

GENERAL CATALOGUE 2025 SOLUTIONS FOR PNEUMATIC AUTOMATION





General catalogue

Solutions for pneumatic automation

This catalogue includes the products range manufactured by Pneumax Industrial Automation Business Unit: air service units and pneumatic components for air distribution and motion control.

Visit pneumaxspa.com



Find out the documentation that complete the Industrial Automation offer

VACUUM TECHNOLOGY



PNEUMATIC FITTINGS



ELECTRIC ACTUATION

Discover more on catalogues which include the product range offered by the other Pneumax Business Units:

AUTOMOTIVE and **PROCESS AUTOMATION**

General index

Solutions for pneumatic automation

Introduction

About Pneumax

Section 01

Air distribution

Valves and solenoid valves



Spool type valves and solenoid valves

Single and manifold versions, mechanical and manual or pneumatic command

Series 104	1.1	Series 800	1.68	Series 2100 Line-Flat-Base	1 .124
Series 105	1.12	Series 888	1.77	Series 2400 Line-Flat-VDMA	1 .139
Series 200	1 .21	Series 400	1 .91	Series 2600 Line-Flat-VDMA	1 .160
Series T200	1 .54	Series T400	1 .110		



Direct operated solenoid valves

Pilot valves, high flow rate performance 2/2 ways and 3/2 ways, version miniaturised available as well

Series 300	1 .175	Series CNOMO	1 .197	UL solenoid coils	1.202
Solenoid coils	1 .189	Series S	1.200		
Series M (mechanical)	1 .193	300-UL solenoid coils	1.202		



Poppet valves and solenoid valves

3/2 and 2/2 valves and solenoid valves for compressed air and vacuum, with aluminium and technopolymer body

Series 700	1 .204
Series PG	1 .207
Series T772-773	1.224
Series T771	1.239



"Namur" valves and solenoid valves

NAMUR valves and solenoid valves with technopolymer or aluminium body, also available in versions classified for use in potentially explosive environments (Directive 2014/34/EU)

Series 514/N	1 .247	Series 514 High Performance	1 .254
Series T514	1.249	Series 515 High Performance	1.260





ISO 5599/1 valves and solenoid valves

Valves and solenoid valves according to standard ISO 5599/1 available in 3 sizes with M12 5/2, 5/3 connectors, aluminium and technopolymer body

Series 1000 - Size 1, 2 and 3 1.264 Series 1000-M12 - Size 1, 2 and 3 1.281

Accessories



Pneumatic circuit accessories

Flow control valves, quick exhaust valves, selectors, silencers, unidirectional valves, manifolds, blocking valves, economizers, gang mounting manifolds, spry valves

Series 600 - M5 - G1" 1.288



Complementary valves

Pressure switches, impulse generators, timers, two hands safety valve, oscillator valve, signal amplifier, progressive start up valve, high-low pressure device

Series 900 1.302



Blocking valves

Unidirectional and bidirectional blocking valves, aluminium and technopolymer versions, with G1/8"- G1/4"- G3/8"- G1/2" connections

Series 50-T50 1.310



Function fittings

Miniaturised logic function with technopolymer body: RFU, RP, VB, VSR, VS-or, VS-and, IP, AP, RP+IP, VB+RFU, VB+VSR

Series 55 Tecno-FUN 1.315



Miniaturised pressure regulators

Brass versions rod G1/8" and with technopolymer body and integrated gauge version

Series 1750 - 1760 1.330



Compact fittings for lubrication

Nichel plated brass compact fittings, with straight male adaptor

Series Mini-RAP 1.332

Valves and solenoid valve manifolds



Wide range of multipolar and serial system, available with main fieldbus protocols

Series PX	1.334	Series 2200 Optyma-S EVO	1 .408	Series 2700 EVO	1.465
Series 3000 EVO	1.355	Series 2200 Optyma-Sc	1.429	EVO Electronics	1.486
Versions 3100 (10 mm) and 3400 (15,5 mm) Stand alone	1.356	Series 2500 Optyma-F EVO	1 .438	Series 2300 Enova®	1 .504
Manifold	1 372	Series 2500 Ontyma-T EVO	1 451		

Section 02

Air treatment



Air service units

Wide range of components for compressed air treatment, available in aluminium, technopolymer and steel, in several sizes with connections from 1/8" to 1" and flow rates up to 8000 NI/min.

Air quality	2 .1	Series 1700	2 .85
Series AIRPLUS	2 .2	Series 1700 Steel line	2 .159



Proportional technology

The proportional pressure regulators range includes 3 product series: 1700 standard, 1700 miniaturised and WPR (Wide Pressure Regulators).

Series 1700 standard 2.176 S	Series 1700 miniaturised	2 .192	Series WPR	2 .208
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Measuring devices

Digital pressure switches and pressure gauges, panel mounting or manifold versions.

Pressure switches Series DS 2.215 Pressure gauges Series DS 2.217



Pressure booster

3 sizes aluminium pressure boosters available or technopolymer with 2:1 compression ratio.

0 : 4700		0 1 0	
Series 1700	2 .219	Series P+	2 .224

Section 03

Pneumatic actuation

Cylinders with piston rod according to standard



ISO 6432 Microbore cylinders

Versions available: with threaded end covers, rolled end covers, aluminium, stainless steel and technopolymer versions

Series 1200 Threaded end covers cylinders	3 .1	Series 1200 Rolled end covers MIR	3 .10	Series 1200, Steel line	3 .18
Series 1200 Tecno-MIR	3 .4	Series 1200 Rolled end covers MIR-INOX	3 .13		



CNOMO-CETOP-ISO cylinders

Cylinders manufactured according to standards CNOMO, CETOP and ISO: standard versions, through rod versions, tandem push with common rod, tandem push with independent rods or opposed tandem with common rod

Series 1303-1308 **3**.30



Cylinders according to standard ISO 15552

Cylinders according to ISO 15552 with bores from Ø32 to Ø200 mm and strokes up to 1250 mm. Available versions: ECOPLUS with aluminium or technopolymer end plates, ECOLIGHT optmized in weight and dimensions, Steel line completely in stainless steel, round tube versions tie rod (Ø250-Ø320 mm)

Series 1319-1320-1321	3.41	Series Ecoplus - HP	3 .47	Series Ecolight	3 .58
Series 1348-1349-1350	3.44	1386-87-88 and 1396-97-98		with protective bellows	
Non rotating cylinders		Series Ecolight	3 .51	Series 1315	3 .73
		1390-1391-1392		Round tube cylinders	
				Series Steel line - AISI 316	3 .77



Hydro-pneumatic speed control cylinders according to standard ISO 15552

ISO 15552 Hydro-pneumatic speed control cylinders with internal hydraulic circuit for movement control

Series 1450 - 1463 -Ø50 - Ø63 3.86





Compact cylinders according to standard ISO 21287

Compact cylinders according to standard ISO with integrated slots suitable for sensors mounting without adaptors. Bores from Ø20 to Ø100 mm. Versions with end stroke adjustable pneumatic cushioning are also available according to ISO 21287

Series 1500 Ecompact 3.92

Cylinders with piston rod not according to standard



Threaded body microbore cylinders

Special performance microbore cylinders with hexagonal or round body and either completely threaded or threaded with a plain rod ending

Series 1200 3.108

Special performance microbore cylinders



Profile tube cylinders, non rotating

Non rotating cylinders twin rod version, available with bores from Ø32 to Ø100 and strokes up to 500 mm

Series 1325-1326-1345-1347 **3**.110

Twin rod cylinders



Flat profile cylinders

ECOFLAT cylinders available with sizes from Ø25 to Ø63 mm and strokes up to 300 mm. Profiled tube has two "T" slots to host sensors 1580._, MRS._, MHS._. without adaptors. Two additional connections are also available on rear cover for cylinder feeding

Series ECOFLAT 3.115



Hydraulic speed control cylinders

Hydraulic speed control cylinders with outward, inward and outward/inward control, with lateral or in-line tank. Available with SKIP valve (accelerating device) and blocking valve (STOP)

Series 1400 - Ø40 - Ø63 3.121



Compact cylinders

Short stroke and compact cylinders with bores from Ø20 to Ø100 mm, available in single and double acting versions, tandem and through rod with magnetic piston versions. The Europe version is compliant with the ISO or UNITOP standard (depending on bores), while the Ecompact-S versions have connections and rods according to the ISO 15552 standard

Series 1500 - Short stroke cylinders 3.132 Series 1500 Europe 3.139 Series Ecompact-S 3.147



Multimount cylinders

Multimount cylinders available with bores from \varnothing 10 to \varnothing 25 mm, with strokes up to 50 mm and with magnetic piston versions

Series 6500 **3**.152



Guided compact cylinders

These cylinders are available in sizes Ø12 to Ø80 mm, and comprise a single compact cylinder with integral guide rods, the rod guide is available in two styles: self-lubricating bronze bushes and bearing bushes

Series 6100-6101-6110 **3**.154



Slide cylinders

Slide cylinders manufactured with bores from Ø8 to Ø25 mm, with strokes up to 150 mm. Available with simple and double regulation end stroke and also with front and rear shock absorber

Series 6600 3.168

Section 03

Pneumatic actuation / Cylinders with piston rod not according to standard (following)



Slide units

Twin-rod linear guide units with bores from Ø10 to Ø32 mm, and with control unit with bronze bush versions, with control unit with bearing bush versions. Are also available the through twin-rod slide units and the compact slide units

Series 6200	3 .179	Series 6210	3 .183	Series 6700	3 .188
Twin-rod slide units		Through twin-rod slide units		Guide cylinders	

Rodless cylinders



Rodless cylinders - Standard

Rodless cylinders with bore from Ø16 to Ø63 mm, and strokes up to 6000 mm, available also with linear control unit

Series 1605	3 .195	Series 1605 - Ø16	3 .206

Rotary actuators



Rack rotary actuators

rotary actuators

Double or single rack & pinion rotary actuators

Series	3 .211	Series 6400 - Double rack	3 .215	Series 6411	3 .218
1330 - 1331 - 1332 - 1333,		actuators with turn table			



Vane type rotary actuators

Vane type rotary actuators with the shaft that runs into ball bearings, available with sizes from Ø10 to Ø100 mm

Series 6420	3 .221

Handling



Pneumatic grippers

Pneumatic grippers manufactured with 2 angular fingers (from -10 $^{\circ}$ to +30 $^{\circ}$), wide opening 180 $^{\circ}$, or 3 finger parallel style. Swing clamp cylinders has been developed to meet the need to clamp a workpiece by means of a clamping arm.

Series 6300	3 231	Series RT	3 .245
361163 0300	J .201	OCHOS III	3 .243

Sensors



Magnetic sensors

Magnetic sensors with Reed type or Hall effect

Series SA	3 .250





Miniaturised magnetic sensors

Miniaturised magnetic sensors with Reed and Hall style versions, available with rectangular, square, square section UL/CSA approved, and round section versions

Series SR	3 .262	Series SQ	3 .267	Series ST	3 .271
Series SU	3 .266				

Accessories and fixing devices



Piston rod lock

Piston rod lock for cylinders with bores from da \varnothing 12 to \varnothing 125 mm

Series 1260 - 1320 3.279



Linear guiding units

Linear guiding units series 1200 (Ø20-25 mm) and series 1320 (from Ø32 to Ø80 mm)

Series 1260 - 1320 **3**.281



Shock absorbers

Shock absorbers with M8x1-M10x1-M14x1,5-M20x1,5-M27x1,5 threads

Series 6900 **3**.283

Appendix



Pneumatic symbols	A .1	
Air quality	A .4	
Dimensioning	A. 5	
Measure and conversion units	A .14	
Alphanumeric index	Δ 18	

GLOBAL VISION and ITALIAN HEART

Excellence in automation since 1976 Made in italy

Founded in 1976 in Lurano (BG), Pneumax has represented Italian excellence worldwide: three business unit dedicated to Industrial Automation, Process Automation and Automotive respectively, manufacturing pneumatic components and systems, electric actuators and components for controlling liquid and gaseous fluids, integrating mechanical, electronic and digital skills.

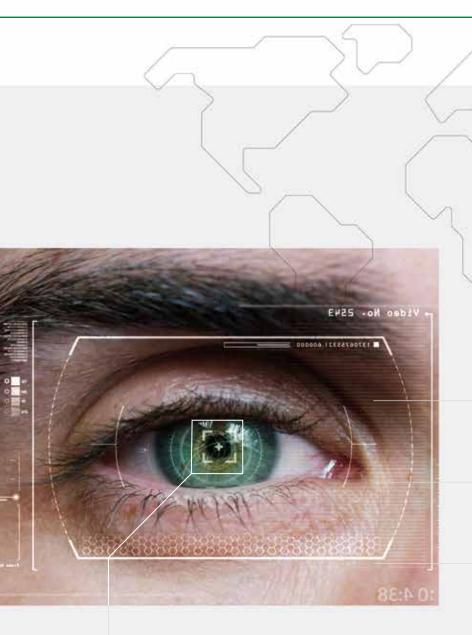
Our presence in over 50 countries around the world is ensured by a network of subsidiaries and authorised distributors. All of our production activity is concentrated in the 10 production units of the Pneumax Group based in Italy. Seven of those units are located in the Pneumax Spa headquarters in Lurano (Bg). In addition to those production plants there are three other companies in the Group: Titan Engineering (San Marino), AutomationWare (Martellago-VE) and Simtech (Lurano-BG).

10 Production sites

29 Companies in the Group

160 .000 m² Headquarters





Foundation 1976

Employees

850

Branches





BUSINESS UNITS

INDUSTRIAL AUTOMATIONPROCESS AUTOMATIONAUTOMOTIVE





World	Europe	Italy
United States	Germany	Milan
Singapore	Czech Republic	Turin
Brazil	United Kingdom	Florence
India	Spain	Vicenza
China	France	Bari
	Portugal	Modena
	Scandinavia	Rimini
		Parma



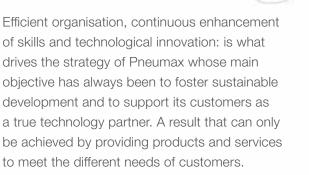
EMPOWERING PEOPLE FOR SUSTAINABLE DEVELOPMENT

Enhancing human resources and the local area, respect for the environment and ethical approach to business

We believe sustainable development means empowering people, through innovation, acting ethically and being respectful of the environment.

Imagining, designing and implementing solutions through the combination of technologies and skills

Our Vision



All this while guaranteeing the highest quality standards and implementing a business model that combines the pursuit of continuous improvement, enhancement of the local area and respect for people and the environment.

The Pneumax Code of Ethics is the document underpinning every company decision to build a business model that values people, relationships and skills.









The desire to offer solutions specifically designed for the applications of different sectors has led to structuring the production and sales organisation into three Business Units: Industrial Automation, Process Automation and Automotive.

Pneumax Business Units are capable of producing a wide range of components made from different materials, from technopolymers to brass, as well as steel and aluminum, according to the relevant international regulations concerning both production processes and product characteristics.



PNEUMATIC TECHNOLOGY



ELECTRIC ACTUATION



FLUID CONTROL







TOTAL QUALITY **MANAGEMENT**

Product quality stems from the quality of the processes and the competence of the people who carry them out

Pneumax constantly invest in new product and manufacturing processes. Through research, quality perfection is the target of each company, that operates in compliance with ISO 9001: 2015, ISO 14001: 2015, and ISO 45001: 2018 standards.

Working according to Total Quality means guaranteeing our customers with the highest reliability of our products and services, because the most prestigious certification is the one that comes from the trust of our partners.







Ongoing Improvement

Measuring, controlling and pursuing perfection



Company

Management & Infrastructure



People

Expertise & Experience



Technology

Products & Production Processes

System and product certifications



PRODUCT CERTIFICATION ACCORDING TO CANADIAN STANDARDS

• IEC 61508

SIL CERTIFICATES
OF COMPLIANCE WITH IEC
61508 STANDARDS

· UL

PRODUCT CERTIFICATION
ACCORDING TO US STANDARDS

EAC

CERTIFICATION OF CONFORMITY FOR THE FREE MOVEMENT OF PRODUCTS IN THE EURO ASIAN ECONOMIC COMMUNITY

ISO 45001:2018

OCCUPATIONAL HEALTH AND SAFETY ASSESSMENT SERIES

• MOCA

FOOD CONTACT

• EN ISO 13849

PRODUCTS CERTIFIED AND/OR
'WELL TRIED' AND SUITABLE FOR
APPLICATIONS IN SAFETY CIRCUITS

• ISO 9001

REQUIREMENTS FOR A QUALITY MANAGEMENT SYSTEM

ATEX 2014/34/EU

SYSTEMS FOR POTENTIALLY EXPLOSIVE ATMOSPHERES

ISO 14001

ENVIRONMENTAL MANAGEMENT STANDARDS

2006/42/CE

COMPLIANCE WITH REGULATIONS 2006/42/EC FOR MACHINERY

NSF

FOOD CONTACT

The Pneumax quality department use's the latest measuring technology. Continuously scanning and analyzing components using structured light laser systems that digitize objects to provide dimensional analysis efficiently via dedicated software: 3D High Resolution X-ray Axial Computed Tomography (CT), with which it is possible to scan components, carry out any measurement required, even in areas that are not accessible or not visible with other instruments.

Plastics and elastomers are monitored through the observation of thermograms provided by DSC (differential scanning calorimetry). All metrological information collected in the company's databases is used for conformity assessments and reprocessed according to statistical control models to allow engineers to work on continuous product improvement.

WORLDWIDE NETWORK

Global vision, local service

Through a network of branches and exclusive distributors, Pneumax operates in over **50 countries** around the world, offering support to it's customers throughout every stage of the supply process, from application to after sales assistance.

Each market and each sector has distinctive characteristics that make them unique. The aim of Pneumax network is to provide services that can enhance these peculiarities by working as a true strategic partner.





Pneumax Business Attitude

An operating model that stems from the ability to combine sector, technology and application expertise through customer collaboration with relevant Sales Engineers, sector Business Specialists and Product Specialists focused on products and technologies.

The BUs, industrial automation, process automation and automotive, constantly interface to transfer the excellence and experience of each sector to the others: from the study of the materials needed in Petrochemicals, to the integration of electronics and digital in industrial Automation or meeting the quality standards required in Automotive processes. An organisation that allows all customers to enjoy the most effective mix of sectoral excellence.



PRODUCT SPECIALISTS

Specific knowledge

• Products and Technologies

BUSINESS SPECIALISTS

Dedicated competences

• Sectors and Applications



SALES ENGINEERS

Worldwide Presence

Relationship management









Section 01

Air distribution

Valves, solenoid valves and devices for compressed air distribution and control

Valves and solenoid valves

Spool type valves and solenoid valves

Single and manifold versions, mechanical and manual or pneumatic command

	Series 104	1.1
	Series 105	1.12
Ó	Series 200	1.21
	Series T200	1.54
	Series 800	1.68
	Series 888	1.77

-	Series 400	1.91
8	Series T400	1 .110
	Series 2100 Line-Flat-Base	1.124
	Series 2400 Line-Flat-VDMA	1.139
	Series 2600 Line-Flat-VDMA	1.160

Direct operated solenoid valves

Pilot valves, high flow rate performance 2/2 ways and 3/2 ways, miniaturised version available as well

	Series 300	1 .175
C No.	Solenoid coils	1.189
	Series M (Mechanical)	1.193
	Series CNOMO	1 .197

a version available	as well	
Bar History	Series S	1.200
	300-UL solenoid coils	1.202
Tigg Was Artists - N	UL solenoid coils	1.202



Poppet valves and solenoid valves

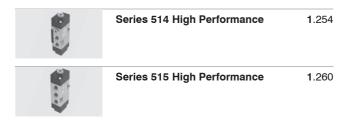
3/2 and 2/2 valves and solenoid valves for compressed air and vacuum, with aluminium and technopolymer body

	Series 700	1.204
	Series PG	1.207
6	Series T772-773	1.224
	Series T771	1.239

"Namur" valves and solenoid valves

NAMUR valves and solenoid valves with technopolymer or aluminium body, also available in versions classified for use in potentially explosive environments (Directive 2014/34/EU)

	Series 514/N	1.247
R	Series T514	1.249



ISO 5599/1 valves and solenoid valves

Valves and solenoid valves according to standard ISO 5599/1 available in 3 sizes with M12 5/2, 5/3 connectors, aluminium and technopolymer body



Series 1000 - Size 1, 2 and 3 1.264



Series 1000-M12 - Size 1, 2 and 3

1.281

Accessories

Pneumatic circuit accessories

Flow control valves, quick exhaust valves, selectors, silencers, unidirectional valves, manifolds, blocking valves, economizers, gang mounting manifolds, spry valves



Series 600 - M5 - G1"

1.288

Blocking valves

Unidirectional and bidirectional blocking valves, aluminium and technopolymer versions, with G1/8"- G1/4"- G3/8"- G1/2" connections



Series 50-T50

1.310

Complementary valves

Pressure switches, impulse generators, timers, two hands safety valve, oscillator valve, signal amplifier, progressive start up valve, highlow pressure device



Series 900

1.302

Function fittings

Miniaturised logic function with technopolymer body: RFU, RP, VB, VSR, VS-or, VS-and, IP, AP, RP+IP, VB+RFU, VB+VSR



Series 55 Tecno-FUN

1.315

Accessories (following)

Miniaturised pressure regulators

Brass versions rod G1/8" and with technopolymer body and integrated gauge version



Series 1750 - 1760 1.330

Compact fittings for lubrication

Nichel plated brass compact fittings, with straight male adaptor



Valves and solenoid valve manifolds

Wide range of multipole and serial systems, available with main fieldbus protocols

Series PX	1.334
Series 3000 EVO Versions 3100 (10 mm) and 3400 (15,5 mm) Stand alone	1.355 1.356
Manifold	1.372
Series 2200 Optyma-S EVO	1.408
Series 2200 Optyma-Sc	1.429
Series 2500 Optyma-F EVO	1.438





Series 104

The micro valves 104 series are a cost effective solution with reduced overall dimensions, easy to install and manage.

Their main characteristic is the possibility to choose between the version with lateral or rear pneumatic connections realized with quick fitting for Ø4mm tube included.

The valves are available with 2 or 3 ways versions, normally closed or open, 5 ways and 5 ways 3 positions open centres and pressured centres.

The 5 ways version is made with two 3 ways valves placed side by side with common inlet.

The operators available for this valve are push button (different versions), selector (key, short and long lever), lever (lever roller or level undirectional) and pneumatic.

It is also possible to combine the 2 and 3 ways valves with electrical switches, normally closed or open.

Construction characteristics		
Body and cover	Technopolymer	
Spacers	Technopolymer	
Seals	NBR	
Springs	Spring steel	
Operators	Plastic material for buttons and switches	
Pistons	Aluminium (for pneumatic command version)	
Spools	Steel	

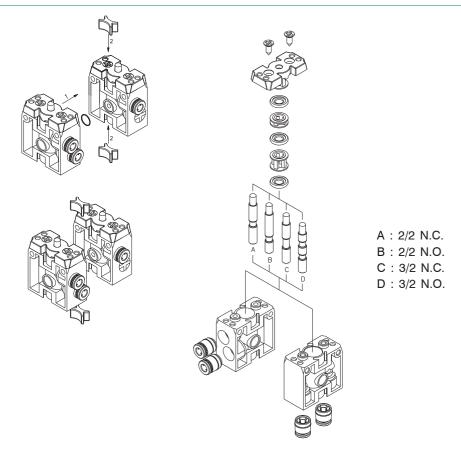
Use and maintenance

This valves have an average life of 15 million cycles depending on the application and air quality.

Filtered and lubricated air using specified lubricants will reduce the wear of the seals and ensures long and trouble free operation.

Please ensure that the valve is being used according with the manufacturers specification, such as air pressure and temperature.

ATTENTION: use hydraulic oil class H for lubrication such as CASTROL MAGNA SW32.





Tappet - Spring

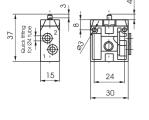
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with Δp=1 (NI/min)	90	
Orifice size (mm)	2.5	
Working ports size	ø4 tube	

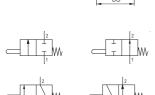
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	TYPE		FUNCTION
0	22 = 2 ways, 2 positions	•	A = Normally Open
	32 = 3 ways, 2 positions		C = Normally Closed
	CONNECTION TYPE		
W	L = Lateral		
	P = Rear		

2/2 - 3/2 - Lateral connections







2/2 - 3/2 - Rear connections





Weight 20 g Operating force 13 N

2/2 - 3/2 - Rear connections

104.**1**.0.1.P.**3**

Push button - Spring

104.**0**.0.1.L.**9**

Weight 20 g Operating force 13 N

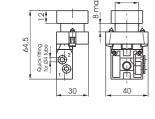
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	90	
Orifice size (mm)	2.5	
Working ports size	ø4tube	

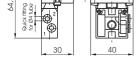
Coding: 104.**1**.6.22/**6**.**0**.**6**

	TYPE		CONNECTION TYPE
	22 = 2 ways, 2 positions	0	L = Lateral
0	32 = 3 ways, 2 positions		P = Rear
	52 = 5 ways, 2 positions		FUNCTION (only for 2/2 or 3/2 ways)
	BUTTON COLOR	•	A = Normally Open
	1 = Red		C = Normally Closed
•	2 = Black		
	3 = Green		
	4 = Yellow		

2/2 - 3/2 - Lateral connections











Weight 50 g Operating force 18 N 104.**0**.6.22/**0**.P.**9**

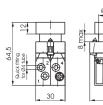


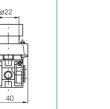


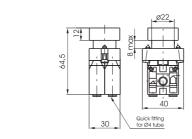


Weight 50 g Operating force 18 N 104.**0**.6.22/**0**.L.**9** 5/2 - Lateral connections









Weight 105 g Operating force 30 N

104.52.6.22/@.L



Weight 105 g Operating force 30 N

104.52.6.22/**@**.P







Push button 2 positions (step - step)

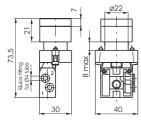
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with Δp=1 (NI/min)	90	
Orifice size (mm)	2.5	
Working ports size	ø4 tube	

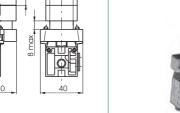
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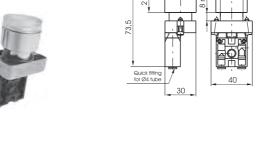
	TYPE		FUNCTION (only for 2/2 and 3/2 ways)
	22 = 2 ways, 2 positions	(3)	A = Normally Open
0	32 = 3 ways, 2 positions		C = Normally Closed
	52 = 5 ways, 2 positions		
	CONNECTION TYPE		
W	L = Lateral		
	P = Rear		

2/2 - 3/2 - Lateral connections



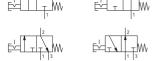






Weight 60 g Operating force 18 N

104.**0**.6.31.L.**9**



Weight 60 g Operating force 18 N

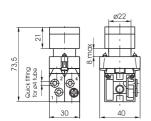
2/2 - 3/2 - Rear connections

104.**1**.6.31.P.



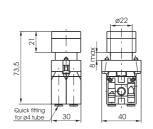
5/2 - Lateral connections





5/2 - Rear connections





Weight 110 g Operating force 30 N

104.52.6.31.L



Weight 110 g Operating force 30 N

104.52.6.31.P





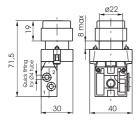
Raised Push button - Spring

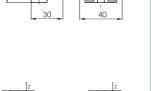
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with Δp=1 (NI/min)	90	
Orifice size (mm)	2.5	
Working ports size	ø4 tube	

Coding: 104.**1**.6.23/**6**.**0**.**6**

П		TYPE		CONNECTION TYPE
	_	22 = 2 ways, 2 positions	0	L = Lateral
	Ū	32 = 3 ways, 2 positions		P = Rear
		52 = 5 ways, 2 positions		FUNCTION (only for 2/2 or 3/2 ways)
		BUTTON COLOR	•	A = Normally Open
		1 = Red		C = Normally Closed
	•	2 = Black		
J		3 = Green		
		4 - Vollow		

2/2 - 3/2 - Lateral connections





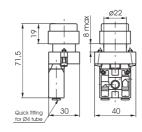
Weight 50 g Operating force 18 N

104.**0**.6.23/**©**.L.**6**



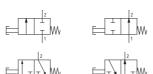
2/2 - 3/2 - Rear connections





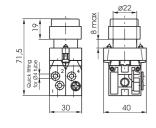
Weight 50 g Operating force 18 N

104.**①**.6.23/**②**.P.**⑤**



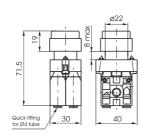
5/2 - Lateral connections





5/2 - Rear connections





Weight 105 g Operating force 30 N

104.52.6.23/**⊚**.L



Weight 105 g Operating force 30 N

104.52.6.23/**@**.P



1 | 4

Palm button 2 position

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with Δp=1 (NI/min)	90	
Orifice size (mm)	2.5	
Working ports size	ø4 tube	

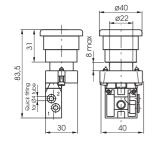
Coding: 104.0.6.25.0.0

2/2 - 3/2 - Rear connections

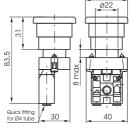
0	TYPE		FUNCTION (only for 2/2 and 3/2 ways)
	22 = 2 ways, 2 positions	•	A = Normally Open
	32 = 3 ways, 2 positions	_	C = Normally Closed
	52 = 5 ways, 2 positions		
	CONNECTION TYPE		
W	L = Lateral		
	P = Rear		

2/2 - 3/2 - Lateral connections









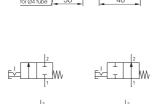
Weight 65 g Operating force 19 N Emergency - Rotate to unlock

104.**0**.6.25.L.**6**



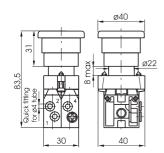
Weight 65 g Operating force 19 N Emergency - Rotate to unlock

104.**0**.6.25.P.**6**



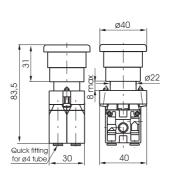
5/2 - Lateral connections





5/2 - Rear connections





Weight 120 g Operating force 32 N Emergency - Rotate to unlock

104.52.6.25.L



Weight 120 g Operating force 32 N Emergency - Rotate to unlock

104.52.6.25.P





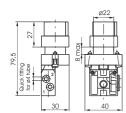
Switch - short lever

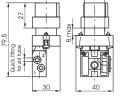
Operational characteristics				
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous			
Max. working pressure (bar)	10			
Temperature °C	-5 +70			
Flow rate at 6 bar with Δp=1 (NI/min)	90			
Orifice size (mm)	2.5			
Working ports size	ø4 tube			

Coding: $104. \bigcirc 1.6.30. \bigcirc . \bigcirc 2$

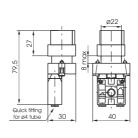
	TYPE		SWITCH POSITION (only for 5/3 ways)
	22 = 2 ways, 2 positions	8	0 = 3 instable positions
0	32 = 3 ways, 2 positions		1 = 3 stable positions
	52 = 5 ways, 2 positions		CONNECTION TYPE
	53 = 5 ways, 3 positions	W	L = Lateral
	FUNCTION 1 (only for 5/3 ways)		P = Rear
	32 = Open centres		FUNCTION 2 (only for 2/2 or 3/2 ways)
	33 = Pressured centres	\Box^2	A = Normally Open
			C = Normally Closed

2/2 - 3/2 - Lateral connections









Weight 65 g Switch 2 positions stable

104.**0**.6.30.L.**6**²







Weight 65 g Switch 2 positions stable

5/2 - Rear connections

2/2 - 3/2 - Rear connections

104.**0**.6.30.P.**6**²





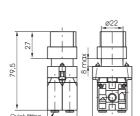




5/2 - Lateral connections







Weight 120 g Switch 2 positions stable

104.52.6.30.L

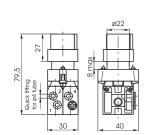


Weight 120 g Switch 2 positions stable

104.52.6.30.P

5/3 - Lateral connections





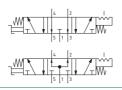
5/3 - Rear connections

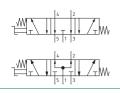




Weight 120 g

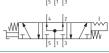
104.53. 6.30. S.L

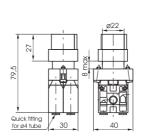


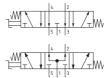


Weight 120 g

104.53.**6**¹.6.30.**⊗**.P







s

Switch - long lever

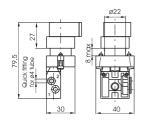
Operational characteristics				
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous			
Max. working pressure (bar)	10			
Temperature °C	-5 +70			
Flow rate at 6 bar with Δp=1 (NI/min)	90			
Orifice size (mm)	2.5			
Working ports size	ø4 tube			

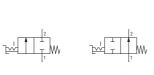
Coding: 104. **1**. **6**. 27. **8**. **7**. **6**. 27. **8**. **7**.

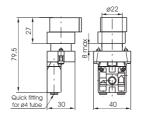
	TYPE		SWITCH POSITION (only for 5/3 ways)
	22 = 2 ways, 2 positions	8	0 = 3 instable positions
•	32 = 3 ways, 2 positions		1 = 3 stable positions
	52 = 5 ways, 2 positions		CONNECTION TYPE
	53 = 5 ways, 3 positions	•	L = Lateral
	FUNCTION 1 (only for 5/3 ways)		P = Rear
(3 1	32 = Open centres		FUNCTION 2 (only for 2/2 or 3/2 ways)
_	33 = Pressured centres	3 2	A = Normally Open
			C = Normally Closed

2/2 - 3/2 - Lateral connections









Weight 65 g Switch 2 positions stable

2/2 - 3/2 - Rear connections





104.**⊕**.6.27.P.**⊕**²



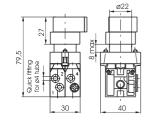


Weight 65 g Switch 2 positions stable

5/2 - Lateral connections

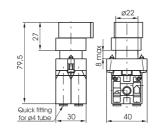


104.**0**.6.27.L.**6**²









Weight 120 g Switch 2 positions stable

5/3 - Rear connections

104.52.6.27.P

4 2 5 1 3

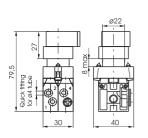
Weight 120 g Switch 2 positions stable

104.52.6.27.L

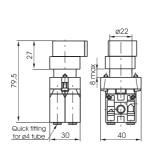


5/3 - Lateral connections



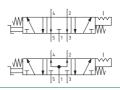


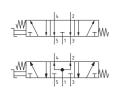




Weight 120 g

104.53. 61.6.27. 6.L





Weight 120 g

104.53.**6**¹.6.27.**⊗**.P



Key switch

Operational characteristics				
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous			
Max. working pressure (bar)	10			
Temperature °C	-5 +70			
Flow rate at 6 bar with Δp=1 (NI/min)	90			
Orifice size (mm)	2.5			
Working ports size	ø4 tube			

Coding: 104. **1**.**6**.28. **8**. **4**. **6**.

	TYPE		SWITCH POSITION (only for 5/3 ways)
	22 = 2 ways, 2 positions	8	0 = 3 instable positions
•	32 = 3 ways, 2 positions		1 = 3 stable positions
	52 = 5 ways, 2 positions		CONNECTION TYPE
	53 = 5 ways, 3 positions	W	L = Lateral
	FUNCTION 1 (only for 5/3 ways)		P = Rear
(3 1	32 = Open centres		FUNCTION 2 (only for 2/2 or 3/2 ways)
	33 = Pressured centres	\bigcirc 2	A = Normally Open
			C = Normally Closed

2/2 - 3/2 - Lateral connections









100,5

Quick fi for ø4 t

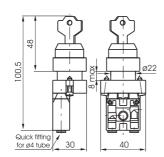




2/2 - 3/2 - Rear connections













5/2 - Lateral connections

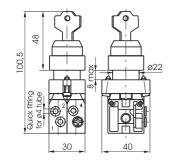
Weight 100 g Switch 2 positions stable



104.**0**.6.28.L.**6**²

Weight 155 g Switch 2 positions stable

104.52.6.28.L

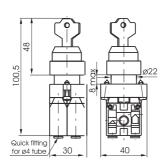




5/2 - Rear connections



Weight 155 g Switch 2 positions stable 104.52.6.28.P

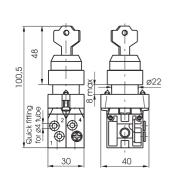


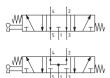
5/3 - Lateral connections



Weight 155 g

104.53. 6.28. S.L



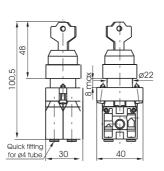


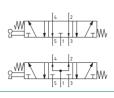
5/3 - Rear connections



Weight 155 g

104.53. 61.6.28. S.P





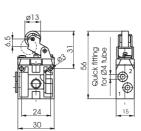


Lever roller - Spring

Operational characteristics				
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous			
Max. working pressure (bar)	10			
Temperature °C	-5 +70			
Flow rate at 6 bar with Δp=1 (NI/min)	90			
Orifice size (mm)	2.5			
Working ports size	ø4 tube			

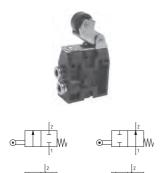
TYPE		FUNCTION
22 = 2 ways, 2 positions	(1)	A = Normally Open
32 = 3 ways, 2 positions		C = Normally Closed
CONNECTION TYPE		
L = Lateral		
P = Rear		
)	22 = 2 ways, 2 positions 32 = 3 ways, 2 positions CONNECTION TYPE L = Lateral	22 = 2 ways, 2 positions 32 = 3 ways, 2 positions CONNECTION TYPE L = Lateral

2/2 - 3/2 - Lateral connections

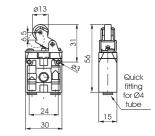


Weight 31 g Operating force 9 N

104.**①**.2.1.L.**②**



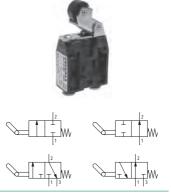




Coding: 104.**1**.2.1.**0**.**9**

Weight 31 g Operating force 9 N

104.**1**.2.1.P.**3**



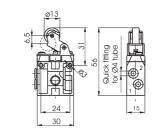
Lever roller ball bearing - Spring

Operational characteristics			
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous		
Max. working pressure (bar)	10		
Temperature °C	-5 +70		
Flow rate at 6 bar with Δp=1 (NI/min)	90		
Orifice size (mm)	2.5		
Working ports size	ø4 tube		

Coding: 104. **1**.2.1/1. **1**.0.

П		TYPE	9	FUNCTION
l	0	22 = 2 ways, 2 positions		A = Normally Open
ł		32 = 3 ways, 2 positions		C = Normally Closed
ł		CONNECTION TYPE		
ł	0	L = Lateral		
1		P = Rear		
1			•	

2/2 - 3/2 - Lateral connections

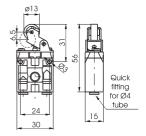


Weight 46 g Operating force 9 N

104.**1**.2.1/1.L.

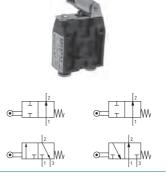






Weight 46 g Operating force 9 N

104.**①**.2.1/1.P.**②**



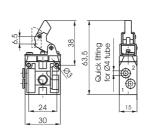
Lever unidirectional - Spring

•				
Operational characteristics				
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous			
Max. working pressure (bar)	10			
Temperature °C	-5 +70			
Flow rate at 6 bar with Δp=1 (NI/min)	90			
Orifice size (mm)	2.5			
Working ports size	ø4 tube			

Coding: 104. **1**.3.1. **1**.3.

		TYPE		FUNCTION
	0	22 = 2 ways, 2 positions	•	A = Normally Open
4		32 = 3 ways, 2 positions		C = Normally Closed
1		CONNECTION TYPE		
	0	L = Lateral		
4		P = Rear		

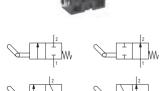
2/2 - 3/2 - Lateral connections



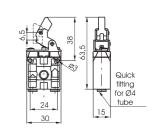
Weight 31 g Operating force 9 N

104.**①**.3.1.L.**②**



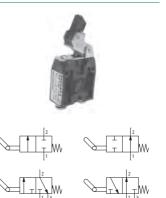


2/2 - 3/2 - Rear connections



Weight 31 g Operating force 9 N

104.**①**.3.1.P.**②**



Complete lever roller operator

Coding: 104.2.1



Complete lever unidirectional

Coding: 104.3.1



Push button

Coding: 104.6.22/@



	BUTTON COLOR
	1 = Red
Θ	2 = Black
	3 = Green
	4 - Vallow

Push button 2 positions

Coding: 104.6.31



(step - step)

Switch - short lever

Coding: 104.6.30.



SWITCH POSITION (only for 3 position		SWITCH POSITION (only for 3 position)	
	8	0 = 3 instable positions	
		1 = 3 stable positions	

Switch 2 positions stable

Switch 3 positions

104.6.30.

104.6.30

Key switch

Coding: 104.6.28.



	SWITCH POSITION (only for 3 position)
8	0 = 3 instable positions

1 = 3 stable positions

Switch 2 positions stable

Switch 3 positions

104.6.28 104.6.28.**©**

Contact electric element

Coding: 104.



	FUNCTION
•	NO = Normally Open
	NC = Normally Closed

Push button protection cover

Coding: 104.02



Complete lever roller ball bearing operator

Coding: 104.2.1/1



Fixing plate

Coding: 104.00 Complete with fixing screws



Raised Push button

Coding: 104.6.23/



	BUTTON COLOR
	1 = Red
•	2 = Black
	3 = Green
	4 = Yellow

Palm button 2 position

Coding: 104.6.25



Emergency - Rotate to unlock

Switch - long lever

Coding: 104.6.27.



	SWITCH POSITION (only for 3 position)	
S 0 = 3 instable positions		
	1 = 3 stable positions	
Switch 2 positions stable		

Switch 3 positions

104.6.27

104.6.27.

Joystick selector switch, 3 instable positions

Coding: 104.6.39.0



Complete Pneumatic Operator

Coding: 104.11



Pneumatic - Spring

Operational characteristics				
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous			
Max. working pressure (bar)	10			
Temperature °C	-5 +50			
Flow rate at 6 bar with Δp=1 (NI/min)	90			
Orifice size (mm)	2.5			
Working ports size	ø4 tube			
Pilot ports size	M5			

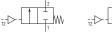
Coding: 104.**1**.11.1.**0**.

	TYPE		FUNCTION
•	22 = 2 ways, 2 positions	•	A = Normally Open
	32 = 3 ways, 2 positions		C = Normally Closed
	CONNECTION TYPE		
W	L = Lateral]	
	P = Rear		
		-	

2/2 - 3/2 - Lateral connections



Weight 25 g Minimum pilot pressure 2,5 bar 104.**1**.11.1.L. Ø15





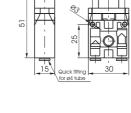
2/2 - 3/2 - Rear connections



Weight 25 g Minimum pilot pressure 2,5 bar

104.**1**.11.1.P.**3**













Series 105

The series 105 consist of a broad range of miniature valves and valves with various type of actuation.

The connections are M5 for this series

Due to their special construction with a balanced spool, these valves can be used interchangeably as 3 ways or 5 ways.

The 3 ways can be used normally closed or normally open and the 5 ways can be fed through the exhausts 3 and 5 with different pressures according to the need.

The spool, as it is moving, isolates the connections without being affected by the inlet pressure.

Construction characteristics

	M5
Body	Aluminium
Spacers	Technopolymer
Seals	NBR
Springs	Spring steel
Operators	Nickel plated brass Stainless steel for roller levers and button levers; Zinc plated steel for side levers; Plastic material for handles, buttons and switches Aluminium (for pneumatic command version)
Pistons	Aluminium (for pneumatic command version)
Spools	Steel

Use and maintenance

1 | 12

This valves have an average life of 15 million cycles depending on the application and air quality.

Filtered and lubricated air using specified lubricants will reduce the wear of the seals and ensures long and trouble free operation.

Please ensure that the valve is being used according with the manufacturers specification, such as air pressure and temperature.

The exhaust port of the distributor has to be protected in a dusty and dirty environment.

Repair kits including the spool complete with seals are available for overhauling the valves.

However, although this is a simple operation it should be carried out by a competent person.

ATTENTION: use hydraulic oil class H for lubrication such as CASTROL MAGNA SW32.

Spool type valves and solenoid valves Series 105 - Mechanical and manual command - M5

Tappet panel - Spring

Operational characteristics				
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous			
Max. working pressure (bar)	10			
Temperature °C	-5 +70			
Flow rate at 6 bar with Δp=1 (NI/min)	120			
Orifice size (mm)	2.5			
Working ports size	M5			

Coding: 105. **1**.0.1

	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



105.52.0.1

3/2 ways



Weight 70 g Operating force 14 N

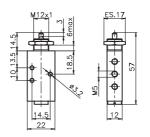
M12x1

M1

5/2 ways



Weight 87 g Operating force 14 N

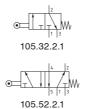


Lever roller - Spring

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	120
Orifice size (mm)	2.5
Working ports size	M5

Coding: 105. **1**.2.1





3/2 ways

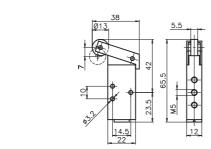


Weight 85 g Operating force 6 N

38 913 5.5 913 913 913 913 913

Weight 102 g Operating force 6 N

5/2 ways

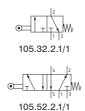


Lever roller ball bearing - Spring

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	120
Orifice size (mm)	2.5
Working ports size	M5

Coding: 105. **1**.2.1/1

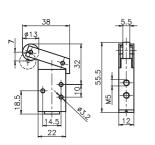
	TYPE	
0	32 = 3 ways, 2 positions	
	52 = 5 ways, 2 positions	



3/2 ways



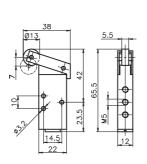
Weight 100 g Operating force 6 N



5/2 ways



Weight 177 g Operating force 6 N



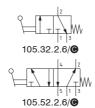
AIR DISTRIBUTION

Lever button - Spring

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	120
Orifice size (mm)	2.5
Working ports size	M5

Coding: 105.0.2.6/@

	TYPE	
32 = 3 ways, 2 positions		
	52 = 5 ways, 2 positions	
	BUTTON COLOR	
	1 = Red	
•	2 = Black	
	3 = Green	

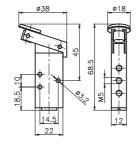


3/2 ways



5/2 ways





Weight 85 g Operating force 6 N

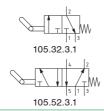
Weight 102 g Operating force 6 N

Lever unidirectional - Spring

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	120
Orifice size (mm)	2.5
Working ports size	M5

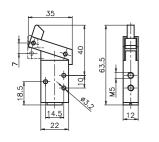
Coding: 105.0.3.1





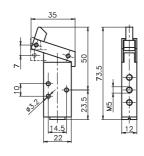
3/2 ways





5/2 ways





Weight 85 g Operating force 6 N

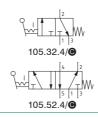
Lever panel Ø22 - 2 positions

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	120
Orifice size (mm)	2.5
Working ports size	M5

Coding: 105.**1**.4/**3**

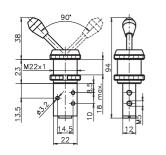
Weight 102 g Operating force 6 N

	TYPE
•	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	LEVER COLOR
•	1 = Red
	2 = Black
	3 = Green



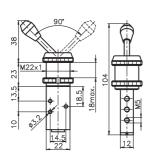
3/2 ways





5/2 ways





Weight 125 g

Weight 142 g



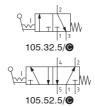


Lever panel Ø30 - 2 positions

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	120
Orifice size (mm)	2.5
Working ports size	M5

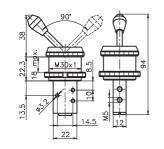


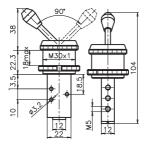
TYPE	
32 = 3 ways, 2 positions	
52 = 5 ways, 2 positions	
LEVER COLOR	
1 = Red	
2 = Black	
3 = Green	



3/2 ways







Weight 165 g

Weight 182 g

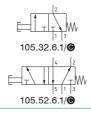
5/2 ways

Push button Ø30 - Spring

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	120
Orifice size (mm)	2.5
Working ports size	M5

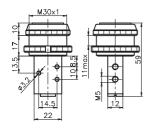
Coding: 105.0.6.1/@

	TYPE	
32 = 3 ways, 2 positions		
	52 = 5 ways, 2 positions	
	BUTTON COLOR	
a	1 = Red	
Θ	2 = Black	
	3 = Green	



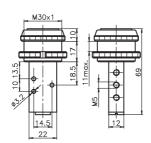
3/2 ways





5/2 ways





Weight 140 g Operating force 14 N

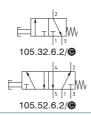
Push button Ø22 - Spring

Weight 123 g Operating force 14 N

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with ∆p=1 (NI/min)	120
Orifice size (mm)	2.5
Working ports size	M5

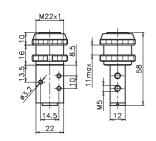
Coding: 105.0.6.2/@

	TYPE
•	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
•	BUTTON COLOR
	1 = Red
	2 = Black
	3 = Green



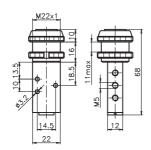
3/2 ways





5/2 ways





Weight 102 g Operating force 14 N

Weight 119 g Operating force 14 N

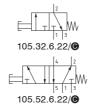


Push button - Spring

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	120
Orifice size (mm)	2.5
Working ports size	M5

Coding: 105.0.6.22/@

	TYPE	
32 = 3 ways, 2 positions		
	52 = 5 ways, 2 positions	
	BUTTON COLOR	
	1 = Red	
•	2 = Black	
	3 = Green	
	4 = Yellow	



3/2 ways



5/2 ways



Weight 182 g Operating force 14 N

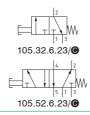
			ø22 -
		×	
84	 	× Sw	
	30		40

Raised Push button - Spring

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	120
Orifice size (mm)	2.5
Working ports size	M5

Coding: 105.0.6.23/@

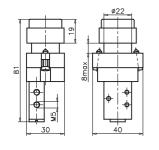
	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
•	BUTTON COLOR
	1 = Red
	2 = Black
	3 = Green
	4 = Yellow



3/2 ways

Weight 165 g Operating force 14 N





5/2 ways



Weight 187 g Operating force 14 N

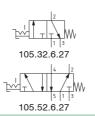
Weight 170 g Operating force 14 N

Switch 2 positions

<u>'</u>		
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with Δp=1 (NI/min)	120	
Orifice size (mm)	2.5	
Working ports size	M5	

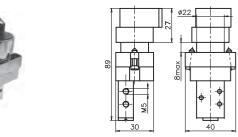
Coding: 105.**1**.6.27

	TYPE	
0	32 = 3 ways, 2 positions	
	52 = 5 ways, 2 positions	



3/2 ways

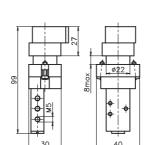




5/2 ways



Weight 202 g



Weight 185 g

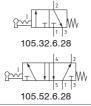
Spool type valves and solenoid valves Series 105 - Mechanical and manual command - M5

Key switch 2 positions

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with Δp=1 (NI/min)	120	
Orifice size (mm)	2.5	
Working ports size	M5	

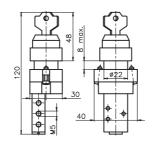
Cod	ing: 105. ① .6.28
	TYPE

	TYPE
Û	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways





Weight 215 g

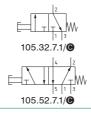
Palm pushbutton Ø30 - Spring

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	120
Orifice size (mm)	2.5
Working ports size	M5

Coding: 105.0.7.1/@

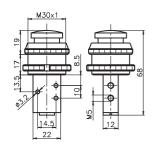
Weight 232 g

	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
6	BUTTON COLOR
	1 = Red
	2 = Black
	3 = Green



3/2 ways

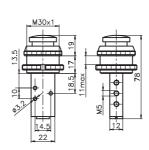




5/2 ways

5/2 ways





Weight 126 g Operating force 14 N

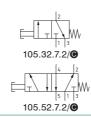
Palm pushbutton Ø22 - Spring

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	120
Orifice size (mm)	2.5
Working ports size	M5

Coding: 105. **1**.7.2/

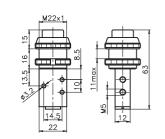
Weight 143 g Operating force 14 N

	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
•	BUTTON COLOR
	1 = Red
	2 = Black
	3 = Green



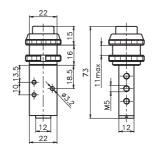
3/2 ways





5/2 ways





Weight 103 g Operating force 14 N

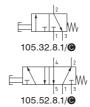
Weight 120 g Operating force 14 N

Push button

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	120
Orifice size (mm)	2.5
Working ports size	M5

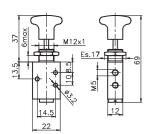
Coding: 105.**1**.8.1/

	TYPE
•	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	BUTTON COLOR
	1 = Red
•	2 = Black
	3 = Green



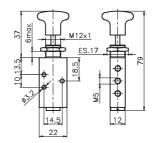
3/2 ways





5/2 ways





Weight 92 g Operating force 14 N

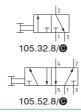
Weight 75 g Operating force 14 N

Push button 2 positions

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with Δp=1 (NI/min)	120	
Orifice size (mm)	2.5	
Working ports size	M5	

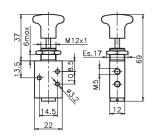
Coding: 105.0.8/@

	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
•	BUTTON COLOR
	1 = Red
	2 = Black
	3 = Green



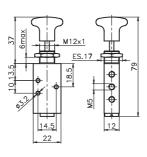
3/2 ways





5/2 ways





Weight 92 g Operating force 14 N

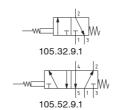
Weight 75 g Operating force 14 N

Whisker - Spring

•		
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 + 70	
Flow rate at 6 bar with Δp=1 (NI/min)	120	
Orifice size (mm)	2.5	
Working ports size	M5	

Coding: 105. **1**.9.1

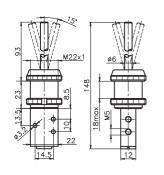
TYPE		
0	32 = 3 ways, 2 positions	
	52 = 5 ways, 2 positions	



3/2 ways







5/2 ways



Weight 153 g

Weight 136 g

1 | 18

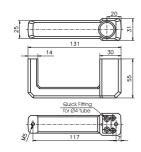
Handle with valve

Operational characteristics			
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous		
Max. working pressure (bar)	10		
Temperature °C	-5 +70		
Flow rate at 6 bar with Δp=1 (NI/min)	120		
Orifice size (mm)	2.5		
Working ports size	M5 - Quick Fitting for Ø4 tube		

Coding: 105.**1**.6.**4**.**5**

Г		TYPE	•	FUNCTION (only for 3 ways)
	0	32 = 3 ways, 2 positions		A = Normally Open
		52 = 5 ways, 2 positions		C = Normally Closed
		FEEDING		
	A	40 = Left feeding		
		40D = Right feeding		
١,				





Weight 165 g Operating force 14 N

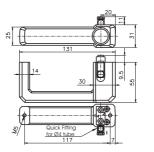




Left feeding Weight 190 g Operating force 14 N

105.52.6.40





Weight 190 g Operating force 14 N

Right feeding

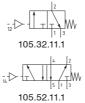


Pneumatic - Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with ∆p=1 (NI/min)	120	
Orifice size (mm)	2.5	
Working ports size	M5	
Pilot ports size	M5	

Coding: 105.0.11.1

	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



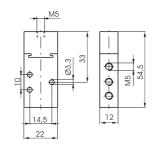
3/2 ways



φ

5/2 ways

Weight 100 g



Weight 90 g Minimum pilot pressure 2,5 bar

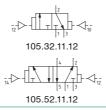
Pneumatic - Differential

Operational characteristics Filtered air. No lubrication needed, if applied it shall be Fluid continuous Max. working pressure (bar) 10 Temperature °C -5 ... +70 Flow rate at 6 bar with $\Delta p=1$ (NI/min) 120 Orifice size (mm) 2.5 Working ports size M5 Pilot ports size М5 5/2 ways

Coding: 105. **1**.11.12

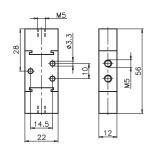
Minimum pilot pressure 2,5 bar

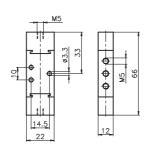
	TYPE	
0	32 = 3 ways, 2 positions	
	52 = 5 ways, 2 positions	



3/2 ways







Weight 120 g Minimum pilot pressure 2,5 bar

5/2 ways

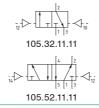
Minimum pilot pressure 2,5 bar

Pneumatic-Pneumatic

Operational characteristics			
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous		
Max. working pressure (bar)	10		
Temperature °C	-5 +70		
Flow rate at 6 bar with Δp=1 (NI/min)	120		
Orifice size (mm)	2.5		

Coding: 105. **1**.11.11

	TYPE
D	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways

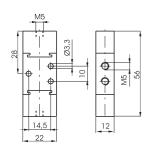
Working ports size

Pilot ports size





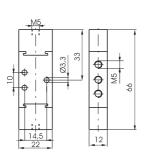
Weight 110 g Minimum pilot pressure 2,5 bar



M5

М5

Weight 120 g Minimum pilot pressure 2,5 bar





Series 200

The series 200 consist of a broad range of valves with various type of actuation.

The connections for this series are from G 1/8" to G 1".

Due to their special construction with a balanced spool, these valves can be used interchangeably as 3 ways or 5 ways.

The 3 ways can be used normally closed or normally open and the 5 ways can be fed through the exhausts 3 and 5 with different pressures according to the need.

The spool, as it is moving, isolates the connections without being affected by the inlet pressure.

Construction characteristics	
	G 1/8" - G 1/4" - G 1/2" - G 1"
Body	Aluminium
Spacers	Technopolymer Aluminium for G1" (211)
Seals	NBR PUR for 212/2
Springs	Spring steel
Operators	Aluminium Technopolymer
Pistons	Technopolymer, for 228 pneumatic command valves Aluminium, for 224, 212, 212/2 and 211 pneumatic command valves
Spools	Steel Aluminium, for 212/2

Use and maintenance

This valves have an average life of 15 million cycles depending on the application and air quality.

Filtered and lubricated air using specified lubricants will reduce the wear of the seals and ensures long and trouble free operation.

Please ensure that the valve is being used according with the manufacturers specification, such as air pressure and temperature.

The exhaust port of the distributor has to be protected in a dusty and dirty environment.

Repair kits including the spool complete with seals are available for overhauling the valves.

However, although this is a simple operation it should be carried out by a competent person.

ATTENTION: use hydraulic oil class H for lubrication such as CASTROL MAGNA SW32.

Tappet - Spring

Operational characteristics			
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous		
Max. working pressure (bar)	10		
Temperature °C	-5 +70		
Flow rate at 6 bar with Δp=1 (NI/min)	540		
Orifice size (mm)	6		
Working ports size	G1/8"		

Coding: 228. **1**.0.1

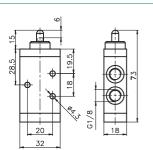
	TYPE
•	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions

3/2 ways



Weight 85 g Operating force 33 N

228.32.0.1

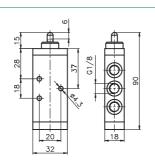






Weight 105 g Operating force 33 N

228.52.0.1





Tappet panel - Spring

Operational characteristics			
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous		
Max. working pressure (bar)	10		
Temperature °C	-5 +70		
Flow rate at 6 bar with Δp=1 (NI/min)	540		
Orifice size (mm)	6		
Working ports size	G1/8"		

Coding: 228.0.1.1

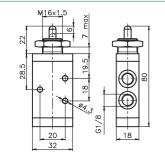
	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions

3/2 ways



Weight 102 g Operating force 33 N

228.32.1.1

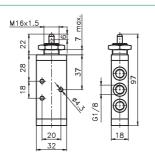






Weight 122 g Operating force 33 N

228.52.1.1





Lever roller-Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with Δp=1 (NI/min)	540	
Orifice size (mm)	6	
Working ports size	G1/8"	

Coding: 228.**①**.2.**②**

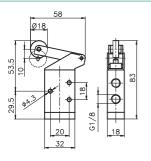
	TYPE
•	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
V	VERSION
	1 = Plastic roller
	1/2 = Metal roller





Weight 115 g Operating force 15 N

228.32.2.

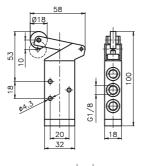






228.52.2.

Weight 135 g Operating force 15 N









Lever roller ball bearing - Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with Δp=1 (NI/min)	540	
Orifice size (mm)	6	
Working ports size	G1/8"	

Coding: 228. **1**.2.1/1

	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions





3/2 ways



Weight 130 g Operating force 15 N

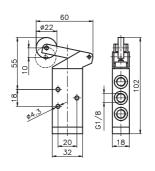
228.32.2.1/1

5/2 ways



Weight 150 g Operating force 15 N

228.52.2.1/1



Lever button - Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with ∆p=1 (NI/min)	540	
Orifice size (mm)	6	
Working ports size	G1/8"	

Coding: 228. **1**.2.6/

	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	BUTTON COLOR
	1 = Red
Θ	2 = Black
	3 = Green



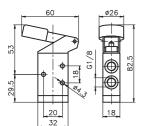


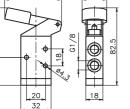
3/2 ways



Weight 120 g Operating force 15 N

228.32.2.6/

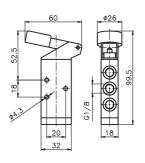




Weight 120 g Operating force 15 N

5/2 ways

228.52.2.6/



Switch lateral 2 positions

•		
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with Δp=1 (NI/min)	540	
Orifice size (mm)	6	
Working ports size	G1/8"	

Coding: 228. **1**.27

	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



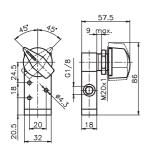


3/2 ways



Weight 190 g

228.32.27

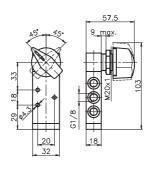


5/2 ways



Weight 210 g

228.52.27



PREUMAX

Lever roller unidirectional - Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with Δp=1 (NI/min)	540	
Orifice size (mm)	6	
Working ports size	G1/8"	

Coding: 228.**①**.3.**②**

	TYPE
0	32 = 3 ways, 2 positions
_	52 = 5 ways, 2 positions
	VERSION
V	1 = Plastic roller
	1/2 = Metal roller



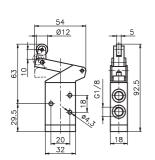


3/2 ways



Weight 110 g

228.32.3.



THE STATE OF THE S

228.52.3.

Weight 130 g

Lever roller lateral bidirectional - Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with Δp=1 (NI/min)	540	
Orifice size (mm)	6	
Working ports size	G1/8"	

Coding: 228. **1**.4.1

	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



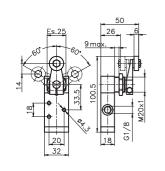


3/2 ways



Weight 180 g

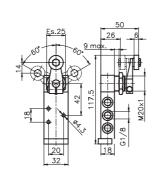
228.32.4.1



Weight 200 g

5/2 ways

228.52.4.1



Lever sensitive - differential

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with Δp=1 (NI/min)	540	
Orifice size (mm)	6	
Working ports size	G1/8"	

Coding: 228. **1**.4.13

	TYPE			
0	32 = 3 ways, 2 positions			
	52 = 5 ways, 2 positions			

Minimum rotation angle 11°

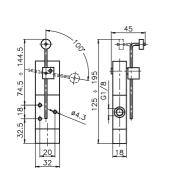


3/2 ways



Weight 200 g Minimum working pressure 2,5 bar

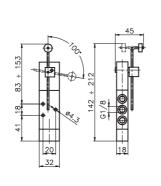
228.32.4.13





Weight 220 g Minimum rotation angle 11° Minimum working pressure 2,5 bar

228.52.4.13



Lever panel Ø30 - 2 positions

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with Δp=1 (NI/min)	540	
Orifice size (mm)	6	
Working ports size	G1/8"	

Coding: 228.0.5/@

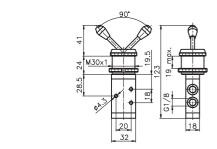
	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	LEVER COLOR
0	1 = Red
	2 = Black
	3 = Green



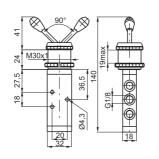








5/2 ways



Weight 198 g

228.32.5/

Frontal lever - 2 positions

Fluid eded, if applied it shall be continuous Max. working pressure (bar) 10 Temperature °C -5 ... +70 Flow rate at 6 bar with $\Delta p=1$ (NI/min) 540 Orifice size (mm) G1/8" Working ports size

Coding: 228.0.55/@

228.52.5/

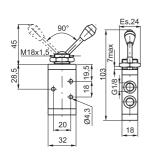
	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
•	LEVER COLOR
	1 = Red
	2 = Black
	3 = Green





3/2 ways





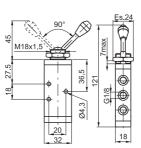
5/2 ways

Weight 135 g

5/2 ways

Weight 218 g





Weight 115 g

228.32.55/@

228.52.55/**©**

Push button Ø30 - spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with Δp=1 (NI/min)	540	
Orifice size (mm)	6	
Working ports size	G1/8"	

Coding: 228. **1**.6.1/

	TYPE
•	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	BUTTON COLOR
	1 = Red
Θ	2 = Black
	3 = Green

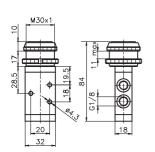


3/2 ways



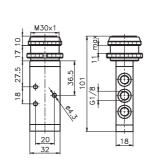
Weight 155 g Operating force 33 N

228.32.6.1/



Weight 175 g Operating force 33 N

228.52.6.1/@



Max. working pressure (bar)

Flow rate at 6 bar with Δp=1 (NI/min)

Temperature °C

Orifice size (mm)

Working ports size

Sensitive push button Ø30 - differential

	Cod	ing: 228. ① .6.13/ ②
		TYPE
olied it shall be continuous	•	32 = 3 ways, 2 positions
		52 = 5 ways, 2 positions
		BUTTON COLOR
		4 DI

	TYPE
•	32 = 3 ways, 2 positions
_	52 = 5 ways, 2 positions
	BUTTON COLOR
•	1 = Red
	2 = Black
	3 - Croon





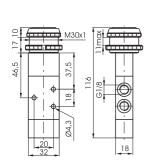
3/2 ways

Fluid



Operating force 18,5 N (at 6 bar)

228.32.6.13/@



10 -5 ... +70

540

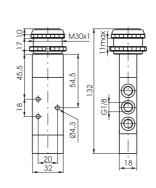
6

G1/8"

5/2 ways

Weight 217 g Operating force 18,5 N (at 6 bar)

228.52.6.13/@



Push button - Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with Δp=1 (NI/min)	540	
Orifice size (mm)	6	
Working ports size	G1/8"	

Coding: 228. **1**.6.22/

	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	BUTTON COLOR
	1 = Red
Θ	2 = Black
	3 = Green
	4 = Yellow



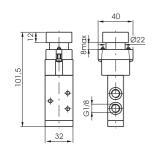


3/2 ways



Weight 225 g Operating force 33 N

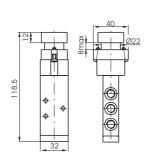
228.32.6.22/@



Weight 245 g Operating force 33 N

5/2 ways

228.52.6.22/@



Raised push button Ø22 - Spring

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

Coding: 228. **1**.6.23/

	TYPE
O	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	BUTTON COLOR
	1 = Red
Θ	2 = Black
	3 = Green
	4 = Yellow



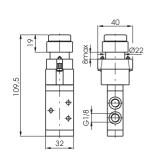






Weight 230 g Operating force 33 N

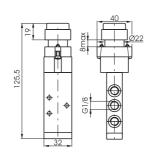
228.32.6.23/@





Weight 250 g Operating force 33 N

228.52.6.23/@



Spool type valves and solenoid valves Series 200 - Mechanical and manual command - G1/8"

Push button Ø22 - 2 positions

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

119

Coding: 228. **1**.6.25

	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions

Emergency - Rotate to unlock





3/2 ways



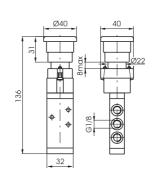
Weight 235 g Operating force 33 N

228.32.6.25



Weight 235 g Operating force 33 N

228.52.6.25



Switch 2 positions

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

Coding: 228. **1**.6.27

	TYPE
Ū	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



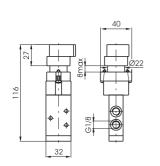


3/2 ways



Weight 230 g

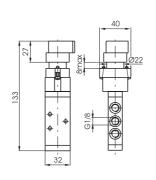
228.32.6.27



Weight 250 g

5/2 ways

228.52.6.27



Key switch 2 positions

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

Coding: $228. \bigcirc .6.28$

	TYPE	
•	32 = 3 ways, 2 positions	
	52 = 5 ways, 2 positions	



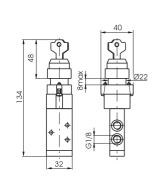






Weight 230 g

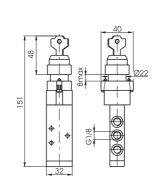
228.32.6.28



Weight 250 g

5/2 ways

228.52.6.28



PNEUMAX

Palm push button Ø30 2 positions

Coding: 228. **1**.7.1/

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

	TYPE
•	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	BUTTON COLOR
	1 = Red
Θ	2 = Black
	3 = Green





3/2 ways



Weight 148 g

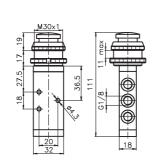
228.32.7.1/@

M30x1

5/2 ways

Weight 168 g

228.52.7.1/@



Push button - Spring

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

Coding: 228. **1**.8.1/

	TYPE
•	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	BUTTON COLOR
	1 = Red
•	2 = Black
	3 = Green



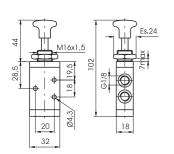


3/2 ways



Weight 120 g

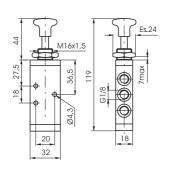
228.32.8.1/



Weight 140 g

5/2 ways

228.52.8.1/



Push button 2 positions

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

Coding: 228. **1**.8/

	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
0	BUTTON COLOR
	1 = Red
	2 = Black
	3 = Green



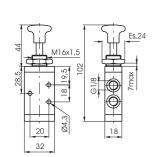






Weight 120 g

228.32.8/@

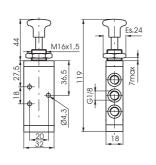


The second secon

Weight 140 g

5/2 ways

228.52.8/@



Spool type valves and solenoid valves Series 200 - Mechanical and manual command - G1/8"

Lever lateral - Spring

Coding: 228. **1**.9.1/

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

	TYPE
Û	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
•	LEVER COLOR
	1 = Red
	2 = Black
	3 = Green





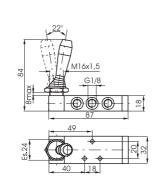
228.32.9.1/@



Weight 160 g

5/2 ways

228.52.9.1/@



Lever lateral 2 positions

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

Coding: 228. **1**.9/

	TYPE
•	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
•	LEVER COLOR
	1 = Red
	2 = Black
	3 = Green



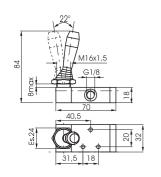






Weight 140 g

228.32.9/

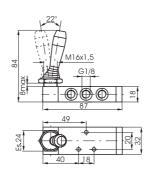


5/2 ways



Weight 160 g

228.52.9/



Pedal aluminium 2 positions

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

Coding: 228. **1**.10

	TYPE
•	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



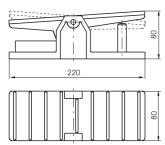






Weight 790 g

228.32.10

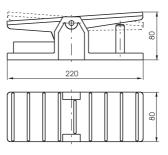


5/2 ways



Weight 810 g

228.52.10



Pedal aluminium - Spring

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

Coding: 228. **1**.10.1

	TYPE	
0	32 = 3 ways, 2 positions	
	52 = 5 ways, 2 positions	





3/2 ways

Weight 790 g

AIR DISTRIBUTION

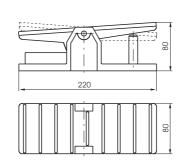


228.32.10.1

Weight 810 g

5/2 ways

228.52.10.1



Pedal protected - Spring

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

Coding: 228.**€**.10.**♥**

	TYPE
Ū	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
V	VERSION
	1/1 = Standard version
	2/1 = without safety device



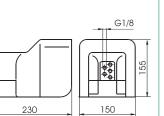


3/2 ways



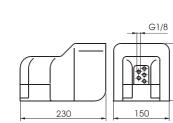
Weight 1120 g

228.32.10.



5/2 ways

Weight 1120 g 228.52.10.



Pedal protected 2 positions

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

Coding: 228. **1**.10/1

TYPE		
•	32 = 3 ways, 2 positions	
	52 = 5 ways, 2 positions	

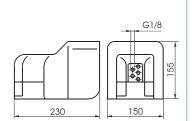


3/2 ways



Weight 1120 g

228.32.10/1

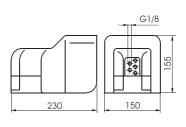


5/2 ways



Weight 1120 g

228.52.10/1



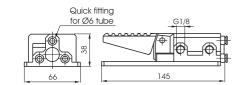
Pedal plastic miniaturized - Spring

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with ∆p=1 (NI/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

Coding: 228.52.10.

	FUNCTION
(3)	1P = Standard version
	1PX = Stainless steel spool





Weight 230 g



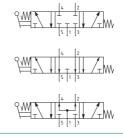
Lever lateral spring centre 3 positions

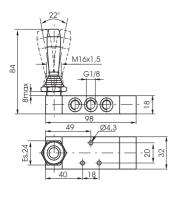
Operational characteristics	
Filtered air. No lubrication needed, if applied it shall be continuous	
10	
-5 +70	
540	
6	
G1/8"	

Coding: 228.53. **3**.9.1/

	FUNCTION
•	31 = Closed centres
•	32 = Open centres
	33 = Pressured centres
•	LEVER COLOR
	1 = Red
	2 = Black
	3 = Green







Weight 190 g

Lever lateral 3 positions detent

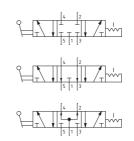
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

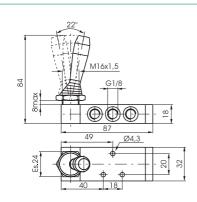
Coding: 228.53. **3**.9/

	FUNCTION
•	31 = Closed centres
	32 = Open centres
	33 = Pressured centres
•	LEVER COLOR
	1 = Red
	2 = Black
	3 = Green











Lever central (spring 3 pos.) Operator, Levar, Spole in Technopolymer

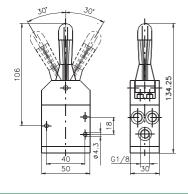
$\textbf{Coding: } 228.53.32.99P/\textbf{\textcircled{6}}$

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	410
Orifice size (mm)	6
Working ports size	G1/8"

	LEVER COLOR
•	1 = Red
	2 = Black







Weight 140 g

Lever central (spring 3 pos.) Levar in Technopolymer

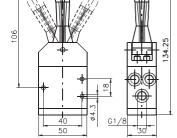
Coding: $228.53.32.99/\bigcirc$

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	410
Orifice size (mm)	6
Working ports size	G1/8"

	LEVER COLOR
0	1 = Red
	2 = Black







Weight 140 g

Lever central Metal (spring 3 pos.) One position stable

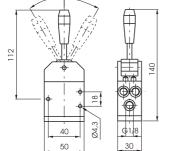
Coding: 228.53.32.99/**@**.S

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with Δp=1 (NI/min)	410	
Orifice size (mm)	6	
Working ports size	G1/8"	

	LEVER COLOR
•	1 = Red
	2 = Black



4 2 T M



Weight 140 g



Lever central Metal

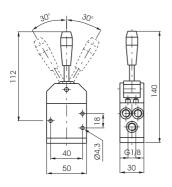
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with Δp=1 (NI/min)	410	
Orifice size (mm)	6	
Working ports size	G1/8"	

	FUNCTION
•	2 = 2 stable positions
_	3 = 3 stable positions
	LEVER COLOR
•	1 = Red
_	2 = Black

Coding: 228.53.32.99.







Weight 140 g

Pedal - Spring 3 positions

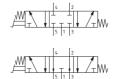
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	410
Orifice size (mm)	6
Working ports size	G1/8"

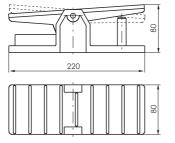
FUNCTION
31 = Closed centres

Coding: 228.53. **6**.10.1

 ${\bf 32} = {\sf Open\,centres}$







Weight 810 g

Pneumatic - Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	540	
Orifice size (mm)	6	
Working ports size	G1/8"	
Pilot ports size	G1/8"	

Coding: 228. **1**.11.1

		TYPE
1	•	32 = 3 ways, 2 positions
1		52 = 5 ways, 2 positions





3/2 ways



Weight 110 g Minimum pilot pressure 2,5 bar

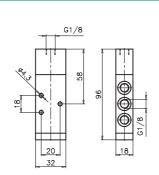
228.32.11.1

5/2 ways



Weight 130 g Minimum pilot pressure 2,5 bar

228.52.11.1

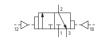


Pneumatic - Differential

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with Δp=1 (NI/min)	540	
Orifice size (mm)	6	
Working ports size	G1/8"	
Pilot ports size	G1/8"	

Coding: 228. **1**.11.12

	TYPE
•	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions





3/2 ways



Weight 140 g Minimum pilot pressure 2,5 bar

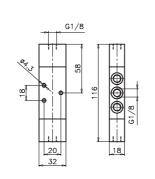
228.32.11.12

G1/8 61/8

Weight 160 g Minimum pilot pressure 2,5 bar

5/2 ways

228.52.11.12



Pneumatic-Differential (Self feeding)

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with Δp=1 (NI/min)	540	
Orifice size (mm)	6	
Working ports size	G1/8"	
Pilot ports size	G1/8"	

Coding: 228. **1**.11.12/1

ĺ		TYPE
32 = 3 ways, 2 positions		32 = 3 ways, 2 positions
		52 = 5 ways, 2 positions

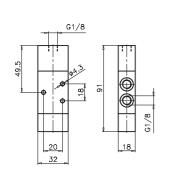


3/2 ways



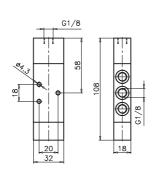
Weight 130 g Minimum pilot pressure 2,5 bar

228.32.11.12/1



5/2 ways

Weight 150 g Minimum pilot pressure 2,5 bar





Pneumatic-Pneumatic

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with ∆p=1 (NI/min)	540	
Orifice size (mm)	6	
Working ports size	G1/8"	
Pilot ports size	G1/8"	

Coding: 228. **1**.11.11

		TYPE
1	0	32 = 3 ways, 2 positions
1		52 = 5 ways, 2 positions



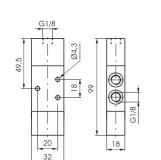


3/2 ways



Weight 140 g Minimum pilot pressure 2 bar

228.32.11.11



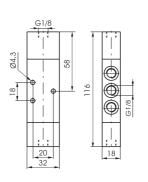


5/2 ways

5/2 ways

Weight 160 g Minimum pilot pressure 2 bar

228.52.11.11



Amplified pneumatic - Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	540	
Orifice size (mm)	6	
Working ports size	G1/8"	
Pilot ports size	G1/8"	

Coding: 228. **1**.13.1

	TYPE	
D	32 = 3 ways, 2 positions	
	52 = 5 ways, 2 positions	



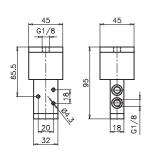


3/2 ways



Weight 260 g Minimum pilot pressure 0,5 bar

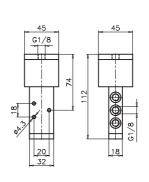
228.32.13.1





Weight 290 g Minimum pilot pressure 0,5 bar

228.52.13.1



Pneumatic-Pneumatic 5/3

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	410	
Orifice size (mm)	6	
Working ports size	G1/8"	
Pilot ports size	G1/8"	

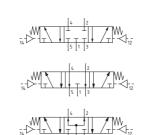
Coding: 228.53. **6**.11.11

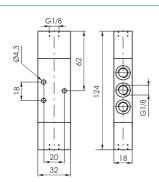
	FUNCTION
	31 = Closed centres
•	32 = Open centres
	33 = Pressured centres



Weight 180 g Minimum pilot pressure 3 bar

228.53. 3.11.11





Tappet panel - Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with $\Delta p = 1$ (NI/min)	1360	
Orifice size (mm)	8	
Working ports size	G1/4"	

M28×1

Coding: 224.0.1.1

TYPE		TYPE
1	0	32 = 3 ways, 2 positions
		52 = 5 ways, 2 positions





3/2 ways



Weight 370 g Operating force 71,5 N

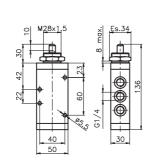
224.32.1.1

5/2 ways



Weight 455 g Operating force 71,5 N

224.52.1.1



Lever roller - Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	1360	
Orifice size (mm)	8	
Working ports size	G1/4"	

Coding: 224.0.2.1

	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions





3/2 ways



Weight 510 g Operating force 35 N

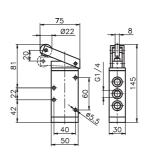
224.32.2.1

5/2 ways



Weight 595 g Operating force 35 N

224.52.2.1



Lever roller unidirectional - Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with Δp=1 (NI/min)	1360	
Orifice size (mm)	8	
Working ports size	G1/4"	

Coding: 224. **1**.3.1

ĺ		TYPE
	•	32 = 3 ways, 2 positions
		52 = 5 ways, 2 positions



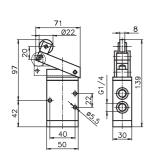


3/2 ways



Weight 525 g Operating force 35 N

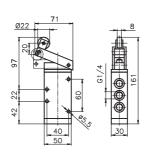
224.32.3.1



Weight 610 g Operating force 35 N

5/2 ways

224.52.3.1



Push button - Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with Δp=1 (NI/min)	1360	
Orifice size (mm)	8	
Working ports size	G1/4"	

Coding: 224. **1**.8.1

_	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



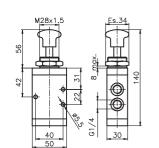


3/2 ways



Weight 395 g Operating force 71,5 N

224.32.8.1

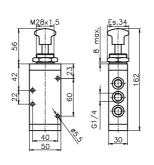


5/2 ways



Weight 480 g Operating force 71,5 N

224.52.8.1



Push button 2 positions

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with Δp=1 (NI/min)	1360	
Orifice size (mm)	8	
Working ports size	G1/4"	

Coding: 224.**1**.8





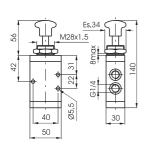


3/2 ways



Weight 385 g Operating force 13 N

224.32.8

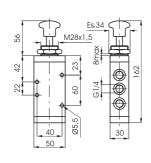


5/2 ways



Weight 470 g Operating force 13 N

224.52.8



Lever lateral - Spring

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	1360
Orifice size (mm)	8
Working ports size	G1/4"

Coding: 224.**①**.9.1/**②**

	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	LEVER COLOR
	1 = Red
0	2 = Black
	3 = Green



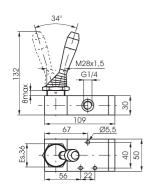


3/2 ways



Weight 520 g

224.32.9.1/

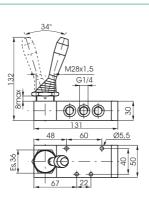


5/2 ways



Weight 605 g

224.52.9.1/





Lever lateral 2 positions

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with Δp=1 (NI/min)	1360	
Orifice size (mm)	8	
Working ports size	G1/4"	

Coding: 224.**1**.9/

	TYPE
•	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	LEVER COLOR
	1 = Red
•	2 = Black
	3 = Green
	•



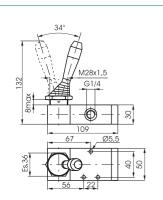


3/2 ways



Weight 510 g

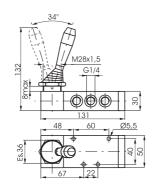
224.32.9/@



5/2 ways

Weight 595 g

224.52.9/@



Pedal aluminium - Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with Δp=1 (NI/min)	1360	
Orifice size (mm)	8	
Working ports size	G1/4"	

Coding: 224. **1**.10.1

	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



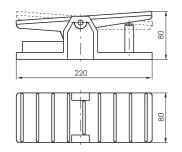


3/2 ways



Weight 1070 g

224.32.10.1

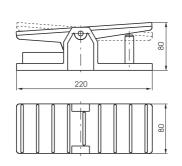


5/2 ways



Weight 1155 g

224.52.10.1



Pedal aluminium 2 positions

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with Δp=1 (NI/min)	1360	
Orifice size (mm)	8	
Working ports size	G1/4"	

Coding: 224. **1**.10

	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



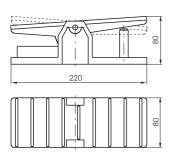






Weight 1060 g

224.32.10

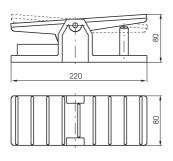


5/2 ways



Weight 1145 g

224.52.10

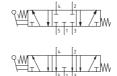


Lateral Lever spring - 3 positions

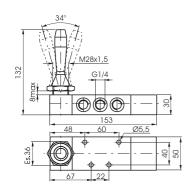
Coding: 224.53. **3**.9.1/

l		FUNCTION
	•	31 = Closed centres
		32 = Open centres
1		LEVER COLOR
]		1 = Red
	•	2 = Black
		3 = Green





G1/4"



Weight 745 g

Working ports size

Lever lateral 3 positions detent

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with Δp=1 (NI/min)	1280	
Orifice size (mm)	8	
Working ports size	G1/4"	

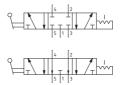
Coding: 224.53. **3**.9/

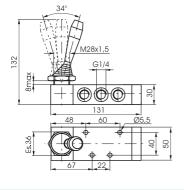
Coding: 224.52.9.2

	FUNCTION
(3)	31 = Closed centres
	32 = Open centres
	LEVER COLOR
•	1 = Red
•	2 = Black
	3 = Green









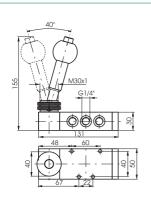
Lever lateral with locking device - 2 positions

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	1020	
Orifice size (mm)	8	
Working ports size	G1/4"	



Weight 825 g







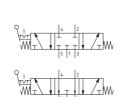
Lever lateral with locking device - Spring 3 positions

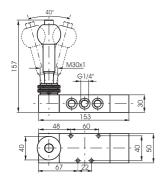
Coding: 224.53. 6 .9.2

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with Δp=1 (NI/min)	1020	
Orifice size (mm)	8	
Working ports size	G1/4"	

	FUNCTION
(3)	31 = Closed centres
	32 = Open centres







Weight 965 g

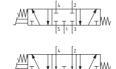
Pedal - Spring 3 positions

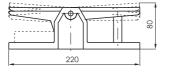
Coding: 224.53. **6**.10.1

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with Δp=1 (NI/min)	1280	
Orifice size (mm)	8	
Working ports size	G1/4"	

	FUNCTION
(3)	31 = Closed centres
	32 = Open centres









Weight 1285 g

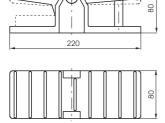
Pedal 3 positions

Coding: 224.53. 6 .10	Coding:	224.53. 10	
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Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with ∆p=1 (NI/min)	1280	
Orifice size (mm)	8	
Working ports size	G1/4"	

	FUNCTION
•	31 = Closed centres
	32 = Open centres





Weight 1145 g



Pneumatic - Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with Δp=1 (NI/min)	1360	
Orifice size (mm)	8	
Working ports size	G1/4"	
Pilot ports size	G1/8"	

Coding: 224. **1**.11.1

		TYPE
1	•	32 = 3 ways, 2 positions
1	-	52 = 5 ways, 2 positions
1		



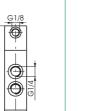


3/2 ways



Weight 370 g Minimum pilot pressure 2,5 bar

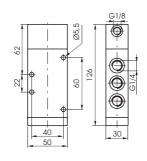
224.32.11.1



5/2 ways

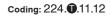
Weight 450 g Minimum pilot pressure 2,5 bar

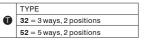
224.52.11.1



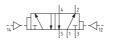
Pneumatic - Differential

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with $\Delta p = 1$ (NI/min)	1360
Orifice size (mm)	8
Working ports size	G1/4"
Pilot ports size	G1/8"







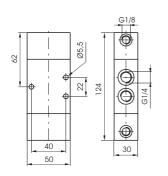


3/2 ways



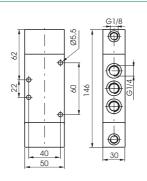
Weight 480 g Minimum pilot pressure 2,5 bar

224.32.11.12





5/2 ways



Pneumatic-Pneumatic

Operational characteristics	
Fluid Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	1360
Orifice size (mm)	8
Working ports size	G1/4"
Pilot ports size	G1/8"

Coding: $224. \bigcirc .11.11$

	TYPE	
0	32 = 3 ways, 2 positions	
	52 = 5 ways, 2 positions	



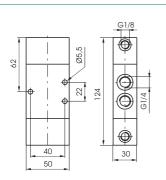


3/2 ways



Weight 470 g Minimum pilot pressure 2 bar

224.32.11.11

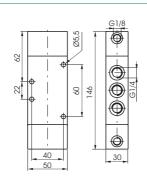


2 ways



Weight 540 g Minimum pilot pressure 2 bar

224.52.11.11





Pneumatic-Pneumatic 5/3

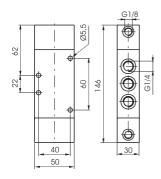
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with ∆p=1 (NI/min)	1280
Orifice size (mm)	8
Working ports size	G1/4"
Pilot ports size	G1/8"

Coding: 224.53. **3**.11.11

	FUNCTION
	31 = Closed centres
•	32 = Open centres
	33 = Pressured centres







Weight 550 g Minimum pilot pressure 3 bar

Pedal protected 2 positions

Operational characteristics Fluid Filtered air. No lubrication needed, if applied it shall be continuous Max. working pressure (bar) 10 Temperature °C -5 ... +70 Flow rate at 6 bar with Δp=1 (NI/min) 1360 Orifice size (mm) 8 Working ports size G1/4"

Coding: 214. **1**.10/1

	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



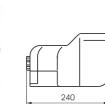


3/2 ways











Weight 1730 g

214.32.10/1

Weight 1730 g

214.52.10/1

Pedal protected - Spring

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	1360
Orifice size (mm)	8
Working ports size	G1/4"

Coding: 214.**1**.10.**♥**

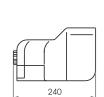
	TYPE	
0	32 = 3 ways, 2 positions	
52 = 5 ways, 2 positions		
VERSION 1/1 = Standard version		

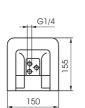




3/2 ways







5/2 ways







Weight 1730 g

214.32.10.

Weight 1730 g

214.52.10.



Lever lateral - Spring

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	3500
Orifice size (mm)	15
Working ports size	G1/2"

Coding: 212. **1**.9.1

Ī		TYPE
1	0	32 = 3 ways, 2 positions
1		52 = 5 ways, 2 positions



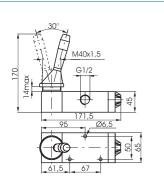


3/2 ways



Weight 1480 g

212.32.9.1



Weight 1765 g

5/2 ways

M40x1,5 G1/2 0

212.52.9.1

Lever lateral 2 positions

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	3500
Orifice size (mm)	15
Working ports size	G1/2"

Coding: 212.0.9

	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions





3/2 ways

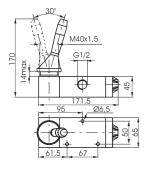


Weight 1460 g

Working ports size

212.32.9

Lever lateral spring centre 3 positions

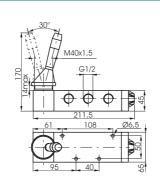




G1/2"

5/2 ways

212.52.9



Coding: 212.53.

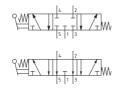
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be o
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	3000
Orifice size (mm)	15

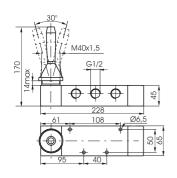
	FUNCTION
(3)	31 = Closed centres
	32 = Open centres



Weight 2100 g

1 | 44







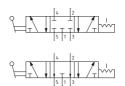
Lever lateral 3 positions detent

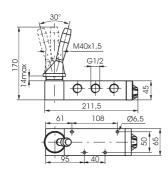
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	3000
Orifice size (mm)	15
Working ports size	G1/2"

Codin	g: 212.53. 6 .9
	FUNCTION
•	31 = Closed centres

32 = Open centres







Weight 1765 g

Pneumatic - Spring

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	3500
Orifice size (mm)	15
Working ports size	G1/2"
Pilot ports size	G1/8"

Coding: 212. **1**.11.1

		TYPE
	0	32 = 3 ways, 2 positions
٦		52 = 5 ways, 2 positions





3/2 ways



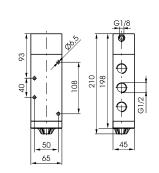
Weight 1110 g Minimum pilot pressure 2,5 bar

212.32.11.1

Weight 1390 g Minimum pilot pressure 2,5 bar

5/2 ways

212.52.11.1

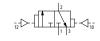


Pneumatic - Differential

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	3500
Orifice size (mm)	15
Working ports size	G1/2"
Pilot ports size	G1/8"

Coding: 212. **1**.11.12

	TYPE
O	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



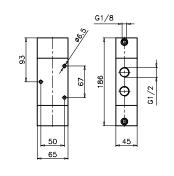


3/2 ways



Weight 1380 g Minimum pilot pressure 2,5 bar

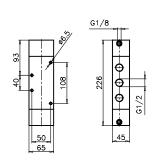
212.32.11.12



5/2 ways

Weight 1660 g Minimum pilot pressure 2,5 bar

212.52.11.12



Pneumatic-Pneumatic

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	3500
Orifice size (mm)	15
Working ports size	G1/2"
Pilot ports size	G1/8"

Coding: 212. **1**.11.11

l		TYPE
1	O	32 = 3 ways, 2 positions
1		52 = 5 ways, 2 positions
1	_	



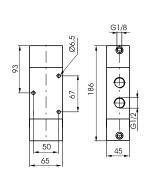


3/2 ways



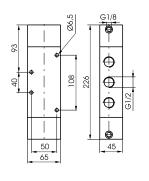
Weight 1350 g Minimum pilot pressure 2 bar

212.32.11.11



5/2 ways

Weight 1630 g Minimum pilot pressure 2 bar 212.52.11.11





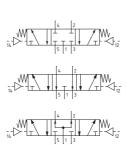
Pneumatic-Pneumatic 5/3

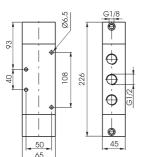
Coding: 212.53. **6**.11.11

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	3000
Orifice size (mm)	15
Working ports size	G1/2"
Pilot ports size	G1/8"

	FUNCTION
•	31 = Closed centres
•	32 = Open centres
	33 = Pressured centres







Weight 1650 g Minimum pilot pressure 3 bar

Pneumatic - Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with Δp=1 (NI/min)	3600	
Orifice size (mm)	15	
Working ports size	G1/2"	
Pilot ports size	G1/8"	

Coding: 212/2. **1**.11.1

		TYPE
٦	0	32 = 3 ways, 2 positions
		52 = 5 ways, 2 positions





3/2 ways



Weight 524 g Minimum pilot pressure 2,5 bar

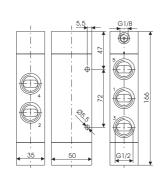
212/2.32.11.1

5/2 ways



Weight 644 g Minimum pilot pressure 2,5 bar

212/2.52.11.1

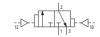


Pneumatic - Differential

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	3600
Orifice size (mm)	15
Working ports size	G1/2"
Pilot ports size	G1/8"

Coding: 212/2. **1**.11.12

	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions





3/2 ways



Weight 464 g Minimum pilot pressure 2,5 bar

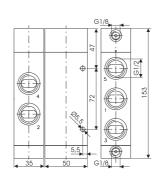
212/2.32.11.12

5/2 ways



Weight 586 g Minimum pilot pressure 2,5 bar

212/2.52.11.12



Pneumatic-Differential (Self feeding)

	•	
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	3600	
Orifice size (mm)	15	
Working ports size	G1/2"	
Pilot ports size	G1/8"	

Coding: 212/2. **1**.11.12/

Û	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
•	FUNCTION
	1.C = Normally closed (only for 3
	ways)
	1.A = Normally open (only for 3
	ways)
	1 = Selffeeding (only for 5 ways)

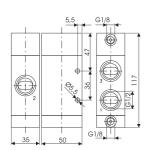


3/2 ways



Weight 466 g Minimum pilot pressure 2,5 bar

212/2.32.11.12/

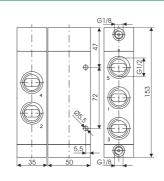


5/2 ways



Weight 588 g Minimum pilot pressure 2,5 bar

212/2.52.11.12/1





Pneumatic-Pneumatic

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	3600
Orifice size (mm)	15
Working ports size	G1/2"
Pilot ports size	G1/8"

Coding: 212/2. **1**.11.11

	TYPE
•	32 = 3 ways, 2 positions
-	52 = 5 ways, 2 positions



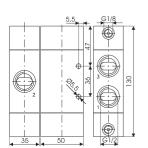


3/2 ways



Weight 518 g Minimum pilot pressure 2,5 bar

212/2.32.11.11

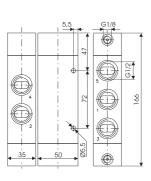


5/2 ways



Weight 640 g Minimum pilot pressure 2,5 bar

212/2.52.11.11



Pneumatic-Pneumatic 5/3

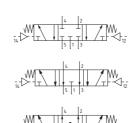
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	3300
Orifice size (mm)	15
Working ports size	G1/2"
Pilot ports size	G1/8"

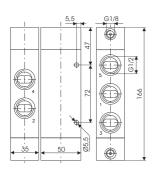
Coding: 212/2.53. **6**.11.11

FUNCTION	
31 = Closed centres	
32 = Open centres	
33 = Pressured centres	



Weight 684 g Minimum pilot pressure 3 bar





Lever lateral - Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with Δp=1 (NI/min)	6500	
Orifice size (mm)	20	
Working ports size	G1"	

Coding: 211. **1**.9.1

TYPE		TYPE
s	0	32 = 3 ways, 2 positions
		52 = 5 ways, 2 positions



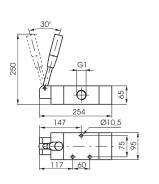


3/2 ways



Weight 4300 g

211.32.9.1



5/2 ways Weight 4900 g

 $\Phi \Phi \Phi$

Lever lateral 2 positions

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	6500
Orifice size (mm)	20
Working ports size	G1"

Coding: 211.0.9

211.52.9.1

	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



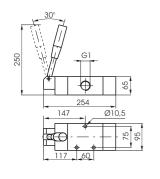


3/2 ways



Weight 4300 g

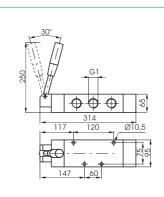
211.32.9





211.52.9

5/2 ways



Lever lateral spring centre 3 positions

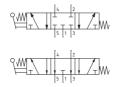
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	6500
Orifice size (mm)	20
Working ports size	G1"

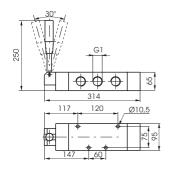
Coding: 211.53. **3**.9.1

	FUNCTION
(3)	31 = Closed centres
	32 = Open centres



Weight 5000 g







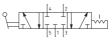
Lever lateral 3 positions detent

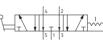
<u>'</u>	
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with ∆p=1 (NI/min)	6500
Orifice size (mm)	20
Marking partaging	C1II

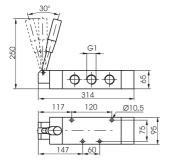
Coding: 211.53.

	FUNCTION
(3)	31 = Closed centres
	32 = Open centres









Weight 5000 g

Pneumatic - Spring

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	6500
Orifice size (mm)	20
Working ports size	G1"
Pilot ports size	G1/8"

107

Coding: 211.0.11.1

TYPE	
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	Ū





3/2 ways



Weight 3330 g Minimum pilot pressure 2,5 bar

211.32.11.1

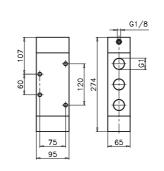
5/2 ways

G1/8



Weight 4200 g Minimum pilot pressure 2,5 bar

211.52.11.1



Pneumatic - Differential

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	6500
Orifice size (mm)	20
Working ports size	G1"
Pilot ports size	G1/8"

95

Coding: 211.0.11.12

	TYPE	
0	32 = 3 ways, 2 positions	
	52 = 5 ways, 2 positions	





3/2 ways



Weight 3330 g Minimum pilot pressure 2,5 bar

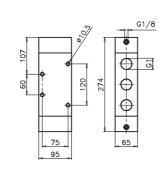
211.32.11.12

5/2 ways



Weight 4200 g Minimum pilot pressure 2,5 bar

211.52.11.12



Pneumatic-Pneumatic

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	6500
Orifice size (mm)	20
Working ports size	G1"
Pilot ports size	G1/8"

95

Coding: 211. **1**.11.11

	TYPE	
•	32 = 3 ways, 2 positions	
	52 = 5 ways, 2 positions	





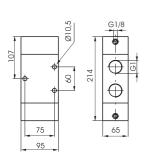
3/2 ways



Weight 3330 g Minimum pilot pressure 2 bar

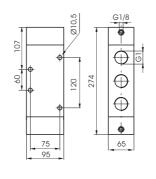
1 | 52

211.32.11.11



5/2 ways

Weight 4200 g Minimum pilot pressure 2 bar 211.52.11.11



32 = Open centres 33 = Pressured centres



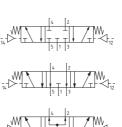
Pneumatic-Pneumatic 5/3

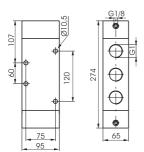
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	6500
Orifice size (mm)	20
Working ports size	G1"
Pilot ports size	G1/8"

	Coding:	211.53. 🔁 .11.11
		FUNCTION
1		31 = Closed centres
1	•	









Weight 4200 g Minimum pilot pressure 3 bar



Series T200

The **T200** series, consist of a broad range of valves with various type of actuation. The connections for this series are from G 1/8" to G 1/4". The main components constituting the valves of the Tecno228 series are manufactured with high performance technopolymer.

The use of technopolymer has resulted in a light weight product which can be offered to the market at very interesting prices.

The **T228** valves, are manufactured with G1/8" connections, 3 and 5 ways function, mechanical or pneumatically operated, monostable spring or pneumatic return, bistable and in 5 ways 3 positions version with closed, open and pressured centres.

This series is completely interchangable with the standard 228 series (with alluminium body).

The **T224** valves, are manufactured with G 1/4" connections, 3/2, 5/2 and 5/3 ways function, (monostable or bistable), depending on version and actuation (manual, pneumatic, or electrical), and self aligning (pneumatic, electric or spring).

Maximum fitting torque

Thread	Maximum torque (Nm)	
G 1/8"	4	
G1/4"	9	

Construction characteristics

	G 1/8" (T228) and G 1/4" (T224)	
Body	Technopolymer	
Operators	Technopolymer	
Seals	NBR	
Spacers	Technopolymer	
Spools	Technopolymer Stainless steel only for the versions Push button-Spring and Lever lateral	
Springs	Spring steel	
Pistons	Technopolymer	

Use and maintenance

This valves have an average life of 15 million cycles depending on the application and air quality.

Filtered and lubricated air using specified lubricants will reduce the wear of the seals and ensures long and trouble free operation.

Please ensure that the valve is being used according with the manufacturers specification, such as air pressure and temperature.

The exhaust port of the distributor has to be protected in a dusty and dirty environment.

Repair kits including the spool complete with seals are available for overhauling the valves.

However, although this is a simple operation it should be carried out by a competent person.

ATTENTION: use hydraulic oil class H for lubrication such as CASTROL MAGNA SW32.



Tappet - Spring

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	620
Orifice size (mm)	6
Working ports size	G1/8"

Coding: T228. **1**.0.1

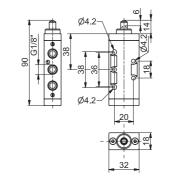
5/2 ways

	TYPE	
0	32 = 3 ways, 2 positions	Operating force 33 N
	52 - 5 ways 2 positions	









Weight 60 g

T228.32.0.1

Tappet panel - Spring

Operational characteristics		
Filtered air. No lubrication needed, if applied it shall be continuous		
10		
-5 +50		
620		
6		
G1/8"		

Coding: T228. **1**.1.1

Weight 72 g

	TYPE	
0	32 = 3 ways, 2 positions	Op
	52 = 5 ways, 2 positions	

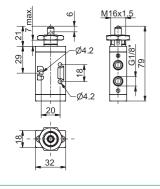
T228.52.0.1

erating force 33 N



3/2 ways







M16x1.5

Weight 77 g

T228.32.1.1

Lever roller-Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with ∆p=1 (NI/min)	620	
Orifice size (mm)	6	
Working ports size	G1/8"	

Coding: T228.**①**.2.**②**

Weight 90 g

	TYPE	
0	32 = 3 ways, 2 positions	ľ
-	52 = 5 ways, 2 positions	
	VERSION	
	1 = Plastic roller	
V	1/1 = ball bearing	
	1/2 = Metal roller	

T228.52.1.1

Operating force 15 N



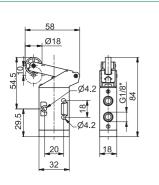
5/2 ways



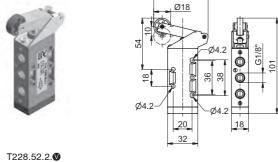
3/2 ways



Weight 90 g T228.32.2.**♥**







Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice



Lever roller ball bearing - Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	620	
Orifice size (mm)	6	
Working ports size	G1/8"	

Coding: T228. **1**.2.1/1

	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions

Operating force 15 N



3/2 ways



Weight 105 g

T228.32.2.1/1

60 Ø22 Ø4.2 Ø4.2 Ø4.2 Ø4.2 18 32

5/2 ways



Weight 117 g

60 Ø22 Ø4.2 Ø4.2 Ø4.2 Ø4.2 Ø4.2 Ø4.2 Ø4.2 Ø4.2

T228.52.2.1/1

Lever button - Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	620	
Orifice size (mm)	6	
Working ports size	G1/8"	

Coding: T228. **1**.2.6/

TYPE
32 = 3 ways, 2 positions
52 = 5 ways, 2 positions
LEVER COLOR
1 = Red
2 = Black
3 = Green

Operating force 15 N



3/2 ways



Weight 95 g

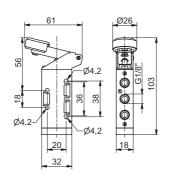
T228.32.2.6/@

5/2 ways



Weight 87 g

T228.52.2.6/**@**



Lever roller unidirectional - Spring

	Annual about about the
Operat	ional characteristics
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	620
Orifice size (mm)	6
Working ports size	G1/8"

32

Coding: T228.**①**.3.**②**

•		TYPE
		32 = 3 ways, 2 positions
		52 = 5 ways, 2 positions
		VERSION
V	1 = Plastic roller	
		1/2 = Metal roller
Г,		

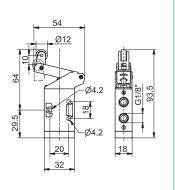


3/2 ways



Weight 85 g

T228.32.3.**♥**

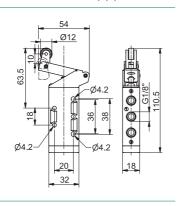




Weight 97 g

T228.52.3.

●



Lever panel Ø30 - 2 positions

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	620
Orifice size (mm)	6
Working ports size	G1/8"

Coding: T228.0.5/@

5/2 ways

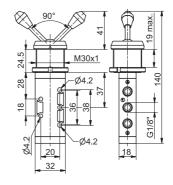
	TYPE
•	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	LEVER COLOR
•	1 = Red
	2 = Black
	3 = Green



3/2 ways



18



Weight 168 g

T228.32.5/@

Lever lateral 2 positions

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	620
Orifice size (mm)	6
Working ports size	G1/8"

Coding: T228. **1**.55/

Weight 180 g

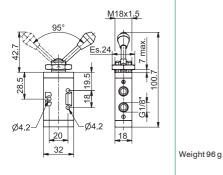
TYPE 32 = 3 ways, 2 positions 52 = 5 ways, 2 positions LEVER COLOR 1 = Red 2 = Black		
52 = 5 ways, 2 positions LEVER COLOR 1 = Red		TYPE
LEVER COLOR 1 = Red	0	32 = 3 ways, 2 positions
1 = Red		52 = 5 ways, 2 positions
@ · · · · · ·		LEVER COLOR
2 = Black		1 = Red
	G	2 = Black
3 = Green		3 = Green

T228.52.5/@



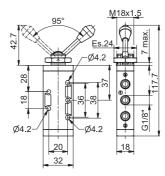
3/2 ways





5/2 ways





Weight 84 g

T228.32.55/@ Push button Ø30 - spring

Coding: T228. **1**.6.1/

5/2 ways

<u> </u>	
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	620
Orifice size (mm)	6
Working ports size	G1/8"

	TYPE	
0	32 = 3 ways, 2 positions	<u> </u> '
	52 = 5 ways, 2 positions	
	BUTTON COLOR	
	1 = Red	
Θ	2 = Black	
	3 = Green	

T228.52.55/@

Operating force 33 N



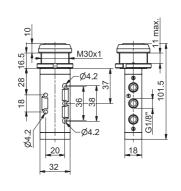




Weight 125 g T228.32.6.1/@

32

Weight 137 g T228.52.6.1/@



Push button - Spring

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	620
Orifice size (mm)	6
Working ports size	G1/8"

Coding: T228. **1**.6.22/

	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	BUTTON COLOR
•	1 = Red
	2 = Black
	3 = Green
	4 = Yellow





3/2 ways



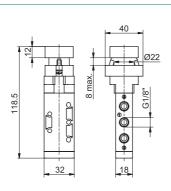
Weight 200 g

T228.32.6.22/@

5/2 ways

Weight 212 g

T228.52.6.22/@



Raised push button Ø22 - Spring

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	620
Orifice size (mm)	6
Working ports size	G1/8"

Coding: T228. **1**.6.23/

TYPE
32 = 3 ways, 2 positions
52 = 5 ways, 2 positions
BUTTON COLOR
1 = Red
2 = Black
3 = Green
4 = Yellow





3/2 ways

Weight 205 g

T228.32.6.23/@

Weight 217 g

5/2 ways

T228.52.6.23/@

Push button Ø22 - 2 positions

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with ∆p=1 (NI/min)	620
Orifice size (mm)	6
Working ports size	G1/8"

Coding: T228. **1**.6.25

	TYPE
32 = 3 ways, 2 positions	
	52 = 5 ways, 2 positions

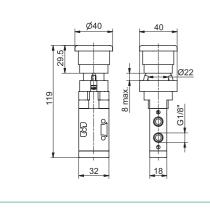
Operating force 33 N





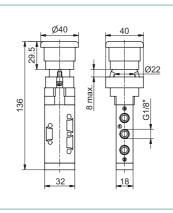
T228.32.6.25

Weight 210 g





Weight 202 g T228.52.6.25



Switch 2 positions

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	620
Orifice size (mm)	6
Working ports size	G1/8"

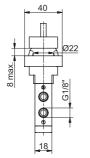
Coding: T228. **1**.6.27

	TYPE	Operating force 33 N
)	32 = 3 ways, 2 positions	
	52 = 5 ways, 2 positions	2
		<u> </u>
		1 3









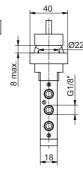
5/2 ways

Weight 217 g

5/2 ways

T228.52.6.27

133 32



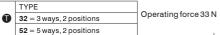
Weight 205 g

T228.32.6.27

Key switch 2 positions

Operational characteristics Fluid eded, if applied it shall be continuous Max. working pressure (bar) 10 Temperature °C -5 ... +50 Flow rate at 6 bar with $\Delta p=1$ (NI/min) 620 Orifice size (mm) Working ports size G1/8"

Coding: T228. **1**.6.28







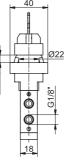
3/2 ways





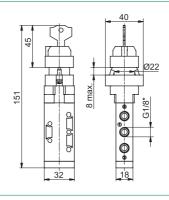
T228.32.6.28

134



Weight 217 g

T228.52.6.28



Palm push button Ø30 2 positions

•	
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	620
Orifice size (mm)	6
Working ports size	G1/8"

Coding: T228. **1**.7.1/

	TYPE	0
0	32 = 3 ways, 2 positions	
	52 = 5 ways, 2 positions	
	BUTTON COLOR	
	1 = Red	
Θ	2 = Black	
	3 = Green	

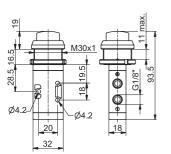
Operating force 33 N





Weight 118 g

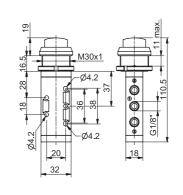
T228.32.7.1/@



Weight 130 g

5/2 ways

T228.52.7.1/@



Push button - Spring

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	620
Orifice size (mm)	6
Working ports size	G1/8"

Coding: T228. **1**.8.1/

	TYPE
•	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	BUTTON COLOR
	1 = Red
0	2 = Black
	3 = Green





3/2 ways



Weight 95 g T228.32.8.1/@



5/2 ways

Weight 107 g

T228.52.8.1/@

Ó • • 04.2

Push button 2 positions

Operational characteristics	
Filtered air. No lubrication needed, if applied it shall be continuous	
10	
-5 +50	
620	
6	
G1/8"	

Coding: T228. **1**.8/

0	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
•	BUTTON COLOR
	1 = Red
	2 = Black
	3 = Green





3/2 ways



Weight 95 g T228.32.8/@

M16x1.5

Weight 107 g

5/2 ways

T228.52.8/@

Φ

Lever lateral - Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	620	
Orifice size (mm)	6	
Working ports size	G1/8"	

Coding: T228. **1**.9.1/

	TYPE
•	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	LEVER COLOR
	1 = Red
O	2 = Black
	3 = Green

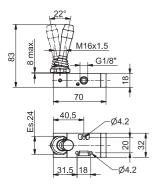






Weight 100 g

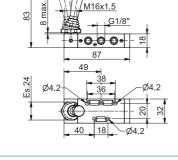
T228.32.9.1/@





Weight 110 g

5/2 ways



T228.52.9.1/@

AIR DISTRIBUTION

Lever lateral 2 positions

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar) 10		
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	620	
Orifice size (mm)	6	
Working ports size	G1/8"	

	Coding: T228. 1 .9/ 6		
		TYPE	
s	0	32 = 3 ways, 2 positions	
		52 = 5 ways, 2 positions	
		LEVER COLOR	
	0	1 = Red	
		2 = Black	

3 = Green



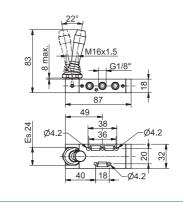
3/2 ways



T228.52.9/**©**

5/2 ways

Weight 110 g



Weight 100 g

T228.32.9/@

Lever lateral-Spring 3 positions

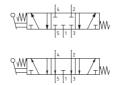
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar) 10		
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	410	
Orifice size (mm)	6	
Working ports size	G1/8"	

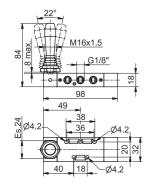
Coding: T228.53. **3**.9.1/

	FUNCTION
(3)	31 = Closed centres
	32 = Open centres
	LEVER COLOR
•	1 = Red
•	2 = Black
	3 = Green









Lateral lever - 3 positions detent

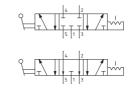
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar) 10	
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	410
Orifice size (mm)	6
Working ports size	G1/8"

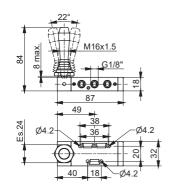
Coding: T228.53. **3**.9/

	FUNCTION
(3)	31 = Closed centres
	32 = Open centres
	LEVER COLOR
	1 = Red
•	2 = Black
	3 = Green









Pneumatic - Spring

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with ∆p=1 (NI/min)	620
Orifice size (mm)	6
Working ports size	G1/8"
Pilot ports size	G1/8"

Coding: T228. **1**.11.1

Γ		TYPE	
	0	32 = 3 ways, 2 positions	Minim
L		52 = 5 ways, 2 positions	

num pilot pressure 2,5 bar



3/2 ways



Weight 65 g T228.32.11.1

G1/8" Φ



Weight 78 g

5/2 ways

Pneumatic - Differential

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	620
Orifice size (mm)	6
Working ports size	G1/8"
Pilot ports size	G1/8"

Coding: T228. **1**.11.12

T228.52.11.1

	TYPE	
1	0	32 = 3 ways, 2 positions
1		52 = 5 ways, 2 positions

Minimum pilot pressure 2,5 bar





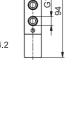




Weight 74 g

T228.32.11.12

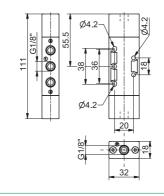
G1/8"



Weight 86 g

5/2 ways

T228.52.11.12



Pneumatic-Differential (Self feeding)

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	620	
Orifice size (mm)	6	
Working ports size	G1/8"	
Pilot ports size	G1/8"	

Coding: T228. **1**.11.12/1

		TYPE	
	•	32 = 3 ways, 2 positions	
		52 = 5 ways, 2 positions	
ľ			,

imum pilot pressure 2,5 bar

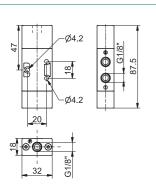






Weight 70 g

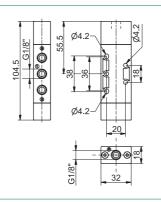
T228.32.11.12/1





Weight 82 g

T228.52.11.12/1





Pneumatic-Pneumatic

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with ∆p=1 (NI/min)	620	
Orifice size (mm)	6	
Working ports size	G1/8"	
Pilot ports size	G1/8"	

Coding: T228. **1**.11.11

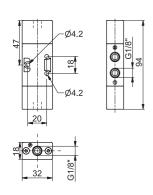
	TYPE	
0	32 = 3 ways, 2 positions	Minimum pilot pressure 2 ba
	52 = 5 ways, 2 positions	

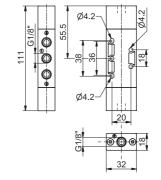




3/2 ways







Weight 90 g

5/2 ways

T228.52.11.11

Weight 77 g

T228.32.11.11

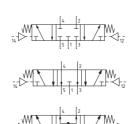
Pneumatic - Pneumatic 3 positions

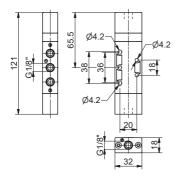
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	410
Orifice size (mm)	6
Working ports size	G1/8"
Pilot ports size	G1/8"

Coding: T228.53. 3.11.11

	FUNCTION	
•	31 = Closed centres	Minimum pilot pressure 3 bar
3	32 = Open centres	
	33 = Pressured centres	







Weight 110 g



Push button - Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	1050	
Orifice size (mm)	8.5	
Working ports size	G1/4"	

Coding: T224. **1**.8.1

	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions

Operating force 50 N





3/2 ways



Weight 170 g

T224.32.8.1

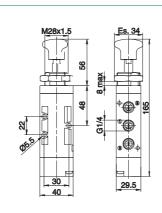
M28x1.5 Es 34

5/2 ways



Weight 200 g

T224.52.8.1



Push button 2 positions

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	1050	
Orifice size (mm)	8.5	
Working ports size	G1/4"	

Coding: T224. **1**.8

	TYPE
•	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions

Operating force 13 N





3/2 ways



Weight 170 g

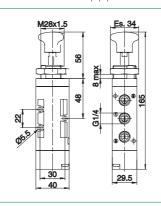
T224.32.8

Weight 200 g

5/2 ways

5/2 ways

T224.52.8



Lever lateral - Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	1050	
Orifice size (mm)	8.5	
Working ports size	G1/4"	

Coding: T224. **1**.9.1/

	TYPE
•	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	LEVER COLOR
	1 = Red
•	2 = Black
	3 = Green

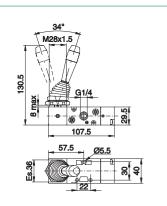






Weight 220 g

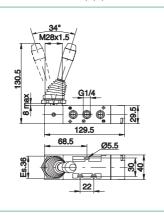
T224.32.9.1/@





Weight 250 g

T224.52.9.1/**©**



Spool type valves and solenoid valves Series T200 - Mechanical and manual command - G1/4"

PNEUMAX

Lever lateral 2 positions

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	1050
Orifice size (mm)	8.5
Working ports size	G1/4"

Coding: T224.**1**.9/**©**

	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	LEVER COLOR
	1 = Red
Θ	2 = Black
	3 = Green



3/2 ways



34°
M28X1.5

G1/A

8
107.5

57.5

Ø5.5

Ø5.5

Ø2.5

Ø2.5

Ø2.5

Ø2.5

Ø2.5

Ø2.5

Ø2.5

Ø3.5

Ø3.5

Ø3.5

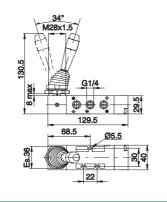
Ø3.5

Ø3.5

Ø4.5

Ø5.5

5/2 ways



Weight 220 g

T224.32.9/@

Lever lateral-Spring 3 positions

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	900
Orifice size (mm)	8.5
Working ports size	G1/4"

Coding: T224.53. **3**.9.1/

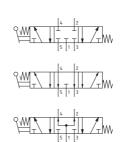
Weight 250 g

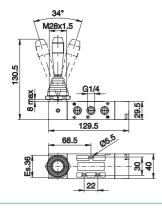
	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres
	LEVER COLOR
•	1 = Red
Θ	2 = Black
	3 = Green

T224.52.9/**©**









Lateral lever - 3 positions detent

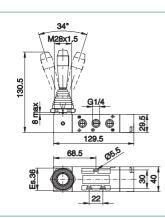
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	900
Orifice size (mm)	8.5
Working ports size	G1/4"

Coding: T224.53. **3**.9/

	FUNCTION
(3)	31 = Closed centres
•	32 = Open centres
	33 = Pressured centres
	LEVER COLOR
	1 = Red
Θ	2 = Black
	3 = Green







Weight 270 g

AIR DISTRIBUTION

Pneumatic - Spring

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	1050
Orifice size (mm)	8.5
Working ports size	G1/4"
Pilot ports size	G1/8"

Coding: T224. 1.11.1

	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions

Minimum pilot pressure 2,5 bar





3/2 ways

Weight 110 g



5/2 ways





T224.32.11.1 Pneumatic - Differential

<u>*</u>		
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with $\Delta p = 1$ (NI/min)	1050	
Orifice size (mm)	8.5	
Working ports size	G1/4"	
Pilot ports size	G1/8"	

Coding: T224. **1**.11.12

	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions

T224.52.11.1

Minimum pilot pressure 2 bar





3/2 ways

Weight 110 g



5/2 ways



Weight 140 g

T224.32.11.12

Pneumatic-Pneumatic

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	1050
Orifice size (mm)	8.5
Working ports size	G1/4"
Pilot ports size	G1/8"

Coding: T224. **1**.11.11

ı		TYPE
1	•	32 = 3 ways, 2 positions
		52 = 5 ways, 2 positions

T224.52.11.12

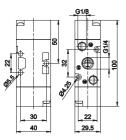
Minimum pilot pressure 2 bar



3/2 ways

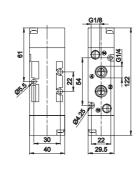


Weight 110 g T224.32.11.11



Weight 140 g

5/2 ways



T224.52.11.11



Pneumatic - Pneumatic 3 positions

Fluid

Temperature °C

Orifice size (mm)

Pilot ports size

Working ports size

Flow rate at 6 bar with $\Delta p=1$ (NI/min)

Coding: T224.53. **3**.11.11 **Operational characteristics** Filtered air. No lubrication needed, if applied it shall be continuous Max. working pressure (bar) 10

-5 ... +50

900

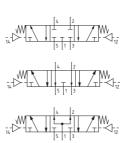
8.5

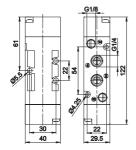
G1/4"

G1/8"

	FUNCTION
•	31 = Closed centres
(3)	32 = Open centres
	33 = Pressured centres







Weight 160 g Minimum pilot pressure 3 bar

3 DISTRIBUTION

Series 800

The trend towards the miniaturization of components has been consolidated. The use of new technologies makes it possible to manufacture components with high flow rates but extremely compact sizes.

Electric piloting is by means of low-absorption miniature solenoids which are easily connected to the electronic control systems of machines (PLC).

Ànother object of study have been manifolds and multiple bases for ganged assembly of valves or solenoid valves with option for having outlets 2 and 4 either on the valve body or on the base through threaded holes or integrated quick connections provided.

Versions 3/2 and 5/2 are fitted with pneumatic and electropneumatic controls with resetting by mechanically or pneumatically operated spring, or by pneumatic or electropneumatic operation on the bistable versions.

The basic difference between this type of distributors and the others we produce, based on the spool system, lies in the fact that the seals rest on the spool and are dynamic, instead of being locked intoo spool the valve body by means of spacers; by this means a compact size is obtained and the distributors can be slotted into bases and manifolds by means of two screws.

Construct	ion cha	iracter	istics
-----------	---------	---------	--------

Body	Aluminium
Body Seals	HNBR
Springs	Stainless steel
Springs Operators	Aluminium
Pistons	Aluminium
Spools	Aluminium

Use and maintenance

These valves have an average life of 15 million cycles depending on the application and air quality.

Filtered and lubricated air using specified lubricants will reduce the wear of the seals and ensures long and trouble free operation.

Please ensure that the valve is being used according with the manufacturers specification, such as air pressure and temperature.

The exhaust port of the distributor has to be protected in a dusty and dirty environment.

Repair kits including the spool complete with seals are available for overhauling the valves.

However, although this is a simple operation it should be carried out by a competent person.

ATTENTION: use hydraulic oil class H for lubrication such as CASTROL MAGNA SW32.

How to order the solenoid valves

Example:

805.52.0.1.01 Solenoid valves with miniature solenoid 12 V D.C.

List of codes for tensions:

01 = miniature solenoid 12 VDC

02 = miniature solenoid 24 VDC

05 = miniature solenoid 24 VAC

06 = miniature solenoid 110 VAC

07 = miniature solenoid 220 VAC

The electropilot utilized is a 15 mm 3/2 N.C. miniature solenoid with faston and 1.1 mm orifice

Miniature solenoid homologated are available (see series 300)

Series 800 - Pneumatic command valves - M5



Pneumatic - Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	160	
Orifice size (mm)	2.5	
Working ports size	M5	
Pilot ports size	M5	

Coding: 805. **1**.11.1

TYPE		TYPE
ı	0	32 = 3 ways, 2 positions
-	52 = 5 ways, 2 positions	



3/2 ways

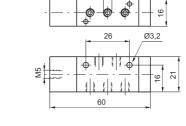


Ø3,2

5/2 ways

16





Weight 45 g Minimum pilot pressure 2 bar

805.32.11.1

Pneumatic - Differential

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with Δp=1 (NI/min)	160	
Orifice size (mm)	2.5	
Working ports size	M5	
Pilot ports size	M5	

Coding: 805. **1**.11.12

Weight 50 g Minimum pilot pressure 2 bar

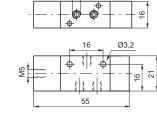
	TYPE	
0	32 = 3 ways, 2 positions	
	52 = 5 ways, 2 positions	

805.52.11.1



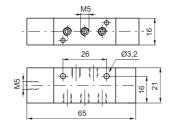
3/2 ways





5/2 ways





Weight 55 g Minimum pilot pressure 2 bar

805.52.11.12

Pneumatic-Pneumatic

805.32.11.12

Weight 50 g Minimum pilot pressure 2 bar

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with Δp=1 (NI/min)	160	
Orifice size (mm)	2.5	
Working ports size	M5	
Pilot ports size	M5	

Coding: 805.0.11.11

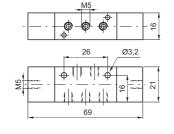
	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



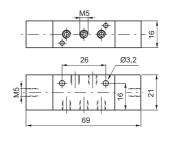
Weight 55 g Minimum pilot pressure 1,5 bar 805.32.11.11



5/2 ways



Weight 60 g Minimum pilot pressure 1,5 bar 805.52.11.11



Solenoid - Spring

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	160
Orifice size (mm)	2.5
Working ports size	M5

Coding: 805.**⊕**.0.1.**♥**

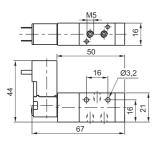
	TYPE
O	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
VOLTAGE	
V	01 = 12V D.C.
	02 = 24V D.C.
	05 = 24V A.C.
	06 = 110V A.C.
	07 = 230 V A.C.

3/2 ways



Weight 80 g Minimum working pressure 2 bar

805.32.0.1.♥



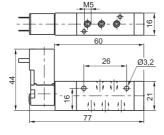


5/2 ways

5/2 ways



Weight 85 g Minimum working pressure 2 bar 805.52.0.1.





Solenoid - Differential

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	160	
Orifice size (mm)	2.5	
Working ports size	M5	

Coding: 805.**①**.0.12.**②**

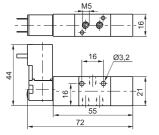
0	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	VOLTAGE
	01 = 12V D.C.
•	02 = 24V D.C.
V	05 = 24V A.C.
	06 = 110V A.C.
	07 = 230 V A.C.

3/2 ways



Weight 85 g Minimum working pressure 2 bar

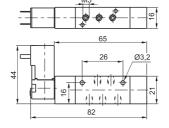
805.32.0.12.







Weight 90 g Minimum working pressure 2 bar 805.52.0.12.♥





Solenoid - Solenoid

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	160	
Orifice size (mm)	2.5	
Working ports size	M5	

Coding: 805.**1**.0.0.**∅**

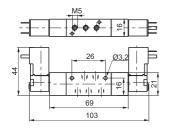
	TYPE
•	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	VOLTAGE
	01 = 12V D.C.
	02 = 24V D.C.
V	05 = 24V A.C.
	06 = 110V A.C.
	07 = 230 V A.C.

3/2 ways

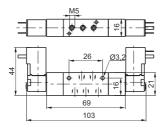


Weight 120 g Minimum working pressure 1,5 bar

805.32.0.0.♥



Weight 125 g Minimum working pressure 1,5 bar 805.52.0.0.♥





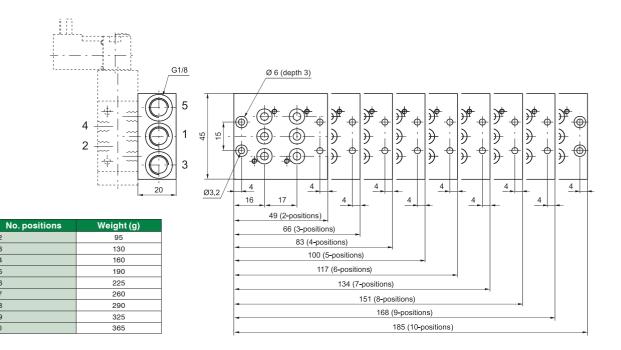


Collectors



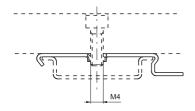
Coding: 805.

	NO. POSITIONS
	02 = 2 positions 03 = 3 positions 04 = 4 positions 05 = 5 positions
0	06 = 6 positions 07 = 7 positions
	08 = 8 positions
	09 = 9 positions
	10 = 10 positions



Clip Coding: 800.00



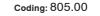


Weight 5 g (for mounting the distributors groups on guide DIN 46277/3)

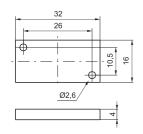
Closing plate

06 07

08 09 10







Weight 15 g

Pneumatic - Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with Δp=1 (NI/min)	520	
Orifice size (mm)	4	
Working ports size	G1/8"	
Pilot ports size	M5	

G1/8

Coding: 808. **1**.11.1

		TYPE
0		32 = 3 ways, 2 positions
1	_	52 = 5 ways, 2 positions
1		



3/2 ways



Weight 95 g Minimum pilot pressure 2 bar

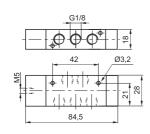
808.32.11.1

5/2 ways



Weight 100 g Minimum pilot pressure 2 bar

808.52.11.1



Pneumatic - Differential

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with Δp=1 (NI/min)	520	
Orifice size (mm)	4	
Working ports size	G1/8"	
Pilot ports size	M5	

Coding: 808. **1**.11.12





3/2 ways



Weight 105 g Minimum pilot pressure 2 bar

808.32.11.12

5/2 ways

Ø3,2

74

28 21



Weight 110 g Minimum pilot pressure 2 bar

808.52.11.12

$\Phi \Phi \Phi$ Ø3,2 89

Pneumatic-Pneumatic

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with Δp=1 (NI/min)	520	
Orifice size (mm)	4	
Working ports size	G1/8"	
Pilot ports size	M5	

Coding: 808. 1.11.11

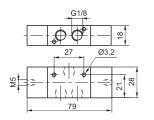
	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions





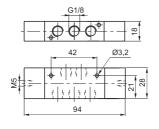
Weight 115 g Minimum pilot pressure 1,5 bar

808.32.11.11





Weight 120 g Minimum pilot pressure 1,5 bar 808.52.11.11





Pneumatic-Pneumatic 5/3

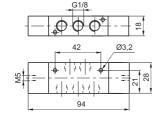
Coding: 808.53.

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with Δp=1 (NI/min)	520	
Orifice size (mm)	4	
Working ports size	G 1/8"	
Pilot ports size	M5	

	FUNCTION
(3)	31 = Closed centres
_	32 = Open centres







Weight 125 g Minimum pilot pressure 3 bar

Solenoid - Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	520	
Orifice size (mm)	4	
Working ports size	G 1/8"	

Coding: 808.**①**.0.1.**②**

	TYPE
O	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
•	VOLTAGE
	01 = 12V D.C.
	02 = 24V D.C.
	05 = 24V A.C.
	06 = 110V A.C.
	07 = 230 V A.C.

3/2 ways



Ø3,2 23 69,5



\$\$ Ø3,2 ²¹ ²⁸ 84.5 101.5

Weight 130 g Minimum working pressure 2 bar

808.32.0.1.♥

Weight 135 g Minimum working pressure 2 bar

5/2 ways

5/2 ways

808.52.0.1.

Solenoid - Differential

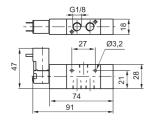
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	520	
Orifice size (mm)	4	
Working ports size	G 1/8"	

Coding: 808. **1**.0.12.

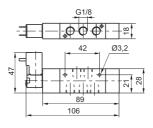
TYPE
32 = 3 ways, 2 positions
52 = 5 ways, 2 positions
VOLTAGE
01 = 12V D.C.
02 = 24V D.C.
05 = 24V A.C.
06 = 110V A.C.
07 = 230 V A.C.

3/2 ways









Weight 140 g Minimum working pressure 2 bar

808.32.0.12.



Weight 145 g Minimum working pressure 2 bar

808.52.0.12.

Solenoid - Solenoid

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with ∆p=1 (NI/min)	520	
Orifice size (mm)	4	
Working ports size	G 1/8"	

Coding: 808.0.0.0.

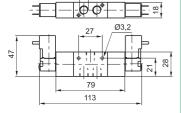
	TYPE
•	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	VOLTAGE
	01 = 12V D.C.
	02 = 24V D.C.
V	05 = 24V A.C.
	06 = 110V A.C.
	07 = 230 V A.C.

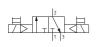
3/2 ways



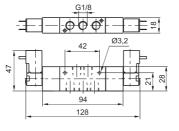
Weight 185 g Minimum working pressure 1,5 bar

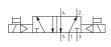
808.32.0.0.











Solenoid - Solenoid 5/3

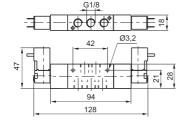
Coding: 808.53. \bigcirc 0.0.

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	520	
Orifice size (mm)	4	
Working ports size	G 1/8"	

	FUNCTION		VOLTAGE
	FUNCTION		VOLTAGE
(3)	31 = Closed centres		01 = 12V D.C.
	32 = Open centres		02 = 24V D.C.
		V	05 = 24V A.C.
			06 = 110V A.C.
			07 = 230 V A.C.







Weight 190 g Minimum working pressure 3 bar

03

04

05

06 07

08

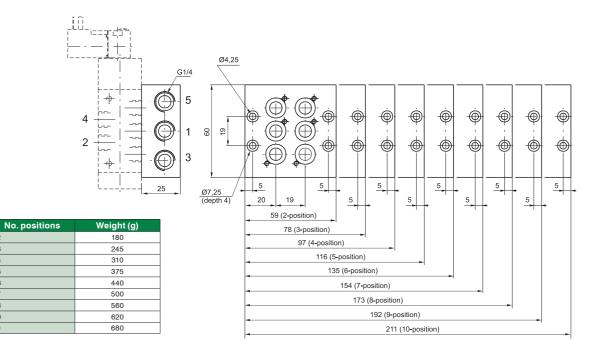


Collectors



Coding: 808.

	NO. POSITIONS
	02 = 2 positions
	03 = 3 positions
	04 = 4 positions
	05 = 5 positions
0	06 = 6 positions
	07 = 7 positions
	08 = 8 positions
	09 = 9 positions
	10 = 10 positions



Clip Coding: 800.00



Coding: 808.00

Weight 5 g $\,$ (for mounting the distributors groups on guide DIN 46277/3)

Closing plate



Weight 65 g

Series 888

Competitively priced, good performance and versatility combined with a compact design are the main characteristics of this new series of valves. The aluminium valve body and spool/seal arrangement optimize both the flow rate and the valve switching time.

This series of valves are available with G1/8" and G1/4" ports in 3/2, 5/2 and 5/3 versions.

Monostable or bistable versions are available and include an integrated technopolymer solenoid operator with 9mm stem and built in manual override.

Solenoid valves series 888 are available in point-to-point and serial configurations.

For serial system specifications, see Optyma-F series.

The valves can be supplied with or without the solenoid coil, however, if the solenoid coil is required please refer to the following table:

Voltages		Coil Code	Voltage Code
Direct current DC	12V (3,5W)	MF4	F04
	24V (3,5W)	MF5	F05
Alternating current AC	24V (3,7W)	MF56	F56
50 - 60 Hz	110V (3,7W)	MF57	F57
	230V (3,7W)	MF58	F58

	Connectors Coding	
Voltages		Kit 100 pieces
DC/AC	24V	888.11.01L-K
Alternating current AC	110V	888.11.02L-K
50 - 60 Hz	230V	888.11.03L-K

Construction characteristics

Body	Aluminium	
Seals	NBR	
Springs Operators	Spring steel	
Operators	Technopolymer Aluminium for spring bottom plates	
Pistons	Technopolymer	
Spools	Aluminium	

Use and maintenance

These valves have an average life of 15 million cycles

depending on the application and air quality, filtered and lubricated air using specified lubricants will dramatically reduce the wear of the seals and ensures long and trouble free operation.

Please ensure that the valve is being used according with the manufacturers specification, such as air pressure and temperature.

The exhaust ports 3 and 5 must be protected against the possible ingress of dirt or debris.

Repair kits including the spool complete with seals are available for overhauling the valves; however, although this is a simple operation it should be carried out by a competent person.



Solenoid - Spring - 3/2 (Self feeding)

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	8	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	790	
Orifice size (mm)	5.8	
Working ports size	G 1/8"	

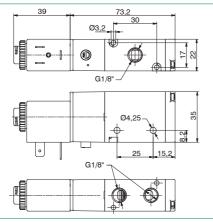
Coding: 8880.32.**€**.39.**♥**

	FUNCTION		VOLTAGE
•	A = Normally Open		F04 = 12 V DC
	C = Normally Closed		F05 = 24 V DC
		V	F56 = 24 V (50-60 Hz)
			F57 = 110 V (50-60 Hz)
			F58 = 230 V (50-60 Hz)
			F00 = Without coil



Weight 210 g Minimum working pressure 2 bar





Solenoid - Spring - 5/2 (Self feeding)

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	8	
Temperature °C	-5 +50	
Flow rate at 6 bar with ∆p=1 (NI/min)	790	
Orifice size (mm)	5.8	
Working ports size	G 1/8"	

Coding: 8880.52.00.39.

ou	ouilig. 0000.32.00.03.			
	VOLTAGE			
	F04 = 12 V DC			
	F05 = 24 V DC			
V	F56 = 24 V (50-60 Hz)			
	F57 = 110 V (50-60 Hz)			
	F58 = 230 V (50-60 Hz)			
	F00 = Without coil			



Weight 220 g Minimum working pressure 2 bar



G1/8" 20 21.7 Q4,25 20 21.7 Q5/8" G1/8" G1/8"

81,2 3 Ø3,2

Solenoid - Solenoid - 3/2 (Self feeding)

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	8	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	790	
Orifice size (mm)	5.8	
Working ports size	G 1/8"	

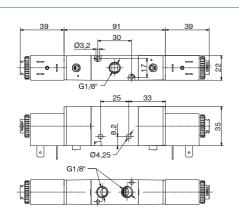
Coding: 8880.32.00.35.

ouilig. 0000.02.00.00.			
	VOLTAGE		
	F04 = 12 V DC		
	F05 = 24 V DC		
V	F56 = 24 V (50-60 Hz)		
	F57 = 110 V (50-60 Hz)		
	F58 = 230 V (50-60 Hz)		
	F00 = Without coil		



Weight 310 g Minimum working pressure 2 bar







Solenoid - Solenoid - 5/2 (Self feeding)

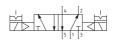
Operational characteristics			
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous		
Max. working pressure (bar)	8		
Temperature °C	-5 +50		
Flow rate at 6 bar with ∆p=1 (NI/min)	790		
Orifice size (mm)	5.8		
Working ports size	G 1/8"		

Coding: 8880.52.00.35.

	VOLTAGE
	F04 = 12 V DC
	F05 = 24 V DC
V	F56 = 24 V (50-60 Hz)
	F57 = 110 V (50-60 Hz)
	F58 = 230 V (50-60 Hz)
	F00 = Without coil



Weight 320 g Minimum working pressure 2 bar



Solenoid - Solenoid - 5/3 (Self feeding)

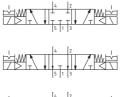
Operational characteristics			
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous		
Max. working pressure (bar)	8		
Temperature °C	-5 +50		
Flow rate at 6 bar with Δp=1 (NI/min)	440		
Orifice size (mm)	5.8		
Working ports size	G 1/8"		

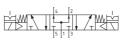
Coding: 8880.53. **3**.35.

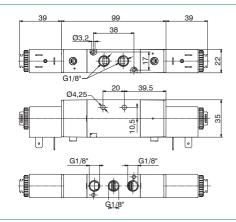
	FUNCTION		VOLTAGE
	31 = Closed Centres		F04 = 12 V DC
9	32 = Open Centres	V	F05 = 24 V DC
	33 = Pressured centres		F56 = 24 V (50-60 Hz)
			F57 = 110 V (50-60 Hz)
			F58 = 230 V (50-60 Hz)
			F00 = Without coil



Weight 330 g Minimum working pressure 2,5 bar







Solenoid - Spring - 3/2 (External feeding)

Operational characteristics				
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous			
Max. working pressure (bar)	8			
Temperature °C	-5 +50			
Flow rate at 6 bar with Δp=1 (NI/min)	790			
Orifice size (mm)	5.8			
Working ports size	G 1/8"			

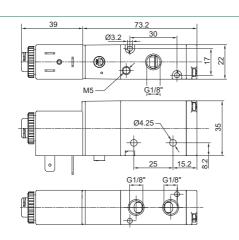
Coding: 8880E.32.**⑤**.39.**♥**

	County. 0000 E.02. 0.00.				
		FUNCTION		VOLTAGE	
	•	A = Normally open		F04 = 12 V DC	
4		C = Normally Closed		F05 = 24 V DC	
4			V	F56 = 24 V (50-60 Hz)	
4				F57 = 110 V (50-60 Hz)	
4				F58 = 230 V (50-60 Hz)	
\exists				F00 = Without coil	



Weight 210 g Minimum working pressure 2 bar







Solenoid - Spring - 5/2 (External feeding)

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	8	
Temperature °C	-5 +50	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	790	
Orifice size (mm)	5.8	
Working ports size	G 1/8"	

Coding: 8880E.52.00.39.

	VOLTAGE
	F04 = 12 V DC
	F05 = 24 V DC
V	F56 = 24 V (50-60 Hz)
	F57 = 110 V (50-60 Hz)
	F58 = 230 V (50-60 Hz)
	F00 = Without coil



Weight 220 g Minimum working pressure 2 bar



G1/8"

Ø3.2

Solenoid - Solenoid - 3/2 (External feeding)

	Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	8	\Box
Temperature °C	-5 +50	٦
Flow rate at 6 bar with Δp=1 (NI/min)	790	
Orifice size (mm)	5.8	٦
Working ports size	G 1/8"	٦١

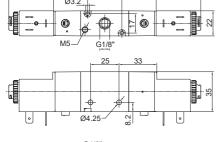
Coding: 8880E.32.00.35.

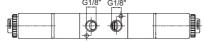
oding: 0000L.32.00.33.		
VOLTAGE		
F04 = 12 V DC		
F05 = 24 V DC		
F56 = 24 V (50-60 Hz)		
F57 = 110 V (50-60 Hz)		
F58 = 230 V (50-60 Hz)		
F00 = Without coil		



Weight 310 g Minimum working pressure 2 bar







Solenoid - Solenoid - 5/2 (External feeding)

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	8	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	790	
Orifice size (mm)	5.8	
Working ports size	G 1/8"	

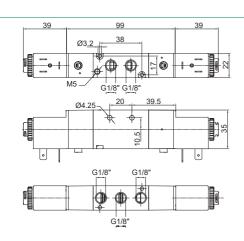
Coding: 8880E.52.00.35.

Journal of the state of the sta		
	VOLTAGE	
	F04 = 12 V DC	
	F05 = 24 V DC	
V	F56 = 24 V (50-60 Hz)	
	F57 = 110 V (50-60 Hz)	
	F58 = 230 V (50-60 Hz)	
	F00 = Without coil	



Weight 320 g Minimum working pressure 2 bar







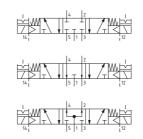
Solenoid - Solenoid - 5/3 (External feeding)

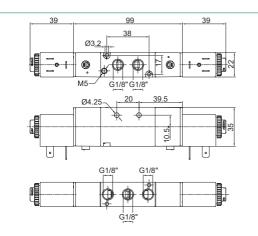
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	8	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	440	
Orifice size (mm)	5.8	
Working ports size	G 1/8"	

Coding: 8880 E.53. ■.35. ■ | FUNCTION | 31 = Closed Centres | 504 = 12 V DC | | 32 = Open Centres | 576 = 24 V DC | | 576 = 24 V (50-60 Hz) | | 578 = 230 V (50-60 Hz) | | 578 = 230 V (50-60 Hz) | | 579 = Without coil



Weight 330 g Minimum working pressure 2,5 bar







Solenoid - Spring - 3/2 (Self feeding)

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	8	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	890	
Orifice size (mm)	6.5	
Working ports size	G 1/4"	

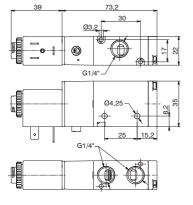
Coding: 8884.32. **3**.39.

	FUNCTION		VOLTAGE
•	A = Normally open		F04 = 12 V DC
	C = Normally Closed		F05 = 24 V DC
		V	F56 = 24 V (50-60 Hz)
		_	F57 = 110 V (50-60 Hz)
			F58 = 230 V (50-60 Hz)
			F00 = Without coil



Weight 210 g Minimum working pressure 2 bar





Solenoid - Spring - 5/2 (Self feeding)

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	8	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	890	
Orifice size (mm)	6.5	
Working ports size	G 1/4"	

Coding: 8884.52.00.39.

oding: 0004.52.00.39.		
V	VOLTAGE	
	F04 = 12 V DC	
	F05 = 24 V DC	
	F56 = 24 V (50-60 Hz)	
	F57 = 110 V (50-60 Hz)	
	F58 = 230 V (50-60 Hz)	
	F00 = Without coil	



Weight 220 g Minimum working pressure 2 bar



03.2 03.2 03.2 03.2 04.25 04.25 04.25 05.8 07.8 08.8 09.

Solenoid - Solenoid - 3/2 (Self feeding)

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	8	
Temperature °C	-5 +50	
Flow rate at 6 bar with $\Delta p = 1$ (NI/min)	890	
Orifice size (mm)	6.5	
Working ports size	G 1/4"	

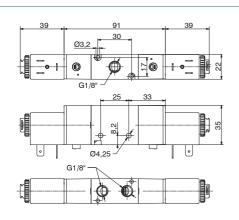
Coding: 8884.32.00.35.

ouilig. 000 7.02.00.00.		
V	VOLTAGE	
	F04 = 12 V DC	
	F05 = 24 V DC	
	F56 = 24 V (50-60 Hz)	
	F57 = 110 V (50-60 Hz)	
	F58 = 230 V (50-60 Hz)	
	F00 = Without coil	



Weight 310 g Minimum working pressure 2 bar





Solenoid - Solenoid - 5/2 (Self feeding)

Operational characteristics		
Fluid Filtered air. No lubrication needed, if applied it shall be continuous		
Max. working pressure (bar) 8		
Temperature °C	-5 +50	
Flow rate at 6 bar with ∆p=1 (NI/min)	890	
Orifice size (mm)	6.5	
Working ports size	G 1/4"	

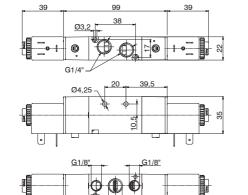
Coding: 8884.52.00.35.	V
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	VOLTAGE
	F04 = 12 V DC
	F05 = 24 V DC
V	F56 = 24 V (50-60 Hz)
	F57 = 110 V (50-60 Hz)
	F58 = 230 V (50-60 Hz)
	F00 = Without coil



Weight 320 g Minimum working pressure 2 bar





Solenoid - Solenoid - 5/3 (Self feeding)

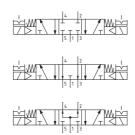
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar) 8		
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	540	
Orifice size (mm)	6.5	
Working ports size	G 1/4"	

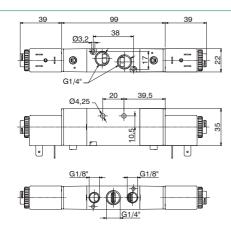
Coding: 8884.53.**€**.35.**♥**

	FUNCTION		VOLTAGE	
	31 = Closed Centres		F04 = 12 V DC	
•	32 = Open Centres		F05 = 24 V DC	l
	33 = Pressured centres	V	F56 = 24 V (50-60 Hz)]
			F57 = 110 V (50-60 Hz)	l
			F58 = 230 V (50-60 Hz)	
			F00 = Without coil	



Weight 330 g Minimum working pressure 2,5 bar





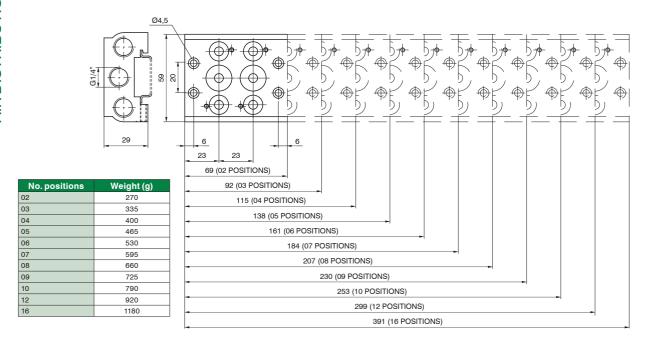


Manifold (Valves 5/2 - 5/3)



Coding: 888.

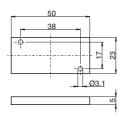
	NO. POSITIONS
	02 = 2 positions
	03 = 3 positions
	04 = 4 positions
	05 = 5 positions
0	06 = 6 positions
	07 = 7 positions
	08 = 8 positions
	09 = 9 positions
	10 = 10 positions
	12 = 12 positions
	16 = 16 positions



Closing plate

Coding: 888.00





Weight 18 g Closing plate supplied complete with 2 fixing screws to the manifold and 2 fixing screws to the multi-pin base

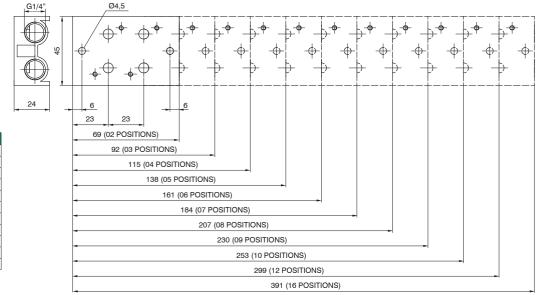


Manifold (Valves 3/2)



Coding: 8883.

	NO. POSITIONS
	02 = 2 positions
	03 = 3 positions
	04 = 4 positions
	05 = 5 positions
	06 = 6 positions
0	07 = 7 positions
	08 = 8 positions
	09 = 9 positions
	10 = 10 positions
	12 = 12 positions
	16 = 16 positions



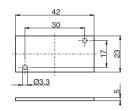
No. positions	Weight (g)
02	270
03	335
04	400
05	465
06	530
07	595
08	660
09	725
10	790
12	920
16	1180

Closing plate (Valves 3/2)



Weight 10 g Closing plate supplied complete with 2 fixing screws to the manifold

Coding: 8883.00



AIR DISTRIBUTION

Endplate, 37 Poles IP65



Weight 186 g The IP65 protection is obtained by IP65 Pneumax cable.
Code complete with assembled endplate and 4 manifold fixing screws, previously mounted on the Manifold.

64.7 194 20 -05 ш 中

Endplate, 25 Poles IP65



Weight 181 g The IP65 protection is obtained by IP65 Pneumax cable. Code complete with assembled endplate and 4 manifold fixing screws, previously mounted on the Manifold.

64.7 •(.....) 0 20 ΨГ ф

Modular base, 2 positions IP65

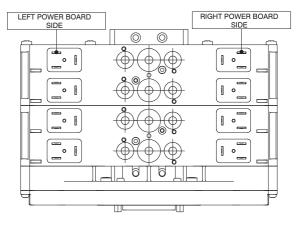


Weight 220 g Complete with seals and fixing screws Usable only for 5/2 and 5/3 Distributors

Ø3,1

Left and Right Power board PNP 24 VDC





No. positions	Weight (g)
04	11.2
08	22.4
12	33.6
16	44.8

Coding: 888M.**(1)**.

Coding: 888M.02.BM

Coding: 888M.37.10

Coding: 888M.25.10

	_
	NO. POSITIONS
	04 = 4 positions
0	08 = 8 positions
	12 = 12 positions
	16 = 16 positions
	TYPE
•	00 = Left
	01 = Right

Series 888 - Accessories - Multi-pin connections



Closing plate



Weight 3 g Closing plate supplied complete with 1 Seal and fixing screw with 0 ring Maximum fixing torque for fittings: 0,35Nm

30 28

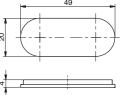




Weight 2,6 g Complete with: Nr. 1 Plug, Nr. 2 Fixing screws

Coding: 888M.T

Coding: 888M.22.PC



Seals



Weight 0,52 g

Coding: 888M.22.G

In line cable complete with connector, IP40



Coding: 2400. **@**. **0**.00

	CONNECTOR
•	25 = 25 poles
	37 = 37 poles
	CABLE LENGTH
	03 = 3 meters
•	05 = 5 meters
	10 = 10 meters

Cable complete with connector, 25 Poles, IP65



Cable complete with connector, 37 Poles, IP65



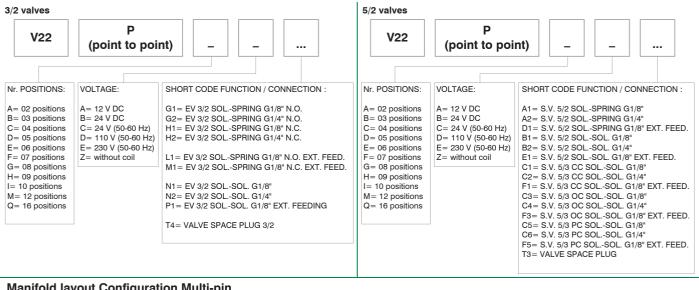
Coding: 2300.25.

	•	CABLE LENGTH
		03 = 3 meters
		05 = 5 meters
		10 = 10 meters
	0	CONNECTOR
		10 = Stand alone
		90 = 90° Angle

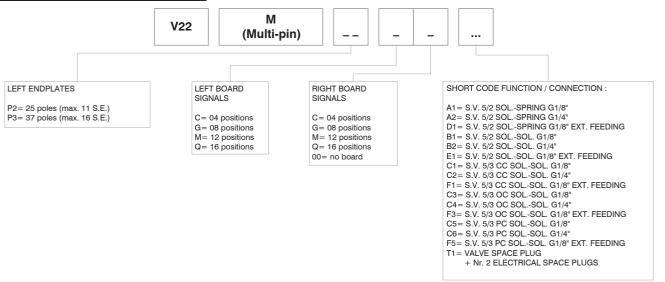
Coding: 2400.37.

•	CABLE LENGTH
	03 = 3 meters
	05 = 5 meters
	10 = 10 meters
•	CONNECTOR
	10 = Stand alone
	90 = 90° Angle

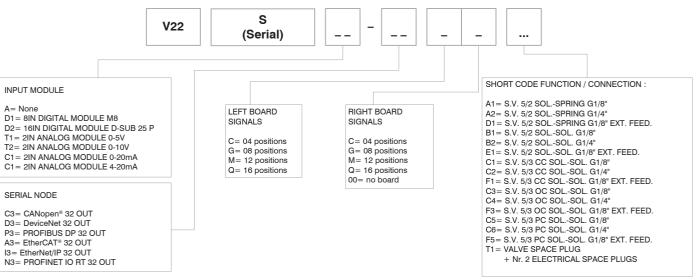
Manifold layout Configuration Point to Point



Manifold layout Configuration Multi-pin



Serial manifold layout (for the serial system node, see the Optyma-F Series)

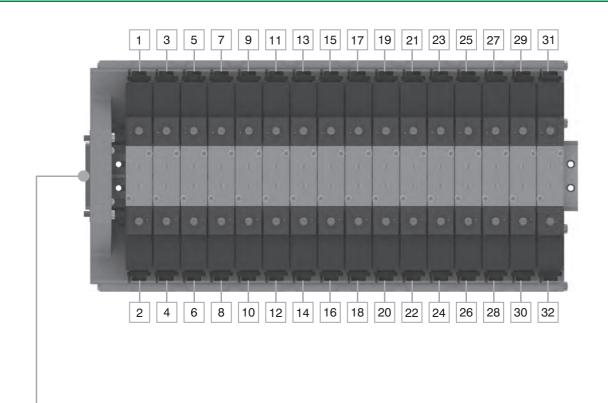


NOTE:

When constructing the configuration, please consider that the maximum number of valves that can be mounted on the manifold is 16, regardless of the valve type. Any valve position presents two electrical connections: in case of use of monostable valves(A1-A2) it will be necessary to assemble a plug to protect the unused electrical connection.

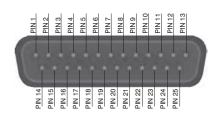
The correspondence between the electrical signal and its location on the manifold is showed in the following diagrams.







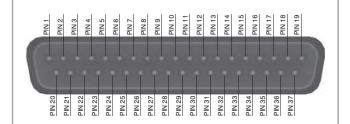




1 - 22 = SIGNALS 23 - 24 = GND25 = NC

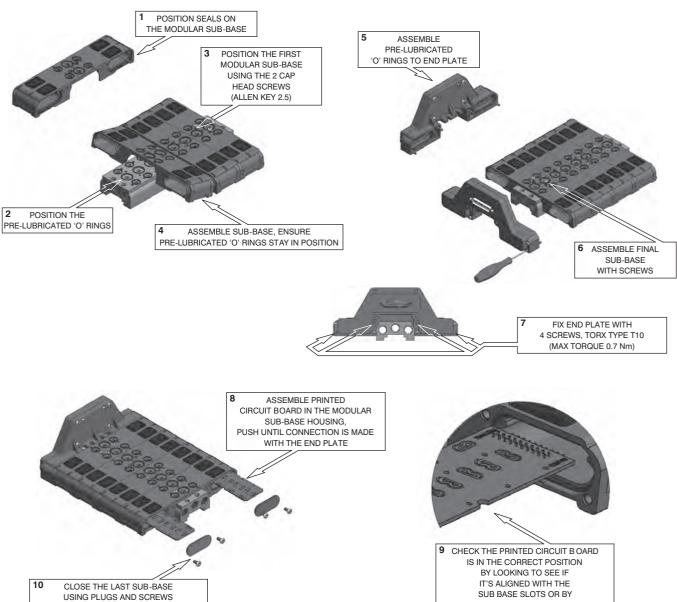
Connector 37 Poles from 1 to 16 Positions E.V. Bistable / Monostable

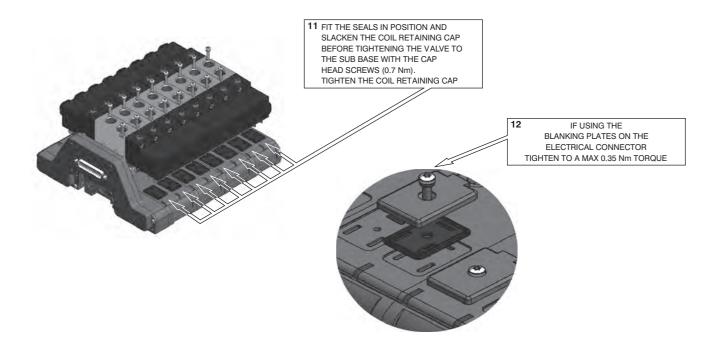






Assembly sequence





INSERTING A COIL INTO POSITION

(TORX T20)

Series 400

These are 2 stage valves actuated electro-pneumatically. A serie 300 directly operated solenoid valve actuates pneumatically the principal power distributor.

This integrated system allows configurations of systems requiring very little space.

The pilot air is normally taken from the inlet port (autofeed) and the only actuating signal is electric.

The range of the solenoid valves, as far as dimensions and mechanical construction, is similar to series 200.

We have therefore solenoid valves G 1/8", G 1/4", G 1/2" and G 1" with identical pneumatic characteristics that are, however, actuated electrically. They have a balanced spool, insentive to presence or absence of pressure. They are constructed in 3 and 5 way with 1 solenoid (monostable) or 2 solenoids (bistable) and also 5 ways 3 positions with closed centres, open centres and pressured centres.

If should be noted that the autofeed of the electric pilot requires always inlet through port 1 and if a 3 ways normally open configuration is desired, it is necessary to switch the operators.

Please note that while the microsolenoid can be mounted in any direction, standard solenoid requires mounting as inticated in the photographs and diagrams.

The order codes pertain only to the solenoid valve with mechanical actuator "M2" or solenoid "S*" already assembled. M2 coils are not included and have to be ordered separately (see Series 300). Coils for M2 and solenoids "S" homologated are available L Wus (see Series 300).

The solenoid valves G1/8" (488), are supplied complete with coil (see Series 300) so that the tension has to be added to the solenoid valve code:

M9 = coil 24 V D.C. (rating power 2 Watt)
M11 = coil 24 V D.C. (rating power 3.8 watt)
M56 = coil 24 V 50/60 Hz (rating power 9 VA)
M57 = coil 110 V 50/60 Hz (rating power 9 VA)
M58 = coil 230 V 50/60 Hz (rating power 9 VA)

"Shifting time of p neumatic directional control valves or moving parts, logic devices were measured in accordance to ISO 12238:2001"

Construction characteristics		
Body	Aluminium	
Spacers	Technopolymer (aluminium for G1")	
Seals	NBR Polyurethane compound for oil free applications (G 1/8", G 1/4" and G 1/2")	
Springs	Stainless steel or spring steel	
Operators	Aluminium Technopolymer for spring botton plate G 1/8", G1/4", G 1/2" and aluminium for G 1"	
Spools	Steel	

Use and maintenance

This valves have an average life of 15 million cycles depending on the application and air quality.

Filtered and lubricated air using specified lubricants will reduce the wear of the seals and ensures long and trouble free operation.

Please ensure that the valve is being used according with the manufacturers specification, such as air pressure and temperature.

The exhaust port of the distributor has to be protected in a dusty and dirty environment.

Repair kits including the spool complete with seals are available for overhauling the valves.

However, although this is a simple operation it should be carried out by a competent person.

ATTENTION: use hydraulic oil class H for lubrication such as CASTROL MAGNA SW32.



Solenoid - Spring

,	
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	540
Orifice size (mm)	6
Working ports size	G 1/8"

Coding: 468. **1**.0.1.M2

	TYPE
0	32 = 3 ways, 2 positions
_	52 = 5 ways, 2 positions





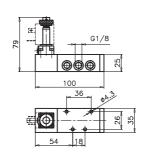
Weight 240 g Minimum working pressure 2,5 bar

468.32.0.1.M2



Weight 240 g Minimum working pressure 2,5 bar

468.52.0.1.M2



Solenoid - Differential

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	540
Orifice size (mm)	6
Working ports size	G 1/8"

Coding: 468. **1**.0.12.M2

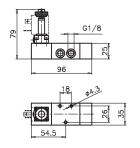
TYPE
32 = 3 ways, 2 positions
52 = 5 ways, 2 positions





Weight 280 g Minimum working pressure 2,5 bar

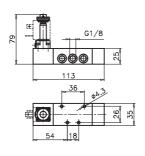
468.32.0.12.M2





Weight 320 g Minimum working pressure 2,5 bar

468.52.0.12.M2

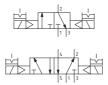


Solenoid - Solenoid

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	540
Orifice size (mm)	6
Working ports size	G 1/8"

Coding: 468. **1**.0.0.M2

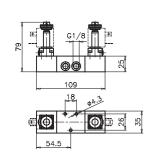
	TYPE
•	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions





Weight 370 g Minimum working pressure 2 bar

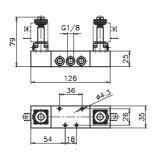
468.32.0.0.M2





Weight 410 g Minimum working pressure 2 bar

468.52.0.0.M2





Solenoid - Solenoid - 5/3

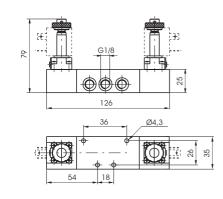
Operational characteristics Filtered air. No lubrication needed, if applied it shall be Fluid continuous Max. working pressure (bar) 10 Temperature °C -5 ... +50 Flow rate at 6 bar with $\Delta p=1$ (NI/min) 410 Orifice size (mm) 6 G 1/8" Working ports size

Coding: 468.53. **6**.0.0. M2

	FUNCTION
	31 = Closed centres
(3)	32 = Open centres
	33 = Pressured centres



Weight 420 g Minimum working pressure 3 bar



Solenoid - Spring

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	540
Orifice size (mm)	6
Working ports size	G 1/8"

Coding: 468/1. **1**.0.1. M2

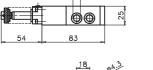
	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



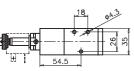


Weight 240 g Minimum working pressure 2,5 bar

468/1.32.0.1.M2

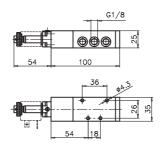


G1/8



Weight 280 g Minimum working pressure 2,5 bar

468/1.52.0.1.M2



Solenoid - Differential

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	540
Orifice size (mm)	6
Working ports size	G 1/8"

Coding: 468/1. **1**.0.12.M2

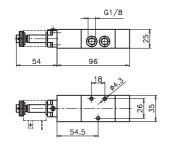
	TYPE
•	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions





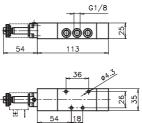
Weight 280 g Minimum working pressure 2,5 bar

468/1.32.0.12.M2





Weight 320 g Minimum working pressure 2,5 bar 468/1.52.0.12.M2



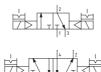


Solenoid - Solenoid

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	540	
Orifice size (mm)	6	
Working ports size	G 1/8"	

Coding: 468/1. **1.** 0.0.0. M2

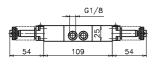
	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions

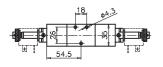




Weight 370 g Minimum working pressure 2 bar

468/1.32.0.0.M2

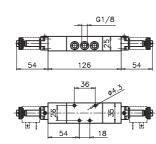






Weight 410 g Minimum working pressure 2 bar

468/1.52.0.0.M2



Solenoid - Solenoid - 5/3

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	410	
Orifice size (mm)	6	
Working ports size	G 1/8"	

Coding: 468/1.53. **3**.0.0.M2

	FUNCTION	
•	31 = Closed centres	
(3)	32 = Open centres	
	33 = Pressured centres	



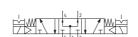






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Ø4,3



Solenoid - Spring

Operational characteristics Filtered air. No lubrication needed, if applied it shall be Fluid continuous Max. working pressure (bar) 10 Temperature °C -5 ... +50 Flow rate at 6 bar with $\Delta p=1$ (NI/min) 620 Orifice size (mm) 6 Working ports size G 1/8" Response time according to ISO 12238, activation time (ms) 20,3 (3 ways) 22,5 (5 ways) Response time according to ISO 12238, 44,5 (3 ways) deactivation time (ms) 47,0 (5 ways)

Coding: 488.**①**.0.1.**②**

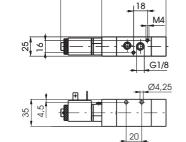
	TYPE		VOLTAGE
0	32 = 3 ways, 2 positions		M9 = 24 V D.C.
	52 = 5 ways, 2 positions	•	M11 = 24 V D.C.
			M56 = 24 V 50/60 Hz
		M57 = 110 V 50/60 Hz	
			M58 = 230 V 50/60 Hz



Weight 220 g Minimum working pressure 2,5 bar

488.32.0.1.





53

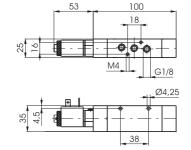
83



Weight 260 g Minimum working pressure 2,5 bar

488.52.0.1.♥

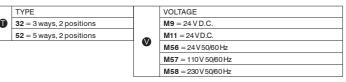




Solenoid - Differential

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	620	
Orifice size (mm)	6	
Working ports size	G 1/8"	
Response time according to ISO 12238, activation time (ms)	28,0 (3 ways) 28,3 (5 ways)	
Response time according to ISO 12238, deactivation time (ms)	34,5 (3 ways) 35,5 (5 ways)	

Coding: 488. **1**.0.12.

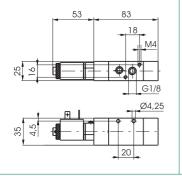




Weight 220 g Minimum working pressure 2,5 bar

488.32.0.12.**0**



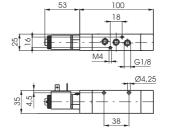




Weight 260 g Minimum working pressure 2,5 bar

488.52.0.12.**♥**





Solenoid - Solenoid

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	410	
Orifice size (mm)	6	
Working ports size	G 1/8"	
Response time according to ISO 12238, activation time (ms)	19,0 (3 ways) 18,2 (5 ways)	
Response time according to ISO 12238, deactivation time (ms)	21,1 (3 ways) 18,5 (5 ways)	

Coding: 488.**⊕**.0.0.

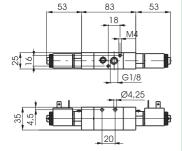
	TYPE		VOLTAGE
0	32 = 3 ways, 2 positions		M9 = 24 V D.C.
	52 = 5 ways, 2 positions		M11 = 24 V D.C.
		V	M56 = 24 V 50/60 Hz
			M57 = 110 V 50/60 Hz
			M58 = 230 V 50/60 Hz



Weight 320 g Minimum working pressure 2 bar

488.32.0.0.♥



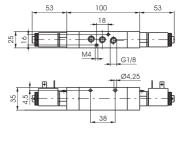




Weight 360 g Minimum working pressure 2 bar

488.52.0.0.♥







Solenoid - Solenoid - 5/3

Operational characteristics			
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous		
Max. working pressure (bar)	10		
Temperature °C	-5 +50		
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	410		
Orifice size (mm)	6		
Working ports size	G 1/8"		
Response time according to ISO 12238, activation time (ms)	23,0 (closed centres) 21,5 (open centres) 18,9 (pressured centres)		
Response time according to ISO 12238, deactivation time (ms)	41,0 (closed centres) 38,0 (open centres) 40,2 (pressured centres)		

Coding: 488.53.**€**.0.0.**◎**

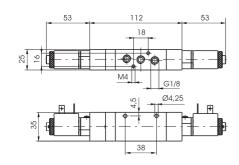
	FUNCTION		VOLTAGE
	31 = Closed centres		M9 = 24 VD.C.
(3)	32 = Open centres		M11 = 24 V D.C.
	33 = Pressured centres	V	M56 = 24 V 50/60 Hz
			M57 = 110 V 50/60 Hz
			M58 = 230 V 50/60 Hz



Weight 400 g Minimum working pressure 3 bar

488.53.31.0.0.♥



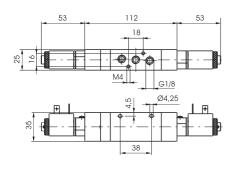




Weight 400 g Minimum working pressure 3 bar

488.53.32.0.0.♥

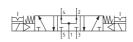


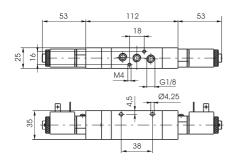




Weight 400 g Minimum working pressure 3 bar

488.53.33.0.0.♥





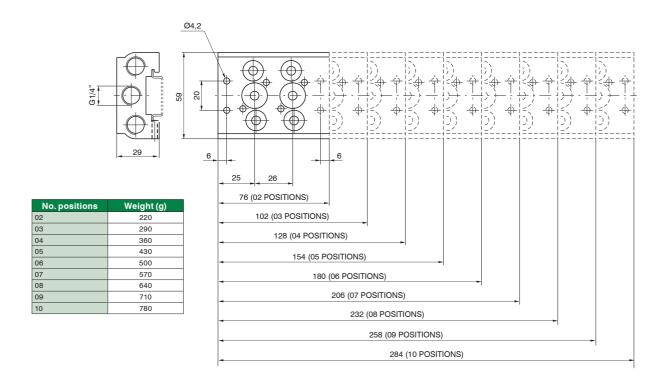


Collectors



Coding: 488.

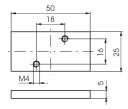
	NO. POSITIONS
	02 = 2 positions
	03 = 3 positions
	04 = 4 positions
	05 = 5 positions
0	06 = 6 positions
	07 = 7 positions
	08 = 8 positions
	09 = 9 positions
	10 = 10 positions



Closing plate

Coding: 488.00





Weight 25 g

Solenoid - Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	1360	
Orifice size (mm)	8	
Working ports size	G 1/4"	

Coding: 464. **1**.0.1.M2

	TYPE
•	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



Weight 530 g Minimum working pressure 2,5 bar

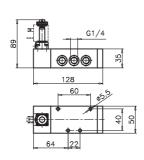
464.32.0.1.M2

5/2 ways



Weight 625 g Minimum working pressure 2,5 bar

464.52.0.1.M2



Solenoid - Differential

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	1360	
Orifice size (mm)	8	
Working ports size	G 1/4"	

Coding: 464. **1**.0.12. M2

	TYPE	
•	32 = 3 ways, 2 positions	
	52 = 5 ways, 2 positions	

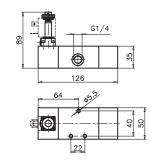


3/2 ways



Weight 650 g Minimum working pressure 2,5 bar

464.32.0.12.M2

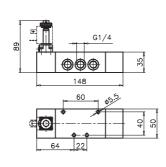


106



Weight 740 g Minimum working pressure 2,5 bar

464.52.0.12.M2

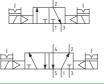


Solenoid - Solenoid

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	1360	
Orifice size (mm)	8	
Working ports size	G 1/4"	

Coding: 464. **1**.0.0. M2

	TYPE
•	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions

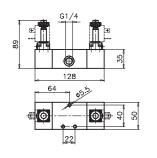


3/2 ways



Weight 730 g Minimum working pressure 2 bar

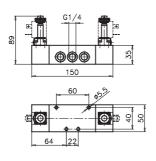
464.32.0.0.M2



5/2 ways



Weight 820 g Minimum working pressure 2 bar 464.52.0.0.M2





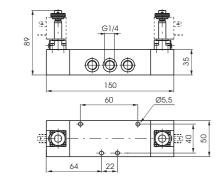
Solenoid - Solenoid - 5/3

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	1280
Orifice size (mm)	8
Working ports size	G 1/4"

Coding: 464.53. **6**.0.0.M2

•	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres





Weight 820 g Minimum working pressure 3 bar







)

Solenoid - Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	1360	
Orifice size (mm)	8	
Working ports size	G 1/4"	

Coding: 464/1. **1**.0.1. M2

	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



Weight 530 g Minimum working pressure 2,5 bar

464/1.32.0.1.M2

5/2 ways

G1/4

G1/4

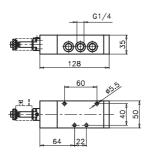
. 64 %

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Weight 625 g Minimum working pressure 2,5 bar

464/1.52.0.1.M2



Solenoid - Differential

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	1360	
Orifice size (mm)	8	
Working ports size	G 1/4"	

Coding: 464/1. ①.0.12.M2

	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



Weight 650 g Minimum working pressure 2,5 bar

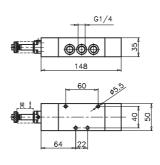
464/1.32.0.12.M2

5/2 ways



Weight 740 g Minimum working pressure 2,5 bar

464/1.52.0.12.M2

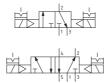


Solenoid - Solenoid

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	1360	
Orifice size (mm)	8	
Working ports size	G 1/4"	

Coding: 464/1. **1**.0.0. M2

	TYPE
•	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions

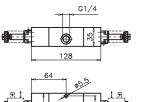


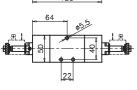
3/2 ways



Weight 730 g Minimum working pressure 2 bar

464/1.32.0.0.M2



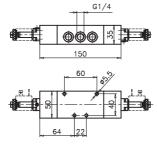


5/2 ways



464/1.52.0.0.M2

Weight 820 g Minimum working pressure 2 bar



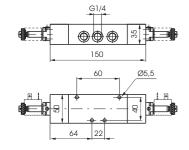
Solenoid - Solenoid - 5/3

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	1280	
Orifice size (mm)	8	
Working ports size	G 1/4"	

Coding: 464/1.53. **3**.0.0.M2

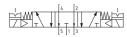
	FUNCTION
	31 = Closed centres
•	32 = Open centres
	33 = Pressured centres

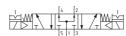




Weight 820 g Minimum working pressure 3 bar









Solenoid - Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	3500	
Orifice size (mm)	15	
Working ports size	G 1/2"	

Coding: 452. **1**.0.1.M2

	TYPE
•	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



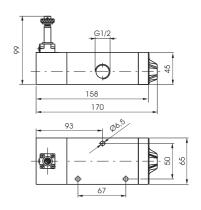
Weight 1152 g Minimum working pressure 2,5 bar

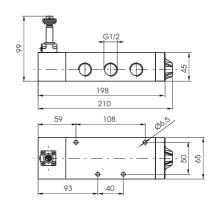
452.32.0.1.M2



Weight 1422 g Minimum working pressure 2,5 bar

452.52.0.1.M2







Solenoid - Differential

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	3500	
Orifice size (mm)	15	
Working ports size	G 1/2"	

Coding: 452. **1**.0.12. M2

	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



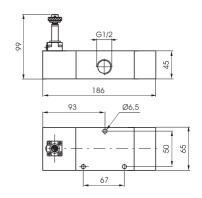
Weight 1422 g Minimum working pressure 2,5 bar

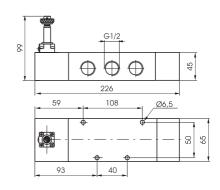
452.32.0.12.M2



Weight 1692 g Minimum working pressure 2 bar

452.52.0.12.M2







Series 400 - G1/2"



Solenoid - Solenoid

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	3500	
Orifice size (mm)	15	
Working ports size	G 1/2"	

	0	TYPE
		32 = 3 ways, 2 positions
		52 = 5 ways, 2 positions

Coding: 452. **1**.0.0. M2



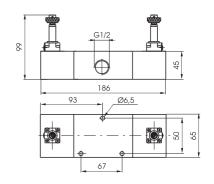
Weight 1474 g Minimum working pressure 2 bar

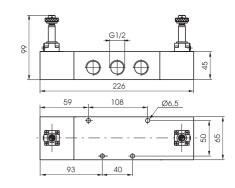
452.32.0.0.M2

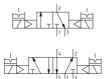


Weight 1744 g Minimum working pressure 2 bar

452.52.0.0.M2







Solenoid - Solenoid - 5/3

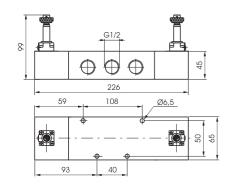
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with $\Delta p = 1$ (NI/min)	3500
Orifice size (mm)	15
Working ports size	G 1/2"

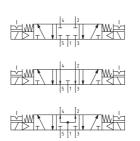
Coding: 452.53. **6**.0.0.M2

	FUNCTION
	31 = Closed centres
(2)	32 = Open centres
	33 = Pressured centres



Weight 1744 g Minimum working pressure 3 bar







Solenoid - Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	3500	
Orifice size (mm)	15	
Working ports size	G 1/2"	

Coding: 452/1. **1**.0.1. M2

	TYPE
•	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



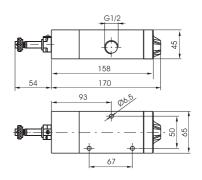
Weight 1330 g Minimum working pressure 2,5 bar

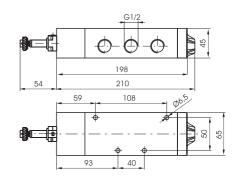
452/1.32.0.1.M2



Weight 1600 g Minimum working pressure 2,5 bar

452/1.52.0.1.M2









Solenoid - Differential

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	3500	
Orifice size (mm)	15	
Working ports size	G 1/2"	

Coding: 452/1. ①.0.12. M2

•	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



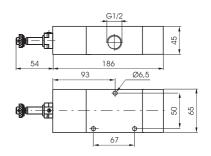
Weight 1600 g Minimum working pressure 2,5 bar

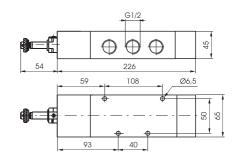
452/1.32.0.12.M2



Weight 1870 g Minimum working pressure 2 bar

452/1.52.0.12.M2











Solenoid - Solenoid

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	3500	
Orifice size (mm)	15	
Working ports size	G 1/2"	

Coding: 452/1. **1**.0.0. M2

		TYPE
32 = 3 ways, 2 positions		32 = 3 ways, 2 positions
		52 = 5 ways, 2 positions



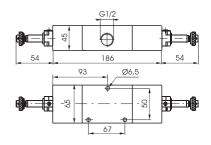
Weight 1830 g Minimum working pressure 2 bar

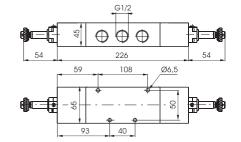
452/1.32.0.0.M2



Weight 2100 g Minimum working pressure 2 bar

452/1.52.0.0.M2









Solenoid - Solenoid - 5/3

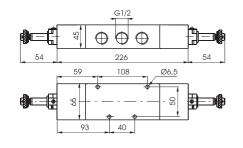
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	3500	
Orifice size (mm)	15	
Working ports size	G 1/2"	

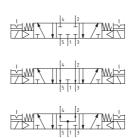
Coding: 452/1.53. **6**.0.0.M2

(3	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres



Weight 2100 g Minimum working pressure 3 bar





AIR DISTRIBUTION

Solenoid - Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	3600	
Orifice size (mm)	15	
Working ports size	G 1/2"	

Coding: 412/2. **1**.0.1.

	TYPE
•	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	FUNCTION
	C.M2 = 3/2 ways Normally Closed
•	A.M2 = 3/2 ways Normally Open
	M2 = 5/2 ways
	•

3/2 ways

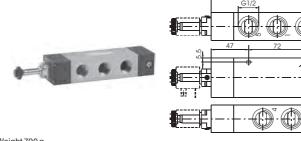


Weight 578 g Minimum working pressure 2,5 bar

> 412/2.32.0.1.C.M2 412/2.32.0.1.A.M2



5/2 ways



Weight 700 g Minimum working pressure 2,5 bar

412/2.52.0.1.M2



Solenoid - Differential

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	3600	
Orifice size (mm)	15	
Working ports size	G 1/2"	

Coding: 412/2. **1**.0.12.

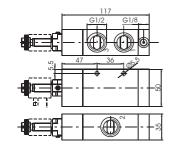
TYPE
32 = 3 ways, 2 positions
52 = 5 ways, 2 positions
FUNCTION
C.M2 = 3/2 ways Normally Closed
A.M2 = 3/2 ways Normally Open
M2 = 5/2 ways

3/2 ways



Weight 522 g Minimum working pressure 2,5 bar

> 412/2.32.0.12.C.M2 412/2.32.0.12.A.M2





5/2 ways



Weight 644 g Minimum working pressure 2,5 bar

412/2.52.0.12.M2

Solenoid - Differential (Self feeding)

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	3600	
Orifice size (mm)	15	
Working ports size	G 1/2"	

Coding: 412/2. **1**.0.12/1. **1**

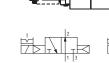
	TYPE
•	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	FUNCTION
•	C.M2 = 3/2 ways Normally Closed
	A.M2 = 3/2 ways Normally Open
	M2 = 5/2 ways

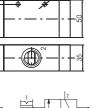
3/2 ways



Weight 526 g Minimum working pressure 2,5 bar

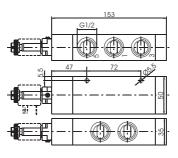
412/2.32.0.12/1.C.M2 412/2.32.0.12/1.A.M2











5/2 wavs



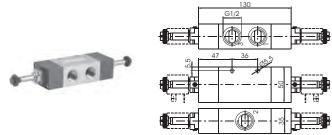
Solenoid - Solenoid

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	3600
Orifice size (mm)	15
Working ports size	G 1/2"

Coding: 412/2. **1**.0.0. M2

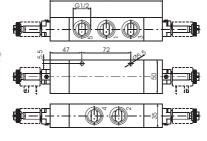
	TYPE
0	32 = 3 ways, 2 positions
_	52 = 5 ways, 2 positions

3/2 ways



-

5/2 ways



Weight 612 g Minimum working pressure 2 bar

412/2.32.0.0.M2

Weight 732 g Minimum working pressure 2 bar

412/2.52.0.0.M2

4 2 1 5 1 3

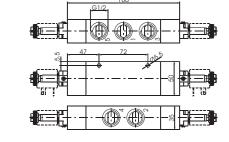
Solenoid - Solenoid - 5/3

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	3300
Orifice size (mm)	15
Working ports size	G 1/2"

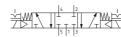
Coding: 412/2.53. **6**.0.0.M2

	FUNCTION	
31 = Closed centres		
•	32 = Open centres	
	33 = Pressured centres	

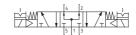




Weight 794 g Minimum working pressure 3 bar









Solenoid - Spring

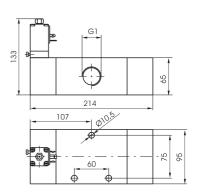
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	6500
Orifice size (mm)	20
Working ports size	G 1"

Coding: 411.0.0.1.

	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	SOLENOID
8	SEE SOLENOID VALVES "S" TYPE,
	SERIES 300

3/2 ways





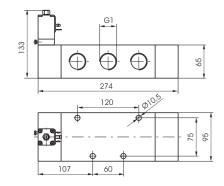
Weight 3400 g Minimum working pressure 2,5 bar

411.32.0.1.



5/2 ways





Weight 4300 g Minimum working pressure 2,5 bar

411.52.0.1.



Solenoid - Differential

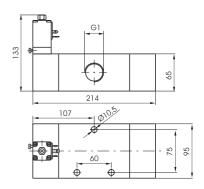
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	6500
Orifice size (mm)	20
Working ports size	G 1"

Coding: 411. **1**.0.12.

	TYPE
32 = 3 ways, 2 positions	
	52 = 5 ways, 2 positions
	SOLENOID
8	SEE SOLENOID VALVES "S" TYPE,
	SERIES 300

3/2 ways





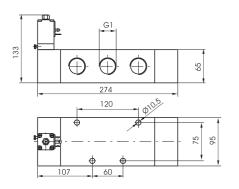
Weight 3400 g Minimum working pressure 2,5 bar

411.32.0.12.**③**



5/2 ways





Weight 4300 g Minimum working pressure 2,5 bar

411.52.0.12.**⑤**







Solenoid - Solenoid

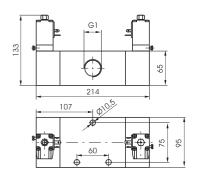
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	6500
Orifice size (mm)	20
Working ports size	G 1"

Coding: 411. **1**.0.0.8

TYPE
32 = 3 ways, 2 positions
52 = 5 ways, 2 positions
SOLENOID
SEE SOLENOID VALVES "S" TYPE,
SERIES 300

3/2 ways





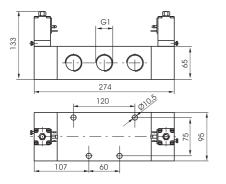
Weight 3700 g Minimum working pressure 2 bar

411.32.0.0.



5/2 ways





Weight 4600 g Minimum working pressure 2 bar

411.52.0.0.



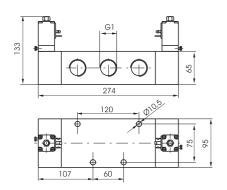
Solenoid - Solenoid - 5/3

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	6500
Orifice size (mm)	20
Working ports size	G 1"

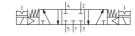
Coding: 411.53. **3**.0.0.

	FUNCTION
_	31 = Closed centres
3	32 = Open centres
	33 = Pressured centres
	SOLENOID
8	SEE SOLENOID VALVES "S" TYPE,
	SERIES 300





Weight 4700 g Minimum working pressure 3 bar









The Series **T400** involves a wide range of valves and solenoid valves, with several type of acting, with connections from **G1/8**" **(T488)** and **G1/4**" **(T424)**, are manufactured with high performance technopolimer.

The use of technopolymer has resulted in a light weight product which can be offered to the market at very interesting prices.

The gang mounted solenoid valves are available with the traditional manifold obtained from bored square bar of series 600 and with the extruded aluminium base allowing a unicinlet port conveying the exhausts. The base is also prearranged to be fixed on DIN 46277/3 guide.

The Valves and Solenoid valves **G1/8"** (**T488**) are: 5 ways function, pneumatically operated, single solenoid (monostable) mechanical or pneumatic spring return, spring or pneumatic return, with 2 coils (bistable) and in 5 ways 3 positions version with closed, open and pressured centres.

The solenoid valves are supplied complete with coil (see Series 300) so that the tension has to be added to the solenoid valve code:

M9 = coil 24 V D.C. (rating power 2 Watt)
M11 = coil 24 V D.C. (rating power 3.8 watt)
M56 = coil 24 V 50/60 Hz (rating power 9 VA)
M57 = coil 110 V 50/60 Hz (rating power 9 VA)
M58 = coil 230 V 50/60 Hz (rating power 9 VA)

The Solenoid valves **G1/4" (T424)**, are manufactured, depending on version and actuation (manual, pneumatic, or electrical), and self aligning (pneumatic-electric or spring) 3/2, 5/2 and 5/3 ways function, (monostable), (bistable).

The solenoid valves are supplied complete with coil so that the tension has to be added to the solenoid valve code.

B04 = coil 12 V D.C. **B05** = coil 24 V D.C. **B09** = coil 24 V (2W) D.C. **B56** = coil 24 V 50/60 Hz **B57** = coil 110 V 50/60 Hz **B58** = coil 230 V 50/60 Hz

Body	Technopolymer
Spacers	Technopolymer
Seals	NBR
Pistons seal	NBR
Springs	AISI 302 stainless steel
Operators	Technopolymer
Pistons	Technopolymer
Spools	Nickel - plated steel / Technopolymer

Thread	Maximum torque (Nm)
G 1/8"	4
G1/4"	9

Use and maintenance

This valves have an average life of 15 million cycles depending on the application and air quality.

Filtered and lubricated air using specified lubricants will reduce the wear of the seals and ensures long and trouble free operation.

Please ensure that the valve is being used according with the manufacturers specification, such as air pressure and temperature.

The exhaust port of the distributor has to be protected in a dusty and dirty environment.

 $Repair \ kits \ including \ the \ spool \ complete \ with \ seals \ are \ available \ for \ overhauling \ the \ valves.$

However, although this is a simple operation it should be carried out by a competent person.

ATTENTION: use hydraulic oil class H for lubrication such as CASTROL MAGNA SW32.

[&]quot;Shifting time of pneumatic directional control valves or moving parts, logic devices were measured in accordance to ISO 12238:2001"



Pneumatic - Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	620	
Orifice size (mm)	6	
Working ports size	G 1/8"	

Coding: T488. 11.1

	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



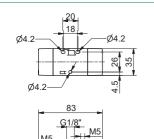


3/2 ways



Weight 69 g Minimum working pressure 2,5 bar

T488.32.11.1

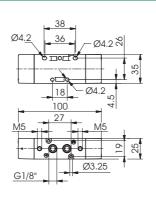


_32

Weight 83 g Minimum working pressure 2,5 bar

5/2 ways

T488.52.11.1

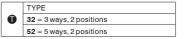


Pneumatic-Differential

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	620	
Orifice size (mm)	6	
Working ports size	G 1/8"	

Ø3.2

Coding: T488. **1**.11.12







3/2 ways



Weight 69 g

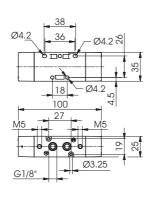
T488.32.11.12

Ø4.2	
83 G1/8" M5 M5 M5 M5 M5 M5 M5 M5 M5 M5	

Weight 83 g

5/2 ways

T488.52.11.12



Pneumatic - Pneumatic

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	620	
Orifice size (mm)	6	
Working ports size	G 1/8"	

Coding: T488. **1**.11.11

	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



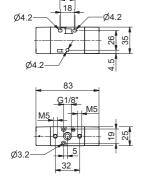






Weight 68 g Minimum working pressure 2 bar

T488.32.11.11

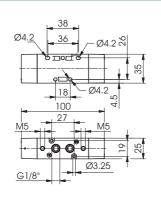


5/2 ways



Weight 83 g Minimum working pressure 2 bar

T488.52.11.11





Pneumatic-Pneumatic 5/3

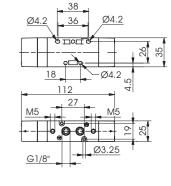
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	410	
Orifice size (mm)	6	
Working ports size	G 1/8"	

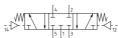
Coding: T488.53. **3**.11.11

	FUNCTION
	31 = Closed centres
•	32 = Open centres
	33 = Pressured centres

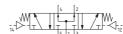














Solenoid-Spring (Self feeding)

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	620	
Orifice size (mm)	6	
Working ports size	G 1/8"	
Response time according to ISO 12238, activation time (ms)	23,4 (3 ways)	
The sponse time according to 150 12250; activation time (1115)	22,8 (5 ways)	
Response time according to ISO 12238, deactivation time (ms)	41,0 (3 ways)	
Tresponse time according to 100 12230, deactivation time (IIIs)	44,5 (5 ways)	

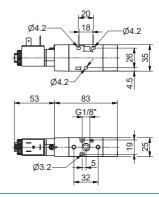
Coding: T488. **1**.0.1.

	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
•	VOLTAGE
	M9 = 24 V D.C.
	M11 = 24 V D.C.
	M56 = 24 V 50/60 Hz
	M57 = 110 V 50/60 Hz
	M58 = 230 V 50/60 Hz



Weight 160 g Minimum working pressure 2,5 bar

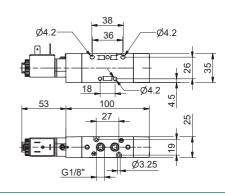
T488.32.0.1.





Weight 190 g Minimum working pressure 2,5 bar

T488.52.0.1.**♥**





Solenoid-Spring (External feeding)

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	620	
Orifice size (mm)	6	
Working ports size	G 1/8"	
Response time according to ISO 12238, activation time (ms)	23,4 (3 ways) 22,8 (5 ways)	
Response time according to ISO 12238, deactivation time (ms)	41,0 (3 ways) 44,5 (5 ways)	

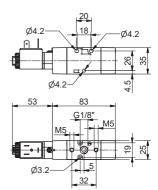
Coding: T488. **1**.0.1 E. **V**

	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
•	VOLTAGE
	M9 = 24 V D.C.
	M11 = 24 V D.C.
	M56 = 24 V 50/60 Hz
	M57 = 110 V 50/60 Hz
	M58 = 230 V 50/60 Hz



Weight 160 g Minimum working pressure 2,5 bar

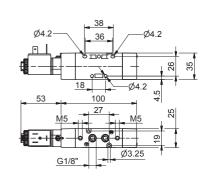
T488.32.0.1E.





Weight 190 g Minimum working pressure 2,5 bar

T488.52.0.1E.♥







Solenoid-Differential (Self feeding)

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	620
Orifice size (mm)	6
Working ports size	G 1/8"
Response time according to ISO 12238, activation time (ms)	31,1 (3 ways) 27,9 (5 ways)
Response time according to ISO 12238, deactivation time (ms)	35,0 (3 ways) 34,5 (5 ways)

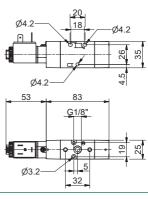
Coding: T488. **1**.0.12.

	TYPE	
•	32 = 3 ways, 2 positions	
	52 = 5 ways, 2 positions	
	VOLTAGE	
•	M9 = 24 V D.C.	
	M11 = 24 V D.C.	
	M56 = 24 V 50/60 Hz	
	M57 = 110 V 50/60 Hz	
	M58 = 230 V 50/60 Hz	



Weight 160 g Minimum working pressure 2,5 bar

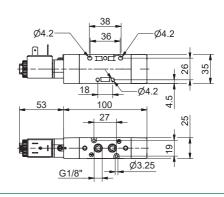
T488.32.0.12.





Weight 190 g Minimum working pressure 2,5 bar

T488.52.0.12.♥





Solenoid-Differential (External feeding)

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	620
Orifice size (mm)	6
Working ports size	G 1/8"
Response time according to ISO 12238, activation time (ms)	31,1 (3 ways) 27,9 (5 ways)
Response time according to ISO 12238, deactivation time (ms)	35,0 (3 ways) 34,5 (5 ways)

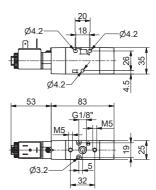
Coding: T488.**①**.0.12E.**♡**

	TYPE
0	32 = 3 ways, 2 positions
_	52 = 5 ways, 2 positions
	VOLTAGE
	M9 = 24 V D.C.
	M11 = 24 V D.C.
V	M56 = 24 V 50/60 Hz
	M57 = 110 V 50/60 Hz
	M58 = 230 V 50/60 Hz
	`



Weight 160 g Minimum working pressure 2,5 bar

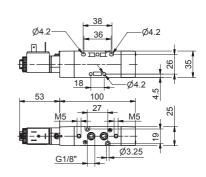
T488.32.0.12E.♥

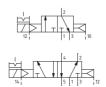




Weight 190 g Minimum working pressure 2,5 bar

T488.52.0.12E.♥







Solenoid-Solenoid (Self feeding)

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	620	
Orifice size (mm)	6	
Working ports size	G 1/8"	
Response time according to ISO 12238, activation time (ms)	18,8 (3 ways) 18,0 (5 ways)	
Response time according to ISO 12238, deactivation time (ms)	18,0 (3 ways) 19,1 (5 ways)	

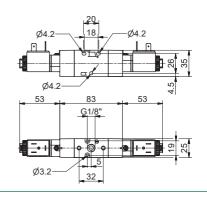
Coding:	T488	.0.	0.0
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	TYPE
D	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	VOLTAGE
	M9 = 24 V D.C.
	M11 = 24 V D.C.
V	M56 = 24 V 50/60 Hz
	M57 = 110 V 50/60 Hz
	M58 = 230 V 50/60 Hz



Weight 250 g Minimum working pressure 2 bar

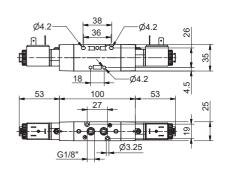
T488.32.0.0.





Weight 290 g Minimum working pressure 2 bar

T488.52.0.0.**♥**





7 T V 5 1 3

Solenoid-Solenoid (External feeding)

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	620
Orifice size (mm)	6
Working ports size	G 1/8"
Response time according to ISO 12238, activation time (ms)	18,8 (3 ways) 18,0 (5 ways)
Response time according to ISO 12238, deactivation time (ms)	18,0 (3 ways) 19,1 (5 ways)

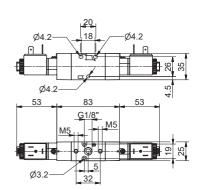
Coding: T488.**①**.0.0E.**♡**

	TYPE
•	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	VOLTAGE
•	M9 = 24 V D.C.
	M11 = 24 V D.C.
	M56 = 24 V 50/60 Hz
	M57 = 110 V 50/60 Hz
	M58 = 230 V 50/60 Hz



Weight 250 g Minimum working pressure 2 bar

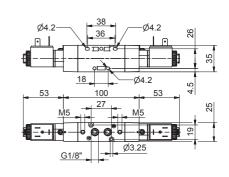
T488.32.0.0E.

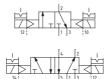




Weight 290 g Minimum working pressure 2 bar

T488.52.0.0E.**♥**





AIR DISTRIBUTION

Solenoid-Solenoid 5/3 (Self feeding)

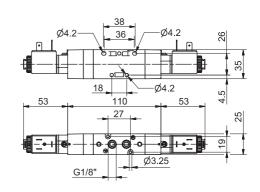
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	410
Orifice size (mm)	6
Working ports size	G 1/8"
Response time according to ISO 12238, activation time (ms)	21,3 (closed centres) 21,5 (open centres) 19,5 (pressured centres)
Response time according to ISO 12238, deactivation time (ms)	37,0 (closed centres) 34,5 (open centres) 37,3 (pressured centres)

Coding: T488.53.**⊕**.0.0.**♥**

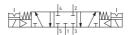
FUNCTION
31 = Closed centres
32 = Open centres
33 = Pressured centres
VOLTAGE
M9 = 24 V D.C.
M11 = 24 V D.C.
M56 = 24 V 50/60 Hz
M57 = 110 V 50/60 Hz
M58 = 230 V 50/60 Hz

Minimum working pressure 3 bar Weight 330 g





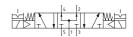
T488.53.31.0.0.



T488.53.32.0.0.**♥**



T488.53.33.0.0.



Solenoid-Solenoid 5/3 (External feeding)

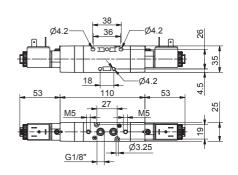
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	410
Orifice size (mm)	6
Working ports size	G 1/8"
Response time according to ISO 12238, activation time (ms)	21,3 (closed centres) 21,5 (open centres) 19,5 (pressured centres)
Response time according to ISO 12238, deactivation time (ms)	37,0 (closed centres) 34,5 (open centres) 37,3 (pressured centres)

Coding: T488.53.**●**.0.0E.**♥**

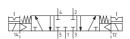
	FUNCTION
	31 = Closed centres
•	32 = Open centres
	33 = Pressured centres
	VOLTAGE
	M9 = 24 V D.C.
•	M11 = 24 V D.C.
	M56 = 24 V 50/60 Hz
	M57 = 110 V 50/60 Hz
	M58 = 230 V 50/60 Hz

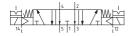
Minimum working pressure 3 bar Weight 330 g

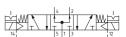




T488.53.31.0.0E.







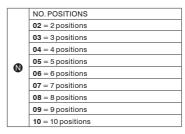
T488.53.32.0.0E. T488.53.33.0.0E.**♥**

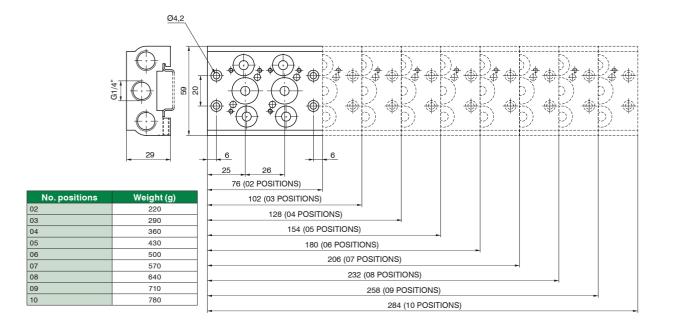


Collectors



Coding: T488.





Modular base



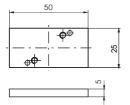
Coding: T488.

TYPE
01 = Single complete base
01K = Complete modular bases (batches of 20 pieces)
30K = Hollow bush, complete with O-rings (No. 50 pieces)
31K = Blank bush, complete with O-rings (No. 50 pieces)
32K = Intermediate air intake with screw (No. 5 pieces)
33 = Screw to suite solenoid valves (No. 50 pieces)
34 = Screw for joning bases (No. 50 pieces)
35 = Washer for screw for joning bases (No. 50 pieces)
36 = OR (No. 50 pieces)

Closing plate



Coding: T488.00



Weight 25 g



Solenoid-Spring (Self feeding)

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	1050
Orifice size (mm)	8.5
Working ports size	G 1/4"

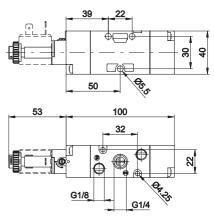
Coding: T424.**①**.0.1.**◎**

	TYPE
•	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	VOLTAGE
•	B04 = 12 V DC
	B05 = 24 V DC
	B09 = 24 V DC (2 W)
	B56 = 24 V 50-60 Hz
	B57 = 110 V 50-60 Hz
	B58 = 230 V 50-60 Hz



Weight 205 g Minimum pilot pressure 2,5 bar

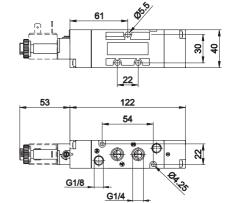
T424.32.0.1.





Weight 235 g Minimum pilot pressure 2,5 bar

T424.52.0.1.





Solenoid-Spring (External feeding)

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	1050
Orifice size (mm)	8.5
Working ports size	G 1/4"
Pilot ports size	G 1/8"

Coding: T424.**①**.0.1.E.**②**

Ū	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	VOLTAGE
•	B04 = 12 V DC
	B05 = 24 V DC
	B09 = 24 V DC (2 W)
	B56 = 24 V 50-60 Hz
	B57 = 110 V 50-60 Hz
	B58 = 230 V 50-60 Hz



Weight 205 g Minimum pilot pressure 2,5 bar

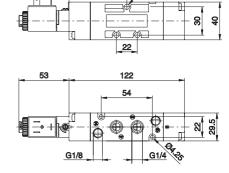
T424.32.0.1.E.

100 32



Weight 235 g Minimum pilot pressure 2,5 bar

T424.52.0.1.E.♥

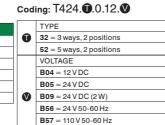






Solenoid-Differential (Self feeding)

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	1050
Orifice size (mm)	8.5
Working ports size	G 1/4"



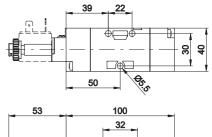
 $B58 = 230 \, V \, 50 \text{-} 60 \, Hz$



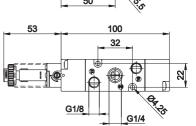
Weight 205 g Minimum pilot pressure 2 bar

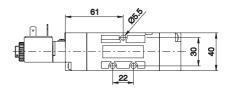
Weight 235 g Minimum pilot pressure 2 bar

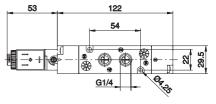
T424.52.0.12.♥



T424.32.0.12.









Solenoid-Differential (External feeding)

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with ∆p=1 (NI/min)	1050	
Orifice size (mm)	8.5	
Working ports size	G 1/4"	
Pilot norts size	G 1/8"	

Coding: T424. **1**.0.12. E. **♥**

•	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
•	VOLTAGE
	B04 = 12 V DC
	B05 = 24 V DC
	B09 = 24 V DC (2 W)
	B56 = 24 V 50-60 Hz
	B57 = 110 V 50-60 Hz
	B58 = 230 V 50-60 Hz

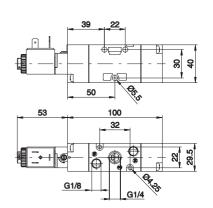


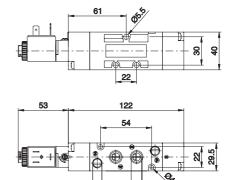
T424.32.0.12.E.

Weight 205 g Minimum pilot pressure 2 bar

Weight 235 g Minimum pilot pressure 2 bar

T424.52.0.12.E.♥







Solenoid-Solenoid (Self feeding)

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar) 10		
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	1050	
Orifice size (mm)	8.5	
Working ports size	G 1/4"	

Coding: T424.**①**.0.0.**♡**

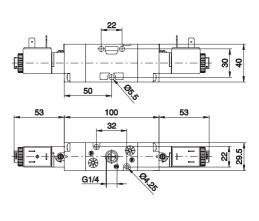
	TYPE	
•	32 = 3 ways, 2 positions	
	52 = 5 ways, 2 positions	
	VOLTAGE	
	B04 = 12 V DC	
	B05 = 24 V DC	
V	B09 = 24 V DC (2 W)	
	B56 = 24 V 50-60 Hz	
	B57 = 110 V 50-60 Hz	
	B58 = 230 V 50-60 Hz	



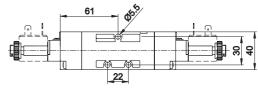
Weight 240 g Minimum pilot pressure 2 bar

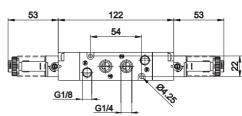
Weight 270 g Minimum pilot pressure 2 bar

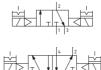
T424.32.0.0.



T424.52.0.0.**Ø**







Solenoid-Solenoid (External feeding)

,		
Operational characteristics		
Fluid Filtered air. No lubrication needed, if applied it shall be continue		
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	1050	
Orifice size (mm)	8.5	
Working ports size	G 1/4"	
Pilot porte size	G 1/8"	

Coding: T424. **1**.0.0. E. **V**

	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	VOLTAGE
•	B04 = 12 V DC
	B05 = 24 V DC
	B09 = 24 V DC (2 W)
	B56 = 24 V 50-60 Hz
	B57 = 110 V 50-60 Hz
	B58 = 230 V 50-60 Hz



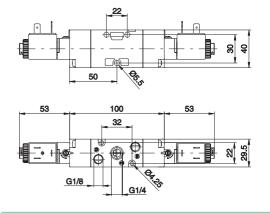
Weight 240 g Minimum pilot pressure 2 bar



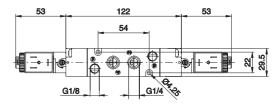
Weight 270 g Minimum pilot pressure 2 bar

T424.32.0.0.E.

T424.52.0.0.E.**Ø**



61 65 1 C	
8	40
22	







Solenoid-Solenoid (Self feeding)

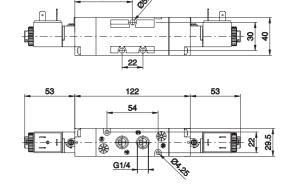
Operational characteristics			
Fluid Filtered air. No lubrication needed, if applied it shall be continuous			
Max. working pressure (bar)	10		
Temperature °C	-5 +50		
Flow rate at 6 bar with Δp=1 (NI/min)	900		
Orifice size (mm)	8.5		
Working ports size	G 1/4"		

Coding: T424.53. **6**.0.0.

	FUNCTION	
•	31 = Closed centres	
32 = Open centres		
	33 = Pressured centres	
	VOLTAGE	
	B04 = 12 V DC	
	B05 = 24 V DC	
B09 = 24 V DC (2 W)		
	B56 = 24 V 50-60 Hz	
	B57 = 110 V 50-60 Hz	
	B58 = 230 V 50-60 Hz	

Weight 295 g Minimum pilot pressure 3 bar

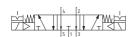




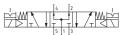
T424.53.31.0.0.



T424.53.32.0.0.



T424.53.33.0.0.



Solenoid-Solenoid (External feeding)

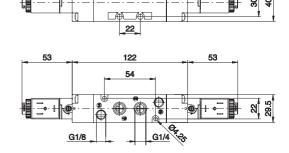
Operational characteristics			
Fluid Filtered air. No lubrication needed, if applied it shall be continuous			
Max. working pressure (bar)	10		
Temperature °C	°C -5+50		
Flow rate at 6 bar with Δp=1 (NI/min)	900		
Orifice size (mm)	8.5		
Working ports size	G 1/4"		
Pilot ports size	G 1/8"		

Coding: T424.53.**€**.0.0.E.**♥**

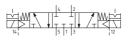
	FUNCTION
a	31 = Closed centres
•	32 = Open centres
	33 = Pressured centres
•	VOLTAGE
	B04 = 12 V DC
	B05 = 24 V DC
	B09 = 24 V DC (2 W)
	B56 = 24 V 50-60 Hz
	B57 = 110 V 50-60 Hz
	B58 = 230 V 50-60 Hz
	11005

Weight 295 g Minimum pilot pressure 3 bar

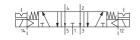




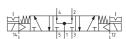
T424.53.31.0.0.E.



T424.53.32.0.0.E.**♥**



T424.53.33.0.0.E.



03

04

05

06

07 08

09

10

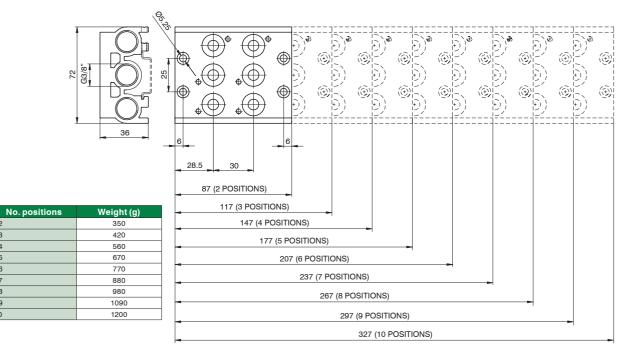


Collectors



Coding: T424.

	NO. POSITIONS
	02 = 2 positions
	03 = 3 positions
	04 = 4 positions
	05 = 5 positions
0	06 = 6 positions
	07 = 7 positions
	08 = 8 positions
	09 = 9 positions
	10 = 10 positions



Modular base



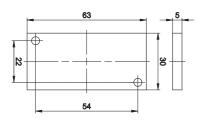
Coding: T424.

	TYPE
	01 = Single complete base
	01K = Complete modular bases (batches of 15 pieces)
	30K = Hollow bush, complete with O-rings (No. 50 pieces)
	31K = Blank bush, complete with O-rings (No. 50 pieces)
0	32K = Intermediate air intake with screw (No. 5 pieces)
	33 = Screw to suite solenoid valves (No. 50 pieces)
	34 = Screw for joning bases (No. 50 pieces)
	35 = Washer for screw for joning bases (No. 50 pieces)
	36 = OR (No. 50 pieces)

Closing plate



Coding: T424.00



Weight 25 g



Series 2100 - 2400 - 2600

This solenoid valves series have been developed to meet requirements for electronically controlled pneumatic systems and / or serial control systems already used in all manufacturing sectors.

They have been designed to be easily assembled into groups or manifolds and include integral electrical connection (2100 and 2400), to facilitate simple and speedy integration into a control system.

The series comprises a range of products classified according to type, size and performance.

There are tree main sizes, 10mm., 18 mm. and 26 mm., with each size further divided into 3 types "LINE", "FLAT" and "VDMA" or "BASE".

The 10 mm and 18 mm 24 VDC range of valves includes a range of accessories for the production of manifolded valve assemblies with integral electrical connections.

Modules are available in two or four station variants for flexibility and are supplied to IP40 or alternatively IP65 environmental protection.

Construction characteristics			
	Series 2100	Series 2400	Series 2600
Central body	Extruded aluminium bar with chemical nickel treatment and PTFE (polytetrafleurethylene)	Extruded aluminium bar with chemical nickel treatment and PTFE (polytetrafleurethylene)	Extruded aluminium bar with chemical nickel treatment and PTFE (polytetrafleurethylene)
Connection plates	Technopolymer	Zincalloy	Die-cast aluminium
Pistons seal	Oil resistant nitrile rubber-NBR	Oil resistant nitrile rubber-NBR	Oil resistant nitrile rubber-NBR
Spool seals	Oil resistant nitrile rubber-HNBR	Oil resistant nitrile rubber-HNBR	Oil resistant nitrile rubber-HNBR
Springs	AISI 302 stainless steel	AISI 302 stainless steel	AISI 302 stainless steel
Operators	Technopolymer	Technopolymer	Technopolymer
Pistons	Aluminium 2011	Technopolymer	Technopolymer
Spools	Aluminium 2011	Aluminium 2011	Aluminium 2011

Use and maintenance

The average life of the valve exceeds 50.000.000 cycles when used under optimum conditions.

Adequate lubrication reduces seals wear, just as proper filtering of supply air prevents the build-up of dirt that can cause malfunction.

Ensure the valve is used within our recommended criteria for pressure and temperature.

In dirty or dusty environments, the exhaust ports should be protected. \\

Seals kits are available for repairs.

Repairs must be made exclusively by specialized personnel.

IR DISTRIBUTION

Series 2100

This solenoid valves series has been developed to meet requirements for electronically controlled pneumatic systems and / or serial control systems already used in all manufacturing sectors.

They have been designed to be easily assembled into groups or manifolds and include integral electrical connection to facilitate simple and speedy integration into a control system.

The 2100 series comprises a range of products classified according to the body size of 10 mm divided into 3 types "LINE", "FLAT" and "BASE". The 10mm, and 18 mm, 24 VDC range of valves includes a range of accessories for the production of manifolded valve assemblies with integral electrical connections.

Modules are available in two or four station variants for flexibility and are supplied to IP40 or alternatively IP65 environmental protection.

Construction characteristics

Central body	Extruded aluminium bar with chemical nickel treatment and PTFE (polytetrafleurethylene)
Connection plates	Technopolymer
Spool seals	Oil resistant nitrile rubber-HNBR
Springs	AISI 302 stainless steel
Operators	Technopolymer
Pistons	Aluminium 2011
Spools	Aluminium 2011

Ordering codes for minature solenoid valves

The 10 mm. miniature solenoid valve with 0,7 mm. orifice has been selected for piloting this series of valves (see Series 300).

This results in low response times and reduced power consumption.

The valve can be supplied with the coil upward or downward depending on the application.

Codes are as follows:

Coil upward code

 $01 = miniature sol. + 12 V DC 90^{\circ}conn.$ with LED

21 = miniature sol. + 12 V DC line conn. with LED

02 = miniature sol. + 24 V DC 90°conn. with LED

22 = miniature sol. + 24 V DC line conn. with LED

Coil downward code

 $11 = miniature sol. + 12 V DC 90^{\circ}conn.$ with LED

31 = miniature sol. + 12 V DC line conn. with LED

12 = miniature sol. + 24 V DC 90°conn. with LED

32 = miniature sol. + 24 V DC line conn. with LED

91 = miniature sol. + 12 V DC for integral electrical connections

92 = miniature sol. + 24 V DC for integral electrical connections

Miniature solenoid the Mus homologated are available (see Series 300).

Use and maintenance

The average life of the solenoid valve exceeds 50.000.000 cycles when used under optimum conditions.

Adequate Iubrication reduces seals wear, just as proper filtering of supply air prevents the build-up of dirt that can cause malfunction.

Ensure the valve is used within our recommended criteria for pressure and temperature.

In dirty or dusty environments, the exhaust ports should be protected.

Seals kits are available for repairs.

Repairs must be made exclusively by specialized personnel.



Pneumatic - Spring

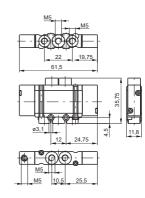
Coding: 2115.52.00.19

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	7
Temperature °C	-5 +50
Flow rate at 6 bar with ∆p=1 (NI/min)	150
Orifice size (mm)	2.5
Working ports size	M5



Weight 30 g Minimum pilot pressure 2 bar

Working ports size





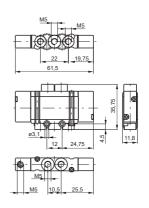
Coding: 2115.52.00.16

Pneumatic-Differential

Operational characteristics Fluid Filtered air. No lubrication needed, if applied it shall be continuous Max. working pressure (bar) Temperature °C -5 ... +50 Flow rate at 6 bar with $\Delta p=1$ (NI/min) 150 Orifice size (mm) 2.5



Weight 28 g Minimum pilot pressure 2 bar



M5



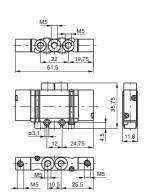
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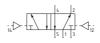
Pneumatic - Pneumatic

Operational characteristics Filtered air. No lubrication needed, if applied it shall be continuous Max. working pressure (bar) Temperature °C -5 ... +50 Flow rate at 6 bar with $\Delta p=1$ (NI/min) 150 Orifice size (mm) 2.5 Working ports size



Weight 30 g Minimum pilot pressure 2 bar







Solenoid - Spring

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	7
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	150
Orifice size (mm)	2.5
Working ports size	M5



Weight 42 g Minimum pilot pressure 2 bar

3.1 12 24.75 9 11.8

Coding: 2115.52.00.39.

downward

VOLTAGE		
01 = + 12 V DC 90° conn. with LED		
21 = + 12 V DC line conn. with LED		
$02 = +24 \text{ V DC } 90^{\circ} \text{ conn. with LED}$		
22 = + 24 V DC line conn. with LED		
11 = + 12 V DC 90° conn. with LED		
downward		
31 = + 12 V DC line conn. with LED		
downward		
12 = + 24 V DC 90° conn. with LED		
downward		
20 - LOAVACCION CONTRACTO		

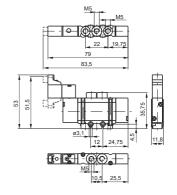


Solenoid - Differential

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	7
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	150
Orifice size (mm)	2.5
Working ports size	M5



Weight 42 g Minimum pilot pressure 2 bar



Coding: 2115.52.00.36.

	VOLTAGE	
	01 = + 12 V DC 90° conn. with LED	
	21 = + 12 V DC line conn. with LED	
	$02 = +24 \text{ V DC } 90^{\circ} \text{ conn. with LED}$	
	22 = + 24 V DC line conn. with LED	
	11 = + 12 V DC 90° conn. with LED	
0	downward	
_	31 = + 12 V DC line conn. with LED	
	downward	
	12 = + 24 V DC 90° conn. with LED	
	downward	
	32 = + 24 V DC line conn. with LED	
	downward	

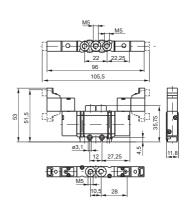


Solenoid - Solenoid

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	7
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	150
Orifice size (mm)	2.5
Working ports size	M5



Weight 52 g Minimum pilot pressure 2 bar



Coding: 2115.52.00.35.

	VOLTAGE
	$01 = + 12 \text{ V DC } 90^{\circ} \text{ conn. with LED}$
	21 = + 12 V DC line conn. with LED
	02 = + 24 V DC 90° conn. with LED
	22 = + 24 V DC line conn. with LED
	11 = + 12 V DC 90° conn. with LED
0	downward
	31 = + 12 V DC line conn. with LED
	downward
	12 = + 24 V DC 90° conn. with LED
	downward
	32 = + 24 V DC line conn. with LED
	downward





Pneumatic - Pneumatic 5/3

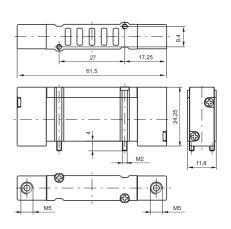
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	7
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	180 (Pressured centres) 130 (Closed centres) 140 (Open centres)
Orifice size (mm)	2.5
Working ports size	M5

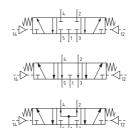
Coding: 2115.53. 3 .18		
		FUNCTION
		31 = Closed centres
7	•	32 = Open centres

33 = Pressured centres



Weight 32 g Minimum pilot pressure 2,5 bar





Solenoid - Solenoid 5/3

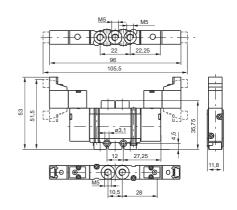
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	7	
Temperature °C	-5 +50	
Flow rate at 6 bar with ∆p=1 (NI/min)	180 (Pressured centres) 130 (Closed centres) 140 (Open centres)	
Orifice size (mm)	2.5	
Working ports size	M5	

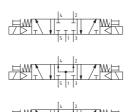
Coding: 2115.53. **3**.35.

	FUNCTION
a	31 = Closed centres
•	32 = Open centres
	33 = Pressured centres
	VOLTAGE
	01 = + 12 V DC 90° conn. with LED
	21 = + 12 V DC line conn. with LED
	02 = + 24 V DC 90° conn. with LED
	22 = + 24 V DC line conn. with LED
	11 = + 12 V DC 90° conn. with LED
0	downward
	31 = + 12 V DC line conn. with LED
	downward
	12 = + 24 V DC 90° conn. with LED
	downward
	32 = + 24 V DC line conn. with LED
	downward



Weight 54 g Minimum pilot pressure 2,5 bar





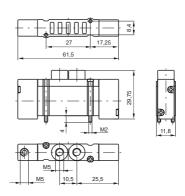


Pneumatic - Spring

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	7
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	150
Orifice size (mm)	2.5
Working ports size	M5



Weight 32 g Minimum pilot pressure 2 bar





Coding: 2135.52.00.16

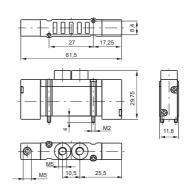
Coding: 2135.52.00.19

Pneumatic-Differential

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	7
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	150
Orifice size (mm)	2.5
Working ports size	M5



Weight 30 g Minimum pilot pressure 2 bar





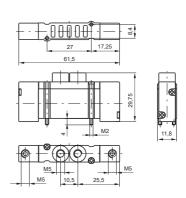
Coding: 2135.52.00.18

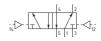
Pneumatic - Pneumatic

<u> </u>		
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	7	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	150	
Orifice size (mm)	2.5	
Working ports size	M5	



Weight 32 g Minimum pilot pressure 2 bar



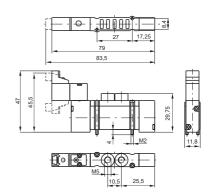


Solenoid - Spring

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	7
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	150
Orifice size (mm)	2.5
Working ports size	M5



Weight 38 g Minimum pilot pressure 2 bar



Coding: 2135.52.00.39.

	VOLTAGE
	01 = + 12 V DC 90° conn. with LED
	21 = + 12 V DC line conn. with LED
	02 = + 24 V DC 90° conn. with LED
	22 = + 24 V DC line conn. with LED
	11 = + 12 V DC 90° conn. with LED
	downward
	31 = + 12 V DC line conn. with LED
•	downward
	12 = + 24 V DC 90° conn. with LED
	downward
	32 = + 24 V DC line conn. with LED
	downward
	91 = + 12 V DC for integral electrical
	connections downward
	92 = + 24 V DC for integral electrical
	connections downward

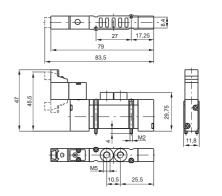


Solenoid - Differential

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	7
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	150
Orifice size (mm)	2.5
Working ports size	M5



Weight 38 g Minimum pilot pressure 2 bar



Coding: 2135.52.00.36.

	VOLTAGE
	01 = + 12 V DC 90° conn. with LED
	21 = + 12 V DC line conn. with LED
	02 = + 24 V DC 90° conn. with LED
	22 = + 24 V DC line conn. with LED
	11 = + 12 V DC 90° conn. with LED
	downward
	31 = + 12 V DC line conn. with LED
0	downward
	12 = + 24 V DC 90° conn. with LED
	downward
	32 = + 24 V DC line conn. with LED
	downward
	91 = + 12 V DC for integral electrical
	connections downward
	92 = + 24 V DC for integral electrical
	connections downward

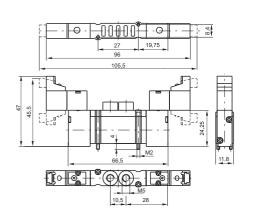


Solenoid - Solenoid

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	7
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	150
Orifice size (mm)	2.5
Working ports size	M5



Weight 50 g Minimum pilot pressure 1,5 bar



Coding: 2135.52.00.35.

_		
		VOLTAGE
٦		01 = + 12 V DC 90° conn. with LED
ī		21 = + 12 V DC line conn. with LED
		02 = + 24 V DC 90° conn. with LED
		22 = + 24 V DC line conn. with LED
		11 = + 12 V DC 90° conn. with LED
		downward
		31 = + 12 V DC line conn. with LED
	0	downward
		12 = + 24 V DC 90° conn. with LED
		downward
		32 = + 24 V DC line conn. with LED
		downward
		91 = + 12 V DC for integral electrical
		connections downward
		92 = + 24 V DC for integral electrical
		connections downward





Pneumatic - Pneumatic 5/3

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	7	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	180 (Pressured centres) 130 (Closed centres) 140 (Open centres)	
Orifice size (mm)	2.5	
Working ports size	M5	

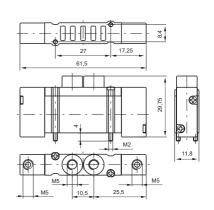
Coding: 2135.53. **6**.18

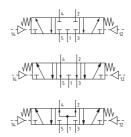
	FUNCTION
	31 = Closed centres
32 = Open centres	
	33 = Pressured centres





Weight 28 g Minimum pilot pressure 2 bar





Solenoid - Solenoid 5/3

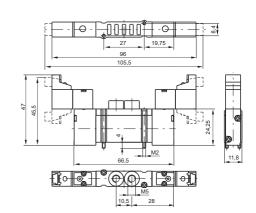
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	7
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	180 (Pressured centres) 130 (Closed centres) 140 (Open centres)
Orifice size (mm)	2.5
Working ports size	M5

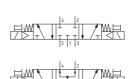
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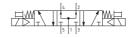
	FUNCTION
	FUNCTION
•	31 = Closed centres
•	32 = Open centres
	33 = Pressured centres
	VOLTAGE
	$01 = + 12 \text{V} \text{DC} 90^{\circ} \text{conn.}$ with LED
	21 = + 12 V DC line conn. with LED
	$02 = +24 \text{ V DC } 90^{\circ} \text{ conn. with LED}$
	22 = + 24 V DC line conn. with LED
	$11 = + 12 \text{ V DC } 90^{\circ} \text{ conn. with LED}$
	downward
	31 = + 12 V DC line conn. with LED
•	downward
	$12 = +24 \text{V}\text{DC}90^{\circ}\text{conn.}$ with LED
	downward
	32 = +24 V DC line conn. with LED
	downward
	91 = + 12 V DC for integral electrical
	connections downward
	92 = + 24 V DC for integral electrical
	connections downward



Weight 52 g Minimum pilot pressure 2,5 bar









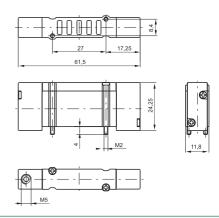
Pneumatic - Spring

Coding: 2141.52.00.19

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	7	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	150	
Orifice size (mm)	2.5	
Working ports size	M5	



Weight 24 g Minimum pilot pressure 2 bar





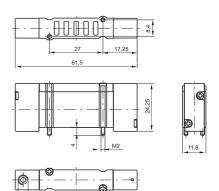
Pneumatic-Differential

Coding: 2141.52.00.16

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	7	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	150	
Orifice size (mm)	2.5	
Working ports size	M5	



Weight 22 g Minimum pilot pressure 2 bar





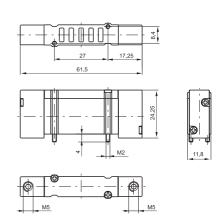
Coding: 2141.52.00.18

Pneumatic - Pneumatic

Operational characteristics Filtered air. No lubrication needed, if applied it shall be continuous Max. working pressure (bar) Temperature °C -5 ... +50 Flow rate at 6 bar with $\Delta p=1$ (NI/min) 150 Orifice size (mm) 2.5 Working ports size М5



Weight 26 g Minimum pilot pressure 1,5 bar





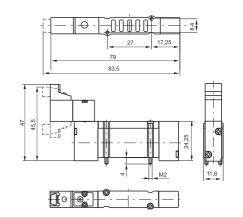


Solenoid - Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	7	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	150	
Orifice size (mm)	2.5	
Working ports size	M5	



Weight 38 g Minimum pilot pressure 2 bar



Coding: 2141.52.00.39.

VOLTAGE

	01 = + 12 V DC 90° conn. with LED		
	21 = + 12 V DC line conn. with LED		
	02 = + 24 V DC 90° conn. with LED		
	22 = + 24 V DC line conn. with LED		
	11 = + 12 V DC 90° conn. with LED		
	downward		
	31 = + 12 V DC line conn. with LED downward		
0			
	12 = + 24 V DC 90° conn. with LED		
	downward		
	32 = + 24 V DC line conn. with LED		
	downward		
	91 = + 12 V DC for integral electrical		
	connections downward		
	92 = + 24 V DC for integral electrical		
	connections downward		

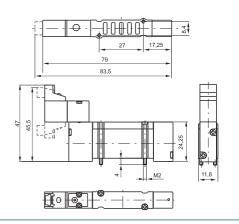


Solenoid - Differential

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	7	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	150	
Orifice size (mm)	2.5	
Working ports size	M5	



Weight 38 g Minimum pilot pressure 2 bar



Coding: 2141.52.00.36.

VOLTAGE		
01 = + 12 V DC 90° conn. with LED		
21 = + 12 V DC line conn. with LED		
02 = + 24 V DC 90° conn. with LED		
22 = + 24 V DC line conn. with LED		
11 = + 12 V DC 90° conn. with LED		
downward		
31 = + 12 V DC line conn. with LED		
downward		
12 = + 24 V DC 90° conn. with LED		
downward		
32 = + 24 V DC line conn. with LED		
downward		
91 = + 12 V DC for integral electrical		
connections downward		
92 = + 24 V DC for integral electrical		
connections downward		

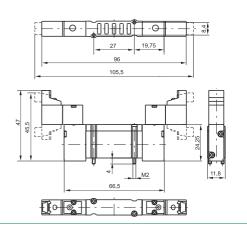


Solenoid - Solenoid

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	7	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	150	
Orifice size (mm)	2.5	
Working ports size	M5	



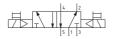
Weight 48 g Minimum pilot pressure 1,5 bar



Coding: 2141.52.00.35.

VOLTAGE

01 = + 12 V DC 90° conn. with LED			
21 = + 12 V DC line conn. with LED			
02 = + 24 V DC 90° conn. with LED			
22 = + 24 V DC line conn. with LED			
11 = + 12 V DC 90° conn. with LED			
downward			
31 = + 12 V DC line conn. with LED			
downward 12 = + 24 V DC 90° conn. with LED downward			
			32 = + 24 V DC line conn. with LED
			downward
91 = + 12 V DC for integral electrical			
connections downward			
92 = + 24 V DC for integral electrical			
connections downward			
•			



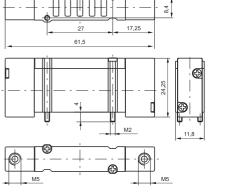
Pneumatic - Pneumatic 5/3

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	7	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	180 (Pressured centres) 130 (Closed centres) 140 (Open centres)	
Orifice size (mm)	2.5	
Working ports size	M5	

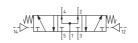
Coding: 2141.5	3. 6 .18
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	FUNCTION
	31 = Closed centres
•	32 = Open centres
	33 = Pressured centres









Solenoid - Solenoid 5/3

Weight 28 g Minimum pilot pressure 2,5 bar

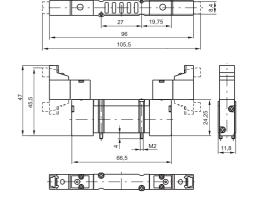
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	7	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	180 (Pressured centres) 130 (Closed centres) 140 (Open centres)	
Orifice size (mm)	2.5	
Working ports size	M5	

Coding: 2141.53. **3**.35.

		g			
		FUNCTION			
1	(3)	31 = Closed centres			
	•	32 = Open centres			
		33 = Pressured centres			
		VOLTAGE			
		01 = + 12 V DC 90° conn. with LED			
ł		21 = + 12 V DC line conn. with LED			
1		02 = + 24 V DC 90° conn. with LED			
J		22 = + 24 V DC line conn. with LED			
		11 = + 12 V DC 90° conn. with LED			
		downward			
		31 = + 12 V DC line conn. with LED			
	0	downward			
		12 = + 24 V DC 90° conn. with LED			
		downward			
	32 = + 24 V DC line conn. with LED				
		downward			
		91 = + 12 V DC for integral electrical			
		connections downward			
		92 = + 24 V DC for integral electrical			
		connections downward			









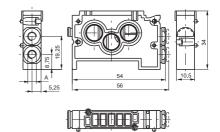


AIR DISTRIBUTION

Modular base for "BASE" version



Weight 22 g



Coding: 214**©**.01

Coding: 2146.01

Coding: 2130.01

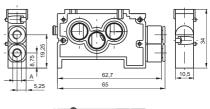
Coding: 2140.02

	VERSION
	0 = modular BASE without cartridges
	4 = modularbasec/wwith4mmtube
	cartridges
V	5 = modular base c/w with M5
	cartridges
	7 = modular base c/w with M7x1
	cartridges

Modular BASE c/w with 6mm tube cartridges



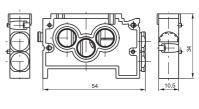
Weight 22 g



Modular base for "FLAT" version



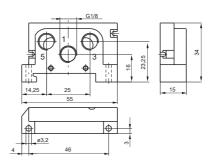
Weight 28 g



Right inlet base



Weight 18 g

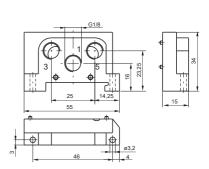


Coding: 2140.03

Left inlet base



Weight 18 g

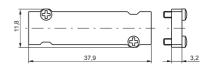




Closing plate

Coding: 2130.00



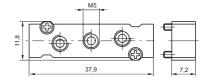


Weight 7 g

Intermediate air intake

Coding: 2130.10



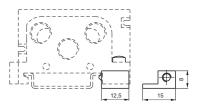


Weight 12 g to be assembled instead of a valve

DIN rail adapter

Coding: 2130.16





Weight 6 g

Modular base cartridge

Coding: 2100.♥



	VERSION
	031M = Ø4 tube cartridge
	033M = M5 cartridges
V	034M = M7x1 cartridges
	035M = lock cartridge
	036M = Ø4 tube cartridge

Weight 5 g

Diaphragm plug

Coding: 2130.17

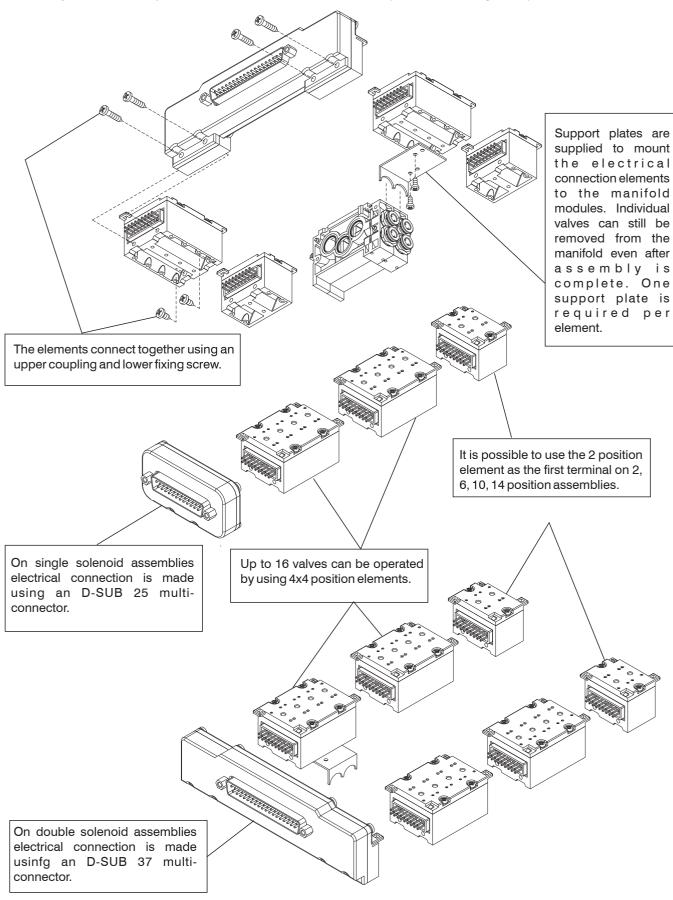


Weight 6 g



The integral electrical design for the series 2100 valve is extremely flexible, allowing the production of pre-wired solenoid valve manifolds, the configuration of which can be determined at the point of assembly. The 24 VDC, 12 VDC (equivalent PNP) modules are available with 2 or 4 positions. The system assembled is designed for an IP40 -IP65 protection.

Coil type 91 or 92 is required for the multipin electrical connection (see valve ordering codes).



Module for connections, 2 positions



Weight 35 g **Note:** with protection diode only direct current (VDC) is available

Coding: 2100.02.♥

Coding: 2100.25.10

 $\textbf{Coding:}\ 2100.00$

	VERSION
	00 = Left IP40-PNP
	02 = Left IP40-PNP with
	protection diode
	10 = Left IP65-PNP
	12 = Left IP65-PNP with
V	protection diode
	01 = Right IP40-PNP
	03 = Right IP40-PNP with
	protection diode
	11 = Right IP65-PNP
	13 = Right IP65-PNP with
	protection diode

Module for connections, 4 positions



Weight 35 g **Note:** with protection diode only direct current (V DC) is available

Coding: 2100.04.**♥**

Coding: 2100.37.10

	VERSION
	00 = Left IP40-PNP
	02 = Left IP40-PNP with
	protection diode
	10 = Left IP65-PNP
	12 = Left IP65-PNP with
V	protection diode
	01 = Right IP40-PNP
	03 = Right IP40-PNP with
	protection diode
	11 = Right IP65-PNP
	13 = Right IP65-PNP with
	protection diode

Connectors 25 poles



The IP65 protection is obtained by IP65 Pneumax cable

Connectors 37 poles



Weight 120 g The IP65 protection is obtained by IP65 Pneumax cable

Plug



Weight 4 g

FLAT support plate



Weight 5 g

Coding: 2130.50

In line cable complete with connector, IP40



Coding: 2400. **@. ...**00

	CONNECTOR	
•	25 = 25 poles	
	37 = 37 poles	
	CABLE LENGTH	
	03 = 3 meters	
•	05 = 5 meters	
	10 = 10 meters	

Cable complete with connector, 25 Poles, IP65



Coding: 2300.25.

	CABLE LENGTH
	03 = 3 meters
	05 = 5 meters
	10 = 10 meters
	CONNECTOR
•	10 = Stand alone
	90 = 90° Angle

Cable complete with connector, 37 Poles, IP65

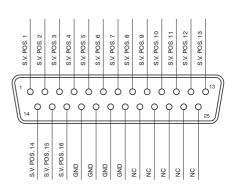


Coding: 2400.37.

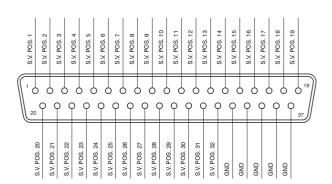
_	
	CABLE LENGTH
	03 = 3 meters
•	05 = 5 meters
	10 = 10 meters
	CONNECTOR
0	10 = Stand alone
	90 = 90° Angle

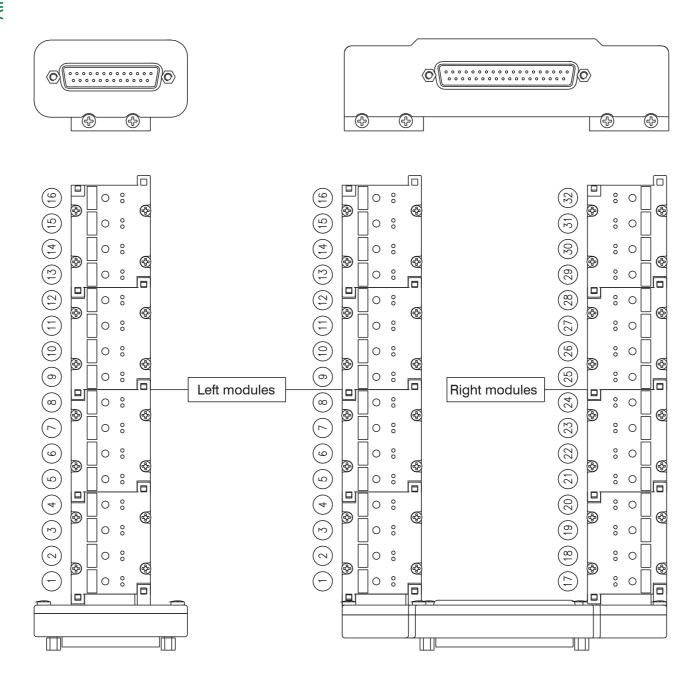


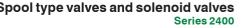
SUB-D 25 POLES CONNECTOR



SUB-D 37 POLES CONNECTOR







Series 2400

This solenoid valves series has been developed to meet requirements for electronically controlled pneumatic systems and / or serial control systems already used in all manufacturing sectors.

They have been designed to be easily assembled into groups or manifolds and include integral electrical connection to facilitate simple and speedy integration into a control system.

The 2400 series comprises a range of products classified according to the body size of 18 mm divided into 3 types "LINE", "FLAT" and "VDMA". The 10mm, and 18 mm, 24 VDC range of valves includes a range of accessories for the production of manifolded valve assemblies with integral electrical connections.

Modules are available in two or four station variants for flexibility and are supplied to IP40 or alternatively IP65 environmental protection.

Construction characteristics Construction characteristics		
Central body	Extruded aluminium bar with chemical nickel treatment and PTFE (polytetrafleurethylene)	
Connection plates	Zinc alloy	
Spool seals	Oil resistant nitrile rubber-HNBR	
Springs	AISI 302 stainless steel	
Operators	Technopolymer	
Pistons	Technopolymer	
Spools	Aluminium 2011	

Use and maintenance

The average life of the solenoid valve exceeds 50.000.000 cycles when used under optimum conditions.

Adequate lubrication reduces seals wear, just as proper filtering of supply air prevents the build-up of dirt that can cause malfunction. Ensure the valve is used within our recommended criteria for pressure and temperature.

In dirty or dusty environments, the exhaust ports should be protected.

Seals kits are available for repairs.

Repairs must be made exclusively by specialized personnel.

Ordering codes for minature solenoid valves

The 15 mm. miniature solenoid valve with 1,1 mm. orifice has been selected for piloting this series of valves (see Series 300).

This results in low response times and reduced power consumption.

The valve can be supplied with the coil upward or downward (multipolar connections) depending on the application.

Codes are as follows:

Coil upward code

01 = miniature sol. + 12 V DC

02 = miniature sol. + 24 V DC

05 = miniature sol. + 24 V AC

06 = miniature sol. 110 V AC

07 = miniature sol. 230 V AC

08 = miniature sol. + 24 V DC 1W

09 = miniature sol. + 24 V DC Earth faston

Coil downward code

11 = miniature sol. + 12 V DC

12 = miniature sol. + 24 V DC

15 = miniature sol. + 24 V AC

16 = miniature sol. 110 V AC

17 = miniature sol. 230 V AC

18 = miniature sol. + 24 V DC 1W

19 = miniature sol. + 24 V DC Earth faston

,	V	Well-tried component
	B _{10d}	50.000.000

- The product is a well-tried product for a safety-related application according to ISO 13849-1.
- The relevant basic and well-tried safety principles according ISO 13849-2 for this product are fulfilled.
- The suitability of the product for a precise application must be verified and confirmed by the user.

Miniature solenoid & Mus homologated are available (see Series 300).



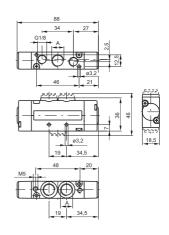
Pneumatic - Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	2	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	800	
Orifice size (mm)	7	
Pilot ports size	M5	

Coding: 241 **3**.52.00.19

	CONNECTION A
	1 = G1/4"
A	5 = G1/8"
	6 = Quick fitting tube Ø6
	8 = Quick fitting tube Ø8





Weight 155 g

For dimension "A" see ordering code



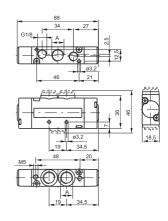
Pneumatic-Differential

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	2	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	800	
Orifice size (mm)	7	
Pilot ports size	M5	

Coding: 241**@**.52.00.16

	CONNECTION A
	1 = G1/4"
A	5 = G1/8"
	6 = Quick fitting tube Ø6
	8 = Quick fitting tube Ø8





Weight 155 g





Pneumatic - Differential (External)

 Operational characteristics

 Fluid
 Filtered air. No lubrication needed, if applied it shall be continuous

 Max. working pressure (bar)
 10

 Minimum pilot pressure (bar)
 2

 Temperature °C
 -5 ... +50

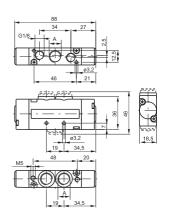
 Flow rate at 6 bar with Δp=1 (NI/min)
 800

 Orifice size (mm)
 7

Coding: 241 (A) .52.00.17

	CONNECTION A
	1 = G1/4"
A	5 = G1/8"
	6 = Quick fitting tube Ø6
	8 = Quick fitting tube Ø8





M5

Weight 155 g

Pilot ports size

For dimension "A" see ordering code



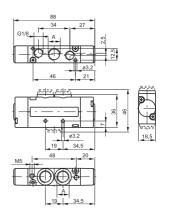
Pneumatic - Pneumatic

Operational characteristics		
Fluid Filtered air. No lubrication needed, if applied it shall be continuous		
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	1.5	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	800	
Orifice size (mm)	7	
Pilot ports size	M5	

Coding: 241**(**3.52.00.18)

CONNECTION A		
	1 = G1/4"	
A	5 = G1/8"	
	6 = Quick fitting tube Ø6	
	8 = Quick fitting tube Ø8	





Weight 155 g





Solenoid-Spring/Differerential

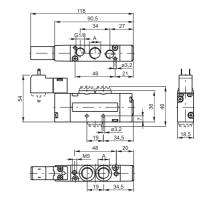
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	2	
Temperature °C	-5 +50	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	800	
Orifice size (mm)	7	
Pilot ports size	M5	

| CONNECTION A | 1 = G1/4" | 5 = G1/8" | 6 = Quick fitting tu | 8 = Quick fitting tu

Coding: 241 **(A**.52.00. **(V**. **(I**)

	CONTRACTION			
	1 = G1/4"			
A	5 = G1/8"			
	6 = Quick fitting tube Ø6			
	8 = Quick fitting tube Ø8			
	VERSION			
	39 = Solenoid-Spring			
	29 = Solenoid external-Spring			
	36 = Solenoid-Differential			
V	37 = Solenoid-Differerential external			
	26 = Solenoid external-Differerential			
	27 = Solenoid external-Differerential			
external				
	VOLTAGE			
	01 = + 12 V DC			
	02 = + 24 V DC			
	05 = + 24 V AC			
	06 = 110 V AC			
	07 = 230 V AC			
	08 = + 24 V DC 1W			
0	09 = + 24 V DC Earth faston			
v	11 = + 12 V DC downward			
	12 = + 24 V DC downward			
	15 = + 24 V AC downward			
	16 = 110 V AC downward			
	17 = 230 V AC downward			
	18 = + 24 V DC 1W downward			
	19 = + 24 V DC Earth faston			





For dimension "A" see ordering code

Weight 195 g







14 2 2 14 1 3 12

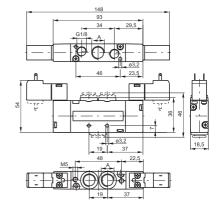
Solenoid - Solenoid

Operational characteristics		
Fluid Filtered air. No lubrication needed, if applied it shall be continuous		
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	1.5	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	800	
Orifice size (mm)	7	
Pilot ports size	M5	

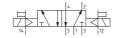
Coding: 241 **(3**.52.00. **(7**.1)

	CONNECTION A
A	1 = G1/4"
	5 = G1/8"
	6 = Quick fitting tube Ø6
	8 = Quick fitting tube Ø8
	VERSION
V	35 = Solenoid-Solenoid
V	24 = Solenoid external-Solenoid
	external
	VOLTAGE
	01 = + 12 V DC
	02 = + 24 V DC
	05 = + 24 V AC
	06 = 110 V AC
	07 = 230 V AC
	08 = + 24 V DC 1W
	09 = + 24 V DC Earth faston
0	11 = + 12 V DC downward
	12 = + 24 V DC downward
	15 = + 24 V AC downward
	16 = 110 V AC downward
	17 = 230 V AC downward
	18 = + 24 V DC 1W downward
	19 = + 24 V DC Earth faston
	downward









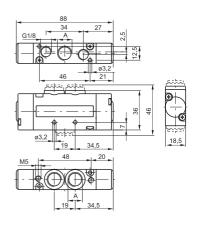
Pneumatic-Pneumatic 5/3

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	3	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	650	
Orifice size (mm)	7	
Pilot ports size	M5	

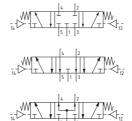
Coding:	241 A .	53.0.18
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	CONNECTION A
	1 = G1/4"
A	5 = G1/8"
	6 = Quick fitting tube Ø6
	8 = Quick fitting tube Ø8
	FUNCTION
_	31 = Closed centres
(3	32 = Open centres
	33 = Pressured centres





For dimension "A" see ordering code



Solenoid - Solenoid 5/3

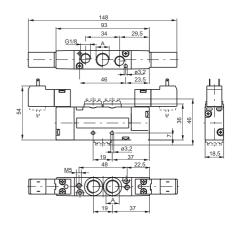
Weight 165 g

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	3	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	650	
Orifice size (mm)	7	
Pilot ports size	M5	

Coding: 241**A**.53.**F**.**V**.**T**

	CONNECTION A
	1 = G1/4"
A	5 = G1/8"
	6 = Quick fitting tube Ø6
	8 = Quick fitting tube Ø8
	FUNCTION
•	31 = Closed centres
•	32 = Open centres
	33 = Pressured centres
	VERSION
V	24 = Solenoid external-Solenoid
•	external
	35 = Solenoid-Solenoid
	VOLTAGE
	01 = + 12 V DC
	02 = + 24 V DC
	05 = + 24 V AC
	06 = 110 V AC
	07 = 230 V AC
	08 = + 24 V DC 1W
	09 = + 24 V DC Earth faston
0	11 = + 12 V DC downward
	12 = + 24 V DC downward
	15 = + 24 V AC downward
	16 = 110 V AC downward
	17 = 230 V AC downward
	18 = + 24 V DC 1W downward
	19 = + 24 V DC Earth faston
	downward

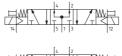




Weight 235 g

For dimension "A" see ordering code







Pneumatic-Pneumatic 2 x 3/2

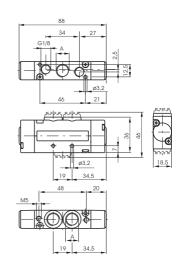
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Pilot pressure (bar)	≥1,5+(0,2 x Inlet pressure)	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	450	
Orifice size (mm)	7	

"Example: if inlet pressure is set at 5 bar then pilot pressure must be at least Pp=1,5+(0.2*5)=2,5 bar"

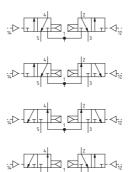
Coding: 241 **(3**.62. **(5**.18)

	CONNECTION A
	1 = G1/4"
A	5 = G1/8"
	6 = Quick fitting tube Ø6
	8 = Quick fitting tube Ø8
FUNCTION 44 = 2 Coils 3/2 NC	
•	NO (12)
	55 = 2 Coils 3/2 NO
	54 = 1 Coil 3/2 NO (14) + 1 Coil 3/2
	NC (12)





For dimension "A" see ordering code



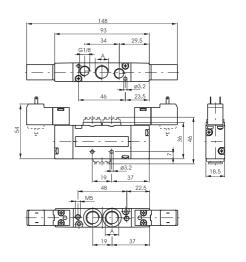
Weight 170 g

Solenoid-Solenoid 2 x 3/2

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Pilot pressure (bar)	≥1,5+(0,2 x Inlet pressure)	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	450	
Orifice size (mm)	7	

 $"Example: if inlet \ pressure \ is \ set \ at \ 5bar \ then \ pilot \ pressure \ must \ be \ at \ least \ Pp=1,5+(0.2*5)=2,5bar"$





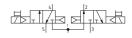
Coding: 241 **(A**.62. **(F**.35. **(1)**

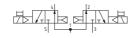
CONNECTION A

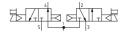
	1 = G1/4"
A	5 = G1/8"
	6 = Quick fitting tube Ø6
	8 = Quick fitting tube Ø8
	FUNCTION
	44 = 2 Coils 3/2 NC
	45 = 1 Coil 3/2 NC (14) + 1 Coil 3/2
(3)	NO (12)
	55 = 2 Coils 3/2 NO
	54 = 1 Coil 3/2 NO (14) + 1 Coil 3/2
	NC (12)
	VOLTAGE
	01 = + 12 V DC
	02 = + 24 V DC
	05 = + 24 V AC
	06 = 110 V AC
	07 = 230 V AC
	08 = + 24 V DC 1W
0	09 = + 24 V DC Earth faston
U	11 = + 12 V DC downward
	12 = + 24 V DC downward
	15 = + 24 V AC downward
	16 = 110 V AC downward
	17 = 230 V AC downward
	18 = + 24 V DC 1W downward
	19 = + 24 V DC Earth faston
	downward

Weight 250 g











Pneumatic - Spring

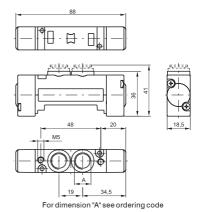
Coding: 243**@**.52.00.19

	Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	7
Max. working pressure (bar)	10	1
Minimum pilot pressure (bar)	2	7
Temperature °C	-5 +50	1
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	800	7
Orifice size (mm)	7	1
Pilot ports size	M5	7

	CONNECTION A
	1 = G1/4"
A	5 = G1/8"
	6 = Quick fitting tube Ø6
	8 = Quick fitting tube Ø8



Weight 105 g





Pneumatic-Differential

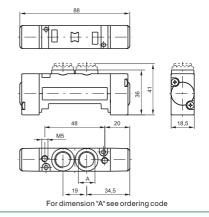
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	2	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	800	
Orifice size (mm)	7	
Pilot ports size	M5	



	CONNECTION A
	1 = G1/4"
A	5 = G1/8"
	6 = Quick fitting tube Ø6
	8 = Quick fitting tube Ø8



Weight 105 g





Pneumatic - Differential (External)

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	2	
Temperature °C	-5 +50	
Flow rate at 6 bar with ∆p=1 (NI/min)	800	
Orifice size (mm)	7	
Pilot ports size	M5	

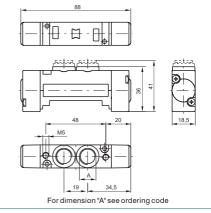
	CONNECTION A	
	1 = G1/4"	
A	5 = G1/8"	
	6 = Quick fitting tube Ø6	

Coding: 243 **3**.52.00.17

8 = Quick fitting tube Ø8



Weight 105 g





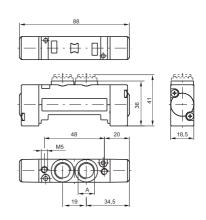
Pneumatic - Pneumatic

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	1.5	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	800	
Orifice size (mm)	7	
Pilot ports size	M5	

Coding: 243**(2)**.52.00.18

	CONNECTION A
	1 = G1/4"
A	5 = G1/8"
	6 = Quick fitting tube Ø6
	8 = Quick fitting tube Ø8





Weight 105 g

For dimension "A" see ordering code



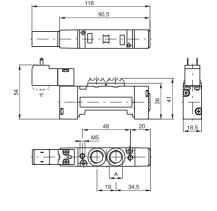
Solenoid-Spring/Differerential

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	2	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	800	
Orifice size (mm)	7	
Pilot ports size	M5	

Coding: 243♠.52.00.♥.**①**

	1 = G1/4"	
A	5 = G1/8"	
	6 = Quick fitting tube Ø6	
	8 = Quick fitting tube Ø8	
	VERSION	
	39 = Solenoid-Spring	
	29 = Solenoid external-Spring	
V	36 = Solenoid-Differential	
•	37 = Solenoid-Differerential external	
	26 = Solenoid external-Differerential	
	27 = Solenoid external-Differerential	
	external	
	VOLTAGE	
	01 = + 12 V DC	
	02 = + 24 V DC	
	05 = + 24 V AC	
	06 = 110 V AC	
	07 = 230 V AC	
	08 = + 24 V DC 1W	
0	09 = + 24 V DC Earth faston	
U	11 = + 12 V DC downward	
	12 = + 24 V DC downward	
	15 = + 24 V AC downward	
	16 = 110 V AC downward	
	17 = 230 V AC downward	
	18 = + 24 V DC 1W downward	
	19 = + 24 V DC Earth faston	
	downward	





For dimension "A" see ordering code

Weight 140 g













PREUNAX

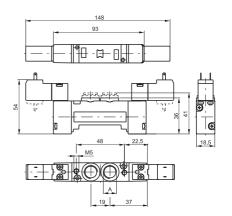
Solenoid - Solenoid

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	1.5	
Temperature °C	-5 +50	
Flow rate at 6 bar with ∆p=1 (NI/min)	800	
Orifice size (mm)	7	
Pilot ports size	M5	

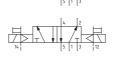


	CONNECTION A
	1 = G1/4"
A	5 = G1/8"
	6 = Quick fitting tube Ø6
	8 = Quick fitting tube Ø8
	VERSION
	35 = Solenoid-Solenoid
V	24 = Solenoid external-Solenoid
	external
	VOLTAGE
	01 = + 12 V DC
	02 = + 24 V DC
	05 = + 24 V AC
	06 = 110 V AC
	07 = 230 V AC
	08 = + 24 V DC 1W
	09 = + 24 V DC Earth faston
0	11 = + 12 V DC downward
	12 = + 24 V DC downward
	15 = + 24 V AC downward
	16 = 110 V AC downward
	17 = 230 V AC downward
	18 = + 24 V DC 1W downward





Weight 175 g For dimension "A" see ordering code



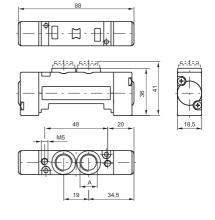
Pneumatic-Pneumatic 5/3

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	3	
Temperature °C	-5 +50	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	650	
Orifice size (mm)	7	
Pilot ports size	M5	

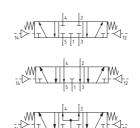
Coding: 243 **(3.**53. **(5.**18)

	CONNECTION A
	1 = G1/4"
A	5 = G1/8"
	6 = Quick fitting tube Ø6
	8 = Quick fitting tube Ø8
	FUNCTION
a	31 = Closed centres
G	32 = Open centres
	33 = Pressured centres





For dimension "A" see ordering code



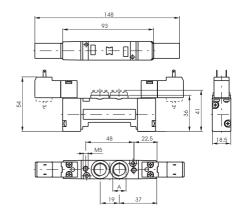
Weight 115 g



Solenoid - Solenoid 5/3

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	3	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	650	
Orifice size (mm)	7	
Pilot ports size	M5	





Coding: 243**♠**.53.**₱**.**♥**.**①**

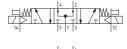
CONNECTION A

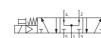
	1 = G1/4"
A	5 = G1/8"
	6 = Quick fitting tube Ø6
	8 = Quick fitting tube Ø8
	FUNCTION
(3)	31 = Closed centres
•	32 = Open centres
	33 = Pressured centres
	VERSION
	24 = Solenoid external-Solenoid
•	external
	35 = Solenoid-Solenoid
	VOLTAGE
	01 = + 12 V DC
	02 = + 24 V DC
	05 = + 24 V AC
	06 = 110 V AC
	07 = 230 V AC
	08 = + 24 V DC 1W
•	09 = + 24 V DC Earth faston
v	11 = + 12 V DC downward
	12 = + 24 V DC downward
	15 = + 24 V AC downward
	16 = 110 V AC downward
	17 = 230 V AC downward
	18 = + 24 V DC 1W downward
	19 = + 24 V DC Earth faston
	downward

Weight 185 g

For dimension "A" see ordering code









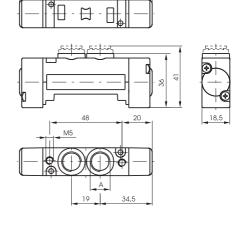
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Pilot pressure (bar)	≥1,5+(0,2 x Inlet pressure)	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	450	
Orifice size (mm)	7	

 $[&]quot;Example: if inlet \ pressure \ is \ set \ at \ 5bar \ then \ pilot \ pressure \ must \ be \ at \ least \ Pp=1,5+(0.2*5)=2,5bar"$

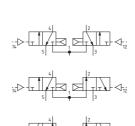
Coding: 243**(**3.62.**(**5.18)

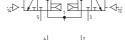
	CONNECTION A
	1 = G1/4"
A	5 = G1/8"
	6 = Quick fitting tube Ø6
	8 = Quick fitting tube Ø8
(3)	FUNCTION
	44 = 2 Coils 3/2 NC
	45 = 1 Coil 3/2 NC (14) + 1 Coil 3/2
	NO (12)
	55 = 2 Coils 3/2 NO
	54 = 1 Coil 3/2 NO (14) + 1 Coil 3/2
	NC (12)

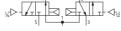




For dimension "A" see ordering code







1 | 148

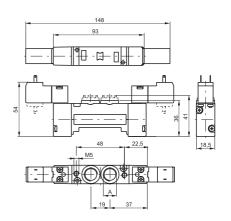
A **5** = G1/8"

Solenoid-Solenoid 2 x 3/2

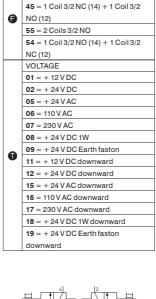
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Pilot pressure (bar)	≥1,5+(0,2 x Inlet pressure)
Temperature °C	-5 +50
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	450
Orifice size (mm)	7

 $[&]quot;Example: if in let \ pressure \ is \ set \ at \ 5 bar \ then \ pilot \ pressure \ must \ be \ at \ least \ Pp=1,5+(0.2*5)=2,5 bar"$





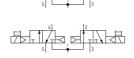
For dimension "A" see ordering code

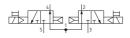


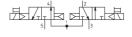
Coding: 243 **(3**.62. **(3**5. **(1)**

6 = Quick fitting tube Ø6 $\textbf{8} = \mathsf{Quick}\,\mathsf{fitting}\,\mathsf{tube}\,\emptyset 8$ FUNCTION 44 = 2 Coils 3/2 NC

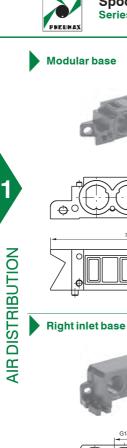
CONNECTION A **1** = G1/4"

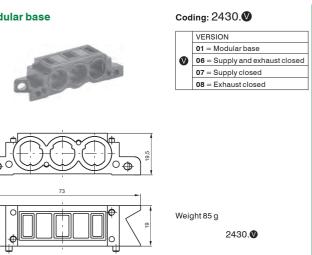




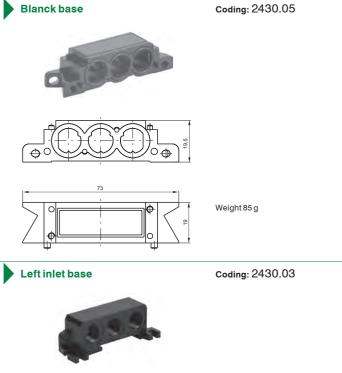


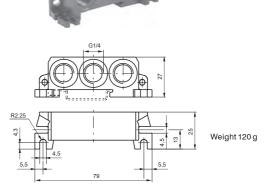
Weight 190 g

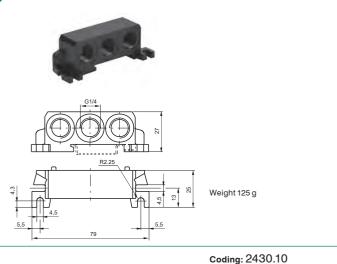




Coding: 2430.02



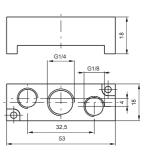






Weight 30 g to be assembled instead of a valve

Intermediate air intake





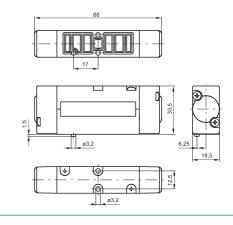


Pneumatic - Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	2	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	550	
Orifice size (mm)	5	









Pneumatic-Differential

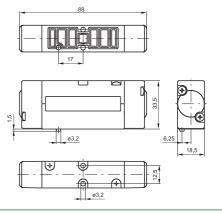
Coding: 2445.52.00.16

Coding: 2445.52.00.19

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2
Temperature °C	-5 +50
Flow rate at 6 bar with ∆p=1 (NI/min)	550
Orifice size (mm)	5



Weight 155 g





Coding: 2445.52.00.17

Pneumatic - Differential (External)

 Operational characteristics

 Fluid
 Filtered air. No lubrication needed, if applied it shall be continuous

 Max. working pressure (bar)
 10

 Minimum pilot pressure (bar)
 2

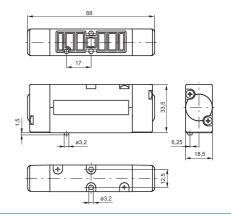
 Temperature °C
 -5...+50

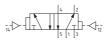
 Flow rate at 6 bar with Δp=1 (NI/min)
 550

 Orifice size (mm)
 5



Weight 155 g





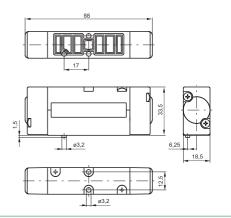


Pneumatic - Pneumatic

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	1.5	
Temperature °C	-5 +50	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	550	
Orifice size (mm)	5	









Coding: 2445.52.00.18

valves)

Coding: 244**©**.52.00.**V**.**1**

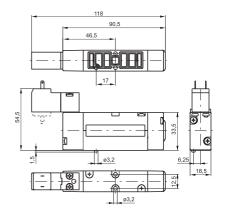
5 = on pilot (for all version)

TYPE ELECTROPILOT EXHAUST 1 =on base (only for self feeding

Solenoid-Spring/Differerential

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2
Temperature °C	-5 +50
Flow rate at 6 bar with ∆p=1 (NI/min)	550
Orifice size (mm)	5





VERSION 39 = Solenoid-Spring 29 = Solenoid external-Spring ${\bf 36} = {\sf Solenoid\text{-}Differential}$ 37 = Solenoid-Differerential external 26 = Solenoid external-Differerential 27 = Solenoid external-Differerential external VOLTAGE **01** = + 12 V DC **02** = + 24 V DC **05** = + 24 V AC 06 = 110 V AC 07 = 230 V AC**08** = + 24 V DC 1W 09 = + 24 V DC Earth faston 11 = + 12 V DC downward**12** = + 24 V DC downward $15 = +24 \, V \, AC \, downward$ **16** = 110 V AC downward **17** = 230 V AC downward 18 = + 24 V DC 1W downward 19 = + 24 V DC Earth faston downward

Weight 190 g







TYPE ELECTROPILOT EXHAUST

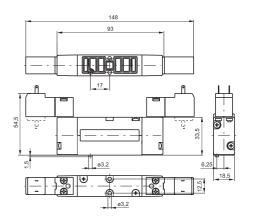
Solenoid - Solenoid

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	1.5	
Temperature °C	-5 +50	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	550	
Orifice size (mm)	5	

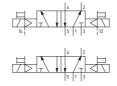
Coding: 244@.52.00.

•	1 = on base (only for self feeding
	valves)
	5 = on pilot (for all version)
•	VERSION
	24 = Solenoid external-Solenoid
V	external
	35 = Solenoid-Solenoid
	VOLTAGE
	01 = + 12 V DC
	02 = + 24 V DC
	05 = + 24 V AC
	06 = 110 V AC
	07 = 230 V AC
	08 = + 24 V DC 1W
•	09 = + 24 V DC Earth faston
0	11 = + 12 V DC downward
	12 = + 24 V DC downward
	15 = + 24 V AC downward
	16 = 110 V AC downward
	17 = 230 V AC downward
	18 = + 24 V DC 1W downward
	19 = + 24 V DC Earth faston
	downward





Weight 225 g





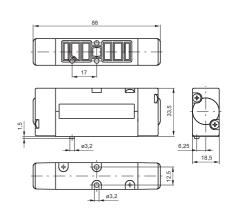
Pneumatic-Pneumatic 5/3

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	3
Temperature °C	-5 +50
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	550
Orifice size (mm)	5

Coding: 244**©**.53.**©**.18

	TYPE ELECTROPILOT EXHAUST
•	1 = on base (only for self feeding
	valves)
	5 = on pilot (for all version)
(3)	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres





Weight 165 g

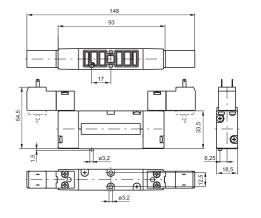
Solenoid - Solenoid 5/3

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	3	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	550	
Orifice size (mm)	5	

Coding: 244@.53.**@.**

•	TYPE ELECTROPILOT EXHAUST
	1 = on base (only for self feeding
	valves)
	5 = on pilot (for all version)
	FUNCTION
a	31 = Closed centres
•	32 = Open centres
	33 = Pressured centres
	VERSION
•	24 = Solenoid external-Solenoid
V	external
	35 = Solenoid-Solenoid
	VOLTAGE
	01 = + 12 V DC
	02 = + 24 V DC
	05 = + 24 V AC
	06 = 110 V AC
	07 = 230 V AC
	08 = + 24 V DC 1W
0	09 = + 24 V DC Earth faston
U	11 = + 12 V DC downward
	12 = + 24 V DC downward
	15 = + 24 V AC downward
	16 = 110 V AC downward
	17 = 230 V AC downward
	18 = + 24 V DC 1W downward
	19 = + 24 V DC Earth faston
	downward





Weight 235 g





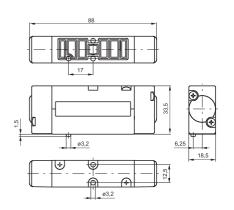
Pneumatic-Pneumatic 2 x 3/2

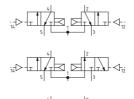
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Pilot pressure (bar)	≥1,5+(0,2 x Inlet pressure)	
Temperature °C -5+50		
Flow rate at 6 bar with ∆p=1 (NI/min)	450	
Orifice size (mm)	5	

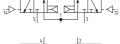
	FUNCTION
	44 = 2 Coils 3/2 NC
	45 = 1 Coil 3/2 NC (14) + 1 Coil 3/2
١	NO (12)
	55 = 2 Coils 3/2 NO
	54 = 1 Coil 3/2 NO (14) + 1 Coil 3/2
	NC (12)

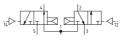
Coding: 2445.62. **6**.18











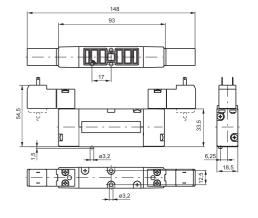
Weight 170 g

Solenoid-Solenoid 2 x 3/2

Operational characteristics			
Fluid Filtered air. No lubrication needed, if applied it shall be continuous			
Max. working pressure (bar)	10		
Pilot pressure (bar) ≥1,5+(0,2 x Inlet pressure)			
Temperature °C	-5 +50		
Flow rate at 6 bar with Δp=1 (NI/min)	450		
Orifice size (mm) 5			

 $"Example: if inlet \ pressure \ is \ set \ at \ 5bar \ then \ pilot \ pressure \ must \ be \ at \ least \ Pp=1,5+(0.2*5)=2,5bar"$

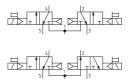


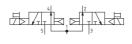


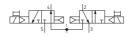
Coding: 2445.62. **3**5.

FUNCTION

44 = 2 Coils 3/2 NC 45 = 1 Coil 3/2 NC (14) + 1 Coil: NO (12) 55 = 2 Coils 3/2 NO	3/2
NO (12)	3/2
55 = 2 Coils 3/2 NO	
54 = 1 Coil 3/2 NO (14) + 1 Coil	3/2
NC (12)	
VOLTAGE	
01 = + 12 V DC	
02 = + 24 V DC	
05 = + 24 V AC	
06 = 110 V AC	
07 = 230 V AC	
08 = + 24 V DC 1W	
09 = + 24 V DC Earth faston	
11 = + 12 V DC downward	
12 = + 24 V DC downward	
15 = + 24 V AC downward	
16 = 110 V AC downward	
17 = 230 V AC downward	
18 = + 24 V DC 1W downward	
19 = + 24 V DC Earth faston	
downward	



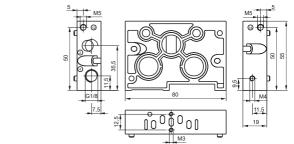




Weight 250 g

[&]quot;Example: if inlet pressure is set at 5bar then pilot pressure must be at least Pp=1,5+(0.2*5)=2,5bar"

Modular base



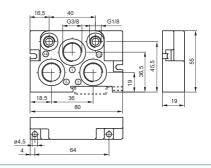
Coding: 2440.**♥**

	VERSION
V	01 = Modular base
	11 = Base for single separate inlet

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Coding: 2440.02

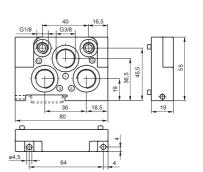


Weight 110 g

Coding: 2440.03

Left inlet base



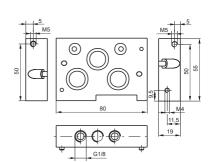


Weight 110 g

Coding: 2440.10

Intermediate air intake



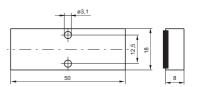


Weight 185 g

Coding: 2440.00

Closing plate





Weight 25 g

Diaphragm plug

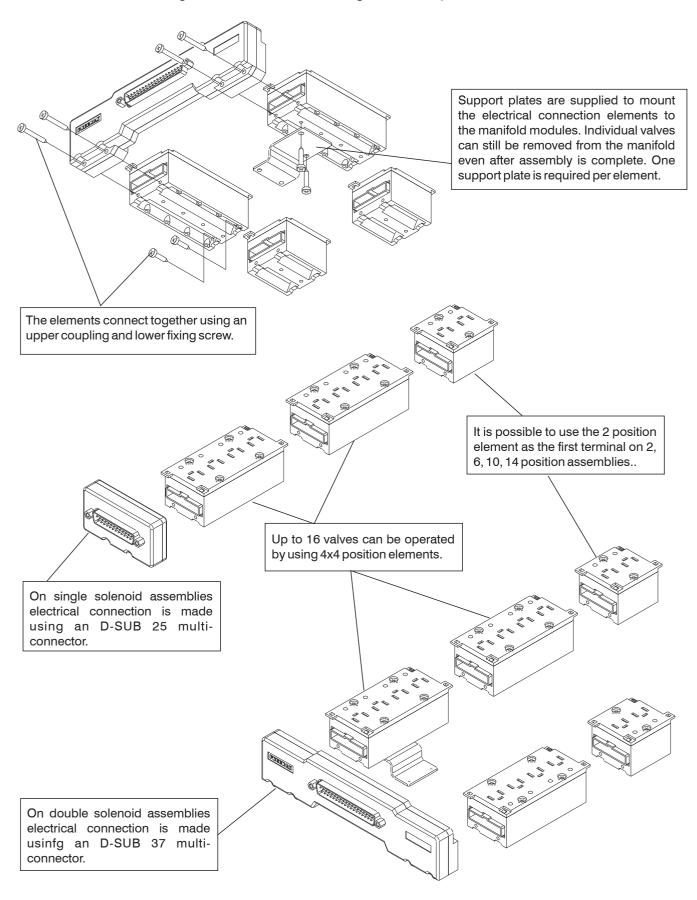


Coding: 2440.17



The integral electrical design for the series 2400 valve is extremely flexible, allowing the production of pre-wired solenoid valve manifolds, the configuration of which can be determined at the point of assembly. The 24 VDC, 12 VDC (equivalent PNP) and 24 VAC* modules are available with 2 or 4 positions. The system assembled is designed for an IP40 protection. IP65 is available on request.

* Attention: If the working tension is 24 VAC DO NOT using modules with protection diode



AIR DISTRIBUTION

Module for connections, 2 positions

Coding: 2400.02.



Weight 30 g $\label{eq:Note:with protection diode only direct current (V DC) is} % \begin{center} \end{center} \begin{center} \end{center}$

	VERSION
	00 = Left IP40-PNP
	02 = Left IP40-PNP with
	protection diode
	10 = Left IP65-PNP
	12 = Left IP65-PNP with
V	protection diode
	01 = Right IP40-PNP
	03 = Right IP40-PNP with
	protection diode
	11 = Right IP65-PNP
	13 = Right IP65-PNP with
	protection diode

Module for connections, 4 positions



Weight 50 g Note: with protection diode only direct current (VDC) is

	VERSION			
	00 = Left IP40-PNP			
	02 = Left IP40-PNP with			
	protection diode			
	10 = Left IP65-PNP			
	12 = Left IP65-PNP with			
Ø	protection diode			
	01 = Right IP40-PNP			
	03 = Right IP40-PNP with			
	protection diode			
	11 = Right IP65-PNP			
	13 = Right IP65-PNP with			
	protection diode			

Coding: 2400.04.

Connectors 25 poles



Weight 40 g The IP65 protection is obtained by IP65 Pneumax cable



Connectors 37 poles

Weight 120 g The IP65 protection is obtained by IP65 Pneumax cable

Plug



Coding: 2400.00

Coding: 2400.25.10

Closing plate electrical positions



Coding: 2400.15.00

Coding: 2400.37.10

Weight 5 g





Coding: 2440.50

FLAT support plate

Weight 2 g

Weight 20 g

Weight 98 g



Coding: 2430.50

4 positions box with 25 contacts connector



Coding: 2400.04.25

15mm male connector with 2 metres cable



Coding: 2400.15.02

Weight 65 g

Weight 20 g

In line cable complete with connector, IP40



Coding: 2400. **@. ...**00

•	CONNECTOR
	25 = 25 pins
	37 = 37 Pins
•	CABLE LENGTH
	03 = 3 meters
	05 = 5 meters
	10 = 10 meters

Cable complete with connector, 25 Poles, IP65



Coding: 2300.25. .

	CABLE LENGTH
	03 = 3 meters
•	05 = 5 meters
	10 = 10 meters
	CONNECTOR
Θ	10 = Stand alone
	90 = 90° Angle

Cable complete with connector, 37 Poles, IP65

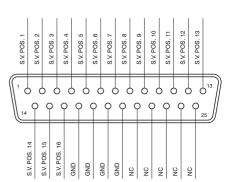


Coding:	2400.3	7. 0 . 0
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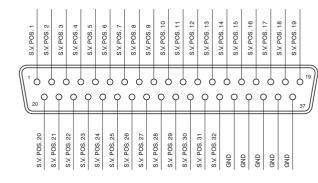
	•	CABLE LENGTH
		03 = 3 meters
		05 = 5 meters
		10 = 10 meters
	Θ	CONNECTOR
		10 = Stand alone
		90 = 90° Angle

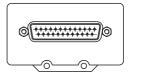


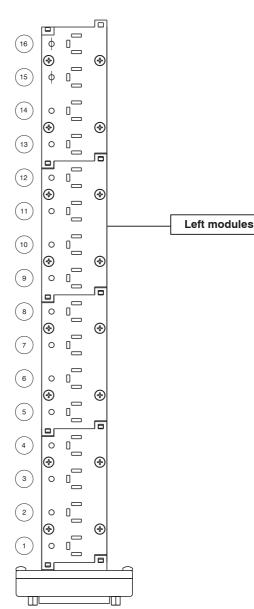
SUB-D 25 POLES CONNECTOR



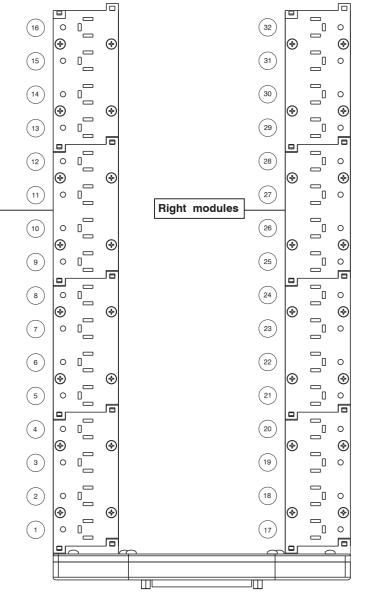
SUB-D 37 POLES CONNECTOR







	©(:::::)	
0 0		0 0



Series 2600

They have been designed to be easily assembled into groups or manifolds.

The 2600 series comprises a range of products classified according to the body size of 26mm divided into 3 types "LINE", "FLAT" and "VDMA". Is not included the integral electrical connection

Construction characteristics

Constitution of all action of the	
Central body	Extruded aluminium bar with chemical nickel treatment and PTFE (polytetrafleurethylene)
Connection plates	Die-cast aluminium
Spool seals	Oil resistant nitrile rubber-HNBR
Springs	AISI 302 stainless steel
Operators	Technopolymer
Pistons	Technopolymer
Spools	Aluminium 2011

Ordering codes for minature solenoid valves

The 15 mm. miniature solenoid valve with 1,1 mm. orifice has been selected for piloting this series of valves (see Series 300).

This results in low response times and reduced power consumption.

The valve can be supplied with the coil upward or downward (multipolar connections) depending on the application.

Codes are as follows:

Coil upward code

01 = miniature sol. + 12 V DC

02 = miniature sol. + 24 V DC

05 = miniature sol. + 24 V AC

06 = miniature sol. 110 V AC

07 = miniature sol. 230 V AC

08 = miniature sol. + 24 V DC 1W

09 = miniature sol. + 24 V DC Earth faston

Coil downward code

11 = miniature sol. + 12 V DC

12 = miniature sol. + 24 V DC15 = miniature sol. + 24 V AC

16 = miniature sol. 110 V AC

17 = miniature sol. 230 V AC

18 = miniature sol. + 24 V DC 1W

19 = miniature sol. + 24 V DC Earth faston

Miniature solenoid 1 homologated are available (see Series 300).

Use and maintenance

The average life of the solenoid valve exceeds 50.000.000 cycles when used under optimum conditions.

Adequate lubrication reduces seals wear, just as proper filtering of supply air prevents the build-up of dirt that can cause malfunction.

Ensure the valve is used within our recommended criteria for pressure and temperature.

In dirty or dusty environments, the exhaust ports should be protected. Seals kits are available for repairs.

Repairs must be made exclusively by specialized personnel.



Pneumatic - Spring

Fluid

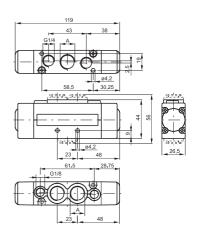
Orifice size (mm) Pilot ports size

Filtered air. No lubrication needed, if applied it shall be continuous Max. working pressure (bar) 10 Temperature °C -5 ... +50 Flow rate at 6 bar with $\Delta p=1$ (NI/min) 1500

	CONNECTION A
_	1 = G3/8"
A	5 = G1/4"
	8 = Quick fitting tube Ø10

Coding: 261**(a)**.52.00.19





G1/8"

Weight 235 g Minimum pilot pressure 2 bar For dimension "A" see ordering code



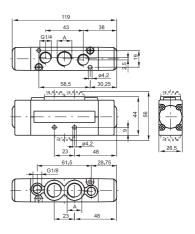
Pneumatic-Differential

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	1500
Orifice size (mm)	9
Pilot ports size	G1/8"

Coding: 261 **(a)**.52.00.16

	CONNECTION A
	1 = G3/8"
A	5 = G1/4"
	8 = Quick fitting tube Ø10





Weight 235 g Minimum pilot pressure 2 bar

For dimension "A" see ordering code





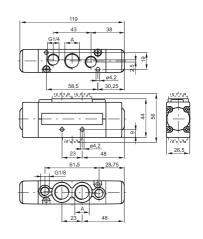
Pneumatic - Differential (External)

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	1500	
Orifice size (mm)	9	
Pilot ports size	G1/8"	

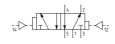
Coding: 261 **(**3.52.00.17

A	CONNECTION A
	1 = G3/8"
	5 = G1/4"
	8 = Quick fitting tube Ø10





Weight 235 g Minimum pilot pressure 2 bar For dimension "A" see ordering code



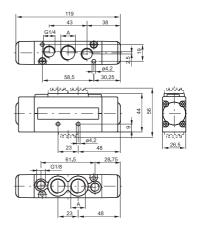
Pneumatic - Pneumatic

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5+50	
Flow rate at 6 bar with Δp=1 (NI/min)	1500	
Orifice size (mm)	9	
Pilot ports size	G1/8"	

Coding: 261 **(A**.52.00.18

A	CONNECTION A
	1 = G3/8"
	5 = G1/4"
	8 = Quick fitting tube Ø10





Weight 235 g Minimum pilot pressure 1,5 bar For dimension "A" see ordering code

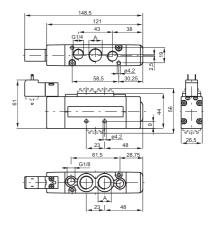




Solenoid-Spring/Differerential

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	1500	
Orifice size (mm)	9	





CONNECTION A 1 = G3/8" A **5** = G1/4" 8 = Quick fitting tube Ø10 VERSION 39 = Solenoid-Spring ${\bf 29} = {\sf Solenoid\,external\text{-}Spring}$ ${\bf 36} = {\sf Solenoid\text{-}Differential}$ V 37 = Solenoid-Differerential external 26 = Solenoid external-Differerential 27 = Solenoid external-Differerential external VOLTAGE 01 = + 12 V DC **02** = + 24 V DC **05** = + 24 V AC 06 = 110 V AC 07 = 230 V AC**08** = + 24 V DC 1W 09 = + 24 V DC Earth faston 11 = + 12 V DC downward12 = + 24 V DC downward **15** = + 24 V AC downward **16** = 110 V AC downward **17** = 230 V AC downward

Coding: 261 **A**.52.00. **V**. **1**

Weight 275 g Minimum pilot pressure 2 bar

For dimension "A" see ordering code









18 = + 24 V DC 1W downward 19 = + 24 V DC Earth faston

downward



Solenoid - Solenoid

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	1500
Orifice size (mm)	9

Coding: 261 **A**.52.00. **V**. **1**

	CONNECTION A
	1 = G3/8"
A	5 = G1/4"
	8 = Quick fitting tube Ø10
	VERSION
	35 = Solenoid-Solenoid
V	24 = Solenoid external-Solenoid
	external
	VOLTAGE

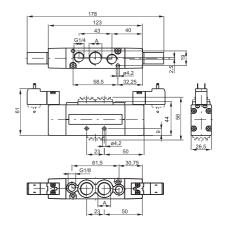
01 = + 12 V DC 02 = + 24 V DC 05 = + 24 V AC 06 = 110 V AC



OS - 1 Z+ V DO EQITITIQUION
11 = + 12 V DC downward
12 = + 24 V DC downward
15 = + 24 V AC downward
16 = 110 V AC downward
17 = 230 V AC downward

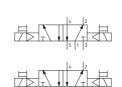
16 = 110 V AC downward 17 = 230 V AC downward 18 = + 24 V DC 1W downward 19 = + 24 V DC Earth faston

downward



Weight 295 g Minimum pilot pressure 1,5 bar

For dimension "A" see ordering code





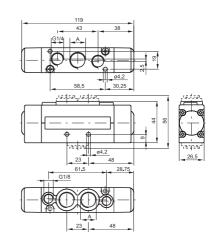
Pneumatic-Pneumatic 5/3

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	1350	
Orifice size (mm)	9	
Pilot ports size	M5	

Coding: 261 **(**3.53. **(**3.18)

CONNECTION A	
•	1 = G3/8"
A	5 = G1/4"
	8 = Quick fitting tube Ø10
	FUNCTION
_	31 = Closed centres
(3)	32 = Open centres
	33 = Pressured centres





For dimension "A" see ordering code



Weight 245 g Minimum pilot pressure 3 bar

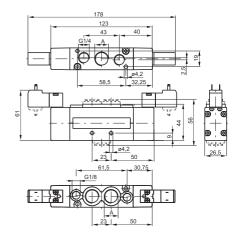
Solenoid - Solenoid 5/3

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	1350
Orifice size (mm)	9

Coding: 261**3**.53.**5**.**0**.**0**

CONNECTION A	
	1 = G3/8"
A	5 = G1/4"
	8 = Quick fitting tube Ø10
	FUNCTION
a	31 = Closed centres
•	32 = Open centres
	33 = Pressured centres
	VERSION
V	24 = Solenoid external-Solenoid
V	external
	35 = Solenoid-Solenoid
	VOLTAGE
	01 = + 12 V DC
	02 = + 24 V DC
	05 = + 24 V AC
	06 = 110 V AC
	07 = 230 V AC
	08 = + 24 V DC 1W
0	09 = + 24 V DC Earth faston
U	11 = + 12 V DC downward
	12 = + 24 V DC downward
	15 = + 24 V AC downward
	16 = 110 V AC downward
	17 = 230 V AC downward
	18 = + 24 V DC 1W downward
	19 = + 24 V DC Earth faston
L	downward

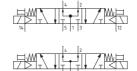




For dimension "A" see ordering code

Weight 245 g Minimum pilot pressure 3 bar





Pneumatic - Spring

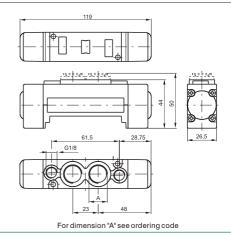
Coding: 263 **3**.52.00.19

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	1500
Orifice size (mm)	9
Pilot ports size	M5

	CONNECTION A
	1 = G3/8"
A	5 = G1/4"
	8 = Quick fitting tube Ø10



Weight 185 g Minimum pilot pressure 2 bar





Pneumatic-Differential

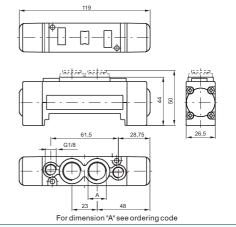
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	1500	
Orifice size (mm)	9	
Pilot ports size	M5	



8 = Quick fitting tube Ø10



Weight 185 g Minimum pilot pressure 2 bar





Coding: 263 (A.52.00.17)

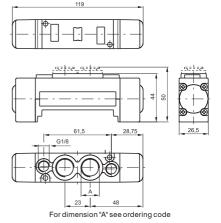
Pneumatic - Differential (External)

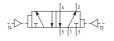
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	1500	
Orifice size (mm)	9	
Pilot ports size	M5	

	CONNECTION A
_	1 = G3/8"
A	5 = G1/4"
	8 = Quick fitting tube Ø10



Weight 185 g Minimum pilot pressure 2 bar







Pneumatic - Pneumatic

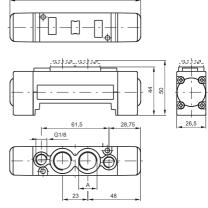
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	1500	
Orifice size (mm)	9	
Pilot ports size	M5	

Coding: 263**@**.52.00.18

	CONNECTION A
_	1 = G3/8"
A	5 = G1/4"
	8 = Quick fitting tube Ø10







For dimension "A" see ordering code

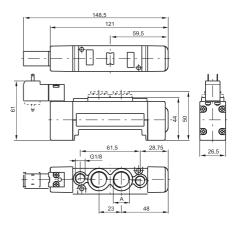




Solenoid-Spring/Differerential

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	1500
Orifice size (mm)	9





CONNECTION A 1 = G3/8" A **5** = G1/4" 8 = Quick fitting tube Ø10 VERSION 39 = Solenoid-Spring 29 = Solenoid external-Spring ${\bf 36} = {\sf Solenoid\text{-}Differential}$ V 37 = Solenoid-Differerential external 26 = Solenoid external-Differerential 27 = Solenoid external-Differerential external VOLTAGE **01** = + 12 V DC **02** = + 24 V DC **05** = + 24 V AC 06 = 110 V AC 07 = 230 V AC**08** = + 24 V DC 1W 09 = + 24 V DC Earth faston **11** = + 12 V DC downward 12 = + 24 V DC downward $15 = +24 \, V \, AC \, downward$ **16** = 110 V AC downward **17** = 230 V AC downward 18 = + 24 V DC 1W downward 19 = + 24 V DC Earth faston

Coding: 2634.52.00.

Weight 220 g Minimum pilot pressure 2 bar

Solenoid - Solenoid

For dimension "A" see ordering code







downward



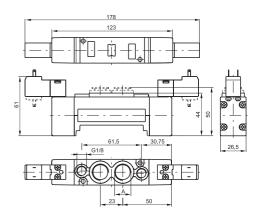


Coding: 263 **A**.52.00. **V**.



Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	1500
Orifice size (mm)	9

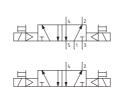




1	
A	1 = G3/8"
	5 = G1/4"
	8 = Quick fitting tube Ø10
	VERSION
	35 = Solenoid-Solenoid
•	24 = Solenoid external-Solenoid
	external
	VOLTAGE
	01 = + 12 V DC
	02 = + 24 V DC
	05 = + 24 V AC
	06 = 110 V AC
	07 = 230 V AC
	08 = + 24 V DC 1W
•	09 = + 24 V DC Earth faston
v	11 = + 12 V DC downward
	12 = + 24 V DC downward
	15 = + 24 V AC downward
	16 = 110 V AC downward
	17 = 230 V AC downward
	18 = + 24 V DC 1W downward
	19 = + 24 V DC Earth faston
	downward

Weight 250 g Minimum pilot pressure 1,5 bar

For dimension "A" see ordering code





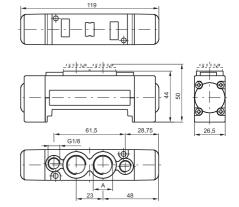
Pneumatic-Pneumatic 5/3

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	1350	
Orifice size (mm)	9	
Pilot ports size	M5	

Coding: 263 **3**.53. **5**.18

	CONNECTION A
A	1 = G3/8"
	5 = G1/4"
	8 = Quick fitting tube Ø10
(3)	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres





For dimension "A" see ordering code

Weight 195 g Minimum pilot pressure 3 bar

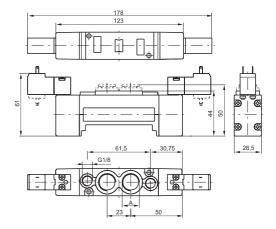
Solenoid - Solenoid 5/3

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	1350	
Orifice size (mm)	a	

Coding: 263 **A**.53. **D**. **V**. **D**

A	CONNECTION A
	1 = G3/8"
	5 = G1/4"
	8 = Quick fitting tube Ø10
	FUNCTION
(3)	31 = Closed centres
•	32 = Open centres
	33 = Pressured centres
	VERSION
V	24 = Solenoid external-Solenoid
V	external
	35 = Solenoid-Solenoid
	VOLTAGE
	01 = + 12 V DC
	02 = + 24 V DC
	05 = + 24 V AC
	06 = 110 V AC
	07 = 230 V AC
	08 = + 24 V DC 1W
	09 = + 24 V DC Earth faston
•	11 = + 12 V DC downward
	12 = + 24 V DC downward
	15 = + 24 V AC downward
	16 = 110 V AC downward
	17 = 230 V AC downward
	18 = + 24 V DC 1W downward
	19 = + 24 V DC Earth faston
	downward

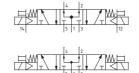




Weight 270 g Minimum pilot pressure 3 bar

For dimension "A" see ordering code





Modular base Coding: 2630.01 Weight 80 g Right inlet base Coding: 2630.02 Weight 80 g Coding: 2630.03 Left inlet base Weight 100 g Intermediate air intake Coding: 2630.10 Weight 60 g to be assembled instead of a valve Closing plate Coding: 2630.00 0 Weight 20 g



Coding: 2630.17



Weight 5 g

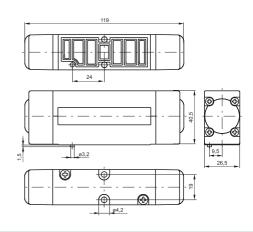


Pneumatic - Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	1100	
Orifice size (mm)	7.5	



Weight 235 g Minimum pilot pressure 2 bar





Coding: 2645.52.00.16

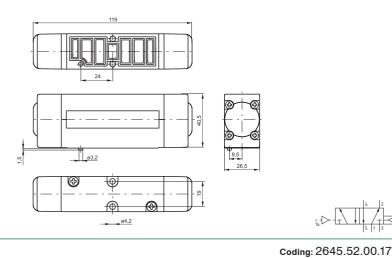
Coding: 2645.52.00.19

Pneumatic-Differential

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	1100
Orifice size (mm)	75



Weight 235 g Minimum pilot pressure 2 bar



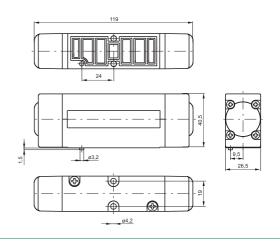


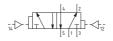
Pneumatic - Differential (External)

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	1100
Orifice size (mm)	7.5



Weight 235 g Minimum pilot pressure 2 bar









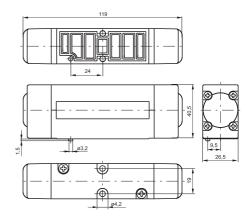
Coding: 2645.52.00.18

Pneumatic - Pneumatic

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	1100
Orifice size (mm)	7.5



Weight 255 g Minimum pilot pressure 1,5 bar



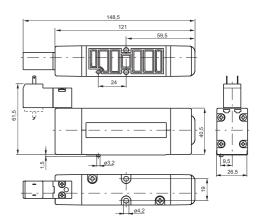




Solenoid-Spring/Differerential

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	1100	
Orifice size (mm)	7.5	





Coding: 264**©**.52.00.**V**.**1**

	TYPE ELECTROPILOT EXHAUST
•	1 = on base (only for self feeding
	valves)
	5 = on pilot (for all version)
	VERSION
	39 = Solenoid-Spring
	29 = Solenoid external-Spring
•	36 = Solenoid-Differential
V	$37 = Solenoid ext{-}Differerentialexternal$
	26 = Solenoid external-Differerential
	27 = Solenoid external-Differerential
	external
	VOLTAGE
	01 = + 12 V DC
	02 = + 24 V DC
	05 = + 24 V AC
	06 = 110 V AC
	07 = 230 V AC
	08 = + 24 V DC 1W
	09 = + 24 V DC Earth faston
•	11 = + 12 V DC downward
	12 = + 24 V DC downward
	15 = + 24 V AC downward
	16 = 110 V AC downward
	17 = 230 V AC downward
	18 = + 24 V DC 1W downward
	19 = + 24 V DC Earth faston
	downward

Weight 270 g Minimum pilot pressure 2 bar

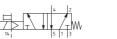
Solenoid - Solenoid







TYPE ELECTROPILOT EXHAUST

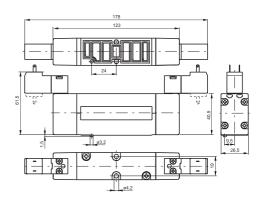






Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	1100	
Orifice size (mm)	7.5	

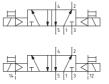




Coding: 264@.52.00.

valves)											
5 = on pilot (for all version)	5 = on pilot (for all version)										
VERSION											
24 = Solenoid external-Soleno	oid										
external											
35 = Solenoid-Solenoid											
VOLTAGE											
01 = + 12 V DC											
02 = + 24 V DC	02 = + 24 V DC										
05 = + 24 V AC	05 = + 24 V AC										
06 = 110 V AC											
07 = 230 V AC											
08 = + 24 V DC 1W											
09 = + 24 V DC Earth faston											
11 = + 12 V DC downward											
12 = + 24 V DC downward											
15 = + 24 V AC downward											
16 = 110 V AC downward											
17 = 230 V AC downward											
18 = + 24 V DC 1W downward											
19 = + 24 V DC Earth faston											
downward											

Weight 305 g Minimum pilot pressure 1,5 bar



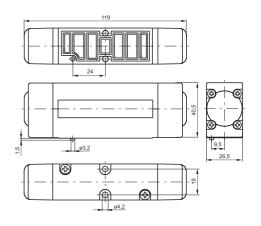
Pneumatic-Pneumatic 5/3

Operational characteristics									
Fluid Filtered air. No lubrication needed, if applied it shall be continuous									
Max. working pressure (bar)	10								
Temperature °C	-5 +50								
Flow rate at 6 bar with ∆p=1 (NI/min)	1000								
Orifice size (mm) 7.5									

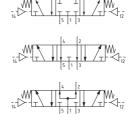
Coding: 264@.53. 3.18 TYPE ELECTROPILOT EXHAUST 1 =on base (only for self feeding Θ valves) 5 = on pilot (for all version) FUNCTION 31 = Closed centres

> 32 = Open centres 33 = Pressured centres





Weight 245 g Minimum pilot pressure 3 bar



Coding: 264**©**.53.**3**.**4**.**0**.**1**

5 = on pilot (for all version)

FUNCTION 31 = Closed centres 32 = Open centres 33 = Pressured centres VERSION

external

VOLTAGE $01 = + 12 \, V \, DC$ **02** = + 24 V DC **05** = + 24 V AC **06** = 110 V AC **07** = 230 V AC $08 = +24 \, V \, DC \, 1W$ 09 = + 24 V DC Earth faston 11 = + 12 V DC downward 12 = + 24 V DC downward **15** = + 24 V AC downward **16** = 110 V AC downward

Θ valves)

TYPE ELECTROPILOT EXHAUST 1 =on base (only for self feeding

24 = Solenoid external-Solenoid

35 = Solenoid-Solenoid

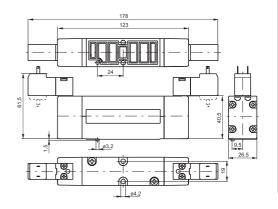
17 = 230 V AC downward 18 = + 24 V DC 1W downward 19 = + 24 V DC Earth faston

downward

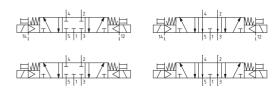
Solenoid - Solenoid 5/3

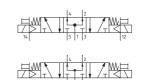
	Operational characteristics
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	1000
Orifico cizo (mm)	E





Weight 315 g Minimum pilot pressure 3 bar

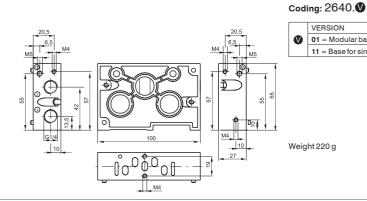




AIR DISTRIBUTION

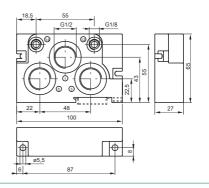
Modular base





Right inlet base





Coding: 2640.02

VERSION 01 = Modular base

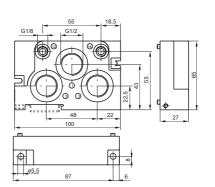
11 = Base for single separate inlet

Weight 200 g

Coding: 2640.03

Left inlet base



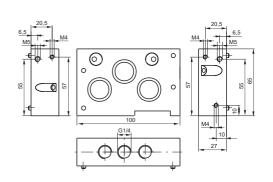


Weight 200 g

Coding: 2640.10

Intermediate air intake

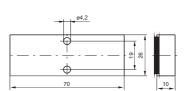




Weight 380 g

Closing plate





Weight 50 g

Diaphragm plug



Coding: 2640.17

Weight 10 g



Series 300

The direct operated solenoid valve is the interface between pneumatic and electronic. In fact, it is actuated by an electrical signal and in turn gives a pneumatic signal directly available for small users or for actuating bigger pneumatic distributors.

A wide range of valves are needed for satisfying various applications. For this need we have available miniature components with very low volume and electrical impute as well as solenoid valves with large flow rate and power for heavy duty operations. These solenoid valves are usually 3/2, normally closed or normally open, but there are available the 2/2, closed or open, for vacuum and others.

Note that the direct operated valves can only be used with bases, individual or multiple with M5 or G 1/8" thread or with connections.

Some PNEUMAX solenoid valves are **c** ws homologated valid for USA and Canada (file n. VAIU2.E206325, VAIU8.E206325). For more details, refer to the coding, in the following pages.

The 10mm and 15mm solenoid valves are certified by UL in compliance with both Canadian and USA safety requirements as recognized component and included in the **UL file E206325** and bear the "UL Recognized Component" marking.

The 10mm and 15mm solenoid valves, since they are devices for "class 2 circuits", according with UL standard UL 429/CSA C22.2 N°139, are not considered dangerous for electric shock or fire and thus a **UL certification is not required for cables and connectors.**

Some solenoid valves, since they are devices for "class 2 circuits", according with UL standard UL 429/CSA C22.2 N°139, are not considered dangerous for electric shock or fire and thus a **UL certification is not required for cables and connectors.**

Use and maintenance

Maintenance is normally not required for these components therefore the spare parts list is not provided.

Their construction complexity and low cost do not make repair economically viable. It's easier and more economic to replace the complete valve in case of malfunction.

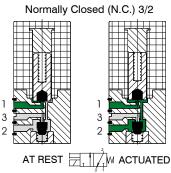
For proper lubrication use only hydraulic oil class H such as Castrol type MAGNA GC 32.

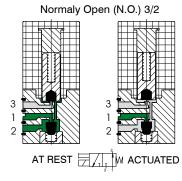
This series of directly operated vales is characterized by its reduced dimensions. They are designed to be mounted individually or on manifold. The high operating speed and high flow rate in consideration of the reduced dimensions, in combination with the high compatibility of the material used to manufacture them ensure a high variety of possible

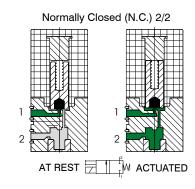
All valves have manual override as standard and are available in 3/2 configuration N.O. and N.C. as well as 2/2 N.C. both 12 or 24 V DC or AC. Electrical connection can be via co moulded cables or via connector, in this configuration a LED indicates the coil status. Ensure that the fixing screws are tightened with 0.15 Nm maximum.

Functional schematics for standard version

1 = SUPPLY PORT 2 = OUTLET PORT 3 = EXHAUST PORT







Standard version

Construction characteristics

Electrical part

Miniature solenoid consisting of a coil made of copper wire of different diameters depending on voltage, isolated according to "F" class standard, with injection-moulded nylon-glass application. All parts forming the cladding, the electrical connections and the pole pieces are protected against corrosion.

Mechanical part

Stainless steel 430F armatures FPM poppets body in thermoplastic material and manual override and plug in nickel plated brass. Valves must be mounted on single or multiple manifold to be used.

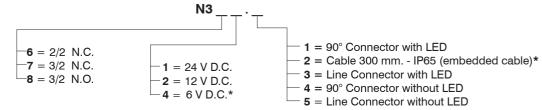
Technical characteristics

	Standard version					
Working pressure	0 7 bar					
Orifice size	0,7 mm					
Temperature	-5° +50°C					
Flow rate at 6 bar with ∆p=1 bar	14 NI/min					
Exhaust flow rate	22 NI/min					
Life expectancy, number of cycles per minute	50 million					
Compressed air, purity class according to ISO 8573-1:2010	5:4:4					
Voltages	12 24 Volt D.C.					
Power	1,3 Watt					
Voltage tollerance	-5% +10%					
Response time when energized *	8 ms					
Response time when de-energized *	10 ms					
Copper wire isolation class	F (155°C)					
Protection degree	IP65 (with cables) IP40 (with connectors) IP00 (with Faston)					
	Orifice size Temperature Flow rate at 6 bar with $\Delta p = 1$ bar Exhaust flow rate Life expectancy, number of cycles per minute Compressed air, purity class according to ISO 8573-1:2010 Voltages Power Voltage tollerance Response time when energized * Response time when de-energized * Copper wire isolation class					

^{(*) &}quot;Response time of pneumatic directional control valves or moving parts, logic devices were measured in accordance to ISO 12238:2001, Pneumatic fluid power - Directional control valves - Measurement of shifting time



10 mm Standard miniature solenoid ordering codes

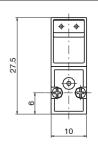


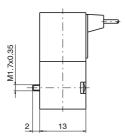
* = The c us directive does not apply to these versions

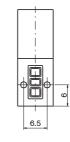
Miniature solenoid valve with cable







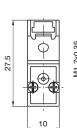




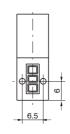
Miniature solenoid valve with 90° connector

Weight 12 g





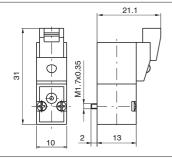


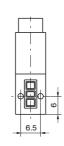


Miniature solenoid valve with line connector

Weight 12 g

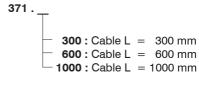




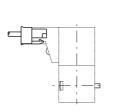


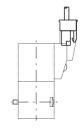
Connector

Ordering codes









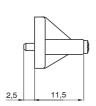
Weight 3 g

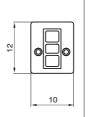
Closing plate

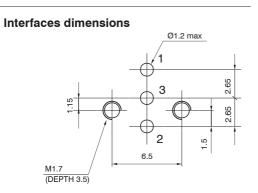
Ordering codes

395.00







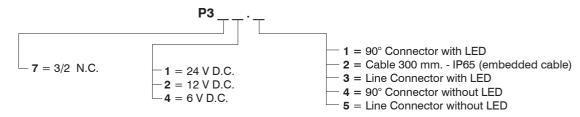






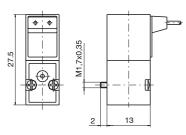
10 mm - ISO 15218-2003 miniature solenoid ordering codes

The versions are not contemplated by the cases directive



Miniature solenoid valve with cable



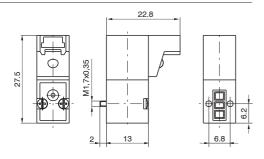


Weight 12 g

Miniature solenoid valve with 90° connector

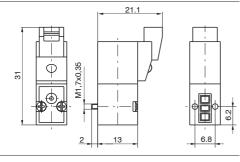






Miniature solenoid valve with line connector

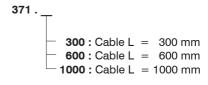
PNEUMAN II-5'-150°C. 24 100°C €



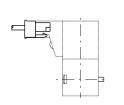
Weight 12 g

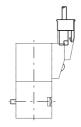
Connector

Ordering codes



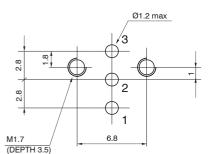






Weight 3 g

Interfaces dimensions 10 mm - ISO 15218





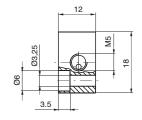
Standard version Individual base

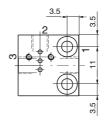
Ordering code

395.01

Weight 10 g



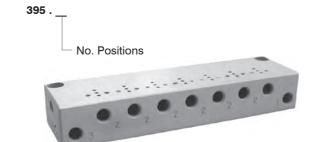


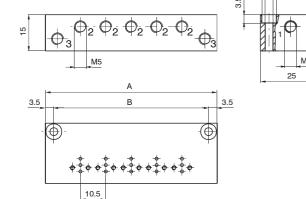


Ø3.25

Standard version multiple bases

Ordering code





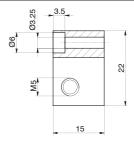
No. Positions	02	03	04	05	06	07	08	09	10
Α	39.5	50	60.5	71	81.5	92	102.5	113	123.5
В	32.5	43	53.5	64	74.5	85	95.5	106	116.5
Weight (g)	43	54	65	76	87	98	109	120	131

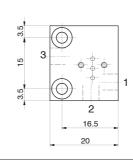
Individual base for ISO 15218-2003 version

Ordering code

P395.01





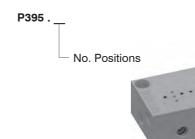


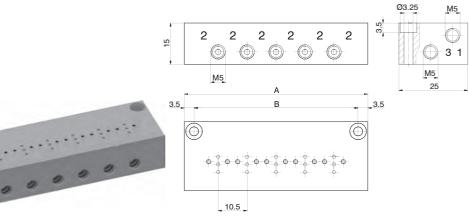
Ø6

Weight 10 g

Multiple base for ISO 15218-2003 version

Ordering code





No. Positions	02	03	04	05	06	07	08	09	10
Α	35	45.5	56	66.5	77	87.5	98	108.5	119
В	28	38.5	49	59.5	70	80.5	91	101.5	112
Weight (g)	43	54	65	76	87	98	109	120	131



This direct operated solenoid valve has minimum overall dimensions (15 mm wide). Its construction method is same as 10 mm valve, of course.

It is suitable to be single or gang mounted or as electro-operator for larger air flow distributors.

Can be utilized with compressed air and other fluids compatible with material used to build the solenoid valve.

The available versions, all equipped with manual overide, are 3 ways, normally closed and normally open with DC and AC

It's possible to install the N.O. valve on N.C. interface by using the registered reverse system included in the valve body. The electrical connection is made with cables (300 mm.), FASTON or with connector.

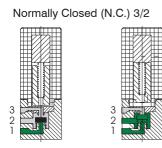
This type of miniature solenoid valve is interchangeable with most of the same products available on the market.

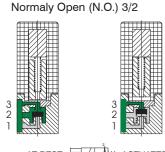
Coil be can also positioned at 180° to get the electrical connection located on the opposite side than override.

Make sure that the fastening screews are tightened with maximum torque of 0,75 Nm.

Functional schematics

- 1 = SUPPLY PORT
- 2 = OUTLET PORT
- 3 = EXHAUST PORT





Construction characteristics

Electrical part

Miniature solenoid consisting of a coil made of copper wire of different diameters depending on voltage, isolated according to "F" class standard, with injection-moulded nylon-glass application. All parts forming the cladding, the electrical connections and the pole pieces are protected against corrosion.

Mechanical part

AISI 430F cores, AISI 302 return springs, FPM poppets, thermoplastic polyester body.

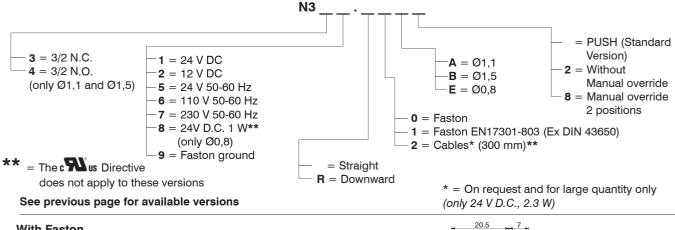
Technical characteristics

Pneumatics

Orifice size	0,8 mm	1,1 mm	1,5 mm (only D.C.)					
Flow rate at 6 bar with Δp=1 bar	20 NI/min	30 NI/min	50 NI/min					
Working pressure for N.C.	0	. 10 bar	0 7 bar					
Working pressure for N.O.	/	0 8 bar	0 5 bar					
Temperature		-5° +50°C						
Max number of cycles per minute	50 million	cycles (with standard working	conditions)					
Compressed air, purity class according to ISO 8573-1:2010		5:4:4						
Electrical								
Voltage D.C.	24 V DC	12-24	V DC					
Voltage A.C.	/	24-110-230 Volt 50/60 Hz	/					
Power consumption D.C.	1 Watt	2,3 V	Vatt					
Power consumption A.C.	/	2,8 VA (at starting) 2,5 VA (at speed)	/					
Voltage tollerance		-5% +10%						
Response time*		10 12 ms						
Isolating class		F (155°C)						
Protection degree	IP65 (with cables)							
	IP40 (with connectors)							
	IP00 (with faston)							

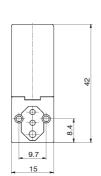
^(*) "Response time of pneumatic directional control valves or moving parts, logic devices were measured in accordance to ISO 12238:2001, Pneumatic fluid power - Directional control valves - Measurement of shifting time"

15 mm miniature solenoid ordering codes



With Faston

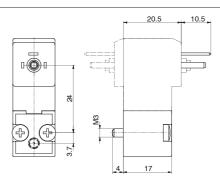


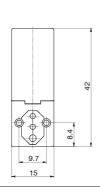


Weight 36 g

With Faston EN17301-803 (Ex DIN 43650)







Weight 36 g With Cables (300 mm)

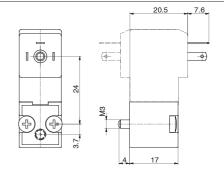


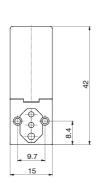
26.5 -300mm cable 20.5

Weight 38 g

With Faston ground







Weight 38 g

Connector

Ordering code

315.11.00 Standard

315.12.00 for faston EN17301-803

(Ex DIN 43650)

315.11.0 L Led

1 = 24 V D.C. / A.C. 2 = 110 V 50/60 Hz 3 = 230 V 50/60 Hz

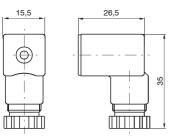
315.12.0_L for faston EN17301-803 (Ex DIN 43650) with LED

(Ex DIN 43650) with L 1 = 24 V D.C. / A.C. 2 = 110 V 50/60 Hz

2 = 110 V 50/60 Hz 3 = 230 V 50/60 Hz



Weight 13 g

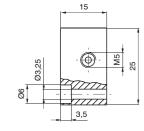


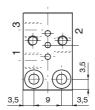
Single use base

Ordering code

355.01





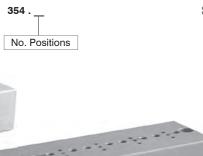


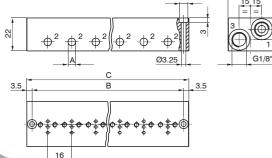
Weight 18 g

Multiple bases









No. Positions	02	03	04	05	06	07	08	09	10
В	37	53	69	85	101	117	133	149	165
С	44	60	76	92	108	124	140	156	172
Weight (g)	66	92	116	141	165	190	216	242	266

Closing plate

Ordering code

355.00

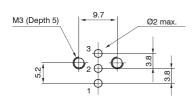


Weight 6 g





Interface dimensions



15mm Solenoid valves Manifold with electric multipoint connection

Also for this 15mm solenoid valves series we have realized the possibility of the assembling on the base with multipoint connection, this for making faster the connection and the harness of them.

Realized from a shaped outline, it results compact because it uses a relevant multipoint connection available only with a 37 poles connector from 10 to 32 solenoid valves (with steps of 2), available in line or at 90° and IP40 protection. On the base it is possible to put some threaded cartridges with push-in fittings for Ø3 – Ø3,17 Ø4 tube or M5 threaded.

The application field of these new configurations is the standard of 3/2 valves, where it is needed to realize groups or Manifolds provided with integrated electric connection to make easier and faster the connection and the harness of them (control of single acting cylinders with small dimensions, pilot system of valves with bigger dimensions etc..).

Constructive characteristics:

Constructive principle:

From 10 up to 32 solenoid valves (with steps of 2)

Extremely compact solution

IP40 protection (without visualisation led)

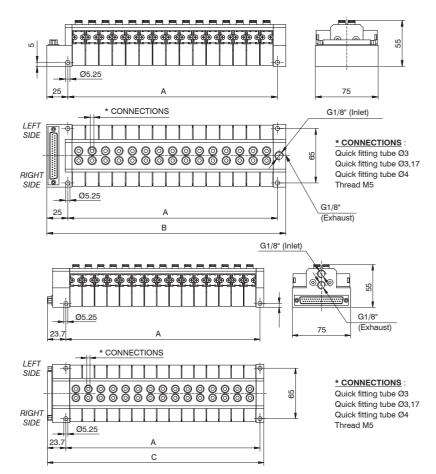
Possibility of having different working connections (Ø3, Ø3,17, Ø4 tubes, M5)

The new coding key requires the use of the same type of solenoid valves (there aren't codes for groups with a mixed configuration).

Overall dimensions







No. Positions	Α	В	С
10	90	125	118,7
12	106	141	134,7
14	122	157	150,7
16	138	173	166,7
18	154	189	182,7
20	170	205	198,7
22	186	221	214,7
24	202	237	230,7
26	218	253	246,7
28	234	269	262,7
30	250	285	278,7
32	266	301	294.7

SUB-D 37 POLES CONNECTORS

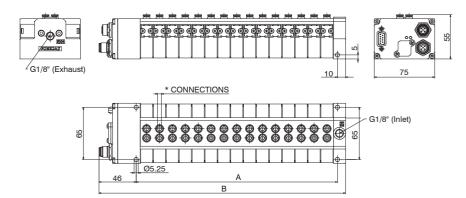
0 V DO0 1				S.V. POS. 4	S.V. POS. 5	S.V. POS. 6	S V POS 7	0 000			S.V. POS. 10	S.V. POS. 11	S.V. POS. 12	S.V. POS. 13	S.V. POS. 14	S.V. POS. 15	S V POS 16		L SO	S.V. POS. 18	S.V. POS. 19	
1	20]] 	,	9	ς Γ	\ '\[]	7) 		ر ا	, ا	ς Γ]) ()	19
	S.V. POS. 20	S.V. POS. 21	S.V. POS. 22	000			S.V. POS. 25	S.V. POS. 26	S.V. POS. 27	S.V. POS. 28	S.V. POS. 29	000		S S	S.V. POS. 32	GND	GND	GND	GND	בועט	5	



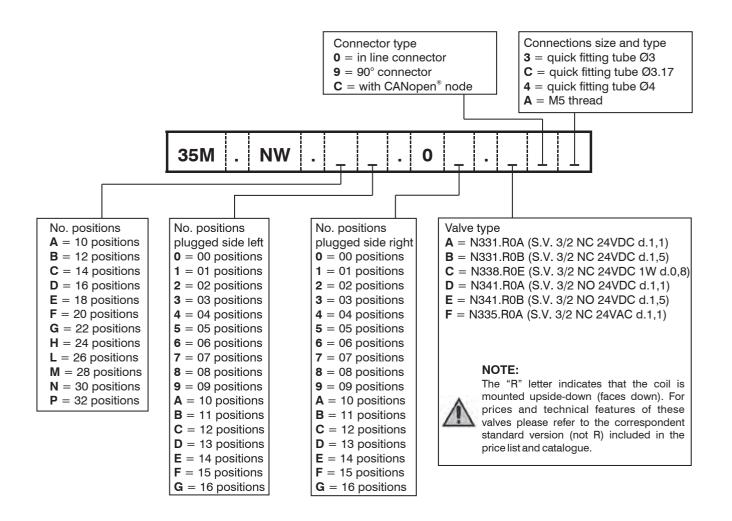
Overall dimensions Manifold with CANopen® node



No. positions	Α	В
10	90	146
12	106	162
14	122	178
16	138	194
18	154	210
20	170	226
22	186	242
24	202	258
26	218	274
28	234	290
30	250	306
32	266	322



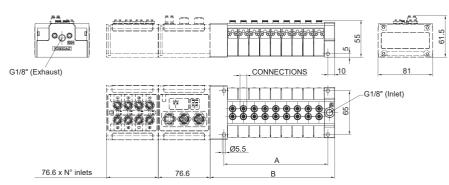
Manifold layout configuration





Overall dimensions Manifold with Optyma-F serial system (slave + input modules)





No. positions	Α	В
10	90	120,50
12	106	136,50
14	122	152,50
16	138	168,50
18	154	184,50
20	170	200,50
22	186	216,50
24	202	232,50
26	218	248,50
28	234	264,50
30	250	280,50
32	266	296,50

Manifold layout configuration with Optyma-F serial system (slave + input modules)

32 OUT VERSION

C3=CANopen® 32OUT

D3=DeviceNet 32OUT

P3=PROFIBUS 32OUT

A3=EtherCAT® 32OUT (Serie 5700)

I3=EtherNet/IP 32OUT

N3=PROFINET IO RT 32OUT

INPUT MODULES

A = No module

D1 = 8 M8 digital inputs modules

D3= 16IN digital inputs (SUB-D 25P) module

T1 = 2 analogue inputs 0-5V module

T2= 2 analogue inputs 0-10V module

C1 = 2 analogue inputs 0-20mA module

C2= 2 analogue inputs 4-20mA module

Connections size and type

3 =quick fitting tube Ø3

 $\mathbf{C} = \text{quick fitting tube } \emptyset 3.17$

4 = quick fitting tube Ø4

 $\mathbf{A} = M5 \text{ thread}$

35S

No. positions

 $\mathbf{A} = 10$ positions

 $\mathbf{B} = 12$ positions

C = 14 positions

D = 16 positions

E = 18 positions

 $\mathbf{F} = 20$ positions

G = 22 positions

H = 24 positions

L = 26 positions

M = 28 positions

N = 30 positions

P = 32 positions

No. positions

plugged side left

 $\mathbf{0} = 00$ positions

1 = 01 positions

2 = 02 positions

3 = 03 positions

4 = 04 positions

5 = 05 positions

6 = 06 positions

7 = 07 positions

 $\mathbf{E} = 14$ positions

F = 15 positions **G** = 16 positions

8 = 08 positions **9** = 09 positions $\mathbf{A} = 10$ positions $\mathbf{B} = 11$ positions C = 12 positions $\mathbf{D} = 13$ positions

No. positions

plugged side right

 $\mathbf{0} = 00$ positions

1 = 01 positions

2 = 02 positions

3 = 03 positions

4 = 04 positions

5 = 05 positions

6 = 06 positions

7 = 07 positions

8 = 08 positions

9 = 09 positions

 $\mathbf{A} = 10$ positions

 $\mathbf{B} = 11$ positions

C = 12 positions

 $\mathbf{D} = 13$ positions

 $\mathbf{E} = 14$ positions **F** = 15 positions

G = 16 positions

Valve type

A = N331.R0A (S.V. 3/2 NC 24VDC d.1,1)

 $\mathbf{B} = N331.R0B (S.V. 3/2 NC 24VDC d.1,5)$

C = N338.R0E (S.V. 3/2 NC 24VDC 1W d.0,8)

D = N341.R0A (S.V. 3/2 NO 24VDC d.1,1)

E = N341.R0B (S.V. 3/2 NO 24VDC d.1,5)

G = N321.R0A (S.V. 2/2 NC 24VDC d.1,1)

H = N321.R0B (S.V. 2/2 NC 24VDC d.1,5)

The "R"letter indicates that the coil is mounted upside-down (faces down). For prices and technical features of these valves please refer to the correspondent standard version (not R) included in the price list and catalogue.



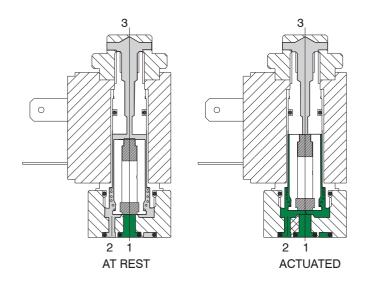
Functional schematics

Normally Closed (N.C.) 3/2 or 2/2

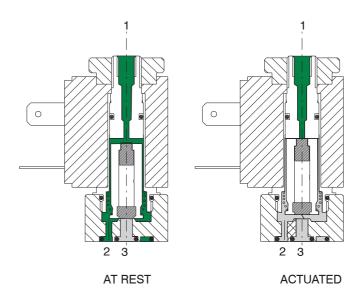


- 1 = INLET PORT
- 2 = OUTLET PORT
- 3 = EXHAUST PORT (Plugged if 2/2)





Normally Open (N.O.) 3/2 or 2/2



Construction characteristics

Electrical parts:

Solenoids: the solenoid consist of coils having different diameter copper wire windings insulated according standards "H"; they are encased in a nylon-glass compound. All parts are corrosion resistant.

Mechanical parts:

Nickel plated brass tube nitrile viton seals stainless steel plunger (AISI 430F), stainless steel adjusted springs, viton poppet seals, tropicalized zinc alloy interface plate, nickeled brass manual override, nickel steel coil lock nut, zinc steel mounting screw. To be usable, the solenoids and microsolenoids have to be attached either to a base or directly to the distributor's operators by means of connectors M5 or G 1/8". These solenoids are available in all voltages and frequences used in the world. The following are the technical characteristics of the solenoid.



Technical characteristics

Pneumatic	Working pressure	0 10 bar	
	Orifice size	1,3 mm	(0,9 mm for 2 W)
	Maximum fluid temperature	50°C	
	Maximum ambient temperature	-40°C +50°C	
	Maximum flow rate at 6 bar with Δp 1 bar	53 NI/min	(20NI/min. for 2 W)
	Cycles/minute	700	
	Fluids	Air-vacuum-inert gases	
	Lubrication	non required	
	Life	45 to 50 million cycles	
Electrical	Power consumption holding - D.C	5 W	(2.5 W) low consumption
	Power consumption holding - A.C	9 VA	(6 VA) low consumption
	Operating voltage tolerance	±10%	
	Response time opening *	8 ms	
	Response time closing *	6 ms	
	Insulation of the copper wire	Н	
	Insulation of the coil	F	
	Connector protection	IP 65	
	Cable protection	DIN 43650 INDUSTRIA	LFORM

^{(*) &}quot;Shifting time of pneumatic directional control valves or moving parts, logic devices were measured in accordance to ISO 12238:2001, Pneumatic fluid power - Directional control valves - Measurement of shifting time"

Maintenance and replacement parts

Maintenance practices for these valves are similar to those already detailed for other products-replacement of the plunger or poppet is not advisable since the new replacement would not provide the best fit with the rest of the already used valve. Special care should be taken that no dirt is accumulated between the working surface of fixed core and the plunger which would result in vibrations and overheating of the solenoid. In the case of microsolenoid it must be assured that the alternate current coil is not charged when the machanical part is not mounted to avoid destruction of the coil. The electrical connections have to be perfect, especially where low currents are used (12-24V). Oxidation of contacts between the connector and the coil can lead to intermittent malfunctions which are difficult to trace. Oxidation of contacts due to humidity or corrosive atmosphere are one of the most common causes of false alarms. Clean the contacts with appropriate spray.

Mechanical actuator for miniature solenoid valve

Ordering code

M 2 Normally Closed (N.C.)

M 2P Normally Closed (N.C.) threaded lock nut

M 2/9 Normally Closed (N.C.) 2 W 24 VDC





M 2/1 Normally Open (N.O.) air feeding through fix flunger

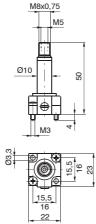






Weight 48 g

Ø20 2



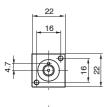
Normally Open (N.O.) air feeding through base

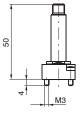




Weight 46 g





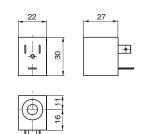


Ordering code	Available voltages	
N.O.	Coil	
MB10/1	24 D.C. (8 Watt)	Direct current
MB17/1 MB21/1 MB22/1 MB24/1	24/50 48/50 110/50 230/50	Alternating current 50 Hz
MB37/1	24/60	Alternating
MB39/1	110/60	current
MB41/1	230/60	60 Hz
MB56/1	24/50-60	Alternating
MB57/1	110/50-60	current
MB58/1	230/50-60	50/60 Hz

ves mm

Coil



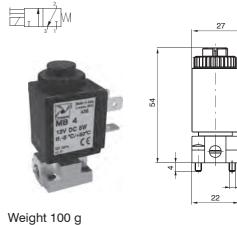


Weight 54 g

* Use only with M2/9

Ordering		Available voltages		
code		Coils		
MB 4	12 D.C.			
MB 5	24 D.C.	Direct current		
MB 6	48 D.C.			
MB 9*	24 D.C. (2 Wa	tt) (Direct current, low consumption)		
MB 17	24/50			
MB 21	48/50	Alternating current 50 Hz		
MB 22	110/50	Alternating current 50 Hz		
MB 24	230/50			
MB 37	24/60			
MB 39	110/60	Alternating current 60 Hz		
MB 41	230/60			
MB 56	24/50-60			
MB 57	110/50-60	Alternating current 50/60 Hz		
MB 58	230/50-60			
MB 66	24/50-60	Alternating current		
MB 67	110/50-60	(low consumption)		
MB 68	230/50-60	50/60 Hz		

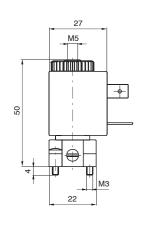
Miniature solenoid valve Normally Closed (N.C.)



Ordering code		Available voltages ture solenoid valve N.C.
M 2.4 M 2.5	12 D.C. 24 D.C.	Direct current
M 2.6 M 2.9	48 D.C. 24 D.C. (2 Watt)	Direct current
M 2.17 M 2.21 M 2.22 M 2.24	24/50 48/50 110/50 230/50	Alternating current 50 Hz
M 2.37 M 2.39 M 2.41	24/60 110/60 230/60	Alternating current 60 Hz
M 2.56 M 2.57 M 2.58	24/50-60 110/50-60 230/50-60	Alternating current 50/60 Hz
M 2.66 M 2.67 M 2.68	24/50-60 110/50-60 230/50-60	Alternating current (low consumption) 50/60 Hz

Miniature solenoid valve Normally Open (N.O.)





Ordering code	Available voltages Miniature solenoid valve N.O.		
M 2/1.4	12 D.C.		
M 2/1.5	24 D.C.	Direct current	
M 2/1.6	48 D.C.	Direct current	
M 2/1.9	24 D.C. (2 Watt)		
M 2/1.17	24/50		
M 2/1.21	48/50	Alternating current FO Ha	
M 2/1.22	110/50	Alternating current 50 Hz	
M 2/1.24	230/50		
M 2/1.37	24/60		
M 2/1.39	110/60	Alternating current 60 Hz	
M 2/1.41	230/60	_	
M 2/1.56	24/50-60		
M 2/1.57	110/50-60	Alternating current 50/60 Hz	
M 2/1.58	230/50-60		

External feeding base

Weight 103 g

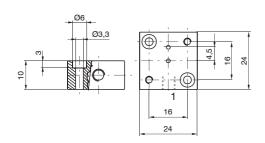
Use with solenoid valves for piloting pressure different from the using pressure

Ordering code

305.10.05

Weight 18 g





Individual base



1 = INLET PORT (N.C.)

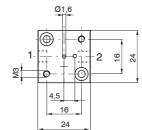
In line ports - thread M5

2 = OUTLET PORT

With a N.O. miniature solenoid valve

1 = EXHAUST

2 = OUTLET PORT



Ø3,2

Ordering code

305.00.00

Weight 56 g

90° Port - thread M5

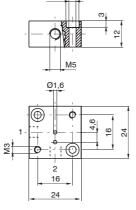


1 = INLET PORT (N.C.) 2 = OUTLET PORT (N.C)

With a N.O, miniature solenoid valve

1 = EXHAUST

2 = OUTLET PORT



Ordering code

305.90.00

Weight 56 g



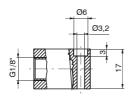
In line ports - thread G 1/8"

1 = INLET PORT (N.C.) 2 = OUTLET PORT (N.C)

With a N.O. miniature solenoid valve

1 = EXHAUST

2 = OUTLET PORT



φ 16

Ordering code

305.00.18

Weight 75 g

90° Port - thread G 1/8"



1 = INLET PORT (N.C.) 2 = OUTLET PORT (N.C.)

With a N.O. miniature solenoid valve

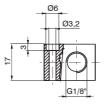
1 = EXHAUST

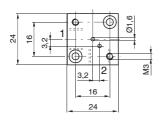
2 = OUTLET PORT

Ordering code

305.90.18

Weight 75 g



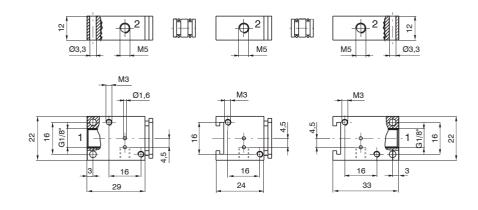


Series 300 - Size 22 mm

Last base



Modular bases for series mounting



Intermediate base

Ordering code

Initial base 305.05.00

Weight 57 g

Intermediate base

Initial base

305.06.00

Weight 44 g

Last base 305.07.00

Weight 53 g

Bored spacer 305.05.01

Weight 3 g

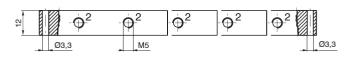
Solid spacer

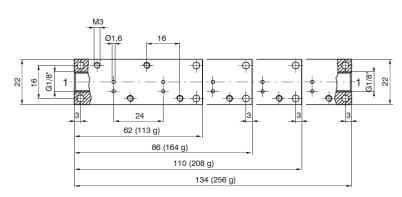
305.05.02

Weight 4 g



Multiple integral bases for series mounting



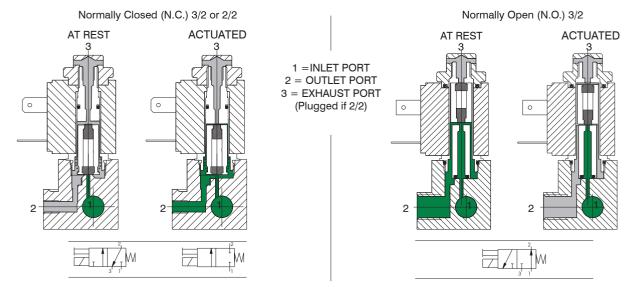


Ordering code

305.08.02 2 positions **305.08.03 3** positions **305.08.04 4** positions **305.08.05 5** positions



Functional schematic



Construction characteristics

<u>Electrical parts:</u> Solenoids: the solenoid consist of coils having different diameter copper wire windings insulated according standards "H"; they are encased in a nylon-glass compount. All parts are corrosion resistant.

<u>Mechanical parts:</u> Nickel plated brass tube nitrile (NBR) stainless steel plunger (AISI 430F), stainless steel adjusted springs, viton poppet seals, tropicalized zinc alloy interface plate, nickeled brass manual override, Technopolymer coil lock nut, zinc steel mounting screws. Electrical connectors are standard.

Technical characteristics

Pneumatic	Working pressure	0 10 bar		
	Orifice size	1,3 mm	(1,1 mm for 2 W)	
	Maximum fluid temperature	50°C		
	Maximum ambient temperature	50°C		
	Maximum flow rate at 6 bar with $\Delta p = 1$	53 NI/min	(35 NI/min. for 2 W)	
	Cycles/minute	700		
	Fluids	Air-Vacuum-Inert	gases	
	Lubrication	Non needed		
	Life	40 to 50 million cycles		
Electrical	Power consumption holding - D.C	5 W	(2 W) low consumption	
	Power consumption holding - A.C	8 VA	(6 VA) low consumption	
	Operating voltage tolerance	±10%		
	Response time opening *	8 ms		
	Response time closing *	6 ms		
	Insulation of the copper wire	Н		
	Insulation of the coil	F		
	Connector protection	IP 65	<u> </u>	
	Cable protection	DIN 43650 INDU	STRIAL FORM	

^{(*) &}quot;Shifting time of pneumatic directional control valves or moving parts, logic devices were measured in accordance to ISO 12238:2001, Pneumatic fluid power - Directional control valves - Measurement of shifting time"

Maintenance and replacement parts

Maintenace practices for these valves are similar to those already detailed for other products - replacement of the plunger or poppet is not advisable since the new replacement would not provide the best fit with the rest of the already used valve.

Special care should be taken that no dirt is accumulated between the working surface of fixed core and the plunger which would result in vibrations and overheating of the solenoid. In the case of microsolenoid it must be assured that the alternate current coil is not charged when the machanical part is not mounted to avoid destruction of the coil.

The electrical connections have to be perfect, especially where low currents are used (12-24 V). Oxidation of contacts between the connector and the coil can lead to intermittent malfunctions which are difficult to trace. Oxidation of contacts due to humidity or corrosive atmosphere are one of the most common causes of false alarms. Clean the contacts with appropriate spray.

Ø20

Mechanical actuator for Normally Closed (N.C.) Miniature solenoid valve

Ordering code

2 W

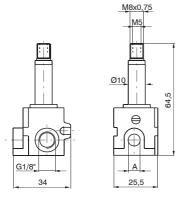
305.M1 A = G 1/8" **355.M1 A** = M5 **345.M1 A** = Push in fitting for 4 mm tube

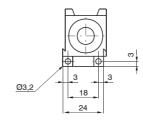
305.M1/9 A = G 1/8" **355.M1/9 A** = M5

345.M1/9 A = Push in fitting for 4 mm tube



Normally Closed (N.C.)





Ø20

Weight 95 g

Normally Open (N.O.)

Ordering code

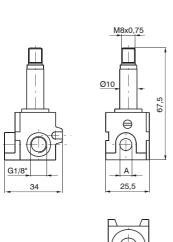
305.M1/1 A = G 1/8"

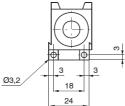
355.M1/1 A = M5

345.M1/1 A = Push in fitting for 4 mm tube





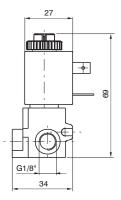




Weight 106 g

Miniature solenoid valve





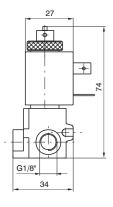
Normally Closed (N.C.)

Weight 149 g



	Ordering code)	Avai	lable voltage
G 1/8"	M5	TUBE Ø4 mm	miniature solenoid	
305.M4 305.M5 305.M6 305.M9	355.M4 355.M5 355.M6 355.M9	345.M4 345.M5 345.M6 345.M9	12 D.C. 24 D.C. 48 D.C. 24 D.C. (2 Watt)	Direct current
305.M17 305.M21 305.M22 305.M24	355.M17 355.M21 355.M22 355.M24	345.M17 345.M21 345.M22 345.M24	24/50 48/50 110/50 230/50	Alternating current 50 Hz
305.M37 305.M39 305.M41	355.M37 355.M39 355.M41	345.M37 345.M39 345.M41	24/60 110/60 230/60	Alternating current 60 Hz
305.M56 305.M57 305 M58	355.M56 355.M57 355.M58	345.M56 345 M57 345 M58	24/50-60 110/50-60 230/50-60	Alternating current 50/60 Hz
305.M66 305.M67 305 M68	355.M66 355.M67 355.M68	345.M66 345 M67 345 M68	24/50-60 110/50-60 230/50-60	Alternating current low consumption 50/60 Hz





Normally Open (N.O.)

Weight 165 g



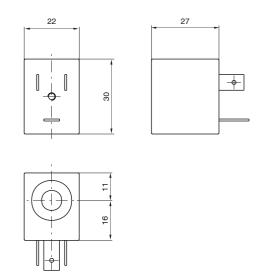
	Ordering code	ode Available voltages		
G 1/8"	M5	TUBE Ø4 mm	miniature solenoid	
305.M10/1	355.M10/1	345.M10/1	24 D.C. (8 Watt) Direct current	
305.M17/1 305.M21/1 305.M22/1 305.M24/1	355.M17/1 355.M21/1 355.M22/1 355.M24/1	345.M17/1 345.M21/1 345.M22/1 345.M24/1	24/50 48/50 110/50 230/50	Alternating current 50 Hz
305.M37/1 305.M39/1 305.M41/1	355.M37/1 355.M39/1 355.M41/1	345.M37/1 345.M39/1 345.M41/1	24/60 110/60 230/60	Alternating current 60 Hz
305. M56/1 305. M57/1 305. M58/1	355.M56/1 355.M57/1 355.M58/1	345.M56/1 345.M57/1 345.M58/1	24/50-60 110/50-60 230/50-60	Alternating current 50/60 Hz



Coil



Weight 54 g



Ordering code		Available voltages		
N.C.	N.O.	Coil		
MB4 MB5 MB6 MB9	MB10/1	12 D.C. 24 D.C. 48 D.C. 24 D.C. (2 Watt) 24 D.C. (8 Watt)	Direct current	
MB17 MB21 MB22 MB24	MB17/1 MB21/1 MB22/1 MB24/1	24/50 48/50 110/50 230/50	Alternating current 50 Hz	
MB37 MB39 MB41	MB37/1 MB39/1 MB41/1	24/60 110/60 230/60	Alternating current 60 Hz	
MB56 MB57 MB58	MB56/1 MB57/1 MB58/1	24/50-60 110/50-60 230/50-60	Alternating current 50/60 Hz	
MB66 MB67 MB68	/	24/50-60 110/50-60 230/50-60	Alternating current (low consumption) 50/60 Hz	

Electrical connector

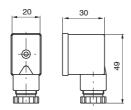
Ordering code

305.11.00 Normal

with Led 1 = 24 V D.C. / A.C.305.11.0_L

2 = 110 V 50/60 Hz 3 = 230 V 50/60 Hz





Weight 19 g



BISTABLE

The most interesting aspects of this bistable miniature solenoid valve operating with D.C. only, is that it can be commuted with a simple electric impulse and stay commuted till an inverted polarity impulse deactivates it. It means that the valve is not automatically deactivated if current fail as happens with normal solenoid valves.

The applications differ but are all based on above mentioned feature.

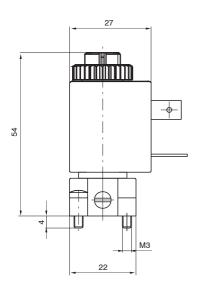
The internal construction is relatively special. The fix plunger is equipped with a permanent magnet that hold or release the mobile plunger according to the magnetic field generated by the coil.

A specific coil is used for this application and it cannot be replaced by the standard ones.

Ordering code is MBB5.

Miniature solenoid valve for distributors and bases





Ordering code

M5/B



Miniature solenoid valve with inseries mounting base

Ordering code

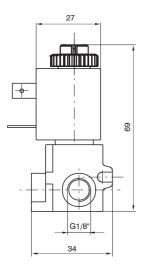
305.M5/B = G 1/8"

355.M5/B = M5

345.M5/B = Fitting for 4 mm tube







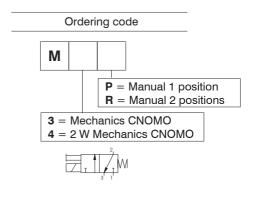


Electric pilot CNOMO (coil not included)

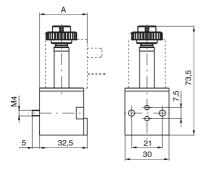
Mechanics with base for solenoid to be used where an electric pilot system is required.

May be used on all sizes and is standardized as an interface on the distributor.

The base is fitted with a manual control which is pulse actuated, without check, or with two stable positions, actuated by means of a screwdriver (pressing down and turning clockwise by 90°). Two different types of solenoids can be mounted on the stem, one in conformity with ISO standard size 30x38 and ISO 4400 (DIN 43650) electrical connection, and a compact one size 22x27, having the same performance but at lower price. The technical characteristics of the latter are described in the catalogue, series 300, and refer to MB solenoids. The base is fitted with screws (M4x30) for fastening to the distributor.







Weight 49 g

A = 33 (with MB solenoid)A = 38 (with MC solenoid)

General characteristics

Structural	Body	Thermoplastic polyester	
	Stem	Nickel-platted brass	
	Cores	AISI 430F stain	less steel
	Springs	AISI 302 stainle	ess steel
	Shutters	FPM	
	Other seals	NBR	
	Manual control	Nickel-platted b	orass
Pneumatic	Fluid	Air, Neutral gas	es
	Working pressure	0 10 bar	
	Fluid ambient temperature	-5°C +50°C	
	Flow rate at 6 bar with Δp 1 bar	53 NI/min	(20 NI/min for 2 W)
	Nominal flow cross section	1,3 mm	(0,9 mm for 2 W)
Electric	Power consumption (inrush) - A.C.	13 VA	
	Power consumption holding - D.C.	4 W	(2 W)
	Power consumption holding - A.C.	8,5 VA	
	Operating voltage tolerance	±10%	
	Response time opening *	13 ms	
	Response time closing *	5 ms	
	Insulation of the copper wire	Н	
	Insulation of the coil	F	
	Connector protection	IP 65	
	Cable protection	DIN 43650 "A" I	FORM

^{(*) &}quot;Shifting time of pneumatic directional control valves or moving parts, logic devices were measured in accordance to ISO 12238:2001, Pneumatic fluid power - Directional control valves - Measurement of shifting time"

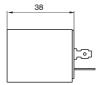
Coil

~ ~	
Ordering code	Available
	voltages
code	Coil
MC5	24 D.C.
MC9	24 D.C. (2 Watt)
MC56	24/50-60 Hz
MC57	110/50-60 Hz
MC58	230/50-60 Hz



Weight 110 g





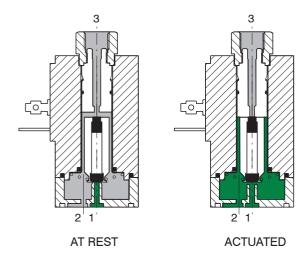
Functional schematic

Normally Closed (N.C.) 3/2 or 2/2

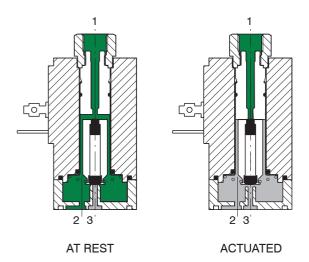


- 1 = INLET PORT
- 2 = OUTLET PORT
- 3 = EXHAUST PORT (Plugged if 2/2)





Normally Open (N.O.) 3/2 or 2/2



Construction characteristics

Electrical parts:

Solenoids: the solenoid consists of coils having different diameter copper wire windings insulated according standards "H"; they are encased in a nylon-glass compound. All parts are corrosion resistant.

Mechanical parts:

Stainless steel tube and plunger (AISI 430F), stainless steel adjusted springs, viton poppet seals, tropicalized zinc alloy interface plate, nitrile (NBR) seal nickeled brass manual override, nickel steel coil lock nut, zinc steel mounting screws. To be usable, the solenoids have to be attached either to a base or directly to the distributor's operators by means of connectors G 1/8". Electrical connectors are standard. These solenoid are available in all voltages and frequences used in the world. The following are the technical characteristics of the solenoid.



Technical characteristics

Pneumatic	Working pressure	0 10 bar	
	Orifice size	1,8 mm	
	Maximum fluid temperature	50°C	
	Maximum ambient temperature	50°C	
	Maximum flow rate at 6 bar with $\Delta p = 1$	80 NI/min	
	Cycles/minute	700	
	Fluids	Air-Vacuum-Inert gases	
	Lubrication	Not required	
	Life	40 to 50 millions	
Electric	Power consumption (inrush) - D.C.	-	
	Power consumption (inrush) - A.C.	19,5 VA	
	Power consumption holding - D.C.	8,2 W	
	Power consumption holding - A.C.	9 VA	
	Operating voltage tolerance	±10%	
	Response time opening *	15 ms	
	Response time closing *	30 ms	
	Insulation of the copper wire	Н	
	Insulation of the coil	F	
	Connector protection	IP 65	
	Cable protection	DIN 43650 "A" FORM	

^{(*) &}quot;Shifting time of pneumatic directional control valves or moving parts, logic devices were measured in accordance to ISO 12238:2001, Pneumatic fluid power - Directional control valves - Measurement of shifting time"

Maintenance and replacement parts

Maintenance practices for these valves are similar to those already detailed for other products - replacement of the plunger or poppet is not advisable since the new replacement would not provide the best fit with the rest of the already used valve.

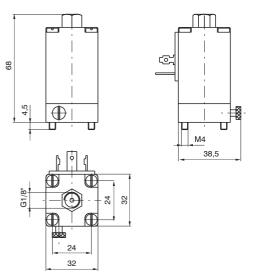
Special care should be taken that no dirt is accumulated between the working surface of fixed cores 3 and the plunger 2 which would result in vibrations and overheating of the solenoid. In the case of microsolenoid it must be assured that the alternate current coil is not charged when the mechanical part is not mounted to avoid destruction of the coil.

The electrical connections have to be perfect, especially where low currents are used (12-24 V). Oxidation of contacts between the connector and the coil can lead to intermittent malfunctions which are difficult to trace. Oxidation of contacts due to humidity or corrosive atmosphere are one of the most common causes of false alarms. Clean the contacts with appropriate spray.

Solenoid valve S and S/1



Weight 220 g



Normally Closed (N.C.) - S



Normally Open (N.O.) - S/1



Ordering code		Available voltages Coil	
S 2 S 4 S 5 S 6	S 2/1 S 4/1 S 5/1 S 6/1	6 D.C. 12 D.C. 24 D.C. 48 D.C.	Direct current
S 16 S 17 S 19 S 20 S 21 S 22 S 23 S 24	S 16/1 S 17/1 S 19/1 S 20/1 S 21/1 S 22/1 S 23/1 S 24/1	12/50 24/50 32/50 42/50 48/50 110/50 115/50 230/50	Alternating current 50 Hz
S 36 S 37 S 38 S 39 S 40 S 41	S 36/1 S 37/1 S 38/1 S 39/1 S 40/1 S 41/1	12/60 24/60 48/60 110/60 115/60 230/60	Alternating current 60 Hz
S 56 S 57 S 58	S 56/1 S 57/1 S 58/1	24/50-60 110/50-60 230/50-60	Alternating current 50/60 Hz

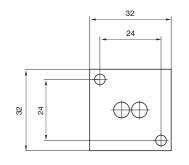
Closing plate

Ordering code

300.12.00



Weight 14 g





External feeding base

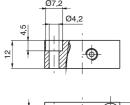
To be used with electrodistributeurs to get a different piloting pressure from the line one.

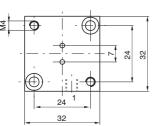
Ordering code

300.10.05



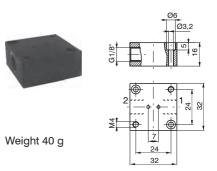
Weight 35 g







Individual base

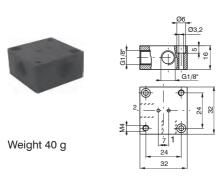


In line port - thread G 1/8" 1 = INLET PORT (N.C.) 2 = OUTLET PORT (N.C.) With solenoid valve N.O.

1 = EXHAUST PORT 2 = OUTLET PORT

Ordering code

300.04.00



90° Port - thread G 1/8" 1= INLET PORT (N.C.)

2 = OUTLET PORT (N.C) With solenoid valve N.O.

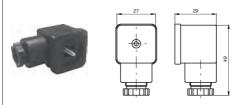
1 = EXHAUST PORT

2 = OUTLET PORT

Ordering code

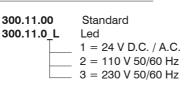
300.04.90





Weight 25 g





Modular bases for series mounting

Ordering code

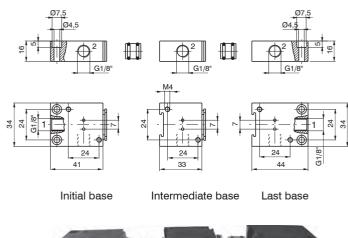
Initial base **300.05.00**

Intermediate base 300.06.00

Last base 300.07.00

Bored specer 300.05.01 Weight 5 g

Solid space 300.05.02 Weight 6 g





Weight 52 g

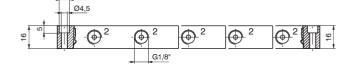
Ø7,5

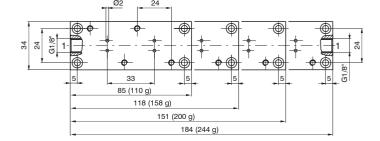
Weight 40 g

Weight 52 g

Multiple integral bases for series mounting









300.08.02 2 positions 300.08.03 3 positions

300.08.04 4 positions **300.08.05 5** positions

The series c Nus homologated solenoid valves (valid for USA and Canada file n. E206325-VAIU2, VAIU8) are different from the standard ones for microsolenoid made with an injected RYNITE embedded copper wire (they are included in class "F" insulation).

Refer to standard versions as for as other details and accessories to be used with solenoid valves.

Miniature solenoid valve 10 mm

Ordering code

UN3 6 = 2/2 N.C. 7 = 3/2 N.C. 8 = 3/2 N.O. $1 = 90^{\circ}$ connector with LED 1 = 24 V D.C.= Line connector with LED 2 = 12 V D.C. = 90° connector without LED **5** = Line connector without LED



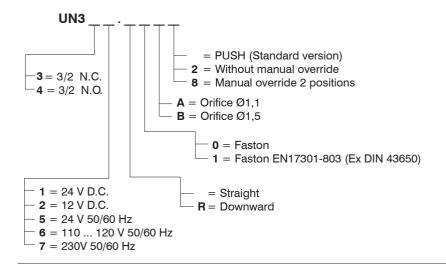






Miniature solenoid valve 15 mm

Ordering code

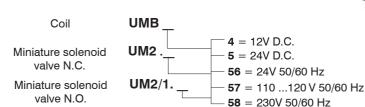






Miniature solenoid valve 22 mm

Ordering code





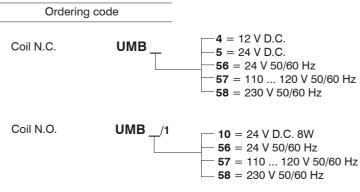


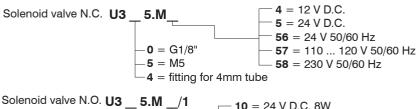






Miniature solenoid valve 22 mm for series mounting















Bi-stable miniature solenoid valve 22mm

Ordering code

Coil

Miniature solenoid valve for distributors and bases (N.C.)

Miniature solenoid valve with inseries mounting base (N.C.)

UMBB5

UM5/B

U3 _5.M5/B

-0 = G1/8"- **5** = M5 -4 =fitting for 4mm tube





Solenoid valve 30 mm (for mechanics M3 and M4)

Ordering code

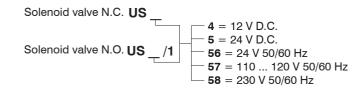
UMC5 = 24 V D.C.**UMC56** = 24 V 50/60 Hz **UMC57** = 110 ... 120 V 50/60 Hz

UMC58 = 230 V 50/60 Hz



Solenoid valve 32 mm

Ordering code





Series 700 - for compressed air and vacuum

The large flow valves and solenoid poppet valves for compressed air and vacuum.

Are manufactured for 3/2 and 2/2 versions only, either normally close and normally open.

For the compressed air oparation, the application is similar to the equivalent spool valves while for the vacuum operation a particular attention should be paid to the valve selected and its connection to the pump.

For the electric pilot it is used a normal miniature solenoid M2 with pneumatic actuator and the special miniature solenoid M2/V with vacuum.

The ordering code are referring to the solenoid valves with mechanics "M2" or "M2/V" assembled.

Coil are not included and have to be ordored separately (see Series 300).

Coil & Nus homologated are available (see 300 Series).

Construction characteristics		
	G 3/8"	
Body	Aluminium	
Actuators rod	Stainless steel	
Bottom plates	Aluminium	
Piston seals	NBR	
Springs	Stainless steel	
Springs Poppets Pistons	NBR	
Pistons	Aluminium	

Use and maintenance

These valves have a mean life of 10 to 15 million cycles under normal operating conditions.

Lubrication is not required for good operation but we recommend good filtration to avoid dirty deposit causing malfunction.

Please ensure that the valve is being used according with the manufacturers specification, such as air pressure and temperature.

The exhaust port of the distributor has to be protected in a dusty and dirty environment.

For these products, according to the construction technique and special application, is not required any maintenance with parts replacement. When necessary it is sufficient to clean the internal parts.

When it is used the solenoid valves with internal pilot, either for air or vacuum, inlet flow rate must be equal or higher that the required consumption flow rate

Otherwise is better choose the external pilot version.

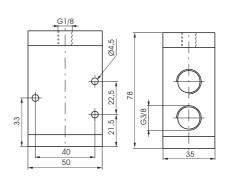


Operational characteristics		
Fluid	filtered and lubricated air or non	
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	2,5	
Temperature °C	-10 +70	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	1800	
Orifice size (mm)	10	
Working ports size	G3/8"	
Pilot ports size	G1/8"	

Coding: 779.32.11.

FUNCTION		FUNCTION	
	(3)	1C = Normally Closed	
		1A = Normally Open	
_			





N.C. Inlet port 1 Outlet port 2 Exhaust port 3



N.O. Inlet port 3 Outlet port 2 Exhaust port 1



Weight 360 g Attention: for the Normally open version, connect the inlet port to the exhaust port No "3".

Solenoid-Spring

Operational characteristics		
Fluid filtered and lubricated air or non		
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	2,5 (external feeding version) 3 (self feeding version)	
Temperature °C	-10+50	
Flow rate at 6 bar with Δp=1 (NI/min)	1800	
Orifice size (mm)	10	
Working ports size	G3/8"	
Pilot ports size	G1/8"	

Coding: 779.32.0. **3**.M2

	FUNCTION	
	1AC = Selffeeding-normally closed	
G	1C = External feeding-normally	
	closed	
	1AA = Selffeeding-normally open	
	1A = External feeding-normally open	

Self feeding - N.C. Inlet port 1 Outlet port 2 Exhaust port 3



Self feeding - N.O. Inlet port 3 Outlet port 2 Exhaust port 1



External feeding - N.C. Inlet port 1 Outlet port 2 Exhaust port 3



External feeding - N.O. Inlet port 3 Outlet port 2 Exhaust port 1







54 137 04,5 83 33 50

Weight 420 g

Weight 360 g



Pneumatic - Spring

Operational characteristics		
Fluid Vacuum		
Minimum pilot pressure (bar)	2	
Temperature °C	-10 +70	
Orifice size (mm)	10	
Working ports size	G3/8"	
Pilot ports size	G1/8"	

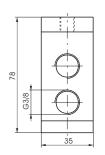
Coding: 779/V.32.11.

	FUNCTION
(3)	1C = Normally Closed
	1A = Normally Open





04,5 22,5 33 50



N.O. Exhaust port 1 Outlet port 2 Pump 3



N.C. Exhaust port 3 Outlet port 2 Pump 1



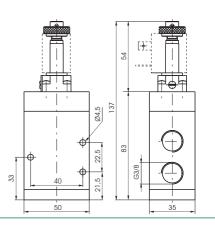
Solenoid-Spring-Internal pilot

Operational characteristics		
Fluid	Vacuum	
Temperature °C	-10 +50	
Orifice size (mm)	10	
Working ports size	G3/8"	
Pilot ports size	G1/8"	

3	FUNCTION
	1AA = Normally Open
	1AC = Normally Closed



Weight 420 g



N.O. Exhaust port 3 Outlet port 2 Pump 1



N.C. Exhaust port 1 Outlet port 2 Pump 3



Solenoid-Spring-External pilot

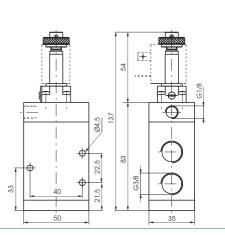
Operational characteristics		
Fluid	Vacuum	
Minimum pilot pressure (bar)	2	
Temperature °C	-10 +50	
Orifice size (mm)	10	
Working ports size	G3/8"	
Pilot ports size	G1/8"	

Coding: 779/V.32.0. **6**. M2

	FUNCTION
•	1A = Normally Open
	1C = Normally Closed
	,



Weight 420 g



N.O. Exhaust port 1 Outlet port 2 Pump 3



N.C. Exhaust port 3 Outlet port 2 Pump 1





Series PG - for compressed air and vacuum



The large flow valves and solenoid poppet valves for compressed air and vacuum. Are manufactured for 3/2 and 2/2 versions only, either normally close and normally open.

Construction characteristics				
	G 1/2" - 1/2" NPT	G 3/4" - 3/4" NPT	G 1" - 1" NPT	G 1 1/2" - 1 1/2" NPT
Body, operator and end cover		Alumii	nium	
Actuators rod	Steel			
Bottom plates		Alumiı	nium	
Seals and poppets		NB	R	
Springs		Stainles	s steel	
Pin guide	Stainless steel Stainless steel			
Pistons	Acetal resin			

Use and maintenance

These valves have a mean life of 10 to 15 million cycles under normal operating conditions.

Lubrication is not required for good operation but we recommend good filtration to avoid dirty deposit causing malfunction.

Please ensure that the valve is being used according with the manufacturers specification, such as air pressure and temperature.

The exhaust port of the distributor has to be protected in a dusty and dirty environment.

For these products, according to the construction technique and special application, is not required any maintenance with parts replacement. When necessary it is sufficient to clean the internal parts.

When it is used the solenoid valves with internal pilot, either for air or vacuum, inlet flow rate must be equal or higher that the required consumption flow rate.

Otherwise is better choose the external pilot version.



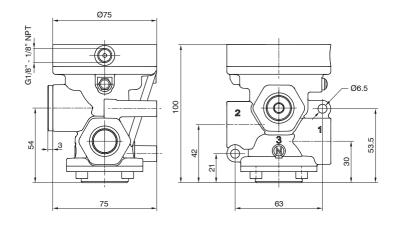
Coding: P@2A****11E**(**00000

Operational characteristics			
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous		
Max. working pressure (bar)	10		
Minimum pilot pressure (bar)	2,5		
Temperature °C	-5 +70		
Flow rate at 6 bar with Δp=1 (NI/min)	4800		
Orifice size (mm)	15		
Working ports size	G1/2" - 1/2" NPT		
Pilot ports size	G1/8" - 1/8" NPT		

		CONNECTIONS
G = Gas thread		
		N = NPT thread
WAYS NUMBER 2 = 2 ways, 2 positions		WAYS NUMBER
		2 = 2 ways, 2 positions
		3 = 3 ways, 2 positions
FUNCTION A = Normally Open (only for 3 ways		FUNCTION
		A = Normally Open (only for 3 ways)
		C = Normally Closed

2/2





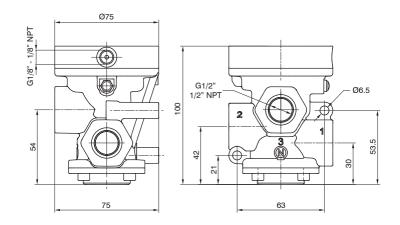
N.C. Inlet port 1 Outlet port 2 Exhaust port 3 (closed)

Weight 675 g

P@2A211E@00000

3/2





N.O. Inlet port 3 Outlet port 2 Exhaust port 1

12 T 3 1

N.C. Inlet port 1 Outlet port 2 Exhaust port 3

-12 - 1 3 W

Weight 648,5 g

P**@**2A311E**@**00000

Coding: **P@**2A**0**01**01**

2 = 2 ways, 2 positions $\mathbf{3} = 3$ ways, 2 positions VERSION A = Selffeeding E = External feedingFUNCTION

S40B0 = 12 VDC

S50B0 = 24 VDC

S60B0 = 24 V 50/60 Hz

S70B0 = 110 V 50/60 Hz **S80B0** = 230 V 50/60 Hz

10000 = Without solenoid coil VOLTAGE (30 MM SOLENOID COIL)

 $\mathbf{A} = \text{Normally Open (only for 3 ways)}$ C = Normally Closed

VOLTAGE (22 MM SOLENOID COIL)

CONNECTIONS $\mathbf{G} = \mathsf{Gasthread}$ N = NPT threadWAYS NUMBER

0

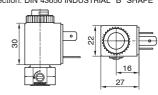
0

Solenoid-Spring

Operational characteristics			
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous		
Max. working pressure (bar)	10		
Minimum pilot pressure (bar)	2,5		
Temperature °C	-5 +50		
Flow rate at 6 bar with Δp=1 (NI/min)	4800		
Orifice size (mm)	15		
Working ports size	G1/2" - 1/2" NPT		
Pilot ports size	G1/8" - 1/8" NPT		
Response time according to ISO 12238, activation time (ms)	21 (selffeeding version)		
Response time according to ISO 12238, deactivation time (ms)	83 (self feeding version)		

30 mm SOLENOID COIL Connection: DIN 43650 "A" SHAPE 23 Ø75

22 mm SOLENOID COIL Connection: DIN 43650 INDUSTRIAL "B" SHAPE

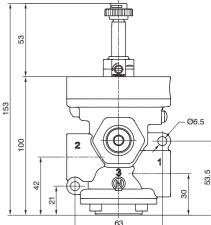


S40C0 = 12 VDC S50C0 = 24 VDC $\textbf{S60C0} = 24\,\text{V}\,50/60\,\text{Hz}$ **S70C0** = 110 V 50/60 Hz

S80C0 = 230 V 50/60 Hz 10000 = Without solenoid coil



G1/8" - 1/8" NPT 75



Self feeding - N.C.

Inlet port 1 Outlet port 2 Exhaust port 3 (closed)



External feeding - N.C.

Inlet port 1 Outlet port 2 Exhaust port 3 (closed)



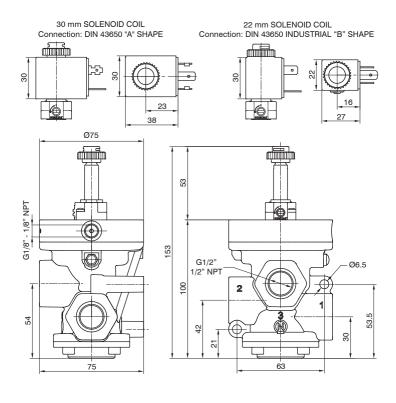
Weight 720,5 g

P@2A201**000**

3/2

2/2





Self feeding - N.O.

Inlet port 3 Outlet port 2 Exhaust port 1



Self feeding - N.C.

Inlet port 1 Outlet port 2 Exhaust port 3



External feeding - N.O.

Inlet port 3 Outlet port 2 Exhaust port 1



External feeding - N.C. Inlet port 1

Outlet port 2 Exhaust port 3

Weight 693,5 g

P@2A301**0G0**



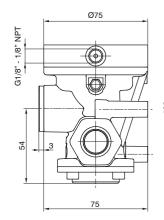
Operational characteristics			
Fluid	Vacuum		
Minimum pilot pressure (bar) 2			
Temperature °C -5 +70			
Orifice size (mm)	15		
Working ports size	G1/2" - 1/2" NPT		
Pilot ports size	G1/8" - 1/8" NPT		
Max. vacuum (mmHg)	758,5		

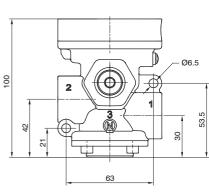
Coding: P@2V****11E**@**00000

	CONNECTIONS
•	G = Gasthread
	N = NPT thread
	WAYS NUMBER
N	2 = 2 ways, 2 positions
	3 = 3 ways, 2 positions
	FUNCTION
3	A = Normally Open (only for 3 ways)
	C = Normally Closed

2/2

- Parameter State of the State





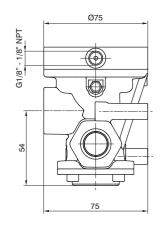
N.C. Pump 1 Outlet port 2 Exhaust port 3 (closed)

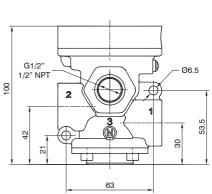
Weight 675,5 g

P@2V211E@00000

3/2







N.O. Pump 3 Outlet port 2 Exhaust port 1

12 T T T 3

N.C. Pump 1 Outlet port 2 Exhaust port 3

12 2 W

Weight 648,5 g

P**@**2V311E**@**00000

Solenoid-Spring

Operational characteristics			
Fluid	Vacuum		
Minimum pilot pressure (bar)	2 (external feeding version)		
Temperature °C	-5 +50		
Orifice size (mm)	15		
Working ports size	G1/2" - 1/2" NPT		
Pilot ports size	G1/8" - G1/8" NPT		
Max. vacuum (mmHg)	758,5		
Minimum operating vacuum (mmHg)	250 (selffeeding version)		

30 mm SOLENOID COIL

Connection: DIN 43650 "A" SHAPE

Ø75

23

53

Ш		CONNECTIONS
1	•	G = Gasthread
		N = NPTthread
		WAYS NUMBER
1	Ø	2 = 2 ways, 2 positions
		3 = 3 ways, 2 positions
VERSION		VERSION
	V	A = Selffeeding
		E = External feeding
		FUNCTION
	(3)	A = Normally Open (only for 3 ways)
	1	l

C = Normally Closed

VOLTAGE (22 MM SOLENOID COIL) **S40B0** = 12 VDC **S50B0** = 24 VDC

0 **S60B0** = 24 V 50/60 Hz **S70B0** = 110 V 50/60 Hz **S80B0** = 230 V 50/60 Hz 10000 = Without solenoid coil VOLTAGE (30 MM SOLENOID COIL)

S40C0 = 12 VDC S50C0 = 24 VDC $\textbf{S60C0} = 24\,\text{V}\,50/60\,\text{Hz}$ **S70C0** = 110 V 50/60 Hz

S80C0 = 230 V 50/60 Hz

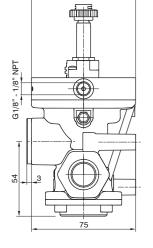
10000 = Without solenoid coil Self feeding - N.C.

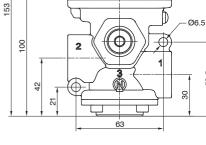
Pump 3 Outlet port 2 Exhaust port 1 (closed)

External feeding - N.C. Pump 1 Outlet port 2 Exhaust port 3 (closed)

2/2







22 mm SOLENOID COIL

Connection: DIN 43650 INDUSTRIAL "B" SHAPE

•

6

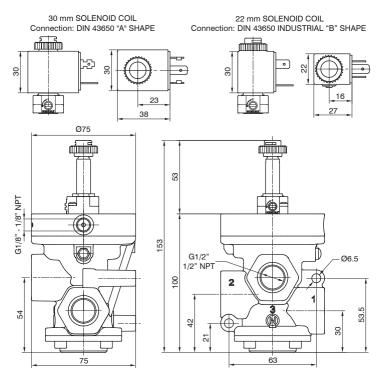
16

Weight 720,5 g

P@2V201**000**







Weight 693,5 g

P@2V301**000**

Self feeding - N.O. Pump 1 Outlet port 2 Exhaust port 3



Pump 3 Outlet port 2 Exhaust port 1



External feeding - N.O. Pump 3 Outlet port 2 Exhaust port 1



External feeding - N.C. Pump 1 Outlet port 2 Exhaust port 3





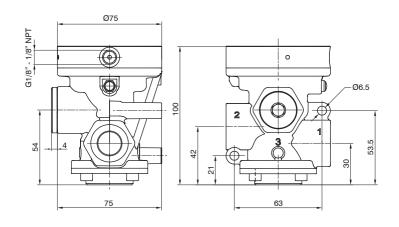
Coding: P@3A****11E**@**00000

Operational characteristics			
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous		
Max. working pressure (bar) 10			
Minimum pilot pressure (bar) 2,5			
Temperature °C	-5 +70		
Flow rate at 6 bar with ∆p=1 (NI/min)	6100		
Orifice size (mm)	20		
Working ports size	G3/4" - 3/4" NPT		
Pilot ports size	G1/8" - 1/8" NPT		

	CONNECTIONS
•	G = Gas thread
	N = NPT thread
WAYS NUMBER	
0	2 = 2 ways, 2 positions
	3 = 3 ways, 2 positions
	FUNCTION
(3)	A = Normally Open (only for 3 ways)
	C = Normally Closed

2/2



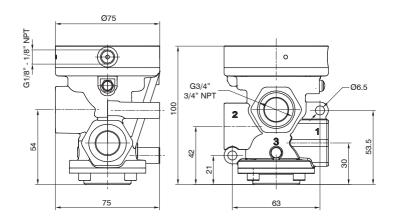


N.C. Inlet port 1 Outlet port 2 Exhaust port 3 (closed)

Weight 576,5 g

P@3A211E@00000





N.O. Inlet port 3 Outlet port 2 Exhaust port 1

N.C. Inlet port 1 Outlet port 2 Exhaust port 3

-12-10-1-13-W

Weight 522,5 g

P**⊚**3A311E**ଢ**000000

22 mm SOLENOID COIL

Connection: DIN 43650 INDUSTRIAL "B" SHAPE

Solenoid-Spring

Operati	onal characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	٦.
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	2,5	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	6100	
Orifice size (mm)	20	
Working ports size	G3/4" - 3/4" NPT	
Pilot ports size	G1/8" - 1/8" NPT	7
Response time according to ISO 12238, activation time (ms)	22 (selffeeding version)	
Response time according to ISO 12238, deactivation time (ms)	81 (self feeding version)	7

30 mm SOLENOID COIL

Connection: DIN 43650 "A" SHAPE

CONNECTIONS **(** $\mathbf{G} = \mathsf{Gasthread}$ N = NPT threadWAYS NUMBER 0 2 = 2 ways, 2 positions $\mathbf{3} = 3$ ways, 2 positions VERSION V A = Selffeeding E = External feedingFUNCTION **(3**) $\mathbf{A} = \text{Normally Open (only for 3 ways)}$

2/2

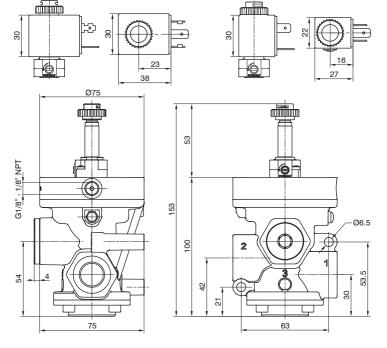
C = Normally Closed VOLTAGE (22 MM SOLENOID COIL) **S40B0** = 12 VDC **S50B0** = 24 VDC 0 S60B0 = 24 V 50/60 Hz **S70B0** = 110 V 50/60 Hz **S80B0** = 230 V 50/60 Hz 10000 = Without solenoid coil VOLTAGE (30 MM SOLENOID COIL) **S40C0** = 12 VDC S50C0 = 24 VDC

 $\textbf{S60C0} = 24\,\text{V}\,50/60\,\text{Hz}$

S70C0 = 110 V 50/60 Hz **S80C0** = 230 V 50/60 Hz

10000 = Without solenoid coil





Self feeding - N.C.

Inlet port 1 Outlet port 2 Exhaust port 3 (closed)



External feeding - N.C.

Inlet port 1 Outlet port 2 Exhaust port 3 (closed)

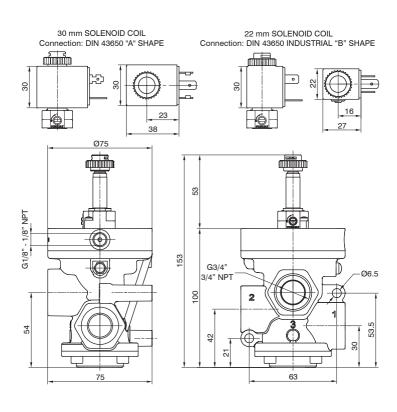


Weight 621,5 g

P@3A201**0@**0

3/2





Self feeding - N.O. Inlet port 3

Outlet port 2 Exhaust port 1



Self feeding - N.C.

Inlet port 1 Outlet port 2 Exhaust port 3



External feeding - N.O.

Inlet port 3 Outlet port 2 Exhaust port 1



External feeding - N.C. Inlet port 1 Outlet port 2

Exhaust port 3

Weight 567,5 g

P@3A301**0@**@



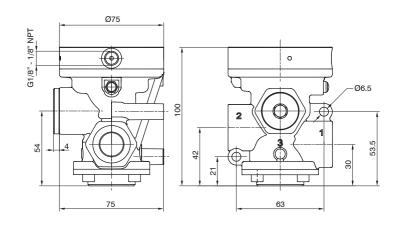
Operational characteristics		
Fluid	Vacuum	
Minimum pilot pressure (bar)	2	
Temperature °C	-5 +70	
Orifice size (mm)	20	
Working ports size	G3/4" - 3/4" NPT	
Pilot ports size	G1/8" - 1/8" NPT	
Max. vacuum (mmHg)	758,5	

Coding: P@3V****11E**F**00000

	CONNECTIONS
•	G = Gasthread
_	N = NPT thread
	WAYS NUMBER
0	2 = 2 ways, 2 positions
	3 = 3 ways, 2 positions
	FUNCTION
(3)	A = Normally Open (only for 3 ways)
	C = Normally Closed

2/2





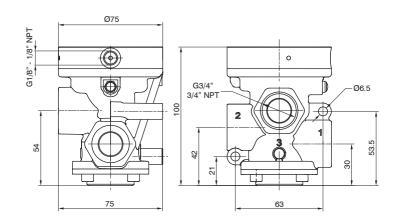
N.C. Pump 1 Outlet port 2 Exhaust port 3 (closed)

Weight 576,5 g

P@3V211E@00000

3/2





N.O. Pump 3 Outlet port 2 Exhaust port 1

12 1 3 W

N.C. Pump 1 Outlet port 2 Exhaust port 3

12 2 1 3 W

Weight 522,5 g

P@3V311E**@**00000

Solenoid-Spring

Operational characteristics		
Fluid	Vacuum	
Minimum pilot pressure (bar)	2 (external feeding version)	
Temperature °C	-5+50	
Orifice size (mm)	20	
Working ports size	G3/4" - 3/4" NPT	
Pilot ports size	G1/8" - 1/8" NPT	
Max. vacuum (mmHg)	758,5	
Minimum operating vacuum (mmHg)	250 (selffeeding version)	

30 mm SOLENOID COIL

Connection: DIN 43650 "A" SHAPE

23

53

Coding: P@3V**0**01**000**

		CONNECTIONS
1	•	G = Gasthread
1		N = NPTthread
WAYS NUMBER		WAYS NUMBER
1	Ø	2 = 2 ways, 2 positions
		3 = 3 ways, 2 positions
		VERSION
	V	A = Selffeeding
		E = External feeding
FUNCTION		FUNCTION
	(3)	A = Normally Open (only for 3 ways)

C = Normally Closed VOLTAGE (22 MM SOLENOID COIL)

S40B0 = 12 VDC **S50B0** = 24 VDC

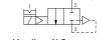
0 **S60B0** = 24 V 50/60 Hz **S70B0** = 110 V 50/60 Hz **S80B0** = 230 V 50/60 Hz 10000 = Without solenoid coil VOLTAGE (30 MM SOLENOID COIL) **S40C0** = 12 VDC

10000 = Without solenoid coil

S50C0 = 24 VDC $\textbf{S60C0} = 24\,\text{V}\,50/60\,\text{Hz}$ **S70C0** = 110 V 50/60 Hz **S80C0** = 230 V 50/60 Hz

Self feeding - N.C.

Pump 3 Outlet port 2 Exhaust port 1 (closed)



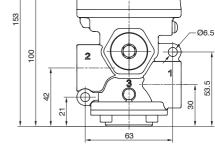
External feeding - N.C. Pump 1

Outlet port 2 Exhaust port 3 (closed)

2/2



Ø75 1/8 54 75



22 mm SOLENOID COIL

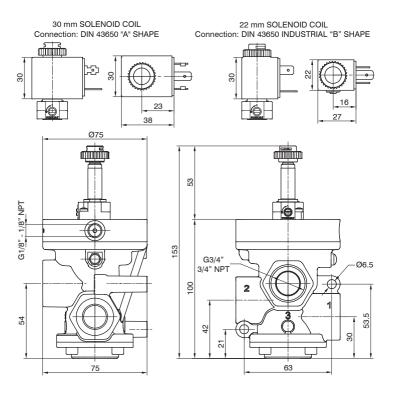
Connection: DIN 43650 INDUSTRIAL "B" SHAPE

•

16

Weight 621,5 g P@3V201**0@0**

3/2



Self feeding - N.O. Pump 1

Outlet port 2 Exhaust port 3



Self feeding - N.C. Pump 3

Outlet port 2 Exhaust port 1



External feeding - N.O. Pump 3 Outlet port 2 Exhaust port 1



External feeding - N.C. Pump 1 Outlet port 2

Exhaust port 3

Weight 567,5 g

P@3V301**0@**0



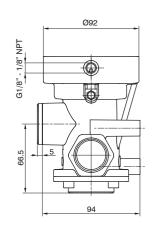
Coding: P@1A****011E**@**00000

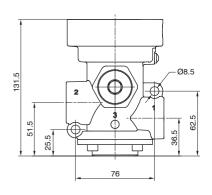
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	2,5	
Temperature °C	-5 +70	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	12500	
Orifice size (mm)	25	
Working ports size	G1" - 1" NPT	
Pilot ports size	G1/8" - 1/8" NPT	

	CONNECTIONS
•	G = Gasthread
_	N = NPT thread
	WAYS NUMBER
Ø	2 = 2 ways, 2 positions
	3 = 3 ways, 2 positions
	FUNCTION
A = Normally Open (only for 3 wa	
	C = Normally Closed

2/2

0





N.C. Inlet port 1 Outlet port 2 Exhaust port 3 (closed)

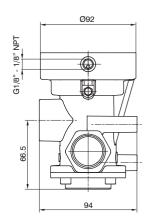
Weight 1231,5 g

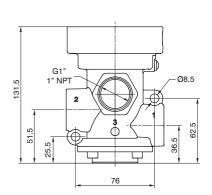
P@1A211E@00000

3/2









N.O. Inlet port 3 Outlet port 2 Exhaust port 1

12 T W

N.C. Inlet port 1 Outlet port 2 Exhaust port 3

-12-10-1-13-W

Weight 1139,5 g

P@1A311E**@**00000

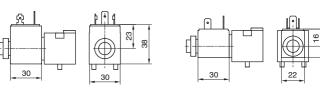
Solenoid-Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	2,5	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	12500	
Orifice size (mm)	25	
Working ports size	G1" - 1" NPT	
Pilot ports size	G1/8" - 1/8" NPT	
Response time according to ISO 12238, activation time (ms)	27 (selffeeding version)	
Response time according to ISO 12238, deactivation time (ms)	88 (selffeeding version)	

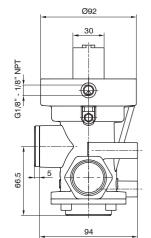
2/2

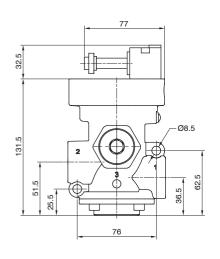
30 mm SOLENOID COIL Connection: DIN 43650 "A" SHAPE

Connection: DIN 43650 INDUSTRIAL "B" SHAPE

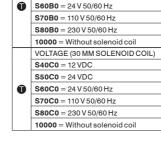








22 mm SOLENOID COIL



 $\mathbf{A} = \text{Normally Open (only for 3 ways)}$ C = Normally Closed

VOLTAGE (22 MM SOLENOID COIL)

Coding: P@1A@01**09**

CONNECTIONS $\mathbf{G} = \mathsf{Gasthread}$ N = NPT threadWAYS NUMBER 2 = 2 ways, 2 positions 3 = 3 ways, 2 positions VERSION A = Selffeeding $\mathbf{E} = \mathbf{E} \mathbf{x} \mathbf{t} \mathbf{e} \mathbf{r} \mathbf{n} \mathbf{a} \mathbf{l}$ feeding FUNCTION

S40B0 = 12 VDC

S50B0 = 24 VDC

Self feeding - N.C.

Inlet port 1 Outlet port 2 Exhaust port 3 (closed)



External feeding - N.C.

Inlet port 1 Outlet port 2 Exhaust port 3 (closed)



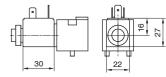
Weight 1290 g

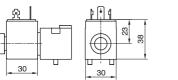
P@1A201**0@0**

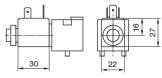
3/2

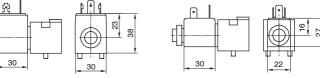
30 mm SOLENOID COIL Connection: DIN 43650 "A" SHAPE

22 mm SOLENOID COIL Connection: DIN 43650 INDUSTRIAL "B" SHAPE

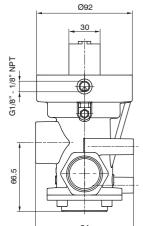


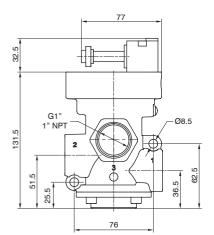












Self feeding - N.O.

Inlet port 3 Outlet port 2 Exhaust port 1



Self feeding - N.C.

Inlet port 1 Outlet port 2 Exhaust port 3



External feeding - N.O.

Inlet port 3 Outlet port 2 Exhaust port 1



External feeding - N.C. Inlet port 1 Outlet port 2 Exhaust port 3

Weight 1198 g

P@1A301**0@**0



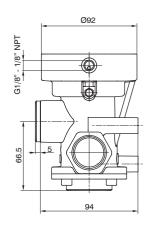
Operational characteristics		
Fluid	Vacuum	
Minimum pilot pressure (bar)	2	
Temperature °C	-5 +70	
Orifice size (mm)	25	
Working ports size	G1" - 1" NPT	
Pilot ports size	G1/8" - 1/8" NPT	
Max. vacuum (mmHg)	758,5	

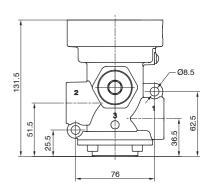
Coding: P@1V****11E**(**00000)

	CONNECTIONS
•	G = Gasthread
_	N = NPT thread
	WAYS NUMBER
0	2 = 2 ways, 2 positions
	3 = 3 ways, 2 positions
	FUNCTION
•	A = Normally Open (only for 3 ways)
	C = Normally Closed

2/2







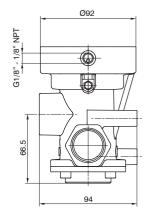
N.C. Pump 1 Outlet port 2 Exhaust port 3 (closed)

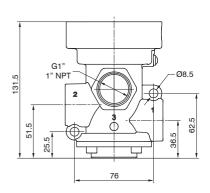
Weight 1231,5 g

P@1V211E@00000

3/2







N.O. Pump 3 Outlet port 2 Exhaust port 1

12 T T 3

N.C. Pump 1 Outlet port 2 Exhaust port 3

12 2 1 3 3 W

Weight 1	139,5 g
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P**@**1V311E**B**00000

Solenoid-Spring

Operational characteristics		
Fluid	Vacuum	
Minimum pilot pressure (bar)	2 (external feeding version)	
Temperature °C	-5 +50	
Orifice size (mm)	25	
Working ports size	G1"-1"NPT	
Pilot ports size	G1/8" - 1/8" NPT	
Max. vacuum (mmHg)	758,5	
Minimum operating vacuum (mmHg)	250 (selffeeding version)	

Coding: P**@**1V**0**01**VD**

	CONNECTIONS	
1	•	G = Gasthread
1		N = NPTthread
1		WAYS NUMBER
7	0	2 = 2 ways, 2 positions
		3 = 3 ways, 2 positions
VERSION		VERSION
	V	A = Selffeeding
E = External feeding	E = External feeding	
		FUNCTION
	•	A = Normally Open (only for 3 ways)
	I	

C = Normally Closed VOLTAGE (22 MM SOLENOID COIL)

S40B0 = 12 VDC **S50B0** = 24 VDC **S60B0** = 24 V 50/60 Hz

0 **S70B0** = 110 V 50/60 Hz **S80B0** = 230 V 50/60 Hz 10000 = Without solenoid coil VOLTAGE (30 MM SOLENOID COIL) **S40C0** = 12 VDC

S50C0 = 24 VDC $\textbf{S60C0} = 24\,\text{V}\,50/60\,\text{Hz}$ **S70C0** = 110 V 50/60 Hz

S80C0 = 230 V 50/60 Hz 10000 = Without solenoid coil

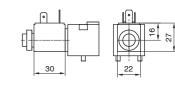
2/2



30 30

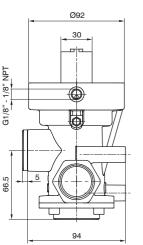
30 mm SOLENOID COIL

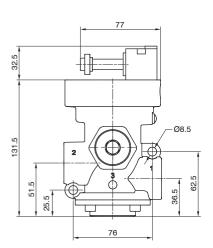
Connection: DIN 43650 "A" SHAPE



22 mm SOLENOID COIL

Connection: DIN 43650 INDUSTRIAL "B" SHAPE







Pump 3 Outlet port 2 Exhaust port 1 (closed)



External feeding - N.C.

Pump 1 Outlet port 2 Exhaust port 3 (closed)



Weight 1290 g

P@1V201**000**

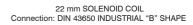
3/2

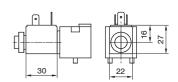
30 mm SOLENOID COIL Connection: DIN 43650 "A" SHAPE

ន

30

30















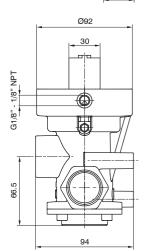
Pump 3 Outlet port 2 Exhaust port 1

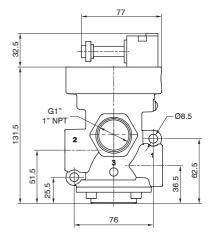


External feeding - N.C. Pump 1 Outlet port 2 Exhaust port 3









Weight 1198 g





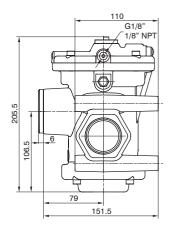
Coding: P@6A****11E**(**00000

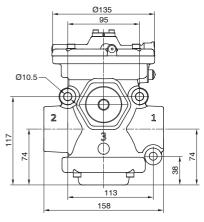
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	3	
Temperature °C	-5 +70	
Flow rate at 6 bar with Δp=1 (NI/min)	33500	
Orifice size (mm)	38	
Working ports size	G1 1/2"-1 1/2"NPT	
Pilot ports size	G1/8" - 1/8" NPT	

	CONNECTIONS
•	G = Gasthread
	N = NPT thread
	WAYS NUMBER
0	2 = 2 ways, 2 positions
	3 = 3 ways, 2 positions
FUNCTION	
(3)	A = Normally Open (only for 3 ways)
	C = Normally Closed

2/2







N.C. Inlet port 1 Outlet port 2 Exhaust port 3 (closed)

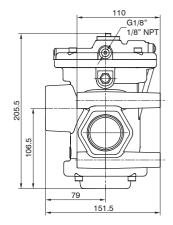
12 - 1 1 1 M

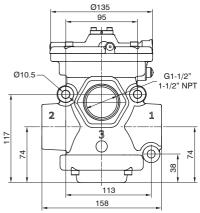
Weight 3417 g

P@6A211E@00000

3/2







N.O. Inlet port 3 Outlet port 2 Exhaust port 1

12 T 3 1

N.C. Inlet port 1 Outlet port 2 Exhaust port 3

-12- - 1 3 3 W

Weight 3168 g

P**@**6A311E**G**00000

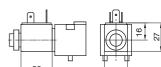
Solenoid-Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	3	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	33500	
Orifice size (mm)	38	
Working ports size	G1 1/2" - 1 1/2" NPT	
Pilot ports size	G1/8" - 1/8" NPT	
Response time according to ISO 12238, activation time (ms)	182 (self feeding version)	
Response time according to ISO 12238, deactivation time (ms)	78 (selffeeding version)	

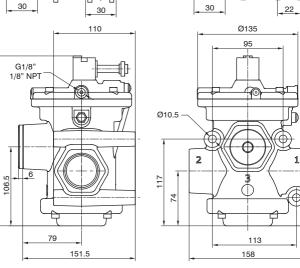
2/2

30 mm SOLENOID COIL Connection: DIN 43650 "A" SHAPE





22 mm SOLENOID COIL



Coding: **P6A0**01**71** CONNECTIONS

 $\mathbf{G} = \mathsf{Gasthread}$ N = NPT thread



Self feeding - N.C.

Inlet port 1 Outlet port 2 Exhaust port 3 (closed)



S80C0 = 230 V 50/60 Hz 10000 = Without solenoid coil

External feeding - N.C.

Inlet port 1 Outlet port 2 Exhaust port 3 (closed)



Weight 3491,5 g

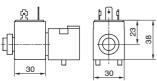
3/2

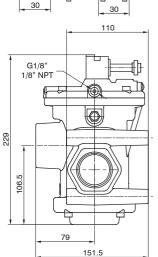
P@6A201**0@**

30 mm SOLENOID COIL

229

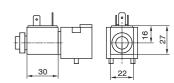
Connection: DIN 43650 "A" SHAPE

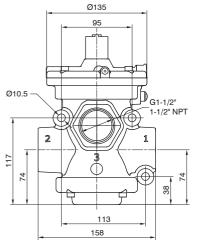




22 mm SOLENOID COIL Connection: DIN 43650 INDUSTRIAL "B" SHAPE

38





Self feeding - N.O. Inlet port 3 Outlet port 2 Exhaust port 1



Self feeding - N.C. Inlet port 1 Outlet port 2 Exhaust port 3



External feeding - N.O.

Inlet port 3 Outlet port 2 Exhaust port 1



External feeding - N.C. Inlet port 1 Outlet port 2 Exhaust port 3





Weight 3242,5 g

P@6A301**0@**



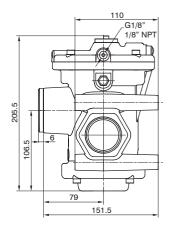
Operational characteristics		
Fluid	Vacuum	
Minimum pilot pressure (bar)	2	
Temperature °C	-5 +70	
Orifice size (mm)	38	
Working ports size	G1 1/2" - 1 1/2" NPT	
Pilot ports size	G1/8" - 1/8" NPT	
Max. vacuum (mmHg)	758,5	

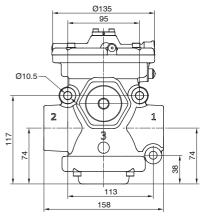
Coding: P@6V****11E**@**00000

	CONNECTIONS
•	G = Gasthread
	N = NPT thread
	WAYS NUMBER
0	2 = 2 ways, 2 positions
	3 = 3 ways, 2 positions
	FUNCTION
3	A = Normally Open (only for 3 ways)
	C = Normally Closed

2/2







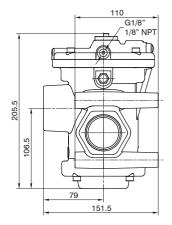
N.C. Pump 1 Outlet port 2 Exhaust port 3 (closed)

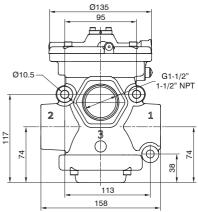
Weight 3417 g

P@6V211E@00000

3/2







N.O. Pump 3 Outlet port 2 Exhaust port 1

12

N.C. Pump 1 Outlet port 2 Exhaust port 3

12 2 1 3 W

Weight 3168 g

P**@**6V311E**@**00000

Solenoid-Spring

Operational characteristics		
Fluid	Vacuum	
Minimum pilot pressure (bar)	2 (external feeding version)	
Temperature °C	-5 +50	
Orifice size (mm)	38	
Working ports size	G1 1/2" - 1 1/2" NPT	
Pilot ports size	G1/8" - 1/8" NPT	
Max. vacuum (mmHg)	758,5	
Minimum operating vacuum (mmHg)	250 (self feeding version)	

30 mm SOLENOID COIL

Connection: DIN 43650 "A" SHAPE

Coding: P**©**6V**0**01**00**

CONN		CONNECTIONS
11	Θ	G = Gasthread
11		N = NPTthread
WAYS NUMBER 2 = 2 ways, 2 positions		WAYS NUMBER
		2 = 2 ways, 2 positions
		3 = 3 ways, 2 positions
l		VERSION
	V	A = Selffeeding
E = External feeding		E = External feeding
		FUNCTION
		A = Normally Open (only for 3 ways)

 $\mathbf{C} = \mathsf{Normally}\,\mathsf{Closed}$ VOLTAGE (22 MM SOLENOID COIL) **S40B0** = 12 VDC **S50B0** = 24 VDC

0 S60B0 = 24 V 50/60 Hz **S70B0** = 110 V 50/60 Hz **S80B0** = 230 V 50/60 Hz

10000 = Without solenoid coil VOLTAGE (30 MM SOLENOID COIL) **S40C0** = 12 VDC **S50C0** = 24 VDC

 $\textbf{S60C0} = 24\,\text{V}\,50/60\,\text{Hz}$ **S70C0** = 110 V 50/60 Hz

S80C0 = 230 V 50/60 Hz 10000 = Without solenoid coil

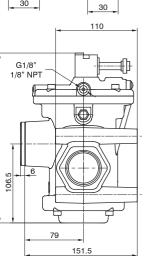
2/2

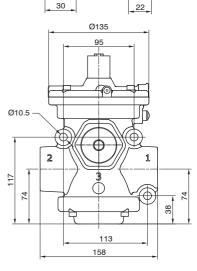


30 G1/8" 1/8" NPT

229

229





22 mm SOLENOID COIL

Connection: DIN 43650 INDUSTRIAL "B" SHAPE



Pump 3 Outlet port 2 Exhaust port 1 (closed)



External feeding - N.C.

Pump 1 Outlet port 2 Exhaust port 3 (closed)



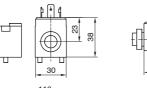
Weight 3491,5 g

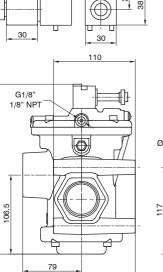
P@6V201**V@0**

3/2

30 mm SOLENOID COIL

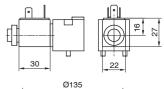
Connection: DIN 43650 "A" SHAPE

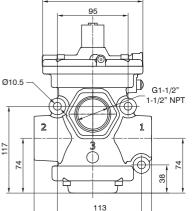




151.5

22 mm SOLENOID COIL Connection: DIN 43650 INDUSTRIAL "B" SHAPE





158

Self feeding - N.O. Pump 1

Outlet port 2 Exhaust port 3



Self feeding - N.C.

Pump 3 Outlet port 2 Exhaust port 1



External feeding - N.O.

Pump 3 Outlet port 2 Exhaust port 1



External feeding - N.C. Pump 1

Outlet port 2 Exhaust port 3



Weight 3242,5 g

P@6V301**0@**



Series T772-773 - for compressed air and vacuum in technopolymer - G1/2" and G3/4"

The range of G1/2" and G3/4" pilot and solenoid operated poppet valves are manufactured with high impact resistant thermoplastic. The use of this materiel results in a versatile, lightweight and economical valve.

The traditional piston lip seal has been replaced with a rolling diaphragm, thereby eliminating frictional wear and tear to this seal.

The valves (with the exception of certain vacuum models) also features a seal, which separates port 3 from the piston head. The inclusion of this seal has enhanced the valve's performance and allows the valve to be used as normally open (a configuration not possible in the Zama series). Solenoid operated valves (both internal and external pilot versions) are fitted with a quick exhaust unit, which reduces the return stroke operating time by 60%.

The bulk of the valves in this series use the MP type operator, the exception being internally piloted vacuum models, which use the MV operator. These operators differ from the M2 type in that they have self-tapping mounting screws for use in plastics.

The ordering code are referring to the solenoid valves with mechanics "MP" or "MV" assembled.

Coils are not included and have to be ordered separately (series 300, Section 1, General Catalogue), with the exception of the bistable versions which already include 24V DC Coils (N331.0A).

Coils : Nus homologated are also available. (See series 300).

Construction characteristics		
Body, operator and end cover	High impact resistant thermoplastic	
Seals and poppets	NBR	
Diaphragm	Oil resistant rubber (NBR)	
Springs	AISI 302 stainless steel	
Piston and shaft	Acetal resin	

Use and maintenance

These valves have a mean life of 10 to 15 million cycles under normal operating conditions.

Lubrication is not required for good operation but we recommend good filtration to avoid dirty deposit causing malfunction.

Please ensure that the valve is being used according with the manufacturers specification, such as air pressure and temperature.

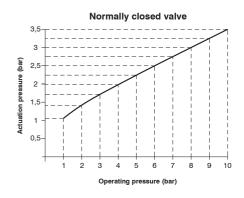
The exhaust port of the distributor has to be protected in a dusty and dirty environment.

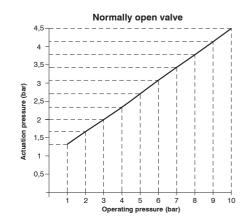
 $For these \ products, according to the \ construction \ technique \ and \ special \ application, is \ not \ required \ any \ maintenance \ with \ parts \ replacement.$ When necessary it is sufficient to clean the internal parts.

When it is used the solenoid valves with internal pilot, either for air or vacuum, inlet flow rate must be equal or higher that the required consumption

Otherwise is better choose the external pilot version.

MINIMUM PILOTING PRESSURE DIAGRAM (Valves for compressed air) PNEUMATIC/SPRING AND EXTERNAL SOLENOID PILOT VERSION





Series T772-773 - for compressed air in technopolymer - G1/2"

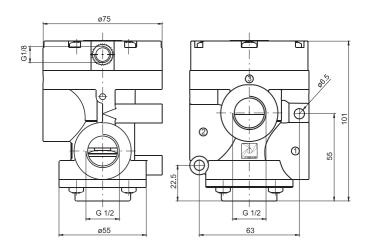


Coding: T772.32.11.1

Pneumatic - Spring

Operational characteristics		
Fluid	filtered and lubricated air or non	
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	See diagram at general page	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	4100	
Orifice size (mm)	15	
Working ports size	G1/2"	
Pilot ports size	G1/8"	
Compressed air, purity class according to ISO 8573-1:2010	7:4:4	





N.C. Inlet port 1 Outlet port 2 Exhaust port 3



N.O. Inlet port 3 Outlet port 2 Exhaust port 1

Weight 350 g

Solenoid-Spring-Internal pilot

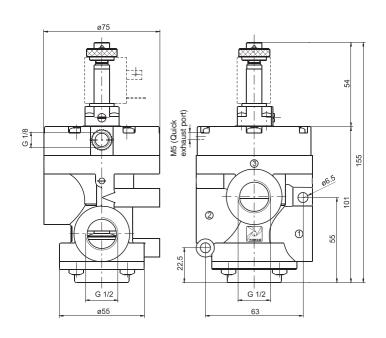
Operational characteristics		
Fluid	filtered and lubricated air or non	
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	2,5	
Temperature °C	-5 +50	
Flow rate at 6 bar with ∆p=1 (NI/min)	4100	
Orifice size (mm)	15	
Working ports size	G1/2"	
Pilot ports size	G1/8"	
Compressed air, purity class according to ISO 8573-1:2010	7:4:4	

Coding: T772.32.0. **@**.MP

	FUNCTION
9	1AA = Normally Open
	1AC = Normally Closed



Weight 390 g



N.C. Inlet port 1 Outlet port 2 Exhaust port 3



N.O. Inlet port 3 Outlet port 2 Exhaust port 1





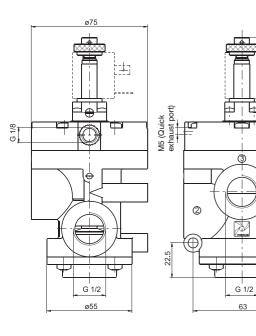
Solenoid-Spring-External pilot

Operational characteristics		
Fluid	filtered and lubricated air or non	
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	See diagram at general page	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	4100	
Orifice size (mm)	15	
Working ports size	G1/2"	
Pilot ports size	G1/8"	
Compressed air, purity class according to ISO 8573-1:2010	7:4:4	



Weight 390 g





N.C. Inlet port 1 Outlet port 2 Exhaust port 3

24

155

101

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Coding: T772.32.0.1.MP

N.O. Inlet port 3 Outlet port 2 Exhaust port 1



Solenoid-Spring - Internal pilot with quick exhaust

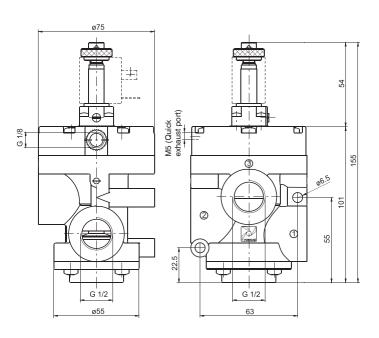
Operational characteristics		
Fluid	filtered and lubricated air or non	
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	2,5	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	4100	
Orifice size (mm)	15	
Working ports size	G1/2"	
Pilot ports size	G1/8"	
Compressed air, purity class according to ISO 8573-1:2010	7:4:4	

Coding: T772S.32.0. **.** MP

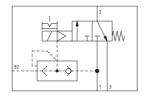
	FUNCTION
•	1AA = Normally Open
	1AC = Normally Closed
	IAC - Normally Closed



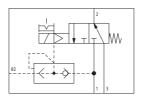




N.C. Inlet port 1 Outlet port 2 Exhaust port 3



N.O. Inlet port 3 Outlet port 2 Exhaust port 1





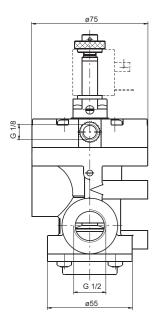


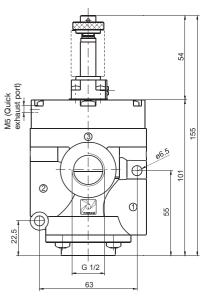
Coding: T772S.32.0.1.MP

Solenoid-Spring - External pilot with quick exhaust

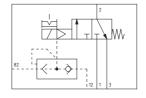
Operational characteristics		
Fluid	filtered and lubricated air or non	
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	See diagram at general page	
Temperature °C	-5 +50	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	4100	
Orifice size (mm)	15	
Working ports size	G1/2"	
Pilot ports size	G1/8"	
Compressed air, purity class according to ISO 8573-1:2010	7:4:4	



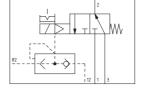




N.C. Inlet port 1 Outlet port 2 Exhaust port 3



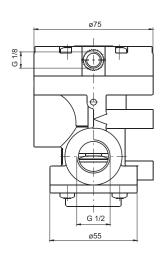
N.O. Inlet port 3 Outlet port 2 Exhaust port 1

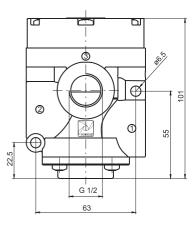




Operational characteristics	
Fluid	Vacuum
Minimum pilot pressure (bar)	2,5
Temperature °C	-5 +50
Orifice size (mm)	15
Working ports size	G1/2"
Pilot ports size	G1/8"
Response time according to ISO 12238, activation time (ms)	N.C. = 50 - N.O. = 27
Response time according to ISO 12238, deactivation time (ms)	N.C. = 150 - N.O. = 195







N.C. Exhaust port 3 Outlet port 2 Pump 1



Coding: T772/V.32.11.1

N.O. Exhaust port 1 Outlet port 2 Pump 3

Solenoid-Spring-Internal pilot

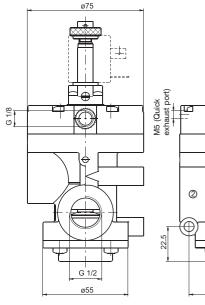
Weight 350 g

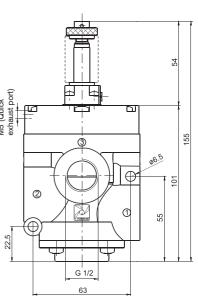
Operational characteristics		
Fluid	Vacuum	
Temperature °C	-5 +50	
Orifice size (mm)	15	
Working ports size	G1/2"	
Pilot ports size	G1/8"	
Response time according to ISO 12238, activation time (ms)	1AC = 55 - 1AA = 33	
Response time according to ISO 12238, deactivation time (ms)	1AC = 30 - 1AA = 38	

Coding: T772/V.32.0. **3**.MV

	FUNCTION
1AA = Normally Open	
_	1AC = Normally Closed







Exhaust port 1 Outlet port 2 Pump 3



N.O. Exhaust port 3 Outlet port 2 Pump 1



Weight 390 g



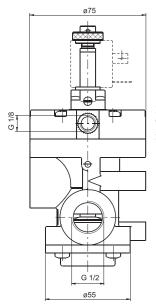
Coding: T772/V.32.0.1.MP

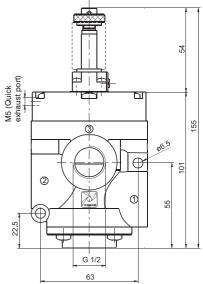
Solenoid-Spring-External pilot

Operational characteristics	
Fluid	Vacuum
Minimum pilot pressure (bar)	2,5
Temperature °C	-5 +50
Orifice size (mm)	15
Working ports size	G1/2"
Pilot ports size	G1/8"
Response time according to ISO 12238, activation time (ms)	N.C. = 42 - N.O. = 22
Response time according to ISO 12238, deactivation time (ms)	N.C. = 135 - N.O. = 175



Weight 390 g





N.C. Exhaust port 3 Outlet port 2 Pump 1



N.O. Exhaust port 1 Outlet port 2 Pump 3



Coding: T772/VS.32.0.1.MP

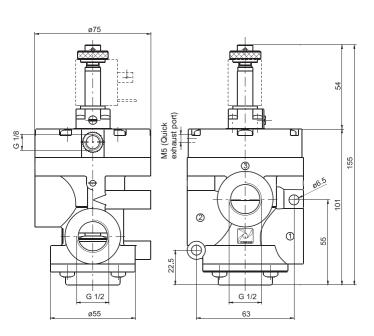
Solenoid-Spring - External pilot with quick exhaust

Operational characteristics		
Fluid	Vacuum	
Minimum pilot pressure (bar)	2,5	
Temperature °C	-5 +50	
Orifice size (mm)	15	
Working ports size	G1/2"	
Pilot ports size	G1/8"	
Response time according to ISO 12238, activation time (ms)	N C = 43 - N O = 25	

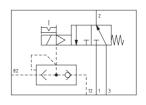
F M To W P Response time according to ISO 12238, deactivation time (ms) N.C. = 37 - N.O. = 42



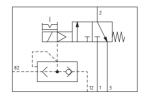
Weight 390 g



N.C. Exhaust port 3 Outlet port 2 Pump 1



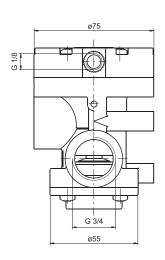
N.O. Exhaust port 1 Outlet port 2 Pump 3

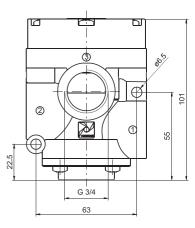




Operational characteristics		
Fluid	filtered and lubricated air or non	
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	See diagram at general page	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	7500	
Orifice size (mm)	20	
Working ports size	G3/4"	
Pilot ports size	G1/8"	
Compressed air, purity class according to ISO 8573-1:2010	7:4:4	







N.C. Inlet port 1 Outlet port 2 Exhaust port 3

Coding: T773.32.11.1

N.O. Inlet port 3 Outlet port 2 Exhaust port 1

12

Solenoid-Spring-Internal pilot

Weight 330 g

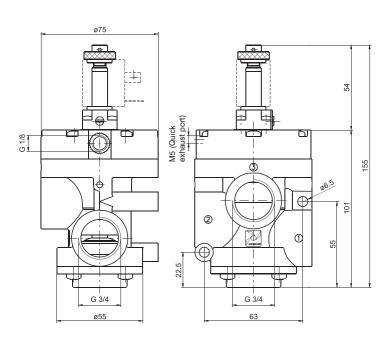
,		
Operational characteristics		
Fluid	filtered and lubricated air or non	
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	2,5	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	7500	
Orifice size (mm)	20	
Working ports size	G3/4"	
Pilot ports size	G1/8"	
Compressed air, purity class according to ISO 8573-1:2010	7:4:4	

Coding: T773.32.0. **G**.MP

(3)	FUNCTION
	1AA = Normally Open
	1AC = Normally Closed



Weight 370 g



N.C. Inlet port 1 Outlet port 2 Exhaust port 3



N.O. Inlet port 3 Outlet port 2 Exhaust port 1



Series T772-773 - for compressed air in technopolymer - G3/4"

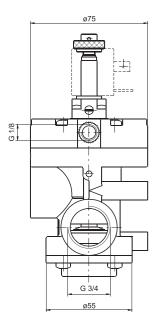
Coding: T773.32.0.1.MP

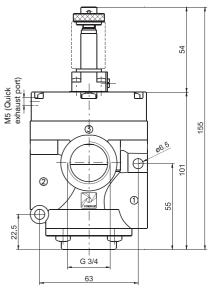
Solenoid-Spring-External pilot

Operational characteristics				
Fluid	filtered and lubricated air or non			
Max. working pressure (bar)	10			
Minimum pilot pressure (bar)	See diagram at general page			
Temperature °C	-5 +50			
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	7500			
Orifice size (mm)	20			
Working ports size	G3/4"			
Pilot ports size	G1/8"			
Compressed air, purity class according to ISO 8573-1:2010	7:4:4			



Weight 370 g





N.C. Inlet port 1 Outlet port 2 Exhaust port 3



N.O. Inlet port 3 Outlet port 2 Exhaust port 1



Solenoid-Spring - Internal pilot with quick exhaust

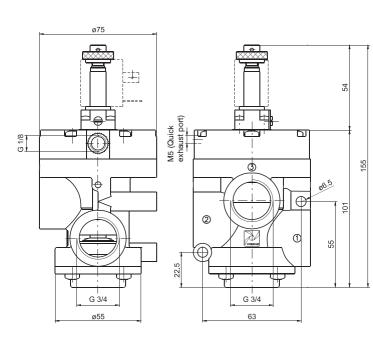
<u>, </u>				
Operational characteristics				
Fluid	filtered and lubricated air or non			
Max. working pressure (bar)	10			
Minimum pilot pressure (bar)	2,5			
Temperature °C	-5 +50			
Flow rate at 6 bar with Δp=1 (NI/min)	7500			
Orifice size (mm)	20			
Working ports size	G3/4"			
Pilot ports size	G1/8"			
Compressed air, purity class according to ISO 8573-1:2010	7:4:4			

Coding: T773S.32.0. . MP

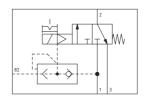
	FUNCTION
a	1AA = Normally Open
	1AC = Normally Closed



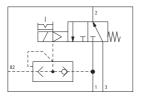
Weight 370 g







N.O. Inlet port 3 Outlet port 2 Exhaust port 1



AIR DISTRIBUTION

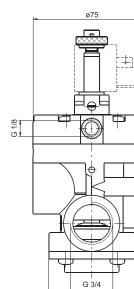


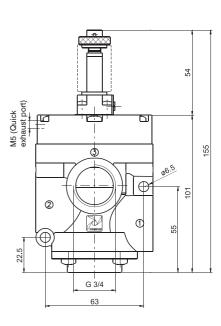
Solenoid-Spring - External pilot with quick exhaust

Operational characteristics				
Fluid	filtered and lubricated air or non			
Max. working pressure (bar)	10			
Minimum pilot pressure (bar)	See diagram at general page			
Temperature °C	-5 +50			
Flow rate at 6 bar with Δp=1 (NI/min)	7500			
Orifice size (mm)	20			
Working ports size	G3/4"			
Pilot ports size	G1/8"			
Compressed air, purity class according to ISO 8573-1:2010	7:4:4			

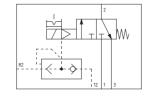






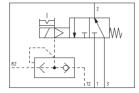


N.C. Inlet port 1 Outlet port 2 Exhaust port 3



Coding: T773S.32.0.1.MP

N.O. Inlet port 3 Outlet port 2 Exhaust port 1



Weight 370 g

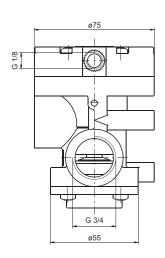


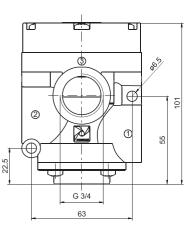
Coding: T773/V.32.11.1

Pneumatic - Spring

Operational characteristics	
Fluid	Vacuum
Minimum pilot pressure (bar)	2,5
Temperature °C	-5 +50
Orifice size (mm)	20
Working ports size	G3/4"
Pilot ports size	G1/8"
Response time according to ISO 12238, activation time (ms)	N.C. = 28 - N.O. = 50
Response time according to ISO 12238, deactivation time (ms)	N C = 190 - N O = 150







N.C. Exhaust port 3 Outlet port 2 Pump 1



N.O. Exhaust port 1 Outlet port 2 Pump 3

Weight 330 g

Solenoid-Spring-Internal pilot

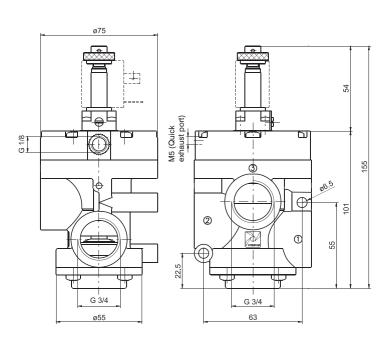
Operational characteristics	
Fluid	Vacuum
Temperature °C	-5 +50
Orifice size (mm)	20
Working ports size	G3/4"
Pilot ports size	G1/8"
Response time according to ISO 12238, activation time (ms)	1AC = 35 - 1AA = 32
Response time according to ISO 12238, deactivation time (ms)	1AC = 30 - 1AA = 80

Coding: T773/V.32.0. . MV

1AA = Normally Open		FUNCTION
	•	1AA = Normally Open
1AC = Normally Closed		



Weight 370 g



Exhaust port 1 Outlet port 2 Pump 3



N.O. Exhaust port 3 Outlet port 2 Pump 1



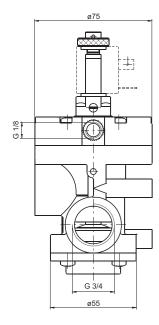
Weight 350 g

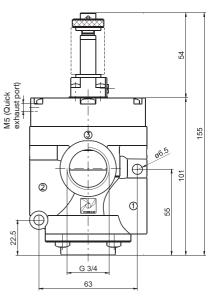


Solenoid-Spring-External pilot

Operational characteristics	
Fluid	Vacuum
Minimum pilot pressure (bar)	2,5
Temperature °C	-5 +50
Orifice size (mm)	20
Working ports size	G3/4"
Pilot ports size	G1/8"
Response time according to ISO 12238, activation time (ms)	N.C. = 25 - N.O. = 40
Response time according to ISO 12238, deactivation time (ms)	N.C. = 175 - N.O. = 145







N.C. Exhaust port 3 Outlet port 2 Pump 1



Coding: T773/V.32.0.1.MP

Exhaust port 1 Outlet port 2 Pump 3



Coding: T773/VS.32.0.1.MP

Solenoid-Spring - External pilot with quick exhaust

 Operational characteristics

 Fluid
 Vacuum

 Minimum pilot pressure (bar)
 2,5

 Temperature °C
 -5... +50

 Orifice size (mm)
 20

 Working ports size
 G3/4"

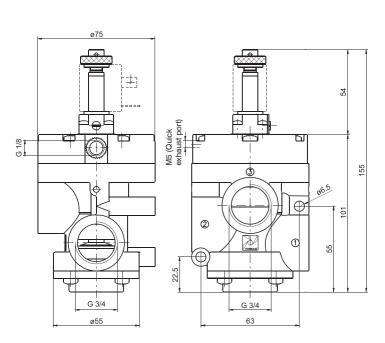
 Pilot ports size
 G1/8"

 Response time according to ISO 12238, activation time (ms)
 N.C. = 25 - N.O. = 42

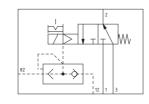
 Response time according to ISO 12238, deactivation time (ms)
 N.C. = 40 - N.O. = 38



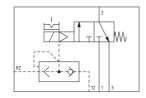




N.C. Exhaust port 3 Outlet port 2 Pump 1



N.O. Exhaust port 1 Outlet port 2 Pump 3

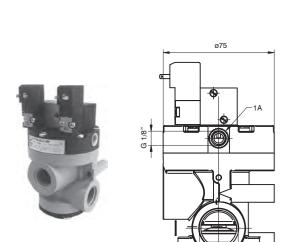


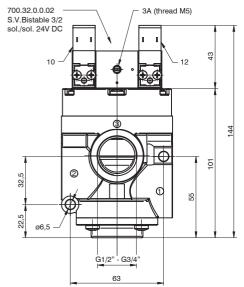


Coding: T772.32.0.1.BP

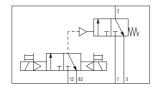
Bistable for compressed air - G1/2"

Operational characteristics	
Fluid	filtered and lubricated air or non
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	4100
Orifice size (mm)	15
Working ports size	G1/2"
Pilot ports size	G1/8"
Compressed air purity class according to ISO 8573-1:2010	7· <i>Δ</i> · <i>Δ</i>

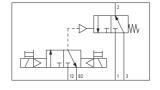




N.C. Inlet port 1 Outlet port 2 Exhaust port 3



N.O. Inlet port 3 Outlet port 2 Exhaust port 1



Coding: T773.32.0.1.BP

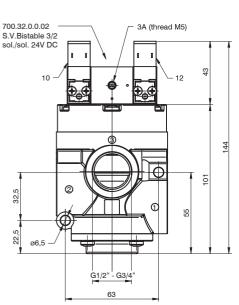
Weight 550 g

Bistable for compressed air - G3/4"

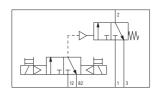
Operational characteristics	
Fluid	filtered and lubricated air or non
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	7500
Orifice size (mm)	15
Working ports size	G3/4"
Pilot ports size	G1/8"
Compressed air, purity class according to ISO 8573-1:2010	7:4:4

G1/2" - G3/4

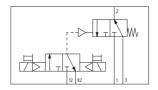




N.C. Inlet port 1 Outlet port 2 Exhaust port 3



N.O. Inlet port 3 Outlet port 2 Exhaust port 1



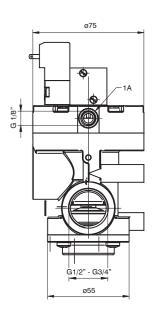
Weight 550 g

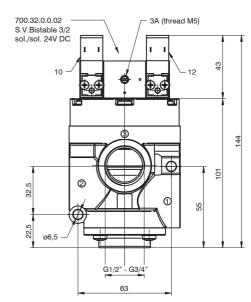


Bistable for compressed air with quick exhaust - G1/2"

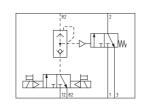
Fluid filtered and lubricated air or non Max. working pressure (bar) 10 Minimum pilot pressure (bar) Temperature °C -5...+50 Flow rate at 6 bar with $\Delta p=1$ (NI/min) 4100 Orifice size (mm) 15 G1/2" Working ports size Pilot ports size G1/8" Compressed air, purity class according to ISO 8573-1:2010 7:4:4





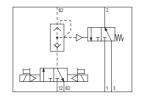


N.C. Inlet port 1 Outlet port 2 Exhaust port 3



Coding: T772S.32.0.1.BP

Inlet port 3 Outlet port 2 Exhaust port 1



Coding: T773S.32.0.1.BP

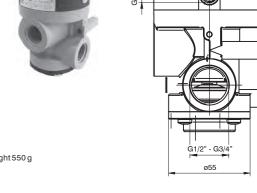
Weight 550 g

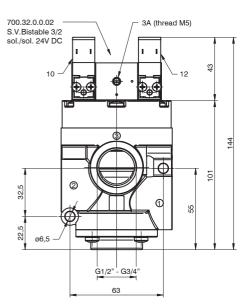
Bistable for compressed air with quick exhaust G3/4"

filtered and lubricated air or non Max. working pressure (bar) 10 Minimum pilot pressure (bar) 2 Temperature °C -5...+50 Flow rate at 6 bar with $\Delta p=1$ (NI/min) 7500 Orifice size (mm) 15 Working ports size G3/4" Pilot ports size G1/8" Compressed air, purity class according to ISO 8573-1:2010 7:4:4

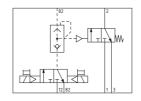
ø75



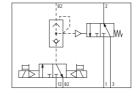




N.C. Inlet port 1 Outlet port 2 Exhaust port 3



N.O. Inlet port 3 Outlet port 2 Exhaust port 1



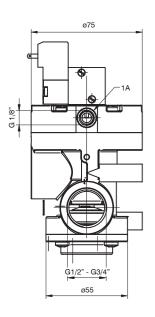


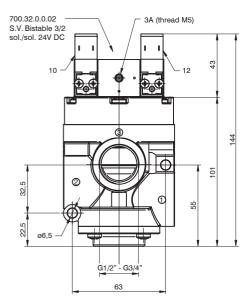
Coding: T772/V.32.0.1.BP

Bistable for vacuum - G1/2"

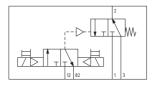
Operational characteristics	
Fluid	Vacuum
Minimum pilot pressure (bar)	2,5
Temperature °C	-5 +50
Orifice size (mm)	15
Working ports size	G1/2"
Pilot ports size	G1/8"



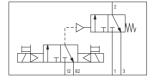




N.C. Pump 1 Outlet port 2 Exhaust port 3



N.O. Pump 3 Outlet port 2 Exhaust port 1



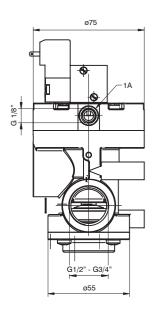
Coding: T773/V.32.0.1.BP

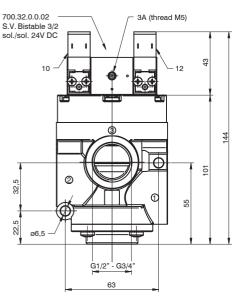
Weight 550 g

Bistable for vacuum - G3/4"

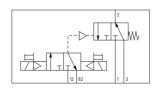
Operational characteristics	
Fluid	Vacuum
Minimum pilot pressure (bar)	2,5
Temperature °C	-5 +50
Orifice size (mm)	15
Working ports size	G3/4"
Pilot ports size	G1/8"



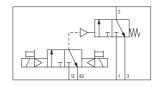




N.C. Pump 1 Outlet port 2 Exhaust port 3



N.O. Pump 3 Outlet port 2 Exhaust port 1



Weight 550 g

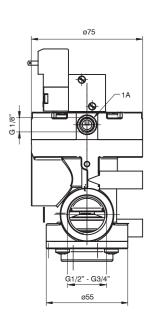


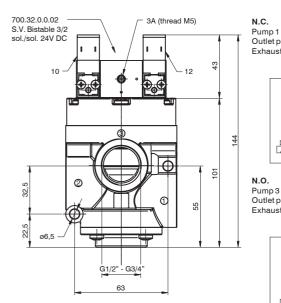
Bistable for vacuum with quick exhaust - G1/2"

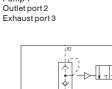
Coding: T772/VS.32.0.1.BP

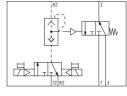
Operational characteristics	
Fluid	Vacuum
Minimum pilot pressure (bar)	2,5
Temperature °C	-5 +50
Orifice size (mm)	15
Working ports size	G1/2"
Pilot ports size	G1/8"



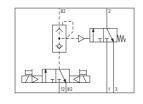








N.O. Pump 3 Outlet port 2 Exhaust port 1



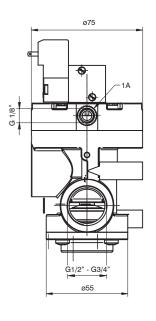
Weight 550 g

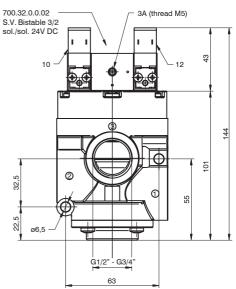
Bistable for vacuum with quick exhaust - G3/4"

Coding: T773/VS.32.0.1.BP

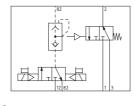
Operational characteristics	
Fluid	Vacuum
Minimum pilot pressure (bar)	2,5
Temperature °C	-5 +50
Orifice size (mm)	15
Working ports size	G3/4"
Pilot ports size	G1/8"



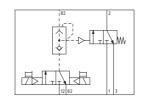




N.C. Pump 1 Outlet port 2 Exhaust port 3



N.O. Pump 3 Outlet port 2 Exhaust port 1



Weight 550 g



Series T771 - for compressed air and vacuum in technopolymer - G1"

The range of G1" pilot and solenoid operated poppet valves represents an evolution of the current popular Zama series and of the Series T772-T773 (G1/2"-3/4").

Also for this series the main feature is the technopolimer material used to mould most of its components.

The use of this materiel results in a versatile, lightweight and economical valve.

This series also has other technical and functional enhancements over the existing range. Firstly, the traditional piston lip seal has been replaced with a rolling diaphragm, thereby eliminating frictional wear and tear to this seal.

This series (with the exception of certain vacuum models) also features a seal, which separates port 3 from the piston head. The inclusion of this seal has enhanced the valve's performance and allows the valve to be used as normally open (a configuration not possible in the Zama series). Solenoid operated valves (both internal and external pilot versions) are fitted with a quick exhaust unit, which reduces the return stroke operating time by 80%.

The bulk of the valves in this series use the MP type operator, the exception being internally piloted vacuum models, which use the MV operator. These operators differ from the M2 type in that they have self-tapping mounting screws for use in plastics.

Bistable versions are also available, both for air or for vacuum. These valves are fitted with a 3/2 sol-sol valve (instead of the standard pilot valve) fitted with two 15mm 24V Dc microvalves (N331.0A).

The ordering code are referring to the solenoid valves with mechanics "MP" or "MV" assembled.

 $Coils \, are \, not \, included \, and \, have \, to \, be \, ordered \, separately \, (series \, 300, \, Section \, 1, \, General \, Catalogue), \, with \, the \, exception \, of \, the \, bistable \, and \, be \, considered \, separately \, (series \, 300, \, Section \, 1, \, General \, Catalogue), \, with \, the \, exception \, of \, the \, bistable \, and \, be \, considered \, separately \, (series \, 300, \, Section \, 1, \, General \, Catalogue), \, with \, the \, exception \, of \, the \, bistable \, and \, be \, considered \, separately \, (series \, 300, \, Section \, 1, \, General \, Catalogue), \, with \, the \, exception \, of \, the \, bistable \, and \, be \, considered \, separately \, (series \, 300, \, Section \, 1, \, General \, Catalogue), \, with \, the \, exception \, of \, the \, bistable \, and \, be \, considered \, and \, consi$ versions which already include 24V Dc Coils (N331.0A).

Coil & Nus homologated are available (see 300 Series).

Construction characteristics	
Body, operator and end cover	High impact resistant thermoplastic
Seals and poppets	NBR
Diaphragm	Oil resistant rubber (NBR)
Springs	AISI 302 stainless steel
Piston and shaft	Acetal resin

Use and maintenance

These valves have a mean life of 10 to 15 million cycles under normal operating conditions.

Lubrication is not required for good operation but we recommend good filtration to avoid dirty deposit causing malfunction.

Please ensure that the valve is being used according with the manufacturers specification, such as air pressure and temperature.

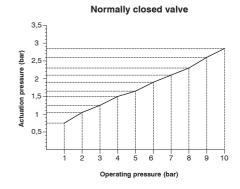
The exhaust port of the distributor has to be protected in a dusty and dirty environment.

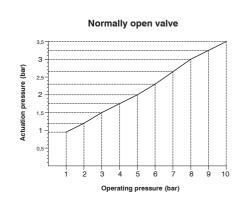
For these products, according to the construction technique and special application, is not required any maintenance with parts replacement. When necessary it is sufficient to clean the internal parts.

When it is used the solenoid valves with internal pilot, either for air or vacuum, inlet flow rate must be equal or higher that the required consumption flow rate.

Otherwise is better choose the external pilot version.

MINIMUM PILOTING PRESSURE DIAGRAM (Valves for compressed air) PNEUMATIC/SPRING AND EXTERNAL SOLENOID PILOT VERSION



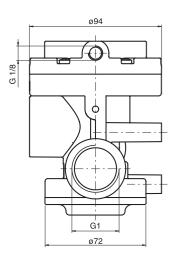


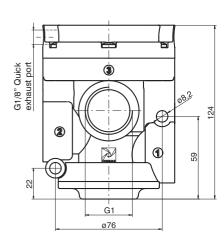


Pneumatic - Spring

Operational characteristics	
Fluid	filtered and lubricated air or non
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	See diagram at general page
Temperature °C	-5 +50
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	12500
Orifice size (mm)	25
Working ports size	G1"
Pilot ports size	G1/8"
Compressed air, purity class according to ISO 8573-1:2010	7:4:4







N.C. Inlet port 1 Outlet port 2 Exhaust port 3

Coding: T771.32.11.1



N.O. Inlet port 3 Outlet port 2 Exhaust port 1

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Weight 480 g

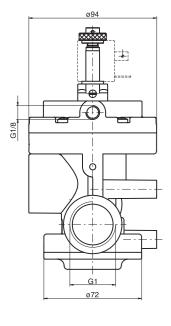
Solenoid-Spring-Internal pilot

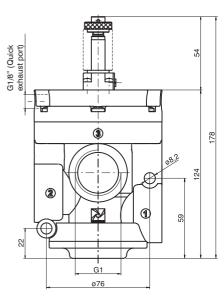
Operational characteristics	
Fluid	filtered and lubricated air or non
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2,5
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	12500
Orifice size (mm)	25
Working ports size	G1"
Pilot ports size	G1/8"
Compressed air, purity class according to ISO 8573-1:2010	7:4:4

Coding: T771.32.0. **6**.MP

FUNCTION		
•	1AC = Normally Closed	
	1AA = Normally Open	







N.C. Inlet port 1 Outlet port 2 Exhaust port 3



N.O. Inlet port 3 Outlet port 2 Exhaust port 1





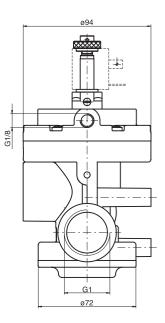
Solenoid-Spring-External pilot

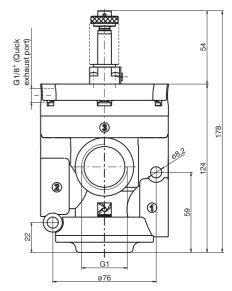
Coding: T771.32.0.1.MP

Operational characteristics	
Fluid	filtered and lubricated air or non
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	See diagram at general page
Temperature °C	-5 +50
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	12500
Orifice size (mm)	25
Working ports size	G1"
Pilot ports size	G1/8"
Compressed air, purity class according to ISO 8573-1:2010	7:4:4



Weight 520 g





N.C. Inlet port 1 Outlet port 2 Exhaust port 3



N.O. Inlet port 3 Outlet port 2 Exhaust port 1



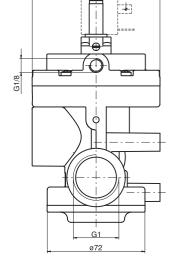
Solenoid-Spring - Internal pilot with quick exhaust

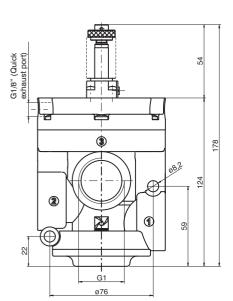
Operational characteristics	
Fluid	filtered and lubricated air or non
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2,5
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	12500
Orifice size (mm)	25
Working ports size	G1"
Pilot ports size	G1/8"
Compressed air, purity class according to ISO 8573-1:2010	7:4:4

Coding: T771S.32.0. . MP

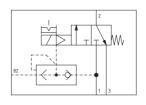
	FUNCTION
(3)	1AC = Normally Closed
	1AA = Normally Open



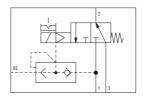




N.C. Inlet port 1 Outlet port 2 Exhaust port 3



N.O. Inlet port 3 Outlet port 2 Exhaust port 1



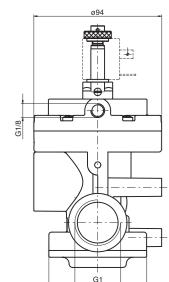
Weight 520 g



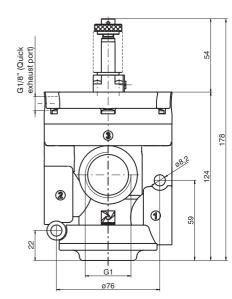
Solenoid-Spring - External pilot with quick exhaust

Fluid filtered and lubricated air or non Max. working pressure (bar) Minimum pilot pressure (bar) See diagram at general page Temperature °C -5...+50 Flow rate at 6 bar with $\Delta p=1$ (NI/min) 12500 Orifice size (mm) 25 G1" Working ports size Pilot ports size G1/8" Compressed air, purity class according to ISO 8573-1:2010 7:4:4

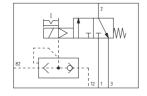




ø72

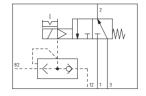


N.C. Inlet port 1 Outlet port 2 Exhaust port 3



Coding: T771S.32.0.1.MP

N.O. Inlet port 3 Outlet port 2 Exhaust port 1



Weight 520 g

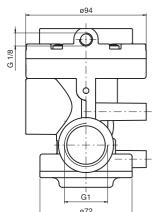


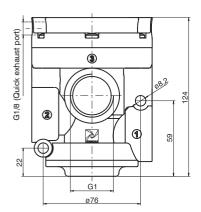
Coding: T771/V.32.11.1

Pneumatic - Spring

Operational characteristics	
Fluid	Vacuum
Minimum pilot pressure (bar)	2
Temperature °C	-5 +50
Orifice size (mm)	25
Working ports size	G1"
Pilot ports size	G1/8"
Response time according to ISO 12238, activation time (ms)	N.C. = 55 - N.O. = 19
Response time according to ISO 12238, deactivation time (ms)	N.C. = 320 - N.O. = 450







N.C. Exhaust port 3 Outlet port 2 Pump 1



N.O. Exhaust port 1 Outlet port 2 Pump 3

Weight 480 g

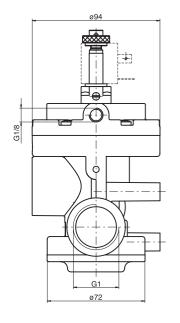
Solenoid-Spring-Internal pilot

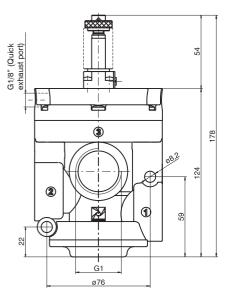
Operational characteristics		
Fluid	Vacuum	
Temperature °C	-5 +50	
Orifice size (mm)	25	
Working ports size	G1"	
Pilot ports size	G1/8"	
Response time according to ISO 12238, activation time (ms)	1AC = 100 - 1AA = 80	
Response time according to ISO 12238, deactivation time (ms)	1AC = 60 - 1AA = 60	

Coding: T771/V.32.0. . MV

	FUNCTION
•	1AC = Normally Closed
	1AA = Normally Open







Exhaust port 1 Outlet port 2 Pump 3



N.O. Exhaust port 3 Outlet port 2 Pump 1



AIR DISTRIBUTION

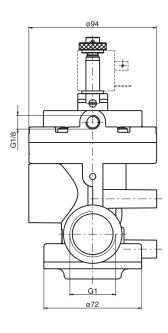
Weight 520 g

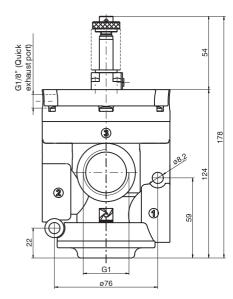


Solenoid-Spring-External pilot

Operational characteristics		
Fluid	Vacuum	
Minimum pilot pressure (bar)	2	
Temperature °C	-5 +50	
Orifice size (mm)	25	
Working ports size	G1"	
Pilot ports size	G1/8"	
Response time according to ISO 12238, activation time (ms)	N.C. = 50 - N.O. = 19	
Response time according to ISO 12238, deactivation time (ms)	N.C. = 315 - N.O. = 450	







N.C. Pump 1 Outlet port 2 Exhaust port 3



Coding: T771/V.32.0.1.MP

N.O. Pump 3 Outlet port 2 Exhaust port 1

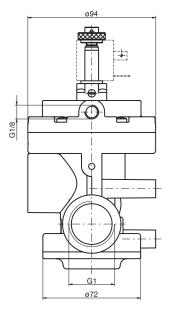


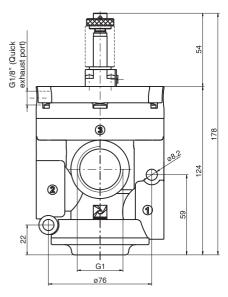
Coding: T771/VS.32.0.1.MP

Solenoid-Spring - External pilot with quick exhaust

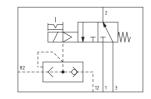
Operational characteristics	
Fluid	Vacuum
Minimum pilot pressure (bar)	2
Temperature °C	-5 +50
Orifice size (mm)	25
Working ports size	G1"
Pilot ports size	G1/8"
Response time according to ISO 12238, activation time (ms)	N.C. = 50 - N.O. = 19
Response time according to ISO 12238, deactivation time (ms)	N.C. = 50 - N.O. = 70



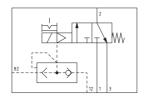




N.C. Pump 1 Outlet port 2 Exhaust port 3



N.O. Pump 3 Outlet port 2 Exhaust port 1

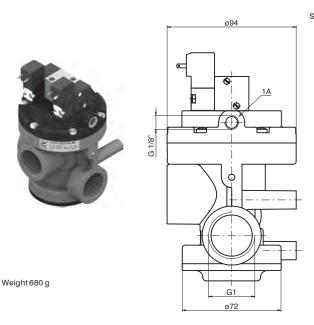


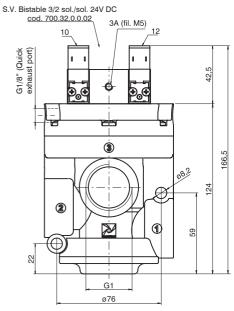
Weight 520 g

Coding: T771.32.0.1.BP

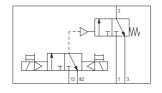
Bistable for compressed air - G1"

Operational characteristics	
Fluid	filtered and lubricated air or non
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2.5
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	12500
Orifice size (mm)	25
Working ports size	G1"
Pilot ports size	G1/8"
Compressed air, purity class according to ISO 8573-1:2010	7:4:4

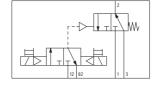




N.C. Inlet port 1 Outlet port 2 Exhaust port 3



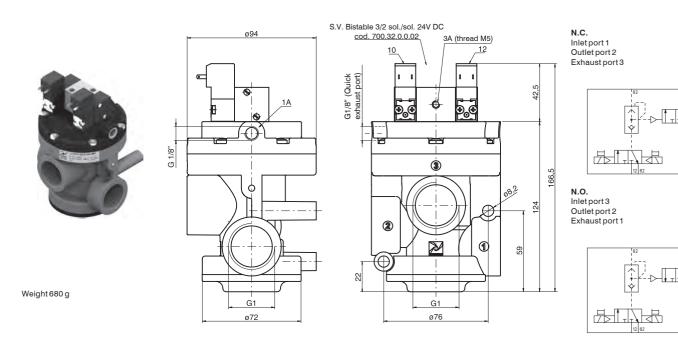
N.O. Inlet port 3 Outlet port 2 Exhaust port 1



Coding: T771S.32.0.1.BP

Bistable for compressed air with quick exhaust - G1"

Output in part of the control of the	
Operational characteristics	
Fluid	filtered and lubricated air or non
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2.5
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	12500
Orifice size (mm)	25
Working ports size	G1"
Pilot ports size	G1/8"
Compressed air, purity class according to ISO 8573-1:2010	7:4:4



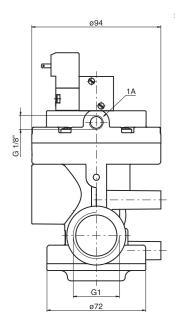


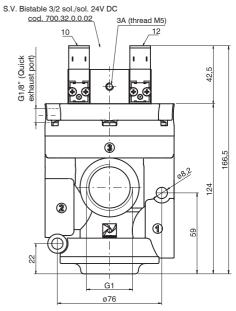
Bistable for vacuum - G1"

Operational characteristics	
Fluid	Vacuum
Minimum pilot pressure (bar)	2,5
Temperature °C	-5 +50
Orifice size (mm)	25
Working ports size	G1"
Pilot ports size	G1/8"

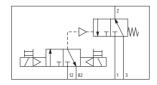






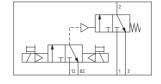


N.C. Pump 1 Outlet port 2 Exhaust port 3



Coding: T771/V.32.0.1.BP

N.O. Pump 3 Outlet port 2 Exhaust port 1



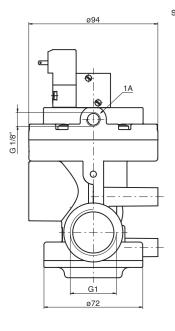
Coding: T771/VS.32.0.1.BP

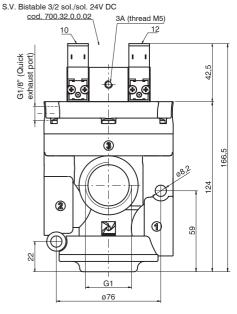
Weight 680 g

Bistable for vacuum with quick exhaust - G1"

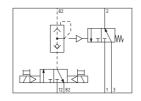
Operational characteristics	
Fluid	Vacuum
Minimum pilot pressure (bar)	2,5
Temperature °C	-5+50
Orifice size (mm)	25
Working ports size	G1"
Pilot ports size	G1/8"



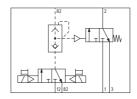




N.C. Pump 1 Outlet port 2 Exhaust port 3



N.O. Pump 3 Outlet port 2 Exhaust port 1



Weight 680 g



Series 514/N

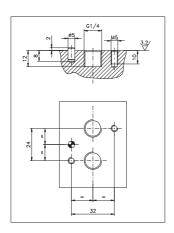
The **514/N** Solenoid valves, are 2 stage valves actuated electro-pneumatically. A series 300 directly operated solenoid valve actuates pneumatically the principal power distributor.

Everything is well integrated in a practical configuration that also permits applications where there is limited space. Used primarily to operate rotary actuators and wherever there is a **NAMUR** standard installation plan.

The pilot air is normally taken from the inlet port (autofeed) and the only actuating signal is electric.

The range of the solenoid valves, as far as dimensions and mechanical construction, is similar to series 200. We have therefore solenoid valves G 1/4" with identical pneumatic characteristics that are, however, actuated electrically. They have a balanced spool, insentive to presence or absence of pressure. They are constructed in 3 and 5 way with 1 solenoid (monostable) or 2 solenoids (bistable).

"NAMUR" interface dimensions: according to standard (VDI/VDE 3847 July 2003)



Construction characteristics

Body	Aluminium
Spacers	Technopolymer
Seals	NBR
Body Spacers Seals Springs	Spring steel
Operators Spools	Aluminium
Spools	Nickel plated steel
Screws	Zinc plated steel

Use and maintenance

This valves have an average life of 15 million cycles depending on the application and air quality.

Filtered and lubricated air using specified lubricants will reduce the wear of the seals and ensures long and trouble free operation.

Please ensure that the valve is being used according with the manufacturers specification, such as air pressure and temperature.

The exhaust port of the distributor has to be protected in a dusty and dirty environment.

Repair kits including the spool complete with seals are available for overhauling the valves.

However, although this is a simple operation it should be carried out by a competent person.

ATTENTION: use hydraulic oil class H for lubrication such as CASTROL MAGNA SW32.

Solenoid-Spring

<u>*</u>		
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-10 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	1030	
Orifice size (mm)	7	
Working ports size	G 1/4"	

Coding:~514/N. 1.0.1.M2

5/2 ways

5/2 ways

	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions

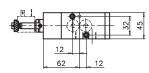
3/2 ways

3/2 ways

Weight 390 g



G1/4 54 114



Weight 450 g Minimum working pressure 2,5 bar



G1/4

Weight 390 g Minimum working pressure 2,5 bar

514/N.32.0.1.M2

Solenoid-Differential

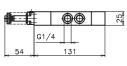
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-10 +50
Flow rate at 6 bar with Δp=1 (NI/min)	1030
Orifice size (mm)	7
Working ports size	G 1/4"

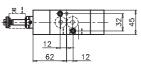
Coding: 514/N. 1.0.12.M2

TYPE
32 = 3 ways, 2 positions
52 = 5 ways, 2 positions

514/N.52.0.1.M2







62 12 We

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G1/4

Weight 450 g Minimum working pressure 2,5 bar

514/N.52.0.12.M2

514/N.32.0.12.M2 Solenoid-Solenoid

Minimum working pressure 2,5 bar

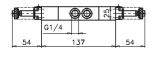
•	
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-10 +50
Flow rate at 6 bar with ∆p=1 (NI/min)	1030
Orifice size (mm)	7
Working ports size	G 1/4"

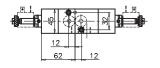
Coding: 514/N. **1**.0.0.M2

	TYPE
0	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions

3/2 ways

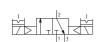






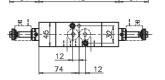
Weight 390 g Minimum working pressure 2,5 bar

514/N.32.0.0.M2



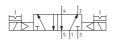






G1/4

Weight 450 g Minimum working pressure 2,5 bar 514/N.52.0.0.M2





Series T514

TECNO-NAMUR are 5/2 and 4/2 valves are solenoid valves pneumatically or electrically actuated. They are used in industrial automation applications or whenever a **NAMUR** mounting plane is available.

Is available in 5/2, 4/2 and all-purposes versions. The final user can switch from one version to another by simply changing interface plate and adding/removing a plug.

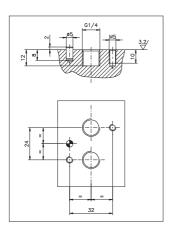
TECNO-NAMUR valves are produced using the most up to date technical features, granting flexible design and elevated characteristics over standard products. Superior performance is further enhanced by the use of innovative materials of construction.

Construction characteristics	
Body	Technopolymer
Spacers	Technopolymer
Seals	Nitrile rubber
Springs	Stainless Steel
Operators	Technopolymer
Spools	Nickel plated steel
Screws	Zinc plated steel

Note: "Although accurately described, the 4/2 valve actually functions as a 3/2 normally closed valve and should be used as such."

"NAMUR" interface dimensions: according to standard (VDI/VDE 3847 July 2003)







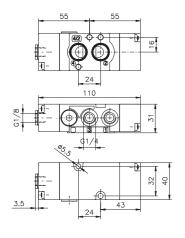
Pneumatic - Differential

,	
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-10 +50
Flow rate at 6 bar with Δp=1 (NI/min)	1100
Orifice size (mm)	8
Working ports size	G 1/A ^{II}

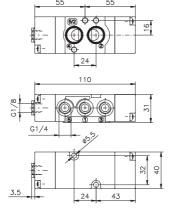
Coding: T514. **1**.00.16

	TYPE
0	42 = 4 ways, 2 positions
-	52 = 5 ways, 2 positions









Weight 140 g Minimum working pressure 2,5 bar Maximum fitting torque 9 N/m

T514.42.00.16



Weight 140 g Minimum working pressure 2,5 bar Maximum fitting torque 9 N/m

T514.52.00.16



Pneumatic-Pneumatic

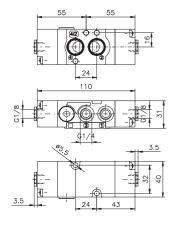
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-10 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	1100	
Orifice size (mm)	8	
Working ports size	G 1/4"	

Coding: T514. **1**.00.18

	TYPE
•	42 = 4 ways, 2 positions
	52 = 5 ways, 2 positions

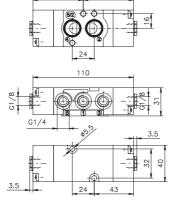
4/2 ways





5/2 ways





Weight 140 g Minimum working pressure 2,5 bar Maximum fitting torque 9 N/m

T514.42.00.18



Weight 140 g Minimum working pressure 2,5 bar Maximum fitting torque 9 N/m

T514.52.00.18





Pneumatic - Spring

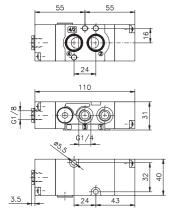
Coding: T514. **1**.00.19

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-10 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	1100	
Orifice size (mm)	8	
Working ports size	G 1/4"	

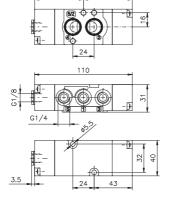
TYPE
42 = 4 ways, 2 positions
52 = 5 ways, 2 positions

4/2 ways









Weight 140 g Minimum working pressure 2,5 bar Maximum fitting torque 9 N/m

T514.42.00.19



Weight 140 g Minimum working pressure 2,5 bar Maximum fitting torque 9 N/m

T514.52.00.19



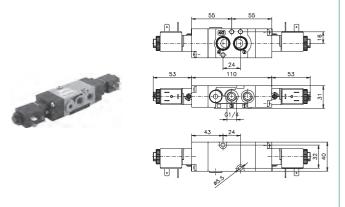
Solenoid-Solenoid

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-10 +50	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	1100	
Orifice size (mm)	8	
Working ports size	G 1/4"	

Coding: T514. **1**.00.35.

	TYPE
42 = 4 ways, 2 positions	
	52 = 5 ways, 2 positions
	VOLTAGE
B04 = 12 VDC	
	B05 = 24 VDC
V	B09 = 24 VDC (2W)
	B56 = 24V (50-60 Hz)
	B57 = 110V (50-60 Hz)
	B58 = 230 V (50-60 Hz)
	B58 = 230 V (50-60 Hz)

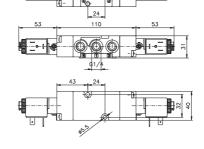
4/2 ways



Weight 250 g Minimum working pressure 2,5 bar Maximum fitting torque 9 N/m







Weight 250 g Minimum working pressure 2,5 bar Maximum fitting torque 9 N/m

5/2 ways

T514.52.00.35.**♥**





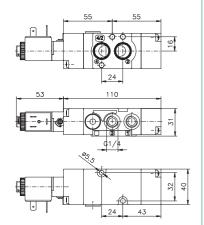
Solenoid-Differential

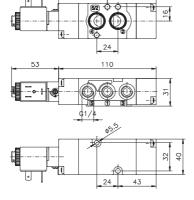
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-10 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	1100	
Orifice size (mm)	8	
Working ports size	G 1/4"	

Coding: T514.**①**.00.36.**②**

ITFE	
42 = 4 ways, 2 positions	
52 = 5 ways, 2 positions	
VOLTAGE	
B04 = 12 VDC	
B05 = 24 VDC	
B09 = 24 VDC (2W)	
B56 = 24V (50-60 Hz)	
B57 = 110V (50-60 Hz)	
B58 = 230 V (50-60 Hz)	

4/2 ways





Weight 200 g Minimum working pressure 2,5 bar Maximum fitting torque 9 N/m

T514.42.00.36.**♥**



Weight 200 g Minimum working pressure 2,5 bar Maximum fitting torque 9 N/m

T514.52.00.36.♥



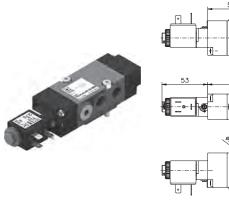
Solenoid-Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-10 +50	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	1100	
Orifice size (mm)	8	
Working ports size	G 1/4"	

Coding: T514. **1**.00.39.

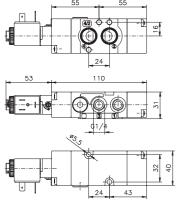
	TYPE
•	42 = 4 ways, 2 positions
	52 = 5 ways, 2 positions
	VOLTAGE
	B04 = 12 VDC
	B05 = 24 VDC
V	B09 = 24 VDC (2W)
	B56 = 24V (50-60 Hz)
	B57 = 110V (50-60 Hz)
	B58 = 230 V (50-60 Hz)

4/2 ways



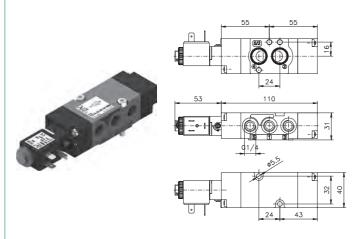
Weight 200 g Minimum working pressure 2,5 bar Maximum fitting torque 9 N/m

T514.42.00.39.





5/2 ways



T514.52.00.39.**Ø**

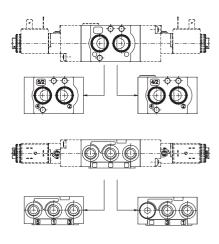
Universal kit

Coding: T514.92.00.**♥**.**①**

	VERSION		VOLTAGE
	16 = Pneumatic-Differential]	B04 = 12 VDC
	18 = Pneumatic - Pneumatic		B05 = 24 VDC
V	19 = Pneumatic - Spring	•	B09 = 24 VDC (2W)
	35 = Solenoid - Solenoid		B56 = 24V (50-60 Hz)
	36 = Solenoid - Differential		B57 = 110V (50-60 Hz)
	39 = Solenoid - Spring		B58 = 230 V (50-60 Hz)



Weight 170 g Minimum working pressure 2,5 bar Maximum fitting torque 9 N/m









Series 514 High Performance

NAMUR valves are 5/2, 4/2 and 3/2 valves and electrovalves, piloted electrically or pneumatically, utilised primarily to operate rotary actuators and wherever there is a NAMUR standard installation plan.

The product is classified for use in potentially explosive atmospheres (Directive 2014/34/EU).

NAMUR valves have been developed using the latest, technical design solutions which guarantee flexibility and an increased flow rate capacity exceeding that of traditional, spool valves.

 $Innovative \ materials\ guarantee\ high\ performances\ also\ in\ critical\ environment\ conditions.$

Available NPT and BSPT connections.

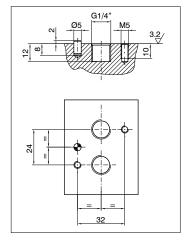
The solenoid valves are available with protection classes for zones 2-22, 1-21 solenoids Ex ec, Ex mb, Ex ia, international approvals IECEx, FM and CSA.



Construction characteristics

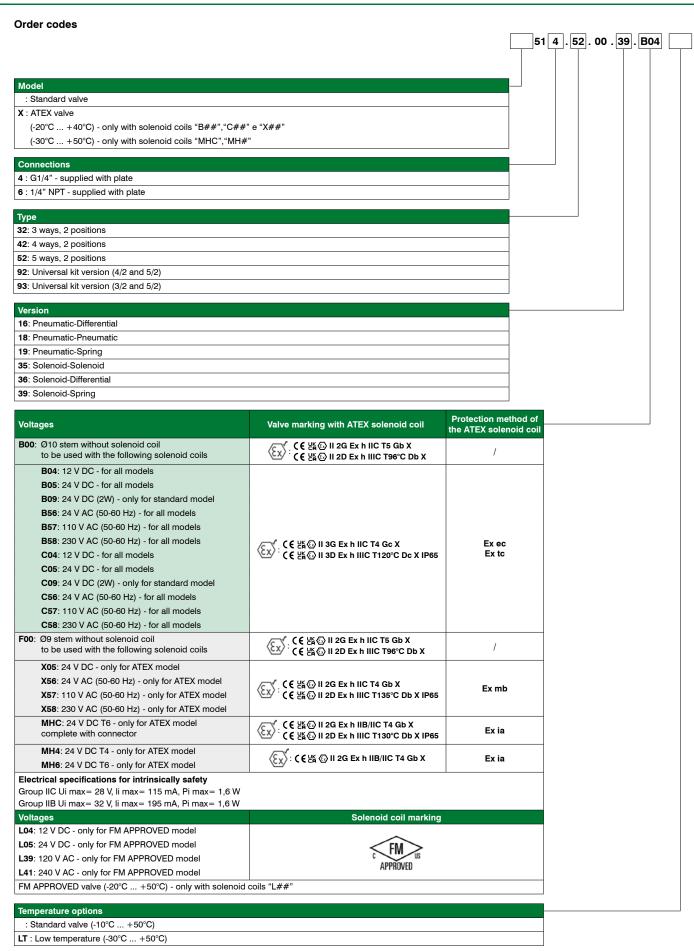
Body	Aluminium
Spacers	Technopolymer
Seals	Nitrile rubber
Springs	Stainless Steel
Operators	Technopolymer
Spools	Steel
Screws	Zinc coated Steel / Stainless steel

"NAMUR" interface dimensions: according to standard (VDI/VDE 3847 July 2003)



Certifications available





Example: 514.52.00.39.B04: Standard valve, G1/4" connections supplied with plate, solenoid-spring 5 ways, 12 VDC solenoid coil



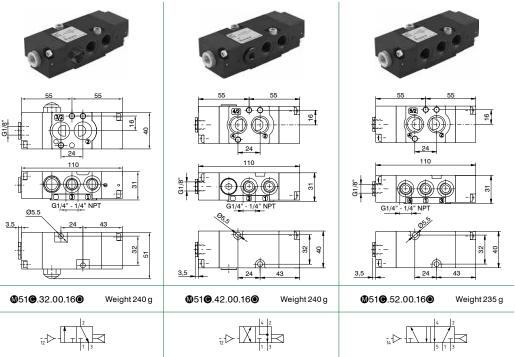
Pneumatic-Differential

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	See order codes page	
Flow rate at 6 bar with Δp=1 (NI/min)	1100	
Orifice size (mm)	8	
Working ports size	G 1/4" - 1/4" NPT	
Cv	1,11	
kv	16,66	

CODING: **1516.1**.00.16

	MODEL
(= Standard valve
	X = ATEX valve
	CONNECTIONS
•	4 = G1/4"
	6 = 1/4" NPT
	TYPE
0	32 = 3 ways, 2 positions
U	42 = 4 ways, 2 positions
	52 = 5 ways, 2 positions
•	TEMPERATURE OPTION
	SEE ORDER CODES PAGE

Minimum pilot pressure 2,5 bar Maximum fitting torque 9 N/m



Pneumatic-Pneumatic

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	See order codes page	
Flow rate at 6 bar with ∆p=1 (NI/min)	1100	
Orifice size (mm)	8	
Working ports size	G 1/4" - 1/4" NPT	
Cv	1,11	
kv	16,66	

CODING: **1**51**6**.**1**.00.18**0**

		MODEL
7	Ø	= Standard valve
1		X = ATEX valve
٦		CONNECTIONS
٦	•	4 = G1/4"
		6 = 1/4" NPT
		TYPE
_		
]		32 = 3 ways, 2 positions
	•	32 = 3 ways, 2 positions 42 = 4 ways, 2 positions
	Û	* ' '
		42 = 4 ways, 2 positions
	••	42 = 4 ways, 2 positions 52 = 5 ways, 2 positions

Minimum pilot pressure 2,5 bar Maximum fitting torque 9 N/m

0.	0:600	Min
55 55	55 55	55 55 55 60 60 60 60 60 60 60 60 60 60 60 60 60
110 G1/4" - 1/4" NPT	110 G1/4*-1/4* NPT	G1/4_1/4_NPT
3.5	3,5	3.5
Ø 51 ⑥ .32.00.18 ⑥ Weight 240 g	Ø 51 ⊚ .42.00.18 ⊚ Weight 240 g	Ø 51 @ .52.00.18 @ Weight 235 g
$r_{12} \sim -\frac{1}{1} + \frac{1}{1} = \frac{1}{1} = \frac{1}{1}$	$\begin{array}{c} \begin{array}{c} \begin{array}{c} 1 \\ 1 \end{array} \end{array} \begin{array}{c} 1 \\ 1 \end{array} \begin{array}{c} 1 \end{array} \begin{array}{c} 1 \\ 1 \end{array} \begin{array}{c} 1 \\ 1 \end{array} \begin{array}{c} 1 \\ 1 \end{array} \begin{array}{c} 1 \end{array} \begin{array}{c} 1 \\ 1 \end{array} \begin{array}{c} 1 \\ 1 \end{array} \begin{array}{c} 1 \end{array} \begin{array}{c} 1 \end{array} \begin{array}{c} 1 \\ 1 \end{array} \begin{array}{c} 1 \end{array} \begin{array}{c} 1 \end{array} \begin{array}{c} 1 \end{array} \begin{array}{c} 1 \\ 1 \end{array} \begin{array}{c} 1 \end{array}$	i ₁₆

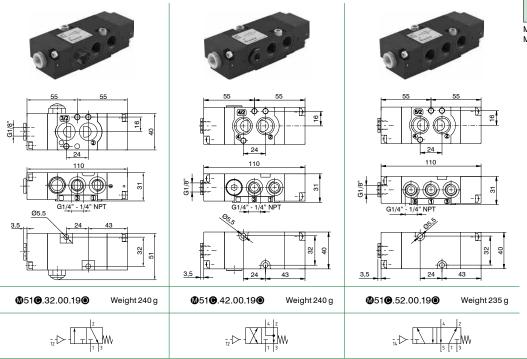
Pneumatic-Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	See order codes page	
Flow rate at 6 bar with Δp=1 (NI/min)	1100	
Orifice size (mm)	8	
Working ports size	G 1/4" - 1/4" NPT	
Cv	1,11	
kv	16,66	

CODING: **1**51**6**.**1**0.00.19**0**

1		MODEL
1	Ø	= Standard valve
1		X = ATEX valve
		CONNECTIONS
	Θ	4 = G1/4"
		6 = 1/4" NPT
4		TYPE
41	O	32 = 3 ways, 2 positions
┚	U	42 = 4 ways, 2 positions
		52 = 5 ways, 2 positions
	•	TEMPERATURE OPTION
	9	SEE ORDER CODES PAGE

Minimum pilot pressure 2,5 bar Maximum fitting torque 9 N/m



Solenoid-Solenoid

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	See order codes page	
Flow rate at 6 bar with Δp=1 (NI/min)	1100	
Orifice size (mm)	8	
Working ports size	G 1/4" - 1/4" NPT	
Cv	1,11	
kv	16,66	

55 55 55 24 24	55 55 55 21	55 55 55 9
53 110 53 55 G1/4" - 1/4" NPT	53 110 53 55 55 55 55 55 55 55 55 55 55 55 55	53 110 53
05.5 24 43	43 24	43 24
Ø 51 © .32.00.35. ♥⊚ Weight 410 g	Ø 51 © .42.00.35. ♥⊚ Weight 410 g	Ø 51 © .52.00.35. ♥© Weight 405 g
1	1. 1	1 1

CODING: **Ø**51**⊚**.**①**.00.35.**♥◎**

1		MODEL
	0	= Standard valve
1		X = ATEX valve
CONNECTIONS		CONNECTIONS
	Θ	4 = G1/4"
		6 = 1/4" NPT
4		TYPE
41	Û	32 = 3 ways, 2 positions
J	U	42 = 4 ways, 2 positions
		52 = 5 ways, 2 positions
	Ø	VOLTAGE
		SEE ORDER CODES PAGE
	0	TEMPERATURE OPTION
	•	SEE ORDER CODES PAGE

Minimum pilot pressure 2,5 bar Maximum fitting torque 9 N/m

Solenoid-Differential

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	See order codes page	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	1100	
Orifice size (mm)	8	
Working ports size	G 1/4" - 1/4" NPT	
Cv	1,11	
kv	16,66	

CODING: Ø51**©**.**1**00.36.**♥0**

	MODEL
(= Standard valve
	X = ATEX valve
	CONNECTIONS
Θ	4 = G1/4"
	6 = 1/4" NPT
	TYPE
a	32 = 3 ways, 2 positions
U	42 = 4 ways, 2 positions
	52 = 5 ways, 2 positions
•	VOLTAGE
V	SEE ORDER CODES PAGE
•	TEMPERATURE OPTION
•	SEE ORDER CODES PAGE

Solenoid-Spring			CODING: Ø 51 ⊙ . ① .00.39. ♥◎
	4 2 1 3		-
Ø 51 ⓒ .32.00.36. ♥⊚ Weight 330 g	Ø 51 ⊚ .42.00.36. ♥⊚ Weight 330 g	Ø 51 © .52.00.36. ♥© Weight 325 g	_
Q5.5 24 43 86 F5	24 43	24 43	_
53 110 55 55 67 110 6 6 6 75 75 75 75 75 75 75 75 75 75 75 75 75	53 110 55 55 55 55 55 55 55 55 55 55 55 55 55	53 110 G1/4" 1/4" NPT	
55 55 55 99 9	55 55 55 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	55 55 55 55 55 55 55 55 55 55 55 55 55	
	600		VOLTAGE SEE ORDER CODES PAGE TEMPERATURE OPTION SEE ORDER CODES PAGE Minimum pilot pressure 2,5 bar Maximum fitting torque 9 N/m
	I and the second	I and the second	- VOLTAGE

Solenoid-Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	See order codes page	
Flow rate at 6 bar with Δp=1 (NI/min)	1100	
Orifice size (mm)	8	
Working ports size	G 1/4" - 1/4" NPT	
Cv	1,11	
kv	16.66	

		X = ATEX valve	
		CONNECTIONS	
	•	4 = G1/4"	
		6 = 1/4" NPT	
		TYPE	
	0	32 = 3 ways, 2 positions	
		42 = 4 ways, 2 positions	
		52 = 5 ways, 2 positions	
	Ø	VOLTAGE	
		SEE ORDER CODES PAGE	
	•	TEMPERATURE OPTION	
		SEE ORDER CODES PAGE	
	Minimum nilat nuasaura O F hau		

MODEL = Standard valve

ninimum pilot pressure 2,5 bar Naximum fitting torque 9 N/m

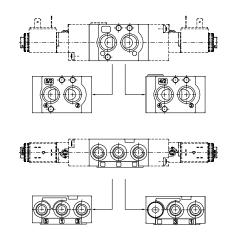
	600	Min
55 55 55 55 55 55 55 55 55 55 55 55 55	55 55 55 55 55 55 55 55 55 55 55 55 55	55 55 55 55 55 55 55 55 55 55 55 55 55
G1/4"-1/4" NPT 05.5 24 43 88 15	G1/4" 1/4" NPT	G1/4" 1/4" NPT
● 51 ● .32.00.39. ●● Weight 330 g	\$ 51 ● .42.00.39. ♦● Weight 330 g	(9 51 (9 .52.00.39. (9(9() 1 3 3 3 3 3 3 3 3 3

AIR DISTRIBUTION

Universal kit version (4/2 and 5/2)

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	See order codes page
Flow rate at 6 bar with Δp=1 (NI/min)	1100
Orifice size (mm)	8
Working ports size	G 1/4" - 1/4" NPT
Cv	1,11
kv	16,66





CODING: **∅**51**ⓒ**.92.00.**♥**.**❶⊚**

	MODEL
0	= Standard valve
	X = ATEX valve
	CONNECTIONS
Θ	4 = G1/4"
	6 = 1/4" NPT
	VERSION
	16 = Pneumatic-Differential
	18 = Pneumatic - Pneumatic
V	19 = Pneumatic - Spring
	35 = Solenoid - Solenoid
	36 = Solenoid - Differential
	39 = Solenoid - Spring
O	VOLTAGE
U	SEE ORDER CODES PAGE
•	TEMPERATURE OPTION
9	SEE ORDER CODES PAGE
	num pilot pressure 2,5 bar

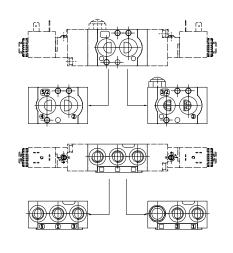
Minimum pilot pressure 2,50 aii
Maximum fitting torque 9 N/m
To change a 5/2 valve into a 4/2: simply replace
the bottom plate with the one included in the
universal kit (cod. 51@.92...) and by plugging

Ø51**@**.92.00.**Ø**.**₽⊚** Weight 405 g

Universal kit version (3/2 and 5/2)

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	See order codes page
Flow rate at 6 bar with Δp=1 (NI/min)	1100
Orifice size (mm)	8
Working ports size	G 1/4" - 1/4" NPT
Cv	1,11
kv	16,66





CODING: **∅**51**ⓒ**.93.00.**♥**.**❶⊚**

	MODEL
Ø	= Standard valve
	X = ATEX valve
	CONNECTIONS
•	4 = G1/4"
	6 = 1/4" NPT
	VERSION
	16 = Pneumatic-Differential
	18 = Pneumatic - Pneumatic
V	19 = Pneumatic - Spring
	35 = Solenoid - Solenoid
	36 = Solenoid - Differential
	39 = Solenoid - Spring
Ū	VOLTAGE
	SEE ORDER CODES PAGE
•	TEMPERATURE OPTION
•	SEE ORDER CODES PAGE

Minimum pilot pressure 2,5 bar Maximum fitting torque 9 N/m To change a 5/2 valve into a 3/2: simply replace the bottom plate with the one included in the universal kit (cod. 51 **@**.93...) and by applying a silencer to connection 5

∅51**⊚**.93.00.**♥**.**⊕⊚** Weight 405 g







Series 515 High Performance

NAMUR valves are 5/2 valves and electrovalves, piloted electrically or pneumatically, utilised primarily to operate rotary actuators and wherever there is a **NAMUR** standard installation plan.

The product is classified for use in potentially explosive atmospheres (Directive 2014/34/EU).

NAMUR valves have been developed using the latest, technical design solutions which guarantee flexibility and an increased flow rate capacity exceeding that of traditional, spool valves.

In addition, they have been produced with innovative materials which guarantee increased performance.

IMPORTANT:

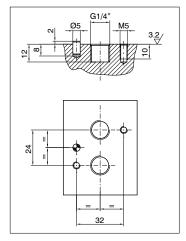
Differs from version 514 because it is supplied without a plate.



Construction characteristics

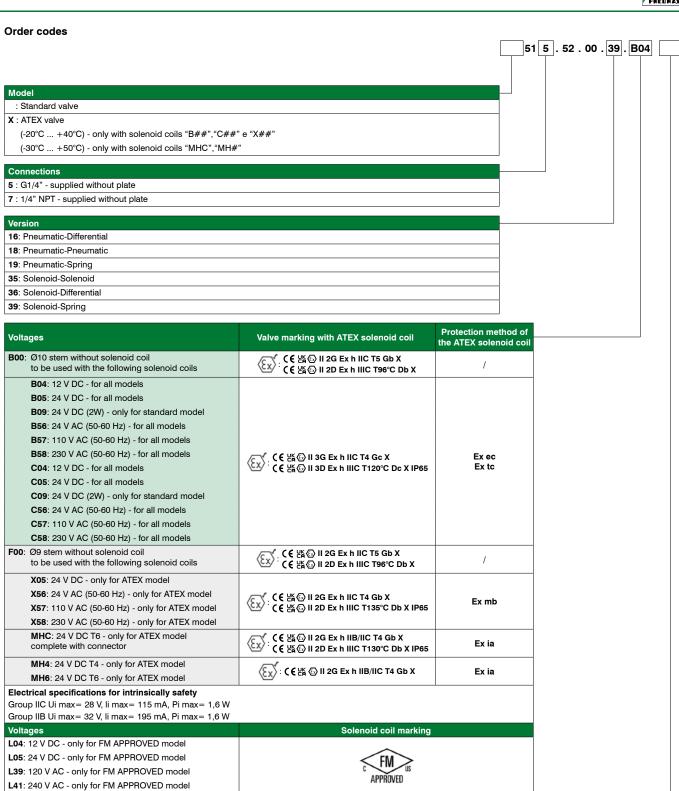
Body	Aluminium
Spacers	Technopolymer
Seals	Nitrile rubber
Springs	Stainless Steel
Operators	Technopolymer
Spools	Steel
Screws	Zinc coated Steel / Stainless steel

"NAMUR" interface dimensions: according to standard (VDI/VDE 3847 July 2003)



Certifications available





Temperature options
: Standard valve (-10°C +50°C)
LT : Low temperature (-30°C +50°C)

FM APPROVED valve (-20°C ... +50°C) - only with solenoid coils "L##"

Example: 515.52.00.39.B04: Standard valve, G1/4" connections supplied without plate, solenoid-spring 5 ways, 12 VDC solenoid coil

Pneumatic-Differential

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	See order codes page
Flow rate at 6 bar with Δp=1 (NI/min)	1100
Orifice size (mm)	8
Working ports size	G 1/4" - 1/4" NPT
Cv	1,11
kv	16,66

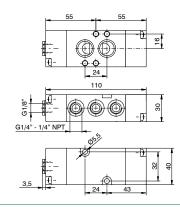
CODING: **1**51**6**.52.00.16

	MODEL
0	= Standard valve
	$\mathbf{X} = ATEXvalve$
•	CONNECTIONS
	5 = G1/4"
	7 = 1/4" NPT
•	TEMPERATURE OPTION
	SEE ORDER CODES PAGE



Weight 245 g Minimum pilot pressure 2,5 bar Maximum fitting torque 9 N/m

∅51**⊚**.52.00.16**⊚**





Pneumatic-Pneumatic

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C See order codes page		
Flow rate at 6 bar with Δp=1 (NI/min)	1100	
Orifice size (mm)	8	
Working ports size	G 1/4" - 1/4" NPT	
Cv	1,11	
kv	16,66	

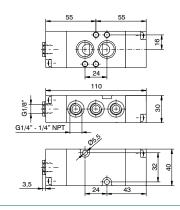
COD	ING: ∅ 51 ⊚ .52.00.18 ⊚
	MODEL

	MODEL
0	= Standard valve
	X = ATEX valve
	CONNECTIONS
Θ	5 = G1/4"
	7 = 1/4" NPT
0	TEMPERATURE OPTION
•	SEE ORDER CODES PAGE



Weight 245 g Minimum pilot pressure 2,5 bar Maximum fitting torque 9 N/m

∅51**⊚**.52.00.18**⊚**





Pneumatic-Spring

Operational characteristics		
Fluid Filtered air. No lubrication needed, if applied it shall be continuou		
Max. working pressure (bar)	10	
Temperature °C	See order codes page	
Flow rate at 6 bar with Δp=1 (NI/min)	1100	
Orifice size (mm)	8	
Working ports size	G 1/4" - 1/4" NPT	
Cv	1,11	
kv	16,66	

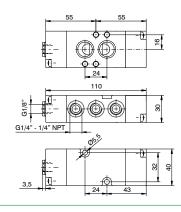
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	•	MODEL
		= Standard valve
		X = ATEX valve
╛	•	CONNECTIONS
		5 = G1/4"
4		7 = 1/4" NPT
4	•	TEMPERATURE OPTION
4		SEE ORDER CODES PAGE



Weight 245 g Minimum pilot pressure 2,5 bar Maximum fitting torque 9 N/m

Ø51**©**.52.00.19**⊚**





Solenoid-Solenoid

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
emperature °C See order codes page		
Flow rate at 6 bar with Δp=1 (NI/min)	1100	
Orifice size (mm)	8	
Working ports size	G 1/4" - 1/4" NPT	
Cv	1,11	
kv	16,66	

MODEL 0 = Standard valve X = ATEX valve CONNECTIONS **5** = G1/4" 7 = 1/4" NPT VOLTAGE SEE ORDER CODES PAGE TEMPERATURE OPTION

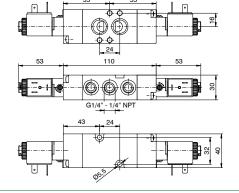
SEE ORDER CODES PAGE

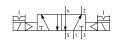
CODING: **∅**51**⊚**.52.00.35.**1⊚**



Weight 415 g Minimum pilot pressure 2,5 bar Maximum fitting torque 9 N/m

₩51@.52.00.35.00





CODING: **0**51**0**.52.00.36.**10**

Solenoid-Differential

Operational characteristics		
Fluid Filtered air. No lubrication needed, if applied it shall be continuou		
Max. working pressure (bar)	10	
Temperature °C	See order codes page	
Flow rate at 6 bar with Δp=1 (NI/min)	1100	
Orifice size (mm)	8	
Working ports size	G 1/4" - 1/4" NPT	
Cv	1,11	
kv	16,66	

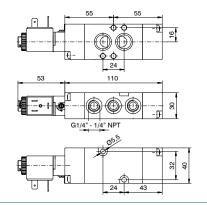
MODEL = Standard valve X = ATEX valve CONNECTIONS **5** = G1/4" 7 = 1/4" NPT VOLTAGE SEE ORDER CODES PAGE TEMPERATURE OPTION

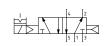
SEE ORDER CODES PAGE



Weight 330 g Minimum pilot pressure 2,5 bar Maximum fitting torque 9 N/m

₩51♥.52.00.36.��





Solenoid-Spring

<u> </u>		
Operational characteristics		
Fluid Filtered air. No lubrication needed, if applied it shall be continuous		
Max. working pressure (bar) 10		
Temperature °C See order codes page		
Flow rate at 6 bar with $\Delta p=1$ (NI/min) 1100		
Orifice size (mm) 8		
Working ports size	G 1/4" - 1/4" NPT	
Cv	1,11	
kv	16,66	



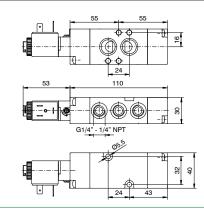
CODING: **∅**51**ⓒ**.52.00.39.**❶⊚**

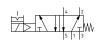
		MODEL
	Ø	= Standard valve
╛		X = ATEX valve
4		CONNECTIONS
4	•	5 = G1/4"
4		7 = 1/4" NPT
\dashv	0	VOLTAGE
+	U	SEE ORDER CODES PAGE
┙	•	TEMPERATURE OPTION
	•	SEE ORDER CODES PAGE



Weight 330 g Minimum pilot pressure 2,5 bar Maximum fitting torque 9 N/m

Ø51**©**.52.00.39.**0⊚**







Series 1000 - Size 1, 2 and 3

5 ways 2 or 3 positions distributors and electric distributors can be used mounted on individual or ganged bases.

These standards are ISO 5599/1, according to which certain dimensions are mandatory, namely, the mounting surface, the pitch of the fastening screws, the characteristic of the electric pilot, the flow rate, the pneumatic connections, and so on.

The design is based on the balanced spool principle with pneumatic or electropneumatic actuators and resetting by mechanically or pneumatically operated spring.

The 3 position closed centres, are obtained by spring operation.

The feed to the actuators on the distributors can be provided either by pressure intake from inlet 1(autofeed) or through the base from inlets 12 and 14 (external feed); there are two separate types of these distributors: one is the Series 1000 and the other is the Series 1010.

The Series 1000 includes size 1 and 2 and are built of die-cast aluminium. The selection is made by turning a seal fitted between body and operator by 180°, so to utilize external-feed pilot or with internal feed.

Ordering codes are referring to distributors with "M2" mechanics or solenoid valves "S" mounted.

Coil are not included and have to be ordored separately (see Series 300).

"S" homologated (See Series 300).

Use and maintenance

This valves have an average life of 15 million cycles depending on the application and air quality.

Filtered and lubricated air using specified lubricants will reduce the wear of the seals and ensures long and trouble free operation.

Make sure that the conditions of use comply with the pressure, temperature etc. limits indicated and that the fastening screws are tightened with the following maximum torques on distributors Series 1010.

Size 1 = 4 Nm

Size 2 = 5 Nm

Size 3 = 8 Nm

Repair kits including the spool complete with seals are available for overhauling the valves.

However, although this is a simple operation it should be carried out by a competent person.

ATTENTION: use hydraulic oil class H for lubrication such as CASTROL MAGNA SW32.

Construction characteristics

Series 1000	Size 1	Size 2
Body	Zinc alloy	Aluminium
Operators	Zincalloy	Aluminium
Spools	Steel	Steel
Seals	NBR	NBR
Spacers	Technopolymer	Aluminium
Springs	Spring steel	Spring steel
Selectors	NBR	NBR

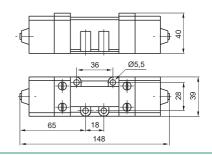
Series 1010	Size 1	Size 2	Size 3
Body	Technopolymer	Technopolymer	Aluminium
Operators	Technopolymer	Technopolymer	Aluminium
Spools	Steel	Steel	Steel
Seals	NBR	NBR	NBR
Spacers	Technopolymer	Technopolymer	Technopolymer
Pistons	Aluminium	Aluminium	Aluminium
Springs	Spring steel	Spring steel	Spring steel



Pneumatic - Spring

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 har with $\Delta n=1$ (NI/min)	840







Weight 780 g Minimum pilot pressure 2,5 bar

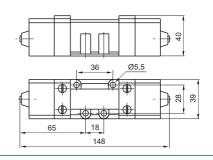
Coding: 1001.52.1.6

Coding: 1001.52.1.9

Pneumatic - Differential

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	840







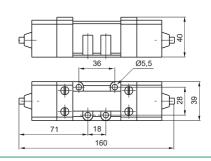
Weight 790 g Minimum pilot pressure 2 bar

Coding: 1001.52.1.8

Pneumatic-Pneumatic 5/2

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	840







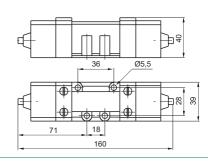
Weight 800 g Minimum pilot pressure 1,5 bar

Coding: 1001.53. **3**.1.8

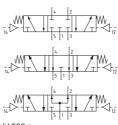
Pneumatic-Pneumatic 5/3

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	720









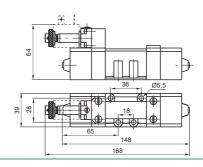
Weight 800 g Minimum pilot pressure 3 bar



Solenoid-Spring

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	840







Weight 890 g Minimum pilot pressure 2,5 bar

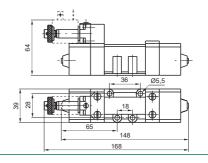
Coding: 1051.52.3.6.M2

Coding: 1051.52.3.9.M2

Solenoid-Differential

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	840







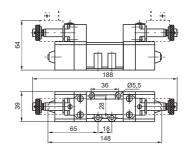
Weight 900 g Minimum pilot pressure 2 bar

Coding: 1051.52.3.5.M2

Solenoid-Solenoid 5/2

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	840







Weight 1040 g Minimum pilot pressure 1,5 bar

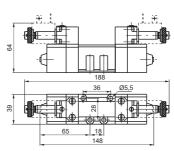
Coding: 1051.53. **3**.5.M2

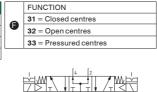
Solenoid-Solenoid 5/3

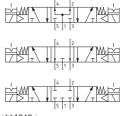
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	720

iltered air. No lubrication needed, if applied it shall be continuous		3
10	•	3
-5 +50		3
720		
		\vdash









Weight 1040 g Minimum pilot pressure 3 bar

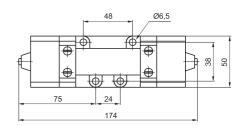


Pneumatic - Differential

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	1700









Weight 730 g Minimum pilot pressure 2 bar

Coding: 1002.52.1.8

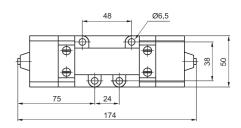
Coding: 1002.52.1.6

Pneumatic-Pneumatic 5/2

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 + 70
Flow rate at 6 bar with Δp=1 (NI/min)	1700









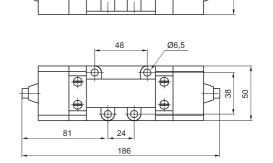
Weight 800 g Minimum pilot pressure 1,5 bar

Pneumatic-Pneumatic 5/3

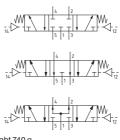
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	1700

Coding: 1002.53. 3 .1.8			
	FUNCTION		
•	31 = Closed centres		
	32 = Open centres		
	33 = Pressured centres		





4



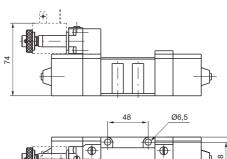
Weight 740 g Minimum pilot pressure 3 bar

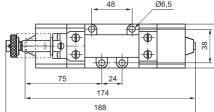


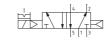
Solenoid-Differential

Operational characteristics			
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous		
Max. working pressure (bar)	10		
Temperature °C	-5 +50		
Flow rate at 6 bar with Δp=1 (NI/min)	1700		









Coding: 1052.52.3.6.M2

Weight 850 g Minimum pilot pressure 2 bar

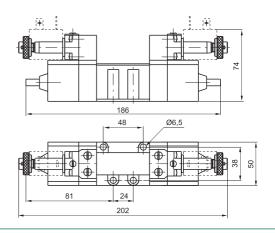
Coding: 1052.52.3.5.M2

22

Solenoid-Solenoid 5/2

Operational characteristics			
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous		
Max. working pressure (bar)	10		
Temperature °C	-5+50		
Flow rate at 6 bar with Δp=1 (NI/min)	1700		







Weight 980 g Minimum pilot pressure 1,5 bar

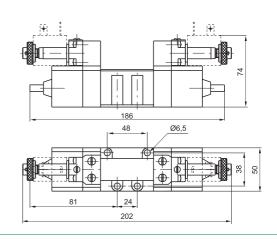
Solenoid-Solenoid 5/3

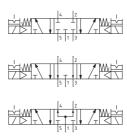
Operational characteristics				
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous			
Max. working pressure (bar)	10			
Temperature °C	-5 +50			
Flow rate at 6 bar with Δp=1 (NI/min)	1700			

Coding: 1052.53. **3**.5.M2

	FUNCTION
	31 = Closed centres
(3)	32 = Open centres
	33 = Pressured centres





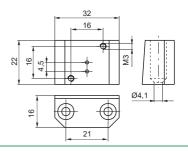


Weight 980 g Minimum pilot pressure 3 bar

Coding: 1001.05

Base for 32 mm Solenoid valve



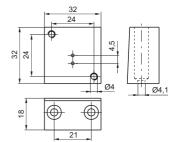


Weight 60 g

Coding: 1001.04

Base CNOMO for 32 mm Solenoid valve





Weight 90 g

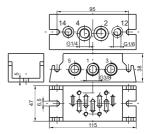
Coding: 1001.00

Coding: 1001.01

Coding: 1001.02

Base with bottom connections size 1

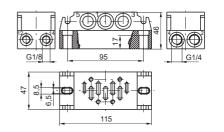




Weight 320 g 1=INLET PORT, 2-4=OUTLET PORTS, 3-5=EXHAUST PORTS, 12-14=PILOT

Base with side connections size 1

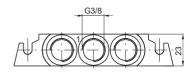


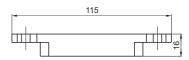


Weight 445 g 1=INLET PORT, 2-4=OUTLET PORTS, 3-5=EXHAUST PORTS, 12-14=PILOT PORTS

Inlet blocks





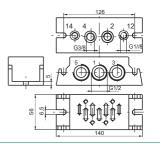


Weight 55 g

Coding: 1002.00

Base with bottom connections size 2





Weight 520 g 1=INLET PORT, 2-4=OUTLET PORTS,

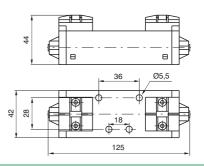
3-5=EXHAUST PORTS, 12-14=PILOT PORTS



Pneumatic - Spring

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with An=1 (NI/min)	900







Weight 230 g Minimum pilot pressure 2,5 bar

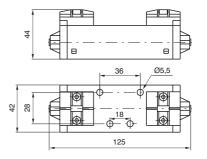
Coding: 1011.52.1.6

Coding: 1011.52.1.9

Pneumatic - Differential

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with $\Delta p = 1$ (NI/min)	900







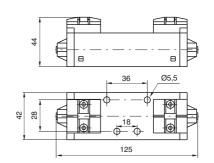
Weight 240 g Minimum pilot pressure 2 bar

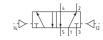
Coding: 1011.52.1.8

Pneumatic-Pneumatic 5/2

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	900







Weight 240 g Minimum pilot pressure 1,5 bar

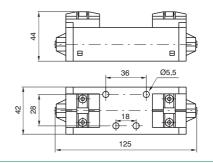
Pneumatic-Pneumatic 5/3

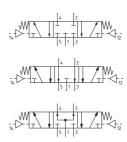
Operational characteristics		ıſ
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	١,
Max. working pressure (bar)	10	11
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	900	1

	•	FUNCTION
		31 = Closed centres
		32 = Open centres
		33 = Pressured centres

Coding: 1011.53.







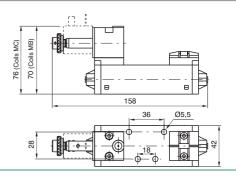
Weight 240 g Minimum pilot pressure 3 bar

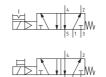
Solenoid-Spring

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with ∆p=1 (NI/min)	900









Weight 290 g Minimum pilot pressure 2,5 bar

Solenoid-Differential

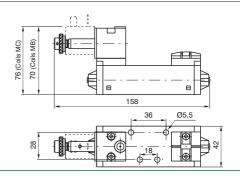
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	900

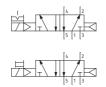
Coding: 1011.52.3.6.

	MECHANIC
w	SEE VALVES SERIES 300 CNOMO

AIR DISTRIBUTION







Weight 290 g Minimum pilot pressure 2 bar

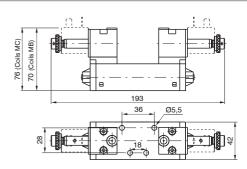
Solenoid-Solenoid 5/2

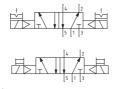
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with ∆p=1 (NI/min)	900	

Coding: 1011.52.3.5.

		MECHANIC
1	w	SEE VALVES SERIES 300 CNOMO
1		







Weight 350 g Minimum pilot pressure 1,5 bar

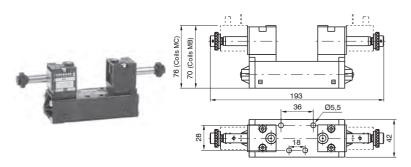
Coding: 1011.53. **3**.5. **3**

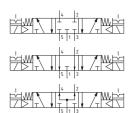
Solenoid-Solenoid 5/3

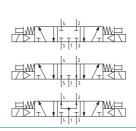
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	900

		FUNCTION
		31 = Closed centres
	(3)	32 = Open centres
		33 = Pressured centres
	0	MECHANIC
		SEE VALVES SERIES 300 CNOMO

Weight 350 g Minimum pilot pressure 3 bar





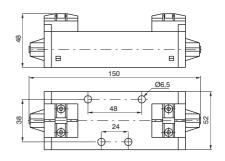




Pneumatic - Spring

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5+50
Flow rate at 6 bar with $\Delta n = 1$ (NI/min)	1600







Weight 300 g Minimum pilot pressure 2,5 bar

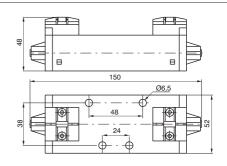
Coding: 1012.52.1.6

Coding: 1012.52.1.9

Pneumatic - Differential

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with $\Delta p = 1$ (NI/min)	1600







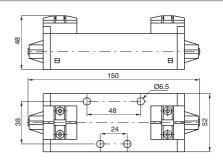
Weight 310 g Minimum pilot pressure 2 bar

Coding: 1012.52.1.8

Pneumatic-Pneumatic 5/2

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	1600





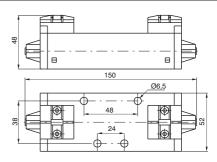


Weight 310 g Minimum pilot pressure 1,5 bar

Pneumatic-Pneumatic 5/3

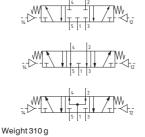
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	1600





Coding: 1012.53. **3**.1.8

	FUNCTION
	31 = Closed centres
32 = Open centres	
	33 = Pressured centres
	-1 -1



Weight 310 g Minimum pilot pressure 3 bar

1012.53. 3.1.8

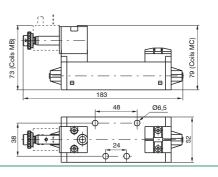
AIR DISTRIBUTION

Solenoid-Spring

Operational characteristics	
Fluid Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with ∆p=1 (NI/min)	1600

Coding: 1012.52.3.9. MECHANIC
SEE VALVES SERIES 300 CNOMO







Weight 360 g Minimum pilot pressure 2,5 bar

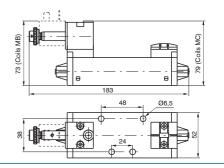
Solenoid-Differential

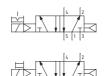
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	1600	

Coding: 1012.52.3.6.

<u> </u>	MECHANIC
w	SEE VALVES SERIES 300 CNOMO







Weight 360 g Minimum pilot pressure 2 bar

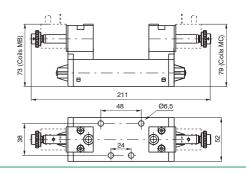
Solenoid-Solenoid 5/2

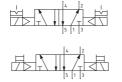
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with ∆p=1 (NI/min)	1600

Coding: 1012.52.3.5.

		MECHANIC
1	W	SEE VALVES SERIES 300 CNOMO
٦.		







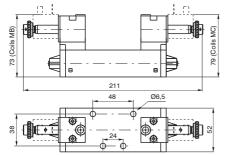
Weight 420 g Minimum pilot pressure 1,5 bar

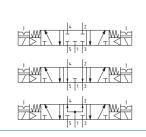
Solenoid-Solenoid 5/3

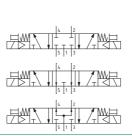
•		
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	1600	

Coding: 1012.53. ⑤ .3.5. ⑥		
	FUNCTION	
	31 = Closed centres	
•	32 = Open centres	
	33 = Pressured centres	
(MECHANIC	
W	SEE VALVES SERIES 300 CNOMO	







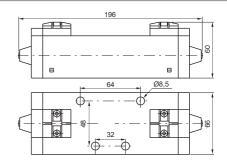




Pneumatic - Spring

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	3600







Weight 1000 g Minimum pilot pressure 2,5 bar

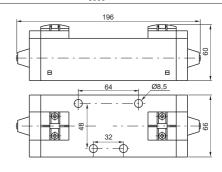
Coding: 1013.52.1.6

Coding: 1013.52.1.9

Pneumatic - Differential

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	3600







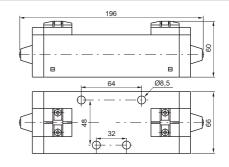
Weight 1020 g Minimum pilot pressure 2 bar

Coding: 1013.52.1.8

Pneumatic-Pneumatic 5/2

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	3600





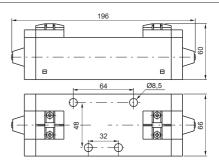


Weight 1050 g Minimum pilot pressure 1,5 bar

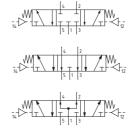
Pneumatic-Pneumatic 5/3

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	3000	









Weight 1050 g Minimum pilot pressure 3 bar

AIR DISTRIBUTION

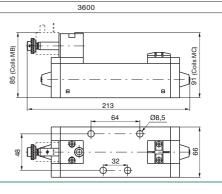
Solenoid-Spring

Filtered air. No lubrication needed, if applied it shall be continuous Fluid Max. working pressure (bar) 10 -5 ... +50 Temperature °C Flow rate at 6 bar with Δp=1 (NI/min)

MECHANIC
SEE VALVES SERIES 300 CNOMO

Coding: 1013.52.3.9.









Weight 1060 g Minimum pilot pressure 2,5 bar

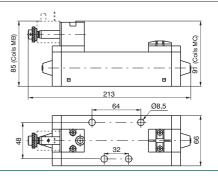
Solenoid-Differential

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	3600

Coding: 1013.52.3.6.

0	MECHANIC
	SEE VALVES SERIES 300 CNOMO







Weight 1080 g Minimum pilot pressure 2 bar

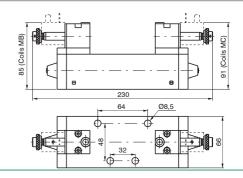
Solenoid-Solenoid 5/2

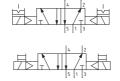
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	3600

Coding: 1013.52.3.5.

		MECHANIC
1	w	SEE VALVES SERIES 300 CNOMO
1		







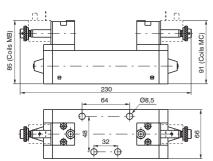
Weight 1170 g Minimum pilot pressure 1,5 bar

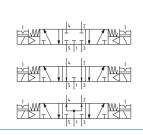
Solenoid-Solenoid 5/3

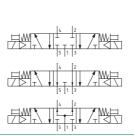
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 +50
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	3000

Coding: 1013.53. ⑤ .3.5. ⑥		
	FUNCTION	
	31 = Closed centres	
•	32 = Open centres	
	33 = Pressured centres	
0	MECHANIC	
W	SEE VALVES SERIES 300 CNOMO	











Series 1100 - Modular bases with side and bottom connections

These bases are manufactured with the outlet and pilot ports on both the sides and the bottom faces giving the option for use with any application. Unused ports must be blanked off using threaded plugs which are not included in the part number or price.

To isolate bases from each other for use with different supply pressures ports 1, 3 & 5 should be plugged underneath the seal.

1101.17 (size 1)-1102.17 (size 2)-1103.17 (size 3)



Coding: 110**1**.00

2 = Size 2 **3** = Size 3

SIZE **1** = Size 1

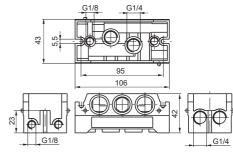
O

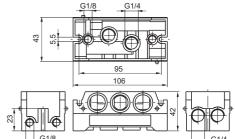




Weight 240 g

1101.00

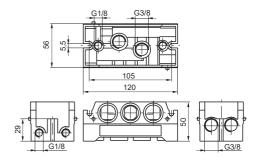






Weight 340 g

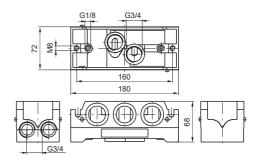
1102.00





Weight 950 g

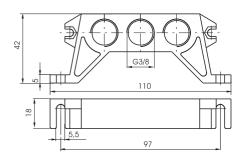
1103.00



Inlet blocks, Size 1



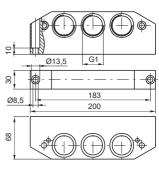
Weight 100 g



Inlet blocks, Size 3



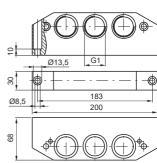
Weight 840 g





Coding: 1103.11

Coding: 1101.09



1

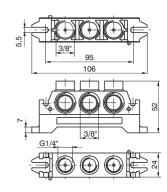
AIR DISTRIBUTION

Inlet blocks



Weight 160 g

1101.



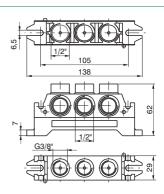
Coding: 110**⊕**.

	SIZE	
1 = Size 1		
	2 = Size 2	
	CONNECTIONS	
	10 = Universal	
0	11 = Stand alone	
	12 = Top connections	
	13 = Bottom connections	



Weight 230 g

1102.



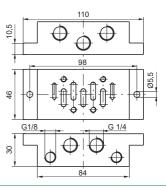
PREUMAX





Weight 160 g

1101.14



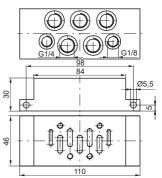
Coding: 110**1**.

		SIZE
	•	1 = Size 1
		2 = Size 2
		3 = Size 3
		SHAPE
	•	14 = Shape A
		15 = Shape B (only for sizes 1 & 2)

1511551

Weight 190 g

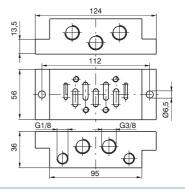
1101.15





Weight 190 g

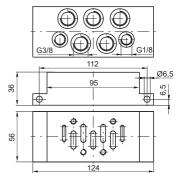
1102.14





Weight 220 g

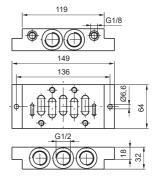
1102.15





Weight 600 g

1103.14

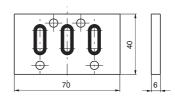




Closing plate



1101.16

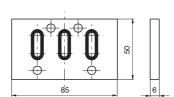


Coding: 110**1**.16

	SIZE
	1 = Size 1
U	2 = Size 2
	3 = Size 3

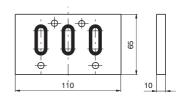


1102.16





1103.16

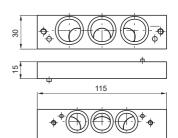


Base adaptor



Weight 110 g

1100.2-1



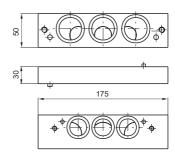
Coding: 1100.





Weight 590 g

1100.3-2





Series 1000 M12 - Size 1, 2 and 3

The ISO 5599/1 Solenoid valves Series 1000 M12 are available in three sizes with flow rates from 900 NI/min for size 1 up to the 3600 NI/min for size

The standard features of the ISO valves are still included, however, they are now combined with a M12 electrical connector located in the middle of the valve to manage the electrical signals.

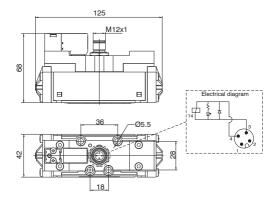
Versions are available to suit valves with both single and double 24VDC solenoids complete with IP65 protection.

All version are supplied with LED indicators "Shifting time of pneumatic directional control valves or moving parts, logic devices were measured in accordance to ISO 12238:2001"

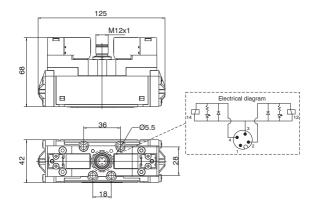
Electrical characteristics

Electrical connector M12x1 Protection degree IP65 Input voltage 24VDC Nominal power 2,3W LED indentification

Monostable version



Bistable version





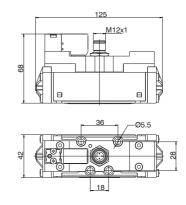
Solenoid-Spring

Coding: 1111.52.3.9.

		VOLTAGE
٦	U	12P = 24VDC

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	2.5	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	900	
Response time according to ISO 12238, activation time (ms)	16	
Response time according to ISO 12238, deactivation time (ms)	122	





Weight 350 g



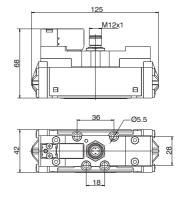
Solenoid-Differential

Coding: 1111.52.3.6.

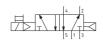
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	2	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	900	
Response time according to ISO 12238, activation time (ms)	32	
Response time according to ISO 12238, deactivation time (ms)	51	

0	VOLTAGE
U	12P = 24VDC





Weight 356 g





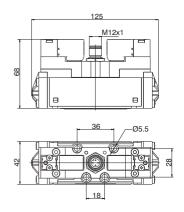
Solenoid-Solenoid 5/2

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	1.5	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	900	
Response time according to ISO 12238, activation time (ms)	13	
Response time according to ISO 12238, deactivation time (ms)	14	

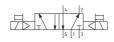
•		VOLTAGE
	U	12P = 24VDC

Coding: 1111.52.3.5.





Weight 390 g



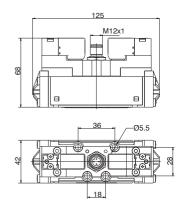
Solenoid-Solenoid 5/3

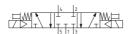
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	3	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	900	
Response time according to ISO 12238, activation time (ms)	18 (Closed centres) 18 (Open centres) 19 (Pressured centres)	
Response time according to ISO 12238, deactivation time (ms)	19 (Closed centres) 20 (Open centres) 18 (Pressured centres)	

Coding: 1111.53. **3**.3.5.

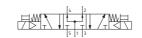
	FUNCTION
	FUNCTION
	31 = Closed centres
9	32 = Open centres
	33 = Pressured centres
VOLTAGE	
v	12P = 24VDC











Weight 392 g



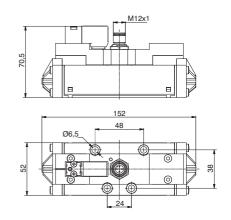
Solenoid-Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	2.5	
Temperature °C	-5 +50	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	1600	
Response time according to ISO 12238, activation time (ms)	24	
Response time according to ISO 12238, deactivation time (ms)	124	

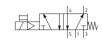
Coding: 1112.52.3.9.

•	VOLTAGE
	12P = 24VDC





Weight 510 g



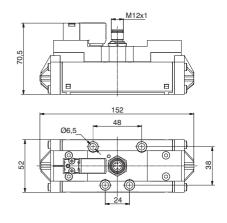
Solenoid-Differential

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	2	
Temperature °C	-5 +50	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	1600	
Response time according to ISO 12238, activation time (ms)	37	
Response time according to ISO 12238, deactivation time (ms)	90	

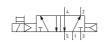
Coding: 1112.52.3.6.

•	VOLTAGE
v	12P = 24VDC





Weight 515 g

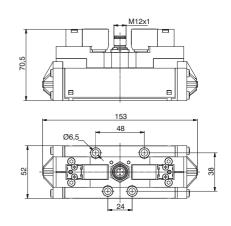


Solenoid-Solenoid 5/2

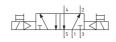
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	1.5	
Temperature °C	-5 +50	
Flow rate at 6 bar with ∆p=1 (NI/min)	1600	
Response time according to ISO 12238, activation time (ms)	17	
Response time according to ISO 12238, deactivation time (ms)	20	

Coding: 1112.52.3.5.**①**| VOLTAGE | 12P = 24VDC





Weight 550 g



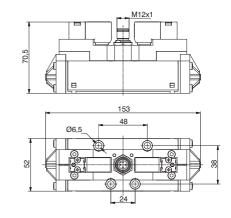
Solenoid-Solenoid 5/3

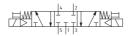
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	3	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	1600	
Response time according to ISO 12238, activation time (ms)	18 (Closed centres) 18 (Open centres) 20 (Pressured centres)	
Response time according to ISO 12238, deactivation time (ms)	112 (Closed centres) 106 (Open centres) 118 (Pressured centres)	

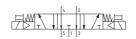
Coding: 1112.53. **6**.3.5.

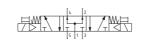
	FUNCTION
	31 = Closed centres
•	32 = Open centres
	33 = Pressured centres
VOLTAGE	
0	12P = 24VDC











Weight 560 g



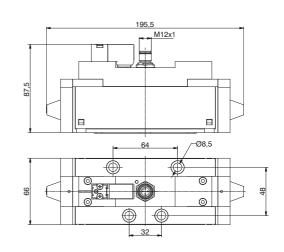
Solenoid-Spring

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	2.5	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	3600	
Response time according to ISO 12238, activation time (ms)	46	
Response time according to ISO 12238, deactivation time (ms)	254	

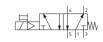
Coding: 1113.52.3.9.

Ū	VOLTAGE
	12P = 24VDC





Weight 1360 g



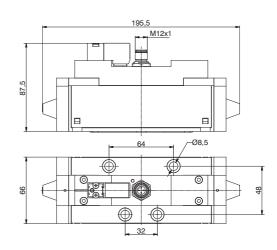
Solenoid-Differential

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	2	
Temperature °C	-5 +50	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	3600	
Response time according to ISO 12238, activation time (ms)	78	
Response time according to ISO 12238, deactivation time (ms)	180	

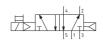
Coding: 1113.52.3.6.

_	VOLTAGE
U	12P = 24VDC





Weight 1360 g





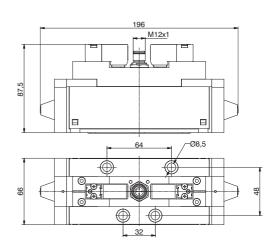
Solenoid-Solenoid 5/2

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	1.5	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	3600	
Response time according to ISO 12238, activation time (ms)	32	
Response time according to ISO 12238, deactivation time (ms)	37	

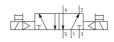
	•	VOLTAGE
1	v	12D - 24VDC

Coding: 1113.52.3.5.





Weight 1370 g



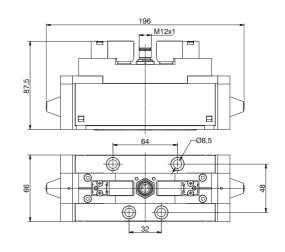
Solenoid-Solenoid 5/3

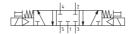
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Max. working pressure (bar)	10	
Minimum pilot pressure (bar)	3	
Temperature °C	-5 +50	
Flow rate at 6 bar with ∆p=1 (NI/min)	3600	
Response time according to ISO 12238, activation time (ms)	30 (Closed centres) 30 (Open centres) 32 (Pressured centres)	
Response time according to ISO 12238, deactivation time (ms)	305 (Closed centres) 230 (Open centres) 270 (Pressured centres)	

Coding: 1113.53. \bigcirc .3.5. \bigcirc

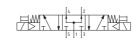
_	
	FUNCTION
	31 = Closed centres
•	32 = Open centres
	33 = Pressured centres
0	VOLTAGE
J	12P = 24VDC











Weight 1380 g

Series 600 - M5 - G1"

These accessories are a range of devices for completing a pneumatic circuit. These valves, with their special functions, are inserted between two valves, between a valve and a cylinder, or following a cylinder.

One of the particular characteristic of these accessories is that they are automatically actuated without the need for external commands. Usually, operation and idle are controlled by the presence or absence of pressure as, for example, in the case of quick exhaust valves which pilots itself as a selector, changing the flow direction as the signal goes off and on.

On the other hand, other components are inert. That is, they do not have any internal variable function which is sensitive to pressure. Among these components are silencers, manifolds and flow regulators.

There are also the flow regulators, which like electronic components, can be defined as variable resistences. They are fundamental in regulating the flow rate, provide precise timings and regulate the cylinders' speed.

The selector valves, with "AND" and "OR" functions, are logic functions components which often are an essential element. Furthermore, they are built to allow high flow rate which cannot be obtained by classic pneumatic logic.

The block valves lock the cylinder in a position, avoiding unexpected depressurization of the cylinder's chamber due to lack of compressed air at the inlet port. Practically, it is a piloted unidirectional valve that blocks the exhaust port when there is no air in the pilot circuit.

Finally the economizer valves are in fact a pressure reducer valves installed between valve and cylinder for reducing the air consumption. For example this is applicable on the cylinder return stroke without penalizing the exhaust as happens with FRL pressure regulator.

Construction characteristics

We have not listed all different materials used for the construction of these components because the list would be too the long. We use corrosion proof material, brass or anodized aluminium and the most appropriate specific mixture for seals. If more information is required please contact our technical department.

Use and maintenance

In operation pay attention to the minimum and maximum criteria for temperature and pressure, and ensure good quality compressed air. In a dirty environment, protect the exhaust ports.

In this case, maintenance is minimal and is necessary only if the air is particularly dirty.

The components most subject to damage by the accumulation of dirt are flow regulators with fine regulation and silencers. As for regulators, follow the normal procedure for disassembling, washing with non-chemical cleaning agents and remounting. The silencers need only to be rinsed in petrol or solvent and blown dry with compressed air.

The number of requests for spare seals for flow regulators and shuttle valves are statistically irrelevant. More often, it is necessary to replace the lining of the quick exhaust because of the wear it undergoes due to the particular conditions of operating.

ATTENTION: use hydraulic oil class H for lubrication such as CASTROL MAGNA SW32.

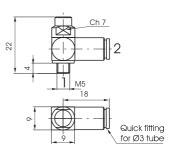


MIniature flow control valve M5-Ø3 tube

Coding: 6.01.305.

Operational characteristics			FUNCTION	
Fluid	Filtered air		1.2 = Unidirectional (from 1 to 2)	
Max. working pressure (bar)	10	•	2.1 = Unidirectional (from 2 to 1)	
Temperature °C	-5 +70		1.1 = Bidirectional (on both sides)	
Orifice size (mm)	1.5	Weig	eight 14 g	











MIniature flow control valve M5-Ø3 tube, with adjustement knob

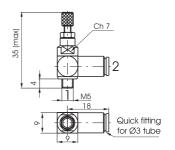
Operational characteristics	
Fluid	Filtered air
Max. working pressure (bar)	10
Temperature °C	-5 +70
Orifice size (mm)	1.5

Coding: 6.01.305. P

	FUNCTION
	1.2 = Unidirectional (from 1 to 2)
(3)	2.1 = Unidirectional (from 2 to 1)
	1.1 = Bidirectional (on both sides)
V-:-	-110













MIniature flow control valve M5-Ø3,17 tube

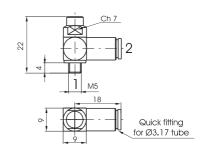
Operation	onal characteristics
Fluid	Filtered air
Max. working pressure (bar)	10
Temperature °C	-5 +70
Orifice size (mm)	1.5

Coding: 6.01.315.

	FUNCTION
	1.2 = Unidirectional (from 1 to 2)
9	2.1 = Unidirectional (from 2 to 1)
	1.1 = Bidirectional (on both sides)

Weight 14 g











MIniature flow control valve M5-Ø3,17 tube, with adjustement knob

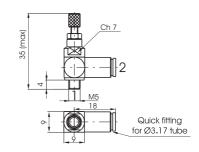
Operational characteristics		
Fluid	Filtered air	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Orifice size (mm)	1.5	

Coding: 6.01.315. P

	FUNCTION
	1.2 = Unidirectional (from 1 to 2)
•	2.1 = Unidirectional (from 2 to 1)
	1.1 = Bidirectional (on both sides)

Weight 16 g











MIniature flow control valve M5-Ø4 tube

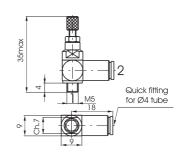
Codina: O.O	Coding:	6.01	.45	
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Operational characteristics		
Fluid	Filtered air] [
Max. working pressure (bar)	10]] "
Temperature °C	-5 +70	1
Orifice size (mm)	1.5	We

	FUNCTION
(3	1.2 = Unidirectional (from 1 to 2)
	2.1 = Unidirectional (from 2 to 1)
	1.1 = Bidirectional (on both sides)

Weight 14 g









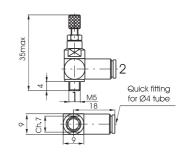
MIniature flow control valve M5-Ø4 tube, with adjustement knob

Coding: 6.01.45. P

Operation	onal characteristics	
Fluid	Filtered air	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Orifice size (mm)	1.5	

	FUNCTION
•	1.2 = Unidirectional (from 1 to 2)
	2.1 = Unidirectional (from 2 to 1)
	1.1 = Bidirectional (on both sides)











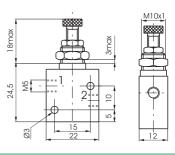
Flow control valve M5-in line ports

Coding: 6.01.

Operational characteristics		
Fluid	Filtered air	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Orifice size (mm)	2	

	FUNCTION
•	05 = Unidirectional
	05/2 = Bidirectional
Weight 48 g	
	-

1







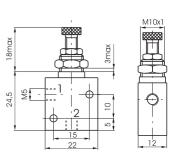
Flow control valve M5-port at 90°

Coding: 6.01.05.

Tion contact tanto mic portatos		•
Operati	onal characteristics	
Fluid	Filtered air] (
Max. working pressure (bar)	10	
Temperature °C	-5 +70	W
Orifice size (mm)	2	

	FUNCTION
•	90 = Unidirectional
	90/2 = Bidirectional
Weig	ht 48 g









Flow control valve M5-with a through bolt

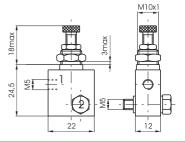
Operati	ional characteristics	
Fluid	Filtered air]] (
Max. working pressure (bar)	10	1
Temperature °C	-5 +70	W
Orifice size (mm)	2	1

Coding: 6.01.05.

		FUNCTION
1	180 = Unidirectional	
1	-	180/2 = Bidirectional

Weight 52 g









Flow control valve G1/8"-ultrasensitive

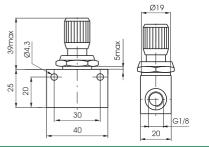
Operational characteristics		
Fluid	Filtered air	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Orifice size (mm)	3	

Coding: 6.01.18/

	FUNCTION
•	4 = Unidirectional
	5 = Bidirectional

Weight 100 g









Flow control valve G1/8"-ultrasensitive with lock nut

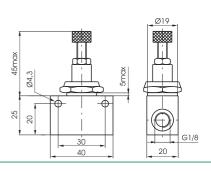
Operational characteristics		
Fluid	Filtered air	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Orifice size (mm)	3	

Coding: 6.01.18/

FUNCTION
6 = Unidirectional
7 = Bidirectional

Weight 105 g









Flow control valve G1/8"

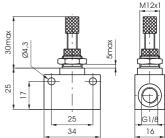
Operational characteristics		
Fluid	Filtered air	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Orifice size (mm)	4	

Coding: 6.01.

	FUNCTION	
18N = Unidirectional		
•	18NE = Unidirectional ECO	
-	18/1N = Bidirectional	
	18/1NE = Bidirectional ECO	

Weight 50 g













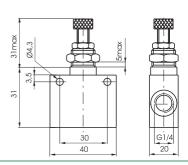
Flow control valve G1/4"- compact type-unidirectional

Coding: 6.01.14/1

Weight	100	ς
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Operational characteristics	
Fluid	Filtered air
Max. working pressure (bar)	10
Temperature °C	-5 +70
Orifice size (mm)	5.5







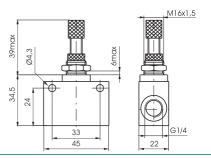
Coding: 6.01.

Flow control valve G1/4"	
	Operational characteristics
Fluid	Filtered air
Max. working pressure (bar)	10
Temperature °C	-5 +70
Orifice size (mm)	7
Orifice size (mm)	7



Weight 105 g









Flow control valve G1/2"

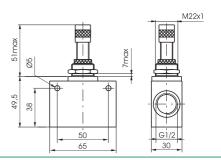
Coding: 6.01.

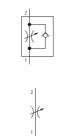
Operational characteristics	
Fluid	Filtered air
Max. working pressure (bar)	10
Temperature °C	-5 +70
Orifice size (mm)	12

	FUNCTION
•	12N = Unidirectional
	12/1N = Bidirectional









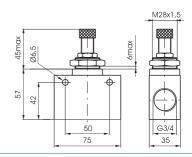
Flow control valve G3/4"-unidirectional

Coding: 6.01.34

Weight 500 g

Operational characteristics		
Fluid	Filtered air	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Orifice size (mm)	12	









Quick exhaust valve

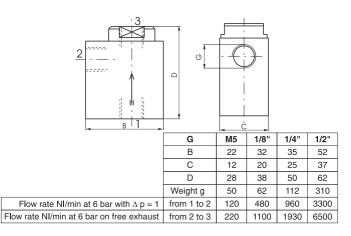
Operational characteristics	
Fluid	Filtered air
Working pressure (bar)	0.5 10
Temperature °C	-5+70

Coding:	6.02.0	
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	CONNECTION (IN)
D	05 = M5
	18 = G1/8"
	14 = G1/4"
	12 = G1/2"

Weight "see table"







Quick exhaust in line valve

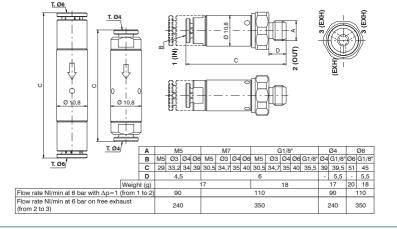
Operational characteristics	
Fluid	Filtered air
Max. working pressure (bar)	10
Temperature °C	-5 +70

Coding: 6.02.**0**.**©**.L

0	CONNECTION (IN)
	M5 = M5
	03 = tube Ø3
	04 = tube Ø4
	06 = tube Ø6
	WORKING PORTS SIZE
	M5 = M5
_	M7 = M7
Θ	18 = G1/8"
	04 = tube Ø4
	06 = tube Ø6

Weight "see table"







Exhaust flow control

Operational characteristics		
Fluid	Filtered air	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	

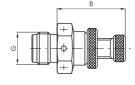
CONNECTION (IN)	
	05 = M5
0	18 = G1/8"
	14 = G1/4"
	12 = G1/2"

Weight "see table"

Coding: 6.03.**●**







G	M5	1/8"	1/4"	1/2"
В	21	18	22	39
E	9	13	16	25
Weight g	10	18	32	155





Shuttle valve "OR"

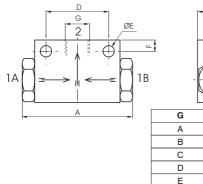
Operational characteristics		
Fluid Filtered air		
Max. working pressure (bar)	10	
Temperature °C	-5 +70	

Coding: 6.04.**●**

	CONNECTION (IN)
_	05 = M5
U	18 = G1/8"
	14 = G1/4"

Weight "see table"





G	M5	1/8"	1/4"	
Α	27	44	62	
В	12	16	22	
С	17	25	30	
D	15	25	35	
Е	3,5	4,5	5,5	
F	3,5	4,5	5,5	
Weight g	33	50	110	

110

700 2200

NI/min.

Shuttle valve "OR"-T=4

 Operational characteristics

 Fluid
 Filtered air

 Max. working pressure (bar)
 10

 Temperature °C
 -5... +70

 Flow rate at 6 bar with Δp=1 (NI/min)
 105

 Orifice size (mm)
 2.5

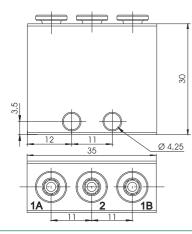
 Working ports size
 Fitting T=4

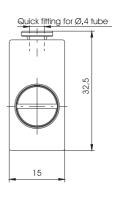
Flow rate at 6 bar with $\Delta p = 1$

Coding: 6.04.04

Weight 50 g









Shuttle valve "AND"-M5 - G1/8"

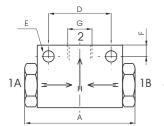
Operational characteristics		
Fluid	Filtered air	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	

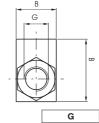
Coding: 6.04.**●**/1

	CONNECTION (IN)
0	05 = M5
	18 = G1/8"

Weight "see table"







G	M5	1/8"
Α	36	44
В	12	16
С	22	45
D	20	25
E	3,2	4,5
F	3,5	4,5
Weight g	30	50
NI/min.	100	480



Flow rate at 6 bar with $\Delta p = 1$



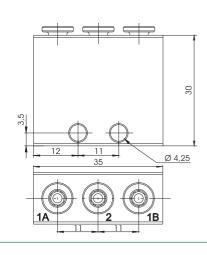
Shuttle valve "AND"-T=4

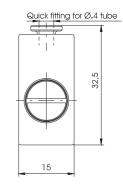
Coding: 6.04.04/1

Operational characteristics		
Fluid	Filtered air	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate at 6 bar with Δp=1 (NI/min)	105	
Orifice size (mm)	2.5	
Working ports size	Fitting T=4	

Weight 50 g









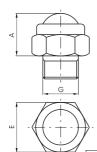
Silencers steel wool

Operational characteristics		
Fluid	Filtered air	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	

Coding: 6.05.**●** CONNECTION (IN) **18** = G1/8" 14 = G1/4" **38** = G3/8"

12 = G1/2" Weight "see table"





G	1/8"	1/4"	3/8"	1/2"
Α	12	13	15	17
E	14	17	22	27
Weight g	8	16	32	44



Coding: 6.06.**●**

14 = G1/4"

0

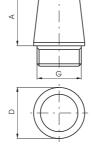
CONNECTION (IN) **05** = M5 **18** = G1/8"

Silencers brass

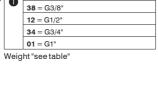
Operati	onal characteristics
Fluid	Filtered air
Max. working pressure (bar)	10
Temperature °C	-5 +70

il characteristics		
	Filtered air	
	10	
	-5 +70	





G	M5	1/8"	1/4"	3/8"	1/2"	3/4"	1"
Α	17	15	18	28	32	40	50
D	8	12	15	19	23	29	38
Weight g	4	8	15	35	50	92	182







G 1/8" compact check valves

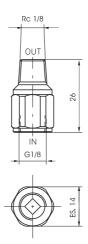
Operational characteristics					
Fluid Filtered air					
Working pressure (bar)	2,5 10				
Temperature °C	-5 +70				
Flow rate at 6 bar with Δp=1 (NI/min)	100				

Coding: 6.07.18.

	SEALS
Œ	$\mathbf{R} = NBR$
	VR = FPM

Weight 50 g







Non return valve

Operational characteristics				
Fluid Filtered air				
Max. working pressure (bar)	10			
Temperature °C	-5 +70 (+150°C FPM)			





	G	M5	1/8"	1/4"	3/8"	1/2"
	E	10	14	17	21	25
	L	21	37	48	50	60
	Weight g	14	35	60	85	136
Flow rate at 6 bar with $\Delta p = 1$	NI/min.	160	650	1150	2600	3500

Coding: 6.07.

	POPPET
	05 = NBR-M5
	18 = NBR-G1/8"
	14 = NBR-G1/4"
_	38 = NBR-G3/8"
O	12 = NBR-G1/2"
	18V = FPM-G1/8"
	14V = FPM-G1/4"
	38V = FPM-G3/8"
	12V = FPM-G1/2"

Weight "see table"



Manifold 4 ports

•	
Operati	onal characteristics
Fluid	Filtered air
Max. working pressure (bar)	20
Temperature °C	-5+70



Coding: 6.08.**©**/4

	WORKING PORTS SIZE
	05 = M5
	18 = G1/8"
•	14 = G1/4"
	38 = G3/8"
	12 = G1/2"

Weight "see table"



- E C	MD MD		- G B	-	
G	M5	1/8"	1/4"	3/8"	1/2"
В	10	16	20	20	30
С	20	32	40	40	50
D	3,3	4,5	4,5	5,5	6,5
E	14	22	30	30	38
Weight g	28	38	68	54	135





Manifold 10 ports

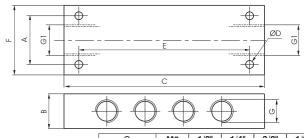
Filtered air Max. working pressure (bar) 20 Temperature °C -5 ... +70

Coding: 6.08.**@**/8

	WORKING PORTS SIZE
	05 = M5
_	18 = G1/8"
0	14 = G1/4"
	38 = G3/8"
	12 = G1/2"

Weight "see table"





G	M5	1/8"	1/4"	3/8"	1/2"
G1	G1/8"	1/8"	1/4"	3/8"	1/2"
Α	16	20	28	28	36
В	12	18	20	20	30
С	60	90	115	130	170
ØD	3,3	4,5	4,5	5,5	5,5
E	50	75	98	112	150
F	22	32	40	40	50
Weight g	92	110	185	165	460



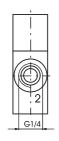
Block valve G1/4"

Operational characteristics				
Fluid	Filtered and lubricated air			
Max. working pressure (bar)	10			
Minimum pilot pressure (bar)	4			
Temperature °C	-5 +70			
Flow rate at 6 bar with Δp=1 (NI/min)	700			
Orifice size (mm)	7			



	FUNCTION			
•	UN = Unidirectional			
	BN = Bidirectional			
Weight 122 g				















Block valve G1/2"

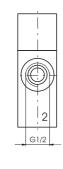
Operational characteristics					
Fluid	Filtered and lubricated air				
Max. working pressure (bar)	10				
Minimum pilot pressure (bar)	4				
Temperature °C	-5 +70				
Flow rate at 6 bar with Δp=1 (NI/min)	2000				
Orifice size (mm)	12				

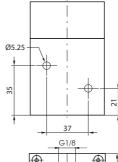
Coding: 6.09.12.

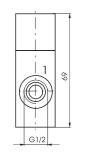
	FUNCTION
(3)	UN = Unidirectional
_	BN = Bidirectional

Weight 305 g



















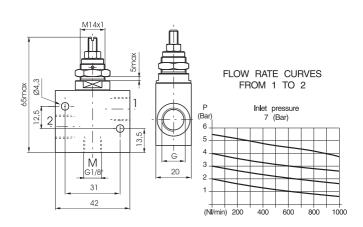
Economizer

Coding:	6.11	.0

	WORKING PORTS SIZE
•	18 = G1/8"
	14 = G1/4"
Weig	ht 85 g

Operational characteristics				
Fluid	Filtered and lubricated air			
Max. working pressure (bar)	10			
Pressure range (bar)	05,5			
Temperature °C	-5 +70			
Flow rate at 6 bar with Δp=1 (NI/min)	860			
Orifice size (mm)	6			

Part Control of the C





Pneumatic panel-mounted indicator G1/4"

Coding	6	14	14	O

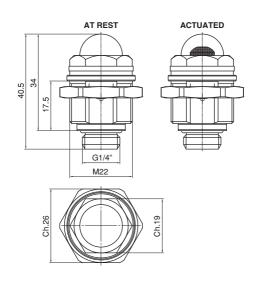
Operational c	haracteristics
Fluid	Filtered air
Working pressure (bar)	210
Temperature °C	-5 +60

ı		INDICATOR COLOUR
1		00 = Green
1	•	01 = Red
		02 = Blue
		03 = Yellow

It's recommended using the device with non-pulsating pressure

Weight 56 g

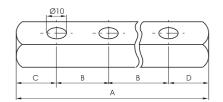






Gang mounting manifold for valves and solenoid valves G1/8"







Coding: 6.10.18.**⑤/②**

	VALVE SIZE
	18 = 18 mm
	25 = 25 mm
8	26 = 26 mm
	30 = 30 mm
	32 = 32 mm
	35 = 35 mm
	NO. POSITIONS
	2 = No. 2 positions
	3 = No. 3 positions
	4 = No. 4 positions
	5 = No. 5 positions
•	6 = No. 6 positions
	7 = No. 7 positions
	8 = No. 8 positions
	9 = No. 9 positions
	10 = No. 10 positions

Weight "see table"

6.10.18.18/

	NO. POSITIONS									
	2	2 3 4 5 6 7 8 9 10								
Α	58	76	94	112	130	148	166	184	202	
В	18	18	18	18	18	18	18	18	18	
С	20	20	20	20	20	20	20	20	20	
D	20	20	20	20	20	20	20	20	20	
Weight g	55	80	105	130	155	180	205	230	255	

6.10.18.25/

		NO. POSITIONS							
	2	3	4	5	6	7	8	9	10
Α	70	95	120	145	170	195	220	245	270
В	25	25	25	25	25	25	25	25	25
С	20	20	20	20	20	20	20	20	20
D	25	25	25	25	25	25	25	25	25
Weight g	80	115	150	185	220	255	290	325	360

6.10.18.26/

		NO. POSITIONS							
	2	3	4	5	6	7	8	9	10
Α	66	92	118	144	170	196	222	248	274
В	26	26	26	26	26	26	26	26	26
С	20	20	20	20	20	20	20	20	20
D	20	20	20	20	20	20	20	20	20
Weight g	70	110	145	185	220	260	300	340	375

6.10.18.30/**P**

		NO. POSITIONS							
	2	3	4	5	6	7	8	9	10
А	80	110	140	170	200	230	260	290	320
В	30	30	30	30	30	30	30	30	30
С	25	25	25	25	25	25	25	25	25
D	25	25	25	25	25	25	25	25	25
Weight g	100	140	180	220	260	300	340	380	420

6.10.18.32/

		NO. POSITIONS							
	2	3	4	5	6	7	8	9	10
Α	82	114	146	178	210	242	274	306	338
В	32	32	32	32	32	32	32	32	32
С	25	25	25	25	25	25	25	25	25
D	25	25	25	25	25	25	25	25	25
Weight g	100	145	190	235	280	325	370	415	460

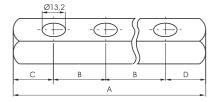
6.10.18.35/

		NO. POSITIONS							
	2	3	4	5	6	7	8	9	10
А	89	124	159	194	229	264	299	334	369
В	35	35	35	35	35	35	35	35	35
С	27	27	27	27	27	27	27	27	27
D	27	27	27	27	27	27	27	27	27
Weight g	110	160	210	260	310	360	410	460	510



Gang mounting manifold for valves and solenoid valves ${\rm G1/4"}$







Coding: 6.10.14.

	VALVE SIZE
	20 = 20 mm
	25 = 25 mm
8	30 = 30 mm
	35 = 35 mm
	45 = 45 mm
	NO. POSITIONS
	2 = No. 2 positions
	3 = No. 3 positions
	4 = No. 4 positions
	5 = No. 5 positions
(2)	6 = No. 6 positions
	7 = No. 7 positions
	8 = No. 8 positions
	9 = No. 9 positions
	10 = No. 10 positions

Weight "see table"

		NO. POSITIONS							
	2	3	4	5	6	7	8	9	10
А	65	85	105	125	145	165	185	205	225
В	20	20	20	20	20	20	20	20	20
С	22,5	22,5	22,5	22,5	22,5	22,5	22,5	22,5	22,5
D	22,5	22,5	22,5	22,5	22,5	22,5	22,5	22,5	22,5
Weight g	130	150	190	190	210	230	250	270	290

6.10.14.25/**P**

6.10.14.20/

		NO. POSITIONS							
	2	3	4	5	6	7	8	9	10
А	75	100	125	150	175	200	225	250	275
В	25	25	25	25	25	25	25	25	25
С	25	25	25	25	25	25	25	25	25
D	25	25	25	25	25	25	25	25	25
Weight g	140	170	200	230	260	290	320	350	380

6.10.14.30/

		NO. POSITIONS							
	2	3	4	5	6	7	8	9	10
Α	80	110	140	170	200	230	260	290	320
В	30	30	30	30	30	30	30	30	30
С	25	25	25	25	25	25	25	25	25
D	25	25	25	25	25	25	25	25	25
Weight g	150	190	230	270	310	350	390	430	470

6.10.14.35/**P**

		NO. POSITIONS							
	2	3	4	5	6	7	8	9	10
Α	85	120	155	190	225	260	295	335	365
В	35	35	35	35	35	35	35	35	35
С	30	30	30	30	30	30	30	30	30
D	20	20	20	20	20	20	20	20	20
Weight g	160	210	260	310	360	410	460	510	560

6.10.14.45/

		NO. POSITIONS							
	2	3	4	5	6	7	8	9	10
Α	115	160	205	250	295	340	385	430	475
В	45	45	45	45	45	45	45	45	45
С	35	35	35	35	35	35	35	35	35
D	35	35	35	35	35	35	35	35	35
Weight g	200	275	350	425	500	575	650	725	800

Coding: 6.13.00



Spry valves

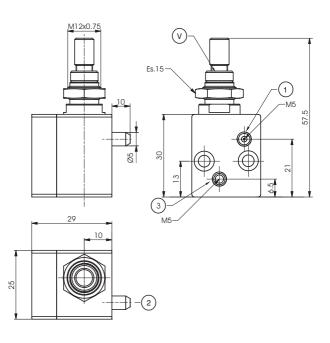
Construction characteristics

- This valve, is based on the Venturi principle, and it is used to spray and nebulize a
- liquid.
 Useful in all applications where is needed a continuous lubrication and / or refrigeration.
- reintgeration.

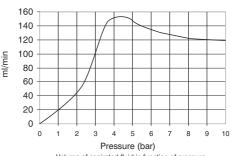
 Incoming air (connection 1) sucks the liquid through the venturi principle (connection 3) to obtain a continuous spray output (connection 2).

Technical characteristics							
Fluid	filtered and lubricated air						
Liquid	Water and oil (Liquid viscosity 3°E* 5°E*) *E = Engler Degrees						
Working pressure (bar)	310						
Temperature °C	-5 +70						
Weight (g)	85						



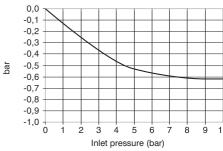


Liquid consumption diagram



Volume of aspirated fluid in function of pressure power with the adjuster screw "V" totally open

Vacuum diagram



Volume of vacuum generated in function of supply pressure



Supply air: Connection 1
Output (air and nebulized liquid): Connection 2 Supply liquid : Connection 3



Series 900

The 900 series consist of the following components:

- Pressure switch, which transforms a pneumatic signal into an electric one.
- Impulse generator, which transforms a permanent pneumatic signal into an adjustable impulse from 0 to 10 seconds.
- Pneumatic timer (N.C. or N.O.), which cuts or releases a pneumatic signal within an adjustable time.
- Two hands safety valve, which allows a safety use of two hands pneumatic controls (for example two push-button 3/2 N.C. to a $certain\ distance)\ excluding\ false\ signals\ in\ case\ of\ push-button\ or\ valve\ malfunction.$
- Flip-Flop: 5/2 ways valve, single signal actuated, commutes the outlet from 2 to 4 and vice versa at each puls.
- For a correct functioning it's important that inlet pressure be the same or lower than pilot pressure.
- Oscillator valve, 5/2 G 1/8" with two logic functions "NOT" mounted on board, switches when the pressure in the connected cylinder exhaust chamber is reaching the threshold of "NOT".
- Signal amplifier, 3/2 G 1/8" N.C. valve actuated by weak signals but higher than 0.05 bar.
- Progressive start-up valve, which is a device that is fitted in between valve or solenoid valve and cylinder allows a gradual filling of the chamber providing a low power cylinder movement. The progressive start-up valve is made of a flow control valve and a 2/2 N.C. valve with 6 mm nominal orifice. The valve is totally open when the pressure in the cylinder reaches 50% of inlet pressure.
- High-low pressure devices, located in the pneumatic circuit between valve and cylinder, allow the function of the cylinder with two different pressures. Example: in case of a locking action, it is possible to approach the required position at a low pressure, then increase to its maximum value in the circuit with the use of an electric signal. They are practically made of a piloted pressure regulator without relieving.

Construction characteristics

We use corrosion proof material, brass or anodized aluminium and the most appropriate specific mixture for seals. If more information is required please contact our technical department.

Use and maintenance

In use pay attention to the minimum and maximum criteria for temperature and pressure, checking and ensure good quality compressed air. In a dirty environment, protect the exhaust ports. In this case, maintenance is minimal and is necessary only if the air is particularly dirty. This simple operation it should be carried out by a competent person.

ATTENTION: use hydraulic oil class H for lubrication such as CASTROL MAGNA SW32.



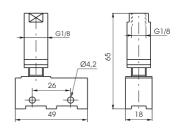
Pressure switch G1/8" - screw connections

Operational characteristics		
Fluid	Filtered and lubricated air	
Max. working pressure (bar)	10	
Temperature °C	-5 +70	
Flow rate microswitch	13 (3) A to 220V~	
Pilot ports size	G1/8"	

	PRESSURE	
1	(2)	1 = Min. switch pressure 1 bar
1	-	4 = Min. switch pressure 4 bar

Weight 75 g







Pressure switch G1/8" - spade connections

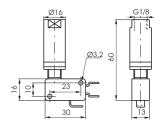
Operational characteristics	
Fluid	filtered and lubricated air
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate microswitch	16 (5) A to 220V~
Pilot ports size	G1/8"

Coding: 900.18.1/

		PRESSURE
1-1 = N		1-1 = Min. switch pressure 1 bar
		1-4 = Min. switch pressure 4 bar

Weight 60 g



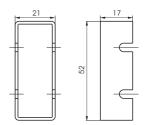




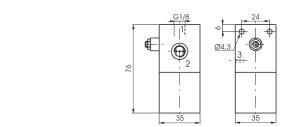
Switch protection

Coding: 900.18.0 Weight 6 g





Impulse generator





Weight 325 g





Pneumatic timer N.C. - G 1/8"

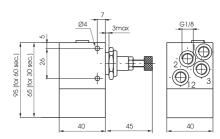
Operational characteristics		
Fluid	Filtered and lubricated air	
Working pressure (bar)	3 10	
Temperature °C	-5 +70	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	130	
Orifice size (mm)	2.5	

Coding: 900.18.

	TIME
0	3 = 0 30 sec.
	3.60 = 0 60 sec.

Weight 290 g (30 sec.) Weight 350 g (60 sec.)







Pneumatic timer N.O. - G 1/8"

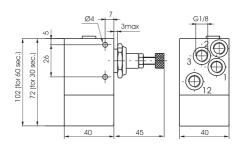
<u>*</u>		
Operational characteristics		
Fluid	Filtered and lubricated air	
Working pressure (bar)	410	
Temperature °C	-5 +70	
Flow rate at 6 bar with Δp=1 (NI/min)	130	
Orifice size (mm)	2.5	

Coding: 900.18.

	TIME
0	4 = 0 30 sec.
	4.60 = 0 60 sec.

Weight 320 g (30 sec.) Weight 380 g (60 sec.)







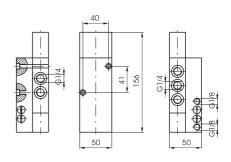
Two hands safety valve G 1/4"

Operational characteristics		
Fluid	Filtered and lubricated air	
Max. working pressure (bar)	10	
Temperature °C	-5+70	
Flow rate at 6 bar with Δp=1 (NI/min)	1030	
Orifice size (mm)	7	
Working ports size	G1/4"	
Pilot ports size	G1/8"	

Coding: 900.52.1.1

Weight 780 g







Attention: This version is not certified to any safety standard



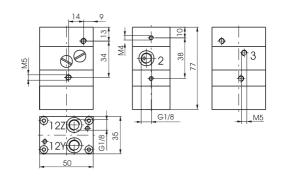
Two hands safety valve ISO 13851: TYPE IIIA

Coding: 900.18.9

Operational characteristics	
Fluid	Filtered and lubricated air
Working pressure (bar)	38
Temperature °C	-5 +70
Flow rate at 6 bar with ∆p=1 (NI/min)	40
Orifice size (mm)	2.5
Working ports size	G1/8"
Pilot ports size	G1/8"

Weight 340 g





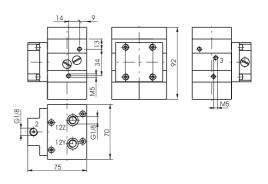


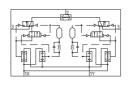
Two hands safety valve ISO 13851: TYPE IIIB

Coding: 900.18.10
Weight 980 g

Operational characteristics	
Fluid	Filtered and lubricated air
Working pressure (bar)	38
Temperature °C	-5 +70
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	40
Orifice size (mm)	2.5
Working ports size	G1/8"
Pilot ports size	G1/8"





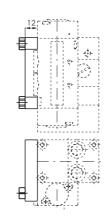


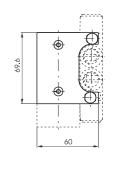
Power valve adaptor (Series 2400)

Coding: 900.18.11

Weight 75 g









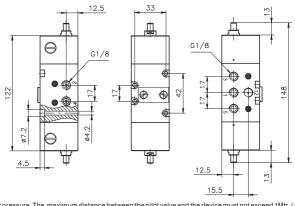
Flip-flop valve G 1/8"-Pneumatic command

Coding: 900.52.1.3

Weight 550 g

Operational characteristics	
Fluid	Filtered and lubricated air
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	540
Orifice size (mm)	6
Working ports size	G1/8"







Attention: Pressure of signal "12" must be the same or higher than device inlet pressure. The maximum distance between the pilot valve and the device must not exceed 1Mtr. (see pneumatic scheme). Should be necessary to work at a greater distance it is advisable to use a pneumatic-spring shut-off valve positioned at the recommended distance.

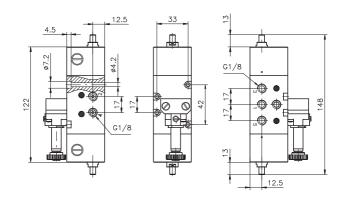
Flip-flop valve-Electric command with M2 mechanic

Coding: 900.52.1.4

Weight 660 g

Operational characteristics	
Fluid	Filtered and lubricated air
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	540
Orifice size (mm)	6
Working ports size	G1/8"





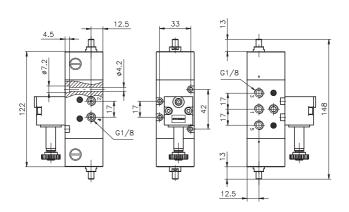


Flip-flop valve-Electric command with M3P CNOMO

Coding: 900.52.1.5
Weight 600 g

Operational characteristics	
Fluid	Filtered and lubricated air
Max. working pressure (bar)	10
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	540
Orifice size (mm)	6
Working ports size	G1/8"









Oscillator valve G 1/8"

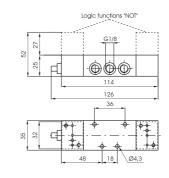
Operational characteristics	
Fluid	Filtered and lubricated air
Max. working pressure (bar)	8
Min. working pressure (bar)	2
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

Coding: 900.52.

l		FUNCTION
1	•	5 = without logic functions NOT
ĺ		5C = with logic functions NOT

Weight 600 g









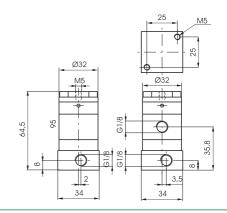
Signal amplifier G 1/8"

Operational characteristics	
Fluid	Filtered and lubricated air
Max. working pressure (bar)	10
Min. working pressure (bar)	0.05
Temperature °C	-5 +70
Flow rate at 6 bar with Δp=1 (NI/min)	130
Orifice size (mm)	3
Working ports size	G1/8"

Coding: 900.32.6

Weight 170 g







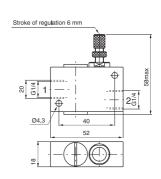
Progressive start-up valve G 1/4"

Operational characteristics	
Fluid	Filtered and lubricated air
Working pressure (bar)	2,510
Temperature °C	-10 +70
Flow rate from 1 to 2 (NI/min)	760
Flow rate from 2 to 1 (NI/min)	900
Orifice size (mm)	6

Coding: 900.14.7

Weight 100 g
Flow rate needle fully open from port 1 to
2 (NI/min.) = 200









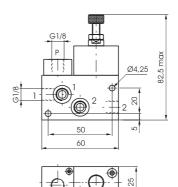
High-low pressure device

Operational characteristics	
Fluid	Filtered and lubricated air
Max. working pressure (bar)	10
Pressure range (bar)	1 4
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	650
Working ports size	G1/8"

Coding: 900.18.8.P

Weight 240 g with pneumatic pilot







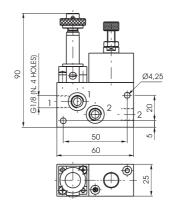
High-low pressure device

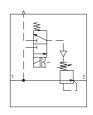
•	
Operational characteristics	
Fluid	Filtered and lubricated air
Max. working pressure (bar)	10
Pressure range (bar)	14
Temperature °C	-5 +50
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	650
Working ports size	G1/8"

$\textbf{Coding:}\,900.18.8.E$

Weight 280 g with M2 mechanic



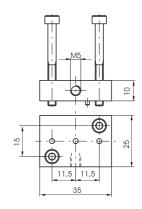




External feeding base "NOT" logical element

Coding: 900.005 Weight 35 g

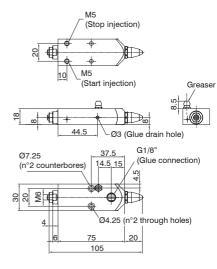




Pneumatic glue injector

Coding: 900.19.01





Construction characteristics

- External components: nickel-plated brass / stainless steel
 Piloting connections: M5
 Glue connection: G1/8"
 Glue Seal: special PTFE
 Pneumatic seals: NBR
 Grease nipple: Stainless steel
 Spray intensity adjustment screw: Stainless steel

reclinical characteristics	
Injection fluid	Vinyl glue
Pressure Glue (bar)	7
Pneumatic fluid piloting	Filtered air. No lubrication needed, if applied it shall be continuous
Opening pilot (bar)	36
Closing pilot (bar)	3 6 (or spring)
Temperature °C	-5 +70
Weight (g)	285

Series 50-T50

The blocking valves are used to maintain pressure in the downstream part of the pneumatic circuit even when the pressure supply is shut down. Blocking valves are normally assembled directly on cylinders ports in order to maintain the position even in cases of accidental loss of the pilot pressure by preventing a sudden loss of pressure in the cylinder chambers.

Unidirectional and bidirectional version are both available.

The unidirectional version allows free air to flow in one direction while requires a pneumatic signal to allow air flow in the opposite direction. The bidirectional version requires a pressure signal to allow air flow in both of the two directions.

The blocking valve cannot be used as safety device.

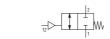
Constructive features

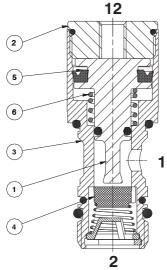
UNIDIRECTIONAL VERSION



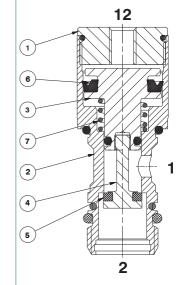








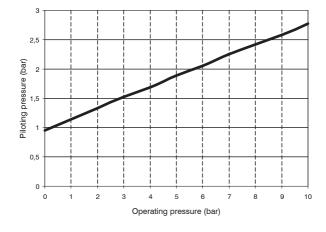
- 1 Aluminium piston
- 2 Brass plug
- 3 Brass body
- 4 FPM poppet (1/8" and 1/4"
- version) PUR poppet
- 5 NBR seal
- 6 Steel spring



BIDIRECTIONAL VERSION

- 1 Brass plug
- 2 Brass body
- 3 Aluminium piston
- 4 Steel piston extension
- 5 PUR poppet
- 6 NBR seal
- 7 Steel spring

Working curves



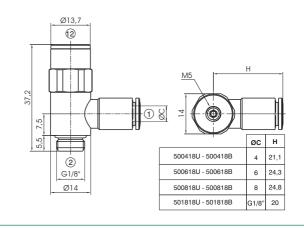
Blocking valves metal type-Size 1/8"

Operational characteristics		
Fluid	filtered and lubricated air or non	
Working pressure (bar)	0,5 10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	285	
Flow rate with free exhaust (NI/min)	450	

Coding: 50**1**18**♥**

	TYPE
	A = Banjo only
_	04 = Banjo Ø4
0	06 = Banjo Ø6
	08 = Banjo Ø8
	18 = Banjo G1/8"
	VERSION
V	U = Unidirectional
	D. Distinguished







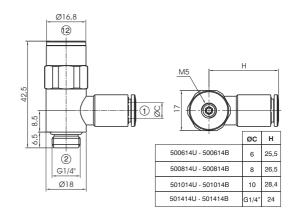
Blocking valves metal type-Size 1/4"

Operational characteristics		
Fluid	filtered and lubricated air or non	
Working pressure (bar)	0,5 10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	530	
Flow rate with free exhaust (NI/min)	800	



0	TYPE
	A = Banjo only
	06 = Banjo Ø6
	08 = Banjo Ø8
	10 = Banjo Ø10
	14 = Banjo G1/4"
	VERSION
V	U = Unidirectional
	B = Bidirectional







Blocking valves metal type-Size3/8"

Operational characteristics		
Fluid	filtered and lubricated air or non	
Working pressure (bar)	0,5 10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	1000	
Flow rate with free exhaust (NI/min)	1600	

Ø21.8 (2) (2) (3) (2) (3) (4) (4) (5) (6) (7) (7) (8) (9) (9) (9) (9) (9) (9) (9) (9	Н	H
G3/8" 500838U - 500	838B 8	28
Ø21 501038U - 501	038B 10	29,9

12 31,4

G3/8" 28,5

501238U - 501238B 503838U - 503838B

Coding: 50**1**38**♥**

	TYPE
_	A = Banjo only
	08 = Banjo Ø8
O	10 = Banjo Ø10
	12 = Banjo Ø12
	38 = Banjo G3/8"
	VERSION
V	U = Unidirectional
	B = Bidirectional









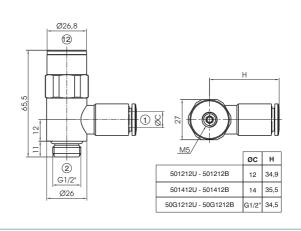
Blocking valves metal type-Size1/2"

Operational characteristics	
Fluid	filtered and lubricated air or non
Working pressure (bar)	0,5 10
Temperature °C	-5 +50
Flow rate at 6 bar with Δp=1 (NI/min)	1300
Flow rate with free exhaust (NI/min)	2600

Coding: 50**1**12**♥**

	TYPE
	A = Banjo only
ש	12 = Banjo Ø12
	G12 = Banjo G1/2"
	VERSION
V	U = Unidirectional
	B = Bidirectional



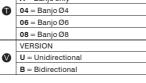




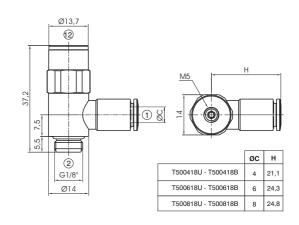
Blocking valves technopolymer type-Size 1/8"

Operational characteristics		
Fluid	filtered and lubricated air or non	
Working pressure (bar)	0,5 10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	285	
Flow rate with free exhaust (NI/min)	450	

Coding: T50 1 18 ♥		
		TYPE
		A = Banjo only
	0	04 = Banjo Ø4
		06 = Banjo Ø6
		08 = Banjo Ø8
		VEDGLON









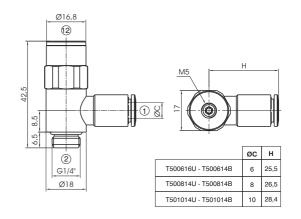
Blocking valves technopolymer type-Size 1/4"

Operational characteristics		
Fluid filtered and lubricated air or non		
Working pressure (bar)	0,5 10	
Temperature °C	-5 +50	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	530	
Flow rate with free exhaust (NI/min)	800	

Coding: T50**1**14**♥**

	TYPE
•	A = Banjo only
	06 = Banjo Ø6
	08 = Banjo Ø8
	10 = Banjo Ø10
	VERSION
V	U = Unidirectional
	B = Bidirectional







Blocking valves technopolymer type-Size 3/8"

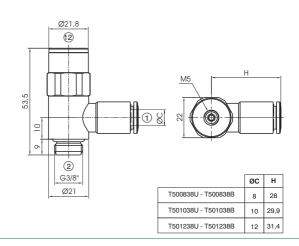
Operational characteristics		
Fluid	filtered and lubricated air or non	
Working pressure (bar)	0,5 10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	1000	
Flow rate with free exhaust (NI/min)	1600	

•	TYPE
	A = Banjo only
	08 = Banjo Ø8
	10 = Banjo Ø10
	12 = Banjo Ø12
V	VERSION
	U = Unidirectional

Coding: T50**1**38**♥**

 ${f B}={\sf Bidirectional}$









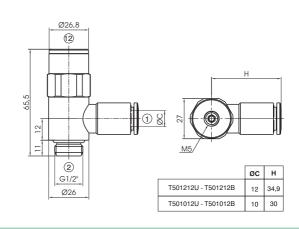
Blocking valves technopolymer type-Size 1/2"

Operational characteristics		
Fluid	filtered and lubricated air or non	
Working pressure (bar)	0,5 10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	1300	
Flow rate with free exhaust (NI/min)	2600	

Coding: T50**1**12**♥**

	TYPE
Û	A = Banjo only
	10 = Banjo Ø10
	12 = Banjo Ø12
V	VERSION
	U = Unidirectional
	B = Bidirectional









Series 55 Tecno-FUN

This line of different logic functions that can be used in any place of the secondary pneumatic circuit, developed to be installed directly onto the main pneumatic components (distributors or cylinders).

Thanks to the modular design it is possible to easily join together multiple logic functions without the need of using pipes to connect them; it is also possible to choose the type and style of each connection. The connections available are the following: straight cartridge; Banjo PL cartridge; male cartridge threaded 1/8" or 1/4" and female cartridge threaded 1/8".

Function fittings can also be assembled side by side in order to be assembled on the DIN EN 50022 rail (using the relevant kit).



Other characteristics:

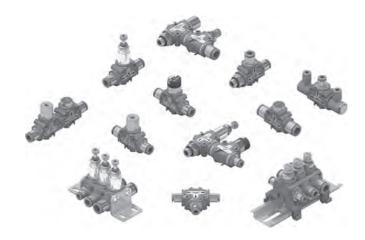
Technopolymer body version Input/output connection directly integrated into the body In line or 90° connection Possibility to build a manifold -parallel mounting-Different connection options: Tube Ø4 Ø6 Ø8 (elbow version as well) G1/8" G1/4" male straight cartridge G1/8" female cartridge, in line or 90°

Different mounting options:

- · Wall fixing through the holes in the body
- By means of the fixing bracket
- Panel mounting (for those function that include such possibility)
- On DIN rail EN 50022 (using the DIN rail adapter kit)

Available functions

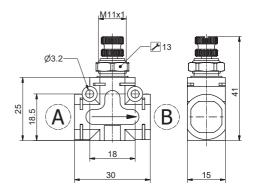
- Flow control valve
- Pressure regulator
- Block valve
- Quick exhaust valve
- OR gate
- AND gate
- Pressure gauge
- Progressive start-up valve
- Pressure regulator + pressure gauge
- Block valve + Flow control valve
 Block valve + quick exhaust valve





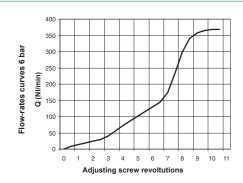
Flow regulator





	TYPE
0	1 = Unidirectional
	2 = Bidirectional
	CONNECTION A
A	SEE CONNECTIONS LIST
	CONNECTION B
₿	SEE CONNECTIONS LIST
	CONNECTIONS LIST
	00 = None
	D4 = Straight Ø4
	D6 = Straight Ø6
	D8 = Straight Ø8
	L1 = Female banjo G1/8"
	G4 = Rotating banjo Ø4
	G6 = Rotating banjo Ø6
	G8 = Rotating banjo Ø8
	M1 = G1/8" male
	M2 = G1/4" male
	F1 = G1/8"female

Example: 551.111.D6.D6.XX
Flow control valve unidirectional, CONNECTIONS "A" and "B" Tube Ø6
NOTE: For the dimension including cartridges see page "Accessories-Function fittings"







Technical characteristics

- The flow control valve is normally used to regulate the air flow and, as a consequence, for example, the speed of a cylinder. Two types of flow control valves are available: unidirectional and bidirectional.

 In the unidirectional valve the flow is regulated only in one direction while is free to move in the opposite direction; in the bidirectional valve the flow is regulated in both directions.

 Panel mounting using the lock nut supplied as standard

 on DIN rail using the relevant adaptor kit (see accessories)

 With 90° bracket (see accessories)

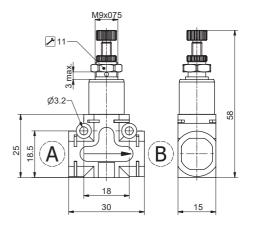
 directly on the support plate thanks to two through holes on the body

Technical characteristics		
Fluid	filtered and lubricated air or non	
Working ports size	See CONNECTIONS LIST	
Max working pressure (bar)	10	
Orifice size (mm)	Ø3	
Free exhaust flow rate in the opposite side of the regulation	800 (for unidirectional version)	
Temperature °C	-5 +50	
Weight (g)	26	

1 | 316

In line pressure regulator





Coding: 551.120.A.B.XX

	g. 55 <u>_</u> 5. 5. 5. 6. 6.
0	TYPE
	2 = 0-2 bar
	4 = 0-4 bar
	8 = 0-8 bar
	CONNECTION A
A	SEE CONNECTIONS LIST
B	CONNECTION B
Ð	SEE CONNECTIONS LIST
	CONNECTIONS LIST
	00 = None
	D4 = Straight Ø4
	D6 = Straight Ø6
	D8 = Straight Ø8
	L1 = Female banjo G1/8"
	G4 = Rotating banjo Ø4
	G6 = Rotating banjo Ø6
	G8 = Rotating banjo Ø8
	M1 = G1/8" male
	M2 = G1/4" male
	F1 = G1/8" female

Example: 551.128.D8.D8.XX

In line pressure regulator, pressure range (bar) 0-8 bar. Connections "A" and "B" Tube Ø6 NOTE: For the dimension including cartridges see page "Accessories-Function fittings"

Technical characteristics

- The pressure regulator is a device which is used to reduce, regulate and stabilize the air pressure in a conduit in order to adapt it to the needs of the equipments to be supplied. The pressure regulator incorporates the relieving function.

 Panel mounting using the lock nut supplied as standard

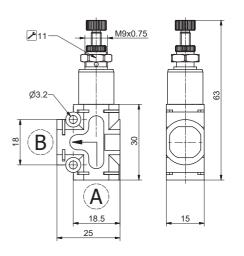
- on DIN rail using the relevant adaptor kit (see accessories)
 With 90° bracket (see accessories)
 directly on the support plate thanks to two through holes on the body

Technical characteristics		
Fluid	filtered and lubricated air or non	
Working ports size	See CONNECTIONS LIST	
Max working pressure (bar)	10	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	180	
Pressure range (bar)	02/04/08	
Temperature °C	-5 +50	
Weight (g)	31	



90° pressure regulator





Coding: 551.22 **1**.**A**.**B**.XX

	TYPE
0	2 = 0-4 bar
u	4 = 0-2 bar
	8 = 0-8 bar
A	CONNECTION A
	SEE CONNECTIONS LIST
в	CONNECTION B
U	SEE CONNECTIONS LIST
	CONNECTIONS LIST
	00 = None
	D4 = Straight Ø4
	D6 = Straight Ø6
	D8 = Straight Ø8
	L1 = Female banjo G1/8"
	G4 = Rotating banjo Ø4
	G6 = Rotating banjo Ø6
	G8 = Rotating banjo Ø8
	M1 = G1/8" male
	M2 = G1/4" male
	F1 = G1/8" female

Example: 551.224.M1.D6.XX

 $90^{\circ}\,pressure\,regulator,\,pressure\,range\,(bar)\,0-4\,bar.\,Connections\,"A"\,Male\,G1/8\,and\,"B"\,Tube\,\it{\varnothing}6$ NOTE: For the dimension including cartridges see page "Accessories-Function fittings"

- The pressure regulator is a device which is used to reduce, regulate and stabilize the air pressure in a conduit in order to adapt it to the needs of the equipments to be supplied. The pressure regulator incorporates the relieving function.
- Panel mounting using the lock nut supplied as standard on DIN rail using the relevant adaptor kit (see accessories) With 90° bracket (see accessories)

- directly on the support plate thanks to two through holes on the body

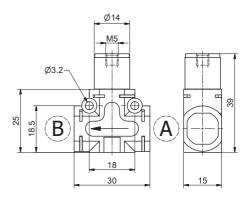
Technical characteristics		
Fluid	filtered and lubricated air or non	
Working ports size	See CONNECTIONS LIST	
Max working pressure (bar)	10	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	180	
Pressure range (bar) 02 / 04 / 08		
Temperature °C	-5 +50	
Weight (g)	31	





Blocking valve

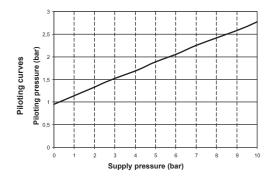




Coding: 551.13 **1**.**A**.**B**.XX

	TYPE
•	1 = Unidirectional
	2 = Bidirectional
A	CONNECTION A
A	SEE CONNECTIONS LIST
₿	CONNECTION B
0	SEE CONNECTIONS LIST
	CONNECTIONS LIST
	00 = None
	D4 = Straight Ø4
	D6 = Straight Ø6
	D8 = Straight Ø8
	L1 = Female banjo G1/8"
	G4 = Rotating banjo Ø4
G6 = Rotating banjo Ø6	
	G8 = Rotating banjo Ø8
	M1 = G1/8" male
	M2 = G1/4" male
	F1 = G1/8" female

Example: 551.131.D4.D4.XX
In line blocking valve, unidirectional. Connections "A" and "B" Tube Ø4
NOTE: For the dimension including cartridges see page "Accessories-Function fittings"





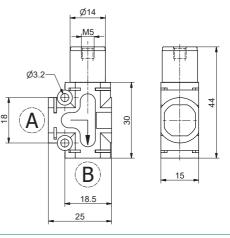
- The blocking valve function is to maintain the circuit downstream pressure in the event of loss of The blocking valve function is to maintain the circuit downstream pressure in the event of loss of supply pressure. It is normally fitted directly onto the cylinder connections ports in order to ensure that, in case of accidental loss of the supply pressure, the units positions is maintained. This is achieved as the blocking valve preserves the pressure inside the pressurised chamber. Blocking valves can be unidirectional or bidirectional. In the unidirectional version the air flow is free in one direction while in order to allow the flow in the opposite direction is necessary to send a pneumatic signal to the unit connection 12. The bidirectional version requires a pneumatic signal on connection 12 to allow the flow in any of the
- two directions.
 on DIN rail using the relevant adaptor kit (see accessories)
 With 90° bracket (see accessories)

- directly on the support plate thanks to two through holes on the body

Technical characteristics		
Fluid	filtered and lubricated air or non	
Working ports size	See CONNECTIONS LIST	
Working pressure (bar)	0,5 10	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	285	
Flow rate at 6 bar with free exhaust (NI/min)	450	
Temperature °C	-5 +50	
Weight (g)	26	

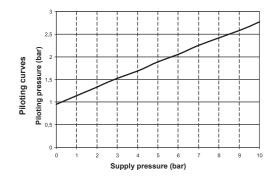
90° blocking valve





Coding: 551.23 **1**.**A**.**B**.XX TYPE 0 $\mathbf{1} = \mathsf{Unidirectional}$ 2 = Bidirectional CONNECTION A A SEE CONNECTIONS LIST CONNECTION B SEE CONNECTIONS LIST **CONNECTIONS LIST 00** = None D4 = Straight Ø4 D6 = Straight Ø6 D8 = Straight Ø8 L1 = Female banjo G1/8" G4 = Rotating banjo Ø4 **G6** = Rotating banjo Ø6 **G8** = Rotating banjo Ø8 M1 = G1/8" male **M2** = G1/4" male F1 = G1/8" female

Example: 551.231.D6.M1.XX 90° blocking valve. Connections "A" Male G1/8 and "B" Tube Ø6 NOTE: For the dimension including cartridges see page "Accessories-Function fittings"





- The blocking valve function is to maintain the circuit downstream pressure in the event of loss of supply pressure. It is normally fitted directly onto the cylinder connections ports in order to ensure that, in case of accidental loss of the supply pressure, the units positions is maintained. This is achieved as the blocking valve preserves the pressure inside the pressurised chamber.

 Unidirectional and bidirectional version are both available.

 In the unidirectional version the air flow is free in one direction while in order to allow the flow in the

- opposite direction is necessary to send a pneumatic signal to the unit connection 12. The bidirectional version requires a pneumatic signal on connection 12 to allow the flow in any of the two directions.

 on DIN rail using the relevant adaptor kit (see accessories)

 With 90° bracket (see accessories)

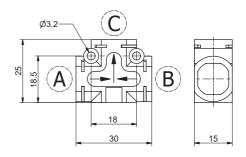
- directly on the support plate thanks to two through holes on the body

-		
Technical characteristics		
Fluid	filtered and lubricated air or non	
Working ports size	See CONNECTIONS LIST	
Working pressure (bar)	0,5 10	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	285	
Flow rate at 6 bar with free exhaust (NI/min)	450	
Temperature °C	-5 +50	
Weight (g)	26	



Circuit selector valve-OR





Coding: 551.141. 4.8.8.

A	CONNECTION A	
	SEE CONNECTIONS LIST	
	CONNECTION B	
₿	SEE CONNECTIONS LIST	
•	CONNECTION C	
•	SEE CONNECTIONS LIST	
	CONNECTIONS LIST	
	00 = None	
	D4 = Straight Ø4	
	D6 = Straight Ø6	
	D8 = Straight Ø8	
	L1 = Female banjo G1/8"	
	G4 = Rotating banjo Ø4	
	G6 = Rotating banjo Ø6	
	G8 = Rotating banjo Ø8	
	M1 = G1/8" male	
	M2 = G1/4" male	
	F1 = G1/8" female	

Example: 551.141.D8.D8.D8
Circuit selector valve-OR. Connections "A", "B" and "C" Tube Ø8

NOTE: For the dimension including cartridges see page "Accessories-Function fittings"

Technical characteristics

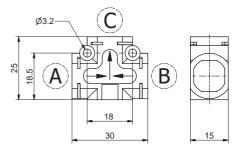
- These valves have two inlets and one output connection and are normally called high pressure selector valves as, when receiving two separate pressure supply, only allow the passage of the highest pressure. The most common application is to operate a component from two separate positions.
- on DIN rail using the relevant adaptor kit (see accessories) With 90° bracket (see accessories)
- directly on the support plate thanks to two through holes on the body

Technical characteristics		
Fluid	filtered and lubricated air or non	
Working ports size	See CONNECTIONS LIST	
Max working pressure (bar)	10	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	600	
Temperature °C	-5 +50	
Weight (g)	10	



Circuit selector valve-AND





Coding: 551.151. **(A.B.)**

A	CONNECTION A	
	SEE CONNECTIONS LIST	
₿	CONNECTION B	
•	SEE CONNECTIONS LIST	
•	CONNECTION C	
•	SEE CONNECTIONS LIST	
	CONNECTIONS LIST	
	00 = None	
	D4 = Straight Ø4	
	D6 = Straight Ø6	
	D8 = Straight Ø8	
	L1 = Female banjo G1/8"	
	G4 = Rotating banjo Ø4	
	G6 = Rotating banjo Ø6	
	G8 = Rotating banjo Ø8	
	M1 = G1/8" male	
	M2 = G1/4" male	
	F1 = G1/8" female	

Example: 551.151.D6.D6.D6
Circuit selector valve AND. Connections "A", "B" and "C" Tube Ø6

NOTE: For the dimension including cartridges see page "Accessories-Function fittings"

- These valves have two inlets and one output connection and are normally called low pressure selector valves as, when receiving two separate pressure supply, only allow the passage of the lowest pressure. The most common application is to operate a component from two separate

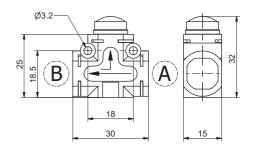
- positions.
 on DIN rail using the relevant adaptor kit (see accessories)
 With 90° bracket (see accessories)
 directly on the support plate thanks to two through holes on the body

Technical characteristics		
Fluid	filtered and lubricated air or non	
Working ports size	See CONNECTIONS LIST	
Max working pressure (bar)	10	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	550	
Temperature °C	-5 +50	
Weight (g)	10	



Quick exhaust valve





Coding: 551.161. 4. B. XX

A	CONNECTION A	
	SEE CONNECTIONS LIST	
B	CONNECTION B	
U	SEE CONNECTIONS LIST	
	CONNECTIONS LIST	
	00 = None	
	D4 = Straight Ø4	
	D6 = Straight Ø6	
	D8 = Straight Ø8	
	L1 = Female banjo G1/8"	
	G4 = Rotating banjo Ø4	
	G6 = Rotating banjo Ø6	
	G8 = Rotating banjo Ø8	
	M1 = G1/8" male	
	M2 = G1/4" male	
	F1 = G1/8" female	

Example: 551.161.D8.D8.XX

Quick exhaust valve. Connections "A" and "B" Tube Ø6

NOTE: For the dimension including cartridges see page "Accessories-Function fittings"

Technical characteristics

- These are 3 ways, two positions valves which can be directly mounted onto the actuator or between the actuator and the control valve. Their function is to discharge the air directly into the atmosphere without going through the pneumatic circuit enabling the actuator to reach the maximum speed.

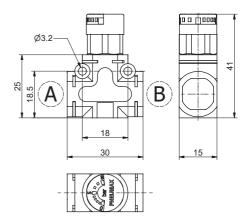
- on DIN rail using the relevant adaptor kit (see accessories)
 With 90° bracket (see accessories)
 directly on the support plate thanks to two through holes on the body

Technical characteristics		
Fluid	filtered and lubricated air or non	
Working ports size	See CONNECTIONS LIST	
Max working pressure (bar)	10	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	250	
Flow rate at 6 bar with free exhaust (NI/min)	500	
Temperature °C	-5 +50	
Weight (g)	15	



Pressure indicator





Coding: 551.178. **(A.B.** XX)

	3
A	CONNECTION A
	SEE CONNECTIONS LIST
₿	CONNECTION B
•	SEE CONNECTIONS LIST
	CONNECTIONS LIST
	00 = None
	D4 = Straight Ø4
	D6 = Straight Ø6
	D8 = Straight Ø8
	L1 = Female banjo G1/8"
	G4 = Rotating banjo Ø4
	G6 = Rotating banjo Ø6
	G8 = Rotating banjo Ø8
	M1 = G1/8" male
	M2 = G1/4" male
	F1 = G1/8" female
	•

Example: 551.178.D6.D4.XX

Pressure indicator. Connections "A" Tube Ø6, "B" Tube Ø4 NOTE: For the dimension including cartridges see page "Accessories-Function fittings"

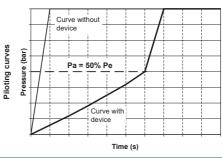
- The pressure visual indicator is a device which measures the pressure inside a pneumatic circuit. The 0 to 8 bar visual indicator makes very easy to monitor the pressure state inside the circuit. It can be use on its own or can be coupled with another device.
- It can be use on its own or can be coupled with another device on DIN rail using the relevant adaptor kit (see accessories)
- With 90° bracket (see accessories)
- directly on the support plate thanks to two through holes on the body

Technical characteristics		
Fluid	filtered and lubricated air or non	
Working ports size	See CONNECTIONS LIST	
Max working pressure (bar)	8	
Visualization scale (bar)	08	
Temperature °C	-5 +50	
Weight (g)	20.5	

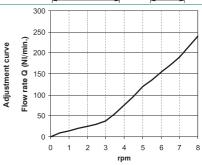


In line progressive start-up valve





Ø13.5 Ø3.2 В 30 15



Coding: 551.181. 4.8. XX

A	CONNECTION A
	SEE CONNECTIONS LIST
B	CONNECTION B
•	SEE CONNECTIONS LIST
	CONNECTIONS LIST
	00 = None
	D4 = Straight Ø4
	D6 = Straight Ø6
	D8 = Straight Ø8
	L1 = Female banjo G1/8"
	G4 = Rotating banjo Ø4
	G6 = Rotating banjo Ø6
	G8 = Rotating banjo Ø8
	M1 = G1/8" male
	M2 = G1/4" male
	F1 = G1/8" female



NOTE: For the dimension including cartridges see page "Accessories-Function fittings"

Technical characteristics

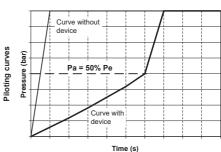
- The soft start valve is a device designed to gradually pressurise the downstream
- circuit until 50% of the upstream pressure value is reached.
 Once the 50% of the upstream pressure value is reached in the down stream circuit the valve fully opens allowing full air passage.
- The filling time can be adjusted thanks to the built in flow regulator.

 This device is used in order to ensure that during the pneumatic circuit start up the cylinders will return to theirs home position slowly avoiding collisions or sudden

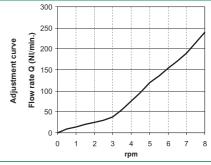
Technical characteristics		
Fluid	filtered and lubricated air or non	
Working ports size	See CONNECTIONS LIST	
Opening pressure (Pa)	50% of the inlet pressure (Pi)	
Flow rate at 6 bar with free exhaust (NI/min) from 1 to 2 with opening ciruit	350	
Flow rate at 6 bar with $\Delta p=1$ from 1 to 2 with opening ciruit	600	
Flow rate at 6 bar with $\Delta p=1$ from 2 to 1 with opening pin	650	
Temperature °C	-5 +50	
Weight (g)	31	

90° progressive start-up valve





Ø13.5 (B



Coding: 551.281. (A. (B. XX)

A	CONNECTION A
	SEE CONNECTIONS LIST
B	CONNECTION B
•	SEE CONNECTIONS LIST
	CONNECTIONS LIST
	00 = None
	D4 = Straight Ø4
	D6 = Straight Ø6
	D8 = Straight Ø8
	L1 = Female banjo G1/8"
	G4 = Rotating banjo Ø4
	G6 = Rotating banjo Ø6
	G8 = Rotating banjo Ø8
	M1 = G1/8" male
	M2 = G1/4" male
	F1 = G1/8" female



Example: 551.281.M1.D4.XX = 90° progressive start-up valve. connections "A" Male G1/8", "B" Tube Ø4 NOTE: For the dimension including cartridges see page "Accessories-Function"

- The soft start valve is a device designed to gradually pressurise the downstream circuit until 50% of the upstream pressure value is reached.

 Once the 50% of the upstream pressure value is reached in the down stream circuit the
- When the survey of the survey
- This device is used in order to ensure that durin cylinders will return to theirs home position slow movements.

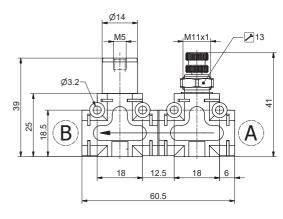
fittings"		
Technical characteristics		
Fluid	filtered and lubricated air or non	
Working ports size	See CONNECTIONS LIST	
Opening pressure (Pa)	50% of the inlet pressure (Pi)	
Flow rate at 6 bar with free exhaust (NI/min) from 1 to 2 with opening ciruit	350	
Flow rate at 6 bar with Δp=1 from 1 to 2 with opening ciruit	600	
Flow rate at 6 bar with Δp=1 from 2 to 1 with opening pin	650	
Temperature °C	-5 +50	
Weight (g)	31	

ng tne pneumatic circuit start up tne	2 With Opening Circuit	
owly avoiding collisions or sudden	Flow rate at 6 bar with Δp=1 from 1 to 2 with opening ciruit	600
	Flow rate at 6 bar with Δp=1 from 2 to 1 with opening pin	650
	Temperature °C	-5 +50
	Weight (g)	31

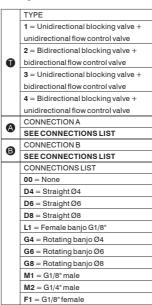


In line blocking valve with flow control valve



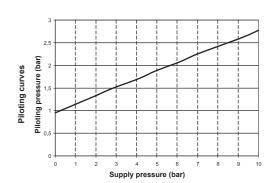


Coding: 551.1F**1**.**A**.**B**.XX



Example: 551.1F1.00.00.XX

In line blocking valve + flow control valve. Without connections "A" and "B" NOTE: For the dimension including cartridges see page "Accessories-Function fittings"











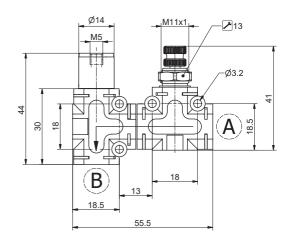
- The combination of this two functions ensures that the downstream pressure is maintained in case of accidental loss of supply pressure and at the same time grants the possibility to regulate the circuit flow rate. A typical application of this combination is close to or directly assembled onto the actuator connection ports. This allows to keep pressurised the cylinder chamber in case of accidental loss of supply pressure and to regulate the exhaust flow rate when the blocking valve is actuated.
- The possible combinations are the following:
 Unidirectional blocking valve + unidirectional flow control valve
 Bidirectional blocking valve + bidirectional flow control valve
 Bidirectional blocking valve + unidirectional flow control valve
 Unidirectional blocking valve + bidirectional flow control valve

Technical characteristics		
Fluid	filtered and lubricated air or non	
Working ports size	See CONNECTIONS LIST	
Working pressure (bar)	0,5 10	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	285	
Orifice size (mm)	Ø3	
Temperature °C	-5 +50	
Weight (g)	62	



90° blocking valve + flow control valve





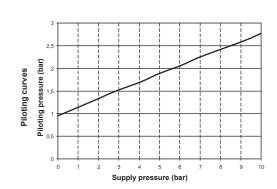
Coding: 551.2F**1**.**A**.**B**.XX

	TYPE
	1 = 90° unidirectional blocking valve
	+ unidirectional flow control valve
	2 = 90° bidirectional blocking valve
•	+ bidirectional flow control valve
	3 = 90° unidirectional blocking valve
	+ bidirectional flow control valve
	4 = 90° bidirectional blocking valve
	+ unidirectional flow control valve
A	CONNECTION A
	SEE CONNECTIONS LIST
B	CONNECTION B
U	SEE CONNECTIONS LIST
	CONNECTIONS LIST
	00 = None
	D4 = Straight Ø4
	D6 = Straight Ø6
	D8 = Straight Ø8
	L1 = Female banjo G1/8"
	G4 = Rotating banjo Ø4
	G6 = Rotating banjo Ø6
	G8 = Rotating banjo Ø8
	M1 = G1/8" male
	M2 = G1/4" male
	F1 = G1/8" female

Example: 5512F1.00.00.XX

90° blocking valve + flow control valve. Without connections "A" and "B"

NOTE: For the dimension including cartridges see page "Accessories-Function fittings"











- The combination of this two functions ensures that the downstream pressure is maintained in case of accidental loss of supply pressure and at the same time grants the possibility to regulate the circuit flow rate. A typical application of this combination is close to or directly assembled onto the actuator connection ports. This allows to keep pressurised the cylinder chamber in case of accidental loss of supply pressure and to regulate the exhaust flow rate when the blocking valve is actuated.
- The possible combinations are the following:

 90° unidirectional blocking valve + unidirectional flow control valve

 90° bidirectional blocking valve + bidirectional flow control valve

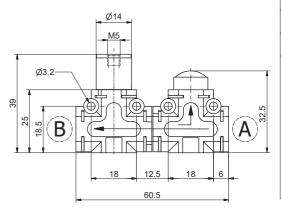
 90° bidirectional blocking valve + unidirectional flow control valve

 90° unidirectional blocking valve + bidirectional flow control valve

Technical characteristics		
Fluid	filtered and lubricated air or non	
Working ports size	See CONNECTIONS LIST	
Working pressure (bar)	0,5 10	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	285	
Orifice size (mm)	Ø3	
Temperature °C	-5 +50	
Weight (g)	62	

In line blocking valve + quick exhaust valve

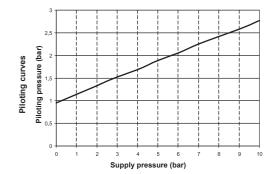




	TYPE
	1 = Unidirectional blocking valve +
•	quick exhaust valve
	2 = Bidirectional blocking valve +
	quick exhaust valve
A	CONNECTION A
A	SEE CONNECTIONS LIST
ß	CONNECTION B
•	SEE CONNECTIONS LIST
	CONNECTIONS LIST
	00 = None
	D4 = Straight Ø4
	D6 = Straight Ø6
	D8 = Straight Ø8
	L1 = Female banjo G1/8"
	G4 = Rotating banjo Ø4
	G6 = Rotating banjo Ø6
	G8 = Rotating banjo Ø8
	M1 = G1/8" male
	M2 = G1/4" male
	F1 = G1/8" female

Example: 5511G1.00.00.XX

In line blocking valve + quick exhaust valve. Without connections "A" and "B" NOTE: For the dimension including cartridges see page "Accessories-Function fittings" and the properties of the dimension of the properties of the p





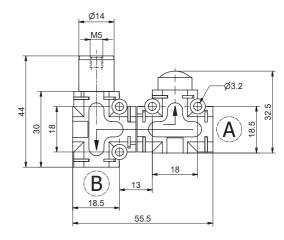


- The combination of this two functions ensures that the downstream pressure is maintained in case of accidental loss of supply pressure and at the same time allows for the air to be directly discharged into the atmosphere without going through the pneumatic circuit. A typical application of this combination is close to or directly assembled onto the actuator connection ports. This allows to keep pressurised the cylinder chamber in case of accidental loss of supply pressure and to quickly discharge the same
- chamber when the blocking valve is actuated. The possible combinations are the following:
- Unidirectional blocking valve + quick exhaust valve
 Bidirectional blocking valve + quick exhaust valve

Technical characteristics		
Fluid	filtered and lubricated air or non	
Working ports size	See CONNECTIONS LIST	
Working pressure (bar)	0.5 10	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	285	
Temperature °C	-5 +50	
Weight (g)	51	



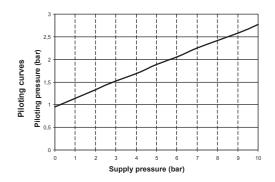
90° blocking valve + quick exhaust valve



Coding: 551.2G**①**.**④**.**B**.XX

	TYPE
	1 = 90° unidirectional blocking valve
•	+ quick exhaust valve
	2 = 90° bidirectional blocking valve
	+ quick exhaust valve
A	CONNECTION A
A	SEE CONNECTIONS LIST
₿	CONNECTION B
•	SEE CONNECTIONS LIST
CONNECTIONS LIST	
	00 = None
	D4 = Straight Ø4
	D6 = Straight Ø6
	D8 = Straight Ø8
	L1 = Female banjo G1/8"
	G4 = Rotating banjo Ø4
G6 = Rotating banjo Ø6	
G8 = Rotating banjo Ø8	
M1 = G1/8" male	
	M2 = G1/4" male
	F1 = G1/8"female

Example: 551.2G1.00.00.XX 90° bidirectional blocking valve + quick exhaust valve. Without connections "A" and "B" NOTE: For the dimension including cartridges see page "Accessories-Function fittings"







- The combination of this two functions ensures that the downstream pressure is maintained in case of accidental loss of supply pressure and at the same time allows for the air to be directly discharged into the atmosphere without going through the pneumatic circuit. A typical application of this combination is close to or directly assembled onto the actuator connection ports. This allows to keep pressurised the cylinder chamber in case of accidental loss of supply pressure and to quickly discharge the same
- chamber when the blocking valve is actuated.

 The possible combinations are the following:

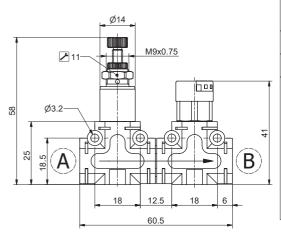
 90° unidirectional blocking valve + quick exhaust valve

 90° bidirectional blocking valve + quick exhaust valve

Technical characteristics		
Fluid	filtered and lubricated air or non	
Working ports size	See CONNECTIONS LIST	
Working pressure (bar)	0,5 10	
Flow rate at 6 bar with Δp=1 (NI/min)	285	
Temperature °C	-5 +50	
Weight (g)	51	

In line pressure regulator + pressure indicator





Coding: 551.1H**1.** (A.B. XX

Coding: 551.1110.0.0.XX		
	TYPE	
	2 = 0-2 bar	
Ū	4 = 0-4 bar	
	8 = 0-8 bar	
A	CONNECTION A	
	SEE CONNECTIONS LIST	
B	CONNECTION B	
•	SEE CONNECTIONS LIST	
	CONNECTIONS LIST	
	00 = None	
	D4 = Straight Ø4	
	D6 = Straight Ø6	
	D8 = Straight Ø8	
	L1 = Female banjo G1/8"	
	G4 = Rotating banjo Ø4	
	G6 = Rotating banjo Ø6	
	G8 = Rotating banjo Ø8	
	M1 = G1/8" male	
	M2 = G1/4" male	
	F1 = G1/8" female	

Example: 551.1H2.M1.D4.XX

In line pressure regulator, adjusting range 0-2 bar + pressure indicator. Connections "A" Male G 1/8 and "B" Tube Ø4 NOTE: For the dimension including cartridges see page "Accessories-Function fittings"

Technical characteristics

- The combination of this two functions ensures the possibility to regulate the downstream pressure while directly visualising the adjusted pressure value.
 The possible combinations are the following:

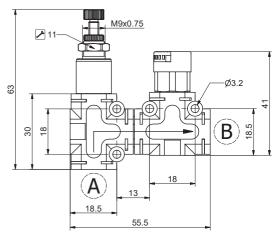
- O to 2 bar pressure regulator + pressure visual indicator
 O to 4 bar pressure regulator + pressure visual indicator
 O to 8 bar pressure regulator + pressure visual indicator
- The visual indicator Pressure range (bar) is always 0 to 8 bar

	Technical characteristics		
Э	Fluid	filtered and lubricated air or non	
	Working ports size	See CONNECTIONS LIST	
	Max working pressure (bar)	8	
	Visualization scale (bar)	08	
		02	
	Pressure range (bar)	0 4	
		0 8	
	Temperature °C	-5 +50	
	Weight (g)	62	



90° pressure regulator + pressure indicator





Coding: 551.2H**1**.**A**.**B**.XX

	3 000
	TYPE
	2 = 0-2 bar
0	4 = 0-4 bar
	8 = 0-8 bar
A	CONNECTION A
	SEE CONNECTIONS LIST
B	CONNECTION B
•	SEE CONNECTIONS LIST
	CONNECTIONS LIST
	00 = None
	D4 = Straight Ø4
	D6 = Straight Ø6
	D8 = Straight Ø8
	L1 = Female banjo G1/8"
	G4 = Rotating banjo Ø4
	G6 = Rotating banjo Ø6
	G8 = Rotating banjo Ø8
	M1 = G1/8" male
	M2 = G1/4" male
	F1 = G1/8" female

Example: 551.2H2.M1.D4.XX

90° pressure regulator, adjusting range 0-2 bar + pressure indicator. Connections "A" Male G 1/8 and "B" Tube Ø4 NOTE: For the dimension including cartridges see page "Accessories-Function fittings"

- The combination of this two functions ensures the possibility to regulate the downstream pressure while directly visualising the adjusted presvalue.

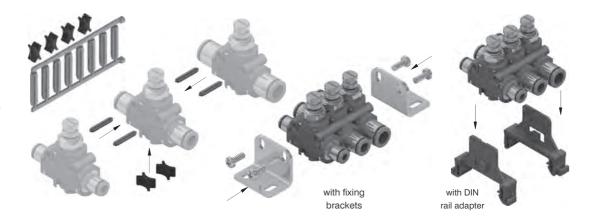
- value.
 The possible combinations are the following:
 0 to 2 bar pressure regulator + pressure visual indicator
 0 to 4 bar pressure regulator + pressure visual indicator
 0 to 8 bar pressure regulator + pressure visual indicator
 The visual indicator Pressure range (bar) is always 0 to 8 bar

Technical	characteristics		
Fluid filtered and lubricated air or no			
Working ports size	See CONNECTIONS LIST		
Max working pressure (bar)	8		
Visualization scale (bar)	08		
	02		
Pressure range (bar)	0 4		
	0 8		
Temperature °C	-5 +50		
Weight (g)	62		



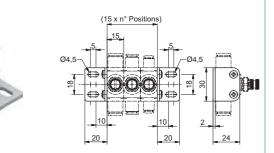
Coupling kit (pins and forks)

Coding: 55160



- Weight 2,5 g
 The kit, which includes a series of pins and forks, enables to join together in a fast and safe way the function fittings. The pins, once inserted in the front holes, ensure resistance against forces applied perpendicularly and sideway (for example the insertion of the tube in the cartridges).
 The forks, once located in the profiled housing ensures that the parts are held together tightly.
 The kit allows for 5 function fittings to be mounted together.





Coding: 55150

Weight 18 g
The kit comprises two fixing brackets and the screws

DIN rail adapter

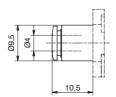


Coding: 55116

Weight 4 g The kit comprises two adapters

(15 x n° Positions)

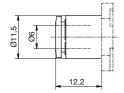
Ø4, Ø6 & Ø8 straight cartridge



Weight 7,5 g

551KD4

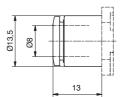




Weight 7,3 g

551KD6





Weight 7 g

551KD8

Coding: 551KD@

	CONNECTIONS
_	4 = tube Ø4
G	

6	=	tube	9 Ø 6
_		Acrel a	- 00



Ø4, Ø6 & Ø8 banjo PL cartridge

Coding: 551KG@

Θ

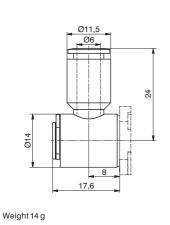
CONNECTIONS **4** = tube Ø4

6 = tube Ø6 **8** = tube Ø8

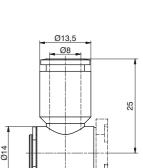








551KG6



Weight 14,3 g

Weight 13,6 g

551KG4

17,6

551KG8

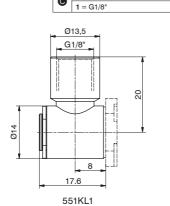
8

17,6

G1/8" banjo artridge







Connection for multiple function



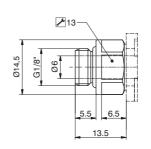
Coding: 551KUU

Weight 14 g

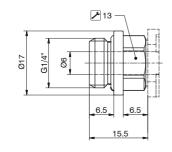
Coding: 551K®

Weight 30 g

Cartridge

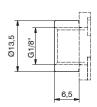


Weight 14 g G1/8" male straight cartridge 551KM1



Weight 20 g G1/4" male straight cartridge 551KM2





Weight 9 g G1/8" female straight cartridge 551KF1

	CONNECTIONS
	M1 = G1/8" male straight cartridge
0	M2 = G1/4" male straight cartridge
	F1 = G1/8" female straight cartridge



Series 1750-1760

This type of miniaturised pressure regulators are mostly indicated for the use on the secondary level of the pneumatic circuits. Thanks to the contained dimensions are particularly indicated to be used very closely or directly mounted onto the consumption. Three versions are available.



Version rod G1/8" swivel ring with female thread G 1/8" and G 1/4" or push-in fitting for tube Ø4, Ø6 and Ø8



Model with body in technopolymer integrated gauge and quick coupling fittings for tube Ø4 and Ø6

G/1/8" model to be directly mounted onto the valve

Compact design to be directly mounted onto the valves uses standard swivel rings with G1/8" female thread (ref 41218) or quick coupling fittings for tube sizes. It is also possible to supply the regulating shaft without the swivel ring.

Model with body in technopolymer and integrated gauge

is the more complete solution, comprises a movable gauge which enables to check the regulated pressure.

Is manufactured using the same regulating unit as the base model fitted into a technopolymer body on which are inserted two quick coupling cartridges, 4mm or 6mm tube for inlet and outlet connections; two side plates lock the cartridges and gauge in position.

It is possible to join together more than one regulator by means of a dedicated adaptor made of technopolymer which must be inserted in the appropriate slot. (the air must be supplied independently to each regulator.)

Several mounting solutions are available: wall mounting via two mounting holes, on DIN rail using the specific accessories or on panels.

Mounting solutions

G/1/8" model to be directly mounted into the valve: directly mounted into the valves threaded connections (consumptions)

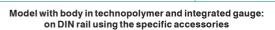


Model with body in technopolymer and integrated gauge:
panel mounting via the locking nut



Model with body in technopolymer and integrated gauge: wall mounting via the mounting holes on the body







Model with body in technopolymer and integrated gauge: panel mounting via the locking nut



Coding: 17522A @. @



Miniaturised pressure regulators-with technopolymer body

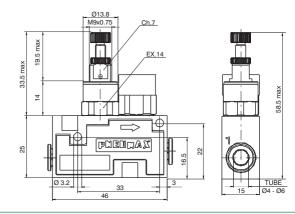
Construction characteristics

- Regulating cartridge = Nickel-plated brass
- Regulator body = Technopolymer Seals = Oil resistant nitrilic rubber (NBR) Plunger spring = AISI 302
- Regulating spring = Spring suitable steel
 Plunger = Oil resistant nitrilic rubber (NBR)
 Other parts = Brass

Operational characteristics		
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with ∆p=1 (NI/min)	120	
Working ports size	Ø4-Ø6	
Inlet connections sizes	Ø4-Ø6	
Assembly positions	Any	

•	CONNECTIONS
	4 = Tube Ø4
	6 = Tube Ø6
©	PRESSURE RANGE
	C = 08 bar
	B = 04 bar
	A = 02 bar







Coding: 17602A**@.@**

SWIVEL RING

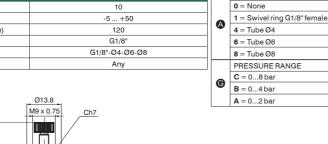
Miniaturised pressure regulators, rod G1/8"

Construction characteristics

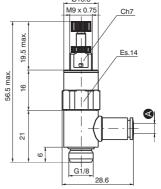
- Regulating cartridge = Nickel-plated brass Regulator body = Nickel-plated brass Seals = Oil resistant nitrilic rubber (NBR) Plunger spring = AISI 302

- Regulating spring = Spring suitable steel Plunger = Oil resistant nitrilic rubber (NBR) Other parts = Brass

Operational characteristics		
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	120	
Working ports size	G1/8"	
Inlet connections sizes	G1/8"-Ø4-Ø6-Ø8	
Assembly positions	Any	









Coding: 17602BA.6

SWIVEL BING

Miniaturised pressure regulators, rod G1/4"

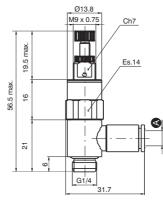
Construction characteristics

- Regulating cartridge = Nickel-plated brass Regulator body = Nickel-plated brass Seals = Oil resistant nitrilic rubber (NBR)
- Plunger spring = AISI 302
- Regulating spring = Spring suitable steel Plunger = Oil resistant nitrilic rubber (NBR) Other parts = Brass

Operational characteristics		
Max. working pressure (bar)	10	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	120	
Working ports size	G1/4"	
Inlet connections sizes	G1/4"-Ø4-Ø6-Ø8	
Assembly positions	Any	

	10		U = None
	-5 +50	A	1 = Swivel ring G1/4" female
min)	120		6 = Tube Ø6
	G1/4"		8 = Tube Ø8
	G1/4"-Ø4-Ø6-Ø8		PRESSURE RANGE
	Any		C = 08 bar
		G	B = 04 bar
			A = 02 bar
	Ø13.8 19 x 0.75 Ch7		









Series Mini-RAP

Technical data

Working temperature: -20°C +70°C Maximum working pressure: 10 bar

Fluid: Compressed air (others fluids on requests)

Nichel-plated brass body, Brass grip, Silicone free NBR gaskets Thread: Cylindrical with O-Ring

Maximum fixing torque for fittings Thread: M3: 0,4 Nm

Thread: M6 and M6x0,75: 1,3 Nm

Main characteristics

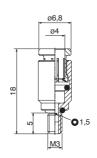
- Can be inserted and extracted with one hand
- 2. Suitable for tube Rilsan, Polyurethane, Nylon, Polyethylene
- 3. 4. 5.
- Supercompact
 Extremely lightweight yet sturdy
 O-Ring provided with his own seat to ensure seal with polished surface
- Suitable for vacuum applicatio

Accessories - Compact fittings for lubrication
Series Mini-RAP



RDR Straight male adaptor (parallel)

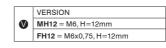




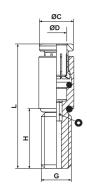
RDR Straight male adaptor (parallel)



Coding: RDR3.40-MH05





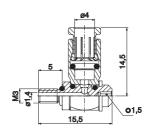


CODE	ØD	G	øс	н	L	0
RDR6.40-MH12	4	M6	6,8	12	25	2
RDR6.40-FH12	4	M6x0,75	6,8	12	25	2

RGR Complete single banjo with stem

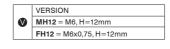
 $\textbf{Coding:} \, RGR3.40\text{-}MH05$





RGR Complete single banjo with stem

Coding: RGR6.40-♥





_ ØD -
н
Wall
0 81
L1

CODE	ØD	G	ØA	Н	L1	L	0
RGR6.40-MH12	4	M6	2	12	24,3	14,5	2
RGR6.40-FH12	4	M6x0,75	2	12	24,3	14,5	2

Series PX



SERIES PX MODULAR ELECTRONIC SYSTEM

- Maximum flexibility
- Digital and analogue I/O modules
- Stand alone solution
- Manufactured in technopolymer
- Wide range of communication protocols









EtheriNet/IP





FLEXIBILITY IN A COMPACT SPACE

Series PX modular electronic system has been designed to offer control and acquisition hardware for pneumatic and electric devices; it supports the most diffused communication protocols and can be configured with I/O modules, both digital and analog.

Series PX in stand alone version can be connected to every solenoid valves battery by using SUB-D connector, on the other hand Series PX can be directly connected to the following Pneumax solenoid valves series:

- Optyma S
- Optyma F
- Optyma T
- 2700
- 3000

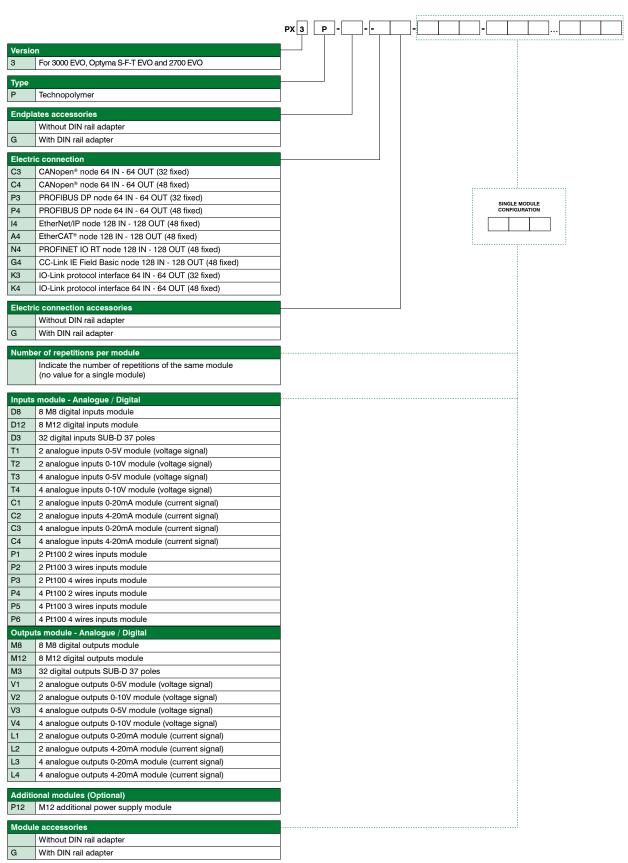
Technopolymer bodies and sub-base and compact design has been studied to optimise room taken by the whole system, they make Series PX extremely light and guarantee maximum flexibility.

The ability to quickly and easily configure the system, the range of modules and accessories available meet at the best the specific application needs of many industrial sectors.

Configurable on Cadenas platform



Configurator



<u>^•</u>

Refer to the current limits indicated in the pages relating to the nodes / IO-Link interface

Configuration examples



Example shown: PX3-P-N4-D8-V4-M3-D12

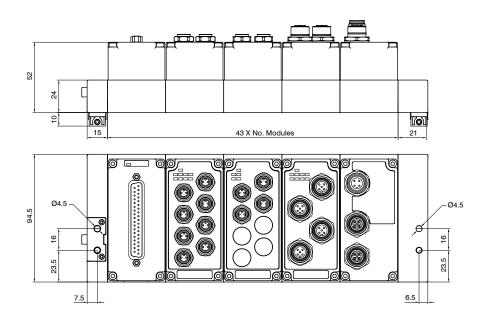
Multiprotocol module with PROFINET IO RT protocol node, M8 digital input module, M8 analogue output module, 37 pin (SUB-D) digital output module and M12 digital input module.



Example shown: PX3-P-G-A4-3D8-2M12

Multiprotocol module with EtherCAT® protocol node, 3 M8 digital input modules and 2 M12 digital output modules; also includes DIN rail adaptors.

Overall dimensions

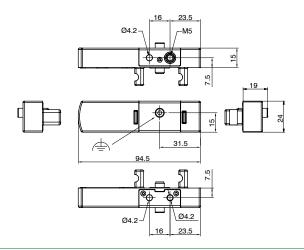


Coding: 3100.KT.00









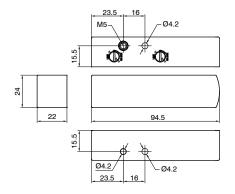
Right endplate kit

Left endplate kit

Coding: 3100.KT.03

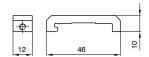


Weight 51 g



DIN rail adapter

Weight 12 g



Cable complete with connector, male 37 poles, IP65

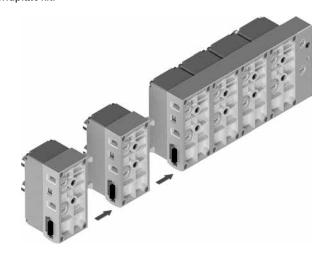


Coding: 2400.37.M. **①**. **②**

Coding: 3100.16

		CABLELENGTH
		03 = 3 meters
	•	05 = 5 meters
		10 = 10 meters
		CONNECTOR
	Θ	10 = Stand alone
		90 = 90° Angle
	Θ	

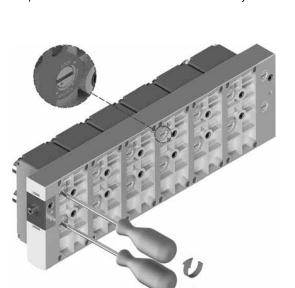
1. Assemble the required modules starting with 3100.KT.03 right endplate kit.



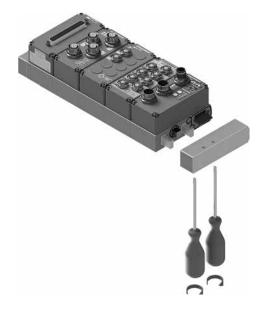
3. To lock: rotate anticlockwise (in the direction of the LOCK print on the

To unlock: rotate clockwise (in the direction of the UNLOCK print on the case).

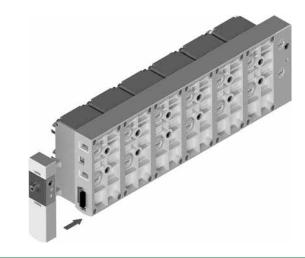
The same procedure shall be used to add or remove any module.



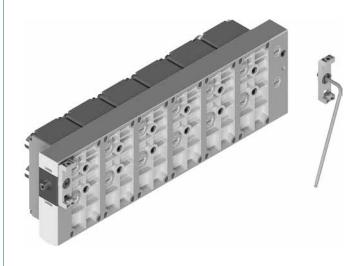
A. For integration with a manifold it is necessary to remove the 3100. KT.03 right endplate kit.



2. Complete the assembly with the 3100.KT.00 left endplate kit.

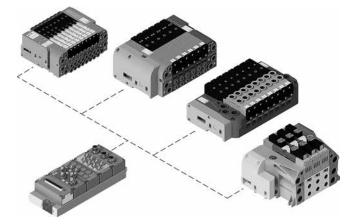


4. If required, assemble the DIN rail adapter using an 3 mm allen key.



B. Series PX modular electronic system can be integrated with the following valve manifold series:

- Optyma-S EVO
- Optyma-F EVO
- Optyma-T EVO
- 2700 EVO



The Series 3000 EVO manifolds already integrates with the PX Series modules with dedicated fixing options.

Please refer to www.pneumaxspa.com for more details.



CANopen® protocol node kit

CANopen® node manages 64 inputs and outputs.

Accessory modules can be connected in whatever order and configuration.

Connection to CANopen® fieldbus is made via two M12, male and female, 5 pins, type A circular connectors, in parallel between them; connectors pinout is compliant to CiA 106 (V.1.1.0: July 11th 2023).

Transmission speed and address, as well as termination resistor activation are set via DIP-switches.

CANopen® node is available in two versions with 32 or 48 outputs allocated to solenoid valves on the manifold directly connected to the node.

Such outputs correspond to least significant bytes and their allocation is independent of how many solenoid valves are installed. Remaining outputs can be used to control the modules.

Byte allocation to additional modules is fully automatic.

Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).

To compute the maximum current on the OUTPUTS + 24 V DC, please use the following formula:

 η = number of installed modules

 $I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\,i_{EV} \qquad I_{out,i} = \text{maximum total current absorbed by the i-th module on the OUTPUTS} + 24\,V\,DC \\ \text{supply rail (please see specifications of the single module)}$

m= number of installed solenoid pilots

 $i_{EV}\;$ = mean absorbed current per solenoid pilot (please see table below)

Series	i_EV
2200 "Optyma S"	36 mA
2500 "Optyma F"	54 mA
2500 "Optyma T"	54 mA
Series 2700	24 mA (1 W version) / 100 mA (2,3 W version)

For each fieldbus node, maximum deliverable current by OUTPUTS + 24 V DC supply is 4 A, moreover the sum of the currents on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

 $I_{24\ V\ DC\ out} + I_{24\ V\ DC\ in} < 4A$

$$I_{24\ V\ DC\ in} = \sum_{i=1}^{n} I_{in,i}$$

n = number of installed modules $I_{in,i}$ = maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)

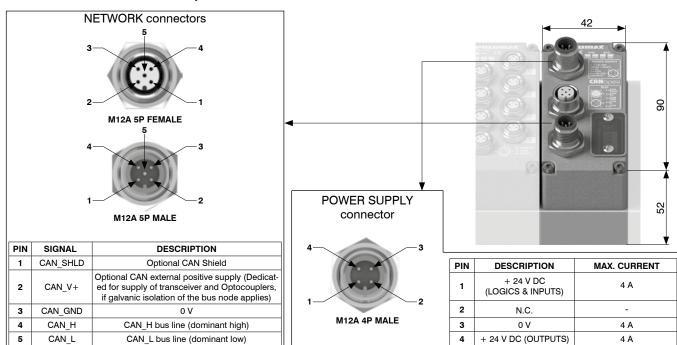
Coding: K5530.64.♥CO

	VERSION
	32 = 32 output bits available for valve
V	connections
	48 = 48 output bits available for valve
	connections



In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.

Scheme / Overall dimensions and I/O layout



Technical characteristics				
Specifications		CiA 106 (V.1.1.0 : July 11th 2023)		
Case		Reinforced technopolymer		
	Voltage	+ 24 V DC ± 10%		
Power supply	Node only current consumption on + 24 V DC inputs	40 mA		
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT		
	Connection	2 M12 5 pins male-female connectors type A		
	Baud rate	10 - 20 - 50 - 125 - 250 - 500 - 800 - 1000 Kbit/s		
Communication	Addresses possible numbers	From 1 to 63		
Communication	Maximum nodes number in network	64 (slave + master)		
	Bus maximum recommended length	100 m at 500 Kbit/s		
	Bus diagnosis	Green / red status LED		
Configuration file		Available from our web site http://www.pneumaxspa.com		
Protection degree		IP65 when assembled		
Temperature °C		-5 +50		



PROFIBUS DP protocol node kit

PROFIBUS DP node manages 64 inputs and outputs.

Accessory modules can be connected in whatever order and configuration.

Connection to PROFIBUS DP fieldbus is made via two M12, male and female, 5 pins, type B circular connectors, in parallel between them; connectors pinout is PROFIBUS Interconnection Technology specifications compliant (Version 1.1, August 2001).

Address as well as termination resistor activation are set via DIP-switches.

PROFIBUS DP node is available in two versions with 32 or 48 outputs allocated to solenoid valves on the manifold directly connected to the

Such outputs correspond to least significant bytes and their allocation is independent of how many solenoid valves are installed. Remaining outputs can be used to control the modules.

Byte allocation to additional modules is fully automatic.

Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).

To compute the maximum current on the OUTPUTS + 24 V DC, please use the following formula:

$$I_{24 V DC out} = \sum_{i=1}^{n} I_{out,i} + m i_{EV}$$

 η = number of installed modules

 $I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\,i_{EV} \qquad I_{out,i} = \text{maximum total current absorbed by the i-th module on the OUTPUTS} + 24\,\text{V\,DC}$

m = number of installed solenoid pilots

 \dot{t}_{EV} = mean absorbed current per solenoid pilot (please see table below)

Series	i_EV
2200 "Optyma S"	36 mA
2500 "Optyma F"	54 mA
2500 "Optyma T"	54 mA
Series 2700	24 mA (1 W version) / 100 mA (2,3 W version)

For each fieldbus node, maximum deliverable current by OUTPUTS + 24 V DC supply is 4 A, moreover the sum of the currents on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

 $I_{24\ V\ DC\ out} + I_{24\ V\ DC\ in} < 4A$

$$I_{24\,V\,DC\,in} = \sum_{i=1}^{n} I_{in,i}$$

 $\pmb{\eta}$ = number of installed modules $I_{in,i}$ = maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)

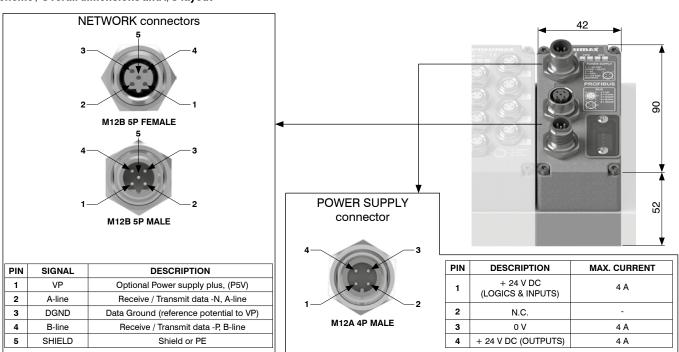
Coding: K5330.64. ♥PB

	VERSION
	32 = 32 output bits available for valve
V	connections
	48 = 48 output bits available for valve
	connections



In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.

Scheme / Overall dimensions and I/O layout



Technical characteristics				
Specifications		PROFIBUS DP		
Case		Reinforced technopolymer		
Power supply	Voltage	+ 24 V DC ± 10%		
	Node only current consumption on + 24 V DC inputs	70 mA		
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT		
	Connection	2 M12 5 pins male-female connectors type B		
	Baud rate	9,6-19,2-93,75-187,5-500-1500-3000-6000-12000 Kbit/s		
Communication	Addresses possible numbers	From 1 to 99		
Communication	Maximum nodes number in network	100 (slave + master)		
	Bus maximum recommended length	100 m at 12 Mbit/s - 1200 m at 9,6 Kbit/s		
	Bus diagnosis	Green/red status LED		
Configuration file		Available from our web site http://www.pneumaxspa.com		
Protection degree		IP65 when assembled		
Temperature °C		-5 +50		



EtherNet/IP protocol node kit

EtherNet/IP node manages 128 inputs and outputs.

Accessory modules can be connected in whatever order and configuration.

Network connection is made via 2 M12 female, type D, 4 pins, circular connectors.

Code K5730.128.48El provides first 48 outputs, corresponding to least significant 6 bytes, are allocated to the solenoid valve positions, regardless how many they are and how many valves are installed on the manifold directly connected to the node. Remaining 80 outputs can be used to manage output modules; bytes allocation to additional modules is fully automatic.

Coding: K5730.128.48EI



Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).

To compute the maximum current on the OUTPUTS + 24 V DC, please use the following formula:

 η = number of installed modules

 $I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\,i_{EV} \qquad \qquad I_{out,i} = \text{maximum total current absorbed by the i-th module on the OUTPUTS} + 24\,\text{V\,DC}$ supply rail (please see specifications of the single module)

m= number of installed solenoid pilots

 i_{EV} = mean absorbed current per solenoid pilot (please see table below)

Series	i_EV
2200 "Optyma S"	36 mA
2500 "Optyma F"	54 mA
2500 "Optyma T"	54 mA
Series 2700	24 mA (1 W version) / 100 mA (2,3 W version)

For each fieldbus node, maximum deliverable current by OUTPUTS + 24 V DC supply is 4 A, moreover the sum of the currents on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

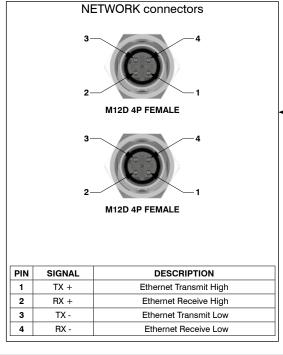
 $I_{24\ V\ DC\ out} + I_{24\ V\ DC\ in} < 4A$

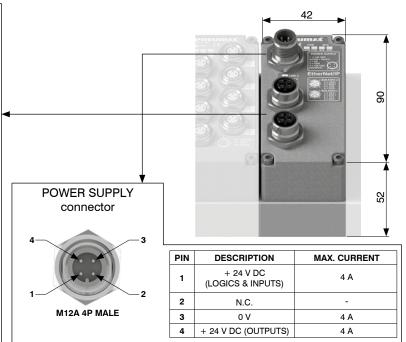
$$I_{24\ V\ DC\ in} = \sum_{i=1}^{n} I_{in,i}$$

n = number of installed modules $I_{in,i}$ = maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)



In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.





Technical characteristics		
Case		Reinforced technopolymer
Power supply	Voltage	+ 24 V DC ± 10%
	Node only current consumption on + 24 V DC inputs	65 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
Communication	Connection	2 M12 4 pins male-female connectors type D (IEC 61076-2-101)
	Baud rate	100 Mbit/s
	Maximum distance between 2 nodes	100 m
	Bus diagnosis	Green / red status LED
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 +50

EtherCAT® protocol node kit

EtherCAT® node manages 128 inputs and outputs.

Accessory modules can be connected in whatever order and configuration.

Network connection is made via 2 M12 female, type D, 4 pins, circular connectors.

Code K5730.128.48EC provides first 48 outputs, corresponding to least significant 6 bytes, are allocated to the solenoid valve positions, regardless how many they are and how many valves are installed on the manifold directly connected to the node. Remaining 80 outputs can be used to manage output modules; bytes allocation to additional modules is fully automatic.

Coding: K5730.128.48EC

Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).

To compute the maximum current on the OUTPUTS $+24\,\mathrm{V}\,\mathrm{DC}$, please use the following formula:

$$I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\,i_{EV}$$

 η = number of installed modules

 $I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\,i_{EV} \qquad I_{out,i} = \text{maximum total current absorbed by the i-th module on the OUTPUTS} + 24\,V\,DC \\ \text{supply rail (please see specifications of the single module)}$

m = number of installed solenoid pilots

 \dot{t}_{EV} = mean absorbed current per solenoid pilot (please see table below)

Series	i_EV
2200 "Optyma S"	36 mA
2500 "Optyma F"	54 mA
2500 "Optyma T"	54 mA
Series 2700	24 mA (1 W version) / 100 mA (2,3 W version)
For each fields and a service and discount of the contract of	

 $For each fieldbus node, maximum deliverable current by OUTPUTS + 24 VDC \ supply \ is 4A, moreover the sum of the currents and the currents of the currents$ on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

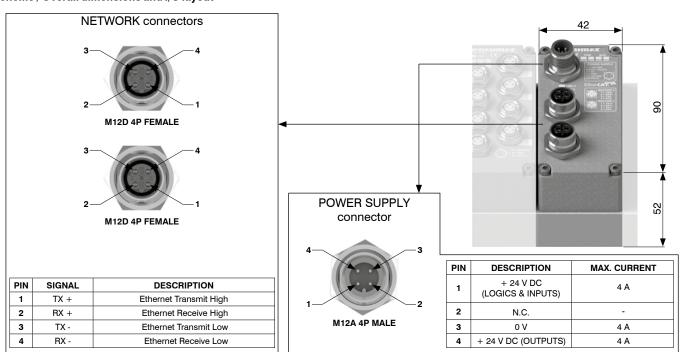
 $I_{24\ V\ DC\ out} + I_{24\ V\ DC\ in} < 4A$

$$I_{24\ V\ DC\ in} = \sum_{i=1}^{n} I_{in,i}$$

 $m{n}$ = number of installed modules $I_{in,i}$ = maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)



In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.



Technical characteristics		
Case		Reinforced technopolymer
	Voltage	+ 24 V DC ± 10%
Power supply	Node only current consumption on + 24 V DC inputs	65 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
	Connection	2 M12 4 pins male-female connectors type D (IEC 61076-2-101)
Communication	Baud rate	100 Mbit/s
Communication	Maximum distance between 2 nodes	100 m
	Bus diagnosis	Green / red status LED
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 +50



PROFINET IO RT protocol node kit

PROFINET IO RT node manages 128 inputs and outputs.

Accessory modules can be connected in whatever order and configuration.

Network connection is made via 2 M12 female, type D, 4 pins, circular connectors.

Code K5730.128.48PN provides first 48 outputs, corresponding to least significant 6 bytes, are allocated to the solenoid valve positions, regardless how many they are and how many valves are installed on the manifold directly connected to the node. Remaining 80 outputs can be used to manage output modules; bytes allocation to additional modules is fully automatic.

Coding: K5730.128.48PN

Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).

To compute the maximum current on the OUTPUTS + 24 V DC, please use the following formula:

$$I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\,i_{EV}$$

 η = number of installed modules

 $I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\,i_{EV} \qquad I_{out,i} = \text{maximum total current absorbed by the i-th module on the OUTPUTS} + 24\,\text{V\,DC}$ supply rail (please see specifications of the single module)

m= number of installed solenoid pilots

 i_{EV} = mean absorbed current per solenoid pilot (please see table below)

i_EV
36 mA
54 mA
54 mA
24 mA (1 W version) / 100 mA (2,3 W version)

For each fieldbus node, maximum deliverable current by OUTPUTS + 24 V DC supply is 4 A, moreover the sum of the currents on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

 $I_{24\ V\ DC\ out} + I_{24\ V\ DC\ in} < 4A$

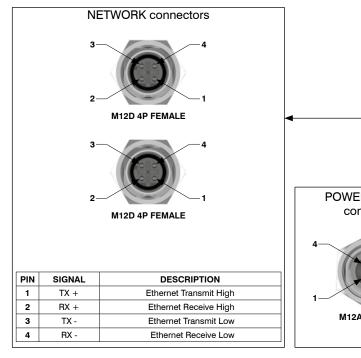
$$I_{24 \, V \, DC \, in} = \sum_{i=1}^{n} I_{in,i}$$

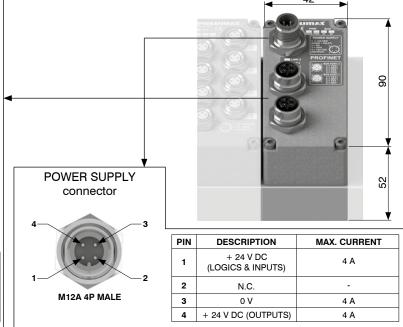
n = number of installed modules $I_{in,i}$ = maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)



In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.







Technical characteristics		
Case		Reinforced technopolymer
	Voltage	+ 24 V DC ± 10%
Power supply	Node only current consumption on + 24 V DC inputs	65 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
Communication	Connection	2 M12 4 pins male-female connectors type D (IEC 61076-2-101)
	Baud rate	100 Mbit/s
	Maximum distance between 2 nodes	100 m
	Bus diagnosis	Green / red status LED
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5+50

AIR DISTRIBUTION



CC-Link IE Field Basic protocol node kit

CC-Link IE Field Basic node manages 128 inputs and outputs.

Accessory modules can be connected in whatever order and configuration.

Network connection is made via 2 M12 female, type D, 4 pins, circular connectors.

Code K5730.128.48CL provides first 48 outputs, corresponding to least significant 6 bytes, are allocated to the solenoid valve positions, regardless how many they are and how many valves are installed on the manifold directly connected to the node. Remaining 80 outputs can be used to manage output modules; bytes allocation to additional modules is fully automatic.

Coding: K5730.128.48CL

Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).

To compute the maximum current on the OUTPUTS $+24\,\mathrm{V}\,\mathrm{DC}$, please use the following formula:

$$I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\,i_{EV}$$

 η = number of installed modules

 $I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\,i_{EV} \qquad I_{out,i} = \text{maximum total current absorbed by the i-th module on the OUTPUTS} + 24\,V\,DC \\ \text{supply rail (please see specifications of the single module)}$

m = number of installed solenoid pilots

 \dot{t}_{EV} = mean absorbed current per solenoid pilot (please see table below)

Series	i_EV
2200 "Optyma S"	36 mA
2500 "Optyma F"	54 mA
2500 "Optyma T"	54 mA
Series 2700	24 mA (1 W version) / 100 mA (2,3 W version)

For each fieldbus node, maximum deliverable current by OUTPUTS + 24 V DC supply is 4 A, moreover the sum of the currents on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

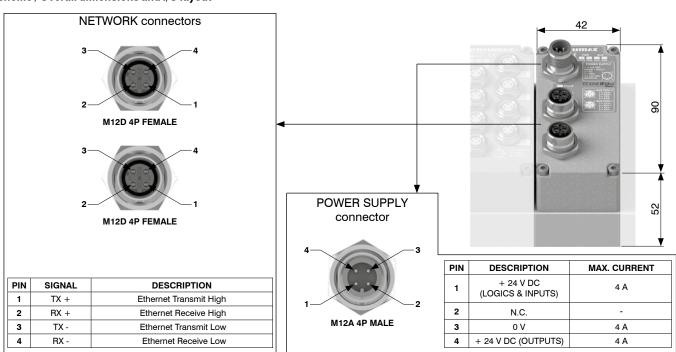
 $I_{24\ V\ DC\ out} + I_{24\ V\ DC\ in} < 4A$

$$I_{24\ V\ DC\ in} = \sum_{i=1}^{n} I_{in,i}$$

n = number of installed modules $I_{in,i}$ = maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)



In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.



Technical characteristics		
Case		Reinforced technopolymer
Power supply	Voltage	+ 24 V DC ± 10%
	Node only current consumption on + 24 V DC inputs	65 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
Communication	Connection	2 M12 4 pins male-female connectors type D (IEC 61076-2-101)
	Baud rate	100 Mbit/s
	Maximum distance between 2 nodes	100 m
	Bus diagnosis	1 Green LED and 1 red status LED + 2 link and activity LEDs'
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 +50





IO-Link protocol interface kit

IO-Link interface manages 64 inputs and outputs.

Accessory modules can be connected in whatever order and configuration.

Electric power supply and IO-Link connection to the Master are made via M12, male, 5 pins, type A, circular connector, "CLASS B", according to IO-Link specifications.

 $Electric \ rails \ L+/L- \ supply \ interface \ only, \ while \ P24/N24 \ rails \ supply \ additional \ modules \ and \ solenoid \ valves.$

Either power supplies are galvanically isolated in the IO-Link interfaces.

IO-Link interface is available in two versions with 32 or 48 outputs allocated to solenoid valves on the manifold directly connected to a solenoid valves on the manifold directly connected to a solenoid valves on the manifold directly connected to a solenoid valves on the manifold directly connected to a solenoid valves on the manifold directly connected to a solenoid valves on the manifold directly connected to a solenoid valves on the manifold directly connected to a solenoid valves on the manifold directly connected to a solenoid valves on the manifold directly connected to a solenoid valves on the manifold directly connected to a solenoid valves on the manifold directly connected to a solenoid valves on the manifold directly connected to a solenoid valves on the manifold directly connected to a solenoid valves on the manifold directly connected to a solenoid valves on the manifold directly connected to a solenoid valves on the manifold directly connected to a solenoid valves on the manifold directly connected to a solenoid valves of the solenoid valves of ththe interface

Such outputs correspond to least significant bytes and their allocation is independent of how many solenoid valves are installed. Remaining outputs can be used to control the modules.

Byte allocation to additional modules is fully automatic.

Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by pin 2 and pin 5 (P24 / N24).

To compute the maximum current on the P24 / N24 supply, please use the following formula::



 η = number of installed modules

 $I_{acc,l}=$ maximum total current absorbed by each i-th accessory module, given by the sum of the absorbed currents on + 24 V DC OUTPUTS and + 24 V DC INPUTS

m= number of installed solenoid pilots

 i_{EV} = mean absorbed current per solenoid pilot (please see table below)

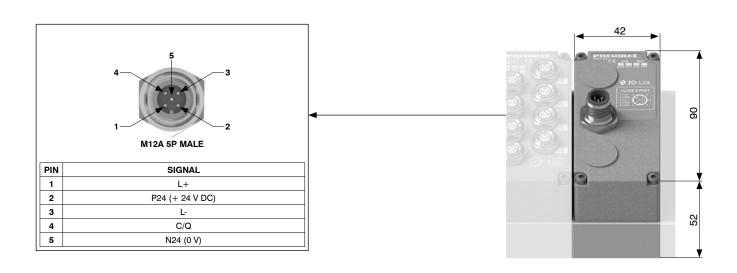
Series	i_EV
2200 "Optyma S"	36 mA
2500 "Optyma F"	54 mA
2500 "Optyma T"	54 mA
Series 2700	24 mA (1 W version) / 100 mA (2,3 W version)

maximum current on P24/N24 supply rail must be less than 4A.



In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.

Scheme / Overall dimensions and I/O layout



Technical characteristics		
Specifications		IO-Link Specification v1.1
Case		Reinforced technopolymer
	Voltage	+ 24 V DC +/- 10%
Power supply	Interface current consumption on + 24 V DC (L+ /L-)	25 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
	Connection	"Class B" port
	Communication speed	38.4 kbaud/s
Communication	Maximum distance from Master	20 m
	Bus diagnosis	Green / red status LED
	Vendor ID / Device ID	1257 (hex 0x04E9) / 3000 (hex 0x0BB8)
Configurations file IODD		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 +50

Coding: K5830.64. VIK

	VERSION
	32 = 32 output bits available for valve
Ø	connections
	48 = 48 output bits available for valve
	connections





8 digital inputs module kit M8

M8 digital inputs module provides 8 M8, 3 pins, female connectors.

Inputs have PNP logic, + 24 V DC ± 10%.

It is possible to connect 2 wires devices (e.g. switches, magnetic limit switches, pressure switches, etc.) as well as 3 wires devices (e.g. proximity sensors, photocells, electronic magnetic limit switches, etc.).

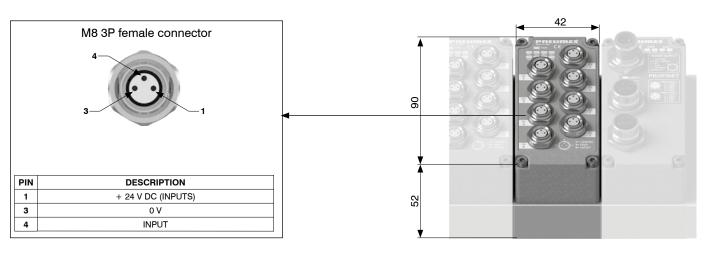
Inputs module power supply is provided by + 24 VDC power input on the serial system (type A, 4 pin M12 power connector, pin 1) or $by \, K5030.M12 \, additional \, power \, supply \, module, in \, case \, it \, were \, installed \, upstream \, of \, the \, inputs \, module.$

Technical characteristics		
Maximum current per module 300 mA		
Protection	Overcurrent (auto-resettable fuse) Reverse polarity	
Input impedence	3 kΩ	
Maximum cable length	< 30 m	
Input data allocation	8 bit	
INPUTS + 24 V DC current consumption of the module only	5 mA	

Coding: K5230.08.M8



Scheme / Overall dimensions and I/O layout



8 digital inputs module kit M12

M12 digital inputs module provides 4 M12, 5 pins, female connectors.

Inputs have PNP logic, $+24 \text{ V DC} \pm 10\%$.

Every connector takes two input channels.

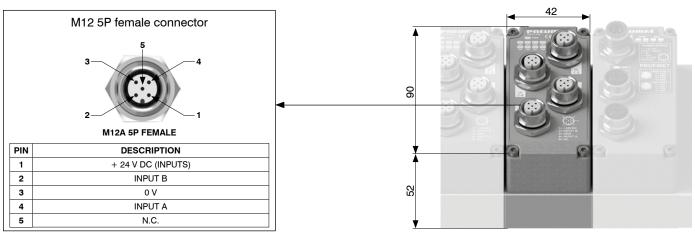
It is possible to connect 2 wires devices (e.g. switches, magnetic limit switches, pressure switches, etc.) as well as 3 wires devices $(e.g.\ proximity\ sensors,\ photocells,\ electronic\ magnetic\ limit\ switches,\ etc.).$

 $Inputs\ module\ power\ supply\ is\ provided\ by\ +\ 24\ V\ DC\ power\ input\ on\ the\ serial\ system\ (type\ A,\ 4\ pin\ M12\ power\ connector,\ pin\ 1)\ or\ begin{picture}$ $by \, K5030.M12 \, additional \, power \, supply \, module, in \, case \, it \, were \, installed \, upstream \, of \, the \, inputs \, module.$

Technical characteristics	
300 mA	
Overcurrent (auto-resettable fuse) Reverse polarity	
3kΩ	
< 30 m	
8 bit	
5 mA	

Coding: K5230.08.M12









8 digital outputs module kit M8

M8 digital inputs module provides 8 M8, 3 pins, female connectors.

Outputs have PNP logic, + 24 V DC ± 10%.

 $Outputs\ module\ power\ supply\ is\ provided\ by\ +\ 24\ V\ DC\ power\ input\ on\ the\ serial\ system\ (type\ A,\ 4\ pins\ M12\ power\ connector,\ pin\ 4)$ or by K5030.M12 additional power supply module, in case it were installed upstream of the outputs module.

Power supply presence is displayed by "PWR" green LED light-on.

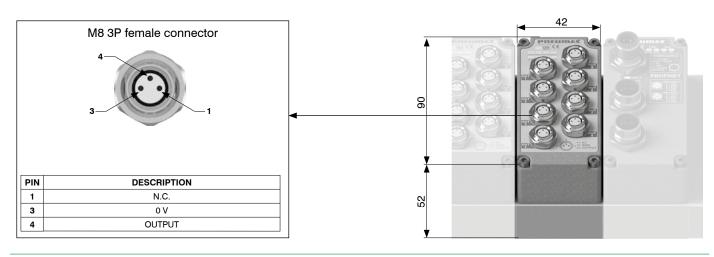
Each output has a LED indicator associated which lights up when output's signal status is high.

Technical characteristics	
Maximum current per output	100 mA
Protection	Short circuit (electronic), trigger at 2.8A
Maximum cable length	< 30 m
Output data allocation	8 bit
OUTPUTS + 24 V DC current consumption of the module only	15 mA





Scheme / Overall dimensions and I/O layout





8 digital outputs module kit M12

M12 digital inputs module provides 4 M12, 5 pins, female connectors.

Outputs have PNP logic, $+24 \, \text{V} \, \text{DC} \pm 10\%$.

Outputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pins M12 power connector, pin 4) or by K5030.M12 additional power supply module, in case it were installed upstream of the outputs module.

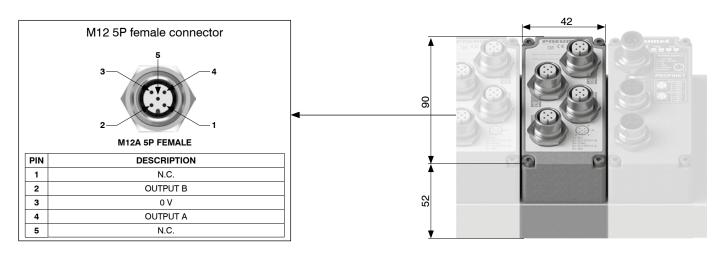
Power supply presence is displayed by "PWR" green LED light-on.

 $Each \ output \ has \ a \ LED \ indicator \ associated \ which \ lights \ up \ when \ output's \ signal \ status \ is \ high.$

Technical characteristics	
Maximum current per output	100 mA
Protection	Short circuit (electronic), trigger at 2.8A
Maximum cable length	< 30 m
Output data allocation	8 bit
OUTPUTS + 24 V DC current consumption of the module only	15 mA

Coding: K5130.08.M12







32 digital inputs module kit (37 pins SUB-D connector)

The module provides a SUB-D 37 pins female connector.

Inputs have PNP logic, $+24 \text{ V DC} \pm 10\%$.

It is possible to connect 2 wires devices (e.g. switches, magnetic limit switches, pressure switches, etc.) as well as 3 wires devices $\frac{1}{2}$ (e.g. proximity sensors, photocells, electronic magnetic limit switches, etc.).

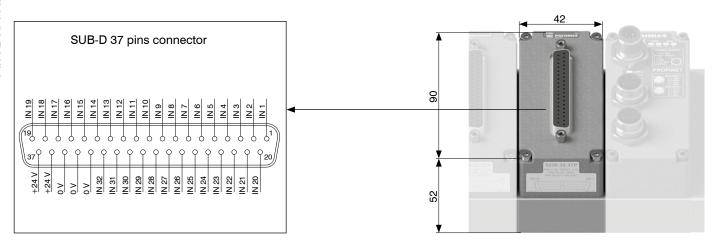
Inputs module power supply is provided by + 24 VDC power input on the serial system (type A, 4 pin M12 power connector, pin 1) or $by \, K5030.M12 \, additional \, power \, supply \, module, in \, case \, it \, were \, installed \, upstream \, of \, the \, inputs \, module.$

Technical characteristics		
Maximum current per module	1 A	
Protection	Overcurrent (auto-resettable fuse) Reverse polarity	
Input impedence	3 kΩ	
Maximum cable length	< 30 m	
Input data allocation	32 bit	
INPUTS + 24 V DC current consumption of the module only	10 mA	

Coding: K5230.32.37P



Scheme / Overall dimensions and I/O layout





32 digital outputs module kit (37 pins SUB-D connector)

The module provides a SUB-D 37 pins female connector.

Outputs have PNP logic, $+24 \, \text{V} \, \text{DC} \pm 10\%$

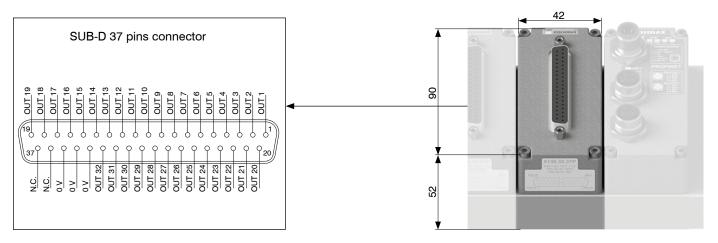
Outputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pins M12 power connector, pin 4) or by K5030.M12 additional power supply module, in case it were installed upstream of the outputs module.

Power supply presence is displayed by "PWR" green LED light-on.

Technical ch	aracteristics
Maximum current per output	100 mA
Protection	Short circuit (electronic), trigger at 2.8A
Maximum cable length	< 30 m
Output data allocation	32 bit
OUTPUTS + 24 V DC current consumption of the module only	15 mA

Coding: K5130.32.37P







Analogue inputs module kit M8

M8 analogue inputs module converts analogue signals into digital signals and transfers acquired data to field bus, via network

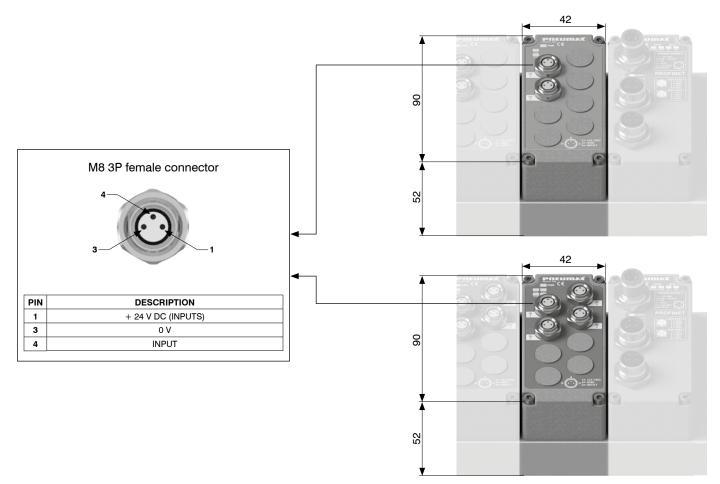
 $Inputs\ module\ power\ supply\ is\ provided\ by\ +\ 24\ V\ DC\ power\ input\ on\ the\ serial\ system\ (type\ A,4pin\ M12\ power\ connector,pin\ power\ power$ 1) or by K5030.M12 additional power supply module, in case it were installed upstream of the inputs module.

Technical characteristics	
Protection (pin 1)	Overcurrent (auto-resettable fuse)
Input impedance (voltage inputs)	33 kΩ
Digital conversion resolution	12 bit
Maximum cable length	< 30 m
Input data allocation	16 bit per channel
Diagnostic LED	Input signal overcurrent or overvoltage
Accuracy	0,3% F.S.
Overall maximum current 2 channels (pin 1)	300 mA
Overall maximum current 4 channels (pin 1)	750 mA (375 mA for each pair of channels)
INPUTS + 24 V DC current consumption of the module only	15 mA

Coding: K5230. **@**

	CHANNELS	
0	2 = 2 channels	
	4 = 4 channels	
	SIGNAL	
	T.00 = Voltage (0-10 V)	
0	T.01 = Voltage (0-5 V)	
	C.00 = Current (4-20 mA)	
	C.01 = Current (0-20 mA)	







Analogue outputs module kit M8

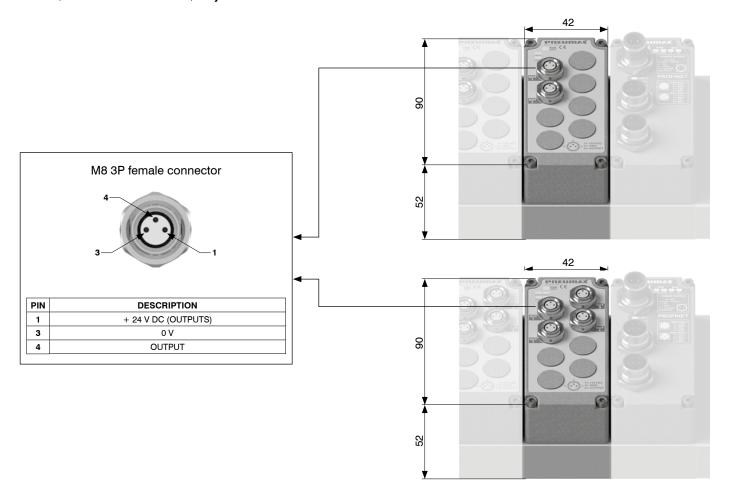
M8 analogue outputs module converts output data, received from field bus via network node, into analogue signal. Outputs module power supply is provided by $+24\,\mathrm{V}\,\mathrm{DC}$ power input on the serial system (type A, 4 pins M12 power connector, $pin\,4)\,or\,by\,K5030.M12\,additional\,power\,supply\,module, in\,case\,it\,were\,installed\,upstream\,of\,the\,outputs\,module.$

Technical characteristics	
Protection (pin 1)	Overcurrent (auto-resettable fuse)
Protection (pin 4)	Overcurrent (auto-resettable fuse)
Digital conversion resolution	12 bit
Maximum cable length	< 30 m
Output data allocation	16 bit per channel
Diagnostic LED	Output signal overcurrent
Accuracy	0,3% F.S.
Overall maximum current 2 channels (pin 1)	1 A
Overall maximum current 4 channels (pin 1)	2 A (1 A for each pair of channels)
INPUTS + 24 V DC current consumption of the module only	15 mA
OUTPUTS $+24\mathrm{V}\mathrm{DC}$ current consumption of the module only (2 channels)	35 mA
OUTPUTS + 24 V DC current consumption of the module only (4 channels)	70 mA

Coding: K5130.@8

	CHANNELS	
Θ	2 = 2 channels	
	4 = 4 channels	
	SIGNAL	
	T.00 = Voltage (0-10 V)	
8	T.01 = Voltage (0-5 V)	
	C.00 = Current (4-20 mA)	
	C.01 = Current (0-20 mA)	





Pt100 inputs module kit

Pt100 inputs module digitizes signals from Pt100 probes and transfers acquired data to field bus, via network node. It is possible to connect two, three or four wires probes.

 $Inputs \, module \, power \, supply \, is \, provided \, by \, + \, 24 \, V \, DC \, power \, input \, on \, the \, serial \, system \, (type \, A, \, 4 \, pin \, M12 \, power \, connector, \, pin \, M13 \, power \, connector, \, pin \, M14 \, power \, connector, \, pin \, M15 \, power \, connector, \, pin \, power \, connector, \,$ $1) or by \, K5030. M12 \, additional \, power \, supply \, module, in \, case \, it \, were \, installed \, upstream \, of \, the \, inputs \, module.$

Technical ch	aracteristics
Digital conversion resolution	12 bit
Maximum cable length	< 30 m
Input data allocation	16 bit per channel
Diagnostic LED	Probe presence Temperature out of range
Accuracy	±0,2°C
Probe temperature range	-100°C +300°C
INPUTS + 24 V DC current consumption of the module with probes (2 channels)	25 mA
INPUTS + 24 V DC current consumption of the module with probes (4 channels)	35 mA

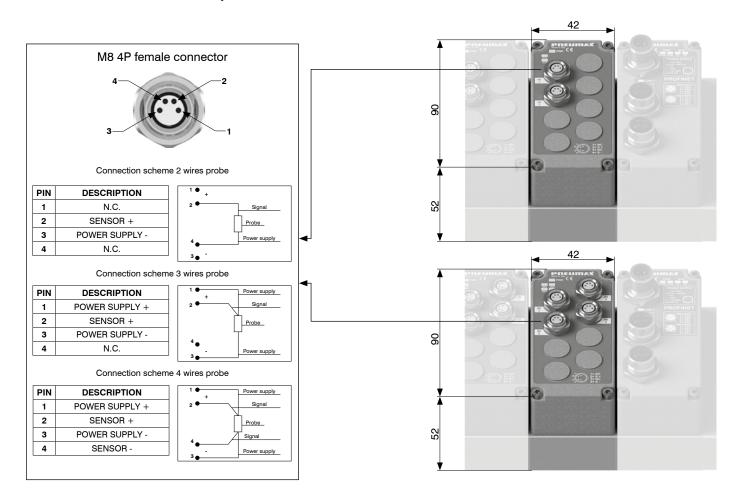
Coding: K5230. P.0

	CHANNELS
0	2 = 2 channels
	4 = 4 channels
	TYPE
	0 = Pt100 2 wires
O	1 = Pt1003 wires
	2 = Pt100 4 wires



Conversion formula (°C)

Temperature (°C) =
$$\left(\frac{\text{Points}}{4095} \times 400\right)$$
 -100







Additional power supply module kit

. Additional power supply module supplies additional electric power for downstream optional modules, where "downstream" means farther from serial node, resetting the current limits of the network node / IO-Link interface.

 $Electric \,connection \,of \,the \,module \,to \,external \,power \,supply \,unit \,occurs \,via \,an \,M12\,4\,pins \,type \,A\,male \,connector.$

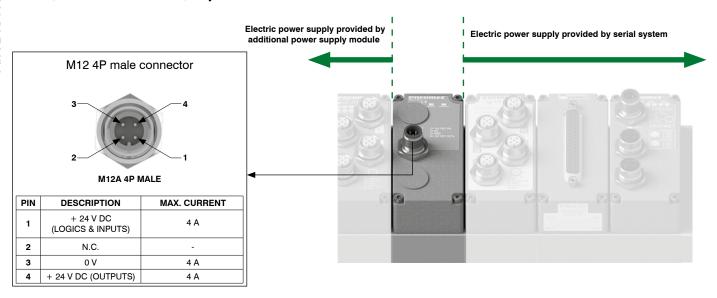
M12 connector has two different pins to power up logics and inputs (Pin 1) and outputs (Pin 4).

Presence of each power supply rail is indicated by corresponding green LED.

When using IO-Link interface, the additional power supply module is useful for separating the module power supplies of input from the output modules placed downstream.

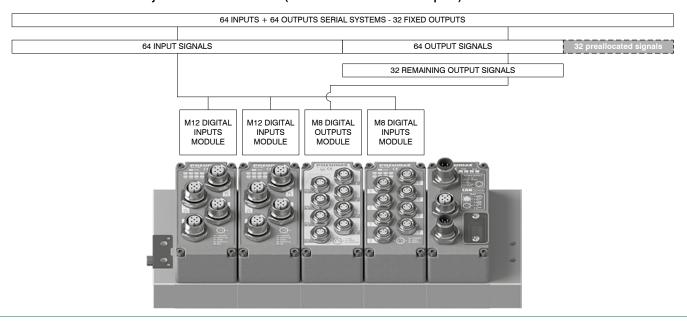
Coding: K5030.M12



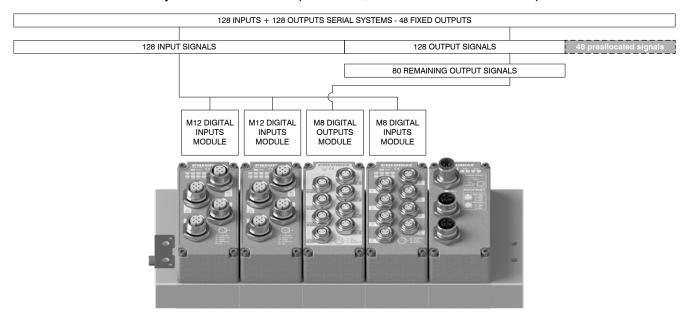


Signal management

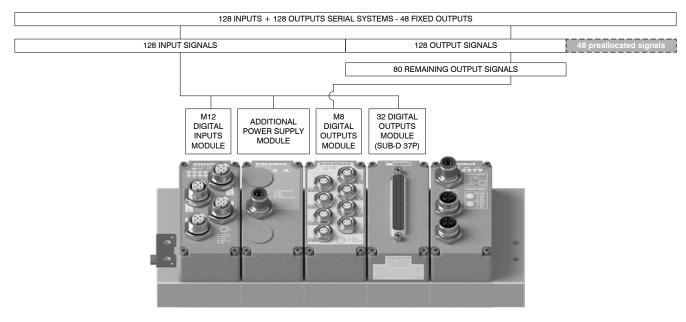
64 INPUT + 64 OUTPUT serial systems - 32 fixed OUTPUT (Ex. PROFIBUS DP and CANopen®)



128 INPUT + 128 OUTPUT serial systems - 48 fixed OUTPUT (Ex. EtherNet/IP - EtherCAT® - PROFINET IO RT)



128 INPUT + 128 OUTPUT serial systems - 48 fixed OUTPUT (Ex. EtherNet/IP - EtherCAT® - PROFINET IO RT)



POWER SUPPLY connectors

Straight connector M12A 4P female





Upper view slave connector

Coding: 5312A.F04.00

Power supply socket

NETWORK connectors

Straight connector M12A 5P female





Upper view slave connector

Coding: 5312A.F05.00

Socket for bus CANopen® and IO-Link

Straight connector M12A 5P male





Upper view slave connector

С	oding: 5312A.M05.00

Plug for bus CANopen®

Straight connector M12D 4P male





Upper view slave connector

PIN	SIGNAL	DESCRIPTION
1	TX+	EtherNet Transmit High
2	RX+	EtherNet Receive High
3	TX-	EtherNet Transmit Low
4	RX-	EtherNet Receive Low

DESCRIPTION

Power Supply A-Line DGND B-Line SHIELD

DESCRIPTION

+ 24 V DC (LOGICS AND INPUTS) N.C 0 V + 24 V DC (OUTPUTS)

> (CAN SHIELD) (CAN V+) CAN_GND CAN_H CAN L

(CAN_SHIELD)

(CAN_V+) CAN_GND CAN_H CAN_L

> Plug for bus EtherCAT®, PROFINET IO RT and EtherNet/IP

 $\textbf{Trademarks}{:}\ Ether CAT^{\text{@}}\ is\ registered$ trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.

Coding: 5312D.M04.00

Straight connector M12B 5P female





Upper view slave connector

Coding: 5312B.F05.00

Socket for bus PROFIBUS DP

Straight connector M12B 5P male





PIN	DESCRIPTION
1	Power Supply
2	A-Line
3	DGND
4	B-Line
5	SHIELD

Coding: 5312B.M05.00

Socket for bus PROFIBUS DP

INPUTS connectors

Straight connector M12A 5P male





DESCRIPTION		
+ 24 V DC		
INPUTB		
0 V		
INPUT A		
N.C.		

Upper view slave connector

Coding: 5312A.M05.00

Plug for inputs modules

M12 plug

Plugs

Coding: 5300.T12



Straight connector M8 3P male





PIN	DESCRIPTION		
1	+ 24 V DC		
4	INPUT		
3	0 V		

Upper view slave connector

Coding: 5308A.M03.00

Plug for inputs modules



Coding: 5300.T08



Series 3000 EVO



- Version 3100 (10 mm) and 3400 (15,5 mm)
- Nominal flow rate up to 200 NI/min (Version 3100)
- Nominal flow rate up to 600 NI/min (Version 3400)
- Stand alone or manifold mounted versions
- Valve replacement without disconnecting the tubes
- Available with a wide range of serial system protocols
- Wide range of accessories
- Available sub-base mounted or with M5 threaded ports (Version 3100) and G1/8" (Version 3400)
- Possibility to use different pressures along the manifold (including vacuum)
- Certified C Wus

Pneumax valves and solenoid valves are designed to guarantee versatility and maximum reliability in the control of integrated pneumatic circuits.

The Pneumax 3000 EVO series of solenoid valves is a very flexible solution that can be easily configured to optimize the efficiency of the whole system through a constant interface and communication with the machine.

The Pneumax 3000 EVO series is available in stand alone and manifold mounted versions.

Both versions include a wide range of functions, capable of working with positive pressures up to 10 bar or vacuum.

The valves have aluminum bodies with integrated electrical connections, manual override and a LED that indicates when the valve is actuated. 3000 EVO series is another addition to the extensive range of solenoid valve systems designed for applications in very demanding industrial sectors such as assembly and robotics, packaging or automotive.

Construction characteristics

Body	Aluminium		
Seals	NBR		
Piston seals	NBR		
Springs	AISI 302 stainless steel		
Operators	Technopolymer		
Pistons	Aluminium / Technopolymer		
Spools	Aluminium		

Operational characteristics

Supply voltage	+ 24 V DC ±10%		
Pilot consumption	1,3W nominal in energy saving mode 0,25W		
Pilot working pressure [12-14] from 2,5 to 7 bar max.			
Valve working pressure [1]	from vacuum to 10 bar max.		
Operating temperature from -5°C to +50°C			
Protection degree	IP65		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous		









EtherNet/IP





Series 3000 EVO - STAND ALONE



The range of series 3000 EVO solenoid valves version 3100 (10mm) and 3400 (15,5mm), are available in STAND ALONE self feeding or external feeding versions and realised with M8 point to point and 90° H connection with an integrated snap-on fitting.

Main characteristics

10 and 15,5 mm size.

Multi-position sub-bases in different lengths.

Functions

S.V. 5/2 Monostable Solenoid-Spring

S.V. 5/2 Monostable Solenoid-Differential (only self feeding)

S.V. 5/2 Bistable Solenoid-Solenoid

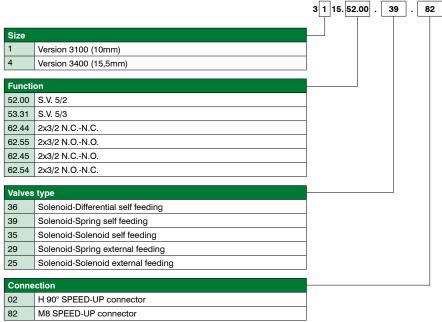
S.V. 5/3 C.C. Solenoid-Solenoid

S.V. 2x3/2 N.C.-N.C. (= 5/3 O.C.) Solenoid-Solenoid

S.V. 2x3/2 N.O.-N.O. (= 5/3 P.C.) Solenoid-Solenoid

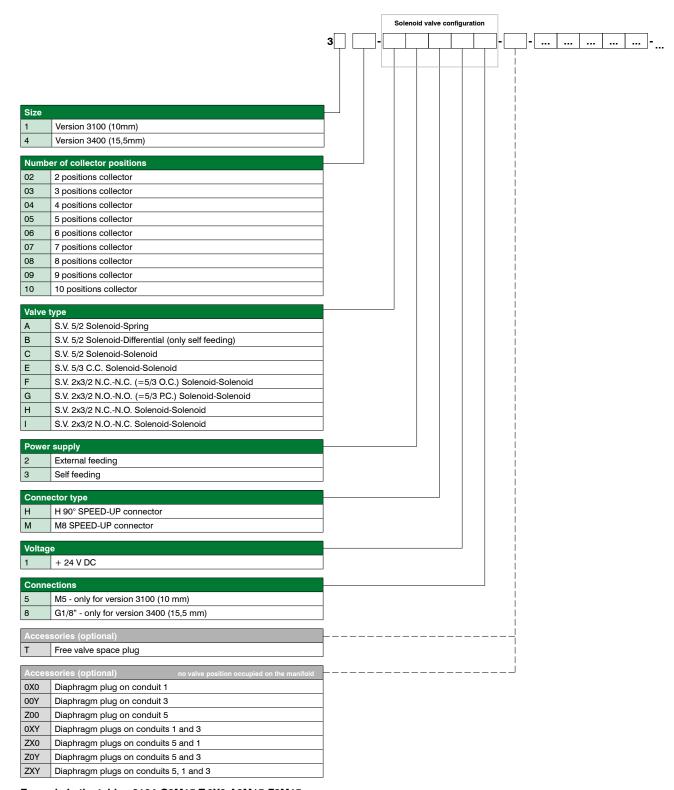
S.V. 2x3/2 N.C.-N.O. Solenoid-Solenoid S.V. 2x3/2 N.O.-N.C. Solenoid-Solenoid

Solenoid valve ordering code



Example in the table: 3115.52.00.39.82: Solenoid valve size 10mm 5/2 solenoid-spring self feeding with M8 SPEED-UP connector

Configurator



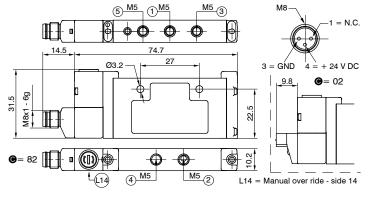
Example in the table : 3104-C2M15-T-0X0-A3M15-F3M15

Four position manifold Version 3100 (10mm) composed of:

- Solenoid valve 5/2 solenoid-solenoid external feeding, + 24 V DC
- Free valve space plug
- Diaphragm plug on pipe 1
- Solenoid valve 5/2 solenoid-spring self feeding, + 24 V DC
- Solenoid valve 2x3/2 N.C.-N.C. (=5/3 O.C.) solenoid-solenoid, + 24 V DC

Solenoid-Spring (Self feeding)





Coding: 3115.52.00.39.

ELECTRICAL CONNECTION				
	02 = H90° SPEED-UP connector +			
0	24 V DC			
-	82 = M8 SPEED-UP connector + 24			
	VDC			

Weight 49 g SHORT FUNCTION CODE "A"

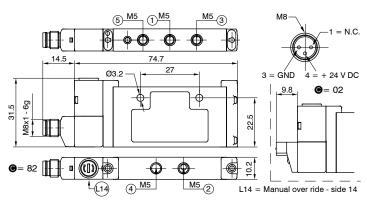
1			4		2
-	Ţ.,	Ι,	ļ	/	Ţ.
		_	5	1	3

Technical characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	160	
Response time according to ISO 12238, activation time (ms)	10	
Response time according to ISO 12238, deactivation time (ms)	20	
Working pressure (bar)	2,5 7	
Temperature °C	-5 +50	

Solenoid-Differential (Self feeding)



c**FL**°us



Coding: 3115.52.00.36.

	ELECTRICAL CONNECTION			
	02 = H90° SPEED-UP connector +			
•	⑥ 24 V DC			
	82 = M8 SPEED-UP connector + 24			
	VDC			

Weight 49 g SHORT FUNCTION CODE "B"

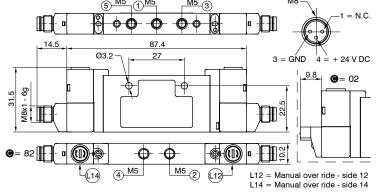


Technical characteristics			
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous		
Flow rate at 6 bar with Δp=1 (NI/min)	160		
Response time according to ISO 12238, activation time (ms)	10		
Response time according to ISO 12238, deactivation time (ms)	15		
Working pressure (bar)	2,5 7		
Temperature °C	-5 +50		

Solenoid-Solenoid (Self feeding)



c **FN**°us



Coding: 3115.52.00.35.

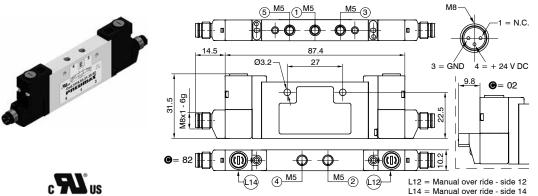
	ELECTRICAL CONNECTION
	02 = H90° SPEED-UP connector +
Θ	24 V DC
	82 = M8 SPEED-UP connector + 24
	VDC

Weight 59 g SHORT FUNCTION CODE "C"

	4	7	
114	5	1	3

Technical characteristics			
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous		
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	160		
Response time according to ISO 12238, activation time (ms)	10		
Response time according to ISO 12238, deactivation time (ms)	20		
Working pressure (bar)	2,5 7		
Temperature °C	-5 +50		

Solenoid-Solenoid 5/3 (Closed centres) (Self feeding)



Coding: 3115.53.31.35.

	ELECTRICAL CONNECTION
	02 = H90° SPEED-UP connector +
Θ	24 V DC
	82 = M8 SPEED-UP connector + 24
	VDC

Weight 59 g SHORT FUNCTION CODE "E"

1	4	2	1
E W		Ш	7 144
	5 1	3	711911

Technical characteristics			
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous		
Flow rate at 6 bar with Δp=1 (NI/min)	150		
Response time according to ISO 12238, activation time (ms)	10		
Response time according to ISO 12238, deactivation time (ms)	20		
Working pressure (bar)	2,5 7		
Temperature °C	-5 +50		

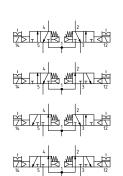
Solenoid-Solenoid 2x3/2 (Self feeding)

M5_3 = N.C. 14.5 87.4 032 27 3 = GND+ 24 V DC M8x1 - 6g 31.5 55.5 **©**= 82 **(1)** 10.2 4 M5 M5_2 L(14) (L12) L12 = Manual over ride - side 12 L14 = Manual over ride - side 14

Coding: 3115.62. **3**.35.

FUNCTION
44 = N.CN.C. (5/3 Open centres)
45 = N.CN.O.
54 = N.ON.C.
55 = N.ON.O. (5/3 Pressured
centres)
ELECTRICAL CONNECTION
02 = H90° SPEED-UP connector +
24 V DC
82 = M8 SPEED-UP connector + 24
VDC

Weight 59, 4 g
SHORT FUNCTION CODE:
N.C. -N.C. (5/3 Open centres) = "F"
N.O.-N.O. (5/3 Pressured centres) = "G"
N.C.-N.O. = "H"
N.O.-N.C. = "I"

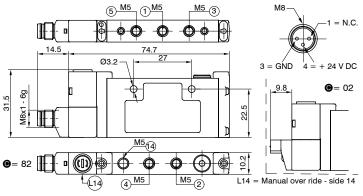


1		•
C	77	US

	1 1 1		
Technical characteristics			
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous		
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	150		
Response time according to ISO 12238, activation time (ms)	10		
Response time according to ISO 12238, deactivation time (ms)	15		
Working pressure (bar)	2,5 7		
Temperature °C	-5 +50		

Solenoid-Spring (External feeding)





Coding: 3115.52.00.29.

	ELECTRICAL CONNECTION			
	02 = H90° SPEED-UP connector +			
Θ	24 V DC			
	82 = M8 SPEED-UP connector + 24			
	VDC			

Weight 49 g SHORT FUNCTION CODE "A"

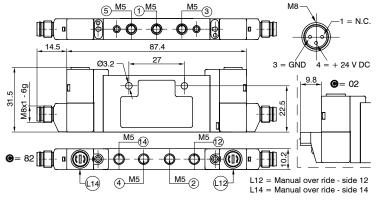


Technical characteristics			
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous		
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	160		
Response time according to ISO 12238, activation time (ms)	10		
Response time according to ISO 12238, deactivation time (ms)	20		
Working pressure (bar)	From vacuum to 10		
Pilot pressure (bar)	2,5 7		
Temperature °C	-5 +50		

Solenoid-Solenoid (External feeding)



c**Al**°us



Coding: 3115.52.00.25.

	ELECTRICAL CONNECTION
	02 = H90° SPEED-UP connector +
Θ	24 V DC
	82 = M8 SPEED-UP connector + 24
	VDC

Weight 59 g SHORT FUNCTION CODE "C"

1	4		2		1
		1	-	_	$\stackrel{\sim}{+}$
14	 5	1	3		12

Coding: 3115.53.31.25. ELECTRICAL CONNECTION

Θ 24 V DC

V DC

Weight 59 g SHORT FUNCTION CODE "E"

02 = H90° SPEED-UP connector +

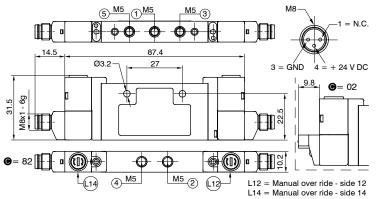
82 = M8 SPEED-UP connector + 24

Technical characteristics			
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous		
Flow rate at 6 bar with Δp=1 (NI/min)	160		
Response time according to ISO 12238, activation time (ms)	10		
Response time according to ISO 12238, deactivation time (ms)	10		
Working pressure (bar)	From vacuum to 10		
Pilot pressure (bar)	2,5 7		
Temperature °C	-5 + 50		

Solenoid-Solenoid 5/3 (Closed centres) (External feeding)

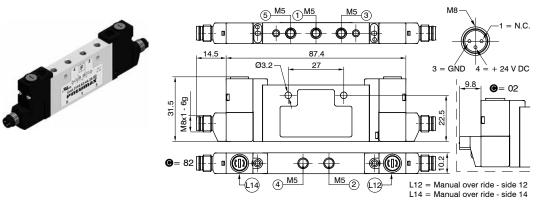


c**FL**°us



Technical characteristics			
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous		
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	150		
Response time according to ISO 12238, activation time (ms)	10		
Response time according to ISO 12238, deactivation time (ms)	20		
Working pressure (bar)	From vacuum to 10		
Pilot pressure (bar)	2,5 7		
Temperature °C	-5 +50		

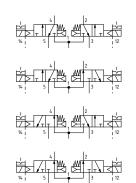
Solenoid-Solenoid 2x3/2 (External feeding)



Coding: 3115.62. **3**.25.

	FUNCTION
	44 = N.CN.C. (5/3 Open centres)
	45 = N.CN.O.
9	54 = N.ON.C.
	55 = N.ON.O. (5/3 Pressured
	centres)
	ELECTRICAL CONNECTION
	02 = H90° SPEED-UP connector +
0	24 V DC
-	82 = M8 SPEED-UP connector + 24
	VDC

Weight 59,4 g
SHORT FUNCTION CODE:
N.C.-N.C. (5/3 Open centres)= "F"
N.C.-N. O. (5/3 Pressured centres)= "G"
N.C.-N.O.= "H"
N.O.-N.C.= "I"

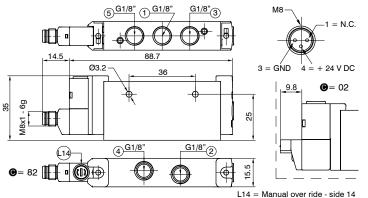




Technical characteristics			
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous		
Flow rate at 6 bar with Δp=1 (NI/min)	150		
Response time according to ISO 12238, activation time (ms)	10		
Response time according to ISO 12238, deactivation time (ms)	15		
Working pressure (bar)	From vacuum to 10		
Pilot pressure (bar)	≥3+(0,2 x Inlet pressure)		
Temperature °C	-5 +50		

Solenoid-Spring (Self feeding)





Coding: 3415.52.00.39.

ELECTRICAL CONNECTION 02 = H90° SPEED-UP connector + Θ 24 V DC 82 = M8 SPEED-UP connector + 24 V DC

Weight 90 g SHORT FUNCTION CODE "A"

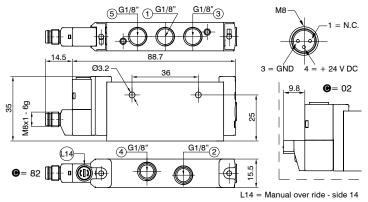


Technical characteristics			
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous		
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	600		
Response time according to ISO 12238, activation time (ms)	10		
Response time according to ISO 12238, deactivation time (ms)	20		
Working pressure (bar)	2,57		
Temperature °C	-5+50		

Solenoid-Differential (Self feeding)



c**Al**°us



Coding: 3415.52.00.36.

	ELECTRICAL CONNECTION
	02 = H90° SPEED-UP connector +
•	24 V DC
	82 = M8 SPEED-UP connector + 24
	VDC

Weight 90 g SHORT FUNCTION CODE "B"



Coding: 3415.52.00.35.

ELECTRICAL CONNECTION

02 = H90° SPEED-UP connector +

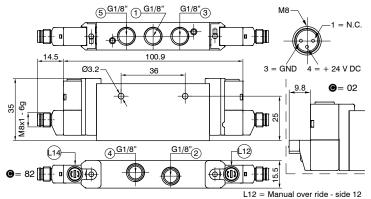
82 = M8 SPEED-UP connector + 24

Technical characteristics			
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous		
Flow rate at 6 bar with Δp=1 (NI/min)	600		
Response time according to ISO 12238, activation time (ms)	10		
Response time according to ISO 12238, deactivation time (ms)	15		
Working pressure (bar)	2,5 7		
Temperature °C	-5 +50		

Solenoid-Solenoid (Self feeding)



c**FU**°us



Weight 100 g SHORT FUNCTION CODE "C"

V DC

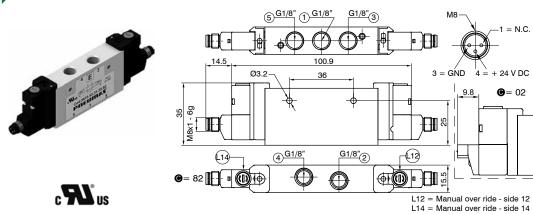
Θ 24 V DC

بر_	<u>" = </u>
=	Manual over ride - side 12
=	Manual over ride - side 14

	4	/-	2	#
7	5	1	3	

Technical characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	600	
Response time according to ISO 12238, activation time (ms)	10	
Response time according to ISO 12238, deactivation time (ms)	10	
Working pressure (bar)	2,5 7	
Temperature °C	-5 +50	

Solenoid-Solenoid 5/3 (Closed centres) (Self feeding)



Coding: 3415.53.31.35.

	ELECTRICAL CONNECTION
	02 = H90° SPEED-UP connector +
Θ	24 V DC
	82 = M8 SPEED-UP connector + 24
	VDC

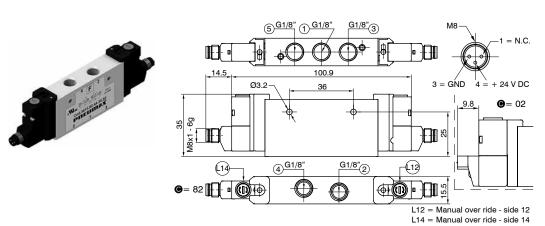
Weight 100 g SHORT FUNCTION CODE "E"

1	4	2
F##\		/ ₋
	5 1	3

AIR DISTRIBUTION

Technical characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	500	
Response time according to ISO 12238, activation time (ms)	10	
Response time according to ISO 12238, deactivation time (ms)	20	
Working pressure (bar) 2,57		
Temperature °C	-5 +50	

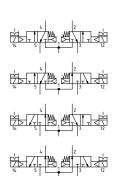
Solenoid-Solenoid 2x3/2 (Self feeding)



Coding: 3415.62. **3**.35.

	FUNCTION
	44 = N.CN.C. (5/3 Open centres)
_	45 = N.CN.O.
•	54 = N.ON.C.
	55 = N.ON.O. (5/3 Pressured
	centres)
	ELECTRICAL CONNECTION
	02 = H90° SPEED-UP connector +
Θ	24 V DC
_	82 = M8 SPEED-UP connector + 24
	VDC

Weight 100 g
SHORT FUNCTION CODE:
N.C. N.C. (5/3 Open centres) = "F"
N.O. N.O. (5/3 Pressured centres) = "G"
N.C. N.O. = "H"
N.O. N.C. = "I"

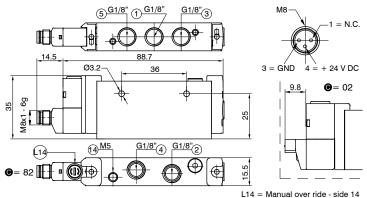


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C	74	US

Technical characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	500	
Response time according to ISO 12238, activation time (ms)	10	
Response time according to ISO 12238, deactivation time (ms)	15	
Working pressure (bar)	2,5 7	
Temperature °C	-5 +50	

Solenoid-Spring (External feeding)





Coding: 3415.52.00.29.

ELECTRICAL CONNECTION 02 = H90° SPEED-UP connector + 24 V DC Θ 82 = M8 SPEED-UP connector + 24 V DC

T TW

Weight 90 g SHORT FUNCTION CODE "A"



	14	5 1 3
Technical characteristics		
Filtered air. No lubrication needed, if applied it shall be co	ntinuous	
600		
10		
20		

Technical characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	600	
Response time according to ISO 12238, activation time (ms)	10	
Response time according to ISO 12238, deactivation time (ms)	20	
Working pressure (bar)	From vacuum to 10	
Pilot pressure (bar)	2,5 7	
Temperature °C	-5 +5 0	

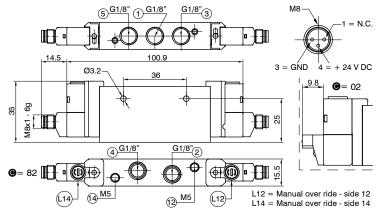
Solenoid-Solenoid (External feeding)



Flow rate at 6 bar with $\Delta p=1$ (NI/min)

Working pressure (bar) Pilot pressure (bar)

Response time according to ISO 12238, activation time (ms) Response time according to ISO 12238, deactivation time (ms)



Coding: 3415.52.00.25.

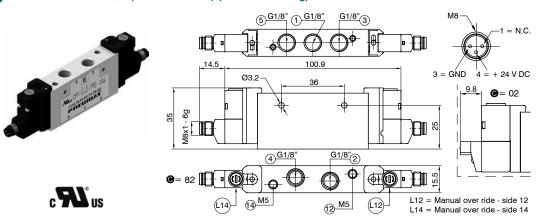
	ELECTRICAL CONNECTION
	02 = H90° SPEED-UP connector +
•	24 V DC
	82 = M8 SPEED-UP connector + 24
	VDC

Weight 100 g SHORT FUNCTION CODE "C"

Technical characteristics	
Filtered air. No lubrication needed, if applied it shall be continuous	
600	
10	
10	
From vacuum to 10	

2,5 ... 7

Solenoid-Solenoid 5/3 (Closed centres) (External feeding)



Coding: 3415.53.31.25.

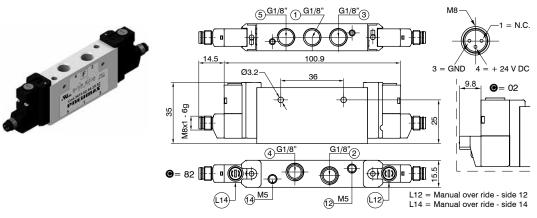
	ELECTRICAL CONNECTION
	02 = H90° SPEED-UP connector +
Θ	24 V DC
	82 = M8 SPEED-UP connector + 24
	VDC

Weight 100 g SHORT FUNCTION CODE "E"

1	4 2	1
r w w ·	1 1	- 7₩⊠
	♦ 〒 〒 〒 ♦	·/-ran
14 84	5 1 3	82 12

Technical characteristics			
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous		
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	500		
Response time according to ISO 12238, activation time (ms)	10		
Response time according to ISO 12238, deactivation time (ms)	20		
Working pressure (bar)	From vacuum to 10		
Pilot pressure (bar)	2,5 7		
Temperature °C	-5 +50		

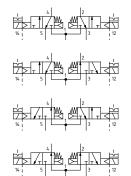
Solenoid-Solenoid 2x3/2 (External feeding)



Coding: 3415.62. **3**.25.

	FUNCTION
	44 = N.CN.C. (5/3 Open centres)
_	45 = N.CN.O.
•	54 = N.ON.C.
	55 = N.ON.O. (5/3 Pressured
	centres)
	ELECTRICAL CONNECTION
	02 = H90° SPEED-UP connector +
Θ	24 V DC
	82 = M8 SPEED-UP connector + 24
	VDC

Weight 100 g
SHORT FUNCTION CODE:
N.C.-N.C. (5/3 Open centres) = "F"
N.O.-N. O, (5/3 Pressured centres) = "G"
N.C.-N.O. = "H"
N.O.-N.C. = "I"



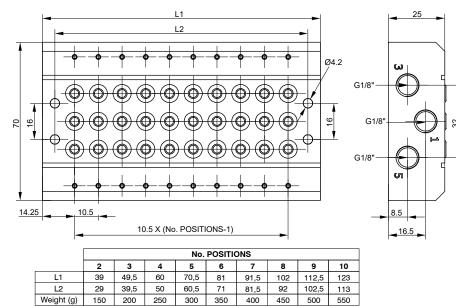


Technical characteristics			
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous		
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	500		
Response time according to ISO 12238, activation time (ms)	10		
Response time according to ISO 12238, deactivation time (ms)	15		
Working pressure (bar)	From vacuum to 10		
Pilot pressure (bar)	≥3+(0,2 x Inlet pressure)		
Temperature °C	-5+50		



Manifold - Version 3100 (10 mm)





Coding: 3115.

	NO. POSITIONS
	02 = No. 2 positions
	03 = No. 3 positions
	04 = No. 4 positions
	05 = No. 5 positions
0	06 = No. 6 positions
	07 = No. 7 positions
	08 = No. 8 positions
	09 = No. 9 positions
	10 = No. 10 positions

Weight "see table"

Assembling kit - Version 3100 (10 mm)

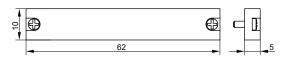


Coding: 3115.KV

Weight 2 g

Closing plate - Version 3100 (10 mm)





Coding: 3115.00

Weight 10 g

Diaphragm plug - Version 3100 (10 mm)



Coding: 3130.17

Weight 1,5 g

Solenoid valves manifold Series 3000 EVO - STAND ALONE - Accessories

30

G1/4"

G1/4"

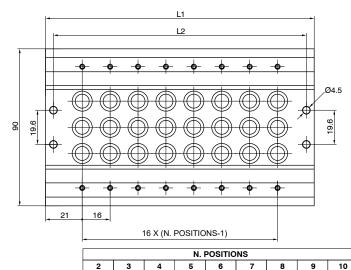
G1/4

12

PNEUMAX

Manifold - Version 3400 (15,5 mm)





Coding: 3415.

	NO. POSITIONS
	02 = No. 2 positions
	03 = No. 3 positions
	04 = No. 4 positions
•	05 = No. 5 positions
W	06 = No. 6 positions
	07 = No. 7 positions
	08 = No. 8 positions
	09 = No. 9 positions
	10 = No. 10 positions

Weight "see table"

Assembling kit - Version 3400 (15,5 mm)

L2

Weight (g)

58

49

350

74

65

440

90

81

530

106

97

620

122

113

710

138

154

145

890

170

161

186

177

1070



Coding: 3415.KV

Weight 3 g

Closing plate - Version 3400 (15,5 mm)



Coding: 3415.00

Weight 25 g

Diaphragm plug - Version 3400 (15,5 mm)



Coding: 3430.17

Weight 3 g

M8 connector with 3 wires cable



Connection 3 wires 3 PIN

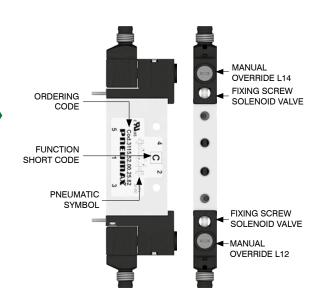
4
1 Brown (+)
4 Black (signal)
3 Blue (-)

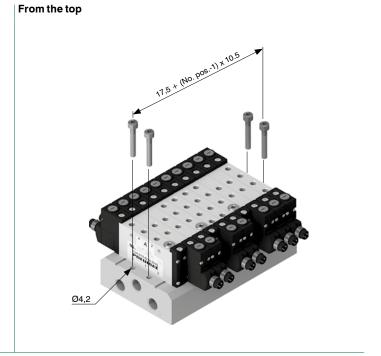
Coding: MCH

•	CABLE LENGTH
	1 = 2,5 meters
	2 = 5 meters
	3 = 10 meters

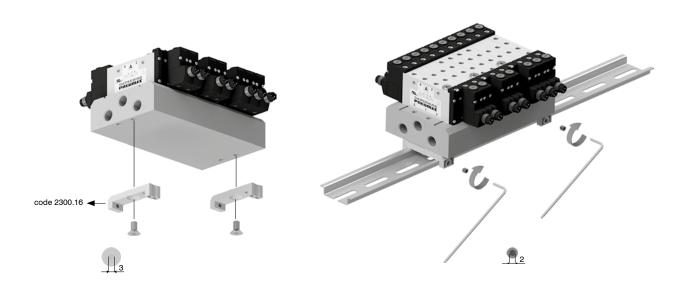
PUR Ø2,6 mm 3x0,15 mm²

Solenoid valve description

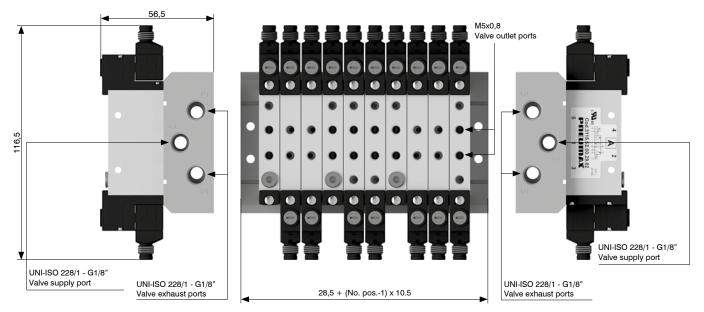




DIN rail fixing



Supply ports and maximum possible size according to valves used



PNEUMAX

Manual override actuation



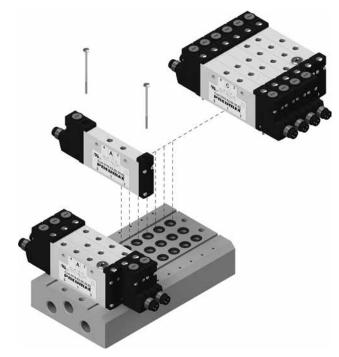
Instable function:
Push to actuate
(when released it moves back to the original position)



Bistable function:Push and turn to get the bistable function

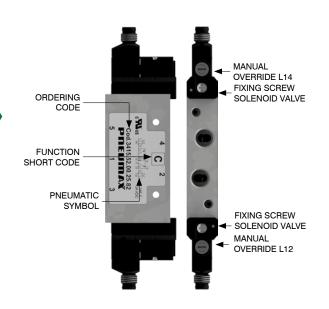
 $\textbf{Note}: we \, recommend \, the \, manual \, override \, is \, returned \, to \, it is \, original \, position \, when \, not \, in \, use$

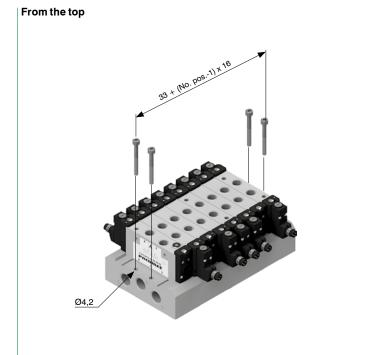
Solenoid valves installation



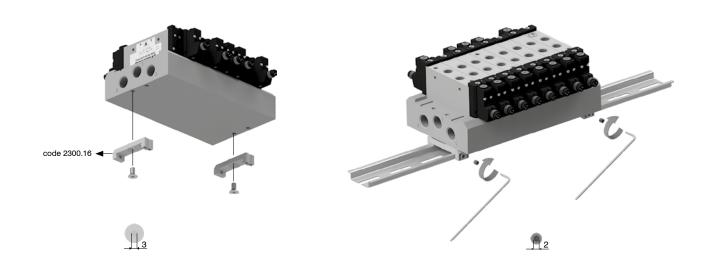
Maximum fixing torque for fittings: 0,2 Nm

Solenoid valve description

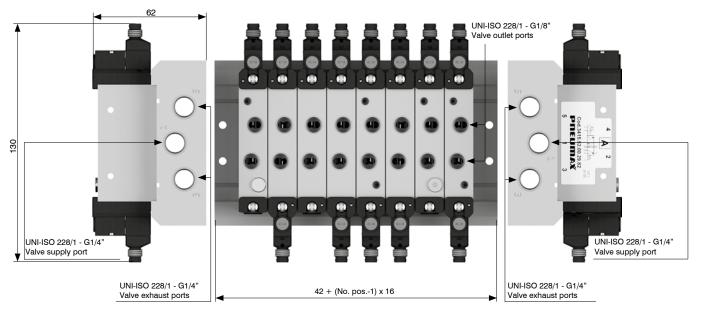




DIN rail fixing



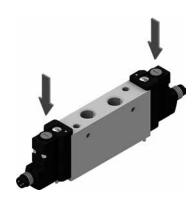
Supply ports and maximum possible size according to valves used



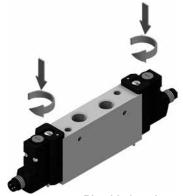
Series 3000 EVO - STAND ALONE (15,5 mm) - Installation specifications



Manual override actuation



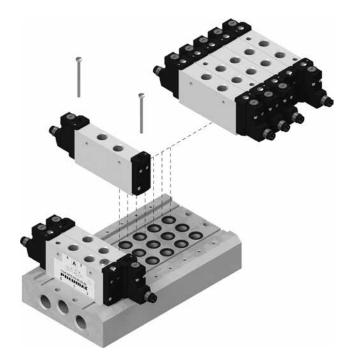
Instable function:
Push to actuate
(when released it moves back to the original position)



Bistable function:Push and turn to get the bistable function

Note: we recommend the manual override is returned to it's original position when not in use

Solenoid valves installation



Maximum fixing torque for fittings: 0,2 Nm

Series 3000 EVO - MANIFOLD



The range of solenoid valves to be assembled in pre-configured manifold, is available in multi-pin and serial versions, with a vast choice of connectors and analogue and digital input and output accessories.

The compact and clean design of both the valve body and the manifold, each one produced in aluminum, allows their use in applications requiring space optimization and weight reduction without sacrificing reliability and the prerogatives of aluminum. The multi-pin connection version is available in three different types of connections:

- SUB-D 25 poles equipped with 24 outputs and configurable in different lengths up to 12 bistable valve positions on the manifold
- SUB-D 37 poles equipped with 32 outputs and configurable in different lengths up to 16 bistable valve positions on the manifold
- SUB-D 44 poles HD equipped with 40 outputs and configurable in different lengths up 20 bistable valve positions on the manifold

Every one of these options covers the wide range of application requirements and provides electronic management by default capable of energy saving on individual coils and managing PNP and NPN connections automatically without any difference in installation for the end user. Precisely in order to guarantee maximum integration versatility in different machines and applications, the 3000 EVO series valves in the serial version are designed to interface with all main communication protocols: CANopen®, PROFIBUS DP, EtherNet/IP, EtherCAT®, PROFINET IO RT, CC-Link IE Field Basic and IO-Link.

Each implemented protocol has been provided to guarantee the best expandibility and inputs/outputs management.

In particular it has been provided protocols to manage up to 64 inputs and 64 outputs (PROFIBUS DP, CANopen® and IO-Link) and other protocols to manage up to 128 inputs and 128 outputs (EtherCAT®, EtherNet/IP, CC-Link IE Field Basic and PROFINET IO RT).

Taking advantage of the output signals it is possible to connect components to manage, for example, proportional pressure regulator or to control other solenoid valves.

The 3000 EVO series allows the use of modules dedicated to managing input signals up to the maximum number of inputs manageable by the specific serial node used.

Input modules with different interfaces and different technologies have been provided: modules with eight digital inputs with M8 or M12 connection, analogue or voltage input modules with M8 connection interface and others.

One of the strengths of this system is the possibility to freely configure the series of input and output modules, giving the advantage of installation flexibility.

Main characteristics

10 and 15.5 mm size. Multi-position sub-bases in different lengths. Integrated and optimized electrical connection system.

Functions

S.V. 5/2 Monostable Solenoid-Spring

S.V. 5/2 Monostable Solenoid-Differential

S.V. 5/2 Bistable Solenoid-Solenoid

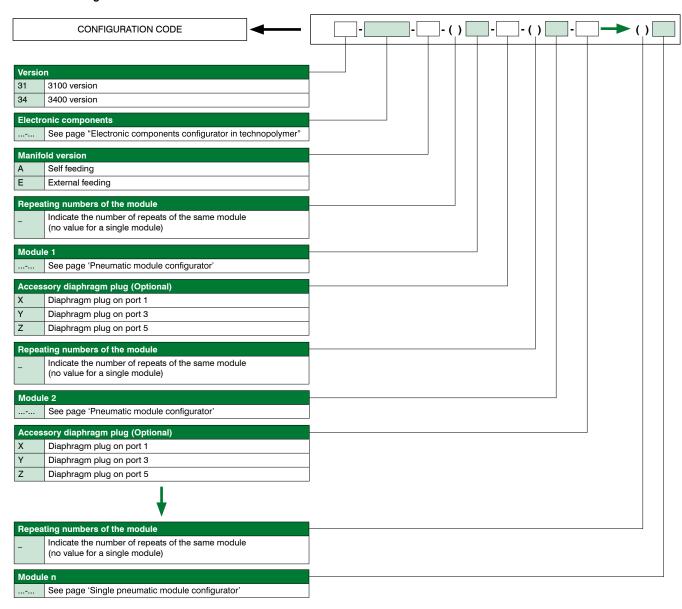
S.V. 5/3 C.C. Solenoid-Solenoid

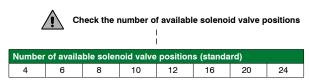
S.V. 2x3/2 N.C.-N.C. (= 5/3 O.C.) Solenoid-Solenoid S.V. 2x3/2 N.O.-N.O. (= 5/3 P.C.) Solenoid-Solenoid

S.V. 2x3/2 N.C.-N.O. Solenoid-Solenoid

S.V. 2x3/2 N.O.-N.C. Solenoid-Solenoid

Rules and configuration scheme







Note:

When composing the configuration, always bear in mind that the maximum number of electrical signals available is:

- 48 if a serial node or IO-Link interface is used.
- 40 if a 44-pole multi-pin is used.
- 32 if a 37-pole multi-pin module is used.
- 24 if a 25-pole multi-pin module is used.

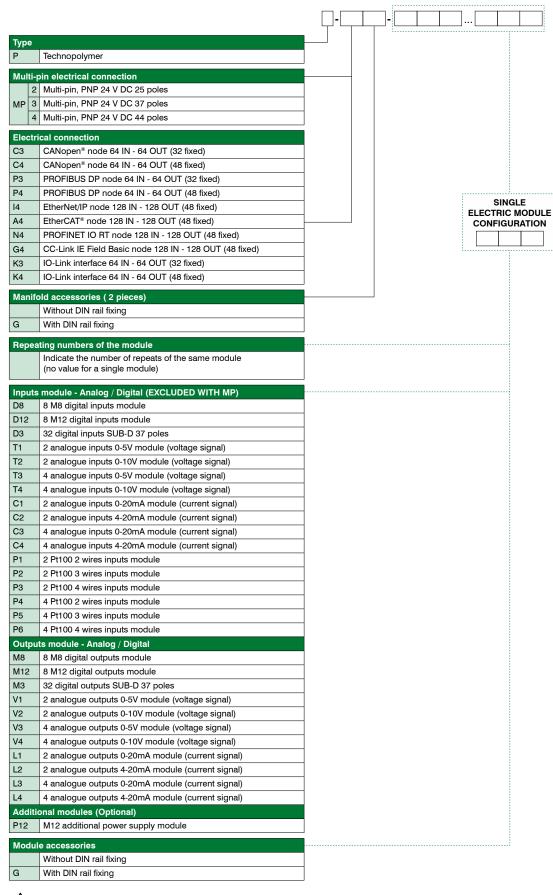
Each position on the manifold occupies two electrical signals; if a monostable valve is used, an electrical signal is lost.

However, this makes it possible to replace the monostable valve with a bistable valve in the same position. Diaphragm plugs are used to interrupt ports 1, 3 and 5 of the sub-base.

If it is necessary to interrupt more than one port at the same time, put the letters that identify their position in sequence (e.g.: if it is necessary to intercept the ports 3 and 5 you must put the letters YZ).

If one or more ports must be interrupted more than once, the addition of the intermediate supply/discharge module is necessary.

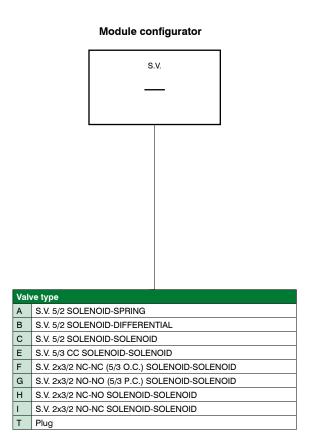
Electronic components configurator in technopolymer

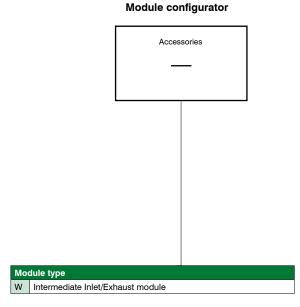




Refer to the current limits indicated in the pages relating to the nodes / IO-Link interface

Modules configuration





N°2 valve seats occupied in the 3100 version

Configuration example of complete group:

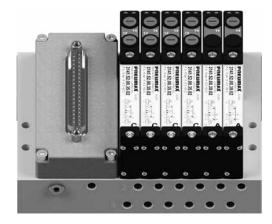
- Version 3400 (34)
- Technopolymer PX3 serial system (P-N4-D8-M8)
- Manifold in external supply version (E)
- Solenoid valves 5/2 Solenoid-Spring (A)

- Solenoid valves 5/2 Solenoid-Solenoid (C)
- Solenoid valves 2X3/2 NC-NC Solenoid-Solenoid (F)
- Solenoid valves 2X3/2 NC-NC Solenoid-Solenoid (F)

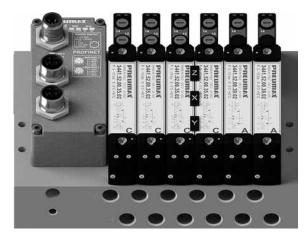


34-P-N4-D8-M8-E-A-C-(2)F

Configuration examples



Example shown: 31-P-MP3-E-(4)C-(2)AManifold with external feeding, multi-pin 37 poles connection and solenoid valves.



Example shown: 34-P-N4-E-(3)C-XYZ-C-(2)AManifold with external feeding, serial node, solenoid valves and diaphragm plugs.



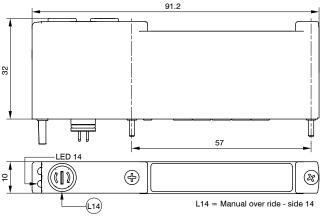
Example shown: 31-P-C4-D8-M12-E-C-B-T-XYZ-A-I-W-(2)C-XYZ-(6)C-T

Manifold with external feeding, serial node, M8 input module, M12 output module; solenoid valves, multi-position diaphragm plugs, additional power supply module.



Example shown: 31-P-C4-(2)D8-M12-A-C-B-(2)I-(2)T

Self feeding manifold with serial node, M8 input module, M12 output module, solenoid valves.



Coding: 3141.52.00.39.

© ELECTRICAL CONNECTION

02 = + 24 V DC

Weight 55,7 g SHORT FUNCTION CODE "A"



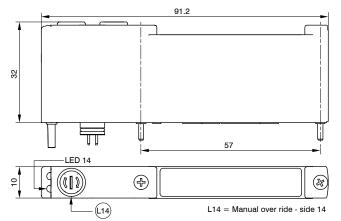
AIR DISTRIBUTION

c FL us

Technical characteristics				
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous			
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	200			
Response time according to ISO 12238, activation time (ms)	10			
Response time according to ISO 12238, deactivation time (ms)	20			
Working pressure (bar)	From vacuum to 10			
Pilot pressure (bar)	2,5 7			
Temperature °C	-5 +50			

Solenoid-Differential





Coding: 3141.52.00.36.

ELECTRICAL CONNECTION Θ **02** = + 24 V DC

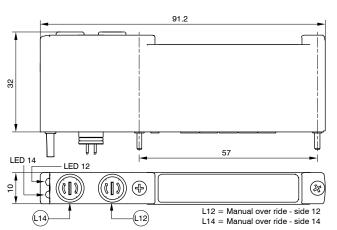
Weight 55,7 g SHORT FUNCTION CODE "B"



Technical characteristics				
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous			
Flow rate at 6 bar with ∆p=1 (NI/min)	200			
Response time according to ISO 12238, activation time (ms)	10			
Response time according to ISO 12238, deactivation time (ms)	20			
Working pressure (bar)	From vacuum to 10			
Pilot pressure (bar)	2,5 7			
Temperature °C	-5 +50			

Solenoid-Solenoid





Coding: 3141.52.00.35.

ELECTRICAL CONNECTION 6 ELECTRIC. 2
02 = + 24 V DC

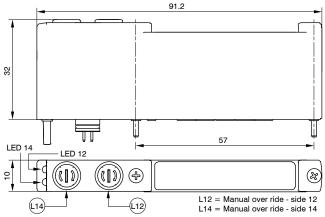
Weight 55,7 g SHORT FUNCTION CODE "C"

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Technical characteristics				
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous			
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	200			
Response time according to ISO 12238, activation time (ms)	10			
Response time according to ISO 12238, deactivation time (ms)	10			
Working pressure (bar)	From vacuum to 10			
Pilot pressure (bar)	2,5 7			
Temperature °C	-5 + 50			

Solenoid-Solenoid 5/3 (Closed centres)





Coding: 3141.53.31.35.

© ELECTRICAL CONNECTION

02 = + 24 V DC

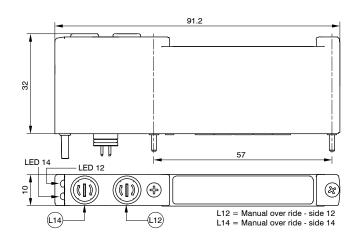
Weight 60,3 g SHORT FUNCTION CODE "E"



Technical characteristics				
Fluid Filtered air. No lubrication needed, if applied it shall be continuous				
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	170			
Response time according to ISO 12238, activation time (ms)	10			
Response time according to ISO 12238, deactivation time (ms)	20			
Working pressure (bar)	From vacuum to 10			
Pilot pressure (bar)	2,5 7			
Temperature °C	-5 +50			

Solenoid-Solenoid 2x3/2

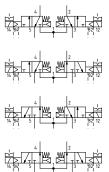




Coding: 3141.62. **3**.35.

	FUNCTION
	44 = N.CN.C. (5/3 Open centres)
	45 = N.CN.O.
9	54 = N.ON.C.
	55 = N.ON.O. (5/3 Pressured
	centres)
e	ELECTRICAL CONNECTION
U	02 = + 24 V DC

Weight 60,7 g
SHORT FUNCTION CODE:
N.C.-N.C. (5/3 Open centres) = "F"
N.O.-N.O. (5/3 Pressured centres) = "G"
N.C.-N.O.="H"
N.O.-N.C.= "I"

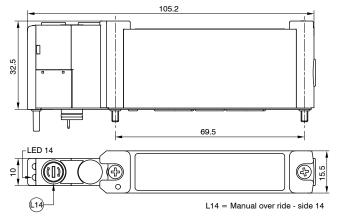


1		8	
C	71	7	US

Technical characteristics				
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous			
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	170			
Response time according to ISO 12238, activation time (ms)	10			
Response time according to ISO 12238, deactivation time (ms)	15			
Working pressure (bar)	From vacuum to 10			
Pilot pressure (bar)	≥3+(0,2xInlet pressure)			
Temperature °C	-5 +50			

Solenoid-Spring





Coding: 3441.52.00.39.

© ELECTRICAL CONNECTION

02 = + 24 V DC

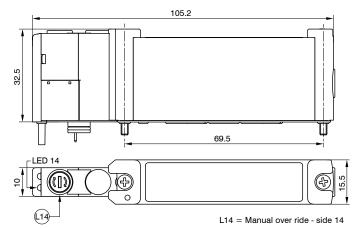
Weight 92 g SHORT FUNCTION CODE "A"



Technical characteristics				
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous			
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	600			
Response time according to ISO 12238, activation time (ms)	10			
Response time according to ISO 12238, deactivation time (ms)	20			
Working pressure (bar)	From vacuum to 10			
Pilot pressure (bar)	2,5 7			
Temperature °C	-5 + 50			

Solenoid-Differential





Coding: 3441.52.00.36.

ELECTRICAL CONNECTION

02 = + 24 V DC

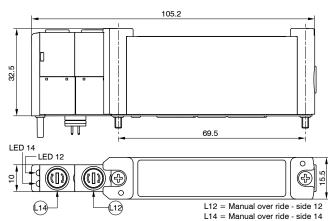
Weight 92 g SHORT FUNCTION CODE "B"



Technical characteristics				
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous			
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	600			
Response time according to ISO 12238, activation time (ms)	10			
Response time according to ISO 12238, deactivation time (ms)	20			
Working pressure (bar)	From vacuum to 10			
Pilot pressure (bar)	2,5 7			
Temperature °C	-5+50			

Solenoid-Solenoid





Coding: 3441.52.00.35.

ELECTRICAL CONNECTION

02 = + 24 V DC

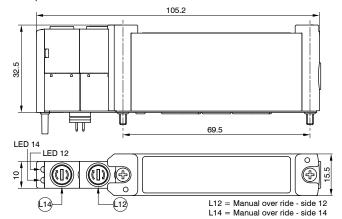
Weight 99 g SHORT FUNCTION CODE "C"

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	solution to the fact that the		
Technical characteristics			
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous		
Flow rate at 6 bar with Δp=1 (NI/min)	600		
Response time according to ISO 12238, activation time (ms)	10		
Response time according to ISO 12238, deactivation time (ms)	10		
Working pressure (bar)	From vacuum to 10		
Pilot pressure (bar)	2,5 7		
Temperature °C	-5 +50		

Solenoid-Solenoid 5/3 (Closed centres)





Coding: 3441.53.31.35.

© ELECTRICAL CONNECTION

02 = + 24 V DC

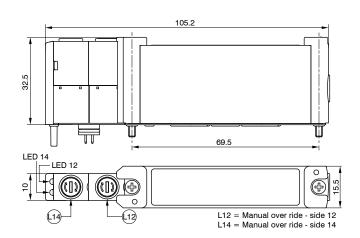
Weight 99 g SHORT FUNCTION CODE "E"

c 7	us

Technical characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Flow rate at 6 bar with Δp=1 (NI/min)	500	
Response time according to ISO 12238, activation time (ms)	10	
Response time according to ISO 12238, deactivation time (ms)	20	
Working pressure (bar)	From vacuum to 10	
Pilot pressure (bar)	2,5 7	
Temperature °C	-5 +50	

Solenoid-Solenoid 2x3/2

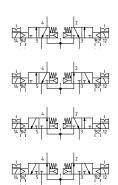




Coding: 3441.62. **3**5. **3**

	FUNCTION
	44 = N.CN.C. (5/3 Open centres)
	45 = N.CN.O.
9	54 = N.ON.C.
	55 = N.ON.O. (5/3 Pressured
	centres)
0	ELECTRICAL CONNECTION
•	02 = + 24 V DC

Weight 99 g
SHORT FUNCTION CODE:
N.C.-N.C. (5/3 Open centres) = "F"
N.O.-N.O. (5/3 Pressured centres) = "G"
N.C.-N.O.="H"
N.O.-N.C.= "I"

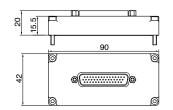


c **FN**°us

Technical characteristics			
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous		
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	500		
Response time according to ISO 12238, activation time (ms)	10		
Response time according to ISO 12238, deactivation time (ms)	20		
Working pressure (bar)	From vacuum to 10		
Pilot pressure (bar)	≥3+(0,2 x Inlet pressure)		
Temperature °C	-5 +50		

Multi-pin module



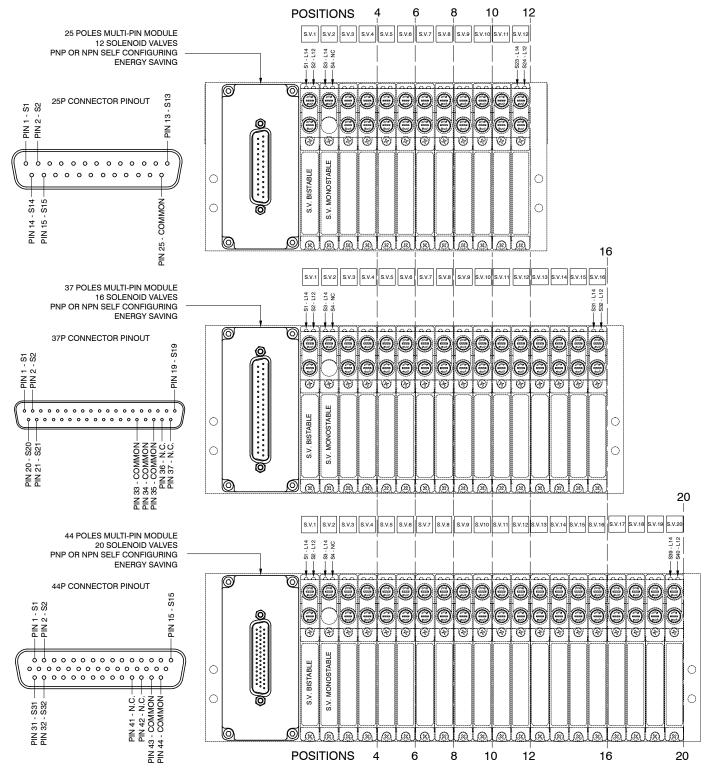


Coding: 3140.00.

	ELECTRICAL CONNECTION
	25P = Connectors 25 poles
9	37P = Connector 37 poles
l	AAB - Connector 44 poles

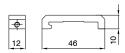
		Technical characteristics	
PNP		+ 24 V DC ±10%	
Control voltage	NPN	+ 24 V DC ±10%	
Protection	PNP	Reverse polarity	
Protection	NPN		
Maximum altitude	PNP	2000 m a.s.l.	
waximum aililude	NPN	2000 III a.s.i.	
Temperature °C		-5+50	(
	IULTI-PIN MODULE	POSITIONS 4 6 8 10 12 S.V.1 S.V.2 S.V.3 S.V.4 S.V.5 S.V.6 S.V.7 S.V.8 S.V.9 S.V.10 S.V.11 S.V.12	
12 SOLENOID VALVES PNP OR NPN SELF CONFIGURING ENERGY SAVING		8 25 - 1. 14 - 10 - 1. 14	

Multi-pin connections linking scheme



DIN rail adapter - Version 3100 (10 mm)



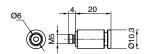


Coding: 3100.16

Weight 12 g

Fitting M5 Ø6



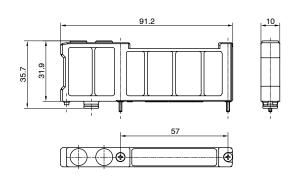


Coding: RDR560

Weight 7 g

Free valve space plug - Version 3100 (10 mm)



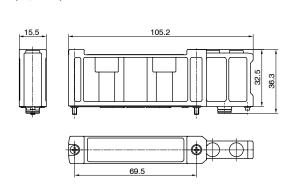


Coding: 3140.00

Weight 21 g

Free valve space plug - Version 3400 (15,5 mm)





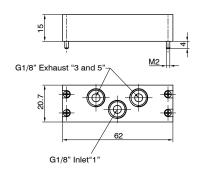
 $\textbf{Coding:}\,3440.00$

Weight 38 g

Solenoid valves manifold Series 3000 EVO - MANIFOLD - Accessories

Inlet/Exhaust module - Version 3100 (10 mm)



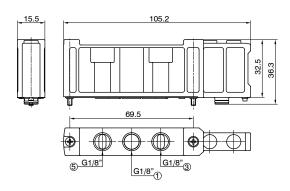


Coding: 3140.10

Weight 50 g

Inlet/Exhaust module - Version 3400 (15,5 mm)





Coding: 3440.10

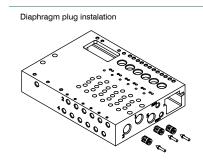
Weight 37 g

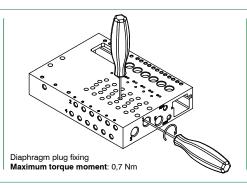
Diaphragm plug - Version 3100 (10 mm)

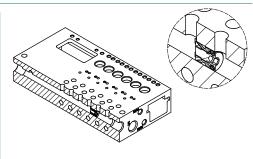


Coding: 3130.17

Weight 1,5 g





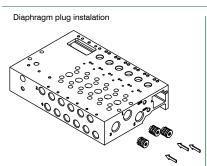


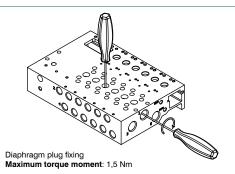
Diaphragm plug - Version 3400 (15,5 mm)

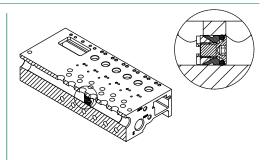


Coding: 3430.17

Weight 3 g

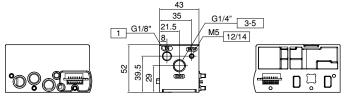


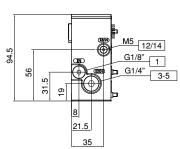




Module adapter kit - Version 3100 (10 mm)







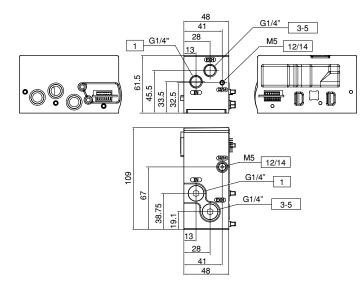
Coding: 3100.KA.



Weight 354 g

Module adapter kit - Version 3400 (15,5 mm)





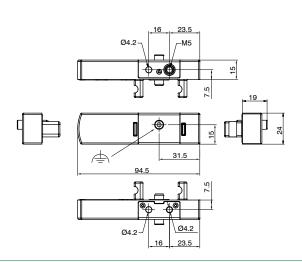
Coding: 3400.KA.♥

	VERSION
Ø	02 = External feeding
	12 = Selffeeding

Weight 566 g

Left endplate kit



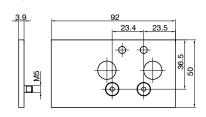


Coding: 3100.KT.00

Weight 52 g

Offset compensation plate - Version 3400 (15,5 mm)





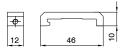
Coding: 3400.P0

Weight 46 g



DIN rail adapter - Version 3400 (15,5 mm)





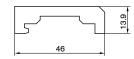
Coding: 3400.16

Weight 12 g

DIN rail extension adapter - Version 3400 (15,5 mm)







Coding: 3400.16P

Weight 15 g

Note: For use if an additional DIN rail mount is required, assembled on a single I/O module.

Cable complete with connector, 25 Poles, IP65



Coding: 2300.25.

		CABLE LENGTH
		03 = 3 meters
	•	05 = 5 meters
		10 = 10 meters
		CONNECTOR
	Θ	10 = Stand alone
		90 = 90° Angle

Cable complete with connector, 37 Poles, IP65



Coding: 2400.37. .

	CABLE LENGTH
	03 = 3 meters
•	05 = 5 meters
	10 = 10 meters
	CONNECTOR
•	10 = Stand alone
	90 = 90° Angle

Cable complete with connector, 44 Poles, IP65

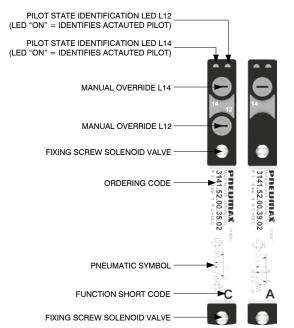


Coding: 2300.44.

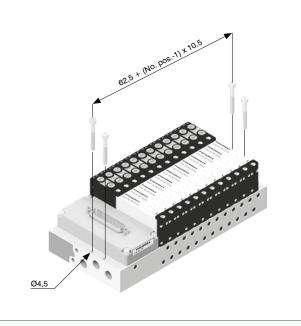
	CABLE LENGTH
	03 = 3 meters
•	05 = 5 meters
	10 = 10 meters
	CONNECTOR
Θ	10 = Stand alone
	90 = 90° Angle



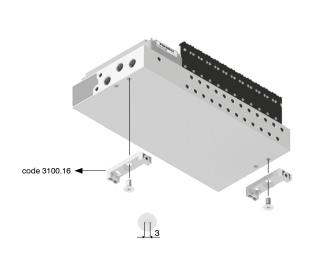
Solenoid valve description

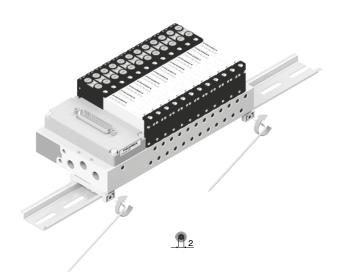


From the top

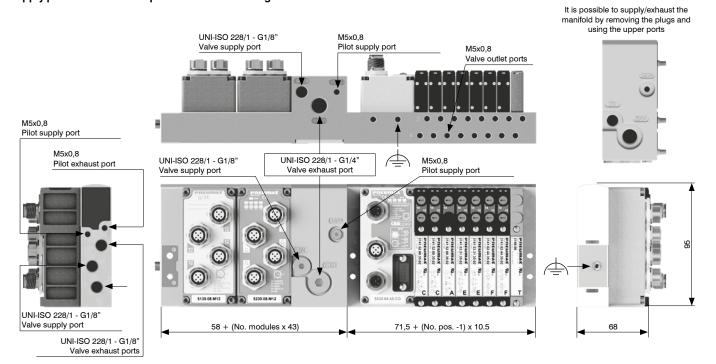


DIN rail fixing





Supply ports and maximum possible size according to valves used



Manual override actuation



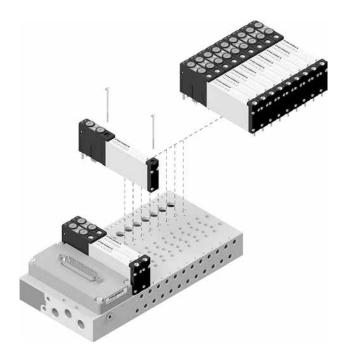
Instable function:
Push to actuate
(when released it moves back to the original position)



Bistable function:
Push and turn to get the bistable function

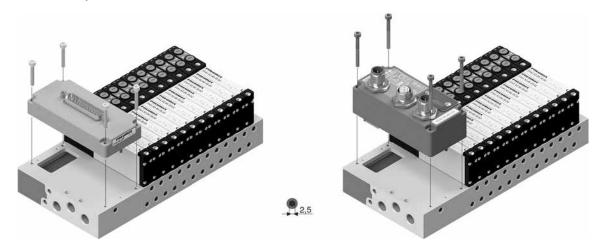
Note: we recommend the manual override is returned to it's original position when not in use

Solenoid valves installation



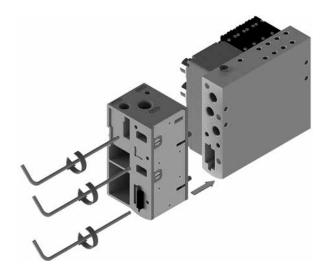
 $\textbf{Maximum fixing torque for fittings}: 0,2 \, Nm$

Serial systems and multi-pin modules installation

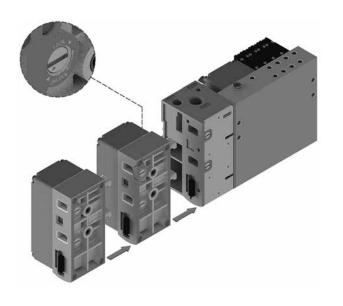




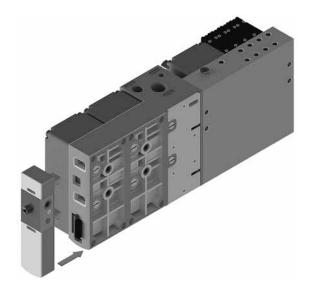
1. Fix the dedicated adapter (code 3100.KA. (a) to the manifold.



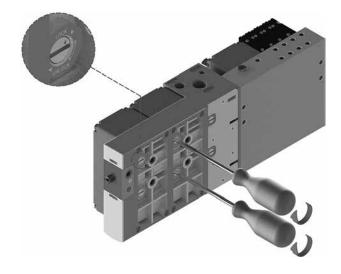
2. Assemble the required modules.



 $\textbf{3.} \ Complete the assembly with the 3100.KT.00 \ left endplate \ kit.$



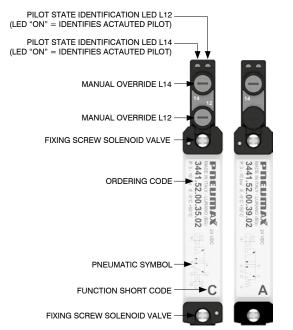
4. To lock: rotate anticlockwise (in the direction of the LOCK print on the case). To unlock: rotate clockwise (in the direction of the UNLOCK print on the case). The same procedure shall be used to add or remove any module.

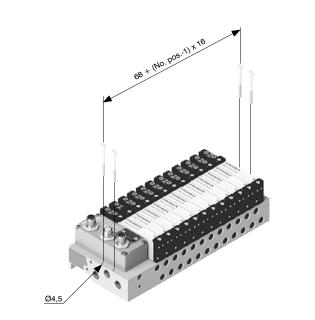


AIR DISTRIBUTION

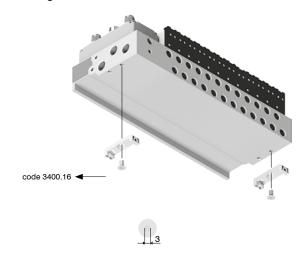
From the top

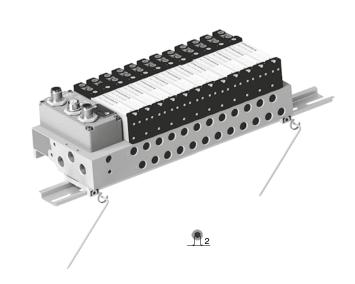
Solenoid valve description



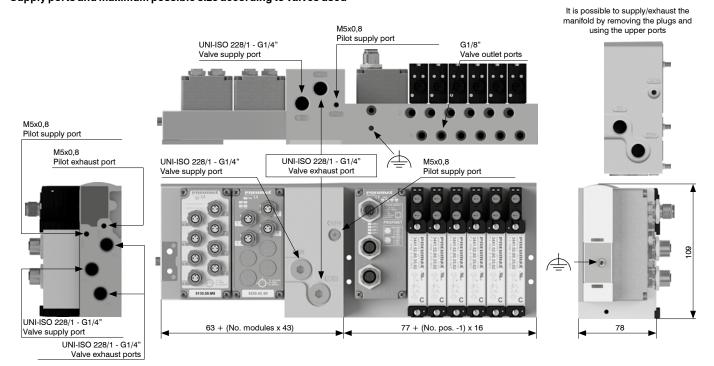


DIN rail fixing





Supply ports and maximum possible size according to valves used



Manual override actuation



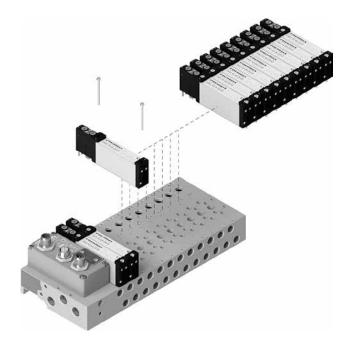
Instable function: Push to actuate (when released it moves back to the original position)



Bistable function: Push and turn to get the bistable function

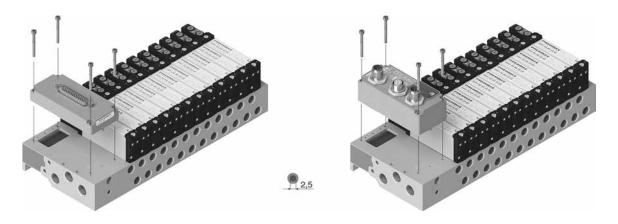
 $\textbf{Note}: we \, recommend \, the \, manual \, override \, is \, returned \, to \, it's \, original \, position \, when \, not \, in \, use$

Solenoid valves installation

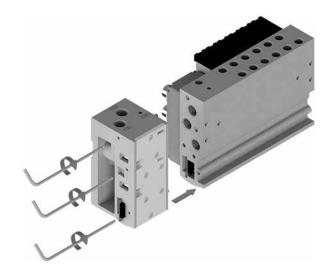


Maximum fixing torque for fittings: 0,2 Nm

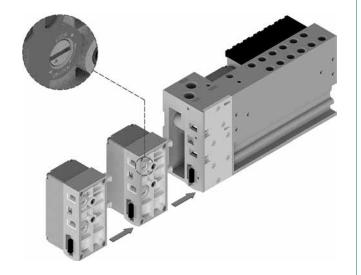
Serial systems and multi-pin modules installation



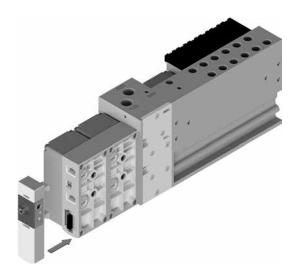
1. Fix the dedicated adapter (code 3400.KA. $\textcircled{\bullet}$) to the manifold.



2. Assemble the required modules.



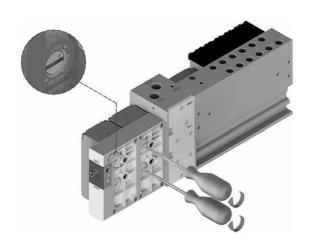
3. Complete the assembly with the 3100.KT.00 left endplate kit.



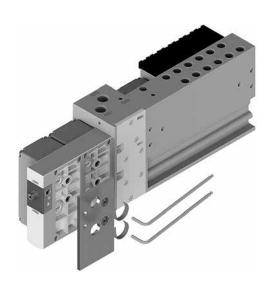
4. To lock: rotate anticlockwise (in the direction of the LOCK print on the case).

To unlock: rotate clockwise (in the direction of the UNLOCK print on the case).

The same procedure shall be used to add or remove any module.



5. Fix the offset compensation plate 3400.P0 to the last single module.



CANopen® protocol node

CANopen® node manages 64 inputs and outputs.

Accessory modules can be connected in whatever order and configuration.

Connection to CANopen® fieldbus is made via two M12, male and female, 5 pins, type A circular connectors, in parallel between them; connectors pinout is compliant to CiA 106 (V.1.1.0: July 11th 2023).

Transmission speed and address, as well as termination resistor activation are set via DIP-switches.

CANopen® node is available in two versions with 32 or 48 outputs allocated to solenoid valves on the manifold directly connected to the

Such outputs correspond to least significant bytes and their allocation is independent of how many solenoid valves are installed. Remaining outputs can be used to control the modules.

Byte allocation to additional modules is fully automatic.

Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).

To compute the maximum current on the OUTPUTS + 24 V DC, please use the following formula:

$$I_{24\ V\ DC\ out} = \sum_{i=1}^{n} I_{out,i} + m\ i_{EV}$$

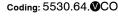
 η = number of installed modules

 $I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\,i_{EV} \qquad I_{out,i} = \text{maximum total current absorbed by the i-th module on the OUTPUTS} + 24\,\text{V\,DC}$ $I_{out,i} = \text{maximum total current absorbed by the i-th module on the OUTPUTS} + 24\,\text{V\,DC}$ $I_{out,i} = \text{maximum total current absorbed by the i-th module on the OUTPUTS} + 24\,\text{V\,DC}$

m = number of installed solenoid pilots

 \dot{t}_{EV} = mean absorbed current per solenoid pilot (please see table below)

Series	i_EV
3000	36 mA



	VERSION	
	32 = 32 output bits available for valve	
Ø	connections	
	48 = 48 output bits available for valve	
	connections	



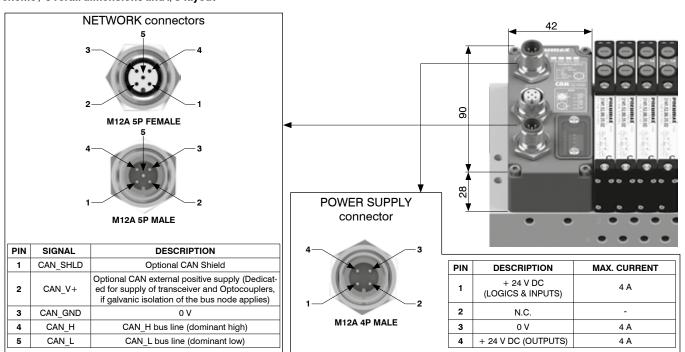
For each fieldbus node, maximum deliverable current by OUTPUTS $+24\,\text{VDC}$ supply is $4\,\text{A}$, moreover the sum of the currents on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

 $I_{24\ V\ DC\ out} + I_{24\ V\ DC\ in} < 4A$

$$I_{24\,V\,DC\,in} = \sum_{i=1}^{n} I_{in,i}$$

 $\pmb{\eta}$ = number of installed modules $I_{in,i}$ = maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)

In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.



Technical characteristics		
Specifications		CiA 106 (V.1.1.0 : July 11th 2023)
Case		Reinforced technopolymer
	Voltage	+ 24 V DC ± 10%
Power supply	Node only current consumption on + 24 V DC inputs	40 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
Communication	Connection	2 M12 5 pins male-female connectors type A
	Baud rate	10 - 20 - 50 - 125 - 250 - 500 - 800 - 1000 Kbit/s
	Addresses possible numbers	From 1 to 63
	Maximum nodes number in network	64 (slave + master)
	Bus maximum recommended length	100 m at 500 Kbit/s
	Bus diagnosis	Green / red status LED
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 +50



PROFIBUS DP protocol node

PROFIBUS DP node manages 64 inputs and outputs.

Accessory modules can be connected in whatever order and configuration.

Connection to PROFIBUS DP fieldbus is made via two M12, male and female, 5 pins, type B circular connectors, in parallel between them; connectors pinout is PROFIBUS Interconnection Technology specifications compliant (Version 1.1, August 2001).

Address as well as termination resistor activation are set via DIP-switches.

PROFIBUS DP node is available in two versions with 32 or 48 outputs allocated to solenoid valves on the manifold directly connected to the node.

Such outputs correspond to least significant bytes and their allocation is independent of how many solenoid valves are installed. Remaining outputs can be used to control the modules.

Byte allocation to additional modules is fully automatic.

Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).

To compute the maximum current on the OUTPUTS + 24 V DC, please use the following formula:

 η = number of installed modules

 $I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\,i_{EV} \qquad I_{out,i} = \text{maximum total current absorbed by the i-th module on the OUTPUTS} + 24\,V\,DC \\ \text{supply rail (please see specifications of the single module)}$

m= number of installed solenoid pilots

 $i_{EV}\;$ = mean absorbed current per solenoid pilot (please see table below)

Series	i_EV
3000	36 mA



For each fieldbus node, maximum deliverable current by OUTPUTS + 24 V DC supply is 4 A, moreover the sum of the currents on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

 $I_{24\ V\ DC\ out} + I_{24\ V\ DC\ in} < 4A$

$$I_{24 \, V \, DC \, in} = \sum_{i=1}^{n} I_{in,i}$$

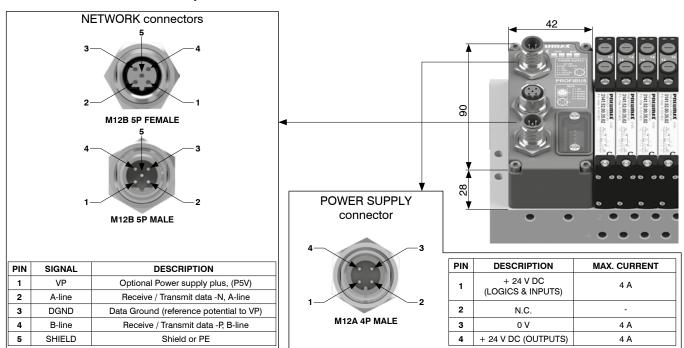
n = number of installed modules $I_{in,i}$ = maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)

Coding: 5330.64. **♥**PB

VERSION	
32 = 32 output bits available for valve	
connections	
48 = 48 output bits available for valve	
connections	



In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.



Technical characteristics		
Specifications		PROFIBUS DP
Case		Reinforced technopolymer
	Voltage	+ 24 V DC ± 10%
Power supply	Node only current consumption on + 24 V DC inputs	70 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
Communication	Connection	2 M12 5 pins male-female connectors type B
	Baud rate	9,6-19,2-93,75-187,5-500-1500-3000-6000-12000 Kbit/s
	Addresses possible numbers	From 1 to 99
	Maximum nodes number in network	100 (slave + master)
	Bus maximum recommended length	100 m at 12 Mbit/s - 1200 m at 9,6 Kbit/s
	Bus diagnosis	Green / red status LED
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 +50

EtherNet/IP protocol node

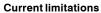
EtherNet/IP node manages 128 inputs and outputs.

Accessory modules can be connected in whatever order and configuration.

Network connection is made via 2 M12 female, type D, 4 pins, circular connectors.

Code 5730.128.48El provides first 48 outputs, corresponding to least significant 6 bytes, are allocated to the solenoid valve positions, regardless how many they are and how many valves are installed on the manifold directly connected to the node. Remaining 80 outputs can be used to manage output modules; bytes allocation to additional modules is fully automatic.

Coding: 5730.128.48EI



Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).

To compute the maximum current on the OUTPUTS $+24\,\mathrm{V}\,\mathrm{DC}$, please use the following formula:

n = number of installed modules

 $I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\,i_{EV} \qquad I_{out,i} = \text{maximum total current absorbed by the i-th module on the OUTPUTS} + 24\,\text{V\,DC}$ supply rail (please see specifications of the single module)

m = number of installed solenoid pilots

 \dot{t}_{EV} = mean absorbed current per solenoid pilot (please see table below)

Series	i_EV
3000	36 mA

For each fieldbus node, maximum deliverable current by OUTPUTS + 24 V DC supply is 4 A, moreover the sum of the currents on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

 $I_{24\ V\ DC\ out} + I_{24\ V\ DC\ in} < 4A$

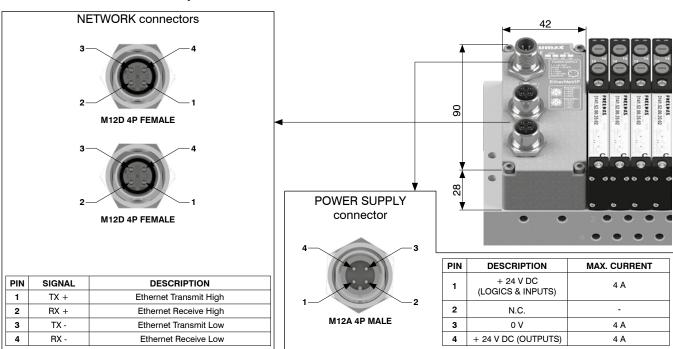
$$I_{24\ V\ DC\ in} = \sum_{i=1}^{n} I_{in,i}$$

n = number of installed modules

 $I_{in,i}$ = maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)



In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.



Technical characteristics		
Case		Reinforced technopolymer
	Voltage	+ 24 V DC ± 10%
Power supply	Node only current consumption on + 24 V DC inputs	65 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
	Connection	2 M12 4 pins male-female connectors type D (IEC 61076-2-101)
Communication	Baud rate	100 Mbit/s
Communication	Maximum distance between 2 nodes	100 m
	Bus diagnosis	Green / red status LED
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 +50

EtherCAT® protocol node

EtherCAT® node manages 128 inputs and outputs.

Accessory modules can be connected in whatever order and configuration.

Network connection is made via 2 M12 female, type D, 4 pins, circular connectors.

Code 5730.128.48EC provides first 48 outputs, corresponding to least significant 6 bytes, are allocated to the solenoid valve positions, regardless how many they are and how many valves are installed on the manifold directly connected to the node. Remaining 80 outputs can be used to manage output modules; bytes allocation to additional modules is fully automatic.

Coding: 5730.128.48EC



Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).

To compute the maximum current on the OUTPUTS + 24 V DC, please use the following formula:

n = number of installed modules

 $I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\,i_{EV} \qquad I_{out,i} = \text{maximum total current absorbed by the i-th module on the OUTPUTS} + 24\,\text{V\,DC}$ supply rail (please see specifications of the single module)

m = number of installed solenoid pilots

 i_{EV} = mean absorbed current per solenoid pilot (please see table below)

Series	i_EV
3000	36 mA

For each fieldbus node, maximum deliverable current by OUTPUTS +24 VDC supply is 4 A, moreover the sum of the currents on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

 $I_{24\ V\ DC\ out} + I_{24\ V\ DC\ in} < 4A$

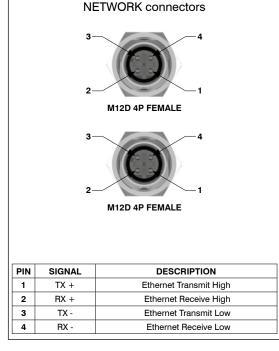
$$I_{24\ V\ DC\ in} = \sum_{i=1}^{n} I_{in,i}$$

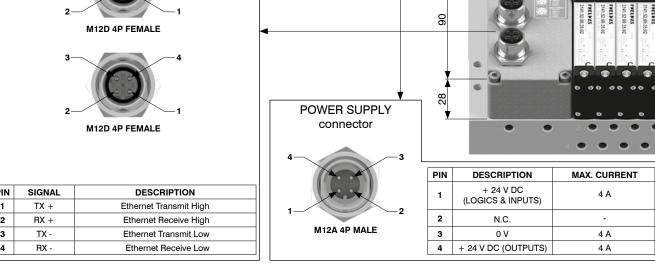
n = number of installed modules

 $I_{in,i}$ = maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)



In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.





Technical characteristics Technical characteristics		
Case		Reinforced technopolymer
Power supply	Voltage	+ 24 V DC ± 10%
	Node only current consumption on + 24 V DC inputs	65 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
Communication	Connection	2 M12 4 pins male-female connectors type D (IEC 61076-2-101)
	Baud rate	100 Mbit/s
	Maximum distance between 2 nodes	100 m
	Bus diagnosis	Green / red status LED
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 +50

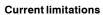
PROFINET IO RT protocol node PROFINET IO RT node manages 128 inputs and outputs.

Accessory modules can be connected in whatever order and configuration.

Network connection is made via 2 M12 female, type D, 4 pins, circular connectors.

Code 5730.128.48PN provides first 48 outputs, corresponding to least significant 6 bytes, are allocated to the solenoid valve positions, regardless how many they are and how many valves are installed on the manifold directly connected to the node. Remaining 80 outputs can be used to manage output modules; bytes allocation to additional modules is fully automatic.

Coding: 5730.128.48PN



Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).

To compute the maximum current on the OUTPUTS $+24\,\mathrm{V}\,\mathrm{DC}$, please use the following formula:

 $I_{24\ V\ DC\ out} = \sum_{i=1}^{n} I_{out,i} + m\ i_{EV}$

n = number of installed modules

 $I_{out,i} = {\rm maximum\,total\,current\,absorbed\,by\,the\,i-th\,module\,on\,the\,OUTPUTS} + 24\,{\rm V\,DC}$ supply rail (please see specifications of the single module)

m = number of installed solenoid pilots

 \dot{t}_{EV} = mean absorbed current per solenoid pilot (please see table below)

Series	i_EV
3000	36 mA

For each fieldbus node, maximum deliverable current by OUTPUTS + 24 V DC supply is 4 A, moreover the sum of the currents on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

 $I_{24\ V\ DC\ out} + I_{24\ V\ DC\ in} < 4A$

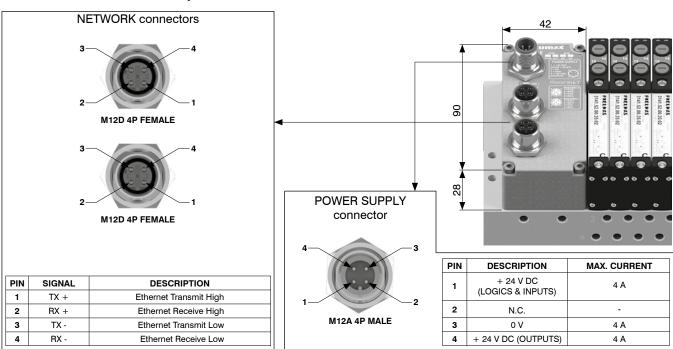
$$I_{24\ V\ DC\ in} = \sum_{i=1}^{n} I_{in,i}$$

 η = number of installed modules

 $l_{in,i}$ = maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)



In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.



Technical characteristics		
Case		Reinforced technopolymer
	Voltage	+ 24 V DC ± 10%
Power supply	Node only current consumption on + 24 V DC inputs	65 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
	Connection	2 M12 4 pins male-female connectors type D (IEC 61076-2-101)
Communication	Baud rate	100 Mbit/s
Communication	Maximum distance between 2 nodes	100 m
	Bus diagnosis	Green / red status LED
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 +50



CC-Link IE Field Basic protocol node

CC-Link IE Field Basic node manages 128 inputs and outputs.

Accessory modules can be connected in whatever order and configuration.

Network connection is made via 2 M12 female, type D, 4 pins, circular connectors.

Code 5730.128.48CL provides first 48 outputs, corresponding to least significant 6 bytes, are allocated to the solenoid valve positions, regardless how many they are and how many valves are installed on the manifold directly connected to the node. Remaining 80 outputs can be used to manage output modules; bytes allocation to additional modules is fully automatic.

Coding: 5730.128.48CL



Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).

To compute the maximum current on the OUTPUTS + 24 V DC, please use the following formula:

$$I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\,i_{EV}$$

n = number of installed modules

 $I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\,i_{EV} \qquad I_{out,i} = \text{maximum total current absorbed by the i-th module on the OUTPUTS} + 24\,\text{V\,DC}$ supply rail (please see specifications of the single module)

m = number of installed solenoid pilots

 i_{EV} = mean absorbed current per solenoid pilot (please see table below)

Series	i_EV
3000	36 mA

For each fieldbus node, maximum deliverable current by OUTPUTS +24 VDC supply is 4 A, moreover the sum of the currents on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

$$I_{24\ V\ DC\ out} + I_{24\ V\ DC\ in} < 4A$$

$$I_{24\ V\ DC\ in} = \sum_{i=1}^{n} I_{in,i}$$

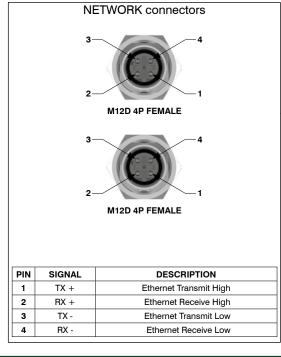
n = number of installed modules

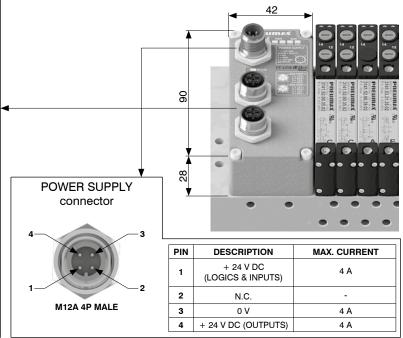
 $I_{in,i}$ = maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)



K5030.M12.

In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module





Technical characteristics Technical characteristics		
Case		Reinforced technopolymer
	Voltage	+ 24 V DC ± 10%
Power supply	Node only current consumption on + 24 V DC inputs	65 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
	Connection	2 M12 4 pins male-female connectors type D (IEC 61076-2-101)
Communication	Baud rate	100 Mbit/s
	Maximum distance between 2 nodes	100 m
	Bus diagnosis	1 Green LED and 1 red status LED + 2 link and activity LEDs'
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 +50



IO-Link protocol interface

IO-Link interface manages 64 inputs and outputs.

Accessory modules can be connected in whatever order and configuration.

Electric power supply and IO-Link connection to the Master are made via M12, male, 5 pins, type A, circular connector, "CLASS B", according to IO-Link specifications.

 $Electric \ rails \ L+/L-supply \ interface \ only, \ while \ P24/N24 \ rails \ supply \ additional \ modules \ and \ solenoid \ valves.$

Either power supplies are galvanically isolated in the IO-Link interfaces.

IO-Link interface is available in two versions with 32 or 48 outputs allocated to solenoid valves on the manifold directly connected to the interface.

Such outputs correspond to least significant bytes and their allocation is independent of how many solenoid valves are installed. Remaining outputs can be used to control the modules.

Byte allocation to additional modules is fully automatic.

Coding: 5830.64.**⊘**IK

	VERSION
	32 = 32 output bits available for valve
Ø	connections
	48 = 48 output bits available for valve
	connections



Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by pin 2 and pin 5 (P24 / N24).

To compute the maximum current on the P24 / N24 supply, please use the following formula::

 $I_{24VDCP24/N24} = \sum_{i=1}^{n} I_{acc,i} * m i_{EV}$

 η = number of installed modules

 $I_{acc,l}=$ maximum total current absorbed by each i-th accessory module, given by the sum of the absorbed currents on + 24 V DC OUTPUTS and + 24 V DC INPUTS

m = number of installed solenoid pilots

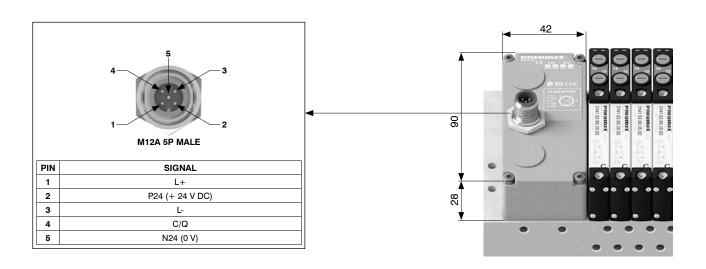
 i_{EV} = mean absorbed current per solenoid pilot (please see table below)

Series	i_EV
3000	36 mA

maximum current on P24/N24 supply rail must be less than 4A.

A

In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.



Technical characteristics		
Specifications IO-Link Specification v1.1		IO-Link Specification v1.1
Case		Reinforced technopolymer
	Voltage	+ 24 V DC +/- 10%
Power supply	Interface current consumption on + 24 V DC (L+ /L-)	25 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
	Connection	"Class B" port
	Communication speed	38.4 kbaud/s
Communication	Maximum distance from Master	20 m
	Bus diagnosis	Green / red status LED
	Vendor ID / Device ID	1257 (hex 0x04E9) / 3000 (hex 0x0BB8)
Configurations file IODD		Available from our web site http://www.pneumaxspa.com
Protection degree Protection degree		IP65 when assembled
Temperature °C		-5+50

8 digital inputs module kit M8

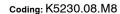
M8 digital inputs module provides 8 M8, 3 pins, female connectors.

Inputs have PNP logic, + 24 V DC ± 10%.

It is possible to connect 2 wires devices (e.g. switches, magnetic limit switches, pressure switches, etc.) as well as 3 wires devices (e.g. proximity sensors, photocells, electronic magnetic limit switches, etc.).

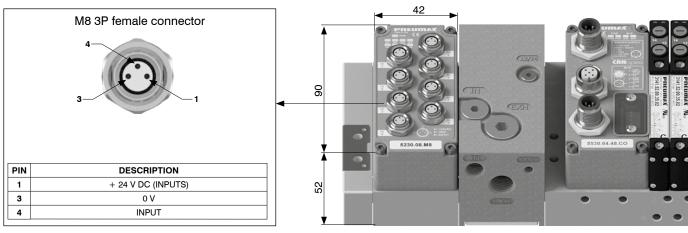
Inputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pin M12 power connector, pin 1) or $by\,K5030.M12\,additional\,power\,supply\,module, in\,case\,it\,were\,installed\,upstream\,of\,the\,inputs\,module.$

Technical characteristics	
Maximum current per module	300 mA
Protection	Overcurrent (auto-resettable fuse) Reverse polarity
Input impedence	3 kΩ
Maximum cable length	< 30 m
Input data allocation	8 bit
INPUTS + 24 V DC current consumption of the module only	5 mA





Scheme / Overall dimensions and I/O layout







8 digital inputs module kit M12

M12 digital inputs module provides 4 M12, 5 pins, female connectors.

Inputs have PNP logic, $+24 \text{ V DC} \pm 10\%$.

Every connector takes two input channels.

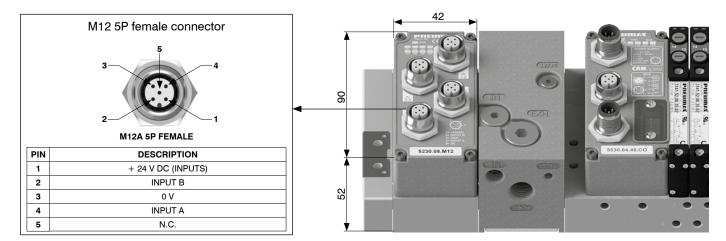
It is possible to connect 2 wires devices (e.g. switches, magnetic limit switches, pressure switches, etc.) as well as 3 wires devices (e.g. proximity sensors, photocells, electronic magnetic limit switches, etc.).

 $Inputs\ module\ power\ supply\ is\ provided\ by\ +\ 24\ V\ DC\ power\ input\ on\ the\ serial\ system\ (type\ A,\ 4\ pin\ M12\ power\ connector,\ pin\ 1)\ or\ begin{picture}$ $by\,K5030.M12\,additional\,power\,supply\,module, in\,case\,it\,were\,installed\,upstream\,of\,the\,inputs\,module.$

Technical characteristics	
Maximum current per module	300 mA
Protection	Overcurrent (auto-resettable fuse) Reverse polarity
Input impedence	3kΩ
Maximum cable length	< 30 m
Input data allocation	8 bit
INPUTS + 24 V DC current consumption of the module only	5 mA









8 digital outputs module kit M8

M8 digital inputs module provides 8 M8, 3 pins, female connectors.

Outputs have PNP logic, + 24 V DC ± 10%.

 $Outputs\ module\ power\ supply\ is\ provided\ by\ +\ 24\ V\ DC\ power\ input\ on\ the\ serial\ system\ (type\ A,4\ pins\ M12\ power\ connector,\ pin\ 4)$ or by K5030.M12 additional power supply module, in case it were installed upstream of the outputs module.

Power supply presence is displayed by "PWR" green LED light-on.

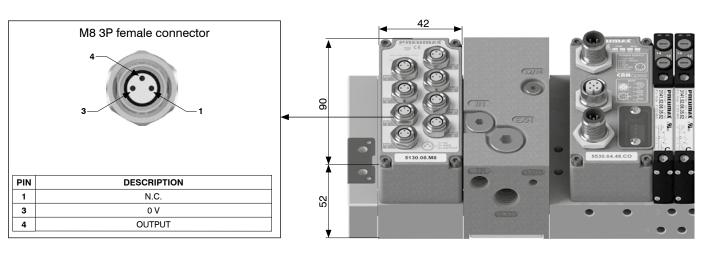
Each output has a LED indicator associated which lights up when output's signal status is high.

Technical characteristics	
Maximum current per output 100 mA	
Protection	Short circuit (electronic), trigger at 2.8A
Maximum cable length	< 30 m
Output data allocation 8 bit	
OUTPUTS + 24 V DC current consumption of the module only	15 mA

Coding: K5130.08.M8



Scheme / Overall dimensions and I/O layout





8 digital outputs module kit M12

M12 digital inputs module provides 4 M12, 5 pins, female connectors.

Outputs have PNP logic, $+24 \, \text{V} \, \text{DC} \pm 10\%$

Outputs module power supply is provided by +24 VDC power input on the serial system (type A, 4 pins M12 power connector, pin 4) or by K5030.M12 additional power supply module, in case it were installed upstream of the outputs module.

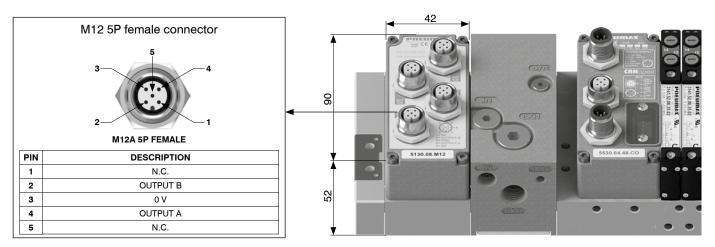
Power supply presence is displayed by "PWR" green LED light-on.

 $Each \ output \ has \ a \ LED \ indicator \ associated \ which \ lights \ up \ when \ output's \ signal \ status \ is \ high.$

Technical characteristics	
Maximum current per output	100 mA
Protection	Short circuit (electronic), trigger at 2.8A
Maximum cable length	< 30 m
Output data allocation	8 bit
OUTPUTS + 24 V DC current consumption of the module only	15 mA

Coding: K5130.08.M12







32 digital inputs module kit (37 pins SUB-D connector)

The module provides a SUB-D 37 pins female connector.

Inputs have PNP logic, + 24 V DC ± 10%.

It is possible to connect 2 wires devices (e.g. switches, magnetic limit switches, pressure switches, etc.) as well as 3 wires devices (e.g. proximity sensors, photocells, electronic magnetic limit switches, etc.).

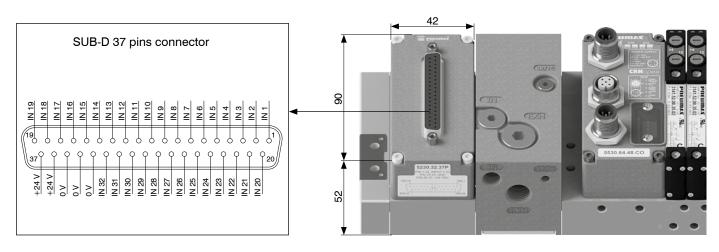
Inputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pin M12 power connector, pin 1) or $by\,K5030.M12\,additional\,power\,supply\,module, in\,case\,it\,were\,installed\,upstream\,of\,the\,inputs\,module.$

Technical characteristics	
Maximum current per module	1 A
Protection	Overcurrent (auto-resettable fuse) Reverse polarity
Input impedence	3 kΩ
Maximum cable length	< 30 m
Input data allocation	32 bit
INPUTS + 24 V DC current consumption of the module only	10 mA



Coding: K5230.32.37P

Scheme / Overall dimensions and I/O layout



32 digital outputs module kit (37 pins SUB-D connector)

The module provides a SUB-D 37 pins female connector.

Outputs have PNP logic, + 24 V DC ± 10%.

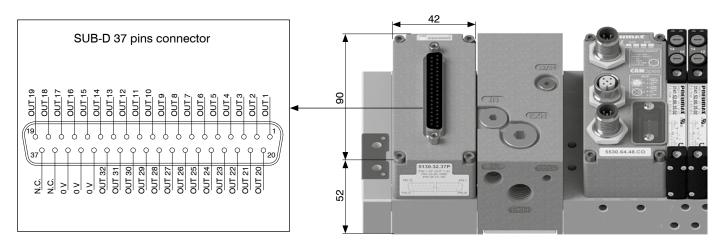
Outputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pins M12 power connector, pin 4) or by K5030.M12 additional power supply module, in case it were installed upstream of the outputs module.

Power supply presence is displayed by "PWR" green LED light-on.

Technical characteristics	
Maximum current per output	100 mA
Protection	Short circuit (electronic), trigger at 2.8A
Maximum cable length	< 30 m
Output data allocation	32 bit
OUTPUTS + 24 V DC current consumption of the module only	15 mA

Coding: K5130.32.37P







Analogue inputs module kit M8

M8 analogue inputs module converts analogue signals into digital signals and transfers acquired data to field bus, via network node.

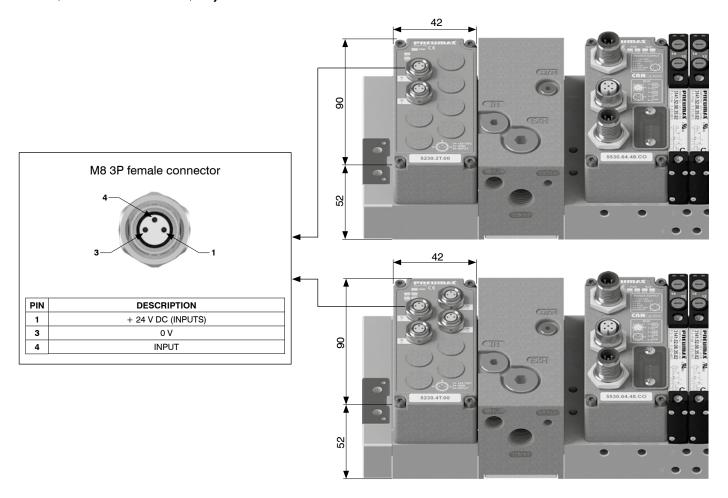
Inputs module power supply is provided by $+24\,\text{V}$ DC power input on the serial system (type A, $4\,\text{pin}$ M12 power connector, pin 1) or by K5030.M12 additional power supply module, in case it were installed upstream of the inputs module.

Technical characteristics	
Protection (pin 1) Overcurrent (auto-resettable fuse)	
Input impedance (voltage inputs) 33 kΩ	
Digital conversion resolution	12 bit
Maximum cable length < 30 m	
Input data allocation	16 bit per channel
Diagnostic LED	Input signal overcurrent or overvoltage
Accuracy 0,3% F.S.	
Overall maximum current 2 channels (pin 1) 300 mA	
Overall maximum current 4 channels (pin 1)	750 mA (375 mA for each pair of channels)
INPUTS + 24 V DC current consumption of the module only 15 mA	

Coding: K5230. **@**

	CHANNELS
•	2 = 2 channels
	4 = 4 channels
	SIGNAL
	T.00 = Voltage (0-10 V)
8	T.01 = Voltage (0-5 V)
-	C.00 = Current (4-20 mA)
	C.01 = Current (0-20 mA)





Analogue outputs module kit M8

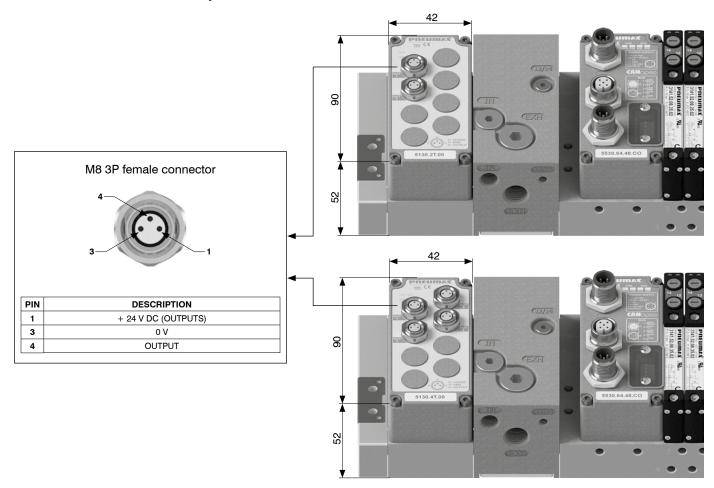
M8 analogue outputs module converts output data, received from field bus via network node, into analogue signal. Outputs module power supply is provided by $+24\,\text{V}$ DC power input on the serial system (type A, 4 pins M12 power connector, pin 4) or by K5030.M12 additional power supply module, in case it were installed upstream of the outputs module.

Technical characteristics		
Protection (pin 1)	Overcurrent (auto-resettable fuse)	
Protection (pin 4)	Overcurrent (auto-resettable fuse)	
Digital conversion resolution	12 bit	
Maximum cable length	< 30 m	
Output data allocation	16 bit per channel	
Diagnostic LED	Output signal overcurrent	
Accuracy	0,3% F.S.	
Overall maximum current 2 channels (pin 1)	1 A	
Overall maximum current 4 channels (pin 1)	2 A (1 A for each pair of channels)	
INPUTS + 24 V DC current consumption of the module only	15 mA	
OUTPUTS + 24 V DC current consumption of the module only (2 channels)	35 mA	
OUTPUTS + 24 V DC current consumption of the module only (4 channels)	70 mA	

Coding: K5130. **@**

	CHANNELS
Θ	2 = 2 channels
	4 = 4 channels
	SIGNAL
	T.00 = Voltage (0-10 V)
8	T.01 = Voltage (0-5 V)
	C.00 = Current (4-20 mA)
	C.01 = Current (0-20 mA)







Pt100 inputs module kit

 $Pt100\,inputs\,module\,digitizes\,signals\,from\,Pt100\,probes\,and\,transfers\,acquired\,data\,to\,field\,bus,\,via\,network\,node.$ It is possible to connect two, three or four wires probes.

 $Inputs \,module\,power\,supply\,is\,provided\,by\,+\,24\,V\,DC\,power\,input\,on\,the\,serial\,system\,(type\,A,\,4\,pin\,M12\,power\,connector,pin$ 1) or by K5030.M12 additional power supply module, in case it were installed upstream of the inputs module.

Technical characteristics		
Digital conversion resolution	12 bit	
Maximum cable length	< 30 m	
Input data allocation	16 bit per channel	
Diagnostic LED	Probe presence Temperature out of range	
Accuracy	±0,2°C	
Probe temperature range	-100°C +300°C	
INPUTS + 24 V DC current consumption of the module with probes (2 channels)	25 mA	
INPUTS + 24 V DC current consumption of the module with probes (4 channels)	35 mA	

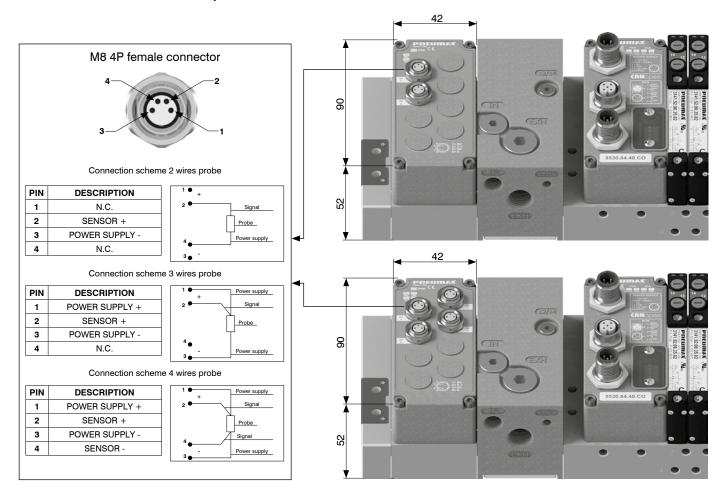
Coding: K5230. P.0

	CHANNELS
0	2 = 2 channels
	4 = 4 channels
	TYPE
	0 = Pt100 2 wires
O	1 = Pt1003 wires
	2 = Pt100 4 wires



Conversion formula (°C)

Temperature (°C) = $\left(\frac{\text{Points}}{4095} \times 400\right)$ -100



Additional power supply module kit

. Additional power supply module supplies additional electric power for downstream optional modules, where "downstream" means farther from serial node, resetting the current limits of the network node / IO-Link interface.

 $Electric \,connection \,of \,the \,module \,to \,external \,power \,supply \,unit \,occurs \,via \,an \,M12\,4\,pins \,type \,A\,male \,connector.$

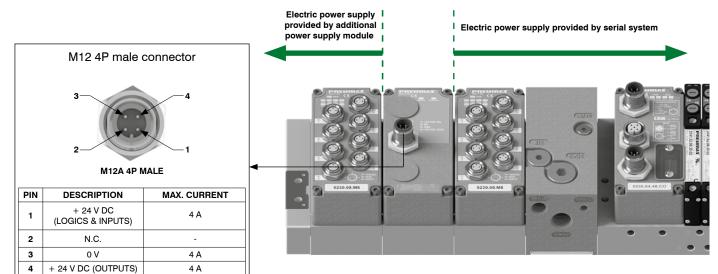
M12 connector has two different pins to power up logics and inputs (Pin 1) and outputs (Pin 4).

Presence of each power supply rail is indicated by corresponding green LED.

When using IO-Link interface, the additional power supply module is useful for separating the module power supplies of input from the output modules placed downstream.

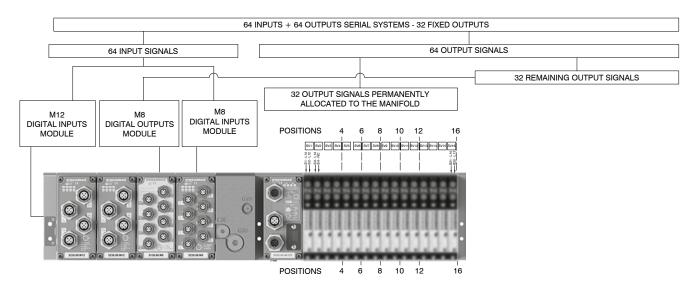
Coding: K5030.M12



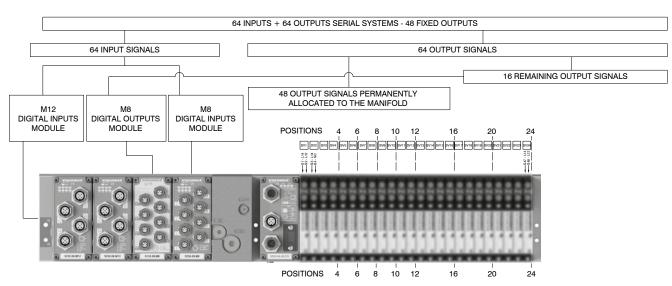


Signal management

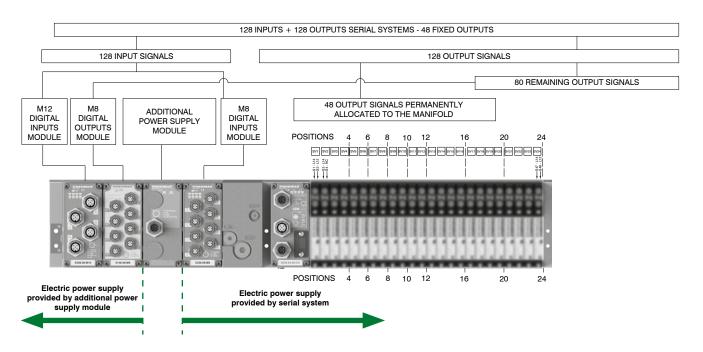
64 INPUT + 64 OUTPUT serial systems - 32 fixed OUTPUT (Ex. PROFIBUS DP and CANopen®)



64 INPUT + 64 OUTPUT serial systems - 48 fixed OUTPUT (Ex. PROFIBUS DP and CANopen®)



128 INPUT + 128 OUTPUT serial systems - 48 fixed OUTPUT (Ex. EtherNet/IP - EtherCAT® - PROFINET IO RT)



POWER SUPPLY connectors

Straight connector M12A 4P female





Upper view slave connector

Coding: 5312A.F04.00

Power supply socket

NETWORK connectors

Straight connector M12A 5P female





Upper view slave connector

Coding: 5312A.F05.00

Socket for bus CANopen® and IO-Link

Straight connector M12A 5P male





Upper view slave connector

PIN	DESCRIPTION
1	(CAN_SHIELD)
2	(CAN_V+)
3	CAN_GND
4	CAN_H
5	CAN_L

+ 24 V DC (LOGICS AND INPUTS) N.C 0 V + 24 V DC (OUTPUTS)

> (CAN SHIELD) (CAN V+) CAN GND CAN H CAN_L

> > Coding: 5312A.M05.00

Plug for bus CANopen®

Straight connector M12D 4P male





Upper view slave connector

PIN	SIGNAL	DESCRIPTION
1	TX+	EtherNet Transmit High
2	RX+	EtherNet Receive High
3	TX-	EtherNet Transmit Low
4	RX-	EtherNet Receive Low

 $\textbf{Coding:}\,5312D.M04.00$

Plug for bus EtherCAT®, PROFINET IO RT and EtherNet/IP

 $\textbf{Trademarks}{:}\ Ether CAT^{\circledast}\ is\ registered$ trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.

Straight connector M12B 5P female





Upper view slave connector

PIN	DESCRIPTION
1	Power Supply
2	A-Line
3	DGND
4	B-Line

SHIELD

Coding: 5312B.F05.00 Socket for bus PROFIBUS DP





Upper view slave connector

		Coding: 5312B.M05.00
N	DESCRIPTION	
	Power Supply	Socket for bus PROFIBUS DP

US DP A-Line

INPUTS connectors

Straight connector M12A 5P male





DESCRIPTION
+ 24 V DC
INPUTB
ov
INPUTA
N.C.

Upper view slave connector

Coding: 5312A.M05.00

Plug for inputs modules

DGND B-Line SHIELD

Plugs M12 plug

Coding: 5300.T12



Straight connector M8 3P male





PIN	DESCRIPTION
1	+ 24 V DC
4	INPUT
3	0 V

Upper view slave connector

Coding: 5308A.M03.00)
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Plug for inputs modules



Coding: 5300.T08



Series 2200 Optyma-S EVO



2200 SERIES Optyma-S EVO SOLENOID VALVES MANIFOLD

- Increased flexibility
- Digital and analogue I/O modules
- Manufactured in technopolymer
- Wide range of communication protocols









EtherNet/IP





Construction characteristics

Body	Technopolymer
Seals	NBR
Piston seals	NBR
Springs	Stainless Steel
Operators	Technopolymer
Pistons	Technopolymer
Spools	Stainless Steel

Operational characteristics

+ 24 V DC ±10%
1,3W nominal, in energy saving mode 0,25W
from 2,5 to 7 bar max.
from vacuum to 10 bar max.
from -5°C to +50°C
IP65
Filtered air. No lubrication needed, if applied it shall be continuous

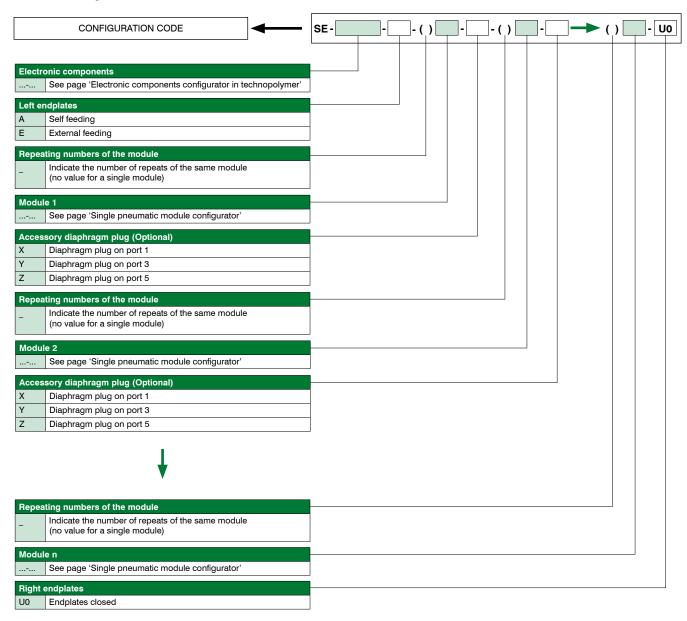
WE SPEAK EVO

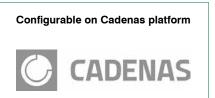
The Optyma-S series becomes EVO and interfaces with the new PX series modular electronic system while still retaining all of its technical advantages. This is enriched with new features that further extend the flexibility of the product:

- Controls up to 48 electrical signals
- Manifold mounted proportional regulators
- Electro-pneumatic shut-off module



Rules and configuration scheme





Note:

When composing the configuration, always bear in mind that the maximum number of electrical signals available is:

- 48 if a serial node or IO-Link interface is used.
- 40 if a 44-pole multi-pin is used.
- 32 if a 37-pole multi-pin module is used.
- 24 if a 25-pole multi-pin module is used.

If a monostable valve is used on a bistable type base (2 electrical signals occupied), an electrical signal is lost.

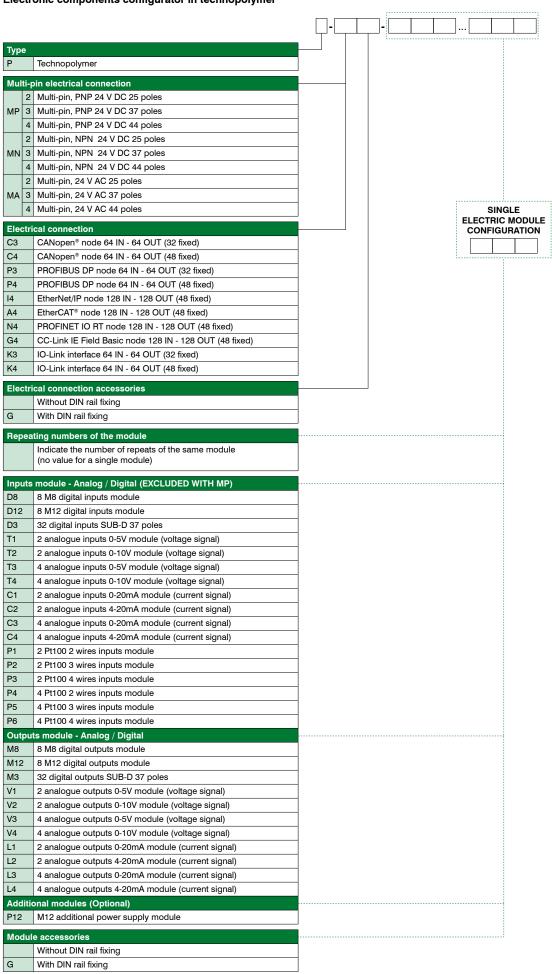
However, this makes it possible to replace the monostable valve with a bistable valve in the same position.

Diaphragm plugs are used to interrupt ports 1, 3 and 5 of the sub-base.

If it is necessary to interrupt more than one port at the same time, put the letters that identify their position in sequence (e.g.: if it is necessary to intercept the ports 3 and 5 you must put the letters YZ).

If one or more ports must be interrupted more than once, the addition of the intermediate supply/discharge module is necessary.

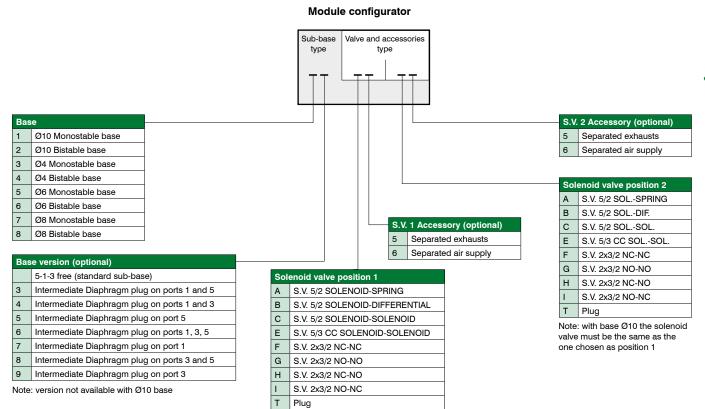
Electronic components configurator in technopolymer





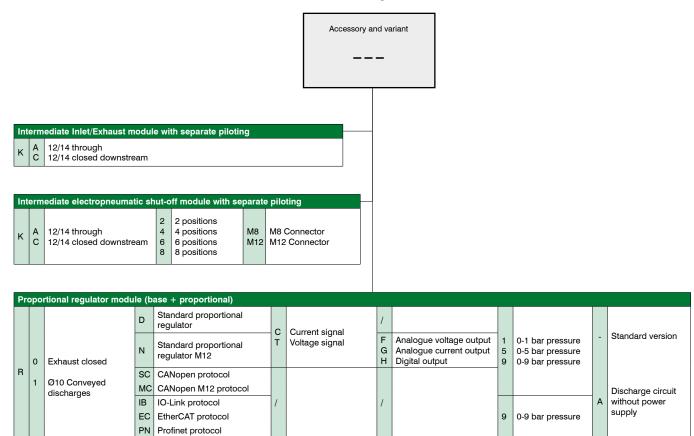
Refer to the current limits indicated in the pages relating to the nodes / IO-Link interface

2 positions base module configurator



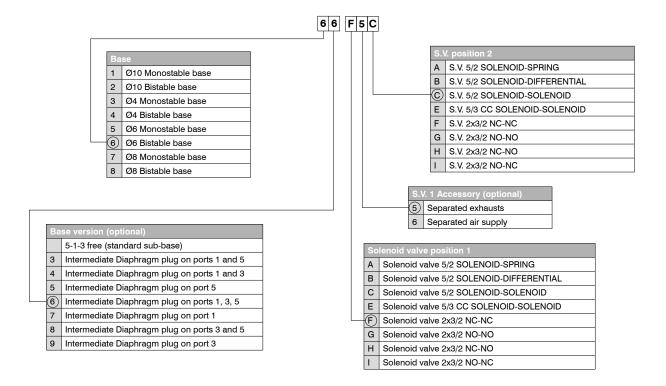
Accessory module configurator





Configuration example of single pneumatic module:

Ø6 Bistable base, intermediate diaphragm on ports 1,3 and 5, 2x3/2 NC-NC Solenoid valve with individual exhaust accessory, 5/2 Solenoid-Solenoid valve



Configuration example of complete group:

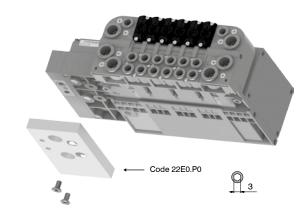
- Technopolymer PX3 serial system (P-I4-D12-M12-D8G)
- Left endplates External feeding (E)
- Ø6 Bistable base with (6HF) Solenoid valve
- Ø6 Bistable base with (6IE) Solenoid valve
- Ø4 Monostable base with (3AA) Solenoid valve
- Ø4 Monostable base with (3BB) Solenoid valve
- Ø8 Bistable base with (8FI) Solenoid valve
- Ø8 Bistable base with (8HE) Solenoid valve
- Right endplate closed (U0)



SE-P-I4-D12-M12-D8G-E-6HF-6IE-3AA-3BB-8FI-8HE-U0

PILOT STATE IDENTIFICATION LED (LED "ON" IDENTIFIES ACTUATED PILOT) VALVE MANUAL OVERRIDE SUB-BASE FIXING SCREW PNEUMATIC SYMBOL CUSTOMIZABLE REMOVABLE LABLES

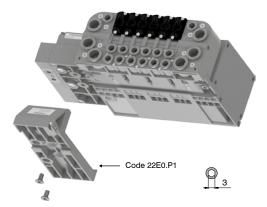
Offset compensation plate





Attention: This accessory is supplied on the manifold unless otherwise stated. This is not compatible for DIN rail mounting.

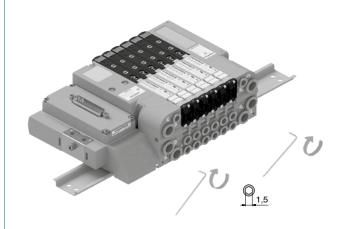
DIN rail mounting support plate



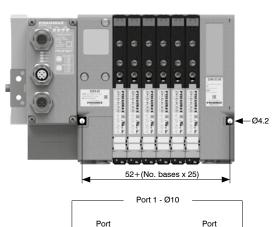
V

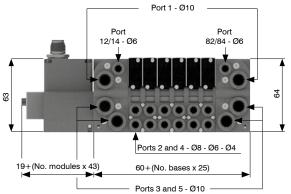
Attention: This must be included when creating the manifold configuration; exclude the offset compensation plate.

DIN rail fixing

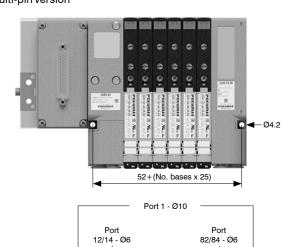


Supply ports and maximum possible size according to valves used Serial system node version





Multi-pin version

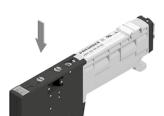




Manual override actuation

Instable function:

Push to actuate (when released it moves back to the original position)

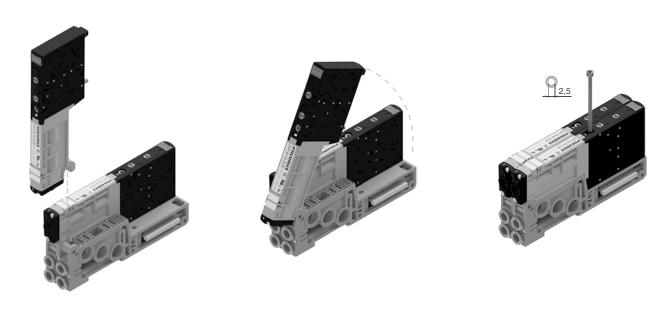


Bistable function: Push and turn to get the bistable function



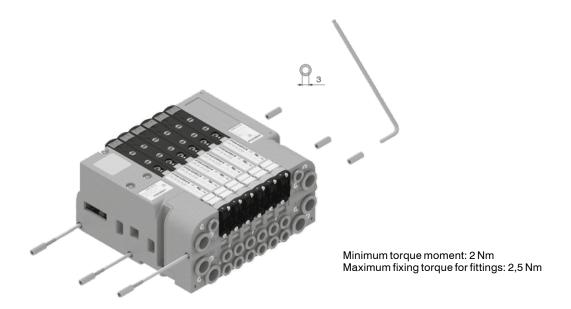
Note: we recommend the manual override is returned to it's original position when not in use

Solenoid valves installation



Note: Torque moment 0,8 Nm

Sub-base assembly





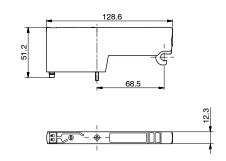
Coding: 2241.52.00.39. Solenoid-Spring

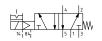
	Technical o	characteristics	
Fluid		Filtered air. No lubrication needed, if applied it shall be continuous	$\exists L$
Working pressure (bar)		From vacuum to 10	
Pilot pressure (bar)		2,5 7	
Temperature °C		-5 +50	SH
	with modular base, tube ø4	140	□ w
Flow rate at 6 bar	with modular base, tube ø6	400	
with $\Delta p=1$ (NI/min)	with modular base, tube ø8	550	
	with high flow rate modular base (2 places) ø10	900	
Response time accor	ding to ISO 12238, activation time (ms)	15	
Response time according to ISO 12238, deactivation time (ms)		20	

		VOLTAGE
٦		02 = 24 VDC PNP
1	V	12 = 24 VDC NPN
		05 = 24 VAC

SHORT FUNCTION CODE "A"
Weight 67 g







Solenoid-Differential

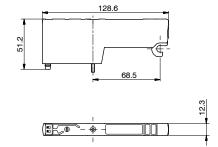
Technical characteristics			
Fluid		Filtered air. No lubrication needed, if applied it shall be continuous	
Working pressure (bar)		From vacuum to 10	
Pilot pressure (bar)		2,5 7	
Temperature °C		-5 +50	
	with modular base, tube ø4	140	
Flow rate at 6 bar	with modular base, tube ø6	400	
with $\Delta p=1$ (NI/min)	with modular base, tube ø8	550	
	with high flow rate modular base (2 places) ø10	850	
Response time according to ISO 12238, activation time (ms)		20	
Response time according to ISO 12238, deactivation time (ms)		25	

Coding: 2241.52.00.36.

•	VOLTAGE	
	02 = 24 VDC PNP	
	12 = 24 VDC NPN	
	05 = 24 VAC	
HORT FUNCTION CODE "P"		

Weight 67 g







Solenoid-Solenoid

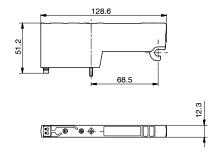
Technical characteristics		
Fluid		Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)		From vacuum to 10
Pilot pressure (bar)		2,5 7
Temperature °C		-5 +50
Flow rate at 6 bar	with modular base, tube ø4	140
	with modular base, tube ø6	400
with $\Delta p=1$ (NI/min)	with modular base, tube ø8	550
	with high flow rate modular base (2 places) ø10	900
Response time according to ISO 12238, activation time (ms)		10
Response time according to ISO 12238, deactivation time (ms)		10

Coding: 2241.52.00.35.

	VOLTAGE
	02 = 24 VDC PNP
V	12 = 24 VDC NPN
	05 = 24 VAC

SHORT FUNCTION CODE "C" Weight 67 g







PNEUMAX

Solenoid-Solenoid 5/3 (Closed centres)

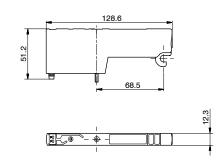
Technical characteristics			
Fluid		Filtered air. No lubrication needed, if applied it shall be continuous	11
Working pressure (bar)		From vacuum to 10	11
Pilot pressure (bar)		2,5 7	
Temperature °C		-5 +50] ;
Flow rate at 6 bar	with modular base, tube ø4	140	١
	with modular base, tube ø6	300	
with $\Delta p=1$ (NI/min)	with modular base, tube ø8	400	
	with high flow rate modular base (2 places) ø10	600	1
Response time according to ISO 12238, activation time (ms)		15	
Response time according to ISO 12238, deactivation time (ms)		20	1

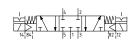
Coding: 2241.53.31.35.

•	VOLTAGE
	02 = 24 VDC PNP
	12 = 24 VDC NPN
	05 = 24 VAC

SHORT FUNCTION CODE "E"
Weight 83 g







Solenoid-Solenoid 2x3/2

Technical characteristics		
Fluid		Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)		From vacuum to 10
Pilot pressure (bar)		≥3+(0,2xInlet pressure)
Temperature °C		-5 +50
	with modular base, tube ø4	140
Flow rate at 6 bar	with modular base, tube ø6	360
with $\Delta p=1$ (NI/min)	with modular base, tube ø8	420
	with high flow rate modular base (2 places) ø10	650
Response time according to ISO 12238, activation time (ms)		15
Response time according to ISO 12238, deactivation time (ms)		25

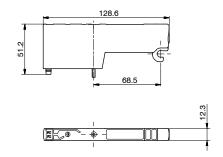
Example: If inlet pressure is set at 5 bar then pilot pressure must be at least Pp=3+(0,2*5)=4 bar for the pilot pressure is set at 5 bar then pilot pressure must be at least Pp=3+(0,2*5)=4 bar for the pilot pressure is set at 5 bar then pilot pressure must be at least Pp=3+(0,2*5)=4 bar for the pilot pressure is set at 5 bar then pilot pressure must be at least Pp=3+(0,2*5)=4 bar for the p

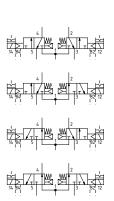
Coding: 2241.62. **3**5.

	FUNCTION	
		44 = NC-NC (5/3 Open centres)
		45 = NC-NO (normally closed-
	€	normally open)
		54 = NO-NC (normally open-
		normally closed)
		55 = NO-NO (5/3 Pressured centres)
I		VOLTAGE
_		02 = 24 VDC PNP
'	V	12 = 24 VDC NPN
		05 = 24 VAC

| US = 24 VAC SHORT FUNCTION CODE: NC-NC (5/3 Open centres)="F" N.O.-N.O. (5/3 Pressured centres)="G" N.O.-N.O.="I" Weight 75 g









Left Endplate

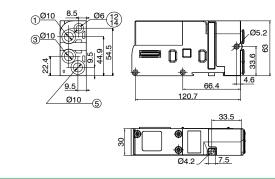
Technical characteristics Filtered air. No lubrication needed, if applied it shall be continuous From vacuum to 10 (external pilot base) 2,5 ... 7 (self-feeding base) Working pressure (bar) Pilot pressure (bar) 2,5 ... 7 (external pilot base) Temperature °C -5...+50

	Coding: 22E0.♥.S		
		VERSION	
٦	V	02 = External feeding	
┪	-	10 - Colf fooding	



12/14 SEPARATED FROM PORT 1 Weight 199 g

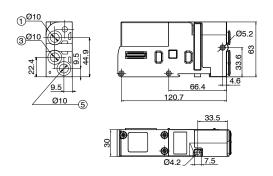
22E0.02.S





12/14 CONNECTED TO PORT 1 Weight 199 g

22E0.12.S



Right Endplate

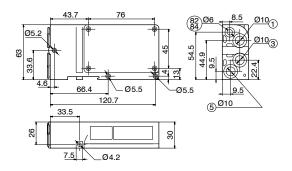
Coding: 2240.03.00

Technical characteristics		
Fluid Filtered air. No lubrication needed, if applied it shall be continuous		
Working pressure (bar)	From vacuum to 10	
Temperature °C	-5 +50	



PORT 82/84 = DO NOT PRESSURIZE, SOLENOID PILOTS EXHAUST Weight 148 g

2240.03.00

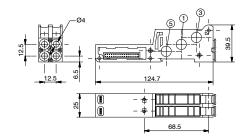


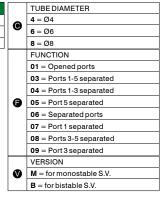
Modular base (2 places)

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Temperature °C	-5 +50



Weight 75 g 22E4.**G**Ø





Coding: 22E**@.₽Ø**

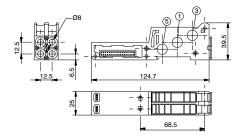
Weight 75 g 22E6.**G**Ø



Weight 75 g

AIR DISTRIBUTION

22E8.**G**



High flow rate modular base (2 places)

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Temperature °C	-5 +50

Coding: 22E1.01 ♥	
	VERSION

	VERSION
V	$\mathbf{M} = \text{for monostable S.V.}$
	B = for bistable S.V.



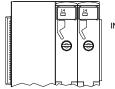
Weight 200 g

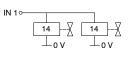
 $the two \, solenoid \, valves \, mounted \, on \, the \, high-flow \, base \, are \, pneumatically \, and \, electrically \, in \, parallel. \, and \, electrically \, in \, parallel. \, electrically \, electrical$

Attention: the mounted solenoid valves must always be two and of the same type.

Attention: the additional supply is necessary to guarantee the declared flow values, the port (1), if not supplied, it must be plugged.

Monostable configuration



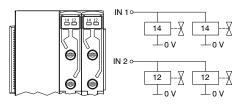


the monostable base consumes only one electrical signal and can the bistable base consumes two electrical signals and can mount only mount monostable solenoid valves.

Bistable configuration

Ø10_④

20



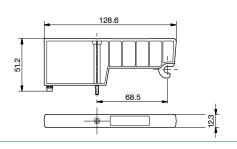
both bistable and monostable solenoid valves; in the latter case one electrical signal will be lost.

Closing plate

Coding: 2240.00

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Temperature °C	-5 +50





SHORT FUNCTION CODE "T" Weight 30 g

Coding: 22E0.♥.06

Individual supply or exhaust module

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10 3 7 (piloting 12/14)
Temperature °C	-5 +50

VERSION V 01 = Port 1 separated 35 = Ports 3-5 separated

The flow rate of the solenoid valve will be reduced compared to that shown in the general catalogue



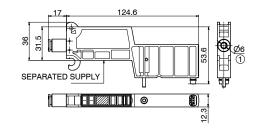
Weight 44 g

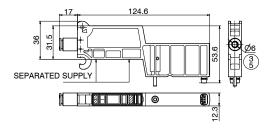
22E0.01.06



Weight 44 g

22E0.35.06





Proportional regulator base

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Temperature °C	-5+50

Coding: 22E0. ©. RP

	CONNECTION
Θ	00 = Closed
_	10 - Ø10



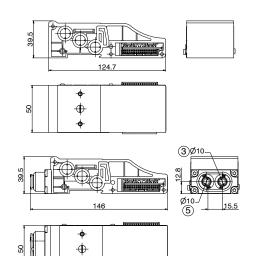
Weight 120 g

22E0.00.RP



Weight 120 g 3/5 = Exhaust connections

22E0.10.RP





Proportional regulator installation on its base



 $Proportional\ pressure\ regulators\ can\ be\ integrated\ into\ an\ Optyma-S\ EVO\ solenoid\ valve\ manifold,\ allowing\ the\ assembly\ to\ be\ fully\ or\ partially\ supplied.\ The\ regulator\ electronic\ control\ is\ independent\ of\ the\ node.$

Technical characteristics

Pneumatic characteristics	
Fluid	Air filtered at 5 micron and dehumidified
Minimum inlet pressure	Desired outlet pressure + 1 bar
Maximum inlet pressure	10 bar
Outlet pressure	0 9 bar
Nominal flow rate from 1 to 2 (6 bar ΔP 1 bar)	1100 NI/min
Discharge flow rate (6 bar with 1 bar overpressure)	1300 NI/min
Air consumption	< 1 NI/min
Supply connection	G 1/4"
Operating connection	G 1/4"
Exhaust connection	G 1/8"
Maximum fitting tightening	15 Nm

Electrical characteristics		
Supply voltage	Supply voltage 24VDC ± 10% (stabilized with ripple<1%)	
Standby current consumption		70mA
Current consumption with sole	enoid valves on	400mA
**Reference Signal Current	*010V *05V *15V	
	Current	*420 mA *020 mA
**InputImpedance	10 kΩ	
	Current	250 Ω
**Digital inputs		+ 24 V DC ± 10%
**Digital output		24 VDC PNP (max current 50 mA)

Functional characteristics	
Linearity	± Insensitivity
Hysteresis	± Insensitivity
Repeatability	± Insensitivity
Sensitivity	0,01 bar
Assembly position	Indifferent
Protection grade	IP65 (with casing fitted)
Ambient temperature	-5° 50° / 23°F 122°F

Construction characteristics	
Body	Anodized aluminum
Shutters	Brass with vulcanized NBR
Diaphragm	Cloth-covered rubber
Seals	NBR
Cover for electrical part	Technopolymer
Springs	AISI 302
Weight	360 g

^{*} Selectable by keyboard or by RS-232 ** Valid only for devices with analog input

AIR DISTRIBUTION

Installation/Operation

PNEUMATIC CONNECTION



The compressed air is connected by G 1/4" threaded holes on the body. Before making the connections, eliminate any impurities in the connecting pipes to prevent chippings or dust entering the unit. Do not supply the circuit with more than 10 bar pressure and make sure that the compressed air is dried (excessive condensate could cause the appliance to malfunction) and filtered at 5 micron. The supply pressure to the regulator must always be at least 1 bar greater than the desired outlet pressure. If a silencer is applied to the discharge path the unit response time may change, periodically check that the silencer is not blocked and replace it if necessary.

ELECTRICAL CONNECTION



For the electrical connection a SUB-D 15-pole female or a M12 connector is used (accordingly to the model, to be ordered separately). Wire in accordance with the wiring diagram shown below. Warning: INCORRECT CONNECTIONS MAY DAMAGE THE DEVICE

NOTES ON OPERATION

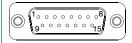


If the electric supply is interrupted, the outlet pressure is maintained at the set value. However, maintaining the exact value cannot be ensured as it is impossible to operate the solenoid valves. In order to discharge the circuit downstream, zero the reference, make sure that the display shows a pressure value equal to zero and then disconnect the electric power supply. A version of the device is available that exhausts the downstream circuit when the power supply is removed (Option "A" at the end of the ordering code). If the compressed-air supply is suspended and the electric power supply is maintained a whirring will be heard that is due to the solenoid valves; an operating parameter can be activated (P18) that triggers the regulator protection whenever the requested pressure is not reached within 4 seconds of the reference signal being sent. In this case the system will intervene to interrupt the control of the solenoid valves. Every twenty seconds, the unit will start the reset procedure until standard operating

Proportional regulator, standard version with D-SUB connector



TOP VIEW OF THE REGULATOR CONNECTOR



CONNECTOR PINOUT:

- 1 = DIGITAL INPUT 1
- 2 = DIGITAL INPUT 2 3 = DIGITAL INPUT 3
- 4 = DIGITAL INPUT 4
- 5 = DIGITAL INPUT 5
- 6 = DIGITAL INPUT 6 7 = DIGITAL INPUT 7
- 8 = ANALOG INPUT **DIGITAL INPUT 8**
- 9 = SUPPLY (24 VDC)
- 10 = DIGITAL OUTPUT (24 VDC PNP)
- 11 = ANALOG OUTPUT (CURRENT) 12 = ANALOG OUTPUT (VOLTAGE)
- 13 = Rx RS-232
- 14 = Tx RS-232
- 15 = GND

Proportional regulator, M12 standard version





M124P MALE

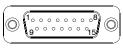
M12 Standard version

- CONNECTOR PINOUT: 1 = POWER SUPPLY (24 VDC) 2 = ANALOG OUTPUT (depending
- on the model) 3 = GND
- 4 = ANALOG INPUT

Proportional regulator, CANopen® version with **D-SUB** connector



TOP VIEW OF THE REGULATOR CONNECTOR



- CONNECTOR PINOUT: 1 = CAN SHIELD
- $2 = CAN_V^- +$
- 3 = CAN GND
- 4 = CAN_H
- 5 = CAN_L 6 = NC
- 7 = NC
- 8 = NC
- 9 = SUPPLY (+24 VDC)
- 10 = CAN SHIELD
- 11 = CAN_V+
- 12 = CAN_GND 13 = CAN_H
- 14 = CAN_L
- 15 = GND

Proportional regulator, CANopen® version with M12 connector





M124F

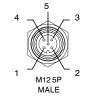
M125P **FEMALE**

PIN	DESCRIPTION	
	+24 VDC (NODE	
'	AND INPUTS)	
2	NC	
3	GND	
4	+24 VDC (OUTPUTS)	

PIN	SIGNAL	DESCRIPTION
1	CAN_SHIELD	Optional Can Shield
2	CAN_V+	Optional Can external positive supply (Dedicated for supply of transceiver and Optocouplers, if galvanic isolation of the bus node applies)
3	CAN_GND	0 V
4	CAN_H	CAN_H bus line (Dominant high)
5	CAN_L	CAN_L bus line (Dominant low)

Proportional regulator, IO-Link version





CONNECTOR PINOUT:

2 = +24 VDC (P24)

5 = GND (N24)

- 3 = L-4 = C/Q

1 = L +

- 1 = Device logic power supply
- 3 = GND
- 4 = Solenoid valves power supply







M12D 4P FEMALE

CONNECTOR PINOUT: CONNECTOR PINOUT:

Proportional regulator, EtherCAT®, PROFINET IO RT and EtherNet/IP

M84P MALE

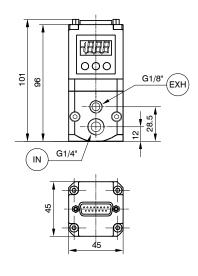
- 1 = TX Signal + (Ethernet Transmit High) 2 = RX Signal + (Ethernet Receive High)
- 3 = TX Signal (Ethernet Transmit Low)
- 4 = RX Signal (Ethernet Receive Low)

version



▶ Proportional regulator, standard version with D-SUB connector





Coding: 221E2N. **1**.D.**2**.**9**.**9**

	TYPE
Ū	C = Current signal (4-20 mA / 0-20 mA)
	T = Voltage signal (0-10 V / 0-5 V / 1-5 V)
9	PRESSURE RANGE
	0001 = from 0 to 1 bar
	0005 = from 0 to 5 bar
	0009 = from 0 to 9 bar
	VARIANT
•	= Standard version
	A = Exhaust downstream pressure when power
	supply is removed

Accessories

Model with SUB-D 15 poles connector



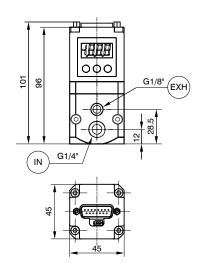
Coding: 5300.F15.**⊚**.**♥**

•	CONNECTOR
	00 = straight connector
	90 = 90° connector
	VARIANT
0	00 = casing IP65*
v	03 = cable 3 meters
	05 = cable 5 meters

^{*}without cable

Proportional regulator, CANopen® version with D-SUB connector





Coding: 221E2N.S.C.**₽.◊**

•	PRESSURE RANGE
	0001 = from 0 to 1 bar
	0005 = from 0 to 5 bar
	0009 = froma 0 to 9 bar
V	VARIANT
	= Standard version
	A = Exhaust downstream pressure when power
	supply is removed

Accessories

Model with SUB-D 15 poles connector



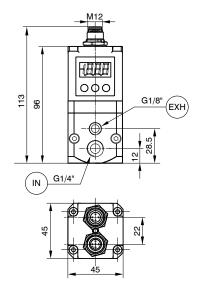
Coding: 5300.F15.**⊙.⊘**

CONNECTOR
00 = straight connector
90 = 90° connector
VARIANT
00 = casing IP65*
03 = cable 3 meters
05 = cable 5 meters

^{*}without cable

Proportional regulator, CANopen® version with M12 connector





Coding: 221E2N.M.C.**②**.**♥**

•	PRESSURE RANGE
	0001 = from 0 to 1 bar
	0005 = from 0 to 5 bar
	0009 = from 0 to 9 bar
8	VARIANT
	= Standard Version
	A = Exhaust downstream pressure when power
	supply is removed

Note: This model doesn't include the terminating resistor

Accessories

Power supply connector

Female straight connector M12A 4P



Network connector

Male straight connector M12A 5P

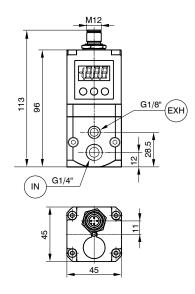


Coding: 5312A.F04.00

Coding: 5312A.M05.00

Proportional regulator, M12 standard version





Coding: $221E2N. \bigcirc . \bigcirc . \bigcirc . \bigcirc . \bigcirc$

Û	TYPE
	C = Current signal (4-20 mA)
	T = Voltage signal (0-10 V)
	OUTPUT
0	F = Voltage analogue output
.	G = Current analogue output
	H = Digital output
	PRESSURE RANGE
e	0001 = from 0 to 1 bar
•	0005 = from 0 to 5 bar
	0009 = from 0 to 9 bar
	VARIANT
•	= Standard Version
	A = Exhaust downstream pressure when power supply is removed

Accessories

Power supply connector



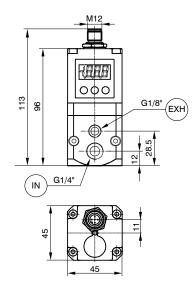
Female straight connector M12A 4P

Coding: 5312A.F04.00



Proportional regulator, IO-Link version





Coding: 221E2N.I.B.0009.

•	VARIANT
	= Standard Version
	A = Exhaust downstream pressure when power supply is removed
	supply is removed

Accessories

Power supply connector

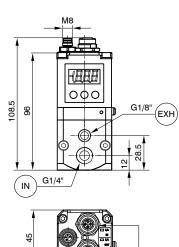
Female straight connector M12A 4P



Coding: 5312A.F05.00

Proportional regulator, EtherCAT®, PROFINET IO RT and EtherNet/IP version





Coding: 221E2N. **1**.0009. **3**

	TYPE
Ū	EC = EtherCAT®
	PN = PROFINET IO RT
	EI = EtherNet/IP
•	VARIANT
	= Standard Version
	A = Exhaust downstream pressure when power
	supply is removed

Accessories

Power supply connector





 $\textbf{Coding:}\ 5312D.M04.00$

Intermediate electro-pneumatic shut-off module 2/4/6/8 positions

Coding: 22E0.**∅**.**①**.**②**

	Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	\Box
Working pressure (bar)	From vacuum to 10 3 7 (piloting 12/14)]
Temperature °C	-5 +50	
Feeding	+ 24 V DC ±10%	
Protection	Inverted polarity protection	
Maximum load	100 mA	\Box
Indicators	+ 24 V DC presence LED	٦ŀ
Series modules maximum number	3	

	MODULE
0	10 = 12-14 open
	11 = 12-14 closed
	SHUT-OFF
	2A = 2 Signals
O	4A = 4 Signals
	6A = 6 Signals
	8A = 8 Signals
	CONNECTION
•	M8 = M8
	M12 = M12

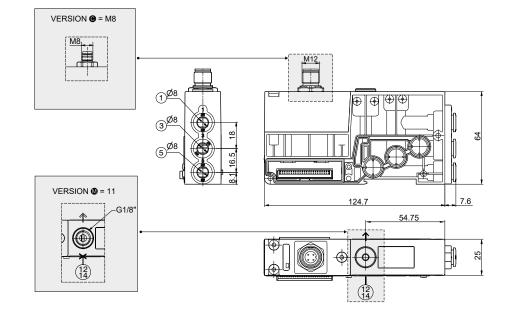


Weight 120 g

22E0. **1**. **1**. M12



Weight 120 g 22E0.**∅**.**⊕**.M8



WORKING PRINCIPLE / SIMPLIFIED FUNCTIONAL DIAGRAM

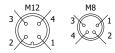
 $Intermediate\ electro-pneumatic\ shut-off\ module\ allows\ you\ to\ interrupt\ at\ the\ same\ time\ the\ first$ $2, 4, 6 \, \text{or} \, 8 \, \text{available command signals for the valves after the module itself.}$

When the shut-off module is present, the controlled output logic signal values are equal to the input logic signal values which came from the serial node or the multi-pin module.

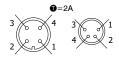
If the supply input signal is absent, the controlled output logic signal values are all equal to zero. This module is particularly useful when control signals are used to block the valves; it is also

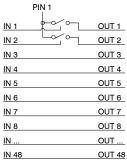
 $effective\ both\ with\ serial\ management\ and\ multi-pin\ connection\ of\ the\ manifolds.$

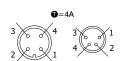
It is possible to use more modules to interrupt every command signals simply by inserting them before the signals to be interrupted.



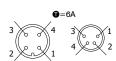
PIN	DESCRIPTION
1	+ 24 V DC
2	NOT CONNECTED
3	GND
4	NOT CONNECTED



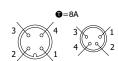




OUT 1
OUT 2
OUT 3
OUT 4
OUT 5
OUT 6
OUT 7
OUT 8
OUT
OUT 48



	PIN 1	
<u>IN 1</u>		OUT 1
IN 2		OUT 2
IN 3		OUT 3
<u>IN 4</u>		OUT 4
IN 5		OUT 5
<u>IN 6</u>		OUT 6
<u>IN 7</u>		OUT 7
IN 8		OUT 8
<u>IN</u>		OUT
IN 48		OUT 48



	PIN 1	
<u>IN 1</u>		OUT 1
IN 2	-	OUT 2
IN 3		OUT 3
<u>IN 4</u>		OUT 4
<u>IN 5</u>		OUT 5
<u>IN 6</u>		OUT 6
IN 7	-	OUT 7
IN 8		OUT 8
<u>IN</u>		OUT
IN 48		OUT 48

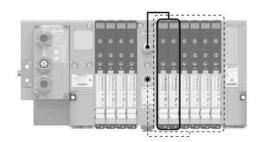
Usage examples

EXAMPLE 1

Manifold of 10 solenoid valves on which you want to interrupt signals 9 and 10.

Assembly:

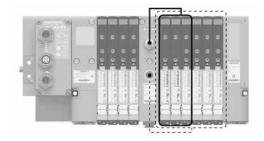
- 4 bistable solenoid valves (not interruptible because before the module)
- 1 intermediate electro-pneumatic shut-off module, 2 signals M8 with conduit 12/14 closed
- 2 monostable solenoid valves (interruptible)
- 4 bistable solenoid valves (managed directly by the corresponding command signal)



EXAMPLE 2

Manifold of 10 solenoid valves on which you want to interrupt signals from 9 to 12. Assembly:

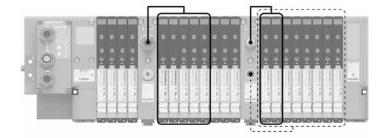
- 4 bistable solenoid valves (not interruptible because before the module)
- 1 intermediate electro-pneumatic shut-off module, 4 signals M8 with conduit 12/14 closed
- 2 monostable solenoid valves (interruptible)
- 4 bistable solenoid valves (the first one is interruptible, the others are managed directly by the corresponding command signal)



EXAMPLE 3

Manifold of 20 solenoid valves on which you want to interrupt signals from 9 to 16 and 23 to 26. Assembly:

- 4 bistable solenoid valves (not interruptible because before the module)
- 1 intermediate electro-pneumatic shut-off module, 8 signals M12 with conduit 12/14 open
- 2 monostable solenoid valves (interruptible)
- 6 bistable solenoid valves (the first three are interruptible, the others are managed directly by the corresponding command signal)
- 1 intermediate electro-pneumatic shut-off module, 4 signals M8 with conduit 12/14 closed
- 8 bistable solenoid valves (the first two are interruptible, the others are managed directly by the corresponding command signal)



Key

S.V. electrically managed by the shut-off module

----- S.V. pneumatically managed (12/14) by the shut-off module



Intermediate inlet/Exhaust module with external pilot

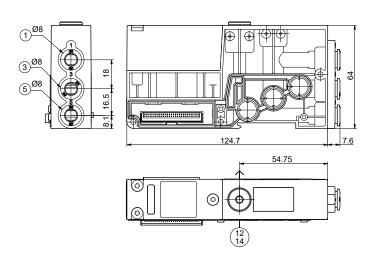
ith external pilot		Coding: 22E0. ■	
	Technical characteristics		MODULE
	Filtered air. No lubrication needed, if applied it shall be continuous	Ø	10 = 12-14 open
	From vacuum to 10 3 7 (piloting 12/14)		11 = 12-14 closed
	-5+50		

	MODULE
•	10 = 12-14 open
-	11 = 12-14 closed



Working pressure (bar)

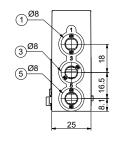
Temperature °C

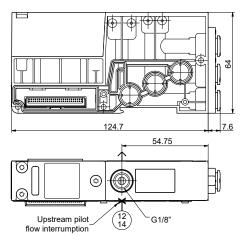


Weight 111 g

22E0.10







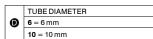
Weight 111 g

22E0.11



Polyethylene Silencer Series SPL-R







Coding: 2230.17



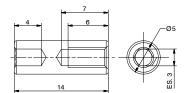
Weight 1,3 g

M3 nuts kit

Coding: 2240.KD.00



The Kit includes 6 pieces



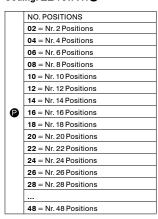
Tie-rod M3

AIR DISTRIBUTION





Coding: 2240.KT.



The Kit includes 3 pieces

DIN rail adapter



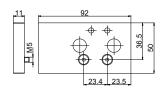


21.5

Offset compensation plate



Weight 116 g



Coding: 22E0.P1

Coding: 22E0.P0

Series 2200 "Optyma-Sc"



Optyma solenoid valves series comes completed by "Compact" version, useful when a limited number of solenoid valves is needed without managing input and output signals.

Standard base blocks provide 4 or 6 solenoid valves positions. Standard base blocks can be individually sold even without solenoid valves to allow maximum configuration flexibility. Solenoid valves can be chosen from whole Opytma-S range.

Manifolds made in this way allow great room and weight saving against corrispondent pneumatic group from Optyma-S series.

- Flow rate: up to 550[NI/min], using the modular base with Ø8 quick fitting tube.
- Modular base available with Ø4, Ø6, Ø8 quick fitting tube.
- The solenoid pilots are low consumption and fitted on the same side of the valve.
- Mono and bistable valves have the same dimension.
- Easy and fast assembly on the sub base thanks to the "one screw" mounting solution.
- Possibility to replace a valve without the need of disconnecting the pneumatic pipes.
- Electrical and pneumatic connections positioned on the same side.
- Possibility to operate with different pressures and vacuum.
- 4 or 6 electric signals management (two signals per position, indipendently of the mounted solenoid valve).
- The electrical connection is achieved thanks to a 9 or 15 poles connector.
- The protection grade is IP65 directly integrated in the manifold components.

"Shifting time of pneumatic directional control valves or moving parts, logic devices were measured in accordance to ISO 12238:2001"

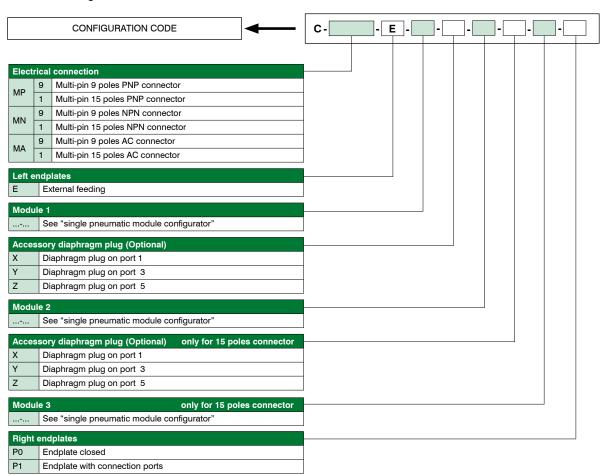
Construction characteristics

Body	Technopolymer
Seals	NBR
Piston seals	NBR
Springs	Stainless Steel
Operators	Technopolymer
Pistons	Technopolymer
Spools	Stainless Steel

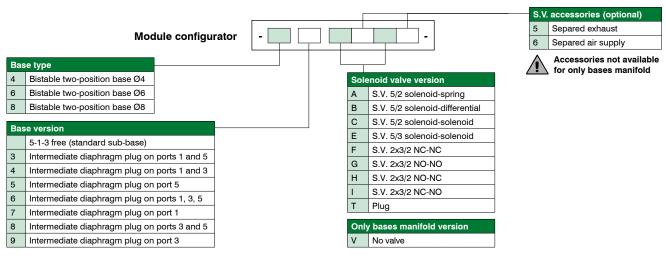
Operational characteristics

Supply voltage	24V DC ±10%
Pilot consumption	1,3W nominal, in energy saving mode 0,25W
Pilot working pressure [12-14]	from 2,5 to 7 bar max.
Valve working pressure [1]	from vacuum to 10 bar max.
Operating temperature	from-5°C to +50°C
Protection degree	IP40
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous

Rules and configuration scheme



Single pneumatic module configurator



It's possible to order an only base manifold by select the field V as described. This selection MUST be done for every place into the manifold. It's NOT possible to configure manifolds with positions both filled with S.V. and free.



Note:

When composing the configuration, always bear in mind that the maximum number of electrical signals available is:

- 8 for multi-pin 9 poles connector (MP9)
- 12 for multi-pin 15 poles connector (MP1)

Consider that every base uses 4 signals and the number of avaliable signals depends on the electrical connection type, so the number of bases you can use is related to the electrical connection you chose. You can order a "bases only" manifold by selecting "V" option in the solenoid valves dedicated field.

If a monostable valve is used on a bistable type base (2 electrical signals occupied), an electrical signal is lost

However, this makes it possible to replace the monostable valve with a bistable valve in the same position.

Diaphragm plugs are used to interrupt ports 1, 3 and 5 of the sub-base.

If it is necessary to interrupt more than one port at the same time, put the letters that identify their position in sequence (e.g.: if it is necessary to intercept the ports 3 and 5 you must put the letters YZ).

Only base configuration example: C-MP1-E-6VV-6VV-6VV-P0

- 15 poles multi-pin connection
- Standard left endplate
- Bistable standard base Ø6 without solenoid valves (6VV)
- Bistable standard base Ø6 without solenoid valves (6VV)
- Bistable standard base Ø6 without solenoid valves (6VV)
- Right Endplates closed



Attention: Complete with solenoid valves before use.



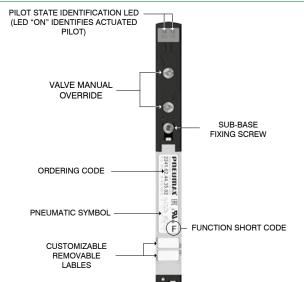
Standard configuration example: C-MP1-E-6AA-6CF-6FF-P1

- 15 poles multi-pin connection
- Standard left endplate
- Bistable standard base Ø6 with AA type solenoid valves (6AA)
- Bistable standard base Ø6 with CF type solenoid valves (6CF)
- Bistable standard base Ø6 with FF type solenoid valves (6FF)
- Right endplate with supply and exhaust ports

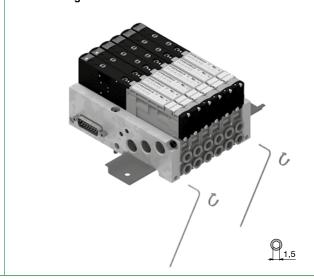


Attention: The signal allocation is 2 signals for every positions, regardless of solenoid valve type.

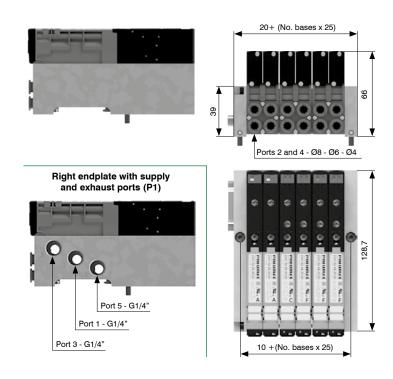


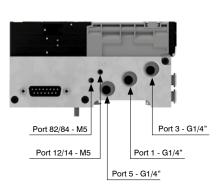


DIN rail fixing



Supply ports and maximum possible size according to valves used







Manual override actuation

Instable function:

Push to actuate (when released it moves back to the original position)

Bistable function: Push and turn to get the bistable function





Note: we recommend the manual override is returned to it's original position when not in use

Solenoid valves installation

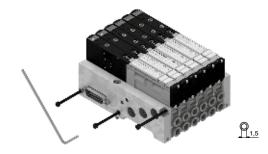






 $\textbf{Note} : \mathsf{Torque} \ \mathsf{moment} \ \mathsf{0,8} \ \mathsf{Nm}$

Sub-base assembly



Minimum torque moment: 2 Nm Maximum fixing torque for fittings: 2,5 Nm

Solenoid-Spring

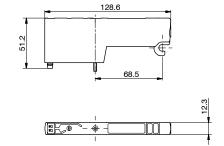
Coding: 2241.52.00.39.

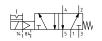
Technical characteristics			
Fluid		Filtered air. No lubrication needed, if applied it shall be continuous	11 .
Working pressure (ba	r)	From vacuum to 10	Ш,
Pilot pressure (bar)		2,5 7	
Temperature °C		-5 +50	SH
	with modular base, tube ø4	140	ĺ
Flow rate at 6 bar with Δp=1 (NI/min)	with modular base, tube ø6	300	
with 2p=1 (rtt/min)	with modular base, tube ø8	400	
Response time accord	ding to ISO 12238, activation time (ms)	15	
Response time accord	ding to ISO 12238, deactivation time (ms)	20	1

1		VOLTAGE
٦		02 = 24 VDC PNP
1	V	12 = 24 VDC NPN
1		05 = 24 VAC

SHORT FUNCTION CODE "A"







Weight 67 g

Solenoid-Differential

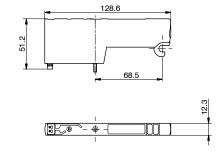
Technical characteristics		
Fluid		Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (ba	ur)	From vacuum to 10
Pilot pressure (bar)		2,5 7
Temperature °C		-5 +50
Fla	with modular base, tube ø4	140
Flow rate at 6 bar with Δp=1 (NI/min)	with modular base, tube ø6	400
with 2p=1 (M/min)	with modular base, tube ø8	550
Response time according to ISO 12238, activation time (ms)		20
Response time according to ISO 12238, deactivation time (ms)		25

Coding: 2241.52.00.36.

	VOLTAGE
	02 = 24 VDC PNP
V	12 = 24 VDC NPN
	05 = 24 VAC

SHORT FUNCTION CODE "B"





Weight 67 g

Solenoid-Solenoid

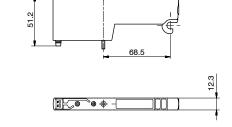
Technical characteristics			
Fluid		Filtered air. No lubrication needed, if applied it shall be continuous	
Working pressure (bar)		From vacuum to 10	
Pilot pressure (bar)		2,5 7	
Temperature °C		-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	with modular base, tube ø4	140	
	with modular base, tube ø6	400	
	with modular base, tube ø8	550	
Response time according to ISO 12238, activation time (ms)		10	
Response time according to ISO 12238, deactivation time (ms)		10	

Coding: 2241.52.00.35.

	VOLTAGE
	02 = 24 VDC PNP
V	12 = 24 VDC NPN
	05 = 24 VAC

SHORT FUNCTION CODE "C"





128.6

Weight 67 g

Solenoid-Solenoid 5/3 (Closed centres)

Technical characteristics			
Fluid		Filtered air. No lubrication needed, if applied it shall be continuous	
Working pressure (bar)		From vacuum to 10	
Pilot pressure (bar)		2,5 7	
Temperature °C		-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	with modular base, tube ø4 140		
	with modular base, tube ø6	300	
	with modular base, tube ø8	400	
Response time according to ISO 12238, activation time (ms)		15	
Response time according to ISO 12238, deactivation time (ms)		20	

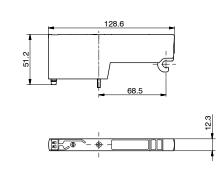
Coding: 2241.53.31.35.

•	VOLTAGE
	02 = 24 VDC PNP
	12 = 24 VDC NPN
	05 = 24 VAC

SHORT FUNCTION CODE "E"









Solenoid-Solenoid 2x3/2

Technical characteristics			
Fluid		Filtered air. No lubrication needed, if applied it shall be continuous	
Working pressure (bar)		From vacuum to 10	
Pilot pressure (bar)		≥3+(0,2x Inlet pressure)	
Temperature °C		-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	with modular base, tube ø4	140	
	with modular base, tube ø6	360	
	with modular base, tube ø8	420	
Response time according to ISO 12238, activation time (ms)		15	
Response time according to ISO 12238, deactivation time (ms)		25	

Coding: 2241.62. **3**5.

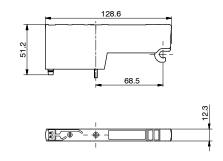
	g :o
	FUNCTION
	44 = NC-NC (5/3 Open centres)
	45 = NC-NO (normally closed-
9	normally open)
	54 = NO-NC (normally open-
	normally closed)
	55 = NO-NO (5/3 Pressured centres)
	VOLTAGE
	02 = 24 VDC PNP
♥	12 = 24 VDC NPN
	05 = 24 VAC

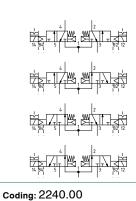
NC-NC (5/3 Open centres)="F"
N.O.-N.O. (5/3 Pressured centres)="G"
N.O.-N.O. -3"H"
N.O.-N.C.="I"

Example: If inlet pressure is set at 5 bar then pilot pressure must be at least Pp=3+(0,2*5)=4



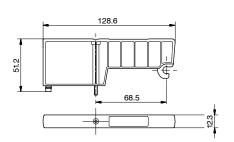
Weight 75 g





Closing plate

Technical characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Working pressure (bar)	From vacuum to 10	
Pilot pressure (bar)	2,5 7	
Tomporature °C	F 150	



SHORT FUNCTION CODE "T"

Weight 30 g

Coding: 22C0.♥.S

Left Endplate

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	2,5 7
Temperature °C	-5 +50

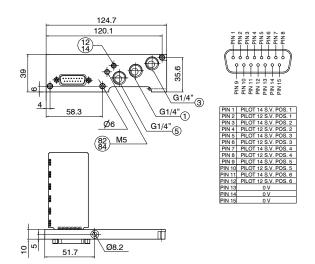
VERSION 15 = Multi-pin 15 poles PNP connector 09 = Multi-pin 9 poles PNP connector 15N = Multi-pin 15 poles NPN connector 09N = Multi-pin 9 poles NPN connector15A = Multi-pin 15 poles AC connector

09A = Multi-pin 9 poles AC connector



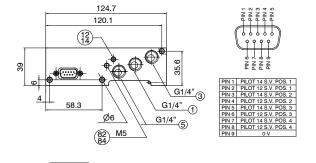
PORT 12/14 SEPARED FROM PORT 1. DO NOT PRESSURIZE PORT 82/84. PILOTS EXHAUST. Weight 199 g

22C0.15.S









Ø8.2

PORT 12/14 SEPARED FROM PORT 1. DO NOT PRESSURIZE PORT 82/84. PILOTS EXHAUST. Weight 199 g

22C0.09.S

Coding: 22C0.♥ VERSION

00 = Blind plate

 ${\bf 03} = With \ a limentation/exhaust \ ports$

Right Endplate	
Te	chnical characteristics
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	2,5 7
Temperature °C	-5 +50

Technical characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Working pressure (bar)	From vacuum to 10	
Pilot pressure (bar)	2,5 7	
Temperature °C	-5 +50	

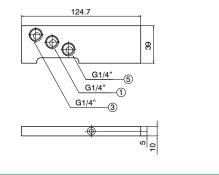


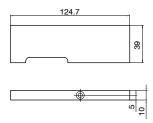
PORT 12/14 SEPARED FROM PORT 1. DO NOT PRESSURIZE PORT 82/84. PILOTS EXHAUST. Weight 148g

22C0.03



Weight 148g	





Modular base (2 places)

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Temperature °C	-5 +50



Coding: 22E0.♥.06 VERSION

Ш	•	TUBE DIAMETER
		4 = Ø4
		6 = Ø6
		8 = Ø8
ſ		FUNCTION
	•	01 = Opened ports
		03 = Ports 1-5 separated
		04 = Ports 1-3 separated
		05 = Port 5 separated
		06 = Separated ports
		07 = Port 1 separated
		08 = Ports 3-5 separated
		09 = Port 3 separated



Weight 75 g 2244.**G**C

Weight 75 g 2246.**G**C

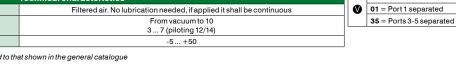


Weight 75 g

2248.**G**C Individual supply or exhaust module

<u>/</u>	
Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
	3 7 (piloting 12/14)
Temperature °C	-5 +50

 $The {\it flow rate of the solenoid valve will be reduced compared to that shown in the general catalogue}$





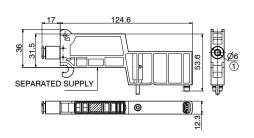
Weight 44 g

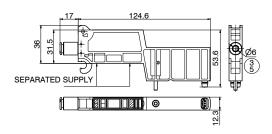
22E0.01.06



Weight 44 g

22E0.35.06







SEP type silencer

Coding: SEP14

Diaphragm plug

Coding: 2230.17

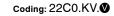


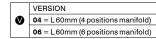
Weight 2 g



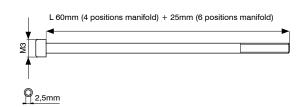
Weight 1,3 g

TCEI M3 screw kit









The Kit includes 3 pieces

Cable complete with connector, 9 Poles, IP40







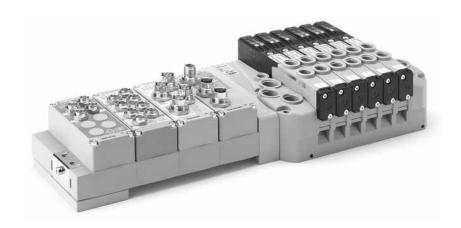
Cable complete with connector, 15 Poles, IP40



Coding: 2400.15. **0**.00

	CABLELENGTH
	03 = 3 meters
•	05 = 5 meters
	10 = 10 meters

Series 2500 Optyma-F EVO



2500 SERIES Optyma-F EVO SOLENOID VALVES MANIFOLD

- Increased flexibility
- Digital and analogue I/O modules
- Manufactured in technopolymer
- Wide range of communication protocols









EtherNet/IP





Construction characteristics

Body	Technopolymer
Seals	NBR
Piston seals	NBR
Springs	Stainless Steel
Operators	Technopolymer
Pistons	Technopolymer
Spools	Technopolymer

Operational characteristics

+ 24 V DC ±10%	
1,3W	
from 3 up to 7 bar max.	
from vacuum to 10 bar max.	
from -5°C to +50°C	
IP65	
Filtered air. No lubrication needed, if applied it shall be continuous	

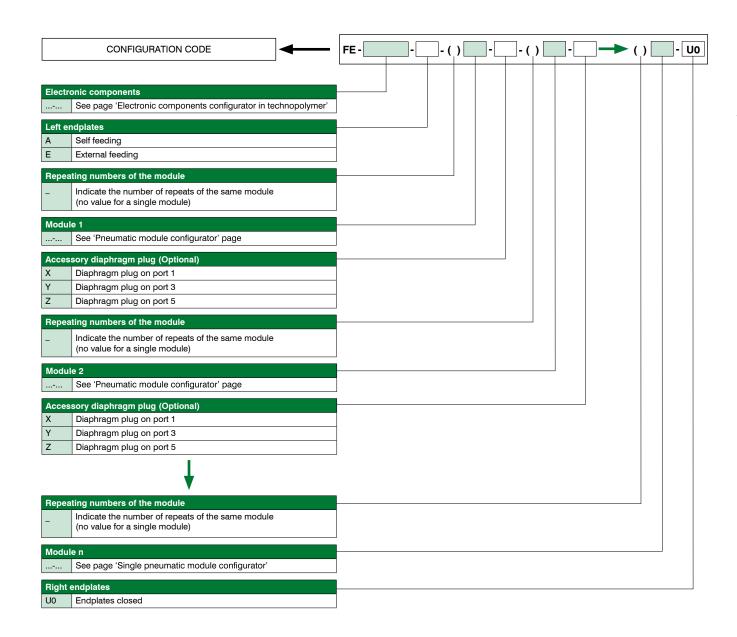
WE SPEAK EVO

The Optyma-F series becomes EVO and interfaces with the new PX series modular electronic system while still retaining all of its technical advantages. This is enriched with new features that further extend the flexibility of the product:

- Flow rate of 1000 NI/min
- Quick assembly using rotating pins
- Operating using different pressures and vacuum



Rules and configuration scheme





Note:

When composing the configuration, always bear in mind that the maximum number of electrical signals available is:

- 32 if a 37-pole multi-pin module, a serial node or IO-Link interface are used.
- 24 if a 25-pole multi-pin module is used.

If a monostable valve is used on a bistable type base (2 electrical signals occupied), an electrical signal is lost.

However, this makes it possible to replace the monostable valve with a bistable valve in the same position.

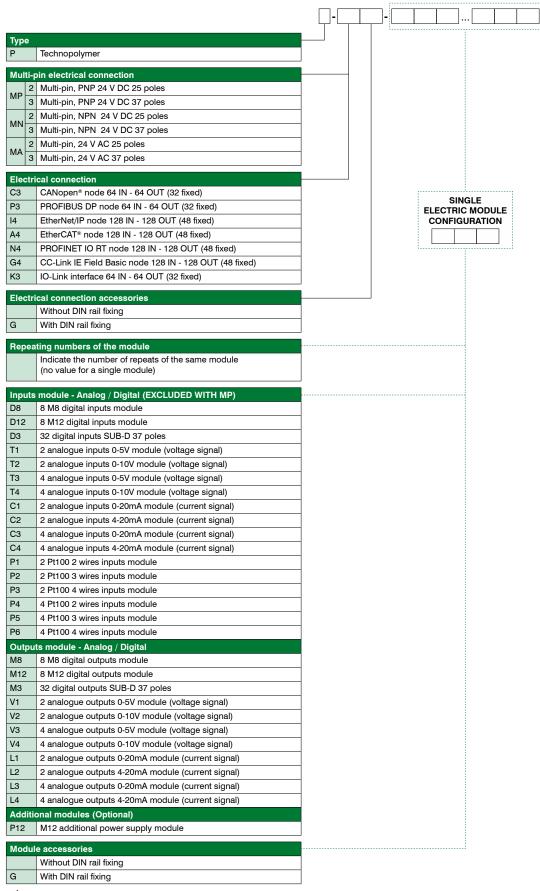
Diaphragm plugs are used to interrupt ports 1, 3 and 5 of the sub-base

If it is necessary to interrupt more than one port at the same time, put the letters that identify their position in sequence

(e.g.: if it is necessary to intercept the ports 3 and 5 you must put the letters YZ).

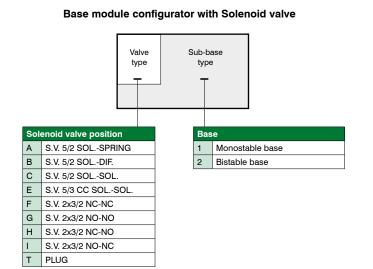
If one or more ports must be interrupted more than once, the addition of the intermediate supply/discharge module is necessary.

Electronic components configurator in technopolymer

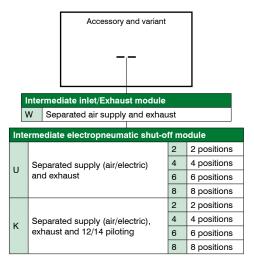


Refer to the current limits indicated in the pages relating to the nodes / IO-Link interface

Modules configurator

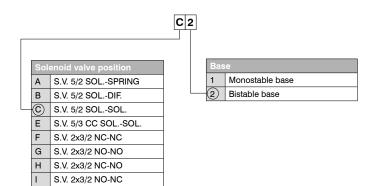


Accessory module configurator

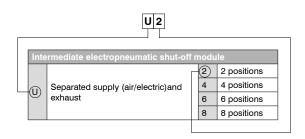


Configuration example of single module:

Bistable base, 5/2 Solenoid-Solenoid valve



Intermediate electropneumatic shut-off module 2 positions



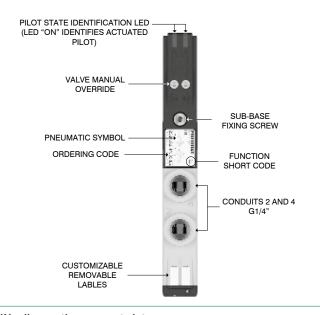
Configuration example of complete group:

- Technopolymer PX3 serial system (P-A4-M12-M8-P4)
- Left endplates External feeding (E)
- · Bistable base with (F2) Solenoid valve
- Bistable base with (C2) Solenoid valve
- Monostable base with (A1) Solenoid valve
- Bistable base with (E2) Solenoid valve
- Bistable base with (C2) Solenoid valve
- Monostable base with (B1) Solenoid valve
- Right endplates closed (U0)

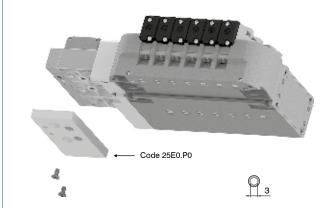


FE-P-A4-M12-M8-P4-E-F2-C2-A1-E2-C2-B1-U0





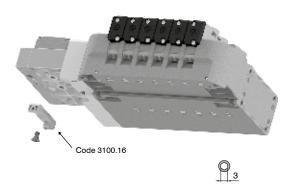
Offset compensation plate





Attention: This accessory is supplied on the manifold unless otherwise stated. This is not compatible for DIN rail mounting.

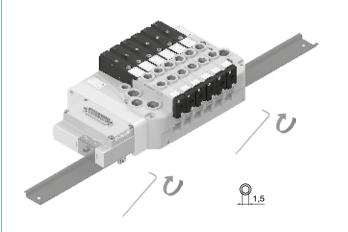
DIN rail mounting support plate



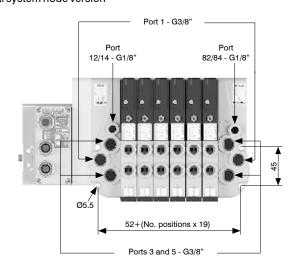


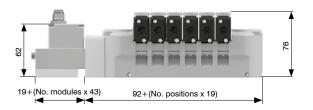
Attention: This must be included when creating the manifold configuration; exclude the offset compensation plate.

DIN rail fixing

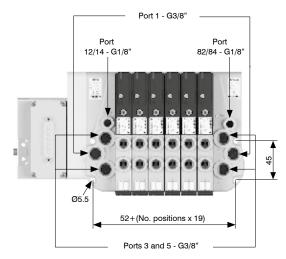


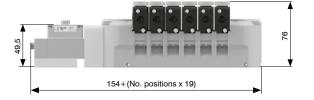
Supply ports and maximum possible size according to valves usedSerial system node version





Multi-pin version





Series 2500 Optyma-F EVO - Installation specifications

Manual override actuation

Instable function:

Push to actuate (when released it moves back to the original position)



Bistable function: Push and turn to get the bistable function



Note: we recommend the manual override is returned to it's original position when not in use

Solenoid valves installation

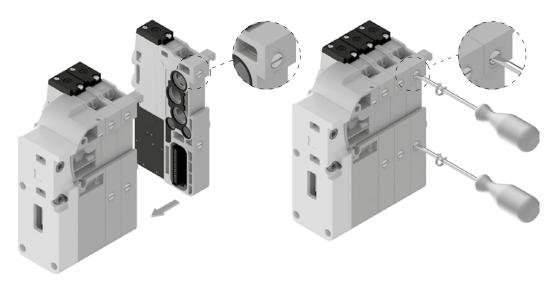






Note: Torque moment 1 Nm

Sub-base assembly



PNEUNAX

Solenoid-Spring

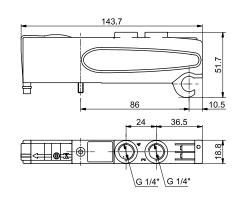
Technical characteristics			
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous		
Working pressure (bar)	From vacuum to 10		
Pilot pressure (bar)	37		
Temperature °C	-5 +50		
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	1000		
Response time according to ISO 12238, activation time (ms)	14		
Response time according to ISO 12238, deactivation time (ms)	40		

Coding: 2531.52.00.39.

	VOLTAGE
	02 = 24 VDC PNP
v	12 = 24 VDC NPN
	05 = 24 VAC

SHORT FUNCTION CODE "A"
Weight 123 g







Solenoid-Differential

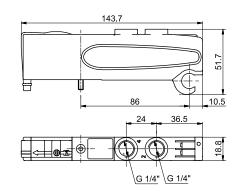
Technical characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Working pressure (bar)	From vacuum to 10	
Pilot pressure (bar)	37	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	1000	
Response time according to ISO 12238, activation time (ms)	20	
Response time according to ISO 12238, deactivation time (ms)	29	

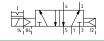
Coding: 2531.52.00.36.

	VOLTAGE
	02 = 24 VDC PNP
V	12 = 24 VDC NPN
	05 = 24 VAC

SHORT FUNCTION CODE "B"
Weight 120 g







Solenoid-Solenoid

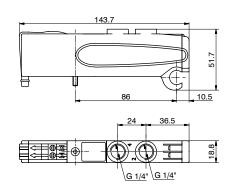
Technical characteristics			
	Fluid	Filtered air. No lubrication needed, if applied it shall be continuous]] ,
	Working pressure (bar)	From vacuum to 10	Ш,
	Pilot pressure (bar)	37]
	Temperature °C	-5 +50	SI
	Flow rate at 6 bar with Δp=1 (NI/min)	1000	W
	Response time according to ISO 12238, activation time (ms)	10	
	Response time according to ISO 12238, deactivation time (ms)	14	1

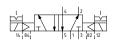
Coding: 2531.52.00.35.

•	VOLTAGE
	02 = 24 VDC PNP
	12 = 24 VDC NPN
	05 = 24 VAC

SHORT FUNCTION CODE "C"
Weight 128 g









Solenoid-Solenoid 5/3

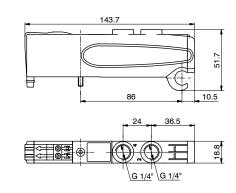
Technical characteristics			
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous][
Working pressure (bar)	From vacuum to 10	11	
Pilot pressure (bar)	2,5 7]	
Temperature °C	-5 +50] {	
Flow rate at 6 bar with Δp=1 (NI/min)	600	٦,	
Response time according to ISO 12238, activation time (ms)	15]	
Response time according to ISO 12238, deactivation time (ms)	20	1	

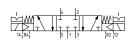
Coding: 2531.53.31.35.

		VOLTAGE
		02 = 24 VDC PNP
٦	V	12 = 24 VDC NPN
		05 = 24 VAC
┑		

SHORT FUNCTION CODE "E" Weight 126 g





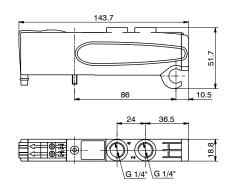


Solenoid-Solenoid 2x3/2

Technical characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Working pressure (bar)	From vacuum to 10	
Pilot pressure (bar)	≥3+(0,2 x Inlet pressure)	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	700	
Response time according to ISO 12238, activation time (ms)	15	
Response time according to ISO 12238, deactivation time (ms)	25	

 $Example: If inlet pressure is set at 5 bar then pilot pressure must be at least Pp=2,5+(0,2*5)=3,5 \ bar then pilot press$



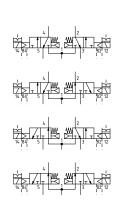


Coding: 2531.62.**●**.35.**♥**

	FUNCTION
	44 = NC-NC (5/3 Open centres)
	45 = NC-NO (normally closed-
•	normally open)
	54 = NO-NC (normally open-
	normally closed)
	55 = NO-NO (5/3 Pressured centres)
	VOLTAGE
•	02 = 24 VDC PNP
V	12 = 24 VDC NPN
	05 = 24 VAC

NC-NC (5/3 Open centres)="F"
N.O.-N.O. (5/3 Pressured centres)="G"
N.O.-N.O.="H"
N.O.-N.C.="I"

Weight 115,5 g





Left Endplate

Technical characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Working pressure (bar)	From vacuum to 10 (external pilot base) 3 7 (self-feeding base)	
Pilot pressure (bar)	3 7 (external pilot base)	
Temperature °C	-5 +50	

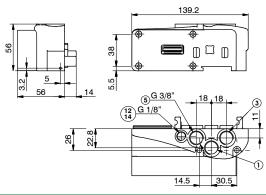
Coding: 25E0.♥.F

V	VERSION
	02 = External feeding
	12 = Self-feeding



12/14 SEPARATED FROM PORT 1 Weight 206 g

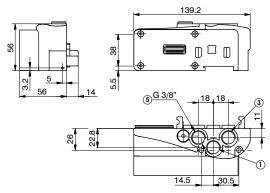
25E0.02.F





12/14 CONNECTED TO PORT 1 Weight 206 g

25E0.12.F



Right Endplate

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Temperature °C	-5 +50

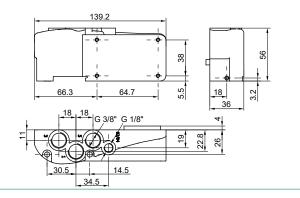
Coding: 2530.03.

9	ELECTRICAL CONNECTION
•	00 = Electrical connection



PORT 82/84= DO NOT PRESSURIZE, SOLENOID PILOTS EXHAUST Weight 181,5 g

2530.03.00



Modular base

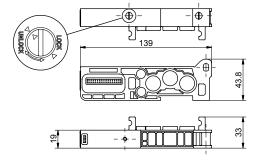
Technical characteristics		
123	in characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Working pressure (bar)	From vacuum to 10	
Temperature °C	-5 +50	

Coding: 2530.01**♥**

	VERSION
V	M = for monostable S.V.
-	B = for bistable S.V.



SHORT CODE "1" (for monostable S.V.) SHORT CODE "2" (for bistable S.V.) Weight 91,5 g



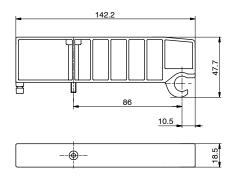


Closing plate

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Temperature °C	-5 +50



SHORT FUNCTION CODE "T" Weight 53.5 g



Intermediate Inlet/Exhaust module

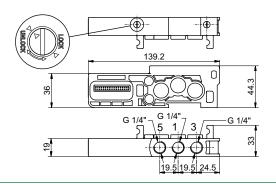
Coding: 2530.10

Coding: 2530.00

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Temperature °C	-5 +50



SHORT FUNCTION CODE "W" Weight 110 g



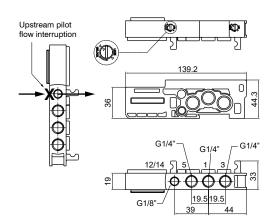
Intermediate inlet/Exhaust module with external pilot

Coding: 2530.11

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	37
Temperature °C	-5 +50



SHORT CODE "K" Weight 162 g



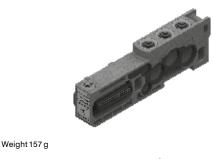
Intermediate electro-pneumatic shut-off module 2/4/6/8 positions

Technical characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Working pressure (bar)	From vacuum to 10 3 7 (piloting 12/14)	
Temperature °C	-5 +50	
Feeding	+ 24 V DC ±10%	
Maximum load	100 mA	
Series modules maximum number	3	

MODULE 10 = Supply and exhaust 0 11 = Supply and exhaust with separate pilot SHUT-OFF 2A = 2 Signals Ū 4A = 4 Signals

Coding: 2530. **10**.

6A = 6 Signals 8A = 8 Signals

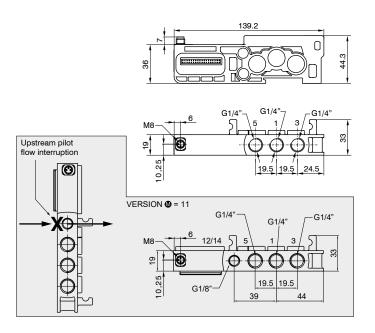


2530.10.



Weight 163 g

2530.11.



WORKING PRINCIPLE / SIMPLIFIED FUNCTIONAL DIAGRAM

 $Intermediate\ electro-pneumatic\ shut-off\ module\ allows\ you\ to\ interrupt\ at\ the\ same\ time\ the\ first$ $2,4,6\,or\,8\,available\,command\,signals\,for\,the\,valves\,after\,the\,module\,itself.$

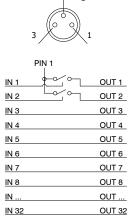
When the shut-off module is present, the controlled output logic signal values are equal to the input logic signal values which came from the serial node or the multi-pin module.

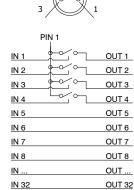
If the supply input signal is absent, the controlled output logic signal values are all equal to zero. This module is particularly useful when control signals are used to block the valves; it is also $effective\ both\ with\ serial\ management\ and\ multi-pin\ connection\ of\ the\ manifolds.$

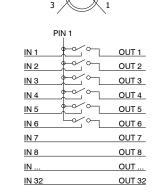
It is possible to use more modules to interrupt every command signals simply by inserting them before the signals to be interrupted.



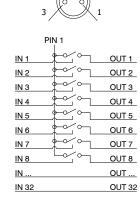
PIN	DESCRIPTION
1	+ 24 V DC
4	NOT CONNECTED
3	GND







1=6A



0=8A



Usage examples

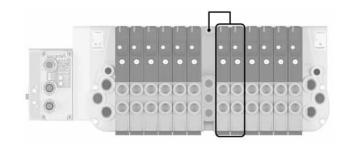
EXAMPLE 1

Manifold of 12 monostable solenoid valves on which you want to interrupt signals 7-8.

Assembly:

- 6 monostable solenoid valves (not interruptible because before the module)
- 1 additional power supply module
- 6 monostable solenoid valves

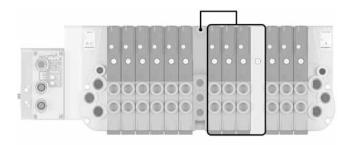
Note: the first 2 of these 6 monostable solenoid valves are interruptible by the module, while the following 4 will work correctly managed directly by the corresponding command signals.



EXAMPLE 2

Manifold of 12 monostable solenoid valves on which you want to interrupt signals 7-8-9. Assembly:

- 6 monostable solenoid valves (not interruptible because before the module)
- 1 additional power supply module
- 3 monostable solenoid valves (interruptible)
- 1 closing plate mounted on a monostable base
- 3 monostable solenoid valves (work correctly managed directly by the corresponding command signals)



EXAMPLE 3

Manifold of 7 monostable and 3 bistable solenoid valves in which you want to interrupt signals 2-3-4-5 and 8-9-10-11. Assembly:

- 1 monostable solenoid valve (not interruptible because before the module)
- 1 additional electro-pneumatic shut-off module
- 6 monostable solenoid valves

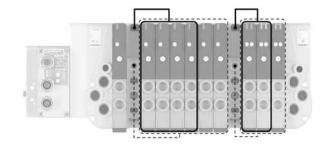
Note: the first 4 of these 6 monostable solenoid valves are interruptible by the module, while the following 2 will work correctly managed directly by the corresponding command signals.

Note no. 2: The pilots of the 6 solenoid valves downstream of the intermediate electro-pneumatic shut-off module are pneumatically powered by the module itself.

- 1 additional electro-pneumatic shut-off module
- 3 bistable solenoid valves

Note no. 3: the first 2 of these 3 bistable solenoid valves are interruptible by the module, while the following will work correctly and are managed directly by the corresponding command signals.

Note no. 4: The pilots of the 3 solenoid valves downstream of the intermediate electro-pneumatic shut-off module are pneumatically powered by the module itself.



Key

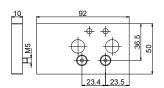
S.V. electrically managed by the shut-off module

- S.V. pneumatically managed (12/14) by the shut-off module

Offset compensation plate





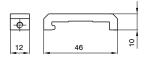


Weight 116 g

DIN rail adapter

Coding: 3100.16





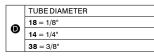
Weight 12 g

AIR DISTRIBUTION

Polyethylene Silencer Series SPL-P

 ${\tt Coding:}\, {\tt SPLP.} {\color{red} \bullet}$

Coding: 2530.17

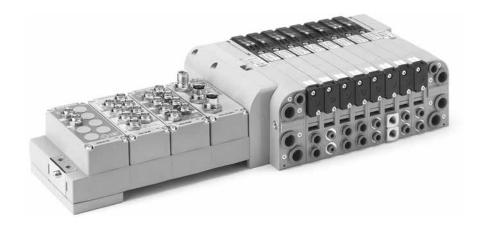




Weight 2,3 g

Diaphragm plug

Series 2500 Optyma-T EVO



2500 SERIES Optyma-T EVO SOLENOID VALVES MANIFOLD

- · Increased flexibility
- Digital and analogue I/O modules
- Manufactured in technopolymer
- Wide range of communication protocols









EtherNet/IP





Construction characteristics

Body	Technopolymer
Body Seals	NBR
Piston seals	NBR
Springs	Stainless Steel
Springs Operators	Technopolymer
Pistons	Technopolymer
Spools	Technopolymer

Operational characteristics

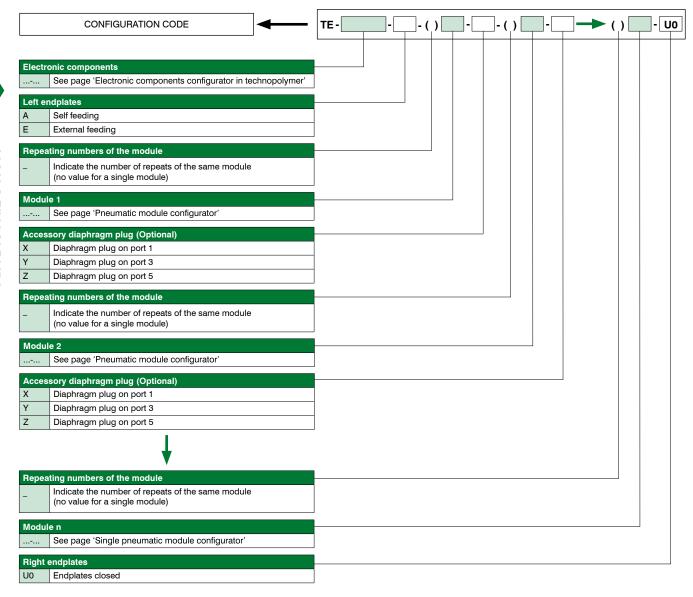
Supply voltage	+ 24 V DC ±10%
Pilot consumption	1,3W
Pilot working pressure [12-14]	from 3 up to 7 bar max.
Valve working pressure [1]	from vacuum to 10 bar max.
Operating temperature	from-5°C to +50°C
Protection degree	IP65
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous

WE SPEAK EVO

The Optyma-T series becomes EVO and interfaces with the new PX series modular electronic system while still retaining all of its technical advantages. This is enriched with new features that further extend the flexibility of the product:
• Flow rate of 750 NI/min

- Assembly with tie rods kit
- Operating using different pressures and vacuum
- Electro-pneumatic shut-off module

Rules and configuration scheme





Note:

When composing the configuration, always bear in mind that the maximum number of electrical signals available is:

- 32 if a 37-pole multi-pin module, a serial node or IO-Link interface are used.
- · 24 if a 25-pole multi-pin module is used.

If a monostable valve is used on a bistable type base (2 electrical signals occupied), an electrical signal is lost.

However, this makes it possible to replace the monostable valve with a bistable valve in the same position.

Diaphragm plugs are used to interrupt ports 1, 3 and 5 of the sub-base.

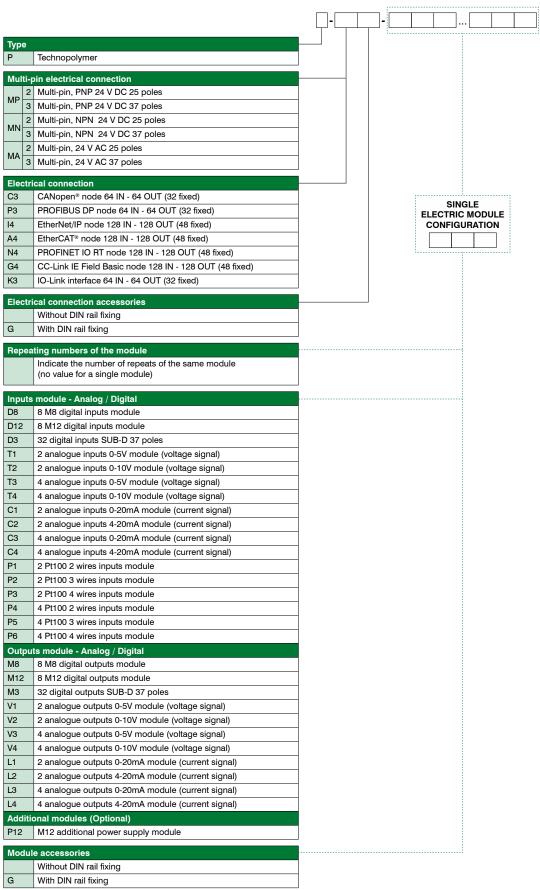
If it is necessary to interrupt more than one port at the same time, put the letters that identify their position in sequence

(e.g.: if it is necessary to intercept the ports 3 and 5 you must put the letters YZ).

If one or more ports must be interrupted more than once, the addition of the intermediate supply/discharge module is necessary.

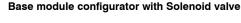


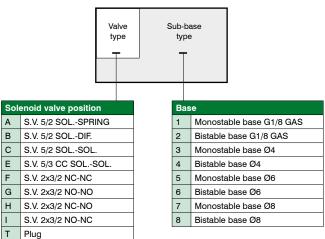
Electronic components configurator in technopolymer



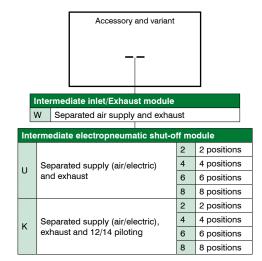
Refer to the current limits indicated in the pages relating to the nodes / IO-Link interface

Modules configurator



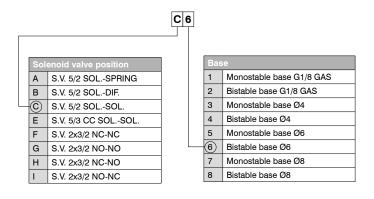


Accessory module configurator

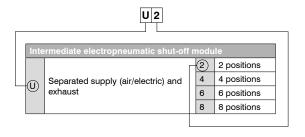


Configuration example of single module:

Bistable base, 5/2 Solenoid-Solenoid valve



Intermediate electropneumatic shut-off module 2 positions



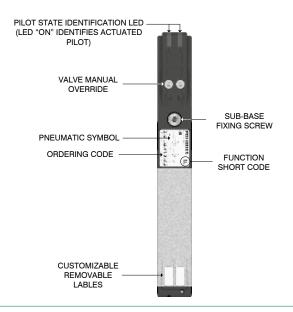
Configuration example of complete group:

- Technopolymer PX3 serial system (P-N4-D8-M8-C1)
- · Left endplates External feeding (E)
- Bistable base with (F6) Solenoid valve
- Monostable base with (B3) Solenoid valve
- · Bistable base with (E6) Solenoid valve
- · Monostable base with (A5) Solenoid valve

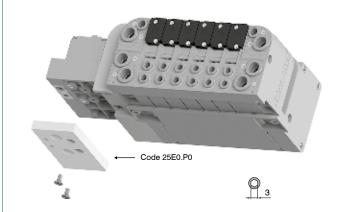
- · Monostable base with (A3) Solenoid valve
- · Monostable base with (B1) Solenoid valve
- Bistable base with (C4) Solenoid valve
- Monostable base with (B3) Solenoid valve
- Right endplates closed (U0)



TE-P-N4-D8-M8-C1-E-F6-B3-E6-A5-A3-B1-C4-B3-U0



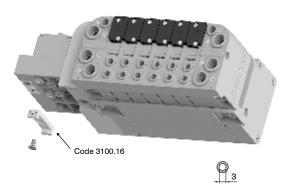
Offset compensation plate





Attention: This accessory is supplied on the manifold unless otherwise stated. This is not compatible for DIN rail mounting.

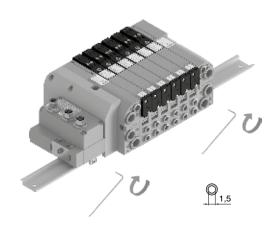
DIN rail mounting support plate



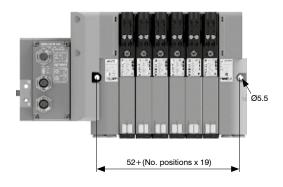


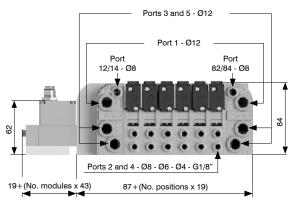
Attention: This must be included when creating the manifold configuration; exclude the offset compensation plate.

DIN rail fixing

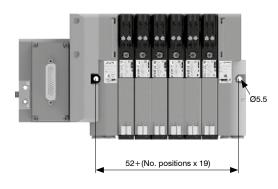


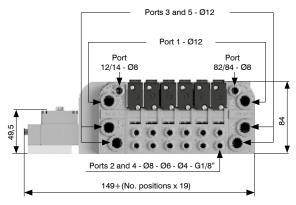
Supply ports and maximum possible size according to valves usedSerial system node version





Multi-pin version







Manual override actuation

Instable function:

Push to actuate (when released it moves back to the original position)



Bistable function: Push and turn to get the bistable function





Note: we recommend the manual override is returned to it's original position when not in use

Solenoid valves installation

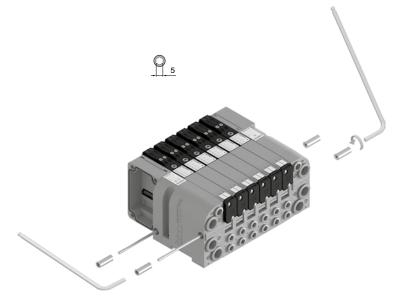






Note: Torque moment 1 Nm

Sub-base assembly



Minimum torque moment: 2,5 Nm Maximum fixing torque for fittings: 3 Nm



Solenoid-Spring

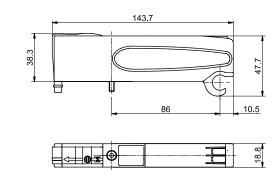
Coding: 2541.52.00.39.

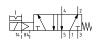
Technical characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous] [
Working pressure (bar)	From vacuum to 10	ן ון
Pilot pressure (bar)	37	
Temperature °C	-5 +50	SH
Flow rate at 6 bar with Δp=1 (NI/min)	750	ີ w
Response time according to ISO 12238, activation time (ms)	14	
Response time according to ISO 12238, deactivation time (ms)	40	

l	VOLTAGE
1	02 = 24 VDC PNP
1	12 = 24 VDC NPN
	05 = 24 VAC

SHORT FUNCTION CODE "A"
Weight 129 g







Solenoid-Differential

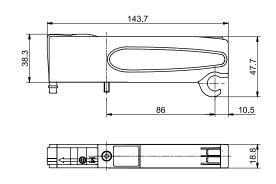
Coding: 2541.52.00.36.

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	37
Temperature °C	-5 +50
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	750
Response time according to ISO 12238, activation time (ms)	20
Response time according to ISO 12238, deactivation time (ms)	29

•	VOLTAGE
	02 = 24 VDC PNP
	12 = 24 VDC NPN
	05 = 24 VAC
NUCRT FUNCTION CORF IDI	

SHORT FUNCTION CODE "B"
Weight 126 g







Solenoid-Solenoid

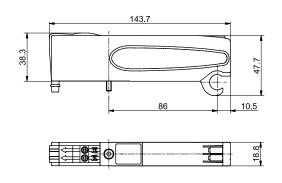
Coding: 2541.52.00.35.

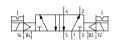
Technical characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Working pressure (bar)	From vacuum to 10	
Pilot pressure (bar)	37	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	750	
Response time according to ISO 12238, activation time (ms)	10	
Response time according to ISO 12238, deactivation time (ms)	14	

		VOLTAGE
٦		02 = 24 VDC PNP
٦	V	12 = 24 VDC NPN
		05 = 24 VAC
1		05 = 24 VAC

SHORT FUNCTION CODE "C"
Weight 134 g







AIR DISTRIBUTION

1

Solenoid-Solenoid 5/3

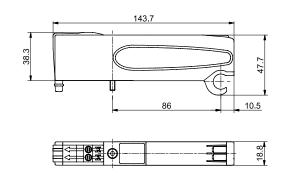
Technical characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Working pressure (bar)	From vacuum to 10	
Pilot pressure (bar)	2,5 7	
Temperature °C	-5 +50	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	600	
Response time according to ISO 12238, activation time (ms)	15	
Response time according to ISO 12238, deactivation time (ms)	20	

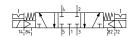
Coding: 2541.53.31.35.

•	VOLTAGE
	02 = 24 VDC PNP
	12 = 24 VDC NPN
	05 = 24 VAC

SHORT FUNCTION CODE "E"
Weight 132 g







Solenoid-Solenoid 2x3/2

<u>:</u>		
Technical characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Working pressure (bar)	From vacuum to 10	
Pilot pressure (bar)	≥3+(0,2 x Inlet pressure)	
Temperature °C	-5 +50	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	700	
Response time according to ISO 12238, activation time (ms)	15	
Response time according to ISO 12238, deactivation time (ms)	25	

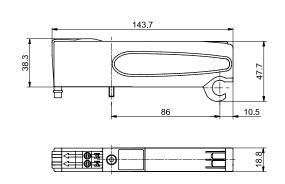
 $\label{pressure} \mbox{Example: If inlet pressure is set at 5 bar then pilot pressure must be at least Pp=2,5+(0,2*5)=3,5 \mbox{ bar then pilot pressure must be at least Pp=2,5+(0,2*5)=3,5 \mbox{ bar then pilot pressure must be at least Pp=2,5+(0,2*5)=3,5 \mbox{ bar then pilot pressure must be at least Pp=2,5+(0,2*5)=3,5 \mbox{ bar then pilot pressure must be at least Pp=2,5+(0,2*5)=3,5 \mbox{ bar then pilot pressure must be at least Pp=2,5+(0,2*5)=3,5 \mbox{ bar then pilot pressure must be at least Pp=2,5+(0,2*5)=3,5 \mbox{ bar then pilot pressure must be at least Pp=2,5+(0,2*5)=3,5 \mbox{ bar then pilot pressure must be at least Pp=2,5+(0,2*5)=3,5 \mbox{ bar then pilot pressure must be at least Pp=2,5+(0,2*5)=3,5 \mbox{ bar then pilot pressure must be at least Pp=2,5+(0,2*5)=3,5 \mbox{ bar then pilot pressure must be at least Pp=2,5+(0,2*5)=3,5 \mbox{ bar then pilot pressure must be at least Pp=2,5+(0,2*5)=3,5 \mbox{ bar then pilot pressure must be at least Pp=2,5+(0,2*5)=3,5 \mbox{ bar then pilot pressure must be at least Pp=2,5+(0,2*5)=3,5 \mbox{ bar then pilot pressure must be at least Pp=2,5+(0,2*5)=3,5 \mbox{ bar then pilot pressure must be at least Pp=2,5+(0,2*5)=3,5 \mbox{ bar then pilot pressure must be at least Pp=2,5+(0,2*5)=3,5 \mbox{ bar then pilot pressure must be at least Pp=2,5+(0,2*5)=3,5 \mbox{ bar then pilot pressure must be at least Pp=2,5+(0,2*5)=3,5 \mbox{ bar then pilot pressure must be at least Pp=2,5+(0,2*5)=3,5 \mbox{ bar then pilot pressure must be at least Pp=2,5+(0,2*5)=3,5 \mbox{ bar then pilot pressure must be at least Pp=2,5+(0,2*5)=3,5 \mbox{ bar then pilot pressure must be at least Pp=2,5+(0,2*5)=3,5 \mbox{ bar then pilot pressure must be at least Pp=2,5+(0,2*5)=3,5 \mbox{ bar then pilot pressure must be at least Pp=2,5+(0,2*5)=3,5 \mbox{ bar then pilot pressure must be at least Pp=2,5+(0,2*5)=3,5 \mbox{ bar then pilot pressure must be at least Pp=2,5+(0,2*5)=3,5 \mbox{ bar then pilot pressure must be at least Pp=2,5+(0,2*5)=3,5 \mbox{ bar then pilot pressure must be at lea$

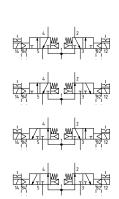
Coding: 2541.62. **3**5.

		•
		FUNCTION
		44 = NC-NC (5/3 Open centres)
		45 = NC-NO (normally closed-
	•	normally open)
		54 = NO-NC (normally open-
_		normally closed)
		55 = NO-NO (5/3 Pressured centres)
		VOLTAGE
		02 = 24 VDC PNP
	V	12 = 24 VDC NPN
		05 = 24 VAC

Weight 122 g







L

Left Endplate	Codi	ing: 25E0. ♥ .T
Tochnical characteristics		VERSION

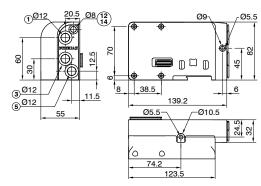
Technical characteristics		
Fluid Filtered air. No lubrication needed, if applied it shall be continuous		
Working pressure (bar)	From vacuum to 10 (external pilot base) 3 7 (self-feeding base)	
Pilot pressure (bar) 3 7 (external pilot base)		
Temperature °C		





12/14 SEPARATED FROM PORT 1 Weight 300 g

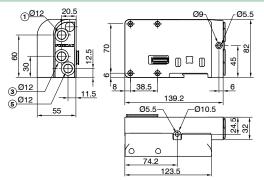
25E0.02.T





12/14 CONNECTED TO PORT 1 Weight 300 g

25E0.12.T



Right Endplate

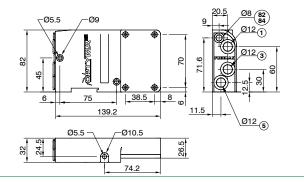
Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Temperature °C	-5 +50

Coding: 2540.03. ELECTRICAL CONNECTION Θ 00 = Electrical connection



PORT 82/84 = DO NOT PRESSURIZE, SOLENOID PILOTS EXHAUST Weight 274 g

2540.03.

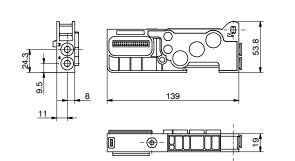


Modular base

Technica	l characteristics
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Tompovoture °C	E 150



Weight 96,5 g



Coding: 254**@**.01**Ø**

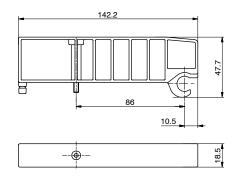
	WORKING PORTS SIZE
	1 = G1/8" female straight cartridge
Θ	4 = Cartridge Ø4
	6 = Quick fitting tube Ø6
	8 = Quick fitting tube Ø8
	VERSION
V	M = for monostable S.V.
_	B = for bistable S.V.



Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Temperature °C	-5 +50



SHORT FUNCTION CODE "T" Weight 53.5 g



Coding: 2530.00

Coding: 2540.10

Coding: 2540.11

Intermediate Inlet/Exhaust module

 Technical characteristics

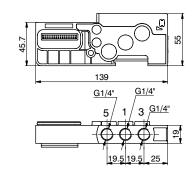
 Fluid
 Filtered air. No lubrication needed, if applied it shall be continuous

 Working pressure (bar)
 From vacuum to 10

 Temperature °C
 -5 ... +50



SHORT FUNCTION CODE "W" Weight 115 g



Intermediate inlet/Exhaust module with external pilot

 Technical characteristics

 Fluid
 Filtered air. No lubrication needed, if applied it shall be continuous

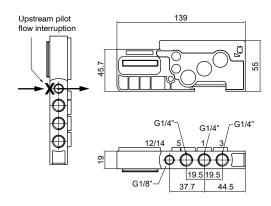
 Working pressure (bar)
 From vacuum to 10

 Pilot pressure (bar)
 3 ... 7

 Temperature °C
 -5 ... +50



SHORT CODE "K" Weight 173 g



Intermediate electro-pneumatic shut-off module 2/4/6/8 positions

Coding: 2540. **10**.

Technical characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Working pressure (bar)	From vacuum to 10 3 7 (piloting 12/14)	
Temperature °C	-5 +50]
Feeding	+ 24 V DC ±10%	
Maximum load	100 mA]
Series modules maximum number	3	

	MODULE
	10 = Supply and exhaust
0	11 = Supply and exhaust with
	separate pilot
	SHUT-OFF
	2A = 2 Signals
Ū	4A = 4 Signals
	6A = 6 Signals
	8A = 8 Signals



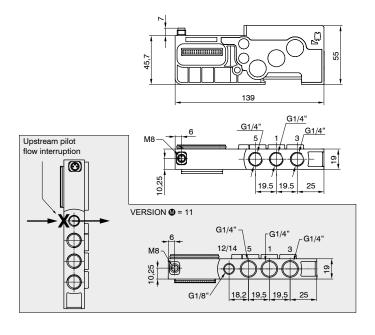
Weight 168 g

2540.10.



Weight 174 g

2540.11.



WORKING PRINCIPLE / SIMPLIFIED FUNCTIONAL DIAGRAM

Intermediate electro-pneumatic shut-off module allows you to interrupt at the same time the first 2,4,6 or 8 available command signals for the valves after the module itself.

When the shut-off module is present, the controlled output logic signal values are equal to the input logic signal values which came from the serial node or the multi-pin module.

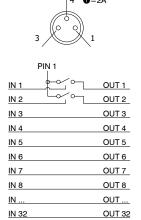
If the supply input signal is absent, the controlled output logic signal values are all equal to zero.

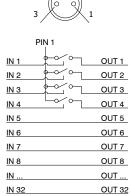
This module is particularly useful when control signals are used to block the valves; it is also effective both with serial management and multi-pin connection of the manifolds.

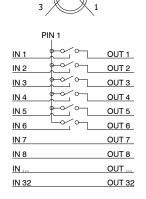
It is possible to use more modules to interrupt every command signals simply by inserting them before the signals to be interrupted.



PIN	DESCRIPTION
1	+ 24 V DC
4	NOT CONNECTED
3	GND







	3		1	
	PI	N 1		
<u>IN</u>	1			OUT 1
IN	2			OUT 2
<u>IN</u>	3		\neg _	OUT 3
<u>IN</u>	4			OUT 4
IN	5			OUT 5
<u>IN</u>	6			OUT 6
IN	7		$\overline{}$	OUT 7
IN	8		$\overline{}$	OUT 8
IN				OUT
IN	32			OUT 32

Usage examples

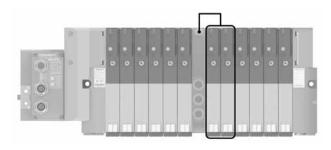
EXAMPLE 1

Manifold of 12 monostable solenoid valves on which you want to interrupt signals 7-8.

Assembly:

- 6 monostable solenoid valves (not interruptible because before the module)
- 1 additional power supply module
- 6 monostable solenoid valves

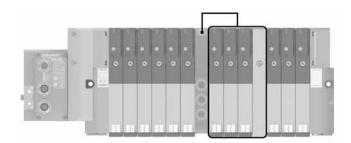
Note: the first 2 of these 6 monostable solenoid valves are interruptible by the module, while the following 4 will work correctly managed directly by the corresponding command signals.



EXAMPLE 2

Manifold of 12 monostable solenoid valves on which you want to interrupt signals 7-8-9. Assembly:

- 6 monostable solenoid valves (not interruptible because before the module)
- 1 additional power supply module
- 3 monostable solenoid valves (interruptible)
- 1 closing plate mounted on a monostable base
- 3 monostable solenoid valves (work correctly managed directly by the corresponding command signals)



EXAMPLE 3

Manifold of 7 monostable and 3 bistable solenoid valves in which you want to interrupt signals 2-3-4-5 and 8-9-10-11. Assembly:

- 1 monostable solenoid valve (not interruptible because before the module)
- 1 additional electro-pneumatic shut-off module
- 6 monostable solenoid valves

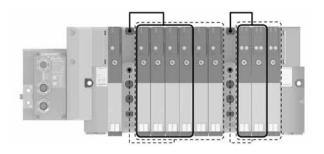
Note: the first 4 of these 6 monostable solenoid valves are interruptible by the module, while the following 2 will work correctly managed directly by the corresponding command signals.

Note no. 2: The pilots of the 6 solenoid valves downstream of the intermediate electro-pneumatic shut-off module are pneumatically powered by the module itself.

- 1 additional electro-pneumatic shut-off module
- 3 bistable solenoid valves

Note no. 3: the first 2 of these 3 bistable solenoid valves are interruptible by the module, while the following will work correctly and are managed directly by the corresponding command signals.

Note no. 4: The pilots of the 3 solenoid valves downstream of the intermediate electro-pneumatic shut-off module are pneumatically powered by the module itself.



Key

- S.V. electrically managed by the shut-off module
- S.V. pneumatically managed (12/14) by the shut-off module

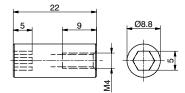


Nut

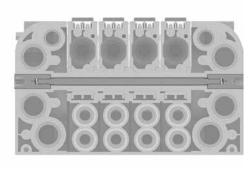
Coding: 2540.KD.00

The Kit includes 4 pieces Weight 10 g







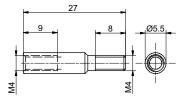


Extension (1 Position)

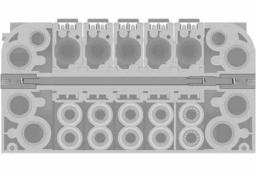
Coding: 2540.KP.01

The Kit includes 2 pieces Weight 3,5 g



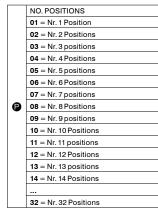






Tie-rod M4

Coding: 2540.KT.





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2				

Offset compensation plate





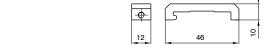
Weight 116 g

DIN rail adapter Coding: 3100.16





AIR DISTRIBUTION



Polyethylene Silencer Series SPL-R



Coding: SPLR.

Coding: 25E0.P0

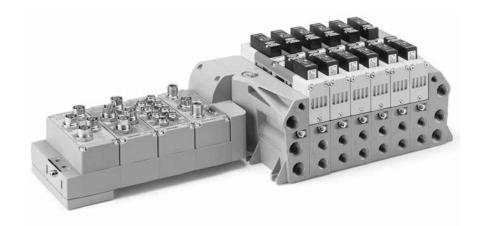
	TUBE DIAMETER
0	8 = 8 mm
_	12 = 12 mm

Diaphragm plug Coding: 2530.17



Weight 2,3 g

Series 2700 EVO



2700 SERIES EVO SOLENOID VALVES MANIFOLD

- · Increased flexibility
- Digital and analogue I/O modules
- Manufactured according to ISO 15407-2
- Wide range of communication protocols









EtherNet/IP





Construction characteristics

Body	Die-cast aluminium
Springs	Stainless Steel
Operators	Technopolymer
Pistons	Technopolymer
Spools	Aluminium

Operational characteristics

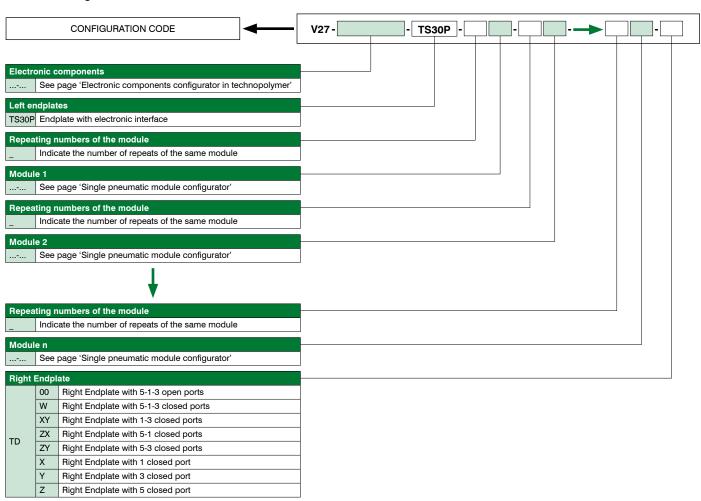
Supply voltage	+ 24 V DC ±10% PNP
Pilot consumption	1W - 2.3W
Valve working pressure [1]	from vacuum to 10 bar max.
Operating temperature	from -5°C to +50°C (serial system node version) from -10°C to +50°C (multi-pin version)
Protection degree	IP65
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous Recommended purity class [5:4:4] according to ISO 8573-1:2010

WE SPEAK EVO

The 2700 series becomes EVO and interfaces with the new PX series modular electronic system while still retaining all of its technical advantages. This is enriched with new features that further extend the flexibility of the product:
• Size 26 mm with nominal flow rate up to 1000 NI/min

- Compliant to directive 2014/30/UE
- Monitored solenoid valves
- Vertical configuration

Rules and configuration scheme





Note:

When composing the configuration, always bear in mind that the maximum number of electrical signals available is:

- 32 if a 37-pole multi-pin module is used, if a node or IO-Link interface is used.
- 24 if a 25-pole multi-pin module is used.

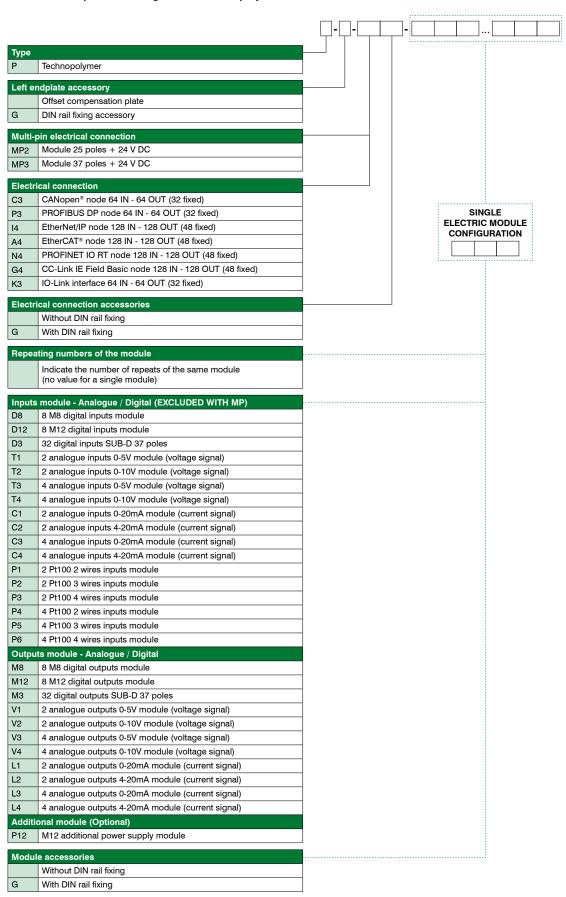
If a monostable valve is used on a bistable type base (2 electrical signals occupied), an electrical signal is lost. However, this makes it possible to replace the monostable valve with a bistable valve in the same position.

Use bases with dedicated closed ports to interrupt ducts 1, 3 and 5.

If one or more ports must be interrupted more than once, the addition of the intermediate supply/discharge module is necessary.



Electronic components configurator in technopolymer

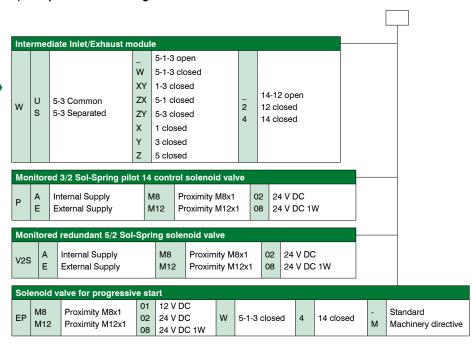


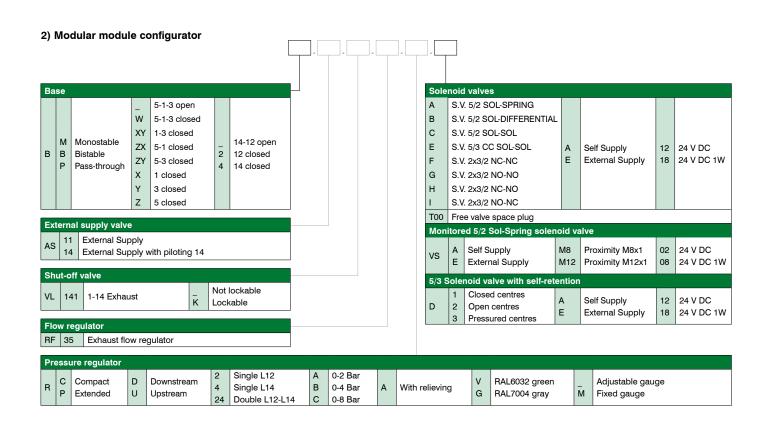


Refer to the current limits indicated in the pages relating to the nodes / IO-Link interface

Modules configurator:

1) Complete module configurator

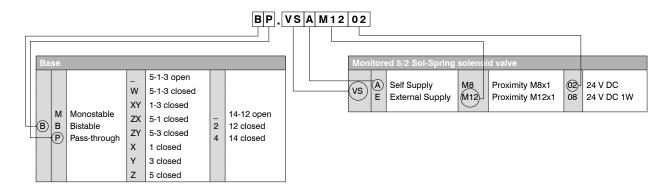






Configuration example of single module:

Signal pass-through base, ports 5-1-3 open, ports 14-12 open with monitored S.V. internal supply, M12 connector, 24 V DC is identified as:



Configuration example of complete group:

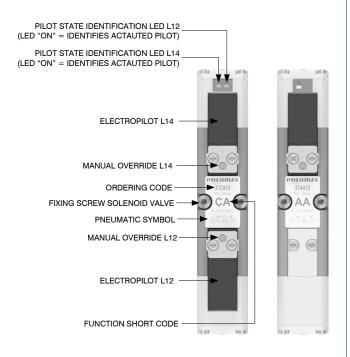
- Technopolymer PX3 serial system (P-C3-2M8-D12)
- Left endplate with interface (TS30P)
- Bistable base with S.V. 5/3 CC Sol-Sol (BB.EE12)
- Bistable base with S.V. 2X3/2 NC-NC (BB.FE12)
- Bistable base with S.V. 5/2 Sol-Sol (BB.CE12)
- Bistable base with S.V. 2X3/2 NC-NC (BB.FE12)
- N°2 bistable bases with S.V. 5/2 Sol-Sol (2BB.CE12)
- Right endplate with open ports 1 3 5 (TD00)



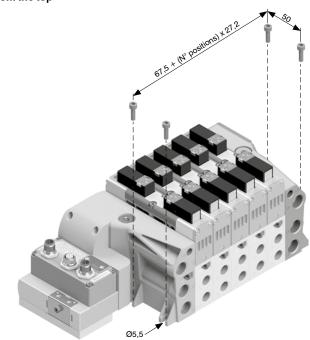
V27-P-C3-2M8-D12-TS30P-BB.EE12-BB.FE12-BB.CE12-BB.FE12-2BB.CE12-TD00



Solenoid valve description

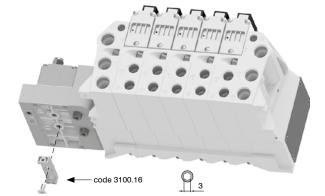


From the top



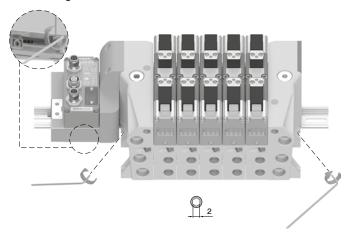
Attention: The overall dimensions shown refer to the modular (valve) sub-bases, and may differ when manifold accessories are included.

DIN rail mounting support plate

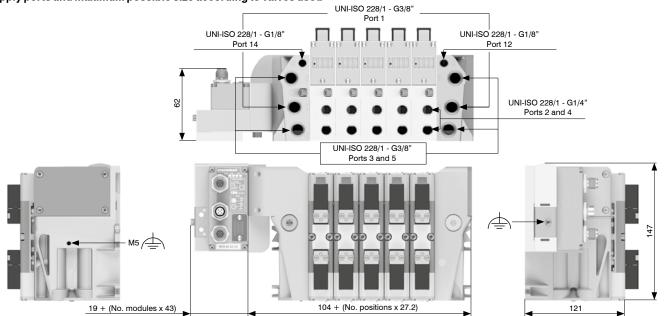


Attention: This must be included when creating the manifold configuration; exclude the offset compensation plate.

DIN rail fixing



Supply ports and maximum possible size according to valves used



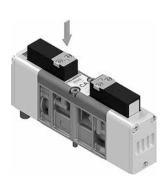
Attention: The overall dimensions shown refer to the modular (valve) sub-bases, and may differ when manifold accessories are included.

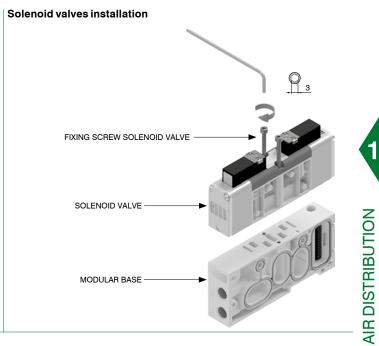
Manual override actuation

Instable function:

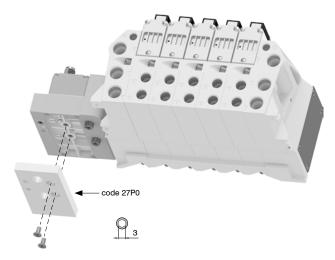
Push to actuate

(when released it moves back to the original position)



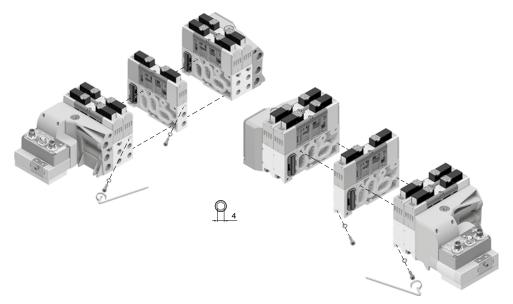


Offset compensation plate



Attention: This accessory is supplied on the manifold unless otherwise stated. This is not compatible for DIN rail mounting.

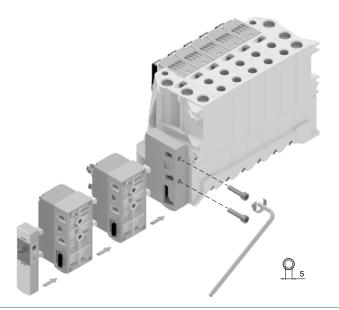
Sub-base assembly



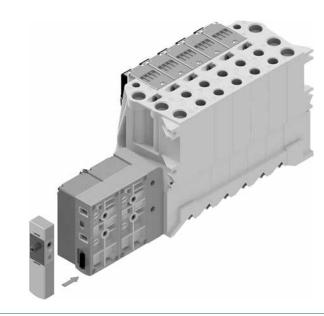
Note: Torque moment 4 Nm

Attention: Ensure the washer is mounted on the screw before tightening

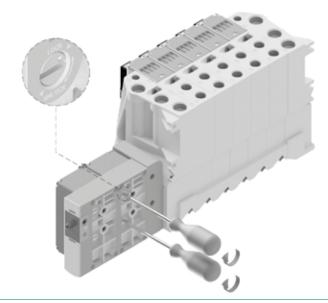
1. Assemble the desired modules and tighten the fixing screws as shown in the figure below.



2. Complete the assembly with the 3100.KT.00 left endplate kit.

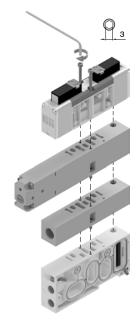


3. To lock: rotate anticlockwise (in the direction of the LOCK print on the case). To unlock: rotate clockwise (in the direction of the UNLOCK print on the case). The same procedure shall be used to add or remove any module.



Modules assembled for vertical configuration





Modules for vertical configuration are as follows:

- Single external supply module
- Flow regulator module
 Shut-off and exhaust module
- Pressure regulator

Attention: The flow rate of the solenoid valve will be reduced compared to that shown in the general catalogue

Solenoid-Spring 5/2

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous Recommended purity class [5:4:4] according to ISO 8573-1:2010
Working pressure (bar)	From vacuum to 10 (external pilot base) 2 10 (self-feeding base)
Minimum pilot pressure (bar)	2
Temperature °C	-10 +50
Flow rate at 6 bar with Δp=1 (NI/min)	1000
Response time according to ISO 12238, activation time (ms)	20
Response time according to ISO 12238, deactivation time (ms)	38

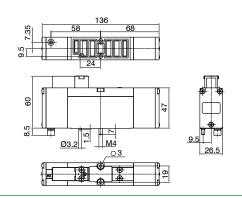
Coding: 27APT

	PILOTING
•	A = Self-feeding
	E = External feeding
	VOLTAGE
0	12 = 24 V DC
	18 = 24 V DC 1 W

Weight 309 g



The "Activations time" values, are valid only for the 24 V DC 2,3W versions





Solenoid-Differential 5/2

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous Recommended purity class [5:4:4] according to ISO 8573-1:2010
Working pressure (bar)	From vacuum to 10 (external pilot base) 2 10 (self-feeding base)
Minimum pilot pressure (bar)	2
Temperature °C	-10 +50
Flow rate at 6 bar with Δp=1 (NI/min)	1000
Response time according to ISO 12238, activation time (ms)	20
Response time according to ISO 12238, deactivation time (ms)	38

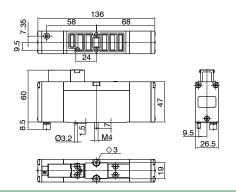
Coding: 27B

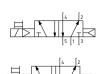
PILOTING
A = Self-feeding
E = External feeding
VOLTAGE
12 = 24 V DC
18 = 24 V DC 1 W

Weight 274 g



The "Activations time" values, are valid only for the 24 V DC 2,3W versions





Solenoid-Solenoid 5/2

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous Recommended purity class [5:4:4] according to ISO 8573-1:2010
Working pressure (bar)	From vacuum to 10 (external pilot base) 2 10 (self-feeding base)
Minimum pilot pressure (bar)	2
Temperature °C	-10 +50
Flow rate at 6 bar with Δp=1 (NI/min)	1000
Response time according to ISO 12238, activation time (ms)	12
Response time according to ISO 12238, deactivation time (ms)	14

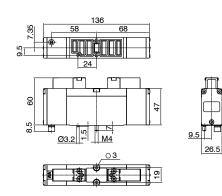
Coding: 27CPT

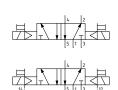
	PILOTING
•	A = Self-feeding
-	E = External feeding
	VOLTAGE
Ū	12 = 24 V DC
	18 = 24 V DC 1 W

Weight 309 g



The "Activations time" values, are valid only for the 24 V DC 2,3W versions







Solenoid-Solenoid 5/3

Technical characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous Recommended purity class [5:4:4] according to ISO 8573-1:2010	
Working pressure (bar)	From vacuum to 10 (external pilot base) 3 10 (self-feeding base)	
Minimum pilot pressure (bar)	3	
Temperature °C	-10 +50	
Flow rate at 6 bar with $\Delta p=1$ (NI/min)	660	
Response time according to ISO 12238, activation time (ms)	12	
Response time according to ISO 12238, deactivation time (ms)	60	

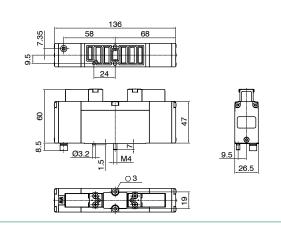
Coding: 27EPT

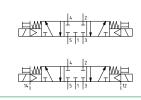
	PILOTING
(2)	A = Self-feeding
	E = External feeding
	VOLTAGE
Ū	12 = 24 V DC
	18 = 24 V DC 1 W

Weight 309 g



The "Activations time" values, are valid only for the 24 V DC 2,3W versions





Solenoid-Solenoid 5/3 with auto-retaining function

us 0
_

Coding: 27D

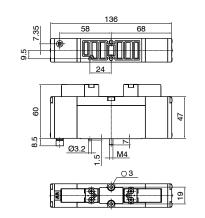
	FUNCTION
	1 = S.V. 5/3 C.C.
9	2 = S.V. 5/3 O.C.
	3 = S.V. 5/3 P.C.
	PILOTING
•	A = Self-feeding
	E = External feeding
	VOLTAGE
0	12 = 24 V DC
	18 = 24 V DC 1 W

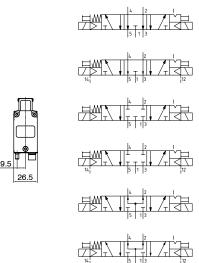
Weight 309 g

- Maintains the valve state without an electric or pneumatic signal after the activation of L14 (self-retention).
 Valve state changes by activating L12.
 Mechanical spring return.



The "Activations time" values, are valid only for the 24 V DC 2,3W versions







Solenoid-Spring 2x3/2

Coding: 27**600**

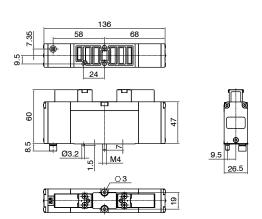
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous Recommended purity class [5:4:4] according to ISO 8573-1:2010	
Working pressure (bar)	From vacuum to 10 (external pilot base) 3,5 10 (self-feeding base)	
Pilot pressure (bar)	≥2+(0.3 x Inlet pressure)] -
Temperature °C	-10 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	550	
Response time according to ISO 12238, activation time (ms)	12 (external pilot base) 15 (self-feeding base)] -
Response time according to ISO 12238, deactivation time (ms)	60 (external pilot base) 15 (self-feeding base)	

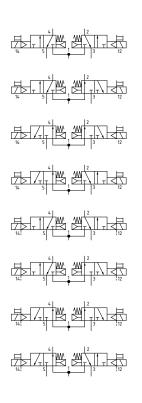
	FUNCTION
	F = NC-NC (5/3 Open centres)
(3	G = NO-NO (5/3 Pressured centres)
	H = NC-NO
	I = NO-NC
	PILOTING
(2)	A = Self-feeding
	E = External feeding
	VOLTAGE
ø	12 = 24 V DC
	18 = 24 V DC 1 W

Weight 309 g



The "Activations time" values, are valid only for the 24 V DC 2,3W versions Example: If inlet pressure is set at 5 bar then pilot pressure must be at least Pp=2+(0,3*5)=3,5 bar







Solenoid-Spring monitored (VS)

Technical characteristics				
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous Recommended purity class [5:4:4] according to ISO 8573-1:2010			
Response time according to ISO 12238, deactivation time (ms)	70			
Response time according to ISO 12238, activation time (ms)	15			
Flow rate from 1 to 2 at 6 bar with $\Delta p=1$ (NI/min)	1000			
Flow rate from 1 to 4 at 6 bar with $\Delta p=1$ (NI/min)	1000			
Flow rate from 2 to 3 at 6 bar with Δp=1 (NI/min)	1000			
Flow rate from 4 to 5 at 6 bar with $\Delta p=1$ (NI/min)	1000			
Flow rate from 2 to 3 at 6 bar with free exhaust (NI/min)	1700			
Flow rate from 4 to 5 at 6 bar with free exhaust (NI/min)	1700			
Temperature °C	-10 +50			
Working pressure (bar)	From vacuum to 10 (external pilot base) 2 10 (self-feeding base)			
Minimum pilot pressure (bar)	2			
Function	5/2 N.C. Monostable			
Noise level (dB)	75			

Coding: 27VSPST

		PILOTING
	•	A = Self-feeding
		E = External feeding
		SENSOR
	8	M8 = M8x1 Proximity Sensor
		M12 = M12x1 Proximity Sensor
		VOLTAGE
ı	O	02 = 24 V DC
		08 = 24 V DC 1 W

Weight 312 g

- -Monostable with mechanical spring return and proximity sensor
- -Safety component according to annex V of 2006/42/EC directive
- -Diagnostic system that monitors the state of the valve: Sensor ON: Valve at rest

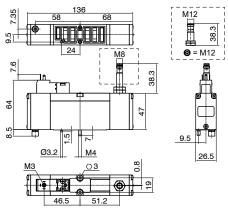
Sensor ON: Valve at rest Sensor OFF: Valve activated



The "Activations time" values, are valid only for the 24 V DC 2,3W versions

Note: Overall noise level depends on the final application of the device

Note: The noise level indicated on the table is obtained without using silencers



Sensor	Out	Pin-out	Wiring diagram
M8 Male 3P type A	N.O.	1 4 3	1 L+
M12 Male 3P type A	N.O.	3 4	3 1.





Pin 1= Brown - Pin 4= Black - Pin 3= Blue

Electrical characteristics: Electropilot			
Electropilot	Series 300 Size 15 mm		
Electrical connection	Earth Faston / Series 300 connectors		
Solenoid coils features	24 V DC 2.3 W 24 V DC 1 W		
Supply voltage allowance	-5% 10%		
Manual override Integrated	Yes		
Protection degree	IP65 (with mounted connector)		

Note : Refer to the Pneumax general catalogue for detailed information regarding the electropilot

Electrical characteristics: Proximity sensor				
Type	Single channel	Single channel		
Thread	M8X1	M12X1		
Electrical design	PNP	PNP		
Output function	N.O.	N.O.		
Operating voltage	10 30 VDC	10 30 VDC		
Current consumption (mA)	< 20	< 20		
Isolating class	III	III		
Display	Switching status 4x90° Yellow LEDs	Switching status 4x90° Yellow LEDs		
Protection degree	IP65 (with mounted connector)	IP65 (with mounted connector)		

Note: Manufacturer and model of proximity sensors could be changed at the discretion of Pneumax S.p.A.

		orr ricumax o.p.A.		
Safety characteristics				
Standards compliancies	EN ISO 13	EN ISO 13849-1:2015		
Staridards compliancies	ENISO 13849-2:2012			
Performed Safety Function	Interruption of supply and discharge of	a pneumatic circuit connected to port 4		
Sensor feedback	Valve at REST	ON		
Sensor leedback	Valve ACTIVATED	OFF		
MTTFd Sensor	Single Channel M8	1088 years		
MITTE Sensor	Single Channel M12 932 years			
Performance Level (PL)	Up to PL=d			
Category	Up to 2			
B10d	630.000 cycles			

Note B10d:

General Procedures for assessing pneumatic component reliability by testing performed in accordance with ISO 19973-1, Pneumatic fluid power -Assessment of component reliability by testing - Part 1: General Procedures.

Reliability and lifetime of pneumatic valves assessed in accordance with ISO 19973-2: Pneumatic fluid power – Assessment of component reliability by testing – Part 2: Directional control valves.

Activities regarding the identification of the safety function, the estimation of the required reliability level (e.g. estimation of the PLr according to EN ISO 13849-1), the design and the production of the related safety circuit, its verification and validation are responsibilities of the operator who uses the device in its final application.

the production of the related safety circuit, its verification and validation are responsibilities of the operator who uses the device in its final application.

The choice of the category and the satisfaction of its requirements according to EN ISO 13849-1 is in charge of the end-user who integrates the device in its final application while considering the final configuration of the safety circuit.

The diagnostic coverage value guaranteed by the sensor must be calculated by the end-user in function of the final configuration of the safety circuit (e.g. in function of the PLC for safety design which controls the solenoid valve and acquires the state of the sensor).

The estimation of the diagnostic coverage must satisfy the requirements of EN ISO 13849-1.

According to EN ISO 13849-1, T10D value must be calculated by the enduser in function of the annual operation number in which the device will be subjected to; in any case, the device must be substituted every 20 years.



Solenoid-Spring monitored redundant (V2S)

Technical characteristics				
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous Recommended purity class [5:4:4] according to ISO 8573-1:2010			
Response time according to ISO 12238, deactivation time (ms)	70			
Response time according to ISO 12238, activation time (ms)	25			
Flow rate from 1 to 2 at 6 bar with $\Delta p=1$ (NI/min)	1000			
Flow rate from 1 to 4 at 6 bar with $\Delta p = 1$ (NI/min)	500			
Flow rate from 2 to 3 at 6 bar with $\Delta p=1$ (NI/min)	500			
Flow rate from 4 to 5 at 6 bar with $\Delta p = 1$ (NI/min)	1000			
Flow rate from 2 to 3 at 6 bar with free exhaust (NI/min)	900			
Flow rate from 4 to 5 at 6 bar with free exhaust (NI/min)	1700			
Temperature °C	-10 +50			
Working pressure (bar)	From vacuum to 10 (external pilot base) 2 10 (self-feeding base)			
Minimum pilot pressure (bar)	2			
Function	5/2 N.C. Monostable			
Noise level (dB)	75			

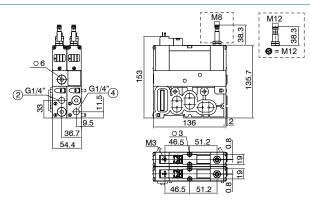
- Coding: 27V2S**PS**
- PILOTING A = Self-feeding E = External feeding SENSOR M8 = M8x1 Proximity Sensor M12 = M12x1 Proximity Sensor VOLTAGE 02 = 24 V DC 08 = 24 V DC 1 W
- Weight 1786 g

- -Double monostable with mechanical spring return and proximity sensor
- -Double redundant channel which guarantees that a pneumatic circuit is safely exhausted in case of failure of one of the valves
- -Safety component according to annex V of 2006/42/EC directive
- -Diagnostic system that monitors the state of the valve:

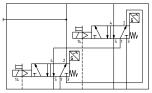
Sensor ON: Valve at rest Sensor OFF: Valve activated



The "Activations time" values, are valid only for the 24 V DC 2,3W versions Note : Overall noise level depends on the final application of the deviceNote: The noise level indicated on the table is obtained without using silencers



	7 N N N N N N N N N N N N N N N N N N N
5 1	3



Sensor	Out	Pin-out	Wiring diagram
M8 Male 3P type A	N.O.	1 4 3	1 L+
M12 Male 3P type A	N.O.	304	3 7.
Pin 1= Brown - Pin 4= Black	- Pin 3= Blue		

Electrical characteristics: Electropilot		
Electropilot	Series 300 Size 15 mm	
Electrical connection	Earth Faston / Series 300 connectors	
Solenoid coils features	24 V DC 2.3 W 24 V DC 1 W	
Supply voltage allowance	-5% 10%	
Manual override Integrated	Yes	
Protection degree	IP65 (with mounted connector)	

Note: Refer to the Pneumax general catalogue for detailed information regarding the electropilot

Electrical characteristics: Proximity sensor		
Type	Single channel	Single channel
Thread	M8X1	M12X1
Electrical design	PNP	PNP
Output function	N.O.	N.O.
Operating voltage	10 30 VDC	10 30 VDC
Current consumption (mA)	< 20	< 20
Isolating class	III	III
Display	Switching status 4x90° Yellow LEDs	Switching status 4x90° Yellow LEDs
Protection degree	IP65 (with mounted connector)	IP65 (with mounted connector)

Note: Manufacturer and model of proximity sensors could be changed at the discretion of Pneumax S p A

		orr mountax o.p., t.	
Safety characteristics			Note B10d:
Standards compliancies	EN ISO 13849-1:2015		General Prod
Standards compliancies	EN ISO 13849-2:2012		component
Performed Safety Function	Interruption of supply and discharge of a pneumatic circuit connected to port 4		accordance
Sensor feedback	Valve at REST	ON	- Assessmen
Sensorfeedback	Valve ACTIVATED	OFF	1: General Pr
MTTFd Sensor	Single Channel M8	1088 years	Reliability an
MTTFd Sensor	Single Channel M12	932 years	accordance
Performance Level (PL)	Up to PL=e		- Assessmer 2: Directiona
Category	Up to 4		2. Directiona
B10d	630.000 cycles (referred to a single valve)		

General Procedures for assessing pneumatic
component reliability by testing performed in
accordance with ISO 19973-1, Pneumatic fluid power
- Assessment of component reliability by testing - Part

l: General Procedures.

Reliability and lifetime of pneumatic valves assessed in accordance with ISO 19973-2: Pneumatic fluid power Assessment of component reliability by testing - Part 2: Directional control valves.

Activities regarding the identification of the safety function, the estimation of the required reliability level (e.g. estimation of the PLr according to EN ISO 13849-1), the design and the production of the related safety circuit, its verification and validation are responsibilities of the operator who uses the device in its final application.

The choice of the category and the satisfaction of its requirements according to EN ISO 13849-1 is in charge of the end-user who integrates the device in its final application while considering the final configuration of the safety circuit.

The diagnostic coverage value guaranteed by the sensor must be calculated by the end-user in function of the final configuration of the safety circuit (e.g. in function of the PLC for safety design which controls the solenoid valve and acquires the state of the sensor).

The estimation of the diagnostic coverage must satisfy the requirements of EN ISO 13849-1.

According to EN ISO 13849-1, T10D value must be calculated by the enduser in function of the annual operation number in which the device will be subjected to; in any case, the device must be substituted every 20 years.



Solenoid-Spring monitored for pilot control 14 (P)

Technical characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous Recommended purity class [5:4:4] according to ISO 8573-1:2010	
Response time according to ISO 12238, deactivation time (ms)	70	
Response time according to ISO 12238, activation time (ms)	15	
Flow rate from 1 to 2(14) at 6 bar with $\Delta p=1$ (NI/min)	250	
Flow rate from 2(14) to 3(5) at 6 bar with $\Delta p=1$ (NI/min)	250	
Flow rate from 2(14) to 3(5) at 6 bar with free exhaust (NI/min)	500	
Temperature °C	-10 +50	
Working pressure (bar)	2 10 (external pilot base) 2 10 (self-feeding base)	
Minimum pilot pressure (bar)	2	
Function	3/2 N.C. Monostable	

Coding: 27P**PS**

	PILOTING
@	A = Self-feeding
	E = External feeding
	SENSOR
8	M8 = M8x1 Proximity Sensor
	M12 = M12x1 Proximity Sensor
	VOLTAGE
Ū	02 = 24 V DC
	08 = 24 V DC 1 W

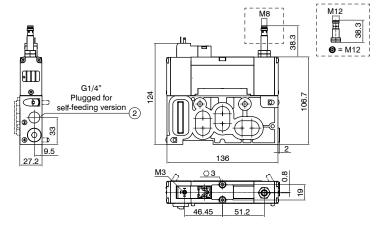
Weight 615 g

- -Monostable with mechanical spring return and proximity sensor
- -Control of downstream pressure in pilot channel 14
- -Safety component according to annex V of 2006/42/EC directive
- -Diagnostic system that monitors the state of the valve:

Sensor ON: Valve at rest Sensor OFF: Valve activated



The "Activations time" values, are valid only for the 24 V DC 2,3W versions $\bf Note$: Overall noise level depends on the final application of the device



Sensor	Out	Pin-out	Wiring diagram
M8 Male 3P type A	N.O.	1 4 3	1 L+
M12 Male 3P type A	N.O.	3 4	3 1.





PIN I=	Brown - Pin 4= Blaci	K - PIN 3=	= blue

Electrical characteristics: Electropilot		
Electropilot	Series 300 Size 15 mm	
Electrical connection	Earth Faston / Series 300 connectors	
Solenoid coils features	24 V DC 2.3 W 24 V DC 1 W	
Supply voltage allowance	-5% 10%	
Manual override Integrated	Yes	
Protection degree	IP65 (with mounted connector)	

Note : Refer to the Pneumax general catalogue for detailed information regarding the electropilot

Electrical characteristics: Proximity sensor			
Type	Single channel	Single channel	
Thread	M8X1	M12X1	
Electrical design	PNP	PNP	
Output function	N.O.	N.O.	
Operating voltage	10 30 VDC	10 30 VDC	
Current consumption (mA)	< 20	< 20	
Isolating class	III	III	
Display	Switching status 4x90° Yellow LEDs	Switching status 4x90° Yellow LEDs	
Protection degree	IP65 (with mounted connector)	IP65 (with mounted connector)	

Note: Manufacturer and model of proximity sensors could be changed at the discretion of Pneumax S n A

			orr mountax o.p., t.
Safety characteristics			
Standards compliancies	EN ISO 13849-1:2015		
Staridards compliancies	EN ISO 13849-2:2012		
Performed Safety Function	Interruption of supply and exhaust of a pneumatic channel to port 2 (14)		
Sensorfeedback	Valve at REST		ON
	Valve ACTIVATED		OFF
MTTFd Sensor	Single Channel M8		1088 years
	Single Channel M12		932 years
Performance Level (PL)	Up to PL=d		
Category	Up to 2		
B10d	1.100.000 cycles		

Note B10d:

General Procedures for assessing pneumatic component reliability by testing performed in accordance with ISO 19973-1, Pneumatic fluid power -Assessment of component reliability by testing - Part 1: General Procedures.

Reliability and lifetime of pneumatic valves assessed in accordance with ISO 19973-2: Pneumatic fluid power – Assessment of component reliability by testing – Part 2: Directional control valves.

Activities regarding the identification of the safety function, the estimation of the required reliability level (e.g. estimation of the PLr according to EN ISO 13849-1), the design and the production of the related safety circuit, its verification and validation are responsibilities of the operator who uses the device in its final application.

The choice of the category and the satisfaction of its requirements according to ENISO 13849-1 is in charge of the end-user who integrates the device in its final application while considering the final configuration of the safety circuit.

The diagnostic coverage value guaranteed by the sensor must be calculated by the end-user in function of the final configuration of the safety circuit (e.g. in function of the PLC for safety design which controls the solenoid valve and acquires the state of the sensor).

The estimation of the diagnostic coverage must satisfy the requirements of EN ISO 13849-1.

According to EN ISO 13849-1, T10D value must be calculated by the enduser in function of the annual operation number in which the device will be subjected to; in any case, the device must be substituted every 20 years.

AIR DISTRIBUTION

Solenoid valve for progressive start (EP)

Coding: 27EP**STGPV** SENSOR

Tech	nical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous Recommended purity class [5:4:4] according to ISO 8573-1:2010	8
Response time according to ISO 12238, deactivation time (ms)	70	
Response time according to ISO 12238, activation time (ms)	15	ı
Flow rate from 1 to 2(1) at 6 bar with $\Delta p=1$ (NI/min)	2200	•
Flow rate from 2(1) to 3 at 6 bar with $\Delta p=1$ (NI/min)	2000	
Flow rate from 2(1) to 3 at 6 bar with free exhaust (NI/min)	4000	
Temperature °C	-10 +50	1
Preset switchover pressure (bar)	~ 4	
Working pressure (bar)	210	
Function	5/2 N.C. Monostable	
Noise level (dB)	75	•
Troibe level (ab)	70	1

reclinical characteristics			SENSOR
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous Recommended purity class [5:4:4] according to ISO 8573-1:2010	8	M8 = M8x1 Proximity Sensor M12 = M12x1 Proximity Sensor
Response time according to ISO 12238, deactivation time (ms)	70	┧┝──	· · · · · · · · · · · · · · · · · · ·
. ,	70	41	VOLTAGE
Response time according to ISO 12238, activation time (ms)	15		02 = 24 V DC
Flow rate from 1 to 2(1) at 6 bar with $\Delta p=1$ (NI/min)	2200		08 = 24 V DC 1 W
Flow rate from 2(1) to 3 at 6 bar with $\Delta p=1$ (NI/min)	2000	JH-	SUPPLY AND EXHAUST PORTS
Flow rate from 2(1) to 3 at 6 bar with free exhaust (NI/min)	4000	⊌	W = Ports 5. 1 and 3 closed
Temperature °C	-10 +50	╛	PILOT PORTS
Preset switchover pressure (bar)	~ 4	(2)	4 = Port 14 closed
Working pressure (bar)	210	1	VERSION
Function	5/2 N.C. Monostable		
Noise level (dB)	75	∥ ♥	= Standard
\ /	<u> </u>	-1	M = Machinery directive

- -It allow slow and gradual increase in pressure to the supply port and rapid exhaust
- -Available version as a safety component according to annex V of 2006/42/EC directive
- -Pressure zone exhaust ports 3 and 5 available
- -Diagnostic system that monitors the state of the valve:

Sensor ON: Valve activated Sensor OFF: Valve at rest



Weight 1360 g

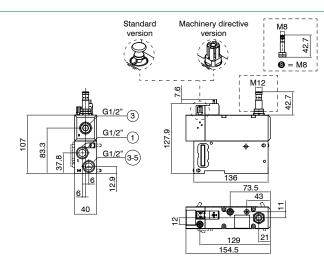
27EP**SG@@**

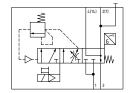


Weight 1360 g

27EP**SG@@**M

The "Activations time" values, are valid only for the 24 V DC 2,3W versions Note: Overall noise level depends on the final application of the device Note: The noise level indicated on the table is obtained without using silencers





Sensor	Out	Pin-out	Wiring diagram
M8 Male 3P type A	N.O.	1 4 3	1 L+
M12 Male 3P type A	N.O.	3 4	3 - 1 -
Pin 1= Brown - Pin 4= Black - Pin 3= Blue			

Electrical characteristics: Electropilot		
Electropilot	Series 300 Size 15 mm	
Electrical connection	Earth Faston / Series 300 connectors	
Solenoid coils features	24 V DC 2.3 W 24 V DC 1 W	
Supply voltage allowance	-5% 10%	
Manual override Integrated No (separated from the electropilot)		
Protection degree	IP65 (with mounted connector)	

Note: Refer to the Pneumax general catalogue for detailed information regarding the electropilot

Electrical characteristics: Proximity sensor		
Туре	Single channel	Single channel
Thread	M8X1	M12X1
Electrical design	PNP	PNP
Output function	N.O.	N.O.
Operating voltage	10 30 VDC	10 30 VDC
Current consumption (mA)	< 20	< 20
Isolating class	III	III
Display	Switching status 4x90° Yellow LEDs	Switching status 4x90° Yellow LEDs
Protection degree	IP65 (with mounted connector)	IP65 (with mounted connector)

Note: Manufacturer and model of proximity sensors could be changed at the discretion of Pneumax S.p.A.

	Safety characteristics		N
	ENISO 13849-1:2015		
Standards compliancies	EN ISO 13	849-2:2012	c
Performed Safety Function	Interruption of supply and exhaust of pneumatic channels connected to port 2 (1) and port 4 (14)		a
0 (")	Valve at REST	OFF	1
Sensor feedback	Valve ACTIVATED	ON	F
	Single Channel M8	1088 years	e
MTTFd Sensor	Single Channel M12	932 years	
Performance Level (PL)	Up to PL=d		2
Category	Up to 2		
B10d	2.000.000 cycles		

Note B10d:

General Procedures for assessing pneumatic component reliability by testing performed in accordance with ISO 19973-1, Pneumatic fluid power Assessment of component reliability by testing - Part : General Procedures.

Reliability and lifetime of pneumatic valves assessed in accordance with ISO 19973-2: Pneumatic fluid power Assessment of component reliability by testing - Part 2: Directional control valves.

Activities regarding the identification of the safety function, the estimation of the required reliability level (e.g. estimation of the PLr according to EN ISO 13849-1), the design and the production of the related safety circuit, its verification and validation are responsibilities of the operator who uses the device in its final application.

The choice of the category and the satisfaction of its requirements according to EN ISO 13849-1 is in charge of the end-user who integrates the device in its final application while considering the final configuration of the safety circuit.

The diagnostic coverage value guaranteed by the sensor must be calculated by the end-user in function of the final configuration of the safety circuit (e.g. in function of the PLC for safety design which controls the solenoid valve and acquires the state of the sensor).

The estimation of the diagnostic coverage must satisfy the requirements of EN ISO 13849-1.

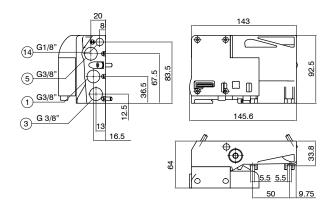
According to EN ISO 13849-1, T10D value must be calculated by the enduser in function of the annual operation number in which the device will be subjected to; in any case, the device must be substituted every 20 years.



Left Endplate

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous Recommended purity class [5:4:4] according to ISO 8573-1:2010
Temperature °C	-10 +50
Working pressure (bar)	From vacuum to 10
Pilot pressure port 14 (bar)	37





Weight 815 g

Right Endplate

Technical characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous Recommended purity class [5:4:4] according to ISO 8573-1:2010	
Temperature °C	-10 +50	
Working pressure (bar)	From vacuum to 10	
Pilot pressure port 12 (bar)	37	

Coding: 27TD

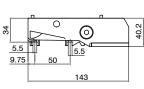
Coding: 27TS30P

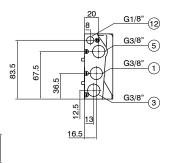
	SUPPLY AND EXHAUST PORTS	
	00 = Ports 5, 1 and 3 open	
	W = Ports 5, 1 and 3 closed	
XY = Ports 1-3 closed		
Θ	ZX = Ports 5-1 closed	
_	ZY = Ports 5-3 closed	
	X = Port 1 closed	
Y = Port 3 closed		
	Z = Port 5 closed	





<u>M5</u>





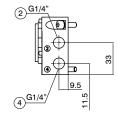
Weight 560 g

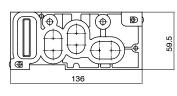
Modular base

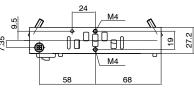
Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous Recommended purity class [5:4:4] according to ISO 8573-1:2010
Temperature °C	-10 +50
Working pressure (bar)	310











7	
1	
1	

•	ZX = Ports 5-1 closed	
	ZY = Ports 5-3 closed	
	X = Port 1 closed	
	Y = Port 3 closed	
	Z = Port 5 closed	
	PILOT PORTS	
	= Ports 14-12 open	
0	4 = Port 14 closed	
	2 = Port 12 closed	

SUPPLY AND EXHAUST PORTS = Ports 5, 1 and 3 open $\mathbf{W} = \text{Ports}\,\mathbf{5},\,\mathbf{1}\,\text{and}\,\mathbf{3}\,\text{closed}$ XY = Ports 1-3 closed

Coding: 27B**Ø⊕** VERSION M = Monostable

B = Bistable P = Pass-through signal

V

Weight 298 g

Coding: 27₩**♥@₽**

 $\mathbf{U} = \text{Conveyed exhausts}$ S = Separated exhausts

SUPPLY AND EXHAUST PORTS

= Ports 5, 1 and 3 open W = Ports 5, 1 and 3 closed XY = Ports 1-3 closed **ZX** = Ports 5-1 closed

ZY = Ports 5-3 closed X = Port 1 closed Y = Port3 closed $\mathbf{Z} = \mathsf{Port}\, \mathsf{5}\, \mathsf{closed}$ PILOT PORTS

= Ports 14-12 open 4 = Port 14 closed

2 = Port 12 closed

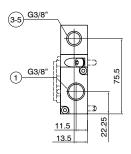
Coding: 27T00

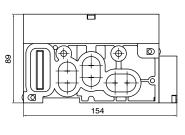
VERSION

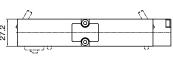
Intermediate Inlet/Exhaust module

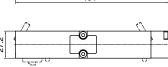
Filtered air. No lubrication needed, if applied it shall be continuous Recommended purity class [5:4:4] according to ISO 8573-1:2010 Temperature °C -10 ... +50 Working pressure (bar) From vacuum to 10







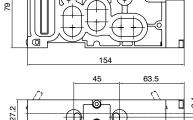








G3/8" 1 22.25



<u>G3/8"</u> G3/8" 3

Weight 524 g

Weight 606 g

Free valve space plug

,		
Technical characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous Recommended purity class [5:4:4] according to ISO 8573-1:2010	
Temperature °C	-10 +50	
Working pressure (bar)	From vacuum to 10	
Pilot pressure port 14 (har)	3 7	



Weight 70 g

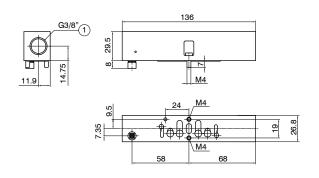
9		
Ī	<u>₩ м4</u> <u>○ 3</u>	
56	 •	6
	 105	

Single external power supply module Coding: 27AS♥

<u>·</u>			
Technical characteristics			VERSION
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous Recommended purity class [5:4:4] according to ISO 8573-1:2010		11 = External supply of port 1
Fluid			14 = External supply of ports 1 and
Temperature °C	-10 +50		14
Working pressure (bar)	2 10 (version 14) From vacuum to 10 (version 11)	Weig	ht 246 g



-Suitable module for vertical configuration -It allows to externally supply a single valve with pressure different from the manifold.



	14	4	5	1	3	2	12
	14	4	5 -	r 1	3	2	12
	14	4	5	1	3	2	12 1
_	-14	4	5 -	-1	3	2	12

Temperature °C

AIR DISTRIBUTION

Flow regulator module

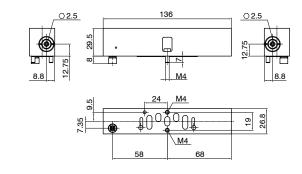
<u> </u>		
	Technical characteristics	VER
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	35 =
i idid	Recommended purity class [5:4:4] according to ISO 8573-1:2010	

RSION = Exhaust flow regulator Weight 283 g

Coding: 27RF♥



- -Suitable module for vertical configuration -It allows the flow regulation of ports 3 and 5 -Regualtion through two needles independent of each other -It is designed to control the speed of an actuator



-10 ... +50



Coding: 27VL

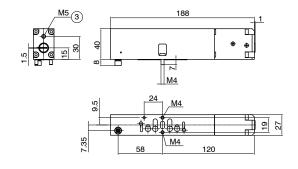
Shut-off and exhaust module

Technical characteristics			
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous Recommended purity class [5:4:4] according to ISO 8573-1:2010		
Temperature °C	-10 +50		

VERSION Ø 141 = Shut-off and exhaust of ports TYPE = Non lockable $\mathbf{K} = \mathsf{Lockable}$



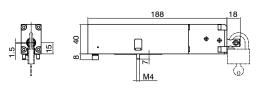
Weight 504 g

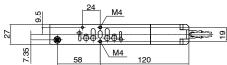




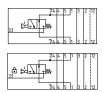
Weight 550 g

27VL**Ø**K





- -Suitable module for vertical configuration
- -It allows you to shut-off and exhaust the supply port 1 and pilot port 14 or other modules mounted on it



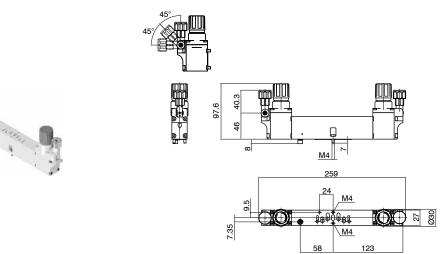
Coding: 27RC**BBGGG**

REGULATION TYPE
D = Downstream
U = Upstream
REGULATION SIDE
2 = Single L12
4 = Single L14
24 = Double L12-L14
PRESSURE RANGE
A = 0-2 bar

V = Green (RAL 6032)

Pressure regulator (compact version)

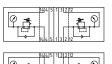
Technical characteristics				
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous Recommended purity class [5:4:4] according to ISO 8573-1:2010			
Temperature °C	-10 +50			
Working pressure (bar)	0,510			



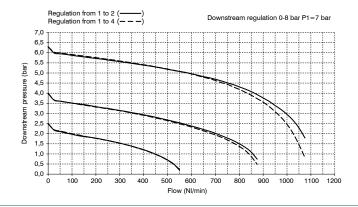
- B = 0 4 bar
 C = 0 8 bar

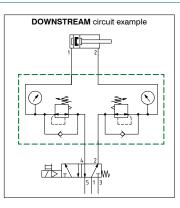
 RELIEVING OPTIONS
 A = With reliving
 KNOB COLOUR
 - **G** = Grey (RAL 7004) Weight 600 g

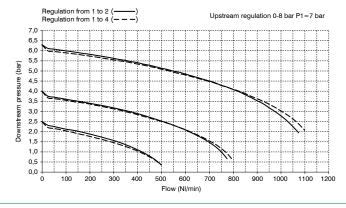
- -Suitable module for vertical configuration
- -It allows the regulation of output pressure to actuators
- -Actuator pressure regulation:
- -with regulator upstream of the solenoid valve (faster exhaust phase of the actuator)
- -with regulator downstream of the solenoid valve
- -Possible installation of pressure regulators in succession (available on request)
- -Pressure gauges adjustable in 3 positions

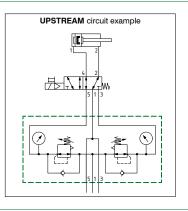












Note:

Pressure must be set upwards.

For greater accuracy and sensitivity, it is recommended using a regulator with a pressure rating as close as possible to the desired pressure.

Pressure regulator (extended version)

Filtered air. No lubrication needed, if applied it shall be continuous Recommended purity class [5:4:4] according to ISO 8573-1:2010 Fluid Temperature °C -10 ... +50 Working pressure (bar) 0,5 ... 10

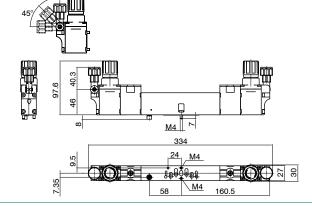
Coding: 27RP**₽©©©©** REGULATION TYPE

ı	8	REGULATION TYPE
۱		D = Downstream
L		U = Upstream
ſ		REGULATION SIDE
	•	2 = Single L12
	J	4 = Single L14
		24 = Double L12-L14
ſ		PRESSURE RANGE
l	_	A = 0 - 2 bar
l	œ	B = 0 - 4 bar
L		C = 0 - 8 bar
ſ	•	RELIEVING OPTIONS
L	•	A = With reliving
ſ		KNOBCOLOUR
l	$oldsymbol{\Theta}$	V = Green (RAL 6032)
		G = Grey (RAL 7004)
ſ		VERSION
١	V	= Adjustable pressure gauge
l		M = Fixed pressure gauge



Weight 760 g 27RP**@@@@**

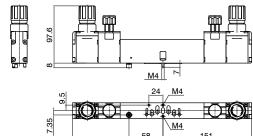
AIR DISTRIBUTION





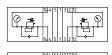
27RP**80606**M

Weight 760 g

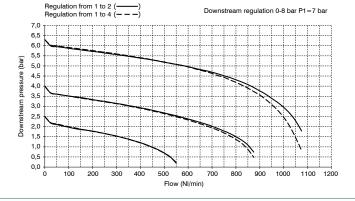


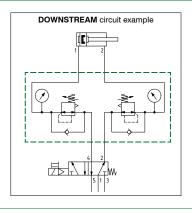
305

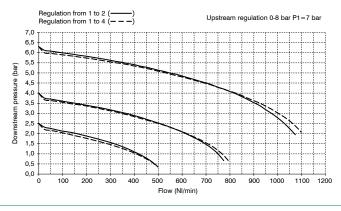
- -Suitable module for vertical configuration
- -It allows the regulation of output pressure to actuators
- -Actuator pressure regulation:
- -with regulator upstream of the solenoid valve (faster exhaust phase of the actuator)
- -with regulator downstream of the solenoid valve
- -Possible installation of pressure regulators in succession (available on request) -Pressure gauges adjustable in 3 positions or fixed

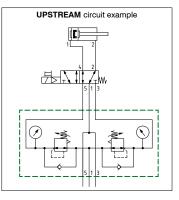












Note:

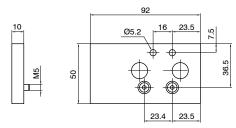
Pressure must be set upwards.

For greater accuracy and sensitivity, it is recommended using a regulator with a pressure rating as close as possible to the desired pressure.

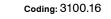
Offset compensation plate



Weight 118 g



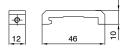




Coding: 27P0







EVO Electronics



A UNIQUE CONTROL SYSTEM, A WIDE RANGE OF SOLUTIONS

The PX Series multiserial module can be integrated into all Optyma S-F-T and 2700 series solenoid valves manifolds in EVO versions. The solenoid valves manifolds can be configured by implementing all major communication protocols on the same electronics, ensuring maximum flexibility and reliability in any application context.

	MULT	ΓΙ-PIN MODULE		
	Optyma-S	Optyma-F	Optyma-T	Series 2700
25 pins	•	•	•	•
37 pins	•	٠	•	•
44 pins	•			
	SER	RIALSYSTEMS		
	Optyma-S	Optyma-F	Optyma-T	Series 2700
CANopen® 32 bit protocol node kit	•	•	•	•
CANopen® 48 bit protocol node kit	•			
PROFIBUS DP 32 bit protocol node kit	•	•	•	•
PROFIBUS DP 48 bit protocol node kit	•			
EtherNet/IP protocol node kit	•	•	•	•
EtherCAT® protocol node kit	•	•	•	•
PROFINET IO RT protocol node kit	•	•	•	•
CC-Link IE Field Basic protocol node kit	•	•	•	•
O-Link 32 bit protocol interface kit	•	•	•	•
O-Link 48 bit protocol interface kit	•			
	INPUTS AND	O OUTPUTS MODULES		
	Optyma-S	Optyma-F	Optyma-T	Series 2700
3 M8 & M12 digital inputs module kits	•	•	•	•
3 M8 & M12 digital outputs module kits	•	•	•	•
32 digital inputs & outputs module kits (37 pin SUB-D connector)	•	•	•	•
Analogue inputs module kit M8	•	•	•	•
Analogue outputs module kit M8	•	•	•	•
Pt100 inputs module kit	•	•	•	•
	ADDIT	ONAL MODULES		
	Optyma-S	Optyma-F	Optyma-T	Series 2700
Additional power supply module kit	•	•	•	•









EtherNet/IP

IO-Link





Multi-pin module

Maximum number of handled signals

,			
	Te	echnical characteristics	
	PNP	+ 24 V DC ±10%	
Control voltage	NPN	T 24 V DC ±10 %	
	AC	+ 24 V AC	
	PNP	Reverse polarity	
Protection	NPN	neverse polarity	(
	AC	1	
	PNP		
Maximum altitude	NPN	2000 m a.s.l.	
	AC		

	ELECTRICAL CONNECTION
	25P = Connector 25 pins PNP
	37P = Connector 37 pins PNP
	44P = Connector 44 pins PNP
_	25N = Connector 25 pins NPN
Θ	37N = Connector 37 pins NPN
	44N = Connector 44 pins NPN
	25A = Connector 25 pins AC
	37A = Connector 37 pins AC
	44A = Connector 44 pins AC

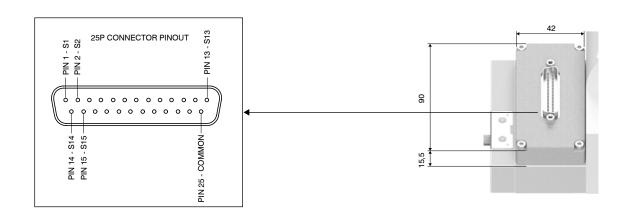
Coding: 5E30.

Scheme / Overall dimensions and I/O layout

25 pins

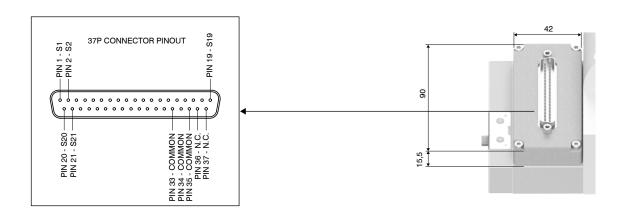
37 pins

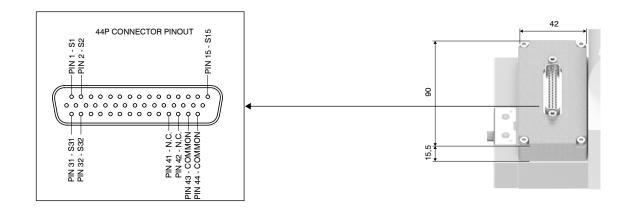
44 pins



24

32 40







CANopen® protocol node kit

CANopen® node manages 64 inputs and outputs.

Accessory modules can be connected in whatever order and configuration.

Connection to CANopen® fieldbus is made via two M12, male and female, 5 pins, type A circular connectors, in parallel between them; connectors pinout is compliant to CiA 106 (V.1.1.0: July 11th 2023).

Transmission speed and address, as well as termination resistor activation are set via DIP-switches.

CANopen® node is available in two versions with 32 or 48 outputs allocated to solenoid valves on the manifold directly connected to the

Such outputs correspond to least significant bytes and their allocation is independent of how many solenoid valves are installed. Remaining outputs can be used to control the modules.

Byte allocation to additional modules is fully automatic.

Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).

To compute the maximum current on the OUTPUTS + 24 V DC, please use the following formula:

 η = number of installed modules

 $I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\,i_{EV} \qquad I_{out,i} = \text{maximum total current absorbed by the i-th module on the OUTPUTS} + 24\,\text{V\,DC}$

m = number of installed solenoid pilots

 \dot{t}_{EV} = mean absorbed current per solenoid pilot (please see table below)

Series	i_EV
2200 "Optyma S"	36 mA
2500 "Optyma F"	54 mA
2500 "Optyma T"	54 mA
Series 2700	24 mA (1 W version) / 100 mA (2,3 W version)

For each fieldbus node, maximum deliverable current by OUTPUTS + 24 V DC supply is 4 A, moreover the sum of the currents on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

 $I_{24\ V\ DC\ out} + I_{24\ V\ DC\ in} < 4A$

$$I_{24\,V\,DC\,in} = \sum_{i=1}^{n} I_{in,i}$$

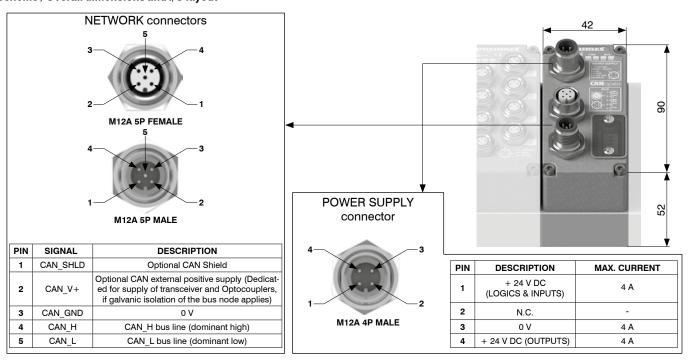
 $\pmb{\eta}$ = number of installed modules $I_{in,i}$ = maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)

Coding: K5530.64.♥CO

	VERSION
	32 = 32 output bits available for valve
Ø	connections
	48 = 48 output bits available for valve
	connections



In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.



	Technical characteristics		
Specifications		CiA 106 (V.1.1.0 : July 11th 2023)	
Case		Reinforced technopolymer	
	Voltage	+ 24 V DC ± 10%	
Power supply	Node only current consumption on + 24 V DC inputs	40 mA	
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT	
	Connection	2 M12 5 pins male-female connectors type A	
	Baud rate	10 - 20 - 50 - 125 - 250 - 500 - 800 - 1000 Kbit/s	
Communication	Addresses possible numbers	From 1 to 63	
Communication	Maximum nodes number in network	64 (slave + master)	
	Bus maximum recommended length	100 m at 500 Kbit/s	
	Bus diagnosis	Green / red status LED	
Configuration file		Available from our web site http://www.pneumaxspa.com	
Protection degree		IP65 when assembled	
Temperature °C		-5 +50	



PROFIBUS DP protocol node kit

PROFIBUS DP node manages 64 inputs and outputs.

Accessory modules can be connected in whatever order and configuration.

Connection to PROFIBUS DP fieldbus is made via two M12, male and female, 5 pins, type B circular connectors, in parallel between them; connectors pinout is PROFIBUS Interconnection Technology specifications compliant (Version 1.1, August 2001).

Address as well as termination resistor activation are set via DIP-switches.

PROFIBUS DP node is available in two versions with 32 or 48 outputs allocated to solenoid valves on the manifold directly connected to the node.

Such outputs correspond to least significant bytes and their allocation is independent of how many solenoid valves are installed. Remaining outputs can be used to control the modules.

Byte allocation to additional modules is fully automatic.

Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).

To compute the maximum current on the OUTPUTS + 24 V DC, please use the following formula:

 η = number of installed modules

 $I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\,i_{EV} \qquad I_{out,i} = \text{maximum total current absorbed by the i-th module on the OUTPUTS} + 24\,\text{V DC}$ supply rail (please see specifications of the single module)

m = number of installed solenoid pilots

 $i_{EV}\,$ = mean absorbed current per solenoid pilot (please see table below)

i_EV
36 mA
54 mA
54 mA
24 mA (1 W version) / 100 mA (2,3 W version)

For each fieldbus node, maximum deliverable current by OUTPUTS + 24 V DC supply is 4 A, moreover the sum of the currents on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

 $I_{24\ V\ DC\ out} + I_{24\ V\ DC\ in} < 4A$

$$I_{24\ V\ DC\ in} = \sum_{i=1}^{n} I_{in,i}$$

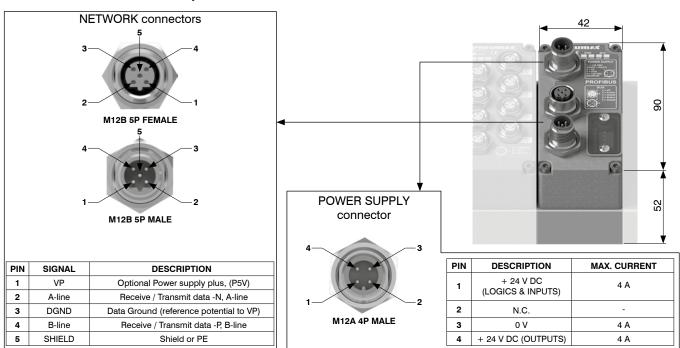
m= number of installed modules $I_{in,i}=$ maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)

Coding: K5330.64. ♥PB

	VERSION
	32 = 32 output bits available for valve
V	connections
	48 = 48 output bits available for valve
	connections



In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.



Technical characteristics		
Specifications		PROFIBUS DP
Case		Reinforced technopolymer
	Voltage	+ 24 V DC ± 10%
Power supply	Node only current consumption on + 24 V DC inputs	70 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
	Connection	2 M12 5 pins male-female connectors type B
	Baud rate	9,6 - 19,2 - 93,75 - 187,5 - 500 - 1500 - 3000 - 6000 - 12000 Kbit/s
Communication	Addresses possible numbers	From 1 to 99
Communication	Maximum nodes number in network	100 (slave + master)
	Bus maximum recommended length	100 m at 12 Mbit/s - 1200 m at 9,6 Kbit/s
	Bus diagnosis	Green / red status LED
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 +50



EtherNet/IP protocol node kit

EtherNet/IP node manages 128 inputs and outputs.

Accessory modules can be connected in whatever order and configuration.

Network connection is made via 2 M12 female, type D, 4 pins, circular connectors.

Code K5730.128.48El provides first 48 outputs, corresponding to least significant 6 bytes, are allocated to the solenoid valve positions, regardless how many they are and how many valves are installed on the manifold directly connected to the node. Remaining 80 outputs can be used to manage output modules; bytes allocation to additional modules is fully automatic.

Coding: K5730.128.48EI

Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).

To compute the maximum current on the OUTPUTS $+24\,\mathrm{V}\,\mathrm{DC}$, please use the following formula:

$$I_{24 V DC out} = \sum_{i=1}^{n} I_{out,i} + m i_{EV}$$

 η = number of installed modules

 $I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\,i_{EV} \qquad I_{out,i} = \text{maximum total current absorbed by the i-th module on the OUTPUTS} + 24\,V\,DC \\ \text{supply rail (please see specifications of the single module)}$

m = number of installed solenoid pilots

 \dot{t}_{EV} = mean absorbed current per solenoid pilot (please see table below)

Series	i_EV
2200 "Optyma S"	36 mA
2500 "Optyma F"	54 mA
2500 "Optyma T"	54 mA
Series 2700	24 mA (1 W version) / 100 mA (2,3 W version)

For each fieldbus node, maximum deliverable current by OUTPUTS + 24 V DC supply is 4 A, moreover the sum of the currents on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

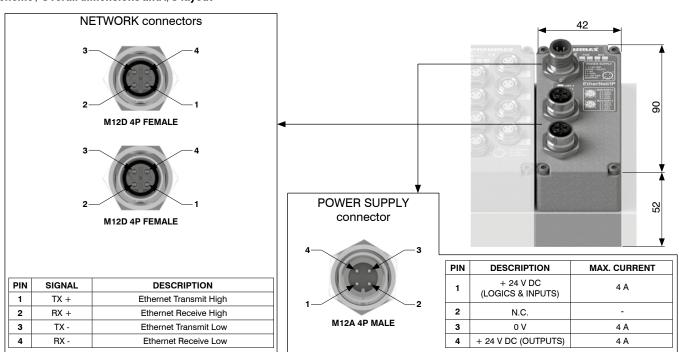
 $I_{24\ V\ DC\ out} + I_{24\ V\ DC\ in} < 4A$

$$I_{24 V DC in} = \sum_{i=1}^{n} I_{in,i}$$

 η = number of installed modules $I_{in,i}$ = maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)



In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.



Technical characteristics		
Case		Reinforced technopolymer
	Voltage	+ 24 V DC ± 10%
Power supply	Node only current consumption on + 24 V DC inputs	65 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
	Connection	2 M12 4 pins male-female connectors type D (IEC 61076-2-101)
	Baud rate	100 Mbit/s
Communication	Maximum distance between 2 nodes	100 m
	Bus diagnosis	Green / red status LED
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 +50



EtherCAT® protocol node kit

EtherCAT® node manages 128 inputs and outputs.

Accessory modules can be connected in whatever order and configuration.

Network connection is made via 2 M12 female, type D, 4 pins, circular connectors.

Code K5730.128.48EC provides first 48 outputs, corresponding to least significant 6 bytes, are allocated to the solenoid valve positions, regardless how many they are and how many valves are installed on the manifold directly connected to the node. Remaining 80 outputs can be used to manage output modules; bytes allocation to additional modules is fully automatic.

Coding: K5730.128.48EC

Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).

To compute the maximum current on the OUTPUTS + 24 V DC, please use the following formula:

$$I_{24\ V\ DC\ out} = \sum_{i=1}^{n} I_{out,i} + m\ i_{EV}$$

 η = number of installed modules

 $I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\,i_{EV} \qquad I_{out,i} = \text{maximum total current absorbed by the i-th module on the OUTPUTS} + 24\,\text{V\,DC}$ supply rail (please see specifications of the single module)

m= number of installed solenoid pilots

 \dot{l}_{EV} = mean absorbed current per solenoid pilot (please see table below)

i_EV	
36 mA	
54 mA	
2500 "Optyma T" 54 mA	
24 mA (1 W version) / 100 mA (2,3 W version)	

For each fieldbus node, maximum deliverable current by OUTPUTS + 24 V DC supply is 4 A, moreover the sum of the currents on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

 $I_{24\ V\ DC\ out} + I_{24\ V\ DC\ in} < 4A$

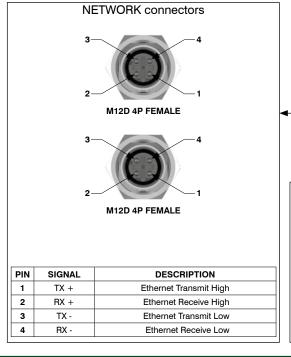
$$I_{24\ V\ DC\ in} = \sum_{i=1}^{n} I_{in,i}$$

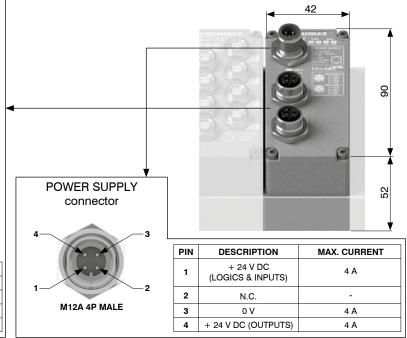
n= number of installed modules $I_{in,i}=$ maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)



In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.







	Technical characteristics		
Case		Reinforced technopolymer	
	Voltage	+ 24 V DC ± 10%	
Power supply	Node only current consumption on + 24 V DC inputs	65 mA	
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT	
	Connection	2 M12 4 pins male-female connectors type D (IEC 61076-2-101)	
0	Baud rate	100 Mbit/s	
Communication	Maximum distance between 2 nodes	100 m	
	Bus diagnosis	Green / red status LED	
Configuration file		Available from our web site http://www.pneumaxspa.com	
Protection degree		IP65 when assembled	
Temperature °C		-5 +50	



PROFINET IO RT protocol node kit

PROFINET IO RT node manages 128 inputs and outputs.

Accessory modules can be connected in whatever order and configuration.

Network connection is made via 2 M12 female, type D, 4 pins, circular connectors.

Code K5730.128.48PN provides first 48 outputs, corresponding to least significant 6 bytes, are allocated to the solenoid valve positions, regardless how many they are and how many valves are installed on the manifold directly connected to the node. Remaining 80 outputs can be used to manage output modules; bytes allocation to additional modules is fully automatic.

Coding: K5730.128.48PN

Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).

To compute the maximum current on the OUTPUTS $+24\,\mathrm{V}\,\mathrm{DC}$, please use the following formula:

$$I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\,i_{EV}$$

 η = number of installed modules

 $I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\,i_{EV} \qquad I_{out,i} = \text{maximum total current absorbed by the i-th module on the OUTPUTS} + 24\,V\,DC \\ \text{supply rail (please see specifications of the single module)}$

m = number of installed solenoid pilots

 \dot{t}_{EV} = mean absorbed current per solenoid pilot (please see table below)

i_EV
36 mA
54 mA
54 mA
24 mA (1 W version) / 100 mA (2,3 W version)

For each fieldbus node, maximum deliverable current by OUTPUTS + 24 V DC supply is 4 A, moreover the sum of the currents on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

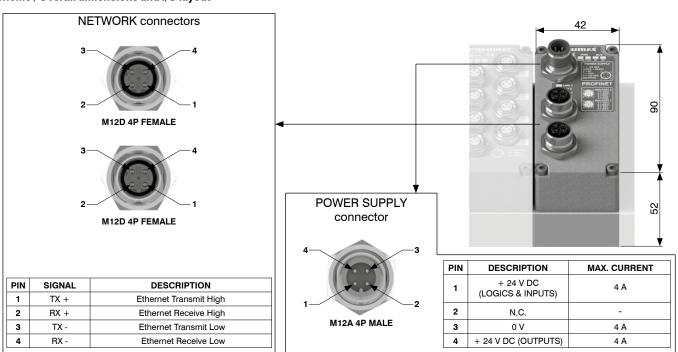
 $I_{24\ V\ DC\ out} + I_{24\ V\ DC\ in} < 4A$

$$I_{24 V DC in} = \sum_{i=1}^{n} I_{in,i}$$

n = number of installed modules $I_{in,i}$ = maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)



In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.



Technical characteristics		
Case Reinforced technopolymer		
Power supply	Voltage	+ 24 V DC ± 10%
	Node only current consumption on + 24 V DC inputs	65 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
Communication	Connection	2 M12 4 pins male-female connectors type D (IEC 61076-2-101)
	Baud rate	100 Mbit/s
	Maximum distance between 2 nodes	100 m
	Bus diagnosis	Green / red status LED
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 +50



CC-Link IE Field Basic protocol node kit

CC-Link IE Field Basic node manages 128 inputs and outputs.

Accessory modules can be connected in whatever order and configuration.

Network connection is made via 2 M12 female, type D, 4 pins, circular connectors.

Code K5730.128.48CL provides first 48 outputs, corresponding to least significant 6 bytes, are allocated to the solenoid valve positions, regardless how many they are and how many valves are installed on the manifold directly connected to the node. Remaining 80 outputs can be used to manage output modules; bytes allocation to additional modules is fully automatic.

Coding: K5730.128.48CL

Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).

To compute the maximum current on the OUTPUTS + 24 V DC, please use the following formula:

$$I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\,i_{EV}$$

 η = number of installed modules

 $I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\,i_{EV} \qquad I_{out,i} = \text{maximum total current absorbed by the i-th module on the OUTPUTS} + 24\,\text{V\,DC}$ supply rail (please see specifications of the single module)

m= number of installed solenoid pilots

 \dot{l}_{EV} = mean absorbed current per solenoid pilot (please see table below)

i_EV
36 mA
54 mA
54 mA
24 mA (1 W version) / 100 mA (2,3 W version)

For each fieldbus node, maximum deliverable current by OUTPUTS + 24 V DC supply is 4 A, moreover the sum of the currents on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

 $I_{24\ V\ DC\ out} + I_{24\ V\ DC\ in} < 4A$

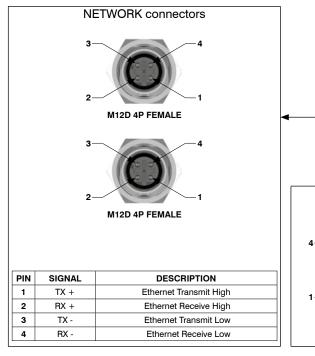
$$I_{24 \, V \, DC \, in} = \sum_{i=1}^{n} I_{in,i}$$

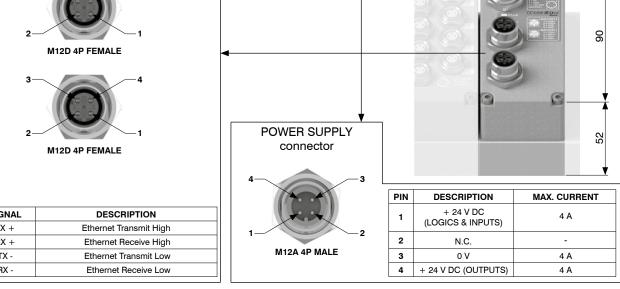
 \pmb{n} = number of installed modules $I_{in,i}$ = maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)



In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module

K5030.M12.





Technical characteristics		
Case Reinforced technopolymer		
Power supply	Voltage	+ 24 V DC ± 10%
	Node only current consumption on + 24 V DC inputs	65 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
	Connection	2 M12 4 pins male-female connectors type D (IEC 61076-2-101)
Communication	Baud rate	100 Mbit/s
	Maximum distance between 2 nodes	100 m
	Bus diagnosis	1 Green LED and 1 red status LED + 2 link and activity LEDs'
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5+50



IO-Link protocol interface kit

IO-Link interface manages 64 inputs and outputs.

Accessory modules can be connected in whatever order and configuration.

Electric power supply and IO-Link connection to the Master are made via M12, male, 5 pins, type A, circular connector, "CLASS B", according to IO-Link specifications.

 $Electric \ rails \ L+/L- \ supply \ interface \ only, \ while \ P24/N24 \ rails \ supply \ additional \ modules \ and \ solenoid \ valves.$

Either power supplies are galvanically isolated in the IO-Link interfaces.

IO-Link interface is available in two versions with 32 or 48 outputs allocated to solenoid valves on the manifold directly connected to the interface.

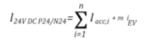
Such outputs correspond to least significant bytes and their allocation is independent of how many solenoid valves are installed. Remaining outputs can be used to control the modules.

Byte allocation to additional modules is fully automatic.

Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by pin 2 and pin 5 (P24 / N24).

To compute the maximum current on the P24 / N24 supply, please use the following formula::



 η = number of installed modules

 $I_{acc,i}={
m maximum}$ total current absorbed by each i-th accessory module, given by the sum of the absorbed currents on + 24 V DC OUTPUTS and + 24 V DC INPUTS

m = number of installed solenoid pilots

 i_{EV} = mean absorbed current per solenoid pilot (please see table below)

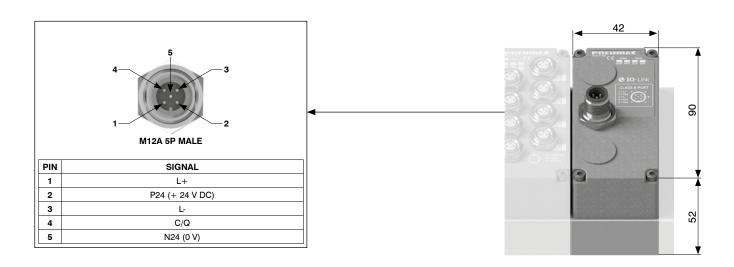
Series	i_EV
2200 "Optyma S"	36 mA
2500 "Optyma F"	54 mA
2500 "Optyma T"	54 mA
Series 2700	24 mA (1 W version) / 100 mA (2,3 W version)

maximum current on P24/N24 supply rail must be less than 4A.



In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.

Scheme / Overall dimensions and I/O layout



Technical characteristics		
Specifications		IO-Link Specification v1.1
Case		Reinforced technopolymer
Power supply	Voltage	+ 24 V DC +/- 10%
	Interface current consumption on + 24 V DC (L+ /L-)	25 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
	Connection	"Class B" port
	Communication speed	38.4 kbaud/s
Communication	Maximum distance from Master	20 m
	Bus diagnosis	Green / red status LED
	Vendor ID / Device ID	1257 (hex 0x04E9) / 3000 (hex 0x0BB8)
Configurations file IODD		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 +50

Coding: K5830.64.

	VERSION	
	32 = 32 output bits available for valve	
V	connections	
	48 = 48 output bits available for valve	
	connections	



8 digital inputs module kit M8

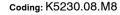
M8 digital inputs module provides 8 M8, 3 pins, female connectors.

Inputs have PNP logic, + 24 V DC ± 10%.

It is possible to connect 2 wires devices (e.g. switches, magnetic limit switches, pressure switches, etc.) as well as 3 wires devices (e.g. proximity sensors, photocells, electronic magnetic limit switches, etc.).

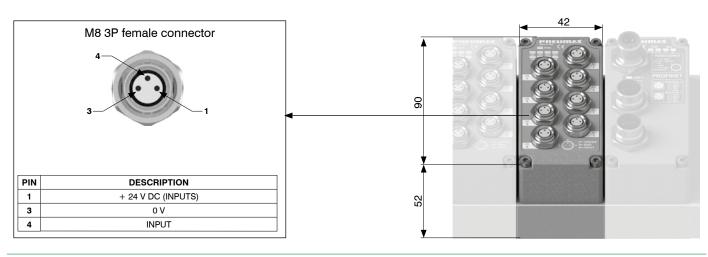
Inputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pin M12 power connector, pin 1) or $by\,K5030.M12\,additional\,power\,supply\,module, in\,case\,it\,were\,installed\,upstream\,of\,the\,inputs\,module.$

Technical characteristics	
Maximum current per module 300 mA	
Protection	Overcurrent (auto-resettable fuse) Reverse polarity
Inputimpedence	3 kΩ
Maximum cable length	< 30 m
Input data allocation	8 bit
INPUTS + 24 V DC current consumption of the module only	5 mA





Scheme / Overall dimensions and I/O layout





8 digital inputs module kit M12

M12 digital inputs module provides 4 M12, 5 pins, female connectors.

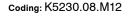
Inputs have PNP logic, $+24 \, \text{V} \, \text{DC} \pm 10\%$

Every connector takes two input channels.

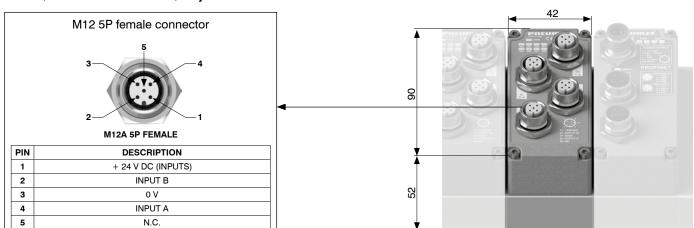
It is possible to connect 2 wires devices (e.g. switches, magnetic limit switches, pressure switches, etc.) as well as 3 wires devices (e.g. proximity sensors, photocells, electronic magnetic limit switches, etc.).

 $Inputs\ module\ power\ supply\ is\ provided\ by\ +\ 24\ V\ DC\ power\ input\ on\ the\ serial\ system\ (type\ A,\ 4\ pin\ M12\ power\ connector,\ pin\ 1)\ or\ begin{picture}$ $by\,K5030.M12\,additional\,power\,supply\,module, in\,case\,it\,were\,installed\,upstream\,of\,the\,inputs\,module.$

Technical characteristics		
Maximum current per module 300 mA		
Protection	Overcurrent (auto-resettable fuse) Reverse polarity	
Inputimpedence	3kΩ	
Maximum cable length	< 30 m	
Input data allocation	8 bit	
INPUTS + 24 V DC current consumption of the module only	5 mA	









8 digital outputs module kit M8

M8 digital inputs module provides 8 M8, 3 pins, female connectors.

Outputs have PNP logic, + 24 V DC ± 10%.

 $Outputs\ module\ power\ supply\ is\ provided\ by\ +\ 24\ V\ DC\ power\ input\ on\ the\ serial\ system\ (type\ A,\ 4\ pins\ M12\ power\ connector,\ pin\ 4)$ or by K5030.M12 additional power supply module, in case it were installed upstream of the outputs module.

Power supply presence is displayed by "PWR" green LED light-on.

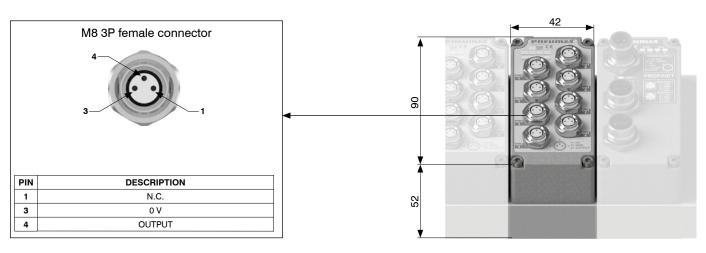
 $Each \ output \ has \ a \ LED \ indicator \ associated \ which \ lights \ up \ when \ output's \ signal \ status \ is \ high.$

Technical characteristics	
Maximum current per output 100 mA	
Protection	Short circuit (electronic), trigger at 2.8A
Maximum cable length	< 30 m
Output data allocation	8 bit
OUTPUTS + 24 V DC current consumption of the module only	15 mA

Coding: K5130.08.M8



Scheme / Overall dimensions and I/O layout





8 digital outputs module kit M12

M12 digital inputs module provides 4 M12, 5 pins, female connectors.

Outputs have PNP logic, $+24 \, \text{V} \, \text{DC} \pm 10\%$

Outputs module power supply is provided by +24 VDC power input on the serial system (type A, 4 pins M12 power connector, pin 4) or by K5030.M12 additional power supply module, in case it were installed upstream of the outputs module.

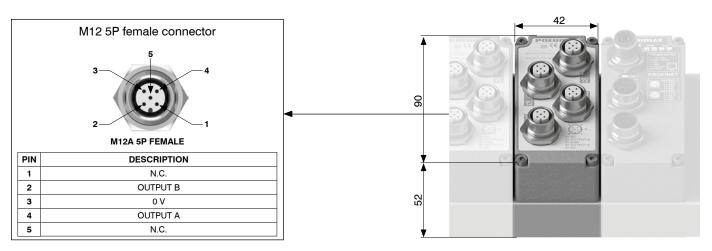
Power supply presence is displayed by "PWR" green LED light-on.

 ${\sf Each\ output\ has\ a\ LED\ indicator\ associated\ which\ lights\ up\ when\ output's\ signal\ status\ is\ high.}$

Technical characteristics	
Maximum current per output 100 mA	
Protection	Short circuit (electronic), trigger at 2.8A
Maximum cable length	< 30 m
Output data allocation	8 bit
OUTPUTS + 24 V DC current consumption of the module only	15 mA

Coding: K5130.08.M12





32 digital inputs module kit (37 pins SUB-D connector)

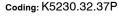
The module provides a SUB-D 37 pins female connector.

Inputs have PNP logic, $+24 \text{ V DC} \pm 10\%$.

It is possible to connect 2 wires devices (e.g. switches, magnetic limit switches, pressure switches, etc.) as well as 3 wires devices (e.g. proximity sensors, photocells, electronic magnetic limit switches, etc.).

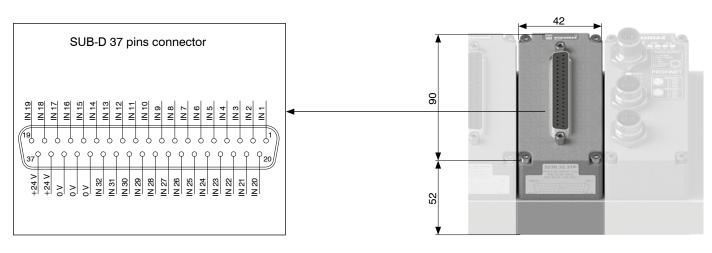
Inputs module power supply is provided by $+24\,\mathrm{VDC}$ power input on the serial system (type A, 4 pin M12 power connector, pin 1) or by K5030.M12 additional power supply module, in case it were installed upstream of the inputs module.

Technical characteristics			
Maximum current per module	1 A		
Protection	Overcurrent (auto-resettable fuse) Reverse polarity		
Input impedence	3 kΩ		
Maximum cable length	< 30 m		
Input data allocation	32 bit		
INPUTS + 24 V DC current consumption of the module only	10 mA		





Scheme / Overall dimensions and I/O layout





32 digital outputs module kit (37 pins SUB-D connector)

The module provides a SUB-D 37 pins female connector.

Outputs have PNP logic, $+24 \text{ V DC} \pm 10\%$.

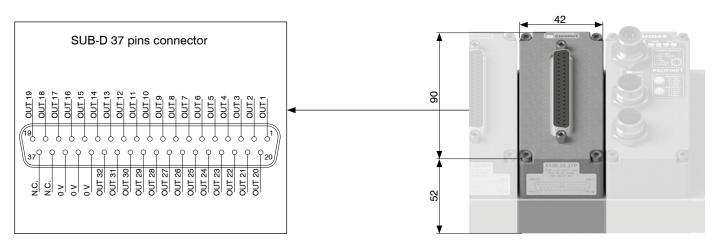
Outputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pins M12 power connector, pin 4) or by K5030.M12 additional power supply module, in case it were installed upstream of the outputs module.

Power supply presence is displayed by "PWR" green LED light-on.

Technical characteristics		
Maximum current per output	100 mA	
Protection	Short circuit (electronic), trigger at 2.8A	
Maximum cable length	< 30 m	
Output data allocation	32 bit	
OUTPUTS + 24 V DC current consumption of the module only	15 mA	

Coding: K5130.32.37P







Analogue inputs module kit M8

M8 analogue inputs module converts analogue signals into digital signals and transfers acquired data to field bus, via network

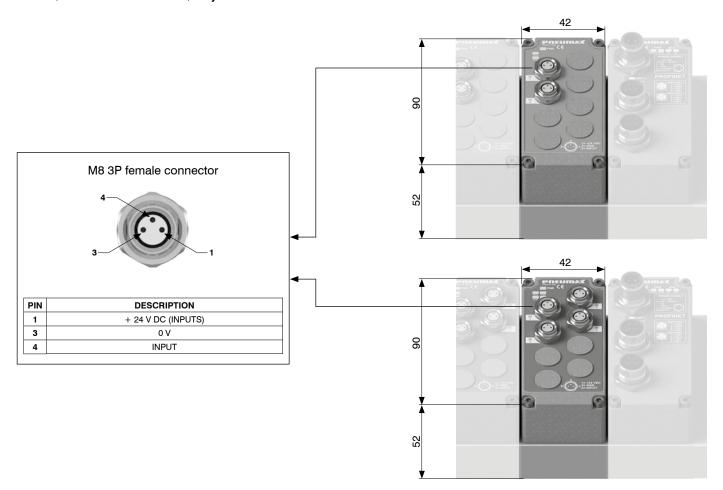
Inputs module power supply is provided by $+24\,\text{V}$ DC power input on the serial system (type A, $4\,\text{pin}$ M12 power connector, pin 1) or by K5030.M12 additional power supply module, in case it were installed upstream of the inputs module.

Technical characteristics			
Protection (pin 1)	Overcurrent (auto-resettable fuse)		
Input impedance (voltage inputs)	33 kΩ		
Digital conversion resolution	12 bit		
Maximum cable length	< 30 m		
Input data allocation	16 bit per channel		
Diagnostic LED	Input signal overcurrent or overvoltage		
Accuracy	0,3% F.S.		
Overall maximum current 2 channels (pin 1)	300 mA		
Overall maximum current 4 channels (pin 1)	750 mA (375 mA for each pair of channels)		
INPUTS + 24 V DC current consumption of the module only	15 mA		

Coding: K5230. **@**

	CHANNELS		
2 = 2 channels			
	4 = 4 channels		
	SIGNAL		
	T.00 = Voltage (0-10 V)		
8	T.01 = Voltage (0-5 V)		
	C.00 = Current (4-20 mA)		
	C 01 = Current (0-20 mA)		





Analogue outputs module kit M8

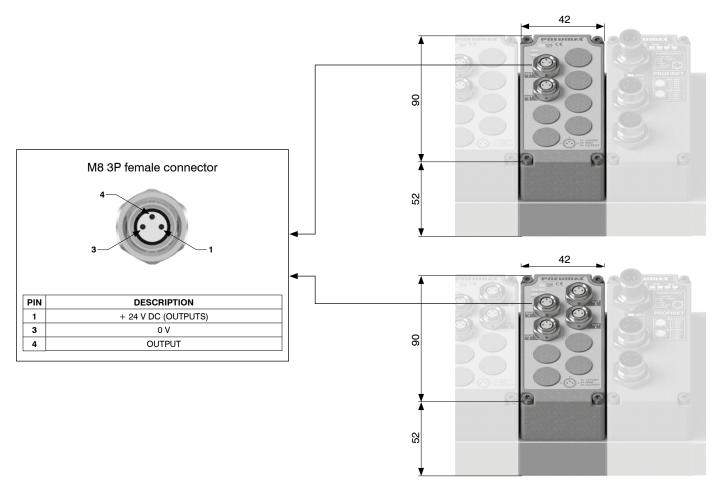
M8 analogue outputs module converts output data, received from field bus via network node, into analogue signal. Outputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pins M12 power connector, pin 4) or by K5030.M12 additional power supply module, in case it were installed upstream of the outputs module.

Technical characteristics			
Protection (pin 1)	Overcurrent (auto-resettable fuse)		
Protection (pin 4)	Overcurrent (auto-resettable fuse)		
Digital conversion resolution	12 bit		
Maximum cable length	< 30 m		
Output data allocation	16 bit per channel		
Diagnostic LED	Output signal overcurrent		
Accuracy	0,3% F.S.		
Overall maximum current 2 channels (pin 1)	1 A		
Overall maximum current 4 channels (pin 1)	2 A (1 A for each pair of channels)		
INPUTS + 24 V DC current consumption of the module only	15 mA		
OUTPUTS + 24 V DC current consumption of the module only (2 channels)	35 mA		
OUTPUTS + 24 V DC current consumption of the module only (4 channels)	70 mA		

Coding: K5130. **@**

	CHANNELS	
Θ	2 = 2 channels	
	4 = 4 channels	
	SIGNAL	
	T.00 = Voltage (0-10 V)	
S T.01 = Voltage (0-5 V)		
	C.00 = Current (4-20 mA)	
	C.01 = Current (0-20 mA)	







Pt100 inputs module kit

Pt100 inputs module digitizes signals from Pt100 probes and transfers acquired data to field bus, via network node. It is possible to connect two, three or four wires probes.

 $Inputs \,module\,power\,supply\,is\,provided\,by\,+\,24\,V\,DC\,power\,input\,on\,the\,serial\,system\,(type\,A,\,4\,pin\,M12\,power\,connector,pin$ 1) or by K5030.M12 additional power supply module, in case it were installed upstream of the inputs module.

Technical characteristics			
Digital conversion resolution	12 bit		
Maximum cable length	< 30 m		
Input data allocation	16 bit per channel		
Diagnostic LED	Probe presence Temperature out of range		
Accuracy	±0,2°C		
Probe temperature range	-100°C +300°C		
INPUTS + 24 V DC current consumption of the module with probes (2 channels)	25 mA		
INPUTS + 24 V DC current consumption of the module with probes (4 channels)	35 mA		

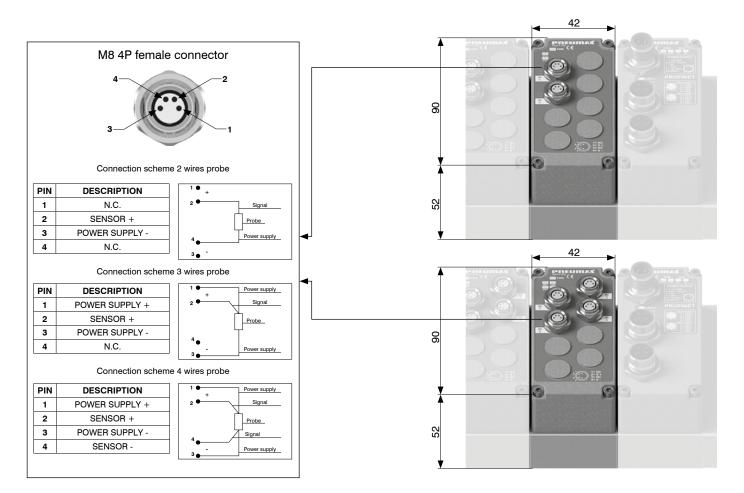
Conversion formula (°C)

Temperature (°C) =
$$\left(\frac{\text{Points}}{4095} \times 400\right)$$
-100

Coding: K5230. P.0

	CHANNELS
•	2 = 2 channels
-	4 = 4 channels
	TYPE
0 = Pt100 2 wires	
O	1 = Pt1003 wires
	2 = Pt100 4 wires





Additional power supply module kit

. Additional power supply module supplies additional electric power for downstream optional modules, where "downstream" means farther from serial node, resetting the current limits of the network node / IO-Link interface.

 $Electric \,connection \,of \,the \,module \,to \,external \,power \,supply \,unit \,occurs \,via \,an \,M12\,4\,pins \,type \,A\,male \,connector.$

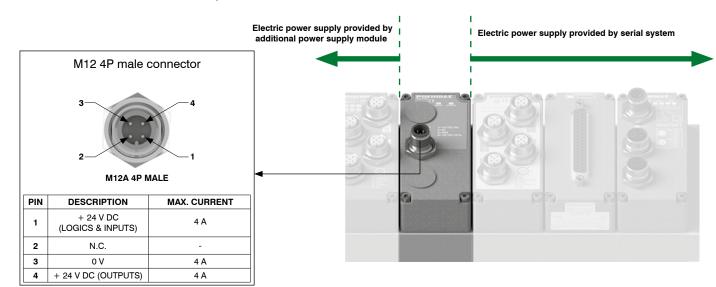
M12 connector has two different pins to power up logics and inputs (Pin 1) and outputs (Pin 4).

Presence of each power supply rail is indicated by corresponding green LED.

When using IO-Link interface, the additional power supply module is useful for separating the module power supplies of input from the output modules placed downstream.

Coding: K5030.M12





AIR DISTRIBUTION

POWER SUPPLY connectors

Straight connector M12A 4P female





Upper view slave connector

Coding: 5312A.F04.00

Power supply socket

NETWORK connectors

Straight connector M12A 5P female





Upper view slave connector

Coding: 5312A.F05.00

Socket for bus CANopen® and IO-Link

Straight connector M12A 5P male





Upper view slave connector

С	oding: 5312A.M05.00

Plug for bus CANopen®

Straight connector M12D 4P male





Upper view slave connector

PIN	SIGNAL	DESCRIPTION
1	TX+	EtherNet Transmit High
2	RX+	EtherNet Receive High
3	TX-	EtherNet Transmit Low
4	RX-	EtherNet Receive Low

DESCRIPTION

Power Supply A-Line DGND B-Line SHIELD

DESCRIPTION

+ 24 V DC (LOGICS AND INPUTS) N.C 0 V + 24 V DC (OUTPUTS)

> (CAN SHIELD) (CAN V+) CAN_GND CAN_H CAN L

> (CAN_SHIELD)

(CAN_V+) CAN_GND CAN_H CAN_L

Coding: 5312D.M04.00

Plug for bus EtherCAT®, PROFINET IO RT and EtherNet/IP

 $\textbf{Trademarks}{:}\ Ether CAT^{\text{@}}\ is\ registered$ trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.

Straight connector M12B 5P female





Upper view slave connector

Coding:	531	12B.	F05	.00
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Socket for bus PROFIBUS DP

Straight connector M12B 5P male





Upper view slave connector

PIN	DESCRIPTION
1	Power Supply
2	A-Line
3	DGND
4	B-Line
_	

Coding: 5312B.M05.00

Socket for bus PROFIBUS DP

INPUTS connectors

Straight connector M12A 5P male





DESCRIPTION
+ 24 V DC
INPUTB
0 V
INPUT A
N.C.

Upper view slave connector

Coding: 5312A.M05.00

Plug for inputs modules

M12 plug

Plugs

Coding: 5300.T12



Straight connector M8 3P male





PIN	DESCRIPTION
1	+ 24 V DC
4	INPUT
3	0 V

Upper view slave connector

Plug for inputs modules





Solenoid valves manifold EVO Electronics - Cables

Cable complete with connector, 25 Poles, IP65



Coding: 2300.25.

	•	CABLELENGTH
		03 = 3 meters
		05 = 5 meters
		10 = 10 meters
	•	CONNECTOR
		10 = Stand alone
90		90 = 90° Angle

Cable complete with connector, 37 Poles, IP65



Coding: 2400.37. **①**. **②**

	•	CABLE LENGTH
		03 = 3 meters
		05 = 5 meters
		10 = 10 meters
	Θ	CONNECTOR
		10 = Stand alone
		90 = 90° Angle

Cable complete with connector, 44 Poles, IP65



Coding: 2300.44.

	CABLE LENGTH
	03 = 3 meters
•	05 = 5 meters
	10 = 10 meters
	CONNECTOR
Θ	10 = Stand alone
	90 = 90° Angle

Cable complete with connector, 25 Poles, IP65



Coding: 2400.25. **0**.25

	•	CABLELENGTH
		03 = 3 meters
		05 = 5 meters
		10 = 10 meters

Cable complete with connector, 37 Poles, IP65



Coding: 2400.37. **3**.37

	CABLE LENGTH
	03 = 3 meters
•	05 = 5 meters
	10 = 10 meters

AIR DISTRIBUTION

Series 2300 ENOVA®

Technical innovation, rational design, high performance and extremely compact size: these are the main features the ENOVA® series bring to the market.

Each valve comprises all the necessary pneumatic and electrical functions needed to produce a solenoid valve assembly.

There are no limits to the configuration of the solenoid valve island, as full priority has been given to the end user's needs; the addition or removal of modules is a simple operation that can be swiftly and easily achieved.

The management of the electrical signals through the valves is optimized through a patented dedicated connector in each valve.

Electrical connections are made via a twenty-five pin connector, which is capable of controlling up to twenty-two solenoids.

Electrical and pneumatic connections are located on the same module at one end of the assembly.

Serial bus nodes compatible with most common protocols are easily integrated.

Most widely used and known communication protocols, such as PROFIBUS DP, CANopen®, DeviceNet, AS-Interface can be directly integrated with the valve manifold by simply plugging the necessary module onto the electrical connection, maintaining IP65 environmental protection. The management of inputs has also been foreseen, and can be achieved by adding one or more expansion modules directly to the serial module.

"Shifting time of pneumatic directional control valves or moving parts, logic devices were measured in accordance to ISO 12238:2001"

Main characteristics

- Clean profile prevents accumulation of dirt
- Compact size: modules of 12.5 mm
- Connections available: 4, 6, 8 mm
- IP65 protection grade
- Optimized electrical connection system
- Electrical and pneumatic line connections on one side
- Quick coupling connection system with visual indicator: locked/unlocked
- Freedom of configuration

Functions

- 5/2 monostable
- 5/2 bistable
- 5/3 closed centres
- 2x3/2 N.C. N.C. (5/3 open centres)
- 2x3/2 N.O. N.O. (5/3 pressured centres)
- 2x3/2 N.C. N.O.
- 2x2/2 N.C. N.C.
- 2x2/2 N.O. N.O.
- 2x2/2 N.C. N.O.

Construction characteristics

Central body	Reinforced technopolymer
External casing	Reinforced technopolymer
Spool seals	PUR
Springs	Spring steel with protective coating
Operators	Reinforced technopolymer
Spools	Aluminium 2011

Operational characteristics

Supply voltage	24 VDC ± 10% PNP (NPN on request)
Pilot consumption	0,9 Watt
Valve working pressure [1-11]	from vacuum to 10 bar max.
Pilot working pressure [12-14]	from 2,5 to 7 bar max.
Operating temperature	-5°C +50°C
Protection degree	IP65
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous

Attention: dry air must be used for applications below 0°C"

Solenoid-Differential (Monostable)

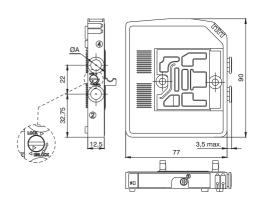
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Working pressure (bar)	From vacuum to 10	
Pilot pressure (bar)	2,5 7	
Temperature °C	-5 +50	
Flow rate at 6 bar with ∆p=1 (NI/min)	700	
Response time according to ISO 12238, activation time (ms)	12	
Response time according to ISO 12238, deactivation time (ms)	15	

Coding: 23 **©**.52.00.36.

	ELECTRICAL CONTACT
(3	0 = Standard (only one electric
	signal)
	1 = CEB (Bistable Electrical
	contacts)-(two electrical signals)
•	CONNECTION ØA
	4 = Quick connection for tube Ø4
	6 = Quick connection for tube Ø6
	8 = Quick connection for tube Ø8
V	VOLTAGE
	02 = 24 VDC PNP
	12 = 24 VDC NPN
	·

SHORT CODE B4
SHORT CODE B6
SHORT CODE B8
SHORT CODE R4 (CEB)
SHORT CODE R6 (CEB)
SHORT CODE R8 (CEB)





Weight 115 g

14 2 12/14 12 12

Solenoid-Spring (Monostable)

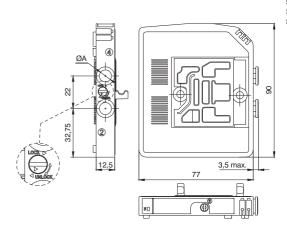
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Working pressure (bar)	From vacuum to 10	
Pilot pressure (bar)	2,5 7	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	700	
Response time according to ISO 12238, activation time (ms)	9	
Response time according to ISO 12238, deactivation time (ms)	30	

Coding: 23**■©**.52.00.39.**♥**

	ELECTRICAL CONTACT
	0 = Standard (only one electric
(3	signal)
	1 = CEB (Bistable Electrical
	contacts)-(two electrical signals)
•	CONNECTION ØA
	4 = Quick connection for tube Ø4
	6 = Quick connection for tube Ø6
	8 = Quick connection for tube Ø8
V	VOLTAGE
	02 = 24 VDC PNP
	12 = 24 VDC NPN
0110	DECODEAL

SHORT CODE A4
SHORT CODE A6
SHORT CODE A8
SHORT CODE P4 (CEB)
SHORT CODE P6 (CEB)
SHORT CODE P8 (CEB)







PNEUMAX

Solenoid-Solenoid (Bistable)

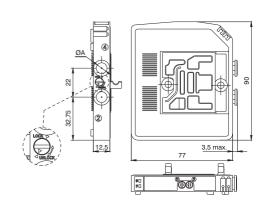
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Working pressure (bar)	From vacuum to 10	
Pilot pressure (bar)	2,5 7	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	700	
Response time according to ISO 12238, activation time (ms)	7	
Response time according to ISO 12238, deactivation time (ms)	7	

Coding: 230**⊚**.52.00.35.**♥**

	CONNECTION ØA
•	4 = Quick connection for tube Ø4
	6 = Quick connection for tube Ø6
	8 = Quick connection for tube Ø8
	VOLTAGE
V	02 = 24 VDC PNP
	12 = 24 VDC NPN

SHORT CODE C4 SHORT CODE C6 SHORT CODE C8





Weight 115 g

Solenoid-Solenoid (Bistable-Closed centres)

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Working pressure (bar)	From vacuum to 10	
Pilot pressure (bar)	2,5 7	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	550	
Response time according to ISO 12238, activation time (ms)	15	
Response time according to ISO 12238, deactivation time (ms)	15	

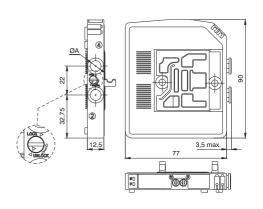
14 12/14 12/14

Coding: 230@.53.31.35.

_	
	CONNECTION ØA
	4 = Quick connection for tube Ø4
0	6 = Quick connection for tube Ø6
	8 = Quick connection for tube Ø8
•	VOLTAGE
	02 = 24 VDC PNP
	12 = 24 VDC NPN

SHORT CODE E4 SHORT CODE E6 SHORT CODE E8





82/84 4 1 2 14 12/14 15/3|11 12

1 | 506

Solenoid-Solenoid 2x3/2 Bistable-N.C. - N.C. (=5/3 Open centres)

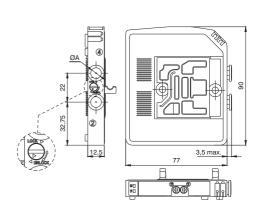
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Working pressure (bar)	From vacuum to 10	
Pilot pressure (bar)	2,5 7	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	700	
Response time according to ISO 12238, activation time (ms)	9	
Response time according to ISO 12238, deactivation time (ms)	30	

Coding: 230 **©**.62.44.35. **V**

•	CONNECTION ØA
	4 = Quick connection for tube Ø4
	6 = Quick connection for tube Ø6
	8 = Quick connection for tube Ø8
V	VOLTAGE
	02 = 24 VDC PNP
	12 = 24 VDC NPN

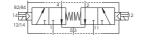
SHORT CODE F4 SHORT CODE F6 SHORT CODE F8





Weight 130 g

5/3 Open Centres: Use the Solenoid valves with 2x3/2 N.C. - N.C. function 5/3 Pressured Centres: Use the Solenoid valves with 2x3/2 N.O. - N.O. function



Solenoid-Solenoid 2x3/2 Bistable-N.C. - N.O.

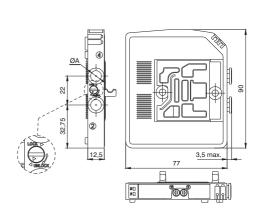
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Working pressure (bar)	From vacuum to 10	
Pilot pressure (bar)	2,5 7	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	700	
Response time according to ISO 12238, activation time (ms)	9	
Response time according to ISO 12238, deactivation time (ms)	30	

Coding: 230@.62.45.35.

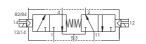
	CONNECTION ØA
0	4 = Quick connection for tube Ø4
	6 = Quick connection for tube Ø6
	8 = Quick connection for tube Ø8
•	VOLTAGE
	02 = 24 VDC PNP
	12 = 24 VDC NPN
CHORT CODE HA	

SHORT CODE H4 SHORT CODE H6 SHORT CODE H8





Weight 130 g 5/3 Open Centres: Use the Solenoid valves with 2x3/2 N.C. - N.C. function 5/3 Pressured Centres: Use the Solenoid valves with 2x3/2 N.O. - N.O. function





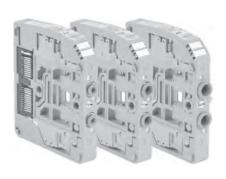
Solenoid-Solenoid 2x3/2 Bistable-N.O. - N.O. (=5/3 Pressured centres)

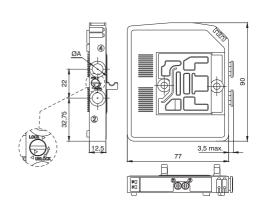
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Working pressure (bar)	From vacuum to 10	
Pilot pressure (bar)	2,5 7	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	700	
Response time according to ISO 12238, activation time (ms)	9	
Response time according to ISO 12238, deactivation time (ms)	30	

Coding: 230@.62.55.35.

	CONNECTION ØA
•	4 = Quick connection for tube Ø4
	6 = Quick connection for tube Ø6
	8 = Quick connection for tube Ø8
	VOLTAGE
V	02 = 24 VDC PNP
	12 = 24 VDC NPN

SHORT CODE G4 SHORT CODE G6 SHORT CODE G8





Weight 130 g 5/3 Open Centres: Use the Solenoid valves with 2x3/2 N.C. - N.C. function 5/3 Pressured Centres: Use the Solenoid valves with 2x3/2 N.O. - N.O.



Solenoid-Solenoid 2x2/2 Bistable-N.C. - N.C.

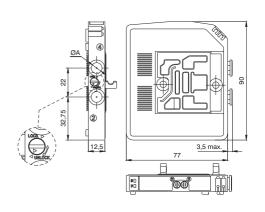
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Working pressure (bar)	From vacuum to 10	
Pilot pressure (bar)	2,5 7	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	700	
Response time according to ISO 12238, activation time (ms)	9	
Response time according to ISO 12238, deactivation time (ms)	30	

Coding: 230@.42.44.35.

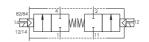
-		
	CONNECTION ØA	
	Θ	$4 = Quick$ connection for tube $\emptyset 4$
	•	6 = Quick connection for tube Ø6
		8 = Quick connection for tube Ø8
VOLTAGE		VOLTAGE
	V	02 = 24 VDC PNP
		12 = 24 VDC NPN

SHORT CODE L6 SHORT CODE L8





Weight 130 g



Solenoid-Solenoid 2x2/2 Bistable-N.C. - N.O.

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Working pressure (bar)	From vacuum to 10	
Pilot pressure (bar)	2,5 7	
Temperature °C	-5 +50	
Flow rate at 6 bar with ∆p=1 (NI/min)	700	
Response time according to ISO 12238, activation time (ms)	9	
Response time according to ISO 12238, deactivation time (ms)	30	

	Coding: 230 ⊚ .42.45.35. ♥			
		CONNECTION ØA		
	Θ	4 = Quick connection for tube Ø4		
=		6 = Quick connection for tube Ø6		

8 = Quick connection for tube Ø8

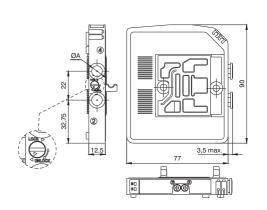
VOLTAGE

02 = 24 VDC PNP

12 = 24 VDC NPN

SHORT CODE N4 SHORT CODE N6 SHORT CODE N8





Weight 130 g

Solenoid-Solenoid 2x2/2 Bistable-N.O. - N.O.

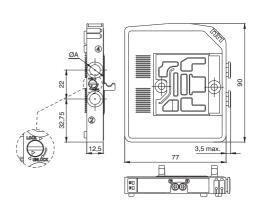
Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Working pressure (bar)	From vacuum to 10	
Pilot pressure (bar)	2,5 7	
Temperature °C	-5 +50	
Flow rate at 6 bar with Δp=1 (NI/min)	700	
Response time according to ISO 12238, activation time (ms)	9	
Response time according to ISO 12238, deactivation time (ms)	30	

Coding: 230@.42.55.35.

	CONNECTION ØA
0	4 = Quick connection for tube Ø4
	6 = Quick connection for tube Ø6
	8 = Quick connection for tube Ø8
	VOLTAGE
V	02 = 24 VDC PNP
	12 = 24 VDC NPN
SHORT CODE M4	

SHORT CODE M4 SHORT CODE M6 SHORT CODE M8





Weight 130 g





Left Endplate

Operational characteristics		
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous	
Working pressure (bar)	From vacuum to 10	
Pilot pressure (bar)	2,5 7	
Temperature °C	-5 +50	

Coding: 2311.

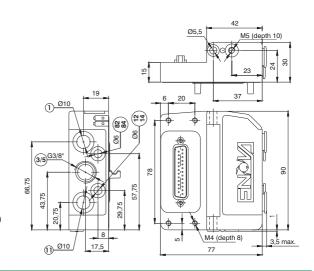
Coding: 2312.00

	PORTS
₿	05 = 5 ports
	03 = 3 ports
	CONNECTIONS
G	P = Electrical connection PNP
	N - Floatrical connection NPN



Weight 190 g
1/11 Conduit (tube ø10): Main Solenoid valve feeding (pressure from vacuum to 10 bar maximum)
3/5 Conduit (G 3/8"): Main Solenoid valve exhaust
12/14 Conduit (tube ø6): Pilot feeding (pressure from 2,5 to 7 bar)
82/84 Conduit (tube ø6): Pilot exhaust

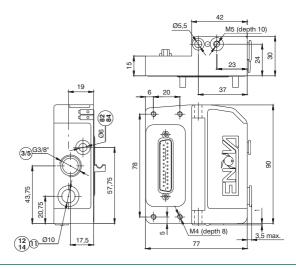
2311.05@





Weight 185 g 1/11-12/14 Conduit (tube ø10): Main Solenoid valve and pilot feeding (pressure from 2,5bar to 7 bar) 3/5 Conduit (G 3/8"): Main Solenoid valve exhaust 82/84 Conduit (tube ø6): Pilot exhaust

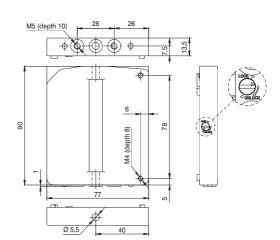
2311.03@



Right Endplates closed

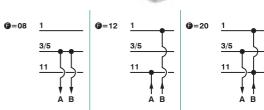


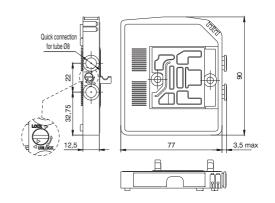
Weight 100 g











Coding: 2308.

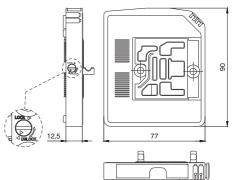
	FUNCTION
08 = Exhaust module	
9	12 = Inlet module
	20 = Inlet-Exhaust module

SHORT CODE J SHORT CODE K SHORT CODE W

Weight 5 g

Through module





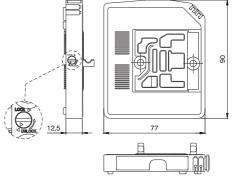
Coding: 2300.

FUNCTION 01 = 1 electric signal module 02 = 2 electric signals module

SHORT CODE T1 SHORT CODE T2

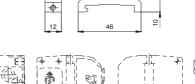
DIN rail adapter

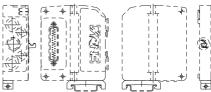




Coding: 2300.16

Weight 90 g



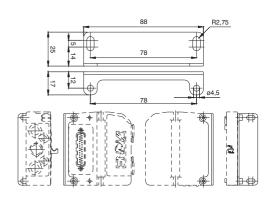


Weight 12 g

Coding: 2300.50

Fixing brackets





Weight 45 g for fixing dimensions see the Left endplates 3 and 5 ports

Exhaust Diaphragm

Coding: 2317.08



Weight 5 g SHORT CODE Y

Inlet/Exhaust Diaphragm

Coding: 2317.20



Weight 5 g SHORT CODE Z

Inlet Diaphragm

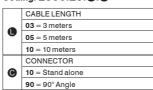
Coding: 2317.12



Weight 5 g SHORT CODE X

Cable complete with connector, 25 Poles, IP65









The electrical connection is achieved via a 25 pin connector and can manage up to 22 solenoid pilots.

The management and distribution of the electrical signals between each valve is obtained thanks to a patented electrical connector which receives the signals from the previous module, uses one, two or none depending on the type, and carries forward to the next module the remaining. Bistable valves, 5/3, 2X3/2 and 2X2/2 valves which have two solenoid pilots built in, use two signals.

The first is directed to the pilot side 14 the second to the pilot side 12.

Monostable valves can be fitted with two type of electrical connector; one that uses only one signal (connected to the pilot side 14) and carries forward the remaining.

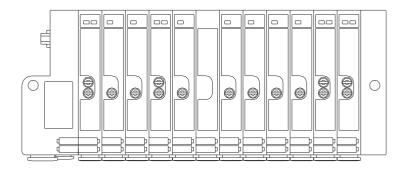
The second one called CEB (Electrical contact for bistable) which uses two signals, one is needed for the valve the other is not used.

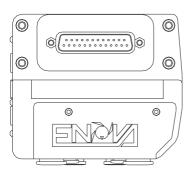
This second solution (CEB) allows the modification of the manifold (replacement of monostable valves with bistable for example) without the need of reconfiguring the PLC outputs layout.

On the other hand this solution limits the maximum number of valves to 11 (two signals for each position).

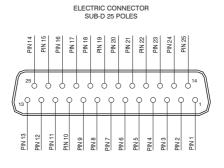
Intermediate supply / exhaust modules are fitted with a dedicated electrical connector which carries forward all electric signals without using any. This allows the use of intermediate modules in any position of the manifold.

 $\label{prop:eq:example} \textbf{Example of manifold samples with the corresponding pin layout.}$



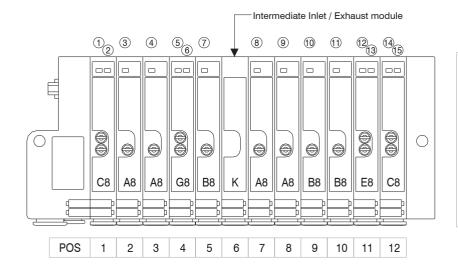


ELECTRICAL INPUT CONNECTIONS



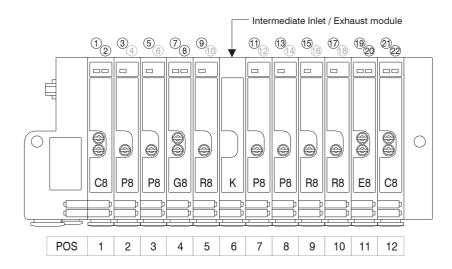
1 - 22 = SIGNALS 23 - 24 - 25 = COMMON

25 PIN connector correspondence for bistable, 2x3/2, 5/3 and standard monostable valves manifold



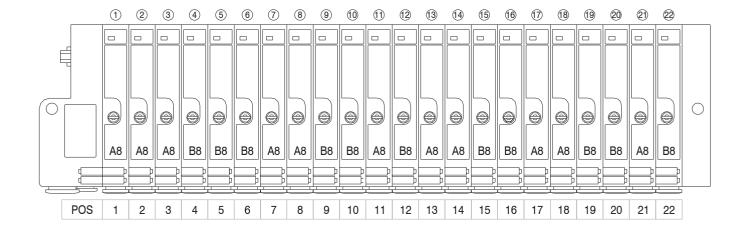
PIN 1 = PILOT 14 S.V. POS.1 PIN 2 = PILOT 14 S.V. POS.1 PIN 3 = PILOT 14 S.V. POS.2 PIN 4 = PILOT 14 S.V. POS.3 PIN 5 = PILOT 14 S.V. POS.4 PIN 6 = PILOT 14 S.V. POS.5 PIN 7 = PILOT 14 S.V. POS.6 PIN 8 = PILOT 14 S.V. POS.7 PIN 9 = PILOT 14 S.V. POS.8 PIN 10 = PILOT 14 S.V. POS.9 PIN 11 = PILOT 14 S.V. POS.10 PIN 12 = PILOT 14 S.V. POS.11 PIN 13 = PILOT 14 S.V. POS.11 PIN 14 = PILOT 14 S.V. POS.12 PIN 15 = PILOT 14 S.V. POS.12

25 PIN connector correspondence for bistable, 2x3/2, 5/3 manifold and CEB monostable valves (electrical contact for bistable)

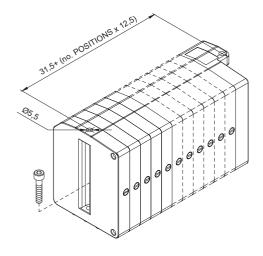


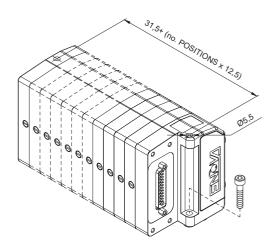
PIN 1 = PILOT 14 S.V. POS.1 PIN 2 = PILOT 12 S.V. POS.1 PIN 3 = PII OT 14 S.V. POS 2 PIN 4 = NOT CONNECTED PIN 5 = PILOT 14 S.V. POS.3 PIN 6 = NOT CONNECTED PIN 7 = PILOT 14 S.V. POS.4 PIN 8 = PILOT 12 S.V. POS.4 PIN 9 = PILOT 14 S.V. POS.5 PIN 10 = NOT CONNECTED PIN 11 = PILOT 14 S.V. POS.7 PIN 12 = NOT CONNECTED PIN 13 = PILOT 14 S.V. POS.8 PIN 14 = NOT CONNECTED PIN 15 = PILOT 14 S.V. POS.9 PIN 16 = NOT CONNECTED PIN 17 = PILOT 14 S.V. POS.10 PIN 18 = NOT CONNECTED PIN 19 = PILOT 14 S.V. POS.11 PIN 20 = PILOT 12 S.V. POS.11 PIN 21 = PILOT 14 S.V. POS.12 PIN 22 = PILOT 12 S.V. POS.12

25 PIN connector correspondence for manifold for 22 position manifold with standard monostable valves

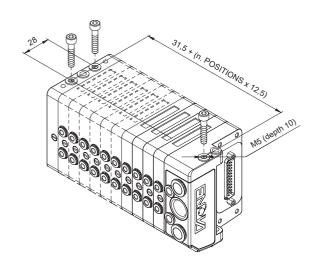


From the top

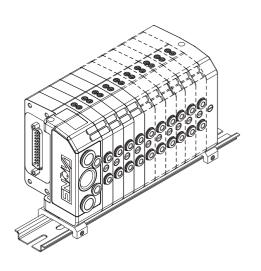




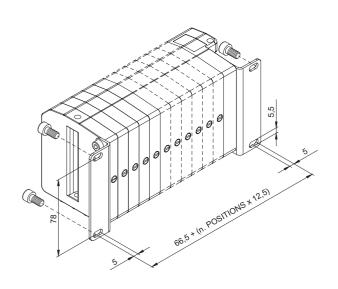
From the bottom



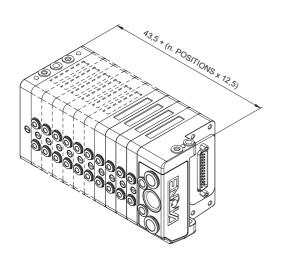
DIN rail fixing

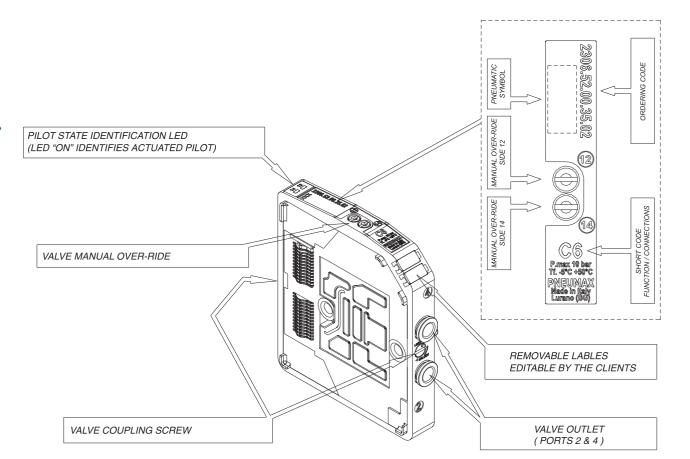


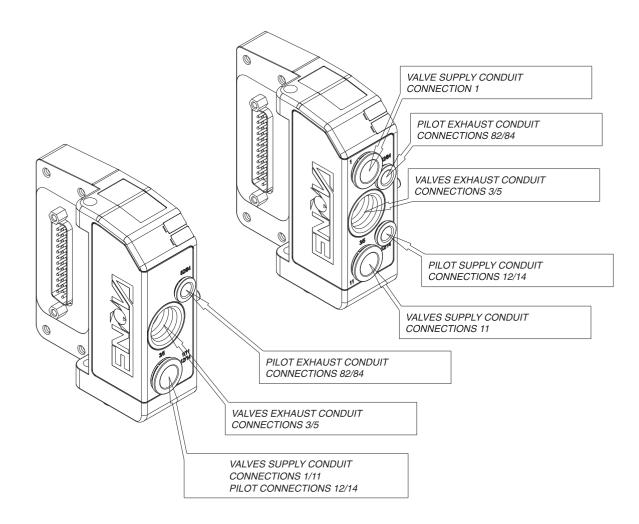
Fixing with 90° bracket



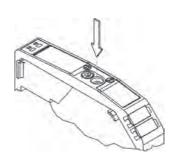
Maximum possible size according to valves used



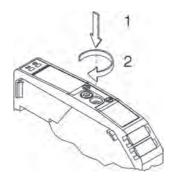




Manual override actuation



Instable function: Push to actuate (when released it moves back to the original position)

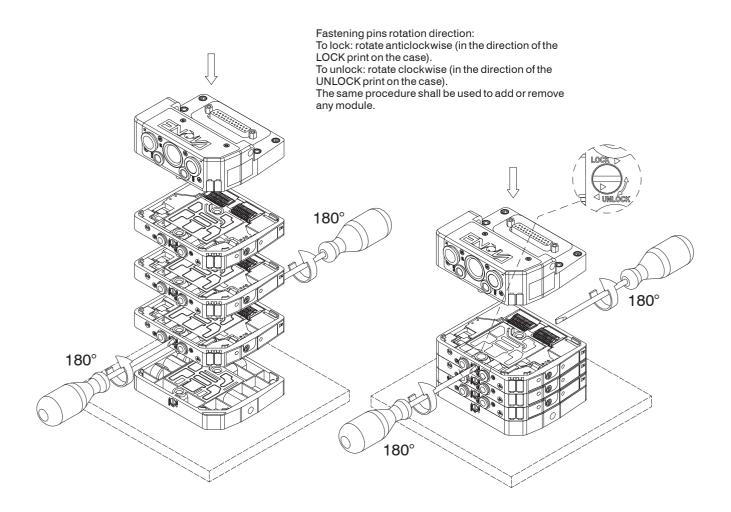


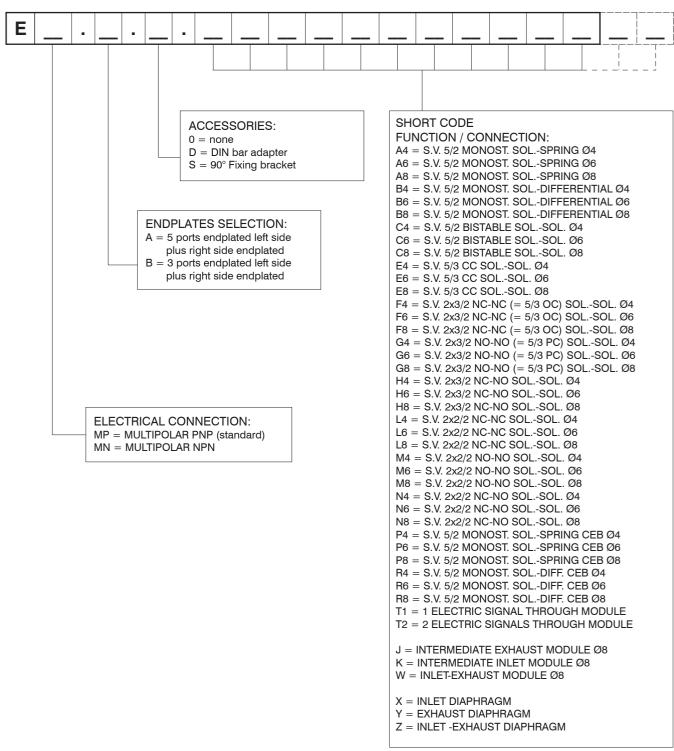
Bistable function: Push and turn to get the bistable function

Note: we recommend the manual override is returned to it's original position when not in use

Manifold assembly

The assembly procedure should start from the end-plate which should be positioned on a flat surface. Add the requested modules by simply rotating by 180° the fastening pins by means of a 1x5.5 flat screw driver. The last module to be assembles shall be the inlet module.





Note:

While configuring the manifold always bear in mind that the maximum number of electrical signals available is 22.

N.B. CEB = Electrical connector for bistable valves (uses two electric signals).

Intermediate supply / exhaust modules require the same space as a valve but do not use any electric signals (as the electric connector carries forward all signals received from the module immediately before).

The separation diaphragms are positioned between two modules and replace the standard seal therefore do not increase the dimension of the assembly

When using a separation diaphragm of any type, it is necessary to add, in any position between diaphragm and the manifold and plate, an extra air supply / exhaust module depending on the type of diaphragm used.



CANopen® protocol node

CANopen® node is directly integrated on Enova® solenoid valves manifold via a 25 poles connector, normally used for multi-pin cable connection.

 ${\tt Enova}^{\tiny{\oplus}}\, {\tt solenoid}\, {\tt valves}\, {\tt connected}\, {\tt to}\, {\tt node}\, {\tt must}\, {\tt be}\, {\tt PNP}\, {\tt equivalent}\, ({\tt final}\, {\tt 02}\, {\tt in}\, {\tt ordering}\, {\tt code}).$

 $The \ node \ can \ be \ easily \ installed \ also \ on \ solenoid \ valves \ manifold \ already \ mounted \ on \ equipment.$

 $Node \ can \ manage \ up \ to \ 22 \ solenoid \ valves, \ and, \ in \ the \ same \ time, \ a \ max \ number \ of \ 3 \ lnput \ modules \ 5200.08.$

CANopen® node recognizes automatically the presence of the Input modules on power on.

Regardless of the number of Input modules connected, the managable solenoid valves are 22.

Node power supply is made by a M12 4P male circular connector.

 $The separation between node 24\,V\,DC\,Power supply and outputs 24\,V\,DC\,allows to switch off the outputs maintaining powered and outputs an$ the node and inputs, if present.

Connection to Bus CANopen® is possible via 2 M12 5P male - female circular connectors; these two are connected in parallel and according to CiA 106 (V.1.1.0: July 11th 2023).

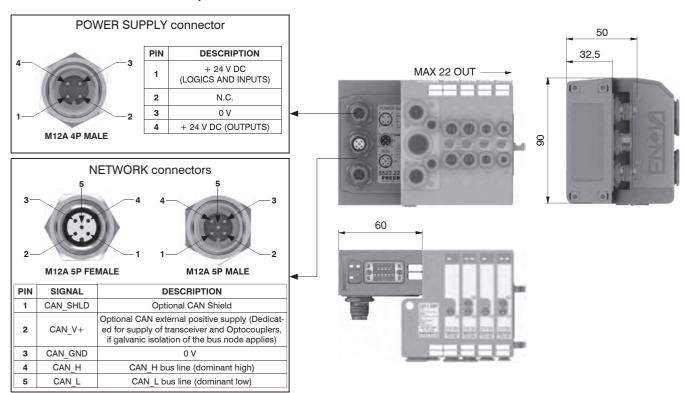
Transmission speed can be set by 3 dip-switches.

The node address can be set by 6 dip-switches using BCD numeration.

The node includes an internal terminating resistance that can be activated by a dip-switch.

Coding: 5523.22





	Technical	characteristics
Model		5523.22
Specifications		CiA 106 (V.1.1.0 : July 11th 2023)
Case		Reinforced technopolymer
	Power supply connection	M12 4P male connector
D	Power supply voltage	+24 VDC +/- 10%
Power supply	Node consumption (without inputs)	25 mA
	Power supply diagnosis	Green LED PWR
	PNP equivalent outputs	+24 VDC +/- 10%
0	Max. current for output	100 mA
Outputs	Maximum output number	22
	Max. output simultaneously actuated	22
	Network connectors	2 M12 5P connectors male-female
	Baud rate	10 - 20 - 50 - 125 - 250 - 500 - 800 - 1000 Kbit/s
	Addresses possible numbers	From 1 to 63
Network	Maximum nodes number in network	64 (slave + master)
	Bus maximum recommended length	100 m at 500 Kbit/s
	Bus diagnosis	Green LED + red LED
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature range		From 0 °C to +50 °C



DeviceNet protocol node

DeviceNet node is directly integrated on Enova® solenoid valves manifold via a 25 poles connector, normally used for multi-pin cable connection.

 ${\tt Enova}^{\circledast} \, {\tt solenoid} \, {\tt valves} \, {\tt connected} \, {\tt to} \, {\tt node} \, {\tt must} \, {\tt be} \, {\tt PNP} \, {\tt equivalent} \, ({\tt final} \, {\tt 02} \, {\tt in} \, {\tt ordering} \, {\tt code}).$

 $The \ node \ can \ be \ easily \ installed \ also \ on \ solenoid \ valves \ manifold \ already \ mounted \ on \ equipment.$

 $Node \ can \ manage \ up \ to \ 22 \ solenoid \ valves, \ and, in the \ same \ time, a \ max \ number \ of \ 3 \ lnput \ modules \ 5200.08.$

DeviceNet node recognizes automatically the presence of the Input modules on power on.

 $Regardless \ of the \ number \ of \ Input \ modules \ connected, the \ managable \ solenoid \ valves \ are \ 22.$

Node power supply is made by a M12 4P male circular connector.

 $The separation \ between \ node \ 24\ V\ DC\ Power \ supply \ and \ outputs \ 24\ V\ DC\ allows \ to\ switch\ off \ the\ outputs\ maintaning\ powered \ the\ node\ and\ inputs, if\ present.$

Connection to Bus DeviceNet is possible via 2 M12 5P male - female circular connectors; these two are connected in parallel and according to DeviceNet Specifications Volume I, release 2.0.

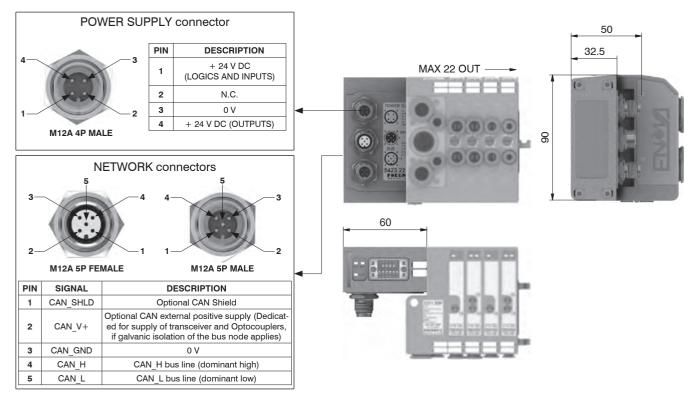
Transmission speed can be set by 3 dip-switches.

The node address can be set by 6 dip-switches using BCD numeration.

The node includes an internal terminating resistance that can be activated by a dip-switch.

Coding: 5423.22





	Techr	nical characteristics
Model		5423.22
Specifications		DeviceNet Specifications Volume I, release 2.0.
Case		Reinforced technopolymer
	Power supply connection	M12 4P male connector
D	Power supply voltage	+24 VDC +/-10%
Power supply	Node consumption (without inputs)	25 mA
	Power supply diagnosis	Green LED PWR
	PNP equivalent outputs	+24 VDC +/- 10%
Outnute	Max. current for output	100 mA
Outputs	Maximum output number	22
	Max. output simultaneously actuated	22
	Network connectors	2 M12 5P connectors male-female
	Baud rate	125 - 250 - 500 Kbit/s
Network	Addresses possible numbers	From 1 to 63
Network	Maximum nodes number in network	64 (slave + master)
	Bus maximum recommended length	100 m at 500 Kbit/s
	Bus diagnosis	Green LED + red LED
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature range		From 0 °C to +50 °C



PROFIBUS DP protocol node

PROFIBUS DP node is directly integrated on Enova® solenoid valves manifold via a 25 poles connector, normally used for multipin cable connection.

Enova® solenoid valves connected to node must be PNP equivalent (final 02 in ordering code).

 $The \ node \ can \ be \ easily \ installed \ also \ on \ solenoid \ valves \ manifold \ already \ mounted \ on \ equipment.$

Node can manage up to 22 solenoid valves, when is connected 0 or 1 INPUT modules, or 16 if node is fitted with 2 INPUT modules. The max number of INPUT modules 5200.08, is 2.

 ${\tt PROFIBUS\,DP\,node\,recognizes\,automatically\,the\,presence\,of\,the\,Input\,modules\,on\,power\,on.}$

Node power supply is made by a M12 4P male circular connector.

 $The separation between node 24\,V\,DC\,Power supply and outputs 24\,V\,DC\,allows to switch off the outputs maintaining powered and outputs an$ the node and inputs, if present.

Connection to Bus PROFIBUS DP is possible via 2 M12 type B 5P male - female circular connectors; these two are connected in $parallel \ and \ according \ to \ PROFIBUS \ Interconnection \ Technology \ (Version \ 1.1: August \ 2001).$

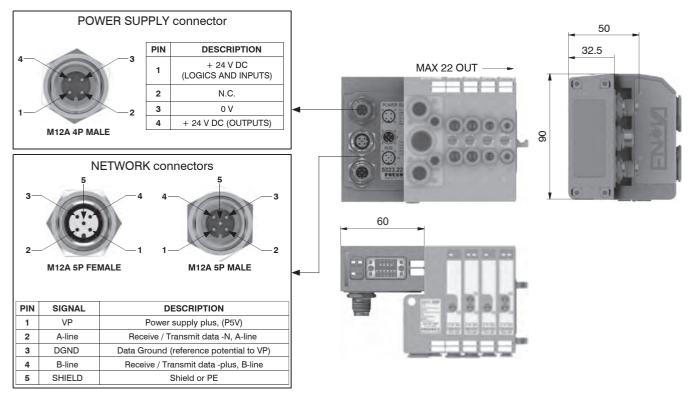
The node address can be set using BCD numeration: 4 dip-switches for the units and 4 dip-switches for the tens.

The node includes an internal terminating resistance that can be activated by a dip-switch.

Coding: 5323.22



Scheme / Overall dimensions and I/O layout



Technical characteristics		
Model		5323.22
Specifications		PROFIBUS DP
Case		Reinforced technopolymer
	Power supply connection	M12 4P male connector
Danier de la constante	Power supply voltage	+24 VDC +/- 10%
Power supply	Node consumption (without inputs)	50 mA
	Power supply diagnosis	Green LED PWR
	PNP equivalent outputs	+24 VDC +/-10%
0	Max. current for output	100 mA
Outputs	Maximum output number	22 or 16 if node is fitted with 2 input modules
	Max. output simultaneously actuated	22
	Network connectors	2 M12 5P connectors male-female
Network	Baud rate	125 - 250 - 500 Kbit/s
	Addresses possible numbers	From 1 to 63
	Maximum nodes number in network	64 (slave + master)
	Bus maximum recommended length	100 m at 500 Kbit/s
	Bus diagnosis	Green LED + red LED
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature range		From 0 °C to +50 °C



8

8 input module

M8 digital inputs module provides 8 M8, 3 pins, female connectors.

Inputs have PNP logic, + 24 V DC ± 10%.

It is possible to connect 2 wires devices (e.g. switches, magnetic limit switches, pressure switches, etc.) as well as 3 wires devices (e.g. proximity sensors, photocells, electronic magnetic limit switches, etc.).

The maximum current available for all 8 onputs is 200 mA.

Each module includes a 200 mA resettable fuse. If a short circuit or a overcharge (overall current >200 mA) occur the safety device acts cutting the 24 VDC power supply to all M8 connectors on the module and switching off the green LED PWR.

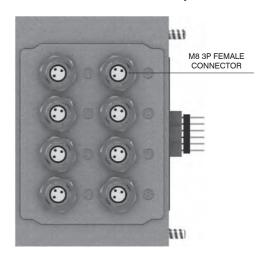
Any other input module connected to the node will remain powered and will function correctly.

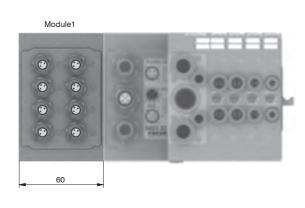
Once the cause of the fault disappears the green led PWR light up indicating the ON state and the node will re-start to operate. The maximum number of Input modules supported is 3 for CANopen $^{\circ}$ and DeviceNet, 2 for PROFIBUS DP.

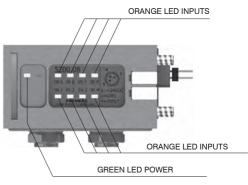
Coding: 5200.08

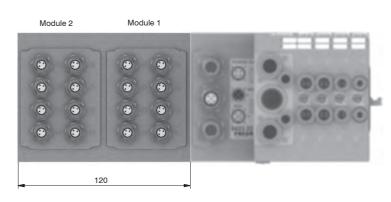


Scheme / Overall dimensions and I/O layout



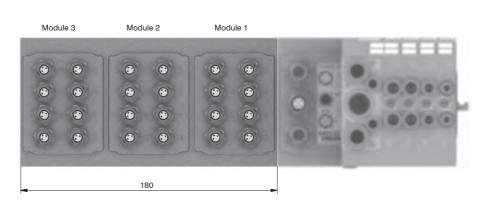








PIN	DESCRIPTION
1	+ 24 V DC
4	INPUT
3	0 V





POWER SUPPLY connectors

Straight connector M12A 4P female

Coding: 5312A.F04.00

Power supply socket





Upper view slave connector

DESCRIPTION
+ 24 V DC (LOGICS AND INPUTS)
N.C.
0 V
+ 24 V DC (OUTPUTS)

NETWORK connectors

Straight connector M12A 5P female





Upper view slave connector

PIN	DESCRIPTION
1	(CAN_SHIELD)
2	(CAN_V+)
3	CAN_GND
4	CAN_H
5	CAN I

Coding: 5312A.F05.00

Socket for bus CANopen® and DeviceNet

Straight connector M12A 5P male





Upper view slave connector

PIN	DESCRIPTION
1	(CAN_SHIELD)
2	(CAN_V+)
3	CAN_GND
4	CAN_H
5	CAN I

Coding: 5312A.M05.00

Plug for bus CANopen® and DeviceNet

Straight connector M12B 5P female





Upper view slave connector

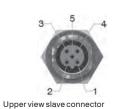
PIN	DESCRIPTION
1	Power Supply
2	A-Line
3	DGND
4	B-Line
5	SHIELD

Coding: 5312B.F05.00

Socket for bus PROFIBUS DP

Straight connector M12B 5P male





DIN	DESCRIPTION
PIN	DESCRIPTION
1	Power Supply
2	A-Line
3	DGND
4	B-Line
5	SHIELD

 $\textbf{Coding:}\ 5312B.M05.00$

Socket for bus PROFIBUS DP

INPUTS connectors

Straight connector M8 3P male

Coding: 5308A.M03.00

Plug for inputs modules





PIN	DESCRIPTION
1	+ 24 V DC
4	INPUT
3	0 V

3
Upper view slave connector

Plugs

M12 plug

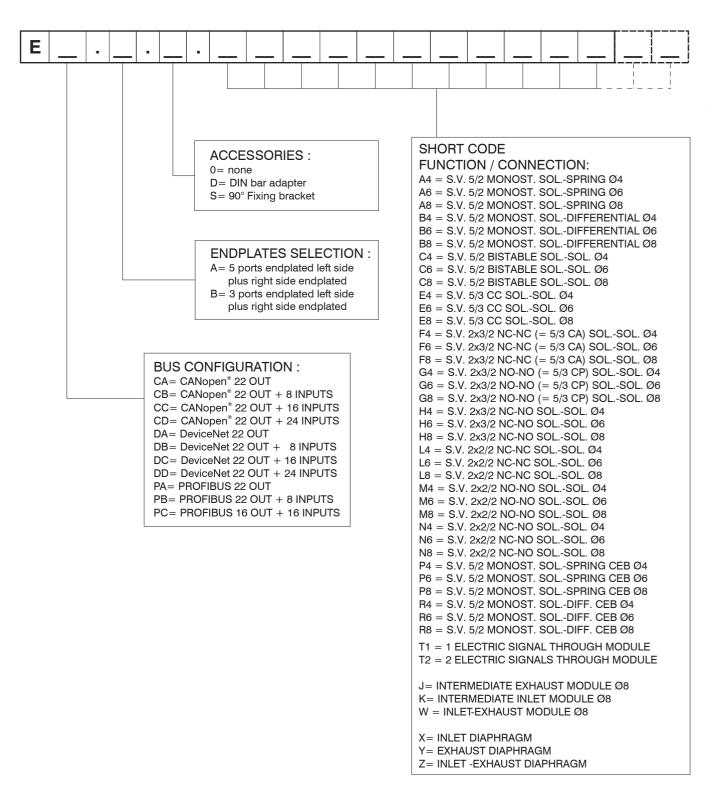
Coding: 5300.T12

M8 plug

9

Coding: 5300.T08

Manifold layout configuration complete with serial systems



Note:

While configuring the manifold always bear in mind that the maximum number of electrical signals available is 22.

N.B. CEB = Electrical connector for bistable valves (uses two electric signals).

Intermediate supply / exhaust modules require the same space as a valve but do not use any electric signals (as the electric connector carries forward all signals received from the module immediately before).

The separation diaphragms are positioned between two modules and replace the standard seal therefore do not increase the dimension of the assembly.

When using a separation diaphragm of any type, it is necessary to add, in any position between diaphragm and the manifold and plate, an extra air supply / exhaust module depending on the type of diaphragm used.



Section 02

Air treatment

Components for compressed air treatment

Air service units

Wide range of components for compressed air treatment, are available in aluminium, technopolymer and steel, in several sizes with connections from 1/8" to 1" and fl ow rates up to 8000 NI/min.



Air quality

2.1



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Filter + Pressure regulator + Lubricator	2 .140
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Series 1700 Steel line	2 .159
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Filter regulators	2 .169
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Proportional technology

The proportional pressure regulators range includes 3 product series: 1700 standard, 1700 miniaturised and WPR (Wide Pressure Regulators).



Series 1700 standard

2.176



2.215

Series 1700 2.192 miniaturised



Series WPR

2. 208

Measuring devices

Digital pressure switches and pressure gauges, panel mounting or manifold versions.



Pressure switches Series DS



Pressure gauges Series DS

2.217

Pressure booster

3 sizes aluminium pressure boosters available or technopolymer with 2:1 compression ratio.



eries 1700



Series P+

2.224

Air quality

Compressed air is a fundamental element for the operation of various modern industrial machines.

Different compressed air purity classes are required depending on its application and the industrial sector in which it is used.

Generally, it must be free of pollutants (dusts, water and oil) in order to maintain the characteristics of the final product and guarantee safety. Standard ISO 8573-1:2010 specifies the permissible level of pollution for every cubic meter of compressed air.

The pollutants that have been analysed are grouped in three macro-families:

· Dusts / Solid particles

Each cubic meter of compressed air could contain a maximum quantity of particles in function of its dimension.

Water

It could be present in liquid or gaseous state.

• Oil

Each cubic meter of compressed air can contain a maximum oil quantity in any of its form: liquid, aerosol, or vapour.

To uniquely determine the purity of compressed air, it is necessary to identify a numeric value for each of the three groups of pollutants illustrated

In general, industrial machines require compressed air with purity class of ISO 8573-1:2010 [1:4:1] of which:

- the first number (1) refers to solid particles with maximum concentration in proportion to their size but still less than 0.1 mg/m³
- the second number (4) refers to dried air with dew point temperature less than +3°C
- The third number (1) refers to residual oil content less than 0.01 mg/m³

For a correct operation of our devices, we require compressed air with purity class of ISO 8573-1:2010 [7:4:4] unless otherwise indicated. For example, our proportional regulators require compressed air with a purity class of ISO 8573-1:2010 [1:4:1]. According to standard ISO 8573-1:2010 pollutant levels could be summarized in the following table:

	Compressed air purity classes according to ISO 8573-1:2010										
		Part	icles	Humidity and	Liquid Water	Oil					
Class	Maximum number of particles per cubic meter as a function of particle size d ^b			Mass Concentration b C p	Pressure dew point [°C]	Concentration of liquid water ^b C _w [g/m ³]	Concentration of total oil ^b (liquid, aereosol and vapour)				
	$0,1 \mu \text{m} < \text{d} \le 0,5 \mu \text{m}$	$0.5 \mu \text{m} < \text{d} \le 1.0 \mu \text{m}$	$1,0 \mu \text{m} < \text{d} \le 5,0 \mu \text{m}$	[9/]	[0]	water o _w [g/iii]	[mg/m³]				
0			As specified by the	equipement user or supplie	er and more stringent than	class 1					
1	≤ 20000	≤ 400	≤ 10	/	≤ -70	/	≤ 0,01				
2	≤ 400000	≤ 6000	≤ 100	/	≤ -40	/	≤ 0,1				
3	/	≤ 90000	≤ 1000	/	≤ -20	/	≤ 1				
4	/	/	≤ 10000	/	≤ +3	/	≤ 5				
5	/	/	≤ 100000	/	≤ 100000	/	/				
6		/		0 < C ₀ ≤ 5	≤ +10	/	/				
7		/		5 < C ₀ ≤ 10	/	C _w ≤ 0,5	/				
8		/		/	/	0,5 < C _w ≤ 5	/				
9		/		/	/	5 < C _w ≤ 10	/				
X		/		C ₀ > 10	/	C _w > 10	>5				

At reference condition:

⁻ air temperature 20°C - absolute air pressure 100 kPa = [1 bar] (a)

relative water vapour pressure 0

Series Airplus



- · Modular system
- Compact and linear design
- Maximum flexibility and reliability
- Plug-n-play connection thru couplig flanges

- Integral safety elements in assembled group
- Available in 4 sizes with connections from 1/8" to 1"
- ATEX certification (II 2GD or II 3GD)

Construction and working characteristics

Pneumax AIRPLUS air treatment units have been designed and developed to increase reliability, modularity and user-friendly operation and installation. Thanks to a wide range of modules with different functions and characteristics, together with a wide choice of materials selection, make the Pneumax AIRPLUS air treatment units a robust, reliable and extremely flexible modular system, adaptable to many applications.

AIRPLUS units correctly assembled are modular with unlimited configurations and solutions, capable of fulfilling all functions of compressed air treatment such as filtration, regulation, lubrication, interception and distribution.

Filters, including coalescing and active carbon elements as well as oil separators provide adequate media filtration. Precise and reliable pressureregulation is provided by the regulators or filter-regulators which are also available with a built in pressure gauge or integral digital pressure switch. The lubricators provide oil mist lubrication in proportion to air being consumed whilst the shut-off valves, which can be operated pneumatic, electro-pneumatic or manually will effectively manage the supply and exhaust of the compressed air system. The range is completed by a series of complementary modules, such as pneumatic connection by-pass, pressure switch and progressive start-up. The complete assembly is built up using the individual modules connected together via quick coupling flanges which provide a 'plug & play' assembly. This provides quick and easy installation or replacement. Pneumax Airplus air treatment units can be integrated with safety elements that comply with EN-ISO 13849-1 and CE marking according to EU Machinery Directive, Annex V.

AIRPLUS air treatment units are available in 4 different sizes, with connections from 1/8 "to 1" and flow rates performances up to 8000NI/min.

Instructions for installation and use

The FRL unit should be installed as close as possible to the 'point of use'. The air flow direction should follow the direction indicated on the individual modules, following threaded connections (IN and OUT). Units fitted with a with bowl should be mounted vertically with the bowl facing down. All units should be operated in accordance to the specified pressure and temperature ranges and should never exceed 0.2 Hz max frequency whether pulsing inlet pressure occur.

Fittings shall be mounted according to the maximum torque specified.

Maintenance

To carry out maintenance which involves the removal of the caps or supports above the body and where the retaining screws are present, it is necessary to remove the cover plates beforehand. If you attempt to dis-assemble the caps or supports without removing the cover plates and retaining screws, the integrity and function of the device could be compromised.

Bowls, plugs and supports are assembled with a bayonet type mechanism. In order to remove them, rotate anti-clockwise until the mechanical stop is reached and then remove from the body (for the bowls firstly press down the green safety button). Bowls and transparent parts can be cleaned with water and neutral soap. Do not use solvents or alcohol. Filtering elements (present in filters and filter regulators) made of HDPE can be regenerated by washing and blowing them. In order to remove them it is necessary to remove the bowl unscrew the filter element and replace it with a new one or clean it. Lubricator oil recharge might be performed during normal operation (apart size 1) depressurizing the bowl thru dedicated plug. Pneumax suggest refilling oil directly into the bowl. No others maintenance operation shall be carried out by client itself, due to complexity of the assembly and Pneumax dedicated post-maintenance testing activities.

FILTRATION



Filter pore sizes from $50 \,\mu\text{m}$ to $5 \,\mu\text{m}$

Coalescing filter with retention efficiency of 99,97% particle removal down to $0,01 \,\mu\mathrm{m}$

Coalescing/oil removal filter with oil residual up to 0,01 ppm

Carbon filter with oil residual up to < 0,003 ppm

REGULATION

Regulators and filter regulators

Pressure regulation range up to 12

Available with integrated pressure gauge, pressure switch or G1/8" connection



LUBRICATION



Manual adjustment of oil quantity complete with visual indicator

Oil refilled with pressurized circuit

Oil mist lubrication

SHUT OFF

Manual, pneumatic or electropneumatic operation availability

Manual version lockable up to 3 padlock



COMPLEMENTARY MODULES



Progressive start-up valve

SAFETY

Integrated diagnostic system

Single version CAT.2 in accordance with ISO EN 13849 up to PL=C

Double version CAT.4 in accordance with ISO EN 13849 up to PL=E

In accordance with EU Machynery directive, annex V



Product overview

			S	ZE		MAX. PR	ESSURE	AMBII	ENT TEMPERATUR	RE	
PRODUCT	VERSION	1	2	3	4	Technopolymer body or bowl	Metal body and bowl	Technopolymer body or bowl	Metal body and bowl	Automatic drain	ATE
	T : Technopolymer body and thread	•	•	•							
	N : Technopolymer body and metal inserts	•	•	•		13 bar	/		/		_
FILTER (F)	P : Aluminum body		•	•	•	10 bar (automatic drain)	20 bar	-5°C +50°C	-30 °C +80 °C	-5 °C +50 °C	•
	L: Aluminum body, low temperature		•	•	•	(automatic drain)	16 bar (automatic drain)		-40 °C +80 °C		
	T : Technopolymer body and thread	•	•	•			(automatic drain)				
	N : Technopolymer body and metal inserts	•	•	•		13 bar	/		/		
COALESCING FILTER DA)	P : Aluminum body		•	•	•	- 10 bar	20 bar	-5 °C +50 °C	-30 °C +80 °C	-5°C +50°C	•
	L : Aluminum body, low temperature		•	•	•	(automatic drain)	- 16 bar		-40 °C +80 °C	-	
	T: Technopolymer body and thread			•			(automatic drain)		40 0 100 0		
	N : Technopolymer body and metal inserts			•		10	bar		-5°C +50°C		
IL REMOVAL FILTER DBV) (DCV) (DAV)				•	•	10	Dai		-5 C +50 C		•
	P : Aluminum body L : Aluminum body, low temperature			•	•		1		1		
	T : Technopolymer body and thread			•			/		,		
				•			/		/		
ARBON FILTER (DD)	N: Technopolymer body and metal inserts			-		13 bar		-5°C +50°C		-5°C +50°C	•
	P : Aluminum body			•	•		20 bar		-30 °C +80 °C	-	
	L: Aluminum body, low temperature			•	•				-40 °C +80 °C		
	T: Technopolymer body and thread	•	•	•					/		
EGULATOR (R) (RM)	N: Technopolymer body and metal inserts	•	•	•		13 bar	20 bar	-5 °C +50 °C		/	
(W)	P : Aluminum body		•	•	•				-30 °C +80 °C		
	L: Aluminum body, low temperature		•	•	•				-40 °C +80 °C		
	T: Technopolymer body and thread										
ANEL REGULATOR RPB) (RPBM)	N: Technopolymer body and metal inserts	•				13 bar	/	-10°C +50°C	/	/	•
2, (2)	P : Aluminum body L : Aluminum body, low temperature	Ĭ									
	T : Technopolymer body and thread	•									
RESSURE	N : Technopolymer body and metal inserts	•				13 bar	/	-5 °C +50 °C	/		_
EGULATORS FOR IANIFOLD (B) (M)	P: Aluminum body							/		/	_
	L : Aluminum body, low temperature						/		/		
RESSURE	T: Technopolymer body and thread	•						200 . 5000	,		
EGULATORS FOR ANIFOLD WITH	N : Technopolymer body and metal inserts	•				13 bar	/	0°C +50°C	/	/	
IGITAL PRESSURE WITCH (P)	P : Aluminum body							1			
WITOIT(I)	L: Aluminum body, low temperature T: Technopolymer body and thread						<i>/</i>		/		
LOTED PRESSURE	N: Technopolymer body and metal inserts					/	/	/	/		
EGULATORS (RP) RMP) (RPP)	P : Aluminum body				•	/	20 bar	/	-30 °C +80 °C	/	•
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	L : Aluminum body, low temperature						/		/		
LOTED PRESSURE	T: Technopolymer body and thread					/	/	/	/		
EGULATORS WITH	N: Technopolymer body and metal inserts				•		001	,		/	
GITAL PRESSURE WITCH (RPP) (RPZ)	P : Aluminum body				•	/	20 bar	/	0°C+50°C		
	L : Aluminum body, low temperature T : Technopolymer body and thread	•	•	•			/		/		
				-		13 bar	20 bar		/		
LTER REGULATOR) (EM) (EW)	N : Technopolymer body and metal inserts	_	•	-		- 10 bar	- 16 bar	-5 °C +50 °C	30°C +80°C	-5°C +50°C	
	P : Aluminum body		-		•	(automatic drain)	(automatic drain)		-30 °C +80 °C		
	L : Aluminum body, low temperature				_				-40 °C +80 °C		
	T: Technopolymer body and thread	_	_	-	-						
EGULATOR WITH IGITAL PRESSURE	N : Technopolymer body and metal inserts	•	•	•	_	13 bar	20 bar	0 °C +50 °C		/	
WITCH (RP) (RZ)	P : Aluminum body		-	-	•						
	L: Aluminum body, low temperature			•	•						



PRESSURE SWITCH (E) (EP) (EZ) LUBRICATOR (L) N LUBRICATOR WITH	T: Technopolymer body and thread I: Technopolymer body and metal inserts P: Aluminum body L: Aluminum body, low temperature	1	2	3	4	Technopolymer body or bowl	Metal body and	Technopolymer	Metal body and	Automatic	ATE
WITH DIGITAL PRESSURE SWITCH (E) (EP) (EZ) LUBRICATOR (L) N LUBRICATOR WITH ELECTRICAL N	I : Technopolymer body and metal inserts P : Aluminum body	•				DOOW OF DOWN					
WITH DIGITAL PRESSURE SWITCH (E) (EP) (EZ) LUBRICATOR (L) N LUBRICATOR WITH ELECTRICAL	I : Technopolymer body and metal inserts P : Aluminum body		_			body of bowl	bowl	body or bowl	bowl	drain	
PRESSURE SWITCH (E) (EP) (EZ) LUBRICATOR (L) N LUBRICATOR WITH ELECTRICAL	P : Aluminum body	_				13 bar	20 bar				
LUBRICATOR (L) N LUBRICATOR WITH ELECTRICAL	-		•			- 10 bar	- 16 bar	0°C	+50 °C	-5°C +50°C	
LUBRICATOR WITH ELECTRICAL N	L: Aluminum body, low temperature		_	-	_	(automatic drain)	(automatic drain)				
LUBRICATOR WITH ELECTRICAL N	,, ,	_	•	•	•						
LUBRICATOR WITH ELECTRICAL N	T: Technopolymer body and thread	•	•	•							
ELECTRICAL N	l: Technopolymer body and metal inserts	•	•	•		13	bar	-5 °C	+50°C	/	•
ELECTRICAL N	P : Aluminum body		•		•						
ELECTRICAL N	L : Aluminum body, low temperature					ı	1		/		
ELECTRICAL N	T: Technopolymer body and thread		•								
MINIMUM LEVEL	l : Technopolymer body and metal inserts	•	•			13	bar	-5 °C	+50°C	,	
SENSOR (LA) (LC)	P : Aluminum body		•		•					,	
	L : Aluminum body, low temperature					ı	1		/		
	T: Technopolymer body and thread		•						,		
	l : Technopolymer body and metal inserts	•	•	•		13	bar -		/		
SHUT OFF VALVE (VL)	P : Aluminum body		•	•	•	10 (for s		-5 °C +50 °C	-30 °C +80 °C	/	•
	L : Aluminum body, low temperature		•	•	•	(101 s	126 4)	-40 °C +80 °C			
	T : Technopolymer body and thread	•	•	•							
N	Technopolymer body and metal inserts	•	•	•					/		
PNEUMATIC SHUT DFF VALVE (VP)		_	•	•	•	13 bar	20 bar	-5 °C +50 °C	2000 1000	/	•
	P : Aluminum body		_		_				-30 °C +80 °C		
	L: Aluminum body, low temperature	_	•	•	•				-40 °C +80 °C		
_	T: Technopolymer body and thread	•	•	•							
	I: Technopolymer body and metal inserts	•	•			10	bar	-5 °C	+50°C	/	•
/ALVE (VE)	P : Aluminum body		•		•						
	L: Aluminum body, low temperature						/		/		
	T: Technopolymer body and thread	•	•	•							
PROGRESSIVE	l : Technopolymer body and metal inserts		•			13	bar -	F*0	.5000	,	
START-UP VALVE (AP)	P : Aluminum body		•	•	•	10 (for s		-5 'C	+50 °C	/	•
	L : Aluminum body, low temperature		•	•	•	(.e. e	.20 1)				
	T: Technopolymer body and thread	•	•	•							
N	I : Technopolymer body and metal inserts	•	•	•		13 bar	20 bar	0°C+50°C	/		_
AIR INTAKE (PA)			•		•	10 541	20041	0 0 100 0	20.00 1.80.00	/	•
	P : Aluminum body L : Aluminum body, low temperature		_	_	_		/		-30 °C +80 °C		
	T : Technopolymer body and thread	•	•	•		,			·		
PRESSURE SWITCH N	Technopolymer body and metal inserts	•	•			13 bar	20 bar	£ ° C	+50°C		
PP)		_	•	•	•	13 Dai	20041	-5 0	T30 C	/	
	P : Aluminum body		_	•	_		,		,		
	L : Aluminum body, low temperature T : Technopolymer body and thread	•	•	•		,	<u> </u>		/		
AIR INTAKE WITH		•	•	•					/		
NTEGRATED N PRESSURE GAUGE	I: Technopolymer body and metal inserts	-	_	_		13	bar	0°C+50°C		/	•
PM-PW)	P : Aluminum body		•	•	•				-30 °C +80 °C		
	L : Aluminum body, low temperature		•	•			/		/		
AIR INTAKE WITH	T: Technopolymer body and thread	-	-	_							
NTEGRATED DIGITAL NPRESSURE SWITCH	I: Technopolymer body and metal inserts		•	•	_	13	bar	0°C	+50 °C	/	
PP-PZ)	P : Aluminum body		•								

Filters (F)





- ▶ Double filter action: air flow centrifugation and filter element
- ▶ Available in 4 sizes with flow rates up to 14000 NI/min and connections from 1/8" to 1"
- \blacktriangleright Filtering cartridge made of HDPE available in three different filtration grades (5 μ m, $20\mu m, 50\mu m)$
- ► Filter cartridge can be regenerated by washing / blowing it or replaced
- ▶ Bowl assembly via bayonet type quick coupling mechanism with safety button
- ▶ Semi-automatic or automatic drain
- ► Atex certification (II 2GD or II 3GD)
- ▶ Inlet pressures up to 20 bar





Note

In order to ensure that any fluid discharged by the auto drain assembly is adequately drained away, it is recommended you use a 6mm fitting and tube.

		Technica	l characteristics							
S	ize	Size 1	Size 2	Size 3	Size 4					
		Technopolymer bo								
Body and connections type		Technop	/							
		/	(P - L versions)							
		Technopolymer protection - PA bowl								
			Technopolymer p	protection - PC bowl						
Protection and bowl type				Metal protection - PA bowl						
		/		Metal protection - PC bowl						
				Metal bowl (blind metal bowl)						
	Tversion	G1/4"	G3/8"	G1/2"	not available					
IN / OUT connections	N version	G1/8" - G1/4" - 1/4 NPT	G3/8" - G1/4" - 3/8 NPT	G3/8" - G1/2" - 1/2 NPT	not available					
	P and L versions	not available	G3/8" - 1/4 NPT	G1/2" - 1/2 NPT	G1" - 1 NPT					
Assembly configuration		Stand alone								
			Panel mounted							
Assembly positions		Vertical ±5°								
		5μm								
Filter pore size		20μm								
		50 µm								
Bowl capacity		18 cm ³	34 cm ³	68 cm ³	90 cm ³					
Condensation drain		Semi-automatic								
Condensation drain										
	G1" metal			1	35Nm					
	G1/2" metal	/		30Nm						
	G1/4" metal	201	Nm	,						
Max. fittings torque IN/OUT	G1/8" metal	15Nm	/	/						
connections	G3/8" metal	,	25Nm		/					
	G1/2" technopolymer	/	/	22Nm						
	G1/4" technopolymer	9Nm	/							
	G3/8" technopolymer	/	16Nm	/						

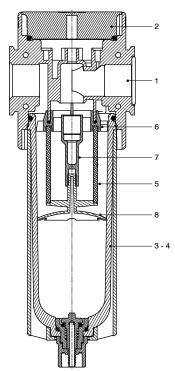
Operational characteristics									
Size	Size 1	Size 2	Size 3 Size 4		Size 1	Size 2	Size 3	Size 4	
Condensation drain		Semi-au	utomatic			Auto	matic		
Maximum working		13	bar			10	bar		
pressure	/	20 bar (only with body and met	al bowl)		16 bar (only with body and met	al bowl)	
Minimum working pressure	U.5 par								
		-5°C	+50°C						
Working temperature	/		°C (only for P version ar °C (only for L version an		-5°C+50°C				

Weights							
Size	Size 1	Size 2	Size 3	Size 4			
Fully technopolymer version	129 g	226 g	355 g	/			
Technopolymer body version, aluminium bowl protection and technopolymer bowl	/	257 g	393 g	/			
Technopolymer body version, aluminium bowl	/	301 g	465 g	/			
Aluminium body version, technopolymer protection and bowl	/	314 g	477 g	1163 g			
Aluminium body version, aluminium bowl protection and technopolymer bow	/	344 g	514 g	1306 g			
Aluminium body version and aluminium bowl	/	389 g	587 g	1330 g			

PREUMAX

Materials

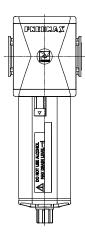
Exploded sectioned



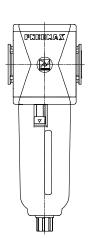
	Filter							
1	Body	Polyamide Die-cast aluminium						
2	Plug	Polyamide						
3	Technopolymer bowl	Polycarbonate Polyamide						
4	Metal bowl Bowl protection	Die-cast aluminium Polyamide - Die-cast aluminium						
5	Filtering element	Polyethylene						
6	Baffle	Acetal resin						
7	Spool support	Acetal resin						
8	Filtering element support	Acetal resin						

Design

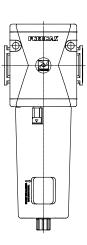
Size 1 - Size 2 - Size 3 Technopolymer protection



Size 1 - Size 2 - Size 3 Protection / Metal bowl



Size 4 All versions



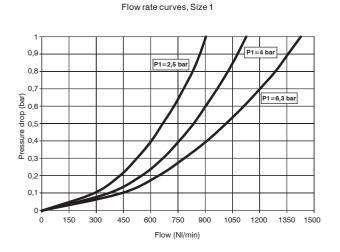
Coding: **♥**17**●**F**⑤●◎**

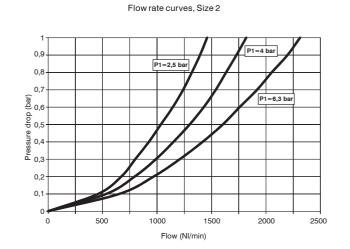
	VERSION							
	N = Technopolymer body and metal inserts (not available for size 4)							
V	T = Technopolymer body and thread (not available for size 4)							
	P = Aluminum body (not available for size 1)							
	L = Aluminum body, low temperature (not available for size 1)							
	SIZE AND CONNECTIONS							
	1A = Size 1 - G1/8" only for N version							
	1B = Size 1 - G1/4" only for T - N versions							
	1C = Size 1 - 1/4" NPT only for N version							
	2A = Size 2 - G1/4" only for N version							
	2B = Size 2 - G3/8" for all versions							
U	2C = Size 2 - 3/8" NPT only for N version - 1/4" NPT only for P - L versions							
	3A = Size 3 - G3/8" only for N version							
	3B = Size 3 - G1/2" for all versions							
	3C = Size 3 - 1/2" NPT only for N - P - L versions							
	4B = Size 4 - G1" only for P - L versions							
	4C = Size 4 - 1" NPT only for P - L versions							

	FILTER PORE SIZE
8	$A = 5 \mu m$
0	$\mathbf{B} = 20 \mu\mathrm{m}$
	$C = 50 \mu\text{m}$
	CONDENSATION DRAIN
$oldsymbol{\Theta}$	= Semi-automatic drain
	S = Automatic drain
	BOWLOPTIONS
	= Technopolymer protection - PC bowl (not available for L version)
	N = Technopolymer protection - PA bowl (not available for L version)
•	P = Metal protection - PC bowl (not available for size 1 and L version)
	R = Metal protection - PA bowl (not available for size 1 and L version)
	T = Metal bowl (not available for size 1)

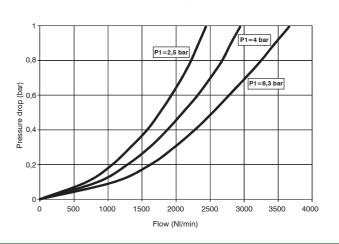
Example: T173BFBST: Size 3 filter G1/2" 20 μ m, automatic drain and metal bowl

Characteristic curves

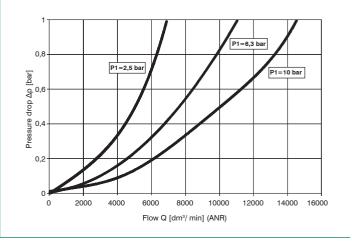




Flow rate curves, Size 3

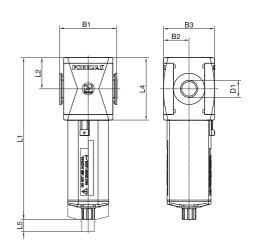


Flow rate curves, Size 4

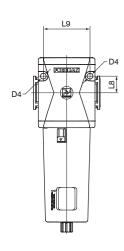


Dimensions

Semi-automatic drain version



Fixing holes dimension detail (only for size 4)



Model	B1	B2	ВЗ	D1	D4	L1 - Bowl	material	L2	L4	_4 L5	L8	L9
Model	ВI	D2	00	וט	D4	Technopolymer	Metal	L2	L4	Lo	Lo	La
#171	48	21	42	G1/8" G1/4" 1/4 NPT	/	148	/	27,5	55	40	/	/
#172	62	28.5	57	G1/4" G3/8" 1/4 NPT 3/8 NPT	/	169.1	171.5	34	68	50	/	/
#173	73	32.5	65	G3/8" G1/2" 1/2 NPT	/	207.2	209.5	40	80	65	/	/
#174	99	44	88	G1" 1 NPT	8.5	262	264.5	52.5	105	103	25	70



Automatic drain version

Variable dimensions

Semi-automatic drain version





Model	L8 - Bow	DZ	
Wodei	Technopolymer	Metal	υ,
Semi-automatic drain	15,7	18	Plastic hose connector Ø6
Automatic drain	2	4,5	G1/8"

Coalescing filters (DA)





- ▶ Available in 4 sizes with flow rates up to 8000 NI/min and connections from 1/8" to 1"
- Available with a filtration grade of either 0.01 μm or 1 μm
- ▶ Filtering performance ranges from 95% to 99,97% (depending on the filtration
- ▶ Bowl assembly via bayonet type quick coupling mechanism with safety button
- ▶ Semi-automatic or automatic drain
- ▶ Atex certification (II 2GD or II 3GD)
- ▶ Inlet pressures up to 20 bar





In order to ensure the high level of filtration, it is recommended that a 5μ filter is installed before the coalescing filter. In order to ensure that any fluid discharged by the auto drain assembly is adequately drained away, it is recommended you use a 6mm fitting

		Technica	al characteristics					
S	ize	Size 1	Size 2	Size 3	Size 4			
		Technopolymer b	,					
Body and connections type		Techno	polymer body, metal connections (N	version)	1			
		/	Aluminium bo	dy, integrated aluminium connections	(P - L versions)			
			Technopolymer p	rotection - PA bowl				
			Technopolymerp	rotection - PC bowl				
rotection and bowl type				Metal protection - PA bowl				
		/		Metal protection - PC bowl				
				Metal bowl (blind metal bowl)				
	Tversion	G1/4"	G3/8"	G1/2"	not available			
N/OUT connections	Nversion	G1/8" - G1/4" - 1/4 NPT	G3/8" - G1/4" - 3/8 NPT	G3/8" - G1/2" - 1/2 NPT	not available			
P and L versions		not available	G3/8"	G1/2"	G1"			
Assembly configuration		Stand alone						
Nasembly configuration		/ Panel mounted						
Assembly positions		Vertical ±5°						
Bowl capacity		18 cm ³	34 cm ³	68 cm ³	90 cm ³			
Condensation drain		Semi-automatic						
Jonaensation drain		Automatic						
	G1" metal		1	1	35 Nm			
	G1/2" metal		,	30 Nm				
	G1/4" metal	20	Nm	,				
Max. fittings torque IN / OUT	G1/8" metal	15 Nm	/	/				
onnections	G3/8" metal		25	Nm	/			
	G1/2" technopolymer	/	,	22 Nm				
	G1/4" technopolymer	9 Nm	/	,				
	G3/8" technopolymer	/	16 Nm	/				

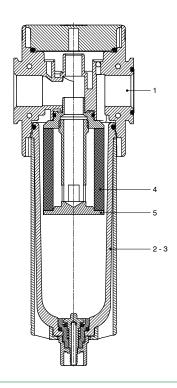
Operational characteristics										
Size	Size 1	Size 2	Size 3	Size 4	Size 1	Size 2	Size 3	Size 4		
Condensation drain		Semi-au	utomatic		Automatic					
Maximum working pressure		13	bar		10 bar					
Maximum working pressure	/	20 bar (on	nly with body and m	netal bowl)	/	16 bar (only with body and metal bowl)				
Minimum working pressure				0,5	bar					
		-5°C	.+50°C							
Working temperature	/		only for P version			-5°C	+50°C			

Filter pore size										
		Filtering performances (µm) Residual oil (ppm)		ISO class for oil	ISO class for oil Retained particles (µm)					
Cartridge	0,01 μm	99,97%	0.01	1	0.01	<1				
	1 μm	95%	0.8	< 3	1	2				

Weights									
Size	Size 1	Size 2	Size 3	Size 4					
Fully technopolymer version	130 g	224 g	366 g	/					
Technopolymer body version, aluminium bowl protection and technopolymer bowl	1	251 g	402 g	/					
Technopolymer body version, aluminium bowl	/	293 g	475 g	/					
Aluminium body version, technopolymer protection and bowl	/	309 g	493 g	1197 g					
Aluminium body version, aluminium bowl protection and technopolymer bow	1	337 g	529 g	1340 g					
Aluminium body version and aluminium bowl	/	378 g	603 g	1365 g					

Materials

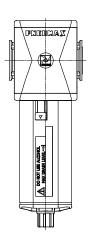
Exploded sectioned



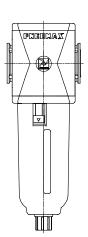
	Coalescing filter										
1	Body	Polyamide Die-cast aluminium									
2	Technopolymer bowl	Polycarbonate Polyamide									
3	Metal bowl Bowl protection	Die-cast aluminium Polyamide - Die-cast aluminium									
4	Filtering element	Borosilicate glass fiber									
5	Filtering element support	Aluminium									

Design

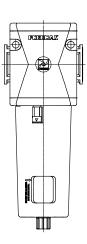
Size 1 - Size 2 - Size 3 Technopolymer protection



Size 1 - Size 2 - Size 3 Protection / Metal bowl



Size 4 All versions



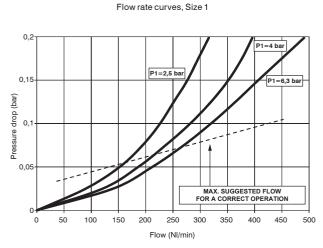
Coding: **171**7**1**0A**900**

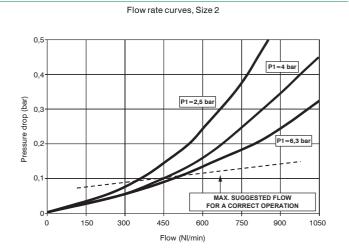
	VERSION								
	N = Technopolymer body and metal inserts (not available for size 4)								
V	T = Technopolymer body and thread (not available for size 4)								
	P = Aluminum body (not available for size 1)								
	L = Aluminum body, low temperature (not available for size 1)								
	SIZE AND CONNECTIONS								
	1A = Size 1 - G1/8" only for N version								
	1B = Size 1 - G1/4" only for T - N versions								
	1C = Size 1 - 1/4" NPT only for N version								
	2A = Size 2 - G1/4" only for N version								
0	2B = Size 2 - G3/8" for all versions								
	2C = Size 2 - 3/8" NPT only for N version								
	3A = Size 3 - G3/8" only for N version								
	3B = Size 3 - G1/2" for all versions								
	3C = Size 3 - 1/2" NPT only for N version								
	4B = Size 4 - G1" only for P - L versions								

	FILTER PORE SIZE
8	$= 0.01 \mu \text{m}$
	$\mathbf{A} = 1 \mu \mathbf{m}$
•	CONDENSATION DRAIN
	= Semi-automatic drain
	S = Automatic drain
	BOWLOPTIONS
	= Technopolymer protection - PC bowl (not available for L version)
	N = Technopolymer protection - PA bowl (not available for L version)
lacktriangle	P = Metal protection - PC bowl (not available for size 1 and L version)
	R = Metal protection - PA bowl (not available for size 1 and L version)
	T = Metal bowl (not available for size 1)

Example: T173BDAST: Size 3 coalescing filter G1/2" 0,01 μ m, automatic drain and metal bowl

Flavorata avenue 6





0.5

0.4

P1=4 bar

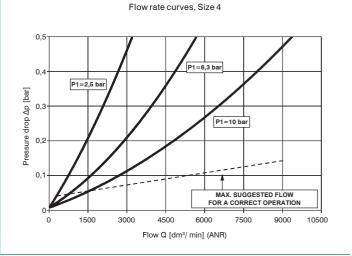
P1=6,3 bar

0.1

MAX. SUGGESTED FLOW
FOR A CORRECT OPERATION

0 200 400 600 800 1000 1200

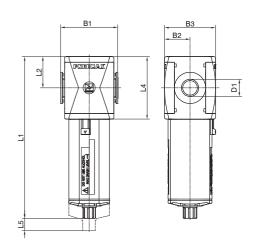
Flow rate curves, Size 3



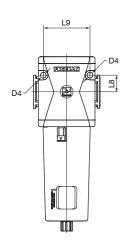
Dimensions

Semi-automatic drain version

Flow (NI/min)



Fixing holes dimension detail (only for size 4)

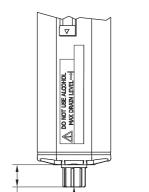


Model	B1	B2	В3	D1	D4	L1 - Bowl ma	aterial	L2	L4	L5	L8	L9
Wodei	ΒI	D2	БЗ	וט	D4	Technopolymer	Metal	L2	L4	Lo	Lo	La
#171	48	21	42	G1/8" G1/4" 1/4 NPT	/	148	/	27,5	55	40	/	/
#172	62	28.5	57	G1/4" G3/8" 1/4 NPT 3/8 NPT	/	169.1	171.5	34	68	50	/	/
#173	73	32.5	65	G3/8" G1/2" 1/2 NPT	/	207.2	209.5	40	80	65	/	/
#174	99	44	88	G1" 1 NPT	8.5	262	264.5	52.5	105	103	25	70



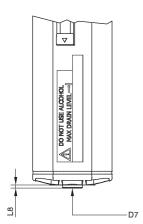
Variable dimensions

Semi-automatic drain version



D7

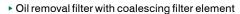
Automatic drain version



Model	L8-Bow	L8 - Bowl material			
Wodel	Technopolymer	Metal	D7		
Semi-automatic drain	15,7	18	Plastic hose connector Ø6		
Automatic drain	2	4,5	G1/8"		

Oil removal filters (DBV - DCV - DAV)





- ▶ Available in 2 sizes with connections from 3/8" to 1"
- Particle removal of 0,01 μm or 1 μm
- ▶ Residual oil 0,01 ppm or 0,8 ppm
- ► Cartridge clogging level display:
- green color ok
- red color warning ($\Delta p > 0.5$ bar)
- ▶ Bowl assembly via bayonet type quick coupling mechanism with safety button
- Automatic drain mounted as standard
- ▶ Atex certification (II 2GD or II 3GD)



In order to ensure the high level of filtration, it is recommended that a 5μ filter is installed before the coalescing filter. In order to ensure that any fluid discharged by the auto drain assembly is adequately drained away, it is recommended you use a 6mm fitting and tube



Technical characteristics					
Si	ize	Size 3	Size 4		
		Aluminium body, integrated aluminium connections (P version)			
Body and connections type		Technopolymer body, integrated technopolymer connections (T version)	/		
		Technopolymer body, metal connections (N version)			
		Technopolymer pro	otection - PA bowl		
		Technopolymer pro	otection - PC bowl		
Protection and bowl type		Metal protect			
		Metal protection - PC bowl			
		Metal bowl (blind metal bowl)			
	Tversion	G1/2"	not available		
IN/OUT connections	N version	G3/8" - G1/2" - 1/2 NPT	notavallable		
	Pversion	G1/2"	G1"		
Assembly configuration		Stand alone			
Assembly configuration		/	Panel mounted		
Assembly positions		Vertica	al ±5°		
Bowl capacity		30 cm ³	90 cm ³		
Condensation drain		Automatic			
	G1" metal	I	35Nm		
Max. fittings torque IN / OUT connections	G1/2" metal	30Nm			
	G3/8" metal	25Nm	1		
	G1/2" technopolymer	22Nm			

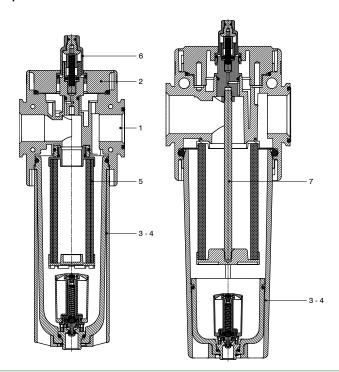
Operational characteristics					
Size	Size 3 Size 4				
Condensation drain	Automatic				
Maximum working pressure	10 bar				
Minimum working pressure	0,5 bar				
Working temperature	-5 °C	+50°C			

	Filter pore size						
		Filtering performances (µm)	Residual oil (ppm)	ISO class for oil	Retained particles (µm)	ISO class for solid particles	
Contridas	0,01 μm	99,97%	0.01	1	0.01	< 1	
Cartridge	1 μm	95%	0.8	< 3	1	2	

Weights					
Size	Size 3 Standard cartridge	Size 3 Oversize cartridge	Size 4		
Fully technopolymer version	416 g	634 g	/		
Technopolymer body version, aluminium bowl protection and technopolymer bowl	453 g	671 g	/		
Technopolymer body version, aluminium bowl	526 g	742 g	/		
Aluminium body version, technopolymer protection and bowl	538 g	661 g	1230 g		
Aluminium body version, aluminium bowl protection and technopolymer bow	575 g	698 g	1374 g		
Aluminium body version and aluminium bowl	647 g	769 g	1398 g		

Materials

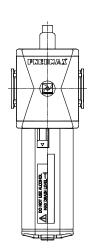
Exploded sectioned



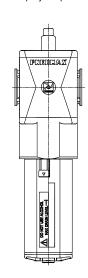
	Oil removal filter					
1	Body	Polyamide Die-cast aluminium				
2	Upper plug	Polyamide				
3	Technopolymer bowl	Polycarbonate Polyamide				
4	Metal bowl Bowl protection	Die-cast aluminium Polyamide - Die-cast aluminium				
5	Filtering element	/				
6	Visualindicator	Polycarbonate				
7	Tie rod	Steel (only for size 4)				
8	Automatic drain	/				

Design

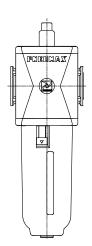
Size 3 Technopolymer protection



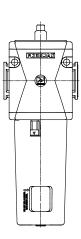
Size 3 - Oversize cartridge Technopolymer protection



Size 3 Protection / Metal bowl



Size 4 All versions

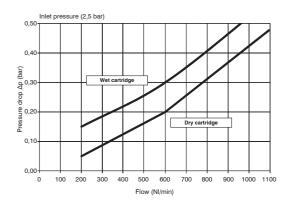


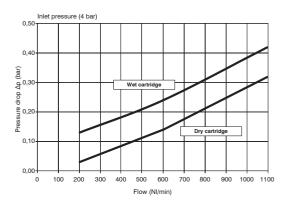
Coding: **▼**17**10**

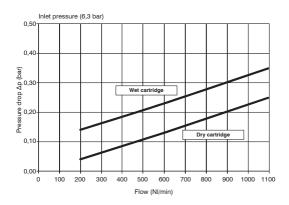
	VERSION				
•	N = Technopolymer body and metal inserts (not available for size 4)				
_	T = Technopolymer body and thread (not available for size 4)				
	P = Aluminium body version				
	SIZE AND CONNECTIONS				
	3ADBV = Size 3 - G3/8" standard cartridge only for N version				
	3BDBV = Size 3 - G1/2" standard cartridge for all versions				
Ū	3CDBV = Size 3 - 1/2" NPT standard cartridge only for N version				
	3BDCV = Size 3 - G1/2" oversize cartridge only for P version				
	4BDAV = Size 4 - G1" standard 0,01 μ m cartridge only for P version				
	4BDBV = Size 4 - G1" standard 1 μ m cartridge only for P version				
	BOWLOPTIONS				
	= Technopolymer protection - PC bowl				
•	N = Technopolymer protection - PA bowl				
	P = Metal protection - PC bowl				
	R = Metal protection - PA bowl				
	T = Metal bowl				

Example: **T173BDBVT**: Size 3 oil removal filter G1/2", standard cartridge, metal bowl

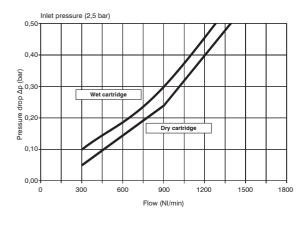
Size 3 - Standard cartridge

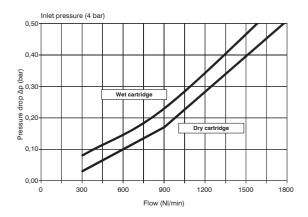


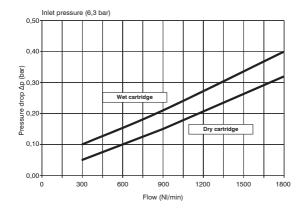




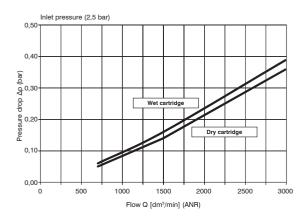
Size 3 - Oversize cartridge

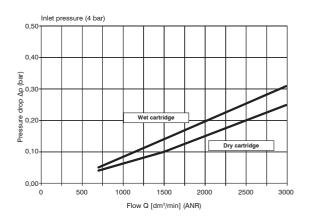


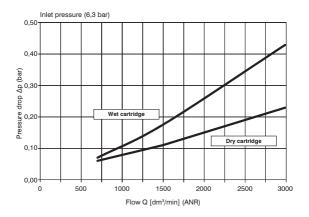




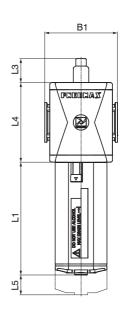
Size 4 - Standard cartridge

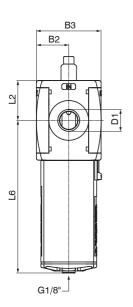




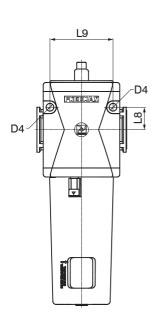


Dimensions





Fixing holes dimension detail (only for size 4)

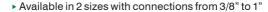


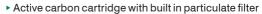
				D	1	L1 - Bowl	material		L	.4			
Model	B1	B2	В3	Standard cartridge	Oversize cartridge	Technopolymer	Metal	L3	Standard cartridge	Oversize cartridge	L5	L8	L9
#173	73	32.5	65	G3/8" G1/2" 1/2 NPT	G1/2"	113.5	116	24.1	80	118	65	/	/
#174	99	44	88	G1"	/	143	145.5	22.5	105	/	103	25	70

Carbon filters (DD)









- ▶ Used to remove oil vapours, hydrocarbons, odours and particles
- ► Oil residue up to <0,003 ppm (max imput aereosol 0.01 ppm)
- ▶ High absorption capacity, with low differential pressure
- ▶ Filtering performances 99.97% (particles up to 0.01 μ m)
- ▶ Bowl assembly via bayonet type quick coupling mechanism with safety button
- ▶ Semi-automatic drain
- ► Atex certification (II 2GD or II 3GD)
- ▶ Inlet pressures up to 20 bar







	Technical characteristics					
S	ize	Size 3	Size 4			
		Technopolymer body, integrated technopolymer connections (T version)	1			
Body and connections type		Technopolymer body, metal connections (N version)				
		Aluminium body, integrated alum	inium connections (P - L versions)			
		Technopolymer p	rotection - PA bowl			
		Technopolymer p	rotection - PC bowl			
Protection and bowl type		Metal protec	tion - PA bowl			
		Metal protection - PC bowl				
		Metal bowl (blind metal bowl)				
	Tversion	G1/2"	not available			
IN/OUT connections	N version	G3/8" - G1/2" - 1/2 NPT	not available			
	P and L versions	G1/2"	G1"			
Assembly configuration		Stand alone	Panel mounted			
Assembly positions		Vertic	al ±5°			
Oil residue		< 0,003 ppm (max imp	out aereosol 0.01 ppm)			
Bowl capacity		68 cm ³	90 cm ³			
Condensation drain		Semi-automatic				
	G1" metal	/	35Nm			
Max. fittings torque IN / OUT	G1/2" metal	30Nm				
connections	G3/8" metal	25Nm	/			
	G1/2" technopolymer	22Nm				

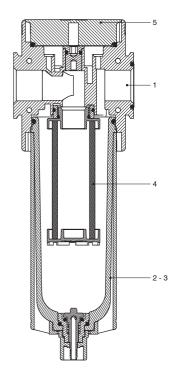
Operational characteristics						
Size 4						
Condensation drain	Semi-automatic					
Maximum working pressure	13 bar					
Maximum working pressure	20 bar (only with body and metal bowl)					
Minimum working pressure	0,5 bar					
	-5°C	+50°C				
Working temperature	-40°C+80°C (only for L version and metal bowl)					
	-30 °C +80 °C (only for P version and metal bowl)					
Cartridge life	2000 hours					

Weights				
Size	Size 3	Size 4		
Fully technopolymer version	395 g	/		
Technopolymer body version, aluminium bowl protection and technopolymer bowl	432 g	1		
Technopolymer body version, aluminium bowl	505 g	/		
Aluminium body version, technopolymer protection and bowl	518 g	1201 g		
Aluminium body version, aluminium bowl protection and technopolymer bow	554 g	1344 g		
Aluminium body version and aluminium bowl	628 g	1368 g		



Materials

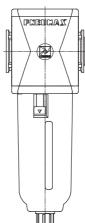
Exploded sectioned



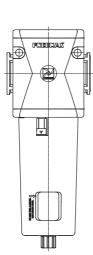
Carbon filter						
1	Body	Polyamide Die-cast aluminium				
2	Technopolymer bowl	Polycarbonate Polyamide				
3	Metal bowl Bowl protection	Die-cast aluminium Polyamide - Die-cast aluminium				
4	Filtering element	Activated carbon				
5	Plug	Polyamide Die-cast aluminium				

Design

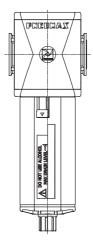
Size 3 Technopolymer protection

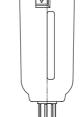






Size 4 All versions



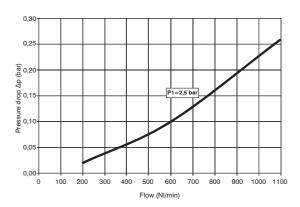


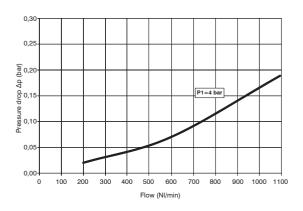
Coding: **V**17**1**DD**0**

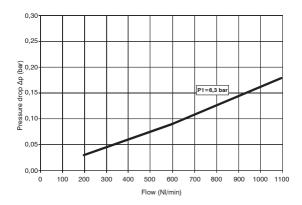
	VERSION					
	N = Technopolymer body and metal inserts (not available for size 4)					
V	T = Technopolymer body and thread (not available for size 4)					
	P = Aluminium body version					
	L = Aluminium body, low temperature					
	SIZE AND CONNECTIONS					
	3A = Size 3 - G3/8" only for N version					
Û	3B = Size 3 - G1/2" for all versions					
	3C = Size 3 - 1/2" NPT only for N version					
	4B = Size 4 - G1" only for P - L versions					
	BOWLOPTIONS					
	= Technopolymer protection - PC bowl					
	N = Technopolymer protection - PA bowl					
•	P = Metal protection - PC bowl					
	R = Metal protection - PA bowl					
	T = Metal bowl					

Example: T173BDDT: Size 3 carbon filter G1/2" metal bowl

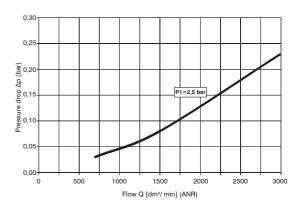
Efficiency curves - Size 3

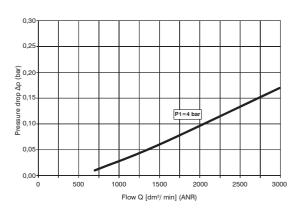


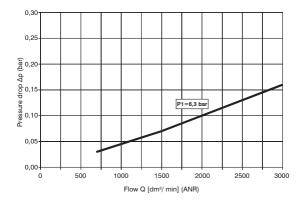




Efficiency curves - Size 4



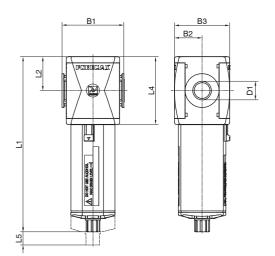




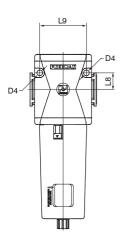


Dimensions

Semi-automatic drain version



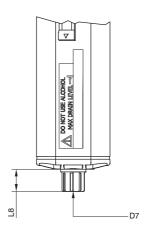
Fixing holes dimension detail (only for size 4)



Model	B1	B2	ВЗ	D1	D4	L1 - Bowl	material	L2	L4	L5	L8	L9
Model	ы	D2	_ B3	וט	D4	Technopolymer	Metal	L2	L4	Lo	Lo	La
#173	73	32,5	65	G3/8" G1/2" 1/2 NPT	/	207,2	209,5	40	80	65	/	/
#174	99	44	88	G1" 1 NPT	8,5	262	264,5	52,5	105	103	25	70

Variable dimensions

Semi-automatic drain version



Model	L8 - Bow	D7	
Wodel	Technopolymer	Metal	D/
Semi-automatic drain	15,7	18	Plastic hose connector Ø6

Filter regulators (E - EM - EW - EP - EZ)

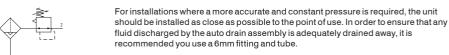




- ▶ Filter diaphragm pressure regulator with relieving
- ► Available in 4 sizes with flow rates up to 8000 NI/min and connections from 1/8" to 1"
- ▶ Low histeresis rolling diaphragm and balanced spool
- ► Filtering element made of HDPE available in 3 different filtration grades (5μ m, 20μ m and 50μ m)
- ▶ Bowl assembly via bayonet type quick coupling mechanism with safety button
- ▶ Semi-automatic or automatic drain
- Available in four pressure ranges up to 12 bar
- Fitted with panel mounting locking ring
- ▶ Available with pressure gauge or digital pressure switch integrated
- ► Atex certification (II 2GD or II 3GD)
- ▶ Inlet pressures up to 20 bar



Note



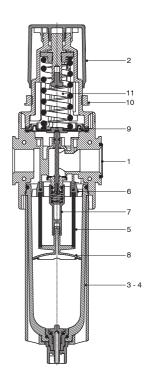
		Technica	l characteristics							
S	ize	Size 1	Size 2	Size 3	Size 4					
		Technopolymer bo	ody, integrated technopolymer conne	ections (T version)	,					
Body and connections type		Technopolymer body, metal connections (N version)								
		/ Aluminium body, integrated aluminium connections (P - L versions)								
		Technopolymer protection - PA bowl								
		Technopolymer protection - PC bowl								
Protection and bowl type		Metal protection - PA bowl								
				Metal protection - PC bowl						
				Metal bowl (blind metal bowl)						
	Tversion	G1/4"	G3/8"	G1/2"	not available					
IN/OUT connections	Nversion	G1/8" - G1/4" - 1/4 NPT	G3/8" - G1/4" - 3/8 NPT	G3/8" - G1/2" - 1/2 NPT	notavallable					
	P and L versions	not available	G3/8" - 1/4 NPT	G1/2" - 1/2 NPT	G1" - 1 NPT					
			Stand alone							
Assembly configuration			Panel m	ounted						
Assembly configuration			With fixing	g bracket						
			/		Panel mounted					
Assembly positions			Vertica	al ±5°						
			5μm							
Filter pore size		20 µm								
		50 µm								
Bowl capacity		18 cm ³	34 cm ³	68 cm ³	90 cm ³					
Condensation drain		Semi-automatic								
Condensation drain		Automatic								
		0-2 bar								
Draceure renes		0.4 bar								
Pressure range		0-8 bar								
		0-12 bar (P2 max 10 Bar in case of digital pressure switch selection)								
Regulation			Manul push and lo	ock with pressure						
negulation			Manual lockable	with accessories						
		G1/8" - 1/8" N	PT pressure gauge connection port	(only for versions with IN / OUT NPT o	onnections)					
Pressure measurement			Integrated pressure	e gauge (optional)						
			Digital pressure s	switch (optional)						
	G1" metal			1	35Nm					
	G1/2" metal	/		30Nm						
	G1/4" metal	201	lm .	1						
Max. fittings torque IN / OUT	G1/8" metal	15Nm	/	/						
connections	G3/8" metal	,	251	lm	/					
	G1/2" technopolymer	/		22Nm						
	G1/4" technopolymer	9Nm	/							
	G3/8" technopolymer	/	16Nm	/						
May fitting torque pros			G1/8" met	al: 15Nm						
Max.fitting torque pressure ga	auge connection port		G1/8" technop	oolymer: 4Nm						

	Operational characteristics								
Size	Size 1	Size 2	Size 3	Size 4	Size 1	Size 2	Size 3	Size 4	
Condensation drain		Semi-a	utomatic			Auto	matic		
Maximum working pressure		13	bar			10	bar		
Maximum working pressure	/	20 bar (on	lly with body and n	netal bowl)	/	/ 16 bar (only with body and metal bowl)			
Minimum working pressure		0,5	bar		0,5 bar				
		-5 °C	+50°C						
Working temperature	,	-30°C +80°C	(only for P version	and metal bowl)	-5 °C +50 °C				
	-40°C +80°C (only for L version and metal bowl)								
Working temperature with digital pressure switch	0 °C +50 °C								

2 | 22

		Weights		
Size	Size 1	Size 2	Size 3	Size 4
Fully technopolymer version	210 g	410 g	500 g	/
Technopolymer body version, aluminium bowl protection and technopolymer bowl	1	440 g	600 g	/
Technopolymer body version, aluminium bowl	/	460 g	660 g	/
Aluminium body version, technopolymer protection and bowl	/	480 g	710 g	1460 g
Aluminium body version, aluminium bowl protection and technopolymer bow	1	510 g	730 g	1600 g
Aluminium body version and aluminium bowl	/	560 g	790 g	1620 g

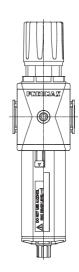
Materials Exploded sectioned



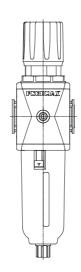
	Filter regul	ator
1	Body	Polyamide Die-cast aluminium
2	Adjusting knob	Polyamide
3	Technopolymer bowl	Polycarbonate Polyamide
4	Metal bowl Bowl protection	Die-cast aluminium Polyamide - Die-cast aluminium
5	Filtering element	Polyethylene
6	Baffle	Acetal resin
7	Spool support	Acetal resin
8	Filtering element support	Acetal resin
9	Diaphragm	NBR
10	Panel mounting locking ring	Polyamide
11	Adjusting spring	Steel

Design

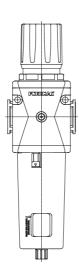
Size 1 - Size 2 - Size 3 Technopolymer protection



Size 1 - Size 2 - Size 3 Protection / Metal bowl



Size 4 All versions



	VERSION
	N = Technopolymer body and metal inserts (not available for size 4)
V	T = Technopolymer body and thread (not available for size 4)
	P = Aluminum body (not available for size 1)
	L = Aluminum body, low temperature (not available for size 1)
	SIZE AND CONNECTIONS
	1A = Size 1 - G1/8" only for N version
	1B = Size 1 - G1/4" only for T - N versions
	1C = Size 1 - 1/4" NPT only for N version
	2A = Size 2 - G1/4" only for N version
Û	2B = Size 2 - G3/8" for all versions
U	2C = Size 2 - 3/8" NPT only for N version - 1/4" NPT only for P - L versions
	3A = Size 3 - G3/8" only for N version
	3B = Size 3 - G1/2" for all versions
	3C = Size 3 - 1/2" NPT only for N - P - L versions
	4B = Size 4 - G1" only for P - L versions
	4C = Size 4 - 1" NPT only for P - L versions
	PRESSURE MEASUREMENT OPTIONS
	= G1/8" - 1/8" NPT thread (Only for P - L versions with metal body and NPT thread)
6 1	M = Integrated pressure gauge (not available on NPT, size 2 and size 3 aluminum body)
⊙ ¹	W = Integrated pressure gauge Right - Left (not available on NPT, size 2 and size 3 aluminum body)
	P = Digital pressure switch (not available on NPT, size 2 and size 3 aluminum body)
	Z = Digital pressure switch Right - Left (not available on NPT, size 2 and size 3 aluminum body)
	FILTER PORE SIZE
	$A = 5 \mu m$
8	$\mathbf{B} = 20 \mu\mathrm{m}$
	$C = 50 \mu\text{m}$
	PRESSURE RANGE
	A = 0 - 2 bar
®	B = 0 - 4 bar
_	C = 0 - 8 bar
	D = 0 - 12 bar
	CONDENSATION DRAIN
•	= Semi-automatic drain
_	S = Automatic drain
	RELIEVING OPTIONS
⊚ ²	= With reliving
	L = Without relieving
	KNOB OPTIONS
6 2	= Non-lockable version
$\mathbf{\Theta}^3$	K = Lockable version
	U = Lockable version with universal key
	DIGITAL PRESSURE SWITCH OPTIONS
	A = Cable 150 mm + M8 PNP
⊚ ⁴	B = Cable 150 mm + M8 NPN
	C = Cable 2 m PNP
	D = Cable 2 m NPN
	BOWLOPTIONS
	= Technopolymer protection - PC bowl (not available for L version)
6 5	N = Technopolymer protection - PA bowl (not available for L version)
⊙ ⁵	P = Metal protection - PC bowl (not available for size 1 and L version)
	R = Metal protection - PA bowl (not available for size 1 and L version)
	T = Metal bowl (not available for size 1)
	1 '

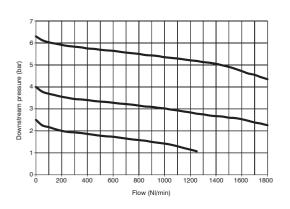
Example: **T173BEMBDST**: Size 3 filter regulator G1/2" $20 \mu m$ 0 - 12 bar, automatic drain and metal bowl

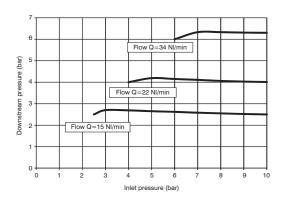


Characteristic curves

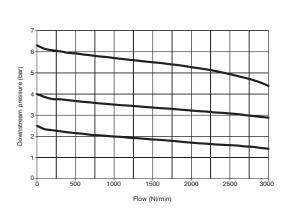
Flow rate curves Adjustment characteristic

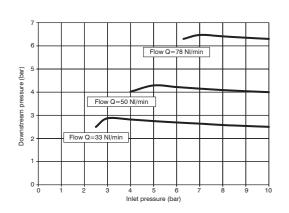
Size 1 - G1/4", 0-8 bar, P1=7 bar



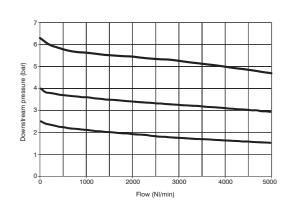


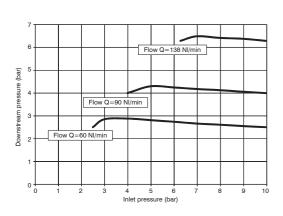
Size 2 - G3/8", 0-8 bar, P1=7 bar



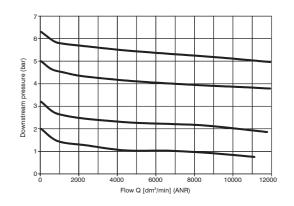


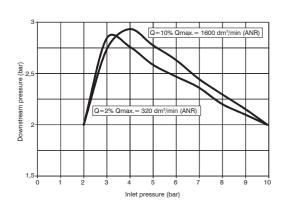
Size 3 - G1/2", 0-8 bar, P1=7 bar





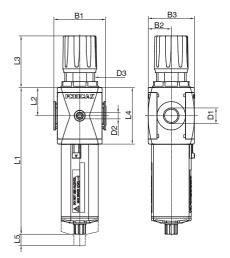
Size 4 - G1", 0-8 bar, P1=10 bar



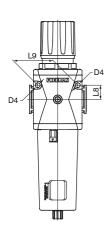


Dimensions

Pressure gauge connection port and semi-automatic drain version



Fixing holes dimension detail (only for size 4)

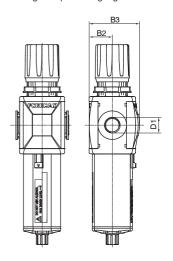


Model	B1	B2	В3	D1	D2	D3	D4	L1 - Bowl n	naterial	L2	L3	L4	L5	L8	L9
Model	PI	DZ		וט	D2	DS	D4	Technopolymer	Metal	LZ	Lo	L4	Lə	Lo	L9
#171	48	21	42	G1/8" G1/4" 1/4" NPT	G1/8" 1/8" NPT*	M30x1,5	/	148	/	27,5	54	55	40	/	/
#172	62	28,5	57	G1/4" G3/8" 1/4" NPT 3/8" NPT	G1/8" 1/8" NPT*	M42x1,5	/	169.1	171,5	34	71,8	68	50	/	/
#173	73	32,5	65	G3/8" G1/2" 1/2" NPT	G1/8" 1/8" NPT*	M42x1,5	/	207,2	209,5	40	72,8	80	65	/	/
#174	99	44	88	G1" 1" NPT	G1/8" 1/8" NPT*	M54x1,5	8,5	262	264,5	52,5	87,5	105	103	25	70

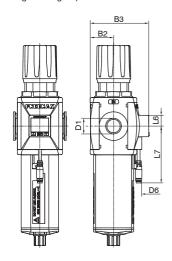
^{*(}only for P - L versions and NPT connections)

Variable dimensions

Integrated pressure gauge version



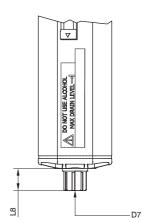
Integrated digital pressure switch version



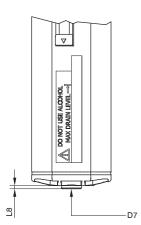
Model	B2	E	33	D6 - Type of digital pressure D1 switch			L6	L7 - Type of digital pressure switch	
Model	DE.	With pressure gauge	With digital pressure switch	5.	A - B	C-D		A-B	C-D
#171	21	48,5	60	G1/8" G1/4" 1/4" NPT					
#172	28,5	62,5	73,5	G1/4" G3/8" 1/4" NPT 3/8" NPT	M8 - 3 PIN	3 x 0,129 mm, Ø 4 mm	15	150	2000
#173	32,5	70,5	81,5	G3/8" G1/2" 1/2" NPT					
#174	44	90,5	101,5	G1" 1" NPT					

Variable dimensions

Semi-automatic drain version







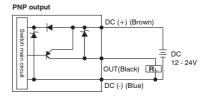
Model	L8 - Bowl	L8 - Bowl material					
Wodel	Technopolymer	Metal	D7				
Semi-automatic drain	15,7	18	Plastic hose connector Ø6				
Automatic drain	2	4,5	G1/8"				

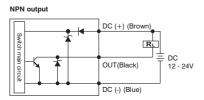
Digital pressure switch



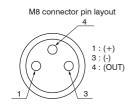
- ▶ 3 color digital LCD display, easy readout
- ▶ 4 units of measurement for pressure indication
- ▶ Optional PNP or NPN digital output
- ▶ N.O. and N.C. output contact selection directly on the digital pressure switch
- Available with M8-3PIN connector or 3 wire cable length 2 m

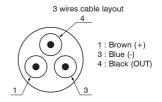
Output circuit wiring diagrams





Digital pressure switch layout





Cable ordering code

MCH1: cable 3 wires I=2,5m with M8 connector MCH2: cable 3 wires I=5m with M8 connector MCH3: cable 3 wires I=10m with M8 connector



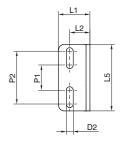
Technical characteristics						
Pressure range and display	0 10 bar					
Max. inlet pressure	15 bar					
Fluid	40μm filtered and dehumidified air					
Display unit of measurement	MPa - kgf/cm² - bar - psi					
Supplyvoltage	1224 VDC					
Current consumption	≤40mA (without load)					
Digital output type	PNP - NPN					
Type of contact output	Normally Open - Normally Closed					
Max. load current	125 mA					
Digital output activation mode	single threshold with fixed hysteresis - window with fixed hysteresis - window without hysteresis					
Digital output activation time	0.05s - 0.25s - 0.5s - 1s - 2s - 3s (selections for chattering-proof options)					
Display characteristics	Double 3 1/2 digit display Digital output status indication Three-pushbuttons touchpad					
Indicator accuracy	≤±2% full scale value ± 1 digit					
Protection degree	IP40					
Working temperature	0 °C 50 °C					
Cable section	3 x 0,129 mm², Ø4 mm, PVC					

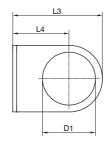
Fixing bracket

Coding: 1050

	SIZE
0	T171 = Size 1
	T172 = Size 2 - Size 3







Model	D1	D2	L1	L2	L3	L4	L5	P1	P2
T17150	30	5.5	20	13	50	30	40	20	30
T17250	42	5.5	25	16	71	44.5	53	20	42

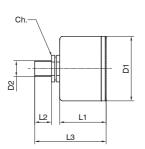
Pressure gauge

Coding: 17070**♥⑤**

V	VERSION
	A = Dial Ø40
	B = Dial Ø50
	SCALE
•	A = 0 - 4 bar
8	B = 0 - 6 bar
	C = 0 - 12 bar







Model	D1	D2	L1	L2	L3	Ch
17070A	41	Gc - 1/8"	26	10	44	14
17070B	49	Gc - 1/8"	27	10	45	14

Regulators (R - RM - RW - RP - RZ)





- ▶ Diaphragm pressure regulator with relieving
- ► Available in 4 sizes with flow rates up to 8000 NI/min and connections from 1/8" to 1"
- ▶ Low histeresis rolling diaphragm and balanced spool
- Available in four pressure ranges up to 12 bar
- ▶ Fitted with panel mounting locking ring
- ▶ Available with pressure gauge or digital pressure switch integrated
- ► Atex certification (II 2GD or II 3GD)
- ▶ Inlet pressures up to 20 bar

Note

For installations where a more accurate and constant pressure is required, the unit should be installed as close as possible to the point of use.



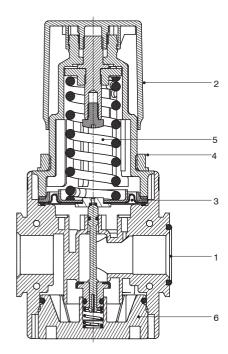
		Technica	al characteristics				
S	ize	Size 1 Size 2 Size 3			Size 4		
Body and connections type		Technopolymer b					
		Techno	Technopolymer body, metal connections (N version)				
		/	(P-L versions)				
	Tversion	G1/4"	G3/8"	G1/2"	not available		
N / OUT connections	N version	G1/8" - G1/4" - 1/4 NPT	G3/8" - G1/4" - 3/8 NPT	G3/8" - G1/2" - 1/2 NPT	notavallable		
	P and L versions	not available	G3/8" - 1/4 NPT	G1/2" - 1/2 NPT	G1" - 1 NPT		
			Star	d alone			
Assembly configuration		Panel mounted					
			Panel mounted				
Assembly positions			Ind	ifferent			
		0-2 bar					
Pressure range		0-4 bar					
riessurerange		0-8 bar					
		0-12 bar (P2 max 10 Bar in case of digital pressure switch selection)					
Regulation		Manul push and lock with pressure					
regulation		Manual lockable with accessories					
		G1/8" - 1/8" NPT pressure gauge connection port (only for versions with IN / OUT NPT connections)					
Pressure measurement		Integrated pressure gauge (optional)					
		Digital pressure switch (optional)					
	G1" metal	,		/	35Nm		
	G1/2" metal		1	30Nm			
	G1/4" metal	20	Nm				
Max. fittings torque IN / OUT	G1/8" metal	15Nm	/	/			
connections	G3/8" metal	,	2	25Nm			
	G1/2" technopolymer	/	,	22Nm			
	G1/4" technopolymer	9Nm	,				
	G3/8" technopolymer	/	16Nm	/			
Max.fitting torque pressure gauge connection port		15Nm					
		4Nm					

Operational characteristics								
Size	Size 1	Size 2 Size 3		Size 4				
Maximum working pressure	13 bar							
waximum working pressure	/	/ 20 bar (only for P - L versions)						
Minimum working pressure	0,5 bar							
	-5°C+50°C							
Working temperature	/ -30°C +80°C (only for P version)							
	/ -40°C +80°C (only for L version)							
Working temperature with digital pressure switch	0°C+50°C							

Weights							
Size	Size 1	Size 2	Size 3	Size 4			
Technopolymer body version	150 g	310 g	390 g	/			
Aluminium body version	/	400 g	560 g	1260 g			

Materials

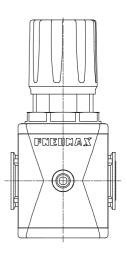
Exploded sectioned

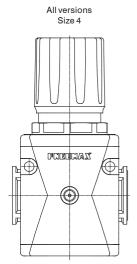


	Regulator							
1	Body	Polyamide Die-cast aluminium						
2	Adjusting knob	Polyamide						
3	Diaphragm	NBR						
4	Panel mounting locking ring	Polyamide						
5	Adjusting spring	Steel						
6	Rear end cap	Polyamide Die-cast aluminium						

Design

Size 1 - Size 2 - Size 3





Coding: **V**17**1**R**0**¹**R0**²**0**³**0**⁴

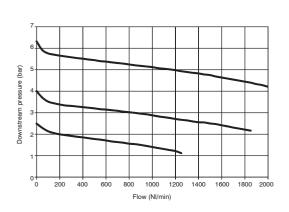
VERSION	
N = Technopolymer body and metal inserts (not available for size 4)	
T = Technopolymer body and thread (not available for size 4)	
P = Aluminum body (not available for size 1)	
L = Aluminum body, low temperature (not available for size 1)	
SIZE AND CONNECTIONS	
1A = Size 1 - G1/8" only for N version	
1B = Size 1 - G1/4" only for T - N versions	
1C = Size 1 - 1/4" NPT only for N version	
2A = Size 2 - G1/4" only for N version	
2B = Size 2 - G3/8" for all versions	
2C = Size 2 - 3/8" NPT only for N version - 1/4" NPT only for P - L versions	
3A = Size 3 - G3/8" only for N version	
3B = Size 3 - G1/2" for all versions	
3C = Size 3 - 1/2" NPT only for N - P - L versions	
4B = Size 4 - G1" only for P - L versions	
4C = Size 4 - 1" NPT only for P - L versions	
PRESSURE MEASUREMENT OPTIONS	
= G1/8" - 1/8" NPT thread (Only for P - L versions with metal body and NPT thread)	
M = Integrated pressure gauge (not available on NPT, size 2 and size 3 aluminum body)	
W = Integrated pressure gauge Right - Left (not available on NPT, size 2 and size 3 aluminum)	body)
P = Digital pressure switch (not available on NPT, size 2 and size 3 aluminum body)	
Z = Digital pressure switch Right - Left (not available on NPT, size 2 and size 3 aluminum body	/)

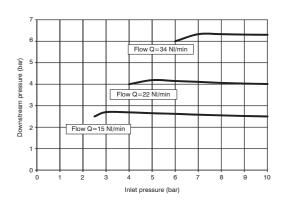
	PRESSURE RANGE
	A = 0 - 2 bar
R	B = 0 - 4 bar
	C = 0 - 8 bar
	D = 0 - 12 bar
	RELIEVING OPTIONS
	= With reliving
\bigcirc^2	F = Controlled refiel and improved relieving (not available for size 4)
	L = Without relieving
	R = Improved relieving
	KNOB OPTIONS
3 3	= Non-lockable version
\bigcirc 3	K = Lockable version
	U = Lockable version with universal key
	DIGITAL PRESSURE SWITCH OPTIONS
	A = Cable 150 mm + M8 PNP
\bigcirc 4	B = Cable 150 mm + M8 NPN
	C = Cable 2 m PNP
	D = Cable 2 m NPN

Example: T173BRMD: Size 3 regulator G1/2" 0 - 12 bar

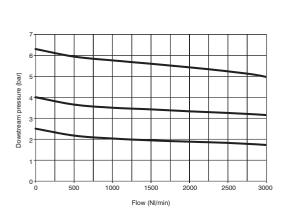
Flow rate curves Adjustment characteristic

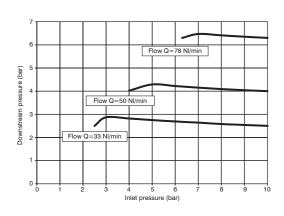
Size 1 - G1/4", 0-8 bar, P1=7 bar



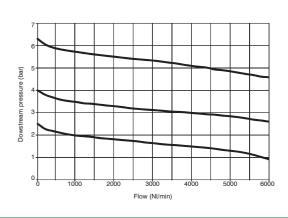


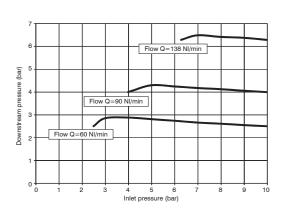
Size 2 - G3/8", 0-8 bar, P1=7 bar



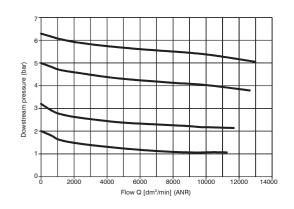


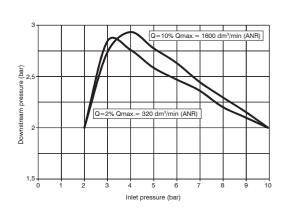
Size 3 - G1/2", 0-8 bar, P1=7 bar





Size 4 - G1", 0-8 bar, P1=10 bar

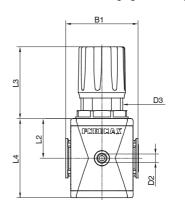


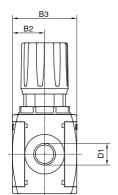




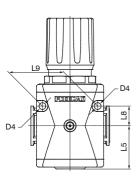
Dimensions

Pressure gauge connection port version





Fixing holes dimension detail (only for size 4)

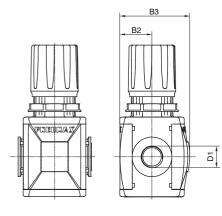


Model	B1	B2	В3	D1	D2	D3	D4	L2	L3	L4	L5	L8	L9
#171	48	21	42	G1/8" G1/4" 1/4 NPT	G1/8" 1/8 NPT *	M30x1,5	/	27,5	54	55	/	/	/
#172	62	28.5	57	G1/4" G3/8" 1/4 NPT 3/8 NPT	G1/8" 1/8 NPT *	M42x1,5	/	34	71.8	68	/	/	/
#173	73	32.5	65	G3/8" G1/2" 1/2 NPT	G1/8" 1/8 NPT *	M42x1,5	/	40	72.8	80	/	/	/
#174	99	44	88	G1" 1 NPT	G1/8" 1/8 NPT *	M54x1,5	8.5	52.5	87.5	105	54.5	25	70

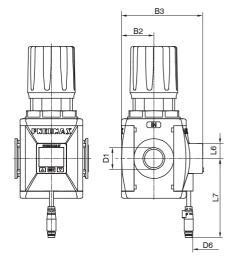
^{*(}only for P - L versions and NPT connections)

Variable dimensions

Integrated pressure gauge version



Integrated digital pressure switch version



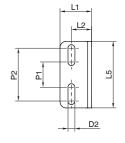
Model	B2	В3		D1		igital pressure itch	L6	L7 - Type of digital pressure switch		
Model	Model B2	With pressure gauge	With digital pressure switch	J.	A-B	C-D		A-B	C-D	
#171	21	48,5	60	G1/8" G1/4" 1/4" NPT	M8-3 PIN					
#172	28,5	62,5	73,5	G1/4" G3/8" 1/4" NPT 3/8" NPT		M8-3PIN 3x	3 x 0,129 mm, Ø 4 mm	15	150	2000
#173	32,5	70,5	81,5	G3/8" G1/2" 1/2" NPT						
#174	44	90,5	101,5	G1" 1" NPT						

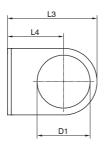


Coding: 150

	SIZE
•	T171 = Size 1
	T172 = Size 2 - Size 3







Model	D1	D2	L1	L2	L3	L4	L5	P1	P2
T17150	30	5.5	20	13	50	30	40	20	30
T17250	42	5.5	25	16	71	44.5	53	20	42

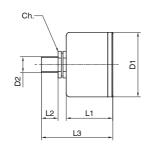
Pressure gauge



	1
	VERSION
V	A = Dial Ø40
	B = Dial Ø50
	SCALE
	A = 0 - 4 bar
8	B = 0 - 6 bar
	C = 0 - 12 bar







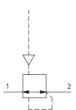
Model	D1	D2	Li	L2	L3	Ch
17070A	41	Gc - 1/8"	26	10	44	14
17070B	49	Gc - 1/8"	27	10	45	14

Piloted pressure regulators (RP - RMP - RPP)





- ▶ Piston piloted pressure regualator
- ▶ Available with pressure gauge or digital pressure switch integrated
- ► Atex certification (II 2GD or II 3GD)
- ▶ Inlet pressures up to 20 bar



Note

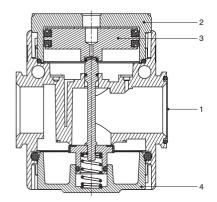
Technical characteristics Technical characteristics					
Size	Size 4				
Body and connections type	Aluminium body, integrated aluminium connections				
IN / OUT connections	G1" - 1 NPT				
Assambly configuration	Stand alone				
Assembly configuration	Panel mounted				
Assembly positions	Indifferent				
Pressure range	0,510 bar				
Regulation	Pneumatic piloting				
	G1/8" - 1/8" NPT pressure gauge connection port (only for versions with IN / OUT NPT connections)				
Pressure measurement	Integrated pressure gauge (optional)				
	Digital pressure switch (optional)				
Max. fittings torque IN / OUT connections	G1"metal: 35Nm				
Max.fitting torque pressure gauge connection port	G1/8" metal: 15Nm				

Operational characteristics					
Size	Size 4				
Maximum working pressure	20 bar				
Minimum working pressure	0,5 bar				
Pilot pressure range	0,510 bar				
Working temperature	-30°C+80°C				
Working temperature with digital pressure switch	0°C+50°C				

Weights							
Size	Size 1	Size 2	Size 3	Size 4			
Pneumatic pilot aluminum body version	/	/	/	1190 g			

Materials

Exploded sectioned



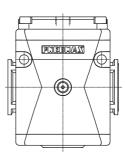
	Piloted pressure regulator							
1	Body	Die-cast aluminium						
2	Piloting operator	Aluminium						
3	Piston	Aluminium						
4 Rear end cap		Die-cast aluminium						

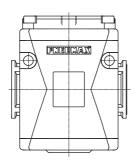
Design

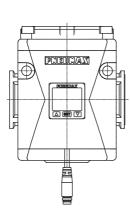
Version with G1/8" pressure gauge

Version with Integrated digital pressure switch

Version with Integrated pressure gauge







Coding: **0**17**1**R**0**¹**0**²P

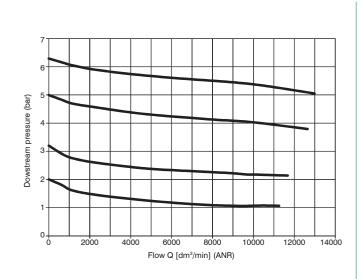
•	VERSION
	P = Aluminium body version
	SIZE AND CONNECTIONS
0	4B = Size 4 - G1"
	4C = Size 4 - 1 NPT
	PRESSURE MEASUREMENT OPTIONS
	= G1/8" - 1/8 NPT thread (Only for version with NPT thread)
⊚ ¹	M = Integrated pressure gauge
•	W = Integrated pressure gauge Right - Left
	P = Digital pressure switch
	Z = Digital pressure switch Right - Left
	DIGITAL PRESSURE SWITCH OPTIONS
	A = Cable 150 mm + M8 PNP
⊚ ²	B = Cable 150 mm + M8 NPN
	C = Cable 2 m PNP
	D = Cable 2 m NPN

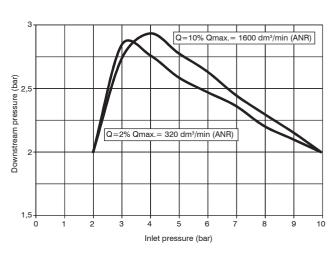
Example: P174BRMP: Size 4 piloted pressure regulator G1", integrated pressure gauge

Characteristic curves

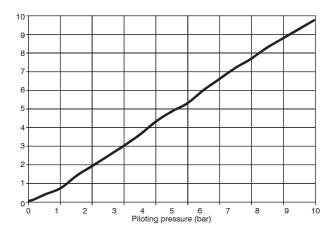
Flow rate curves Adjustment characteristic

Size 4 - G1", P1=10 bar

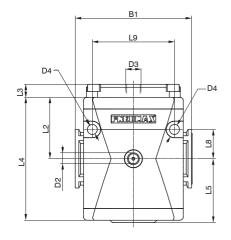


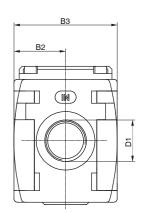


Piloting curves



Dimensions



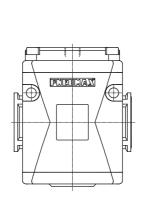


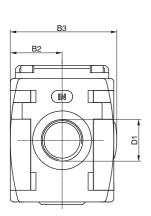
Model	B1	B2	В3	D1	D2	D3	D4	L2	L3	L4	L5	L8	L9
#174	99	44	90	G1" 1 NPT	G1/8" 1/8 NPT	G1/4"	8.5	52.5	11	105	54.5	25	70

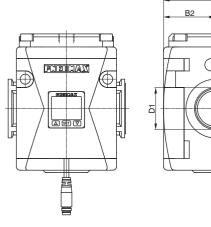
Variable dimensions

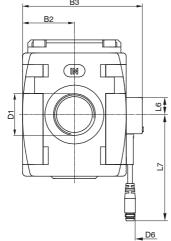
Integrated pressure gauge version

Integrated digital pressure switch version









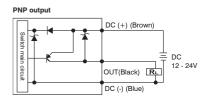
Model	B2	В3		D1	D6 - Type of digital pressure switch		L6	L7 - Type of digital pressure switch	
	D2	With pressure gauge	With digital pressure switch	- B1	A-B	C-D	Lo	A-B	C-D
#174	44	90	101,5	G1" 1 NPT	M8 - 3 PIN	3 x 0,129 mm, Ø4 mm	15	150	2000

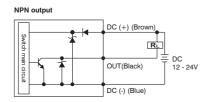
Digital pressure switch



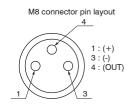
- ▶ 3 color digital LCD display, easy readout
- ▶ 4 units of measurement for pressure indication
- ▶ Optional PNP or NPN digital output
- ▶ N.O. and N.C. output contact selection directly on the digital pressure switch
- ▶ Available with M8-3PIN connector or 3 wire cable length 2 m

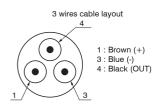
Output circuit wiring diagrams





Digital pressure switch layout





Cable ordering code

MCH1: cable 3 wires I=2,5m with M8 connector MCH2: cable 3 wires I=5m with M8 connector MCH3: cable 3 wires I=10m with M8 connector



	Technical characteristics						
Pressure range and display	0 10 bar						
Max. inlet pressure	15 bar						
Fluid	40μm filtered and dehumidified air						
Display unit of measurement	MPa - kgf/cm² - bar - psi						
Supply voltage	1224 VDC						
Current consumption	≤40mA (without load)						
Digital output type	PNP - NPN						
Type of contact output	Normally Open - Normally Closed						
Max. load current	125 mA						
Digital output activation mode	single threshold with fixed hysteresis - window with fixed hysteresis - window without hysteresis						
Digital output activation time	0.05s - 0.25s - 0.5s - 1s - 2s - 3s (selections for chattering-proof options)						
Display characteristics	Double 3 1/2 digit display Digital output status indication Three-pushbuttons touchpad						
Indicator accuracy	≤±2% full scale value ± 1 digit						
Protection degree	IP40						
Working temperature	0 °C 50 °C						
Cable section	3 x 0,129 mm², Ø4 mm, PVC						

Pressure regulators for manifold (B - M - P)





- ▶ Diaphragm pressure regulator with relieving
- Available with 2 front outputs connections G1/8 " or with 1 front output and integrated pressure gauge on the opposite side

For installations where a more accurate and constant pressure is required, the unit

should be installed as close as possible to the point of use.

- ▶ Low histeresis rolling diaphragm and balanced spool
- Available in four pressure ranges up to 12 bar
- ▶ Fitted with panel mounting locking ring
- Available with integrated pressure gauge or digital pressure switch
- Air supply can be applied by both directions (Right or Left)

Note

- Max. 6 off pressure regulators in manifold configuration
- ▶ Atex certification (II 3GD)



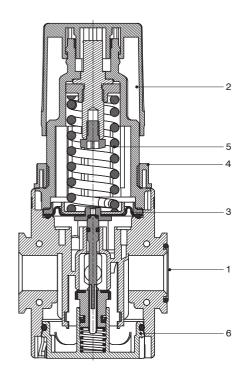


Technical characteristics							
	Size	Size 1					
Body and connections t	уре	Technopolymer body, integrated technopolymer connections (T version) Technopolymer body, metal connections (N version)					
	Tversion	G1/4"					
IN connections	N version	G1/8" - G1/4" - 1/4" NPT					
OUT connections		G1/8"					
		Stand alone					
Assembly configuration	1	Panel mounted					
		With fixing bracket					
Assembly positions		Indifferent					
		0-2 bar					
Dragourarana		0-4 bar					
Pressure range		0-8 bar					
		0-12 bar					
Regulation		Manul push and lock with pressure					
negulation		Manual lockable with accessories					
		G1/8" pressure gauge connection port					
Pressure measurement		Integrated pressure gauge (optional)					
		Digital pressure switch (optional)					
		G1/8" metal: 15Nm					
Max. fittings torque IN /	OUT connections	G1/4" metal: 20Nm					
		G1/4" technopolymer: 9Nm					
Max.fitting torque press	sure gauge connection port	G1/8" technopolymer: 4 Nm					
		G1/8" metal: 15Nm					

Operational characteristics						
Size	Size 1					
Maximum working pressure	13 bar					
Minimum working pressure	0,5 bar					
Working temperature	-5°C+50°C					
Working temperature with digital pressure switch	0°C+50°C					

Weights						
Size	Size 1					
Technopolymer body version	140 g					

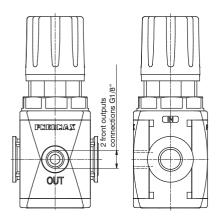
Materials Exploded sectioned



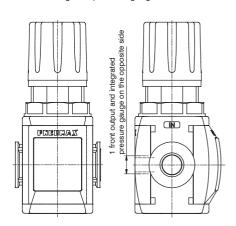
	Pressure regulator for manifold							
1	Body	Polyamide Die-cast aluminium						
2	Adjusting knob	Polyamide						
3	Diaphragm	NBR						
4	Panel mounting locking ring	Polyamide						
5	Adjusting spring	Steel						
6	Rear end cap	Polyamide Die-cast aluminium						

Design

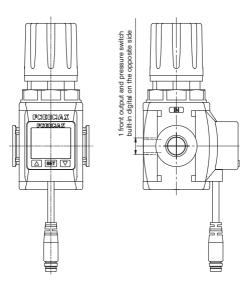
Pressure gauge version



Integrated pressure gauge version



Integrated digital pressure switch version



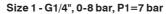
Coding: **1710110120**²**0**³**0**⁴

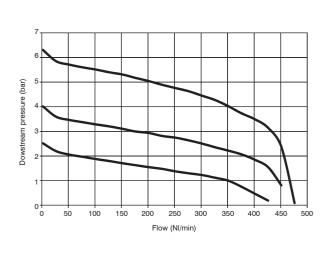
	VERSION
	N = Technopolymer body and metal inserts
	T = Technopolymer body and thread
	SIZE AND CONNECTIONS
	1A = Size 1 - G1/8"
•	1B = Size 1 - G1/4"
	1C = Size 1 - 1/4" NPT only for N version
	PRESSURE MEASUREMENT OPTIONS
O 1	B = G1/8" Thread
© ¹	M = Integrated pressure gauge
	P = Digital pressure switch
	PRESSURE RANGE
	A = 0 - 2 bar
R	B = 0 - 4 bar
	C = 0 - 8 bar
	D = 0 - 12 bar
	RELIEVING OPTIONS
	= With reliving
\bigcirc^2	F = Controlled refiel and improved relieving
	L = Without relieving
	R = Improved relieving
	KNOB OPTIONS
⊚ 3	= Non-lockable version
	K = Lockable version
	U = Lockable version with universal key
	DIGITAL PRESSURE SWITCH OPTIONS
	A = Cable 150 mm + M8 PNP
\bigcirc 4	B = Cable 150 mm + M8 NPN
	C = Cable 2 m PNP
	D = Cable 2 m NPN

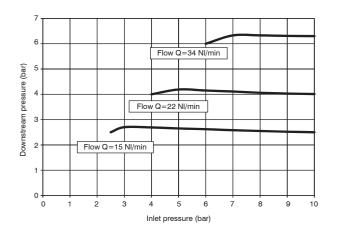
 $\textbf{Example}: \textbf{T171BBD}: Size \ 1 \ pressure \ regulator \ for \ manifold \ G1/4", \ 0-12 \ bar$

Characteristic curves

Flow rate curves Adjustment characteristic



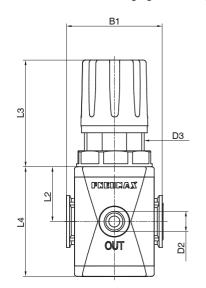


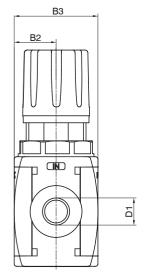




Dimensions

Pressure gauge connection port version (B)

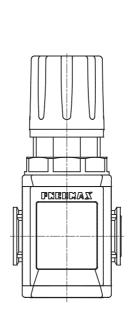


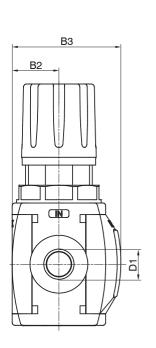


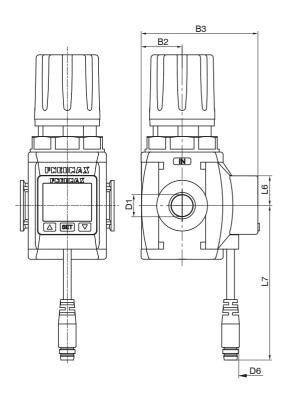
Model	B1	B2	B3	D1	D2	D3	L2	L3	L4
#171	48	21	42	G1/4" G1/8" 1/4" NPT	G1/8"	M30x1,5	27,5	54	55

Integrated pressure gauge version (M)

Integrated digital pressure switch version







Model	B2	В3		2	D6 - Type of digital pressure switch		l e	L7 - Type of digital pressure switch	
Model		with pressure gauge	With digital pressure switch	D1	A-B	C-D	L6	A-B	C-D
#171	21	48.5	60	G1/8" G1/4" 1/4" NPT	M8-3 PIN	3 x 0,129 mm, Ø4 mm	15	150	2000

Ail Sei

Manifold pressure regulators





- ▶ Manifold pressure regulators
- ▶ Available in four pressure ranges up to 12 bar
- ▶ Inlet pressure common for the whole manifold of pressure regulator
- A maximum of 6 pressure regulators can be mounted
- ► Atex certification (II 3GD)
- ▶ Assembly with X or Y flanges

Technical characteristics						
	Size	Size 1				
Body and connections type		Technopolymer body, integrated technopolymer connections (T version)				
		Technopolymer body, metal connections (N version)				
IN connections	Tversion	G1/4"				
INCOMMECTIONS	N version	G1/8" - G1/4" - 1/4 NPT				
OUT connections		G1/8"				
		Stand alone				
Assembly configuration		Panel mounted				
		With fixing bracket				
Assembly positions		Indifferent				
		0-2 bar				
Dragging range		0-4 bar				
Pressure range		0-8 bar				
		0-12 bar				
Demolation		Manul push and lock with pressure				
Regulation		Manual lockable with accessories				
Pressure measurement		G1/8" pressure gauge connection port				
Pressure measurement	L	Integrated pressure gauge (optional)				
		G1/8" metal: 15Nm				
Max. fittings torque IN /	OUT connections	G1/4" metal: 20Nm				
		G1/4" technopolymer: 9Nm				
Man		G1/8" metal: 15Nm				
Max.fitting torque pressure gauge connection port		G1/8" technopolymer: 4Nm				

Operational characteristics						
Size	Size 1					
Maximum working pressure	13 bar					
Minimum working pressure	0,5 bar					
Working temperature	-5°C+50°C					

$\textbf{Coding: } \textbf{G} \bullet \textbf{17} \bullet \textbf{10} \bullet \textbf$

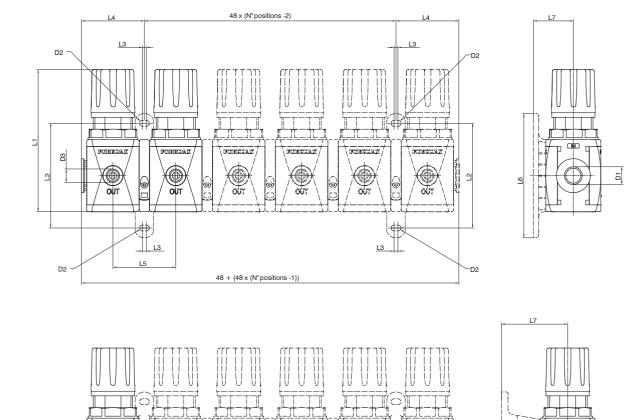
	VERSION		PRESSURE RANGE
V	N = Technopolymer body and metal inserts		A = 0 - 2 bar
	T = Technopolymer body and thread	R ²	B = 0-4 bar
	SIZE AND CONNECTIONS	_ •	C = 0 - 8 bar
	1A = Size 1 - G1/8"		D = 0-12 bar
•	1B = Size 1 - G1/4"		PRESSURE RANGE
	1C = Size 1 - 1/4" NPT only for N version		A = 0 - 2 bar
	PRESSURE MEASUREMENT OPTIONS	® ³	B = 0 - 4 bar
	B = G1/8" thread with flanges X		C = 0 - 8 bar
	M = Integrated pressure gauge with flanges X		D = 0 - 12 bar
① ¹	P = G1/8" thread with extended flanges Y]	PRESSURE RANGE
•	R = Integrated pressure gauge with extended flanges Y		A = 0 - 2 bar
	W = G1/8" thread with flanges Y		B = 0 - 4 bar
	Z = Integrated pressure gauge with flanges Y		C = 0 - 8 bar
	NUMBER OF REGULATORS		D = 0 - 12 bar
	2 = n. 2 regulators		PRESSURE RANGE
0	3 = n.3 regulators		A = 0 - 2 bar
W	4 = n. 4 regulators	₽ 5	B = 0 - 4 bar
	5 = n.5 regulators		C = 0 - 8 bar
	6 = n. 6 regulators		D = 0 - 12 bar
	PRESSURE RANGE		PRESSURE RANGE
	A = 0 - 2 bar		A = 0 - 2 bar
\mathbb{R}^1	B = 0 - 4 bar	\mathbf{R}^6	B = 0 - 4 bar
	C = 0 - 8 bar		C = 0 - 8 bar
	D = 0 - 12 bar		D = 0 - 12 bar

Example: T171BM6CCCCC: Size 1 manifold pressure regulators

G1/4", 0 - 8 bar, integrated pressure gauge

Air service units Series Airplus

Dimensions



Model	D1	D2	D3	Li	L2	L3	L4	L5	L6	L7
#171with flanges X	G1/4"	/			/	/			/	/
#171with flanges Y	G1/8"	Ø 4,5	G1/8"	109	90	0	48	48	105	30,5
#171with extended flanges Y	1/4" NPT	04,5			80	0 3	3		105	50,5

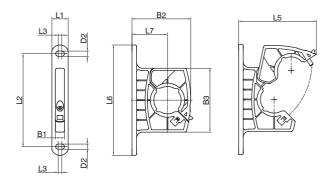
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AIR TREATMENT

Manifold mounting flanges

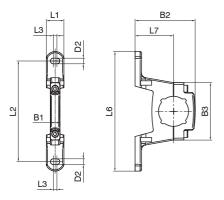
Flange Y





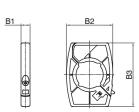
Extended flange Y

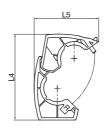




Flange X





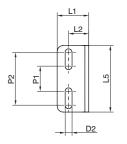


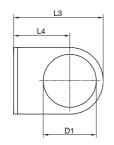
Model	B1	B2	В3	D2	L1	L2	L3	L4	L5	L6	L7
T171Y		50,5	55	Ø 4,5	14	80	3	/	66	O.F.	30,5
N171YP	7,8	67.7	45.7	Ø 4,5	14	80	3	/	66	95	50.5
T171X		40	55	/	/	/	/	74.5	55,5	/	/

Fixing bracket

Coding: 17150







Model	L1	L2	L3	L4	L5	D1	D2	P1	P2
17150	20	13	50	30	40	30	5,5	20	30

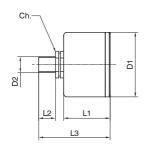
Pressure gauge



	VERSION
V	A = Dial Ø40
	B = Dial Ø50
	SCALE
	A = 0 - 4 bar
8	B = 0 - 6 bar
	C = 0 - 12 bar







Model	D1	D2	L1	L2	L3	Ch
17070A	41	Gc - 1/8"	26	10	44	14
17070B	49	Gc - 1/8"	27	10	45	14

Lubricators (L)





- ▶ Oil mist lubricator
- ► Available in 4 sizes with flow rates up to 16000 NI/min and connections from 1/8" to 1"
- ▶ Bowl assembly via bayonet type quick coupling mechanism with safety button
- ▶ Variable orifice size in function of the flow rate
- ▶ Oil quantity regulation mechanism and oil quantity visualization dome made of polycarbonate (PC)
- ► Oil refill plug
- Lubricator oil recharge with pressurized system
- Available with low level electrical sensor NO and NC
- ► Atex certification (II 2GD or II 3GD)



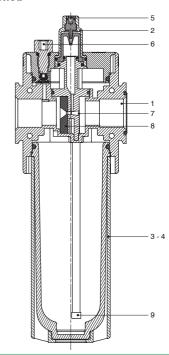
		Technic	al characteristics				
S	ize	Size 1	Size 2	Size 3	Size 4		
		Technopolymer b	,				
Body and connections type		Techno	ppolymer body, metal connections (N	Iversion)	/		
		/	Aluminium bo	dy, integrated aluminium connections	(P-Lversions)		
		Technopolymer protection - PA bowl					
			Technopolymer p	rotection - PC bowl			
Protection and bowl type				Metal protection - PA bowl			
		/		Metal protection - PC bowl			
			Me	tal bowl (Blind metal bowl or with disp	olay)		
	Tversion	G1/4"	G3/8"	G1/2"	not available		
IN/OUT connections	Nversion	G1/8" - G1/4" - 1/4 NPT	G3/8" - G1/4" - 3/8 NPT	G3/8" - G1/2" - 1/2 NPT	not available		
	P and L versions	not available	G3/8"	G1/2"	G1"		
Assembly configuration		Stand alone					
Assembly configuration		/ Panel mounted					
Assembly positions		Vertical ±5°					
Bowl capacity		36 cm ³ 70 cm ³		136 cm ³	360 cm ³		
Lubrication type		Oil mist lubrication					
Oil level regulation		Manual, complete with visual indicator					
	G1" metal		1	/	35Nm		
	G1/2" metal		/	30Nm			
	G1/4" metal	20	Nm				
Max. fittings torque IN / OUT	G1/8" metal	15Nm	/	/			
connections	G3/8" metal	,	25	5Nm	/		
	G1/2" technopolymer	/	,	22Nm			
	G1/4" technopolymer	9Nm	/	,			
	G3/8" technopolymer	/	16Nm	/			

Operational characteristics							
Size	Size 1	Size 2	Size 3	Size 4			
Maximum working pressure		13	bar				
Minimum working pressure		0,5	bar				
Min. operational flow at 6,3 bar	40 NI/min 70 NI/min 100 NI/min						
Indicative oil drop rate		1 drope every 3	300/600 NI/min				
Oil type		FD22-	- HG32				
		-5°C	+50°C				
Working temperature	,	-30°C	+80°C (body and metal bowl version	ns P)			
	-40°C+80°C (body and metal bowl versions L)						

		Weights		
Size	Size 1	Size 2	Size 3	Size 4
Fully technopolymer version	121 g	215 g	347 g	/
Technopolymer body version, aluminium bowl protection and technopolymer bowl	/	245 g	383 g	/
Aluminium body version, technopolymer protection and bowl	/	315 g	477 g	1032 g
Aluminium body version, aluminium bowl protection and technopolymer bow	/	345 g	513 g	1077 g
Metal body and bowl	/	380 g	580 g	1137 g



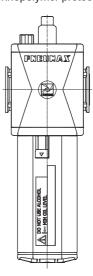
Materials Exploded sectioned



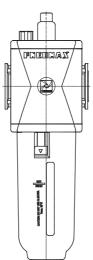
	Lubricator							
1	Body	Polyamide Die-cast aluminium						
2	Visual indicator	Polyamide						
3	Bowl	Polycarbonate Polyamide Die-cast aluminium						
4	Bowl protection	Polyamide Die-cast aluminium						
5	Oil regulation needle	Brass						
6	Recharge plug	Acetal resin						
7	Diaphragm support	Acetal resin						
8	Diaphragm	NBR						
9	Filter	Sintered brass						

Design

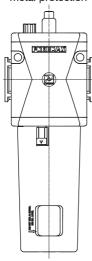
Size 1 - Size 2 - Size 3 Technopolymer protection



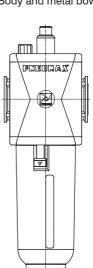
Size 1 - Size 2 - Size 3 Metal protection



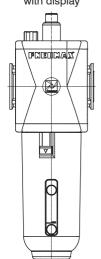
Size 4 Technopolymer protection and metal protection



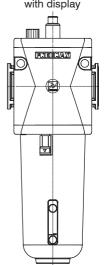
Size 2 - Size 3 Body and metal bowl



Size 2 - Size 3 Body and metal bowl with display



Size 4 Body and metal bowl with display



Size 4 Body and metal bowl

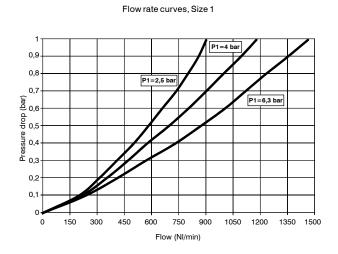


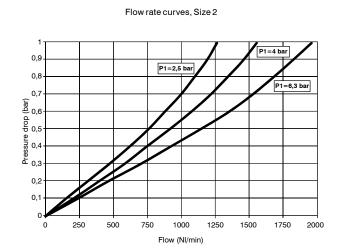
	VERSION									
	N = Technopolymer body and metal inserts (not available for size 4)									
V	T = Technopolymer body and thread (not available for size 4)									
	P = Aluminum body (not available for size 1)									
	L = Aluminum body, low temperature (not available for size 1)									
	SIZE AND CONNECTIONS									
	1A = Size 1 - G1/8" only for N version									
	1B = Size 1 - G1/4" only for T - N versions									
	1C = Size 1 - 1/4" NPT only for N version									
	2A = Size 2 - G1/4" only for N version									
Ū	2B = Size 2 - G3/8" for all versions									
	2C = Size 2 - 3/8" NPT only for N version									
	3A = Size 3 - G3/8" only for N version									
	3B = Size 3 - G1/2" for all versions									
	3C = Size 3 - 1/2" NPT only for N version									
	4B = Size 4 - G1" only for P-L version									

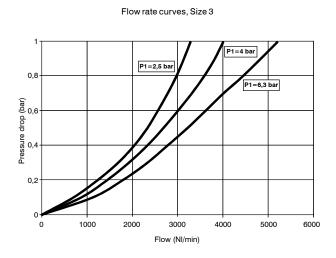
	OPTIONS							
⊚ ¹	= No electric level sensor device							
	A = Electrical minimum level sensor NO (not available for size 1)							
	C = Electrical minimum level sensor NC (not available for size 1)							
	BOWLOPTIONS							
]	= Technopolymer protection - PC bowl (not available for L version)							
11	N = Technopolymer protection - PA bowl (not available for L version)							
● ²	P = Metal protection - PC bowl (not available for size 1 and L version)							
	R = Metal protection - PA bowl (not available for size 1 and L version)							
11	T = Metal bowl without oil level indicator (not available for Size 1)							
	VT = Metal bowl with oil level display (not available for Size 1)							

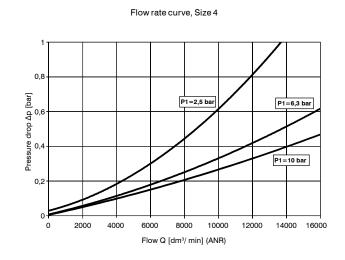
Example: T173BLAN: Size 3 lubricator G1/2", normally open low level electrical sensor, PA bowl with technopolymer protection

Characteristic curves



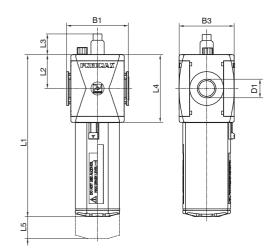




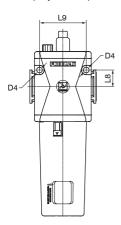




Dimensions



Fixing holes dimension detail (only for size 4)

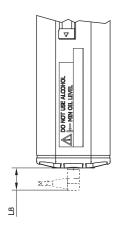


Model	B1	Вз	D1	D4	Lt	L2	L3	L4	L5	L8	L9
#171	48	42	G1/8" G1/4" 1/4" NPT	1	131	27,5	24	55	70	/	/
#172	62	57	G1/4" G3/8" 3/8" NPT	1	152,7	34	24	68	90	/	/
#173	73	65	G3/8" G1/2" 1/2" NPT	1	191,4	40	24	80	120	/	/
#174	99	88	G1"	8,5	247	52,5	24	105	145	25	70

Variable dimensions

Model	L8	Electrical connection details
Electrical minimum level sensor NO	16	C1 - C2 - C3 (see sensors section of
Electrical minimum level sensor NC	16	general catalog

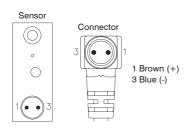
Connector for electrical minimum level sensor



Accessories

Connectors for minimum electrical level

C1: connector with 2,5 m cable 2 wires (PVC Ø3,5 mm 2x0,25mm²) C2: connector with 5 m cable 2 wires (PVC Ø3,5 mm 2x0,25mm²) C3: connector with 10 m cable 2 wires (PVC Ø3,5 mm 2x0,25mm²)



SNAP code connectors									
C1	Ø 3,5 mm								
C2	PVC								
C3	2x 0,25 mm ²								

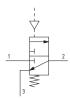
Shut off valves (VL - VP - VE)

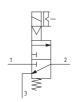




- ▶ 3/2 N.C. shut off valve
- ▶ Suitable for system downstream pneumatic feeding or exhaust
- ▶ Manual, pneumatic and electropneumatic operation available
- ▶ Up to 3 off manual operation lockable device available (closed position)
- ► Atex certification (II 2GD or II 3GD)





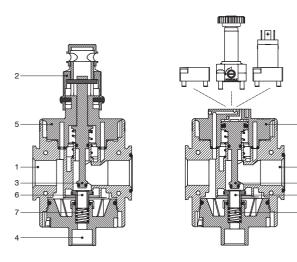


		Technica	l characteristics								
S	ize	Size 1	Size 2	Size 3	Size 4						
		Technopolymer bo	ody, integrated technopolymer conn	ections (T version)	1						
Body and connections type		Technop	oolymer body, metal connections (N	version)	1						
		/ Aluminium body, integrated aluminium connections (P version)									
		Manual									
Operated type) perated type		Pneumatic								
			Electrop	neumatic							
	Tversion	G1/4"	G3/8"	G1/2"	not available						
	N version	G1/8" - G1/4" - 1/4" NPT	G3/8" - G1/4" - 3/8" NPT	G3/8" - G1/2" - 1/2" NPT	not available						
	P and L versions	not available	G3/8"	G1/2"	G1"						
Pilot ports size											
Exhaust connection		G1/4"	3/8"	G1/2"							
Assembly configuration		Stand alone									
			/		Panel mounted						
Assembly positions			Indiff	ferent							
	G1" metal			/	35Nm						
	G1/2" metal	/		30N	lm						
	G1/4" metal	201	Nm	,							
Max. fittings torque IN / OUT	G1/8" metal	15Nm	/	/							
connections	G3/8" metal	,	25	Nm	,						
	G1/2" technopolymer	/		22Nm	1						
	G1/4" technopolymer	9Nm	/	,							
	G3/8" technopolymer	/	16Nm	,	İ						

Operational characteristics														
Size	Size 1	Size 2	Size 3	Size 4	Size 1	Size 2	Size 3	Size 4						
Operator		Ma	nual			Pneumatio	/Solenoid							
Maximum working pressure		13 bar		10 bar		10	bar							
Minimum working pressure		0,5	bar		2,5 bar									
		-5 °C	. +50°C		-5 °C +50 °C									
Working temperature	/		. +80°C (only for P . +80°C (only for L		/	-30°C +80°C (only with metal body and pne version) -40°C +80°C (only with metal body and pne version)								
Nominal flow rate at 6 bar with $\Delta p=1$ (from 1 to 2)	1400 NI/min	2200 NI/min	3600 NI/min	15000 NI/min	1400 NI/min	2200 NI/min 3600 NI/min 15000 NI/min								
Exhaust nominal flow rate at 6 bar with $\Delta p=1$ (from 2 to 3)	550 NI/min	1500	NI/min	3600 NI/min	550 NI/min 1500 NI/min 3600 NI/min									
Un-conveyed exhaust nominal flow rate (from 2 to 3)	1000 NI/min	2500	NI/min	5000 NI/min	1000 NI/min 2500 NI/min 5000 N									

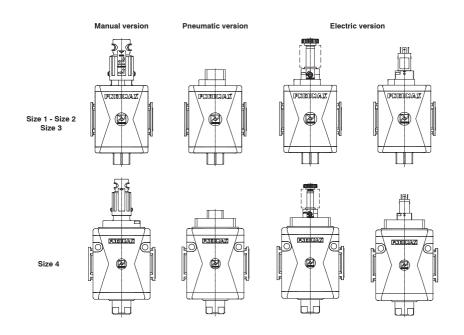
	Weights														
Size			Size 1	Size 2	Size 3	Size 4									
	Manual	Technopolymer body version	110 g	190 g	250 g	/									
	Manuai	Aluminium body version	/	270 g	400 g	1100 g									
	Flootroppoumotio	Technopolymer body version	99 g	181 g	270 g	/									
Operator	Electropneumatic	Aluminium body version	/	265 g	398 g	1135 g									
Operator	Solenoid M2 actuator	Technopolymer body version	140 g	210 g	310 g	/									
	Soleriold W2 actuator	Aluminium body version	/	298 g	429 g	1170 g									
	Solenoid 15mm coil	Technopolymer body version	140 g	216 g	310 g	/									
	Soletiola (SIIIII) Coll	Aluminium body version	/	301 g	432 g	1180 g									

Materials Exploded sectioned



	Shut off valve											
1	Body	Polyamide Die-cast aluminium										
2	Manual override	Polyamide										
3	Drive pin Piston	Aluminium										
4	Exhaust plug	Polyamide										
5	Central support	Polyamide										
6	Poppet	Brass + NBR										
7	Repositioning spring	Steel										

Design



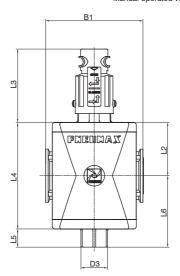
Coding: **V**17**1**V**A0**

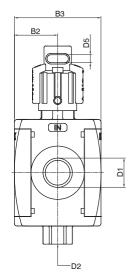
	VERSION									
	N = Technopolymer body and metal inserts (not available for size 4)									
V	T = Technopolymer body and thread (not available for size 4)									
	P = Aluminum body (not available for size 1)									
	L = Aluminium body, low temperature (not available for solenoid version and size 1)									
	SIZE AND CONNECTIONS									
	1A = Size 1 - G1/8" only for N version									
	1B = Size 1 - G1/4" only for T - N versions									
	1C = Size 1 - 1/4" NPT only for N version									
	2A = Size 2 - G1/4" only for N version									
•	2B = Size 2 - G3/8" for all versions									
	2C = Size 2 - 3/8" NPT only for N version									
	3A = Size 3 - G3/8" only for N version									
	3B = Size 3 - G1/2" for all versions									
	3C = Size 3 - 1/2" NPT only for N version									
	4B = Size 4 - G1" only for P - L versions									
	OPERATOR									
•	L = Manual									
	P = Pneumatic									
	E = Solenoid									

Example: T173BVEA5: Size 3 electric shut off valve G1/2", 15 mm coil, 24VDC

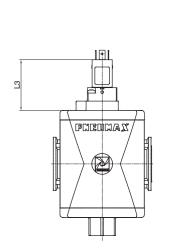
	COIL OPTIONS									
	15 mm coil									
	A4 = 12 VDC									
	A5 = 24 VDC									
	A6 = 24 VAC (50-60 Hz)									
	A7 = 110 VAC (50-60 Hz)									
	A8 = 230 VAC (50-60 Hz)									
	A9 = 24 VDC (1 Watt)									
	22 mm coil									
	B2 = Mechanical M2, without coil									
.	B4 = 12 VDC									
' I	B5 = 24 VDC									
	B6 = 24 VAC (50-60 Hz)									
	B7 = 110 VAC (50-60 Hz)									
	B8 = 230 VAC (50-60 Hz)									
	B9 = 24 V DC (2 Watt) (Atex certification not available)									
	30 mm coil									
	C5 = 24 VDC									
	C6 = 24 VAC (50-60 Hz)									
	C7 = 110 VAC (50-60 Hz)									
	C8 = 230 VAC (50-60 Hz)									
	C9 = 24 V DC (2 Watt) (Atex certification not available)									

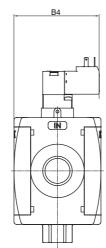
Manual operated version



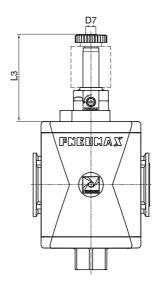


Solenoid operated version (15 mm coil)

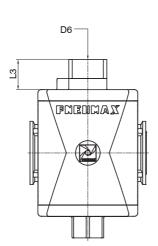




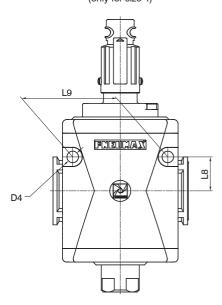
Solenoid operated version (22 / 30 mm coil)



Pneumatic operated version



Fixing holes dimension detail (only for size 4)



											D6 D7 L2	L3	L3	L3	L3						
Model	B1	B2	В3	B4	D1	D2	D3	D4	D5	5 D6 D7 L2 M		Manual	Pneumatic	Solenoid coil 22 or 30mm	Solenoid 15mm coil	L4	L5	L6	L8	L9	
#171	48	21	42	52	G1/8" G1/4" 1/4 NPT	G1/4"	Ch.17	/	6	G1/8"	M5	27,5	55	19	57	37.5	55	11	38.5	/	/
#172	62	28.5	57	59.6	G1/4" G3/8" 3/8 NPT	G3/8"	Ch.20	/	6	G1/8"	M5	34	54.2	22	60	40.3	68	14	48	/	/
#173	73	32.5	65	63.6	G3/8" G1/2" 1/2 NPT	G3/8"	Ch.20	/	6	G1/8"	M5	40	55	19	57	37.4	80	14	54	/	/
#174	99	44	88	75	G1"	G1/2"	Ch.25	8.5	6	G1/8"	M5	52.5	71.5	27	67	45.5	105	22	74.5	25	70

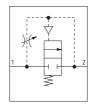
Air service units Series Airplus



Progressive start-up valve (AP - APW)



- ▶ Progressive start-up valve
- ▶ Available in 4 sizes with flow rates up to 15000 NI/min and connections from 1/8" to 1"
- ▶ Suitable for downstream system gradual pressurization
- ▶ Downstream circuit filling time regulated via a built in flow regulator
- ► Full pressure is allowed once the down stream circuit pressure reaches 50% of the inlet pressure
- ▶ Atex certification (II 2GD or II 3GD)



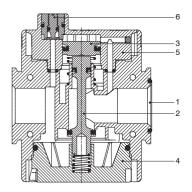
		Technica	l characteristics				
S	ize	Size 1	Size 4				
		/ Aluminium body, integrated aluminium connections (P version)					
Body and connections type		Technopolymer bo	ody, integrated technopolymer conn	nections (T version)	1		
		Techno	oolymer body, metal connections (N	lversion)	/		
	Tversion	G1/4"	G3/8"	G1/2"	not available		
IN / OUT connections	N version	G1/8" - G1/4" - 1/4 NPT	G3/8" - G1/4" - 3/8 NPT	G3/8" - G1/2" - 1/2 NPT	notavallable		
	Pversion	not available	G3/8"	G1/2"	G1"		
		Stand alone					
Assembly configuration				Panel mounted			
Assembly positions			Indif	ferent			
	G1" metal		,	/	35Nm		
	G1/2" metal	,		30Nm			
	G1/4" metal	201	Nm	,			
Max. fittings torque IN / OUT connections	G1/8" metal	15Nm	/	,			
	G3/8" metal	,	25	Nm	/		
	G1/2" technopolymer	,	1	22Nm			
	G1/4" technopolymer	9Nm	/	,			
	G3/8" technopolymer	/	16Nm	7			

Operational characteristics								
Size	Size 1 Size 2 Size 3			Size 4				
Maximum working pressure		13 bar						
Minimum working pressure		2,5	bar					
Working temperature		-5°C	+50°C					
Nominal flow rate at 6 bar with $\Delta p = 1$ (from 1 to 2)	1400 NI/min	2200 NI/min	3600 NI/min	15000 NI/min				
Fully open flow control device maximum flow rate	75 NI/min	200 NI/min 1000 NI/min						

Weights							
Size Size 1 Size 2 Size 3 Size 4							
Technopolymer body version	80 g	150 g	240 g	/			
Aluminium body version	/	235 g	370 g	1100 g			

Materials

Exploded sectioned

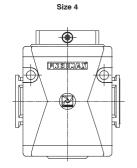


	Progressive start-up valve								
1	Body	Polyamide Die-castaluminium							
2	Drive pin	Aluminium							
3	Piston	Aluminium							
4	Rear end cap	Polyamide / Die-cast aluminium							
5	Central support	Polyamide / Aluminium							
6	Modulating needle	Brass							

Design

Size 1 - Size 2 - Size 3



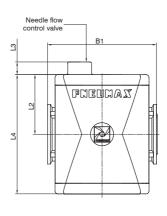


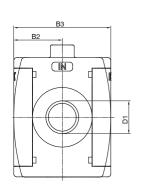
Coding: **V**17**T**AP**F**

	VERSION
•	N = Technopolymer body and metal inserts (not available for size 4)
V	T = Technopolymer body and thread (not available for size 4)
	P = Aluminum body (not available for size 1)
	SIZE AND CONNECTIONS
	1A = Size 1 - G1/8" only for N version
	1B = Size 1 - G1/4" only for T - N versions
	1C = Size 1 - 1/4" NPT only for N version
	2A = Size 2 - G1/4" only for N version
•	2B = Size 2 - G3/8" for all versions
	2C = Size 2 - 3/8" NPT only for N version
	3A = Size 3 - G3/8" only for N version
	3B = Size 3 - G1/2" for all versions
	3C = Size 3 - 1/2" NPT only for N version
	4B = Size 4 - G1" only for P version
	FLOW DIRECTION (ONLY FOR SIZE 4)
(3)	= From left to right
	W = From right to left

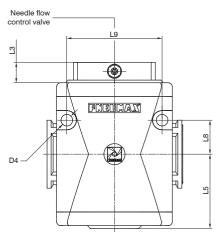
 $\textbf{Example}{:}\,\textbf{T173BAP}{:}\,\textbf{Size}\,3\,progressive\,start\text{-up}\,valve\,G1/2"$

Dimensions





Fixing holes dimension detail (only for size 4)



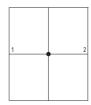
Model	B1	B2	В3	D1	D4	L2	L3	L4	L5	L8	L9
#171	48	21	42	G1/8" G1/4"		27,5	12	55			
#172	62	28.5	57	G1/4" G3/8"	/	34	9.2	68	/	/	/
#173	73	32.5	65	G3/8" G1/2"		40	8.7	80			
#174	99	44	88	G1"	8.5	52.5	13	105	54.5	25	70



Air intake (PA)



- ▶ Pneumatic by-pass
- Available with 2 threaded connections
- ▶ Atex certification (II 2GD or II 3GD)



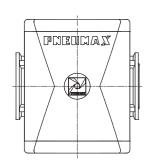
		Technica	l characteristics					
S	ize	Size 1 Size 2 Size 3			Size 4			
		/	/ Aluminium body, integrated aluminium connections (P version)					
Body and connections type		Technopolymer bo	ody, integrated technopolymer conn	ections (T version)	,			
		Techno	oolymer body, metal connections (N	version)	/			
	Tversion	G1/4"	G3/8"	G1/2"	not available			
IN/OUT/INTAKE connections	N version	G1/8" - G1/4" - 1/4 NPT	G3/8" - G1/4" - 3/8 NPT	G3/8" - G1/2" - 1/2 NPT	not available			
Connections	Pversion	not available	G3/8"	G1/2"	G1"			
A		Stand alone						
Assembly configuration			Panel mounted					
Assembly positions		Indifferent						
	G1" metal		,	/	35Nm			
	G1/2" metal	,		30Nm				
	G1/4" metal	201	Nm	,				
Max. fittings torque IN / OUT / INTAKE connections	G1/8" metal	15Nm	/	/				
	G3/8" metal	1	25	Nm	/			
	G1/2" technopolymer	,	1	22Nm	1			
	G1/4" technopolymer	9Nm	/	,				
	G3/8" technopolymer	/	16Nm	7				

Operational characteristics							
Size	Size 1	Size 4					
Maximum working pressure		20 bar					
Working town areture		-					
Working temperature		-30°C +80°C (only for P version)					

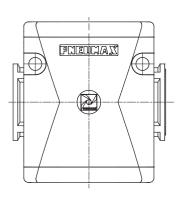
Weights							
Size	Size 1	Size 2	Size 3	Size 4			
Technopolymer body version	52 g	95,5 g	151 g	/			
Aluminium body version	/	248 g	370 g	720 g			

Design

Size 1 - Size 2 - Size 3



Size 4



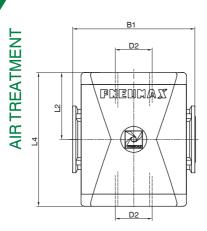


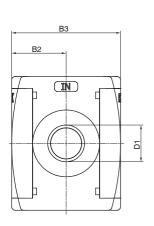
Coding: **171**PA

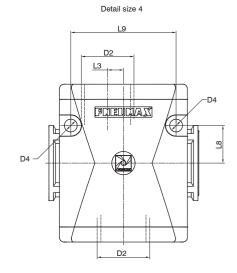
	VERSION				
	N = Technopolymer body and metal inserts (not available for size 4)				
	T = Technopolymer body and thread (not available for size 4)				
	P = Aluminum body (not available for size 1)				
	SIZE AND CONNECTIONS				
	1A = Size 1 - G1/8" only for N version				
	1B = Size 1 - G1/4" only for T - N versions				
	1C = Size 1 - 1/4" NPT only for N version				
	2A = Size 2 - G1/4" only for N version				
Ū	2B = Size 2 - G3/8" for all versions				
	2C = Size 2 - 3/8" NPT only for N version				
	3A = Size 3 - G3/8" only for N version				
	3B = Size 3 - G1/2" for all versions				
	3C = Size 3 - 1/2" NPT only for N version				
	4B = Size 4 - G1" only for P version				

Example: T173BPA: Size 3 air intake G1/2"

Dimensions







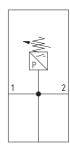
Model	B1	B2	B3	D1	D2	D4	L2	L3	L4	L8	L9
#171	48	21	42	G1, G1, 1/4 N	/4"		27,5		55		
#172	62	28.5	57	G3, G1, 3/81	/4"	/	34	/	68	/	/
#173	73	32.5	65	G3 G1, 1/21	/2"		40		80		
#174	99	44	88	G ⁻	1"	8.5	52.5	10.5	105	25	70



Pressure switch (PP)



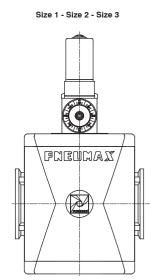
- ▶ 2 to 10 bar adjustable pressure switch with electrical connection
- ► The electrical connection is made by mean of a 15 mm connector (DIN 43650 type C)
- ► The microswitch contact could be normally closed or open (change overswitch)

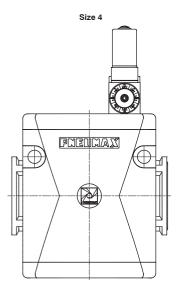


		Technica	l characteristics					
S	ize	Size 1	Size 2	Size 3	Size 4			
		/	/ Aluminium body, integrated aluminium connections (P version)					
Body and connections type		Technopolymer bo	ody, integrated technopolymer conn	ections (T version)	,			
		Technop	oolymer body, metal connections (N	version)	/			
	Tversion	G1/4"	G3/8"	G1/2"	not available			
IN/OUT/INTAKE connections	N version	G1/8" - G1/4" - 1/4" NPT	G3/8" - G1/4" - 3/8" NPT	G3/8" - G1/2" - 1/2" NPT	not available			
Connections	Pversion	notavailable	G3/8"	G1/2"	G1"			
Assembly configuration		Stand alone						
Assembly configuration			Panel mounted					
Assembly positions		Indifferent						
Microswitch capacity		1A						
Microswitch maximum tensior	1	250 VAC						
Microswitch IP Rating		IP65 (with mounted connector)						
	G1" metal	,		/	35Nm			
	G1/2" metal	/		30Nm				
	G1/4" metal	201	Nm	,				
Max. fittings torque IN / OUT / INTAKE connections	G1/8" metal	15Nm	/	7				
	G3/8" metal	,	25	Nm	/			
	G1/2" technopolymer	/	-	22Nm				
	G1/4" technopolymer	9Nm	/	,				
	G3/8" technopolymer	/	16Nm	7				

Operational characteristics									
Size	Size 1	Size 1 Size 2 Size 3 Size 4							
Maximum working pressure		131	bar						
Working temperature		-5°C+50°C							
Operating pressure range		2 - 10) bar						

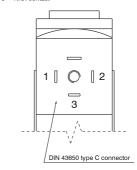
Weights									
Size	Size 1	Size 2	Size 3	Size 4					
Technopolymer body version	138 g	179 g	235 g	/					
Aluminium body version	/	330 g	780 g	800 g					





Electrical connection

- 1 = neutral 2 = N.C. contact 3 = N.O. contact

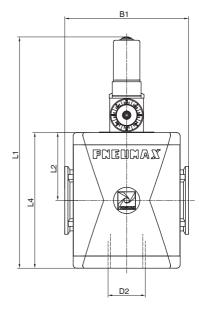


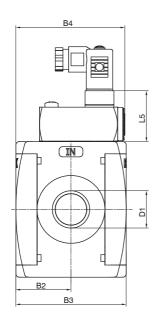
Coding: **V**17**1**PP**G**

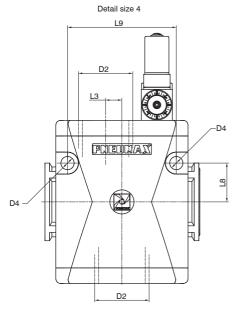
	VERSION						
•	N = Technopolymer body and metal inserts (not available for size 4)						
•	T = Technopolymer body and thread (not available for size 4)						
	P = Aluminum body (not available for size 1)						
	SIZE AND CONNECTIONS						
	1A = Size 1 - G1/8" only for N version						
	1B = Size 1 - G1/4" only for T - N versions						
	1C = Size 1 - 1/4" NPT only for N version						
	2A = Size 2 - G1/4" only for N version						
0	2B = Size 2 - G3/8" for all versions						
	2C = Size 2 - 3/8" NPT only for N version						
	3A = Size 3 - G3/8" only for N version						
	3B = Size 3 - G1/2" for all versions						
	3C = Size 3 - 1/2" NPT only for N version						
	4B = Size 4 - G1" only for P version						
	FLOW DIRECTION (ONLY FOR SIZE 4)						
(3	= From left to right						
	W = From right to left						

Example: T173BPP: Size 3 pressure switch G1/2"

Dimensions







Model	B1	B2	В3	D1	D2	D4	L1	L2	L3	L4	L5	L8	L9
#171	48	21	42	G1	/8" I/4" NPT		114.7	27,5		55	32.7		
#172	62	28.5	57	G1	8/8" 1/4" NPT	/	125	34	/	68		/	/
#173	73	32.5	65	G1	8/8" 1/2" NPT		137	40		80	30		
#174	99	44	88	G	i1"	8.5	162	52.5	10.5	105]	25	70

Air intake with pressure gauge or digital pressure switch integrated (PM-PW-PP-PZ)



P#





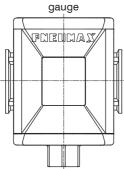
- Available with pressure gauge or digital pressure switch integrated
- Air intake connection device available
- ▶ Material and version wide selection
- Available in 4 sizes with connections from 1/8" to 1"
- ► Atex certification (II 2GD or II 3GD) for Integrated pressure gauge version

		Technic	al characteristics					
S	ize	Size 1	Size 4					
		/	/ Aluminium body, integrated aluminium connections (
Body and connections type		Technopolymer body, integrated technopolymer connections (T version)			1			
		Techno	ppolymer body, metal connections (N	Version)	/			
	Tversion	G1/4"	G3/8"	G1/2"	not available			
IN / OUT connections	Nversion	G1/8" - G1/4" - 1/4" NPT	G3/8" - G1/4" - 3/8" NPT	G3/8" - G1/2" - 1/2" NPT	not available			
	Pversion	not available	G3/8"	G1/2"	G1"			
Air intake connection		G1/4"	G3/8"	G3/8"	G1"			
A		Stand alone						
Assembly configuration			Panel mounted					
Assembly positions		Indifferent						
Pressure measurement		Integrated pressure gauge						
Pressure measurement		Digital pressure switch						
	G1" metal		1	/	35Nm			
	G1/2" metal		/	30Nm				
	G1/4" metal	20)Nm	,				
Max. fittings torque IN / OUT	G1/8" metal	15Nm	/	/				
connections	G3/8" metal	,	25	5Nm	/			
	G1/2" technopolymer	/	,	22Nm				
	G1/4" technopolymer	9Nm	7	,				
	G3/8" technonolymer	/	16Nm	7				

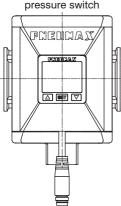
	Operational characteristics								
Size	Size 1	Size 2	Size 3	Size 4					
Maximum working pressure		13	bar						
Working to magazety we with integrated processing going	-5°C +50 °C								
Working temperature with integrated pressure gauge	/ -30°C +80°C (only with metal body)								
Working temperature with digital pressure switch	0°C +50°C								

Weights							
Size	Size 1	Size 2	Size 3	Size 4			
Technopolymer body and integrated gauge	83 g	161 g	249 g	/			
Working temperature with digital pressure switch	111 g	189 g	277 g	/			
Technopolymer body version with Integrated pressure gauge	/	245 g	373 g	770 g			
Technopolymer body version with integrated digital pressure switch	/	273 g	401 g	787 g			

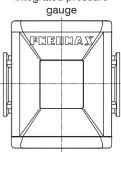
Size 1 - Size 2 - Size 3 Technopolymer body and integrated pressure



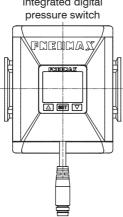
Size 1 - Size 2 - Size 3 Technopolymer body and integrated digital pressure switch



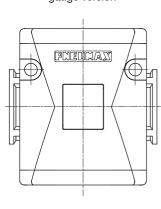
Size 2 - Size 3 Aluminium body and integrated pressure



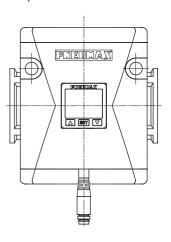
Size 2 - Size 3 Aluminium body and integrated digital pressure switch



Size 4 Integrated pressure gauge version



Size 4 Integrated digital pressure switch version



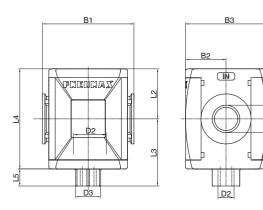
	VERSION						
	N = Technopolymer body and metal inserts (not available for size 4)						
V	T = Technopolymer body and thread (not available for size 4)						
	P = Aluminum body (not available for size 1)						
	SIZE AND CONNECTIONS						
	1A = Size 1 - G1/8" only for N version						
	1B = Size 1 - G1/4" only for T - N versions						
	1C = Size 1 - 1/4" NPT only for N version						
	2A = Size 2 - G1/4" only for N version						
Û	2B = Size 2 - G3/8" for all versions						
	2C = Size 2 - 3/8" NPT only for N version						
	3A = Size 3 - G3/8" only for N version						
	3B = Size 3 - G1/2" for all versions						
	3C = Size 3 - 1/2" NPT only for N version						
	4B = Size 4 - G1" only for P version						

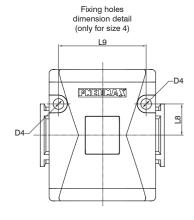
	PRESSURE MEASUREMENT OPTIONS
	M = Integrated pressure gauge
① 1	W = Integrated pressure gauge Right - Left
	P = Digital pressure switch
	Z = Digital pressure switch Right - Left
	DIGITAL PRESSURE SWITCH OPTIONS
	A = Cable 150 mm + M8 PNP
⊙ ²	B = Cable 150 mm + M8 NPN
	C = Cable 2 m PNP
	D = Cable 2 m NPN

Example: T173BPPA: Digital pressure switch with cable 150 mm + M8 PNP, size 3 G1/2"

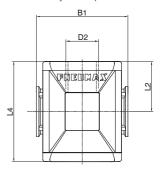
Dimensions - Integrated pressure gauge version

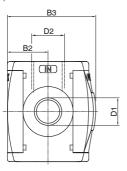
Technopolymer body version





Aluminum body version (Size 2 - Size 3 - Size 4)

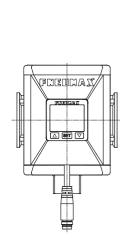


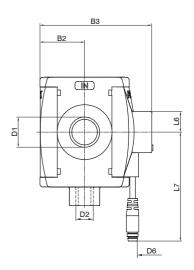


Model	B1	B2	Вз	D1	D2	D3	D4	L2	L3	L4	L5	L8	L9
#171	48	21	48,5	G1/8" G1/4" 1/4 NPT	G1/4"	Ch. 17	1	27,5	38,5	55	11	/	/
#172	62	28,5	62,5	G1/4" G3/8" 3/8" NPT	G3/8"	Ch. 20	1	34	48	68	14	/	/
#173	73	32,5	70,5	G3/8" G1/2" 1/2 NPT	G3/8"	Ch. 20	1	40	54	80	14	/	/
#174	99	44	90,5	G1"	G1"	/	8,5	52,5	52.5	105	/	25	70

5

Variable dimensions - Digital pressure switch version





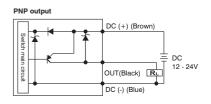
Model	B2	В3	D1	D2		D6 - Type of digital pressure switch			gital pressure itch
					A-B	C-D		A - B	C-D
#171	21	60	G1/8" G1/4" 1/4 NPT	G1/4"					
#172	28,5	73,5	G1/4" G3/8" 3/8" NPT	G3/8"	M8 - 3 PIN	3 x 0,129 mm, Ø 4 mm	15	150	2000
#173	32,5	81,5	G3/8" G1/2" 1/2 NPT	G3/8"					
#174	44	101,5	G1"	G1/2"	1				

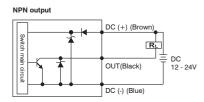
Digital pressure switch



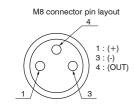
- ▶ 3 color digital LCD display, easy readout
- ▶ 4 units of measurement for pressure indication
- ▶ Optional PNP or NPN digital output
- ▶ N.O. and N.C. output contact selection directly on the digital pressure switch
- Available with M8-3PIN connector or 3 wire cable length 2 m

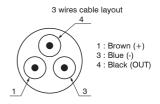
Output circuit wiring diagrams





Digital pressure switch layout





Cable ordering code

MCH1: cable 3 wires I=2,5m with M8 connector MCH2: cable 3 wires I=5m with M8 connector MCH3: cable 3 wires I=10m with M8 connector



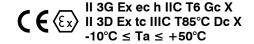
Technical characteristics							
Pressure range and display	0 10 bar						
Max. inlet pressure	15 bar						
Fluid	40 μ m filtered and dehumidified air						
Display unit of measurement	MPa - kgf/cm² - bar - psi						
Supplyvoltage	12 24 VDC						
Current consumption	≤40mA (without load)						
Digital output type	PNP - NPN						
Type of contact output	Normally Open - Normally Closed						
Max. load current	125 mA						
Digital output activation mode	single threshold with fixed hysteresis - window with fixed hysteresis - window without hysteresis						
Digital output activation time	0.05s - 0.25s - 0.5s - 1s - 2s - 3s (selections for chattering-proof options)						
Display characteristics	Double 3 1/2 digit display Digital output status indication Three-pushbuttons touchpad						
Indicator accuracy	≤±2% full scale value ± 1 digit						
Protection degree	IP40						
Working temperature	0 °C 50 °C						
Cable section	3 x 0.129 mm². Ø4 mm. PVC						



Supply and discharge valves SAFELINE



- ▶ Interruption of supply and unloading of the downstream pneumatic circuit
- ▶ Single version classified in CATEGORY 1, suitable for use in safety circuits up to
- ▶ Double version classified in CATEGORY 4, suitable for use in safety circuits up to PI = e
- ► Compliance with the ATEX Directive and the Machinery Directive
- ▶ Solenoid valves with marking:



Upon implementation of the size 3 AIRPLUS series air treatment units, Pneumax develops a supply and discharge valve, with an electropneumatic control and spring-return, fitted with a diagnostic system regarding the state of the valve, with the possibility of creating a double channel to determine the system's redundancy.

The version with one single channel emphasises the features of an S.V. 3/2 NC, monostable with electropneumatic control and spring-return, which operation involves:

- condition of the valve at rest, with a de-energised coil; port 1 (air supply) is not connected to port 2 (downstream air circuit). port 2 is discharged through port 3;
- condition of the valve activated, with an energised coil; port 1 (air supply) is connected to port 2 (downstream air circuit), with port 3 (discharge) closed. By de-energising the coil, the system resets the condition of valve at rest by means of the return spring, which repositions the spool. Once again port 2 (downstream air circuit), is discharged via port 3.

The state of the valve is constantly monitored by a diagnostic system, using a Hall effect sensor, which reads the position of the spool and consequently takes note of the valve's position.

The sensor is in the ON state when the valve is at rest (de-energised coil), while it is in the OFF state when the valve is activated (energised coil).

The sensor is in the OFF state under conditions of an activated valve (de-energised coil), indicating a possible problem.

The version with a double redundant channel is made using two single solenoid valves 3/2 NC provided with diagnostics, mounted in series so that the port 2 of the first solenoid valve is linked to the port 1 of the second solenoid valve.

It is sufficient that only one of the S.V. is de-energised to guarantee the discharge of the air circuit.

If one of the two S.V. remained blocked due to a malfunction, the other one ensures the discharge function of the pneumatic installation. Even in this case, the diagnostic system of both solenoid valves constantly monitors the state of the 2 single S.V.

Construction characteristics	
Body	Aluminium
Solenoid Operator	Technopolymer
Rear end cap	Aluminium
Spool	Aluminium
Spoolseals	Polyurethane
Piston	Aluminium
Spring	EN 10270-1 DH steel
Electrical Interface	Male M12 5P TYPE A connector

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working temperature	-10°C +50°C
Minimum working pressure	2,5 bar
Maximum working pressure	10 bar

Instructions for installation and use

Undertake the installation respecting the safety requirements with regards to the system and components for hydraulic and pneumatic transmissions. Install the device as close as possible to the point of use. Its assembly is possible in any position. Pay attention to the flow direction, indicated on the main body with the labels IN and OUT. During the components discharge, high levels of noise occur.

The use of a silencer on the discharge port is recommended. Ensure there is sufficient space for assembly during the installation process. Please ensure that the discharge area is always clear, and in case a silencer is used, periodically verify that it is not obstructed.

It is possible to integrate and install the device in an existing AIRPLUS group or in a new installation, or else to use the device individually attaching it by aligning the assembled unit with the relevant fastening flange for the supply and discharge valve, or to use the device individually attaching it by aligning the assembled unit with the type "Y" fastening flange for the double supply and discharge valve



WARNING!

Pay particular attention to external factors such as the nearness of live wires, magnetic fields, metallic objects providing magnetic conduction very close to the device, which may influence and disturb the diagnostic system.



WARNING!

The electrical connection must be made exclusively by specialized personnel, using components that have no voltage present. Only use power supplies which can guarantee a safe electrical isolation of the working voltage in accordance to IEC/EN 60204-1. Additionally, observe the requirements anticipated by the PELV circuits in accordance to IEC/EN 60204-1.

Care and maintenance



WARNING!

Do not connect or disconnect the device when energised! Do not open and/or disassemble the parts that are included in the energised valve. Once the power supply is disconnected, wait for a few minutes before opening or disassembling parts of the valve that result in its disassembly.

Before carrying out any operation, it is essential to remove the pneumatic and power supply to the device and wait for the residual pressure to be completely discharged.

Please ensure that the discharge is always clear, and in case a silencer is used, periodically verify that it is not obstructed.

Periodically remove any dust deposits from the valve using a damp cloth.

Use soapy water to clean the device.

Do not use corrosive or alcohol-based products.

For maintenance operations on internal components, please consult with PNEUMAX SPA.



Supply and discharge valve single (VS)

Technical characteristics	
Connections	G1/2" UNI-ISO 228/1
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Function	3/2 N.C. monostable
Minimum working pressure	2,5 bar
Maximum working pressure	10 bar
Working temperature	-10°C +50°C
Flow rate at 6bar Δp (from 1 to 2)	3500 NI/min
Flow rate at 6bar Δp (from 2 to 3)	2000 NI/min
Flow rate at 6bar (from 2 to 3) with free discharge	3800 NI/min
Type of installation	Stand alone
Assembly positions	Indifferent
Noise level	90 dB
Response time ON ISO 12238	36 ms
Response time OFF ISO 12238	76 ms
Protection degree	IP65 (with mounted connector)

Electrical characteristics	
Electrical connection	Male M125P TYPE A connector
Coil Features	24 V DC, 1 W
Suppressor diode for coil reverse voltage spike	Present
Supply voltage allowance	-5% +10%

Electrical characteristics of sensor	
Sensor characteristics	10 30 V DC
Operating principle	Hall effect
Contacttype	N.O.
Output type	PNP
Permanent maximum current	100 mA
Permanent maximum power	3W
Voltage drop max.	2 V

Safety characteristics	
Regulatory compliance	ENISO 13849
Safety function fulfiled	Interruption of supply and unloading of the downstream pneumatic circuit
Performance Level (PL)	Up to c
EN ISO 13849 category	up to 1
Safety Integrity Level (SIL) EN 62061	up to 1
B10d	7.000.000 cycles
	Directive 2006/42/EC
CE marking	Directive 2014/34/EU
	Directive 2011/65/EU

Reliability and lifetime of pneumatic valves assessed in accordance with ISO 19973-2: Pneumatic fluid power – Assessment of component reliability by testing – Part 2: Directional control valves.

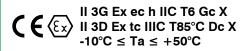
Electrical connection



PIN	Description
1	+ 24 V DC (Sensor)
2	+ 24 V DC (EV)
3	0 V DC (EV)
4	SENSOR OUTPUT
5	0 V DC (Sensor)



Certifications available



CODING: P173BVS

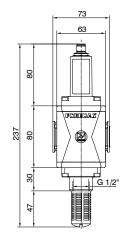
		VERSIONS
		= Standard
	V	M = Integrated pressure gauge
		W = Integrated pressure gauge (Right-Left)
		G = G1/8" pressure gauge connection
	•	FIXING
		= Without fixing
		01 = Fixing bracket mounted (Left-Right)
		02 = Fixing bracket mounted (Right-Left)

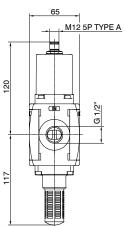
Example: P173BVSM01

Size 3 single safety valve G1/2", Built-in pressure gauge and fixing bracket mounted (Left-Right)

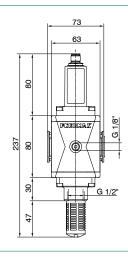
Dimensions

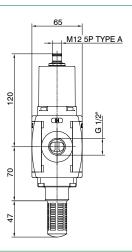




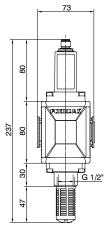


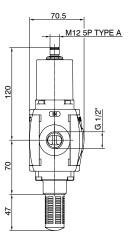


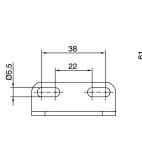


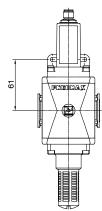


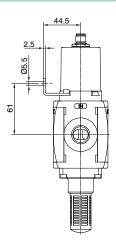












Air service units **Series Airplus**

Supply and discharge valve double (V2S)

Technical characteristics	
Connections	G1/2" UNI-ISO 228/1
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Function	3/2 N.C. monostable
Minimum working pressure	2,5 bar
Maximum working pressure	10 bar
Working temperature	-10°C +50°C
Flow rate at 6bar Δp (from 1 to 2)	2500 NI/min
Flow rate at 6bar Δp (from 2 to 3)	2000 NI/min
Flow rate at 6bar (from 2 to 3) with free discharge	3800 NI/min
Type of installation	Stand alone
Assembly positions	Indifferent
Noise level	90 dB
Response time ON ISO 12238	68 ms
Response time OFF ISO 12238	79 ms
Protection degree	IP65 (with mounted connector)

Electrical characteristics	
Electrical connection	2 Male M12 5P TYPE A connectors
Coil Features	24 V DC, 1 W + 1 W
Suppressor diode for coil reverse voltage spike	Present
Supply voltage allowance	-5% +10%

Electrical characteristics of sensor	
Sensor characteristics	10 30 V DC
Operating principle	Hall effect
Contacttype	N.O.
Output type	PNP
Permanent maximum current	100 mA + 100 mA
Permanent maximum power	3 W + 3 W
Voltage drop max.	2V+2V

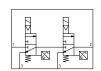
Safety characteristics	
Regulatory compliance	ENISO 13849
Safety function fulfiled	Interruption of supply and unloading of the downstream pneumatic circuit
Performance Level (PL)	up to e
EN ISO 13849 category	up to 4
Safety Integrity Level (SIL) EN 62061	Up to 3
B10d	7.000.000 cycles
	Directive 2006/42/EC
CE marking	Directive 2014/34/EU
	Directive 2011/65/EU

Reliability and lifetime of pneumatic valves assessed in accordance with ISO 19973-2: Pneumatic fluid power – Assessment of component reliability by testing – Part 2: Directional control valves.

Electrical connection



PIN	Description
1	+ 24 V DC (Sensor)
2	+ 24 V DC (EV)
3	0 V DC (EV)
4	SENSOR OUTPUT
5	OVDC (Songor)



Certifications available

CODING: P173BV2S

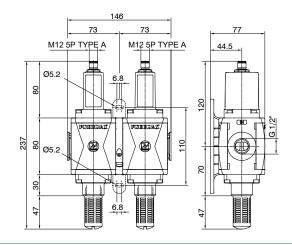
	VERSIONS
Ø	= Standard
•	M = Integrated pressure gauge
	G = G1/8" pressure gauge connection
	FIXING
	X = Flange X
3	Y = Flange Y
	K = Aluminium flange Y
	Z = Aluminium flange X
	FLOW RATE DIRECTION
O	= Standard (Left-Right)
	W = (Right-Left)

Example:P173BV2SMK

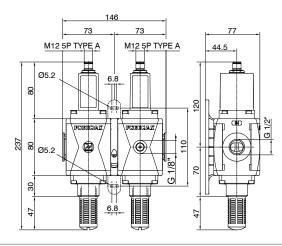
Size 3 double safety valve G1/2", built-in pressure gauge and Y aluminum flange

Dimensions

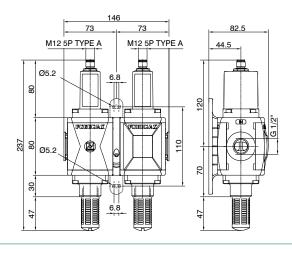










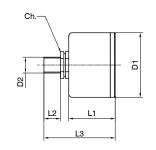


Pressure gauge









CODING:	1707	70 09
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_		
		VERSION
	Ø	A = Dial Ø40
		B = Dial Ø50
		SCALE
	8	A = 0 - 4 bar
	0	B = 0 - 6 bar
		C = 0 - 12 bar
_		

Model	D1	D2	Lt	L2	L3	Ch
17070A	41	Gc - 1/8"	26	10	44	14
17070B	49	Gc - 1/8"	27	10	45	14

Regulatory Framework

The purpose of the Machinery Directive is to define the health and safety requirements in the framework of designing and constructing machinery.

Since 2009, the new Machinery Directive has become effective in the European Union.

Member countries of the EU are required to implement this standard.

The manufacturers of machinery can comply with the Machinery Directive applying the harmonised standards listed in the Official Journal of the European Union.

The design and manufacture of safety controls are developed in compliance with one of the two important harmonised standards:

EN ISO 13849
Safety of machinery
Safety-related parts of control systems
Part 1: General design principles

EN 62061
Safety of machinery
Functional safety of electrical, electronic and programmable
control systems regarding safety

The EN ISO 13849 standard is one of the most important harmonised standards, which has been widely used; it is intended to provide a guide to principles for design and integration of safety-related parts of the control system.

Each safety-related control system must be designed and constructed in accordance with the principles of ISO 12100 and ISO 14121 by which the possible risks are considered and assessed, in view of the intended uses and the reasonably anticipated incorrect uses.

The parts of a machinery's control system are called "Safety-related parts of control systems". Their capacity to perform a safety function under predictable conditions is assigned by means of five possible levels called "performance levels" (PL). These levels are defined in terms of probability of dangerous malfunction per hour.

PL - Performance Level	Average probability of dangerous malfunction per hour (1/h)
а	≥ 10 ⁻⁵ up to < 10 ⁻⁴
b	≥ 3 x 10 ⁹ up to < 10 ⁴
С	$\geq 10^{-6} \text{ up to} < 3 \text{x} 10^{-6}$
d	≥ 10 ⁻⁷ up to < 10 ⁶
е	$\geq 10^{-8} \text{ up to} < 10^{-10}$

The calculated PL must be greater or equal to the necessary value, which arises from the calculation of the risk correlated to one single function and to the need to reduce it to an acceptable level.

Calculated risk assessment						
	F1 - Occasional danger and brief exposure	P1 - possibly avoidable danger	-			
S1 - Slight danger	F1 - Occasional danger and brief exposure	P2 - largely unavoidable danger	PL= a PL= b			
S1 - Slight danger	F2 - Frequent danger and long exposure	P1 - possibly avoidable danger	1 = 5			
	F2 - Frequent danger and long exposure	P2 - largely unavoidable danger				
	F1 - Occasional danger and brief exposure	P1 - possibly avoidable danger	PL= c			
CO. Cariava dangar	F1 - Occasional danger and brief exposure	P2 - largely unavoidable danger	PL= d			
S2 - Serious danger	F0. F	P1 - possibly avoidable danger				
	F2 - Frequent danger and long exposure	P2 - largely unavoidable danger	PL= e			

Manifold unit





- ► Modular system
- ▶ Compact and linear design
- Maximum flexibility and reliability
- ▶ Up to 10 items assembly with unlimited configuration
- ▶ Plug-n-play connection thru couplig flanges
- ▶ Maintenance possible without completely disassembling the group
- ▶ Integral safety elements in assembled group
- ▶ Material and version wide selection
- ► Available in 4 sizes with connections from 1/8" to 1"
- ▶ Atex certification (II 2GD or II 3GD)

		Operational c	haracteristics						
	Size	Size 1	Size 2	Size 3	Size 4				
Maximum working pressure *			10 bar / 13 bar	/ 16 bar / 20 bar					
Minimum working pressure *			0,5 bar	/ 2,5 bar					
Working temperature *			-5 °C +50 °C / -30 °C	+80 °C /-40 °C +80 °C					
	Tversion	G1/4"	G3/8"	G1/2"	not available				
IN/OUT connections	Nversion	G1/8" - G1/4" - 1/4" NPT	G3/8" - G1/4" - 3/8" NPT	G3/8" - G1/2" - 1/2" NPT	notavallable				
	P and L versions	not available	G3/8" - 1/4" NPT	G1/2" - 1/2" NPT	G1" - 1" NPT				
Assembly configuration			Stand alone						
		Panel mounted thru fixing elements							
Assembly positions			Vertical $\pm 5^\circ$ with no restriction in case of elements without bowl						
	G1" metal		1	/	35Nm				
	G1/2" metal		/	30Nm					
	G1/4" metal	20	Nm	,					
Max. fittings torque IN / OUT	G1/8" metal	15Nm	/	/					
connections	G3/8" metal	,	25	Nm	/				
	G1/2" technopolymer	/	,	22Nm					
	G1/4" technopolymer	9Nm	/	,					
	G3/8" technopolymer	/	16Nm	/					
NA ("")			G1/8" metal: 15Nm						
Max. fittings torque G1/8" press	ure gauge connection		G1/8" techno	polymer: 4 Nm					



^{*} Module configuration shall be identified according to individual technical details of each items included in applicable manifold.

Manifold assembly

The assembly operation of selected items (module) is carried out thru dedicated quick connection flanges. Both aluminum and techno polymer materials selection available, with fixing holes in case of panel mounting configuration. Due to its design, Pneumax connection flanges allow user-friendly maintenance activities with no need of entire manifold disassembling procedure.



Thanks to a wide range of modules with different functions and characteristics, together with a wide choice of materials selection, make the Pneumax AIRPLUS air treatment units a robust, reliable and extremely flexible modular system, adaptable to different applications.

AIRPLUS units properly assembled are modular with unlimited configurations and solutions and capable to satisfy and fulfill all their functions of compressed air treatment. Pneumax Airplus air treatment units can be integrated with safety elements that comply with EN-ISO 13849-1 and CE marking according to EU Machinery Directive, Annex V. Simple instruction provides an easy manifold configuration.

Configuration instructions

Manifold configuration as per following instructions.

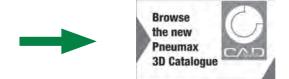
As a result, a dedicated code will be provided, and the two main parameters will be identified, as follow:

- Features applicable to all items included in manifold (i.e. version, size, connection, flow direction).
- Assembly sequence of the single item + coupling flanges.

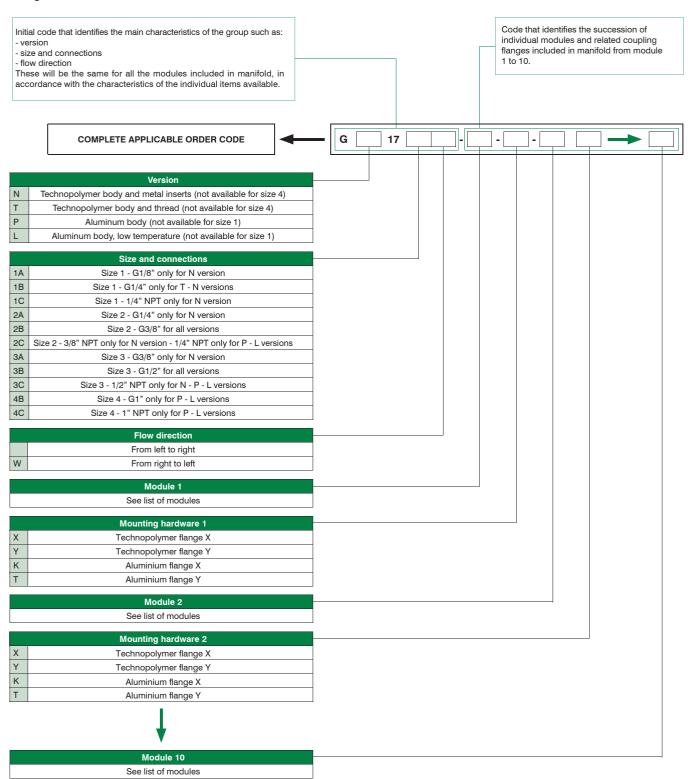
Note: Max 10 items for each manifold.

The group can be configured by consulting the Pneumax catalog

http://pneumax.partcommunity.com/3d-cad-models/ also reachable through a special link available on the home page of the Pneumax website

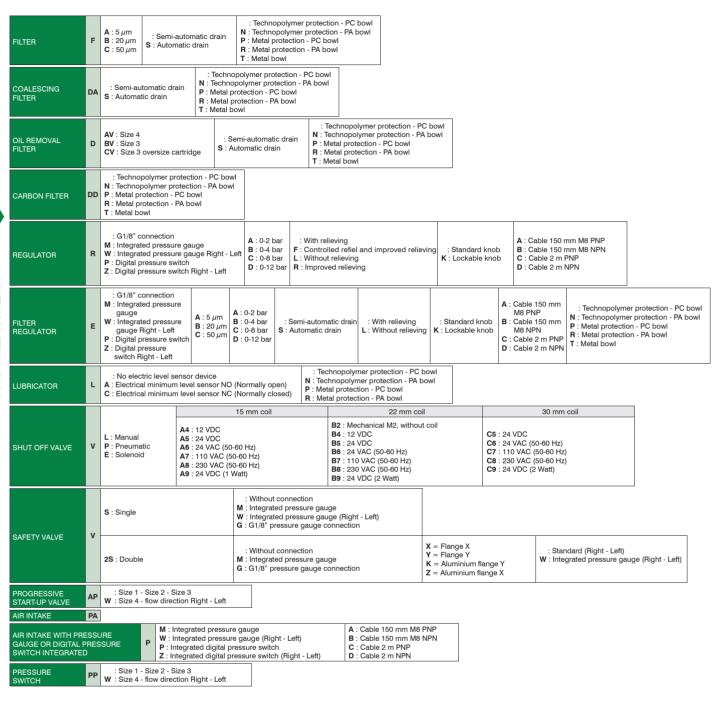


Coding

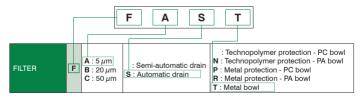


List of modules

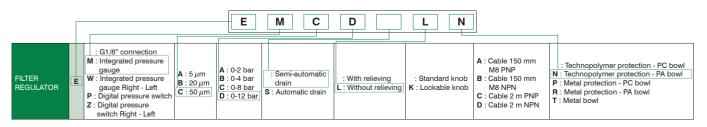
Below the list of modules available for assembly of the manifold



Examples of module identification: 5 μ m filter, automatic drain, metal bowl is identified as: **F A S T**



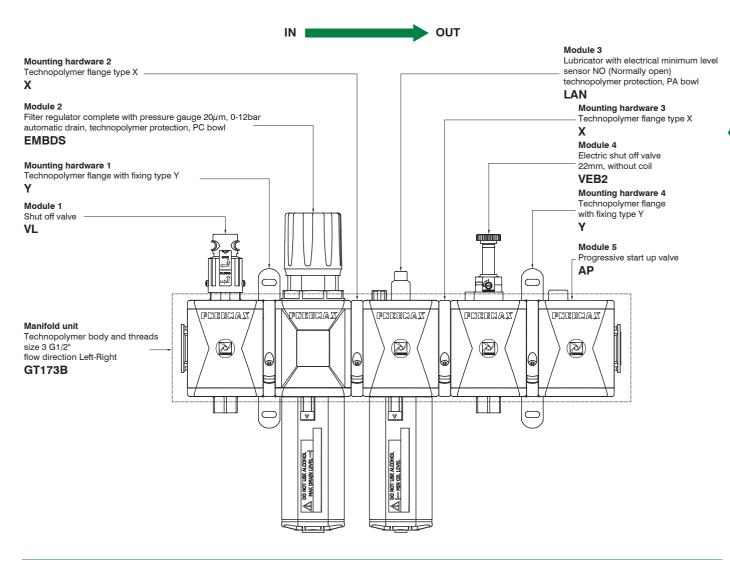
- Filter regulator with pressure gauge 50 μ m, 0-12 bar semi-automatic drain, without relieving, technopolymer bowl protection, PA bowl, is identified as: **E M C D L N**



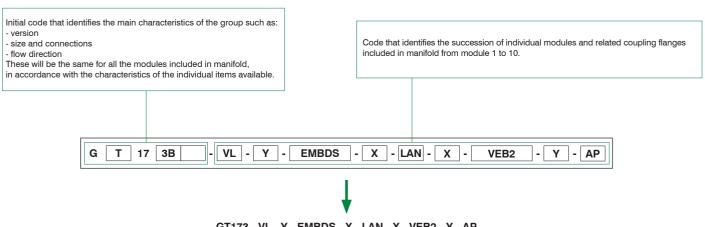
AIRPLUS assembled groups configuration

Configuration example of a Size 3, G1/2" technopolymer group SX - DX composed of:

- Shut off valve
- Filter regulator, 20µm, 0-12bar, automatic drain
- Lubricator with electrical minimum level sensor NO
- Electric shut off valve, 22mm, without coil
- Progressive start-up valve



Applicable order code:



GT173 - VL - Y - EMBDS - X - LAN - X - VEB2 - Y - AP

Quick coupling flanges

Pneumax AIRPLUS quick coupling flanges series are made of technopolymer or die-cast aluminium and allow for rapid module interconnection as well as wall mounting of the assembly. Due to its design, Pneumax connection flanges allow user-friendly maintenance activities with no need of entire manifold disassembling procedure.

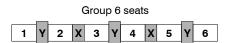
Two types of flanges are available: X type flange for assembling the modules together, and Y type flange suitable for panel mounted also.

Here below some indications related to flanges positioning according to the number of seats.



Group 3 seats

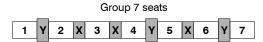
1 Y 2 Y 3

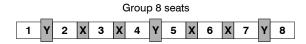


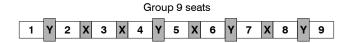
Y: Y type flange (Aluminium or technopolymer)

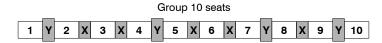
X: X type flange (Aluminium or technopolymer)

1 ... 10: AIRPLUS modules





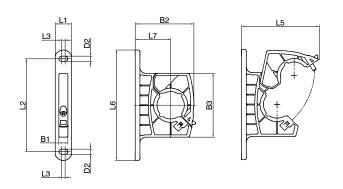




Technopolymer flanges

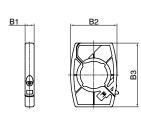
Flange Y

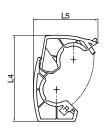




Flange X





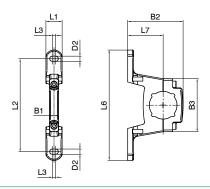


Model	B1	B2	В3	D2	L1	L2	L3	L4	L5	L6	L7
T171Y	7.0	50,5	55	Ø 4,5	14	80	3	/	66	95	30,5
T171X	7,8	40	55	/	/	/	/	74,5	55,5	/	/
T172Y	9,7	67,6	68	Ø 5,2	18	95	6,8	/	86,5	117,9	40,5
T172X	9,7	53,6	00	/	/	/	/	96,5	72,5	/	/
T173Y	9.7	75,5	80	Ø 5,2	18	110	6,8	/	98,3	133	44,5
T173X	9,7	62	80	/	/	/	/	112,8	85	/	/
T174Y	40.7	106,5	405	Ø 8,5	25	148	6,5	/	133,5	175	64
T174X	13,7	85	105	/	/	/	/	153,5	112	/	/

Aluminium flanges

Flange Y

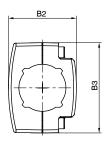




Flange X







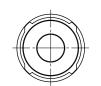
Model	B1	B2	В3	D2	L1	L2	L3	L6	L7
N171Y	7,8	47,7	45,7	Ø 4,5	14	80	3	95	30,5
N171X	7,0	34,4	45,7	/	/	/	/	/	/
N172Y	0.7	64,6	55.0	Ø 5,2	18	95	6,8	117,9	40,5
N172X	9,7	55,6	55,6	/	/	/	/	/	/
N173Y	9,7	75,5	56	Ø 5,2	18	110	6,8	133	44,5
N173X	9,7	62	50	/	/	/	/	/	/
N174Y	13,7	106,5	102	Ø 8,5	25	148	6,5	175	64
N174X	13,7	85	102	/	/	/	/	/	/

Size adapters



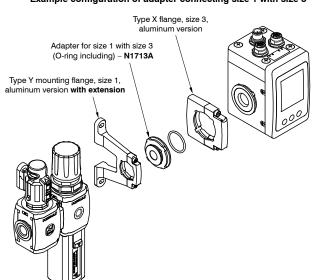




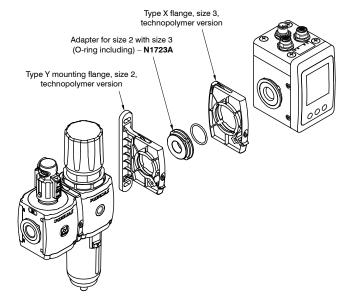


Model	Fits	B1	D1	D2
N1713A	Size 1 → Size 3	9	25.9	39.9
N1723A	Size 2 → Size 3	9.5	32.9	39.9

Example configuration of adapter connecting size 1 with size 3



Example configuration of adapter connecting size 2 with size 3



Panel mounted pressure regulators (RP)





- ▶ Diaphragm pressure regulator with relieving
- Aluminium body version
- ▶ High flow rates with low pressure drops
- ► Available with 1/8" and 1/4" connections
- ▶ Low hysteresis rolling diaphragm and balanced spool
- Available in four pressure ranges up to 12 bar
- ▶ Fitted with panel mounting locking ring
- ▶ Atex certification Atex II 2GD

Note

For installations where a more accurate and constant pressure is required, the unit should be installed as close as possible to the point of use.

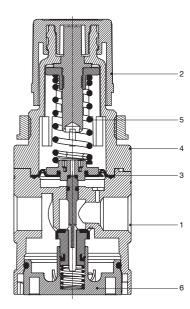


	Technical characteristics					
Size	Size 1					
Body and connections type	Aluminium body version					
IN/OUT connections	G1/8" - G1/4"					
Assembly configuration	Stand alone					
Assembly configuration	Panel mounted					
Assembly configuration	With fixing bracket					
Assembly positions	Indifferent					
	0-2 bar					
Drace ve vene	0-4 bar					
Pressure range	0-8 bar					
	0-12 bar					
Regulation	Manul push and lock with pressure					
Pressure measurement	G1/8" pressure gauge connection port					
Max. fittings torque IN / OUT connections	G1/8" metal: 15Nm					
max. httings torque in / OOT connections	G1/4" metal: 20Nm					
Max.fitting torque pressure gauge connection port	G1/8" metal: 15Nm					

	Operational characteristics						
Size Size 1							
Maximum working pressure	13 bar						
Minimum working pressure	0,5 bar						
Working temperature	-10 °C +50 °C						

	Weights
Size	Size 1
Aluminium body version	130 g

Materials Exploded sectioned



	Panel mounted pressure regulator									
1	Body	Die-cast aluminium								
2	Adjusting knob	Polyamide								
3	Diaphragm	NBR								
4	Adjustment support	Polyamide								
5	Adjusting spring	Steel								
6	Rear end cap	Polyamide								

Design

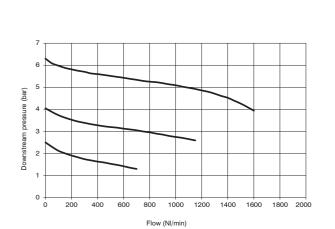


Coding: $RP17 \bigcirc B \bigcirc O^1 \bigcirc O^2$

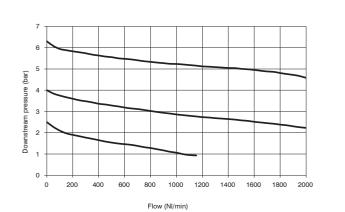
3			
	SIZE AND CONNECTIONS		KNOB COLOUR
0	1A = Size 1 - G1/8"	•	V = Green knob (RAL6032)
	1B = Size 1 - G1/4"		G = Grey knob (RAL7004)
	PRESSURE RANGE		KNOB OPTIONS
	A = 0 - 2 bar	⊚ ²	= Non-lockable version
R	B = 0 - 4 bar		K = Lockable version
1A = : 1B = PRES A = 0 C = 0 D = 0 RELIE A = W F = C C = 0	C = 0 - 8 bar		U = Lockable version with universal key
	D =0 - 12 bar		
	RELIEVING OPTIONS		
A 1	A =With reliving		
•	F = Controlled refiel and improved relieving		
	L =Without relieving		

 $\label{thm:continuous} \textbf{Table example RP171ABAAV}: Size 1~G1/8" \ Panel mounted pressure regulator, 0 - 2 bar, with relieving and green knob.$

Flow rate curves

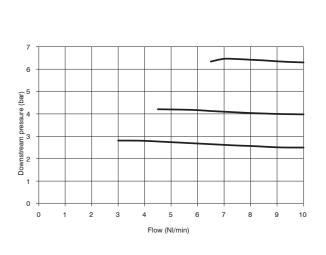


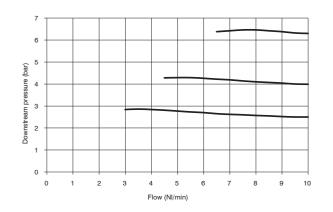
G1/8" 0-8 bar P1 = 7 bar



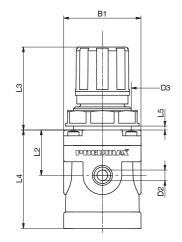
G1/4" 0-8 bar P1= 7 bar

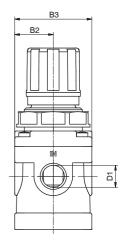
Adjustment characteristic





Dimensions





Model	B1	B2	В3	D1	D2	D3	L2	L3	L4	L5
RP171A	40	20	40	G1/8"	G1/8"	M30x1,5	23.5	43	51	4 max
RP171B	40	20	40	G1/4"	G1/8"	M30x1,5	23.5	43	51	4 max

Panel mounted pressure regulator with pressure gauge built into the adjusting knob (RP)





- ▶ Diaphragm pressure regulator with relieving
- ▶ Aluminium body version
- ▶ High flow rates with low pressure drops
- ▶ Available with G1/8" and G1/4" connections
- ▶ Low hysteresis rolling diaphragm and balanced spool
- Available in four pressure ranges up to 12 bar
- ▶ Fitted with panel mounting locking ring
- ▶ Atex certification Atex II 2GD
- ▶ Ø 24,5 pressure gauge built into adjusting knob
- ► Pressure gauge with 4 mounting positions relative to IN connection (0°-90°-180°-270°)
- ► Class 4 pressure gauge (±4% full scale)



Note

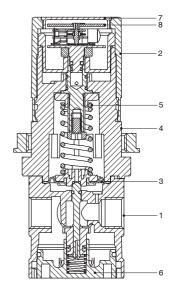
For installations where a more accurate and constant pressure is required, the unit should be installed as close as possible to the point of use.

	Technical characteristics				
Size	Size 1				
Body and connections type	Aluminium body version				
IN / OUT connections	G1/8" - G1/4"				
	Stand alone				
Assembly configuration	Panel mounted				
	With fixing bracket				
Assembly positions	Indifferent				
Parassur 2222	0-2 bar				
	0-4 bar				
Pressure range	0-8 bar				
	0-12 bar				
Regulation	Manul push and lock with pressure				
Pressure measurement	Pressure gauge built into knob				
Max. fittings torque IN / OUT connections	G1/8" metal: 15Nm				
Max. Intings torque IN / OOT connections	G1/4" metal: 20Nm				
Max.fitting torque pressure gauge connection port	G1/8" metal: 15Nm				

Operational characteristics					
Size	Size 1				
Maximum working pressure	13 bar				
Minimum working pressure	0,5 bar				
Working temperature	-10 °C +50 °C				

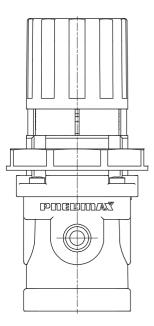
	Weights
Size	Size 1
Aluminium body version	190 a

Exploded sectioned



	Panel mounted pressure regulator								
1	Body	Die-cast aluminium							
2	Adjusting knob	Polyamide							
3	Diaphragm	NBR							
4	Adjustment support	Polyamide							
5	Adjusting spring	Steel							
6	Rear end cap	Polyamide							
7	Lens	Polycarbonate							
8	Pressure gauge	Brass/ABS							

Design

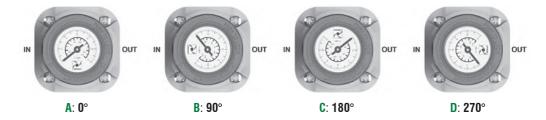


Coding: RP17**©**BM**®©**¹**©**²**©**³

	CONNECTIONS	ĺ
•	1A = G1/8"	
	1B = G1/4"	ĺ
	PRESSURE RANGE	ĺ
	A =0 - 2 bar	
®	B = 0 - 4 bar	ĺ
	C = 0 - 8 bar	
	D =0 - 12 bar	ĺ
	RELIEVING OPTIONS	ĺ
⊚ ¹	A =With reliving	ĺ
•	F = Controlled refiel and improved relieving	ĺ
	L =Without relieving	ı
	PRESSURE GAUGE ORIENTATION	ĺ
	$\mathbf{A} = 0^{\circ}$	ĺ
● ²	$B = 90^{\circ}$	ĺ
	C = 180°	ĺ
	D = 270°	ĺ

KNOB OPTIONS V = Green knob (RAL6032) G = Grey knob (RAL7004)

Pressure gauge orientation



Example: RP171ABMAAV Panel mounted pressure regulator with pressure gauge G1/8", 0 - 2 bar, pressure gauge orientation at 0°, with relieving and green knob.

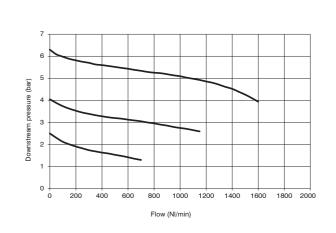


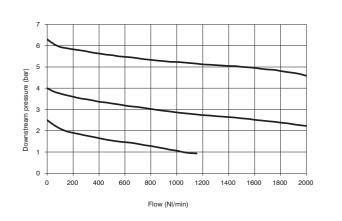
Characteristic curves

Flow rate curves

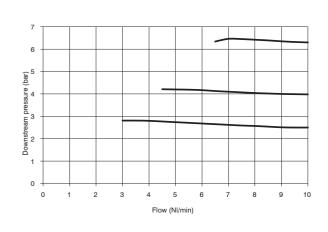
G1/8" 0-8 bar P1= 7 bar

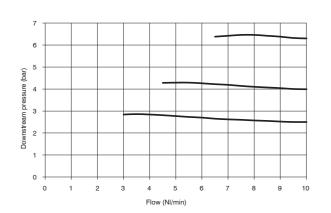




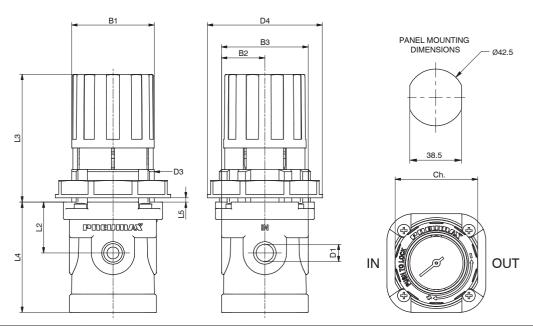


Adjustment characteristic





Dimensions

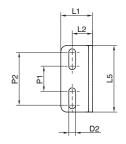


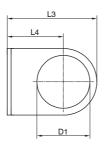
Model	B1	B2	В3	D1	D2	D3	D4	L2	L3	L4	L5	СН
RP171ABM	38	20	40	G1/8"	G1/8"	M42x1,5	53	23.5	59	51	4 max	38
RP171BBM	38	20	40	G1/4"	G1/8"	M42x1,5	53	23.5	59	51	4 max	38



Coding: 17150







Model	L1	L2	L3	L4	L5	D1	D2	P1	P2
17150	20	13	50	30	40	30	5,5	20	30

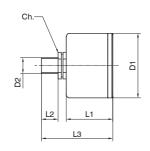
Pressure gauge





	VERSION
V	A = Dial Ø40
	B = Dial Ø50
	SCALE
	A = 0 - 4 bar
8	B = 0 - 6 bar
	C = 0 - 12 bar





Model	D1	D2	L1	L2	L3	Ch
17070A	41	Gc - 1/8"	26	10	44	14
17070B	49	Gc - 1/8"	27	10	45	14

Series 1700

- Modular sistem
- Available for 4 sizes with connections from 1/8" to 1"
- · ATEX certification (II 2GD o II 3GD) on request



Construction and working characteristics

1700 air treatment series includes a wide range of elements for individual use or modular assembling.

Available in 4 sizes e connections from 1/8" to 1".

The bowls are made in zinc alloy body with zinc alloy integrated connections, technopolymer with integrated metal connections for size 1 and aluminium with integrated aluminium connections for sizes 2, 3 and 4.

The bowls are in Nylon, with technopolymer protection for sizes 1, 2, 3 (also available for size 1 without protection). The bowls are in metal with condensation drain display for size 4.

Filters can be equipped with manual or semiautomatic condensation drain; furthermore it's possible to install the automatic draining device inside the bowl.

Wall mounting by means of screws directly through the body and hidden by protective covers.

The pressure regulator handle is lockable in the desired position, the shut-off valves are lockable with a maximum of three pad-locks to prevent accidents or damages due to unauthorized operation.

The lubricator oil flow is adjustable with proper handle and it is visibly checked through the sight dome.

The progressive start-up valve, pneumatically or electropneumatically controlled, allows air supply to the circuit progressively and with adjustable time. The accessories like panel mounted brackets, pressure gauges with different scales and diameters and the air intake blocks are completing the range. They are assembled between the elements to get filtered or filtered non-lubricated air in the system.

Instruction for installation and operation

Pay attention to install a group or a single component with air flow direction according to the arrows and to the following sequence: filter, pressure regulator, lubricator and with bowls downwards. The group can be fixed to the wall by removing the covers, which can be installed again after fixing for covering the screws. Do not exceed the recommended torque while assembling the connectors.

Do not exceed the recommended air pressure and temperature limits. The moisture should not exceed the level marked on the bowl and it can be drawn off and carried by a flexible tube of Ø 6/4 directly connected to the discharge valve handle.

The pressure should be set from minimum to maximum, rotating the adjusting handle clockwise.

As lubricant, we suggest to use oil class FD22 or HG32. Verify that the lubricator is not fed with a flow lower than the minimum operational.

To set the oil flow rotate the proper adjusting handle in order to get one drop of oil every 300-600 liters of air.

The oil flow will be kept automatically and proportionally to the air flow. The oil can be refilled by mean of proper plug or directly into the bowl after having de-pressurized the system. Do not exceed the maximum level indicated on the bowl. For opening the shut-off valve push and rotate clockwise the operating handle. For closing it and consequently discharging the down stream line, rotate the handle counter-clockwise.

Maintenance

Clean the bowls with water and detergent. Do not use alcohol.

The filter element made with HPDE is reusable by blowing and cleaning it with proper detergent. For replacing or cleaning it, remove the bowl and unscrew the baffle spins.

Replace the pressure regulator diaphragm whenever the operation is not correct or there is a continuous air leaking through the relieving (over pressure discharge); reinstall the adjusting mechanism support, locking it with about 8 Nm torque. In case it is necessary to replace the lubricator transparent dome, tight it at 5 Nm torque maximum.

Product overview

		SIZES AND CONNECTIONS				
PRODUCT	BODY MATERIAL	SIZE 1	SIZE 2	SIZE 3	SIZE 4	
	Zinc alloy	G1/8" - G1/4"	/	1	1	
FILTER	Technopolymer	G1/8" - G1/4"	/	/	/	
	Aluminum	/	G1/4" - G3/8"	G3/8" - G1/2" - G 3/4"	G1"	
DYNAMIC DRIER	Aluminum	/	/	/	G1"	
	Zinc alloy	G1/8" - G1/4"	/	/	/	
FILTER REGULATORS	Technopolymer	G1/8" - G1/4"	1	/	/	
	Aluminum		G1/4" - G3/8"	G3/8" - G1/2" - G 3/4"	/	
	Zinc alloy	G1/8" - G1/4"	/	/	/	
REGULATORS	Technopolymer	G1/8" - G1/4"	/	/	/	
	Aluminum		G1/4" - G3/8"	G3/8" - G1/2" - G 3/4"	G1"	
	Zinc alloy	G1/8" - G1/4"	1	/	1	
REGULATORS WITH INTEGRATED PRESSURE GAUGE	Technopolymer	G1/8" - G1/4"	1	/	1	
THEOGOTE WOOLE	Aluminum	1	G1/4" - G3/8"	G3/8" - G1/2"	/	
PRECISION PRESSURE REGULATORS WITH HIGH FLOW RATE RELIEVING	Aluminum	G1/4"		G1/2"	/	
PRECISION PRESSURE REGULATORS WITH PNEUMATIC PILOT	Aluminum	1	1	G1/2"	/	
PRECISION PRESSURE REGULATOR FOR MANIPULATION APPLICATIONS	Aluminum	1	/	G1/2" (IN and OUT) G3/8" (EXH)	/	
PILOTED PRESSURE REGULATORS	Aluminum	1	G1/4" - G3/8"	G3/8" - G1/2"	G1"	
PANEL MOUNTING PRESSURE REGULATOR	Technopolymer	G1/8" - G1/4"	/	/	/	
PRESSURE REGULATORS FOR MANIFOLD	Zinc alloy	G1/8" - G1/4"	/	/	/	
MANIFOLD PRESSURE REGULATORS	Zinc alloy	G1/8" - G1/4"	/	/	/	
	Zinc alloy	G1/8" - G1/4"	/	/	/	
LUBRICATORS	Technopolymer	G1/8" - G1/4"	/	/	/	
	Aluminum	/	G1/4" - G3/8"	G3/8" - G1/2" - G 3/4"	G1"	
	Zinc alloy	G1/4"	/	/	/	
SHUT-OFF VALVE	Technopolymer	G1/4"	/	/	/	
	Aluminum	/	G3/8"	G1/2"	G1"	
	Zinc alloy	G1/4"	/	/	/	
ELECTRIC SHUT-OFF VALVE	Technopolymer	G1/4"	/	/	/	
	Aluminum	/	G3/8"	G1/2"	/	
	Zinc alloy	G1/4"	/	/	/	
PNEUMATIC SHUT-OFF VALVE	Technopolymer	G1/4"	/	/	/	
	Aluminum	/	G3/8"	G1/2"	/	
PROGRESSIVE START-UP VALVE	Aluminum	G1/4"	G3/8"	G1/2"	G1"	
AIR INTAKE	Aluminum	G1/4"	G3/8"	G1/2"	G1"	
AIR INTAKE - "H" PROFILE	Aluminum	G1/4"	G3/8"	G1/2"	/	
PRESSURE SWITCH COMPLETE WITH ADAPTER	Aluminum	G1/8"	G3/8"	G1/2"	Ø36	







- Double filter action: air flow centrifugation and filter element
- Available in 4 sizes with flow rates up to 10000 NI/min and connections from 1/8" to 1"
- Filtering cartridge made of HDPE available in three different filtration grades (5μm, 20μm, 50μm)
- Filter cartridge can be regenerated by washing / blowing it or replaced
- ▶ Bowls screwed to the body (Size 1)
-) Bowl assembly via bayonet type quick coupling mechanism with safety button (Size 2 Size 3 Size 4)
- > Semi-automatic or automatic condensation drain
- Atex certification (II 2GD o II 3GD) on request



Note

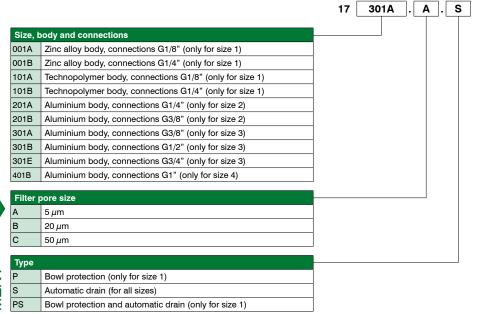
In order to ensure that any fluid discharged by the auto drain assembly is adequately drained away, it is recommended you to use a 6mm fitting and tube

	Technical characteristics						
Size	Size 1	Size 2	Size 3	Size 4			
Body and connections type	Zinc alloy body, Zinc alloy integrated connections Technopolymer body, metal connections	Aluminium body, integrated aluminium connections					
Protection and bowl type		Technopolymer protection - PA bowl (Size 1 available without protection)					
IN / OUT connections	G1/8" - G1/4"	G1/4" - G3/8"	G1"				
Assembly configuration	Stand alone Panel mounted with M4 screws			Stand alone Panel mounted with M8 screws			
Assembly position		Vertic	al ±5°				
Filter pore size (µm)		5 / 20	0 / 50				
Bowl capacity (cm³)	20	30 48		178			
Condensation drain	Semi-automatic Automatic						
Max. fittings torque IN / OUT connections (Nm)	G1/8" metal: 15 G1/4" metal: 20	G1/4" metal: 20 G3/8" metal: 25					

Operational characteristics								
Size	Size 1	Size 2	Size 3	Size 4	Size 1	Size 2	Size 3	Size 4
Condensation drain		Semi-a	utomatic			Auto	matic	
Maximum working pressure (bar)		13				10		
Minimum working pressure (bar)		0,5						
Working temperature (°C)		-5 +50						

	Weights					
Size	Size 1	Size 2	Size 3	Size 4		
Zinc alloy body version (g)	218	/	/	/		
Technopolymer body version (g)	103	/	/	/		
Aluminium body version (g)	/	255	405	1700		

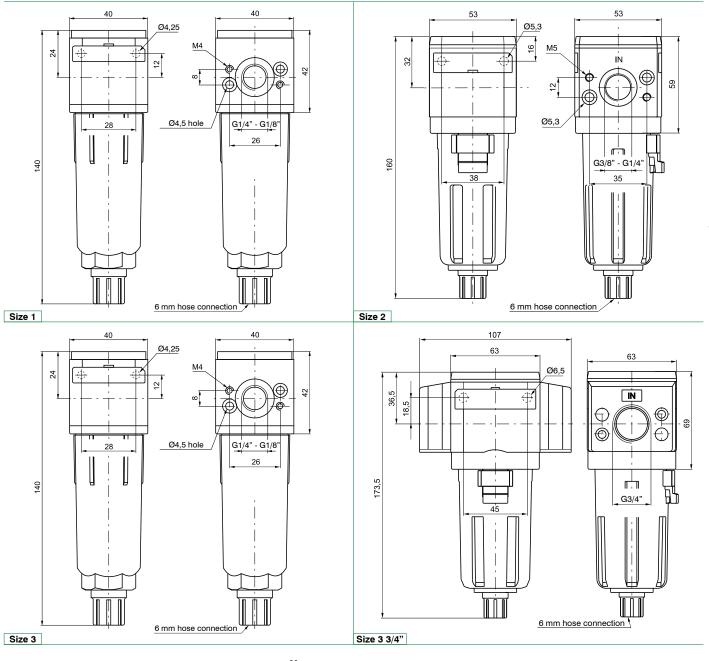
Order codes

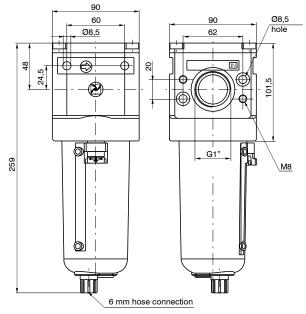


Example: 17301A.A.S

Size 3 filter, aluminium body, G3/8" connections, filter pore size5 μ m, automatic drain

Dimensions





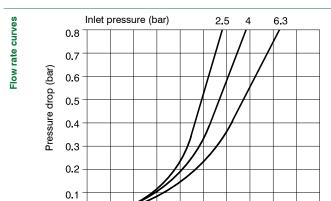
Size 4

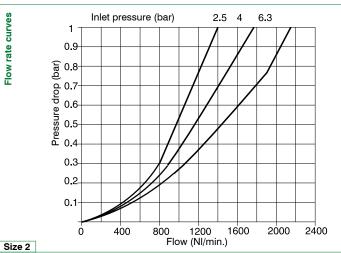
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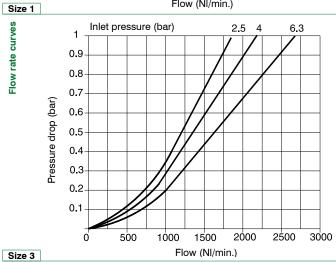
200

Flow rate curves

Size 4







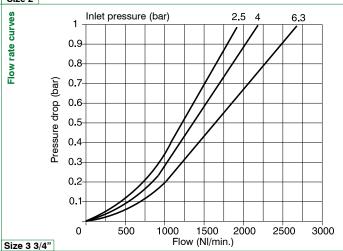
400

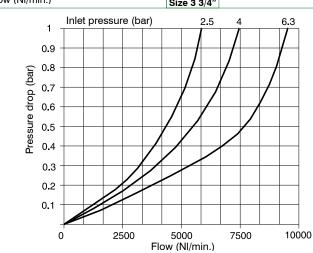
Flow (NI/min.)

600

800

1000





Flow rate curves



Coalescing filters





- Coalescing filter
- Available in 4 sizes with flow rates up to 3000 NI/min and connections from 1/8" to 1"
-) Filtering cartridge with filtration grade of 0,01 μm
- Filtering performances 99.97% (particles up to 0.01 μ m)
- Bowls screwed to the body (Size 1)
-) Bowl assembly via bayonet type quick coupling mechanism with safety button (Size 2 Size 3 Size 4)
- Semi-automatic or automatic drain
- Atex certification (II 2GD o II 3GD) on request



Note

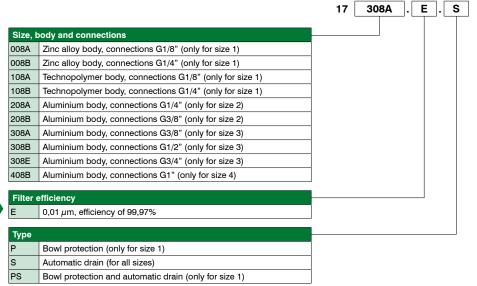
In order to ensure the high level of filtration, it is recommended that a 5μ filter is installed before the coalescing filter. In order to ensure that any fluid discharged by the auto drain assembly is adequately drained away, it is recommended you use a 6mm fitting and tube.

		Technical characteristics					
Size	Size 1	Size 2	Size 3	Size 4			
Body and connections type	Zinc alloy body, Zinc alloy integrated connections Technopolymer body, metal connections	Aluminium body, integrated aluminium connections					
Protection and bowl type		Technopolymer protection - PA bowl (Size 1 available without protection)					
IN / OUT connections	G1/8" - G1/4"	G1/4" - G3/8"	G3/8" - G1/2", G3/4"	G1"			
Assembly configuration	Stand alone Panel mounted with M4 screws			Stand alone Panel mounted with M8 screws			
Assembly position		Vertic	al ±5°				
Filter pore size (µm)		0,01 efficien	cy of 99,97%				
Bowl capacity (cm³)	20	30	48	178			
Condensation drain	Semi-automatic Automatic						
Max. fittings torque IN / OUT connections (Nm)	G1/8" metal: 15 G1/4" metal: 20	G1/4" metal: 20 G3/8" metal: 25 G1/2" metal: 30 G3/8" metal: 25 G3/4" metal: 35		G1"metal: 35			

Operational characteristics								
Size	Size 1	Size 2	Size 3	Size 4	Size 1	Size 2	Size 3	Size 4
Condensation drain		Semi-a	utomatic			Auto	matic	
Maximum working pressure (bar)		13				10		
Minimum working pressure (bar)		0,5						
Working temperature (°C)		-5 +50						

	Weights					
Size	Size 1	Size 2	Size 3	Size 4		
Zinc alloy body version (g)	225	/	/	/		
Technopolymer body version (g)	110	1	/	/		
Aluminium body version (g)	/	255	405	1700		

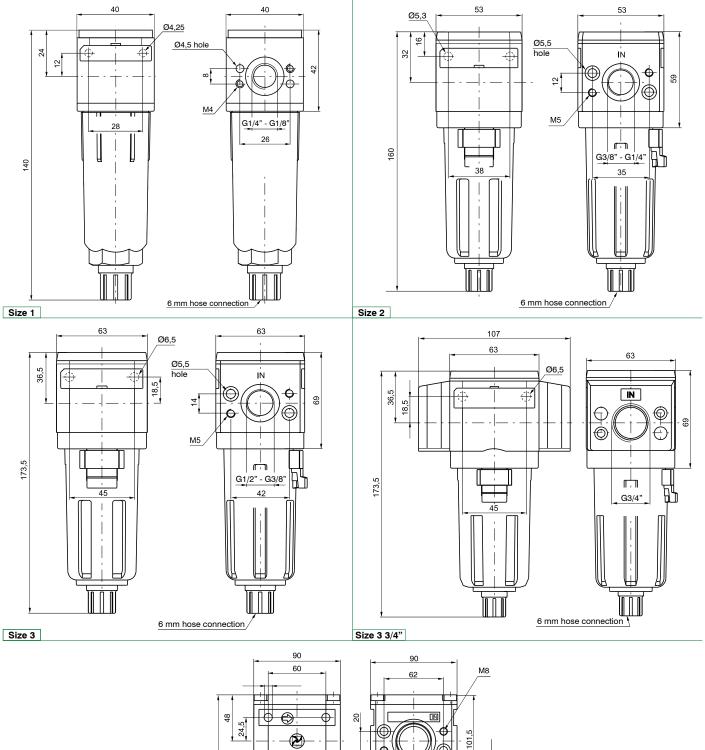
Order codes

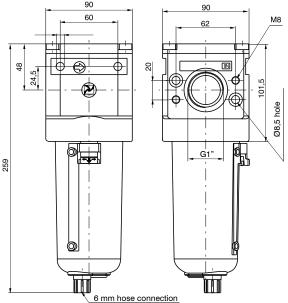


Example: 17308A.E.S

Size 3, coalescing filter, aluminium body, G3/8" connections, filter efficiency of 99,97%, automatic drain

Dimensions





Size 4

Size 4

Dynamic drier



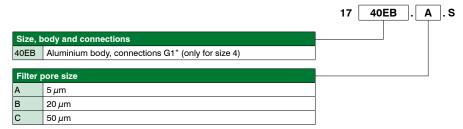
-) Aluminium body
- Wall mounting possibility with M8 screws
-) Filtering cartridge made of HDPE available in three different filtration grades (5 μ m, 20 μ m, 50 μ m)
- Filter cartridge can be regenerated by washing / blowing it or replaced
- With blind metal bowl
-) Bowl assembly via bayonet type quick coupling mechanism with safety button
-) Automatic condensation drain

	Technical characteristics					
Size	Size 4					
Body and connections type	Aluminium body with integrated aluminium connections					
Protection and bowl type	Metal bowl with blind metal bowl					
IN / OUT connections	G1"					
Assembly configuration	Stand alone Panel mounted with M8 screws					
Assembly position	Vertical ±5°					
Filter pore size (µm)	5 / 20 / 50					
Filter efficiency at flow rate 1500 NI/min	96,00%					
Bowl capacity (cm³)	160					
Condensation drain	Automatic					
Max. fittings torque IN / OUT connections (Nm)	G1"metal: 35					

Operational characteristics					
Size	Size 4				
Condensation drain	Automatic				
Maximum working pressure (bar)	13				
Minimum working pressure (bar)	0,5				
Nominal flow rate at 6 bar with Δp=1 (NI/min)	2500				
Working temperature (°C)	-5 +50				

		Weights
	Size	Size 4
Al	luminium body version (g)	1700

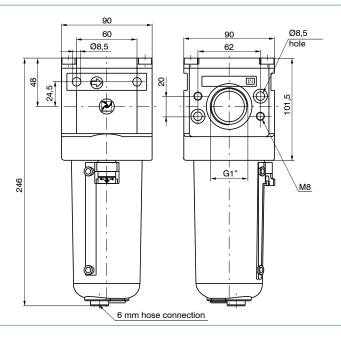
Order codes



Example: 1740EB.A.S

Size 4, dynamic drier, aluminium body, G1" connections, filter pore size 5 $\mu \mathrm{m}$

Dimensions



AIR TREATMENT

Size 4

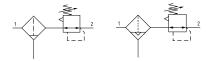


Filter regulators





- Filter diaphragm pressure regulator with relieving
- Available in 3 sizes with flow rates up to 3500 NI/min and connections from 1/8" to 3/4"
 - Low histeresis rolling diaphragm and balanced spool
- Filtering element made of HDPE available in 3 different filtration grades (5μm, 20μm and 50μm)
-) Bowls screwed to the body (Size 1)
-) Bowl assembly via bayonet type quick coupling mechanism with safety button (Size 2 Size 3)
-) Semi-automatic or automatic drain
- Available in four pressure ranges up to 12 bar
- Fitted with panel mounting locking ring
- Atex certification (II 2GD o II 3GD) on request



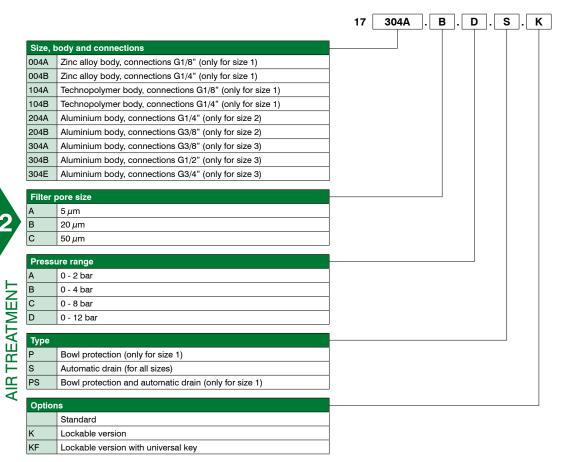
For installations where a more accurate and constant pressure is required, the unit should be installed as close as possible to the point of use. In order to ensure that any fluid discharged by the auto drain assembly is adequately drained away, it is recommended you to use a 6mm fitting and tube.

Technical characteristics					
Size	Size 1	Size 2	Size 3		
Body and connections type	Zinc alloy body, Zinc alloy integrated connections Technopolymer body, metal connections Aluminium body, integrated aluminium connections				
Protection and bowl type	Technopolymer protection - PA bowl (Size 1 available without protection)				
IN / OUT connections	G1/8" - G1/4"	G1/4" - G3/8"	G3/8" - G1/2", G3/4"		
Assembly configuration	Stand alone Panel mounting Panel mounted with M4 screws With fixing bracket	Stand alone Panel mounting Panel mounted with M5 screws With fixing bracket	Stand alone Panel mounting Panel mounted with M6 screws With fixing bracket		
Assembly position	Vertical ±5°				
Filter pore size (µm)	5/20/50				
Pressure range (bar)	0-2/0-4/0-8/0-12				
Bowl capacity (cm³)	20	30	48		
Condensation drain	Semi-automatic Automatic				
Regulation	Manual push and lock with pressure Manual lockable with accessories				
Pressure measurement	G1/8" Pressure gauge connection port				
Max. fittings torque IN / OUT connections (Nm)	G1/8" metal: 15 G1/4" metal: 20	G1/4" metal: 20 G3/8" metal: 25 G1/2" metal: 25 G3/8" metal: 25 G3/4" metal: 35			

Operational characteristics						
Size	Size 1	Size 2 Size 3 Size 1 Size 2 Siz				Size 3
Condensation drain	Semi-automatic			Automatic		
Maximum working pressure (bar)	13			10		
Minimum working pressure (bar)	0,5					
Working temperature (°C)	-5 +50					

Weights					
Size	Size 1	Size 2	Size 3		
Zinc alloy body version (g)	295	/	/		
Technopolymer body version (g)	180	/	/		
Aluminium body version (g)	/	450	645		

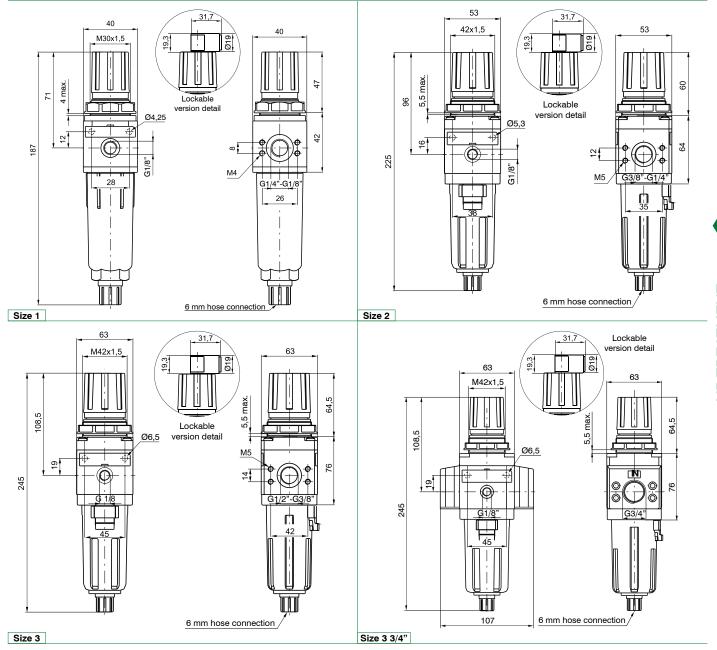
Order codes



Example: 17304A.B.D.S.K

Size 3, filter regulator, aluminium body, G3/8" connections, filter pore size 20 µm 0 - 12 bar, automatic drain lockable version

Dimensions



Size 3

Size 3 3/4"

Inlet pressure (bar)

Inlet pressure (bar)



Regulators





- Diaphragm pressure regulator with relieving
- Available in 4 sizes with flow rates up to 8000 NI/min and connections from 1/8" to 1"
- Low histeresis rolling diaphragm and balanced spool
- Available in four pressure ranges up to 12 bar
- Fitted with panel mounting locking ring
- High flow rate of the discharge valve for the dowstream overpressure (Size 4)
- Atex certification (II 2GD o II 3GD) on request



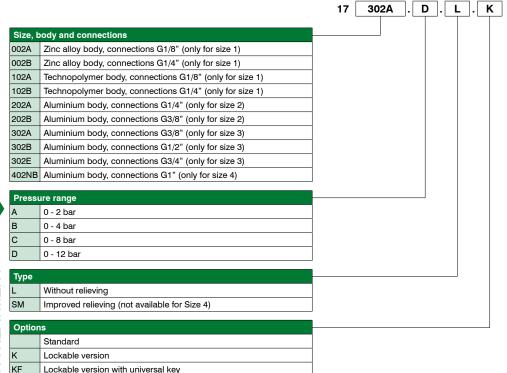
For installations where a more accurate and constant pressure is required, the unit should be installed as close as possible to the point of use.

Technical characteristics					
Size	Size 1	Size 2	Size 3	Size 4	
Body and connections type	Zinc alloy body, Zinc alloy integrated connections Technopolymer body, metal connections	Aluminium body, integrated aluminium connections			
IN / OUT connections	G1/8" - G1/4"	G1/4" - G3/8"	G3/8" - G1/2", G3/4"	G1"	
Assembly configuration	Stand alone Panel mounting Panel mounted with M4 screws With fixing bracket	Stand alone Panel mounting Panel mounted with M5 screws With fixing bracket	Stand alone Panel mounting Panel mounted with M6 screws With fixing bracket	Stand alone Panel mounting Panel mounted with M8 screws	
Assembly position	Indifferent				
Pressure range (bar)	0-2/0-4/0-8/0-12				
Regulation	Manual push and lock with pressure Manual lockable with accessories				
Pressure measurement	G1/8" Pressure gauge connection port				
Max. fittings torque IN / OUT connections (Nm)	G1/8" metal: 15 G1/4" metal: 20	G1/4" metal: 20 G3/8" metal: 25	G3/8" metal: 25 G1/2" metal: 30 G3/4" metal: 35	G1" metal: 35	

Operational characteristics					
Size	Size 1	Size 2	Size 3	Size 4	
Maximum working pressure (bar)	13				
Minimum working pressure (bar)	0,5				
Working temperature (°C)		-5	+50		

Weights					
Size	Size 1	Size 2	Size 3	Size 4	
Zinc alloy body version (g)	250	/	/	/	
Technopolymer body version (g)	135	/	/	/	
Aluminium body version (g)	/	390	550	1900	

Order codes

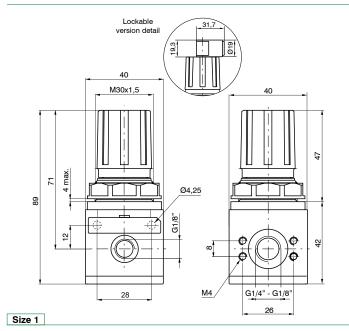


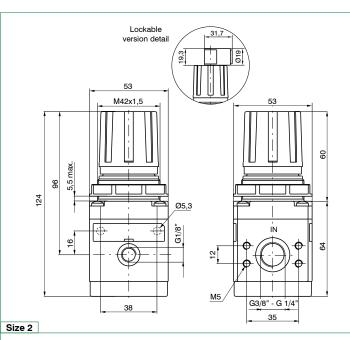
Example: 17302A.D.L.K

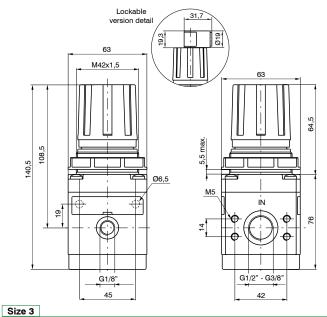
Size 3, regulator, body in light aluminium alloy, G3/8" connections, 0 - 12 bar, without relieving, lockable version

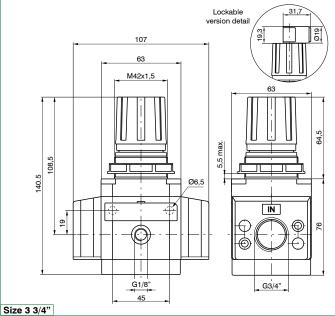
AIR TREATMENT

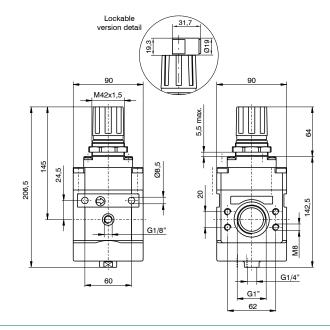
Dimensions

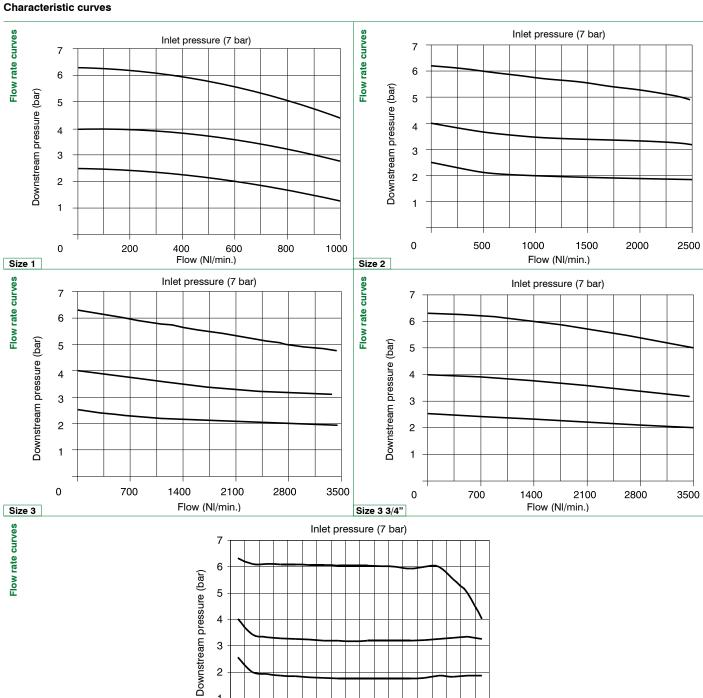












Size 4

0

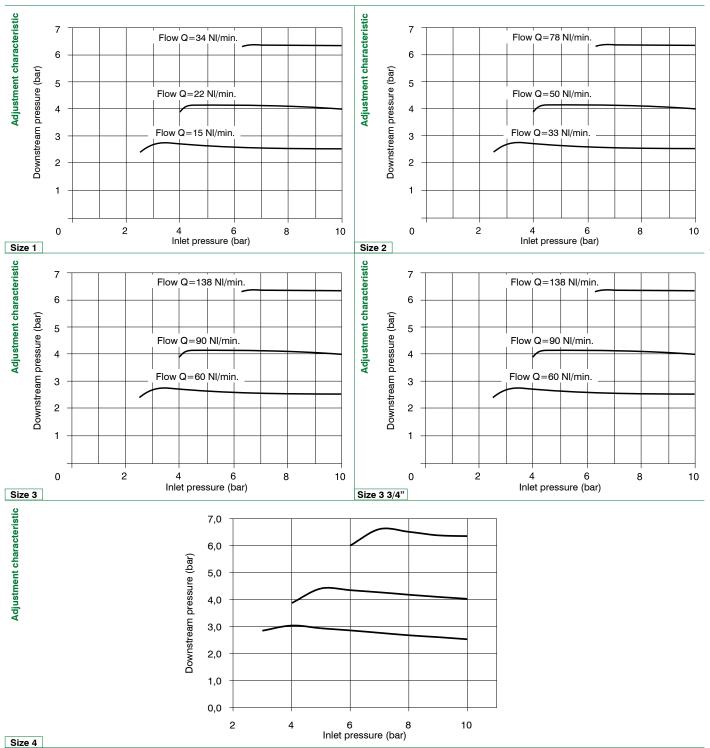
2000

4000

Flow (NI/min.)

6000

8000



Regulators with integrated pressure gauge





-) Diaphragm pressure regulator with relieving
- Available in 4 sizes with flow rates up to 3500 NI/min and connections from 1/8" to 1/2"
- Low histeresis rolling diaphragm and balanced spool
- Available in four pressure ranges up to 12 bar
- Fitted with panel mounting locking ring
- Pressure gauge included on the top of adjusting knob
- Atex certification (II 2GD o II 3GD) on request



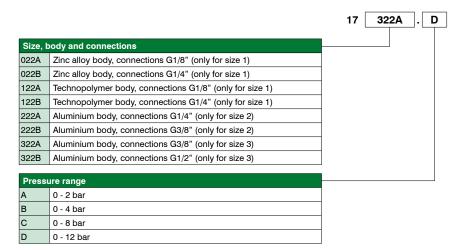
Note

For installations where a more accurate and constant pressure is required, the unit should be installed as close as possible to the point of use.

Technical characteristics				
Size	Size 1	Size 2	Size 3	
Body and connections type	Zinc alloy body, Zinc alloy integrated connections Technopolymer body, metal connections	Aluminium body, integrated aluminium connections		
IN / OUT connections	G1/8" - G1/4"	G1/4" - G3/8"	G3/8" - G1/2"	
Assembly configuration	Stand alone Panel mounting Panel mounted with M4 screws With fixing bracket	Panel mounting Panel mounting Panel mounted with M4 screws Panel mounted with M5 screws		
Assembly position		Indifferent		
Pressure range (bar)		0 - 2 / 0 - 4 / 0 - 8 / 0 - 12		
Regulation	Manual push and lock with pressure			
Pressure measurement	G1/8" Pressure gauge connection port is included on the top of adjusting knob			
Max. fittings torque IN / OUT connections (Nm)	G1/8" metal: 15 G1/4" metal: 20 G3/8" metal: 25 G1/2" metal: 25 G1/2" metal: 35 G1/2" metal: 36 G1/2" metal: 37 G1/2" metal: 3			

Operational characteristics					
Size	Size 1 Size 2 Size 3				
Maximum working pressure (bar)	13				
Minimum working pressure (bar)	0,5				
Working temperature (°C)		-5 +50			

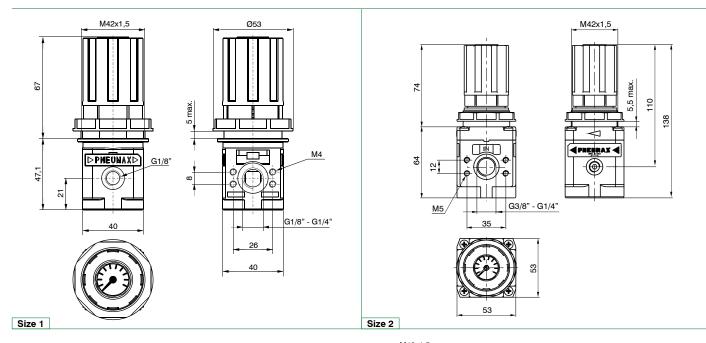
Weights						
Size Size 1 Size 2 Size 3						
Zinc alloy body version (g)	380	/	/			
Technopolymer body version (g)	250	/	/			
Aluminium body version (g)	/	440	600			

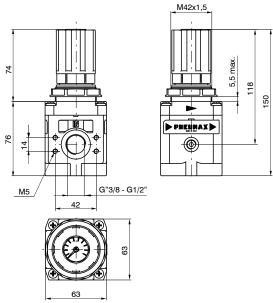


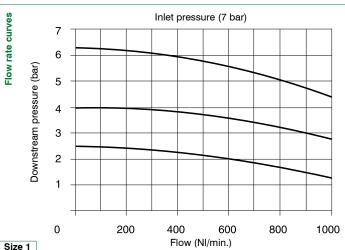
Example: 17322A.D

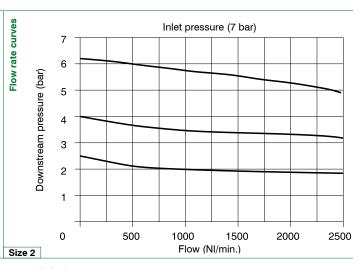
Size 3, regulator with integrated pressure gauge, aluminium body, G3/8" connections, 0 - 12 bar

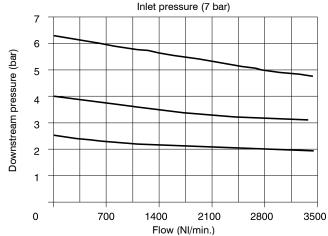
Dimensions

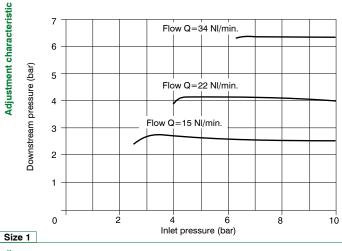


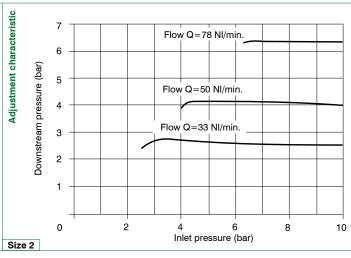




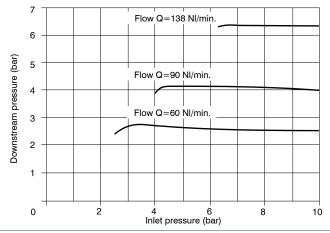














Piloted pressure regulators





- Diaphragm piloted pressure regulator
- Available in 3 sizes with flow rates up to 3500 NI/min and connections from 1/4" a 1"
- Atex certification (II 2GD o II 3GD) on request

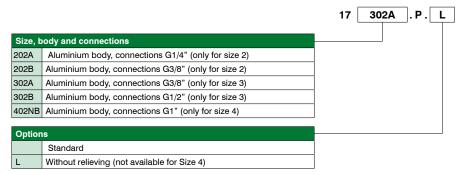


Always regulate the rising pressure.

Technical characteristics					
Size	Size 2	Size 4			
Body and connections type	Aluminium body, integrated aluminium connections				
IN / OUT connections	G1/4" - G3/8"	G1/4" - G3/8" G3/8" - G1/2" G1"			
Assembly configuration	Stand alone Panel mounted with M5 screws	Stand alone Panel mounted with M8 screws			
Assembly position	Indifferent				
Pressure range (bar)	0,510				
Regulation	Pneumatic piloting				
Pressure measurement	G1/8" Pressure gauge connection port				
Max. fittings torque IN / OUT connections (Nm)	G1/4" metal: 20 G3/8" metal: 25 G3/8" metal: 25 G1/2" metal: 30		G1" metal: 35		

Operational characteristics					
Size	Size 2 Size 3 Size 4				
Maximum working pressure (bar)	13				
Minimum working pressure (bar)	0,5				
Pilot pressure range (bar)	0,510				
Working temperature (°C)	-5 +50				

Weights			
Size	Size 2	Size 3	Size 4
Aluminium body version (a)	313	510	1638

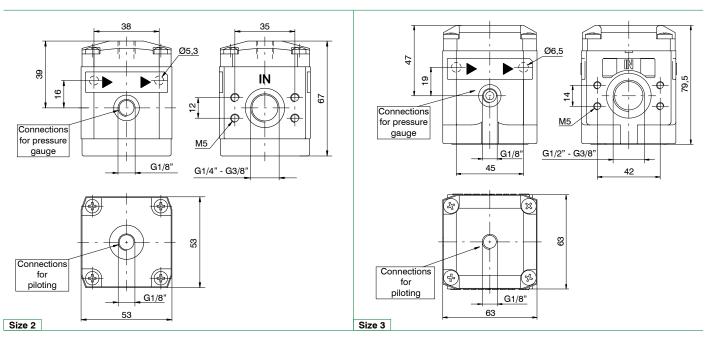


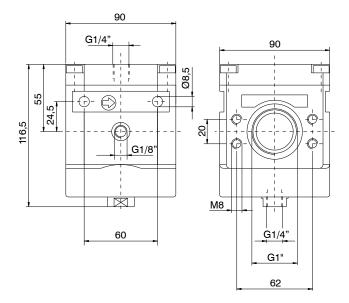
Example: 17302A.P.L

Size 3, piloted pressure regulator, aluminium body, G3/8" connections, without relieving

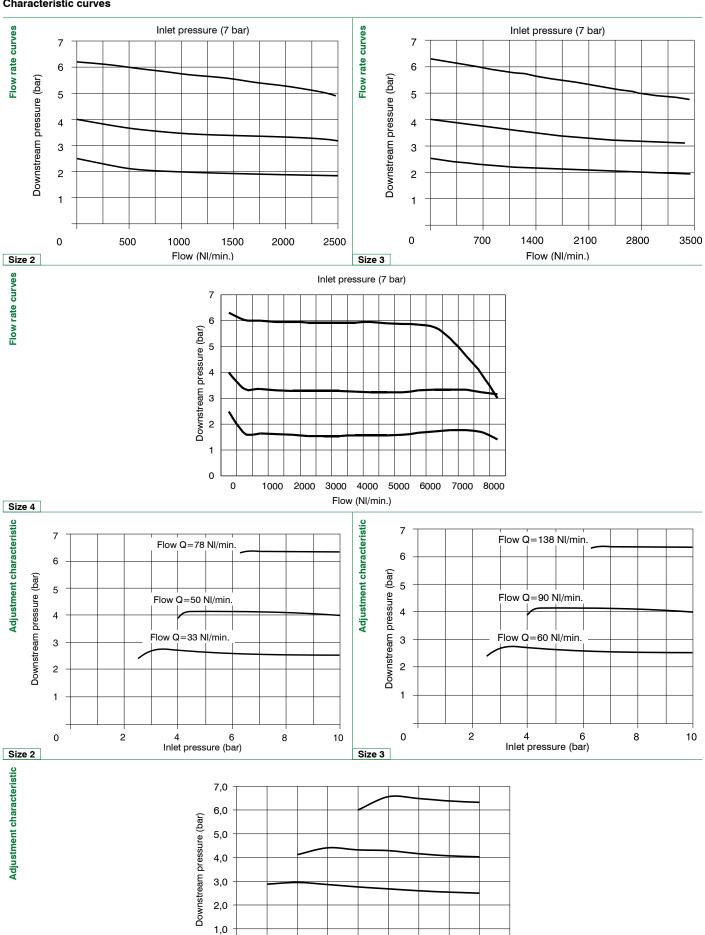
Dimensions

AIR TREATMENT





Characteristic curves



6

Inlet pressure (bar)

8

10

4

0,0 2 

Pressure regulators for manifold





- Diaphragm pressure regulator with relieving.
- Available with 2 front outputs connections G1/8"
- Available in four pressure ranges up to 12 bar
- Ring nut for panel mounting
- Available with integrated pressure gauge on the top of adjusting knob
- Air supply can be applied by both directions (Right or Left)
- Max. 6 off pressure regulators in manifold configuration
- Atex certification (II 2GD) on request

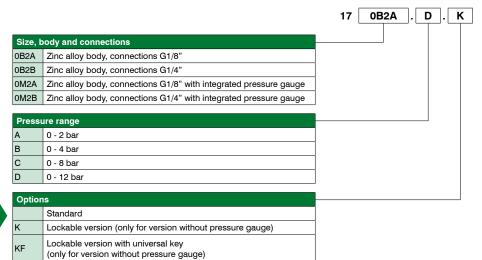


For installations where a more accurate and constant pressure is required, the unit should be installed as close as possible to the point of use.

Technical characteristics				
Size Size 1				
Body and connections type	Zinc alloy body, integrated zinc alloy connections			
IN / OUT connections	G1/8" - G1/4"			
Assembly configuration	Stand alone Panel mounting Panel mounted with M4 screws With fixing bracket			
Assembly position	Indifferent			
Pressure range (bar)	0-2/0-4/0-8/0-12			
Regulation	Manual push and lock with pressure Manual lockable with accessories (only for version without pressure gauge)			
Pressure measurement	Integrated pressure gauge on the top of adjusting knob (optional)			
Max. fittings torque IN / OUT connections (Nm)	G1/8" metal: 15 G1/4" metal: 20			

Operational characteristics			
Size	Size 1		
Maximum working pressure (bar)	13		
Minimum working pressure (bar)	0,5		
Working temperature (°C)	-5 +50		

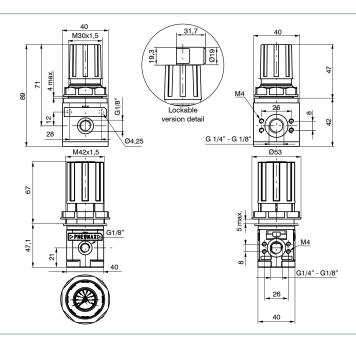
	Weights		
Size Size			
	Zinc alloy body version (g)	380	



Example: 170B2A.D.K

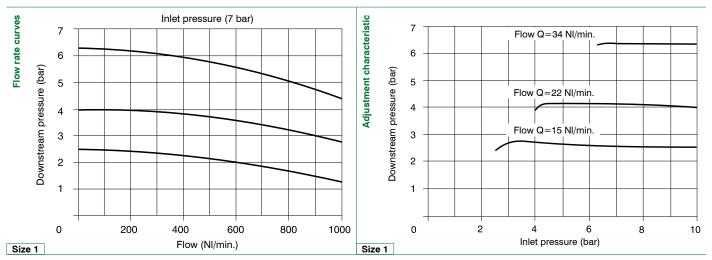
Size 1, pressure regulators for manifold, zinc alloy body, G1/8" connections, 0 - 12 bar, without pressure gauge, lockable version

Dimensions



Size 1

Characteristic curves



Air service units Series 1700

Manifold pressure regulators



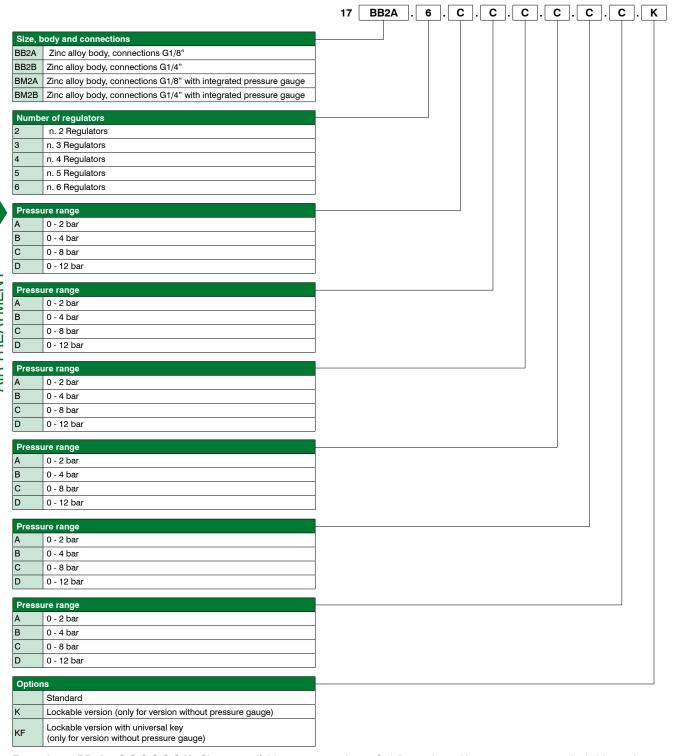


- Manifold pressure regulators
- Available in four pressure ranges up to 12 bar
- Inlet pressure common for the whole manifold of pressure regulator
- A maximum of 6 pressure regulators can be mounted
- Atex certification (II 2GD) on request

Technical characteristics			
Size	Size 1		
Body and connections type	Zinc alloy body, integrated zin alloy connections		
IN / OUT connections	G1/8" - G1/4"		
Assembly configuration	Stand alone Panel mounting Panel mounted with M4 screws With fixing bracket		
Assembly position	indifferent		
Pressure range (bar)	0 - 2 / 0 - 4 / 0 - 8 / 0 - 12		
Regulation	Manual push and lock with pressure Manual lockable with accessories (only for version without pressure gauge)		
Pressure measurement	G1/8" Pressure gauge connection port		
Max. fittings torque IN / OUT connections (Nm)	G1/8" metal: 15 G1/4" metal: 20		

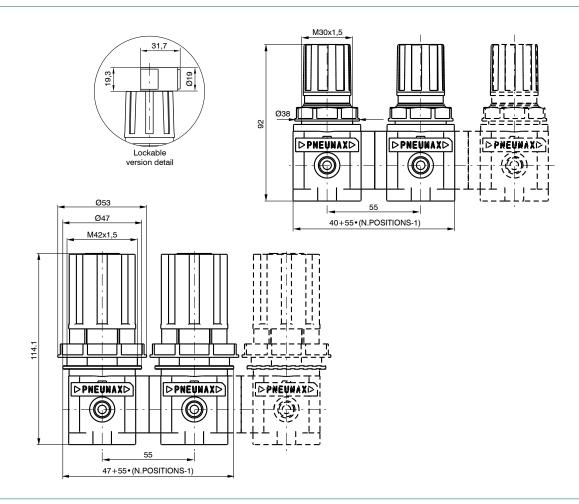
Operational characteristics			
Size	Size 1		
Maximum working pressure (bar)	13		
Minimum working pressure (bar)	0,5		
Working temperature (°C)	-5 +50		





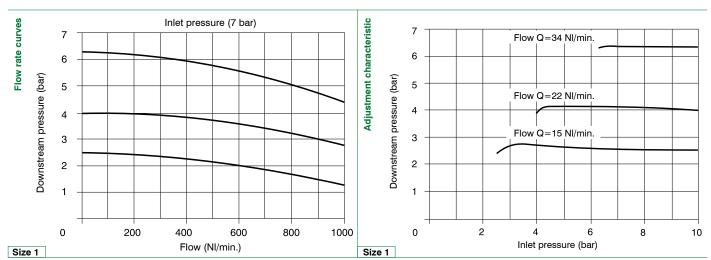
Example: 17BB2A.6.C.C.C.C.C.K: Size 1, manifold pressure regulators G1/8", 0 - 8 bar, without pressure gauge, lockable version

Dimensions



Size 1

Characteristic curves



Lubricators





- Oil mist lubricator
- Available in 4 sizes with flow rates up to 10000 NI/min and connections from 1/8" to 1"
-) Bowls screwed to the body (Size 1)
-) Bowl assembly via bayonet type quick coupling mechanism with safety button (Size 2 Size 3 Size 4)
- Variable orifice size in function of the flow rate
- Oil quantity regulation mechanism and oil quantity visualization dome made of polycarbonate (PC)
-) Oil refill plug
- Available with low level electrical sensor NO and NC
-) Atex certification (II 2GD o II 3GD) on request

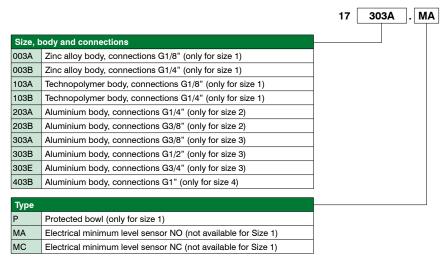
Technical characteristics				
Size	Size 1	Size 2	Size 3	Size 4
Body and connections type	Zinc alloy body, Zinc alloy integrated connections Technopolymer body, metal connections	Zinc alloy integrated connections Technopolymer body, integrated aluminium connections		
Protection and bowl type	Technopolymer protection - PA bowl (Size 1 available without protection) Metal bowl with blind metal bowl			
IN / OUT connections	G1/8" - G1/4"	G1/4" - G3/8"	G3/8" - G1/2", G3/4"	G1"
Assembly configuration	Stand alone Panel mounted with M4 screws	Stand alone Panel mounted with M5 screws	Stand alone Panel mounted with M6 screws	Stand alone Panel mounted with M8 screws
Assembly position		Vertice	al ±5°	
Bowl capacity (cm³)	36	52	62	300
Lubrication type	Oil mist			
Oil level regulation	Manual, complete with visual indicator			
Max. fittings torque IN / OUT connections (Nm)	G1/8" metal: 15 G1/4" metal: 20	G1/4" metal: 20 G3/8" metal: 25	G3/8" metal: 25 G1/2" metal: 30 G3/4" metal: 35	G1"metal: 35

Operational characteristics				
Size	Size 1	Size 2	Size 3	Size 4
Maximum working pressure (bar)	13			
Minimum working pressure (bar)	0,5			
Min.operational flow at 6,3 bar (NI/min)	10	2	0	100
Indicative oil drop rate (NI/min)	1 drop every 300/600			
Oil type	FD22 - HG32			
Working temperature (°C)		-5 +50		

Weights				
Size	Size 1	Size 2	Size 3	Size 4
Zinc alloy body version (g)	258	/	/	/
Technopolymer body version (g)	108	/	/	/
Aluminium body version (g)	1	280	435	1500

Air service units Series 1700

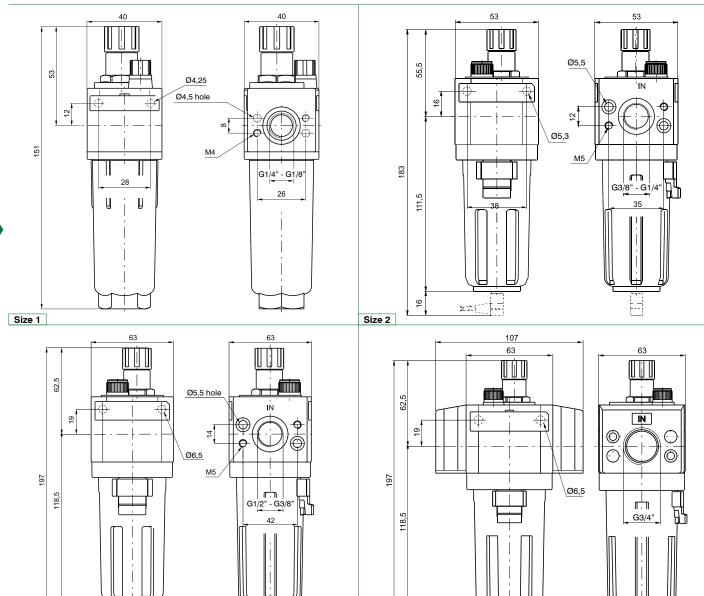
Order codes

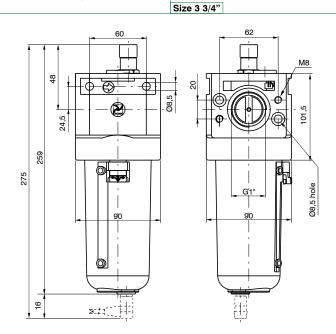


Example: 17303A.MA

Size 3, lubricator, aluminium body, G3/8" connections, normally open low level electrical sensor

Dimensions





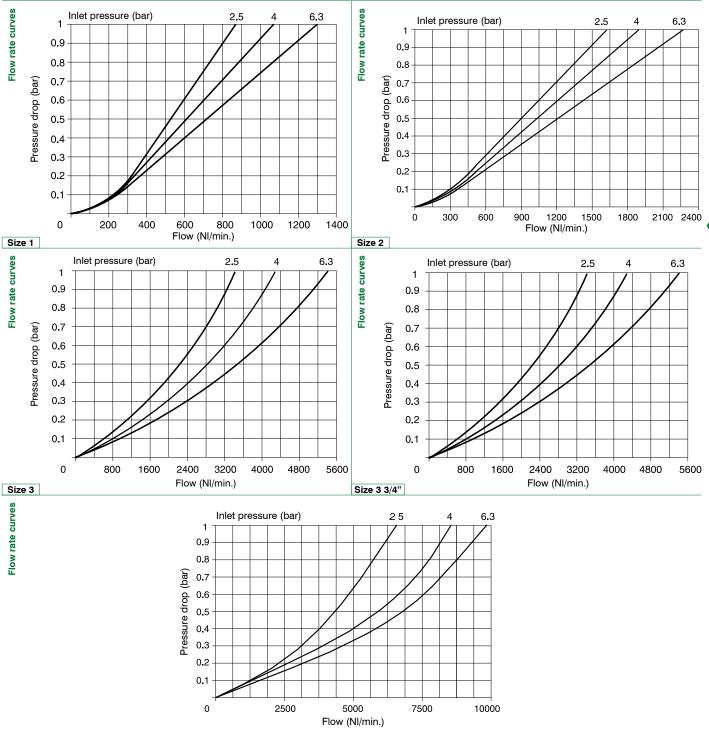
16

**i_j

Size 3

2....

Characteristic curves



Shut-off valve





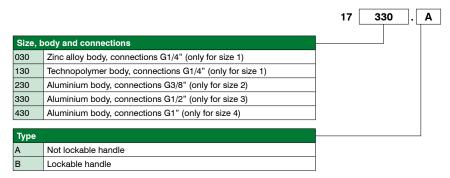
-) 3/2 N.C. poppet valve for opening and exhausting the circuit
- Allows to pneumatically supply the part of the system downstream of the valve
- Manual adjusting lockable handle (in shut-off position) with a maximum of three pad-locks
- Atex certification (II 2GD o II 3GD) on request



Technical characteristics					
Size	Size 1	Size 2	Size 3	Size 4	
Body and connections type	Zinc alloy body, Zinc alloy integrated connections Technopolymer body, metal connections		Aluminium body, integrated aluminium connections		
Operated type	Manual				
IN / OUT connections	G1/4"	G3/8"	G1/2"	G1"	
Discharge connections	G1/8"	G1/4"	G3/8"	G1/4"	
Assembly configuration	Stand alone Panel mounted with M4 screws	Stand alone Panel mounted with M5 screws	Stand alone Panel mounted with M6 screws	Stand alone Panel mounted with M8 screws	
Assembly position	Indifferent				
Max. fittings torque IN / OUT connections (Nm)	G1/4" metal: 20	G3/8" metal: 25	G1/2" metal: 30	G1"metal: 35	

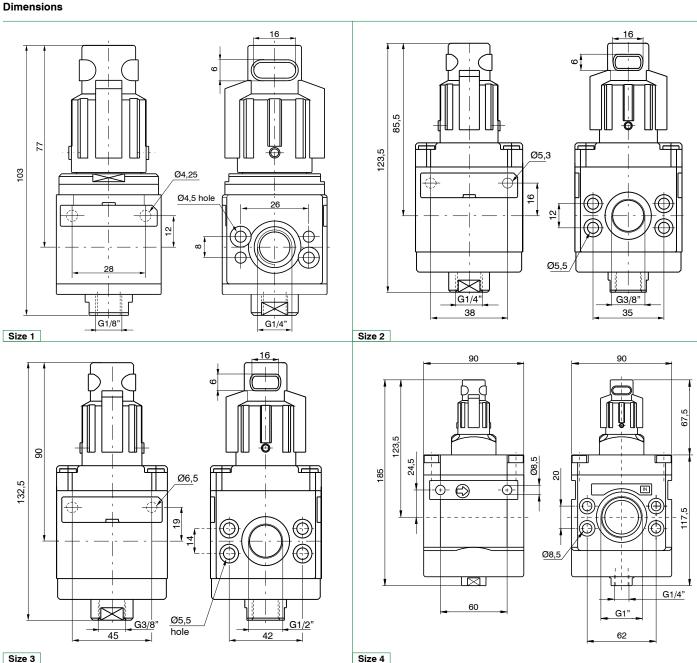
Operational characteristics					
Size	Size 1	Size 1 Size 2 Size 3 Size 4			
Maximum working pressure (bar)	13 10				
Minimum working pressure (bar)	0,5				
Nominal flow rate at 6 bar with Δp=1 (NI/min)	1000	2100	2500	8000	
Working temperature (°C)		-5	+50		

Weights				
Size	Size 1	Size 2	Size 3	Size 4
Zinc alloy body version (g)	280	/	/	/
Technopolymer body version (g)	155	/	/	/
Aluminium body version (g)	/	380	550	1600



Example: 17330.A

Size 3, shut-off valve, aluminium body, G1/2" connections, with not lockable handle



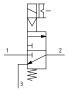
Electric shut-off valve







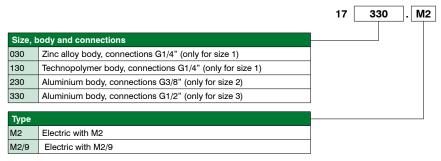
-) 3/2 N.C. poppet valve for entering and exhausting the circuit
-) It allows to pneumatically supply the part of the system downstream of the valve
-) Opening and closing of the valve via solenoid operator
- The supply pressure must be minimum 2 bars or higher
- It is possible to produce the external supplied solenoid version by mounting the 305.10.05 between the valve main body and the solenoid pilot valve.
-) The air supply can only be done via port 1
-) Ensure that the downstream air consumption will not cause a pressure drop which could result in the pressure falling below the minimum operating values.
-) If the pressure inside the valve falls below 2 bars , the valve might shut off.
- Atex certification (II 2GD o II 3GD) on request



Technical characteristics					
Size	Size 1	Size 1 Size 2 Size 3			
Body and connections type	Zinc alloy body, Zinc alloy integrated connections Technopolymer body, metal connections	d connections Aluminium body, ler body, integrated aluminium connections			
Operated type	Electric				
IN / OUT connections	G1/4"	G3/8"	G1/2"		
Discharge connections	G1/8"	G1/4"	G3/8"		
Assembly configuration	Stand alone Panel mounted with M4 screws	Stand alone Panel mounted with M5 screws	Stand alone Panel mounted with M6 screws		
Assembly position	Indifferent				
Max. fittings torque IN / OUT connections (Nm)	G1/4" metal: 20	G3/8" metal: 25	G1/2" metal: 30		

Operational characteristics			
Size	Size 1	Size 2	Size 3
Maximum working pressure (bar)		10	
Minimum working pressure (bar)		2	
Nominal flow rate at 6 bar with Δp=1 (NI/min)	1000	2100	3200
Working temperature (°C)		-5 +50	

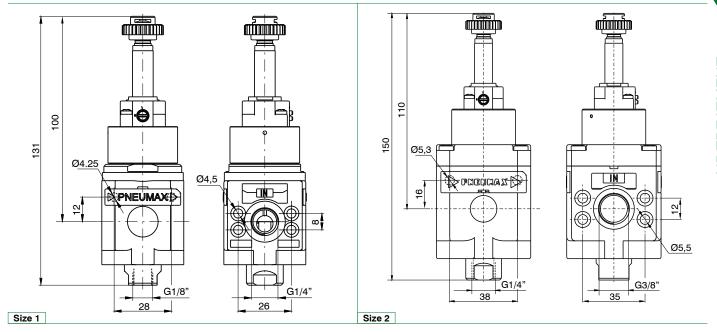
Weights			
Size	Size 1	Size 2	Size 3
Zinc alloy body version (g)	345	/	/
Technopolymer body version (g)	215	/	1
Aluminium body version (g)	/	440	680

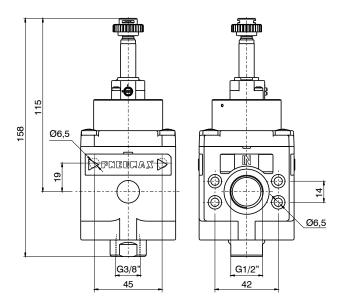


Example: 17330.M2

Size 3, electric shut-off valve, aluminium body, G1/2" connections, electric with M2

Dimensions











-) 3/2 N.C. poppet valve for entering and exhausting the circuit
- It allows to pneumatically supply the part of the system downstream of the valve
-) Opening and closing of the valve via pneumatic operator
- The piloting pressure must be minimum 2 bar or higher
- The air supply can only be done via port 1
- Ensure that the downstream air consumption will not cause a pressure drop which could result in the pressure falling below the minimum operating values
-) If the pressure inside the valve falls below 2 bars , the valve might shut off
- Atex certification (II 2GD o II 3GD) on request



Technical characteristics				
Size	Size 1	Size 2	Size 3	
Body and connections type	Zinc alloy body, Zinc alloy integrated connections Technopolymer body, metal connections Aluminium body, integrated aluminium connections			
Operated type	Pneumatic			
IN / OUT connections	G1/4"	G3/8"	G1/2"	
Discharge connections	G1/8"	G1/4"	G3/8"	
Pilot connections	G1/8"			
Assembly configuration	Stand alone Panel mounted with M4 screws	Stand alone Panel mounted with M5 screws	Stand alone Panel mounted with M6 screws	
Assembly position	Indifferent			
Max. fittings torque IN / OUT connections (Nm)	G1/4" metal: 20	G3/8" metal: 25	G1/2" metal: 30	

Operational characteristics			
Size	Size 1	Size 2	Size 3
Maximum working pressure (bar)		13	
Minimum working pressure (bar)		2	
Piloting pressure (bar)	2		
Nominal flow rate at 6 bar with $\Delta p = 1$ (NI/min)	1000	2100	3200
Working temperature (°C)	-5 +50		

Weights			
Size	Size 1	Size 2	Size 3
Zinc alloy body version (g)	310	1	/
Technopolymer body version (g)	180	/	/
Aluminium body version (g)	/	405	645

ize, body and connections

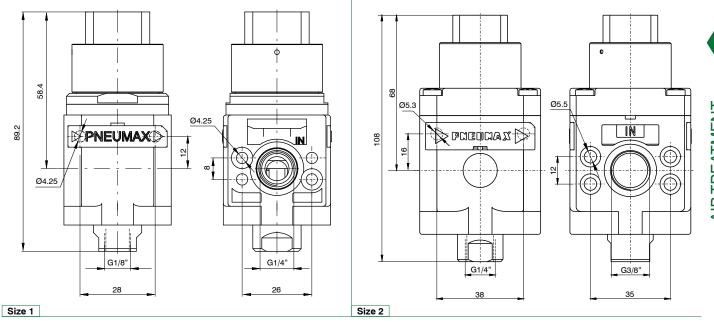
Zinc alloy body, connections G1/4" (only for size 1)

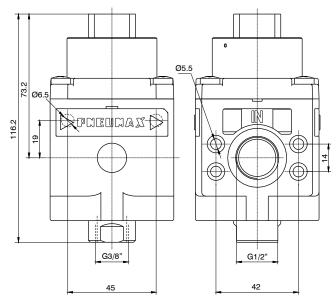
Size, b	Size, body and connections		
030	Zinc alloy body, connections G1/4" (only for size 1)		
130	Technopolymer body, connections G1/4" (only for size 1)		
230	Aluminium body, connections G3/8" (only for size 2)		
330	Aluminium body, connections G1/2" (only for size 3)		

Example: 17330.PN

Size 3, pneumatic shut-off valve, aluminium body, G1/2" connections, with pneumatic pilot

Dimensions



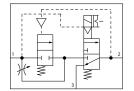


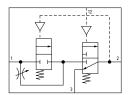






- 3 way valve with double poppet
-) Aluminium body
- Possibility to adjust the down stream circuit filling time by the enclosed adjustable metering screw
-) Quick down stream circuit discharge
- Possibility for a pneumatic or electric piloting control
- Atex certification (II 2GD o II 3GD) on request

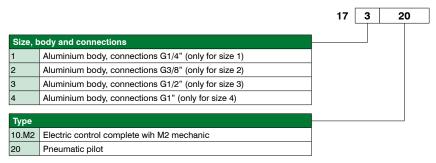




Technical characteristics							
Size	Size 1	Size 1 Size 2 Size 3 Size 4					
Body and connections type	Aluminium body, integrated aluminium connections						
IN / OUT connections	G1/4" G3/8" G1/2" G1"						
Discharge connections	G1/8"	G1/4"	G3/8"	G3/4"			
Assembly configuration	Stand alone Panel mounted with M4 screws	Stand alone Panel mounted with M5 screws	Stand alone Panel mounted with M6 screws	Stand alone Panel mounted with M8 screws			
Assembly position	Indifferent						
Max. fittings torque IN / OUT connections (Nm)	G1/4" metal: 20	G3/8" metal: 25	G1/2" metal: 30	G1"metal: 35			

	Operational characteristics					
Size	Size 1 Size 2 Size 3 Size 4					
Maximum working pressure (bar)	10					
Minimum working pressure (bar)	2,5					
Nominal flow rate at 6 bar with $\Delta p=1$ (NI/min)	1000	1000 1700 2500 80				
Flow with adjustable metering screw fully open (NI/min)	150 340 3000			3000		
Working temperature (°C)	-5 +50					

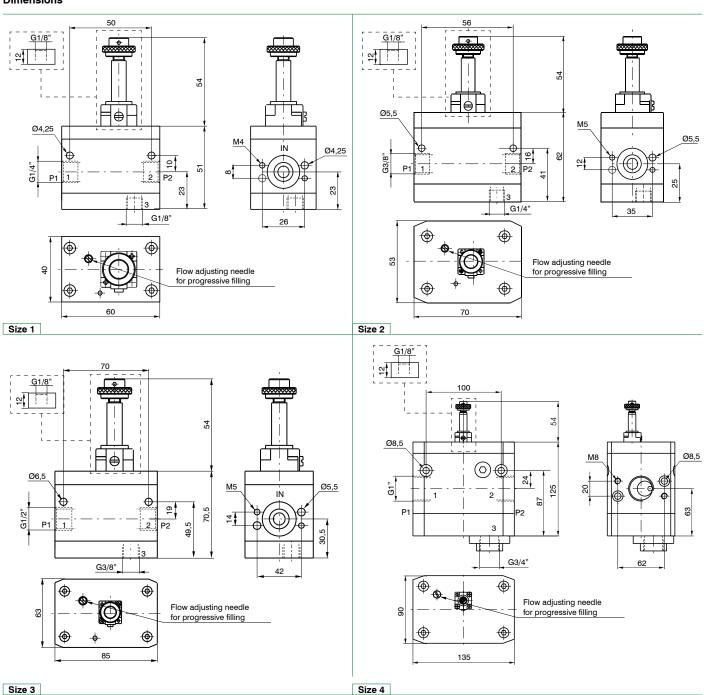
Weights					
Size	Size 1	Size 2	Size 3	Size 4	
Aluminium body version (a)	365	595	1010	2300	



Example: 17320

Size 3, progressive start-up valve, aluminium body, G1/2" connections, with pneumatic pilot

Dimensions





- Pneumatic by-pass
- Available with 2 threaded connections



Technical characteristics							
Size	Size 1	Size 1 Size 2 Size 3 Size 4					
Body and connections type	Aluminium body, integrated aluminium connections						
IN / OUT Connections	G1/4" G3/8" G1/2" G1"						
INTAKE connections	G1/8"	G1/4"	G3/8"	G3/4"			
Assembly configuration	Stand alone	Stand alone	Stand alone	Stand alone			
Assembly position	Indifferent						
Max. fittings torque IN / OUT connections (Nm)	G1/4" metal: 20	G3/8" metal: 25	G1/2" metal: 30	G1"metal: 35			

Operational characteristics					
Size	Size 1	Size 2	Size 3	Size 4	
Maximum working pressure (bar)	13				
Working temperature (°C)		-5	+50		

		Weights		
Size	Size 1	Size 2	Size 3	Size 4
Aluminium body version (g)	78	159	271	761

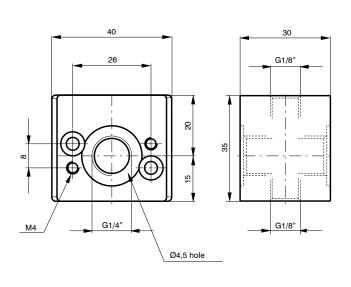
17 3 40

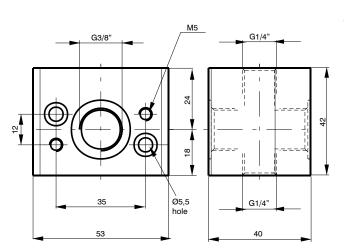
Size, b	Size, body and connections				
1	Aluminium body, connections G1/4" (only for size 1)				
2	Aluminium body, connections G3/8" (only for size 2)				
3	Aluminium body, connections G1/2" (only for size 3)				
4	Aluminium body, connections G1" (only for size 4)				

Example: 17340

Size 3, air intake, aluminium body, G1/2" connections

Dimensions

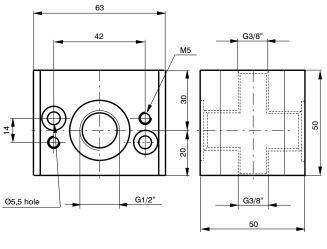




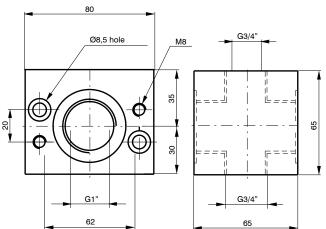
Size 1

Size 3









Air Intake -"H" profile



- Pneumatic by-pass
- Available with 2 threaded connections



Technical characteristics						
Size	Size 1 Size 2 Size 3					
Body and connections type	Aluminium body					
IN / OUT Connections	G1/4"	G1/4" G3/8" G1/2"				
INTAKE connections	G1/8"	G1/4"	G3/8"			
Assembly configuration	Stand alone	Stand alone	Stand alone			
Assembly position	Indifferent					
Max. fittings torque IN / OUT connections (Nm)	G1/4" metal: 20	G3/8" metal: 25	G1/2" metal: 30			

Operational characteristics						
Size	Size 1 Size 2 Size 3					
Maximum working pressure (bar)	13					
Working temperature (°C)		-5 +50				

		Weights	
Size	Size 1	Size 2	Size 3
Aluminium body version (a)	50	116	192

Size, body and connections

Aluminium body, connections G1/4" (only for size 1)

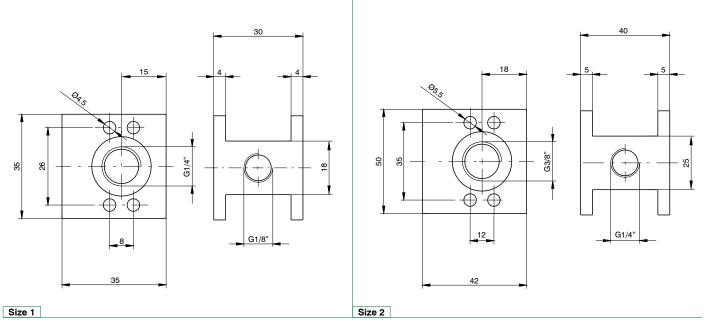
Aluminium body, connections G3/8" (only for size 2)

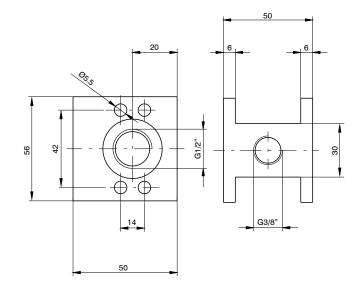
Aluminium body, connections G1/2" (only for size 3)

Example: 17340H

Size 3, air intake -"H" profile, aluminium body, G1/2" connections

Dimensions





Pressure Switch complete with adapter



- The pressure switch can be set at desired pressure from 2 to 10 bar with electrical connection applied
-) The electrical connection is made by mean of a 15 mm connector DIN 43650 type C
- The microswitch contact could be Normally Closed or open (change over switch)



Technical characteristics						
Size	Size 1	Size 2	Size 3	Size 4		
Body and connections type		Aluminic	ım body			
IN / OUT Connections	G1/8" G3/8" G1/2" Ø36					
Assembly configuration	Stand alone	Stand alone	Stand alone	Stand alone		
Assembly position		Indifferent				
Microswitch capacity (A)	1					
Microswitch Maximum voltage (VAC)	250					
Grade of protection	IP65 (with connector assembled)					

Operational characteristics					
Size	Size 1	Size 2	Size 3	Size 4	
Maximum working pressure (bar)	13				
Working temperature (°C)	-5 +50				
Pressure range (bar)	2 10				

Weights				
Size	Size 1	Size 2	Size 3	Size 4
Aluminium body version (g)	160	200	220	450

17 34C

Order codes

14A Pressure switch adapter (only for size 1) 14B Pressure switch (for all sizes) 14C Pressure switch complete with adapter (only for size 1) Pressure switch adapter (only for size 2) 24A 24C Pressure switch complete with adapter (only for size 2) 34A Pressure switch adapter (only for size 3) 34C Pressure switch complete with adapter (only for size 3) 44A Pressure switch adapter (only for size 4) 44C Pressure switch complete with adapter (only for size 4)

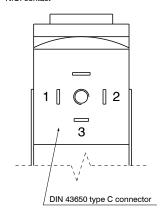
Example: 1734C

Size 3, pressure switch adapter

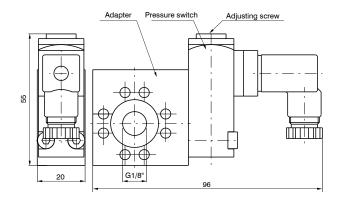
Air service units Series 1700

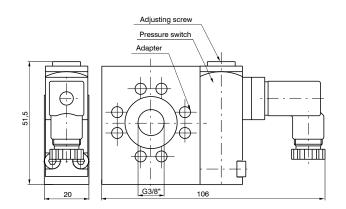
Electrical connection

- 1 = neutral 2 = N.C. contact 3 = N.O. contact

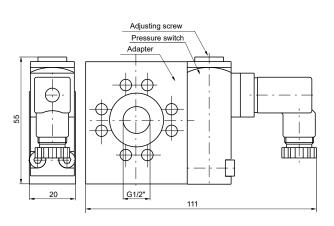


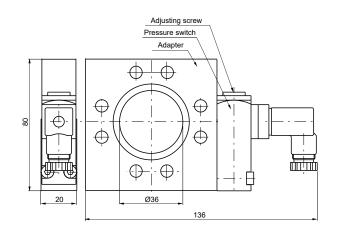
Dimensions





Size 1





Size 4

Filter pressure regulator + Lubricator



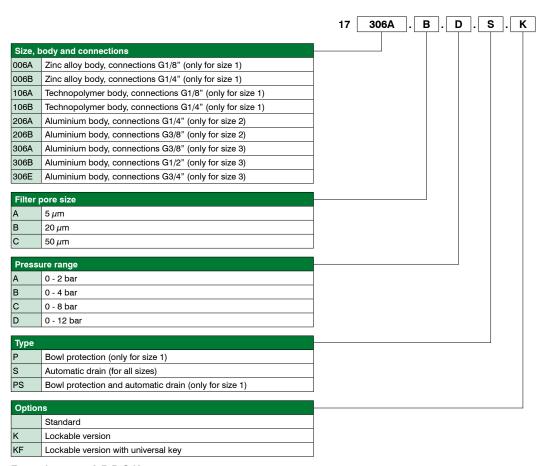


-) Filter diaphragm pressure regulator with relieving
-) Low histeresis rolling diaphragm and balanced spool
- Filtering element made of HDPE available in 3 different filtration grades (5μm, 20μm, 50μm)
-) Semi-automatic or automatic drain
- Available in four pressure ranges up to 12 bar
- Oil mist lubricator
- Variable orifice size in function of the flow rate
-) Oil quantity regulation mechanism and oil quantity visualization dome made of polycarbonate (PC)
- Oil refill plud
-) Available with low level electrical sensor NO and NC
-) Bowls screwed to the body (Size 1)
-) Bowl assembly via bayonet type quick coupling mechanism with safety button (Size 2 Size 3)
- Atex certification (II 2GD o II 3GD) on request

Technical characteristics					
Size	Size 1	Size 2	Size 3		
Body and connections type	Zinc alloy body, Zinc alloy integrated connections Technopolymer body, metal connections	Aluminium body, integrated aluminium connections			
Protection and bowl type	Technopolymer protection - PA bowl (Size 1 available without protection)				
IN / OUT connections	G1/8" - G1/4"	G1/4" - G3/8"	G3/8" - G1/2", G3/4"		
Assembly configuration	Stand alone Panel mounted with M4 screws	Stand alone Panel mounted with M5 screws	Stand alone Panel mounted with M6 screws		
Assembly position	Vertical ±5°				
Filter pore size (µm)	5 / 20 / 50				
Pressure range (bar)	0-2/0-4/0-8/0-12				
Bowl capacity (cm³)	20	30	48		
Condensation drain	Semi-automatic Automatic				
Regulation	Manual push and lock with pressure Manual lockable with accessories				
Pressure measurement	G1/8" Pressure gauge connection port				
Bowl capacity (cm ³)	36	52	62		
Lubrication type	Oil mist				
Min.operational flow at 6,3 bar (NI/min)	10	20			
Oil level regulation	Manual, complete with visual indicator				
Max. fittings torque IN / OUT connections (Nm)	G1/8" metal: 15 G1/4" metal: 20	G1/4" metal: 20 G3/8" metal: 25	G3/8" metal: 25 G1/2" metal: 30 G3/4" metal: 35		

Operational characteristics						
Size	Size 1	Size 2	Size 3	Size 1	Size 2	Size 3
Condensation drain	Semi-automatic			Automatic		
Maximum working pressure (bar)	13			10		
Minimum working pressure (bar)	0,5					
Indicative oil drop rate (NI/min)	1 drop every 300/600					
Oil type	FD22 - HG32					
Working temperature (°C)	-5 +50					

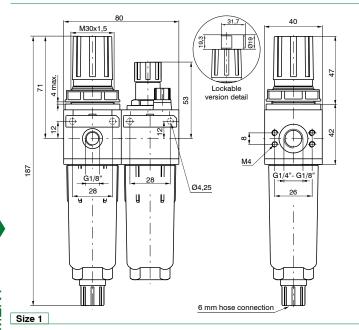
Weights			
Size	Size 1	Size 2	Size 3
Zinc alloy body version (g)	560	/	1
Technopolymer body version (g)	295	/	1
Aluminium body version (g)	/	750	1100

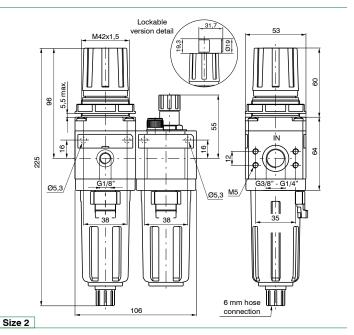


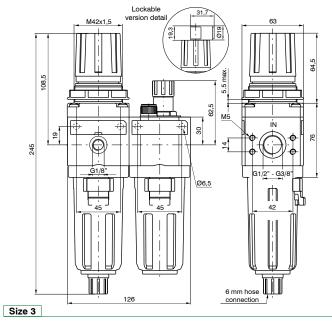
Example: 17306A.B.D.S.K

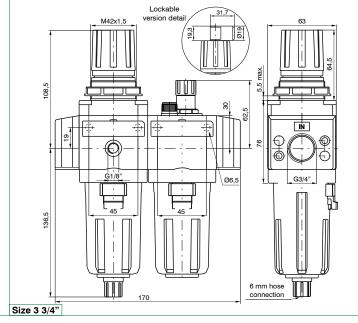
Size 3, filter pressure regulator + lubricator, aluminium body, G3/8" connections, filter pore size 20 µm 0 - 12 bar, automatic drain lockable version

Dimensions

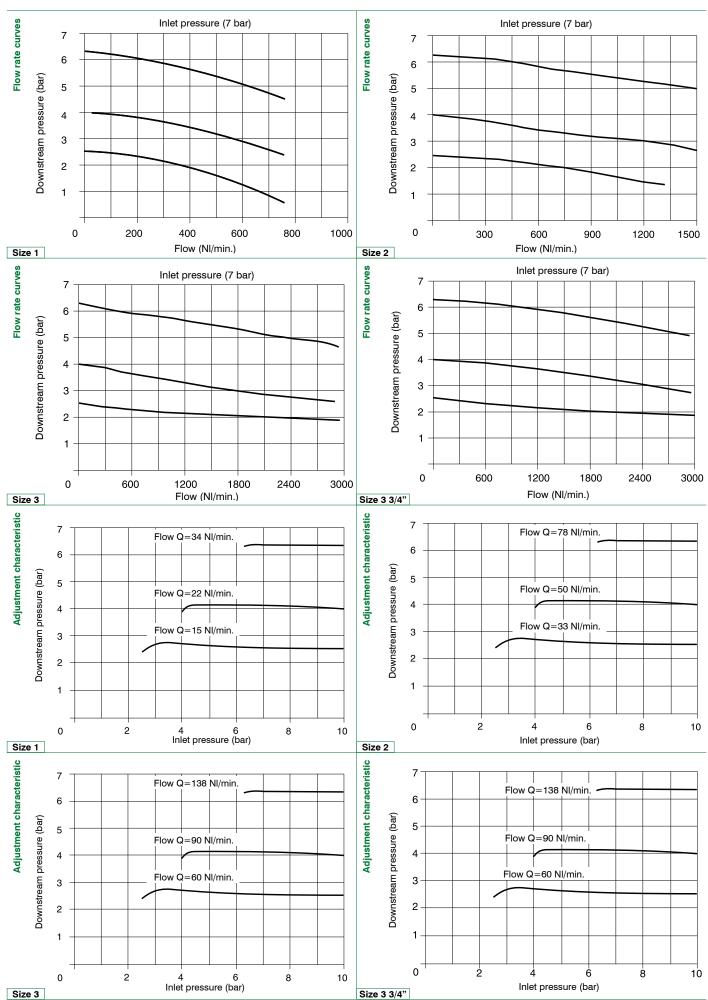








Characteristic curves



Filter + Pressure regulator + Lubricator





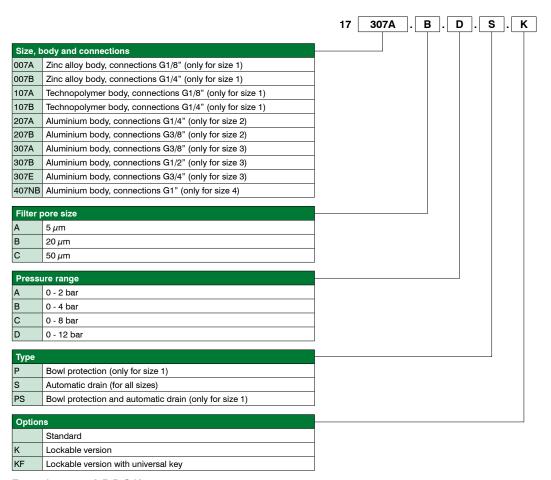
-) Double filter action: air flow centrifugation and filter element
-) Filtering cartridge made of HDPE available in three different filtration grades (5 μ m, 20 μ m, 50 μ m)
-) Filter cartridge can be regenerated by washing / blowing it or replaced
-) Semi-automatic or automatic drain
-) Diaphragm pressure regulator with relieving
-) Low histeresis rolling diaphragm and balanced spool
- Available in four pressure ranges up to 12 bar
-) Oil mist lubricator
- Variable orifice size in function of the flow rate
-) Oil quantity regulation mechanism and oil quantity visualization dome made of polycarbonate (PC)
-) Oil refill plug
-) Available with low level electrical sensor NO and NC
-) Bowls screwed to the body (Size 1)
-) Bowl assembly via bayonet type quick coupling mechanism with safety button (Size 2 Size 3 Size 4)
- Atex certification (II 2GD o II 3GD) on request

Technical characteristics						
Size	Size 1	Size 2 Size 3 Size 4				
Body and connections type	Zinc alloy body, Zinc alloy integrated connections Technopolymer body, metal connections	ntegrated connections Aluminium body, nopolymer body, integrated aluminium connections				
Protection and bowl type	Technopolymer protection - PA bowl (Size 1 available without protection)			Metal bowl with blind metal bowl		
IN / OUT connections	G1/8" - G1/4"	G1/4" - G3/8"	G3/8" - G1/2", G3/4"	G1"		
Assembly configuration	Stand alone Panel mounted with M4 screws	Stand alone Stand alone Panel mounted with M5 screws Panel mounted with M6 screws		Stand alone Panel mounted with M6 screws		
Assembly position	Vertical ±5°					
Filter pore size (µm)		5 / 20	0 / 50			
Pressure range (bar)	0-2/0-4/0-8/0-12					
Bowl capacity (cm³)	20	30	48	178		
Condensation drain	Semi-automatic Automatic					
Regulation	Manual push and lock with pressure Manual lockable with accessories					
Pressure measurement		G1/8" Pressure gau	ige connection port			
Bowl capacity (cm³)	36	52 62		300		
Lubrication type	Oil mist					
Min.operational flow at 6,3 bar (NI/min)	10	20 100				
Oil level regulation	Manual, complete with visual indicator					
Max. fittings torque IN / OUT connections (Nm)	G1/8" metal: 15 G1/4" metal: 20	G1/4" metal: 20 G3/8" metal: 25	G3/8" metal: 25 G1/2" metal: 30 G3/4" metal: 35	G1"metal: 35		

Operational characteristics								
Size	Size 1	Size 2	Size 3	Size 4	Size 1	Size 2	Size 3	Size 4
Condensation drain		Semi-au	utomatic			Auto	matic	
Maximum working pressure (bar)	13 10							
Minimum working pressure (bar)	0,5							
Indicative oil drop rate (NI/min)	1 drop every 300/600							
Oil type	FD22 - HG32							
Working temperature (°C)	-5 +50							



Weights				
Size	Size 1	Size 2	Size 3	Size 4
Zinc alloy body version (g)	755	/	/	/
Technopolymer body version (g)	375	/	/	/
Aluminium body version (g)	/	960	1430	5300

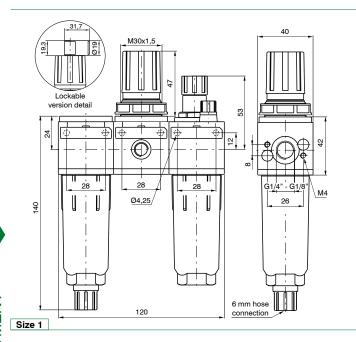


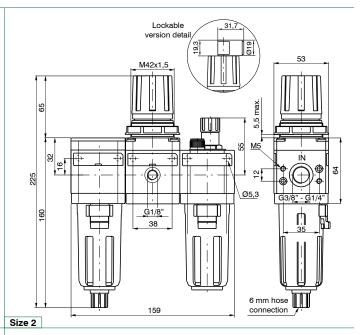
Example: 17307A.B.D.S.K

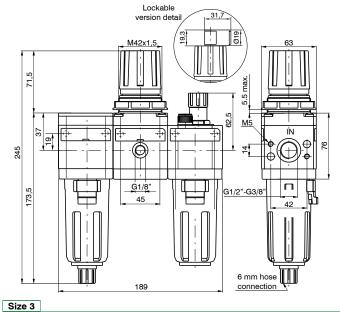
Size 3, filter + pressure regulator + lubricator, aluminium body, G3/8" connections,

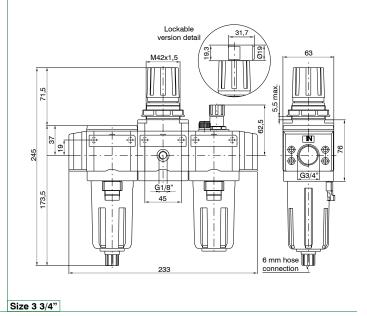
filter pore size 20 μ m 0 - 12 bar, automatic drain lockable version

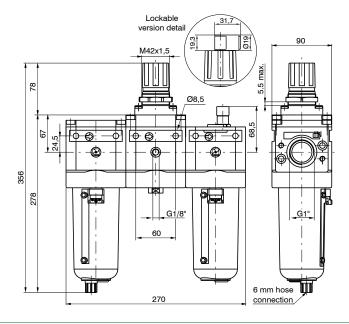
Dimensions



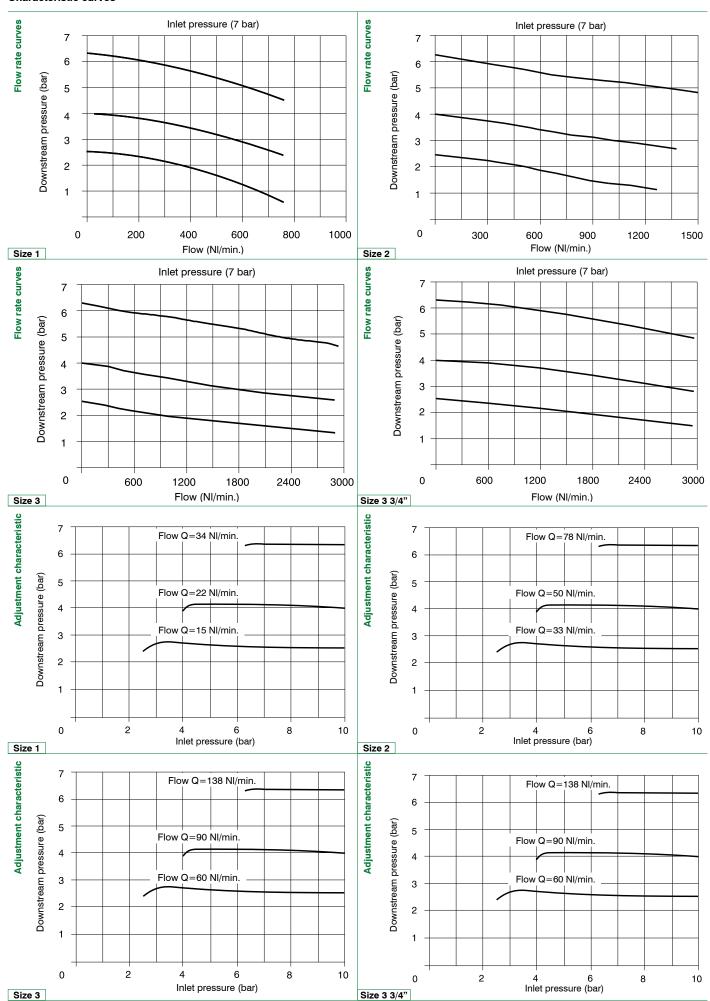








Characteristic curves



Panel mounting pressure regulator





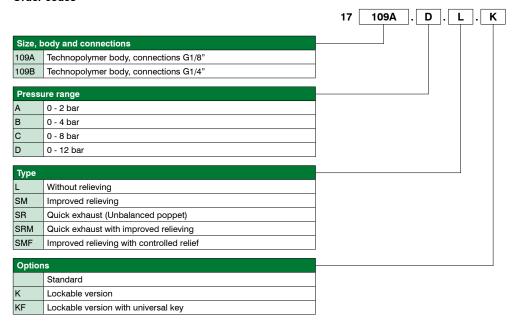
- Diaphragm pressure regulator with relieving
- Balanced poppet
- ▶ Technopolymer body, metal connections
-) Lockable adjusting knob, simply press downwards to engage the locked position
- Ring nut for panel mounting
- Atex certification (II 3GD) on request



Technical characteristics		
Size	Size 1	
Body and connections type	Technopolymer body, integrated metal connections	
IN / OUT connections	G1/8" - G1/4"	
Assembly configuration	Stand alone Panel mounting With fixing bracket	
Assembly position	indifferent	
Pressure range (bar)	0-2/0-4/0-8/0-12	
Regulation	Manual push and lock with pressure Manual lockable with accessories	
Pressure measurement	G1/8" Pressure gauge connection port	
Max. fittings torque IN / OUT connections (Nm)	G1/8" metal: 15 G1/4" metal: 20	

Operational characteristics		
Size	Size 1	
Maximum working pressure (bar)	13	
Minimum working pressure (bar)	0,5	
Working temperature (°C)	-5 +50	

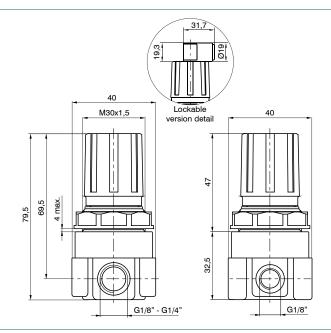
Weights		
Size	Size 1	
Technopolymer body version (g)	110	



Example: 17109A.D.L.K

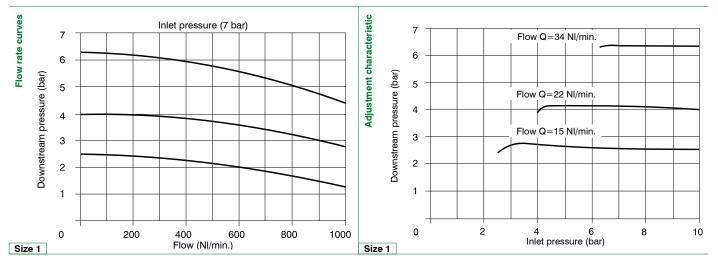
Size 1, panel mounting pressure regulator, technopolymer body, G1/8" connections, 0 - 12 bar, without relieving, lockable version

Dimensions



Size 1

Characteristic curves



Panel mounting pressure regulator including pressure gauge





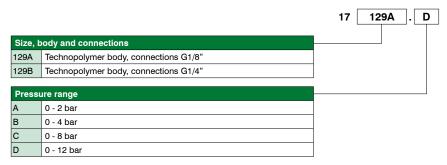
-) Diaphragm pressure regulator with relieving
- Balanced poppet
- Technopolymer body with aluminum reinforced threaded connections
- Lockable adjusting knob, simply press downwards to engage the locked position
- Including pressure gauge integrated on the knob
- Ring nut for panel mounting
- Atex certification (II 3GD) on request



Technical characteristics			
Size	Size 1		
Body and connections type	Technopolymer body, aluminum reinforced threaded connections		
IN / OUT connections	G1/8" - G1/4"		
Assembly configuration	Stand alone Panel mounting With fixing bracket		
Assembly position	Indifferent		
Pressure range (bar)	0 - 2 / 0 - 4 / 0 - 8 / 0 - 12		
Regulation	Manual push and lock with pressure		
Pressure measurement	G1/8* Pressure gauge connection port integrated on the knob		
Max. fittings torque IN / OUT connections (Nm)	G1/8" metal: 15 G1/4" metal: 20		

Operational characteristics		
Size	Size 1	
Maximum working pressure (bar)	13	
Minimum working pressure (bar)	0,5	
Working temperature (°C)	-5 +50	

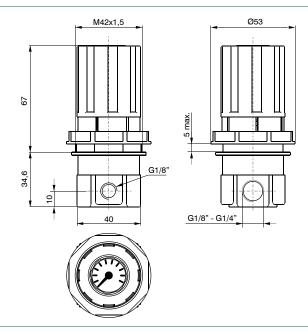
Weights		
Size	Size 1	
Technopolymer body version (g)	250	



Example: 17129A.D

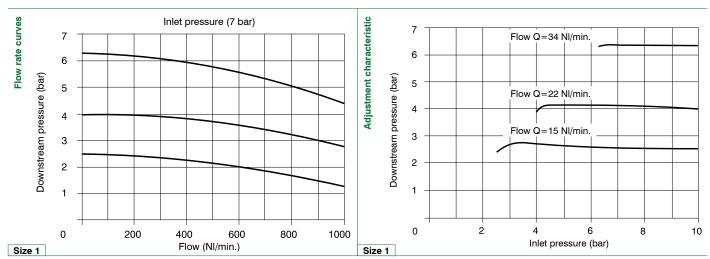
Size 1, panel mounting pressure regulator including pressure gauge, technopolymer body, G1/8" connections, 0 - 12 bar

Dimensions



Size 1

Characteristic curves



Precision pressure regulators with high flow rate relieving





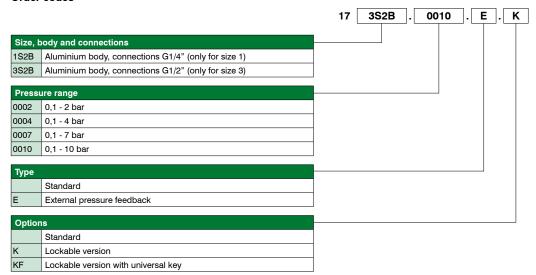
- Maintains accurate pressure settings
- Sensitivity combined with high relieving rates
- High flow rate with extremely low pressure drop
- Lockable adjusting knob, simply press downwards to engage the locked position
- Aluminium body
- Ring nut for panel mounting
- Controlled relief
- Atex certification (II 2GD) on request

Technical characteristics				
Size	Size 1 Size 3			
Body and connections type	Aluminium body, integrated aluminium connections			
IN / OUT connections	G1/4"	G1/2"		
Assembly configuration	Stand alone Panel mounting With fixing bracket	Stand alone Panel mounting With fixing bracket		
Assembly position	Indifferent			
Fluid	20µ filtered air and preferably non lubricated			
Air flow with inlet pressure 10 bar (NI/min)	5			
Pressure range (bar)	0,1 - 2 / 0,1 - 4 / 0,1 - 7 / 0,1 - 10			
Regulation	Manual push and lock with pressure Manual lockable with accessories			
Pressure measurement	G1/8" Pressure gauge connection port			
Max. fittings torque IN / OUT connections (Nm)	G1/4" metal: 20 G1/2" metal: 30			

Operational characteristics				
Size	Size 1 Size 3			
Maximum working pressure (bar)	10			
Minimum working pressure (bar)	0,5			
Working temperature (°C)	-5	+50		

	Weights	
Size	Size 1	Size 3
Aluminium body version (g)	380	970

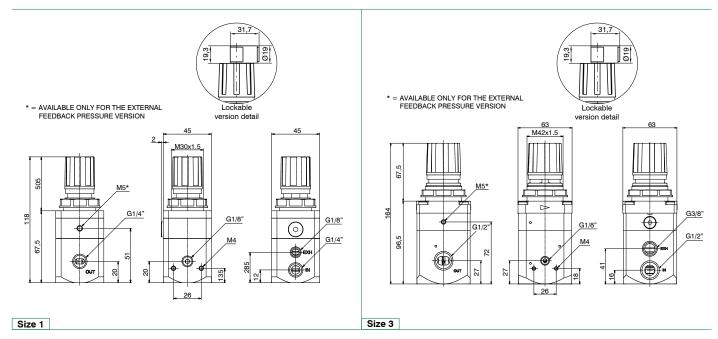


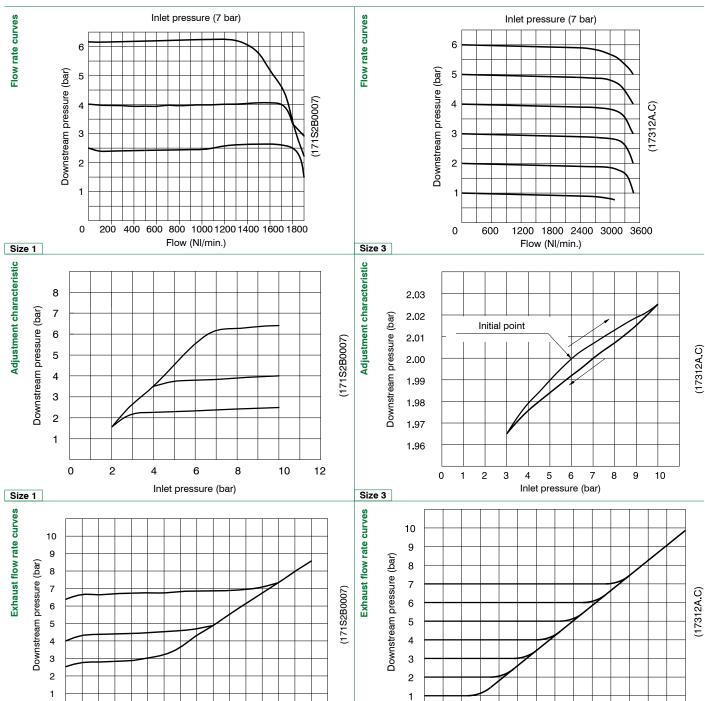


Example: 173S2B.0010.E.K

Size 3, precision pressure regulator with high flow rate relieving, aluminium body, G1/2" connections, 0,1 - 10 bar, external pressure feedback, lockable version

Dimensions





0

Size 1

200

400

600

800

Exhaust flow rate (NI/min.)

1000

1200

1400

1600

Size 3

300

900

1200

Exhaust flow rate (NI/min.)

1500

1800

2100

Precision pressure regulators with pneumatic pilot



- Maintains accurate pressure settings
- > Sensitivity combined with high relieving rates
- High flow rate with extremely low pressure drop
- Aluminium body
- Controlled relief
- Atex certification (II 2GD) on request

Technical characteristics					
Size	Size 3				
Body and connections type	Aluminium body, integrated aluminium connections				
IN / OUT connections	G1/2"				
Assembly configuration	Stand alone				
Assembly position	Indifferent				
Fluid	20μ filtered air and preferably non lubricated				
Air flow with inlet pressure 10 bar (NI/min)	5				
Pressure measurement	G1/8" Pressure gauge connection port				
Max. fittings torque IN / OUT connections (Nm)	G1/2" metal: 30				

Operational characteristics						
Size Size 3						
Maximum working pressure (bar)	10					
Minimum working pressure (bar)	0,5					
Working temperature (°C)	-5 +50					

	Weights
Size	Size 3
Aluminium body version (g)	970



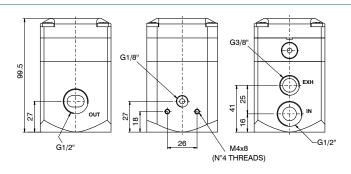
Size, body and connections

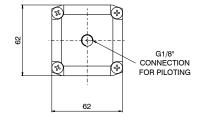
3P2B Aluminium body, connections G1/2"

Example: 173P2B.0010

Size 3, precision pressure regulator with pneumatic pilot, aluminium body, G1/2" connections

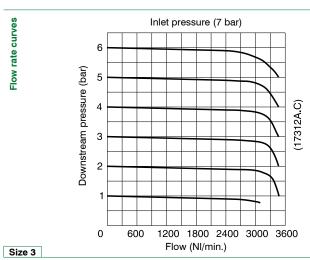
Dimensions

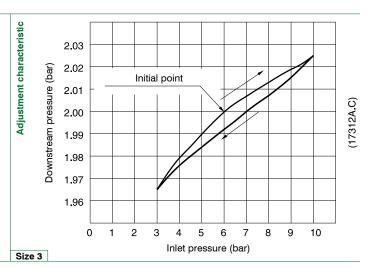




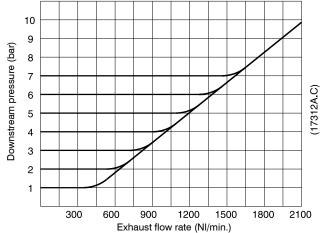
Size 3

Characteristic curves





Exhaust flow rate curves





Precision pressure regulator for manipulation applications



- Maintains accurate pressure settings
- Sensitivity combined with high relieving rates
- High flow rate with extremely low pressure drop
- Manual and piloted adjustment for structure and load balancing
- Aluminium body
- Controlled relief
- Manual adjustment: 5 Bar Maximum
- Pilot adjustment: 5 Bar Maximum
- Hysteresis ±0.01bar

Technical characteristics					
Size	Size 3				
Body and connections type	Aluminium body, integrated aluminium connections				
IN / OUT / EXH connections	G1/2" (IN and OUT) / G3/8 (EXH)				
Pilot connection	G1/8				
Assembly configuration	Stand alone With fixing bracket				
Assembly position	Indifferent				
Fluid	20µ filtered air and preferably non lubricated				
Air flow with inlet pressure 10 bar (NI/ min)	5				
Pressure range (bar)	0.1 - 5 (max manual adjustment) / 0.1 - 8 (max pilot adjustment)				
Regulation	Manual (for balancing of the structure) Piloted (for load balancing)				
Pressure measurement	G1/8" Pressure gauge connection port				
Max. fittings torque IN / OUT connections (Nm)	G1/2" metal: 30 G3/8" metal: 25				

Operational characteristics					
Size	Size 3				
Maximum working pressure (bar)	10				
Minimum working pressure (bar)	OUT pressure + 1 bar				
Working temperature (°C)	-5 +70				
Sensitivity	0.2% F.S				
Repeatability	±0.5% F.S				
Hysteresis	± 0.01 bar				

	Weights
Size	Size 3
Aluminium body version (g)	1600

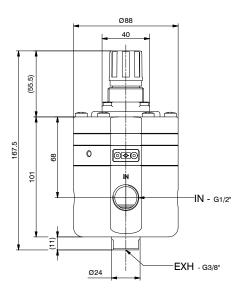
RB17 3B R2C

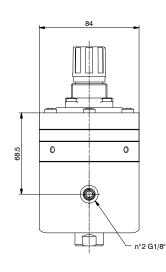
Aluminium body, connections G1/2"

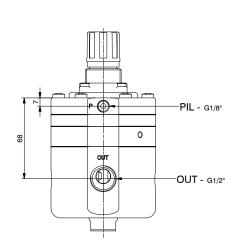
Example: RB173BR2C

Size 3, precision pressure regulator for manipulation applications, aluminium body, G1/2" connections

Dimensions

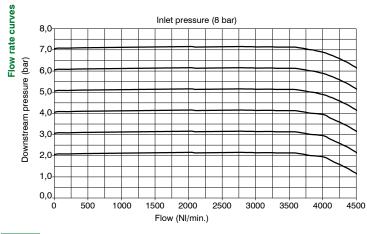


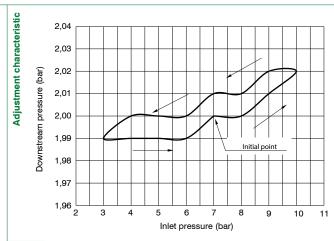




Size 3

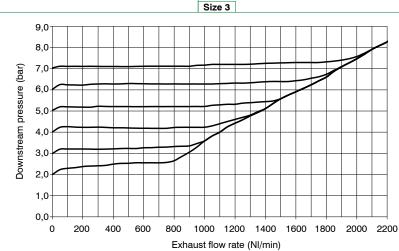
Characteristic curves





Size 3

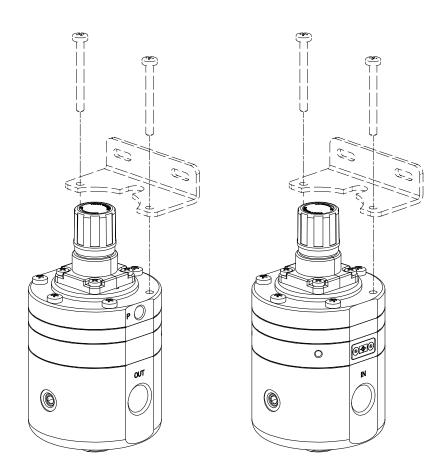
Exhaust flow rate curves



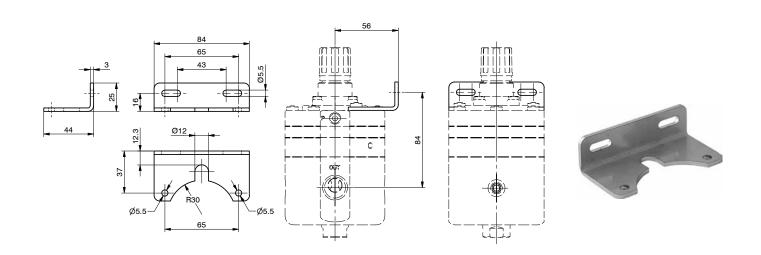


Accessories and fixing

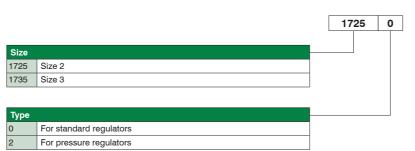
The regulator can be mounted by means of a bracket. To enable fixing, unscrew the two screws indicated and screw them back with the bracket mounted. It is advisable to apply soft thread-locker to the screws before screwing them back in.



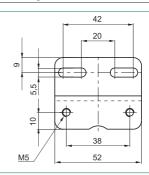


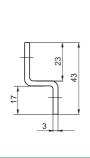


Fixing bracket for regulators

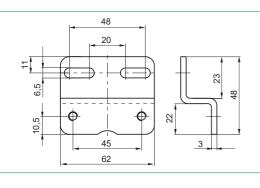






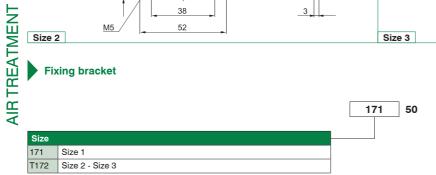


Size 3

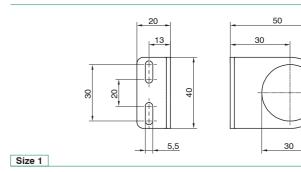


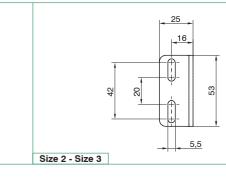
Fixing bracket

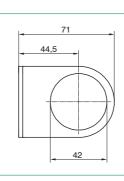
Size 2







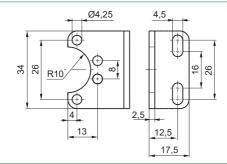




Fixing bracket



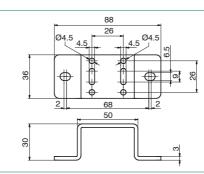




Fixing bracket for pressure regulator





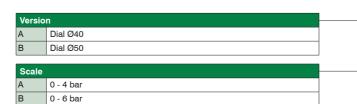


17070 A

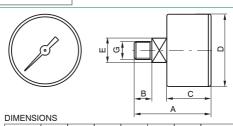
Size 1

Pressure gauge

0 - 12 bar



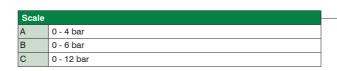




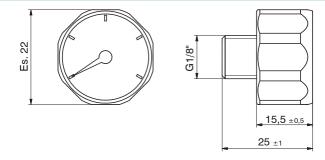
DIMILITOR	0110						
CODE	Α	В	С	D	Е	G	Weight g
17070A	44	10	26	41	14	1/8"	60
17070B	45	10	27	49	14	1/8"	80

17070M A

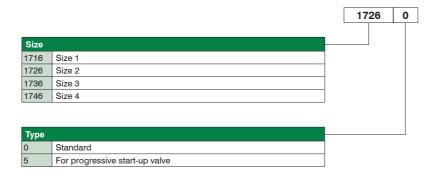
Pressure gauge diameter Ø23







Assembling kit



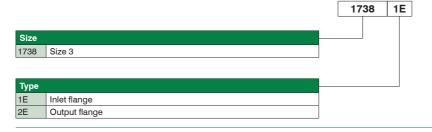


Assembling kit for manifold regulators

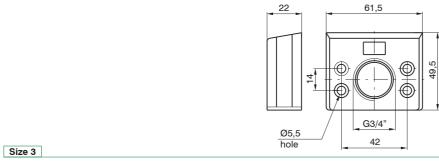




Flange G3/4"









Series 1700 Steel line



- · Wide working temperature range
- Available in 3 sizes with connections from 1/4" to 1"
- · ATEX certification (II 2G or II 2D), SIL, EAC
- · Clean profile versions available

The stainless steel SS1700 air treatment series has been engineered and developed to approach specifically the OIL & GAS industry and more widely for all the severe service applications that require excellent corrosion resistance due to chemical and/or harsh environmental condition.

All external and internal parts (except for the automatic drain version) are AlSI 316L stainless steel material in compliance with NACE standard MR0175/ISO 15156/1. The product range includes FILTER, with filtration elements up to 3 filtration degree (5μ m-20 μ m-50 μ m), available in AlSI316 stainless steel or HDPE (high density polyethylene), and manual or automatic condensed exhaust; The PRESSURE REGULATOR is supplied with low hysteresis rolling diaphragm and an over-pressure exhaust valve (RELIEVING), available in 4 different adjustment ranges from 0 to 12 bar. As a last the FILTER REGULATOR range, which combines the features of a filter and pressure regulator into a one single device. "CLEAN PROFILE" version is available for all the sizes, featuring a glossy finish on the external surface. The over-pressure exhaust hole (RELIEVING) has a 1/8" NPT threading, and it is protected by an AISI 316 sintered filter series. Note: for CLEAN PROFILE series this is a simple unthread hole.

Instructions for installation and use

Product shall be installed reducing the distance from inlet point. Check and install the device following the flow direction (clearly marked with an arrow stamped on the body). Vertical position installation with condensed exhaust tap pointing downward is recommended.

Devices must be used in compliance with pressure and temperature operating range. To set the pressure there is an adjustable knob, located on the top of the device. Pneumax recommend selection of pressure regulator adjusting range option in line with client required performance The condensed exhaust action for the manual drain version shall be performed only in the absence of pressure. To discharge liquid, turn the tap clockwise until the discharge of liquid is triggered, then tighten it all the way.

Size	Size 2	Size 3	Size 4			
Body, bowl and adjustment mechanism	AISI 316L stainless steel					
Caseback regulator		AISI 316L stainless steel				
Adjustment screw, locking nut and fastening screws		AISI 316L stainless steel (stainless steel A4-70)				
Internal components	AISI 316L stainless steel					
Filtering elements	Al	SI 316L stainless steel or HDPE (High density polyethyler	ne)			
Springs		AISI 316L stainless steel				
Seals	NBR (standard versions and automatic drain) NBR for low temperatures (L versions) FPM - HNBR (H versions) FPDM-FDA (EF versions) Silicone - PU (Z version)					
Automatic drain	Brass, stainless steel AISI 304 and AISI 302, sintered bronze Acetal resin, NBR, FPM					

Operating range							
Size	Size 2 Size 3 Size 4						
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous Inert gases Natural gases						
Working temperature (°C)	-30 +80 (standard version) -50 +80 (low temperature L version) -60 +80 (low temperature version -60 °C Z) -5 +150 (high temperature H version) -35 +70 (automatic drain S version and reduced orifice automatic drain SR version) -40 +100 (EPDM-FDA version)						
Maximum working pressure (bar)	20 (standard, low and high temperature versions) 16 (automatic drain version) 10 (reduced orifice automatic drain version)						

Maintenance



Filtration elements and filter regulator are reusable through blowing and/or washing and is made of stainless steel or HDPE (high density polyethylene). To replace, remove the cup, loosen the set screw of the support and replace the filter element with a new one or refurbished one. Replace the regulator diaphragm whenever the performance is compromised or if there is a continuous discharge from the relieving hole (over-pressure exhaust). Fully discharge the adjustment spring before removing the adjustment mechanism. For other maintenance activities, due to complexity of assembly and requirement for dedicated **PNEUMAX** testing activities, it is strongly recommended to contact the manufacturer.

Certifications available













-) Body, bowl and internal components in AISI 316L stainless steel
- A4 (AISI 316) stainless steel fixing screws
- Manual or automatic drain
- ATEX certification (II 2G or II 2D), SIL, EAC
-) Filter cartridge available in AISI 316 stainless steel or HDPE
-) Clean profile versions available
- Versions with 1/8" NPT pressure gauge connection available

Technical characteristics							
Size	Size Size 2 Size 3 Size 4						
Туре	Rough finishing Clean profile (bowl)						
IN / OUT connections	G1/4" 1/4" NPT 3/8" NPT	G1/2" 1/2" NPT 1/4" NPT	G1" 1" NPT 3/4" NPT				
Assembly configuration	Stand alone						
Assembly position		Vertical					
Filter pore size (μm)	5 20 50						
Max. bowl capacity (cm³)	15	25	78				
Condensation drain	Manual Automatic						

Operational characteristics						
Size	Size 2 Size 3 Size 4 Size 2 Size 3 Size				Size 4	
Condensation drain		Manual			Automatic	
Maximum working pressure (bar)	20 (standard version)			16 (automatic drain version) 10 (reduced orifice automatic drain version)		
Minimum working pressure (bar)	1				0,5	
Working temperature (°C)	-50 -60 +8 -5 +	-30 +80 (standard version) -50 +80 (low temperature L version) -60 +80 (low temperature version -60 °C Z) -5 +150 (lhigh temperature H version) -40 +100 (EPDM-FDA version)			-35 +70 ion and reduced orifice auto	omatic drain SR version)

Weighte	Size				
Weights	Size 2	Size 3	Size 4		
Standard version (g)	1088	1903	4655		
Automatic drain version / Reduced orifice automatic drain version (g)	1175	2070	4692		

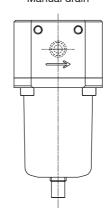


Example: SS172BFBSG

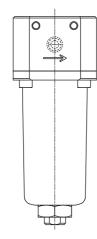
Size 2 filter, rough finishing, 3/8" NPT connection, filter pore size 20 µm - 316 stainless steel, automatic drain with pressure gauge connection port.

Design

Size 2 - Size 3 - Size 4 Manual drain

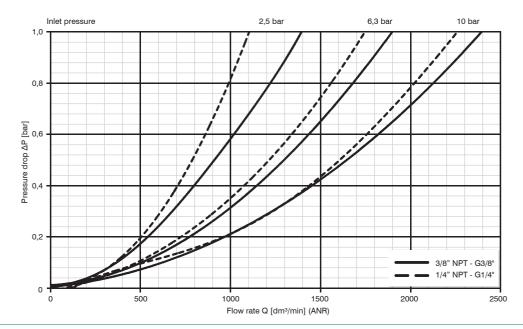


Size 2 - Size 3 - Size 4 Automatic drain



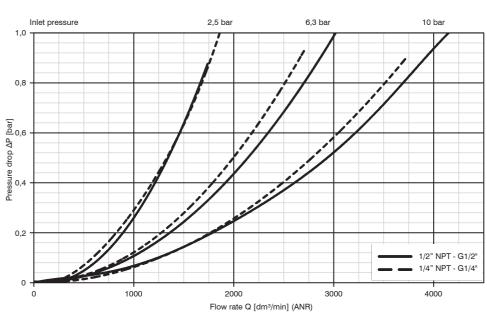






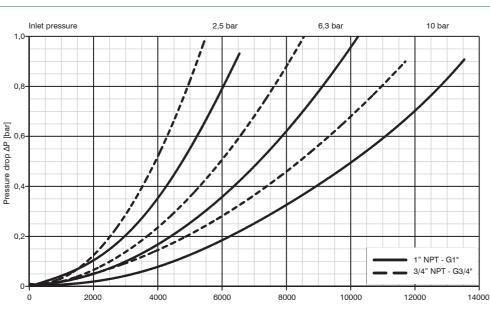
Size 2

Flow rate curves



Size 3

Flow rate curves



Flow rate Q [dm³/min] (ANR)

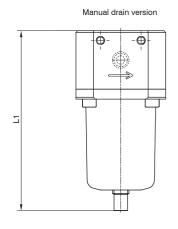
Ľ2*

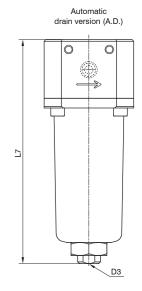
Overall manual drain version В1 Вз Φ-2 9 5 4 -Ξ

- * = BOWL REMOVAL MAXIMUM HEIGHT
 ** = ONLY FOR VERSION WITH PRESSURE GAUGE CONNECTION PORT

Model	B1	B2	В3	D1	D2	L1	L2	L3	L4	L5	L6
#172	55	25	55	G1/4" 1/4" NPT 3/8" NPT	1/8" NPT	111	18	6	42	45	18
#173	71	22	71	G1/2" 1/2" NPT 1/4" NPT	1/8" NPT	124	20	5,5	48	65	20
#174	92	36	92	G1" 1" NPT 3/4" NPT	1/8" NPT	198,5	32,5	10	73,5	80	32,5

Variable dimensions





Model	Li	L7	D3
#172	111	138	1/8" NPT
#173	124	160	1/8" NPT
#174	198,5	207,5	1/8" NPT

Regulators











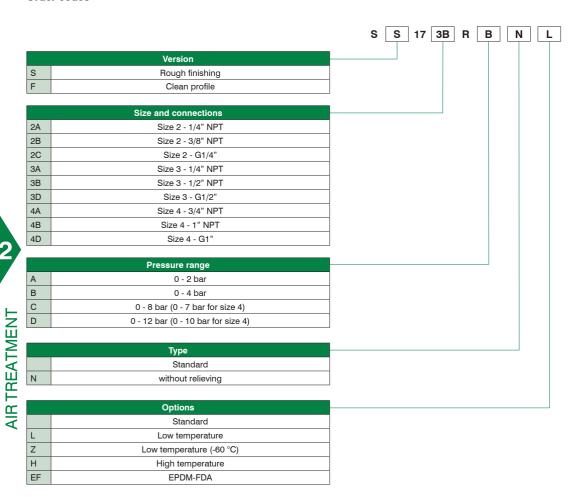
- Pressure regulator diaphragm with over-pressure drain (Relieving)
-) Body, adjustment mechanism, back plate and caseback internal components in AISI 316L stainless steel
- AISI 316 stainless steel adjustment springs
- Fixing screws, adjustment screw and locking nut in inox A4 (AISI 316)
- Clean profile versions available
- Low hysteresis rolling diaphragm
- Balanced system
- ATEX certification (II 2G or II 2D), SIL, EAC

The pressure must be always regulating while increasing. For a more precise regulation and higher sensibility, the use of a regulator with a pressure range as close as possible to the regulated pressure is recommended.

	Technic	cal characteristics	
Size	Size 2	Size 3	Size 4
Туре		Rough finishing Clean profile (Back plate and adjustment mechanism)	
IN / OUT connections	1/4" NPT 3/8" NPT G1/4"	1/4" NPT 1/2" NPT G1/2"	3/4" NPT 1" NPT G1"
Assembly configuration		Stand alone	
Assembly position		Indifferent	
Pressure range (bar)		0-2 0-4 0-8 0-12	
Regulation		Manual	
Pressure measurement	<u> </u>	1/8" NPT pressure gauge connection port	·

	Operation	onal characteristics									
Size	Size 2	Size 3	Size 4								
Maximum working pressure (bar)		20									
Minimum working pressure (bar)		0,5									
Working temperature (C°)		-30 +80 (standard version) -50 +80 (low temperature L version) -80 +80 (low temperature version -60 °C Z) -5 +150 (lhigh temperature H version) -40 +100 (EPDM-FDA version)									

		Weights	
Size	Size 2	Size 3	Size 4
Weight (g)	1283	2270	5400

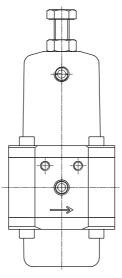


Example: SS173BRBNL

Size 3 regulator, rough finishing, 1/2" NPT connection, pressure range 0 - 4 bar, without relieving, low temperature version.

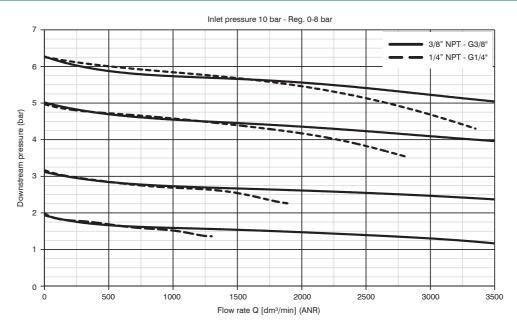
Design

Size 2 - Size 3 - Size 4



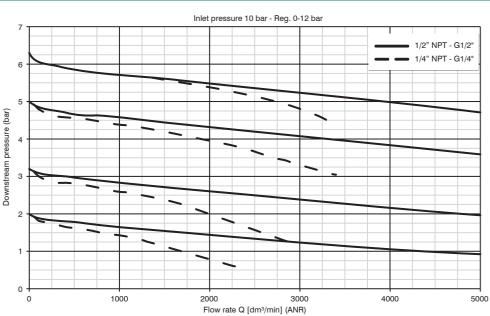
Characteristic curves





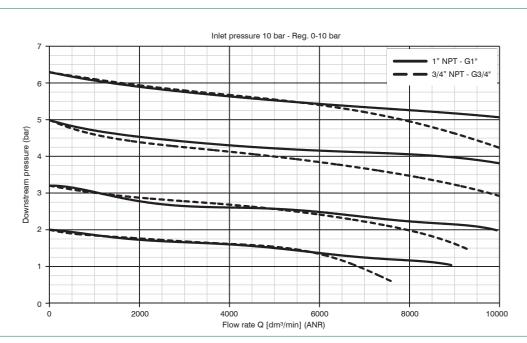
Size 2

Flow rate curves

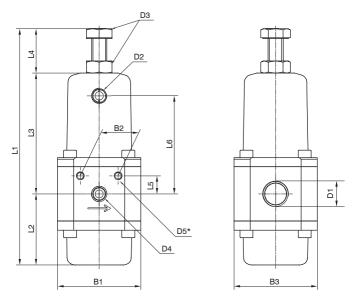


Size 3

Flow rate curves



Dimensions



*THREADED HOLES ON BOTH SIDES

Model	B1	B2	В3	D1	D2	D3	D4	D5	L1	L2	L3	L4	L5	L6
#172	55	25	55	1/4" NPT 3/8" NPT G1/4"	1/8" NPT	Ch.17	1/8" NPT	M5 2 front holes 2 rear holes	156,5	47	80	29,5	12	65
#173	71	22	71	1/4" NPT 1/2" NPT G1/2"	1/8" NPT	Ch.17	1/8" NPT	M6 2 front holes 2 rear holes	172,5	53	91	28,5	14,5	76,5
#174	92	36	92	3/4" NPT 1" NPT G1"	1/8" NPT	Ch.19	1/8" NPT	M8 2 front holes 2 rear holes	260,5	74	147	39,5	22,5	128

Air service units Serie 1700 Steel line



Filter regulators

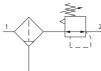


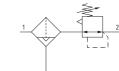






- Filter-pressure regulator diaphragm with over-pressure drain (Relieving)
-) Body, adjustment mechanism, back plate and caseback internal components in AISI 316L stainless steel
- AISI 316 stainless steel adjustment springs
- Fixing screws, adjustment screw and locking nut in inox A4 (AISI 316)
- Clean profile versions available
- Filter cartridge available in AISI 316 stainless steel or HDPE
- Low hysteresis rolling diaphragm
- Balanced system
- Manual or automatic drain
- ATEX certification (II 2G or II 2D), SIL, EAC





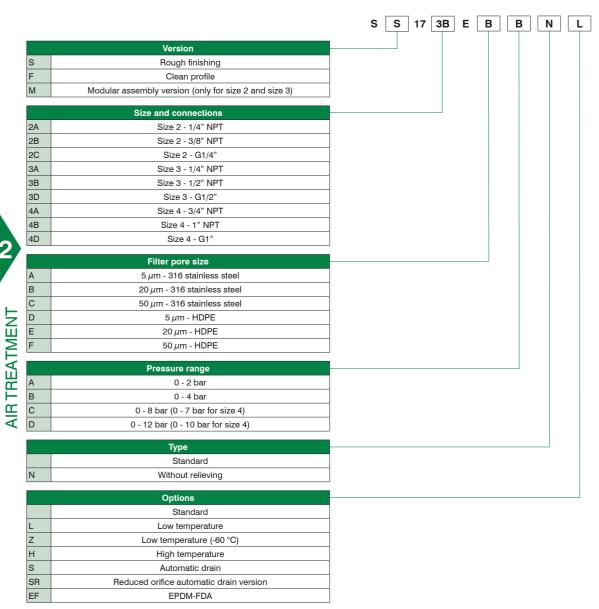
Note

The pressure must be always regulating while increasing. For a more precise regulation and higher sensibility, the use of a regulator with a pressure range as close as possible to the regulated pressure is recommended.

	Technica	al characteristics							
Size	Size 2	Size 3	Size 4						
Туре		Rough finishing Clean profile (Bowl and adjustment mechanism)							
IN / OUT connections	1/4" NPT 3/8" NPT G1/4"	1/4" NPT 1/2" NPT G1/2"	3/4" NPT 1" NPT G1"						
Assembly configuration	Stand alone								
Assembly position	Vertical								
Filter pore size (µm)		5 20 50							
Pressure range (bar)	0	2 4 8 112	0-2 0-4 0-7 0-10						
Max. bowl capacity (cm³)	34	68	90						
Condensation drain		Manual Automatic							
Regulation		Manual							
Pressure measurement		1/8" NPT pressure gauge connection port							

		Operation	nal characteristics							
Size	Size 2	Size 3	Size 4	Size 2	Size 3	Size 4				
Condensation drain		Manual		Automatic						
Maximum working pressure (bar)		20 (standard version)		16 (automatic drain version) 10 (reduced orifice automatic drain version)						
Minimum working pressure (bar)		/		0,5						
Working temperature (C°)	-50 -60 +6 -5 +	orifice automatic drain SR								

	Weight		
Size	Size 2	Size 3	Size 4
Standard version (g)	1492	2557	6253
Automatic drain version / Reduced orifice automatic drain version (g)	1579	2723	6290

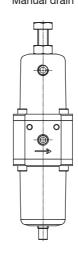


Example: SS173BEBBNL

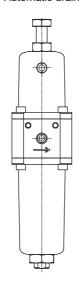
Size 3 filter regulator, rough finishing, 1/2" NPT connection, filter pore size $20 \, \mu m$ - 316 stainless steel, pressure range 0 - 4 bar, without relieving, low temperature version.

Design

Size 2 - Size 3 - Size 4 Manual drain

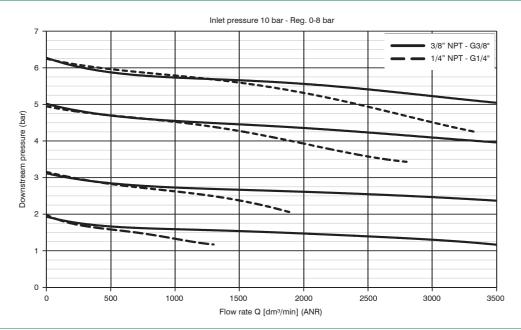


Size 2 - Size 3 - Size 4 Automatic drain



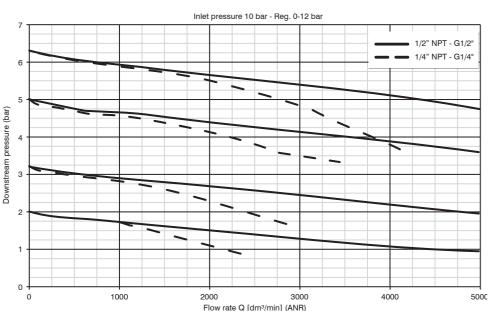
Characteristic curves





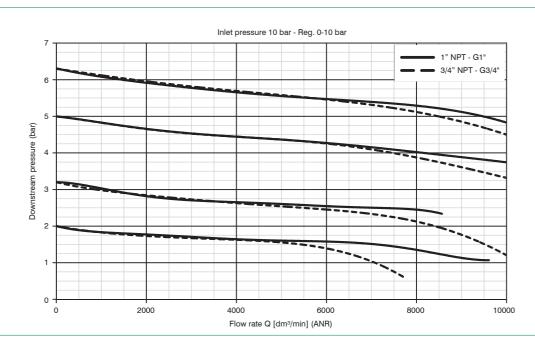
Size 2

Flow rate curves

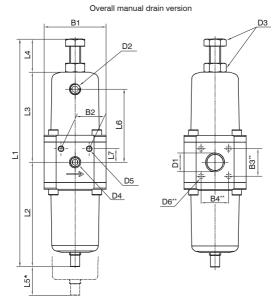


Size 3

Flow rate curves



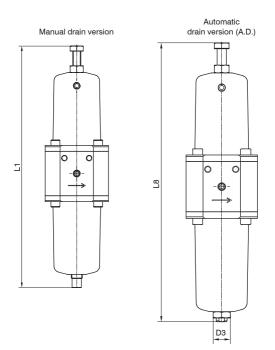
Dimensions



- * = BOWL REMOVAL MAXIMUM HEIGHT ** = ONLY FOR M VERSION

Model	B1	B2	В3	B4	D1	D2	D3	D4	D5	D6	L1	L2	L3	L4	L5	L6	L7
#172	55	25	25	25	1/4" NPT 3/8" NPT G1/4"	1/8" NPT	Ch.17	1/8" NPT	M5 2 front holes 2 rear holes	M4 4 holes IN side 4 holes OUT side	202,5	93	80	29,5	45	65	12
#173	71	22	31,5	31,5	1/4" NPT 1/2" NPT G1/2"	1/8" NPT	Ch.17	1/8" NPT	M6 2 front holes 2 rear holes	M5 4 holes IN side 4 holes OUT side	223,5	104	91	28,5	65	76	14,5
#174	92	36	/	/	3/4" NPT 1" NPT G1"	1/8" NPT	Ch.19	1/8" NPT	M8 2 front holes 2 rear holes	/	352,5	166	147	39,5	80	128	22,5

Variable dimensions

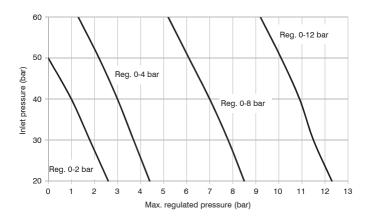


Model	Li	L8	D3
#172	202,5	229,5	1/8" NPT
#173	223,5	259,5	1/8" NPT
#174	352,5	361	1/8" NPT

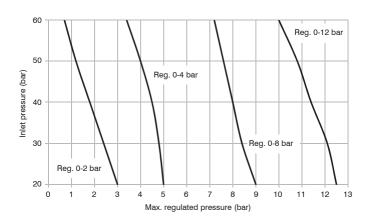


Inlet pressure notes

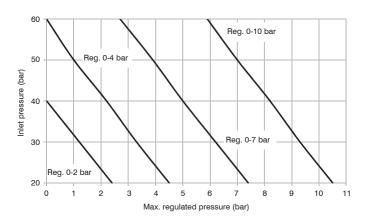
Pressure regulator Stainless steel line have been designed to withstand **a 60 bar** maximum inlet pressure. **Maximum regulated outlet pressure is 20 bar**. For performance details please refer to diagram alongside.

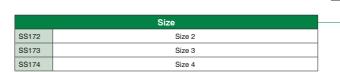


Size 2

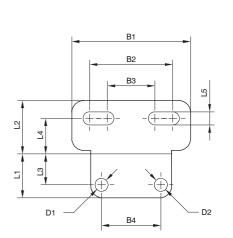


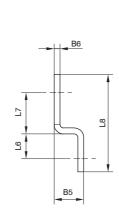
Size 3

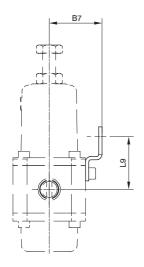












Model	B1	B2	В3	B4	B5	B6	B7	D1	D2	L1	L2	L3	L4	L5	L6	L7	L8	L9
SS17250	50	35	20	25	12,5	2,5	40	Ø5,5	Ø5,5	18,5	22,5	13	15	5,5	10,5	17,5	41	40
SS17350	60	45	20	22	14,5	3	50	Ø6,5	Ø6,5	14	24,5	/	16,5	6,5	11	19,5	44,5	45
SS17450	80	60	40	36	16	4	62	Ø8,5	Ø8,5	24	31	/	/	8,5	11	25	55	58,5

SS174

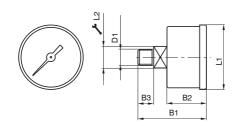
50

Pressure gauge

Α

		SS17070A A
	Scale	
Α	0 - 4 bar	
R	0 - 12 har	





Model	B1	B2	B3	D1	L1	L2
SS17070AA SS17070AB	40	25	10	1/8" NPT	42,5	11

Air service units Serie 1700 Steel line - Accessories

Tamper-proof kit

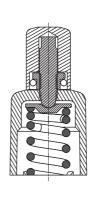
 Size

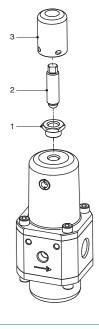
 SS172
 Size 2 - Size 3

 SS174
 Size 4



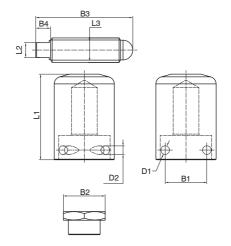






To use, replace the standard adjustment screw and nut with the screw and nut supplied in the kit. Assemble the screw and nut as shown (see adjacent drawing), adjust until the desired $P_{\rm 2}$ value is reached, lock the nut and insert the cap that can be locked with wire or padlock.

	Tamper-proof kit			
1	Adjustment screw			
2	Locking nut			
3	Tamper-proof cap			



Model	B1	B2	В3	B4	D1	D2	L1	L2	L3
SS17250	17	Ch.17	39,5	6	Ø3,5	Ø3,5	35	Ch. 6	M10x1,5
SS17450	19	Ch. 20	56,5	6,5	Ø3,5	Ø3,5	45	Ch. 7	M12x1,75



Series 1700 - Electronic proportional regulators - Size 0 - 1 - 3

Modern industrial applications require increasingly high performances from their pneumatic components. For example, the speed and thrust of a pneumatic actuator may need to be varied. These parameters often need to be modified dynamically while an operation is runnina.

This solution can be achieved by means of a regulator that can vary pressure over time.

Pneumax portfolio includes 1700 Series electronic proportional regulator, available in three different sizes with flow rates of 7, 1100, and 4000 NI/min respectively and supporting Analog/Digital, CANopen® or IO-Link communication interfaces.

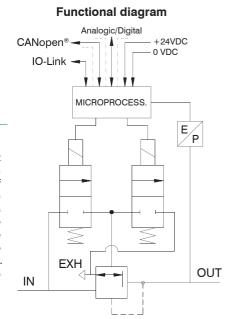
Application fields

Typical applications will include the necessity to dynamically control the force of the actuator, be it thrust of torque.

Examples include: Closing systems, painting systems, tensioning systems, packaging systems, pneumatic braking systems, force control for welding grippers, thickness compensation systems, balancing systems, laser cutting, pressure transducers for the control of modulating valves, test benches for system testing, force control for buffers on polishers, etc.

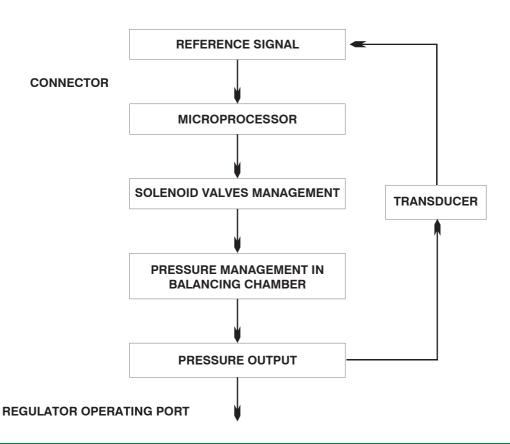
Product presentation

The supply and exhaust connections are on one side of the regulator and the working port is on the opposite side. The two remaining sides carry G 1/8" ports that are blanked off with removable plugs, these can be used to connect a pressure gauge or as an outlet port. If you order the version with the external feedback there is a M5 threaded connection to which connect the feedback pressure (to the pressure transducer). This connection is placed on the outlet connection side. This option allows to take the signal from a remote point instead of directly from the outlet connection; this function is typically used when the regulated pressure is used far away to the regulator. The control solenoid valves, the pressure sensor, and the management electronics are placed in upper part of the regulator. The electronic management system is the same for all the size 0, size 1 and size 3



CLOSED LOOP diagram (internal control circuit)

The proportional regulator is known as a CLOSED LOOP regulator because a pressure transducer in the circuit transmits a continuous analog signal to the microprocessor, which compares the reference value and supplies the control solenoid valves accordingly.





Features

Pneumatic Pneumatic				
Fluid	Air filtered at 5 micron and dehumidified			
Minimum inlet pressure	De	sired outlet pressure + 1	bar	
Maximum inlet pressure		10 bar		
Outlet pressure 0 9 bar				
Nominal flowrate from 1 to 2	Size 0	Size 1	Size 3	
(6 bar ΔP 1 bar)	7 NI/min	1100 NI/min	4000 NI/min	
Discharge flowrate (a 6 bar with 1 bar overpressure)	7 NI/min	1300 NI/min	4500 NI/min	
Air consumption	< 1 NI/min	< 1 NI/min	< 1 NI/min	
Supply connection	M5	G 1/4"	G 1/2"	
Operating connection	M5	G 1/4"	G 1/2"	
Exhaust connection	Ø1,8	G 1/8"	G 3/8"	
Maximum fitting tightening	3 Nm	15 Nm	15 Nm	

Electric Control of the Control of t				
Supply voltage		24VDC ± 10% (stabilized with ripple<1%)		
Standby current consumption		70mA		
Current consumption with solenoid valves on		400mA		
**Reference Signal	Voltage	*0 10 V *0 5 V *1 5 V		
	Current	*4 20 mA *0 20 mA		
**!	Voltage	10 kΩ		
**Input Impedance	Current	250 Ω		
**Digital Inputs		24VDC ± 10%		
**Digital Output		24 VDC PNP (max current 50 mA)		

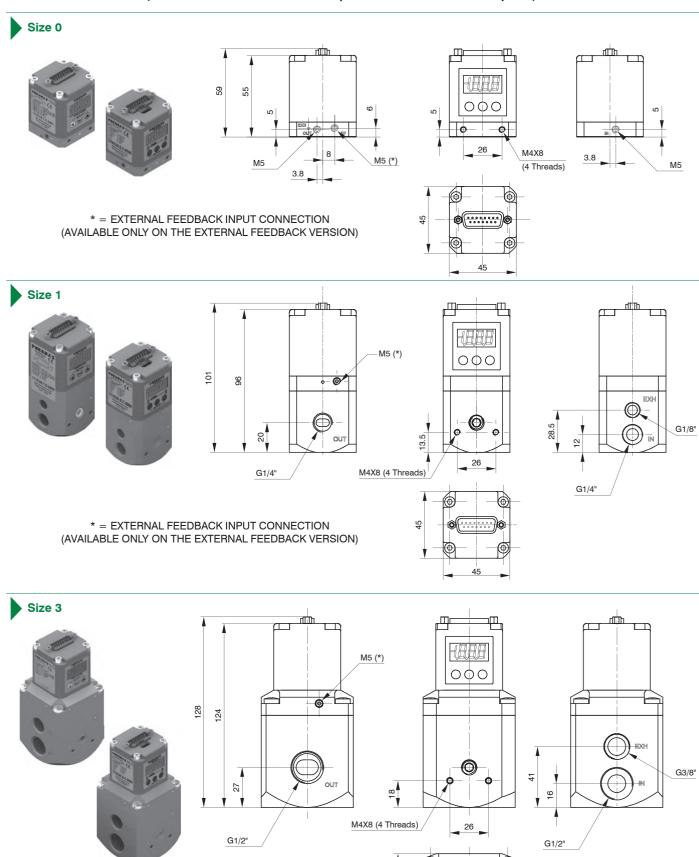
Functional			
Linearity	± Insensitivity		
Hysteresis	± Insensitivity		
Repeatability	± Insensitivity		
Sensitivity	0,01 bar		
Assembly position	Indifferent		
Protection grade	IP65 (with casing fitted)		
Ambient temperature	-5°C 50°C / 23°F 122°F		

Constructional				
Body	Anodized aluminum			
Shutters	Brass with vulcanized NBR			
Diaphragm	Cloth-covered rubber			
Seals	NBR			
Cover for electrical part	Technopolymer			
Springs	AISI 302			
Weight	Size 0	Size 1	Size 3	
Weight	168 g	360 g	850 g	

^{*} Selectable by keyboard or by RS-232

^{**} Valid only for devices with analog input

Overall dimensions ("521" standard version and CANopen® version with SUB-D 15 poles)

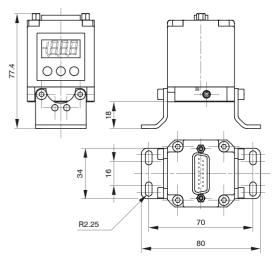


62

62

Mounting options ("521" standard version and CANopen® version with SUB-D 15 poles)

In addition to mounting directly using the M4 tappings on the body, the 170M5 bracket may also be used, as shown below:





 $\circ \phi \circ$

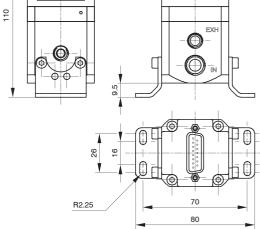
Size 0



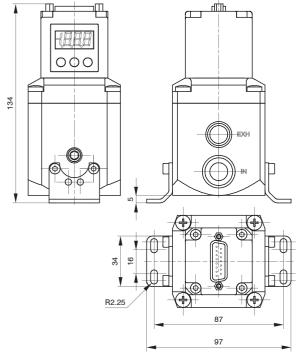
Size 1







Size 3



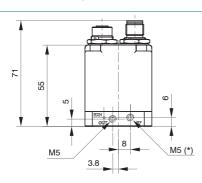


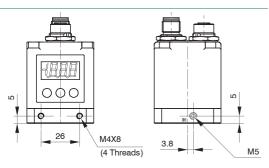


Overall dimensions ("521 M12 version" - CANopen® version)









28.5

4

10

G1/2"

7

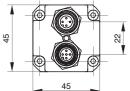
G1/4"

EXH

G1/8"

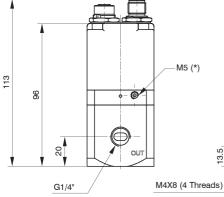
G3/8"

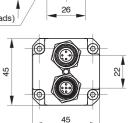
* = EXTERNAL FEEDBACK INPUT CONNECTION (AVAILABLE ONLY ON THE EXTERNAL FEEDBACK VERSION)



Size 1





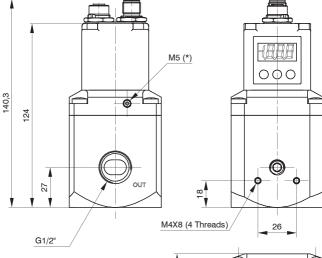


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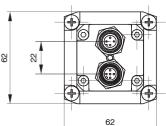
* = EXTERNAL FEEDBACK INPUT CONNECTION (AVAILABLE ONLY ON THE EXTERNAL FEEDBACK VERSION)

Size 3





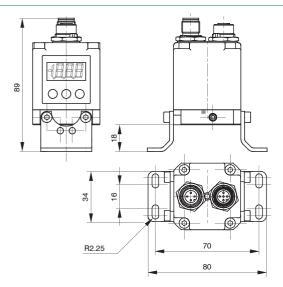
* = EXTERNAL FEEDBACK INPUT CONNECTION (AVAILABLE ONLY ON THE EXTERNAL FEEDBACK VERSION)





Mounting options ("521 M12 version" - CANopen® version)

In addition to mounting directly using the M4 tappings on the body, the 170M5 bracket may also be used, as shown below:

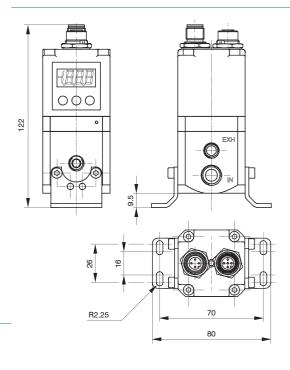


Size 0



Size 1



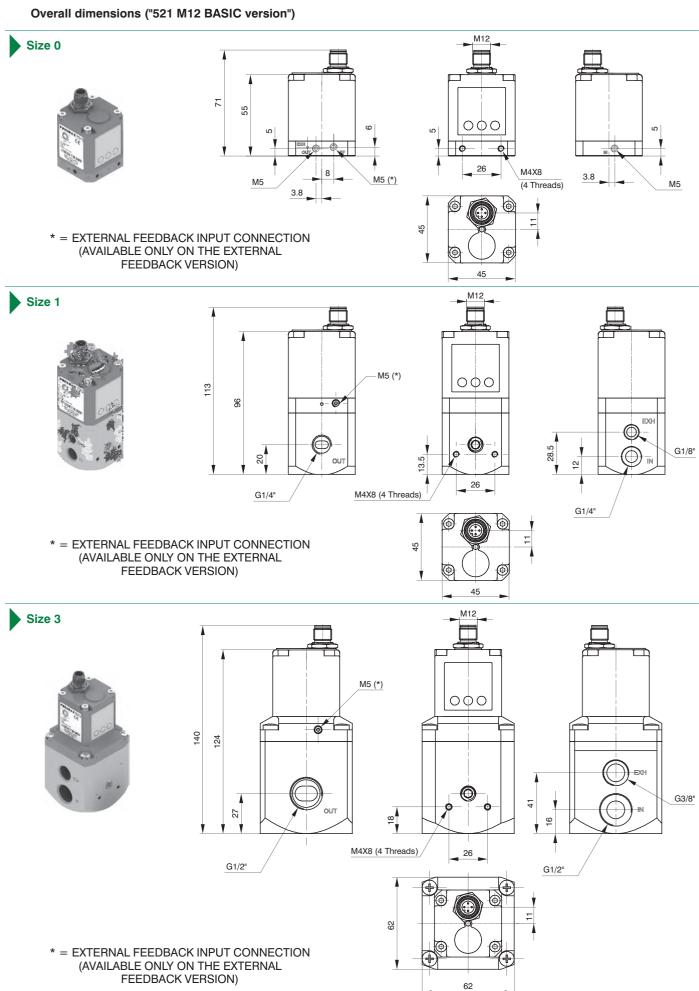


000 145 87

Size 3

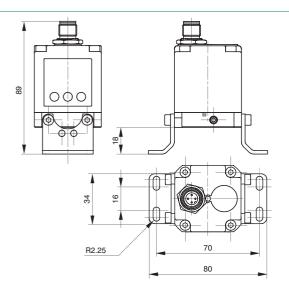






Mounting options ("521 M12 BASIC version")

In addition to mounting directly using the M4 tappings on the body, the 170M5 bracket may also be used, as shown below:

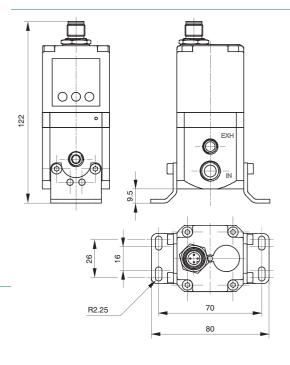


Size 0



Size 1





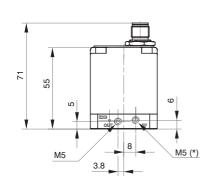
000 145 34 R2.25 87 97

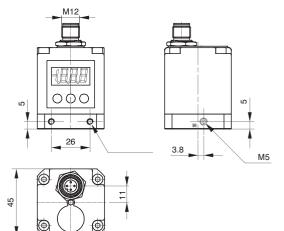


Size 3

Overall dimensions ("521 M12 version" - Standard version)



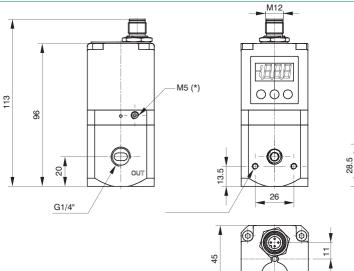


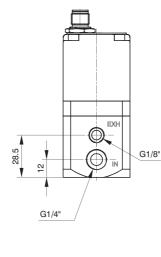


Size 1

AIR TREATMENT

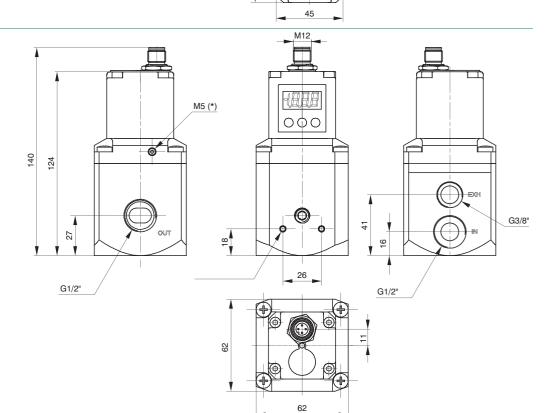






Size 3

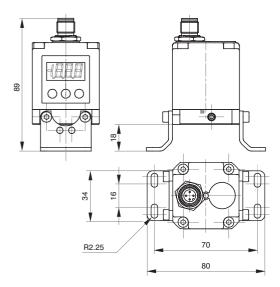






Mounting options ("521 M12 version" - Standard version)

In addition to mounting directly using the M4 tappings on the body, the 170M5 bracket may also be used, as shown below:

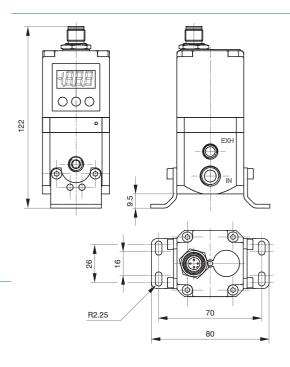


Size 0



Size 1



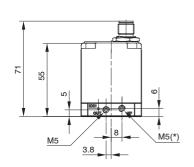


000 145 34 R2.25 87 97



Size 3





M4x8 (4 Threads)

3.8

M5

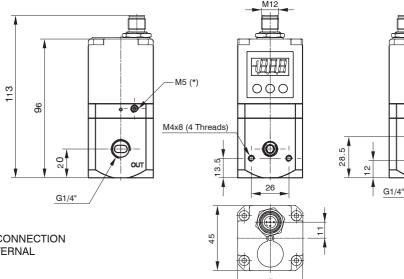
G 1/8"

* = EXTERNAL FEEDBACK INPUT CONNECTION (AVAILABLE ONLY ON THE EXTERNAL FEEDBACK VERSION)

Overall dimensions ("521 IO-Link version")

Size 1

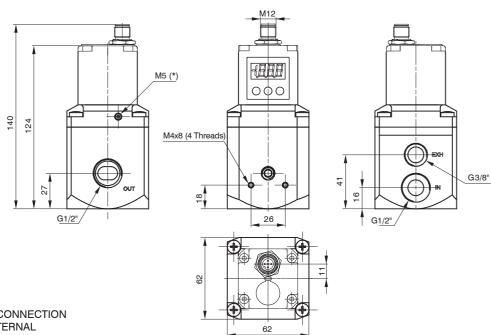




* = EXTERNAL FEEDBACK INPUT CONNECTION (AVAILABLE ONLY ON THE EXTERNAL FEEDBACK VERSION)

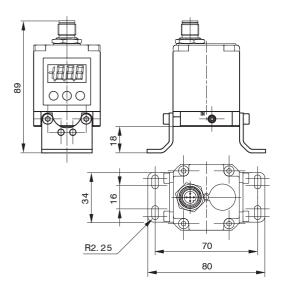
Size 3





* = EXTERNAL FEEDBACK INPUT CONNECTION (AVAILABLE ONLY ON THE EXTERNAL FEEDBACK VERSION)

In addition to mounting directly using the M4 tappings on the body, the 170M5 bracket may also be used, as shown below.



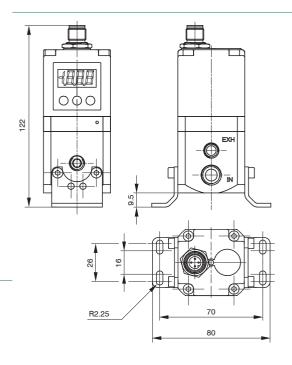
Mounting options ("521 IO-Link version")

Size 0



Size 1





000 145 34 R2.25 87 97



Size 3



Installation/Operation

PNEUMATIC CONNECTION



The compressed air is connected by means of M5 threaded holes (for size 0 regulators), G 1/4" threaded holes (for size 1 regulators) and G 1/2" threaded holes (for size 3 regulators) on the body.

Before making the connections, eliminate any impurities in the connecting pipes to prevent chippings or dust entering the unit. Do not supply the circuit with more than 10 bar pressure and make sure that the compressed air is dried (excessive condensate could cause the appliance to malfunction) and filtered at 5 micron. The supply pressure to the regulator must always be at least 1 bar greater than the desired outlet pressure.

If a silencer is applied to the discharge path the unit response time may change; periodically check that the silencer is not blocked and replace it if necessary.

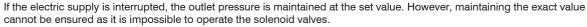


ELECTRICAL CONNECTION

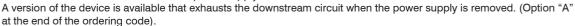
For the electrical connection a SUB-D 15-pole female or a M12 connector is used (accordingly to the model, to be ordered separately). Wire in accordance with the wiring diagram shown below.

Warning: INCORRECT CONNECTIONS MAY DAMAGE THE DEVICE

NOTES ON OPERATION



In order to discharge the circuit downstream, zero the reference, make sure that the display shows a pressure value equal to zero and then disconnect the electric power supply.



If the compressed-air supply is suspended and the electric power supply is maintained a whirring will be heard that is due to the solenoid valves; an operating parameter can be activated (P18) that triggers the regulator protection whenever the requested pressure is not reached within 4 seconds of the reference signal being sent. In this case the system will intervene to interrupt the control of the solenoid valves. Every twenty seconds, the unit will start the reset procedure until standard operating conditions have been restored.

"521" Standard version with D-SUB connector



= DIGITAL INPUT 1

= DIGITAL INPUT 2

= DIGITAL INPUT 3

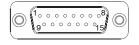
= DIGITAL INPUT 4

= DIGITAL INPUT 5

3

6

TOP VIEW OF THE REGULATOR CONNECTOR



- = ANALOG INPUT / **DIGITAL INPUT 8**
- 9 = SUPPLY (24 VDC)
- 10 = DIGITAL OUTPUT (24 VDC PNP)
- 11 = ANALOG OUTPUT (CURRENT)
- 12 = ANALOG OUTPUT (VOLTAGE)
- 13 = Rx RS 232
- 14 = Tx RS-232
- = DIGITAL INPUT 6 = DIGITAL INPUT 7 15 = 0 V

"521" M12 BASIC and Standard versions



M12 4P MALE

M12 BASIC version CONNECTOR PINOUT:

- = POWER SUPPLY (24 VDC)
- 2 = NC
- = 0 V3
- = ANALOG INPUT

M12 Standard version

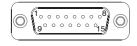
CONNECTOR PINOUT:

- = POWER SUPPLY (24 VDC)
- = ANALOG OUTPUT
 - (depending on the model)
- = 0 V
- = ANALOG INPUT

"521" CANopen® version with D-SUB connector



TOP VIEW OF THE REGULATOR CONNECTOR



"521" CANopen® version with M12 connector



M12 5P **FEMALE**



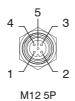
M12 4P MALE

CONNECTOR PINOUT:

- 1 = CAN SHIELD
- 2 = CAN V +
- 3 = CAN GND
- $4 = CAN_H$
- $5 = CAN_L$
- 6 = NC
- 7 = NC
- 8 = NC
- = SUPPLY 9
- (+24 VDC)
- 10 = CAN SHIELD
- $11 = CAN^{-}V +$
- 12 = CAN GND
- 13 = CAN H
- $14 = CAN^{T}L$
- 15 = 0 V

"521 IO-Link version"





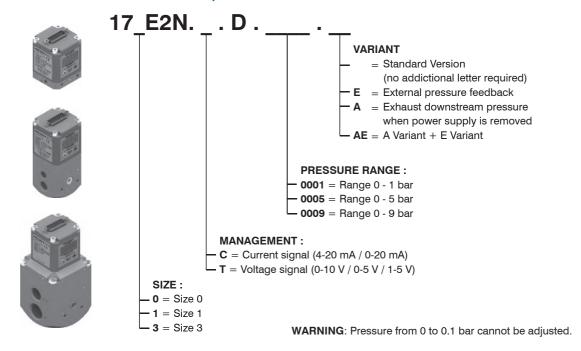
CONNECTOR PINOUT:

- = L+
- = +24 VDC (P24)
- 3 = L-
- = C/Q
- = 0 V (N24)



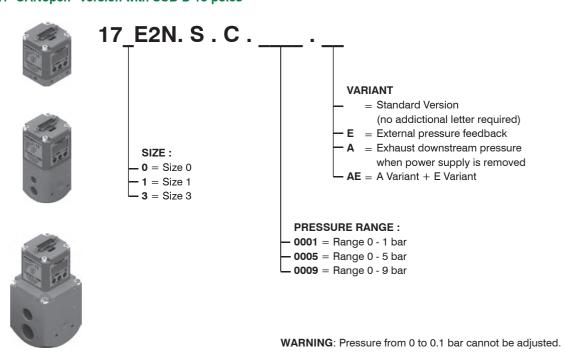
ORDERING CODES

"521" standard version with SUB-D 15 poles

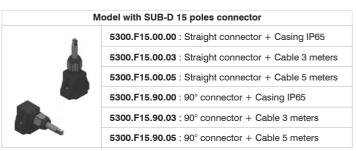


ORDERING CODES

"521" CANopen® version with SUB-D 15 poles



Accessories



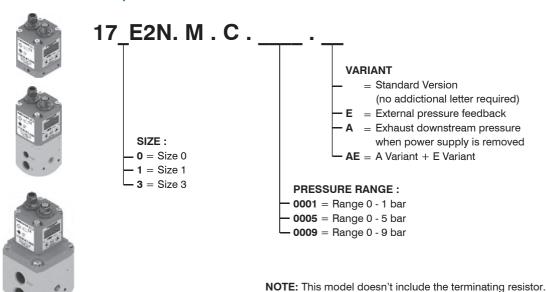
^{*} Without cable





ORDERING CODES

"521 M12 version" - CANopen® version



Accessoris

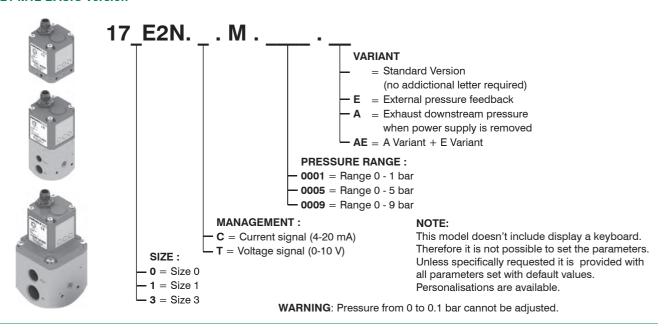






WARNING: Pressure from 0 to 0.1 bar cannot be adjusted.

ORDERING CODES "521 M12 BASIC version"



Accessories

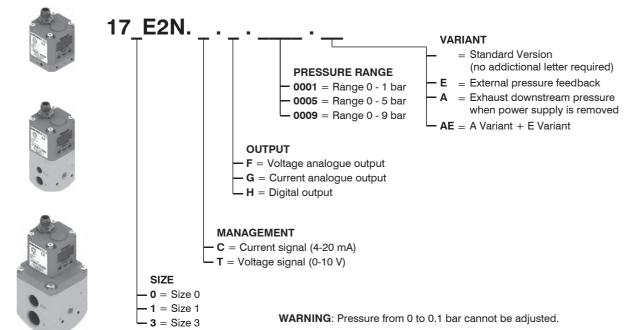






ORDERING CODES

"521 M12 version" - Standard version

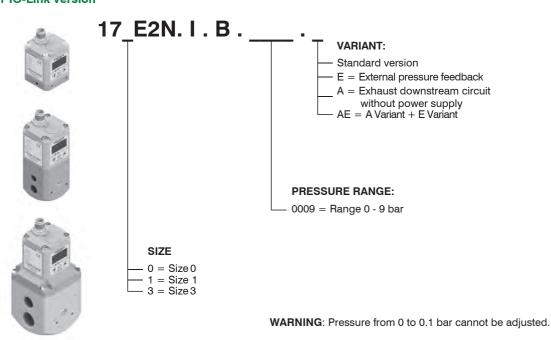


Accessories





ORDERING CODES "521 IO-Link version"



Accessories







Series 1700 - Miniaturised proportional pressure regulator - Size 0 - 1 - 3

Modern industrial applications constantly require more sophisticated and better performing pneumatic components.

Flexibility and adaptability are key factor when designing a machine. The possibility to change the application parameter during operation such as for example the speed of a cylinder or the force generated by a rotary actuator are beneficial to the designer.

In the past it was necessary to design complicated pneumatic circuits based on pneumatic logic elements which required a lot of space and complicated set up, today, thanks to the electronic proportional regulators such operations are extremely easy to achieve and offer even more flexibility.

Pneumax miniaturized proportional regulators series integrates all the main features of the 521 series with the exclusion of the display and analogue/digital output.

High precision in pressure regulation, fast response speed, assembling options and reduced dimensions are the main advantages.

Pneumatic characteristics				
Fluid		Air filtered at 5 micron and dehumidified		
Minimum inlet pressure		Desired outlet pressure + 1 bar		
Maximum inlet pressure		10 bar		
Outlet aussessus	Ordering code	009		
Outlet pressure	Presure value	0 9 bar		
Nominal flowrate from 1 to 2 (6 bar Δρ	1 bar)	7 NI /min		
Discharge flowrate (at 6 bar with 1 bar overpressure)		7 NI /min		
Air consumption		M5 / Ø4		
Operating connection		M5 / Ø4		
Exhaust connection		M5 / Ø4		
Maximum fitting tightening		3 Nm		

Electrical characteristics				
Supply voltage		24VDC ± 10% (stabilised with ripple <1%)		
Standby current consumption		55 mA		
Current consumption with solenoid valves on		145 mA		
Reference signal	Voltage*	0 10 V		
neiererice signal	Current*	4 20 mA		
Input impedance	Voltage	10 ΚΩ		
input impedance	Current	250 Ω		
Analog outputs voltage		0,2 10 V (10 V to 9 bar)		
Connector		M8 4 poles		

Operational characteristics			
Linearity	< ± 0,3 % F.S.		
Hysteresis	<0,3 % F.S.		
Repeatability	< ± 0,5 % F.S.		
Sensitivity	< ± 0,5 % F.S.		
Assembly position	Indifferent		
Protection degree	IP65 (with casing fitted)		
Environment temperature	-5°C 50°C / 23°F 122°F		

Construction characteristics				
Body	Technopolymer			
Seals	NBR			
Cover for electrical part	Technopolymer			
Weight	60 g			

^{*} Request during ordering process

PARAMETER 18 - Protection mode

If during operation in "standard" mode the desired pressure cannot be reached (for example, there is no compressed-air supply or it is insufficient) or the discharge conduit is blocked or closed, the regulator continues to work on the solenoid valves to try to reach the desired pressure. This parameter allows the automatic switch-off of the control solenoid valves for up to 20 seconds to be enabled. This function is used to safeguard the solenoid valves over time. The protection is triggered if the desired pressure is not reached and the outlet pressure does not undergo significant variations within a 4-seconds control of the solenoid valves. A significant variation is defined as a variation that is greater than the defined insensitivity value, parameter P1. After the 4 seconds have elapsed in which the regulator attempts to reach the desired pressure, the protection is triggered. This protection switches off the solenoid valves for a maximum of 20 seconds. If the 20 seconds have elapsed or if during the 20 seconds during which the solenoid valves are switched off the required pressure (reference) varies or the outlet pressure varies the regulator will again start to control the solenoid valves for another 4 seconds, trying to reach the desired pressure.

If this does not occur, the protection is reactivated. From this point on 4 seconds of controlling the solenoid valves and 20 seconds of switch-off alternate cyclically.

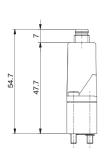
2 = Parameter 18 not active

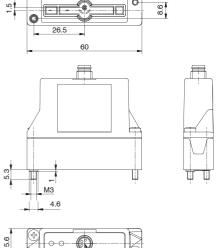
0 = Parameter 18 active

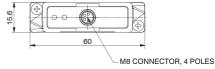
Series 1700 - Miniaturised proportional pressure regulator - Sizes 0 - 1 - 3

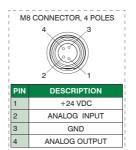
Proportional pressure regulator





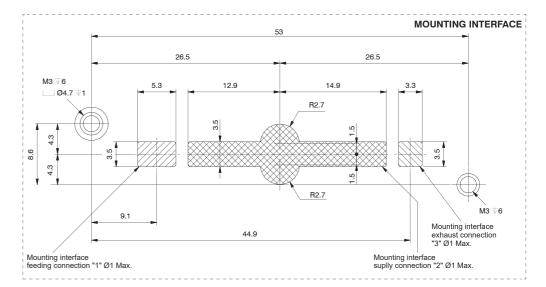








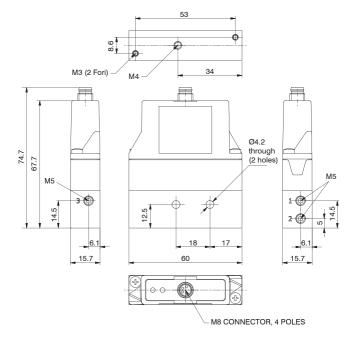
PWR	Green Led: The regulator is properly powered
P-OUT	Green Led: lights up when the outlet pressure is higher than the desired pressure minus 0.2 bar and less than the desired pressure more 0.2 bar





Proportional Pressure Regulator c/w M5 In-Line Single Base





Ordering code

170E@M. .M. .M. .G.FO

PROTECTION
0 = Parameter 18 active
2 = Parameter 18 not active
VERSION
T = Voltage signal
C = Current signal
PRESSURE RANGE
001 = Range 0 ... 1 bar
005 = Range 0 ... 5 bar
009 = Range 0 ... 9 bar

Ordering code

170M1.FO

Weight: 110 g

M5 In-Line Single Base

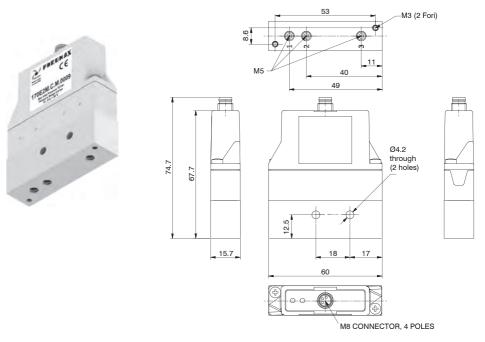


M3 V6

Weight: 50 g



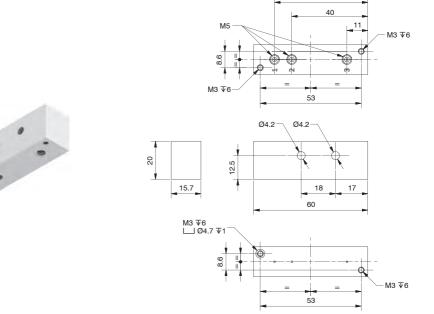
Proportional Pressure Regulator c/w M5 Bottom Entry Base



	Ordering code					
1	170E ❷ M. Ø .M. ⑥ .FV					
	PROTECTION					
P	0 = Parameter 18 active					
	2 = Parameter 18 not active					
	VERSION					
V	T = Voltage signal					
	C = Current signal					
	PRESSURE RANGE					
G	001= Range 0 1 bar					
•	005= Range 0 5 bar					
	009= Range 0 9 bar					

Weight: 110 g

M5 Bottom Entry Single Base



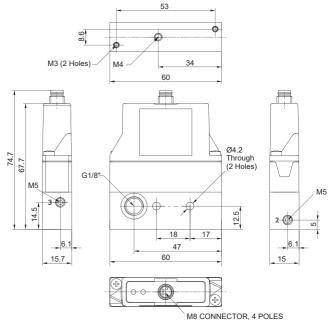
Ordering code

Weight: 50 g



Proportional Pressure Regulator c/w Modular In-Line Base





Ordering code

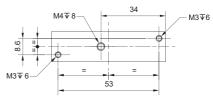
170E@M. .M. .M. .G.FP

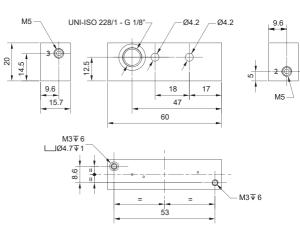
PROTECTION
0 = Parameter 18 active
2 = Parameter 18 not active
VERSION
T = Voltage signal
C = Current signal
PRESSURE RANGE
001= Range 0 ... 1 bar
005= Range 0 ... 5 bar
009= Range 0 ... 9 bar

Weight: 110 g

Single Modular In-Line Base







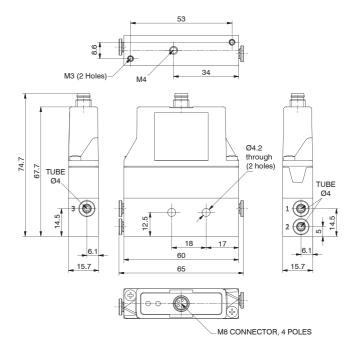
Weight: 50 g

Ordering code

170M1.FP

Proportional Pressure Regulator c/w 4mm In-Line Single base



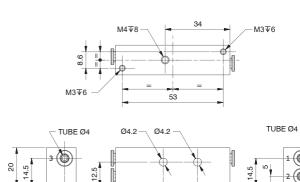


	Ordering code
1	70E @ M. ♥ .M. ⊜ .TO
	PROTECTION
P	0 = Parameter 18 active
	2 = Parameter 18 not active
	VERSION
V	T = Voltage signal
	C = Current signal
	PRESSURE RANGE
G	001= Range 0 1 bar
	005= Range 0 5 bar
	009= Range 0 9 bar

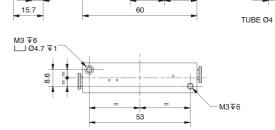
Weight: 110 g

Single 4mm In-Line Base





6.1



18

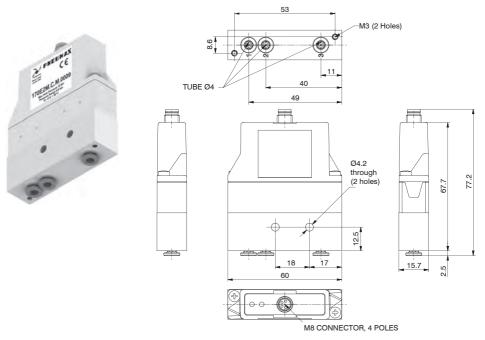
60

Ordering code

170M1.TO

Weight: 50 g

Proportional Pressure Regulator c/w 4mm Bottom Entry Single Base



Ordering code

170E@M. .M. .M. .G.TV

PROTECTION
0 = Parameter 18 active
2 = Parameter 18 not active
VERSION
T = Voltage signal
C = Current signal
PRESSURE RANGE
001= Range 0 ... 1 bar
005= Range 0 ... 5 bar
009= Range 0 ... 9 bar

Weight: 110 g

Single 4mm Bottom Entry Base



TUBO 04

M3 \(\vec{V} \)

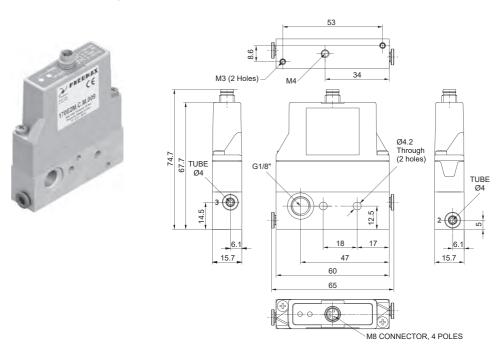
Weight: 50 g

Ordering code

170M1.TV



Proportional Pressure Regulator c/w 4mm In-Line Modular Base



Ordering code

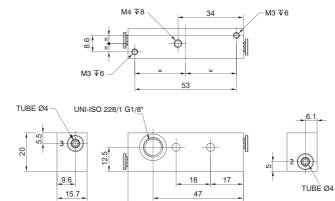
170E@M. .M. .M. .G.TP

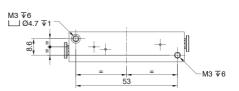
PROTECTION
0 = Parameter 18 active
2 = Parameter 18 not active
VERSION
T = Voltage signal
C = Current signal
PRESSURE RANGE
001= Range 0 ... 1 bar
005= Range 0 ... 5 bar
009= Range 0 ... 9 bar

Weight: 110 g

Single 4mm In-Line Modular Base







60

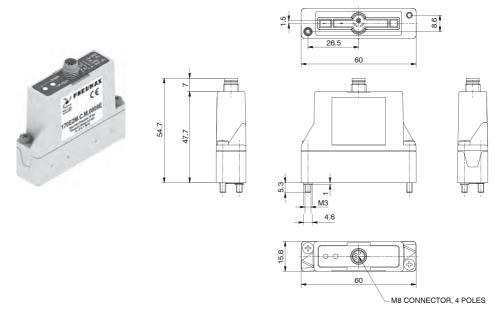
Weight: 50 g

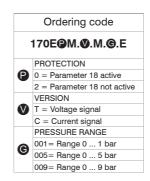
Ordering code

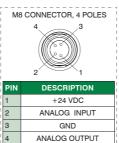
170M1.TP

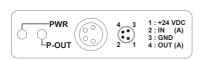
PNEUMAX

Proportional pressure regulator with external feedback

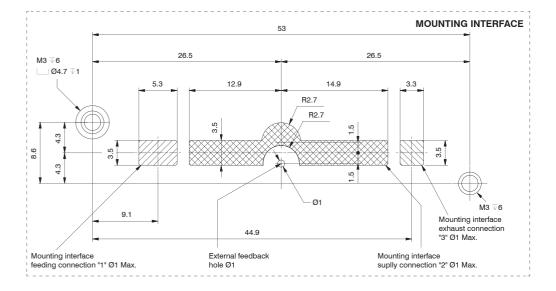








PWR	Green Led: The regulator is properly powered
P-OUT	Green Led: lights up when the outlet pressure is higher than the desired pressure minus 0.2 bar and less than the desired pressure more 0.2 bar



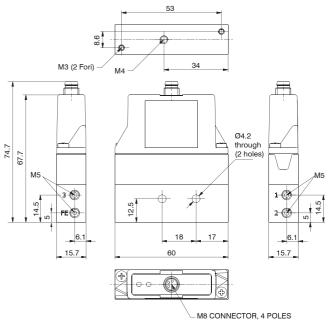


Ordering code

Ordering code 170M1.EFO

Proportional Pressure Regulator c/w M5 In-Line Single Base with External Feedback



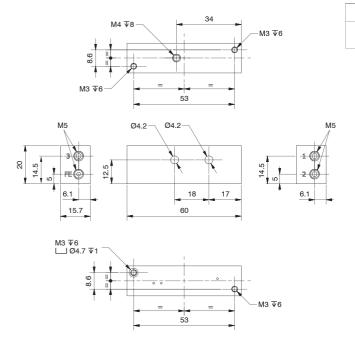


170E**₽**M.**Ø**.M.**©**.EFO PROTECTION D = Parameter 18 active 2 = Parameter 18 not active VERSION ▼ T = Voltage signal C = Current signal
PRESSURE RANGE 001= Range 0 ... 1 bar 005= Range 0 ... 5 bar 009= Range 0 ... 9 bar

Weight: 110 g

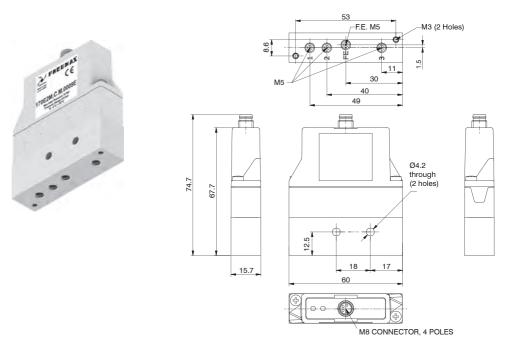
Single M5 In-Line Base with External Feedback





Weight: 50 g

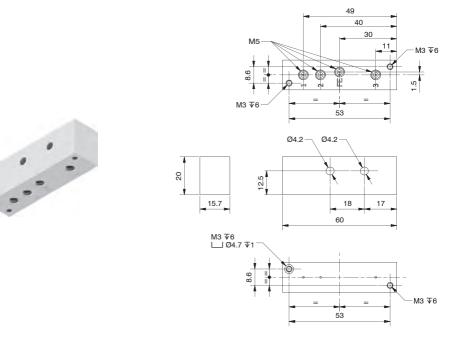
Proportional Pressure Regulator c/w M5 Bottom Entry Base with External Feedback



Ordering code 170E**₽**M.**Ø**.M.**@**.EFV PROTECTION D = Parameter 18 active 2 = Parameter 18 not active VERSION T = Voltage signal C = Current signal
PRESSURE RANGE 001= Range 0 ... 1 bar 005= Range 0 ... 5 bar 009= Range 0 ... 9 bar

Weight: 110 g

Single M5 Bottom Entry Base with External Feedback



Ordering code 170M1.EFV

Weight: 50 g

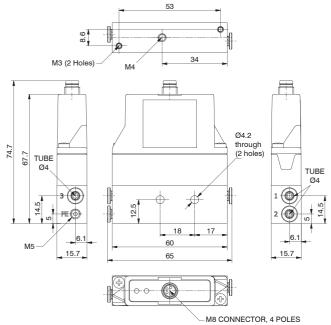


Proportional Pressure Regulator c/w 4mm In-Line Single Base with External Feedback

M5

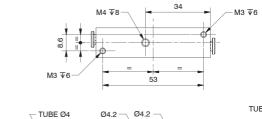
15.7

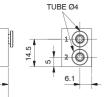


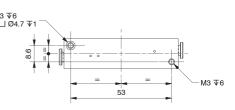


Weight: 110 g

Single 4mm In-Line Base with External Feedback







18

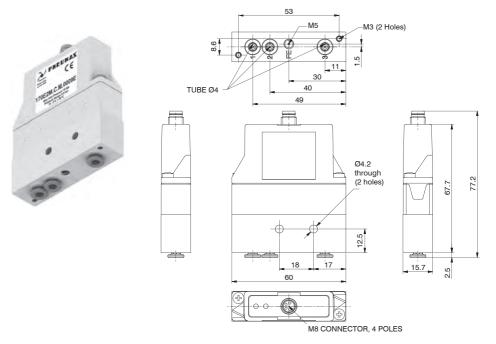
Weight: 50 g

Ordering code

170M1.ETO



Proportional Pressure Regulator c/w 4mm Bottom Entry Single Base with External Feedback



Ordering code

170E@M. M. M. G. ETV

PROTECTION
0 = Parameter 18 active
2 = Parameter 18 not active
VERSION
T = Voltage signal
C = Current signal
PRESSURE RANGE
001= Range 0 ... 1 bar
005= Range 0 ... 5 bar
009= Range 0 ... 9 bar

Weight: 110 g

Single 4mm Bottom Entry Base with External Feedback

90. 0

TUBO 04

M3 V6

Weight: 50 g

Ordering code

170M1.ETV



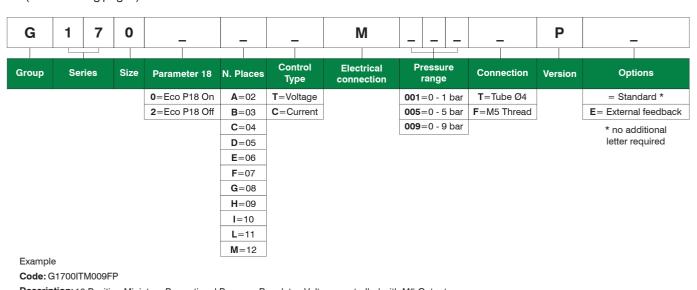
Coding For Proportional Pressure Regulator Modular Manifold

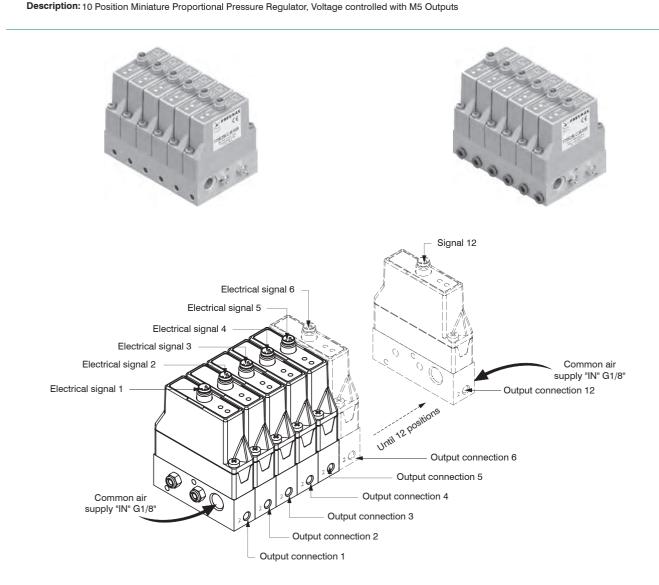
It is possible to assemble a manifold of Miniature Proportional Regulators to a maximum of 12 Regulators.

For the coding of the Manifold, refer to the configuration Table below.

The Regulators are feed by a single supply pressure via the G1/8" connection. In the Manifold, the Pressure Regulators operate independently, the output pressure is supplied via the M5 or 4mm output connection depending on the model requested. The electrical signal is controlled via the M8 connector.

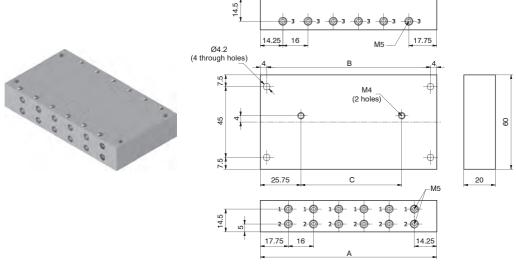
There are also configured single bases up to a maximum of 12 positions with power supplies and independent consumptions (See following pages).







Multiple M5 In-Line Base



			3 = 3 positions (weight 150 g)
			4 = 4 positions (weight 200 g)
	Ī		5 = 5 positions (weight 250 g)
		W	6 = 6 positions (weight 300 g)
			7 = 7 positions (weight 350 g)
	09		8 = 8 positions (weight 400 g)
			9 = 9 positions (weight 450 g)
			10 = 10 positions (weight 500 g)
	.		
00			

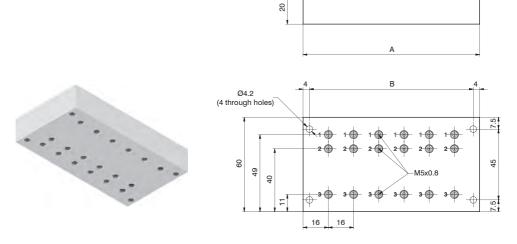
Ordering code
170M\(\mathbb{O}\).FO

2 = 2 positions (weight 100 g)

NO. POSITIONS

Dimensions В

Multiple M5 Bottom Entry Base



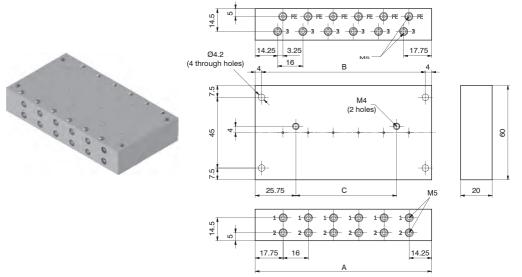
Dimensions				No	o. positio	ns			
Dimensions	2	3	4	5	6	7	8	9	10
Α	48	64	80	96	112	128	144	160	176
В	40	56	72	88	104	120	136	152	168

	Ordering code
	170M ۞ .FV
	NO. POSITIONS
	2 = 2 positions (weight 100 g)
	3 = 3 positions (weight 150 g)
	4 = 4 positions (weight 200 g)
	5 = 5 positions (weight 250 g)
W	6 = 6 positions (weight 300 g)
	7 = 7 positions (weight 350 g)
	8 = 8 positions (weight 400 g)
	9 = 9 positions (weight 450 g)

10 = 10 positions (weight 500 g)



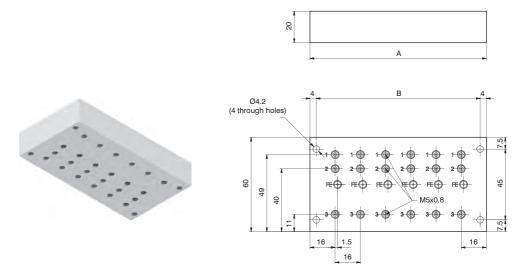
Multiple M5 In-Line Base with External Feedback



	Ordering code
	170M ℚ .EFO
	NO. POSITIONS
	2 = 2 positions (weight 100 g)
•	3 = 3 positions (weight 150 g)
	4 = 4 positions (weight 200 g)
	5 = 5 positions (weight 250 g)
W	6 = 6 positions (weight 300 g)
	7 = 7 positions (weight 350 g)
	8 = 8 positions (weight 400 g)
	9 = 9 positions (weight 450 g)
	10 = 10 positions (weight 500 g)

Dimensions	No. positions									
Dilliensions	2	3	4	5	6	7	8	9	10	
Α	48	64	80	96	112	128	144	160	176	
В	40	56	72	88	104	120	136	152	168	
С	0	16	32	48	64	80	96	112	128	

Multiple M5 Bottom Entry Base with External Feedback

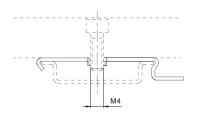


	Ordering code							
	170M ℚ .EFV							
	NO. POSITIONS							
	2 = 2 positions (weight 100 g)							
	3 = 3 positions (weight 150 g)							
	4 = 4 positions (weight 200 g)							
	5 = 5 positions (weight 250 g)							
w	6 = 6 positions (weight 300 g)							
	7 = 7 positions (weight 350 g)							
	8 = 8 positions (weight 400 g)							
	9 = 9 positions (weight 450 g)							
	10 = 10 positions (weight 500 a)							

Dimensions	No. positions								
	2	3	4	5	6	7	8	9	10
Α	48	64	80	96	112	128	144	160	176
В	40	56	72	88	104	120	136	152	168

Clip





Ordering code
800.00



- · Output pressure up to 18 bar
- Flow rate up to 4000NI/min
- There are versions available with or without proportional integration
- Proportional Integrated versions available with Analogue/Digital,

CANopen®, IO-Link, EtherCAT®, PROFINET IO RT and EtherNet/IP

- IN / OUT connections, main regulator G1/2"
- EXH connection, main regulator G1/4"
- IN connection, pilot regulator M5
- · Versions available with external feedback









Ether et/IP

WPR proportional piloting pressure regulators are designed to be able to provide an output pressure value P2 up to 18 bar and are available with the integrated pilot proportional pressure regulator or with an M5 connection for pneumatic proportional remote piloting.

The main regulator and pilot regulator maintain separate supplies, while the main regulator has a maximum inlet pressure of 20 bar the proportional pilot regulator maintains the inlet pressure of 10 bar.

The ratio of pilot pressure to outlet pressure is between 1:1 and 1:2 depending on the inlet pressure and pilot pressure.

The device is made with G1/2" IN/OUT main connections and provides a nominal flow rate of 4.000 NI/min.

The device is available with pneumatic, Analog/Digital, CANopen®, IO-Link, EtherCAT®, PROFINET IO RT and EtherNet/IP interfaces

Proportional management refers only to the low-pressure piloting part.

Proportional management refers only to the low-pressure piloting part.

Product presentation and applications

WPR proportional regulators (Wide Pressure Range) are ideal for all applications where there is a need to use a low-pressure (0-9 bar) reference signal resulting in a high-pressure (0-18 bar) P2 output.

The devices have separate pneumatic supplies for the main regulator and the integrated pilot proportional regulator.

The main regulator features G1/2" IN/OUT connections and a G1/4" EXH drain connection.

The input connection of the integrated pilot proportional regulator is M5 ported.

An external feedback version is available an option that allows the P2 pressure signal to be taken from a remote point rather than directly from the usage connection. This function is usually used when the end user is not near to the devices.

At the top is located the management electronics or the connection for remote piloting.

The fixing takes place through the use of a special fixing bracket.

Technical characteristics

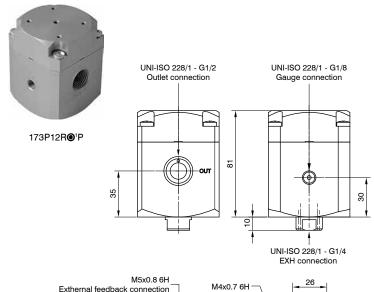
EXH connections G1/4" Max. torque fitting tightening (Nm) IN/OUT/EXH connections G1/2" Metallic: 30 G1/4" Metallic: 20 Fluid 20μm filtered and preferably non-lubricated air. For the proportional regulator pilot 5μm filtered non-lubricated and dehumidified air. Pressure measurement G1/8" pressure gauge socket Assembly configuration Stand alone Assembly positions Indifferent Body and connections type Aluminum body, integrated aluminum connections	IN/OUT connections	G1/2"
G1/4" Metallic: 20 Fluid 20μm filtered and preferably non-lubricated air. For the proportional regulator pilot 5μm filtered non-lubricated and dehumidified air. Pressure measurement G1/8" pressure gauge socket Assembly configuration Stand alone Assembly positions Indifferent	EXH connections	G1/4"
regulator pilot 5 µm filtered non-lubricated and dehumidified air. Pressure measurement Assembly configuration Assembly positions G1/8" pressure gauge socket Stand alone Indifferent	Max. torque fitting tightening (Nm) IN/OUT/EXH connections	,
Assembly configuration Stand alone Assembly positions Indifferent	Fluid	
Assembly positions Indifferent	Pressure measurement	G1/8" pressure gauge socket
· · · · · · · · · · · · · · · · · · ·	Assembly configuration	Stand alone
Body and connections type Aluminum body, integrated aluminum connections	Assembly positions	Indifferent
7 71	Body and connections type	Aluminum body, integrated aluminum connections

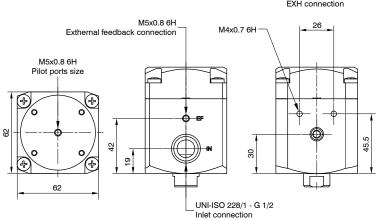
Operational characteristics

Main regulator max inlet pressure (bar)	20 (the inlet pressure must be at least 1 bar higher than the desired outlet pressure)
Pilot regulator max inlet pressure (bar)	10 (the inlet pressure must be at least 1 bar higher than the desired outlet pressure)
Piloting pressure range (bar)	09
Temperature range (°C)	-5 +50

PHELIMAX

WPR pressure regulator



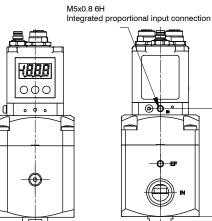


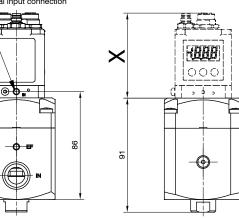
Coding: 173P12R**@**1**P@**2

unig.	1701 12110 00
	FEEDBACK OPTIONS
⊙ ¹	1 = Internal feedback
	E = External feedback
	PILOTING OPTIONS
(2)	P = M5 connection
	N = Integrated pilot proportional regulator
	INTEGRATED PILOT OPTIONS
	DC=SUB-D 15 poles connector current signal, 0-9 bar
	DCA = SUB-D 15 poles connector current signal, 0-9 bar, N.O.
	DT=SUB-D 15 poles connector voltage signal, 0-9 bar
	DTA=SUB-D 15 poles connector voltage signal, 0-9 bar, N.O.
	SC=SUB-D 15 poles connector, CANopen®, 0-9 bar
	SCA=SUB-D 15 poles connector, CANopen®, 0-9 bar, N.O.
	MC=M12 connector, CANopen®, 0-9 bar
	MCA=M12 connector, CANopen® 0-9 bar, N.O.
	NCF=M12 connector, current signal, voltage analogue output, 0-9 bar
	NCFA=M12 connector, current signal, voltage analogue output, 0-9
	bar, N.O.
	NCG=M12 connector, current signal, current analogue output, 0-9 bar
	NCGA=M12 connector, current signal, current analogue output, 0-9
	bar, N.O.
	NCH=M12 connector, current signal, digital output, 0-9 bar
\odot^2	NCHA=M12 connector, current signal, digital output, 0-9 bar, N.O.
	NTF=M12 connector, voltage signal, voltage analogue output, 0-9 bar
	NTFA=M12 connector, voltage signal, voltage analogue output, 0-9
	bar, N.O.
	NTG=M12 connector, voltage signal, current analogue output, 0-9 bar
	NTGA=M12 connector, voltage signal, current analogue output, 0-9
	bar, N.O.
	NTH=M12 connector, voltage signal, digital output, 0-9 bar
	NTHA=M12 connector, voltage signal, digital output, 0-9 bar, N.O.
	IB=IO-Link, 0-9 bar
	IBA=IO-Link, 0-9 bar, N.O.
	EC=EtherCAT®, 0-9 bar
	ECA=EtherCAT®, 0-9 bar, N.O.
	PN=PROFINET, 0-9 bar
	PNA=PROFINET, 0-9 bar, N.O.
	EI=EtherNet/IP, 0-9 bar
	EIA=EtherNet/IP, 0-9 bar, N.O.



173P12R**⊚**¹N**⊚**²





Туре	X dimension
Standard - Socket connector	68
CANopen® - Socket connector	59
CANopen® - M12 connector	71
Standard - M12 connector	71
IO-Link	71
EtherCAT®	68
PROFINET IO RT	68
ETHERNET/IP	68

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Pilot regulator construction characteristics		
Body	Anodized aluminium	
Cover for electrical section	Technopolymer	
Seals	NBR	
Diaphragm	Cloth-covered rubber	
Diaphragm Springs	AISI 302	
Actuators	Brass with vulcanised NBR	
Weight	168 g	

Pilot regulator functional characteristics		
Supply connection	M5	
Exhaust connection	Ø1,8	
Operating connection	M5	
Air consumption	< 1 NI/min	
Standby current consumption	70mA	
Current consumption with solenoid valves on	400mA	
Maximum fittings tightening	3 Nm	
Fluid	Air filtered at 5 micron and dehumidified	
Protection degree	IP65 (with casing fitted)	
** Input Impedance - Current	250 Ω	
** Input Impedance - Voltage	10 kΩ	
Digital inputs	+ 24 V DC ± 10%	
Hysteresis	± Insensitivity	
Linearity	± Insensitivity	
Discharge flowrate	7 NI/min	
Nominal flowrate from 1 to 2 (6 bar ΔP 1 bar)	7 NI/min	
Assembly positions	Indifferent	
Outlet pressure	0-9 bar	
Maximum inlet pressure	10 bar	
Minimum inlet pressure	Desired outlet pressure + 1 bar	
Repeatability	± Insensitivity	
** Reference Signal - Current	*4 20 mA *0 20 mA	
** Reference Signal - Voltage	*05V *05V *15V	
Sensitivity	0,01 bar	
Environment temperature	-5°C 50°C / 23°F 122°F	
Supply voltage	+ 24 V DC ± 10% (stabilised with ripple <1%)	
**Digital output	+ 24 V DC PNP (Max. current 50 mA)	

^{*} Selectable by keyboard or by RS-232

Installation and operation of the piloting proportional regulator

PNEUMATIC CONNECTION

The compressed air is connected by means of M5 threaded port in the body.

Ensure the compressed air entering the unit is filtered for both water and dust down to 5 microns.

Maximum inlet pressure is 10 Bar.

The supply pressure to the regulator must always be at least 1 bar greater than the required outlet pressure.

ELECTRICAL CONNECTION

For the electrical connection a D-SUB 15-pole female connector is used (supplied separately).

Wire in accordance with the wiring diagram shown below.

Warning: INCORRECT CONNECTIONS MAY DAMAGE THE DEVICE.

OPERATING NOTES

If the electric supply is interrupted, the outlet pressure is maintained at the set value.

However, maintaining the exact value cannot be ensured as it is impossible to operate the solenoid valves.

In order to discharge the circuit downstream, zero the reference, make sure that the display shows a pressure value equal to zero and then disconnect the electric power supply.

A version of the device is available that exhausts the downstream circuit when the power supply is removed. (Option A at the end of the part number).

If the compressed-air supply is suspended and the electric power supply is maintained a whirring will be heard that is due to the solenoid valves; an operating parameter can be activated (P18) that triggers the regulator protection whenever the requested pressure is not reached within 4 seconds of the reference signal being sent.

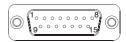
In this case the system will intervene to interrupt the control of the solenoid valves. Every twenty seconds, the unit will start the reset procedure until standard operating conditions have been restored.

^{**} Valid only for devices with analog input

Proportional regulator, standard version with socket connector



CONNECTOR UPPER VIEW



Connector PIN: 1 = DIGITAL INPUT 1

2 = DIGITAL INPUT 2 3 = DIGITAL INPUT 3 9 = POWERSUPPLY (+24 VDC) 10 = DIGITAL OUTPUT (+ 24 V DC PNP) 11 = ANALOGUE OUTPUT (CURRENT) 12 = ANALOGUE OUTPUT (VOLTAGE)

4 = DIGITAL INPUT 4 13 = Rx RS - 2325 = DIGITAL INPUT 5 14 = Tx RS-2326 = DIGITAL INPUT 6

15 = 0 V7 = DIGITAL INPUT 7 8 = ANALOGUE INPUT / DIGITAL

INPUT8

Proportional regulator, CANopen® version with socket connector





Connector PIN:

1 = CAN SHIELD $2 = CAN^{T}V +$

3 = CAN GND $4 = CAN_H$

 $5 = CAN_L$ 6 = NC

7 = NC

8 = NC

9 = POWERSUPPLY (+24 VDC)

10 = CAN SHIELD

 $11 = CAN^{T}V +$

12 = CAN GND

13 = CAN H $14 = CAN_L$

15 = 0 V

Proportional regulator, M12 BASIC and Standard version





Connector PIN of the M12 BASIC version:

1 = POWER SUPPLY (+ 24 V DC)

2 = NC

3 = 0 V

4 = ANALOGUE INPUT

Connector PIN of the M12 Standard version:

1 = POWER SUPPLY (+ 24 V DC)

2 = OUTPUT (depending on model)

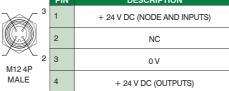
3 = 0 V

4 = ANALOGUE INPUT

Proportional regulator, CANopen® version with M12 connector







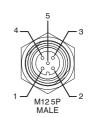


M125P **FEMALE**

PIN	SIGNAL	DESCRIPTION
1	CAN_SHIELD	Optional Can Shield
2	CAN_V+	Optional Can external positive supply (Dedicated for supply of transceiver and Optocouplers, if galvanic isolation of the bus node applies)
3	CAN_GND	0 V
4	CAN_H	CAN_H bus line (Dominant high)
5	CAN_L	CAN_L bus line (Dominant low)

Proportional regulator, IO-Link version





Connector PIN:

1 = L +

2 = +24 V DC (P24)

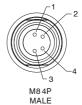
3 = L-

4 = C/Q

5 = 0 V (N24)

Proportional regulator, EtherCAT® version, PROFINET IO RT and EtherNet/IP









FEMALE

Connector PIN: 1 = Device logical power supply 2 = NC3 = 0 V

Connector PIN:

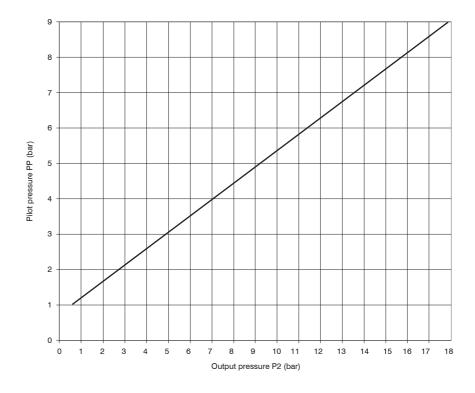
1 = Signal TX + (Ethernet Transmit High)

4 = Solenoid valve power supply

2 = Signal RX + (Ethernet Receive High)3 = Signal TX - (Ethernet Transmit Low)

4 = Signal RX - (Ethernet Receive Low)

Piloting curves



							Inlet pre	ssure P1	=20bar								
Piloting pressure	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9
Output pressure	0.6	1.7	2.7	3.7	4.9	5.9	7	8.2	9.7	10.5	11.6	12.7	13.7	14.8	15.8	16.9	18
P1/P2	0.62	1 14	1.36	1.5	1.64	1.69	1 75	1.82	1 94	1 01	1 93	1 95	1.96	1 97	1 98	1 99	2

Outlet pressure/Piloting pressure table

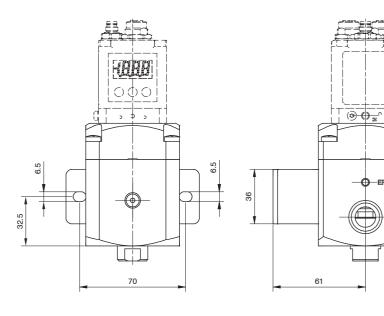
Inlet pressure					Pilot pres	sure (bar)				
Main regulator (bar)	1	2	3	4	5	6	7	8	9	10
2	1.6	1	/	/	/	/	/	/	/	/
3	1.6	1.5	1	/	/	/	1	/	/	/
4	1.6	1.8	1.3	1	/	/	/	/	/	/
5	1.5	1.8	1.7	1.3	1	/	1	/	/	/
6	1.4	1.8	1.9	1.5	1.2	1	/	/	/	/
7	1.4	1.7	1.8	1.8	1.4	1.2	1	/	/	/
8	1.4	1.8	1.9	1.9	1.6	1.3	1.1	1	/	/
9	1.3	1.7	1.8	1.9	1.8	1.5	1.3	1.1	1	/
10	1.3	1.7	1.8	1.9	1.9	1.7	1.4	1.3	1.1	1
11	1.4	1.6	1.8	1.9	1.9	1.8	1.6	1.4	1.2	1.1
12	1.3	1.6	1.8	1.8	1.9	1.9	1.7	1.5	1.3	1.2
13	1.3	1.6	1.7	1.8	1.9	1.9	1.9	1.6	1.4	1.3
14	1.2	1.5	1.7	1.8	1.9	1.9	1.9	1.8	1.6	1.4
15	1	1.5	1.7	1.8	1.9	1.9	1.9	1.9	1.7	1.5
16	1	1.5	1.7	1.8	1.8	1.9	1.9	1.9	1.8	1.6
17	/	1.5	1.7	1.8	1.8	1.9	1.9	1.9	1.9	1.7
18	/	1.5	1.7	1.8	1.8	1.9	1.9	1.9	2	1.8
19	/	1.5	1.7	1.8	1.8	1.9	1.9	1.9	2	1.9
20	/	1.5	1.6	1.8	1.8	1.9	1.9	1.9	1.9	2

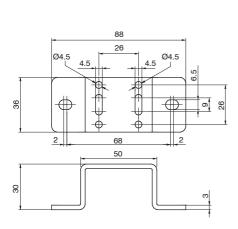
Coding: 17050

Fixing bracket



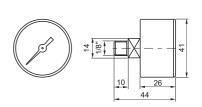






Pressure gauge





Coding: 17070**♥⑤**

V	VERSION
	A = Dial Ø40
	SCALE
	A = 0 - 4 bar
	B = 0 - 6 bar
8	C = 0 - 12 bar
	D = 0 - 16 bar
	E = 0 - 20 bar

POWER SUPPLY and NETWORK connectors

SUB-D 15 pins female connector

Coding: 5300.F15.@.

	CONNECTOR
•	10 = Stand alone
	90 = 90° Angle
	CABLE LENGTH
	00 = IP65 with casing, without cable
•	03 = 3 meters
	05 = 5 meters

POWER SUPPLY connectors

Straight connector M12A 4P female





Upper view slave connector

	Coding: 5312A.F04.00
DESCRIPTION	Connector version for standard and
+ 24 V DC (LOGICS AND INPUTS)	CANopen

Straight connector M12A 5P female



AIR TREATMENT



Upper view slave connector

PIN	DESCRIPTION
1	(CAN_SHIELD)
2	(CAN_V+)
3	CAN_GND
4	CAN_H
5	CAN L

N.C. 0 V + 24 V DC (OUTPUTS)

Coding: 5312A.F05.00 Connector version for IO-Link

NETWORK connectors

Straight connector M12A 5P male





Upper view slave connector

PIN	DESCRIPTION
1	(CAN_SHIELD)
2	(CAN_V+)
3	CAN_GND
4	CAN_H
5	CAN L

Coding: 5312A.M05.00 Connector version for standard and

Straight connector M12D 4P male





Hnner	view sla	We con	nactor
Obbei	AIGAN SIG	IVE COIL	IIECTOI

PIN	SIGNAL	DESCRIPTION
1	TX+	EtherNet Transmit High
2	RX+	EtherNet Receive High
3	TX-	EtherNet Transmit Low
4	RX-	EtherNet Receive Low

Coding: 5312D.M04.00 Connector version for EtherCAT, PROFINET and EtherNet/IP

Plugs



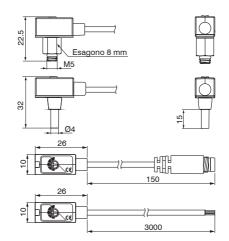


Coding: 5300.T12



Mini digital pressure switch





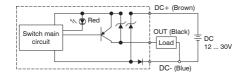
Coding: DS.10.P.B.**@.**.

		CONNECTION
	•	F4 = Male M5
		R4 = Plug-in connection Ø4
	•	CABLE LENGTH
		A = 150 mm*
		E = 3000 mm**
		OPTIONS
	•	0 = Without connector
		1 = With connector M8 male 3 Pin

^{*}only with M8 connector
**only without connector

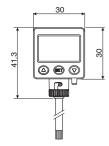
	Technical characteristics				
Working pressure range		00,6 MPa			
Regulation pressure range		00,6 MPa			
Maximum supported pressu	ire	1.5 MPa			
Allowed fluids		Air, non-corrosive gases, non-combustible gases			
Supply voltage		From 12 to 30 VDC ±10%			
Current consumption		≤ 10 mA			
Digital output		PNP N.O. 1 outputs Maximum load current: 80mA Maximum supply voltage: 30 VDC Voltage drop: ≤0.8V			
Repeatability		± 1% Full Scale			
D: 21 1 1 1	Type of hysteresis	fixed			
Digital output	Hysteresis	3% Full Scale max.			
Response time		1 ms			
Protection from short circuit	at output	Present			
Method of setting threshold		Adjustable, trimmer			
Indicator		LED red (output)			
	Protection degree	IP40			
	Environment temperature	Operational: 0 - 60°C, Storage: -20 - 70°C (without ice or condensation)			
Ingress protection rating	Ambient humidity	Operational/Storage: 35 85% (without condensation)			
	Vibration	Total amplitude 1.5mm.,10Hz-55Hz-10Hz scanning for 1 minute, 2 hours in each direction of X, Y and Z			
	Impacts/shocks	980m/s² (100G), 3 times in each direction of X, Y and Z			
Temperature characteristics	· · · · · · · · · · · · · · · · · · ·	±2% Full Scale in a range between 0 50°C			
Type of connection		Male M5x0.8, Plug-in connection Ø4			
Electrical cable		Oilproof cable, 3 wires (0.18 mm), Ø2.6 mm			
Weight		Approximately 50 q (with 3 metres of cable)			

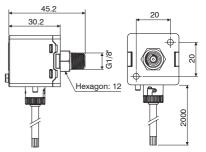
Output circuit wiring diagrams



Panel-mounted digital pressure switch





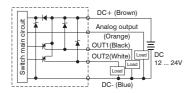


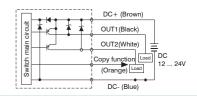
Coding: DS.45.P.**①**.F3.D.0

OUTPUTS
E = 2 PNP outputs $+ $ Analog output
(4 / 20 mA)
L = 2 PNP outputs + copy function

		Technical characteristics
Working pressure range		0,000 1,000 MPa
Regulation pressure range		-0,100 1,000 MPa
Maximum supported pressure		1.5 MPa
Allowed fluids		Air, non-corrosive gases, non-combustible gases
	kPa	0.1
	kgf/cm²	0.001
Pressure calibration sensitivity	bar	0.001
	psi	0.01
	InHg	0.1
Supply voltage		From 12 to 24 VDC
Current consumption		≤40mA (without load)
Digital output		PNP N.O. 2 outputs Maximum load current: 125mA Maximum supply voltage: 24 VDC Voltage drop: ≤1.5V
Repeatability		± 0.2% Full Scale ± 1 digit
Digital output	Type of hysteresis	Settable
Digital output	Hysteresis	from 0.001 to 0.008 bar
Response time		≤2,5 ms (anti-interference function: 25ms, 100ms, 250ms, 500ms, 1000ms and 1500ms selectable)
Protection from short circuit at	output	Present
Display		Display with 3 1/2 digits (red/Green)
Indicator accuracy		±2% FS. ±1 digit
Indicator		LED Orange (output1) LED Orange (output2)
Analog output		Output current: 420mA ±2.5% F. S. Linearity: ±1% F. S. Maximum load resistance: 250Ω supply at 12V and 600Ω supply at 24V Minimum load resistance: 50Ω
	Protection degree	IP65
	Environment temperature	Operational: 0 - 50°C, Storage: -10 60°C (without ice or condensation)
	Ambient humidity	Operational/Storage: 35 85% (without condensation)
Ingress protection rating	Supported voltage	1000VAC in 1min. (between body and cable)
	Insulation resistance	50MΩ (at 500VDC, between body and cable)
	Vibration	Total amplitude 1.5mm or 10G,10Hz-55Hz-10Hz scanning for 1 minute, 2 hours in each direction of X, Y and Z
	Impacts/shocks	100m/s² (10G), 3 times in each direction of X, Y and Z
Temperature characteristics		±2.5% Full Scale in a range between 0 50°C
Type of connection		G1/8" (BSPP), M5 female
Electrical cable		Oil resistant cable (internal 0.15 mm²)
Weight		Approximately 86 g (with 2 metres of cable)

Output circuit wiring diagrams

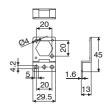




Accessories



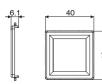




Panel mount adapter





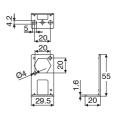




Coding: DS.BT10

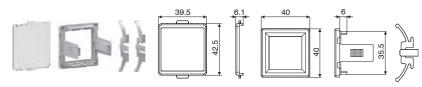
Fixing bracket





Coding: DS.PAE

Panel mount adapter with screen protection

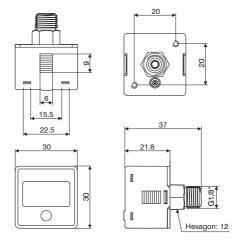


Coding: DS.BT11

Coding: DS.60.P.I.F1.F.0

Digital battery pressure gauge



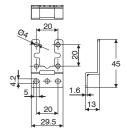


		Technical characteristics
Working pressure range		0,000 1,000 MPa
Regulation pressure range		-0,100 1,000 MPa
Maximum supported pressur	e	1,5 MPa
Allowed fluids		Air, non-corrosive gases, non-combustible gases
	kPa	0.1
Current consumption	bar	0.01
Current consumption	psi	0.1
	mmHg	1
Battery		CR 2032 lithium
Backlight		Not present
Battery life		3 years (5 power ups a day)
Indication of battery level		Present
Battery replaceable		Yes
Display power up time		Goes off after 60 seconds
Sampling frequency		2 Hz (2 times per second)
Repeatability		±1% F. S. ±1 digit
Display		Display with 3 1/2 digits
Indicator accuracy		$\pm 2\%$ F.S. ± 1 digit (at ambient temperature of 25°C ± 3 °C)
	Protection degree	IP65 (only with connected air pipe)
	Environment temperature	Operational: 0 - 50°C, Storage: -10 60°C (without ice or condensation)
Ingress protection rating	Ambient humidity	Operational/Storage: 35 85% (without condensation)
	Vibration	Total amplitude 1.5mm or 10G,10Hz-55Hz-10Hz scanning for 1 minute,2 hours in each direction of X,Y and Z
	Impacts/shocks	100m/s² (10G), 3 times in each direction of X, Y and Z
Temperature characteristics		±2% Full Scale in a range between 0 50°C
Type of connection		R1/8", M5 female
Weight		Approximately 40 g

Accessories

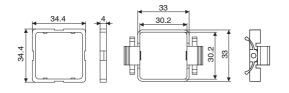
Fixing bracket





Panel mount adapter

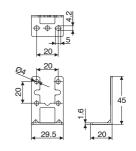




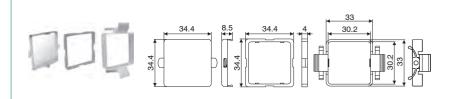
Coding: DS.BT5

Fixing bracket





Panel mount adapter with screen protection

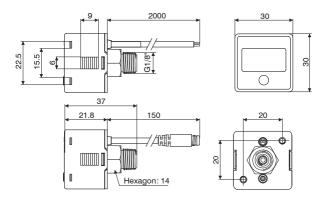


Coding: DS.PAD

Coding: DS.PAC

Digital pressure gauge



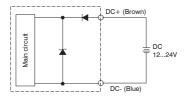


Coding: DS.61.P.I.F1. .

	CABLE LENGTH
	A = 150 mm*
	D = 2000 mm**
	OPTIONS
•	O = Without connector
	2 = With connector M8 male 4 Pin

		Technical characteristics
Working pressure range		0,000 1,000 MPa
Regulation pressure range		-0,100 1,000 MPa
Maximum supported pressure	•	1,5 MPa
Allowed fluids		Air, non-corrosive gases, non-combustible gases
	kPa	1
Pressure calibration sensitivity	kgf/cm²	0.01
riessure calibration sensitivity	bar	0.01
	psi	0.1
Supply voltage		From 12 to 24 VDC ± 10%
Current consumption		10 mA
Repeatability		± 1% Full Scale ±1 digit
Display		Display with 3 1/2 digits (sampling 5 times per sec.)
ndicator accuracy		±2% F.S. ±1 digit (at ambient temperature of 25°C ±3°C)
	Protection degree	IP65 (only with connected air pipe)
	Environment temperature	Operational: 0 - 50°C, Storage: -10 60°C (without ice or condensation)
	Ambient humidity	Operational/Storage: 35 85% (without condensation)
ngress protection rating	Supported voltage	1000VAC in 1 min. (between body and cable)
	Insulation resistance	50MΩ (at 500VDC, between body and cable)
	Vibration	Total amplitude 1.5mm or 10G,10Hz-55Hz-10Hz scanning for 1 minute, 2 hours in each direction of X, Y and Z
	Impacts/shocks	100m/s² (10G), 3 times in each direction of X, Y and Z
emperature characteristics		±2% Full Scale in a range between 0 50°C
ype of connection		R1/8", M5 female
Electrical cable		Oil resistant cable (internal 0.15 mm²)
Veight		Approximately 60 g (with 2 metres of cable) and Approximately 40 g (with M8 4 pin male connector)

Output circuit wiring diagrams

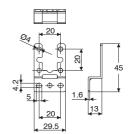


Accessories

AIR TREATMENT

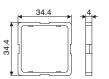
Fixing bracket

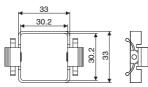




Panel mount adapter



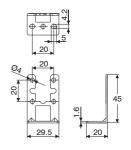




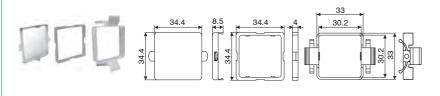
Coding: DS.BT5

Fixing bracket





Panel mount adapter with screen protection



Coding: DS.PAD

Coding: DS.PAC

^{*}only with M8 connector
**only without connector

Series 1700

It is not unusual that, during some applications the thrust generated by a pneumatic cylinder is not sufficient for the specific purpose it has been designed for.

In order to get over the problem, the working pressure may be increased to a maximum line pressure which normally is 6 - 7 bar; alternatively the problem is solved by an higher bore cylinder that suits the machine.

Three size pressure boosters, with pressure ratio of 2:1, have been designed to avoid these problems.

This device is utilizing the compressed air of the circuit where it is installed.

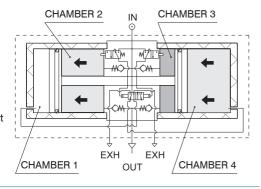
Construction and working characteristics

The working method is based on the pump effect of the four chambers cylinder as shown in fig. 1. Two chambers are alternatively compressing the air in the boost one, while the fourth one is discharging.

By means of an internal circuit, the pressure booster keeps on pumping air till the down stream pressure reaches a value double the inlet pressure. In these circumstances there is a balance condition.

When the down stream pressure decreases, the pressure booster starts again its alternating cycle till a new balance condition is restored.

The pressure booster can be furnished complete with pressure regulator installed on the inlet port for getting an accurate outlet pressure value. A wall mounting plate is also available.



Instructions for installation and use

Do not exceed the indicated pressure and temperature limits.

It is advisable to install a small air tank after the pressure booster to avoid pressure pulsation effects.

Discharge the down stream circuit before any maintenance operation as the inner circuit of the booster does not allow the down stream line discharge even if the inlet pressure drops down.

Maintenance

Pressure booster has an average life of about 20 millions of valve cycles, depending on working conditions (every back stroke corresponds to one valve cycles).

A proper lubrication and filtration of air improve the life of pressure booster parts.

It is advisable to protect the exhaust ports in environment.

Replaceable spare seal kits are available.

How to calculate the required time of pressure booster to increase the air pressure in a tank whose capacity is known.

Operating Data

P1 = Inlet pressure

P2' = Tank initial pressure

P2" = Tank final pressure

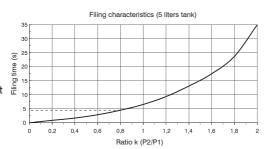
V = Tank volume

Procedure:

- 1) Calculate the ratio K' between the initial pressure of the tank and the inlet pressure of the booster (P2'/P1).
- 2) Calculate the ratio K" between the final pressure of the tank and the inlet pressure of the booster (P2" / P1).
- 3) Locate the intersection point between the ratio K' and the curve on filling time diagram related to the specific booster. Trace a vertical line from the above point and read the correspondent time T' (the example shows the ratio K=0.8 and correspondent time of about 4.8 seconds).
- 4) Repeat same procedure also for ratio K" to get time T".
- 5) Use the following formula

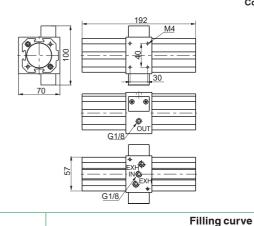
$$\mathsf{T} = \frac{\mathsf{V}}{5} \cdot (\mathsf{T''}\text{-}\mathsf{T'})$$

to obtain the total time required to move the pressure P2' to P2" of tank volume V.

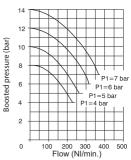


P1 = inlet pressure P2 = tank pressure





Flow rate characteristics



P1 = inlet pressure (bar)

Filing characteristics (5liters tank) 35 25 Filing time (s) 20 15 10 0,8 1 1, Ratio K (P2/P1)

P1 = inlet pressure (bar) P2 = tank pressure (bar)

	Construction characteristics

- Self operating pressure booster with pressure ratio of 2:1.
 Automatic functioning: to operate the booster just connect it to compressed air line.
 Body made with light alloy.
 Barrel made of extruded and anodized aluminium.

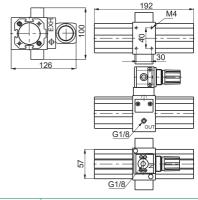
- $\bullet \ \mathsf{Downstream} \ \mathsf{circuit} \ \mathsf{pressure} \ \mathsf{is} \ \mathsf{keptunder} \ \mathsf{pressure} \ \mathsf{even} \ \mathsf{in} \ \mathsf{absence} \ \mathsf{of} \ \mathsf{inlet} \ \mathsf{pressure} \ \mathsf{of} \ \mathsf{inlet} \ \mathsf{pressure} \ \mathsf{of} \ \mathsf{order} \ \mathsf{order$

Technical characteristics	•
Connections	G1/8"
Max working pressure (bar)	28
Working temperature °C	-5 +50
Orifice size (mm)	5
Weight (g)	1500
Assembly positions	Indifferent
Max. fittings torque (Nm)	15

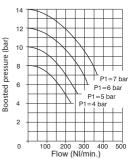
Coding: 1740.50NR

Pressure booster Ø40 with pressure regulator





Flow rate characteristics



P1 = inlet pressure (bar)

Filling curve Filing characteristics (5liters tank) 30 25 Filing time (s) 20 15 10 Ratio K (P2/P1)

P1 = inlet pressure (bar) P2 = tank pressure (bar)

	Constit
Self operating	pressure booster with pre

- Self operating pressure booster with pressure ratio of 2:1.
 Automatic functioning: to operate the booster just connect it to compressed air line.
 Body made with light alloy. Barrel made of extruded and anodized aluminium.

 Powerteem is with the control of the con

 Downstream circuit pressure is kept under pressure e 	ven in absence of inlet pressure.
 Regulation of the inlet pressure (and as a consequence) 	ce regulation of the outlet pressure).

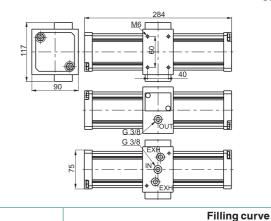
Technical charac	teristics
Connections	G1/8"
Max working pressure (bar)	28
Working temperature °C	-5 +50
Orifice size (mm)	5
Weight (g)	1600
Assembly positions	Indifferent
Max fittings torque (Nm)	15

Coding: 1763.80N



Pressure booster ø63





Flow rate characteristics Boosted pressure (bar) P1=5 bar 300 450 600 Flow (NI/min.)

Construction characteristics

P1 = inlet pressure (bar) P2 = tank pressure (bar)

										1	4	1	\neg			
	1.6 -	Н	+	F				$\overline{}$			-			-	_	
Ratio K (P2/P1)	1.2 -		+		Ζ	_					-				_	
o К	0.8 -		/	/												
Rati	0.4 -		1	t												
		/														
	0			3		(in	i ne	(e	,	þ		1	2		1	5
							ıc	(3	,							

Filing characteristics (10 liters tank)

P1 = inlet pressure (bar)

• Self operating pressure booster with pressure ratio of 2:1.

- Automatic functioning: to operate the booster just connect it to compressed air line.
 Body made with light alloy.
 Barrel made of extruded and anodized aluminium.

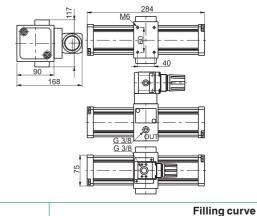
- $\bullet \ \mathsf{Downstream} \ \mathsf{circuit} \ \mathsf{pressure} \ \mathsf{is} \ \mathsf{kept} \ \mathsf{under} \ \mathsf{pressure} \ \mathsf{even} \ \mathsf{in} \ \mathsf{absence} \ \mathsf{of} \ \mathsf{inlet} \ \mathsf{pressure} \ \mathsf{even} \ \mathsf{in} \ \mathsf{absence} \ \mathsf{of} \ \mathsf{inlet} \ \mathsf{pressure} \ \mathsf{even} \ \mathsf{in} \ \mathsf{absence} \ \mathsf{of} \ \mathsf{inlet} \ \mathsf{pressure} \ \mathsf{even} \ \mathsf{in} \ \mathsf{absence} \ \mathsf{of} \ \mathsf{inlet} \ \mathsf{pressure} \ \mathsf{even} \ \mathsf{in} \ \mathsf{absence} \ \mathsf{of} \ \mathsf{inlet} \ \mathsf{pressure} \ \mathsf{even} \ \mathsf{in} \ \mathsf{absence} \ \mathsf{of} \ \mathsf{inlet} \ \mathsf{pressure} \ \mathsf{even} \ \mathsf{in} \ \mathsf{absence} \ \mathsf{of} \ \mathsf{inlet} \ \mathsf{absence} \ \mathsf{of} \ \mathsf{inlet} \ \mathsf{even} \ \mathsf{inlet} \ \mathsf{even} \ \mathsf{inlet} \ \mathsf{absence} \ \mathsf{of} \ \mathsf{inlet} \ \mathsf{even} \ \mathsf{even} \ \mathsf{inlet} \ \mathsf{even} \ \mathsf{inlet} \ \mathsf{even} \ \mathsf{even} \ \mathsf{inlet} \ \mathsf{even} \ \mathsf{e$

recimical characteristics	
Connections	G3/8"
Max working pressure (bar)	28
Working temperature °C	-5 +50
Orifice size (mm)	7
Weight (g)	3000
Assembly positions	Indifferent
Max. fittings torque (Nm)	15

Coding: 1763.80NR

Pressure booster Ø63 complete with pressure regulator





Boosted pressure (bar) P1=5 bar

Flow (NI/min.)

Flow rate characteristics

P1 = inlet pressure (bar)

Filing characteristics (10 liters tank) 1.6 Ratio K (P2/P1) 1.2 0.8 0.4 Ω

= inlet pressure (bar) P2 = tank pressure (bar)

	Construction characteristics
Self operating pressur	e booster with pressure ratio of 2:1.

- Automatic functioning: to operate the booster just connect it to compressed air line.

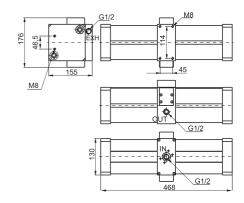
3ody made with light alloy Barrel made of extruded and anodized aluminium. Downstream circuit pressure is kept under pressure even in absence of inlet pressure. Regulation of the inlet pressure (and as a consequence regulation of the outlet pressure).	Working temperature °C
	Orifice size (mm)
riogulation of the interpressure (and as a consequence regulation of the statiot pressure).	Weight (g)
	Assembly positions

T = ITIEL PLESSULE (Dal) F2 = Latik Plessule (Dal)					
Technical characteristics					
Connections	G3/8"				
Max working pressure (bar)	2 8				
Working temperature °C	-5 +50				
Orifice size (mm)	5				
Weight (g)	3200				
Assembly positions	Indifferent				
Max. fittings torque (Nm)	15				

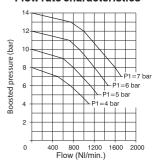
Time (s)

Pressure booster ø100





Flow rate characteristics

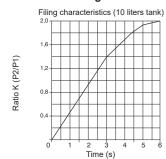


Construction characteristics

- Self operating pressure booster with pressure ratio of 2:1.
 Automatic functioning: to operate the booster just connect it to compressed air line.
 Body made with light alloy.
 Barrel made of extruded and anodized aluminium.

- $\bullet \ \mathsf{Downstream} \ \mathsf{circuit} \ \mathsf{pressure} \ \mathsf{is} \ \mathsf{keptunder} \ \mathsf{pressure} \ \mathsf{even} \ \mathsf{in} \ \mathsf{absence} \ \mathsf{of} \ \mathsf{inlet} \ \mathsf{pressure} \ \mathsf{of} \ \mathsf{inlet} \ \mathsf{pressure} \ \mathsf{of} \ \mathsf{order} \ \mathsf{order$

Filling curve



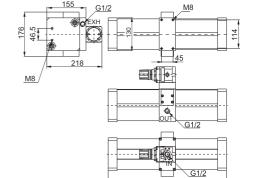
P1 = inlet pressure (bar) P2 = tank pressure (bar)

Technical characteristics	
Connections	G1/2"
Max working pressure (bar)	28
Working temperature °C	-5 +50
Orifice size (mm)	12
Weight (g)	12000
Assembly positions	Indifferent
Max. fittings torque (Nm)	40

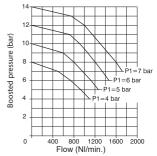
Coding: 17100.125NR

Pressure booster ø100 complete with pressure regulator



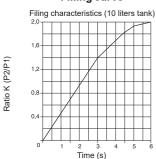


Flow rate characteristics



P1 = inlet pressure (bar)

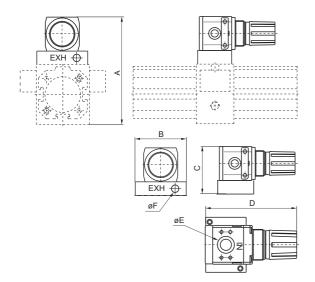
Filling curve



P1 = inlet pressure (bar) P2 = tank pressure (bar)

Fi - Interpressure (bar)	FI - Illiet pressure (bai) FZ - talik pressure (bai)	
Construction characteristics	Technical characteristics	
* Self operating pressure booster with pressure ratio of 2.1. * Automatic functioning: to operate the booster just connect it to compressed air line. * Body made with light alloy Barrel made of extruded and anodized aluminium.	Connections	G1/2"
	Max working pressure (bar)	28
	Working temperature °C	-5 +50
 Downstream circuit pressure is kept under pressure even in absence of inlet pressure. Regulation of the inlet pressure (and as a consequence regulation of the outlet pressure). 	Orifice size (mm)	12
nogulation of the interpressure (and as a consequence regulation of the state pressure).	Weight (g)	12600
	Assembly positions	Indifferent
	Max. fittings torque (Nm)	40

Base complete with pressure reducer



Coding: 17**♥**.BR

	VERSION
	40 = Base complete with pressure
V	reducer for Ø40 booster
_	63 = Base complete with pressure
	reducer for Ø63 booster

ø100 = Mount directly the pressure reducer Code 17302B.C

Dimensions						
Code	Α	В	С	D	E	F
1740.BR	126	60	56	91	G1/8"	G1/8"
1763.BR	168	75	78	124	G3/8"	G3/8"

Coding: 17**♥**.02 **Booster mounting plate** VERSION 40 = Mounting plate for Ø40 booster 63 = Mounting plate for Ø63 booster Ф ø100 = Use short foot bracket code 1320.50.05/1F \oplus \oplus \oplus øG ﴾⊕ **(** Φ Φ **((**

Dimensions							
Code	Α	В	С	D	E	F	ØG
1740.02	75	5	30	45	72	82	5.5
1763.02	100	15	53	70	98	110	M8

Series P+

In some cases the force generated by a pneumatic actuator is not sufficient to carry out its required function.

To overcome this problem it is then necessary, where possible, to either increase the working pressure or use a larger bore actuator providing it will fit within the structure of the machine.

If you cannot fit a larger actuator, the solution is to use a pressure booster to increase the air pressure to that portion of the pneumatic circuit. The booster operates using the same compressed air used by the pneumatic system and does not require an external power supply. It is easy to install and can increase the working pressure in any part of the system where ever its needed, maintaining the normal working pressure in the rest of the system.

The new pressure booster P+ is lightweight with a new compact and linear design.

P+ has an integrated pressure regulator that adjusts the setting of the output pressure P2 which is also fitted with a pressure relief valve. The design of the internal circuit provides high flow rates and fast filling times whilst the two G1/8" manometer connections built into the body of the booster allow monitoring of the input and output pressures.

Operation

The operating principle of the device is based on a four chamber pump in which with a reciprocating movement, two chambers compress the air in the compression chamber whilst the fourth chamber is in the discharge phase.

The incoming air passes through the non-return valves and supplies the compression chambers "A" and "B" at the same time.

Meanwhile the integrated pressure regulator, via the switching valve, feeds the thrust chamber "C", discharging chamber "D". The movement of the piston, with the thrust of chamber "C", compresses the air in the multiplication chamber "B", which is pushed through the

output Non return valve and then onto the OUT connection. When the piston reaches the end of stroke the switching valve feeds chamber "D" putting chamber "C" into the discharge position thus reversing

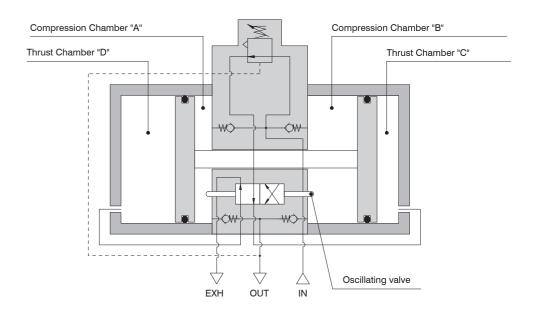
the motion of the piston.

The previous process compressing the air in compression chamber "A", pushing it through the non-return valve and out through the outlet connection.

The oscillating motion of the piston allows the pressure booster to pump intensified air into the downstream circuit until the chambers reach a state of equilibrium; this in turn stops the booster.

When the downstream pressure decays the booster restarts oscillating until the state of equilibrium is re-established

Pneumatic Circuit



The P+ pressure booster, is certified by ATEX:

CE II 3GD c T6 T85°C X 5°C≤Ta≤50°C.



General Warning

It is recommended you follow the instructions below in order to prevent personal injury or damage to the booster.

- The pressure booster is supplied as standard with the regulating spring completely unwand. In this condition it is possible to detect a leak of air from below the regulating knob or through the exhaust port. this conditions is standard for the unit. When the spring is completely unwand the downstream pressure and the inlet pressure are the same. In order to increase the downstream pressure it is necessary to operate th regulation knob increasing the sping compression.
- Please apply the necessary safety measures to ensure that the booster only operates within the specified pressure range. Exceeding the maximum output pressure is dangerous.
- The Booster is fitted with a non-return valve on the output which prevents discharge of the downstream pressure, It is recommended that a 3/2 valve be installed in the OUT connection if it is necessary to rapidly discharge the downstream pressure.
- When the booster is not in use it is recommended that the inlet pressure is removed to let the booster stop, thus avoiding unexpected operation or malfunction.
- If there is not downstream air consumption it is possible to register a leak through the exhaust port of the unit. This condition is normal and is the consequence of the internal designed aimed at discharging any pressure building up in the unit in the rest condition.

Use and maintenance

The pressure booster must always be used in accordance with the operating parameters and instruction. Any improper use may cause injury or malfunction.

The pressure booster is not an alternative to a compressor because continuous uninterrupted operation will greatly reduce the life of the unit.

- The operating life of the device depends mainly on the operational duty cycle. Prolonged uninterrupted use without pause may reduce the operating life of the booster.
- Ensure the unit is supplied with a suitable compressed air supply, please note: appropriate filtration and lubrication may help to increase the durability of the product.
- The input flow value must be equal or greater than double the output flow value (Q1/Q2>2). Ensure that the value of the output pressure is at least 1bar higher than the input pressure (P2>P1+1).
- To avoid pulsation of the output pressure during operation, it is recommended that an accumulation tank (reservoir) is installed in the downstream circuit.
- To avoid pulsation of the output pressure during operation, it is recommended that an accumulation tank (reservoir) is installed in the downstre
 am circuit.
- To reduce the noise generated by the unit, install silencers into the exhaust ports.
- Pressure booster has an average life of about 20 millions of valve cycles, depending on working conditions (every back stroke corresponds to one valve cycles).

Pressure regulation

The booster is fitted with an internal pressure regulator which allows regulation of the output pressure P2 and is also fitted with pressure relief valve. For correct operation of the booster, please consider the following instructions:

- Air leaking from under the adjusting knob when the spring is decompressed is not a defect but a sign that the device is working correctly.
- In order to increase the regulated pressure, pull the knob upwards to unlock, then rotate the knob in the direction indicated by the arrow (+).
- The rotation of the knob has an upper and lower block beyond which the knob is damaged.
- To lock the knob after the adjustment has been made, push the knob downwards until it detents in the locked position.
- To reduce the output pressure, pull the knob upwards, rotate the knob indicated by the arrow (-), the built in pressure relief valve will discharge the excess pressure from under the adjusting knob.
- Always regulate the rising pressure.



 $Method\ of\ calculation\ of\ the\ time\ necessary\ to\ increase\ the\ pressure\ in\ a\ tank\ of\ a\ given\ volume\ using\ a\ pressure\ booster.$

DATA:

P1 = Inlet pressure
P2' = Tank initial pressure
P2" = Final tank pressure
V = Tank volume

Procedure

- 1) Calculate the K' ratio between the initial tank pressure and the inlet booster pressure (P2'/P1).
- 2) Calculate the K" ratio between the final tank pressure and the inlet booster pressure (P2"/P1).
- 3) Locate, on the chart illustrating, the booster filling time, the intersection point between the K' ratio and the curve, then trace a vertical line from the intersection point to the vertical axis and read the correspondent value T' (in the example chart, to a ratio of 0.8 corresponds a time value of about 3.6 seconds).
- 4) Repeat the operation for the K" ratio, obtaining the T" time.
- 5) Use the following formula

$$T = \frac{V}{5} \cdot (T''-T')$$

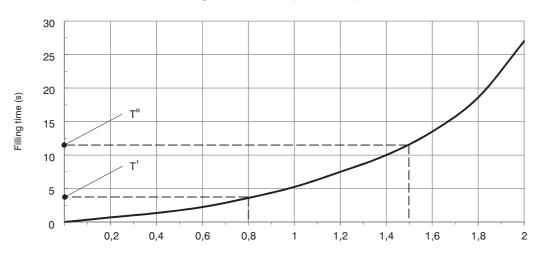
to obtain the total time needed to take the tank of volume V from the pressure value P2' to the pressure value P2'.

Example of calculation of the necessary time to take a 10L tank from the pressure value P2' to the value P2"

K' = 0,8 T' = 3,6 sec. V = 5L.
K" = 1,5 T" = 12 sec.

$$T = \frac{5}{5} \cdot (12-3,6) = 8,4 sec.$$

Filling Characteristics (5 litres tank)

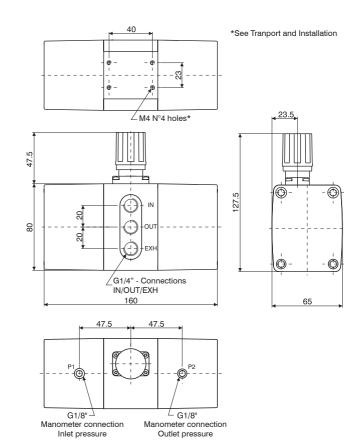


K ratio P2/P1 P1 = Inlet pressure P2 = Tank pressure

Pressure booster in technopolymer Ø40





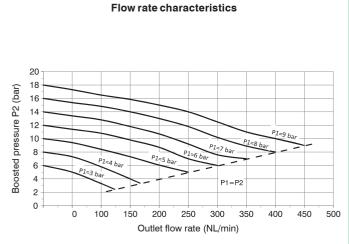


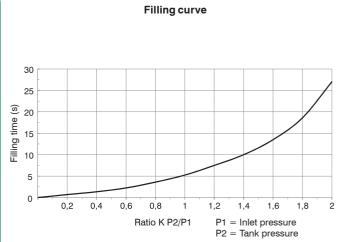
Coding: MDPT40.2R.

	MANOMETER OPTIONS
	Standard without manometer
	A = Manometer P1 0-12 bar
	Manometer P2 0-20 bar
()	B = Manometer P1 0-12 bar
	Manometer P2 0-16 ba
	C = Manometer P1 0-12 bar
	Manometer P2 0-12 bar

Construction characteristics	Technical characteristics	
Pressure Booster with max. 2:1 Compression ratio	Connections IN/OUT/EXT	G1/4"
Automatic operation for use with compressed air only	Manometer connections P1/P2	G1/8"
Maintains downstream air when the supply pressure fails (Providing the circuit has no leakage)	Max working pressure (bar)	2,5 10
Integrated regulator for output pressure control, with overpressure relief valve IN,OUT and EXH connections – G1/4" on the same side	Working temperature °C	-5 +50
Manometer connections G1/8" to monitor and control the input and output pressures	Moltiplication ratio max.	2:1
Body and cover in technopolymer	Assembly positions	Indifferent
Connections in technopolymer	Pressure regulation	Manual with relieving
	Weight (g)	905
	Max. fittings torque (Nm)	G1/8 = 4

Characteristic curves





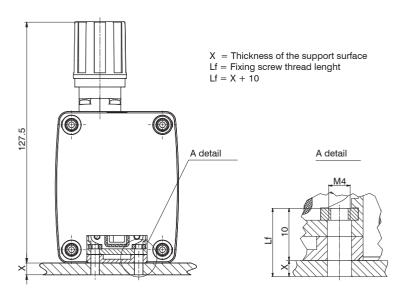
Transport and Installation

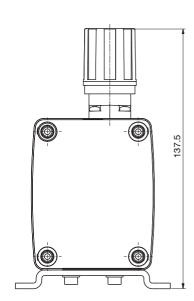
The installation and implementation of the device must be done by skilled personnel. Respecting the safety requirements specified in the **UNI** norm UNI EN 983-97 Machinery Safety – Safety Requirements concerning oleo-hydraulic and pneumatic systems and their components. The following instructions are essential for a correct installation:

- Do not use the green knob to lift and transport the device, because it could rip off causing injuries or damaging objects.
- Install the booster by fixing it through the threaded M4 holes on the body of the machine or using the special accessories (see the "Accessories" chapter).

Direct wall fixing

Fixing with a steel plate fixing clamp







AIR TREATMENT

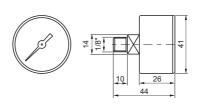


Weight: 94,5 Complete with booster fixing screws

137.5 2 Ø5.5 20

Pressure gauge





Coding: T1740.01

Coding: 17070**♥⑤**

	VERSION
V	
	A = Dial Ø40
	SCALE
	A = 0 - 4 bar
	B = 0 - 6 bar
8	C = 0 - 12 bar
	D = 0 - 16 bar
	E = 0 - 20 bar



General Catalogue

Section 03

Pneumatic actuation

Pneumatic cylinders, handling and magnetic sensors

Cylinders with piston rod according to standard

ISO 6432 Microbore cylinders

Versions available: with threaded end covers, rolled end covers, aluminium, stainless steel and technopolymer versions





CNOMO-CETOP-ISO cylinders

Cylinders manufactured according to standards CNOMO, CETOP and ISO: standard versions, through rod versions, tandem push with common rod, tandem push with independent rods or opposed tandem with common rod

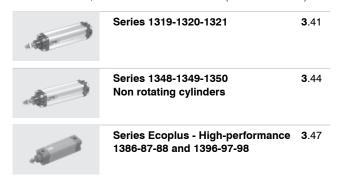


Series 1303-1308 3.30

Cylinders according to standard ISO 15552

Cylinders according to ISO 15552 with bores from Ø32 to Ø200 mm and strokes up to 1250 mm.

Available versions: ECOPLUS with aluminium or technopolymer end plates, ECOLIGHT optmized in weight and dimensions, Steel line completely in stainless steel, round tube versions tie rod (Ø250-Ø320 mm)



<i>///</i> 2	Series Ecolight	3 .51
	1390-1391-1392	
W-0-		
	Series Ecolight	3 .58
3	with protective bellows	
	Series 1315	3 .73
	Round tube cylinders	3 5
	Series Steel line - AISI 316	3.77
4-13	Series Steel line - AlSi 316	3.77

Hydro-pneumatic speed control cylinders according to standard ISO 15552

ISO 15552 hydro-pneumatic speed control cylinders with internal hydraulic circuit for movement control



PNEUMAX

Compact cylinders according to standard ISO 21287

Compact cylinders according to standard ISO with integrated slots suitable for sensors mounting without adaptors. Bores from Ø20 to Ø100 mm. Versions with end stroke adjustable pneumatic cushioning are also available according to ISO 21287



Series 1500 Ecompact

3.92

Cylinders with piston rod not according to standard

Threaded body microbore cylinders

Special performance microbore cylinders with hexagonal or round bodied and either completely threaded or threaded with a plain rod ending



Series 1200 Special performance microbore cylinders **3**.108

Profile tube cylinders, non rotating

Non rotating profile tube cylinders twin rod version, available with bores from Ø32 to Ø100 mm, and strokes up to 500 mm



Series 1325-1326-1345-1347 Twin rod cylinders **3**.110

Flat profile cylinders

ECOFLAT cylinders available with sizes from Ø25 to Ø63 mm and strokes up to 300 mm. Profiled tube has two "T" slots on the side hosting sensors 1580. , MRS. , MHS. . without adaptors. Two additional connections are also available on rear cover for cylinder feeding



Series ECOFLAT

3.115

Hydraulic speed control cylinders

Hydraulic speed control cylinders with outward, inward and outward/inward control, with lateral or in-line tank. Available with SKIP valve (accelerating device) and blocking valve (STOP).



Series 1400 - Ø40 - Ø63

3.121

Compact cylinders

Short stroke and compact cylinders with bores from Ø20 to Ø100 mm, available in single and double acting versions, tandem and through rod with magnetic piston versions. The Europe versions are mainly compliant with the ISO or UNITOP standard (depending on bores), while the Ecompact-S versions have connections and rods according to the ISO 15552 standard



Series 1500 - Short stroke cylinders 3.132



Series 1500 Ecompact-S

3.147



3 | *i*

Series 1500 Europe

3.139



Cylinders with piston rod not according to standard (following)

Multimount cylinders

Multimount cylinders available with bores from Ø10 to Ø25 mm, with strokes up to 50 mm and with magnetic piston versions



Series 6500

3.152

Guided compact cylinders

These cylinders are available in sizes Ø12 to Ø80 mm, and comprise a single compact cylinder with integral guide rods, the rod guide is available in two styles: self-lubricating bronze bushes and bearing bushes



Series 6100-6101-6110

3.154

Slide cylinders

Slide cylinders manufactured with bores from Ø8 to Ø25 mm, with strokes up to 150 mm. Available with simple and double regulation end stroke and also with front and rear shock absorber



Series 6600

3.168

Slide units

Twin-rod linear guide units with bores from Ø10 to Ø32 mm, and with control unit with bronze bush versions, with control unit with bearing bush versions. Are also available the through twin-rod slide units and the compact slide units



Series 6200 - Twin-rod slide units

1

Series 6700

3.188



Series 6210 Through twin-rod slide units **3**.183

3.179

Rodless cylinders

Rodless cylinders - Standard

Rodless cylinders with bore from Ø16 to Ø63 mm, and strokes up to 6000 mm, available also with linear control unit



Series 1605

3.195



Series 1605 - Ø16

3.206

Rotary actuators

Rack rotary actuators

Double or single rack & pinion rotary actuators



Series 1330 - 1331 - 1332 - 1333, **3**.211 rotary actuators



Series 6411

3.218



Series 6400 - Double rack rotary

actuators with turn table

Vane type rotary actuators

Vane type rotary actuators with the shaft that runs into ball bearings, available with sizes from Ø10 to Ø100 mm

3.215

3.221



Series 6420

Handling

Pneumatic grippers

Pneumatic grippers manufactured with 2 angular fingers (from -10° to +30°), wide opening 180°, or 3 finger parallel style. Swing clamp cylinders has been developed to meet the need to clamp a workpiece by means of a clamping arm.



Series 6300 **3**.231



Series RT

3.245

Sensors

Magnetic sensors

Magnetic sensors with Reed type or Hall effect



Series SA

3.250

Miniaturised magnetic sensors

Miniaturised magnetic sensors with Reed and Hall style versions, available with rectangular, square, square section UL/CSA approved, and round section versions



Series SR

3.262



Series SQ

3.267



Series SU

3.266

Series ST

3.271

Accessories and fixing devices

Piston rod lock

Piston rod lock for cylinders with bores from da \emptyset 12 to \emptyset 125 mm



Series 1260 - 1320

3.279

Linear guiding units

Linear guiding units series 1200 (Ø20-25 mm) and series 1320 (from Ø32 to Ø80 mm)



Series 1260 - 1320

3.281

Shock absorbers

Shock absorbers with M8x1-M10x1-M14x1,5-M20x1,5-M27x1,5 threads



3 | *i*

Series 6900

3.283



Series 1200, Threaded end covers

Construction characteristics

Barrel	anodised aluminium (brass for Ø8 and Ø10)						
Fixing devices	vices steel painted in cataphoresis						
Forks	zinc plated steel						
Seals	standard: NBR Oil resistant rubber, PUR Piston rod seals (HNBR or FPM seals available upon request)						
Single-acting springs	ngs Steel for springs and stainless steel						
Pistons	aluminium						
Piston rod	non magnetic piston: Ø8 - Ø10: stainless steel / Ø12 Ø50: C43 chromed magnetic piston: Ø10 20: stainless steel / Ø25 50: C43 chromed						
End caps anodi:					minium		
Cushioning lenght	Ø	16	20	25	32	40	50
	mm	15	18	18	18	22	22

Operational characteristics

Fluid	filtered air, preferably lubricated
Max. working pressure	10 bar
Working temperature	-5°C +70°C with standard seals magnetic or non magnetic piston -5°C +80°C with FPM seals magnetic piston -5°C +80°C with HNBR seals magnetic piston -5°C +120°C with HNBR seals non magnetic piston -5°C +150°C with FPM seals non magnetic piston

Please follow the suggestions below to ensure a long life for these cylinders:

- · use clean and lubricated air.
- · correct alignment during assembly with regard to the applied load so as to avoid radial components or bending the rod.
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).
- evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

Please note: air must be dried for applications with lower temperature.

Use hydraulic oils H class (ISO VG32) for correct continued lubrication.

Standard strokes

Double acting version

Ø8-Ø10:

15 - 25 - 50 - 75 - 80 - 100 mm

Ø12-Ø16:

15 - 25 - 50 - 75 - 80 - 100 - 150 - 160 - 200 - 250 - 300 mm

Ø20 - Ø25:

15-25-50-75-80-100-150-160-200-250-300-320-350-400 mm

Ø32 ... Ø50:

15 - 25 - 50 - 75 - 80 - 100 - 150 - 160 - 200 - 250 - 300 - 320 - 350 - 400 - 450 - 500 mm

On request are available strokes up to:

Ø8 - Ø10: 250 mm Ø12 - Ø16: 700 mm Ø20 ... Ø50: 1000 mm Single acting version

Ø12 ... Ø50:

up to stroke 40 mm

On request are available strokes up to 200 mm

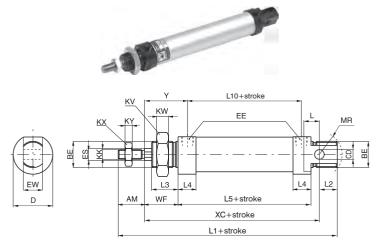
$\label{lem:minimum} \textbf{Minimum and maximum springs load for single acting version}$

Bore	Ø12 Ø20	Ø25	Ø32	Ø40 - Ø50
Min. load (N)	10	10	20	40
Max. load (N)	25	50	55	110

Basic version

Coding: 120.Ø.stroke.VG

Coding:	12U.Ø.Stroke.VG
	TYPE
	60 = Double acting version
•	71 = front spring from Ø12 (max stroke 40 mm)
	72 = rear spring from Ø12 (max stroke 40 mm)
	BORE
	8 = Ø8
Ø	10 = Ø10
	50 = Ø50
	VERSION
	A = Adjustable cushioning (from Ø16)
	M = Magnetic piston (from Ø10)
V	X = Stainless steel rod
	MA = Cushioning with magnetic piston
	MAX = Cushioning, magnetic piston and stainless steel piston rod
	SEALS
	= NBR
e	T = HNBR
	V = FPM

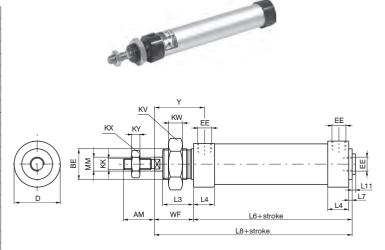


Standard execution, fully complying with ISO standards from 08 to 025. Bores 32, 40 and 50 not included in the standard, comply with our own specifications. Can use all available mountings. For single acting type, the maximum stroke is 40 mm., after which overall dimensions increase in length to an extent not proportional to the stroke (and in any case not longer than stroke 100).

Without rear eye version

Coding: 12 **1**.Ø.stroke.**♥6**

	TYPE
	61 = Double acting version
•	73 = front spring from Ø12 (max stroke 40 mm)
	74 = rear spring from Ø12 (max stroke 40 mm)
	BORE
	8 = Ø8
Ø	10 = Ø10
	50 = Ø50
	VERSION
	A = Adjustable cushioning (from Ø16)
	E = version with non-rotating hexagonal rod, non magnetic piston (from Ø12)
	M = Magnetic piston (from Ø10)
	X = Stainless steel rod
•	AE = version with non-rotating hexagonal rod, with cushioning (from Ø16)
•	MA = Cushioning with magnetic piston
	ME = version with non-rotating hexagonal rod, magnetic piston (from Ø12)
	MAE = version with non-rotating hexagonal rod, with cushioning and magnetic
	piston (from Ø16)
	MAX = Cushioning, magnetic piston and stainless steel piston rod
	L = Air inlet at 90° version
	SEALS
e	= NBR
•	T = HNBR
	V = FPM



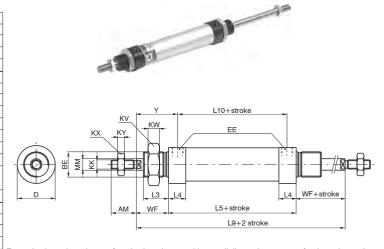
Version derived from standard execution 1260 and not included in ISO standard. Not having a rear eye it is shorter and the air inlet is from the rear or at 90° like it is on the front. The considerations made for the basic type 1260 apply for all single-acting types.

Through rod cylinder version

Coding: 1262.Ø.stroke.

Coung:	1202.Ø.Stroke. Ø
	BORE
	8 = Ø8
Ø	10 = Ø10
	50 = Ø50
	VERSION
	A = Adjustable cushioning (from Ø16)
	E = version with non-rotating hexagonal rod, non magnetic piston (from Ø12)
	M = Magnetic piston (from Ø10)
	X = Stainless steel rod
V	AE = version with non-rotating hexagonal rod, with cushioning (from Ø16)
	MA = Cushioning with magnetic piston
	ME = version with non-rotating hexagonal rod, magnetic piston (from Ø12)
	MAE = version with non-rotating hexagonal rod, with cushioning and magnetic
	piston (from Ø16)
	MAX = Cushioning, magnetic piston and stainless steel piston rod
	SEALS
	= NBR
e	T = HNBR*
	V = FPM*

^{*}Excludes hexagonal rod version



Execution by rod coming out from both end caps, with overall dimensions. except for the rod, equal to 1260 version. Not available with $\emptyset 8$ and 10.

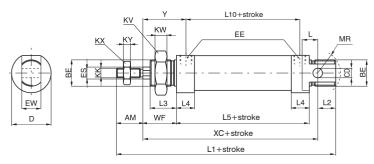


Non rotating hexagonal piston rod version (from Ø 12)

Coding: 12 **1**.Ø.stroke.**♥6**

	TYPE
0	60 = Double acting version
•	71 = front spring from Ø12 (max stroke 40 mm)
	72 = rear spring from Ø12 (max stroke 40 mm)
	BORE
	8 = Ø8
Ø	10 = Ø10
	50 = Ø50
	VERSION
	E = with non magnetic piston
	AE = version with non-rotating hexagonal rod, with cushioning (from Ø16)
V	ME = Hexagonal piston rod with magnetic piston (from Ø12)
	MAE = version with non-rotating hexagonal rod, with cushioning and magnetic
	piston (from Ø16)
	SEALS
	= NBR
e	T = HNBR
	V = FPM





Similar overall dimensions as 1260 basic type, it differs because of the hexagonal rod (instead of circular) to avoid the rotation. It is particularly suitable when it is used as a guide and support to the linked element. Not for use with high frequencies and long strokes. For which, whenever possible use front spring.

Table of dimensions

Bore	8	10	12	16	20	25	32	40	50
AM (-0,2)	12	12	16	16	20	22	20	25	25
BE	M12x1,25	M12x1,25	M16x1,5	M16x1,5	M22x1,5	M22x1,5	M30x1,5	M40x1,5	M40x1,5
CD (H9)	4	4	6	6	8	8	12	14	14
D (-0,3)	16	17	19	24	28	33	40	48	58
EE	M5	M5	M5	M5	G1/8"	G1/8"	G1/8"	G1/4"	G1/4"
ES	-	-	6	6	8	10	12	12	12
EW (d13)	8	8	12	12	16	16	26	30	30
KK (6g)	M4x0,7	M4x0,7	M6x1	M6x1	M8x1,25	M10x1,25	M10x1,25	M12x1,75	M12x1,75
KV	17	17	22	22	30	30	42	52	52
KW	5,5	5,5	6	6	7	7	8	9	9
KX	7	7	10	10	13	17	17	19	19
KY	3	3	4	4	5	6	6	7	7
L	6	6	9	9	12	13	13	16	16
L1(±1) *	85	85	105	111	130	141	139	164	167
L2	9	9	14	13	15	15	14	16	16
L3	11	11	17	17	18	22	22	25	25
L4	10	10	9,5	10,5	15	15	15	18	18
L5 (±1) *	46	46	50	56	68	69	69	79	82
L6 (±1) *	48	48	52	58	70,5	71,5	71,5	82	85
L7	2	2	2	2	2,5	2,5	2,5	3	3
L8 (±1) *	64	64	74	80	94,5	99,5	99,5	117	120
L9 (±1,2) *	78	78	94	100	116	125	125	149	152
L10 (±1) *	35	35	40	45	52	53	53	60	63
L11	-	-	-	1,5	2	2	2	2	2
MM (f7)	4	4	6	6	8	10	12	14	14
MR (min.)	12	12	16	16	18	19	22	28	28
WF (±1,2)	16	16	22	22	24	28	28	35	35
XC (±1) *	64	64	75	82	95	104	105	123	126
Y (±1,2)	21,5	21,5	27	27,5	32	36	36	44,5	44,5

(*) These dimensions increase of 10 mm for microbore cylinders equipped with magnetic piston and spring return, and of 9 mm for microbore cylinders with 10 mm BORE magnetic piston

STROKE TOLERANCE: until stroke 100 mm - 1,5, beyond + 2 mm.

Weight	Stroke 0	55	60	80	100	175	240	365	610	790
g	every 10mm	6	7	5	5	8	11	15	19	21
Vithout rear ey	e version									
Weight	Stroke 0	50	55	75	95	170	230	345	570	750
9	every 10mm	6	7	5	5	8	11	15	19	21
hrough rod cy	rlinder version									
Weight	Stroke 0	55	60	95	120	220	310	450	760	950
1	every 10mm	7	8	7	7	12	17	24	31	33
9	every formin	- 1	0	,		12	17	24	31	33
e Hexagonal rod		1	0	1	1	12	17		31	33
exagonal rod Weight		-	-	85	105	180	250	370	590	760

Series 1200 Tecno-MIR

Construction characteristics

Barrel	nylon 66 reinforced with glass fibres
Fixing devices	steel painted / stainless steel AISI 304
Forks	zinc plated steel / stainless steel AISI 304
Piston seals	NBR oil-resistant rubber seal
Rod seal	PUR
Pistons	aluminium
Piston rod	C43 chromed (non magnetic piston version) stainless steel (magnetic piston version)
End caps	nylon 66 reinforced with glass fibres

Operational characteristics

Fluid	filtered air, preferably lubricated
Max. working pressure	8 bar
Working temperature	-5 °C +50 °C

Please follow the suggestions below to ensure a long life for these cylinders:

- · use clean and lubricated air.
- correct alignment during assembly with regard to the applied load so as to avoid radial components or bending the rod.
- · avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).
- evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

Please note: air must be dried for applications with lower temperature.

Use hydraulic oils H class (ISO VG32) for correct continued lubrication.

Standard strokes

Double acting version

Ø12:

15 - 25 - 50 - 75 - 80 - 100 - 125 - 150 - 160 - 200 mm

Ø16: 15 - 25 - 50 - 75 - 80 - 100 - 150 - 160 - 200 - 250 mm

Ø20 - Ø25: 15 - 25 - 50 - 75 - 80 - 100 - 150 - 160 - 200 - 250 - 300 mm

On request are available strokes up to:

Ø12: 200 mm Ø16: 250 mm **Ø20 - Ø25:** 300 mm

Maximum fitting torque

Bore	Thread	Maximum torque (Nm)
Ø12	M5	1
Ø16	M5	1
Ø20	G 1/8"	4
Ø25	G 1/8"	4

Weight charts

Weight table series TECNO MIR 1230 - 1231												
Bore		Ø12	Ø16	Ø20	Ø25							
Maight (g)	Stroke 0	50	65	120	160							
Weight (g)	every 10 mm	3,75	4	6,5	9							

Weight table series TECNO MIR 1232											
Bore		Ø12	Ø16	Ø20	Ø25						
\A/-:	Stroke 0	60	75	180	200						
Weight (g)	every 10 mm	7	8,5	10	20						

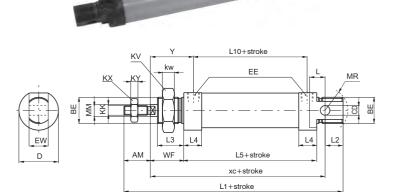


Basic version

Coding: 1230.Ø.stroke.♥

g	
BORE	
12 = Ø12	
16 = Ø16	
20 = Ø20	
25 = Ø25	
VERSION	
= non m	agnetic piston
M = magi	netic piston
	<u> </u>

Standard version, fully complying with ISO standards. Can use all available mountings.



Without rear eye version

Coding: 1231.Ø.stroke.♥

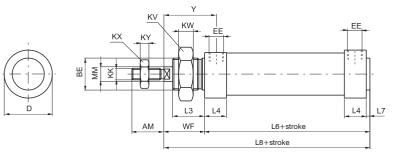
	. 12011210110110110
	BORE
Ø	12 = Ø12
	16 = Ø16
	20 = Ø20
	25 = Ø25
	VERSION
V	= non magnetic piston
	M = magnetic piston

This version derived from standard version 1230 and not included in ISO standard.

Not having a rear eye it is shorter.

The inlet connection is lateral on the rear caps (like on the front caps).





Through rod cylinder version

Coding: 1232.Ø.stroke.♥

Ø	BORE
	12 = Ø12
	16 = Ø16
	20 = Ø20
	25 = Ø25
	VERSION
V	= non magnetic piston
	M = magnetic piston

Through rod model, dimensions as for the 1230 (except the rod).



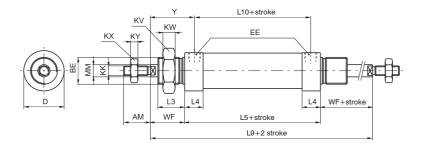


Table of dimensions

Bore	AM (-0,2)	ВЕ	CD (H9)	D (h11)	EE	EW (d13)	KK (6g)	κv	KW	кх	кү	L	L1 (±1)	L2	L3	L4	L5 (±1)	L6	L7	L8	L9 (±1,2)	L10 (±1)	MM (f7)	WF (±1,2)	XC (±1)	Y (±1)
12	16	M16X1,5	6	19	M5	12	M6X1	22	6	10	4	9	105	14	17	13,5	50	52	2	74	94	41	6	22	75	26,5
16	16	M16X1,5	6	23	M5	12	M6X1	22	6	10	4	9	111	13	17	14,5	56	58	2	80	100	45	6	22	82	27,5
20	20	M22X1,5	8	28,5	G1/8"	16	M8X1,25	30	7	13	5	12	130	15	18	20,5	68	70,5	2,5	94,5	116	52	8	24	95	32
25	22	M22X1,5	8	31,5	G1/8"	16	M10X1,25	30	7	17	6	14	140	14	22	20	68	70,5	2,5	98,5	124	52	10	28	104	36



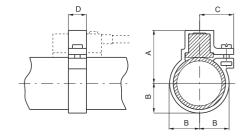


Sensor clamps - codes 1500._, RS._, HS._

Coding: 1260.Ø.F

00uing. 1200.0.1									
	BORE								
	10 = Ø10								
	12 = Ø12								
	16 = Ø16								
Ø	20 = Ø20								
	25 = Ø25								
	32 = Ø32								
	40 = Ø40								
	50 = Ø50								





Sensor for microbore cylinders

For technical characteristics and ordering codes see the "Magnetic sensors" sections

Bore	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32	Ø40	Ø50
A	23	23	25	27	29,5	33	37	42
В	10	10	12	14	16,5	20	24	29
С	15	15	16,5	17,5	19	20	22	24
D	10	10	10	10	10	10	10	10
Weight (g)	2	2	3	5	7	10	14	16

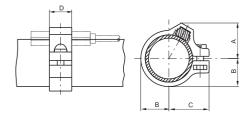


Sensor clamps - codes 1580._, MRS._, MHS._

Coding: 1260.Ø.FS

	5
	BORE
	10 = Ø10
	12 = Ø12
	16 = Ø16
Ø	20 = Ø20
	25 = Ø25
	32 = Ø32
	40 = Ø40
	50 = Ø50





Sensor for microbore cylinders

For technical characteristics and ordering codes see the "Magnetic sensors" sections

Bore	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32	Ø40	Ø50
A	13	14	15.4	17.2	19.3	20.5	22	29
В	9	10	12	14	16.5	20	24	29
С	16	16	18	19.5	22	26	30	35
D	10	10	10	10	10	10	10	10
Weight (g)	2	2	3	5	7	8	10	11



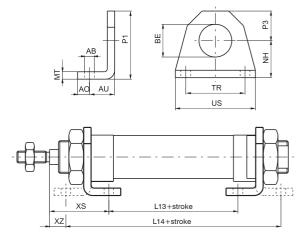
Foot

Coding: 1200.Ø.01

	BORE
	8 = Ø8
	10 = Ø10
	12 = Ø12
~	16 = Ø16
Ø	20 = Ø20
	25 = Ø25
	32 = Ø32
	40 = Ø40
	50 = Ø50
	40 = Ø40

(1 piece)





Used to mount the cylinder on the mounting plane with the rod parallel to said plane. Use one for short strokes and two for long strokes. It is made of stamped steel, made corrosion resistant by cataphoreses treatment. Attached to the end caps by means of nuts (or lock nuts) 05.

Attention: the dimensions of microbore cylinders with threaded end covers (*) increase of 10 mm. for microbore cylinders equipped with magnetic piston and spring return, and of 9 mm. for microbore cylinders with 10 mm. bore magnetic piston.

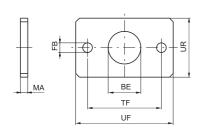
Bore	8	10	12	16	20	25	32	40	50
AB (H13)	4,5	4,5	5,5	5,5	6,5	6,5	6,5	8,5	8,5
AO	5	5	6	6	8	8	8	10	10
AU	11	11	14	14	17	17	17	20	20
BE	12	12	16	16	22	22	30	40	40
L13 (±1) *	30	30	30	36	44	45	45	49	52
L14 (±1) *	68	68	78	84	102	103	103	119	122
MT	3	3	4	4	5	5	5	5	5
NH (±0,3)	16	16	20	20	25	25	28	40	40
P1	26	26	33	33	45	45	50	70	70
P3	10	10	13	13	20	20	22	30	30
TR (JS14)	25	25	32	32	40	40	52	70	70
US	35	35	42	42	54	54	66	90	90
XS (±1,4)	24	24	32	32	36	40	40	50	50
XZ (±1,4)	5	5	8	8	7	11	11	15	15
Weight (g)	22	22	45	45	90	90	110	210	210

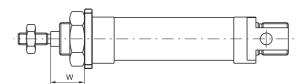
Flange

Coding: 1200.Ø.02

	BORE
	8 = Ø8
	10 = Ø10
	12 = Ø12
_	16 = Ø16
Ø	20 = Ø20
	25 = Ø25
	32 = Ø32
	40 = Ø40
	50 = Ø50
	32 = Ø32 40 = Ø40







Used to mount the microcylinder at a right angle to the mounting plane. Attached to the front (or rear) end cap by a nut (or lock nut) 05. Made of extruded steel, made corrosion resistant by cataphoresis.

Bore	8	10	12	16	20	25	32	40	50
BE	12	12	16	16	22	22	30	40	40
FB (H13)	4,5	4,5	5,5	5,5	6,5	6,5	6,5	8,5	8,5
UF	40	40	53	53	66	66	68	90	90
UR	25	25	30	30	40	40	50	60	60
MA	3	3	4	4	5	5	5	5	5
TF (JS14)	30	30	40	40	50	50	52	70	70
W (±1,4)	13	13	18	18	19	23	23	30	30
Weight (g)	20	20	40	40	85	85	100	150	150



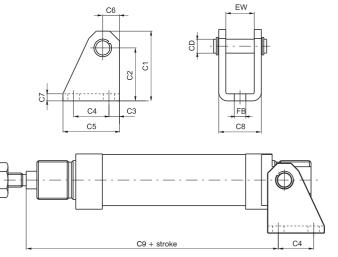
Rear clevis

Coding: 1200.Ø.03

	BORE
	8 = Ø8
	10 = Ø10
	12 = Ø12
~	16 = Ø16
Ø	20 = Ø20
	25 = Ø25
	32 = Ø32
	40 = Ø40
	50 = Ø50
	50 = Ø50

Use with the rear end cover to mount the cylinder either parallel or at a right-angle to the mounting plane. This allows the cylinder to oscillate and self-align with the linked element to the rod. This is necessary when the rod may be subject to lateral during travel.





Bore	8	10	12	16	20	25	32	40	50
CD	4	4	6	6	8	8	12	14	14
C1	28,5	28,5	33,5	33,5	39,5	39,5	44,5	53,5	53,5
C2 (±0,3)	24	24	27	27	30	30	33	40	40
C3	3,5	3,5	5	5	6	6	7	10	10
C4	12,5	12,5	15	15	20	20	24	28	28
C5	20	20	25	25	32	32	38	45	45
C6	4,5	4,5	6,5	6,5	9,5	9,5	11,5	13,5	13,5
C7	2,5	2,5	3	3	4	4	4	4	4
C8	13	13	18	18	24	24	34	38	38
C9 (±0,4) *	63	63	73,5	80,5	91,5	100,5	100,5	119,5	122,5
EW	8,1	8,1	12,1	12,1	16,1	16,1	26,1	30,1	30,1
FB (H13)	4,5	4,5	5,5	5,5	6,5	6,5	6,5	8,5	8,5
Weight (g)	20	20	35	35	75	75	135	180	180

Attention: the dimensions of microbore cylinders with threaded end covers (*) increase of 10 mm. for microbore cylinders equipped with magnetic piston and spring return, and of 9 mm. for microbore cylinders with 10 mm. bore magnetic piston.

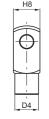
Fork with pin

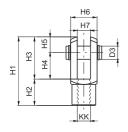
Coding: 1200.Ø.04

	BORE
	12 = Ø12
	16 = Ø16
α	20 = Ø20
Ø	25 = Ø25
	32 = Ø32
	40 = Ø40
	50 = Ø50

Similar to hinge 03, mounted on the rod thread, assures a regular operation even in the presence of significant forces to the linked element. Made of zinc plated steel.







Bore	D3	D4	H1	H2	НЗ	H4	H5	H6	H7 (B12)	H8	KK	Weight (g)
12	6	10	31	12	19	12	7	12	6	12	M6x1	20
16	6	10	31	12	19	12	7	12	6	12	M6x1	20
20	8	14	42	16	26	16	10	16	8	16	M8x1,25	45
25	10	18	52	20	32	20	12	20	10	20	M10x1,25	90
32	10	18	52	20	32	20	12	20	10	20	M10x1,25	90
40	12	20	62	24	38	24	14	24	12	24	M12x1,75	145
50	12	20	62	24	38	24	14	24	12	24	M12x1,75	145

Fork with clips

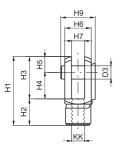
Coding: 1200.Ø.04/1

	•
	BORE
	8 = Ø8
	10 = Ø10
	12 = Ø12
~	16 = Ø16
Ø	20 = Ø20
	25 = Ø25
	32 = Ø32
	40 = Ø40
	50 = Ø50

Similar to hinge 03, mounted on the rod thread, assures a regular operation even in the presence of significant forces to the linked element. Made of zinc plated steel.







Bore	D3	D4	H1	H2	НЗ	H4	Н5	Н6	H7 (B12)	Н8	Н9	KK	Weight (g)
8	4	8	21	8	13	8	5	8	4	10	11	M4x0,7	12
10	4	8	21	8	13	8	5	8	4	10	11	M4x0,7	12
12	6	10	31	12	19	12	7	12	6	12	18	M6x1	20
16	6	10	31	12	19	12	7	12	6	12	18	M6x1	20
20	8	14	42	16	26	16	10	16	8	16	23	M8x1,25	45
25	10	18	52	20	32	20	12	20	10	20	27	M10x1,25	90
32	10	18	52	20	32	20	12	20	10	20	27	M10x1,25	90
40	12	20	62	24	38	24	14	24	12	24	32	M12x1,75	145
50	12	20	62	24	38	24	14	24	12	24	32	M12x1,75	145

Series 1200 Threaded end covers / Tecno-MIR - Fixing devices

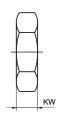


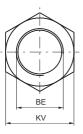
Nut for the endcap

Coding: 1200.Ø.05

BORE
8 = Ø8
10 = Ø10
12 = Ø12
16 = Ø16
20 = Ø20
25 = Ø25







Used to fasten flanges or feet to the endcaps of the microcylinder Mounted on diameters from 8 to 25. Supplied as standard (1 piece) with microcylinders.

Bore	BE	KV	KW	Weight (g)
8	M12x1,25	17	5.5	7
10	M12x1,25	17	5.5	7
12	M16x1,5	22	6	16
16	M16x1,5	22	6	16
20	M22x1,5	30	7	25
25	M22x1,5	30	7	25

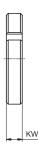


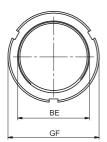
Lock nut for the end cap

 $\textbf{Coding: } 1200. \emptyset.05$

Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50







Used to fasten flanges or feet to the endcaps of the microcylinder Mounted on diameters from 32 to 50. Supplied as standard (1 piece) with microcylinders.

Bore	BE	GF	KW	Weight (g)
32	M30x1,5	42	8	42
40	M40x1,5	52	9	60
50	M40x1,5	52	9	60

Series 1200, Rolled end covers MIR

Construction characteristics

Barrel		stainless steel AISI 304				
Fixing devices		steel painted in cataphoresis				
Forks				zinc plated steel		
Seals		standard: NBR Oil resistant rubber, PUR Piston rod seals (HNBR or FPM seals available upon request)				
Single-acting springs		C98 zinc plated steel for springs				
Pistons		brass (Ø8-10-12) aluminium (Ø16-20-25-32)				
Piston rod	Piston rod stainless steel					
End caps anodized aluminium						
Cushioning lenght	Ø	16	20	25	32	
	mm	15	18	18	18	

Operational characteristics

•	
Fluid	filtered air, preferably lubricated
Max. working pressure	10 bar
Working temperature	-5°C +70°C with standard seals magnetic or non magnetic piston -5°C +80°C with FPM seals magnetic piston -5°C +80°C with HNBR seals magnetic piston -5°C +120°C with HNBR seals non magnetic piston -5°C +150°C with FPM seals non magnetic piston

Please follow the suggestions below to ensure a long life for these cylinders:

- use clean and lubricated air.
- $correct\ a lignment\ during\ assembly\ with\ regard\ to\ the\ applied\ load\ so\ as\ to\ avoid\ radial\ components\ or\ bending\ the\ rod.$
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).
- · evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

Please note: air must be dried for applications with lower temperature.

Use hydraulic oils H class (ISO VG32) for correct continued lubrication.

Standard strokes

Double acting version

Ø8 - Ø10:

15 - 25 - 50 - 75 - 80 - 100 mm

Ø12 - Ø16:

15 - 25 - 50 - 75 - 80 - 100 - 150 - 160 - 200 - 250 - 300 mm

Ø20 - Ø25:

15 - 25 - 50 - 75 - 80 - 100 - 150 - 160 - 200 - 250 - 300 - 320 - 350 - 400 mm

15 - 25 - 50 - 75 - 80 - 100 - 150 - 160 - 200 - 250 - 300 - 320 - 350 - 400 - 450 - 500 mm

On request are available strokes up to:

Ø8 - Ø10: 250 mm Ø12 - Ø16: 700 mm Ø20 - Ø32: 1000 mm

Single acting version

Front spring Ø8 - Ø32: up to stroke 50 mm Rear spring Ø16 - Ø32: up to stroke 50 mm

Minimum and maximum springs load for single acting version

Bore	Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
Min. load (N)	2.2	2.2	4	7.5	11	16.5	23
Max. load (N)	4.2	4.2	8.7	21	22	30.7	52.5



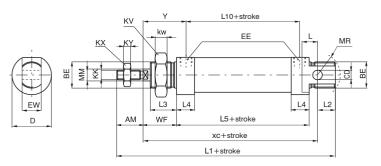
Basic version

Coding: 121.Ø.stroke.

TYPE
80 = Double acting version
91 = front spring (max stroke 50 mm)
92 = rear spring from Ø16 (max stroke 50 mm)
BORE
8 = Ø8
10 = Ø10
32 = Ø32
VERSION
A = Adjustable cushioning (from Ø16)
M = Magnetic piston
AM = Cushioning with magnetic piston (from Ø16)
SEALS
= NBR
T = HNBR
V = FPM

Standard version, fully compliant with ISO standards. Can use all available mountings. For single acting type, the maximum stroke is 50 mm, after which overall dimensions increase in length to an extent not proportional to the stroke (and in any case not longer than stroke 100).





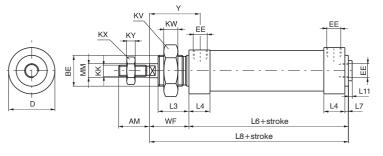
Without rear eye version

Coding: 12 **1**.Ø.stroke.**♥6**

120.2.ou one.
TYPE
81 = Double acting version
93 = front spring (max stroke 50 mm)
94 = rear spring from Ø16 (max stroke 50 mm)
BORE
8 = Ø8
10 = Ø10
32 = Ø32
VERSION
A = Adjustable cushioning (from Ø16)
M = Magnetic piston
AM = Cushioning with magnetic piston (from Ø16)
SEALS
= NBR
T = HNBR
V = FPM

Version derived from standard version 1260 and not included in ISO standard. Not having a rear eye it is shorter. Rear inlet connection is at 90 like the front one, in line and plugged. The considerations made for the basic type 1280 apply for all single-acting





Through rod cylinder version

Coding: 1282.Ø.stroke.

County.	1202.Ø.Sti 0ke.
	BORE
	8 = Ø8
Ø	10 = Ø10
	32 = Ø32
	VERSION
	= Double acting version
V	A = Adjustable cushioning (from Ø16)
	M = Magnetic piston
	AM = Cushioning with magnetic piston (from Ø16)
	SEALS
e	= NBR
9	T = HNBR
	V = FPM

This version having rods coming out from both end plates with overall dimensions except for the rod, equal to 1280 version. This version is not suitable for Ø8 and Ø10 due to difficulty in anchoring the pistons to rods.



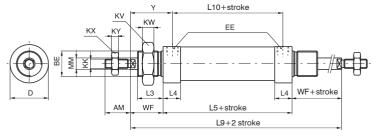


Table of dimensions

Bore	8	10	12	16	20	25	32
AM (-0,2)	12	12	16	16	20	22	20
BE	M12X1,25	M12X1,25	M16X1,5	M16X1,5	M22X1,5	M22X1,5	M30X1,5
CD (H9)	4	4	6	6	8	8	12
D (h11)	16	16	20	21	27	30	38
EE	M5	M5	M5	M5	G1/8"	G1/8"	G1/8"
EW (d13)	8	8	12	12	16	16	26
KK (6g)	M4X0,7	M4X0,7	M6X1	M6X1	M8X1,25	M10X1,25	M10X1,25
KV	17	17	22	22	30	30	42
KW	5,5	5,5	6	6	7	7	8
KX	7	7	10	10	13	17	17
KY	3	3	4	4	5	6	6
L	6	6	9	9	12	13	13
L1 (±1) *	86	86	105	111	130	141	139
L2	10	10	14	13	15	15	14
L3	12	12	17	17	18	22	22
L4	9	9	9	11	15,5	15	14,5
L5 (±1) *	46	46	50	56	68	69	69
L6 *	48	48	52	58	70,5	71,5	71,5
L7	2	2	2	2	2,5	2,5	2,5
L8 *	64	64	74	80	94,5	99,5	99,5
L9 (±1,2) *	78	78	94	100	116	125	125
L10 (±1) *	37	37	41	45	52,5	53	54,5
L11	1,5	1,5	1,5	1,5	2	2	2
MM (f7)	4	4	6	6	8	10	12
MR	12	12	16	16	18	19	22
WF (±1,2)	16	16	22	22	24	28	28
XC (±1) *	64	64	75	82	95	104	105
Y (±1,2)	20,5	20,5	26,5	27,5	32	36	35

 $Dimensions\ marked\ with\ *\ do\ not\ increase\ proportionally\ to\ stroke\ for\ rear\ spring\ version\ (over\ 25\ mm\ stroke)$

${\bf STROKE\ TOLERANCE:\ until\ stroke\ 100\ mm-1,5,\ beyond\ +\ 2\ mm.}$

Weight	Stroke 0	30	35	65	80	160	200	310
g	every 10mm	2	2,5	4	5	7,5	11,5	18
Without rear eye ve	rsion							
Weight	Stroke 0	25	35	60	75	150	185	290
g	every 10mm	2	2,5	4	5	7,5	11,5	18
Through rod cylinder version								
Weight	Stroke 0	35	40	75	95	200	250	370
weight	every 10mm	2.5	3	6	7	10.5	15.5	24



Series 1200 Rolled end covers MIR-INOX

Construction characteristics

Barrel	stainless steel AISI 304		
Fixing devices	stainless steel AISI 304		
Forks	stainless steel AISI 304		
Piston seals	standard: NBR Oil resistant rubber, PUR Piston rod seals (FPM seals available upon request)		
Pistons	aluminium		
Piston rod	stainless steel		
End caps	stainless steel AISI 316		

Operational characteristics

Fluid	filtered air, preferably lubricated			
Max. working pressure	10 bar			
Working temperature	-5°C +70°C with standard seals magnetic or non magnetic piston -5°C +80°C with FPM seals magnetic piston -5°C +150°C with FPM seals non magnetic piston			

Please follow the suggestions below to ensure a long life for these cylinders:

- use clean and lubricated air.
- correct alignment during assembly with regard to the applied load so as to avoid radial components or bending the rod.
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).
- · evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

Please note: air must be dried for applications with lower temperature.

Use hydraulic oils H class (ISO VG32) for correct continued lubrication.

Standard strokes

Double acting version

Ø16:

15 - 25 - 50 - 75 - 80 - 100 - 150 - 160 - 200 - 250 - 300 mm

Ø20 - Ø25:

 $15 - 25 - 50 - 75 - 80 - 100 - 150 - 160 - 200 - 250 - 300 - 320 - 350 - 400 \, mm$

Ø32

15 - 25 - 50 - 75 - 80 - 100 - 150 - 160 - 200 - 250 - 300 - 320 - 350 - 400 - 450 - 500 mm

On request are available strokes up to:

Ø16: 700 mm **Ø20 - Ø32:** 1000 mm

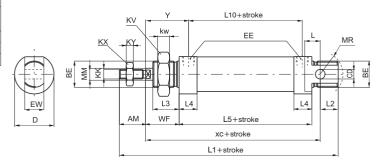


Basic version

Coding: 1280.Ø.stroke.VG

oouing.	1200.0.01010.00
Ø	BORE
	16 = Ø16
	20 = Ø20
	25 = Ø25
	32 = Ø32
	VERSION
	X = non-magnetic
	AX = non-magnetic version with cushions (non-adjustable cushioning)
V	MX = Stainless steel magnetic version
	AMX = stainless steel magnetic version with cushions (non-adjustable
	cushioning)
	SEALS
e	= NBR
	V = FPM
	1



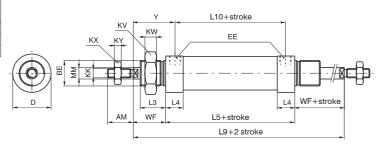


 $Standard\,version, fully\,complying\,with\,ISO\,standards.\,Can\,use\,all\,available\,mountings.$

Through rod cylinder version

Coding: 1282.Ø.stroke.♥6

Ø	BORE
	16 = Ø16
	20 = Ø20
	25 = Ø25
	32 = Ø32
	VERSION
	X = non-magnetic
V	AX = non-magnetic version with cushions (non-adjustable cushioning)
V	MX = Stainless steel magnetic version
	AMX = stainless steel magnetic version with cushions (non-adjustable
	cushioning)
	SEALS
e	= NBR
	V = FPM



This version having rods coming out from both end caps, with overall dimensions, except for the rod, equal to 1280 version.

Table of dimensions

Bore	AM	BE	CD	D	EE	EW	KK	K۷	KW	KX	KY	L	L1	L2	L3	L4	L5	L9	L10	MM	MR	WF	хс	Υ
16	16	M16X1,5	6	21	M5	12	M6X1	22	6	10	4	9	111	13	17	10,5	56	100	45	6	16	22	82	27,5
20	20	M22X1,5	8	27	G1/8"	16	M8X1,25	30	7	13	5	12	130	15	18	10,5	68	116	52,5	8	18	24	95	32
25	22	M22X1,5	8	30	G1/8"	16	M10X1,25	30	7	17	6	13	140	15	22	15,5	68	125	52,5	10	18	28	104	36
32	20	M30X1,5	12	38	G1/8"	26	M10X1,25	42	8	17	6	13	139	14	22	14,5	69	125	54,5	12	22	28	105	35

Bore	Standard	weight (g)	Weight push-pull version (g)				
Боге	Stroke 0	every 10 mm	Stroke 0	every 10 mm			
16	145	5	180	7			
20	280	8	330	11			
25	370	12	440	16			
32	580	18	660	24			

Series 1200 Rolled end covers MIR / MIR-INOX - Sensor supports

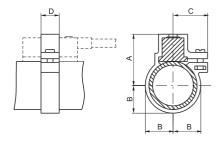


Sensor clamps - codes 1500._, RS._, HS._

Coding: 1280.Ø.

Oou	ing. 1200.0.0
	BORE
	16 = Ø16
Ø	20 = Ø20
	25 = Ø25
	32 = Ø32
	TYPE
0	F = Cylinders MIR
	FX = Cylinders MIR-INOX





Sensor for microbore cylinders

For technical characteristics and ordering codes see the "Magnetic sensors" sections

Bore	Ø16	Ø20	Ø25	Ø32
A	24	25,5	28,5	31,8
В	10,5	12,5	15,5	18,8
С	16,5	17,5	19	20
D	10	10	10	10
Weight (g)	3	5	7	10

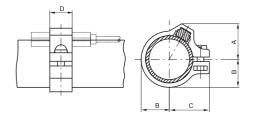


Sensor clamps - codes 1580._, MRS._, MHS._

Coding: 1280.Ø.

	g
~	BORE
	8 = Ø8
	10 = Ø10
	12 = Ø12
Ø	16 = Ø16
	20 = Ø20
	25 = Ø25
	32 = Ø32
	TYPE
•	FS = Cylinders MIR
	FSX = Cylinders MIR-INOX





Sensor for microbore cylinders

For technical characteristics and ordering codes see the "Magnetic sensors" sections

Bore	Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
Α	11	12	13	14.5	16	17.5	19.5
В	6.5	7.5	8.5	10.5	12.5	15.3	18.8
С	12.5	13.5	15	16	18	20.5	24
D	10	10	10	10	10	10	10
Weight (g)	2	2	2	3	5	7	10

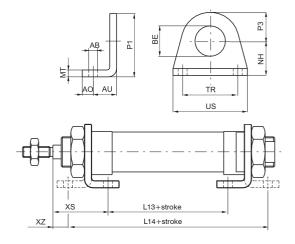


Foot

Coding: 1200.Ø.01X

	BORE
	16 = Ø16
Ø	20 = Ø20
	25 = Ø25
	32 = Ø32





Bore	16	20	25	32	
AB (H13)	5,5	6,5	6,5	6,5	
AO	6	8	8	8	
AU	14	17	17	17	
BE	16	22	22	30	
L13 (±1)	36	44	44	45	
L14 (±1)	84	102	102	103	
MT	4		5	5	
NH (±0,3)	20	25	25	28	
P1	33		45	50	
P3	13	20	20	22	
TR (Js14)	32	40	40	52	
US	42	54	54	66	
XS (±1,4)	32	36	40	40	
XZ (±1,4)	8	7	11	11	
Weight (a)	45	90	90	110	

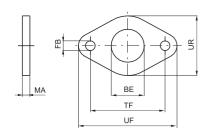
Used to mount the cylinder on the mounting plane with the rod parallel to said plane. Use one for short strokes and two for long strokes. It is made stamped stainless steel AISI 303. Attached to the end caps by means of nuts (or lock nuts) 05X.

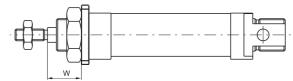
Flange

Coding: 1200.Ø.02X

	BORE	
	16 = Ø16	
Ø	20 = Ø20	
	25 = Ø25	
	32 = Ø32	







Use to mount the microcylinder at a right angle to the mounting plane. Attached to the front (or rear) end cap by a nut (or lock nut)05X. Made ofstainless steel AISI 303.

Bore	16	20	25	32
BE	16	22	22	30
FB (H13)	5,5	6,5	6,5	6,5
UF	53	66	66	68
UR	30	40	40	50
MA	4	5	5	5
TF (JS14)	40	50	50	52
W (±1,4)	18	19	23	23
Weight (g)	40	85	85	100

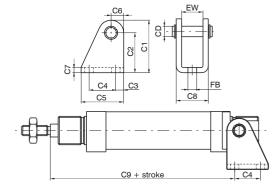


Rear clevis

Coding: 1200.Ø.03X

	g
	BORE
	16 = Ø16
Ø	20 = Ø20
	25 = Ø25
	32 = Ø32





Used to mount by using the rear end cover to mount either parallel or at a right angle to the mounting plane. Allows the cylinder to oscillate and self-align with the linked element to the rod. Necessary to use when the rod may be subject to lateral forces during travel. Made of stamped stainless steel AISI 303.

Bore	16	20	25	32
CD	6	8	8	12
C1	33,5	39,5	39,5	44,5
C2 (±0,3)	27	30	30	33
C3	5	6	6	7
C4	15	20	20	24
C5	25	32	32	38
C6	6,5	9,5	9,5	11,5
C7	3	4	4	4
C8	18	24	24	34
C9 (±0,4)	80,5	91,5	100,5	100,5
EW	12,1	16,1	16,1	26,1
FB (H13)	5,5	6,5	6,5	6,5
Weight (g)	35	75	75	135

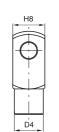
Fork with pin

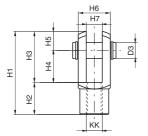
Coding: 1200.Ø.04X

	5	
	BORE	
	16 = Ø16	
Ø	20 = Ø20	
	25 = Ø25	
	32 = Ø32	

Similar to hinge 03X, mounted on the rod thread, assures a regular operation even in the presence of significant forces to the linked element. Made of stainless steel AISI 303.







Bore	D3	D4	H1	H2	Н3	H4	H5	Н6	H7 (B12)	Н8	KK	Weight (g)
16	6	10	31	12	19	12	7	12	6	12	M6X1	20
20	8	14	42	16	26	16	10	16	8	16	M8X1,25	45
25	10	18	52	20	32	20	12	20	10	20	M10X1,25	90
32	10	18	52	20	32	20	12	20	10	20	M10X1,25	90

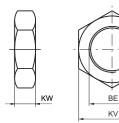
Nut for the endcap

Coding: 1200.Ø.05X

	BORE
_	16 = Ø16
Ø	20 = Ø20
	25 = Ø25

Used to fasten flanges or feet to the endcaps of the microcylinder Mounted on diameters from 16 to 25. Supplied as standard (1 piece) with microcylinders. Made of stainless steel AISI 303.





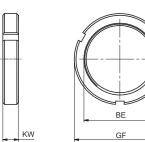
Bore	BE	KV	KW	Weight (g)
16	M16X1,5	22	6	16
20	M22X1,5	30	7	25
25	M22X1,5	30	7	25

Lock nut for the end cap

Coding: 1200.32.05X

Used to fasten flanges or feet to the endcaps of the microcylinder Mounted on diameter 32. Supplied as standard (1 piece) with microcylinders. Made of stainless steel AISI 303.





		H-H-	-	7
Bore	BE	GF	KW	Weight (g)
32	M30X1,5	42	8	42

End caps

Series 1200, Steel line

The 12X stainless steel ISO 6432 cylinders Series are designed for corrosion resistance application such as marine, pharmaceutical and food ambiences.

The pre lubrication grease used is NSF H1 certified for food application.

Specific care has been taken during the design stages and the result is a clean profile cylinder easy to clean and free from possible residue build-up areas.

All parts in contact with the external environment are in Stainless steel 316L and the seals are available in three different compounds for different temperature applications:

NBR -5 °C ... +70 °C, PUR -30 °C ... +80 °C, FPM -5 °C ... +150 °C

The range starts from 16 bore up to 63 bore, double acting version standard or with through rod, magnetic or not magnetic piston available. The end caps are crimped onto the barrel for bore sizes 16 to 25 and screwed on the barrel from 32 to 63 bore.

Depending on the type of mounting required it is possible to choose different end caps style.

The piston is aluminium and the sensor bracket, when required is in stainless steel 316 with plastic adaptor or in plastic material. The cylinder can be fixed with the wide range of stainless steel accessories.

Construction characteristics Barrel stainless steel AISI 316 Fixing devices stainless steel AISI 316 / 304 Seals NBR (PUR piston rod seals) FPM PUR Pistons Aluminium Piston rod stainless steel AISI 316

stainless steel AISI 316

Operational characteristics

Fluid				fi	tered air, pre	ferably lubric	cated	
Max. working pressure					1	0 bar		
Bore	Ø	16	20	25	32	40	50	63
Cushioning lenght	mm	15	18	18	18	22	22	25

Working temperature

01-	0	Pis	ton	Cushi	oning	Rayes	
Seals	Operating temperature	Magnetic	Non magnetic	Pneumatic adjustable	Pneumatic fix	Bores	
NBR	-5 °C +70 °C	•	•	•	•	Ø16-Ø20-Ø25-Ø32-Ø40-Ø50-Ø63	
FPM	-5°C +80°C	•	/	•	•	Ø16-Ø20-Ø25-Ø32-Ø40-Ø50-Ø63	
FFIVI	-5°C +150°C	/	•	•	•	Ø16-Ø20-Ø25-Ø32-Ø40-Ø50-Ø63	
	-5 °C +70 °C	•	•	•	/	Ø16-Ø20-Ø25-Ø32	
PUR	-30°C +80°C	•	•	/	•	Ø16-Ø20-Ø25-Ø32	
	-30 C +80 C	•	•	•	•	Ø40-Ø50-Ø63	

Use and maintenance

Please follow the suggestions below to ensure a long life for these cylinders:

- use clean and lubricated air.
- · correct alignment during assembly with regard to the applied load so as to avoid radial components or bending the rod.
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).
- evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

Please note: air must be dried for applications with lower temperature.

Use hydraulic oils H class (ISO VG32) for correct continued lubrication.

Standard strokes

Ø16:

15 - 25 - 50 - 75 - 80 - 100 - 150 - 160 - 200 - 250 - 300 mm

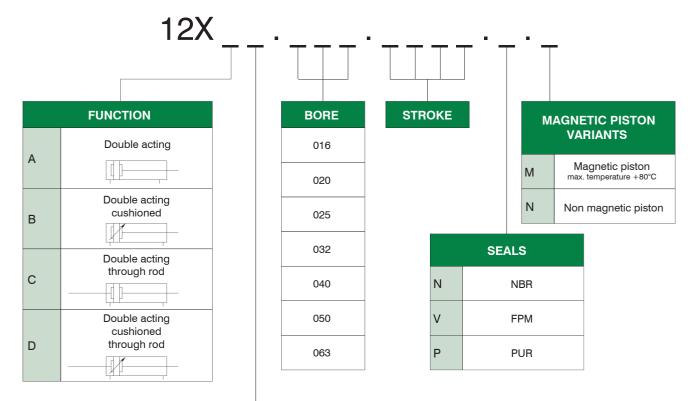
Ø20-Ø25 :

 $15 - 25 - 50 - 75 - 80 - 100 - 150 - 160 - 200 - 250 - 300 - 320 - 350 - 400 \, mm$

Ø 32 ... Ø 63:

15 - 25 - 50 - 75 - 80 - 100 - 150 - 160 - 200 - 250 - 300 - 320 - 350 - 400 - 450 - 500 mm

Coding key



		TYPE	
	Front end cap	Basic version	Rear end cap
Α	CLEAN PROFILE		WITH INTEGRATED TRUNNION
В	CLEAN PROFILE		THREADED
С	THREADED		THREADED
D	THREADED		SHORT END CAP
E*	FOR PIN		SHORT END CAP

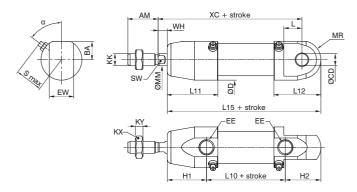
^{*} available only for Ø32 - Ø40 - Ø50 - Ø63

	END CAP	THROUGH ROD CYLINDER VERSION	END CAP
S	THREADED		THREADED
Т	THREADED		CLEAN PROFILE

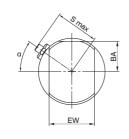
Cylinder type "A"

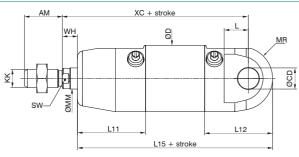


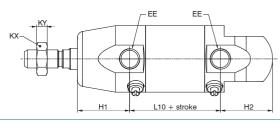
from Ø16 to Ø25











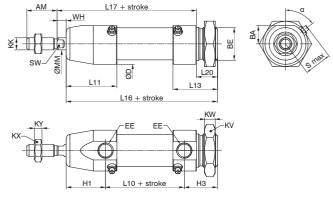
from Ø32 to Ø63

PNEUMATIC ACTUATION

Cylinder type "B"

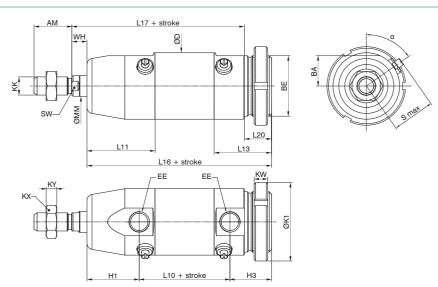


from Ø16 to Ø25





from Ø32 to Ø63

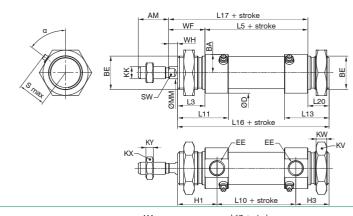




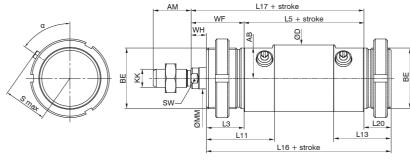


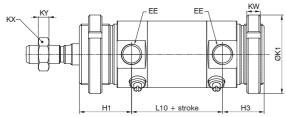


from Ø16 to Ø25







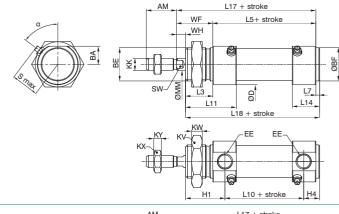


from Ø32 to Ø63

Cylinder type "D"

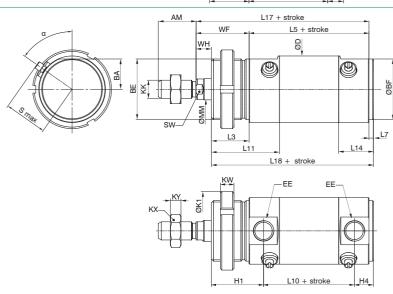


from Ø16 to Ø25

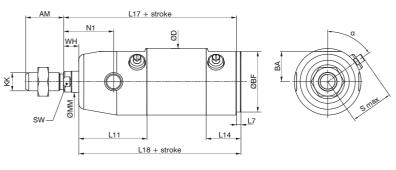


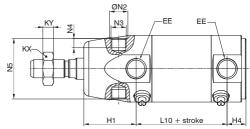


from Ø32 to Ø63









from Ø32 to Ø63

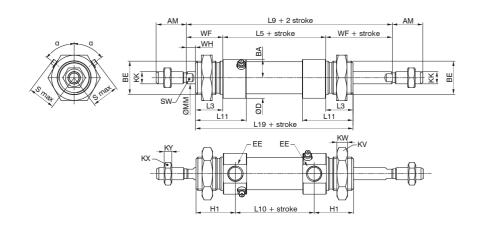
3

PNEUMATIC ACTUATION

Cylinder type "S"

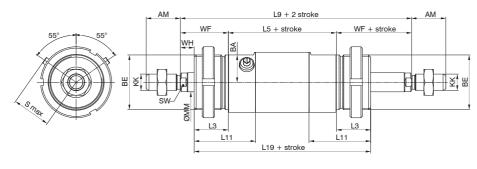


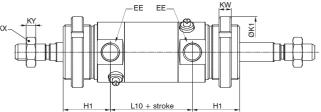
from Ø16 to Ø25





from Ø32 to Ø63



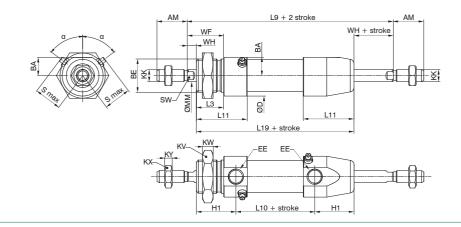


WH + stroke

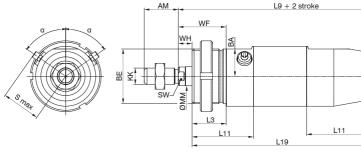
Cylinder type "T"

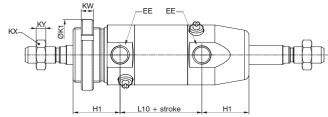


from Ø16 to Ø25









from Ø32 to Ø63

Weight charts

- 3	Weight (g)								
	Basic version		Ø16	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63
		Stroke 0	131	264	371	621	1060	1600	3150
A		every 10mm	5	7	11	26	33	42	65
		Stroke 0	150	310	410	666	1160	1700	3230
В		every 10mm	5	7	11	26	33	42	65
		Stroke 0	153	323	411	688	1200	1660	3060
С		every 10mm	5	7	11	26	33	42	65
		Stroke 0	129	267	359	580	1020	1460	2800
D		every 10mm	5	7	11	26	33	42	65
		Stroke 0	/	/	/	558	960	1480	2930
E*		every 10mm	/	/	/	26	33	42	65

^{*} Available only for Ø32 - Ø40 - Ø50 - Ø63

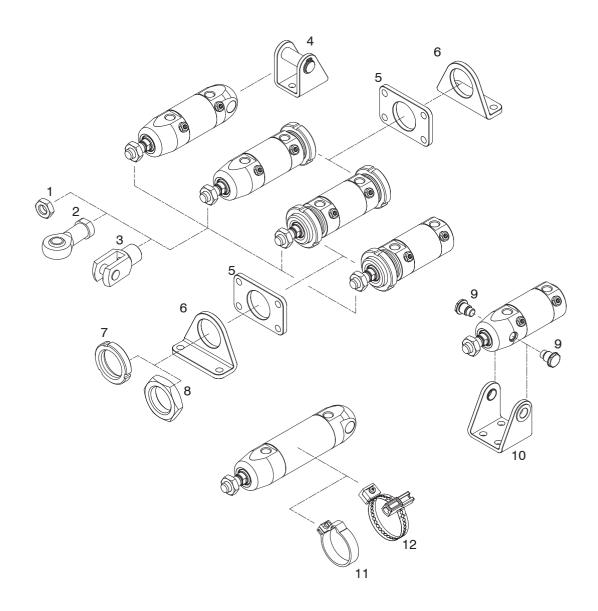
	Weight (g)								
	Through rod cylinder version		Ø16	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63
		Stroke 0	172	350	465	745	1364	1793	3318
s		every 10mm	5	7	11	26	33	42	90
		Stroke 0	181	336	470	723	1299	1832	3483
Т		every 10mm	5	7	11	26	33	42	90



Table of dimensions

Bore	Ø16	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63
Dote	53°	53°	53°	55°	55°	55°	55°
MM	16	20	22	20	25	25	32
BA	9	12	13,5	16	20	25	31
BE	M16x1,5	M22x1,5	M22x1,5	M30x1,5	M40x1,5	M40x1,5	M45x1,5
ØBF	16	22	W22X1,5	30	40	WI40X1,5	W45X1,5
EE	M5	G1/8	G1/8	G1/8	G1/4	G1/4	G3/8
= <u> </u>	12	16	16	26	30	30	
=vv ØCD ^{H9}			+				40
ØD	6	8 27	8	12 36	14	14	16 68
<u>ขบ</u> ไ 1	21		30		44	54	
	22,5	26	30	30	34,5	34,5	40
12	17,5	23,5	27,5	30	34,5	34,5	40
13	16,5	22	22	23	27,5	27,5	30
14	7,5	10,5	10,5	10,5	12,5	12,5	16
0K1	/	/	<u> </u>	/	52	52	60
KK	M6x1	M8x1,25	M10x1,25	M10x1,25	M12x1,75	M12x1,75	M16x1,5
XX	10	13	17	17	19	19	24
Υ	4	5	6	6	7	7	8
XV	22	30	30	42	1	/	/
XW	6	7	7	8	9	9	10
	9	12	14	13	16	16	22
3	17	18	22	22	25	25	28
.5	56	68	69	69	79	82	106
.7	2	2,5	2,5	2,5	3	3	4
9	100	116	125	125	149	152	180
.10	45	52	53	53	60	63	82
.11	28	33,5	37	38,5	45	45	54
12	23	31	34,5	38,5	45	45	54
.13	22	29,5	29	31,5	38	38	44
.14	12,8	18	17,5	19	23	23	30
.15	85	101,5	110,5	113	129	132	162
.16	84	100	105	106	122	125	152
.17	78	92	97	97	114	117	143
18	75	88,5	93,5	93,5	107	110	138
19	90	104	113	113	129	132	162
20	11	14	14	15	18	18	18
MM	6	8	10	12	14	16	20
/IR	8	12,5	12,5	17	21	26	34,5
l1	/	/	/	27	33	40	45
IN2+0/-0,05	/	/	/	10,1	12,1	14,1	16,1
3	/	/	1	M8x0,75	M10x1	M12x1	M14x1
4	1	/	1	5,5	6	8,7	11,7
15+0,1/-0	1	1	1	32	40	50	64
max.	15,5	18,5	19,5	25	28,5	33,5	40
SW SW	5	6	8	10	12	12	17
VF	22	24	28	28	35	35	37
			+	+			
VH	5	6	6	6	10	10	9





Position	Description	Coding	Materials
ı	Rod lock nut	12X.Ø.11	Stainless steel AISI 316
2	Ball joint	12X.Ø.10	Stainless steel
3	Fork with pin	12X.Ø.04	Stainless steel
	Rear clevis	12X.Ø.03	Stainless steel
;	Flange	12X.Ø.02	Stainless steel AISI 316
5	Foot	12X.Ø.01	Stainless steel AISI 316
,	Lock nut for the end cap (Ø32 Ø63)	12X.Ø.05	Stainless steel AISI 316
3	Nut for the endcap (Ø16 Ø25)	12X.Ø.05	Stainless steel AISI 316
)	Pin for front clevis (Ø32 Ø63)	12X.Ø.09	Stainless steel AISI 316
0	Front clevis (Ø32 Ø63)	12X.Ø.08	Stainless steel AISI 316
1	Sensor clamps cod. 1580, MRS, MHS (Ø16 Ø50)	12X.Ø.FS	Technopolymer
2	Sensor clamps cod. 1580, MRS, MHS (Ø16 Ø63)	12X.Ø.FSX	Stainless steel Technopolymer

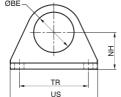
Coding: 12X.Ø.01

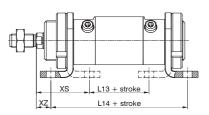
BORE
16 = Ø16
20 = Ø20
25 = Ø25
32 = Ø32
40 = Ø40
50 = Ø50
63 = Ø63

The kit comprises: n° 1 foot (AISI 304)









Used to mount the cylinder on the mounting plane with the rod parallel to said plane. Use one for short strokes and two for long strokes. It is made stamped stainless steel AISI 316.

Bore	16	20	25	32	40	50	63
AB (H13)	5,5	6,5	6,5	6,5	9	9	9
AO	6	8	8	8	10	10	10
AU	14	17	17	17	20	20	20
ØBE	16	22	22	30	40	40	45
L13 (±1)	36	44	44	45	49	52	78
L14 (±1)	84	102	102	103	119	122	146
MT	4	5	5	5	5	5	6
NH (±0.3)	20	25	25	28	40	40	50
P1	33	45	45	50	66,5	66,5	80
TR (Js14)	32	40	40	52	70	70	70
US	42	54	54	66	90	90	90
XS (±1.4)	32	36	40	40	50	50	51
XZ (±1.4)	8	7	11	11	15	15	17
Weight (g)	45	90	90	110	210	210	262

Sensor clamps cod. 1580._, MRS._, MHS._

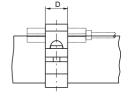
Coding: 12X.Ø.FS

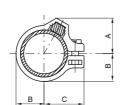
Jou	ilg. 127.10.10
	BORE
	16 = Ø16
Ø	20 = Ø20
	25 = Ø25
	32 = Ø32
	40 = Ø40
	50 = Ø50

The kit comprises:
n° 1 clamp (Technopolymer)
n° 1 screw (AISI 304)

n° 1 nut (AISI 304)







Bore	Ø16	Ø20	Ø25	Ø32	Ø40	Ø50
A	14,5	16	17,5	20,5	22	29
В	10,5	12,5	15,3	20	24	29
С	16	18	20,5	26	30	35
D	10	10	10	10	10	10
Weight (g)	3	5	7	8	10	11

Sensor clamps cod. 1580._, MRS._, MHS._

Coding: 12X.Ø.FSX

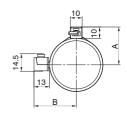
Cou	ilig. 127.107
Ø	BORE
	16 = Ø16
	20 = Ø20
	25 = Ø25
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63

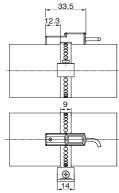
The kit comprises:

n° 1 clamp (AISI 304) n° 1 switch bracket + support (Technopolymer) n° 1 screw (AISI 304)

n° 1 nut (AISI 304)







Bore	Ø16	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63
A	19	21	23	28	32	37	44
В	22	24	26	31	35	40	47



Flange

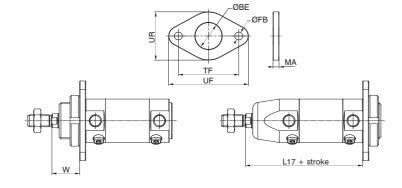
Coding: 12X.Ø.02

	· ·
	BORE
Ø	16 = Ø16
	20 = Ø20
	25 = Ø25
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63

The kit comprises: n° 1 flange (AISI 316)

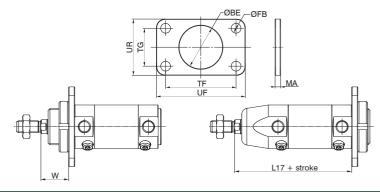


(For Ø16-Ø20-Ø25)





(For Ø32-Ø40-Ø50-Ø63)



Use to mount the microcylinder at a right angle to the mounting plane. Made of stainless steel AISI 316.

Bore	16	20	25	32	40	50	63
ØBE	16	22	22	30	40	40	45
ØFB (H13)	5.5	6.5	6.5	6.5	9	9	9
UF	53	66	66	66	82	82	96
UR	30	40	40	42	52	52	70
MA	4	5	5	5	5	5	6
TF (JS14)	40	50	50	52	65	65	76
TG	/	/	/	28	35	35	50
W (±1.4)	18	19	23	23	30	30	31
L17	78	92	97	97	114	117	143
Weight (g)	40	85	85	100	105	105	225

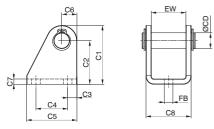
Rear clevis

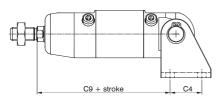
Codina: 12X.Ø.03

Coa	ing: 1∠∧.∅.∪3
	BORE
	16 = Ø16
	20 = Ø20
a	25 = Ø25
Ø	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63

The kit comprises: n° 1 clevis (AISI 316) n° 1 pin (AISI 316) n° 2 circlips (AISI 420)







Used to mount by using the rear end cover to mount either parallel or at a right angle to the mounting plane. Allows the cylinder to oscillate and self-align with the linked element to the rod. Necessary to use when the rod may be subject to lateral forces during travel. Made of stamped stainless steel.

Bore	16	20	25	32	40	50	63
ØCD	6	8	8	12	14	14	16
C1	33,5	39,5	39,5	44,5	53,5	53,5	64
C2 (±0.3)	27	30	30	33	40	40	50
C3	5	6	6	7	10	10	8
C4	15	20	20	24	28	28	34
C5	25	32	32	38	45	45	50
C6	6,5	9,5	9,5	11,5	13,5	13,5	14
C7	3	4	4	4	4	4	6
C8	18	24	24	34	38	38	52
C9 (±0.4)	80,5	91,5	100,5	100,5	119,5	122,5	148
EW	12,1	16,1	16,1	26,1	30,5	30,5	40,5
FB (H13)	5,5	6,5	6,5	6,5	8,5	8,5	9
Weight (g)	35	75	75	135	138	138	284

Rod lock nut

Coding: 12X.Ø.11

- Cu	g. 1271.2111
	BORE
	16 = Ø16
	20 = Ø20
Ø	25 = Ø25
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63





The kit comprises: n° 1 rod lock nut (AISI 316)

Mounted on the rod thread. Made of stainless steel AISI 316.

Bore	S	Т	U	Weight (g)
16	10	4	M6X1	3
20	13	5	M8X1,25	4
25	17	6	M10X1,25	9
32	17	6	M10X1,25	9
40	19	7	M12X1,75	12
50	19	7	M12X1,75	12
63	24	8	M16X1,5	21



Nut for the endcap

Coding: 12X.Ø.05

	g,
	BORE
Ø	16 = Ø16
	20 = Ø20
	25 = Ø25

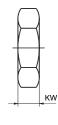


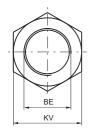
n° 1 nut for the endcap (AISI 316)



ВΕ

M22x1,5 M22x1,5





Weight (g)

25

Used to fasten flanges or feet to the endcaps of the microcylinder Moun on diameters from 16 to 25. Supplies standard (1 piece) with microcylinder

nted ed as	Bore
lers.	16
	20

Lock nut for the end cap

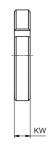
Coding: 12X.Ø.05

Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63

The kit comprises:

n° 1 lock nut for the end cap (AISI 316)

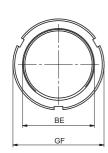




K۷

22 30

30



Used to fasten flanges or feet to the endcaps of the microcylinder Mounted on diameters from 32 to 63. Supplied as standard (1 piece) with microcylinders.

Bore	BE	GF	KW	Weight (g)
32	M30x1,5	42	8	42
40	M40x1,5	52	9	62
50	M40x1,5	52	9	62
63	M45x1,5	60	10	100



Front clevis

Coding: 12X.Ø.08

	BORE
Ø	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63

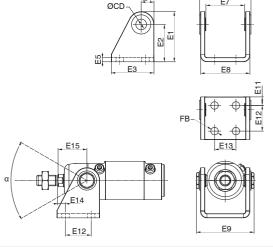
The kit comprises:

n° 1 clevis (AISI 316)

n° 2 bushings (Technopolymer)

Used to mount by using the front end cap to mount parallel to the mounting plane. Allows the cylinder to oscillate and self-align with the linked element to the rod. Necessary to use when the rod may be subject to lateral forces during travel. Made of stamped stainless steel AISI 316.





Bore	E2 (±0,2)	E3	E4	E5	E6	E7	E8	E9	E11	E12	E13	E14	E15	FB (H13)	ØCD	α	Weight (g)
32	35	40	12	4	48	36	46	54	8	24	20	7	27	7	10	50°	121
40	40	50	13	4	60	49	58	68	10	30	28	6	33	9	12	50°	175
50	45	54	14	6	74	54	72	84	10	34	36	10	40	9	14	50°	330
63	50	65	16	6	88	72	86	98	15	35	42	11	45	9	16	40°	458

PNEUMATIC ACTUATION



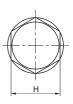
Pin for front clevis

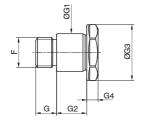
Coding: 12X.Ø.09

	County. 1271.0.00									
ĺ		BORE								
	Ø	32 = Ø32								
		40 = Ø40								
		50 = Ø50								
		63 = Ø63								

The kit comprises: n° 1 pin (AISI 316)







Bore	32	40	50	63
G	5,5	6	8,5	11
G1 (h7)	10	12	14	16
G2	8	10	12	12
G3	15	17	19	24
G4	3	4	5	5
F	M8X0,75	M10X1	M12X1	M14X1
Н	13	15	17	21

Ball joint

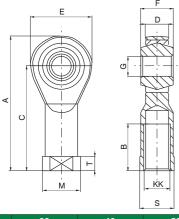
Coding: 12X.Ø.10

	BORE
	16 = Ø16
	20 = Ø20
Ø	25 = Ø25
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63

The kit comprises:

n° 1 ball joint (AISI 304 and 420)





Mounted on the rod thread, assures a regular operation even in the presence of significant forces to the linked element. Made of stainless steel AISI 304 and 420.

Bore	16	20	25	32	40	50	63
A	40	48	57	57	66	66	85
В	12	16	20	20	22	22	28
С	30	36	43	43	50	50	64
D	6,75	9	10,5	10,5	12	12	15
E	20	24	28	28	32	32	42
F	9	12	14	14	16	16	21
G (H7)	6	8	10	10	12	12	16
KK	M6	M8	M10X1,25	M10X1,25	M12X1,75	M12X1,75	M16X1,5
M	13	16	19	19	22	22	27
S	11	14	17	17	19	19	22
Т	5	5	6,5	6,5	6,5	6,5	8
Weight (g)	25	25	75	75	112	112	222

Fork with pin

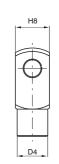
Coding: 12X.Ø.04

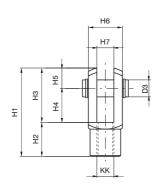
Journ	ilg. 127.20.07
	BORE
	16 = Ø16
	20 = Ø20
~	25 = Ø25
Ø	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63

The kit comprises: n° 1 fork (AISI 303) n° 1 pin (AISI 316)

n° 2 circlips (AISI 420)







Mounted on the rod thread, assures a regular operation even in the presence of significant forces to the linked element. Made of stainless steel.

Bore	D3	D4	H1	H2	Н3	H4	H5	Н6	H7 (B12)	Н8	KK	Weight (g)
16	6	10	31	12	19	12	7	12	6	12	M6X1	20
20	8	14	42	16	26	16	10	16	8	16	M8X1.25	45
25	10	18	52	20	32	20	12	20	10	20	M10X1.25	90
32	10	18	52	20	32	20	12	20	10	20	M10X1.25	90
40	12	20	62	18	38	24	14	24	12	24	M12X1.75	121
50	12	20	62	18	38	24	14	24	12	24	M12X1.75	121
63	16	26	83	32	51	32	19	32	16	32	M16X1.5	340

Series 1303-1308

They conform to CNOMO standards, fully complying with CETOP and ISO standards, with mounted fixing devices 32 to 100.

Construction characteristics

Cushion bushings	aluminium
Piston rod bushings	brass (Ø32, Ø40, Ø50) in aluminium with self-lubricating bearings in sinterized bronze for the remaining bores
Barrel	oxidised aluminium
Seals	standard: NBR Oil resistant rubber, PUR Piston rod seals (FPM seals available upon request)
Pistons	aluminium lathed from bar
Piston rod	C43 chromed steel, by thickness or stainless steel
End caps	solid aluminium bar up to Ø100, alloy aluminium from Ø125 to Ø200
Tierods	steel with rolled threads

Operational characteristics

Fluid					filtered and lubricated air - hydraulic oil (with special bushing)						
Pressure					max. 12 bar (air) - 20 bar (oil)						
Working temperature		-5°C +70°C with 1303 1308 standard seals -5°C +80°C with FPM seals for 1306 1308 Series (magnetic piston) -5°C +150°C with FPM seals for 1303 1305 Series (non magnetic piston)									
Cushioning lenght	Ø	32 20	40	50 22	63 24	80 24	100 25	125 27	160 35	200 35	

Please follow the suggestions below to ensure a long life for these cylinders:

- use clean and lubricated air.
- correct alignment during assembly with regard to the applied load so as to avoid radial components or bending the rod.
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).

 • evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

Please note: air must be dried for applications with lower temperature.

Use hydraulic oils H class (ISO VG32) for correct continued lubrication.

Standard strokes

Double acting version

From 0 to 150 every 25 mm; from 150 to 500 every 50 mm; from 500 to 1000 every 100 mm. (for all diameters). On request are available strokes up to: 2800 mm

Single acting version

up to stroke 50 mm.

Minimum and maximum springs load for single acting version

Bore	Ø32	Ø40-50	Ø63	Ø80 - Ø100	
Min. load (N)	17	25	50	100	
Max. load (N)	50	80	115	200	

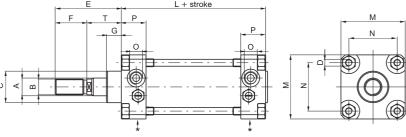


Basic version

Coding: 13 **0**. \varnothing .stroke.01 A **G 0 S**

	STANDARDS					
	03 = CNOMO (Non magnetic rod)					
	04 = CETOP (Non magnetic piston)					
0	05 = ISO (Non magnetic piston)					
	06 = CNOMO (Magnetic piston)					
	07 = CETOP (Magnetic piston)					
	08 = ISO (Magnetic piston)					
	BORE					
	32 = Ø32					
Ø	40 = Ø40					
	200 = Ø200					
	SEALS					
G	= Standard seals					
	V = FPM seals					
	SPRING					
	= Double acting					
M	MA = Front springs (Ø32 Ø125)*					
	MP = Rear springs (Ø32 Ø125)*					
	PISTON ROD					
8	= C43 chromed steel piston rod					
	X = Stainless steel piston rod					
	·					

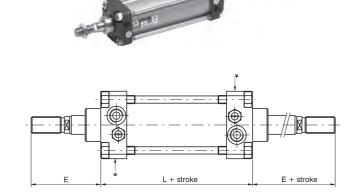




Through rod cylinder version

coding: 13 . Ø. stroke. 02 A G S

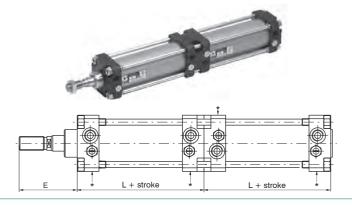
	STANDARDS						
	03 = CNOMO (Non magnetic rod)						
	04 = CETOP (Non magnetic piston)						
•	05 = ISO (Non magnetic piston)						
	06 = CNOMO (Magnetic piston)						
	07 = CETOP (Magnetic piston)						
	08 = ISO (Magnetic piston)						
	BORE						
	32 = Ø32						
Ø	40 = Ø40						
	200 = Ø200						
	SEALS						
œ	= Standard seals						
	V = FPM seals						
	PISTON ROD						
8	= C43 chromed steel piston rod						
	X = Stainless steel piston rod						



Tandem push with a common rod

coding: 13**∅**.Ø.stroke.H

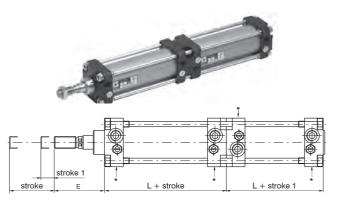
	STANDARDS				
	03 = CNOMO (Non magnetic rod)				
	04 = CETOP (Non magnetic piston)				
Ø	05 = ISO (Non magnetic piston)				
_	06 = CNOMO (Magnetic piston)				
	07 = CETOP (Magnetic piston)				
	08 = ISO (Magnetic piston)				
	BORE				
	32 = Ø32				
Ø	40 = Ø40				
	200 = Ø200				



Tandem push with independent rods

coding: 130.Ø.stroke.stroke1.N

STANDARDS			
03 = CNOMO (Non magnetic rod)			
04 = CETOP (Non magnetic piston)			
05 = ISO (Non magnetic piston)			
06 = CNOMO (Magnetic piston)			
07 = CETOP (Magnetic piston)			
08 = ISO (Magnetic piston)			
BORE			
32 = Ø32			
40 = Ø40			
200 = Ø200			



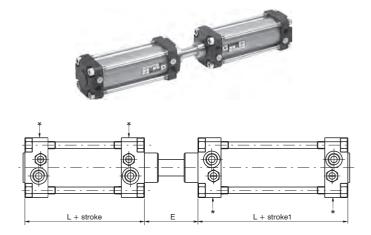
^{*} max. stroke 50



Opposed tandem with common rods

coding: 130.Ø.stroke.stroke1.R

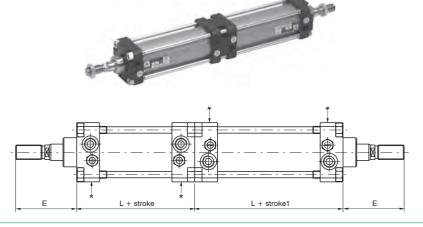
	STANDARDS			
	03 = CNOMO (Non magnetic rod)			
	04 = CETOP (Non magnetic piston)			
0	05 = ISO (Non magnetic piston)			
	06 = CNOMO (Magnetic piston)			
	07 = CETOP (Magnetic piston)			
	08 = ISO (Magnetic piston)			
	BORE			
	32 = Ø32			
Ø	40 = Ø40			
	200 = Ø200			



Tandem with opposed rods

Coding: 13 . Ø. stroke. stroke 1. U

	STANDARDS					
	03 = CNOMO (Non magnetic rod)					
	04 = CETOP (Non magnetic piston)					
0	05 = ISO (Non magnetic piston)					
	06 = CNOMO (Magnetic piston)					
	07 = CETOP (Magnetic piston)					
	08 = ISO (Magnetic piston)					
	BORE					
	32 = Ø32					
Ø	40 = Ø40					
	200 = Ø200					



 $\textbf{Note:} \ \textbf{Cushion adjustment (for 032,040,0125,0160 and 0200) is on the side indicated by * (see drawings). \\$

Table of dimensions

able of difficults											
Bore	32	40	50	63	80	100	125	160	200		
A (f7)	12	18	18	22	22	30	30	40	40		
B - CNOMO (6g)	M10x1,5	M16x1,5	M16x1,5	M20x1,5	M20x1,5	M27x2	M27x2	M36x2	M36x2		
B - CETOP (6g)	M10x1,25	M12x1,25	M16x1,5	M16x1,5	M20x1,5	M20x1,5	M24x2	M36x2	M36x2		
B - ISO (6g)	M10x1,25	M12x1,25	M16x1,5	M16x1,5	M20x1,5	M20x1,5	M27x2	M36x2	M36x2		
C (d11)	25	32	32	45	45	55	55	65	65		
Н	2,5	2	2	2	2	2	3	3	3		
D	M6	M6	M8	M8	M10	M10	M12	M16	M16		
E-CNOMO	45	70	70	85	85	110	110	135	135		
E-CETOP	44	52	67	67	82	87	109	152	162		
E-ISO	46	52	67	67	82	87	115	152	162		
F-CNOMO	20	36	36	46	46	63	63	85	85		
F-CETOP	20	24	32	32	40	40	48	72	72		
F-ISO	22	24	32	32	40	40	54	72	72		
G	15	15	15	20	20	20	20	25	25		
М	45	52	65	75	95	115	140	180	220		
N	33	40	49	59	75	90	110	140	175		
0	G1/8"	G 1/4"	G 1/4"	G 3/8"	G 3/8"	G 1/2"	G 1/2"	G 3/4"	G 3/4"		
P	16	23	25	31	31	35	36	45	45		
T-CNOMO	25	34	34	39	39	47	47	50	50		
T-CETOP-ISO	24	28	35	35	42	47	61	80	90		
L-CNOMO (±1)	80	110	110	125	125	145	145	180	180		
L - CETOP-ISO (±1)	98	110	110	125	136	145	168	180	190		

STROKE TOLERANCE: + 2 mm.

 $WEIGHT\,IN\,(g)\,OF\,THE\,CYLINDERS\,WITH\,VARIOUS\,BARRELS\,(BASIC\,VERSION)$

В	ore	32	40	50	63	80	100	125	160	200
Aluminium	Stroke 0	580	1010	1350	2110	3350	5400	7450	13300	18300
	every 10 mm.	24	38	47	63	75	117	130	235	250

FOR CYLINDERS IN TANDEM THE WEIGHT IS APPROXIMATELY DOUBLE

CNOMO-CETOP-ISO cylinders

Series 1303-1308, Sensor brackets, distributor supports

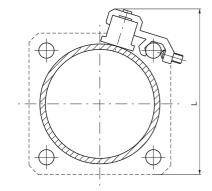


Sensor brackets codes - 1500._, RS._, HS._

1306

Coa	ing: 1300.
	TYPE
	A = from Ø32 to Ø63
U	B = from Ø80 to Ø125
	C = Ø160-Ø200





Sensor for microbore cylinders

For technical characteristics and ordering codes see the "Magnetic sensors" sections

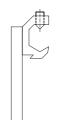
Bore	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100	Ø125	Ø160	Ø200
L	59	65	76	87	103	121	144	179	215

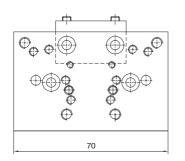


Support for solenoid valves

Coding: 1306.15 Ø32 ... Ø100







Fixing holes for valves series:

A = 414/2

B = 824

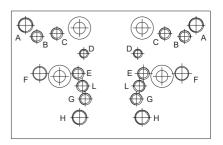
C = 828, T488, 488, 484 D = 2400

E = 2600 F = Bases for ISO solenoid valves

G = 858/2

H = T424

L = 888_



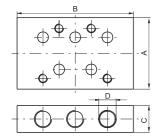
This accessory allows valves or solenoid valves to mount on the side of the cylinder. Support should be anchored to the tie rods and on it either a threaded distributor can be mounted or a base upon which an ISO distributor can be mounted. Once installed the connections must be done with fittings and pipes. All of the threaded holes on the support plate are dedicated to different valves series as per attached drawing.

Bases for ISO solenoid valves

Coding: 1320.

Ou	ing. 1020.
	STANDARDS
0	21 = ISO1
	22 = ISO2



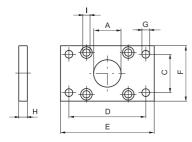


Dimensions									
Bases for solenoid valves	Α	В	С	D					
ISO 1	40	75	15	G 1/8"					
ISO 2	50	95	20	G 1/4"					

Front and rear flanges

Coding: 130 .Ø.03 F

	3
	STANDARDS
0	3 = CNOMO
	4 = CETOP - ISO
	BORE
	32 = Ø 32
	40 = Ø 40
	50 = Ø 50
_ ~	63 = Ø 63
Ø	80 = Ø 80
	100 = Ø 100
	125 = Ø 125
	160 = Ø 160
	200 = Ø 200



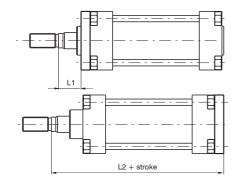




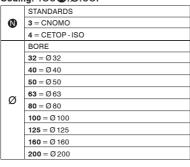
Plate which allows anchorage of the cylinder at a right angle to the plane. It is made of zinc-plated extruded steel.

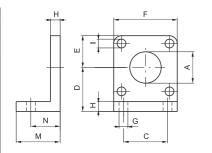
Bore	32	40	50	63	80	100	125	160	200
A (H11)	25	32	32	45	45	55	55	65	65
C - CNOMO (JS 14)	33	40	49	59	75	90	110	140	175
C - CETOP ISO (JS 14)	32	36	45	50	63	75	90	115	135
D - CNOMO (JS 14)	68	78	94	104	130	150	180	228	268
D - CETOP - ISO (JS 14)	64	72	90	100	126	150	180	230	270
E	80	90	110	120	150	170	205	260	300
F	45	52	65	75	95	115	140	180	220
G - CNOMO (H13)	9	9	11	11	14	14	18	22	22
G - CETOP - ISO (H13)	7	9	9	9	12	14	16	18	22
H (JS 14)	8	8	10	10	12	12	16	20	20
I	6,5	6,5	9	9	10,5	10,5	13,5	16,5	16,5
L1 - CNOMO	17	26	24	29	27	35	31	30	30
L1 - CETOP - ISO	16	20	25	25	30	35	45	60	70
L2-CNOMO	113	152	154	174	176	204	208	250	250
L2-CETOP-ISO	130	145	155	170	190	205	245	280	300
Weight (g)	165	200	540	1060	1460	1510	3100	6400	9500

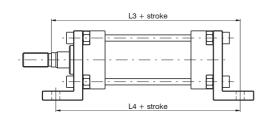
Standard feet

PNEUMATIC ACTUATION

Coding: 130 . Ø.05 F









Elements used to anchor the cylinder parallel to the mounting plane. They are made of cast aluminium, painted black.

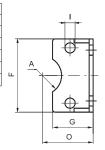
Bore	32	40	50	63	80	100	125	160	200
A (H11)	25	32	32	45	45	55	55	65	65
C - CNOMO (JS 14)	28	36	45	55	70	90	100	130	170
C - CETOP ISO (JS 14)	32	36	45	50	63	75	90	115	135
D - CNOMO (JS 15)	32	36	45	50	63	73	91	115	135
D - CETOP - ISO (JS 15)	32	36	45	50	63	71	90	115	135
E	22	26	32	37	47	57	70	90	110
F	45	52	65	75	95	115	140	180	220
G - CNOMO (H14)	9	9	11	11	14	14	18	22	22
G - CETOP (H14)	7	9	9	9	12	14	16	18	22
G - ISO (H14)	7	9	9	9	12	14	16	18	22
Н	8	8	10	10	12	12	16	20	20
I	7	7	9	9	11	11	13	17	17
M	35	35	45	45	55	55	68	82	91
N - CNOMO (±0,2)	27	27	35	35	43	43	52	62	62
N - CETOP - ISO (±0,2)	22	25,5	30	30	37	37,5	41	60	65
L3 - CNOMO	132	171	179	199	207	235	244	292	292
L3-CETOP-ISO	144	163	175	190	215	230	270	320	345
L4-CNOMO	134	164	180	195	211	231	249	304	304
L4-CETOP-ISO	142	161	170	185	210	220	250	300	320
Weight (g)	55	70	150	175	260	550	920	2200	3200

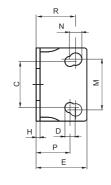


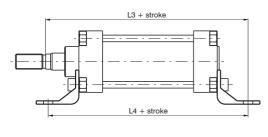
Short sheet metal feet

Coding: 1303.Ø.05/1F

	BORE
	32 = Ø 32
	40 = Ø 40
Ø	50 = Ø 50
	63 = Ø 63
	80 = Ø 80
	100 = Ø 100







CNOMO - CETOP - ISO (1 piece)



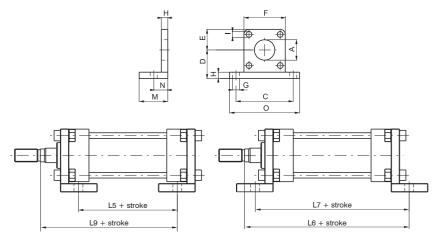
Elements used to anchor the cylinder parallel to the mounting plane. They are made of stamped and pierced sheet metal and painted in black. The mounting holes allow use with CNOMO, CETOP and ISO. Available up to 100 mm bore.

Bore	32	40	50	63	80	100
A	13	17	17	23,5	23,5	-
C - CETOP - ISO (JS 14)	32	36	45	50	63	75
D - CETOP - ISO (JS 15)	7	9	9	9	12	14
E	35	36	45	45	55	56
F	45	52	65	75	95	115
G	30	30	36	35	45	44
Н	3,5	3,5	3,5	4,5	5	5
I .	7	7	9	9	11	11
M - CNOMO (JS 14)	28	36	45	55	70	90
N - CNOMO (JS 15)	9	9	11	11	13	13
O - CNOMO (JS 15)	32	36	45	50	63	73
O - CETOP - ISO (JS 15)	32	36	45	50	63	71
P-CETOP-ISO (±0,2)	22	25,5	30	30	37	37,5
R - CNOMO (±0,2)	27	27	35	35	43	43
L3-CNOMO	132	171	179	199	207	235
L3-CETOP-ISO	144	163	175	190	215	230
L4-CNOMO	134	164	180	195	211	231
L4-CETOP-ISO	142	161	170	185	210	220
Weight (g)	58	70	118	184	305	385

Large internal and external feet

odina: 1303.Ø.**@**F

Codir	ıg: 1303.∅. ⊕ F
	BORE
	32 = Ø 32
	40 = Ø 40
	50 = Ø 50
α	63 = Ø 63
Ø	80 = Ø 80
	100 = Ø 100
	125 = Ø 125
	160 = Ø 160
	200 = Ø 200
	TYPE
	06 = Internal CNOMO (1 piece)May be used
•	with CETOP-ISO cylinders but are not specified
	in the standards
	07 = External CNOMO (1 piece)





Elements used to anchor the cylinder parallel to the mounting plane. They are made of cast aluminium, painted black.	

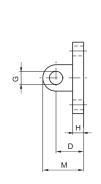
Bore	32	40	50	63	80	100	125	160	200		
A (H11)	25	32	32	45	45	55	55	65	65		
C (JS 14)	65	72	90	100	126	148	180	230	270		
D (JS 15)	32	36	45	50	63	73	91	115	135		
E	22	26	32	37	47	57	70	90	110		
F	45	52	65	75	95	115	140	180	220		
G (H14)	9	9	11	11	14	14	18	22	22		
Н	8	8	10	10	12	12	16	20	20		
I	7	7	9	9	11	11	13	17	17		
M	35	35	45	45	55	55	67	80	80		
N (±0,2)	18	18	22	22	28	28	32	40	40		
0	82	90	110	120	155	180	215	275	315		
L5-CNOMO	60	90	86	101	93	113	113	140	140		
L5-CETOP-ISO	78	90	86	101	104	113	136	140	150		
L6-CNOMO	123	162	166	186	192	220	224	270	270		
L6-CETOP-ISO	141	162	166	186	203	220	247	270	280		
L7 - CNOMO	116	146	154	169	181	201	209	260	260		
L7-CETOP-ISO	134	146	154	169	192	201	232	260	270		
L9-CNOMO	95	134	132	152	148	176	176	210	210		
L9-CETOP-ISO	112	128	133	148	162	176	213	240	250		
Weight (g)	80	90	190	210	460	600	1080	2400	3100		

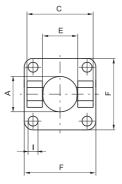


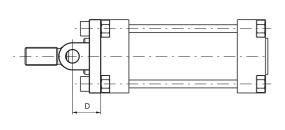
Front clevis

Coding: 130**0**.Ø.08F

	•
	STANDARDS
Ø	3 = CNOMO
	4 = CETOP-ISO
	BORE
	32 = Ø 32
	40 = Ø 40
	50 = Ø 50
_ ~	63 = Ø 63
Ø	80 = Ø 80
	100 = Ø 100
	125 = Ø 125
	160 = Ø 160
	200 = Ø 200









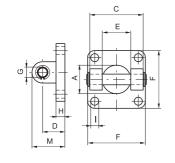
This type of mounting allows anchorage of the cylinder both parallel and at a right angle to the plane; the cylinder rod can oscillate and self-align as necessary. It is made of aluminium alloy and painted black.

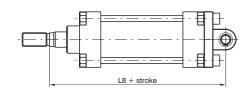
Bore	32	40	50	63	80	100	125	160	200
A	25	32	32	45	45	55	55	65	65
C - CNOMO (H1)	45	52	65	75	95	115	140	180	220
C - CETOP - ISO (H14)	45	52	60	70	90	110	130	170	170
D - CNOMO (±0,2)	18	24	26	30	32	37	41	55	55
D - CETOP (±0,2)	20	22	25	30	32	37	46	55	55
E-CNOMO (H14)	26	33	33	47	47	57	57	72	72
E - CETOP (H14)	26	28	32	40	50	60	70	90	90
F	45	52	65	75	95	115	140	180	220
G - CNOMO (H9)	8	12	12	16	16	20	20	25	25
G-CETOP-ISO (H9)	10	12	12	16	16	20	25	30	30
Н	8	8	10	10	12	12	16	19	19
I	7	7	9	9	11	11	13	17	17
M - CNOMO	26	36	38	46	48	57	61	80	80
M-CETOP-ISO	30	35	37	46	48	57	71	85	85
Weight (g)	55	60	120	145	325	510	900	2080	3100

Rear clevis complete with pin

Coding: 130 .Ø.09 F

	,
	STANDARDS
Ø	3 = CNOMO
	4 = CETOP - ISO
	BORE
	32 = Ø 32
	40 = Ø 40
	50 = Ø 50
α	63 = Ø 63
Ø	80 = Ø 80
	100 = Ø 100
	125 = Ø 125
	160 = Ø 160
	200 = Ø 200







This type of mounting allows anchorage of the cylinder both parallel and at a right angle to the plane; the cylinder rod can oscillate and self-align as necessary. It is made of aluminium alloy and painted black.

Bore	32	40	50	63	80	100	125	160	200
A	25	32	32	45	45	55	55	65	65
C - CNOMO (H1)	45	52	65	75	95	115	140	180	220
C - CETOP - ISO (H14)	45	52	60	70	90	110	130	170	170
D - CNOMO (±0,2)	18	24	26	30	32	37	41	55	55
D - CETOP (±0,2)	20	22	25	30	32	37	46	55	55
E-CNOMO (H14)	26	33	33	47	47	57	57	72	72
E-CETOP (H14)	26	28	32	40	50	60	70	90	90
F	45	52	65	75	95	115	140	180	220
G - CNOMO (H9)	8	12	12	16	16	20	20	25	25
G - CETOP - ISO (H9)	10	12	12	16	16	20	25	30	30
Н	8	8	10	10	12	12	16	19	19
I	7	7	9	9	11	11	13	17	17
M - CNOMO	26	36	38	46	48	57	61	80	80
M-CETOP-ISO	30	35	37	46	48	57	71	85	85
L8-CNOMO	123	168	170	194	196	229	233	285	285
L8-CETOP-ISO	142	160	170	190	210	230	275	315	335
Weight (g)	75	110	190	280	490	820	1270	2800	3900

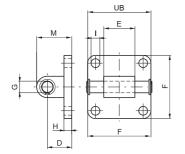


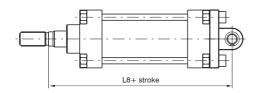
Rear male clevis

Coding: 1304.Ø.09/1F

	g
	BORE
	32 = Ø 32
	40 = Ø 40
	50 = Ø 50
_ <	63 = Ø 63
Ø	80 = Ø 80
	100 = Ø 100
	125 = Ø 125
	160 = Ø 160
	200 = Ø 200

For CETOP-ISO cylinders May be used with CNOMO cylinders but is not specified in the standards







Similar to 09 clevis except for the connection, which is male rather than female. It can also be used as a counter clevis for type 10 (only CETOP - ISO). Allow mounting of cylinder at right angle to the plane of the cylinder rod.

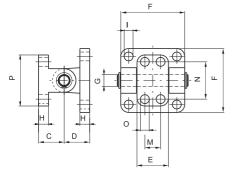
	Bore	32	40	50	63	80	100	125	160	200
D (±0,2)		20	22	25	30	32	37	46	55	55
E (-0,2/-0,6)		26	28	32	40	50	60	70	90	90
F		45	52	65	75	95	115	140	180	220
UB		46	53	61	71	91	111	132	172	172
G (H 9)		10	12	12	16	16	20	25	30	30
rs H		8	8	8	10	12	12	16	20	20
I		7	7	9	9	11	11	14	18	18
M		30	35	36	45	47	57	71	80	80
L8-CNOMO		125	166	169	194	196	229	233	285	285
L8-CETOP-	ISO	142	160	170	190	210	230	275	315	335
Weight (g)		50	80	110	185	325	460	1300	2850	3980

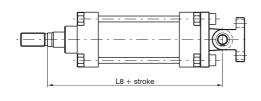
Rear clevis bracket

Coding: 1303.Ø.10F

	BORE
	32 = Ø 32
	40 = Ø 40
	50 = Ø 50
~	63 = Ø 63
Ø	80 = Ø 80
	100 = Ø 100
	125 = Ø 125
	160 = Ø 160
	200 = Ø 200

May be used with CETOP - ISO cylinders but is not specified in the standard







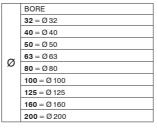
Mounting consists of clevis 09 and counter clevis. Used to mount cylinders at a right angle to the plane to which the counter clevis is attached. Allows selfalignment of the cylinder rod under load with an oscillation of $\pm\,60$ degrees

Bore	32	40	50	63	80	100	125	160	200
C (±0,2)	18	26	26	34	34	41	41	55	55
D (±0,2)	18	24	26	30	32	37	41	55	55
E	25	32	32	46	46	56	56	71	71
F	45	52	65	75	95	115	140	180	220
G (H9)	8	12	12	16	16	20	20	25	25
Н	8	10	10	12	12	16	16	20	20
I	7	7	9	9	11	11	13	17	17
M (JS 14)	-	16	16	25	25	32	32	43	43
N (JS 14)	28	38	38	54	54	90	90	150	150
O (H 13)	7	9	9	11	11	14	14	18	18
P	40	52	52	75	75	115	115	180	180
L8-CNOMO	123	168	170	194	196	229	233	285	285
L8-CETOP-ISO	140	162	171	190	210	229	270	315	335
Weight (g)	90	165	240	470	665	1190	1660	3700	4700

PREUMAX

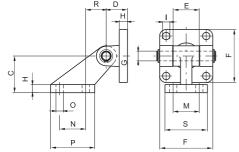
Trunnion with support bracket

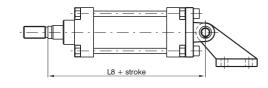
1303.Ø.11F



CNOMO

May be used with CETOP - ISO cylinders but is not specified in the standard







Mounting consists of clevis 09 and right angle counter clevis. Used to mount cylinders parallel to the plane to which the counterclevis is attached. Allows self-alignment of the cylinder rod under load with an oscillation up to 90 degrees from the mounting plane.

Bore	32	40	50	63	80	100	125	160	200
C (JS 15)	32	45	45	63	63	90	90	140	140
D (±0,2)	18	24	26	30	32	37	41	55	55
E	25	32	32	46	46	56	56	71	71
F	45	52	65	75	95	115	140	180	220
G (H9)	8	12	12	16	16	20	20	25	25
Н	8	10	10	12	12	16	16	20	20
I	7	7	9	9	11	11	13	17	17
M (JS14)	25	32	32	40	40	50	50	63	63
N (Js14)	20	32	32	50	50	70	70	110	110
O (JS 13)	7	9	9	11	11	14	14	18	18
P	37	54	54	75	75	102	102	154	154
R	18	25	25	32	32	40	40	50	50
S	41	51	51	62	62	80	80	110	110
L8-CNOMO	123	168	170	194	196	229	233	285	285
L8-CETOP-ISO	140	162	171	190	210	229	270	315	335
Weight (g)	125	250	325	600	800	1570	2100	4600	5700

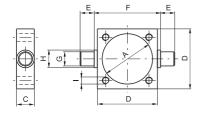
In

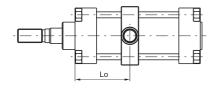
Intermediate trunnion

Coding: 1300.Ø.12F

	•
	BORE
	32 = Ø 32
	40 = Ø 40
	50 = Ø 50
~	63 = Ø 63
Ø	80 = Ø 80
	100 = Ø 100
	125 = Ø 125
	160 = Ø 160
	200 = Ø 200







Clevis to be mounted between the endcaps of the cylinder allowing rotation at any point along the barrel. One piece construction from zinc-plated stamped steel. Can be mounted in fixed position or attached to adjustable tie rods.

NOTE: Lo max means at stroke 0.

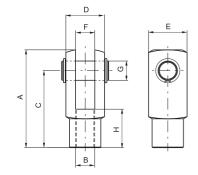
Bore	32	40	50	63	80	100	125	160	200
A	37	46	56	69	87	107	133	170	211
С	15	20	20	25	25	30	32	40	40
D	46	59	69	84	102	125	155	190	240
E (h 14)	12	16	16	20	20	25	25	32	32
F (h 14)	50	63	73	90	108	131	160	200	250
G (e 9)	12	16	16	20	20	25	25	32	32
Н	15	20	20	25	25	30	30	40	40
I	M6	M6	M8	M8	M10	M10	M12	M16	M16
Lo min.	32	35	40	47	53	55	61	78	79
Lo max. +stroke - CNOMO	48	75	70	80	72	90	84	103	102
Lo max. + stroke - CETOP - ISO	67	75	70	80	84	90	107	103	112
Weight (g)	130	310	370	700	900	1590	2600	4300	7500

Fork with pin

Coding: 130**◎**.Ø.13F

	·
	STANDARDS
0	0 = CNOMO
W	1 = CETOP
	2 = ISO
	BORE
	32 = Ø 32
	40 = Ø 40
	50 = Ø 50
ø	63 = Ø 63
ש	80 = Ø 80
	100 = Ø 100
	125 = Ø 125
	160 = Ø 160
	200 = Ø 200





CNOMO-CETOP-ISO cylinders Series 1303-1308 - Accessories

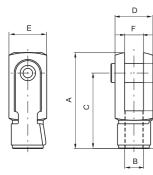
Bore	32	40	50	63	80	100	125	160	200
A-CNOMO	45	64	64	80	80	105	105	140	140
A - CETOP - ISO	51	62	82	82	105	105	132/148	188	188
B - CNOMO (6H)	M10x1,5	M16x1,5	M16x1,5	M20x1,5	M20x1,5	M27x2	M27x2	M36x2	M36x2
B - CETOP (6H)	M10x1,25	M12x1,25	M16x1,5	M16x1,5	M20x1,5	M20x1,5	M24x2	M36x2	M36x2
B-ISO (6H)	M10x1,25	M12x1,25	M16x1,5	M16x1,5	M20x1,5	M20x1,5	M27x2	M36x2	M36x2
C-CNOMO	36	51	51	63	63	85	85	115	115
C-CETOP-ISO	40	48	64	65	80	80	100/100	144	144
D-CNOMO	22	36	36	45	45	63	63	80	80
D-CETOP-ISO	20	24	32	32	40	40	50/55	70	70
E-CNOMO	22	26	26	34	34	42	42	50	50
E-CETOP-ISO	20	24	32	32	40	40	50/55	70	70
F-CNOMO (H 14)	11	18	18	22	22	30	30	40	40
F-CETOP-ISO (B 12)	10	12	16	16	20	20	25/30	35	35
G-CNOMO (H9)	8	12	12	16	16	20	20	25	25
G-CETOP-ISO (H9)	10	12	16	16	20	20	25/30	35	35
H-CNOMO	20	26	26	30	30	45	45	75	75
H-CETOP-ISO	20	24	32	32	40	40	50/56	72	72
Weight (g)	90	150	350	350	680	680	2500	4000	4000

Fork with clips

Coding: 130 .Ø.13/1F

	STANDARDS
	0 = CNOMO
0	1 = CETOP
	2 = ISO
	BORE
	32 = Ø 32
	40 = Ø 40
Ø	50 = Ø 50
	63 = Ø 63
	80 = Ø 80
	100 = Ø 100



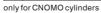


Bore	32	40	50	63	80	100
A - CNOMO	45	64	64	80	80	105
A - CETOP - ISO	51	62	82	82	105	105
B - CNOMO (6H)	M10x1,5	M16x1,5	M16x1,5	M20x1,5	M20x1,5	M27x2
B - CETOP (6H)	M10x1,25	M12x1,25	M16x1,5	M16x1,5	M20x1,5	M20x1,5
B-ISO (6 H)	M10x1,25	M12x1,25	M16x1,5	M16x1,5	M20x1,5	M20x1,5
C-CNOMO	36	51	51	63	63	85
C-CETOP-ISO	40	48	64	65	80	80
D-CNOMO	22	36	36	45	45	63
D-CETOP-ISO	20	24	32	32	40	40
E-CNOMO	22	26	26	34	34	42
E-CETOP-ISO	20	24	32	32	40	40
F - CNOMO (H 14)	11	18	18	22	22	30
F - CETOP - ISO (B 12)	10	12	16	16	20	20
G-CNOMO (H9)	8	12	12	16	16	20
G-CETOP-ISO (H9)	10	12	16	16	20	20
H-CNOMO	20	26	26	30	30	45
H-CETOP-ISO	20	24	32	32	40	40
Weight (g)	90	150	350	350	680	680

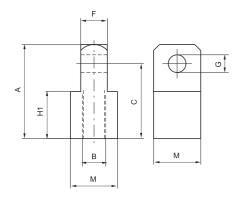
Male fork

Coding: 1300.Ø.14F

	BORE
	32 = Ø 32
	40 = Ø 40
	50 = Ø 50
~	63 = Ø 63
Ø	80 = Ø 80
	100 = Ø 100
	125 = Ø 125
	160 = Ø 160
	200 = Ø 200







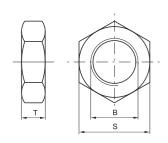
Bore	32	40	50	63	80	100	125	160	200
A - CNOMO	45	64	64	80	80	105	105	140	140
A - CETOP - ISO	51	62	82	82	105	105	132/148	188	188
B - CNOMO (6H)	M10x1,5	M16x1,5	M16x1,5	M20x1,5	M20x1,5	M27x2	M27x2	M36x2	M36x2
B-CETOP (6H)	M10x1,25	M12x1,25	M16x1,5	M16x1,5	M20x1,5	M20x1,5	M24x2	M36x2	M36x2
B-ISO (6H)	M10x1,25	M12x1,25	M16x1,5	M16x1,5	M20x1,5	M20x1,5	M27x2	M36x2	M36x2
C-CNOMO	36	51	51	63	63	85	85	115	115
C-CETOP-ISO	40	48	64	65	80	80	100/100	144	144
F - CNOMO (H 14)	11	18	18	22	22	30	30	40	40
F-CETOP-ISO (B 12)	10	12	16	16	20	20	25/30	35	35
G-CNOMO (H9)	8	12	12	16	16	20	20	25	25
G-CETOP-ISO (H9)	10	12	16	16	20	20	25/30	35	35
H1 - CNOMO	20	32	32	40	40	55	55	75	75
М	22	32	32	36	36	45	45	70	70
Weight (g)	113	359	359	500	500	1300	1300	3500	3500

Rod lock nut

Coding: 130 .Ø.18F

	STANDARDS
0	0 = CNOMO
	1 = CETOP
	2 = ISO
	BORE
	32 = Ø 32
	40 = Ø 40
	50 = Ø 50
Ø	63 = Ø 63
Ø	80 = Ø 80
	100 = Ø 100
	125 = Ø 125
	160 = Ø 160
	200 = Ø 200





Bore	32	40	50	63	80	100	125	160	200
B - CNOMO (6H)	M10x1,5	M16x1,5	M16x1,5	M20x1,5	M20x1,5	M27x2	M27x2	M36x2	M36x2
B - CETOP (6H)	M10x1,25	M12x1,25	M16x1,5	M16x1,5	M20x1,5	M20x1,5	M24x2	M36x2	M36x2
B-ISO (6H)	M10x1,25	M12x1,25	M16x1,5	M16x1,5	M20x1,5	M20x1,5	M27x2	M36x2	M36x2
S-CNOMO	17	24	24	30	30	41	41	55	55
S-CETOP	17	19	24	24	30	30	36	55	55
S-ISO	17	19	24	24	30	30	41	55	55
T-CNOMO	6	8	8	9	9	12	12	18	18
T-CETOP	6	7	8	8	9	9	10	18	18
T-ISO	6	7	8	8	9	9	12	18	18
Weight (g)	10	20	20	35	35	80	80	210	210

3 | 40



Series 1319-1320-1321

This series of pneumatic cylinders is manufactured according to ISO 6431 standards adapted to VDMA 24562 and CNOMO/AFNOR 49003 that guarantee the interchangeability of the cylinders even without mounted anchoring.

Construction characteristics

Cushion bushings	hardened aluminium					
Piston rod bushings	self-lubricating sintered bronze					
Barrel	oxidised aluminium					
Seals	standard: NBR Oil resistant rubber, PUR Piston rod and cushion seals (FPM seals available upon request)					
Pistons	vulcanized rubber block on steel core with incorporated plastoferrite permanent magnet, or without magnet for non magnetic version (plus rear spacer).					
Piston rod	stainless steel or C43 chromed steel					
End caps	from Ø32 to Ø125: UNI 5079 aluminium alloy casting painted black by cataphoresis from Ø160 to Ø200: UNI 3051 aluminium chilled painted black by cataphoresis					
Cushion adjustment screws	brass					
Operational characteris	tics					
Fluid	filtered and lubricated air					
Pressure	max. 10 bar					
Working temperature	-5°C +70°C with standard seals (magnetic or non magnetic piston) -5°C +80°C with FPM seals for 1319 and 1320 series (magnetic piston) -5°C +150°C with FPM seals for 1321 series (non magnetic piston)					

Cushioning lenght	Ø	32	40	50	63	80	100	125	160	200
	mm	28	32	32	40	44	50	55	55	55

Please follow the suggestions below to ensure a long life for these cylinders:

- · use clean and lubricated air.
- correct alignment during assembly with regard to the applied load so as to avoid radial components or bending the rod.
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).
- · evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

Please note: air must be dried for applications with lower temperature.

Use hydraulic oils H class (ISO VG32) for correct continued lubrication.

Standard strokes (for all diameters)

Double acting version

from 0 to 150, every 25 mm over 150 up to 500, every 50 mm over 500 up to 1000, every 100 mm

On request are available strokes up to: 2800 mm

Single acting version

From 32 to 125, up to stroke 50 mm.

On request are available strokes up to: 200 mm

Stroke tolerance (ISO 15552)

Bore	Stroke	Tolerance
32-40-50	up to 500 mm	+2 0
32-40-30	over 500 up to 1000	+3,2 0
63-80-100	up to 500 mm	+2,5 0
63-60-100	over 500 up to 1000	+4 0
125-160-200	up to 500 mm	+4 0
123-100-200	over 500 up to 1000	+5 0

Minimum and maximum springs load (stroke 0 ... 50mm)

Bore	Ø32	Ø40	Ø50 - Ø63	Ø80 - Ø100	Ø125
Min. load (N)	15	25	50	100	150
Max. load (N)	40	80	115	200	250

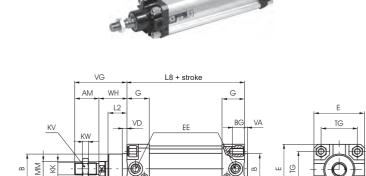
Basic version "01"

Coding: 13♥.Ø.stroke.01@0

	VERSION
•	19 = Magnetic chromed rod
	20 = Magnetic stainless steel rod
	21 = Non magnetic chromed rod
	BORE
	32 = Ø32
Ø	40 = Ø40
	200 = Ø200
	SEALS
G	= Standard seals
	V = FPM seals
	SPRING
	= Double acting
M	MA = Front springs (Ø32 Ø125)*
	MP = Rear springs (Ø32 Ø125)*
W	,

^{*} max. stroke 50

This is the configuration that represents the basic cylinder according to ISO-VDMA standards. It can be directly anchored on machine parts using the four thread on the end cap. For other applications see the following pages where different types of attachments are shown.

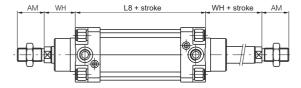


Through rod cylinder version "02"

Coding: 13♥.Ø.stroke.02@

	VERSION
O	19 = Magnetic chromed rod
	20 = Magnetic stainless steel rod
	21 = Non magnetic chromed rod
	BORE
	32 = Ø32
Ø	40 = Ø40
	200 = Ø200
	SEALS
G	= Standard seals
	V = FPM seals

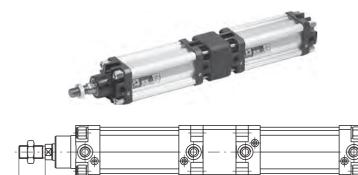




Tandem push with a common rods "G"

Coding: 13♥.Ø.stroke.G

	VERSION
Ø	19 = Magnetic chromed rod
•	20 = Magnetic stainless steel rod
	21 = Non magnetic chromed rod
	BORE
	32 = Ø32
Ø	40 = Ø40
	200 = Ø200

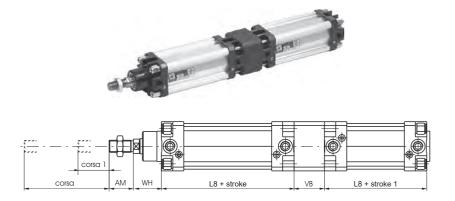


L8 + stroke

Tandem push with independent rods"F"

Coding: 13 Ø Ø stroke stroke1 F

Coaing	: 13 V.D.SITOKE.SITOKET.F
	VERSION
	19 = Magnetic chromed rod
V	20 = Magnetic stainless steel rod
	21 = Non magnetic chromed rod
	BORE
	32 = Ø32
Ø	40 = Ø40
	200 = Ø200



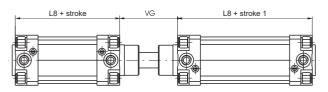


Opposed tandem with common rod "D"

coding: 13♥.Ø.stroke.stroke1.D

VERSION 19 = Magnetic chromed rod 20 = Magnetic stainless steel rod	
<u> </u>	
20 = Magnetic stainless steel rod	
21 = Non magnetic chromed rod	
BORE	
32 = Ø32	
Ø 40 = Ø40	
200 = Ø200	





Tandem with opposed rods "E"

Coding: 13♥.Ø.stroke.stroke1.E

3	• ·-
V	VERSION
	19 = Magnetic chromed rod
	20 = Magnetic stainless steel rod
	21 = Non magnetic chromed rod
	BORE
	32 = Ø32
Ø	40 = Ø40
	200 = Ø200



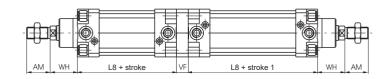


Table of dimensions

Bore		32	40	50	63	80	100	125	160	200
AM		22	24	32	32	40	40	54	72	72
B (d 11)		30	35	40	45	45	55	60	65	75
BG		14	14	16	16	21	21	23	24	24
E		46	52	65	75	95	115	140	180	220
EE		G 1/8"	G 1/4"	G 1/4"	G 3/8"	G 3/8"	G 1/2"	G 1/2"	G 3/4"	G 3/4"
G		25	29	29,5	36	36	40	45	49	49
KK		M10X1,25	M12X1,25	M16x1,5	M16x1,5	M20x1,5	M20x1,5	M27x2	M36x2	M36x2
KV		17	19	24	24	30	30	41	55	55
KW		6	7	8	8	9	9	12	18	18
L2		16	20	25	25	32	35	45	50	60
L8 *		94	105	106	121	128	138	160	180	180
MM		12	16	20	20	25	25	32	40	40
PL		9	11,5	13	14	16	18	19	24	25
RT		M6	M6	M8	M8	M10	M10	M12	M16	M16
SW		10	13	17	17	22	22	27	32	32
TG		32,5	38	46,5	56,5	72	89	110	140	175
VA		4	4	4	4	4	4	6	5	5
VB		25	30	40	40	50	50	75	70	75
VD		5	6	6	6	10	10	12	10	10
VF		12	12	16	16	20	20	25	30	30
VG		48	54	69	69	86	91	119	152	167
WH		26	30	37	37	46	51	65	80	95
Weight	Stroke 0	480	730	1150	1600	2800	3600	7800	15000	21500
g	every 10 mm	25	32	56	60	90	100	140	265	325

^{*} For strokes over 50mm, the length does not increase proportionally to the stroke, and allowance must be made for adequate spring allocation (see table of L8 dimensions)

"L8" dimensions for "rear spring" and "front spring"

Bore	32	40	50	63	80	100	125
L8 (stroke 51 100)	134	150	151	166	183	193	230
L8 (stroke 101 150)	174	195	196	211	238	248	300
L8 (stroke 151 200)	214	240	241	256	293	303	370

Series 1348-1349-1350, Non rotating cylinders

Construction characteristics

Cushion bushings 2011 UNI 9002/5 hardened alloy alu			
Barrel	UNI 9006/1 aluminium alloy square section, hardened 30 micron oxidate		
Piston seals	NBR oil-resistant rubber, PUR Piston rod and cushions		
Pistons polyacetal resin, self-lubricated and anti-wear, with pl magnetic version			
Piston rod	C43 chromed steel Ra = 0.2		
End caps UNI 5079 aluminium alloy casting painted black by cataph			
Cushion adjustment screws	brass		

Operational characteristics

Fluid	filtered and lubricated air	
Pressure	10 bar	
Working temperature	-5 °C +70 °C	

Please follow the suggestions below to ensure a long life for these cylinders:

- · use clean and lubricated air.
- correct alignment during assembly with regard to the applied load so as to avoid radial components or bending the rod.
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).
- evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

Please note: air must be dried for applications with lower temperature. Use hydraulic oils H class (ISO VG32) for correct continued lubrication.

Bore	Usable surface (square profile) cm²	Max couple on the rod (max torque) Nm	Grade precision (rest rod, without load) anti-rotation	Cushion length mm
32	8,31	0,5	12'	22
40	12,41	0,8	12'	27
50	18,41	1,1	12'	27
63	29,67	1,5	12'	32

Standard strokes

Ø32: 25 - 50 - 75 - 80 - 100 - 125 - 150 mm

Ø40: 25 - 50 - 75 - 80 - 100 - 125 - 150 - 160 mm

Ø50: 25 - 50 - 75 - 80 - 100 - 125 - 150 - 160 - 200 - 250 mm

Ø63: 25 - 50 - 75 - 80 - 100 - 125 - 150 - 160 - 200 - 250 - 300 - 320 mm

On request are available strokes up to: 2800 mm

Stroke tolerance (ISO 15552)

	Bore	Stroke	Tolerance
	32 - 40 - 50	up to 500 mm	+2 0
	32-40-50	over 500 mm	+3.2 0
	63	up to 500 mm	+2.5 0
	03	over 500 mm	+4 0
ш			



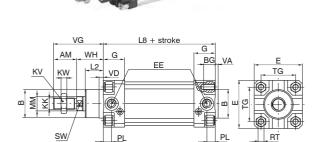
Basic version

Coding: 13♥.Ø.stroke.01

VERSION
48 = Magnetic chromed rod
49 = Magnetic stainless steel rod
50 = Non magnetic chromed rod
BORE
32 = Ø32
40 = Ø40
50 = Ø50
63 = Ø63

This is the configuartion that represents the basic cylinder according to ISO standards. It can be directly anchored on machine parts using the four threads on the end cap.
For other applications see the following pages where different

types of attachments shown.



Through rod cylinder version

Coding: 13♥.Ø.stroke.02

•	VERSION
	48 = Magnetic chromed rod
	49 = Magnetic stainless steel rod
	50 = Non magnetic chromed rod
	BORE
	30 = Ø32
Ø	40 = Ø40
	50 = Ø50
	63 = Ø63



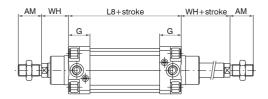


Table of dimensions

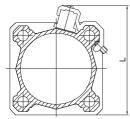
Вс	ore	32	40	50	63
AM		22	24	32	32
B (d 11)		30	35	40	45
BG		12	12	16	16
E		46	52	65	75
EE		G 1/8"	G 1/4"	G 1/4"	G 3/8"
G		25	29	29,5	36
KK		M10x1,25	M12x1,25	M16x1,5	M16x1,5
KV		17	19	24	24
KW		6	7	8	8
L2		16	20 25		25
L8		94	105	106	121
MM		12	16	20	20
PL		9	11,5	13	14
RT		M6	M6	M8	M8
SW		10	13	17	17
TG		32,5	38	46,5	56,5
VA		4	4	4	4
VD		5	6	6	6
VG		48	54	69	69
WH		26	30	37	37
Weight	Stroke 0	505	705	1320	1710
g	every 10 mm	24	33	53	58

Sensor brackets codes - 1500._, RS._, HS._

Coding: 1320.

	-
	TYPE
	A = Ø32-Ø40
	B = Ø50-Ø63
0	C = Ø80-Ø100
	D = Ø125
	E = Ø160
	F = Ø200





Sensor for microbore cylinders

For technical characteristics and ordering codes see the "Magnetic sensors" sections

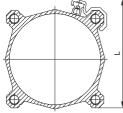
Bore	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100	Ø125	Ø160	Ø200
L	60	65	77	87	105	125	145	184	222

Sensor brackets codes - 1595.HAP

Coding: 1320.

	TYPE
•	ASC = Ø32-Ø40
	BSC = Ø50-Ø63
	CSC = Ø80-Ø100
	DSC = Ø125
	ESC = Ø160
	FSC = Ø200





Sensor for microbore cylinders

For technical characteristics and ordering codes see the "Magnetic sensors" sections

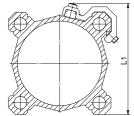
Bore	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100	Ø125	Ø160	Ø200
L	60	65	77	87	105	125	145	184	222

Sensor brackets codes - 1580._,MRS._,MHS

Coding: 1320.

	TYPE
	AS = Ø32-Ø40
0	BS = Ø50-Ø63
	CS = Ø80-Ø100





For Ø125, Ø160 and Ø200, use sensor bracket

Sensor for microbore cylinders

For technical characteristics and ordering codes see the "Magnetic sensors" sections

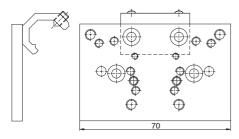
Bore	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
L1	48	54	66	76	96	112

Support for solenoid valves

Coding: 1320.

	SIZE
	15 = Ø32-Ø40
•	16 = Ø50-Ø63
	17 = Ø80-Ø100
	18 = Ø125
	19 = Ø160
	20 = Ø200





Fixing holes for valves series:

A = 414/2

B = 824 C = 828, T488, 488, 484

D = 2400

E = 2600

F = Bases for ISO solenoid

valves

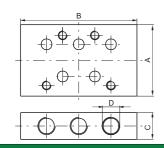
G = 858/2 H = T424

This accessory permits to mount a valve or an electrovalve on a side of the cylinder. The plate can be fitted on the cylinder profiled barrel, and, on it, can be mounted either a threaded distributor or a base on whic can be mounted an ISO distributor. Once installed the connections must be done with fittings and pipes. All of the threaded holes on the support plate are dedicated to different valves series as per attached drawing.

Bases for ISO solenoid valves

Coding: 1320.





Dimensions						
Bases for solenoid valves	A	В	С	D		
ISO 1	40	75	15	G 1/8"		
ISO 2	50	95	20	G 1/4"		

PNEUMATIC ACTUATION



Series Ecoplus - High Performance

Profiled tube has two "T" slots on the three sides hosting sensors 1580._, MRS._, MHS._. without adaptors.

Construction characteristics

Piston rod bushings	self-lubricating sintered bronze
Barrel	anodised aluminium alloy
Seals	standard: NBR Oil resistant rubber, PUR Piston rod seals (PUR seals available upon request)
Pistons	acetal resin, aluminium on request
Piston rod	C43 chromed steel or stainless steel
End caps	Series 1386 1388: high resistant thermoplastic material Series 1396 1398: Die-cast aluminium
Cushion adjustment screws	brass

Operational characteristics

Fluid	filtered and preferably lubricated air or not (if lubricated the lubrication must be continuous)						
Pressure					max 10 bar		
Working temperature			-5°C +70°C with standard seals -30°C +80°C with PUR seals				
Bore	Ø	32	40	50	63	80	100
Cushioning lenght	mm	27	31	31	37	40	44
Cushioning lenght "K" and "PK" version	mm	20	20	22	22	32	32

Please follow the suggestions below to ensure a long life for these cylinders:

- · use clean and lubricated air.
- correct alignment during assembly with regard to the applied load so as to avoid radial components or bending the rod.
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).
- · evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

Please note: air must be dried for applications with lower temperature.

Use hydraulic oils H class (ISO VG32) for correct continued lubrication.

Standard strokes (for all diameters)

from 0 to 150, every 25 mm from 150 to 500, every 50 mm from 500 to 1000, every 100 mm On request are available strokes up to: 2800 mm

Stroke tolerance (ISO 15552)

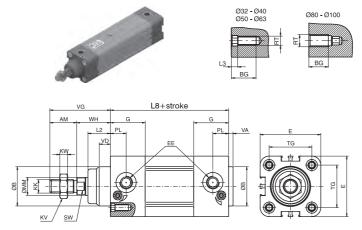
Bore	Stroke	Tolerance
32-40-50	up to 500 mm	+2 0
32-40-30	over 500 up to 1000	+3,2 0
00 00 400	up to 500 mm	+2,5 0
63-80-100	over 500 up to 1000	+4 0



Basic version "01"

Coding: 13♥.Ø.stroke.01 ■

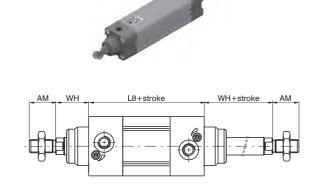
oouilig.	100.0.01010					
	VERSION					
	86 = Magnetic chromed rod (technopolymer covers)					
	87 = Magnetic stainless steel rod (technopolymer covers)					
V	88 = Non magnetic chromed rod (technopolymer covers)					
_	96 = Magnetic chromed rod (aluminium covers)					
	97 = Magnetic stainless steel rod (aluminium covers)					
	98 = Non magnetic chromed rod (aluminium covers)					
	BORE					
	32 = Ø32					
Ø	40 = Ø40					
	100 = Ø100					
	TYPE					
	= Version with NBR seals					
0	P = Version with PUR seals					
	K = Version with aluminium piston					
	PK = Version with PUR seals and aluminium piston					



Through rod cylinder version "02"

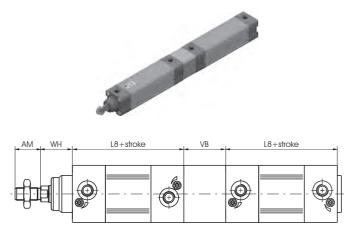
Coding: 13♥.Ø.stroke.02 ■

V	VERSION				
	86 = Magnetic chromed rod (technopolymer covers)				
	87 = Magnetic stainless steel rod (technopolymer covers)				
	88 = Non magnetic chromed rod (technopolymer covers)				
	96 = Magnetic chromed rod (aluminium covers)				
	97 = Magnetic stainless steel rod (aluminium covers)				
	98 = Non magnetic chromed rod (aluminium covers)				
	BORE				
	32 = Ø32				
Ø	40 = Ø40				
	100 = Ø100				
	TYPE				
	= Version with NBR seals				
Ū	P = Version with PUR seals				
	K = Version with aluminium piston				
	PK = Version with PUR seals and aluminium piston				



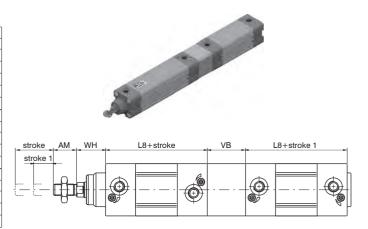
Tandem push with a common rods "G"

Ø	VERSION					
	86 = Magnetic chromed rod (technopolymer covers)					
	87 = Magnetic stainless steel rod (technopolymer covers)					
	88 = Non magnetic chromed rod (technopolymer covers)					
	96 = Magnetic chromed rod (aluminium covers)					
	97 = Magnetic stainless steel rod (aluminium covers)					
	98 = Non magnetic chromed rod (aluminium covers)					
	BORE					
	32 = Ø32					
Ø	40 = Ø40					
	100 = Ø100					
	TYPE					
	= Version with NBR seals					
•	P = Version with PUR seals					
	K = Version with aluminium piston					
	PK = Version with PUR seals and aluminium piston					



Tandem push with independent rods"F"

Coding:	13♥.Ø.stroke.stroke1.F❶						
	VERSION						
	86 = Magnetic chromed rod (technopolymer covers)						
	87 = Magnetic stainless steel rod (technopolymer covers)						
V	88 = Non magnetic chromed rod (technopolymer covers)						
	96 = Magnetic chromed rod (aluminium covers)						
	97 = Magnetic stainless steel rod (aluminium covers)						
	98 = Non magnetic chromed rod (aluminium covers)						
	BORE						
	32 = Ø32						
Ø	40 = Ø40						
	100 = Ø100						
	TYPE						
	= Version with NBR seals						
•	P = Version with PUR seals						
	K = Version with aluminium piston						
	PK = Version with PUR seals and aluminium piston						

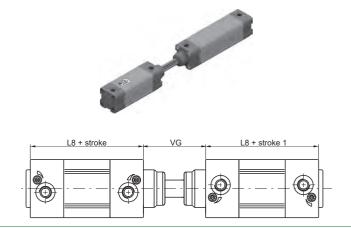




Opposed tandem with common rod "D"

coding:13♥.Ø.stroke.stroke1.D

•	
	VERSION
	86 = Magnetic chromed rod (technopolymer covers)
	87 = Magnetic stainless steel rod (technopolymer covers)
V	88 = Non magnetic chromed rod (technopolymer covers)
	96 = Magnetic chromed rod (aluminium covers)
	97 = Magnetic stainless steel rod (aluminium covers)
	98 = Non magnetic chromed rod (aluminium covers)
	BORE
	32 = Ø32
Ø	40 = Ø40
	100 = Ø100
	TYPE
	= Version with NBR seals
Û	P = Version with PUR seals
	K = Version with aluminium piston
	PK = Version with PUR seals and aluminium piston



Tandem with opposed rods "E"

coding:13♥.Ø.stroke.stroke1.E①

od (technopolymer covers) eel rod (technopolymer covers)				
ed rod (technopolymer covers)				
od (aluminium covers)				
eel rod (aluminium covers)				
ed rod (aluminium covers)				
= Version with NBR seals				
P = Version with PUR seals				
K = Version with aluminium piston				
als and aluminium piston				



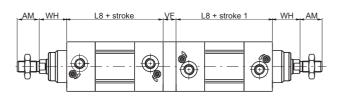


Table of dimensions

Bore	32	40	50	63	80	100
AM	22	24	32	32	40	40
B (d 11)	30	35	40	45	45	55
BG	16	16	18	18	16	16
E	46	54	65	77,5	95,5	115,5
EE	G 1/8"	G 1/4"	G 1/4"	G 3/8"	G 3/8"	G 1/2"
G	29	31	33	36	40	44
KK	M10X1,25	M12X1,25	M16x1,5	M16x1,5	M20x1,5	M20x1,5
KV	17	19	24	24	30	30
KW	6	7	8	8	9	9
L2	16	20	25	25	32	35
L3	4	4	5	5	/	/
L8	94	105	106	121	128	138
MM	12	16	20	20	25	25
PL	13	14	14	16	16	18
RT	M6	M6	M8	M8	M10	M10
SW	10	13	17	17	22	22
TG	32,5	38	46,5	56,5	72	89
VA	4	4	4	4	4	4
VB	33	41	51	51	65	71
VD	8	10	12	12	15	16
VF	12	12	16	16	20	20
VG	48	54	69	69	86	91
WH	26	30	37	37	46	51

Aluminium covers								
Weight	Weight Stroke 0 550 690 1200 1590 2500 3670							
g	every 10 mm	29	40	57	66	96	112	
Technopolymer covers Technopolymer covers								

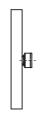
Technopolymer covers Technopolymer covers							
Weight	Stroke 0	470	590	1020	1320	2090	3010
g	every 10 mm	29	40	57	66	96	112

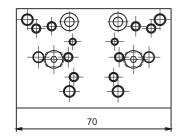


Support for solenoid valves

Coding: 1386.15 Attention: do not use ISO distributor for base mounting







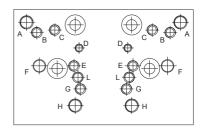
Fixing holes for valves series:

A = 414/2

B = 824 C = 828, T488, 488, 484 D = 2400

E = 2600

= 858/2 H = T424



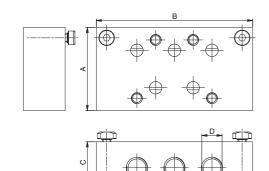
This accessory permits to mount a valve or an electrovalve on a side of the cylinder. The plate can be fitted on the cylinder profiled barrel, and, on it, can be mounted either a threaded distributor or a base on whic can be mounted an ISO distributor. Once installed the connections must be done with fittings and pipes. All of the threaded holes on the support plate are dedicated to different valves series as per attached drawing.

Bases for ISO solenoid valves

Coding: 1320.

	STANDARDS
Ø	23 = ISO1
	24 = ISO2





Dimensions							
Bases for solenoid valves	A	В	С	D			
ISO 1	40	75	15	G 1/8"			
ISO 2	50	95	20	G 1/4"			





Series Ecolight

Construction characteristics

Piston rod bushings	spheroid bronze on steel band with P.T.F.E. coat
Barrel	anodised aluminium alloy
Seals	standard: NBR Oil resistant rubber, PUR Piston rod seals V version: FPM P version: PUR Q version: NBR and PUR with plastic rod scraper with high wear resistance R version: PUR with metallic rod scraper L version: special PUR
Pistons	Ø32 Ø100 acetal resin, aluminium on request Ø125 Ø200 aluminium V, Q, R, L Version: aluminium
Piston rod	C43 chromed steel or stainless steel
End caps	die-casting aluminium
Cushion adjustment screws	brass

Operational characteristics

Fluid	filtered and preferably lubricated air or not (if lubricated the lubrication
	must be continuous)
	L version (for low temperature): dried air, guarantee a dew point lower
	than the minimum operating temperature
Pressure	max 10 bar

Working temperature

-5°C ... +70°C with standard seals
-30°C ... +80°C with PUR seals (**P** version)
-5°C ... +80°C with FPM seals for 1390 and 1391 series
(magnetic piston) (**V** version)
-5°C ... +150°C with FPM seals for 1392 series
(Non magnetic rod) (**V** Version)
-20°C ... +80°C (**Q** Version)
-10°C ... +80°C (**R** Version)
-50°C ... +80°C (**L** Version)

Bore	Ø	32	40	50	63	80	100	125	160	200
Cushioning lenght	mm	27	31	31	37	40	44	44	50	55
Cushioning lenght, version with aluminum piston	mm	20	20	22	22	32	32	44	50	55

Cylinders according to standard ISO 15552 Series Ecolight

Please follow the suggestions below to ensure a long life for these cylinders:

- use clean and lubricated air.
- correct alignment during assembly with regard to the applied load so as to avoid radial components or bending the rod.
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).
- evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

VERSIONS WITH ADDITIONAL ROD SCRAPER

Version with plastic rod scraper (Q)

The pneumatic seal is manufactured using a special NBR seal material, with the rod scraper that comes in contact with the external environment made of a plastic material with a high wear resistance. The geometric shape with its excellent scraping capacity guarantees additional protection of the piston rod and nose seal against the impurities, liquids, water, and debris.

Version with metallic rod scraper (R)

The pneumatic seal is manufactured using a special FPM seal material with its own scraping lip with the additional rod scraper that comes into contact with the external environment made of metal. This combination of scraping lip and metal rod scraper enable these actuators to be used in particularly extreme environments.

Here are some examples:

Aluminum foundries: To remove the residues of alumina or fluorine compounds that are deposited on the piston rod during the preparation phase of aluminum casting.

Automotive: To prevent debris which has collected on the piston rod damaging the nose seal during operation especially waste produced during the welding process.

Industrial ovens: To eliminate cement powders or those produced during the manufacture of bricks/tiles Thanks to the high-performance nose seal and scraper protection of the piston rod, the cylinder will be protected against premature wear that you would normally experience using standard cylinders in these harsh environments.

Thanks to the high-performance nose seal and scraper protection of the piston rod, the cylinder will be protected against premature wear that you would normally experience using standard cylinders in these harsh environments.

Low temperature version (L): The special seals compound allows the use of the cylinders up to a temperature of -50°C. The rod scraper seal is equipped with a metallic scraper which removes ice crystals which might form at minus temperature

Please note: air must be dried for applications with lower temperature.

Use hydraulic oils H class (ISO VG32) for correct continued lubrication.

Standard strokes (for all diameters)

from 0 to 150, every 25 mm from 150 to 500, every 50 mm from 500 to 1000, every 100 mm On request are available strokes up to: 2800 mm

Stroke tolerance (ISO 15552)

l	Bore	Stroke	Tolerance
	32-40-50	up to 500 mm	+2 0
	32-40-30	over 500 up to 1000	+3,2 0
	63-80-100	up to 500 mm	+2,5 0
	03-00-100	over 500 up to 1000	+4 0
	125-160-200	up to 500 mm	+4 0
	125-160-200	over 500 up to 1000	+5 0

3 | 52



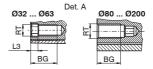
Basic version "01"

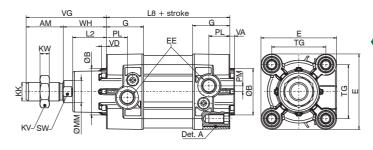
Coding:13♥.Ø.stroke.01 ■

	- Colono Rollo I C
	VERSION
	90 = Magnetic chromed rod
•	91 = Magnetic stainless steel rod
	92 = Non magnetic chromed rod
	BORE
	32 = Ø32
Ø	40 = Ø40
	200 = Ø200
	TYPE
	= Version with NBR seals
	P = Version with PUR seals
	K = Version with aluminium piston (Ø32 Ø100)
	PK = Version with PUR seals and aluminium piston (Ø32 Ø100)
0	V = Version with FPM seals and aluminium piston
	R = Version with PUR seals, with metallic rod scraper and aluminium piston (Ø32
	Ø100)
	Q = Version with PUR seals, with plastic rod scraper and aluminium piston (Ø32
	Ø100)
	L = Version for low temperature and aluminium piston (-50°C)

This is the configuration representing the basic cylinder according to ISO-VDMA standards. It can be directly anchored on machine parts using the four threads on the end cap screws. For other applications see "Cylinder section" on the General Catalogue, where different types of attachments are shown.





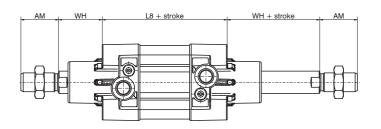


Through rod cylinder version "02"

Coding: 13♥.Ø.stroke.02€

Coung:	150.9.Sti oke.020
	VERSION
V	90 = Magnetic chromed rod
	91 = Magnetic stainless steel rod
	92 = Non magnetic chromed rod
	BORE
	32 = Ø32
Ø	40 = Ø40
	200 = Ø200
	TYPE
	= Version with NBR seals
	P = Version with PUR seals
	K = Version with aluminium piston (Ø32 Ø100)
	PK = Version with PUR seals and aluminium piston (Ø32 Ø100)
0	V = Version with FPM seals and aluminium piston
	R = Version with PUR seals, with metallic rod scraper and aluminium piston (Ø32
	Ø100)
	Q = Version with PUR seals, with plastic rod scraper and aluminium piston (Ø32
	Ø100)
	L = Version for low temperature and aluminium piston (-50°C)

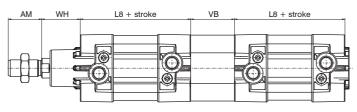




Tandem push with a common rods "G"

	VERSION
	90 = Magnetic chromed rod
	91 = Magnetic stainless steel rod
	92 = Non magnetic chromed rod
	BORE
	32 = Ø32
Ø	40 = Ø40
	200 = Ø200
	TYPE
	= Version with NBR seals
	P = Version with PUR seals
	K = Version with aluminium piston (Ø32 Ø100)
	PK = Version with PUR seals and aluminium piston (Ø32 Ø100)
0	V = Version with FPM seals and aluminium piston
_	R = Version with PUR seals, with metallic rod scraper and aluminium piston (Ø32
	Ø100)
	Q = Version with PUR seals, with plastic rod scraper and aluminium piston (Ø32
	Ø100)
	L = Version for low temperature and aluminium piston (-50°C)



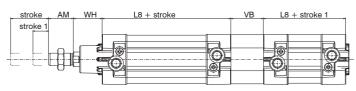


Tandem push with independent rods"F"

coding: 13♥.Ø.stroke.stroke1.F●

VERSION						
	90 = Magnetic chromed rod					
	91 = Magnetic stainless steel rod					
	92 = Non magnetic chromed rod					
	BORE					
	32 = Ø32					
Ø	40 = Ø40					
	200 = Ø200					
	TYPE					
	= Version with NBR seals					
	P = Version with PUR seals					
	K = Version with aluminium piston (Ø32 Ø100)					
	PK = Version with PUR seals and aluminium piston (Ø32 Ø100)					
0	V = Version with FPM seals and aluminium piston					
	R = Version with PUR seals, with metallic rod scraper and aluminium piston (Ø32					
	Ø100)					
	Q = Version with PUR seals, with plastic rod scraper and aluminium piston (Ø32					
	Ø100)					
	L = Version for low temperature and aluminium piston (-50°C)					



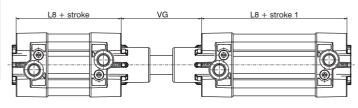


Opposed tandem with common rod "D"

coding: 130.Ø.stroke.stroke1.D0

Coaing:	15 V. g. Sti oke i Sti oke i . Du
	VERSION
•	90 = Magnetic chromed rod
V	91 = Magnetic stainless steel rod
	92 = Non magnetic chromed rod
	BORE
	32 = Ø32
Ø	40 = Ø40
	200 = Ø200
	TYPE
	= Version with NBR seals
	P = Version with PUR seals
	K = Version with aluminium piston (Ø32 Ø100)
	PK = Version with PUR seals and aluminium piston (Ø32 Ø100)
O	V = Version with FPM seals and aluminium piston
	R = Version with PUR seals, with metallic rod scraper and aluminium piston (Ø32
	Ø100)
	Q = Version with PUR seals, with plastic rod scraper and aluminium piston (Ø32
	Ø100)
	L = Version for low temperature and aluminium piston (-50°C)







Tandem with opposed rods "E"

coding: 13♥.Ø.stroke.stroke1.E①

	VERSION
	90 = Magnetic chromed rod
V	91 = Magnetic stainless steel rod
	92 = Non magnetic chromed rod
	BORE
	32 = Ø32
Ø	40 = Ø40
	200 = Ø200
	TYPE
	= Version with NBR seals
	P = Version with PUR seals
	K = Version with aluminium piston (Ø32 Ø100)
	PK = Version with PUR seals and aluminium piston (Ø32 Ø100)
0	V = Version with FPM seals and aluminium piston
_	R = Version with PUR seals, with metallic rod scraper and aluminium piston (Ø32
	Ø100)
	Q = Version with PUR seals, with plastic rod scraper and aluminium piston (Ø32
	Ø100)
	L = Version for low temperature and aluminium piston (-50°C)



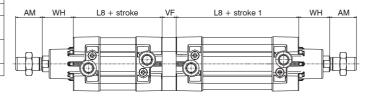
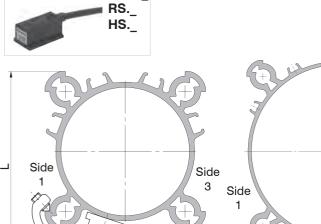


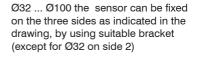
Table of dimensions

Bore		32	40	50	63	80	100	125	160	200
AM		22	24	32	32	40	40	54	72	72
B (d 11)		30	35	40	45	45	55	60	65	75
BG		16	16	18	18	16	16	21	25	25
E		47	54	65	76	95	113	138	180	216
EE		G 1/8"	G 1/4"	G 1/4"	G 3/8"	G 3/8"	G 1/2"	G 1/2"	G 3/4"	G 3/4"
G		29.5	33	32	36	38.5	41.5	48	49	49
KK		M10X1.25	M12X1.25	M16x1.5	M16x1.5	M20x1.5	M20x1.5	M27x2	M36x2	M36x2
KV		17	19	24	24	30	30	41	55	55
KW		6	7	8	8	9	9	12	18	18
L2		19	22	29	29	35	36	45	50	60
L3		4	4	5	5	/	/	/	/	/
L8		94	105	106	121	128	138	160	180	180
MM		12	16	20	20	25	25	32	40	40
PL		13	16	18	18	16	18	25	26	25
PM		3	4	5	4.5	2.5	6	8	11	11
RT		M6	M6	M8	M8	M10	M10	M12	M16	M16
SW		10	13	17	17	22	22	27	36	36
TG		32.5	38	46.5	56,5	72	89	110	140	175
VA		4	4	4	4	4	4	6	6	6
VB		33	41	51	51	65	71	75	70	75
VD		4	4	4	4	4	4	6	6	6
VF		12	12	16	16	20	20	25	30	30
VG		48	54	69	69	86	91	119	152	167
WH		26	30	37	37	46	51	65	80	95
Weight	Stroke 0	460	650	1030	1360	2180	2890	5700	11200	14900
g	every 10 mm	23	32	45	49	75	81	130	195	245

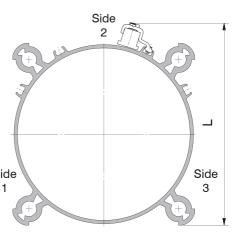
On the ECOLIGHT series it is possible to use three sensor types, according to bore, as indicated below:



Side



Sensors code **1500**.



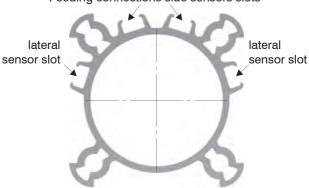
Ø125 ... Ø200 the sensor can be fixed on the three sides as indicated in the drawing, by using suitable bracket



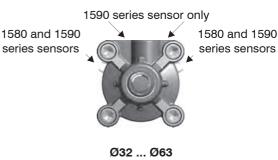
Code	Bore	L
1390.A	Ø32	58
1390.A	Ø40	65
1390.B	Ø50	75
1390.6	Ø63	86
1390.C	Ø80	105
1390.C	Ø100	122
	Ø125	150
1390.D	Ø160	190
	Ø200	225







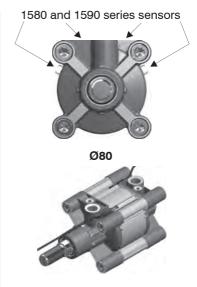






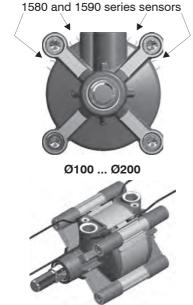
CYLINDERS - BORE SIZES Ø32 ... Ø63

The two slots on connection side are plugged, therefore only sensor 1590 can be used. Suiable for top housing and once placed by means of is screw, it can be fixed in desired position.



CYLINDERS - BORE SIZES Ø80

The two top housing can be accessed from the front of the unit, once housing can be accessed from the front end cap and opposite housing from the rear end cap. It is therefore possible to use both type of sensor: 1580-1590.



CYLINDERS - BORE SIZES Ø100 ... Ø200 All four housings can be accessed from the front of the unit. It is therefore possible to use both type of sensors: 1580-1590.





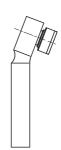
Support for solenoid valves

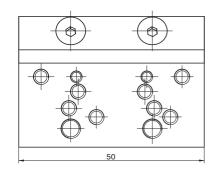
Coding: 1390.

Ou	ing. 1000.
	SIZE
	25 = Ø32
	26 = Ø40
0	27 = Ø50
	28 = Ø63
	29 = Ø80
	30 = Ø100

Attention: do not use ISO distributor for base mounting



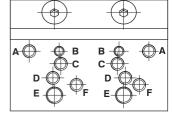




Fixing holes for valves series:

A = 488 / 484 B = 2400 C = T488

D = 2600 E = T424 F = 888_



This accessory permits to mount a valve or an electrovalve on a side of the cylinder. The plate can be fitted on the cylinder profiled barrel. Once installed the connections must be done with fittings and pipes. All of the threaded holes on the support plate are dedicated to different valves series as per attached drawing.



Series Ecolight - with protective bellows

The modular bellows has the function of protecting the piston rod and piston rod nose seal on the Pneumax ECOLIGHT' cylinder range from Ø32 to Ø100 to a maximum stroke length of 1 mtr (all versions excluding cylinders fitted with the Q and R scraper seal).

It is constructed by mounting the bellows in series fixed with end plates mounted on the piston rod and front end cap.

There is also a guide washer with bushing (Sintered bronze/PTFE) placed in the middle of the bellows and guided by the piston rod to prevent the bellows sliding on the rod and to keep the orientation in line with the cylinder.

The bellows can be constructed from three different materials depending on the temperature, application or the possibility of any substance coming into contact with the cylinder.

During operation the bellows extend and retract which means the air contained within the bellows needs to be controlled, this is achieved by;

- NON CONVEYED: a series of breathers/filters on the end plate fitted to the piston rod.
- CONVEYED: a threaded connection on the end cover fitted to the cylinders front end cap.

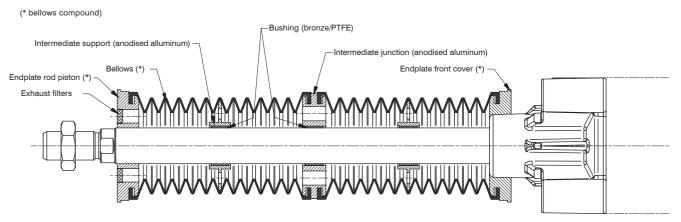
Assembly is simple and requires a cylinder with extended rod (see ordering codes)

Are available:

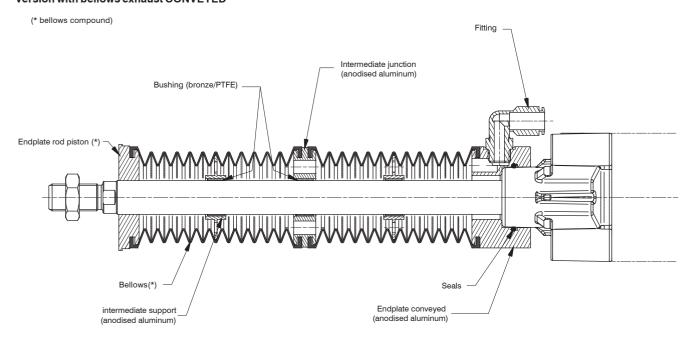
- -cylinder with bellows
- -kit bellows (degrease the surface of the front cover and the piston rod before mounting the bellows terminals by interference).

Construction characteristics

Version with bellows exhaust NOT CONVEYED



Version with bellows exhaust CONVEYED



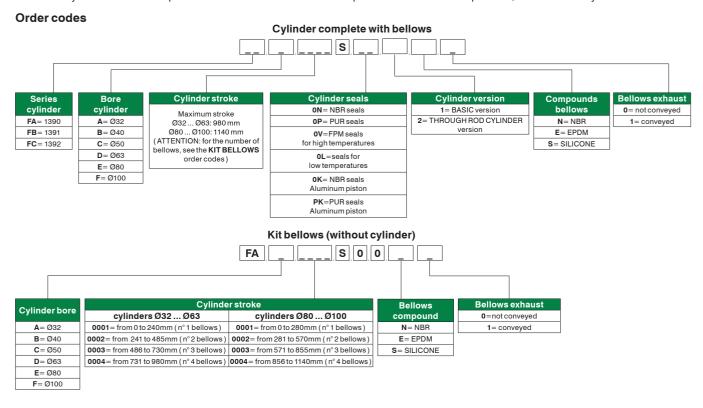
Notice: with cylinders Ø32 ... 63, use fitting G1/4 tube Ø10 and Ø12 with cylinders Ø80 – 100, use fitting G3/8 tube Ø12 and Ø14



Operational characteristics

Maximum Speed admissible	1m/sec
Maximum stroke	Ø32 Ø63: 980mm – Ø80 Ø100: 1140mm
Assembly	endplates for interference with piston rod and front cover (in the conveyed exhaust version, endplate front cover fixed with grub screws)
cylinder orientation	unconcerned
EPDM (black color)	Limit temperatures of using: -40°C/+110°C Ideal for outdoor uses and water applications, Excellent resistance to atmospheric agents, ozone, direct sunlight, water and steam, good resistance to acids and oxygenated solvents, high resistance to permanent deformations, low resistance to oils, mineral greases and hydrocarbons contact.
NBR (black color)	Limit temperatures of using: -40°C/+130°C Application include: aerospace, automotive, high temperature, gas and vaccum application, Not adapted for external using, High resistance to oils, grease, hydrocarbons, water and alcohol, good resistance to air and gas impermeability.
SILICONE (orange color)	Limit temperatures of using: -60°C / +200°C ideal for applications: food, clean, high temperature, atmospheric agents (ozone, water), Maintenance of flexibility even at low temperatures, good elasticity, excellent electro-insulating characteristics, low resistance to oils, mineral greases and hydrocarbons contact, not recommended for contact with ketones or concentrated acids, benzene, High gas pemeability.

The temperatures indicated above refer to the material of the bellows. Therefore, the operating temperature of the assembled bellows + cylinder kit will correspond to the minimum values of the temperatures of the two components, ie those of the cylinders.



Version with bellows exhaust NOT CONVEYED



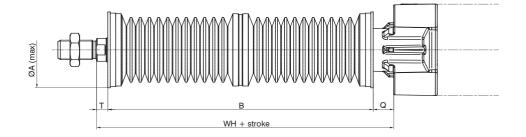


Table of dimensions

Bore	ØA	Т		B + s	Q		WH +	stroke			
Ø32		10	60	115	170	225	7	77	132	187	242
Ø40	00	10,5	60	115	170	225	10	80,5	135,5	190,5	245,5
Ø50	60	12	60	115	170	225	17	89	144	199	254
Ø63		12	60	115	170	225	17	89	144	199	254
strokes	/	/	0 240	241 485	486 730	731 980	/	0 240	241 485	486 730	731 980
Ø80	00	14	70	130	195	260	23	107	167	232	297
Ø100	- 83	14	70	130	195	260	24	108	168	233	298
strokes	/	/	0 280	281 570	271 855	856 1140	/	0 280	281 570	571 855	856 1140

Version with bellows exhaust CONVEYED



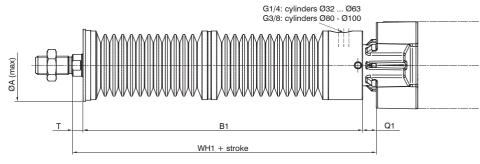


Table of dimensions

Bore	ØA	Т		B1 +	stroke		Q1		WH1 +	stroke	
Ø32		10	75	130	185	240	10	95	150	205	260
Ø40	60	10,5	75	130	185	240	13	98,5	153,5	208,5	263,5
Ø50	80	12	83	138	193	248	12	107	162	217	272
Ø63		12	83	138	193	248	12	107	162	217	272
strokes	/	/	0 240	241 485	286 730	731 980	/	0 240	241 485	486 730	731 980
Ø80	83	14	94	154	219	284	18	126	186	251	316
Ø100	03	14	94	154	219	284	19	127	187	252	317
strokes	/	/	0 280	281 570	571 855	856 1140	/	0 280	281 570	571 855	856 1140

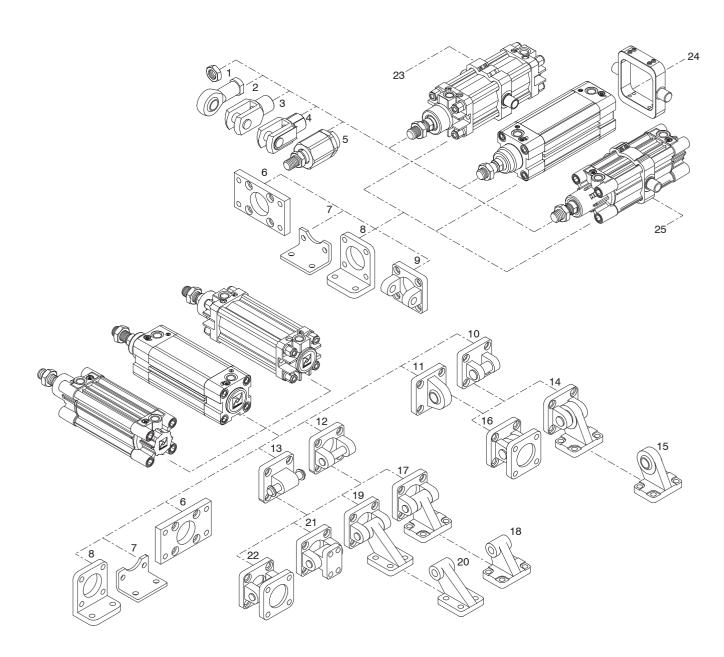
Fixing device

All ISO 15552 series ECOLIGHT cylinder fixing device/accessories and sensors available in the general catalog can be used except to:

- front clevis and normal foot code, not available for Ø32 cylinders in the version with not conveyed exhaust bellows.

in case of cylinder complete of bellows, for the accessories assembly on the front cover is require to take off the bellows kit. therefore, for the re-assembling, consider the dimension in preceding page about the overall dimensions.





Position	Description	Aluminium	Steel
1	Nuts	/	1320.Ø.18F
2	Balljoint	/	1320.Ø.32F
3	Fork with pin	/	1320.Ø.13F
4	Fork with clips	/	1320.Ø.13/1F
5	Self-aligning joint	/	1320.Ø.33F
6	Front and rear flange (MF1 - MF2) *	1390.Ø.03FP	1380.Ø.03F
7	Short mounting foot brackets (in sheet metal MS1)	/	1320.Ø.05/1F
8	Standard feet *	1320.Ø.05F	/
9	Front clevis (not specified by ISO-VDMA standards) **	1380.Ø.08F	1320.Ø.19F
10	Rear narrow clevis	1380.Ø.30F	1320.Ø.29F
11	Rear male clevis (with jointed head according to DIN 648K standard)	1380.Ø.15F	1320.Ø.25F
12	Rear clevis (MP2)	1380.Ø.09F	1320.Ø.20F
13	Rear male clevis (MP4)	1380.Ø.09/1F	1320.Ø.21F
14	Complete square angle trunnion (with joined head according to DIN 648K standards) (pos.10 + pos.15)	/	1320.Ø.27F
15	Simple square counter clevis (pos.14)	/	1320.Ø.28F
16	Complete square angle trunnion (with joined head according to DIN 648K standards) (pos. 10 + pos. 11)	1380.Ø.36F	1320.Ø.26F
17	Square angle trunnion (AB7) (pos.18 + pos.12)	1380.Ø.35F	1320.Ø.23F
18	Simple square counter clevis (pos.17)	1320.Ø.11/2F	1320.Ø.24F
19	Simple rear trunnion with support brackets (not specified by ISO-VDMA standards) (pos.20 + pos.12)	1380.Ø.11F	/
20	Simple square counter clevis (pos.19)	1320.Ø.11/1F	/
21	Standard trunnion (not specified by ISO-VDMA standards)	1380.Ø.10F	/
22	Standard complete trunnion (pos.12 + pos.13)	1380.Ø.22F	1320.Ø.22F
23	1319 1321 cylinders series Intermediate trunnion	1320.Ø.12BF	1320.Ø.12F
24	1386 1388 / 1396 - 1398 Ecoplus series Intermediate trunnion	/	1386.Ø.12F
25	1390 1392 Ecolight series Intermediate trunnion	1390.Ø.12F	/

^{*} Do not use on Ecolight Series cylinders with bellows Ø32
** Do not use on Ecolight Series cylinders with bellows



Front and rear flanges (MF1 - MF2)

Coding: 13**∅**.Ø.

$\overline{}$	
	MATERIALS
(80 = Steel
	90 = Aluminium
	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
ø	63 = Ø63
0	80 = Ø80
	100 = Ø100
	125 = Ø125
	160 = Ø160
	200 = Ø200
	VERSION
V	03F = Steel flange (Ø32 Ø200)
	03FP = Aluminium flange (Ø32 Ø100)



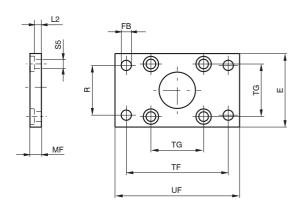
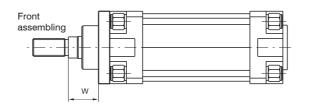
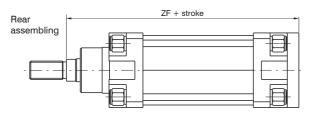


Plate which allows anchorage of the cylinder at a right angle to the plane. It is made of zincplated extruded steel.





Bore	E	FB (H 13)	MF (JS 14)	R (JS 14)	TF (JS 14)	TG	UF	ZF	w	L2	S 5	Weight (g) steel	Weight (g) aluminium
32	45	7	10	32	64	32,5	80	130	16	5	6,6	190	60
40	52	9	10	36	72	38	90	145	20	5	6,6	250	69
50	65	9	12	45	90	46,5	110	155	25	6,5	9	480	130
63	75	9	12	50	100	56,5	120	170	25	6,5	9	620	170
80	95	12	16	63	126	72	150	190	30	9	11	1430	345
100	115	14	16	75	150	89	170	205	35	9	11	1990	485
125	140	16	20	90	180	110	205	245	45	10,5	14	3750	/
160	180	18	20	115	230	140	260	280	60	9,5	18	6350	/
200	220	22	25	135	270	175	300	300	70	12,5	18	11350	/

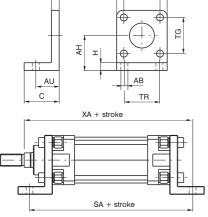
Standard feet

Codin	ig: 1320.Ø.05F
	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
~	63 = Ø63
Ø	80 = Ø80
	100 = Ø100
	125 = Ø125
	160 = Ø160
	200 = Ø200

Aluminium (1 piece)



Weight (g)



Е

	1								
Bore	32	40	50	63	80	100	125	160	200
AB (H 14)	7	9	9	9	12	14	16	18	22
AH (JS 15)	32	36	45	50	63	71	91	115	135
AU (±0,2)	24	28	32	32	41	41	45	60	70
С	35	35	45	45	55	56	68	82	90
E	45	52	65	75	95	115	140	180	220
Н	8	8	10	10	12	12	16	20	20
SA	142	161	170	185	210	220	250	300	320
TG	32,5	38	46,5	56,5	72	89	110	140	175
TR (JS 14)	32	36	45	50	63	75	90	115	135
ΧΔ	144	163	175	190	215	230	270	320	345

175

380

470

920

2300

3200

Elements used to anchor the cylinder parallel to the mounting plane.
They are made of cast aluminium, painted black.

140



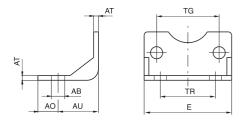
Short mounting foot brackets (in sheet metal MS1)

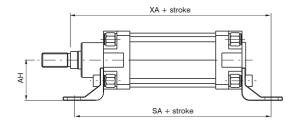
Coding: 1320.Ø.05/1F

	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
a	63 = Ø63
Ø	80 = Ø80
	100 = Ø100
	125 = Ø125
	160 = Ø160
	200 = Ø200

Steel (1 piece)







Elements used to anchor the cylinder parallel to the mounting plane.
They are made of steel, and painted black.

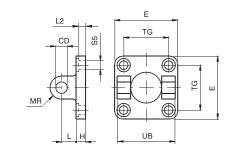
	Bore	32	40	50	63	80	100	125	160	200
	AB (H 14)	7	9	9	9	12	14	16	18	22
	AH (JS 15)	32	36	45	50	63	71	90	115	135
	AU (± 0.2)	24	28	32	32	41	41	45	60	70
е	AO (± 0.2)	11	8	15	13	14	16	25	15	30
	Е	45	52	65	75	95	115	140	180	220
	AT	4	4	5	5	6	6	8	9	12
	SA	142	161	170	185	210	220	250	300	320
	TG	32,5	38	46,5	56,5	72	89	110	140	175
	TR (JS 14)	32	36	45	50	63	75	90	115	135
	XA	144	163	175	190	215	230	270	320	345
	Weight (g)	65	80	170	190	380	452	1090	1190	3450

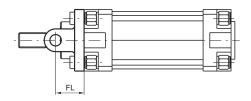
Front clevis (not specified by ISO-VDMA standards)

Coding: 13M Ø

Coair	ig: 13W.D.V
	MATERIALS
M	20 = Steel
	80 = Aluminium
	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
~	63 = Ø63
Ø	80 = Ø80
	100 = Ø100
	125 = Ø125
	160 = Ø160
	200 = Ø200
	VERSION
V	08F = Aluminium front clevis
	19F = Steel front clevis
	· · · · · · · · · · · · · · · · · · ·







Used to mount the cylinder either parallel or at a right angle to the mounting plane; allows the cylinder to self-align under load.

Made of aluminium alloy or steel (see ordering code) and painted black.

Dolo		02	70				100	120	100	200
CD (H9)		10	12	12	16	16	20	25	30	30
Е	Aluminium	45	52	65	75	95	115	140	180	220
E	Steel	45	55	65	75	95	115	140	180	220
FL (±0,2)		22	25	27	32	36	41	50	55	60
н	Aluminium	9	9	11	11	14	14	20	20	25
П	Steel	10	10	10	12	14	16	20	20	20
	Aluminium	13	16	16	21	22	27	30	35	35
L	Steel	12	15	17	20	22	25	30	35	40
MR		10	12	12	16	16	20	25	25	25
TG		32,5	38	46,5	56,5	72	89	110	140	175
UB (h14)		45	52	60	70	90	110	130	170	170
L2(±0,5)		5,5	5,5	6,5	6,5	10	10	10	10	11
S5 (H13)		6,6	6,6	9	9	11	11	14	18	18
Weight (g)	Aluminium	50	75	125	190	380	620	1180	1780	2900
Weight (g)	Steel	150	235	340	550	1010	1710	3360	5750	8960

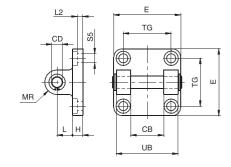


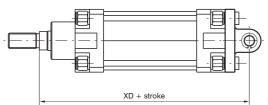
Rear clevis (MP2)

Coding: 13**∅**.Ø.

	3
	MATERIALS
Ø	20 = Steel
	80 = Aluminium
	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
~	63 = Ø63
Ø	80 = Ø80
	100 = Ø100
	125 = Ø125
	160 = Ø160
	200 = Ø200
	VERSION
V	20F = Steel rear clevis
	09F = Aluminium rear clevis







Bore		32	40	50	63	80	100	125	160	200
CB (H 14)		26	28	32	40	50	60	70	90	90
CD		10	12	12	16	16	20	25	30	30
Е	Aluminium	45	52	65	75	95	115	140	180	220
=	Steel	45	55	65	75	95	115	140	180	220
н	Aluminium	9	9	11	11	14	14	20	20	25
П	Steel	10	10	10	12	14	16	20	20	20
	Aluminium	13	16	16	21	22	27	30	35	35
L	Steel	12	15	17	20	22	25	30	35	40
MR		10	12	12	16	16	20	25	25	25
TG		32,5	38	46,5	56,5	72	89	110	140	175
UB (h14)		45	52	60	70	90	110	130	170	170
XD		142	160	170	190	210	230	275	315	335
L2(±0,5)		5,5	5,5	6,5	6,5	10	10	10	10	11
S5		6,6	6,6	9	9	11	11	14	18	18
Weight (g)	Aluminium	80	130	185	310	530	910	1710	2760	3820
weight (g)	Steel	180	290	400	670	1160	2000	3890	6730	9880

Similar to type 08 but includes a hinge pin.
This type of mounting allows anchorage of the cylinder either parallel or right angle to plane; the cylinder rod can oscillate and self-align as necessary when under load. Made of aluminium alloy or steel (see ordering

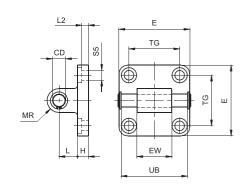
code) and painted black.

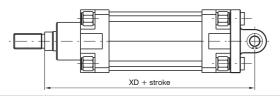
Rear male clevis (MP4)

Coding: 13**∅**.Ø.**♥**

	ig. 10
	MATERIALS
Ø	20 = Steel
	80 = Aluminium
	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
~	63 = Ø63
Ø	80 = Ø80
	100 = Ø100
	125 = Ø125
	160 = Ø160
	200 = Ø200
	VERSION
V	21F = Steel rear male clevis
	09/1F = Aluminium rear male clevis







Similar to 09 clevis except for the connection, which is male rather than female.

Used to mount the cylinder either parallel or at a right angle to the plane; the cylinder rod can oscillate and self-align as necessary when under

load.

Made of aluminium alloy or steel (see ordering code) and painted black.

	CD		10	12	12	16	16	20	25	30	30
	_	Aluminium	45	52	65	75	95	115	140	180	220
	E	Steel	45	55	65	75	95	115	140	180	220
ch	EW		26 (-0.2/-0.6)	28 (-0.2/-0.6)	32 (-0.2/-0.6)	40 (-0.2/-0.6)	50 (-0.2/-0.6)	60 (-0.2/-0.6)	70 (-0.5/-1.2)	90 (-0.5/-1.2)	90 (-0.5/-1.2)
		Aluminium	9	9	11	11	14	14	20	20	25
	Н	Steel	10	10	10	12	14	16	20	20	20
	L	Aluminium	13	16	16	21	22	27	30	35	35
		Steel	12	15	17	20	22	25	30	35	40
	MR		10	12	12	16	16	20	25	25	25
	TG		32,5	38	46,5	56,5	72	89	110	140	175
	UB (-0.5/-0)		46	53	61	71	91	111	132	171,5	171,5
	XD		142	160	170	190	210	230	275	315	335
	L2 (±0.5)		5,5	5,5	6,5	6,5	10	10	10	10	11
	\$5		6,6	6,6	9	9	11	11	14	18	18
	Weight (g)	Aluminium	90	130	190	340	580	960	1890	2830	3940
- 1	Weight (g)	Steel	210	330	430	810	1350	2400	4300	6880	8560



Simple rear trunnion with support brackets (not specified by ISO-VDMA standards)

160 = Ø160

 $\mathbf{200} = \emptyset 200$

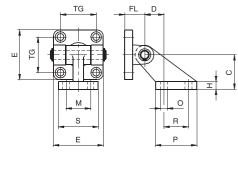
Coding: 1380.Ø.11F

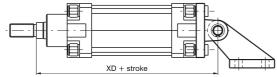
| BORE | 32 = Ø32 | 40 = Ø40 | 50 = Ø50 | 63 = Ø63 | 80 = Ø80 | 100 = Ø100 | 125 = Ø125 |

Aluminium

Counter clevis can be ordered separately with code1320. \emptyset .11/1F







Used to mount cylinders parallel to the plane to	
which the counter clevis is attached. Allows	
selfalignment of the cylinder rod under load with a	ιn
oscillation up to 90 degrees from the mounting	
plane.	

Bore	32	40	50	63	80	100	125	160	200
C (±0,2)	32	45	45	63	63	90	90	140	140
D (±0,5)	18	25	25	32	32	40	40	50	50
E	45	52	65	75	95	115	140	180	220
Н	8	10	10	12	12	17	17	20	20
FL	22	25	27	32	36	41	50	55	60
M (JS 14)	25	32	32	40	40	50	50	63	63
TG	32,5	38	46,5	56,5	72	89	110	140	175
O (H 13)	7	9	9	11	11	14	14	18	18
P	37	54	54	75	75	103	103	154	154
R (JS 14)	20	32	32	50	50	70	70	110	110
S	41	52	52	63	63	80	80	110	110
XD	142	160	170	190	210	230	275	315	335
Weight (g)	130	260	330	600	820	1560	2530	4735	5795

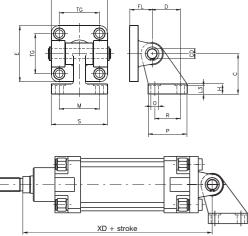
Square angle trunnion (AB7)

Couli	ig: 10w.p.w
	MATERIALS
•	20 = Steel
	80 = Aluminium
	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
~	63 = Ø63
Ø	80 = Ø80
	100 = Ø100
	125 = Ø125
	160 = Ø160
	200 = Ø200
	VERSION
	23F = Steel square angle trunnion (Ø32
V	Ø100)
	35F = Aluminium square angle trunnion

Counter clevis

can be ordered separately with code: 1320.Ø.11/2F (aluminium) 1320.Ø.24F (steel) (Ø32...Ø100)





Bore		32	40	50	63	80	100	125	160	200
-	Aluminium	45	52	65	75	95	115	140	180	220
E	Steel	45	55	65	75	95	115	140	180	220
TG		32,5	38	46,5	56,5	72	89	110	140	175
FL		22	25	27	32	36	41	50	55	60
D (JS14)		21	24	33	37	47	55	70	97	105
CD		10	12	12	16	16	20	25	30	30
C (JS15)		32	36	45	50	63	71	90	115	135
н	Aluminium	8	10	12	14	14	17	20	25	30
	Steel	8	10	12	12	14	15	/	/	/
1.0	Aluminium	6,4	8,4	10,4	12,4	11,5	14,5	16,8	21	26
L3	Steel	6,5	8,5	10,5	10,5	11,5	12,5	/	/	/
R (JS14)		18	22	30	35	40	50	60	88	90
P		31	35	45	50	60	70	90	126	130
O (H13)		6,6	6,6	9	9	11	11	14	14	18
S		51	54	65	67	86	96	124	156	162
M (JS14)		38	41	50	52	66	76	94	118	122
XD		142	160	170	190	210	230	275	315	335
Maight (g)	Aluminium	120	180	225	435	730	1220	2325	3780	4950
Weight (g)	Steel	340	500	640	1250	2100	3500	/	/	/



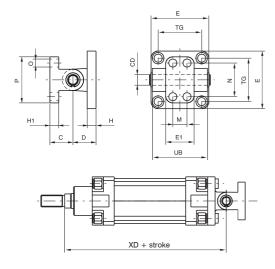
Standard trunnion (not specified by ISO-VDMA standards)

Coding: 1380.Ø.10F							
	BORE						
	32 = Ø 32						
	40 = Ø40						
	50 = Ø50						
_ ~	63 = Ø63						
Ø	80 = Ø80						
	100 = Ø100						
	125 = Ø125						
	160 = Ø160						

Aluminium

200 = Ø200





Mounting consists of clevis 09 and counter clevis. Used to mount cylinders at a right angle to the plane to which the counter clevis is attached. Allows self-alignment of the cylinder rod under load with an oscillation of $\pm\,60$ degrees.

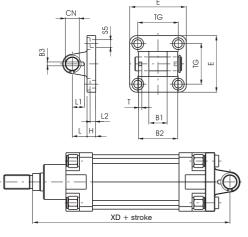
	Bore	32	40	50	63	80	100	125	160	200
. [C (±0.2)	18	26	26	34	34	41	41	55	55
	CD	10	12	12	16	16	20	25	30	30
1	D	22	25	27	32	36	41	50	55	60
	E	45	52	65	75	95	115	140	180	220
	E1	25	32	32	46	46	56	56	71	71
	н	10	10	12	12	16	16	20	20	25
	H1	8	10	10	12	12	16	16	20	20
	M (±0.2)	-	16	16	25	25	32	32	43	43
	N (±0.2)	28	38	38	54	54	90	90	150	150
1	0	7	9	9	11	11	14	14	18	18
	P	40	52	52	75	75	115	115	180	180
-	TG	32.5	38	46.5	56.5	72	89	110	140	175
	UB	45	52	60	70	90	110	130	170	170
	XD	142	160	170	190	210	230	275	315	335
,	Weight (g)	11	190	240	490	710	1290	2090	3690	4810

Rear narrow clevis

. Coding: 13**∅**.Ø.

Coun	ig. 10 w
	MATERIALS
Ø	20 = Steel
	80 = Aluminium
	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
~	63 = Ø63
Ø	80 = Ø80
	100 = Ø100
	125 = Ø125
	160 = Ø160
	200 = Ø200
	VERSION
V	29F = Steel rear narrow clevis (Ø32 Ø125)
	30F = Aluminium rear narrow clevis





Bore		32	40	50	63	80	100	125	160	200
B1 (H 14)		14	16	21	21	25	25	37	43	43
B2 (d 12)		34	40	45	51	65	75	97	122	122
B3 (+0,2/-0)		3,3	4,3	4,3	4,3	4,3	6,3	6,3	6,3	6,3
CN		10	12	16	16	20	20	30	35	35
_	Aluminium	45	52	65	75	95	115	140	180	220
E	Steel	45	55	65	75	95	115	140	180	220
	Aluminium	9	9	11	11	14	14	20	20	25
Н	Steel	10	10	10	12	14	16	20	/	/
	Aluminium	13	16	16	21	22	27	30	35	35
L	Steel	12	15	17	20	22	25	30	/	/
L1		11,5	12	14	14	16	16	24	26,5	26,5
L2 (±0,5)		5,5	5,5	6,5	6,5	10	10	10	10	11
S5		6,6	6,6	9	9	11	11	14	18	18
Т		3	4	4	4	4	4	6	6	6
TG		32,5	38	46,5	56,5	72	89	110	140	175
XD		142	160	170	190	210	230	275	315	335
Weight (g)	Aluminium	70	115	200	290	570	820	1710	3010	4380
weight (g)	Steel	160	270	370	670	1110	2100	4150	1	/

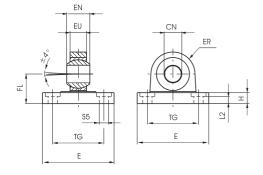


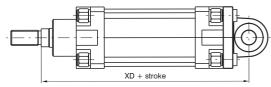
Rear male clevis (with jointed head according to DIN 648K standard)

Coding: 13**∅**.Ø.

MATERIALS 20 = Steel 80 = Aluminium BORE 32 = Ø32		
80 = Aluminium BORE		MATERIALS
BORE	•	20 = Steel
		80 = Aluminium
32 = Ø32		BORE
		32 = Ø32
40 = Ø40		40 = Ø40
50 = Ø50		50 = Ø50
63 = Ø63	~	63 = Ø63
Ø 80 = Ø80	0	80 = Ø80
100 = Ø100		100 = Ø100
125 = Ø125		125 = Ø125
160 = Ø160		160 = Ø160
200 = Ø200		200 = Ø200
VERSION		VERSION
25F = Steel rear male clevis (Ø32 Ø125)	V	25F = Steel rear male clevis (Ø32 Ø125)
15F = Aluminium rear male clevis		15F = Aluminium rear male clevis







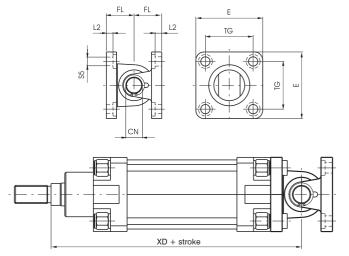
Во	re	32	40	50	63	80	100	125	160	200
CN (H7)		10	12	16	16	20	20	30	35	35
_	Aluminium	45	52	65	75	95	115	140	180	220
E	Steel	45	55	65	75	95	115	140	180	220
EN (-0.1)		14	16	21	21	25	25	37	43	43
	Aluminium	16	19	21	24	28.5	30	40	45	48
ER	Steel	15	18	20	23	27	30	40	/	/
EU		10.5	12	15	15	18	18	25	28	28
FL (JS 15)		22	25	27	32	36	41	50	55	60
	Aluminium	9	9	11	11	14	14	20	20	25
Н	Steel	10	10	10	12	14	16	20	/	/
L2 (±0.5)		5.5	5.5	6.5	6.5	10	10	10	10	11
S5		6.6	6.6	9	9	11	11	14	18	18
TG		32.5	38	46.5	56.5	72	89	110	140	175
XD		142	160	170	190	210	230	275	315	335
Weight (g)	Aluminium	60	100	180	245	480	650	1410	2420	3840
weignit (g)	Steel	210	310	400	710	1350	2400	4000	/	/

Complete standard trunnion (with joined head according to DIN 648K standards)

Coding: 13**∅**.Ø.

	ig. 10 w.D.
	MATERIALS
M	20 = Steel
	80 = Aluminium
	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
~	63 = Ø63
Ø	80 = Ø80
	100 = Ø100
	125 = Ø125
	160 = Ø160
	200 = Ø200
	VERSION
	26F = Steel complete standard trunnion (Ø32
V	Ø125)
	36F = Aluminium complete standard trunnion





Bor	е	32	40	50	63	80	100	125	160	200
CN		10	12	16	16	20	20	30	35	35
Е	Aluminium	45	52	65	75	95	115	140	180	220
_	Steel	45	55	65	75	95	115	140	180	220
FL (JS 15)		22	25	27	32	36	41	50	55	60
L2 (±0.5)		5.5	5.5	6.5	6.5	10	10	10	10	11
S5		6.6	6.6	9	9	11	11	14	18	18
TG		32.5	38	46.5	56,5	72	89	110	140	175
XD		142	160	170	190	210	230	275	315	335
Weight (g)	Aluminium	130	215	380	535	1050	1470	3120	5430	8220
weight (g)	Steel	380	580	770	1380	2460	4500	8150	/	/

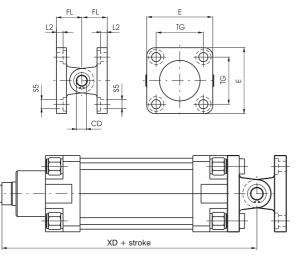


Standard complete trunnion

Coding: 13**0**.Ø.22F

	MATERIALS
M	20 = Steel
	80 = Aluminium
	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
~	63 = Ø63
Ø	80 = Ø80
	100 = Ø100
	125 = Ø125
	160 = Ø160
	200 = Ø200





Bore	32	40	50	63	80	100	125	160	200
CD	10	12	12	16	16	20	25	30	30
E	45	55	65	75	95	115	140	180	220
FL	22	25	27	32	36	41	50	55	60
L2 (±0.5)	5,5	5,5	6,5	6,5	10	10	10	10	11
S5	6,6	6,6	9	9	11	11	14	18	18
TG	32,5	38	46,5	56,5	72	89	110	140	175
XD	142	160	170	190	210	230	275	315	335
Weight (g)	360	580	780	1370	2370	4110	7670	12650	17480

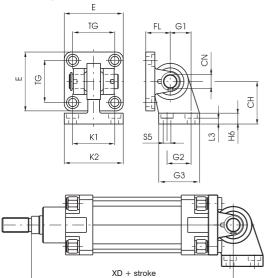
Complete square angle trunnion (with joined head according to DIN 648K standards)

Coding: 1320.Ø.27F

Jouin	ig. 1020.0.211
	BORE
	32 = Ø32
	40 = Ø40
α	50 = Ø50
Ø	63 = Ø63
	80 = Ø80
	100 = Ø100
	125 = Ø125

Counter clevis can be ordered separately with code 1320.Ø.28F





Bore	32	40	50	63	80	100	125
CH (JS 15)	32	36	45	50	63	71	90
CN	10	12	16	16	20	20	30
E	45	55	65	75	95	115	140
FL (JS 15)	22	25	27	32	36	41	50
G1 (JS 15)	21	24	33	37	47	55	70
G2 (JS 14)	18	22	30	35	40	50	60
G3	31	35	45	50	60	70	90
H6	10	10	12	12	14	15	20
K1 (JS 14)	38	41	50	52	66	76	94
K2	51	54	65	67	86	96	124
L3 (+0,5/-0)	8,5	8,5	10,5	10,5	11,5	12,5	17
S5	6,6	6,6	9	9	11	11	14
TG	32,5	38	46,5	56,5	72	89	110
XD	142	160	170	190	210	230	275
Weight (g)	330	480	830	1220	2100	3580	7000

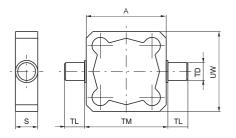


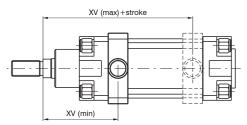
Intermediate trunnion (Steel)

Coding: 1320.Ø.12F

	.g. 1020.2.121
	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
_	63 = Ø63
Ø	80 = Ø80
	100 = Ø100
	125 = Ø125
	160 = Ø160
	200 = Ø200







Clevis to be mounted on the barrel to have the centre of rotation of the hinge pin at a point between the end caps of the cylinder. It is attached to the barrel by means of eight pointed grains that block in the "V" groove of the four protruding shapes. In the case of anchorage subject to heavy use, it is recommended to connect the clevis once the right position has been found.

Attention: mounting of the clevis with contact to the $\,$ end caps does not allow the use of the magnetic $\,$ sensors as the switch limits.

Bore	32	40	50	63	80	100	125	160	200
Α	49	62	73	87	109	130	155	190	240
S	18	21	21	27	27	32	32	40	40
TD (e9)	12	16	16	20	20	25	25	32	32
TL (h14)	12	16	16	20	20	25	25	32	32
TM (h14)	50	63	75	90	110	132	160	200	250
UW	59	62	73	87	109	130	155	190	240
XV (max.)	85	96	102	109	123.5	131.5	162	193	204
XV (min.)	61	69	78	86	96.5	108.5	128	150	168
Weight (g)	180	270	330	650	890	1550	1950	3580	5850

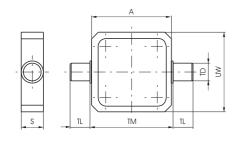


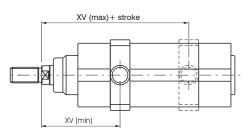
Intermediate trunnion (Steel)

Coding: 1386.Ø.12F

	BORE
	32 = Ø32
	40 = Ø40
Ø	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100







Clevis to be mounted on the barrel to have the centre of rotation of the hinge pin at a point between the end caps of the cylinder. It is attached to the barrel by means of eight pointed grains. In the case of anchorage subject to heavy use, it is recommended to connect the clevis once the right position has been found.

Attention: mounting of the clevis with contact to the end caps does not allow the use of the magnetic sensors as the switch limits.

Bore	32	40	50	63	80	100
A	49.8	62.6	74.1	89.1	109.1	130.1
S	18	21	21	27	27	30
TD (e 9)	12	16	16	20	20	25
TL (h 14)	12	16	16	20	20	25
TM (h 14)	50	63	75	90	110	132
UW	70	78	91	94	130	145
XV (max.)	80	91.5	97.5	106.5	118.5	127
XV (min.)	66	73.5	82.5	88.5	101.5	113
Weight (g)	195	350	430	565	1035	1450

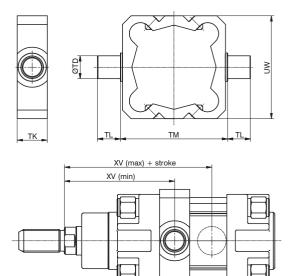


Intermediate trunnion (Aluminium with steel bushes)

Coding: 1320.Ø.12BF

Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100





Aluminium Intermediate Trunnion with steel **bushes** to be mounted on the barrel. This solution allows the cylinder to rotate around the hinge which can be mounted in any position between the end caps. It is attached to the barrel by means of 8 grub screws which secure the Trunnion to the extruded

In the case of heavy duty applications it is recommended that the Trunnion is secured using expansion pins. In case off applications with high speed, high load and high pressure please contact our technical office.

Attention: mounting of the clevis with contact to the end caps does not allow the use of the magnetic sensors as the switch limits.

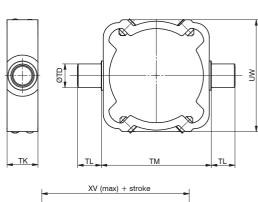
Bore	32	40	50	63	80	100
TD	Ø12	Ø16	Ø16	Ø20	Ø20	Ø25
TL	12	16	16	20	20	25
TM	50	63	75	90	110	132
TK	18	21	21	27	27	32
UW	54	60	72	87	109	130
XV min.	61	69	78	86	96.5	108.5
XV max.	85	96	102	109	123.5	131.5
Weight (g)	70	110	140	280	370	630

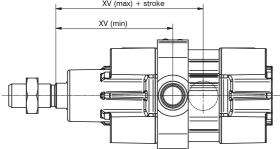
Intermediate trunnion (Aluminium with steel bushes)

Coding: 1390.Ø.12F

	9
	BORE
	32 = Ø32
	40 = Ø40
Ø	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100







Aluminium Intermediate Trunnion with steel **bushes** to be mounted on the barrel. This solution allows the cylinder to rotate around the hinge which can be mounted in any position between the end caps. It is attached to the barrel by means of 8 grub screws which secure the Trunnion to the extruded barrel

In the case of heavy duty applications it is recommended that the Trunnion is secured using expansion pins. In case off applications with high speed, high load and high pressure please contact our technical office.

Attention: If the Trunnion is mounted in direct contact with the cylinder end cap, it will not be possible to fit magnetic sensors at the end of stroke 1500._, RS._, HS._series.

D	00	40				400
Bore	32	40	50	63	80	100
TD	Ø12	Ø16	Ø16	Ø20	Ø20	Ø25
TL	12	16	16	20	20	25
TM	53*	63	75	90	110	132
TK	18	21	21	27	27	32
UW	56	64	76	92	112	134
XV min.	65	74	80	87	99	109
XV max.	81	91	100	108	121	130.5
Weight (g)	60	100	125	240	320	540

^{*} Ø32, TM: not according to standard ISO 15552



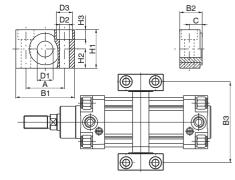
Support for intermediate trunnion

Coding: 1320.Ø.12/1F

ooun	ig. 1020.2.12/11
	BORE
	32 = Ø32
Ø	40 = Ø40
	200 = Ø200

(1 piece) Combining two supports to the intermediate trunnion it is possible to fix the cylinder on plane surface.





Bore	32	40	50	63	80	100	125	160	200
A (±0.2)	32	36	36	42	42	50	50	60	60
B1	46	55	55	65	65	75	75	92	92
B2	18	21	21	23	23	28.5	28.5	40	40
B3	71	87	99	116	136	164	192	245	295
С	10.5	12	12	13	13	16	16	22.5	22.5
D1 (F7)	12	16	16	20	20	25	25	32	32
D2	6.6	9	9	11	11	14	14	18	18
D3	11	15	15	18	18	20	20	26	26
H1	30	36	36	40	40	50	50	60	60
H2 (±0.1)	15	18	18	20	20	25	25	30	30
H3	7	9	9	11	11	13	13	17	17
Weight (g) (1 piece)	100	150	150	235	235	435	435	850	850

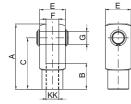
Fork with pin

Coding: 1320.Ø.13F

	9					
	BORE					
BO 32 40 50	32 = Ø32					
	40 = Ø40					
	50 = Ø50					
Ø	63 = Ø63					
	80 = Ø80					
	100 = Ø100					
	125 = Ø125					
	160 = Ø160					
	200 = Ø200					

Element that when screwed to the rod consents a regular functioning even when there are significant lateral forces as the connection point. Made of zincplated steel.





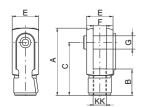
Bore	32	40	50	63	80	100	125	160	200
A	52	62	83	83	105	105	148	188	188
В	20	24	32	32	40	40	56	72	72
С	40	48	64	64	80	80	110	144	144
Е	20	24	32	32	40	40	55	70	70
F(B12)	10	12	16	16	20	20	30	35	35
G	10	12	16	16	20	20	30	35	35
KK	M10X1.25	M12X1.25	M16X1.5	M16X1.5	M20X1.5	M20X1.5	M27X2	M36X2	M36X2
Weight (g)	100	140	340	340	680	680	2500	4000	4000

Fork with clips

Coding: 1320.Ø.13/1F

	BORE
	32 = Ø32
	40 = Ø40
Ø	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100



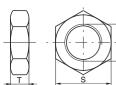


Bore	32	40	50	63	80	100
A	52	62	83	83	105	105
В	20	24	32	32	40	40
С	40	48	64	64	80	80
E	20	24	32	32	40	40
F(B12)	10	12	16	16	20	20
G	10	12	16	16	20	20
KK	M10X1.25	M12X1.25	M16X1.5	M16X1.5	M20X1.5	M20X1.5
Weight (g)	100	140	340	340	680	680

Element that when screwed to the rod consents a regular functioning even when there are significant lateral forces as the connection point. Made of zincplated steel.

Codir	ng: 1320.Ø.18F
	BORE
	32 = Ø32
Ø	40 = Ø40
	200 = Ø200





Used to block the position of the fork.

Bore	32	40	50	63	80	100	125	160	200
S	17	19	24	24	30	30	41	55	55
Т	6	7	8	8	9	9	12	18	18
KK	M10X1.25	M12X1.25	M16X1.5	M16X1.5	M20X1.5	M20X1.5	M27X2	M36X2	M36X2
Weight (g)	15	20	20	20	40	40	100	210	210

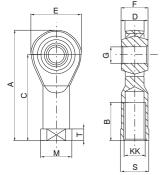


Ball joint

Coding: 1320.Ø.32F

ooun	ig. 1020.01021
	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
Ø	63 = Ø63
	80 = Ø80
	100 = Ø100
	125 = Ø125
	160 = Ø160
	200 = Ø200





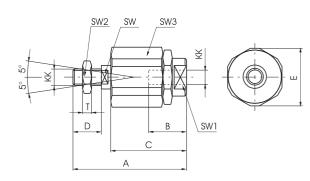
Bore	32	40	50	63	80	100	125	160	200
A	57	66	85	85	102	102	145	165	165
В	20	22	28	28	33	33	51	56	56
С	43	50	64	64	77	77	110	125	125
D (-0.1)	10.5	12	15	15	18	18	25	28	28
Е	28	32	42	42	50	50	70	80	80
F	14	16	21	21	25	25	37	43	43
G (H7)	10	12	16	16	20	20	30	35	35
KK	M10x1.25	M12x1.25	M16x1.5	M16x1.5	M20x1.5	M20x1.5	M27x2	M36x2	M36x2
М	19	22	27	27	34	34	50	58	58
S	17	19	22	22	30	30	41	50	50
Т	6.5	6.5	8	8	10	10	15	17	17
Weight (g)	76	110	220	220	410	410	1200	1600	1600

Self-aligning joint

Coding: 1320.Ø.33F

	outing. To Lot Otto			
	BORE			
	32 = Ø32			
	40 = Ø40			
Ø	50 = Ø50			
	63 = Ø63			
	80 = Ø80			
	100 = Ø100			





Bore	32	40	50	63	80	100
A	71	75	103	103	119	119
В	20	20	32	32	40	40
С	46	46	63	63	71	71
D	20	24	32	32	40	40
E	32	32	45	45	45	45
KK	M10x1.25	M12x1.25	M16x1.5	M16x1.5	M20x1.5	M20x1.5
SW	12	12	20	20	20	20
SW1	19	19	27	27	27	27
SW2	17	19	24	24	30	30
SW3	30	30	41	41	41	41
Т	6	7	8	8	9	9
Weight (g)	220	230	660	660	700	700



Series 1315, Round tube cylinders

These cylinders are built according to ISO 15552.

Construction characteristics

Cushion bushings	aluminium			
Piston rod bushings	sintered bronze			
Barrel	oxidised aluminium			
Seals	standard: NBR Oil resistant rubber, PUR Piston rod seals			
Pistons	aluminium			
Piston rod	C43 chromed steel			
End caps	aluminium alloy casting			
Tie rods	steel with rolled threads			

Operational characteristics

Fluid	filtered and lubricated air - hydraulic oil (with special bushing)
Pressure	max. 10 bar
Working temperature	-5 °C +70 °C
Cushioning lenght	50 mm

Please follow the suggestions below to ensure a long life for these cylinders:

- use clean and lubricated air.
- · correct alignment during assembly with regard to the applied load so as to avoid radial components or bending the rod.
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).
- evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

Please note: air must be dried for applications with lower temperature.

Use hydraulic oils H class (ISO VG32) for correct continued lubrication.

On request are available strokes up to: 2800 mm



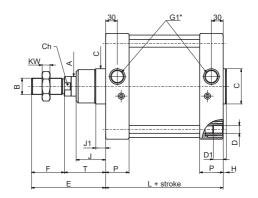
Basic version "01"

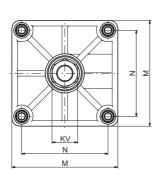
Coding: 1315.Ø.stroke.01A

	•
	BORE
Ø	250 = 250mm
	320 = 320mm

magnetic, aluminium barrel







Through rod cylinder version "02"

Coding: 1315.Ø.stroke.02A

ooun	ig. 1010101011011010E/1
	BORE
Ø	250 = 250mm
	320 = 320mm

magnetic, aluminium barrel



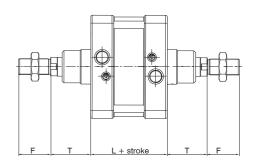


Table of dimensions

Bore	250	320
A	Ø50	Ø63
В	M42x2	M48x2
Ch	46	55
С	Ø90	Ø110
D	M20	M24
D1	25	28
E	189	216
F	84	96
J	75	90
J1	25	25
Н	8	10
KW	21	24
KV	Es65	Es65
L	200	220
M	270	350
N	220	270
P	60	65
Т	105	120
Weight (g)	28.170 (increase of 380 g each 10 mm stroke)	49.810 (increase of 616 g each 10 mm stroke)

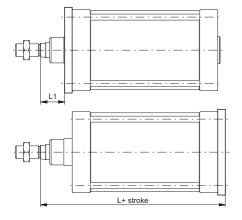


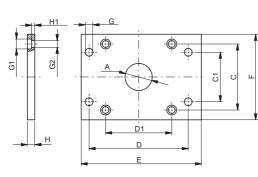
Front and rear flanges

Coding: 1315.Ø.03F

ooun	ocume. To to				
Ø	BORE				
	250 = 250mm				
	320 = 320mm				

Steel





250 90 220 165 330 220 400 285 26 33 22 25 10,5 330 80 20.150 320 110 270 200 400 270 470 350 33 39 26 30 15 370 90 34.000	ı	Bore	A(H11)	С	C1 (JS14)	D (JS14)	D1	Ε	F	G (H13)	G1 (H13)	G2 (H13)	H (±0,2)	H1 (+0/-0,5)	L	L1	Weight (g)
320 110 270 200 400 270 470 350 33 39 26 30 15 370 90 34,000		250	90	220	165	330	220	400	285	26	33	22	25	10,5	330	80	20.150
		320	110	270	200	400	270	470	350	33	39	26	30	15	370	90	34.000

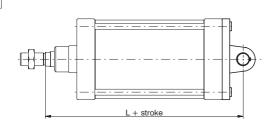
Rear clevis

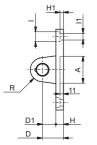
Coding: 1315.Ø.09F

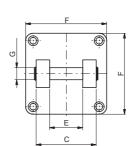
	.g
	BORE
Ø	250 = 250mm
	320 = 320mm

Steel









Bore	Α	C (h14)	D (±0,2)	D1	E (H14)	F	G (H9)	н	H1	I	l1	L	R	Weight (g)
250	Ø90	200	70	45	110	270	40	25	11	33	22	375	40	7.800
320	Ø110	220	80	50	120	350	45	30	15	39	26	420	45	13.000

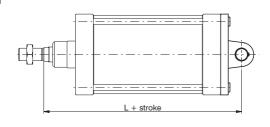
Rear male clevis

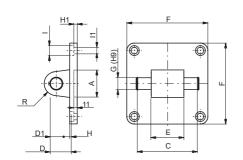
Coding: 1315 Ø 09/1F

Codir	ig: 1315.Ø.09/1F
	BORE
Ø	250 = 250mm
	320 = 320mm

Steel







Bore	Α	C (+0,3/-0)	D (±0,2)	D1	E (-0,5/-1,2)	F	G (H9)	Н	H1	I	l1	L	R	Weight (g)
250	Ø90	202	70	45	110	270	40	25	11	33	22	375	40	8300
320	Ø110	222	80	50	120	350	45	30	15	39	26	420	45	13060

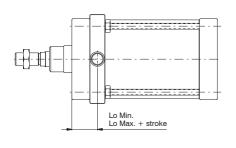
Intermediate trunnion

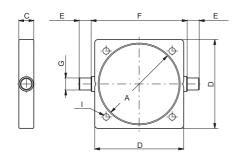
Coding: 1315.Ø.12F

	BORE
Ø	250 = 250mm
	320 = 320mm

Steel







Bore	Α	С	D	E (h14)	F (h14)	G (e9)	I	Lo Min.	Lo Max.	Weight (g)
250	Ø268	50	295	40	320	Ø40	Ø20,25	85	115 + stroke	10.500
320	Ø343	70	370	50	400	Ø50	Ø24,25	95	125 + stroke	25.300

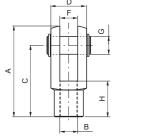
Fork with pin

Coding: 1302.Ø.13F

Ø	BORE						
Ø	250 = 250mm						
	320 = 320mm						

Steel







Bore	Α	В	С	D	E	F	G	Н	Weight (g)
250	188	M42x2 (H8)	144	70	70	35 (B12)	Ø35 (H9)	72	3.700
320	265	M48x2	192	96	96	50	Ø50	96	9.700

Rod lock nut

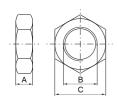
Coding: 1302.Ø.18F

	BORE
Ø	250 = 250mm
	320 = 320mm

Steel

PNEUMATIC ACTUATION





Bore	Α	В	С	Weight (g)
250	21	M42x2	65	260
320	24	M48x2	72	580

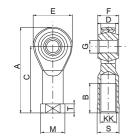
Ball joint

Coding: 1302.Ø.32F

	·-
	BORE
Ø	250 = 250mm
	320 = 320mm

Steel





Bore	Α	В	С	D (-0.1)	E	F	G (H 7)	KK	M	S	T	Weight (g)
250	187	60	142	33	91	49	40	M42x2	65	55	19	2.400
320	218	65	162	45	117	60	50	M48x2	75	65	23	5.000

Sensor bracket - codes 1500._,RS._,HS._

1306

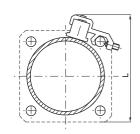
Coair	ig: 1300.
	TYPE
0	D = 250 mm
	E = 320 mm

Sensor for microbore cylinders

For technical characteristics and ordering codes see the "Magnetic sensors" sections



Bore	L
250	250
320	365



32



Series Steel line - AISI 316

The 1393-1394 stainless steel ISO 15552 cylinders series are designed for corrosion resistance application such as marine, pharmaceutical and food ambiences.

The pre lubrication grease used is NSF H1 certified for food application.

Specific care has been taken during the design stages and the result is a clean profile cylinder easy to clean and free from possible residue build-up areas.

All parts in contact with the external environment are in Stainless steel 316L and the seals are available in two different compounds for different temperature applications:

PUR -30°C ... +80°C FPM -5°C ... +150°C.

The range starts from 32 bore up to 100 bore, round barrel and tie rods design. Double acting version standard or with through rod, magnetic or not magnetic piston available.

The piston is aluminium and the sensor bracket, when required is in stainless steel 316.

The cylinder can be fixed via the threaded holes in the tie rod nuts or with the wide range of stainless steel accessories.

Construction characteristics

Piston rod bushings	Stainless steel AISI 316 with P.T.F.E. coat	
Barrel	Stainless steel AISI 316	
Lubricating grease	NSF-H1 certified grease for incidental contact with food	
Seals	PUR or FPM on request	
Half-pistons	Aluminium	
Piston rod	Stainless steel AISI 316	
End caps	Stainless steel AISI 316	
Cushion screws	Stainless steel AISI 316	

Operational characteristics

Fluid			filtered and preferably lubricated air or not (if lubricated the lubr must be continuous)							
Pressure				10 bar						
Working temperature			-30° C +80° C with PUR seals -5° C +150° C with FPM seals and non magnetic piston -5° C +80° C with FPM seals and magnetic piston							
Cushioning lengths										
Bore	Ø	32	40	50	63	80	100			

Please follow the suggestions below to ensure a long life for these cylinders:

mm

use clean and lubricated air.

Cushioning lenght

• correct alignment during assembly with regard to the applied load so as to avoid radial components or bending the rod.

20

• avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).

20

· evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

Please note: air must be dried for applications with lower temperature.

Standard strokes (for all diameters)

from 0 to 150, every 25 mm from 150 to 500, every 50 mm from 500 to 1000, every 100 mm On request are available strokes up to: 2800 mm

Stroke tolerance (ISO 15552)

22

Bore	Stroke	Tolerance		
32-40-50	up to 500 mm	+2 0		
32-40-50	over 500 up to 1000	+3,2 0		
00 00 400	up to 500 mm	+2,5 0		
63-80-100	over 500 up to 1000	+4		

22

32

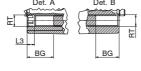


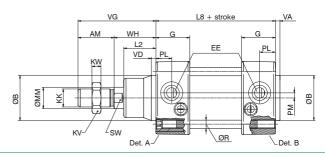
Basic version "01"

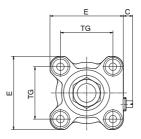
coding: 13♥.Ø.stroke.016

VERSION 93 = Magnetic 94 = Non magnetic BORE 32 = Ø32 40 = Ø40 Ø 50 = Ø50 63 = Ø63 80 = Ø80 100 = Ø100 SEALS ■ PUR V = FPM		
94 = Non magnetic BORE 32 = 032 40 = 040 50 = 050 63 = 063 80 = 080 100 = 0100 SEALS = PUR		VERSION
BORE 32 = 032 40 = 040 50 = 050 63 = 063 80 = 080 100 = 0100 SEALS = PUR	V	93 = Magnetic
32 = Ø32 40 = Ø40 50 = Ø50 63 = Ø63 80 = Ø80 100 = Ø100 SEALS = PUR		94 = Non magnetic
40 = Ø40 50 = Ø50 63 = Ø63 80 = Ø80 100 = Ø100 SEALS = PUR		BORE
Ø 50 = Ø50 63 = Ø63 80 = Ø80 100 = Ø100 SEALS = PUR		32 = Ø32
63 = Ø63 80 = Ø80 100 = Ø100 SEALS = PUR		40 = Ø40
80 = Ø80 100 = Ø100 SEALS = PUR	Ø	50 = Ø50
100 = Ø100 SEALS = PUR		63 = Ø63
SEALS = PUR		80 = Ø80
G = PUR		100 = Ø100
_		SEALS
V = FPM	e	= PUR
		V = FPM









Through rod cylinder version "02"

Coding: 13 .Ø. Stroke. 02 G

	g
	VERSION
V	93 = Magnetic
	94 = Non magnetic
	BORE
	32 = Ø32
	40 = Ø40
Ø	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
	SEALS
G	= PUR
	V = FPM



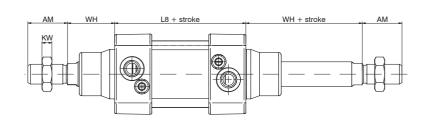
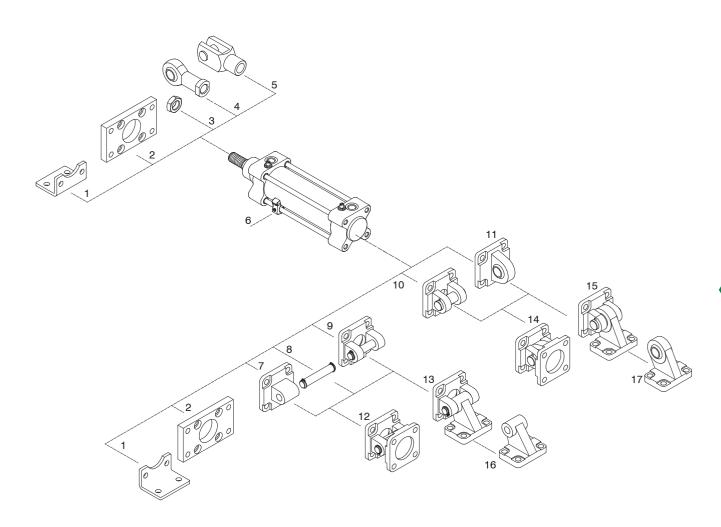


Table of dimensions

Bore		32	40	50	63	80	100
AM		22	24	32	32	40	40
ØB (d 11)		30	35	40	45	45	55
BG min.		16	16	16	16	18	17
C min.		4	4	4	4	3,5	3,5
C max.		7.5	7,5	8,5	8,5	9	9
E		47	52	65	76	95	113
EE		G1/8"	G1/4"	G1/4"	G3/8"	G3/8"	G1/2"
G		29	31	30	34	36	40,5
KK		M10X1,25	M12X1,25	M16X1,5	M16X1,5	M20x1,5	M20X1,5
KV		17	19	24	24	30	30
KW		16	7	8	8	9	9
L2		20	22	28,5	29	35	36
L3		4,5	4,5	5	5	6	6
L8		94	105	106	121	128	138
ØMM		12	16	20	20	25	25
PL		13	14	14	16	16	18
PM		3	3,5	4,5	7	8	8
ØR		Ø5,2	Ø5,2	Ø7,1	Ø7,1	Ø8,9	Ø8,9
RT		M6	M6	M8	M8	M10	M10
SW		10	13	17	17	22	22
TG		32,5	38	46,5	56,5	72	89
VA		4	4	4	4	4	4
VD		4	4	4	4	4	4
VG		48	54	69	69	86	91
WH		26	30	37	37	46	51
Weight	Stroke 0	1000	1430	2150	3000	4400	6400
g	every 10 mm	35	45	63	80	120	135





Position	Description	Coding	Materials
1	Short mounting foot brackets (MS1)	1393.Ø.05/1F	Stainless steel AISI 316
2	Front and rear flanges (MF1 - MF2)	1393.Ø.03F	Stainless steel AISI 316
3	Nuts	1393.Ø.18F	Stainless steel AISI 316
4	Ball joint	1393.Ø.32F	Stainless steel
5	Fork	1393.Ø.13F	Stainless steel
6	Sensor brackets codes - 1580,MRS,MHS	1393	Stainless steel AISI 316
7	Rear male clevis (MP4)	1393.Ø.09/1F	Stainless steel AISI 316
8	Pin with circlips for rear clevis (MP4 and MP2) (pos. 9)	1393.Ø.37F	Stainless steel AISI 316
9	Rear female clevis (MP2)	1393.Ø.09F	Stainless steel AISI 316
10	Rear narrow clevis	1393.Ø.30F	Stainless steel AISI 316
11	Rear male clevis (with jointed head according to DIN 648K standard)	1393.Ø.15F	Stainless steel AISI 316
12	Standard complete trunnion (pos. 7 + pos. 9)	1393.Ø.22F	Stainless steel AISI 316
13	Square angle trunnion (AB7) (pos. 9 + pos. 16)	1393.Ø.35F	Stainless steel AISI 316
14	Complete square angle trunnion (with joined head according to DIN 648K standards) (pos. 10 + pos. 11)	1393.Ø.36F	Stainless steel AISI 316
15	Complete square angle trunnion (with joined head according to DIN 648K standards) (pos. 10 + pos. 17)	1393.Ø.27F	Stainless steel AISI 316
16	Simple square counter clevis (AB7) (pos. 13)	1393.Ø.11/2F	Stainless steel AISI 316
17	Simple square counter clevis (pos. 15)	1393.Ø.28F	Stainless steel AISI 316



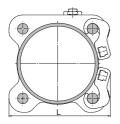
Sensor brackets codes - 1580._,MRS._,MHS

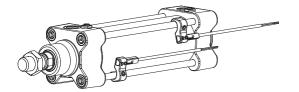
Coding: 1393.

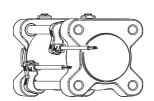
	TYPE
_	A = Ø32-Ø40
•	B = Ø50-Ø63
	C = Ø80-Ø100

Fixing bracket made of stainless steel AISI 316 for sensor mounting on cylinders.









To mount the brackets on the tie rods use the dedicated stainless steel grub screw

Bore	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
L	51	57	67	79	98	115

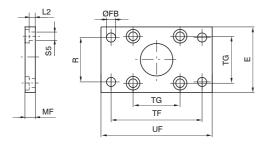
Front and rear flanges (MF1 - MF2)

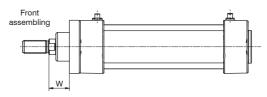
Coding: 1393.Ø.03F

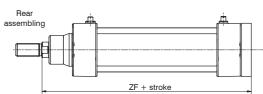
Ooun	ig. 1000.0.001
	BORE
	32 = Ø32
	40 = Ø40
Ø	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100

Plate in stainless steel AISI 316 which allows anchorage of the cylinder at a right angle to the plane.









Bore	E	ØFB (H 13)	MF (JS 14)	R (JS 14)	TF (JS 14)	TG	UF	ZF	w	L2	ØS5	Weight (g)
32	45	7	10	32	64	32,5	80	130	16	5	6,6	190
40	52	9	10	36	72	38	90	145	20	5	6,6	250
50	65	9	12	45	90	46,5	110	155	25	6,5	9	480
63	75	9	12	50	100	56,5	120	170	25	6,5	9	620
80	95	12	15	63	126	72	150	189	31	7	11	1430
100	115	14	15	75	150	89	170	204	36	7	11	1990

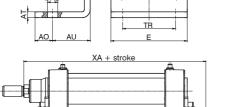
Short mounting foot brackets (MS1)

1393 Ø 05/1F

Codir	ig: 1393.Ø.05/1F
	BORE
	32 = Ø32
	40 = Ø40
Ø	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100

Elements used to anchor the cylinder parallel to the mounting plane.
Made of stainless steel AISI 316.





SA + stroke

Bore	32	40	50	63	80	100
ØAB (H 14)	7	9	9	9	12	14
AH	32	36	45	50	63	71
AU (± 0.2)	24	28	32	32	41	41
AO	11	8	15	13	14	16
E	45	52	65	75	95	115
AT	4	4	5	5	6	6
SA	142	161	170	185	210	220
TG	32,5	38	46,5	56,5	72	89
TR (JS 14)	32	36	45	50	63	75
XA	144	163	175	190	215	230
Weight (g)	60	70	160	180	370	430

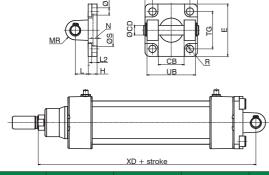


Rear clevis (MP2)

Coding: 1393.Ø.09F

BORE
32 = Ø32
40 = Ø40
50 = Ø50
63 = Ø63
80 = Ø80
100 = Ø100





This type of mounting allows anchorage of the cylinder either parallel or right angle to plane; the cylinder rod can oscillate and self-align as necessary when under load. Made of stainless steel AISI 316.

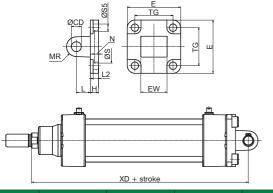
Bore	32	40	50	63	80	100
CB (H 14)	26	28	32	40	50	60
ØCD	10	12	12	16	16	20
E	45	55	65	75	95	115
ØS (H11)	30	35	40	45	45	55
N	5	5	5	5	/	/
R (H13)	5,5	5,5	7,5	7,5	9	9
H	10	10	10	12	14	16
L	12	15	17	20	22	25
MR	10	12	12	16	16	20
TG	32,5	38	46,5	56,5	72	89
UB (h14)	45	52	60	70	90	110
XD	142	160	170	190	210	230
L2 (±0,5)	5,5	5,5	6,5	6,5	10	10
S5 (H13)	6,6	6,6	9	9	11	11
Weight (g)	140	230	370	540	1000	1700

Rear male clevis (MP4)

Coding: 1393.Ø.09/1F

g. 1000.0.00/11
BORE
32 = Ø32
40 = Ø40
50 = Ø50
63 = Ø63
80 = Ø80
100 = Ø100





Similar to 09 clevis except for the connection, which is male rather than female.

Used to mount the cylinder either parallel or at a right angle to the plane; the cylinder rod can oscillate and self-align as necessary when under

load. Made of stainless steel AISI 316.

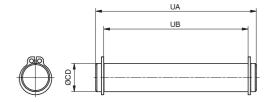
Bore	32	40	50	63	80	100
CD (H9)	10	12	12	16	16	20
E	45	55	65	75	95	115
EW (-0,2/-0,6)	26	28	32	40	50	60
Н	10	10	10	12	14	16
L	12	15	17	20	22	25
ØS (H11)	30	35	40	45	45	55
N	5	5	5	5	/	/
R (H13)	5,5	5,5	7,5	7,5	9	9
MR	10	12	12	16	16	20
TG	32,5	38	46,5	56,5	72	89
XD	142	160	170	190	210	230
L2 (±0,5)	5,5	5,5	6,5	6,5	10	10
S5 (H13)	6,6	6,6	9	9	11	11
Weight (g)	180	280	370	680	1200	2100

Pin with circlips for rear clevis (MP4 and MP2)

Coding: 1393.Ø.37F

Coaii	ig: 1090.071
	BORE
	32 = Ø32
	40 = Ø40
Ø	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100





Stainless steel AISI 316 pin, complete with stainless steel circlips, which can be used with clevis code 1393.Ø.09/1F and 1393.Ø.09F

Bore	32	40	50	63	80	100
CD (e8)	10	12	12	16	16	20
UA	53	60	68	78	98	118
UB (-0,5/-0)	46	53	61	71	91	111
Weight (g)	35	50	60	120	150	290



Square angle trunnion (AB7)

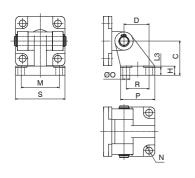
Coding:	1393.Ø.35F

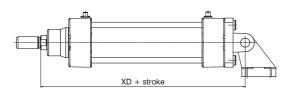
	•
	BORE
	32 = Ø32
	40 = Ø40
Ø	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100

Counter clevis

can be ordered separately with code: 1393.Ø.11/2F







Made of stainless steel AISI 316

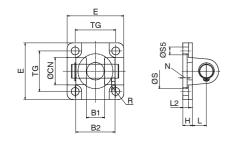
Bore	32	40	50	63	80	100
D (JS 15)	21	24	33	37	47	55
C (JS 15)	32	36	45	50	63	71
Н	8	10	12	12	14	15
N (H 13)	5,5	5,5	7,5	7,5	9	9
L3	6,5	8,5	10,5	10,5	11,5	12,5
R (JS 14)	18	22	30	35	40	50
Р	31	35	45	50	60	70
O (H 13)	6,6	6,6	9	9	11	11
S	51	54	65	67	86	96
M (JS 14)	38	41	50	52	66	76
XD	142	160	170	190	210	230
Weight (g)	330	520	810	1200	2200	4710

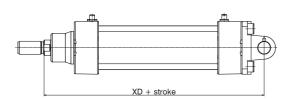
Rear narrow clevis

Coding: 1393.Ø.30F

	9
	BORE
Ø	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100







Bore	32	40	50	63	80	100
B1 (H 14)	14	16	21	21	25	25
B2 (h 14)	34	40	45	51	65	75
ØCN	10	12	16	16	20	20
E	45	55	65	75	95	115
Н	10	10	10	12	14	16
L	12	15	17	20	22	25
L2 (±0,5)	5,5	5,5	6,5	6,5	10	10
S5 (H 13)	6,6	6,6	9	9	11	11
TG	32,5	38	46,5	56,5	72	89
XD	142	160	170	190	210	230
ØS (H 12)	30	35	40	45	45	55
R (H 13)	5,5	5,5	7,5	7,5	9	9
N	5	5	5	5	5	5
Weight (g)	170	270	420	650	1380	2050



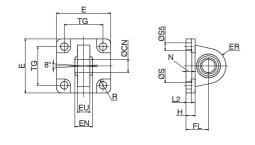
Rear male clevis (with jointed head according to DIN 648K standard)

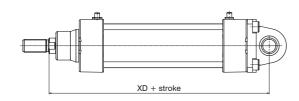
Coding: 1393.Ø.15F

Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100

Made of stainless steel AISI 316







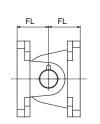
Bore	32	40	50	63	80	100
ØCN (H7)	10	12	16	16	20	20
E	45	55	65	75	95	115
EN (-0.1)	14	16	21	21	25	25
ER	15	18	20	23	27	30
EU	10,5	12	15	15	18	18
FL (JS 15)	22	25	27	32	36	41
Н	10	10	10	12	14	16
L2	5,5	5,5	6,5	6,5	10	10
S5 (H 13)	6,6	6,6	9	9	11	11
TG	32,5	38	46,5	56,5	72	89
XD	142	160	170	190	210	230
ØS (H 11)	30	35	40	45	45	55
R (H 13)	5,5	5,5	7,5	7,5	9	9
N	5	5	5	5	5	5
Weight (g)	150	260	370	600	1130	1800

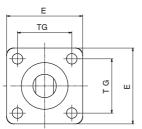
Complete standard trunnion (with joined head according to DIN 648K standards)

Coding: 1393.Ø.36F

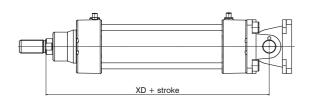
ooun	ig. 1000.01001
	BORE
	32 = Ø32
	40 = Ø40
Ø	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100

Made of stainless steel AISI 316









Bore	32	40	50	63	80	100
Е	45	55	65	75	95	115
FL (JS 15)	22	25	27	32	36	41
TG	32,5	38	46,5	56,5	72	89
XD	142	160	170	190	210	230
Weight (g)	320	530	790	1250	2510	3850



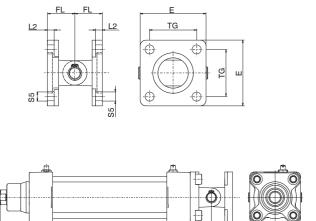
Standard complete trunnion

Coding: 1393.Ø.22F

	BORE
	32 = Ø32
	40 = Ø40
Ø	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100

Made of stainless steel AISI 316





Bore	32	40	50	63	80	100
E	45	55	65	75	95	115
FL	22	25	27	32	36	41
L2 (±0,5)	5,5	5,5	6,5	6,5	10	10
S5	6,6	6,6	9	9	11	11
TG	32,5	38	46,5	56,5	72	89
XD	142	160	170	190	210	230
Weight (g)	360	580	780	1370	2370	4110

XD + stroke

Complete square angle trunnion (with joined head according to DIN 648K standards)

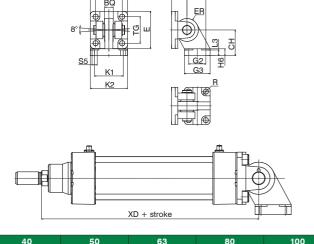
Coding: 1393.Ø.27F

	•
	BORE
	32 = Ø32
	40 = Ø40
Ø	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100

Counter clevis







CH (JS 15)	32	36	45	50	63	71
E	45	55	65	75	95	115
FL	22	25	27	32	36	41
G1 (JS 15)	21	24	33	37	47	55
G2 (JS 14)	18	22	30	35	40	50
G3	31	35	45	50	60	70
H6	10	10	12	12	14	15
K1 (JS 14)	38	41	50	52	66	76
K2	51	54	65	67	86	96
L3 (+0,5/-0)	8,5	8,5	10,5	10,5	11,5	12,5
S5 (H13)	6,6	6,6	9	9	11	11
TG	32,5	38	46,5	56,5	72	89
XD	142	160	170	190	210	230
BQ	10,5	12	15	15	18	18
ER	15	18	20	23	27	30
R (H 13)	5,5	5,5	7,5	7,5	9	9
Weight (g)	350	540	880	1200	2350	3380

Made of stainless steel AISI 316

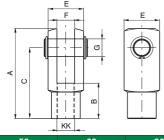


Fork with pin

Coding: 1393.Ø.13F

	.g
Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100





Bore	32	40	50	63	80	100	
A	52	62	83	83	105	105	
В	20	24	32	32	40	40	
С	40	48	64	64	80	80	
E	20	24	32	32	40	40	
F(B12)	10	12	16	16	20	20	
G	10	12	16	16	20	20	
KK	M10X1.25	M12X1.25	M16X1.5	M16X1.5	M20X1.5	M20X1.5	
Weight (g)	100	140	340	340	680	680	

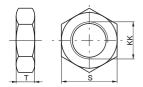
Element that when screwed to the rod consents a regular functioning even when there are significant lateral forces as the connection point. Made of stainless steel AISI 303.

Nuts

Coding: 1393.Ø.18F

	BORE
	32 = Ø32
	40 = Ø40
Ø	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
	100 = Ø100





Used to block the position of the fork. Made of stainless steel AISI 316.

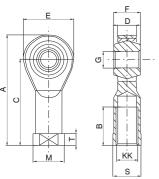
Bore	32	40	50	63	80	100	
S	17	19	24	24	30	30	
Т	6	7	8	8	9	9	
KK	M10X1.25	M12X1.25	M16X1.5	M16X1.5	M20X1.5	M20X1.5	
Weight (g)	15	20	20	20	40	40	

Ball joint

Coding: 1393.Ø.32F

Jouin	ig. 1000.0.021
	BORE
	32 = Ø32
	40 = Ø40
Ø	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100





Mounted on the rod thread, assures a regular operation even in the presence of significant forces to the linked element. Made of stainless steel AISI 304 and 420.

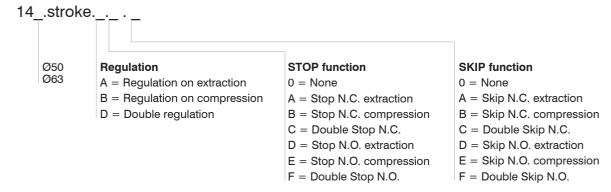
Bore	32	40	50	63	80	100	
A	57	66	85	85	102	102	
В	20	22	28	28	33	33	
С	43	50	64 64		77	77	
D	10,5	12	15	15	18	18	
E	28	32	42	42	50	50	
F	14	16	21	21	25	25	
G (H7)	10	12	16	16	20	20	
KK	M10x1,25	M12x1,25	M16x1,5	M16x1,5	M20x1,5	M20x1,5	
M	19	22	27	27	34	34	
S	17	19	22	22	30	30	
Т	6,5	6,5	8	8	10	10	
Weight (g)	75	110	220	220	410	410	

Series 1450 - 1463 - Ø50 - Ø63

Pneumatic cylinder ISO 15552 handling and controlling movement by means of internal hydraulic circuit. All ISO fixing devices can be used except for:

- Cylinder Ø63 front clevis code 1463.63.08F
- Cylinder Ø63 front flange code 1463.63.03F
- Cylinder Ø63 foot code 1463.63.05/1F

Coding



Construction characteristics

Barrel	aluminium alloy anodised
Hydraulic piston seal (hydraulic side)	PUR
Pneumatic piston seal (pneumatic side)	oil resistant NBR rubber
Rod and cushion seal	PUR
Magnetic piston	aluminium
Oil tank	aluminium
Piston rod	steel tube externally chrome plated
End caps	aluminium black anodised
Cushion adjustment screws	nickel plated steel

Operational characteristics

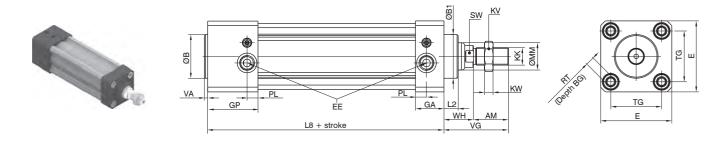
Pneumatic media Pneumatic media	filtered and lubricated air
Hydraulic media	filtered 1 μ hydraulic oil
SKIP & STOP valve minimum operating pressure	3 bar
Max. pressure	8 bar
Environment temperature	-5 °C +70 °C
Minimum regulated speed	40 mm/min. *
Maximum regulated speed	6000 mm/min. *
Speed with SKIP	150 mm/sec. *
Free speed (without regulation)	300 mm/sec. *
Cushioning lenght	20 mm
Standard stroke	from 50 to 450 steps 50 mm**
Possibility of rear regulation (on request)	

- * Attenction: speed recorded with cylinder on horizontal position fed at 8 bar without load on piston rod.
- ** Strokes exceeding 450 mm (up to max. 750 mm) are only available after technical evaluation.

Bore	Force (N)	Pressure (bar)									
		1	2	3	4	5	6	7	8	9	10
50	Out	181,4	362,9	544,3	725,7	907,2	1088,6	1270	1451,5	1632,9	1814,3
	In	144,4	288,8	433,2	577,6	722	866,3	1010,7	1155,1	1299,5	1443,9
63	Out	294,6	589,1	883,7	1178,2	1472,8	1767,3	2061,9	2356,5	2651	2945,6
	In	211,3	422,6	633,9	845,2	1056,6	1267,9	1479,2	1690,5	1901,8	2113,1

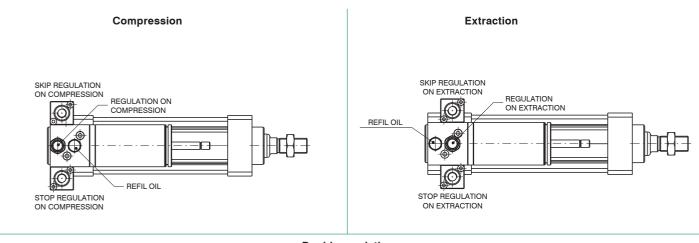


Base cylinder dimensions

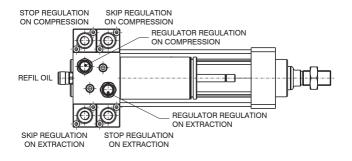


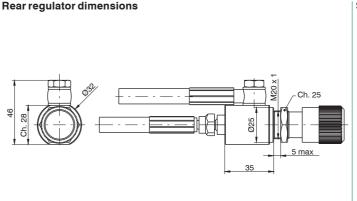
Bore	AM	B (d 11)	BG	Е	EE	GA	GP	KK	KV	KW	L2	L8	MM	PL	RT	SW	TG	VA	VG	WH
50	32	40	16	65	G1/4"	26	46	M16x1.5	24		13	116	25	10	M8	17	46.5	3	59	27
63	32	50	16	75	G3/8"	26	46	0,1 x011VI	24	0	20	121	35	12	IVIO	17	56.5	4	69	37

Function valves and regulators position for the different versions

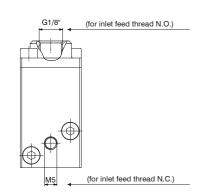


Double regulation





${\bf SKIP} \ and \ {\bf STOP} \ valves \ in let \ feed \ position$





Regulation on the outward stroke

Coding: 14Ø.stroke.A.0.0

bouning. I honour orton trono							
	BORE						
Ø	50 = Ø50						
	63 = Ø63						



SS SS LA MAX

Strokes	LS	LA max
0 150	130	41
151 350	185	66
054 450	055	400

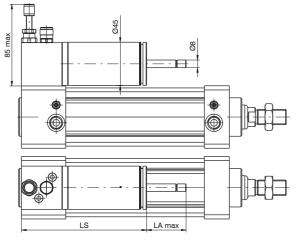
Weight Ø50: 1970 g + 200 g every 50 mm stroke Ø63: 2591 g + 280 g every 50 mm stroke

Regulation on the inward stroke

Coding: 14Ø.stroke.B.0.0

	g
	BORE
Ø	50 = Ø50
	63 = Ø63





Strokes	LS	LA max
0 150	130	41
151 350	185	66
351 450	255	106

Weight Ø50: 1970 g + 200 g every 50 mm stroke Ø63: 2591 g + 280 g every 50 mm stroke

Regulation in both directions

Coding: 14Ø.stroke.D.0.0

Coding: 14Ø.Stroke.D.U.U						
	BORE					
Ø	50 = Ø50					
	63 - Ø63					



88 max		088	
			}
013,5	00	LS LA max	}

Strokes	LS	LA max
0150	132	41
151 350	187	66
351 450	257	106

85 max



Regulation on the outward stroke with SKIP N.O.

Codina: 14Ø.stroke.A.0.D

Cou	ilig. 170.3ti Oke.A.U.D
	BORE
Ø	50 = Ø50
	63 = Ø63

LS LA max LA max 151 ... 350 185 66 351 ... 450 255 106

045

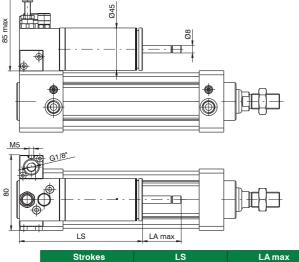
Ø50: 2059 g + 200 g every 50 mm stroke Ø63: 2928 g + 280 g every 50 mm stroke

Regulation on the inward stroke with SKIP N.O.

Coding: 14Ø.stroke.B.0.E

	BORE
Ø	50 = Ø50
	63 = Ø63





Strokes	LS	LA max
0 150	130	41
151 350	185	66
351 450	255	106

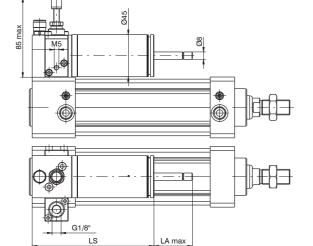
 \emptyset 50: 2059 g + 200 g every 50 mm stroke \emptyset 63: 2928 g + 280 g every 50 mm stroke

Regulation on the outward stroke with STOP N.O.

Coding: 14Ø.stroke.A.D.0						
	BORE					
Ø	50 = Ø50					
	63 = Ø63					







Strokes	LS	LA max
0 150	130	41
151 350	185	66
351 450	255	106

Regulation on the inward stroke with STOP N.O.

Coding: 14Ø.stroke.B.E.0

	BORE
Ø	50 = Ø50
	63 = Ø63



045 85 max G1/8" LA max

Strokes	LS	LA max
0 150	130	41
151 350	185	66
351 450	255	106

Weight \emptyset 50: 2059 g + 200 g every 50 mm stroke \emptyset 63: 2928 g + 280 g every 50 mm stroke

Regulation on the outward stroke with SKIP N.O. - STOP N.O.

Coding: 14Ø.stroke.A.D.D

	g	
	BORE	
Ø	50 = Ø50	
	63 = Ø63	



045 G1/8" LA max

Strokes	LS	LA max
0150	130	41
151 350	185	66
351 450	255	106

$Weight $$ \varnothing 50: 2140 \ g + 200 \ g \ every \ 50 \ mm \ stroke $$ \varnothing 63: 2761 \ g + 280 \ g \ every \ 50 \ mm \ stroke $$$

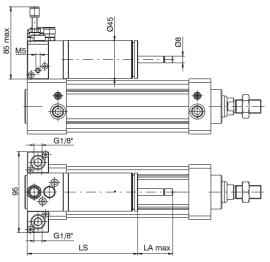
Regulation on the inward stroke with SKIP N.O. - STOP N.O.

140 stroke B E E

Coding: 140.5troke.b.c.c		
	BORE	
Ø	50 = Ø50	
	63 - 062	



Veight
050: 2140 g + 200 g every 50 mm stroke
Ø63: 2761 g + 280 g every 50 mm stroke



Strokes	LS	LA max
0150	130	41
151 350	185	66
351 450	255	106

88 max

<u>M5</u>



Regulation and SKIP in both directions (N.O. SKIP valves in both directions)

Coding: 14Ø.stroke.D.0.F

Cou	ilig. 170.3ti Oke.D.o.i	
	BORE	
Ø	50 = Ø50	
	63 = Ø63	



045 max 88 G1/8" Ø13,5 LA max

Ø45

Strokes	LS	LA max
0 150	132	41
151 350	187	66
051 450	057	106

80

Weight

Ø50: 2311 g + 200 g every 50 mm stroke Ø63: 2932 g + 280 g every 50 mm stroke

Regulation and STOP in both directions (N.O. STOP valves in both directions)

Coding: 14Ø.stroke.D.F.0

	g
	BORE
Ø	50 = Ø50
	63 = Ø63





G1/8" Ø13,5 50 LA max

Strokes	LS	LA max
0 150	132	41
151 350	187	66
351 450	257	106

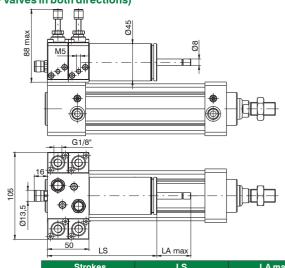
\emptyset 50: 2311 g + 200 g every 50 mm stroke \emptyset 63: 2932 g + 280 g every 50 mm stroke

Regulation with SKIP and STOP in both directions (N.O. SKIP and STOP valves in both directions)

Cod	ing: 14Ø.Stroke.D.F.F
	BORE
Ø	50 = Ø50
	63 = Ø63







Strokes	LS	LA max
0 150	132	41
151 350	187	66
351 450	257	106



Series 1500 Ecompact

These cylinders are built according to ISO 21287 standards. New barrel profile has two sensor slots on the three sides (\emptyset 20 and \emptyset 25 one slot) suitable for sensors 1580._, MRS._, MHS._ series housing, without need for adaptors.

Versions with end stroke adjustable pneumatic cushioning are also available, allowing adjustments to deceleration and keeping the required overall dimensions according to ISO 21287.

For fixing operation is possible to use the four threaded holes on the end covers, or screws in body holes, alternatively all the fixing devices of UNITOP RU-P/6-P/7 (Ø20 and Ø25) and ISO 15552 (from Ø32 to Ø100) series.

Construction characteristics

Body	anodized aluminium
Piston rod bushings	sintered bronze
Seals	standard: NBR Oil resistant rubber, PUR Piston rod seals (PUR or FPM on request)
Springs	stainless steel
Pistons	from Ø20 to Ø40 acetal resin (aluminium on request), Ø50 and Ø100 aluminium (with FPM seals, aluminium piston for all standard diameters)
Piston rod	from Ø 20 to Ø 25 stainless steel from Ø32 to Ø100 C43 chromed (on request stainless steel)
End caps	aluminium alloy casting painted
Fixing screws	zinc plated steel

Operational characteristics

Fluid	filtered and preferably lubricated air or not (if lubricated the lubrication must be continuous)
Max. pressure	10 bar
Working temperature	-5°C +70°C with standard seals (magnetic or non magnetic piston) -30°C +80°C with PUR seals (magnetic or non magnetic piston)
	-5°C +80°C with FPM seals (magnetic piston) -5°C - +150°C with FPM seals (non magnetic piston)

Please follow the suggestions below to ensure a long life for these cylinders:

- use clean and lubricated air.
- · correct alignment during assembly with regard to the applied load so as to avoid radial components or bending the rod.
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).
- evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

Please note: air must be dried for applications with lower temperature.

Use hydraulic oils H class (ISO VG32) for correct continued lubrication.

Stroke tolerance, minimum and maximum spring loads and cushioning length

Bore (mm)	Stroke tolerance (mm)	Minimum springs load (N)	Maximum springs load (N)	Cushioning length (mm)
Ø20	+ 1,5/0 mm	10,8	19,6	/
Ø25	+ 1,5/011111	16,7	22,6	5
Ø32		19,6	25,5	6,5
Ø40	+ 2 / 0 mm	25,5	42,2	8
Ø50		44,1	96,3	7,5
Ø63		44,1	96,3	7,5
Ø80	+ 2,5 / 0 mm	63,8	100,1	8
Ø100		107,9	193,3	12



Standard strokes

DOUBLE ACTING BASIC version and THROUGH ROD CYLINDER version

Cylinders with longer strokes than those in the chart are also available. The end user is responsible for the load applied on the product and for its correct use.

For special applications, please get in touch with our sales rep.

															Str	oke														
	5	10	15	20	25	30	35	40	45	50	55	6	30	65	70	75	80	100	125	150	160	200	250	300	320	350	400	450	500	
Bore		•	•			•	•	•				WI	ITHC	OUT	CUSH	HON	NG D	EVIC	É	•	•		•	•		•	•	•	•	Maximum suggested strokes
Ø20	•	•	•	•	•	•	•	•	•	•	•	•		•		•	•	•	•	•	•	•								450
Ø25	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•	•	•	•	•								450
Ø32	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•						
Ø40	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•						
Ø50	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•			650
Ø63	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•			650
Ø80	•	•	•	•	•	•	•	•	•	•		•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Ø100	•	•	•	•	•	•	•	•	•	•		•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Bore												,	WITI	нси	SHIC	ONING	3 DEV	/ICE												Maximum suggested strokes
Ø20																														
Ø25					•	•	•	•	•	•		•		•	•	•	•	•	•	•	•	•								450
Ø32					•	•	•	•	•	•		•			•	•	•	•	•	•	•	•	•	•						
Ø40					•	•	•	•	•	•	•	•			•	•	•	•	•	•	•	•	•	•						
Ø50					•	•	•	•	•	•		•		•	•	•	•	•	•	•	•	•	•	•	•	•	•			050
Ø63					•	•	•	•	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•			650
Ø80					•	•	•	•	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Ø100					•	•	•	•	•	•			D	•		•	•	•	•	•	•	•	•	•		•	•		•	

DOUBLE ACTING THROUGH ROD CYLINDER BORED version

 $Cylinders\ with \ longer\ strokes\ than\ those\ in\ the\ chart\ are\ also\ available.$

The end user is responsible for the load applied on the product and for its correct use.

For special applications, please get in touch with our sales rep.

														Str	oke														
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	25	30	35	40	45	50	55	60	65	70	75	80	
Bore						WITH	OUT	CUSH	IIONI	NG DI	EVICE									WI	THCL	JSHIC	ONING	G DEV	ICE				Maximum suggested strokes
Ø20	•	•	•	•	•	•	•	•	•	•																			440
Ø25	•	•	•	•	•	•	•	•	•	•							•	•	•	•	•	•							110
Ø32	•	•	•	•	•	•	•	•	•	•							•	•	•	•	•	•							405
Ø40	•	•	•	•	•	•	•	•	•	•							•	•	•	•	•	•							125
Ø50	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•		450
Ø63	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•		150
Ø80	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Ø100	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	200



DOUBLE ACTING version WITH NON-ROTATING DEVICE

 $Cylinders\ with longer\ strokes\ than\ those\ in\ the\ chart\ are\ also\ available,\ exceptionally\ for\ applications\ without\ twisting\ moments\ and/or\ radial\ loads\ on\ the\ anti-rotation\ device.$

														Str	oke													
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	25	30	35	40	45	50	55	60	65	70	75	80
Bore						W	THOU	CUSH	IIONIN	G DEVI	CE										WITHC	USHIC	NING	DEVICE	Ξ			
Ø20	•	•	•	•	•	•	•	•																				
Ø25	•	•	•	•	•	•	•	•									•	•	•	•								
Ø32	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Ø40	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Ø50	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Ø63	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Ø80	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Ø100	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

SINGLE ACTING version

Please get in touch with our sales rep. for dimensions over 25 mm stroke.

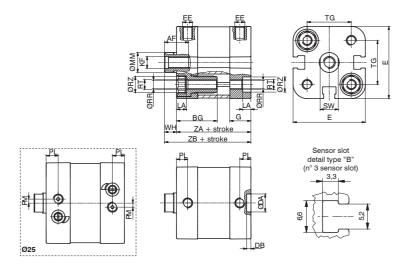
			E	Bore				
Stroke	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
5	•	•	•	•	•	•	•	•
10	•	•	•	•	•	•	•	•
15	•	•	•	•	•	•	•	•
20	•	•	•	•	•	•	•	•
25	•	•	•	•	•	•	•	•
Maximum suggested strokes			•	7	75	•		



BASIC version double and single acting

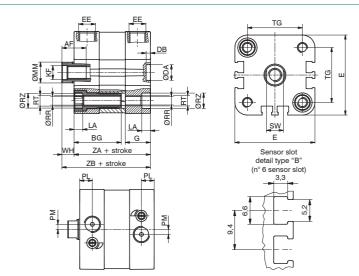


Ø20 and Ø25



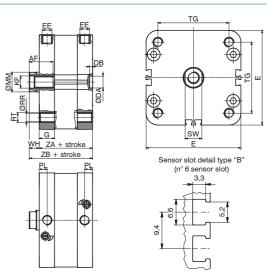


from Ø32 to Ø63



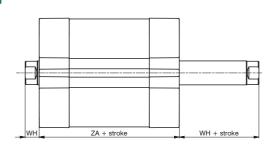


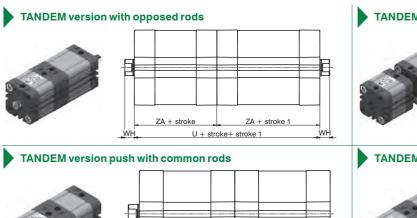
Ø80 and Ø100



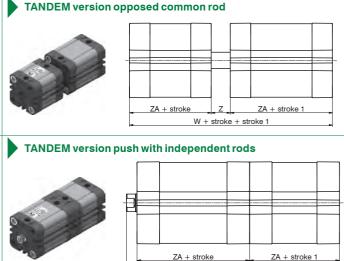
THROUGH ROD CYLINDER version, double and single acting







U + 2 stroke



Ordering code

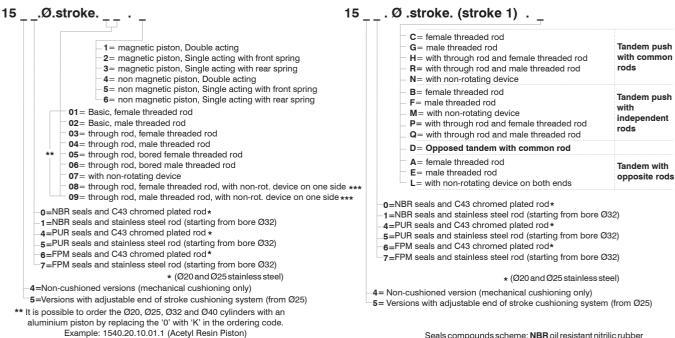
Basic and Through rod cylinder version

1540.20.10.K1.1 (Aluminium Piston version)

*** for single acting version, the spring is on the anti-rotation side

TANDEM version (magnetic pistons)

U + stroke + stroke 1

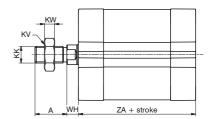


Seals compounds scheme: NBR oil resistant nitrilic rubber PUR: polyurethane seals FPM: fluoropolymer rubber seals

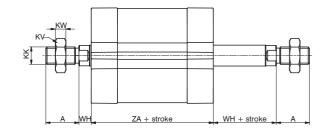
В	ore	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
AF (min)		12	12	14	14	18	18	24	24
BG		20	20	16	16	16	16	/	/
DA (H9)		9	9	9	9	12	12	12	12
DB (+0,1/0)		2,1	2,1	2,5	2,5	2,6	2,6	3	3
E (max)		36	40,5	47,5	55	66	78	96	116
EE		M5	M5	G1/8	G1/8	G1/8	G1/8	G1/8	G1/8
G		10,5	12	14,5	15	15	15	15,5	18,5
KF		M6	M6	M8	M8	M10	M10	M12	M12
LA (0/-0,1)		4.1	4,1	5	5	5	5	/	/
MM (f 7)		10	10	12	12	16	16	20	25
PL (+0,1/0)		5,5	6	7,5	8	8	8	8	8
PM		/	2	3	/	/	/	/	/
RR (min)		4,1	4,1	5,1	5,1	6,6	6,6	8,4	8,4
RT		M5	M5	M6	M6	M8	M8	M10	M10
RZ (min)		7,5	7,5	8,5	8,5	10,5	10,5	/	/
SW (0/-0,1)		9	9	10	10	13	13	17	22
TG (±0,2)		22	26	32,5	38	46,5	56,5	72	89
U		74	78	88	90	90	98	108	134
W		83	89	100	103	105	113	124	154
WH (±1)		6	6	7	7	8	8	10	10
Z		9	11	12	13	15	15	16	20
ZA (±0,5)		37	39	44	45	45	49	54	67
ZB (+1/0)		43	45	51	52	53	57	64	77
A/=:-l=+ /=\	stroke	105	110	200	270	420	550	760	1400
Weight (g)	every 5mm	10	10,5	13	17	23,5	27	37	51



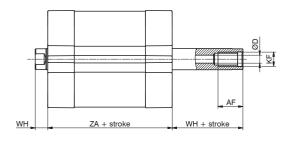
Basic version male piston rod



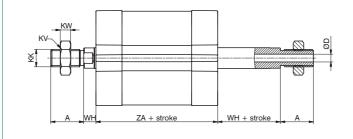
Through rod cylinder version male rod



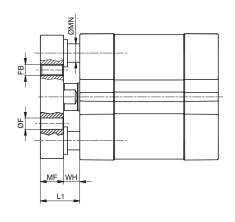
Through rod cylinder version bored female piston rod

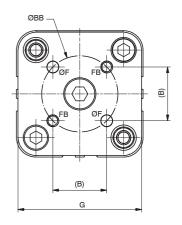


Through rod cylinder version bored male piston rod



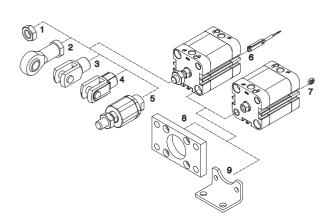
Non-rotating version



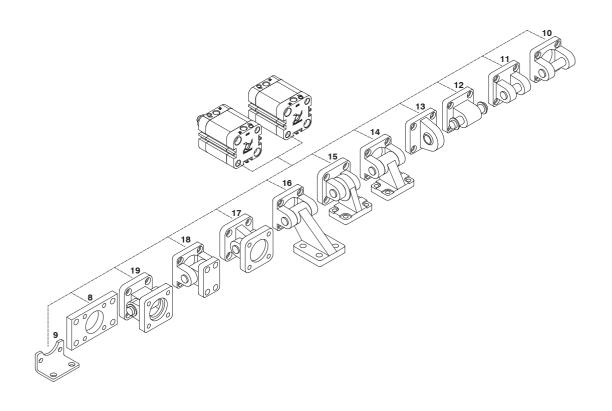


Bore	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
A (0/-0,5)	16	16	19	19	22	22	28	28
AF (min)	12	12	14	14	18	18	24	24
В	12	15,6	19,8	23,3	29,7	35,4	46	56,6
BB (±0,1)	17	22	28	33	42	50	65	80
D	3	3,8	4,5	4,5	6	6	8	10
F (+0,1/0)	4	5	5	5	6	6	8	10
FB	M4	M5	M5	M5	M6	M6	M8	M10
G	35	39,5	45	52	65	75	95	115
KF	M6	M6	M8	M8	M10	M10	M12	M12
KK	M8x1,25	M8x1,25	M10x1,25	M10x1,25	M12x1,25	M12x1,25	M16x1,5	M16x1,5
KV JE	13	13	17	17	19	19	24	24
KW	5	5	6	6	7	7	8	8
L1	14	14	17	17	20	20	24	24
MF (+0,1/0)	8	8	10	10	12	12	14	14
MN (f7)	6	6	8	8	10	10	12	12
WH (±1)	6	6	7	7	8	8	10	10
ZA (±0,5)	37	39	44	45	45	49	54	67





Position	Description	Cod	ding
1	Nuts	1200.20.06 1320.32.18F 1320.40.18F 1320.50.18F	(Ø20 and Ø25) (Ø32 and Ø40) (Ø50 and Ø63) (Ø80 and Ø100)
2	Ball joint	1200.20.32F 1320.32.32F 1320.40.32F 1320.50.32F	(Ø20 and Ø25) (Ø32 and Ø40) (Ø50 and Ø63) (Ø80 and Ø100)
3	Fork with pin	1200.20.04 1320.32.13F 1320.40.13F 1320.50.13F	(Ø20 and Ø25) (Ø32 and Ø40) (Ø50 and Ø63) (Ø80 and Ø100)
4	Fork with clips	1200.20.04/1 1320.32.13/1F 1320.40.13/1F 1320.50.13/1F	(Ø20 and Ø25) (Ø32 and Ø40) (Ø50 and Ø63) (Ø80 and Ø100)
5	Self-aligning joint	1200.20.33F 1320.32.33F 1320.40.33F 1320.50.33F	(Ø20 and Ø25) (Ø32 and Ø40) (Ø50 and Ø63) (Ø80 and Ø100)
6	Sensors	(see sense	or section)
7	Valves direct mounting bolt	1500.20F	(Ø20, Ø100)



Position	Description	Coding			
Position	Description	Aluminium	Steel		
8	Front and rear flanges (MF1 - MF2)	/	1540.Ø.03F (Ø20 and Ø25) 1380.Ø.03F (Ø32 Ø100)		
9	Short mounting foot brackets (in sheet metal MS1)	/	1540.Ø.05/1F (Ø32 Ø100)		
10	Rear clevis (MP2)	1380.Ø.09F (Ø32 Ø100)	1320.Ø.20F (Ø32 Ø100)		
11	Rear narrow clevis	1380.Ø.30F (Ø32 Ø100)	1320.Ø.29F (Ø32 Ø100)		
12	Rear male clevis (MP4)	1580.Ø.09/1F (Ø20 and Ø25) 1380.Ø.09/1F (Ø32 Ø100)	1580.Ø.09/2F (Ø20 and Ø25) 1320.Ø.21F (Ø32 Ø100)		
13	Rear male clevis (with jointed head according to DIN 648K standard)	1380.Ø.15F (Ø32 Ø100)	1320.Ø.25F (Ø32 Ø100)		
14	Square angle trunnion (AB7)	1380.Ø.35F (Ø32 Ø100)	1320.Ø.23F (Ø32 Ø100)		
15	Complete square angle trunnion (with joined head according to DIN 648K standards)	/	1320.Ø.27F (Ø32 Ø100)		
16	Square angle trunnion (not specified by ISO 15552)	1380.Ø.11F (Ø32 Ø100)	/		
17	Complete standard trunnion (with joined head according to DIN 648K standards)	1380.Ø.36F (Ø32 Ø100)	1320.Ø.26F (Ø32 Ø100)		
18	Standard trunnion (not specified by ISO 15552)	1380.Ø.10F (Ø32 Ø100)	/		
19	Standard complete trunnion	/	1320.Ø.22F (Ø32 Ø100)		

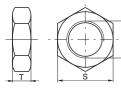


Nuts

Coding: 1**①**.Ø.

•	TYPE
	200 = Nut (Ø20 and Ø25)
	320 = Nut (Ø32 Ø100)
	BORE
	20 = Ø20 and Ø25
Ø	32 = Ø32 and Ø40
	40 = Ø50 and Ø63
	50 = Ø80 and Ø100
	MODEL
•	05 = Ø20 and Ø25
	18F = Ø32 Ø100





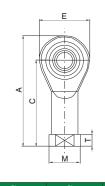
Bore	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
S	13	13	17	17	19	19	24	24
Т	5	5	6	6	7	7	8	8
KK	M8x1.25	M8x1.25	M10x1.25	M10x1.25	M12x1.25	M12x1.25	M16x1.5	M16x1.5
Weight (g)	12	12	15	15	20	20	20	20

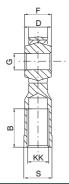
Ball joint

Coding: 10.Ø.32F

	5
	TYPE
•	200 = Ball joint (Ø20 and Ø25)
	320 = Ball joint (Ø32 Ø100)
	BORE
	20 = Ø20 and Ø25
Ø	32 = Ø32 and Ø40
	40 = Ø50 and Ø63
	50 = Ø80 and Ø100
	•







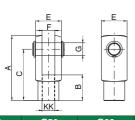
Bore	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
Α	48	48	57	57	66	66	85	85
В	16	16	20	20	22	22	28	28
С	36	36	43	43	50	50	64	64
D (-0,1)	9	9	10,5	10,5	12	12	15	15
E	24	24	28	28	32	32	42	42
F	12	12	14	14	16	16	21	21
G (H7)	8	8	10	10	12	12	16	16
KK	M8x1,25	M8x1,25	M10x1,25	M10x1,25	M12x1,25	M12x1,25	M16x1,5	M16x1,5
M	16	16	19	19	22	22	27	27
S	14	14	17	17	19	19	22	22
Т	5	5	6,5	6,5	6,5	6,5	8	8
Weight (g)	46	46	76	76	110	110	220	220

Fork with pin

Coding: 1 Ø Ø

Coair	ig: Iw.Ø.w
	TYPE
0	200 = Fork with pin (Ø20 and Ø25)
	320 = Fork with pin (Ø32 Ø100)
	BORE
	20 = Ø20 and Ø25
Ø	32 = Ø32 and Ø40
	40 = Ø50 and Ø63
	50 = Ø80 and Ø100
	MODEL
M	04 = Ø20 and Ø25
	13F = Ø32 Ø100



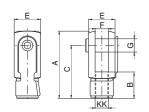


Bore	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
Α	42	42	52	52	62	62	83	83
В	16	16	20	20	24	24	32	32
С	32	32	40	40	48	48	64	64
E	16	16	20	20	24	24	32	32
F (B12)	8	8	10	10	12	12	16	16
G	8	8	10	10	12	12	16	16
KK	M8x1,25	M8x1,25	M10x1,25	M10x1,25	M12x1,25	M12x1,25	M16x1,5	M16x1,5
Weight (g)	45	45	100	100	140	140	340	340

Fork with clips

TYPE 200 = Fork with clips (Ø20 and Ø25) 320 = Fork with clips (Ø32 Ø100) BORE 20 = Ø20 and Ø25
320 = Fork with clips (Ø32 Ø100) BORE
BORE
20 = Ø20 and Ø25
Ø 32 = Ø32 and Ø40
40 = Ø50 and Ø63
50 = Ø80 and Ø100
MODEL
M 04/1 = Ø20 and Ø25
13/1F = Ø32 Ø100





Bore	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
Α	42	42	52	52	62	62	83	83
В	16	16	20	20	24	24	32	32
С	32	32	40	40	48	48	64	64
E	16	16	20	20	24	24	32	32
F (B12)	8	8	10	10	12	12	16	16
G	8	8	10	10	12	12	16	16
KK	M8x1,25	M8x1,25	M10x1,25	M10x1,25	M12x1,25	M12x1,25	M16x1,5	M16x1,5
Weight (g)	45	45	100	100	140	140	340	340

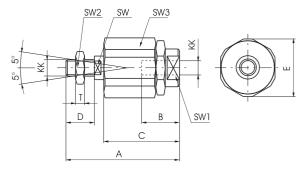


Self-aligning joint

Coding: 10.Ø.33F

	TYPE
0	200 = Self-aligning joint (Ø20 and Ø25)
	320 = Self-aligning joint (Ø32 Ø100)
	BORE
	20 = Ø20 and Ø25
Ø	32 = Ø32 and Ø40
	40 = Ø50 and Ø63
	50 = Ø80 and Ø100



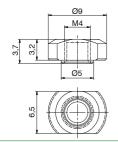


Bore	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
Α	57	57	71	71	75	75	103	103
В	20	20	20	20	20	20	32	32
С	33	33	46	46	46	46	63	63
D	20	20	20	20	24	24	32	32
E	19	19	32	32	32	32	45	45
KK	M8x1,25	M8x1,25	M10x1,25	M10x1,25	M12x1,25	M12x1,25	M16x1,5	M16x1,5
SW	7	7	12	12	12	12	20	20
SW1	11	11	19	19	19	19	27	27
SW2	13	13	17	17	19	19	24	24
SW3	17	17	30	30	30	30	41	41
Т	5	5	6	6	7	7	8	8
Weight (g)	60	60	220	220	230	230	660	660

Valves direct mounting bolt

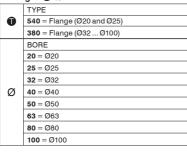
Coding: 1500.20.F





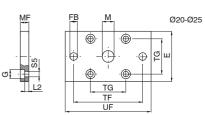
Front and rear flanges (MF1 - MF2)

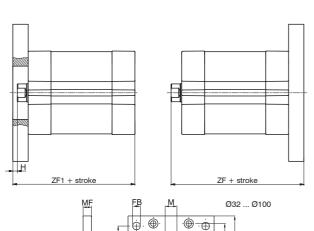
Coding: 10.Ø.03F





The kit comprises: n° 1 flange (plated zinc steel) n° 4 screws (plated zinc steel)





	I -			I 						
Bore	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100		
Е	35	40	45	52	65	75	95	115		
FB (H 13)	6.6	6.6	7	9	9	9	12	14		
G	9.5	9.5	10.5	10.5	15	15	18	18		
M (H 11)	16	16	30	35	40	45	45	55		
MF (JS 14)	8	8	10	10	12	12	16	16		
R (JS 14)	/	/	32	36	45	50	63	75		
TF (JS 14)	55	60	64	72	90	100	126	150		
TG	22	26	32.5	38	46.5	56.5	72	89		
UF	70	75	80	90	110	120	150	170		
ZF	51	53	130	145	155	170	190	205		
ZF1	45	47	54	55	57	61	70	83		
Н	2	2	3	3	4	4	6	6		
L2	3	3	5	5	6.5	6.5	8	8		
S5	5.5	5.5	6.6	6.6	9	9	11	11		
Weight (g)	125	160	190	250	480	620	1430	1990		



Short mounting foot brackets (in sheet metal MS1)

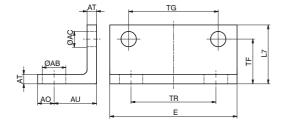
Coding: 1540.Ø.05/1F

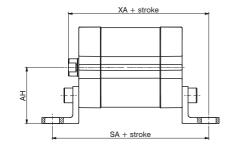
	BORE
	20 = Ø20
	25 = Ø25
	32 = Ø32
Ø	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100

The kit comprises:

n° 1 foot (plated zinc steel)







Bore	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
AB (H 14)	7	7	7	10	10	10	12	14.5
AC	5.5	5.5	6.5	6.5	8.5	8.5	10.5	10.5
AH	27	29	33.5	38	45	50	63	74
AO (max)	7	7	7	7	9	9	11	13
AT (±0.5)	4	4	4	4	5	5	6	6
AU (±0.2)	16	16	16	18	21	21	26	27
E (max)	35.5	39.5	46.5	54	65	77	95	115
L7	20	20	25	25	30	30	40	45
TF (±0.1)	16	16	17.25	19	21.75	21.75	27	29.5
TG (±0.2)	22	26	32.5	38	46.5	56.5	72	89
TR (JS 14)	22	26	32	36	45	50	63	75
SA	69	71	76	81	87	91	106	121
XA	59	61	67	70	74	78	90	104
Weight (g)	40	45	60	70	130	160	300	405

Rear narrow clevis

Coding: 13M.Ø.

Couii	ig. 10 w. 2. v				
	MATERIALS				
M	20 = Steel				
	80 = Aluminium				
	BORE				
	32 = Ø32				
	40 = Ø40				
Ø	50 = Ø50				
	63 = Ø63				
	80 = Ø80				
	100 = Ø100				
	VERSION				
V	29F = Steel rear narrow clevis				
	30F = Aluminium rear narrow clevis				
Th = 1.5					

The kit comprises:

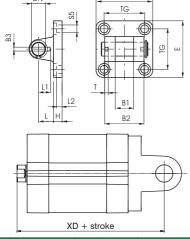
n° 1 clevis (plated zinc steel or painted)

n° 4 screws (plated zinc steel)

n° 1 pin (plated zinc steel) complete with elastic

 $pin\,and\,ring$





Bore		Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
B1 (H 14)		14	16	21	21	25	25
B2 (d 12)		34	40	45	51	65	75
33 (+0,2/-0)		3.3	4.3	4.3	4.3	4.3	6.3
ON		10	12	16	16	20	20
	Aluminium	45	52	65	75	95	115
	Steel	45	55	65	75	95	115
1	Aluminium	9	9	11	11	14	14
1	Steel	10	10	10	12	14	16
	Aluminium	13	16	16	21	22	27
	Steel	12	15	17	20	22	25
.1		11.5	12	14	14	16	16
.2 (±0.5)		5,5	5.5	6.5	6.5	10	10
S5		6,6	6.6	9	9	11	11
-		3	4	4	4	4	4
TG		32.5	38	46.5	56.5	72	89
XD		73	77	80	89	100	118
Weight (g)	Aluminium	70	115	200	290	570	820
	Steel	160	270	370	670	1110	2100

n° 2 screws (plated zinc steel)



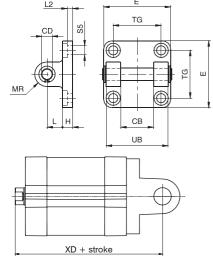
Rear clevis (MP2)

Coding: 13**∅**.Ø.

	MATERIALS
M	20 = Steel
	80 = Aluminium
	BORE
	32 = Ø32
	40 = Ø40
Ø	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
	VERSION
V	20F = Steel rear clevis
	09F = Aluminium rear clevis
Th 1 20	

- The kit comprises:
 n° 1 clevis (steel or painted aluminium)
- n° 4 screws (plated zinc steel)
- n° 1 pin (plated zinc steel) n° 2 circlips (steel)





Bore		Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
CB (H14)		26	28	32	40	50	60
CD		10	12	12	16	16	20
E	Aluminium	45	52	65	75	95	115
E	Steel	45	55	65	75	95	115
	Aluminium	9	9	11	11	14	14
Н	Steel	10	10	10	12	14	16
	Aluminium	13	16	16	21	22	27
L	Steel	12	15	17	20	22	25
MR		10	12	12	16	16	20
TG		32.5	38	46.5	56.5	72	89
UB (h14)		45	52	60	70	90	110
XD		73	77	80	83	100	118
L2(±0.5)		5.5	5,5	6.5	6.5	10	10
S5		6.6	6.6	9	9	11	11
Weight (g)	Aluminium	80	130	185	310	530	910
	Steel	180	290	400	670	1160	2000

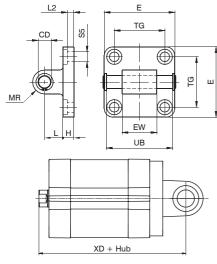
Rear male clevis (MP4)

Coding: 1**10**00.Ø.**Ø**

oou;	g. 1000.2.0
	TYPE
•	5 = Rear male clevis (Ø20 and Ø25)
	3 = Rear male clevis (Ø32 Ø100)
	MATERIALS
M	8 = Steel (Ø20 and Ø25) - Aluminium (Ø20 Ø100)
	2 = Steel (Ø32 Ø100)
	BORE
	20 = Ø20
	25 = Ø25
	32 = Ø32
Ø	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
	VERSION
	09/1F = Aluminium rear male clevis (Ø20 Ø100)
V	09/2F = Steel rear male clevis (Ø20 and Ø25)
	21F = Steel rear male clevis (Ø32 Ø100)

- The kit comprises:
 n° 1 clevis (steel or painted aluminium)
- n° 4 screws (plated zinc steel) n° 1 pin (plated zinc steel) * n° 2 circlips (steel)





В	ore	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
CD		8(H9)	8(H9)	10	12	12	16	16	20
E	Aluminium	34	38	45	52	65	75	95	115
_	Steel	34	38	45	55	65	75	95	115
EW		16(h14)	16(h14)	26 (-0,2/-0,6)	28 (-0,2/-0,6)	32 (-0,2/-0,6)	40 (-0,2/-0,6)	50 (-0,2/-0,6)	60 (-0,2/-0,6)
Н	Aluminium	6	6	9	9	11	11	14	14
п	Steel	/	/	10	10	10	12	14	16
	Aluminium	14	14	13	16	16	21	22	27
L	Steel	/	/	12	15	17	20	22	25
MR		8	8	10	12	12	16	16	20
TG		22	26	32,5	38	46,5	56,5	72	89
UB (-0,5/-0)		/	/	46	53	61	71	91	111
XD		63	65	73	77	80	89	100	118
L2(±0.5)		2,6	2,6	5,5	5,5	6,5	6,5	10	10
S5		5,5	5,5	6,6	6,6	9	9	11	11
Maiabt (a)	Aluminium	25	28	90	130	190	340	580	960
Weight (g)	Steel	70	80	210	330	430	810	1350	2400



Rear male clevis (with jointed head according to DIN 648K standard)

Coding: 13**∅**.Ø.**Ø**

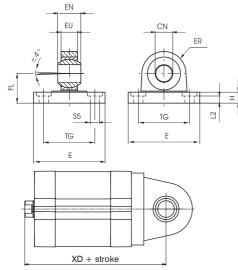
Coun	ig. 10 				
	MATERIALS				
•	20 = Steel				
	80 = Aluminium				
	BORE				
	32 = Ø32				
	40 = Ø40				
Ø	50 = Ø50				
	63 = Ø63				
	80 = Ø80				
	100 = Ø100				
	VERSION				
V	25F = Steel rear male clevis				
	15F = Aluminium rear male clevis				



n° 1 clevis (steel or painted aluminium)

n° 4 screws (plated zinc steel)





Bore		Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
CN (H7)		10	12	16	16	20	20
_	Aluminium	45	52	65	75	95	115
E	Steel	45	55	65	75	95	115
EN (-0.1)		14	16	21	21	25	25
	Aluminium	16	19	21	24	28.5	30
ER	Steel	15	18	20	23	27	30
EU		10.5	12	15	15	18	18
FL (JS 15)		22	25	27	32	36	41
Н	Aluminium	9	9	11	11	14	14
П	Steel	10	10	10	12	14	16
L2 (±0.5)		5.5	5.5	6.5	6.5	10	10
S5		6.6	6.6	9	9	11	11
TG		32.5	38	46.5	56.5	72	89
XD		73	77	80	89	100	118
Maight (g)	Aluminium	60	100	180	245	480	650
Weight (g)	Steel	210	310	400	710	1350	2400

Square angle trunnion (AB7)

<u>Coding</u>: 13**∅**.Ø.

	.g. 15 3 1.2 1				
	MATERIALS				
Ø	20 = Steel				
	80 = Aluminium				
	BORE				
	32 = Ø32				
	40 = Ø40				
Ø	50 = Ø50				
	63 = Ø63				
	80 = Ø80				
	100 = Ø100				
	VERSION				
V	23F = Steel square angle trunnion				
_	35F = Aluminium square angle trunnion				

The kit comprises:

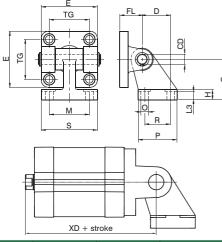
n° 1 clevis (steel or painted aluminium)

n° 1 counter clevis, square (steel or painted

aluminium)

n° 4 screws (plated zinc steel) n° 1 pin (plated zinc steel) n° 2 circlips (steel)





Bore		Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
E	Aluminium	45	52	65	75	95	115
_	Steel	45	55	65	75	95	115
TG		32.5	38	46.5	56.5	72	89
FL		22	25	27	32	36	41
D (JS14)		21	24	33	37	47	55
CD		10	12	12	16	16	20
C (JS15)		32	36	45	50	63	71
	Aluminium	8	10	12	14	14	17
Н	Steel	8	10	12	12	14	15
1.0	Aluminium	6.4	8.4	10.4	12.4	11.5	14.5
L3	Steel	6.5	8.5	10.5	10.5	11.5	12.5
R (JS14)		18	22	30	35	40	50
Р		31	35	45	50	60	70
O (H13)		6.6	6.6	9	9	11	11
S		51	54	65	67	86	96
M (JS14)		38	41	50	52	66	76
XD		73	77	80	89	100	118
14/ * 11/ 1	Aluminium	120	180	225	435	730	1220
Weight (g)	Steel	340	500	640	1250	2100	3500



Complete square angle trunnion (with joined head according to DIN 648K standards)

Coding: 1320.Ø.27F

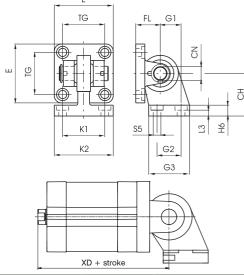
	BORE
	32 = Ø32
	40 = Ø40
Ø	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100

Steel

The kit comprises:

- n° 1 clevis (painted steel)
- n° 1 counter clevis square with joined head
- (painted steel)
- n° 4 screws (plated zinc steel) n° 1 pin (plated zinc steel) n° 2 circlips (steel)





Bore	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
CH (JS 15)	32	36	45	50	63	71
CN	10	12	16	16	20	20
E	45	55	65	75	95	115
FL (JS 15)	22	25	27	32	36	41
G1 (JS 15)	21	24	33	37	47	55
G2 (JS 14)	18	22	30	35	40	50
G3	31	35	45	50	60	70
H6	10	10	12	12	14	15
K1 (JS 14)	38	41	50	52	66	76
K2	51	54	65	67	86	96
L3 (+0,5/-0)	8,5	8,5	10,5	10,5	11,5	12,5
S5	6,6	6,6	9	9	11	11
TG	32,5	38	46,5	56,5	72	89
XD	73	77	80	89	100	118
Weight (g)	330	480	830	1220	2100	3580



Square angle trunnion (not specified by ISO 15552)

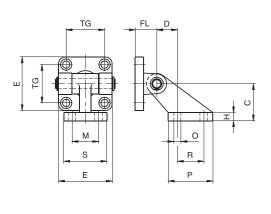
Coair	ig: 1300.Ø.11F	
	BORE	
	32 = Ø32	
	40 = Ø40	
Ø	50 = Ø50	
	63 = Ø63	
	80 = Ø80	
	100 = Ø100	

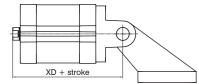
Aluminium

The kit comprises:

- n° 1 clevis (painted aluminium) n° 1 counter clevis square (painted aluminium)
- n° 4 screws (plated zinc steel)
- n° 1 pin (plated zinc steel)
- n° 2 circlips (steel)







Bore	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
C (±0,2)	32	45	45	63	63	90
D (±0,5)	18	25	25	32	32	40
E	45	52	65	75	95	115
Н	8	10	10	12	12	17
FL	22	25	27	32	36	41
M (JS 14)	25	32	32	40	40	50
TG	32,5	38	46,5	56,5	72	89
O (H 13)	7	9	9	11	11	14
Р	37	54	54	75	75	103
R (JS 14)	20	32	32	50	50	70
S	41	52	52	63	63	80
XD	73	77	80	89	100	118
Weight (g)	130	260	330	600	820	1560



Complete standard trunnion (with joined head according to DIN 648K standards)

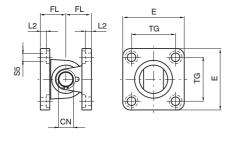
Coding: 13**∅**.Ø.

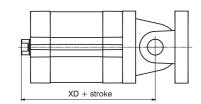
	<u> </u>
	MATERIALS
M	20 = Steel
	80 = Aluminium
	BORE
	32 = Ø32
	40 = Ø40
Ø	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
	VERSION
V	26F = Steel complete standard trunnion
	36F = Aluminium complete standard trunnion

The kit comprises:

- n° 1 clevis (steel or painted aluminium)
- n° 1 counter clevis with joined head (steel or painted aluminium)
- n° 4 screws (plated zinc steel)
- n° 1 pin (plated zinc steel) complete with elastic pin and ring







	Bore	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
CN		10	12	16	16	20	20
Е	Aluminium	45	52	65	75	95	115
E	Steel	45	55	65	75	95	115
FL (JS 15)		22	25	27	32	36	41
L2 (±0.5)		5.5	5.5	6.5	6.5	10	10
S5		6.6	6.6	9	9	11	11
TG		32.5	38	46.5	56.5	72	89
XD		73	77	80	89	100	118
Weight (g)	Aluminium	130	215	380	535	1050	1470
	Steel	380	580	770	1380	2460	4500

Standard trunnion (not specified by ISO 15552)

Coding: 1380.Ø.10F

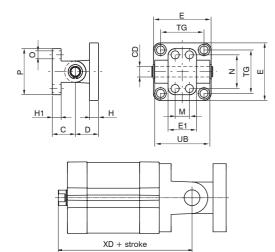
oou	ig. 1000.21101
	BORE
	32 = Ø 32
	40 = Ø40
Ø	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100

Aluminium

The kit comprises:

- n° 1 clevis (painted aluminium)
- n° 1 counter clevis (painted aluminium)
- n° 4 screws (plated zinc steel)
- n° 1 pin (plated zinc steel) n° 2 circlips (steel)





Bore	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
C (±0,2)	18	26	26	34	34	41
CD	10	12	12	16	16	20
D	22	25	27	32	36	41
E	45	52	65	75	95	115
E1	25	32	32	46	46	56
Н	10	10	12	12	16	16
H1	8	10	10	12	12	16
M (±0,2)	-	16	16	25	25	32
N (±0,2)	28	38	38	54	54	90
0	7	9	9	11	11	14
Р	40	52	52	75	75	115
TG	32,5	38	46,5	56,5	72	89
UB	45	52	60	70	90	110
XD	73	77	80	89	100	118
Weight (g)	110	190	240	490	710	1290



Standard complete trunnion

Coding: 1320.Ø.22F

	9
	BORE
Ø	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100

- The kit comprises:

 n° 1 clevis (painted steel)

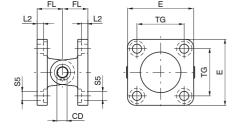
 n° 1 counter clevis (painted steel)

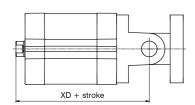
 n° 4 screws (plated zinc steel)

 n° 1 pin (plated zinc steel)

 n° 2 circling (steel)
- n° 2 circlips (steel)







Bore	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
CD	10	12	12	16	16	20
E	45	55	65	75	95	115
FL	22	25	27	32	36	41
L2(±0.5)	5,5	5,5	6,5	6,5	10	10
S5	6,6	6,6	9	9	11	11
TG	32,5	38	46,5	56,5	72	89
XD	73	77	80	89	100	118
Weight (g)	360	580	780	1370	2370	4110

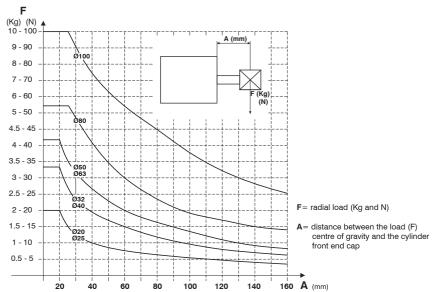


Alternative fixing options

- Frontal mounting from Ø20 to Ø40 bolt head
- the use of non-magnetic screws is recommended

Rear mounting

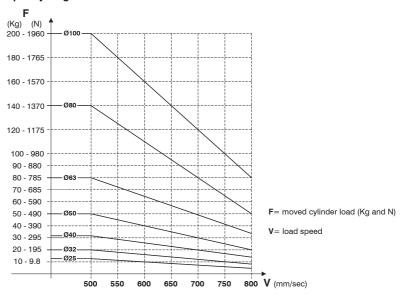
Admissible maximum radial load diagram



The diagram shows the maximum radial load F (in Newtons) that can be applied to the cylinder piston rod as a function of the distance A (in mm), based upon the standard version cylinder under static conditions.

Important: Do not exceed the recommended values in the table as reduced life or damage to the cylinder may result.

End of stroke cushioning capacity diagram



The diagram shows, for each diameter, the safety curves relative to the maximum loads which can be moved by the cylinder in function of it's speed V. The data has been calculated under the following test conditions: Cylinder mounted vertically with the rod pointing down, air pressure at 5 bar and with a guided load.

Important: Do not exceed the recommended values in the table as reduced life or damage to the cylinder may result.

Series 1200 - Special performance microbore cylinders

These microbore cylinders are not subject to a standard; they are single acting with a front spring, can be either hexagonal or round bodied and either completely threaded or threaded with a plain rod ending.

They are available with M5 connections or with incorporated quick fittings.

Construction characteristics

Body	brass
Rod bushing	brass
Seals	NBR
Springs	stainless steel
Rod / piston	stainless steel (AISI 303)

Operational characteristics

Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Pressure	3 7 bar
Working temperature	-5 °C +70 °C

Attention: air must be dried for applications with lower temperature.

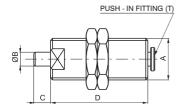


Threaded body, round execution

Coding: 1213.Ø.

ooun	ig. 1210.0.0
Ø	BORE
	6 = Ø6
	8 = Ø8
	10 = Ø10
	STROKE
	3 = 3 mm stroke (Ø10 only)
•	5 = 5 mm stroke (for all diameters)
	10 = 10 mm stroke (Ø6 and Ø10 only)
	20 = 20 mm stroke (Ø6 only)





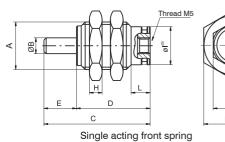
Α	ØB	С	D	T
			30,5	
M10x1	92	5	35,5	
	Ø3		49,5	
M12x1		6	28	4/2
		1	44	
M15x1,5	Ø5	5	40	
		12	44	

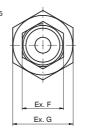
Threaded body, hexagonal execution

Coding: 1213.Ø.stroke.

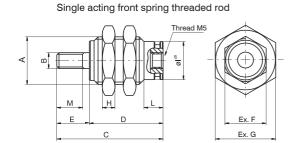
	.g. := :=::=::=:
~	BORE
	6 = Ø6
Ø	10 = Ø10
	16 = Ø16
	STROKE
	5 = 5 mm stroke
•	10 = 10 mm stroke
	15 = 15 mm stroke
M	SPRING
	C = Single acting front spring
	CF = Single acting front spring threaded body









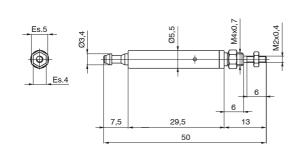


A	ØВ	В	С	D	E	Hex. F	Hex. G	Н	Ø١	L	M
			27,5	18,5							
M10x1	Ø3	M3x0.5	34,5	25.7	9	9	12	3	Ø8,5		7
			41,5	32,5						6	
			32,5	21.5						0	
M15x1.5	Ø5	M4x0.7	39	28	12	13	19	4	Ø12		10
			46	34							
			37,5	24.5							
M22x1.5 Ø6	Ø6 M5x0.8	43,5	30.5	14	20	27	5	Ø19	7	12	
		50 37									

Front fixing microbore cylinders

Coding: 1273.4.10





PNEUMAX

Series 1325-1326-1345-1347 - Twin rod cylinders

Construction characteristics

Other seals	NBR 80 shore rubber
Cushion bushings	hardened aluminium
Barrel	RA=0.3-0.5 anodised aluminium
Flange	zinc plated steel
Rod seal	PUR
Pistons	vulcanized rubber block on steel core with incorporated permanent magnet, or without magnet for non magnetic version (plus spacer).
Piston rod	C43 chromed steel or stainless steel
Frontcap	oxidised aluminium
Rear cap	UNI 5079 aluminium alloy casting
Cushion adjustment screws	nickel plated steel

Operational characteristics

Fluid	filtered and lubricated air
Pressure	10 bar
Working temperature	-5 °C +70 °C

Please follow the suggestions below to ensure a long life for these cylinders:

- use clean and lubricated air.
- correct alignment during assembly with regard to the applied load so as to avoid radial components or bending the rod.
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).
- evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

Please note: air must be dried for applications with lower temperature.

Use hydraulic oils H class (ISO VG32) for correct continued lubrication.

Cushioning lengths

Bore	Ø	32	40	50	63	80	100
Front length	mm	22	22	24	32	32	32
Rear length	mm	28	32	32	40	44	50

Standard strokes

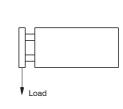
Ø32: 25 - 50 - 75 - 100 - 150 - 200 mm Ø40: 25 - 50 - 75 - 100 - 150 - 200 - 250 mm Ø50: 25 - 50 - 75 - 100 - 150 - 200 - 250 - 300 mm

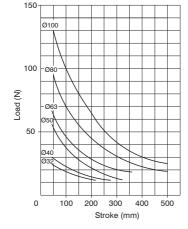
Ø63: 25 - 50 - 75 - 100 - 150 - 200 - 250 - 300 - 350 mm

On request are available strokes up to: 1000 mm

Stroke tolerance (ISO 15552)

Bore	Stroke	Tolerance	
32-40-50	t- 500	+2	
63-80-100	up to 500 mm	0	





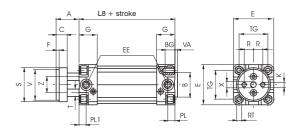


Basic version

Coding: 13♥.Ø.stroke.§

	ig. 10 Dioloti otto.
	VERSION
V	25 = magnetic
	26 = non-magnetic
	BORE
	32 = Ø32
	40 = Ø40
Ø	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
	PISTON ROD
8	01 = C43 chromed steel
	01X = Stainless steel



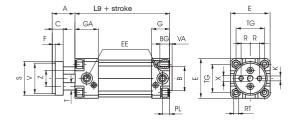


Extended front cap

Coding: 13 . Ø. Stroke.

	VERSION
V	45 = magnetic
	47 = non-magnetic
	BORE
	32 = Ø32
	40 = Ø40
Ø	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
	PISTON ROD
8	01 = C43 chromed steel
	01X = Stainless steel



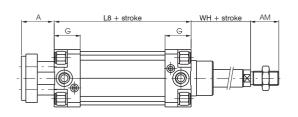


Through rod cylinder version with ISO standard

Coding: 130.Ø.stroke.

VERSION 25 = magnetic 26 = non-magnetic BORE 32 = 032 40 = 040 Ø 50 = 050 63 = 063 80 = 080	Couli	ig. 100.p.stroke.
26 = non-magnetic BORE 32 = Ø32 40 = Ø40 Ø 50 = Ø50 63 = Ø63 80 = Ø80		VERSION
BORE 32 = Ø32 40 = Ø40 Ø 50 = Ø50 63 = Ø63 80 = Ø80	V	25 = magnetic
32 = Ø32 40 = Ø40 Ø 50 = Ø50 63 = Ø63 80 = Ø80		26 = non-magnetic
40 = Ø40 Ø 50 = Ø50 63 = Ø63 80 = Ø80		BORE
Ø 50 = Ø50 63 = Ø63 80 = Ø80		32 = Ø32
63 = Ø63 80 = Ø80		40 = Ø40
80 = Ø80	Ø	50 = Ø50
		63 = Ø63
100 - 0100		80 = Ø80
100 - 8100		100 = Ø100
PISTON ROD		PISTON ROD
© 02 = C43 chromed steel	8	02 = C43 chromed steel
02X = Stainless steel		02X = Stainless steel







Through rod twin cylinder version

Coding: 13♥.Ø.stroke.S

	VERSION
V	25 = magnetic
	26 = non-magnetic
	BORE
	32 = Ø32
ø	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
	PISTON ROD
8	06 = C43 chromed steel
	06X = Stainless steel



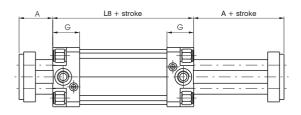


Table of dimensions

		Dote	32	40	50	63	80	100
Α			26	30	37	37	46	51
AM			22	24	32	32	40	40
В			30	35	40	45	45	55
BG			12	12	16	16	20	20
С			15	15	18	22	22	22
E			46	52	65	75	95	115
EE			G1/8"	G 1/4"	G 1/4"	G 3/8"	G 3/8"	G 1/2"
F			4	4	5	5	5	5
G			25	29	29,5	36	36	40
GA			50	54	54,5	61	61	65
K			M6	M8	M8	M10	M12	M12
L8			94	105	106	121	128	138
L9			119	130	131	146	153	163
PL			9	11,5	13	14	16	18
PL1			9.5	11	10,5	14	13	15
R			9.5	11,25	15	19	25	35
RT			M6	M6	M8	M8	M10	M10
S			35	45	55	70	85	105
T			8	10	12	16	20	20
TG			32.5	38	46,5	56,5	72	89
V			32	40	50	63	80	100
VA			4	4	4	4	4	4
Z			18	22	26	35	40	50
WH			26	30	37	37	46	51
Χ			M8	M10	M10	M12	M14	M14
	Stroke 0	Basic version	560	810	1380	2300	3680	5740
Weight (g)	Strokeu	Extended front cap	650	950	1500	2500	4100	6300
		every 10 mm	20	26	30	40	80	90



Sensor brackets codes - 1500._, RS._, HS._

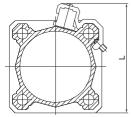
Coding: 1320.

boung. 1020.					
	TYPE				
_	A = Ø32-Ø40				
0	B = Ø50-Ø63				
	C = Ø80-Ø100				



For technical characteristics and ordering codes see the "Magnetic sensors" sections





Bore	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
L	60	65	77	87	105	125

Sensor brackets codes - 1595.HAP

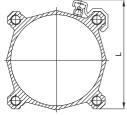
Coding: 1320.

	TYPE
_	ASC = Ø32-Ø40
•	BSC = Ø50-Ø63
	CSC = Ø80-Ø100

Sensor for microbore cylinders

For technical characteristics and ordering codes see the "Magnetic sensors" sections





Bore	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
_	60	65	77	87	105	125

Sensor brackets codes - 1580._,MRS._,MHS

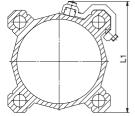
Coding: 1320.

Ū	TYPE
	AS = Ø32-Ø40
	BS = Ø50-Ø63
	CS = Ø80-Ø100

Sensor for microbore cylinders

For technical characteristics and ordering codes see the "Magnetic sensors" sections





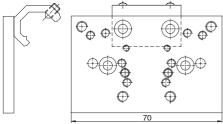
Bore	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
L1	48	54	66	76	96	112

Support for solenoid valves

Coding: 1320.

	-
	SIZE
_	15 = Ø32-Ø40
•	16 = Ø50-Ø63
	17 = Ø80-Ø100





Fixing holes for valves series:

A = 414/2

B = 824C = 828, T488, 488, 484

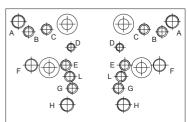
D = 2400

E = 2600 F = Bases for ISO solenoid

valves

G = 858/2 H = T424

L = 888_



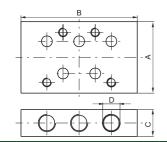
This accessory permits to mount a valve or an electrovalve on a side of the cylinder. The plate can be fitted on the cylinder profiled barrel, and, on it, can be mounted either a threaded distributor or a base on whic can be mounted an ISO distributor. Once installed the connections must be done with fittings and pipes. All of the threaded holes on the support plate are dedicated to different valves series as per attached drawing.

Bases for ISO solenoid valves

Coding: 1320.

STANDARDS
21 = ISO1
22 = ISO2





Dimensions								
Bases for solenoid valves	Α	В	С	D				
ISO 1	40	75	15	G 1/8"				
ISO 2	50	95	20	G 1/4"				

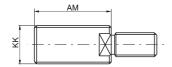


Threaded Nipple

Coding: 1325.Ø.17F

	.g = =
	BORE
	32 = Ø32
	40 = Ø40
Ø	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100





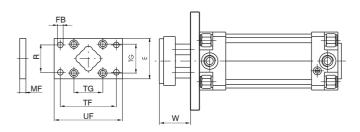
Bore	32	40	50	63	80	100
AM	22	24	32	35	40	40
KK	M10x1,25	M12x1,25	M16x1,5	M16x1,5	M20x1,5	M20x1,5
Weight (g)	17	27	63	65	110	110

Front Flange

Coding: 1325.Ø.03F

	BORE
	32 = Ø32
	40 = Ø40
Ø	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100





Bore	32	40	50	63	80	100
Е	45	52	65	75	95	115
FB (H13)	7	9	9	9	12	14
MF (JS 14)	10	10	12	12	16	16
R (JS 14)	32	36	45	50	63	75
TF (JS 14)	64	72	90	100	126	150
TG	32,5	38	46,5	56,5	72	89
UF	80	90	110	120	150	170
W	16	20	25	25	30	35
Weight (g)	160	250	480	620	1430	3500

Front foot mounting bracket (short)

Coding: 1325.Ø.05/1F

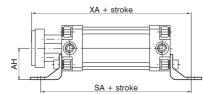
	J ,
	BORE
	32 = Ø32
	40 = Ø40
Ø	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100

(1 piece)









Bore	32	40	50	63	80	100
AB (H14)	7	9	9	9	12	14
AH (JS 15)	32	36	45	50	63	71
AO (± 0,2)	11	8	13	13	14	15
AT	3,5	3,5	3,5	4,5	5	5
AU	24	28	32	32	41	41
E	45	52	65	75	95	115
SA	142	161	170	185	210	220
TG	32,5	38	46,5	56,5	72	89
TR (JS 14)	32	36	45	50	63	75
XA	144	163	175	190	215	230
Weight (g)	50	70	120	180	320	400

3 | 114

Series ECOFLAT

Profiled tube has two "T" slots on the side hosting sensors 1580._, MRS._, MHS._ without adaptors. Two additional connections are also available on rear cap for cylinder feeding

Construction characteristics

Barrel	aluminium alloy anodised	
Piston seals	PUR	
Piston rod seals	PUR (FPM upon request)	
Shock absorber	NBR	
Pistons	acetal resin, aluminium on request	
Piston rod	C43 chromed steel or stainless steel	
End caps	anodized aluminium	
Fixing screws	zinc plated steel	

Operational characteristics

Fluid	filtered and lubricated air or not (if lubricated the lubrication must be continuous)
Pressure	10 bar
Working temperature	-5 °C +70 °C

Please follow the suggestions below to ensure a long life for these cylinders:

- · use clean and lubricated air.
- correct alignment during assembly with regard to the applied load so as to avoid radial components or bending the rod.
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).
- evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

Please note: air must be dried for applications with lower temperature.

Use hydraulic oils H class (ISO VG32) for correct continued lubrication.

Maximum standard strokes

Size 25: 200 mm Size 32 ... 63: 300 mm

On request are available strokes up to: $500\,\mathrm{mm}$

Sections (cm²)

Size	25	32	40	50	63
Out stroke (cm²)	5,28	8,09	13,09	20,28	32,68
In stroke (cm²)	4,49	6,96	11,08	17,14	29,54

In order to calculate the theoretical force generated by the unit, both outstroke and instroke, it is necessary to use the following equation: FORCE(Kg) = Surface (cm²) x Pressure(bar)

It is also necessary to remember that the theoretical force must be reduced by 10-15% in order to account for the unit internal friction.

Maximum rod radial movement (°)

Size	25	32	40	50	63
rod radial movement	±0.8	±0.7	±0.6	±0.5	±0.4
Maximum torque applicable on the	e piston rod (Nm)				
Size	25	32	40	50	63

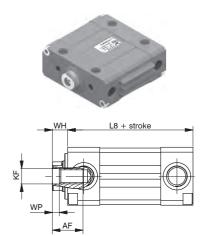
 $The \ maximum \ torque \ values \ must \ also \ be \ accounted \ for \ while \ mounting \ accessories \ on \ the \ piston \ rod.$



Basic version "1" female rod

Coding: 13 . T. stroke. AP

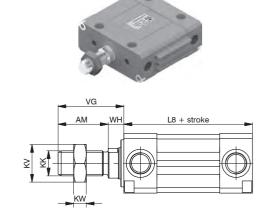
ooumg	. Too. Stroke.
	VERSION
	70 = Magnetic chromed rod
V	71 = Magnetic stainless steel rod
	72 = Non magnetic chromed rod
	73 = Non magnetic stainless steel rod
	SIZE
	25 = Equivalent Ø25 piston area
	32 = Equivalent Ø32 piston area
•	40 = Equivalent Ø40 piston area
	50 = Equivalent Ø50 piston area
	63 = Equivalent Ø63 piston area
	FEEDING
A	1 = Side connection
	1P= Rear connection
	PISTON
(2)	= Standard version
	K = Version with aluminium piston



Basic version "2" male rod

Coding: 13 . T. stroke. AP

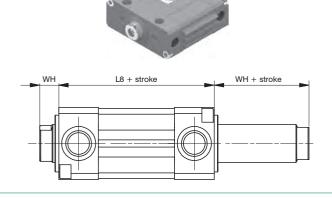
•	VERSION
	70 = Magnetic chromed rod
	71 = Magnetic stainless steel rod
	72 = Non magnetic chromed rod
	73 = Non magnetic stainless steel rod
	SIZE
	25 = Equivalent Ø25 piston area
	32 = Equivalent Ø32 piston area
U	40 = Equivalent Ø40 piston area
	50 = Equivalent Ø50 piston area
	63 = Equivalent Ø63 piston area
	FEEDING
A	2 = Side connection
	2P = Rear connection
	PISTON
•	= Standard version
	K = Version with aluminium piston



Female through rod cylinder version "3"

Coding: 13 . troke. 3 .

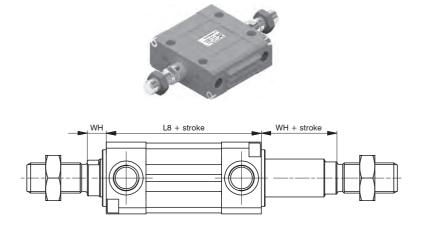
	VERSION
	70 = Magnetic chromed rod
V	71 = Magnetic stainless steel rod
	72 = Non magnetic chromed rod
	73 = Non magnetic stainless steel rod
	SIZE
	25 = Equivalent Ø25 piston area
0	32 = Equivalent Ø32 piston area
U	40 = Equivalent Ø40 piston area
	50 = Equivalent Ø50 piston area
	63 = Equivalent Ø63 piston area
	PISTON
P	= Standard version
	K = Version with aluminium piston



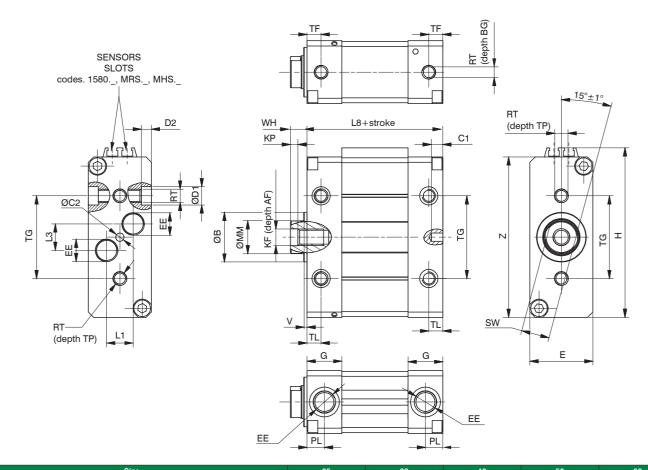
Male through rod cylinder version "4"

ding: 13**0 fi** stroke 4**0**

Coding	: 13 V.U. Stroke.4 P
	VERSION
	70 = Magnetic chromed rod
V	71 = Magnetic stainless steel rod
	72 = Non magnetic chromed rod
	73 = Non magnetic stainless steel rod
	SIZE
	25 = Equivalent Ø25 piston area
	32 = Equivalent Ø32 piston area
0	40 = Equivalent Ø40 piston area
	50 = Equivalent Ø50 piston area
	63 = Equivalent Ø63 piston area
	PISTON
P	= Standard version
	K = Version with aluminium piston







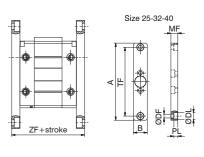
	Si	ze		25	32	40	50	63
AM	AM		22	22	24	32	32	
AF			12	14	16	20	20	
Ø B (h9)				16	20	25	30	30
BG				8	9	9	12	14
C1				7	7	7	7	7
C2 (H9)				4	4	4	5	5
Ø D1				8	10	10	11	15
D2				4	4	5	6	6
E				20	24	30	38	50
EE				M5	G1/8"	G1/8"	G1/4"	G1/4"
G				12	17	17	21	21
Н				56,5	65,5	82,5	102,5	127
KF				M5	M6	M8	M10	M10
KK				M10x1,25	M10x1,25	M12x1,25	M16x1,5	M16x1,5
KP				2	2,5	3	4,5	4,5
KV			17	17	19	24	24	
KW			6	6	7	8	8	
L1				6	7,5	7,5	16	19
L3				10	14,5	14,5	16	21
L8				62	72	76	82	82
ØMM				10	12	16	20	20
PL				6,5	8,5	8,5	10,5	10,5
RT				M5	M6	M6	M8	M10
SW (H13)				8	10	13	17	17
TF				5	8,5	8,5	8,5	8,5
TG				25	32	40	50	60
TL				5	8,5	8,5	8,5	8,5
TP				8	9	9	12	14
V				2	2	2	2	2
VG				30	30	33	42	42
WH				8	8	9	10	10
Z				51	60	77	97	1215
	Version	1	Stroke 0	180	285	482	848	1350
Weight (g)	Version	2	Stroke 0	203	309	520	929	1431
		every 10 mm		22	29	49	79	118
	Version	3	Stroke 0	195	314	534	959	1478
Weight (g)	Version	4	Stroke 0	242	362	610	1096	1615
		every 10 mm		28	38	65	103	143

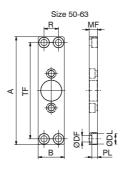
Front and rear flanges

Coding: 1370.0.03

	.g
	SIZE
	25 = Size 25
	32 = Size 32
0	40 = Size 40
	50 = Size 50
	63 = Size 63







Brackets used to anchor the cylinder parallel to the mounting plane. Manufactured from steel with a rust proof protective treatment. Mounted to the cylinder end caps with bolts.

Size	25	32	40	50	63
A	112	130	146	157	157
В	20	24	30	38	50
ØDF	5.5	6.6	6.6	9	9
ØDL	10	11	11	15	15
PL	5.7	6.5	6.3	8.3	8.3
MF	10	10	10	12	15
R	/	/	/	21	33
TF	100	115	132	140	140
ZF	82	92	96	106	112

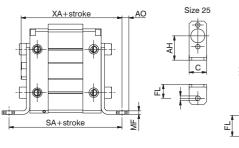
Foot

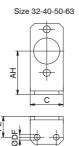
PNEUMATIC ACTUATION

Coding: 1370. **1**.05/1F

	3 ,
	SIZE
	25 = Size 25
	32 = Size 32
0	40 = Size 40
	50 = Size 50
	63 = Size 63







Brackets used to anchor the cylinder parallel to the mounting plane. Manufactured from steel with a rust proof protective treatment. Mounted to the cylinder end caps with bolts.

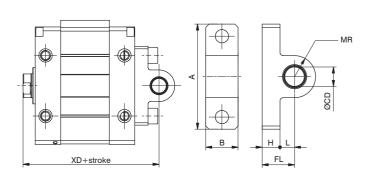
Size	25	32	40	50	63
AH	28	32	40	50	63
AO	7	5.5	7	8	10
С	20	24	30	38	50
ØDF	5.5	5.5	5.5	6.6	9
FL	16	18	20	24	27
MF	3	3	4	4	4
R	/	13	16	22	30
SA	94	108	116	130	136
XA	86	98	105	116	119

Rear male clevis

Coding: 1370. **1**.09/1F

Oun	souning. 1070. (City) 100/11					
	SIZE					
	25 = Size 25					
	32 = Size 32					
0	40 = Size 40					
	50 = Size 50					
	63 = Size 63					





This type of mounting allows anchorage of the cylinder either parallel or right angle to plane; the cylinder rod can oscillate and self-align as necessary when under load.

Size	25	32	40	50	63
A	37	44	52	65	78
В	9	10.5	10.5	20	25
ØCD (H7)	8	10	12	12	16
FL	14	15	18	20	24
Н	6	9	9	11	11
L	8	6	9	9	13
MR	7.5	10	13	13	17
XD	84	95	103	112	116

3 | 118



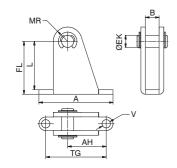


Rear clevis

a: 1370 🗰 09F

Couii	builig: 1070. T.091						
	SIZE						
	25 = Size 25						
	32 = Size 32						
0	40 = Size 40						
	50 = Size 50						
	63 = Size 63						





To be used in conjunction with 09/1 clevis. Similar to type 08 but includes a hinge pin. This type of mounting allows anchorage of the cylinder either parallel or right angle to plane; the cylinder rod can oscillate and selfalign as necessary when under load. Manufactured from sheet metal with rust proof protective treatment.

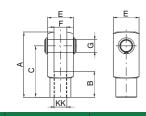
	Size	25	32	40	50	63
	A	49	60	60	46	60
0	AH	25.5	33	29.5	24	32
	В	9.1	10.6	10.6	20.1	25.1
	ØEK	8	10	12	12	16
	FL	35	42	51	55	68
of	L	32	38	47	50	63
	MR	9.5	11	14	14	18
	TG	40	50	50	30	40
	ØV	5.5	6.6	6.6	9	11

Fork with pin

Coding: 1320. 13F

	SIZE
	32 = Size 25 and 32
0	40 = Size 40
_	50 = Size 50
	63 = Size 63
	63 = Size 63





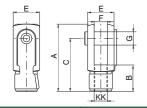
Bore	25	32	40	50	63
Α	52	52	62	83	83
В	20	20	24	32	32
С	40	40	48	64	64
E	20	20	24	32	32
F(B12)	10	10	12	16	16
G	10	10	12	16	16
KK	M10X1.25	M10X1.25	M12X1.25	M16X1.5	M16X1.5
Weight (g)	100	100	140	340	340

Element that when screwed to the rod consents a regular functioning even when there are significant lateral forces as the connection point. Made of zincplated steel.

Fork with clips

Coding: 1320. 13/1F





Bore	25	32	40	50	63
Α	52	52	62	83	83
В	20	20	24	32	32
С	40	40	48	64	64
E	20	20	24	32	32
F(B12)	10	10	12	16	16
G	10	10	12	16	16
KK	M10X1.25	M10X1.25	M12X1.25	M16X1.5	M16X1.5
Weight (g)	100	100	140	340	340

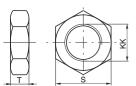
Element that when screwed to the rod consents a regular functioning even when there are significant lateral forces as the connection point. Made of zincplated steel.

Nuts

Coding: 1320. **1**.18F

	5					
	SIZE					
	32 = Size 25 and 32					
•	40 = Size 40					
	50 = Size 50					
	63 = Size 63					





Used to block the position of the fork.

Bore	25	32	40	50	63
S	17	17	19	24	24
Т	6	6	7	8	8
KK	M10X1.25	M10X1.25	M12X1.25	M16X1.5	M16X1.5
Weight (g)	15	15	20	20	20

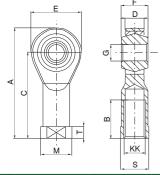


Ball joint

Coding: 1320. **1**.32F

Oun	ig. 1020			
	SIZE			
	32 = Size 25 and 32			
0	40 = Size 40			
	50 = Size 50			
	63 = Size 63			





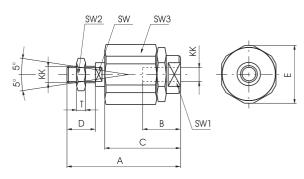
Bore	25	32	40	50	63
A	57	57	66	85	85
В	20	20	22	28	28
С	43	43	50	64	64
D (-0.1)	10.5	10.5	12	15	15
E	28	28	32	42	42
F	14	14	16	21	21
G (H 7)	10	10	12	16	16
KK	M10x1.25	M10x1.25	M12x1.25	M16x1.5	M16x1.5
М	19	19	22	27	27
S	17	17	19	22	22
Т	6.5	6.5	6.5	8	8
Weight (g)	76	76	110	220	220

Self-aligning joint

Coding: 1320. **1**.33F

Coair	Coding: 1320.0.331			
	SIZE			
	32 = Size 25 and 32			
0	40 = Size 40			
	50 = Size 50			
	63 = Size 63			





Bore	25	32	40	50	63
A	71	71	75	103	103
В	20	20	20	32	32
С	46	46	46	63	63
D	20	20	24	32	32
E	32	32	32	45	45
KK	M10x1.25	M10x1.25	M12x1.25	M16x1.5	M16x1.5
SW	12	12	12	20	20
SW1	19	19	19	27	27
SW2	17	17	19	24	24
SW3	30	30	30	41	41
Т	6	6	7	8	8
Weight (g)	220	220	230	660	660



Series 1400 - Ø40 - Ø63

The SKIP and STOP valves are pneumatically actuated 2 ways poppet valves.

The SKIP valve (accelerating device) is normally open and is equipped with a supplementary regulator for maximum speed control; it must be activated to obtain speed regulation.

The STOP valve can be normally closed or normally open.

Construction characteristics

Bore	40 mm and 63 mm diameter	
Barrel	bright painted drawn steel	
Regulators group	brass	
Waterproof seals	NBR rubber	
Piston seals	FPM	
Rod seal	PUR	
Circuit oil	hydraulic with viscosity 2.9° E at 50°C (viscosity index minimum 118)	
Pistons	aluminium	
Piston rod	C43 chromed steel	
End caps	black anodised aluminium	
Tie rods	zinc plated steel	
SKIP and STOP valves	black anodised aluminium	
Operational characteristics		

Max connecting load	600 kg (Ø40) -1200 Kg (Ø63)
Working temperature	-5 °C +70 °C
Min. and max. speed	60 10000 mm/min.
Minimum pressure for the actuation of SKIP and STOP valves	4 bar

Attention: air must be dried for applications with lower temperature.

Standard strokes

50 - 75 - 100 - 150 - 200 - 250 - 300 - 350 - 400 - 450 - 500 mm For minimum strokes see different types. On request are available strokes up to: 1300 mm

Operation instructions

Important: If the hydraulic regulator is mounted parallely with a pneumatic actuator, to avoid the bending moment on the rod generated when the stroke is adjusted or when the stop is engaged, it is recommended to guide and support the load to be moved.

The limit pressure is indicated below, based on the size of the pneumatic actuator, above which it is recommended to guide and support the load:

Limit pressure (bar)
10
5
2
always guide and support the load

Maintenance

The speed control check is a closed system and there are no external factors that can adversely affect its function.

Care however, has to be exercised not to allow the hydraulic fluid level to drop below the minimum indicated on the auxiliary tank. Should this occur, cavitation, or worse, an air pocket would result causing erratic control.

Additional fluid should be put in exclusively through a unidirectional valve by means of an appropriate syringe (such as our code number 1400.99.01). Excess fluid will be expelled through a vent into an appropriate container. It is necessary to completely disassemble the regulator and be sure to bleed the system to eliminate air pockets.

We suggest that you create a vacuum before beginning to refill.

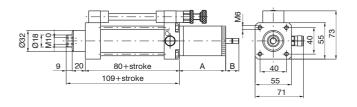
This can be done with a small unidirectional valve turned up and repeatedly loaded with a syringe. The rod must be manually actuated successively releasing air through the valve using a small and pointed instrument.



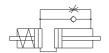
Regulation on the outward stroke - Tank in line

Coding: 1400.40.stroke.01.1





Weight 1450 g + 300 g every 50 mm stroke

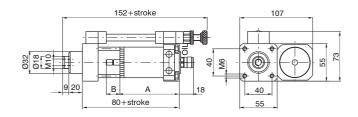


Strokes	A	B max.
< 75	78	30
75<150	102	45
150<250	127	60
250<350	187	90
350<500	202	120

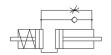
Regulation on the outward stroke - Lateral tank

Coding: 1400.40.stroke.01.2





Weight 1530 g + 300 g every 50 mm stroke

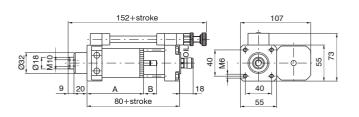


Strokes	A	B max.
< 75	93	30
75<150	118	45
150<250	143	60
250<350	183	90
350<500	218	120

Regulation on the inward stroke

Coding: 1400.40.stroke.02.2





Weight 1530 g + 300 g every 50 mm stroke



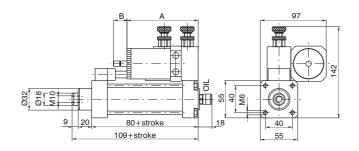
Strokes	A	B max.
< 75	93	30
75<150	118	45
150<250	143	60
250<350	183	90
350 <500	218	120



Regulation in both directions

Coding: 1400.40.stroke.03.2

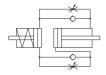




Weight

1870 g + 300 g every 50 mm stroke

Attention: minimum stroke=150 mm when fitted in $tandem \ (parallel \ or \ in-line) \ with \ 1319-1320-1321 \\ cylinders \ series.$

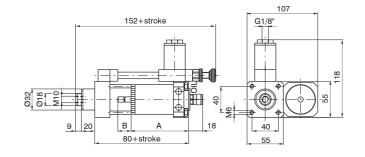


Strokes	A	B max.
< 75	110	30
75<150	135	45
150<250	160	60
250<350	200	90
350<500	235	120

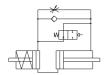
Regulation on the outward stroke with skip (acceleration valve)

Coding: 1400.40.stroke.01.04





Weight $1670\,\mathrm{g} + 300\,\mathrm{g}$ every $50\,\mathrm{mm}$ stroke

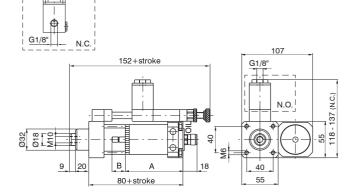


Strokes	A	B max.
< 75	93	30
75<150	118	45
150<250	143	60
250<350	183	90
350<500	218	120

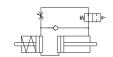
Regulation on the outward stroke with STOP (STOP valve)

Coding: 1400.40.Stroke.01.0	
	VERSION
V	5 = STOP N.O.
	7 = STOP N C





 $1710\,\mathrm{g} + 300\,\mathrm{g}$ every $50\,\mathrm{mm}$ stroke



Strokes	Α	B max.
< 75	93	30
75<150	118	45
150<250	143	60
250<350	183	90
350<500	218	120

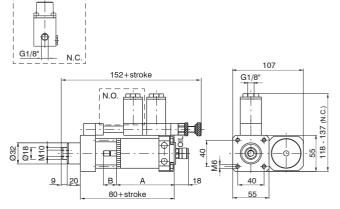


Regulation on the outward stroke with SKIP and STOP (acceleration and STOP valves)

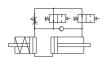
Coding: 1400.40.stroke.01.0♥

coung. I room romand and room		
	VERSION	
V	6 = STOP N.O.	
	8 = STOP N.C.	





Weight $1830\,g + 300\,g\,\text{every}\,50\,\text{mm}\,\text{stroke}$

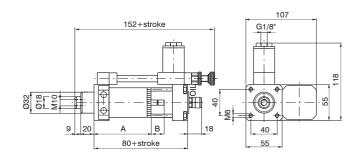


Strokes	Α	B max.
< 75	93	30
75<150	118	45
150<250	143	60
250<350	183	90
350<500	218	120

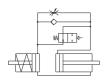
Regulation on the inward stroke with SKIP (acceleration valve)

Coding: 1400.40.stroke.02.04





Weight 1670 g + 300 g every 50 mm stroke



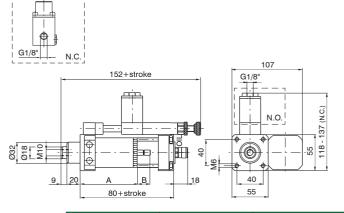
Strokes	Α	B max.
< 75	93	30
75<150	118	45
150<250	143	60
250<350	183	90
350<500	218	120

Regulation on the inward stroke with stop (stop valve)

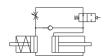
Coding: 1400.40.stroke.02.0♥

	VERSION	
V	5 = STOP N.O.	
	7 = STOP N.C.	





Weight 1710 g + 300 g every 50 mm stroke



Strokes	A	B max.
< 75	93	30
75<150	118	45
150<250	143	60
250<350	183	90
350<500	218	120

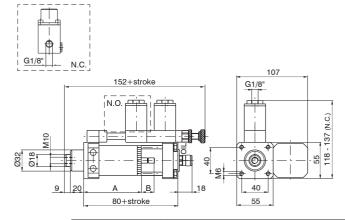


Regulation on the inward stroke with skip and stop (acceleration and stop valves)

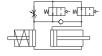
Coding: 1400.40.stroke.02.0

	ocamig. 1 100: 10:0ti otto:0E:0		
ſ		VERSION	
l	V	6 = STOP N.O.	
l		8 = STOP N.C.	





Weight 1830 g + 300 g every 50 mm stroke

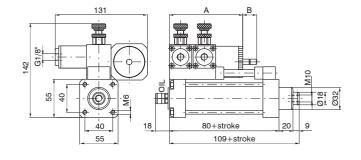


Strokes	Α	B max.
< 75	93	30
75<150	118	45
150<250	143	60
250<350	183	90
350<500	218	120

Regulation in both directions with skip (acceleration valves in both directions)

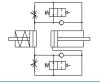
Coding: 1400.40.stroke.03.04





Weight $2110\,\mathrm{g} + 300\,\mathrm{g}$ every $50\,\mathrm{mm}$ stroke

Attention: minimum stroke=150 mm when fitted in tandem (parallel or in-line) with 1319-1320-1321 cylinders series.



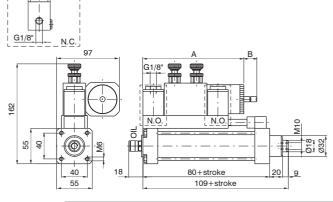
Strokes	Α	B max.
< 75	110	30
75<150	135	45
150<250	160	60
250<350	200	90
350<500	235	120

Regulation in both directions with STOP (STOP valves in both directions)

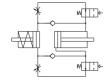
Coding: 1400 40 stroke 03 0

Coding: 1400.40.Stroke.03.0		
	VERSION	
V	5 = STOP N.O.	
-	7 = STOP N.C.	





Min. stroke 150 mm Weight 2390 g + 300 g every 50 mm stroke



Strokes	Α	B max.
150<250	197	60
250<350	237	90
350<500	272	120



Regulation in both directions with SKIP and STOP (acceleration and STOP valves in both directions)

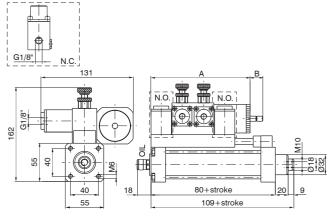
Coding: 1400.40.stroke.03.0♥

VERSION

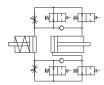
6 = STOP N.C.

8 = STOP N.C.





Min. stroke 150 mm Weight 2630 g + 300 g every 50 mm stroke



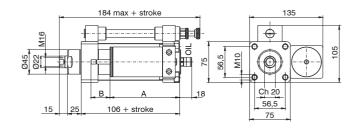
Strokes	Α	B max.
150 - < 250	197	60
250 - < 350	237	90
350 - < 500	272	120



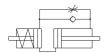
Regulation on the outward stroke – Lateral tank

Coding: 1400.63.stroke.01.2





Min. stroke 75 mm Weight 2950 g + 850 g every 50 mm stroke

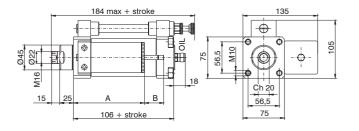


Strokes	A	B max.
≥75<150	128	50
≥150 <250	188	80
≥250<350	238	100
≥350<450	298	130
≥450 <600	358	160

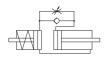
Regulation on the inward stroke

Coding: 1400.63.stroke.02.2





Min. stroke 75 mm $295\widetilde{0}\,\mathrm{g} + 850\,\mathrm{g}$ every $50\,\mathrm{mm}$ stroke

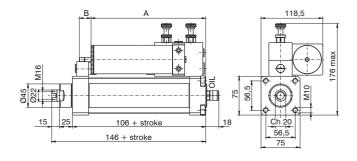


Strokes	A	B max.
≥75<150	128	50
≥150<250	188	80
≥250<350	238	100
≥350<450	298	130
≥450<600	358	160

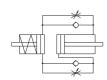
Regulation in both directions

Coding: 1400.63.stroke.03.2





Min. stroke 100 mm Weight 3600 g + 850 g every 50 mm stroke



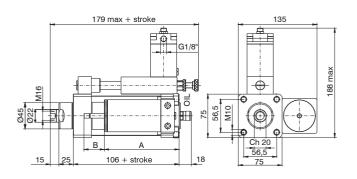
Strokes	Α	B max.
≥100 <150	160	50
≥150 <250	220	80
≥250<350	270	100
≥350<450	330	130
≥450<600	390	160
≥600<700	450	190



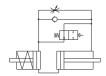
Regulation on the outward stroke with skip (acceleration valve)

Coding: 1400.63.stroke.01.04





Min. stroke 75 mm Weight $3450\,\mathrm{g} + 850\,\mathrm{g}$ every $50\,\mathrm{mm}$ stroke



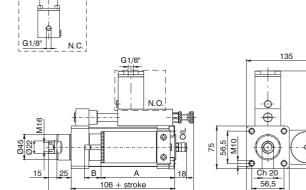
Strokes	A	B max.
≥75 <150	128	50
≥150<250	188	80
≥250 <350	238	100
≥350<450	298	130
≥450<600	358	160

Regulation on the outward stroke with STOP (STOP valve)

ding: 1400 63 stroke 01 0

County. 1700.00.3ti Oke.01.0		
	VERSION	
V	5 = STOP N.O.	
	7 = STOP N.C.	





Strokes	Α	B max.
≥75<150	128	50
≥150 <250	188	80
≥250 <350	238	100
≥350<450	298	130
≥450 <600	358	160

Min. stroke 75 mm 3450 g + 850 g every 50 mm stroke

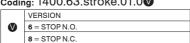


	≥75<150	128	50
*	≥150 <250	188	80
	≥250 <350	238	100
	≥350<450	298	130
<u> </u>	≥450 <600	358	160

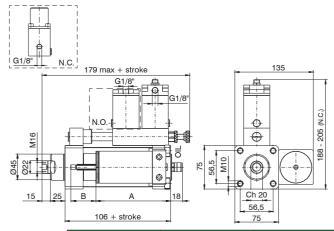
179 max + stroke

Regulation on the outward stroke with SKIP and STOP (acceleration and STOP valves)

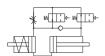
Coding: 1400.63.stroke.01.0♥







Min. stroke 75 mm Weight 3700 g + 850 g every 50 mm stroke



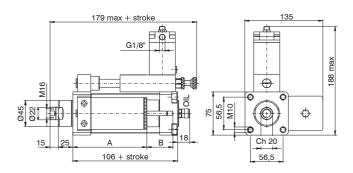
Strokes	A	B max.
≥75 <150	128	50
≥150 <250	188	80
≥250 <350	238	100
≥350<450	298	130
≥450 <600	358	160



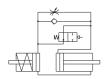
Regulation on the inward stroke with SKIP (acceleration valve)

Coding: 1400.63.stroke.02.04





Min. stroke 75 mm Weight $3450\,\mathrm{g} + 850\,\mathrm{g}$ every $50\,\mathrm{mm}$ stroke



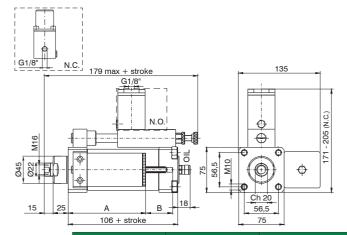
	Strokes	A	B max.
≥75.	<150	128	50
≥150) <250	188	80
≥250	0 <350	238	100
≥350	0 <450	298	130
≥450	0<600	358	160

Regulation on the inward stroke with stop (stop valve)

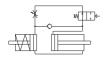
Coding: 1400.63.stroke.02.0

	.g
	VERSION
•	5 = STOP N.O.
	7 = STOP N.C.





Min. stroke 75 mm $3450\,\mathrm{g} + 850\,\mathrm{g}$ every $50\,\mathrm{mm}$ stroke



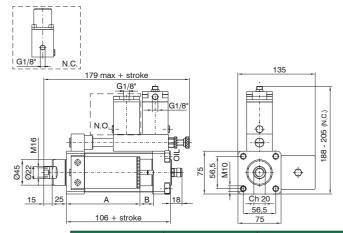
Strokes	A	B max.
≥75<150	128	50
≥150<250	188	80
≥250<350	238	100
≥350<450	298	130
≥450<600	358	160

Regulation on the inward stroke with skip and stop (acceleration and stop valves)

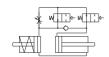
Coding: 1400.63.stroke.0♥







Min. stroke 75 mm Weight 3700 g + 850 g every 50 mm stroke



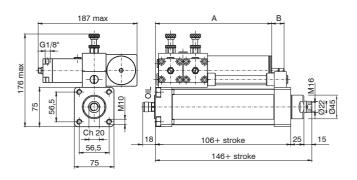
Strokes	Α	B max.
≥75 <150	128	50
≥150 <250	188	80
≥250<350	238	100
≥350<450	298	130
≥450 <600	358	160



Regulation in both directions with skip (acceleration valves in both directions)

Coding: 1400.63.stroke.03.04





Min. stroke 100 mm Weight $4100 \, \mathrm{g} + 850 \, \mathrm{g}$ every $50 \, \mathrm{mm}$ stroke



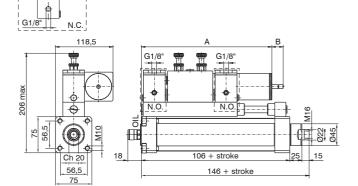
Strokes	A	B max.
≥100<150	160	50
≥150 <250	220	80
≥250 <350	270	100
≥350 <450	330	130
≥450 <600	390	160
≥600<700	450	190

Regulation in both directions with STOP (STOP valves in both directions)

Coding: 1400.63.stroke.03.0

	.g. : : : : : : : : : : : : : : : : : :
	VERSION
V	5 = STOP N.O.
	7 = STOP N.C.





M ↓

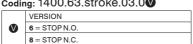
Strokes	Α	B max.
≥200<250	270	50
≥250<350	320	100
≥350 <450	380	130
≥450<600	440	160
≥600<700	500	190

4850 g + 850 g every 50 mm stroke

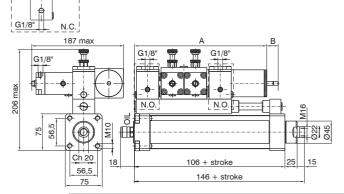
Min. stroke 200 mm

Regulation in both directions with SKIP and STOP (acceleration and STOP valves in both directions)

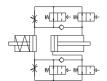
Coding: 1400.63.stroke.03.0♥







Min. stroke 200 mm 5400 g + 850 g every 50 mm stroke

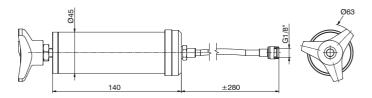


Strokes	A	B max.
≥200<250	270	50
≥250<350	320	100
≥350 <450	380	130
≥450 <600	440	160
≥600<700	500	190

Hydraulic fluid refill syringe

 $\textbf{Coding:}\ 1400.99.02$





Weight 420 g

Oil for hydraulic and pneumatic circuits

Coding: PNEUM.OIL01



1 L bottle.

This oil is suitable to lubricate pneumatic circuits and also to refill hydraulic speed control tanks. It is completely compatible with our seals.

Series 1500 - Short stroke cylinders

Profiled tube has three "T" slots on the three sides hosting sensors 1500._, RS._, HS._. without adaptors and with adaptor code 1380.01F codes 1580._, MRS._, MHS._.

A complete range of clamps makes them easy to install under any conditions.

It is interesting to note that as these cylinders (from Ø32 to Ø100) have anchoring holes with the same lead and thread as those of series 1320 ISO 6431, they accept all mountings except for the intermediate trunnion.

Construction characteristics

Body	oxidised aluminium
Piston rod bushing	oxidised aluminium
Bottom plates	oxidised aluminium
Seals	standard: NBR Oil resistant rubber, PUR Piston rod seals (HNBR or FPM seals available upon request)
Pistons	aluminium
Piston rod	C43 chromed steel (stainless steel for magnetic cylinder Ø20 and Ø25)

Operational characteristics

Fluid	filtered air, preferably lubricated				
Pressure	10 bar				
Working temperature	-5°C +70°C with standard seals magnetic or non magnetic piston				
	-5°C +80°C with FPM seals magnetic piston				
	-5°C +80°C with HNBR seals magnetic piston				
	-5°C +120°C with HNBR seals non magnetic piston				
	-5°C +150°C with FPM seals non magnetic piston				

Please follow the suggestions below to ensure a long life for these cylinders:

- · use clean and lubricated air.
- · correct alignment during assembly with regard to the applied load so as to avoid radial components or bending the rod.
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).

Series with non-rotating device:

Ø20-Ø25: from 5 to 40 mm every 5 mm

Ø32-Ø40: from 5 to 50 mm every 5 mm **Ø50-Ø63**: from 5 to 60 mm every 5 mm

Ø80-Ø100: from 5 to 80 mm every 5 mm

For longer strokes, please get in touch with the area sales rep.

- evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).
- Please note: air must be dried for applications with lower temperature.

Use hydraulic oils H class (ISO VG32) for correct continued lubrication.

Standard strokes

Double acting version Series 1501, 1504, 1511, 1514, 1515, 1516, 1517 and 1518: for all bores from 5 to 50 mm every 5 mm.

Maximum suggested strokes: Ø20-Ø25: up to stroke 250 mm Ø32-Ø40: up to stroke 300 mm Ø50-Ø63: up to stroke 350 mm Ø80-Ø100: up to stroke 400 mm

for strokes longer than 50 mm, please get in touch with our area sales rep.

Single acting version

Serie 1502, 1503, 1512 and 1513:

for all bores from 5 to 10 mm.

for strokes longer than 10 mm, please get in touch with our area sales rep.

Minimum and maximum springs load for single acting version

Bore	20	25	32	40	50	63	80-100
Min. load (N)	8.5	9.5	34	34	49	54	110
Max. load (N)	14.5	26	59.5	63.5	79	85	137

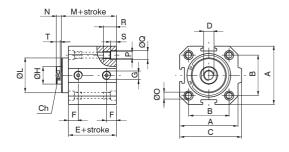


Double acting version

Coding: 15 P.Ø. stroke.

Ooun	ig. 10 . D. Sti Oko. O
	PISTON
•	01 = Non magnetic
	11 = Magnetic
	BORE
	20 = Ø20
Ø	25 = Ø25
	100 = Ø100
	SEALS
	= Standard seals
e	V = FPM seals
	T = HNBR seals





Bore		20	25	32	40	50	63	80	100
A		35	41	48	57	67	80	100	120
В		26	28	32,5	38	46,5	56,5	72	89
С		39,5	44,5	52	61	71	84	106	126
D		M4x8	M5x10	M6x12	M10x15	M12x18	M12x18	M16x20	M16x20
E	Non magnetic	29	30,5	32	33,5	35	38	44	47
_	Magnetic	34	35,5	37	38,5	40	43	49	52
F		9	9,15	9,75	10,5	11	11,25	13,75	15,25
G		G 1/8"	G 3/8"	G 3/8"					
ØН		8	10	12	16	20	20	25	25
Ø L ±0,05 (0/-0,1 for Ø80 and Ø100)		17	20,5	26	31	39	40	55	55
М	Non magnetic	32	33	35,5	39,5	43	46	51,5	54,5
IVI	Magnetic	37	38	40,5	44,5	48	51	56,5	59,5
N		4	4	4	5	6	6	8	8
ØO		4,3	5,3	5,3	5,3	7	7	9	9
P		M5	M6	M6	M6	M8	M8	M10	M10
ØQ		7,5	8,5	8,5	8,5	10,5	10,5	13,5	13,5
R		15	18	18	18	22	22	30	30
S		4,5	5,5	5,5	5,5	6,5	6,5	8,5	8,5
Т		3	3	3	4	4,5	4,5	5,5	5,5
Ch		6	8	10	13	17	17	22	22

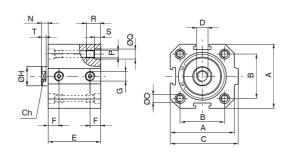
Weight (g)										
ŀ	Non magnetic	Stroke 0	75	110	170	260	400	600	800	1500
	Non magnetic	every 10 mm	20	30	40	60	80	100	120	145
	Magnetic	Stroke 0	90	130	200	310	460	700	910	1620
	Magnetic	every 10 mm	20	30	40	60	80	100	120	145

Single acting version with front spring

Coding: 15 P.Ø. stroke. G

	ig. 10 G.D.O.I.O.I.O.
	PISTON
•	02 = Non magnetic
	12 = Magnetic
	BORE
	20 = Ø20
Ø	25 = Ø25
	100 = Ø100
	SEALS
e	= Standard seals
6	V = FPM seals
	T = HNBR seals





		Bore Control	20	25	32	40	50	63	80	100
Α			35	41	48	57	67	80	100	120
В			26	28	32,5	38	46,5	56,5	72	89
С	Non magnetic stroke 5 stroke 10 stroke 5 stroke 5 stroke 10		39,5	44,5	52	61	71	84	106	126
D			M4X8	M5X10	M6X12	M10X15	M12X18	M12X18	M16X20	M16X20
	Nonmagnetia	stroke 5	29	30,5	32	33,5	35	38	44	47
E	Non magnetic	stroke 10	34	35,5	37	38,5	40	43	49	52
-	Manadia	stroke 5	34	35,5	37	38,5	40	43	49	52
	Magnetic	stroke 10	39	40,5	42	43,5	45	48	54	57
F			9	9,15	9,75	10,5	11	11,25	13,75	15,25
G			G 1/8"	G 3/8"	G 3/8"					
ØН			8	10	12	16	20	20	25	25
N			4	4	4	5	6	6	8	8
ØO			4,3	5,3	5,3	5,3	7	7	9	9
Р			M5	M6	M6	M6	M8	M8	M10	M10
ØQ			7,5	8,5	8,5	8,5	10,5	10,5	13,5	13,5
R			15	18	18	18	22	22	30	30
S		4,5	5,5	5,5	5,5	6,5	6,5	8,5	8,5	
Т			3	3	3	4	4,5	4,5	5,5	5,5
Ch			6	8	10	13	17	17	22	22

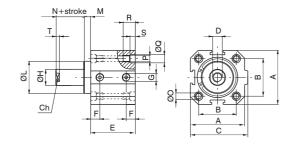
Weight (g)									
Nonmagnatio	stroke 5	70	105	160	250	370	550	750	1440
Non magnetic	stroke 10	80	120	180	280	410	600	810	1500
Magnetia	stroke 5	85	125	190	300	430	650	860	1560
Magnetic	stroke 10	95	140	210	330	470	700	920	1620

Single acting version with rear spring

Coding: 15P.Ø.stroke.

ooun	ig. 10
	PISTON
(2)	03 = Non magnetic
	13 = Magnetic
	BORE
	20 = Ø20
Ø	25 = Ø25
	100 = Ø100
	SEALS
•	= Standard seals
G	V = FPM seals
	T = HNBR seals
	,





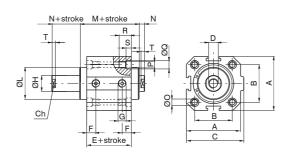
	В	ore	20	25	32	40	50	63	80	100
Α			35	41	48	57	67	80	100	120
В			26	28	32,5	38	46,5	56,5	72	89
С			39,5	44,5	52	61	71	84	106	126
D			M4X8	M5X10	M6X12	M10X15	M12X18	M12X18	M16X20	M16X20
	Non magnetic	stroke 5	29	30,5	32	33,5	35	38	44	47
_	Normagnetic	stroke 10	34	35,5	37	38,5	40	43	49	52
В С D No E Ме	Magnetie	stroke 5	34	35,5	37	38,5	40	43	49	52
	Magnetic	netic stroke 10		40,5	42	43,5	45	48	54	57
F			9	9,15	9,75	10,5	11	11,25	13,75	15,25
G			G 1/8"	G 3/8"	G 3/8"					
ØН	ØН			10	12	16	20	20	25	25
ØL±0,	05 (0/-0,1 for Ø80 and Ø	0100)	17	20,5	26	31	39	40	55	55
M			3	2,5	3,5	6	8	8	7,5	7,5
N			4	4	4	5	6	6	8	8
ØO			4,3	5,3	5,3	5,3	7	7	9	9
Р	Magnetic F G Ø H Ø L ±0,05 (0/-0,1 for Ø80 and Ø100 M N Ø O P Ø Q G R		M5	M6	M6	M6	M8	M8	M10	M10
ØQ			7,5	8,5	8,5	8,5	10,5	10,5	13,5	13,5
R			15	18	18	18	22	22	30	30
		4,5	5,5	5,5	5,5	6,5	6,5	8,5	8,5	
Т			3	3	3	4	4,5	4,5	5,5	5,5
Ch			6	8	10	13	17	17	22	22

Weight (g)										
Nonmagnatia	stroke 5	70	105	160	250	370	550	750	1440	
Non magnetic	stroke 10	80	120	180	280	410	600	810	1500	
Magnetic	stroke 5	85	125	190	300	430	650	86	1560	
Magnetic	stroke 10	95	40	210	330	470	700	920	1620	

Double acting push-pull rod version Coding: 15@.Ø.stroke.©

Coair	ig: 150.D.Stroke.G
	PISTON
•	04 = Non magnetic
	14 = Magnetic
	BORE
	20 = Ø20
Ø	25 = Ø25
	100 = Ø100
	SEALS
e	= Standard seals
6	V = FPM seals
	T = HNBR seals





Bore		20	25	32	40	50	63	80	100
A		35	41	48	57	67	80	100	120
В		26	28	32,5	38	46,5	56,5	72	89
С		39,5	44,5	52	61	71	84	106	126
D		M4X8	M5X10	M6X12	M10X15	M12X18	M12X18	M16X20	M16X20
Е	Non magnetic	29	30,5	32	33,5	35	38	44	47
-	Magnetic	34	35,5	37	38,5	40	43	49	52
F		9	9,15	9,75	10,5	11	11,25	13,75	15,25
G	G		G 1/8"	G 3/8"	G 3/8"				
ØН	ØН		10	12	16	20	20	25	25
Ø L ±0,05 (0/-0,1 for Ø80 and Ø100)		17	20,5	26	31	39	40	55	55
М	Non magnetic	35	35,5	39	45,5	51	54	59	62
IVI	Magnetic	40	40,5	44	50,5	56	59	64	67
N		4	4	4	5	6	6	8	8
ØO		4,3	5,3	5,3	5,3	7	7	9	9
P		M5	M6	M6	M6	M8	M8	M10	M10
ØQ		7,5	8,5	8,5	8,5	10,5	10,5	13,5	13,5
R		15	18	18	18	22	22	30	30
S S		4,5	5,5	5,5	5,5	6,5	6,5	8,5	8,5
Т		3	3	3	4	4,5	4,5	5,5	5,5
Ch		6	8	10	13	17	17	22	22

	Weight (g)									
Nonmognotio	Stroke 0	90	130	200	320	460	670	1100	1680	
Non magnetic	every 10 mm	20	35	50	70	90	110	155	185	
Manadia	Stroke 0	105	160	240	380	530	740	1210	1820	
Magnetic	every 10 mm	20	35	50	70	90	110	155	185	

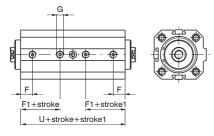


Tandem with opposed rods

Coding: 1515.Ø.stroke.stroke1.@G

Count	g. 1010.2.0ti 010.0ti 0101.
	BORE
	20 = Ø20
Ø	25 = Ø25
	100 = Ø100
	PISTON
•	= Non magnetic
	M = Magnetic
	SEALS
	= Standard seals
G	V = FPM seals
	T = HNBR seals





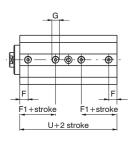
Вс	Bore		25	32	40	50	63	80	100
F			9,15	9,75	10,5	11	11,25	13,75	15,25
F1	Non magnetic	17,5	18,35	19,75	20,5	21,5	24,25	24,75	26,25
Г	Magnetic	22.5	23.35	24.75	25.5	26.5	29.25	29.75	31.25
G	G		G 1/8"						3/8"
U	Non magnetic	59	60,5	67	68,5	70	78	89	97
U	Magnetic	69	70.5	77	78.5	80	88	99	107

Tandem push with common rods

Coding: 1516.Ø.stroke.@@

- cumi	g. 1010.2.0.10.10.
	BORE
	20 = Ø20
Ø	25 = Ø25
	100 = Ø100
	PISTON
•	= Non magnetic
	M = Magnetic
	SEALS
e	= Standard seals
6	V = FPM seals
	T = HNBR seals







Вс	re	20	25	32	40	50	63	80	100	
F		9	9,15	9,75	10,5	11	11,25	13,75	15,25	
F1 Non magnetic		17,5	18,35	19,75	20,5	21,5	24,25	24,75	26,25	
гі	Magnetic	22.5	23.35	24.75	25.5	26.5	29.25	29.75	31.25	
G				G 1	1/8"			G 3	3/8"	
U	Non magnetic	59	60,5	67	68,5	70	78	89	97	
U	Magnetic	69	70.5	77	78.5	80	88	99	107	

Tandem push with independent rods

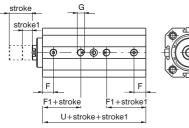
Coding: 1517.Ø.stroke.stroke1.@@

Coain	g: 1517.Ø.SHOKE.SHOKET.
	BORE
	20 = Ø20
Ø	25 = Ø25
	100 = Ø100
	PISTON
•	= Non magnetic
	M = Magnetic
	SEALS
e	= Standard seals
6	V = FPM seals
	T = HNBR seals



Non magnetic Magnetic

Non magnetic Magnetic



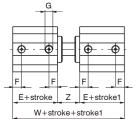
	FI+S	J+stroke-	+stroke1	oke i			
20	25	32	40	50	63	80	100
9	9,15	9,75	10,5	11	11,25	13,75	15,25
17,5	18,35	19,75	20,5	21,5	24,25	24,75	26,25
22.5	23.35	24.75	25.5	26.5	29.25	29.75	31.25
		G 1	/8"			G 3	3/8"
59	60,5	67	68,5	70	78	89	97

Opposed tandem with common rods

Coding	g: 1518.Ø.stroke.stroke1. @©
	BORE
	20 = Ø20
Ø	25 = Ø25
	100 = Ø100
	PISTON
•	= Non magnetic
	M = Magnetic
	SEALS
e	= Standard seals
•	V = FPM seals
	T = HNBR seals



G



Bore			20	25	32	40	50	63	80	100
E		Non magnetic	29	30.5	32	33.5	35	38	44	47
		Magnetic	34	35.5	37	38.5	40	43	49	52
F	F			9.15	9.75	10.5	11	11.25	13.75	15.25
G					G1	/8"			G3	3/8"
w		Non magnetic	72	74	79	89	98	104	119	125
		Magnetic	82	84	89	99	108	114	129	135

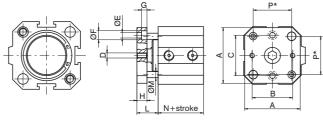


Double acting version with non-rotating device

Coding: 15 **2**.Ø.stroke.AR

	ig. 10 G.D.O.O.O.O.O.O.
	PISTON
•	01 = Non magnetic
	11 = Magnetic
	BORE
	20 = Ø20
Ø	25 = Ø25
	100 = Ø100
	SEALS
	= Standard seals
e	V = FPM seals
	T = HNBR seals





* = distance between rods centres

Bore		20	25	32	40	50	63	80	100
A		35	40	45	55	65	80	100	120
В		22	26	32	40	50	62	82	103
С		22	28	34	40	50	62	82	103
D		M4	M5	M5	M5	M6	M6	M8	M8
ØE		4,5	5,5	5,5	5,5	6,5	8,5	8,5	8,5
ØF		7,5	9	9	9	10,5	13,5	13,5	13,5
G		4,5	5,5	5,5	5,5	6,5	8,5	8,5	8,5
Н		8	8	10	10	12	12	15	15
L		15	14,5	17,5	21	26	26	30,5	30,5
ØM		6	6	6	6	8	8	10	10
N	Non magnetic	29	30,5	32	33,5	35	38	44	47
IN .	Magnetic	34	35,5	37	38,5	40	43	49	52
P		26	28	32,5	38	46,5	56,5	72	89
Max. suggestion stroke		40	40	50	50	60	60	80	80

Weight (g)											
Non magnetic	Stroke 0	115	160	240	350	600	850	1290	2150		
	every 10 mm	25	35	45	65	90	110	140	165		
Magnetic	Stroke 0	130	180	270	400	660	950	1400	2270		
	every 10 mm	25	35	45	65	90	110	140	165		

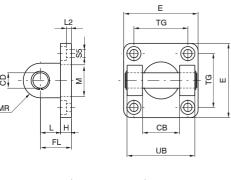


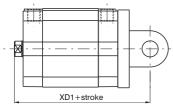
Rear clevis (MP2)

Coding: 1500.Ø.09F

	3
	BORE
	20 = Ø20
	25 = Ø25
	32 = Ø32
Ø	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100







This type of mounting allows anchorage of the cylinder either parallel or right angle to plane; the cylinder rod can oscillate and self-align as necessary when under load.
It is made of aluminium alloy and painted black.

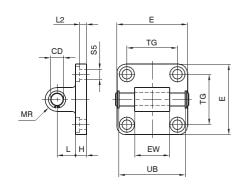
Bore	20	25	32	40	50	63	80	100
CB (H9)	16	20	26	28	32	40	50	60
CD (H 9)	8	10	10	12	12	16	16	20
E	35	40	45	52	65	75	95	115
Н	6	8	9	9	11	11	14	14
L	12	12	13	16	16	21	22	27
MR	8	9	10	12	12	16	16	20
TG	26	28	32,5	38	46,5	56,5	72	89
UB	35	40	45	52	60	70	90	110
FL	18	20	22	25	27	32	36	41
L2	/	/	5,5	5,5	6,5	6,5	10	10
S5 (H13)	5,5	6,6	6,6	6,6	9	9	11	11
Weight (g)	45	75	80	130	185	310	530	910

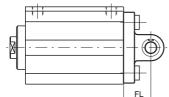
Rear male clevis (MP4)

Coding: 1500.Ø.09/1F

Couli	ig. 1500.p.03/11
	BORE
	20 = Ø20
	25 = Ø25
	32 = Ø32
Ø	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100







This type of mounting allows anchorage of the cylinder either parallel or right angle to plane; the cylinder rod can oscillate and self-align as

necessary when under load. It is made of aluminium alloy and painted black.

Bore	20	25	32	40	50	63	80	100
CD (H9)	8	10	10	12	12	16	16	20
E	35	40	45	52	65	75	95	115
EW	16	20	26	28	32	40	50	60
Н	6	8	9	9	11	11	14	14
L	12	12	13	16	16	21	22	27
MR	8	9	10	12	12	16	16	20
TG	26	28	32,5	38	46,5	56,5	72	89
UB	35	40	46	53	61	71	91	111
FL	18	20	22	25	27	32	36	41
L2	/	/	5,5	5,5	6,5	6,5	10	10
S5 (H 13)	5,5	6,6	6,6	6,6	9	9	11	11
Weight (g)	53	85	90	130	190	340	580	960

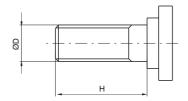


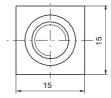
Slot fixing screws

Coding: 1500.1**1**F

Coding: 1300.10F							
	SIZE						
	5 = from Ø20 to Ø32						
0	6 = from Ø40 to Ø63						
	8 = Ø80 and Ø100						

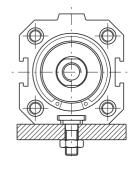


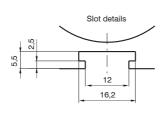




Example of mounting with square head screws







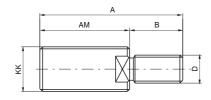
Bore	20	25	32	40	50	63	80	100
ØD	M6	M6	M6	M8	M8	M8	M10	M10
Н	15	15	15	20	20	20	25	25
Weight (g)	10				18		2	5

Nipple with ISO standard thread

Coding: 1500.Ø.17F

Coair	ig: 1300.Ø.17F
	BORE
	20 = Ø20
	25 = Ø25
	32 = Ø32
Ø	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100





Fitted on the female thread of the compact cylinders, restore the ISO configurations rod (ISO 6432 for cylinders Ø20 and Ø25; ISO 6431 for cylinders from Ø32 to Ø100).

Bore	20	25	32	40	50	63	80	100
KK	M8x1,25	M10x1,25	M10x1,25	M12x1,25	M16x1,5	M16x1,5	M20x1,5	M20x1,5
AM	20	22	22	24	32	32	40	40
Α	26	30	32	36	47	47	58	58
В	6	8	10	12	15	15	18	18
D	M4	M5	M6	M10	M12	M12	M16	M16
Weight (g)	8	15	16	27	65	65	110	110



Series 1500 Europe

This series of cylinders is available in two versions with different threaded fixing holes. The first one includes cylinders from Ø32 to Ø100 called "ISO" with fixing holes same as cylinders ISO 6431 - VDMA 24562.

Cylinders from Ø20 to Ø100 called "UNITOP", parts of second series, are mainly according to standard UNITOP RU - P/6 - P/7. Cylinders Ø12 and Ø16 non standard, are interchangeable with similar products available on the market.

The ISO version uses all fixing devices of series 1320 with exception of intermediate trunnion, while for cylinders Ø12, Ø16 and for "UNITOP" version are available fixing devices as flanges, foot, male and female clevis made with aluminium or steel. For use of magnetic sensors see directions on next page.

Construction characteristics

Body	anodized aluminium
Piston rod bushings	sintered bronze
Seals	PUR (on request HNBR)
Springs	zinc plated steel for springs
Pistons	from Ø12 to Ø25 brass from Ø32 from Ø100 aluminium alloy 2011 UNI 9002/5
Piston rod	from Ø12 to Ø25 stainless steel froml Ø32 to Ø100 C43 chromed (on request stainless steel for all bores)
End caps	from Ø12 to Ø25 aluminium alloy UNI 9006/1 anodised from Ø32 to Ø100 UNI 5076 aluminium die-casting and painted (cataphoresis)
Fixing screws	zinc plated steel

Operational characteristics

Fluid	Filtered and lubricated air or non	
Max. working pressure	10 bar	_
Working temperature	-30°C +80°C with standard seals (magnetic or non magnetic piston)	
	-5°C +80°C with HNBR seals (magnetic piston)	
	-5°C +120°C with HNBR seals (non magnetic piston)	

Please follow the suggestions below to ensure a long life for these cylinders:

- · use clean and lubricated air.
- · correct alignment during assembly with regard to the applied load so as to avoid radial components or bending the rod.
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).
- evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

Please note: air must be dried for applications with lower temperature.

Use hydraulic oils H class (ISO VG32) for correct continued lubrication.

Standard strokes

VERSION		DOUBLE ACTING CONTRACTOR CONTRACT							
Base	•					•			
Throughrod	•					•			
Bored through rod			•			•			
Non-rotating device				•		•			
Through rod and non-rotating device				•		•			
BORE	Standard strokes	*Maximum suggested strokes	Max. stroke	**Standard strokes	Standard strokes	Maximum suggested strokes (please get in touch with our sales rep. for the dimensions)			
12	from 5 to 40 mm every 5 mm	150	65		5-10	20			
16	nom s to 40 mm every 5 mm	250	100	40					
20 25	from 5 to 50 mm every 5 mm	450	110	40					
32 40			125		from 5 to 25 mm every 5	75			
50 63	from 5 to 80 mm every 5 mm	650	150	80	mm ´				
80 100			200						

^{*}Cylinders with longer strokes than those in the chart are also available.

The end user is responsible for the load applied on the product and for its correct use.

For special applications, please get in touch with our sales rep.

**Cylinders with longer strokes than those in the chart are also available, exceptionally for applications without twisting moments and/or radial loads on the anti-rotation device.

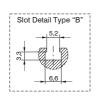
Minimum and maximum springs load

Bore	Ø12	Ø16	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
Min. load (N)	3,9	7,2	7,8	9,8	12,3	16,7	27,5	37,3	59,4	101,3
Max. load (N)	12,7	37,2	20,6	25,5	34,3	44,1	51,0	63,8	99,4	141,9

BASIC version double and single acting



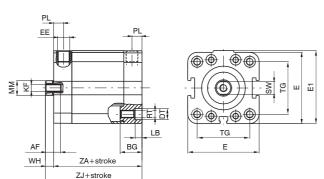
for bores from Ø12 to Ø25 use sensors codes 1580._, MHS._, MRS._ only



Slot Detail Type "A"







ВG

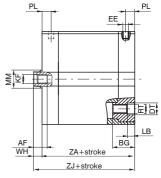
ZA+stroke ZJ+stroke



for bores from Ø32 to Ø50 use sensors codes 1500._, RS._, HS._ (slot A) 1580._, MHS._, MRS._ (slot B and slot A with adapter code 1380.01F)

for bores from Ø63 to Ø100 use sensors codes 1500._, RS._, HS._ and 1580._, MHS._, MRS._ (with adapter code 1380.01F)

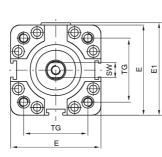




M 자

AF

WH



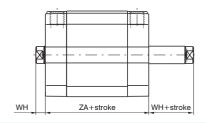
D D

TG

Ш

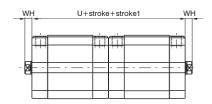
Through rod cylinder version, double and single acting





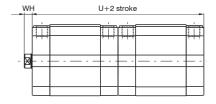
Tandem with opposed rods





Tandem push with common rods

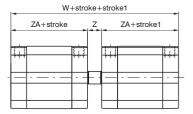




3 | 140

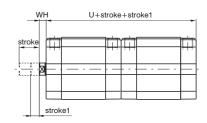
Opposed tandem with common rods





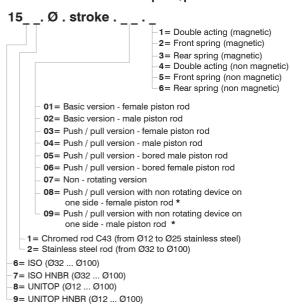
Tandem push with independent rods



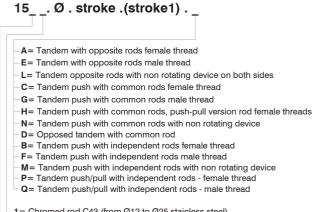


Ordering code

Basic version push/pull



Tandem version



- 1= Chromed rod C43 (from Ø12 to Ø25 stainless steel)
- 2= Stainless steel rod (from Ø32 to Ø100)
- 6= ISO (Ø32 ... Ø100)
- 7= ISO HNBR (Ø32 ... Ø100)
- 8= UNITOP (Ø12 ... Ø100)
- 9= UNITOP HNBR (Ø12 ... Ø100)

* for single acting version, the spring is on the anti-rotation side

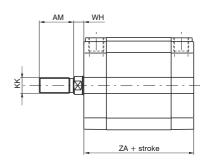
Table of dimensions

В	ore	12	16	20	25	32	40	50	63	80	100
AF		6	8	10	10	12	12	12	12	16	20
BG		19	19	20	20	17,5	17,5	19,5	19,5	23,5	24,5
DT		6	6	8	8	10	9	10,5	10,5	14	14
E		29	29	36	40	48	57	67	80	102	122
E1		30	30	37,5	41,5	49,5	58,5	69	82	105	125
EE		M 5	M 5	M 5	M 5	G 1/8"	G 1/4"				
KF		М3	M 4	M 5	M 5	M 6	M 6	M 8	M 8	M 10	M12
LB		3,5	3,5	4,8	4,8	5,5	5,5	6,5	6,5	8,5	8,5
MM		6	8	10	10	12	12	16	16	20	25
PL		8	8	8	8	8	8	8	8	8,5	10,5
RT		M 4	M 4	M 5	M 5	M 6	M 6	M 8	M 8	M 10	M 10
SW		5	7	8	8	10	10	13	13	17	22
TGISO		/	/	/	/	32,5	38	46,5	56,5	72	89
TG UNITOP		18	18	22	26	32	42	50	62	82	103
U		76	76	76	79	89	91	91	100	112	133
W		85	85	85	90	101	104	106	115	128	153
WH		4,5	4,5	4,5	5,5	6	6,5	7,5	7,5	8	10
Z		9	9	9	11	12	13	15	15	16	20
ZA*		38	38	38	39,5	44,5	45,5	45,5	50	56	66,5
ZJ*		42,5	42,5	42,5	45	50,5	52	53	57,5	64	76,5
Maiabt (a)	Stroke 0	88	90	140	170	210	320	460	690	1390	2290
Weight (g)	every 5 mm	8	8	12	13	15	19	25	31	50	66

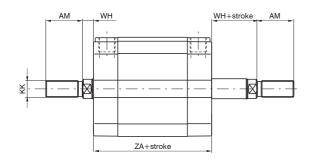
Dimensions marked with * increase of 10 mm for cylinders Ø12 front spring version

Tabular weights above refer to BASIC version; the weights of TANDEM versions are approximately double those shown

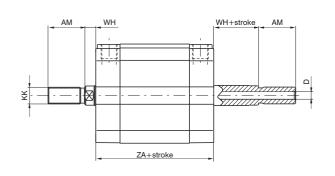
Basic version male piston rod



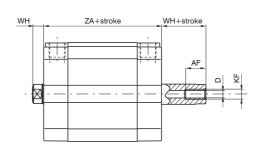
Through rod cylinder version male rod



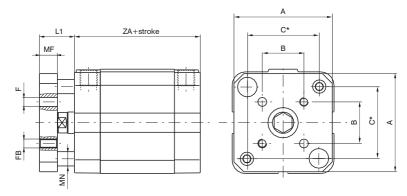
$Through\ rod\ cylinder\ version\ bored\ male\ piston\ rod$



Through rod cylinder version bored female piston rod



Non-rotating version



* = distance between rods centres

Bore	12	16	20	25	32	40	50	63	80	100
A	28,5	28,5	35,5	39,5	45	55	65	80	100	120
AF	6	8	10	10	12	12	12	12	16	20
AM	16	20	22	22	22	22	24	24	32	40
В	9,9	9,9	12	15,6	19,8	23,3	29,7	35,4	46	56,6
С	18	18	22	26	34	40,5	49	59,5	77	94
D	2,3	3,2	3,8	3,8	4,5	4,5	6	6	8	10
F	3	3	4	5	5	5	6	6	8	10
FB	М3	М3	M 4	M 5	M 5	M 5	M 6	M 6	M 8	M 10
KF	M 3	M 4	M 5	M 5	M 6	M 6	M 8	M 8	M 10	M 12
KK	M6X1	M8X1,25	M10X1,25	M10X1,25	M10X1,25	M10X1,25	M12X1,25	M12X1,25	M16X1,5	M20X1,5
L1	10,5	10,5	12,5	13,5	16	16,5	19,5	19,5	22	24
MF	6	6	8	8	10	10	12	12	14	14
MN	5	5	6	6	8	8	10	10	12	12
WH	4,5	4,5	4,5	5,5	6	6,5	7,5	7,5	8	10
ZA	38	38	38	39,5	44,5	45,5	45,5	50	56	66,5



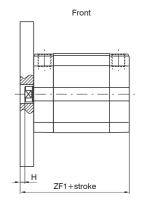
Front and rear flanges (MF1 - MF2)

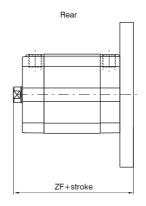
Coding: 15**0**.Ø.**6**

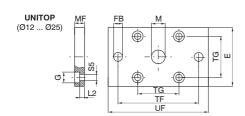
Couii	ig. 13 w. 2. w
	STANDARDS
0	00 = ISO
	80 = UNITOP
	BORE
	12 = Ø12 (UNITOP)
	16 = Ø16 (UNITOP)
	20 = Ø20 (UNITOP)
	25 = Ø25 (UNITOP)
Ø	32 = Ø32 (ISO / UNITOP)
	40 = Ø40 (ISO / UNITOP)
	50 = Ø50 (ISO / UNITOP)
	63 = Ø63 (ISO / UNITOP)
	80 = Ø80 (ISO / UNITOP)
	100 = Ø100 (ISO / UNITOP)
	MATERIALS
M	03F = Steel
	03/1F = Aluminium (UNITOP)

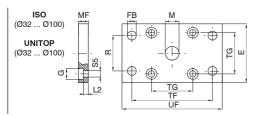


Plate which allows anchorage of the cylinder at a right angle to the plane. It is made with zincplated extruded steel or with aluminium.









		ISO Dimensions						UNITOP Dimensions								
Bore		32	40	50	63	80	100	12-16	20	25	32	40	50	63	80	100
E		45	52	65	75	95	115	29	36	40	50	60	68	87	107	128
S5 (H13)		6,6	6,6	9	9	11	11	4,5	5,5	5,5	6,6	6,6	9	9	11	11
FB(H13)		7	9	9	9	12	14	5,5	6,6	6,6	7	9	9	9	12	14
G		10,5	11	15	15	18	18	9	10	10	11	11	15	15	18	18
Н		4	3,5	4,5	4,5	8	6	5,5	5,5	4,5	4	3,5	4,5	7,5	7	5
L2		5	5	6,5	6,5	8	8	4,6	4,6	4,6	3,6	3,6	3,4	6,4	4,4	4,4
M(H11)		30	35	40	45	45	55	10	12	12	14	14	18	18	23	28
MF(JS14)		10	10	12	12	16	16	10	10	10	10	10	12	15	15	15
R(JS14)		32	36	45	50	63	75	/	/	/	32	36	45	50	63	75
TF(JS14)		64	72	90	100	126	150	43	55	60	65	82	90	110	135	163
TG		32,5	38	46,5	56,5	72	89	18	22	26	32	42	50	62	82	103
UF		80	90	110	120	150	170	55	70	76	80	102	110	130	160	190
ZF		60,5	62	65	69,5	80	92,5	52,5	52,5	55	60,5	62	65	72,5	79	91,5
ZF1		54,5	55,5	57,5	62	72	82,5	48	48	49,5	54,5	55,5	57,5	65	71	81,5
\A/=:= =+ (=)	Steel	160	250	480	620	1430	1970	100	170	210	270	430	600	1210	1810	2610
Weight (g)	Aluminium	/	/	/	/	/	/	35	60	70	90	150	210	420	630	900

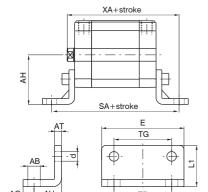
Foot

Coding: 15**ℚ**.Ø.05/1F

	·9· · · · · · · · · · · · · · · · · · ·								
	STANDARDS								
0	00 = ISO								
	80 = UNITOP								
	BORE								
	12 = Ø12 (UNITOP)								
	16 = Ø16 (UNITOP)								
	20 = Ø20 (UNITOP)								
	25 = Ø25 (UNITOP)								
Ø	32 = Ø32 (ISO / UNITOP)								
	40 = Ø40 (ISO / UNITOP)								
	50 = Ø50 (ISO / UNITOP)								
	63 = Ø63 (ISO / UNITOP)								
	80 = Ø80 (ISO / UNITOP)								
	100 = Ø100 (ISO / UNITOP)								



Element used to anchor the cylinder parallel to the mounting plane. They are made with stamped and pierced sheet metal black painted.



(1 piece)

	ISO Dimensions							UNITOP Dimensions							
Bore	32	40	50	63	80	100	12-16	20	25	32	40	50	63	80	100
AB (H14)	7	9	9	9	12	14	5,5	6,6	6,6	6,6	9	9	11	11	13,5
AH (JS15)	32	36	45	50	63	71	22	27	30	32	42,5	47	59,5	65,5	78
AO (±0,2)	11	8	15	13	14	16	4,5	6	6	8	8	8	12	12	12
AT	4	4	5	5	6	6	3	4	4	5	5	6	6	8	8
AU (±0,2)	24	28	32	32	41	41	13	16	16	18	20	24	27	30	33
d	7	7	9	9	11	11	4,4	5,4	5,4	6,6	6,6	9	9	11	11
Е	45	52	65	75	95	115	30	36	40	50	60	68	84	102	123
L1	30	30	36	35	47	53	17,5	22	23	24	29,5	30	39	36,5	38,5
SA	92,5	101,5	109,5	114	138	148,5	64	70	71,5	80,5	85,5	93,5	104	116	132,5
TG	32,5	38	46,5	56,5	72	89	18	22	26	32	42	50	62	82	103
TR	32	36	45	50	63	75	18	22	26	32	42	50	62	82	103
XA	74,5	80	85	89,5	105	117,5	55,5	58,5	61	68,5	72	77	84,5	94	109,5
Weight (g)	50	70	120	180	320	400	20	35	45	75	100	150	250	390	500

UNITOP rear male clevis

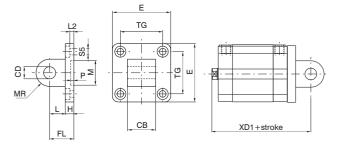
..... 1500 Ø **M**

09/2F = Steel

	Coding: 158U. Ø. W							
	Ø	BORE						
		12 = Ø12						
		16 = Ø16						
		20 = Ø20						
		25 = Ø25						
ĺ		MATERIALS						
ı	•	09/1E - Aluminium						

This type of mounting allows anchorage of the cylinder both parallel and at the right angle to the plane. The cylinder rod can oscillate and self-align to the connected load. It's made with aluminium alloy black painted or with zinc plated steel (from Ø20).





В	ore	12-16	20	25
CB(H14)		12	16	16
CD (H9)		6	8	8
E (±0,5)		27	34	38
FL		16	20	20
Н		6	6	6
L		10	14	14
L2 (±0,5)		2,6	2,6	2,6
M (H11)		10	12	12
MR		6	8	8
P (+0,3)		3	3	3
S5 (H13)		4,5	5,5	5,5
TG (±0,2)		18	22	26
XD1		58,5	62,5	65
Weight (g)	Steel	/	70	80
weight (g)	Aluminium	13	25	28

F

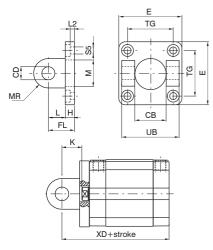
Front clevis

Coding: 15**∅**.Ø.**∅**

	•
	STANDARDS
0	00 = ISO
	80 = UNITOP
	BORE
	32 = Ø32
	40 = Ø40
Ø	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
	MATERIALS
M	08F = Aluminium (ISO)
W	11F = Aluminium (UNITOP)
	13F = Steel (UNITOP)
	•



This type of mounting allows anchorage of the cylinder both parallel and at the right angle to the plane. The cylinder rod can oscillate and self-align to the connected load. It's made with aluminium alloy black painted or with zinc plated steel.



		ISO Dimensions						UNITOP Dimensions					
Bore		32	40	50	63	80	100	32	40	50	63	80	100
CB (H14)		26	28	32	40	50	60	26	28	32	40	50	60
CD (H9)		10	12	12	16	16	20	10	12	12	16	16	20
E		45	52	65	75	95	115	48	58	66	83	102	123
FL		22	25	27	32	36	41	22	25	27	32	36	41
Н		9	9	11	11	14	14	9	9	11	11	13	15
K		16	18,5	19,5	24,5	28	31	16	18,5	19,5	24,5	28	31
L		13	16	16	21	22	27	13	16	16	21	23	26
L2		5,5	5,5	6,5	6,5	10	10	5,5	5,5	6,5	6,5	10	10
М		30	35	40	45	45	55	14	14	18	18	23	28
MR		10	12	12	16	16	20	10	12,5	12,5	15	15	20
S5		6,6	6,6	9	9	11	11	6,6	6,6	9	9	11	11
TG		32,5	38	46,5	56,5	72	89	32	42	50	62	82	103
UB		45	52	60	70	90	110	45	52	60	70	90	110
XD		66,5	70,5	72,5	82	92	107,5	66,5	70,5	72,5	82	92	107,5
XD1		72,5	77	80	89,5	100	117,5	72,5	77	80	89,5	100	117,5
Maight (g)	Steel	/	/	/	/	/	/	180	310	420	700	1240	2210
Weight (g)	Aluminium	40	70	120	170	360	570	65	110	145	240	430	770



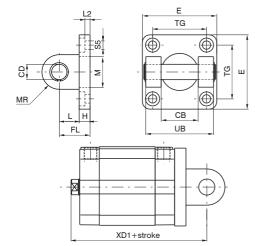
Rear clevis (MP2)

Coding: 15**ℚ**.∅.

oou	ig. 10
	STANDARDS
0	00 = ISO
	80 = UNITOP
	BORE
	32 = Ø32
	40 = Ø40
Ø	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
	MATERIALS
	09F = Aluminium (ISO)
M	10F = Aluminium (UNITOP)
	12F = Steel (UNITOP)



This type of mounting allows anchorage of the cylinder both parallel and at the right angle to the plane. The cylinder rod can oscillate and self-align to the connected load. It's made with aluminium alloy black painted or with zinc plated



		ISO Dimensions							UNITOP Dimensions					
Bore		32	40	50	63	80	100	32	40	50	63	80	100	
CB (H14)		26	28	32	40	50	60	26	28	32	40	50	60	
CD (H9)		10	12	12	16	16	20	10	12	12	16	16	20	
E		45	52	65	75	95	115	48	58	66	83	102	123	
FL		22	25	27	32	36	41	22	25	27	32	36	41	
Н		9	9	11	11	14	14	9	9	11	11	13	15	
K		16	18,5	19,5	24,5	28	31	16	18,5	19,5	24,5	28	31	
L		13	16	16	21	22	27	13	16	16	21	23	26	
L2		5,5	5,5	6,5	6,5	10	10	5,5	5,5	6,5	6,5	10	10	
M		30	35	40	45	45	55	14	14	18	18	23	28	
MR		10	12	12	16	16	20	10	12,5	12,5	15	15	20	
S5		6,6	6,6	9	9	11	11	6,6	6,6	9	9	11	11	
TG		32,5	38	46,5	56,5	72	89	32	42	50	62	82	103	
UB		45	52	60	70	90	110	45	52	60	70	90	110	
XD		66,5	70,5	72,5	82	92	107,5	66,5	70,5	72,5	82	92	107,5	
XD1		72,5	77	80	89,5	100	117,5	72,5	77	80	89,5	100	117,5	
Waight (g)	Steel	/	/	/	/	/	/	220	360	480	830	1390	2500	
Weight (g)	Aluminium	80	120	180	300	500	860	80	125	170	290	480	865	

Slot fixing screws

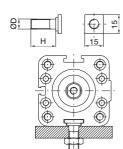
Coding: 1500.10F

Oun	ouning. 100011 O									
	SIZE									
	7 = Small slot (from Ø12 to Ø50)									
0	5 = Large slot (Ø32)									
	6 = Large slot (from Ø40 to Ø63)									
	8 = Large slot (from Ø80 to Ø100)									









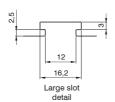


Example of mounting with square head screws





Small slot detail



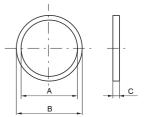
Bore	12 50	32	40 63	80 100
ØD	/	M6	M8	M10
Н	/	15	20	25
Weight (a)	8	10	18	25

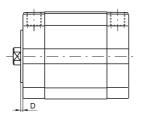
Centering rings

Coding: 1580.Ø.02F

	.g
	BORE
	32 = Ø32
	40 = Ø40
Ø	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100







This aluminium ring allows the center assembling

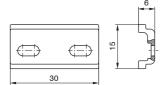
Bore	32	40	50	63	80	100
Α	25	30	35	40	40	50
B (e11)	30	35	40	45	45	55
С	3,5	3,5	3,5	4,5	5,5	5,5
D	1,5	1,5	1,5	2	2,5	2,5
Weight (g)	2	2	3	4	5	6



Sensor adapter (Series SR)

Coding: 1380.01F





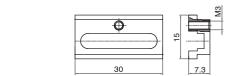
Weight 1 g



Sensor adapter (Series SQ-SU)

Coding: 1500.22F

 $\label{lem:accessory} A luminium \, accessory \, for \, sensor \, mounting \, square \, section \, in \, grooves \, "A" \, shape.$



Weight 4 g

Series 1500 Ecompact-S

Based on the ECOMPACT series with piston rods and centring diameters according to ISO 15552 standard

Construction characteristics

Body	anodized aluminium
Piston rod bushings	spheroid bronze on steel band with P.T.F.E. coat
Seals	standard: NBR Oil resistant rubber, PUR Piston rod seals (PUR or FPM on request)
Springs	stainless steel
Pistons	Ø32 and Ø40 acetal resin (aluminium on request) Ø50 and Ø63 aluminium (with FPM seals, aluminium for all of standard diameters)
Piston rod	C43 chromed steel (on request stainless steel)
End caps	aluminium alloy casting painted with brass centring bearing
Fixing screws	zinc plated steel

Operational characteristics

Fluid	filtered and preferably lubricated air or not (if lubricated the lubrication must be continuous)
Max. pressure	10 bar
Working temperature	-5°C +70°C with standard seals (magnetic or non magnetic piston) -30°C +80°C with PUR seals (magnetic or non magnetic piston) -5°C +80°C with FPM seals (magnetic piston) -5°C - +150°C with FPM seals (non magnetic piston)

Use and maintenance

Please follow the suggestions below to ensure a long life for these cylinders:

- use clean and lubricated air.
- correct alignment during assembly with regard to the applied load so as to avoid radial components or bending the rod.
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).
- evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

Please note: air must be dried for applications with lower temperature.

Use hydraulic oils H class (ISO VG32) for correct continued lubrication.

Stroke tolerance, minimum and maximum spring loads and cushioning length $\,$

Bore (mm)	Stroke tolerance (mm)	Minimum springs load (N)	Maximum springs load (N)	Cushioning length (mm)
Ø32		19,6	25,5	6,5
Ø40	+ 2 / 0 mm	25,5	42,2	8
Ø50		44,1	96,3	7,5
Ø63	+ 2,5 / 0 mm	44,1	96,3	7,5

Standard strokes

DOUBLE ACTING BASIC version and THROUGH ROD CYLINDER version

Cylinders with longer strokes than those in the chart are also available.

The end user is responsible for the load applied on the product and for its correct use.

For special applications, please get in touch with our sales rep.

														Sti	oke															
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	100	125	150	160	200	250	300	320	350	400	450	500		
Bore												WITH	OUT	CUSI	IIONI	NG D	EVIC	E											Maximum suggested strokes	
Ø32	•	•		•	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•	•	•	•							
Ø40	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•						0.50	
Ø50	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•			650	
Ø63	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•				
Bore												WI	THCL	JSHI	ONINC	3 DE	/ICE		•	•				•					Maximum suggested strokes	
Ø32					•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•							
Ø40					•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•						050	
Ø50					•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•			650	
Ø63					•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•			1	

DOUBLE ACTING THROUGH ROD CYLINDER BORED version

Cylinders with longer strokes than those in the chart are also available.

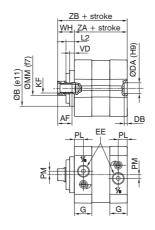
The end user is responsible for the load applied on the product and for its correct use.

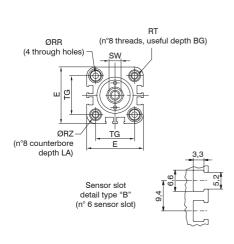
For special applications, please get in touch with our sales rep.

														Str	oke														
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	25	30	35	40	45	50	55	60	65	70	75	80	
Bore WITHOUT CUSHIONING DEVICE										WI	THCL	JSHIC	NINC	a DEV	ICE				Maximum suggested strokes										
Ø32	•	•	•	•	•	•	•	•	•	•							•	•		•	•	•							405
Ø40	•	•	•	•	•	•	•	•	•	•							•	•	•	•	•	•							125
Ø50	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•		450
Ø63	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•		150

Basic version

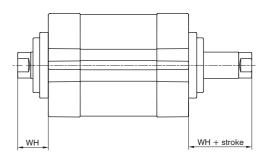






Through rod cylinder version

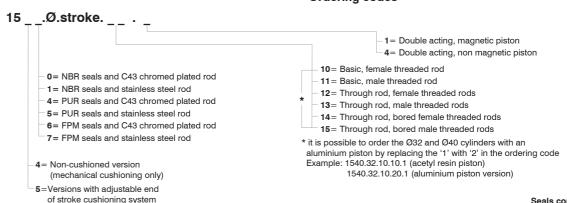




PNEUMATIC ACTUATION



Ordering codes



Seals compounds scheme

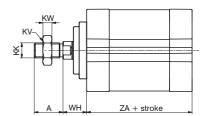
NBR: Oil resistant nitrilic rubber seals

PUR: Polyurethane seals **FPM**: Fluoropolymer rubber seals

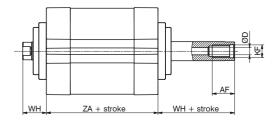
Table of dimensions

	Bore	Ø32	Ø40	Ø50	Ø63	
AF (min)		12	16	20	20	
ØB (e11)		30	35	40	45	
BG		16	16	16	16	
ØDA (H9)		9	9	12	12	
DB (+0,1/0)		2,5	2,5	2,6	2,6	
E (max)		47,5	55	66	78	
EE		G1/8"	G1/8"	G1/8"	G1/8"	
G		14,5	15	15	15	
KF		M8	M10	M12	M12	
LA (0/-0,1)		5	5	5	5	
L2		7	7	10	10	
ØMM (f7)		12	16	20	20	
PL (+0,1/0)		7,5	8	8	8	
PM		3	/	/	/	
ØRR (min)		5,1	5,1	6,6	6,6	
RT		M6	M6	M8	M8	
ØRZ (min)		8,5	8,5	10,5	10,5	
SW (0/-0,1)		10	13	17	17	
TG (±0,2)		32,5	38	46,5	56,5	
VD		4	4	5	5	
/H (±1)		14	14	18	18	
A (±0,5)		44	45	45	49	
ZB (+1/0)		58	59	63	67	
Majabt (a)	stroke	240	330	530	700	
weight (g)	eight (g) every 5 mm		17	24	27	

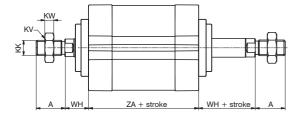
Basic version male piston rod



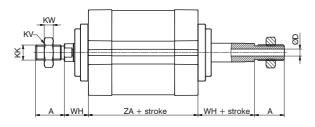
Through rod cylinder version bored female piston rod



Through rod cylinder version male rod

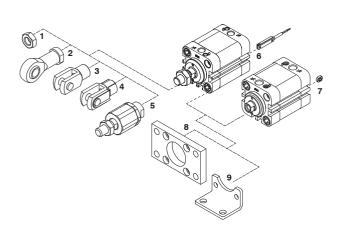


$Through\ rod\ cylinder\ version\ bored\ male\ piston\ rod$

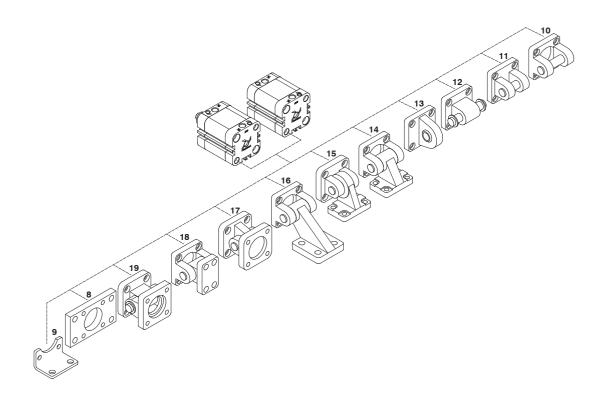


Bore	A (0/-0,5)	AF (min)	DØ	KF	кк	KV 🏂	KW	WH (±1)	ZA (±0,5)
Ø32	22	14	4,5	M8	M10x1,25	17	6	14	44
Ø40	24	18	4,5	M10	M12x1,25	19	7	14	45
Ø50	32	24	6	M12	M16x1,5	24	8	18	45
Ø63	32	24	6	M12	M16x1,5	24	8	18	49





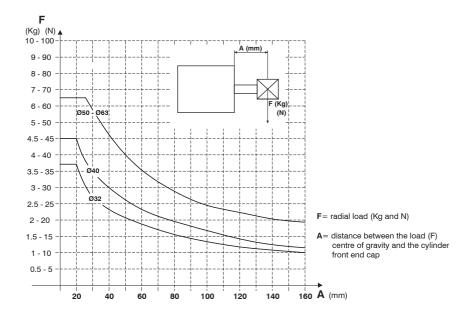
Position	Description	Cod	ling
1	Nuts	1320.32.18F 1320.40.18F 1320.50.18F	(Ø32) (Ø40) (Ø50 and Ø63)
2	Balljoint	1320.32.32F 1320.40.32F 1320.50.32F	(Ø32) (Ø40) (Ø50 and Ø63)
3	Fork with pin	1320.32.13F 1320.40.13F 1320.50.13F	(Ø32) (Ø40) (Ø50 and Ø63)
4	Fork with clips	1320.32.13/1F 1320.40.13/1F 1320.50.13/1F	(Ø32) (Ø40) (Ø50 and Ø63)
5	Self-aligning joint	1320.32.33F 1320.40.33F 1320.50.33F	(Ø32) (Ø40) (Ø50 and Ø63)
6	Sensors	(see senso	or section)
7	Valves direct mounting bolt	1500.20F	(Ø32 Ø63)



NoteFor dimensions and characteristics of fixings see ISO 15552 cylinder chapter (for the foot pos. 9, see compact cylinder chapter ISO 21287).

Position	Description	Cod	ling:
Position	Description	Aluminium	Steel
8	Front and rear flanges (MF1 - MF2)	1390.Ø.03FP	1380.Ø.03F
9	Short mounting foot brackets (in sheet metal MS1)	/	1540.Ø.05/1F
10	Rear clevis (MP2)	1380.Ø.09F	1320.Ø.20F
11	Rear narrow clevis	1380.Ø.30F	1320.Ø.29F
12	Rear male clevis (MP4)	1380.Ø.09/1F	1320.Ø.21F
13	Rear male clevis (with jointed head according to DIN 648K standard)	1380.Ø.15F	1320.Ø.25F
14	Square angle trunnion (AB7)	1380.Ø.35F	1320.Ø.23F
15	Complete square angle trunnion (with joined head according to DIN 648K standards)	/	1320.Ø.27F
16	Square angle trunnion (not specified by ISO 15552)	1380.Ø.11F	/
17	Complete standard trunnion (with joined head according to DIN 648K standards)	1380.Ø.36F	1320.Ø.26F
18	Standard trunnion (not specified by ISO 15552)	1380.Ø.10F	/
19	Standard complete trunnion	1380.Ø.22F	1320.Ø.22F

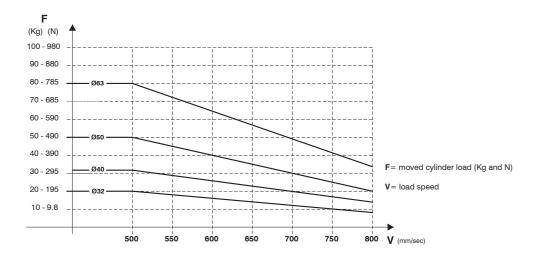
Admissible maximum radial load diagram



The diagram shows the maximum Radial load **F** (in Newtons) that can be applied to the cylinder piston rod as a function of the distance **A** (in mm); based upon the standard version cylinder under static conditions

Important: Do not exceed the recommended values in the table as reduced life or damage to the cylinder may result.

End of stroke cushioning capacity diagram



The diagram shows, for each diameter, the safety curves relative to the maximum loads **F** which can be moved by the cylinder in function of it's speed **V**. The data has been calculated under the following test conditions: Cylinder mounted vertically with the rod pointing down, air pressure at 5 bar and with a guided load.

 $Important: Do \ not \ exceed \ the \ recommended \ values \ in \ the \ table \ as \ reduced \ life \ or \ damage \ to \ the \ cylinder \ may \ result.$

Series 6500

Construction characteristics

Body	anodized aluminium
Piston rod bushings	sintered bronze
Rear end cap	anodized aluminium
Seals	oil resistant NBR rubber
Piston	Brass
Cushioning washer	PUR
Piston rod	stainless steel

Operational characteristics

Fluid	filtered and lubricated air or not (if lubricated the lubrication must be continuous)
Max. working pressure	7 bar
Working temperature	-5 °C +70 °C
Minimum working pressure	0.6 bar (for bore Ø10 - Ø16) 0.5 bar (for bore Ø20 - Ø25)
Cushioning	with elastic bumper
Stroke tolerance	+1 / 0 mm
Piston speed	50 500 mm/s (without load)

Standard strokes

	Stroke										
Bore	5	10	15	20	25	30	40	50			
Ø10	•	•	•	•	•	•					
Ø16	•	•	•	•	•	•					
Ø20	•	•	•	•	•	•	•	•			
Ø25	•	•	•	•	•	•	•	•			

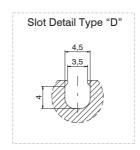


Multimount cylinders

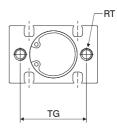
Coding: 6500.Ø.@.1.@

$\overline{}$	
	BORE
	10 = Ø10
Ø	16 = Ø16
	20 = Ø20
	25 = Ø25
	STROKE
	5 = 5 mm
	10 = 10 mm
	15 = 15 mm
•	20 = 20 mm
	25 = 25 mm
	30 = 30 mm
	40 = 40 mm
	50 = 50 mm
	PISTON
P	= non-magnetic
	M = magnetic

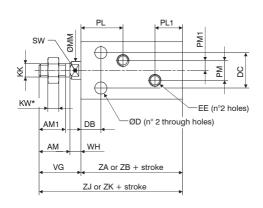


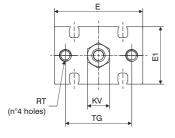


Overall dimensions



*Ø10: n° 2 piston rod nuts Ø16: n° 1 piston rod nut





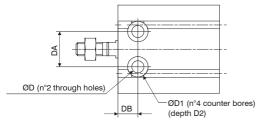
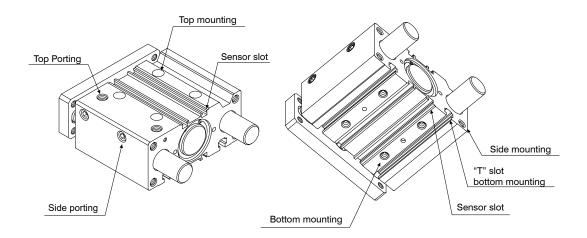


Table of dimensions

	Bore		Ø16	Ø20	Ø25	
AM		/	12,5	14	18	
AM1		10	11	12	15,5	
ØD		Ø3,2	Ø4,5	Ø5,5	Ø5,5	
ØD1		Ø6	Ø7,6	Ø9,3	Ø9,3	
D2		5	6,5	8	9	
DA		11	14	16	20	
DB		7	7	9	10	
OC .		9	12	16	20	
		24	32	40	50	
1		15	20	26	32	
E		M5	M5	M5	M5	
(K		M4	M5	M6	M8	
(V		7	8	10	13	
(W		3	4	5	5	
MM		Ø4	Ø6	Ø8	Ø10	
PL		16,5	16,5	19	21,5	
PL1		10	11,5	12,5	13	
PM		/	4	9	9	
PM1		/	2	4,5	4,5	
RT		M3 (useful depth 5)	M4 (useful depth 6)	M5 (useful depth 8)	M5 (useful depth 8)	
SW		/	5	6	8	
·G		18	25	30	38	
/G		16	16	19	23	
VH		/	3,5	5	5	
'A magnetic		36	40	46	50	
'B non magnetic		36	30	36	40	
ZJ magnetic	52		56	65	73	
K non magnetic		52	46	55	63	
A/-:	Stroke 0	32	44	84	159	
Weight (g)	every 5 mm	4	6	11	17	

Series 6100-6101-6110



These guided compact cylinders, characterised by reduced overall dimensions, can be used for the compression, conveyance and manipulation of objects in many industrial sectors.

Similarly they can also be used in pushing, lifting and stopping applications.

These cylinders are available in sizes 32mm to 63 mm diameter, and comprise a single compact cylinder with integral guide rods, making it a true guide cylinder designed with installation flexibility and space saving in mind.

The rod guide is available in two styles:

Self-lubricating bronze bushes - useful for absorbing lateral loads and forces, especially as a stopper.

Bearing bushes - guaranteeing high precision and uniform movement with low friction characteristics, useful with mis-aligned loads. Guided compact cylinders are ideal for use in applications requiring a combination of reduced dimensions and anti-rotation features.

Mounting can be achieved on three sides through holes or "T" slots.

When sensors are required, there are special slots in the barrel extrusion where 1580 series miniaturised sensors are easily fitted.

Construction characteristics

Body	anodized aluminium
Guiderods	C43 chromed steel (control unit with bronze bush) tempered and chromed steel (control unit with bearing bush)
Rods bushing	teflon coated bush
Piston rod bushing	bronze or bearing bushing
Rear end cap	anodized aluminium
Piston seals	oil resistant NBR rubber
Piston rod seals	PUR (NBR 12-16)
Plate	anodized aluminium
Piston	aluminium
Wipers	PUR
Piston rod	C43 chromed steel or stainless steel

Operational characteristics

Fluid	filtered and lubricated air or not (if lubricated the lubrication must be continuous)
Working pressure	max. 10 bar
Function	Double acting
Working temperature	-5 °C +70 °C
Cushioning	elastic bumper on both ends



Guided compact cylinder

Coding: 6100.Ø.**@.@**.

	g. 0100.2.0.0.
	BORE
	12 = Ø12
	16 = Ø16
	20 = Ø20
Ø	25 = Ø25
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	STROKE
	10 = 10 mm
	20 = 20 mm
	25 = 25 mm
	30 = 30 mm
	40 = 40 mm
	50 = 50 mm
	75 = 75 mm
	100 = 100 mm
•	125 = 125 mm
	150 = 150 mm
	175 = 175 mm
	200 = 200 mm
	250 = 250 mm *
	300 = 300 mm *
	350 = 350 mm *
	400 = 400 mm *
	450 = 450 mm *
	500 = 500 mm *
	CONTROLUNIT
	B = Control unit with bronze bush
e	C = Control unit with bearing
	bushes
	CONNECTIONS
•	= Side supply ports closed
_	L = Top supply ports closed





Construction characteristics

Body	anodized aluminium
Guide rods	C43 chromed steel (control unit with bronze bush) tempered and chromed steel (control unit with bearing bush)
Piston	aluminium
Piston rod	stainless steel (for bores Ø12, Ø16, Ø20, Ø25) C43 chromed steel (for bores Ø32, Ø40, Ø50, Ø63)
Piston rod bushings	bronze or bearing bushing
Bottom plates	anodized aluminium
Piston seals	oil resistant NBR rubber
Rod seal	PUR (NBR 12-16)
Wipers	PUR
Plate	zinc plated steel

^{*}Only for bronze bushings **B** version

Operational characteristics							
Cushioning	elastic bumper on both ends						
Fluid	filtered and lubricated air or not (if lubricated the lubrication must be continuous)						
Function	Double acting						
Working pressure (bar)	max 10						
Temperature °C	-5 +70						

Standard strokes

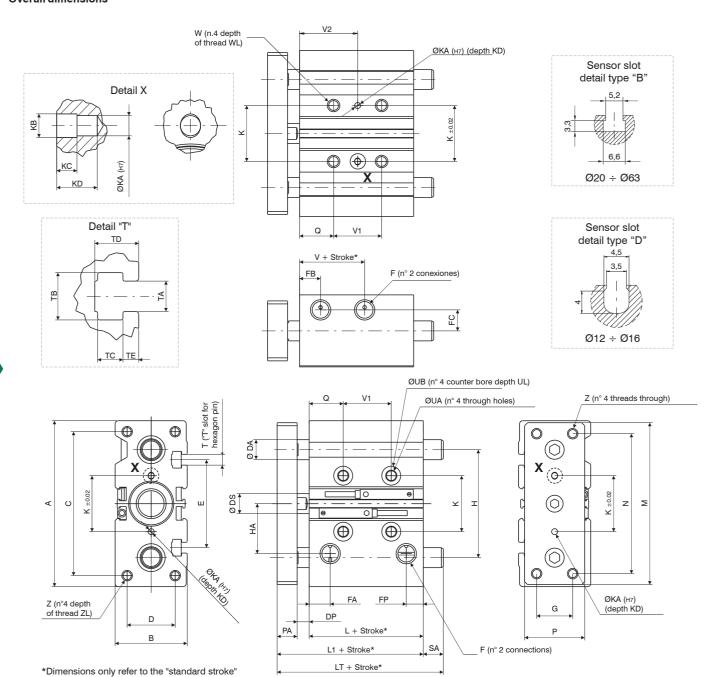
	Stroke																	
Bore	10	20	25	30	40	50	75	100	125	150	175	200	250	300	350	400	450	500
Ø12	•	•		•	•	•	•	•										
Ø16	•	•		•	•	•	•	•										
Ø20		•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Ø25		•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Ø32			•			•	•	•	•	•	•	•	•	•	•	•	•	•
Ø40			•			•	•	•	•	•	•	•	•	•	•	•	•	•
Ø50			•			•	•	•	•	•	•	•	•	•	•	•	•	•
Ø63			•			•	•	•	•	•	•	•	•	•	•	•	•	•
											Only fo	or bronze b	ushinas B	version				

Intermediate strokes can be obtained by adding specific spacers (5, 10, 15, 20 mm).

Example: It is possible to obtain a **6100.32.45.B** cylinder from a **6100.32.50.B** cylinder by adding a 5 mm spacer.

The Intermediate strokes manufactured without the use of spacers are considered special executions.

Overall dimensions





Overall dimensions

Bore	Ø12	Ø16	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63
Α	58	64	83	93	112	120	148	162
В	26	30	36	42	48	54	64	78
C	40	42	72	82	98	106	130	142
D	18	22	24	30	34	40	46	58
DA Control unit with bronze bushes	8	10	12	16	20	20	25	25
DA Control unit with bearing bushes	6	8	10	14	16	16	20	20
DP	2	4	5,5	5,5	9,5	10	13	13
DS	6	8	10	12	16	16	20	20
E	/	/	44	50	63	72	92	110
F	M5	M5	G1/8"	G1/8"	G1/8"	G1/8"	G1/4"	G1/4"
FA	11	11	11	12	13	13	13	14
FB	11	11	11	12	13	13	13	14
FC	8,5	10	10,5	13,5	15	18	21,5	28
FP FP	15	17	9	10,5	9,5	11	11	12,5
G	14	16	18	26	30	30	40	50
H	41,5	46	54	64	78	86	110	124
HA		23	+					124 55
K	19,5 23	23	25 28	28,5 34	34 42	38 50	47 66	55 80
	/	-	3	4	42			
KA	,	/	+	<u> </u>		4	5	5
KB	/	/	3,5	4,5	4,5	4,5	6	6
KC	/	/	3	3	3	3	4	4
KD	/	/	6	6	6	6	8	8
L	29	31	38	38,5	38,5	44	44	49
L1	39	43	53,5	54	60	66	72	77
LT Control unit with bronze bushes stroke ≤50	39	43	53,5	54	97	97	106,5	106,5
LT Control unit with bronze bushes stroke ≤50 stroke ≤200	57	64	84,5	85	102	102	118	118
LT >200 < Stroke ≤ 500	/	/	122	122	140	140	161	161
LT Control unit with bearing bushes		1		1	able 1	1	1	
M	56	62	81	91	110	118	146	158
N	48	52	70	78	96	104	130	130
PA	8	8	10	10	12	12	15	15
P	22	25	30	38	44	44	60	70
Q	5	5	17,5	17,5	21,5	22	24	24
SA Control unit with bronze bushes stroke ≤50	/	/	/	/	37	31	34,5	29,5
SA Control unit with bronze bushes ≤50 stroke ≤200	18	21	31	31	42	36	46	41
SA >200 < Stroke ≤ 500	/	/	68.5	68	80	74	89	84
SA Control unit with bearing bushes					able 1			
T	/	/	M5	M5	M6	M6	M8	M10
TA	/	/	5,4	5,4	6,5	6,5	8,5	11
ТВ	/	/	8,4	8,4	10,5	10,5	13,5	17,8
TC	/	/	4,5	4,5	5,5	5,5	7,5	10
TD	/	/	7,8	8,2	9,5	11	13,5	18,5
TE	/	/	2,8	3	3,5	4	4,5	7
UA	4,3	4,3	5,6	5,6	6,6	6,6	8,6	8,6
UB	8	8	9,5	9,5	11	11	14	14
UL	4,5	4,5	5,5	5,5	7,5	7,5	9	9
V	14	14	13	13	7,5	13	9	14
V1				0	able 2			
V2				5001	avie 2			
W	M5	M5	M6x1	M6x1	M8x1,25	M8x1,25	M10x1,5	M10x1,5
WL	10	10	12	12	16	16	20	20
Z	M4	M5	M5x0,8	M6x1	M8x1,25	M8x1,25	M10x1,5	M10x1,5
ZL	9	11	13	15	20	20	22	22

	Table 1										
Bore		LT		SA							
Dote	stroke≤30	30 <stroke≤100< td=""><td>100<stroke≤200< td=""><td>stroke≤30</td><td>30<stroke≤100< td=""><td>100<stroke≤200< td=""></stroke≤200<></td></stroke≤100<></td></stroke≤200<></td></stroke≤100<>	100 <stroke≤200< td=""><td>stroke≤30</td><td>30<stroke≤100< td=""><td>100<stroke≤200< td=""></stroke≤200<></td></stroke≤100<></td></stroke≤200<>	stroke≤30	30 <stroke≤100< td=""><td>100<stroke≤200< td=""></stroke≤200<></td></stroke≤100<>	100 <stroke≤200< td=""></stroke≤200<>					
Ø12	39	53	53	/	14	1					
Ø16	43	64	64	/	21	/					
Ø20	47	72	72	/	18,5	49					
Ø25	49	77	77	/	23	48					
	stroke <50	50≤stroke≤100	100 <stroke≤200< td=""><td>stroke <50</td><td>50≤stroke≤100</td><td>100<stroke≤200< td=""></stroke≤200<></td></stroke≤200<>	stroke <50	50≤stroke≤100	100 <stroke≤200< td=""></stroke≤200<>					
Ø32	/	87	117	/	27	57					
Ø40	/	07	117	/	21	51					
Ø50	/	92	127	/	20	55					
Ø63	/	92	127	/	15	50					

				Table 2							
Bore		V	/1		V2						
	stroke≤30	30 <stroke≤100< td=""><td>100<stroke≤200< td=""><td>200<stroke≤500< td=""><td>stroke≤30</td><td>30<stroke≤100< td=""><td>100<stroke≤200< td=""><td>200<stroke≤500< td=""></stroke≤500<></td></stroke≤200<></td></stroke≤100<></td></stroke≤500<></td></stroke≤200<></td></stroke≤100<>	100 <stroke≤200< td=""><td>200<stroke≤500< td=""><td>stroke≤30</td><td>30<stroke≤100< td=""><td>100<stroke≤200< td=""><td>200<stroke≤500< td=""></stroke≤500<></td></stroke≤200<></td></stroke≤100<></td></stroke≤500<></td></stroke≤200<>	200 <stroke≤500< td=""><td>stroke≤30</td><td>30<stroke≤100< td=""><td>100<stroke≤200< td=""><td>200<stroke≤500< td=""></stroke≤500<></td></stroke≤200<></td></stroke≤100<></td></stroke≤500<>	stroke≤30	30 <stroke≤100< td=""><td>100<stroke≤200< td=""><td>200<stroke≤500< td=""></stroke≤500<></td></stroke≤200<></td></stroke≤100<>	100 <stroke≤200< td=""><td>200<stroke≤500< td=""></stroke≤500<></td></stroke≤200<>	200 <stroke≤500< td=""></stroke≤500<>			
Ø12		A t about		/	,	,	,	,			
Ø16		4+stroke			/	/	/	'			
Ø20	24	44	120	200	29,5	39.5	77,5	404			
Ø25	24	44				39,5		124			
	stroke≤25	25 <stroke≤100< td=""><td>100<stroke≤200< td=""><td>200<stroke≤500< td=""><td>stroke≤25</td><td>25<stroke≤100< td=""><td>100<stroke≤200< td=""><td colspan="2">200<stroke≤500< td=""></stroke≤500<></td></stroke≤200<></td></stroke≤100<></td></stroke≤500<></td></stroke≤200<></td></stroke≤100<>	100 <stroke≤200< td=""><td>200<stroke≤500< td=""><td>stroke≤25</td><td>25<stroke≤100< td=""><td>100<stroke≤200< td=""><td colspan="2">200<stroke≤500< td=""></stroke≤500<></td></stroke≤200<></td></stroke≤100<></td></stroke≤500<></td></stroke≤200<>	200 <stroke≤500< td=""><td>stroke≤25</td><td>25<stroke≤100< td=""><td>100<stroke≤200< td=""><td colspan="2">200<stroke≤500< td=""></stroke≤500<></td></stroke≤200<></td></stroke≤100<></td></stroke≤500<>	stroke≤25	25 <stroke≤100< td=""><td>100<stroke≤200< td=""><td colspan="2">200<stroke≤500< td=""></stroke≤500<></td></stroke≤200<></td></stroke≤100<>	100 <stroke≤200< td=""><td colspan="2">200<stroke≤500< td=""></stroke≤500<></td></stroke≤200<>	200 <stroke≤500< td=""></stroke≤500<>			
Ø32			124		33,5	45,5	83,5				
Ø40	24	48		200	34	46	84	1			
Ø50					36	48	86	124			
Ø63	28	52	128		38	50	88]			



Weight (g)

					1			
	Ø12	Ø16	Ø20	Ø25	ore Ø32	Ø40	Ø50	Ø63
Dáma las	W12	010	W20		h bronze bushes	Ø40	Ø50	963
Stroke 10	240	330	/	/ Control unit wil		,	1	1
10	280	380	-		/	/	/	/
		/	670	950	'	/	,	,
0	310	430	/ 750	1050	1690	1950	3360	4180
0	350	480	830	1160	/	-	/	1
			+		· · ·	/	4000	1010
50 '5	390	530	910	1270	2070	2370	4000	4940
	500	680	1170	1650	2470	2830	4730	5780
00	5903	800	1370	1920	2850	3250	5370	6540
25	/	/	1570	2190	3240	3680	6010	7290
50	/	/	1760	2470	3620	4100	6650	8050
75	/	/	1960	2740	4000	4530	7290	8800
00	/	/	2160	3010	4380	4950	7930	9560
50	/	/	2360	3280	4760	5370	8570	10320
00	/	/	2560	3550	5140	5790	9210	11080
50	/	/	2760	3820	5520	6210	9850	11840
00	/	/	2960	4090	5900	6630	10490	12600
50	/	/	3160	4360	6280	7050	11130	13360
00	/	/	3360	4630	6660	7470	11770	14120
troke					ig parts	,		1
0	100	155	/	/	/	/	/	/
0	108	170	330	520	/	/	/	/
5	1	/	/	/	1070	1140	2150	2500
0	116	185	350	560	/	/	/	/
0	124	200	380	600	/	/	/	/
0	132	215	400	640	1230	1300	2400	2750
5	152	250	520	840	1420	1490	2750	3090
00	172	285	580	950	1580	1650	3000	3350
25	/	/	640	1050	1740	1810	3260	3600
50	/	/	700	1150	1910	1980	3510	3860
75	/	/	760	1250	2070	2140	3760	4110
200	/	/	820	1350	2230	2300	4020	4360
:50	/	/	880	1450	2390	2460	4280	4610
00	/	1	940	1550	2550	2620	4540	4860
50	,	,	1000	1650	2710	2780	4800	5110
00	,	1	1060	1750	2870	2940	5060	5360
.50	1	1	1120	1850	3030	3100	5320	5610
600	,	,	1180	1950	3190	3260	5580	5860
Stroke		,			h bearing bushes	0200	0000	0000
0	240	340	/	/	/	/	/	/
0	270	390	700	980	,	1	1	,
5	210	/	/ /	/	1540	1790	3110	3930
0	300	430	770	1070	/	/	/	/
0	350	510	890	1250	/	/	/	/
0	390	560	970		1850	2150	3660	4590
<u>0</u> 5	470	670	1140	1340 1570	2300			
						2640	4410	5460
00	560	790	1310	1810	2620	300	4960	6120
25	/	/	1520	2080	2990	3420	5600	6880
50	/	/	1690	2310	3310	3780	6150	7540
75	/	/	1870	2540	3620	4140	6700	8210
00	/	/	2040	2770	3940	4500	7250	8870
troke					ng parts			
)	95	145	/	/	/	/	/	/
) -	100	153	310	490	/	/	/	
5	/	/	/	/	820	870	1770	2110
0	105	161	330	520	/	/	/	/
0	110	169	370	580	/	/	/	/
0	120	177	390	610	940	1010	1950	2300
5	145	197	440	690	1110	1180	2240	2590
00	170	217	480	760	1230	1300	2430	2770
25	/	/	560	880	1410	1480	2710	3050
50	/	/	600	950	1530	1600	2890	3240
75	/	/	650	1020	1650	1720	3080	3420
	/	/	700	1100	1770	1830	3270	3610

Cylinder theoretic force (N)

Cymraci incorcio ioroc (i	•/															
Working pressure																
2 bar	23	17	40	30	63	47	98	76	161	121	251	211	393	330	623	561
3 bar	34	26	60	45	94	71	147	113	241	181	377	317	589	495	935	841
4 bar	45	34	80	60	126	94	196	151	322	241	503	422	785	660	1247	1121
5 bar	57	43	101	76	157	118	246	189	402	302	629	528	982	825	1559	1402
6 bar	68	51	121	91	188	142	295	227	482	362	754	634	1178	989	1870	1682
7 bar	79	60	141	106	220	165	344	265	563	422	880	739	1374	1154	2182	1962
8 bar	90	68	161	121	251	189	393	302	643	482	1006	845	1570	1319	2494	2242
9 bar	102	77	181	136	283	212	442	340	724	543	1131	950	1767	1484	2805	2523
10 bar	113	85	201	151	314	236	491	378	804	603	1257	1056	1963	1649	3117	2803
Effective even (mm²)	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In
Effective area (mm²)	113	85	201	151	314	236	491	378	804	603	1257	1056	1963	1649	3117	2803

Maximum permissible Momentum

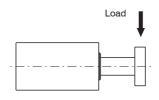
J	0,08	0,09	0,11	0,18	0,29	0,52	0,91	1,54
How to calculate the M	omentum:Ec = 1/2 V2(J)							
			:					
	s: weight of driven object a		inder moving parts (kg)					
v = V = max, speed; eq	gual to average speed + 4	0% (m/s)						

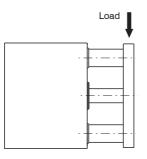


Operating criteria

Permissible lateral load(N) - applied on overall plate

Bore									
Version	Stroke	Ø12	Ø16	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63
	10	30	48						
	20	23	37	49	69				
	25					203	203	296	296
	30	19	30	43	60				
	40	16	25	38	54				
Control unit with bronze	50	14	20	35	49	164	164	245	245
bushes	75	12	18	87	116	182	182	273	273
5451165	100	10	15	75	100	159	159	241	241
	125			66	88	142	142	216	216
	150			59	79	127	127	195	195
	175			54	71	116	116	179	179
	200			49	65	106	106	164	164
	10	20	35						
	20	15	28	58	69				
	25					191	190	208	206
	30	13	22	48	68				
	40	11	18	101	132				
Control unit	50	10	16	90	118	157	157	173	171
with bearing bushes	75	8	14	70	93	164	163	223	221
5451.65	100	6	11	58	77	144	144	199	196
	125			62	80	203	203	264	262
	150			54	70	186	185	242	240
	175			48	62	171	171	224	221
	200			43	55	158	158	207	205



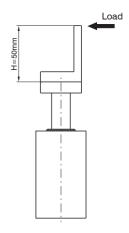


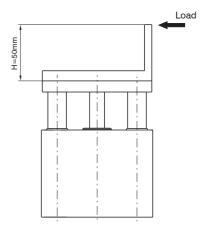
Recommended torque moments (Nm)

					Во	ore								
Version	Stroke	Ø12	Ø16	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63					
	10	0,40	0,70											
	20	0,35	0,65	1,1	1,8									
	25					6,4	7	13	14,7					
	30	0,28	0,48	0,9	1,6									
	40	0,25	0,45	0,8	1,4									
Control unit with bronze	50	0,21	0,39	0,8	1,3	5,1	5,7	10,8	12,1					
bushes	75	0,42	0,68	1,9	3,0	5,7	6,3	12,0	13,5					
	100	0,40	0,60	1,6	2,6	5,0	5,5	10,6	11,9					
	125			1,4	2,3	4,4	4,9	9,5	10,7					
	150			1,3	2,0	4,0	4,4	8,6	9,7					
	175			1,2	1,8	3,6	4,0	7,9	8,9					
	200			1,1	1,7	3,3	3,7	7,2	8,2					
	10	0,62	0,70											
	20	0,41	0,65	1,3	2,1									
	25					6,0	6,6	9,2	10,2					
	30	0,33	0,48	1,0	1,8									
	40	0,30	0,45	2,2	3,4									
Control unit with bearing	50	0,48	0,39	1,9	3,0	4,9	5,4	7,6	8,5					
bushes	75	0,38	0,68	1,5	2,4	5,1	5,6	9,8	11,0					
	100	0,32	0,60	1,3	2,0	4,5	5,0	8,7	9,7					
	125			1,3	2,1	6,3	7,0	11,6	13,0					
	150			1,2	1,8	5,8	6,4	10,7	11,9					
	175			1,0	1,6	5,3	5,9	9,8	11,0					
	200			0,9	1,4	4,9	5,4	9,1	10,2					

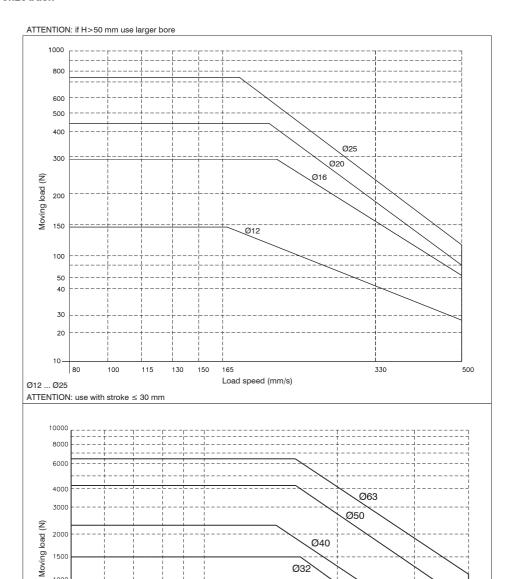


"Stopper" device applications





Control unit with bronze bush

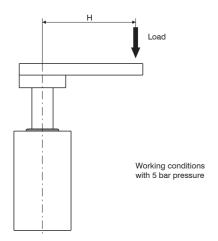


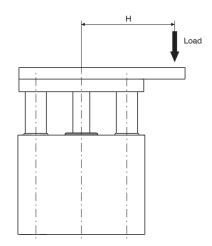
400

ATTENTION: use with stroke ≤ 50 mm

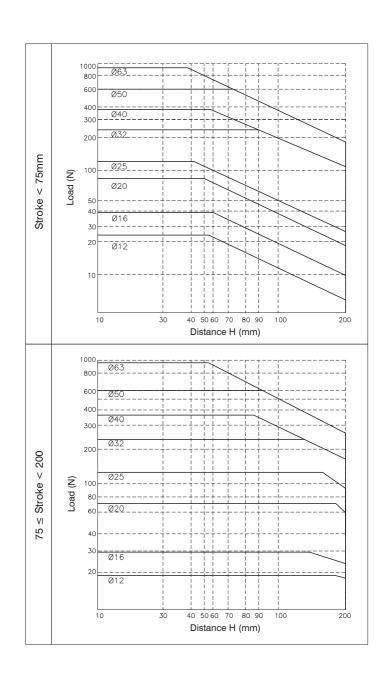
Operating criteria

Handling applications





Control unit with bronze bush

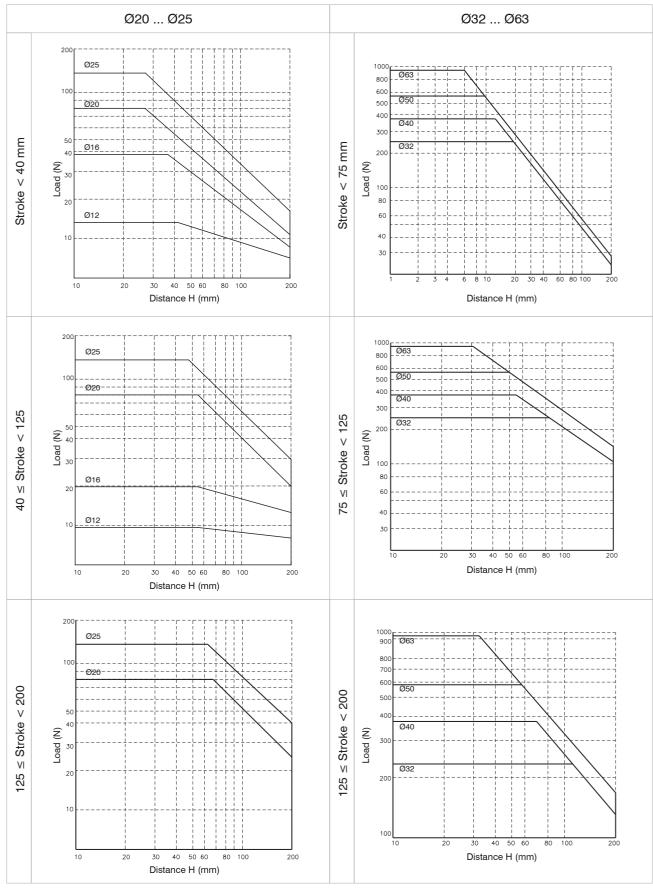




Operating criteria

Handling applications

Control unit with bronze bushes





Heavy duty guided compact cylinder

ding: 6101.80.**@**.B.

Coa	ng: 0101.00. G .D. G
	STROKE
	25 = 25 mm
	50 = 50 mm
	75 = 75 mm
•	100 = 100 mm
	125 = 125 mm
	150 = 150 mm
	175 = 175 mm
	200 = 200 mm
	CONNECTIONS
•	= Side supply ports closed
	L = Top supply ports closed



Construction characteristics

Body	anodized aluminium			
Guide rods	C43 chromed steel			
Piston	aluminium			
Piston rod	C43 chromed steel			
Piston rod bushing	sintered bronze			
Rods bushing	teflon coated bush			
Rear end cap	anodized aluminium			
Piston seals	oil resistant NBR rubber			
Piston rod seals	PUR			
Plate	anodized aluminium			

Operational characteristics

Operational characteristics						
Cushioning	elastic bumper on both ends					
Fluid	filtered and preferably lubricated air or not (if lubricated the lubrication must be continuous)					
Function	Double acting					
Working pressure (bar)	max 10					
Temperature °C	-5 +70					

Standard strokes

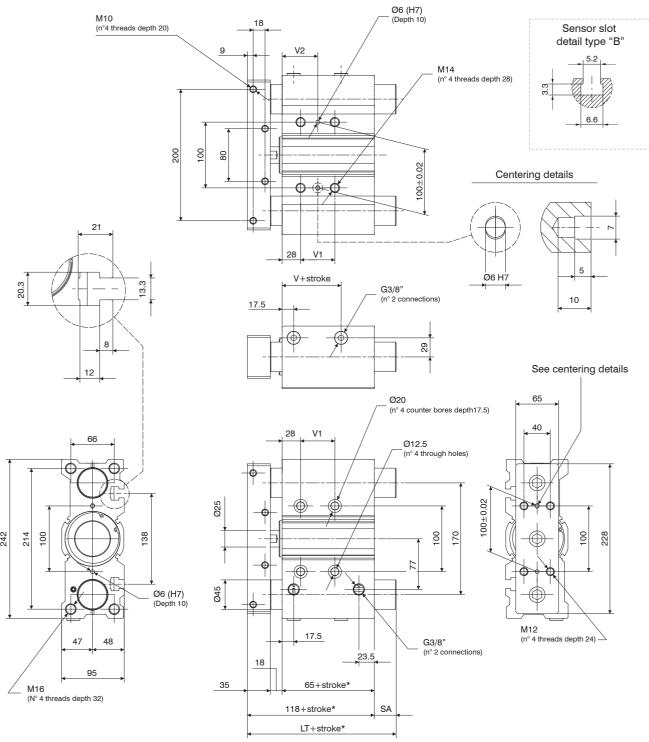
Stroke								
Bore	25	50	75	100	125	150	175	200
Ø80	•	•	•	•	•	•	•	•

Intermediate strokes can be obtained by adding specific spacers (5, 10, 15, 20 mm).

Example: It is possible to obtain a 6101.80.45.B cylinder from a 6101.80.50.B cylinder by adding a 5 mm spacer.

The Intermediate strokes manufactured without the use of spacers are considered special executions.

Overall dimensions



^{*}Dimensions only refer to the "standard stroke"

Table of dimensions		
Strokes		
25		118
50	LT	118
> 50		151
	V	14,5
25		28
50		52
75	V1	52
100		52
> 100		128
25		42
50		54
75	V2	54
100		54
> 100		92
25		0
50	SA	U
> 50		33



Cylinder force - Operating criteria

Cylinder theoretic force (N)

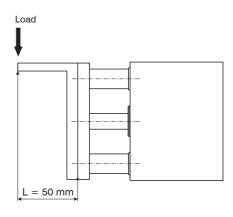
-		
Working pressure		
2 bar	1005	907
3 bar	1508	1361
4 bar	2011	1814
5 bar	2513	2268
6 bar	3016	2721
7 bar	3519	3175
8 bar	4021	3629
9 bar	4524	4082
10 bar	5027	4536
Effective area (mm²)	Out	In
Effective area (mm²)	5027	4536

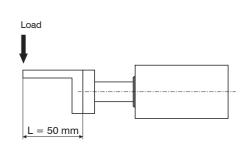
Recommended torque moments

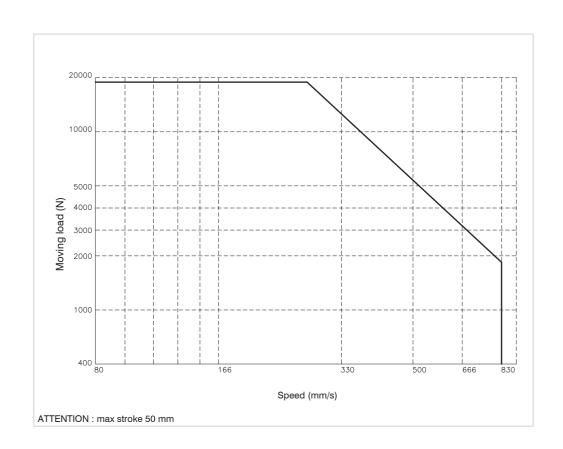
Stroke	Nm
25	49
50	41
75	51
100	45
125	41
150	38
175	35
200	32



"Stopper" device applications

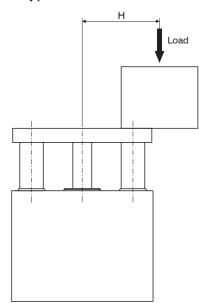




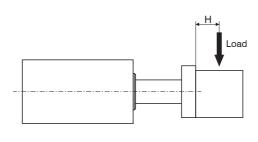


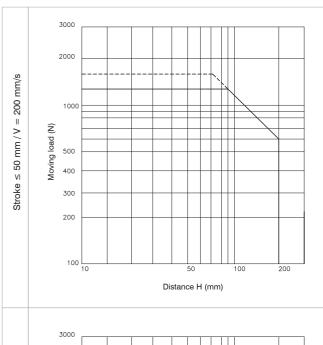
Operating criteria Handling applications

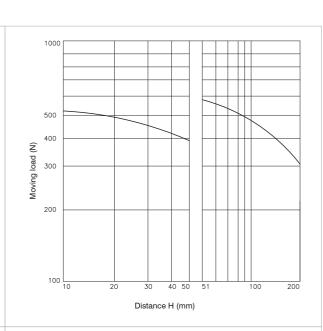
VERTICAL assembly position

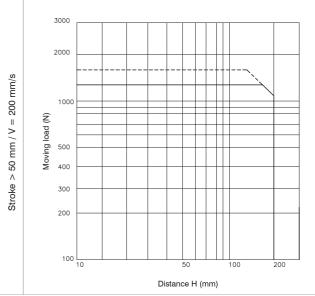


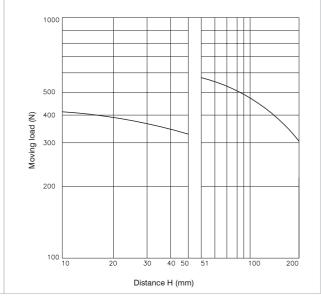
HORIZONTAL assembly position











Working pressure: 4 bar ---- Working pressure: 5 bar

H = 100 mm / V = 200 mm/s

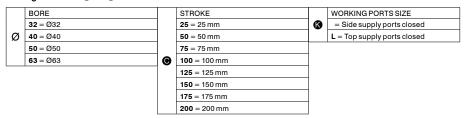
H = 50 mm / V = 200 mm/s

3 | 166



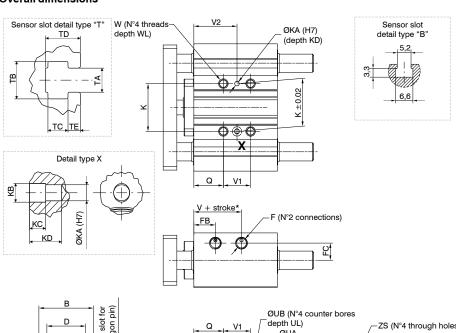
Compact guided cylinders with metal rodscrapers

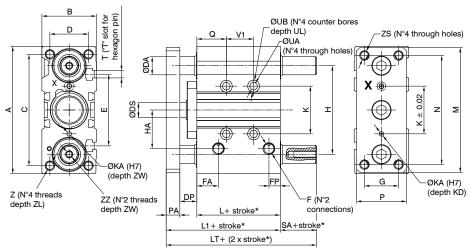
Coding: 6110.Ø.@.C.





Overall dimensions





Intermediate strokes can be obtained by adding specific spacers (5, 10, 15, 20 mm).

Example: it is possible to obtain a 6110.32.45.B cylinder from a 6110.32.50.B cylinder by adding a 5 mm spacer.

The intermediate strokes manufactured without the use of spacers are considered special executions.

Table of dimensions										
Bore	Ø32	Ø40	Ø50	Ø63						
Α	112	120	148	162						
В	48	54	64	78						
С	98	106	130	142						
D	34	40	46	58						
DA Rods with bronze	16	16	20	20						
bushes	15	00	00	00						
DS	15	20	23	23						
	16	16	20	20						
F	63	72	92	110						
	G1/8"	G1/8"	G1/4"	G1/4"						
FA	19	13	13	14						
FB	19	13	13	14						
FC	15	18	21,5	28						
FP	10	11	11	12,5						
G	30	30	40	50						
Н	78	86	110	124						
НА	34	38	47	55						
K	42	50	66	80						
KA	4	4	5	5						
KB	4,5	4,5	6	6						
KC	3	3	4	4						
KD	6	6	8	8						
L	48,5	50	50	55						
L1	75,5	82	88	93						
M	110	118	146	158						
N	96	104	130	130						
PA	12	12	15	15						
Р	44	44	60	70						
Q	26	22	24	24						
SA	7	7	5	7						
Т	M6	M6	M8	M10						
TA	6,5	6,5	8,5	11						
ТВ	10,5	10,5	13,5	17,8						
TC	5,5	5,5	7,5	10						
TD	9,5	11	13,5	18,5						
TE	3,5	4	4,5	7						
UA	6,6	6,6	8,6	8,6						
UB	11	11	14	14						
UL	7,5	7,5	9	9						
٧	17	19	15	20						
V1		0	-1-1-4	`						
V2	See table 1									
W	M8x1,25	M8x1,25	M10x1,5	M10x1,5						
WL	16	16	20	20						
Z	M8x1,25	M8x1,25	M10x1,5	M10x1,5						
ZL	20	20	22	22						
ZS	M8x1,25	M8x1,25	M10x1,5	M10x1,5						
ZW	20	20	25	25						
ZZ	M6	M8	M10	M10						
			· · · ·							

Standard strokes

	Stroke								
Bore	25	50	75	100	125	150	175	200	
Ø32	•	•	•	•	•	•	•	•	
Ø40	•	•	•	•	•	•	•	•	
Ø50	•	•	•	•	•	•	•	•	
Ø63	•	•	•	•	•	•	•	•	

Table 1	V1			V2			
Bore	stroke≤25	25 <stroke≤100< th=""><th>100<stroke≤200< th=""><th>stroke≤25</th><th>25<stroke≤100< th=""><th>100<stroke≤200< th=""></stroke≤200<></th></stroke≤100<></th></stroke≤200<></th></stroke≤100<>	100 <stroke≤200< th=""><th>stroke≤25</th><th>25<stroke≤100< th=""><th>100<stroke≤200< th=""></stroke≤200<></th></stroke≤100<></th></stroke≤200<>	stroke≤25	25 <stroke≤100< th=""><th>100<stroke≤200< th=""></stroke≤200<></th></stroke≤100<>	100 <stroke≤200< th=""></stroke≤200<>	
Ø32				38	50	88	
Ø40	24	48	124	34	46	84	
Ø50				36	48	86	
Ø63	28	52	128	38	50	88	

Series 6600

Slide cylinders

Coding: 6600.Ø.**@**.

	3
	BORE
	8 = Ø8
a	12 = Ø12
Ø	16 = Ø16
	20 = Ø20
	25 = Ø25
	STROKE
	10 = 10 mm
	20 = 20 mm
	30 = 30 mm
	40 = 40 mm
•	50 = 50 mm
	75 = 75 mm
	100 = 100 mm
	125 = 125 mm
	150 = 150 mm

	ACCESSORIES
	= Without accessories
	A = Double regulation end stroke
	AU = Regulation front end stroke
•	AR = Regulation rear end stroke
	D = Double shock absorber
	DU = Front shock absorber
	DR = Rear shock absorber



Construction characteristics

Body	anodized aluminium
Piston rod bushings	sintered bronze
Flange	anodized aluminium
Rear end cap	anodized aluminium
Seals	oil resistant NBR rubber
Piston	stainless steel
Cushioning washer	PUR
Piston rod	stainless steel

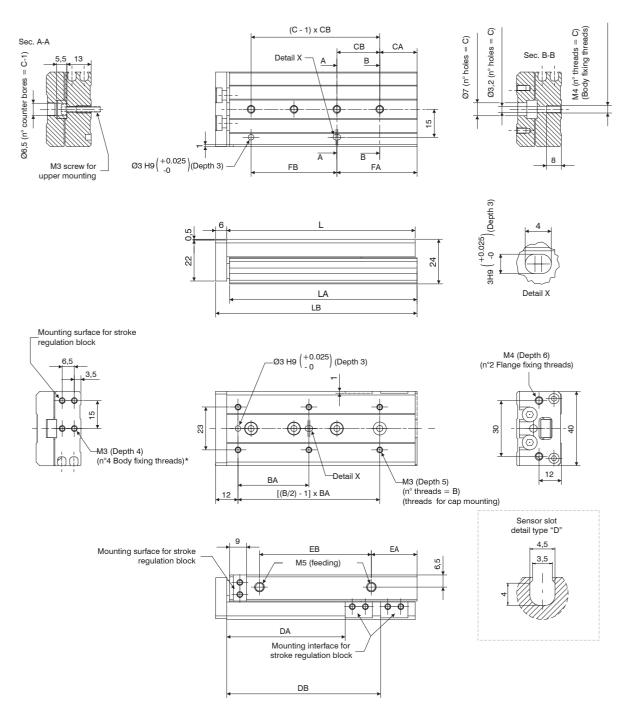
	Piston rod	stainless steel
JATION	Operational characteristics Fluid	filtered and preferably lubricated air or not (if lubricated the lubrication must be continuous)
Ĕ	Working procesure	1,5 bar 7 bar
Q	Working pressure Working temperature	-5°C +70°C
Ö	Cushioning	with elastic bumper
Ē	Cusinorning	with elastic bumper
₹		
5		
剪		
<u></u>		
	Theoretical force	

Theoretical force

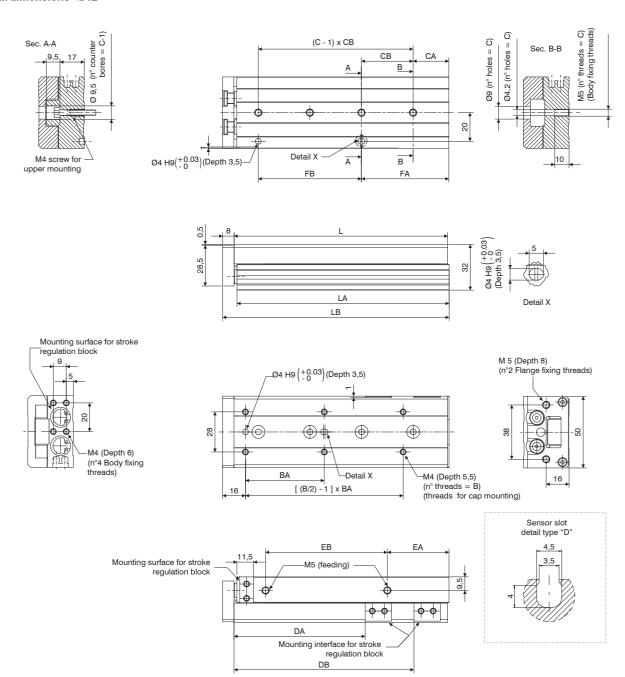
Bore	Effective area (mm²)	Force (N)						
Ø8	Out	101	20	30	40	51	61	71
<i>2</i> 00	In	75	15	23	30	38	45	53
Ø12	Out	226	45	68	90	113	136	158
012	In	170	34	51	68	85	102	119
Ø16	Out	402	80	121	161	201	241	281
Ø16	In	302	60	91	121	151	181	211
Ø20	Out	628	126	188	251	314	377	440
Ø20	In	471	94	141	188	236	283	330
Ø25	Out	982	196	295	393	491	589	687
025	In	756	151	227	302	378	454	529
·	·		2	3	4	5	6	7
		Working pressure (bar)						

Standard strokes

Standard St										
				Stro	oke					
Bore	10	20	30	40	50	75	100	125	150	
Ø8	•	•	•	•	•	•				
Ø12	•	•	•	•	•	•	•			
Ø16	•	•	•	•	•	•	•	•		
Ø20	•	•	•	•	•	•	•	•	•	
Ø25	•	•	•	•	•	•	•	•	•	

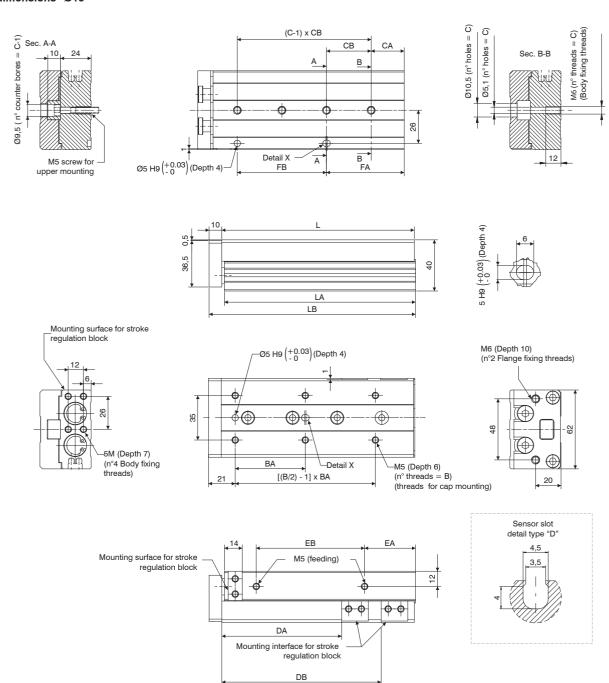


			Standard	d strokes		
	10	20	30	40	50	75
В	4	4	4	4	6	6
BA	25	25	40	50	38	50
С	2	2	3	3	4	5
CA	9	12	13	15	20	27
СВ	28	30	20	28	23	28
DA	23,5	33,5	43,5	53,5	63,5	88,5
DB	/	/	/	1	82,5	132,5
FA	17	12	33	43	43	83
FB	20	30	20	28	46	56
EA	13	8,5	9,5	10,5	24,5	38,5
EB	19,5	29	39	56	60	96
L	49	54	65	83	101	151
LA	48,5	53,5	64,5	82,5	100,5	150,5
LB	56	61	72	90	108	158
Weight (g)	150	160	190	235	285	410

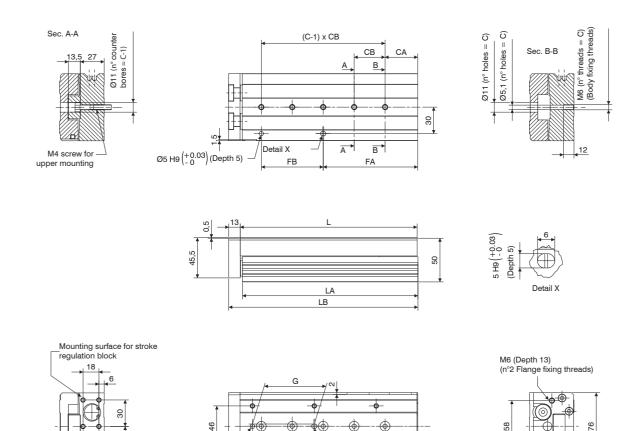


		Standard strokes									
	10	20	30	40	50	75	100				
В		4	1	,		6					
BA		35		50	35	55	65				
С		2		3	3	4	5				
CA		15		17	15	25	35				
СВ		40		25	36	36	38				
DA	26,5	36,5	46,5	56,5	66,5	91,5	116,5				
DB	/	/	/	/	/	125,5	179,5				
FA		15		42	51	61	111				
FB		40		25	36	72	76				
EA		1	0		22	43	52				
EB		40		52	60	85	130				
L		71		83	103	149	203				
LA		70		82	102	148	202				
LB		80		92	112	158	212				
Weight (g)		325		385	480	660	890				



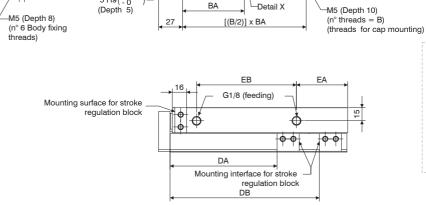


		Standard strokes Standard strokes										
	10	20	30	40	50	75	100	125				
В	4	4	4	4	6	6	6	8				
BA	35	35	35	40	30	55	65	70				
С	2	2	2	2	3	4	5	7				
CA	16	16	16	16	21	26	39	19				
СВ	40	40	40	50	30	35	35	35				
DA	29	39	49	59	69	94	119	144				
DB	/	/	/	/	/	125	173	223				
FA	16	16	16	16	51	61	109	159				
FB	40	40	40	50	30	70	70	70				
EA	10	10	10	10	15	40	55	68				
EB	40	40	40	50	60	85	118	155				
L	76	76	76	86	101	151	199	249				
LA	75	75	75	85	100	150	198	248				
LB	87	87	87	97	112	162	210	260				
Weight (g)	570	570	580	640	760	1090	1370	1700				



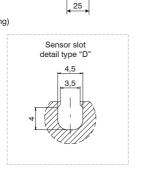
Detail X

[(B/2)] x BA

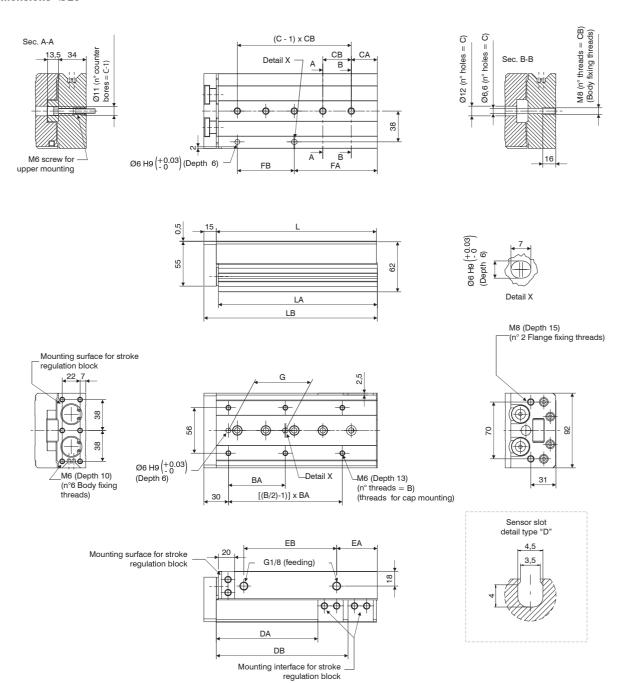


27

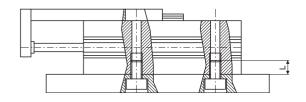
5 H9(+0.03) (Depth 5)



		Standard strokes									
	10	20	30	40	50	75	100	125	150		
В	4	4	4	4	6	6	6	8	8		
BA	50	50	50	60	35	60	70	70	80		
С	2	2	2	2	3	4	5	6	7		
CA	15	15	15	15	15	19	37	41	19		
СВ	45	45	45	55	35	35	35	38	44		
DA	31	41	51	61	71	96	121	146	171		
DB	/	/	/	/	/	/	169	223	275		
EA	10	10	10	10	10	10	58	70	87		
EB	44	44	44	54	69	108	113	155	190		
FA	25	25	25	35	50	54	107	155	195		
FB	35	35	35	35	35	70	70	76	88		
G	40	40	40	50	35	60	70	70	80		
L	83	83	83	93	108	147	200	254	306		
LA	81,5	81,5	81,5	91,5	106,5	145,5	198,5	252,5	304,5		
LB	97	97	97	107	122	161	214	268	320		
Weight (g)	960	980	1010	1100	1250	1630	2150	2670	3190		

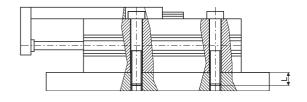


		Standard strokes									
	10	20	30	40	50	75	100	125	150		
В	4	4	4	4	6	6	6	8	8		
BA	50	50	50	60	35	60	70	75	80		
С	2	2	2	2	3	4	5	6	7		
CA	22	22	22	22	20	26	32	40	30		
СВ	45	45	45	55	35	35	35	38	40		
DA	35	45	55	65	75	100	125	150	175		
DB	/	/	/	/	/	/	162	218	258		
EA	12	12	12	12	12	33	50	67	82		
EB	47	47	47	57	70	90	114	155	180		
FA	22	22	22	22	55	61	102	154	190		
FB	45	45	45	55	35	70	70	76	80		
G	40	40	40	50	35	60	70	75	80		
L	92	92	92	102	115	156	197	255	295		
LA	90,5	90,5	90,5	100,5	113,5	154,5	195,5	253,5	293,5		
LB	108	108	108	118	131	172	213	271	311		
Weight (g)	1660	1680	1690	1840	2090	2650	3270	4140	4710		



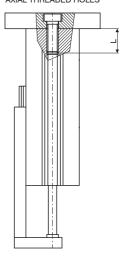
Bore	Screw	Torque (Nm)	Max. Lenght L (mm)
Ø8	M3	2,1	8
Ø12	M4	4,4	10
Ø16	M5	7,4	12
Ø20	M5	7,4	12
Ø25	M6	18	16

SIDE THROUGH HOLES



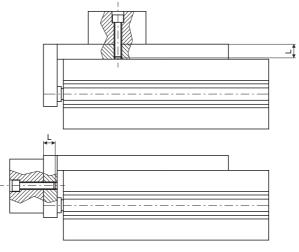
Bore	Screw	Torque (Nm)	Max. Lenght L (mm)
Ø8	M3	1,2	13
Ø12	M4	2,8	18,5
Ø16	M5	5,7	24
Ø20	M5	5,7	29
Ø25	M6	18	34

AXIAL THREADED HOLES



Bore	Screw	Torque (Nm)	Max. Lenght L (mm)
Ø8	M3	0,9	4
Ø12	M4	2,1	6
Ø16	M5	4,4	7
Ø20	M5	4,4	8
Ø25	M6	7,4	10

Mounting load



Bore	Screw	Torque (Nm)	Max. Lenght L (mm)
Ø8	M3	2,1	6
Ø12	M4	4,4	8
Ø16	M5	7,4	10
Ø20	M5	7,4	13
Ø25	M6	18	15

Bore	Screw	Torque (Nm)	Max. Lenght L (mm)
Ø8	M3	0,9	5
Ø12	M4	2,1	5,5
Ø16	M5	4,4	6
Ø20	M5	4,4	10
Ø25	M6	7,4	13

Kinetic energy (J)

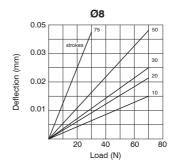
Bore	With elastic bumper	With shock absorbers
Ø8	0,027	
Ø12	0,055	
Ø16	0,11	See shock absorbers 6900
Ø20	0,16	
Ø25	0,24	

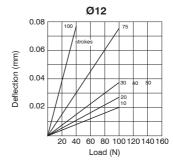
PNEUMATIC ACTUATION

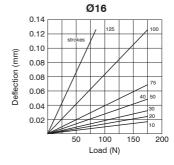
ENEMMAX

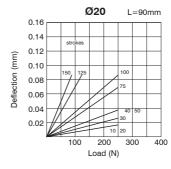
Plate deflection

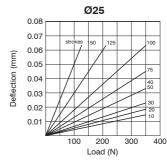
With front moment under static conditions completely extended and with load applied as indicated by the arrows



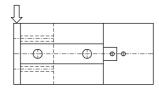


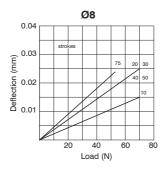


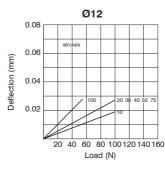


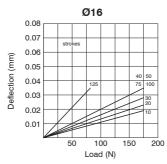


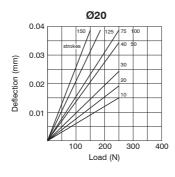
With side moment under static conditions completely extended and with load applied as indicated by the arrow

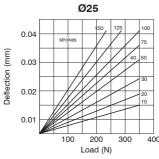






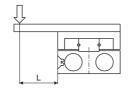


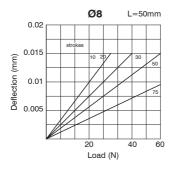


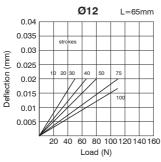


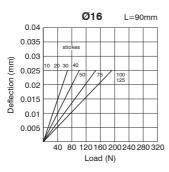
With misaligned side moment with load applied as indicated by the arrow at a distance "L" and with plate completely retracted

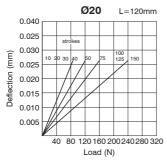
Slide cylinders Series 6600

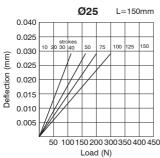




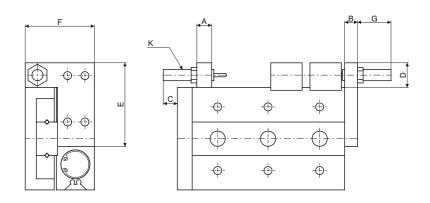




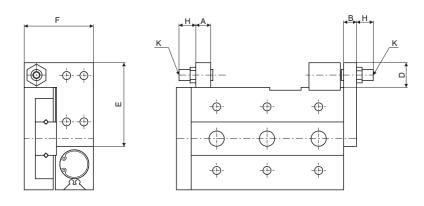




Accessories - Static moment Dimensions with shock absorbers



Dimensions with adjusting screw



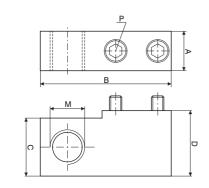
Bore	Α	В	С	D	E	F	G max.	H max.	K
Ø8	7	8	26	14,5	38,5	23	25,5	28,5	M8x1
Ø12	9,5	8	21	15	45	31,5	24,5	32	M8x1
Ø16	11	10	19	18	55	37,5	29	34,5	M10x1
Ø20	13	12	28	24,5	70	47,5	42,5	35,5	M14x1,5
Ø25	16	15	34	24,5	80	54,5	39,5	37,5	M14x1,5

Shock absorber mounting block / front stroke adjusting screw

Coding: 6600.Ø.SU



Bore	Α	В	С	D	M	Р
Ø8	7	23	14	15,5	M8x1	M3x16
Ø12	9,5	31	14,5	16	IVIBXI	M4x16
Ø16	11	37	17,5	19	M10x1	M5x18
Ø20	13	45,5	00.5	26	M44v4 E	M6x25
Ø25	16	53,5	23,5	26,5	M14x1,5	M8x25

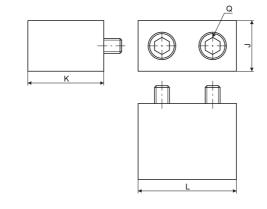


Reference block

Coding: 6600.Ø.SI



Bore	J	K	L	Q
Ø8	7	15,5	14,6	M3x16
Ø12	10	15	18,5	M4x14
Ø16	12	18,5	21	M5x18
Ø20	13	05.5	25	M6x25
Ø25	17	25,5	91	Mevas

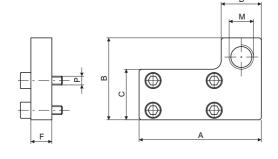


Shock absorber mounting block / rear stroke adjusting screw

 $\textbf{Coding:}\,6600. \emptyset. SR$



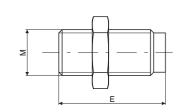
Bore	Α	В	С	D	F	M	P
Ø8	38	23	12,5	44	8	M8x1	M3x12
Ø12	45	31	18	14	0	IVIOXI	M4x12
Ø16	55	37	23,5	16	10	M10x1	M5x14
Ø20	70	47	29	23	12	Managa	M5x16
Ø25	80	54	35	23	15	M14x1,5	M6x20

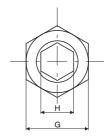


Adjusting screw

Coding: 6600.Ø.VR







Bore	E	G	н	M	
Ø8	36,5	10		M8x1	
Ø12	40	12	4	M8X1	
Ø12 Ø16	44,5	14	5	M10x1	
Ø20	47,5	10		Maria	
Ø25	52,5	19	б	M14x1,5	



Series 6200 and 6210

TWIN-ROD SLIDE UNITS SERIES 6200 AND 6210

The 6200 series twin-rod linear guide units are wide cylinders used in manipulation applications and are characterised by their high force output thanks to their double piston design.

Bores range from 10mm to 32mm diameter, with sintered bronze bearings for standard applications and linear ball bearings for more rugged applications.

One major characteristic of these cylinders is the precision of their anti-rotational design, with the possibility of regulating the stroke to within 0.5mm.

When using magnetic sensors, the 1580 series sensor sits entirely within the extrusion, resulting in a smooth profile.

The liner guided units range includes, alongside the conventional two rod version with flange series 6200, also the through rod version with twin flanges series 6210

Thanks to the twin-rod, double yoke design of the 6210 series it is possible to either fix the body and use the ends of the rods, or alternatively to fix the rod ends and use the body as the moving part.

The cylinder can be piped through the body or through the rods depending on the application.

Stroke limiting screws are fitted at either end of the stroke.

The substitution of these screws with shock absorbers makes it possible to use the cylinder on higher velocity applications (up to 500 mm/s).

Slots are provided along the edge of these units to accommodate 1580 series miniature sensors.

Twin-rod slide units

Coding: 6200.Ø.**@.**@

	BORE
	10 = Ø10
Ø	15 = Ø15
Ø	20 = Ø20
	25 = Ø25
	32 = Ø32
	STROKE
	10 = 10 mm
	15 = 15 mm
	20 = 20 mm
	25 = 25 mm
	30 = 30 mm
	35 = 35 mm
•	40 = 40 mm
	45 = 45 mm
	50 = 50 mm
	60 = 60 mm
	70 = 70 mm
	80 = 80 mm
	90 = 90 mm
	100 = 100 mm
	CONTROLUNIT
G	B = Control unit with bronze bush
	C = Control unit with bearing bushes





Construction characteristics

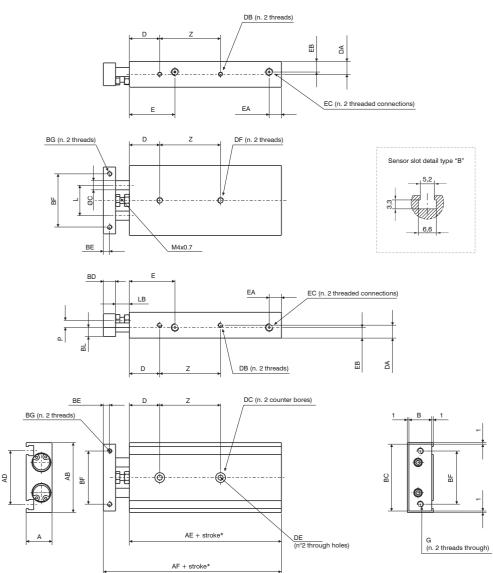
Body	anodized aluminium		
Guide rods	C43 chromed steel (control unit with bronze bush)		
	tempered and chromed steel (control unit with bearing bush)		
Piston	aluminium		
Piston rod bushing	brass		
Rear end cap	anodized aluminium		
Piston seals	oil resistant NBR rubber		
Piston rod seals	PUR		
Plate	anodized aluminium		

Operational characteristics

Operational characteristics							
Cushioning elastic bumper							
Fluid	filtered and preferably lubricated air or not (if lubricated the lubrication must be continuous)						
Function	Double acting Double acting						
Max. working pressure (bar)	7						
Temperature °C	-5+70						

Standard strokes

							Stroke								
Bore	10	15	20	25	30	35	40	45	50	60	70	75	80	90	100
Ø10	•	•	•	•	•	•	•	•	•	•	•	•			
Ø15	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Ø20	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Ø25	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Ø32	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•



	Bore	Ø10	Ø15
Α		17	20
AB		46	58
AD		35,6	48
AE		55	60
AF		72	79
В		15	18
ВС		44	56
BD		8	10
BE		4	5
BF		35	45
BG		M3x0,5	M4x0,7
BG	Useful depth	5	6
BL		6	9
С		6	8
D		20	30
DA		8,5	10
DB		M3x0,5	M4x0,7
DB	Useful depth	4,5	5
DC		6,5	8
DC	Useful depth	3,3	4,4
DE		3,4	4,3
DF		M4x0,7	M5x0,8
DF	Useful depth	7	8
Е		30	38,5
EA		8	8
EB		7	10
EC		M5x0,8	M5x0,8
EC	Useful depth	4,5	4,5
F		M4x0,7	M4x0,7
G		M4x0,7	M5x0,8
L		20	25
LB		9	9
Р		4,7	4,5
	stroke 10 25	30	25
	stroke 30 50	40	35
Z	stroke 60 75	50	45
	stroke 80	-	45
	stroke 90-100	-	55

Ø32

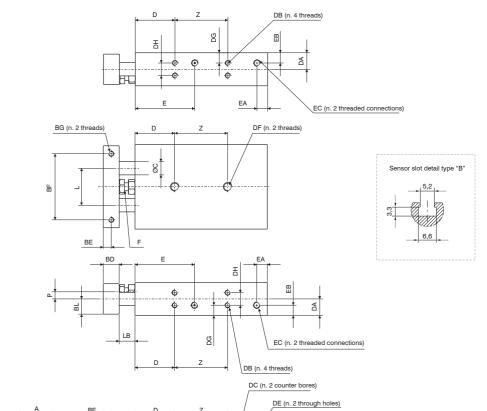
Ø25

Slide units

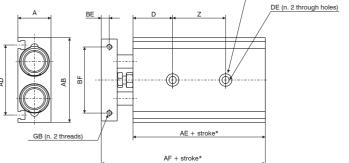
Ø20

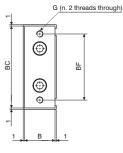
Series 6200 - Twin-rod slide units

Overall dimensions Ø20 - Ø25 - Ø32



	Dole	2020	2023	2002
Α		25	30	38
AE	3	64	80	98
ΑĽ)	53	64	76
ΑE		70	72	82
AF		94	96	112
В		23	28	36
ВС		62	78	96
BE)	12	12	16
BE		6	6	8
BF		50	60	75
В	à	M4x0,7	M5x0,8	M5x0,8
В	G Useful depth	6	7,5	8
BL		11,5	14	18
С		10	12	16
D		30	30	30
DA	4	12,5	15	19
DE	3	M4x0,7	M5x0,8	M5x0,8
DE	3 Useful depth	6	7,5	7,5
DC		9,5	11	11
DC	C Useful depth	5,3	6,3	6,3
DE		5,5	6,9	6,9
DF		M6x1	M8x1,25	M8x1,25
DF	Useful depth	10	12	12
DO	a .	7,75	8,5	9
DH	1	9,5	13	20
Е		45	46	56
EΑ	\	8	9	10
EB	3	7,75	15	19
EC		M5x0,8	G1/8	G1/8
DC	C Useful depth	4,5	6,5	6,5
F		M6x1	M6x1	M6x1
G		M5x0,8	M6x1	M6x1
L		28	35	44
LB	3	12	12	14
Р		5,4	7,8	12
	stroke 10 25	30	30	40
z	stroke 30 50	40	40	50
	stroke 60 100	60	60	70



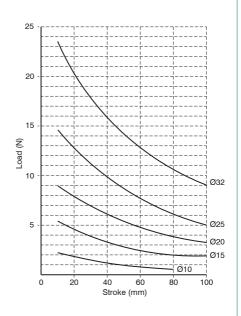


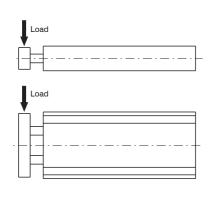
^{*}Dimensions only refer to the "standard stroke"

					В	ore						
	Q)10	Q	15	Ø	20	e e	125	Ø	32		
Stroke				Control unit w	vith bronze bush				Weig	ght (g)		
10	1	150	2	250	4	00	6	310	11	150		
15	1	160		160		165	4	420		635		190
20	1	170	2	280	4	40	6	660	12	230		
25	1	180	2	90	4	60	6	90	12	275		
30	1	190	3	100	4	80	7	'20	15	320		
35	2	200	3	315	4	95	7	'45	13	360		
40	2	210	3	30	5	10	7	70	14	400		
45	2	220	3	345	5	30	8	100	14	450		
50	2	230	3	160	5	50	8	30	14	190		
60	2	250	3	190	5	85	8	90	15	580		
70	2	270	4	120	6	20	9	50	16	365		
75	2	280	4	35	6	40	9	970	17	710		
80			4	50	6	60	9	95	17	755		
90			4	80	7	00	10	060	18	340		
100				510 740			1000		1930			
Stroke					Control unit wi	th bearing bush						
10	1	160		270		430		20	11	160		
15	1	165	2	85	445		645		12	205		
20	1	170	300		460		6	370	12	250		
25	1	180	310		480		700		12	295		
30	1	90	320		500		730		1340			
35	2	200	335		515		755		1380			
40	2	210	350		530		780		14	120		
45	2	220	365		550		810		14	165		
50	2	230	380		570		840		1510			
60	2	250	4	410		605		895		1595		
70	2	270	4	40	640		9	55	1680			
75	2	280		55	6	60	9	80	17	720		
80			4	170	6	80	10	005	17	765		
90				000		15	10	065	18	355		
100			5	30		50	1:	110	19	940		
Working pressure						slide force (N)						
1 bar	16	10	35,5	25	63	47	98	75,5	161	120,5		
1,5 bar	23,5	15	53	38	94	62,5	147,5	113,5	241	181		
2 bar	31,5	20,0	70,5	50,5	125,5	94	196,5	151	321,5	241		
3 bar	47	30	106	75,5	188,5	141	294,5	227	482,5	362		
4 bar	63	40	141	101	251	188	393	302,5	643	482,5		
5 bar	78,5	50	176,5	126	314	236	491	378	804	603		
6 bar	94	60	212	151	377	283	589	453,5	965	723,5		
7 bar	110	70	247	176,5	440	330	687,5	529	1125,6	844		
	Out	In	Out	In	Out	In	Out	In	Out	In		

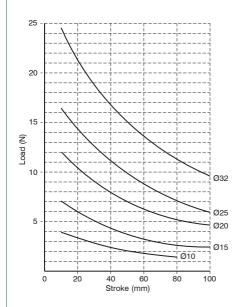
Operating criteria Permissible Loads

Control unit with bronze bushes





Control unit with bearing bush





Through twin-rod slide units

Coding: 6210.Ø.**⊚**.**♥**

	ig. o_ 10.2.4.
	BORE
Ø	10 = Ø10
	15 = Ø15
	25 = Ø25
	STROKE
	25 = 25 mm
	50 = 50 mm
	75 = 75 mm
•	100 = 100 mm
	125 = 125 mm
	150 = 150 mm
	175 = 175 mm
	200 = 200 mm
	VERSION
V	C = Fixed body
	P = Fixed end plates



Construction characteristics

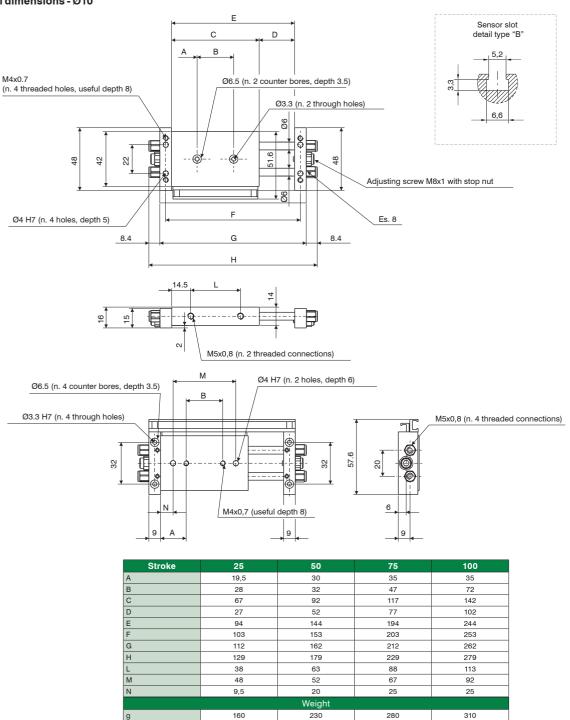
Body	anodized aluminium			
Guide rods	stainless steel			
Piston	aluminium			
Piston rod bushing	brass			
Piston seals	oil resistant NBR rubber			
Piston rod seals	PUR			
Plate	anodized aluminium			

Operational characteristics

Operational characteristics							
Cushioning	with shock absorbers (available on request)						
Fluid	filtered and preferably lubricated air or not (if lubricated the lubrication must be continuous)						
Function	Double acting						
Max. working pressure (bar)	10						
Temperature °C	-5 +70						

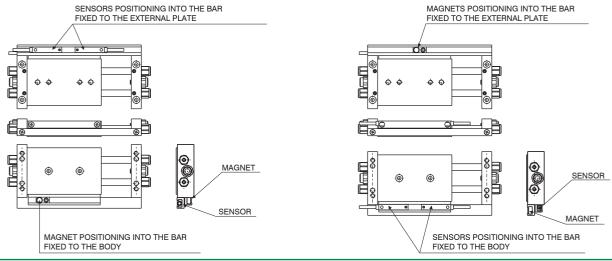
Standard strokes

				Stroke				
Bore	25	50	75	100	125	150	175	200
Ø10	•	•	•	•				
Ø15	•	•	•	•	•	•	•	•
Ø25	•	•	•	•	•	•	•	•



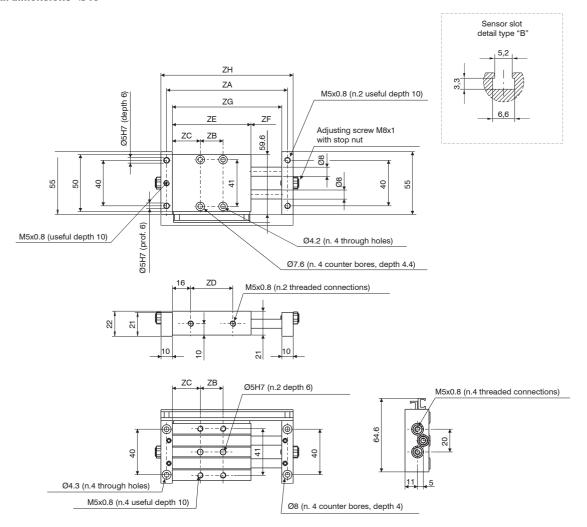
MOUNTING WITH FIXED PLATE

MOUNTING WITH A FIXED BODY



PREUNAX

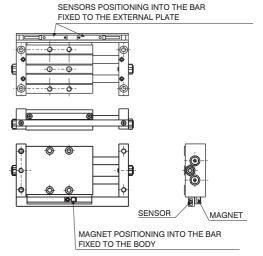
Overall dimensions - Ø15

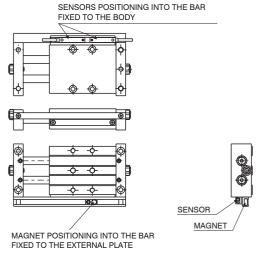


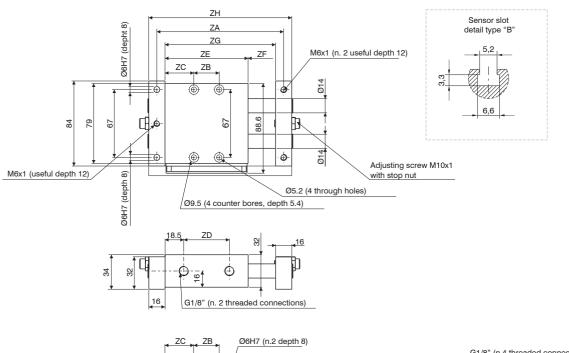
Stroke	25	50	75	100	125	150	175	200
ZA	106	156	206	256	306	356	406	456
ZB	20	45	65	90	90	90	90	90
ZC	24,5	24,5	27	27	39,5	52	64,5	77
ZD	37	62	87	112	137	162	187	212
ZE	69	94	119	144	169	194	219	244
ZF	27	52	77	102	127	152	177	202
ZG	96	146	196	246	296	346	396	446
ZH	116	166	216	266	316	366	416	466
				Weight				
g	240	350	450	550	670	750	900	1000

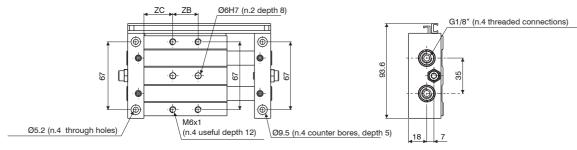
MOUNTING WITH FIXED PLATE

MOUNTING WITH A FIXED BODY





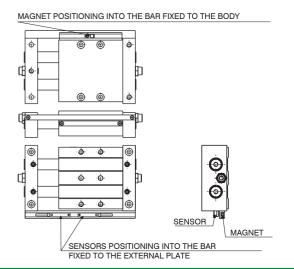


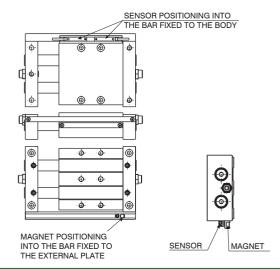


Stroke	25	50	75	100	125	150	175	200
ZA	125	175	225	275	325	375	425	475
ZB	25	45	65	90	90	90	90	90
ZC	28,5	31	33,5	33,5	46	58,5	71	83,5
ZD	45	70	95	120	145	170	195	220
ZE	82	107	132	157	182	207	232	257
ZF	27	52	77	102	127	152	177	202
ZG	109	159	209	259	309	359	409	459
ZH	141	191	241	291	341	391	441	491
				Weight				
g	950	1140	1350	1600	1800	2000	2300	2500

MOUNTING WITH FIXED PLATE

MOUNTING WITH A FIXED BODY







Slide force - Operating conditions

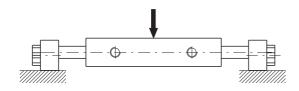
Theoretical slide force (N)

Bore Bore									
Working pressure	Ø10	Ø15	Ø25						
2 bar	20	41	119						
3 bar	30	62	179						
4 bar	40	83	239						
5 bar	51	104	299						
6 bar	61	124	358						
7 bar	71	145	418						
8 bar	81	166	478						
9 bar	91	186	537						
	101	207	597						
	Effective area (mm²)								

Deflection of piston rods

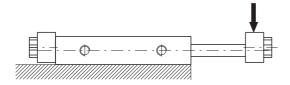
Applied load to body centre

Bore	Load	Deflection (mm)				
Ø10	10 N	0,07	/			
Ø15	30 N	0,08	0,28			
Ø25	60 N	0,02	0,08			
		100	200			
		Stroke				

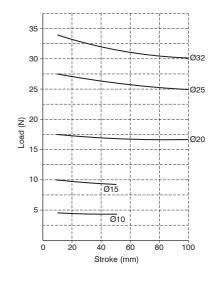


Applied load to body centre

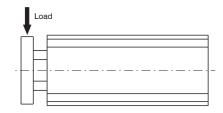
Bore	Load	Deflection (mm)					
Ø10	3 N	0,06	0,3	/	/		
Ø15	5 N	0,1	0,2	0,5	1		
Ø25	10 N	0,03	0,1	0,15	0,25		
		50	100	150	200		
		Stroke					



Control unit with bronze bushes







	STROKE
	5 = 5 mm
	10 = 10 mm
	15 = 15 mm
•	25 = 25 mm
	30 = 30 mm
	40 = 40 mm
	50 = 50 mm
	60 = 60 mm

Standard strokes

	Stroke									
Bore	5	10	15	20	25	30	40	50	60	
Ø10		•	•	•	•		•	•	•	
Ø16		•	•	•	•		•	•	•	
Ø20		•	•	•	•	•	•	•	•	

Operational characteristics

Cushioning	with elastic bumper
Fluid	filtered and preferably lubricated air or not (if lubricated the lubrication must be continuous)
Working pressure (bar)	1,2 7
Temperature °C	-5 +70



Construction characteristics

Body	anodized aluminium
Piston rod	stainless steel
Piston	aluminium
Piston rod bushing	aluminium
Rear end cap	anodized aluminium
Seals	oil resistant NBR rubber
Plate	anodized aluminium

Theoretical force

Bore	Effective area (mm²)		Force (N)						
Ø10	Out	28,3	5,7	8,5	11,3	14,2	17	19,8	
Ø10	In	21,2	4,2	6,4	8,5	10,6	12,7	14,8	
Ø16	Out	78,5	15,7	23,6	31,4	39,3	47,1	55	
010	In	66	13,2	19,8	26,4	33	39,6	46,2	
G00	Out	314	62,8	94,2	125,6	157	188,4	219,8	
Ø20	In	264	52,8	79,2	105,6	132	158,4	184,8	
			2	3	4	5	6	7	
		Working pressure (bar)							

Overall dimensions - Ø10

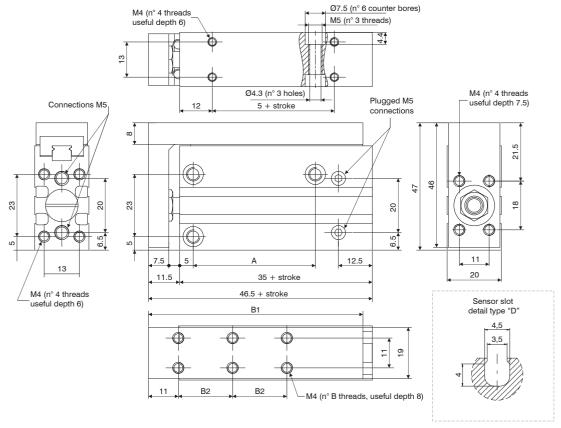


Table of dimensions

		Standard strokes									
	5	10	15	20	25	30	40	50	60		
Α	1	4 24			30		45	45	60		
B1	4	.9	59		69		79	79	99		
B2	1	0	2	20	3	0	20	20	30		
В	4				6						
Weight (g)	117	125	140	148	148 162 170			215	238		

PNEUMATIC ACTUATION



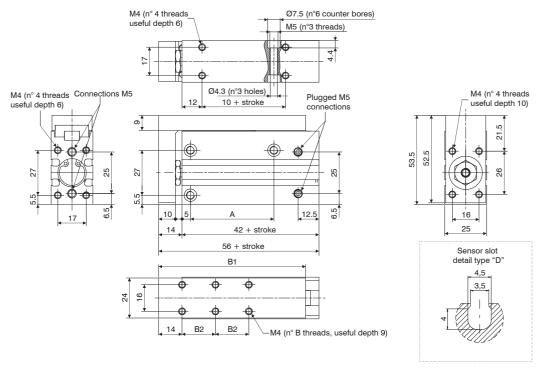
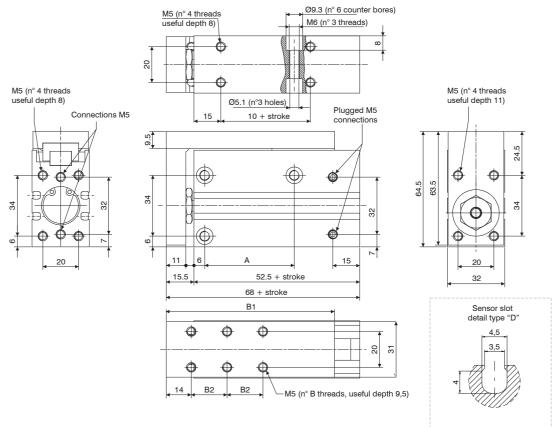


Table of dimensions

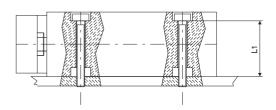
		Standard strokes										
	5	10	15	20	25	30	40	50	60			
Α	20 30			40		50	60					
B1	5	i8	6	88	78		88	98	108			
B2	1	0	2	20	30 20			25	30			
В				4				6				
Weight (a)	215	230	250	260 280 290			325	350	390			

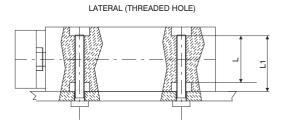
Overall dimensions - Ø20



		Standard strokes									
	5	10	15	20	25	30	40	50	60		
Α	20 25			40		50	70				
B1	6	4	74		84		94	104	114		
B2	1	0	2	10	30		20	25	30		
В	4							6			
Weight (g)	440	455	490	505 540 560			600	660	700		

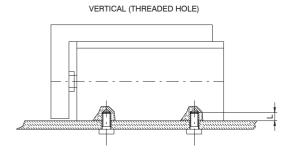
LATERAL (THROUGH SCREW)

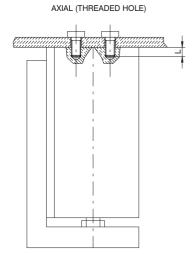




11,2 16,2 16

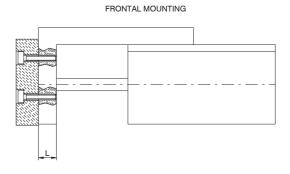
	Screw	Maximum torque (Nm) L1		Screw		Maximum torque (Nm)	L1
Ø10	M4	2,5	15,6	Ø10	M5	5,1	15,6
Ø16	M4	2,5	20,6	Ø16	M5	5,1	20,6
Ø20	M5	5,1	24	Ø20	M6	8,1	24





	Screw	Maximum torque (Nm)	L	Screw		Maximum torque (Nm)	L
Ø10	M4	2,5	6	Ø10	M4	2,5	6
Ø16	M4	2,5	6	Ø16	M4	2,5	6
Ø20	M5	5,1	8	Ø20	M5	5,1	8

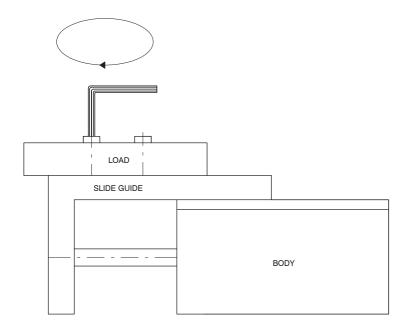
Load



BACK MOUNTING

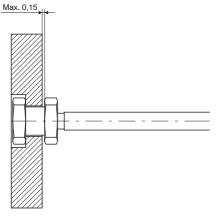
Screw		Maximum torque (Nm)	L	Screw		Maximum torque (Nm)	L
Ø10	M4	2,5	7,5	Ø10	M4	2,5	8
Ø16	M4	2,5	10	Ø16	M4	2,5	9
Ø20	M5	5.1	11	Ø20	M5	5.1	9.5

Fixing - Load



ATTENTION: Slide must be blocked before fixing the load. This operation shoul not be done by blocking the body as the guide could get damaged.



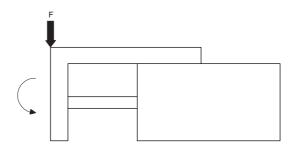


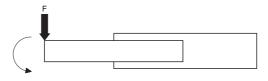
The fluctuating connection, maximum clearence 0.15 mm as indicated by the arrow.

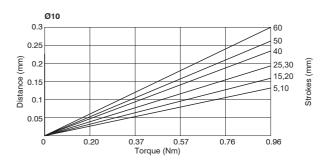
Plate deflection graphs

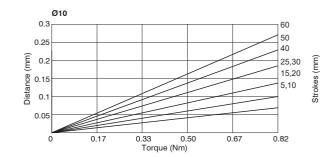
Plate deviation (arrow) when the load is applied on the spot indicated with the arrow and the unit completely extended

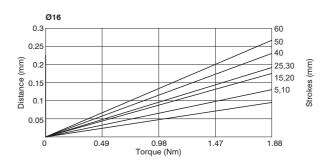
Plate deviation (arrow) when the load is applied on the spot indicated with the arrow and the unit completely extended

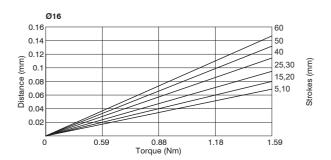


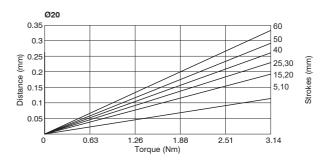












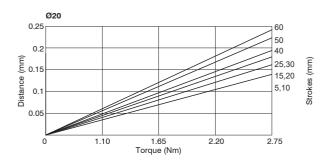
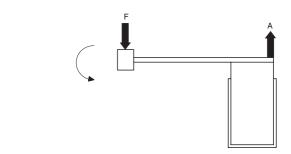
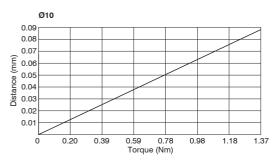
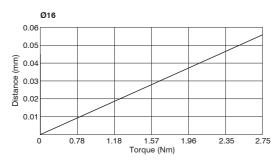


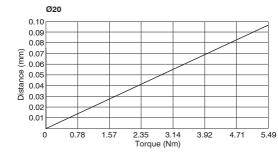
Plate deflection graphs outer stroke - selection graphs

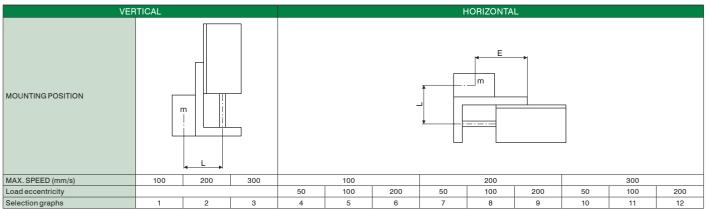
Plate deviation (compared to A) when the load is applied on the spot indicated with the arrow and the unit completely extended



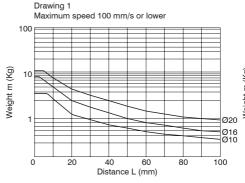


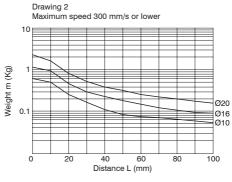


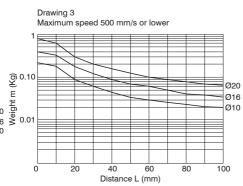




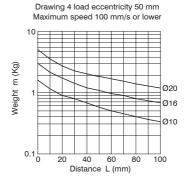
Selection graphs 1 - 3 (vertical mounting)



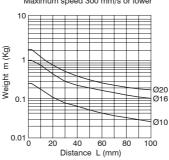




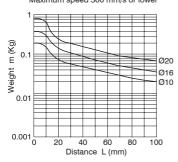
PNEUMATIC ACTUATION



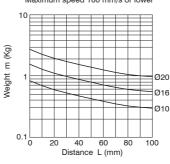
Drawing 7 load eccentricity 50 mm Maximum speed 300 mm/s or lower



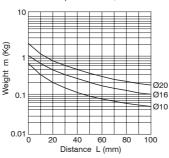
Drawing 10 load eccentricity 50 mm Maximum speed 500 mm/s or lower



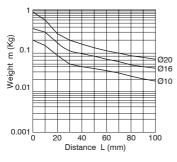
Drawing 5 load eccentricity 100 mm Maximum speed 100 mm/s or lower



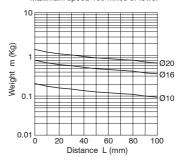
Drawing 8 load eccentricity 100 mm Maximum speed 300 mm/s or lower



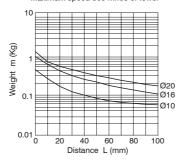
Drawing 11 load eccentricity 100 mm Maximum speed 500 mm/s or lower



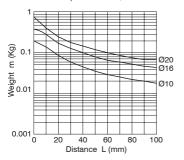
Drawing 6 load eccentricity 200 mm Maximum speed 100 mm/s or lower



Drawing 9 load eccentricity 200 mm Maximum speed 300 mm/s or lower



Drawing 12 load eccentricity 200 mm Maximum speed 500 mm/s or lower





Series 1605

The purpose of producing a rodless cylinder is to provide a space saving option over conventional cylinders. On a traditional rod type cylinder, the total space occupied with rod out is more than double the length of the cylinder, while with rodless cylinder it is little more than its stroke. Profiled tube allows mounting of sensors 1500._, RS._, HS._ and 1580._, MRS._, MHS._ on the two sides of carriage, by means of suitable brackets. Standard accessories include foot mounting brackets for installation on cylinder and caps, intermediate mounting brackets to give support to long stroke cylinders under load (over one metre), an oscillating coupling device for installation between the mounting plate and the load and on request, a very precise external movement device.

Construction characteristics

Bands tempered stainless steel Cushion bushings aluminium Barrel anodized aluminium Mounting place anodized aluminium Piston seals special 80 shore nitril mixture, wear resistant
Barrel anodized aluminium Mounting place anodized aluminium
Mounting place anodized aluminium
Piston seals special 80 shore nitril mixture, wear resistant
Tieterredate operation of the first transfer
Plain bearing guide acetal resin
Piston acetal resin
End caps anodized aluminium

Operational characteristics

Fluid	filtered and lubricated air
Pressure	0.5 8 bar
Working temperature	-5 °C +70 °C
Max. speed	1.5 m/s (normal working conditions)
Bores	Ø25 - Ø32 - Ø40 - Ø50 - Ø63
Max. strokes	6 meters

Please follow the suggestions below to ensure a long life for these cylinders:

- use clean and lubricated air.
- Please adequately evaluate the load involved and its direction, especially in respect to the moving carriage (also see tables for loads and admitted moments).
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).
- evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

Please note: air must be dried for applications with lower temperature.

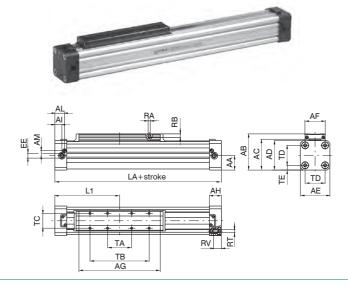
Use hydraulic oils H class (ISO VG32) for correct continued lubrication.

For applications where a low smooth uniform operations speed is required, you must specify this on your purchase order so that we can use the proper special grease.

Use and maintenance

This type of cylinder, due to its characteristics, has to be used within certain criteria. Correct use will give long and troublefree operation. Filtered and lubricated compressed air reduce seal wear. Verify that the load will not produce unforeseen stresses. Never combine high speed with heavy load. Always support the long stroke cylinder with intermediate brackets and never exceed the specified working conditions. If maintenance is required, follow the instructions supplied with the repair kit.

(Max. stroke 6 m)

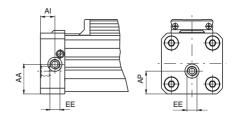


Left head

Coding: 1605.Ø.stroke.02.M

(Max. stroke 6 m)

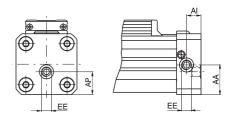
Possibility of a single feed cylinder head



Right head

Coding: 1605.Ø.stroke.03.M

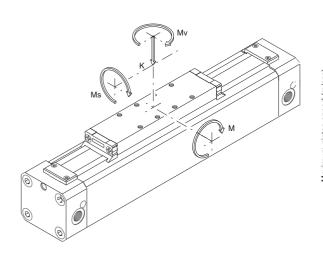
(Max. stroke 6 m)

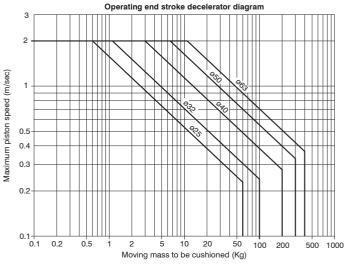


Bore		25	32	40	50	63
AA		19,5	25,5	31	39	46,5
AB		56	70	80	98	113,5
AC		48,5	60	70	85	100
AD		44	55	65	80	95
AE		40	55	65	80	95
AF		30	40	40	55	55
AG		117	146	186	220	255
AH		23	27	30	32	36
Al		12,5	14,5	17,5	19	23
AL		19	22,5	24,5	26	30
AM		7,5	10,5	11,5	13,5	16
AP		13	15,2	23	30	35,5
EE		G1/8"	G1/4"	G1/4"	G1/4"	G3/8"
L1		100	125	150	175	215
LA		200	250	300	350	430
RA		M4	M5	M5	M6	M6
RB		7,5	9,5	9,5	11,5	11,5
RT		M5	M6	M6	M8	M8
RV		13,5	16,5	16,5	20,5	20,5
TA		30	40	40	65	65
TB		80	110	110	160	160
TC		23	30	30	40	40
TD		27	36	47	54	68
TE		6,5	9,5	9	13	13,5
Weight (g)	Stroke 0	900	1650	2650	4330	8010
weight (g)	every 100 mm	225	340	490	725	1070
Stroke tolerance:	: + 2 mm.					



Basic version cylinder





Recommended loads and moments in static conditions

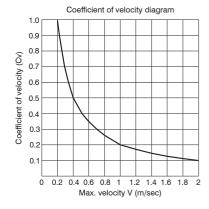
Cylinder bore	Decelerating stroke (mm)	Max. recommended load K (N)	Max. recommended bending moment M (Nm)	Max. recommended cross moment Ms (Nm)	Max. recommended twisting moment Mv (Nm)
25	20	300	15	0,8	3
32	25	450	30	2,5	5
40	31	750	60	4,5	8
50	38	1200	115	7,5	15
63	49	1600	150	8,5	24

Attention: use guided carriage for heavier loads or precise linear movements (MG or MH versions).

All reported data are referred to carriage plane and indicates MAX - values in statical conditions. These values should not be exceeded either in dynamic conditions (best speed <1m/sec).

 $Should the \ cylinder \ be \ utilised \ at its \ maximum \ performances, ensure \ the \ proper \ additional \ absorbers \ are \ used.$

Calculation of permissible load (Kd) in dynamic conditions $Kd=K \bullet Cv$



Loads under combined stressing conditions

It is important to take into consideration the following formula when there are a combination of forces with torque:

$$\left[\left(2~\textrm{x}~\frac{\textrm{Ms}}{\textrm{Ms max}}\right) + \left(1.5~\textrm{x}~\frac{\textrm{Mv}}{\textrm{Mv max}}\right) + \frac{\textrm{M}}{\textrm{M max}} + \frac{\textrm{K}}{\textrm{K max}}\right)\right]\textrm{x}~\frac{100}{\textrm{Cv}} < 100$$



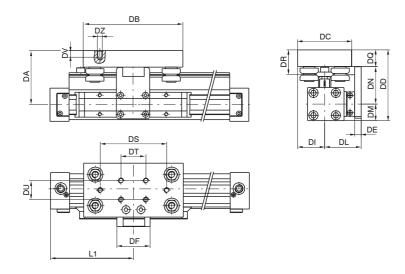
Cylinder with linear control unit

Coding: 1605.Ø.stroke.01.MG

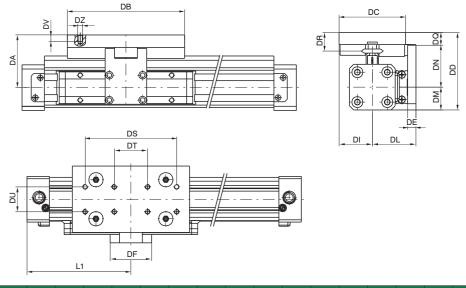
(Max. stroke 3 m)



Cylinders Ø25



Cylinders Ø32, Ø40, Ø50



Bore	DA	DB	DC	DD	DE	DF	DI	DL	DM	DN	DQ	DR	DS	DT	DU	DV	DZ	L1	Weight (g)	every 100 mm
25	65	120	65	85	8	40	32,5	44	20	45,5	19,5	29	80	30	23	8	M6	100	850	
32	63	141	80	90,5	10	50	40	52,5	27,5	48,5	14,5	21,5	110	40	30	8	M5	125		00 ~
40	68,5	141	80	101	10	50	40	57,5	32,5	54	14,5	21,5	110	40	30	8	M5	150	950	90 g
50	76	141	80	116	12	80	40	70	40	61,5	14,5	21,5	110	40	30	8	M5	175]	

For cylinders weight refer to base version

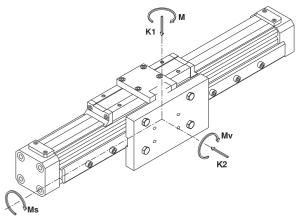
Construction and working characteristics

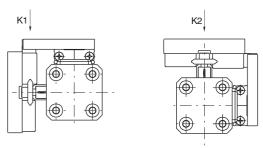
Rod	carbon steel with hardness higher than 55-60 HRC
Bearing with shaft	shielded bearing with shaped ring
Carriage plate	anodised aluminium
End cap	acetal resin

Rodless cylinders - Standard Series 1605 - Technical data

Cylinder with linear control unit Ø25, Ø32, Ø40 and Ø50 mm

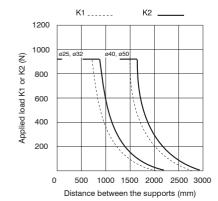
Max. suggested loads and moments

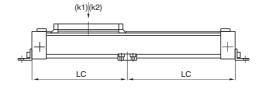




K1 (N)	K2 (N)	M (Nm)	Ms (Nm)	Mv (Nm)
960	960	40	12	40

Max. load (K1 o K2) depending on the distance LC between the supports



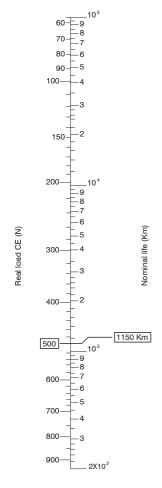


Real load (CE) under combined stressing conditions

It is important to take into consideration the following formula when there are a combination of forces with torque:

 $CE = [K1 + K2 + (24 \times M) + (80 \times Ms) + (24 \times Mv)] \le 960$

Nomograph load / life



All data refers to a linear control unit properly lubricated with linear speed < of 1.5 m/s $\bf Example$ to $\bf compute$ the life

Compute the linear control unit life with a load of 100 N applied 50 mm off its axle.

$$\begin{split} Ms &= 0.05 \times 100 = 5 \text{ Nm} & \quad K1 = 100 \text{ N} \\ \text{How to compute the real load using the formula:} \\ CE &= \left[K1 + K2 + (24 \times M) + (80 \times Ms) + (24 \times Mv) \right] \\ CE &= \left[(100 + 0) + (24 \times 0) + (80 \times 5) + (24 \times 0) \right] = 500N \\ \text{After having verified that the CE is lower than 960 N we realise that the life is 1150 Km} \end{split}$$

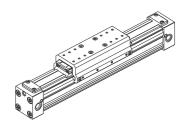
from the nomograph.



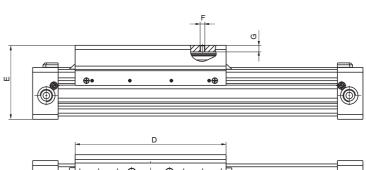
Cylinder with plain bearing guide

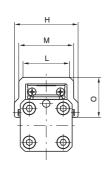
Coding: 1605.Ø.stroke.01.MH

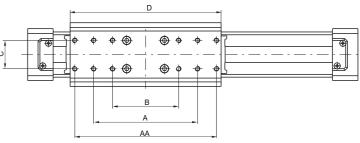
(Max. stroke 6 m)











Bore	AA	Α	В	С	D	Е	F	G	Н	L	M	0	Weight (g)
Ø25	/	80	55	23	130	64 ±1	M4	6,5	57	36	42	32	235
Ø32	/	110	70	30	160	78,5 ±1	M5	7	68	50	58	42,5	445
Ø40	/	110	70	30	202	88,5 ±1	M5	7	77	52	60	45,5	595
Ø50	210	160	110	40	235	114,5 ±1	M6	14	100	71	83	61,5	1453
Ø63	210	160	110	40	270	130 ±1	M6	14	116	76	90	65,5	1810

Complete plain bearing guide

Coding: 1600.Ø.05F

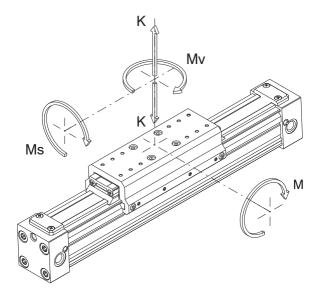


Construction and working characteristics

Plain bearing	reinforced carbon fibre nylon
Carriage plate	anodised aluminium

Cylinder with plain bearing guide ø25, ø32, ø40, ø50 and ø63 mm

Max. suggested loads and moments



Recommended loads and moments in static conditions

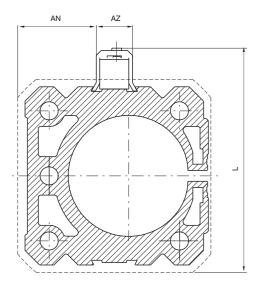
Cylinder bore	Max. recommended load K (N)	Max. recommended bending moment M (Nm)	Max. recommended cross moment Ms (Nm)	Max. recommended twisting moment Mv (Nm)
Ø25	300	20	1	4
Ø32	450	35	3	6
Ø40	750	70	5	9
Ø50	1200	120	8	16
Ø63	1600	155	9	25



SA series sensor bracket

Coding: 1600.A



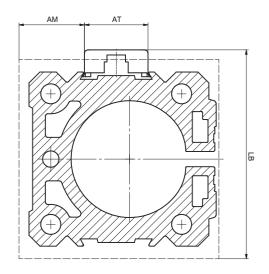


В	ore	25	32	40	50	63					
AN		12.5	20	25	32.5	40					
AM		11	18	22	30	37.5					
AZ			15								
AT		17.5									
L		55	68	79	94	110					
LB		45	58	69	84	100					
Maight (g)	1600.A			1							
Weight (g)	1600.C		-	2.5							

Bracket for sensor series SR - SU - SQ

Coding: 1600.C





Sensors

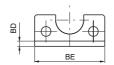
 $for technical \, characteristics \, and \, ordering \, codes \, see \, magnetic \, sensors \, section$

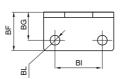




Coding: 1600.Ø.01F (1 piece)

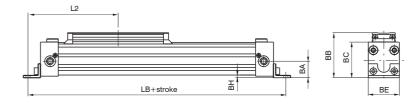
Bore Ø25, Ø32





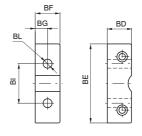
Bore Ø40, Ø50, Ø63

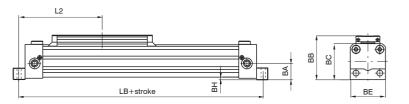






Bore	25	32	40	50	63
BA	21,5	28	32,5	41	49
BB	58	72,5	81,5	100	116
BC	46	57,5	66,5	82	97,5
BD	3	3	20	25	30
BE	40	55	65	80	95
BF	22	25	25	25	30
BG	16	18	12,5	12,5	15
ВН	3,5	6	4,5	5	5
BI	27	36	30	40	48
BL	5,5	6,6	9	9	11
L2	116	143	162,5	187,5	230
LB	232	286	32,5	375	460
Weight (g)	30	45	65	110	190



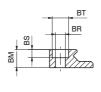




Intermediate support

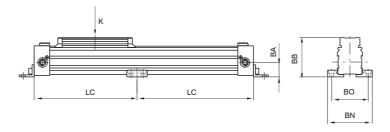
Coding: 1600.Ø.02F

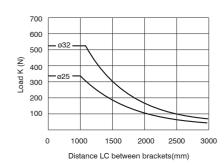
Bore Ø25, Ø32







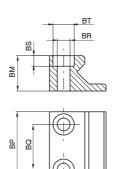


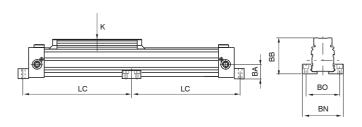


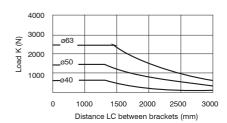
Bore Ø40, Ø50, Ø63



Bore	25	32	40	50	63
ВА	21,5	28	32,5	41	49
ВВ	58	72,5	81,5	100	116
BM	10	18	18	25	30
BN	66	86	96	120	140
ВО	54	70	80	100	120
BP	30	40	40	50	50
BQ	18	25	25	32	32
BR	5,5	6,6	6,6	9	9
BS	4,5	5,5	5,5	7,5	7,5
BT	9	11	11	15	15
Weight (g)	25	80	80	160	215





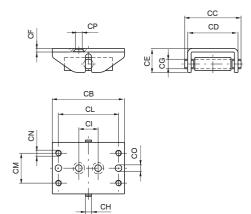


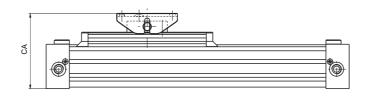


Coding: 1600.Ø.03F

Bore Ø25, Ø32



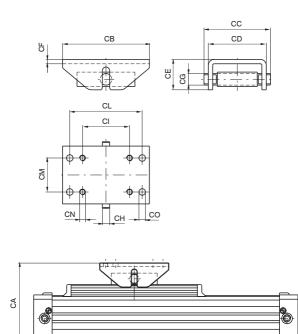




Bore Ø40, Ø50, Ø63



Bore	25	32	40	50	63
CA (±5,5)	76	99,5	108,5	135,5	151
СВ	60	100	100	120	120
CC	47	64	64	92	92
CD (±5)	42	56	56	80	80
CE	20	30	30	42	42
CF	3	4	4	6	6
CG	8	12	2	16	16
CH	5	8	8	10	10
CI	16	40	40	65	65
CL	50	80	80	100	100
CM	25	30	30	47	47
CN	M5	M6	M6	M8	M8
CO	5,5	6,5	6,5	9	9
СР	5,5	7	7	-	-
Weight (g)	130	380	380	990	990



Series 1605 - Ø16

Mechanically coupled cylinder based on the stainless steel strip sealing technology widely used and tested on bigger bore sizes.

Available versions: sliding shoe as standard ("MH"). This system ensures high resistance and long life as the carriage which supports the weight is not tied to the piston and therefore the piston only transfers the movement without bearing any force.

Air connections: M5 threaded connections. All air connections on one end cap version available. (side-back-bottom side) Mountings:

- foot brackets and intermediate supports if needed (depending on the stroke)
- oscillating hinge
- Directly in position via the slot on the end caps- in this conditions the air supply can come directly from the mounting plate.

Magnetic sensors: sensors series (1590...., LRS.... and LHS....) can be used directly in the 2 slots on the barrel.

Construction characteristics

End caps	anodized aluminium
Barrel	anodized aluminium
Bands	stainless steel
Mounting place	anodized aluminium
Plain bearing guide	special technopolymer
Piston	acetal resin
Cushion bushings	aluminium
Piston seals	special NBR
Other seals	NBR

Operational characteristics

Fluid	filtered and lubricated air
Working pressure	1.5 8 bar
Working temperature	-5 °C +70 °C
Max. speed	1 m/s (normal working conditions)
Max. stroke	2,5 meters
Cushioning lenght	18 mm

Please follow the suggestions below to ensure a long life for these cylinders:

- use clean and lubricated air.
- Please adequately evaluate the load involved and its direction, especially in respect to the moving carriage (also see tables for loads and admitted moments).
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).
 - evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

Please note: air must be dried for applications with lower temperature.

Use hydraulic oils H class (ISO VG32) for correct continued lubrication.

For applications where a low smooth uniform operations speed is required, you must specify this on your purchase order so that we can use the proper special grease.

Use and maintenance

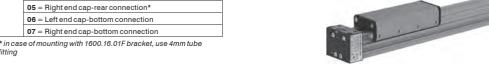
This type of cylinder, due to its characteristics, has to be used within certain criteria. Correct use will give long and troublefree operation. Filtered and lubricated compressed air reduce seal wear. Verify that the load will not produce unforeseen stresses. Never combine high speed with heavy load. Always support the long stroke cylinder with intermediate brackets and never exceed the specified working conditions. If maintenance is required, follow the instructions supplied with the repair kit.

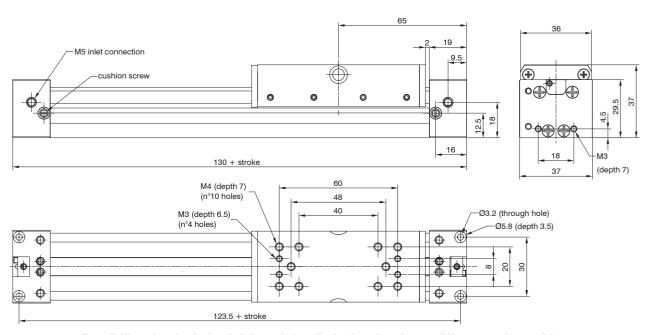


Basic version (cylinder with plain bearing guide)

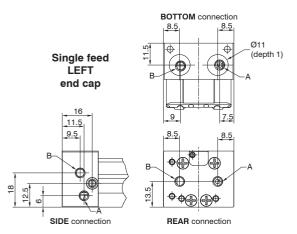
Coding: 1605.16.stroke. . MH

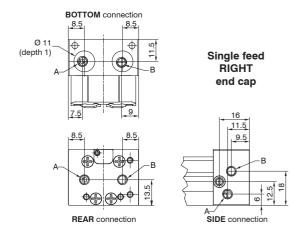
	END COVERS
	01 = Basic version
	02 = Left end cap-side connection
	03 = Right end cap-side connection
0	04 = Left end cap-rear connection*
	05 = Right end cap-rear connection*
	06 = Left end cap-bottom connection
	07 = Right end cap-bottom connection

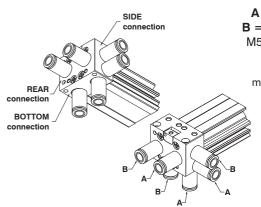




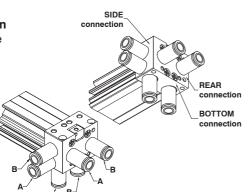
Possibility of a single feed right or left cylinder head and on 3 different end cap sides



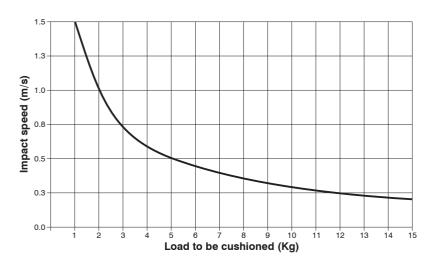




A = forward stroke connection B = backwards stroke connection M5 tube Ø4 and Ø6 fittings can be used for air connections. In case of use with 1600.16.01F mounting and REAR air connections use a 4mm pipe fitting.



Operating end stroke decelerator diagram

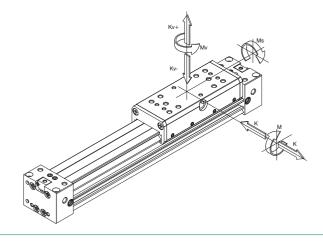


In case of extreme applications close to the maximum allowed values in the graph it is strongly recommended to add external damping systems.

Recommended loads and moments in static conditions

K1	K2	K3	M Ms My			
200	250	100	10	2	3	
(N)				(Nm)		

Maximum Load and moments allowed in static or dynamic conditions (max. speed 0,2 m/s)

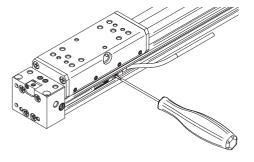


Magnetic sensors

Code	
1590	
LRS	
LHS	



The two side slots allow the direct use of 1590....LRS... and LHS... sensors mounted from the top and positioned via the built in screw.





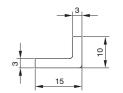
Foot

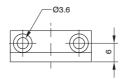
Coding: 1600.16.01F (1 piece)

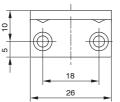
Attention: based on the stroke evaluate the need to use also side mounted supports. (see below)

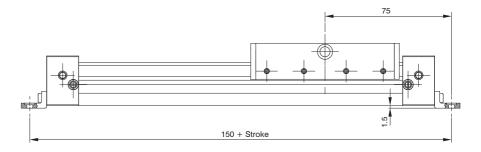
The kit comprises: n° 1 foot (plated zinc steel) n° 2 screws (plated zinc steel)

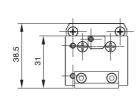












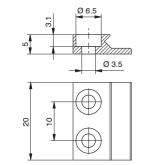
Intermediate support

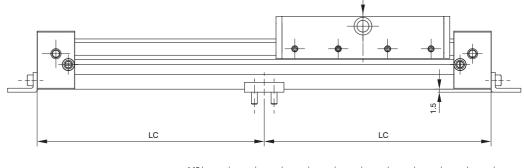
Coding: 1600.16.02F (1 piece)

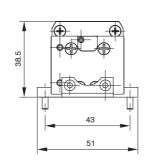
The kit comprises:

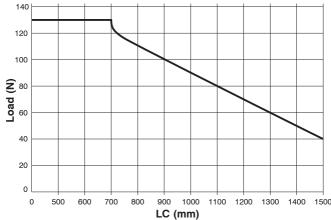
n° 1 support (aluminium) n° 2 screws (plated zinc steel)











 $The graph shows the \,LC \,limit \,in \,conjunction \,with \,the \,applied \,load \,K \,beyond \,which \,it \,is \,necessary to \,mount \,an \,A \, applied \,load \,K \,beyond \,which \,it \,is \,necessary to \,in \,applied \,load \,K \,beyond \,which \,it \,in \,applied \,$ intermediate side support in order to prevent the barrel from bending





Coding: 1600.16.03F

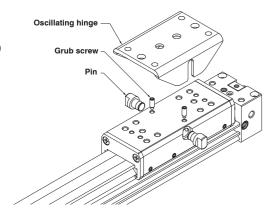
(1 piece)

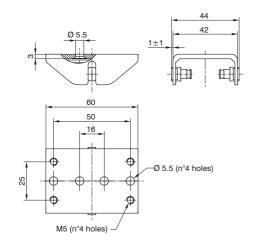
The kit comprises: n° 2 pins (plated zinc steel)

n° 2 grub screw (steel)

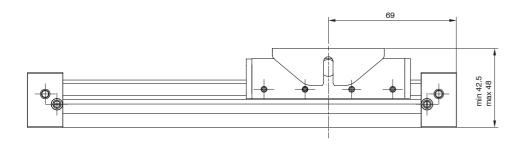
n° 1 oscillating hinge (plated zinc steel)







mounting sequence: $mount\,the\,pin\,into\,the\,dedicated$ housing tighten the blocking grub screws in the dedicated housing



Direct mounting without brackets

Coding: 1600.16.04F

(1 piece)

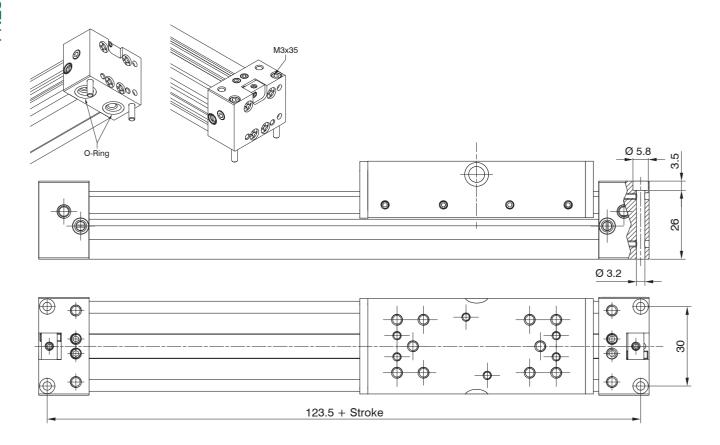
The kit comprises:

n° 4 screws M3x35 (plated zinc steel)

n° 2 O-Rings (NBR)

Direct mounting without brackets

Thanks to the mounting holes with counter bores on the end caps it is possible to mount the cylinder directly onto the mounting surface. Having the end caps and barrel flush and in contact with the mounting plate it is not necessary to use any intermediate mounting brackets even in case of long strokes. It is also possible to supply air to the cylinder directly through the mounting plate through the two air connection on the bottom side of the end cap (06.MH and 07.MH) which are machined with counterbores.





Series 1330 - 1331 - 1332 - 1333, rotary actuators

Construction characteristics

Central body	oxidised aluminium
Cushion bushings	hardened aluminium
Barrel	anodised aluminium Ra=0.3-0.5
Rack	C43
Rotating angle adjustment assy	brass
Seals	NBR 80 shore rubber
Plain bearing guide	acetal resin
Pinion	18 NiCrMo4 cemented and tempered
Pistons	vulcanized rubber block on steel core with incorporated permanent magnet or without magnet plus rear spacer for non magnetic version
End caps	UNI 5079 aluminium alloy casting
Cushion adjustment screws nickel plated steel	

Operational characteristics

Fluid	filtered air, preferably lubricated	
Pressure	10 bar	
Working temperature	-5 °C +70 °C	
Standard rotation	90° - 180° - 270° - 360°(+1°)	
Rotating angle adjustment assy	±10° (±5° start position, ±5° end position)	

Use and maintenance

Please follow the suggestions below to ensure a long life for these cylinders:

- use clean and lubricated air.
- · correct alignment during assembly with regard to the applied load so as to avoid radial components or bending the rod.
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).
- evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

Please note: air must be dried for applications with lower temperature.

Use hydraulic oils H class (ISO VG32) for correct continued lubrication.

Bore	32	40	50	63	80	100
Torque moments Nm/bar	1,2	2,25	3,9	7,3	15,7	26,5
Axis load max. kg	8	10	10	12	18	22
Cushioning angle	60°	60°	50°	50°	40°	40°

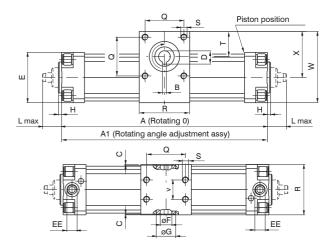


Female pinion version

Coding: 133♥.Ø.♠₽

VERSION 0 = magnetic 1 = non-magnetic BORE 32 = Ø32 40 = Ø40 Ø 50 = Ø50 63 = Ø63 80 = Ø80 100 = Ø100 ROTATING ANGLE 90 = 90° 180 = 180° 270 = 270° 360 = 360° STANDARD ROTATION 01 = basic version		ing. 100 g.D. g			
1 = non-magnetic BORE 32 = 032 40 = 040 Ø 50 = 050 63 = 063 80 = 080 100 = 0100 ROTATING ANGLE 90 = 90° \$180 = 180° 270 = 270° 360 = 360° STANDARD ROTATION		VERSION			
BORE 32 = Ø32 40 = Ø40 50 = Ø50 63 = Ø63 80 = Ø80 100 = Ø100 ROTATING ANGLE 90 = 90° 180 = 180° 270 = 270° 360 = 360° STANDARD ROTATION	V	0 = magnetic			
32 = Ø32 40 = Ø40 Ø 50 = Ø50 63 = Ø63 80 = Ø60 100 = Ø100 ROTATING ANGLE 90 = 90° 180 = 180° 270 = 270° 360 = 360° STANDARD ROTATION		1 = non-magnetic			
40 = Ø40 Ø 50 = Ø50 63 = Ø63 80 = Ø80 100 = Ø100 ROTATING ANGLE 90 = 90° 180 = 180° 270 = 270° 360 = 360° STANDARD ROTATION		BORE			
50 = Ø50 63 = Ø63 80 = Ø80 100 = Ø100 ROTATING ANGLE 90 = 90° 180 = 180° 270 = 270° 360 = 360° STANDARD ROTATION		32 = Ø32			
63 = Ø63 80 = Ø80 100 = Ø100 ROTATING ANGLE 90 = 90° 180 = 180° 270 = 270° 360 = 360° STANDARD ROTATION		40 = Ø40			
80 = Ø80 100 = Ø100 ROTATING ANGLE 90 = 90° 180 = 180° 270 = 270° 360 = 360° STANDARD ROTATION	Ø	50 = Ø50			
100 = Ø100 ROTATING ANGLE 90 = 90° 180 = 180° 270 = 270° 360 = 360° STANDARD ROTATION		63 = Ø63			
ROTATING ANGLE 90 = 90° 180 = 180° 270 = 270° 360 = 360° STANDARD ROTATION		80 = Ø80			
90 = 90° 180 = 180° 270 = 270° 360 = 360° STANDARD ROTATION		100 = Ø100			
180 = 180° 270 = 270° 360 = 360° STANDARD ROTATION		ROTATING ANGLE			
270 = 270° 360 = 360° STANDARD ROTATION		90 = 90°			
360 = 360° STANDARD ROTATION	A	180 = 180°			
STANDARD ROTATION		270 = 270°			
		360 = 360°			
01 = basic version		STANDARD ROTATION			
	01 = basic version				
01R = with rotating adjustment		01R = with rotating adjustment			

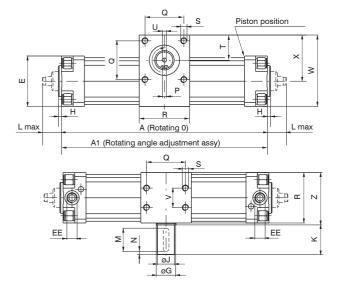




Male pinion version

Cod	ing: 133 V .Ø. AB
	VERSION
V	2 = magnetic
	3 = non-magnetic
	BORE
	32 = Ø32
	40 = Ø40
Ø	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
	ROTATING ANGLE
	90 = 90°
A	180 = 180°
	270 = 270°
	360 = 360°
	STANDARD ROTATION
R	01 = basic version
	01R = with rotating adjustment





Dimensions

В	ore	32	40	50	63	80	100
A rot. 0°		171	195	202	233	268	300
A rot. 90°		218	252	265	308	378	427
A rot. 180°		265	308	328	382	488	555
A rot. 270°		312	364	390	457	598	682
A rot. 360°		359	421	453	531	708	809
A1 rot. 0°		174	198	206	237	274	307
A1 rot. 90°		221	255	269	312	384	434
A1 rot. 180°		268	311	332	386	494	562
A1 rot. 270°		315	367	394	461	604	689
A1 rot. 360°		362	424	457	535	714	816
В		5	5	5	6	6	8
С		1	1	1	1	1	1
D		17,3	17,3	17,3	20,8	22,8	28,3
E		46	52	65	75	95	115
ØF(H7)		15	15	15	18	20	25
ØG		25	25	25	30	40	55
Н		4	4	4	4	4	4
ØJ (h7)		14	14	22	25	30	35
K		30	30	40	40	50	50
L max.		23	23	28,5	28,5	34,5	34,5
M		25	25	35	35	45	45
N	·	2,5	2,5	2,5	2,5	2,5	2,5
P		5	5	6	8	8	10
Q		33	40	50	60	80	80
R	·	50	60	65	75	100	115
S		M6	M6	M8	M8	M10	M10
T		27,5	35	32,5	35,5	50	54,5
U		M5	M5	M6	M8	M8	M10
V		18	22	25	35	50	60
W		71	85	92	105	141	162
Х		48	59	59,5	67,5	93,5	104,5
Z		51	61	66	76	101	116
EE		G 1/8"	G 1/4"	G 1/4"	G 3/8"	G 3/8"	G 1/2"
Piston stroke every 10° c	frotation	2,61	3,14	3,49	4,14	6,11	7,07
	rot. 90°	1450	2020	3050	4850	10000	14900
Female Pinion weight	rot. 180°	1600	2240	3350	5350	11000	16350
(g)	rot. 270°	1750	2460	3650	5850	12000	17800
	rot. 360°	1900	2680	3950	6350	13000	19250
	rot. 90°	1550	2150	3280	5150	10500	15700
Mala Dinian maintain	rot. 180°	1700	2370	3580	5650	11500	17150
Male Pinion weight (g)	rot. 270°	1850	2590	3880	6150	12500	18600
	rot. 360°	2000	2810	4180	6650	13500	20050



Sensor brackets codes - 1500._, RS._, HS._

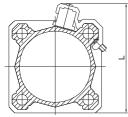
Coding: 1320.

	·g· · - = - · · ·
	TYPE
	A = Ø32-Ø40
0	B = Ø50-Ø63
	C = Ø80-Ø100

Sensor for microbore cylinders

For technical characteristics and ordering codes see the "Magnetic sensors" sections





Bore	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
L	60	65	77	87	105	125

Sensor brackets codes - 1595.HAP

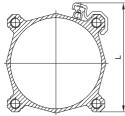
Coding: 1320.

•	TYPE
	ASC = Ø32-Ø40
	BSC = Ø50-Ø63
	CSC = Ø80-Ø100

Sensor for microbore cylinders

For technical characteristics and ordering codes see the "Magnetic sensors" sections

-	0	
1	F	
		19



Bore	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
	60	65	77	87	105	125

Sensor brackets codes - 1580._,MRS._,MHS

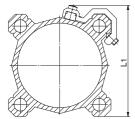
Coding: 1320.

	TYPE
	AS = Ø32-Ø40
•	BS = Ø50-Ø63
	CS = Ø80-Ø100

Sensor for microbore cylinders

For technical characteristics and ordering codes see the "Magnetic sensors" sections





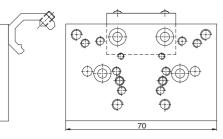
Bore	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
L1	48	54	66	76	96	112

Support for solenoid valves

Coding: 1320.

	-
	SIZE
	15 = Ø32-Ø40
0	16 = Ø50-Ø63
	17 = Ø80-Ø100





Fixing holes for valves series:

A = 414/2

B = 824 C = 828, T488, 488, 484

D = 2400

E = 2600

F = Bases for ISO solenoid

valves

G = 858/2 H = T424

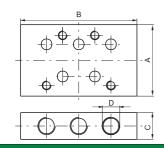
L = 888_

This accessory permits to mount a valve or an electrovalve on a side of the cylinder. The plate can be fitted on the cylinder profiled barrel, and, on it, can be mounted either a threaded distributor or a base on whic can be mounted an ISO distributor. Once installed the connections must be done with fittings and pipes. All of the threaded holes on the support plate are dedicated to different valves series as per attached drawing.

Bases for ISO solenoid valves

Coding: 1320.							
	STANDARDS						
0	21 = ISO1						
	22 = ISO2						





	Dimensions Dimensions				
Bases for solenoid valves	A	В	С	D	
ISO 1	40	75	15	G 1/8"	
ISO 2	50	95	20	G 1/4"	



Series 6400 - Double rack rotary actuators with turn table

These rotary actuators convert linear motion of a piston into a rotary motion via a rack and pinion device, using a single pinion-rack system for the 6411 version and a double system on 6400 versions.

The 6410 series actuators have fixed stops at 90 and 180 degrees; while on the 6400 series, rotation can be adjusted between 0 and 190 degrees using variable stops that can also be substituted with hydraulic stoppers (shock absorbers).

These devices are equipped with a rotating table upon which the load is fixed.

Body	anodized aluminium		
Rack	steel		
Rear end cap	anodized aluminium		
Piston seals	NBR rubber		
Pinion	steel		
Turn table	anodized aluminium		
Cushioning	elastic bumper (hydraulic damper available on request)		
End caps anodized aluminium			

Fluid	filtered and preferably lubricated air or not (if lubricated the lubrication must be continuous)		
Max. working pressure	10 bar (for type 100 and 200, 6 bar)		
Temperature °C	-5 +70		
Rotation angle range	0190°		
Max. rotation	190°		
Rotation speed	s/90° (see rotation time table)		



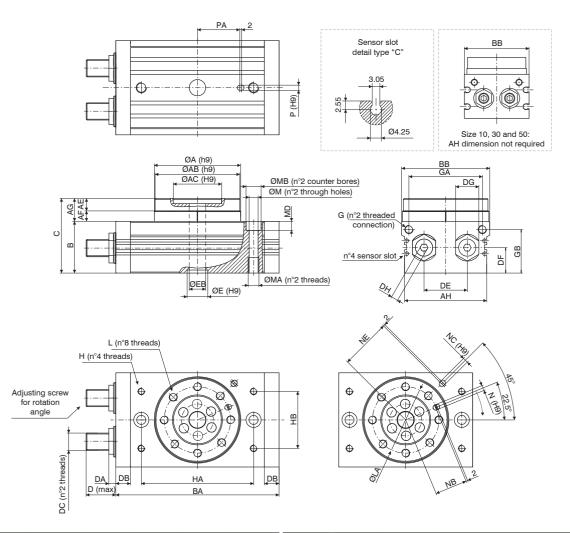
Double rack rotary actuators with turn table

Coding: 6400.**₽.♥**

	5
	PISTON
	10 = (piston Ø15)
	30 = (piston Ø20)
(2)	50 = (piston Ø25)
	100 = (piston ø32)
	200 = (piston Ø40)
	VERSION
V	A = Standard
	R = Cushioning (Shock absorber)







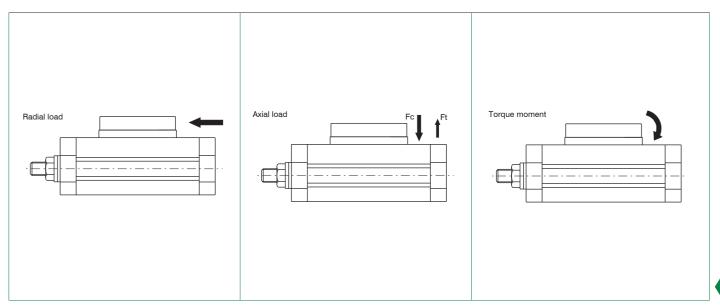
Si	ze	10	30	50	100	200
Ø piston		Ø15	Ø21	Ø25	Ø32	Ø40
ØAh9		46	67	77	100	118
ØAB ^{h9}		45	65	75	98	116
ØAC ^{h9}		20	32	35	56	64
ØAC.	Useful depth	4	4,5	5	6	9
AE		8	10	12	14,5	16,5
AF		5	7	8	12,5	15,5
AG		13	17	20	27	32
AH		/	/	/	95	114
B ^{+0,5/0}		34	40	46	59	74
BA		92	127	152	189	240
BB+0,5/0		50	70	80	102	120
C+0,5/0		47	57	66	86	106
D		17,7	25	31,4	34,3	40,2
DA		8,6	10,6	14	8	20
DB		9,5	12	15,5	17	24
DC		M8x1	M10x1	M14x1,5	M20x1,5	M27x1,5
DE		20	29	38	50	60
DF		15,5	18,5	22	29,5	36,5
DG		12	14	19	27	36
DH		4	5	6	8	10
ØE ^{H9}		15	22	26	24	32
ØE.	Useful depth	3	3	3	3,5	5,5
ØEB		5	9	10	19	24
G		M5x0,8	G1/8	G1/8	G1/8	G1/8

Øpiston		Ø15	Ø21	Ø25	Ø32	Ø40
GA		34,5	50	63	85	103
GB		27,8	32	37,5	50,5	65,5
Н		M5x0,8	M6x1	M8x1,25	M8x1,25	M12x1,75
П	Useful depth	8	8	8	10	13
HA		60	84	100	130	150
НВ		27	37	50	66	80
		M5x0,8	M6x1	M8x1,25	M10x1,5	M12x1,75
L	Useful depth	8	10	12	14,5	16,5
LA		32	48	55	77	90
М		6,8	8,6	10,5	10,4	14,2
MA		M8x1,25	M10x1,5	M12x1,75	M12x1,75	M16x2
IVIA	Useful depth	12	15	18	18	25
MB		11	14	18	17,5	20
MD		6,5	8,5	10,5	10,5	12,5
N ^{H9}		3	4	5	6	8
IN	Useful depth	3,5	4,5	5,5	6,5	8,5
NB		15	23	26,5	37,5	44
NC ^{H9}		/	/	/	6	8
NC.	Useful depth	/	/	/	4,5	4,5
NE		/	/	/	59	69
D H9		/	/	/	6	8
P	Useful depth	/	/	/	4,5	6,5
PA		/	/	/	49	54
Weight (g)		530	1230	2080	4100	7650

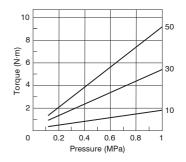
Rack rotary actuators Series 6400 - Double rack rotary actuators with turn table

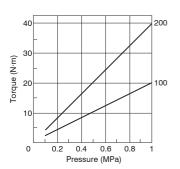


Permissible loads						
Size 10 30 50 100 200						
Radial Load (N)		80	200	320	400	550
Axial Load (N) Fc	Fc	80	370	450	710	1000
	Ft	75	200	300	500	750
Torque Moment (Nm)		2.5	5.5	9.5	18	25



Torque Diagrams





Rotation time (sec./90°)

Dimension	With adjusting screw	With hydraulic decelerator
10-30-50	0,2 1	0,2 0,7
100	0,2 2	0,2 1
200	0,2 2,5	0,2 1

Kinetic energy (J)

Kinetic energy (o)							
Dimension	With adjusting screw	With hydraulic decelerator					
10	0,006						
30	0,045]					
50	0,08	Please apply to our tech-dpt for info (as general rule expressed valves can be multiplied by 3)					
100	0,30	valves can be multiplied by 3)					
200	0,52						

PNEUMATIC ACTUATION

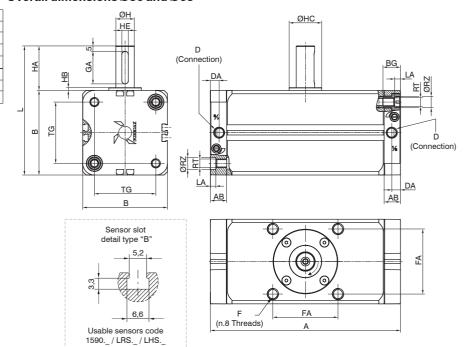
Series 6411

Single rack rotary actuators

Coding: 6411.Ø.♥

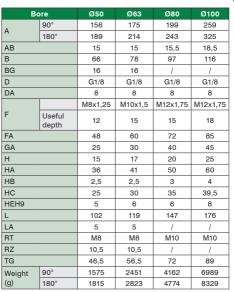
Ø	BORE	
		50 = Ø50
	Ø	63 = Ø63
		80 = Ø80
		100 = Ø100
ĺ		VERSION
V	90 = rotation 90°	
	_	180 = rotation 180°

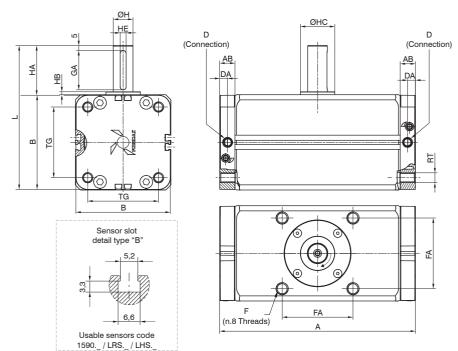
Overall dimensions Ø50 and Ø63





Overall dimensions Ø80 and Ø100



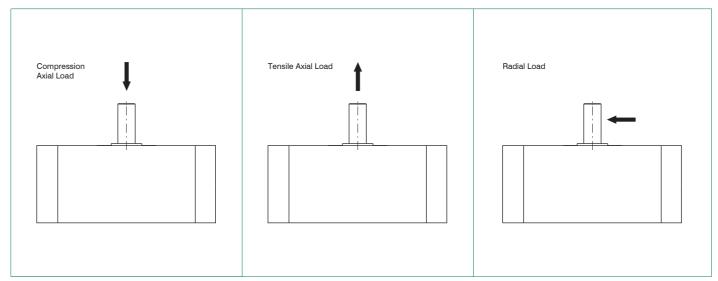


Construction characteristics			
Body	anodized aluminium		
Rear end cap anodized aluminium			
Piston aluminium			
Piston seals NBR rubber			
Pinion steel			
Rack	steel		

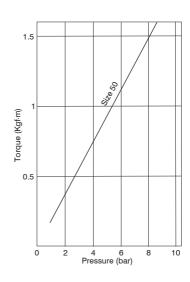
Operational characteristics			
Fluid	filtered and preferably lubricated air or not (if lubricated the lubrication must be continuous)		
Max working pressure (bar)	10 bar		
Temperature °C	-5 °C +70 °C		
Rotation tolerance	0°+4°		

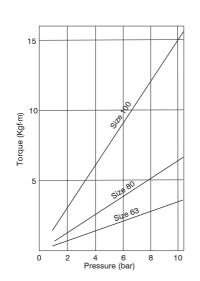


Permissible Loads					
Bore	Ø50	Ø63	Ø80	Ø100	
Radial Load (N)	200	300	400	600	
Compression Axial Load	500	600	900	1000	
Tensile Axial Load	200				



Torque Diagrams



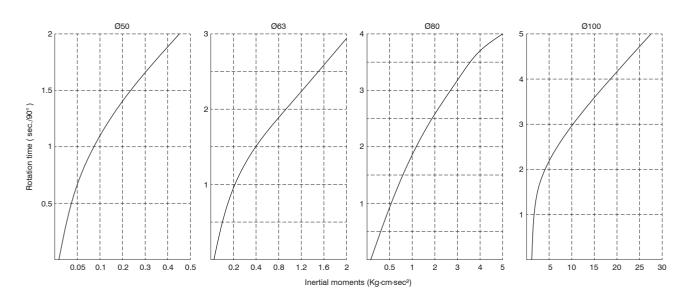


Max Kinetic energy (Kg·cm)

Kinetic energy (cushioning angle 35°)

Bore				
Ø50	Ø63	Ø80	Ø100	
10	15	20	30	

Rotation time according to inertial moments

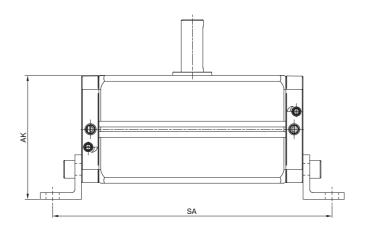


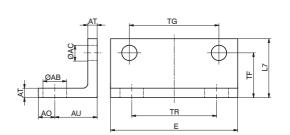


Short mounting foot brackets (in sheet metal MS1)

Coding: 1540.Ø.05/1F The kit comprises: n° 1 foot (plated zinc steel) n° 2 screws (plated zinc steel)







Во	re	Ø50	Ø63	Ø80	Ø100
AK		78	89	111,5	132
SA	90°	198	217	251	313
	180°	231	256	295	379

Series 6420

Vane type rotary actuators

Coding: 6420.∅.**®**.♥

SIZE **10** = Ø10 **15** = Ø15 **20** = Ø20 **30** = Ø30 Ø **40** = Ø40 **50** = Ø50 **63** = Ø63 **80** = Ø80 100 = Ø100 **ROTATING ANGLE** $90 = 90^{\circ}$ **180** = 180° **270** = 270° VERSION = Without adjustable rotation angle, and without sensor support R = With adjustable rotation angleS = With sensor supportsT = With adjustable rotation angle and sensorsupports

The vane type rotary actuators, 6420 series is designed to operate at 90-180 or 270 deg. in a contained space. Dimensionally are more compact than other types of rotary actuators. The range includes bore sizes from 10 to 100 in 4 configurations:

- basic
- with adjustable rotation angle
- with sensor supports
- with adjustable rotation angle and sensor supports

The bodies are in aluminium, the shafts in chrome plated steel and the seals in NBR. The sensing support kit enables for the sensors to be positioned in any position. The rotary angle adjustment mechanism enables the adjustment of the complete rotation on bore sizes 10 to 40 while on the others sizes carries as standard hydraulic dampers which enable the adjustment only of the last part of the rotation. The units can be fixed using the thread on the body or the through holes on the body. On bore sizes 50 to 100 the shaft runs into ball bearings which ensure high resistence.

Construction characteristics			
Body	anodized aluminium		
Piston rod	steel		
Seals	NBR		
Vane	vulcanized NBR rubber on steel core		
Cushioning	elastic bumper; hydraulic dampers from size Ø50 Ø100 versions R or T		

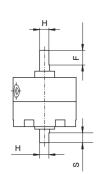
O constituents	have shaded as		
Operational characteristics			
Fluid	filtered air, preferably lubricated		
Rotation range	90° - 180° - 270°		
Working pressure (bar)	1,57		
Temperature °C	0+50		
Max. allowed leak	Ø10Ø40 = 0.3 NI/min / Ø50Ø100 = 0.5 NI/min		

PNEUMATIC ACTUATION

NEUMAX

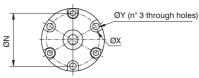




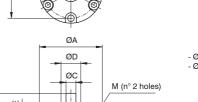


ш

Overall dimensions $\emptyset 10 \dots \emptyset 40$



@-

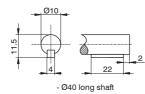


ØC

ΧÎ

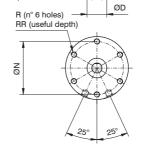


- Ø10 ... Ø30 long shaft - Ø10 ... Ø40 short shaft

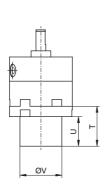




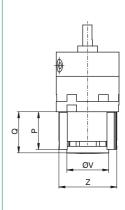




Adjustable rotation angle version



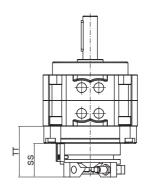
With sensor support version



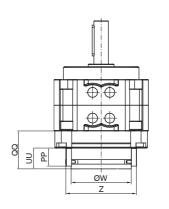
	10-90°	15 - 90°	20 - 90°	30 - 90°	40 - 90°
Bore - Rotation	10 - 180°	15 - 180°	20 - 180°	30 - 180°	40 - 180°
	10 - 270°	15 - 270°	20 - 270°	30-270°	40 - 270°
ØA	30	35	44	51	64
В	17	20,1	29,1	40	45
ØС	4	5	6	8	10
ØD	9	12	14	16	25
E	3	4	4,5	5	6,5
F	9	10	10	12	22
G	14	18	20,3	22	30
Н	3,5	4,5	5,5	7,5	9
J	8	9	9,6	13	15
K	1	1,5	1,6	2	4,5
L	4,2	5	8,5	11	9,5
VI	M5x0,8	M5x0,8	M5x0,8	M5x0,8	M5x0,8
ðN	24	29	36	43	56
P	23,3	28	28	30,8	33
2	24	29,5	30,5	34	36
R	M3x0,5	M3x0,5	M4x0,7	M5x0,8	M5x0,8
RR	3	3	4,5	9	9
3	5	6	7	8	9
Г	24	28	28,5	32,5	34,5
J	18	22	21	24	26
ØV	18	24	30	34	34
ØΧ	6	6	7,5	9	9
XX	3,5	3,5	4,5	5,5	5,5
ØΥ	2,3	2,3	3,2	4,2	4,2
Z	29	34	42	47	47
Weight (g) Base	28	48	112	200	342
Weight (g) With regulation rotation system	78	116	240	390	805

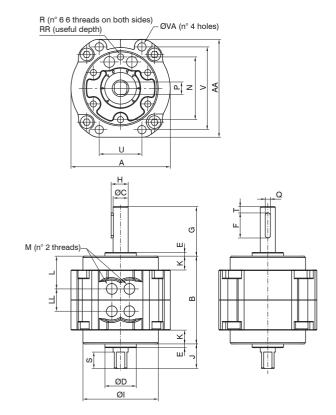
Adjustable rotation angle version

Overall dimensions Ø50 ... Ø100



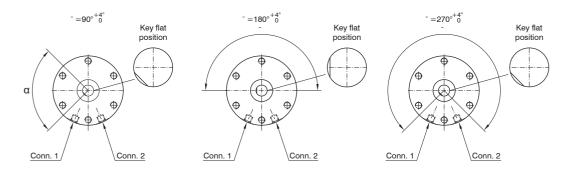
With sensor support version





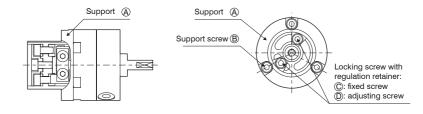
	50 - 90°	63 - 90°	80 - 90°	100 - 90°
Bore - Rotation	50 - 180°	63 - 180°	80 - 180°	100 - 180°
	50 - 270°	63 - 270°	80 - 270°	100 - 270°
A	79	98	110	140
AA	78	98	110	140
В	70	80	90	103
ØC	12	15	17	25
ØD	25	28	30	45
E	3	3	3	4
F	20	25	36	40
G	39,5	45	53,5	65
Н	13,5	17	19	29
ØI	60	75	88	108
J	19,5	21	23,5	30
K	11	14	15	11,5
L	26	28,9	30	35,4
LL	18	22,2	30	32,2
M	G1/8"	G1/8"	G1/4"	G1/4"
N	50	60	70	80
P	10	12	13	19
PP	21	21	21	21
Q	4	5	5	7
QQ	39,4	43	44	48,5
R	M6x1	M8x1,25	M8x1,25	M10x1,5
RR	8	10	14	14
S	13	14	16	16
SS	38	38	39	39,5
T	5	7,5	5	5
TT	53	56,5	59	63
U	34	39	48	60
UU	24,5	24,5	24,5	24,5
V	66	83	94	120
ØVA	6,5	9	9	11
ØW	60	60	70	70
Z	73	73	83	83
Weight (g) Base	760	1290	1920	4100
Weight (g) With regulation rotation system	1100	1690	2370	4840

Spline position and adjustable rotation angle $\emptyset 10 \dots \emptyset 40$ **ROTATING SHAFT KEY FLAT POSITION**



ROTATION ANGLE SETUP

To regulate the rotation angle (codes 6420..R or T), follow the instructions below

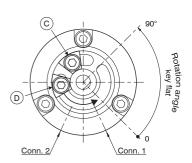


Phase 1: choose the regulation configuration based on the following options (consider the actuator base position): rotation 90°, regulation 0 ... 90°, rotation 180°, regulation 0 ... 180°, rotation 270°, regulation 0 ... 175°

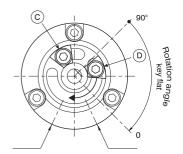
ROTATION CONFIGURATION

90°

Standard version from 0° to 90°



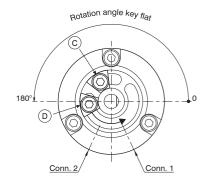
from 90° to 0°



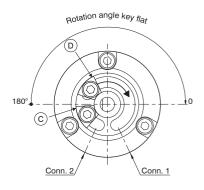
ROTATION CONFIGURATION

180°

Standard version from 0° to 180°



from 180 $^{\circ}$ to 0 $^{\circ}$



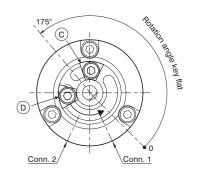


Spline position and adjustable rotation angle Ø10 ... Ø40

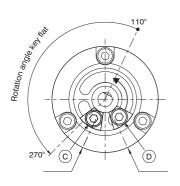
ROTATION CONFIGURATION

270°

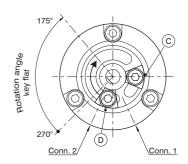
Standard version from 0° to 175°



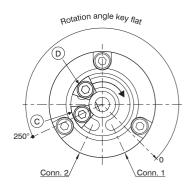
from 110° to 270°



from 270° to 175°

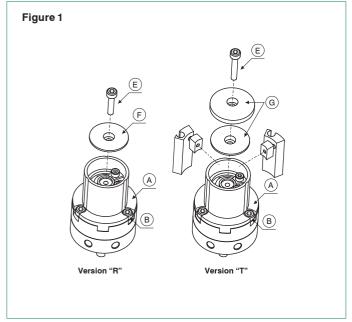


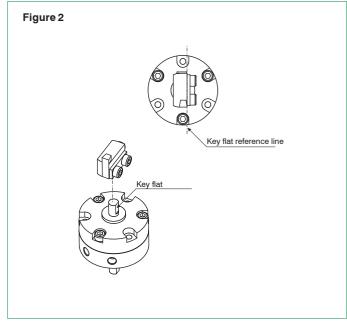
from 250° to 0°



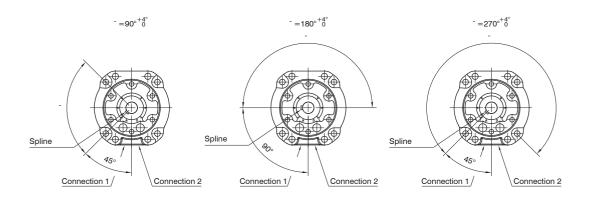
Phase 2: if the desired settings do not correspond to the basic version settings:

- remove screw e and disk or (depending on the version) (see figure 1)
- remove screws (B), the actuator support (A) (see figure 1) and unlock blocking screws (C) and (D) (see rotation configuration)
- position screws © and D and the key flat of rotating shaft as indicated in the chosen rotation configuration in order to align the key flat of rotating shaft (see figure 2)
- re-assemble actuator support (A), tighten screws (B)
- position screws Q and Q according to the desired adjustment and tighten the screws
- re-assemble disk F or G and screw E





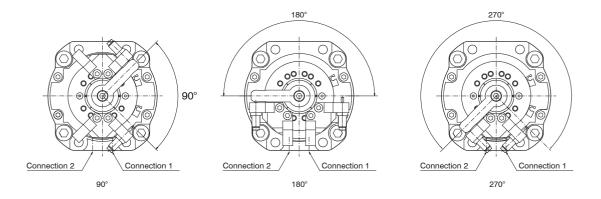
Spline position and adjustable rotation angle Ø50 ... Ø100 **ROTATING SHAFT SPLINE POSITION**



ROTATION ANGLE SETUP

 $The \, version \, with \, adjustable \, rotation \, angle \, (cod. \, 6420..R \, or \, T) \, is \, available \, with \, hydraulic \, shock \, absorbers \, which \, enable \, to \, regulate \, the \, rotation \, angle \, (cod. \, 6420..R \, or \, T) \, is \, available \, with \, hydraulic \, shock \, absorbers \, which \, enable \, to \, regulate \, the \, rotation \, angle \, (cod. \, 6420..R \, or \, T) \, is \, available \, with \, hydraulic \, shock \, absorbers \, which \, enable \, to \, regulate \, the \, rotation \, angle \, (cod. \, 6420..R \, or \, T) \, is \, available \, with \, hydraulic \, shock \, absorbers \, which \, enable \, to \, regulate \, the \, rotation \, angle \, (cod. \, 6420..R \, or \, T) \, is \, available \, with \, hydraulic \, shock \, absorbers \, which \, enable \, to \, regulate \, the \, rotation \, angle \, (cod. \, 6420..R \, or \, T) \, is \, available \, with \, hydraulic \, shock \, absorbers \, which \, enable \, to \, regulate \, the \, rotation \, angle \, (cod. \, 6420..R \, or \, T) \, is \, available \, with \, hydraulic \, shock \, absorbers \, available angle by 15° and to decelerate moving mass. Example:

- 90° rotation 15° for each deceleration = 60°
- 180° rotation 15° for each deceleration = 150°
- 270° rotation 15° for each deceleration = 240°

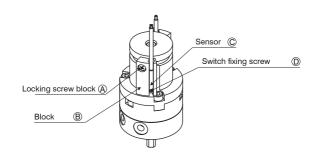


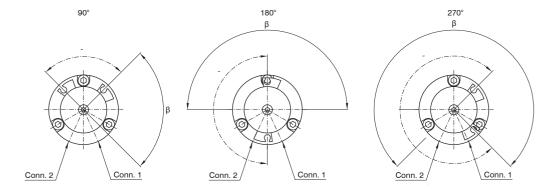
Switch positioning instructions $\emptyset 10 \dots \emptyset 40$

Phase 1: unfasten screw A

Phase 2: assemble the switch \bigcirc into the dedicated housing \bigcirc and lock with screw \bigcirc

Phase 3: rotate block B in the desired position (see following image)





α: magnet rotating angle β: shaft key flat rotating angle

For correct functionality position the switch within angle $\boldsymbol{\alpha}$

Phase 4: tighten screw A

Phase 5: repeat the following phases for the second switch

AVAILABLE SENSORS



Code	
1581.U	
TRS.U	
1581.HAP	
THS.P	



Code
1583.DC
1583.HAP
THR.P

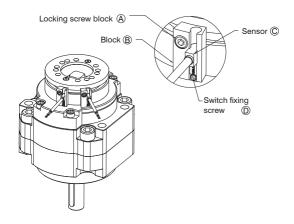


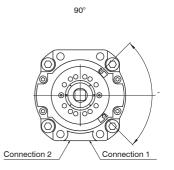
Switch positioning instructions $\emptyset 50 \dots \emptyset 100$

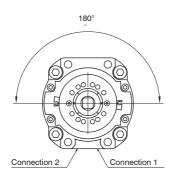
Phase 1: unfasten screw (A)

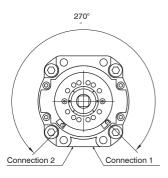
Phase 2: assemble the switch \bigcirc into the dedicated housing \bigcirc and lock with screw \bigcirc

Phase 3: rotate block B in the desired position (see following image)









 $\alpha :$ magnet rotating angle (that corresponds to the shaft key flat rotating angle)

For correct functionality position the switch within angle α

Phase 4: tighten screw (A)

Phase 5: repeat the following phases for the second switch

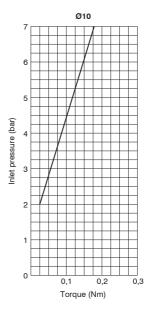
AVAILABLE SENSORS

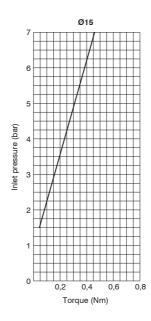


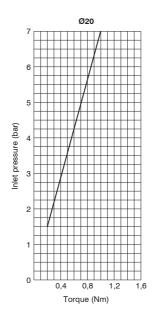
Code
1583.DC
1583.HAP
THR.P

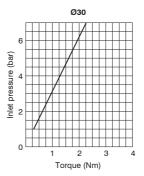
PNEUMAX

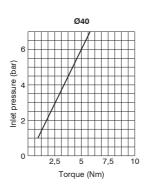
Available torques

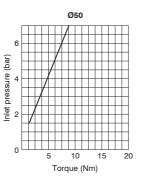


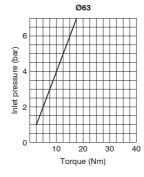


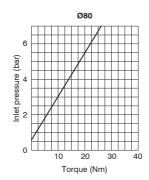


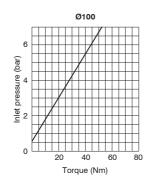




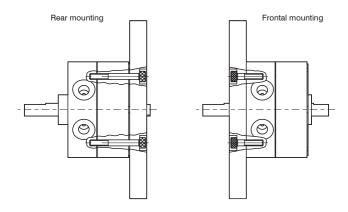


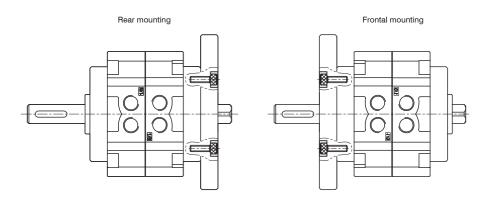


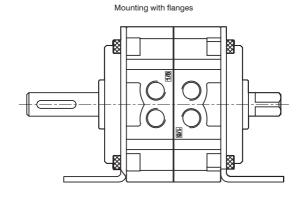




Direct mounting Mounting types







Series 6300

Pneumatic grippers from the 6300 series are typically used in complex systems such as assembly machines, robots, manipulators etc. This series covers the wide range requirements of this sector, allowing a variety of applications.

The range includes grippers equipped with holding fingers operating from -10° to +30° degrees, with 180° degree opening, or a parallel guided

gripper with great rigidity throughout the stroke.

The parallel grippers cater for larger openings (three different strokes for each diameter) with synchronised operation via a pinion-rack system with high strength thanks to a double piston mechanism.

For the typical application of supplying a piece upon to a machine tool, make provision for an automatic three-pronged movement carried along by a wedge mechanism, containing the elevated force dimensions.

The holding fingers can have a tolerance reference as a precise fixing device for the catching mechanism.

Every type of "hand" offers different functional levels of performance at varying diameters and lengths, secondary to the application by the "fingers".

Construction characteristics

	Materials			Se	ries		
Body	Anodized aluminium	6301	6302	6303	6310	6311	6312
Piston	AISI 303 stainless steel	6301	/	/	/	/	/
	Aluminium	/	6302	6303	/	6311	6312
	Aluminium or stainless steel (based on bore)	/	/	/	6310	/	/
Fingers	Steel	6301	6302	6303	6310	/	6312
	Anodized aluminium	/	/	/	/	6311	/
Rear end cap	Anodized aluminium	6301	6302	6303	6310	/	/
Seals	oil resistant NBR rubber	6301	/	/	6310	/	/
Piston rod	Steel	/	/	/	/	6311	/
Rack	Steel	/	/	/	/	6311	/
Pinion	Steel	/	/	/	/	6311	/
Wedge	Steel	/	/	/	/	1	6312

Operational characteristics

All series

Fluid	filtered and preferably lubricated air or not (if lubricated the lubrication must be continuous)
Working pressure	1 6 bar (double acting) - 2.5 6 bar (single acting)
Working temperature	-5 °C +70 °C

	6301	6302	6303	6310	6311	6312
Opening total stroke	-10° 30°	-3° 180°	-5° 180°	/	/	/
Maximum operating frequency	from Ø10 to Ø25, 190 cycles/minute	from Ø10 to Ø25, 60 cycles/minute	from Ø20 to Ø25, 60 cycles/minute from Ø32 to Ø50, 30 cycles/minute	from Ø10 to Ø25, 180 cycles/minute	/	from Ø16 to Ø25, 120 cycles/minute from Ø32 to Ø63, 60 cycles/minute from Ø80 to Ø125, 30 cycles/minute
Working pressure	/	1	/	l	Ø10: 1.5 6 bar Ø16 Ø40: 1 6 bar	2 6 bar (Ø16- Ø20-Ø25) 1 6 bar (Ø32 Ø125)
Function	/	/	/	/	Double acting	Double acting

6301

	Bore	Double acting	Single acting
Holding force	Ø10	0,1	0,07
(Nm) at 5 bar	Ø16	0,4	0,30
	Ø20	0,7	0,55
	Ø25	1,35	1,08



Pneumatic grippers, angular - Standard version

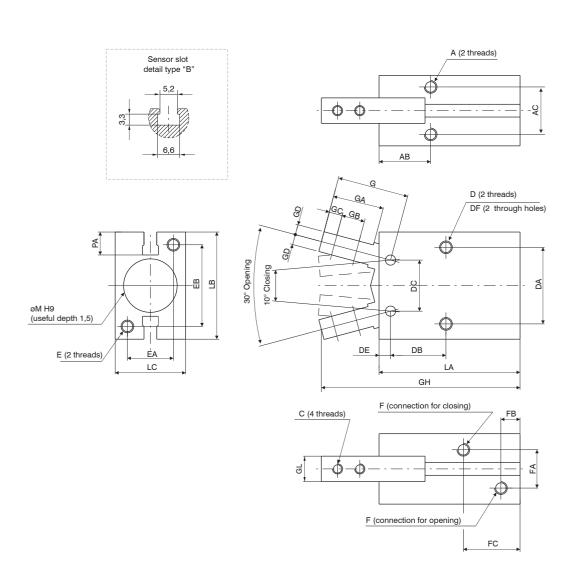
Coding: 6301.Ø.■

	BORE
	10 = Ø10
Ø	16 = Ø16
	20 = Ø20
	25 = Ø25
	VERSION
V	D = Double acting
	S = Single acting (N.O.)

Overall dimensions

	Bore	Ø10	Ø16	Ø20	Ø25
		M3x0,5	M4x0,7	M5x0,8	M6
A	Useful depth	6	6,5	8	10
AB		11,6	14,6	20,2	23,9
AC		11,4	16	18,6	22
С		M2,5x0,45	M3x0,5	M4x0,7	M5x0,8
		M3x0,5	M4x0,7	M5x0,8	M6
D	Useful depth	5	8	10	12
DA		16	24	30	36
DB		12,8	16,2	21,7	25,8
DC		10	16	20	25
DE		2,8	3,9	4,5	4,6
DF		2,6	3,4	4,3	5,1
E		M3x0,5	M4x0,7	M5x0,8	M6
_	Useful depth	6	8	10	12
EA		12	15	18	22
EB		18	22	32	40
F	F		M5x0,8	M5x0,8	M5x0,8
FA		11	13	15	20
FB		7,2	7	7,5	7,7
FC		18,8	18,3	22,2	23,5
G		17,2	22,6	28	37,5
GA		12	16	20	27
GB		5,7	7	9	12
GC		3	4	5,2	8
GD		2	3,5	4	5
GH		52,4	62,5	78,7	92
GL ^{0/-0,1}		6,4 38,6	8	10	12
LA	LA		44,6	55,2	60,4
LB	LB		30,6	42	52
LC	LC		23,6	27,6	33,6
M ^{H9}		11	17	21	26
PA		5,4	5,8	9	11,5
Weight (g)		40	90	180	315





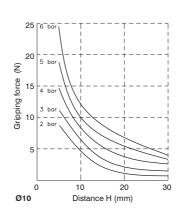


Gripping force 5 bar (Nm)

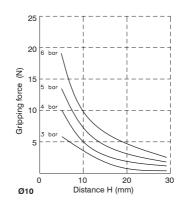
Bore	Ø10	Ø16	Ø20	Ø25
Double acting (Nm)	0,1	0,4	0,7	1,35
Single acting (Nm)	0,07	0,3	0,55	1,08

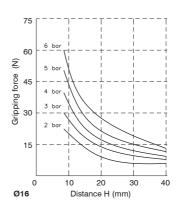
Note: Bore selection should be made considering a holding force 10 to 20 times the component weight. In case of acceleration/deceleration a further margin of safety should be considered.

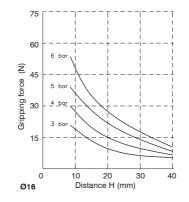
Double acting

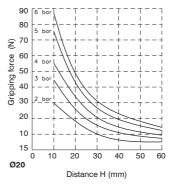


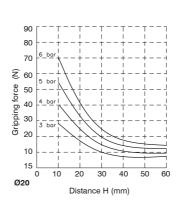
Single acting

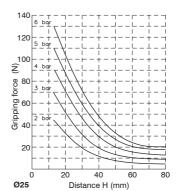


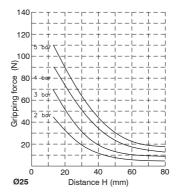


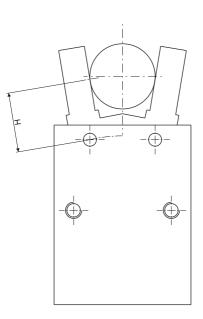














Pneumatic grippers, 180 °angular

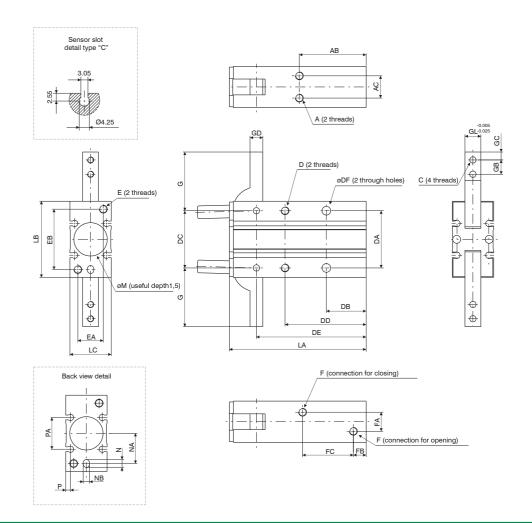
Coding: 6302.Ø.D

	BORE
	10 = Ø10
Ø	16 = Ø16
	20 = Ø20
	25 - Ø25

Overall dimensions

	Bore	Ø10	Ø16	Ø20	Ø25
		M3x0,5	M4x0,7	M5x0,8	M6x1
A	Useful depth	4	5	8	10
AB		30	33	42	50
AC		9	12	14	16
С		M3x0,5	M3x0,5	M4x0,7	M5x0,8
-		M3x0,5	M4x0,7	M5x0,8	M6x1
D	Useful depth	6	8	10	12
DA	<u>'</u>	24	30	36	42
DB		18	20	25	30
DC		22	28	36	45
DD		35	41	50	60
DE		47,5	55,5	69	86
DF		3,4	4,5	5,5	6,6
_		M3x0,5	M4x0,7	M5x0,8	M6x1
E	Useful depth	6	8	10	12
EA		9	12	16	18
EB		24	30	38	46
F		M5x0,8	M5x0,8	M5x0,8	M5x0,8
FA		3	8	12	14
FB		7	7	8	8
FC		23	25	32	42
G		23,5	28,5	37	45
GB		6	7	9	12
GC		3	4	5	6
GD		4	5	8	10
GL		6	8	10	12
LA		58	69	86	107
LB		30	38	48	58
LC		15	20	26	30
N		4	4	5	5
IN	Useful depth	3	3	4	4
NO		9	15	19	23
ØМн ₉		11	17	21	26
ØNB ^{H9}		3	3	4	4
Р		2	2,5	3	3
PA		13	18	20	24
Weight (g)		70	150	320	550

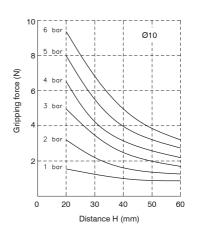


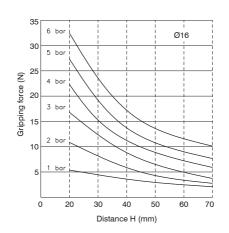


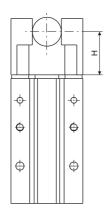


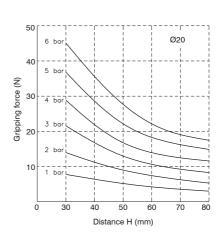
Gripping force 5 bar (Nm)

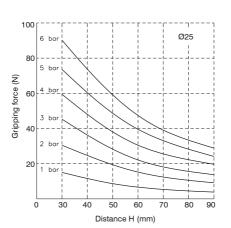
Bore	Ø10	Ø16	Ø20	Ø25
(Nm)	0,16	0,54	1,1	2,28



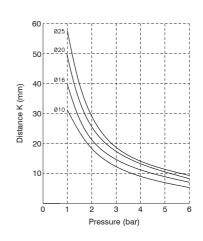


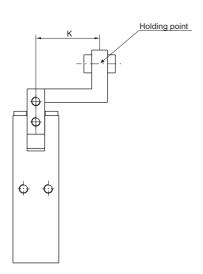






Confirmation of Holding point





 $Applications \ where \ the \ holding \ point is outside \ the \ recommended \ parameters \ shown \ on \ the \ above \ graph \ might \ affect \ the \ product \ life.$

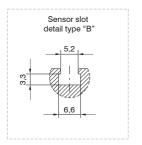


180° angular gripper rack & pinion style

Coding: 6303.∅.D**◎**

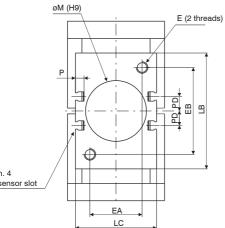
Ø	BORE
	20 = Ø20
	25 = Ø25
	32 = Ø32
	40 = Ø40
	50 = Ø50
	FINGERS
V	F = Fingers, end fixing
	L = Fingers, side fixing

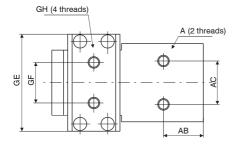
Overall dimensions

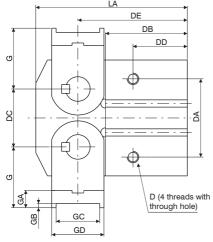


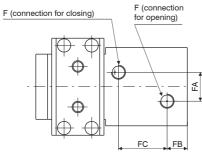


		-					P	
E	Bore	Ø20	Ø25	Ø32	Ø40	Ø50		
		M5	M6	M6	M8	M10		
A	Useful depth	7	10	10	15	20	/	
AB		17	20	21	27,5	36	/	
AC		20	24	24	30	40	n. 4	
		M5	M6	M6	M8	M10	sensor slot	
D	Useful depth	10	12	12	16	20		
DA		27	34	42	54	70		
DB		35	40	47	56,5	69		
DC		18	24	30	40	56		
DD		23	27	29	37,5	48		
DE		45	51	61,5	75,5	96		



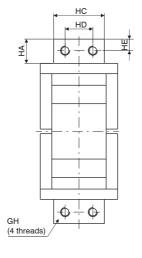


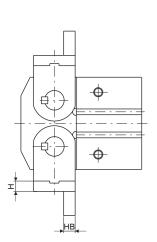




Fingers, side fixing





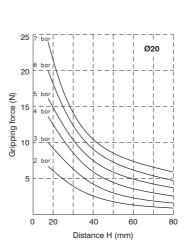


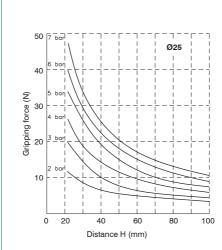
Operating criteria

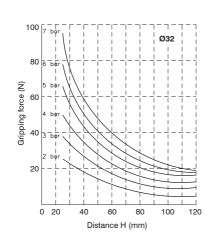
Gripping force

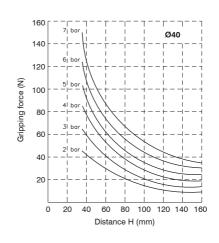
Note: Bore selection should be made considering a holding force 10 to 20 times the component weight. In case of acceleration/deceleration a further margin of safety should be considered.

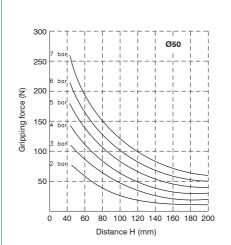
Bore	Ø20	Ø25	Ø32	Ø40	Ø50
(Nm)	0,3	0,7	1,6	3,7	8,3

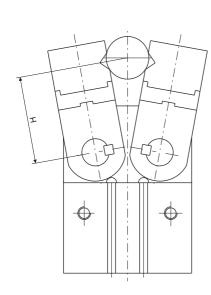












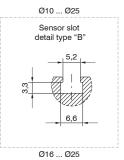


Parallel style pneumatic grippers - Standard version

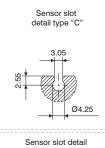
Coding: 6310.Ø.♥

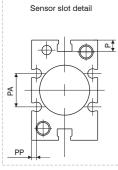
BORE
10 = Ø10
16 = Ø16
20 = Ø20
25 = Ø25
VERSION
D = Double acting
NC = Single acting (N.C.)
NO = Single acting (N.O.)

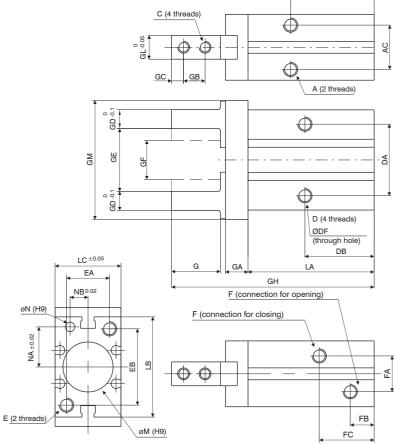
Overall dimensions











D M3x0,5 M4x0,7 M5x0,8 DA 16 24 30 DB 23 24,5 29 ODF 2,6 3,4 4,3 E M3x0,5 M4x0,7 M5x0,8 EA 12 15 18 EB 18 22 32 F M3x0,5 M5x0,8 M5x0,8 FA 11 13 15 FB 9 7,5 10 FC 19 19 23 G 12 15,5 20 GA 6 7,5 9,5 GB 5,7 7 9 GC 3 4 5 GD 4 5 8 GE 15,2 20,9 26,3	Ø25 M6x1 10 36,5 22 M5x0,8
AB Useful depth 6 4,5 8 AB 27 30 35 AC 11,4 16 18,6 C M2,5x0,45 M3x0,5 M4x0,7 D M3x0,5 M4x0,7 M5x0,8 DA 16 24 30 DB 23 24,5 29 ØDF 2,6 3,4 4,3 E M3x0,5 M4x0,7 M5x0,8 EA 12 15 18 EB 18 22 32 F M3x0,5 M5x0,8 M5x0,8 FA 11 13 15 FB 9 7,5 10 FC 19 19 23 G 12 15,5 20 GA 6 7,5 9,5 GB 5,7 7 9 GC 3 4 5 GD 4 5 8	10 36,5 22
Useful depth 6	36,5 22
AC	22
C M2,5x0,45 M3x0,5 M4x0,7 D M3x0,5 M4x0,7 M5x0,8 Useful depth 5,5 8 10 DB 16 24 30 DB 23 24,5 29 ODF 2,6 3,4 4,3 E M3x0,5 M4x0,7 M5x0,8 EA 12 15 18 EB 18 22 32 F M3x0,5 M5x0,8 M5x0,8 FA 11 13 15 FB 9 7,5 10 FC 19 19 23 G 12 15,5 20 GA 6 7,5 9,5 GB 5,7 7 9 GC 3 4 5 GD 4 5 8 GE 15,2 20,9 26,3	
D M3x0,5 M4x0,7 M5x0,8 DA 16 24 30 DB 23 24,5 29 ØDF 2,6 3,4 4,3 E M3x0,5 M4x0,7 M5x0,8 Useful depth 6 8 10 EA 12 15 18 EB 18 22 32 F M3x0,5 M5x0,8 M5x0,8 FA 11 13 15 FB 9 7,5 10 FC 19 19 23 G 12 15,5 20 GA 6 7,5 9,5 GB 5,7 7 9 GC 3 4 5 GD 4 5 8 GE 15,2 20,9 26,3	M5x0.8
Useful depth	
Useful depth	M6x1
DB 23 24,5 29 ØDF 2,6 3,4 4,3 E M3x0,5 M4x0,7 M5x0,8 Useful depth 6 8 10 EA 12 15 18 EB 18 22 32 F M3x0,5 M5x0,8 M5x0,8 FA 11 13 15 FB 9 7,5 10 FC 19 19 23 G 12 15,5 20 GA 6 7,5 9,5 GB 5,7 7 9 GC 3 4 5 GD 4 5 8 GE 15,2 20,9 26,3	12
ØDF 2,6 3,4 4,3 E M3x0,5 M4x0,7 M5x0,8 Useful depth 6 8 10 EA 12 15 18 EB 18 22 32 F M3x0,5 M5x0,8 M5x0,8 FA 11 13 15 FB 9 7,5 10 FC 19 19 23 G 12 15,5 20 GA 6 7,5 9,5 GB 5,7 7 9 GC 3 4 5 GD 4 5 8 GE 15,2 20,9 26,3	36
E M3x0,5 M4x0,7 M5x0,8 Useful depth 6 8 10 EA 12 15 18 EB 18 22 32 F M3x0,5 M5x0,8 M5x0,8 FA 11 13 15 FB 9 7,5 10 FC 19 19 23 G 12 15,5 20 GA 6 7,5 9,5 GB 5,7 7 9 GC 3 4 5 GD 4 5 8 GE 15,2 20,9 26,3	30
EA Useful depth 6 8 10 EA 12 15 18 EB 18 22 32 F M3x0,5 M5x0,8 M5x0,8 FA 11 13 15 FB 9 7,5 10 FC 19 19 23 G 12 15,5 20 GA 6 7,5 9,5 GB 5,7 7 9 GC 3 4 5 GD 4 5 8 GE 15,2 20,9 26,3	5,1
EA 12 15 18 22 32 F M3x0,5 M5x0,8 M5x0,8 M5x0,8 FA 11 13 15 10 FC 19 19 19 23 G GA 6 7,5 9,5 GB 5,7 7 9 GC GC 3 4 5 5 6 GD 4 5 5 6 GE 15,2 20,9 26,3	M6x1
EB 18 22 32 F M3x0,5 M5x0,8 M5x0,8 FA 11 13 15 FB 9 7,5 10 FC 19 19 23 G 12 15,5 20 GA 6 7,5 9,5 GB 5,7 7 9 GC 3 4 5 GD 4 5 8 GE 15,2 20,9 26,3	12
F M3x0,5 M5x0,8 M5x0,8 FA 11 13 15 FB 9 7,5 10 FC 19 19 23 G 12 15,5 20 GA 6 7,5 9,5 GB 5,7 7 9 GC 3 4 5 GD 4 5 8 GE 15,2 20,9 26,3	22
FA 11 13 15 FB 9 7,5 10 FC 19 19 23 G 12 15,5 20 GA 6 7,5 9,5 GB 5,7 7 9 GC 3 4 5 GD 4 5 8 GE 15,2 20,9 26,3	40
FB 9 7,5 10 FC 19 19 23 G 12 15,5 20 GA 6 7,5 9,5 GB 5,7 7 9 GC 3 4 5 GD 4 5 8 GE 15,2 20,9 26,3	M5x0,8
FB 9 7,5 10 FC 19 19 23 G 12 15,5 20 GA 6 7,5 9,5 GB 5,7 7 9 GC 3 4 5 GD 4 5 8 GE 15,2 20,9 26,3	20
FC 19 19 23 G 12 15,5 20 GA 6 7,5 9,5 GB 5,7 7 9 GC 3 4 5 GD 4 5 8 GE 15,2 20,9 26,3	10,7
GA 6 7,5 9,5 GB 5,7 7 9 GC 3 4 5 GD 4 5 8 GE 15,2 20,9 26,3	23,5
GA 6 7,5 9,5 GB 5,7 7 9 GC 3 4 5 GD 4 5 8 GE 15,2 20,9 26,3	25
GB 5,7 7 9 GC 3 4 5 GD 4 5 8 GE 15,2 20,9 26,3	11
GD 4 5 8 GE 15,2 20,9 26,3	12
GE 15,2 20,9 26,3	6
	10
	33,3
GF 11,2 14,9 16,3	19,3
GH 57 67,5 84,8	102,7
GL 5 8 10	12
GM 29 38 50	63
LA 37,8 42,5 52,8	63,6
LB 23 30,6 42	52
LC 16,4 23,6 27,6	33,6
11 17 21	26
Useful depth 2 2 3	3,5
2 3 4	4
Useful depth 3 3 4	
NO 7,6 11 16,8	4
NB 5,2 6,5 7,5	21,8
P 5,4 5,8 9	
PA / 11,6 14	21,8
PP / 2,1 2,1	21,8
Weight (g) 55 120 230	21,8 10 11,5

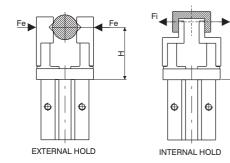


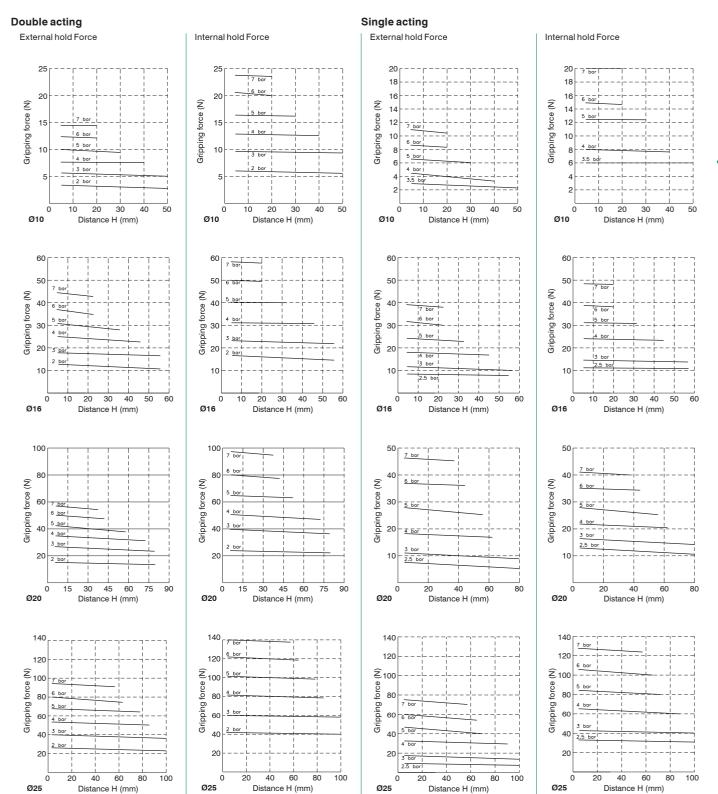
Operating criteria

Gripping force (N) (pressure 5 bar, holding point H=20 half stroke)

				Вс	re	
Version	Force (N)	Ø10	Ø16	Ø20	Ø25	
Double seting	Fe	9,8	30	42	65	
Double acting		Fi	17	40	66	104
Cinale acting	N.O.	Fe	6,3	24	28	45
Single acting	N.C.	Fi	12	31	56	83

Fe = External hold Force Fi = Internal hold Force







Parallel style pneumatic grippers - Wide opening

Overall dimensions

Coding: 6311.Ø.D.

BORE **10** = Ø10 **16** = Ø16 Ø 20 = Ø20 **25** = Ø25 **32** = Ø32 **40** = Ø40 STROKE = 20 mm (Ø10), 30 mm (Ø16), 40 mm (Ø20), 50 mm (Ø25), 70 mm (Ø32), 100 mm (Ø40)

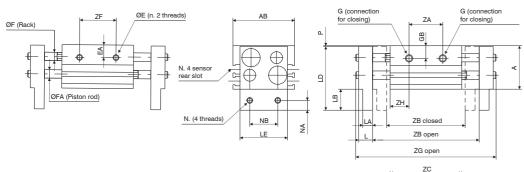
 $1 = 40 \, \text{mm}$ (Ø10), $60 \, \text{mm}$ (Ø16), $80 \, \text{mm}$ • (Ø20), 100 mm (Ø25), 120 mm (Ø32), 160 mm (Ø40)

> $\mathbf{2} = 60 \, \text{mm}$ (Ø10), $80 \, \text{mm}$ (Ø16), $100 \, \text{mm}$ (Ø20), 120 mm (Ø25), 160 mm (Ø32), 200 mm (Ø40)

Coding examples:

6311.10.D (Stroke 20 mm, Ø10) 6311.10.D.1 (Stroke 40 mm, Ø10) 6311.10.D.2 (Stroke 60 mm, Ø10)









	Bore		טוש			סוש			Ø20			Ø25			Ø32			Ø40	
Α			31			39			46			52			68			79	
AB			44			55			65		76		82		98				
<u> </u>			M4x0,7			M5x0,8	,		M6x1		N	/18x1,2	5	N	Л8х1.2	5	1	/10x1.5	5
В	Useful depth		8			10			12			16			16			20	
ВА			34			42			52			62			64			76	
ØС			4,5			5,5			6,6			9			/			/	
D _{H9}			3			3			4			4			6			6	
D	Useful depth		3			3			4			4,5			8			8	
DA			4			4			5			5			7			7	
ØDB ^{H9}			3			3			4			4			6			6	
שטט	Useful depth		3			3			4			4,5			8			8	
E			M4x0,7			M5x0,8	}		M6x1		N	/18х1,2	5	N	Л8х1.2	5	1	/110x1.5	5
_	Useful depth		5			7			7			7			11			16	
EA			9			10			11			12,5			22			28	
ØF			6			8			10			12			14			16	
FA			6			8			10			12			16			20	
G			M5x0,8	3		M5x0,8			M5x0,8			M5x0,8	1		G1/8			G1/8	
GB			9			10			11			16			16			18	
L			10		13		17		21		24		28						
LA			7		9		12,5		14				15		18				
LB		15		19		24		29			32		38						
LD			45,5		57,5		69		80		100		117						
LE			34			43		54		64			70		86				
ØМна			18			23			27			32			35			40	
OW	Useful depth		1,5		1,5		1,5			1,5		1,5		1,5					
N			M4x0,7			M6x1		M8x1,25		M10x1,5		M10x1,5							
NO			7		8		10		12		15		18						
NB			20			25		30		40			50		60				
Р			0,5			0,5			1			1			1			1	
ZA		24	39	57	26	50	70	32	68	88	38	86	104	54	104	148	72	130	170
ZB	closed	56	78	96	68	110	130	82	142	162	100	182	200	150	198	242	188	246	286
	open	76	118	156	98	170	210	122	222	262	150	282	320	220	318	402	288	406	486
ZC		51	67	85	60	90	110	71	113	133	88	142	160	110	158	202	148	206	246
ZD		36	52	70	45	75	95	58	100	120	70	124	142	86	134	178	116	174	214
ZE		38	54	72	40	70	90	54	96	116	66	120	138	/	/	/	/	/	/
ZF		26	42	60	28	58	78	38	80	100	48	102	120	60	108	152	80	138	178
ZG	open	100	142	180	128	200	240	160	260	300	196	328	366	272	370	454	348	466	546
ZH		13,5	14	14	17	20	20	19,5	22,5	22,5	25	28	28	28	_	7		38	
Weight ((g)	280	350	430	600	800	950	1000	1500	1700	1700	2500	2800	2900	3800	4700	5300	6850	7900
		20	40	60	30	60	80	40	80	100	50	100	120	70	120	160	100	160	200
										Str	oke								

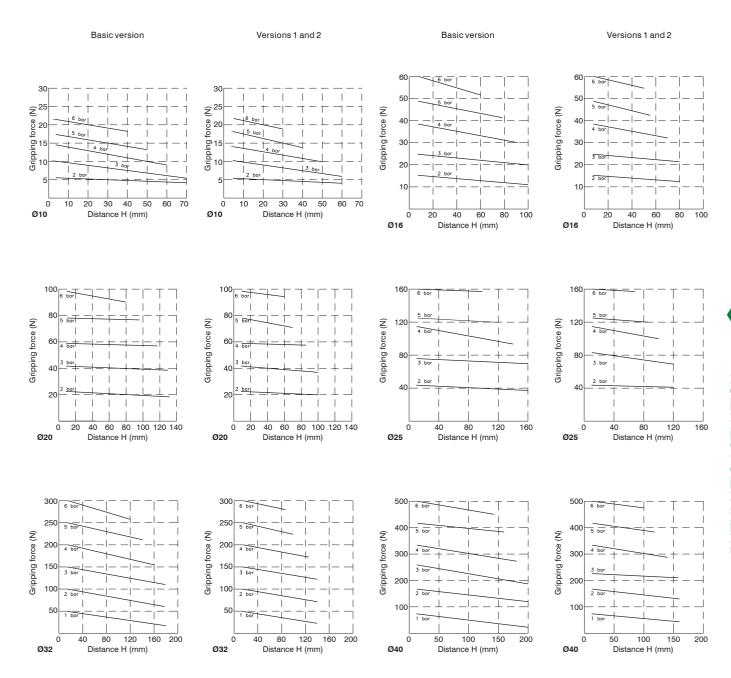
Model	Diameter (mm)	Max. operating frequence cicles/min.	
6311.10.D		60	
6311.10.D.1	10	40	
6311.10.D.2		40	
6311.16.D		60	
6311.16.D.1	16	40	
6311.16.D.2		40	
6311.20.D		60	
6311.20.D.1	20	40	
6311.20.D.2		40	
6311.25.D		60	
6311.25.D.1	25	40	
6311.25.D.2		40	
6311.32.D		30	
6311.32.D.1	32	00	
6311.32.D.2		20	
6311.40.D		30	
6311.40.D.1	40		
6311 40 D 2		20	

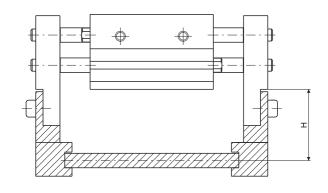
BA



Operating criteria Gripping force

Opening / closing stroke







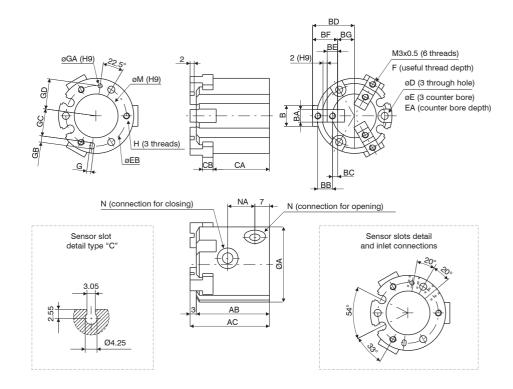
3 Finger parallel style pneumatic grippers

Coun	ig. 00 12.0.D
	BORE
	16 = Ø16
	20 = Ø20
	25 = Ø25
	32 = Ø32
Ø	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
	125 = Ø125



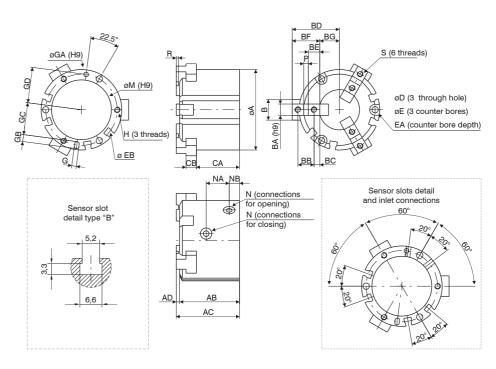
	Bore	Ø16	Ø20	Ø25
ØA		30	36	42
AB		32	35	37
AC		35	38	40
В		8	10	12
BA ^{H9}		5	6	6
ВВ		6	7	8
ВС		2	2,5	3
	open	17	20	24
BD	closed	15	18	21
BE		4	5	6
BF		10	12	14
	open	7	8	10
BG	closed	5	6	7
CA		25	27	28
СВ		4	5	5
D		3,4	3,4	4,5
E		6,5	6,5	8
EA		8	9,5	10
EB		25	29	34
F		5	6	6
OH0		2	2	3
G ^{H9}	Useful depth	2	2	3
ØGA ^{H9}		2	2	3
ØGA ^{ns}	Useful depth	2	2	3
GB		3	3	5
GC		11	13	14,5
GD		12,5	14,5	17
		M3x0,5	M3x0,5	M4x0,7
Н	Useful depth	4,5	6	6
CAME		17	21	26
ØМ ^{н9}	Useful depth	1,5	1,5	1,5
N		M3x0,5	M5x0,8	M5x0,8
NO		11	13	15
Weight (g	3)	62	98	139

Overall dimensions Ø16 ... Ø25



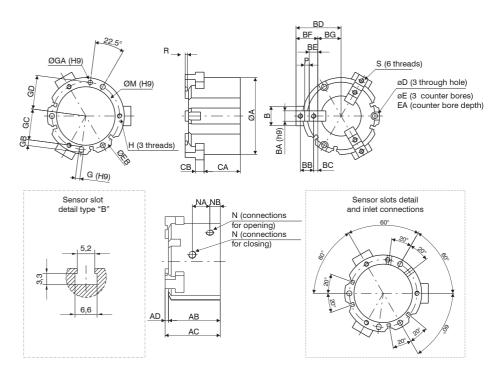
PNEUMAX

Overall dimensions Ø32 ... Ø80



Bore		Ø32	Ø40	Ø50	Ø63	Ø80
ØA		52	62	70	86	106
AB		41	44	52	62	77
AC		44	47	55	66	82
AD		3	3	3	4	5
В		14	16	18	24	28
BA ^{H9}		8	8	10	12	14
ВВ		11	12	14	17	20
вс		4,5	4,5	5	5,5	6
DD.	open	32	35	41	51	63,5
BD	closed	28	31	35	43	53,5
BE		9	9	10	11	12
BF		20	21	24	28	32
BG	open	12	14	17	23	31,5
В	closed	8	10	11	15	21,5
CA		30,5	32	37,5	44	56
СВ		6	7	9	11	12
D		4,5	5,5	5,5	6,6	6,6
E		8	9,5	9,5	11	11
EA		9	9	12 14		19
EB		44	53	53 62 76		95
		M4x0,7	M5x0,8	M5x0,8	M6x1	M6x1
Н	Useful depth	6	7,5	10	9	12
		3	4	4	5	6
G ^{H9}	Useful depth	3	4	4	5	6
		3	4	4	5	6
ØGA ^{H9}	Useful depth	3	4	4	5	6
GB		5	6	6	7	8
GC		19,5	23,5	28	34,5	43,5
GD		22	26,5	31	38	47,5
N		M5x0,8	M5x0,8	M5x0,8	M5x0,8	G1/8
		34	42	52	65	82
ØM ^{H9}	Useful depth	2	2	2	2,5	3
NO		16	17	20	22	27
NB		8	9	9	12	13,5
P ^{H9}		2	3	4	6	8
R		2	2	2	3	4
		M4x0,7	M4x0,7	M5x0,8	M5x0,8	M6x1
S	Useful depth	8	8	10	10	12
Weight (g)		240	354	542	1000	1850

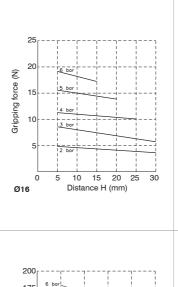
Overall dimensions Ø100 and Ø125

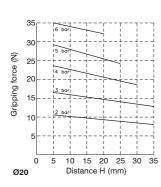


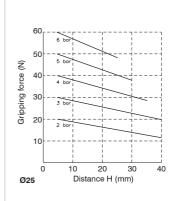
	Bore	Ø100	Ø125
ØA		134	166
AB		90	114
AC		96	122
AD		6	8
В		34	40
BA ^{H9}		18	22
ВВ		23	31
ВС		7,5	10,5
	open	78	98
BD	closed	66	82
BE		15	21
BF		38	52
BG	open	40	46
ВС	closed	28	30
CA		63	84
СВ		15	18
ØD		9	11
ØE		14	17,5
EA		21	34
EB		118	148
G ^{H9}		8	10
G	Useful depth	6	8
ØGA ^{H9}		8	10
ØGA	Useful depth	6	8
GB		10	12
GC		54	68
GD		59	74
н		M8x1,25	M10x1,5
11	Useful depth	16	20
ØM ^{H9}		102	130
DIVI	Useful depth	4	6
N		G1/4	G3/8
NO		30,6	38
NB		18	23,5
P ^{H9}		8	10
R		4	6
S		M8x1,25	M10x1,5
3	Useful depth	16	20
Weight (g)	3360	6430

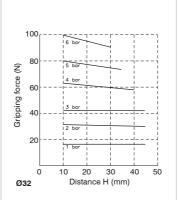
PNEUMATIC ACTUATION

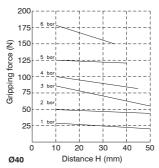
Operating criteria **Gripping force**

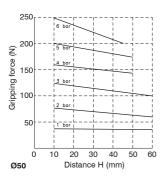


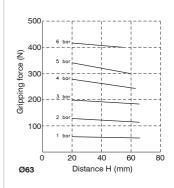


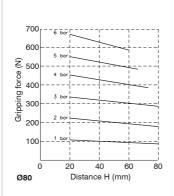


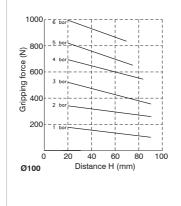


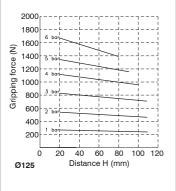


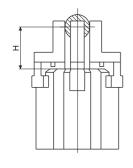


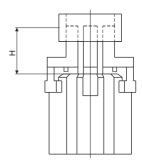












Series RT



The swing clamp cylinder has been developed to meet the need to clamp a workpiece by means of a clamping arm which when released would unclamp rotate 90 degrees in order to allow unrestricted access to the workpiece; the stroke of the swing movement is 21mm.

They are supplied in two bore sizes Ø40 and Ø50 in magnetic or non magnetic versions.

The swing clamp cylinder is available with standard clamping stroke lengths of 10, 20, 30 and 50mm with both right (R) or left (L) rotation. The following accessories are available:

- The clamp bracket can be re-positioned through 360 degree on the piston rod
- Rubber clamping tip
- Front and rear flange for fixing

Available sensors:

- SA series mounted directly in the groove
- SR series mounted with adapter 1380.01.F
- SQ and SU series mounted with adapter 1500.22F

(for ordering codes and characteristics see sensors section in the general catalogue)

Construction characteristics

Seals	N Version: PUR piston rod seals, NBR piston seals
	P Version: PUR piston rod seals, PUR piston seals
	V Version: FPM piston rod seals, FPM piston seals
Piston	Aluminium
Piston rod	C43 chromed steel
End caps	Aluminium

Operational characteristics

Fluid	filtered and preferably lubricated air or not (if lubricated the lubrication must be continuous)
Min. working pressure (bar)	1
Max. pressure (bar)	10
Working temperature (°C)	-5 +70 N Version (magnetic or non magnetic piston) -30 +80 P Version (magnetic or non magnetic piston) -5 +80 V Version (magnetic piston) -5 +150 V Version (non magnetic piston)
Stroke of rotation movement R/L90° (mm)	21
Standard linear clamping strokes (mm)	10, 20, 30, 50
Theoretical clamping force at 10 bar (N)	924 (Ø40) - 1610 (Ø50)

Please follow the suggestions below to ensure a long life for these cylinders:

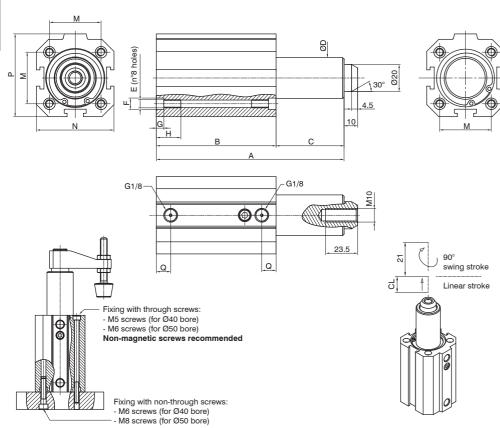
- Use of good air quality
- Observe the application advice carefully
- Operating pressure (see clamping pressure graph)
- Translation speed ≤ 50 mm/sec.

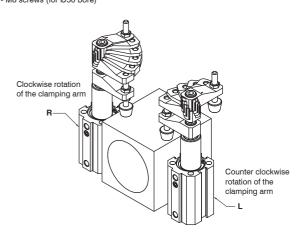


Swing clamp cylinder

	BORE
Ø	040 = Ø40
	050 = Ø50
	VERSION
V	M = magnetic piston
	N = non magnetic piston
	LINEAR CLEARANCE STROKE
	010 = 10 mm
•	020 = 20 mm
	030 = 30 mm
	050 = 50 mm
	INPUT ROTATION OF THE ROD
B	R = Right (clockwise rotation)
	L = Left (counter clockwise rotation)
	SEALS
	N = NBR
e	$\mathbf{P} = PUR$
	V = FPM



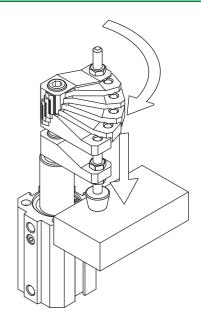




 $The \ direction \ of \ rotation \ is \ defined \ by \ the \ looking \ at \ the \ cylinder \ from \ the \ rod \ side \ when \ it \ retracts.$

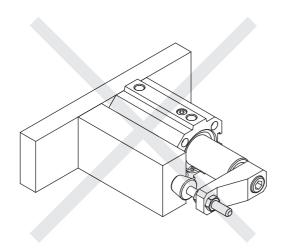
Bore	CL	Α	В	С	ØD	E	ØF	G	H	M	N	P	Q	R	Weight (g)												
	10	138	88	50											885												
40	20	158	98	60	30	M6	8.5	5.5	18	40 00	38 57	57 61	10.5	5.3	982												
40	30	178	108	70	30					30					1080												
	50	218	128	90											1274												
	10	138	88	50											1004												
50	20	158	98	60			l								40.5	40.5	40.5	40.5	40.5	_			07	74		_	1114
50	30	178	108	70	39	IVI8	M8 10.5	5 6.5	6.5 22	46.5	46.5 67	67 71	11	'	1225												
	50	218	128	90											1447												





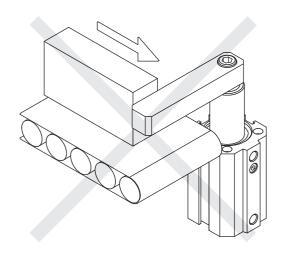


Clamping in linear stroke phase



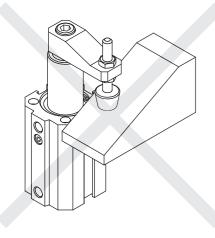


Don't use the cylinder in a horizontal position



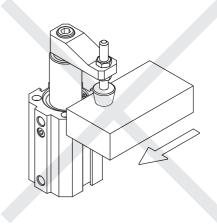


Don't stress the cylinder radially



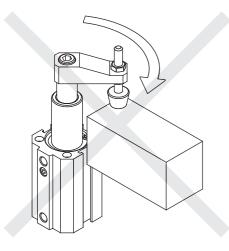


Don't clamp on an inclined surface



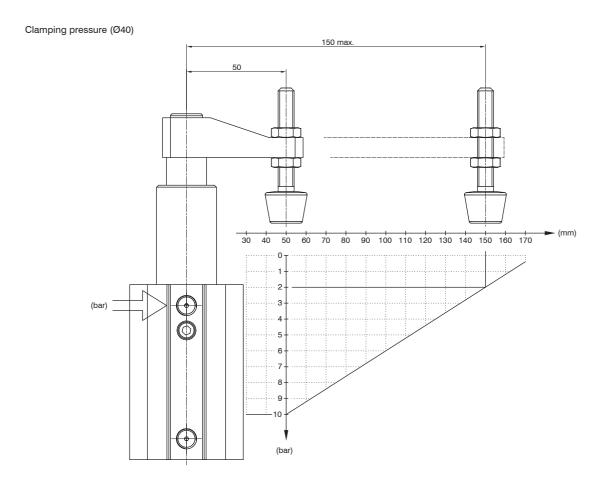


Don't clamp moving components



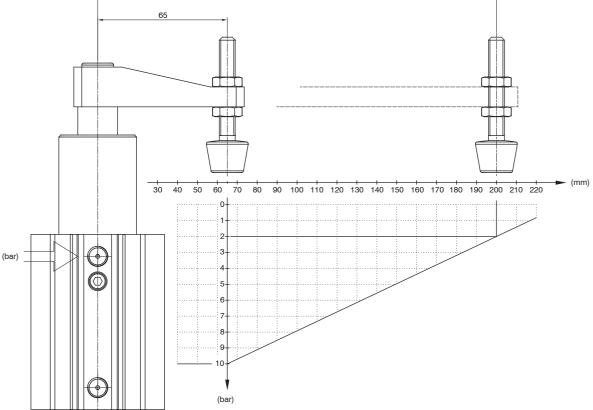


Don't clamp during the rotating movement





Clamping pressure (Ø50)



200 max.



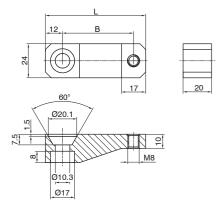
Bracket

Coding: RTØ.01

	BORE
Ø	040 = Ø40
	050 = Ø50

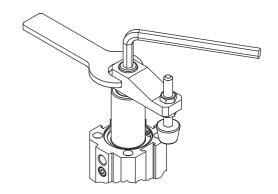
Zinc plated steel Includes: n° 1 screw M10x20





Bore	L	В	Weight (g)
40	70.5	50	168
50	85.5	65	211

Bracket mountingTo avoid damaging the rotation system, act as shown on the drawing below; hold the bracket with a 24mm spanner when tightening the 8mm hexagonal socket screw to a maximum torque of 30 ... 40 Nm

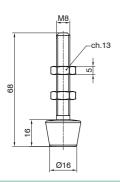


Rubber clamping tip

Coding: RT040.02 Zinc plated steel Neoprene 85 Shore A tip



Weight 33 g



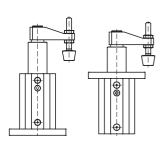
Steel front and rear flange (MF1 - MF2)

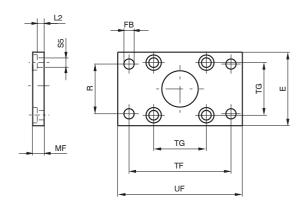
1380 Ø 03E

Coding: 1300.Ø.03F					
	BORE				
Ø	40 = Ø 40				
	50 = Ø 50				

Plate which allows anchorage of the cylinder at a right angle to the plane. It is made of zincplated extruded steel.







Bore	Е	FB (H 13)	MF (JS 14)	R (JS 14)	TF (JS 14)	TG	UF	L2	S5	Weight (g)
40	52	9	10	36	72	38	90	5	6,6	250
50	65	9	12	45	90	46,5	110	6,5	9	480

Series SA

The limit switches of magnetic sensors must be mounted on cylinders fitted with magnetic pistons.

These, are activated by the magnetic field generated by the magnetic piston as it approaches and closes the circuit sending an electrical signal to either a relay, solenoid valve or converses with the electrical control system of the machine. There are both ampulla or Hall effect magnetic sensors available which are attached to the cylinder using a suitable cylinder clamp/adaptor or mounted in a suitable slot on the cylinder. The switch may also include an activation LED indicator.

Note: The magnetic sensors are in accordance with the Directive 2014/30/EU and following amendments

Instruction on how to use the sensors

Particular attention needs to be paid to ensure that you do not exceed the operating characteristics shown in the following pages. Its important to note; 2 wire sensors should not be connected to the supply voltage if a load is not connected in series. Failure to do so may result in damage to the sensor. Furthermore, please consider that the 'inrush' (loading) current absorbed by the sensors might be up to 50% higher than rated. For direct currents (DC), The polarity of the connection must be observed: The brown cable must be connected to the live (+) and the blue wire connected to the negative (-).

For all sensor applications, particular attention must be paid to the external factors such as nearby live cables, electromagnetic fields generated by electric motors as well as nearby metallic bodies as these can affect the magnetic field generated by the magnetic piston which in turn can cause malfunctions.

Electrical cables must be kept below 10mtrs in length to guarantee correct function, however, if a 10 mtr length cable is required, Pneumax suggests the inclusion of an inductor or resistor to the load to reduce the capacitive behaviour of the cable. In this instance, the customer is responsible for the selection of the correct resistive or inductive load required as Pneumax accept no responsibility for any malfunction. If needed, 10 meters cable length can be exceeded; Pneumax suggests the use of an inductor or resistor in series to the load in order to reduce the capacitive behavior of the cable.

In this case, the customer is responsible for the selection of the inductor or resistor value. Pneumax assume no responsibility in case of malfunction.

When using a 2-wire reed type sensor, always ensure that the correct load is applied in series on any of the two wires.

When using a sensor fitted with a SNAP connector always pay attention to the orientation of the connector because by inverting the connection the circuit will not be damaged, however, the LED will not illuminate. In case 2 or more sensors need to be connected in series, pay attention to the voltage drop generated (approx 3v per sensor), in this instance, use the version designed for series connection.

Hall effect sensors are longer lasting if compare to reed switched as they do not include any moving parts.



Cable sensor

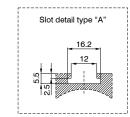
			l	J	U/1		
Technical characteristics	A.C.	D.C.	A.C.	D.C.	A.C.	D.C.	
Permanent maximum current	1,5A	1,2A	0,	5A	0,3A		
Maximum current (0.5 sec. pulses)	6A	1,5A	1	A	0,	8A	
Voltage field	12 230V	12 30V	3 230V	12 48V	0 230V	0 48V	
Permanent maximum power	375VA	32W	20VA	15W	10VA	8W	
Working temperature			-20°C .	70°C			
Maximum voltage drop	3V max	2V max	3V r	nax	C	V	
Cable length			2	m			
Cable colour			Bla	ack			
External cable section			Ø4,2	2mm			
Cover material			Pl	JR			
Number of wires in the cable	2						
Wires section	0,34 mm ²						
Connection type	With cable without connector						
Protection degree		,	IP	65			
Switch-on time			21	ns			
Switch-off time			1 r	ns			
Average working time			10 ⁷ C	ycles			
Repetition of intervention point			± 0,1	l mm			
Contacttype			N.	0.			
Directive	CE as set out in Directive 2014/30/EU UKCA pursuant to U.K. S.I. Regulation 2016 No. 1091						
Fixing	With screw						
Weight	50g						
With LED indication	With LED Without LED						
LED color		R	ed			/	

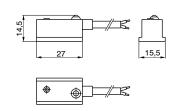
Coding: 1**1**00.**♥**

	TYPE				
Ū	5 = Cylinders and microcylinders.				
	Slot detail type "A".				
	6 = Rodless cylinders				
	VERSION				
•	AC = For alternating current				
	DC = For continuous current				
	U = Universal				
	U/1 = Universal sensor (REED				
	ampulla only)				

Cylinders and microcylinders

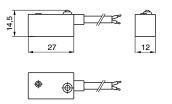




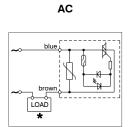


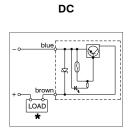
Rodless cylinders

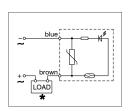




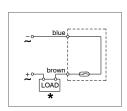
Diagrams and connections







U



U/1

^{*}The load (LOAD) can be connected either to negative or positive pole.

Sensor for SNAP connector

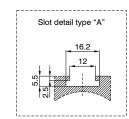
		UA		UC		UA/1			
Technical characteristics	DC	A.C.	D.C.	A.C.	D.C.	A.C.	D.C.		
Contacttype	N.O.	N.O.		N.	C.	N.O.			
Permanent maximum current	1.2A	0.5A		0.3	3A	0.8	0.5A		
Maximum current (0.5 sec. pulses)	1,5A	1A		0.8	BA	1.	A		
Voltagefield	12 30V	3 250V	12 48V	3 110V	12 48V	0 250V	0 48V		
Permanent maximum power	32W	20VA	15W	10VA	8W	10VA	W8		
Working temperature				-20°C 70°C					
Maximum voltage drop	2V		<3V			0	0V		
Connectiontype			Wi	th cable and conn	ector				
Protection degree				IP65					
Switch-on time				2 ms					
Switch-off time				1 ms					
Average working time				107cycles					
Repetition of intervention point				± 0,1 mm					
Directive	CE as set out in Directive 2014/30/EU UKCA pursuant to U.K. S.I. Regulation 2016 No. 1091								
Fixing	Withscrew								
Weight	7g								
With LED indication			With LED			Withou	#LED		
LED color			Red			Withou			

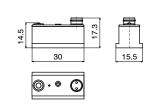
Coding: **⊕**RS.**♥**

	TYPE
•	= Cylinders and microcylinders.
	Slot detail type "A".
	S = Rodless cylinders
•	VERSION
	DC = For continuous current
	UA = Universal sensor N.O.
	UC = Universal sensor N.C.
	UA/1 = Universal sensor N.O.
	Without LED

Cylinders and microcylinders

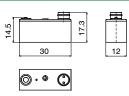




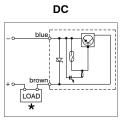


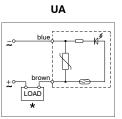
Rodless cylinders

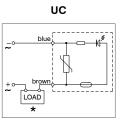


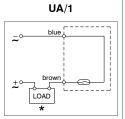


Diagrams and connections



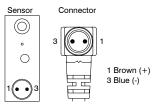






Technical data

Connection 2 wires 2 PIN



*The load (LOAD) can be connected either to negative or positive pole.

Sensor + Cable



Coding:	ORS.OO
---------	--------

	TYPE
0	= Cylinders and microcylinders.
U	Slot detail type "A".
	S = Rodless cylinders
	VERSION
	DC = For continuous current
	UA = Universal sensor N.O.
V	UC = Universal sensor N.C.
	UAC = Universal sensor N.O.
	Without LED
	CABLE LENGTH (DC, UA, UC)
•	C1 = 2,5 m cable
4	C2 = 5 m cable
	C3 = 10 m cable
	CABLE LENGTH (UAC)
	1/1 = 2,5 m cable
4	2/1 = 5 m cable
	3/1 = 10 m cable

2-wire cable connector



Technical characteristics	C1	C2	C3
Cable colour		Light grey	
External cable section	Ø3,5mm		
Cover material		PVC	
Number of wires in the cable	2 wires		
Wires section	0,25 mm		

Coding: C

	CABLE LENGTH
	1 = 2,5 m 2-wire cable
U	2 = 5 m 2-wire cable
	3 = 10 m 2-wire cable

3-pin sensor with SNAP connector for series assembling

	UA/1L			
Technical characteristics	A.C.	D.C.		
Permanent maximum current	0.6	5A		
Maximum current (0.5 sec. pulses)	1.	A		
Voltage field	24	IV		
Permanent maximum power	20VA	15W		
Working temperature	-20°C .	70°C		
Maximum voltage drop	0	V		
Connection type	With cable ar	nd connector		
Protection degree	IP	65		
Switch-on time	2 r	ns		
Switch-off time	1 ms			
Average working time	10 ⁷ cycles			
Repetition of intervention point	± 0,1 mm			
Contacttype	N.	0.		
Directive	CE as set out in Dir UKCA pursuant to U.K. S.I.			
Fixing	Withs	screw		
Weight	7g			
With LED indication	With	LED		

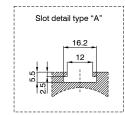
Coding: TRS.UA/1L

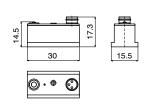
	TYPE
_	= Cylinders and microcylinders.
Ū	Slot detail type "A".
	S = Rodless cylinders

Cylinders and microcylinders

LED color

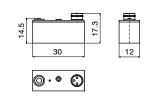






Rodless cylinders

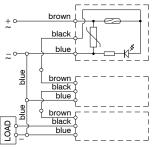




Red

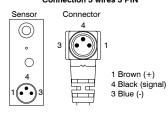
Diagrams and connections

UA/1L



Technical data

Connection 3 wires 3 PIN



Sensor + Cable



Coding: **O**RS.UA**O**/1L

	TYPE
O	= Cylinders and microcylinders.
	Slot detail type "A".
	S = Rodless cylinders
•	CABLE LENGTH
	CH1 = 2,5 m cable
	CH2 = 5 m cable
	CH3 = 10 m cable

Connector with 3 wires cable



Technical characteristics	CH1	CH2	СНЗ
Cable colour		Light grey	
External cable section		Ø3,5mm	
Cover material		PVC	
Number of wires in the cable	3 wires		
Wires section		0,25 mm²	

Coding: CH

	CABLE LENGTH
	1 = 2,5 m cable
•	2 = 5 m cable
	3 = 10 m cable

3 pin sensor in according to IEC 947 directives

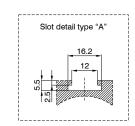
	DCNO	DCNO UANO		
Technical characteristics	DC	A.C.	D.C.	
Contacttype		N.O.		
Permanent maximum current	1.2A	0.5A	0.5A	
Maximum current (0.5 sec. pulses)	1,5A	1A	1A	
Voltage field	12 30V	3 250V	12 48V	
Permanent maximum power	32W	20VA	15W	
Working temperature		-20°C 70°C		
Maximum voltage drop	2V	<3V		
Connection type	With cable and connector		r	
Protection degree	IP65			
Switch-on time	2 ms			
Switch-off time		1 ms		
Average working time	10 ⁷ cycles			
Repetition of intervention point		± 0,1 mm		
Directive	CE as set out in Directive 2014/30/EU UKCA pursuant to U.K. S.I. Regulation 2016 No. 1091			
Fixing	xing			
Weight	Weight			
With LED indication		With LED		
LED color Red		Yell	ow	

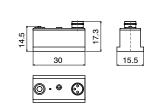
Coding: RS.♥

	VERSION
Ø	DCNO = Continuous current N.O.
	UANO = Universal sensor N.O.

Cylinders and microcylinders

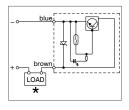


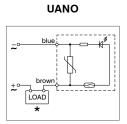




Diagrams and connections

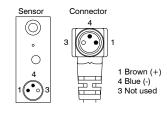
DCNO





Technical data

Connection 2 wires 3 PIN



*The load (LOAD) can be connected either to negative or positive pole.

IEC 947 standard connector with cable



Technical characteristics	C1NO	C2NO	C3NO
Cable colour		Light grey	
External cable section		Ø3,5mm	
Cover material		PVC	
Number of wires in the cable	2 wires		
Wires section		0,25 mm²	

Coding: CONO

	CABLELENGTH
•	1 = 2,5 m cable
U	2 = 5 m cable
	3 = 10 m cable

2 PIN Sensor with M8 connector

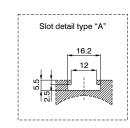
		UA		UC	
Technical characteristics	DC	A.C.	D.C.	A.C.	D.C.
Contact type	N.O.		N.O.	N.	C.
Permanent maximum current	1,2A		0,5A	0,3A	
Maximum current (0.5 sec. pulses)	1,5A		1A	0.8	BA
Voltage field	1230V	3 250V	12 48V	3 110V	12 48V
Permanent maximum power	32W	20VA	15W	10VA	8W
Working temperature			-20°C	70°C	
Maximum voltage drop	2V			< 3V	
Connection type	With cable and connector				
Protection degree	IP65				
Switch-on time	2 ms				
Switch-offtime	1 ms				
Average working time	10 ⁷ cycles				
Repetition of intervention point	± 0,1 mm				
Directive	CE as set out in Directive 2014/30/EU UKCA pursuantto U.K. S.I. Regulation 2016 No. 1091				
Fixing	With screw				
Weight	7g				
With LED indication	With LED				
LED color	Red				

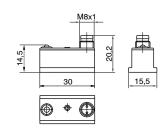
Coding: **⊕**RS8.

	TYPE
_	= Cylinders and microcylinders.
Ū	Slot detail type "A".
	S = Rodless cylinders
	VERSION
•	VERSION DC = For continuous current N.O.
V	

Cylinders and microcylinders

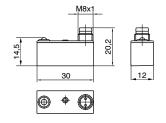






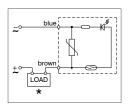
Rodless cylinders



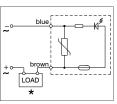


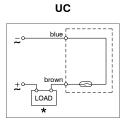
Diagrams and connections





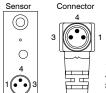
UA





Technical data

Connection 3 wires 3 PIN



1 Brown (+) 4 Black (signa

*The load (LOAD) can be connected either to negative or positive pole.

M8 connector with 3 wires cable



Technical characteristics	MCH1	MCH2	мснз
Cable colour		Light grey	
External cable section		Ø2,6mm	
Cover material		PUR	
Number of wires in the cable	3 wires		
Wires section	0,15 mm²		

Coding: MCH

•	CABLELENGTH
	1 = 2,5 m 3-wire cable
	2 = 5 m 3-wire cable
	3 = 10 m 3-wire cable

PNEUMATIC ACTUATION

3-pin sensor with M8 connector for series assembling

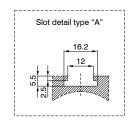
	UA/1L		
Technical characteristics	A.C.	D.C.	
Permanent maximum current	0.0	5A	
Maximum current (0.5 sec. pulses)	1.	A	
Voltagefield	24	VV	
Permanent maximum power	20VA	15W	
Working temperature	-20°C.	70°C	
Maximum voltage drop	0'	V	
Connection type	With cable ar	nd connector	
Protection degree	IP65		
Switch-on time	2 ms		
Switch-off time	1 ms		
Average working time	10 ⁷ cycles		
Repetition of intervention point	± 0,1 mm		
Contacttype	N.O.		
Directive	CE as set out in Directive 2014/30/EU UKCA pursuantto U.K. S.I. Regulation 2016 No. 1091		
Fixing	With screw		
Weight	7g		
With LED indication	With LED		
LED color	Red		

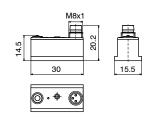
Coding: **O**RS8UA/1L

	TYPE
Ū	= Cylinders and microcylinders.
	Slot detail type "A".
	S = Rodless cylinders

Cylinders and microcylinders

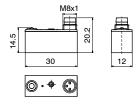




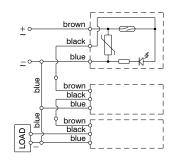


Rodless cylinders





Diagrams and connections



Technical data

Connection 3 wires 3 PIN Sensor Connector \bigcirc 0 1 Brown (+) 4 Black (signal) 3 Blue (-)

M8 connector with 3 wires cable



Technical characteristics	MCH1	MCH2	мснз
Cable colour		Light grey	
External cable section	Ø2,6mm		
Cover material		PUR	
Number of wires in the cable	3 wires		
Wires section	0,15 mm²		

Coding: MCH

	CABLE LENGTH
	1 = 2,5 m 3-wire cable
•	2 = 5 m 3-wire cable
	3 = 10 m 3-wire cable



Sensor with 3-wire cable

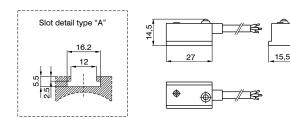
Technical characteristics		
Permanent maximum current	0,5A	
Voltage field	10 30V DC	
Power (inductive load)	10W	
Working temperature	-20°C 70°C	
Voltage drop	2V	
Cable length	3m	
Cable colour	Black	
External cable section	Ø4,2mm	
Cover material	PUR	
Number of wires in the cable	3	
Wires section	0,34 mm²	
Connection type	With cable without connector	
Protection degree	IP65	
Switch-on time	0,8μs	
Switch-off time	0,3 <i>µ</i> s	
Average working time	10°cycles	
Repetition of intervention point	± 0,1 mm	
Contacttype	N.O.	
Directive	CE as set out in Directive 2014/30/EU UKCA pursuant to U.K. S.I. Regulation 2016 No. 1091	
Fixing	Withscrew	
Weight	70g	
With LED indication	With LED	
LED color	Red	

Coding: 1**⊕**00.HA**♥**

Ū	TYPE
	5 = Cylinders and microcylinders.
	Slot detail type "A".
	6 = Rodless cylinders
	VERSION
V	$\mathbf{P} = PNP$
	N - NDN

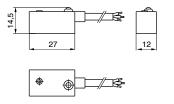
Cylinders and microcylinders





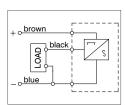
Rodless cylinders



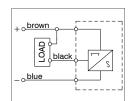


Diagrams and connections

PNP



NPN



3-pin sensor for SNAP connector

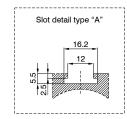
Technical characteristics		
Permanent maximum current	0,25A	
Voltage field	6 30V DC	
Power (inductive load)	6W	
Working temperature	-20°C 70°C	
Voltage drop	2V	
Connection type	With cable and connector	
Protection degree	IP65	
Switch-on time	0,8µs	
Switch-offtime	0,3 µs	
Average working time	10°cycles	
Repetition of intervention point	± 0,1 mm	
Contacttype	N.O.	
Directive	CE as set out in Directive 2014/30/EU UKCA pursuant to U.K. S.I. Regulation 2016 No. 1091	
Fixing	Withscrew	
Weight	6g	
With LED indication	With LED	
LED color	Red	

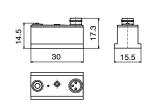
Coding: **1**HS.PA

Ū	TYPE
	= Cylinders and microcylinders.
	Slot detail type "A".
	S = Rodless cylinders

Cylinders and microcylinders



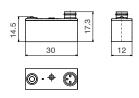




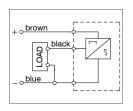
Rodless cylinders

PNEUMATIC ACTUATION





Diagrams and connections



Technical data

Connection 3 wires 3 PIN Sensor Connector \bigcirc \circ 1 Brown (+) 4 Black (signal) 3 Blue (-)

Sensor + Cable



Coding: THS.PAC

		TYPE
	•	= Cylinders and microcylinders.
		Slot detail type "A".
		••
		S = Rodless cylinders
	•	CABLE LENGTH
		1 = 2,5 m cable
		2 = 5 m cable
		3 = 10 m cable

Connector with 3 wires cable



Technical characteristics	CH1	CH2	СНЗ
Cable colour	Light grey		
External cable section	Ø3,5mm		
Cover material	PVC		
Number of wires in the cable	3 wires		
Wires section	0,25 mm²		

Coding: CH

•	CABLELENGTH
	1 = 2,5 m cable
	2 = 5 m cable
	3 = 10 m cable



3 PIN sensor for M8 connector

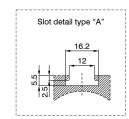
Technical characteristics			
Permanent maximum current	0,25A		
Voltage field	6 30V DC		
Power (inductive load)	6W		
Working temperature	-20°C 70°C		
Voltage drop	2V		
Connectiontype	With cable and connector		
Protection degree	IP65		
Switch-on time	0,8 <i>µ</i> s		
Switch-offtime	0,3 <i>μ</i> s		
Average working time	10°cycles		
Repetition of intervention point	± 0,1 mm		
Contacttype	N.O.		
Directive	CE as set out in Directive 2014/30/EU UKCA pursuant to U.K. S.I. Regulation 2016 No. 1091		
Fixing	With screw		
Weight	6g		
With LED indication	With LED		
LED color	Red		

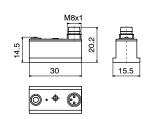
Coding: THS8.VA

TYPE = Cylinders and microcylinders. Slot detail type "A". S = Rodless cylinders VERSION P = PNP N = NPN		
Slot detail type "A". S = Rodless cylinders VERSION P = PNP		TYPE
Slot detail type "A". S = Rodless cylinders VERSION P = PNP	_	= Cylinders and microcylinders.
VERSION P = PNP	v	Slot detail type "A".
P = PNP		S = Rodless cylinders
		VERSION
N = NPN	V	P = PNP
		N = NPN

Cylinders and microcylinders

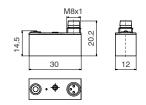






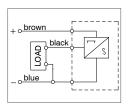
Rodless cylinders



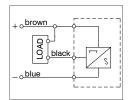


Diagrams and connections

PNP

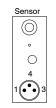


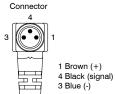
NPN



Technical data

Connection 3 wires 3 PIN





M8 connector with 3 wires cable



Technical characteristics	MCH1	MCH2	МСНЗ
Cable colour	Light grey		
External cable section	Ø2,6mm		
Cover material	PUR		
Number of wires in the cable	3 wires		
Wires section	0,15 mm²		

CABLE LENGTH 1 = 2,5 meters • 2 = 5 meters

Coding: MCH

3 = 10 meters



Series SA				
Series	Description	Assembly		
	for microbore with threaded end covers and "TECNO-MIR" microbore	with clamps code 1260.Ø.F		
1200	for microbore "MIR" with rolled end covers, cylinders from Ø16 to Ø32	with clamps code 1280.Ø.F		
	for microbore "MIR-INOX" with rolled end covers	with clamps code 1280.Ø.FX		
	or cylinders from Ø32 to Ø63	with brackets code 1306.A		
1306 - 1307 - 1308	for cylinders from Ø80 to Ø125	with brackets code 1306.B		
	for cylinders from Ø160 to Ø200	with brackets code 1306.C		
1315	for cylinders Ø250 and Ø320 (ISO)	with brackets code 1306.D		
	for cylinders Ø32 and Ø40	with brackets code 1320.A		
	for cylinders Ø50 and Ø63	with brackets code 1320.B		
1319 - 1320	for cylinders Ø80 and Ø100	with brackets code 1320.C		
1319-1320	for cylinders Ø125	with brackets code 1320.D		
	for cylinders Ø160	with brackets code 1320.E		
	for cylinders Ø200	with brackets code 1320.F		
	for cylinders ECOLIGHT Ø32 and Ø40	with brackets code 1390.A		
1390 - 1391	for cylinders ECOLIGHT Ø50 and Ø63	with brackets code 1390.B		
1390 - 1391	for cylinders ECOLIGHT Ø80 and Ø100	with brackets code 1390.C		
	for cylinders ECOLIGHT Ø125 - Ø200	with brackets code 1390.D		
1500	Compact cylinders "Europe" (from Ø32)	directly on groove		
1605	Rodless cylinders	with brackets code 1600.A		



Series SR - SU - SQ - ST

The limit switches of magnetic sensors must be mounted on cylinders fitted with magnetic pistons.

These, are activated by the magnetic field generated by the magnetic piston as it approaches and closes the circuit sending an electrical signal to either a relay, solenoid valve or converses with the electrical control system of the machine. There are both ampulla or Hall effect magnetic sensors available which are attached to the cylinder using a suitable cylinder clamp/adaptor or mounted in a suitable slot on the cylinder. The switch may also include an activation LED indicator.

Note: The magnetic sensors are in accordance with the Directive 2014/30/EU and following amendments

Instruction on how to use the sensors

Particular attention needs to be paid to ensure that you do not exceed the operating characteristics shown in the following pages. Its important to note; 2 wire sensors should not be connected to the supply voltage if a load is not connected in series. Failure to do so may result in damage to the sensor. Furthermore, please consider that the 'inrush' (loading) current absorbed by the sensors might be up to 50% higher than rated. For direct currents (DC), The polarity of the connection must be observed: The brown cable must be connected to the live (+) and the blue wire connected to the negative (-).

For all sensor applications, particular attention must be paid to the external factors such as nearby live cables, electromagnetic fields generated by electric motors as well as nearby metallic bodies as these can affect the magnetic field generated by the magnetic piston which in turn can cause malfunctions.

Electrical cable length must be kept below 10 meters in order to guarantee proper functioning.

If needed, 10 meters cable length can be exceeded; Pneumax suggests the use of an inductor or resistor in series to the load in order to reduce the capacitive behavior of the cable.

In this case, the customer is responsible for the selection of the inductor or resistor value. Pneumax assume no responsibility in case of malfunction.

When using a 2-wire reed type sensor, always ensure that the correct load is applied in series on any of the two wires.

In case two or more sensors need to be connected in series, pay attention to the voltage drop generated (around 3V for each sensor), and, in case, use the version designed for in series connection.

Hall effect sensors are longer lasting if compare to reed switched as they do not include any moving parts.

PREUMAX

Universal sensor with cable

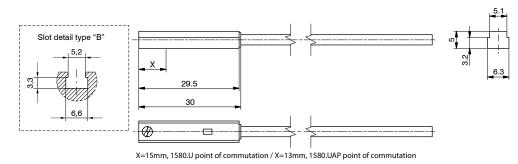
Technical characteristics	1580.U	1580.UAP	
Permanent maximum current	100mA	500mA	
Permanent maximum power	10	W	
Output type	/	PNP	
Voltage field	5 240V DC/AC	10 30V DC/AC	
Working temperature	-10°C.	70°C	
Maximum voltage drop	3,5V	0.1V @100mA **	
Cable length	2,5	5m	
Cable colour	Light	grey	
External cable section	Ø3,3mm		
Cover material	PL	JR	
Number of wires in the cable	2	3	
Wires section	0,14	mm²	
Connection type	Oper	nend	
Protection degree	IP67		
Contacttype	N.O.		
Directive	CE as set out in Directive 2014/30/EU		
Fixing	With screw		
Weight	27g		
With LED indication	With LED		
LED color	Red	Yellow	

Coding: 1580.U

	VERSION
V	= 2 wires
	AP = 3 wires, PNP

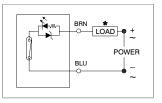
^{**} Test conditions: 24V DC, ambient temperature 25°C, cable length 2 meters.



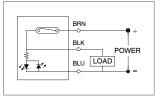


Diagrams and connections

With REED bulb, 2 wires



With REED bulb, 3 wires



^{*}The load (LOAD) can be connected either to negative or positive pole.

Coding: MRS.U

VERSION

= 2 wires AP = 3 wires, PNP

V

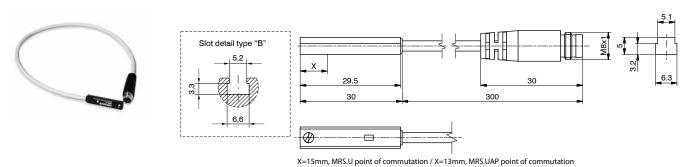
SR Series - Rectangular section REED bulb versions



Universal sensor with M8 connection cable

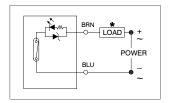
,				
Technical characteristics	MRS.U	MRS.UAP		
Permanent maximum current	100mA	500mA		
Permanent maximum power	10	W		
Output type	/	PNP		
Voltage field	5 240V DC/AC	10 30V DC/AC		
Working temperature	-10°C.	70°C		
Maximum voltage drop	3,5V	0.1V @100mA **		
Cable length	300	mm		
Cable colour	Light	grey		
External cable section	Ø3,3	3mm		
Cover material	PL	JR		
Number of wires in the cable	2	3		
Wires section	0,14	mm²		
Connection type	With M8 mal	e connector		
Protection degree	IP6	67		
Contacttype	N.O.			
Directive	CE as set out in Directive 2014/30/EU			
Fixing	With screw			
Weight	15g			
With LED indication	With LED			
LED color	Red Yellow			

^{**} Test conditions: 24V DC, ambient temperature 25°C, cable length 2 meters.

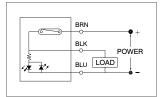


Diagrams and connections

With REED bulb, 2 wires



With REED bulb, 3 wires



*The load (LOAD) can be connected either to negative or positive pole.

Technical data

Connection 2 wires





1 Brown (+) 4 Blue (-) 3 Not used

Connection 3 wires

- 1 Brown (+) 4 Black (signal) 3 Blue (-)
- MRS.U MRS.UAP Sensor 2 wires: MC1, MC2,MC3 Connectors 3 wires: MCH1, MCH2, MCH3

M8 connector with 2 wires cable



Technical characteristics	MC1	MC2	мсз
Cable colour	Light grey		
External cable section	Ø2,6mm		
Cover material	PUR		
Number of wires in the cable	2 wires		
Wires section	0.15 mm²		

CABLE LENGTH 1 = 2,5 m 2-wire cable **2** = 5 m 2-wire cable

3 = 10 m 2-wire cable

M8 connector with 3 wires cable



Technical characteristics	MCH1	MCH2	МСНЗ
Cable colour	Light grey		
External cable section	Ø2,6mm		
Cover material	PUR		
Number of wires in the cable	3 wires		
Wires section	0,15 mm²		

Coding: MCH

Coding: MC

•	CABLE LENGTH
	1 = 2,5 meters
	2 = 5 meters
	3 = 10 meters

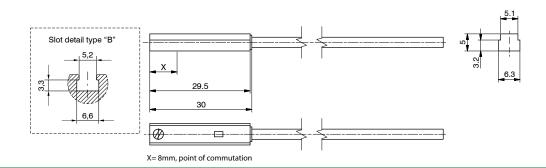
PREUNAX

Cable sensor

Technical characteristics			
	1580.HAP	1580.HAN	
Permanent maximum current	100mA		
Permanent maximum power	3W		
Output type	PNP	NPN	
Voltage field	10 30V DC		
Working temperature	-10°C .	70°C	
Maximum voltage drop	1.5V		
Cable length	2,5m		
Cable colour	Light grey		
External cable section	Ø3,3mm		
Cover material	PUR		
Number of wires in the cable	3		
Wires section	0,14 mm²		
Connection type	Openend		
Protection degree	IP67		
Contacttype	N.O.		
Directive	CE as set out in Directive 2014/30/EU		
Fixing	Withscrew		
Weight	27g		
With LED indication	With LED		

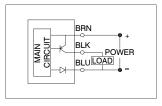




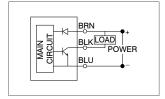


Diagrams and connections

HALL effect-PNP, 3 wire



HALL effect-NPN, 3 wire



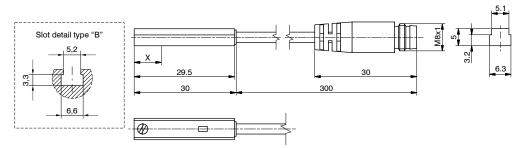
 $\textbf{Coding:}\ MHS.P$

Sensor with M8 connection cable

Technical characteristics		
Output type	PNP	
Permanent maximum current	100mA	
Permanent maximum power	3W	
Voltage field	1030V DC	
Working temperature	-10°C 70°C	
Maximum voltage drop	1.5V	
Cable length	300mm	
Cable colour	Light grey	
External cable section	Ø3,3mm	
Cover material	PUR	
Number of wires in the cable	3	
Wires section	0,14 mm ²	
Connection type	With M8 male connector	
Protection degree	IP67	
Contact type	N.O.	
Directive	CE as set out in Directive 2014/30/EU	
Fixing	With screw	
Weight	15g	
With LED indication	With LED	



LED color

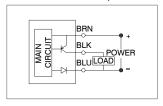


X=8mm, point of commutation

Yellow

Diagrams and connections

HALL effect-PNP, 3 wire



Technical data

Connection 3 wires



- 1 Brown (+) 4 Black (signal) 3 Blue (-)

	Connectors to use	
	Sensor	MHS.P
	Connectors	MCH1 - MCH2 - MCH3

M8 connector with 3 wires cable



Technical characteristics	MCH1	MCH2	мснз
Cable colour	Light grey		
External cable section	Ø2,6mm		
Cover material	PUR		
Number of wires in the cable	3 wires		
Wires section	0,15 mm²		

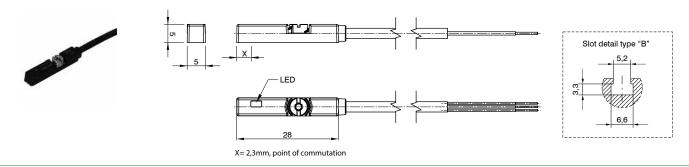
Coding: MCH

•	CABLE LENGTH
	1 = 2,5 meters
	2 = 5 meters
	3 = 10 meters



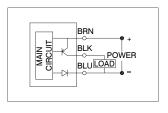
Cable sensor

Technical characteristics		
Output type	PNP	
Permanent maximum current	100mA	
Permanent maximum power	3W	
Voltagefield	10 28V DC	
Working temperature	-10°C 70°C	
Maximum voltage drop	1,5V	
Cable length	2,5m	
Cable colour	Black	
External cable section	Ø2,8mm	
Cover material	PUR	
Number of wires in the cable	3	
Wires section	0,14 mm ²	
Connection type	Openend	
Protection degree	IP67	
Contacttype	N.O.	
Directive	CE as set out in Directive 2014/30/EU	
Fixing	Withscrew	
Weight	23g	
With LED indication	With LED	
LED color	Yellow	



Coding: 1595.HAP

Diagrams and connections





Coding: 1590.U VERSION

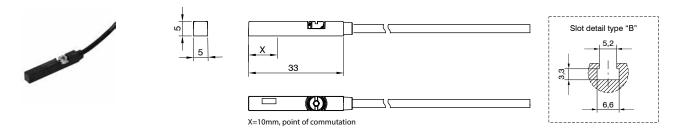
= 2 wires AP = 3 wires, PNP

V

Cable sensor

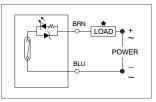
	Technical characteristics			
	1590.UAP			
Output type	-	PNP		
Permanent maximum current	100mA	500mA		
Permanent maximum power	1	0W		
Voltagefield	5 240V DC/AC	10 30V DC/AC		
Working temperature	-10°C	70°C		
Maximum voltage drop	3V	0.1V @100mA **		
Cable length	2,	5m		
Cable colour	BI	ack		
External cable section	Ø2,8mm			
Cover material	Р	UR		
Number of wires in the cable	2	3		
Wires section	0,14	l mm²		
Connection type	Ope	en end		
Protection degree	IF	267		
Contact type	N.O.			
Directive	CE as set out in Directive 2014/30/EU			
Fixing	With screw			
Weight	27g			
With LED indication	With LED			
LED color	Red	Yellow		

^{**} Test conditions: 24V DC, ambient temperature 25°C, cable length 2 meters.

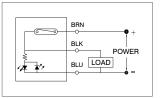


Diagrams and connections

With REED bulb, 2 wires



With REED bulb, 3 wires



^{*}The load (LOAD) can be connected either to negative or positive pole.

LED color

Sensor with M8 connection cable

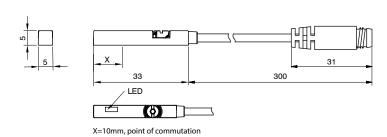
Technical characteristics					
	LRS.U	LRS.UAP			
Output type	-	PNP			
Permanent maximum current	100mA	500mA			
Permanent maximum power	10	W			
Voltage field	5 240V DC/AC	10 30V DC/AC			
Working temperature	-10°C.	70°C			
Maximum voltage drop	3V	0.1V @100mA **			
Cable length	300	mm			
Cable colour	Bla	ick			
External cable section	Ø2,8mm				
Cover material	PL	JR			
Number of wires in the cable	2	3			
Wires section	0,14	mm²			
Connectiontype	With M8 mal	e connector			
Protection degree	IP67				
Contacttype	N.O.				
Directive	CE as set out in Directive 2014/30/EU				
Fixing	With screw				
Weight	15g				
With LED indication	With LED				

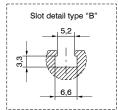
Coding: LRS.U♥

	VERSION
$lackbox{}$	= 2 wires
	AP = 3 wires, PNP

^{**} Test conditions: 24V DC, ambient temperature 25°C, cable length 2 meters.

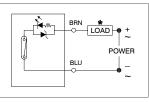


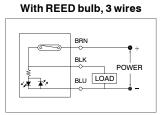




Diagrams and connections

With REED bulb, 2 wires





*The load (LOAD) can be connected either to negative or positive pole.

Technical data

Connection 2 wires

Yellow

Connector



- 1 Brown (+) 4 Blue (-) 3 Not used

Connection 3 wires

Connector



1 Brown (+) 4 Black (signal) 3 Blue (-)

Coding: MC

l	Connectors to use		
	Sensors	LRS.U	LRS.UAP
	Connectors	MC1 - MC2 - MC3	MCH1 - MCH2 - MCH3

M8 connector with 2 wires cable



Technical characteristics	MC1	MC2	МСЗ
Cable colour	Light grey		
External cable section	Ø2,6mm		
Cover material	PUR		
Number of wires in the cable	2 wires		
Wires section	0,15 mm²		

CABLE LENGTH	
1 = 2,5 m 2-wire cable	
2 = 5 m 2-wire cable	
3 = 10 m 2-wire cable	

M8 connector with 3 wires cable



Technical characteristics	MCH1	MCH2	МСНЗ
Cable colour	Light grey		
External cable section	Ø2,6mm		
Cover material	PUR		
Number of wires in the cable	3 wires		
Wires section	0,15 mm²		

Coding: MCH

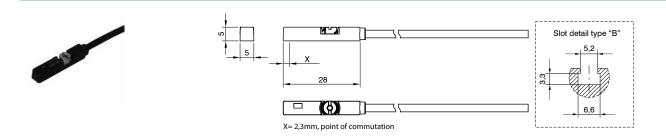
	CABLE LENGTH
_	1 = 2,5 m 3-wire cable
U	2 = 5 m 3-wire cable
	3 = 10 m 3-wire cable



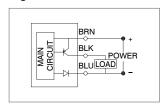
Cable sensor

Coding: 1590.HAP

Technical characteristics			
Output type	PNP		
Permanent maximum current	200mA		
Permanent maximum power	5.5W		
Voltage field	10 28V DC		
Working temperature	-10°C 70°C		
Maximum voltage drop	1,5V		
Cable length	2,5m		
Cable colour	Black		
External cable section	Ø2,8mm		
Cover material	PUR		
Number of wires in the cable	3		
Wires section	0,14 mm ²		
Connection type	Open end		
Protection degree	IP67		
Contacttype	N.O.		
Directive	CE as set out in Directive 2014/30/EU		
Fixing	With screw		
Weight	27g		
With LED indication	With LED		
LED color	Yellow		



Diagrams and connections



LED color

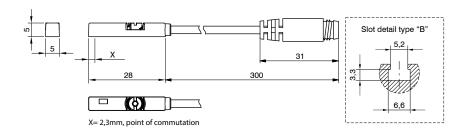


Sensor with M8 connection cable

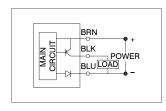
Technical characteristics			
Output type	PNP		
Permanent maximum current	200mA		
Permanent maximum power	5.5W		
Voltage field	10 28V DC		
Working temperature	-10°C 70°C		
Maximum voltage drop	1,5V		
Cable length	300mm		
Cable colour	Black		
External cable section	Ø2,8mm		
Cover material	PUR		
Number of wires in the cable	3		
Wires section	0,14 mm²		
Connection type	With M8 male connector		
Protection degree	IP67		
Contacttype	N.O.		
Directive	CE as set out in Directive 2014/30/EU		
Fixing	With screw		
Weight	15g		
With LED indication	With LED		

Yellow





Diagrams and connections



Technical data

Connection 3 wires

Connector





1 Brown (+) 4 Black (signal) 3 Blue (-)

	Connectors to use
Sensors	LHS.P
Connectors	MCH1 - MCH2 - MCH3

M8 connector with 3 wires cable



Technical characteristics	MCH1	MCH2	МСНЗ
Cable colour	Light grey		
External cable section	Ø2,6mm		
Cover material	PUR		
Number of wires in the cable	3 wires		
Wires section	0.15 mm²		

Coding: MCH

Coding: LHS.P

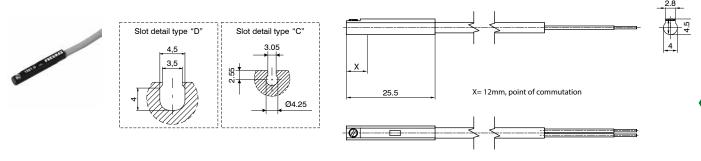
	CABLE LENGTH
_	1 = 2,5 m 3-wire cable
•	2 = 5 m 3-wire cable
	3 = 10 m 3-wire cable

Coding: 1581.U

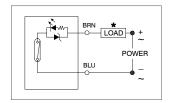


Universal sensor with cable

Technical characteristics		
Permanent maximum current	100mA	
Permanent maximum power	10W	
Voltage field	5 120V DC/AC	
Working temperature	-10°C 70°C	
Maximum voltage drop	3,5V	
Cable length	2,5m	
Cable colour	Light grey	
External cable section	Ø2,8mm	
Cover material	PUR	
Number of wires in the cable	2	
Wires section	0,14 mm ²	
Connection type	Open end	
Protection degree	IP67	
Contacttype	N.O.	
Directive	CE as set out in Directive 2014/30/EU	
Fixing	With screw	
Weight	27g	
With LED indication	With LED	
LED color	Red	



Diagrams and connections

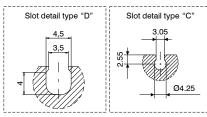


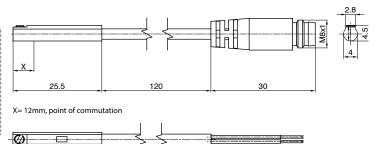
*The load (LOAD) can be connected either to negative or positive pole.

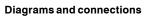
Universal sensor with M8 connection cable

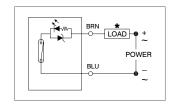
	Technical characteristics
Permanent maximum current	100mA
Permanent maximum power	10W
Voltage field	5 120V DC/AC
Working temperature	-10°C 70°C
Maximum voltage drop	3,5V
Cable length	150mm
Cable colour	Light grey
External cable section	Ø2,8mm
Cover material	PUR
Number of wires in the cable	2
Wires section	0,14 mm²
Connection type	With M8 male connector
Protection degree	IP67
Contacttype	N.O.
Directive	CE as set out in Directive 2014/30/EU
Fixing	With screw
Weight	10g
With LED indication	With LED
LED color	Red











Technical data

Connection 2 wires

Connector





 $\textbf{Coding:} \, TRS.U$

- 1 Brown (+) 4 Blue (-) 3 Not used

Connectors to use	
Sensors	TRS.U
Connectors	MC1 - MC2 - MC3

M8 connector with 2 wires cable



Technical characteristics	MC1	MC2	МСЗ
Cable colour	Light grey		
External cable section	Ø2,6mm		
Cover material	PUR 2 wires		
Number of wires in the cable			
Wires section			

Coding: MC

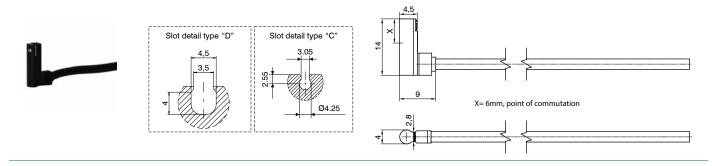
	CABLE LENGTH
_	1 = 2,5 m 2-wire cable
J	2 = 5 m 2-wire cable
	3 - 10 m 2-wire cable



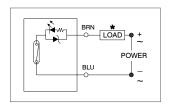
Coding: 1583.DC

Sensor with 90° cable

Technical characteristics		
Permanent maximum current	50mA	
Permanent maximum power	1.5W	
Voltage field	530V DC	
Working temperature	-10°C 70°C	
Maximum voltage drop	3,5V	
Cable length	2m	
Cable colour	Black	
External cable section	Ø2,6mm	
Cover material	PVC	
Number of wires in the cable	2	
Wires section	0,14 mm²	
Connection type	Open end	
Protection degree	IP67	
Contacttype	N.O.	
Directive	CE as set out in Directive 2014/30/EU	
Fixing	With screw	
Weight	22g	
With LED indication	With LED	
LED color	Red	



Diagrams and connections

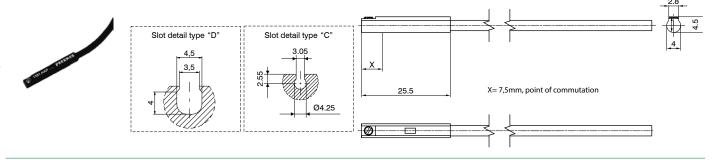


PREUMAX

Cable sensor

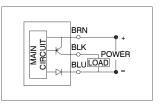
Technical characteristics		
Output type	PNP	
Permanent maximum current	200mA	
Permanent maximum power	6W	
Voltage field	530V DC	
Working temperature	-10°C 70°C	
Maximum voltage drop	1V @200mA *	
Cable length	2,5m	
Cable colour	Black	
External cable section	Ø2,8mm	
Cover material	PUR	
Number of wires in the cable	3	
Wires section	0,14 mm²	
Connection type	Openend	
Protection degree	IP67	
Contacttype	N.O.	
Directive	CE as set out in Directive 2014/30/EU	
Fixing	Withscrew	
Weight	22g	
With LED indication	With LED	
LED color	Green	

^{*} Test conditions: 24V DC, ambient temperature 25°C, cable length 2 meters.



Coding: 1581.HAP

Diagrams and connections



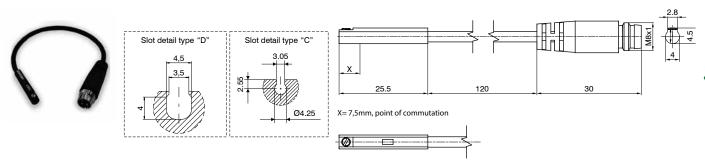


Sensor with M8 connection cable

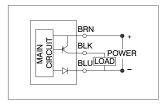
Coding: THS.P

Technical characteristics			
Output type	PNP		
Permanent maximum current	200mA		
Permanent maximum power	6W		
Voltage field	530V DC		
Working temperature	-10°C 70°C		
Maximum voltage drop	1V @200mA *		
Cable length	150mm		
Cable colour	Black		
External cable section	Ø2,8mm		
Cover material	PUR		
Number of wires in the cable	3		
Wires section	0,14 mm²		
Connection type	With M8 male connector		
Protection degree	IP67		
Contacttype	N.O.		
Directive	CE as set out in Directive 2014/30/EU		
Fixing	With screw		
Weight	10g		
With LED indication	With LED		
LED color	Green		

^{*}Test conditions: 24V DC, ambient temperature 25°C, cable length 2 meters.



Diagrams and connections



Technical data

Connection 3 wires





1 Brown (+) 4 Black (signal) 3 Blue (-)

	Connectors to use
Sensors	THS.P
Connectors	MCH1 - MCH2 - MCH3

M8 connector with 3 wires cable



Technical characteristics	MCH1	MCH2	мснз
Cable colour	Light grey		
External cable section	Ø2,6mm		
Cover material	PUR		
Number of wires in the cable	3 wires		
Wires section	0.15 mm²		

	Coding: MCH				
١		CABLE LENGTH			
	_	1 = 2,5 m 3-wire cable			
Ш	U	2 - 5 m 3-wire cable			

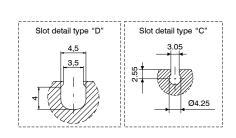
3 = 10 m 3-wire cable

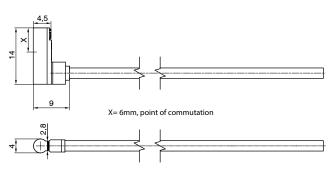


Sensor with 90° cable

Technical characteristics				
Output type	PNP			
Permanent maximum current	50mA			
Permanent maximum power	1,5W			
Voltage field	4,5 28V DC			
Working temperature	-10°C 70°C			
Maximum voltage drop	0,5V			
Cable length	3m			
Cable colour	Black			
External cable section	Ø2,6mm			
Cover material	PVC			
Number of wires in the cable	3			
Wires section	0,14 mm²			
Connection type	Openend			
Protection degree	IP67			
Contacttype	N.O.			
Directive	CE as set out in Directive 2014/30/EU			
Fixing	With screw			
Weight	22g			
With LED indication	With LED			
LED color	Red			

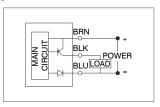






Coding: 1583.HAP

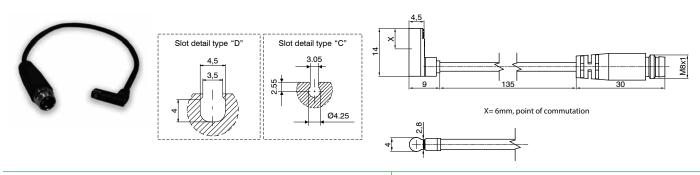
Diagrams and connections



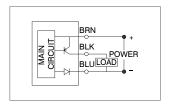
Coding: THR.P

Sensor with 90° cable and M8 connection

Technical characteristics				
Output type	PNP			
Permanent maximum current	50mA			
Permanent maximum power	1,5W			
Voltage field	4,5 28V DC			
Working temperature	-10°C 70°C			
Maximum voltage drop	0,5V			
Cable length	100mm			
Cable colour	Black			
External cable section	Ø2,6mm			
Cover material	PVC			
Number of wires in the cable	3			
Wires section	0,14 mm²			
Connection type	With M8 male connector			
Protection degree	IP67			
Contacttype	N.O.			
Directive	CE as set out in Directive 2014/30/EU			
Fixing	With screw			
Weight	10g			
With LED indication	With LED			
LED color	Red			



Diagrams and connections



Technical data

Connection 3 wires



- 1 Brown (+) 4 Black (signal) 3 Blue (-)

	Connectors to use					
	Sensors THR.P					
	Connectors	MCH1 - MCH2 - MCH3				
- 1						

M8 connector with 3 wires cable



Technical characteristics	MCH1	MCH2	мснз		
Cable colour	Light grey				
External cable section	Ø2,6mm				
Cover material	PUR				
Number of wires in the cable	3 wires				
Wires section	0.15 mm²				

Coding: MCH

	CABLELENGTH
•	$1 = 2,5 \mathrm{m}3$ -wire cable
u	2 = 5 m 3-wire cable
	3 = 10 m 3-wire cable

	SR series, rectangular section vers	ion (for "B" type slot)		
Series	Description	Assembly		
1200	Microbore with threaded end covers and "TECNO-MIR" microbore "MIR" with rolled end covers Microbore "MIR-INOX" with rolled end covers	with clamps code 1260.0.FS with clamps code 1280.0.FS with clamps code 1280.0.FSX		
	for cylinders Ø32 Ø40	with bracket code 1320.AS		
1319 - 1320	for cylinders Ø50 Ø63	with bracket code 1320.BS		
1325 - 1345	for cylinders Ø80 Ø100	with bracket code 1320.CS		
1330 - 1332	for cylinders Ø125	with bracket code 1320.DSC		
1348 - 1349	for cylinders Ø160	with bracket code 1320.ESC		
	for cylinders Ø200	with bracket code 1320.FSC		
1386-87 / 1396-97	Cylinders according to standard ISO 15552 ECOPLUS	directly on groove		
1000 07	Cylinders according to standard ISO 15552 ECOLIGHT			
1390 - 1391	Warning: To use only into the lateral slot, from Ø32 to Ø63 cylinders. (do not use into the 2 slots positioned on the side of feeding connection)	directly on groove		
1370 1373	Cylinders ECOFLAT	directly on groove		
	Short stroke compact cylinders	with adapter code 1380.01F		
		from Ø12 to Ø25: directly on groove		
1500	Compact cylinders "Europe"	from Ø32 to Ø50: directly on groove or with adapter 1380.01F		
		from Ø63 to Ø100: with adapter cod. 1380.01F		
	Compact cylinder according to standard ISO 21287 ECOMPACT	directly on groove		
1605	Rodless cylinders	with adapter code 1600.C		
6100	Guided compact cylinder (Ø20 - Ø63)	directly on groove		
6101	Heavy duty guided shortstroke cylinder	directly on groove		
6200	Twin-rod slide units	directly on groove		
6210	Through twin-rod slide units	directly on groove		
6301	Pneumatic grippers, angular standard version	directly on groove		
6303	180° angular gripper rack & pinion style	directly on groove		
6310	Parallel style pneumatic grippers standard version (Ø10 - Ø25)	directly on groove		
6311	Parallel style pneumatic grippers wide opening	directly on groove		
6312	3 finger parallel style pneumatic grippers (Ø32 - Ø125)	directly on groove		



SQ-SU series, square section version ((for sensor slot type "B")		
Description	Assembly		
for cylinders Ø32 Ø40	with brackets code 1320.ASC		
for cylinders Ø50 Ø63	with brackets code 1320.BSC		
for cylinders Ø80 Ø100	with brackets code 1320.CSC		
for cylinders Ø125	with bracket code 1320.DSC		
for cylinders Ø160	with bracket code 1320.ESC		
for cylinders Ø200	with bracket code 1320.FSC		
Cylinders according to standard ISO 15552 ECOPLUS	directly on groove		
Cylinders according to standard ISO 15552 ECOLIGHT	directly on groove		
Cylinders ECOFLAT	directly on groove		
Short stroke compact cylinders	with adapter code 1380.01F		
	from Ø12 to Ø25: directly on groove		
Compact cylinders "Europe"	from Ø32 to Ø50: directly on groove		
	directly on groove		
Compact cylinder according to standard ISO 21287 ECOMPACT	directly on groove		
Rodless cylinders	with adapter code 1600.C		
Guided compact cylinder (Ø20 - Ø63)	directly on groove		
Heavy duty guided shortstroke cylinder	directly on groove		
Twin-rod slide units	directly on groove		
Through twin-rod slide units	directly on groove		
Pneumatic grippers, angular standard version	directly on groove		
180° angular gripper rack & pinion style	directly on groove		
Parallel style pneumatic grippers standard version (Ø10 - Ø25)	directly on groove		
Parallel style pneumatic grippers wide opening	directly on groove		
3 finger parallel style pneumatic grippers (Ø32 - Ø125)	directly on groove		
Single rack rotary actuators	directly on groove		
	Description for cylinders Ø32 Ø40 for cylinders Ø35 Ø63 for cylinders Ø50 Ø63 for cylinders Ø50 Ø63 for cylinders Ø100 for cylinders Ø100 for cylinders Ø160 for cylinders Ø200 Cylinders according to standard ISO 15552 ECOPLUS Cylinders according to standard ISO 15552 ECOLIGHT Cylinders ECOFLAT Short stroke compact cylinders Compact cylinders "Europe" Compact cylinder according to standard ISO 21287 ECOMPACT Rodless cylinders Guided compact cylinders Guided compact cylinder (Ø20 - Ø63) Heavy duty guided shortstroke cylinder Twin-rod slide units Pneumatic grippers, angular standard version 180° angular gripper rack & pinion style Parallel style pneumatic grippers wide opening 3 finger parallel style pneumatic grippers wide opening		



ST Series, round section version (for sensor slot type "C" and "D")					
Series	Description	Assembly			
6100	Guided compact cylinder (Ø12 - Ø16)	directly on groove			
6302	Pneumatic grippers, 180 °angular	directly on groove			
6310	Parallel style pneumatic grippers standard version (Ø16 and Ø25)	directly on groove			
6312	3 finger parallel style pneumatic grippers (Ø16 (Ø25)	directly on groove			
6400	Double rack rotary actuators with turn table	directly on groove			
6420	Vane type rotary actuators (from Ø10 to Ø40)	directly on groove			
6500	Multimount cylinders	directly on groove			
6600	Slide cylinders	directly on groove			
6700	Guide cylinders	directly on groove			



	ST Series, 90° round cable section version (for sensor slot type "C" and "D")					
Series	Series Description Assembly					
6420	Vane type rotary actuators	directly on groove				



Series 1260-1320

The piston rod lock devices are clamping units mounted on the microbore cylinders front head. They allow the piston rod to lock in any position. Piston rod clamping is mechanically obtained by springs actuated purpose-made jaws. This method allows to lock the cylinder in the desired position, should the air pressure drop.

The piston rod lock device is not a safety device.

Construction characteristics

Body	anodized aluminium
Clamping jaws	hardened alloy copper
Seals	NBR
Springs	spring steel
Pistons	acetal resin
Body	anodized aluminium

Operational characteristics

Fluid	filtered and lubricated air						
Working pressure	3 bar 6 bar						
Function	mechanical double jaws						
Locking			axial, two-dir	ection (normall	y locked)		
Unlocking				pneumatic			
Working temperature	-5 °C +70 °C						
Holding force with static load (microbore cylinders)	Ø12		Ø16	Ø20	Ø25	5	Ø32
	180N		180N	350N	350	N	600N
Holding force with static load	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100	Ø125
(cylinders)	600N	1000N	1400N	2000N	5000N	5000N	7000N

Attention: Dry air must be used for application below 0°C

Use and maintenance

Operate within the specified technical characteristics.

The piston rod lock does not require maintenance if properly utilised.

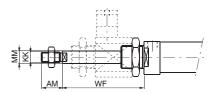
The working inlet port has to be pressurised for assembling the piston rod lock device on cylinder. Alternatively adjust the jaws with screw located on connection.

Spare parts are not available.

PNEUMATIC ACTUATION

Microbore for piston rod lock

Threaded end covers version



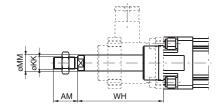
Ordering code

12__.Ø.stroke.B

Order piston rod lock separately.

Do not use with stainless steel or hexagonal piston rod.

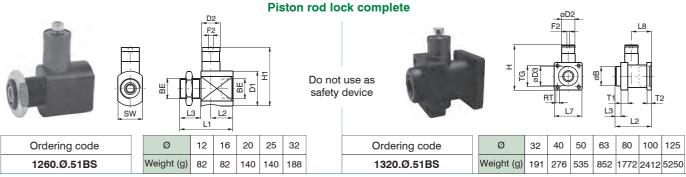
ISO 15552 cylinders for piston rod lock



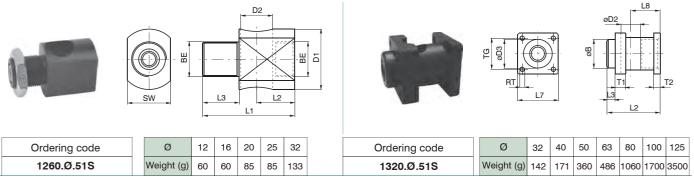
Order piston rod lock separately. Do not use with stainless steel piston rod.

Ordering code

13 - -.Ø.stroke.- -.B

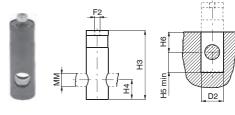


Piston rod lock bracket



Piston rod lock and housing

Do not use as safety device

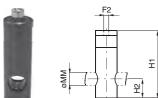


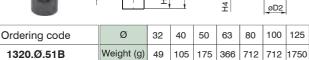
Ordering code

1260.Ø.51B (Ø12...Ø25)

1320.32.51B (Ø32)

Ø	12	16	20	25	32
Weight (g)	22	22	55	55	55





윋

Table of dimensions (series 1200)

Bore	AM	BE	D1	D2	F2	H1	НЗ	H4	H5	H6	KK	L1	L2	L3	MM	sw	WF
12	16	M16x1,5	20	16	M5	35	35	10	11	10	M6x1	42	21	12	6	20	55
16	16	M16x1,5	20	16	M5	35	35	10	11	10	M6x1	42	21	12	6	20	55
20	20	M22x1,5	38	20	M5	64	62	17,5	19	18	M8x1,25	58	24	23	8	27	73
25	22	M22x1,5	38	20	M5	64	62	17,5	19	18	M10x1,25	58	24	23	10	27	77
32	20	M30x1,5	39,5	20	M5	64	62	17,5	18,5	18	M10x1,25	60	26	22	12	35	76,5

Table of dimensions (series 1300)

			`		,																
Bore	AM	В	D2	D3	F2	Н	H1	H2	НЗ	H4	KK	L2	L3	L7	L8	MM	RT	T1	T2	TG	WH
32	22	30	20	30,5	M5	67	62	17,5	18	18,5	M10x1,25	58	10	45	31,5	12	M6	13	8	32,5	74
40	24	35	24	35	G 1/8"	86	83	22	22	23	M12x1,25	65	10	50	36	16	M6	13	8	38	85
50	32	40	30	40	G 1/8"	105	100	25	25	26	M16x1,5	82	12	60	45,5	20	M8	16	15	46,5	107
63	32	45	38	45	G 1/8"	121	116	30	30	31	M16x1,5	82	12	70	49,5	20	M8	16	15	56,5	107
80	40	45	48	45	G 1/8"	164	155	36	36	37	M20x1,5	110	20	90	61	25	M10	20	18	72	126
100	40	55	48	55	G 1/8"	172	155	36	36	37	M20x1,5	115	23	105	65	25	M10	20	18	89	143
125	54	60	65	60	G 1/8"	210	195	56	55	56	M27x2	167	45	140	86.5	32	M12	30	22	110	187

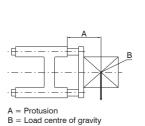


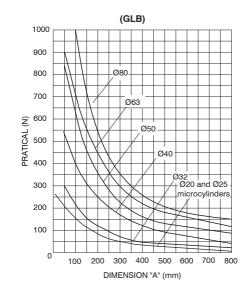
Series 1260 - 1320 Linear guiding units for ISO 6432 microcylinders and ISO 15552 cylinders

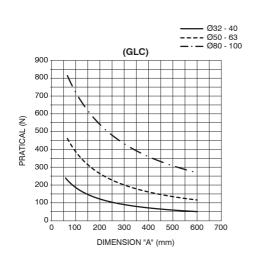
Construction characteristics

Body	sintered bronze bushings : anodised aluminium recirculating ball bearings guides : aluminium alloy black painted
Bushings	sintered bronze or recirculating ball bearing guides
Wipers	oil resistant NBR rubber
Guiderods	sintered bronze bushings : C43 chromed steel recirculating ball bearings guides : tempered and chromed steel
Plate	zinc plated steel
Mounting block	zinc plated steel

Loading diagram based on dimension "A"







Use and maintenance

Follow the indication of the above diagram as far as loads are concerned. A large quantity of grease is placed between the two wipers during assembly, therefore the linear control units should not require special maintenance.

Linear guiding units for ISO 6432 microcylinders with sintered bronze rod bushings

Coding: 1260.Ø.stroke.GLB

(Microbore cylinders ISO 6432 must be ordered separately)



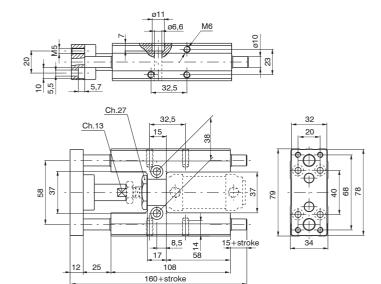
Standard strokes

Ø20 100 - 150 - 200 mm **Ø25** 100 - 150 - 200 - 250 mm

On request are available strokes up to: 1000 mm

Weig	ht (g)
stroke 100	970
each 50 mm	60

Sensors and clamps: standard sensors and clamps are used





Linear guiding units for ISO 15552 cylinders with sintered bronze rod bushings

Coding: 1320.Ø.stroke.GLB (Cylinders must be ordered separately)



Standard strokes

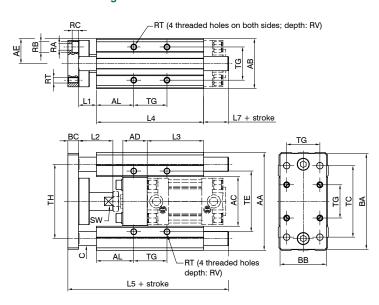
Ø32 100 - 150 - 200 - 250 - 300 mm

Ø40 100 - 150 - 200 - 250 - 300 - 350 mm

Ø50 100 - 150 - 200 - 250 - 300 - 350 - 400 - 450 mm Ø63 100 - 150 - 200 - 250 - 300 - 350 -400 - 450 - 500 mm

Ø80 100 - 150 - 200 - 250 - 300 - 350 - 400 - 450 - 500 - 550 mm

On request are available strokes up to: 2800 mm



Sensor clamps and brackets for 1319-1320 series:

Use standard sensors and brackets on the rear and following special brackets on front of cylinders for use sensors codes 1500._, RS._, HS._which have the following ordering codes: 1320.AGL sensor bracket for cylinders Ø32 and Ø40

-RT (4 threaded holes on both sides; depth; RV)

1320.BGL sensor bracket for cylinders Ø50 and Ø63

1320.CGL sensor bracket for cylinders Ø80

Weight (g)									
Bore	32	40	50	63	80				
stroke 100	1720	2900	4700	6000	11300				
each 50mm	91	159	159	250	380				

Linear guiding units for ISO 15552 cylinders with recirculating ball bearings guides

Coding: 1320.Ø.stroke.GLC (Cylinders must be ordered separately)



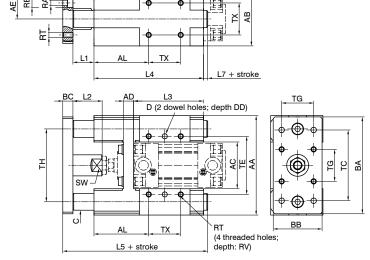
Standard strokes

Ø32 100 - 150 - 200 - 250 - 300 mm Ø40 100 - 150 - 200 - 250 - 300 - 350 mm

Ø50 100 - 150 - 200 - 250 - 300 - 350 -400 - 450 mm Ø63 100 - 150 - 200 - 250 - 300 - 350 - 400 - 450 - 500 mm

Ø80-Ø100 100 - 150 - 200 - 250 - 300 - 350 -400 - 450 - 500 - 550 mm

On request are available strokes up to: 2800 mm



Sensor clamps and brackets for 1319-1320 series:

Use standard sensors and brackets on the rear and following special brackets on front of cylinders for use sensors codes 1500._, RS._, HS._ which have the following ordering codes: 1320.AGL sensor bracket for cylinders Ø32 and Ø40

1320.BGL sensor bracket for cylinders Ø50 and Ø63

1320.CGL sensor bracket for cylinders Ø80

Bore	32	40	50	63	80	10
stroke 100	3100	3050	6350	6200	155	500
each 50mm	24	16	38	35	45	55

Weight (g)

Table of dimensions

	Bore	AA	AB	AE	AC	AD	AL	ВА	ВВ	ВС	С	ØD	DD	RA	RB	RC	RT	RV	TE	TC	TG	TX	TH	L1	L2	L3	L4	L5	L7	SW
	32	97	49	28,5	50	24	44,7	93	45	12	12			6,6	11	6,5	M6	12	61	78	32,5	32,5	74	25	39	76	125	187	25	15
	40	115	58	29	57,5	28	48	112	55	12	16			6,6	11	6,5	M6	14	69	84	38	38	87	25	44	81	140	207	30	15
GLB	50	137	70	35	69,5	34	52,2	134	65	15	20	/	/	9	15	9	M8	16	85	100	46,5	46,5	104	25	48	79	150	225	35	22
	63	152	85	42,5	84,5	34	55,7	149	80	15	20			9	15	9	M8	16	100	105	56,5	56,5	119	25	48	111	182	242	20	22
	80	189	105	52,5	106	34	66	180	100	20	25			11	18	11	M10	20	130	130	72	72	148	25	53	128	215	302	42	27
	32	118	62	30	51	12	65	115	58	12	20	6	12	6,5	11	6,5	М6	12	69	84	38	38	84	25	35	83	130	172	5	20
	40	118	62	30	55,5	12	65	115	58	12	20	6	12	6,5	11	6,5	М6	12	69	84	38	38	86,5	25	35	83	130	172	5	20
GLC	50	155	85,5	42,5	70	16	80	153	80	15	25	6	12	9	15	9	M8	16	100	112	56,5	46.5	112	25	35	106,5	165	210	5	24
	63	155	85,5	42,5	78	16	80	153	80	15	25	6	12	9	15	9	M8	16	100	112	56,5	46.5	116	25	35	106,5	165	210	5	24
	80-100	214	131	66,5	122	39,5	115	213	130	15	30	8	13	11	17	10,5	M10	15	176	176	89	86	168	20	55	160,5	260	300	5	24



Shock absorbers

Series 6900

Series 6900

Operational characteristics

Code	Max. pov	ver (Nm)	Return force	Operating temperature	Weight
Code	For cycle	For hour	netuililoice	Operating temperature	Weight
6900.A	4	14400	2,5 6 N		10 g
6900.B	15	24000	3,6 8 N		20 g
6900.C	30	50000	13 23 N	-20°C 80°C	50 g
6900.D	100	76500	12 23 N	1	140 g
6900.E	390	175500	14 31 N		340 g

Shock absorbers

Coding: 6900.

	THREAD
	A = Thread M8x1
	B = Thread M10x1
•	C = Thread M14x1,5
	D = Thread M20x1,5
	E = Thread M27x1,5



Overall dimensions

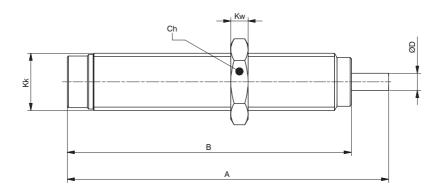


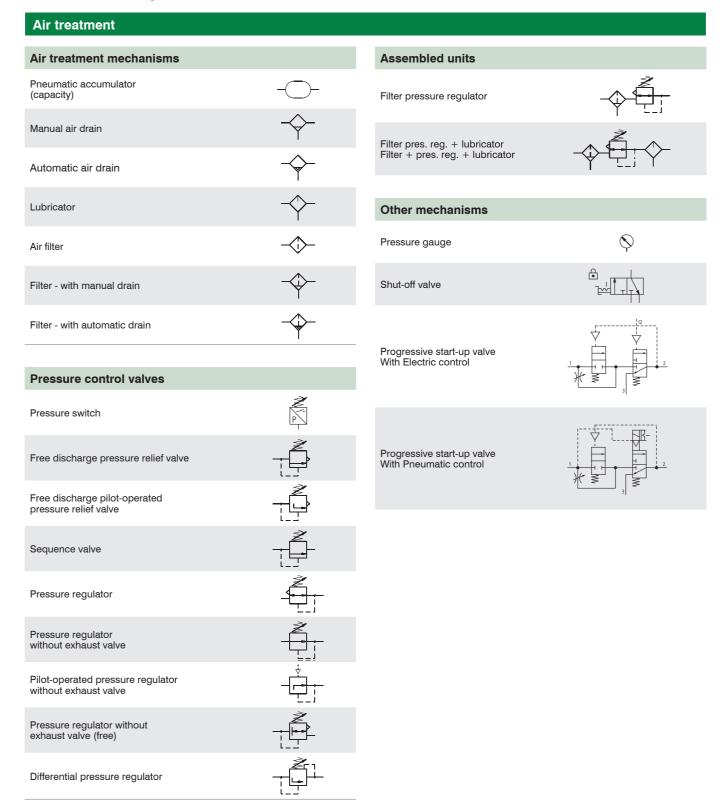
Table of dimensions

Code	Α	В	Ch	D	Kk	Kw
6900.A	51	44	11	2,5	M8x1	3
6900.B	56	49,5	13	3	M10x1	3
6900.C	79	69	17	4	M14x1,5	5
6900.D	107	88	24	6	M20x1,5	6
6900.E	126,5	108,5	30	8	M27x1,5	8



Appendix

Pneumatic symbols



Valves and solenoid valves

Terms and descriptions

The connections to the inlet and out lets of the valves can be of two types:

The connections to	of the fillet and out lets of the valves can be of two types.
Main connections	- supply connection identified with number 1
	- consumption connection identified with number 2 and 4
	- exhaust connection identified with number 3 and 5
Pilot connections	- repositioning connection on 2/2 & 3/2 ways valves identified with number 10
	- switching connection on 2/2 & 3/2 ways valves and repositioning connection on 5/2 & 5/3 ways valves identified with number 12
	- switching connection on 5/2 & 5/3 ways valve identified with number 14

Appendix

Pneumatic symbols

Switching: is the process that changes the state of a valve from rest position to actuated position and is achieved by means of a mechanical, pneumatic or electric signal.

Repositioning: is the process that changes the valve state from actuated back to rest position and is achieved by means of an external mechanical (spring), pneumatic (differential) or electric signal.

Switching and Repositioning

Ways: indicated the number of connections on the valve body and on the pneumatic diagram.

Positions: indicates the number of positions achieved by the valve and corresponds to the number of squares on the pneumatic simple.

Function: indicates the valve working diagram at rest condition and corresponds to the right square in the pneumatic scheme.

Valves symbols											
Way	Pos.	Function	Symbol								
2	2	Normally closed									
2	2	Normally open	T 1								
3	2	Normally closed									
3	2	Normally open									
5	2	Separated exhaust connections									
5	3	Closed centres									
5	3	Open centres									
5	3	Pressured centres									

Complementary valves	
Throttle valve	$\overline{\boxtimes}$
Bidirectional flow regulator	*
Unidirectional flow regulator	
Quick exhaust valve	
Shuttle valve	
Silencer	-53
Non-return valve without spring	->-
Non-return valve with spring	₩>—
Non-return valve controlled during closing	1_
Non-return valve controlled during opening	

Switching and Repositioning	
Mechanical	
Plunger	
Sensitive plunger	≕aL
Roller	<u> </u>
Unidirectional roller	%
Sensitive roller	
Pedal	Æ
Pedal - spring return	<u></u>
Push Button	E
Sensitive push button	
Push button - two positions-	Į.
Lever	¥
Lever - spring to center	<u> </u>
Sensitive lever	₽
Two position mechanical stop	<u>_</u>
Three position mechanical stop	<u>_</u>
Spring	\supseteq_{w}
Pneumatics	
Pneumatic	>-[
Pneumatic -return to center	
Pneumatic - depressurised	-√ <u></u> [
Differential (pneumatic spring)	k
Differential external pilot	la la
Sensitive differential]
Electrical	
Solenoid	囯
Bistable solenoid	
Solenoid (internal pilot)	7 C
Solenoid (external pilot)	7 >C
Solenoid - spring to center	W W



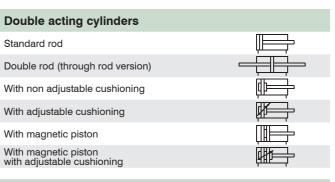
Valves and solenoid valves (following)

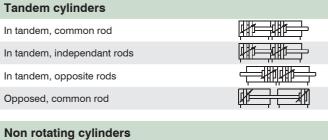
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+ +
o <u></u>

One-way rotating intake	$\overline{\leftarrow}$
Three-way rotating intake	#
Closed air intake	→ ×
Air intake with connection	×-
Quick coupling connection without non-return valve	→ ←
Quick coupling connection with non-return valve	→
Air exhaust unthreaded connection	\Box
Air exhaust threaded connection	Ţ

Cylinders



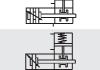






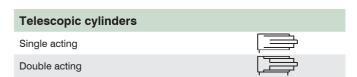
Cylinders for piston rod lock

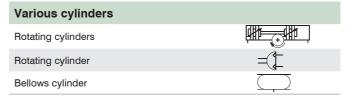
With magnetic piston with adjustable cushioning



With non magnetic piston with adjustable cushioning

Rodless cylinders With magnetic piston With adjustable cushioning Cable cylinders with magnetic piston Cable cylinders with non magnetic piston





Pressure boosters	
Air-Air intensifier	У
Air-oil intensifier	У
Hydropneumatic accumulator	4 •

Air quality

Compressed air is a fundamental element for the operation of various modern industrial machines.

Different compressed air purity classes are required depending on its application and the industrial sector in which it is used.

Generally, it must be free of pollutants (dusts, water and oil) in order to maintain the characteristics of the final product and guarantee safety. Standard ISO 8573-1:2010 specifies the permissible level of pollution for every cubic meter of compressed air.

The pollutants that have been analysed are grouped in three macro-families:

· Dusts / Solid particles

Each cubic meter of compressed air could contain a maximum quantity of particles in function of its dimension.

Water

It could be present in liquid or gaseous state.

- Oil

Each cubic meter of compressed air can contain a maximum oil quantity in any of its form: liquid, aerosol, or vapour.

To uniquely determine the purity of compressed air, it is necessary to identify a numeric value for each of the three groups of pollutants illustrated above.

In general, industrial machines require compressed air with purity class of ISO 8573-1:2010 [1:4:1] of which:

- the first number (1) refers to solid particles with maximum concentration in proportion to their size but still less than 0.1 mg/m³;
- the second number (4) refers to dried air with dewpoint temperature less than +3°C;
- The third number (1) refers to residual oil content less than 0.01 mg/m³.

For a correct operation of our devices, we require compressed air with purity class of **ISO 8573-1:2010 [7:4:4]** unless otherwise indicated. For example, our proportional regulators require compressed air with a purity class of ISO 8573-1:2010 [1:4:1]. According to standard ISO 8573-1:2010 pollutant levels could be summarized in the following table:

			Compressed air purity ci	asses according to ISO	8573-1:2010		
		Particl	es		Humidity and	l Liquid Water	Total Oil
Class		n number of particles per cus a function of particle size	Mass concentration ^b	Pressure dewpoint [°C]	Concentration of liquid water ^b	Concentration of total oil ^b (liquid, aereosol and vapour)	
	$0,1 \ \mu \text{m} < d \le 0,5 \ \mu \text{m}$	$0.5 \mu \text{m} < d \leq 1.0 \mu \text{m}$	$1,0 \mu \text{m} < d \leq 5,0 \mu \text{m}$	C _p [mg/m³]	domponia [o]	C _w [g/m³]	[mg/m³]
0		As	specified by the equipeme	ent user or supplier and	more stringent than (Class 1	
1	≤ 20000	≤ 400	≤ 10	-	≤ -70	-	≤ 0,01
2	≤ 400000	≤ 6000	≤ 100	-	≤ -40	-	≤ 0,1
3	-	≤ 90000	≤ 90000 ≤ 1000		≤ -20	-	≤ 1
4	-	- ≤ 10000		-	≤ +3	-	≤ 5
5	-	- ≤ 100000		-	≤ +7	-	-
6		-		$0 < C_p \le 5$	≤ +10	-	-
7	-			$5 < C_p \le 10$	-	$C_w \le 0.5$	-
8		-		-	-	$0.5 < C_w \le 5$	-
9		-	•	-	-	$5 < C_w \le 10$	-
Х		-		C _p > 10	-	C _w > 10	>5

At reference condition:

- Air temperature 20°C

- Absolute air pressure 100 kPa = [1 bar] (a)

Relative water vapour pressure 0

Dimensioning

Flow characteristics

Each cylinder requires, in order to generate specific forces and operate at the needed speed, specific air flow through the control valve. It is therefore necessary to know and understand the laws that regulate the flow through a valve; and therefore the relation between pressure, pressure drop and flow rate. Only by doing so is it possible to determine whether a valve is capable of supplying the required flow rate to a cylinder at a given inlet pressure and with a reasonable pressure drop.

In order to carry out these analyses it is necessary to work with precise functional data; it is not sufficient to know the valve port size. This data is presented in different ways depending on the different applicable, standards and various experimental measurments methods.

The figures are mainly coefficients which must be used in specific equations, with which we can estimate the valve flow rate. In order to understand the meaning of these equations it is necessary to examine the flow inside a pneumatic valve. For example, let us consider the following conditions: a valve supplied with an absolute pressure P1 and with a flow regulator connected downstream.

Starting condition - flow regulator closed

- no flow rate (Q=0)
- Upstream and downstream pressure are identical (P2=P1)

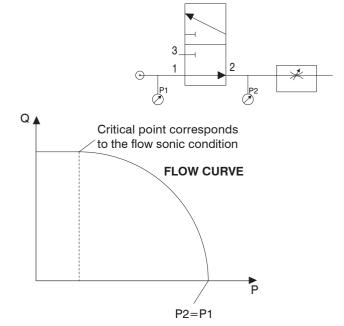
Intermediate conditions - opening flow regulator

By progressively opening the flow regulator the pressure P2 will decrease and the flow rate increase up to a critical point at which the flow rate becomes constant even if the flow regulator is opened further..

This critical point corresponds to the sonic condition of the flow.

Final condition - flow regulator completely open

- maximum flow rate (constant from critical point)
- downstream pressure P2=0



On a varying P1 the curves maintain the same form and only shift into a higher or lower flow rate area depending on whether P1 has increased or decreased. The area of interest in pneumatic valve applications is the subsonic zone, just before the critical flow point is reached. This zone is expressed in a number of different ways which average the effective flow pattern enabling simple description of the flow using experimental coefficients.

Valve coefficients "C" and "B"

CETOP RP50P recommendation (derived from ISO 6358 standard) expresses flow rate in function of two experimental coefficients:

- conductance C
- critical pressure ratio b.

Conductance C = Q*/P₁ is the ratio between maximum flow rate Q* and absolute inlet pressure P₁ under sonic flow condition at a temperature of 20°C. Critical ratio $b = P^*2/P_1$ is the ratio between the output absolute pressure P_2 and the inlet absolute pressure P_1 at which the flow becomes sonic. The expression that represents an elliptic approximation of the relationship between pressure and flow follows:

$$Q_N = C \cdot P_1 \cdot K_t \cdot 1 - \left(\frac{r - b}{1 - b}\right)^2$$
 [1]

is the flow rate in dm/s at normal condition: 1,013 bar and 20°C; QN (dm³/s) where:

is the valve conductance;

P₁ (bar) is the inlet absolute pressure;

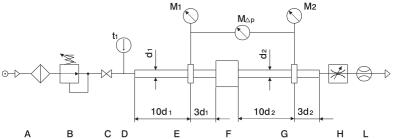
is the ratio between downstream and upstream pressure (P₂/P₁);

is the pressures critical ratio;

is a corrective factor that consider the absolute inlet temperature T₁;

 $T_1 = 273 + t_1$ (°K) is the absolute temperature (t_1 is the temperature in °C).

The experimental determination of the valve coefficient C & b is carried out with compressed air following standardised procedures and according to the scheme below.



CETOP test circuit

- Compressed air generator.
- В Pressure regulator to set upstream pressure P1.
- С Shut off valve.
- D Temperature sensor to check upstream temperature t 1, positioned in a low velocity area.
- E Pipe where the upstream pressure is measured.
- G Pipe where the downstream pressure is measured.
- Н Flow regulator to adjust the downstream pressure P2.
- Flow meter.
- M1,M2 Pressure measuring equipment for upstream and downstream.
- $M\Lambda P$ Pressure drop measuring equipment assuming P1-P2< 1 bar.

Pipes E & G, used to measure the valve upstream and downstream pressure, must be sized according to the standard's specifications and change in size depending on the valve port sizes; the position of the connection at which the measurements are taken depends on the pipe's inner diameter.

Conductance C is determined with the following equation, measuring the critical flow rate Q* through the valve, where upstream pressure P1 is constant and greater than 3 bar.

$$C = \frac{Q^*}{P_1 \cdot K_t}$$
 [2]

Pressure critical ration **b** can be calculated using the following equation:

$$b = 1 - \frac{\Delta P}{P_1 \left[1 - \sqrt{1 - \left(\frac{Q'}{Q^*} \right)^2} \right]}$$
 [3]

Considering a given constant pressure P_1 it is necessary to proceed measuring the flow rate Q' corresponding to a pressure drop $\Delta P = P_1 - P_2 = 1$ bar. Equation 3 is used to calculate the critical ratio as it is difficult to experimentally identify the exact pressure P*2 at which the flow becomes sonic. The values of both the conductance C and the critical ratio b are experimentally calculated and are the average of the results obtained. Equation [1] is used to calculate the flow in subsonic conditions P₂>b·P₁ when values C; b and the valve working conditions (P₁, P₂, T₁) are known. Under sonic conditions, $P_2 \le b \cdot P_1$ the equation can be simplified and the maximum flow rate can be calculated as follows:

$$\mathbf{Q}^* = \mathbf{C} \cdot \mathbf{P}_1 \cdot \mathbf{k}_t \tag{4}$$

Hydraulic coefficient Kv

The hydraulic coefficient allows, using the equation. The calculation of the flow rate of a fluid through a valve.

$$Q = Kv \sqrt{\frac{\Delta p}{\rho}} \qquad (I/min)$$
 [5]

where:

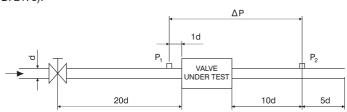
is the fluid flow rate in I/min

is the pressure drop inside the valve calculated in bar (P1 - P1)

is the fluid density calculated in Kg/dm3

is the hydraulic coefficient calculated in

Using these measurement units the flow rate coefficient Kv represents the flow rate (in liters) of water across the valve with a pressure drop of 1 bar. The measurement are carried out using the standardised circuit below on which the connection ports are positioned according to the pipe inner bore size (norm VDE/VDI 2173).



A

Hydraulic circuit

In some cases flow rate is measured in m³/h which correspond a Kv measured

To obtain Kv expressed in $\frac{1}{\min} \left(\frac{kg}{dm^3 \bullet bar} \right)^{\frac{1}{2}}$ it is sufficient to multiply the Kv value expressed in $\frac{m^3}{h} \left(\frac{kg}{dm^3 \bullet bar} \right)^{\frac{1}{2}}$ By the coefficient 16,66.

The coefficient kv is perfectly suitable to express the flow rate of fluids but only gives approximate values in case of compressed air. Experiences gained in hydraulic environments can be inferred in the pneumatic field, bearing in mind the difference in density, and assuming that the air flow will generate the same pressure drops and flow reductions as water It is therefore possible to calculate reliable values for compressed air using flow coefficients Kv obtained from experiments with water.

To define the flow rate Qn through a valve at a given constant absolute inlet pressure P_1 , regardless of fluctuations of the downstream absolute pressure P_2 , refer to the equation below:

$$Q_{N} = 28,6 \cdot K_{v} \sqrt{P_{2} \cdot \Delta P} \cdot \sqrt{\frac{T_{n}}{T_{1}}}$$
 [6]

where: Qn is the flow rate in volume I/min;

 K_{V} is the hydraulic coefficient $\frac{I}{min} \left(\frac{kg}{dm^{3} \cdot bar}\right)^{\frac{1}{2}}$

 T_{n} is the absolute reference temperature

T₁ is the inlet absolute temperature in °K;

P2 is the downstream absolute pressure in bar;

 ΔP is the pressure drop P_1 - P_2 in bar.

Equation [6] is real up to $\Delta P=\,\frac{P_1}{2}$ therefore $P_2=\,\frac{P_1}{2}$

For lower P2 values the flow rate is considered to be constant, corresponding to the sonic flow rate Q*n given by the following equation:

$$Q^*_N = 14.3 \cdot K_V \cdot P_1 \sqrt{\frac{T_n}{T_*}}$$
 [7]

The nominal flow rate Q_{Nn}

The nominal flow rate is the flow volume (at normal conditions) that passes through a valve with an upstream pressure P_1 =6bar (7 bar absolute pressure) and a pressure drop of 1 bar, corresponding to a downstream relative pressure P_2 of 5bar (6 bar absolute pressure).

Normally the nominal flow rate is expressed in I/min and can be easily deduced from an experimental flow curve drawn for a upstream pressure of 6 bar (relative). Nominal flow rate can be useful for a preliminary assessment of the performances of different valves but in reality can be used only if the working conditions are the same as those mentioned before. In order to be able to compare valve charactersistics which are expressed in different coefficients it is possible to use conversion equations.

Given the C and b coefficient, it is possible to determine the nominal flow rate using the following equation:

$$Q_{Nn} = 420 \cdot C \cdot \sqrt{1 - \left(\frac{0.857 - b}{1 - b}\right)^2}$$
 [8]

where:

$$Q_{Nn} = \text{is in I/min and C in} \frac{dm^3}{s \cdot \text{bar}}$$

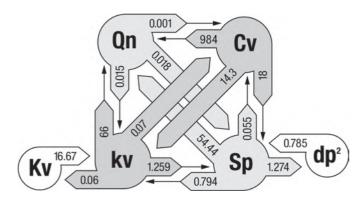
The correlation between the hydraulic coefficient K_V and the corresponding nominal flow rate is as follows:

where:

$$Q_{Nn} = 66 \, \text{Ky}$$

$$Q_{Nn} \text{ is in I/min and } K_V \text{ in } \frac{I}{min} \left(\frac{kg}{dm^3 \bullet bar} \right)^{1/2}$$

Conversion table

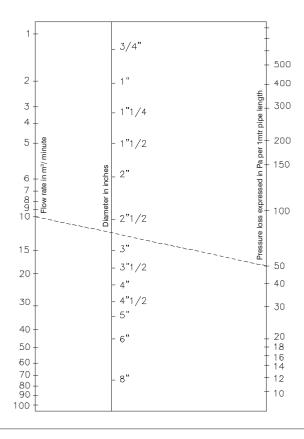


Qn	Nominal flow rate	NI/min			
kv		l/min			
Kv	Hydraulic coefficient	m³ /hours			
Cv		USA gallons/min			
Sp	Nominal inner section area	mm²			
dp²	Nominal diameter*	mm²			
dp²	Nominal diameter*	mm²			

^{*}to calculate the diameter dp (mm²) square root of dp²

Pipes flow resistence

The C factor (I/sec) indicates the pipe flow capacity and is the ratio between the maximum flow rate and absolute pressure (ISO 6358). The flow capacity progressively decreases with increasing pipe length, due to the air friction on the pipe inner surface increasing the pressure drop. Therefore the longer the pipe the smaller the flow rate. The chart below shows the flow rate characteristics of different pipe sizes (i/d and o/d) in function of the length.

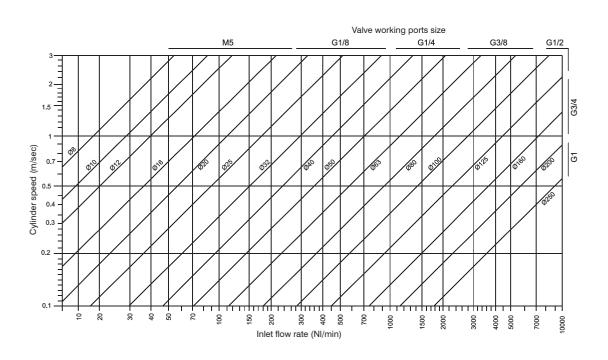


Valve sizing

The choice of the correct size valve is essential in order to ensure that the cylinder to be controlled will perform as expected. It is therefore necessary to know the cycle time to be achieved and to calculate the coefficient T which will be used as multiplier for the air consumption value previously calculated. The result of this equation, expressed in NI/min and multiplied by a safety factor of 1.2, corresponds to the minimum flow rate needed (at standard conditions 6 bar supply and 5 bar on the consumption connection) to operate the cylinder at the required rate.

$$T = \ \frac{60 \ Qn}{cycle \ time} \ = T \ x \ Consumption$$

It is also imortant to ensure that the pipes used to connect the valve to the air supply and to the cylinder do not affect the flow rate in any way. The pipe inner bore must therefore be at least 1.5 times the diameter of the valve nominal orifice size. The choice of the fittings is also very important, the inner bore must be equal or greater than the pipe I/D. The diagram below shows the flow rate required to operate different size cylinders atvarying speeds and also the valve connection sizes.



Cylinder air consumption

The air consumption corresponds to the volume of air that the cylinder uses in a complete cycle (stroke out and back in) at a specific pressure.

Consumption = $Pa \times C \times (A+b)$

Pa= Absolute pressure (bar) C= Cylinder stroke (dm) A= see tab. 1 (dm²) b= see tab. 2 (dm²)

Air consumption is measured in Normal-liters (NI) which correspond to the volume that a specific quantity (mass) of gas would fill at atmospheric pressure.

Calculation example:

ISO 15552 cylinder - 1319 series: Supply pressure 6 bar (Pa=7 bar) Stroke 50mm (C=0,5 dm) Ø63 (A=0,31157 dm²) Rod Ø=20 mm (b=0,28017 dm²)

Consumption = 7 (bar) \times 0,5 (dm) \times (0,31157+0,28017) = **2,072 NI**

(In order to calculate the air consumption for a specific number of cycles it is sufficient to multiply the above value for the number of cycles)

Piston surface area
А
0,00502 dm²
0,00785 dm²
0,01130 dm²
0,02010 dm²
0,03140 dm²
0,04906 dm²
0,08038 dm²
0,12560 dm²
0,19625 dm²
0,31157 dm²
0,50240 dm²
0,78500 dm²
1,22656 dm²
2,00960 dm ²
3,14000 dm²

tab.1

Surface difference cylinder piston / rod Ø						
Ø cylinder - Ø rod	b					
Ø8 - Ø4	0,00377 dm ²					
Ø10 - Ø4	0,00659 dm ²					
Ø12 - Ø6	0,00848 dm²					
Ø16 - Ø6	0,01727 dm ²					
Ø20 - Ø8	0,02638 dm²					
Ø25 - Ø10	0,04121 dm²					
Ø32 - Ø12	0,06908 dm²					
Ø40 - Ø14	0,11021 dm²					
Ø40 - Ø16	0,10550 dm²					
Ø40 - Ø18	0,10017 dm²					
Ø50 - Ø14	0,18086 dm²					
Ø50 - Ø18	0,17082 dm²					
Ø50 - Ø20	0,16485 dm²					
Ø63 - Ø20	0,28017 dm²					
Ø63 - Ø22	0,27357 dm²					
Ø80 - Ø22	0,46441 dm²					
Ø80 - Ø25	0,45334 dm²					
Ø100 - Ø25	0,73594 dm²					
Ø100 - Ø30	0,71435 dm²					
Ø125 - Ø30	1,15591 dm²					
Ø125 - Ø32	1,14618 dm²					
Ø160 - Ø40	1,88400 dm²					
Ø200 - Ø40	3,01440 dm ²					
tab.2						

tab.2

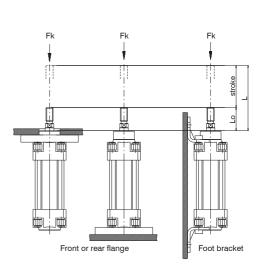
Allowed axial load (combined bending and compressing load)

This is the maximum load that can be applied axially on the rod tip. Above this value the rod might bend under compression. This value depends on a number of factors such as load size, rod diameter, the distance at which the load is applied (bending and compressing length L) and the conditions under which the load is applied (cylinder mountings). Among the possible conditions, the following three are the most common.

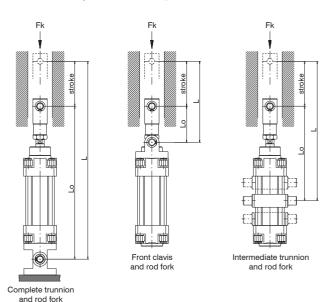
Appendix

Dimensioning

CASE 1 Fixed cylinder and free load



CASE 2 Cylinder fixed with pin and loosen load



The maximum axial load can be calculated in two ways:

In an empirical way (see equations) or by checking the following diagram which shows the worst possible conditions (case 1 & 2) For all other possible mountings alternatives the axial load will surely be higher.

$$Fk = \frac{\pi^3 x E x d^4}{64 x L^2 x C} (N)$$

$$\mathbf{d} = \sqrt[4]{\frac{\mathbf{Fk} \times \mathbf{64} \times \mathbf{L}^2 \times \mathbf{C}}{\mathbf{\pi}^3 \times \mathbf{E}}} (cm)$$

$$L = \sqrt{\frac{\pi^3 \mathbf{x} \mathbf{E} \mathbf{x} \mathbf{d}^4}{\mathbf{Fk} \mathbf{x} \mathbf{64} \mathbf{x} \mathbf{C}}} (cm)$$

Example: Axial load verification

Cylinder ø80 mm Rod diameter ø20 mm Stroke 600 mm Mounting CASE 2 intermediate trunnion: L0=290 mm Load 2000 N

L (distance) = 29+60=89 cm

 $\mathbf{Fk} = (\pi^3 \times 2.1 \times 10^7 \times 2^4) : (64 \times 89^2 \times 5) = 4104 \text{ N}$

(Above the 2000 N applied)

The same result can be obtained using the below diagram: following the bending and compression distance line relative to 900 mm up to the intersection with the 20 mm Ø line we obtain 4000 N.

Example: Rod diameter sizing

E = rod material coefficient of elasticity (N/cm²) (steel=2,1x107 N/cm2)

d = rod diameter (cm)

L = bending and

compression distance (cm)

C = safety factor (from 2,5 to 5)

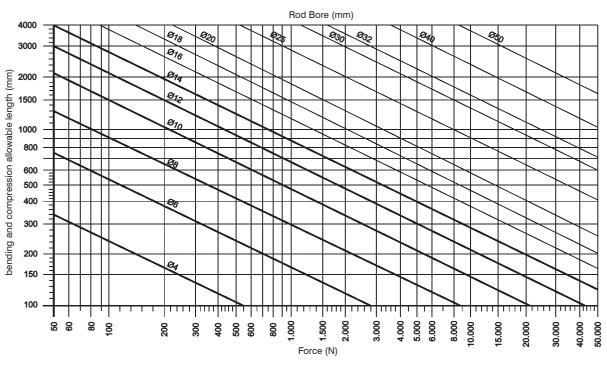
Considering the same conditions as in the above case we need to determinate the rod diameter suitable to withstand a 4000N load

$$d = \sqrt{(4000 \times 64 \times 89^2 \times 5) / (\pi^3 \times 2.1 \times 10^7)} = 2 \text{ cm}$$

The diameter to choose is the next one up: Ø25 mm

Also this second example can be resolved using the below diagram: following the bending and compression distance line relative to 900mm up to the intersection with the 4000 N maximum load we obtain Ø20 mm.

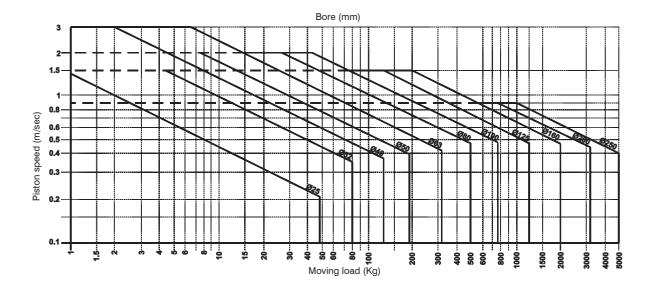
With the third equation or using the diagram it is possible to calculate the bending and compression distance.



End of stroke cushioning capability

The function of the end of stroke cushioning is to reduce the kinetic energy generated by movement of the load and to prevent high speed impact between the piston and end caps that could compromise the unit functionality. The use of non-cushioned cylinders is not recomended on high speed applications unless external means of deceleration (such as dampers) are used.

The maximum load that can be cushioned depends on the speed of the unit and the cylinder cushioning capacity. The chartbelow shows the values relative to the ISO 15552 series cylinders considering the out stroke movement and a supply pressure of 6 bar. The acceptable values for any diameter are those found below each size line.



Cylinder sizing

In order to properly size a cylinder it is necessary to consider the following parameters:

Force generated: calculated in function of the piston area and of the pressure that acts upon it.

$$F = area x pressure$$
 $(daN) = (cm2) x (bar)$

The value is theoretical and needs to be reduced by approximately 10-15% in order to compensate for the effects of friction. We must also consider that the force generated during the return stroke (traction) is lower, as the area on which the pressure acts is reduced by the presence of the rod.

Weight of the load: the force generated by the cylinder must be sufficient to move the load in the desired direction within the specified time (cycle time). The load ratio (RdC) must not exceed 70%.

 $\frac{\text{Needed force (load weight)}}{\text{Available force (generated)}} \text{ x } 100 = \text{RdC}$



Load position

Vertical lift (pull upwards): the real force generated by the cylinder must be sufficient to counterbalance the load and to accelerate it.

Appendix

Dimensioning

Weight to be lifted 120Kg Working pressure 6 bar Load ratio 70%

Using the load ratio equation it is possible to calculate the force needed to lift the load:

Available force =
$$\frac{\text{Load}}{\text{Rdc}}$$
 x 100 the result is 171,4 daN

A 63 bore cylinder which generates a theoretical force of 187 daN is suitable for the application.

A similar load ratio allows, using unidirectional flow regulators, good speed control.

When the speed is below 20 mm/sec. It is difficult to properly control the movement.

The load ratio must be reduced to 50% on slow speed applications. In these conditions, or where constant movement is required, the use of a hydraulic speed control unit is recommended. On applications were the load is moving downwards, thereby increasing the force generated by the actuator, it is usually necessary to use flow regulators.

Horizontal or inclined movement: If the load is supported and the working position is horizontal, it is necessary to multiply the needed force by the coefficient of friction.

The coefficient of friction m varies according to the material. For example considering m= 0.4 Weight to be moved 120 Kg Pressure 6 bar Load ratio 70%

Solving the load ratio equation it is possible to calculate the available force:

Available force
$$=$$
 $\frac{\text{Load}}{\text{Rdc}}$ x 100 x m which, in the above conditions is 68,57 daN

A Ø40 bore cylinder that generates a theoretical force of 75.4 daN is suitable for the application. In cases of inclined application the required force increases according to the angle. Also in these conditions it is necessary to multiply the needed force by a coefficient of friction.

Theoretical force -Push- (N) - rod moving out											
Bore	Push area		Feeding pressure (bar)								
(mm)	(mm²)	1	2	3	4	5	6	7	8	9	10
Ø6	28	2,5	5,5	8	11	13,5	16,5	19	22	24,5	27,5
Ø8	50	4,5	9,5	14,5	19,5	24,5	29,5	34	39	44	49
Ø10	79	7,5	15	23	30,5	38	46	53,5	61,5	69	76,5
Ø12	113	11	22	33	44	55	66	77	88	99	110
Ø16	201	19	39	59	78	98	118	137	157	177	197
Ø20	314	30	61	92	123	153	184	215	246	277	307
Ø25	491	48	96	144	192	240	288	336	384	433	481
Ø32	804	78	157	236	315	394	472	551	630	709	788
Ø40	1.256	123	246	369	492	615	739	862	985	1.108	1.231
Ø50	1.963	192	384	577	769	962	1.154	1.347	1.539	1.732	1.924
Ø63	3.116	305	611	916	1.222	1.527	1.833	2.138	2.444	2.749	3.055
Ø80	5.024	492	985	1.478	1.970	2.463	2.956	3.448	3.941	4.434	4.926
Ø100	7.850	769	1.539	2.309	3.079	3.849	4.618	5.388	6.158	6.928	7.698
Ø125	12.266	1.202	2.405	3.608	4.811	6.014	7.217	8.419	9.622	10.825	12.028
Ø160	20.096	1.970	3.941	5.912	7.882	9.853	11.824	13.795	15.765	17.736	19.707
Ø200	31.400	3.079	6.158	9.237	12.317	15.396	18.475	21.555	24.634	27.713	30.792
Ø250	49.063	4.811	9.622	14.434	19.245	24.056	28.868	33.679	38.491	43.302	48.113

Surface diffe - Cylinder pisto	
Ø cylinder - Ø rod	b
Ø8 - Ø4	0,377 cm ²
Ø10 - Ø4	0,659 cm ²
Ø12 - Ø6	0,848 cm ²
Ø16 - Ø6	1,727 cm ²
Ø20 - Ø8	2,638 cm ²
Ø25 - Ø10	4,121 cm ²
Ø32 - Ø12	6,908 cm ²
Ø40 - Ø14	11,021 cm ²
Ø40 - Ø16	10,550 cm ²
Ø40 - Ø18	10,017 cm ²
Ø50 - Ø14	18,086 cm ²
Ø50 - Ø18	17,082 cm ²
Ø50 - Ø20	16,485 cm ²
Ø63 - Ø20	28,017 cm ²
Ø63 - Ø22	27,357 cm ²
Ø80 - Ø22	46,441 cm ²
Ø80 - Ø25	45,334 cm ²
Ø100 - Ø25	73,594 cm ²
Ø100 - Ø30	71,435 cm ²
Ø125 - Ø30	115,591 cm ²
Ø125 - Ø32	114,618 cm ²
Ø160 - Ø40	188,400 cm ²
Ø200 - Ø40	301,440 cm ²
tah 2	

tab.2



Single acting cylinder spring initial and final load characteristics

Microbore cylinders ISO 6431 - 1260 series									
	Event envise	Dany anying	Bore						
	Front spring	Rear spring	Ø12	Ø16	Ø20	Ø25	Ø32	Ø40	Ø50
Initial load (N) external spring			9,9	10,8	10,8	7,9	19,7	39,3	39,3
Final load (N) compressed load			26,5	22,6	22,6	49,1	53,0	106,0	106,0

(stroke 0-40 mm)

		Microbore cylind	ers ISO 64	31 - 1280 s	eries "MIR"					
	Front spring	Rear spring	Bore							
			Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32	
Initial load (N) external spring			2,2	2,2	4,0	7,5	11,0	16,5	23,0	
Final load (N) compressed load			4,2	4,2	8,7	21,0	22,0	30,7	30,7	

(stroke 0-50 mm)

	Cylinders ISO 15552 - 1319-20-21 series											
	Front spring	Rear spring	Bore									
			Ø32	Ø40	Ø50	Ø63	Ø80	Ø100				
Initial load (N) external spring			17,2	24,6	51,0	51,0	98,1	98,1				
Final load (N) compressed load			41,7	83,4	114,8	114,8	194,2	194,2				

(stroke 0-50 mm)

	Short stroke compact cylinders											
	Front spring	Rear spring	Bore									
			Ø20	Ø25	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100		
Initial load (N) external spring			7,9	9,9	34,4	34,4	50,1	54,0	117,7	108,9		
Final load (N) compressed load			27,5	26,5	59,9	63,8	79,5	85,4	157,0	134,4		

(stroke 0-10 mm)

	"Europe" Compact cylinders											
	Event envine	Boor onring	Bore									
	Front spring	Rear spring	Ø12	Ø16	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
Initial load (N) external spring			3,9	4,4	4,9	9,8	12,3	16,7	27,5	37,3	59,4	101,3
Final load (N) compressed load			9,3	17,7	18,1	25,5	34,3	44,1	51,0	63,8	99,4	141,9

(Ø12 stroke 0-10 mm - Ø16¸100 stroke 0-25 mm)

Cylinder nuts recommended tightening torque										
Bore size	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100	Ø125	Ø160	Ø200	
Torque (Nm)	8	8	16	16	22	22	30	85	85	



Measure and conversion units

International system of units - table

Size	Name	Symbol
Lenght	Meter	m
Area	square meter	m²
Volume	cubic meter	m³
Force	Newton	N
Mass	kilogram	Kg
Pressure	Pascal	Pa (N/m²)
Work and Energy	Joulle	J (Nm)
Power	Watt	W (J/s)
Time	Second	s
Speed	meter / second	m/s
Acceleration	meter / second ²	m/s²
Flow rate	meter / second ³	m³/s
Temperature	Kelvin	°K
Frequency	Hertz	Hz (1/s)
Electric current	Ampere	А
Voltage	Volt	V (W/A)
Electrical resistance	Ohm	Ω (V/A)
Electric power	Volt Ampere	VA (VA)

Appendix

Measure and conversion units

Measure and conversion units

Lenght	Centimetre (cm)	Meter (m)	Inch (In)	Foot (ft)	Yard (yd)
1 Meter (m)	100	1	39,37	3,281	1,094
1 Inch (In)	2,54	2,54x10 ⁻²	1	8,33x10 ⁻²	0,028
1 Foot (ft)	30,48	0,3048	12	1	0,333
1 Yard (yd)	91,44	0,9144	36	3	1

Area	Square centimetre (cm²)	Square meter (m²)	Square inch (sq in)	Square foot (sq ft)	Square yard (sq yd)
1 Square centimetre (cm²)	1	1x10 ⁻⁴	0,155	1,08x10 ⁻³	1,2x10 ⁻⁴
1 Square meter (m²)	1x10 ⁴	1	1.550	10,764	1,2
1 Square inch (sq in)	6,452	6,45x10 ⁻⁴	1	6,95x10 ⁻³	7,72x10 ⁻⁴
1 Square foot (sq ft)	929	9,29x10 ⁻²	144	1	0,111
1 Square yard (sq yd)	8.361	0,8361	1.296	9	1

Volume	Litre (l=dm³)	Cubic metre (m³)	Cubic inch (cu in)	Cubic foot (cu ft)	Gallon (gal-USA)	Gallon (gal-GB)
1 Litre (I) = 1dm³	1	1x10 ⁻³	61,02	3,53x10 ⁻²	0,2642	0,22
1 Cubic meter (m³)	1.000	1	6,102x10⁴	35,31	264,2	220
1 Cubic inch (cu in)	1,64x10 ⁻²	1,64x10 ⁻⁵	1	5,8x10 ⁻⁴	4,33x10 ⁻³	3,6x10 ⁻³
1 Cubic foot (cu ft)	28,317	2,83x10 ⁻²	1.728	1	7,48	6,23
1 Gallon (gal -USA)	3,785	3,79x10 ⁻³	231	0,1337	1	0,8327
1 Gallon (gal -GB)	4,546	4,55x10 ⁻³	277,4	0,1605	1,2	1

Mass (Weight)	Kilogram (Kg)	Pound (lb)	Hundred-weight USA	Hundred-weight GB
1 Kilogram (Kg)	1	2,205	1,102x10 ⁻³	9,842x10 ⁻⁴
1 Pound (lb)	0,4536	1	5x10 ⁻⁴	4,464x10 ⁻⁴
1 Hundred-weight USA	907,2	2.000	1	0,8929
1 Hundred-weight GB	1.016	2.240	1,12	1

Force	Newton (N)	Kilopound (kgp)	Poundal (pdl)
1 Newton (N)	1	0,102	7,23
1 Kilopound (kgp)	9,807	1	70,93
1 Poundal (pdl)	0,1383	0,0141	1

Pressure	Pascal (Pa)	Bar (bar)	Poundal/ pollice² (psi)	Technical atmosphere (at=kg/cm²)	Atmosphere (atm)	Column of Mercury (mmHg = Torr)	Column of water (mH ₂ O)
1 Pascal (Pa)	1	1x10⁻⁵	1,45x10 ⁻⁴	1,02x10 ⁻⁵	9,87x10 ⁻⁶	7,5x10 ⁻³	1,02x10 ⁻⁴
1 Bar (bar)	1x10⁵	1	14,50	1,02	0,9869	750	10,2
1 Poundal/pollice ² (psi)	6.895	0,069	1	7,03x10 ⁻²	0,06805	51,72	0,703
1 Technical atmosphere (at=kg/cm²)	9,807x10⁴	0,9807	14,22	1	0,9678	735,6	10
1 Atmosphere (atm)	1,013x10⁵	1,013	14,70	1,033	1	760	10,33
1 millimetre of mercury (mmHg = Torr)	133,32	1,34x10 ⁻³	1,934x10 ⁻²	1,36x10 ⁻³	1,316x10 ⁻³	1	1,36x10 ⁻²
1 Metre of water (mH ₂ O)	9.810	9,81x10 ⁻²	1,423	0,1	9,682x10 ⁻²	73,6	1

Work and Energy	Kilocalorie (kcal)	Kilogrammetre (kgm)	Kilowatt (kWh)	Horse power/hr (Hph) non Metric	Joule (J)
1 Kilocalorie (kcal)	1	427	1,163x10 ⁻³	1,561x10 ⁻³	4.190
1 Kilogrammeter (kgm)	2,34x10 ⁻³	1	2,724x10 ⁻⁶	3,653x10 ⁻⁶	9,806
1 Kilowatt-hour (kWh)	860	367.122	1	1,341	3,6x10 ⁵
1 Horsepower/hour-non metric (hph)	641	273.761	0,7457	1	2,685x10 ⁶
1 Joule (J)	2,39x10 ⁻⁴	0,102	2,78x10 ⁻⁷	3,725x10 ⁻⁷	1

Temperature Kelvin (K)		Celsius (°C)	Fahrenheit (°F)
Kelvin (K)	/	K-273 = °C	(K-273)x1,8 = °F
Celsius (°C)	°C+273 = K	1	(°Cx1,8)+32 = °F
Fahrenheit (°F)	273+[(°F-32):1,8] = K	(°F-32):1,8 = °C	/

Appendix

Measure and conversion units

ISO metric thread UNI 4535-64

Coarse ISO metric thread					
Thread	Pitch (mm)	Ø Drilling (mm)	Ø Drill (mm)		
M 1,6	0,35	1,321	1,20		
M 1,8	0,35	1,521	1,45		
M 2	0,40	1,679	1,60		
M 2,2	0,45	1,838	1,75		
M 2,5	0,45	2,138	2,05		
М 3	0,50	2,599	2,5		
M 3,5	0,60	3,010	2,9		
M 4	0,70	3,422	3,3		
M 4,5	0,75	3,878	3,7		
M 5	0,80	4,334	4,2		
M 6	1	5,153	5		
M 7	1	6,153	6		
M 8	1,25	6,912	6,8		
M 9	1,25	7,912	7,8		
M 10	1,5	8,676	8,5		
M 11	1,5	9,676	9,5		
M 12	1,75	10,441	10,2		
M 14	2	12,210	12		
M 16	2	14,210	14		
M 18	2,5	15,744	15,5		
M 20	2,5	17,744	17,5		
M 22	2,5	19,744	19,5		
M 24	3	21,252	21		
M 27	3	24,252	24		
M 30	3,5	26,771	26,5		
M 33	3,5	29,771	29,5		
M 36	4	32,270	32		
M 39	4	35,270	35		
M 42	4,5	37,799	37,5		
M 45	4,5	40,799	40,5		
M 48	5	43,297	43		
M 52	5	47,297	47		
M 56	5,5	50,796	50,5		
M 60	5,5	54,796	54,5		
M 64	6	58,305	58		
M 68	6	62,305	62		

Fine ISO metric thread					
Thursd	Pitch	Ø Drilling	Ø Drill		
Thread	(mm)	(mm)	(mm)		
М 3	0,35	2,721	2,65		
M 4	0,50	3,599	3,5		
M 5	0,50	4,599	4,5		
M 6	0,75	5,378	5,2		
M 7	0,75	6,378	6,2		
M 8	0,75	7,378	7,2		
M 8	1	7,153	7		
M 9	1	8,153	8		
M 10	0,75	9,378	9,2		
M 10	1	9,153	9		
M 10	1,25	8,912	8,8		
M 11	1	10,153	10		
M 12	1	11,153	11		
M 12	1,25	10,912	10,8		
M 12	1,5	10,676	10,5		
M 14	1	13,153	13		
M 14	1,25	12,912	12,8		
M 14	1,5	12,676	12,5		
M 15	1	14,153	14		
M 15	1,5	13,676	13,5		
M 16	1	15,153	15		
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M 36	1,5	34,676	34,5		
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M 38	1,5	36,676	36,5		
M 39	3	36,252	36		
M 40	1,5	38,676	38,5		
M 42	1,5	40,676	40,5		
M 45	1,5	43,676	43,5		
M 50	1,5	48,676	48,5		

«G» UNI 338-66				
Thread	Thread Ø External (mm)		Ø Drill point (mm)	
G 1/8" - 28	9,73	8,68	8,70	
G 1/4" - 19	13,16	11,62	11,75	
G 3/8" - 19	16,66	15,12	15,25	
G 1/2" - 14	20,95	18,86	19,00	
G 5/8" - 14	22,91	20,82	21,00	
G 3/4" - 14	26,44	24,35	24,50	
G 7/8" - 14	30,20	28,11	28,25	
G 1" - 11	33,25	30,59	30,50	
G 1 1/8" - 11	37,90	35,24	35,50	
G 1 1/4" - 11	41,91	39,25	39,50	
G 1 3/8" - 11	44,32	41,66	41,50	
G 1 1/2" - 11	47,80	45,14	45,00	
G 1 5/8" - 11	51,32	48,67	48,50	
G 1 3/4" - 11	53,75	51,08	51,00	
G 2" - 11	59,61	56,95	57,00	
G 2 1/4" - 11	65,71	63,05	63,00	
G 2 1/2" - 11	75,18	72,52	72,50	
G 2 3/4" - 11	81,53	78,87	79,00	
G 3" - 11	87,88	85,22	85,50	
G 3 1/4" - 11	93,98	91,32	91,50	
G 3 1/2" - 11	100,33	97,67	97,50	
G 3 3/4" - 11	106,68	104,02	104,00	
G 4" - 11	113,03	110,37	110,50	

«Gc» UNI 339-66					
Thread	Ø External (mm)	Ø Drilling (mm)	Ø Drill point (mm)		
Gc 1/8" - 28	8,5	4,9	3,1		
Gc 1/4" - 19	11,5	7,3	4,7		
Gc 3/8" - 19	15,0	7,7	5,1		
Gc 1/2" - 14	18,5	10,0	6,4		
Gc 3/4" - 14	23,5	11,3	7,7		
Gc 1" - 11	30,0	12,7	8,1		
Gc 1 1/4" - 11	38,0	15,0	10,4		
Gc 1 3/8" - 11	41,0	15,0	10,4		
Gc 1 1/2" - 11	44,5	15,0	10,4		
Gc 2" - 11	56,0	18,2	13,6		
Gc 2 1/2" - 11	72,0	21,0	14,0		
Gc 3" - 11	85,0	24,1	17,1		
		max	min		



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