Series 1390 - 1391 - 1392 - ECOLIGHT with protective bellows

General

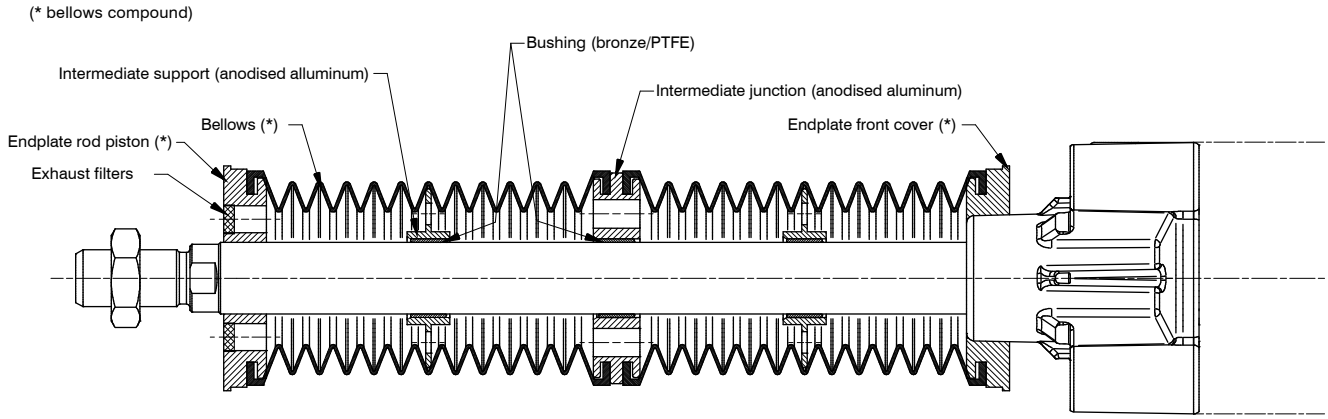
The modular bellows has the function of protecting the piston rod and piston rod nose seal on the Pneumax ECOLIGHT' cylinder range from Ø32 to Ø100 to a maximum stroke length of 1 mtr (all versions excluding cylinders fitted with the Q and R scraper seal).
It is constructed by mounting the bellows in 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)

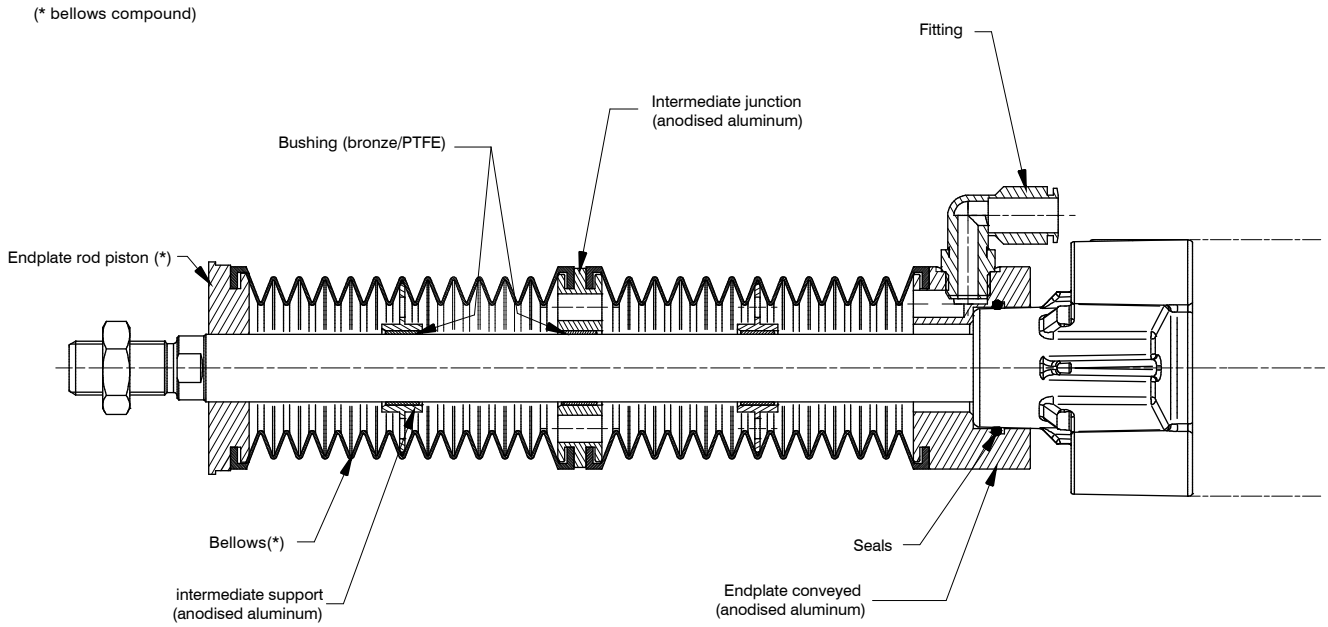
Are available:
-cylinder with bellows
-kit bellows (degrease the surface of the front cover and the piston rod before mounting the bellows terminals by interference).

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.

Order codes

Cylinder complete with bellows

__ . _ . _ _ _ _ . S . __ . . . _

Series cylinder
FA= 1390
FB= 1391
FC= 1392

Bore cylinder
A= Ø32
B= Ø40
C= Ø50
D= Ø63
E= Ø80
F= Ø100

Cylinder stroke
Maximum stroke Ø32 ... Ø63: 980 mm Ø80 ... Ø100: 1140 mm (ATTENTION: for the number of bellows, see the **KIT BELLOWS** order codes)

Cylinder seals
0N= NBR seals
0P= PUR seals
0V=FPM seals for high temperatures
0L=seals for low temperatures
0K= NBR seals Aluminum piston
PK=PUR sealvs Aluminum piston

Cylinder version
1= BASIC version
2= THROUGH ROD CYLINDER version

Compounds bellows
N= NBR
E= EPDM
S= SILICONE

Bellows exhaust
0= not conveyed
1= conveyed

kit bellows (without cylinder)

FA . _ . _ _ _ _ . S . 0 . 0 . _ . _

Cylinder bore
A= Ø32
B= Ø40
C= Ø50
D= Ø63
E= Ø80
F= Ø100

Cylinder stroke	
cylinders Ø32 ... Ø63	**cylinders Ø80 ... Ø100**
0001= from 1 to 245mm (n° 1 bellows)	**0001**= from 1 to 285mm (n° 1 bellows)
0002= from 246 to 490mm (n° 2 bellows)	**0002**= from 286 to 570mm (n° 2 bellows)
0003= from 491 to 735mm (n° 3 bellows)	**0003**= from 571 to 855mm (n° 3 bellows)
0004= from 736 to 980mm (n° 4 bellows)	**0004**= from 856 to 1140mm (n° 4 bellows)

Bellows compound
N= NBR
E= EPDM
S= SILICONE

Bellows exhaust
0=not conveyed
1= conveyed

Version with bellows exhaust NOT CONVEYED

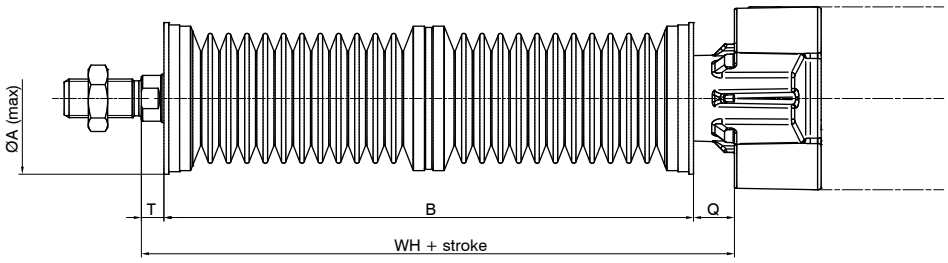


Table of dimensions

Bore	ØA	T	B + stroke				Q	WH + stroke			
Ø32	60	10	60	115	170	225	7	77	132	187	242
Ø40		10,5	60	115	170	225	10	80,5	135,5	190,5	245,5
Ø50		12	60	115	170	225	17	89	144	199	254
Ø63		12	60	115	170	225	17	89	144	199	254
strokes	/	/	0 ... 240	0 ... 485	0 ... 730	0 ... 980	/	0 ... 240	0 ... 485	0 ... 730	0 ... 980
Ø80	83	14	70	130	195	260	23	107	167	232	297
Ø100		14	70	130	195	260	24	108	168	233	298
strokes	/	/	0 ... 280	0 ... 570	0 ... 855	0 ... 1140	/	0 ... 280	0 ... 570	0 ... 855	0 ... 1140

Version with bellows exhaust CONVEYED

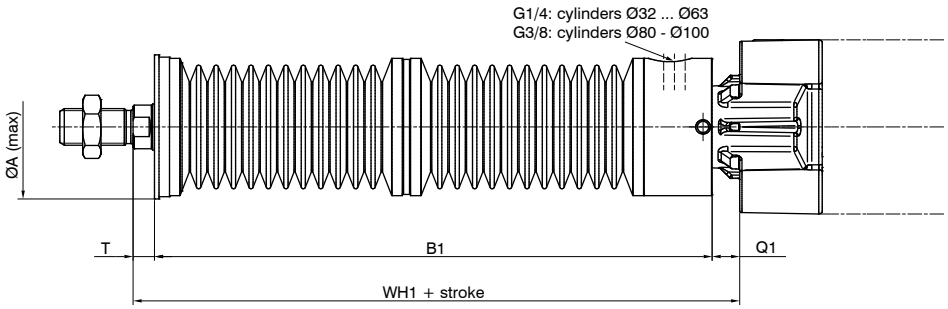


Table of dimensions

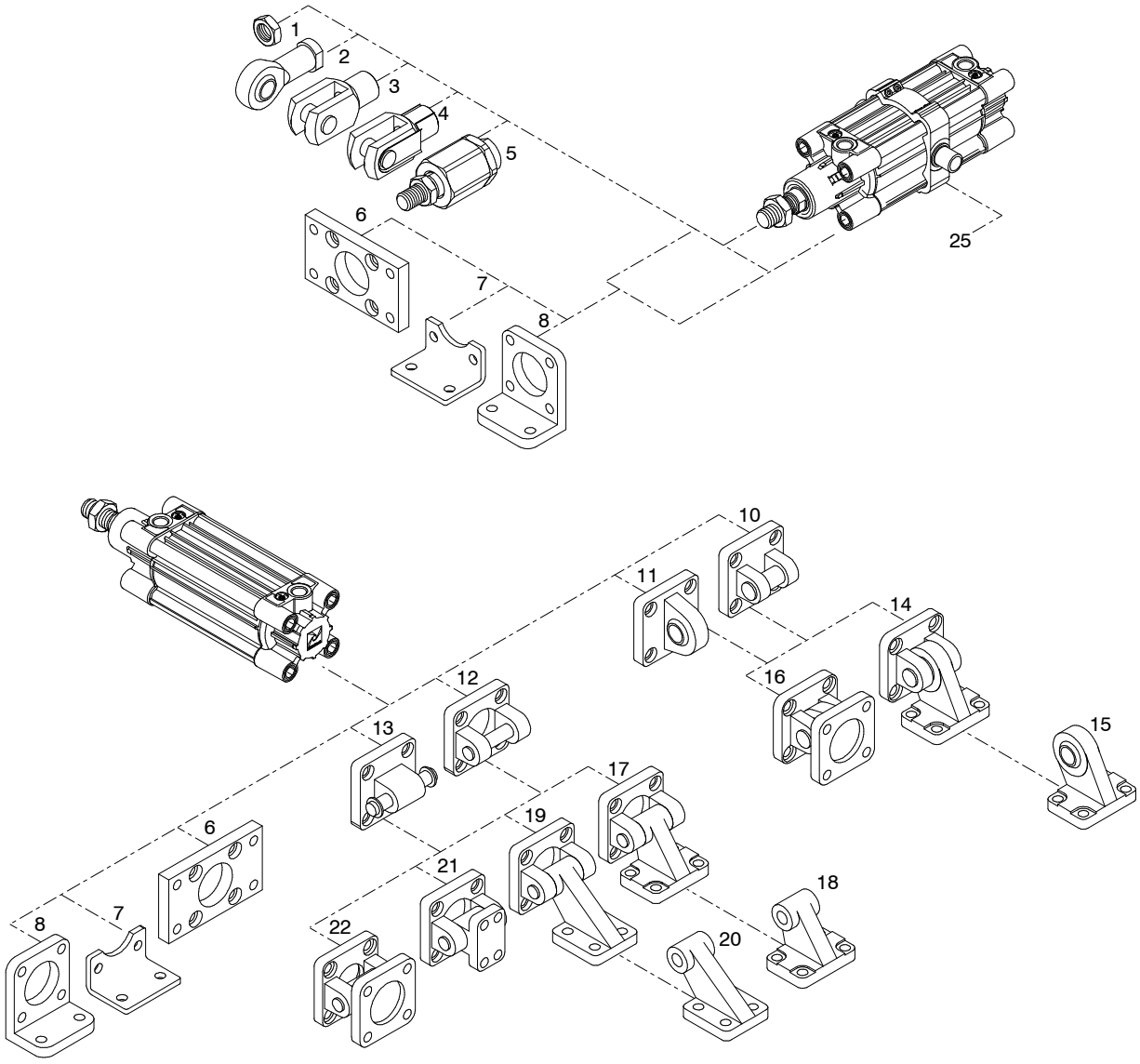
Bore	ØA	T	B1 + stroke				Q1	WH1 + stroke			
Ø32	60	10	75	130	185	240	10	95	150	205	260
Ø40		10,5	75	130	185	240	13	98,5	153,5	208,5	263,5
Ø50		12	83	138	193	248	12	107	162	217	272
Ø63		12	83	138	193	248	12	107	162	217	272
strokes	/	/	0 ... 240	0 ... 485	0 ... 730	0 ... 980	/	0 ... 240	0 ... 485	0 ... 730	0 ... 980
Ø80	83	14	94	154	219	284	18	126	186	251	316
Ø100		14	94	154	219	284	19	127	187	252	317
strokes	/	/	0 ... 280	0 ... 570	0 ... 855	0 ... 1140	/	0 ... 280	0 ... 570	0 ... 855	0 ... 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
- front flange 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.



Pos.	Description	Aluminum	Steel
1	Rod nut	/	1320.Ø.18F
2	Ball joint	/	1320.Ø.32F
3	Forks	/	1320.Ø.13F
4	Fork with clips	/	1320.Ø.13/1F
5	Self-aligning joint	/	1320.Ø.33F
6	Flange (MF1-MF2)	1390.Ø.03FP	1380.Ø.03F
7	Short mounting foot brackets (in sheet metal MS1)	/	1320.Ø.05/1F
8	Standard mounting foot brackets	1320.Ø.05F	/
10	Rear narrow clevis (AB6)	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 female 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 (pos.10 + pos.15)	/	1320.Ø.27F
15	Simple square counter clevis (pos.14)	/	1320.Ø.28F
16	Square angle trunnion with joined head (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 (pos.20 + pos.12)	1380.Ø.11F	/
20	Simple square counter clevis (pos.19)	1320.Ø.11/1F	/
21	Standard trunnion	1380.Ø.10F	/
22	Standard complete trunnion (pos.12 + pos.13)	1380.Ø.22F	1320.Ø.22F
25	1390 - 1392 Ecolight series Intermediate trunnion	1390.Ø.12F	/