



**PNEUMAX**



## **SERIES Eco-Smart**

ISO 1552 CYLINDERS WITH POSITION TRANSDUCER



## Series Eco-Smart - with integrated position transducer



- According to ISO 15552 standard
- Bores Ø40, Ø50, Ø63, Ø80, Ø100
- Strokes up to 1000 mm, with 50 mm increments
- Wide range of accessories
- IP67 protection degree

The cylinders of the Eco-Smart Series are pneumatic actuators according to ISO 15552 standard, equipped with a linear potentiometer integrated into the piston rod. This device enables continuous monitoring of the rod position along the entire stroke, which is detected by processing the internal resistance variation of the transducer. The pistons (from Ø50 to Ø100) are equipped with a permanent magnet, allowing the use of external end of stroke sensors from the SQ, SU, and SR series. The dynamic seals are made of low-friction polyurethane. The electrical connection, made via a male M12 connector located on the rear cap, makes the cylinder compliant with IP67 protection degree.

### Construction characteristics

|                          |                                                                                                                                                                                                                                                                                                          |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Piston rod bushings      | spheroidal bronze on steel strip with PTFE coating                                                                                                                                                                                                                                                       |
| Barrel                   | anodised aluminium alloy                                                                                                                                                                                                                                                                                 |
| Seals                    | standard: PUR rod seals, NBR piston seals<br><b>P</b> version: PUR rod seals, PUR piston seals<br><b>V</b> version: FPM rod seals, PUR piston seals<br><b>Q</b> version: plastic rod scraper, NBR rod seals, PUR piston seals<br><b>R</b> version: metallic rod scraper, FPM rod seals, PUR piston seals |
| Pistons                  | aluminium (magnetic version for external sensor from Ø50 to Ø100)                                                                                                                                                                                                                                        |
| Piston rod               | C43 chromed steel                                                                                                                                                                                                                                                                                        |
| End caps                 | aluminium                                                                                                                                                                                                                                                                                                |
| Cushion adjustment screw | brass                                                                                                                                                                                                                                                                                                    |

### Operational characteristics

|                                |                                                                                                                                                                                              |    |    |    |    |     |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|----|----|-----|
| Fluid                          | filtered and preferably lubricated air or not (if lubricated the lubrication must be continuous)                                                                                             |    |    |    |    |     |
| Maximum pressure               | 10 bar                                                                                                                                                                                       |    |    |    |    |     |
| Minimum pressure               | 1 bar                                                                                                                                                                                        |    |    |    |    |     |
| Working temperature            | -5°C ... +70°C (Standard seals)<br>-30°C ... +80°C ( <b>P</b> version)<br>-5°C ... +80°C ( <b>V</b> version)<br>-20°C ... +80°C ( <b>Q</b> version)<br>-10 °C ... +80 °C ( <b>R</b> Version) |    |    |    |    |     |
| Bore                           | Ø                                                                                                                                                                                            | 40 | 50 | 63 | 80 | 100 |
| Cushioning lenght (front only) | mm                                                                                                                                                                                           | 20 | 22 | 22 | 32 | 32  |

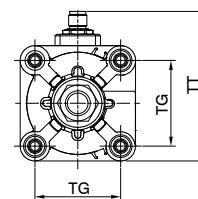
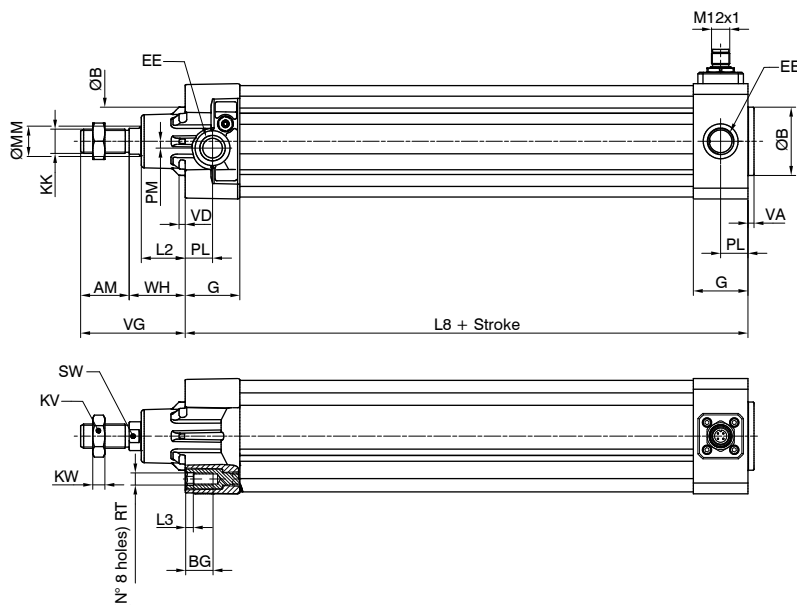
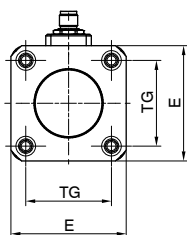
### Standard strokes

Standard strokes up to 1000 mm, with 50 mm increments

**Cylinder with integrated position transducer**

**CODING: 13V.Ø.C.09T**

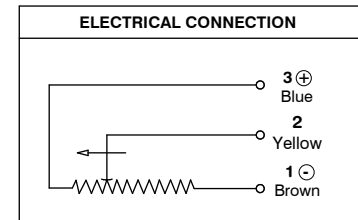
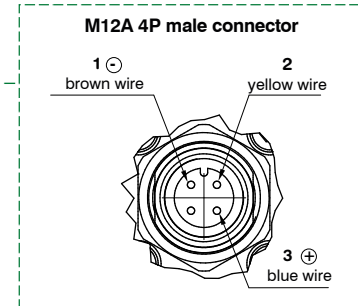
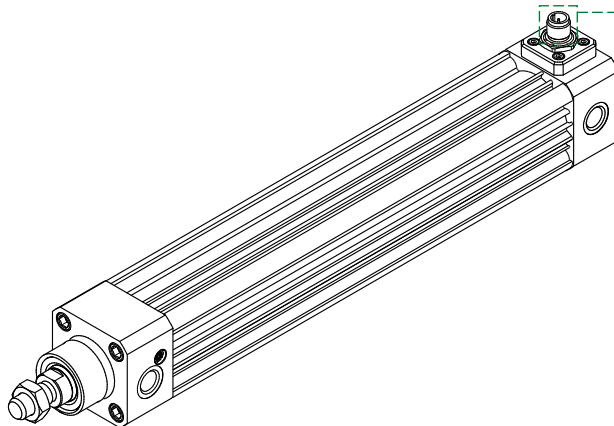
|   |                                                                        |
|---|------------------------------------------------------------------------|
| V | VERSION                                                                |
|   | 90 = Magnetic chromed rod (Ø50 ... Ø100)                               |
|   | 92 = Non magnetic chromed rod                                          |
| Ø | BORE                                                                   |
|   | 40 = Ø40                                                               |
|   | 50 = Ø50                                                               |
|   | 63 = Ø63                                                               |
|   | 80 = Ø80                                                               |
| C | STROKE                                                                 |
|   | 50 = 50 mm                                                             |
|   | 100 = 100 mm                                                           |
|   | 150 = 150 mm                                                           |
|   | 200 = 200 mm                                                           |
| T | TYPE                                                                   |
|   | = Standard seals                                                       |
|   | P = PUR seals                                                          |
|   | V = Version with FPM rod seals, PUR piston seals                       |
|   | Q = Version with plastic rod scraper, NBR rod seals, PUR piston seals  |
|   | R = Version with metallic rod scraper, FPM rod seals, PUR piston seals |



**Table of dimensions**

| Bore     |             | 40       | 50      | 63      | 80      | 100     |
|----------|-------------|----------|---------|---------|---------|---------|
| AM       |             | 24       | 32      | 32      | 40      | 40      |
| B (d 11) |             | 35       | 40      | 45      | 45      | 55      |
| BG       |             | 16       | 18      | 18      | 16      | 16      |
| E        |             | 54       | 65      | 76      | 95      | 113     |
| EE       |             | G1/4"    | G1/4"   | G3/8"   | G3/8"   | G1/2"   |
| G        |             | 33       | 32      | 36      | 38.5    | 41.5    |
| KK       |             | M12x1,25 | M16x1,5 | M16x1,5 | M20x1,5 | M20x1,5 |
| KV       |             | 19       | 24      | 24      | 30      | 30      |
| KW       |             | 7        | 8       | 8       | 9       | 9       |
| L2       |             | 22       | 29      | 29      | 35      | 36      |
| L3       |             | 4        | 5       | 5       | /       | /       |
| L8       |             | 105      | 106     | 121     | 128     | 138     |
| MM       |             | 20       | 20      | 20      | 25      | 25      |
| PL       |             | 16.5     | 18      | 18      | 16      | 18      |
| PM       |             | 4        | 5       | 4.5     | 2.5     | 6       |
| RT       |             | M6       | M8      | M8      | M10     | M10     |
| SW       |             | 17       | 17      | 17      | 22      | 22      |
| TG       |             | 38       | 46.5    | 56.5    | 72      | 89      |
| TT       |             | 77       | 88      | 99      | 118     | 136     |
| VA       |             | 4        | 4       | 4       | 4       | 4       |
| VD       |             | 4        | 4       | 4       | 4       | 4       |
| VG       |             | 54       | 69      | 69      | 86      | 91      |
| WH       |             | 30       | 37      | 37      | 46      | 51      |
| Weight g | Stroke 0    | 650      | 1030    | 1360    | 2180    | 2890    |
|          | every 10 mm | 32       | 45      | 49      | 75      | 81      |

## Wiring diagram



## Operation instructions

- Make the specified electrical connections (do not use the transducer as a variable resistance).
- When calibrating the transducer, be careful to set the stroke so that the output does not drop below 1% or rise above 99% of the voltage level.
- The potentiometer operates based on a "magnetic drag" principle for its movement.
- The allowed accelerations must not exceed 10 m/s<sup>2</sup> to prevent decoupling of the internal element from the transducer.

## Transducer data

|                                                                 | Useful electrical stroke +1/-0 (mm) |     |      |     |     |     |     |     |     |     |              |     |     |     |     |     |     |     |     |      |  |  |
|-----------------------------------------------------------------|-------------------------------------|-----|------|-----|-----|-----|-----|-----|-----|-----|--------------|-----|-----|-----|-----|-----|-----|-----|-----|------|--|--|
|                                                                 | 50                                  | 100 | 150  | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550          | 600 | 650 | 700 | 750 | 800 | 850 | 900 | 950 | 1000 |  |  |
| Resistance (kΩ)                                                 | 5                                   |     |      |     |     |     | 10  |     |     |     |              |     | 20  |     |     |     |     |     |     |      |  |  |
| Resistance tolerance (±%)                                       | 20                                  |     |      |     |     |     |     |     |     |     |              |     |     |     |     |     |     |     |     |      |  |  |
| Independent linearity (±%)                                      | 0.1                                 |     | 0.05 |     |     |     |     |     |     |     |              |     |     |     |     |     |     |     |     |      |  |  |
| Maximum applicable voltage (V)                                  | 40                                  | 60  |      |     |     |     |     |     |     |     |              |     |     |     |     |     |     |     |     |      |  |  |
| Displacement sensitivity (without hysteresis) (mm)              |                                     |     |      |     |     |     |     |     |     |     | 0,05 ... 0,1 |     |     |     |     |     |     |     |     |      |  |  |
| Repeatability (mm)                                              |                                     |     |      |     |     |     |     |     |     |     | ≤0,08        |     |     |     |     |     |     |     |     |      |  |  |
| Output voltage thermal coefficient (ppm/°C)                     |                                     |     |      |     |     |     |     |     |     |     | ≤5           |     |     |     |     |     |     |     |     |      |  |  |
| Hysteresis (mm)                                                 |                                     |     |      |     |     |     |     |     |     |     | ≤0,25        |     |     |     |     |     |     |     |     |      |  |  |
| Displacement speed (m/s)                                        |                                     |     |      |     |     |     |     |     |     |     | ≤1           |     |     |     |     |     |     |     |     |      |  |  |
| Maximum acceleration (m/s²)                                     |                                     |     |      |     |     |     |     |     |     |     | ≤10          |     |     |     |     |     |     |     |     |      |  |  |
| Acquisition device input impedance (MΩ)                         |                                     |     |      |     |     |     |     |     |     |     | >100         |     |     |     |     |     |     |     |     |      |  |  |
| Maximum current in cursor circuit (Pin 2) in case of fault (mA) |                                     |     |      |     |     |     |     |     |     |     | 10           |     |     |     |     |     |     |     |     |      |  |  |

## Accessories and fixing devices

All ISO 15552 ECOLIGHT series cylinder fixing devices and accessories can be used.

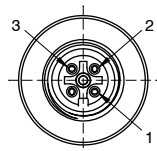
## Sensors

All sensors from the SQ, SU and SR series can be used.

## POWER SUPPLY connectors

### Straight connector M12A 4P female

CODING: 5312A.F04.00



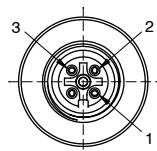
Upper view slave connector

| PIN | DESCRIPTION    |
|-----|----------------|
| 1   | brown wire (-) |
| 2   | yellow wire    |
| 3   | blue wire (+)  |

Power supply socket

### 90° M12A 4P female connector

CODING: 5312A.F04.90.00



Upper view slave connector

| PIN | DESCRIPTION    |
|-----|----------------|
| 1   | brown wire (-) |
| 2   | yellow wire    |
| 3   | blue wire (+)  |

90° power supply socket



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