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# Compact Pneumatic Cylinders P1P Series

According to ISO 21287

Catalogue PDE2660TCUK February 2012



ENGINEERING YOUR SUCCESS.

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### P1P Compact Cylinder according to ISO 21287

The P1P Series is a complete range of ISO 21287 compact cylinders developed to meet the highest requirements for quality and performance. The careful design in every detail provides first class function and service life properties.

#### Features

- ISO 21287 conformity and global availability throughout the worldwide Parker Hannifin organization.
- Product launch starts with 32, 40, 50 and 63mm bore sizes followed by other sizes shortly after.
- One of the widest ranges of sizes and versions for a broad range of applications.
- Corrosion resistant design with end covers and barrel in anodized aluminium and stainless steel piston rod.
- Long service life thanks to proven high quality materials, surfaces and seal technology.
- Compact design and many installation alternatives for flexible use in narrow spaces.
- Efficient elastic cushioning absorbing residual energy facilitates high speeds and short cycle times.
- Smooth, low noise operation thanks to elastic material in end faces of the piston.
- Flush, drop in global P8S-G sensors on all side faces for flexible and compact assembly and mechanical protection of the sensors.
- P1P is suitable for processing, packaging and handling applications within the food industry thanks to the food approved grease used for the initial greasing.

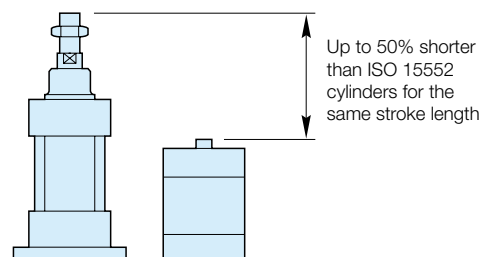
### High quality

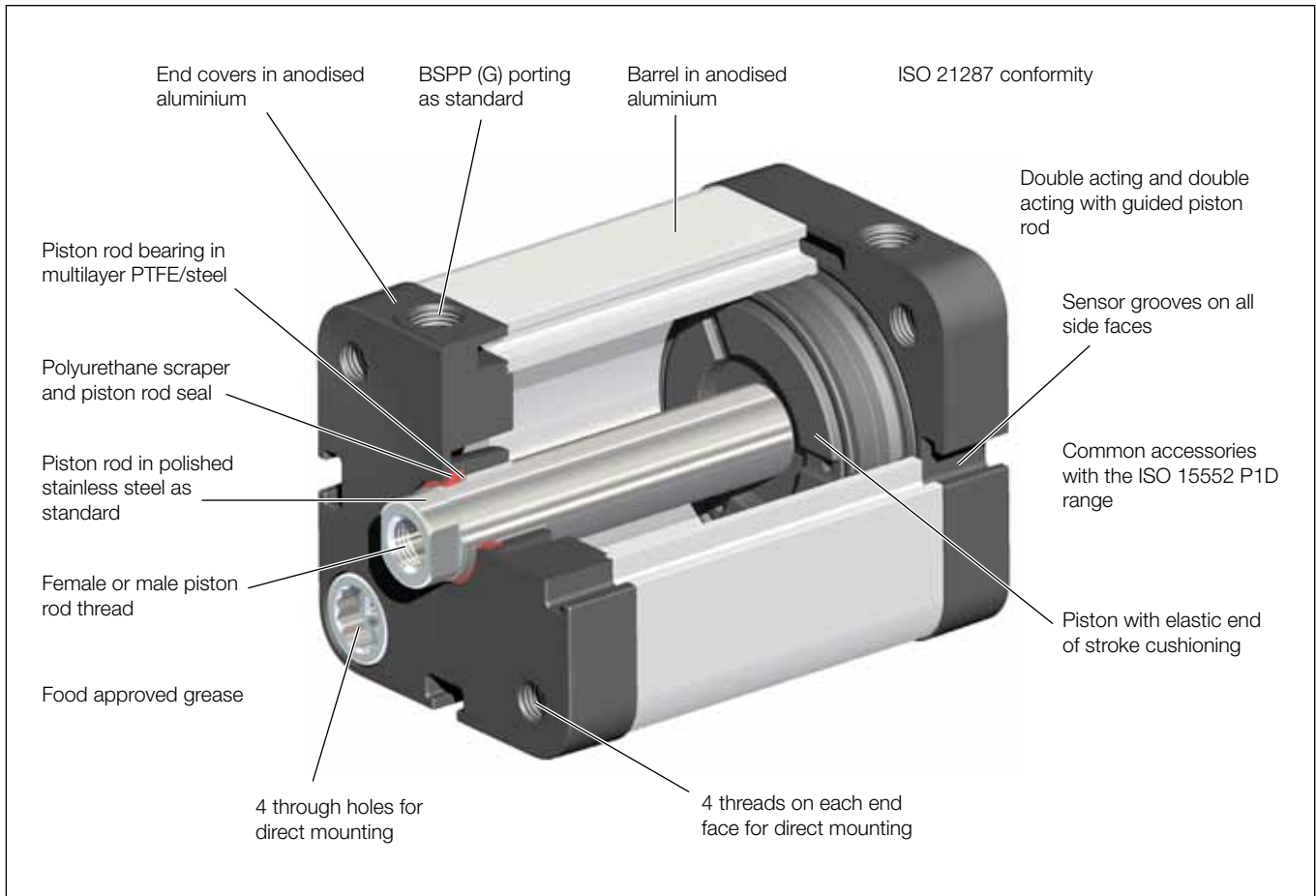
Reliability and long service life are key qualities of any pneumatic cylinder. Therefore we have given P1P highest possible quality in every detail based on our 40 years of experience and extensive testing. The design is based on the following important principles.

- Proven seal design and materials throughout the cylinder. The expertise for seal technology within Parker Hannifin is the basis for leading and proven tribology solutions for all our pneumatic actuators.
- Body extrusion in anodised aluminium with extra fine and hard internal surface for optimum operational conditions.
- End covers and body extrusion with external anodisation for excellent corrosion resistance.
- Stainless steel piston rod for versatile use in corrosive environment.

### Compact dimensions for versatile use

The very compact axial dimensions makes it possible to use the P1P cylinders in a broad range of applications. Note that the P1P cylinders are up to 50% shorter than ISO 15552 cylinders for the same stroke length. This is highly valuable in narrow spaces in machines or production lines. The P1P range is a truly versatile cylinder family.

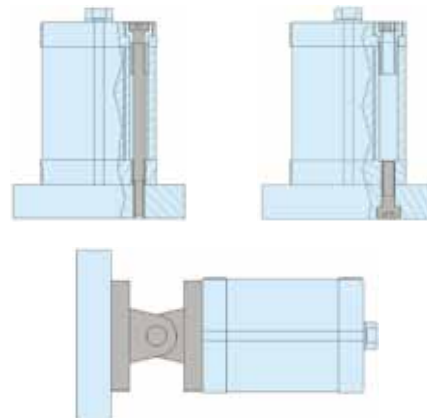




**Flexible installation**

The new P1P compact cylinder range offers many opportunities for mechanical installation.

- There are holes through the cylinder body. Use these to fix the cylinder with through bolts into threads in the surface behind the cylinder.
- In each end of the same through holes there are female threads. These can be used for flange mounting of the actuator from the rear or front face.
- The wide range of ISO 15552 cylinder mountings are available for use with P1P cylinders bore 32-63 mm. Examples are the foot and flange mountings, as well as MP2 and MP4 mountings for articulated applications.

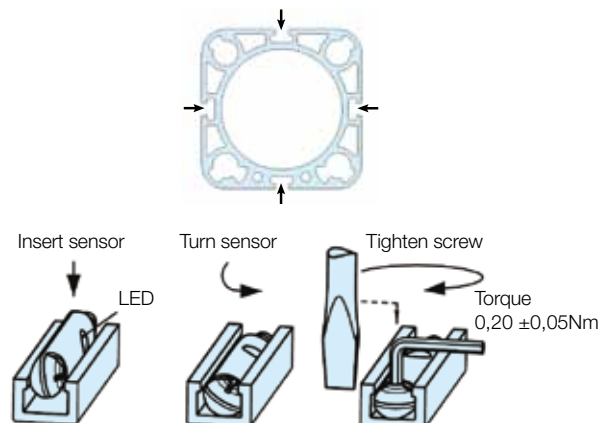


**Global drop-in P8S-G sensor range**

The global sensor range P8S-G fits P1P as well as most of our pneumatic cylinder families. This simplifies your ordering, stock and overall service of sensors.

The P8S-G sensors has a drop-in mounting into the sensor grooves facilitating the assembly and commissioning work. There are sensor grooves on all four side faces for maximum flexibility and adaptation to each application.

The wide range of P8S-G sensors includes both reed and solid state sensors, flying lead versions with 3 and 10 meter cable and pig tail versions with M8 and M12 connector.



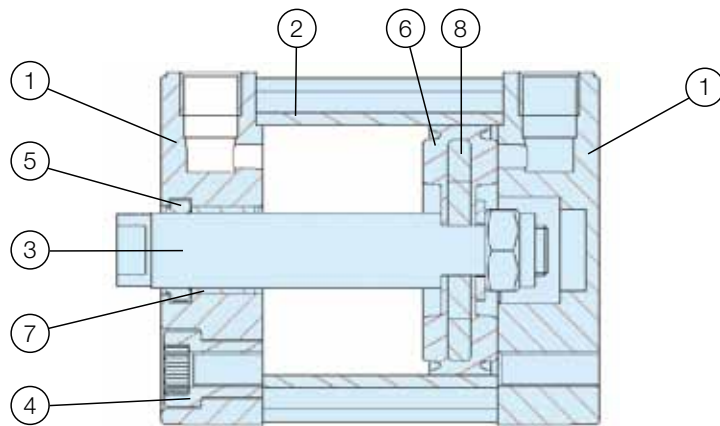
**General technical data**

|                   |   |   |
|-------------------|---|---|
| Product type      | Compact cylinder according to ISO 21287 |   |
| Bore size         | 32 - 63 mm                              |   |
| Stroke length     | 1 - 500 mm                              |   |
| Versions          | P1PS...DS                               | Double acting   |
|                   | P1PG...DS                               | Double acting with non rotating piston rod                |
| Cushioning        | Elastic cushioning                      |   |
| Position sensing  | Proximity sensor                        |   |
| Installation      | Direct                                  | Through holes<br>Female thread on front and rear end face |
|                   | Accessories                             | Cylinder and piston rod mountings                         |
| Mounting position | Any                                     |   |

**Operating and environmental data**

|                      |   |                |
|----------------------|---|----------------|
| Operating medium     | For best possible service life and trouble-free operation it is recommended to use dry, filtered compressed air to ISO 8573-1:2010 quality class 3.4.3. This specifies a dew point of +3°C for indoor operation (a lower dew point should be selected for outdoor operation) and is in line with the air quality from most standard compressors with a standard filter. Refer to page 22. |                |
| Operating pressure   | 0.5 bar to 10 bar   |                |
| Ambient temperature  | Standard version  | -20°C to +80°C |
| Pre-lubricated       | Further lubrication is normally not necessary. If additional lubrication is introduced it must be continued.  |                |
| Corrosion resistance | High resistance to corrosion and chemicals. Materials and surface treatment have been selected for industrial applications where solvents and detergents are frequently used.   |                |

**Material specification**



| Pos | Part                 | Specification                                    |
|-----|----------------------|--|
| 1   | End covers           | Anodised aluminium                               |
| 2   | Cylinder barrel      | Anodised aluminium                               |
| 3   | Piston rod           | Standard<br>Stainless steel, DIN X 10 CrNiS 18 9 |
| 4   | End cover screws     | Zinc plated steel                                |
| 5   | Piston rod seal      | Polyurethane                                     |
| 6   | Piston / piston seal | Steel / Nitrile rubber                           |
| 7   | Piston rod bearing   | Multilayer PTFE/steel                            |
| 8   | Magnet               | Plastic coated magnetic material                 |
|     | Note on materials    | RoHS compliant                                   |



## Cylinder forces, double acting variants

| Cylinder bore mm | Stroke        | Bore mm | Piston rod mm | Area cm <sup>2</sup> | Max theoretical force in N (bar) |         |         |         |         |         |         |         |         |          |      |
|------------------|---------------|---------|---------------|----------------------|----------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|----------|------|
|                  |               |         |               |                      | 1.0 bar                          | 2.0 bar | 3.0 bar | 4.0 bar | 5.0 bar | 6.0 bar | 7.0 bar | 8.0 bar | 9.0 bar | 10.0 bar |      |
| 32               | Double acting | +       | 32            | 12                   | 8.0                              | 79      | 158     | 237     | 315     | 394     | 473     | 552     | 631     | 710      | 789  |
|                  |               | -       | 32            | 12                   | 6.9                              | 68      | 136     | 203     | 271     | 339     | 407     | 474     | 542     | 610      | 678  |
| 40               | Double acting | +       | 40            | 12                   | 12.6                             | 123     | 246     | 370     | 493     | 616     | 740     | 863     | 986     | 1109     | 1233 |
|                  |               | -       | 40            | 12                   | 11.4                             | 112     | 224     | 336     | 448     | 561     | 673     | 785     | 897     | 1010     | 1122 |
| 50               | Double acting | +       | 50            | 16                   | 19.6                             | 193     | 385     | 578     | 770     | 963     | 1155    | 1348    | 1540    | 1733     | 1925 |
|                  |               | -       | 50            | 16                   | 17.6                             | 173     | 346     | 518     | 691     | 864     | 1037    | 1210    | 1382    | 1555     | 1728 |
| 63               | Double acting | +       | 63            | 16                   | 31.2                             | 306     | 611     | 917     | 1223    | 1528    | 1834    | 2140    | 2445    | 2751     | 3056 |
|                  |               | -       | 63            | 16                   | 29.1                             | 286     | 572     | 858     | 1144    | 1430    | 1716    | 2002    | 2287    | 2573     | 2864 |

+ = Outward stroke  
- = Return stroke

**Note:** Select a theoretical force 50-100% larger than the force required.

## Technical data

| Cylinder designation   | Cylinder bore |                 | Piston rod area |                 | Piston rod thread | Total mass        |                              | Air consumption litres <sup>(1)</sup> | Port size |
|--|---------------|-----------------|-----------------|-----------------|-------------------|-------------------|------------------------------|---------------------------------------|-----------|
|  | mm            | cm <sup>2</sup> | mm              | cm <sup>2</sup> |                   | at 0 mm stroke kg | addition per 10 mm stroke kg |                                       |           |
| <b>P1PS...DS7G Double acting with female piston rod thread</b> |               |                 |                 |                 |                   |                   |                              |                                       |           |
| P1PS032  | 32            | 8.0             | 12              | 1.1             | M8 x 1.25         | 0.291             | 0.030                        | 0.105                                 | G1/8      |
| P1PS040  | 40            | 12.6            | 12              | 1.1             | M8 x 1.25         | 0.375             | 0.036                        | 0.162                                 | G1/8      |
| P1PS050  | 50            | 19.6            | 16              | 2.0             | M10 x 1.5         | 0.519             | 0.050                        | 0.253                                 | G1/8      |
| P1PS063  | 63            | 31.2            | 16              | 2.0             | M10 x 1.5         | 0.743             | 0.059                        | 0.414                                 | G1/8      |
| <b>P1PS...DS8G Double acting with male piston rod thread</b>   |               |                 |                 |                 |                   |                   |                              |                                       |           |
| P1PS032  | 32            | 8.0             | 12              | 1.1             | M10 x 1.25        | 0.308             | 0.030                        | 0.105                                 | G1/8      |
| P1PS040  | 40            | 12.6            | 12              | 1.1             | M10 x 1.25        | 0.392             | 0.036                        | 0.162                                 | G1/8      |
| P1PS050  | 50            | 19.6            | 16              | 2.0             | M12 x 1.25        | 0.548             | 0.050                        | 0.253                                 | G1/8      |
| P1PS063  | 63            | 31.2            | 16              | 2.0             | M12 x 1.25        | 0.772             | 0.059                        | 0.414                                 | G1/8      |
| <b>P1PG...DS7G Double acting with guided piston rod</b>        |               |                 |                 |                 |                   |                   |                              |                                       |           |
| P1PS032  | 32            | 8.0             | 12              | 1.1             |                   | 0.358             | 0.033                        | 0.105                                 | G1/8      |
| P1PS040  | 40            | 12.6            | 12              | 1.1             |                   | 0.455             | 0.039                        | 0.162                                 | G1/8      |
| P1PS050  | 50            | 19.6            | 16              | 2.0             |                   | 0.664             | 0.057                        | 0.253                                 | G1/8      |
| P1PS063  | 63            | 31.2            | 16              | 2.0             |                   | 0.930             | 0.067                        | 0.414                                 | G1/8      |

<sup>(1)</sup> Free air consumption per 10 mm stroke length for a double stroke at 6 bar

### Selecting Pneumatic System Components

**Cylinder to Valve:** The below chart contains recommendations for selecting air valve products based on 5.5 bar with a 0.35 bar pressure drop. The values within the chart show the corresponding Cv values.

#### Moduflex Valve System

- Stand-alone valves, short-build valve manifold, or large valve manifold configurations available
- Cv range from 0.18 – 0.80
- Peripheral modules available— flow control, pressure regulation, P.O. check valves and vacuum generators



| Cylinder speed (mm/s) | Cylinder bore size |        |      |                         |
|-----------------------|--------------------|--------|------|-------------------------|
|                       | 32                 | 40     | 50   | 63                      |
| 50                    | 0.03               | 0.04   | 0.06 | 0.10                    |
| 100                   | 0.05               | 0.08   | 0.13 | 0.20                    |
| 150                   | 0.08               | 0.12   | 0.19 | 0.30                    |
| 200                   | 0.10               | 0.16   | 0.26 | 0.41                    |
| 250                   | 0.13               | 0.20   | 0.32 | 0.51                    |
| 300                   | 0.16               | 0.25   | 0.38 | 0.61                    |
| 350                   | 0.18               | 0.29   | 0.45 | 0.71                    |
| 400                   | 0.21               | 0.33   | 0.51 | 0.81                    |
| 450                   | 0.24               | 0.37   | 0.58 | 0.91                    |
| 500                   | 0.26               | 0.41   | 0.64 | 1.10                    |
|                       | Size 1             | Size 2 |      | See larger valve system |

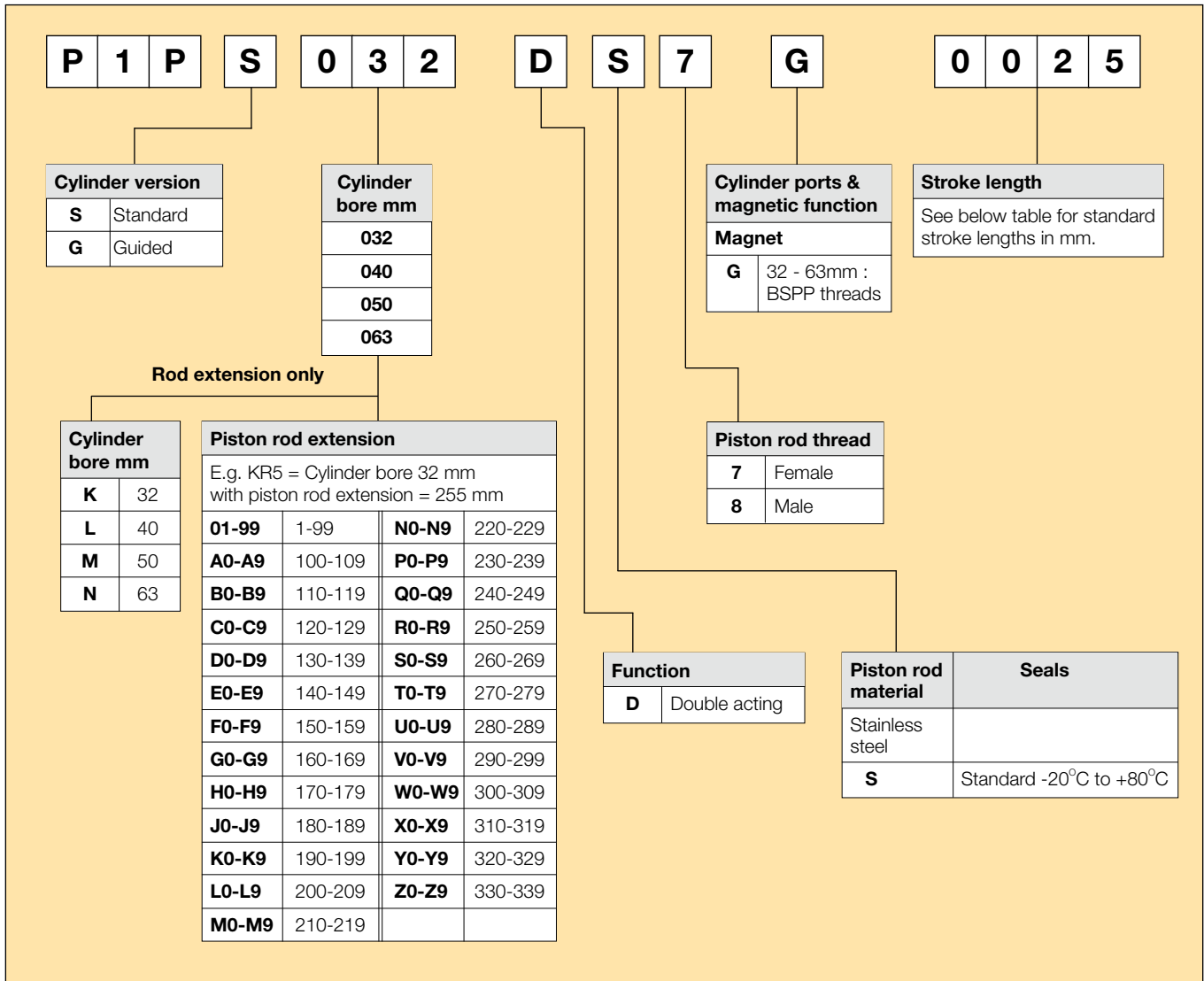
#### Micro / ISO Valve System

- Isys Micro Cv range 0.30 – 0.35
- IsysNet system fieldbus, Turck system fieldbus, 25 pin D-sub, or low cost Moduflex fieldbus options available
- Isys ISO offers 5 sizes with Cv range 0.55 – 6.0

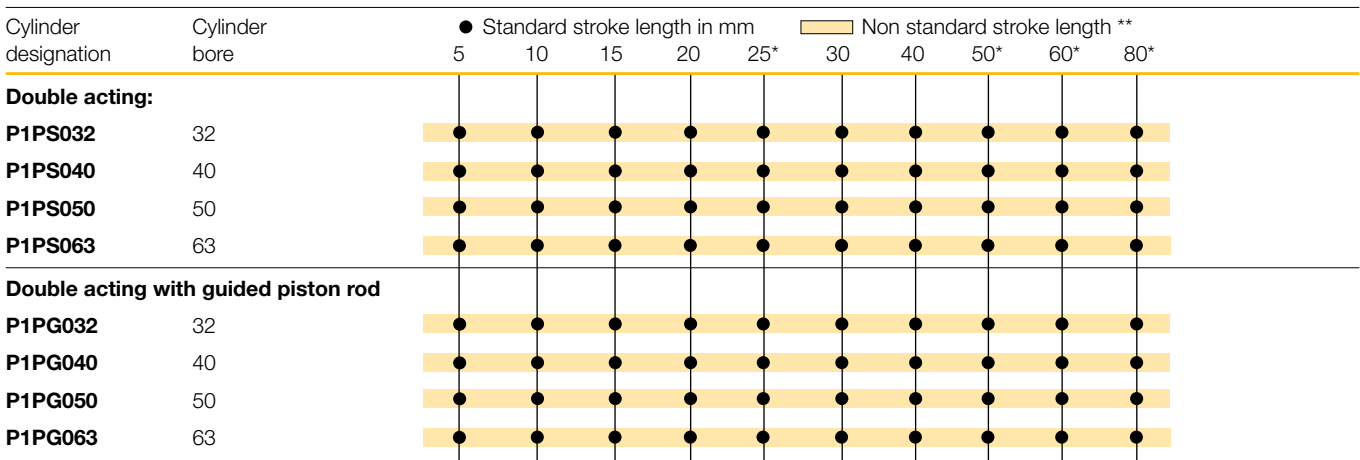


| Cylinder speed (mm/s) | Cylinder bore size |      |      |      | Valve range |
|-----------------------|--------------------|------|------|------|-------------|
|                       | 32                 | 40   | 50   | 63   |             |
| 50                    | 0.03               | 0.04 | 0.06 | 0.10 | Isys Micro  |
| 100                   | 0.05               | 0.08 | 0.13 | 0.20 |             |
| 150                   | 0.08               | 0.12 | 0.19 | 0.30 |             |
| 200                   | 0.10               | 0.16 | 0.26 | 0.41 | HB          |
| 250                   | 0.13               | 0.20 | 0.32 | 0.51 | HA          |
| 300                   | 0.16               | 0.25 | 0.38 | 0.61 |             |
| 350                   | 0.18               | 0.29 | 0.45 | 0.71 |             |
| 400                   | 0.21               | 0.33 | 0.51 | 0.81 |             |
| 450                   | 0.24               | 0.37 | 0.58 | 0.91 |             |
| 500                   | 0.26               | 0.41 | 0.64 | 1.10 |             |

**Order Code Key**



**Standard stroke length**



\* Standard stroke lengths in mm according to ISO 4393  
 \*\* Max stroke 500 mm



### Double acting with female piston rod thread

- Bore 32-63 mm with ISO 21287 conformity
- Double acting with female piston rod thread
- Ideal for applications where space is at a premium
- Corrosion resistant thanks to use of anodised aluminium and stainless steel
- Elastic cushioning facilitates high speeds and short cycle times.
- Flexible direct mounting with through holes and threads
- Wide range of mountings and drop-in sensors



#### Ø 32mm - (G1/8)

| Stroke (mm) | Order code      |
|-------------|-----------------|
| 5           | P1PS032DS7G0005 |
| 10          | P1PS032DS7G0010 |
| 15          | P1PS032DS7G0015 |
| 20          | P1PS032DS7G0020 |
| 25          | P1PS032DS7G0025 |
| 30          | P1PS032DS7G0030 |
| 40          | P1PS032DS7G0040 |
| 50          | P1PS032DS7G0050 |
| 60          | P1PS032DS7G0060 |
| 80          | P1PS032DS7G0080 |

#### Ø 40mm - (G1/8)

| Stroke (mm) | Order code      |
|-------------|-----------------|
| 5           | P1PS040DS7G0005 |
| 10          | P1PS040DS7G0010 |
| 15          | P1PS040DS7G0015 |
| 20          | P1PS040DS7G0020 |
| 25          | P1PS040DS7G0025 |
| 30          | P1PS040DS7G0030 |
| 40          | P1PS040DS7G0040 |
| 50          | P1PS040DS7G0050 |
| 60          | P1PS040DS7G0060 |
| 80          | P1PS040DS7G0080 |

#### Ø 50mm - (G1/8)

| Stroke (mm) | Order code      |
|-------------|-----------------|
| 5           | P1PS050DS7G0005 |
| 10          | P1PS050DS7G0010 |
| 15          | P1PS050DS7G0015 |
| 20          | P1PS050DS7G0020 |
| 25          | P1PS050DS7G0025 |
| 30          | P1PS050DS7G0030 |
| 40          | P1PS050DS7G0040 |
| 50          | P1PS050DS7G0050 |
| 60          | P1PS050DS7G0060 |
| 80          | P1PS050DS7G0080 |

#### Ø 63mm - (G1/8)

| Stroke (mm) | Order code      |
|-------------|-----------------|
| 5           | P1PS063DS7G0005 |
| 10          | P1PS063DS7G0010 |
| 15          | P1PS063DS7G0015 |
| 20          | P1PS063DS7G0020 |
| 25          | P1PS063DS7G0025 |
| 30          | P1PS063DS7G0030 |
| 40          | P1PS063DS7G0040 |
| 50          | P1PS063DS7G0050 |
| 60          | P1PS063DS7G0060 |
| 80          | P1PS063DS7G0080 |

### Double acting with guided piston rod

- Bore 32-63 mm
- Double acting with non rotating linear movement
- For fixing, clamping and moving anti rotate applications
- Anodised end covers, tool plate and barrel
- Stainless steel guide rods and piston rod as standard
- Flexible direct mounting with through holes and threads
- Wide range of mountings and drop-in sensors



#### Ø 32mm - (G1/8)

| Stroke (mm) | Order code      |
|-------------|-----------------|
| 5           | P1PG032DS7G0005 |
| 10          | P1PG032DS7G0010 |
| 15          | P1PG032DS7G0015 |
| 20          | P1PG032DS7G0020 |
| 25          | P1PG032DS7G0025 |
| 30          | P1PG032DS7G0030 |
| 40          | P1PG032DS7G0040 |
| 50          | P1PG032DS7G0050 |
| 60          | P1PG032DS7G0060 |
| 80          | P1PG032DS7G0080 |

#### Ø 40mm - (G1/8)

| Stroke (mm) | Order code      |
|-------------|-----------------|
| 5           | P1PG040DS7G0005 |
| 10          | P1PG040DS7G0010 |
| 15          | P1PG040DS7G0015 |
| 20          | P1PG040DS7G0020 |
| 25          | P1PG040DS7G0025 |
| 30          | P1PG040DS7G0030 |
| 40          | P1PG040DS7G0040 |
| 50          | P1PG040DS7G0050 |
| 60          | P1PG040DS7G0060 |
| 80          | P1PG040DS7G0080 |

#### Ø 50mm - (G1/8)

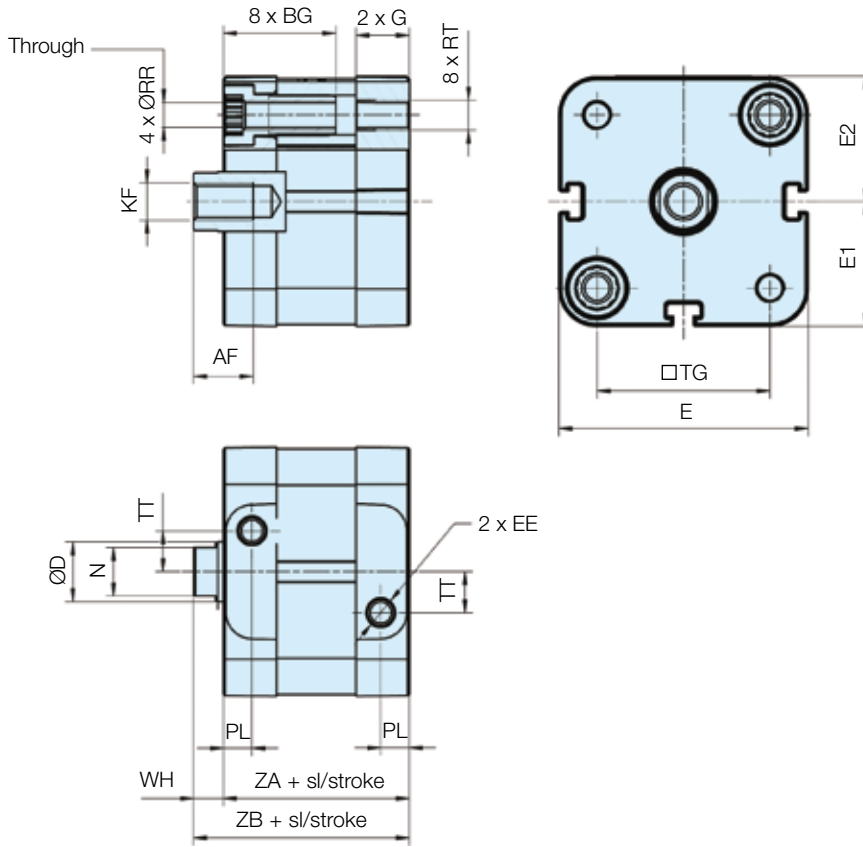
| Stroke (mm) | Order code      |
|-------------|-----------------|
| 5           | P1PG050DS7G0005 |
| 10          | P1PG050DS7G0010 |
| 15          | P1PG050DS7G0015 |
| 20          | P1PG050DS7G0020 |
| 25          | P1PG050DS7G0025 |
| 30          | P1PG050DS7G0030 |
| 40          | P1PG050DS7G0040 |
| 50          | P1PG050DS7G0050 |
| 60          | P1PG050DS7G0060 |
| 80          | P1PG050DS7G0080 |

#### Ø 63mm - (G1/8)

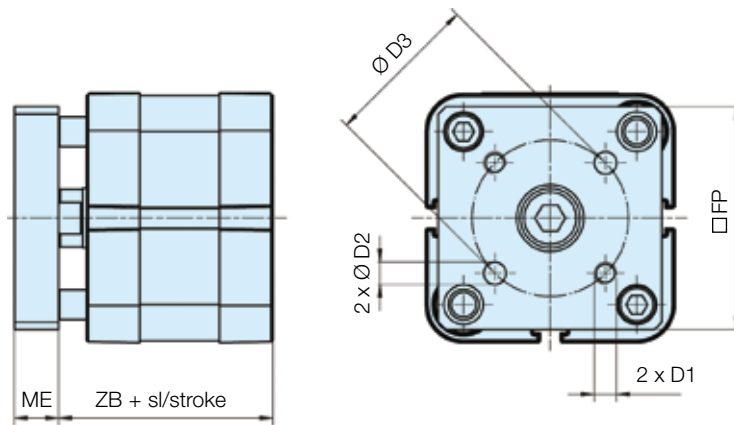
| Stroke (mm) | Order code      |
|-------------|-----------------|
| 5           | P1PG063DS7G0005 |
| 10          | P1PG063DS7G0010 |
| 15          | P1PG063DS7G0015 |
| 20          | P1PG063DS7G0020 |
| 25          | P1PG063DS7G0025 |
| 30          | P1PG063DS7G0030 |
| 40          | P1PG063DS7G0040 |
| 50          | P1PG063DS7G0050 |
| 60          | P1PG063DS7G0060 |
| 80          | P1PG063DS7G0080 |

Dimensions

P1PS...DS7G Double acting with female piston rod thread

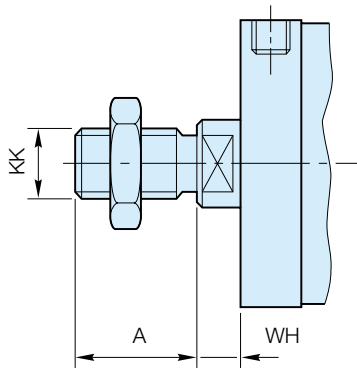


P1PG...DS Double acting with guided piston rod



| Bore size | AF  | BG  | ØD | D1 | ØD2 | ØD3 | EE   | E    | E1   | E2   | FP | G     | KF  | ME | N   | PL  | ØRR | RT | TG   | TT   | WH | ZA    | ZB    |
|-----------|-----|-----|----|----|-----|-----|------|------|------|------|----|-------|-----|----|-----|-----|-----|----|------|------|----|-------|-------|
|           | min | min |    |    | H8  |     |      |      |      |      |    |       |     |    | h14 |     | min |    |      |      |    | ± 0,3 | ± 0,6 |
| Ø32       | 12  | 16  | 12 | M5 | 5   | 28  | G1/8 | 49,4 | 24,7 | 24,9 | 45 | 15,25 | M8  | 10 | 10  | 7,8 | 5,1 | M6 | 32,5 | 6,5  | 7  | 44    | 51    |
| Ø40       | 12  | 16  | 12 | M5 | 5   | 33  | G1/8 | 56,0 | 28,0 | 28,5 | 50 | 15,25 | M8  | 10 | 10  | 8,0 | 5,1 | M6 | 38,0 | 8,0  | 7  | 45    | 52    |
| Ø50       | 16  | 16  | 16 | M6 | 6   | 42  | G1/8 | 67,0 | 33,5 | 33,7 | 60 | 14,30 | M10 | 12 | 13  | 7,7 | 6,4 | M8 | 46,5 | 11,0 | 8  | 45    | 53    |
| Ø63       | 16  | 16  | 16 | M6 | 6   | 50  | G1/8 | 79,0 | 39,5 | 39,8 | 70 | 16,30 | M10 | 12 | 13  | 8,0 | 6,4 | M8 | 56,5 | 16,0 | 8  | 49    | 57    |

**P1PS...DS8G Double acting with male piston rod thread**



| Bore size  | A  | WH   |       | KK         |
|------------|----|------|-------|------------|
|            |    | nom. | tol.  |            |
| <b>Ø32</b> | 19 | 7    | ± 1,6 | M10 x 1,25 |
| <b>Ø40</b> | 19 | 7    | ± 1,6 | M10 x 1,25 |
| <b>Ø50</b> | 22 | 8    | ± 1,6 | M12 x 1,25 |
| <b>Ø63</b> | 22 | 8    | ± 1,6 | M12 x 1,25 |

**Note:** Cylinders with male piston rod thread are delivered with one piston rod nut in zinc plated steel

Cylinder mountings

Flange MF1/MF2



Intended for fixed mounting of cylinder. Flange can be fitted to front- or rear end-plates of cylinder.

Materials  
Flange: Surface-treated steel  
Mounting screws according to DIN 6912: Zinc-plated steel 8.8

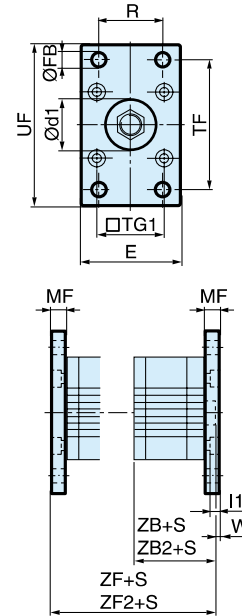
Supplied complete with mounting screws for attachment to cylinder.

| Cyl. bore<br>Ø mm | Weight<br>kg | Order code      |
|-------------------|--------------|-----------------|
| 32                | 0,23         | <b>P1C-4KMB</b> |
| 40                | 0,28         | <b>P1C-4LMB</b> |
| 50                | 0,53         | <b>P1C-4MMB</b> |
| 63                | 0,71         | <b>P1C-4NMB</b> |

Ø32-100 according to ISO MF1/MF2, VDMA, AFNOR

| Cyl. bore<br>mm | d1<br>mm | FB<br>mm | TG1<br>mm | E<br>mm | R<br>mm | MF<br>mm | TF<br>mm | UF<br>mm | l1<br>mm | W<br>mm | ZF*<br>mm | ZB*<br>mm | ZF2*<br>mm | ZB2*<br>mm |
|-----------------|----------|----------|-----------|---------|---------|----------|----------|----------|----------|---------|-----------|-----------|------------|------------|
|                 | H11      | H13      |           |         | JS14    | JS14     | JS14     |          | -0,5     |         |           |           |            |            |
| 32              | 30,0     | 7,0      | 32,5      | 45      | 32      | 10,0     | 64,0     | 80       | 5,0      | 2,0     | 58,5      | 48,5      | 67,0       | 57,0       |
| 40              | 35,0     | 9,0      | 38,0      | 52      | 36      | 10,0     | 72,0     | 90       | 5,0      | 2,0     | 60,5      | 50,5      | 68,5       | 58,5       |
| 50              | 40,0     | 9,0      | 46,5      | 65      | 45      | 12,0     | 90,0     | 110      | 6,5      | 4,0     | 64,5      | 52,5      | 71,0       | 59,0       |
| 63              | 45,0     | 9,0      | 56,5      | 75      | 50      | 12,0     | 100,0    | 120      | 6,5      | 4,0     | 70,0      | 58,0      | 75,5       | 63,5       |

S = Stroke length



Foot bracket MS1



Intended for fixed mounting of cylinder. Angle bracket can be fitted to front- and rear end-plates of cylinder.

Materials  
Foot bracket: Surface-treated steel, black  
Mounting screws according to DIN 912: Zinc-plated steel 8.8

Supplied in pairs with mounting screws for attachment to cylinder.

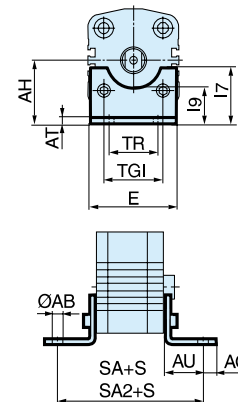
| Cyl. bore<br>Ø mm | Weight<br>kg | Order code       |
|-------------------|--------------|------------------|
| 32                | 0,06**       | <b>P1C-4KMF</b>  |
| 40                | 0,08**       | <b>P1C-4LMF</b>  |
| 50                | 0,16**       | <b>P1C-4MMF</b>  |
| 63                | 0,25**       | <b>P1C-4NMF*</b> |

\*\* Weight per item

Ø32-63 according to ISO MS1, VDMA, AFNOR

| Cyl. bore<br>mm | AB<br>mm | TG1<br>mm | E<br>mm | TR<br>mm | AO<br>mm | AU<br>mm | AH<br>mm | l7<br>mm | AT<br>mm | l9<br>mm | SA*<br>mm | SA2*<br>mm |
|-----------------|----------|-----------|---------|----------|----------|----------|----------|----------|----------|----------|-----------|------------|
|                 | H14      |           |         | JS14     |          |          | JS15     |          | JS14     |          |           |            |
| 32              | 7,0      | 32,5      | 45      | 32       | 10,0     | 24,0     | 32       | 30,0     | 4,5      | 17,5     | 88,5      | 97,0       |
| 40              | 9,0      | 38,0      | 52      | 36       | 8,0      | 28,0     | 36       | 30,0     | 4,5      | 18,5     | 98,5      | 106,5      |
| 50              | 9,0      | 46,5      | 65      | 45       | 13,0     | 32,0     | 45       | 36,0     | 5,5      | 25,0     | 108,5     | 115,0      |
| 63              | 9,0      | 56,5      | 75      | 50       | 13,0     | 32,0     | 50       | 35,0     | 5,5      | 27,5     | 114,0     | 119,5      |

S = Stroke length



**Cylinder mountings**

**Pivot bracket with rigid bearing**



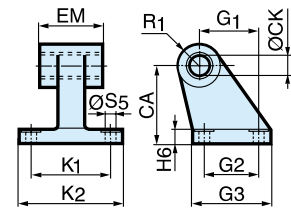
Intended for flexible mounting of cylinder. The pivot bracket can be combined with clevis bracket MP2.

Materials  
 Pivot bracket: Surface-treated aluminium, black  
 Bearing: Sintered oil-bronze bushing

| Cyl. bore<br>Ø mm | Weight<br>kg | Order code      |
|-------------------|--------------|-----------------|
| 32                | 0,06         | <b>P1C-4KMD</b> |
| 40                | 0,08         | <b>P1C-4LMD</b> |
| 50                | 0,15         | <b>P1C-4MMD</b> |
| 63                | 0,20         | <b>P1C-4NMD</b> |

Ø32-63 according to CETOP RP 107 P, VDMA, AFNOR

| Cyl. bore<br>mm | CK<br>H9<br>mm | S5<br>H13<br>mm | K1<br>JS14<br>mm | K2<br>mm | G1<br>JS14<br>mm | G2<br>JS14<br>mm | EM<br>mm | G3<br>mm | CA<br>JS15<br>mm | H6<br>mm | R1<br>mm |
|-----------------|----------------|-----------------|------------------|----------|------------------|------------------|----------|----------|------------------|----------|----------|
| 32              | 10             | 6,6             | 38               | 51       | 21               | 18               | 25,5     | 31       | 32               | 8        | 10       |
| 40              | 12             | 6,6             | 41               | 54       | 24               | 22               | 27,0     | 35       | 36               | 10       | 11       |
| 50              | 12             | 9,0             | 50               | 65       | 33               | 30               | 31,0     | 45       | 45               | 12       | 13       |
| 63              | 16             | 9,0             | 52               | 67       | 37               | 35               | 39,0     | 50       | 50               | 12       | 15       |



**Clevis bracket MP2**



Intended for flexible mounting of cylinder. Clevis bracket MP2 can be combined with clevis bracket MP4.

Materials  
 Clevis bracket: Surface-treated aluminium, black  
 Mounting screws according to DIN 912:  
 Zinc-plated steel 8.8  
 Pin: surface treated steel

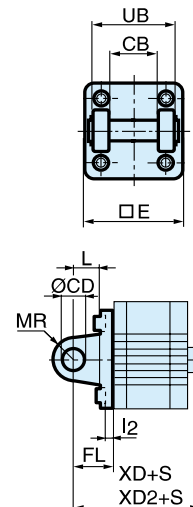
| Cyl. bore<br>Ø mm | Weight<br>kg | Order code      |
|-------------------|--------------|-----------------|
| 32                | 0,08         | <b>P1C-4KMT</b> |
| 40                | 0,11         | <b>P1C-4LMT</b> |
| 50                | 0,14         | <b>P1C-4MMT</b> |
| 63                | 0,29         | <b>P1C-4NMT</b> |

Supplied complete with mounting screws for attachment to cylinder.

Ø32-63 according to ISO MP2, VDMA, AFNOR

| Cyl. bore<br>mm | E<br>mm | UB<br>h14<br>mm | CB<br>H14<br>mm | FL<br>±0,2<br>mm | L<br>mm | I2<br>mm | CD<br>H9<br>mm | MR<br>mm | XD*<br>mm | XD2*<br>mm |
|-----------------|---------|-----------------|-----------------|------------------|---------|----------|----------------|----------|-----------|------------|
| 32              | 45,0    | 45              | 26,0            | 22               | 13      | 5,5      | 10             | 10       | 70,5      | 79,0       |
| 40              | 52,0    | 52              | 28,0            | 25               | 16      | 5,5      | 12             | 12       | 75,5      | 83,5       |
| 50              | 65,0    | 60              | 32,0            | 27               | 16      | 6,5      | 12             | 12       | 79,5      | 86,0       |
| 63              | 75,0    | 70              | 40,0            | 32               | 21      | 6,5      | 16             | 16       | 90,0      | 95,5       |

S = Stroke length



Cylinder mountings

Clevis bracket MP4



Intended for flexible mounting of cylinder. Clevis bracket MP4 can be combined with clevis bracket MP2.

Materials  
 Clevis bracket: Surface-treated aluminium, black  
 Mounting screws according to DIN 912: Zinc-plated steel 8.8

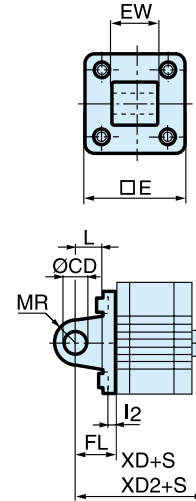
Supplied complete with mounting screws for attachment to cylinder.

| Cyl. bore<br>Ø mm | Weight<br>kg | Order code      |
|-------------------|--------------|-----------------|
| 32                | 0,09         | <b>P1C-4KME</b> |
| 40                | 0,13         | <b>P1C-4LME</b> |
| 50                | 0,17         | <b>P1C-4MME</b> |
| 63                | 0,36         | <b>P1C-4NME</b> |

Ø32-100 according to ISO MP4, VDMA, AFNOR

| Cyl. bore<br>mm | E<br>mm | EW<br>mm | FL<br>±0,2<br>mm | L<br>mm | I2<br>mm | CD<br>H9<br>mm | MR<br>mm | XD*<br>mm | XD2*<br>mm |
|-----------------|---------|----------|------------------|---------|----------|----------------|----------|-----------|------------|
| 32              | 45,0    | 26,0     | 22               | 13      | 5,5      | 10             | 10       | 70,5      | 79,0       |
| 40              | 52,0    | 28,0     | 25               | 16      | 5,5      | 12             | 12       | 75,5      | 83,5       |
| 50              | 65,0    | 32,0     | 27               | 16      | 6,5      | 12             | 12       | 79,5      | 86,0       |
| 63              | 75,0    | 40,0     | 32               | 21      | 6,5      | 16             | 16       | 90,0      | 95,5       |

S = Stroke length



Clevis bracket GA



Intended for flexible mounting of cylinder. Clevis bracket GA can be combined with pivot bracket with swivel bearing, swivel eye bracket and swivel rod eye.

Materials  
 Clevis bracket: Surface-treated aluminium, black  
 Pin: Surface hardened steel  
 Locking pin: Spring steel  
 Circlips according to DIN 471: Spring steel  
 Mounting screws acc. to DIN 912: Zinc-plated steel 8.8

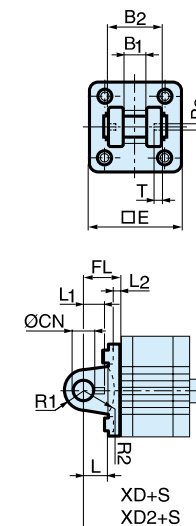
Supplied complete with mounting screws for attachment to cylinder.

| Cyl. bore<br>Ø mm | Weight<br>kg | Order code       |
|-------------------|--------------|------------------|
| 32                | 0,09         | <b>P1C-4KMCA</b> |
| 40                | 0,13         | <b>P1C-4LMCA</b> |
| 50                | 0,17         | <b>P1C-4MMCA</b> |
| 63                | 0,36         | <b>P1C-4NMCA</b> |

According to VDMA, AFNOR

| Cyl. bore<br>mm | E<br>mm | B2<br>d12<br>mm | B1<br>H14<br>mm | T<br>mm | B3<br>mm | R2<br>mm | L1<br>mm | FL<br>±0,2<br>mm | I2<br>mm | L<br>mm | CN<br>F7<br>mm | R1<br>mm | XD*<br>mm | XD2*<br>mm |
|-----------------|---------|-----------------|-----------------|---------|----------|----------|----------|------------------|----------|---------|----------------|----------|-----------|------------|
| 32              | 45      | 34              | 14              | 3       | 3,3      | 17       | 11,5     | 22               | 5,5      | 12      | 10             | 11       | 70,5      | 79,0       |
| 40              | 52      | 40              | 16              | 4       | 4,3      | 20       | 12,0     | 25               | 5,5      | 15      | 12             | 13       | 75,5      | 83,5       |
| 50              | 65      | 45              | 21              | 4       | 4,3      | 22       | 14,0     | 27               | 6,5      | 17      | 16             | 18       | 79,5      | 86,0       |
| 63              | 75      | 51              | 21              | 4       | 4,3      | 25       | 14,0     | 32               | 6,5      | 20      | 16             | 18       | 90,0      | 95,5       |

S = Stroke length



Stainless steel Pin Set GA

Materials  
 Pin: Stainless steel  
 Locking pin: Stainless steel  
 Circlips according to DIN 471: Stainless steel

| Cyl. bore<br>Ø mm | Weight<br>kg | Order code        |
|-------------------|--------------|-------------------|
| 32                | 0,05         | <b>9301054311</b> |
| 40                | 0,06         | <b>9301054312</b> |
| 50                | 0,07         | <b>9301054313</b> |
| 63                | 0,07         | <b>9301054314</b> |



**Cylinder mountings**

**Pivot bracket with swivel bearing**



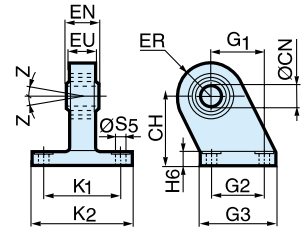
Intended for use together with clevis bracket GA.

Material  
 Pivot bracket: Surface-treated steel, black  
 Swivel bearing according to DIN 648K: Hardened steel

| Cyl. bore<br>Ø mm | Weight<br>kg | Order code      |
|-------------------|--------------|-----------------|
| 32                | 0,18         | <b>P1C-4KMA</b> |
| 40                | 0,25         | <b>P1C-4LMA</b> |
| 50                | 0,47         | <b>P1C-4MMA</b> |
| 63                | 0,57         | <b>P1C-4NMA</b> |

According to VDMA, AFNOR

| Cyl. bore<br>mm | CN<br>mm | S5<br>mm | K1<br>mm | K2<br>mm | EU<br>mm | G1<br>mm  | G2<br>mm | EN<br>mm | G3<br>mm | CH<br>mm | H6<br>mm | ER<br>mm | Z<br>° |
|-----------------|----------|----------|----------|----------|----------|-----------|----------|----------|----------|----------|----------|----------|--------|
|                 | H7       | H13      | JS14     |          |          | JS14 JS14 |          |          | JS15     |          |          |          |        |
| 32              | 10       | 6,6      | 38       | 51       | 10,5     | 21        | 18       | 14       | 31       | 32       | 10       | 16       | 4°     |
| 40              | 12       | 6,6      | 41       | 54       | 12,0     | 24        | 22       | 16       | 35       | 36       | 10       | 18       | 4°     |
| 50              | 16       | 9,0      | 50       | 65       | 15,0     | 33        | 30       | 21       | 45       | 45       | 12       | 21       | 4°     |
| 63              | 16       | 9,0      | 52       | 67       | 15,0     | 37        | 35       | 21       | 50       | 50       | 12       | 23       | 4°     |



**Swivel eye bracket**



Intended for use together with clevis bracket GA.

Material  
 Bracket: Surface-treated aluminium, black  
 Swivel bearing acc. to DIN 648K: Hardened steel

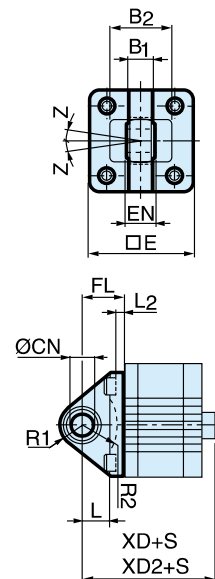
Supplied complete with mounting screws for attachment to cylinder.

| Cyl. bore<br>Ø mm | Weight<br>kg | Order code       |
|-------------------|--------------|------------------|
| 32                | 0,08         | <b>P1C-4KMSA</b> |
| 40                | 0,11         | <b>P1C-4LMSA</b> |
| 50                | 0,20         | <b>P1C-4MMSA</b> |
| 63                | 0,27         | <b>P1C-4NMSA</b> |

According to VDMA, AFNOR

| Cyl. bore<br>mm | E<br>mm | B1<br>mm | B2<br>mm | EN<br>mm | R1<br>mm | R2<br>mm | FL<br>mm | I2<br>mm | L<br>mm | CN<br>mm | XD*<br>mm | XD2*<br>mm | Z<br>° |
|-----------------|---------|----------|----------|----------|----------|----------|----------|----------|---------|----------|-----------|------------|--------|
| 32              | 45      | 10,5     | 38       | 14       | 16       | 14       | 22       | 5,5      | 12      | 10       | 70,5      | 79,0       | 4°     |
| 40              | 52      | 12,0     | 44       | 16       | 18       | 16       | 25       | 5,5      | 15      | 12       | 75,5      | 83,5       | 4°     |
| 50              | 65      | 15,0     | 51       | 21       | 21       | 19       | 27       | 6,5      | 15      | 16       | 79,5      | 86,0       | 4°     |
| 63              | 75      | 15,0     | 56       | 21       | 23       | 22       | 32       | 6,5      | 20      | 16       | 90,0      | 95,5       | 4°     |

S=Stroke length



Cylinder mountings

Mounting kit

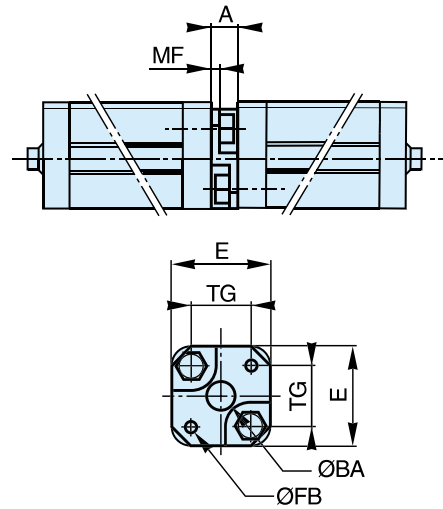


Mounting kit for back to back mounted cylinders, 3 and 4 position cylinders.

Material:  
Mounting: Aluminium  
Mounting screws: Zinc-plated steel 8.8

| Cyl. bore<br>Ø mm | Weight<br>kg | Order code      |
|-------------------|--------------|-----------------|
| 32                | 0,060        | <b>P1E-6KB0</b> |
| 40                | 0,078        | <b>P1E-6LB0</b> |
| 50                | 0,162        | <b>P1E-6MB0</b> |
| 63                | 0,194        | <b>P1E-6NB0</b> |

| Cyl.<br>bore<br>mm | E<br>mm | TG<br>mm | ØFB<br>mm | MF<br>mm | A<br>mm | ØBA<br>mm |
|--------------------|---------|----------|-----------|----------|---------|-----------|
| 32                 | 50      | 32,5     | 6,5       | 5        | 16      | 30        |
| 40                 | 60      | 38,0     | 6,5       | 5        | 16      | 35        |
| 50                 | 66      | 46,5     | 8,5       | 6        | 20      | 40        |
| 63                 | 80      | 56,5     | 8,5       | 6        | 20      | 45        |



**Piston rod mountings**

**Swivel rod eye**



Swivel rod eye for articulated mounting of cylinder. Swivel rod eye can be combined with clevis bracket GA. Maintenance-free.

Materials  
 Swivel rod eye: Zinc-plated steel  
 Swivel bearing according to DIN 648K: Hardened steel

| Cyl. bore<br>Ø mm | Weight<br>kg | Order code      |
|-------------------|--------------|-----------------|
| 32 / 40           | 0,08         | <b>P1C-4KRS</b> |
| 50 / 63           | 0,12         | <b>P1C-4LRS</b> |

**Stainless steel swivel rod eye**

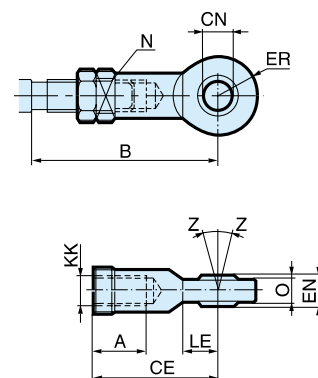


Stainless-steel swivel rod eye for articulated mounting of cylinder. Swivel rod eye can be combined with clevis bracket GA. Maintenance-free.

Materials  
 Swivel rod eye: Stainless steel  
 Swivel bearing according to DIN 648K: Stainless steel

Use stainless steel nut with stainless steel swivel rod eye.

| Cyl. bore<br>Ø mm | Weight<br>kg | Order code      |
|-------------------|--------------|-----------------|
| 32 / 40           | 0,08         | <b>P1S-4JRT</b> |
| 50 / 63           | 0,12         | <b>P1S-4LRT</b> |



According to ISO 8139

| Cyl. bore<br>mm | A<br>mm | B<br>min<br>max<br>mm | B<br>max<br>mm | CE<br>mm | CN<br>H9<br>mm | EN<br>h12<br>mm | ER<br>mm | KK<br>mm | LE<br>min<br>mm | N<br>mm | O<br>mm | Z<br>12° |
|-----------------|---------|-----------------------|----------------|----------|----------------|-----------------|----------|----------|-----------------|---------|---------|----------|
| 32 / 40         | 20      | 48,0                  | 55             | 43       | 10             | 14              | 14       | M10x1,25 | 15              | 17      | 10,5    | 12°      |
| 50 / 63         | 22      | 56,0                  | 62             | 50       | 12             | 16              | 16       | M12x1,25 | 17              | 19      | 12,0    | 12°      |

**Clevis**



Clevis for articulated mounting of cylinder.

Material  
 Clevis, clip: Galvanized steel  
 Pin: Hardened steel

| Cyl. bore<br>Ø mm | Weight<br>kg | Order code      |
|-------------------|--------------|-----------------|
| 32 / 40           | 0,09         | <b>P1C-4KRC</b> |
| 50 / 63           | 0,15         | <b>P1C-4LRC</b> |

**Stainless steel clevis**

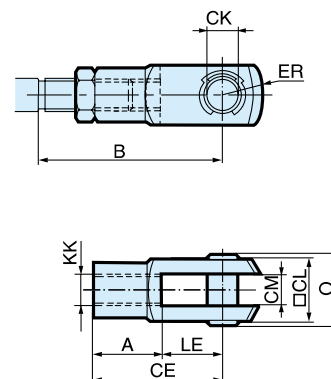


Stainless-steel clevis for articulated mounting of cylinder.

Material  
 Clevis: Stainless steel  
 Pin: Stainless steel  
 Circlips according to DIN 471: Stainless steel

Use stainless steel nut with stainless steel swivel rod eye.

| Cyl. bore<br>Ø mm | Weight<br>kg | Order code      |
|-------------------|--------------|-----------------|
| 32 / 40           | 0,09         | <b>P1S-4JRD</b> |
| 50 / 63           | 0,15         | <b>P1S-4LRD</b> |



According to ISO 8140

| Cyl. bore<br>mm | A<br>mm | B<br>min<br>max<br>mm | B<br>max<br>mm | CE<br>mm | CK<br>h11/E9<br>mm | CL<br>mm | CM<br>mm | ER<br>mm | KK<br>mm | LE<br>mm | O<br>mm |
|-----------------|---------|-----------------------|----------------|----------|--------------------|----------|----------|----------|----------|----------|---------|
| 32 / 40         | 20      | 45,0                  | 52             | 40       | 10                 | 20       | 10       | 16       | M10x1,25 | 20       | 28,0    |
| 50 / 63         | 24      | 54,0                  | 60             | 48       | 12                 | 24       | 12       | 19       | M12x1,25 | 24       | 32,0    |

**Piston rod mountings**

**Flexo coupling**



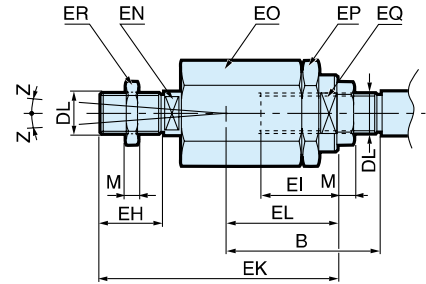
Flexo coupling for articulated mounting of piston rod. Flexo fitting is intended to take up axial angle errors within a range of ±4°.

Material  
Flexo coupling, nut: Zinc-plated steel  
Socket: Hardened steel

Supplied complete with galvanized adjustment nut.

| Cyl. bore<br>Ø mm | Weight<br>kg | Order code      |
|-------------------|--------------|-----------------|
| 32 / 40           | 0,21         | <b>P1C-4KRF</b> |
| 50 / 63           | 0,22         | <b>P1C-4LRF</b> |

| Cyl. bore<br>mm | B<br>min<br>mm | B<br>max<br>mm | DL       | EH | EI | EK | EL | EN | EO | EP | EQ | ER | M   | Z  |
|-----------------|----------------|----------------|----------|----|----|----|----|----|----|----|----|----|-----|----|
|                 |                |                |          | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm  | mm |
| 32 / 40         | 36,0           | 43             | M10x1,25 | 20 | 23 | 70 | 31 | 12 | 30 | 30 | 19 | 30 | 5,0 | 4° |
| 50 / 63         | 37,0           | 43             | M12x1,25 | 23 | 23 | 67 | 31 | 12 | 30 | 30 | 19 | 30 | 6,0 | 4° |



**Nut**



Intended for fixed mounting of accessories to the piston rod.

Material: Galvanized steel

(Supplied in quantities in multiples of 10 only)

| Cyl. bore<br>Ø mm | Weight<br>kg | Order code        |
|-------------------|--------------|-------------------|
| 32 / 40           | 0,007        | <b>9128985601</b> |
| 50 / 63           | 0,010        | <b>0261109910</b> |

**Stainless steel nut**



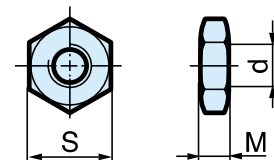
Intended for fixed mounting of accessories to the piston rod.

Material: Stainless steel A2

| Cyl. bore<br>Ø mm | Weight<br>kg | Order code        |
|-------------------|--------------|-------------------|
| 32 / 40           | 0,007        | <b>9126725404</b> |
| 50 / 63           | 0,010        | <b>9126725405</b> |

According to DIN 439 B

| Cyl. bore<br>mm | d        | M   | S  |
|-----------------|----------|-----|----|
|                 |          | mm  | mm |
| 32 / 40         | M10x1,25 | 5,0 | 17 |
| 50 / 63         | M12x1,25 | 6,0 | 19 |



### Drop-in sensors

The "drop-in" sensors can easily be installed from the side in the sensor groove, at any position along the piston stroke. The sensors are completely recessed and thus mechanically protected. Choose between electronic or reed sensors and several cable lengths and 8 mm and M12 connectors. The same standard sensors are used for all versions.



### Electronic sensors

The new electronic sensors are "Solid State", i.e. they have no moving parts at all. They are provided with short-circuit protection and transient protection as standard. The built-in electronics make the sensors suitable for applications with high on and off switching frequency, and where very long service life is required.

#### Technical data

|                            |  |
|----------------------------|--|
| Design                     | GMR (Giant Magnetic Resistance) magneto-resistive function                     |
| Installation               | From side, down into the sensor groove, so-called drop-in                      |
| Outputs                    | PNP, normally open (also available in NPN design, normally closed, on request) |
| Voltage range              | 10-30 VDC<br>10-18 V DC, ATEX sensor   |
| Ripple                     | max 10%  |
| Voltage drop               | max 2,5 V  |
| Load current               | max 100 mA   |
| Internal consumption       | max 10 mA  |
| Actuating distance         | min 9 mm   |
| Hysteresis                 | max 1,5 mm   |
| Repeatability accuracy     | max 0,2 mm   |
| On/off switching frequency | max 5 kHz  |
| On switching time          | max 2 ms   |
| Off switching time         | max 2 ms   |
| Encapsulation              | IP 67 (EN 60529)   |
| Temperature range          | -25 °C to +75 °C<br>-20 °C to +45 °C, ATEX sensor                              |
| Indication                 | LED, yellow  |
| Material housing           | PA 12  |
| Material screw             | Stainless steel  |
| Cable                      | PVC or PUR 3x0.25 mm <sup>2</sup><br>see order code respectively               |

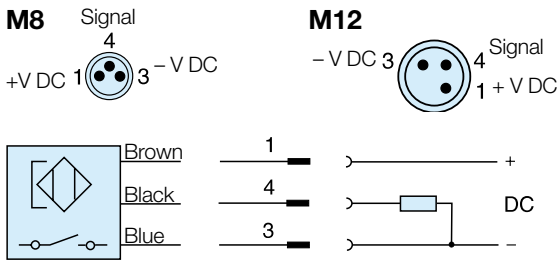
### Reed sensors

The sensors are based on proven reed switches, which offer reliable function in many applications. Simple installation, a protected position on the cylinder and clear LED indication are important advantages of this range of sensors.

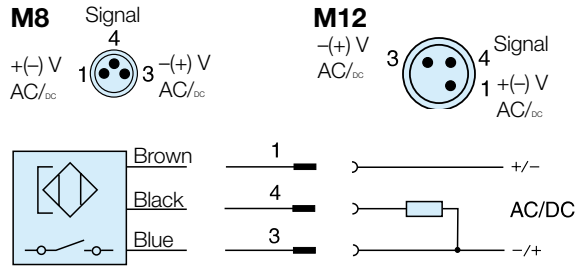
#### Technical data

|                            |  |
|----------------------------|--|
| Design                     | Reed element   |
| Mounting                   | From side, down into the sensor groove, so-called drop-in                      |
| Output                     | Normally open , or normally closed   |
| Voltage range              | 10-30 V AC/DC or<br>10-120 V AC/DC<br>24-230 V AC/DC                           |
| Load current               | max 500 mA for 10-30 V or<br>max 100 mA for 10-120 V<br>max 30 mA for 24-230 V |
| Breaking power (resistive) | max 6 W/VA   |
| Actuating distance         | min 9 mm   |
| Hysteresis                 | max 1,5 mm   |
| Repeatability accuracy     | 0,2 mm   |
| On/off switching frequency | max 400 Hz   |
| On switching time          | max 1,5 ms   |
| Off switching time         | max 0,5 ms   |
| Encapsulation              | IP 67 (EN 60529)   |
| Temperature range          | -25 °C to +75 °C   |
| Indication                 | LED, yellow  |
| Material housing           | PA12   |
| Material screw             | Stainless steel  |
| Cable                      | PVC or PUR 3x0.14 mm <sup>2</sup><br>see order code respectively               |

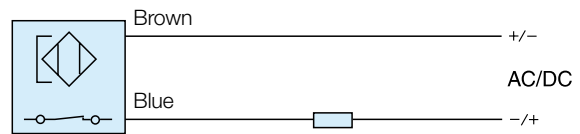
**Electronic sensors**



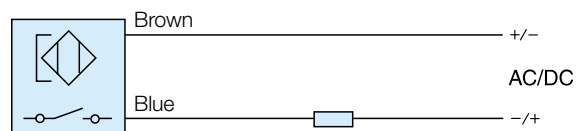
**Reed sensors**



**P8S-GCFPX**

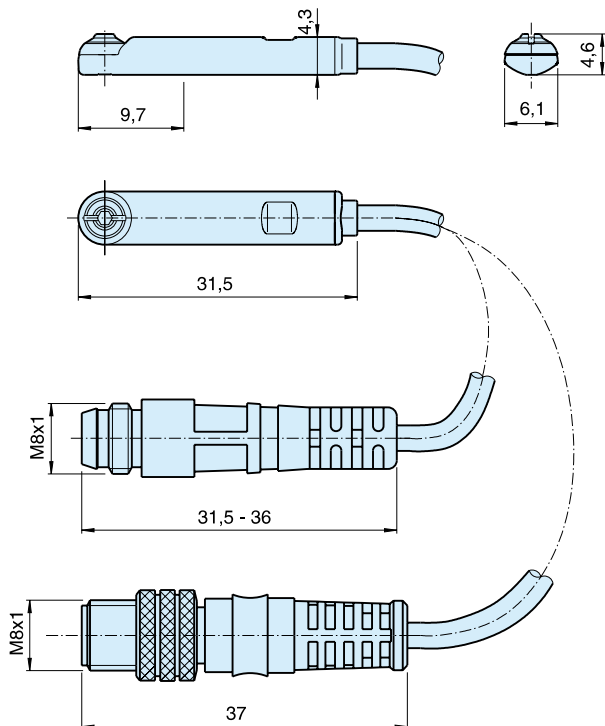


**P8S-GRFLX / P8S-GRFLX2**

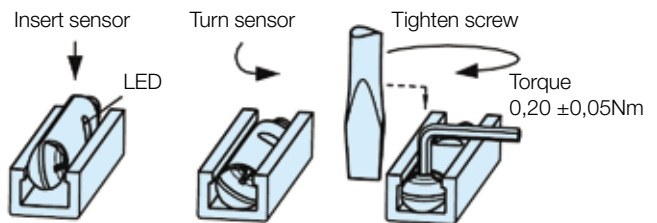


**Dimensions**

**Sensors**



**Sensor Installation**





## Ordering data

| Output/function                        | Cable/connector                                  | Weight<br>kg | Order code        |
|--|--|--------------|-------------------|
| <b>Electronic sensors , 10-30 V DC</b> |  |              |                   |
| PNP type, normally open                | 0,27 m PUR-cable and 8 mm snap-in male connector | 0,007        | <b>P8S-GPSHX</b>  |
| PNP type, normally open                | 0,27 m PUR-cable and M12 screw male connector    | 0,015        | <b>P8S-GPMHX</b>  |
| PNP type, normally open                | 3 m PVC-cable without connector                  | 0,030        | <b>P8S-GPFLX</b>  |
| PNP type, normally open                | 10 m PVC-cable without connector                 | 0,110        | <b>P8S-GPFTX</b>  |
| <b>Reed sensors , 10-30 V AC/DC</b>    |  |              |                   |
| Normally open                          | 0,27 m PUR-cable and 8 mm snap-in male connector | 0,007        | <b>P8S-GSSHX</b>  |
| Normally open                          | 0,27 m PUR-cable and M12 screw male connector    | 0,015        | <b>P8S-GSMHX</b>  |
| Normally open                          | 3 m PVC-cable without connector                  | 0,030        | <b>P8S-GSFLX</b>  |
| Normally open                          | 10 m PVC-cable without connector                 | 0,110        | <b>P8S-GSFTX</b>  |
| Normally closed                        | 5m PVC-cable without connector <sup>(1)</sup>    | 0,050        | <b>P8S-GCFPX</b>  |
| <b>Reed sensors, 10-120 V AC/DC</b>    |  |              |                   |
| Normally open                          | 3 m PVC-cable without connector                  | 0,030        | <b>P8S-GRFLX</b>  |
| <b>Reed sensorer, 24-230 V AC/DC</b>   |  |              |                   |
| Normalt öppen                          | 3 m PVC-kabel utan kontakt                       | 0,030        | <b>P8S-GRFLX2</b> |

1) Without LED

## Connecting cables with one connector

The cables have an integral snap-in female connector.



| Type of cable   | Cable/connector             | Weight<br>kg | Order code        |
|---|-----------------------------|--------------|-------------------|
| <b>Cables for sensors, complete with one female connector</b> |                             |              |                   |
| Cable, Flex PVC   | 3 m 8 mm Snap-in connector  | 0,07         | <b>9126344341</b> |
| Cable, Flex PVC   | 10 m 8 mm Snap-in connector | 0,21         | <b>9126344342</b> |
| Cable, Polyurethane   | 3 m 8 mm Snap-in connector  | 0,01         | <b>9126344345</b> |
| Cable, Polyurethane   | 10 m 8 mm Snap-in connector | 0,20         | <b>9126344346</b> |
| Cable, Polyurethane   | 5 m M12 screw connector     | 0,07         | <b>9126344348</b> |
| Cable, Polyurethane   | 10 m M12 screw connector    | 0,20         | <b>9126344349</b> |

## Male connectors for connecting cables

Cable connectors for producing your own connecting cables. The connectors can be quickly attached to the cable without special tools. Only the outer sheath of the cable is removed. The connectors are available for M8 and M12 screw connectors and meet protection class IP 65.



| Connector           | Weight<br>kg | Order code       |
|---------------------|--------------|------------------|
| M8 screw connector  | 0,017        | <b>P8CS0803J</b> |
| M12 screw connector | 0,022        | <b>P8CS1204J</b> |

# Specifying air quality (purity) in accordance with ISO8573-1:2010, the international standard for Compressed Air Quality

ISO8573-1 is the primary document used from the ISO8573 series as it is this document which specifies the amount of contamination allowed in each cubic metre of compressed air.

ISO8573-1 lists the main contaminants as Solid Particulate, Water and Oil. The purity levels for each contaminant are shown separately in tabular form, however for ease of use, this document combines all three contaminants into one easy to use table.

| ISO8573-1:2010 CLASS | Solid Particulate  |                |              |                                      | Water                    |                         | Oil   |
|----------------------|--|----------------|--------------|--------------------------------------|--------------------------|-------------------------|---|
|                      | Maximum number of particles per m <sup>3</sup>                                 |                |              | Mass Concentration mg/m <sup>3</sup> | Vapour Pressure Dewpoint | Liquid g/m <sup>3</sup> | Total Oil (aerosol liquid and vapour) mg/m <sup>3</sup> |
|                      | 0,1 - 0,5 micron   | 0,5 - 1 micron | 1 - 5 micron |                                      |                          |                         |   |
| 0                    | As specified by the equipment user or supplier and more stringent than Class 1 |                |              |                                      |                          |                         |   |
| 1                    | ≤ 20 000   | ≤ 400          | ≤ 10         | -                                    | ≤ -70 °C                 | -                       | 0,01  |
| 2                    | ≤ 400 000  | ≤ 6 000        | ≤ 100        | -                                    | ≤ -40 °C                 | -                       | 0,1   |
| 3                    | -  | ≤ 90 000       | ≤ 1 000      | -                                    | ≤ -20 °C                 | -                       | 1   |
| 4                    | -  | -              | ≤ 10 000     | -                                    | ≤ +3 °C                  | -                       | 5   |
| 5                    | -  | -              | ≤ 100 000    | -                                    | ≤ +7 °C                  | -                       | -   |
| 6                    | -  | -              | -            | ≤ 5                                  | ≤ +10 °C                 | -                       | -   |
| 7                    | -  | -              | -            | 5 - 10                               | -                        | ≤ 0,5                   | -   |
| 8                    | -  | -              | -            | -                                    | -                        | 0,5 - 5                 | -   |
| 9                    | -  | -              | -            | -                                    | -                        | 5 - 10                  | -   |
| X                    | -  | -              | -            | > 10                                 | -                        | > 10                    | > 10  |

## Specifying air purity in accordance with ISO8573-1:2010

When specifying the purity of air required, the standard must always be referenced, followed by the purity class selected for each contaminant (a different purity class can be selected for each contamination if required).

An example of how to write an air quality specification is shown below:

### ISO 8573-1:2010 Class 1.2.1

ISO 8573-1:2010 refers to the standard document and its revision, the three digits refer to the purity classifications selected for solid particulate, water and total oil. Selecting an air purity class of 1.2.1 would specify the following air quality when operating at the standard's reference conditions :

#### Class 1 - Particulate

In each cubic metre of compressed air, the particulate count should not exceed 20,000 particles in the 0.1 - 0.5 micron size range, 400 particles in the 0.5 - 1 micron size range and 10 particles in the 1 - 5 micron size range.

#### Class 2 - Water

A pressure dewpoint (PDP) of -40°C or better is required and no liquid water is allowed.

#### Class 1 - Oil

In each cubic metre of compressed air, not more than 0.01mg of oil is allowed. This is a total level for liquid oil, oil aerosol and oil vapour.

## ISO8573-1:2010 Class zero

- **Class 0 does not mean zero contamination.**
- **Class 0 requires the user and the equipment manufacturer to agree contamination levels as part of a written specification.**
- **The agreed contamination levels for a Class 0 specification should be within the measurement capabilities of the test equipment and test methods shown in ISO8573 Pt 2 to Pt 9.**
- **The agreed Class 0 specification must be written on all documentation to be in accordance with the standard.**
- **Stating Class 0 without the agreed specification is meaningless and not in accordance with the standard.**
- **A number of compressor manufacturers claim that the delivered air from their oil-free compressors is in compliance with Class 0.**
- **If the compressor was tested in clean room conditions, the contamination detected at the outlet will be minimal. Should the same compressor now be installed in typical urban environment, the level of contamination will be dependent upon what is drawn into the compressor intake, rendering the Class 0 claim invalid.**
- **A compressor delivering air to Class 0 will still require purification equipment in both the compressor room and at the point of use for the Class 0 purity to be maintained at the application.**
- **Air for critical applications such as breathing, medical, food, etc typically only requires air quality to Class 2.2.1 or Class 2.1.1.**
- **Purification of air to meet a Class 0 specification is only cost effective if carried out at the point of use.**



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