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# Pneumatic Cylinders


Series P1D-B Basic Line - Ø32 to Ø125 mm  
According to ISO 15552

PDE2659TCUK




ENGINEERING YOUR SUCCESS.

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**Important**

Before attempting any external or internal work on the cylinder or any connected components, make sure the cylinder is vented and disconnect the air supply in order to ensure isolation of the air supply.



**Note**

All technical data in this catalogue are typical data only.  
Air quality is essential for maximum cylinder service life (see ISO 8573).



**WARNING**

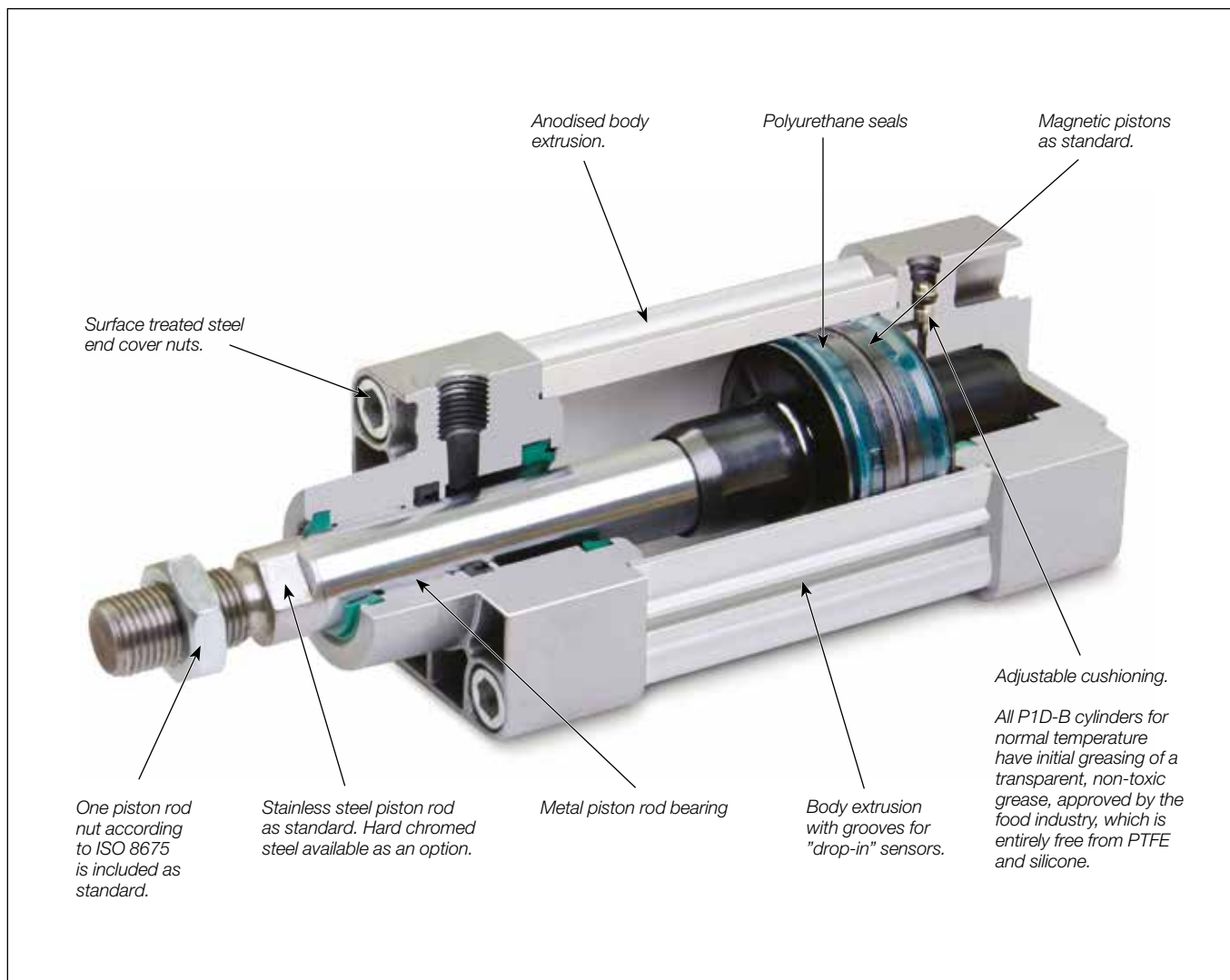
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## P1D-B Pneumatic ISO Cylinders



### Standard cylinders P1D-B, ISO 15552

#### Global product range

The P1D-B Series meets the specifications in the ISO 15552 standard. This means full interchangeability to any ISO 15552 cylinder anywhere around the globe. P1D-B will be available throughout the extensive worldwide Parker Hannifin organization – for the benefit to you and your customers.

#### Features

- ISO 15552 conformity.
- Bore sizes 32-125 mm.
- Corrosion resistant design with barrel in anodized aluminium and stainless steel piston rod.
- Polyurethane seal technology.
- Adjustable air cushioning.
- Range of mountings available.
- Drop in global P8S-G sensors.
- Metal piston rod bearing.

## P1D-B Pneumatic ISO Cylinders

### Cylinder forces, double acting variants

| Cyl. bore/<br>pist. rod mm | Stroke | Piston<br>cm <sup>2</sup> | Max theoretical force in N (bar) |      |      |      |      |      |      |      |       |       |
|----------------------------|--------|---------------------------|----------------------------------|------|------|------|------|------|------|------|-------|-------|
|                            |        |                           | 1,0                              | 2,0  | 3,0  | 4,0  | 5,0  | 6,0  | 7,0  | 8,0  | 9,0   | 10,0  |
| 32/12                      | +      | 8,0                       | 80                               | 161  | 241  | 322  | 402  | 483  | 563  | 643  | 724   | 804   |
|                            | -      | 6,9                       | 69                               | 138  | 207  | 276  | 346  | 415  | 484  | 553  | 622   | 691   |
| 40/16                      | +      | 12,6                      | 126                              | 251  | 377  | 503  | 628  | 754  | 880  | 1005 | 1131  | 1257  |
|                            | -      | 10,6                      | 106                              | 212  | 318  | 424  | 530  | 636  | 742  | 848  | 954   | 1060  |
| 50/20                      | +      | 19,6                      | 196                              | 393  | 589  | 785  | 982  | 1178 | 1374 | 1571 | 1767  | 1963  |
|                            | -      | 16,5                      | 165                              | 330  | 495  | 660  | 825  | 990  | 1155 | 1319 | 1484  | 1649  |
| 63/20                      | +      | 31,2                      | 312                              | 623  | 935  | 1247 | 1559 | 1870 | 2182 | 2494 | 2806  | 3117  |
|                            | -      | 28,0                      | 280                              | 561  | 841  | 1121 | 1402 | 1682 | 1962 | 2242 | 2523  | 2803  |
| 80/25                      | +      | 50,3                      | 503                              | 1005 | 1508 | 2011 | 2513 | 3016 | 3519 | 4021 | 4524  | 5027  |
|                            | -      | 45,4                      | 454                              | 907  | 1361 | 1814 | 2268 | 2721 | 3175 | 3629 | 4082  | 4536  |
| 100/25                     | +      | 78,5                      | 785                              | 1571 | 2356 | 3142 | 3927 | 4712 | 5498 | 6283 | 7069  | 7854  |
|                            | -      | 73,6                      | 736                              | 1473 | 2209 | 2945 | 3682 | 4418 | 5154 | 5890 | 6627  | 7363  |
| 125/32                     | +      | 122,7                     | 1227                             | 2454 | 3682 | 4909 | 6136 | 7363 | 8590 | 9817 | 11045 | 12272 |
|                            | -      | 114,7                     | 1147                             | 2294 | 3440 | 4587 | 5734 | 6881 | 8027 | 9174 | 10321 | 11468 |

+ = Outward stroke  
- = Return stroke

#### Note!

Select a theoretical force 50-100% larger than the force required

### Main data: P1D-B

| Cylinder<br>designation      | Cylinder |                 | Piston rod |                 | Piston rod<br>thread | Cushioning<br>length | Connection                  |        |
|------------------------------|----------|-----------------|------------|-----------------|----------------------|----------------------|-----------------------------|--------|
|                              | bore     | area            | dia.       | area            |                      |                      | sump-<br>tion <sup>2)</sup> | thread |
|                              | mm       | cm <sup>2</sup> | mm         | cm <sup>2</sup> |                      | mm                   | litre                       |        |
| P1D-B032••XXXX <sup>1)</sup> | 32       | 8,0             | 12         | 1,1             | M10x1,25             | 17                   | 0,105                       | G1/8   |
| P1D-B040••XXXX <sup>1)</sup> | 40       | 12,6            | 16         | 2,0             | M12x1,25             | 19                   | 0,162                       | G1/4   |
| P1D-B050••XXXX <sup>1)</sup> | 50       | 19,6            | 20         | 3,1             | M16x1,5              | 20                   | 0,253                       | G1/4   |
| P1D-B063••XXXX <sup>1)</sup> | 63       | 31,2            | 20         | 3,1             | M16x1,5              | 23                   | 0,414                       | G3/8   |
| P1D-B080••XXXX <sup>1)</sup> | 80       | 50,3            | 25         | 4,9             | M20x1,5              | 23                   | 0,669                       | G3/8   |
| P1D-B100••XXXX <sup>1)</sup> | 100      | 78,5            | 25         | 4,9             | M20x1,5              | 27                   | 1,043                       | G1/2   |
| P1D-B125••XXXX <sup>1)</sup> | 125      | 122,7           | 32         | 8,0             | M27x2                | 30                   | 1,662                       | G1/2   |

### Total mass including moving parts

| Cylinder<br>designation      | Total mass (kg) |                             |
|------------------------------|-----------------|-----------------------------|
|                              | at 0 mm stroke  | Supplement per 10 mm stroke |
| P1D-B032••XXXX <sup>1)</sup> | 0,55            | 0,023                       |
| P1D-B040••XXXX <sup>1)</sup> | 0,80            | 0,033                       |
| P1D-B050••XXXX <sup>1)</sup> | 1,20            | 0,048                       |
| P1D-B063••XXXX <sup>1)</sup> | 1,73            | 0,051                       |
| P1D-B080••XXXX <sup>1)</sup> | 2,45            | 0,075                       |
| P1D-B100••XXXX <sup>1)</sup> | 4,00            | 0,084                       |
| P1D-B125••XXXX <sup>1)</sup> | 6,87            | 0,138                       |

### Mass moving parts only (for cushioning calculation)

| Cylinder<br>designation      | Mass moving parts (kg) |                             |
|------------------------------|------------------------|-----------------------------|
|                              | at 0 mm stroke         | Supplement per 10 mm stroke |
| P1D-B032••XXXX <sup>1)</sup> | 0,13                   | 0,009                       |
| P1D-B040••XXXX <sup>1)</sup> | 0,24                   | 0,016                       |
| P1D-B050••XXXX <sup>1)</sup> | 0,42                   | 0,025                       |
| P1D-B063••XXXX <sup>1)</sup> | 0,50                   | 0,025                       |
| P1D-B080••XXXX <sup>1)</sup> | 0,90                   | 0,039                       |
| P1D-B100••XXXX <sup>1)</sup> | 1,10                   | 0,039                       |
| P1D-B125••XXXX <sup>1)</sup> | 2,34                   | 0,063                       |

1) XXXX = stroke

2) Free air consumption per 10 mm stroke for a double stroke at 6 bar

## P1D-B Pneumatic ISO Cylinders

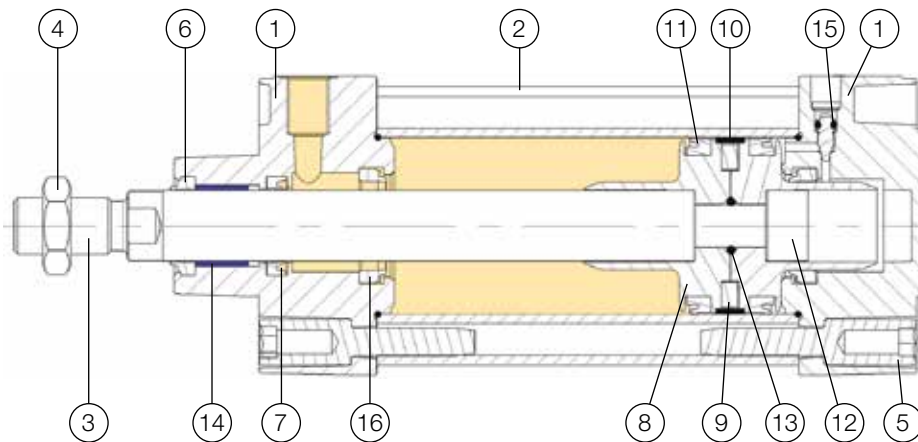
### General technical data

|                   |  |               |
|-------------------|--|---------------|
| Product type      | Standard cylinder according to ISO 15552 |               |
| Bore size         | 32 - 125 mm                              |               |
| Stroke length     | 5-2800 mm                                |               |
| Versions          | P1D-B...MS                               | Double acting |
| Cushioning        | Adjustable air cushioning                |               |
| Position sensing  | Proximity sensor                         |               |
| Installation      | P1D cylinder and piston rod mountings    |               |
| Mounting position | Any                                      |               |

### Operating and environmental data

|                      |   |
|----------------------|---|
| Operating medium     | For best possible service life and trouble-free operation dry, filtered compressed air to ISO 8573-1:2010 quality class 3.4.3 should be used. 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. |
| 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 | Resistance to corrosion and chemicals.  |

### Material specification



| Pos | Part               | Specification                         |  |
|-----|--------------------|---------------------------------------|--|
| 1   | End covers         | Aluminium                             |  |
| 2   | Cylinder barrel    | Anodised aluminium                    |  |
| 3   | Piston rod         | Standard                              | Austenitic Stainless steel X8CRN18-9 (AISI303)           |
|     |                    | Option                                | Hard-chromium plated austenitic steel NF EN 10083-1 C45E |
| 4   | Piston rod nut     | Zinc plated steel                     |  |
| 5   | End cover screws   | Zinc plated steel                     |  |
| 6   | Scraper ring       | Polyurethane                          |  |
| 7   | Piston rod seal    | Polyurethane                          |  |
| 8   | Piston             | POM high tech polymer                 |  |
| 9   | Magnet             | Plastic coated magnetic material      |  |
| 10  | Piston bearing     | POM high tech polymer                 |  |
| 11  | Piston seals       | Polyurethane                          |  |
| 12  | Piston bolt        | Zinc plated steel                     |  |
| 13  | O-rings            | Nitrile rubber                        |  |
| 14  | Piston rod bearing | Multilayer PTFE/steel                 |  |
| 15  | Cushioning screws  | Stainless steel, DIN X 10 CrNiS 18 n9 |  |
| 16  | Cushioning seals   |                                       | Polyurethane   |
|     |                    | Note on materials                     | RoHS compliant   |

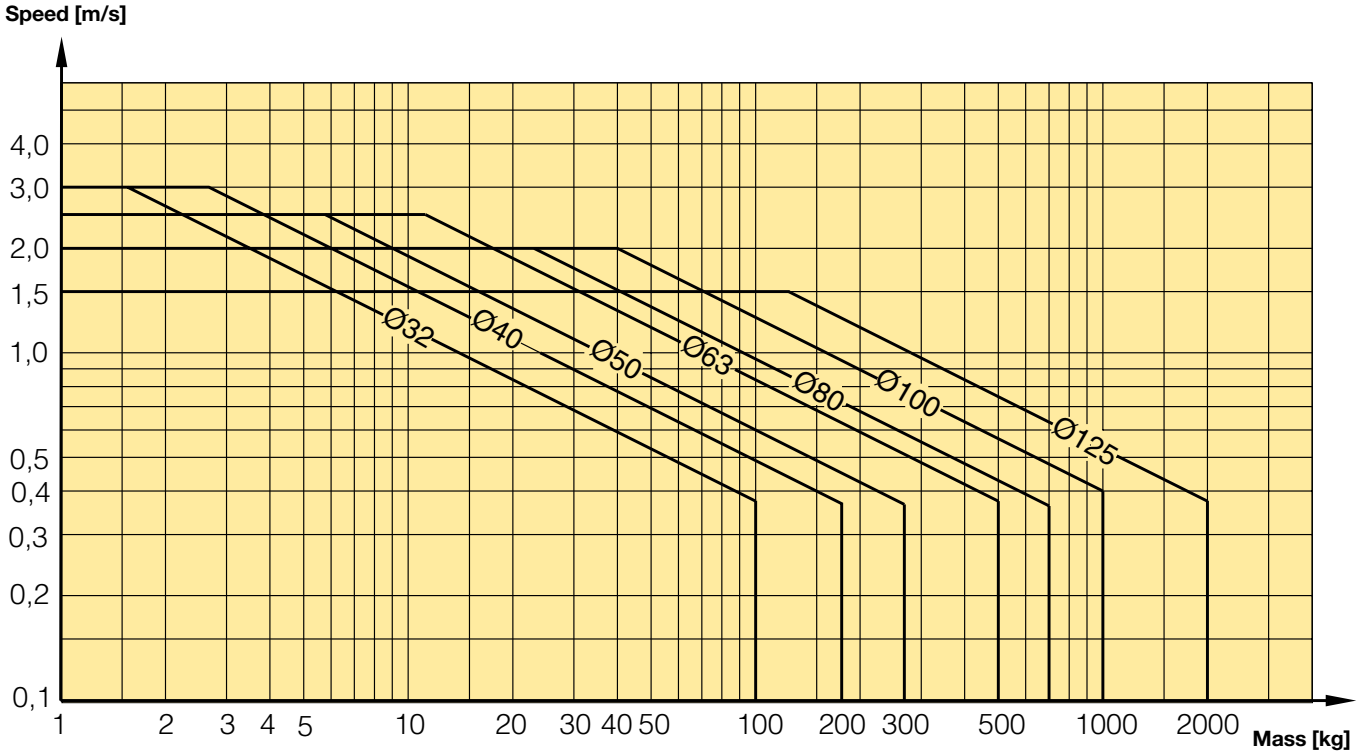
# P1D-B Pneumatic ISO Cylinders

## Cushioning characteristics

The diagram below is used for dimensioning of cylinders related to the cushioning capacity. The maximum cushioning capacity shown in the diagram assumes the following:

- Low load, i.e. low pressure drop across the piston
- Equilibrium speed
- Correctly adjusted cushioning screw
- 6 bar at cylinder port

The load is the sum of internal and external friction, plus any gravitational forces. At high relative load (pressure drop exceeding 1 bar), we recommend that for any given speed, the mass should be reduced by a factor of 2.5, or for a given mass, the speed should be reduced by a factor of 1.5. This is in relation to the maximum performance given in the diagram





**Guide for selecting suitable tubing**

The selection of the correct size of tubing is often based on experience, with no great thought to optimizing energy efficiency and cylinder velocity. This is usually acceptable, but making a rough calculation can result in worthwhile economic gains.

**The following is the basic principle:**

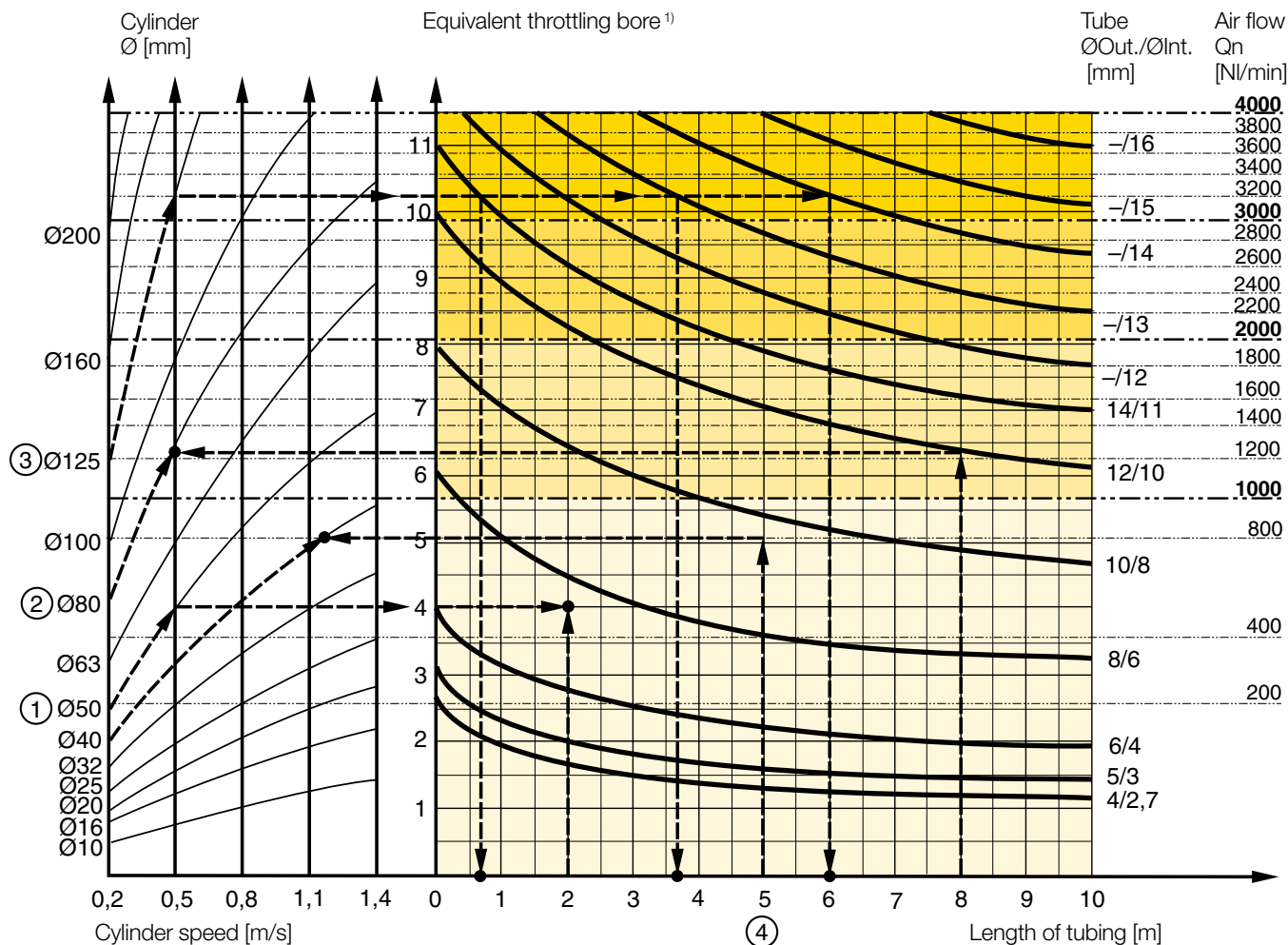
1. The primary line to the working valve could be over sized (this does not cause any extra air consumption and consequently does not create any extra costs in operation).
2. The tubes between the valve and the cylinder should, however, be optimized according to the principle that an insufficient bore throttles the flow and thus limits the cylinder speed, while an oversized pipe creates a dead volume which increases the air consumption and filling time.

The chart below is intended to help when selecting the correct size of tube to use between the valve and the cylinder.

**The following prerequisites apply:**

The *cylinder load* should be about 50% of the theoretical force (= normal load). A lower load gives a higher velocity and vice versa. The tube size is selected as a function of the *cylinder bore*, the desired *cylinder velocity* and the *tube length* between the valve and the cylinder.

If you want to use the capacity of the valve to its maximum, and obtain maximum speed, the tubing should be chosen so that they at least correspond with the equivalent restriction diameter (see description below), so that the tubing does not restrict the total flow. This means that a short tubing must have at least the equivalent restriction diameter. If the tubing is longer, choose it from the table below. Straight fittings should be chosen for highest flow rates. (Elbow and banjo fittings cause restriction.)



- 1) The "equivalent throttling bore" is a long throttle (for example a tube) or a series of throttles (for example, through a valve) converted to a short throttle which gives a corresponding flow rate. This should not be confused with the "orifice" which is sometimes specified for valves. The value for the orifice does not normally take account of the fact that the valve contains a number of throttles.
- 2) Qn is a measure of the valve flow capacity, with flow measured in litre per minute (l/min) at 6 bar(e) supply pressure and 1 bar pressure drop across the valve.

## P1D-B Pneumatic ISO Cylinders

### Example ① : Which tube diameter should be used?

A 50 mm bore cylinder is to be operated at 0.5 m/s. The tube length between the valve and cylinder is 2 m. In the diagram we follow the line from 50 mm bore to 0.5 m/s and get an “equivalent throttling bore” of approximately 4 mm. We continue out to the right in the chart and intersect the line for a 2 m tube between the curves for 4 mm (6/4 tube) and 6 mm(8/6 tube). This means that a 6/4 tube throttles the velocity somewhat, while an 8/6 tube is a little too large. We select the 8/6 tube to obtain full cylinder velocity.

### Example ② : What cylinder velocity will be obtained?

A 80 mm bore cylinder will be used, connected by 8 m 12/10 tube to a valve with Qn 1200 NI/min. What cylinder velocity will we get? We refer to the diagram and follow the line from 8 mm tube length up to the curve for 12/10 tube. From there, we go horizontally to the curve for the Ø80 cylinder. We find that the velocity will be about 0.5 m/s.

### Example ③ : What is the minimum inner diameter and maximum length of tube?

For an application a 125 mm bore cylinder will be used. Maximum velocity of piston rod is 0.5 m/s. The cylinder will be controlled by a valve with Qn 3200 NI/min. What diameter of tube can be used and what is maximum length of tube.

We refer to the diagram. We start at the left side of the diagram cylinder Ø125. We follow the line until the intersection with the velocity line of 0.5 m/s. From here we draw a horizontal line in the diagram. This line shows us we need an equivalent throttling bore of approximately 10 mm. Following this line horizontally we cross a few intersections. These intersections shows us the minimum inner diameter (rightside diagram) in combination with the maximum length of tube (bottomside diagram).

For example:

Intersection one: When a tube (14/11) will be used, the maximum length of tube is 0.7 meter.

Intersection two: When a tube (—/13) will be used, the maximum length of tube is 3.7 meter.

Intersection three: When a tube (—/14) will be used, the maximum length of tube is 6 meter.

### Example ④ : Determining tube size and cylinder velocity with a particular cylinder and valve?

For an application using a 40 mm bore cylinder with a valve with Qn=800 NI/min. The distance between the cylinder and valve has been set to 5 m.

**Tube dimension:** What tube bore should be selected to obtain the maximum cylinder velocity? Start at pipe length 5 m, follow the line up to the intersection with 800 NI/min. Select the next largest tube diameter, in this case Ø10/8 mm.

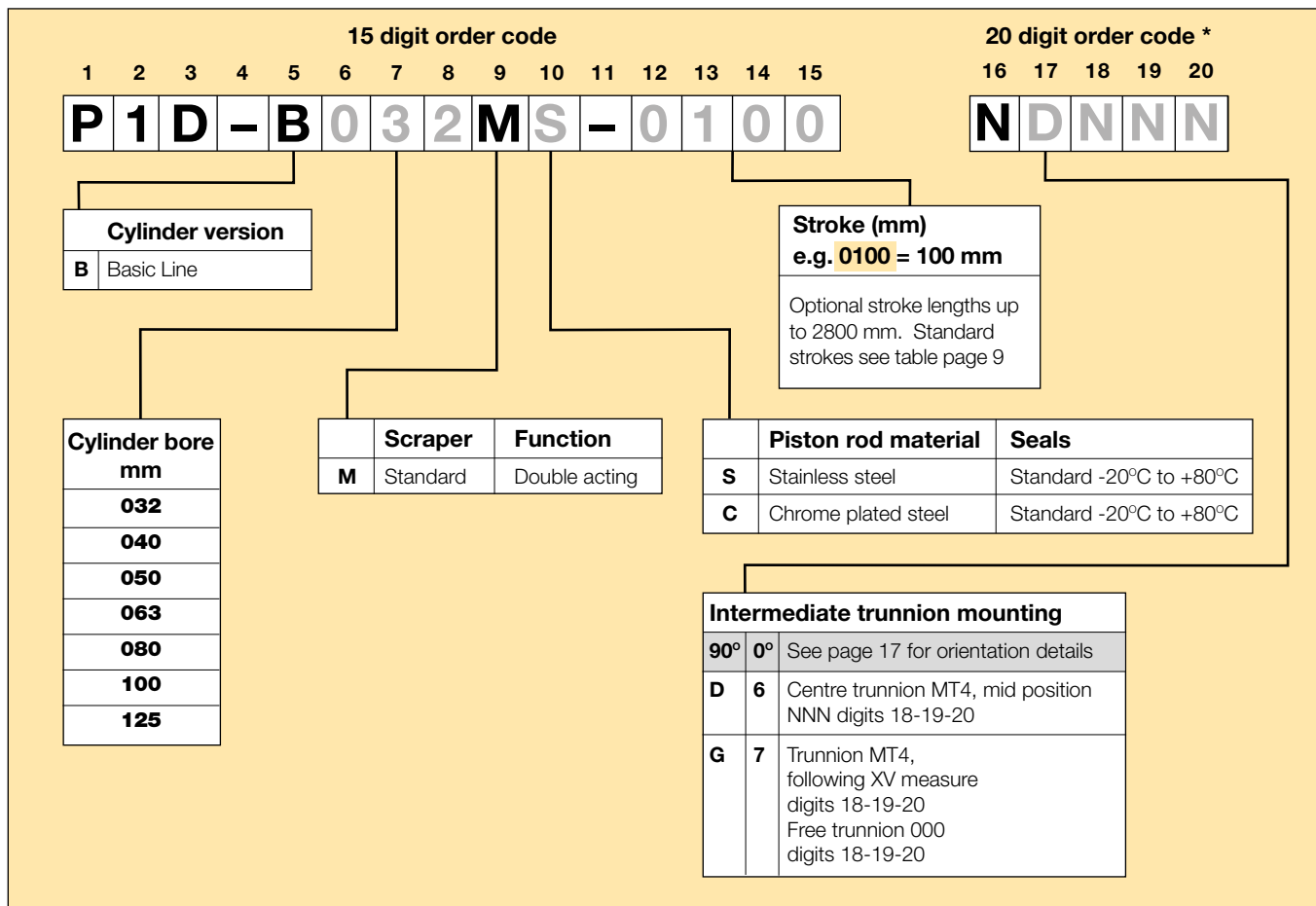
**Cylinder velocity:** What maximum cylinder velocity will be obtained? Follow the line for 800 NI/min to the left until it intersects with the line for the Ø40 mm cylinder. In this example, the speed is just above 1.1 m/s.

### Valve series with respective flows in NI/minute

| Valve series                                 | Qn in NI/Min |
|--|--------------|
| Interface PS1                                | 120          |
| Moduflex Size 1 - Double 4/2 single solenoid | 165          |
| Adex A05                                     | 173          |
| H Series Micro - Single 5/3 APB              | 228          |
| Moduflex Size 1 - Single or Double 3/2       | 235          |
| H Series Micro - Double 3/2                  | 276          |
| H Series Micro - Single 5/2                  | 282          |
| Moduflex Size 1 - Single 4/2                 | 310          |
| ISOMAX DX02                                  | 378          |
| H Series ISO HB                              | 390          |
| Moduflex Size 2 - Single or Double 3/2       | 440          |
| PVL-B stackable inline valve                 | 540          |
| Adex A12                                     | 560          |
| ISOMAX DX01                                  | 588          |
| Viking Xtrem P2LAX - G1/8"                   | 660          |
| Moduflex Size 2 - Single 4/2                 | 800          |
| H Series ISO HA                              | 918          |
| ISOMAX DX1 & DX Rail                         | 1032         |
| PVL-C stackable inline valve                 | 1100         |
| H Series ISO H1                              | 1248         |
| Viking Xtrem P2L BX - G1/4"                  | 1290         |
| ISOMAX DX2 & DX Rail                         | 2298         |
| Viking Xtrem P2LCX - G3/8"                   | 2460         |
| H Series ISO H2                              | 2520         |
| Viking Xtrem P2LDX - G1/2"                   | 2658         |
| ISOMAX DX3 & DX Rail                         | 3840         |
| H Series ISO H3                              | 5022         |

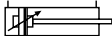


Order Key Code (\* 20 digits used only for the trunnion option)



Standard strokes

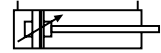
Standard strokes for all P1D-B cylinders comply with ISO 4393 (with the exception of stroke 40 mm).  
Special strokes up to 2800 mm.

| Order no        | Cylinder bore (mm)  | ● = Standard stroke (mm)                                     | ■ = Stroke to special order |
|-----------------|---|--|-----------------------------|
| XXXX = Stroke   |   | 25 40 50 80 100 125 160 200 250 320 400 500 600 700 800 2800 |                             |
| <b>P1D-B</b>    |  |  |                             |
| P1D-B032MS-XXXX | 32  | ●  | ■                           |
| P1D-B040MS-XXXX | 40  | ●  | ■                           |
| P1D-B050MS-XXXX | 50  | ●  | ■                           |
| P1D-B063MS-XXXX | 63  | ●  | ■                           |
| P1D-B080MS-XXXX | 80  | ●  | ■                           |
| P1D-B100MS-XXXX | 100   | ●  | ■                           |
| P1D-B125MS-XXXX | 125   | ●  | ■                           |

# P1D-B Pneumatic ISO Cylinders

## Double acting with stainless steel piston rod

- Conforms to ISO 15552.
- Bore 32-125 mm.
- Double acting.
- Stainless steel piston rod.
- Robust design.
- Adjustable air cushioning.
- Retained stainless steel cushioning screws.
- Wide range of mountings and drop-in sensors

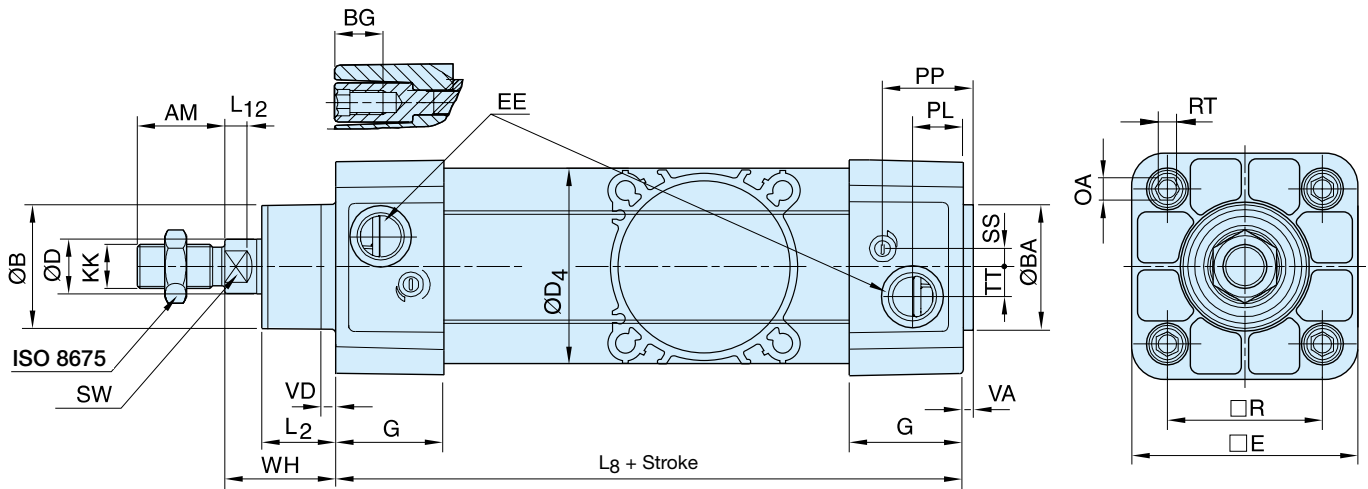


| Cyl. bore<br>mm         | Stroke<br>mm | Order code      |
|-------------------------|--------------|-----------------|
| <b>32</b><br>Conn. G1/8 | 25           | P1D-B032MS-0025 |
|                         | 40           | P1D-B032MS-0040 |
|                         | 50           | P1D-B032MS-0050 |
|                         | 80           | P1D-B032MS-0080 |
|                         | 100          | P1D-B032MS-0100 |
|                         | 125          | P1D-B032MS-0125 |
|                         | 160          | P1D-B032MS-0160 |
|                         | 200          | P1D-B032MS-0200 |
|                         | 250          | P1D-B032MS-0250 |
|                         | 320          | P1D-B032MS-0320 |
| <b>40</b><br>Conn. G1/4 | 25           | P1D-B040MS-0025 |
|                         | 40           | P1D-B040MS-0040 |
|                         | 50           | P1D-B040MS-0050 |
|                         | 80           | P1D-B040MS-0080 |
|                         | 100          | P1D-B040MS-0100 |
|                         | 125          | P1D-B040MS-0125 |
|                         | 160          | P1D-B040MS-0160 |
|                         | 200          | P1D-B040MS-0200 |
|                         | 250          | P1D-B040MS-0250 |
|                         | 320          | P1D-B040MS-0320 |
| <b>50</b><br>Conn. G1/4 | 25           | P1D-B050MS-0025 |
|                         | 40           | P1D-B050MS-0040 |
|                         | 50           | P1D-B050MS-0050 |
|                         | 80           | P1D-B050MS-0080 |
|                         | 100          | P1D-B050MS-0100 |
|                         | 125          | P1D-B050MS-0125 |
|                         | 160          | P1D-B050MS-0160 |
|                         | 200          | P1D-B050MS-0200 |
|                         | 250          | P1D-B050MS-0250 |
|                         | 320          | P1D-B050MS-0320 |
| <b>63</b><br>Conn. G3/8 | 25           | P1D-B063MS-0025 |
|                         | 40           | P1D-B063MS-0040 |
|                         | 50           | P1D-B063MS-0050 |
|                         | 80           | P1D-B063MS-0080 |
|                         | 100          | P1D-B063MS-0100 |
|                         | 125          | P1D-B063MS-0125 |
|                         | 160          | P1D-B063MS-0160 |
|                         | 200          | P1D-B063MS-0200 |
|                         | 250          | P1D-B063MS-0250 |
|                         | 320          | P1D-B063MS-0320 |

| Cyl. bore<br>mm          | Stroke<br>mm | Order code      |
|--------------------------|--------------|-----------------|
| <b>80</b><br>Conn. G3/8  | 25           | P1D-B080MS-0025 |
|                          | 40           | P1D-B080MS-0040 |
|                          | 50           | P1D-B080MS-0050 |
|                          | 80           | P1D-B080MS-0080 |
|                          | 100          | P1D-B080MS-0100 |
|                          | 125          | P1D-B080MS-0125 |
|                          | 160          | P1D-B080MS-0160 |
|                          | 200          | P1D-B080MS-0200 |
|                          | 250          | P1D-B080MS-0250 |
|                          | 320          | P1D-B080MS-0320 |
| <b>100</b><br>Conn. G1/2 | 25           | P1D-B100MS-0025 |
|                          | 40           | P1D-B100MS-0040 |
|                          | 50           | P1D-B100MS-0050 |
|                          | 80           | P1D-B100MS-0080 |
|                          | 100          | P1D-B100MS-0100 |
|                          | 125          | P1D-B100MS-0125 |
|                          | 160          | P1D-B100MS-0160 |
|                          | 200          | P1D-B100MS-0200 |
|                          | 250          | P1D-B100MS-0250 |
|                          | 320          | P1D-B100MS-0320 |
| <b>125</b><br>Conn. G1/2 | 25           | P1D-B125MS-0025 |
|                          | 40           | P1D-B125MS-0040 |
|                          | 50           | P1D-B125MS-0050 |
|                          | 80           | P1D-B125MS-0080 |
|                          | 100          | P1D-B125MS-0100 |
|                          | 125          | P1D-B125MS-0125 |
|                          | 160          | P1D-B125MS-0160 |
|                          | 200          | P1D-B125MS-0200 |
|                          | 250          | P1D-B125MS-0250 |
|                          | 320          | P1D-B125MS-0320 |

# P1D-B Pneumatic ISO Cylinders

## P1D-B Basic



### Dimensions (mm)

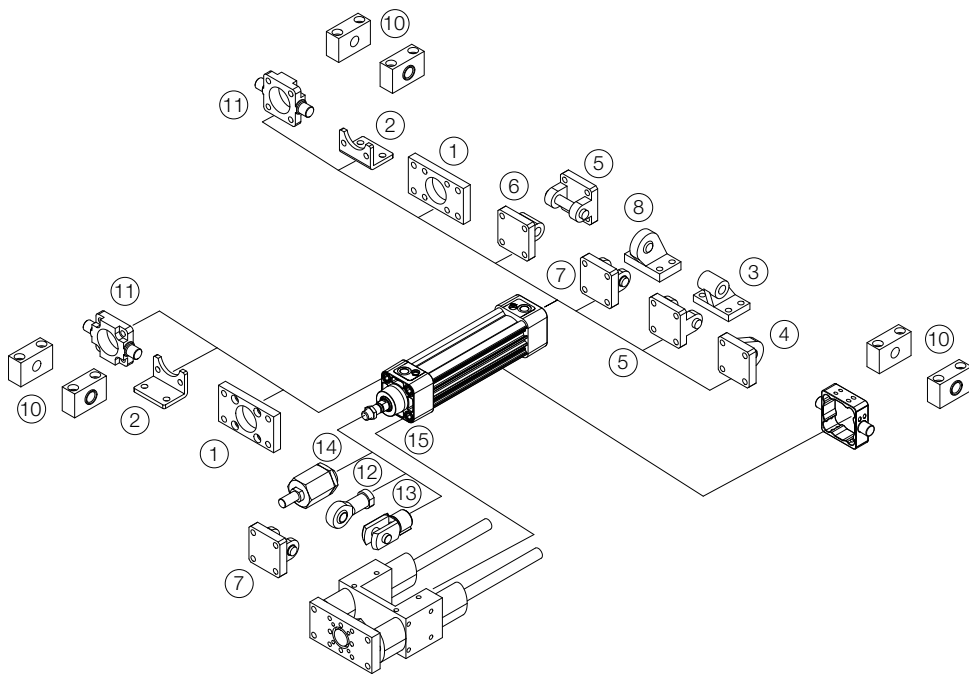
| Cylinder bore mm | AM mm | B mm | BA mm | BG mm | D mm | D4 mm | E mm  | EE mm | G mm | KK       | L2 mm | L8 mm | L12 mm |
|------------------|-------|------|-------|-------|------|-------|-------|-------|------|----------|-------|-------|--------|
| 32               | 22    | 30   | 30    | 16    | 12   | 45,0  | 48,0  | G1/8  | 28,5 | M10x1,25 | 16,8  | 94    | 6,0    |
| 40               | 24    | 35   | 35    | 16    | 16   | 52,0  | 53,5  | G1/4  | 33,0 | M12x1,25 | 19,0  | 105   | 6,5    |
| 50               | 32    | 40   | 40    | 16    | 20   | 60,7  | 65,2  | G1/4  | 33,5 | M16x1,5  | 24,0  | 106   | 8,0    |
| 63               | 32    | 45   | 45    | 16    | 20   | 71,5  | 75,5  | G3/8  | 39,5 | M16x1,5  | 24,3  | 121   | 8,0    |
| 80               | 40    | 45   | 45    | 17    | 25   | 86,7  | 95,0  | G3/8  | 39,5 | M20x1,5  | 30,0  | 128   | 10,0   |
| 100              | 40    | 55   | 55    | 17    | 25   | 106,7 | 114,0 | G1/2  | 44,5 | M20x1,5  | 34,0  | 138   | 14,0   |
| 125              | 54    | 60   | 60    | 20    | 32   | 134,0 | 139,0 | G1/2  | 51,0 | M27x2    | 45,0  | 160   | 18,0   |

| Cylinder bore mm | OA mm | PL mm | PP mm | R mm  | RT mm | SS mm | SW mm | TT mm | VA mm | VD mm | WH mm |
|------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 32               | 6,0   | 14,0  | 24,2  | 32,5  | M6    | 5,5   | 10    | 4,2   | 3,5   | 4,5   | 26    |
| 40               | 6,0   | 16,0  | 27,5  | 38,0  | M6    | 8,0   | 13    | 5,5   | 3,5   | 4,5   | 30    |
| 50               | 8,0   | 14,0  | 29,3  | 46,5  | M8    | 9,0   | 17    | 7,5   | 3,5   | 4,5   | 37    |
| 63               | 8,0   | 16,6  | 30,8  | 56,5  | M8    | 6,5   | 17    | 10,0  | 3,5   | 4,5   | 37    |
| 80               | 6,0   | 16,8  | 33,5  | 72,0  | M10   | 0     | 22    | 11,5  | 3,5   | 4,5   | 46    |
| 100              | 6,0   | 20,5  | 37,5  | 89,0  | M10   | 0     | 22    | 14,5  | 3,5   | 4,5   | 51    |
| 125              | 8,0   | 23,3  | 45,8  | 110,0 | M12   | 0     | 27    | 15,0  | 5,5   | 6,5   | 65    |

### Tolerances (mm)

| Cylinder bore mm | B   | BA  | L <sub>8</sub> mm | L <sub>9</sub> mm | R mm | Stroke tolerance up to stroke 500 mm | Stroke tolerance for stroke over 500 mm |
|------------------|-----|-----|-------------------|-------------------|------|--------------------------------------|---|
| 32               | d11 | d11 | ±0,4              | ±2                | ±0,5 | +0,3/+2,0                            | +0,3/+3,0                               |
| 40               | d11 | d11 | ±0,7              | ±2                | ±0,5 | +0,3/+2,0                            | +0,3/+3,0                               |
| 50               | d11 | d11 | ±0,7              | ±2                | ±0,6 | +0,3/+2,0                            | +0,3/+3,0                               |
| 63               | d11 | d11 | ±0,8              | ±2                | ±0,7 | +0,3/+2,0                            | +0,3/+3,0                               |
| 80               | d11 | d11 | ±0,8              | ±3                | ±0,7 | +0,3/+2,0                            | +0,3/+3,0                               |
| 100              | d11 | d11 | ±1,0              | ±3                | ±0,7 | +0,3/+2,0                            | +0,3/+3,0                               |
| 125              | d11 | d11 | ±1,0              | ±3                | ±1,1 | +0,3/+2,0                            | +0,3/+3,0                               |

|       | Flange MF1/MF2 <sup>1</sup>           | Foot brackets MS1 <sup>2</sup>   | Pivot bracket with rigid bearing AB7 <sup>3</sup>  | Swivel eye bracket MP6 <sup>4</sup> | Clevis bracket MP2 <sup>5</sup>                   |
|-------|---------------------------------------|----------------------------------|--|-------------------------------------|---|
| Ø 32  | <b>P1C-4KMB</b>                       | <b>P1C-4KMF</b>                  | <b>P1C-4KMDB</b>                                   | <b>PD23843</b>                      | <b>P1C-4KMTB</b>                                  |
| Ø 40  | <b>P1C-4LMB</b>                       | <b>P1C-4LMF</b>                  | <b>P1C-4LMDB</b>                                   | <b>PD23844</b>                      | <b>P1C-4LMTB</b>                                  |
| Ø 50  | <b>P1C-4MMB</b>                       | <b>P1C-4MMF</b>                  | <b>P1C-4MMDB</b>                                   | <b>PD23845</b>                      | <b>P1C-4MMTB</b>                                  |
| Ø 63  | <b>P1C-4NMB</b>                       | <b>P1C-4NMF</b>                  | <b>P1C-4NMDB</b>                                   | <b>PD23846</b>                      | <b>P1C-4NMTB</b>                                  |
| Ø 80  | <b>P1C-4PMB</b>                       | <b>P1C-4PMF</b>                  | <b>P1C-4PMDB</b>                                   | <b>PD23847</b>                      | <b>P1C-4PMTB</b>                                  |
| Ø 100 | <b>P1C-4QMB</b>                       | <b>P1C-4QMF</b>                  | <b>P1C-4QMDB</b>                                   | <b>PD23848</b>                      | <b>P1C-4QMTB</b>                                  |
| Ø 125 | <b>P1C-4RMB</b>                       | <b>P1C-4RMF</b>                  | <b>P1C-4RMDB</b>                                   | <b>PD23849</b>                      | <b>P1C-4RMTB</b>                                  |
|       | Clevis bracket MP4 <sup>6</sup>       | Clevis bracket AB6 <sup>7</sup>  | Pivot bracket with swivel bearing CS7 <sup>8</sup> | 3 and 4 positions flange JP1        | Pivot brackets AT4 <sup>10</sup> for MT* trunnion |
| Ø 32  | <b>PD23412</b>                        | <b>P1C-4KMCB</b>                 | <b>KC5130</b>                                      | <b>P1E-6KB0</b>                     | <b>PD23381</b>                                    |
| Ø 40  | <b>PD23413</b>                        | <b>P1C-4LMCB</b>                 | <b>KC5131</b>                                      | <b>P1E-6LB0</b>                     | <b>PD23382</b>                                    |
| Ø 50  | <b>PD23414</b>                        | <b>P1C-4MMCB</b>                 | <b>KC5132</b>                                      | <b>P1E-6MB0</b>                     | <b>PD23382</b>                                    |
| Ø 63  | <b>PD23415</b>                        | <b>P1C-4NMCB</b>                 | <b>KC5133</b>                                      | <b>P1E-6NB0</b>                     | <b>PD23383</b>                                    |
| Ø 80  | <b>PD23416</b>                        | <b>P1C-4PMCB</b>                 | <b>KC5134</b>                                      | <b>P1E-6PB0</b>                     | <b>PD23383</b>                                    |
| Ø 100 | <b>PD23417</b>                        | <b>P1C-4QMCB</b>                 | <b>KC5135</b>                                      | <b>P1E-6QB0</b>                     | <b>PD23384</b>                                    |
| Ø 125 | <b>PD23418</b>                        | <b>P1C-4RMCB</b>                 | <b>KC5136</b>                                      |                                     | <b>PD23384</b>                                    |
|       | Flange trunnion MT5/MT6 <sup>11</sup> | Swivel rod eye AP6 <sup>12</sup> | Clevis AP2 <sup>13</sup>                           | Flexo coupling PM5 <sup>14</sup>    | Zinc-plated nut MR9 <sup>15</sup> (pack of 10)    |
| Ø 32  | <b>P1D-4KMYF</b>                      | <b>P1C-4KRS</b>                  | <b>P1C-4KRC</b>                                    | <b>P1C-4KRF</b>                     | <b>P14-4KRPZ</b>                                  |
| Ø 40  | <b>P1D-4LMYF</b>                      | <b>P1C-4LRS</b>                  | <b>P1C-4LRC</b>                                    | <b>P1C-4LRF</b>                     | <b>P14-4LRPZ</b>                                  |
| Ø 50  | <b>P1D-4MMYF</b>                      | <b>P1C-4MRS</b>                  | <b>P1C-4MRC</b>                                    | <b>P1C-4MRF</b>                     | <b>P14-4MRPZ</b>                                  |
| Ø 63  | <b>P1D-4NMYF</b>                      | <b>P1C-4MRS</b>                  | <b>P1C-4MRC</b>                                    | <b>P1C-4MRF</b>                     | <b>P14-4MRPZ</b>                                  |
| Ø 80  | <b>P1D-4PMYF</b>                      | <b>P1C-4PRS</b>                  | <b>P1C-4PRC</b>                                    | <b>P1C-4PRF</b>                     | <b>P14-4PRPZ</b>                                  |
| Ø 100 | <b>P1D-4QMYF</b>                      | <b>P1C-4PRS</b>                  | <b>P1C-4PRC</b>                                    | <b>P1C-4PRF</b>                     | <b>P14-4PRPZ</b>                                  |
| Ø 125 |                                       | <b>P1C-4RRS</b>                  | <b>P1C-4RRC</b>                                    | <b>P1C-4RRF</b>                     | <b>P14-4RRPZ</b>                                  |



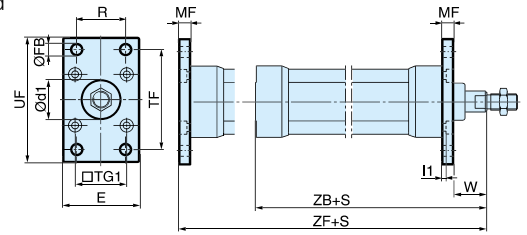
**Flange MF1/MF2 ①**



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

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

Supplied complete with mounting screws for attachment to cylinder.



| Cyl. bore mm | d1 mm | FB mm | TG1 mm | E mm | R mm | MF mm | TF mm | UF mm | I1 mm | W* mm | ZF* mm | ZB* mm | Weight (kg) | Order code      |
|--------------|-------|-------|--------|------|------|-------|-------|-------|-------|-------|--------|--------|-------------|-----------------|
| 32           | 30    | 7     | 32,5   | 45   | 32   | 10    | 64    | 80    | 5,0   | 16    | 130    | 123,5  | 0,23        | <b>P1C-4KMB</b> |
| 40           | 35    | 9     | 38,0   | 52   | 36   | 10    | 72    | 90    | 5,0   | 20    | 145    | 138,5  | 0,28        | <b>P1C-4LMB</b> |
| 50           | 40    | 9     | 46,5   | 65   | 45   | 12    | 90    | 110   | 6,5   | 25    | 155    | 146,5  | 0,53        | <b>P1C-4MMB</b> |
| 63           | 45    | 9     | 56,5   | 75   | 50   | 12    | 100   | 120   | 6,5   | 25    | 170    | 161,5  | 0,71        | <b>P1C-4NMB</b> |
| 80           | 45    | 12    | 72,0   | 95   | 63   | 16    | 126   | 150   | 8,0   | 30    | 190    | 177,5  | 1,59        | <b>P1C-4PMB</b> |
| 100          | 55    | 14    | 89,0   | 115  | 75   | 16    | 150   | 170   | 8,0   | 35    | 205    | 192,5  | 2,19        | <b>P1C-4QMB</b> |
| 125          | 60    | 16    | 110,0  | 140  | 90   | 20    | 180   | 205   | 10,5  | 45    | 245    | 230,5  | 3,78        | <b>P1C-4RMB</b> |

S = Stroke length

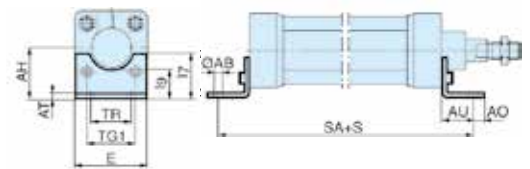
**Foot brackets MS1 ②**



Intended for fixed mounting of cylinder. Foot bracket can be fitted to front and rear end covers of cylinder.

Materials  
Foot bracket: Surface-treated steel  
Mounting screws acc. to DIN 912: Zinc-plated steel 8.8

Supplied in pairs with mounting screws for attachment to cylinder.



| Cyl. bore mm | AB mm | TG1 mm | E mm | TR mm | AO mm | AU mm | AH mm | I7 mm | AT mm | I9 mm | SA* mm | Weight (kg) | Order code      |
|--------------|-------|--------|------|-------|-------|-------|-------|-------|-------|-------|--------|-------------|-----------------|
| 32           | 7     | 32,5   | 45   | 32    | 10    | 24    | 32    | 30    | 4,5   | 17,0  | 142    | 0,06**      | <b>P1C-4KMF</b> |
| 40           | 9     | 38,0   | 52   | 36    | 8     | 28    | 36    | 30    | 4,5   | 18,5  | 161    | 0,08**      | <b>P1C-4LMF</b> |
| 50           | 9     | 46,5   | 65   | 45    | 13    | 32    | 45    | 36    | 5,5   | 25,0  | 170    | 0,16**      | <b>P1C-4MMF</b> |
| 63           | 9     | 56,5   | 75   | 50    | 13    | 32    | 50    | 35    | 5,5   | 27,5  | 185    | 0,25**      | <b>P1C-4NMF</b> |
| 80           | 12    | 72,0   | 95   | 63    | 14    | 41    | 63    | 49    | 6,5   | 40,5  | 210    | 0,50**      | <b>P1C-4PMF</b> |
| 100          | 14    | 89,0   | 115  | 75    | 15    | 41    | 71    | 54    | 6,5   | 43,5  | 220    | 0,85**      | <b>P1C-4QMF</b> |
| 125          | 16    | 110,0  | 140  | 90    | 22    | 45    | 90    | 71    | 8,0   | 60,0  | 250    | 1,48**      | <b>P1C-4RMF</b> |

\*\* Weight per item

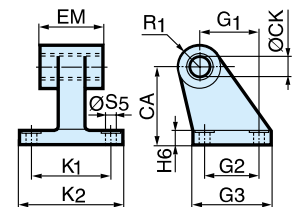
S = Stroke length

**Pivot bracket with rigid bearing AB7 ③**



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

Material:  
Pivot bracket: Aluminium  
Bearing: Sintered oil-bronze bushing



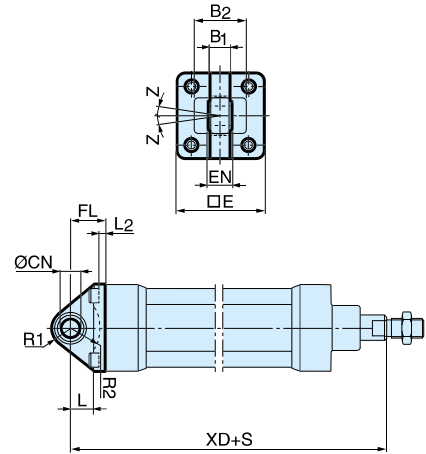
| Cyl. bore mm | CK mm | S5 mm | K1 mm | K2 mm | G1 mm | G2 mm | EM mm | G3 mm | CA mm | H6 mm | R1 mm | Weight (kg) | Order code       |
|--------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------------|------------------|
| 32           | 10    | 6,6   | 38    | 51    | 21    | 18    | 25,5  | 31    | 32    | 8     | 10,0  | 0,06        | <b>P1C-4KMDB</b> |
| 40           | 12    | 6,6   | 41    | 54    | 24    | 22    | 27,0  | 35    | 36    | 10    | 11,0  | 0,08        | <b>P1C-4LMDB</b> |
| 50           | 12    | 9,0   | 50    | 65    | 33    | 30    | 31,0  | 45    | 45    | 12    | 13,0  | 0,15        | <b>P1C-4MMDB</b> |
| 63           | 16    | 9,0   | 52    | 67    | 37    | 35    | 39,0  | 50    | 50    | 12    | 15,0  | 0,20        | <b>P1C-4NMDB</b> |
| 80           | 16    | 11,0  | 66    | 86    | 47    | 40    | 49,0  | 60    | 63    | 14    | 15,0  | 0,33        | <b>P1C-4PMDB</b> |
| 100          | 20    | 11,0  | 76    | 96    | 55    | 50    | 59,0  | 70    | 71    | 15    | 19,0  | 0,49        | <b>P1C-4QMDB</b> |
| 125          | 25    | 14,0  | 94    | 124   | 70    | 60    | 69,0  | 90    | 90    | 20    | 22,5  | 1,02        | <b>P1C-4RMDB</b> |

**Swivel eye bracket MP6** ④ Intended for use together with clevis bracket GA



Material:  
Bracket: Aluminium  
Swivel bearing acc. to DIN 648K: Hardened steel

Supplied complete with mounting screws for attachment to cylinder.



| Cyl. bore mm | E mm | B1 mm | B2 mm | EN mm | R1 mm | R2 mm | FL mm | I2 mm | L mm | CN H7 mm | XD mm | Z ° | Weight (kg) | Order code     |
|--------------|------|-------|-------|-------|-------|-------|-------|-------|------|----------|-------|-----|-------------|----------------|
| 32           | 47   | 10,5  | -     | 14    | 16    | 12    | 22    | 6,0   | 12   | 10       | 142   | 4°  | 0,08        | <b>PD23843</b> |
| 40           | 55   | 12,0  | -     | 16    | 21    | 14    | 25    | 6,0   | 15   | 12       | 160   | 4°  | 0,11        | <b>PD23844</b> |
| 50           | 65   | 12,0  | 51    | 16    | 23    | 16    | 27    | 7,0   | 15   | 12       | 170   | 4°  | 0,20        | <b>PD23845</b> |
| 63           | 78   | 15,0  | -     | 21    | 27    | 19    | 32    | 7,0   | 20   | 16       | 190   | 4°  | 0,27        | <b>PD23846</b> |
| 80           | 95   | 15,0  | -     | 21    | 29    | 21    | 36    | 10,0  | 20   | 16       | 210   | 4°  | 0,52        | <b>PD23847</b> |
| 100          | 115  | 18,0  | -     | 25    | 34    | 24    | 41    | 10,0  | 25   | 20       | 230   | 4°  | 0,72        | <b>PD23848</b> |
| 125          | 140  | 22,0  | -     | 31    | 40    | 30    | 50    | 10,5  | 30   | 25       | 275   | 4°  | 1,53        | <b>PD23849</b> |

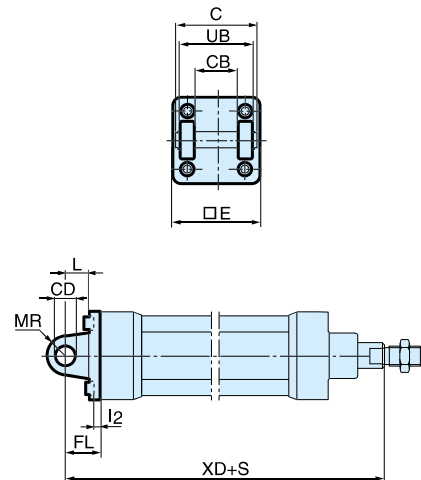
S = Stroke length

**Clevis bracket MP2** ⑤ Intended for flexible mounting of cylinder. Clevis bracket MP2 can be combined with clevis bracket MP4.



Material:  
Clevis bracket: Aluminium  
Pin: Surface hardened 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 mm | C mm | E mm | UB mm | CB mm | FL mm | L mm | I2 mm | CD H9 mm | MR mm | XD mm | Weight (kg) | Order code       |
|--------------|------|------|-------|-------|-------|------|-------|----------|-------|-------|-------------|------------------|
| 32           | 53   | 47   | 45    | 26    | 22    | 13   | 6,0   | 10       | 10    | 142   | 0,08        | <b>P1C-4KMTB</b> |
| 40           | 60   | 55   | 52    | 28    | 25    | 16   | 6,0   | 12       | 12    | 160   | 0,11        | <b>P1C-4LMTB</b> |
| 50           | 68   | 65   | 60    | 32    | 27    | 16   | 7,0   | 12       | 12    | 170   | 0,14        | <b>P1C-4MMTB</b> |
| 63           | 78   | 78   | 70    | 40    | 32    | 21   | 7,0   | 16       | 16    | 190   | 0,29        | <b>P1C-4NMTB</b> |
| 80           | 98   | 95   | 90    | 50    | 36    | 22   | 10,0  | 16       | 16    | 210   | 0,36        | <b>P1C-4PMTB</b> |
| 100          | 118  | 115  | 110   | 60    | 41    | 27   | 10,5  | 20       | 20    | 230   | 0,64        | <b>P1C-4QMTB</b> |
| 125          | 139  | 140  | 130   | 70    | 50    | 30   | 10,5  | 25       | 25    | 275   | 1,17        | <b>P1C-4RMTB</b> |

S = Stroke length



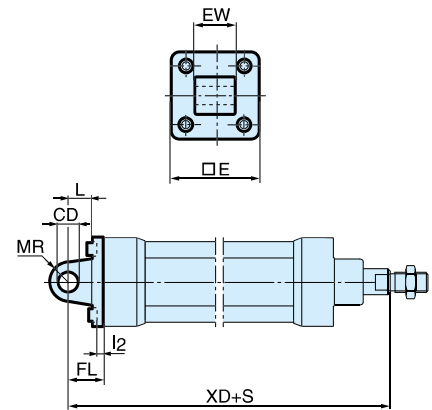
**Clevis bracket MP4** ⑥



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

Material:  
 Clevis bracket: Aluminium  
 Mounting screws acc. to DIN 912: Zinc-plated steel 8.8

Supplied complete with mounting screws for attachment to cylinder.



| Cyl. bore mm | E mm | EW mm | FL mm | L mm | l2 mm | CD mm | MR mm | XD mm | Weight (kg) | Order code     |
|--------------|------|-------|-------|------|-------|-------|-------|-------|-------------|----------------|
| 32           | 47   | 26    | 22    | 13   | ±0,2  | 6,0   | 10    | 142   | 0,09        | <b>PD23412</b> |
| 40           | 55   | 28    | 25    | 16   | 6,0   | 12    | 12    | 160   | 0,13        | <b>PD23413</b> |
| 50           | 65   | 32    | 27    | 16   | 7,0   | 12    | 12    | 170   | 0,17        | <b>PD23414</b> |
| 63           | 78   | 40    | 32    | 21   | 7,0   | 16    | 16    | 190   | 0,36        | <b>PD23415</b> |
| 80           | 95   | 50    | 36    | 22   | 10,0  | 16    | 16    | 210   | 0,46        | <b>PD23416</b> |
| 100          | 115  | 60    | 41    | 27   | 10,5  | 20    | 20    | 230   | 0,83        | <b>PD23417</b> |
| 125          | 140  | 70    | 50    | 30   | 10,5  | 25    | 25    | 275   | 1,53        | <b>PD23418</b> |

S = Stroke length

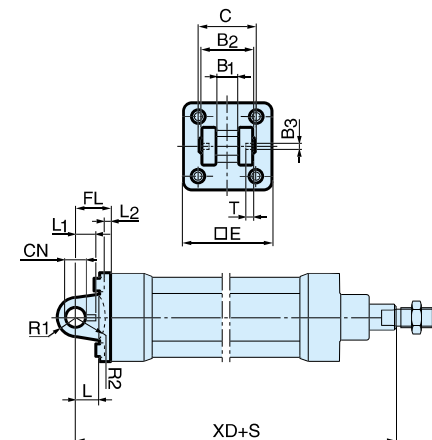
**Clevis bracket AB6** ⑦



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.

Material:  
 Clevis bracket: Surface-treated aluminium  
 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.



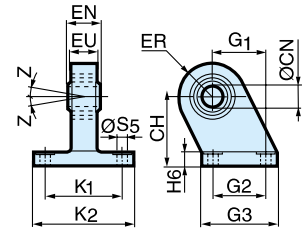
| Cyl. bore mm | C mm | E mm | B2 mm | B1 mm | T mm | B3 mm | R2 mm | L1 mm | FL mm | l2 mm | L mm | CN mm | R1 mm | XD* mm | Weight (kg) | Order code       |                  |
|--------------|------|------|-------|-------|------|-------|-------|-------|-------|-------|------|-------|-------|--------|-------------|------------------|------------------|
| 32           | 41   | 45   | 34    | 14    | 3    | 3,3   | 17    | 11,5  | 22    | ±0,2  | 5,5  | 12    | 10    | 11     | 142         | 0,09             | <b>P1C-4KMCB</b> |
| 40           | 48   | 52   | 40    | 16    | 4    | 4,3   | 20    | 12,0  | 25    | 5,5   | 15   | 12    | 13    | 160    | 0,13        | <b>P1C-4LMCB</b> |                  |
| 50           | 54   | 65   | 45    | 21    | 4    | 4,3   | 22    | 14,0  | 27    | 6,5   | 17   | 16    | 18    | 170    | 0,17        | <b>P1C-4MMCB</b> |                  |
| 63           | 60   | 75   | 51    | 21    | 4    | 4,3   | 25    | 14,0  | 32    | 6,5   | 20   | 16    | 18    | 190    | 0,36        | <b>P1C-4NMCB</b> |                  |
| 80           | 75   | 95   | 65    | 25    | 4    | 4,3   | 30    | 16,0  | 36    | 10,0  | 20   | 20    | 22    | 210    | 0,58        | <b>P1C-4PMCB</b> |                  |
| 100          | 85   | 115  | 75    | 25    | 4    | 4,3   | 32    | 16,0  | 41    | 10,0  | 25   | 20    | 22    | 230    | 0,89        | <b>P1C-4QMCB</b> |                  |
| 125          | 110  | 140  | 97    | 37    | 6    | 6,3   | 42    | 24,0  | 50    | 10,0  | 30   | 30    | 30    | 275    | 1,75        | <b>P1C-4RMCB</b> |                  |

S = Stroke length

**Pivot bracket with swivel bearing CS7** ⑧

Intended for use together with clevis bracket GA.

Material:  
Pivot bracket: Surface-treated steel  
Swivel bearing acc. to DIN 648K: Hardened steel

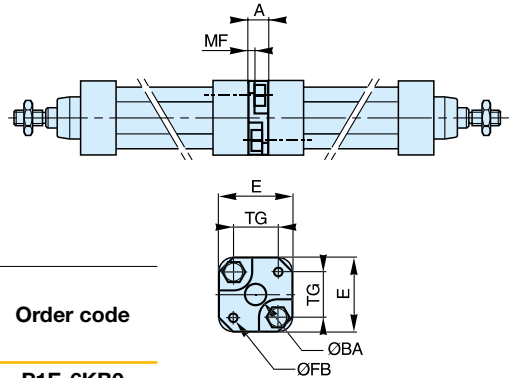


| Cyl. bore mm | CN H7 mm | S5 H13 mm | K1 JS14 mm | K2 mm | EU mm | G1 JS14 mm | G2 JS14 mm | EN mm | G3 mm | CH JS15 mm | H6 mm | ER mm | Z  | Order code    |
|--------------|----------|-----------|------------|-------|-------|------------|------------|-------|-------|------------|-------|-------|----|---------------|
| 32           | 10       | 6.6       | 38         | 51    | 10.5  | 21         | 18         | 14    | 31    | 32         | 10    | 16    | 4° | <b>KC5130</b> |
| 40           | 12       | 6.6       | 41         | 54    | 12    | 24         | 22         | 16    | 35    | 36         | 10    | 18    | 4° | <b>KC5131</b> |
| 50           | 16       | 9.0       | 50         | 65    | 15    | 33         | 30         | 21    | 45    | 45         | 12    | 21    | 4° | <b>KC5132</b> |
| 63           | 16       | 9.0       | 52         | 67    | 15    | 37         | 35         | 21    | 50    | 50         | 12    | 23    | 4° | <b>KC5133</b> |
| 80           | 20       | 11        | 66         | 86    | 18    | 47         | 40         | 25    | 60    | 63         | 14    | 28    | 4° | <b>KC5134</b> |
| 100          | 20       | 11        | 76         | 96    | 18    | 55         | 50         | 25    | 70    | 71         | 15    | 30    | 4° | <b>KC5135</b> |
| 125          | 30       | 14        | 94         | 124   | 25    | 70         | 60         | 27    | 90    | 90         | 20    | 40    | 4° | <b>KC5136</b> |

**3 and 4 positions flange JP1** ⑨

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

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



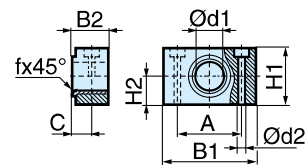
| Cyl. bore mm | E mm | TG mm | ØFB mm | MF mm | A mm | ØBA mm | Weight (kg) | Order code      |
|--------------|------|-------|--------|-------|------|--------|-------------|-----------------|
| 32           | 50   | 32.5  | 6.5    | 5     | 16   | 30     | 0.060       | <b>P1E-6KB0</b> |
| 40           | 60   | 38.0  | 6.5    | 5     | 16   | 35     | 0.078       | <b>P1E-6LB0</b> |
| 50           | 66   | 46.5  | 8.5    | 6     | 20   | 40     | 0.162       | <b>P1E-6MB0</b> |
| 63           | 80   | 56.5  | 8.5    | 6     | 20   | 45     | 0.194       | <b>P1E-6NB0</b> |
| 80           | 100  | 72.0  | 10.5   | 8     | 25   | 45     | 0.450       | <b>P1E-6PB0</b> |
| 100          | 118  | 89.0  | 10.5   | 8     | 25   | 55     | 0.672       | <b>P1E-6QB0</b> |

**Pivot brackets AT4 for trunnion MT\*** ⑩

Intended for use together with centre trunnion MT4.

Material:  
Pivot bracket: Aluminium  
Bearing: Composite

Supplied in pairs.



| Cyl. bore mm | B1 mm | B2 mm | A mm | C mm | d1 mm | d2 H13 mm | H1 mm | H2 mm | Weight (kg) | Order code     |
|--------------|-------|-------|------|------|-------|-----------|-------|-------|-------------|----------------|
| 32           | 55    | 20    | 36   | 10.5 | 12    | 8.4       | 26    | 13    | 0.06        | <b>PD23381</b> |
| 40           | 55    | 20    | 36   | 12   | 16    | 8.4       | 26    | 13    | 0.06        | <b>PD23382</b> |
| 50           | 55    | 20    | 36   | 12   | 16    | 8.4       | 26    | 13    | 0.06        | <b>PD23382</b> |
| 63           | 65    | 25    | 42   | 13   | 20    | 10.5      | 30    | 15    | 0.10        | <b>PD23383</b> |
| 80           | 65    | 25    | 42   | 13   | 20    | 10.5      | 30    | 15    | 0.10        | <b>PD23383</b> |
| 100          | 75    | 28    | 50   | 16   | 25    | 13        | 40    | 20    | 0.175       | <b>PD23384</b> |
| 125          | 75    | 28    | 50   | 16   | 25    | 13        | 40    | 20    | 0.175       | <b>PD23384</b> |

**Intermediate trunnion MT4**



Intended for articulated mounting of cylinder. The trunnion is factory-fitted in the centre of the cylinder or at an optional location specified by the XV-measure – Combined with pivot brackets for MT4. Material: zinc plated steel.

**Trunnion with optional position XV measure**

The intermediate trunnion for the P1D-B is ordered with a letter D in position 17 and desired XV-measure (3-digits measure in mm) in positions 18-20.

**Free trunnion**

The centre trunnion for the P1D-B can also be ordered with the intermediate trunnion loosely fitted to the cylinder (not fixed in position). This allows the position to be established at the time of installation.

Ordered with a letter G in position 17 and 000 in positions 18-20.

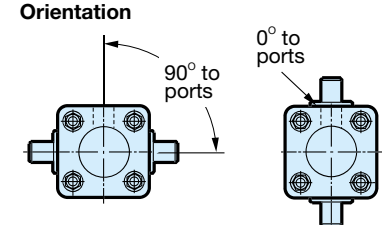
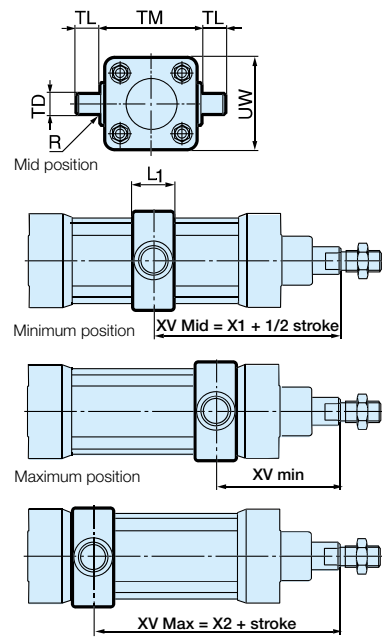
Digits 17: G letters mean shafts at 90° to air ports

Digits 17: 7 numbers mean shafts in line with air ports

| Cyl. bore mm | L1 mm | TL mm | TM mm | Ø TD mm | R mm | UW mm | XV min mm | X1 mm | X2 mm |
|--------------|-------|-------|-------|---------|------|-------|-----------|-------|-------|
| 32           | 18    | 12    | 50    | 12      | 1,0  | 52    | 89        | 73.0  | 57    |
| 40           | 20    | 16    | 63    | 16      | 1,6  | 59    | 95        | 82.5  | 70    |
| 50           | 20    | 16    | 75    | 16      | 1,6  | 71    | 113       | 90.0  | 67    |
| 63           | 26    | 20    | 90    | 20      | 1,6  | 84    | 118       | 97.5  | 77    |
| 80           | 26    | 20    | 110   | 20      | 1,6  | 105   | 132       | 110.0 | 88    |
| 100          | 32    | 25    | 132   | 25      | 2,0  | 129   | 140       | 120.0 | 100   |
| 125          | 33    | 25    | 180   | 25      | 2,0  | 159   | 168       | 145.0 | 122   |

**Important:** If the cylinder is ordered with a piston rod protusion (WH dimension), please add this extra length to XVmin, XV and XVmax.

S = Stroke length, does not apply to cylinders with lock unit or with protusion of the piston rod



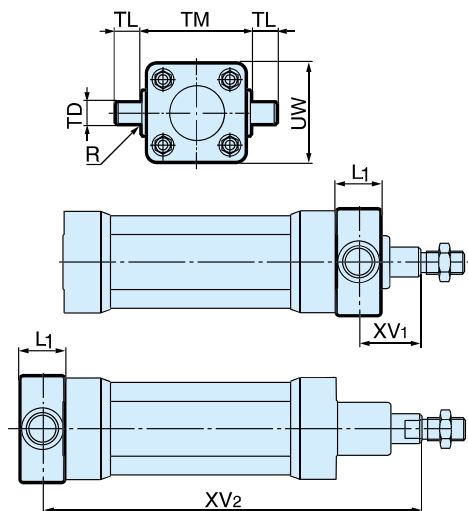
**Flange trunnion MT5/MT6**




Intended for articulated mounting of cylinder. This trunnion can be flange mounted on the front or rear end cover of all P1D cylinders. Individual trunnions have order code as shown to the right.

Material:  
Trunnion: zinc plated steel  
Screws: zinc plated steel, 8.8

Delivered complete with mounting screws for attachment to the cylinder



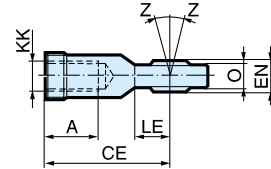
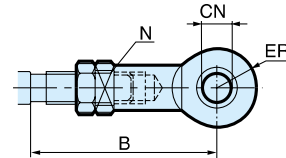
| Cyl. bore mm | TM H14 mm | TL H14 mm | TD E9 mm | R mm | UW mm | L1 mm | XV1 mm | XV2 mm | Weight (kg) | Order code       |
|--------------|-----------|-----------|----------|------|-------|-------|--------|--------|-------------|------------------|
| 32           | 50        | 12        | 12       | 1.0  | 46    | 14    | 19.5   | 127.0  | 0.17        | <b>P1D-4KMYF</b> |
| 40           | 63        | 16        | 16       | 1.6  | 59    | 19    | 21.0   | 144.5  | 0.43        | <b>P1D-4LMYF</b> |
| 50           | 75        | 16        | 16       | 1.6  | 69    | 19    | 28.0   | 152.5  | 0.55        | <b>P1D-4MMYF</b> |
| 63           | 90        | 20        | 20       | 1.6  | 84    | 24    | 25.5   | 170.0  | 1.10        | <b>P1D-4NMYF</b> |
| 80           | 110       | 20        | 20       | 1.6  | 102   | 24    | 34.5   | 186.0  | 1.66        | <b>P1D-4PMYF</b> |
| 100          | 132       | 25        | 25       | 2.0  | 125   | 29    | 37.0   | 203.5  | 3.00        | <b>P1D-4QMYF</b> |

**Swivel rod eye AP6** 



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

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



According to ISO 8139

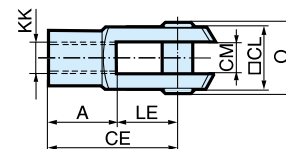
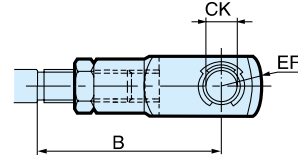
| Cyl. bore mm | A mm | B min mm | B max mm | CE mm | CN H9 mm | EN H12 mm | ER mm | KK         | LE | N min mm | O mm | Z mm | Weight (kg) | Order code      |
|--------------|------|----------|----------|-------|----------|-----------|-------|------------|----|----------|------|------|-------------|-----------------|
| 32           | 20   | 48.0     | 55       | 43    | 10       | 14        | 14    | M10 x 1.25 | 15 | 17       | 10.5 | 12°  | 0.08        | <b>P1C-4KRS</b> |
| 40           | 22   | 56.0     | 62       | 50    | 12       | 16        | 16    | M12 x 1.25 | 17 | 19       | 12.0 | 12°  | 0.12        | <b>P1C-4LRS</b> |
| 50           | 28   | 72.0     | 80       | 64    | 16       | 21        | 21    | M16 x 1.5  | 22 | 22       | 15.0 | 15°  | 0.25        | <b>P1C-4MRS</b> |
| 63           | 28   | 72.0     | 80       | 64    | 16       | 21        | 21    | M16 x 1.5  | 22 | 22       | 15.0 | 15°  | 0.25        | <b>P1C-4MRS</b> |
| 80           | 33   | 87.0     | 97       | 77    | 20       | 25        | 25    | M20 x 1.5  | 26 | 32       | 18.0 | 15°  | 0.46        | <b>P1C-4PRS</b> |
| 100          | 33   | 87.0     | 97       | 77    | 20       | 25        | 25    | M20 x 1.5  | 26 | 32       | 18.0 | 15°  | 0.46        | <b>P1C-4PRS</b> |
| 125          | 51   | 123.5    | 137      | 110   | 30       | 37        | 35    | M27 x 2    | 36 | 41       | 25.0 | 15°  | 1.28        | <b>P1C-4RRS</b> |

**Clevis AP2** 



Clevis for articulated mounting of cylinder.

Material  
Clevis, clip: Galvanized steel  
Pin: Hardened steel



| Cyl. bore mm | A mm | B min mm | B max mm | CE mm | CK H9 / 11 mm | CL mm | CM mm | KK         | LE | O mm | Weight (kg) | Order code      |
|--------------|------|----------|----------|-------|---------------|-------|-------|------------|----|------|-------------|-----------------|
| 32           | 20   | 45.0     | 52       | 40    | 10            | 20    | 10    | M10 x 1.25 | 20 | 28.0 | 0.09        | <b>P1C-4KRC</b> |
| 40           | 24   | 54.0     | 60       | 48    | 12            | 24    | 12    | M12 x 1.25 | 24 | 32.0 | 0.15        | <b>P1C-4LRC</b> |
| 50           | 32   | 72.0     | 80       | 64    | 16            | 32    | 16    | M16 x 1.5  | 32 | 41.5 | 0.35        | <b>P1C-4MRC</b> |
| 63           | 32   | 72.0     | 80       | 64    | 16            | 32    | 16    | M16 x 1.5  | 32 | 41.5 | 0.35        | <b>P1C-4MRC</b> |
| 80           | 40   | 90.0     | 100      | 80    | 20            | 40    | 20    | M20 x 1.5  | 40 | 50.0 | 0.75        | <b>P1C-4PRC</b> |
| 100          | 40   | 90.0     | 100      | 80    | 20            | 40    | 20    | M20 x 1.5  | 40 | 50.0 | 0.75        | <b>P1C-4PRC</b> |
| 125          | 56   | 123.5    | 137      | 110   | 30            | 55    | 30    | M27 x 2    | 54 | 72.0 | 2.10        | <b>P1C-4RRC</b> |

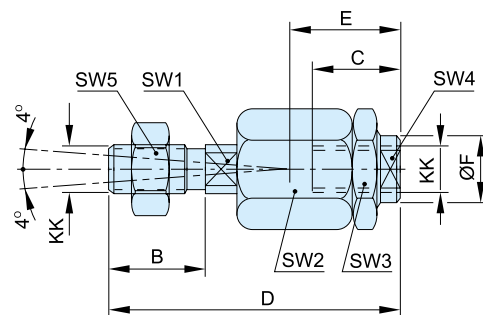
**Flexo coupling PM5** <sup>(14)</sup>



Flexo coupling for articulated mounting of piston rod. Flexo fitting is intended to take up axial angle errors within a range of  $\pm 4^\circ$ .

Material  
Flexo coupling, nut: Zinc-plated steel

Supplied complete with galvanized adjustment nut.



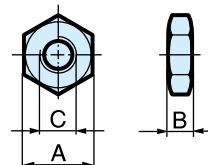
| Cyl. bore mm | KK         | B mm | C mm | D mm | E mm | ØF mm | SW1 mm | SW2 mm | SW3 mm | SW4 mm | SW5 mm | Weight (kg) | Order code      |
|--------------|------------|------|------|------|------|-------|--------|--------|--------|--------|--------|-------------|-----------------|
| 32           | M10 x 1.25 | 20   | 23   | 73   | 31   | 21    | 12     | 30     | 30     | 19     | 17     | 0.21        | <b>P1C-4KRF</b> |
| 40           | M12 x 1.25 | 24   | 23   | 77   | 31   | 21    | 12     | 30     | 30     | 19     | 19     | 0.22        | <b>P1C-4LRF</b> |
| 50           | M16 x 1.5  | 32   | 32   | 108  | 45   | 33.5  | 19     | 41     | 41     | 30     | 24     | 0.67        | <b>P1C-4MRF</b> |
| 63           | M16 x 1.5  | 32   | 32   | 108  | 45   | 33.5  | 19     | 41     | 41     | 30     | 24     | 0.67        | <b>P1C-4MRF</b> |
| 80           | M20 x 1.5  | 40   | 42   | 122  | 56   | 33.5  | 19     | 41     | 41     | 30     | 30     | 0.72        | <b>P1C-4PRF</b> |
| 100          | M20 x 1.5  | 40   | 42   | 122  | 56   | 33.5  | 19     | 41     | 41     | 30     | 30     | 0.72        | <b>P1C-4PRF</b> |
| 125          | M27 x 2    | 54   | 48   | 147  | 51   | 39    | 24     | 55     | 55     | 32     | 41     | 1.80        | <b>P1C-4RRF</b> |

**Nut MR9** <sup>(15)</sup>



Intended for fixed mounting of accessories to the piston rod.  
Material: Zinc-plated steel

All P1D cylinders are delivered with a zinc-plated steel piston rod nut, except P1D Ultra Clean, which is delivered with a stainless steel piston rod nut instead.



According to DIN 439 B

| Cyl. bore mm | A mm | B mm | C mm     | Weight ** (kg) | Order code Nut MR9 |
|--------------|------|------|----------|----------------|--------------------|
| 32           | 17   | 5,0  | M10x1,25 | 0,007          | <b>P14-4KRPZ</b>   |
| 40           | 19   | 6,0  | M12x1,25 | 0,010          | <b>P14-4LRPZ</b>   |
| 50           | 24   | 8,0  | M16x1,5  | 0,021          | <b>P14-4MRPZ</b>   |
| 63           | 24   | 8,0  | M16x1,5  | 0,021          | <b>P14-4MRPZ</b>   |
| 80           | 30   | 10,0 | M20x1,5  | 0,040          | <b>P14-4PRPZ</b>   |
| 100          | 30   | 10,0 | M20x1,5  | 0,040          | <b>P14-4PRPZ</b>   |
| 125          | 41   | 13,5 | M27x2    | 0,100          | <b>P14-4RRPZ</b>   |

\* Supplied as pack of 10 off

\*\* Weight per item

## Drop-in sensors

The P1D 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 P1D versions.



## Electronic sensors

The 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.

## 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

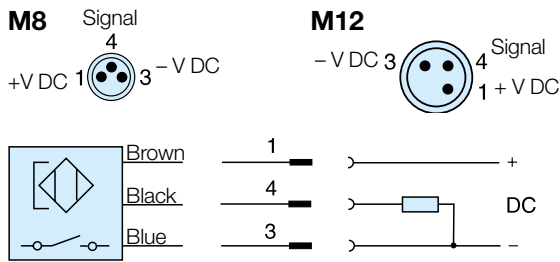
|                            |  |
|----------------------------|--|
| Design                     | GMR (Giant Magnetic Resistance)<br>magneto-resistive function                  |
| Installation               | From side, down into the sensor groove, so-called drop-in                      |
| Outputs                    | 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               |

### Technical data

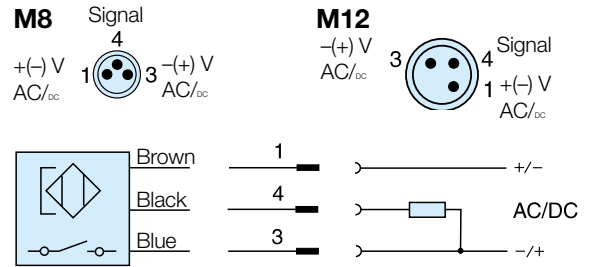
|                            |  |
|----------------------------|--|
| Design                     | Reed element   |
| Mounting                   | From side, down into the sensor groove, so-called drop-in                      |
| Output                     | Normally open, or normally closed  |
| Voltage 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               |



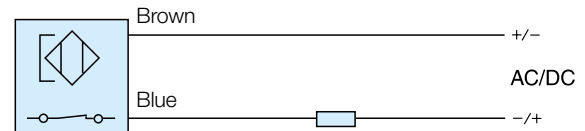
**Electronic sensors**



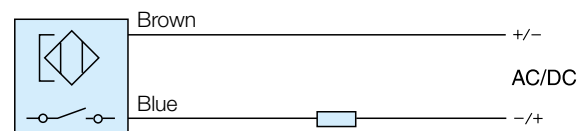
**Reed sensors**



**P8S-GCFPX**

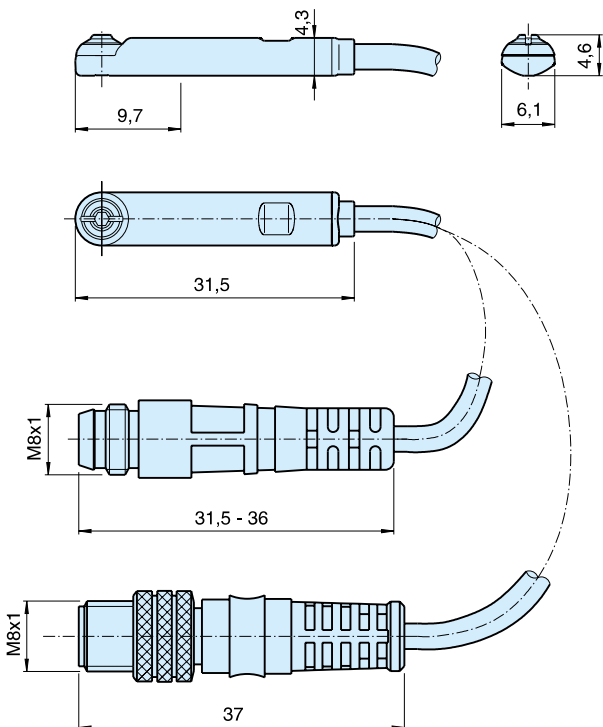


**P8S-GRFLX / P8S-GRFLX2**

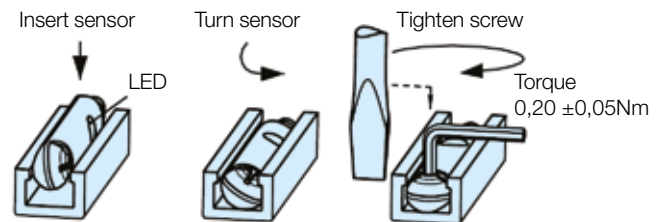


**Dimensions**

**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>   |  |              |                   |
| Normally open                          | 3 m PVC-cable without connector                  | 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.



### Technical data

|                               |   |                     |              |                  |
|-------------------------------|---|---------------------|--------------|------------------|
| Operating voltage             | max. 32 V AC/DC   | Connector           | Weight<br>kg | Order code       |
| Operating current per contact | max. 4 A  | M8 screw connector  | 0,017        | <b>P8CS0803J</b> |
| Connection cross section      | 0.25...0.5mm <sup>2</sup><br>(conductor diameter min 0.1mm) | M12 screw connector | 0,022        | <b>P8CS1204J</b> |
| Protection                    | IP65 and IP67 when plugged and<br>screwed down (EN 60529)   |                     |              |                  |
| Temperature range             | -25...+85 °C  |                     |              |                  |

**P1D-B Seal kits**

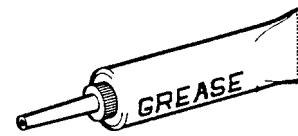
Complete seal kits consisting of:  
 Piston seals  
 Cushioning seals  
 Piston rod seal  
 O-rings  
 Scraper ring  
 Material specification, see page 5



**Order codes**

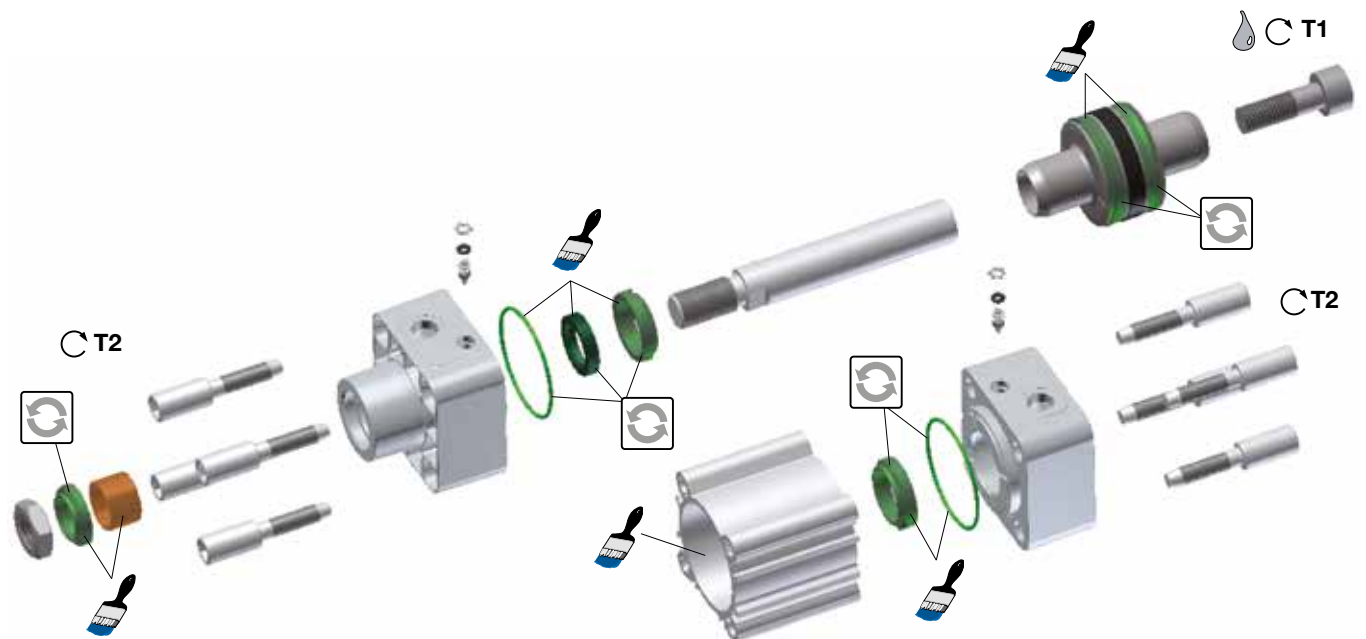
| Cyl.bore<br>mm | P1D cylinder version<br>Standard<br>P1D-B |
|----------------|---|
| 32             | <b>P1D-6KRNB</b>                          |
| 40             | <b>P1D-6LRNB</b>                          |
| 50             | <b>P1D-6MRNB</b>                          |
| 63             | <b>P1D-6NRNB</b>                          |
| 80             | <b>P1D-6PRNB</b>                          |
| 100            | <b>P1D-6QRNB</b>                          |
| 125            | <b>P1D-6RRNB</b>                          |

**Order codes**



Standard 30g **9127394541**

**Seal kits**



= Included in seal kit

= Lubricated with grease

= Socket head

= Locking fluid

= Tightening torque

*Loctite 270 or Loctite 2701  
 locking fluid must be used*

| Cyl.-dia<br>mm | Plastic<br>piston<br>T1<br>Nm | <br>NV<br>mm | <br>T2<br>Nm | <br>NV<br>mm |
|----------------|-------------------------------|--------------|--------------|--------------|
| 32             | 4,5                           | 6            | 8            | 6            |
| 40             | 11                            | 8            | 8            | 6            |
| 50             | 20                            | 10           | 20           | 8            |
| 63             | 20                            | 10           | 20           | 8            |
| 80             | 40                            | 14           | 20           | 6            |
| 100            | 120                           | 14           | 20           | 6            |
| 125            | 120                           | 14           | 70           | 8            |

Order code key, spare parts

|          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| 1        | 2        | 3        | 4        | 5        | 6        | 7        | 8        | 9        | 10       | 11       | 12       | 13       | 14       | 15       |
| <b>P</b> | <b>1</b> | <b>D</b> | <b>-</b> | <b>8</b> | <b>0</b> | <b>3</b> | <b>2</b> | <b>D</b> | <b>G</b> | <b>-</b> | <b>0</b> | <b>1</b> | <b>0</b> | <b>0</b> |

|                      |  |  |  |  |
|----------------------|--|--|--|--|
| <b>8 Spare parts</b> |  |  |  |  |
|----------------------|--|--|--|--|

|                         |                                   |                               |   |
|-------------------------|-----------------------------------|-------------------------------|---|
| <b>Cylinder dia. mm</b> | <b>Piston rod</b>                 | <b>Piston rod</b>             | <b>Stroke** (mm) e.g. 0100 = 100 mm</b>   |
| <b>032</b>              | <b>D</b> Standard external thread | <b>G</b> Stainless steel      | Any stroke up to max. 2800 mm.  |
| <b>040</b>              | <b>G</b> Standard internal thread | <b>H</b> Hard-chromium plated |   |
| <b>050</b>              | <b>Cylinder barrel</b>            | <b>Cylinder barrel</b>        | ** When ordering piston rods for cylinders with an extended piston rod, add together the stroke and the extension in the order key.<br>For example, a cylinder with stroke 100 mm and a piston rod extension of 25 mm is ordered with 0125 in the order number. |
| <b>063</b>              | <b>A</b> Standard profile         | <b>A</b> Aluminium            |   |
| <b>080</b>              |                                   |                               |   |
| <b>100</b>              |                                   |                               |   |
| <b>125</b>              |                                   |                               |   |

P1D with standard profile



# 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  |                |              | Mass Concentration mg/m <sup>3</sup> | Water                    |                         | Oil   |
|----------------------|--|----------------|--------------|--------------------------------------|--------------------------|-------------------------|---|
|                      | Maximum number of particles per 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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