

## Round cylinders DPRA

**FESTO**



## Key features

### At a glance

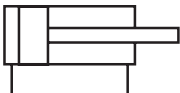
- Double- and single-acting versions
- With and without protection against rotation
- With and without cushioning
- Stainless steel piston rod
- Good running performance and long service life
- The variants can be configured according to individual needs using a modular product system

### System of units

[N] Imperial

### Function

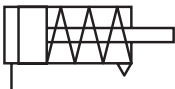
[ ] Double-acting



- The cylinder has two pneumatic connections which can be pressurised with compressed air one after the other
- When the rear connection is pressurised with compressed air, the cylinder advances. For the cylinder to retract, the front connection is pressurised with compressed air

### Function

[-S] Single-acting, pushing (piston rod retracted by spring force)



- The cylinder has one pneumatic connection. The piston rod is retracted in its initial position
- When the connection is pressurised with compressed air, the cylinder advances. It is retracted by a spring

### Protection against rotation

[-Q] With protection against rotation



- Protection against rotation prevents the piston rod from turning during the movement
- Application example: position-oriented feeding

### Function

[-P] Single-acting, pulling (piston rod advanced by spring force)



- The cylinder has one pneumatic connection. The piston rod is advanced in its initial position
- When the connection is pressurised with compressed air, the cylinder retracts. It is advanced by a spring

### Piston rod type

[ ] At one end



- The piston rod can be used for connection at one end of the cylinder

## Key features

### Piston rod type

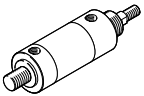
[H] Through, hollow piston rod



- The piston rod can be used for connection at both ends of the cylinder
- The piston rod is hollow inside, so it can be used to carry vacuum or compressed air
- Identical forces in the forward and return stroke

### Type of bearing cover

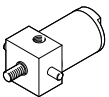
[ ] With mounting thread



- Including ring nut for combination with end cap type [NG] Without mounting thread

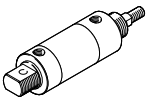
### Type of bearing cover

[M] With trunnion flange



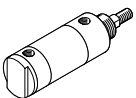
### Type of end cap

[U] With swivelling rod eye



### Type of end cap

[NG] Without mounting thread



### Piston rod type

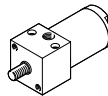
[T] Through piston rod



- The piston rod can be used for connection at both ends of the cylinder
- Identical forces in the forward and return stroke

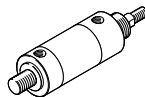
### Type of bearing cover

[B] For direct mounting



### Type of end cap

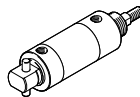
[ ] Standard



- Including ring nut

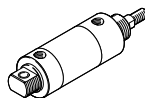
### Type of end cap

[ME] With trunnion flange



### Type of end cap

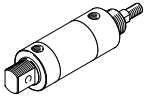
[UB] With swivelling rod eye and bearing sleeve



## Key features

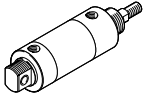
### Type of end cap

[U90] With swivelling rod eye, rotated 90°



### Type of end cap

[UB90] With swivelling rod eye and bearing sleeve, rotated 90°



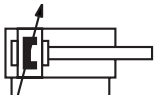
### Compressed air supply port

[P4] Axial

- The front compressed air supply port is located on the side of the cylinder and the rear compressed air supply port is located axially on the cylinder
- Can only be selected with end cap type [NG] without mounting thread

### Cushioning

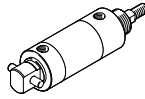
[-PPV] Pneumatic cushioning, adjustable at both ends



- The cylinder is fitted with pneumatic end-position cushioning, which can be adapted by the operator for maximum performance according to the moving mass and speed
- Very powerful

### Type of end cap

[ME90] Trunnion flange, rotated 90°



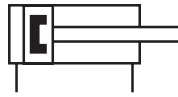
### Compressed air supply port

[ ] Lateral

- The compressed air supply ports are located on the side of the cylinder

### Cushioning

[-P] Flexible cushioning rings/plates at both ends



- The cylinder is fitted with flexible polymer end-position cushioning
- No adjustment required
- Saves time

### Position sensing

[A] For proximity switch

By using proximity switches, any position can be detected

## Key features

**Corrosion protection**

[-R1] Stainless steel



- For use in damp or dirty environments
- Stainless steel end cap
- Stainless steel piston rod

**Temperature range**

[ ] Standard



- The cylinder is intended for use in a temperature range of -5 ...+165 °F

**Temperature range**

[-T4] +32 ... +300 °F



- The cylinder is intended for use in a temperature range of +32 ...+300 °F

**Extended piston rod**

[...NE] 0 ... 6 inch

- The piston rod can be extended by 0 ... 6 inches

**Corrosion protection**

[R3] High corrosion protection



- For use in very damp or very dirty environments
- End cap made of POM
- Stainless steel piston rod
- Temperature range +32 ... +160 °F
- Operating pressure 10 ... 100 psi

**Temperature range**

[-T3] -40 ... +225 °F



- The cylinder is intended for use in a temperature range of -40 ...+225 °F

**Wiper variant**

[A4] Wiper made of NBR



- The wiper prevents dirt from getting into the cylinder

**Extended piston rod thread**

[...NL] 0 ... 6 inch

- The piston rod thread can be extended by 0 ... 6 inches

Product range overview

| Function          | Type                                                       | Piston ø | Stroke           | Protection<br>against<br>rotation | Piston rod<br>type |     |     | Type of bearing<br>cap |     | Type of end cap |      |      |       |        |        |      |   | Com-<br>pressed air<br>supply<br>port <sup>1)</sup> |
|-------------------|------------------------------------------------------------|----------|------------------|-----------------------------------|--------------------|-----|-----|------------------------|-----|-----------------|------|------|-------|--------|--------|------|---|-----------------------------------------------------|
|                   |                                                            | [in]     | [in]             | [Q]                               | [H]                | [T] | [B] | [M]                    | [U] | [ME]            | [NG] | [UB] | [U90] | [ME90] | [UB90] | [P4] |   |                                                     |
| Double-<br>acting | DPRA                                                       |          |                  |                                   |                    |     |     |                        |     |                 |      |      |       |        |        |      |   |                                                     |
|                   | DPRA                                                       | 9/16     | 0.0625 ...<br>12 | -                                 | -                  | ■   | -   | -                      | -   | -               | ■    | ■    | -     | -      | ■      | ■    |   |                                                     |
|                   |                                                            | 3/4      |                  | -                                 | -                  | ■   | ■   | ■                      | ■   | ■               | ■    | -    | ■     | -      | ■      |      |   |                                                     |
|                   |                                                            | 7/8      |                  | -                                 | -                  | -   | -   | -                      | -   | ■               | ■    | ■    | -     | ■      | -      | ■    |   |                                                     |
|                   |                                                            | 1 1/16   |                  | -                                 | ■                  | ■   | ■   | ■                      | ■   | ■               | ■    | -    | ■     | -      | ■      |      |   |                                                     |
|                   |                                                            | 1 1/4    |                  | -                                 | ■                  | ■   | -   | -                      | ■   | -               | ■    | ■    | ■     | -      | -      | ■    |   |                                                     |
|                   |                                                            | 1 1/2    |                  | -                                 | ■                  | ■   | ■   | ■                      | ■   | ■               | ■    | -    | ■     | -      | ■      |      |   |                                                     |
|                   |                                                            | 1 3/4    |                  | -                                 | -                  | -   | -   | -                      | ■   | -               | ■    | ■    | ■     | -      | -      | ■    |   |                                                     |
|                   |                                                            | 2        |                  | -                                 | -                  | ■   | -   | -                      | -   | -               | ■    | ■    | -     | -      | ■      | ■    |   |                                                     |
|                   |                                                            | 2 1/2    |                  | -                                 | -                  | -   | -   | -                      | -   | -               | -    | ■    | ■     | -      | -      | ■    | ■ |                                                     |
|                   |                                                            | 3        |                  | -                                 | -                  | -   | -   | -                      | -   | -               | -    | -    | ■     | ■      | -      | ■    | ■ |                                                     |
| Single-<br>acting | DPRA-....P (pulling, piston rod advanced by spring force)  |          |                  |                                   |                    |     |     |                        |     |                 |      |      |       |        |        |      |   |                                                     |
|                   | DPRA-....S (pushing, piston rod retracted by spring force) |          |                  |                                   |                    |     |     |                        |     |                 |      |      |       |        |        |      |   |                                                     |
|                   | DPRA-....P<br>DPRA-....S                                   | 9/16     | 0.0625 ... 6     | ■                                 | -                  | -   | -   | -                      | -   | -               | ■    | ■    | -     | -      | ■      | ■    |   |                                                     |
|                   |                                                            | 3/4      |                  | ■                                 | -                  | -   | -   | -                      | ■   | ■               | ■    | ■    | -     | ■      | -      | ■    |   |                                                     |
|                   |                                                            | 7/8      |                  | ■                                 | -                  | -   | -   | -                      | -   | ■               | ■    | ■    | -     | ■      | -      | ■    |   |                                                     |
|                   |                                                            | 1 1/16   |                  | ■                                 | -                  | -   | -   | -                      | ■   | ■               | ■    | ■    | -     | ■      | -      | ■    |   |                                                     |
|                   |                                                            | 1 1/4    |                  | ■                                 | -                  | -   | -   | -                      | ■   | -               | ■    | ■    | ■     | -      | -      | ■    |   |                                                     |
|                   |                                                            | 1 1/2    |                  | ■                                 | -                  | -   | -   | -                      | ■   | ■               | ■    | ■    | -     | ■      | -      | ■    |   |                                                     |
|                   |                                                            | 1 3/4    |                  | -                                 | -                  | -   | -   | -                      | ■   | -               | ■    | ■    | ■     | -      | -      | ■    |   |                                                     |
|                   |                                                            | 2        |                  | -                                 | -                  | -   | -   | -                      | -   | -               | -    | ■    | ■     | -      | -      | ■    | ■ |                                                     |
|                   | 0.0625 ... 4                                               |          | -                | -                                 | -                  | -   | -   | -                      | -   | -               | ■    | ■    | -     | -      | ■      | ■    |   |                                                     |

1) Can only be selected with end cap type [NG] without mounting thread

## Product range overview

| Function      | Type                                                                                                                    | Piston ø | Stroke        | Cushioning   |       | Position sensing | Corrosion protection |      | Temperature range |      | Wiper variant | Extended piston rod | Extended piston rod thread |
|---------------|-------------------------------------------------------------------------------------------------------------------------|----------|---------------|--------------|-------|------------------|----------------------|------|-------------------|------|---------------|---------------------|----------------------------|
|               |                                                                                                                         | [in]     | [in]          | [P]          | [PPV] | [A]              | [R1]                 | [R3] | [T3]              | [T4] | [A4]          | [...NE]             | [...NL]                    |
| Double-acting | DPRA                                                                                                                    |          |               |              |       |                  |                      |      |                   |      |               |                     |                            |
|               | DPRA                                                                                                                    | 9/16     | 0.0625 ... 12 | ■            | –     | ■                | –                    | –    | ■                 | ■    | –             | ■                   | ■                          |
|               |                                                                                                                         | 3/4      |               | ■            | ■     | ■                | ■                    | ■    | ■                 | ■    | ■             | ■                   |                            |
|               |                                                                                                                         | 7/8      |               | ■            | –     | ■                | –                    | –    | ■                 | ■    | ■             | ■                   | ■                          |
|               |                                                                                                                         | 1 1/16   |               | ■            | ■     | ■                | ■                    | ■    | ■                 | ■    | ■             | ■                   | ■                          |
|               |                                                                                                                         | 1 1/4    |               | ■            | –     | ■                | ■                    | –    | ■                 | ■    | ■             | ■                   | ■                          |
|               |                                                                                                                         | 1 1/2    |               | ■            | ■     | ■                | ■                    | ■    | ■                 | ■    | ■             | ■                   | ■                          |
|               |                                                                                                                         | 1 3/4    |               | ■            | –     | ■                | –                    | –    | ■                 | ■    | ■             | ■                   | ■                          |
|               |                                                                                                                         | 2        |               | ■            | ■     | ■                | ■                    | –    | ■                 | ■    | ■             | ■                   | ■                          |
|               |                                                                                                                         | 2 1/2    |               | ■            | –     | ■                | –                    | –    | ■                 | ■    | –             | ■                   | ■                          |
| 3             | ■                                                                                                                       | –        | ■             | –            | –     | ■                | ■                    | –    | ■                 | ■    |               |                     |                            |
| Single-acting | DPRA-....P (pulling, piston rod advanced by spring force)<br>DPRA-....S (pushing, piston rod retracted by spring force) |          |               |              |       |                  |                      |      |                   |      |               |                     |                            |
|               | DPRA-....P<br>DPRA-....S                                                                                                | 9/16     | 0.0625 ... 6  | ■            | –     | ■                | –                    | –    | ■                 | ■    | –             | ■                   | ■                          |
|               |                                                                                                                         | 3/4      |               | ■            | –     | ■                | –                    | –    | ■                 | ■    | –             | ■                   | ■                          |
|               |                                                                                                                         | 7/8      |               | ■            | –     | ■                | –                    | –    | ■                 | ■    | –             | ■                   | ■                          |
|               |                                                                                                                         | 1 1/16   |               | ■            | –     | ■                | –                    | –    | ■                 | ■    | –             | ■                   | ■                          |
|               |                                                                                                                         | 1 1/4    |               | ■            | –     | ■                | –                    | –    | ■                 | ■    | –             | ■                   | ■                          |
|               |                                                                                                                         | 1 1/2    |               | ■            | –     | ■                | –                    | –    | ■                 | ■    | –             | ■                   | ■                          |
|               |                                                                                                                         | 1 3/4    |               | ■            | –     | ■                | –                    | –    | ■                 | ■    | –             | ■                   | ■                          |
|               |                                                                                                                         | 2        |               | ■            | –     | ■                | –                    | –    | ■                 | ■    | –             | ■                   | ■                          |
|               |                                                                                                                         |          |               | 0.0625 ... 4 | ■     | –                | ■                    | –    | –                 | ■    | ■             | –                   | ■                          |

## Type codes

|             |                 |
|-------------|-----------------|
| <b>001</b>  | <b>Baureihe</b> |
| <b>DPRA</b> | Rundzylinder    |

|            |                        |
|------------|------------------------|
| <b>002</b> | <b>Einheitensystem</b> |
| <b>N</b>   | Imperial               |

|            |                         |
|------------|-------------------------|
| <b>003</b> | <b>Verdrehsicherung</b> |
|            | Ohne                    |
| <b>Q</b>   | Mit Verdrehsicherung    |

|                |                              |
|----------------|------------------------------|
| <b>004</b>     | <b>Kolbendurchmesser [„]</b> |
| <b>9/16“</b>   | 9/16“                        |
| <b>3/4“</b>    | 3/4“                         |
| <b>7/8“</b>    | 7/8“                         |
| <b>1 1/16“</b> | 1 1/16“                      |
| <b>1 1/4“</b>  | 1 1/4“                       |
| <b>1 1/2“</b>  | 1 1/2“                       |
| <b>1 3/4“</b>  | 1 3/4“                       |
| <b>2“</b>      | 2“                           |
| <b>2 1/2“</b>  | 2 1/2“                       |
| <b>3“</b>      | 3“                           |

|            |                       |
|------------|-----------------------|
| <b>005</b> | <b>Hubbereich [„]</b> |
| <b>...</b> | 0.0625 ... 12         |

|            |                          |
|------------|--------------------------|
| <b>006</b> | <b>Funktion</b>          |
|            | Doppeltwirkend           |
| <b>P</b>   | Einfachwirkend, ziehend  |
| <b>S</b>   | Einfachwirkend, drückend |

|            |                                  |
|------------|----------------------------------|
| <b>007</b> | <b>Kolbenstangenart</b>          |
|            | Einseitig                        |
| <b>H</b>   | Durchgehende, hohle Kolbenstange |
| <b>T</b>   | Durchgehende Kolbenstange        |

|            |                         |
|------------|-------------------------|
| <b>008</b> | <b>Lagerdeckelart</b>   |
|            | Mit Befestigungsgewinde |
| <b>B</b>   | Für Direktmontage       |
| <b>M</b>   | Mit Schwenkzapfen       |

|             |                                             |
|-------------|---------------------------------------------|
| <b>009</b>  | <b>Abschlussdeckelart</b>                   |
|             | Standard                                    |
| <b>U</b>    | Mit Schwenkauge                             |
| <b>ME</b>   | Mit Schwenkzapfen                           |
| <b>NG</b>   | Ohne Befestigungsgewinde                    |
| <b>UB</b>   | Mit Schwenkauge und Lagerhülse              |
| <b>U90</b>  | Mit Schwenkauge, 90° gedreht                |
| <b>ME90</b> | Schwenkzapfen, 90° gedreht                  |
| <b>UB90</b> | Mit Schwenkauge und Lagerhülse, 90° gedreht |

|            |                           |
|------------|---------------------------|
| <b>010</b> | <b>Druckluftanschluss</b> |
|            | Lateral                   |
| <b>P4</b>  | Axial                     |

|            |                                               |
|------------|-----------------------------------------------|
| <b>011</b> | <b>Dämpfung</b>                               |
| <b>N</b>   | Keine Dämpfung                                |
| <b>P</b>   | Elastische Dämpfungsringe/-platten beidseitig |
| <b>PPV</b> | Pneumatische Dämpfung, beidseitig einstellbar |

|            |                           |
|------------|---------------------------|
| <b>012</b> | <b>Positionserkennung</b> |
|            | Ohne                      |
| <b>A</b>   | Für Näherungsschalter     |

|            |                         |
|------------|-------------------------|
| <b>013</b> | <b>Korrosionsschutz</b> |
|            | Standard                |
| <b>R1</b>  | Edelstahl               |
| <b>R3</b>  | Hoher Korrosionsschutz  |

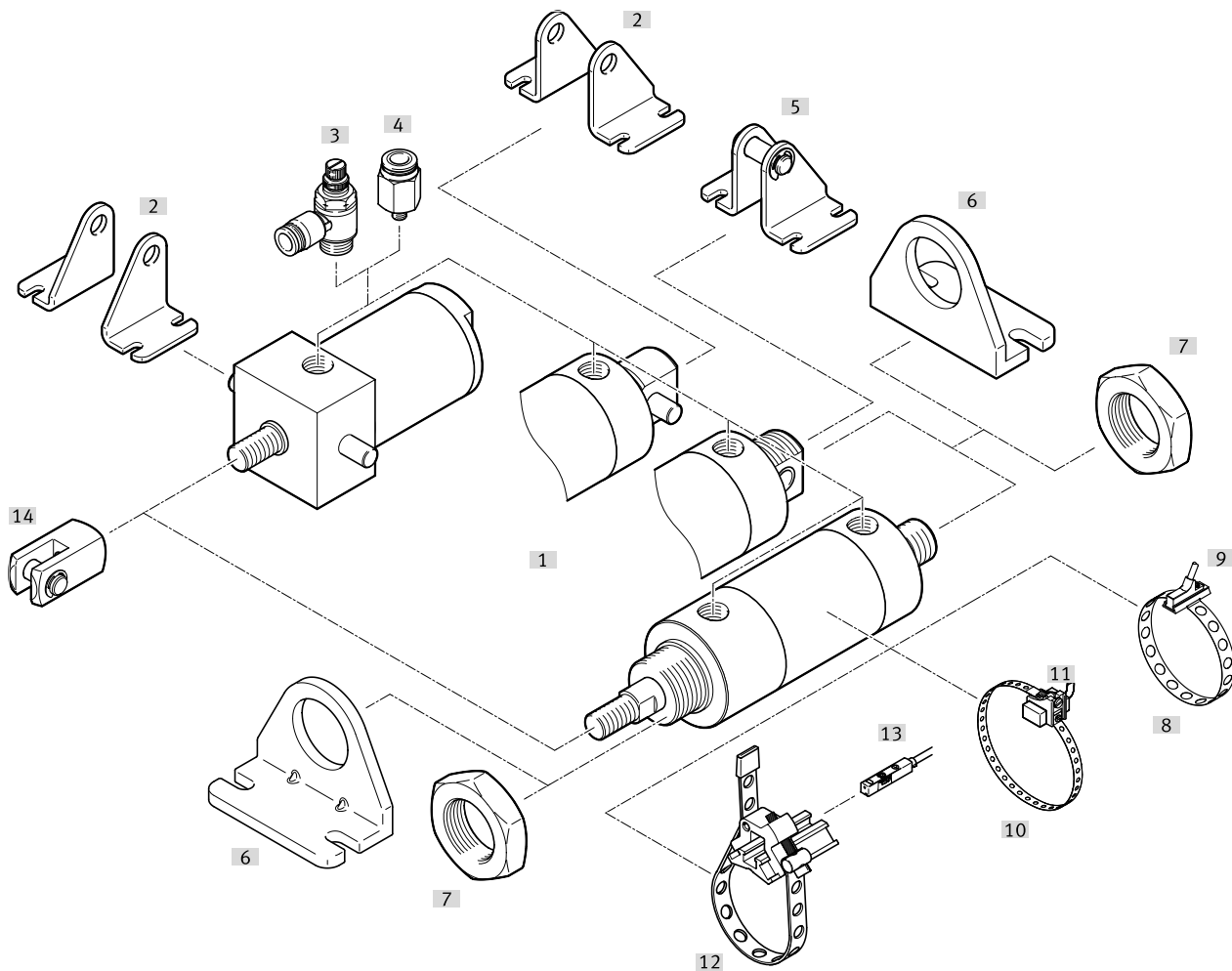
|            |                          |
|------------|--------------------------|
| <b>014</b> | <b>Temperaturbereich</b> |
|            | Standard                 |
| <b>T3</b>  | -40 ... +80 °C           |
| <b>T4</b>  | 0 ... +150 °C            |

|            |                           |
|------------|---------------------------|
| <b>015</b> | <b>Abstreifervariante</b> |
|            | Keine                     |
| <b>A4</b>  | Abstreifer aus NBR        |

|              |                                  |
|--------------|----------------------------------|
| <b>016</b>   | <b>Kolbenstangenverlängerung</b> |
|              | Ohne                             |
| <b>...NE</b> | 0.001“ ... 6“                    |

|              |                                          |
|--------------|------------------------------------------|
| <b>017</b>   | <b>Kolbenstangengewinde-Verlängerung</b> |
|              | Ohne                                     |
| <b>...NL</b> | 0.001“ ... 6“                            |

## Peripherals overview



| Accessories                         |                                                                                                                                                             |                 |  |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|--|
| Type/order code                     | Description                                                                                                                                                 | → Page/Internet |  |
| [1] Round cylinder DPRA             | Double-acting                                                                                                                                               | 10              |  |
|                                     | Single-acting                                                                                                                                               | 30              |  |
| [2] Clevis foot DAMC-C6-...-D       | <ul style="list-style-type: none"> <li>For mounting the cylinder via the bearing cap/end cap</li> <li>Permits a swivelling movement in one plane</li> </ul> | 51              |  |
| [3] One-way flow control valve GRLA | For regulating speed                                                                                                                                        | 54              |  |
| [4] Push-in fitting QB/QBL          | For connecting tubing with standard O.D.                                                                                                                    | 54              |  |
| [5] Clevis foot DAMC-C6-...-B       | <ul style="list-style-type: none"> <li>For mounting the cylinder via the end cap</li> <li>Permits a swivelling movement in one plane</li> </ul>             | 51              |  |
| [6] Foot mounting DAMH-C6           | For mounting the cylinder via the bearing cap/end cap                                                                                                       | 50              |  |
| [7] Hex nut DAMD                    | <ul style="list-style-type: none"> <li>For directly mounting the cylinder</li> <li>For fixing the foot mounting DAMH-C6 in place</li> </ul>                 | 50              |  |
| [8] Sensor bracket SAMH-FB-SH       | For proximity switch SDBF-FBS                                                                                                                               | 52              |  |
| [9] Proximity switch SDBF-FBS       | Can be integrated into sensor bracket SAMH-FB-SH                                                                                                            | 53              |  |
| [10] Sensor bracket SAMH-FB-4-SH    | For proximity switch SDBF-FES                                                                                                                               | 52              |  |
| [11] Proximity switch SDBF-FES      | Can be integrated into sensor bracket SAMH-FB-4-SH                                                                                                          | 53              |  |
| [12] Mounting kit SMBR              | For proximity switch SMT/SDBT                                                                                                                               | 53              |  |
| [13] Proximity switch SMT/SDBT      | Can be integrated in mounting kit SMBR                                                                                                                      | 53              |  |
| [14] Rod clevis DARC-C6             | Permits a swivelling movement in one plane                                                                                                                  | 52              |  |

## Datasheet

| General technical data |                                              |               |     |                |                |               |               |               |       |               |
|------------------------|----------------------------------------------|---------------|-----|----------------|----------------|---------------|---------------|---------------|-------|---------------|
| Piston Ø               | 9/16                                         | 3/4           | 7/8 | 1 1/16         | 1 1/4          | 1 1/2         | 1 3/4         | 2             | 2 1/2 | 3             |
| Design                 | Piston                                       |               |     |                |                |               |               |               |       |               |
|                        | Piston rod                                   |               |     |                |                |               |               |               |       |               |
|                        | Cylinder barrel                              |               |     |                |                |               |               |               |       |               |
| Operating mode         | Double-acting                                |               |     |                |                |               |               |               |       |               |
| Pneumatic connection   | 1/8 NPT                                      |               |     |                |                |               | 1/4 NPT       |               |       |               |
| Piston rod thread      | 10-32 UNF-2A                                 | 1/4-28 UNF-2A |     | 5/16-24 UNF-2A | 7/16-20 UNF-2A |               | 1/2-20 UNF-2A |               |       | 5/8-18 UNF-2A |
| Stroke                 | [in]                                         | 0.0625 ... 12 |     |                |                |               |               |               |       |               |
| Cushioning             |                                              |               |     |                |                |               |               |               |       |               |
| [N]                    | No cushioning                                |               |     |                |                |               |               |               |       |               |
| [P]                    | Elastic cushioning rings/plates at both ends |               |     |                |                |               |               |               |       |               |
| [PPV]                  | –                                            | <sup>1)</sup> | –   | <sup>1)</sup>  | –              | <sup>1)</sup> | –             | <sup>1)</sup> | –     |               |
| Position sensing       | Via proximity switch                         |               |     |                |                |               |               |               |       |               |
| Type of mounting       | Via lock nut                                 |               |     |                |                |               | –             |               |       |               |
|                        | With accessories                             |               |     |                |                |               |               |               |       |               |
| Mounting position      | Any                                          |               |     |                |                |               |               |               |       |               |

1) Pneumatic cushioning, adjustable at both ends

| Operating and environmental conditions       |                                                                                            |               |     |               |       |               |       |               |       |   |
|----------------------------------------------|--------------------------------------------------------------------------------------------|---------------|-----|---------------|-------|---------------|-------|---------------|-------|---|
| Piston Ø                                     | 9/16                                                                                       | 3/4           | 7/8 | 1 1/16        | 1 1/4 | 1 1/2         | 1 3/4 | 2             | 2 1/2 | 3 |
| Operating pressure [psi]                     | 10 ... 150 <sup>1)</sup>                                                                   |               |     |               |       |               |       |               |       |   |
| Operating medium                             | Compressed air to ISO 8573-1:2010 [7:4:4]                                                  |               |     |               |       |               |       |               |       |   |
| Note on the operating/pilot medium           | Lubricated operation possible (in which case lubricated operation will always be required) |               |     |               |       |               |       |               |       |   |
| Ambient temperature <sup>2)</sup> [°F]       | –40 ... +300                                                                               |               |     |               |       |               |       |               |       |   |
| Corrosion resistance class CRC <sup>3)</sup> | 1 - Low corrosion stress                                                                   |               |     |               |       |               |       |               |       |   |
|                                              | –                                                                                          | <sup>4)</sup> | –   | <sup>4)</sup> | –     | <sup>4)</sup> | –     |               |       |   |
|                                              | –                                                                                          | <sup>5)</sup> | –   | <sup>5)</sup> | –     |               | –     | <sup>5)</sup> | –     |   |

1) With [R3] high corrosion protection max. 100 psi

2) Note operating range of proximity switches

3) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

4) 3 - High corrosion stress

5) 4 - Particularly high corrosion stress

## Datasheet

| Forces [lb] at 80 psi         |                            |      |                    |        |                    |       |                    |       |                   |       |
|-------------------------------|----------------------------|------|--------------------|--------|--------------------|-------|--------------------|-------|-------------------|-------|
| Piston ø                      | 9/16                       | 3/4  | 7/8                | 1 1/16 | 1 1/4              | 1 1/2 | 1 3/4              | 2     | 2 1/2             | 3     |
| Theoretical force, advancing  | 19.9                       | 35.3 | 48.1               | 70.9   | 98.2               | 141.4 | 192.4              | 251.3 | 392.7             | 565.5 |
| Theoretical force, retracting | 17.7                       | 31.4 | 44.2               | 64.8   | 86.1               | 129.3 | 176.7              | 226.8 | 368.2             | 530.1 |
| Weight [lb]                   |                            |      |                    |        |                    |       |                    |       |                   |       |
| Piston ø                      | 9/16                       |      | 3/4                |        | 7/8                |       | 1 1/16             |       | 1 1/4             |       |
| Product weight                | 45.36 ... 385.55           |      |                    |        |                    |       | 99.79 ... 598.74   |       | 176.9 ... 1097.69 |       |
| Weight [lb]                   |                            |      |                    |        |                    |       |                    |       |                   |       |
| Piston ø                      | 1 1/2                      |      | 1 3/4              |        | 2                  |       | 2 1/2              |       | 3                 |       |
| Product weight                | 199.58 ... 1238.3          |      | 385.55 ... 1374.38 |        | 471.74 ... 1832.51 |       | 898.11 ... 1954.98 |       |                   |       |
| Materials                     |                            |      |                    |        |                    |       |                    |       |                   |       |
| Piston ø                      | 9/16                       | 3/4  | 7/8                | 1 1/16 | 1 1/4              | 1 1/2 | 1 3/4              | 2     | 2 1/2             | 3     |
| Cover material                | Wrought aluminium alloy    |      |                    |        |                    |       |                    |       |                   |       |
|                               | –                          | POM  | –                  | POM    | –                  | POM   | –                  |       |                   |       |
|                               | –                          | 1)   | –                  | 1)     | –                  |       | –                  | 1)    | –                 |       |
| Sealing material              | FPM                        |      |                    |        |                    |       |                    |       |                   |       |
|                               | NBR                        |      |                    |        |                    |       |                    |       |                   |       |
| Piston rod material           | High-alloy stainless steel |      |                    |        |                    |       |                    |       |                   |       |
| Cylinder barrel material      | High-alloy stainless steel |      |                    |        |                    |       |                    |       |                   |       |
| Note on materials             | RoHS-compliant             |      |                    |        |                    |       |                    |       |                   |       |
| LABS (PWIS) conformity        | VDMA24364 zone III         |      |                    |        |                    |       |                    |       |                   |       |

1) High-alloy stainless steel

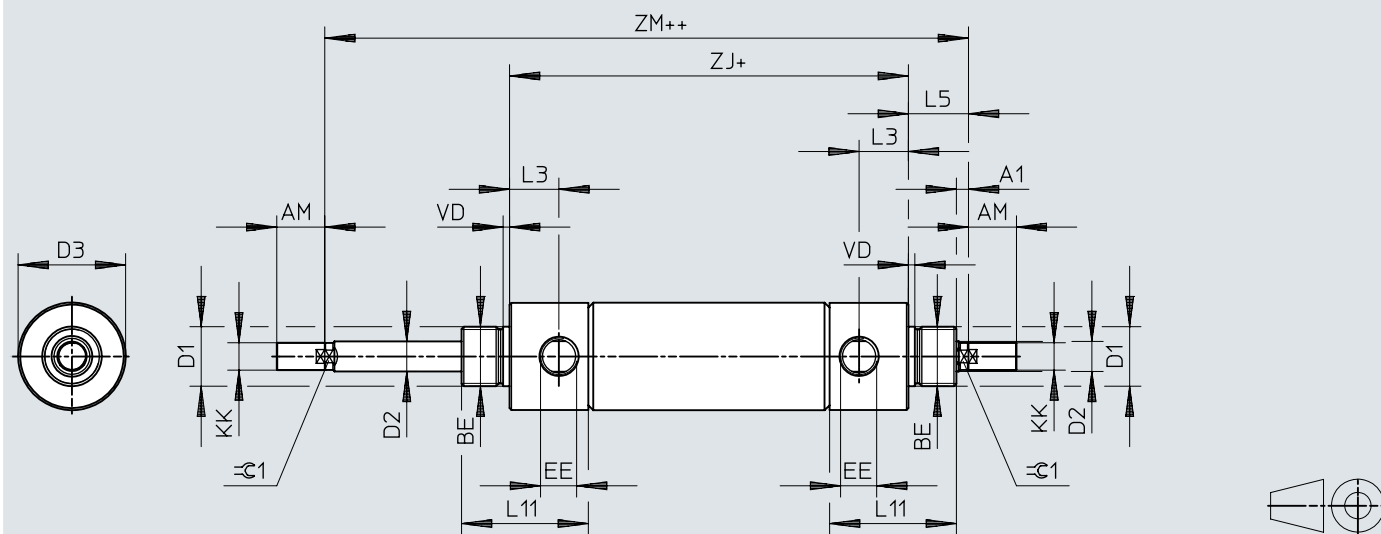
# Datasheet

## Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

[T] Through piston rod

[TR3] Through piston rod; high corrosion protection



+= plus stroke length

++ = plus 2x stroke length

| ∅      | A1    | AM    | BE              |               | D1<br>∅ | D2<br>∅ | D3<br>∅ |       | EE      | KK             |
|--------|-------|-------|-----------------|---------------|---------|---------|---------|-------|---------|----------------|
| [in]   |       |       |                 | [TR3]         |         |         |         | [TR3] |         |                |
| 9/16   | –     | 0.5   | 7/16-20 UNF-2A  | –             | 0.437   | 0.188   | 0.625   | –     | 1/8 NPT | 10-32 UNF-2A   |
| 3/4    | –     | 0.5   | 5/8-18 UNF-2A   | 5/8-18 UNF-2A | 0.624   | 0.25    | 0.875   | 0.875 | 1/8 NPT | 1/4-28 UNF-2A  |
| 1 1/16 | 0.125 | 0.5   | 5/8-18 UNF-2A   | –             | 0.624   | 0.313   | 1.125   | 1.180 | 1/8 NPT | 5/16-24 UNF-2A |
| 1 1/4  | 0.25  | 0.75  | 3/4-16 UNF-2A   | –             | 0.749   | 0.438   | 1.344   | –     | 1/8 NPT | 7/16-20 UNF-2A |
| 1 1/2  | 0.25  | 0.75  | 3/4-16 UNF-2A   | 1-14 UNF-2A   | 0.999   | 0.438   | 1.562   | 1.615 | 1/8 NPT | 7/16-20 UNF-2A |
| 2      | 0.375 | 0.875 | 1 1/4-12 UNF-2A | –             | 1.375   | 0.625   | 2.078   | –     | 1/4 NPT | 1/2-20 UNF-2A  |

| ∅      | L1    |       | L2    |       | L3    |       | L5    | L11   |       | VD    | ⊕1   |
|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|
| [in]   |       | [TR3] |       | [TR3] |       | [TR3] |       |       | [TR3] |       |      |
| 9/16   | 2.938 | –     | 2.188 | –     | 0.375 | –     | 0.375 | 1     | –     | 0.063 | –    |
| 3/4    | 4     | 4.656 | 3     | 3.406 | 0.469 | 0.469 | 0.5   | 1.343 | 1.593 | 0.094 | –    |
| 1 1/16 | 4.406 | –     | 3.156 | –     | 0.563 | 0.512 | 0.625 | 1.322 | 1.317 | 0.094 | 0.25 |
| 1 1/4  | 5.563 | –     | 3.813 | –     | 0.75  | –     | 0.875 | 1.625 | –     | 0.094 | 0.25 |
| 1 1/2  | 5.125 | –     | 3.375 | –     | 0.625 | –     | 0.875 | 1.625 | –     | 0.094 | 0.25 |
| 2      | 6.563 | –     | 4.188 | –     | 0.734 | –     | 1.188 | 2     | –     | 0.125 | 0.25 |

## Datasheet

**Formula for calculating the length ZM/ZJ**

The value O... should be selected for the formula depending on the cushioning and position sensing variants

O0 = N (no cushioning)

O1 = P (flexible cushioning rings/plates at both ends)

O2 = A (for proximity switch)

O3 = PA (flexible cushioning rings/plates at both ends and for proximity switch)

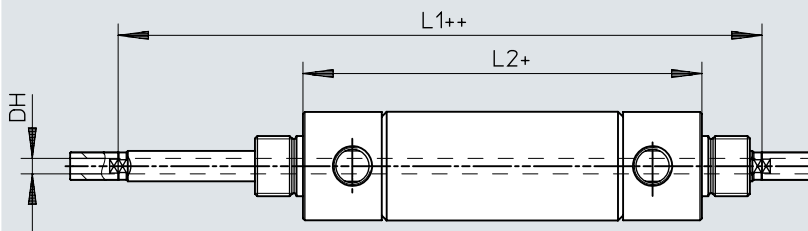
n = stroke length

| Stroke<br>[in]   | O0 | O1   | O2   | O3   | ZM           |              | ZJ               |                  |
|------------------|----|------|------|------|--------------|--------------|------------------|------------------|
|                  |    |      |      |      |              | [TR3]        |                  | [TR3]            |
| Piston Ø 9/16    |    |      |      |      |              |              |                  |                  |
| 0.0625 ...<br>12 | 0  | 0.13 | 0.25 | 0.38 | 2.188+n+O... | –            | 2.938+(2*n)+O... | –                |
| Piston Ø 3/4     |    |      |      |      |              |              |                  |                  |
| 0.0625 ...<br>12 | 0  | 0.25 | –    | 0.25 | 3+n+O...     | 3.438+n+O... | 4+(2*n)+O...     | 4.438+(2*n)+O... |
| Piston Ø 1 1/16  |    |      |      |      |              |              |                  |                  |
| 0.0625 ...<br>12 | 0  | 0.25 | –    | 0.25 | 3.156+n+O... | –            | 4.406+(2*n)+O... | –                |
| Piston Ø 1 1/4   |    |      |      |      |              |              |                  |                  |
| 0.0625 ...<br>12 | 0  | 0.25 | –    | 0.25 | 3.813+n+O... | –            | 5.563+(2*n)+O... | –                |
| Piston Ø 1 1/2   |    |      |      |      |              |              |                  |                  |
| 0.0625 ...<br>12 | 0  | 0.25 | –    | 0.25 | 3.375+n+O... | –            | 5.125+(2*n)+O... | –                |
| Piston Ø 2       |    |      |      |      |              |              |                  |                  |
| 0.0625 ...<br>12 | 0  | 0.25 | –    | 0.25 | 4.188+n+O... | –            | 6.563+(2*n)+O... | –                |

**Dimensions**

Download CAD data → [www.festo.com](http://www.festo.com)

[H] Through, hollow piston rod



+ = plus stroke length

++ = plus 2x stroke length

| $\varnothing$ | DH   | L1    | L2    |
|---------------|------|-------|-------|
| [in]          |      |       |       |
| 1 1/16        | 0.16 | 4     | 2.75  |
| 1 1/4         | 0.25 | 5.63  | 3.813 |
| 1 1/2         | 0.25 | 5.125 | 3.375 |

# Datasheet

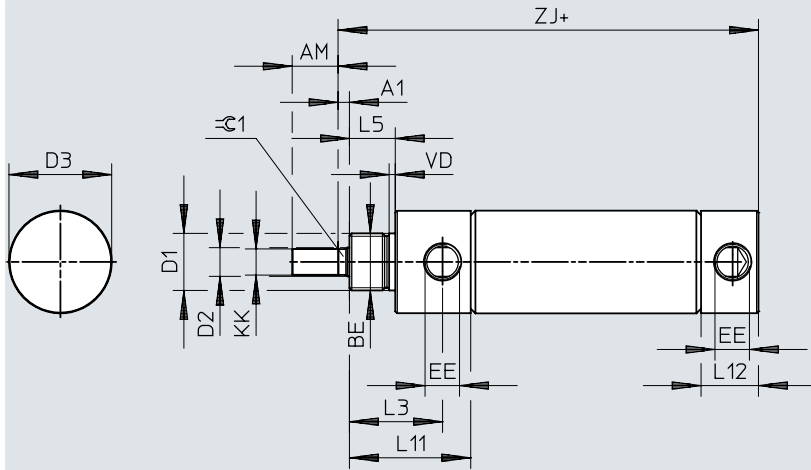
## Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

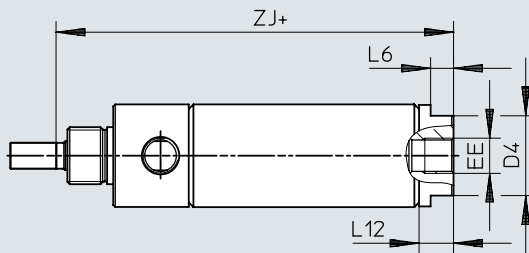
[ ] End cap type: standard

[NG] Without mounting thread

[NG-R3] Without mounting thread; high corrosion protection



DPRA-N- . . . . . -NGP4



+ = plus stroke length

| ø      | A1    |       |         | AM    | BE             |                 |               | D1    |         |       | D2    | D3    |         |       |
|--------|-------|-------|---------|-------|----------------|-----------------|---------------|-------|---------|-------|-------|-------|---------|-------|
|        | [in]  | [NG]  | [NG-R3] |       | [NG]           | [NG-R3]         |               | [NG]  | [NG-R3] |       |       | [NG]  | [NG-R3] |       |
| 9/16   | -     | -     | -       | 0.5   | 7/16-20 UNF-2A | 7/16-20 UNF-2A  | -             | 0.437 | 0.437   | -     | 0.188 | 0.625 | 0.625   | -     |
| 3/4    | -     | -     | -       | 0.5   | 5/8-18 UNF-2A  | 5/8-18 UNF-2A   | 5/8-18 UNF-2A | 0.624 | 0.624   | 0.624 | 0.25  | 0.875 | 0.875   | 0.875 |
| 7/8    | -     | -     | -       | 0.5   | 5/8-18 UNF-2A  | 5/8-18 UNF-2A   | -             | 0.624 | 0.624   | -     | 0.25  | 0.938 | 0.938   | -     |
| 1 1/16 | 0.125 | 0.125 | -       | 0.5   | 5/8-18 UNF-2A  | 5/8-18 UNF-2A   | 5/8-18 UNF-2A | 0.624 | 0.624   | 0.624 | 0.313 | 1.125 | 1.125   | 1.18  |
| 1 1/4  | -     | 0.25  | -       | 0.75  | -              | 3/4-16 UNF-2A   | -             | -     | 0.749   | -     | 0.438 | -     | 1.344   | -     |
| 1 1/2  | 0.25  | 0.25  | 0.25    | 0.75  | 3/4-16 UNF-2A  | 3/4-16 UNF-2A   | 1-14 UNF-2A   | 0.749 | 0.749   | 0.999 | 0.438 | 1.563 | 1.563   | 1.615 |
| 1 3/4  | -     | 0.313 | -       | 0.875 | -              | 1-14 UNF-2A     | -             | -     | 1.031   | -     | 0.5   | -     | 1.844   | -     |
| 2      | -     | 0.375 | -       | 0.875 | -              | 1 1/4-12 UNF-2A | -             | -     | 1.375   | -     | 0.625 | -     | 2.078   | -     |
| 2 1/2  | -     | 0.375 | -       | 0.875 | -              | 1 3/8-12 UNF-2A | -             | -     | 1.5     | -     | 0.625 | -     | 2.625   | -     |
| 3      | -     | 0.375 | -       | 1.25  | -              | 1 1/2-12 UNF-2A | -             | -     | 1.625   | -     | 0.75  | -     | 3.156   | -     |

| ø      | D4   |       |         | EE           | KK             | L3    |         |       | L5    |         |       |
|--------|------|-------|---------|--------------|----------------|-------|---------|-------|-------|---------|-------|
|        | [in] | [NG]  | [NG-R3] |              |                | [NG]  | [NG-R3] |       | [NG]  | [NG-R3] |       |
| 9/16   | -    | 0.5   | -       | 10-32 UNF-2B | 10-32 UNF-2A   | 0.75  | 0.75    | -     | 0.375 | 0.375   | -     |
| 3/4    | -    | 0.625 | 0.625   | 1/8 NPT      | 1/4-28 UNF-2A  | 0.969 | 0.969   | 0.969 | 0.5   | 0.5     | -     |
| 7/8    | -    | 0.625 | -       | 1/8 NPT      | 1/4-28 UNF-2A  | 0.968 | 0.968   | -     | 0.5   | 0.5     | -     |
| 1 1/16 | -    | 0.875 | 0.875   | 1/8 NPT      | 5/16-24 UNF-2A | 1.188 | 1.188   | 1.063 | 0.625 | 0.625   | 0.5   |
| 1 1/4  | -    | 0.875 | -       | 1/8 NPT      | 7/16-20 UNF-2A | -     | 1.625   | -     | -     | 0.875   | -     |
| 1 1/2  | -    | 0.875 | 0.875   | 1/8 NPT      | 7/16-20 UNF-2A | 1.5   | 1.5     | 1.375 | 0.875 | 0.875   | 0.875 |
| 1 3/4  | -    | 1.25  | -       | 1/4 NPT      | 1/2-20 UNF-2A  | -     | 1.938   | -     | -     | 1.063   | -     |
| 2      | -    | 1.25  | -       | 1/4 NPT      | 1/2-20 UNF-2A  | -     | 1.922   | -     | -     | 1.188   | -     |
| 2 1/2  | -    | 1.75  | -       | 1/4 NPT      | 1/2-20 UNF-2A  | -     | 1.84    | -     | -     | 1.188   | -     |
| 3      | -    | 2     | -       | 3/8 NPT      | 5/8-18 UNF-2A  | -     | 2.094   | -     | -     | 1.375   | -     |

## Datasheet

| ∅      | L6 |       |         | L11   |       |         | L12   |       |         | VD    | ≈G1   |       |         |
|--------|----|-------|---------|-------|-------|---------|-------|-------|---------|-------|-------|-------|---------|
| [in]   |    | [NG]  | [NG-R3] |       | [NG]  | [NG-R3] |       | [NG]  | [NG-R3] |       |       | [NG]  | [NG-R3] |
| 9/16   | –  | 0.188 | –       | 1     | 1     | –       | 0.844 | 0.375 | –       | 0.063 | –     | –     | –       |
| 3/4    | –  | 0.188 | 0.188   | 1.34  | 1.343 | 1.34    | 1.348 | 0.284 | 0.284   | 0.094 | –     | –     | –       |
| 7/8    | –  | 0.188 | –       | 1.325 | 1.325 | –       | 1.230 | 0.325 | –       | 0.067 | –     | –     | –       |
| 1 1/16 | –  | 0.188 | 0.188   | 1.322 | 1.322 | 1.317   | 1.25  | 0.375 | 0.375   | 0.094 | 0.25  | 0.25  | –       |
| 1 1/4  | –  | 0.25  | –       | –     | 1.625 | –       | –     | 0.545 | –       | 0.094 | –     | 0.375 | –       |
| 1 1/2  | –  | 0.25  | 0.25    | 1.625 | 1.625 | 1.625   | 1.5   | 0.438 | 0.438   | 0.094 | 0.375 | 0.375 | 0.375   |
| 1 3/4  | –  | 0.25  | –       | –     | 2.202 | –       | –     | 0.39  | –       | 0.094 | –     | 0.438 | –       |
| 2      | –  | 0.313 | –       | –     | 2     | –       | –     | 0.5   | –       | 0.125 | –     | 0.5   | –       |
| 2 1/2  | –  | 0.313 | –       | –     | 2     | –       | –     | 0.5   | –       | 0.125 | –     | 0.5   | –       |
| 3      | –  | 0.313 | –       | –     | 2.313 | –       | –     | 0.563 | –       | 0.188 | –     | 0.625 | –       |

**Formula for calculating the length Zj**

The value O... should be selected for the formula depending on the cushioning and position sensing variants

O0 = N (no cushioning)

O1 = P (flexible cushioning rings/plates at both ends)

O2 = A (for proximity switch)

O3 = PA (flexible cushioning rings/plates at both ends and for proximity switch)

O4 = NG (without mounting thread) or NG-R3 (without mounting thread and high corrosion protection)

n = stroke length

| Stroke           | O0 | O1    |       |         | O2   |      |         | O3    |       |         | O4    | Zj           |                    |              |
|------------------|----|-------|-------|---------|------|------|---------|-------|-------|---------|-------|--------------|--------------------|--------------|
| [in]             |    |       | [NG]  | [NG-R3] |      | [NG] | [NG-R3] |       | [NG]  | [NG-R3] | [NG]  |              | [NG]               | [NG-R3]      |
| Piston ∅ 9/16    |    |       |       |         |      |      |         |       |       |         |       |              |                    |              |
| 0.0625 ...<br>12 | 0  | 0.125 | 0.125 | –       | 0.25 | 0.25 | –       | 0.375 | 0.375 | –       | 0.031 | 2.312+n+O... | 2.281+n+0.031+O... | –            |
| Piston ∅ 3/4     |    |       |       |         |      |      |         |       |       |         |       |              |                    |              |
| 0.0625 ...<br>12 | 0  | –     | –     | 0.281   | –    | –    | 0.281   | 0.125 | 0.125 | 0.406   | 0.44  | 3.75+n+O...  | 2.969+n+0.44+O...  | 3.125+n+O... |
| Piston ∅ 7/8     |    |       |       |         |      |      |         |       |       |         |       |              |                    |              |
| 0.0625 ...<br>12 | 0  | –     | –     | –       | –    | –    | –       | 0.125 | 0.125 | –       | 0.28  | 3.218+n+O... | 2.938+n+0.28+O...  | –            |
| Piston ∅ 1 1/16  |    |       |       |         |      |      |         |       |       |         |       |              |                    |              |
| 0.0625 ...<br>12 | 0  | 0.125 | 0.125 | 0.375   | –    | –    | 0.25    | 0.125 | 0.125 | 0.375   | 0.25  | 3.844+n+O... | 3.25+n+0.25+O...   | 3.188+n+O... |
| Piston ∅ 1 1/4   |    |       |       |         |      |      |         |       |       |         |       |              |                    |              |
| 0.0625 ...<br>12 | 0  | –     | –     | –       | –    | –    | –       | –     | 0.125 | –       | 0.31  | –            | 4+n+0.31+O...      | –            |
| Piston ∅ 1 1/2   |    |       |       |         |      |      |         |       |       |         |       |              |                    |              |
| 0.0625 ...<br>12 | 0  | 0.125 | 0.125 | 0.375   | –    | –    | 0.25    | 0.25  | 0.25  | 0.5     | 0.19  | 4.75+n+O...  | 3.688+n+0.19+O...  | 3.562+n+O... |
| Piston ∅ 1 3/4   |    |       |       |         |      |      |         |       |       |         |       |              |                    |              |
| 0.0625 ...<br>12 | 0  | –     | –     | –       | –    | –    | –       | –     | –     | –       | 0.56  | –            | 4.688+n+0.56+O...  | –            |
| Piston ∅ 2       |    |       |       |         |      |      |         |       |       |         |       |              |                    |              |
| 0.0625 ...<br>12 | 0  | –     | 0.25  | –       | –    | –    | –       | –     | 0.25  | –       | 0.38  | –            | 4.688+n+0.38+O...  | –            |
| Piston ∅ 2 1/2   |    |       |       |         |      |      |         |       |       |         |       |              |                    |              |
| 0.0625 ...<br>12 | 0  | –     | 0.062 | –       | –    | –    | –       | –     | 0.062 | –       | 0.38  | –            | 4.688+n+0.38+O...  | –            |
| Piston ∅ 3       |    |       |       |         |      |      |         |       |       |         |       |              |                    |              |
| 0.0625 ...<br>12 | 0  | –     | 0.062 | –       | –    | –    | –       | –     | 0.062 | –       | 0.437 | –            | 5.25+n+0.437+O...  | –            |

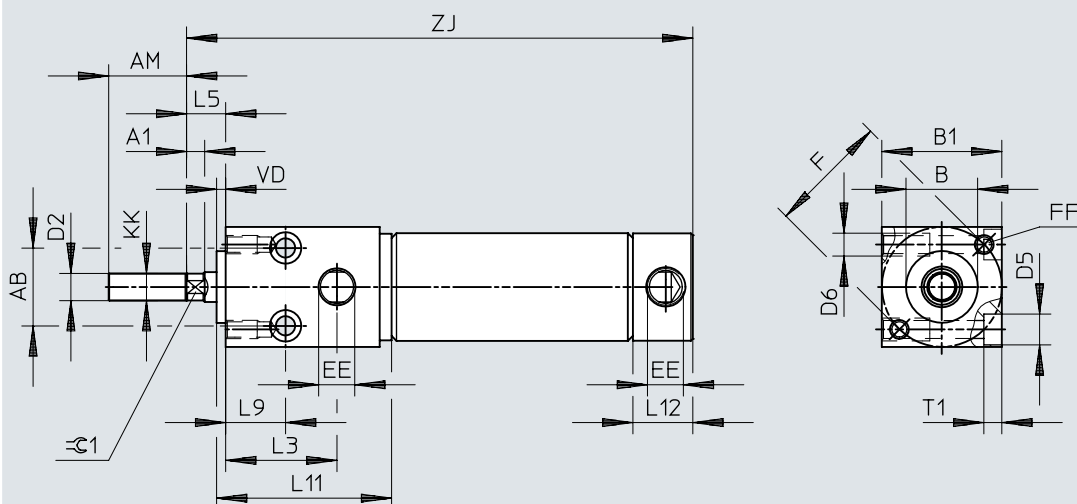
## Datasheet

## Dimensions

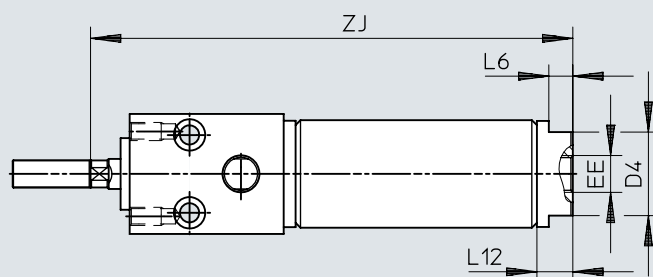
Download CAD data → [www.festo.com](http://www.festo.com)

[BNG] For direct mounting, without mounting thread

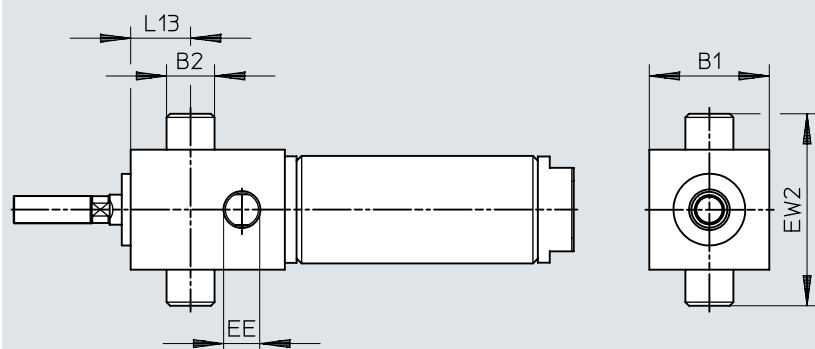
[BNGP4] For direct mounting, without mounting thread, axial compressed air supply port



DPRA-N- . . . -BNGP4



[MNGP4] With trunnion flange, without mounting thread, axial compressed air supply port



| ø      | A1    | AB    | AM    | B     | B1   | B2      | D2    | D4    | D5    | D6             | EE      | EW2     | F    |
|--------|-------|-------|-------|-------|------|---------|-------|-------|-------|----------------|---------|---------|------|
| [in]   |       |       |       |       |      | [MNGP4] | ø     | ø     | ø     |                |         | [MNGP4] |      |
| 3/4    | 0.188 | 0.625 | 0.562 | 0.625 | 1    | 0.5     | 0.25  | 0.625 | 0.332 | 1/4-20 UNC-2A  | 1/8 NPT | 1.75    | 1    |
| 1 1/16 | 0.125 | 0.812 | 0.75  | 0.749 | 1.25 | 0.5     | 0.313 | 0.875 | 0.328 | 1/4-20 UNC-2A  | 1/8 NPT | 2       | 1.25 |
| 1 1/2  | 0.25  | 1.125 | 1.25  | 0.999 | 1.75 | 0.5     | 0.438 | 0.875 | 0.406 | 5/16-18 UNC-2A | 1/8 NPT | 2.5     | 1.75 |

| ø      | FF            | KK             | L3    | L5    | L6      | L9    | L11   | L12   |         | L13     | T1    | VD    | ≈G1   |
|--------|---------------|----------------|-------|-------|---------|-------|-------|-------|---------|---------|-------|-------|-------|
| [in]   |               |                |       |       | [BNGP4] |       |       |       | [BNGP4] | [MNGP4] |       |       |       |
| 3/4    | 10-32 UNF-2B  | 1/4-28 UNF-2A  | 0.875 | 0.344 | 0.188   | 0.375 | 1.233 | 0.724 | 0.284   | 0.0343  | 0.187 | 0.093 | 0.218 |
| 1 1/16 | 10-32 UNF-2B  | 5/16-24 UNF-2A | 1.156 | 0.468 | 0.188   | 0.625 | 1.7   | 0.625 | 0.375   | 0.625   | 0.187 | 0.094 | 0.25  |
| 1 1/2  | 1/4-20 UNC-2B | 7/16-20 UNF-2A | 1.531 | 0.375 | 0.25    | 0.875 | 2     | 0.628 | 0.438   | 0.937   | 0.259 | 0.094 | 0.375 |

## Datasheet

### Formula for calculating the length Z]

The value O... should be selected for the formula depending on the cushioning and position sensing variants

O0 = N (no cushioning)

O1 = P (flexible cushioning rings/plates at both ends)

O2 = A (for proximity switch)

O3 = PA (flexible cushioning rings/plates at both ends and for proximity switch)

n = stroke length

| Stroke<br>[in]   | O0 | O1    | O2 | O3    | Z]           |              |
|------------------|----|-------|----|-------|--------------|--------------|
|                  |    |       |    |       |              | [BNGP4]      |
| Piston Ø 3/4     |    |       |    |       |              |              |
| 0.0625 ...<br>12 | 0  | –     | –  | 0.125 | 3.659+n+O... | 3.219+n+O... |
| Piston Ø 1 1/16  |    |       |    |       |              |              |
| 0.0625 ...<br>12 | 0  | 0.125 | –  | 0.125 | 4+n+O...     | 3.75+n+O...  |
| Piston Ø 1 1/2   |    |       |    |       |              |              |
| 0.0625 ...<br>12 | 0  | 0.125 | –  | 0.25  | 4.378+n+O... | 4.188+n+O... |

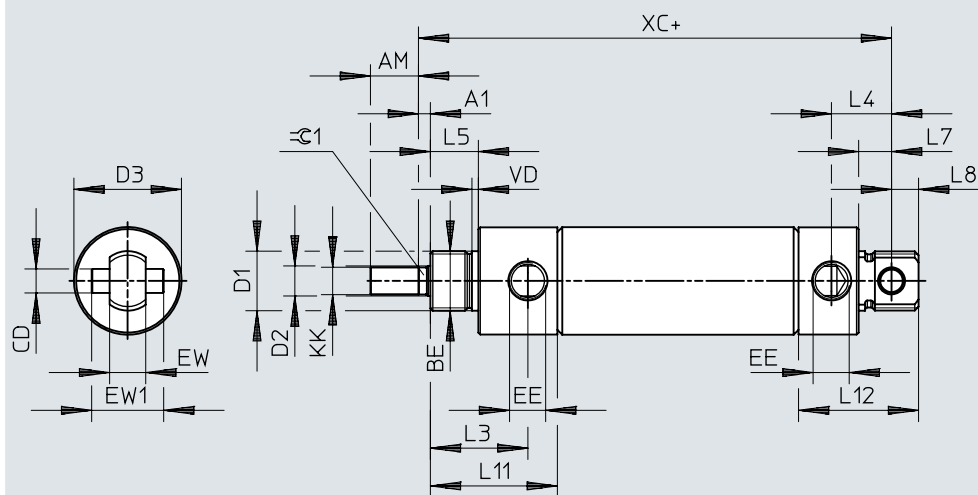
# Datasheet

## Dimensions

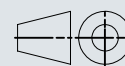
Download CAD data → [www.festo.com](http://www.festo.com)

[ME] With trunnion flange

[ME90] With trunnion flange, rotated 90°



DPRA-N-...-ME90



+ = plus stroke length

| ∅      | A1    | AM   | BE            | CD<br>∅ | D1<br>∅ | D2<br>∅ | D3<br>∅ | EE      | EW    | EW1  |
|--------|-------|------|---------------|---------|---------|---------|---------|---------|-------|------|
| [in]   |       |      |               |         |         |         |         |         |       |      |
| 3/4    | –     | 0.5  | 5/8-18 UNF-2A | 0.25    | 0.624   | 0.25    | 0.875   | 1/8 NPT | 0.375 | 0.75 |
| 7/8    | –     | 0.5  | 5/8-18 UNF-2A | 0.25    | 0.624   | 0.25    | 0.938   | 1/8 NPT | 0.375 | 0.75 |
| 1 1/16 | 0.125 | 0.5  | 5/8-18 UNF-2A | 0.25    | 0.624   | 0.313   | 1.125   | 1/8 NPT | 0.375 | 0.75 |
| 1 1/2  | 0.25  | 0.75 | 3/4-16 UNF-2A | 0.375   | 0.749   | 0.438   | 1.563   | 1.8 NPT | 0.625 | 1    |

| ∅      | KK             | L3    | L4    | L5    | L7    | L8    | L11   | L12   | VD    | XC    | ∅1    |
|--------|----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| [in]   |                |       |       |       |       |       |       |       |       |       |       |
| 3/4    | 1/4-28 UNF-2A  | 0.969 | 0.625 | 0.5   | 0.344 | 0.281 | 1.34  | 1.348 | 0.094 | 3.75  | –     |
| 7/8    | 1/4-28 UNF-2A  | 0.968 | 0.625 | 0.5   | 0.344 | 0.281 | 1.325 | 1.23  | 0.067 | 3.563 | –     |
| 1 1/16 | 5/16-24 UNF-2A | 1.188 | 0.625 | 0.625 | 0.344 | 0.281 | 1.322 | 1.25  | 0.094 | 3.844 | 0.25  |
| 1 1/2  | 7/16-20 UNF-2A | 1.5   | 0.813 | 0.875 | 0.5   | 0.375 | 1.625 | 1.5   | 0.094 | 4.375 | 0.375 |

## Datasheet

**Formula for calculating the length XC**

The value O... should be selected for the formula depending on the cushioning and position sensing variants

O0 = N (no cushioning)

O1 = P (flexible cushioning rings/plates at both ends)

O2 = A (for proximity switch)

O3 = PA (flexible cushioning rings/plates at both ends and for proximity switch)

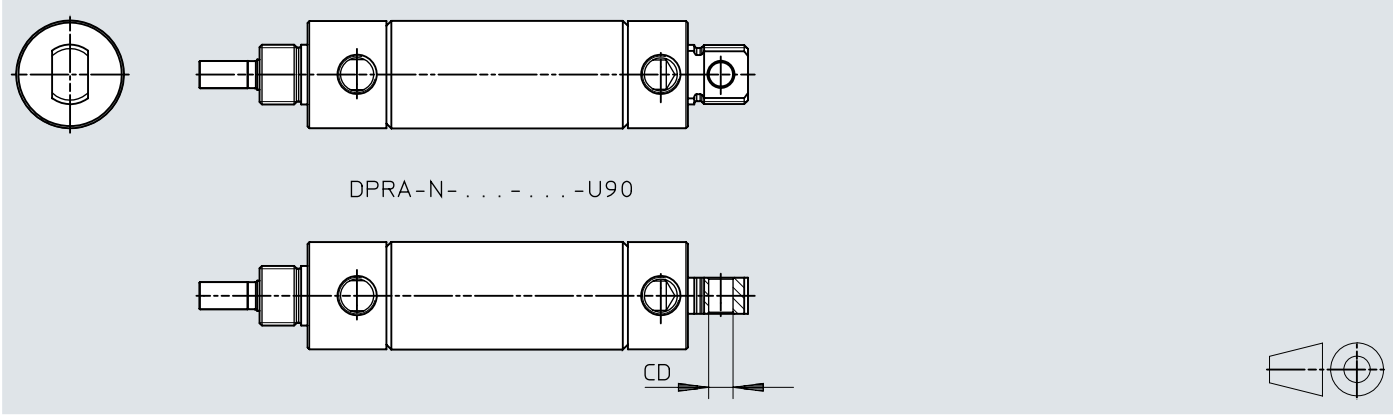
n = stroke length

| Stroke<br>[in]   | O0 | O1    | O2 | O3    | XC             |
|------------------|----|-------|----|-------|----------------|
| Piston Ø 3/4     |    |       |    |       |                |
| 0.0625 ...<br>12 | 0  | –     | –  | 0.125 | $3.75+n+O...$  |
| Piston Ø 7/8     |    |       |    |       |                |
| 0.0625 ...<br>12 | 0  | –     | –  | 0.125 | $3.563+n+O...$ |
| Piston Ø 1 1/16  |    |       |    |       |                |
| 0.0625 ...<br>12 | 0  | 0.125 | –  | 0.125 | $3.844+n+O...$ |
| Piston Ø 1 1/2   |    |       |    |       |                |
| 0.0625 ...<br>12 | 0  | 0.125 | –  | 0.25  | $4.375+n+O...$ |

Datasheet

**Dimensions** Download CAD data → [www.festo.com](http://www.festo.com)

- [U] With swivelling rod eye
- [U90] With swivelling rod eye, rotated 90°



| ø      | CD    |       |
|--------|-------|-------|
|        | ø     | [U90] |
| [in]   |       |       |
| 3/4    | 0.25  | 0.25  |
| 1 1/16 | 0.25  | 0.25  |
| 1 1/4  | 0.251 | 0.251 |
| 1 1/2  | 0.375 | 0.375 |
| 1 3/4  | 0.376 | 0.376 |

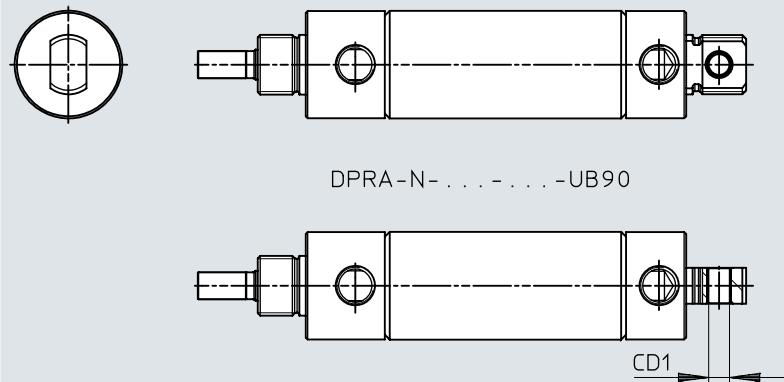
## Datasheet

## Dimensions

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[UB] With swivelling rod eye and bearing sleeve

[UB90] With swivelling rod eye and bearing sleeve, rotated 90°

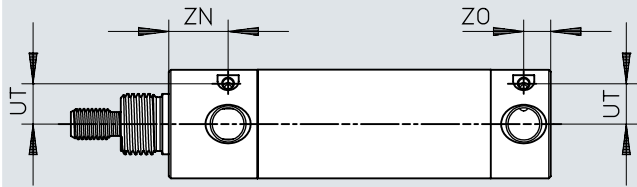


| ∅      | CD1   |        |
|--------|-------|--------|
| [in]   | ∅     | [UB90] |
| 9/16   | 0.157 | 0.157  |
| 3/4    | 0.25  | –      |
| 7/8    | 0.25  | –      |
| 1 1/16 | 0.251 | –      |
| 1 1/4  | 0.251 | –      |
| 1 1/2  | 0.375 | –      |
| 1 3/4  | 0.376 | –      |
| 2      | 0.375 | 0.375  |
| 2 1/2  | 0.376 | 0.376  |
| 3      | 0.501 | 0.501  |

Datasheet

**Dimensions** Download CAD data → [www.festo.com](http://www.festo.com)

- [ -PPV ] Pneumatic cushioning, adjustable at both ends
- [ NG-PPV ] Without mounting thread; pneumatic cushioning, adjustable at both ends
- [ ME-PPV ] With trunnion flange; pneumatic cushioning, adjustable at both ends



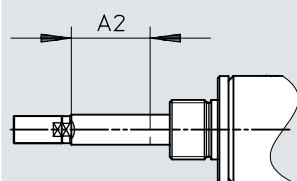
| ø<br>[in] | UT    |       |       | ZO    |       |       | ZN    |       |       |
|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|           |       | [NG]  | [ME]  |       | [NG]  | [ME]  |       | [NG]  | [ME]  |
| 3/4       | 0.29  | 0.29  | 0.29  | 0.281 | 0.281 | 0.281 | 0.46  | 0.46  | 0.46  |
| 1 1/16    | 0.335 | 0.335 | 0.335 | 0.281 | 0.281 | 0.281 | 0.563 | 0.563 | 0.563 |
| 1 1/2     | 0.475 | 0.475 | 0.475 | 0.297 | 0.297 | 0.313 | 0.625 | 0.625 | 0.625 |
| 2         | 0.625 | 0.625 | —     | 0.469 | 0.469 | —     | 0.737 | 0.737 | —     |

## Datasheet

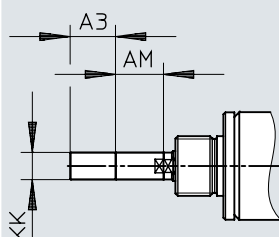
## Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

[...NE] Piston rod extension



[...NL] Piston rod thread extension



| ∅      | A2         | A3         | AM    | KK             |
|--------|------------|------------|-------|----------------|
| [in]   | [...NE]    | [...NL]    |       |                |
| 9/16   | 1/16 ... 6 | 1/16 ... 6 | 0.5   | 10-32 UNF-2A   |
| 3/4    | 1/16 ... 6 | 1/16 ... 6 | 0.5   | 1/4-28 UNF-2A  |
| 7/8    | 1/16 ... 6 | 1/16 ... 6 | 0.5   | 1/4-28 UNF-2A  |
| 1 1/16 | 1/16 ... 6 | 1/16 ... 6 | 0.5   | 5/16-24 UNF-2A |
| 1 1/4  | 1/16 ... 6 | 1/16 ... 6 | 0.75  | 7/16-24 UNF-2A |
| 1 1/2  | 1/16 ... 6 | 1/16 ... 6 | 0.75  | 7/16-24 UNF-2A |
| 1 3/4  | 1/16 ... 6 | 1/16 ... 6 | 0.875 | 1/2-20 UNF-2A  |
| 2      | 1/16 ... 6 | 1/16 ... 6 | 0.875 | 1/2-20 UNF-2A  |
| 2 1/2  | 1/16 ... 6 | 1/16 ... 6 | 0.875 | 1/2-20 UNF-2A  |
| 3      | 1/16 ... 6 | 1/16 ... 6 | 1.25  | 5/8-18 UNF-2A  |

## Ordering data

| [NGP4] Without mounting thread, axial compressed air supply port |        |          |                           |
|------------------------------------------------------------------|--------|----------|---------------------------|
| Piston Ø                                                         | Stroke | Part no. | Type                      |
| 3/4"                                                             | 0.5"   | 8217823  | DPRA-N-3/4"-0.5-NGP4-N    |
|                                                                  | 1"     | 8217824  | DPRA-N-3/4"-1-NGP4-N      |
|                                                                  | 1.5"   | 8217826  | DPRA-N-3/4"-1.5-NGP4-N    |
|                                                                  | 2"     | 8217827  | DPRA-N-3/4"-2-NGP4-N      |
|                                                                  | 3"     | 8217828  | DPRA-N-3/4"-3-NGP4-N      |
|                                                                  | 4"     | 8217829  | DPRA-N-3/4"-4-NGP4-N      |
| 1 1/16"                                                          | 0.5"   | 8217854  | DPRA-N-1 1/16"-0.5-NGP4-N |
|                                                                  | 1"     | 8217838  | DPRA-N-1 1/16"-1-NGP4-N   |
|                                                                  | 1.5"   | 8217853  | DPRA-N-1 1/16"-1.5-NGP4-N |
|                                                                  | 2"     | 8217845  | DPRA-N-1 1/16"-2-NGP4-N   |
|                                                                  | 3"     | 8217846  | DPRA-N-1 1/16"-3-NGP4-N   |
|                                                                  | 4"     | 8217842  | DPRA-N-1 1/16"-4-NGP4-N   |
| 1 1/4"                                                           | 5"     | 8217844  | DPRA-N-1 1/16"-5-NGP4-N   |
|                                                                  | 1"     | 8217855  | DPRA-N-1 1/4"-1-NGP4-N    |
|                                                                  | 2"     | 8217856  | DPRA-N-1 1/4"-2-NGP4-N    |
|                                                                  | 3"     | 8217857  | DPRA-N-1 1/4"-3-NGP4-N    |
|                                                                  | 4"     | 8217858  | DPRA-N-1 1/4"-4-NGP4-N    |
| 1 1/2"                                                           | 5"     | 8217859  | DPRA-N-1 1/4"-5-NGP4-N    |
|                                                                  | 1"     | 8217879  | DPRA-N-1 1/2"-1-NGP4-N    |
|                                                                  | 1.5"   | 8217866  | DPRA-N-1 1/2"-1.5-NGP4-N  |
|                                                                  | 2"     | 8217867  | DPRA-N-1 1/2"-2-NGP4-N    |
|                                                                  | 3"     | 8217868  | DPRA-N-1 1/2"-3-NGP4-N    |
|                                                                  | 4"     | 8217869  | DPRA-N-1 1/2"-4-NGP4-N    |
|                                                                  | 5"     | 8217870  | DPRA-N-1 1/2"-5-NGP4-N    |
| 2"                                                               | 6"     | 8217871  | DPRA-N-1 1/2"-6-NGP4-N    |
|                                                                  | 1"     | 8217891  | DPRA-N-2"-1-NGP4-N        |
|                                                                  | 2"     | 8217880  | DPRA-N-2"-2-NGP4-N        |
|                                                                  | 3"     | 8217881  | DPRA-N-2"-3-NGP4-N        |
|                                                                  | 4"     | 8217882  | DPRA-N-2"-4-NGP4-N        |
|                                                                  | 5"     | 8217883  | DPRA-N-2"-5-NGP4-N        |
|                                                                  | 6"     | 8217884  | DPRA-N-2"-6-NGP4-N        |

| [ME] With trunnion flange |        |          |                         |
|---------------------------|--------|----------|-------------------------|
| Piston Ø                  | Stroke | Part no. | Type                    |
| 3/4"                      | 0.5"   | 8217830  | DPRA-N-3/4"-0.5-ME-N    |
|                           | 1"     | 8217825  | DPRA-N-3/4"-1-ME-N      |
|                           | 1.5"   | 8217831  | DPRA-N-3/4"-1.5-ME-N    |
|                           | 2"     | 8217832  | DPRA-N-3/4"-2-ME-N      |
|                           | 3"     | 8217833  | DPRA-N-3/4"-3-ME-N      |
|                           | 4"     | 8217834  | DPRA-N-3/4"-4-ME-N      |
|                           | 5"     | 8217835  | DPRA-N-3/4"-5-ME-N      |
| 1 1/16"                   | 0.5"   | 8217839  | DPRA-N-1 1/16"-0.5-ME-N |
|                           | 1"     | 8217840  | DPRA-N-1 1/16"-1-ME-N   |
|                           | 1.5"   | 8217849  | DPRA-N-1 1/16"-1.5-ME-N |
|                           | 2"     | 8217847  | DPRA-N-1 1/16"-2-ME-N   |
|                           | 3"     | 8217848  | DPRA-N-1 1/16"-3-ME-N   |
|                           | 4"     | 8217843  | DPRA-N-1 1/16"-4-ME-N   |
|                           | 5"     | 8217850  | DPRA-N-1 1/16"-5-ME-N   |
| 1 1/2"                    | 6"     | 8217852  | DPRA-N-1 1/16"-6-ME-N   |
|                           | 1"     | 8217872  | DPRA-N-1 1/2"-1-ME-N    |
|                           | 1.5"   | 8217873  | DPRA-N-1 1/2"-1.5-ME-N  |
|                           | 2"     | 8217874  | DPRA-N-1 1/2"-2-ME-N    |
|                           | 3"     | 8217875  | DPRA-N-1 1/2"-3-ME-N    |
|                           | 4"     | 8217876  | DPRA-N-1 1/2"-4-ME-N    |
|                           | 5"     | 8217877  | DPRA-N-1 1/2"-5-ME-N    |
|                           | 6"     | 8217878  | DPRA-N-1 1/2"-6-ME-N    |

## Ordering data

| [U] With swivelling rod eye |        |                |                            |
|-----------------------------|--------|----------------|----------------------------|
| Piston Ø                    | Stroke | Part no.       | Type                       |
| 1 1/4"                      | 1"     | <b>8217860</b> | <b>DPRA-N-1 1/4"-1-U-N</b> |
|                             | 2"     | <b>8217865</b> | <b>DPRA-N-1 1/4"-2-U-N</b> |
|                             | 3"     | <b>8217861</b> | <b>DPRA-N-1 1/4"-3-U-N</b> |
|                             | 4"     | <b>8217862</b> | <b>DPRA-N-1 1/4"-4-U-N</b> |
|                             | 5"     | <b>8217863</b> | <b>DPRA-N-1 1/4"-5-U-N</b> |
|                             | 6"     | <b>8217864</b> | <b>DPRA-N-1 1/4"-6-U-N</b> |

| [UB] With swivelling rod eye and bearing sleeve |        |                |                         |
|-------------------------------------------------|--------|----------------|-------------------------|
| Piston Ø                                        | Stroke | Part no.       | Type                    |
| 2"                                              | 1"     | <b>8217885</b> | <b>DPRA-N-2"-1-UB-N</b> |
|                                                 | 2"     | <b>8217886</b> | <b>DPRA-N-2"-2-UB-N</b> |
|                                                 | 3"     | <b>8217887</b> | <b>DPRA-N-2"-3-UB-N</b> |
|                                                 | 4"     | <b>8217888</b> | <b>DPRA-N-2"-4-UB-N</b> |
|                                                 | 5"     | <b>8217889</b> | <b>DPRA-N-2"-5-UB-N</b> |
|                                                 | 6"     | <b>8217890</b> | <b>DPRA-N-2"-6-UB-N</b> |

## Ordering data – Modular product system

| Ordering table              |                                                         |                                               |         |                                               |                                      |                  |      |            |
|-----------------------------|---------------------------------------------------------|-----------------------------------------------|---------|-----------------------------------------------|--------------------------------------|------------------|------|------------|
| Piston ø                    | 9/16                                                    | 3/4                                           | 7/8     | 1 1/16                                        | 1 1/4                                | Conditions       | Code | Enter code |
| Module no.                  | 8180567                                                 | 8109549                                       | 8180568 | 8109550                                       | 8109551                              |                  |      |            |
| Series                      | Round cylinder, double-acting                           |                                               |         |                                               |                                      |                  | DPRA | DPRA       |
| System of units             | Imperial                                                |                                               |         |                                               |                                      |                  | -N   |            |
| Protection against rotation | None                                                    |                                               |         |                                               |                                      |                  |      |            |
| Piston ø                    | 9/16"                                                   | 3/4"                                          | 7/8"    | 1 1/16"                                       | 1 1/4"                               |                  | -"   |            |
| Stroke                      | 0.0625 ... 12"                                          |                                               |         |                                               |                                      |                  | -"   |            |
| Function                    | Double-acting                                           |                                               |         |                                               |                                      |                  |      |            |
| Piston rod type             | At one end                                              |                                               |         |                                               |                                      |                  |      |            |
|                             | –                                                       |                                               |         | Through, hollow piston rod                    |                                      |                  | H    |            |
|                             | –                                                       | Through piston rod                            | –       | Through piston rod                            |                                      |                  | T    |            |
| Type of bearing cover       | With mounting thread                                    |                                               |         |                                               |                                      |                  |      |            |
|                             | –                                                       | For direct mounting                           | –       | For direct mounting                           | –                                    | [1][2]           | B    |            |
|                             | –                                                       | With trunnion flange                          | –       | With trunnion flange                          | –                                    | [1][2]           | M    |            |
| Type of end cap             | Standard                                                |                                               |         |                                               |                                      |                  |      |            |
|                             | –                                                       | With swivelling rod eye                       | –       | With swivelling rod eye                       |                                      | [1][4][5][10]    | U    |            |
|                             | –                                                       | With trunnion flange                          |         |                                               | –                                    | [1][4][5][8][17] | ME   |            |
|                             | Without mounting thread                                 |                                               |         |                                               |                                      | [1]              | NG   |            |
|                             | With swivelling rod eye and bearing sleeve              |                                               |         |                                               |                                      | [1][4][5][8]     | UB   |            |
|                             | –                                                       |                                               |         |                                               | With swivelling rod eye, rotated 90° | [1][4][5]        | U90  |            |
|                             | –                                                       | With trunnion flange                          |         |                                               | –                                    | [1][4][5][17]    | ME90 |            |
|                             | With swivelling rod eye and bearing sleeve, rotated 90° | –                                             |         |                                               |                                      | [1][4][5]        | UB90 |            |
|                             | Compressed air supply port                              | Lateral                                       |         |                                               |                                      |                  |      |            |
| Axial                       |                                                         |                                               |         |                                               | [1][2][14]                           | P4               |      |            |
| Cushioning                  | No cushioning                                           |                                               |         |                                               |                                      |                  | -N   |            |
|                             | Elastic cushioning rings/plates at both ends            |                                               |         |                                               |                                      | [6]              | -P   |            |
|                             | –                                                       | Pneumatic cushioning, adjustable at both ends | –       | Pneumatic cushioning, adjustable at both ends | –                                    | [1][4][7][16]    | -PPV |            |
| Position sensing            | None                                                    |                                               |         |                                               |                                      |                  |      |            |
|                             | Via proximity switch                                    |                                               |         |                                               |                                      | [6]              | A    |            |

[1] B, M, U, ME, NG, UB, U90, ME90, UB90, P4, cushioning PPV, R1

[2] B, M, P4, R1

[4] U, ME, UB, U90, ME90, UB90, cushioning PPV, R1, R3

[5] U, ME, UB, U90, ME90, UB90

[6] Cushioning P, A, R3, T3, T4, A4

[7] Cushioning PPV

[8] ME, UB, T3, T4, A4

[10] U

[14] P4

[16] Cushioning PPV, R1

[17] ME, ME90, T3

Not with H, T

Not with standard type of end cap

Not with M, B

Not with P4

Not with U90, UB90, ME90

Not with P4, U90

Only in combination with standard type of end cap, if piston diameter 3/4", 1 1/16" is selected

Not with R3

Only with piston diameter 3/4", 1 1/16" if R3 is selected

Mandatory with NG if A or T4 selected

Not with U

Not with R1

## Ordering data – Modular product system

| Ordering table             |                        |                           |         |                           |         |                      |       |  |            |
|----------------------------|------------------------|---------------------------|---------|---------------------------|---------|----------------------|-------|--|------------|
| Piston ø                   | 9/16                   | 3/4                       | 7/8     | 1 1/16                    | 1 1/4   | Conditions           | Code  |  | Enter code |
| Module no.                 | 8180567                | 8109549                   | 8180568 | 8109550                   | 8109551 |                      |       |  |            |
| Corrosion protection       | Standard               |                           |         |                           |         |                      |       |  |            |
|                            | –                      | Stainless steel           | –       | Stainless steel           |         | [1][2][3]<br>[4][16] | -R1   |  |            |
|                            | –                      | High corrosion protection | –       | High corrosion protection | –       | [3][4][6]<br>[9][12] | -R3   |  |            |
| Temperature range          | Standard –5 ... 165 °F |                           |         |                           |         |                      |       |  |            |
|                            | –40 ... +225 °F        |                           |         |                           |         | [6][8][17]           | -T3   |  |            |
|                            | +32 ... +300 °F        |                           |         |                           |         | [3][6][8]<br>[11]    | -T4   |  |            |
| Wiper variant              | None                   |                           |         |                           |         |                      |       |  |            |
|                            | –                      | Wiper made of NBR         |         |                           |         | [6][8][9]<br>[15]    | A4    |  |            |
| Extended piston rod        | None                   |                           |         |                           |         |                      |       |  |            |
|                            | 0 ... 6 inch           |                           |         |                           |         |                      | ---NE |  |            |
| Extended piston rod thread | None                   |                           |         |                           |         |                      |       |  |            |
|                            | 0 ... 6 inch           |                           |         |                           |         | [13]                 | ---NL |  |            |

- |                                                                  |                                                                     |
|------------------------------------------------------------------|---------------------------------------------------------------------|
| [1] B, M, U, ME, NG, UB, U90, ME90, UB90, P4, cushioning PPV, R1 | Not with H, T                                                       |
| [2] B, M, P4, R1                                                 | Not with standard type of end cap                                   |
| [3] R1, R3, T4                                                   | Not with cushioning PPV                                             |
| [4] U, ME, UB, U90, ME90, UB90, cushioning PPV, R1, R3           | Not with M, B                                                       |
| [6] Cushioning P, A, R3, T3, T4, A4                              | Not with U90, UB90, ME90                                            |
| [8] ME, UB, T3, T4, A4                                           | Not with R3                                                         |
| [9] R3, A4                                                       | Not with NG if lateral compressed air supply port is selected       |
| [11] T4                                                          | Not with A, cushioning P                                            |
| [12] R3                                                          | Not with H                                                          |
|                                                                  | Only in combination with standard type of end cap, if T is selected |
| [13] ...NL                                                       | Not with ...NE                                                      |
| [15] A4                                                          | Not with T3                                                         |
|                                                                  | Mandatory with R1                                                   |
| [16] Cushioning PPV, R1                                          | Not with U                                                          |
| [17] ME, ME90, T3                                                | Not with R1                                                         |

## Ordering data – Modular product system

| Ordering table              |                                               |                                      |                                                         |         |         |                  |      |  |            |
|-----------------------------|-----------------------------------------------|--------------------------------------|---------------------------------------------------------|---------|---------|------------------|------|--|------------|
| Piston ø                    | 1 1/2                                         | 1 3/4                                | 2                                                       | 2 1/2   | 3       | Conditions       | Code |  | Enter code |
| Module no.                  | 8109552                                       | 8109553                              | 8109554                                                 | 8109555 | 8180569 |                  |      |  |            |
| Series                      | Round cylinder, double-acting                 |                                      |                                                         |         |         |                  | DPRA |  | DPRA       |
| System of units             | Imperial                                      |                                      |                                                         |         |         |                  | -N   |  |            |
| Protection against rotation | None                                          |                                      |                                                         |         |         |                  |      |  |            |
| Piston ø                    | 1 1/2"                                        | 1 3/4"                               | 2"                                                      | 2 1/2"  | 3"      |                  | -"   |  |            |
| Stroke                      | 0.0625 ... 12"                                |                                      |                                                         |         |         |                  | -"   |  |            |
| Function                    | Double-acting                                 |                                      |                                                         |         |         |                  |      |  |            |
| Piston rod type             | At one end                                    |                                      |                                                         |         |         |                  |      |  |            |
|                             | Through, hollow piston rod                    | -                                    |                                                         |         |         |                  | H    |  |            |
|                             | Through piston rod                            | -                                    | Through piston rod                                      | -       |         |                  | T    |  |            |
| Type of bearing cover       | With mounting thread                          |                                      |                                                         |         |         |                  |      |  |            |
|                             | For direct mounting                           | -                                    |                                                         |         |         | [1][2]           | B    |  |            |
|                             | With trunnion flange                          | -                                    |                                                         |         |         | [1][2]           | M    |  |            |
| Type of end cap             | Standard                                      | -                                    | Standard                                                | -       |         |                  |      |  |            |
|                             | With swivelling rod eye                       |                                      | -                                                       |         |         | [1][4][5][10]    | U    |  |            |
|                             | With trunnion flange                          | -                                    |                                                         |         |         | [1][4][5][8][18] | ME   |  |            |
|                             | Without mounting thread                       |                                      |                                                         |         |         | [1][16]          | NG   |  |            |
|                             | With swivelling rod eye and bearing sleeve    |                                      |                                                         |         |         | [1][4][5][8][16] | UB   |  |            |
|                             | -                                             | With swivelling rod eye, rotated 90° | -                                                       |         |         | [1][4][5][16]    | U90  |  |            |
|                             | Trunnion flange, rotated 90°                  | -                                    |                                                         |         |         | [1][4][5][18]    | ME90 |  |            |
|                             | -                                             |                                      | With swivelling rod eye and bearing sleeve, rotated 90° |         |         | [1][4][5]        | UB90 |  |            |
| Compressed air supply port  | Lateral                                       |                                      |                                                         |         |         |                  |      |  |            |
|                             | Axial                                         |                                      |                                                         |         |         | [1][2][14]       | P4   |  |            |
| Cushioning                  | No cushioning                                 |                                      |                                                         |         |         |                  | -N   |  |            |
|                             | Elastic cushioning rings/plates at both ends  |                                      |                                                         |         |         | [6]              | -P   |  |            |
|                             | Pneumatic cushioning, adjustable at both ends | -                                    | Pneumatic cushioning, adjustable at both ends           | -       |         | [1][4][7][17]    | -PPV |  |            |
| Position sensing            | None                                          |                                      |                                                         |         |         |                  |      |  |            |
|                             | Via proximity switch                          |                                      |                                                         |         |         | [6]              | A    |  |            |

[1] B, M, U, ME, NG, UB, U90, ME90, UB90, P4, cushioning PPV, R1

[2] B, M, P4, R1

[4] U, ME, UB, U90, ME90, UB90, cushioning PPV, R1, R3

[5] U, ME, UB, U90, ME90, UB90

[6] Cushioning P, A, R3, T3, T4, A4

[7] Cushioning PPV

[8] ME, UB, T3, T4, A4

[10] U

[14] P4

[16] NG, UB, UB90

[17] Cushioning PPV, R1

[18] ME, ME90, T3

Not with H, T

Not with standard type of end cap

Not with M, B

Not with P4

Not with U90, UB90, ME90

Not with P4, U90

Not with R3

Only with piston diameter 1 1/2" if R3 is selected

Mandatory with NG if A or T4 selected

Mandatory with piston diameter 2" with piston rod type at one end

Not with U

Not with R1

## Ordering data – Modular product system

| Ordering table             |                           |         |                 |         |         |                      |              |            |
|----------------------------|---------------------------|---------|-----------------|---------|---------|----------------------|--------------|------------|
| Piston Ø                   | 1 1/2                     | 1 3/4   | 2               | 2 1/2   | 3       | Conditions           | Code         | Enter code |
| Module no.                 | 8109552                   | 8109553 | 8109554         | 8109555 | 8180569 |                      |              |            |
| Corrosion protection       | Standard                  |         |                 |         |         |                      |              |            |
|                            | Stainless steel           | –       | Stainless steel | –       |         | [1][2][3]<br>[4][17] | <b>-R1</b>   |            |
|                            | High corrosion protection | –       |                 |         |         | [3][4][6]<br>[9][12] | <b>-R3</b>   |            |
| Temperature range          | Standard –5 ... 165 °F    |         |                 |         |         |                      |              |            |
|                            | –40 ... +225 °F           |         |                 |         |         | [6][8][18]           | <b>-T3</b>   |            |
|                            | +32 ... +300 °F           |         |                 |         |         | [3][6][8]<br>[11]    | <b>-T4</b>   |            |
| Wiper variant              | None                      |         |                 |         |         |                      |              |            |
|                            | Wiper made of NBR         |         |                 | –       |         | [6][8][9]<br>[15]    | <b>A4</b>    |            |
| Extended piston rod        | None                      |         |                 |         |         |                      |              |            |
|                            | 0 ... 6 inch              |         |                 |         |         |                      | <b>...NE</b> |            |
| Extended piston rod thread | None                      |         |                 |         |         |                      |              |            |
|                            | 0 ... 6 inch              |         |                 |         |         | [13]                 | <b>...NL</b> |            |

[1] B, M, U, ME, NG, UB, U90, ME90, UB90, P4, cushioning PPV, R1

[2] B, M, P4, R1

[3] R1, R3, T4

[4] U, ME, UB, U90, ME90, UB90, cushioning PPV, R1, R3

[6] Cushioning P, A, R3, T3, T4, A4

[8] ME, UB, T3, T4, A4

[9] R3, A4

[11] T4

[12] R3

[13] ...NL

[15] A4

[17] Cushioning PPV, R1

[18] ME, ME90, T3

Not with H, T

Not with standard type of end cap

Not with cushioning PPV

Not with M, B

Not with U90, UB90, ME90

Not with R3

Not with NG if lateral compressed air supply port is selected

Not with A, cushioning P

Not with H

Only in combination with standard type of end cap, if T is selected

Not with ...NE

Not with T3

Mandatory with R1

Not with U

Not with R1

## Datasheet

| General technical data                       |                                                                                            |               |     |                |                |       |               |              |  |
|----------------------------------------------|--------------------------------------------------------------------------------------------|---------------|-----|----------------|----------------|-------|---------------|--------------|--|
| Piston Ø                                     | 9/16                                                                                       | 3/4           | 7/8 | 1 1/16         | 1 1/4          | 1 1/2 | 1 3/4         | 2            |  |
| Design                                       | Piston                                                                                     |               |     |                |                |       |               |              |  |
|                                              | Piston rod                                                                                 |               |     |                |                |       |               |              |  |
|                                              | Cylinder barrel                                                                            |               |     |                |                |       |               |              |  |
| Operating mode                               |                                                                                            |               |     |                |                |       |               |              |  |
| [S]                                          | Single-acting, pushing (piston rod retracted by spring force)                              |               |     |                |                |       |               |              |  |
| [P]                                          | Single-acting, pulling (piston rod advanced by spring force)                               |               |     |                |                |       |               |              |  |
| Protection against rotation/guide            |                                                                                            |               |     |                |                |       |               |              |  |
| [Q]                                          | Hexagonal piston rod                                                                       |               |     |                |                |       | –             |              |  |
| Pneumatic connection                         | 1/8 NPT                                                                                    |               |     |                |                |       | 1/4 NPT       |              |  |
| Piston rod thread                            | 10-32 UNF-2A                                                                               | 1/4-28 UNF-2A |     | 5/16-24 UNF-2A | 7/16-20 UNF-2A |       | 1/2-20 UNF-2A |              |  |
| Stroke                                       | [in]                                                                                       | 0.0625 ... 6  |     |                |                |       |               | 0.0625 ... 4 |  |
| Cushioning                                   |                                                                                            |               |     |                |                |       |               |              |  |
| [N]                                          | No cushioning                                                                              |               |     |                |                |       |               |              |  |
| [P]                                          | Elastic cushioning rings/plates at both ends                                               |               |     |                |                |       |               |              |  |
| Position sensing                             | Via proximity switch                                                                       |               |     |                |                |       |               |              |  |
| Type of mounting                             | Via lock nut                                                                               |               |     |                |                |       | –             |              |  |
|                                              | With accessories                                                                           |               |     |                |                |       |               |              |  |
| Mounting position                            | Any                                                                                        |               |     |                |                |       |               |              |  |
| Operating and environmental conditions       |                                                                                            |               |     |                |                |       |               |              |  |
| Piston Ø                                     | 9/16                                                                                       | 3/4           | 7/8 | 1 1/16         | 1 1/4          | 1 1/2 | 1 3/4         | 2            |  |
| Operating pressure                           | [psi]                                                                                      | 10 ... 150    |     |                |                |       |               |              |  |
| Operating medium                             | Compressed air to ISO 8573-1:2010 [7:4:4]                                                  |               |     |                |                |       |               |              |  |
| Note on the operating/pilot medium           | Lubricated operation possible (in which case lubricated operation will always be required) |               |     |                |                |       |               |              |  |
| Ambient temperature <sup>1)</sup>            | [°F]                                                                                       | –40 ... +300  |     |                |                |       |               |              |  |
| Corrosion resistance class CRC <sup>2)</sup> | 1 - Low corrosion stress                                                                   |               |     |                |                |       |               |              |  |
|                                              | –                                                                                          | 3)            | –   | 3)             | –              | 3)    | –             |              |  |
|                                              | –                                                                                          | 4)            | –   | 4)             | –              |       |               | 4)           |  |

1) Note operating range of proximity switches

2) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

3) 3 - High corrosion stress

4) 4 - Particularly high corrosion stress

## Datasheet

| <b>Forces [lb] at 80 psi<sup>1)</sup></b>                         |      |      |      |        |       |       |       |       |
|-------------------------------------------------------------------|------|------|------|--------|-------|-------|-------|-------|
| Piston Ø                                                          | 9/16 | 3/4  | 7/8  | 1 1/16 | 1 1/4 | 1 1/2 | 1 3/4 | 2     |
| [P] Single-acting, pulling (piston rod advanced by spring force)  |      |      |      |        |       |       |       |       |
| Stroke start [in]                                                 | 15.7 | 28.4 | 41.2 | 61.8   | 78.6  | 122.3 | 165.7 | 211.8 |
| Stroke end [in]                                                   | 13.7 | 25.4 | 38.2 | 58.8   | 71.1  | 115.3 | 152.7 | 196.8 |
| [S] Single-acting, pushing (piston rod retracted by spring force) |      |      |      |        |       |       |       |       |
| Stroke start [in]                                                 | 17.9 | 32.3 | 45.1 | 67.9   | 90.7  | 134.4 | 181.4 | 236.3 |
| Stroke end [in]                                                   | 17.7 | 31.4 | 44.2 | 64.8   | 86.1  | 129.3 | 176.7 | 226.8 |

1) The theoretical forces apply for full strokes only (stroke 1, 2, 3, 4, 5, and 6).

For intermediate strokes, the force at the start of the stroke is reduced due to higher spring preload. At the end of the stroke the force corresponds to that for full strokes.

| Weight [lb]    |                  |     |     |                  |                   |
|----------------|------------------|-----|-----|------------------|-------------------|
| Piston Ø       | 9/16             | 3/4 | 7/8 | 1 1/16           | 1 1/4             |
| Product weight | 45.36 ... 385.55 |     |     | 99.79 ... 598.74 | 176.9 ... 1097.69 |

| <b>Weight [lb]</b> |                   |                    |                    |
|--------------------|-------------------|--------------------|--------------------|
| Piston Ø           | 1 1/2             | 1 3/4              | 2                  |
| Product weight     | 199.58 ... 1238.3 | 385.55 ... 1374.38 | 471.74 ... 1832.51 |

| <b>Materials</b>         |                            |     |     |        |       |       |       |    |
|--------------------------|----------------------------|-----|-----|--------|-------|-------|-------|----|
| Piston Ø                 | 9/16                       | 3/4 | 7/8 | 1 1/16 | 1 1/4 | 1 1/2 | 1 3/4 | 2  |
| Cover material           | Wrought aluminium alloy    |     |     |        |       |       |       |    |
|                          | –                          | POM | –   | POM    | –     | POM   | –     |    |
|                          | –                          | 1)  | –   | 1)     |       |       | –     | 1) |
| Sealing material         | FPM                        |     |     |        |       |       |       |    |
|                          | NBR                        |     |     |        |       |       |       |    |
| Piston rod material      | High-alloy stainless steel |     |     |        |       |       |       |    |
| Cylinder barrel material | High-alloy stainless steel |     |     |        |       |       |       |    |
| Note on materials        | RoHS-compliant             |     |     |        |       |       |       |    |
| LABS (PWIS) conformity   | VDMA24364 zone III         |     |     |        |       |       |       |    |

1) High-alloy stainless steel

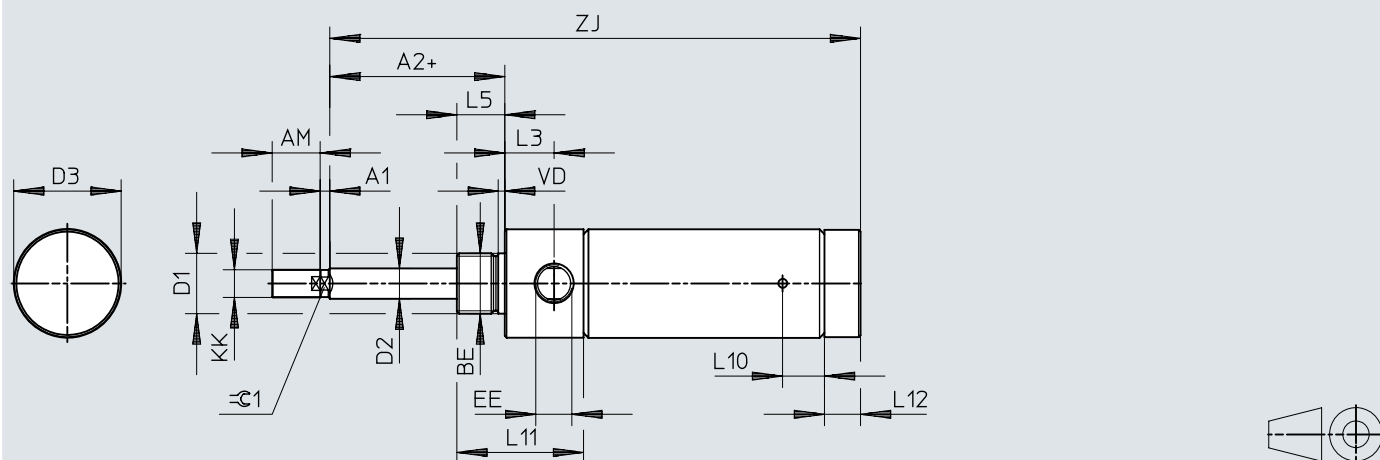
## Datasheet

## Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

[-P] Single-acting, pulling (piston rod advanced by spring force)

[NG] Without mounting thread



+ = plus stroke length

| ∅      | A1    | A2    | AM    | BE              | D1<br>∅ | D2<br>∅ | D3<br>∅ | EE           |
|--------|-------|-------|-------|-----------------|---------|---------|---------|--------------|
| [in]   |       |       |       |                 |         |         |         |              |
| 9/16   | 0     | 0.375 | 0.5   | 7/16-20 UNF-2A  | 0.437   | 0.188   | 0.625   | 10-32 UNF-2B |
| 3/4    | 0     | 0.5   | 0.5   | 5/8-18 UNF-2A   | 0.624   | 0.25    | 0.875   | 1/8 NPT      |
| 7/8    | 0     | 0.5   | 0.5   | 5/8-18 UNF-2A   | 0.624   | 0.25    | 0.938   | 1/8 NPT      |
| 1 1/16 | 0.125 | 0.5   | 0.5   | 5/8-18 UNF-2A   | 0.624   | 0.313   | 1.125   | 1/8 NPT      |
| 1 1/4  | 0.25  | 0.625 | 0.75  | 3/4-16 UNF-2A   | 0.749   | 0.438   | 1.344   | 1/8 NPT      |
| 1 1/2  | 0.25  | 0.625 | 1.25  | 3/4-16 UNF-2A   | 0.749   | 0.438   | 1.563   | 1/8 NPT      |
| 1 3/4  | 0.313 | 0.75  | 0.875 | 1-14 UNF-2A     | 1.031   | 0.5     | 1.844   | 1/4 NPT      |
| 2      | 0.375 | 0.813 | 0.875 | 1 1/4-12 UNF-2A | 1.375   | 0.625   | 2.078   | 1/4 NPT      |

| ∅      | KK             | L3    | L5    | L10   | L11   | L12   | VD    | ⌀1    |
|--------|----------------|-------|-------|-------|-------|-------|-------|-------|
| [in]   |                |       |       |       |       |       |       |       |
| 9/16   | 10-32 UNF-2A   | 0.375 | 0.375 | 0.3   | 1     | 0.375 | 0.063 | -     |
| 3/4    | 1/4-28 UNF-2A  | 0.469 | 0.5   | 0.437 | 1.343 | 0.313 | 0.094 | -     |
| 7/8    | 1/4-28 UNF-2A  | 0.469 | 0.5   | 0.35  | 1.325 | 0.23  | 0.67  | -     |
| 1 1/16 | 5/16-24 UNF-2A | 0.563 | 0.5   | 0.437 | 1.322 | 0.477 | 0.094 | 0.25  |
| 1 1/4  | 7/16-20 UNF-2A | 0.75  | 0.625 | 0.437 | 1.625 | 0.522 | 0.094 | 0.375 |
| 1 1/2  | 7/16-20 UNF-2A | 0.625 | 0.625 | 0.437 | 1.625 | 0.683 | 0.094 | 0.375 |
| 1 3/4  | 1/2-20 UNF-2A  | 0.875 | 0.75  | 0.437 | 2.202 | 0.259 | 0.094 | 0.438 |
| 2      | 1/2-20 UNF-2A  | 0.734 | 0.813 | 0.437 | 2     | 0.376 | 0.125 | 0.5   |

## Formula for calculating the length ZJ

The value O... should be selected for the formula depending on the cushioning and position sensing variants

O0 = N (no cushioning)

O1 = P (flexible cushioning rings/plates at both ends)

O2 = A (for proximity switch)

O3 = PA (flexible cushioning rings/plates at both ends and for proximity switch)

n = stroke length

| Stroke<br>[in] | O0 | O1    | O2    | O3    | ZJ                         |
|----------------|----|-------|-------|-------|----------------------------|
| Piston ∅ 9/16  |    |       |       |       |                            |
| 1/16 ... 1     | 0  | 0.062 | 0.531 | 0.713 | $2+(2.625*1)-2*(1-n)+O...$ |
| 1 1/16 ... 2   | 0  | 0.062 | 0.531 | 0.713 | $2+(2.625*2)-2*(2-n)+O...$ |
| 2 1/16 ... 3   | 0  | 0.062 | 0.531 | 0.713 | $2+(2.625*3)-2*(3-n)+O...$ |
| 3 1/16 ... 4   | 0  | 0.062 | 0.531 | 0.713 | $2+(2.625*4)-2*(4-n)+O...$ |
| 4 1/16 ... 5   | 0  | 0.062 | 0.531 | 0.713 | $2+(2.625*5)-2*(5-n)+O...$ |
| 5 1/16 ... 6   | 0  | 0.062 | 0.531 | 0.713 | $2+(2.625*6)-2*(6-n)+O...$ |

## Datasheet

**Formula for calculating the length ZJ**

The value O... should be selected for the formula depending on the cushioning and position sensing variants

O0 = N (no cushioning)

O1 = P (flexible cushioning rings/plates at both ends)

O2 = A (for proximity switch)

O3 = PA (flexible cushioning rings/plates at both ends and for proximity switch)

n = stroke length

| Stroke<br>[in]         | O0 | O1    | O2    | O3    | ZJ                                         |
|------------------------|----|-------|-------|-------|--------------------------------------------|
| <b>Piston Ø 3/4</b>    |    |       |       |       |                                            |
| 1/16 ... 1             | 0  | 0.125 | 0.688 | 0.89  | $2.313 + (2.687 * 1) - 2 * (1 - n) + 0...$ |
| 1 1/16 ... 2           | 0  | 0.125 | 0.688 | 0.89  | $2.313 + (2.687 * 2) - 2 * (2 - n) + 0...$ |
| 2 1/16 ... 3           | 0  | 0.125 | 0.688 | 0.89  | $2.313 + (2.687 * 3) - 2 * (3 - n) + 0...$ |
| 3 1/16 ... 4           | 0  | 0.125 | 0.688 | 0.89  | $2.313 + (2.687 * 4) - 2 * (4 - n) + 0...$ |
| 4 1/16 ... 5           | 0  | 0.125 | 0.688 | 0.89  | $2.313 + (2.687 * 5) - 2 * (5 - n) + 0...$ |
| 5 1/16 ... 6           | 0  | 0.125 | 0.688 | 0.89  | $2.313 + (2.687 * 6) - 2 * (6 - n) + 0...$ |
| <b>Piston Ø 7/8</b>    |    |       |       |       |                                            |
| 1/16 ... 1             | 0  | –     | 0.531 | 0.733 | $2.313 + (2.562 * 1) - 2 * (1 - n) + 0...$ |
| 1 1/16 ... 2           | 0  | –     | 0.531 | 0.733 | $2.313 + (2.562 * 2) - 2 * (2 - n) + 0...$ |
| 2 1/16 ... 3           | 0  | –     | 0.531 | 0.733 | $2.313 + (2.562 * 3) - 2 * (3 - n) + 0...$ |
| 3 1/16 ... 4           | 0  | –     | 0.531 | 0.733 | $2.313 + (2.562 * 4) - 2 * (4 - n) + 0...$ |
| 4 1/16 ... 5           | 0  | –     | 0.531 | 0.733 | $2.313 + (2.562 * 5) - 2 * (5 - n) + 0...$ |
| 5 1/16 ... 6           | 0  | –     | 0.531 | 0.733 | $2.313 + (2.562 * 6) - 2 * (6 - n) + 0...$ |
| <b>Piston Ø 1 1/16</b> |    |       |       |       |                                            |
| 1/16 ... 1             | 0  | 0.125 | 0.562 | 0.687 | $2.5 + (2.812 * 1) - 2 * (1 - n) + 0...$   |
| 1 1/16 ... 2           | 0  | 0.125 | 0.562 | 0.687 | $2.5 + (2.812 * 2) - 2 * (2 - n) + 0...$   |
| 2 1/16 ... 3           | 0  | 0.125 | 0.562 | 0.687 | $2.5 + (2.812 * 3) - 2 * (3 - n) + 0...$   |
| 3 1/16 ... 4           | 0  | 0.125 | 0.562 | 0.687 | $2.5 + (2.812 * 4) - 2 * (4 - n) + 0...$   |
| 4 1/16 ... 5           | 0  | 0.125 | 0.562 | 0.687 | $2.5 + (2.812 * 5) - 2 * (5 - n) + 0...$   |
| 5 1/16 ... 6           | 0  | 0.125 | 0.562 | 0.687 | $2.5 + (2.812 * 6) - 2 * (6 - n) + 0...$   |
| <b>Piston Ø 1 1/4</b>  |    |       |       |       |                                            |
| 1/16 ... 1             | 0  | –     | 0.531 | 0.734 | $3.219 + (2.812 * 1) - 2 * (1 - n) + 0...$ |
| 1 1/16 ... 2           | 0  | –     | 0.531 | 0.734 | $3.219 + (2.812 * 2) - 2 * (2 - n) + 0...$ |
| 2 1/16 ... 3           | 0  | –     | 0.531 | 0.734 | $3.219 + (2.812 * 3) - 2 * (3 - n) + 0...$ |
| 3 1/16 ... 4           | 0  | –     | 0.531 | 0.734 | $3.219 + (2.812 * 4) - 2 * (4 - n) + 0...$ |
| 4 1/16 ... 5           | 0  | –     | 0.531 | 0.734 | $3.219 + (2.812 * 5) - 2 * (5 - n) + 0...$ |
| 5 1/16 ... 6           | 0  | –     | 0.531 | 0.734 | $3.219 + (2.812 * 6) - 2 * (6 - n) + 0...$ |
| <b>Piston Ø 1 1/2</b>  |    |       |       |       |                                            |
| 1/16 ... 1             | 0  | –     | 0.5   | 0.827 | $2.938 + (3 * 1) - 2 * (1 - n) + 0...$     |
| 1 1/16 ... 2           | 0  | –     | 0.5   | 0.827 | $2.938 + (3 * 2) - 2 * (2 - n) + 0...$     |
| 2 1/16 ... 3           | 0  | –     | 0.5   | 0.827 | $2.938 + (3 * 3) - 2 * (3 - n) + 0...$     |
| 3 1/16 ... 4           | 0  | –     | 0.5   | 0.827 | $2.938 + (3 * 4) - 2 * (4 - n) + 0...$     |
| 4 1/16 ... 5           | 0  | –     | 0.5   | 0.827 | $2.938 + (3 * 5) - 2 * (5 - n) + 0...$     |
| 5 1/16 ... 6           | 0  | –     | 0.5   | 0.827 | $2.938 + (3 * 6) - 2 * (6 - n) + 0...$     |
| <b>Piston Ø 1 3/4</b>  |    |       |       |       |                                            |
| 1/16 ... 1             | 0  | –     | 0.656 | 0.735 | $4.031 + (3 * 1) - 2 * (1 - n) + 0...$     |
| 1 1/16 ... 2           | 0  | –     | 0.656 | 0.735 | $4.031 + (3 * 2) - 2 * (2 - n) + 0...$     |
| 2 1/16 ... 3           | 0  | –     | 0.656 | 0.735 | $4.031 + (3 * 3) - 2 * (3 - n) + 0...$     |
| 3 1/16 ... 4           | 0  | –     | 0.656 | 0.735 | $4.031 + (3 * 4) - 2 * (4 - n) + 0...$     |
| 4 1/16 ... 5           | 0  | –     | 0.656 | 0.735 | $4.031 + (3 * 5) - 2 * (5 - n) + 0...$     |
| 5 1/16 ... 6           | 0  | –     | 0.656 | 0.735 | $4.031 + (3 * 6) - 2 * (6 - n) + 0...$     |
| <b>Piston Ø 2</b>      |    |       |       |       |                                            |
| 1 1/16 ... 0.5         | 0  | –     | 0.714 | 0.789 | $5.234 - 2 * (0.5 - n) + 0...$             |
| 9/16 ... 1             | 0  | –     | 0.714 | 0.789 | $5.734 - 2 * (1 - n) + 0...$               |
| 1 1/16 ... 1.5         | 0  | –     | 0.714 | 0.789 | $7.534 - 2 * (1.5 - n) + 0...$             |
| 1 9/16 ... 2           | 0  | –     | 0.714 | 0.789 | $7.734 - 2 * (2 - n) + 0...$               |
| 2 1/6 ... 2.5          | 0  | –     | 0.714 | 0.789 | $8.469 - 2 * (2.5 - n) + 0...$             |
| 2 9/16 ... 3           | 0  | –     | 0.714 | 0.789 | $8.696 - 2 * (3 - n) + 0...$               |
| 3 1/6 ... 4            | 0  | –     | 0.714 | 0.789 | $11.969 - 2 * (4 - n) + 0...$              |

# Datasheet

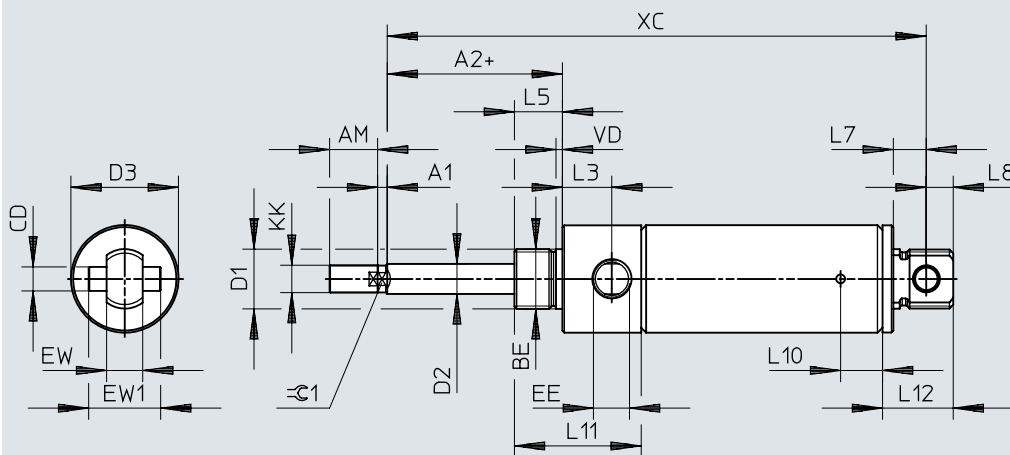
## Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

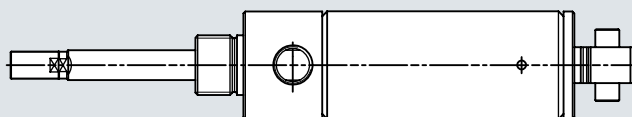
[+P] Single-acting, pulling (piston rod advanced by spring force)

[ME] With trunnion flange

[ME90] Trunnion flange, rotated 90°



DPRA-N-...-PME90



+ = plus stroke length

| ∅      | A1    | A2    | AM   | BE            | CD<br>∅ | D1<br>∅ | D2<br>∅ | D3<br>∅ | EE      | EW    |
|--------|-------|-------|------|---------------|---------|---------|---------|---------|---------|-------|
| [in]   |       |       |      |               |         |         |         |         |         |       |
| 3/4    | 0     | 0.5   | 0.5  | 5/8-18 UNF-2A | 0.25    | 0.624   | 0.25    | 0.875   | 1/8 NPT | 0.375 |
| 7/8    | 0     | 0.5   | 0.5  | 5/8-18 UNF-2A | 0.25    | 0.624   | 0.25    | 0.938   | 1/8 NPT | 0.375 |
| 1 1/16 | 0.125 | 0.5   | 0.5  | 5/8-18 UNF-2A | 0.25    | 0.624   | 0.313   | 1.125   | 1/8 NPT | 0.375 |
| 1 1/2  | 0.25  | 0.625 | 1.25 | 3/4-16 UNF-2A | 0.375   | 0.749   | 0.438   | 1.563   | 1/8 NPT | 0.625 |

| ∅      | EW1  | KK             | L3    | L5    | L7    | L8    | L10   | L11   | L12   | VD    | ⊥C1   |
|--------|------|----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| [in]   |      |                |       |       |       |       |       |       |       |       |       |
| 3/4    | 0.75 | 1/4-28 UNF-2A  | 0.469 | 0.5   | –     | –     | 0.437 | 1.343 | 0.724 | 0.094 | –     |
| 7/8    | 0.75 | 1/4-28 UNF-2A  | 0.469 | 0.5   | 0.344 | 0.281 | 0.35  | 1.325 | 0.825 | 0.067 | –     |
| 1 1/16 | 0.75 | 5/16-24 UNF-2A | 0.563 | 0.5   | 0.344 | 0.281 | 0.437 | 1.322 | 0.915 | 0.094 | 0.25  |
| 1 1/2  | 1    | 7/16-20 UNF-2A | 0.625 | 0.625 | 0.5   | 0.375 | 0.437 | 1.625 | 1.745 | 0.094 | 0.375 |

## Datasheet

**Formula for calculating the length XC**

The value O... should be selected for the formula depending on the cushioning and position sensing variants

O0 = N (no cushioning)

O1 = P (flexible cushioning rings/plates at both ends)

O2 = A (for proximity switch)

O3 = PA (flexible cushioning rings/plates at both ends and for proximity switch)

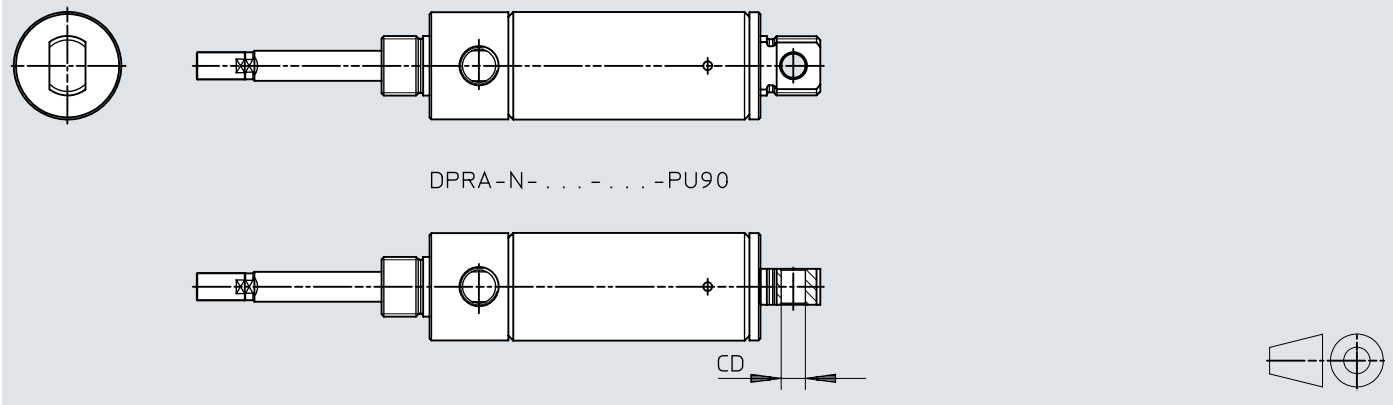
n = stroke length

| Stroke<br>[in]         | O0 | O1    | O2    | O3    | XC                                                 |
|------------------------|----|-------|-------|-------|----------------------------------------------------|
| <b>Piston Ø 3/4</b>    |    |       |       |       |                                                    |
| 1/16 ... 1             | 0  | 0.125 | 0.688 | 0.89  | $2.437 + (2.687 \cdot 1) - 2 \cdot (1 - n) + 0...$ |
| 1 1/16 ... 2           | 0  | 0.125 | 0.688 | 0.89  | $2.437 + (2.687 \cdot 2) - 2 \cdot (2 - n) + 0...$ |
| 2 1/16 ... 3           | 0  | 0.125 | 0.688 | 0.89  | $2.437 + (2.687 \cdot 3) - 2 \cdot (3 - n) + 0...$ |
| 3 1/16 ... 4           | 0  | 0.125 | 0.688 | 0.89  | $2.437 + (2.687 \cdot 4) - 2 \cdot (4 - n) + 0...$ |
| 4 1/16 ... 5           | 0  | 0.125 | 0.688 | 0.89  | $2.437 + (2.687 \cdot 5) - 2 \cdot (5 - n) + 0...$ |
| 5 1/16 ... 6           | 0  | 0.125 | 0.688 | 0.89  | $2.437 + (2.687 \cdot 6) - 2 \cdot (6 - n) + 0...$ |
| <b>Piston Ø 7/8</b>    |    |       |       |       |                                                    |
| 1/16 ... 1             | 0  | –     | 0.531 | 0.733 | $2.625 + (2.565 \cdot 1) - 2 \cdot (1 - n) + 0...$ |
| 1 1/16 ... 2           | 0  | –     | 0.531 | 0.733 | $2.625 + (2.565 \cdot 2) - 2 \cdot (2 - n) + 0...$ |
| 2 1/16 ... 3           | 0  | –     | 0.531 | 0.733 | $2.625 + (2.565 \cdot 3) - 2 \cdot (3 - n) + 0...$ |
| 3 1/16 ... 4           | 0  | –     | 0.531 | 0.733 | $2.625 + (2.565 \cdot 4) - 2 \cdot (4 - n) + 0...$ |
| 4 1/16 ... 5           | 0  | –     | 0.531 | 0.733 | $2.625 + (2.565 \cdot 5) - 2 \cdot (5 - n) + 0...$ |
| 5 1/16 ... 6           | 0  | –     | 0.531 | 0.733 | $2.625 + (2.565 \cdot 6) - 2 \cdot (6 - n) + 0...$ |
| <b>Piston Ø 1 1/16</b> |    |       |       |       |                                                    |
| 1/16 ... 1             | 0  | 0.125 | 0.562 | 0.765 | $2.656 + (2.812 \cdot 1) - 2 \cdot (1 - n) + 0...$ |
| 1 1/16 ... 2           | 0  | 0.125 | 0.562 | 0.765 | $2.656 + (2.812 \cdot 2) - 2 \cdot (2 - n) + 0...$ |
| 2 1/16 ... 3           | 0  | 0.125 | 0.562 | 0.765 | $2.656 + (2.812 \cdot 3) - 2 \cdot (3 - n) + 0...$ |
| 3 1/16 ... 4           | 0  | 0.125 | 0.562 | 0.765 | $2.656 + (2.812 \cdot 4) - 2 \cdot (4 - n) + 0...$ |
| 4 1/16 ... 5           | 0  | 0.125 | 0.562 | 0.765 | $2.656 + (2.812 \cdot 5) - 2 \cdot (5 - n) + 0...$ |
| 5 1/16 ... 6           | 0  | 0.125 | 0.562 | 0.765 | $2.656 + (2.812 \cdot 6) - 2 \cdot (6 - n) + 0...$ |
| <b>Piston Ø 1 1/2</b>  |    |       |       |       |                                                    |
| 1/16 ... 1             | 0  | –     | 0.438 | 0.765 | $3.875 + (3 \cdot 1) - 2 \cdot (1 - n) + 0...$     |
| 1 1/16 ... 2           | 0  | –     | 0.438 | 0.765 | $3.875 + (3 \cdot 2) - 2 \cdot (2 - n) + 0...$     |
| 2 1/16 ... 3           | 0  | –     | 0.438 | 0.765 | $3.875 + (3 \cdot 3) - 2 \cdot (3 - n) + 0...$     |
| 3 1/16 ... 4           | 0  | –     | 0.438 | 0.765 | $3.875 + (3 \cdot 4) - 2 \cdot (4 - n) + 0...$     |
| 4 1/16 ... 5           | 0  | –     | 0.438 | 0.765 | $3.875 + (3 \cdot 5) - 2 \cdot (5 - n) + 0...$     |
| 5 1/16 ... 6           | 0  | –     | 0.438 | 0.765 | $3.875 + (3 \cdot 6) - 2 \cdot (6 - n) + 0...$     |

Datasheet

**Dimensions** Download CAD data → [www.festo.com](http://www.festo.com)

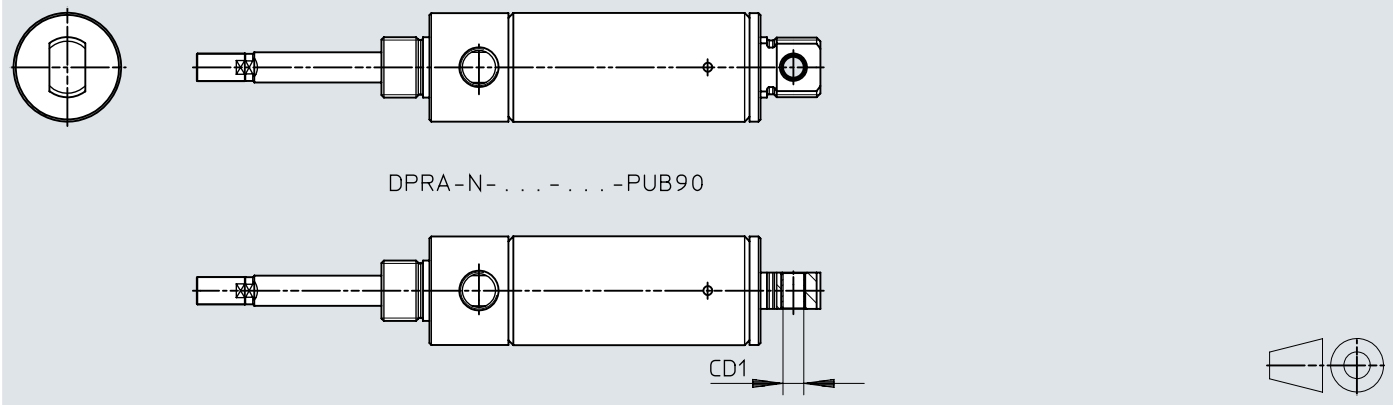
- [-P] Single-acting, pulling (piston rod advanced by spring force)
- [U] With swivelling rod eye
- [U90] With swivelling rod eye, rotated 90°



| ø      | CD    |       |
|--------|-------|-------|
|        | ø     | [U90] |
| [in]   |       |       |
| 3/4    | 0.25  | 0.25  |
| 1 1/16 | 0.25  | 0.25  |
| 1 1/4  | 0.251 | 0.251 |
| 1 1/2  | 0.375 | 0.375 |
| 1 3/4  | 0.376 | 0.376 |

**Dimensions** Download CAD data → [www.festo.com](http://www.festo.com)

- [-P] Single-acting, pulling (piston rod advanced by spring force)
- [UB] With swivelling rod eye and bearing sleeve
- [UB90] With swivelling rod eye and bearing sleeve, rotated 90°



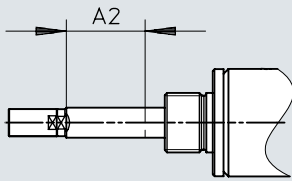
| ø      | CD1   |        |
|--------|-------|--------|
|        | ø     | [UB90] |
| [in]   |       |        |
| 9/16   | 0.157 | 0.157  |
| 3/4    | 0.25  | —      |
| 7/8    | 0.25  | —      |
| 1 1/16 | 0.25  | —      |
| 1 1/4  | 0.251 | —      |
| 1 1/2  | 0.375 | —      |
| 1 3/4  | 0.376 | —      |
| 2      | 0.375 | 0.375  |

## Datasheet

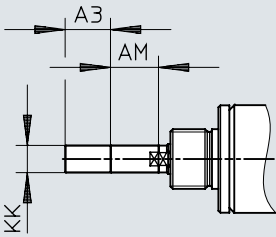
## Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

[...NE] Piston rod extension



[...NL] Piston rod thread extension



| Ø      | A2         | A3         | AM    | KK             |
|--------|------------|------------|-------|----------------|
| [in]   | [...NE]    | [...NL]    |       |                |
| 9/16   | 1/16 ... 6 | 1/16 ... 6 | 0.5   | 10-32 UNF-2A   |
| 3/4    | 1/16 ... 6 | 1/16 ... 6 | 0.5   | 1/4-28 UNF-2A  |
| 7/8    | 1/16 ... 6 | 1/16 ... 6 | 0.5   | 1/4-28 UNF-2A  |
| 1 1/16 | 1/16 ... 6 | 1/16 ... 6 | 0.5   | 5/16-24 UNF-2A |
| 1 1/4  | 1/16 ... 6 | 1/16 ... 6 | 0.75  | 7/16-24 UNF-2A |
| 1 1/2  | 1/16 ... 6 | 1/16 ... 6 | 0.75  | 7/16-24 UNF-2A |
| 1 3/4  | 1/16 ... 6 | 1/16 ... 6 | 0.875 | 1/2-20 UNF-2A  |
| 2      | 1/16 ... 6 | 1/16 ... 6 | 0.875 | 1/2-20 UNF-2A  |

## Datasheet

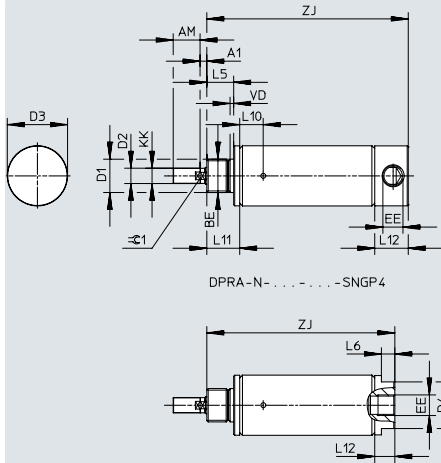
## Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

[S] Single-acting, pushing (piston rod retracted by spring force)

[NG] Without mounting thread

[NGP4] Without mounting thread, axial compressed air supply port



| ∅      | A1    | AM    | BE              | D1<br>∅ | D2<br>∅ | D3<br>∅ | D4<br>∅ | EE           |
|--------|-------|-------|-----------------|---------|---------|---------|---------|--------------|
| [in]   |       |       |                 |         |         |         | [NGP4]  |              |
| 9/16   | 0     | 0.5   | 7/16-20 UNF-2A  | 0.437   | 0.188   | 0.625   | 0.5     | 10-32 UNF-2B |
| 3/4    | 0     | 0.5   | 1/2-20 UNF-2A   | 0.5     | 0.25    | 0.813   | 0.625   | 1/8 NPT      |
| 7/8    | 0.125 | 0.5   | 5/8-18 UNF-2A   | 0.624   | 0.25    | 0.938   | 0.625   | 1/8 NPT      |
| 1 1/16 | 0.125 | 0.5   | 5/8-18 UNF-2A   | 0.624   | 0.313   | 1.125   | 0.875   | 1/8 NPT      |
| 1 1/4  | 0.25  | 0.75  | 3/4-16 UNF-2A   | 0.749   | 0.438   | 1.344   | 0.875   | 1/8 NPT      |
| 1 1/2  | 0.25  | 0.75  | 3/4-16 UNF-2A   | 0.749   | 0.438   | 1.563   | 0.875   | 1/8 NPT      |
| 1 3/4  | 0.313 | 0.875 | 1-14 UNF-2A     | 1.031   | 0.5     | 1.844   | 1.250   | 1/8 NPT      |
| 2      | 0.375 | 0.875 | 1 1/4-12 UNF-2A | 1.375   | 0.625   | 2.078   | 1.250   | 1/8 NPT      |

| ∅      | KK             | L5    | L6     | L10   | L11   | L12   |        | VD    | ≈G1   |
|--------|----------------|-------|--------|-------|-------|-------|--------|-------|-------|
| [in]   |                |       | [NGP4] |       |       |       | [NGP4] |       |       |
| 9/16   | 10-32 UNF-2A   | 0.375 | 0.188  | 0.3   | 0.531 | 0.405 | 0.375  | 0.063 | –     |
| 3/4    | 1/4-28 UNF-2A  | 0.438 | 0.188  | 0.437 | 0.563 | 0.724 | 0.284  | 0.094 | –     |
| 7/8    | 1/4-28 UNF-2A  | 0.5   | 0.188  | 0.35  | 0.75  | 0.605 | 0.325  | 0.067 | –     |
| 1 1/16 | 5/16-24 UNF-2A | 0.5   | 0.188  | 0.437 | 0.613 | 0.625 | 0.375  | 0.094 | 0.25  |
| 1 1/4  | 7/16-20 UNF-2A | 0.625 | 0.25   | 0.437 | 0.791 | 0.855 | 0.545  | 0.094 | 0.375 |
| 1 1/2  | 7/16-20 UNF-2A | 0.625 | 0.25   | 0.437 | 0.438 | 0.565 | 0.438  | 0.094 | 0.375 |
| 1 3/4  | 1/2-20 UNF-2A  | 0.75  | 0.25   | 0.437 | 1.014 | 0.95  | 0.39   | 0.094 | 0.438 |
| 2      | 1/2-20 UNF-2A  | 0.813 | 0.313  | 0.437 | 1.065 | 0.88  | 0.5    | 0.125 | 0.5   |

## Formula for calculating the length ZJ

The value O... should be selected for the formula depending on the cushioning and position sensing variants

O0 = N (no cushioning)

O1 = P (flexible cushioning rings/plates at both ends)

O2 = A (for proximity switch)

O3 = PA (flexible cushioning rings/plates at both ends and for proximity switch)

n = stroke length

| Stroke<br>[in] | O0 | O1    | O2    | O3    | ZJ                           | [NGP4]                       |
|----------------|----|-------|-------|-------|------------------------------|------------------------------|
| Piston ∅ 9/16  |    |       |       |       |                              |                              |
| 1/16 ... 1     | 0  | 0.062 | 0.531 | 0.713 | $1.561+(1.625*1)-(1-n)+0...$ | $1.531+(1.531*1)-(1-n)+0...$ |
| 1 1/16 ... 2   | 0  | 0.062 | 0.531 | 0.713 | $1.561+(1.625*2)-(2-n)+0...$ | $1.531+(1.531*2)-(2-n)+0...$ |
| 2 1/16 ... 3   | 0  | 0.062 | 0.531 | 0.713 | $1.561+(1.625*3)-(3-n)+0...$ | $1.531+(1.531*3)-(3-n)+0...$ |
| 3 1/16 ... 4   | 0  | 0.062 | 0.531 | 0.713 | $1.561+(1.625*4)-(4-n)+0...$ | $1.531+(1.531*4)-(4-n)+0...$ |
| 4 1/16 ... 5   | 0  | 0.062 | 0.531 | 0.713 | $1.561+(1.625*5)-(5-n)+0...$ | $1.531+(1.531*5)-(5-n)+0...$ |
| 5 1/16 ... 6   | 0  | 0.062 | 0.531 | 0.713 | $1.561+(1.625*6)-(6-n)+0...$ | $1.531+(1.531*6)-(6-n)+0...$ |

## Datasheet

**Formula for calculating the length ZJ**

The value O... should be selected for the formula depending on the cushioning and position sensing variants

O0 = N (no cushioning)

O1 = P (flexible cushioning rings/plates at both ends)

O2 = A (for proximity switch)

O3 = PA (flexible cushioning rings/plates at both ends and for proximity switch)

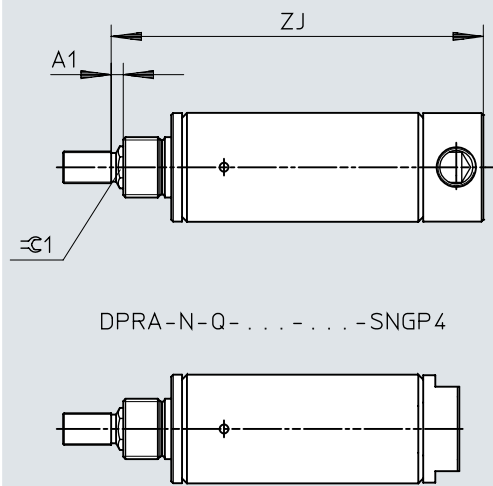
n = stroke length

| Stroke<br>[in]         | O0 | O1    | O2    | O3    | ZJ                           |                              |
|------------------------|----|-------|-------|-------|------------------------------|------------------------------|
|                        |    |       |       |       |                              | [NGP4]                       |
| <b>Piston Ø 3/4</b>    |    |       |       |       |                              |                              |
| 1/16 ... 1             | 0  | 0.125 | 0.688 | 0.89  | $1.94+(1.687*1)-(1-n)+O...$  | $1.5+(1.5*1)-(1-n)+O...$     |
| 1 1/16 ... 2           | 0  | 0.125 | 0.688 | 0.89  | $1.94+(1.687*2)-(2-n)+O...$  | $1.5+(1.5*2)-(2-n)+O...$     |
| 2 1/16 ... 3           | 0  | 0.125 | 0.688 | 0.89  | $1.94+(1.687*3)-(3-n)+O...$  | $1.5+(1.5*3)-(3-n)+O...$     |
| 3 1/16 ... 4           | 0  | 0.125 | 0.688 | 0.89  | $1.94+(1.687*4)-(4-n)+O...$  | $1.5+(1.5*4)-(4-n)+O...$     |
| 4 1/16 ... 5           | 0  | 0.125 | 0.688 | 0.89  | $1.94+(1.687*5)-(5-n)+O...$  | $1.5+(1.5*5)-(5-n)+O...$     |
| 5 1/16 ... 6           | 0  | 0.125 | 0.688 | 0.89  | $1.94+(1.687*6)-(6-n)+O...$  | $1.5+(1.5*6)-(6-n)+O...$     |
| <b>Piston Ø 7/8</b>    |    |       |       |       |                              |                              |
| 1/16 ... 1             | 0  | –     | 0.531 | 0.733 | $2.124+(1.562*1)-(1-n)+O...$ | $1.844+(1.844*1)-(1-n)+O...$ |
| 1 1/16 ... 2           | 0  | –     | 0.531 | 0.733 | $2.124+(1.562*2)-(2-n)+O...$ | $1.844+(1.844*2)-(2-n)+O...$ |
| 2 1/16 ... 3           | 0  | –     | 0.531 | 0.733 | $2.124+(1.562*3)-(3-n)+O...$ | $1.844+(1.844*3)-(3-n)+O...$ |
| 3 1/16 ... 4           | 0  | –     | 0.531 | 0.733 | $2.124+(1.562*4)-(4-n)+O...$ | $1.844+(1.844*4)-(4-n)+O...$ |
| 4 1/16 ... 5           | 0  | –     | 0.531 | 0.733 | $2.124+(1.562*5)-(5-n)+O...$ | $1.844+(1.844*5)-(5-n)+O...$ |
| 5 1/16 ... 6           | 0  | –     | 0.531 | 0.733 | $2.124+(1.562*6)-(6-n)+O...$ | $1.844+(1.844*6)-(6-n)+O...$ |
| <b>Piston Ø 1 1/16</b> |    |       |       |       |                              |                              |
| 1/16 ... 1             | 0  | 0.125 | 0.562 | 0.765 | $2.188+(1.562*1)-(1-n)+O...$ | $1.938+(1.938*1)-(1-n)+O...$ |
| 1 1/16 ... 2           | 0  | 0.125 | 0.562 | 0.765 | $2.188+(1.562*2)-(2-n)+O...$ | $1.938+(1.938*2)-(2-n)+O...$ |
| 2 1/16 ... 3           | 0  | 0.125 | 0.562 | 0.765 | $2.188+(1.562*3)-(3-n)+O...$ | $1.938+(1.938*3)-(3-n)+O...$ |
| 3 1/16 ... 4           | 0  | 0.125 | 0.562 | 0.765 | $2.188+(1.562*4)-(4-n)+O...$ | $1.938+(1.938*4)-(4-n)+O...$ |
| 4 1/16 ... 5           | 0  | 0.125 | 0.562 | 0.765 | $2.188+(1.562*5)-(5-n)+O...$ | $1.938+(1.938*5)-(5-n)+O...$ |
| 5 1/16 ... 6           | 0  | 0.125 | 0.562 | 0.765 | $2.188+(1.562*6)-(6-n)+O...$ | $1.938+(1.938*6)-(6-n)+O...$ |
| <b>Piston Ø 1 1/4</b>  |    |       |       |       |                              |                              |
| 1/16 ... 1             | 0  | –     | 0.531 | 0.734 | $2.716+(1.812*1)-(1-n)+O...$ | $2.406+(2.406*1)-(1-n)+O...$ |
| 1 1/16 ... 2           | 0  | –     | 0.531 | 0.734 | $2.716+(1.812*2)-(2-n)+O...$ | $2.406+(2.406*2)-(2-n)+O...$ |
| 2 1/16 ... 3           | 0  | –     | 0.531 | 0.734 | $2.716+(1.812*3)-(3-n)+O...$ | $2.406+(2.406*3)-(3-n)+O...$ |
| 3 1/16 ... 4           | 0  | –     | 0.531 | 0.734 | $2.716+(1.812*4)-(4-n)+O...$ | $2.406+(2.406*4)-(4-n)+O...$ |
| 4 1/16 ... 5           | 0  | –     | 0.531 | 0.734 | $2.716+(1.812*5)-(5-n)+O...$ | $2.406+(2.406*5)-(5-n)+O...$ |
| 5 1/16 ... 6           | 0  | –     | 0.531 | 0.734 | $2.716+(1.812*6)-(6-n)+O...$ | $2.406+(2.406*6)-(6-n)+O...$ |
| <b>Piston Ø 1 1/2</b>  |    |       |       |       |                              |                              |
| 1/16 ... 1             | 0  | –     | 0.438 | 0.765 | $2.378+(1.687*1)-(1-n)+O...$ | $2.188+(2.188*1)-(1-n)+O...$ |
| 1 1/16 ... 2           | 0  | –     | 0.438 | 0.765 | $2.378+(1.687*2)-(2-n)+O...$ | $2.188+(2.188*2)-(2-n)+O...$ |
| 2 1/16 ... 3           | 0  | –     | 0.438 | 0.765 | $2.378+(1.687*3)-(3-n)+O...$ | $2.188+(2.188*3)-(3-n)+O...$ |
| 3 1/16 ... 4           | 0  | –     | 0.438 | 0.765 | $2.378+(1.687*4)-(4-n)+O...$ | $2.188+(2.188*4)-(4-n)+O...$ |
| 4 1/16 ... 5           | 0  | –     | 0.438 | 0.765 | $2.378+(1.687*5)-(5-n)+O...$ | $2.188+(2.188*5)-(5-n)+O...$ |
| 5 1/16 ... 6           | 0  | –     | 0.438 | 0.765 | $2.378+(1.687*6)-(6-n)+O...$ | $2.188+(2.188*6)-(6-n)+O...$ |
| <b>Piston Ø 1 3/4</b>  |    |       |       |       |                              |                              |
| 1/16 ... 1             | 0  | –     | 0.656 | 0.735 | $3.216+(2*1)-(1-n)+O...$     | $2.656+(2.656*1)-(1-n)+O...$ |
| 1 1/16 ... 2           | 0  | –     | 0.656 | 0.735 | $3.216+(2*2)-(2-n)+O...$     | $2.656+(2.656*2)-(2-n)+O...$ |
| 2 1/16 ... 3           | 0  | –     | 0.656 | 0.735 | $3.216+(2*3)-(3-n)+O...$     | $2.656+(2.656*3)-(3-n)+O...$ |
| 3 1/16 ... 4           | 0  | –     | 0.656 | 0.735 | $3.216+(2*4)-(4-n)+O...$     | $2.656+(2.656*4)-(4-n)+O...$ |
| 4 1/16 ... 5           | 0  | –     | 0.656 | 0.735 | $3.216+(2*5)-(5-n)+O...$     | $2.656+(2.656*5)-(5-n)+O...$ |
| 5 1/16 ... 6           | 0  | –     | 0.656 | 0.735 | $3.216+(2*6)-(6-n)+O...$     | $2.656+(2.656*6)-(6-n)+O...$ |
| <b>Piston Ø 2</b>      |    |       |       |       |                              |                              |
| 1 1/16 ... 0.5         | 0  | –     | 0.461 | 0.789 | $4.911-(0.5-n)+O...$         | $4.531-(0.5-n)+O...$         |
| 9/16 ... 1             | 0  | –     | 0.461 | 0.789 | $5.411-(1-n)+O...$           | $5.031-(1-n)+O...$           |
| 1 1/16 ... 1.5         | 0  | –     | 0.461 | 0.789 | $6.911-(1.5-n)+O...$         | $6.531-(1.5-n)+O...$         |
| 1 9/16 ... 2           | 0  | –     | 0.461 | 0.789 | $7.411-(2-n)+O...$           | $7.031-(2-n)+O...$           |
| 2 1/6 ... 2.5          | 0  | –     | 0.461 | 0.789 | $8.161-(2.5-n)+O...$         | $7.781-(2.5-n)+O...$         |
| 2 9/16 ... 3           | 0  | –     | 0.461 | 0.789 | $8.661-(3-n)+O...$           | $8.281-(3-n)+O...$           |
| 3 1/6 ... 4            | 0  | –     | 0.461 | 0.789 | $11.598-(4-n)+O...$          | $11.218-(4-n)+O...$          |

Datasheet

**Dimensions** Download CAD data → [www.festo.com](http://www.festo.com)

- [S] Single-acting, pushing (piston rod retracted by spring force)
- [-QNG] With protection against rotation; without mounting thread
- [-QNGP4] With protection against rotation; without mounting thread; axial compressed air supply port



| ∅      | A1    | ≅1    |
|--------|-------|-------|
| [in]   |       |       |
| 9/16   | 0.25  | 0.188 |
| 3/4    | 0.25  | 0.25  |
| 7/8    | 0.25  | 0.25  |
| 1 1/16 | 0.25  | 0.375 |
| 1 1/4  | 0.25  | 0.438 |
| 1 1/2  | 0.375 | 0.438 |

## Datasheet

**Formula for calculating the length Z]**

The value O... should be selected for the formula depending on the cushioning and position sensing variants

O0 = N (no cushioning)

O1 = P (flexible cushioning rings/plates at both ends)

O2 = A (for proximity switch)

O3 = PA (flexible cushioning rings/plates at both ends and for proximity switch)

n = stroke length

| Stroke<br>[in]  | O0 | O1    | O2    | O3    | Z]                         |                            |
|-----------------|----|-------|-------|-------|----------------------------|----------------------------|
|                 |    |       |       |       | [NGP4]                     |                            |
| Piston Ø 9/16   |    |       |       |       |                            |                            |
| 1/16 ... 1      | 0  | 0.062 | 0.531 | 0.713 | 1.811+(1.625*1)-(1-n)+O... | 1.781+(1.625*1)-(1-n)+O... |
| 1 1/16 ... 2    | 0  | 0.062 | 0.531 | 0.713 | 1.811+(1.625*2)-(2-n)+O... | 1.781+(1.625*2)-(2-n)+O... |
| 2 1/16 ... 3    | 0  | 0.062 | 0.531 | 0.713 | 1.811+(1.625*3)-(3-n)+O... | 1.781+(1.625*3)-(3-n)+O... |
| 3 1/16 ... 4    | 0  | 0.062 | 0.531 | 0.713 | 1.811+(1.625*4)-(4-n)+O... | 1.781+(1.625*4)-(4-n)+O... |
| 4 1/16 ... 5    | 0  | 0.062 | 0.531 | 0.713 | 1.811+(1.625*5)-(5-n)+O... | 1.781+(1.625*5)-(5-n)+O... |
| 5 1/16 ... 6    | 0  | 0.062 | 0.531 | 0.713 | 1.811+(1.625*6)-(6-n)+O... | 1.781+(1.625*6)-(6-n)+O... |
| Piston Ø 3/4    |    |       |       |       |                            |                            |
| 1/16 ... 1      | 0  | 0.125 | 0.688 | 0.89  | 2.19+(1.687*1)-(1-n)+O...  | 1.75+(1.687*1)-(1-n)+O...  |
| 1 1/16 ... 2    | 0  | 0.125 | 0.688 | 0.89  | 2.19+(1.687*2)-(2-n)+O...  | 1.75+(1.687*2)-(2-n)+O...  |
| 2 1/16 ... 3    | 0  | 0.125 | 0.688 | 0.89  | 2.19+(1.687*3)-(3-n)+O...  | 1.75+(1.687*3)-(3-n)+O...  |
| 3 1/16 ... 4    | 0  | 0.125 | 0.688 | 0.89  | 2.19+(1.687*4)-(4-n)+O...  | 1.75+(1.687*4)-(4-n)+O...  |
| 4 1/16 ... 5    | 0  | 0.125 | 0.688 | 0.89  | 2.19+(1.687*5)-(5-n)+O...  | 1.75+(1.687*5)-(5-n)+O...  |
| 5 1/16 ... 6    | 0  | 0.125 | 0.688 | 0.89  | 2.19+(1.687*6)-(6-n)+O...  | 1.75+(1.687*6)-(6-n)+O...  |
| Piston Ø 7/8    |    |       |       |       |                            |                            |
| 1/16 ... 1      | 0  | –     | 0.531 | 0.733 | 2.374+(1.562*1)-(1-n)+O... | 2.094+(1.687*1)-(1-n)+O... |
| 1 1/16 ... 2    | 0  | –     | 0.531 | 0.733 | 2.374+(1.562*2)-(2-n)+O... | 2.094+(1.687*2)-(2-n)+O... |
| 2 1/16 ... 3    | 0  | –     | 0.531 | 0.733 | 2.374+(1.562*3)-(3-n)+O... | 2.094+(1.687*3)-(3-n)+O... |
| 3 1/16 ... 4    | 0  | –     | 0.531 | 0.733 | 2.374+(1.562*4)-(4-n)+O... | 2.094+(1.687*4)-(4-n)+O... |
| 4 1/16 ... 5    | 0  | –     | 0.531 | 0.733 | 2.374+(1.562*5)-(5-n)+O... | 2.094+(1.687*5)-(5-n)+O... |
| 5 1/16 ... 6    | 0  | –     | 0.531 | 0.733 | 2.374+(1.562*6)-(6-n)+O... | 2.094+(1.687*6)-(6-n)+O... |
| Piston Ø 1 1/16 |    |       |       |       |                            |                            |
| 1/16 ... 1      | 0  | 0.125 | 0.562 | 0.765 | 2.188+(1.562*1)-(1-n)+O... | 1.938+(1.562*1)-(1-n)+O... |
| 1 1/16 ... 2    | 0  | 0.125 | 0.562 | 0.765 | 2.188+(1.562*2)-(2-n)+O... | 1.938+(1.562*2)-(2-n)+O... |
| 2 1/16 ... 3    | 0  | 0.125 | 0.562 | 0.765 | 2.188+(1.562*3)-(3-n)+O... | 1.938+(1.562*3)-(3-n)+O... |
| 3 1/16 ... 4    | 0  | 0.125 | 0.562 | 0.765 | 2.188+(1.562*4)-(4-n)+O... | 1.938+(1.562*4)-(4-n)+O... |
| 4 1/16 ... 5    | 0  | 0.125 | 0.562 | 0.765 | 2.188+(1.562*5)-(5-n)+O... | 1.938+(1.562*5)-(5-n)+O... |
| 5 1/16 ... 6    | 0  | 0.125 | 0.562 | 0.765 | 2.188+(1.562*6)-(6-n)+O... | 1.938+(1.562*6)-(6-n)+O... |
| Piston Ø 1 1/4  |    |       |       |       |                            |                            |
| 1/16 ... 1      | 0  | –     | 0.531 | 0.734 | 2.716+(1.812*1)-(1-n)+O... | 2.406+(1.812*1)-(1-n)+O... |
| 1 1/16 ... 2    | 0  | –     | 0.531 | 0.734 | 2.716+(1.812*2)-(2-n)+O... | 2.406+(1.812*2)-(2-n)+O... |
| 2 1/16 ... 3    | 0  | –     | 0.531 | 0.734 | 2.716+(1.812*3)-(3-n)+O... | 2.406+(1.812*3)-(3-n)+O... |
| 3 1/16 ... 4    | 0  | –     | 0.531 | 0.734 | 2.716+(1.812*4)-(4-n)+O... | 2.406+(1.812*4)-(4-n)+O... |
| 4 1/16 ... 5    | 0  | –     | 0.531 | 0.734 | 2.716+(1.812*5)-(5-n)+O... | 2.406+(1.812*5)-(5-n)+O... |
| 5 1/16 ... 6    | 0  | –     | 0.531 | 0.734 | 2.716+(1.812*6)-(6-n)+O... | 2.406+(1.812*6)-(6-n)+O... |
| Piston Ø 1 1/2  |    |       |       |       |                            |                            |
| 1/16 ... 1      | 0  | –     | 0.438 | 0.75  | 2.378+(1.687*1)-(1-n)+O... | 2.188+(1.687*1)-(1-n)+O... |
| 1 1/16 ... 2    | 0  | –     | 0.438 | 0.75  | 2.378+(1.687*2)-(2-n)+O... | 2.188+(1.687*2)-(2-n)+O... |
| 2 1/16 ... 3    | 0  | –     | 0.438 | 0.75  | 2.378+(1.687*3)-(3-n)+O... | 2.188+(1.687*3)-(3-n)+O... |
| 3 1/16 ... 4    | 0  | –     | 0.438 | 0.75  | 2.378+(1.687*4)-(4-n)+O... | 2.188+(1.687*4)-(4-n)+O... |
| 4 1/16 ... 5    | 0  | –     | 0.438 | 0.75  | 2.378+(1.687*5)-(5-n)+O... | 2.188+(1.687*5)-(5-n)+O... |
| 5 1/16 ... 6    | 0  | –     | 0.438 | 0.75  | 2.378+(1.687*6)-(6-n)+O... | 2.188+(1.687*6)-(6-n)+O... |

# Datasheet

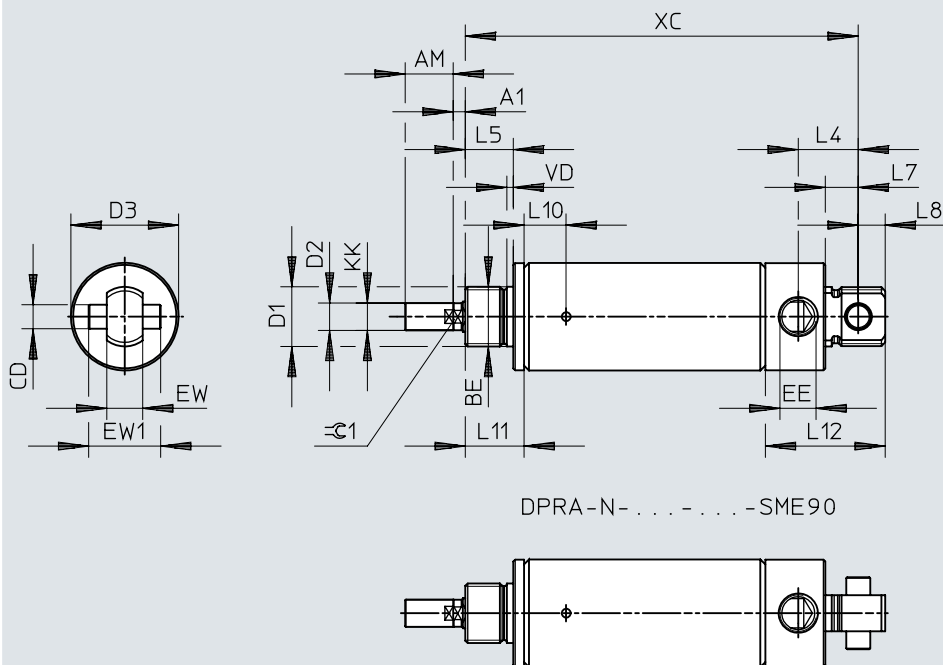
## Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

[S] Single-acting, pushing (piston rod retracted by spring force)

[ME] With trunnion flange

[ME90] Trunnion flange, rotated 90°



| ∅      | A1    | AM   | BE            | CD<br>∅ | D1<br>∅ | D2<br>∅ | D3<br>∅ | EE      | EW    | EW1  |
|--------|-------|------|---------------|---------|---------|---------|---------|---------|-------|------|
| [in]   |       |      |               |         |         |         |         |         |       |      |
| 3/4    | 0     | 0.5  | 1/2-20 UNF-2A | 0.25    | 0.5     | 0.25    | 0.875   | 1/8 NPT | 0.375 | 0.75 |
| 7/8    | 0     | 0.5  | 5/8-18 UNF-2A | 0.25    | 0.624   | 0.25    | 0.938   | 1/8 NPT | 0.375 | 0.75 |
| 1 1/16 | 0.125 | 0.5  | 5/8-18 UNF-2A | 0.25    | 0.624   | 0.313   | 1.125   | 1/8 NPT | 0.375 | 0.75 |
| 1 1/2  | 0.25  | 0.75 | 3/4-16 UNF-2A | 0.375   | 0.749   | 0.438   | 1.563   | 1/8 NPT | 0.625 | 1    |

| ∅      | KK             | L4    | L5    | L7    | L8    | L10   | L11   | L12   | VD    | ≡C1   |
|--------|----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| [in]   |                |       |       |       |       |       |       |       |       |       |
| 3/4    | 1/4-28 UNF-2A  | 0.625 | 0.438 | 0.344 | 0.281 | 0.437 | 0.563 | 1.348 | 0.094 | –     |
| 7/8    | 1/4-28 UNF-2A  | 0.625 | 0.5   | 0.344 | 0.281 | 0.35  | 0.75  | 1.23  | 0.067 | –     |
| 1 1/16 | 5/16-24 UNF-2A | 0.625 | 0.5   | 0.344 | 0.281 | 0.437 | 0.613 | 1.25  | 0.094 | 0.25  |
| 1 1/2  | 7/16-20 UNF-2A | 0.813 | 0.625 | 0.5   | 0.375 | 0.437 | 0.438 | 1.5   | 0.094 | 0.375 |

## Datasheet

**Formula for calculating the length XC**

The value O... should be selected for the formula depending on the cushioning and position sensing variants

O0 = N (no cushioning)

O1 = P (flexible cushioning rings/plates at both ends)

O2 = A (for proximity switch)

O3 = PA (flexible cushioning rings/plates at both ends and for proximity switch)

n = stroke length

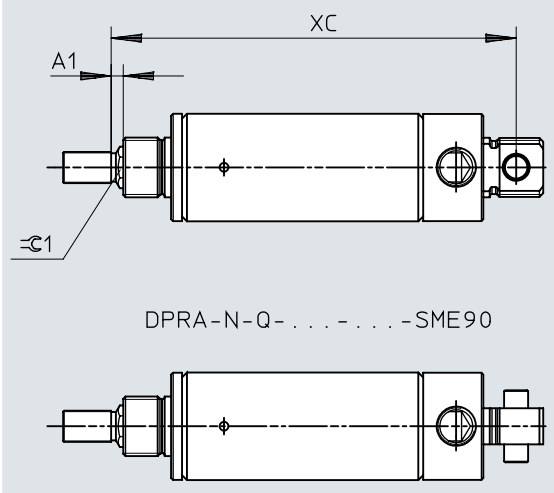
| Stroke<br>[in]         | O0 | O1    | O2    | O3    | XC                           |
|------------------------|----|-------|-------|-------|------------------------------|
| <b>Piston Ø 3/4</b>    |    |       |       |       |                              |
| 1/16 ... 1             | 0  | 0.125 | 0.688 | 0.89  | $2.281+(1.687*1)-(1-n)+O...$ |
| 1 1/16 ... 2           | 0  | 0.125 | 0.688 | 0.89  | $2.281+(1.687*2)-(2-n)+O...$ |
| 2 1/16 ... 3           | 0  | 0.125 | 0.688 | 0.89  | $2.281+(1.687*3)-(3-n)+O...$ |
| 3 1/16 ... 4           | 0  | 0.125 | 0.688 | 0.89  | $2.281+(1.687*4)-(4-n)+O...$ |
| 4 1/16 ... 5           | 0  | 0.125 | 0.688 | 0.89  | $2.281+(1.687*5)-(5-n)+O...$ |
| 5 1/16 ... 6           | 0  | 0.125 | 0.688 | 0.89  | $2.281+(1.687*6)-(6-n)+O...$ |
| <b>Piston Ø 7/8</b>    |    |       |       |       |                              |
| 1/16 ... 1             | 0  | –     | 0.531 | 0.733 | $2.469+(1.562*1)-(1-n)+O...$ |
| 1 1/16 ... 2           | 0  | –     | 0.531 | 0.733 | $2.469+(1.562*2)-(2-n)+O...$ |
| 2 1/16 ... 3           | 0  | –     | 0.531 | 0.733 | $2.469+(1.562*3)-(3-n)+O...$ |
| 3 1/16 ... 4           | 0  | –     | 0.531 | 0.733 | $2.469+(1.562*4)-(4-n)+O...$ |
| 4 1/16 ... 5           | 0  | –     | 0.531 | 0.733 | $2.469+(1.562*5)-(5-n)+O...$ |
| 5 1/16 ... 6           | 0  | –     | 0.531 | 0.733 | $2.469+(1.562*6)-(6-n)+O...$ |
| <b>Piston Ø 1 1/16</b> |    |       |       |       |                              |
| 1/16 ... 1             | 0  | 0.125 | 0.562 | 0.765 | $2.531+(1.562*1)-(1-n)+O...$ |
| 1 1/16 ... 2           | 0  | 0.125 | 0.562 | 0.765 | $2.531+(1.562*2)-(2-n)+O...$ |
| 2 1/16 ... 3           | 0  | 0.125 | 0.562 | 0.765 | $2.531+(1.562*3)-(3-n)+O...$ |
| 3 1/16 ... 4           | 0  | 0.125 | 0.562 | 0.765 | $2.531+(1.562*4)-(4-n)+O...$ |
| 4 1/16 ... 5           | 0  | 0.125 | 0.562 | 0.765 | $2.531+(1.562*5)-(5-n)+O...$ |
| 5 1/16 ... 6           | 0  | 0.125 | 0.562 | 0.765 | $2.531+(1.562*6)-(6-n)+O...$ |
| <b>Piston Ø 1 1/2</b>  |    |       |       |       |                              |
| 1/16 ... 1             | 0  | –     | 0.438 | 0.765 | $3.125+(1.687*1)-(1-n)+O...$ |
| 1 1/16 ... 2           | 0  | –     | 0.438 | 0.765 | $3.125+(1.687*2)-(2-n)+O...$ |
| 2 1/16 ... 3           | 0  | –     | 0.438 | 0.765 | $3.125+(1.687*3)-(3-n)+O...$ |
| 3 1/16 ... 4           | 0  | –     | 0.438 | 0.765 | $3.125+(1.687*4)-(4-n)+O...$ |
| 4 1/16 ... 5           | 0  | –     | 0.438 | 0.765 | $3.125+(1.687*5)-(5-n)+O...$ |
| 5 1/16 ... 6           | 0  | –     | 0.438 | 0.765 | $3.125+(1.687*6)-(6-n)+O...$ |

Datasheet

Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

- [S] Single-acting, pushing (piston rod retracted by spring force)
- [-QME] With protection against rotation; trunnion flange, rotated 90°



| ø      | A1    | ≅1    |
|--------|-------|-------|
| [in]   |       |       |
| 3/4    | 0.25  | 0.25  |
| 7/8    | 0.25  | 0.25  |
| 1 1/16 | 0.25  | 0.375 |
| 1 1/2  | 0.375 | 0.438 |

## Datasheet

**Formula for calculating the length XC**

The value O... should be selected for the formula depending on the cushioning and position sensing variants

O0 = N (no cushioning)

O1 = P (flexible cushioning rings/plates at both ends)

O2 = A (for proximity switch)

O3 = PA (flexible cushioning rings/plates at both ends and for proximity switch)

n = stroke length

| Stroke<br>[in]         | O0 | O1    | O2    | O3    | XC                           |
|------------------------|----|-------|-------|-------|------------------------------|
| <b>Piston Ø 3/4</b>    |    |       |       |       |                              |
| 1/16 ... 1             | 0  | 0.125 | 0.688 | 0.89  | $2.531+(1.687*1)-(1-n)+O...$ |
| 1 1/16 ... 2           | 0  | 0.125 | 0.688 | 0.89  | $2.531+(1.687*2)-(2-n)+O...$ |
| 2 1/16 ... 3           | 0  | 0.125 | 0.688 | 0.89  | $2.531+(1.687*3)-(3-n)+O...$ |
| 3 1/16 ... 4           | 0  | 0.125 | 0.688 | 0.89  | $2.531+(1.687*4)-(4-n)+O...$ |
| 4 1/16 ... 5           | 0  | 0.125 | 0.688 | 0.89  | $2.531+(1.687*5)-(5-n)+O...$ |
| 5 1/16 ... 6           | 0  | 0.125 | 0.688 | 0.89  | $2.531+(1.687*6)-(6-n)+O...$ |
| <b>Piston Ø 7/8</b>    |    |       |       |       |                              |
| 1/16 ... 1             | 0  | –     | 0.531 | 0.733 | $2.719+(1.562*1)-(1-n)+O...$ |
| 1 1/16 ... 2           | 0  | –     | 0.531 | 0.733 | $2.719+(1.562*2)-(2-n)+O...$ |
| 2 1/16 ... 3           | 0  | –     | 0.531 | 0.733 | $2.719+(1.562*3)-(3-n)+O...$ |
| 3 1/16 ... 4           | 0  | –     | 0.531 | 0.733 | $2.719+(1.562*4)-(4-n)+O...$ |
| 4 1/16 ... 5           | 0  | –     | 0.531 | 0.733 | $2.719+(1.562*5)-(5-n)+O...$ |
| 5 1/16 ... 6           | 0  | –     | 0.531 | 0.733 | $2.719+(1.562*6)-(6-n)+O...$ |
| <b>Piston Ø 1 1/16</b> |    |       |       |       |                              |
| 1/16 ... 1             | 0  | 0.125 | 0.562 | 0.765 | $2.781+(1.562*1)-(1-n)+O...$ |
| 1 1/16 ... 2           | 0  | 0.125 | 0.562 | 0.765 | $2.781+(1.562*2)-(2-n)+O...$ |
| 2 1/16 ... 3           | 0  | 0.125 | 0.562 | 0.765 | $2.781+(1.562*3)-(3-n)+O...$ |
| 3 1/16 ... 4           | 0  | 0.125 | 0.562 | 0.765 | $2.781+(1.562*4)-(4-n)+O...$ |
| 4 1/16 ... 5           | 0  | 0.125 | 0.562 | 0.765 | $2.781+(1.562*5)-(5-n)+O...$ |
| 5 1/16 ... 6           | 0  | 0.125 | 0.562 | 0.765 | $2.781+(1.562*6)-(6-n)+O...$ |
| <b>Piston Ø 1 1/2</b>  |    |       |       |       |                              |
| 1/16 ... 1             | 0  | –     | 0.438 | 0.765 | $3.25+(1.687*1)-(1-n)+O...$  |
| 1 1/16 ... 2           | 0  | –     | 0.438 | 0.765 | $3.25+(1.687*2)-(2-n)+O...$  |
| 2 1/16 ... 3           | 0  | –     | 0.438 | 0.765 | $3.25+(1.687*3)-(3-n)+O...$  |
| 3 1/16 ... 4           | 0  | –     | 0.438 | 0.765 | $3.25+(1.687*4)-(4-n)+O...$  |
| 4 1/16 ... 5           | 0  | –     | 0.438 | 0.765 | $3.25+(1.687*5)-(5-n)+O...$  |
| 5 1/16 ... 6           | 0  | –     | 0.438 | 0.765 | $3.25+(1.687*6)-(6-n)+O...$  |

Datasheet

Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

[S]Single-acting, pushing (piston rod retracted by spring force)

[U]With swivelling rod eye

[U90]With swivelling rod eye, rotated 90°

[-QU]With protection against rotation; with swivelling rod eye

[-QU90]With protection against rotation; with swivelling rod eye, rotated 90°

DPRA-N-...-SU90

| ø      | CD    |       |       |         |
|--------|-------|-------|-------|---------|
|        | ø     |       |       |         |
| [in]   |       | [U90] | [-QU] | [-QU90] |
| 3/4    | 0.25  | 0.25  | 0.25  | 0.25    |
| 1 1/16 | 0.25  | 0.25  | 0.25  | 0.25    |
| 1 1/4  | 0.251 | 0.251 | 0.251 | 0.251   |
| 1 1/2  | 0.375 | 0.375 | 0.375 | 0.375   |
| 1 3/4  | 0.376 | 0.376 | -     | -       |

Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

[S]Single-acting, pushing (piston rod retracted by spring force)

[UB]With swivelling rod eye and bearing sleeve

[UB90]With swivelling rod eye and bearing sleeve, rotated 90°

DPRA-N-...-SUB90

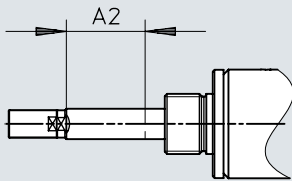
| ø      | CD1   |        |
|--------|-------|--------|
|        | ø     |        |
| [in]   |       | [UB90] |
| 9/16   | 0.157 | 0.157  |
| 3/4    | 0.25  | -      |
| 7/8    | 0.25  | -      |
| 1 1/16 | 0.25  | -      |
| 1 1/4  | 0.251 | -      |
| 1 1/2  | 0.375 | -      |
| 1 3/4  | 0.376 | -      |
| 2      | 0.375 | 0.375  |

## Datasheet

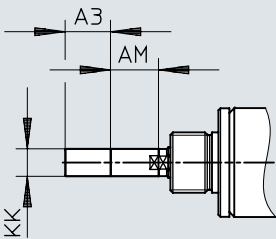
## Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

[...NE] Piston rod extension



[...NL] Piston rod thread extension



| ∅      | A2         | A3         | AM    | KK             |
|--------|------------|------------|-------|----------------|
| [in]   | [...NE]    | [...NL]    |       |                |
| 9/16   | 1/16 ... 6 | 1/16 ... 6 | 0.5   | 10-32 UNF-2A   |
| 3/4    | 1/16 ... 6 | 1/16 ... 6 | 0.5   | 1/4-28 UNF-2A  |
| 7/8    | 1/16 ... 6 | 1/16 ... 6 | 0.5   | 1/4-28 UNF-2A  |
| 1 1/16 | 1/16 ... 6 | 1/16 ... 6 | 0.5   | 5/16-24 UNF-2A |
| 1 1/4  | 1/16 ... 6 | 1/16 ... 6 | 0.75  | 7/16-24 UNF-2A |
| 1 1/2  | 1/16 ... 6 | 1/16 ... 6 | 0.75  | 7/16-24 UNF-2A |
| 1 3/4  | 1/16 ... 6 | 1/16 ... 6 | 0.875 | 1/2-20 UNF-2A  |
| 2      | 1/16 ... 6 | 1/16 ... 6 | 0.875 | 1/2-20 UNF-2A  |

## Ordering data

**[-S] Single-acting, pushing (piston rod retracted by spring force)**  
**[NGP4] Without mounting thread, axial compressed air supply port**

| Piston Ø | Stroke | Part no. | Type                     |
|----------|--------|----------|--------------------------|
| 3/4"     | 1"     | 8217836  | DPRA-N-3/4"-1-SNGP4-N    |
| 1 1/16"  |        | 8217851  | DPRA-N-1 1/16"-1-SNGP4-N |

**[-S] Single-acting, pushing (piston rod retracted by spring force)**  
**[ME] With trunnion flange**

| Piston Ø | Stroke | Part no. | Type                   |
|----------|--------|----------|------------------------|
| 3/4"     | 1"     | 8217837  | DPRA-N-3/4"-1-SME-N    |
| 1 1/16"  |        | 8217841  | DPRA-N-1 1/16"-1-SME-N |

## Ordering data – Modular product system

## Ordering table

|                             |                                                               |                              |         |                         |                                      |            |      |            |
|-----------------------------|---------------------------------------------------------------|------------------------------|---------|-------------------------|--------------------------------------|------------|------|------------|
| Piston Ø                    | 9/16                                                          | 3/4                          | 7/8     | 1 1/16                  | 1 1/4                                | Conditions | Code | Enter code |
| Module no.                  | 8180567                                                       | 8109549                      | 8180568 | 8109550                 | 8109551                              |            |      |            |
| Series                      | Round cylinder, single-acting                                 |                              |         |                         |                                      |            | DPRA | DPRA       |
| System of units             | Imperial                                                      |                              |         |                         |                                      |            | -N   |            |
| Protection against rotation | None                                                          |                              |         |                         |                                      |            |      |            |
|                             | With protection against rotation                              |                              |         |                         |                                      |            | -Q   |            |
| Piston Ø                    | 9/16"                                                         | 3/4"                         | 7/8"    | 1 1/16"                 | 1 1/4"                               |            | -"   |            |
| Stroke                      | 0.0625 ... 6"                                                 |                              |         |                         |                                      |            | -"   |            |
| Function                    | Single-acting, pulling (piston rod advanced by spring force)  |                              |         |                         |                                      | [4]        | -P   |            |
|                             | Single-acting, pushing (piston rod retracted by spring force) |                              |         |                         |                                      | [5]        | -S   |            |
| Piston rod type             | At one end                                                    |                              |         |                         |                                      |            |      |            |
| Type of bearing cover       | With mounting thread                                          |                              |         |                         |                                      |            |      |            |
| Type of end cap             | -                                                             | With swivelling rod eye      | -       | With swivelling rod eye |                                      | [1]        | U    |            |
|                             | -                                                             | With trunnion flange         |         |                         | -                                    | [1]        | ME   |            |
|                             | Without mounting thread                                       |                              |         |                         |                                      |            | NG   |            |
|                             | With swivelling rod eye and bearing sleeve                    |                              |         |                         |                                      | [1]        | UB   |            |
|                             |                                                               |                              |         |                         | With swivelling rod eye, rotated 90° | [1]        | U90  |            |
|                             | -                                                             | Trunnion flange, rotated 90° |         |                         | -                                    | [1]        | ME90 |            |
|                             | With swivelling rod eye and bearing sleeve, rotated 90°       |                              |         |                         |                                      | [1]        | UB90 |            |
| Compressed air supply port  | Lateral                                                       |                              |         |                         |                                      |            |      |            |
|                             | Axial                                                         |                              |         |                         |                                      | [7]        | P4   |            |
| Cushioning                  | No cushioning                                                 |                              |         |                         |                                      |            | -N   |            |
|                             | Elastic cushioning rings/plates at both ends                  |                              |         |                         |                                      | [2]        | -P   |            |
| Position sensing            | None                                                          |                              |         |                         |                                      |            |      |            |
|                             | Via proximity switch                                          |                              |         |                         |                                      | [2]        | A    |            |
| Corrosion protection        | Standard                                                      |                              |         |                         |                                      |            |      |            |
| Temperature range           | Standard -5 ... 165 °F                                        |                              |         |                         |                                      |            |      |            |
|                             | -40 ... +225 °F                                               |                              |         |                         |                                      | [2]        | -T3  |            |
|                             | +32 ... +300 °F                                               |                              |         |                         |                                      | [2][3]     | -T4  |            |
| Extended piston rod         | None                                                          |                              |         |                         |                                      |            |      |            |
|                             | 0 ... 6 inch                                                  |                              |         |                         |                                      |            | -"NE |            |
| Extended piston rod thread  | None                                                          |                              |         |                         |                                      |            |      |            |
|                             | 0 ... 6 inch                                                  |                              |         |                         |                                      | [6]        | -"NL |            |

- [1] U, ME, UB, U90, ME90, UB90 Not with P4  
 [2] Cushioning P, A, T3, T4 Not with U90, UB90, ME90  
 [3] T4 Not with A, cushioning P  
 [4] Function P Not with Q  
 [5] Function S Mandatory with Q  
 [6] ...NL Not with ...NE  
 [7] P4 Not with function P  
 Mandatory with NG if function S and cushioning P or A or T4 selected

## Ordering data – Modular product system

| Ordering table              |                                                               |                                      |                                                         |            |        |            |
|-----------------------------|---------------------------------------------------------------|--------------------------------------|---------------------------------------------------------|------------|--------|------------|
| Piston Ø                    | 1 1/2                                                         | 1 3/4                                | 2                                                       | Conditions | Code   | Enter code |
| Module no.                  | 8109552                                                       | 8109553                              | 8109554                                                 |            |        |            |
| Series                      | Round cylinder, single-acting                                 |                                      |                                                         |            | DPRA   | DPRA       |
| System of units             | Imperial                                                      |                                      |                                                         |            | -N     |            |
| Protection against rotation | None                                                          |                                      |                                                         |            |        |            |
|                             | With protection against rotation                              | –                                    |                                                         |            | -Q     |            |
| Piston Ø                    | 1 1/2"                                                        | 1 3/4"                               | 2"                                                      |            | -..."  |            |
| Stroke                      | 0.0625 ... 6"                                                 |                                      | 0.0625 ... 4"                                           |            | -..."  |            |
| Function                    | Single-acting, pulling (piston rod advanced by spring force)  |                                      |                                                         | [4]        | -P     |            |
|                             | Single-acting, pushing (piston rod retracted by spring force) |                                      |                                                         | [5]        | -S     |            |
| Piston rod type             | At one end                                                    |                                      |                                                         |            |        |            |
| Type of bearing cover       | With mounting thread                                          |                                      |                                                         |            |        |            |
| Type of end cap             | With swivelling rod eye                                       |                                      | –                                                       | [1]        | U      |            |
|                             | With trunnion flange                                          | –                                    |                                                         | [1]        | ME     |            |
|                             | Without mounting thread                                       |                                      |                                                         | [8]        | NG     |            |
|                             | With swivelling rod eye and bearing sleeve                    |                                      |                                                         | [1][8]     | UB     |            |
|                             | –                                                             | With swivelling rod eye, rotated 90° | –                                                       | [1]        | U90    |            |
|                             | Trunnion flange, rotated 90°                                  |                                      | –                                                       | [1]        | ME90   |            |
|                             | –                                                             |                                      | With swivelling rod eye and bearing sleeve, rotated 90° | [1][8]     | UB90   |            |
| Compressed air supply port  | Lateral                                                       |                                      |                                                         |            |        |            |
|                             | Axial                                                         |                                      |                                                         | [7]        | P4     |            |
| Cushioning                  | No cushioning                                                 |                                      |                                                         |            | -N     |            |
|                             | Elastic cushioning rings/plates at both ends                  |                                      |                                                         | [2]        | -P     |            |
| Position sensing            | None                                                          |                                      |                                                         |            |        |            |
|                             | Via proximity switch                                          |                                      |                                                         | [2]        | A      |            |
| Corrosion protection        | Standard                                                      |                                      |                                                         |            |        |            |
| Temperature range           | Standard –5 ... 165 °F                                        |                                      |                                                         |            |        |            |
|                             | –40 ... +225 °F                                               |                                      |                                                         | [2]        | -T3    |            |
|                             | +32 ... +300 °F                                               |                                      |                                                         | [2][3]     | -T4    |            |
| Extended piston rod         | None                                                          |                                      |                                                         |            |        |            |
|                             | 0 ... 6 inch                                                  |                                      |                                                         |            | -...NE |            |
| Extended piston rod thread  | None                                                          |                                      |                                                         |            |        |            |
|                             | 0 ... 6 inch                                                  |                                      |                                                         | [6]        | -...NL |            |

- [1] U, ME, UB, U90, ME90, UB90 Not with P4  
 [2] Cushioning P, A, T3, T4 Not with U90, UB90, ME90  
 [3] T4 Not with A, cushioning P  
 [4] Function P Not with Q  
 Only with piston diameter 1 3/4" if NG is selected  
 [5] Function S Mandatory with Q  
 [6] ...NL Not with ...NE  
 [7] P4 Not with function P  
 Mandatory with NG if function S and cushioning P or A or T4 selected  
 [8] NG, UB, UB90 Mandatory with piston diameter 2" with piston rod type at one end

## Accessories

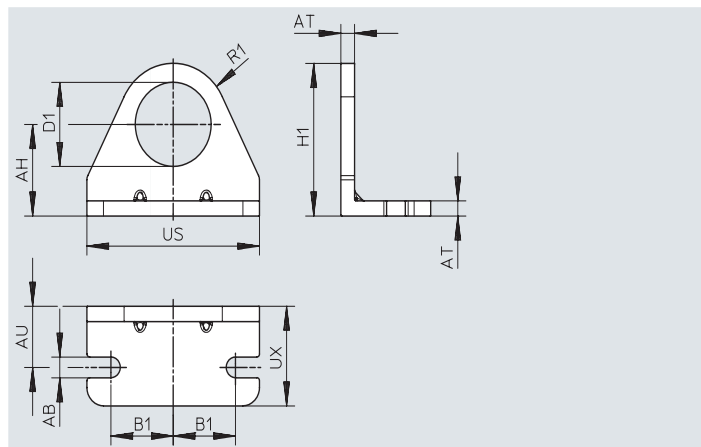
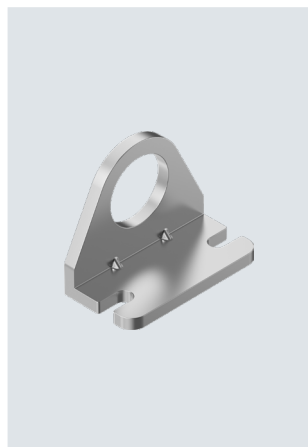
### Foot mounting DAMH-C6

Material:

Mounting: Steel (galvanised or nickel-plated)

RoHS-compliant

LABS (PWIS) conformity: VD-MA24364-Zone III



#### Dimensions and ordering data

| For $\varnothing$<br>[in]       | AB   | AH    | AT    | AU   | B1   | D1<br>+0.002 | H1   | R1   | US   | UX   | Part no. | Type              |
|---------------------------------|------|-------|-------|------|------|--------------|------|------|------|------|----------|-------------------|
| 9/16                            | 0.2  | 0.563 | 0.94  | 0.38 | 0.5  | 0.438        | 0.83 | 0.38 | 1.38 | 0.69 | 8180570  | DAMH-C6-9/16"-1   |
| 3/4 <sup>1)</sup> ; 7/8; 1 1/16 | 0.26 | 0.813 | 0.125 | 0.56 | 0.75 | 0.626        | 1.38 | 0.56 | 1.88 | 1    | 8109921  | DAMH-C6-1 1/16"-1 |
| 3/4 <sup>2)</sup>               | 0.2  | 0.688 | 0.94  | 0.44 | 0.63 | 0.501        | 1.09 | 0.41 | 1.63 | 0.75 | 8109922  | DAMH-C6-3/4"-1    |
| 1 1/4; 1 1/2                    | 0.28 | 1     | 0.125 | 0.75 | 0.94 | 0.751        | 1.75 | 0.75 | 2.5  | 1.5  | 8109923  | DAMH-C6-1 1/2"-1  |
| 1 3/4                           | 0.34 | 1.250 | 0.188 | 0.88 | 1.13 | 1.032        | 2.13 | 0.91 | 3    | 1.5  | 8109924  | DAMH-C6-1 3/4"-1  |
| 2                               | 0.34 | 1.5   | 0.25  | 1    | 1.13 | 1.376        | 2.5  | 1    | 3.13 | 1.63 | 8109925  | DAMH-C6-2"-1      |
| 2 1/2                           | 0.34 | 1.75  | 0.25  | 1    | 1.44 | 1.501        | 3    | 1.25 | 3.75 | 1.63 | 8109926  | DAMH-C6-2 1/2"-1  |
| 3                               | 0.34 | 1.89  | 0.25  | 1    | 1.75 | 1.626        | 3.14 | 1.25 | 4.38 | 1.63 | 8180572  | DAMH-C6-3"-1      |

1) For mounting on the end cap

2) For mounting on the bearing cap

### Hex nut DAMD

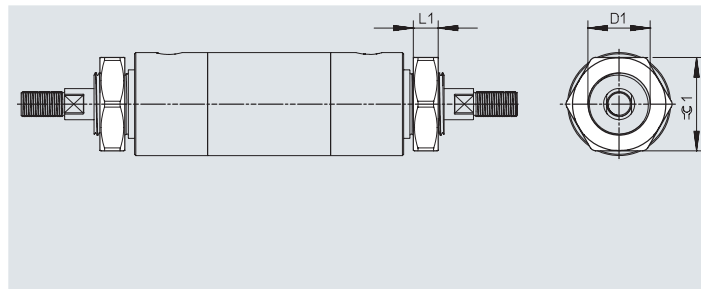
Material:

Nut: Steel (galvanised or nickel-plated)

RoHS-compliant

LABS (PWIS) conformity:

VDMA24364-Zone III



#### Dimensions and ordering data

| For $\varnothing$<br>[in] | D1              | L1   | $\approx \varnothing 1$ | Part no. | Type        |
|---------------------------|-----------------|------|-------------------------|----------|-------------|
| 9/16                      | 7/16-20 UNF-2B  | 0.25 | 0.687                   | 8180576  | DAMD-N-U716 |
| 3/4                       | 1/2-20 UNF-2B   | 0.31 | 0.75                    | 8109934  | DAMD-N-U1/2 |
| 3/4; 7/8; 1 1/16          | 5/8-18 UNF-2B   | 0.38 | 0.938                   | 8109935  | DAMD-N-U58  |
| 1 1/4; 1 1/2              | 3/4-16 UNF-2B   | 0.42 | 1.125                   | 8109936  | DAMD-N-U34  |
| 1 3/4                     | 1-14 UNF-2B     | 0.55 | 1.5                     | 8109937  | DAMD-N-U15  |
| 2                         | 1 1/4-12 UNF-2B | 0.5  | 1.875                   | 8109938  | DAMD-N-U114 |
| 2 1/2                     | 1 3/8-12 UNF-2B | 0.5  | 2.062                   | 8109939  | DAMD-N-138  |
| 3                         | 1 1/2-12 UNF-2B | 0.5  | 2.25                    | 8180577  | DAMD-N-U112 |

## Accessories

### Clevis foot DAMC-C6-...-B

Material:

Clevis foot: Steel (galvanised or nickel-plated)

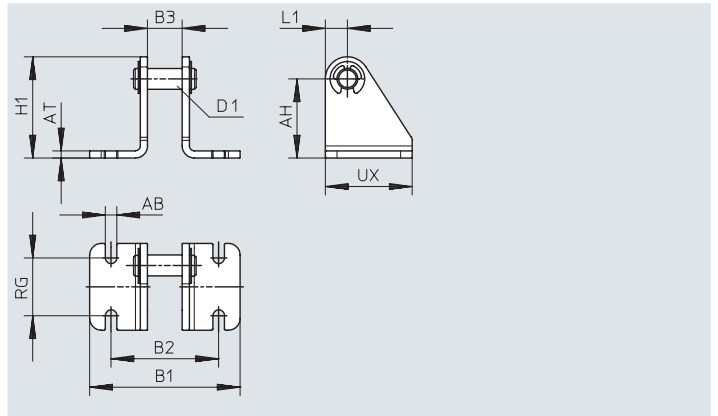
Bolt: Steel (galvanised or nickel-plated)

Lock: Steel (galvanised or nickel-plated)

RoHS-compliant

LABS (PWIS) conformity:

VDMA24364-Zone III



| Dimensions and ordering data |      |      |       |      |      |      |         |      |      |      |      |          |                   |
|------------------------------|------|------|-------|------|------|------|---------|------|------|------|------|----------|-------------------|
| For Ø<br>[in]                | AB   | AH   | AT    | B1   | B2   | B3   | D1<br>Ø | H1   | L1   | RG   | UX   | Part no. | Type              |
| 9/16                         | 0.2  | 0.56 | 0.63  | 1.34 | 0.9  | 0.34 | 0.157   | 0.77 | 0.2  | 0.5  | 0.5  | 8180573  | DAMC-C6-9/16"-B   |
| 3/4; 1 1/16                  | 0.26 | 0.88 | 0.125 | 2    | 1.25 | 0.38 | 0.25    | 1.19 | 0.31 | 0.75 | 1.13 | 8109927  | DAMC-C6-1 1/16"-B |
| 1 3/4                        | 0.26 | 1.38 | 0.250 | 2.88 | 2    | 0.63 | 0.375   | 1.75 | 0.38 | 1    | 1.5  | 8109928  | DAMC-C6-1 3/4"-B  |
| 1 1/4                        | 0.26 | 0.88 | 0.125 | 2.12 | 1.38 | 0.5  | 0.25    | 1.19 | 0.31 | 0.75 | 1.13 | 8109929  | DAMC-C6-1 1/4"-B  |
| 2; 2 1/2                     | 0.26 | 1.38 | 0.250 | 3    | 2.13 | 0.75 | 0.375   | 1.75 | 0.38 | 1    | 1.5  | 8109930  | DAMC-C6-2"-B      |
| 3                            | 0.26 | 1.75 | 0.25  | 3.88 | 2.63 | 0.88 | 0.5     | 2.25 | 0.5  | 1.25 | 1.75 | 8180575  | DAMC-C6-3"-B      |

### Clevis foot DAMC-C6-...-D

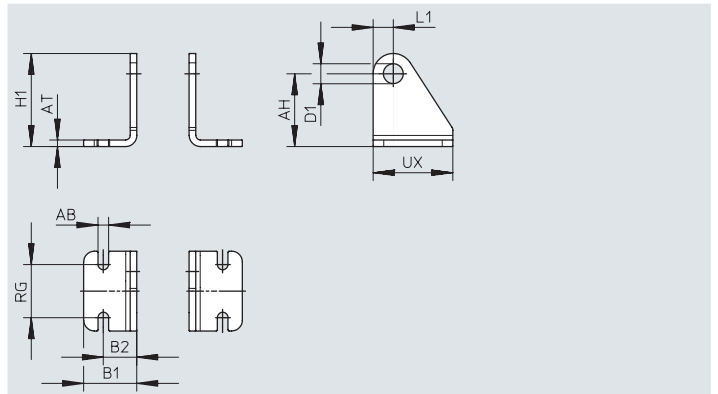
Material:

Clevis foot: Steel (galvanised or nickel-plated)

RoHS-compliant

LABS (PWIS) conformity:

VDMA24364-Zone III



| Dimensions and ordering data                                   |      |      |       |      |      |         |      |      |      |      |          |                   |
|----------------------------------------------------------------|------|------|-------|------|------|---------|------|------|------|------|----------|-------------------|
| For ø<br>[in]                                                  | AB   | AH   | AT    | B1   | B2   | D1<br>ø | H1   | L1   | RG   | UX   | Part no. | Type              |
| 3/4 <sup>1)</sup> ; 7/8 <sup>1)</sup> ; 1 1/16 <sup>1)</sup>   | 0.26 | 0.88 | 0.125 | 0.81 | 0.44 | 0.25    | 1.19 | 0.31 | 0.75 | 1.13 | 8109931  | DAMC-C6-3/4"-D    |
| 1 1/2 <sup>1)</sup>                                            | 0.26 | 1.38 | 0.125 | 1    | 0.63 | 0.375   | 1.75 | 0.38 | 1    | 1.5  | 8109932  | DAMC-C6-1 1/2"-D  |
| 3/4 <sup>2)</sup> ; 1 1/16 <sup>2)</sup> ; 1 1/2 <sup>2)</sup> | 0.26 | 1.38 | 0.25  | 1.13 | 0.69 | 0.5     | 1.75 | 0.38 | 1    | 1.5  | 8109933  | DAMC-C6-1 1/16"-D |

1) For mounting on the end cap with trunnion flange

2) For mounting on the bearing cap with trunnion flange

## Accessories

### Rod clevis DARC-C6

Material:

Rod clevis: Steel (galvanised or nickel-plated)

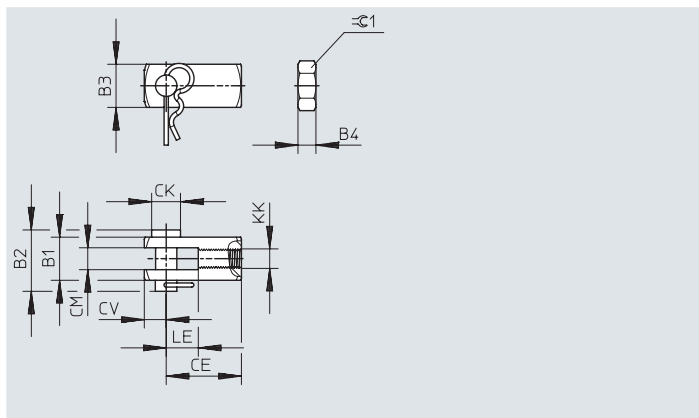
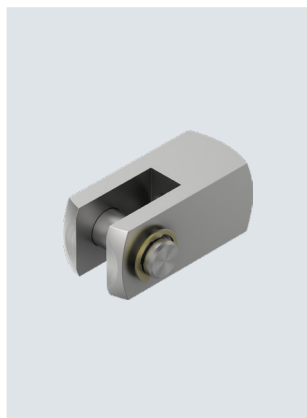
Bolt: Steel (galvanised or nickel-plated)

Lock: Steel (galvanised or nickel-plated)

RoHS-compliant

LABS (PWIS) conformity:

VDMA24364-Zone III



#### Dimensions and ordering data

| For $\varnothing$<br>[in] | B1   | B2   | B3   | B4   | CE   | CK    | CM   | CV   | KK             | LE   | $\approx \varnothing 1$ | Part no. | Type         |
|---------------------------|------|------|------|------|------|-------|------|------|----------------|------|-------------------------|----------|--------------|
| 9/16                      | 0.38 | 0.62 | 0.38 | 0.13 | 0.75 | 0.188 | 0.19 | 0.19 | 10-32 UNF-2B   | 0.37 | 0.375                   | 8180578  | DARC-C6-U10  |
| 3/4; 7/8                  | 0.5  | 0.77 | 0.5  | 0.16 | 0.94 | 0.25  | 0.25 | 0.25 | 1/4-28 UNF-2B  | 0.43 | 0.44                    | 8109940  | DARC-C6-U14  |
| 1 1/16                    | 0.5  | 0.77 | 0.5  | 0.19 | 0.94 | 0.25  | 0.25 | 0.25 | 5/16-24 UNF-2B | 0.43 | 0.5                     | 8109941  | DARC-C6-U516 |
| 1 1/4; 1 1/2              | 0.75 | 1.06 | 0.75 | 0.25 | 1.31 | 0.375 | 0.38 | 0.38 | 7/16-20 UNF-2B | 0.56 | 0.69                    | 8109942  | DARC-C6-U716 |
| 1 3/4; 2;<br>2 1/2        | 0.75 | 1.06 | 0.75 | 0.25 | 1.31 | 0.375 | 0.38 | 0.38 | 1/2-20 UNF-2B  | 0.56 | 0.75                    | 8109943  | DARC-C6-U12  |
| 3                         | 1    | 2.75 | 1    | 0.39 | 2.25 | 0.5   | 0.5  | 0.5  | 5/8-18 UNF-2B  | 1    | 0.938                   | 8180580  | DARC-C6-U58  |

### Sensor bracket SAMH-FB-SH

For proximity switch SDBF-FBS

Material:

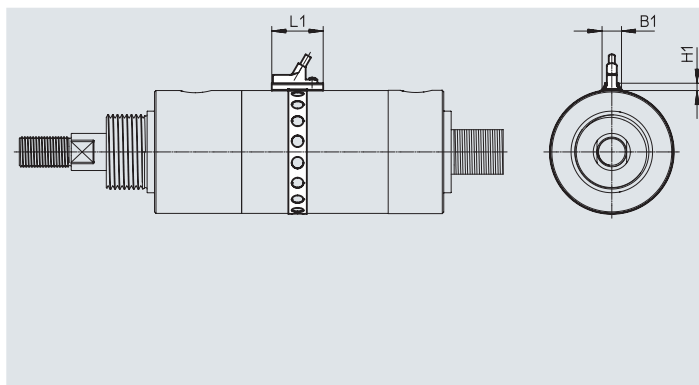
Mounting: High-alloy stainless steel

Screw: Steel (galvanised or nickel-plated)

RoHS-compliant

LABS (PWIS) conformity:

VDMA24364-Zone III



#### Dimensions and ordering data

| For $\varnothing$<br>[in] | B1   | H1   | L1   | Part no. | Type       |
|---------------------------|------|------|------|----------|------------|
| 3/4;<br>1 1/16 ... 2 1/2  | 0.36 | 0.26 | 0.79 | 8109945  | SAMH-FB-SH |

## Accessories

### Sensor bracket SAMH-FB-4-SH

For proximity switch SDBF-FES

Material:

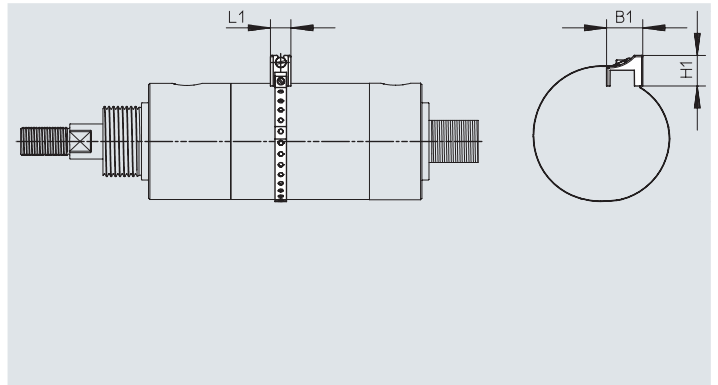
Mounting: High-alloy stainless steel

Screw: Steel (galvanised or nickel-plated)

RoHS-compliant

LABS (PWIS) conformity:

VDMA24364-Zone III



| Dimensions and ordering data |      |      |      |          |              |
|------------------------------|------|------|------|----------|--------------|
| For ø<br>[in]                | B1   | H1   | L1   | Part no. | Type         |
| 9/16 ... 3                   | 0.79 | 0.67 | 0.45 | 8182282  | SAMH-FB-4-SH |

| Ordering data – Proximity switch with dovetail slot, magneto-resistive |                            |                                                  |                  |                       |          | Datasheets → Internet: sdbf |
|------------------------------------------------------------------------|----------------------------|--------------------------------------------------|------------------|-----------------------|----------|-----------------------------|
|                                                                        | For ø<br>[in]              | Type of mounting                                 | Switching output | Electrical connection | Part no. | Type                        |
|                                                                        | 9/16; 3/4;<br>1 1/16 ... 3 | Can be integrated into sensor bracket SAMH-FB-SH | PNP              | Cable, 3-core         | 8106575  | SDBF-FBS-1L-PU-K-9-N-LE     |
|                                                                        |                            |                                                  |                  | Plug M8x1, 3-pin      | 8106576  | SDBF-FBS-1L-PU-K-0.5-N-M8   |
|                                                                        |                            |                                                  | NPN              | Cable, 3-core         | 8106577  | SDBF-FBS-1L-NU-K-9-N-LE     |
|                                                                        |                            |                                                  |                  | Plug M8x1, 3-pin      | 8106578  | SDBF-FBS-1L-NU-K-0.5-N-M8   |

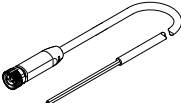
| Ordering data – Proximity switch in block design, magneto-resistive |               |                                                    |                  |                       |          | Datasheets → Internet: sdbf |
|---------------------------------------------------------------------|---------------|----------------------------------------------------|------------------|-----------------------|----------|-----------------------------|
|                                                                     | For ø<br>[in] | Type of mounting                                   | Switching output | Electrical connection | Part no. | Type                        |
|                                                                     | 9/16 ... 3    | Can be integrated into sensor bracket SAMH-FB-4-SH | PNP              | Cable, 3-core         | 8182046  | SDBF-FES-1L-PU-K-9-N-LE     |
|                                                                     |               |                                                    |                  | Plug M8x1, 3-pin      | 8182048  | SDBF-FES-1L-PU-K-N-M8       |
|                                                                     |               |                                                    | NPN              | Cable, 3-core         | 8182047  | SDBF-FES-1L-NU-K-9-N-LE     |
|                                                                     |               |                                                    |                  | Plug M8x1, 3-pin      | 8182049  | SDBF-FES-1L-NU-K-N-M8       |

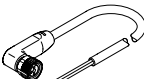
| Ordering data – Mounting kits for proximity switches SMT/SDBT |               |  |  | Datasheets → Internet: smbr |                 |
|---------------------------------------------------------------|---------------|--|--|-----------------------------|-----------------|
| Designation                                                   | For ø<br>[in] |  |  | Part no.                    | Type            |
| <b>Mounting kit SMBR-8</b>                                    |               |  |  |                             |                 |
|                                                               | 9/16 ... 3    |  |  | 538937                      | SMBR-8-8/100-S6 |
|                                                               |               |  |  |                             |                 |

| Ordering data – Proximity switch for T-slot, magneto-resistive |               |                                                   |                  |                       |          | Datasheets → Internet: smt |
|----------------------------------------------------------------|---------------|---------------------------------------------------|------------------|-----------------------|----------|----------------------------|
|                                                                | For ø<br>[in] | Type of mounting                                  | Switching output | Electrical connection | Part no. | Type                       |
|                                                                | 9/16 ... 3    | Can be integrated in mounting kit SMBR-8-8/100-S6 | PNP              | Cable, 3-core         | 574335   | SMT-8M-A-PS-24V-E-2.5-OE   |
|                                                                |               |                                                   |                  | Cable, 3-core         | 574336   | SMT-8M-A-PS-24V-E-5.0-OE   |
|                                                                |               |                                                   |                  | Plug M8x1, 3-pin      | 574334   | SMT-8M-A-PS-24V-E-0.3-M8D  |
|                                                                |               |                                                   | NPN              | Cable, 3-core         | 574338   | SMT-8M-A-NS-24V-E-2.5-OE   |
|                                                                |               |                                                   |                  | Plug M8x1, 3-pin      | 574339   | SMT-8M-A-NS-24V-E-0.3-M8D  |

## Accessories

| Ordering data – Proximity switch for T-slot, magnetic Hall                       |               |                                                   |                                |                       |          | Datasheets → Internet: sdbt |  |
|----------------------------------------------------------------------------------|---------------|---------------------------------------------------|--------------------------------|-----------------------|----------|-----------------------------|--|
|                                                                                  | For ø<br>[in] | Type of mounting                                  | Switching output               | Electrical connection | Part no. | Type                        |  |
| N/O or N/C contact, switchable                                                   |               |                                                   |                                |                       |          |                             |  |
|  | 9/16 ... 3    | Can be integrated in mounting kit SMBR-8-8/100-S6 | PNP,<br>can be switched to NPN | Cable, 3-core         | 8059122  | SDBT-MSX-1L-PU-E-5-N-LE     |  |
|                                                                                  |               |                                                   |                                | Cable, 3-core         | 8059121  | SDBT-MSX-1L-PU-E-2.5-N-LE   |  |
|                                                                                  |               |                                                   |                                | Plug M8x1, 3-pin      | 8059120  | SDBT-MSX-1L-PU-E-0.3-N-M8   |  |
|                                                                                  |               |                                                   | NPN,<br>can be switched to PNP | Cable, 3-core         | 8059125  | SDBT-MSX-1L-NU-E-5-N-LE     |  |
|                                                                                  |               |                                                   |                                | Cable, 3-core         | 8059124  | SDBT-MSX-1L-NU-E-2.5-N-LE   |  |
|                                                                                  |               |                                                   |                                | Plug M8x1, 3-pin      | 8059123  | SDBT-MSX-1L-NU-E-0.3-N-M8   |  |

|                                                                                  |  |                                                |                                                |                                               |              |          |                       |
|----------------------------------------------------------------------------------|--|------------------------------------------------|------------------------------------------------|-----------------------------------------------|--------------|----------|-----------------------|
| Connecting cables NEBA, straight                                                 |  |                                                |                                                |                                               |              |          |                       |
|                                                                                  |  | Electrical connection 1, connection technology | Electrical connection 2, connection technology | Electrical connection 2, number of pins/cores | Cable length | Part no. | Type                  |
|  |  | M8x1 A-coded to EN 61076-2-104                 | Open end                                       | 3                                             | 2.5 m        | 8078223  | NEBA-M8G3-U-2.5-N-LE3 |
|                                                                                  |  |                                                |                                                |                                               | 5 m          | 8078224  | NEBA-M8G3-U-5-N-LE3   |

|                                                                                    |  |                                                |                                                |                                               |              |          |                       |
|------------------------------------------------------------------------------------|--|------------------------------------------------|------------------------------------------------|-----------------------------------------------|--------------|----------|-----------------------|
| Connecting cables NEBA, angled                                                     |  |                                                |                                                |                                               |              |          |                       |
|                                                                                    |  | Electrical connection 1, connection technology | Electrical connection 2, connection technology | Electrical connection 2, number of pins/cores | Cable length | Part no. | Type                  |
|  |  | M8x1 A-coded to EN 61076-2-104                 | Open end                                       | 3                                             | 2.5 m        | 8078230  | NEBA-M8W3-U-2.5-N-LE3 |
|                                                                                    |  |                                                |                                                |                                               | 5 m          | 8078231  | NEBA-M8W3-U-5-N-LE3   |

| Ordering data                                                                      |                |                      |  |  |          |                   |
|------------------------------------------------------------------------------------|----------------|----------------------|--|--|----------|-------------------|
|                                                                                    | For ø<br>[in]  | Description          |  |  | Part no. | Type              |
| One-way flow control valve GRLA                                                    |                |                      |  |  |          |                   |
|  | 9/16 ... 1 1/2 | For regulating speed |  |  | 534658   | GRLA-1/8-QB-1/4-U |
|                                                                                    | 1 3/4 ... 3    |                      |  |  | 534663   | GRLA-1/4-QB-3/8-U |

|                                                                                    |                |                                          |  |  |        |              |
|------------------------------------------------------------------------------------|----------------|------------------------------------------|--|--|--------|--------------|
| Push-in fitting, straight                                                          |                |                                          |  |  |        |              |
|  | 9/16 ... 1 1/2 | For connecting tubing with standard O.D. |  |  | 533273 | QB-1/8-1/4-U |
|                                                                                    | 1 3/4 ... 3    |                                          |  |  | 567773 | QB-1/8-3/8-U |
|                                                                                    |                |                                          |  |  | 533278 | QB-1/4-3/8-U |
|                                                                                    |                |                                          |  |  | 567771 | QB-1/4-1/2-U |

|                                                                                    |                |                                          |  |  |        |               |
|------------------------------------------------------------------------------------|----------------|------------------------------------------|--|--|--------|---------------|
| Push-in fitting, angled                                                            |                |                                          |  |  |        |               |
|  | 9/16 ... 1 1/2 | For connecting tubing with standard O.D. |  |  | 533292 | QBL-1/8-1/4-U |
|                                                                                    | 1 3/4 ... 3    |                                          |  |  | 567777 | QBL-1/8-3/8-U |
|                                                                                    |                |                                          |  |  | 533297 | QBL-1/4-3/8-U |
|                                                                                    |                |                                          |  |  | 567775 | QBL-1/4-1/2-U |