




Standards-based cylinders DSBG, ISO 15552

FESTO











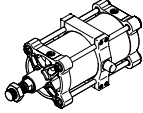
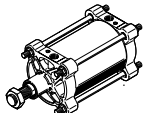
Key features

At a glance

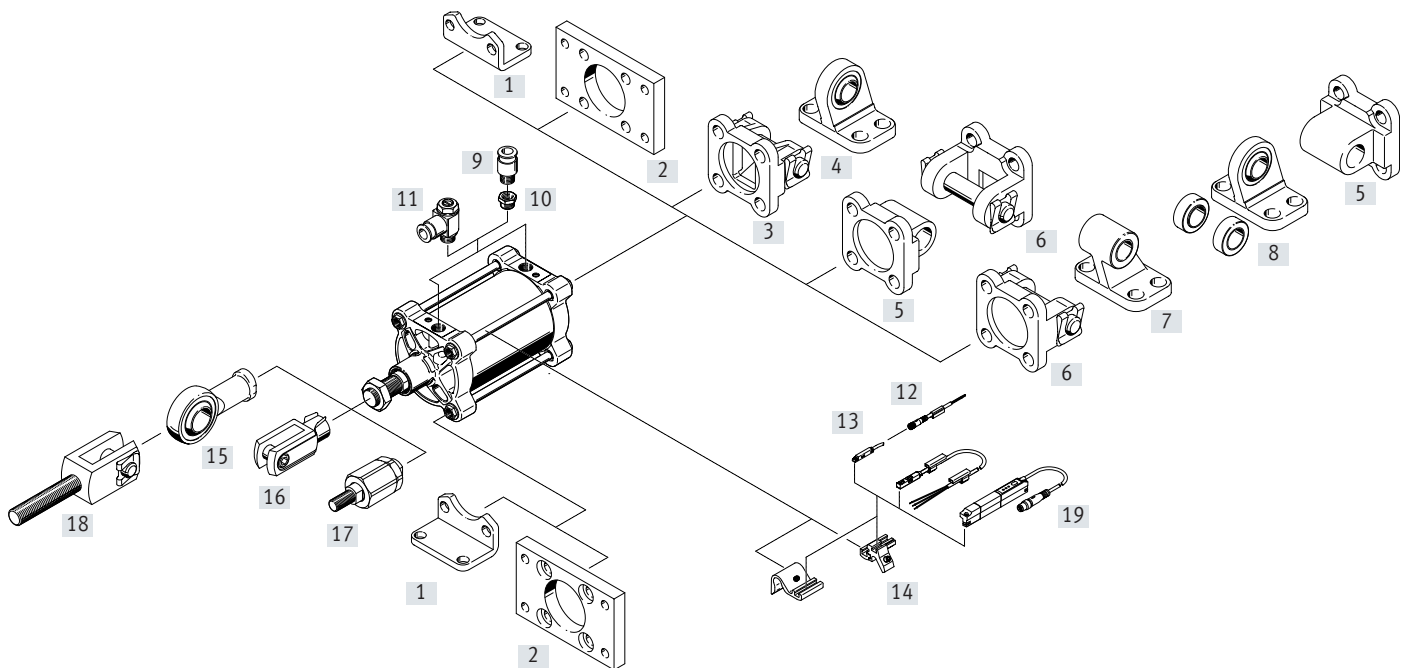
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 - Standards-based cylinders to ISO 15552 (corresponds to the withdrawn standards ISO 6431, DIN ISO 6431, VDMA24562, NFE49003.1 and UNI 10290)
 - Sturdy tie rod design
 - Double-acting
 - For contactless position sensing
 - EX4: for use in potentially explosive areas
 - An extensive range of accessories enables the cylinders to be installed virtually anywhere
 - Choice of two cushioning types:
 - Elastic cushioning: elastic cushioning rings/pads at both ends
 - PPV cushioning: pneumatic cushioning, adjustable at both ends
 - The variants can be configured according to individual needs using a modular product system
 - Excellent flexibility thanks to the wide range of variants

Variants from the modular product system

| Symbol | Key features | Description |
|---|--|---|
|  | T Through piston rod | For working at both ends with the same force in the forward and return stroke, for attaching external stops |
|  | F Female piston rod thread | – |
|  | R3 High corrosion protection | All external cylinder surfaces comply with corrosion resistance class 3 to Festo standard 940 070. The piston rod is made from corrosion and acid-resistant steel |
|  | T1 Heat-resistant seals | Temperature range 0 ... +120°C |
|  | T4 Heat-resistant seals | Temperature range 0 ... +150°C |
|  | ...E Extended piston rod | 1 ... 500 mm |
|  | ...L Extended piston rod thread | 1 ... 100 mm |
| | ...S Shortened piston rod thread | 1 ... 86 mm |
| | M... Piston rod thread | Piston rod thread version: M16/M16x1.5/M20/M20x1.5/M24/M27/M27x2/M30x2/M36/ M36x2/M42/M42x2/M48 |
|  | A6 Scraper variant | Metal scraper: The cylinder is fitted with a hard-chrome plated piston rod and a metal scraper, which scrapes off hard particles (e.g. welding spatter) sticking to the piston rod. For use in welding systems, for example |
|  | V Central swivel mounting | <ul style="list-style-type: none"> • For piston diameter 160, 200 • Swivel mounting, clamped centrally between the cylinder end caps • Position can be moved at any time |
| | ...Y Trunnion flange mounting position | <ul style="list-style-type: none"> • For piston diameter 250, 320 • Swivel mounting, position freely selectable, positive-locking screw connection • Position cannot be changed at a later date |
|  | B Integrated spacer bolts | <ul style="list-style-type: none"> • B1: at both ends • B2: on the bearing cap • B3: on the end cap |
| | Thread length of spacer bolts: ...LB2 on the bearing cap ...LB3 on the end cap | <ul style="list-style-type: none"> • Variable thread length: 32 ... 140 mm • Optionally on the bearing or end cap |

Peripherals overview



Mounting components and accessories

| | For diameter | Description | → Page/ Internet |
|--------------------------------------|--------------|--|---------------------|
| [1] Foot mounting HNG | 160 ... 320 | For bearing and end caps, corresponds to MS1 to ISO 15552 | 17 |
| [2] Flange mounting FNG | 160 ... 320 | For bearing or end caps, corresponds to MF1/MF2 to ISO 15552 | 17 |
| [3] Swivel flange SNG | 160, 200 | For end caps | 18 |
| [4] Clevis foot LSNG | 160, 200 | With spherical bearing | 20 |
| [5] Swivel flange SNGL | 160, 200 | For end cap, corresponds to MP2 to ISO 15552 | 19 |
| [6] Swivel flange SNGB | 160 ... 320 | For end cap, corresponds to MP2 to ISO 15552 | 18 |
| [7] Clevis foot LN/LNG | 160 ... 320 | For swivel flange SNGB | 18 |
| [8] Clevis foot LSN | 160 ... 320 | With spherical bearing | 20 |
| [9] Push-in fitting QS | 160, 200 | For connecting tubing with standard outside diameters | 20 |
| [10] Reducing nipple NPFC | 160, 200 | For connecting QS fittings with thread G1/2 to cylinders with thread G3/4 | 20 |
| Reducing nipple D | 250, 320 | For connecting QS fittings with thread G1/2 to cylinders with thread G1 | |
| [11] One-way flow control valve GRIA | 160, 200 | For speed regulation | grla |
| [12] Connecting cable NEBU | 160 ... 320 | – | 21 |
| [13] Proximity switch SME/SMT-8 | 160 ... 320 | For sensing the piston position | 21 |
| [14] Sensor bracket DASP | 160 ... 320 | For proximity switch SME/SMT-8 | 22 |
| [15] Rod eye SGS | 160 ... 320 | With spherical bearing | 20 |
| [16] Rod clevis SG | 160 ... 320 | Permits a swivelling movement of the cylinder in one plane | 20 |
| [17] Self-aligning rod coupler FK | 160, 200 | For compensating radial and angular deviations | 20 |
| [18] Rod clevis SGA | 160, 200 | Suitable for spherical mounting of cylinders in conjunction with rod eye SGS | 20 |
| [19] Position transmitter SDAT | 160, 200 | <ul style="list-style-type: none"> Continuously senses the position of the piston Has an analogue output | 22 |
| – Trunnion support LNZG | 160 ... 320 | For mounting the cylinder in combination with central swivel mounting or trunnion flange mounting position | 19 |

Type codes

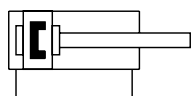
| | | |
|-------------|---|--|
| 001 | Series | |
| DSBG | Standards-based cylinder, double-acting, based on ISO 15552 | |
| 002 | Central swivel mounting | |
| | None | |
| V | Central, clamped | |
| 003 | Piston diameter | |
| 160 | 160 | |
| 200 | 200 | |
| 250 | 250 | |
| 320 | 320 | |
| 004 | Stroke | |
| ... | 25 ... 500 | |
| 005 | Piston rod type | |
| | At one end | |
| T | Through piston rod | |
| 006 | Piston rod thread type | |
| | Male thread | |
| F | Female thread | |
| 007 | Cushioning | |
| P | Elastic cushioning rings/plates on both sides | |
| PPV | Pneumatic cushioning, adjustable at both ends | |
| 008 | Position sensing | |
| | None | |
| A | For proximity sensor | |
| 009 | Standard | |
| | Not according to standard | |
| N3 | Conforms to ISO 15552 | |
| 010 | Corrosion protection | |
| | Standard | |
| R3 | High corrosion protection | |
| 011 | Temperature range | |
| | Standard | |
| T1 | Heat-resistant seals max. 120°C | |
| T4 | 0 ... +150°C | |
| 012 | Scraper variant | |
| | None | |
| A6 | Metal scraper | |

| | | |
|---------------|--|--|
| 013 | EU certification | |
| | None | |
| EX4 | II 2GD | |
| 014 | Trunnion flange mounting position, positive locking | |
| | None | |
| ...Y | With | |
| 015 | Piston rod extension | |
| | None | |
| ...E | 1 ... 500 mm | |
| 016 | Piston rod thread extension | |
| ...L | 1 ... 70 mm | |
| 017 | Piston rod thread shortening | |
| | None | |
| ...S | 0 ... 86 mm | |
| 018 | Piston rod thread | |
| | Standard | |
| M16 | M16 | |
| M16P | M16x1.5 | |
| M20 | M20 | |
| M20P | M20x1.5 | |
| M24 | M24 | |
| M27 | M27 | |
| M36P | M36x2 | |
| M42P | M42x2 | |
| M48 | M48 | |
| M42 | M42 | |
| M27P | M27x2 | |
| M30P | M30x2 | |
| M36 | M36 | |
| 019 | Integrated spacer bolts | |
| | None | |
| B1 | Both sides | |
| B2 | In the bearing cover | |
| B3 | In the end cap | |
| 020 | Thread length of spacer bolts on bearing cap | |
| | Without spacer bolt | |
| ...LB2 | 20 ... 140 mm | |
| 021 | Thread length of spacer bolts on end cap | |
| | Without spacer bolt | |
| ...LB3 | 20 ... 140 mm | |

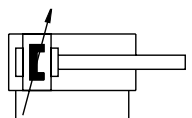
Data sheet

Function

Elastic cushioning



PPV cushioning

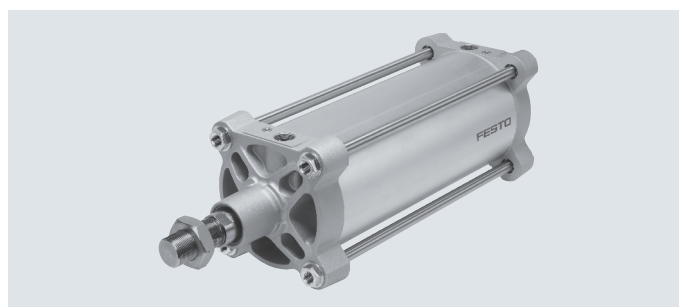


∅ - Diameter
160 ... 320 mm

- | - Stroke length
1 ... 2700 mm



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| General technical data | | | |
|------------------------|---|------------|------------|
| Piston diameter | 160 | 200 | 320 |
| Design | Piston/piston rod/cylinder barrel | | |
| Mode of operation | Double-acting | | |
| Pneumatic connection | G3/4 | G3/4 | G1 |
| Stroke ¹⁾ | | | |
| DSBG-... | [mm] | 1 ... 2700 | 1 ... 2250 |
| DSBG-...-...E | [mm] | 1 ... 2000 | |
| DSBG-...-...L | [mm] | 1 ... 2000 | |
| Cushioning | | | |
| DSBG-...-P | Elastic cushioning rings/pads at both ends | | |
| DSBG-...-PPV | Pneumatic cushioning, adjustable at both ends | | |
| Cushioning length | [mm] | 48 | 65 |
| Position sensing | Via proximity switch | | |
| Type of mounting | With female thread/accessories | | |
| Mounting position | Any | | |

1) In combination with the position sensing option, the minimum stroke is 10 mm

| Operating and environmental conditions | | | |
|--|--|-----------------|-----|
| Piston diameter | 160 | 200 | 320 |
| Operating medium | Compressed air to ISO 8573-1:2010 [7:4:4] | | |
| Note on operating/pilot medium | Lubricated operation possible (in which case lubricated operation will always be required) | | |
| Operating pressure | [bar] | 0.6 ... 10 | |
| Ambient temperature ¹⁾ | | | |
| DSBG-... | [°C] | -20 ... +80 | |
| DSBG-...-T1 | [°C] | 0 ... +120 | |
| DSBG-...-T4 | [°C] | 0 ... +150 | |
| DSBG-...-EX4 | [°C] | -20 ... +60 | |
| Corrosion resistance CRC | | | |
| DSBG-... | | 2 ²⁾ | |
| DSBG-...-R3 | | 3 ³⁾ | |

1) Note operating range of proximity switches

2) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

3) Corrosion resistance class CRC 3 to Festo standard FN 940070

High corrosion stress. Outdoor exposure under moderate corrosive conditions. External visible parts with primarily functional surface requirements which are in direct contact with a normal industrial environment.

Data sheet

| ATEX ¹⁾ | |
|---|---|
| ATEX category for gas | II 2G |
| Type of ignition protection for gas | Ex h IIC T4 Gb |
| ATEX category for dust | II 2D |
| Type of ignition protection for dust | Ex h IIIC T120°C Db |
| Explosion-proof ambient temperature | -20°C ≤ Ta ≤ +60°C |
| CE marking (see declaration of conformity) | To EU Explosion Protection Directive (ATEX) |
| UKCA marking (see declaration of conformity) | To UK EX instructions |
| Explosion protection certification outside the EU | EPL Gb (GB) |
| | EPL Db (GB) |

1) Note the ATEX certification of the accessories.

| Forces [N] and impact energy [J] | | | | |
|---|-------|-------|-------|-------|
| Piston diameter | 160 | 200 | 250 | 320 |
| Theoretical force at 6 bar, advancing | 12064 | 18850 | 29452 | 48255 |
| Theoretical force at 6 bar, retracting | 11310 | 18096 | 28274 | 46385 |
| Max. impact energy in the end positions | | | | |
| DSBG-... | 3.3 | 4.8 | 7.2 | 12.6 |
| DSBG-...-T1/T4 | 2.3 | 4 | 4.2 | 6 |

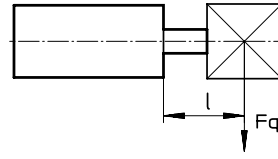
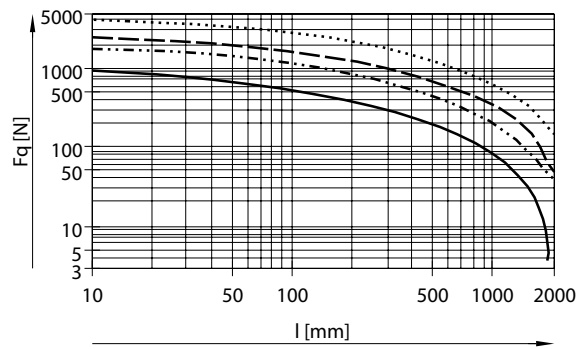
Permissible impact velocity:
$$v = \sqrt{\frac{2 \cdot E}{m_1 + m_2}}$$

Maximum permissible mass:
$$m_2 = \frac{2 \cdot E}{v^2} - m_1$$

V perm. impact velocity
 E max. impact energy
 m1 Moving mass (drive)
 m2 Moving payload

| Weights [g] | | | | |
|------------------------------------|-------|-------|-------|-------|
| Piston diameter | 160 | 200 | 250 | 320 |
| DSBG-... | | | | |
| Product weight with 0 mm stroke | 11751 | 15493 | 29313 | 50231 |
| Additional weight per 10 mm stroke | 208 | 246 | 384 | 623 |
| Moving mass with 0 mm stroke | 4292 | 5348 | 9978 | 16912 |
| Moving mass per 10 mm stroke | 97 | 97 | 157 | 249 |
| DSBG-...-T | | | | |
| Product weight with 0 mm stroke | 13487 | 17356 | 31979 | 54775 |
| Additional weight per 10 mm stroke | 304 | 343 | 541 | 872 |
| Moving mass with 0 mm stroke | 6028 | 7210 | 12643 | 21455 |
| Moving mass per 10 mm stroke | 194 | 194 | 314 | 499 |

Data sheet

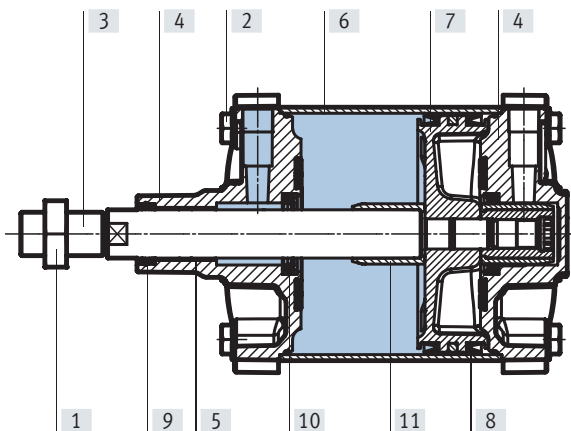
Max. transverse force F_q as a function of stroke length l 

- Ø 160/200
- ⋯ Ø 250
- - - Ø 320

Data sheet

Materials

Sectional view



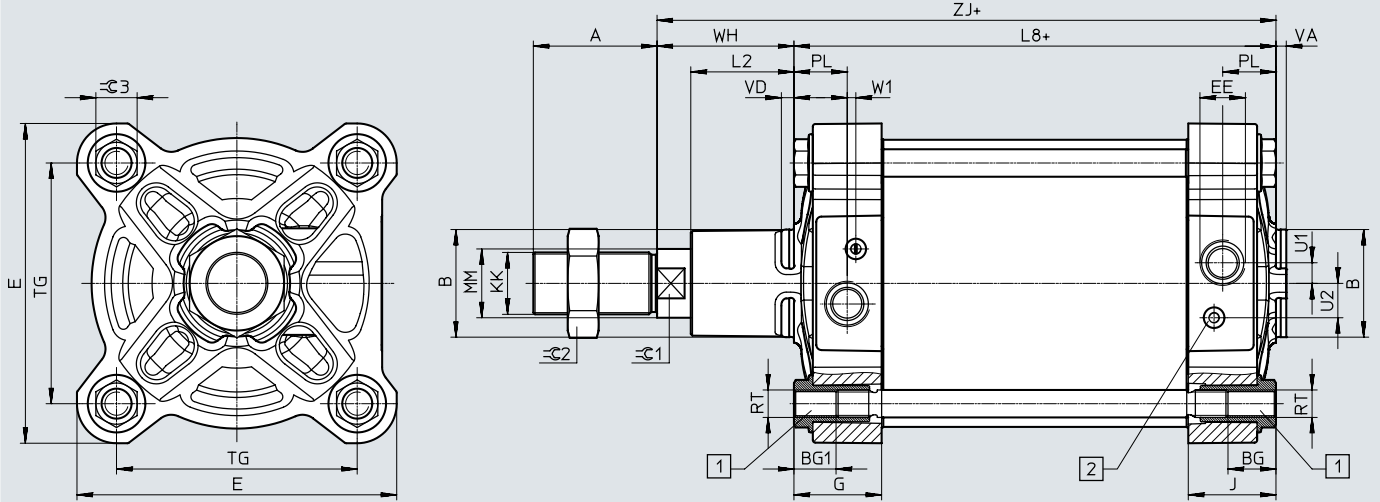
Normzylinder

| | | |
|------|--|--|
| [1] | Nut | |
| | DSBG-... | Galvanised steel |
| | DSBG-...-R3 | High-alloy stainless steel |
| [2] | Collar nut | Galvanised steel |
| [3] | Piston rod | |
| | DSBG-... | Steel, high-alloy |
| | DSBG-...-R3 | High-alloy stainless steel |
| | DSBG-...-A6 | Hard-chrome-plated tempered steel |
| [4] | Cover | Coated die-cast aluminium |
| [5] | Bearing | |
| | DSBG-... | Metal polymer compound |
| | DSBG-...-EX4 | Bronze |
| [6] | Cylinder barrel | Anodised wrought aluminium alloy |
| [7] | Piston | Coated die-cast aluminium |
| [8] | Piston seal | |
| | DSBG-... | NBR |
| | DSBG-...-T1/-T4 | FPM |
| [9] | Piston rod wiper seal | |
| | DSBG-... | NBR |
| | DSBG-...-T1/-T4 | FPM |
| [10] | Buffer seal | |
| | DSBG-... | POM |
| | DSBG-...-T1/-T4 | Wrought aluminium alloy |
| [11] | Cushion piston | |
| | DSBG-... | POM |
| | DSBG-...-T1/-T4 | Wrought aluminium alloy |
| - | Tie rods | |
| | DSBG-... | Steel, high-alloy |
| | DSBG-...-R3 | High-alloy stainless steel |
| | Rod wiper seal | |
| | DSBG-...-A6 | CuZn |
| | Spacer bolt | |
| | DSBG-...-B1/-B2/-B3/-LB2/-LB3 | High-alloy steel |
| | DSBG-...-R3-B1/-R3-B2/-R3-B3/-R3-LB2/-R3-LB3 | High-alloy stainless steel |
| | Swivel mounting | |
| | DSBG-160/200-...-V/-...V | Painted spheroidal graphite cast iron |
| | DSBG-250/320-...-Y/-...Y | Galvanised steel |
| | Collar nut | Galvanised steel |
| | Note on materials | |
| | DSBG-... | RoHS-compliant |
| | DSBG-...-T4 | Contains paint-wetting impairment substances |

Data sheet

Dimensions

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- + = plus stroke length
- [1] Special outer hex nut with female thread for mounting components
- [2] Adjusting screw for adjustable end-position cushioning (PPV)

| \varnothing | A | B \varnothing d11 | BG | BG1 | E | EE | G | J |
|---------------|------|---------------------------|------|-----------|-----------|------|------|------|
| [mm] | -0.5 | | min. | ± 0.5 | ± 0.9 | | | |
| 160 | 72 | 65 | 24 | 25 | 186 | G3/4 | 50.7 | 50.7 |
| 200 | 72 | 75 | 24 | 25 | 230 | G3/4 | 46.9 | 46.7 |
| 250 | 84 | 90 | 25 | 26 | 284 | G1 | 51.2 | 51.2 |
| 320 | 96 | 110 | 28 | 29 | 347 | G1 | 58.2 | 58.2 |

| \varnothing | L2 | L8 | MM | PL | RT | TG | U1 | U2 |
|---------------|----|---------------|----|------|-----|-----------|----|----|
| [mm] | | | | | | ± 1.1 | | |
| 160 | 60 | 180 ± 1 | 40 | 31 | M16 | 140 | 12 | 20 |
| 200 | 70 | 180 ± 1.2 | 40 | 30 | M16 | 175 | 12 | 20 |
| 250 | 80 | 200 ± 1.6 | 50 | 32 | M20 | 220 | 25 | 25 |
| 320 | 90 | 220 ± 2.2 | 63 | 37.5 | M24 | 270 | 25 | 25 |

| \varnothing | VA | VD | W1 | WH | ZJ | $\varnothing 1$ | $\varnothing 2$ | $\varnothing 3$ |
|---------------|----|------|-----|---------------|---------|-----------------|-----------------|-------------------|
| [mm] | -1 | | | | ± 1 | | | |
| 160 | 6 | 7 | 5 | 80 ± 1.3 | 260 | 36 | 55 | 24 _{h13} |
| 200 | 6 | 6.5 | 5 | 95 ± 1.4 | 275 | 36 | 55 | 24 _{h13} |
| 250 | 10 | 13.7 | 3 | 105 ± 1.5 | 305 | 46 | 65 | 41 _{h14} |
| 320 | 10 | 10.7 | 1.5 | 120 ± 1.5 | 340 | 55 | 75 | 50 _{h14} |

| \varnothing | KK | |
|---------------|---------|---|
| | DSBG... | -M... ¹⁾ |
| [mm] | | |
| 160 | M36x2 | M16/M16x1.5/M20/M20x1.5/M24/M27/M27x2/M30x2/M36 |
| 200 | M36x2 | M20/M20x1.5/M24/M27/M27x2/M30x2/M36 |
| 250 | M42x2 | M24/M27/M27x2/M30x2/M36x2/M42 |
| 320 | M48x2 | M27/M27x2/M30x2/M36x2/M42x2/M48 |

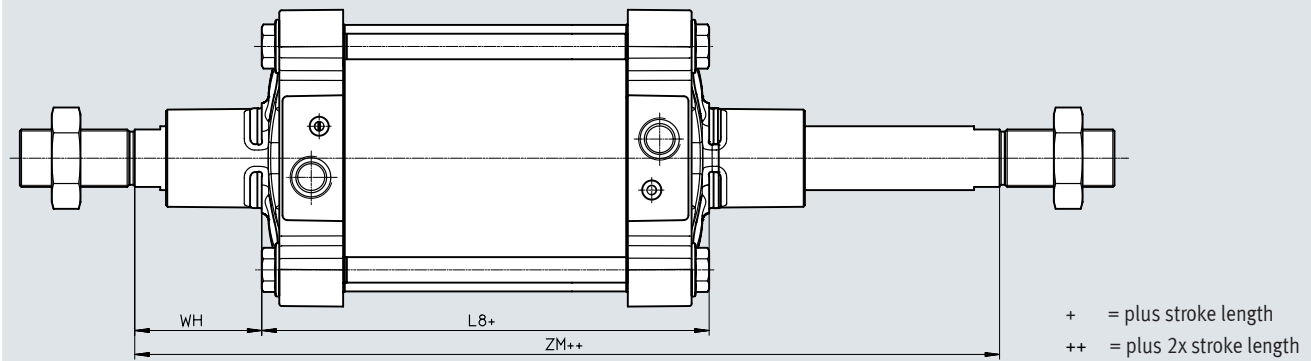
1) Threads with smaller nominal diameter than in the basic version can generally not withstand such high loads. If necessary, the screw connection must be engineered.

Data sheet

Dimensions – Variants

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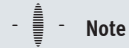
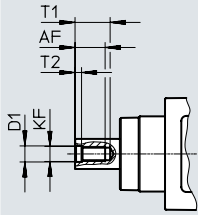
T – Through piston rod



| ∅ | L8 | WH | ZM |
|------|---------|---------|---------|
| [mm] | | | |
| 160 | 180±1.1 | 80±1.3 | 342±1 |
| 200 | 180±1 | 95±1.4 | 372±1.2 |
| 250 | 200±1 | 105±1.5 | 410±1.6 |
| 320 | 220±2.2 | 120±1.5 | 462±1 |

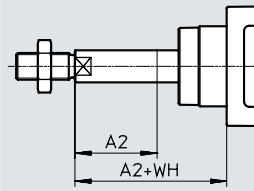
Data sheet

F – Female thread



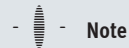
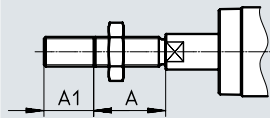
Note
Female thread at both ends in combination with the variant T.

...E – Extended piston rod



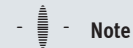
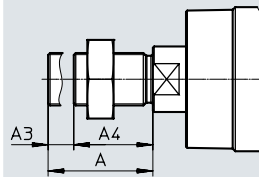
Note
Piston rod thread is extended at one end in combination with the variant T.

...L – Extended piston rod thread



Note
Piston rod thread is extended at both ends in combination with variant T.

...S – Shortened piston rod thread



Note
Piston rod is shortened at both ends in combination with variant T.

Effective thread length: $A4 = A - A3$

| ∅ | A | A1 | | A2 | | A3 | |
|-----|----|------|------|------|------|------|------|
| | | min. | max. | min. | max. | min. | max. |
| 160 | 72 | 1 | 70 | 1 | 500 | 1 | 62 |
| 200 | 72 | 1 | 70 | 1 | 500 | 1 | 62 |
| 250 | 84 | 1 | 100 | 1 | 500 | 1 | 74 |
| 320 | 96 | 1 | 100 | 1 | 500 | 1 | 86 |

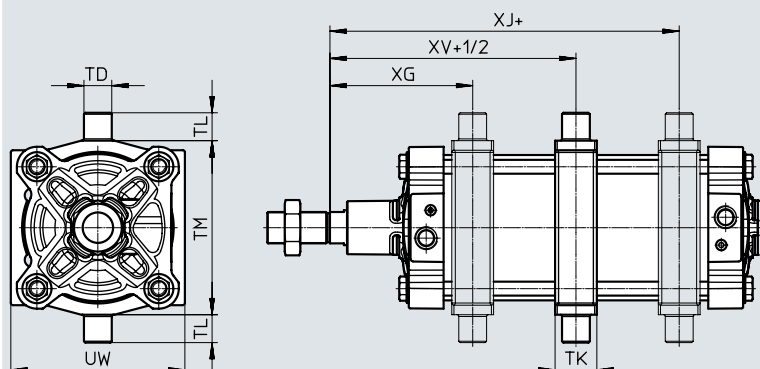
| ∅ | AF | D1 | KF | T1 | T2 | WH |
|------|----|----|-----|----|----|---------|
| [mm] | | H9 | | | | |
| 160 | 36 | 25 | M24 | 40 | 10 | 80±1.3 |
| 200 | 36 | 25 | M24 | 40 | 10 | 95±1.4 |
| 250 | 50 | 31 | M30 | 60 | 10 | 105±1.5 |
| 320 | 55 | 37 | M36 | 65 | 13 | 120±1.5 |

Data sheet

Dimensions – Variants

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V – Central swivel mounting



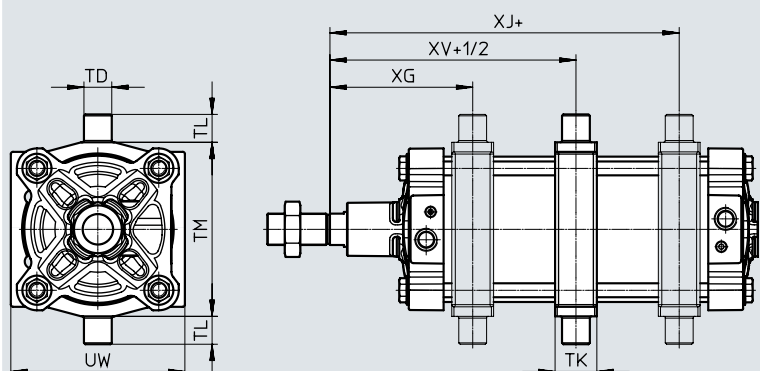
- **Note**

The swivel mounting is mounted centrally on delivery but can be moved at any time.

+ = plus stroke length
+1/2 = plus half stroke length

| ∅ | TD | TK | TL | TM | UW | XG | XJ | XV |
|------|---------|----|-----|-----|-----|-------|-------|-----|
| [mm] | ∅ e8 | | h14 | h14 | | ±0.5 | ±0.5 | |
| 160 | 32 | 48 | 32 | 200 | 200 | 157.5 | 182.5 | 170 |
| 200 | 32 | 48 | 32 | 250 | 240 | 169 | 200.5 | 185 |

...Y – Trunnion flange mounting position



- **Note**

The dimensions for the trunnion flange mounting position (...Y) refer to the basic design without extended piston rod thread.

The swivel mounting has a positive-locking screw connection.

This means that the position cannot be changed at a later date.

+ = plus stroke length
+1/2 = plus half stroke length

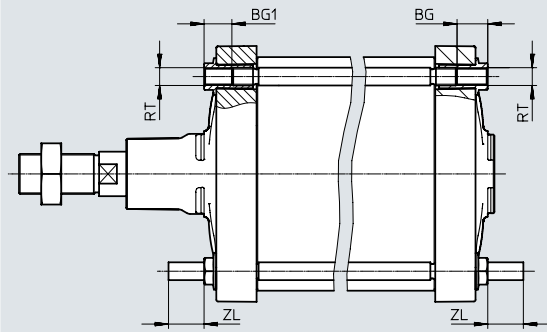
| ∅ | TD | TK | TL | TM | UW | XG | XJ | XV |
|------|---------|----|-----|-----|-----|------|------|------|
| [mm] | ∅ e8 | | h14 | h14 | | ±2.4 | ±2.4 | ±2.4 |
| 250 | 40 | 60 | 40 | 320 | 319 | 198 | 209 | 205 |
| 320 | 50 | 70 | 50 | 400 | 385 | 226 | 233 | 230 |

Data sheet

Dimensions – Variants

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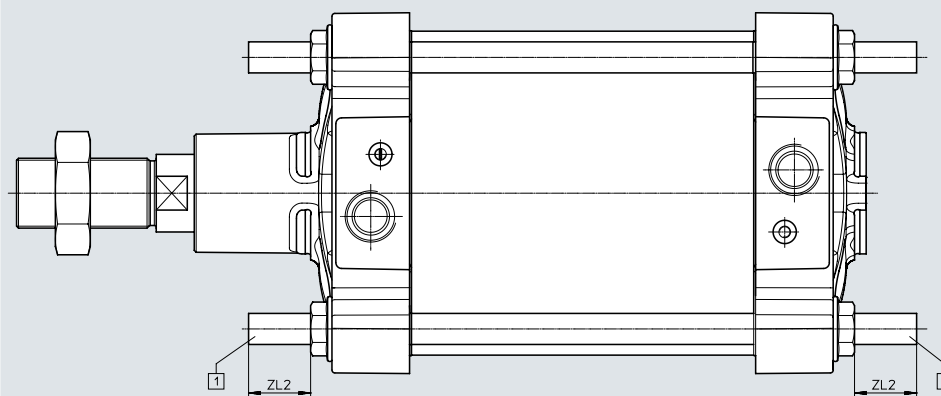
B1/B2/B3 – Integrated spacer bolt



| ∅ | BG | BG1 | RT | ZL | ZL1 ¹⁾ |
|------|------|------|-----|------|-------------------|
| [mm] | min. | ±0.5 | | ±0.5 | |
| 160 | 24 | 25 | M16 | 32 | 32 |
| 200 | 24 | 25 | M16 | 32 | 32 |
| 250 | 25 | 26 | M20 | 40 | 40 |
| 320 | 28 | 29 | M24 | 50 | 50 |

1) Tolerances depending on variant:
 B1: ZL1 = +1/-2; B3: ZL1 = ±0.5

...LB2/-LB3 – Thread length of spacer bolts




- [1] = DSBG-...-LB2 (on the bearing cap)
- [2] = DSBG-...-LB3 (on the end cap)

| ∅ | ZL2 | |
|------|------|------|
| | min. | max. |
| [mm] | | |
| 160 | 32 | 140 |
| 200 | 32 | 140 |
| 250 | 40 | 140 |
| 320 | 50 | 140 |

Data sheet

| Ordering data | | | | | |
|-------------------------|--------------------------|--|----------------------|---|-------------------|
| Piston diameter [mm] | Stroke [mm] | With PPV cushioning With position sensing | | With elastic cushioning Without position sensing | |
| | | Part no. | Type | Part no. | Type |
| 160 | 25 | 2029462 | DSBG-160-25-PPVA-N3 | 2536747 | DSBG-160-25-P-N3 |
| | 40 | 2029463 | DSBG-160-40-PPVA-N3 | 2536748 | DSBG-160-40-P-N3 |
| | 50 | 2029464 | DSBG-160-50-PPVA-N3 | 2536749 | DSBG-160-50-P-N3 |
| | 80 | 2029465 | DSBG-160-80-PPVA-N3 | 2536750 | DSBG-160-80-P-N3 |
| | 100 | 2029466 | DSBG-160-100-PPVA-N3 | 2536751 | DSBG-160-100-P-N3 |
| | 125 | 2029467 | DSBG-160-125-PPVA-N3 | 2536752 | DSBG-160-125-P-N3 |
| | 160 | 2029468 | DSBG-160-160-PPVA-N3 | 2536753 | DSBG-160-160-P-N3 |
| | 200 | 2029469 | DSBG-160-200-PPVA-N3 | 2536754 | DSBG-160-200-P-N3 |
| | 250 | 2029470 | DSBG-160-250-PPVA-N3 | 2536755 | DSBG-160-250-P-N3 |
| | 320 | 2029471 | DSBG-160-320-PPVA-N3 | 2536756 | DSBG-160-320-P-N3 |
| | 400 | 2029472 | DSBG-160-400-PPVA-N3 | 2536758 | DSBG-160-400-P-N3 |
| | 500 | 2029473 | DSBG-160-500-PPVA-N3 | 2536759 | DSBG-160-500-P-N3 |
| | 1 ... 2700 ¹⁾ | 2035926 | DSBG-160-...-PPVA-N3 | 2537196 | DSBG-160-...-P-N3 |
| 200 | 25 | 2390139 | DSBG-200-25-PPVA-N3 | 2537448 | DSBG-200-25-P-N3 |
| | 40 | 2390140 | DSBG-200-40-PPVA-N3 | 2537449 | DSBG-200-40-P-N3 |
| | 50 | 2390141 | DSBG-200-50-PPVA-N3 | 2537450 | DSBG-200-50-P-N3 |
| | 80 | 2390142 | DSBG-200-80-PPVA-N3 | 2537451 | DSBG-200-80-P-N3 |
| | 100 | 2390143 | DSBG-200-100-PPVA-N3 | 2537452 | DSBG-200-100-P-N3 |
| | 125 | 2390144 | DSBG-200-125-PPVA-N3 | 2537454 | DSBG-200-125-P-N3 |
| | 160 | 2390145 | DSBG-200-160-PPVA-N3 | 2537455 | DSBG-200-160-P-N3 |
| | 200 | 2390146 | DSBG-200-200-PPVA-N3 | 2537456 | DSBG-200-200-P-N3 |
| | 250 | 2390147 | DSBG-200-250-PPVA-N3 | 2537457 | DSBG-200-250-P-N3 |
| | 320 | 2390148 | DSBG-200-320-PPVA-N3 | 2537458 | DSBG-200-320-P-N3 |
| | 400 | 2390149 | DSBG-200-400-PPVA-N3 | 2537459 | DSBG-200-400-P-N3 |
| | 500 | 2390150 | DSBG-200-500-PPVA-N3 | 2537460 | DSBG-200-500-P-N3 |
| | 1 ... 2700 ¹⁾ | 2389803 | DSBG-200-...-PPVA-N3 | 2537445 | DSBG-200-...-P-N3 |
| 250 | 1 ... 2250 ¹⁾ | 2865078 | DSBG-250-...-PPVA-N3 | 2865145 | DSBG-250-...-P-N3 |
| 320 | 1 ... 2250 ¹⁾ | 3150987 | DSBG-320-...-PPVA-N3 | 3178601 | DSBG-320-...-P-N3 |

1) In combination with the position sensing option, the minimum stroke is 10 mm.

 **Note**

Other variants in the modular product system → page 15

Ordering data – Modular product system


| Ordering table | | | | | | | |
|--|---|-------------------------------------|----------------|----------------|--------------|-------------|--------------|
| Size | 160 | 200 | 250 | 320 | Conditions | Code | Enter code |
| Module no. | 2036032 | 2344936 | 2732003 | 2776472 | | | |
| Function | Standards-based cylinder, double-acting, based on ISO 15552 | | | | | DSBG | DSBG |
| Central swivel mounting | None | | | | | | |
| | Centrally clamped | | – | | | -V | |
| Piston diameter [mm] | 160 | 200 | 250 | 320 | | -... | |
| Stroke [mm] | 1 ... 2700 | | 1 ... 2250 | | [1] | -... | |
| Piston rod type | At one end | | | | | | |
| | Through piston rod | | | | | -T | |
| Piston rod thread type | Male thread | | | | | | |
| | Female thread | | | | [2] | -F | |
| Cushioning | Elastic cushioning rings/pads at both ends | | | | | -P | |
| | Pneumatic cushioning, adjustable at both ends | | | | | -PPV | |
| Position sensing | None | | | | | | |
| | Via proximity switch | | | | | A | |
| Standard | Corresponds to ISO 15552 | | | | | -N3 | |
| Corrosion protection | Standard | | | | | | |
| | High corrosion protection | | | | [3] | R3 | |
| Temperature range | Standard | | | | | | |
| | [°C] | Heat-resistant seals up to max. 120 | | | | T1 | |
| | [°C] | 0 ... +150 | | – | [4] | T4 | |
| Scraper variant | None | | | | | | |
| | Metal scraper | | – | | | A6 | |
| EU certification | None | | | | | | |
| | II 2GD | | | | [45] | EX4 | |
| Trunnion flange mounting position [mm] | None | | | | | | |
| | – | | 198 ... 2459 | | 226 ... 2483 | [6] | -...Y |

- [1] ... In combination with the position sensing option A, the minimum stroke is 10 mm
 [2] F Not with N3, ...L, M...
 [3] R3 Not with V, ...Y
 [4] T4 Not with A6
 [5] EX4 Not with V, P, T1, T4, B1, B2, B3, ...LB2, ...LB3
 [6] ...Y Not with ...LB2, ...LB3


Ordering data – Modular product system

| Ordering table | | 160 | 200 | 250 | 320 | Conditions | Code | Enter code | |
|-------------------------------|------|--------------------|------------|------------|------------|------------|---------|------------|--|
| Size | | | | | | | | | |
| Extended piston rod | [mm] | None | | | | | | | |
| | | 1 ... 500 | | | | [7] | -...E | | |
| Extended piston rod thread | [mm] | None | | | | | | | |
| | | 1 ... 70 | | 1 ... 100 | | [7] | -...L | | |
| Shortened piston rod thread | [mm] | None | | | | | | | |
| | | 1 ... 62 | | 1 ... 74 | 1 ... 86 | | -...S | | |
| Piston rod thread | | Standard (→ 9) | | | | | | | |
| | | M16 | | - | | [9] | -M16 | | |
| | | M16x1.5 | | - | | [9] | -M16P | | |
| | | M20 | | - | | [9] | -M20 | | |
| | | M20x1.5 | | - | | [9] | -M20P | | |
| | | M24 | | - | | [9] | -M24 | | |
| | | M27 | | - | | [9] | -M27 | | |
| | | M27x2 | | - | | [9] | -M27P | | |
| | | M30x2 | | - | | [9] | -M30P | | |
| | | M36 | | - | | [9] | -M36 | | |
| | | M36x2 | | - | | [9] | -M36P | | |
| | | - | | M42 | - | | [9] | -M42 | |
| | | - | | M42x2 | | - | [9] | -M42P | |
| - | | - | | M48 | [9] | -M48 | | | |
| Integrated spacer bolts | | None | | | | | | | |
| | | At both ends | | | | [8] [9] | -B1 | | |
| | | On the bearing cap | | | | [8] [9] | -B2 | | |
| | | On the end cap | | | | [8] [9] | -B3 | | |
| Thread length of spacer bolts | [mm] | None | | | | | | | |
| | | On the bearing cap | | | | [9] | -...LB2 | | |
| | | 32 ... 140 | | 40 ... 140 | 50 ... 140 | | | | |
| | | On the end cap | | | | [9] | -...LB3 | | |
| 32 ... 140 | | 40 ... 140 | 50 ... 140 | | | | | | |

- [7] ...E, ...L Only up to stroke 2000 mm.
Not with N3
- [8] B1, B2, B3 Not with ...LB2, ...LB3
- [9] M..., B..., LB... Not with N3

 - **Note**

If a thread smaller than the standard thread is selected for feature M... (piston rod thread), this may reduce the load capacity.

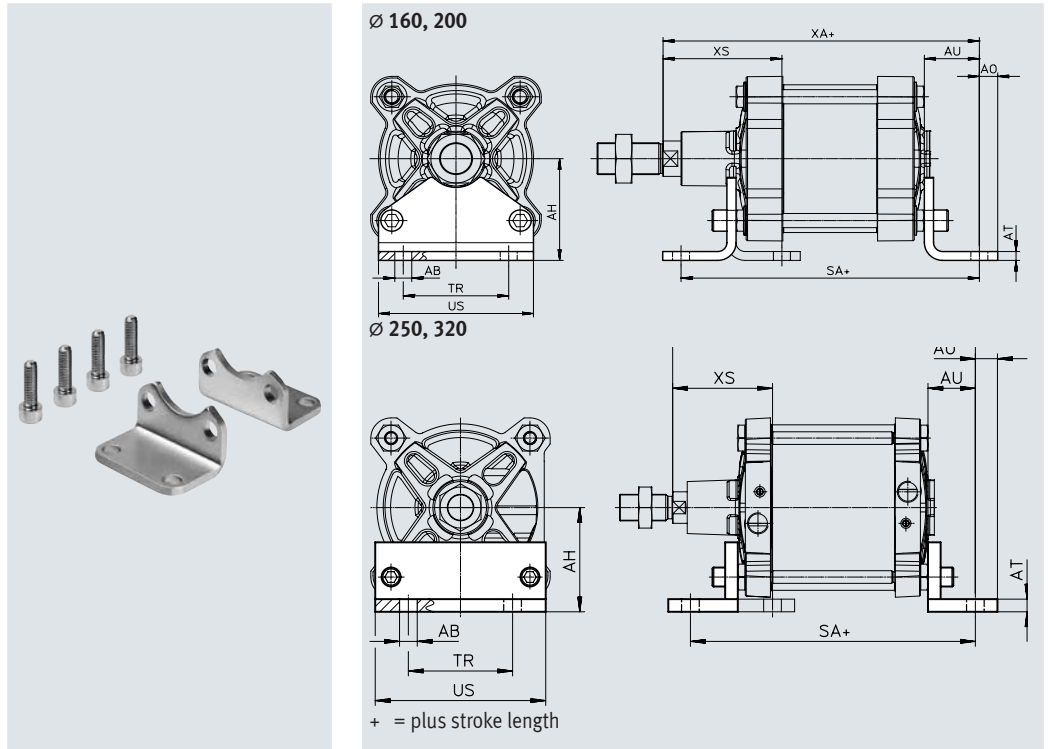
 - **Note**

When characteristic M... is selected, the piston rod nut is not included.

Accessories

Foot mounting HNG

Material:
Galvanised steel
Free of copper and PTFE

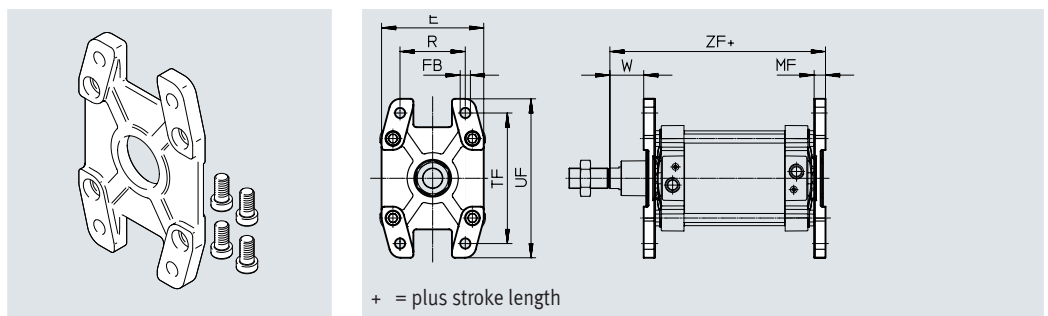


| Dimensions and ordering data | | | | | | | | | | | | | | |
|------------------------------|------------------|-----|----|----|----|-----|-----|-----|-----|-----|-------------------|------------|---------------|----------------|
| For diameter [mm] | AB \varnothing | AH | AO | AT | AU | SA | TR | US | XA | XS | CRC ¹⁾ | Weight [g] | Part no. | Type |
| 160 | 18.5 | 115 | 20 | 10 | 60 | 300 | 115 | 169 | 320 | 130 | 2 | 3931 | 34476 | HNG-160 |
| 200 | 24 | 135 | 30 | 12 | 70 | 320 | 135 | 214 | 345 | 153 | 2 | 6896 | 34477 | HNG-200 |
| 250 | 28 | 165 | 35 | 20 | 75 | 350 | 165 | 270 | 380 | 160 | 2 | 17084 | 157510 | HNG-250 |
| 320 | 35 | 200 | 40 | 25 | 85 | 390 | 200 | 340 | 425 | 180 | 2 | 29968 | 157511 | HNG-320 |

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

Flange mounting FNG

Material:
Painted spheroidal graphite cast iron
Free of copper and PTFE
RoHS-compliant



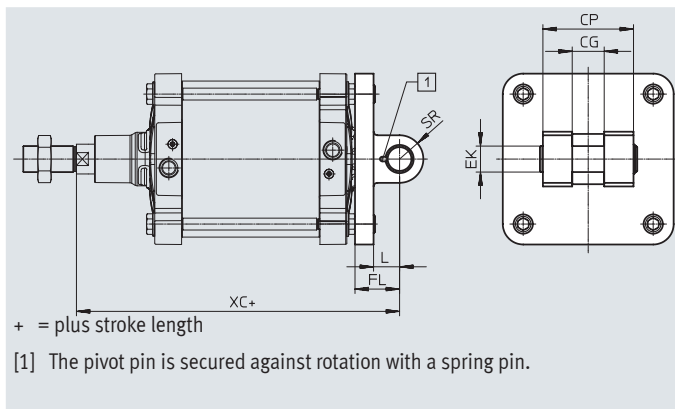
| Dimensions and ordering data | | | | | | | | | | | | | |
|------------------------------|------------|----------------------|-----------|------------|------------|------------|-----------|------------|-------------------|------------|---------------|----------------|--|
| For diameter [mm] | E | FB \varnothing H13 | MF | R | TF | UF | W | ZF | CRC ¹⁾ | Weight [g] | Part no. | Type | |
| 160 | 180 | 18 | 20 | 115 | 230 | 280 | 60 | 280 | 1 | 3550 | 34478 | FNG-160 | |
| 200 | 220 | 22 | 25 | 135 | 270 | 320 | 70 | 300 | 1 | 5321 | 34479 | FNG-200 | |
| 250 | 270 | 26 | 25 | 165 | 330 | 390 | 80 | 330 | 1 | 8657 | 157508 | FNG-250 | |
| 320 | 340 | 33 | 30 | 200 | 400 | 470 | 90 | 370 | 1 | 15109 | 157509 | FNG-320 | |

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. Dry internal application or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Accessories

Swivel flange SNG

Material:
Die-cast aluminium
Free of copper and PTFE
RoHS-compliant



+ = plus stroke length

[1] The pivot pin is secured against rotation with a spring pin.

Dimensions and ordering data

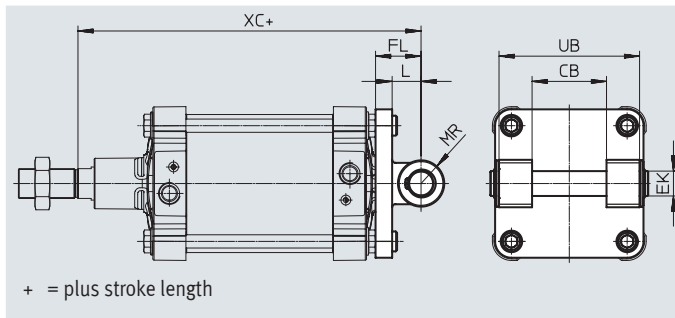
| For diameter [mm] | CG | CP | EK \varnothing | FL | L | SR | XC | CRC ¹⁾ | Weight [g] | Part no. | Type |
|-------------------|-----|-----|------------------|-----------|----|------|-----|-------------------|------------|---------------|----------------|
| 160 | H14 | d12 | F7 h9 | ± 0.2 | 35 | max. | 315 | 2 | 3577 | 152597 | SNG-160 |
| 200 | H14 | d12 | F7 h9 | ± 0.2 | 35 | max. | 335 | 2 | 5160 | 152598 | SNG-200 |

1) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

Swivel flange SNGB

Material:
 $\varnothing 160$: Die-cast aluminium
 $\varnothing 200$: Galvanised steel
 $\varnothing 250/320$: Spheroidal graphite cast iron
Free of copper and PTFE
RoHS-compliant



+ = plus stroke length

Dimensions and ordering data

| For diameter [mm] | CB | EK \varnothing | FL | L | MR | UB | XC | CRC ¹⁾ | Weight [g] | Part no. | Type |
|-------------------|-----|------------------|-----------|----|----|-----|-----|-------------------|------------|---------------|-------------------|
| 160 | H14 | E10 | ± 0.2 | 37 | 30 | h14 | 315 | 2 | 3445 | 34547 | SNGB-160 |
| 200 | H14 | E10 | ± 0.2 | 40 | 25 | h14 | 335 | 2 | 10020 | 562455 | SNGB-200-B |
| 250 | H14 | E10 | ± 0.2 | 47 | 40 | h14 | 375 | 1 | 16141 | 157512 | SNGB-250 |
| 320 | H14 | E10 | ± 0.2 | 52 | 45 | h14 | 420 | 1 | 26636 | 157513 | SNGB-320 |

1) Corrosion resistance class CRC 1 to Festo standard FN 940070

Low corrosion stress. Dry internal application or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

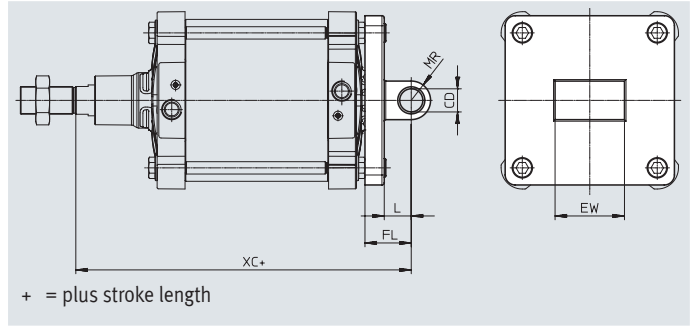
Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

Accessories

Swivel flange SNGL

Material:
Die-cast aluminium
Free of copper and PTFE



Dimensions and ordering data

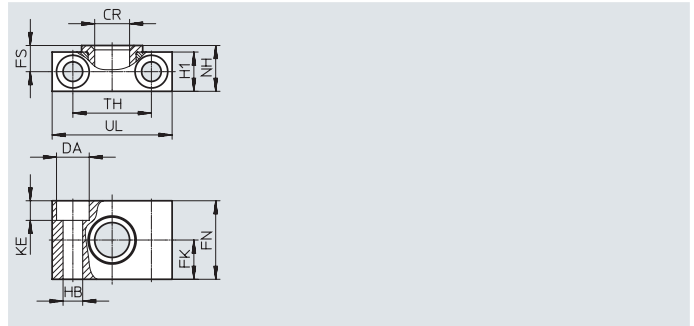
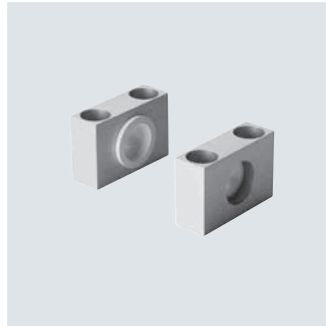
| For diameter [mm] | CD ∅ H9 | EW -0.5/-1.2 | FL ±0.2 | L | MR | XC | CRC ¹⁾ | Weight [g] | Part no. | Type |
|-------------------|---------------|-----------------|------------|----|----|-----|-------------------|------------|----------|----------|
| 160 | 30 | 90 | 55 | 35 | 25 | 315 | 2 | 2358 | 151534 | SNGL-160 |
| 200 | 30 | 90 | 60 | 35 | 25 | 335 | 2 | 3713 | 151535 | SNGL-200 |

1) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

Trunnion support LNZG

Material:
Mounting: Galvanised steel
Plain bearing: Plastic
Free of copper and PTFE
RoHS-compliant



Dimensions and ordering data

| For diameter [mm] | CR ∅ | DA ∅ H13 | FK ∅ ±0.2 | FN | FS | H1 | HB ∅ H13 | KE |
|-------------------|-------------------|----------------|-----------------|----|------|----|----------------|------|
| 160, 200 | 32 ^{D11} | 26 | 30 | 60 | 22.5 | 36 | 18 | 17 |
| 250 | 40 ^{G7} | 33 | 35 | 70 | 27.5 | 45 | 22 | 21.5 |
| 320 | 50 ^{G7} | 40 | 40 | 80 | 32.5 | 55 | 26 | 25.5 |



| For diameter [mm] | NH | TH ±0.3 | UL | CRC ¹⁾ | Weight [g] | Part no. | Type |
|-------------------|----|------------|-----|-------------------|------------|----------|---------------|
| 160, 200 | 40 | 60 | 92 | 2 | 659 | 35780 | LNZG-16 0/200 |
| 250 | 50 | 90 | 140 | 2 | 2218 | 157516 | LNZG-250 |
| 320 | 60 | 100 | 150 | 2 | 2934 | 157517 | LNZG-320 |

1) Corrosion resistance class CRC 2 to Festo standard FN 940070


Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

Accessories


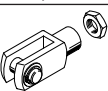
Ordering data – Mounting components

| Designation | For diameter | Part no. | Type |
|--|--------------|---------------|-----------------|
| Clevis foot LN/LNG | | | |
|  | 160 | 9037 | LN-160 |
| | 200 | 33898 | LNG-200 |
| | 250 | 9039 | LN-250 |
| | 320 | 9040 | LN-320 |
| Clevis foot LSNG | | | |
|  | 160 | 152599 | LSNG-160 |
| | 200 | 152600 | LSNG-200 |

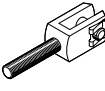
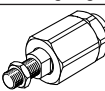
Data sheets → Internet: mounting component

| Designation | For diameter | Part no. | Type |
|---|--------------|-------------|----------------|
| Clevis foot LSN | | | |
|  | 160 | 6988 | LSN-160 |
| | 200 | 6989 | LSN-200 |
| | 250 | 6990 | LSN-250 |
| | 320 | 6991 | LSN-320 |


Ordering data – Piston rod attachments

| Designation | For diameter | Part no. | Type |
|---|--------------|--------------|------------------|
| Rod eye SGS | | | |
|  | 160, 200 | 10775 | SGS-M36x2 |
| | 250 | 10776 | SGS-M42x2 |
| | 320 | 10777 | SGS-M48x2 |
| Rod eye SG | | | |
|  | 160, 200 | 9581 | SG-M36x2 |
| | 250 | 9582 | SG-M42x2 |
| | 320 | 9583 | SG-M48x2 |

Data sheets → Internet: piston rod attachment

| Designation | For diameter | Part no. | Type |
|--|--------------|--------------|------------------|
| Rod clevis SGA | | | |
|  | 160, 200 | 10771 | SGA-M36x2 |
| Self-aligning rod coupler FK | | | |
|  | 160, 200 | 10746 | FK-M36x2 |


Ordering data – Push-in fittings

| | For diameter | Connection | | Part no. | Type | PE ¹⁾ |
|--|--------------|------------|-------------|----------------|-------------------|------------------|
| | | Thread | Tubing O.D. | | | |
| G thread with external hexagon | | | | | | |
|  | 160, 200 | G3/4 | 22 | 8040613 | QS-G3/4-22 | 1 |

Data sheets → Internet: qs

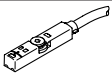
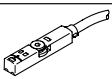
1) Packaging unit

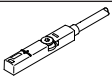
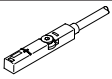
Ordering data – Reducing nipple


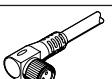
| | For diameter | Description | Part no. | Type | PE ¹⁾ |
|--|-----------------------------|---|----------------|--------------------------|------------------|
|  | Reducing nipple NPFC | | | | |
| | 160, 200 | For connecting QS fittings with thread G1/2 to cylinders with thread G3/4 | 8030313 | NPFC-R-G34-G12-MF | 1 |
| | Reducing nipple D | | | | |
| | 250, 320 | For connecting QS fittings with thread G1/2 to cylinders with thread G1 | 197634 | D-1/2I-1A | 1 |

1) Packaging unit

Accessories

| Ordering data – Proximity switch for T-slot, magneto-resistive | | | | | | Data sheets → Internet: smt |
|---|--|------------------|-----------------------|------------------|----------|-----------------------------|
| | Type of mounting | Switching output | Electrical connection | Cable length [m] | Part no. | Type |
| N/O contact | | | | | | |
|  | Inserted in the slot from above, flush with the cylinder profile, short design | PNP | Cable, 3-wire | 2.5 | 574335 | SMT-8M-A-PS-24V-E-2.5-OE |
| | | | Plug M8x1, 3-pin | 0.3 | 574334 | SMT-8M-A-PS-24V-E-0.3-M8D |
| | | | Plug M12x1, 3-pin | 0.3 | 574337 | SMT-8M-A-PS-24V-E-0.3-M12 |
| | | NPN | Cable, 3-wire | 2.5 | 574338 | SMT-8M-A-NS-24V-E-2.5-OE |
| | | | Plug M8x1, 3-pin | 0.3 | 574339 | SMT-8M-A-NS-24V-E-0.3-M8D |
| N/C contact | | | | | | |
|  | Inserted in the slot from above, flush with the cylinder profile, short design | PNP | Cable, 3-wire | 7.5 | 574340 | SMT-8M-A-PO-24V-E-7.5-OE |

| Ordering data – Proximity switches for T-slot, magnetic reed | | | | | | Data sheets → Internet: sme |
|--|--|------------------|-----------------------|------------------|------------------------|-----------------------------|
| | Type of mounting | Switching output | Electrical connection | Cable length [m] | Part no. | Type |
| N/O contact | | | | | | |
|  | Inserted in the slot from above, flush with the cylinder profile | Contacting | Cable, 3-wire | 2.5 | 543862 | SME-8M-DS-24V-K-2.5-OE |
| | | | 5.0 | 543863 | SME-8M-DS-24V-K-5.0-OE | |
| | | | Cable, 2-wire | 2.5 | 543872 | SME-8M-ZS-24V-K-2.5-OE |
| | | | Plug M8x1, 3-pin | 0.3 | 543861 | SME-8M-DS-24V-K-0.3-M8D |
| N/C contact | | | | | | |
|  | Inserted in the slot from above, flush with the cylinder profile | Contacting | Cable, 3-wire | 7.5 | 546799 | SME-8M-DO-24V-K-7.5-OE |

| Ordering data – Connecting cables | | | | | | Data sheets → Internet: nebu |
|---|-------------------------------|------------------------------|------------------|----------|----------------------|------------------------------|
| | Electrical connection, left | Electrical connection, right | Cable length [m] | Part no. | Type | |
|  | Straight socket, M8x1, 3-pin | Cable, open end, 3-wire | 2.5 | 541333 | NEBU-M8G3-K-2.5-LE3 | |
| | | | 5 | 541334 | NEBU-M8G3-K-5-LE3 | |
| | Straight socket, M12x1, 5-pin | Cable, open end, 3-wire | 2.5 | 541363 | NEBU-M12G5-K-2.5-LE3 | |
| | | | 5 | 541364 | NEBU-M12G5-K-5-LE3 | |
|  | Angled socket, M8x1, 3-pin | Cable, open end, 3-wire | 2.5 | 541338 | NEBU-M8W3-K-2.5-LE3 | |
| | | | 5 | 541341 | NEBU-M8W3-K-5-LE3 | |
| | Angled socket, M12x1, 5-pin, | Cable, open end, 3-wire | 2.5 | 541367 | NEBU-M12W5-K-2.5-LE3 | |
| | | | 5 | 541370 | NEBU-M12W5-K-5-LE3 | |

Accessories

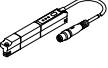
Position transmitter

The position transmitter continuously senses the position of the piston.

It has an analogue output with an output signal in proportion to the piston position.



Ordering data – Position transmitter for T-slot

Data sheets → Internet: position transmitter

| | For diameter | Position measuring range | Analogue output [mA] | Type of mounting | Electrical connection | Cable length [m] | Part no. | Type |
|--|--------------|--------------------------|----------------------|---------------------------------|---------------------------|------------------|----------|------------------------------|
|  | 160, 200 | 0 ... 50 | 4 ... 20 | Inserted in the slot from above | Plug M8x1, 4-pin, in-line | 0.3 | 1531265 | SDAT-MHS-M50-1L-SA-E-0.3-M8 |
| | | 0 ... 80 | | | | | 1531266 | SDAT-MHS-M80-1L-SA-E-0.3-M8 |
| | | 0 ... 100 | | | | | 1531267 | SDAT-MHS-M100-1L-SA-E-0.3-M8 |
| | | 0 ... 125 | | | | | 1531268 | SDAT-MHS-M125-1L-SA-E-0.3-M8 |
| | | 0 ... 160 | | | | | 1531269 | SDAT-MHS-M160-1L-SA-E-0.3-M8 |

Ordering data – Connecting cables

Data sheets → Internet: nebu

| | Electrical connection, left | Electrical connection, right | Cable length [m] | Part no. | Type |
|--|------------------------------|------------------------------|------------------|----------|---------------------|
|  | Straight socket, M8x1, 4-pin | Cable, open end, 4-wire | 2.5 | 541342 | NEBU-M8G4-K-2.5-LE4 |
| | | | 5 | 541343 | NEBU-M8G4-K-5-LE4 |
|  | Angled socket, M8x1, 4-pin | Cable, open end, 4-wire | 2.5 | 541344 | NEBU-M8W4-K-2.5-LE4 |
| | | | 5 | 541345 | NEBU-M8W4-K-5-LE4 |

Ordering data – Sensor bracket for proximity switches

| | For diameter | Materials | Part no. | Type |
|--|--------------|--|----------|---------------|
|  | 160, 200 | Rail: anodised wrought aluminium alloy | 1553813 | DASP-M4-160-A |
| | 250 | Screws: high-alloy stainless steel | 1456781 | DASP-M4-250-A |
| | 320 | | 3015256 | DASP-M4-320-A |

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