

Pneumatic cylinder

Type B

double-acting

Linear Ball Slide

Ø 8/10/16/20

25/32/40 mm



The ball slides consist of hardened and ground angular rails provided with linear cages for balls, which allows to apply stress on all sides. These pneumatic cylinders can also be supplied with end position cushioning (see order data).

Technical data:

| Type | 8 - B | 10 - B | 16 - B | 20 - B | 25 - B | 32 - B | 40 - B |
|-----------------------------|--|--------|--------|--------|--------|--------|--------|
| Design type | Pneumatic cylinder with linear ball guide | | | | | | |
| Stroke length [mm] | 10, 25, 50, 80, 100, 125, 160, 200 (Ø 8 up to stroke 100) | | | | | | |
| Fitting position | any (as long as extended position is possible) | | | | | | |
| Adm. temperature range [°C] | -10 to +70 | | | | | | |
| Medium | Filtered, oiled or non-oiled compressed-air (min. fineness 40 µm) | | | | | | |
| Compressed-air supply | Front, lateral or combi-type (Ø 8 only front type) | | | | | | |
| Compressed-air [bar] | min. 2 ... max. 6 | | | | | | |
| Materials | Base body, upper part, mounting plate, cover, piston plate: Al Guides: 100 Cr 6, piston rod: Ck 45 SL f7 Piston: NBR (Ø 8 and Ø 10: Ms 58) Seals: NBR, cylinder barrel: Ms 63 | | | | | | |

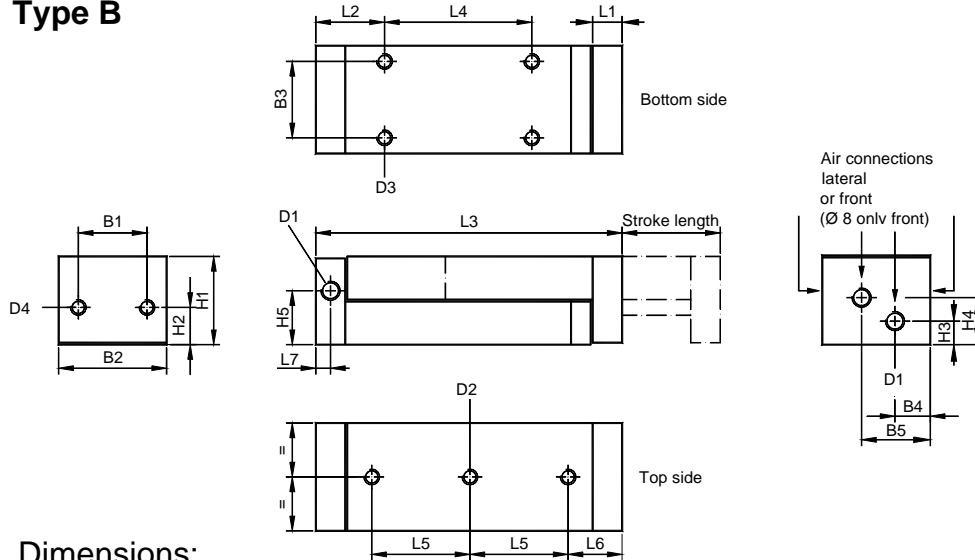
Weights: (gramme)

| Stroke length [mm] | Piston - Ø [mm] | | | | | | |
|-----------------------|-----------------|-----|------|------|------|------|------|
| | 8 | 10 | 16 | 20 | 25 | 32 | 40 |
| 10 | 100 | 190 | 290 | 390 | 640 | 840 | 1340 |
| 25 | 150 | 240 | 380 | 440 | 740 | 1000 | 1540 |
| 50 | 200 | 340 | 530 | 580 | 1000 | 1300 | 1900 |
| 80 | 260 | 440 | 630 | 730 | 1340 | 1740 | 2500 |
| 100 | 300 | 540 | 730 | 830 | 1540 | 2040 | 2900 |
| 125 | - | 590 | 880 | 1030 | 1840 | 2400 | 3300 |
| 160 | - | 780 | 1080 | 1280 | 2200 | 2840 | 3940 |
| 200 | - | 890 | 1280 | 1530 | 2600 | 3440 | 4640 |

Pneumatic cylinder



Type B



Dimensions:

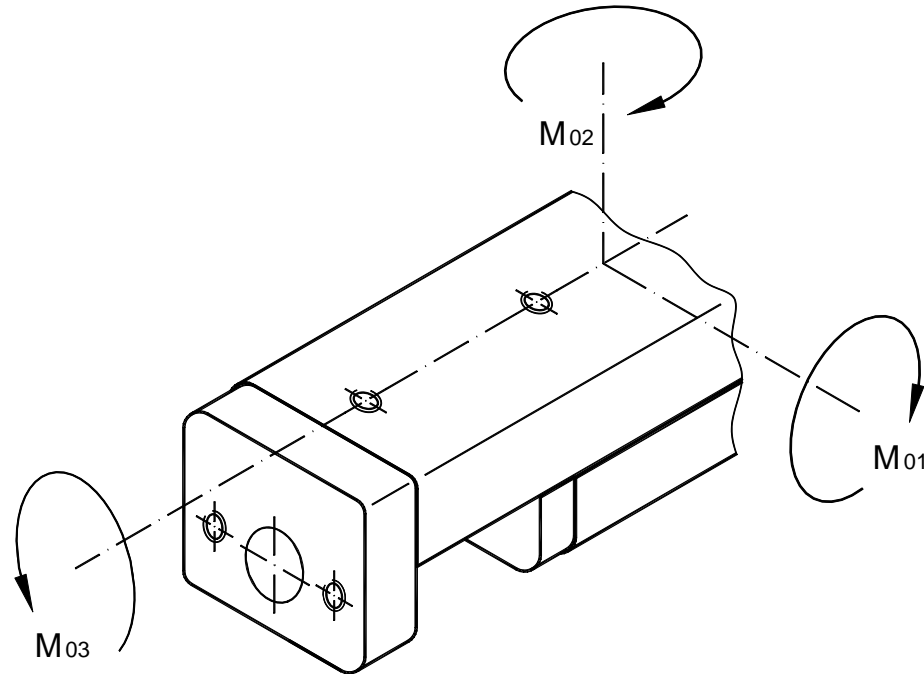
| Piston ∅ [mm] | Piston rod ∅ [mm] | B1 [mm] | B2 [mm] | B3 [mm] | B4 [mm] | B5 [mm] | D1 | D2/depth [mm] | D3/depth [mm] | D4/depth [mm] | H1 [mm] | H2 [mm] | H3 [mm] | H4 [mm] | H5 [mm] | L1 [mm] |
|---------------------|-------------------------|------------|------------|------------|------------|------------|------|------------------|------------------|------------------|------------|------------|------------|------------|------------|------------|
| 8 | 4 | 16 | 25 | 18 | 12,5 | | M5 | M4/6,0 | M4/8,0 | M4/9,5 | 25 | 11,7 | 6,2 | 18,5 | - | 10 |
| 10 | 5 | 26 | 35 | 25 | 12,0 | 21 | M5 | M6/5,0 | M5/10 | M6/11,5 | 26 | 10,5 | 7,0 | 14,0 | 14,5 | 12 |
| 16 | 8 | 30 | 40 | 30 | 13,0 | 25,5 | M5 | M6/5,5 | M6/11 | M6/11,5 | 32 | 12,0 | 7,5 | 15,5 | 18,5 | 12 |
| 20 | 8 | 30 | 40 | 30 | 12,5 | 24,5 | M5 | M6/8,0 | M6/14 | M6/11,5 | 39,5 | 15,5 | 8,0 | 20,0 | 8,3 | 12 |
| 25 | 10 | 35 | 55 | 39 | 17,5 | 34,75 | G1/8 | M8/7,5 | M8/16 | M8/10,5 | 45 | 19,0 | 11,0 | 24,0 | 28,0 | 15 |
| 32 | 12 | 45 | 65 | 49 | 20,0 | 40,5 | G1/8 | M8/7,5 | M8/18 | M8/10,5 | 50 | 20,0 | 10,8 | 28,3 | 31,3 | 15 |
| 40 | 15 | 50 | 70 | 54 | 22,0 | 44,5 | G1/4 | M8/10,5 | M8/18 | M8/10,5 | 65 | 27,0 | 14,0 | 36,5 | 40,5 | 20 |

| Piston - ∅ [mm] | | Stroke length [mm] | | | | | | | |
|--------------------|----|--------------------|--------|--------|--------|----------|-----------|---------|-----------|
| | | 10 | 25 | 50 | 80 | 100 | 125 | 160 | 200 |
| 8 | L2 | 22 | 22 | 22 | 22 | 22 | - | - | - |
| | L3 | 74 | 89 | 129 | 169 | 192 | - | - | - |
| | L4 | 21 | 36 | 76 | 116 | 2 x 69,5 | - | - | - |
| | L5 | 29 | 44 | 2 x 42 | 2 x 62 | 3 x 49 | - | - | - |
| | L6 | 22 | 22 | 22 | 22 | 22 | - | - | - |
| 10 / 16 | L2 | 27 | 27 | 27 | 27 | 27 | 27 | 27 | 27 |
| | L3 | 80 | 95 | 135 | 175 | 200 | 245 | 305 | 360 |
| | L4 | 15 | 30 | 70 | 2 x 55 | 2 x 67,5 | 2 x 90 | 2 x 120 | 2 x 147,5 |
| | L5 | 31 | 2 x 23 | 2 x 43 | 3 x 42 | 3 x 50 | 3 x 65 | 3 x 85 | 4 x 78 |
| | L6 | 24,0 | 24,0 | 24,0 | 24,0 | 24,5 | 24,5 | 24,5 | 23,5 |
| | L7 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| 20 | L2 | 22 | 27 | 27 | 27 | 27 | 27 | 27 | 27 |
| | L3 | 80 | 95 | 135 | 175 | 200 | 245 | 305 | 360 |
| | L4 | 25 | 30 | 70 | 2 x 55 | 2 x 67,5 | 2 x 90 | 2 x 120 | 2 x 147,5 |
| | L5 | 31 | 2 x 23 | 2 x 43 | 3 x 42 | 3 x 50 | 3 x 65 | 3 x 85 | 4 x 78 |
| | L6 | 24,0 | 24,0 | 24,0 | 24,0 | 24,5 | 24,5 | 24,5 | 23,5 |
| | L7 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| 25 / 32 | L2 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 |
| | L3 | 101 | 121 | 156 | 211 | 246 | 286 | 341 | 411 |
| | L4 | 20 | 40 | 75 | 130 | 2 x 82,5 | 2 x 102,5 | 2 x 130 | 2 x 165 |
| | L5 | 45 | 65 | 2 x 50 | 2 x 78 | 2 x 95 | 3 x 77 | 3 x 95 | 3 x 115 |
| | L6 | 27,5 | 27,5 | 27,5 | 27,0 | 27,5 | 27,0 | 27,5 | 32,5 |
| | L7 | 7,5 | 7,5 | 7,5 | 7,5 | 7,5 | 7,5 | 7,5 | 7,5 |
| 40 | L2 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| | L3 | 116 | 131 | 166 | 221 | 256 | 296 | 351 | 421 |
| | L4 | 25 | 40 | 75 | 130 | 2 x 82,5 | 2 x 102,5 | 2 x 130 | 2 x 165 |
| | L5 | 50 | 65 | 2 x 50 | 2 x 78 | 2 x 95 | 3 x 77 | 3 x 95 | 3 x 115 |
| | L6 | 32,5 | 32,5 | 32,5 | 32,0 | 32,5 | 32,0 | 32,5 | 37,5 |
| | L7 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |

Pneumatic cylinder

Admissible stress

Type B



| Longitudinal torque | Lateral torque | Transverse torque |
|---|---|---|
| | | |
| $F_{01} \leq \frac{M_{01 \text{ zul.}}}{L_1 + A}$ | $F_{02} \leq \frac{M_{02 \text{ zul.}}}{L_2 + A}$ | $F_{03} \leq \frac{M_{03 \text{ zul.}}}{L_3 + B}$ |
| | | |
| $F_{01} \leq \frac{M_{01 \text{ zul.}}}{L_1 + C}$ | $F_{02} \leq \frac{M_{02 \text{ zul.}}}{L_2 + B}$ | $F_{03} \leq \frac{M_{03 \text{ zul.}}}{L_3 + C}$ |

Admissible stress

Pneumatic cylinder



| Stroke length [mm] | 10 | | 25 | | 50 | | 80 | | 100 | | 125 | |
|--------------------|-------------|----------|-------------|----------|-------------|----------|-------------|----------|-------------|----------|-------------|----------|
| Ø / Type | M1/M2 Nm | M3 Nm | M1/M2 Nm | M3 Nm | M1/M2 Nm | M3 Nm | M1/M2 Nm | M3 Nm | M1/M2 Nm | M3 Nm | M1/M2 Nm | M3 Nm |
| 8 - B | 1,28 | 0,58 | 1,55 | 0,58 | 2,08 | 0,81 | 2,63 | 0,98 | 3,37 | 1,22 | - | - |
| 10 - B | 1,37 | 1,04 | 1,42 | 1,04 | 2,12 | 1,45 | 2,60 | 1,76 | 3,23 | 2,18 | 3,93 | 2,18 |
| 16 - B | 1,52 | 1,15 | 1,58 | 1,15 | 2,35 | 1,61 | 2,88 | 1,96 | 3,59 | 2,42 | 4,37 | 2,42 |
| 20 - B | 1,67 | 1,27 | 1,74 | 1,27 | 2,58 | 1,77 | 3,17 | 2,16 | 3,95 | 2,67 | 4,80 | 2,67 |
| 25 - B | 3,32 | 2,65 | 3,83 | 2,65 | 4,86 | 4,16 | 6,70 | 5,68 | 8,07 | 6,82 | 13,00 | 6,82 |
| 32 - B | 4,60 | 3,87 | 4,78 | 4,56 | 6,36 | 5,88 | 9,31 | 8,48 | 10,84 | 9,75 | 13,07 | 9,75 |
| 40 - B | 5,06 | 4,42 | 5,26 | 5,17 | 7,00 | 6,67 | 10,24 | 9,59 | 11,92 | 11,04 | 14,38 | 11,04 |

| Stroke length [mm] | 160 | | 200 | |
|--------------------|-------------|----------|-------------|----------|
| Ø / Type | M1/M2 Nm | M3 Nm | M1/M2 Nm | M3 Nm |
| 8 - B | - | - | - | - |
| 10 - B | 5,22 | 2,18 | 6,13 | 2,18 |
| 16 - B | 5,80 | 2,42 | 6,81 | 2,42 |
| 20 - B | 6,38 | 2,67 | 7,50 | 2,67 |
| 25 - B | 11,38 | 6,82 | 13,71 | 6,82 |
| 32 - B | 14,78 | 9,75 | 18,48 | 9,75 |
| 40 - B | 16,26 | 11,04 | 20,32 | 11,04 |

Correction factors:

| Ø / Type | Stroke length | A | B | C |
|----------|---------------|------|-------|------|
| | [mm] | [mm] | [mm] | [mm] |
| 8 - B | 10 | 34,5 | 12,25 | 11,4 |
| | 25 | 42,0 | | |
| | 50 | 60,8 | | |
| | 80 | 80,0 | | |
| | 100 | 96,3 | | |

| Ø / Type | Stroke length | A | B | C |
|----------|---------------|-------|-------|------|
| | [mm] | [mm] | [mm] | [mm] |
| 10 - B | 10 | 40,6 | 17,25 | 10,4 |
| | 25 | 48,1 | | |
| | 50 | 66,9 | | |
| | 80 | 86,1 | | |
| | 100 | 98,4 | | |
| | 125 | 121,2 | | |
| | 160 | 151,3 | | |
| | 200 | 178,1 | | |

| Ø / Type | Stroke length | A | B | C |
|----------|---------------|-------|-------|------|
| | [mm] | [mm] | [mm] | [mm] |
| 16 - B | 10 | 40,6 | 19,75 | 11,5 |
| | 25 | 48,1 | | |
| | 50 | 66,9 | | |
| | 80 | 86,1 | | |
| | 100 | 98,4 | | |
| | 125 | 121,2 | | |
| | 160 | 151,3 | | |
| | 200 | 178,1 | | |

| Ø / Type | Stroke length | A | B | C |
|----------|---------------|-------|-------|------|
| | [mm] | [mm] | [mm] | [mm] |
| 20 - B | 10 | 40,6 | 19,75 | 13,6 |
| | 25 | 48,1 | | |
| | 50 | 66,9 | | |
| | 80 | 86,1 | | |
| | 100 | 98,4 | | |
| | 125 | 121,2 | | |
| | 160 | 151,3 | | |
| | 200 | 178,1 | | |

Admissible stress

Pneumatic cylinder

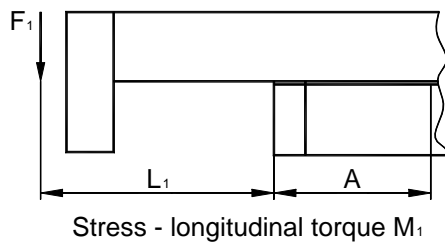
Correction factors:

| Ø / Type | Stroke length | A | B | C |
|----------|---------------|-------|-------|------|
| | [mm] | [mm] | [mm] | [mm] |
| 25 - B | 10 | 49,2 | 27,25 | 16,0 |
| | 25 | 56,7 | | |
| | 50 | 77,0 | | |
| | 80 | 102,4 | | |
| | 100 | 120,2 | | |
| | 125 | 140,5 | | |
| | 160 | 168,4 | | |
| | 200 | 201,4 | | |

| Ø / Type | Stroke length | A | B | C |
|----------|---------------|-------|-------|------|
| | [mm] | [mm] | [mm] | [mm] |
| 32 - B | 10 | 49,7 | 32,25 | 17,7 |
| | 25 | 57,2 | | |
| | 50 | 75,8 | | |
| | 80 | 103,2 | | |
| | 100 | 119,4 | | |
| | 125 | 141,2 | | |
| | 160 | 164,9 | | |
| | 200 | 200,4 | | |

| Ø / Type | Stroke length | A | B | C |
|----------|---------------|-------|-------|------|
| | [mm] | [mm] | [mm] | [mm] |
| 40 - B | 10 | 49,7 | 34,75 | 20,8 |
| | 25 | 57,2 | | |
| | 50 | 75,8 | | |
| | 80 | 103,2 | | |
| | 100 | 119,4 | | |
| | 125 | 141,2 | | |
| | 160 | 164,9 | | |
| | 200 | 200,4 | | |

Example of calculation:



Given qty: 25 - B with a stroke length of 80 mm

Lever arm $L_1 = 40 \text{ mm} = 0,04 \text{ m}$

Longitudinal torque $M_1 = 6,7 \text{ Nm}$

Correction factor $A = 102,4 \text{ mm} = 0,1024 \text{ m}$

$$\text{Required qty: } F_1 \leq \frac{M_1}{L_1 + A} = \frac{6,7 \text{ Nm}}{0,04 \text{ m} + 0,1024 \text{ m}} = 47 \text{ N}$$