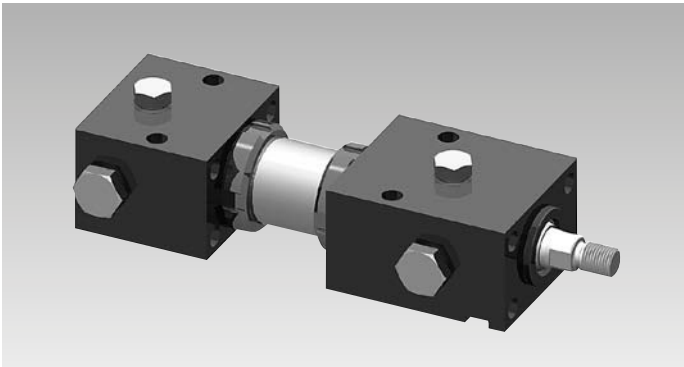


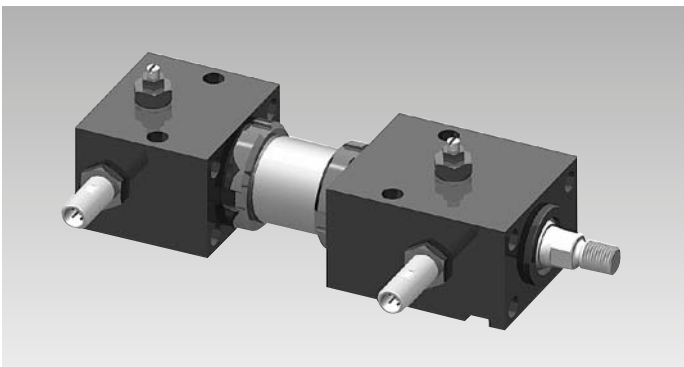


Hydraulic Block Cylinders

block cylinder, design with tube,
double acting, max. operating pressure 250 bar

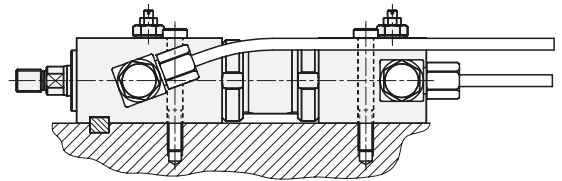


Hydraulic block cylinder in standard version

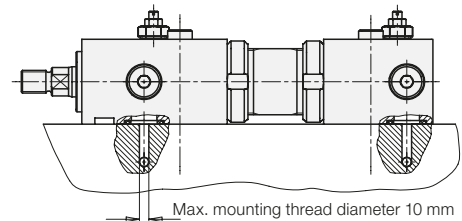


Hydraulic block cylinder with stroke end cushioning and control of the end positions

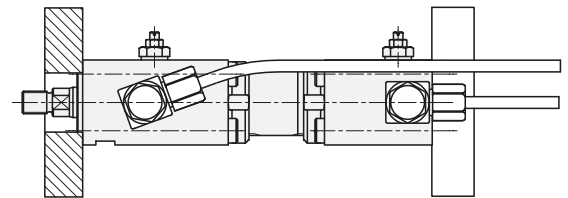
Connecting and fixing possibilities



Oil supply through high-pressure hoses or tubes



Oil supply through drilled channels



Fixing at the front or at the bottom with oil supply through high-pressure hoses or tubes

Application

Over years the ROEMHELD block cylinder has proved a building block in hydraulic systems. The hydraulic block cylinder completes this programme by the following characteristics:

- Piston stroke up to 1200 mm
- Installation possibility of high-pressure resistant sensors for the stroke end control
- Adjustable stroke end cushioning available

The application possibilities in machine and apparatus construction are considerably extended, especially in mould construction for operation of core-pullers and slides.

Description

The hydraulic block cylinder as linear drive combines the advantages of two series

- Hydraulic cylinders with long strokes and optional stroke end cushioning,
- Block cylinders with diverse fixing and oil supply possibilities and optional stroke end control.

The two cylinder heads in block form are connected by a HP tube, in which the piston is guided.

The HP tube and the chromium-plated piston rod material are cut goods, which allows manufacturing of any piston strokes in a very short time. The different connecting and fixing possibilities are shown in the above examples. The hydraulic block cylinder can be delivered with and without adjustable stroke end cushioning.

Two high-pressure resistant sensors, which can be selected according the cylinder size (see table) are available for the stroke end control.

Important notes

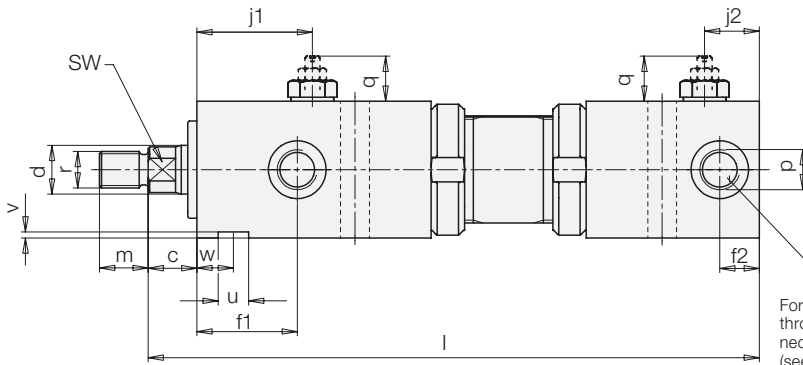
The high-pressure resistant sensors are delivered separately for mounting at place of installation in order to avoid transport damage. Please refer to the installation instructions on page 4.

Advantages

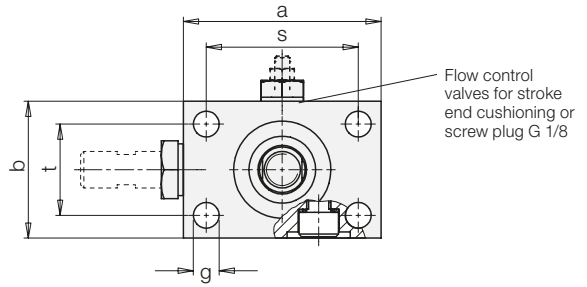
- Diverse fixing possibilities
- Tenon slot
- Oil supply through fittings or drilled channels with O-ring sealing
- Piston rod hardened and chromium-plated
- Piston rod sealing with minimum leakage
- Standard FKM seals
- Piston stroke up to 1200 mm
- Adjustable stroke end cushioning on request
- Stroke end control can be retrofitted with high-pressure resistant sensors

Dimensions of hydraulic block cylinders

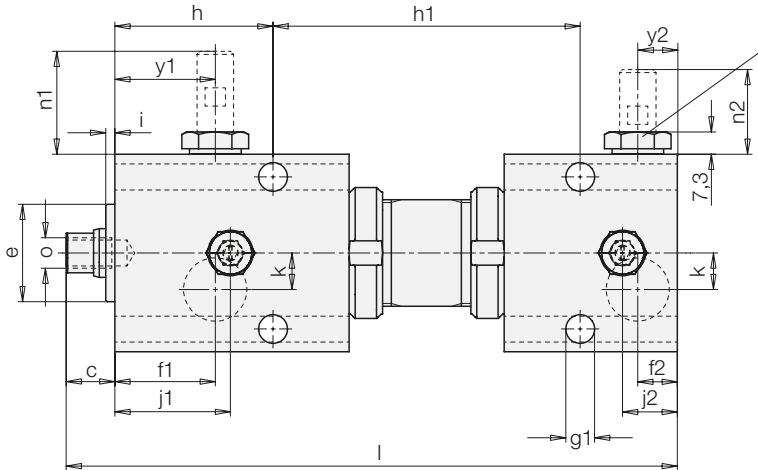
Piston rod with external thread



View for 1593 up to 1596

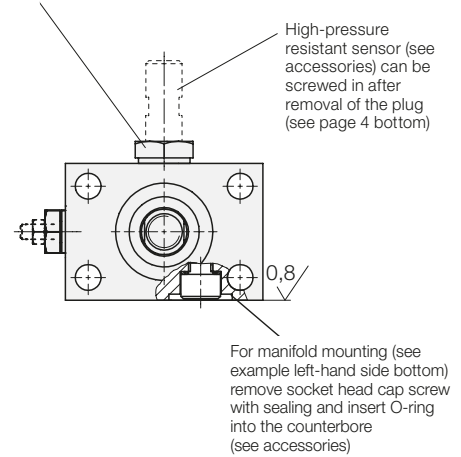


Piston rod with internal thread

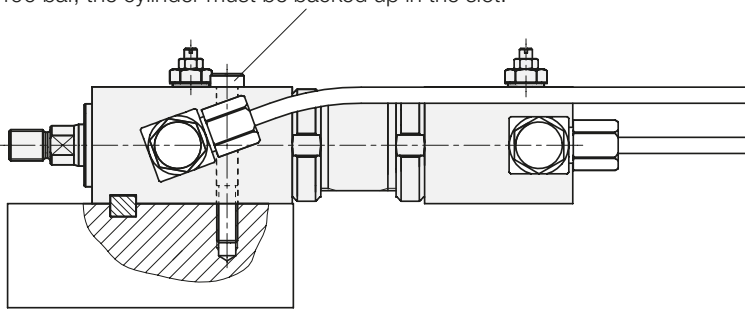


Screw plug M12 x 1

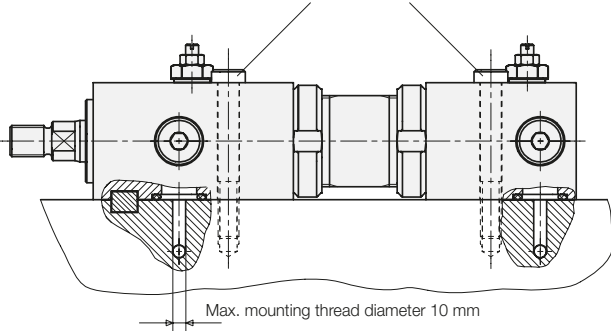
View for 1597 up to 1598



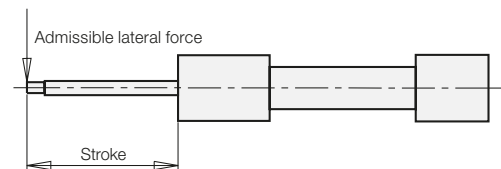
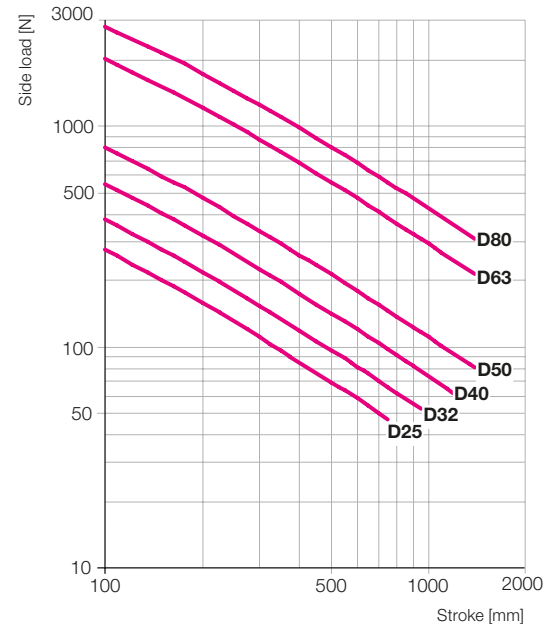
When fixing with 2 screws (property class 12.9) and a pressure exceeding 100 bar, the cylinder must be backed up in the slot.



When fixing with 4 screws (property class 12.9) and a pressure exceeding 200 bar, the cylinder must be backed up in the slot.



Admissible transverse force with extended piston rod



Dimensions of hydraulic block cylinders

| Hydraulic block cylinder (see code for part-nos.) | 1593- | 1594- | 1595- | 1596- | 1597- | 1598- | |
|---|--------------------|----------|------------|------------|----------|----------|----------|
| Piston Ø D | [mm] | 25 | 32 | 40 | 50 | 80 | |
| Rod Ø d | [mm] | 16 | 20 | 25 | 32 | 50 | |
| Nominal force at 250 bar | Extending stroke | [kN] | 12.3 | 20.1 | 31.4 | 49.1 | 77.9 |
| | Retracting stroke | [kN] | 7.25 | 12.3 | 19.1 | 29 | 46.5 |
| Piston area | [cm ²] | 4.9 | 8.04 | 12.56 | 19.63 | 31.17 | 50.26 |
| Annulus area | [cm ²] | 2.89 | 4.9 | 7.65 | 11.59 | 18.6 | 30.6 |
| Cushioning stroke | [mm] | 16 | 16 | 20 | 25 | 32 | 40 |
| L ± 0.75 = desired stroke + | [mm] | 111 | 124 | 153 | 166 | 193 | 230 |
| a | [mm] | 65 | 75 | 85 | 100 | 125 | 160 |
| b | [mm] | 45 | 55 | 63 | 75 | 95 | 120 |
| c | [mm] | 16 | 16 | 16 | 18 | 20 | 22 |
| Ø e f7 | [mm] | 32 | 40 | 50 | 60 | 70 | 85 |
| f1 | [mm] | 33 | 38.5 | 46 | 54 | 66 | 79 |
| f2 | [mm] | 13 | 14 | 18 | 21 | 26 | 36 |
| Ø g | [mm] | 8.5 | 8.5 | 10.5 | 13 | 17 | 21 |
| Ø g1 for (MXX) | [mm] | 9.5 (M8) | 11.5 (M10) | 11.5 (M10) | 14 (M12) | 18 (M16) | 22 (M20) |
| h | [mm] | 52 | 56 | 64.5 | 74 | 94 | 105 |
| h1 = desired stroke + | [mm] | 11 | 21 | 38.5 | 33 | 23 | 42.5 |
| i | [mm] | 3 | 4 | 4 | 4 | 4 | 5 |
| j1 | [mm] | 38 | 45 | 57 | 64 | 58 | 72 |
| j2 | [mm] | 18 | 20 | 26.5 | 31 | 18 | 26 |
| k | [mm] | 12 | 14.5 | 16 | 20 | 30 | 32 |
| m | [mm] | 16 | 18 | 22 | 28 | 36 | 45 |
| n1 | [mm] | 34 | 31 | 29 | 47 | 31 | 45 |
| n2 | [mm] | 28 | 25 | 23 | 39.5 | 22 | 34.5 |
| o x depth of thread (internal thread) | [mm] | M10x15 | M12x15 | M16x25 | M20x30 | M27x40 | M30x40 |
| p | | G 1/4 | G 1/4 | G 1/4 | G 1/4 | G 1/2 | G 1/2 |
| q | [mm] | 15 | 14 | 14 | 12.5 | 11 | 11 |
| r (external thread) | [mm] | M12x1.25 | M14x1.5 | M16x1.5 | M20x1.5 | M27x2 | M33x2 |
| SW | [mm] | 13 | 17 | 22 | 27 | 36 | 46 |
| s | [mm] | 50 | 58 | 66 | 80 | 99 | 124 |
| t | [mm] | 30 | 38 | 44 | 55 | 69 | 84 |
| u H11 | [mm] | 10 | 12 | 12 | 14 | 20 | 22 |
| v | [mm] | 2 | 3 | 3 | 3 | 4 | 5 |
| w | [mm] | 12 | 16 | 24 | 32 | 35 | 50 |
| y1 | [mm] | 33 | 38.5 | 46 | 50.5 | 60.5 | 69 |
| y2 | [mm] | 13 | 14 | 18 | 16.5 | 20.5 | 21 |
| minimum stroke* ± 1.5 | [mm] | 70 | 70 | 60 | 70 | 80 | 80 |
| minimum stroke** ± 1.5 | [mm] | 130 | 140 | 150 | 170 | 190 | 210 |
| maximum stroke ± 1.5 | [mm] | 750 | 950 | 1200 | 1200 | 1200 | 1200 |

Accessories

| | | | | | | |
|--|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Part no. high-pressure resistant sensor (s. page 4) | 3829-180 | 3829-180 | 3829-180 | 3829-030 | 3829-180 | 3829-030 |
| Dimensions of O-ring for manifold mounting | [mm] | 15.54x2.62 | 15.54x2.62 | 15.54x2.62 | 18.72x2.62 | 18.72x2.62 |
| Part no. O-ring (FKM) | 3000-103 | 3000-103 | 3000-103 | 3000-103 | 3001-061 | 3001-061 |
| Part no. Screw plug with hexagon socket | 3300-821 | 3300-821 | 3300-821 | 3300-821 | 3610-045 | 3610-045 |

Code for part numbers

159X - X X - XXXX

- 0XXX = stroke in mm up to 999 mm } min. and max. strokes
- 1XXX = stroke in 1000 mm and over } see at the end of the chart
- 1 = without cushioning
- 3 = with cushioning
- 1 = piston rod with exterior thread
- 2 = piston rod with interior thread
- 3 = piston-Ø D 25 mm
- 4 = piston-Ø D 32 mm
- 5 = piston-Ø D 40 mm
- 6 = piston-Ø D 50 mm
- 7 = piston-Ø D 63 mm
- 8 = piston-Ø D 80 mm

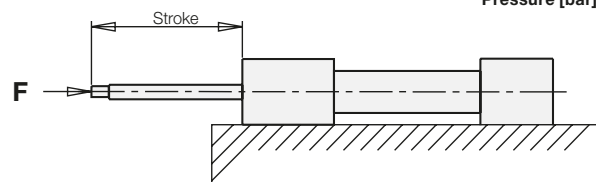
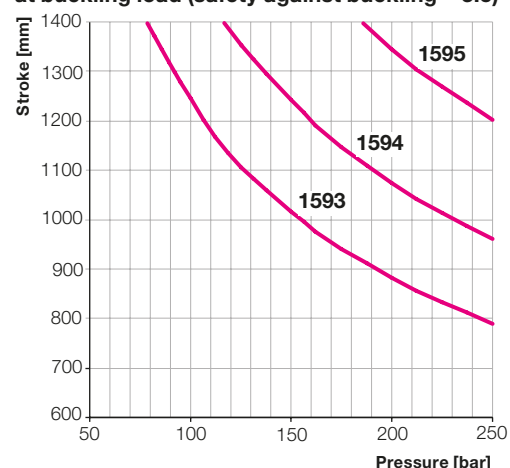
Order example:

- Hydraulic block cylinder Ø 40 x 755 stroke without cushioning and piston rod with interior thread : **1595-21-0755**
- Hydraulic block cylinder Ø 63 x 1015 stroke with cushioning and piston rod with exterior thread : **1597-13-1015**

* minimum stroke with fixing at the broad side

** minimum stroke with fixing at the front by flange

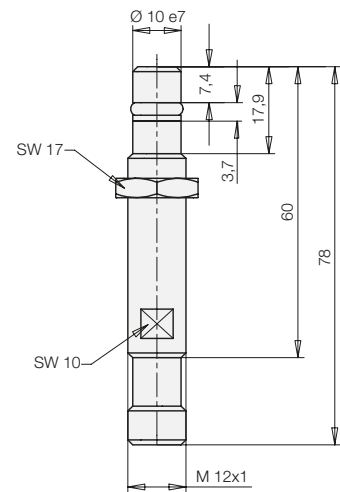
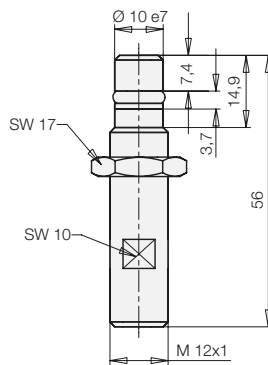
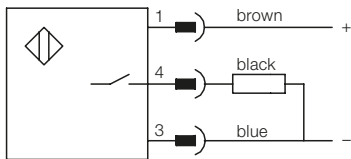
Limit values for stroke and operating pressures at buckling load (safety against buckling = 3.5)



High-pressure resistant sensors

For cylinders:

| | 1593-XXX 1594-XXX 1595-XXX 1597-XXX | | 1596-XXX 1598-XXX | | |
|--|--|------------------|----------------------|------------------|-------------------|
| | | | | | |
| General and technical characteristics | | | | | |
| Environmental temperature | °C | -25...+80 | -25...+120 | -25...+80 | -25...+120 |
| Rated operating distance Sn | mm | 1.5 | 1.5 | 1.5 | 1.5 |
| Secured operating distance Sa | mm | 0...1.2 | 0...1.2 | 0...1.2 | 0...1.2 |
| Repeatability | % | ≤ 5 | ≤ 5 | ≤ 5 | ≤ 5 |
| Hysteresis | % | ≤ 15 | ≤ 15 | ≤ 15 | ≤ 15 |
| Dimensions DxT | mm | M12x1 x 56 | M12x1 x 56 | M12x1x78 | M12x1 x 78 |
| Material of the body | | 1.4104 | 1.4104 | 1.4104 | 1.4104 |
| Material of sensing face | | EP (Duroplast) | Ceramics | EP (Duroplast) | Ceramics |
| Code class | IP54 | 68 | 68 | 68 | 68 |
| Connection type | | Plug S4 | Plug S4 | Plug S4 | Plug S4 |
| Electrical characteristics | | | | | |
| Voltage | | DC | DC | DC | DC |
| Wiring | | 3 wires | 3 wires | 3 wires | 3 wires |
| Switching function | | interlock | interlock | interlock | interlock |
| Output signal | | pnp | pnp | pnp | pnp |
| Rated operating voltage | V | 24 DC | 24 DC | 24 DC | 24 DC |
| Rated operating current | mA | 200 | 200 | 200 | 200 |
| Operating voltage | V | 10...30 DC | 10...30 DC | 10...30 DC | 10...30 DC |
| Ripple | % | ≤ 15 | ≤ 15 | ≤ 15 | ≤ 15 |
| Switching frequency | Hz | 2000 | 400 | 1000 | 400 |
| No-load current | mA | ≤ 10/≤ 2 | ≤ 8 | ≤ 10/≤ 1 | ≤ 8 |
| Voltage drop | V | ≤ 1.5/- | ≤ 2.5 | ≤ 1.5/- | ≤ 2.5 |
| Short circuit protection | | yes | yes | yes | yes |
| Protection against reverse battery | | yes | yes | yes | yes |
| Part no. sensor (with mounted seals) | | 3829-180 | 3829-228 | 3829-030 | 3829-227 |

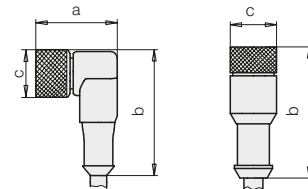
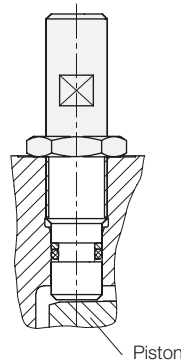


Mounting and setting of the sensors

Front sensor:

- Extend piston rod completely
- Carefully screw in the sensor to the stop at the piston. Turn back the sensor:

| Rotation | Switching point before the final position |
|----------|---|
| 1/4 | approx. 4 mm |
| 1 1/4 | approx. 1 mm |
- Lock the sensor in this position by means of a nut
- Wire the switch electrically and check the function



LED: Operating voltage (green)
Function display (yellow)

Rear sensor:

- Retract completely the piston rod
(Further steps see front sensor)

| Accessories for sensors | a | b | c | Cable length [m] | Code class | Environmental temperature | LED | Part no. |
|--|----|----|------|------------------|------------|---------------------------|-----|-----------------|
| Plug-type connector pnp M12, knee-type | 27 | 38 | 14.5 | 3 | IP68 | -25...+80 °C | yes | 3829-049 |
| Plug-type connector pnp M12, straight | - | 44 | 14.5 | 5 | IP68 | -40...+90 °C | no | 3829-078 |
| Plug-type connector pnp M12, knee-type | 27 | 38 | 14.5 | 5 | IP68 | -20...+105 °C | no | 3829-230 |
| Plug-type connector pnp M12, straight | - | 44 | 14.5 | 5 | IP68 | -40...+105 °C | no | 3829-229 |