ROEMHELD
HILMA ▪ STARK

Program Summary

BLOCK CYLINDERS

- Up to operating pressures of 500 bar
- Single and double acting
- Steel, aluminium and bronze bodies
- Piston diameter from 16 to 200 mm
- Strokes from 8 to 1,200 mm
- Position monitoring
  Stroke end control
- Stroke end cushioning
  Anti-torsion device

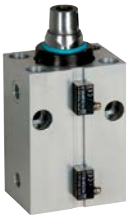
Program summary BLOCK CYLINDERS

Description	Block cylinder	Block cylinder	Block cylinder S	Block cylinder piston rod with exterior thread
Max. operating pressure	500 bar	500 bar	250*/500 bar	500 bar
				
Data sheet	B 1.5091	B 1.5094	B 1.5100	B 1.542
Functioning	single acting	double acting	double acting	double acting
Force to push at max. pressure	10…392 kN	10…1,570 kN	40.2…251.3 kN	24.5…155.9 kN
Piston diameter **Piston stroke**	16…100 mm 8…100 mm	16…200 mm 16…200 mm	32…80 mm 25…100 mm	25…63 mm 50…63 mm
Max. piston speed **Admissible piston side load**	0.25 m/s –	0.25 m/s 3 %**	0.50 m/s as per diagram	0.25 m/s 3 %**
Seals and max. operating temperature* **	NBR: +100 °C FKM: +200 °C	NBR: +100 °C FKM: +200 °C	as per diagram up to +200 °C	NBR: +100 °C FKM: +200 °C
Housing material **Stainless steel version**	steel –	steel –	steel –	steel –
Hydraulic connection	pipe thread flange with O-ring sealing	pipe thread flange with O-ring sealing	pipe thread flange with O-ring sealing	pipe thread flange with O-ring sealing
Stroke limitation by distance bushing	■	■	■	❑
Housing with keyway	■	■	■	❑
Housing with centring collar	–	–	■	–
Piston with external thread	❑	❑	■	●
Piston with anti-rotation device	–	–	–	–
Piston with stroke end cushioning	–	–	–	–
Stroke end or position monitoring	–	–	–	–
Accessories	–	–	–	–
Type	–	–	–	–
Design	–	–	–	–
Adjustability of switching points	–	–	–	–
Max. operating temperature	–	–	–	–

Legend: ● **Series** ■ **Variant** **– not available**
❍ **Option** ❑ **Special version**

* **For punching applications max. operating pressure 250 bar**
** **3 % of the push force at max. pressure and up to 50 mm piston stroke**
*** **See data sheet A 0.100**

Pull-type cylinder	Block cylinder for stroke end control	Block cylinder with adjustable stroke end cushioning	Block cylinder with extended piston rod	Block cylinder with bronze housing for magnetic sensors
500 bar	**500 bar**	**500 bar**	**500 bar**	**500 bar**
				
B 1.570	**B 1.520**	**B 1.530**	**B 1.552**	**B 1.553**
single acting	double acting	double acting	double acting	double acting
6 … 235 kN (pull)	10 … 392 kN	24.5 … 392 kN	20.6 … 610 kN	24.5 … 156 kN
16 … 100 mm 8 … 12 mm	16 … 100 mm 16 … 100 mm	25 … 100 mm 25 … 100 mm	25 … 125 mm 20 … 50 mm	25 … 63 mm 20 … 100 mm
0.25 m/s	0.25 m/s 3 %**	0.25 m/s 3 %**	0.25 m/s 3 %**	0.25 m/s –
NBR: +100 °C FKM: +200 °C	FKM dependent on sensor	NBR: +100 °C FKM: +120 °C	FKM: +150 °C	NBR: +100 °C FKM: +120 °C
steel –	steel –	steel –	steel –	bronze ❍
pipe thread	pipe thread flange with O-ring sealing	pipe thread flange with O-ring sealing	pipe thread flange with O-ring sealing	pipe thread flange with O-ring sealing
– ❑ –	❑ ❑ –	– ❑ –	❑ ❑ –	❑ ❑ –
❑ – –	❑ – –	❑ – ●	❑ – –	❑ – –
–	❍	❍	❍	❍
–	proximity switch	proximity switch	position monitoring	magnetic sensor
–	inductive	inductive	inductive	magnetoresistive
–	pressure resistant	pressure resistant	moveable	moveable
–	1... 4 mm before end position	1... 4 mm before end position	over the entire stroke	over the entire stroke
–	+80 °C ... +120 °C	+80 °C ... +120 °C	+70 °C ... +120 °C	+100 °C

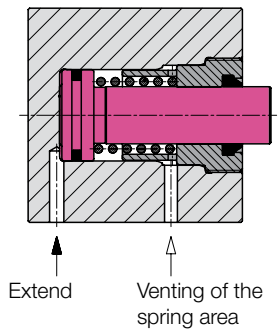
Block cylinder with aluminium housing for magnetic sensors	Block cylinder with aluminium housing with anti-rotation piston	Hydraulic block cylinder design with tube	Built-in elements piston and threaded bushing	Built-in elements piston with anti-rotation piston
350 bar	**350 bar**	**250 bar**	**500 bar**	**350 bar**
				
B 1.554	**B 1.560**	**B 1.590**	**B 1.5401**	**B 1.5601**
double acting	double acting	double acting	double acting	double acting
17.1 … 109.2 kN	28.1 … 68.7 kN	12.3 … 125.7 kN	10 … 392 kN	28.1 … 68.7 kN
25 … 63 mm 20 … 100 mm	32 … 50 mm 25 … 100 mm	25 … 80 mm 60 … 1,200 mm	16 … 100 mm 16 … 100 mm	32 … 50 mm 25 … 100 mm
0.25 m/s –	0.25 m/s 10 %	0.5 m/s as per diagram	0.25 m/s 3 %**	0.25 m/s 10 %
NBR: +100 °C FKM: +120 °C	NBR: +100 °C	NBR: +80 °C FKM: +120 °C	NBR: +100 °C FKM: +200 °C	NBR: +100 °C
alu ❍	alu –	steel –	steel –	steel –
pipe thread flange with O-ring sealing	pipe thread	pipe thread flange with O-ring sealing	– –	– –
❑	❑	–	❑	❑
❑	❑	●	–	–
–	–	●	–	–
❑	–	■	–	–
–	●	–	–	●
–	–	■	–	–
❍	❍	❍	–	–
magnetic sensor	magnetic sensor	proximity switch	–	–
magnetoresistive	magnetoresistive	inductive	–	–
moveable	moveable	pressure resistant	–	–
over the entire stroke	over the entire stroke	1...4 mm before end position	–	–
+100 °C	+100 °C	+80 °C ... +120 °C	–	–

Application

For all hydraulically operated linear movements.

Single acting

The hydraulic force acts only in one axial direction. The return stroke is effected by spring force or by external forces.

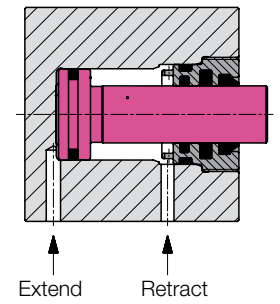


Venting of the spring area

If there is any danger that fluids penetrate through the sintered metal air filter into the spring area, a vent hose has to be connected and be placed in a protected position (see data sheet G 0.110).

Double acting

The hydraulic forces act in both axial directions, whereby the force to push is always higher than the force to pull.
The double-acting block cylinder has a high functional safety with exactly calculable rimes required for the stroke.

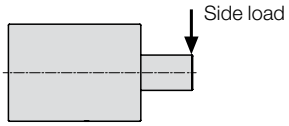


Maximum piston speed

The table values of 0.25 m/s and 0.50 m/s are based on data provided by the seal manufacturers. Apart from two exceptions, the block cylinders have no stroke end cushioning.
To avoid damage, the piston should not move at this speed against the internal piston stops without braking.

Admissible piston side load

If the piston rod is loaded with a side load, higher wear must be expected. For strokes up to 50 mm, the side load should not be higher than 3 % of the max. piston push force. The block cylinder S and the hydraulic block cylinder are equipped with high-quality guide rings. The admissible side load can be taken from the diagrams on the data sheets.



Seals and max. operating temperature

The data in the chart ar approximate values:

- NBR = Nitril-Butadien-Rubber
  Trade name e.g. Perbunan
  Temperature range –30….+100 °C
- FKM = fluoro rubber
  Trade name e.g. VITON®
  Temperature range –20….+200 °C

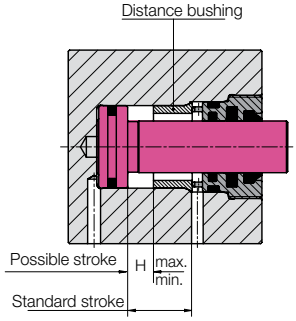
More detailed information, taking into account the common hydraulic fluids, can be found on data sheet A 0.100.
5 sealing packages are available for the block cylinder S. It can thus be optimally adapted to pressure, temperature and hydraulic fluid.

Leakage

Block cylinders do not leak oil when static. When extending the piston rod, the double sealing lets pass only a micro-oil film to ensure the required lubrication of the seals and thus a high service life.

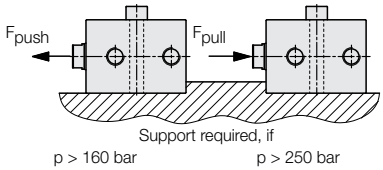
Stroke limitation by distance bushing

Extending of the piston can be limited by the installation of a distance bushing. The minimum stroke shortening is between 3 and 8 mm, depending on the size, and the smallest possible stroke between 1 and 10 mm.



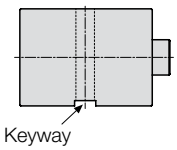
Fixation

All block cylinders can be fixed with screws of tensile strength 8.8.
When fastened across the cylinder axis, block cylinders must be supported depending on the operating pressure.



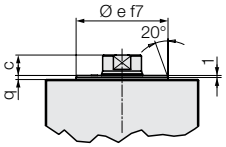
Housing with keyway

If the necessary support on the bottom or rod side is not possible, the cylinder housings can be provided with a keyway.



Housing with centring collar

Available for block cylinder S and hydraulic block cylinder.

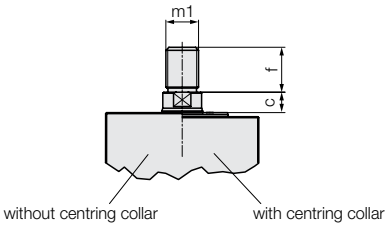


Piston materials

Case-hardening steel, hardened
High alloy steel, nitrated or chromium-plated

Piston with external thread

Available as variant or special version.



Piston with anti-rotation device

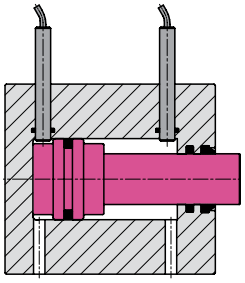
Block cylinder with aluminium housing and piston rod with polygonal profile.

Piston with stroke end cushioning

The damping effect can be adjusted for block cylinder with stroke end cushioning and hydraulic block cylinders.

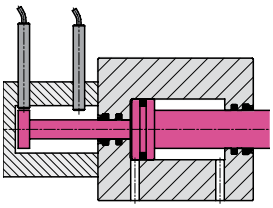
Stroke end control

These block cylinders are equipped with pressure-resistant proximity switches. They are adjustable in the range from 1 - 4 mm before the end position.



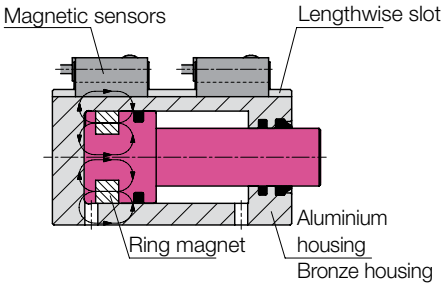
Position monitoring complete

Is mounted to the cylinder bottom of block cylinders with extended piston rod.
The inductive proximity switches are movable and can monitor the complete piston stroke. Observe minimum distance between adjacent switching points as per data sheet.



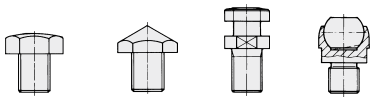
Position monitoring with magnetic sensors

Magnetic sensors are mounted to block cylinders with aluminium or bronze housings in a trapezoidal slot and can be moved over the entire piston stroke.
Minimum distance of the switching points approx. 6 mm.



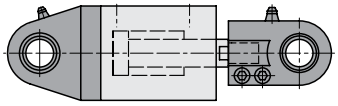
Accessory - Contact bolts

Different contact bolts and coupling pins as per data sheet G 3.800.



Accessory - spherical bearing

Block cylinders with external thread of the piston rod (B 1.542) can be equipped with spherical bearing.
Bearing flanges are available for the cylinder base (see data sheet G 3.810).



Fittings

Screwed plug with elastic sealing as per DIN 3852 T11 form E and EN ISO 1179-2

Mounting position

any, if not otherwise stated

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