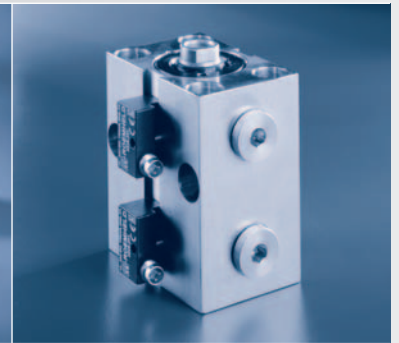




Program summary

Double-acting hydraulic cylinders

Hydro-cylinders
Hydraulic block cylinders



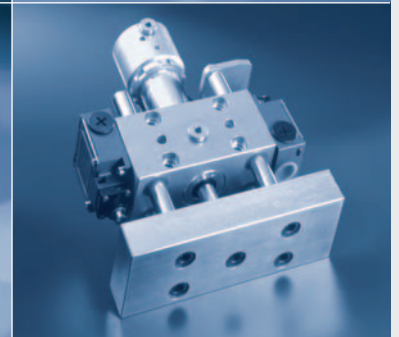
Block cylinders

Threaded-body cylinders



Built-in elements

Universal cylinders



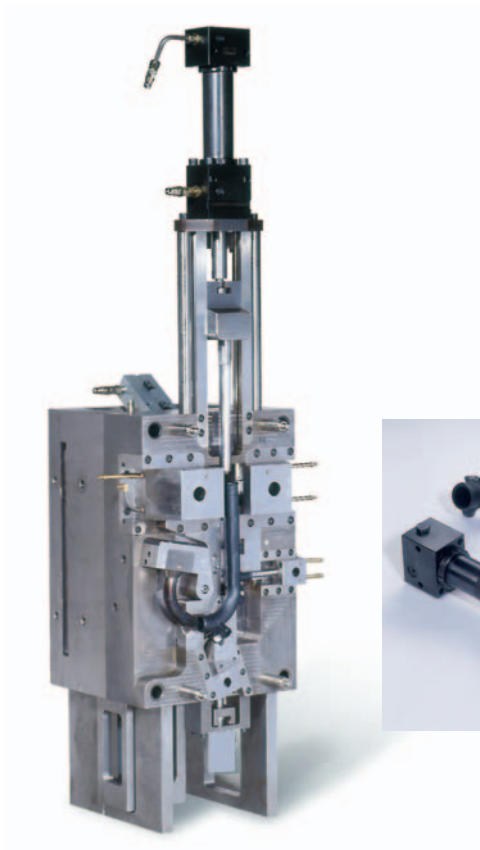
Hydraulic slides



Application examples

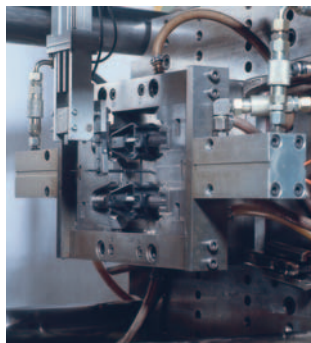
Tool for fabrication of an automotive component.

5 cylinders operate these core-pullers for the required dimensional accuracy of the complex shaping of this elbow tube with two additional tube connections.



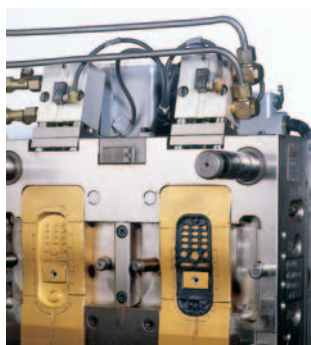
Tool for fabrication of connecting components for children's push chairs.

The core-pullers for injection moulding connecting components made out of plastic materials are inserted and retracted by two aluminium block cylinders for fabrication in exact position.






Tool for fabrication of mobile phone housings.

The exact shaping of the inlet for the later installation of the microphone is made during the injection process by dies, which are operated by aluminium block cylinders with magnetic sensors.





Program summary Double-acting hydraulic cylinders

Description	Hydro-cylinders	Hydro-cylinders	Universal cylinders
			
Data sheet	B 1.2811	B 1.282	B 1.309
Piston diameter [mm]	25 ... 80	25 ... 80	16 ... 63
Max. operating pressure [bar]	200	200	500
Force to push at max. pressure [kN]	9.8 ... 100.5	9.8 ... 100.5	10 ... 156
Stroke lengths [mm]: - range - graduation - intermed. strokes	100 ... 1000 standard strokes special versions	70 ... 1200 mm standard	16 ... 100 standard strokes with distance bushing
Max. operating temperature (without position control)	+100 °C	with NBR: +100 °C with FKM: +200 °C	with NBR: +100 °C with FKM: +200 °C
Admissible side loads	none	little see data sheet	3% (1)
Max. piston speed [m/s]	0.5	0.5	0.25
Fixation of the cylinder	internal thread accessory: flange	internal thread accessory: flange or spherical bearing joint	external thread accessory: groove nuts
Fixation at the piston rod	external thread	external thread	internal thread
Keyway	no	no	no
Hydraulic connection	pipe thread G ¼...G ½	pipe thread G ¼...G ¾	pipe thread G ¼...G ¼
Space required	medium	medium / large	little
Materials:			
- body	free-cutting steel, galvanized	free-cutting steel, galvanized	high alloy steel, black oxide
- piston rod	high alloy steel chromium-plated	high alloy steel chromium-plated	case-hardening steel, hardened
- seals	NBR	NBR or FKM	NBR or FKM
Stroke end cushioning	no	option, adjustable	no
Anti-torsion device	no	no	no
Accessory - Position monitoring - Sensor/switch type	no	no	no
- Adjustment of monitoring points - Maximum operating temperature			

(1): up to max. 50 mm stroke: 3% of the force to push at max. operating pressure

(2): 500 bar for static, 250 bar for dynamic load

(3): Extend: 500 bar for steel block cylinders, 350 bar for aluminium block cylinders / Retract: 350 bar all versions

Threaded-body cylinders	Block cylinders	Block cylinders for stroke end control	Block cylinders with stroke end cushioning	Built-in elements
				
B 1.470	B 1.5094	B 1.520	B 1.530	B 1.5401
16 ... 40	16 ... 200	16 ... 100	25 ... 100	16 ... 100
500	500	500	500	500
10 ... 62.8	10 ... 1570	10 ... 392	24.5 ... 392	10 ... 392
16 ... 40 standard strokes with distance bushing	8 ... 200 standard strokes with distance bushing	16 ... 100 standard strokes with distance bushing	25 ... 100 standard strokes special version	16 ... 100 standard strokes with distance bushing
with NBR: +100 °C with FKM: +200 °C	with NBR: +100 °C with FKM: +200 °C	+120 °C	with NBR: +100 °C with FKM: +200 °C	with NBR: +100 °C with FKM: +200 °C
3% (1)	3% (1)	3% (1)	3% (1)	3% (1)
0.25	0.25	0.25	0.25	0.25
Built-in type with screw-in thread	through holes variant: internal thread	through holes variant: internal thread	through holes variant: internal thread	–
internal thread	internal thread	internal thread	internal thread	internal thread
no	variant	variant	variant	–
provided by customer drilled channels	pipe thread G manifold-mount. connection with O-ring sealing	pipe thread G manifold-mount. connection with O-ring sealing	pipe thread G manifold-mount. connection with O-ring sealing	provided by customer drilled channels
little	little / medium	little / medium	medium	minimal
free-cutting steel, galvanized	high alloy steel, black oxide	high alloy steel, black oxide	high alloy steel, black oxide	provided by customer
case-hard. steel, hardened	case-hard. steel, hardened	case-hard. steel, hardened	case-hard. steel, hardened	case-hard. steel, hardened
NBR or FKM	NBR or FKM	FKM	NBR or FKM	NBR or FKM
no	no	no	yes, adjustable	no
no	no	no	no	no
no	no	yes proximity sensors, inductive, pressure resistant max. 5 mm to stroke end +80 °C or 120 °C	yes proximity sensors, inductive, pressure resistant max. 5 mm to stroke end +80 °C or 120 °C	no

Block cylinders with piston rod with external thread	Block cylinders with extended piston rod	Block cylinders with bronze housing	Block cylinders with aluminium housing	Block cylinders with anti-rotation piston with aluminium housing
				
B 1.542	B 1.552	B 1.553	B 1.554	B 1.560
25 ... 63	25 ... 125	25 ... 63	25 ... 63	32 ... 50
500	500	500	350	350
24.5 ... 156	20.6 ... 610	24.5 ... 156	17.1 ... 109	28.1 ... 68.7
50 ... 63 standard strokes with distance bushing	20 ... 50 standard strokes with distance bushing	20 ... 100 standard strokes with distance bushing	20 ... 100 standard strokes with distance bushing	25 ... 100 standard strokes with distance bushing
with NBR: +100 °C with FKM: +200 °C	+200 °C	with NBR: +100 °C with FKM: +120 °C	with NBR: +100 °C with FKM: +120 °C	+100 °C
3% (1)	3% (1)	3% (1)	3% (1)	high see data sheet
0.25	0.25	0.25	0.25	0.25
through holes variant: internal thread	through holes variant: internal thread	through holes variant: internal thread	through holes variant: internal thread	through holes variant: internal thread
external thread	internal thread	internal thread	internal thread	cone 1:10 with internal thread
variant	variant	variant	variant	variant
pipe thread G manifold-mount. connection with O-ring sealing	pipe thread G manifold-mount. connection with O-ring sealing	pipe thread G manifold-mount. connection with O-ring sealing	pipe thread G manifold-mount. connection with O-ring sealing	pipe thread G ¼
little / medium	medium	little / medium	little / medium	little / medium
high alloy steel, black oxide	high alloy steel, black oxide	bronze alloy	aluminium alloy anodized	aluminium alloy anodized
high alloy steel, nitrated	case-hard. steel, hardened	case-hard. steel, hardened option: stainless	case-hard. steel, hardened option: stainless	case-hard. steel, hardened
NBR or FKM	FKM	NBR or FKM	NBR or FKM	NBR
no	no	no	no	no
no	no	no	no	yes, radial clearan. max. ±0,3°
no	yes proximity sensors, inductive	yes magnetic sensors,	yes magnetic sensors,	yes magnetic sensors
	over the complete stroke +70 °C or +120 °C	over the complete stroke +100 °C	over the complete stroke +100 °C	over the complete stroke +100 °C



Built-in elements with anti-rotation piston	Hydraulic block cylinders	Block cylinders with guide housing	RM mini slides	RS hydraulic slides
				
B 1.5601	B 1.590	B 1.738	B 1.7384	B 1.7385
32 ... 50	25 ... 80	25 ... 63	25 ... 50	25 ... 100
350	250	500 / 350 (3)	500	250
28.1 ... 68.7	12.3 ... 126	17.1 ... 156	24.5 ... 98.5	12.3 ... 196
25 ... 100 standard strokes with distance bushing	70 ... 1200 mm standard	20 ... 63 standard strokes with distance bushing	20 ... 100 standard strokes with distance bushing	50 ... 200 25 mm variant
+100 °C	+200 °C	aluminium: +120 °C steel + 200 °C	+150 °C	with NBR: +100 °C with FKM: +180 °C
high see data sheet	little see data sheet	very high	medium see data sheet	very high see data sheet
0.25	0.5	0.25	0.25	0.5
–	through holes variant: internal thread	through holes	internal thread	through holes or internal thread
cone 1:10 with internal thread	internal thread or external thread	guide bolts: with internal thread	front block	front block
–	standard	drill bushings	dowel holes	standard and dowel holes
provided by customer drilled channels	pipe thread G manifold-mount. connection with O-ring sealing	pipe thread G ¼...G ½	pipe thread G manifold-mount. connection with O-ring sealing	pipe thread G manifold-mount. connection with O-ring sealing
minimal	large	large	little / medium	large
provided by customer	free-cutting steel, galvan.	free-cutting steel, galvan. or aluminium alloy	high alloy steel, black oxide	free-cutting steel, galvan.
case-hard. steel, hardened	high alloy steel chromium-plated	guide bolts: case-hard. steel, hardened	case-hard. steel, hardened	high alloy steel chromium-plated
NBR	FKM	FKM	FKM	NBR or FKM
no	option, adjustable	no	no	option, not adjustable
no	no	no	yes, without clearance	yes, without clearance
no	yes proximity sensors, ind., pressure resistant	yes ind. proximity sensors or magnetic sensors	yes ind. proximity sensors or mechanical switches	yes mechanical switches
	max. 5 mm to stroke end +80 °C or 120 °C	over the complete stroke +70°C, +100°C or +120°C	over the complete stroke +70°C, +100°C or +120°C	no, only for stroke ends +70 °C



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Bronze block cylinder B 1.553

for adjustable magnetic sensors

With cylinder housing of a non-magnetizable special bronze alloy. Stable as steel. For more process safety even with strongest loads. With continuous control of the piston position by magnetic sensors.



Polygon block cylinders B 1.560

with anti-rotation piston

Block cylinder with aluminium housing and piston rod with polygonal profile to prevent rotation. The installed guide is in the position to compensate torques and side loads. With continuous control of the piston rod by magnetic sensors.

Also available as built-in element (data sheet B 1.5601).



RM mini slides B 1.7384

with 4 guide rods and front block

Small and compact hydraulic slide with 4 guide rods and front block to compensate side loads and torques.

Position monitoring by limit switches or inductive sensors.



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