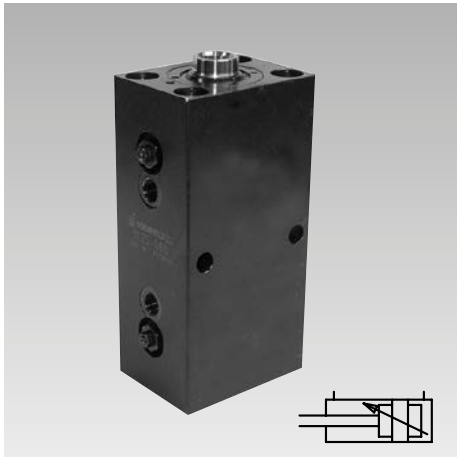


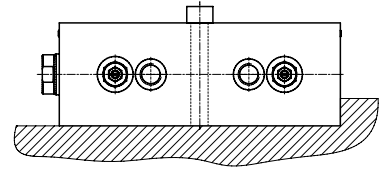
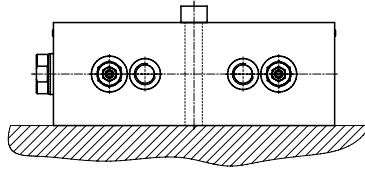


Block Cylinders

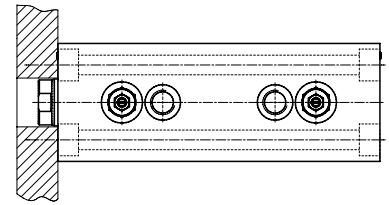
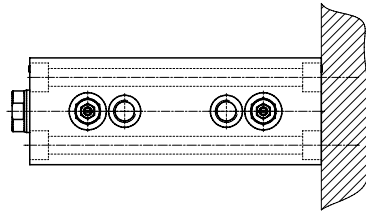
with adjustable stroke end cushioning and optional stroke end control
 double acting, max. operating pressure 500 bar



Fixing possibilities



Cylinders must be backed up for operating pressures exceeding 160 bar



Application

Block cylinder with stroke end cushioning avoid a crash stop of the piston in the cylinder body in case of the following applications:

1. High piston speed.
2. Additional load at the piston rod.
3. An external stop to compensate the additional load is not possible.

Description

Just before the stroke end of the piston the cushioning spigot enters into the cushioning disc and reduces the flow rate in the return line and thereby also the piston speed. The residual speed can be adjusted in certain limits by an **adjustable flow control valve**. If required, the stroke ends can be controlled by pressure-resistant sensors.

Advantages

- 7 sizes each with 3 stroke lengths available
- Compact block design
- Same dimensions as the block cylinders as per data sheet B 1.5094, except for total length
- Adjustable stroke end cushioning
- Unthrottled cylinder start from the stroke ends
- Optional stroke end control with pressure-resistant sensors
- Stroke end control adjustable up to 4 mm before the stroke end
- Multiple fixing possibilities
- Oil supply optionally with fittings or drilled channels
- Maintenance free
- FKM seals as an option

Important notes

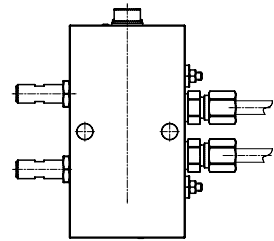
Block cylinders are short-stroke cylinders. In comparison to standard hydro-cylinders, the cushioning strokes are relatively short, thereby the cushioning capacity is limited. Please consider the limit values in the chart. The high-pressure resistant sensors are installed on customer site, in order to avoid transport damages. Please refer to the installation instructions on page 4. Consider the maximum environmental temperature of the sensors on page 4.

Tolerances and angle dimensions as per DIN 7168-m.

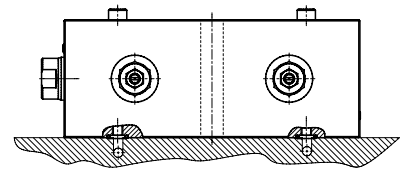
Operating conditions and other data see data sheet A 0.100.

Connecting possibilities

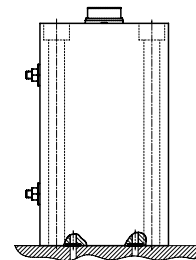
Version with pipe thread



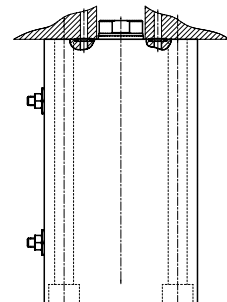
Version for manifold mounting with O-ring sealing Broad side



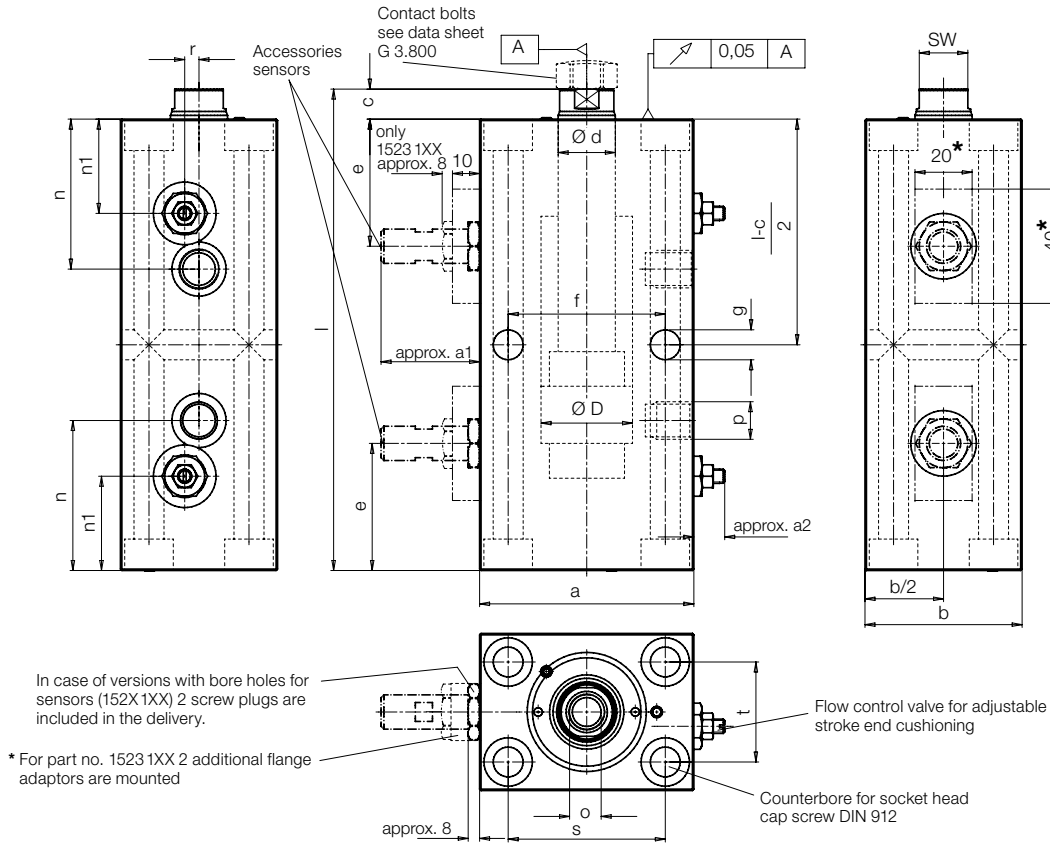
Version for manifold mounting with O-ring sealing Bottom side



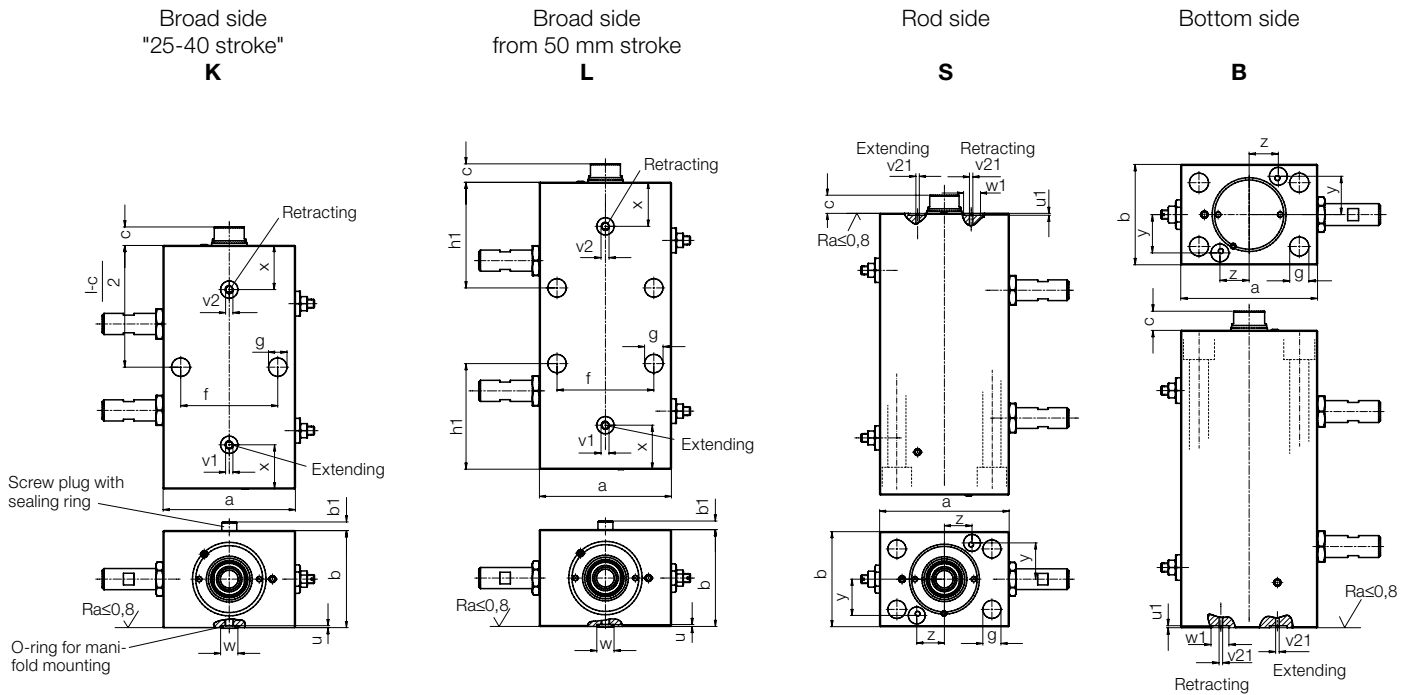
Version for manifold mounting with O-ring sealing Rod side



Dimensions – Versions with pipe thread



Dimensions - Version for manifold mounting with O-ring sealing



Version "K" and "L"

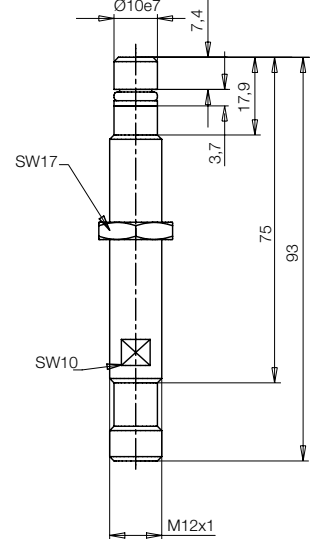
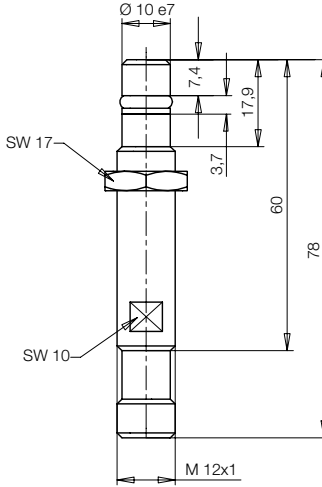
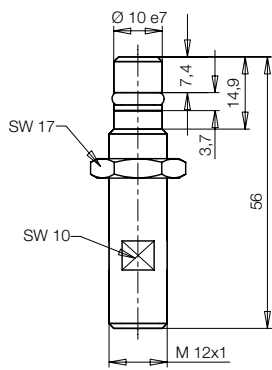
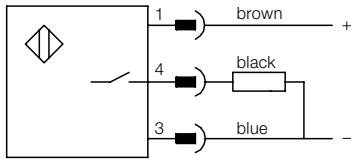
For use of the sensors at the right side, the cylinder will be rotated by 180° and the screw plug with sealing ring and the O-ring for manifold mounting are exchanged.

Dimensions

Piston Ø D	[mm]	25	32	40	50	63	80	100
Rod Ø d	[mm]	16	20	25	32	40	50	63
Force to push at	100 bar [kN]	4.9	8	12.56	19.63	31.17	50.26	78.54
	500 bar [kN]	24.5	40.2	62.8	98	156	251	392
Force to pull at	100 bar [kN]	2.9	4.9	7.6	11.6	18.6	30.6	47.3
	500 bar [kN]	14.5	24.5	38.3	57.9	93.0	153	236.8
Oil volume/	Stroke to extend [cm ³]	4.91	8.05	12.56	19.63	31.17	50.26	78.54
10 mm stroke	Stroke to retract [cm ³]	2.9	4.9	7.6	11.6	18.6	30.6	47.3
a	[mm]	65	75	85	100	125	160	200
a1 + Switching distance	1.5 up to 2.5 [mm]	35.5	34	33	31	45.5	37	42.5
a2 + max. 2.5	[mm]	9	9	8	8	6	5	5
b	[mm]	45	55	63	75	95	120	150
b1	[mm]	4	5	5	5	7.5	7.5	7.5
c	[mm]	7	10	10	10	14	14	15
e	[mm]	40	44.5	46	49.5	54	62.5	68.5
f	[mm]	40	55	63	76	95	120	158
g	[mm]	8.5	10.5	10.5	13	17	21	25
h1	[mm]	52.5	60.0	60.0	65.0	72.0	85	102
n	[mm]	51	53.5	56	57.5	66	72	77
n1	[mm]	30	33	34	37	40.5	47	50
o x depth of thread	[mm]	M10x15	M12x15	M16x25	M20x30	M27x40	M30x40	M42x60
p		G 1/4	G 1/4	G 1/4	G 1/4	G 1/2	G 1/2	G 1/2
r	[mm]	0	0	0	0	0	6	7
s	[mm]	50	55	63	76	95	120	158
t	[mm]	30	35	40	45	65	80	108
u ±0.05	[mm]	1.1	1.1	1.1	1.1	1.5	1.5	1.5
v1 extend	[mm]	M4	M5	M5	M5	M8	M8	M8
v2 retract	[mm]	M4	M5	M5	M5	M8	M8	M8
w +0.2	[mm]	9.8	9.8	9.8	9.8	13.8	13.8	13.8
u1 ±0.05	[mm]	0.7	1.1	1.1	1.1	1.5	1.5	1.5
v21 extend/retract	[mm]	2.8	2.8	4	6	8	8	8
w1 +0.2	[mm]	5.8	9.8	9.8	9.8	13.8	13.8	13.8
x	[mm]	21.5	25	25.5	28	31.5	37.5	39
y	[mm]	15	21	24	27.5	38	50	60
z	[mm]	16.5	16	20.5	25.5	29	30	40
SW	[mm]	13	17	22	26	34	41	55
Cushioning stroke approx.	[mm]	5.5	5	5	6.5	6.5	8	8
Dimensions O-ring (version K, L, S, B)		7x1.5	7x1.5	7x1.5	7x1.5	10x2	10x2	10x2
Part no. O-ring		3000342	3000342	3000342	3000342	3000347	3000347	3000347
Part no. O-ring FKM		3001077	3001077	3001077	3001077	3001078	3001078	3001078
Only for 1523XXXB(S) O-ring 4x1		3000815						
Only for 1523XXXB(S) O-ring 4x1 FKM		3001628						
Part no. for pipe thread connection								
Stroke ±1	[mm]	25	25	25	25	30	32	40
Total length l±1	[mm]	137.0	148.0	157.0	158.0	190.0	223.0	234.0
Weight	[kg]	2.5	3.7	5.3	7.3	13.3	26.2	42.0
Part no. without sensor bore holes		1523035	1524035	1525035	1526035	1527045	1528045	1529055
Part no. with sensor bore holes		1523135	1524135	1525135	1526135	1527145	1528145	1529155
Part no. for 1523XXXB(S) O-ring 4x1								
Stroke ±1	[mm]	50	50	50	50	63	80	
Total length l±1	[mm]	162.0	173.0	182.0	183.0	223.0	271.0	
Weight	[kg]	3.0	4.4	6.1	8.5	15.7	31.8	
Part no. without sensor bore holes		1523065	1524065	1525065	1526065	1527075	1528085	
Part no. with sensor bore holes		1523165	1524165	1525165	1526165	1527175	1528185	
Part no. for 1523XXXB(S) O-ring 4x1 FKM								
Stroke ±1	[mm]	100	100	100	100	100	100	100
Total length l±1	[mm]	212.0	223.0	232.0	233.0	260.0	291.0	294.0
Weight	[kg]	3.9	5.7	7.7	10.7	18.3	34.1	53.0
Part no. without sensor bore holes		1523095	1524095	1525095	1526095	1527095	1528095	1529095
Part no. with sensor bore holes		1523195	1524195	1525195	1526195	1527195	1528195	1529195
Accessory sensor 80° (description see page 4)								
Part no.		3829180	3829180	3829180	3829180	3829030	3829030	3829204
Accessory pull-type connector pnp (description see page 4)								
M12x1 knee-type								
Part no.		3829049	3829049	3829049	3829049	3829049	3829049	3829049
M12x1 straight								
Part no.		3829078	3829078	3829078	3829078	3829078	3829078	3829078
Code for part-nos.:								
Seals				Version for manifold mounting (see page 2)				
		NBR	FKM					
152XXX0	NBR (max. 100 °C)	152XX30K	152XX31K	O-ring sealing at the broad side			25–40 stroke	
XX5		152XX60L	152XX61L				50–80 stroke	
152XXX1	FKM (max. 200 °C)	152XX90L	152XX91L				100 stroke	
XX6		152XX5S	152XX6S	O-ring sealing at the rod side			25–100 Stroke	
(Identification code 0 and 1 only for versions K and L)				152XX5B	152XX6B	O-ring sealing at the bottom side		25–100 stroke

High-pressure resistant sensors max. operating pressure 500 bar

For block cylinders:		1523XXX 1524XXX 1525XXX 1526XXX		1527XXX 1528XXX		1529XXX
General and technical characteristics						
Environmental temperature	°C	-25...+80	-25...+120	-25...+80	-25...+120	-25...+80
Rated operating distance S _n	mm	1.5	1.5	1.5	1.5	1.5
Secured operating distance S _a	mm	0...1.2	0...1.2	0...1.2	0...1.2	0...1.2
Repeatability	%	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5
Hysteresis	%	≤ 15	≤ 15	≤ 15	≤ 15	≤ 15
Dimensions D x T	mm	M12x1 x 56	M12x1 x 56	M12x1x78	M12x1 x 78	M12x1 x 93
Material of the body		1.4104	1.4104	1.4104	1.4104	1.4104
Material of sensing face		EP (Duroplast)	Ceramics	EP (Duroplast)	Ceramics	EP (Duroplast)
Code class	IP54	68	68	68	68	68
Connection type		Plug S4	Plug S4	Plug S4	Plug S4	Plug S4
Electrical characteristics						
Voltage		DC	DC	DC	DC	DC
Wiring		3 wires	3 wires	3 wires	3 wires	3 wires
Switching function		interlock	interlock	interlock	interlock	interlock
Output signal		pnp	pnp	pnp	pnp	pnp
Rated operating voltage	V	24 DC	24 DC	24 DC	24 DC	24 DC
Rated operating current	mA	200	200	200	200	200
Operating voltage	V	10...30 DC	10...30 DC	10...30 DC	10...30 DC	10...30 DC
Ripple	%	≤ 15	≤ 15	≤ 15	≤ 15	≤ 15
Switching frequency	Hz	2000	400	1000	400	1000
No-load current	mA	≤ 10/≤ 2	≤ 8	≤ 10/≤ 1	≤ 8	≤ 10/≤ 1
Voltage drop	V	≤ 1.5/-	≤ 2.5	≤ 1.5/-	≤ 2.5	≤ 1.5/-
Short circuit protection		yes	yes	yes	yes	yes
Protection against reverse battery		yes	yes	yes	yes	yes
Part no. sensor (with mounted seals)		3829 180	3829 228	3829 030	3829 227	3829 204

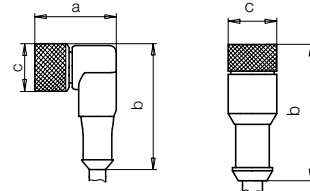
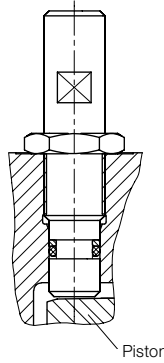


Mounting and setting of the sensors

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