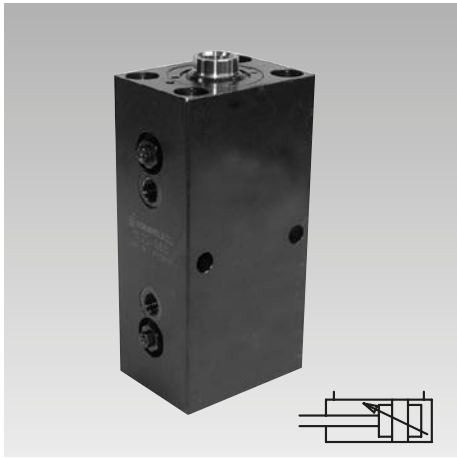


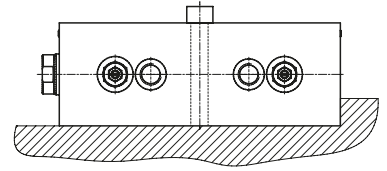
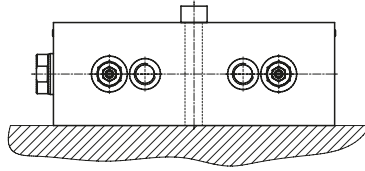


Block Cylinders

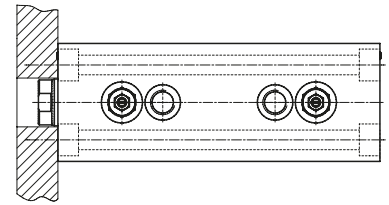
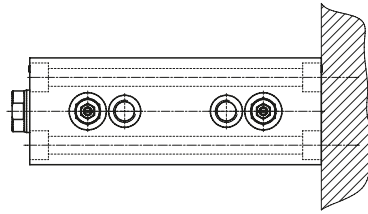
with adjustable stroke end cushioning and optional stroke end control
 double acting, max. operating pressure 500 bar



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

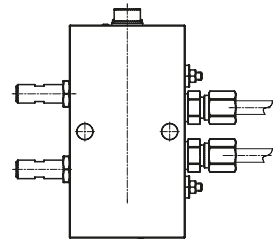
Block cylinders are short-stroke cylinders. In comparison to standard hydro-cylinders, the cushioning strokes are relatively short, thereby the cushioning capacity is limited. Please consider the limit values in the chart. The high-pressure resistant sensors are installed on customer site, in order to 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.

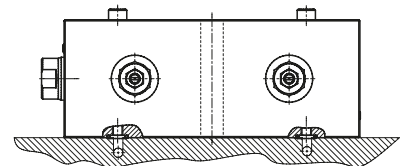
Operating conditions and other data see data sheet A 0.100.

Connecting possibilities

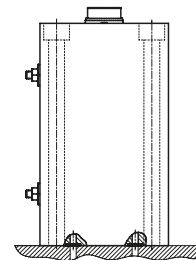
Version with pipe thread



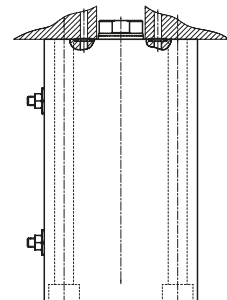
Version for manifold mounting with O-ring sealing Broad side



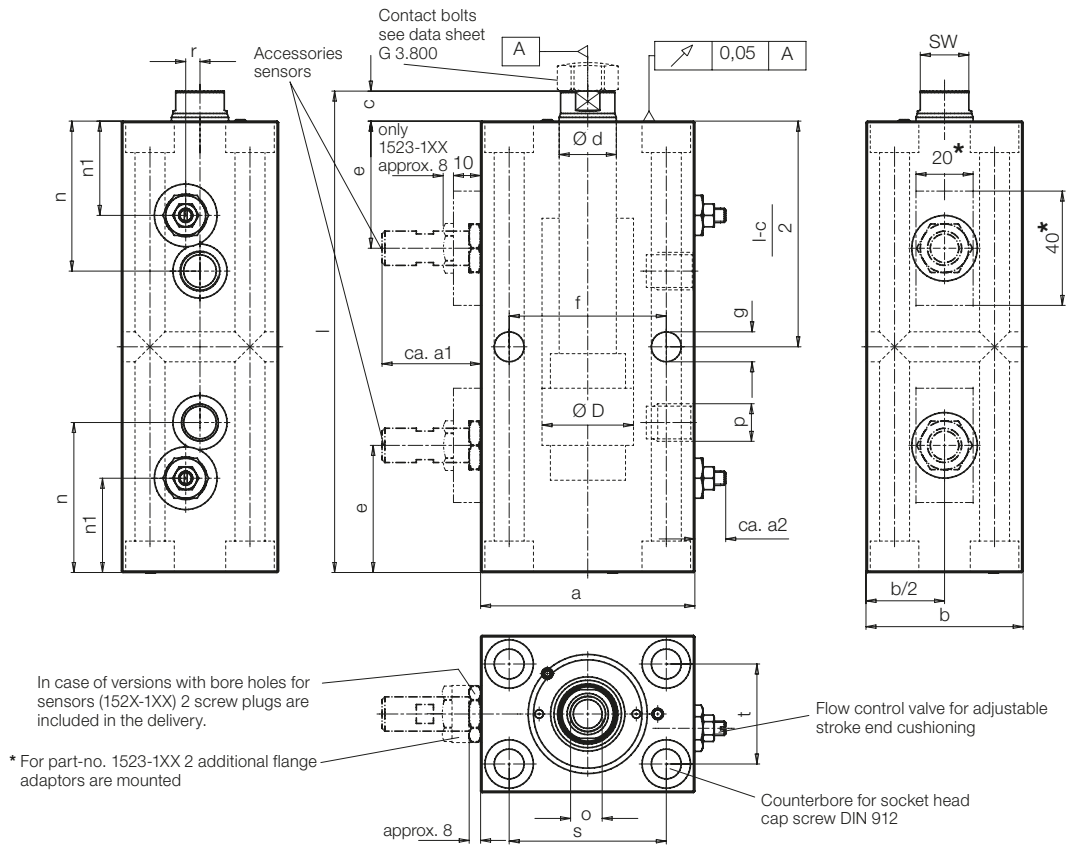
Version for manifold mounting with O-ring sealing Bottom side



Version for manifold mounting with O-ring sealing Rod side



Dimensions - Versions with pipe thread



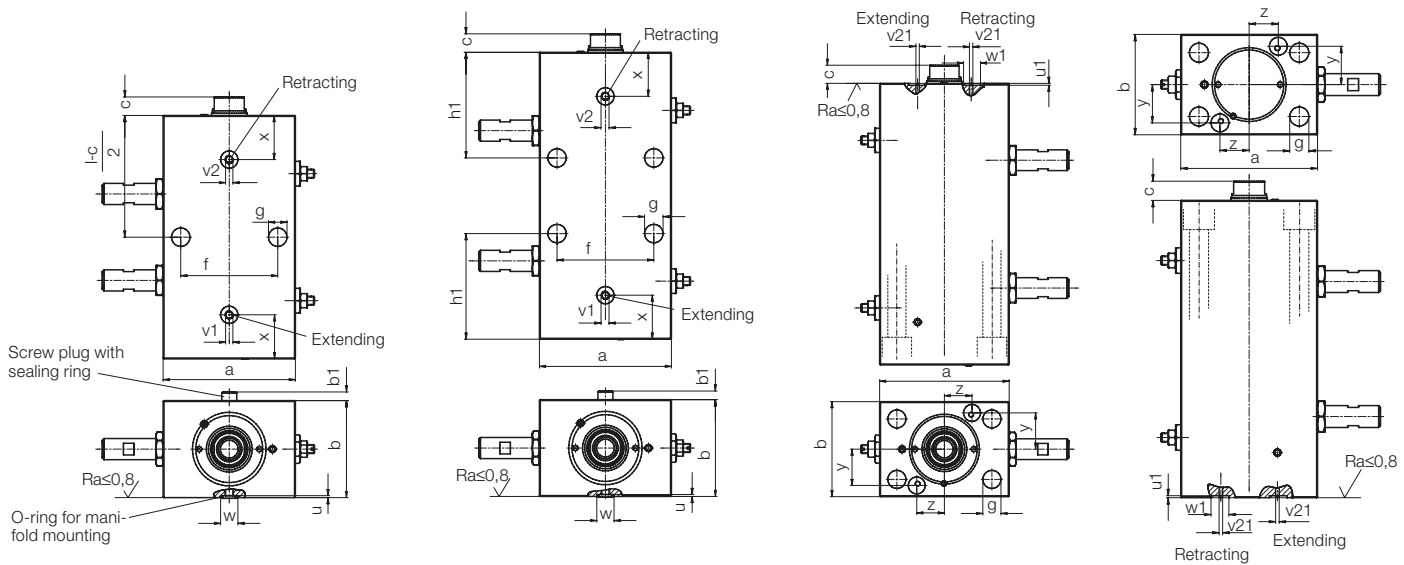
Dimensions - Version for manifold mounting with O-ring sealing

Broad side
"25-40 stroke"
K

Broad side
from 50 mm stroke
L

Rod side
S

Bottom side
B



Version "K" and "L"

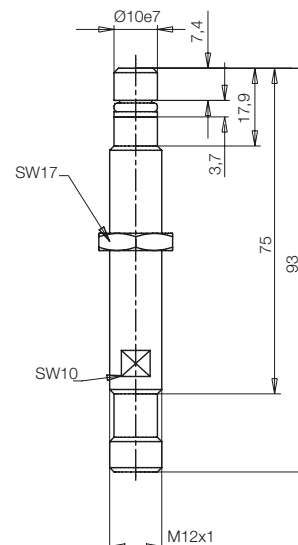
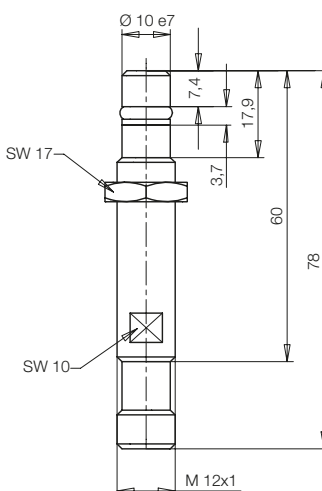
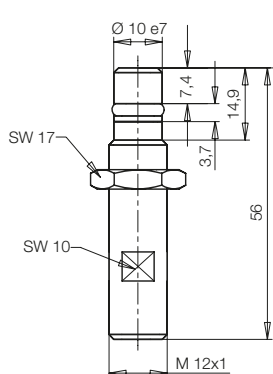
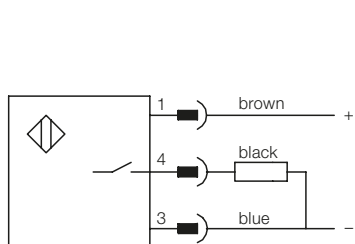
For use of the sensors at the right side, the cylinder will be rotated by 180° and the screw plug with sealing ring and the O-ring for manifold mounting are exchanged.

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/ 10 mm stroke	Stroke to extend	[cm ³]	4.91	8.05	12.56	19.63	31.17	50.26	78.54	
	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			3000-342	3000-342	3000-342	3000-342	3000-347	3000-347	3000-347	
Part-no. O-ring FKM			3001-077	3001-077	3001-077	3001-077	3001-078	3001-078	3001-078	
Only for 1523-XXX-B(S) O-ring 4x1			3000-815							
Only for 1523-XXX-B(S) O-ring 4x1 FKM			3001-628							
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			1523-035	1524-035	1525-035	1526-035	1527-045	1528-045	1529-055	
Part no. with sensor bore holes			1523-135	1524-135	1525-135	1526-135	1527-145	1528-145	1529-155	
Part-no. for 1523-XXX-B(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			1523-065	1524-065	1525-065	1526-065	1527-075	1528-085		
Part no. with sensor bore holes			1523-165	1524-165	1525-165	1526-165	1527-175	1528-185		
Part-no. for 1523-XXX-B(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			1523-095	1524-095	1525-095	1526-095	1527-095	1528-095	1529-095	
Part no. with sensor bore holes			1523-195	1524-195	1525-195	1526-195	1527-195	1528-195	1529-195	
Accessory sensor 80° (description see page 4)										
Part no.			3829-180	3829-180	3829-180	3829-180	3829-030	3829-030	3829-204	
Accessory pull-type connector pnp (description see page 4)										
M12x1 knee-type										
Part no.			3829-049	3829-049	3829-049	3829-049	3829-049	3829-049	3829-049	
M12x1 straight										
Part no.			3829-078	3829-078	3829-078	3829-078	3829-078	3829-078	3829-078	
Code for part-nos.:										
Seals										
			NBR				FKM			
152X-XX0	NBR (max. 100 °C)		152X-X30K	152X-X31K	O-ring sealing at the broad side		25–40 stroke			
-XX5			152X-X60L	152X-X61L			50–80 stroke			
152X-XX1	FKM (max. 200 °C)		152X-X90L	152X-X91L			100 stroke			
-XX6			152X-XX5S	152X-XX6S	O-ring sealing at the rod side		25–100 Stroke			
			152X-XX5B	152X-XX6B	O-ring sealing at the bottom side		25–100 stroke			
(Identification code 0 and 1 only for versions K and L)										

High-pressure resistant sensors max. operating pressure 500 bar

For block cylinders:		1523-XXX 1524-XXX 1525-XXX 1526-XXX		1527-XXX 1528-XXX		1529-XXX
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

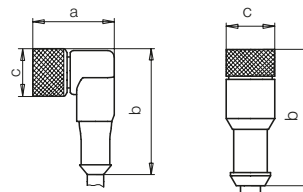
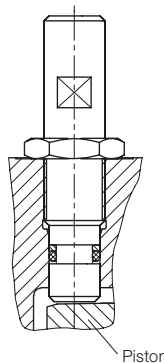


Mounting and setting of the sensors

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