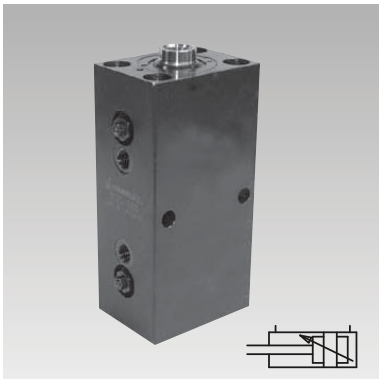
ROEMHELD
HILMA ▪ STARK

Issue 7-14 E

B 1.530

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

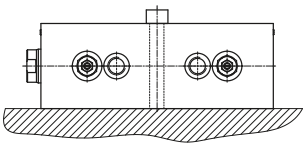
Description

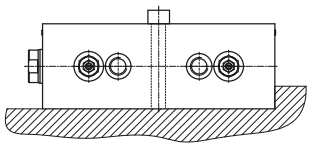
Just before the stroke end of the piston the cushioning spigot enters into the cushioning disc and reduces the flow rate in the return line and thereby also the piston speed. The residual speed can be adjusted in certain limits by an **adjustable flow control valve**. If required, the stroke ends can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

Advantages

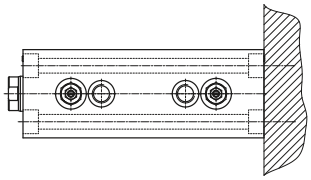
- 7 sizes each with 3 stroke lengths available
- Compact block design
- Same dimensions as the block cylinders as per data sheet B 1.5094, except for total length
- Adjustable stroke end cushioning
- Unthrottled cylinder start from the stroke ends
- Optional stroke end control with pressure-resistant 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

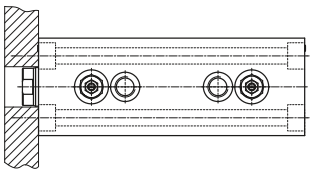
Fixing possibilities





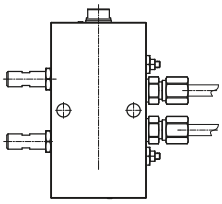
Cylinders must be backed up for operating pressures exceeding 160 bar



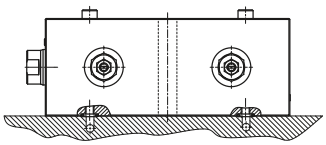


Connecting possibilities

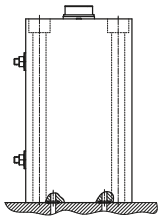
Version with pipe thread



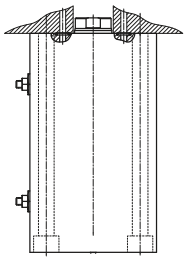
Version for manifold mounting with O-ring sealing Broad side



Version for manifold mounting with O-ring sealing Bottom side



Version for manifold mounting with O-ring sealing Rod side

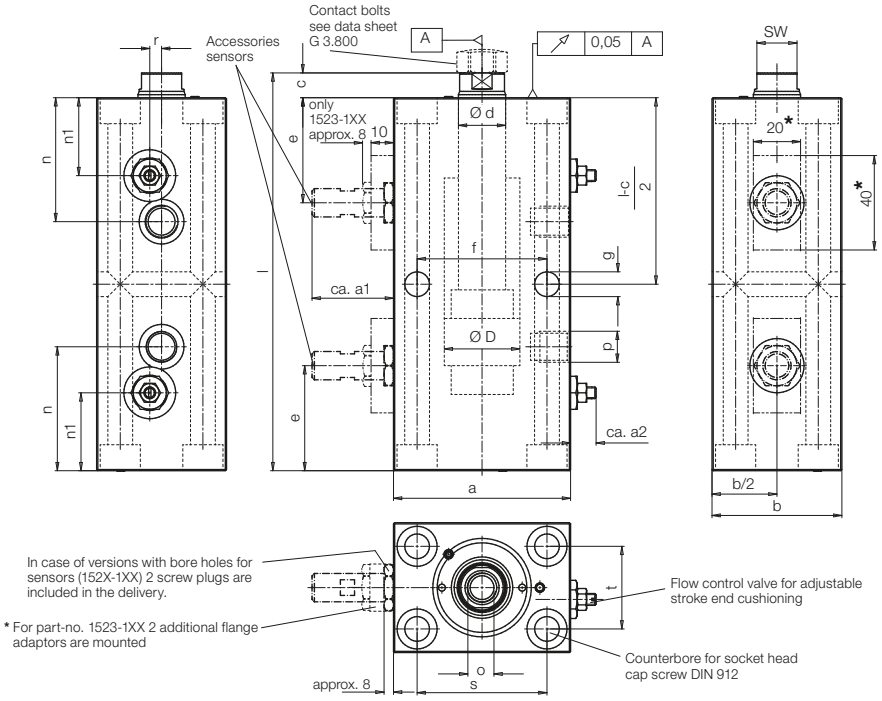


Important notes

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.

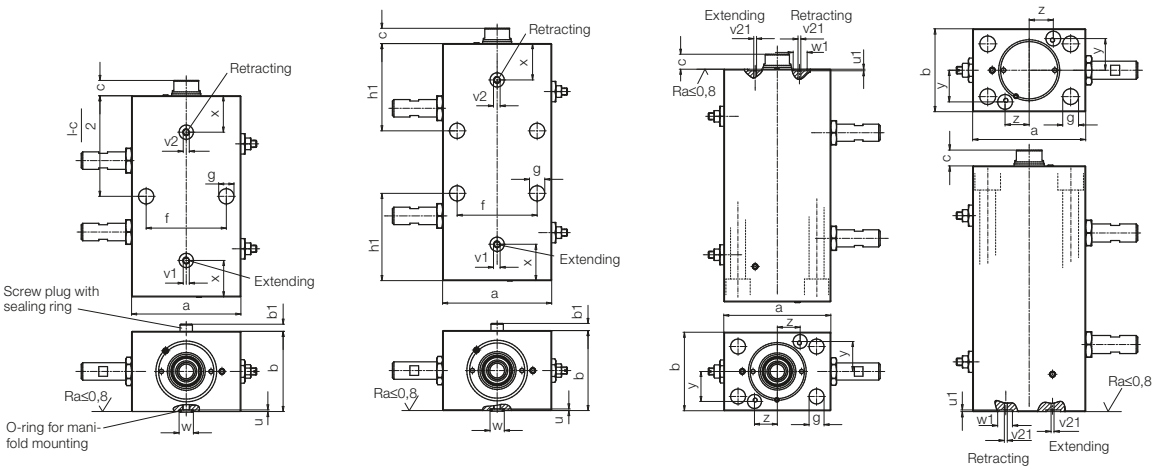
Technical data and dimensions

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/	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			**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**

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**	

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

152X-XX**0** -XX**5** NBR (max. 100 °C)

152X-XX**1** -XX**6** FKM (max. 200 °C)

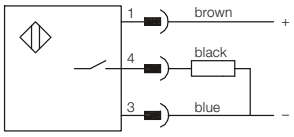
(Identification code **0** and **1** only for versions **K** and **L**)

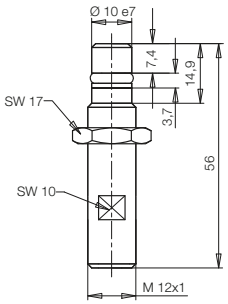
Version for manifold mounting (see page 2)

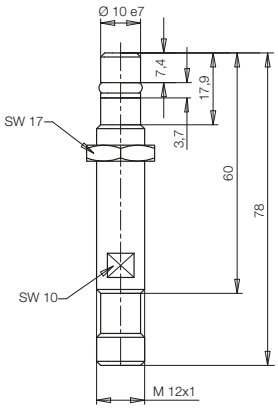
NBR	FKM		
152X-X30**K**	152X-X31**K**	O-ring sealing at the broad side	25–40 stroke
152X-X60**L**	152X-X61**L**		50–80 stroke
152X-X90**L**	152X-X91**L**		100 stroke
152X-XX5**S**	152X-XX6**S**	O-ring sealing at the rod side	25–100 Stroke
152X-XX5**B**	152X-XX6**B**	O-ring sealing at the bottom side	25–100 stroke

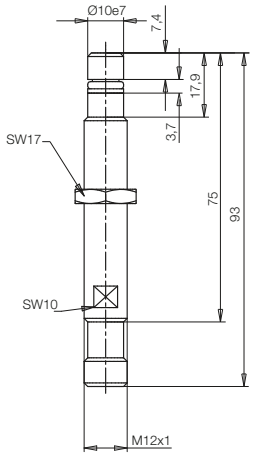
High-pressure resistant sensors
max. operating pressure 500 bar

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 Sn	mm	1.5	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	0...1.2
Repeatability	%	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5
Hysteresis	%	≤ 15	≤ 15	≤ 15	≤ 15	≤ 15
Dimensions DxT	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:

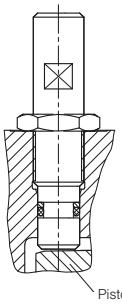
1. Extend piston rod completely
2. Carefully screw in the sensor to the stop at the piston. Turn back the sensor:

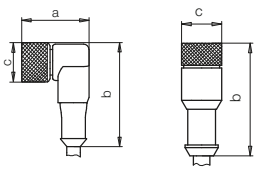
Rotation	Switching point before the final position
1/4	approx. 4 mm
1 1/4	approx. 1 mm

3. Lock the sensor in this position by means of a nut
4. Wire the switch electrically and check the function

Rear sensor:

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





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

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**