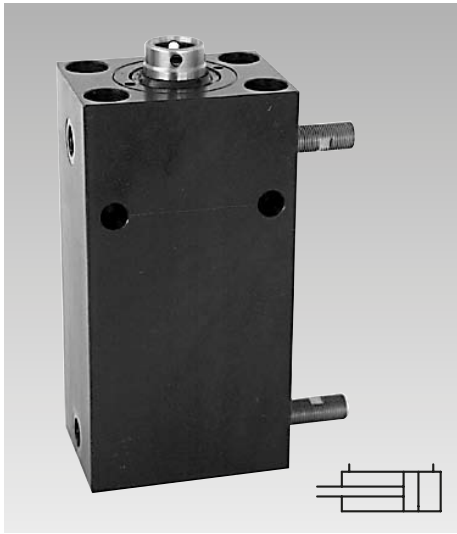


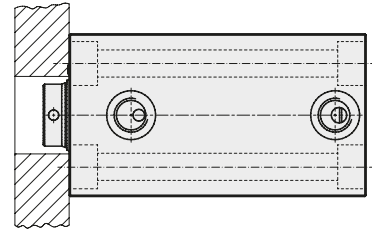
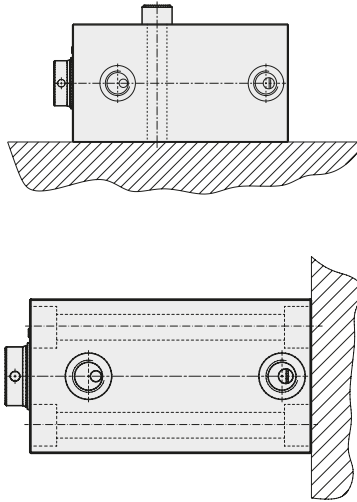


## Block Cylinders

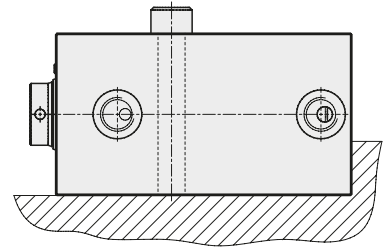
for stroke end control  
 double acting, max. operating pressure 500 bar



### Fixing possibilities



Cylinders must be backed up for operating pressures exceeding 160 bar



### Application

Double-acting block cylinders with stroke end control are particularly suitable for automated installations, time and cycle-dependent clamping and unclamping.

### Description

The stroke end control supplies the required information about the position of the piston. Control is made by pressure-proof sensors, which are fixed at the corresponding stroke end of the cylinder piston in the body.

### Advantages

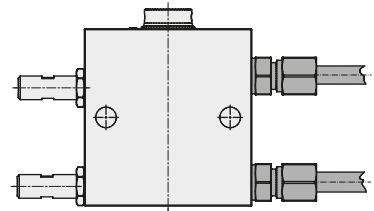
- Compact design
- Same dimensions as the block cylinders as per data sheet B 1.5094, except for total length
- Diverse mounting possibilities
- 3 standard stroke lengths
- Sensors can be mounted at the right or left-hand side
- Switching point of the sensors adjustable up to 5 mm before the final position
- All versions are equipped by default with FKM seals

### Important notes!

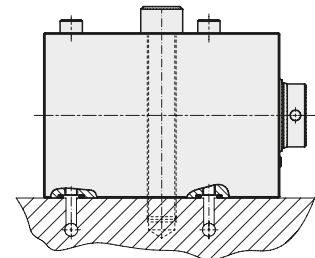
The high-pressure resistant sensors are installed on customer site, in order to avoid transport damages. Please refer to the installation instructions on page 4.

Maximum environmental temperature according to the sensor  $-25...+80^{\circ}\text{C}$  or  $120^{\circ}\text{C}$ .

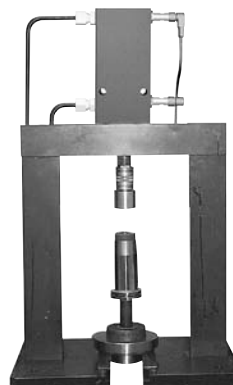
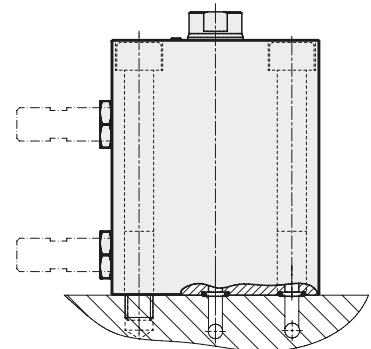
### Version with pipe thread



### Version for manifold mounting with O-ring sealing



### Version for manifold mounting with O-ring sealing bottom side



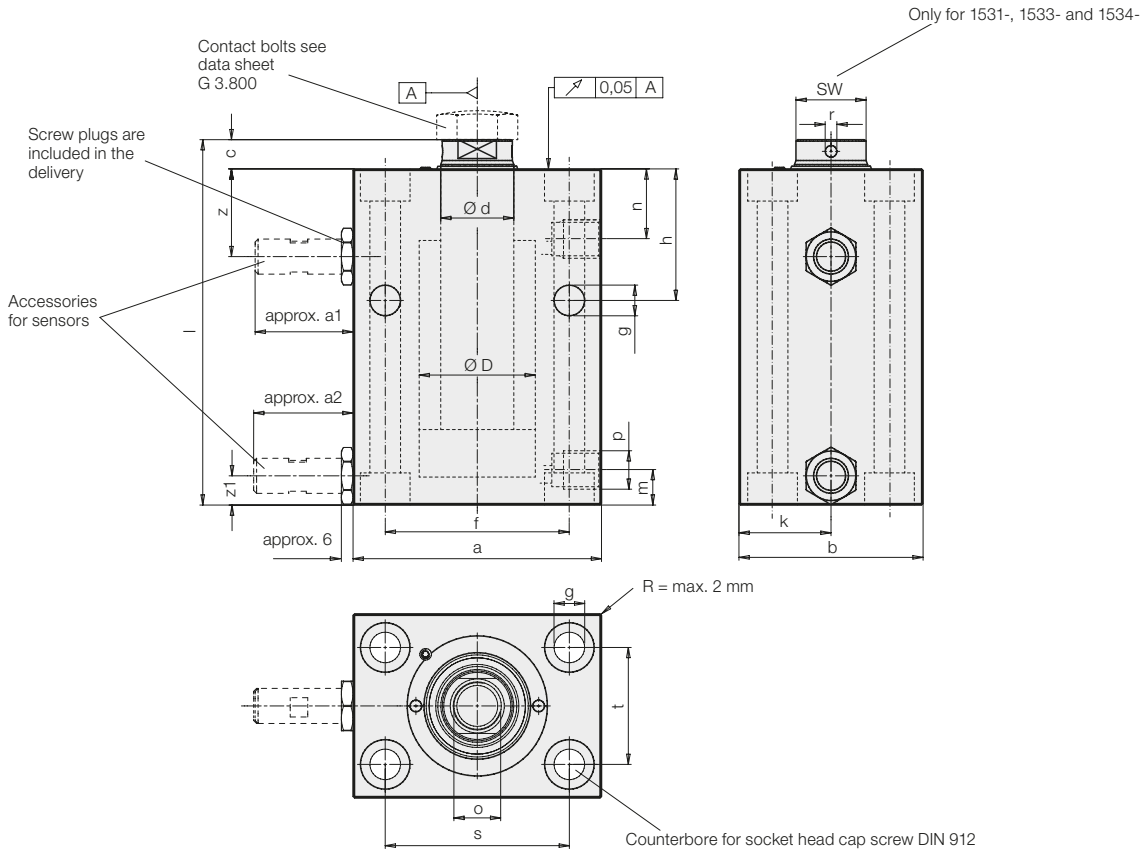
### Application example

Application for pressing in of piston rods into the pistons.

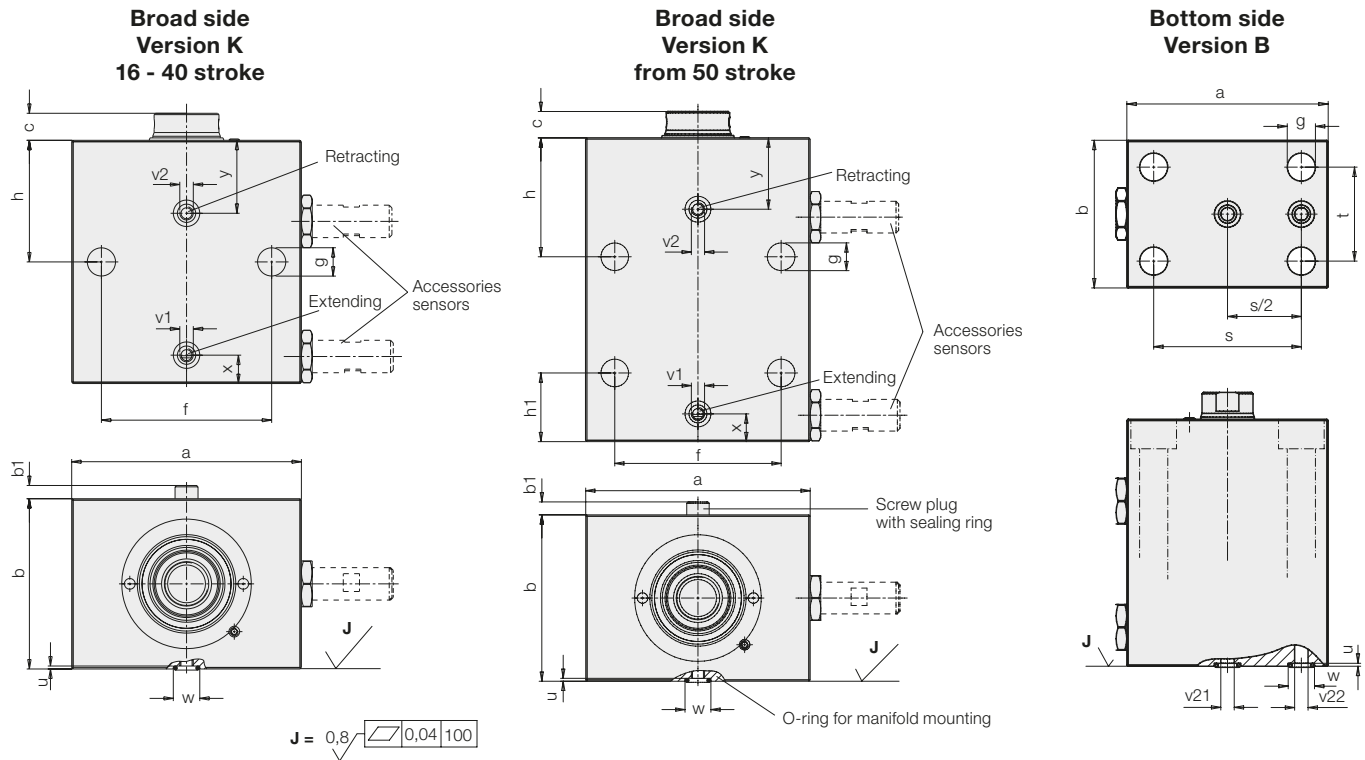
To monitor the press-in depth of the piston rods, the stroke ends of the block cylinder are controlled.

# Technical data

## Dimensions – Versions with pipe thread



## Oil supply and O-ring sealing at:



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

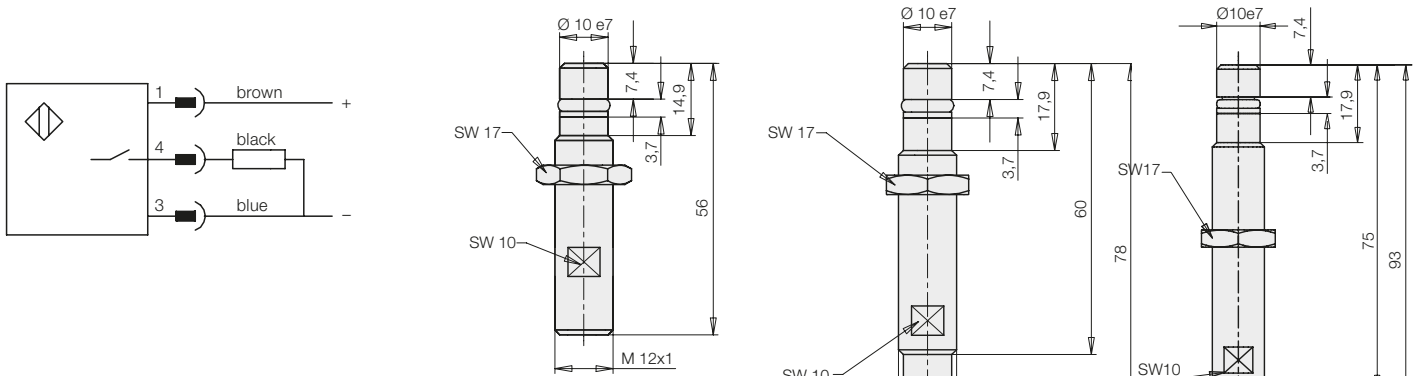
## Dimensions

Piston Ø D	[mm]	16	25	32	40	50	63	80	100	
Rod Ø d	[mm]	10	16	20	25	32	40	50	63	
Push force at	100 bar	[kN]	2	4.9	8	12.6	19.5	31.2	50.4	78.4
	500 bar	[kN]	10	24.5	40.2	62.8	98.5	156	252	392
Pull force at	100 bar	[kN]	1.2	2.9	4.9	7.7	11.6	18.6	30.6	47.4
	500 bar	[kN]	6.1	14.5	24.5	38.3	57.9	93	153.2	236.8
Oil volume/ 10 mm stroke	Stroke to extend	[cm³]	2.01	4.91	8.05	12.56	19.63	31.17	50.26	78.54
	Stroke to retract	[cm³]	1.2	2.9	4.9	7.7	11.6	18.6	30.6	47.4
a	[mm]	60	65	75	85	100	125	160	200	
a1	[mm]	35	34.5	33.5	33.5	30	47	37	42	
a2	[mm]	35	34.5	33.5	34	32	47	39	44	
b	[mm]	35	45	55	63	75	95	120	150	
b1	[mm]	4	5	5	5	6	5.5	7.5	7.5	
c	[mm]	6	7	10	10	10	14	14	15	
f	[mm]	30	50	55	63	76	95	120	158	
g	[mm]	6.5	8.5	10.5	10.5	13	17	21	25	
h	[mm]	40	38	45	45	49	52	62	64	
h1	[mm]	24	38	29	26	33	37	47	52	
k	[mm]	17.5	22.5	27.5	31.5	37.5	47.5	60	75	
m	[mm]	11	16	13	12	13	20.5	20	24	
n	[mm]	16.5	18	24	24	27	26	34	35	
o x depth of thread	[mm]	M6x12	M10x15	M12x15	M16x25	M20x30	M27x40	M30x40	M42x60	
p		G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	G 1/2	G 1/2	G 1/2	
r	[mm]	-	-	-	4	4	4	5	6	
s	[mm]	40	50	55	63	76	95	120	158	
t	[mm]	22	30	35	40	45	65	80	108	
u ± 0.05	[mm]	1.1	1.1	1.1	1.1	1.1	1.5	1.5	1.5	
v1 extend	[mm]	M4	M5	M5	M5	M6	M6	M8	M8	
v2 retract	[mm]	M4	M5	M5	M5	M6	M6	M8	M8	
v21 extend	[mm]	3.5	4	5	6	6	8	8	8	
v22 retract	[mm]	3.5	4	5	6	6	8	8	8	
w +0.2	[mm]	9.8	9.8	9.8	9.8	10.8	13.8	13.8	13.8	
x	[mm]	9	16	13	10.5	13	18	22.5	24	
y	[mm]	20.5	21	27	27	29.5	31.5	39	40	
z	[mm]	28	24.5	30.5	30	33	34.5	41.5	42.5	
z1	[mm]	11	12.7	14.5	13	17.5	21	26	30	
R	[mm]	-	-	-	2	2	2	2	-	
SW	[mm]	8	13	17	-	-	-	-	-	
Dimensions O-ring		7x1.5	7x1.5	7x1.5	7x1.5	8x1.5	10x2	10x2	10x2	
Part-no. O-ring		3001-077	3001-077	3001-077	3001-077	3000-275	3001-078	3001-078	3001-078	
<b>Stroke ±1</b>	<b>[mm]</b>	<b>16</b>	<b>20</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>30</b>	<b>32</b>	<b>40</b>	
Total length l ±1	[mm]	81	88	102	104	109	126	141	156	
Weight	[kg]	1	1.6	2.7	3.4	5.1	8.9	16.3	28.2	
<b>With pipe thread</b>										
<b>Part no.</b>		<b>1531-136</b>	<b>1533-136</b>	<b>1534-136</b>	<b>1535-136</b>	<b>1536-136</b>	<b>1537-146</b>	<b>1538-146</b>	<b>1539-156</b>	
<b>For manifold mounting with O-ring sealing</b>										
<b>Part no. version K</b>		<b>1531-130K</b>	<b>1533-130K</b>	<b>1534-130K</b>	<b>1535-130K</b>	<b>1536-130K</b>	<b>1537-140K</b>	<b>1538-140K</b>	<b>1539-150K</b>	
<b>Part no. version B</b>		<b>1531-136B</b>	<b>1533-136B</b>	<b>1534-136B</b>	<b>1535-136B</b>	<b>1536-136B</b>	<b>1537-146B</b>	<b>1538-146B</b>	<b>1539-156B</b>	
<b>Stroke ±1</b>	<b>[mm]</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>63</b>	<b>80</b>		
Total length l ±1	[mm]	115	118	127	129	134	159	189		
Weight	[kg]	1.7	2.3	3	4.2	6.2	11.1	21.7		
<b>With pipe thread</b>										
<b>Part no.</b>		<b>1531-166</b>	<b>1533-166</b>	<b>1534-166</b>	<b>1535-166</b>	<b>1536-166</b>	<b>1537-176</b>	<b>1538-186</b>		
<b>For manifold mounting with O-ring sealing</b>										
<b>Part no. version L</b>		<b>1531-160L</b>	<b>1533-160L</b>	<b>1534-160L</b>	<b>1535-160L</b>	<b>1536-160L</b>	<b>1537-170L</b>	<b>1538-180L</b>		
<b>Part no. version B</b>		<b>1531-166B</b>	<b>1533-166B</b>	<b>1534-166B</b>	<b>1535-166B</b>	<b>1536-166B</b>	<b>1537-176B</b>	<b>1538-186B</b>		
<b>Stroke ±1</b>	<b>[mm]</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	
Total length l ±1	[mm]	165	168	177	179	184	196	209	216	
Weight	[kg]	2.5	3.3	4.8	6	8.6	14	24.2	39	
<b>With pipe thread</b>										
<b>Part no.</b>		<b>1531-196</b>	<b>1533-196</b>	<b>1534-196</b>	<b>1535-196</b>	<b>1536-196</b>	<b>1537-196</b>	<b>1538-196</b>	<b>1539-196</b>	
<b>For manifold mounting with O-ring sealing</b>										
<b>Part no. version L</b>		<b>1531-190L</b>	<b>1533-190L</b>	<b>1534-190L</b>	<b>1535-190L</b>	<b>1536-190L</b>	<b>1537-190L</b>	<b>1538-190L</b>	<b>1539-190L</b>	
<b>Part no. version B</b>		<b>1531-196B</b>	<b>1533-196B</b>	<b>1534-196B</b>	<b>1535-196B</b>	<b>1536-196B</b>	<b>1537-196B</b>	<b>1538-196B</b>	<b>1539-196B</b>	
<b>Accessory sensor</b>										
<b>Part no.</b>		<b>3829-180</b>	<b>3829-180</b>	<b>3829-180</b>	<b>3829-180</b>	<b>3829-180</b>	<b>3829-030</b>	<b>3829-030</b>	<b>3829-204</b>	
<b>Accessory pull-type connector pnp</b>										
M12x1 knee-type										
<b>Part no.</b>		<b>3829-049</b>	<b>3829-049</b>	<b>3829-049</b>	<b>3829-049</b>	<b>3829-049</b>	<b>3829-049</b>	<b>3829-049</b>	<b>3829-049</b>	
M12x1 straight										
<b>Part no.</b>		<b>3829-078</b>	<b>3829-078</b>	<b>3829-078</b>	<b>3829-078</b>	<b>3829-078</b>	<b>3829-078</b>	<b>3829-078</b>	<b>3829-078</b>	

Technical characteristics see page 4

# High-pressure resistant sensors

For block cylinders:	1531-XXX		1537-XXX		1539-XXX
	1533-XXX	1534-XXX	1538-XXX		
	1535-XXX	1536-XXX			
<b>General and technical characteristics</b>					
<b>Environmental temperature</b>	°C		-25...+80	-25...+120	-25...+80
Rated operating distance S <sub>n</sub>	mm	1.5	1.5	1.5	1.5
Secured operating distance S <sub>a</sub>	mm	0...1.2	0...1.2	0...1.2	0...1.2
Repeatability	%	≤ 5	≤ 5	≤ 5	≤ 5
Hysteresis	%	≤ 15	≤ 15	≤ 15	≤ 15
Dimensions D x T	mm	M12x1 x 56	M12x1 x 56	M12x1x78	M12x1 x 78
Material of the body		1.4104	1.4104	1.4104	1.4104
Material of sensing face		EP (Duroplast)	Ceramics	EP (Duroplast)	Ceramics
Code class	IP54	68	68	68	68
Connection type		Plug S4	Plug S4	Plug S4	Plug S4
<b>Electrical characteristics</b>					
Voltage		DC	DC	DC	DC
Wiring		3 wires	3 wires	3 wires	3 wires
Switching function		interlock	interlock	interlock	interlock
Output signal		npn	npn	npn	npn
Rated operating voltage	V	24 DC	24 DC	24 DC	24 DC
Rated operating current	mA	200	200	200	200
Operating voltage	V	10...30 DC	10...30 DC	10...30 DC	10...30 DC
Ripple	%	≤ 15	≤ 15	≤ 15	≤ 15
Switching frequency	Hz	2000	400	1000	400
No-load current	mA	≤ 10/≤ 2	≤ 8	≤ 10/≤ 1	≤ 8
Voltage drop	V	≤ 1.5/-	≤ 2.5	≤ 1.5/-	≤ 2.5
Short circuit protection		yes	yes	yes	yes
Protection against reverse battery		yes	yes	yes	yes
<b>Part no. sensor</b> (with mounted seals)		<b>3829-180</b>	<b>3829-228</b>	<b>3829-030</b>	<b>3829-227</b>
				<b>3829-227</b>	<b>3829-204</b>

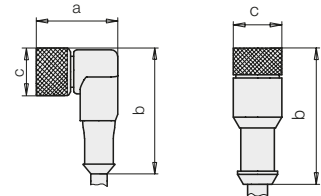
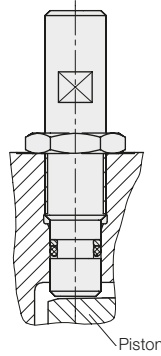


### Mounting and setting of the sensors

#### 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 npn M12, knee-type	27	38	14.5	3	IP68	-25...+80 °C	yes	<b>3829-049</b>
Plug-type connector npn M12, straight	-	44	14.5	5	IP68	-40...+90 °C	no	<b>3829-078</b>
Plug-type connector npn M12, knee-type	27	38	14.5	5	IP68	-20...+105 °C	no	<b>3829-230</b>
Plug-type connector npn M12, straight	-	44	14.5	5	IP68	-40...+105 °C	no	<b>3829-229</b>