

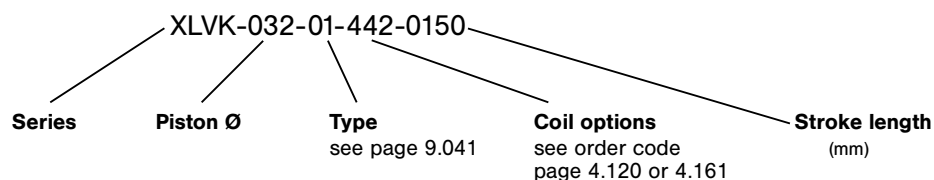
Cylinder/valve combination series XLVK

Cylinder ISO 15552

G1/8 and G1/4 • piston Ø 32 to 125 mm



Order code



Design and function

Double acting Al-profile cylinder with integrated sensor grooves, adjustable cushions and permanent magnet for proximity sensors. The sensors can be installed directly into the sensor grooves of the Al-profile. The cylinder includes a 5/2- or 5/3-way valve with a high flow rate and compact dimensions.

Alternatively the fittings can include a flow control valve for infinite speed adjustment.

Please specify the required voltage when ordering. The valve includes the standard socket 28-ST-01 if not specified. Other coils and socket types are available, see accessories on page 9.044.

Standard stroke lengths in table below, additional lengths on request.

Order number Please complete according to order code.	XLVK-032-...	XLVK-040-...	XLVK-050-...	XLVK-063-...	XLVK-080-...	XLVK-100-...	XLVK-125-...	
Piston Ø (mm)	32	40	50	63	80	100	125	
Force at 6 bar in N**	Extension	434 (97.6 lbf.)	678 (152.4 lbf.)	1060 (238.3 lbf.)	1682 (378.1 lbf.)	2713 (609.9 lbf.)	4239 (953.0 lbf.)	6623 (1489.0 lb.)
	Retraction	373 (83.8 lbf.)	570 (128.1 lbf.)	890 (200.1 lbf.)	1513 (340.1 lbf.)	2448 (550.3 lbf.)	3974 (893.4 lbf.)	6189 (1391.4 lb.)
Valve type	KM 09				KM 10			
Connection	G1/8				G1/4			
Nominal size	6 mm (0.2362 in)				9 mm (0.3543 in)			
Piston rod thread	M10 x 1.25	M12 x 1.25	M16 x 1.5	M16 x 1.5	M20 x 1.5	M20 x 1.5	M27 x 2	
Cushioning length mm	27	29	32	32	32	32	42	
Operating pressure	3 ... 10 bar (max. 8 bar at 2.2 W) 43.5 ... 145 psi (max. 116 psi at 2.2 W)				2.5 ... 10 bar (max. 8 bar at 2.2 W) 36 ... 145 psi (max. 116 psi at 2.2 W)			
Medium	Compressed air in accordance with ISO 8573-1:2001, Class 7 4 – and free of aggressive additives							
Temperature range	– 10 °C ... + 70 °C (+ 14 °F ... + 158 °F)							
Standard stroke lengths (mm)*	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, max. 2800							
Standard voltage	DC: 12 V, 24 V AC: 24 V, 115 V, 230 V / 50/60 Hz							
Power consumption	DC: 4.2 W, AC: 7.0/4.0 VA special DC 12 V, 24 V with 2.2 W							
Degree of protection	IP 65 according to EN 60529							

* = The internal friction is considered.

**= refer to "Critical Load Diagram" on page 9.240 to determine critical values on the piston rod.

Cylinder/valve combination series XLVK

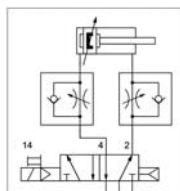
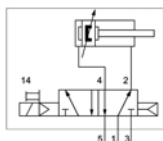
Cylinder ISO 15552

G1/8 and G1/4 • piston Ø 32 to 125 mm



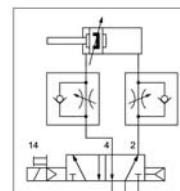
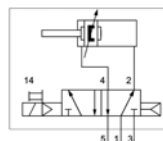
Types of series XLVK

Cylinder with 5/2-way valve, normally retracted



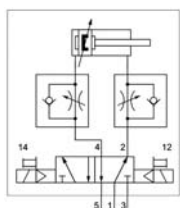
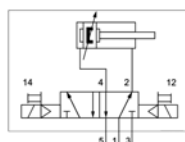
- 01 – standard cylinder with valve (air spring return)
- 02 – valve with spring return
- 03 – piston rod in stainless steel
- 04 – valve with spring return, piston rod in stainless steel
- 05 – standard cylinder with flow controls
- 06 – valve with spring return and flow controls
- 07 – piston rod in stainless steel and flow controls
- 08 – valve with spring return, piston rod in stainless steel and flow controls

Cylinder with 5/2-way valve, piston rod normally extended



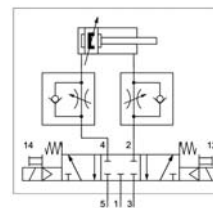
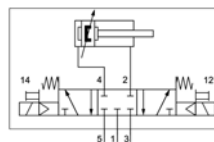
- 10 – standard cylinder with valve (air spring return)
- 11 – valve with spring return
- 12 – piston rod in stainless steel
- 13 – valve with spring return, piston rod in stainless steel
- 15 – standard cylinder with flow controls
- 16 – valve with spring return and flow controls
- 17 – piston rod in stainless steel and flow controls
- 18 – valve with spring return, piston rod in stainless steel and flow controls

Cylinder with 5/2-way valve, double solenoid



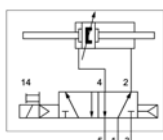
- 20 – standard cylinder
- 21 – piston rod in stainless steel
- 22 – standard cylinder with flow controls
- 23 – piston rod in stainless steel and flow controls

Cylinder with 5/3-way valve, center position closed

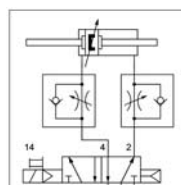


- 25 – standard cylinder
- 26 – piston rod in stainless steel
- 27 – standard cylinder with flow controls
- 28 – piston rod in stainless steel and flow controls

Cylinder with double-ended piston rod, 5/2-way valve

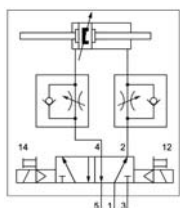
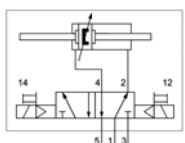


- 30 – standard cylinder with valve (air spring return)
- 31 – valve with spring return
- 32 – piston rod in stainless steel
- 33 – valve with spring return, piston rod in stainless steel



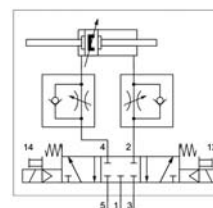
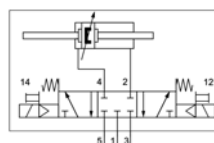
- 35 – standard cylinder with flow controls
- 36 – valve with spring return and flow controls
- 37 – piston rod in stainless steel and flow controls
- 38 – valve with spring return, piston rod in stainless steel and flow controls

Cylinder with double-ended piston rod 5/2-way valve, double solenoid



- 40 – standard cylinder
- 41 – piston rod in stainless steel
- 42 – standard cylinder with flow controls
- 43 – piston rod in stainless steel and flow controls

Cylinder with double-ended piston rod 5/3-way valve, center position closed



- 45 – standard cylinder
- 46 – piston rod in stainless steel
- 47 – standard cylinder with flow controls
- 48 – piston rod in stainless steel and flow controls

Further cylinder/valve combinations on request.

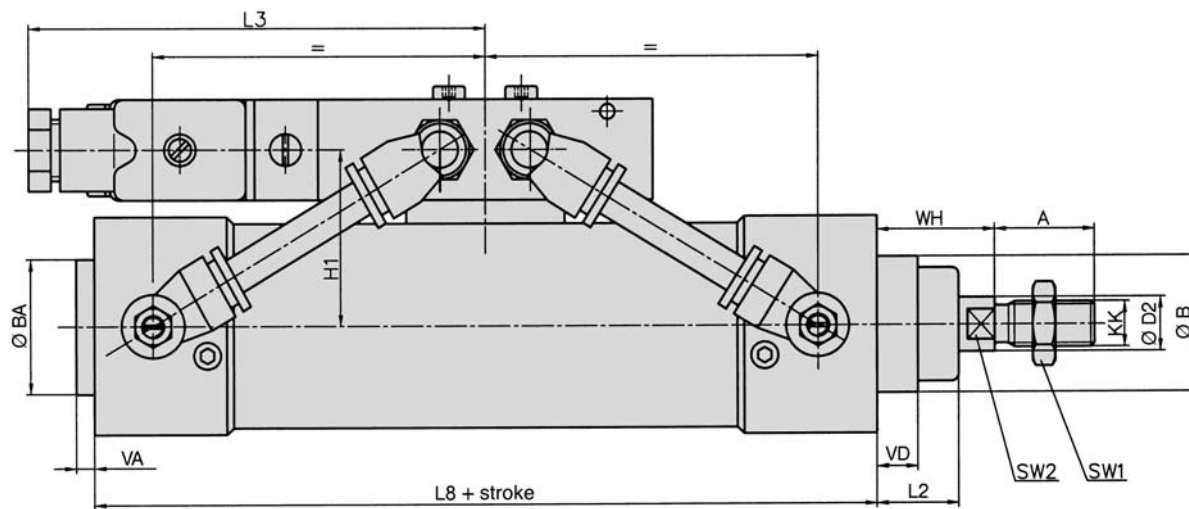
Cylinder/valve combination series XLVK

Cylinder ISO 15552

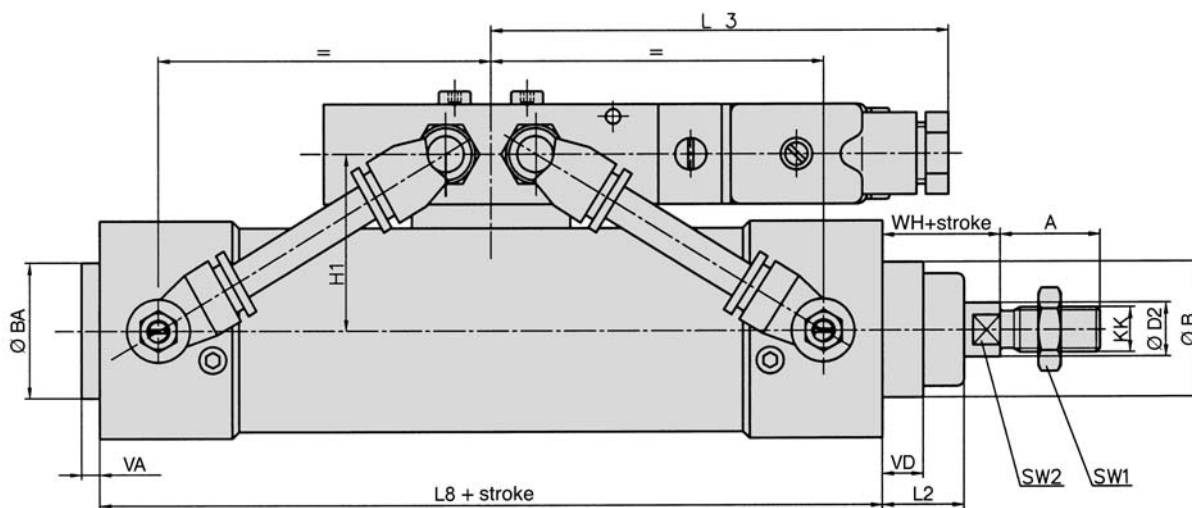
G1/8 and G1/4 • piston Ø 32 to 125 mm



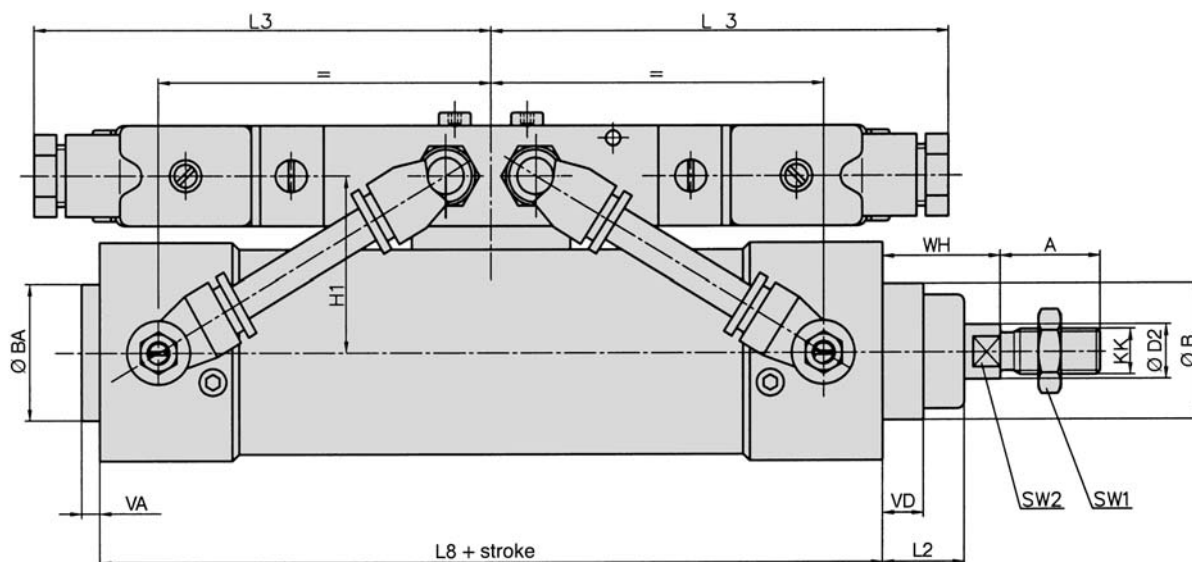
Types with single solenoid valve, normally retracted



Types with single solenoid valve, piston rod normally extended



Types with double solenoid or 5/3-way valves



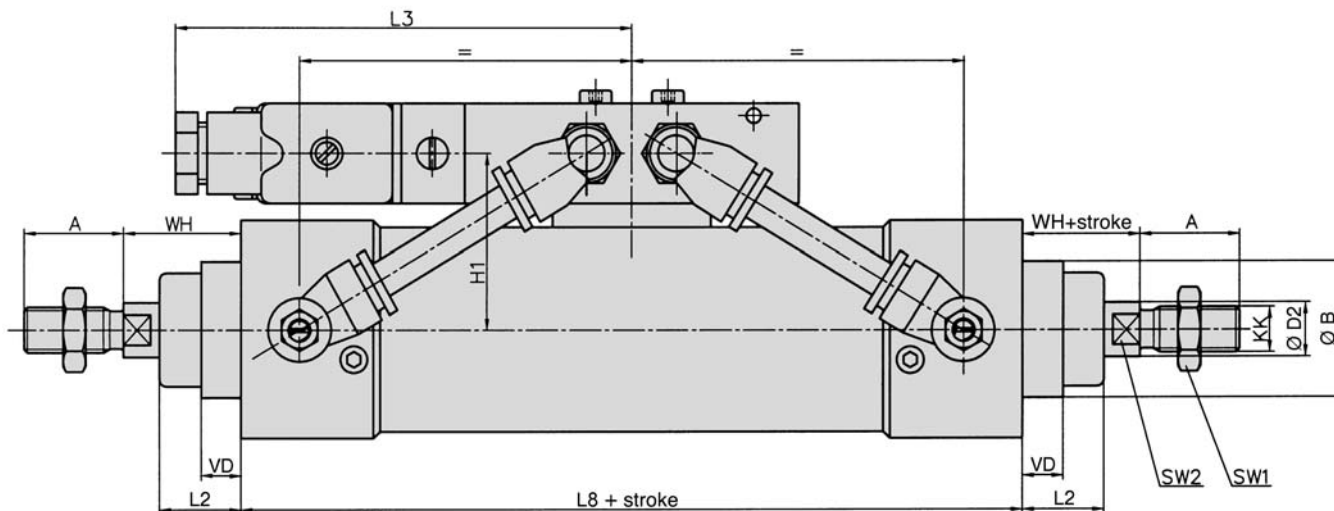
Cylinder/valve combination series XLVK

Cylinder ISO 15552

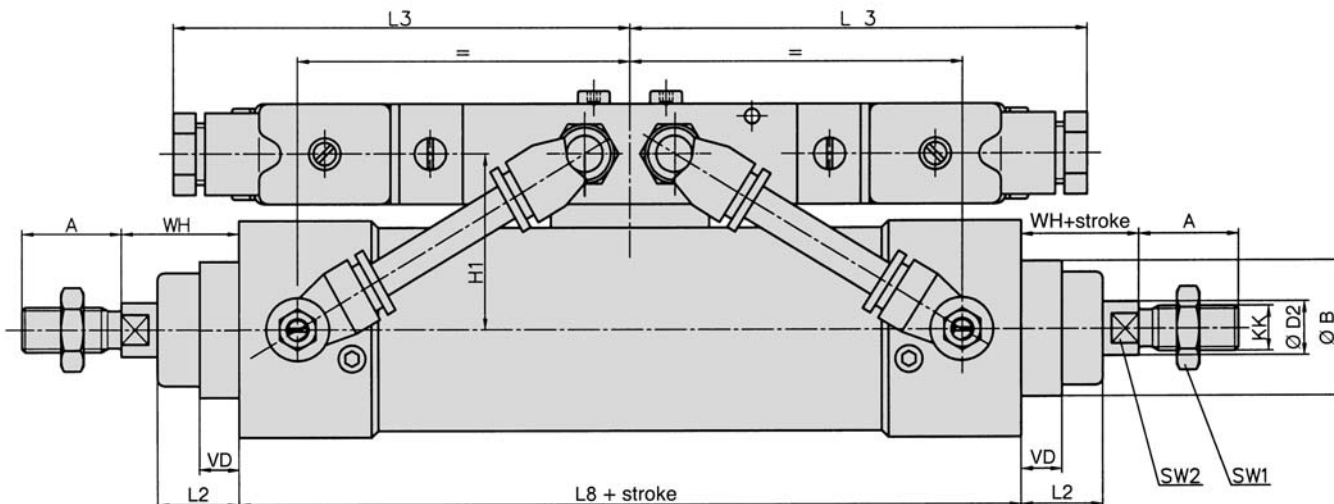
G1/8 and G1/4 • piston Ø 32 to 125 mm

airtec

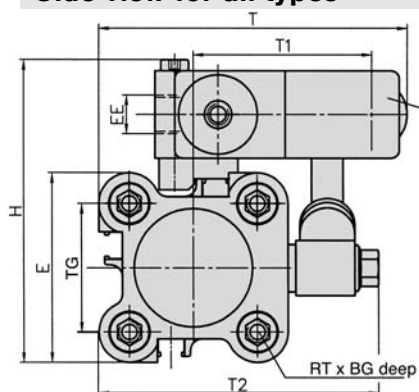
Types with single solenoid valve, double-ended piston rod



Types with double solenoid or 5/3-way valves, double-ended piston rod



Side view for all types



Coil can be repositioned by 3 x 90°. Socket can be repositioned by 180°.

All dimensions are for types with adjustable flow controls. For cylinders without throttles, T, T1 and T2 are smaller.

Cyl.-Ø	A	Ø B Ø BA	BG	Ø D2	□ E	EE	H
32	22	30	16	12	47	G1/8	76
40	24	35	16	16	54	G1/8	83.3
50	32	40	21.5	20	63	G1/8	92
63	32	45	21.5	20	74	G1/4	107
80	40	45	17.5	25	93.5	G1/4	132
100	40	55	17.5	25	110	G1/4	150
125	54	60	20.5	31	138	G1/2	178
	-2	d 11		f 7			

Cyl.-Ø	H 1	KK	L 2	L 3	L 8	RT	SW 1	SW 2	T	T 1	T 2	□ TG	VA	VD	WH
32	38.7	M10 x 125	18	101	94	M 6	17	10	78	46	72	32.5	4	9.0	26
40	42.5	M12 x 125	22	101	105	M 6	19	13	83	47	81	38	4	9.0	30
50	46.5	M16 x 1.5	25.5	101	106	M 8	24	16	94	53	91	46.5	4	9.0	37
63	55	M16 x 1.5	25	101	121	M 8	24	16	111	65	107	56.5	4	9.0	37
80	66.4	M20 x 1.5	35	109	128	M10	30	21	120	64	131	72	4	9.5	46
100	76.8	M20 x 1.5	38	109	138	M10	30	21	142	78	155	89	4	7.5	51
125	90.5	M27 x 2	46	109	160	M12	41	27	153	73.5	163.5	110	6	11	65

Accessories for Cylinder/valve combination series XLVK

Cylinder ISO 15552

G1/8 and G1/4 • piston Ø 32 to 125 mm



Piston rod accessories



Flexible coupling
FK
Page 9.212



Rod eye
FO + RO
Page 9.212



Rod clevis with pin
FD + RD
Page 9.211



Piston rod nut
FE + RL
Page 9.212

Mounting accessories



Foot mount
XLB-Ø-01
Page 9.016



Flange mount
XLB-Ø-02
Page 9.016



Clevis mount with bushing
XLB-Ø-04
Page 9.016



Swivel mount
XLB-Ø-05
Page 9.017



Swivel mount 90°
XLB-Ø-06
Page 9.017



Swivel mount with
spherical bearing
XLB-Ø-12
Page 9.019



Clevis pin
XLB-Ø-08
Page 9.017



Trunnion flange mount
XLB-Ø-11
Page 9.018



Small clevis mount
with non rotating pin
XLB-Ø-14
Page 9.019

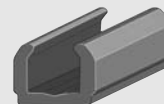
Proximity sensors



Sensors
ZS-
Page 9.220



Connecting cable
KA-
Page 9.221



Cover for sensor groove
XLB-011 0,5 m

Seal kits see page 9.045.

Solenoid coils, actuators

Solenoid coils	23-SP-011-...	Standard coil	page 4.280
	23-SP-012-...	Coil with 2,2 W power consumption	page 4.280
	23-SP-011-5-O12	Coil with M12 plug connection, 4,8 W, LED and circuit protection	page 4.282
	23-SP-012-5-O32	Coil with M12 plug connection, 2,5 W, LED and circuit protection	page 4.282
Actuators	23-R-011	Standard actuator	
	23-R-012	Low power actuator	
Plug sockets	28-ST-01	Standard plug socket	page 4.283
	28-ST-04-...	Plug socket with LED	page 4.283
	28-ST-06-...	Plug socket with LED and circuit protection	page 4.283
	28-ST-06-K3-...	Plug socket with LED, circuit protection and cable	page 4.283

User information

Low power consumption coils (2.2 W or 2.5 W) are for pressures up to 8 bar (116 psi) only. Valve actuator 23-R-012 is required. The actuator 23-R-012 is nickel plated. Make sure that the coils with the right power consumption are used.

For outdoor applications or in areas with high humidity use coil 23-SP-011-1-... or 23-SP-012-1-... (see page 4.280).

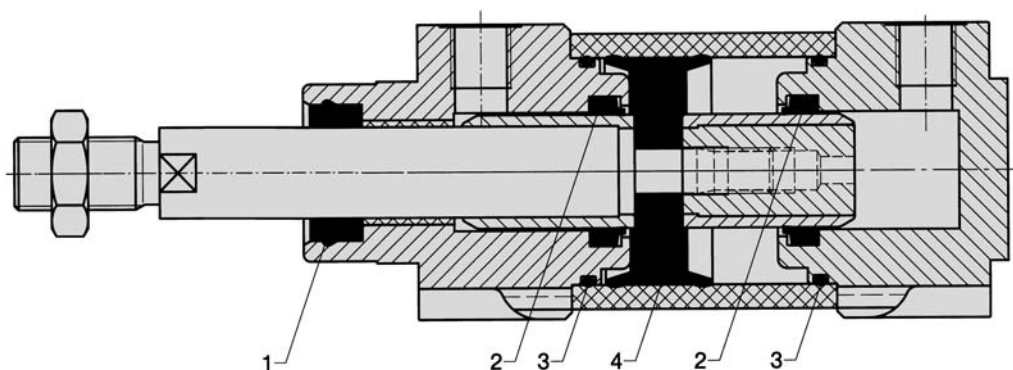
The following types are available on request

Coils and sockets with contacts according to DIN EN 175301-803 type B (U-form).

Plug sockets with molded cable.

Seal kits for series XL, XG, CX*

For cylinders with piston rod on one side



Seal kits – standard

Order number	Ø
VS-XL-032-01	32 mm
VS-XL-040-01	40 mm
VS-XL-050-01	50 mm
VS-XL-063-01	63 mm
VS-XL-080-01	80 mm
VS-XL-100-01	100 mm
VS-XL-125-01	125 mm
VS-XG-160-01	160 mm
VS-XG-200-01	200 mm
VS-XG-250-01	250 mm
VS-XG-320-01	320 mm

Seal kits – Viton

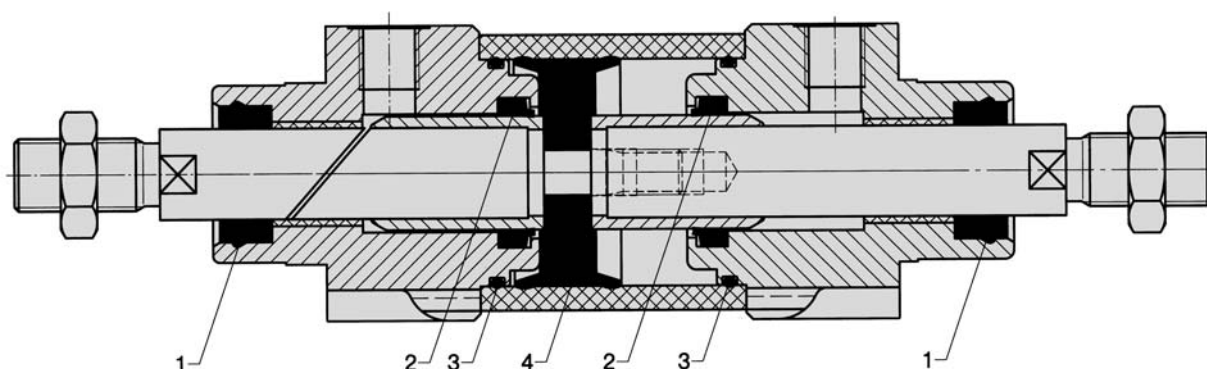
Order number	Ø
VS-XL-032-02	32 mm
VS-XL-040-02	40 mm
VS-XL-050-02	50 mm
VS-XL-063-02	63 mm
VS-XL-080-02	80 mm
VS-XL-100-02	100 mm
VS-XL-125-02	125 mm
VS-XG-160-02	160 mm
VS-XG-200-02	200 mm
VS-XG-250-02	250 mm
VS-XG-320-02	320 mm

Content

Pos.	Part	Quantity
1	Wiper and seal element	1
2	Cushion seal	2
3	O-ring	2
4	Piston	1
	Grease	1

* Repair kits for CX from Ø 32 to Ø 100 are identical with XL.

For cylinders with piston rod on both sides



Seal kits – standard

Order number	Ø
VS-XL-032-03	32 mm
VS-XL-040-03	40 mm
VS-XL-050-03	50 mm
VS-XL-063-03	63 mm
VS-XL-080-03	80 mm
VS-XL-100-03	100 mm
VS-XL-125-03	125 mm
VS-XG-160-03	160 mm
VS-XG-200-03	200 mm
VS-XG-250-03	250 mm
VS-XG-320-03	320 mm

Seal kits – Viton

Order number	Ø
VS-XL-032-04	32 mm
VS-XL-040-04	40 mm
VS-XL-050-04	50 mm
VS-XL-063-04	63 mm
VS-XL-080-04	80 mm
VS-XL-100-04	100 mm
VS-XL-125-04	125 mm
VS-XG-160-04	160 mm
VS-XG-200-04	200 mm
VS-XG-250-04	250 mm
VS-XG-320-04	320 mm

Content

Pos.	Part	Quantity
1	Wiper and seal element	2
2	Cushion seal	2
3	O-ring	2
4	Piston	1
	Grease	1

* Repair kits for CX from Ø 32 to Ø 100 are identical with XL.

Piston rod accessories



Flexible coupling
FK
Page 9.212



Rod eye
FO + RO
Page 9.212



Rod clevis with pin
FD + RD
Page 9.211



Piston rod nut
FE + RL
Page 9.212

Mounting accessories



Foot mount
XLB-Ø-01
Page 9.016



Flange mount
XLB-Ø-02
Page 9.016



Clevis mount with bushing
XLB-Ø-04
Page 9.016



Swivel mount
XLB-Ø-05
Page 9.017



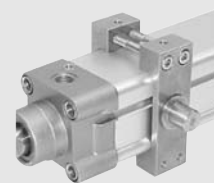
Swivel mount 90°
XLB-Ø-06
Page 9.017



Clevis pin
XLB-Ø-08
Page 9.017



Bearing block
XLB-Ø-09
Page 9.018



Trunnion mount
XLB-Ø-10
Page 9.018



Trunnion flange mount
XLB-Ø-11
Page 9.018



Swivel mount with
spherical bearing
XLB-Ø-12
Page 9.019

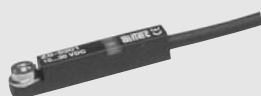


Small clevis mount
with non rotating pin
XLB-Ø-14
Page 9.019



Linear guides
LE-
Page 9.201

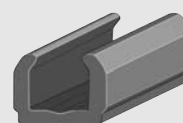
Proximity sensors



Sensors
ZS-
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Connecting cable
KA-
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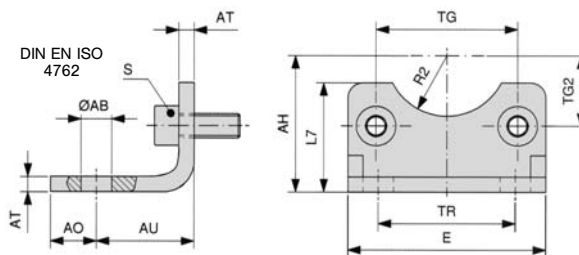


Cover for sensor groove
XLB-011 0,5 m

Seal kits see page 9.045.

Foot mount

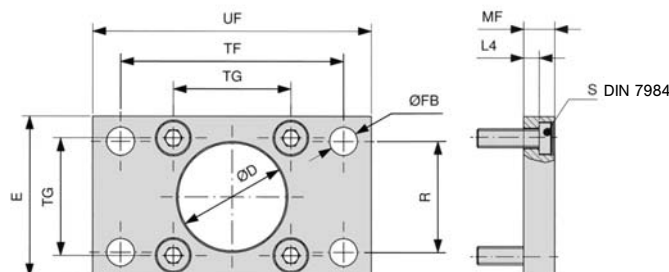
1 pair



Material: steel (zinc-plated)

Order number	Ø AB	AH	AO	AU	AT	E	L7	R2	S	TG	TG2	TR
XLB-032-01	7	32	11	24	4	45	30	15	M6 x 20	32.5	16.25	32
XLB-040-01	10	36	8	28	4	52	30	17.5	M6 x 20	38	19	36
XLB-050-01	10	45	15	32	5	65	36	20	M8 x 20	46.5	23.25	45
XLB-063-01	10	50	13	32	5	75	35	22.5	M8 x 20	56.5	28.25	50
XLB-080-01	12	63	14	41	6	95	47	22.5	M10 x 20	72	36	63
XLB-100-01	14.5	71	16	41	6	115	53	27.5	M10 x 20	89	44.5	75
XLB-125-01	16.5	90	25	45	8	140	70	30	M12 x 25	110*	55	90
	H14	JS16		± 0,2				H15		± 0,2 *± 0,3		JS14

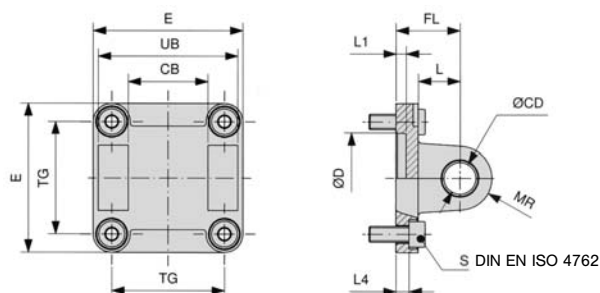
Flange mount



Material: steel (zinc-plated)

Order number	Ø D	E	Ø FB	L4	MF	R	S	TF	TG	UF
XLB-032-02	30	45	7	5	10	32	M6 x 20	64	32.5	80
XLB-040-02	35	52	9	5	10	36	M6 x 20	72	38	90
XLB-050-02	40	65	9	6.5	12	45	M8 x 20	90	46.5	110
XLB-063-02	45	75	9	6.5	12	50	M8 x 20	100	56.5	120
XLB-080-02	45	95	12	9	16	63	M10 x 25	126	72	150
XLB-100-02	55	115	14	9	16	75	M10 x 25	150	89	170
XLB-125-02	60	140	16	10.5	20	90	M12 x 25	180	110*	205
	H11		H13	- 0,5	JS14	JS14		JS14	± 0,2 *± 0,3	

Clevis mount with bushing

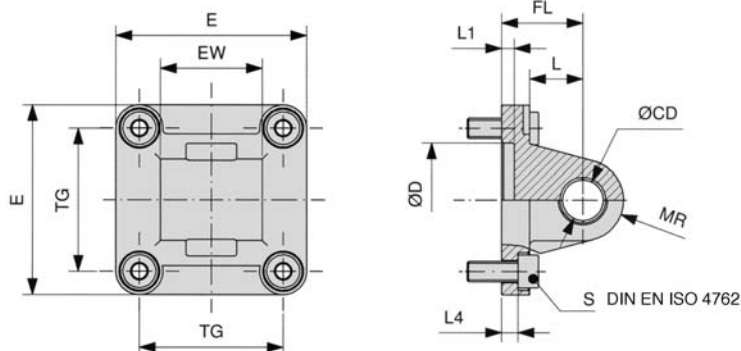


Order number **XLB-xxx-48** includes the mounting pin.

Material: Al

Order number	CB	Ø CD	Ø D	E	FL	L	L1	L4	MR	S	TG	UB
XLB-032-04	26	10	30	45	22	13	5	5.5	10	M6 x 20	32.5	45
XLB-040-04	28	12	35	52	25	16	5	5.5	12	M6 x 20	38	52
XLB-050-04	32	12	40	65	27	16	5	6.5	12	M8 x 20	46.5	60
XLB-063-04	40	16	45	75	32	21	5	6.5	16	M8 x 20	56.5	70
XLB-080-04	50	16	45	95	36	22	5	10	16	M10 x 25	72	90
XLB-100-04	60	20	55	115	41	27	5	10	20	M10 x 25	89	110
XLB-125-04	70	25	60	140	50	30	7	10	25	M12 x 25	110*	130
	H14	H9	H11		± 0,2			± 0,5			± 0,2 *± 0,3	h13

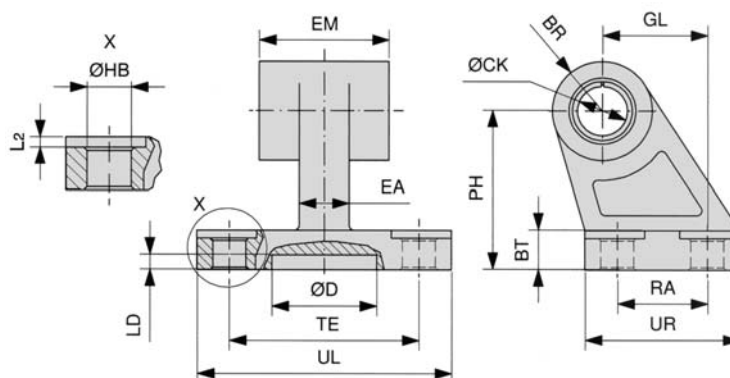
Swivel mount



Material: Al

Order number	Ø CD	Ø D	E	EW	FL	L	L1	L4	MR	S	TG
XLB-032-05	10	30	45	26	22	13	5	5.5	10	M6 x 20	32.5
XLB-040-05	12	35	52	28	25	16	5	5.5	12	M6 x 20	38
XLB-050-05	12	40	65	32	27	16	5	6.5	12	M8 x 20	46.5
XLB-063-05	16	45	75	40	32	21	5	6.5	16	M8 x 20	56.5
XLB-080-05	16	45	95	50	36	22	5	10	16	M10 x 25	72
XLB-100-05	20	55	115	60	41	27	5	10	20	M10 x 25	89
XLB-125-05	25	60	140	70	50	30	7	10	25	M12 x 25	110*
	H9	H11			± 0.2			± 0.5			± 0.2 * ± 0.3

Swivel mount 90°



Material: Al

Order number	BR	BT	Ø CK	Ø D	EA	EM	GL	Ø HB	L2	LD	PH	RA	TE	UL	UR
XLB-032-06	10	8	10	21	10	26	21	6.6	1.6	3	32	18	38	51	31
XLB-040-06	11	10	12	21	15	28	24	6.6	1.6	3	36	22	41	54	35
XLB-050-06	13	12	12	21	16	32	33	9	1.6	3	45	30	50	65	45
XLB-063-06	15	14	16	21	16	40	37	9	1.6	3	50	35	52	67	50
XLB-080-06	15	14	16	21	20	50	47	11	2.5	3	63	40	66	86	60
XLB-100-06	19	17	20	11	20	60	55	11	2.5	3	71	50	76	96	70
XLB-125-06	22.5	20	25	21	30	70	70	14	3.2	3	90	60	94	124	90
			H9				JS14	H13			JS15	JS14	JS14		

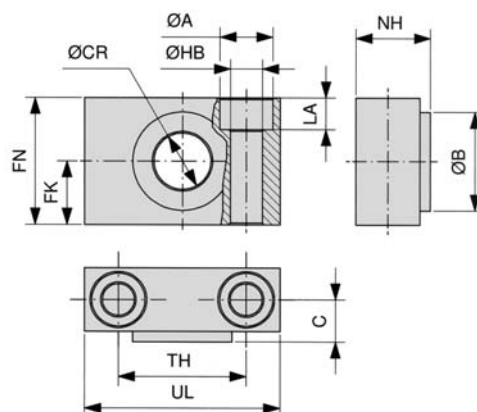
Clevis pin



Order number	A	Ø B	Ø EK	EL	LB
XLB-032-08	53	9.6	10	46	1.1
XLB-040-08	60	11.5	12	53	1.1
XLB-050-08	68	11.5	12	61	1.1
XLB-063-08	78	15.2	16	71	1.1
XLB-080-08	98	15.2	16	91	1.1
XLB-100-08	118	19	20	111	1.3
XLB-125-08	139	23.9	25	132*	1.3
		e8		+ 2 * + 3	

Material: steel (zinc-plated)
Snap rings are included.

Bearing block (1 pair)

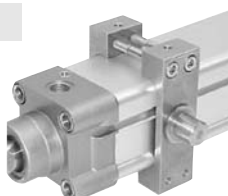


Order number = 1 pair
Material: steel (zinc-plated), bronze

Order number	Ø A	Ø B	C	Ø CR	FK	FN	Ø HB	LA	NH	TH	UL
XLB-032-09	11	22	10.5	12	15	30	6.6	7	18	32	46
XLB-040-09	15	28	12	16	18	36	9	9	21	36	55
XLB-063-09	18	32	13	20	20	40	11	11	23	42	65
XLB-100-09	20	39	16	25	25	50	14	13	28.5	50	75
				H9	± 0.1					± 0.2	

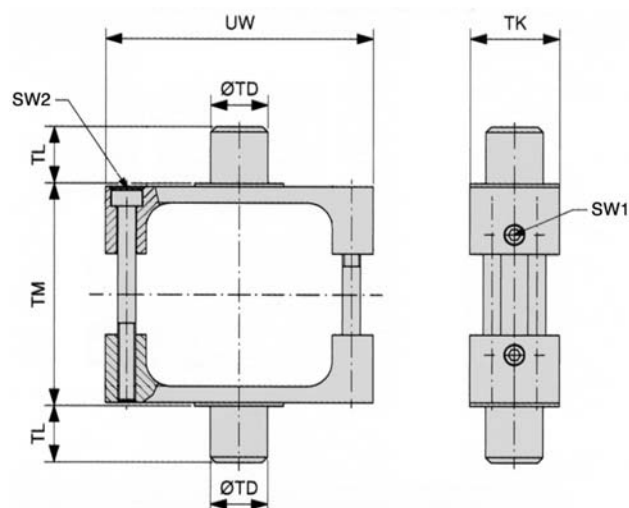
Trunnion mount

Mounting position arbitrary.



Material: steel (zinc-plated)

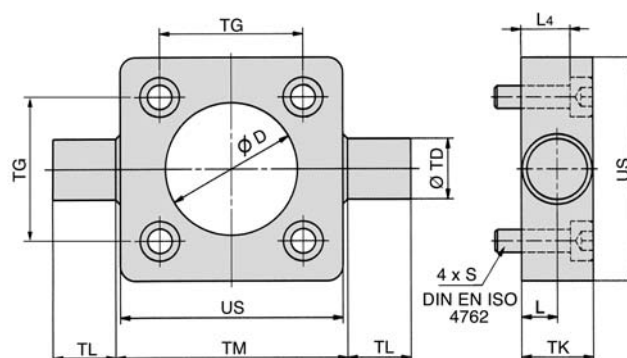
Order number	SW1 DIN 914	SW2 DIN 7984	Ø TD	TK	TL	TM	UW
XLB-032-10	3	2.5	12	25	12	50	65
XLB-040-10	3	3	16	25	16	63	75
XLB-050-10	3	4	16	30	16	75	95
XLB-063-10	3	4	20	30	20	90	105
XLB-080-10	3	4	20	30	20	110	130
XLB-100-10	4	5	25	40	25	132	145
XLB-125-10	4	6	25	40	25	160	175
EN ISO 4762			e 9		h14	h14	



Trunnion flange mount

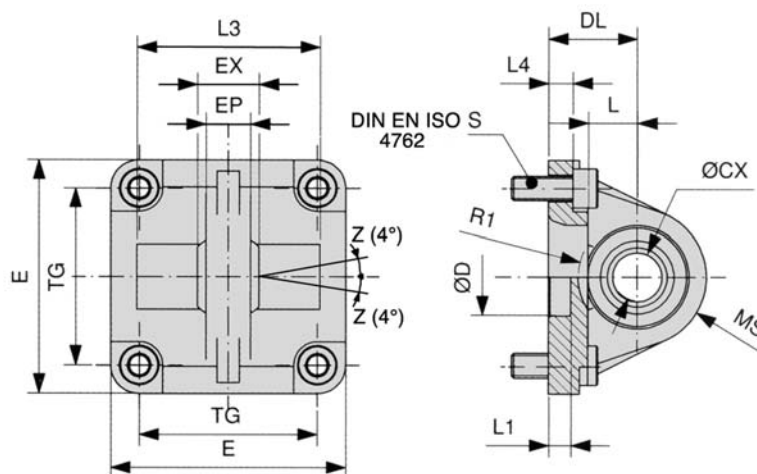


Material: steel (zinc-plated)



Order number	D	L	L4	S	TD	TG	TK	TL	Ø TM	US
XLB-032-11	30	6.5	8	M6 x 20	12	32.5	14	12	50	46
XLB-040-11	35	9	13	M6 x 25	16	38	19	16	63	59
XLB-050-11	40	9	11	M8 x 25	16	46.5	19	16	75	69
XLB-063-11	45	11.5	16	M8 x 30	20	56.5	24	20	90	84
XLB-080-11	45	11.5	14	M10 x 30	20	72	24	20	110	102
XLB-100-11	55	14	19	M10 x 35	25	89	29	25	132	125
		H11	+ 0.2			e9	± 0.2	h14	h14	

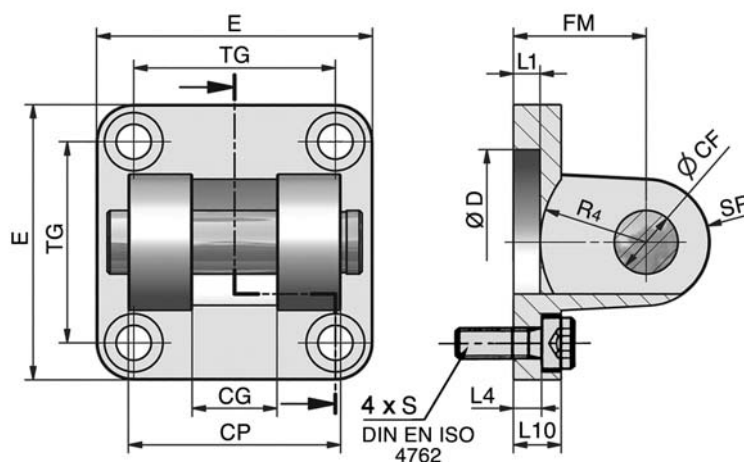
Swivel mount with spherical bearing



Material: Al

Order number	Ø CX	Ø D	DL	E	EP	EX	L	L1	L3	L4	MS	R1	S	TG
XLB-032-12	10	30	22	45	10.5	14	12	7	–	5.5	16	–	M6 x 20	32.5
XLB-040-12	12	35	25	52	12	16	15	7	–	5.5	18	–	M6 x 20	38
XLB-050-12	16	40	27	65	15	21	15	7	51	6.5	21	19	M8 x 20	46.5
XLB-063-12	16	45	32	75	15	21	20	7	–	6.5	23	–	M8 x 20	56.5
XLB-080-12	20	45	36	95	18	25	20	9	74	10	28	24	M10 x 25	72
XLB-100-12	20	55	41	115	18	25	25	9	–	10	30	–	M10 x 25	89
XLB-125-12	30	60	50	140	25	37	30	9	–	10	40	–	M12 x 25	110*
	H7	H11	± 0.2			± 0.1				± 0.5				± 0.2 * ± 0.3

Small clevis mount with non rotating pin



Material of clevis: Al
of pin: steel (zinc-plated)

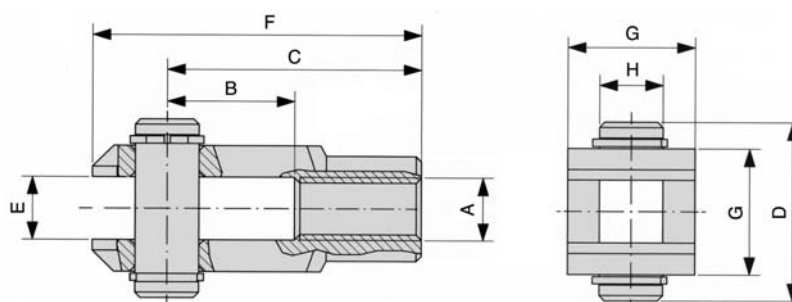
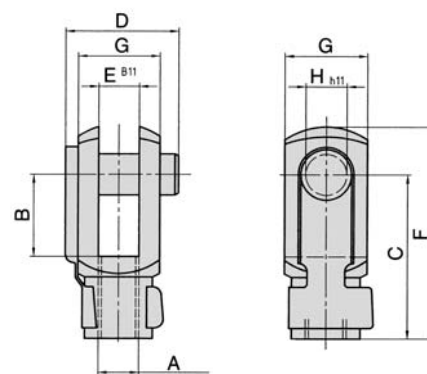
Order number	CF	CG	CP	D	E	FM	L1	L4	L10	R4	S	SR	TG
XLB-032-14	10	14	34	30	45	22	5	5.5	9	17	M6 x 20	10	32.5
XLB-040-14	12	16	40	35	52	25	5	5.5	9	20	M6 x 20	12	38
XLB-050-14	16	21	45	40	65	27	5	6.5	11	22	M8 x 20	14	46.5
XLB-063-14	16	21	51	45	75	32	5	6.5	11	25	M8 x 20	18	56.5
XLB-080-14	20	25	65	45	95	36	5	10	14	30	M10 x 25	20	72
XLB-100-14	20	25	75	55	115	41	5	10	14	32	M10 x 25	22	89
XLB-125-14	30	37	97	60	140	50	7	10	20	42	M12 x 25	25	110*
	F7	D10	d 12	H11		± 0.2		± 0.5					± 0.2 * ± 0.3

Assignment to series

Series	Cylinder Ø	Piston rod thread	Rod clevis	Piston rod nut	Flexible coupling	Rod eye
HE and HM	Ø 8 and 10	M4	RD-10	RL-10	–	–
NXD and NXE	Ø 12	M6	RD-16	RL-16	FK-16	RO-16
HE and HM	Ø 12 and 16					
NXD and NXE	Ø 16	M8	RD-20	RL-20	FK-20	RO-20
HE and HM	Ø 20					
NYD and NYE	Ø 20 and 25					
NXD and NXE	Ø 20 to 40	M10 x 1.25	RD-25	RL-25	FK-32	RO-25
HE and HM	Ø 25					
XL	Ø 32					
NYD and NYE	Ø 32 and 40					
NXD and NXE	Ø 50 and 63	M12 x 1.25	FD-40	FE-40	FK-40	FO-40
XL	Ø 40					
NYD and NYE	Ø 50 and 63					
NXD and NXE	Ø 80					
XL	Ø 50 and 63	M16 x 1.5	FD-63	FE-63	FK-63	FO-63
NYD and NYE	Ø 80 and 100					
NXD and NXE	Ø 100					
XL	Ø 80 and 100	M20 x 1.5	FD-80	FE-80	FK-80	FO-80
XL	Ø 125					
XG	Ø 160 and 200	M27 x 2	FD-125	FE-125	FK-125	FO-125
XG	Ø 250	M36 x 2	FD-200	FE-200	FK-200	FO-160/200
XG	Ø 320	M42 x 2	FD-250	FE-250	–	–
XG	Ø 320	M48 x 2	FD-320	FE-320	–	–

Rod clevis with pin

Order number	A	B	C	D	E	F	G	H
RD-10	M4	8	16	11.5	4	21	8	4
RD-16	M6	12	24	16	6	31	12	6
RD-20	M8	16	32	22	8	42	16	8
RD-25	M10 x 1.25	20	40	26	10	52	20	10
RD-32	M10	20	40	26	10	52	20	10
RD-40	M12	24	48	32	12	62	24	12
RD-63	M16	32	64	36	16	83	32	16
FD-40	M12 x 1.25	24	48	32	12	62	24	12
FD-63	M16 x 1.5	32	64	40	16	83	32	16
FD-80	M20 x 1.5	40	80	50	20	105	40	20
FD-125	M27 x 2	54	110	65	30	148	55	30
FD-200	M36 x 2	72	144	84	35	188	70	35
FD-250	M42 x 2	84	168	104.5	40	232	85	40
FD-320	M48 x 2	96	192	117.5	50	265	96	50

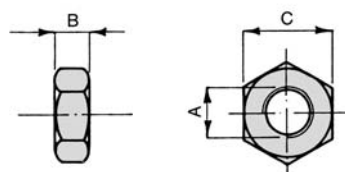


Rod clevis FD-125 to FD-320, pin with snap rings.

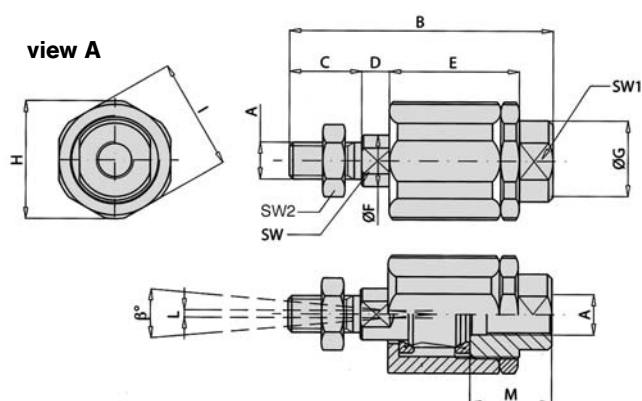
Piston rod accessories

Piston rod nut

Order number	A	B	C
RL-10	M4	3.2	7
RL-16	M6	4	10
RL-20	M8	5	13
RL-25	M10 x 1.25	5	17
RL-32	M10	5	17
RL-40	M12	6	19
RL-50/63	M16	8	24
FE-40	M12 x 1.25	6	19
FE-63	M16 x 1.5	8	24
FE-80	M20 x 1.5	10	30
FE-125	M27 x 2	13.5	41
FE-200	M36 x 2	18	55
FE-250	M42 x 2	21	65
FE-320	M48 x 2	24	75



Material: steel (zinc-plated)



Flexible coupling



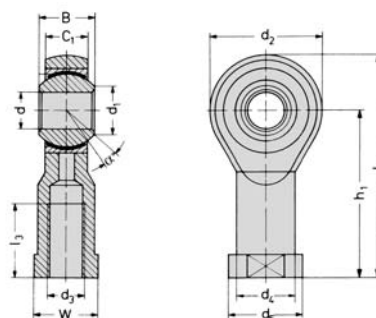
Material: steel (zinc-plated)

Order number	A	B	C	D	E	Ø F	Ø G	Ø H	I	L	M	SW	SW1	SW2	B°
FK-16	M6	35	11	2.5	17.5	6	8.5	14.5	13	1	12.5	5	7	10	6°
FK-20	M8	57	21	5	26	8	12.5	19	17	2	16	7	11	13	8°
FK-32	M10 x 1.25	71.5	20	7.5	35	14	22	32	30	2	22	12	19	17	8°
FK-33	M10	71.5	20	7.5	35	14	22	32	30	2	22	12	19	17	8°
FK-40	M12 x 1.25	75.5	24	7.5	35	14	22	32	30	2	22	12	19	19	8°
FK-41	M12	75.5	24	7.5	35	14	22	32	30	2	22	12	20	19	9°
FK-63	M16 x 1.5	104	32	10	53	22	32	45	41	2	30	20	27	24	6°
FK-80	M20 x 1.5	119	40	10	53	22	32	45	41	2	37	20	27	30	6°
FK-125	M27 x 2	147	54	10	60	32	57	70	65	2	48	24	54	41	8°
FK-200	M36 x 2	190	72	15.5	77	39	57	75	70	2	68	32	54	55	8°

Rod eye



Material: steel (zinc-plated)
stainless steel



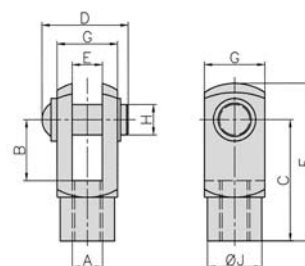
Order number	d ₃	d	d ₁	d ₂	d ₄	d ₅	B	C ₁	W	L ₃	L ₄	h ₁	α
RO-16	M6	6	8.9	20	10	13	9	6.75	11	12	40	30	13
RO-20	M8	8	10.4	24	12.5	16	12	9	14	16	48	36	14
RO-25	M10 x 1.25	10	12.9	28	15	19	14	10.5	17	20	57	43	13
RO-32	M10	10	12.9	28	15	19	14	10.5	17	20	57	43	13
RO-40	M12	12	15.4	32	17.5	22	16	12	19	22	66	50	13
RO-50	M16	16	19.3	42	22	27	21	15	22	28	85	64	15
FO-40	M12 x 1.25	12	15.4	32	17.5	22	16	12	19	22	66	50	13
FO-63	M16 x 1.5	16	19.3	42	22	27	21	15	22	28	85	64	15
FO-80	M20 x 1.5	20	24.3	50	27.5	34	25	18	30	33	102	77	14
FO-125	M27 x 2	30	34.8	70	40	50	37	25	41	51	145	110	17
FO-160/200	M36 x 2	35	37.7	80	46	58	43	28	50	56	165	125	16
FO-250	M42 x 2	40	45.1	91	53	65	49	33	55	60	187	142	16
FO-320	M48 x 2	50	56.6	117	65	75	60	45	65	65	218	162	14

Piston rod accessories stainless steel

Assignment to series

Series	Piston rod thread	Rod clevis	Piston rod nut	Rod eye
CM-16	M 6	PD-16	PL-16	PO-16
CM-20	M 8	PD-20	PL-20	PO-20
CM-25	M 10 x 1.25	PD-25	PL-25	PO-25
CX-32				
CX-40	M 12 x 1.25	PD-40	PL-40	PO-40
CX-50	M 16 x 1.5	PD-63	PL-63	PO-63
CX-63				
CX-80	M 20 x 1.5	PD-80	PL-80	PO-80
CX-100				

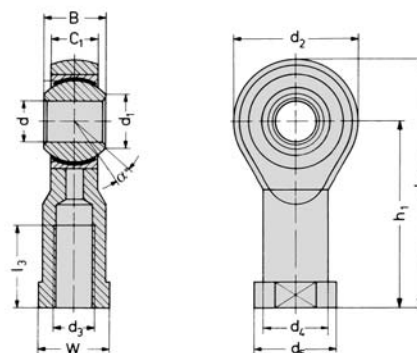
Rod clevis with pin



Material: stainless steel 1.4305

Order number	A	B	C	D	E	F	G	H	J
PD-16	M 6	12	24	17	6	31	12	6	10
PD-20	M 8	16	32	20	8	42	16	8	14
PD-25	M 10 x 1.25	20	40	25	10	52	20	10	18
PD-40	M 12 x 1.25	24	48	30	12	62	24	12	20
PD-63	M 16 x 1.5	32	64	39	16	83	32	16	26
PD-80	M 20 x 1.5	40	80	48	20	105	40	20	34
			± 0,3					h ₁₁	

Rod eye

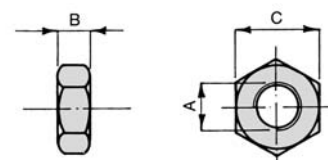


Material Body: stainless steel 1.4057
 Bearing housing: stainless steel 1.4571 PTFE coated
 Inner ring: stainless steel 1.4034 hardened

Order number	d ₃	d	d ₁	d ₂	d ₄	d ₅	B	C ₁	W	L ₃	L ₄	h ₁	α
PO-16	M 6	6	8.9	20	10	13	9	6.75	11	12	40	30	13
PO-20	M 8	8	10.4	24	12.5	16	12	9	13	16	48	36	13
PO-25	M 10 x 1.25	10	12.9	28	15	19	14	10.5	17	20	57	43	13
PO-40	M 12 x 1.25	12	15.4	32	17.5	22	16	12	19	22	66	50	13
PO-63	M 16 x 1.5	16	19.3	42	22	27	21	15	22	28	85	64	15
PO-80	M 20 x 1.5	20	24.3	50	27.5	34	25	18	32	33	102	77	15

Piston rod nut

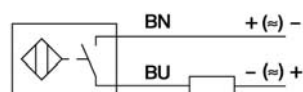
Order number	A	B	C
PL-16	M 6	3.2	10
PL-20	M 8	4	13
PL-25	M 10 x 1.25	5	17
PL-40	M 12 x 1.25	6	19
PL-63	M 16 x 1.5	8	24
PL-80	M 20 x 1.5	10	30



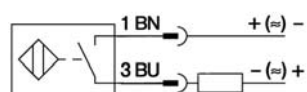
Material: stainless steel 1.4301

Proximity sensors

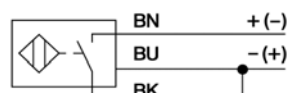
Wiring diagram



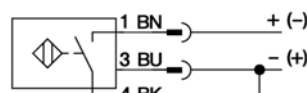
ZS-5600



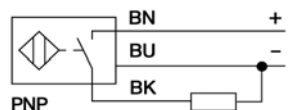
ZS-5601



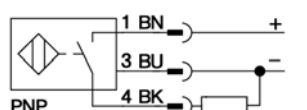
ZS-5700, ZS-5700-10



ZS-5701

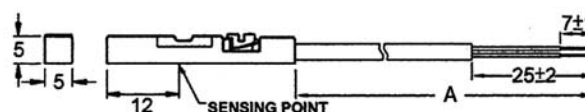


ZS-6700, ZS-7300



ZS-6701, ZS-7302 (dimensions for ZS-7302, page 9.221)

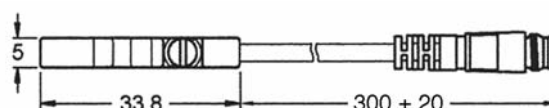
Dimensions



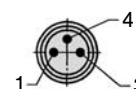
ZS-5600, ZS-6700, ZS-7300; $A = 3.000 \pm 20$

ZS-5700; $A = 5.000 \pm 20$

ZS-5700-10; $A = 10.000 \pm 20$



ZS-5601, ZS-5701, ZS-6701



Function principles

Magnetic field sensors are actuated by magnetic fields and are especially suited for piston position detection in pneumatic cylinders. Based on the fact that magnetic fields can permeate non-magnetizable metals, it is possible to detect a permanent magnet attached to the piston through the aluminum wall of the cylinder.

Mounting tip

The sensor is firmly fixed in the groove by clockwise rotation of the screw.

Proximity sensors Reed contact



Order number	ZS-5600	ZS-5601	ZS-5700	ZS-5700-10	ZS-5701
Design	2-pole Reed sensor (non-polarized) normally open		3-pole Reed sensor* normally open		
Cable	ø 2.8, PUR				
Cable cross section	n/a				
Cable length	3 m	0.3 m	5 m	10 m	0.3 m
Cable plug	–	M8	–	–	M8
Overtravel speed	n/a				
Max. absolute hysteresis	n/a				
Temperature drift	n/a				
min. absolute repeat accuracy	n/a				
Operating temperature	– 10 °C ... + 70 °C				
Degree of protection	IP 67				
Housing material	Plastic				
Switching status indication	LED red		LED yellow		
Rated operational voltage	5 ... 240 V AC/DC	5 ... 60 V AC/DC	5 ... 30 V DC		
Rated operational DC current I _E	3 ... 100 mA		≤ 500 mA		
AC	3 ... 100 mA		≤ 500 mA		
Breaking capacity	≤ 10 W				
No-load current	n/a		≤ 10 mA		
Max. OFF-state current	0 mA				
Max. switching frequency	≤ 0.2 kHz				
Rated insulation voltage	n/a				
Short-circuit protection	no				
Max. voltage drop at I _E	≤ 2.5 V		≤ 0.1 V		
Wire breakage	no				
Reverse polarity protection	yes				
Vibration resistance	9 g (1.5 mm, 10 – 55 Hz – 10 Hz)				
Shock resistance	30 g (11 ms)				
Explosion proof	–				

* Useable as 2-wire contact, voltage 0 ... 30 V AC / 0 ... 30 V DC, LED has no function.

Proximity sensors

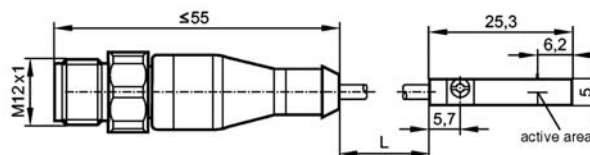
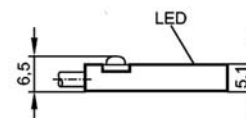
Mounting bracket for round cylinder Ø 8 – 63 mm



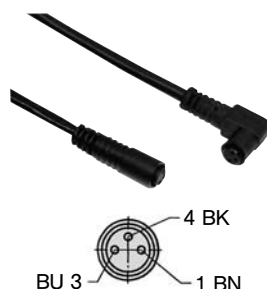
Material: metal,
plastic PA GI/6T

Order number	Piston Ø
NT-250	8 to 25 mm
NT-500	32 to 63 mm

Dimensions for ZS-7302



Connecting cable for ZS-5601, ZS-5701 and ZS-6701



Cable: PUR, black, 3 x 0.25 mm², Ø 3.9, high flexible
Operating voltage 0 ... 48 V AC/DC

Order number	Length of cable	Connection
KA-30	3 m	8 mm sensor snap-in, straight
KA-50	5 m	8 mm sensor snap-in, straight
KA-51	5 m	8 mm sensor snap-in, 90°
KA-100	10 m	8 mm sensor snap-in, straight
KA-101	10 m	8 mm sensor snap-in, 90°

Proximity sensors electronic

Order number	ZS-6700	ZS-6701	ZS-7300	ZS-7302
Design	electronic, magnet-inductive sensor, normally open PNP output			
Cable	Ø 2,8, PUR		n/a	
Cable cross section	n/a		3 x 0,14 mm ²	
Cable lengths	3 m	0,3 m	6 m	0,3 m
Cable plug	–	M8	–	M12
Overtravel speed	n/a		≤ 10 m/s	
Max. absolute hysteresis	n/a		n/a	
Temperatur drift	n/a		≤ 0,1 mm	
Min. absolute repeat accuracy	n/a		≤ 0,2 mm	
Operating temperature	– 10 °C ... + 70 °C		– 25 °C ... + 60 °C	
Degree of protection	IP 67		IP65/IP67	IP 67
Housing material	Plastic		Body: PA; Mounting band: stainless steel	
Switching status indication	LED green		LED yellow	
Rated operational voltage	5 ... 30 V DC		10 ... 30 V DC	
Rated operational current I _E	≤ 200 mA		≤ 100 mA	
DC	–		–	
AC	–		–	
Breaking capacity	6 W		n/a	
No-load current	≤ 10 mA		≤ 10 mA	
Max. OFF-state current	n/a		n/a	
Max. switching frequency	≤ 1 kHz		> 6.000 Hz	> 10.000 Hz
Rated insulation voltage	n/a		n/a	
Short-circuit protection	yes		yes	
Max. voltage drop at I _E	≤ 1,0 V		≤ 2,5 V	
Wire breakage	yes		n/a	
Reverse polarity protection	yes		yes	
Vibration resistance	9 g (1.5 mm, 10 – 55 Hz – 10 Hz)		n/a	
Shock resistance	50 g (11 ms)		n/a	
Explosion proof	–		EX II 3G Ex nA T4 X EX II 3D Ex tD A22 IP67 T125°C X	EX II 3D Ex tc IIIC T125°C Dc X

Force chart

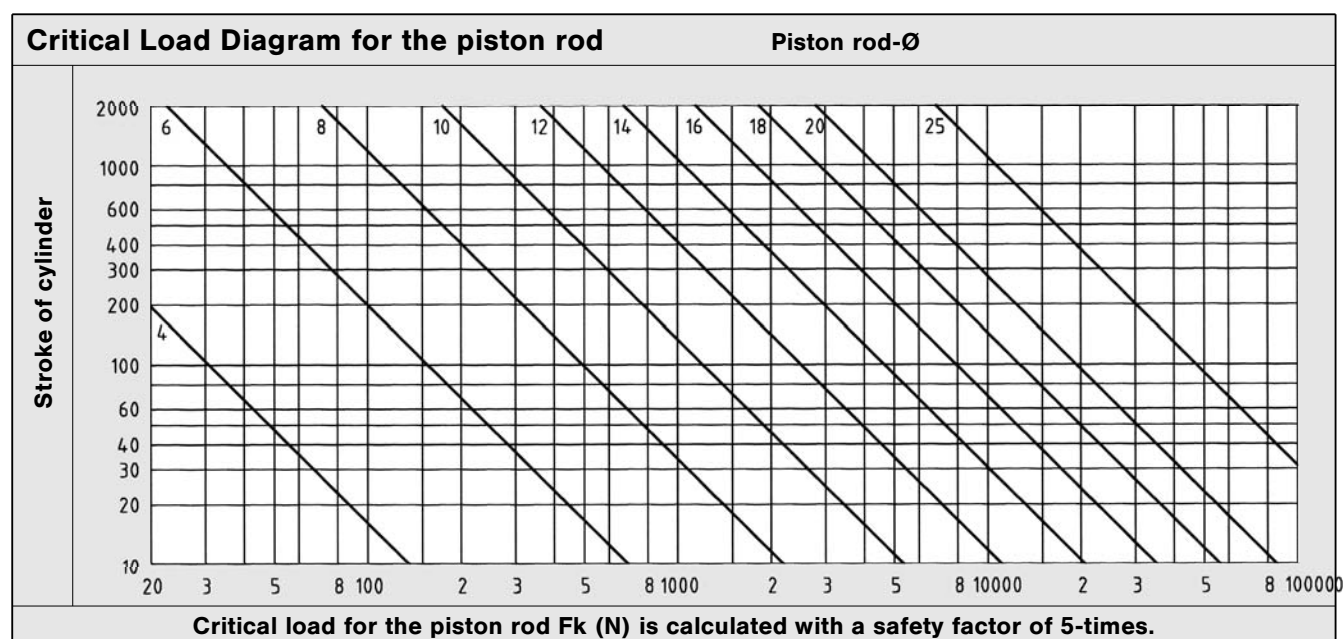
The chart shows extension and retraction forces for double acting cylinders in N. A correction factor of 0,9 for the internal friction is already calculated. Minor influences based on the cushioning bushings are disregarded.

Cylinder Ø	Cylinder series	Rod diameter Ø	Piston area [cm²]	Pressure in bar						
				2	3	4	5	6	7	8
8			Extension force 0,50	9	14	18	23	27	32	36
	HM	4	Retraction force 0,38	7	10	14	17	20	24	27
10			Extension force 0,79	14	21	28	35	42	49	57
	HM	4	Retraction force 0,66	12	18	24	30	36	42	47
12			Extension force 1,13	20	31	41	51	61	71	81
	HM	6	Retraction force 0,85	15	23	31	38	46	53	61
16			Extension force 2,01	36	54	72	90	109	127	145
	HM, CM	6	Retraction force 1,73	31	47	62	78	93	109	124
	NXD	8	Retraction force 1,51	27	41	54	68	81	95	109
20			Extension force 3,14	57	85	113	141	170	198	226
	HM, CM	8	Retraction force 2,64	47	71	95	119	142	166	190
	NXD, NYD, LX	10	Retraction force 2,36	42	64	85	106	127	148	170
25			Extension force 4,91	88	132	177	221	265	309	353
	HM, NXD, NYD, CM	10	Retraction force 4,12	74	111	148	185	223	260	297
	LX	12	Retraction force 3,78	68	102	136	170	204	238	272
32	XL,		Extension force 8,04	145	217	289	362	434	506	579
	NXD, NYD, CX	12	Retraction force 6,91	124	187	249	311	373	435	497
	LX	16	Retraction force 6,03	109	163	217	271	326	380	434
40			Extension force 12,56	226	339	452	565	678	791	904
	NXD, NYD	12	Retraction force 11,43	206	309	411	514	617	720	823
	XL, LX, CX	16	Retraction force 10,55	190	285	380	475	570	665	760
50			Extension force 19,63	353	530	707	883	1060	1236	1413
	NXD, NYD	16	Retraction force 17,62	317	476	634	793	951	1110	1268
	XL, LX, CX	20	Retraction force 16,49	297	445	593	742	890	1039	1187
63			Extension force 31,16	561	841	1122	1402	1682	1963	2243
	NXD, NYD	16	Retraction force 29,15	525	787	1049	1312	1574	1836	2099
	XL, LX, CX	20	Retraction force 28,02	504	756	1009	1261	1513	1765	2017
80			Extension force 50,24	904	1356	1809	2261	2713	3165	3617
	NXD, NYD	20	Retraction force 47,10	848	1272	1696	2120	2543	2967	3391
	XL, CX	25	Retraction force 45,33	816	1224	1632	2040	2448	2856	3264
100	XL, NXD,		Extension force 78,50	1413	2120	2826	3533	4239	4946	5652
	NYD, CX	25	Retraction force 73,59	1325	1987	2649	3312	3974	4636	5299
125			Extension force 122,66	2208	3312	4416	5520	6623	7727	8831
	XL	32	Retraction force 114,62	2063	3095	4126	5158	6189	7221	8252
160			Extension force 200,96	3617	5426	7235	9043	10852	12660	14469
	XG	40	Retraction force 188,40	3391	5087	6782	8478	10174	11869	13565
200			Extension force 314,00	5652	8478	11304	14130	16956	19782	22608
	XG	40	Retraction force 301,44	5426	8139	10852	13565	16278	18991	21704
250			Extension force 490,63	8831	13247	17663	22078	26494	30909	35325
	XG	50	Retraction force 471,00	8478	12717	16956	21195	25434	29673	33912
320			Extension force 803,84	14469	21704	28938	36173	43407	50642	57876
	XG	63	Retraction force 772,68	13908	20862	27817	34771	41725	48679	55633

Technical charts

This table shows the air consumption for a single stroke of 100 mm. These statements are based upon extension and are in NI.

Piston Ø mm	Air pressure in bar/psi						
	2 (29 psi)	3 (43.4 psi)	4 (58 psi)	5 (72.5 psi)	6 (87 psi)	7 (101.5 psi)	8 (116 psi)
8	0.02	0.02	0.03	0.03	0.04	0.04	0.05
10	0.02	0.03	0.04	0.05	0.05	0.06	0.07
12	0.03	0.05	0.06	0.07	0.08	0.09	0.10
16	0.06	0.08	0.10	0.12	0.14	0.16	0.18
20	0.09	0.13	0.16	0.19	0.22	0.25	0.28
25	0.15	0.20	0.25	0.29	0.34	0.39	0.44
32	0.24	0.32	0.40	0.48	0.56	0.64	0.72
40	0.38	0.50	0.63	0.75	0.88	1.01	1.13
50	0.59	0.79	0.98	1.18	1.37	1.57	1.77
63	0.94	1.25	1.56	1.87	2.18	2.49	2.81
80	1.51	2.01	2.51	3.02	3.52	4.02	4.52
100	2.36	3.14	3.93	4.71	5.50	6.28	7.07



$$F_k = \frac{\pi^2 EI}{L_k^2 S}$$

F_k = permitted critical force (N)
 E = elasticity module (N/mm²)
 I = moment of inertia (mm⁴)
 L_k = effective length of critical load
 S = security

Elastic cases of buckling according to Euler

