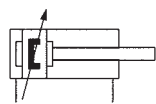
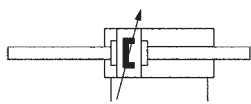


# Pneumatic cylinders series SL

Double acting with magnetic piston DIN ISO 15552  
G1/8 to G1/2 • piston Ø 32 to 100 mm



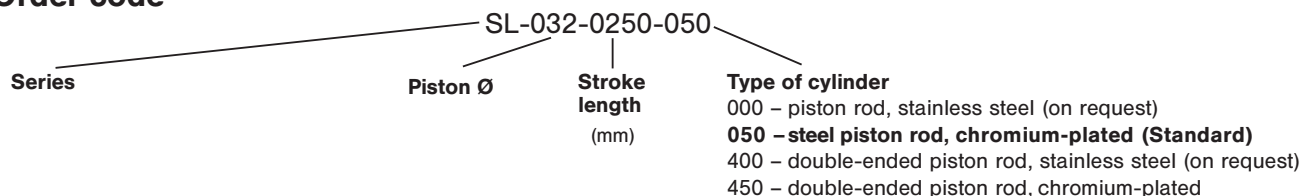
000, 050



400, 450



## 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.

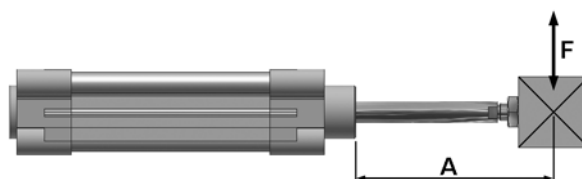
Order number Please complete according to order code.	SL-032-...	SL-040-...	SL-050-...	SL-063-...	SL-080-...	SL-100-...
<b>Piston Ø (mm)</b>	32	40	50	63	80	100
<b>Connection</b>	G1/8	G1/4	G1/4	G3/8	G3/8	G1/2
<b>Piston rod thread</b>	M10 x 1.25	M12 x 1.25	M16 x 1.5	M16 x 1.5	M20 x 1.5	M20 x 1.5
<b>Cushioning length (mm)</b>	27	29	32	32	32	32
<b>Operating pressure</b>	1 ... 10 bar (14.5 ... 145 psi)					
<b>Temperature range</b>	- 20 °C ... + 80 °C (- 4 °F ... + 176 °F)					
<b>Medium</b>	filtered/lubricated or filtered/non-lubricated air					
<b>Stroke lengths (mm)</b>	25, 40, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500					
<b>Materials</b>	Cylinder tube: Al-profile (anodized) End caps: Al-die-cast (painted) Piston rod: steel (chromium-plated) / stainless steel (on request) Seals: PU/NBR					

## Force chart for series SL

Piston Ø (mm)	Extension	Retraction
32	430 N (96.6 lbf.)	370 N (83.2 lbf.)
40	680 N (152.8 lbf.)	570 N (128.1 lbf.)
50	1060 N (238.3 lbf.)	890 N (200.1 lbf.)
63	1680 N (377.7 lbf.)	1510 N (339.5 lbf.)
80	2700 N (607.0 lbf.)	2550 N (573.3 lbf.)
100	4240 N (953.2 lbf.)	3970 N (892.5 lbf.)

Pressure 6 bar. The internal friction is considered.

## Permissible side load for series SL (N)

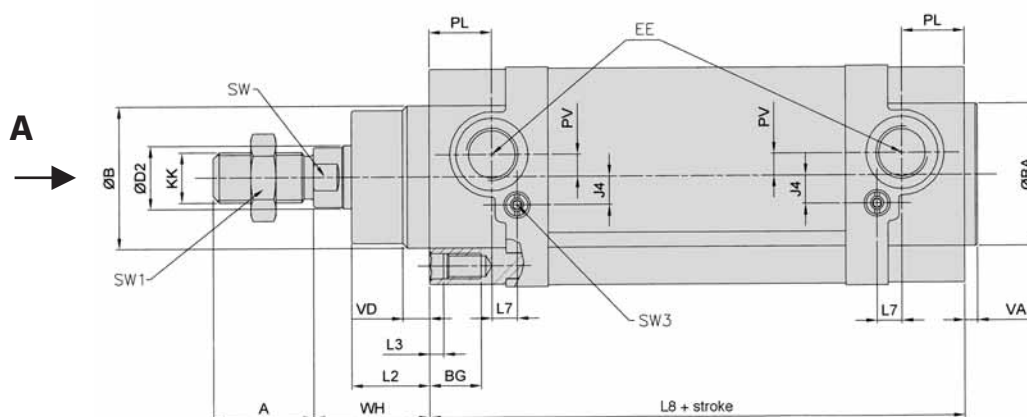
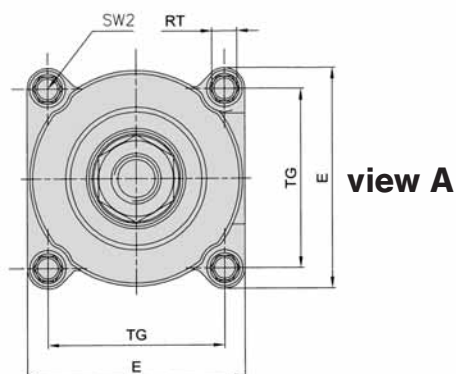


Piston Ø	Distance A (mm)											
	25	40	50	80	100	125	160	200	250	320	400	500
32	75	55	50	40	34	28	23	20	16	12	9	7
40	175	150	130	105	91	78	62	55	45	35	28	21
50 + 63	220	180	170	130	120	105	90	80	65	52	43	33
80 + 100	500	450	400	350	310	270	230	205	180	150	125	100

**Pneumatic cylinders series SL**  
 Double acting with magnetic piston DIN ISO 15552  
 G1/8 to G1/2 • piston Ø 32 to 100 mm



**SL** (Type for order code: -000 and -050)

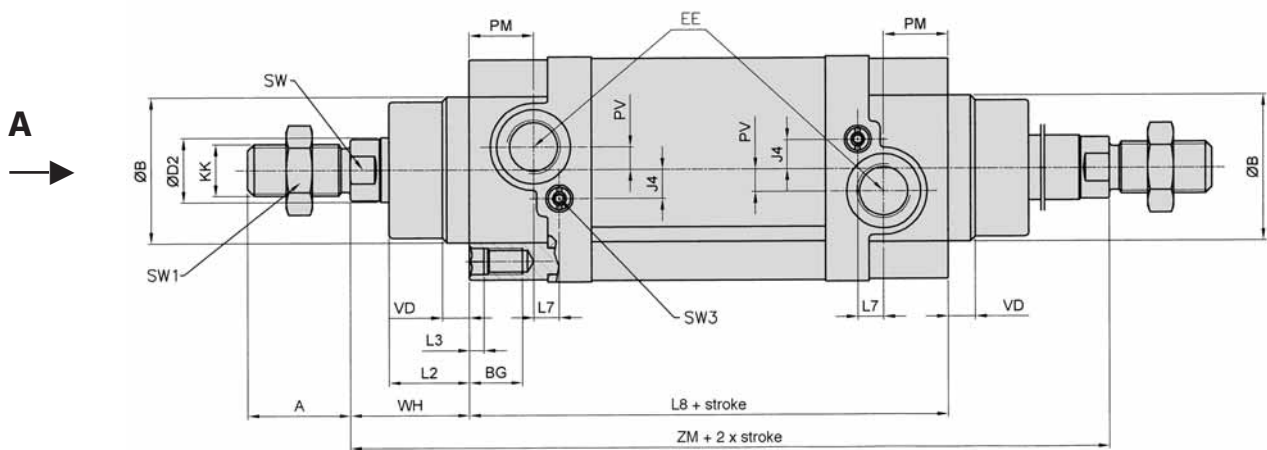
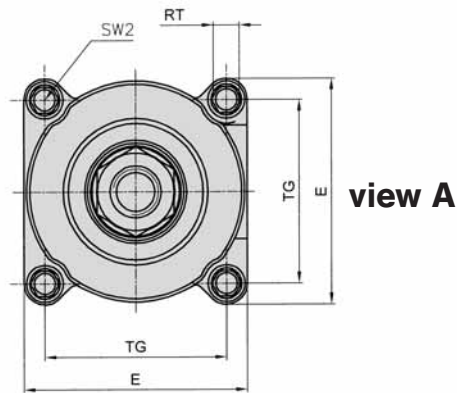


Piston Ø	A	Ø B Ø BA	BG	Ø D2	E	EE	J4	KK	L2	L3	L7
32	22	30	16.5	12	44	G1/8	3.5	M10 x 1.25	18	5	11.5
40	24	35	16.5	16	51	G1/4	7.5	M12 x 1.25	22	5	12.5
50	32	40	16.5	20	59.5	G1/4	5	M16 x 1.5	25.5	4.5	13.25
63	32	45	16.5	20	69.5	G3/8	16	M16 x 1.5	25	4.5	8
80	40	45	17	25	87	G3/8	20.5	M20 x 1.5	35	-	9.25
100	40	55	17	25	106.5	G1/2	21.5	M20 x 1.5	38	-	8
	-2	d11		f 7							

Piston Ø	L8	PL	PV	RT	SW	SW1	SW2	SW3	TG	VA	VD	WH
32	94	12.5	-	M6	10	17	6	2	32.5	4	8	26
40	105	14	-	M6	13	19	6	2.5	38	4	12	30
50	106	14	-	M8	17	24	8	2.5	46.5	4	10.5	37
63	121	20	7	M8	17	24	8	2.5	56.5	4	8.5	37
80	128	18.5	6.5	M10	22	30	6	4	72	4	10	46
100	138	20	12	M10	22	30	6	4	89	4	12.5	51

Piston Ø	32	40	50	63	80	100
Mass at 0 mm stroke in kg	0.582	0.861	1.289	1.723	2.873	3.879
add-on per 100 mm stroke	0.208	0.308	0.400	0.421	0.613	0.682

**SL** (Type for order code: -400 and -450)



Piston Ø	A	Ø B	BG	Ø D2	E	EE	J4	KK	L2	L3	L7
32	22	30	16.5	12	44	G1/8	3.5	M10 x 1.25	18	5	11.5
40	24	35	16.5	16	51	G1/4	7.5	M12 x 1.25	22	5	12.5
50	32	40	16.5	20	59.5	G1/4	5	M16 x 1.5	25.5	4.5	13.25
63	32	45	16.5	20	69.5	G3/8	16	M16 x 1.5	25	4.5	8
80	40	45	17	25	87	G3/8	20.5	M20 x 1.5	35	-	9.25
100	40	55	17	25	106.5	G1/2	21.5	M20 x 1.5	38	-	8
	-2	d11		f 7							

Piston Ø	L8	PM	PV	RT	SW	SW1	SW2	SW3	TG	VD	WH	ZM
32	94	12.5	-	M6	10	17	6	2	32.5	8	26	146
40	105	14	-	M6	13	19	6	2.5	38	12	30	165
50	106	14	-	M8	17	24	8	2.5	46.5	10.5	37	180
63	121	20	7	M8	17	24	8	2.5	56.5	8.5	37	195
80	128	18.5	6.5	M10	22	30	6	4	72	10	46	220
100	138	20	12	M10	22	30	6	4	89	12.5	51	240

Piston Ø	32	40	50	63	80	100
Mass at 0 mm stroke in kg	0.654	0.996	1.536	1.996	3.348	4.438
add-on per 100 mm stroke	0.296	0.465	0.645	0.666	0.995	1.064

# Accessories for pneumatic cylinders series SL

Double acting with magnetic piston DIN ISO 15552

G1/8 to G1/2 • piston Ø 32 to 100 mm



## Piston rod accessories



Flexible coupling  
**FK**  
Page 9.008 and 9.212



Rod eye  
**FO + RO**  
Page 9.008 and 9.212



Rod clevis with pin  
**FD + RD**  
Page 9.008 and 9.211



Piston rod nut  
**FE + RL**  
Page 9.008 and 9.212

## Mounting accessories



Foot mount  
**XLB-Ø-01**  
Page 9.015



Flange mount  
**XLB-Ø-02**  
Page 9.015



Clevis mount with bushing  
**XLB-Ø-04**  
Page 9.015



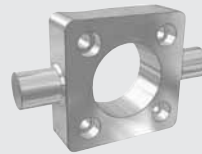
Swivel mount  
**XLB-Ø-05**  
Page 9.016



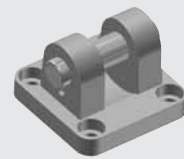
Swivel mount 90°  
**XLB-Ø-06**  
Page 9.016



Swivel mount with spherical bearing  
**XLB-Ø-12**  
Page 9.017



Trunnion flange mount  
**XLB-Ø-11**  
Page 9.019



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



Clevis pin  
**XLB-Ø-08**  
Page 9.017

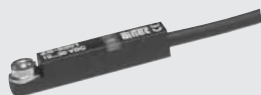


Bearing block  
**XLB-Ø-09**  
Page 9.018



Linear guides  
**LE-**  
Page 9.200

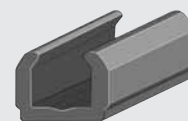
## Proximity sensors



Sensors  
**ZS-**  
Page 9.220



Connecting cable  
**KA-**  
Page 9.221



Cover for sensor groove  
**XLB-011** 0.5m

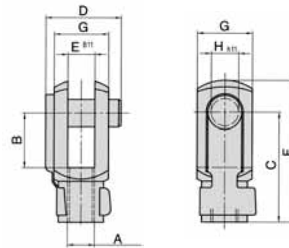
Seal kits see page 9.045.

### Allocation

Series	Cylinders Ø	Screw thread	Rod clevis	Piston rod nut	Flexible coupling	Rod eye
SL	Ø 32	M10 x 1.25	RD-25	RL-25	FK-32	RO-25
SL	Ø 40	M12 x 1.25	FD-40	FE-40	FK-40	FO-40
SL	Ø 50 and 63	M16 x 1.5	FD-63	FE-63	FK-63	FO-63
SL	Ø 80 and 100	M20 x 1.5	FD-80	FE-80	FK-80	FO-80

### Rod clevis with pin

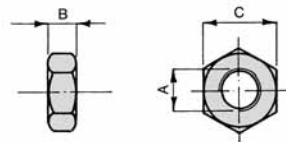
Order number	A	B	C	D	E	F	G	H
RD-25	M10 x 1.25	20	40	26	10	52	20	10
FD-40	M12 x 1.25	24	48	32	12	62	24	12
FD-63	M16 x 1.5	32	64	40	16	83	32	16
FD-80	M20 x 1.5	40	80	50	20	105	40	20



Material:  
steel (zinc-plated)  
stainless steel

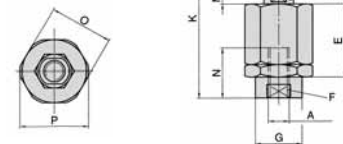
### Piston rod nut

Order number	A	B	C
RL-25	M10 x 1.25	4.7	17
FE-40	M12 x 1.25	5.7	19
FE-63	M16 x 1.5	7.4	24
FE-80	M20 x 1.5	9.1	30



Material: steel (zinc-plated)

### Flexible coupling



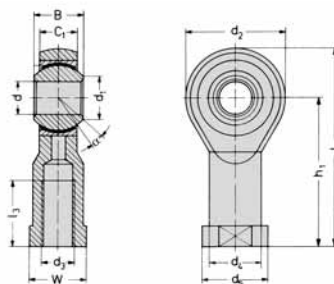
Material: steel (zinc-plated)

Order number	A	B	C	D	E	F	G	K	L	M	N	O	P
FK-32	M10 x 1.25	SW 17	SW 12	14	35	SW 19	22	71	20	5	20	30	32
FK-40	M12 x 1.25	SW 19	SW 12	14	35	SW 19	22	75	24	5	20	30	32
FK-63	M16 x 1.5	SW 24	SW 20	22	54	SW 30	32	103	32	8	32	41	45
FK-80	M20 x 1.5	SW 30	SW 20	22	54	SW 30	32	119	40	8	40	41	45

### Rod eye



Material: steel (zinc-plated),  
brass, PTFE

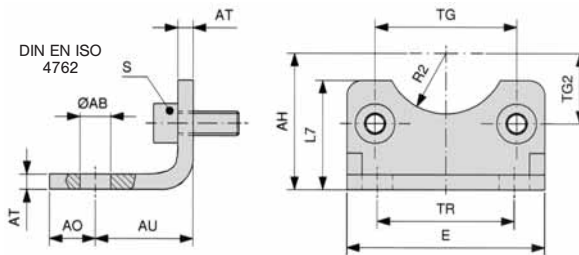


Order number	d <sub>3</sub>	d	d <sub>1</sub>	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	B	C <sub>1</sub>	W	L <sub>3</sub>	L <sub>4</sub>	h <sub>1</sub>	α
RO-25	M10 x 1.25	10	12.9	28	15	19	14	10.5	17	20	57	43	13
FO-40	M12 x 1.25	12	15.4	32	17.5	22	16	12	19	22	66	50	13
FO-63	M16 x 1.5	16	19.3	42	22	27	21	15	22	28	85	64	15
FO-80	M20 x 1.5	20	24.3	50	27.5	34	25	18	32	33	102	77	15

# Mounting accessories for series XL and SL



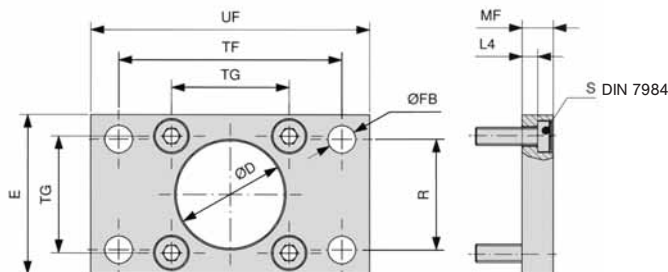
## Foot mount 1 pair



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

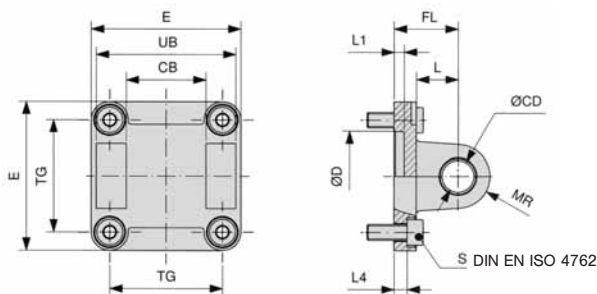
## Flange mount



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	

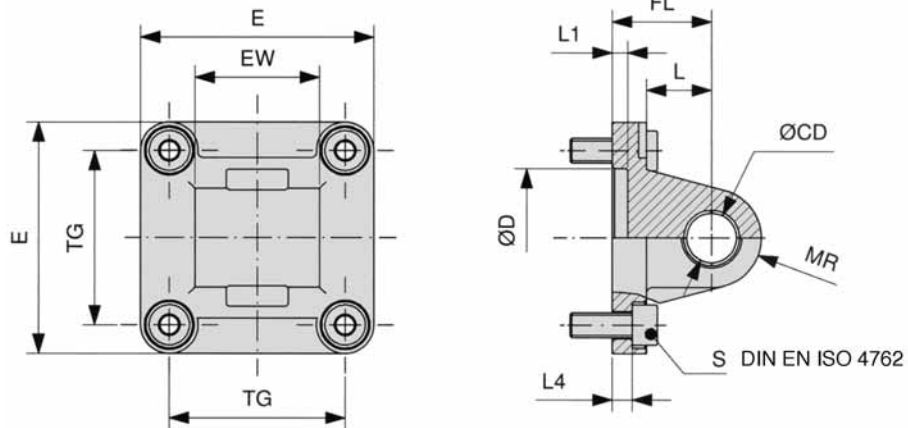
## Clevis mount with bushing



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

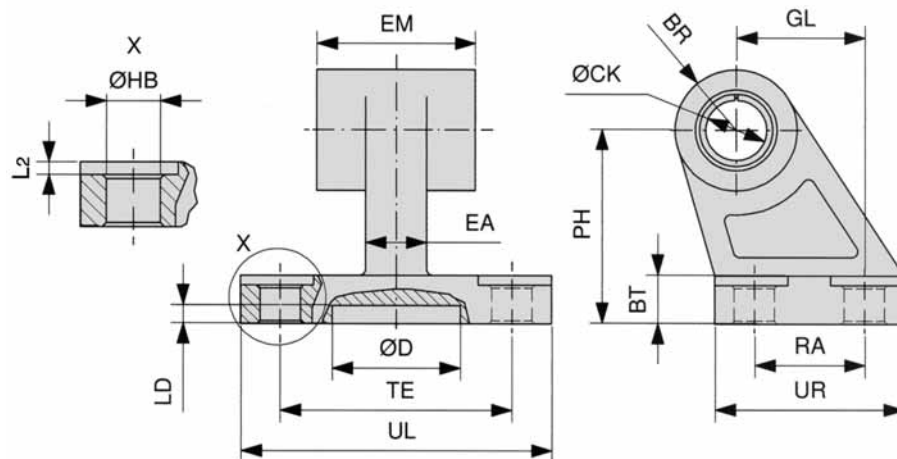
**Swivel mount**



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

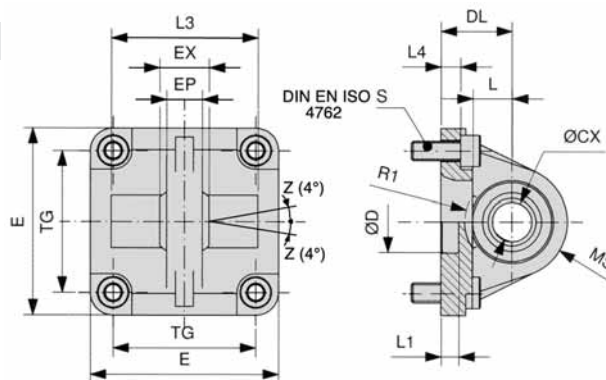
**Swivel mount 90°**



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		

## Swivel mount with spherical bearing



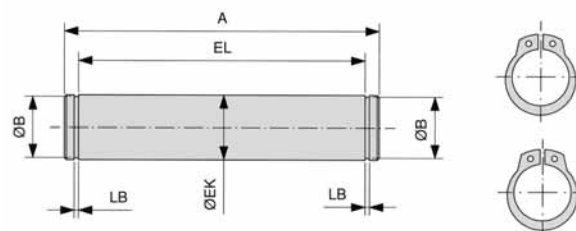
Material: Al

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

## Clevis pin



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

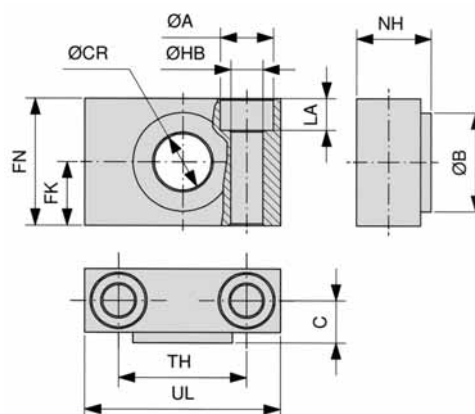


Order number	A	Ø B	Ø EK	EL	LB
XLB-032-08	53	9.6	10	46	1.1
XLB-040-08	60	11.5	12	53	1.1
XLB-050-08	68	11.5	12	61	1.1
XLB-063-08	78	15.2	16	71	1.1
XLB-080-08	98	15.2	16	91	1.1
XLB-100-08	118	19	20	111	1.3
XLB-125-08	139	23.9	25	132*	1.3
			e8	+ 2 *+ 3	

## Bearing block (1 pair)



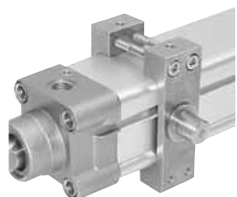
Order number = 1 pair  
Material: steel (zinc-plated), bronze



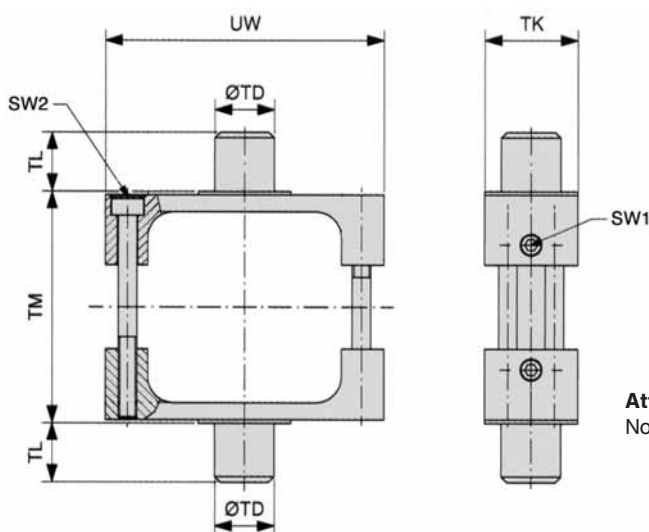
Order number	Ø A	Ø B	C	Ø CR	FK	FN	Ø HB	LA	NH	TH	UL
XLB-032-09	11	22	10,5	12	15	30	6,6	7	18	32	46
XLB-040-09	15	28	12	16	18	36	9	9	21	36	55
XLB-063-09	18	32	13	20	20	40	11	11	23	42	65
XLB-100-09	20	39	16	25	25	50	14	13	28,5	50	75
				H9	± 0,1		H13			± 0,2	



**Trunnion mount**



Mounting position arbitrary.

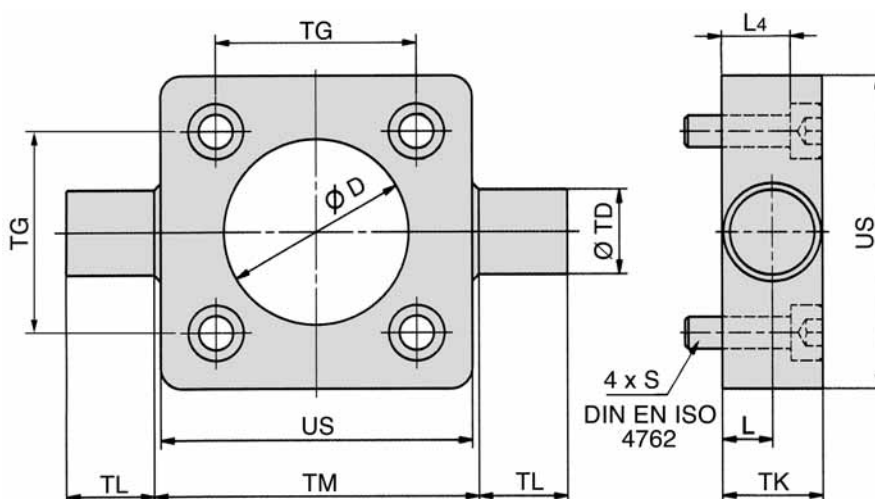
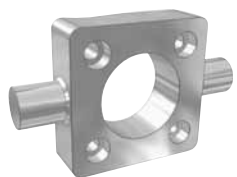


**Attention!**  
Not available for SL type.

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
		DIN EN ISO 4762	e9		h14	h14	

**Trunnion flange mount**



Material: steel (zinc-plated)

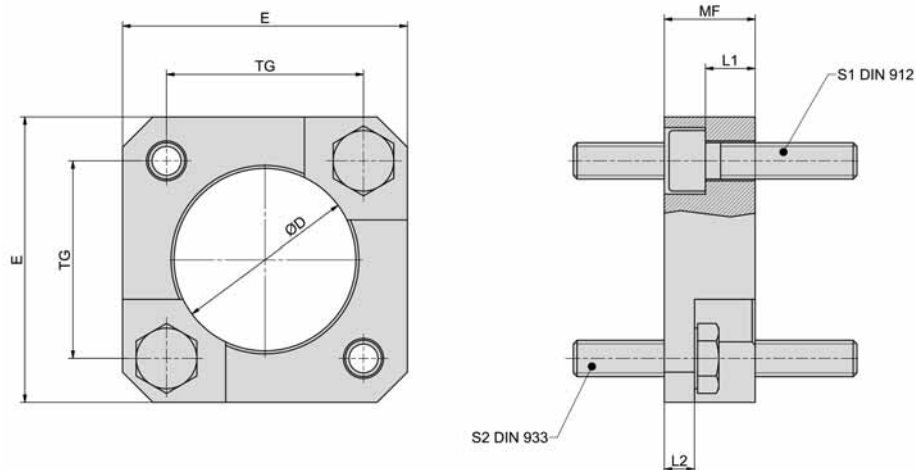
Order number	D	L	L4	S	TD	TG	TK	TL	Ø TM	US
XLB-032-11	30	6.5	8	M6 x 20	12	32.5	14	12	50	46
XLB-040-11	35	9	13	M6 x 25	16	38	19	16	63	59
XLB-050-11	40	9	11	M8 x 25	16	46.5	19	16	75	69
XLB-063-11	45	11.5	16	M8 x 30	20	56.5	24	20	90	84
XLB-080-11	45	11.5	14	M10 x 30	20	72	24	20	110	102
XLB-100-11	55	14	19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

# Mounting accessories

for series XL and SL



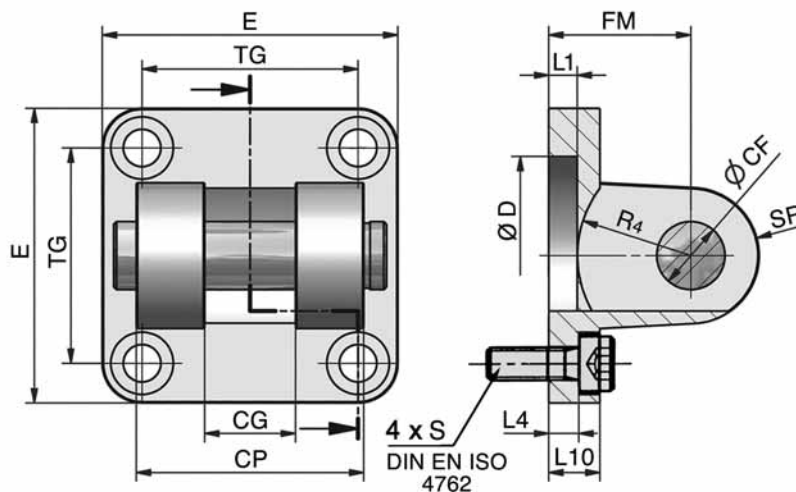
## Back to back adapter



Material: steel (zinc-plated)

Order number	Ø D	E	L1	L2	S1	S2	MF	TG
XLB-032-13	30	47	8,2	5	M6 x 25	M6 x 20	15	32,5
XLB-040-13	35	54	8,2	5	M6 x 25	M6 x 20	15	38
XLB-050-13	40	63	11	7	M8 x 25	M8 x 20	20	46,5
XLB-063-13	45	74	11	7	M8 x 25	M8 x 20	20	56,5
XLB-080-13	45	93,5	14	8	M10 x 30	M10 x 25	25	72
XLB-100-13	55	110	14	8	M10 x 30	M10 x 25	25	89
XLB-125-13	60	137	17	10	M10 x 35	M10 x 35	30	110

## Small clevis mount with non rotating pin

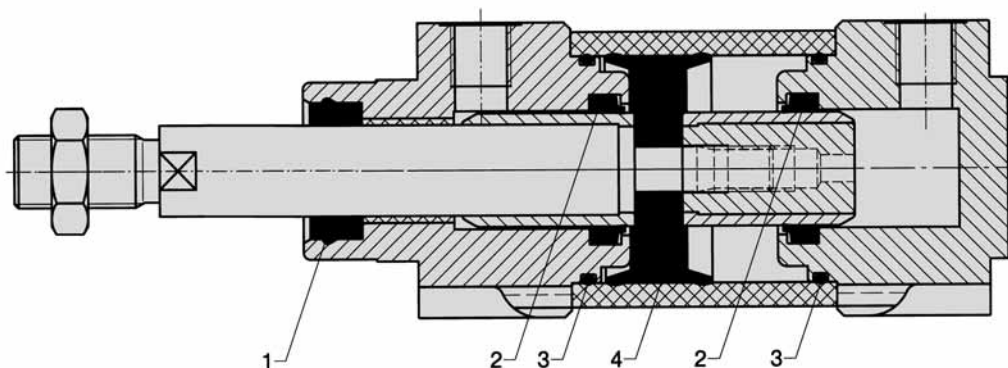


Material of clevis: Al  
of pin: steel (zinc-plated)

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

## Seal kits for series XL, XG, CX\*, SL\*\*

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

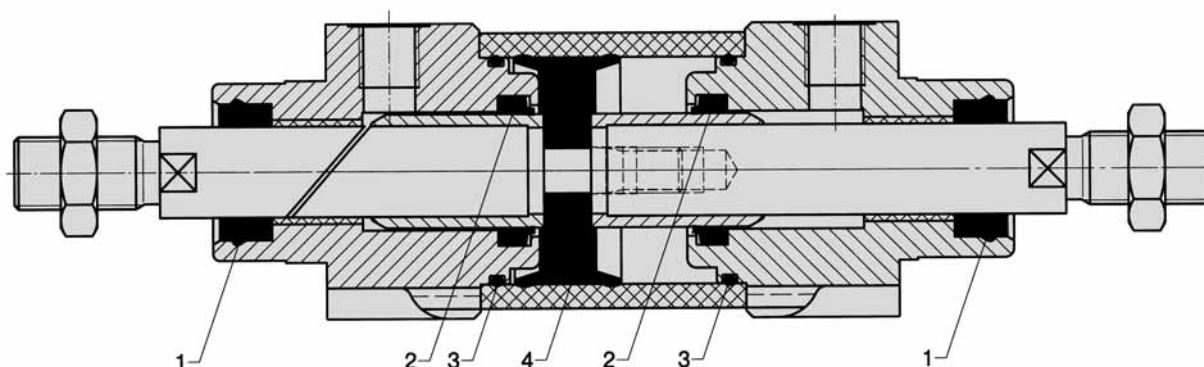
### Content

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 125 are identical with XL. Repair kits for CX from Ø 160 and Ø 200 are identical with XG.

\*\* Repair kits for XL and SL are identical.

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

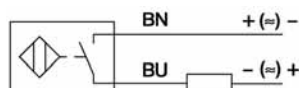
Pos.	Part	Quantity
1	Wiper and seal element	2
2	Cushion seal	2
3	O-ring	2
4	Piston	1
	Grease	1

\* Repair kits for CX from Ø 32 to Ø 125 are identical with XL. Repair kits for CX from Ø 160 and Ø 200 are identical with XG.

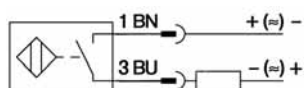
\*\* Repair kits for XL and SL are identical.

## Proximity sensors

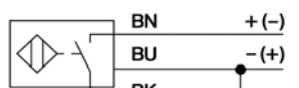
### Wiring diagram



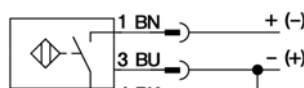
Reed  
**ZS-5600**



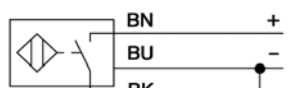
Reed  
**ZS-5601**



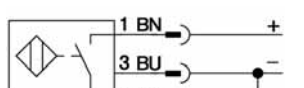
Reed  
**ZS-5700, ZS-5700-10**



Reed  
**ZS-5701**

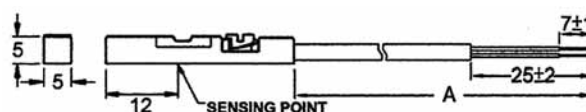


PNP  
**ZS-6700, ZS-7300**



PNP  
**ZS-6701, ZS-7302**

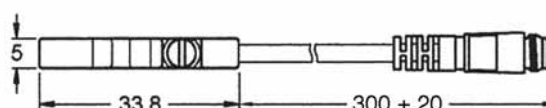
### Dimensions



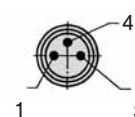
**ZS-5600, ZS-6700, ZS-7300;** A = 3.000 ± 20

**ZS-5700;** A = 5.000 ± 20

**ZS-5700-10;** A = 10.000 ± 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
<b>Design</b>	2-pole Reed sensor (non-polarized) normally open		3-pole Reed sensor* normally open		
<b>Cable</b>	∅ 2.8, PUR				
<b>Cable cross section</b>	n/a				
<b>Cable length</b>	3 m	0.3 m	5 m	10 m	0.3 m
<b>Cable plug</b>	-	M8	-	-	M8
<b>Overtravel speed</b>	n/a				
<b>Max. absolute hysteresis</b>	n/a				
<b>Temperature drift</b>	n/a				
<b>Min. absolute repeat accuracy</b>	n/a				
<b>Operating temperature</b>	- 10 °C ... + 70 °C				
<b>Degree of protection</b>	IP 68				
<b>Housing material</b>	Plastic				
<b>Switching status indication</b>	LED red		LED yellow		
<b>Rated operational voltage</b>	5 ... 240 V AC/DC		5 ... 60 V AC/DC		5 ... 30 V DC
<b>Rated operational current I<sub>E</sub></b>	3 ... 100 mA		3 ... 100 mA		≤ 500 mA
	DC		AC		≤ 500 mA
<b>Breaking capacity</b>	≤ 10 W				
<b>No-load current</b>	n/a		≤ 10 mA		
<b>Max. OFF-state current</b>	0 mA				
<b>Max. switching frequency</b>	≤ 0.2 kHz				
<b>Rated insulation voltage</b>	n/a				
<b>Short-circuit protection</b>	no				
<b>Max. voltage drop at I<sub>E</sub></b>	≤ 2.5 V		≤ 0.1 V		
<b>Wire breakage</b>	no				
<b>Reverse polarity protection</b>	yes				
<b>Vibration resistance</b>	9 g (1.5 mm, 10 – 55 Hz – 10 Hz)				
<b>Shock resistance</b>	30 g (11 ms)				
<b>Explosion proof</b>	-				

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

## Proximity sensors

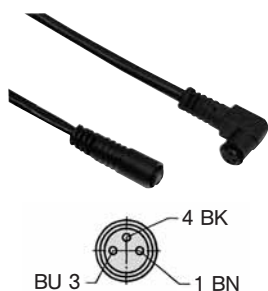
### Mounting bracket for round cylinder Ø 8 – 63 mm



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

Material: metal,  
plastic PA GI/6T

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



Cable: PUR, black, 3 x 0.25 mm<sup>2</sup>, 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°

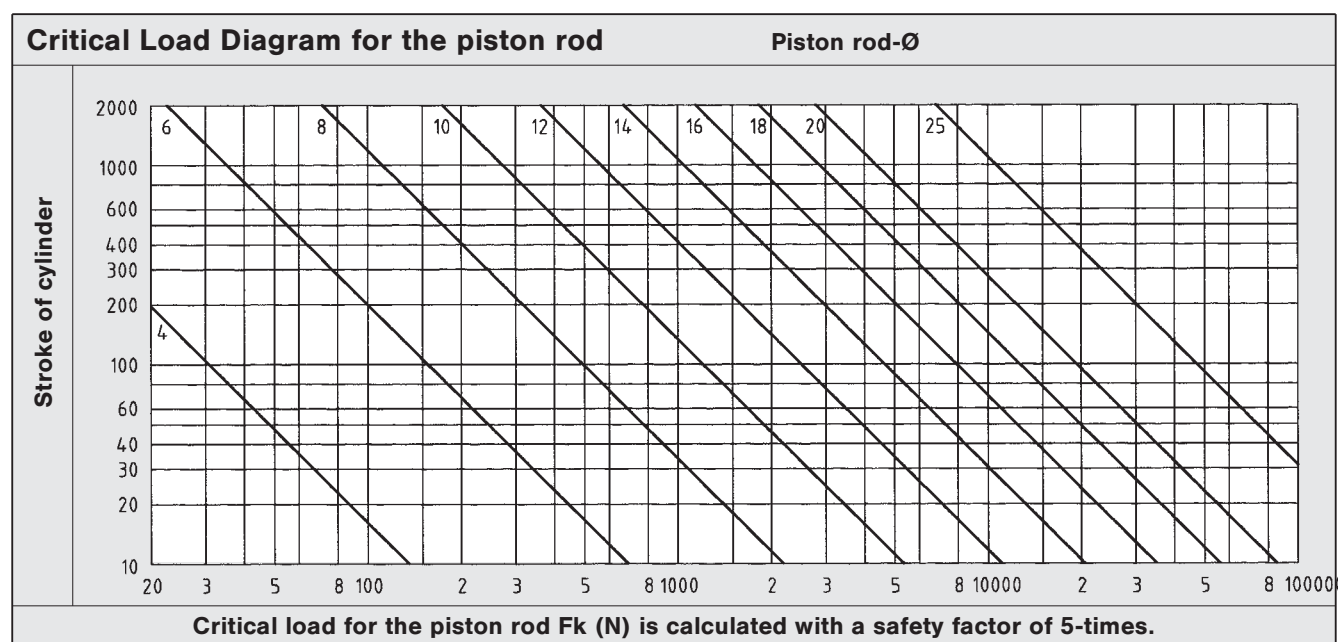
### Proximity sensors electronic

Order number	ZS-6700	ZS-6701	ZS-7300	ZS-7302
<b>Design</b>	electronic, magnet-inductive sensor, normally open PNP output			
<b>Cable</b>	Ø 2,8, PUR		n/a	
<b>Cable cross section</b>	n/a		3 x 0,14 mm <sup>2</sup>	
<b>Cable lengths</b>	3 m	0,3 m	6 m	0,3 m
<b>Cable plug</b>	-	M8	-	M12
<b>Overtravel speed</b>	n/a		≤ 10 m/s	
<b>Max. absolute hysteresis</b>	n/a		n/a	
<b>Temperatur drift</b>	n/a		≤ 0,1 mm	
<b>Min. absolute repeat accuracy</b>	n/a		≤ 0,2 mm	
<b>Operating temperature</b>	- 10 °C ... + 70 °C		- 25 °C ... + 60 °C	
<b>Degree of protection</b>	IP 68		IP65/IP67	IP 67
<b>Housing material</b>	Plastic		Body: PA; Mounting band: stainless steel	
<b>Switching status indication</b>	LED green		LED yellow	
<b>Rated operational voltage</b>	5 ... 30 V DC		10 ... 30 V DC	
<b>Rated operational current I<sub>E</sub></b>	≤ 200 mA		≤ 100 mA	
	DC		-	
	AC		-	
<b>Breaking capacity</b>	6 W		n/a	
<b>No-load current</b>	≤ 10 mA		≤ 10 mA	
<b>Max. OFF-state current</b>	n/a		n/a	
<b>Max. switching frequency</b>	≤ 1 kHz		> 6.000 Hz	> 10.000 Hz
<b>Rated insulation voltage</b>	n/a		n/a	
<b>Short-circuit protection</b>	yes		yes	
<b>Max. voltage drop at I<sub>E</sub></b>	≤ 1,0 V		≤ 2,5 V	
<b>Wire breakage</b>	yes		n/a	
<b>Reverse polarity protection</b>	yes		yes	
<b>Vibration resistance</b>	9 g (1.5 mm, 10 – 55 Hz – 10 Hz)		n/a	
<b>Shock resistance</b>	50 g (11 ms)		n/a	
<b>Explosion proof</b>	-		EX II 3G Ex nA T4 X EX II 3D Ex tD A22 IP67 T125°C X	EX II 3D Ex tD A22 IP67 T80°C X

# 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/mm<sup>2</sup>)
- $I$  = moment of inertia (mm<sup>4</sup>)
- $L_k$  = effective length of critical load
- $S$  = security

Elastic cases of buckling according to Euler

