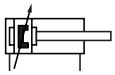
Series XL
ISO 15552, double acting

Technical details

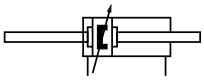
Operating pressure	1 ... 10 bar
Temperature range	-20°C ... +80°C (XL, XLD, XLL) (XLH: -10°C ... +150°C, XLC/ XLCD: -40°C ...+80°C)
Max. stroke	2800 mm
Medium	Filtered, oil-free and dried compressed air according to ISO 8573-1:2010, Class 7:2:4, instrument air, free of aggressive additives. Alternatively the pressure dew point must be at least 10°C below lowest occurring ambient temperature.
Materials	Cylinder tube: Al (anodized) End caps: Al-die-cast (painted) Piston rod: steel hard chrome plated (optional 1.4301) Seals: PU, NBR (optional FKM)
	Cylinders in accordance with 2014/34/EU (ATEX) available. (Chapter 13)

Double acting Al-profile cylinder with integrated sensor grooves, adjustable cushions and magnetic piston for proximity sensors.
The sensors can be installed directly into the sensor grooves of the Al-profile.
Standard stroke lengths in table below, additional lengths on request.

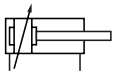
Versions



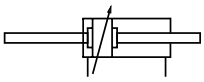
050, 054, 000, 004
double acting, adjustable cushioning, with magnetic piston



450, 454, 400, 404
double acting, double end piston rod, adjustable cushioning, with magnetic piston



152, 102
double acting, adjustable cushioning



552, 502
double acting, double end piston rod, adjustable cushioning

Order code

XL-***-****-***-****

Series	
XL	standard
XLC	low temperature version
XLCD	low temperature version, with metal scraper
XLD	with metal scraper
XLH	high temperature version
XLL	low friction version

Piston Ø	
032	32 mm
040	40 mm
050	50 mm
063	63 mm
080	80 mm
100	100 mm
125	125 mm

Not all combinations are possible and available.

* For longer stroke lengths please check the max buckling load.

Options	
ATEX	cylinders in accordance with 2014/34/EU (ATEX)
E8	piston rod seal E8, two-part, with plastic scraper

Versions	
050 450	standard version
000 400	piston rod stainless steel
054 454	piston rod seal FKM
004 404	piston rod stainless steel , piston rod seal FKM
152 552	high temperature version (without magnetic piston)
102 502	high temperature version, piston rod stainless steel (without magnetic piston)

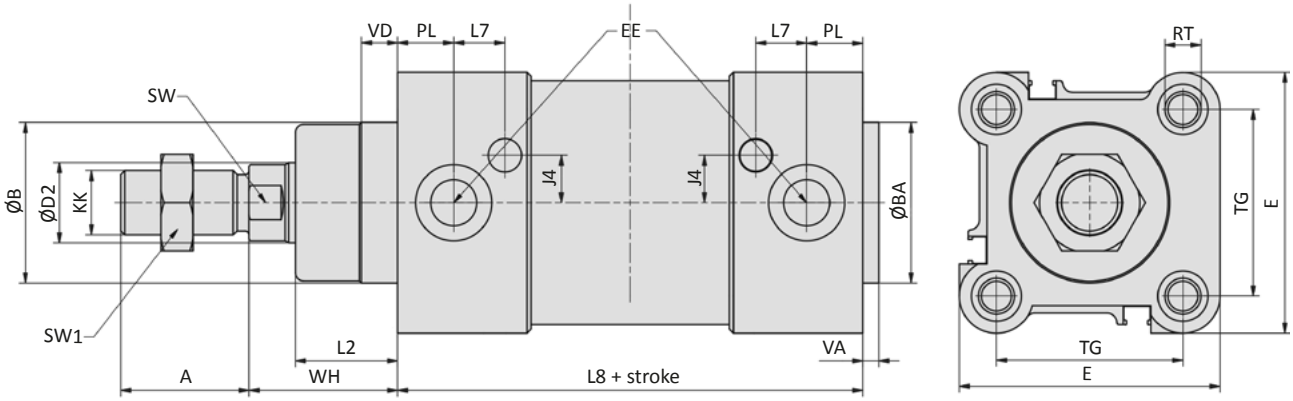
Stroke (mm)	
XXXX	max. 2800 mm*
Standard	25, 40, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500 mm

Series XL
ISO 15552, double acting

Technical data

Model-no.:		XL-032-...	XL-040-...	XL-050-...	XL-063-...	XL-080-...	XL-100-...	XL-125-...
Piston Ø (mm)		32	40	50	63	80	100	125
Force at 6 bar (N)	Extension	434	678	1060	1682	2713	4239	6623
	Retraction	373	570	890	1513	2448	3974	6189
Connection		G1/8	G1/4	G1/4	G3/8	G3/8	G1/2	G1/2
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

Dimensions series XL

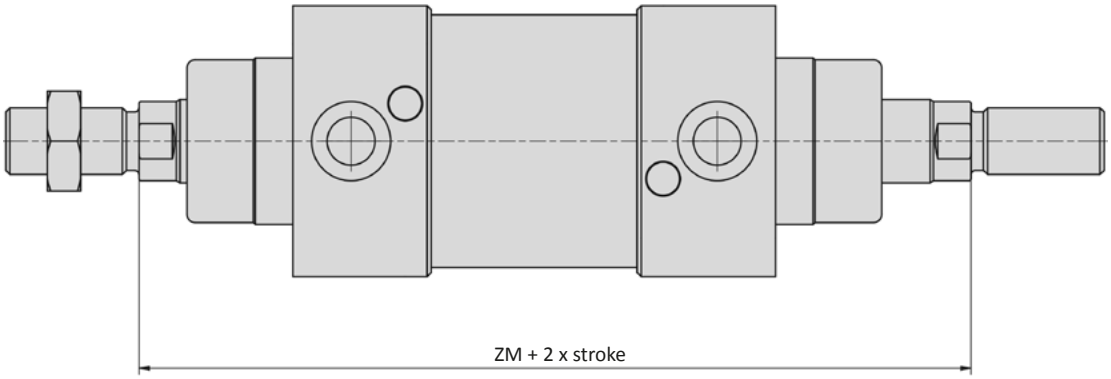


Piston Ø	A	Ø B	Ø BA	Ø D2	E	EE	J4	KK	L2
32	22	30	30	12	47	G1/8	6	M10 x 1.25	18
40	24	35	35	16	54	G1/4	9	M12 x 1.25	22
50	32	40	40	20	63	G1/4	8	M16 x 1.5	25.5
63	32	45	45	20	74	G3/8	9.5	M16 x 1.5	25
80	40	45	45	25	93.5	G3/8	14	M20 x 1.5	35
100	40	55	55	25	110	G1/2	15	M20 x 1.5	38
125	54	60	60	32	137.5	G1/2	15	M27 x 2	46

Piston Ø	L7	L8	PL	RT	SW	SW1	TG	VA	VD	WH
32	11.5	94	12.5	M6	10	17	32.5	4	9.5	26
40	13	105	14	M6	13	19	38	4	9.5	30
50	12.75	106	14	M8	17	24	46.5	4	9.5	37
63	14.5	121	16.5	M8	17	24	56.5	4	9.5	37
80	13.75	128	17	M10	22	30	72	4	10	46
100	15.5	138	18	M10	22	30	89	4	10	51
125	20	160	18	M12	27	41	110	6	11	65

Piston Ø (mm)		32	40	50	63	80	100	125
Weight (kg)	0 mm stroke	0.617	0.925	1.421	1.950	3.250	4.396	6.391
	each 100 mm stroke	0.286	0.403	0.528	0.597	0.861	0.946	1.517

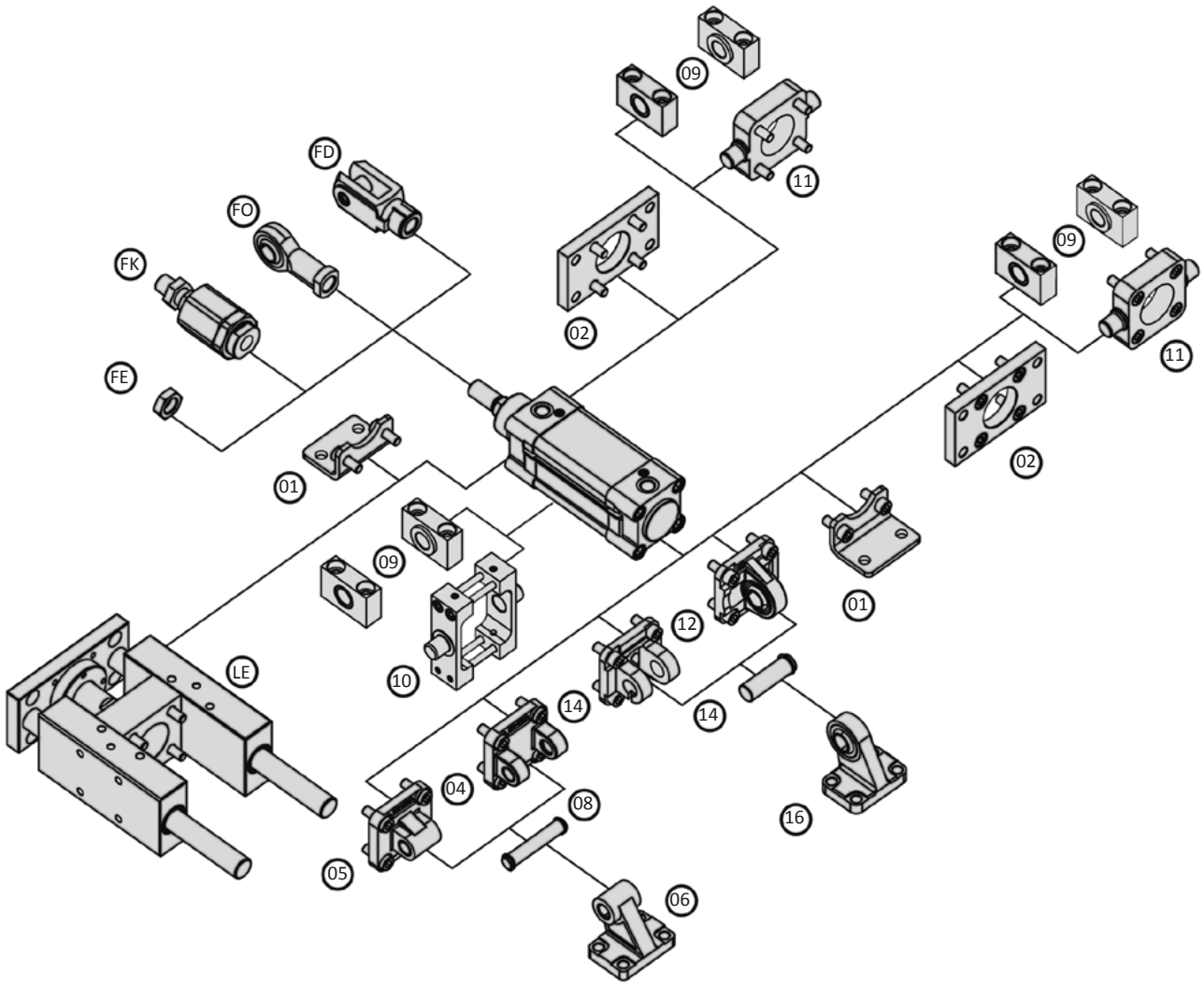
Dimensions series XL (addition at double end piston rod)



Piston Ø (mm)	32	40	50	63	80	100	125
ZM	146	165	180	195	220	240	290

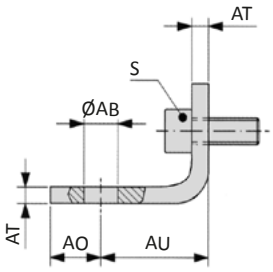
Piston Ø (mm)		32	40	50	63	80	100	125
Weight (kg)	0 mm stroke	0.702	1.065	1.713	2.208	3.780	5.057	9.387
	each 100 mm stroke	0.374	0.559	0.768	0.837	1.243	1.328	2.143

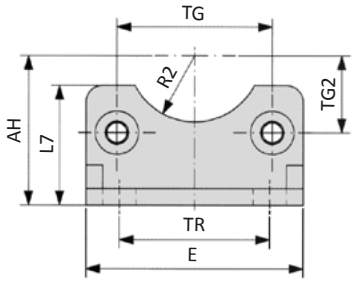
Mounting accessories XLB-xxx-yy



Series XL
Mounting accessories

XLB-xxx-01 Foot mount

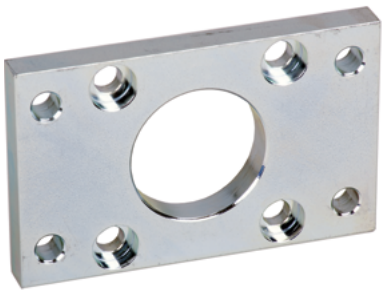


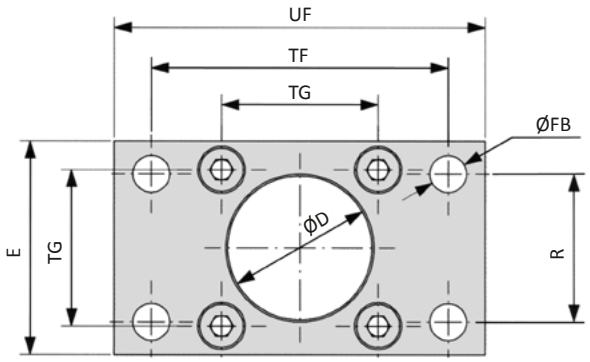


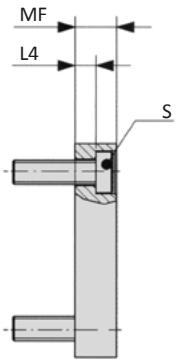
Model-no.:	Ø AB	AH	AO	AU	AT	E	L7	R2	S	TG	TG2	TR
XLB-032-01	7	32	11	24	4	45	30	15	M6 x 16	32.5	16.25	32
XLB-040-01	10	36	8	28	4	52	30	17.5	M6 x 16	38	19	36
XLB-050-01	10	45	15	32	5	65	36	20	M8 x 20	46.5	23.25	45
XLB-063-01	10	50	13	32	5	75	35	22.5	M8 x 20	56.5	28.25	50
XLB-080-01	12	63	14	41	6	95	47	22.5	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
tolerances and adjustments	H14	JS16		± 0.2				H15		± 0.2 *± 0.3		JS14

Material: steel, zinc plated; 2 x 2 screws in accordance with EN ISO 4762 are included.

XLB-xxx-02 Flange mount







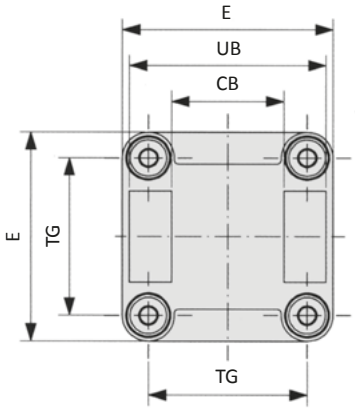
Model-no.:	Ø D	E	Ø FB	L4	MF	R	S	TF	TG	UF
XLB-032-02	30	45	7	5	10	32	M6 x 20	64	32.5	80
XLB-040-02	35	52	9	5	10	36	M6 x 20	72	38	90
XLB-050-02	40	65	9	6.5	12	45	M8 x 20	90	46.5	110
XLB-063-02	45	75	9	6.5	12	50	M8 x 20	100	56.5	120
XLB-080-02	45	95	12	9	16	63	M10 x 25	126	72	150
XLB-100-02	55	115	14	9	16	75	M10 x 25	150	89	170
XLB-125-02	60	140	16	10.5	20	90	M12 x 25	180	110*	205
tolerances and adjustments	H11		H13	- 0.5	JS14	JS14		JS14	± 0.2 *± 0.3	

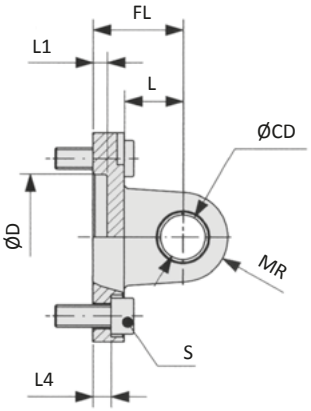
Material: steel, zinc plated; 4 screws in accordance with DIN 7984 are included.

Series XL
Mounting accessories

XLB-xxx-04 Clevis mount with bushing

Inclusive clevis pin
order no:**XLB-xxx-48**

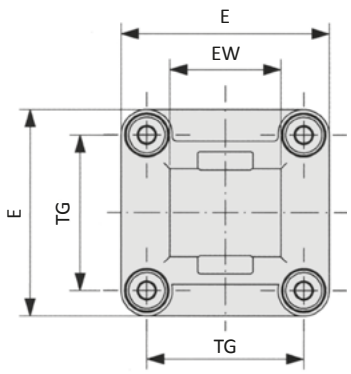


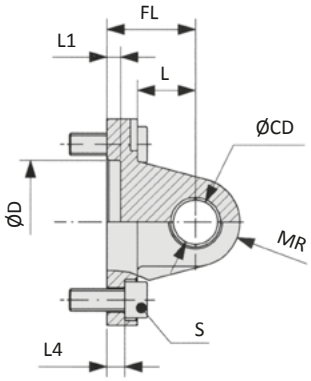


Model-no.:	CB	Ø CD	Ø D	E	FL	L	L1	L4	MR	S	TG	UB
XLB-032-04	26	10	30	45	22	13	5	5.5	10	M6 x 20	32.5	45
XLB-040-04	28	12	35	52	25	16	5	5.5	12	M6 x 20	38	52
XLB-050-04	32	12	40	65	27	16	5	6.5	12	M8 x 20	46.5	60
XLB-063-04	40	16	45	75	32	21	5	6.5	16	M8 x 20	56.5	70
XLB-080-04	50	16	45	95	36	22	5	10	16	M10 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
tolerances and adjustments	H14	H9	H11		± 0.2			± 0.5			± 0.2 *± 0.3	h13

Materials: Al, bushing steel and PTFE; 4 screws in accordance with EN ISO 4762 are included.

XLB-xxx-05 Swivel mount



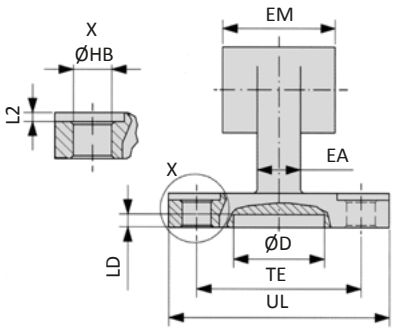


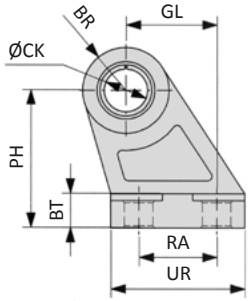
Model-no.:	Ø CD	Ø D	E	EW	FL	L	L1	L4	MR	S	TG
XLB-032-05	10	30	45	26	22	13	5	5.5	10	M6 x 20	32.5
XLB-040-05	12	35	52	28	25	16	5	5.5	12	M6 x 20	38
XLB-050-05	12	40	65	32	27	16	5	6.5	12	M8 x 20	46.5
XLB-063-05	16	45	75	40	32	21	5	6.5	16	M8 x 20	56.5
XLB-080-05	16	45	95	50	36	22	5	10	16	M10 x 25	72
XLB-100-05	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*
tolerances and adjustments	H9	H11			± 0.2			± 0.5			± 0.2 *± 0.3

Materials: Al, bushing steel and PTFE; 4 screws in accordance with EN ISO 4762 are included.

Series XL
Mounting accessories

XLB-xxx-06 Swivel mount 90°

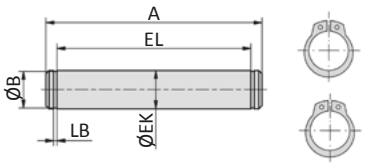




Model-no.:	BR	BT	ØCK	Ø D	EA	EM	GL	ØHB	L2	LD	PH	RA	TE	UL	UR
XLB-032-06	10	8	10	21	10	26	21	6.6	1.6	3	32	18	38	51	31
XLB-040-06	11	10	12	21	15	28	24	6.6	1.6	3	36	22	41	54	35
XLB-050-06	13	12	12	21	16	32	33	9	1.6	3	45	30	50	65	45
XLB-063-06	15	14	16	21	16	40	37	9	1.6	3	50	35	52	67	50
XLB-080-06	15	14	16	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
tolerances and adjustments			H9				JS14	H13			JS15	JS14	JS14		

Materials: Al, bushing steel and PTFE

XLB-xxx-08 Clevis pin

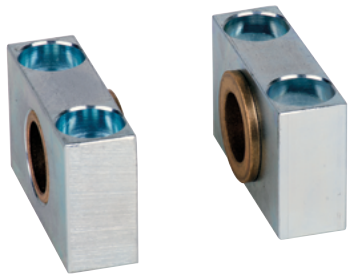


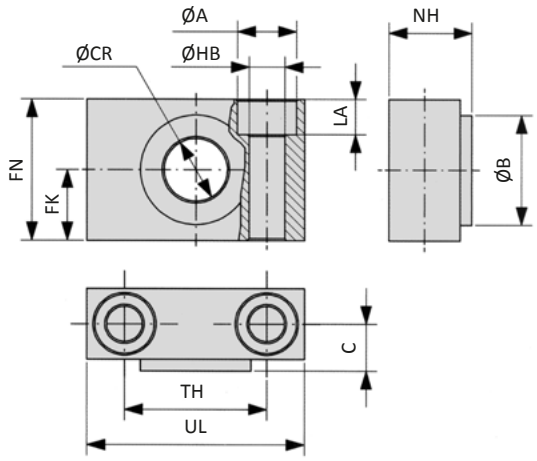
Model-no.:	A	Ø B	Ø EK	EL	LB
XLB-032-08	53	9.6	10	46	1.1
XLB-040-08	60	11.5	12	53	1.1
XLB-050-08	68	11.5	12	61	1.1
XLB-063-08	78	15.2	16	71	1.1
XLB-080-08	98	15.2	16	91	1.1
XLB-100-08	118	19	20	111	1.3
XLB-125-08	139	23.9	25	132*	1.3
tolerances and adjustments			e8	+ 2 *+ 3	

Material: steel, zinc plated; 2 snap rings are included.

Series XL
Mounting accessories

XLB-xxx-09 Bearing block

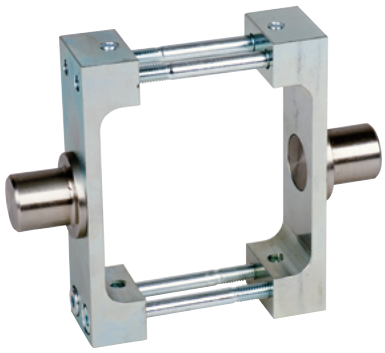


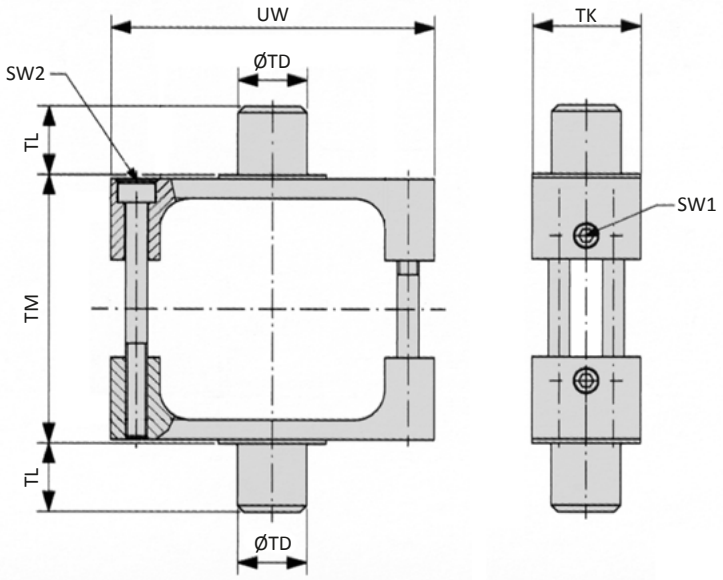


Model-no.:	Ø A	Ø B	C	Ø CR	FK	FN	Ø HB	LA	NH	TH	UL
XLB-032-09	11	22	10.5	12	15	30	6.6	7	18	32	46
XLB-040-09	15	28	12	16	18	36	9	9	21	36	55
XLB-063-09	18	32	13	20	20	40	11	11	23	42	65
XLB-100-09	20	39	16	25	25	50	14	13	28.5	50	75
tolerances and adjustments				H9	± 0.1		H13			± 0.2	

Materials: Al, bronze bushing

XLB-xxx-10 Trunnion mount



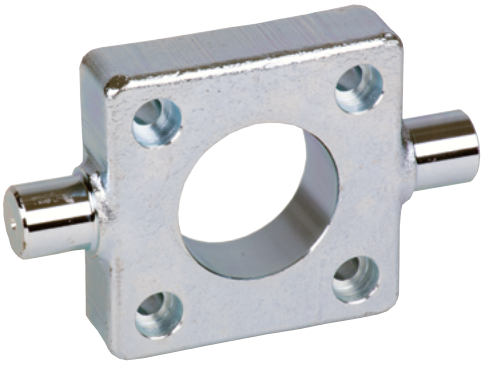


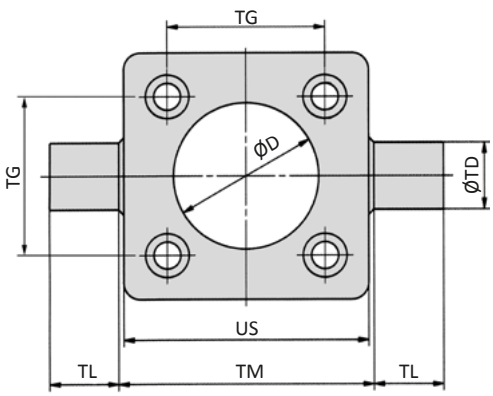
Model-no.:	SW1	SW2	Ø TD	TK	TL	TM	UW
XLB-032-10	3	2.5	12	25	12	50	65
XLB-040-10	3	3	16	25	16	63	75
XLB-050-10	3	4	16	30	16	75	95
XLB-063-10	3	4	20	30	20	90	105
XLB-080-10	3	4	20	30	20	110	130
XLB-100-10	4	5	25	40	25	132	145
XLB-125-10	4	6	25	40	25	160	175
tolerances and adjustments			e9		h14	h14	

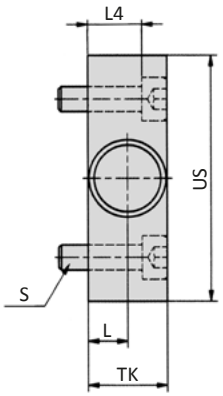
Material: steel, zinc plated

Series XL
Mounting accessories

XLB-xxx-11 Trunnion mount



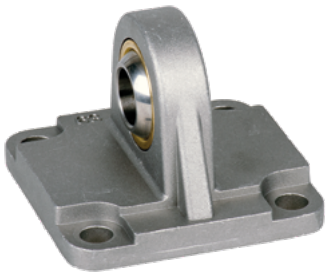


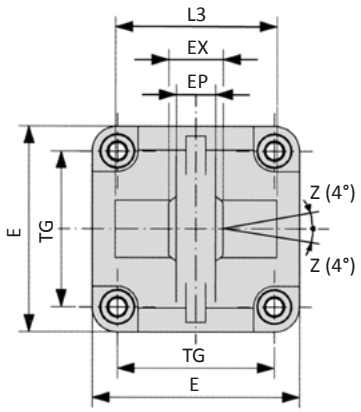


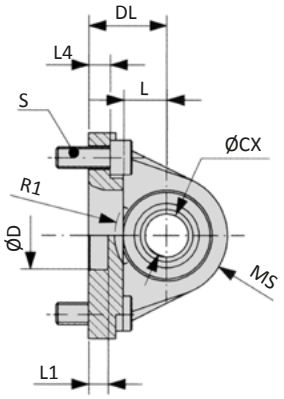
Model-no.:	Ø D	L	L4	S	Ø TD	TG	TK	TL	TM	US
XLB-032-11	30	6.5	8	M6 x 20	12	32.5	14	12	50	46
XLB-040-11	35	9	13	M6 x 25	16	38	19	16	63	59
XLB-050-11	40	9	11	M8 x 25	16	46.5	19	16	75	69
XLB-063-11	45	11.5	16	M8 x 30	20	56.5	24	20	90	84
XLB-080-11	45	11.5	14	M10 x 30	20	72	24	20	110	102
XLB-100-11	55	14	19	M10 x 35	25	89	29	25	132	125
XLB-125-11	60	15	18	M12 x 35	25	110*	30	25	160	150
tolerances and adjustments	H 11	+ 0.2			e9	± 0,2 *± 0,3		h14	h14	

Material: steel, zinc plated; 4 screws in accordance with EN ISO 4762 are included.

XLB-xxx-12 Swivel mount with spherical bearing





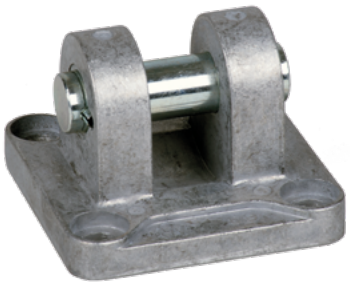


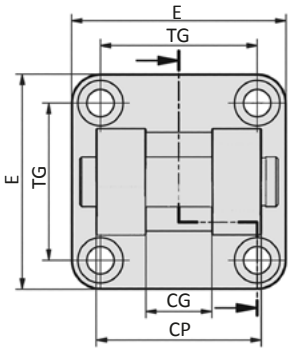
Model-no.:	Ø CX	Ø D	DL	E	EP	EX	L	L1	L3	L4	MS	R1	S	TG
XLB-032-12	10	30	22	45	10.5	14	12	7	-	5.5	16	-	M6 x 20	32.5
XLB-040-12	12	35	25	52	12	16	15	7	-	5.5	18	-	M6 x 20	38
XLB-050-12	16	40	27	65	15	21	15	7	51	6.5	21	19	M8 x 20	46.5
XLB-063-12	16	45	32	75	15	21	20	7	-	6.5	23	-	M8 x 20	56.5
XLB-080-12	20	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*
tolerances and adjustments	H7	H11	± 0.2			± 0.1				± 0.5				± 0.2 *± 0.3

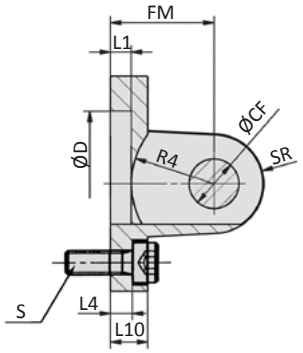
Materials: Al, bearing steel, bronze bushing; 4 screws in accordance with EN ISO 4762 are included.

Series XL
Mounting accessories

XLB-xxx-14 Clevis mount small with pin





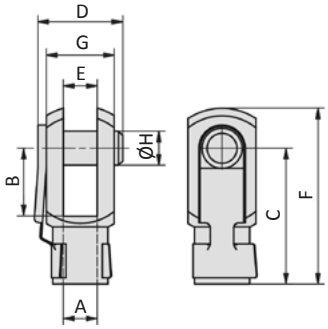


Model-no.:	Ø CF	CG	CP	Ø D	E	FM	L1	L4	L10	R4	S	SR	TG
XLB-032-14	10	14	34	30	45	22	5	5.5	9	17	M6 x 20	10	32.5
XLB-040-14	12	16	40	35	52	25	5	5.5	9	20	M6 x 20	12	38
XLB-050-14	16	21	45	40	65	27	5	6.5	11	22	M8 x 20	14	46.5
XLB-063-14	16	21	51	45	75	32	5	6.5	11	25	M8 x 20	18	56.5
XLB-080-14	20	25	65	45	95	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*
tolerances and adjustments	F7	D10	d12	H11		± 0.2		± 0.5					± 0.2 *± 0.3

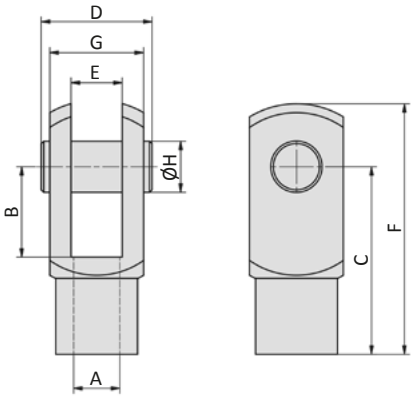
Materials: Al, bushing steel and PTFE, clevis pin steel, zinc plated; 4 screws in accordance with EN ISO 4762 are included.

RD-xx, FD-xxx Rod clevis

Spring loaded pin (RD-25, FD-40...80)



Clevis pin with snap rings (FD-125)

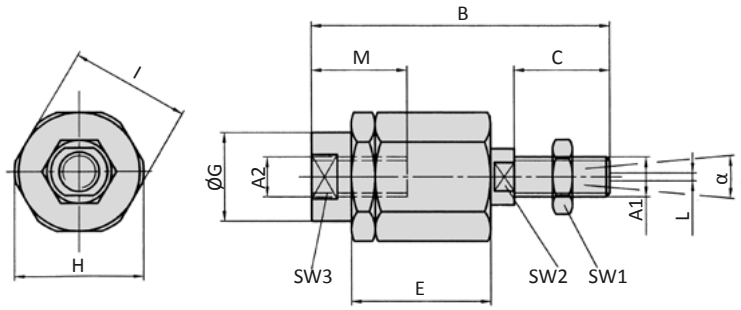


Model-no.:	for cylinder	A	B	C	D	E	F	G	Ø H
RD-25	XL-032	M10 x 1.25	20	40	26	10	52	20	10
FD-40	XL-040	M12 x 1.25	24	48	32	12	62	24	12
FD-63	XL-050, XL-063	M16 x 1.5	32	64	40	16	83	32	16
FD-80	XL-080, XL-100	M20 x 1.5	40	80	50	20	105	40	20
FD-125	XL-125	M27 x 2	54	110	65	30	148	55	30

Material: steel, zinc plated

Series XL
Mounting accessories

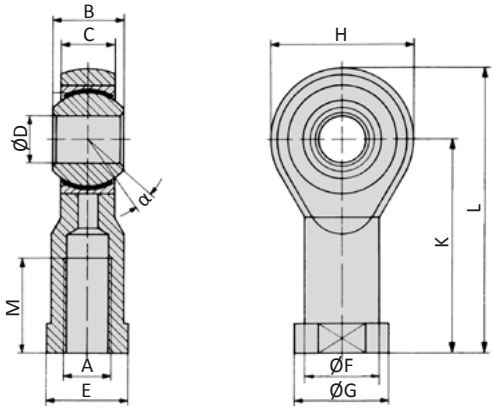
FK-xxx Flexible coupling



Model-no.:	for cylinder	A1, A2	B	C	D	E	Ø G	H	I	L	M	SW1	SW2	SW3	α
FK-32	XL-032	M10 x 1.25	71.5	20	7.5	35	22	32	30	2	22	17	12	19	8°
FK-40	XL-040	M12 x 1.25	71.5	20	7.5	35	22	32	30	2	22	19	12	19	8°
FK-63	XL-050, XL-063	M16 x 1.5	104	32	10	53	32	45	41	2	30	24	20	27	6°
FK-80	XL-080, XL-100	M20 x 1.5	119	40	10	53	32	45	41	2	37	30	20	27	6°
FK-125	XL-125	M27 x 2	147	54	10	60	57	70	65	2	48	41	24	54	8°

Material: steel, zinc plated

RO-xx, FO-xxx Rod eye

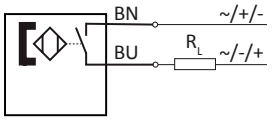


Model-no.:	for cylinder	A	B	C	Ø D	E	Ø F	Ø G	H	K	L	M	α
RO-25	XL-032	M10 x 1.25	14	10.5	10	17	15	19	28	43	57	20	13°
FO-40	XL-040	M12 x 1.25	16	12	12	19	17.5	22	32	50	66	22	13°
FO-63	XL-050, XL-063	M16 x 1.5	21	15	16	22	22	27	42	64	85	28	15°
FO-80	XL-080, XL-100	M20 x 1.5	25	18	20	30	27.5	34	50	77	102	33	14°
FO-125	XL-125	M27 x 2	37	25	30	41	40	50	70	110	145	51	17°

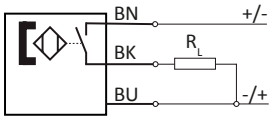
Materials: steel, zinc plated, bearing steel, bronze bushing

Series ZS
Proximity sensors

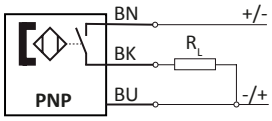
Proximity sensors with cable



ZS-5600

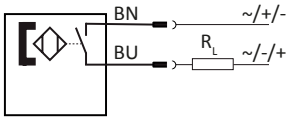


ZS-5700

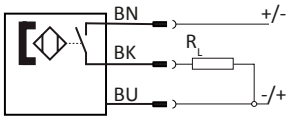


ZS-6700, ZS-7300

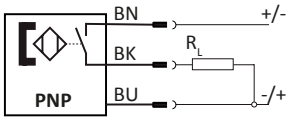
Proximity sensors with plug



ZS-5601



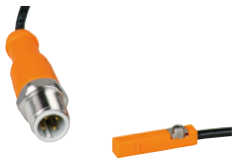
ZS-5701



ZS-6701, ZS-7302

Technical data

Model-no.:	ZS-5600	ZS-5601	ZS-5700	ZS-5701
Design	2-pole Reed sensor	2-pole Reed sensor	3-pole Reed sensor	3-pole Reed sensor
Contact function	NO	NO	NO	NO
Rated operational voltage	5 ... 240 V AC / DC	5 ... 60 V AC / DC	5 ... 30 V DC	5 ... 30 V DC
Rated operational current I_E	3 ... 100 mA	3 ... 100 mA	≤ 500 mA	≤ 500 mA
Max. voltage drop at I_E	≤ 2.5	≤ 2.5	≤ 0.1	≤ 0.1
Breaking capacity	10 W	10 W	10 W	10 W
Cable length	3 m	0.3 m with M8 connection	5 m	0.3 m with M8 connection
Temperature range	-10 ... +70°C	-10 ... +70°C	-10 ... +70°C	-10 ... +70°C
Protection	IP 67	IP 67	IP 67	IP 67
Switching status indication	LED red	LED red	LED yellow	LED yellow

Model-no.:	ZS-6700	ZS-6701	ZS-7300	ZS-7302
				
Design	3-pole inductive	3-pole inductive	3-pole inductive	3-pole inductive
Contact function	NO	NO	NO	NO
Output	PNP	PNP	PNP	PNP
Rated operational voltage	5 ... 30 V DC	5 ... 30 V DC	10 ... 30 V DC	10 ... 30 V DC
Rated operational current I_E	≤ 200 mA	≤ 200 mA	≤ 100 mA	≤ 100 mA
Max. voltage drop at I_E	≤ 1.0	≤ 1.0	≤ 2.5	≤ 2.5
Breaking capacity	6 W	6 W	3 W	3 W
Cable length	3 m	0.3 m with M8 connection	6 m	0.3 m with M12 connection
Temperature range	-10 ... +70°C	-10 ... +70°C	-20 ... +60°C	-20 ... +60°C
Protection	IP 67	IP 67	IP 67	IP 67
Switching status indication	LED green	LED green	LED yellow	LED yellow
Ex	-	-	II 3G Ex nA T4 II 3D Ex tD A22 IP67 T 125°C	II 3D Ex tc IIIC T125°C Dc X

Series ZS
Proximity sensors

Cable with bushing for proximity sensors

Model-no.:	KA-30	KA-50	KA-51	KA-100	KA-101
Connection	M8, snap-in	M8, snap-in	M8, snap-in	M8, snap-in	M8, snap-in
Version	straight	straight	elbow 90°	straight	elbow 90°
Cable length	3 m	5 m	5 m	10 m	10 m

Mounting

The sensors are mounted at the groove of the cylinder profile. It is fixed by turning the fixing screw at the sensor clockwise. The cover stripe XLB-011 (see below) can be used for protecting the sensor cable.

Cover for sensor groove

Model-no.:	XLB-011
Design	plastic profile, 50 cm length, blue
For series	XL, NXD, NXE, NYD, NYE, NYSE, LX

Series XL
Seal kits

Order code

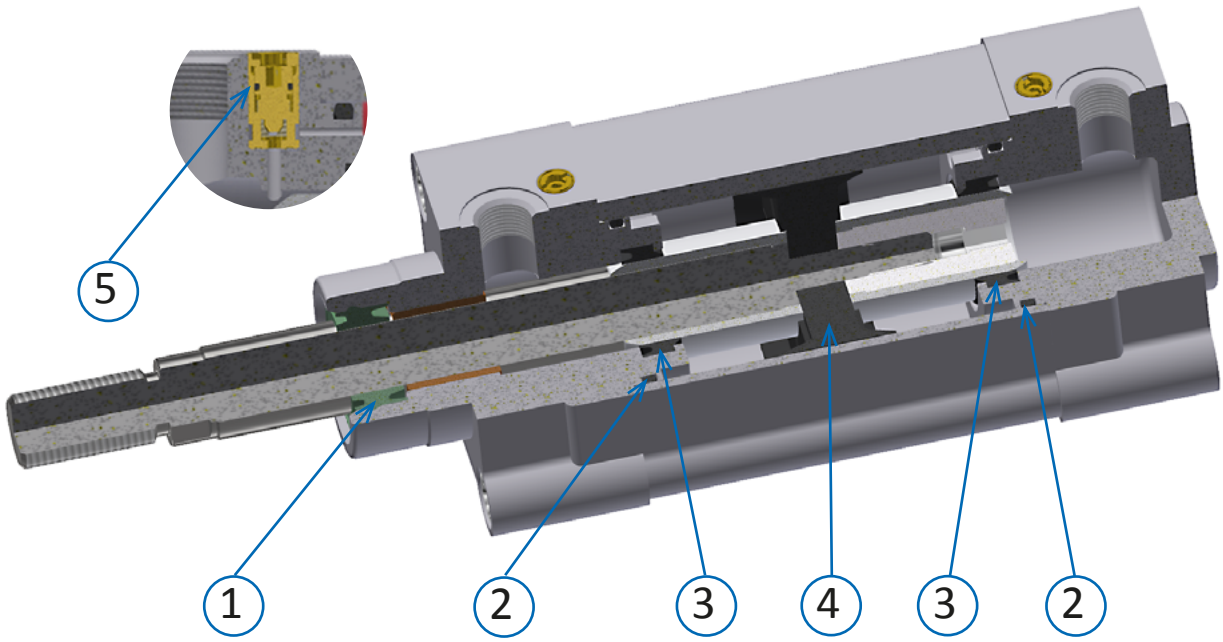
VS-XL-***-**

Series	
VS-XL	seal kit for series XL

Piston Ø	
032	32 mm
040	40 mm
050	50 mm
063	63 mm
080	80 mm
100	100 mm
125	125 mm

Versions	
01	standard version
02	high temperature version
03	double end piston rod
04	double end piston rod, high temperature version

Content



Standard version

Position	Part	Quantity
1	piston rod seal (PUR)	1*
2	O-ring (NBR)	2
3	cushion seal (PUR)	2
4	piston with magnet (NBR)	1
5	O-ring (NBR)	2
6	grease	1

*2 pieces for version 03

High temperature version

Position	Part	Quantity
1	piston rod seal (FKM) + circlip	1*
2	O-ring (FKM)	2
3	cushion seal (FKM)	2
4	piston (FKM)	1
5	O-ring (FKM)	2
6	grease	1

*2 pieces for version 04

Force chart cylinders (N)

Piston-Ø	Piston rod Ø (mm)	Pressure in bar						
		2	3	4	5	6	7	8
32		145	217	289	362	434	506	579
	12	124	187	249	311	373	435	497
40		226	339	452	565	678	791	904
	16	190	285	380	475	570	665	760
50		353	530	707	883	1060	1236	1413
	20	297	445	593	742	890	1039	1187
63		561	841	1122	1402	1682	1963	2243
	20	504	756	1009	1261	1513	1765	2017
80		904	1356	1809	2261	2713	3165	3617
	25	816	1224	1632	2040	2448	2856	3264
100		1413	2120	2826	3533	4239	4946	5652
	25	1325	1987	2649	3312	3974	4636	5299
125		2208	3312	4416	5520	6623	7727	8831
	32	2063	3095	4126	5158	6189	7221	8252

extension force*

retraction force*

* A correction factor of 0.9 for the internal friction is already calculated.

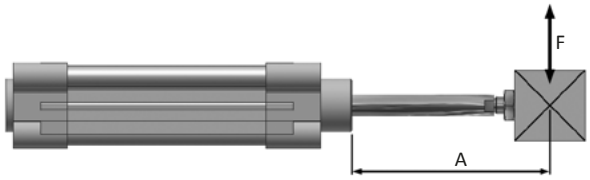
Air consumption cylinder (Nl for a single stroke of 100 mm, based upon extension)

	Pressure in bar						
Piston-Ø	2	3	4	5	6	7	8
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
125	3,72	4,96	6,21	7,42	8,64	9,91	11,14

Required flow rate (Nl/min at p = 6 bar)

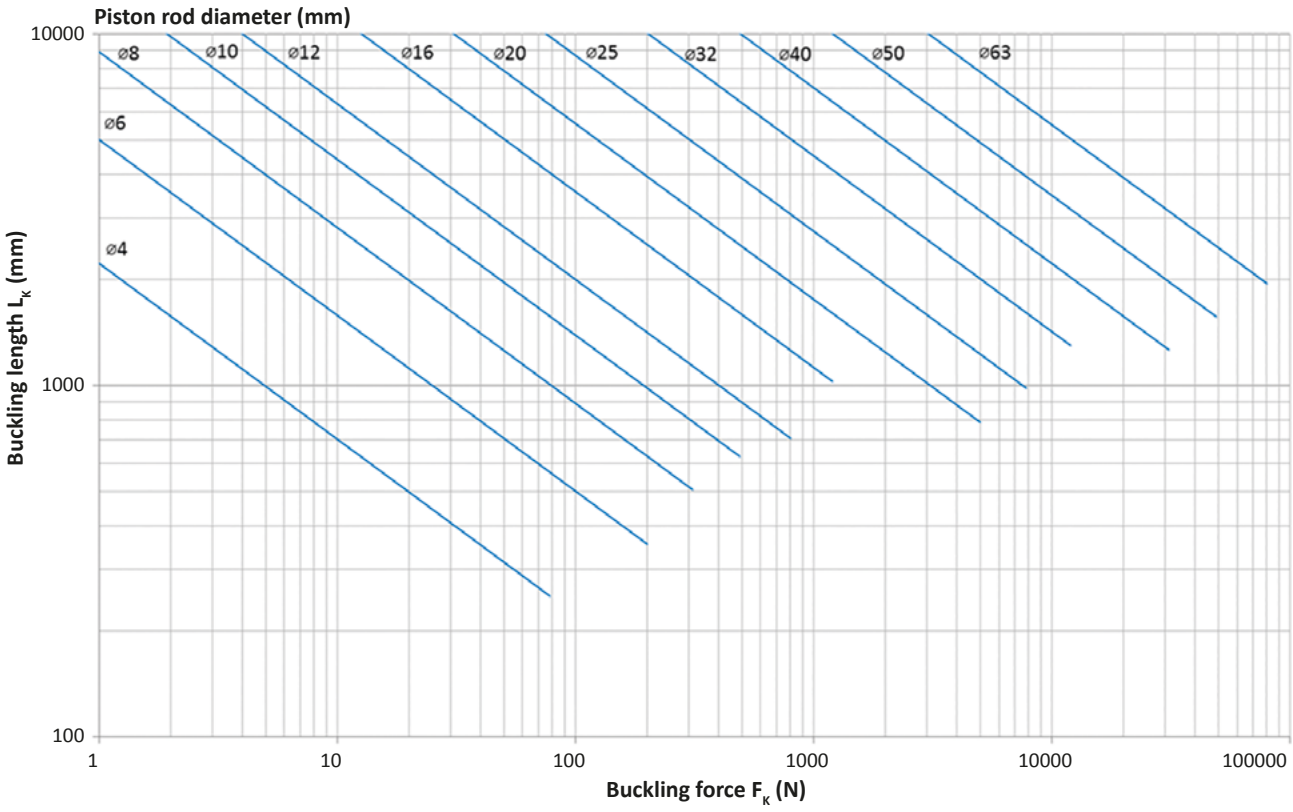
	speed (m/s)				
Piston-Ø	0,25	0,5	1	1,5	2
32	84	169	338	506	675
40	132	264	528	791	1055
50	206	412	824	1236	1649
63	327	654	1309	1963	2617
80	528	1055	2110	3165	4220
100	824	1649	3297	4946	6594
125	1288	2576	5152	7727	10303

Permissible side load F (N)

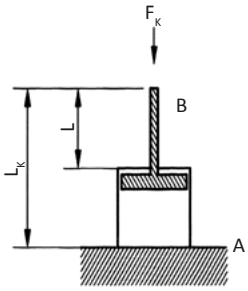


	Distance A (mm)											
Piston-Ø	25	40	50	80	100	125	160	200	250	320	400	500
32	75	55	50	40	34	28	23	20	16	12	9	7
40	175	150	130	105	91	78	62	55	45	35	28	21
50 + 63	220	180	170	130	120	105	90	80	65	52	43	33
80 + 100	500	450	400	350	310	270	230	205	180	150	125	100
125	810	710	680	590	520	470	420	390	330	270	230	200

Critical load diagram for the piston rod

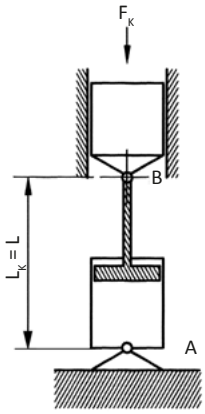


First elastic case of buckling



A: fixed restraint
B: open end
$L_K \approx 4$*cylinder stroke length

Second elastic case of buckling



A: joint
B: joint
$L_K \approx 2$*cylinder stroke length

Knowing the actual buckling case, either 1 or 2, and knowing the requested stroke length you can calculate the buckling length L_K. If you know the buckling force F_K (compressive force) you determine in the diagram above the intersection of both data. Choose the next graph line above to get the necessary rod diameter.