

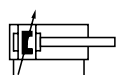
Technical details

Operating pressure	1 ... 10 bar
Temperature range	-20°C ... +80°C
Max. stroke	2.800 mm
Working speed	50 ... 800 mm/s
Medium	Filtered, oil-free and dried compressed air according to ISO 8573-1:2010, Class 7:2:4, instrument air, free of aggressive additives. Differing the pressure dew point must be at least 10°C below lowest occurring ambient temperature.
Materials	cylinder tube: Al (anodized) End caps: Al-Druckguß, (painted) Piston rod: steel hard chrome plated (optional 1.4301) Seals: PU, NBR
	Cylinders in accordance with 2014/34/EU (ATEX) available. (page 29)

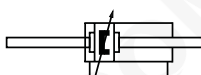


Double acting Al-profile cylinder with integrated sensor grooves, adjustable cushions and magnetic piston for proximity sensors. The sensors can be installed directly into the sensor grooves of the Al-profile. Standard stroke lengths in table below, additional lengths on request.

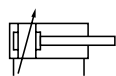
Versions



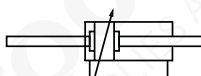
050, 000 double acting, adjustable cushioning, with magnetic piston



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



150, 100 double acting, adjustable cushioning



550, 500 double acting, double end piston rod, adjustable cushioning

Order code

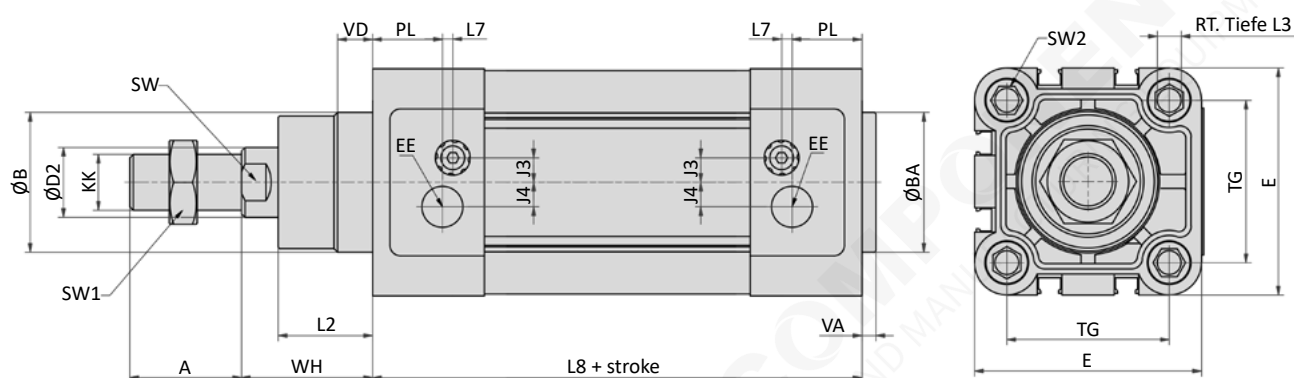
Series, Version		Options	
88-XSI standard		X	cylinders in accordance with 2014/34/EU (ATEX)
Piston Ø		Versions	
032	32 mm	050	standard version
040	40 mm	450	
050	50 mm	000	piston rod stainless steel
063	63 mm	400	
080	80 mm	150	without magnetic piston
100	100 mm	550	
125	125 mm	100	without magnetic piston, piston rod stainless steel
		500	
		Stroke (mm)	
		XXXX	max. 2.800 mm*
		standard	25, 40, 50, 80, 100, 125, 150, 160, 200, 250, 320, 400, 500 mm

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

Technical data

Model-no.:	88-XSI-032-...	88-XSI-040-...	88-XSI-050-...	88-XSI-063-...	88-XSI-080-...	88-XSI-100-...	88-XSI-125-...
Piston Ø (mm)	32	40	50	63	80	100	125
Force at 6 bar (N)	434	678	1060	1682	2713	4239	6623
Extension							
Retraction							
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)	20	20	20	20	26	26	26

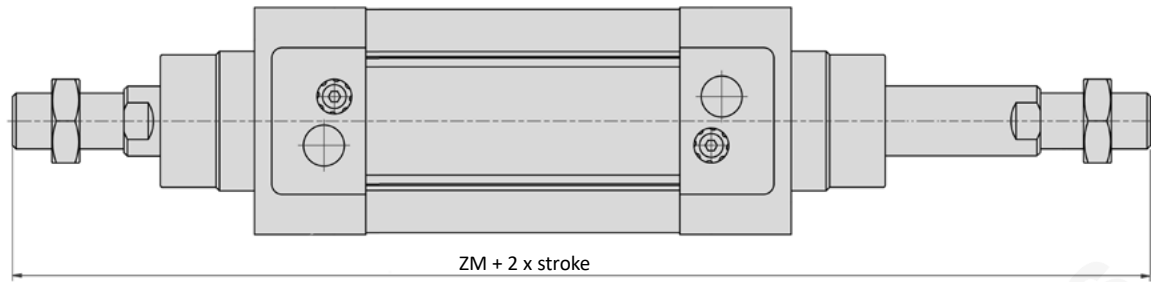
Dimensions series 88-XSI



Piston Ø	A	Ø B	Ø BA	Ø D2	E	EE	J3	J4	KK	L2	L3
32	22	30	30	12	45	G1/8	6.5	5	M10 x 1.25	16	12
40	24	35	35	16	52	G1/4	7	7	M12 x 1.25	20	12
50	32	40	40	20	65	G1/4	9	7	M16 x 1.5	27	12
63	32	45	45	20	76	G3/8	9	8	M16 x 1.5	26	12
80	40	45	45	25	94	G3/8	12	10	M20 x 1.5	35	15
100	40	55	55	25	112	G1/2	14	10	M20 x 1.5	40	15
125	54	60	60	32	134	G1/2	14	10	M27 x 2	46	20

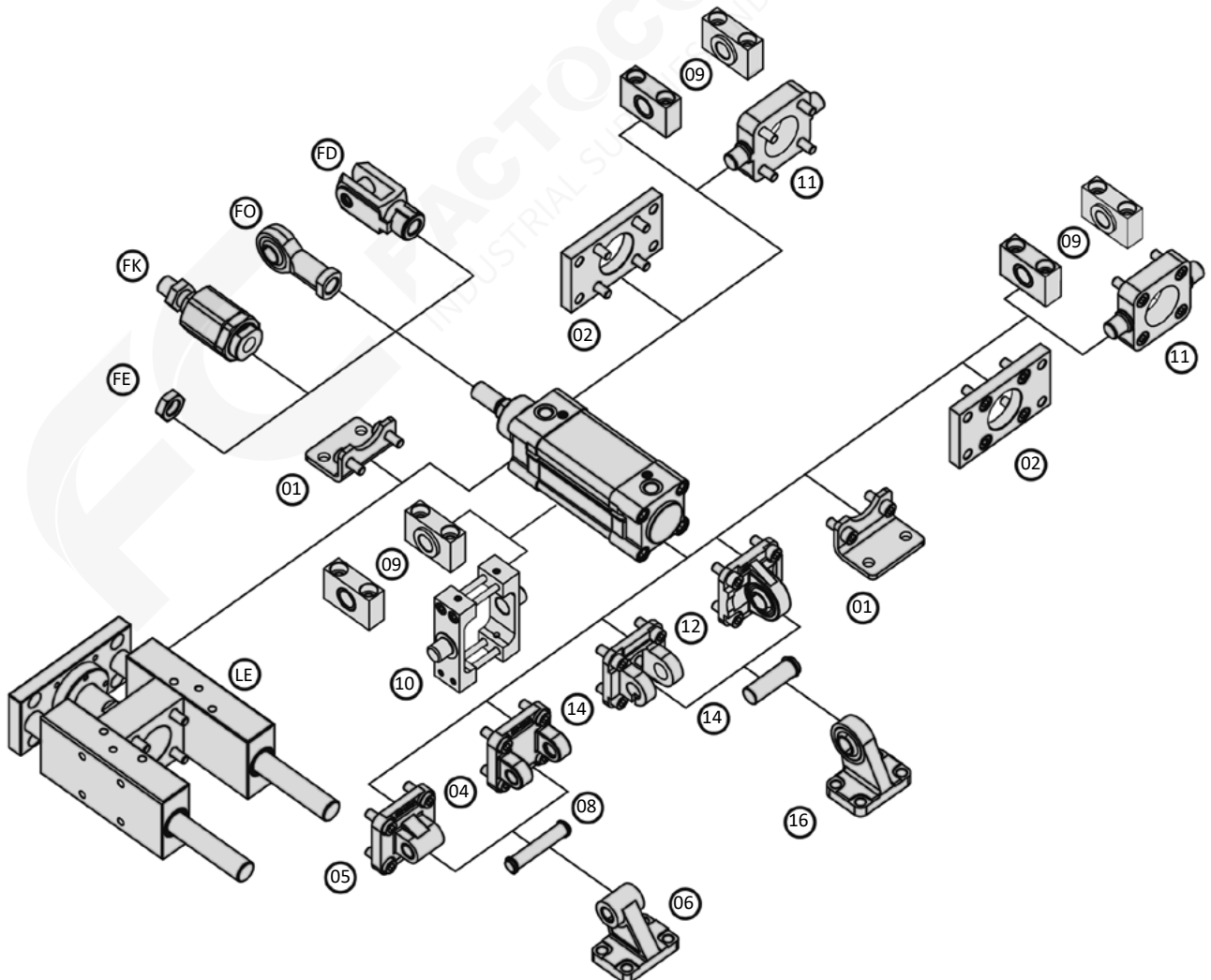
Piston Ø	L7	L8	PL	RT	SW	SW1	SW2	TG	VA	VD	WH
32	3	94	15	M6	10	17	6	32.5	4	10	27
40	3	105	17.5	M6	13	19	6	38	4	10	30
50	3	106	20	M8	17	24	8	46.5	4	10	37.5
63	5	121	22	M8	17	24	8	56.5	4	10	36
80	5	128	23	M10	22	30	10	72	5	10	48
100	5	138	26	M10	22	30	10	89	6	10	52
125	5	160	29	M12	27	41	12	110	7	10	63

Dimensions series 88-XSI (addition at double end piston rod)



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

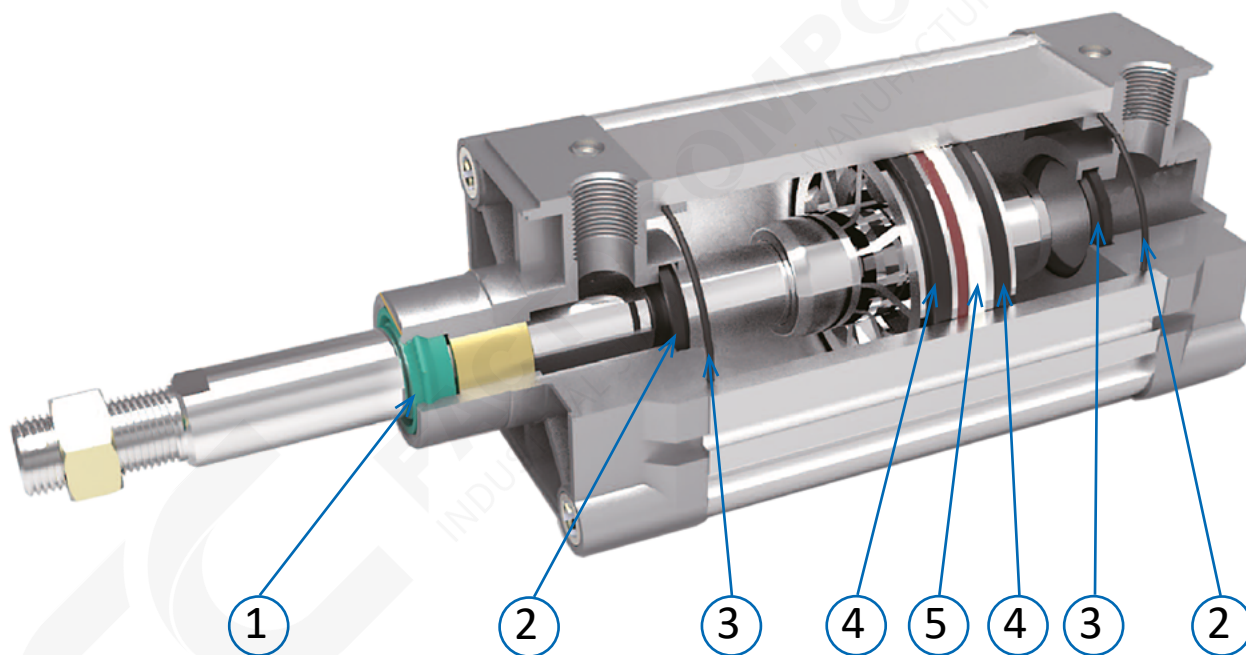
Mounting the add-on parts XLB-xxx-yy



Order code

88-VS-XSI-***-***	
Series	Versions
VS-88-XSI repair kit for series 88-XSI	01 standard version
Piston Ø	
032	32 mm
040	40 mm
050	50 mm
063	63 mm
080	80 mm
100	100 mm
125	125 mm

Content



Standard version

Position	Product description	Quantity
1	piston rod seal (PUR)	1
2	damping seal (NBR)	2
3	O-ring, cylinder tube (NBR)	2
4	piston seal (NBR)	2
5	guide ring (PTFE)	1



Please grease the running surfaces after fitting the seals.
We recommend our assembly grease 21-MP-01-00030-50.

Piston rod cylinders

Device marking

Piston rod cylinders are marked as follows:

II 2G Ex h IIC T5 Gb
 II 2D Ex h IIIC T100°C Db
-20°C T_{amb} +40°C

Marking according to DIN EN ISO 80079-36/ -37.

Piston rod cylinders conform to Equipment category 2 and can be used in Zone 1 respectively Zone 21.

Available cylinders

Series	Versions
88-XSI	

Piston rod cylinders

Piston rod cylinders according ATEX are marked with following suffix:

-ATEX
-EX
-X

Accessories for piston rod cylinders

The cylinders are intended to be used with the following accessories:

Accessories	series
Flexible coupling	FK-Ø
Rod eye	FO-Ø, RO-Ø, PO-Ø (v _{max} 1 m/s)
Rod clevis	FD-Ø, RD-Ø, PD-Ø
Piston rod nut	FE-Ø, RL-Ø, PL-Ø
Mounting accessories XL	XLB-Ø-01, XLB-Ø-02, XLB-Ø-03, XLB-Ø-04, XLB-Ø-05, XLB-Ø-06, XLB-Ø-07, XLB-Ø-08, XLB-Ø-09, XLB-Ø-10, XLB-Ø-11, XLB-Ø-12, XLB-Ø-13, XLB-Ø-14,
Mounting accessories XG	VLB-Ø-01, VLB-Ø-02, VLB-Ø-03, VLB-Ø-04, VLB-Ø-05, VLB-Ø-06, VLB-Ø-08, VLB-Ø-09, VLB-Ø-12
Mounting accessories HM	RA-Ø, RC-Ø, RG-Ø, RH-Ø, RB-Ø, RM-Ø
Mounting accessories CM	PA-Ø, PC-Ø, PB-Ø, PM-Ø

Proximity switches

Model-No.	Classification / Identification marking
ZS-7300	II 3G Ex nA T4 II 3D Ex tD A22 IP67 T 125°C
ZS-7302	II 3D Ex tc IIIC T125°C Dc X

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

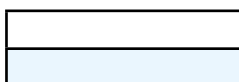
Piston-Ø	Pressure in bar						
	2	3	4	5	6	7	8
32	0.24	0.32	0.40	0.48	0.56	0.64	0.72
40	0.38	0.50	0.63	0.75	0.88	1.01	1.13
50	0.59	0.79	0.98	1.18	1.37	1.57	1.77
63	0.94	1.25	1.56	1.87	2.18	2.49	2.81
80	1.51	2.01	2.51	3.02	3.52	4.02	4.52
100	2.36	3.14	3.93	4.71	5.50	6.28	7.07
125	3.72	4.96	6.21	7.42	8.64	9.91	11.14

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

Piston-Ø	speed (m/s)				
	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

Force chart cylinders (N)

Piston-Ø	Series	Piston rod Ø (mm)	Pressure in bar						
			2	3	4	5	6	7	8
32	88-XSI	12	145	217	289	362	434	506	579
			124	187	249	311	373	435	497
40	88-XSI	16	226	339	452	565	678	791	904
			190	285	380	475	570	665	760
50	88-XSI	20	353	530	707	883	1060	1236	1413
			297	445	593	742	890	1039	1187
63	88-XSI	20	561	841	1122	1402	1682	1963	2243
			504	756	1009	1261	1513	1765	2017
80	88-XSI	25	904	1356	1809	2261	2713	3165	3617
			816	1224	1632	2040	2448	2856	3264
100	88-XSI	25	1413	2120	2826	3533	4239	4946	5652
			1325	1987	2649	3312	3974	4636	5299
125	88-XSI	32	2208	3312	4416	5520	6623	7727	8831
			2063	3095	4126	5158	6189	7221	8252

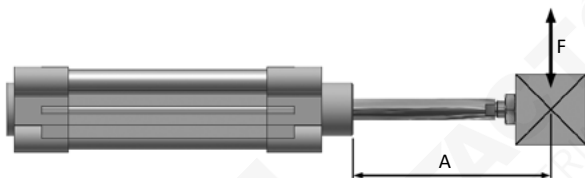


extension force*

retraction force*

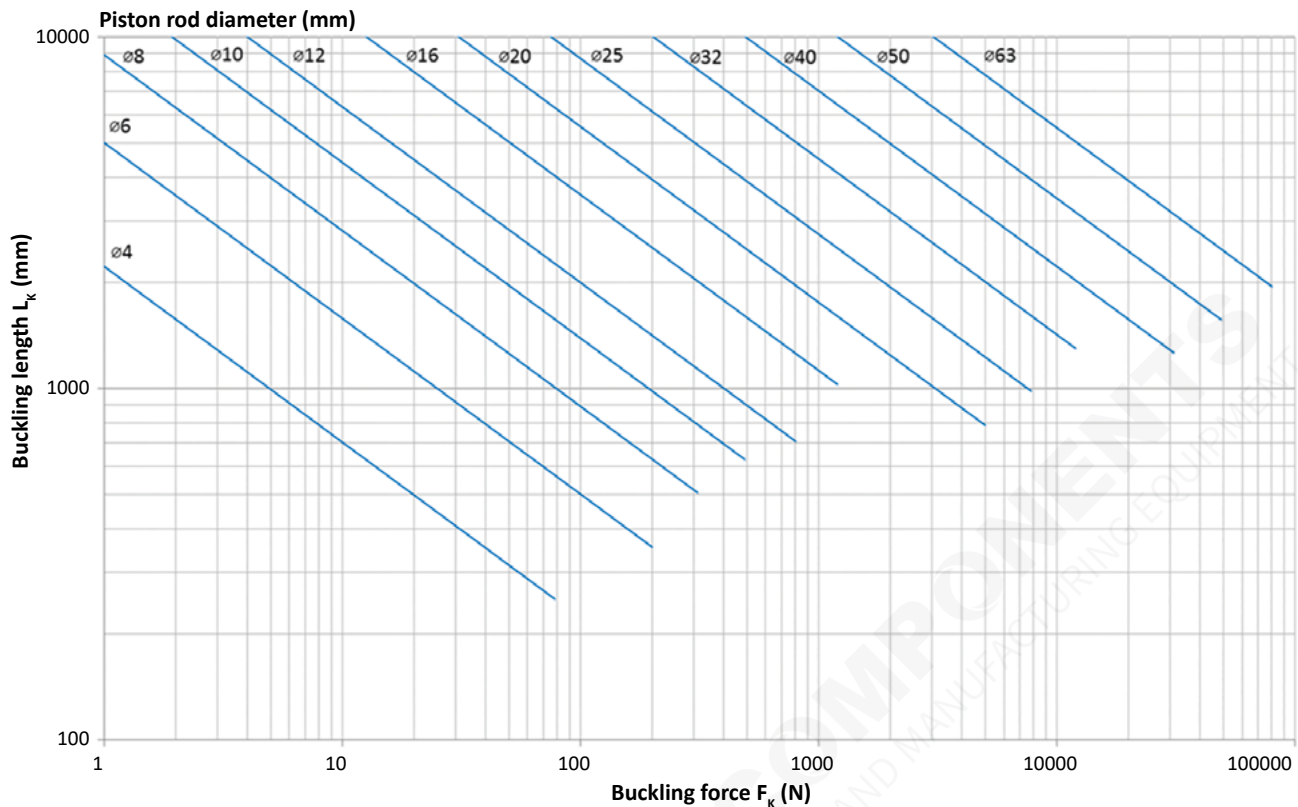
* A correction factor of 0.9 for the internal friction is already calculated.

Permissible side load F (N), series 88-XSI

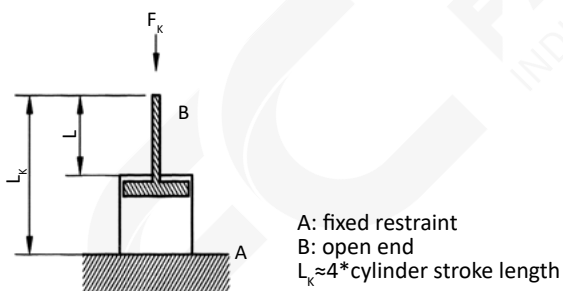


Piston-Ø	Distance A (mm)											
	25	40	50	80	100	125	160	200	250	320	400	500
32	75	55	50	40	34	28	23	20	16	12	9	7
40	175	150	130	105	91	78	62	55	45	35	28	21
50 + 63	220	180	170	130	120	105	90	80	65	52	43	33
80 + 100	500	450	400	350	310	270	230	205	180	150	125	100
125	810	710	680	590	520	470	420	390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

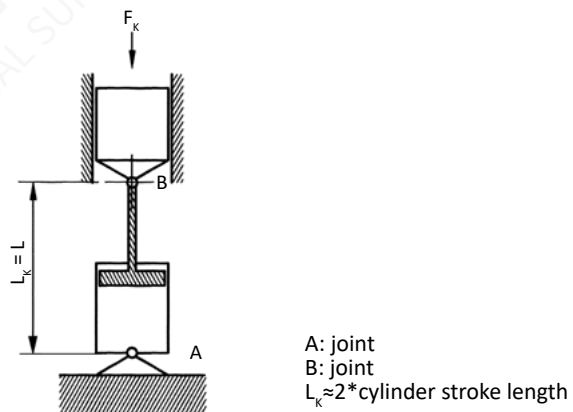
Critical load diagram for the piston rod



First elastic case of buckling



Second elastic case of buckling



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.

