

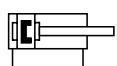
Technical details

Operating pressure	1 ... 10 bar
Temperature range	-30°C ... +80°C (0 ... +150°C for high temperature version)
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: AISI 304 (1.4301) End caps: AISI 304 (1.4301) Piston rod: AISI 316 (1.4401) Seals: PU
	Cylinders in accordance with 2014/34/EU (ATEX) available. (Chapter 13)

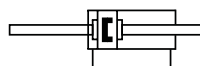


Double acting pneumatic cylinder with magnetic piston and built-in cushioning rings.

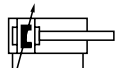
Versions



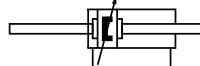
CM
double acting, with magnetic piston



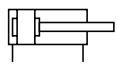
CMDE
double acting, double end piston rod, with magnetic piston



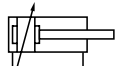
CMP
double acting, adjustable cushioning, with magnetic piston



CMPDE
double acting, double end piston rod, adjustable cushioning, with magnetic piston

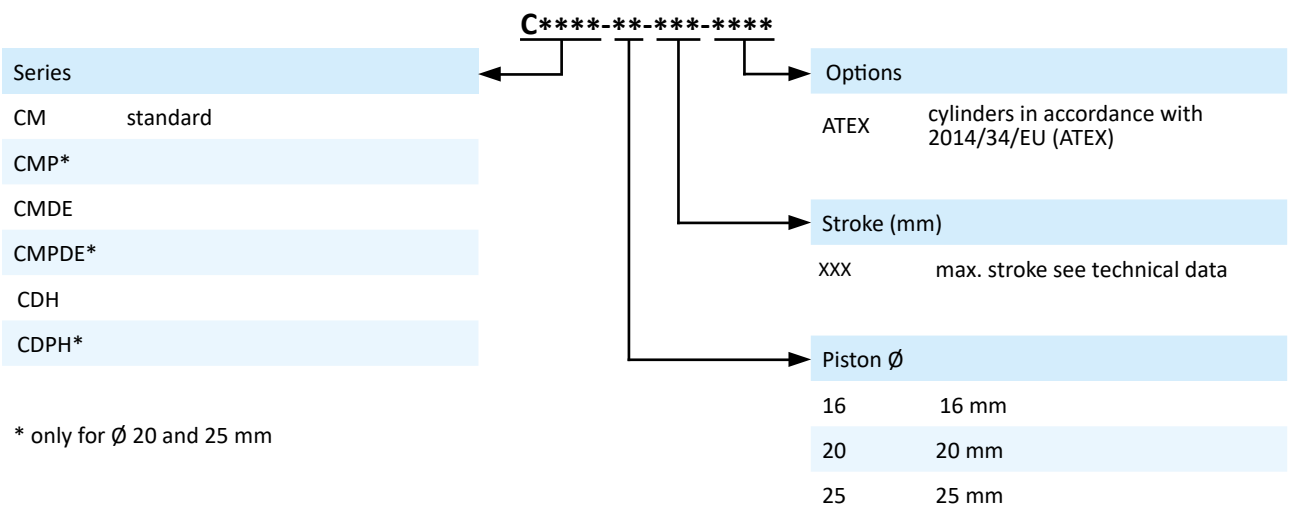


CDH
double acting, high temperature version



CDPH
double acting, adjustable cushioning, high temperature version

Order code



* only for Ø 20 and 25 mm

Series CM
Mini cylinders ISO 6432, double acting

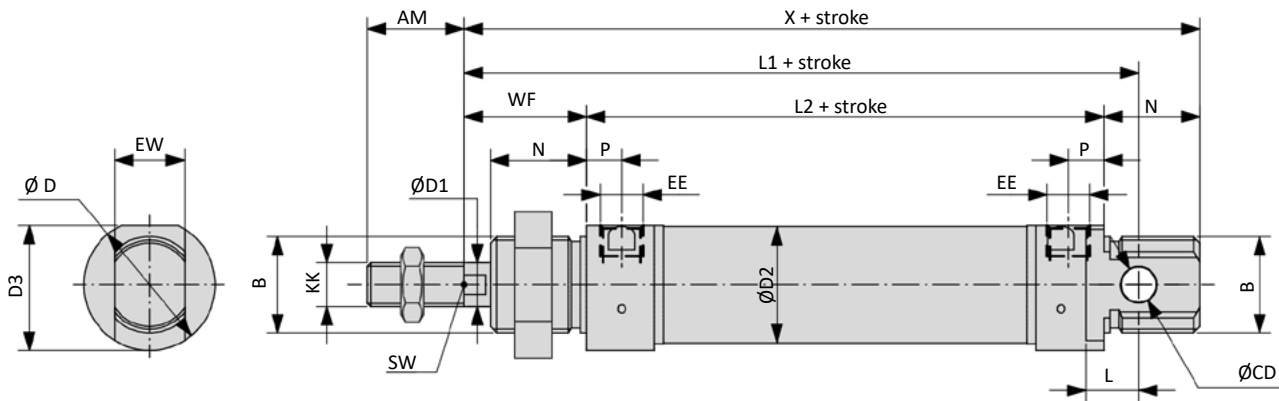


Technical data

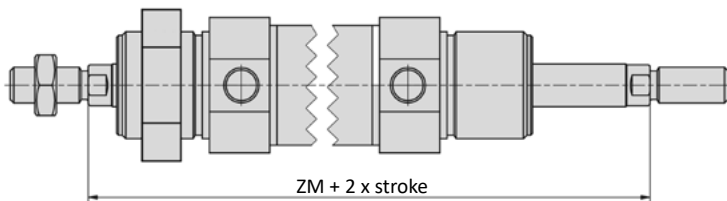
Model-no.:	Cxx-16-...	Cxx-20-...	Cxx-25-...
Piston Ø (mm)	16	20	25
Force at 6 bar (N)	109	170	265
Extension			
Retraction	93	142	223
Connection	M5	G1/8	G1/8
Piston rod thread	M6	M8	M10 x 1,25
Max. stroke (mm)	250	600	600
Cushioning length (mm)*	-	17	19,5

* only for series CMP, CMPDE, CDHP

Dimensions series CM, CMP, CDH, CDHP



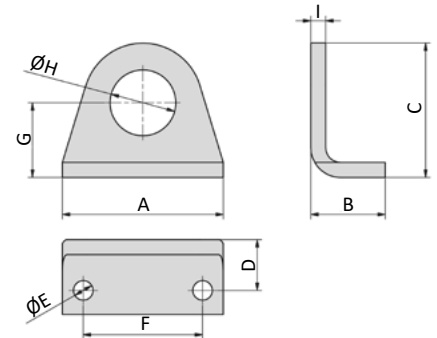
double end piston rod



Piston Ø	AM	B	Ø CD	Ø D	Ø D1	Ø D2	D3	EE	EW
16	16	M16 x 1,5	6	19*	6	17,27	18	M5	12
20	20	M22 x 1,5	8	27	8	21,27	25,5	G1/8	16
25	22	M22 x 1,5	8	30	10	26,5	28,5	G1/8	16

Piston Ø	KK	L	L1	L2	N	P	SW	WF	X	ZM
16	M6	9	82	53	18*	4,5	5	22	93	97
20	M8	12	95	67	20	8	7	24	111	115
25	M10 x 1,25	12	104	68	22	8	9	28	118	124

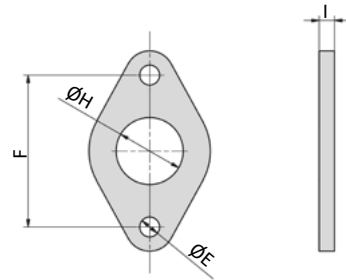
PA-xx Foot mount



Model-no.:	for cylinder \varnothing	A	B	C	D	$\varnothing E$	F	G	$\varnothing H$	I
PA-16	16	42	20	33	14	5.5	32	20	16.1	4
PA-25	20, 25	54	25	45	17	6.6	40	25	22.1	5

material: stainless steel AISI 304 (1.4301)

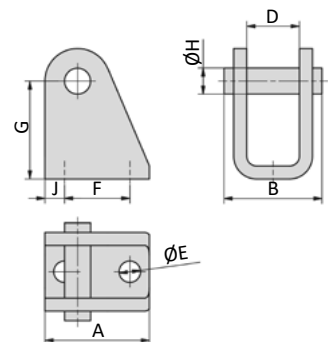
PB-xx Flange mount



Model-no.:	for cylinder \varnothing	$\varnothing E$	F	$\varnothing H$	I
PB-16	16	5.5	40	16.1	4
PB-25	20, 25	6.6	50	22.1	5

material: stainless steel AISI 304 (1.4301)

PC-xx Clevis mount



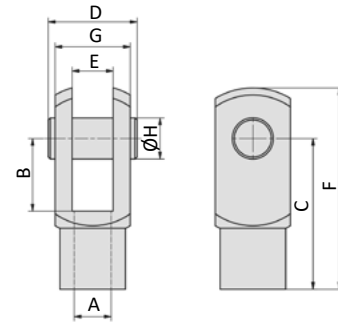
Model-no.:	for cylinder \varnothing	A	B	D	$\varnothing E$	F	G	$\varnothing H$	J
PC-16	16	25	24	12.1	5.5	15	27	6	5
PC-25	20, 25	32	30	16.1	6.6	20	30	8	6

material: stainless steel AISI 304 (1.4301), 2 snap rings are included.

Series CM
Mounting accessories



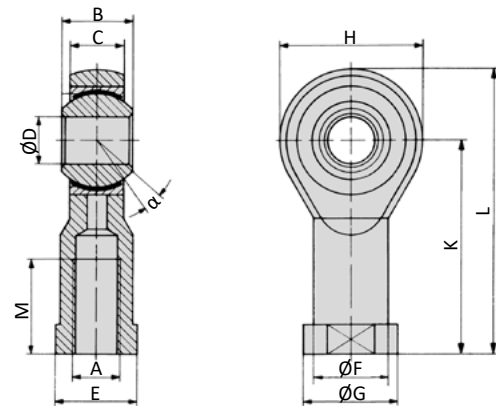
PD-xx Rod clevis



Model-no.:	for cylinder Ø	A	B	C	D	E	F	G	Ø H
PD-16	16	M6	12	24	16	6	31	12	6
PD-20	20	M8	16	32	22	8	42	16	8
PD-25	25	M10 x 1.25	20	40	26	10	52	20	10

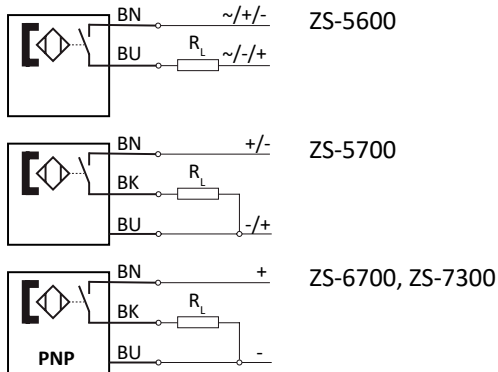
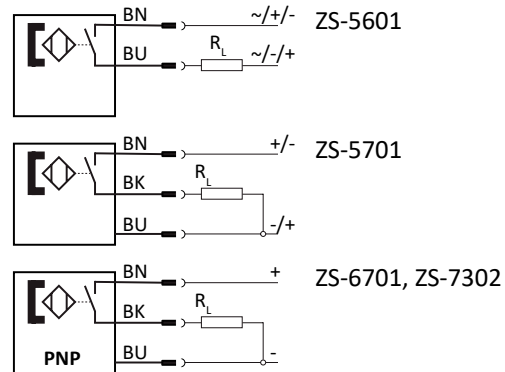
material: stainless steel AISI 303 (1.4305)

PO-xx Rod eye



Model-no.:	for cylinder Ø	A	B	C	Ø D	E	Ø F	Ø G	H	K	L	M	α
PO-16	16	M6	9	6.75	6	11	10	13	20	30	40	12	13°
PO-20	20	M8	12	9	8	14	12.5	16	24	36	48	16	14°
PO-25	25	M10 x 1.25	14	10.5	10	17	15	19	28	43	57	20	13°

materials: stainless steel AISI 331 (1.4057), bearing stainless steel AISI 316 Ti, PTFE coated, bushing stainless steel AISI 420 (1.4034)

Proximity sensors with cable

Proximity sensors with plug

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
	-	-	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

For this cylinder series separate mounting brackets are necessary for the sensor mounting.

Mounting brackets for proximity sensors

Model-no.:	NT-550
	
Design	sensor mounting

Force chart cylinders (N)

Piston-Ø	Piston rod Ø (mm)	Pressure in bar						
		2	3	4	5	6	7	8
8		9	14	18	23	27	32	36
	4	7	10	14	17	20	24	27
10		14	21	28	35	42	49	57
	4	12	18	24	30	36	42	47
12		20	31	41	51	61	71	81
	6	15	23	31	38	46	53	61
16		36	54	72	90	109	127	145
	6	31	47	62	78	93	109	124
20		57	85	113	141	170	198	226
	8	47	71	95	119	142	166	190
25		88	132	177	221	265	309	353
	10	74	111	148	185	223	260	297

	extension force*
	retraction force*

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

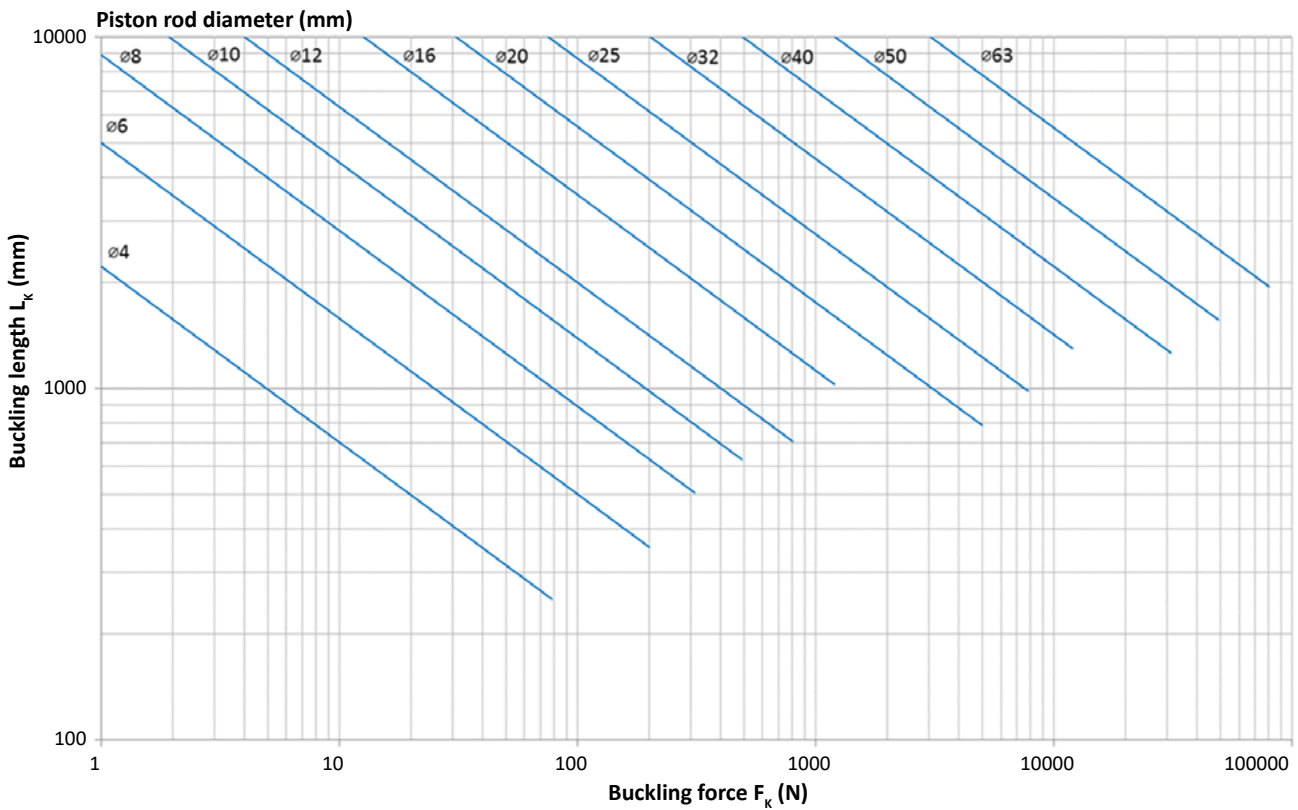
Air consumption cylinder (NI for a single stroke of 100 mm, based upon extension)

Piston-Ø	Pressure in bar						
	2	3	4	5	6	7	8
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

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

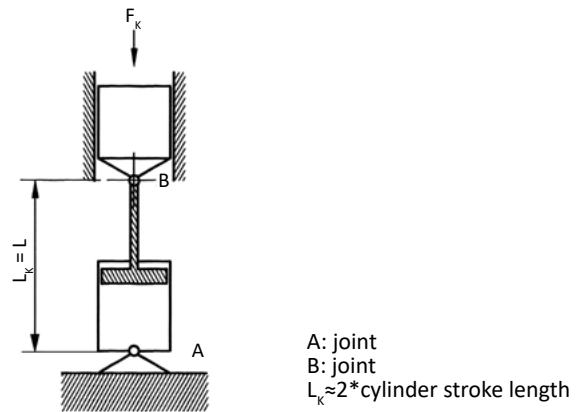
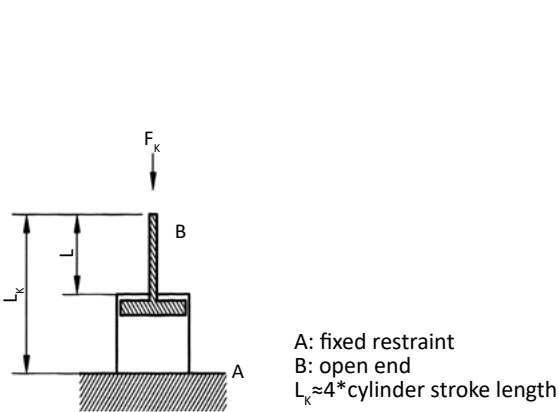
Piston-Ø	speed (m/s)				
	0,25	0,5	1	1,5	2
8	5	11	21	32	42
10	8	16	33	49	66
12	12	24	47	71	95
16	21	42	84	127	169
20	33	66	132	198	264
25	52	103	206	309	412

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.