Profile Design ISO/VDMA
Air Cylinder

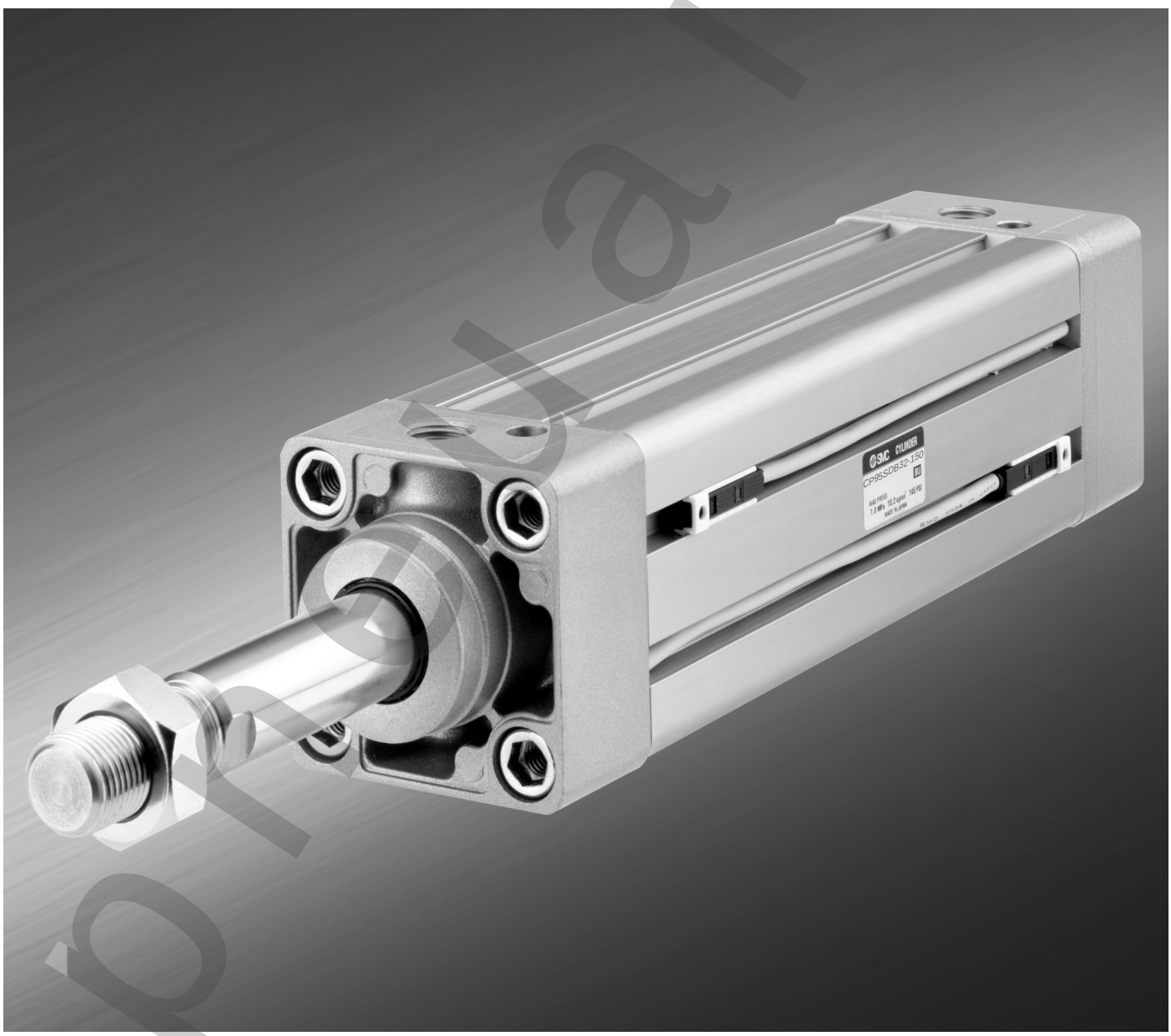
Double acting

Double acting
Double rod type

Double acting
Non-rotating rod type

Series CP95

Ø32, Ø40, Ø50, Ø63, Ø80, Ø100



Profile design with enclosed tie-rods

Profile Design ISO/VDMA Air Cylinder

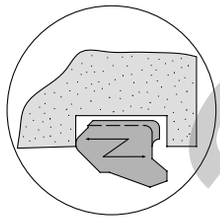
Series CP95

Increased kinetic energy absorption

The absorption of kinetic energy has been increased by nearly 30%, through increased cushion volume and the use of a new cushion seal.

Improved end of stroke cushion capacity

Piston rod lurching has been eliminated at the end of stroke positions by means of a floating seal mechanism.



Compact and light design

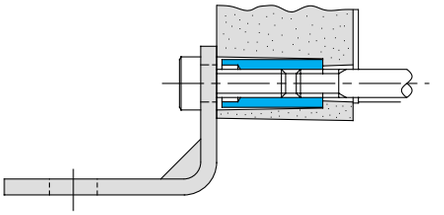
Die casting of the covers has reduced the weight by 25%.

Improved mounting accuracy

High accuracy covers and tie rod nuts simplify the mounting process and also extend cylinder life.

Piston rod deflection reduced

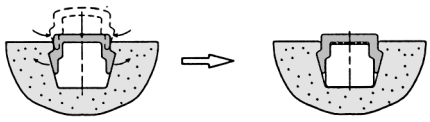
Deflection of the piston rod has been reduced by increasing the precision of the bushing and piston rod, and reducing the tolerances.

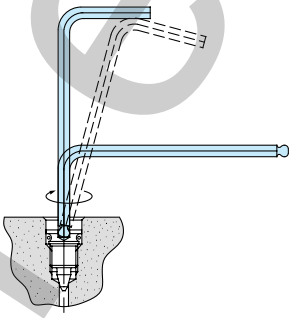


Ø32, Ø40, Ø50, Ø63, Ø80, Ø100

Space saving auto switch mounting

Space is saved by setting switches completely into grooves provided on 4 surfaces.





Port aperture

Easy end of stroke cushion valve adjustment

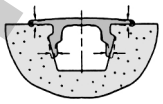
Since adjustment of the cushion valve is performed with a hexagon wrench key, even fine control can be easily accomplished. Furthermore, the cushion valve has been recessed so that it does not protrude from the cover.

Appearance improved by enclosing the tie-rods

Tie-rods are enclosed in an extruded aluminium profile barrel, which is integrated with both end covers to achieve a smooth and attractive appearance.

Dust accumulation can be prevented with optional fastener strips

Auto switch mounting grooves can be covered with resin fastener strips, which adhere tightly to the tube to prevent the entry and accumulation of dirt.



Key Page Index

Series CP95
ISO/VDMA Air Cylinders

Specifications

Type		Model	Bore						Stroke end cushioning as standard	Rod specifications Standard type hard chromed	W	E	R	Upon receipt of order XB6
			32	40	50	63	80	100						
Double acting	Standard	CP95SB	•	•	•	•	•	•	•	•	•	•	•	•
		CP95SDB	•	•	•	•	•	•	•	•	•	•	•	–
	Double rod	CP95SB•W	•	•	•	•	•	•	•	•	–	•	•	•
		CP95SDB•W	•	•	•	•	•	•	•	•	–	•	•	–
	Non-rotating rod	CP95KB	•	•	•	•	•	•	•	–	•	•	•	–
		CP95KDB	•	•	•	•	•	•	•	–	•	•	•	–

W = double/through rod
E = extended rod
R = stainless rod
XB6= heat resistant (to 150° C)

• available
– not available

How to order: Cylinders

CP95 S D B 32 – 80 [ ] [ ]

Piston rod

S	Standard
K	Non-rotating
Q	Low friction

Standard (Order the mounting accessories separately – see page 5)

Nil	Non-magnetic
D	With built-in magnet

Ø Bore [mm]

32
40
50
63
80
100

Stroke [mm] (Standard strokes – see page 6)

Rod specifications

Nil	Hard chromed rod as standard
W	Double/through rod
E+..	Extended rod
R	Stainless rod (not rquired for KB/KDB non-rotating model which already includes stainless rod)

Special specifications

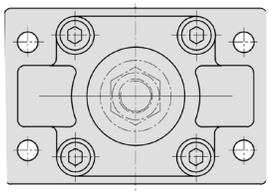
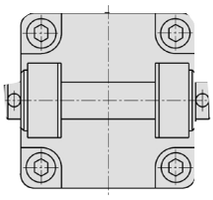
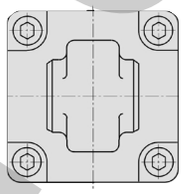
Nil	With dry compressed air or lubricated (Standard)
CA	Low friction in output direction
CB	Low friction in input direction
XB6	Heat resistant to 150° C (without magnet)*

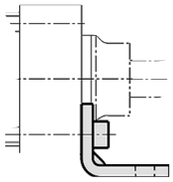
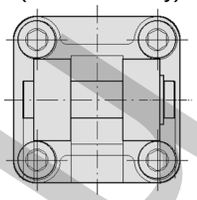
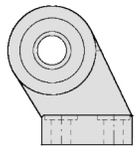
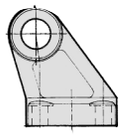
* The non-rotating rod is not available for XB6 specification.

How to order: Accessories

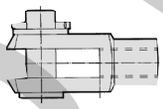
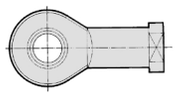
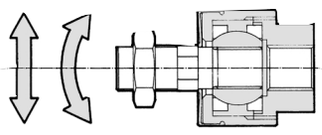
How to order mounting accessories

Mounting accessories, cylinders

Ø bore	**F** Front/rear flange	**D** Female rear clevis (corresponds to E accessories)	**C** Male rear clevis
	 Supplied with 4 screws	 Supplied with bolt, safety device and 4 screws	 Supplied with 4 screws
32	F5032	D5032	Plain: C5032 / with ball joint: CR5032
40	F5040	D5040	C5040 / CR5040
50	F5050	D5050	C5050 / CR5050
63	F5063	D5063	C5063 / CR6063
80	F5080	D5080	C5080 / CR5080
100	F5100	D5100	C5100 / CR5100
	See page 10 for dimensions	See pages 10/11 for dimensions	See pages 10/11 for dimensions Note: See page 11 for male rear clevis with swivel CR50

Ø bore	**L** Foot	**DS** Female rear clevis (for ES accessory)	**ES** Angled rear clevis with ball joint	**E** Angled rear clevis
	 Supplied with two pieces			
32	L5032	DS5032	ES5032	E5032
40	L5040	DS5040	ES5040	E5040
50	L5050	DS5050	ES5050	E5050
63	L5063	DS5063	ES5063	E5063
80	L5080	DS5080	ES5080	E5080
100	L5100	DS5100	ES5100	E5100
	See page 10 for dimensions	See page 12 for dim.	See page 12 for dim.	See page 11 for dimensions

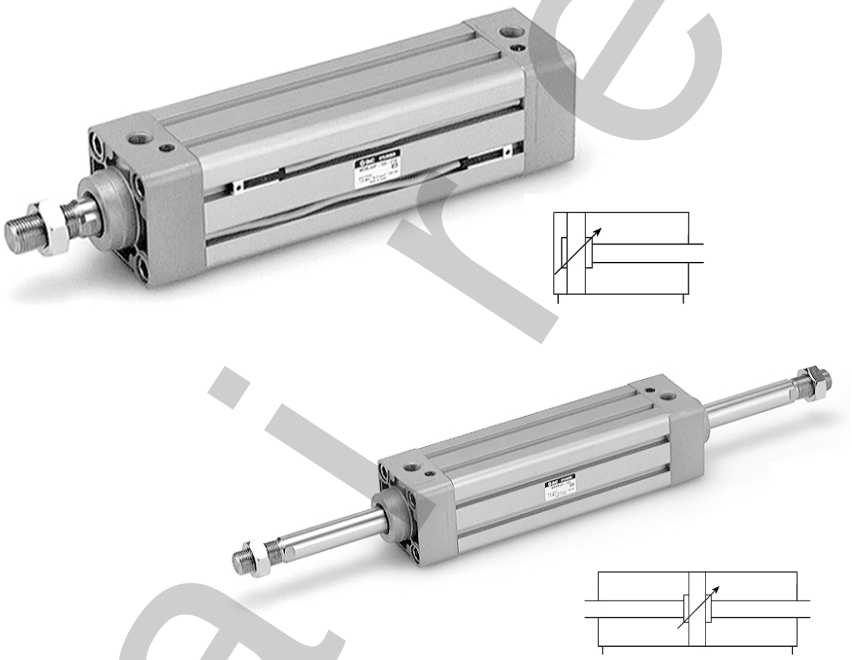
Mounting accessories, rod

Ø bore	**GKM** Rod clevis DIN 71752	**KJ** Piston rod ball joint DIN 648	**JA** Floating joint
	 Supplied with bolts and safety devices		
32	GKM 10-20	KJ10 D	JA30-10-125
40	GKM12-24	KJ12 D	JA40-12-125
50	GKM16-32	KJ16 D	JA50-16-150
63	GKM16-32	KJ16 D	JA50-16-150
80	GKM20-40	KJ20D	JAH50-20-150
100	GKM20-40	KJ20D	JAH50-20-150
	See page 18 for dimensions	See page 18 for dimensions	See page 18 for dimensions

ISO/VDMA Air Cylinder

Series CP95 VDMA

Double acting with end of stroke cushioning Ø32 - Ø100



- Conforms to VDMA 24 562 (parts 1 and 2), ISO 6431 and CETOP standards
- Combines lightweight profile barrel design with enclosed tie rods for extra strength
- Unique seal system ensures efficient performance and long life
- Fully adjustable cushioning at end of stroke
- Magnetic proximity sensing
- Superior cushioning performance and kinetic energy absorption

Technical specifications

Bore [mm]	32	40	50	63	80	100
Type	Non-lube type					
Action	Double acting single rod					
Fluid	Compressed air filtered to <10 µm,lubricated or non lubricated (dry air)					
Proof pressure	1.5MPa {15.3kgf/cm²}					
Maximum operating pressure	1.0MPa {10.2kgf/cm²}					
Minimum operating pressure	0.05MPa {0.5kgf/cm²}					
Piston force	Up to 7500N					
Piston rod	Hard chromed steel (25µm finish)					
Lubrication	Not required (non-lube)					
Rod diameter [mm]	12	16	20	20	25	30
Piston rod thread	M10x1.25	M12x1.25	M16x1.5	M16x1.5	M20x1.5	M20x1.5
Ports	G1/8	G1/4	G1/4	G3/8	G3/8	G1/2
Cushioning stroke [mm]	19	19	24	24	30	30
Mounting position	Any					
Standard strokes (DIN ISO 4393) [mm]	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600, 700, 800 Other stroke lengths in accordance with ISO497 R 10					
Stroke tolerance [mm]	<250mm: + 1.0/-0mm, <1000mm: + 1.4/-0mm, <1500mm: + 1.8/-0mm					
Working pressure [MPa]	0.05 - 1.0					
Fluid and ambient temperature [°C]	-10°C to +60°C, -10°C to +70°C without magnet					
Piston speed [mm/s]	50 - 1000					

Standard strokes [mm]

Ø Bore	Standard stroke	Max. stroke
32	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 450, 500	700
40	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 450, 500	800
50	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 450, 500, 600	1200
63	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 450, 500, 600	1200
80	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 450, 500, 600, 700, 800	1400
100	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 450, 500, 600, 700, 800	1500

Note: Intermediate strokes are also available

Theoretical output table [N]

Ø Bore [mm]	Ø Rod diam. [mm]	Operating direction	Piston area [mm²]	Working pressure [MPa]								
				0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	10
32	12	OUT	804	161	241	322	402	482	563	643	724	804
		IN	691	138	207	276	346	415	484	553	622	691
40	16	OUT	1257	251	377	503	629	754	880	1006	1131	1257
		IN	1056	211	317	422	528	634	739	845	950	1056
50	20	OUT	1963	393	589	785	982	1178	1374	1570	1767	1963
		IN	1649	330	495	660	825	989	1154	1319	1484	1649
63	20	OUT	3117	623	935	1247	1559	1870	2182	2494	2805	3117
		IN	2803	561	841	1121	1402	1682	1862	2242	2523	2803
80	25	OUT	5027	1005	1508	2011	2514	3016	3519	4022	4524	5027
		IN	4536	907	1361	1814	2268	2722	3175	3629	4082	4536
100	30	OUT	7854	1571	2356	3142	3927	4712	5498	6283	7069	7854
		IN	7147	1429	2144	2859	3574	4288	5003	5718	6432	7147

Note: Theoretical output OUT [N] = Pressure [MPa] x Piston area [mm²]

Weight table

[kg]

Ø Bore	Mounting type	32	40	50	63	80	100
Basic weight	Basic type B	0.59	0.87	1.44	2.00	3.37	4.45
	Foot L	0.16	0.20	0.38	0.46	0.89	1.09
	Front/rear flange F	0.20	0.23	0.47	0.58	1.30	1.81
	Male rear clevis C	0.16	0.23	0.37	0.60	1.07	1.73
	Female rear clevis D	0.20	0.32	0.45	0.71	1.28	2.11
	Angled rear clevis E	0.16	0.22	0.42	0.52	0.94	1.40
	Female rear clevis DS	0.17	0.27	0.45	0.64	1.37	2.05
	Spherical bearing ES	0.18	0.27	0.46	0.55	0.97	1.33
Additional weight per 50 mm stroke		0.11	0.17	0.28	0.40	0.67	0.89
Accessories	Piston rod ball joint KJ	0.15	0.23	0.26	0.26	0.60	0.83
	Rod clevis GKM	0.22	0.37	0.43	0.43	0.87	1.27
	Floating joint JA	0.015	0.20	0.26	0.26	0.9	0.9

Weight calculation method

Example: CP95S32-100
(basic Ø32, 100st)

- Basic weight . . . . .0.59kg (Standard Ø32)
- Additional weight . .0.11kg/50mm stroke
- Cylinder stroke . . .100st

Cylinder weight =
0.59+(0.11 x 100/50)=0.81kg

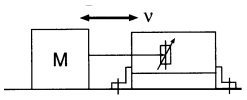
Kinetic energy absorbable by air cushion mechanism

Ø Bore [mm]	Cushioning stroke [mm]	Absorbable kinetic energy [J]
32	19	2.2
40	19	3.4
50	24	5.9
63	24	11
80	30	20
100	30	29

At the stroke end, when stopping a large amount of kinetic energy generated by a large load and high speed operation, compression of air is used to absorb the impact without transmitting vibration to the surroundings. The purpose of an air cushion is not to reduce the speed of a piston as it nears the stroke end. The kinetic energy of a load can be found using the following formula:

$$E = \frac{1}{2} m \cdot v^2$$

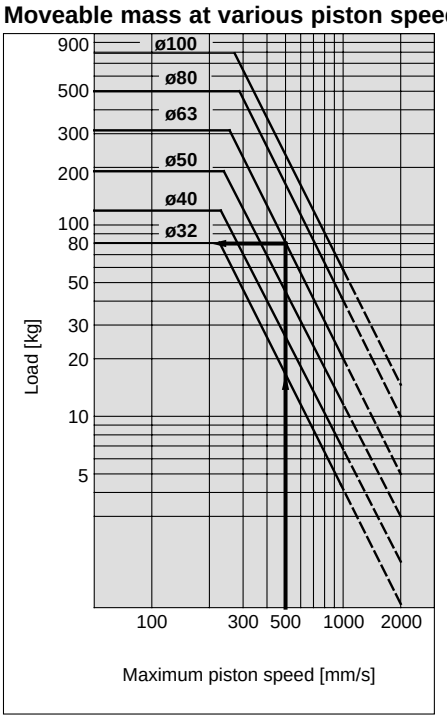
E: Kinetic energy [J = Nm]
m: Load weight [kg]
v: Piston speed [m/s]



Note: v is final velocity which is 1.4 • average velocity.

If the kinetic energy obtained is no greater than the absorbable kinetic energy shown in the table above, the life of the cushion seal should be 10 million cycles or more.

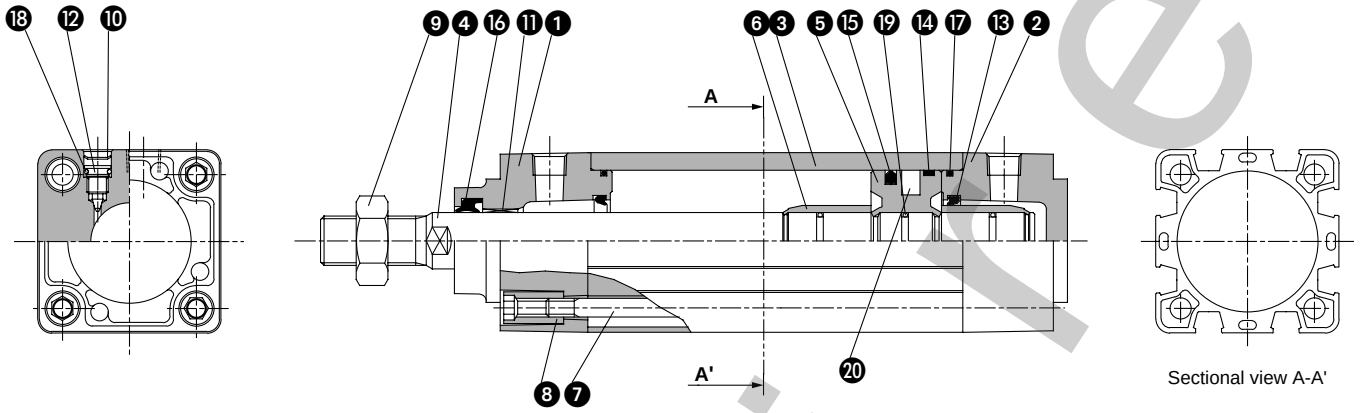
Moveable mass at various piston speeds



Example: Find the rod end load limit when a ø63 air cylinder is operated at a maximum drive speed of 500mm/s. Extend upward from 500mm/s on the horizontal axis of the graph to the intersection point with the line for a tube bore of 63mm, and then extend lefward from this point to find the load of 80kg.

Series CP95

Construction



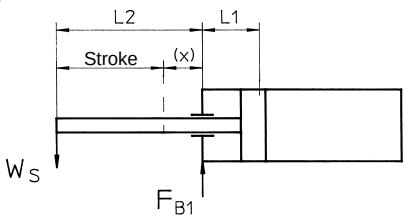
Parts list

No.	Description	Material
❶	Head cover	Die-cast aluminum
❷	End cover	Die-cast aluminum
❸	Cylinder tube	Die-cast aluminum
❹	Piston rod	Hard chromed steel C45
❺	Piston	Die-cast aluminum
❻	Cushion ring	Brass
❼	Tie rod	Steel, zinc chromate plated
❽	Tie rod nut	Steel, zinc chromate plated
❾	Rod end nut	Steel, zinc chromate plated
❿	Snap ring	Steel nickel plated
⓫	Bushing	Lead-bronze casting
⓬	Cushion valve	Steel, zinc chromate plated
⓭	Cushion seal	Elastomer
⓮	Wear ring	Antifriction material
⓯	Piston seal	NBR
⓰	Rod seal	NBR
⓱	Cylinder tube gasket	NBR
⓲	Cushioning valve seal	NBR
⓳	Piston/rod gasket	NBR
⓴	Magnet ring	

Replacement parts: Seal kits
Ø32 includes order No. from ⓭ to ⓱,
Ø40 - Ø100 includes from ⓬ to ⓲

Ø	Order No.
32	**CS95-32**
40	**CS95-40**
50	**CS95-50**
63	**CS95-63**
80	**CS95-80**
100	**CS95-100**

Maximum allowable radial loads



$$F_{B1} = W_S\,(1+\frac{L2}{L1}) \le F_{B\ allowable}$$

Ø	L1	L2	F_{B1} allowable
32	62.5	34.5 + st	80 N
40	74.0	39.0 + st	125 N
50	76.0	44.5 + st	195 N
63	91.0	44.5 + st	310 N
80	93.0	53.0 + st	500 N
100	104.0	57.5 + st	785 N

e.g. 63mm bore, 100mm stroke, W_S = 20N

W_S = (2kgs) 20N

$F_{B1} = 20\,(1+\frac{144.5}{91}) = 51.76N$

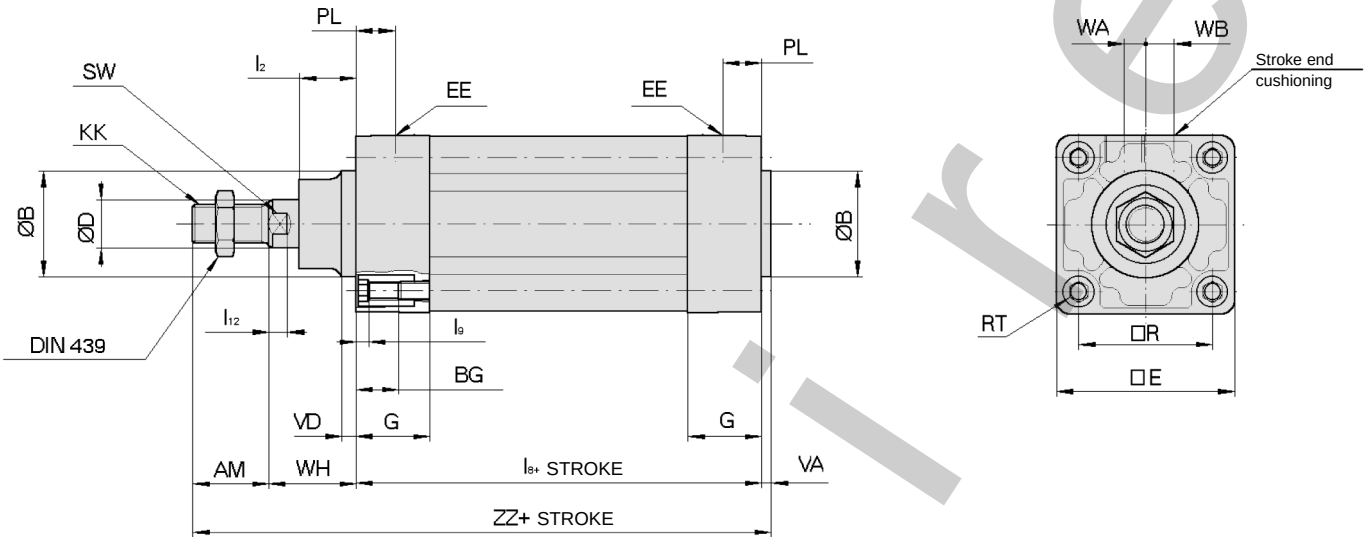
$F_{B1} = 51.76N \le 310N$ (from table)

Therefore, side load is allowable

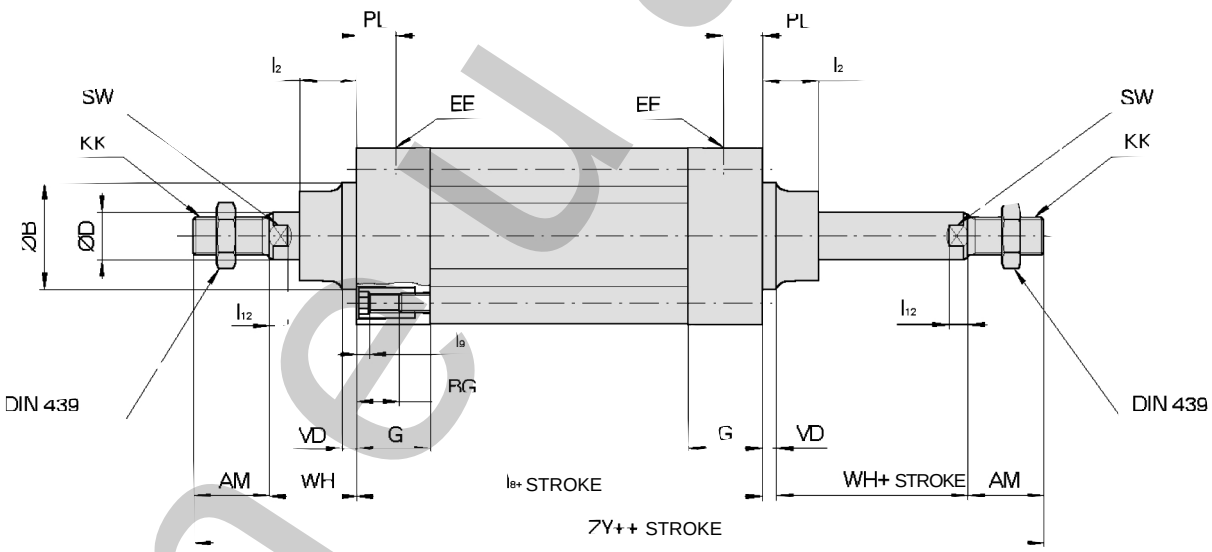
Dimensions - standard specifications

[mm]

CP95S□BØ-stroke



CP95S□BØ-stroke W



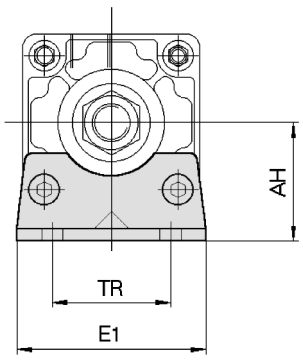
Ø Bore	AM	ØB	ØD	EE	PL	RT	l_{12}	KK	SW	G	BG	l_8	VD	VA	WA	WB	WH	ZZ	ZY	□E	□R	l_2	l_9
32	22	30	12	G1/8	13	M6	6	M10x1.25	10	27	16	94	4	4	4	6.5	26	146	190	46	32.5	15	4
40	24	35	16	G1/4	14	M6	6.5	M12x1.25	13	27	16	105	4	4	4	9	30	163	213	52	38	17	4
50	32	40	20	G1/4	15.5	M8	8	M16x1.5	16	31.5	16	106	6	4	5	10.5	37	179	244	65	46.5	24	5
63	32	45	20	G3/8	16.5	M8	8	M16x1.5	16	31.5	16	121	6	4	9	12	37	194	259	75	56.5	24	5
80	40	45	25	G3/8	19	M10	10	M20x1.5	21	38	16	128	8	4	11.5	14	46	218	300	95	72	30	5
100	40	55	30	G1/2	19	M10	10	M20x1.5	21	38	16	138	8	4	17	15	51	233	320	114	89	32	5

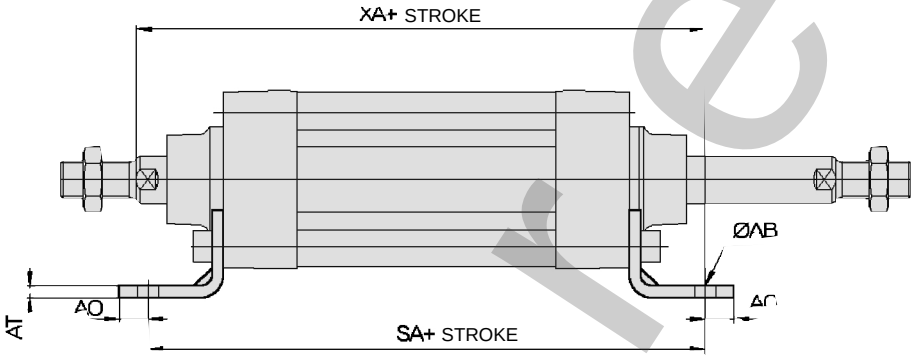
Series CP95

Dimensions – mounting accessories L, F, C and D

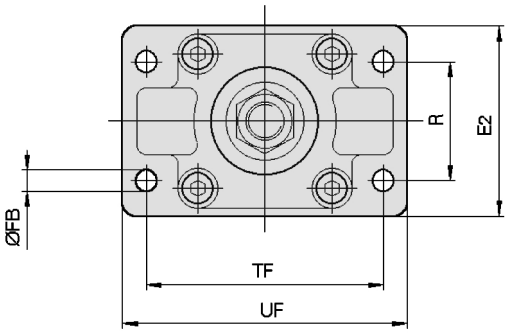
[mm]

Mounting type L

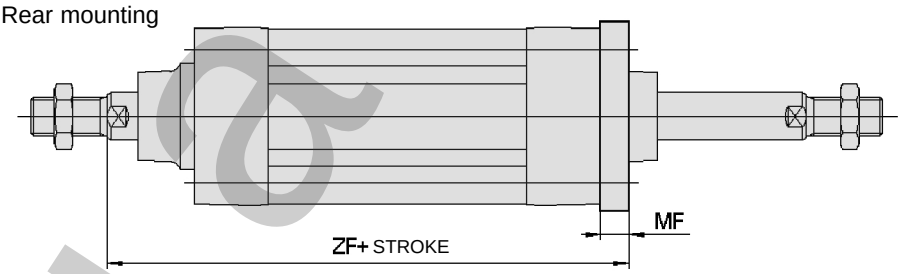




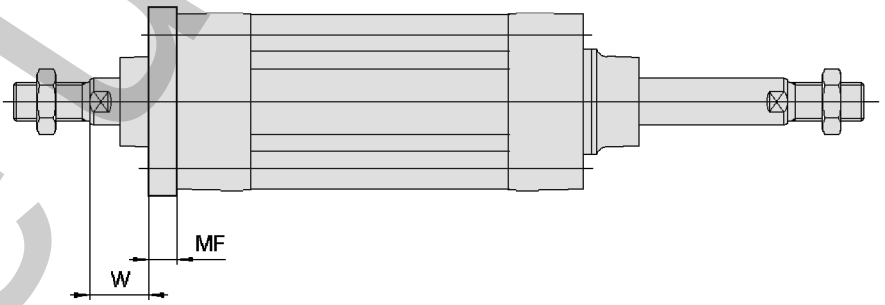
Mounting type F



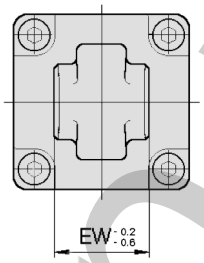
Rear mounting



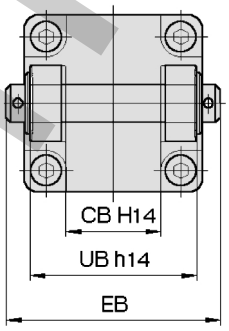
Front mounting

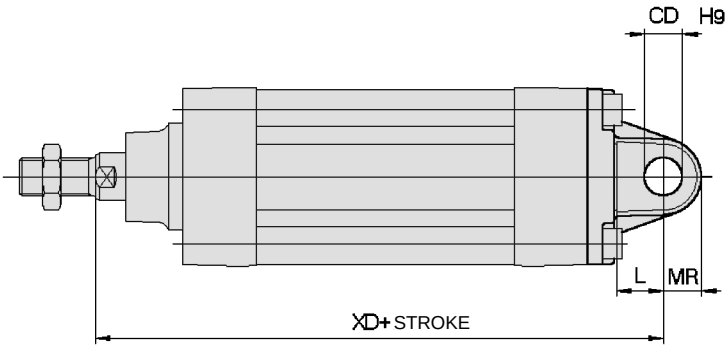


Mounting type C



Mounting type D

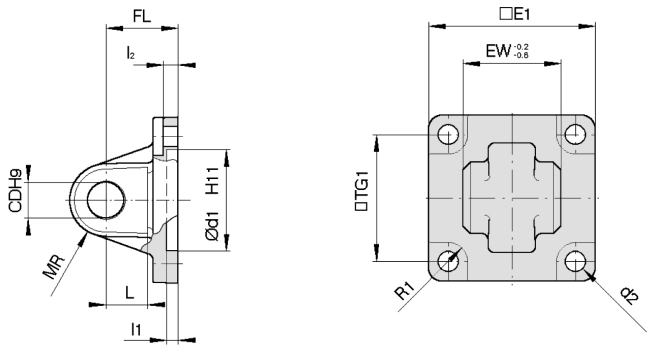




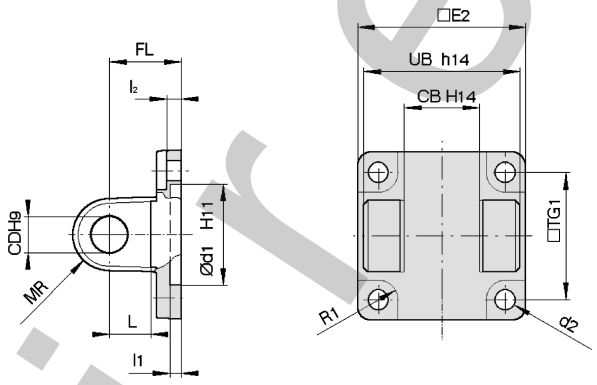
Ø Bore	E1	R	W	MF	ZF	ØFB	CD	EB	L	XD	UB	CB	EW	MR	TR	AO	AT	XA	SA	AH	ØAB	TF	UF	E2
32	48	32	16	10	130	7	10	65	12	142	45	26	26	9.5	32	10	4	144	142	32	7	64	79	50
40	55	36	20	10	145	9	12	75	15	160	52	28	28	12	36	11	4	163	161	36	9	72	90	55
50	68	45	25	12	155	9	12	80	15	170	60	32	32	12	45	12	5	175	170	45	9	90	110	70
63	80	50	25	12	170	9	16	90	20	190	70	40	40	16	50	12	5	190	185	50	9	100	120	80
80	100	63	30	16	190	12	16	110	20	210	90	50	50	16	63	14	6	215	210	63	12	126	153	100
100	120	75	35	16	205	14	20	140	25	230	110	60	60	20	75	16	6	230	220	71	14	150	178	120

Dimensions – mounting accessories C, D, E and CR [mm]

Mounting type C

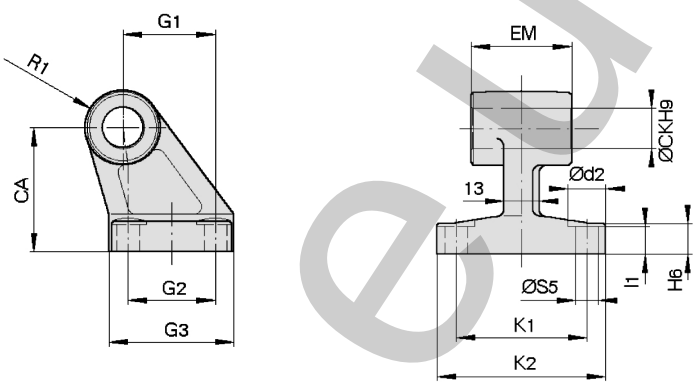


Mounting type D



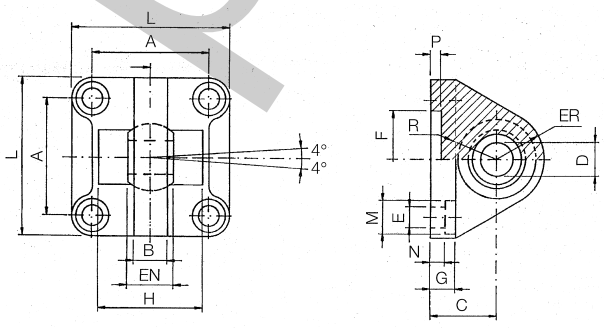
Ø Bore	□E1	EW	□TG1	FL	l_1	L	l_2	Ød1	CD	MR	d2	R1	□E2	UB	CB
32	45	26	32.5	22	5	12	5.5	30	10	9.5	6.6	6.5	48	45	26
40	51	28	38	25	5	15	5.5	35	12	12	6.6	6.5	56	52	28
50	64	32	46.5	27	5	15	6.5	40	12	12	9	8.5	64	60	32
63	74	40	56.5	32	5	20	6.5	45	16	16	9	8.5	75	70	40
80	94	50	72	36	5	20	10	45	16	16	11	11	95	90	50
100	113	60	89	41	5	25	10	55	20	20	11	12	115	110	60

Mounting type E



Ø Bore	Ød2	ØCK	ØS5	K1	K2	l3	G1	l_1	G2	EM	G3	CA	H6	R1
32	11	10	6.6	38	51	10	21	7	18	26	31	32	8	10
40	11	12	6.6	41	54	10	24	9	22	28	35	36	10	11
50	15	12	9	50	65	12	33	11	30	32	45	45	12	12
63	15	16	9	52	67	14	37	11	35	40	50	50	12	15
80	18	16	11	66	86	18	47	12.5	40	50	60	63	14	15
100	18	20	11	76	96	20	55	13.5	50	60	70	71	15	19

Mounting type CR Rear clevis with ball joint

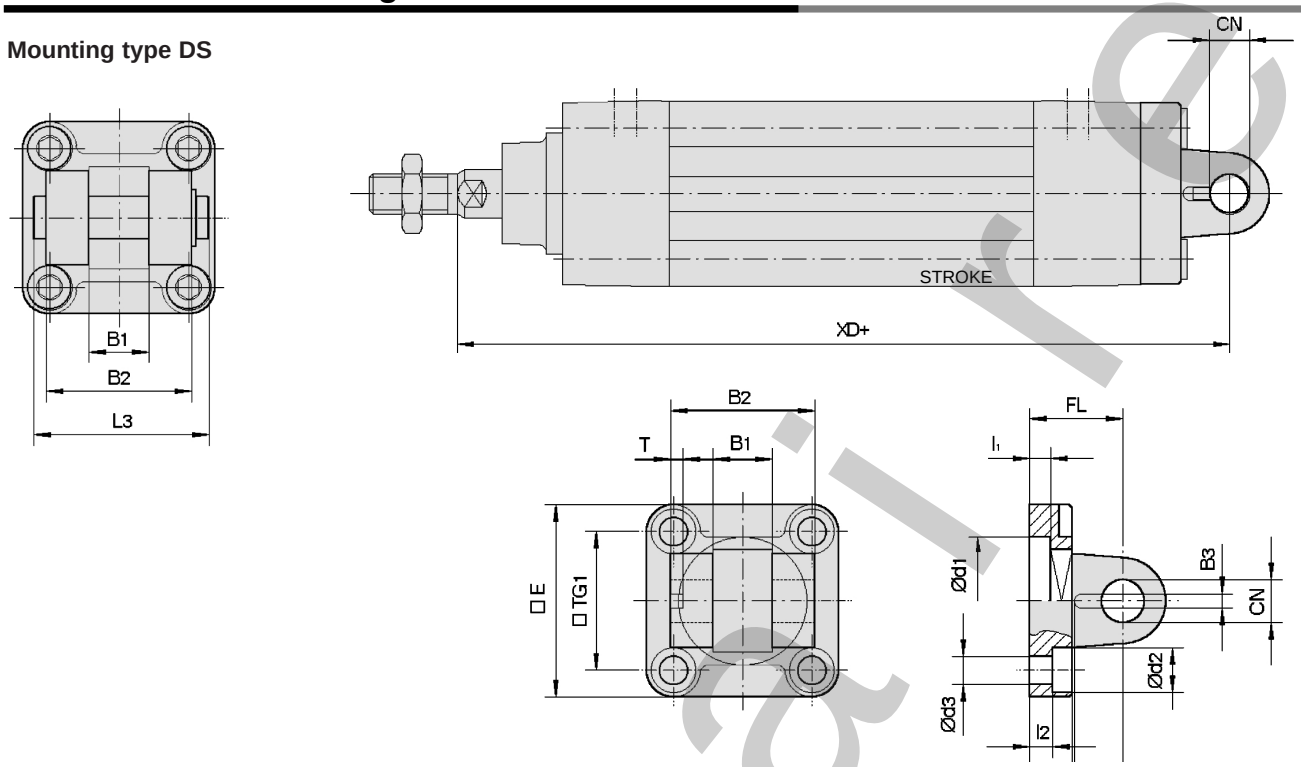


Ø (mm)	A ±0.2	B maxi	C JS15	D H7	EN -0.1	ER maxi	ØF H11	G	E H13	L	M H13	N ±0.5	P	H ±0.5	R ±0.5
32	32.5	10.5	22	10	14	15	30	10	6.6	45	10.5	5.5	5	–	–
40	38	12	25	12	16	18	35	10	6.6	55	11	5.5	5	–	–
50	46.5	15	27	16	21	20	40	10	9	65	15	6.5	5	51	19
63	56.5	15	32	16	21	23	45	12	9	75	15	6.5	5	–	–
80	72	18	36	20	25	27	45	14	11	95	18	10	5	–	–
100	89	18	41	20	25	30	55	16	11	115	18	10	5	–	–

Series CP95

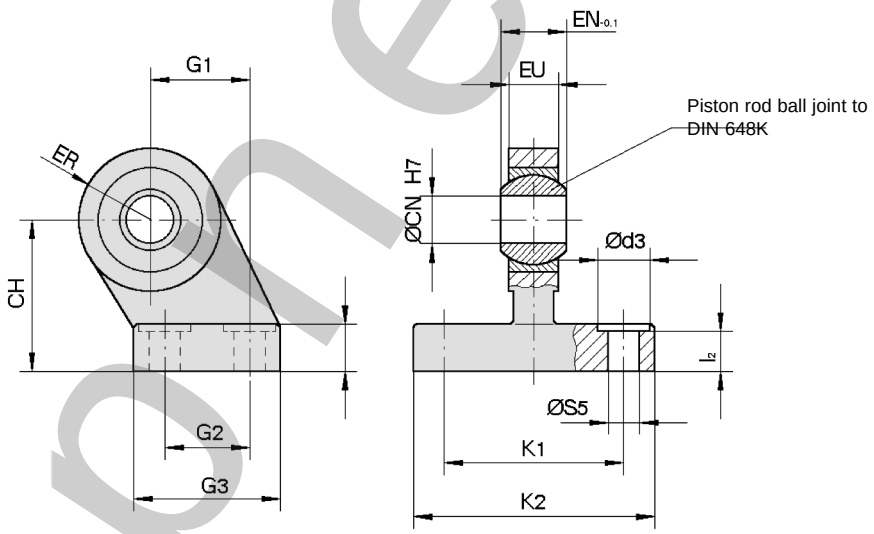
Dimensions – mounting accessories DS and ES [mm]

Mounting type DS



Ø Bore	□E	B1	B2	B3	□TG1	T	L1	L3	l_1	l_2	FL	H	Ød1	Ød2	Ød3	CN	XD
32	45	14	34	3.3	32.5	3	11.5	41	5	5.5	22	10	30	10.5	6.6	10	142
40	55	16	40	4.3	38	4	12	48	5	5.5	25	10	35	11	6.6	12	160
50	65	21	45	4.3	46.5	4	14	54	5	6.5	27	10	40	15	9	16	170
63	75	21	51	4.3	56.5	4	14	60	5	6.5	32	12	45	15	9	16	190
80	95	25	65	4.3	72	4	16	75	5	10	36	16	45	18	11	20	210
100	115	25	75	6.3	89	4	16	85	5	10	41	16	55	18	11	20	230

Mounting type ES



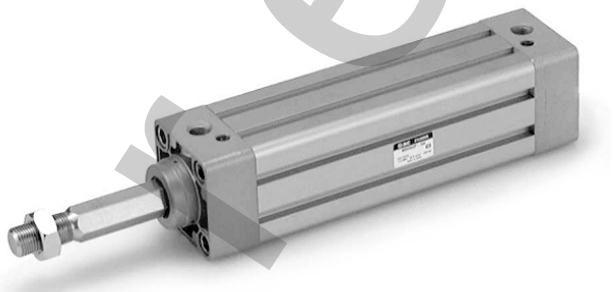
Ø Bore	Ød3	ØCN	ØS5	K1	K2	l_2	G1	G2	G3	EN	EU	CH	H6	ER
32	11	10	6.6	38	51	8.5	21	18	31	14	10.5	32	10	15
40	11	12	6.6	41	54	8.5	24	22	35	16	12	36	10	18
50	15	16	9	50	65	10.5	33	30	45	21	15	45	12	20
63	15	16	9	52	67	10.5	37	35	50	21	15	50	12	23
80	18	20	11	66	86	11.5	47	40	60	25	18	63	14	27
100	18	20	11	76	96	12.5	55	50	70	25	18	71	15	30

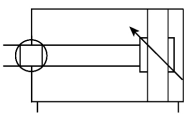
ISO/VDMA Air Cylinders

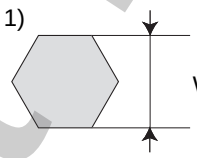
Series CP95K

Double acting with end of stroke cushioning and non-rotating rod
Ø32 - Ø100

- Conforms to VDMA 24 562 (parts 1 and 2), ISO 6431 and CETOP standards
- Combines lightweight profile barrel design with enclosed tie rods for extra strength
- Unique seal system ensures efficient performance and long life
- Fully adjustable cushioning at end of stroke
- Magnetic proximity sensing
- Superior cushioning performance and kinetic energy absorption







Technical specifications

Bore [mm]	32	40	50	63	80	100
Type	Non-lube type air cylinder					
Action	Double acting single rod					
Fluid	Compressed air filtered to < 10 µm, lubricated or non lubricated (dry air)					
Proof pressure	1.5MPa {15.3kgf/cm²}					
Maximum operating pressure	1.0MPa {10.2kgf/cm²}					
Minimum operating pressure	0.05MPa {0.5kgf/cm²}					
Piston force	Up to 7500N					
Rod width across flats [mm] [1)]	12.2	14.2	19	19	23	27
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
Ports	G1/8	G1/4	G1/4	G3/8	G3/8	G1/2
Cushioning stroke [mm]	19	19	24	24	30	30
Mounting position	Any					
Standard strokes [mm] (DIN ISO 4393) [mm]	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600, 700, 800 Other stroke lengths in accordance with ISO 497 R 10					
Stroke tolerance [mm]	<250mm: +1.0/-0mm, <1000mm: +1.4/-0mm					
Working pressure [MPa]	0.05 - 1.0					
Fluid and ambient temperature [°C]	-10°C to +60°C built-in magnet / -10°C to +70°C without magnet					
Piston speed [mm/s]	50 - 1000					
Rod non-rotating accuracy	± 0.5°	± 0.5°	± 0.5°	± 0.5°	± 0.3°	± 0.3°
Allowable maximum stroke [mm] [2)]	700	800	1200		1400	1500
Allowable Torque [Nm]	0.25	0.45	0.64	0.64	0.79	0.93
Rod material	Stainless steel					

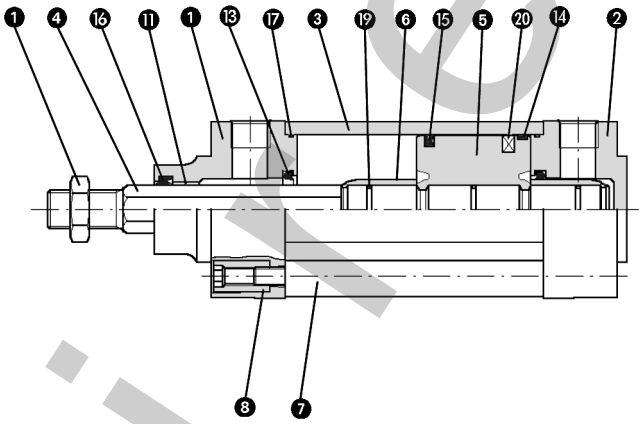
[2)] For longer stroke lengths please contact P/A.

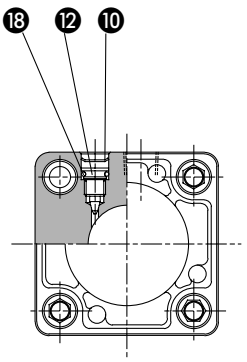
Series CP95K

Construction

Parts list

No.	Description	Material
❶	Head cover	Die-cast aluminum
❷	End cover	Die-cast aluminum
❸	Cylinder tube	Die-cast aluminum
❹	Piston rod	Stainless Steel
❺	Piston	Die-cast aluminum
❻	Cushion ring	Brass
❼	Tie rod	Steel, zinc chromate plated
❽	Tie rod nut	Steel, zinc chromate plated
❾	Rod end nut	Steel, zinc chromate plated
❿	Snap ring	Steel nickel plated
⓫	Bushing	Lead-bronze casting
⓬	Cushion valve	Steel, zinc chromate plated
⓭	Cushion seal	Elastomer
⓮	Wear ring	Antifriction material
⓯	Piston seal	NBR
⓰	Rod seal	NBR
⓱	Cylinder tube gasket	NBR
⓲	Cushioning valve seal	NBR
⓳	Piston/rod gasket	NBR
⓴	Magnet ring	





Replacement parts: Seal kits
Ø32 includes the order No. from 13 to 17,
Ø40-Ø100 includes from 12 to 18.

Ø Bore	**Order No.**
32	**CK95-32**
40	**CK95-40**
50	**CK95-50**
63	**CK95-63**
80	**CK95-80**
100	**CK95-100**

Theoretical output table

The value at the OUT side is the same as the double acting single rod type, but the value at the IN side is different. Refer to the table below.

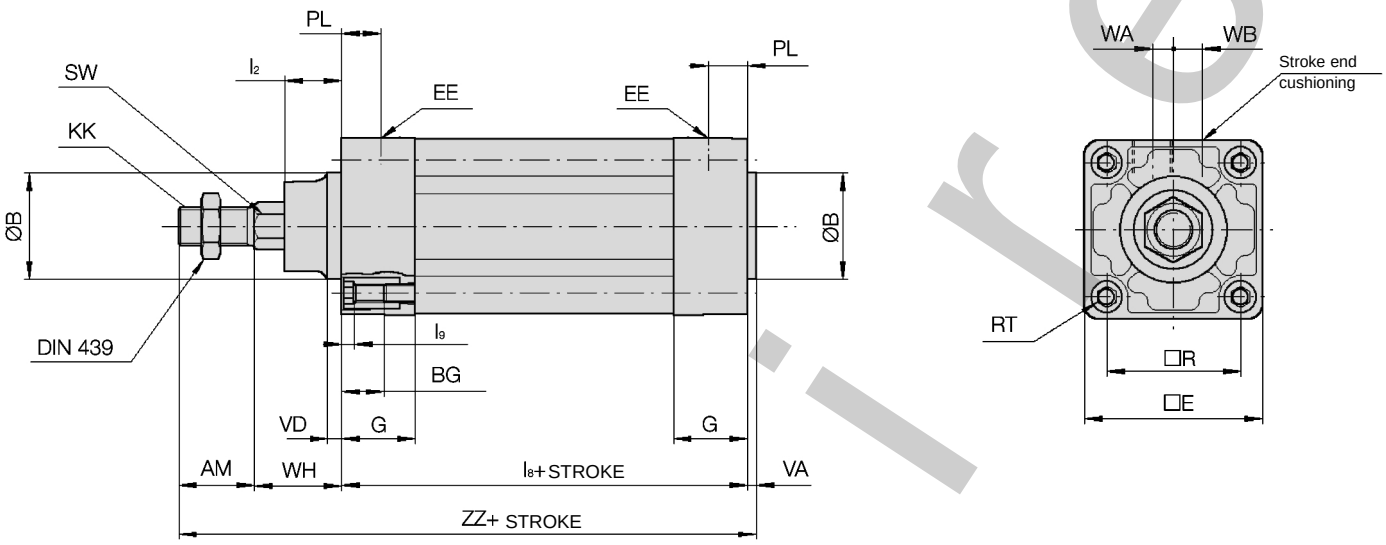
Bore size (mm)	Piston area (mm^2)	Bore size (mm)	Piston area (mm^2)
32	675	**63**	2804
40	1082	**80**	4568
50	1651	**100**	7223

Theoretical output (N) =Pressure (MPa) x Piston area (mm^2).
1N: approx. 0.102kgf 1MPa: approx. 10.2kgf/cm^2

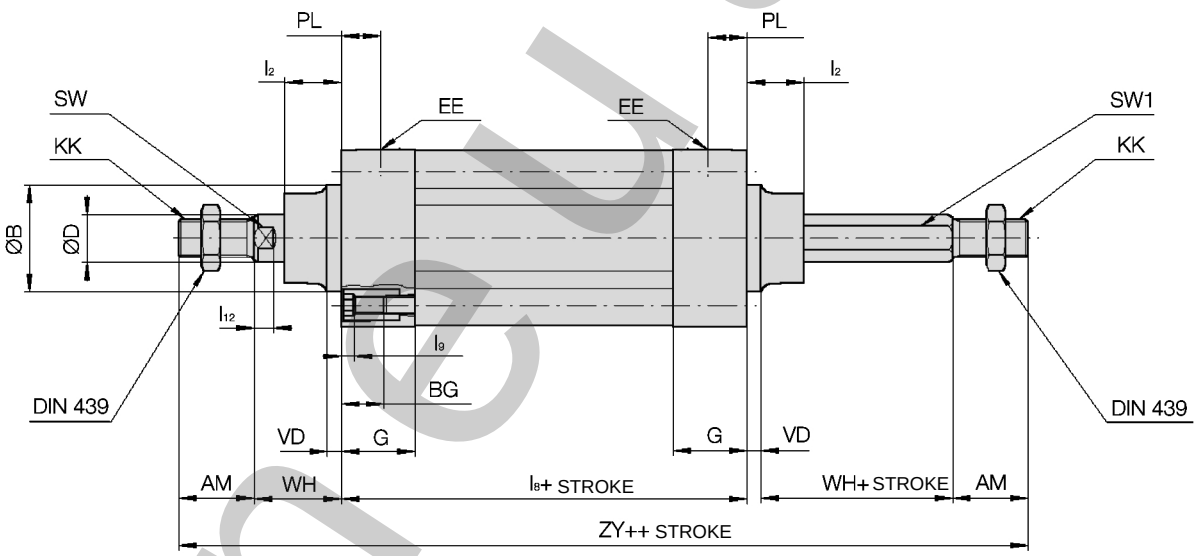
Dimensions – non-rotating rod specification

[mm]

CP95K□BØ-Stroke



CP95K□BØ-Stroke W

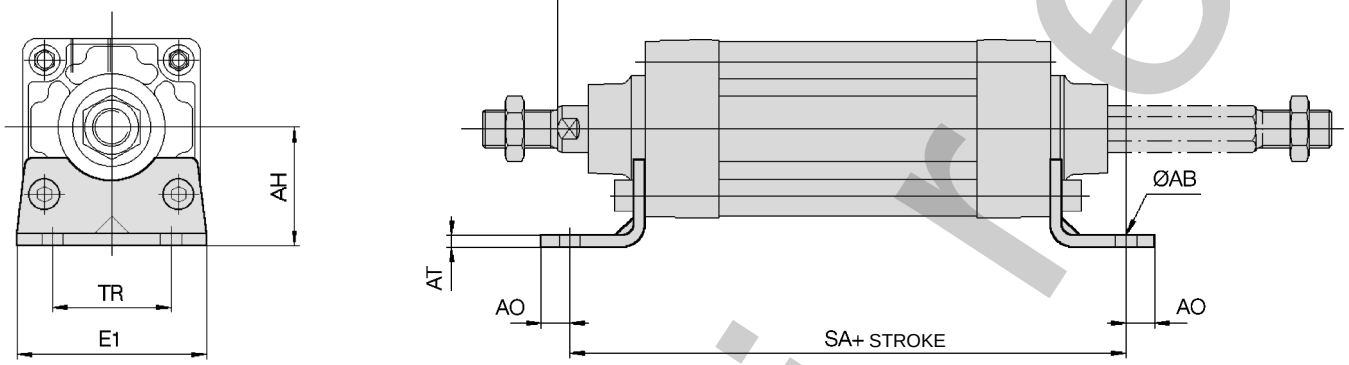


Ø Bore	AM	ØB	ØD	EE	PL	RT	l_{12}	KK	SW	SW1	G	BG	l_8	VD	VA	WA	WB	WH	ZZ	ZY	□E	□R	l_2	l_g
32	22	30	12	G1/8	13	M6	6	M10x1.25	10	12.2	27	16	94	4	4	4	6.5	26	146	190	46	32.5	15	4
40	24	35	16	G1/4	14	M6	6.5	M12x1.25	13	14.2	27	16	105	4	4	4	9	30	163	213	52	38	17	4
50	32	40	20	G1/4	15.5	M8	8	M16x1.5	16	19	31.5	16	106	6	4	5	10.5	37	179	244	65	46.5	24	5
63	32	45	20	G3/8	16.5	M8	8	M16x1.5	16	19	31.5	16	121	6	4	9	12	37	194	259	75	56.5	24	5
80	40	45	25	G3/8	19	M10	10	M20x1.5	21	23	38	16	128	8	4	11.5	14	46	218	300	95	72	30	5
100	40	55	30	G1/2	19	M10	10	M20x1.5	21	27	38	16	138	8	4	17	15	51	233	320	114	89	32	5

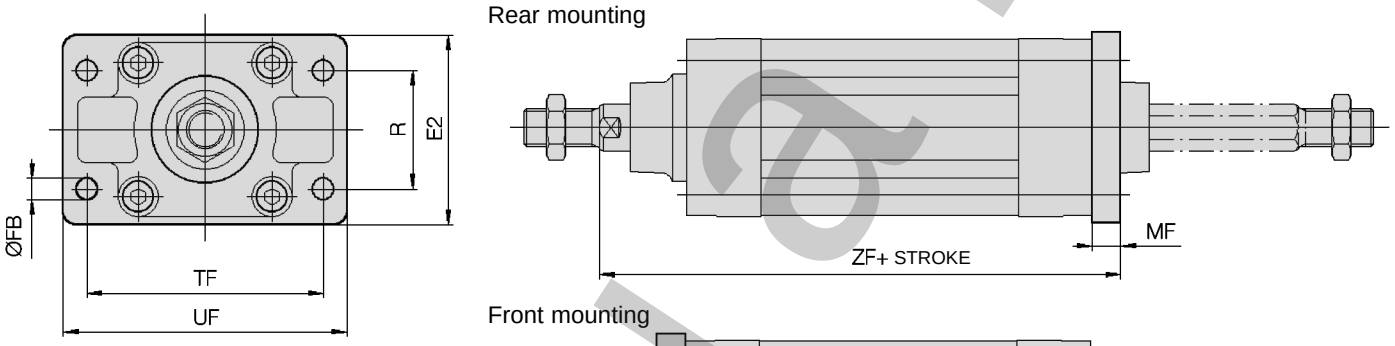
Series CP95K

Cylinder mounting accessories dimensions L, F, C and D [mm]

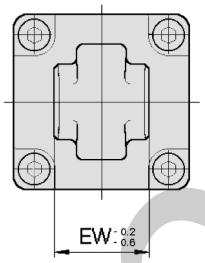
Mounting type L



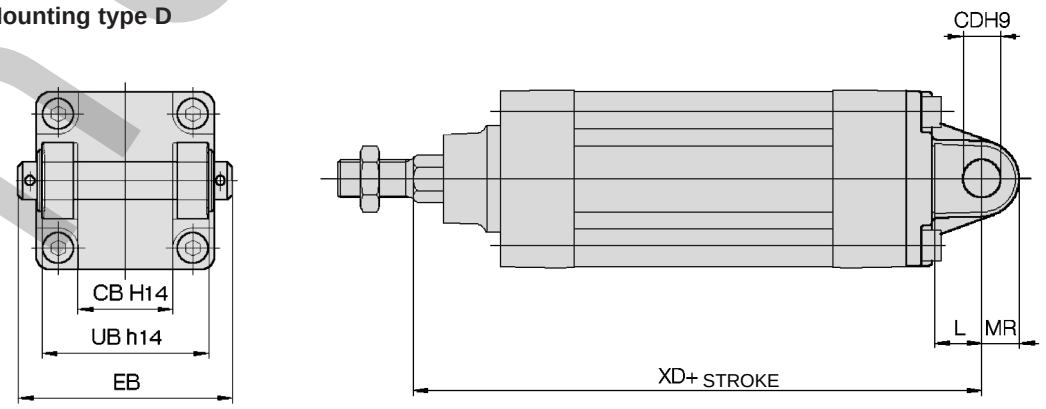
Mounting type F



Mounting type C



Mounting type D

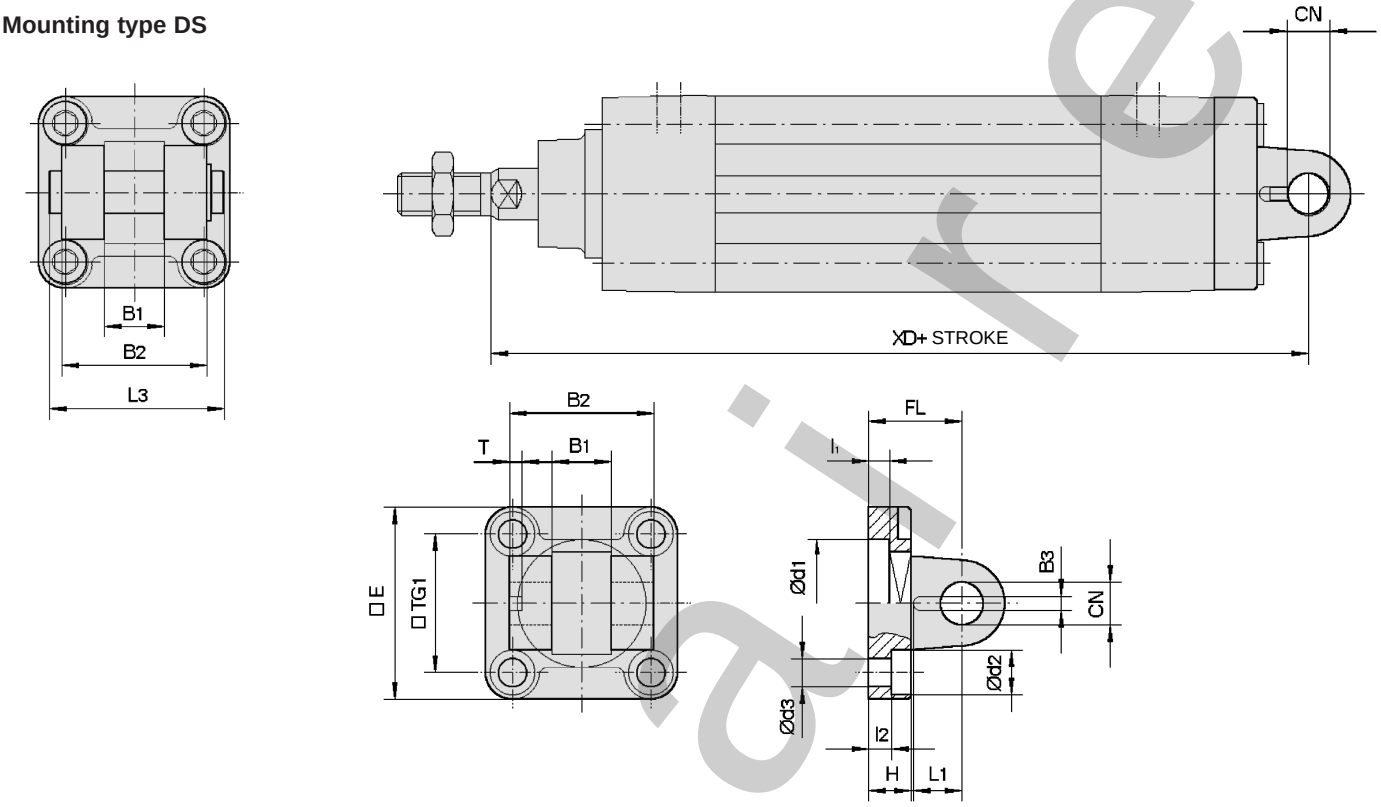


Ø Bore	E1	R	W	MF	ZF	ØFB	CD	EB	L	XD	UB	CB	EW	MR	TR	AO	AT	XA	SA	AH	ØAB	TF	UF	E2
32	48	32	16	10	130	7	10	65	12	142	45	26	26	9.5	32	10	4	144	142	32	7	64	79	50
40	55	36	20	10	145	9	12	75	15	160	52	28	28	12	36	11	4	163	161	36	9	72	90	55
50	68	45	25	12	155	9	12	80	15	170	60	32	32	12	45	12	5	175	170	45	9	90	110	70
63	80	50	25	12	170	9	16	90	20	190	70	40	40	16	50	12	5	190	185	50	9	100	120	80
80	100	63	30	16	190	12	16	110	20	210	90	50	50	16	63	14	6	215	210	63	12	126	153	100
100	120	75	35	16	205	14	20	140	25	230	110	60	60	20	75	16	6	230	220	71	14	150	178	120

Cylinder mounting accessory DS and ES

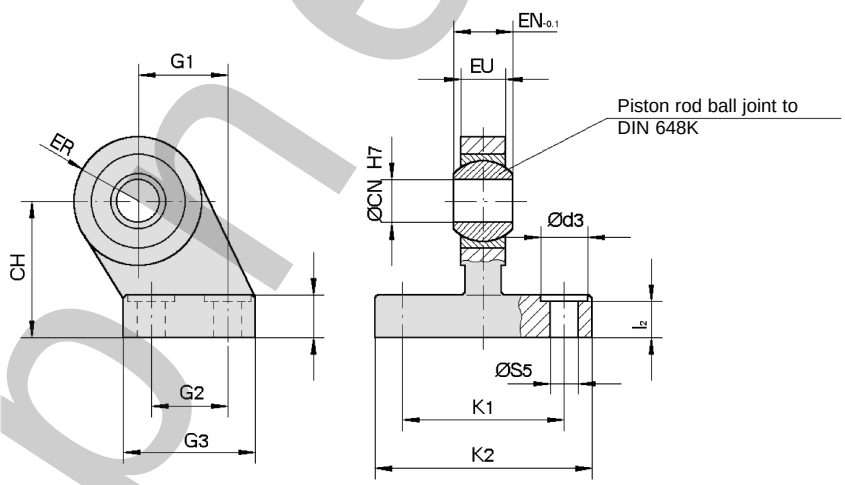
[mm]

Mounting type DS



Ø Bore	□E	B1	B2	B3	□TG1	T	L1	L3	l_1	l_2	FL	H	Ød1	Ød2	Ød3	CN	XD
32	45	14	34	3.3	32.5	3	11.5	41	5	5.5	22	10	30	10.5	6.6	10	142
40	55	16	40	4.3	38	4	12	48	5	5.5	25	10	35	11	6.6	12	160
50	65	21	45	4.3	46.5	4	14	54	5	6.5	27	10	40	15	9	16	170
63	75	21	51	4.3	56.5	4	14	60	5	6.5	32	12	45	15	9	16	190
80	95	25	65	4.3	72	4	16	75	5	10	36	16	45	18	11	20	210
100	115	25	75	6.3	89	4	16	85	5	10	41	16	55	18	11	20	230

Mounting type ES



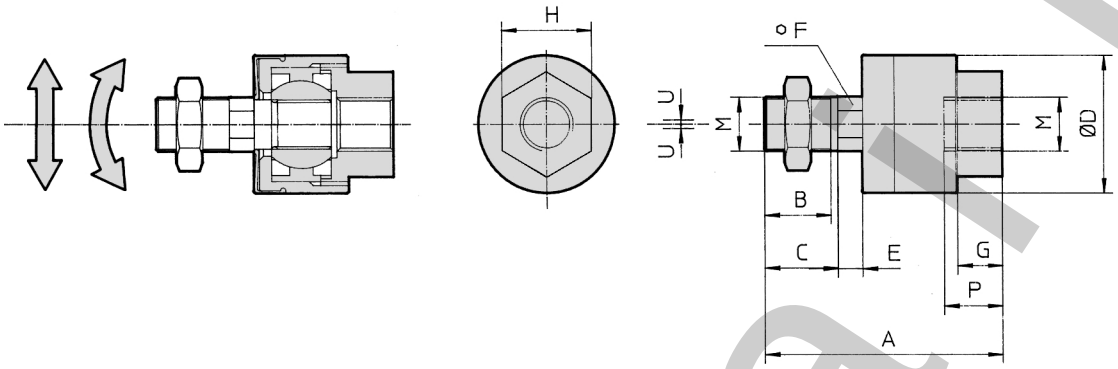
Ø Bore	Ød3	ØCN	ØS5	K1	K2	l_2	G1	G2	G3 □	EN	EU	CH	H6	ER
32	11	10	6.6	38	51	8.5	21	18	31	14	10.5	32	10	15
40	11	12	6.6	41	54	8.5	24	22	35	16	12	36	10	18
50	15	16	9	50	65	10.5	33	30	45	21	15	45	12	20
63	15	16	9	52	67	10.5	37	35	50	21	15	50	12	23
80	18	20	11	66	86	11.5	47	40	60	25	18	63	14	27
100	18	20	11	76	96	12.5	55	50	70	25	18	71	15	30

Series CP95

Piston Rod mounting accessory dimensions [mm]

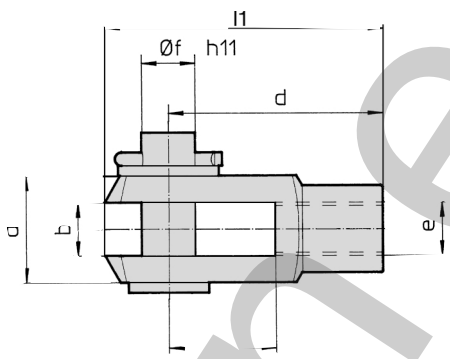
Floating joint JA
Carbon tool steel

Ø Bore	M	Order No.	A	B	C	ØD	E	F	G	H	P	U	Load [kN]	Weight [g]	Angle
32	M10x1.25	**JA30-10-125**	49.5	19.5	–	24	5	8	8	17	9	0.5	2.5	70	±5°
40	M12x1.25	**JA40-12-125**	60	20	–	31	6	11	11	22	13	0.75	4.4	160	
50/63	M16x1.5	**JA50-16-150**	71.5	22	–	41	7.5	14	13.5	27	15	1.0	11	300	
80/100	M20x1.5	**JAH50-20-150**	101	28	31	59.5	11.5	24	16	32	18	2.0	18	1080	

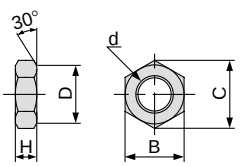


Rod clevis GKM (DIN 71752), supplied with bolt and safety device
Chromed steel

Ø Bore	e	Order No.	b	d	Øf	l1	c	a
32	M10x1.25	**GKM10-20**	10	40	10	52	20	20
40	M12x1.25	**GKM12-24**	12	48	12	62	24	24
50/63	M16x1.5	**GKM16-32**	16	64	16	83	32	32
80/100	M20x1.5	**GKM20-40**	20	80	20	105	40	40



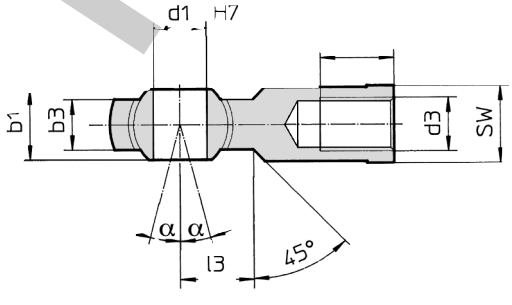
Rod end nut
(standard equipment)

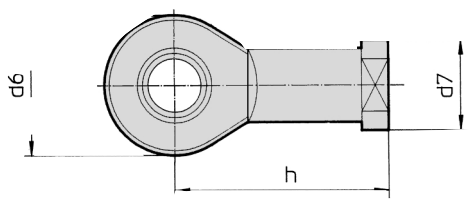


Order No.	Bore size (mm)	d	H	B	C	D
NT-03	32	M10 x 1.25	6	17	19.6	16.5
NT-04	40	M14 x 1.5	8	22	25.4	21
NT-05	50, 63	M18 x 1.5	11	27	31.2	26
NT-08	80	M22 x 1.5	13	32	37.0	31
NT-10	100	M26 x 1.5	16	41	47.3	39

Piston rod ball joint KJ (DIN 648)
Zinc chromate plated steel

Ø Bore	d3	Order No.	d1	h	d6	b3	b1	l	d7	α	l3	sw
32	M10x1.25	**KJ10D**	10	43	28	10.5	14	20	19	13°	14	17
40	M12x1.25	**KJ12D**	12	50	32	12	16	22	22	13°	16	19
50/63	M16x1.5	**KJ16D**	16	64	42	15	21	28	27	15°	26	32
80/100	M20x1.5	**KJ20D**	20	77	50	18	25	33	34	15°	26	32

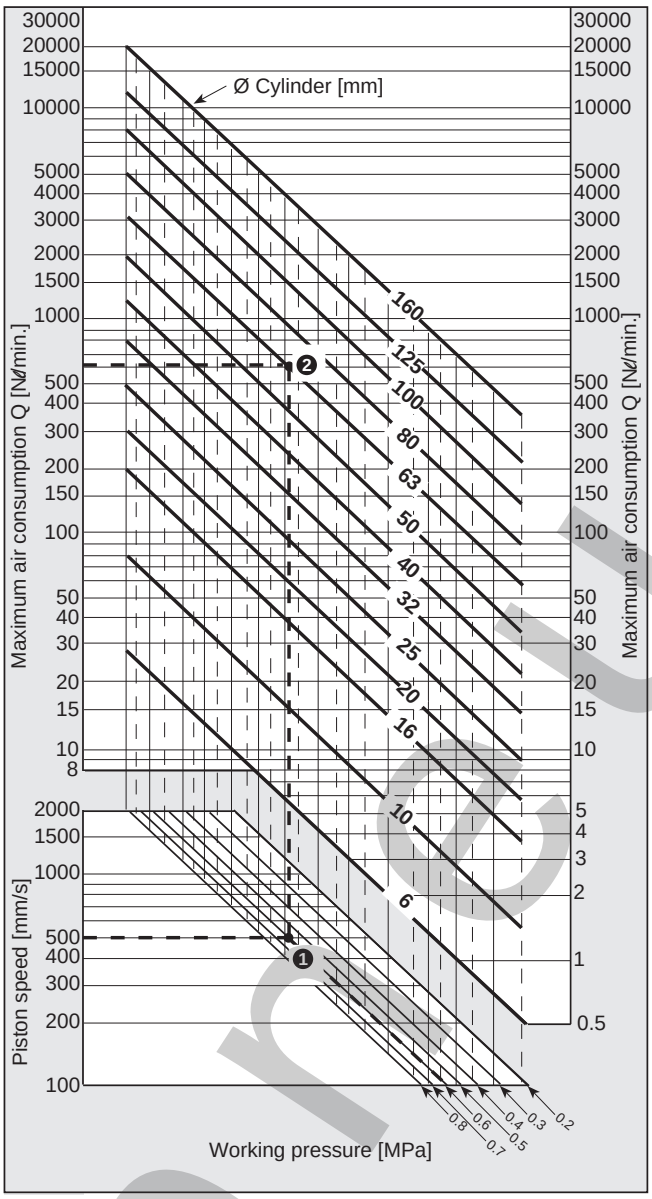




Series CP95
Cylinder Flow Rate and Air Consumption

In order to determine the correct size of valves, piping and accessories the maximum air consumption should be calculated. Air consumption is determined by the total maximum air consumed by all the cylinders that operate during an operating cycle, and is dependant on the maximum cylinder speed.

Theoretical maximum air consumption



Thermal loss is not represented in this diagram. For this reason, the air consumption is multiplied by 1.4. This factor is an average value.

Example
Calculate the maximum effective air consumption of a Ø63 cylinder at an average speed of 500 mm/s. The working pressure is 0.6 MPa.

Solution
1. Determine the intersection point ❶ of the 0.6 MPa working pressure on the horizontal axis with the 500 mm/s average speed on the vertical axis.

2. Extend the intersection point ❶ upward to the Ø63 cylinder. Intersection point ❷ is obtained.

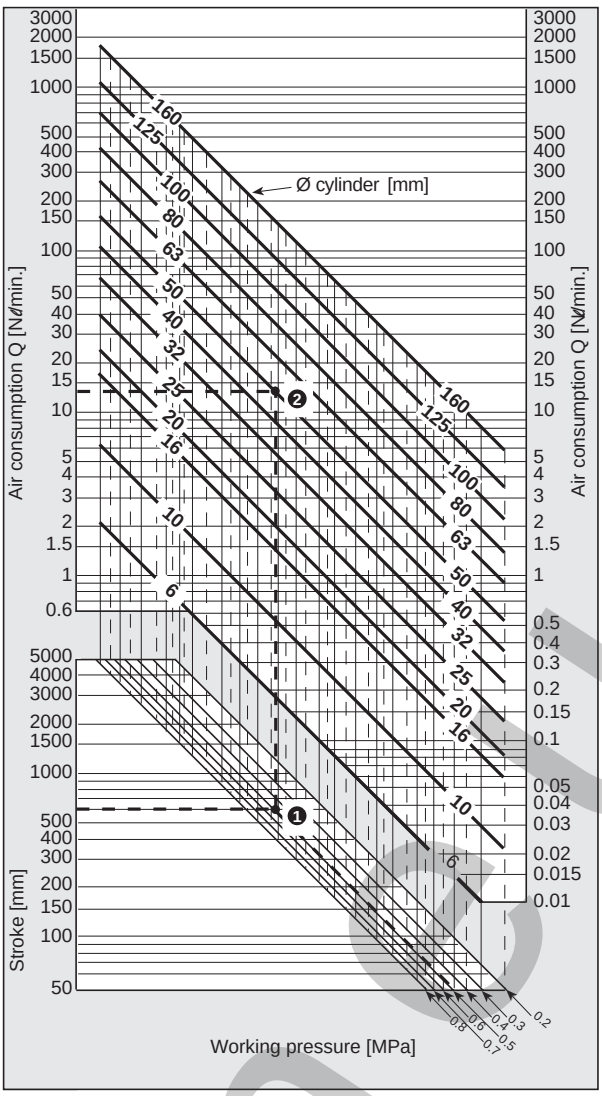
3. Extend the intersection point ❷ rightward or leftward. A Q value of approximately 620 Nℓ/min is obtained.

4. The 620 Nℓ/min.theoretical value is multiplied by 1.4
   Q = 620 Nℓ/min. × 1.4
   Q = 870 Nℓ/min.

Average air consumption of compressed air cylinders and piping

In order to find the appropiate size of the compressor and the compressed air supply. It is necessary to determine the average compressed air consumption.

Average theoretical air consumption of cylinders in a cycle/m. (1 cycle = SWITCH ON/SWITCH OFF)



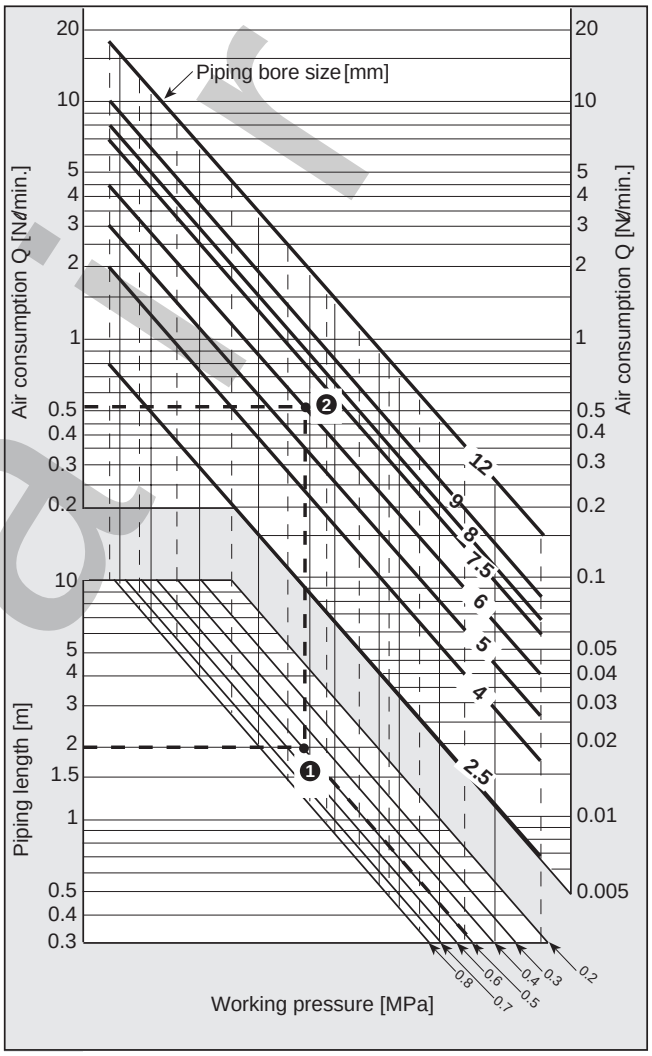
Example:
Cylinder diameter: Ø50 mm
Stroke: 600 mm
Working pressure: 0.5 MPa
Cycles: 5 per minute
Bore size: 6 mm
Piping length (between the cylinder and the valve): 2 m

Cylinder air consumption

1. Determine the intersection point ❶ of a 0.5 MPa working pressure with a stroke of 600 mm.
2. Extend the intersection point ❶ upward to the intersection point 2 where a Ø50 mm is represented.
3. Extend the intersection point ❷ rightward or leftward. The Q value of 13.5 Nℓ/min. is obtained.
4. The value of 13.5 Nℓ/min. is multiplied by 1.4 and by the number of cycles.
   Q_1 = 13.5 Nℓ/min. × 1.4 × 5 cycles
   = 94.5 Nℓ/min.

Thermal loss is not represented in this diagram. For this reason, the air consumption is multiplied by 1.4. This factor is an average value.

Theoretical air consumption of compressed air piping



Air consumption of compressed air piping

5. Determine the intersection point ❶ of a 0.5 MPa working pressure with a piping length of 2m.
6. Extend the intersection point ❶ upward to a Ø6 piping bore size. Intersection point ❷ is obtained.
7. Extend the intersection point ❷ rightward or leftward. Value: Q = 0.56 Nℓ/min.
8. The value of 0.56 Nℓ/min. is multiplied by 1.4 and by the number of cycles.
   Q_2 = 0.56 Nℓ/min. × 1.4 × 5 cycles
   = 3.92 Nℓ/min.

Total air consumption of compressed air cylinder and piping:
Q = Q_1 + Q_2 = 94.5 Nℓ/min. + 4 Nℓ/min.
Q = 98.5 Nℓ/min.

Series CP95

Maximum stroke determination

The table below indicates the maximum stroke with different mounting accessories. The values are for standard applications when a cylinder drives a load (m) that corresponds to the cylinder theoretical output which results from a determined working pressure. If the rod diameter is not the appropiate one in relation to the pressure and the stroke, a longer stroke cylinder should be selected or pressure should be reduced.

Allowable theoretical strokes (mm)

	Mounting type			Accessories	Pressure	Bore					(mm)
					[MPa]	32	40	50	63	80	100b
	L	F (front)	G (rear)	L • F (front)	0.2	680	–	–	980	1220	1410
					0.3	540	–	1020	790	980	1140
					0.4	460	700	880	680	840	980
					0.5	410	630	780	610	750	880
					0.6	370	580	710	550	680	800
					0.7	340	520	650	500	620	730
					0.8	310	480	600	460	580	680
					0.9	290	450	570	430	540	630
					1	270	420	530	400	510	590
				G (rear)	0.2	580	450	580	430	540	630
					0.3	450	350	460	340	420	500
					0.4	370	300	390	280	350	420
					0.5	310	260	340	250	310	370
					0.6	270	230	300	220	270	330
					0.7	240	210	270	190	240	290
					0.8	210	190	250	170	220	270
					0.9	190	170	230	160	200	240
					1	170	160	210	140	190	220
	C•D			C • D	0.2	–	–	1200	920	1150	1330
					0.3	–	760	960	730	910	1050
					0.4	–	640	820	620	770	890
					0.5	–	570	720	540	680	780
					0.6	630	510	650	490	610	700
					0.7	560	460	600	440	550	640
					0.8	510	430	550	400	510	580
					0.9	470	400	510	380	470	550
					1	430	370	480	350	440	510

G – Rear flange
F – Front flange
L – Foot
C – Male rear clevis
D – Female rear clevis

Maximum stroke determination

Allowable theoretical strokes (mm)

	Mounting type			Accessories	Pressure	Bore					(mm)
					[MPa]	32	40	50	63	80	100
	L	F (front)	G (rear)	L • F (front)	0.2						
					0.3						
					0.4						
					0.5						
					0.6						
					0.7						
					0.8						
					0.9						
					1	*)	*)	*)	*)	*)	*)
				G (rear)	0.2		–	–	–	–	–
					0.3		–	–	1160	1360	–
					0.4		–	–	940	1160	1350
					0.5		–	1080	830	1020	1190
					0.6		770	980	750	920	1080
					0.7		700	900	680	850	990
					0.8		650	830	630	780	910
					0.9		610	790	590	740	860
					1	*)	580	740	560	690	810
	L	F (front)	F (rear)	L • F (front)	0.2						
					0.3						
					0 .4						
					0.5						
					0.6						
					0.7						
					0.8						
					0.9						
					1	*)	*)	*)	*)	*)	*)
				G (rear)	0.2			–	–	–	–
					0.3			–	–	–	–
					0.4			–	–	–	–
					0.5			–	–	–	–
					0.6			–	1010	1380	–
					0.7			–	1020	1270	1470
					0.8			–	950	1180	1380
					0.9			1160	890	1110	1290
					1	*)	*)	1090	840	1040	1220

*) The maximum standard stroke should be used depending on the cylinder diameter (Refer to page 11 below for standard strokes).

G – Rear flange
F – Front flange
L – Foot
C – Male rear clevis
D – Female rear clevis