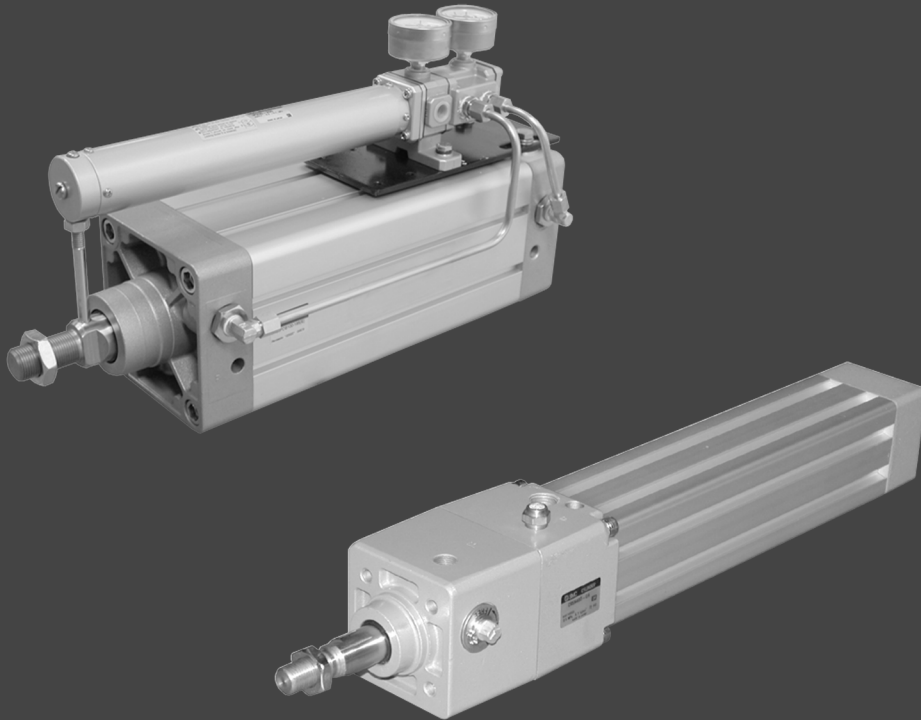




ISO Cylinder Series *CP95*

ø32, ø40, ø50, ø63, ø80, ø100

Dimensions conform to ISO 6431, VDMA 24562, CETOP RP43P.



Quick Reference
Guide

C55

C85

C76

CP95

C95

-X
(Made to Order)

D-
(Auto Switch)

Model Selection
Procedures

ISO Cylinder: Double Acting with Positioner

Series CP95P

ø32, ø40, ø50, ø63, ø80, ø100

How to Order

Standard CP95PD B 32 100 Z76 S

Built-in magnet (points to CP95PD)

Mounting (points to B)

B	Basic/without bracket
L	Axial foot
G	Rear flange
C	Single rear clevis
D	Double rear clevis

Bore size (points to 32)

50	50mm
63	63mm
80	80mm
100	100mm

Stroke (mm) (points to 100)

Auto switch (points to Z76)

—	Without auto switch
S	1
3	3
n	n

Number of auto switches

* Refer to table below for selection of applicable auto switch.

Applicable Auto Switches/Direct mounting type

Refer to standard stroke table on p.5-4 maximum 300mm

Type	Special function	Electrical entry	Indicator light	Wiring (output)	Load voltage		Auto switch model		Lead wire length (m) ^(Note)			Applicable load		Mounting bracket	
					DC	AC	Electrical entry direction		0.5 (Nil)	3 (L)	5 (Z)				
Reed switch	—	Grommet	Yes	3 wire	24V	—	5V	—	Z76	●	●	—	IC circuit	BMP1-032	
				2 wire		—	100V	—	Z73	●	●	●	—		Relay PLC
				—		5V, 12V	100V or less	—	Z80	●	●	—	IC circuit		
Solid state switch	—	Grommet	Yes	3 wire (NPN)	24V	5V, 12V	—	Y69A	Y59A	●	●	○	IC circuit	BMP1-032	
				3 wire (PNP)				Y7PV	Y7P	●	●	○	—		Relay PLC
				2 wire				Y69B	Y59B	●	●	○	—		IC circuit
				3 wire (NPN)				Y7NWV	Y7NW	●	●	○	—		IC circuit
				3 wire (PNP)				Y7PWV	Y7PW	●	●	○	—		IC circuit
				2 wire				Y7BWV	Y7BW	●	●	○	—		—
—	—	Connector and Grommet	Yes	3 wire (NPN)	24V	5V, 12V	—	M9NV	M9N	●	●	○	IC circuit	Relay PLC	BMP1-032 + BMG2-012
				3 wire (PNP)				M9PV	M9P	●	●	○			
				2 wire				M9BV	M9B	●	●	○			

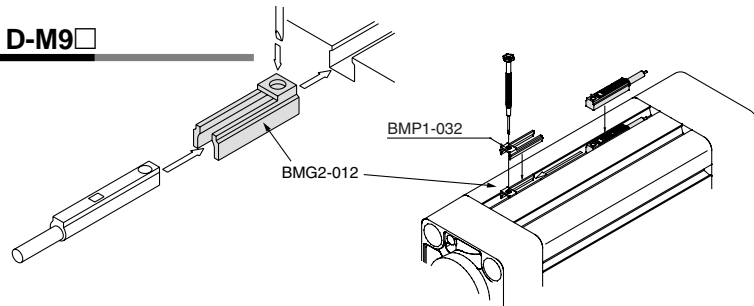
* Lead wire length 0.5m..... — (Example: A53)
 3m..... L (Example: A53L)
 5m..... Z (Example: A53Z)

○: Manufactured upon receipt of order.

Auto Switch Mounting Accessories for D-M9□

Bore size (mm)	Order No.
ø32~ø100	BMP1-032
	BMG2-012

Note: For the mounting of auto switch D-M9, both BMP1-032 and BMG2-012 are necessary.



Series CP95P

Specifications

Application:

The positioner IP200 is capable of pneumatic positioning of the piston. Adjustable positions can be reached with high repeating accuracy. The piston stroke is in proportion to the air pressure input signal (0.02-0.01MPa). External forces on the position of the piston are reduced to a minimum by a special control system and an integrated function to revert the set position.

The IP200 shows excellent performance in remote control or standard control of flaps, proportioning devices, pumps, gears usw.

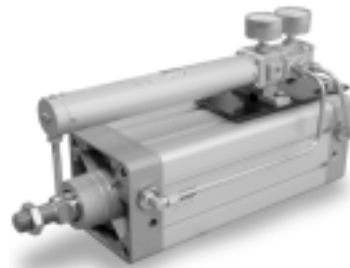
Specifications

- The bleed pressure acts directly onto the flapper plate. A change of the input signal will cause an instantaneous movement of the piston rod.
- easy and simple adjustment of neutral point and operation band from outside.
- Return spring is protected against accidental touches
- Positioner cylinder conforms to ISO and CETOP recommendations
- No change in dimensions with auto switch capability

Specifications

Fluid	Air 5µm filtration
Supply pressure "SUP" (MPa)	0.3 ~ 0.7
Signal pressure "SIG" (MPa)	0.02 ~ 0.1
Fluid temperature (°C)	+5 to +60
Linearity	< 2%*
Hystereses	< 1%*
Repeatability	< 1%*
Sensitivity	< 1%*
Port size	G1/4
Gauge port	G1/8
Primary pressure	0.5% with 0.5MPa
Flow rate (l/min)	250 with 0.5MPa
Leakage	< 18 with 0.5MPa
Bore Size (mm)	40 to 100
Cylinder stroke (mm)	25 to 300
Standard stroke (mm)	50/100/150/200/250/300
Max. possible stroke (mm)	300

*different in % related to full span.



Part No: Mounting Bracket, Mounting Accessories

Description	ø50	ø63	ø80	ø100
L	L5050	L5063	L5080	L5100
G	F5050	F5063	F5080	F5100
C	C5050	C5063	C5080	C5100
D	D5050	D5063	D5080	D5100
DS	DS5050	DS5063	DS5080	DS5100
ES	ES5050	ES5063	ES5080	ES5100
E	E5050	E5063	E5080	E5100
GKM	GKM16-32	GKM16-32	GKM20-40	GKM20-40
KJ	KJ16D	KJ16D	KJ20D	KJ20D
JA	JAS0-16-150	JAS0-16-150	JAH50-20-150	JAH50-20-150

Note 1) Two foot brackets required for one cylinder.

Note 2) Accessories for each mounting bracket are as follows.

Foot, Flange, Single clevis: Mounting bolts

Double rear clevis: (D,DS): Clevis pin

Note 3) GKM according to ISO 8140

Note 4) KJ according to ISO 8139

Note 5) Piston rod nut is standard

Weight accessories (kg)

Ø	50	63	80	100
L	0.38	0.46	0.89	1.09
F	0.47	0.58	1.30	1.81
C	0.37	0.60	1.07	1.73
D	0.45	0.71	1.28	2.11
E	0.42	0.52	0.94	1.40

Weight Table

Weight (kg)					
	Ø	50	63	80	100
	B		2.27	2.79	4.11
Weight each 50mm stroke		0.32	0.33	0.48	0.62

Example: CP95PDB50-200

Cylinder Ø50mm, stroke 200mm

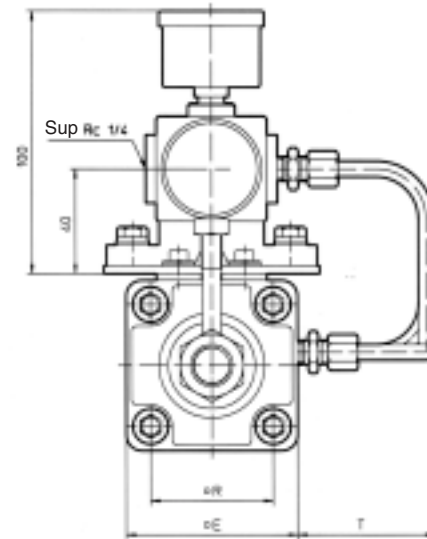
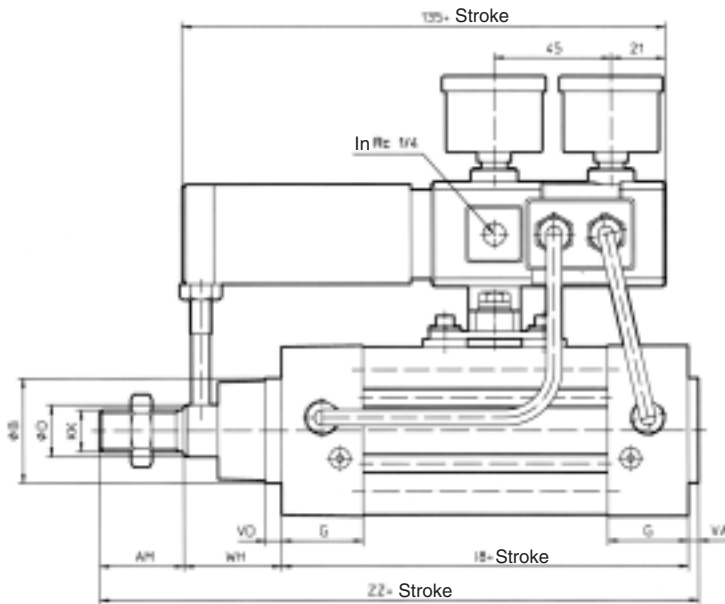
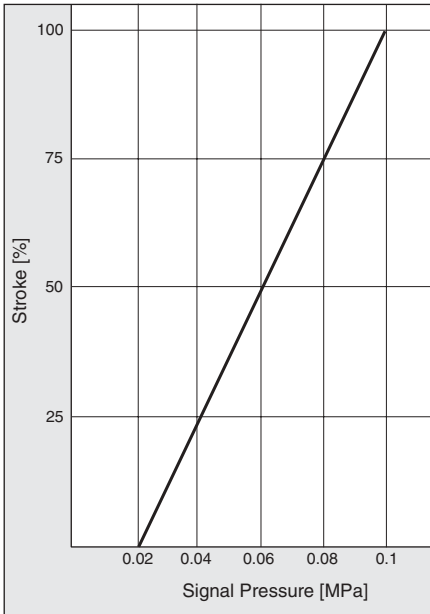
Bracket L

Weight = 2.72kg + (0.31kg × $\frac{200}{50}$) = 3.96kg

For dimensions of the brackets and accessories, please see C95S, page 5-4

Dimensions

Signal Pressure/Stroke Diagram



Ø	AM	ØB	ØD	±E	G	KK	I 8	±R	T	VA	VD	WH	ZZ
50	32	40	20	65	31.5	M16 x 1.5	106	46.5	52.1	4	6	37	179
63	32	45	20	75	31.5	M16 x 1.5	121	56.5	53.8	4	6	37	194
80	40	45	25	95	38	M20 x 1.5	128	72	53.8	4	8	46	218
100	40	55	30	114	38	M20 x 1.5	138	89	25.6	4	8	51	233

ISO Cylinder/Standard: Double Acting with Lock

Series CP95N

ø32, ø40, ø50, ø63, ø80, ø100

How to Order

Standard CP95ND **B** **32** **100** **W** **Z76** **S**

Built-in magnet

Mounting

B	Basic/without bracket
L	Axial foot
F	Front flange
G	Rear flange
C	Single rear clevis
D	Double rear clevis

Bore size

50	50mm
63	63mm
80	80mm
100	100mm

Auto switch

—	Without auto switch
---	---------------------

* Refer to table below for selection of applicable auto switch.

Number of auto switches

—	2
S	1
3	3
n	n

Rod specifications

—	Hard chrome as standard
W	Double/through rod

Stroke (mm)

Refer to standard stroke table on p.5-23 maximum 1000mm

Applicable Auto Switches/Direct mounting type

Type	Special function	Electrical entry	Indicator light	Wiring (output)	Load voltage		Auto switch model		Lead wire length (m) ^{Note)}			Applicable load	Mounting bracket		
					DC	AC	Vertical	Lateral	0.5 (Nil)	3 (L)	5 (Z)				
Reed switch	—	Grommet	Yes	3 wire	—	5V	—	—	Z76	●	●	—	IC circuit	BMP1-032	
				2 wire	24V	—	100V	—	Z73	●	●	●	—		Relay PLC
				No	5V, 12V	100V or less	—	Z80	●	●	—	—	IC circuit		
Solid state switch	—	Grommet	Yes	3 wire (NPN)	24V	5V, 12V	—	Y69A	Y59A	●	●	○	IC circuit	BMP1-032	
				3 wire (PNP)				Y7PV	Y7P	●	●	○	—		
				2 wire				Y69B	Y59B	●	●	○	—		
				3 wire (NPN)				Y7NWV	Y7NW	●	●	○	IC circuit		
				3 wire (PNP)				Y7PWV	Y7PW	●	●	○	—		
				Water resistant (2 colour indicator)				Y7BWV	Y7BW	●	●	○	—		
				2 wire				—	Y7BA	—	●	—	—		
—	Connector and Grommet	Yes	3 wire (NPN)	24V	5V, 12V	—	M9NV	M9N	●	●	○	IC circuit	Relay PLC	BMP1-032 + BMG2-012	
			3 wire (PNP)				M9PV	M9P	●	●	○				
			2 wire				M9BV	M9B	●	●	○				

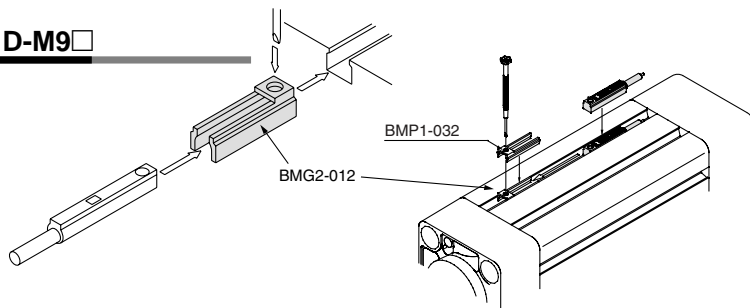
* Lead wire length 0.5m..... — (Example: A53)
 3m..... L (Example: A53L)
 5m..... Z (Example: A53Z)

○: Manufactured upon receipt of order.

Auto Switch Mounting Accessories for D-M9

Bore size (mm)	Order No.
ø32~ø100	BMP1-032
	BMG2-012

Note: For the mounting of auto switch D-M9, both BMP1-032 and BMG2-012 are necessary.



Cylinder Series CP95N with lock

Cylinder Specifications

Bore Size [mm]	32, 40, 50, 63, 80, 100
Fluid	Air
Proof Pressure	1.5MPa
Max. operating pressure	1.0MPa
Min. operating pressure	0.08MPa
Piston speed	50 to 1000mm/s <small>note)</small>
Ambient and fluid temperature	Without autoswitch : -10°C to 70°C (without freezing) With autoswitch : -10°C to 70°C (without freezing)
Cushion	Double air side cushion
Stroke length tolerance	to 250: $^{+1.0}_0$, 251 to 1000: $^{+1.4}_0$
Bracket type	Basic type, Axial foot type, Front flange type, Rear flange type, Single clevis type, Double clevis type, Spherical bearing
max. possible stroke [mm]	1000

Note) Load limits exist depending upon piston speed when locked, mounting direction and operating pressure.

Lock Specifications

Lock actuation	Spring lock (exhaust lock)
Unlocking pressure	≥ 0.25 MPa
Locking pressure	≥ 0.20 MPa
Max. operating pressure	1.0MPa
Locking direction	2 Two-way

Standard Stroke

Bore Size [mm]	Standard Stroke [mm]	Max. Stroke
32	25,50,75,100,125,150,175,200,250,300,350,400,450,500	700
40	25,50,75,100,125,150,175,200,250,300,350,400,450,500	800
50	25,50,75,100,125,150,175,200,250,300,350,400,450,500,600	1000
63	25,50,75,100,125,150,175,200,250,300,350,400,450,500,600	
80	25,50,75,100,125,150,175,200,250,300,350,400,450,500,600,700,800	
100	25,50,75,100,125,150,175,200,250,300,350,400,450,500,600,700,800	

Intermediate strokes are available.

* Please consult with SMC for longer stroke.

Stopping Accuracy

[mm]

Locking system	Piston speed [mm/s]			
	100	300	500	1000
Spring lock	± 0.3	± 0.6	± 1.0	± 2.0

Conditions/Horizontal supply pressure P=0.5MPa

Load weight Upper limit of allowable value

Solenoid valve for locking mounted on the locking pdr

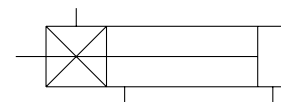
Maximum value of stopping position dispersion from 100 measurements

Spring Lock Holding Power (Maximum static Load)

Bore size [mm]	32	40	50	63	80	100
Holding power [N]	552	882	1370	2160	3430	5390



Cylinder with lock



Quick Reference
Guide

C55

C85

C76

CP95

C95

-X
(Made to Order)

D-
(Auto Switch)

Model Selection
Procedures

Series CP95N

CP95N Cylinder

Part No: Mounting Bracket, Mounting Accessories

Description	Bore size	ø32	ø40	ø50	ø63	ø80	ø100
L	Foot ⁽¹⁾	L5032	L5040	L5050	L5063	L5080	L5100
F,G	Flange	FN5032	FN5040	FN5050	FN5063	F5080	F5100
C	Single rear clevis	C5032	C5040	C5050	C5063	C5080	C5100
D	Double rear clevis	D5032	D5040	D5050	D5063	D5080	D5100
DS	Double rear clevis (for ES accessory)	DS5032	DS5040	DS5050	DS5063	DS5080	DS5100
ES	Angled rear clevis with ball joint	ES5032	ES5040	ES5050	ES5063	ES5080	ES5100
E	Angled rear clevis	E5032	E5040	E5050	E5063	E5080	E5100
GKM	Rod clevis	GKM10-20	GKM12-24	GKM16_32	GKM16-32	GKM20-40	GKM20-40
KJ	Piston rod ball joint	KJ10D	KJ12D	KJ16D	KJ16D	KJ20D	KJ20D
JA	Floating joint	JA30-10-125	JA40-12-125	JA50-16-150	JA50-16-150	JAH50-20-150	JAH50-20-150

- Note 1) Two foot brackets required for one cylinder.
 Note 2) Accessories for each mounting bracket are as follows:Foot, Flange, Single clevis: Mounting bolts
 Double rear clevis: (D.DS): Clevis pin
 Note 3) GKM according to ISO 8140
 Note 4) KJ according to ISO 8139
 Note 5) Piston rod nut is standard

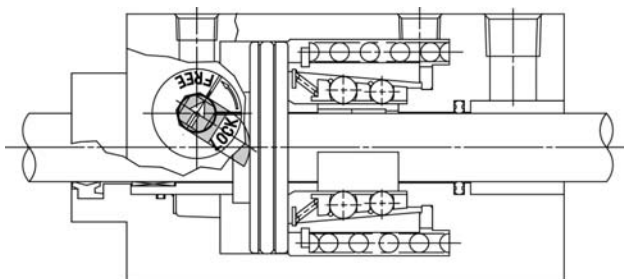
Single Rod Weight Table

Bore Size [mm]		32	40	50	63	80	100
Basic weight	Basic type B	1.40	2.15	3.53	5.18	8.99	12.72
Additional weight per 50mm of stroke	All mounting brackets	0.11	0.16	0.26	0.27	0.42	0.56

(Example) CP95NDB32-100 (Standard, Ø32, 100er)
 •Basic weight..... 1.40 (basic type, Ø32)
 •Additional weight 0.11/50mm stroke
 •Cylinder stroke 100mm stroke
 $1.40 + 0.11 \times 100/50 = 3.02\text{kg}$

Manual override for unlocking

In case the air supply is cut off or discharged, unlocking can be performed with a commercially available tool. The fail safe mechanism locks again when manual override is released.



Weight accessories [kg]

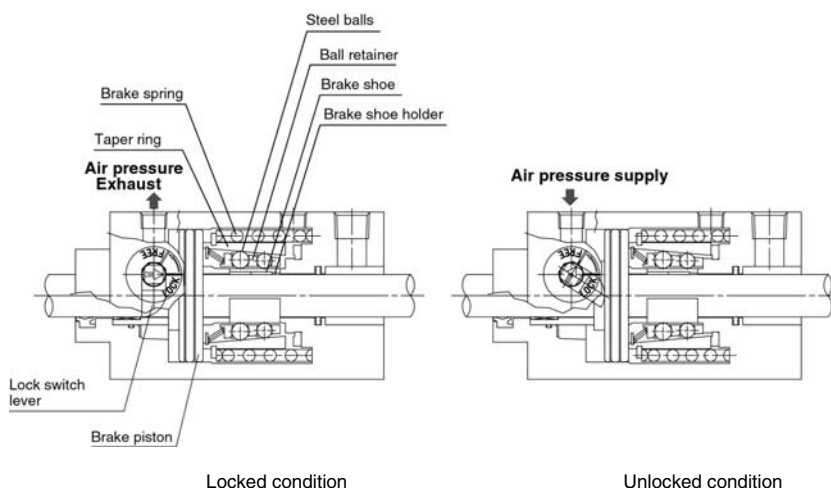
Ø	32	40	50	63	80	100
L	0.16	0.20	0.38	0.46	0.89	1.09
F	0.20	0.23	0.47	0.58	1.30	1.81
C	0.16	0.23	0.37	0.60	1.07	1.73
D	0.20	0.32	0.45	0.71	1.28	2.11

Example:

Cylinder Ø40 mm, Stroke 100 mm, bracket D

$$\text{Weight} = 0.84 \text{ kg} + (0.16 \text{ kg} \times \frac{100}{50}) + 0.32 \text{ kg} = 1.48 \text{ kg}$$

Construction Principles

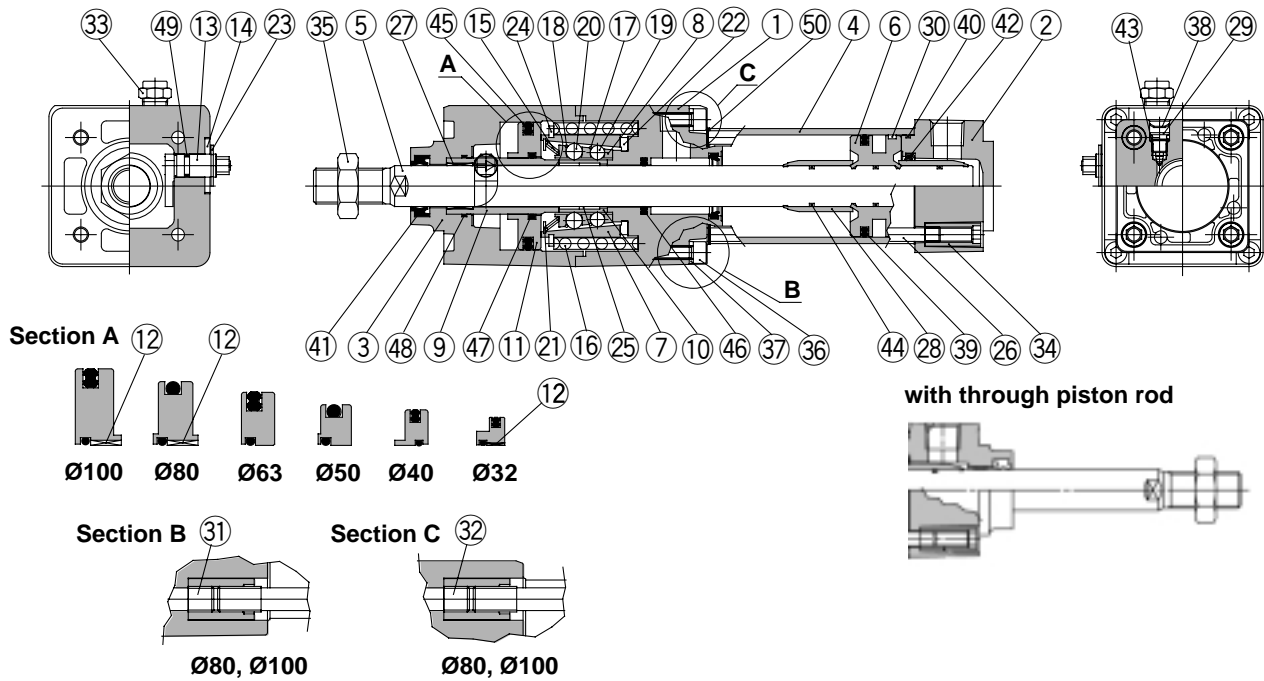


Spring lock (exhaust lock)

The spring force which acts upon the taper ring is magnified by a wedge effect, and is conveyed to all of the numerous steel balls which are arranged in two circles. These act on the brake shoe holder and brake, which locks the piston rod by tightening against it with a large force.

Unlocking is accomplished when air pressure is supplied to the unlocking port. The brake piston and taper ring oppose the spring force, moving to the right side, and the ball retainer strikes the cover section A. The braking force is released as the steel balls are removed from the taper ring by the ball retainer.

Construction



Parts list

No.	Description	Material	Note	
①	Rod cover	Aluminium alloy	Hard anodised & metallic coated	
②	Head cover	Aluminium alloy	Chromated & metallic coated	
③	Cover	Aluminium alloy	Hard anodised & metallic coated	
④	Cylinder tubing	Aluminium alloy	Hard anodised	
⑤	Piston rod	Carbon steel	Hard chrome plated	
⑥	Piston	Aluminium alloy	Chromated	
⑦	Taper Ring	Carbon steel	Heat treated	
⑧	Ball retainer	Special resin		
⑨	Piston guide	Carbon steel	Zinc chromated	
⑩	Brake shoe holder	Carbon steel	Heat treated	
⑪	Release piston	Ø40	Aluminium alloy	Hard anodised
		Ø50		
		Ø63		
		Ø32	Carbon steel	Zinc chromated
		Ø80		
		Ø100		
⑫	Release piston bushing	Steel + special resin	Ø32, Ø80, Ø100 only	
⑬	Unlocking cam	Carbon steel	Glossy chromated	
⑭	Washer	Carbon steel	Black zinc chromated	
⑮	Retainer pre-load spring	Carbon steel	Zinc chromated	
⑯	Brake spring	Carbon steel	Zinc chromated	
⑰	Clip A	Stainless steel		
⑱	Clip B	Stainless steel		
⑲	Steel ball A	Carbon steel		
⑳	Steel ball B	Carbon steel		
㉑	Tooth ring	Stainless steel		
㉒	Damper	Polyurethane rubber		
㉓	C type retaining ring for unlocking cam shaft	Carbon steel		
㉔	C type retaining ring for taper ring	Carbon steel		
㉕	Brake shoe	Special friction material		
㉖	Tie rod	Carbon steel	Chromated	
㉗	Bushing	Lead-bronze casting		
㉘	Cushion ring	Brass		

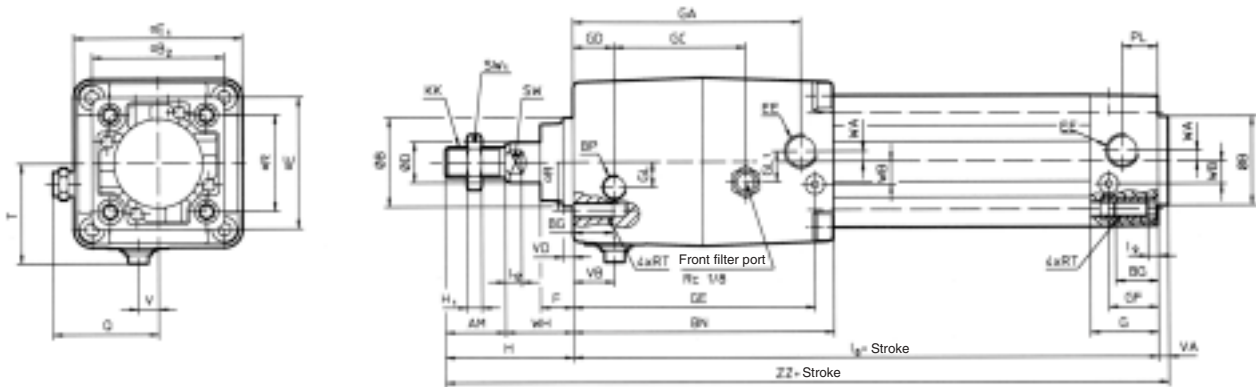
Parts list

No.	Description	Material	Note
㉙	Cushion valve	Carbon steel	Nickel plated
㉚	Wear ring	PUR	
㉛	Unit holding tie-rod A	Carbon steel	Chromated Ø80, Ø100 only
㉜	Unit holding tie-rod B	Carbon steel	Chromated Ø80, Ø100 only
㉝	BC element		
㉞	Tie-rod nut	Carbon steel	Nickel plated
㉟	Rod end nut	Carbon steel	Nickel plated
㊱	Hexagon socket head cap screw	Carbon steel	Nickel plated Ø32, Ø63 only
㊲	Spring washer for hex. socket head cap screw	Carbon steel	Nickel plated Ø32, Ø63 only
㊳	Retaining ring	Carbon steel	
㊴	Piston seal	NBR	
㊵	Cylinder tube gasket	NBR	
㊶	Rod seal A	NBR	
㊷	Cushion seal	NBR	
㊸	Cushion valve seal	NBR	
㊹	Piston gasket	NBR	
㊺	Release piston gasket	NBR	
㊻	Rod seal B	NBR	
㊼	Release piston gasket	NBR	
㊽	Piston guide gasket	NBR	
㊾	Unlocking cam gasket	NBR	
㊿	Spacer disc	CR	

Series CP95N

Dimensions

Basic type (B)

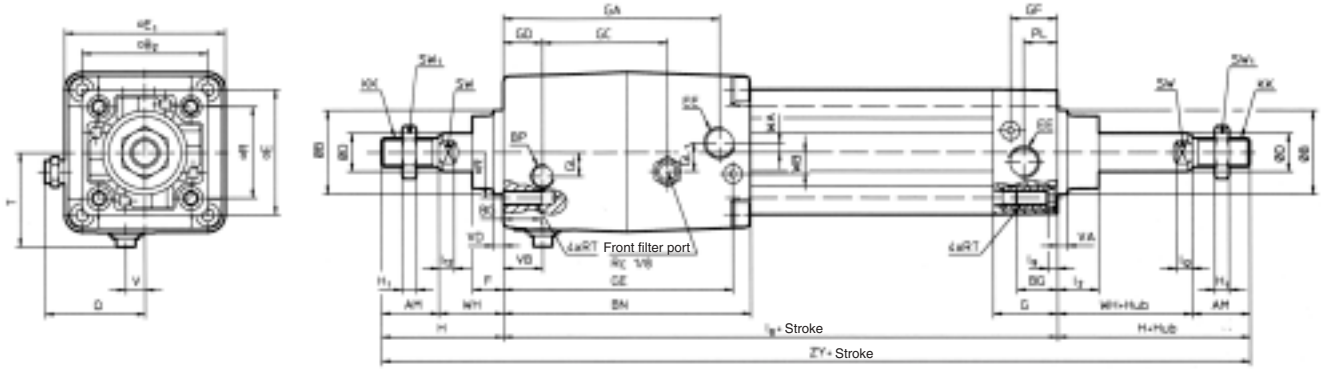


Bore size (mm)	AM	ØBe 11	□B ₂	BG	BN	BP	ØD	EE	□E	□E ₁	F	G	GA	GC	GD	GE	GF	GL	GL ₁	H	H ₁
32	22	30	46	16	97	G1/8	12	G1/8	46	54	13	27	83	45.5	13	88.5	18.3	7.5	12	48	6
40	24	35	52	16	104	G1/8	16	G1/4	52	63	13	27	91	52.5	16.5	96.5	19.5	10	12	54	8
50	32	40	65	16	120.5	G1/4	20	G1/4	65	75	14	31.5	104.5	58.5	19	111.2	22.4	11.5	15	69	11
63	32	45	75	16	134.5	G1/4	20	G3/8	75	90	14	31.5	119.5	68	23	123.5	20.7	17.5	12	69	11
80	40	45	95	16	169	G1/4	25	G3/8	95	102	20	38	150	81	33	157	26	22	18	86	13
100	40	55	114	16	189	G1/4	30	G1/2	114	116	20	38	170	96	37.5	177	26	25	20	91	16

Bore size (mm)	KK	I ₈	I ₉	I ₁₂	PL	Q	□R	RT	SW	SW ₁	T	V	VA	VB	VD	WA	WB	WH	ZZ
32	M10 x 1.25	164	4	6	13	37	32.5	M6	10	17	34	6.5	4	13	4	4	6.5	26	216
40	M12 x 1.25	182	4	6.5	14	41.5	38	M6	13	19	39.5	8	4	16.5	4	4	9	30	240
50	M16 x 1.5	195	5	8	15.5	47.5	46.5	M8	16	24	47	9	4	20	6	5	10.5	37	268
63	M16 x 1.5	224	5	8	16.5	55	56.5	M8	16	24	55.5	8.5	4	23	6	9	12	37	297
80	M20 x 1.5	259	5	10	19	61	72	M10	21	30	61.5	10.5	4	33	8	11.5	14	46	349
100	M20 x 1.5	289	5	10	19	68	89	M10	21	30	69.5	10.5	4	37.5	8	17	15	51	384

Dimensions

Double Rod (Option W)



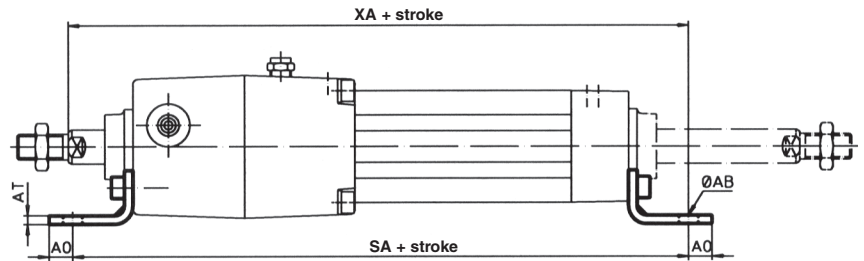
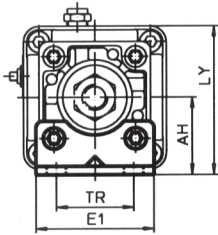
Bore size (mm)	AM	ϕB_{e11}	$\square B_2$	BG	BN	BP	ϕD	EE	$\square E$	$\square E_1$	F	G	GA	GC	GD	GE	GF	GL	GL ₁	H	H ₁
32	22	30	46	16	97	G1/8	12	G1/8	46	54	13	27	83	45.5	13	88.5	18.3	7.5	12	48	6
40	24	35	52	16	104	G1/8	16	G1/4	52	63	13	27	91	52.5	16.5	96.5	19.5	10	12	54	8
50	32	40	65	16	120.5	G1/4	20	G1/4	65	75	14	31.5	104.5	58.5	19	111.2	22.4	11.5	15	69	11
63	32	45	75	16	134.5	G1/4	20	G3/8	75	90	14	31.5	119.5	68	23	123.5	20.7	17.5	12	69	11
80	40	45	95	16	169	G1/4	25	G3/8	95	102	20	38	150	81	33	157	26	22	18	86	13
100	40	55	114	16	189	G1/4	30	G1/2	114	116	20	38	170	96	37.5	177	26	25	20	91	16

Bore size (mm)	KK	I ₂	I ₈	I ₉	I ₁₂	PL	Q	$\square R$	RT	SW	SW ₁	T	V	VA	VB	VD	WA	WB	WH	ZY
32	M10 x 1.25	15	164	4	6	13	37	32.5	M6	10	17	34	6.5	4	13	4	4	6.5	26	260
40	M12 x 1.25	17	182	4	6.5	14	41.5	38	M6	13	19	39.5	8	4	16.5	4	4	9	30	290
50	M16 x 1.5	24	195	5	8	15.5	47.5	46.5	M8	16	24	47	9	4	20	6	5	10.5	37	333
63	M16 x 1.5	24	224	5	8	16.5	55	56.5	M8	16	24	55.5	8.5	4	23	6	9	12	37	362
80	M20 x 1.5	30	259	5	10	19	61	72	M10	21	30	61.5	10.5	4	33	8	11.5	14	46	431
100	M20 x 1.5	32	289	5	10	19	68	89	M10	21	30	69.5	10.5	4	37.5	8	17	15	51	471

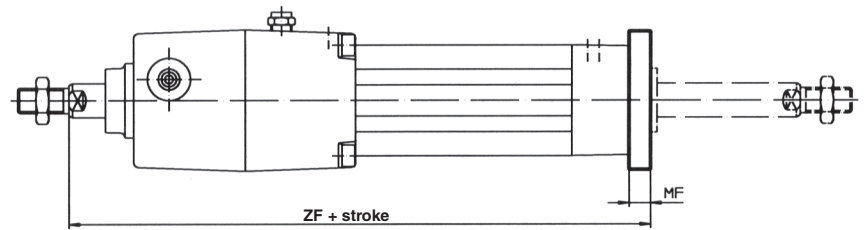
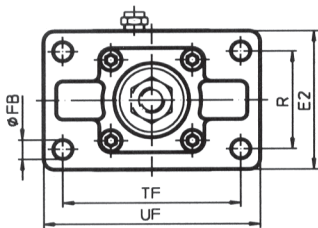
Series CP95N

Dimensions Brackets on Cylinder

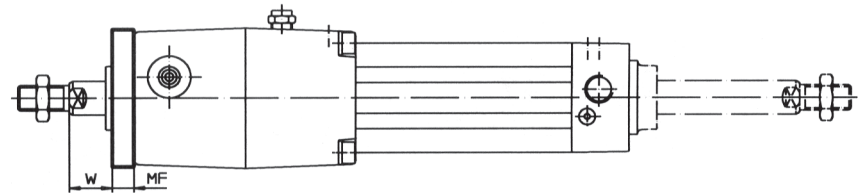
Axial Foot Type



Rear Flange Type

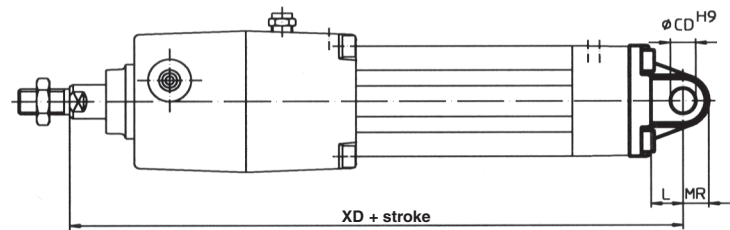
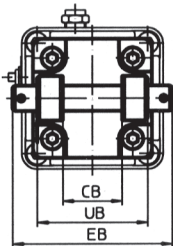
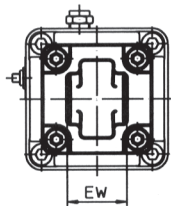


Front Flange Type



Single Clevis Type

Double Clevis Type



Bore size (mm)	Ø AB	AH	AO	AT	CB ₁	ØCD H9	E1	E2	EB	EW ₂	ØFB	L	LY	MF	MR	R	SA	TF	TR	UB	UF
32	7	32	10	4	26	10	48	56	65	26	7	12	59	10	9.5	38	212	72	32	45	87
40	9	36	11	4	28	12	55	65	75	28	9	15	67.5	10	12	46	238	83	36	52	101
50	9	45	12	5	32	12	68	77	80	32	9	15	82.5	12	12	45	259	90	45	60	120
63	9	50	12	5	40	16	80	92	90	40	9	20	95	12	16	62	288	115	50	70	135
80	12	63	14	6	50	16	100	100	110	50	12	20	114	16	16	63	341	126	63	90	153
100	14	71	16	6	60	20	120	120	140	60	14	25	129	16	20	75	371	150	75	110	178

1) +0.03/+0.1 2) -0.2/-0.6

Bore size (mm)	W	XA	XD	ZF
32	16	214	212	200
40	20	240	237	222
50	25	264	259	244
63	25	293	293	273
80	30	346	341	321
100	35	381	381	356



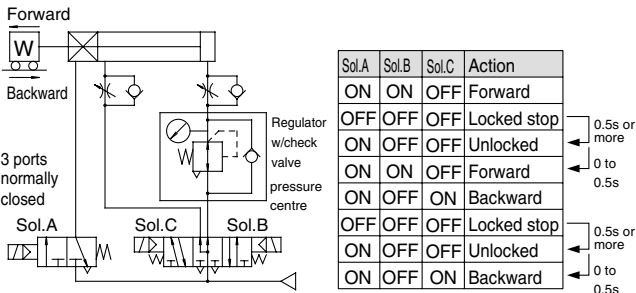
Series CP95N Specific Product Precaution

Air Pressure Circuits

Warning

1. Basic Circuits

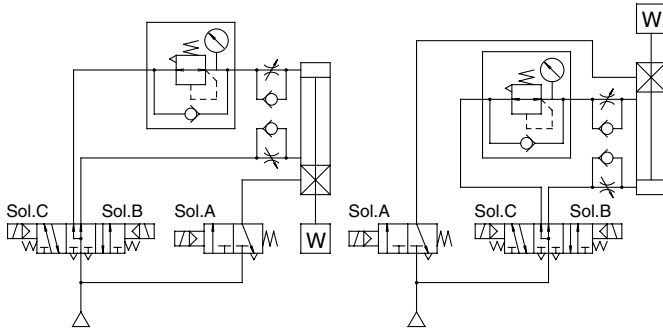
1. [Horizontal]



2. [Vertical]

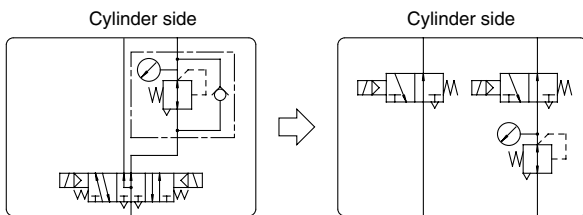
[Load in direction of rod extension]

[Load in direction of rod retraction]



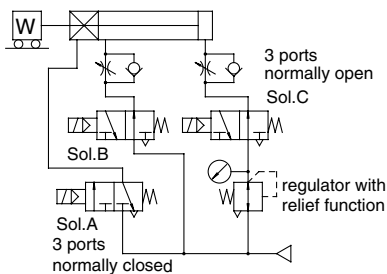
Caution

- A 3 position pressure centre solenoid valve and regulator with check valve can be replaced with two 3 port normally open valves and a regulator with relief function.



[Example]

1. [Horizontal]



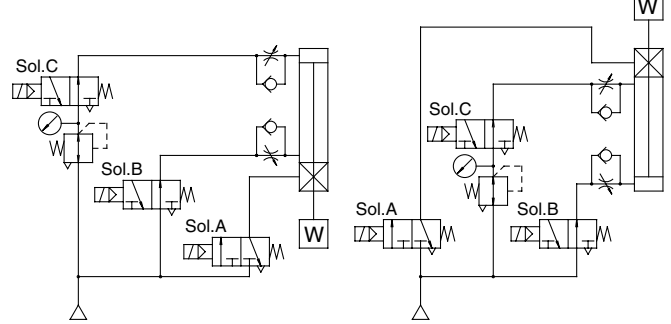
Air Pressure Circuits

Caution

2. [Vertical]

[load in direction of rod extension]

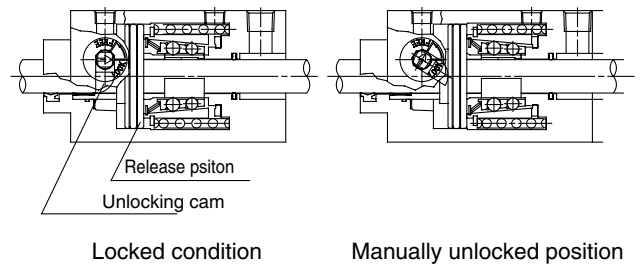
[Load in direction of rod retraction]



Manual Unlocking

Caution

- The unlocking cam provided on the C95N Series is an emergency unlocking mechanism only. During an emergency when the air supply is cut off, it is used to alleviate a problem by forcibly pushing the release piston back to release the lock. However, take note that the sliding resistance of the piston rod will be high compared to unlocking with air pressure.
- When installing into equipment or machinery, etc., in cases where it will be necessary to hold an unlocked condition for an extended time, air pressure of 0.25MPa or more should be applied to the unlocking port.
- Do not turn the unlocking cam (the arrow ← on the unlocking cam head) past the FREE position. If it is turned too far there is a danger of damaging the unlocking cam.



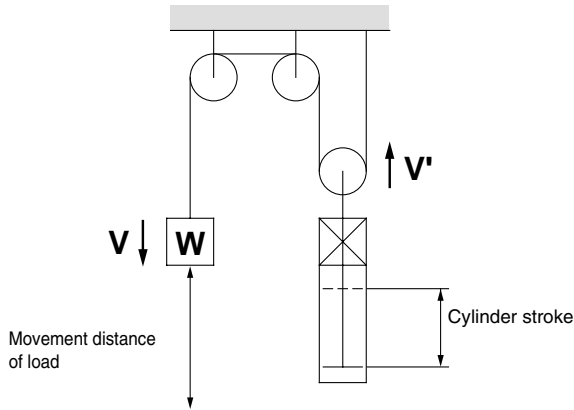
[Principle]

If the unlocking cam is turned counter clockwise with a tool such as an adjustable angle wrench, the release piston is pushed back and the lock is released. Since the lever will return to its original position when released and become locked again, it should be held in this position for as long as unlocking is needed.

Precautions on Model Selection

⚠ Caution

Example



Selection Example

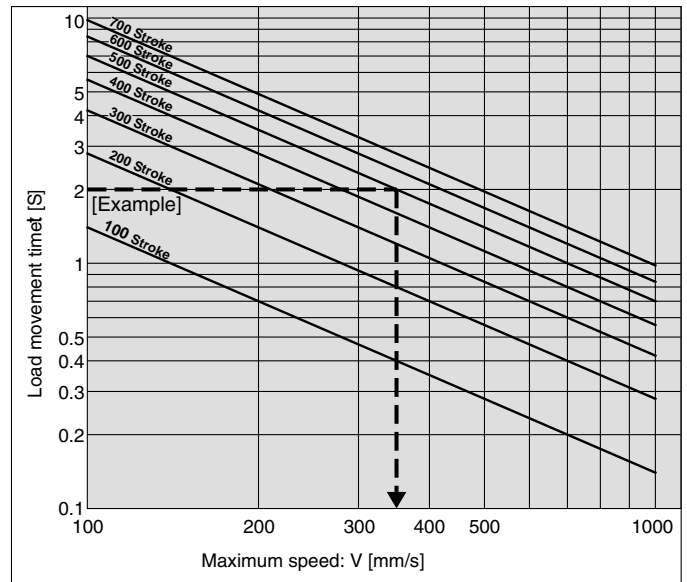
- **Load weight:** $m=50\text{kg}$
- **Movement distance:** Stroke=500mm
- **Movement time:** $t=2\text{s}$
- **Load condition:** Vertical downward=Load in direction of rod extension
- **Operating pressure:** $P=0.4\text{MPa}$

Step 1: From graph 1 find the maximum movement speed of the load
 \therefore Maximum speed V : approx 350mm/s

Step 2: Select graph 6 based upon the load condition and operating pressure, and then from the intersection of the maximum speed $V=350\text{mm/s}$ found in step 1, and the load weight $m=50\text{kg}$
 $\therefore \text{Ø63}$ →selecta C95NDB63 or larger bore size.

Step 1 Find the maximum load speed: V

Graph 1

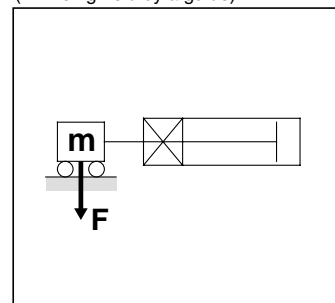


Step 2 Find the cylinder bore size

Load condition

Operating pressure

Direction of load at right angle to rod
 (* θ Being held by a guide)

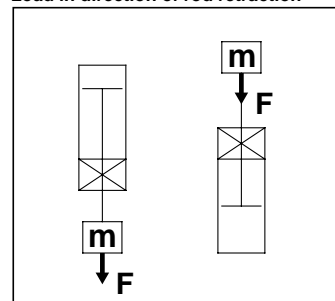


from 0.3MPa → Graph 2

from 0.4MPa → Graph 3

from 0.5MPa → Graph 4

Load in direction of rod extension
 Load in direction of rod retraction



from 0.3MPa → Graph 5

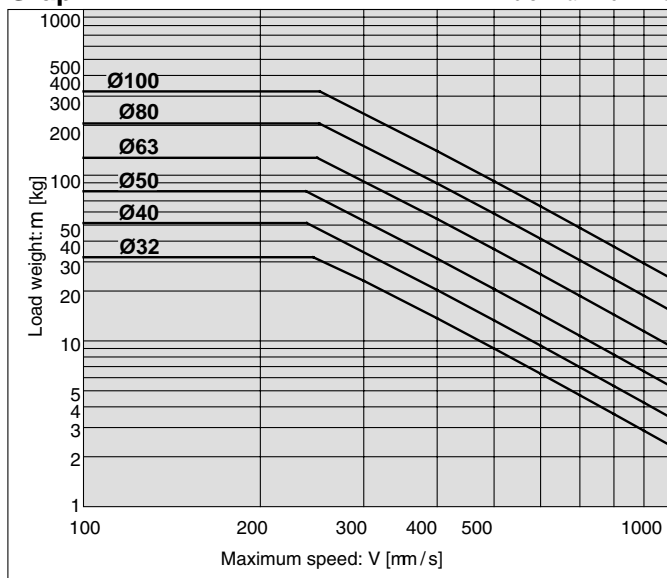
from 0.4MPa → Graph 6

from 0.5MPa → Graph 7

Selection Graphs

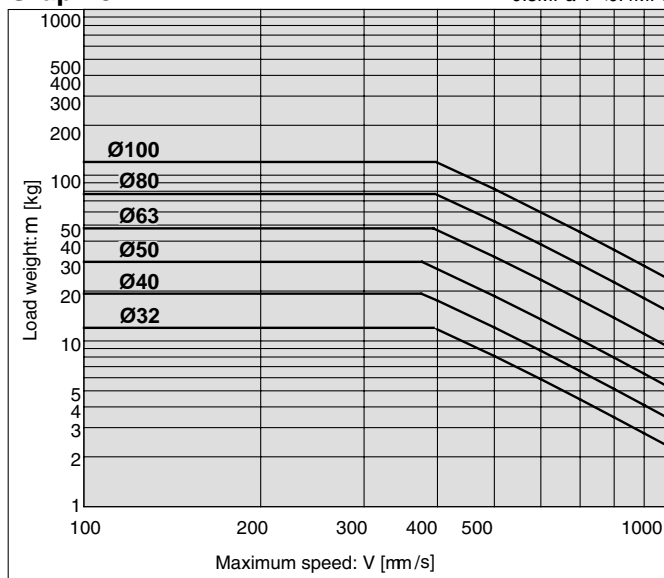
Graph 2

0.3MPa^a P<0.4MPa



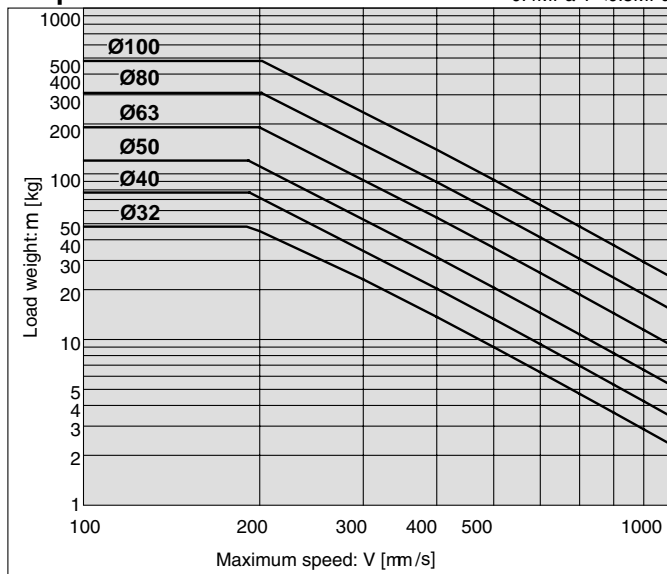
Graph 5

0.3MPa^a P<0.4MPa



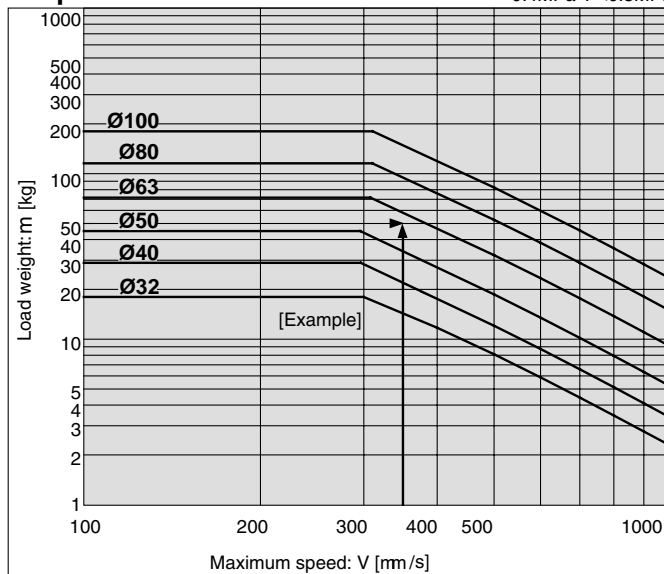
Graph 3

0.4MPa^a P<0.5MPa



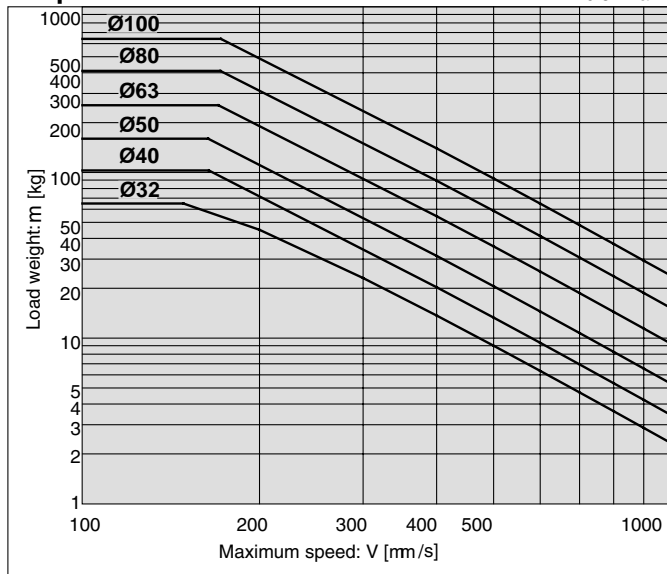
Graph 6

0.4MPa^a P<0.5MPa



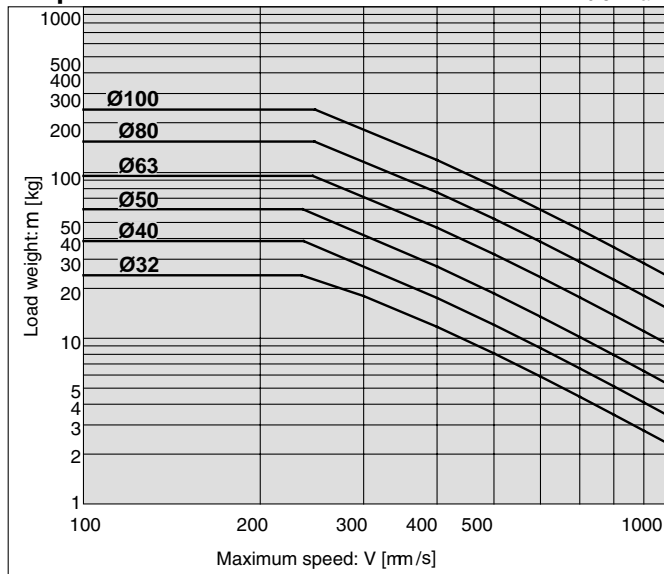
Graph 4

0.5MPa^a P



Graph 7

0.5MPa^a P



Quick Reference Guide

C55

C85

C76

CP95

C95

-X
(Made to Order)

D-
(Auto Switch)

Model Selection Procedures

Series CP95

Auto switch mounting

[mm]



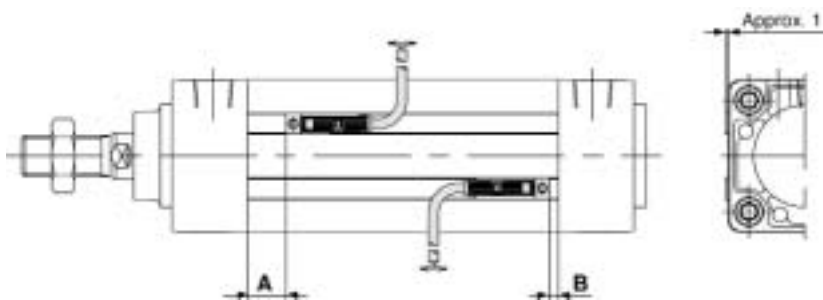
Minimum strokes for auto switches

Auto switch type	Model	Amount* of switches	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
Reed	D-Z73L	2 pcs.	25				15	
	D-Z80L	1 pcs.						
Solid state	D-Y59BL	2 pcs.	25				15	
	D-Y69BL	1 pcs.						
	D-Y7PL							

*Auto switches are mounted on the same side but in different grooves of the cylinder.

Recommended mounting position for stroke ends

[mm]

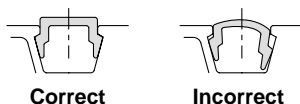


Bore (mm)	D-Z73L, D-Z80L, D-Y7PL D-Y59BL, D-Y69BL	
	A	B
32	14	1
40	25	1
50	16	2
63	31	2
80	21.5	5.5
100	31.5	5.5

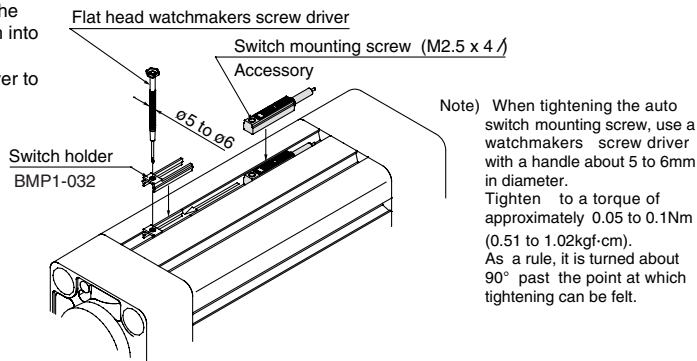
Mounting of Auto Switches

1N·m: approx. 10.2kgf·cm

When attaching an auto switch, first take a switch holder between your fingers and press it into a switch mounting groove. When doing this, confirm that it is set in the correct mounting orientation, or reattach if necessary. Next, insert an auto switch into the groove and slide it until it is positioned under the switch holder. After establishing the mounting position, use a watchmakers flat head screw driver to tighten the switch mounting screw which is included.



Switch holder: BMP1-032



How to order: Auto Switches, holders and Groove Covers

Auto switch holder band

Ø	Order No.	
	Auto switch	Switch holder
32	D-Z73L	BMP1-032
40	D-Z80L	
50	D-Y7PL	
63	D-Y59BL	
80	D-Y69BL	
100		

Groove cover of square tube

Ø	Order No.	Cylinder length without stroke
32	CP95-AL	41.5 mm
40		52.5 mm
50		44.5 mm
63		59.5 mm
80		53.5 mm
100		63.5 mm

Groove covers are available in progressive rates of 1 metre. Please, indicate round figures when ordering.

Write the required length of the groove cover in the box.

Order example: Groove cover for CP95SB63-160

59.5 mm + 160 mm = 239.5 x 8 grooves = 1916 mm
 [Cylinder length without stroke] [Stroke] [8 grooves in the square tube]

Length to order: 1916 mm corresponds to a groove cover of 2 m for each cylinder

Order No.: CP95-AL length in metres



Series CP95 Specific Product Precautions

Adjustment

⚠ Warning

- ① **Do not open the cushion valve above the stopper.**
Cushion valves are provided with a crimp ($\phi 32$) or a retaining ring ($\phi 40$ to $\phi 100$) as a stopping mechanism, and the cushion valve should not be opened above that point.
If air is supplied and operation started without confirming the above condition, the cushion valve may be ejected from the cover.

Bore size (mm)	Cushion valve	Width across flats	Socket wrench
32, 40, 50	MB-32-10-C1247	2.5	JIS 4648 Hex spanner wrench 2.5
63, 80, 100	MB-63-10-C1250	4	JIS 4648 Hex spanner wrench 4

- ② **When replacing brackets, use the hexagon wrenches shown below.**

Bore size (mm)	Bolt	Width across flats	Tightening torque (Nm)
32, 40	MB-32-48-C1247	4	4.9
50, 63	MB-50-48-C1249	5	11
80, 100	Foot Others	6	25
	MB-80-48AC1251		
	MB-80-48BC1251		

With Non-rotating Rod (Double Acting: Single Rod)

Operating Precautions

⚠ Caution

- ① **Do not apply more than the allowable rotating torque to the piston rod.**
If more than the allowable rotating torque is applied, the non-rotating guide will be deformed and there will be a significant loss of rotational accuracy. This may cause damage to the machinery.

Mounting & Piping

⚠ Caution

- ① **Mounting of a work piece at the rod end.**
When screwing a fitting or nut, etc. onto the threads at the end of the piston rod, push the piston rod into its fully retracted position, and grasp the protruding section with a wrench.
Furthermore, when tightening, take care that the torque is not applied to the non-rotating guide.

