

SMC デジタルカタログ

お探しのシリーズ名をクリックして下さい

形式	シリーズ	作動方式	チューブ内径(mm)
標準形	C85	複動片ロッド	8,10,12,16,20,25
標準形	C85W	複動両ロッド	
標準形	C85	単動(押・引)	
ロッド回り止め形	C85K	複動片ロッド	
ダイレクトマウント形	C85R	複動片ロッド	

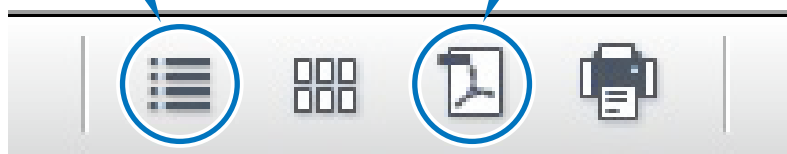
形式	シリーズ	作動方式	チューブ内径(mm)
標準形	CP96	複動片ロッド	32,40,50,63,80,100,125
		複動両ロッド	

形式	シリーズ	作動方式	チューブ内径(mm)
標準形	C96	複動片ロッド	32,40,50,63,80,100,125
		複動両ロッド	

形式	シリーズ	作動方式	チューブ内径(mm)
標準形	C55	複動片ロッド	20,32,40,50,63,80,100

目次の表示はこちら

PDFダウンロードはこちら



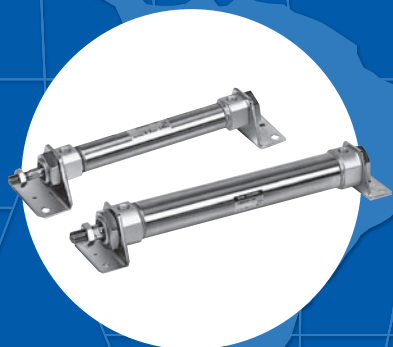
画面下中央のツールバーより操作可能です。

ISO Cylinder

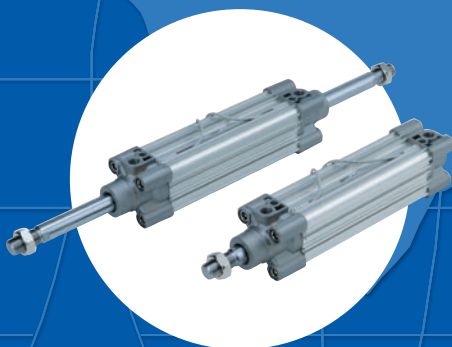
ISO cylinders are designed to meet with the international standard laid down by the International Organization for Standardization (ISO).

As long as the standard number is identical, the mounting sizes are applicable worldwide.

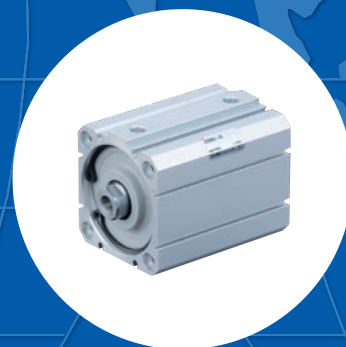
ISO 6432
Series C85



ISO 15552
Series CP96/C96



ISO 21287
Series C55



For the maintenance of equipment and machine manufactured overseas.

Mounting compatibility

Transposable with cylinders manufactured overseas.

Machine manufactured overseas



ISO cylinders manufactured overseas

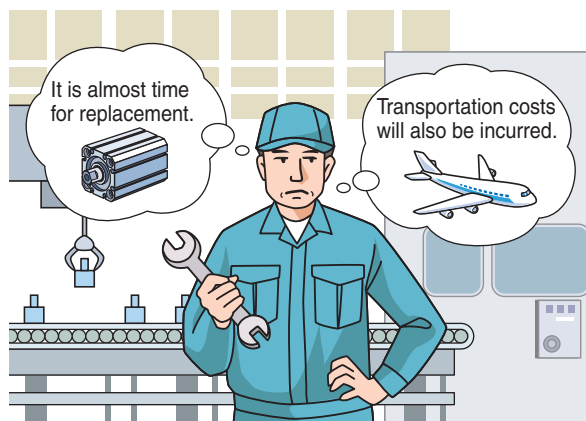
SMC's ISO Cylinder



Transposable
Compatible mounting

Prompt delivery

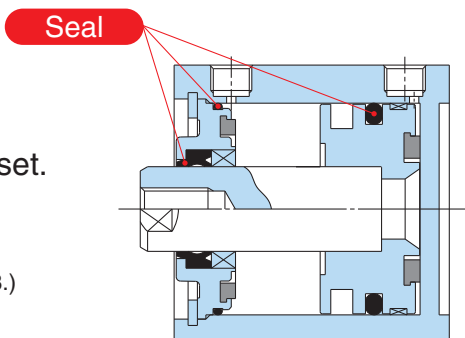
This is **produced in Japan** and as such a **quicker delivery** is available by comparison with the back-orders from overseas.



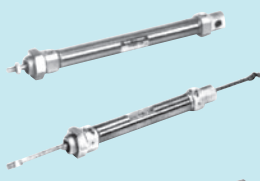
Replaceable seal

SMC's ISO cylinders have a replaceable seal.
We provide this product with a seal set.
It will be more cost efficient than a cylinder replacement.

(For details, refer to pages 1, 11, 21, 36, 42 and 58.)



ISO Cylinder, Series Variations

Standard no.	Series	Action	Bore size (mm)												Page	
			8	10	12	16	20	25	32	40	50	63	80	100		125
ISO 6432		C85	Double acting, Single rod	●	●	●	●	●	●							P.1
			Double acting, Double rod	●	●	●	●	●	●							
			Single acting, Single rod	●	●	●	●	●	●							
		C85R	Double acting, Single rod	●	●	●	●	●	●							P.21
ISO 15552		CP96	Double acting, Single rod							●	●	●	●	●	●	P.35
Double acting, Double rod									●	●	●	●	●	●		
ISO 15552		C96	Double acting, Single rod							●	●	●	●	●	●	P.41
			Double acting, Double rod								●	●	●	●	●	
ISO 21287		C55	Double acting, Single rod					●	●	●	●	●	●	●	●	P.57

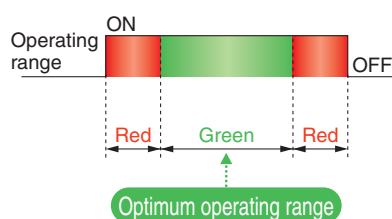
Small auto switch mountable on all types

2-color indication solid state auto switch

©Appropriate setting of the mounting position can be performed without mistakes.

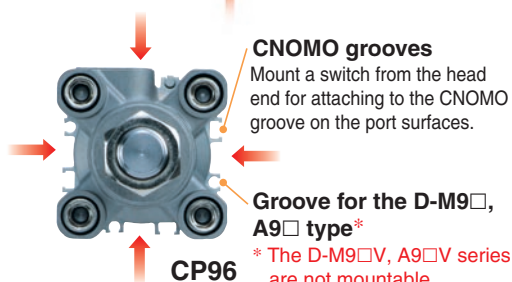


A **green** light lights up at the optimum operating range.



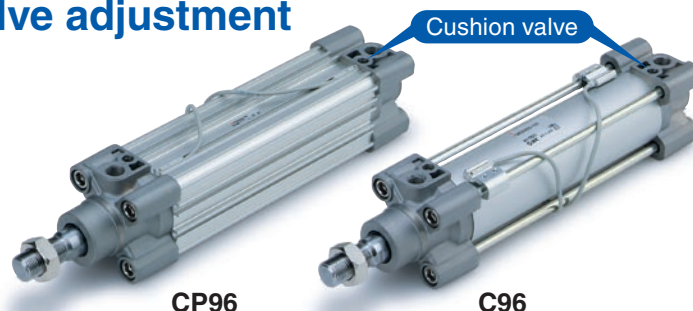
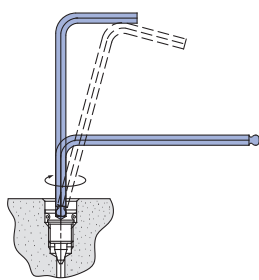
Water resistant auto switches are available in environments with exposure to water or coolants.

Mountable on all four sides



Simple end of stroke cushion valve adjustment

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



ISO Standards

Air Cylinder: Standard/Non-rotating Type Double Acting, Single/Double Rod

Series C85

ø8, ø10, ø12, ø16, ø20, ø25

How to Order

**Double acting
Single rod**

C D 85

**Double acting
Double rod**

C D 85W

K N 16 - 40 C J - A

E 16 - 40 C JJ - B

Built-in magnet

Nil	None
D	Built-in magnet

Type

Nil	Standard
K	Non-rotating rod (Rubber bumper only)

Mounting

N*	Basic (integrated clevis)
E**	Double end boss-cut style
F	Boss-cut basic style
Y	Head cover axial port

* Air cushion type is applicable only for the N type.
** Double rod is applicable only for the E type.

Auto switch mounting

A	Rail mounting
B	Band mounting

Applicable auto switches are shown on page 24. Please order auto switches and bands separately. (Auto switches and bands cannot be indicated here.)

Rod boot (Only ø20, ø25)

Nil	Without rod boot
J	Nylon tarpaulin (one side)
K	Heat resistant tarpaulin (one side)
JJ*	Nylon tarpaulin (both sides)
KK*	Heat resistant tarpaulin (both sides)

* In the case of double acting/double rod.

Cushion

Nil	Rubber bumper (Standard)
C	Air cushion (Only "N" mounting, ø10 to 25)

Bore size

Bore size (mm)	Standard stroke (mm)**	Max. stroke (mm)***		
		Standard	Non-rotating	Double rod
8 *	10, 25, 40, 50, 80, 100	200	100	100
10				
12		400	200	200
16	125, 160, 200			
20	10, 25, 40, 50, 80, 100	1000	1000	500
25	125, 160, 200, 250, 300			

* Not available with air cushion.
** Other strokes available on request.
*** For exceeding the standard stroke range, it will be available as a special order (-X2018).

Mounting Bracket Part No.

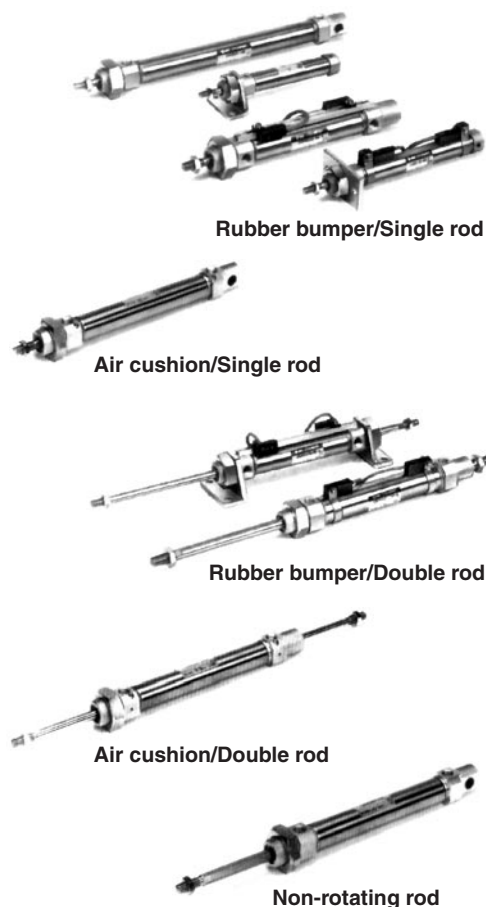
Bore size (mm)		8	10	12	16	20	25
Mounting bracket	Foot (1 pc.)	C85L10A	C85L16A	C85L25A			
	Foot (2 pcs. with mounting nut 1 pc.)	C85L10B	C85L16B	C85L25B			
	Flange	C85F10	C85F16	C85F25			
	Trunnion	C85T10	C85T16	C85T25			
	Clevis	C85C10	C85C16	C85C25			
Accessory	Single knuckle joint	KJ4D	KJ6D	KJ8D	KJ10D		
	Double knuckle joint	GKM4-8	GKM6-10	GKM8-16	GKM10-20		
	Floating joint	JA10-4-070	JA15-6-100	JA20-8-125	JA30-10-125		

Replacement Parts/Standard Cylinders

Bore size (mm)	Part no.	Note
20	C85-20PS	Every set includes: 1 rod seal 1 seal retaining washer 1 retaining ring
25	C85-25PS	

Replacement Parts/Non-rotating Cylinders ("K")

Bore size (mm)	Part no.	Note
20	C85K-20PS	Every set includes: 1 rod seal 1 seal retaining washer 1 retaining ring
25	C85K-25PS	



Specifications

Bore size (mm)		8	10	12	16	20	25
Piston rod dia. (mm)		4	4	6	6	8	10
Piston rod thread		M4 x 0.7	M4 x 0.7	M6 x 1	M6 x 1	M8 x 1.25	M10 x 1.25
Port size		M5 x 0.8	M5 x 0.8	M5 x 0.8	M5 x 0.8	G 1/8	G 1/8
Action		Double acting, Single/Double rod					
Fluid		Air					
Proof pressure		1.5 MPa					
Max. operating pressure		1.0 MPa					
Min. operating pressure		0.1 MPa	0.08 MPa			0.05 MPa	
Ambient and fluid temperature		-20 to 80°C (Built-in magnet: -10 to 60°C)					
Cushion		Rubber bumper, Air cushion (Except ø8) (Non-rotating: Rubber bumper only)					
Lubrication		Not required. Use turbine oil Class 1 ISO VG32, if lubricated.					
Rod boot	Nylon tarpaulin	—				Max. ambient temperature 60°C	
	Heat resistant tarpaulin	—				Max. ambient temperature 110°C*	
Piston speed		50 to 1500 mm/s					
Allowable kinetic energy	Rubber bumper	0.02 J	0.03 J	0.04 J	0.09 J	0.27 J	0.4 J
	Air cushion	—	0.17 J	0.19 J	0.4 J	0.66 J	0.97 J
Non-rotating accuracy		±1.5°	±1.5°	±1°	±1°	±0.7°	±0.7°
Stroke length tolerance		+ 1.0 0 mm				+ 1.4 0 mm	

* Maximum ambient temperature of rod boots only.

Weight

(g)

Bore size (mm)		8	10	12	16	20	25
Double acting	Basic weight	45	49	96	109	183 (203)	258 (286)
	Additional weight per 10 mm of stroke	3	3.2	6.2	7.2	11.8	18.4
Mounting bracket		C85L□A	20		40		95
		C85L□B	55		105		210
		C85F□	12		25		90
		C85T□	20		50		75
		C85C□	20		40		85
Accessory	Single knuckle joint	KJ□D	17		25	45	70
	Double knuckle joint	GKM□-□	10		20	50	100
	Floating joint	JA□-□-□	10		20	50	70

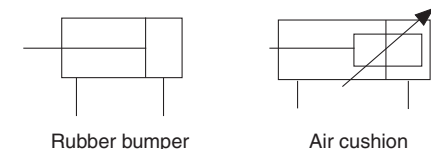
Calculation: (Example) C85N10-50, C85F10

Basic weight 49 (ø10) g
 Additional weight 3.2/10 mm stroke
 Cylinder stroke 50 mm stroke
 Mounting bracket 12 g
 $49 + 3.2 \times 50/10 = 65 \text{ g}$ $65 + 12 = 77 \text{ g}$

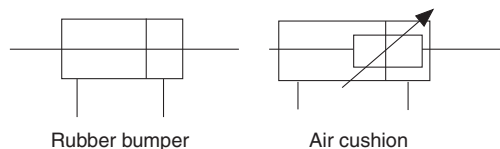
() : In the case of air cushion

JIS Symbol

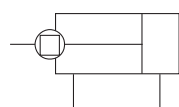
Double acting, Single rod



Double acting, Double rod



Non-rotating rod: Double acting, Single rod

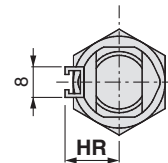
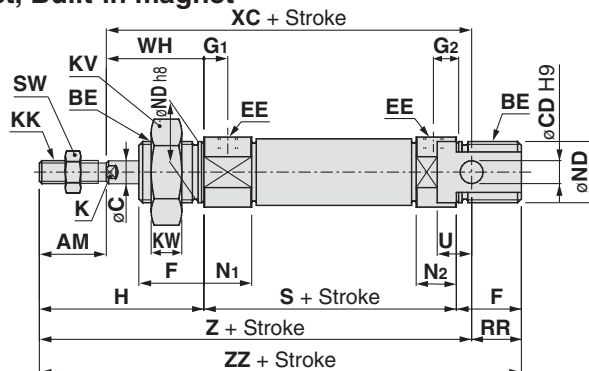


Dimensions

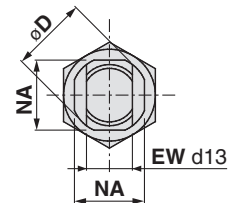
Double acting, Single rod

Rubber bumper: C□85N Bore size - Stroke - □

Without magnet, Built-in magnet

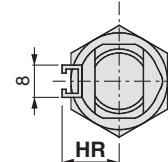
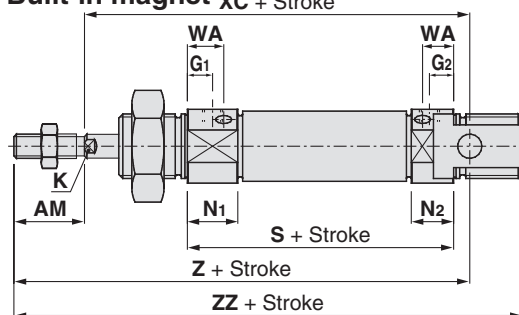


Rail mounting type (A)

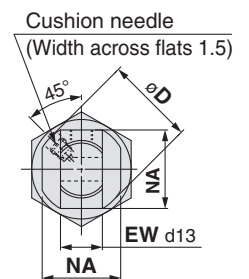
Band mounting type (B)
or non-magnet

Air cushion: C□85N Bore size - Stroke C - □

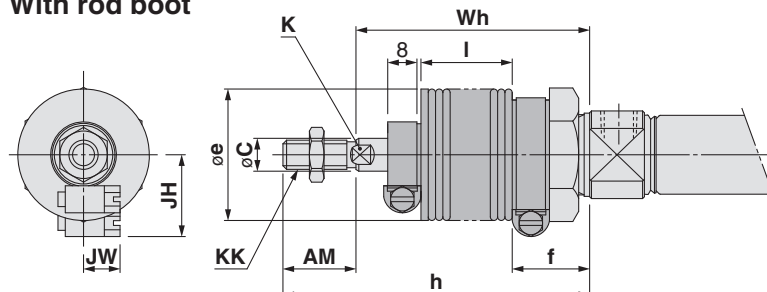
Without magnet, Built-in magnet



Rail mounting type (A)

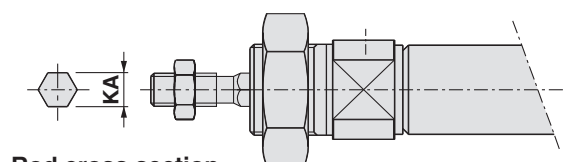
Band mounting type (B)
or non-magnet

With rod boot



C□85KN

Non-rotating, Piston rod (Rubber bumper only)



Rod cross section

Bore size	AM	BE	C	CD	D	EE	EW	F	G1	G2	H	HR	K	KA	KK	KV	KW	N1	N2	NA	ND	RR	S	SW	U	WA	WH	XC	Z	ZZ
8	12	M12 x 1.25	4	4	16.7	M5 x 0.8	8	12	7	5	28	10	—	4.2	M4 x 0.7	19	6	11.5	9.5	15	12	10	46	7	6	—	16	64	76	86
10	12	M12 x 1.25	4	4	16.7	M5 x 0.8	8	12	7 (5.5)	5 (5.5)	28	10.5	—	4.2	M4 x 0.7	19	6	11.5 (13.5)	9.5 (13.5)	15	12	10	46 (53)	7	6	10.5	16	64 (71)	76 (83)	86 (93)
12	16	M16 x 1.5	6	6	19.7	M5 x 0.8	12	17	8 (5.5)	6 (5.5)	38	14	5	6.2	M6 x 1	24	8	12.5 (12.5)	10.5 (12.5)	18.3	16	14	50 (54)	10	9	9.5	22	75 (79)	91 (95)	105 (109)
16	16	M16 x 1.5	6	6	19.7	M5 x 0.8	12	17	8 (5.5)	6 (5.5)	38	14	5	6.2	M6 x 1	24	8	12.5 (12.5)	10.5 (12.5)	18.3	16	13	56 (56)	10	9	9.5	22	82 (82)	98 (98)	111 (111)
20	20	M22 x 1.5	8	8	28	G 1/8	16	20	8	8	44	17	6	8.2	M8 x 1.25	32	11	15 (17)	15 (17)	24	22	11	62	13	12	13	24	95	115	126
25	22	M22 x 1.5	10	8	33.5	G 1/8	16	22	8	8	50	20	8	10.2	M10 x 1.25	32	11	15 (17)	15 (17)	30	22	11	65	17	12	13	28	104	126	137

(): In the case of air cushion.

With Rod Boot

Item	Stroke	AM	C	e	f	K	KK	h						
Bore size	Stroke	AM	C	e	f	K	KK	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500
20	20	20	8	36	20	6	M8 x 1.25	71	84	96	109	134	159	—
25	22	22	10	36	20	8	M10 x 1.25	74	87	99	112	137	162	187

Item	Stroke	I							JH	JW	Wh						
Bore size	Stroke	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500	JH	JW	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500
20	20	12.5	25	37.5	50	75	100	—	23.5	10.5	51	64	76	89	114	139	—
25	25	12.5	25	37.5	50	75	100	125	23.5	10.5	52	65	77	90	115	140	165

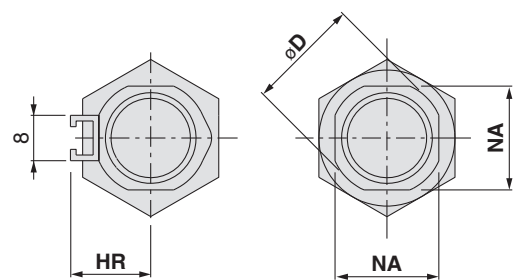
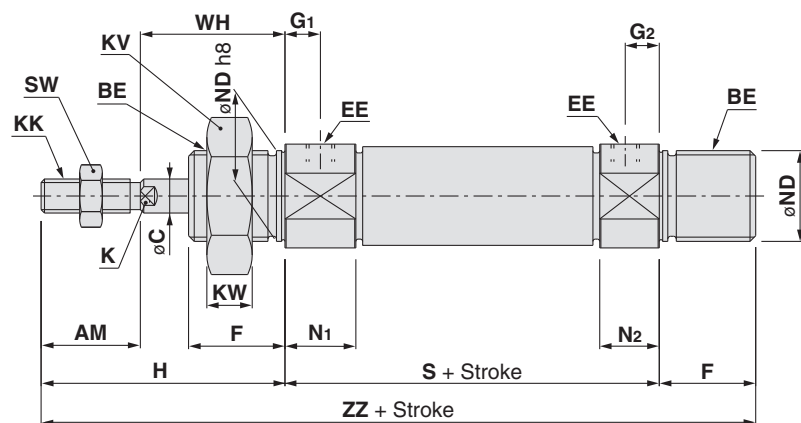
Series C85

Dimensions

Double acting, Single rod

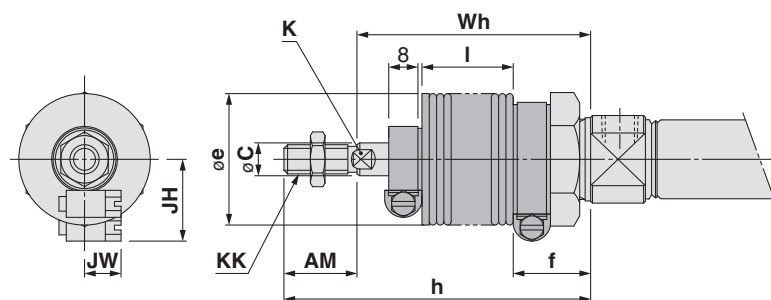
Rubber bumper: C□85E Bore size - Stroke - □

Without magnet, Built-in magnet



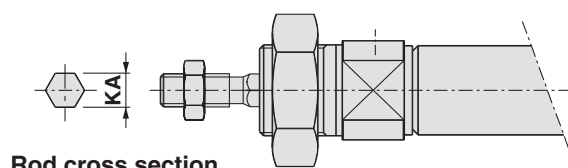
Rail mounting type (A) Band mounting type (B) or non-magnet

With rod boot



C□85KE

Non-rotating, Piston rod (Rubber bumper only)



Rod cross section

(mm)																							
Bore size	AM	BE	C	D	EE	F	G1	G2	H	HR	K	KA	KK	KV	KW	N1	N2	NA	ND	S	SW	WH	ZZ
8	12	M12 x 1.25	4	16.7	M5 x 0.8	12	7	5	28	10	—	4.2	M4 x 0.7	19	6	11.5	9.5	15	12	46	7	16	86
10	12	M12 x 1.25	4	16.7	M5 x 0.8	12	7	5	28	10.5	—	4.2	M4 x 0.7	19	6	11.5	9.5	15	12	46	7	16	86
12	16	M16 x 1.5	6	19.7	M5 x 0.8	17	8	6	38	14	5	6.2	M6 x 1	24	8	12.5	10.5	18.3	16	50	10	22	105
16	16	M16 x 1.5	6	19.7	M5 x 0.8	17	8	6	38	14	5	6.2	M6 x 1	24	8	12.5	10.5	18.3	16	56	10	22	111
20	20	M22 x 1.5	8	28	G 1/8	20	8	8	44	17	6	8.2	M8 x 1.25	32	11	15	15	24	22	62	13	24	126
25	22	M22 x 1.5	10	33.5	G 1/8	22	8	8	50	20	8	10.2	M10 x 1.25	32	11	15	15	30	22	65	17	28	137

With Rod Boot

With HSA 2001

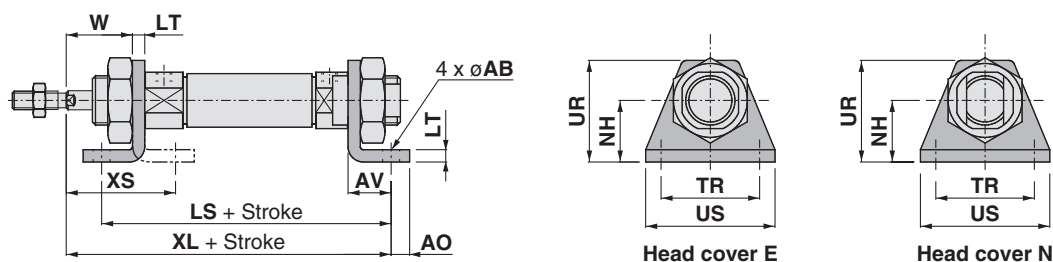
(mm)

Bore size	Item Stroke	AM	C	e	f	K	KK	h						
								1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500
20		20	8	36	20	6	M8 x 1.25	71	84	96	109	134	159	—
25		22	10	36	20	8	M10 x 1.25	74	87	99	112	137	162	187

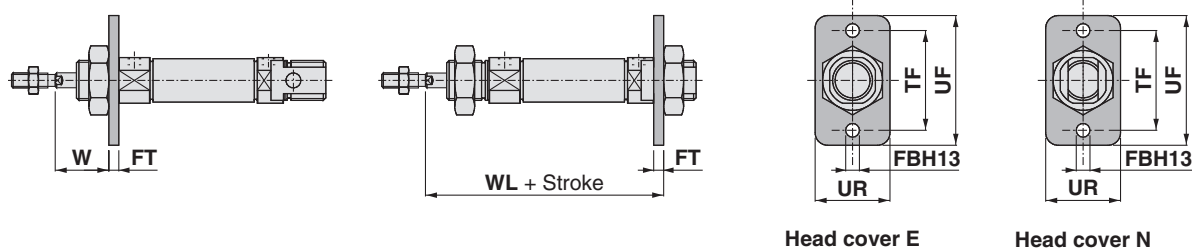
Bore size	Item Stroke	I							JH	JW	Wh						
		1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500			1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500
20		12.5	25	37.5	50	75	100	—	23.5	10.5	51	64	76	89	114	139	—
25		12.5	25	37.5	50	75	100	125	23.5	10.5	52	65	77	90	115	140	165

Dimensions

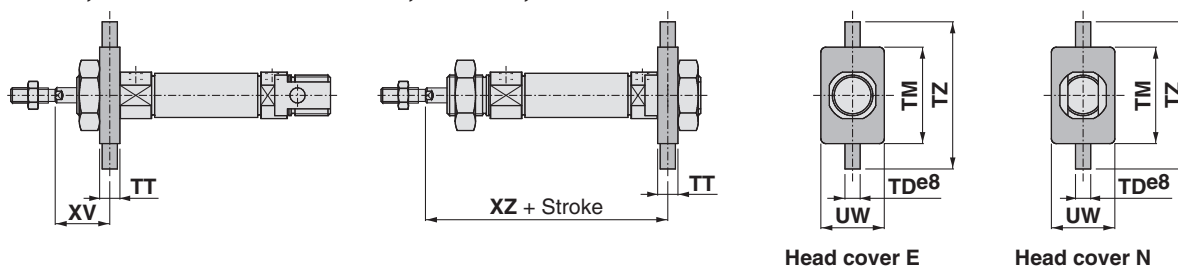
Double acting, Single rod

Rod foot, Head foot: C85L10^A_B, C85L16^A_B, C85L25^A_B

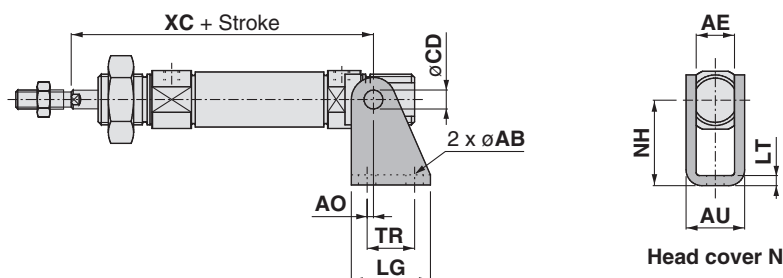
Rod flange, Head flange: C85F10, C85F16, C85F25



Rod trunnion, Head trunnion: C85T10, C85T16, C85T25



Clevis: C85C10, C85C16, C85C25



(mm)

Bore size	Rod foot, Head foot												Rod flange, Head flange							
	AB	AO	AV	LS	LT	NH	TR JS14	UR	US	W	XL	XS	FBH13	FT	TF	UF	UR	W	WL	
8	4.5	5	11	68	3.2	16	25	26	35	12.8	73	23.8	4.5	3.2	30	40	22	12.8	65.2	
10	4.5	5	11	68 (75)	3.2	16	25	26	35	12.8	73 (80)	23.8	4.5	3.2	30	40	22	12.8	65.2 (72.2)	
12	5.5	6	14	78 (82)	4	20	32	33	42	18	86 (90)	32	5.5	4	40	52	30	18	76 (80)	
16	5.5	6	14	84 (84)	4	20	32	33	42	18	92 (92)	32	5.5	4	40	52	30	18	82 (82)	
20	6.6	8	17	96	5	25	40	42	54	19	103	36	6.6	5	50	66	40	19	91	
25	6.6	8	17	99	5	25	40	42	54	23	110	40	6.6	5	50	66	40	23	98	

Bore size	Rod trunnion, Head trunnion							Clevis									
	TD e8	TM	TT	TZ	UW	XV	XZ	AB	AE	AO	AU	CD H9	LG	LT	NH	TR	XC
8	4	26	6	38	20	13	65	4.5	8.1	1.5	13.1	4	20	2.5	24	12.5	64
10	4	26	6	38	20	13	65 (72)	4.5	8.1	1.5	13.1	4	20	2.5	24	12.5	64 (71)
12	6	38	8	58	25	18	76 (80)	5.5	12.1	2	18.5	6	25	3.2	27	15	75 (79)
16	6	38	8	58	25	18	82 (82)	5.5	12.1	2	18.5	6	25	3.2	27	15	82 (82)
20	6	46	8	66	32	20	90	6.6	16.1	4	24.1	8	32	4	30	20	95
25	6	46	8	66	32	24	97	6.6	16.1	4	24.1	8	32	4	30	20	104

(): In the case of air cushion.

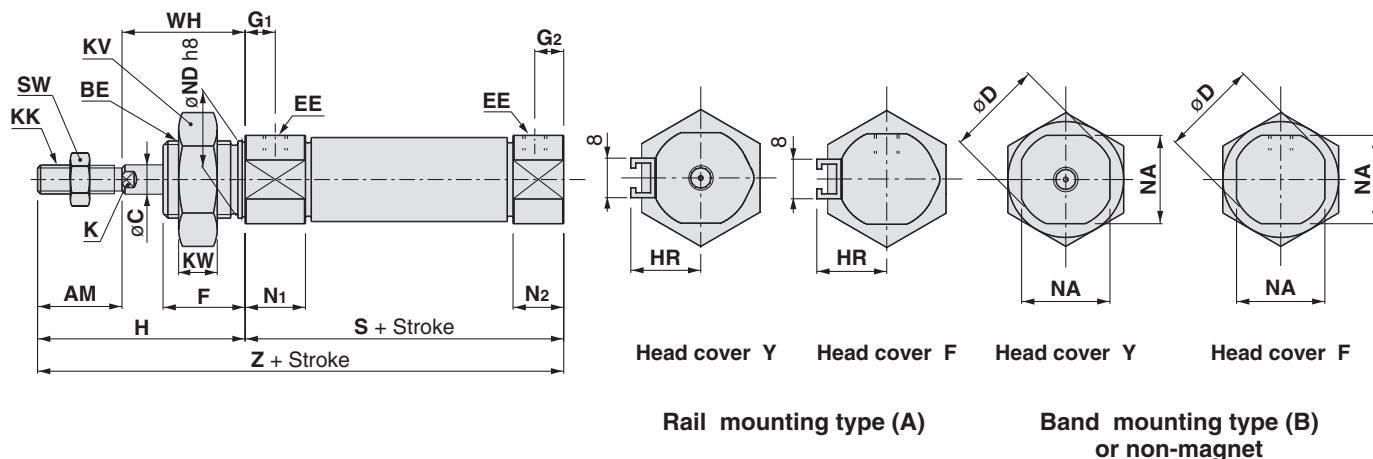
Series C85

Dimensions

Double acting, Single rod

Rubber bumper: C□85F/Y Bore size - Stroke - □

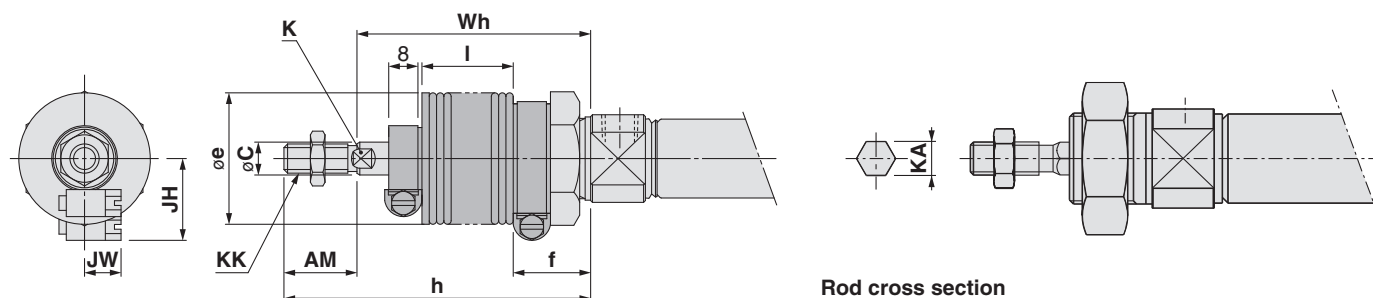
Without magnet, Built-in magnet



With rod boot

C□85KF/Y Bore size - Stroke - □

Non-rotating, Piston rod (Rubber bumper only)

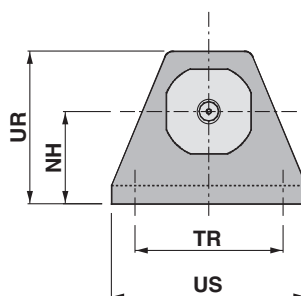
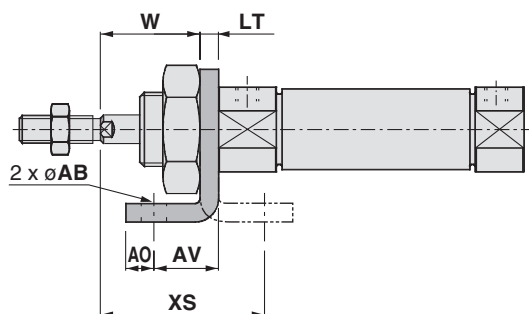


Bore size	AM	BE	C	D	EE	F	G1	G2	H	HR	K	KA	KK	KV	KW	N1	N2	NA	ND	S	SW	WH	Z
8	12	M12 x 1.25	4	16.7	M5 x 0.8	12	7	5	28	10	—	4.2	M4 x 0.7	19	6	11.5	9.5	15	12	46	7	16	74
10	12	M12 x 1.25	4	16.7	M5 x 0.8	12	7	5	28	10.5	—	4.2	M4 x 0.7	19	6	11.5	9.5	15	12	46	7	16	74
12	16	M16 x 1.5	6	19.7	M5 x 0.8	17	8	6	38	14	5	6.2	M6 x 1	24	8	12.5	10.5	18.3	16	50	10	22	88
16	16	M16 x 1.5	6	19.7	M5 x 0.8	17	8	6	38	14	5	6.2	M6 x 1	24	8	12.5	10.5	18.3	16	50	10	22	88
20	20	M22 x 1.5	8	28	G 1/8	20	8	8	44	17	6	8.2	M8 x 1.25	32	11	15	15	24	22	62	13	24	106
25	22	M22 x 1.5	10	33.5	G 1/8	22	8	8	50	20	8	10.2	M10 x 1.25	32	11	15	15	30	22	65	17	28	115

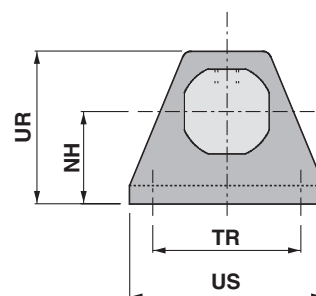
With rod boot

Bore size	Item Stroke	AM	C	e	f	K	KK	h						
								1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500
20		20	8	36	20	6	M8 x 1.25	71	84	96	109	134	159	—
25		22	10	36	20	8	M10 x 1.25	74	87	99	112	137	162	187

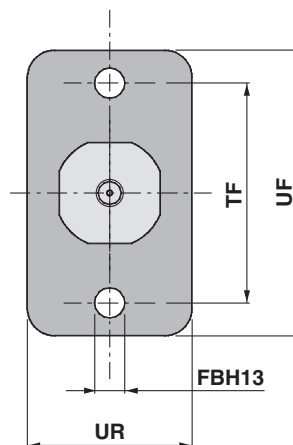
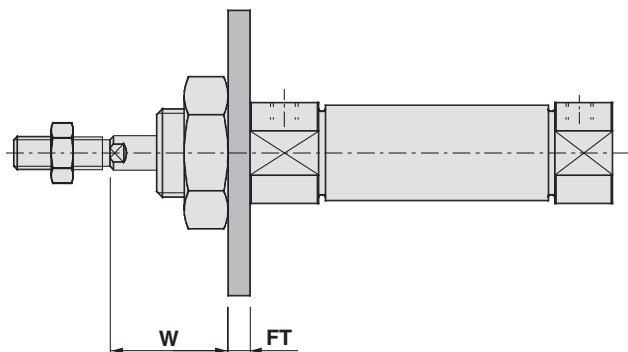
Bore size	Item Stroke	I							JH	JW	Wh						
		1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500			1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500
20		12.5	25	37.5	50	75	100	—	23.5	10.5	51	64	76	89	114	139	—
25		12.5	25	37.5	50	75	100	125	23.5	10.5	52	65	77	90	115	140	165

Dimensions**Double acting, Single rod****Rod foot: C85L10A, C85L16A, C85L25A**

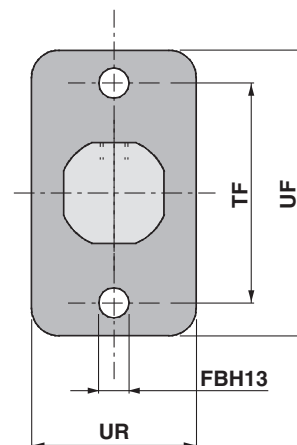
Head cover Y



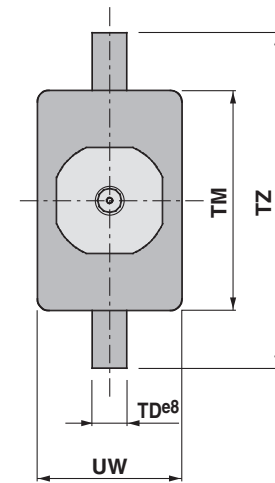
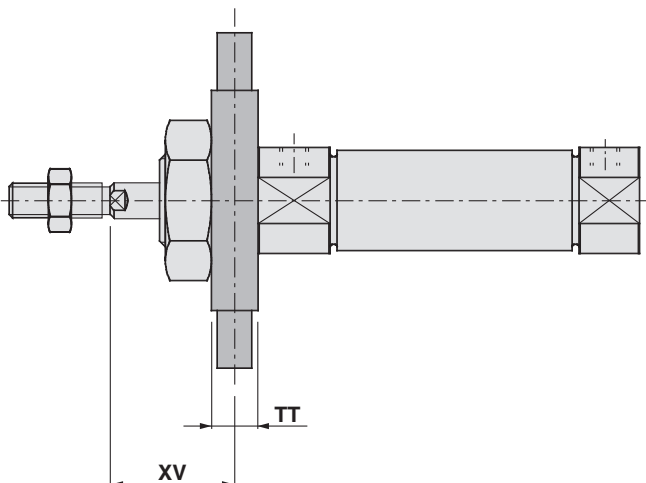
Head cover F

Rod flange: C85F10, C85F16, C85F25

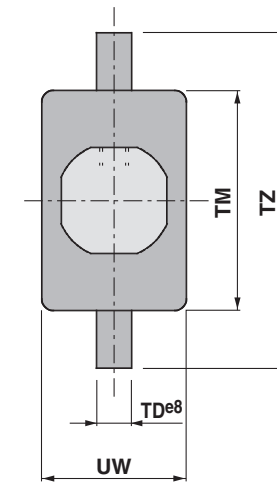
Head cover Y



Head cover F

Rod trunnion: C85T10, C85T16, C85T25

Head cover Y



Head cover F

(mm)

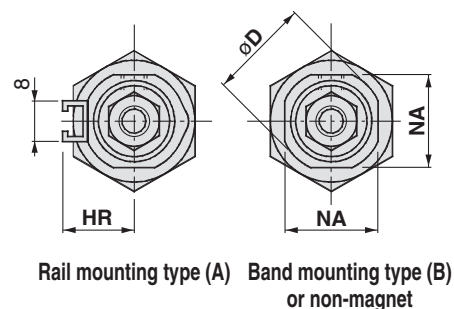
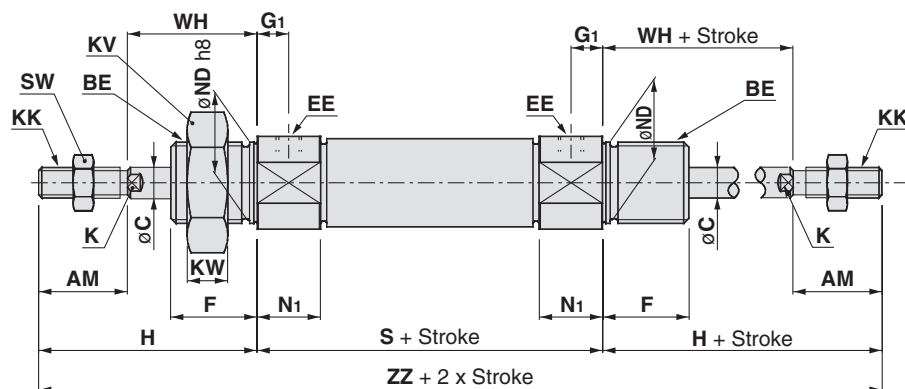
Bore size	Rod foot										Rod flange						Rod trunnion					
	AB	AO	AV	LT	NH	TR JS14	UR	US	W	XS	FBH13	FT	TF	UF	UR	W	TD e8	TM	TT	TZ	UW	XV
8	4.5	5	11	3.2	16	25	26	35	12.8	23.8	4.5	3.2	30	40	22	12.8	4	26	6	38	20	13
10	4.5	5	11	3.2	16	25	26	35	12.8	23.8	4.5	3.2	30	40	22	12.8	4	26	6	38	20	13
12	5.5	6	14	4	20	32	33	42	18	32	5.5	4	40	52	30	18	6	38	8	58	25	18
16	5.5	6	14	4	20	32	33	42	18	32	5.5	4	40	52	30	18	6	38	8	58	25	18
20	6.6	8	17	5	25	40	42	54	19	36	6.6	5	50	66	40	19	6	46	8	66	32	20
25	6.6	8	17	5	25	40	42	54	23	40	6.6	5	50	66	40	23	6	46	8	66	32	24

Dimensions

Double acting, Double rod

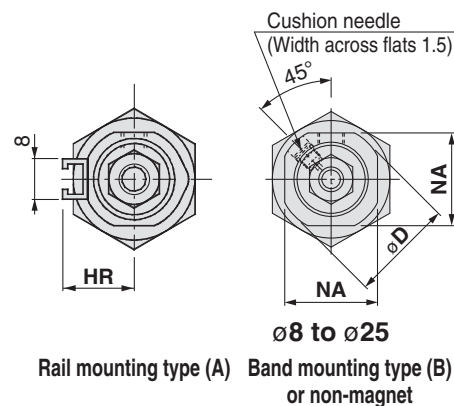
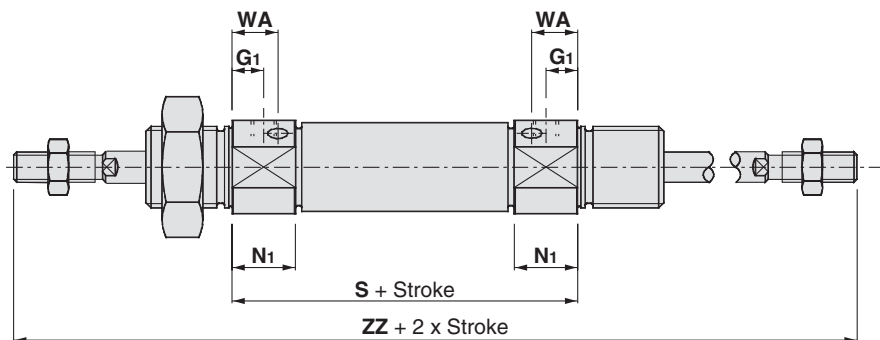
Rubber bumper: C85WE **Bore size** – **Stroke** –

Without magnet, Built-in magnet

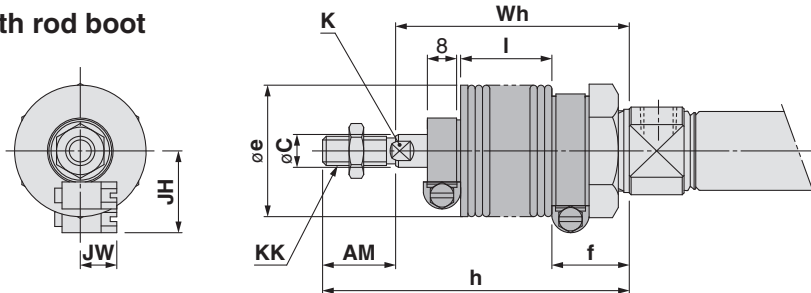


Air cushion: C 85WE **Bore size** – **Stroke** C –

Without magnet, Built-in magnet



With rod boot



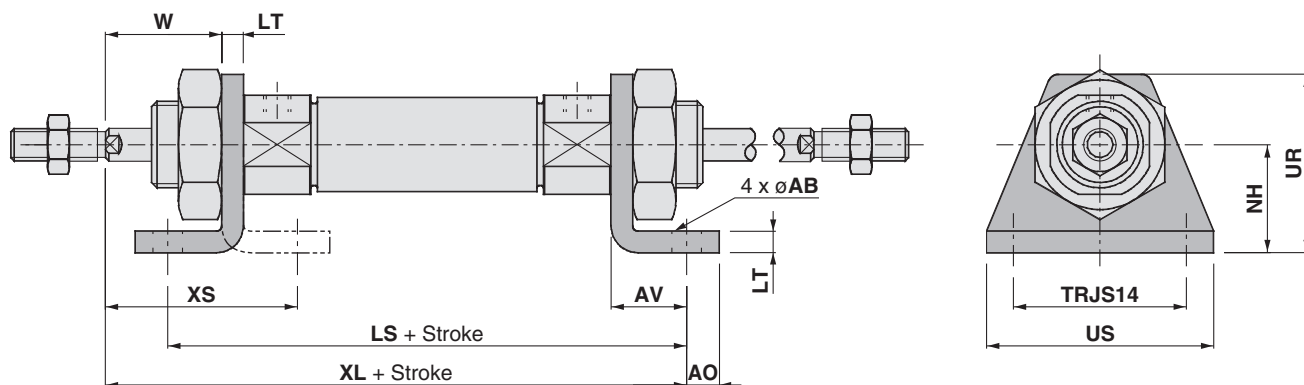
(mm)																					
Bore size	AM	BE	C	D	EE	F	G1	H	HR	K	KK	KV	KW	N6	NA	ND	S	SW	WA	WH	ZZ
8	12	M12 x 1.25	4	16.7	M5 x 0.8	12	7	28	10	—	M4 x 0.7	19	6	11.5	15	12	48 {54}	7	—	16	104 {110}
10	12	M12 x 1.25	4	16.7	M5 x 0.8	12	7 (5.5)	28	10.5	—	M4 x 0.7	19	6	11.5 (13.5)	15	12	48 (53)	7	10.5	16	104 (109)
12	16	M16 x 1.5	6	19.7	M5 x 0.8	17	8 (5.5)	38	14	5	M6 x 1	24	8	12.5 (12.5)	18.3	16	52 (54)	10	9.5	22	128 (130)
16	16	M16 x 1.5	6	19.7	M5 x 0.8	17	8 (5.5)	38	14	5	M6 x 1	24	8	12.5 (12.5)	18.3	16	52 (54)	10	9.5	22	128 (130)
20	20	M22 x 1.5	8	28	G 1/8	20	8	44	17	6	M8 x 1.25	32	11	15 (17)	24	22	62	13	13	24	150
25	22	M22 x 1.5	10	33.5	G 1/8	22	8	50	20	8	M10 x 1.25	32	11	15 (17)	30	22	65	17	13	28	165

(): In the case of air cushion. { }: In the case of built-in magnet.

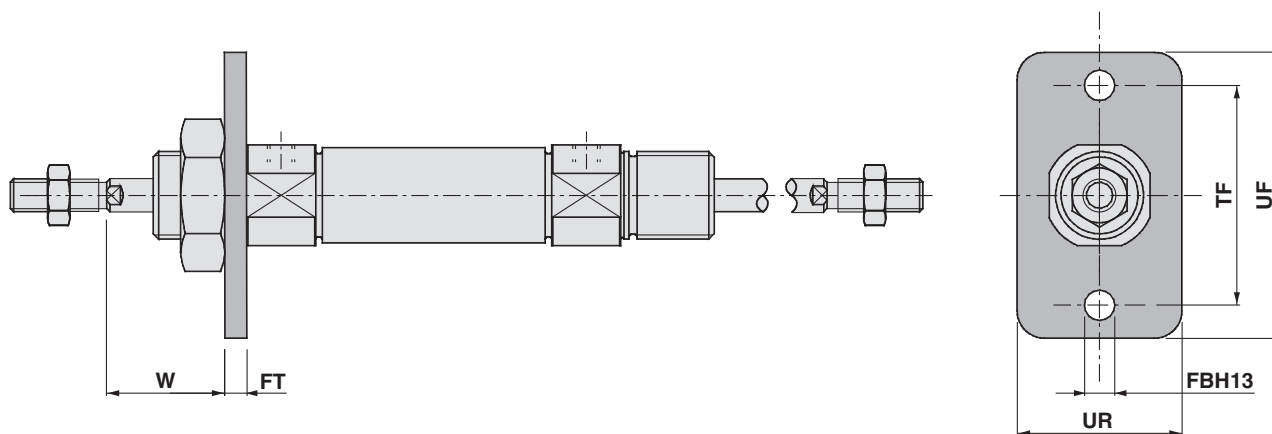
With Rod Boot

Item								h						
Bore size	Stroke	AM	C	e	f	K	KK							
								1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500
20		20	8	36	20	6	M8 x 1.25	71	84	96	109	134	159	—
25		22	10	36	20	8	M10 x 1.25	74	87	99	112	137	162	187

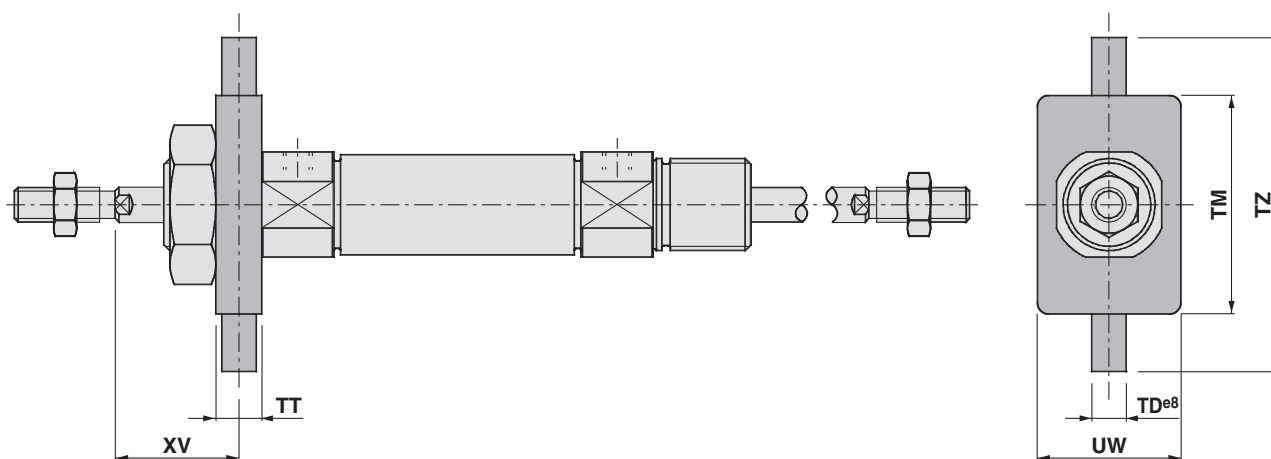
Bore size	Item Stroke	I							JH	JW	Wh						
		1 to 50	50 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500			1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 40 0	401 to 500
20		12.5	25	37.5	50	75	100	—	23.5	10.5	51	64	76	89	114	139	—
25		12.5	25	37.5	50	75	100	125	23.5	10.5	52	65	77	90	115	140	165

Dimensions**Double acting, Double rod**Rod foot, Head foot: C85L10^A_B, C85L16^A_B, C85L25^A_B

Rod flange: C85F10, C85F16, C85F25



Rod trunnion: C85T10, C85T16, C85T25



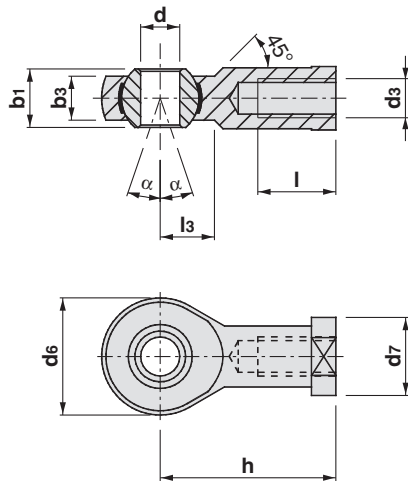
Bore size	Rod foot, Head foot												Rod flange						Rod trunnion					
	AB	AO	AV	LS	LT	NH	TRJS14	UR	US	W	XL	XS	FBH13	FT	TF	UF	UR	W	TD e8	TM	TT	TZ	UW	XV
8	4.5	5	11	70 {76}	3.2	16	25	26	35	12.8	75 {81}	23.8	4.5	3.2	30	40	22	12.8	4	26	6	38	20	13
10	4.5	5	11	70 (75)	3.2	16	25	26	35	12.8	75 (80)	23.8	4.5	3.2	30	40	22	12.8	4	26	6	38	20	13
12	5.5	6	14	80 (82)	4	20	32	33	42	18	88 (90)	32	5.5	4	40	52	30	18	6	38	8	58	25	18
16	5.5	6	14	80 (82)	4	20	32	33	42	18	88 (90)	32	5.5	4	40	52	30	18	6	38	8	58	25	18
20	6.6	8	17	96	5	25	40	42	54	19	103	36	6.6	5	50	66	40	19	6	46	8	66	32	20
25	6.6	8	17	99	5	25	40	42	54	23	110	40	6.6	5	50	66	40	23	6	46	8	66	32	24

(): In the case of air cushion. { }: In the case of built-in magnet.

Series C85

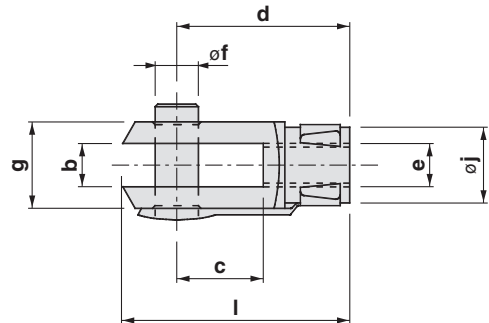
Accessory Dimensions

Single Knuckle Joint



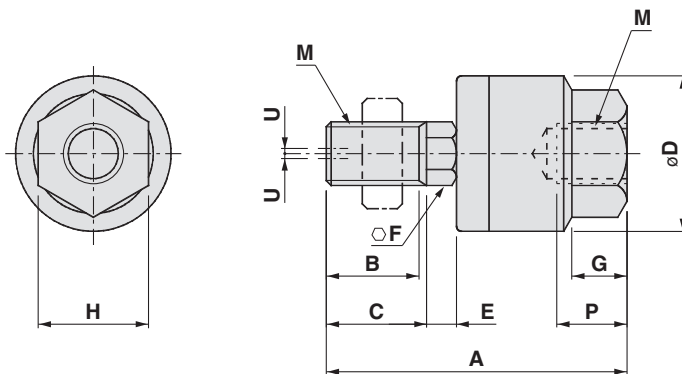
Bore size	Model	b1	b3	dh7	d6	d7	h	l	l3	d3	α°
8	KJ4D	8	6.0	5	18	11	27	10	10	M4 x 0.7	7.5
10	KJ4D	8	6.0	5	18	11	27	10	10	M4 x 0.7	7.5
12	KJ6D	9	6.75	6	20	13	30	12	10	M6 x 1	6.5
16	KJ6D	9	6.75	6	20	13	30	12	10	M6 x 1	6.5
20	KJ8D	12	9	8	24	16	36	16	12	M8 x 1.25	13
25	KJ10D	14	10.5	10	28	19	43	20	14	M10 x 1.25	13

Double Knuckle Joint

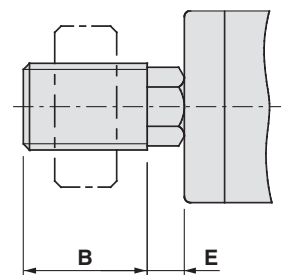


Bore size	Model	a	b	c	d	f	g	j	e
8	GKM4-8	8	4	8	16	4	8	6	M4 x 0.7
10	GKM4-8	8	4	8	16	4	8	6	M4 x 0.7
12	GKM6-12	12	6	12	24	6	10	8	M6 x 1
16	GKM6-12	12	6	12	24	6	10	8	M6 x 1
20	GKM8-16	16	8	16	32	8	12	10	M8 x 1.25
25	GKM10-20	20	10	20	40	10	18	12	M10 x 1.25

Floating Joint: Series JA



In the case of dimension without C



Bore size	Model	M		A	B	C	D	E	F	G	H	Maximum screw-in depth P	Allowable eccentricity U	Max. operating tension and compression power (kN)
		Nominal thread dia.	Pitch											
8, 10	JA10-4-070	4	0.7	26	9	10	12	1.5	4	4	7	5.5	0.5	0.054
12, 16	JA15-6-100	6	1	34.5	12.5	14	16	2	6	5	10	7	0.5	0.123
20	JA20-8-125	8	1.25	44	17.5	—	21	4.5	7	7	13	8	0.5	1.1
25	JA30-10-125	10	1.25	49.5	19.5	—	24	5	8	8	17	9	0.5	2.5

ISO Standards

Air Cylinder: Standard/Non-rotating Type Single Acting, Spring Return/Extended

Series C85

ø8, ø10, ø12, ø16, ø20, ø25

How to Order

Single acting,
Spring return/
Spring extended

C D 85 K N 16 - 40 S - B

Built-in magnet

Nil	None
D	Built-in magnet

Type

Nil	Standard
K	Non-rotating rod (Rubber bumper only)

Mounting

N	Basic (integrated clevis)
E	Double end boss-cut style
F	Boss-cut basic style
Y*	Head cover axial port

* Except single acting/spring extended type.

Auto switch mounting

A	Rail mounting
B	Band mounting

Applicable auto switches are shown on page 24. Please order auto switches and bands separately. (Auto switches and bands cannot be indicated here.)

Action

S	Single acting, Spring return
T	Single acting, Spring extended

Bore size

Stroke

Bore size (mm)	Standard stroke (mm)*	Max. stroke (mm)
8	10, 25, 40, 50	50
10		
12		
16	10, 25, 40, 50, 80, 100 125, 150	150
20		
25		

* Other strokes available on request.

Mounting Bracket Part No.

Bore size (mm)		8	10	12	16	20	25
Mounting bracket	Foot (1 pc.)	C85L10A	C85L16A	C85L25A			
	Foot (2 pcs. with mounting nut 1 pc.)	C85L10B	C85L16B	C85L25B			
	Flange	C85F10	C85F16	C85F25			
	Trunnion	C85T10	C85T16	C85T25			
	Clevis	C85C10	C85C16	C85C25			
Accessory	Single knuckle joint	KJ4D	KJ6D	KJ8D	KJ10D		
	Double knuckle joint	GKM4-8	GKM6-10	GKM8-16	GKM10-20		
	Floating joint	JA10-4-070	JA15-6-100	JA20-8-125	JA30-10-125		

Replacement Parts/Standard Cylinders

Bore size (mm)	Part no.	Note
20	C85-20PS	Every set includes: 1 rod seal 1 seal retaining washer 1 retaining ring
25	C85-25PS	

Replacement Parts/Non-rotating Cylinders ("K")

Bore size (mm)	Part no.	Note
20	C85K-20PS	Every set includes: 1 rod seal 1 seal retaining washer 1 retaining ring
25	C85K-25PS	

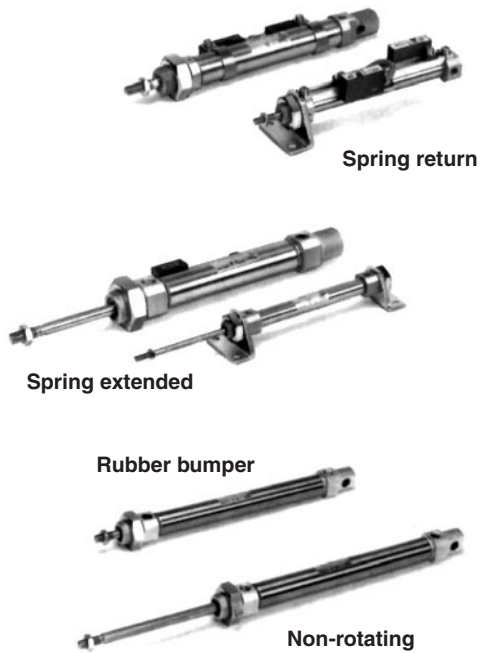
Series C85

Series CP96

Series C96

Series C55

Series C85



Specifications

Bore size (mm)		8	10	12	16	20	25
Piston rod dia. (mm)		4	4	6	6	8	10
Piston rod thread		M4 x 0.7	M4 x 0.7	M6 x 1	M6 x 1	M8 x 1.25	M10 x 1.25
Port size		M5 x 0.8	M5 x 0.8	M5 x 0.8	M5 x 0.8	G 1/8	G 1/8
Action		Single acting, Single rod, Spring return/extend					
Fluid		Air					
Proof pressure		1.5 MPa					
Max. operating pressure		1.0 MPa					
Min. operating pressure	Spring return	0.22 MPa	0.18 MPa	0.13 MPa	0.18 MPa		
	Spring extended				0.23 MPa		
Ambient and fluid temperature		−20 to 80°C (Built-in magnet type: −10 to 60°C)					
Cushion		Rubber bumper (Standard)					
Lubrication		Not required. Use turbine oil Class 1 ISO VG32, if lubricated.					
Piston speed		50 to 1500 mm/s					
Allowable kinetic energy		0.02 J	0.03 J	0.04 J	0.09 J	0.27 J	0.4 J
Non-rotating accuracy		±1.5°	±1.5°	±1°	±1°	±0.7°	±0.7°
Stroke length tolerance		+1.0 0 mm				+1.4 0 mm	

Spring Retracting Force

Spring Return

(N)

Bore size (mm)	Standard stroke (mm)	Spring force									
		10		25		50		100		150	
		Retract	Extended	Retract	Extended	Retract	Extended	Retract	Extended	Retract	Extended
8	10, 25, 50	4.4	4.0	4.4	3.4	4.4	2.5	—	—	—	—
10		6.3	5.7	6.3	4.9	6.3	3.5	—	—	—	—
12		7.2	6.6	7.2	5.8	7.2	4.4	—	—	—	—
16	10, 25, 50, 100, 150	13.2	12.1	13.2	10.3	13.2	7.5	13.2	7.5	13.2	7.5
20		21.6	18.6	21.6	16.7	21.6	11.8	39.2	9.8	39.2	9.8
25		27.5	25.3	27.5	22.1	27.5	16.7	47.1	13.7	47.1	15.7

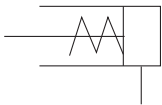
Spring Extended

(N)

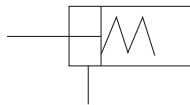
Bore size (mm)	Standard stroke (mm)	Spring force									
		10		25		50		100		150	
		Retract	Extended	Retract	Extended	Retract	Extended	Retract	Extended	Retract	Extended
8	10, 25, 50	5.3	3.9	5.3	3.1	5.3	2.7	—	—	—	—
10		6.0	4.8	6.0	4.0	6.0	3.5	—	—	—	—
12		6.6	5.6	6.6	4.9	6.6	4.5	—	—	—	—
16	10, 25, 50, 100, 150	14.7	11.3	14.7	9.2	14.7	7.9	14.7	7.9	14.7	7.9
20		39.2	33.0	39.2	23.5	39.2	9.8	39.2	9.8	39.2	9.8
25		47.1	40.4	47.1	30.4	47.1	13.7	47.1	13.7	47.1	15.7

JIS Symbol

Standard

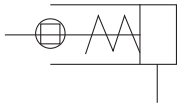


Spring return

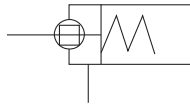


Spring extended

Non-rotating



Spring return



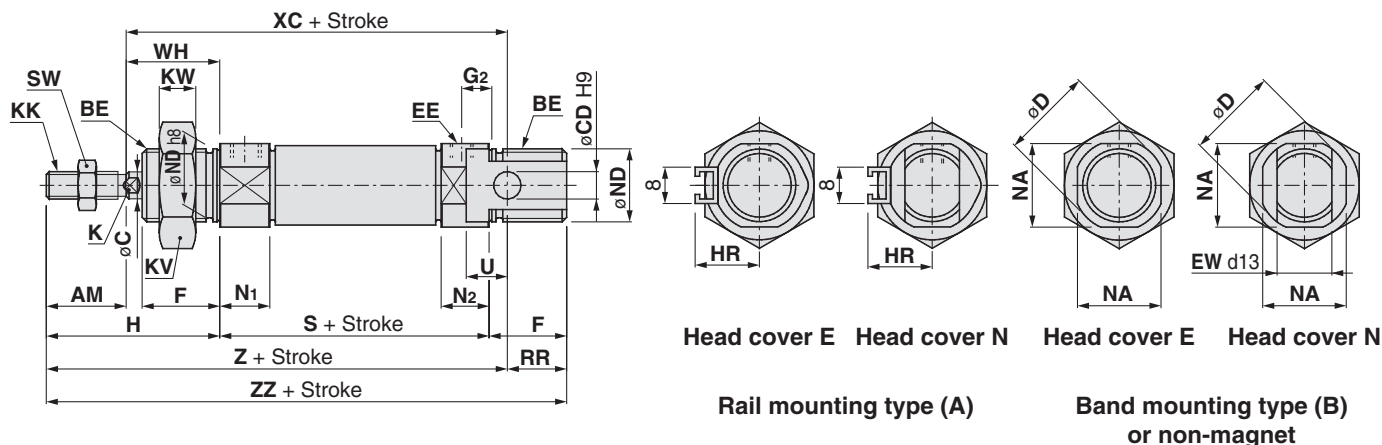
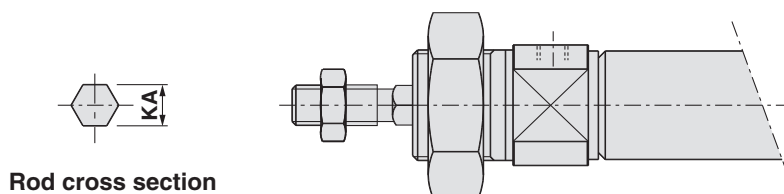
Spring extended

Dimensions

Single acting, Spring return

C□85^N_E [Bore size] - [Stroke] S - □

Without magnet, Built-in magnet

C□85KN, C□85KE
Non-rotating (Piston rod)

(mm)																								
Bore size	AM	BE	C	CD	D	EE	EW	F	G ₂	H	HR	K	KA	KK	KV	KW	N ₁	N ₂	NA	ND	RR	SW	U	WH
8	12	M12 x 1.25	4	4	16.7	M5 x 0.8	8	12	5	28	10	—	4.2	M4 x 0.7	19	6	5.5	9.5	15	12	10	7	6	16
10	12	M12 x 1.25	4	4	16.7	M5 x 0.8	8	12	5	28	10.5	—	4.2	M4 x 0.7	19	6	5.5	9.5	15	12	10	7	6	16
12	16	M16 x 1.5	6	6	19.7	M5 x 0.8	12	17	6	38	14	5	6.2	M6 x 1	24	8	5.5	10.5	18.3	16	14	10	9	22
16	16	M16 x 1.5	6	6	19.7	M5 x 0.8	12	17	6	38	14	5	6.2	M6 x 1	24	8	5.5	10.5	18.3	16	13	10	9	22
20	20	M22 x 1.5	8	8	28	G 1/8	16	20	8	44	17	6	8.2	M8 x 1.25	32	11	15	15	24	22	11	13	12	24
25	22	M22 x 1.5	10	8	33.5	G 1/8	16	22	8	50	20	8	10.2	M10 x 1.25	32	11	15	15	30	22	11	17	12	28

Bore size	S			XC			Z			ZZ		
	1 to 50	51 to 100	101 to 150	1 to 50	51 to 100	101 to 150	1 to 50	51 to 100	101 to 150	1 to 50	51 to 100	101 to 150
8	46 {52} {56(62)}	—	—	64 {70} {74(80)}	—	—	76 {82} {86(92)}	—	—	86 {92} {96(102)}	—	—
10	46 {50} {56(60)}	—	—	64 {68} {74(78)}	—	—	76 {80} {86(90)}	—	—	86 {90} {96(100)}	—	—
12	50 {53.5} {60(63.5)}	—	—	75 {78.5} {85(88.5)}	—	—	91 {94.5} {101(104.5)}	—	—	105 {108.5} {115(118.5)}	—	—
16	56 {59.5} {66(69.5)}	71.5 {75} {92(95.5)}	87 {90.5} {118(121.5)}	82 {85.5} {92(95.5)}	97.5 {101} {118(121.5)}	113 {116.5} {144(147.5)}	98 {101.5} {108(111.5)}	113.5 {117} {134(137.5)}	129 {132.5} {160(163.5)}	111 {114.5} {121(124.5)}	126.5 {130} {147(150.5)}	142 {145.5} {173(176.5)}
20	62 {87}	112	137	95 {120}	145	170	115 {140}	165	190	126 {151}	176	201
25	65 {88.5}	113.5	138.5	104 {127.5}	152.5	177.5	126 {149.5}	174.5	199.5	137 {160.5}	185.5	210.5

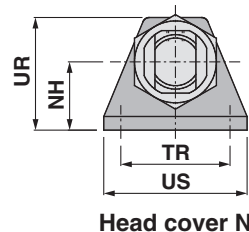
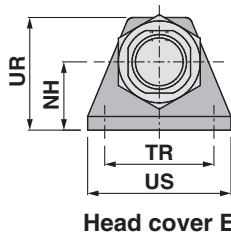
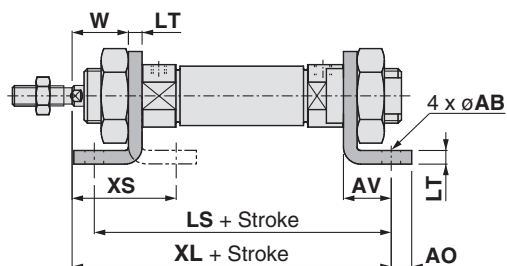
(): In the case of auto switch style. { }: In the case of non-rotating rod.

Series C85

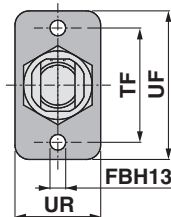
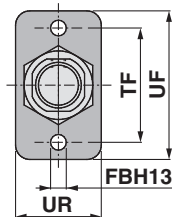
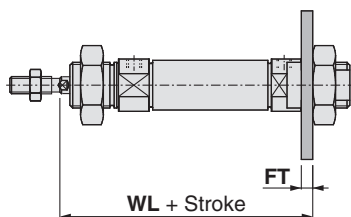
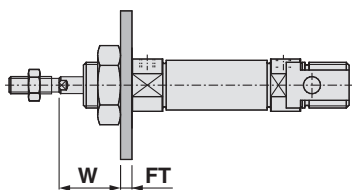
Dimensions

Single acting, Spring return

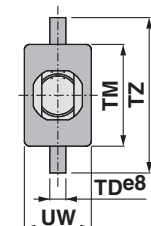
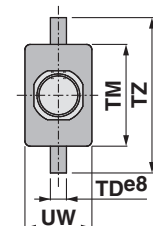
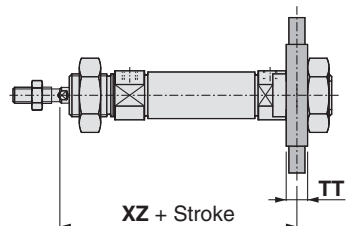
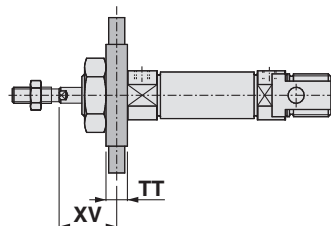
Rod foot, Head foot: C85L10^A_B, C85L16^A_B, C85L25^A_B



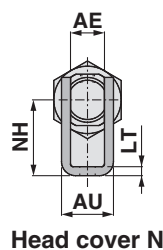
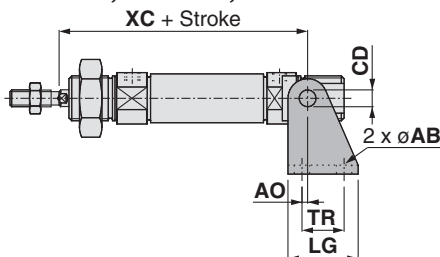
Rod flange, Head flange: C85F10, C85F16, C85F25



Rod trunnion, Head trunnion: C85T10, C85T16, C85T25



Clevis: C85C10, C85C16, C85C25



Head cover N

(mm)

Bore size	Rod foot, Head foot																Rod flange, Head flange									
	AB	AO	AV	LS			LT	NH	TR	JS14	UR	US	W	XL			XS	FBH13	FT	TF	UF	UR	W	WL		
				1 to 50	51 to 100	101 to 150								1 to 50	51 to 100	101 to 150								1 to 50	51 to 100	101 to 150
8	4.5	5	11	68 (74) (78(84))	—	—	3.2	16	25	26	35	12.8	73 (79) (83(89))	—	—	—	23.8	4.5	3.2	30	40	22	12.8	65.2 (71.2) (75.2(81.2))	—	—
10	4.5	5	11	68 (72) (78(82))	—	—	3.2	16	25	26	35	12.8	73 (77) (83(87))	—	—	—	23.8	4.5	3.2	30	40	22	12.8	65.2 (69.2) (75.2(79.2))	—	—
12	5.5	6	14	78 (81.5) (88(91.5))	—	—	4	20	32	33	42	18	86 (89.5) (96(99.5))	—	—	—	32	5.5	4	40	52	30	18	76 (79.5) (86(89.5))	—	—
16	5.5	6	14	84 (87.5) (94(97.5))	99.5 (103) (120(123.5))	115 (118.5) (146(149.5))	4	20	32	33	42	18	92 (95.5) (102(105.5))	107.5 (111) (128(131.5))	123 (126.5) (154(157.5))	—	32	5.5	4	40	52	30	18	82 (85.5) (92(95.5))	97.5 (101) (118(121.5))	113 (116.5) (144(147.5))
20	6.6	8	17	96 {121}	146	171	5	25	40	42	54	19	103 {128}	153	178	—	36	6.6	5	50	66	40	19	91 {116}	141	166
25	6.6	8	17	96 {122.5}	147.5	172.5	5	25	40	42	54	23	110 {133.5}	158.5	183.5	—	40	6.6	5	50	66	40	23	98 {121.5}	146.5	171.5

Bore size	Rod trunnion, Head trunnion									Clevis													
	TD	e8	TM	TT	TZ	UW	XV	XZ			AB	AE	AO	AU	CD	H9	LG	LT	NH	TR	XC		
								1 to 50	51 to 100	101 to 150											1 to 50	51 to 100	101 to 150
8	4	26	6	38	20	13	65 (71) (75(81))	—	—	4.5	8.1	1.5	13.1	4	20	2.5	24	12.5	64 (70) (74(80))	—	—		
10	4	26	6	38	20	13	65 (69) (75(79))	—	—	4.5	8.1	1.5	13.1	4	20	2.5	24	12.5	64 (68) (74(78))	—	—		
12	6	38	8	58	25	18	76 (79.5) (86(89.5))	—	—	5.5	12.1	2	18.5	6	25	3.2	27	15	75 (78.5) (85(88.5))	—	—		
16	6	38	8	58	25	18	82 (85.5) (92(95.5))	97.5 (101) (118(121.5))	113 (116.5) (144(147.5))	5.5	12.1	2	18.5	6	25	3.2	27	15	82 (88.5) (92(95.5))	97.5 (101) (118(121.5))	113 (116.5) (144(147.5))		
20	6	46	8	66	32	20	90 {115}	140	165	6.6	16.1	4	24.1	8	32	4	30	20	95 {120}	145	170		
25	6	46	8	66	32	24	97 {120.5}	145.5	170.5	6.6	16.1	4	24.1	8	32	4	30	20	104 {127.5}	152.5	177.5		

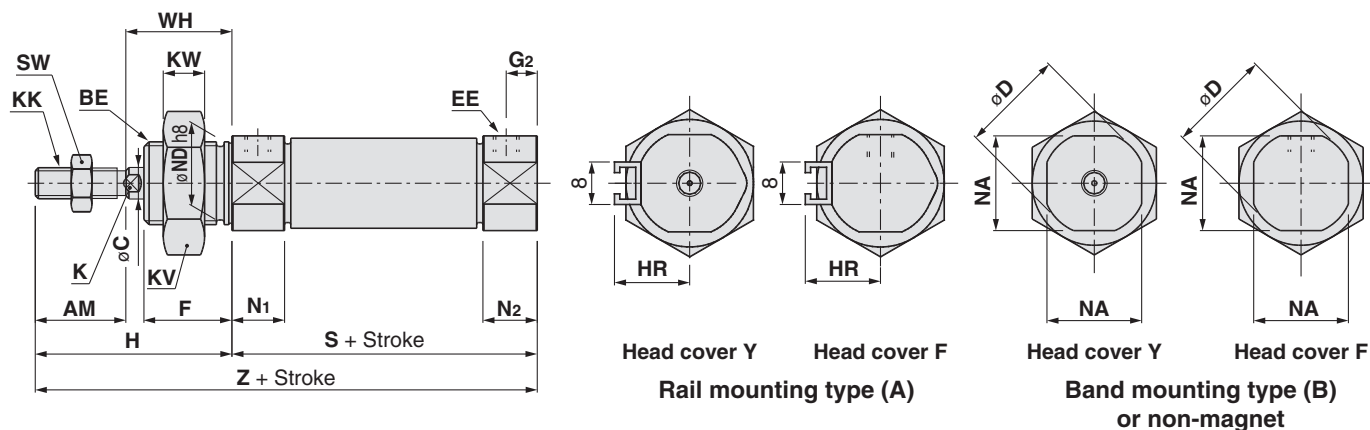
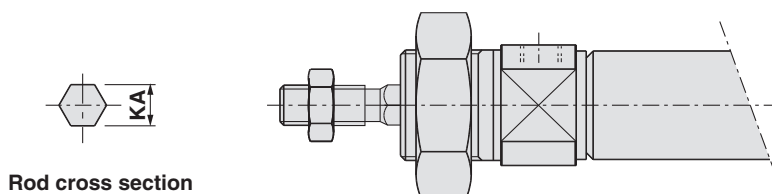
(): In the case of auto switch style. { }: In the case of non-rotating rod.

Dimensions

Single acting, Spring return

C□85F ☐ Bore size - ☐ Stroke S - ☐

Without magnet, Built-in magnet

C□85KF, C□85KY
Non-rotating (Piston rod)

Bore size	AM	BE	C	D	EE	F	G ₂	H	HR	K	KA	KK	KV	KW	N ₁	N ₂	NA	ND	SW	WH
8	12	M12 x 1.25	4	16.7	M5 x 0.8	12	5	28	10	—	4.2	M4 x 0.7	19	6	5.5	9.5	15	12	7	16
10	12	M12 x 1.25	4	16.7	M5 x 0.8	12	5	28	10.5	—	4.2	M4 x 0.7	19	6	5.5	9.5	15	12	7	16
12	16	M16 x 1.5	6	19.7	M5 x 0.8	17	6	38	14	5	6.2	M6 x 1	24	8	5.5	10.5	18.3	16	10	22
16	16	M16 x 1.5	6	19.7	M5 x 0.8	17	6	38	14	5	6.2	M6 x 1	24	8	5.5	10.5	18.3	16	10	22
20	20	M22 x 1.5	8	28	G 1/8	20	8	44	17	6	8.2	M8 x 1.25	32	11	15	15	24	22	13	24
25	22	M22 x 1.5	10	33.5	G 1/8	22	8	50	20	8	10.2	M10 x 1.25	32	11	15	15	30	22	17	28

Bore size	S			Z		
	1 to 50	51 to 100	101 to 150	1 to 50	51 to 100	101 to 150
8	46 (52) {56(62)}	—	—	74 (80) {84(90)}	—	—
10	46 (50) {56(60)}	—	—	74 (78) {84(88)}	—	—
12	50 (53.5) {60(63.5)}	—	—	88 (91.5) {98(101.5)}	—	—
16	50 (53.5) {60(63.5)}	65.5 (69) {86(89.5)}	81 (84.5) {112(115.5)}	88 (91.5) {98(101.5)}	103.5 (107) {124(127.5)}	119 (122.5) {150(153.5)}
20	62 {87}	112	137	106 {131}	156	181
25	65 {88.5}	113.5	138.5	115 {138.5}	163.5	188.5

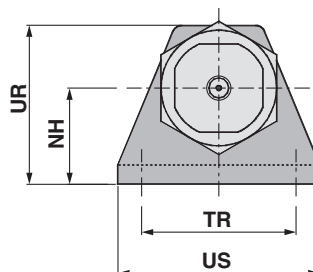
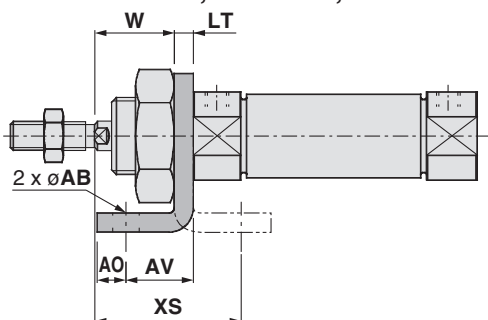
(): In the case of auto switch type. { }: In the case of non-rotating.

Series C85

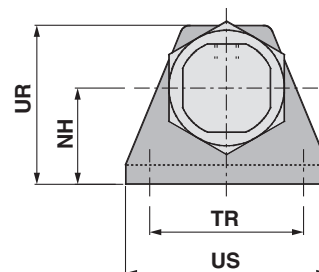
Dimensions

Single acting, Spring return

Rod foot: C85L10A, C85L16A, C85L25A

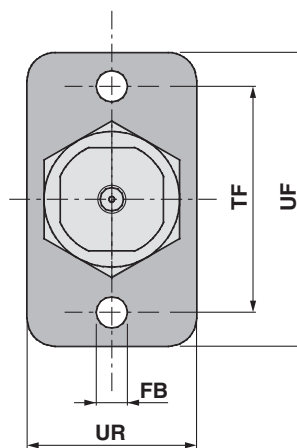
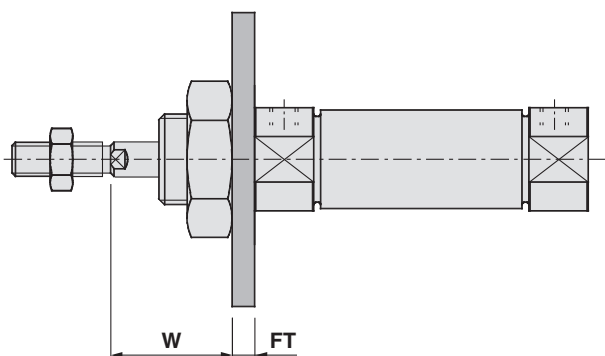


Head cover Y

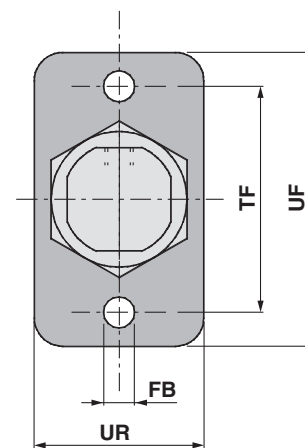


Head cover F

Rod flange: C85F10, C85F16, C85F25

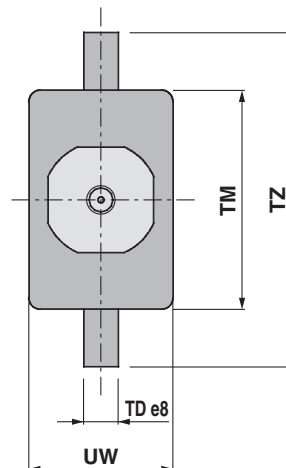
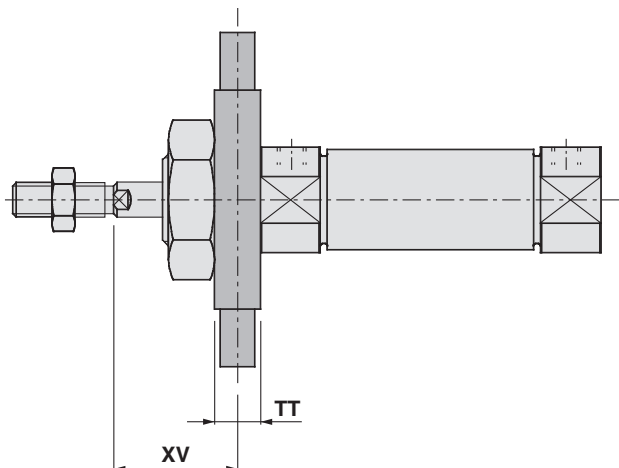


Head cover Y

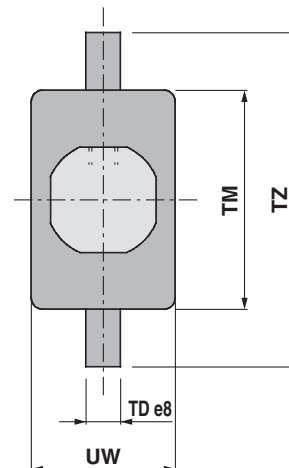


Head cover F

Rod trunnion: C85T10, C85T16, C85T25



Head cover Y



Head cover F

(mm)

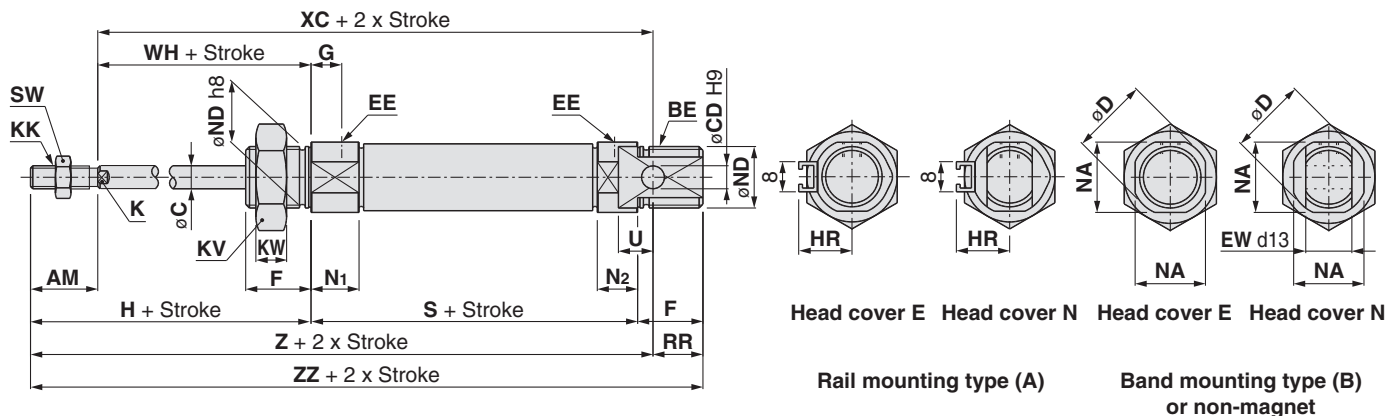
Bore size	Rod foot										Rod flange						Rod trunnion					
	AB	AO	AV	LT	NH	TR JS14	UR	US	W	XS	FBH13	FT	TF	UF	UR	W	TD e8	TM	TT	TZ	UW	XV
8	4.5	5	11	3.2	16	25	26	35	12.8	23.8	4.5	3.2	30	40	22	12.8	4	26	6	38	20	13
10	4.5	5	11	3.2	16	25	26	35	12.8	23.8	4.5	3.2	30	40	22	12.8	4	26	6	38	20	13
12	5.5	6	14	4	20	32	33	42	18	32	5.5	4	40	52	30	18	6	38	8	58	25	18
16	5.5	6	14	4	20	32	33	42	18	32	5.5	4	40	52	30	18	6	38	8	58	25	18
20	6.6	8	17	5	25	40	42	54	19	36	6.6	5	50	66	40	19	6	46	8	66	32	20
25	6.6	8	17	5	25	40	42	54	23	40	6.6	5	50	66	40	23	6	46	8	66	32	24

Dimensions

Single acting, Spring extended

C□85^N_E Bore size - Stroke T - □

Without magnet, Built-in magnet



C□85KN/E

Non-rotating (Piston rod)



(mm)																								
Bore size	AM	BE	C	CD	D	EE	EW	F	G	H	HR	K	KA	KK	KV	KW	N ₁	N ₂	NA	ND	RR	SW	U	WH
8	12	M12 x 1.25	4	4	16.7	M5 x 0.8	8	12	7	28	10	—	4.2	M4 x 0.7	19	6	11.5	9.5	15	12	10	7	6	16
10	12	M12 x 1.25	4	4	16.7	M5 x 0.8	8	12	7	28	10.5	—	4.2	M4 x 0.7	19	6	11.5	9.5	15	12	10	7	6	16
12	16	M16 x 1.5	6	6	19.7	M5 x 0.8	12	17	8	38	14	5	6.2	M6 x 1	24	8	12.5	10.5	18.3	16	14	10	9	22
16	16	M16 x 1.5	6	6	19.7	M5 x 0.8	12	17	8	38	14	5	6.2	M6 x 1	24	8	12.5	10.5	18.3	16	13	10	9	22
20	20	M22 x 1.5	8	8	28	G 1/8	16	20	8	44	17	6	8.2	M8 x 1.25	32	11	15	15	24	22	11	13	12	24
25	22	M22 x 1.5	10	8	33.5	G 1/8	16	22	8	50	20	8	10.2	M10 x 1.25	32	11	15	15	30	22	11	17	12	28

Bore size	S			XC			Z			ZZ		
	1 to 50	51 to 100	101 to 150	1 to 50	51 to 100	101 to 150	1 to 50	51 to 100	101 to 150	1 to 50	51 to 100	101 to 150
8	64.5 (70.5)	—	—	82.5 (88.5)	—	—	94.5 (100.5)	—	—	104.5 (110.5)	—	—
10	64.5 (68.5)	—	—	82.5 (86.5)	—	—	94.5 (98.5)	—	—	104.5 (108.5)	—	—
12	70 (73.5)	—	—	95 (98.5)	—	—	111 (114.5)	—	—	125 (128.5)	—	—
16	75 (78.5)	101 (104.5)	127 (130.5)	101 (104.5)	127 (130.5)	153 (156.5)	117 (120.5)	143 (146.5)	169 (172.5)	130 (133.5)	156 (159.5)	182 (185.5)
20	87	112	137	120	145	170	140	165	190	151	176	201
25	88.5	113.5	138.5	127.5	152.5	177.5	149.5	174.5	199.5	160.5	185.5	210.5

(): In the case of auto switch style.

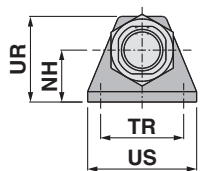
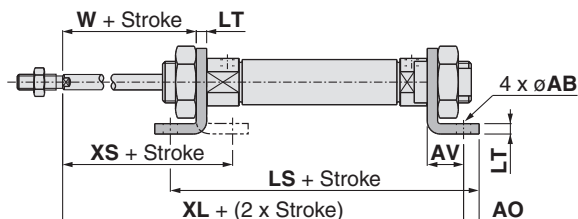
Series C85

Dimensions

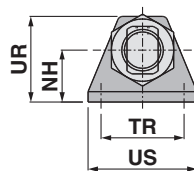
Single acting, Spring extended

C□85N, C□85E

Rod foot, Head foot: C85L10^A_B, C85L16^A_B, C85L25^A_B



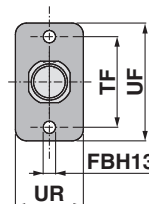
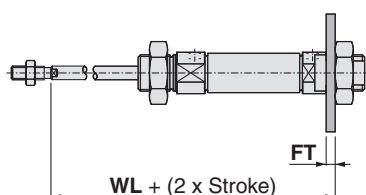
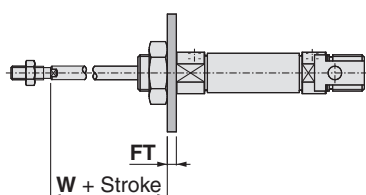
Head cover E



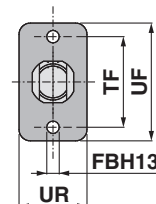
Head cover N

C□85N, C□85E

Rod flange, Head flange: C85F10, C85F16, C85F25



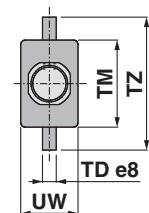
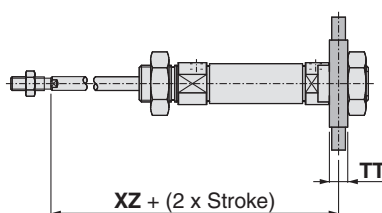
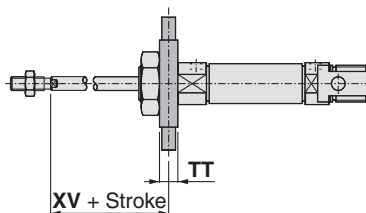
Head cover E



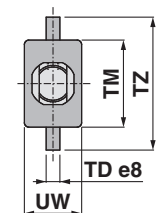
Head cover N

C□85N, C□85E

Rod trunnion, Head trunnion: C85T10, C85T16, C85T25



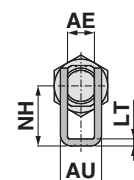
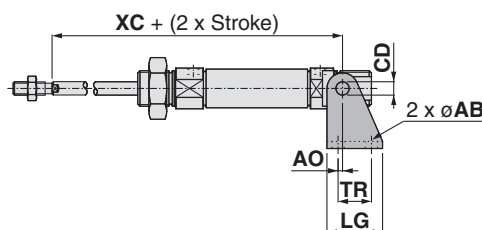
Head cover E



Head cover N

C□85N

Clevis: C85C10, C85C16, C85C25



Head cover N

(mm)

Bore size	Rod foot, Head foot																Rod flange, Head flange											
	AB	AO	AV	LS			LT	NH	TR JS14	UR	US	W	XL			XS	FBH13	FT	TF	UF	UR	W	WL					
				1 to 50	51 to 100	101 to 150							1 to 50	51 to 100	101 to 150								1 to 50	51 to 100	101 to 150			
8	4.5	5	11	86.5 (92.5)	—	—	3.2	16	25	26	35	12.8	91.5 (97.5)	—	—	23.8	4.5	3.2	30	40	22	12.8	83.7 (89.7)	—	—			
10	4.5	5	11	86.5 (90.5)	—	—	3.2	16	25	26	35	12.8	91.5 (95.5)	—	—	23.8	4.5	3.2	30	40	22	12.8	83.7 (87.7)	—	—			
12	5.5	6	14	98 (101.5)	—	—	4	20	32	33	42	18	106 (109.5)	—	—	32	5.5	4	40	52	30	18	96 (99.5)	—	—			
16	5.5	6	14	103 (106.5)	129 (132.5)	155 (158.5)	4	20	32	33	42	18	111 (114.5)	137 (140.5)	163 (166.5)	32	5.5	4	40	52	30	18	101 (104.5)	127 (130.5)	153 (156.5)			
20	6.6	8	17	121	146	171	5	25	40	42	54	19	128	153	178	36	6.6	5	50	66	40	19	116	141	166			
25	6.6	8	17	122.5	147.5	172.5	5	25	40	42	54	23	133.5	158.5	183.5	40	6.6	5	50	66	40	23	121.5	146.5	171.5			

Bore size	Rod trunnion, Head trunnion									Clevis												
	TD e8	TM	TT	TZ	UW	XV	XZ			AB	AE	AO	AU	CD H9	LG	LT	NH	TR	XC			
							1 to 50	51 to 100	101 to 150										1 to 50	51 to 100	101 to 150	
8	4	26	6	38	20	13	83.5 (89.5)	—	—	4.5	8.1	1.5	13.1	4	20	2.5	24	12.5	82.5 (88.5)	—	—	
10	4	26	6	38	20	13	83.5 (87.5)	—	—	4.5	8.1	1.5	13.1	4	20	2.5	24	12.5	82.5 (86.5)	—	—	
12	6	38	8	58	25	18	96 (99.5)	—	—	5.5	12.1	2	18.5	6	25	3.2	27	15	95 (98.5)	—	—	
16	6	38	8	58	25	18	101 (104.5)	127 (130.5)	153 (156.5)	5.5	12.1	2	18.5	6	25	3.2	27	15	101 (104.5)	127 (130.5)	153 (156.5)	
20	6	46	8	66	32	20	115	140	165	6.6	16.1	4	24.1	8	32	4	30	20	120	145	170	
25	6	46	8	66	32	24	120.5	145.5	170.5	6.6	16.1	4	24.1	8	32	4	30	20	127.5	152.5	177.5	

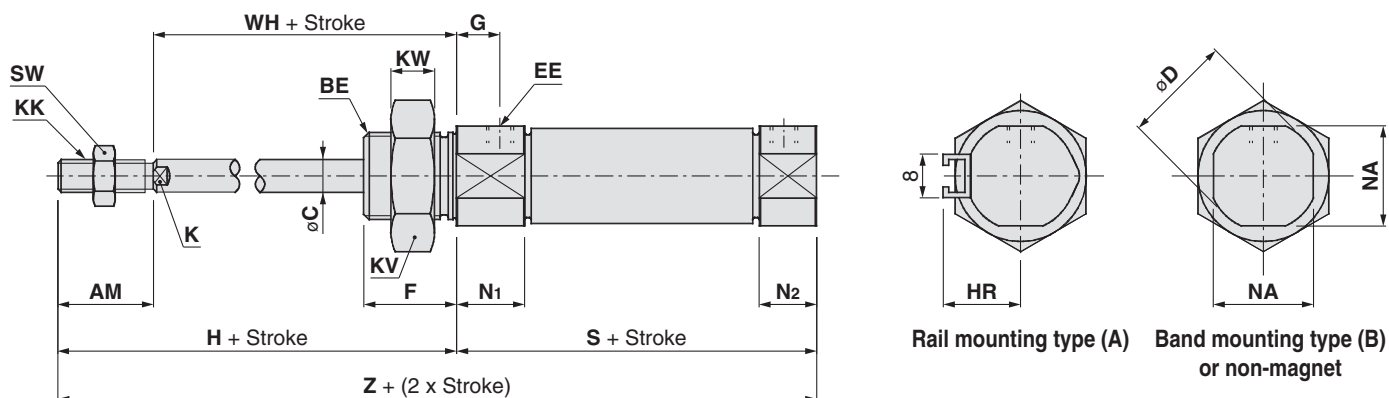
() : In the case of auto switch style.

Dimensions

Single acting, Spring extended

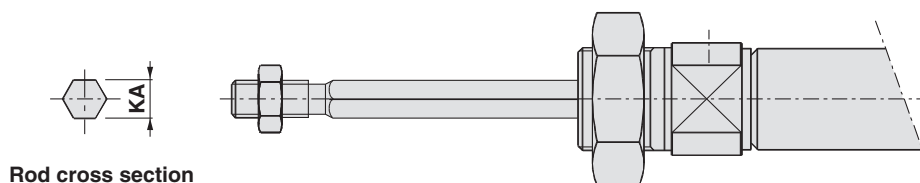
C□85F Bore size – Stroke T – □

Without magnet, Built-in magnet



C85KF, CD85KF

Non-rotating (Piston rod)



Rod cross section

(mm)																			
Bore size	AM	BE	C	D	EE	F	G	H	HR	K	KA	KK	KV	KW	N ₁	N ₂	NA	SW	WH
8	12	M12 x 1.25	4	16.7	M5 x 0.8	12	7	28	10	—	4.2	M4 x 0.7	19	6	11.5	9.5	15	7	16
10	12	M12 x 1.25	4	16.7	M5 x 0.8	12	7	28	10.5	—	4.2	M4 x 0.7	19	6	11.5	9.5	15	7	16
12	16	M16 x 1.5	6	19.7	M5 x 0.8	17	8	38	14	5	6.2	M6 x 1	24	8	12.5	10.5	18.3	10	22
16	16	M16 x 1.5	6	19.7	M5 x 0.8	17	8	38	14	5	6.2	M6 x 1	24	8	12.5	10.5	18.3	10	22
20	20	M22 x 1.5	8	28	G 1/8	20	8	44	17	6	8.2	M8 x 1.25	32	11	15	15	24	13	24
25	20	M22 x 1.5	10	33.5	G 1/8	22	8	50	20	8	10.2	M10 x 1.25	32	11	15	15	30	17	28

Bore size	S			Z		
	1 to 50	51 to 100	101 to 150	1 to 50	51 to 100	101 to 150
8	64.5 (70.5)	—	—	92.5 (98.5)	—	—
10	64.5 (68.5)	—	—	92.5 (96.5)	—	—
12	70 (73.5)	—	—	108 (111.5)	—	—
16	69 (72.5)	95 (98.5)	121 (124.5)	107 (110.5)	133 (136.5)	159 (162.5)
20	87	112	137	131	156	181
25	88.5	113.5	138.5	138.5	163.5	188.5

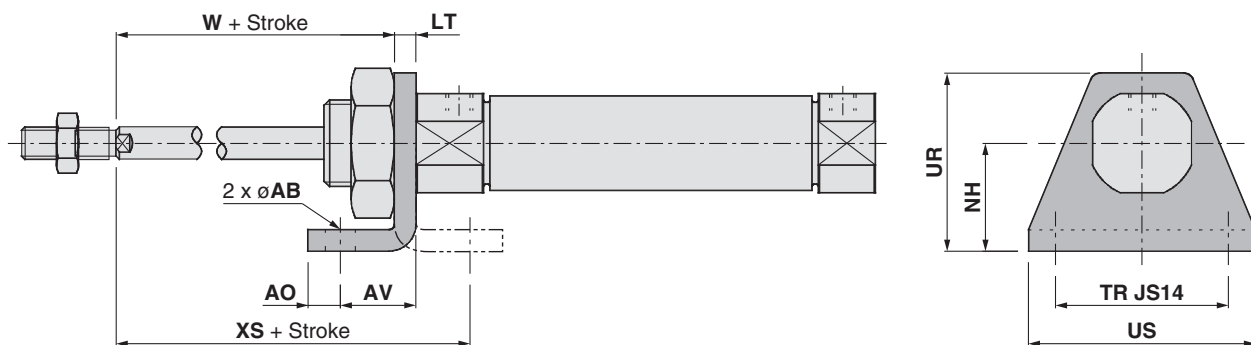
(): In the case of auto switch style.

Series C85

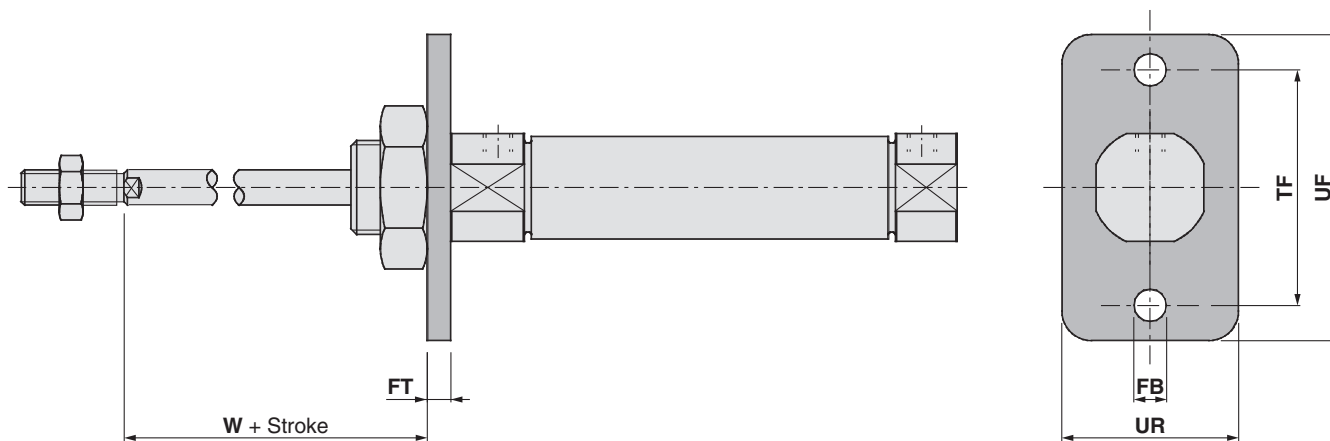
Dimensions

Single acting, Spring extended

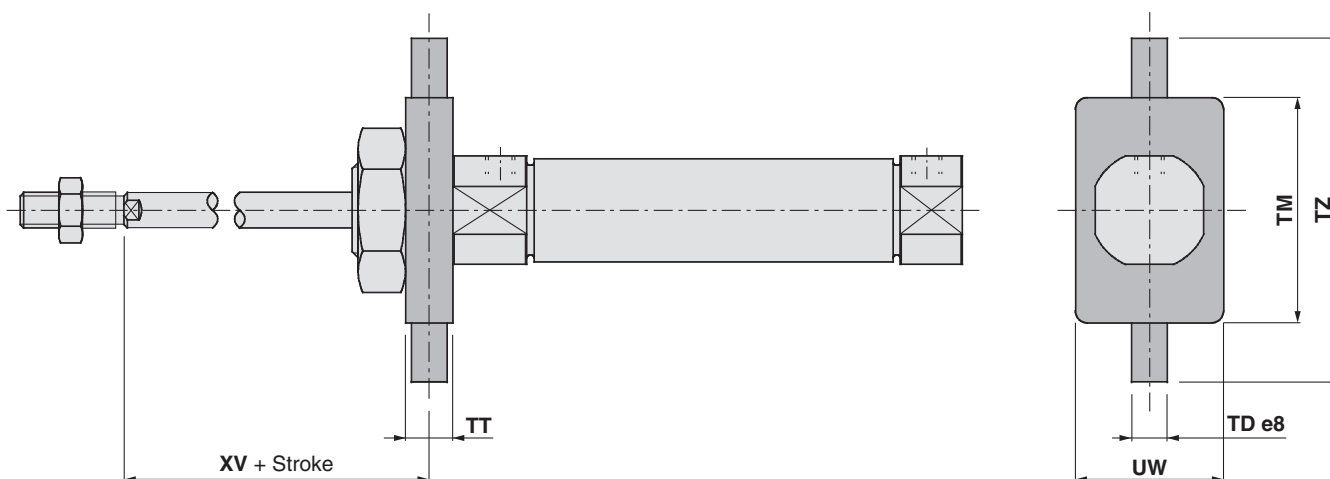
Rod foot: C85L10A, C85L16A, C85L25A



Rod flange: C85F10, C85F16, C85F25



Rod trunnion: C85T10, C85T16, C85T25



Bore size	Rod foot										Rod flange						Rod trunnion					
	AB	AO	AV	LT	NH	TR JS14	UR	US	W	XS	FBH13	FT	TF	UF	UR	W	TD e8	TM	TT	TZ	UW	XV
8	4.5	5	11	3.2	16	25	26	35	2.8	23.8	4.5	3.2	30	40	22	12.8	4	26	6	38	20	13
10	4.5	5	11	3.2	16	25	26	35	12.8	23.8	4.5	3.2	30	40	22	12.8	4	26	6	38	20	13
12	5.5	6	14	4	20	32	33	42	18	32	5.5	4	40	52	30	18	6	38	8	58	25	18
16	5.5	6	14	4	20	32	33	42	18	32	5.5	4	40	52	30	18	6	38	8	58	25	18
20	6.6	8	17	5	25	40	42	54	19	36	6.6	5	50	66	40	19	6	46	8	66	32	20
25	6.6	8	17	5	25	40	42	54	23	40	6.6	5	50	66	40	23	6	46	8	66	32	24

ISO Standards

Air Cylinder: Direct Mount Type Double Acting, Single Rod

Series C85R

ø8, ø10, ø12, ø16, ø20, ø25

How to Order

Double acting Single rod

C D 85R A F 16 - 40 - B

Built-in magnet

Nil	None
D	Built-in magnet

Type

A	Bottom side mounting
B*	Front side mounting

* Only ø20, ø25

Mounting

F	Boss-cut basic style
Y	Head cover axial port

Auto switch mounting

A	Rail mounting
B	Band mounting

Applicable auto switches are shown on page 24. Please order auto switches and bands separately.
(Auto switches and bands cannot be indicated here.)

Bore size

Stroke

Bore size (mm)	Standard stroke (mm)*	Max. stroke (mm)**
8	10, 25, 40, 50, 80, 100	200
10		400
12	10, 25, 40, 50, 80, 100	
16	125, 160	1000
20	10, 25, 40, 50, 80, 100	
25	125, 160	

* Other strokes on request.

** For exceeding the standard stroke range, it will be available as a special order (-X2018).

Mounting Bracket Part No.

Mounting bracket	Bore size (mm)					
	8	10	12	16	20	25
Single knuckle joint	KJ4D		KJ6D		KJ8D	KJ10D
Double knuckle joint	GKM4-8		GKM6-10		GKM8-16	GKM10-20
Floating joint	JA10-4-070		JA15-6-100		JA20-8-125	JA30-10-125

Replacement Parts

Bore size (mm)	Part no.	Note
20	C85-20PS	Every set includes: 1 rod seal 1 seal retaining washer 1 retaining ring
25	C85-25PS	

Series C85

Series CP96

Series C96

Series C55

Series C85R

Square rod cover makes direct mounting possible

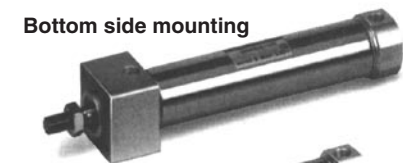
Space-saving

Mounting accuracy and rigidity made possible by means of faucet joint and direct mounting.

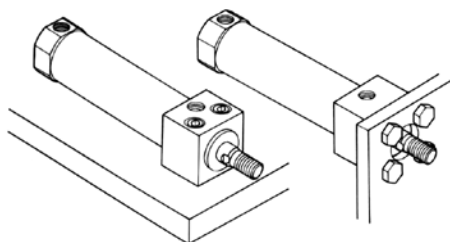
2 mounting types

Front side mounting and bottom side mounting available to suit your applications.

Bottom side mounting



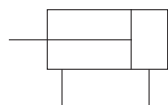
Front side mounting



Bottom side mounting Front side mounting

JIS Symbol

Double Acting, Single Rod



Specifications

Bore size (mm)	8	10	12	16	20	25
Piston rod dia. (mm)	4	4	6	6	8	10
Piston rod thread	M4 x 0.7	M4 x 0.7	M6 x 1	M6 x 1	M8 x 1.25	M10 x 1.25
Port size	M5 x 0.8	M5 x 0.8	M5 x 0.8	M5 x 0.8	G 1/8	G 1/8
Action	Double acting, Single rod					
Fluid	Air					
Proof pressure	1.5 MPa					
Max. operating pressure	1.0 MPa					
Min. operating pressure	0.1 MPa	0.08 MPa			0.05 MPa	
Ambient and fluid temperature	-20 to 80°C (Built-in magnet type: -10 to 60°C)					
Cushion	Rubber bumper (Standard)					
Lubrication	Not required. Use turbine oil Class 1 ISO VG32, if lubricated.					
Piston speed	50 to 1500 mm/s					
Allowable kinetic energy	0.02 J	0.03 J	0.04 J	0.09 J	0.27 J	0.4 J
Stroke length tolerance	+1.0 0 mm			+1.4 0 mm		

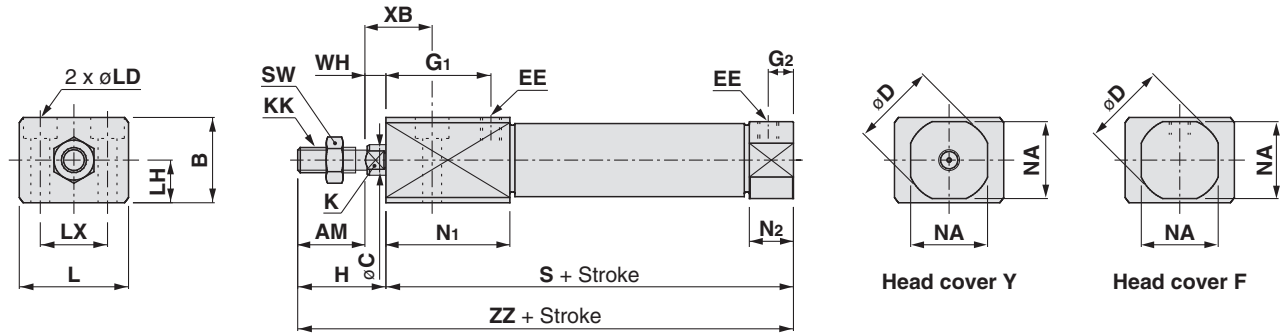
Weight

Bore size (mm)		8	10	12	16	20	25
Basic weight	Bottom side mounting	43	46	84	95	167	253
	Front side mounting	—	—	—	—	163	230
Additional weight per 10 mm of stroke		2	2.2	4.1	5.1	7.8	12.2

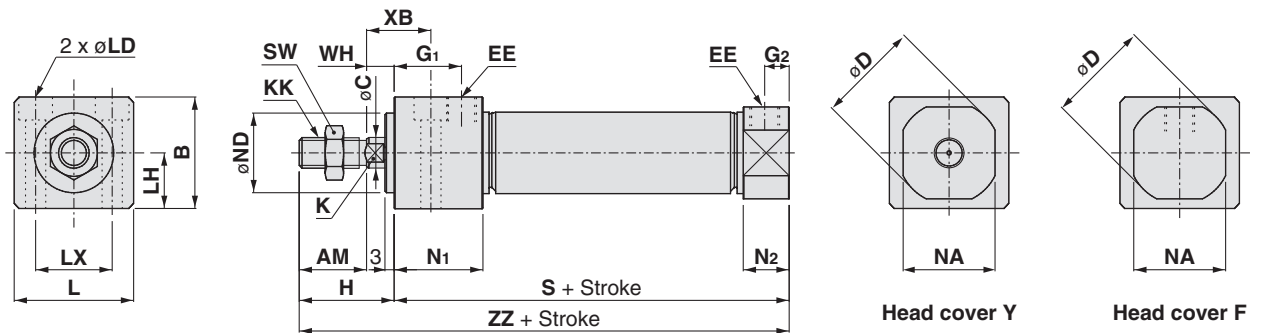
(g)

Dimensions

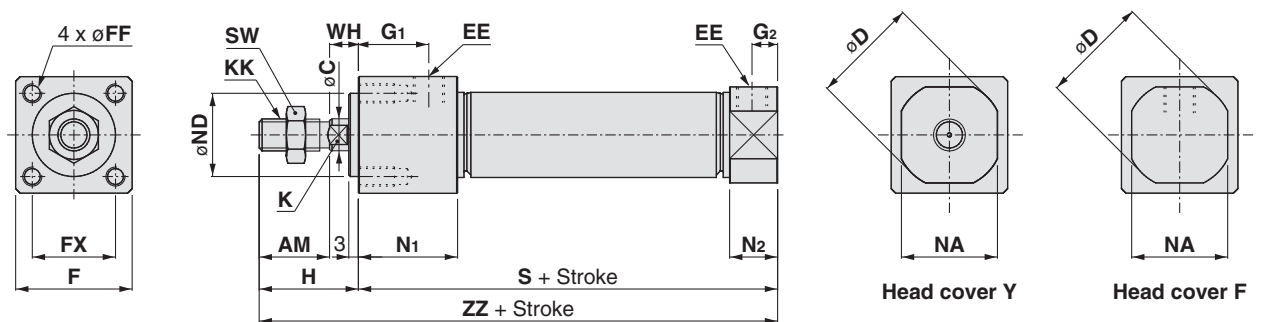
Double acting, Single rod

Bottom side mounting/C□85RA^F 8 to 16 – Stroke – B
Without magnet, Built-in magnet (Band mounting type)

Bore size	AM	B	C	D	EE	G1	G2	H	K	KK	L	LD	LH	LX	N1	N2	NA	S	SW	WH	XB	ZZ
8	12	16	4	17	M5 x 0.8	19	5	16	—	M4 x 0.7	23	ø3.5, ø6.5 depth of counterbore 4	8	14	23.5	9.5	15	58	7	4	12	74
10	12	16	4	17	M5 x 0.8	19	5	16	—	M4 x 0.7	23	ø3.5, ø6.5 depth of counterbore 4	8	14	23.5	9.5	15	58	7	4	12	74
12	16	20	6	20	M5 x 0.8	25	6	21	5	M6 x 1	26	ø4.5, ø8 depth of counterbore 5	10	16	29.5	10.5	18.3	67	10	5	16	88
16	16	20	6	20	M5 x 0.8	25	6	21	5	M6 x 1	26	ø4.5, ø8 depth of counterbore 5	10	16	29.5	10.5	18.3	67	10	5	16	88

Bottom side mounting/C□85RA^F 20/25 – Stroke – B
Without magnet, Built-in magnet (Band mounting type)

Bore size	AM	B	C	D	EE	G1	G2	H	K	KK	L	LD	LH	LX	N1	N2	NA	ND h8	S	SW	WH	XB	ZZ
20	20	30.3	8	28	G 1/8	22	8	30	6	M8 x 1.25	33.5	ø5.5, ø9.5 depth of counterbore 6.5	15	21	29	15	24	20 ⁰ _{-0.033}	76	13	10	22	106
25	22	36.6	10	33.5	G 1/8	22	8	36	8	M10 x 1.25	39	ø6.6, ø11 depth of counterbore 7.5	18	25	29	15	30	26 ⁰ _{-0.033}	79	17	14	26	115

Front side mounting/C□85RB^F 20/25 – Stroke – B
Without magnet, Built-in magnet (Band mounting type)

Bore size	AM	C	D	EE	F	FF	FX	G1	G2	H	K	KK	N1	N2	NA	ND h8	S	SW	WH	ZZ
20	20	8	28	G 1/8	30.4	M5 x 0.8 depth 9	22	22	8	30	6	M8 x 1.25	29	15	24	20 ⁰ _{-0.033}	76	13	10	106
25	22	10	33.5	G 1/8	36.4	M6 x 1 depth 11	26	22	8	36	8	M10 x 1.25	29	15	30	26 ⁰ _{-0.033}	79	17	14	115

Series C85 Auto Switch

Please order auto switches and mounting brackets separately.

Applicable Auto Switches/Refer to Best Pneumatics No. 2 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage			Auto switch model			Lead wire length (m)					Pre-wired connector	Applicable load		
					DC		AC	Band mounting	Rail mounting		0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)				
Solid state switch	—	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	M9N	—	—	●	●	●	○	—	○	IC	Relay, PLC		
				3-wire (PNP)			—	F7NV	F79	●	—	●	○	—	○				
				2-wire			—	F7PV	F7P	●	—	●	○	—	○				
		Connector		2-wire			M9B	—	—	●	●	●	○	—	○			—	
				3-wire (NPN)			—	F7BV	J79	●	—	●	○	—	○				
				3-wire (PNP)			H7C	J79C	—	●	—	●	●	●	—				
	Diagnosis indication (2-color)	Grommet		3-wire (NPN)	5 V, 12 V		M9NW	—	—	●	●	●	○	—	○	IC			
				3-wire (PNP)			—	F7NVV	F79W	●	—	●	○	—	○				
				2-wire			—	—	F7PW	●	—	●	○	—	○				
				Water resistant (2-color)			2-wire	M9BW	—	—	●	●	●	○	—			○	—
							2-wire	***H7BA	***F7BAV	***F7BA	—	—	●	○	—			○	
							4-wire (NPN)	H7NF	—	F79F	●	—	●	○	—			○	
Reed switch <td rowspan="6">—</td> <td rowspan="3">Grommet</td> <td rowspan="12">Yes</td> <td>3-wire (Equiv. to NPN)</td> <td rowspan="6">—</td> <td rowspan="12">—</td> <td>**A96</td> <td>—</td> <td>A76H</td> <td>●</td> <td>—</td> <td>●</td> <td>—</td> <td>—</td> <td>—</td> <td>IC</td> <td rowspan="12">Relay, PLC</td>	—	Grommet	Yes	3-wire (Equiv. to NPN)	—	—	**A96	—	A76H	●	—	●	—	—	—	IC	Relay, PLC		
				2-wire			—	200 V	—	A72	A72H	●	—	●	—	—		—	—
							12 V	100 V	—	A73	A73H	●	—	●	●	—		—	
		Connector						100 V or less	**A93	—	—	●	—	●	—	—		—	
				24 V or less				C73C	A73C	—	●	—	●	●	●	—		—	—
				24 V or less			C80C	A80C	—	●	—	●	●	●	—	—		—	IC
	Diagnosis indication (2-color)	Grommet		Yes	—		—	—	**A79W	—	—	●	—	●	—	—		—	—

*** Water resistant type auto switch can be mounted to the models with the above mentioned part numbers, but this does not guarantee the water resistance of the cylinder. For other applicable auto switches, please contact SMC.

* Lead wire length symbols: 0.5 m Nil (Example) M9NW

1 m M (Example) M9NWM

3 m L (Example) M9NWL

5 m Z (Example) M9NWZ

None N (Example) H7CN

* Solid state switches marked with a "○" are produced upon receipt of order.

* Since there are other applicable auto switches than listed, refer to the next page.

* For details about auto switches with pre-wired connector, refer to Best Pneumatics No. 2.

* Band mounting type is not available for D-A9□V, M9□V, M9□WV, and D-M9□A(V) types.

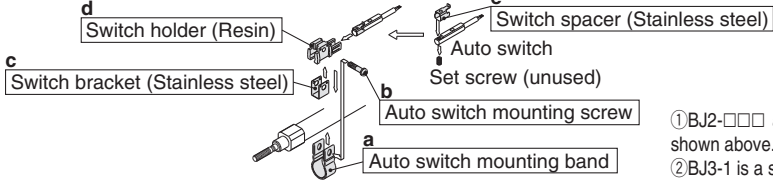
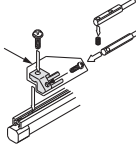
* D-A9□/M9□/M9□W/A7□□/A80□/F7□□/J7□□ auto switches are shipped together (but not assembled). (However, when D-A9□/M9□/M9□W types are selected, only auto switch mounting brackets are assembled at the time of shipment.)

* When D-A9□(V)/M9□(V)/M9□W(V)/M9□A(V) types are mounted on a ø8 to ø25 rail, order auto switch mounting brackets separately. Refer to the next page for details.

** D-A79W type cannot be mounted on bore sizes ø8, ø10, and ø12 cylinder.

** D-A9□ type cannot be mounted on bore sizes ø8, ø10, and ø12 cylinder.

Auto Switch Mounting Bracket/Part No.

How to mount the auto switch	Auto switch model	Bore size (mm)					
		ø8	ø10	ø12	ø16	ø20	ø25
Band mounting	D-A9□ ^{Note 5)} D-M9□ D-M9□W	Note 1), Note 2) ①BJ2-008 ②BJ3-1	Note 1), Note 2) ①BJ2-010 ②BJ3-1	Note 1), Note 2) ①BJ2-012 ②BJ3-1	Note 1), Note 2) ①BJ2-016 ②BJ3-1	Note 1), Note 2) ①BM2-020 ②BJ3-1	Note 1), Note 2) ①BM2-025 ②BJ3-1
	D-C7□/C80 D-C73C/C80C D-H7□/H7□W D-H7BA/H7NF	 ①BJ2-□□□ and BM2-□□□ are a set of a and b shown above. ②BJ3-1 is a set of c, d and e shown in the drawing.					
Rail mounting	D-A9□ ^{Note 5)} D-A9□V ^{Note 5)} D-M9□ ^{Note 6)} D-M9□V ^{Note 6)} D-M9□W ^{Note 6)} D-M9□WV ^{Note 6)} D-M9□A ^{Note 4)} D-M9□AV ^{Note 4)}	Note 3), Note 4) BQ2-012, BQ2-012S	Note 3), Note 4) BQ2-012, BQ2-012S	Note 3), Note 4) BQ2-012, BQ2-012S	Note 3), Note 4) BQ2-012, BQ2-012S	Note 3) BQ2-012	Note 3) BQ2-012
							

Note 1) Two kinds of auto switch mounting brackets are used as a set.

Note 2) When a cylinder is shipped, only auto switch mounting brackets are assembled.

Note 3) When mounting a small auto switch on a rail mounting type of bore size ø8 to ø25 cylinders, auto switch mounting brackets are required as shown in the above chart. Order them separately from the cylinders.

Ordering example: CD85KN10-40-A...1 pc. D-M9BWV...2 pcs. BQ2-012...2 pcs.

Note 4) When using D-M9□A(V), order BQ2-012S which is produced with stainless steel mounting screw.

Note 5) When mounting a band and/or a rail on bore sizes ø8, ø10 and ø12 cylinder, D-A9□(V) type cannot be mounted.

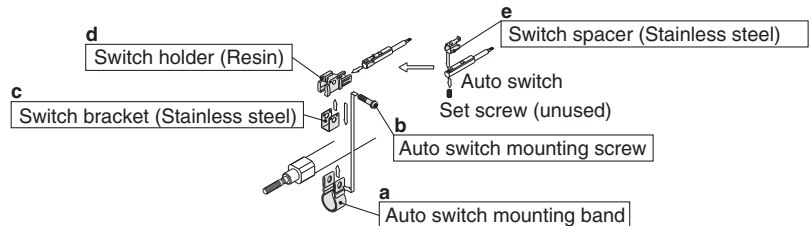
Note 6) When mounting a rail on bore sizes ø20 and ø25 cylinder, D-M9□(V), M9□W(V) and M9□A(V) types cannot be mounted.

How to Order Auto Switch

The order procedure for the solid state auto switches, auto switch mounting brackets and order quantity, if the solid state auto switch D-M9B is mounted on the C85N8 series with band.

Type	Order No.	Order Qty.
Auto switch	D-M9B	2
Auto switch mounting bracket	BJ2-008 (Part number for a and b set)	2
	BJ3-1 (Part number for c, d, and e set)	2

* Please order cylinders separately.



Besides the models listed “How to Order”, the following auto switches are applicable.

For detailed auto switch specifications, refer to Best Pneumatics No. 2.

Type	Auto switch model	Electrical entry	Features	Mounting	Applicable bore size
Reed switch	D-A93V, A96V	Grommet (Perpendicular)	—	Rail	ø16, ø20, ø25
	D-A90V		Without indicator light		
	D-C73, C76	Grommet (In-line)	—	Band	ø8 to ø25
	D-C80		Without indicator light		
Solid state switch	D-M9NV, M9PV, M9BV	Grommet (Perpendicular)	—	Rail	ø8 to ø16
	D-M9NWV, M9PWV, M9BWV		Diagnosis indication (2-color)		
	D-M9NAV, M9PAV, M9BAV		Water resistant (2-color)		
	D-H7A1, H7A2, H7B	Grommet (In-line)	—	Band	ø8 to ø25
	D-H7NW, H7PW, H7BW		Diagnosis indication (2-color)		

* Normally closed (NC = b contact) solid state switch (D-F9G, F9H type) are also available. For details, refer to Best Pneumatics No. 2.

* For details about auto switches with pre-wired connector, refer to Best Pneumatics No. 2.

Minimum Stroke for Auto Switch Mounting

ø8, ø10, ø12, ø16

n: No. of auto switch (mm)

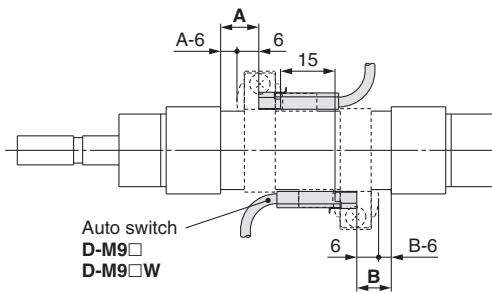
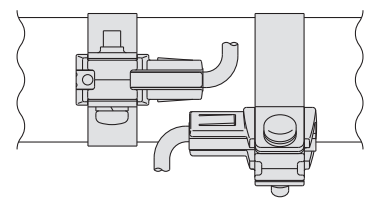
Auto switch model		Number of auto switch mounted				
		1 switch	2 switches		Other qty.	
			Different side	Same side	ø8 to ø16	
Band mounting	D-M9□ D-M9□W D-A9□(Note 2)	10	Note 1) 15	Note 1) 45	$15 + 35 \frac{(n-2)}{2}$ (n = 2, 4, 6...)	$45 + 15 (n - 2)$ (n = 2, 4, 6...)
	D-C7□ D-C80	10	15	50	$15 + 40 \frac{(n-2)}{2}$ (n = 2, 4, 6...)	$50 + 20 (n - 2)$ (n = 2, 4, 6...)
	D-H7□ D-H7□W D-H7BA D-H7NF	10	15	60	$15 + 45 \frac{(n-2)}{2}$ (n = 2, 4, 6...)	$60 + 22.5 (n - 2)$ (n = 2, 4, 6...)
	D-H7C D-C73C D-C80C	10	15	65	$15 + 50 \frac{(n-2)}{2}$ (n = 2, 4, 6...)	$50 + 27.5 (n - 2)$ (n = 2, 4, 6...)
	D-M9□V D-F7□V D-J79C	5	—	5	—	$10 + 10 (n - 2)$ (n = 4, 6...)
Rail mounting	D-F7□ D-J79	5	—	5	—	$15 + 15 (n - 2)$ (n = 4, 6...)
	D-A9□V(Note 2)	5	—	10	—	$10 + 15 (n - 2)$ (n = 4, 6...)
	D-A7□ D-A80 D-A73C D-A80C	5	—	10	—	$15 + 10 (n - 2)$ (n = 4, 6...)
	D-A7□H D-A80H	5	—	10	—	$15 + 15 (n - 2)$ (n = 4, 6...)
	D-M9□ D-A9□(Note 2)	10	—	10	—	$15 + 15 (n - 2)$ (n = 4, 6...)
	D-F7□WV D-F7BAV D-A79W(Note 2)	10	—	15	—	$10 + 15 (n - 2)$ (n = 4, 6...)
	D-M9□WV D-M9□AV	10	—	15	—	$15 + 15 (n - 2)$ (n = 4, 6...)
	D-F7□W D-J79W D-F7BA	10	—	15	—	$15 + 20 (n - 2)$ (n = 4, 6...)
	D-M9□W	15	—	15	—	$15 + 15 (n - 2)$ (n = 4, 6...)
	D-M9□A	15	—	20	—	$20 + 15 (n - 2)$ (n = 4, 6...)

ø20, ø25

n: No. of auto switch (mm)

Auto switch model		Number of auto switch mounted				
		1 switch	2 switches		Other qty.	
			Different side	Same side	ø20, ø25	
Band mounting	D-M9□ D-M9□W D-A9□	10	Note 1) 15	Note 1) 45	—	$45 + 45 (n - 2)$ (n = 2, 4, 6...)
	D-C7□ D-C80	10	15	50	$15 + 45 \frac{(n-2)}{2}$ (n = 2, 4, 6...)	$50 + 45 (n - 2)$ (n = 2, 4, 6...)
	D-H7□ D-H7□W D-H7BA D-H7NF	10	15	60	—	$60 + 45 (n - 2)$ (n = 2, 4, 6...)
	D-H7C D-C73C D-C80C	10	15	65	$15 + 50 \frac{(n-2)}{2}$ (n = 2, 4, 6...)	$65 + 50 (n - 2)$ (n = 2, 4, 6...)
	D-F7□V D-J79C	5	—	5	—	$10 + 10 (n - 2)$ (n = 4, 6...)
Rail mounting	D-F7□ D-J79	5	—	5	—	$15 + 15 (n - 2)$ (n = 4, 6...)
	D-A9□ D-A9□V	5	—	10	—	$10 + 15 (n - 2)$ (n = 4, 6...)
	D-A7□ D-A80 D-A73C D-A80C	5	—	10	—	$15 + 10 (n - 2)$ (n = 4, 6...)
	D-A7□H D-A80H	5	—	10	—	$15 + 15 (n - 2)$ (n = 4, 6...)
	D-F7□WV D-F7BAV D-A79W	10	—	15	—	$10 + 15 (n - 2)$ (n = 4, 6...)
	D-F7□W D-J79W D-F7BA	10	—	15	—	$15 + 20 (n - 2)$ (n = 4, 6...)

Note 1) How to mount the auto switch (with the stroke range within the below, an adjustment is required as shown in the chart below).

Auto switch model	With 2 auto switches	
	Different side Note 1)	Same side Note 1)
	 The proper auto switch mounting position is 6 mm inward from the switch holder edge.	 The auto switch is mounted by slightly displacing it in a direction (cylinder tube circumferential exterior) so that the auto switch and lead wire do not interfere with each other.
D-A93	—	45 to less than 50 strokes
D-M9□/M9□W	15 to less than 20 strokes	45 to less than 55 strokes

Note 2) D-A9□(V) and A79W types cannot be mounted on bore sizes ø8, ø10, and ø12 cylinder.

Note 3) When mounting a rail on bore sizes ø20 and ø25 cylinder, D-M9□(V), M9□W(V) and M9□A(V) types cannot be mounted.

Operating Range

Auto switch model		(mm)					
		Bore size					
		8	10	12	16	20	25
Band mounting	D-M9□ D-M9□W	2	2.5	2.5	3	3	3
	D-H7□ D-H7□W D-H7BA D-H7NF	3	3	3	4	4	4
	D-H7C	8	8	8	9	7	8.5
	D-A9□	—	—	—	7	6	6
	D-C7□/C80 D-C73C/C80C	7	7	7	7	7	8
Rail mounting	D-M9□/M9□V D-M9□W/M9□WV D-M9□A/M9□AV	2.5	3	3.5	3.5	—	—
	D-F7□/J79 D-F7□V/J79C D-F7□W/J79W D-F7□WV D-F79F D-F7BA/F7BAV	5	5	6	6	5	6
	D-A9□ D-A9□V	—	—	—	6.5	5.5	6
	D-A7□/A80 D-A7□H/A80H D-A73C/A80C	8	8	9	9	7	7
	D-A79W	—	—	—	13	10	10.5

Note) Since this is a guideline including hysteresis, not meant to be guaranteed. (Assuming approximately ±30% dispersion)

There may be the case it will vary substantially depending on an ambient environment.

Note 1) D-A9□(V) and A79W types cannot be mounted on bore sizes ø8, ø10, and ø12 cylinder.

Note 2) When mounting a rail on bore sizes ø20 and ø25 cylinder, D-M9□(V), M9□W(V) and M9□A(V) types cannot be mounted.

Series C85

Series CP96

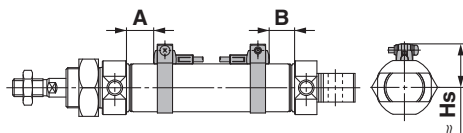
Series C96

Series C55

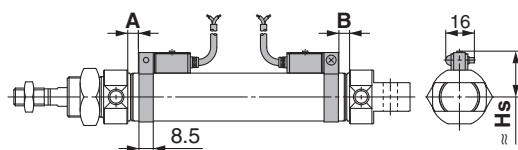
Proper Auto Switch Mounting Position (Detection at stroke end) and Mounting Height

Double/Single acting: Band Mounting

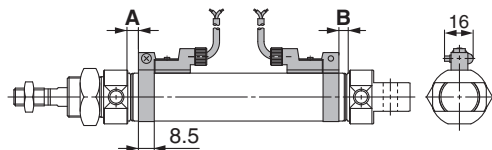
D-M9□
D-M9□W



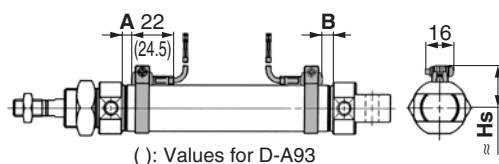
D-H7□
D-H7□W
D-H7BA
D-H7NF
D-C7□
D-C80



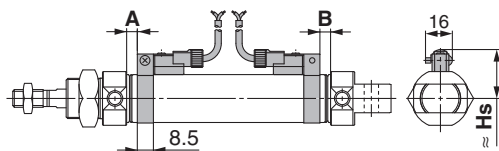
D-H7C



D-A9□

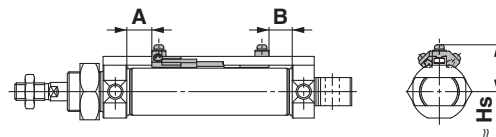


D-C73C
D-C80C

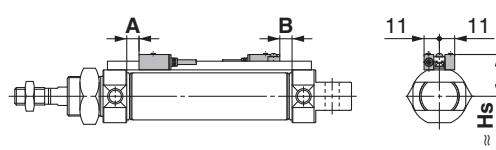


Double/Single acting: Rail Mounting

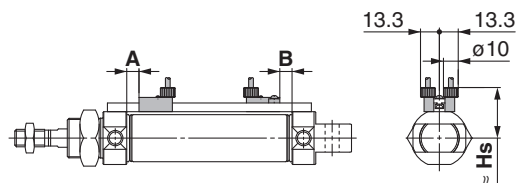
D-M9□
D-M9□V
D-M9□W
D-M9□WV
D-M9□A
D-M9□AV



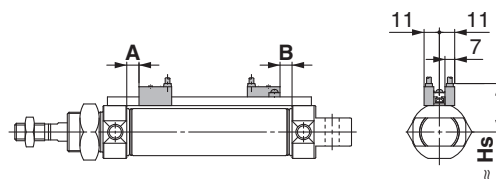
D-F7□
D-F7□W
D-J79
D-J79W
D-F7BA
D-F79F
D-A7□H
D-A80H



D-J79C
D-A73C
D-A80C



D-F7□V
D-F7□WV
D-F7BAV
D-A7□
D-A80
D-A79W



Proper Auto Switch Mounting Position (Detection at stroke end) and Mounting Height

Applicable series: CD85 (Double acting, Single rod), CD85W (Double acting, Double rod), CD85R (Direct mounting type)

Proper Auto Switch Mounting Position (mm)

Auto switch model	Band mounting							
	D-M9□ D-M9□W		D-H7□ D-H7C D-H7□W D-H7BA D-H7NF		D-A9□		D-C7□ D-C80 D-C73C D-C80C	
Bore size	A	B	A	B	A	B	A	B
8	6.5	6.5	2	2	—	—	3	3
10	6.5 (7)	6.5 (7)	2 (2.5)	2 (2.5)	—	—	3 (3.5)	3 (3.5)
12	7.5 (8.5)	7.5 (8.5)	3 (4)	3 (4)	—	—	4 (5)	4 (5)
16	7.5 (8.5)	13.5 (10.5) [7.5]	3 (4)	9 (6) [3]	3.5 (4.5)	9.5 (6.5) [3.5]	4 (5)	10 (7) [4]
20	10.5 (8.5)	9.5 (7.5)	6 (4)	5 (3)	6.5 (4.5)	5.5 (3.5)	7 (5)	6 (4)
25	12 (10)	11 (9)	7.5 (5.5)	6.5 (4.5)	8 (6)	7 (5)	8.5 (6.5)	7.5 (5.5)

* The value in () is in cases with air cushion.

* The value in [] is in cases of CD85F16, CD85Y.

Note 1) D-A9□ type cannot be mounted on bore sizes ø8, ø10, and ø12 cylinder.

Note 2) In the actual setting, adjust them after confirming the auto switch performance.

Auto Switch Mounting Height (mm)

Auto switch model	Band mounting			
	D-M9□ D-M9□W D-A9□(Note 1)	D-H7□ D-H7□W D-H7BA D-H7NF D-C7□ D-C80	D-H7C	D-C73C D-C80C
Bore size	Hs	Hs	Hs	Hs
8	15	16	19	18.5
10	16.5	17	20	19.5
12	18	18.5	21	21
16	20	20.5	23	23
20	22	22.5	25	25
25	24.5	25	27.5	27.5

Note 1) D-A9□ type cannot be mounted on bore sizes ø8, ø10, and ø12 cylinder.

Auto switch model	Rail mounting									
	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV		D-F7□/J79 D-F7□W/J79W D-F7□V D-F7□WV D-F79F/J79C D-F7BA D-F7BAV D-A72/A7□H D-A80H D-A73C/A80C		D-A9□ D-A9□V		D-A73 D-A80		D-A79W	
Bore size	A	B	A	B	A	B	A	B	A	B
8	5	5	4	4	—	—	3.5	3.5	—	—
10	5 (5.5)	5 (5.5)	4 (4.5)	4 (4.5)	—	—	3.5 (4)	3.5 (4)	—	—
12	6 (7)	6 (7)	5 (6)	5 (6)	—	—	4.5 (5.5)	4.5 (5.5)	—	—
16	6 (7)	12 (9) [6]	5 (6)	11 (8) [5]	3.5 (4.5)	9.5 (6.5) [3.5]	4.5 (5.5)	10.5 (7.5) [4.5]	2 (3)	8 (5) [2]
20	—	—	8 (6)	7 (5)	6.5 (4.5)	5.5 (3.5)	7.5 (5.5)	6.5 (4.5)	5 (3)	4 (2)
25	—	—	9.5 (7.5)	8.5 (6.5)	8 (6)	7 (5)	9 (7)	8 (6)	6.5 (4.5)	5.5 (3.5)

* The value in () is in cases with air cushion.

* The value in [] is in cases of CD85F16, CD85Y.

Note 1) D-A9□(V) and A79W types cannot be mounted on bore sizes ø8, ø10, and ø12 cylinder.

Note 2) D-M9□(V), M9□W(V), and M9□A(V) types cannot be mounted on bore sizes ø20 and ø25 cylinder.

Note 3) In the actual setting, adjust them after confirming the auto switch performance.

								(mm)
Auto switch model	Rail mounting							
	D-M9□ ^{Note 1)}	D-F7□	D-F7□V D-F7□WV D-F7BAV	D-J79C	D-A7□ D-A80	D-A73C D-A80C	^{Note 2)} D-A79W	
	D-M9□V	D-J79						
	D-M9□W	D-F7□W						
	D-M9□WV	D-J79W						
	D-M9□A	D-F79F						
	D-M9□AV	D-F7BA						
	D-A9□ ^{Note 2)}	D-A7□H						
D-A9□V	D-A80H							
Bore size	Hs	Hs	Hs	Hs	Hs	Hs	Hs	
8	19	19	21.5	23.5	18	25	—	
10	19	19	21.5	23.5	18	25	—	
12	20.5	20.5	23	25	19.5	26.5	—	
16	20.5	20.5	23	25	19.5	26.5	22	
20	23.5	23.5	26	29	22.5	29.5	25	
25	26.5	26.5	29	32	25.5	32.5	28	

Note 1) D-M9□(V), M9□W(V), and M9□A(V) types cannot be mounted on bore sizes ø20 and ø25 cylinder.

Note 2) D-A9□(V) and A79W types cannot be mounted on bore sizes ø8, ø10, and ø12 cylinder.

Series C85

Auto Switch Mounting 3

Proper Auto Switch Mounting Position (Detection at stroke end) and Mounting Height

Applicable series: CD85□-□S (Single acting, Spring return)

Proper Auto Switch Mounting Position

(mm)

Auto switch model	Bore size	A Dimensions			B
		5 to 50 st	51 to 100 st	101 to 150 st	
D-M9□ D-M9□W	8	18.5	18.5	18.5	6.5
	10	16.5	16.5	16.5	6.5
	12	18	18	18	7.5
	16	18	33.5	49	13.5 [7.5]
	20	10.5 (35.5)	60.5	85.5	9.5
	25	10.5 (35.5)	60.5	85.5	11
D-H7□ D-H7C D-H7□W D-H7BA D-H7NF	8	14	14	14	2
	10	12	12	12	2
	12	13.5	13.5	13.5	3
	16	13.5	29	44.5	9 [3]
	20	6 (31)	56	81	5
	25	6 (31)	56	81	6.5
D-A9□	16	14	29.5	45	9.5 [3.5]
	20	6.5 (31.5)	56.5	81.5	5.5
	25	6.5 (31.5)	56.5	81.5	7
D-C7□ D-C80 D-C73C D-C80C	8	15	15	15	3
	10	13	13	13	3
	12	14.5	14.5	14.5	4
	16	14.5	30	45.5	10 [4]
	20	7 (32)	57	82	6
	25	7 (32)	57	82	7.5

* The value in () is in cases of non-rotating.

* The value in [] is in cases of CD85F16, CD85Y.

Note 1) D-A9□(V) and A79W types cannot be mounted on bore sizes ø8, ø10, and ø12 cylinder.

Note 2) When mounting a rail on bore sizes ø20 and ø25 cylinder, D-M9□(V), M9□W(V) and M9□A(V) types cannot be mounted.

Note 3) In the actual setting, adjust them after confirming the auto switch performance.

Auto Switch Mounting Height

(mm)

Auto switch model	Band mounting			
	D-M9□ D-M9□W D-A9□(Note 1)	D-H7□ D-H7□W D-H7BA D-H7NF D-C7□ D-C80	D-H7C	D-C73C D-C80C
Bore size	Hs	Hs	Hs	Hs
8	15	16	19	18.5
10	16.5	17	20	19.5
12	18	18.5	21	21
16	20	20.5	23	23
20	22	22.5	25	25
25	24.5	25	27.5	27.5

Note 1) D-A9□ type cannot be mounted on bore sizes ø8, ø10, and ø12 cylinder.

Auto switch model	Bore size	A Dimensions			B
		5 to 50 st	51 to 100 st	101 to 150 st	
D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV D-F7□/J79 D-F7□W D-J79W D-F7□V D-F7□WV D-F79F/J79C D-F7BA D-F7BAV D-A72 D-A7□H/A80H D-A73C/A80C	8	17	17	17	5
	10	15	15	15	5
	12	16.5	16.5	16.5	6
	16	16.5	32	47.5	12 [6]
	8	16	16	16	4
	10	14	14	14	4
	12	15.5	15.5	15.5	5
	16	15.5	31	46.5	11 [5]
	20	8 (33)	58	83	7
	25	8 (33)	58	83	8.5
	16	12.5	28	43.5	8 [2]
	20	5 (30)	55	80	4
D-A9□ D-A9□V D-A79W	25	5 (30)	55	80	5.5
	8	15.5	15.5	15.5	3.5
	10	13.5	13.5	13.5	3.5
	12	15	15	15	4.5
	16	15	30.5	46	10.5 [4.5]
	20	7.5 (32.5)	57.5	82.5	6.5
	25	7.5 (32.5)	57.5	82.5	8
	8	15.5	15.5	15.5	3.5
D-A73 D-A80	10	13.5	13.5	13.5	3.5
	12	15	15	15	4.5
	16	15	30.5	46	10.5 [4.5]
	20	7.5 (32.5)	57.5	82.5	6.5
	25	7.5 (32.5)	57.5	82.5	8

Auto switch model	Rail mounting						
	D-M9□(Note 1) D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV D-A9□(Note 2) D-A9□V	D-F7□ D-J79 D-F7□W D-J79W D-F79F D-F7BA D-A7□H D-A80H	D-F7□V D-F7□WV D-F7BAV	D-J79C	D-A7□ D-A80	D-A73C D-A80C	Note 2) D-A79W
Bore size	Hs	Hs	Hs	Hs	Hs	Hs	Hs
8	19	19	21.5	23.5	18	25	—
10	19	19	21.5	23.5	18	25	—
12	20.5	20.5	23	25	19.5	26.5	—
16	20.5	20.5	23	25	19.5	26.5	22
20	23.5	23.5	26	29	22.5	29.5	25
25	26.5	26.5	29	32	25.5	32.5	28

Note 1) D-M9□(V), M9□W(V), and M9□A(V) types cannot be mounted on bore sizes ø20 and ø25 cylinder.

Note 2) D-A9□(V) and A79W types cannot be mounted on bore sizes ø8, ø10, and ø12 cylinder.

Proper Auto Switch Mounting Position (Detection at stroke end) and Mounting Height

Applicable series: CD85□-□T (Single acting, Spring extended type)

Proper Auto Switch Mounting Position (mm)

Auto switch model	Bore size	A	B Dimensions		
			5 to 50 st	51 to 100 st	101 to 150 st
Band mounting	D-M9□ D-M9□W	8	6.5	31	31
		10	6.5	29	29
		12	7.5	31	31
		16	7.5	36 [30]	62 [56]
		20	10.5	34.5	59.5
		25	12	34.5	59.5
	D-H7□ D-H7C D-H7□W D-H7BA D-H7NF	8	2	26.5	26.5
		10	2	24.5	24.5
		12	3	26.5	26.5
		16	3	31.5 [25.5]	57.5 [51.5]
		20	6	30	55
		25	7.5	30	55
	D-A9□	16	3.5	32 [26]	58 [52]
		20	6.5	30.5	55.5
		25	8	30.5	55.5
	D-C7□ D-C80 D-C73C D-C80C	8	3	27.5	27.5
		10	3	25.5	25.5
		12	4	27.5	27.5
		16	4	32.5 [26.5]	58.5 [52.5]
		20	7	31	56
		25	8.5	31	56

* The value in [] is in cases of CD85F16, CD85Y.

Note 1) D-A9□(V) and A79W types cannot be mounted on bore sizes ø8, ø10, and ø12 cylinder.

Note 2) When mounting a rail on bore sizes ø20 and ø25 cylinder, D-M9□(V), M9□W(V) and M9□A(V) types cannot be mounted.

Note 3) In the actual setting, adjust them after confirming the auto switch performance.

Auto Switch Mounting Height (mm)

Auto switch model	Band mounting			
	Bore size	Hs	Hs	Hs
D-M9□ D-M9□W D-A9□ ^{Note 1)}	8	15	16	19
	10	16.5	17	20
	12	18	18.5	21
	16	20	20.5	23
	20	22	22.5	25
	25	24.5	25	27.5
D-H7□ D-H7□W D-H7BA D-H7NF D-C7□ D-C80	8	15	16	19
	10	16.5	17	20
	12	18	18.5	21
	16	20	20.5	23
	20	22	22.5	25
	25	24.5	25	27.5
D-H7C D-C73C D-C80C	8	15	16	19
	10	16.5	17	20
	12	18	18.5	21
	16	20	20.5	23
	20	22	22.5	25
	25	24.5	25	27.5

Note 1) D-A9□ type cannot be mounted on bore sizes ø8, ø10, and ø12 cylinder.

Auto switch model	Bore size	A	B Dimensions		
			5 to 50 st	51 to 100 st	101 to 150 st
Rail mounting	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV	8	5	29.5	29.5
		10	5	27.5	27.5
		12	6	29.5	29.5
		16	6	34.5 [28.5]	60.5 [54.5]
		20	8	32	57
		25	9.5	32	57
	D-F7□/J79 D-F7□W D-J79W D-F7□V D-F7□WV D-F79F/J79C D-F7BA D-F7BAV D-A72 D-A7□H/A80H D-A73C/A80C	8	4	28.5	28.5
		10	4	26.5	26.5
		12	5	28.5	28.5
		16	5	33.5 [27.5]	59.5 [53.5]
		20	8	32	57
		25	9.5	32	57
	D-A9□ D-A9□V D-A79W	16	2	30.5 [24.5]	56.5 [50.5]
		20	5	29	54
		25	6.5	29	54
	D-A73 D-A80	8	3.5	28	28
		10	3.5	26	26
		12	4.5	28	28
		16	4.5	33 [27]	59 [53]
		20	7.5	31.5	56.5
		25	9	31.5	56.5

Auto switch model	Rail mounting						
	Bore size	Hs	Hs	Hs	Hs	Hs	Hs
D-M9□ ^{Note 1)} D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV D-A9□ ^{Note 2)} D-A9□V	8	19	19	21.5	23.5	18	25
	10	19	19	21.5	23.5	18	25
	12	20.5	20.5	23	25	19.5	26.5
	16	20.5	20.5	23	25	19.5	26.5
	20	23.5	23.5	26	29	22.5	29.5
	25	26.5	26.5	29	32	25.5	32.5
D-F7□ D-J79 D-F7□W D-J79W D-F79F D-F7BA D-F7BAV	8	19	19	21.5	23.5	18	25
	10	19	19	21.5	23.5	18	25
	12	20.5	20.5	23	25	19.5	26.5
	16	20.5	20.5	23	25	19.5	26.5
	20	23.5	23.5	26	29	22.5	29.5
	25	26.5	26.5	29	32	25.5	32.5
D-J79C D-A7□ D-A80 D-A73C D-A80C	8	19	19	21.5	23.5	18	25
	10	19	19	21.5	23.5	18	25
	12	20.5	20.5	23	25	19.5	26.5
	16	20.5	20.5	23	25	19.5	26.5
	20	23.5	23.5	26	29	22.5	29.5
	25	26.5	26.5	29	32	25.5	32.5
D-A79W ^{Note 2)}	8	19	19	21.5	23.5	18	25
	10	19	19	21.5	23.5	18	25
	12	20.5	20.5	23	25	19.5	26.5
	16	20.5	20.5	23	25	19.5	26.5
	20	23.5	23.5	26	29	22.5	29.5
	25	26.5	26.5	29	32	25.5	32.5

Note 1) D-M9□(V), M9□W(V), and M9□A(V) types cannot be mounted on bore sizes ø20 and ø25 cylinder.

Note 2) D-A9□(V) and A79W types cannot be mounted on bore sizes ø8, ø10, and ø12 cylinder.

How to Mount and Move the Auto Switch

Mounting Bracket Band Mounting Type

<Applicable auto switch>

Solid state D-M9N, D-M9P, D-M9B
D-M9NW, D-M9PW, D-M9BW
Reed D-A90, A93, A96

How to Mount and Move the Auto Switch

Mounting the Auto Switch

1. Attach the switch bracket to the switch holder.
(Fit the convex part of the switch bracket over the concave part of the holder.)
2. Mount the auto switch mounting band to the cylinder tube.
3. Set the switch holder between the reinforcing plates of the band which is already attached to the cylinder.
4. Insert the auto switch mounting screw in the hole of the reinforcing plate through the switch holder, and thread it into the other plate. Tighten the screw temporarily.
5. Remove the set screw attached to the auto switch.
6. Attach the switch spacer to the auto switch.
7. Insert the auto switch with a switch spacer from the back of the switch holder and set it at the specified position.
(Insert the auto switch with an angle of approximately 10 to 15°. See figure 1.)
8. To secure the auto switch, tighten the switch mounting screw with the specified torque (0.8 N·m to 1.0 N·m).

Adjusting the Switch Position

1. Unloosen the auto switch mounting screw 3 turns to adjust the auto switch set position.
2. Tighten the screw as described above (8) after adjustment.

Dismounting Auto Switch

1. Remove the auto switch mounting screw from the switch holder.
2. Move the auto switch back towards the position where it stops at the lead wire side.
3. Hold up the lead wire side of the auto switch at the angle of around 45°.
4. Maintain the angle, and pull back the auto switch obliquely at the same angle.

Note 1) Be careful not to pull or strain the lead wires.
Be careful not to apply excess tensile force (over 10 N) to the auto switches.
Adjust the auto switch position after sufficiently loosening its screw. For the band mounting type BJ3-1, loosen the screw three rotations or more.

Note 2) Be sure to use the switch spacer and switch bracket for the band mounting type.
Use together with the conventional auto switch mounting bands (brackets) BJ2-□□□ or BM2-□□□.
Confirm that a switch spacer is mounted to the end of the auto switch before fastening the auto switch. If the switch bracket is not mounted, the auto switch may move after installation.

<Applicable auto switch>

Solid state D-H7A1, D-H7A2, D-H7B,
D-H7BA, D-H7C, D-H7NF,
D-H7NW, D-H7PW, D-H7BW
Reed D-C73, D-C76, D-C80, D-C73C,
D-C80C

How to Mount and Move the Auto Switch

1. Put a mounting band on the cylinder tube and set it at the auto switch mounting position.
2. Put the mounting section of the auto switch between the band mounting holes, then adjust the position of mounting holes of switch to those of mounting band.
3. Lightly thread the auto switch mounting screw (M3 x 0.5 x 14 L) through the mounting hole into the thread part of band fitting.
4. After setting the whole body to the detecting position by sliding, tighten the mounting screw (M3 x 0.5 x 14 L) to secure the auto switch while properly contacting the auto switch bottom part and the cylinder tube. (Tightening torque of M3 screw should be 0.8 to 1 N·m.)
5. Modification of the detection position should be made in the condition of 3.
6. After auto switch is mounted and fixed, attach a protective tube on the tip of an auto switch mounting screw (M3 x 0.5 x 14 L).

[Mounting screws set made of stainless steel]

The following set of mounting screws made of stainless steel is also available. Use it in accordance with the operating environment. (Please order the auto switch mounting band separately, since it is not included.)

BBA4: For D-C7/C8/H7

"D-H7BA" switch is set on the cylinder with the stainless steel screws above when shipped.
When only an auto switch is shipped independently, "BBA4" screws are attached.

Stainless Steel Mounting Screw Set

Part no.	Contents			Applicable auto switch mounting bracket part no.	Applicable auto switch
	Description	Size	Qty.		
BBA4	Auto switch mounting screw	M3 x 0.5 x 14 L	1	BJ2-006, BJ2-010, BJ2-016	D-C7, C8
				BM2-020, BM2-025, BM2-032, BM2-040	D-H7

⚠ Caution

1. Tighten the screw under the specified torque when mounting auto switch.
2. Set the auto switch mounting band perpendicularly to cylinder tube.

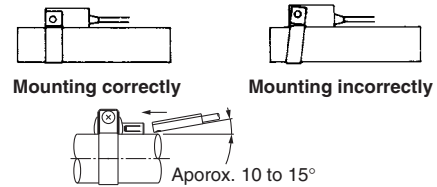
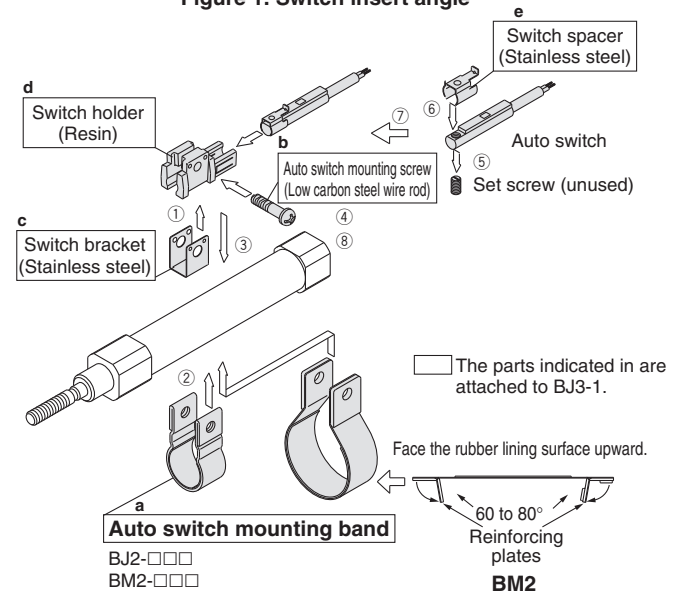


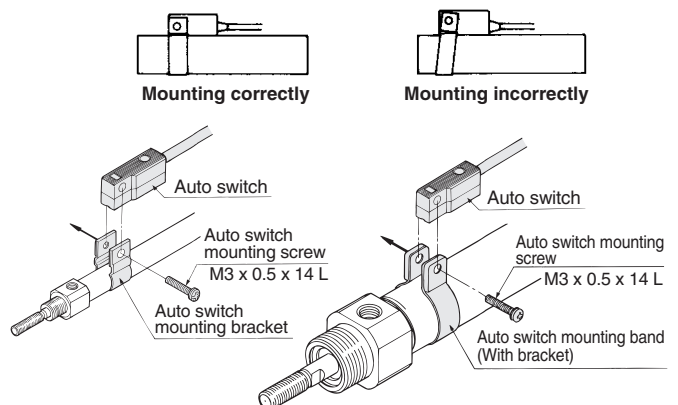
Figure 1. Switch insert angle



BJ2-□□□ and BM2-□□□ are a set of a and b shown above. BJ3-1 is a set of c, d and e shown above.

⚠ Caution

1. Tighten the screw under the specified torque when mounting auto switch.
2. Set the auto switch mounting band perpendicularly to cylinder tube.



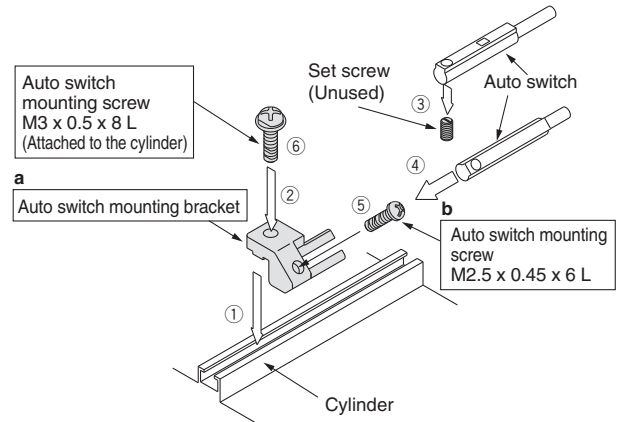
Mounting Bracket Rail Mounting Type

<Applicable auto switch>

Solid state D-M9N(V), D-M9P(V), D-M9B(V),
D-M9NW(V), D-M9PW(V), D-M9BW(V),
D-M9NA(V), D-M9PA(V), D-M9BA(V)

Reed D-A90(V), A93(V), A96(V)

1. Slide the auto switch mounting nut inserted into the mounting rail and set it at the auto switch mounting position.
2. Fit the convex part of the auto switch mounting bracket arm over the concave part of the rail, and slide the arm to the nut position.
3. Push the auto switch mounting screw lightly into the hexagon nut through the hole of the auto switch mounting arm.
4. Remove the set screw (M2.5) attached to the auto switch.
5. Insert the auto switch in the auto switch attachment part of the auto switch mounting bracket.
6. Secure the auto switch mounting screw (M2.5 x 0.45 x 6 L). (Tightening torque of M2.5 screw: 0.1 to 0.2 N·m)
7. Secure the auto switch mounting screw (3) after confirming the detecting position. (Tightening torque of M3 screw: 0.5 to 0.7 N·m)
8. Modify the detecting position while the auto switch is secured at the position of (3) in the figure.



• BQ2-012 is a set of a and b shown above.

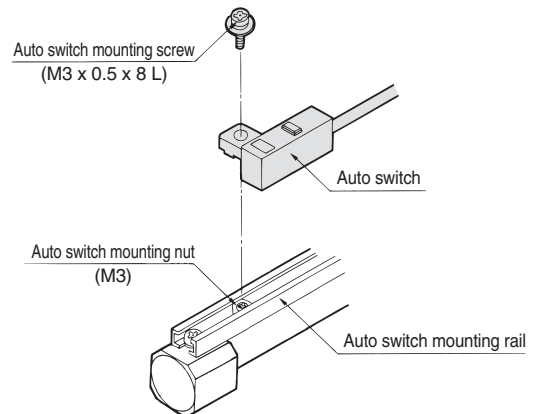
<Applicable auto switch>

Solid state D-F79, D-F7P, D-J79, D-F7NV,
D-F7PV, D-F7BV, D-J79C,
D-F79W, D-F7PW, D-J79W,
D-F7NWV, D-F7BWV, D-F79F,
D-F7BA, D-F7BAV,

Reed D-A72, D-A73, D-A80,
D-A72H, D-A73H,
D-A76H, D-A80H,
D-A73C, D-A80C, D-A79W

How to Mount and Move the Auto Switch

1. Slide the auto switch mounting nut (M3) inserted into the mounting rail and set it at the auto switch mounting position.
2. Fit the convex part of auto switch mounting arm into the concave part of auto switch mounting rail. Then slide the switch over the nut.
3. Push the auto switch mounting screw (M3 x 0.5 x 8 L) lightly into the mounting nut (M3) through the hole of auto switch mounting arm.
4. After reconfirming the detecting position, tighten the mounting screw (M3 x 0.5 x 8 L) to secure the auto switch. (Tightening torque of M3 screw should be 0.5 to 0.7 N·m.)
5. Modification of the detecting position should be made in the condition of 3.



[Mounting screws set made of stainless steel]

The set of stainless steel mounting screws (with nuts) described below is available and can be used depending on the operating environment. (Please order the auto switch spacer, since it is not included.)

BBA2: For D-A7/A8/F7/J7

"D-F7BA" auto switch is set on the cylinder with the stainless steel screws above when shipped. When only an auto switch is shipped independently, "BBA2" screws are attached.

Stainless Steel Mounting Screw Set

Part no.	Contents				Applicable auto switch mounting bracket part no.	Applicable auto switch
	No.	Description	Size	Qty.		
BBA2	1	Auto switch mounting screw	M3 x 0.5 x 6 L	1	BMU1-025	D-A7, A8 D-F7, J7
			M3 x 0.5 x 8 L	1	BQ-1	
			M3 x 0.5 x 10 L	1	BQ-2	
	2	Auto switch mounting nut (Hexagon nut)	M3 x 0.5	1	BQ-1	
	3	Auto switch mounting nut (Convex shape)	M3 x 0.5	1	BQ-2	

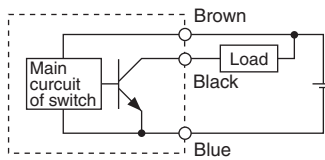
Note 1) A spacer for BQ-2 (black resin) is not included.

Note 2) When using D-A9□(V)/M9□(V)/M9□W(V)/M9□A(V) auto switches with BQ2-012, use stainless steel screws suitable for the auto switch mounting bracket.

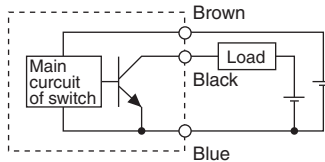
Auto Switches Connection and Example

Basic Wiring

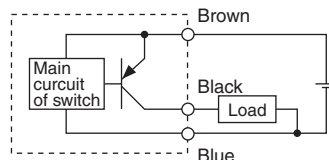
Solid state 3-wire, NPN



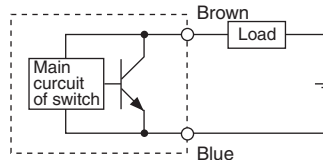
(Power supply for switch and load are separate)



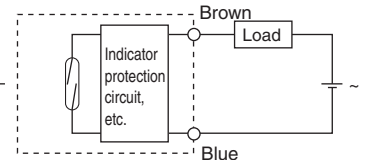
Solid state 3-wire, PNP



2-wire (Solid state)

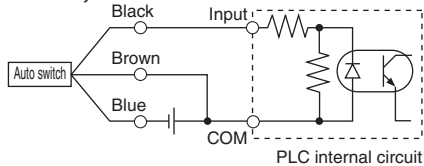


2-wire (Reed switch)

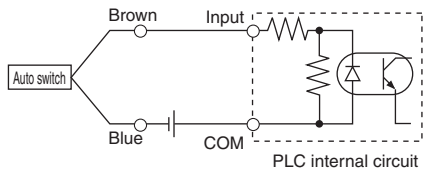


Example of Connection with PLC (Programmable Logic Controller)

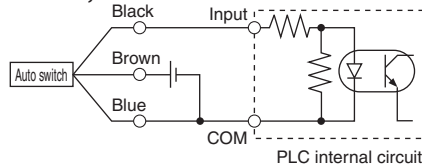
• Sink input specifications 3-wire, NPN



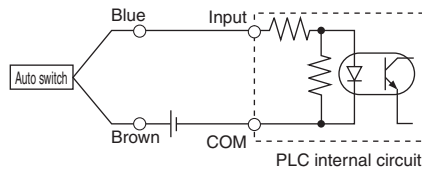
2-wire



• Source input specifications 3-wire, PNP



2-wire

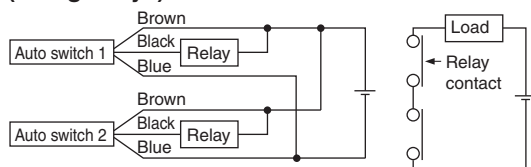


Connect according to the applicable PLC input specifications, as the connection method will vary depending on the PLC input specifications.

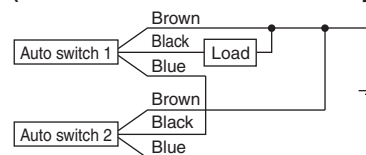
Example of AND (Series) and OR (Parallel) Connection

• 3-wire

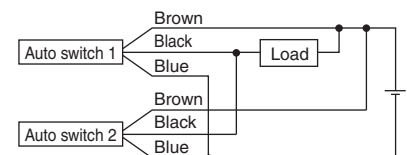
AND connection for NPN output (Using relays)



AND connection for NPN output (Performed with auto switches only)



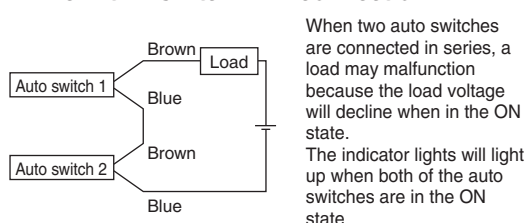
OR connection for NPN output



The indicator lights will light up when both auto switches are turned ON.

• 2-wire

2-wire with 2-switch AND connection

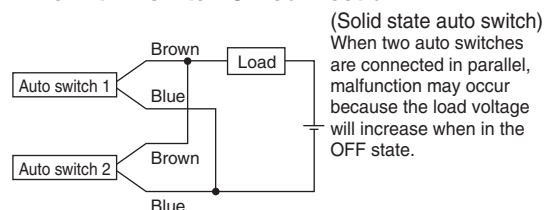


When two auto switches are connected in series, a load may malfunction because the load voltage will decline when in the ON state. The indicator lights will light up when both of the auto switches are in the ON state.

Load voltage at ON = Power supply voltage – Residual voltage x 2 pcs.
= 24 V – 4 V x 2 pcs.
= 16 V

Example: Power supply is 24 VDC
Internal voltage drop in auto switch is 4 V.

2-wire with 2-switch OR connection



(Solid state auto switch)
When two auto switches are connected in parallel, malfunction may occur because the load voltage will increase when in the OFF state.

Load voltage at OFF = Leakage current x 2 pcs. x Load impedance
= 1 mA x 2 pcs. x 3 kΩ
= 6 V

Example: Load impedance is 3 kΩ.
Leakage current from auto switch is 1 mA.

(Reed auto switch)
Because there is no current leakage, the load voltage will not increase when turned OFF. However, depending on the number of auto switches in the ON state, the indicator lights may sometimes grow dim or not light up, due to the dispersion and reduction of the current flowing to the auto switches.

ISO Standards

Air Cylinder: Standard Double Acting with End of Stroke Cushioning Series **CP96** ø32, ø40, ø50, ø63, ø80, ø100, ø125

How to Order

CP96S **B** **32** - **100** **W**

With auto switch **CP96SD** **B** **32** - **100** **W** - **M9BW** **S**

Built-in magnet •

Mounting •

B	Basic
L	Axial foot
F	Rod flange
G	Head flange
C	Single clevis
D	Double clevis

* Mounting brackets are shipped together, (but not assembled).

Bore size •

32	32 mm
40	40 mm
50	50 mm
63	63 mm
80	80 mm
100	100 mm
125	125 mm

Stroke (mm)
Refer to "Standard Stroke" on page 36.

Rod

Nil	Single rod
W	Double rod

Number of auto switches

Nil	2 pcs.
S	1 pc.
3	3 pcs.
n	"n" pcs.

Auto switch

Nil	Without auto switch
------------	---------------------

* For applicable auto switch model, refer to the table below.

Applicable Auto Switches/Refer to Best Pneumatics No. 2 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model	Lead wire length (m)				Pre-wired connector	Applicable load			
					DC	AC		0.5 (Nil)	1 (M)	3 (L)	5 (Z)					
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9N	●	●	●	○	○	IC	Relay, PLC	
				3-wire (PNP)		12 V		M9P	●	●	●	○	○			
				2-wire				M9B	●	●	●	○	○			
	Diagnosis indication (2-color)	Grommet		3-wire (NPN)	24 V	5 V, 12 V		—	M9NW	●	●	●	○	○		IC
				3-wire (PNP)		12 V			M9PW	●	●	●	○	○		
				2-wire					M9BW	●	●	●	○	○		
	Water resistant (2-color)	Grommet		3-wire (NPN)	24 V	5 V, 12 V		—	M9NA**	○	○	●	○	○		IC
				3-wire (PNP)		12 V			M9PA**	○	○	●	○	○		
				2-wire					M9BA**	○	○	●	○	○		
Reed switch	—	Grommet	Yes	3-wire (Equiv. to NPN)	—	5 V	—	A96	●	—	●	—	—	IC	—	
				None	2-wire	24 V	12 V	100 V	A93	●	—	●	—	—		—
			100 V or less					A90	●	—	●	—	—	—		—

** Water resistant type auto switch can be mounted to the models with the above mentioned part numbers, but this does not guarantee the water resistance of the cylinder.

* Lead wire length symbols: 0.5 m Nil (Example) M9NW
1 m M (Example) M9NWM
3 m L (Example) M9NWL
5 m Z (Example) M9NWZ

* Solid state switches marked with a "○" are produced upon receipt of order.

* Since there are other applicable auto switches than listed, refer to Best Pneumatics No. 2 for details.

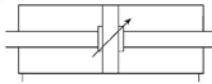
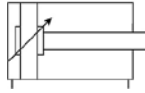
* For details about auto switches with pre-wired connector, refer to Best Pneumatics No. 2.

* D-A9□, M9□, M9□W, M9□A are shipped together, (but not assembled).

* (Switch mounting bracket is only assembled at the time of shipment.)

Note) D-Y59A, Y69A, Y7P, Y7□W, Z7□, Z80 type cannot be mounted on the CP96 series.

Moreover, D-M9□□ and A9□ type cannot be mounted on square groove of the CP96 series.



Specifications

Bore size (mm)	32	40	50	63	80	100	125
Action	Double acting						
Fluid	Air						
Proof pressure	1.5 MPa						
Max. operating pressure	1.0 MPa						
Min. operating pressure	0.05 MPa						
Ambient and fluid temperature	Without auto switch: -20 to 70°C* With auto switch: -10 to 60°C*						
Lubrication	Not required (Non-lube)						
Operating piston speed	50 to 1000 mm/s					50 to 700 mm/s	
Allowable stroke tolerance	Up to 250 st: $^{+1.0}_0$, 251 to 1000 st: $^{+1.4}_0$, 1001 to 1500 st: $^{+1.8}_0$, 1501 to 2000 st: $^{+2.2}_0$						
Cushion	Air cushion						
Port size	G 1/8	G 1/4	G 1/4	G 3/8	G 3/8	G 1/2	G 1/2
Mounting	Basic, Axial foot, Rod flange, Head flange, Single clevis, Double clevis, Center trunnion						

* No freezing

Standard Stroke

Bore size (mm)	Standard stroke (mm)	Max. stroke (Note)
32	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500	2000
40	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500	2000
50	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600	2000
63	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600	2000
80	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600, 700, 800	2000
100	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600, 700, 800	2000
125	—	2000

Intermediate strokes are available.

Note) Please consult with SMC for longer strokes.

Accessories

Mounting		Basic	Foot	Rod flange	Head flange	Single clevis	Double clevis	Center trunnion
Standard	Rod end nut	●	●	●	●	●	●	●
	Clevis pin	—	—	—	—	—	●	—
Option	Piston rod ball joint	●	●	●	●	●	●	●
	Rod clevis	●	●	●	●	●	●	●
	Rod boot	●	●	●	●	●	●	●

* Please do not use a piston rod ball joint (or floating joint) together with a single clevis with a ball joint (or clevis pivot bracket with a ball joint).

Replacement Parts/Seal Kit

Bore size (mm)	Kit no.	Contents
32	CS95-32	Cushion seal Wearing Piston seal Rod seal Tube gasket
40	CS95-40	
50	CS95-50	
63	CS95-63	
80	CS95-80	
100	CS96-100	
125	CS96-125	

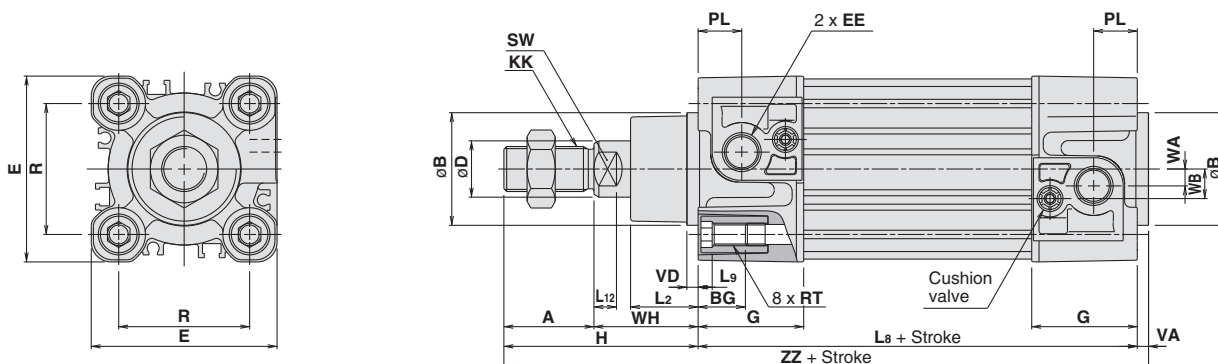
* Seal kit includes cushion seal, wearing, piston seal, rod seal, and tube gasket. Order the seal kit, based on each bore size.

* Seal kit includes a grease pack (ø32 to ø50: 10 g, ø63, ø80: 20 g, ø100, ø125: 30 g). Order with the following part number when only the grease pack is needed.

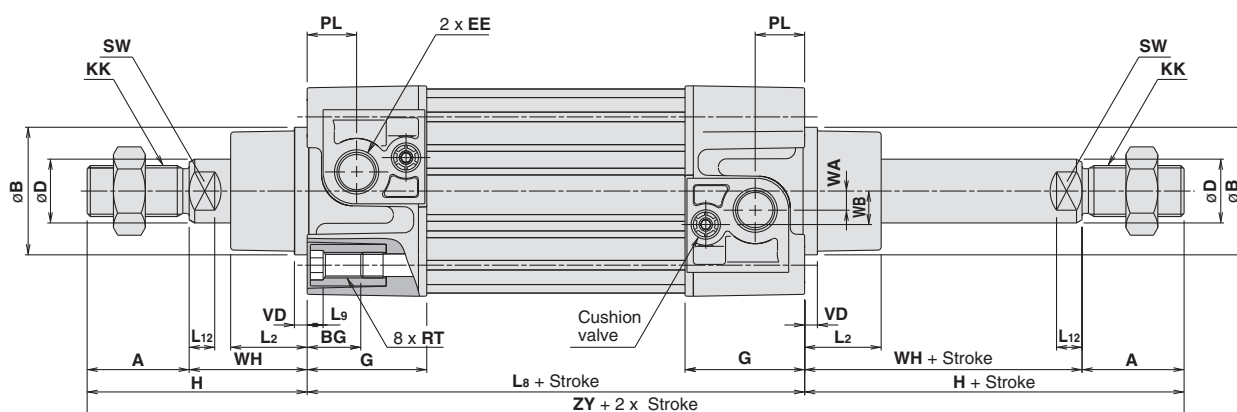
Grease pack part number: GR-S-010 (10 g), GR-S-020 (20 g)

Dimensions

Basic: CP96S(D)B Bore size – Stroke



Basic: CP96S(D)B Bore size – Stroke W

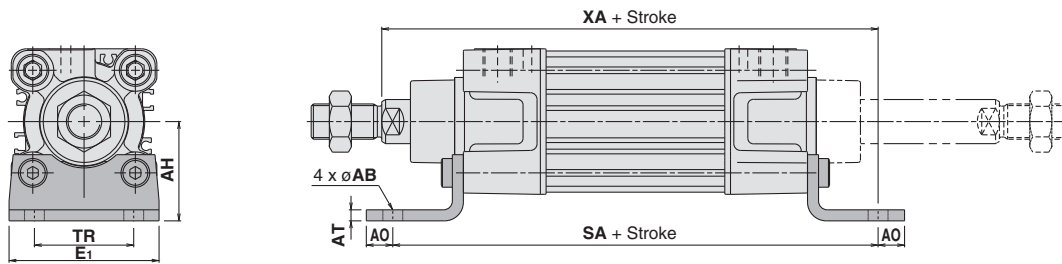


Bore size (mm)	A	B d11	BG	D	E	EE	G	H	KK	L ₂	L ₈	L ₉	L ₁₂	PL	R	RT	SW	VA	VD	WA	WB	WH	ZY	ZZ
32	22	30	16	12	47	G 1/8	32	48	M10 x 1.25	15	94	4	6	13	32.5	M6 x 1	10	4	4	4	7	26	190	146
40	24	35	16	16	54	G 1/4	37.5	54	M12 x 1.25	17	105	4	6.5	14	38	M6 x 1	13	4	4	5	9	30	213	163
50	32	40	16	20	66	G 1/4	37.5	69	M16 x 1.5	24	106	5	8	15.5	46.5	M8 x 1.25	17	4	4	6	10.5	37	244	179
63	32	45	16	20	77	G 3/8	45	69	M16 x 1.5	24	121	5	8	16.5	56.5	M8 x 1.25	17	4	4	9	12	37	259	194
80	40	45	17	25	99	G 3/8	45	86	M20 x 1.5	30	128	—	10	19	72	M10 x 1.5	22	4	4	11.5	14	46	300	218
100	40	55	17	25	118	G 1/2	50	91	M20 x 1.5	32	138	—	10	19	89	M10 x 1.5	22	4	4	17	15	51	320	233
125	54	60	20	32	144	G 1/2	58	119	M27 x 2	40	160	—	13	19	110	M12 x 1.75	27	6	6	17	15	65	398	285

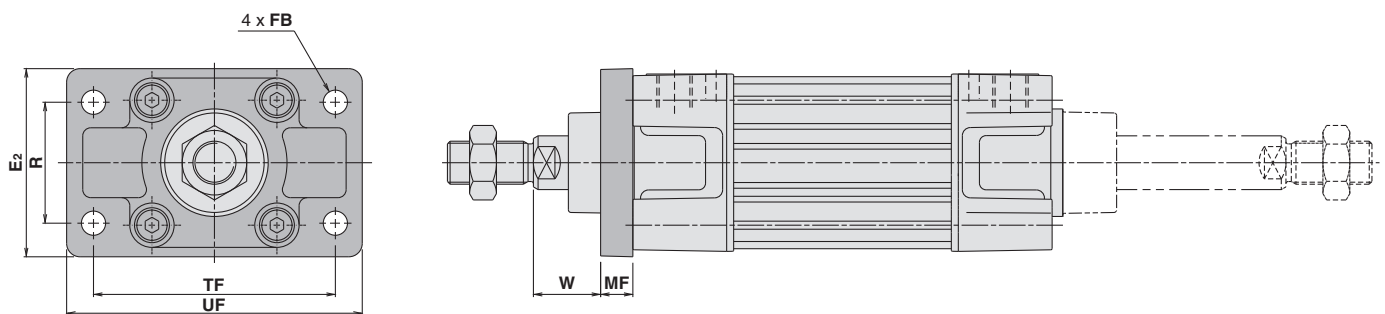
Series CP96

Dimensions

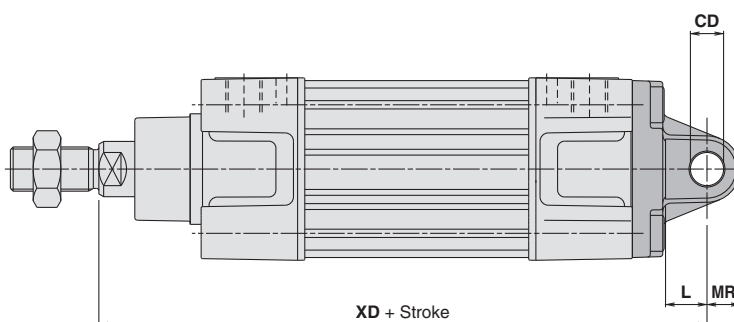
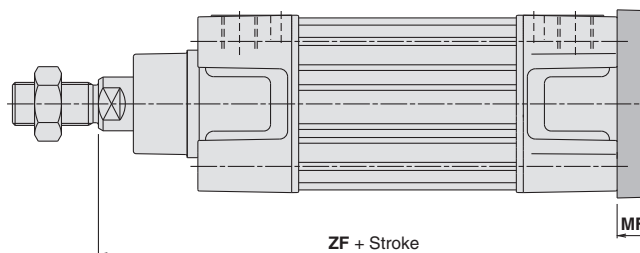
Axial foot (L)



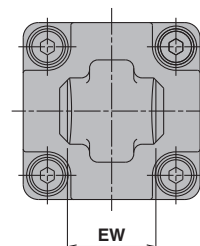
Rod flange (F)



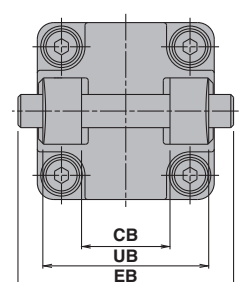
Head flange (G)



Single clevis (C)



Double clevis (D)



Bore size (mm)	E1	TR	AH	AO	AT	AB	SA	XA	R	TF	FB	E2	UF	W	MF	ZF	UB h14	CB H14	EW	CD H9	L	MR	XD	EB
32	48	32	32	10	4.5	7	142	144	32	64	7	50	79	16	10	130	45	26	26 ^{-0.2} _{-0.6}	10	12	9.5	142	65
40	55	36	36	11	4.5	10	161	163	36	72	9	55	90	20	10	145	52	28	28 ^{-0.2} _{-0.6}	12	15	12	160	75
50	68	45	45	12	5.5	10	170	175	45	90	9	70	110	25	12	155	60	32	32 ^{-0.2} _{-0.6}	12	15	12	170	80
63	80	50	50	12	5.5	10	185	190	50	100	9	80	120	25	12	170	70	40	40 ^{-0.2} _{-0.6}	16	20	16	190	90
80	100	63	63	14	6.5	12	210	215	63	126	12	100	153	30	16	190	90	50	50 ^{-0.2} _{-0.6}	16	20	16	210	110
100	120	75	71	16	6.5	14.5	220	230	75	150	14	120	178	35	16	205	110	60	60 ^{-0.2} _{-0.6}	20	25	20	230	140
125	Max.157	90	90	Max.25	8	16	250	270	90	180	16	Max.157	Max.224	45	20	245	130	70	70 ^{-0.5} _{-1.2}	25	Min.30	Max.26	275	Max.157

Series CP96

Auto Switch Mounting 1

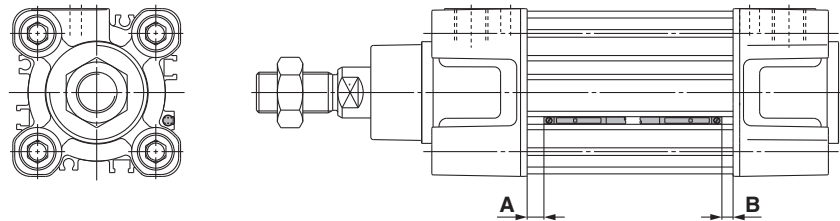


Minimum Stroke for Auto Switch Mounting

(mm)								
Auto switch model	Number of auto switch mounted	32	40	50	63	80	100	125
D-M9□	2 switches (Different side, Same side)	15				10		
	1 switch	15				10		
	Other qty.	15+5 (n-2)				10+10 (n-2)		
D-M9□W D-M9□A	2 switches (Different side, Same side)	15				10		
	1 switch	15				10		
	Other qty.	15+10 (n-2)				10+10 (n-2)	10+15 (n-2)	
D-A9□	2 switches (Different side, Same side)	15						
	1 switch	15				10		
	Other qty.	15+10 (n-2)		15+15 (n-2)			15+20 (n-2)	

Note) n = 3, 4, 5 ...

Recommended Mounting Position for Stroke Ends



Auto Switch Proper Mounting Position

Auto switch model	D-M9□ D-M9□W D-M9□A		D-A9□	
	A	B	A	B
Bore size				
32	10.5	8	6.5	4
40	10.5	8	6.5	4
50	11	8.5	7	4.5
63	11	8.5	7	4.5
80	14	12.5	10	8.5
100	14	12.5	10	8.5
125	16	16	12	12

Note) Adjust the auto switch after confirming the operation to set actually.

Operating Range

Auto switch model	Bore size						
	32	40	50	63	80	100	125
D-M9□ D-M9□W D-M9□A	4	4	5	6	5.5	6	7
D-A9□	7	8	8.5	9.5	9.5	10.5	12.5

* Since this is a guideline including hysteresis, not meant to be guaranteed. (Assuming approximately $\pm 30\%$ dispersion)
There may be the case it will vary substantially depending on an ambient environment.

Besides the models listed "How to Order," the following auto switches are applicable.

* Normally closed (NC = b contact) solid state switch (D-F9G, F9H type) are also available.
For details, refer to Best Pneumatics No. 2.

Series CP96

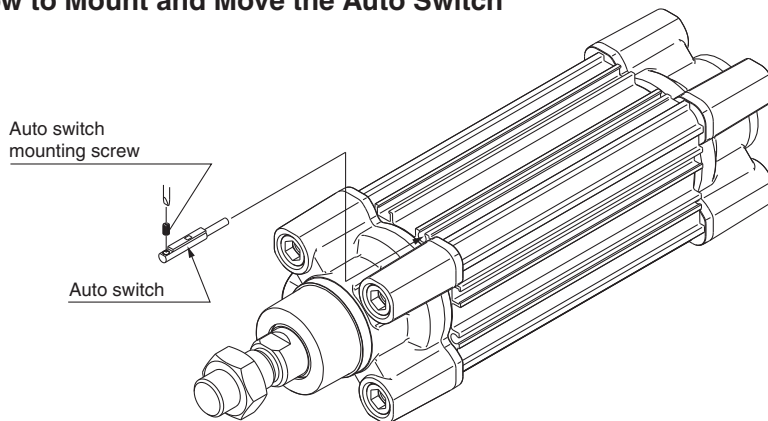
Auto Switch Mounting 2

How to Mount and Move the Auto Switch

<Applicable Auto Switch>

Solid state switch..... D-M9N/M9P/M9B
 D-M9NW/M9PW/M9BW
 D-M9NA/M9PA/M9BA
 Reed switch..... D-A90/A93/A96

How to Mount and Move the Auto Switch



- Please use a watchmaker's screwdriver with a handle diameter of 5 to 6 mm when tightening the auto switch mounting screw.

Auto switch mounting screw tightening torque

Auto switch model	Tightening torque (N·m)
D-M9□ D-M9□W D-M9□A	0.05 to 0.15
D-A9□	0.10 to 0.20

* As a guide, turn 90° from the position where it comes to feel tight.

Note) D-M9□ and A9□ type cannot be mounted on square groove of the CP96 series.

ISO Standards

Air Cylinder: Standard Double Acting, Single/Double Rod **Series C96** ø32, ø40, ø50, ø63, ø80, ø100, ø125

How to Order

C96S **B** **32** - **100** **W**

With auto switch **C96SD** **B** **32** - **100** **W** - **M9BW** **S**

Mounting

B	Basic/Without bracket
L	Axial foot
F	Rod end flange
G	Head end flange
C	Single clevis
D	Double clevis
T	Center trunnion

* Mounting brackets except center trunnion type are shipped together, (but not assembled).

Built-in magnet

Bore size

32	32 mm
40	40 mm
50	50 mm
63	63 mm
80	80 mm
100	100 mm
125	125 mm

Stroke (mm)
Refer to "Standard Stroke" on page 42.

Rod

Nil	Single rod
W	Double rod

Auto switch

Nil	Without auto switch
------------	---------------------

* For applicable auto switch model, refer to the table below.

Number of auto switches

Nil	2 pcs.
S	1 pc.
3	3 pcs.
n	"n" pcs.

Applicable Auto Switches/Refer to Best Pneumatics No. 2 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model		Lead wire length (m)				Pre-wired connector	Applicable load						
					DC	AC	Tie-rod mounting	Band mounting	0.5 (Nil)	1 (M)	3 (L)	5 (Z)								
Solid state switch	—	Grommet	—	3-wire (NPN)	24 V	5 V, 12 V	—	M9N	—	●	●	●	○	○	IC	Relay, PLC				
				3-wire (PNP)				M9P	—	●	●	●	○	○						
		Terminal conduit		2-wire	—	—	100 V, 200 V	M9B	—	●	●	●	○	○	—					
				3-wire (NPN)	24 V	5 V, 12 V	—	J51	—	●	—	●	○	—	—					
	2-wire	—	G39	—				—	—	—	—	—	IC							
	3-wire (NPN)	—	K39	—				—	—	—	—	—	—							
	3-wire (PNP)	M9NW	—	●				●	●	○	○	○	IC							
	2-wire	M9PW	—	●				●	●	○	○	○	—							
	3-wire (NPN)	M9BW	—	●				●	●	○	○	○	—							
	3-wire (PNP)	**M9NA	—	○				○	●	○	○	○	IC							
	2-wire	**M9PA	—	○				○	●	○	○	○	—							
	4-wire (NPN)	**M9BA	—	○				○	●	○	○	○	—							
	2-wire (Non-polar type)	F59F	—	●				—	●	○	○	○	IC							
	—	P4DW	—	—				—	●	●	○	—	—							
	—	Grommet	Yes	3-wire (Equiv. to NPN)				—	5 V	—	A96	—	●	—	●		—	—	—	IC
					None	24 V	12 V				100 V	A93	—	●	—		●	—	—	—
100 V or less											A90	—	●	—	●	—	—	—	IC	
100 V, 200 V											A54	—	●	—	●	●	—	—	—	
200 V or less			A64	—				●	—	●	—	—	—	—						
Terminal conduit			Yes	2-wire	24 V	12 V	—	A33	—	—	—	—	—	—	—	PLC				
							—	A34	—	—	—	—	—	—	—	—	—			
							100 V, 200 V	—	A44	—	—	—	—	—	—	—		Relay, PLC		
		DIN					—	—	A59W	—	●	—	●	—	—	—	—			
Diagnosis indication (2-color)		Grommet	Yes	2-wire	24 V	—	—	A59W	—	●	—	●	—	—	—	—				

** Water resistant type auto switch can be mounted to the models with the above mentioned part numbers, but this does not guarantee the water resistance of the cylinder.

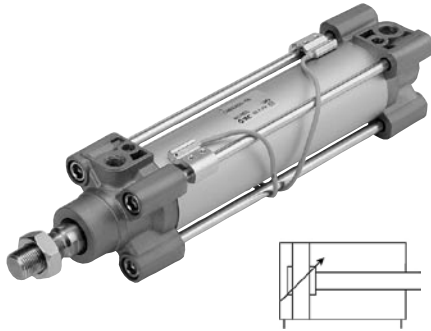
* Lead wire length symbols: 0.5 m Nil (Example) M9NW
1 m M (Example) M9NWM
3 m L (Example) M9NWL
5 m Z (Example) M9NWX

* Solid state switches marked with a "○" are produced upon receipt of order.

* Since there are other applicable auto switches than listed, refer to Best Pneumatics No. 2 for details.

* For details about auto switches with pre-wired connector, refer to Best Pneumatics No. 2.

* D-A9□, M9□, M9□W, M9□A are shipped together, (but not assembled).
(Switch mounting bracket is only assembled at the time of shipment.)



Specifications

Bore size (mm)	32	40	50	63	80	100	125
Action	Double acting						
Fluid	Air						
Proof pressure	1.5 MPa						
Max. operating pressure	1.0 MPa						
Min. operating pressure	0.05 MPa						
Ambient and fluid temperature	Without auto switch: -20 to 70°C* With auto switch: -10 to 60°C*						
Lubrication	Not required (Non-lube)						
Operating piston speed	50 to 1000 mm/s					50 to 700 mm/s	
Allowable stroke tolerance	Up to 250 st: $^{+1.0}_0$, 251 to 1000 st: $^{+1.4}_0$, 1001 to 1500 st: $^{+1.8}_0$, 1501 to 2000 st: $^{+2.2}_0$						
Cushion	Air cushion						
Port size	G 1/8	G 1/4	G 1/4	G 3/8	G 3/8	G 1/2	G 1/2
Mounting	Basic, Axial foot, Rod flange, Head flange, Single clevis, Double clevis, Center trunnion						

* No freezing

Standard Stroke

Bore size (mm)	Standard stroke (mm)	Max. stroke Note)
32	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500	1000
40	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500	1900
50	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600	1900
63	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600	1900
80	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600, 700, 800	1900
100	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600, 700, 800	1900
125	—	2000

Intermediate strokes are available.

Note) Please consult with SMC for longer strokes.

Accessories

Mounting		Basic	Foot	Rod flange	Head flange	Single clevis	Double clevis	Center trunnion
Standard	Rod end nut	●	●	●	●	●	●	●
	Clevis pin	—	—	—	—	—	●	—
Option	Piston rod ball joint	●	●	●	●	●	●	●
	Rod clevis	●	●	●	●	●	●	●
	Rod boot	●	●	●	●	●	●	●

* Please do not use a piston rod ball joint (or floating joint) together with a single clevis with a ball joint (or clevis pivot bracket with a ball joint).

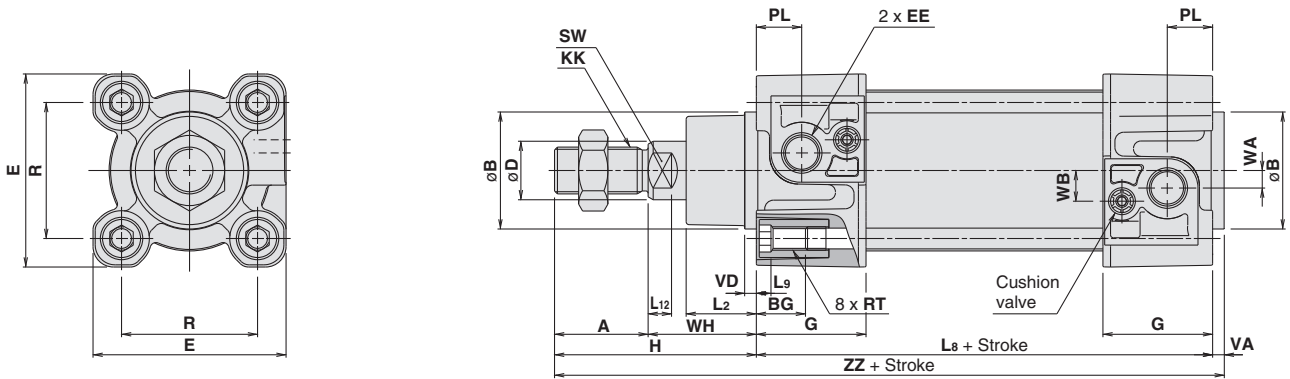
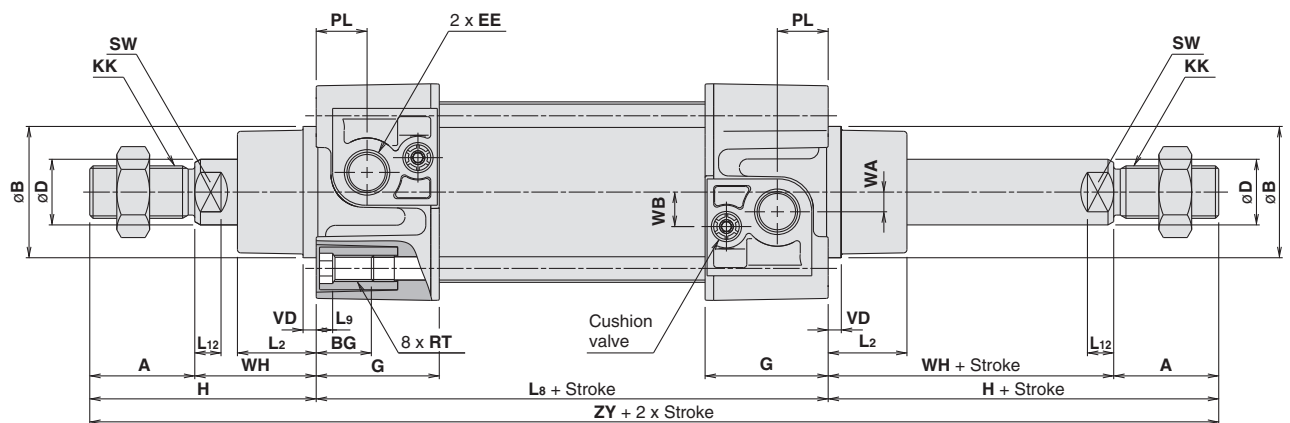
Replacement Parts/Seal Kit

Bore size (mm)	Kit no.	Contents
32	CS95-32	Cushion seal Wearing Piston seal Rod seal Tube gasket
40	CS95-40	
50	CS95-50	
63	CS95-63	
80	CS95-80	
100	CS96-100	
125	CS96-125	

* Seal kit includes cushion seal, wearing, piston seal, rod seal, and tube gasket. Order the seal kit, based on each bore size.

* Seal kit includes a grease pack (ø32 to ø50: 10 g, ø63, ø80: 20 g, ø100, ø125: 30 g). Order with the following part number when only the grease pack is needed.

Grease pack part number: GR-S-010 (10 g), GR-S-020 (20 g)

Dimensions**Basic: C96S(D)B** Bore size – Stroke**Basic: C96S(D)B** Bore size – Stroke W

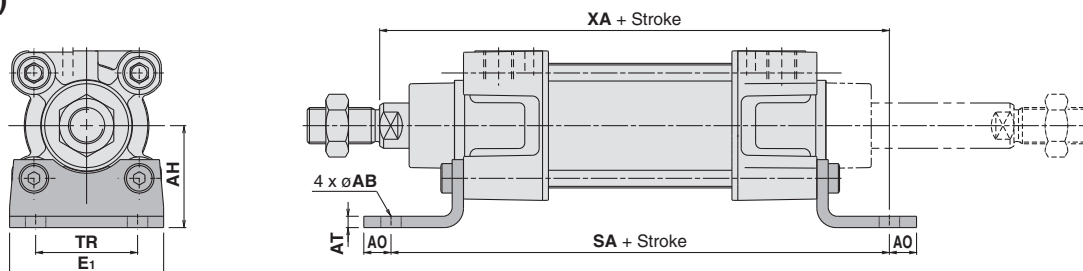
(mm)

Bore size (mm)	A	B d11	BG	D	E	EE	G	H	KK	L ₂	L ₈	L ₉	L ₁₂	PL	R	RT	SW	VA	VD	WA	WB	WH	ZY	ZZ
32	22	30	16	12	47	G 1/8	32	48	M10 x 1.25	15	94	4	6	13	32.5	M6 x 1	10	4	4	4	7	26	190	146
40	24	35	16	16	54	G 1/4	37.5	54	M12 x 1.25	17	105	4	6.5	14	38	M6 x 1	13	4	4	5	9	30	213	163
50	32	40	16	20	66	G 1/4	37.5	69	M16 x 1.5	24	106	5	8	15.5	46.5	M8 x 1.25	17	4	4	6	10.5	37	244	179
63	32	45	16	20	77	G 3/8	45	69	M16 x 1.5	24	121	5	8	16.5	56.5	M8 x 1.25	17	4	4	9	12	37	259	194
80	40	45	17	25	99	G 3/8	45	86	M20 x 1.5	30	128	—	10	19	72	M10 x 1.5	22	4	4	11.5	14	46	300	218
100	40	55	17	25	118	G 1/2	50	91	M20 x 1.5	32	138	—	10	19	89	M10 x 1.5	22	4	4	17	15	51	320	233
125	54	60	20	32	144	G 1/2	58	119	M27 x 2	40	160	—	13	19	110	M12 x 1.75	27	6	6	17	15	65	398	285

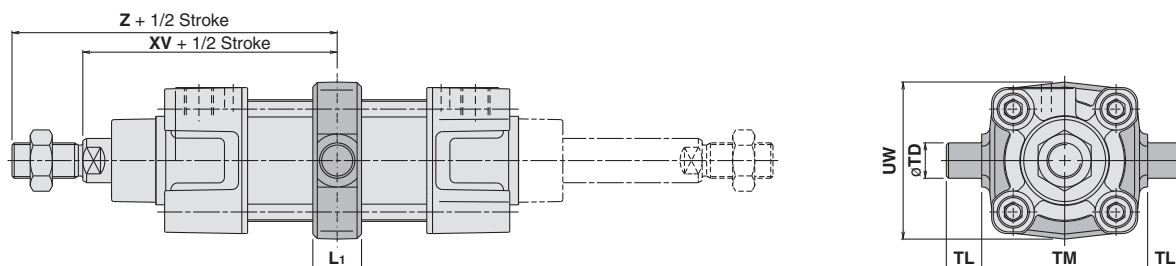
Series C96

Dimensions

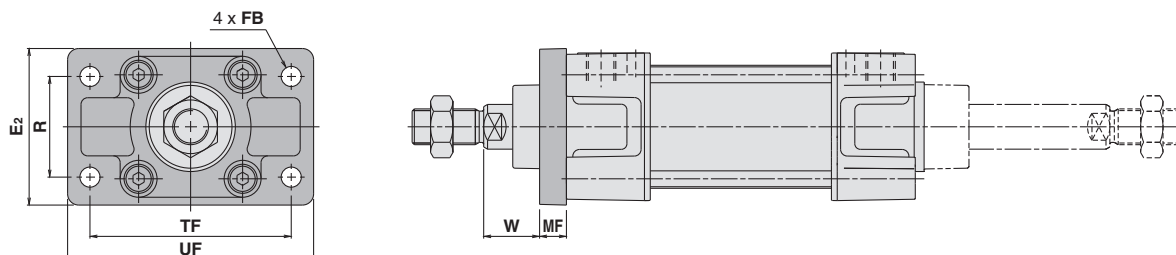
Axial foot (L)



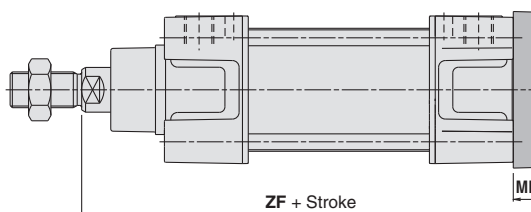
Center trunnion (T)



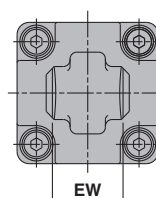
Rod flange (F)



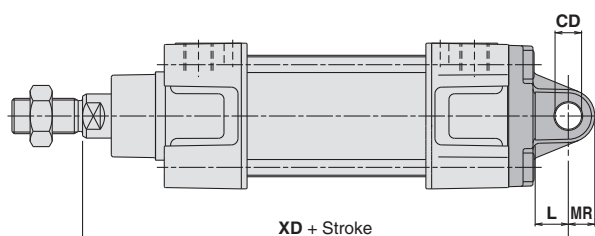
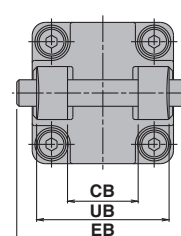
Head flange (G)



Single clevis (C)



Double clevis (D)



Bore size (mm)	E1	TR	AH	AO	AT	AB	SA	XA	TM	TL	TD e8	UW	L1	XV	Z	R	TF	FB	E2	UF	W	MF	ZF	UB h14	CB H14	EW	CD H9	L	MR	XD	EB
32	48	32	32	10	4.5	7	142	144	50	12	12	49	17	73	95	32	64	7	50	79	16	10	130	45	26	26 ^{-0.2} _{-0.6}	10	12	9.5	142	65
40	55	36	36	11	4.5	10	161	163	63	16	16	58	22	82.5	106.5	36	72	9	55	90	20	10	145	52	28	28 ^{-0.2} _{-0.6}	12	15	12	160	75
50	68	45	45	12	5.5	10	170	175	75	16	16	71	22	90	122	45	90	9	70	110	25	12	155	60	32	32 ^{-0.2} _{-0.6}	12	15	12	170	80
63	80	50	50	12	5.5	10	185	190	90	20	20	87	28	97.5	129.5	50	100	9	80	120	25	12	170	70	40	40 ^{-0.2} _{-0.6}	16	20	16	190	90
80	100	63	63	14	6.5	12	210	215	110	20	20	110	34	110	150	63	126	12	100	153	30	16	190	90	50	50 ^{-0.2} _{-0.6}	16	20	16	210	110
100	120	75	71	16	6.5	14.5	220	230	132	25	25	136	40	120	160	75	150	14	120	178	35	16	205	110	60	60 ^{-0.2} _{-0.6}	20	25	20	230	140
125	Max. 157	90	90	Max. 25	8	16	250	270	160	25	25	Max. 160	50	145	199	90	180	16	Max. 157	Max. 224	45	20	245	130	70	70 ^{-0.5} _{-1.2}	25	Min. 30	Max. 26	275	Max. 157

(mm)

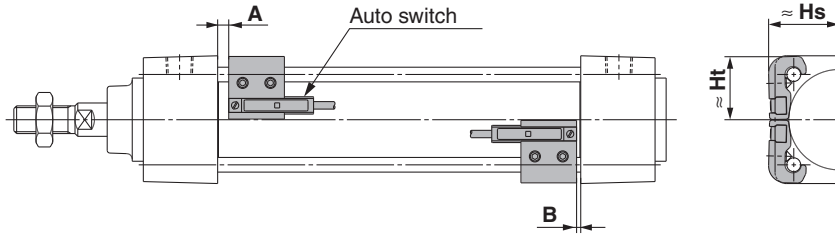


Minimum Stroke for Auto Switch Mounting

(mm)											
Auto switch model	Number of auto switch mounted	Center trunnion						Support bracket other than Center trunnion			
		ø32	ø40	ø50	ø63	ø80	ø100	ø125	ø32, ø40, ø50, ø63	ø80, ø100	ø125
D-A9□	1 switch, 2 switches (Different side, Same side)	70	75		80	85	95	100	15		
	Other qty.	70 + 40 (n - 4)/2 n = 4, 8, 12, 16...	75 + 40 (n - 4)/2 n = 4, 8, 12, 16...		80 + 40 (n - 4)/2 n = 4, 8, 12, 16...	85 + 40 (n - 4)/2 n = 4, 8, 12, 16...	95 + 40 (n - 4)/2 n = 4, 8, 12, 16...	100 + 40 (n - 4)/2 n = 4, 8, 12, 16...	15 + 40 (n - 2)/2 n = 2, 4, 6, 8...		
D-A9□V	1 switch, 2 switches (Different side, Same side)	45	50		55	60	70	75	10		
	Other qty.	45 + 30 (n - 4)/2 n = 4, 8, 12, 16...	50 + 30 (n - 4)/2 n = 4, 8, 12, 16...		55 + 30 (n - 4)/2 n = 4, 8, 12, 16...	60 + 30 (n - 4)/2 n = 4, 8, 12, 16...	70 + 30 (n - 4)/2 n = 4, 8, 12, 16...	75 + 30 (n - 4)/2 n = 4, 8, 12, 16...	10 + 30 (n - 2)/2 n = 2, 4, 6, 8...		
D-M9□ D-M9□W	1 switch, 2 switches (Different side, Same side)	75	80		85	90	95	105	15		
	Other qty.	75 + 40 (n - 4)/2 n = 4, 8, 12, 16...	80 + 40 (n - 4)/2 n = 4, 8, 12, 16...		85 + 40 (n - 4)/2 n = 4, 8, 12, 16...	90 + 40 (n - 4)/2 n = 4, 8, 12, 16...	95 + 40 (n - 4)/2 n = 4, 8, 12, 16...	105 + 40 (n - 4)/2 n = 4, 8, 12, 16...	15 + 40 (n - 2)/2 n = 2, 4, 6, 8...		
D-M9□V D-M9□WV	1 switch, 2 switches (Different side, Same side)	50	55		60	65	70	80	10		
	Other qty.	50 + 30 (n - 4)/2 n = 4, 8, 12, 16...	55 + 30 (n - 4)/2 n = 4, 8, 12, 16...		60 + 30 (n - 4)/2 n = 4, 8, 12, 16...	65 + 30 (n - 4)/2 n = 4, 8, 12, 16...	70 + 30 (n - 4)/2 n = 4, 8, 12, 16...	80 + 30 (n - 4)/2 n = 4, 8, 12, 16...	10 + 30 (n - 2)/2 n = 2, 4, 6, 8...		
D-M9□A	1 switch, 2 switches (Different side, Same side)	80	85		90	95	100	110	15		
	Other qty.	80 + 40 (n - 2)/2 n = 4, 8, 12, 16...	85 + 40 (n - 2)/2 n = 4, 8, 12, 16...		90 + 40 (n - 2)/2 n = 4, 8, 12, 16...	95 + 40 (n - 2)/2 n = 4, 8, 12, 16...	100 + 40 (n - 2)/2 n = 4, 8, 12, 16...	110 + 40 (n - 2)/2 n = 4, 8, 12, 16...	15 + 40 (n - 2)/2 n = 2, 4, 6, 8...		
D-M9□AV	1 switch, 2 switches (Different side, Same side)	55	60		65	70	75	85	15		
	Other qty.	55 + 30 (n - 2)/2 n = 4, 8, 12, 16...	60 + 30 (n - 2)/2 n = 4, 8, 12, 16...		65 + 30 (n - 2)/2 n = 4, 8, 12, 16...	70 + 30 (n - 2)/2 n = 4, 8, 12, 16...	75 + 30 (n - 2)/2 n = 4, 8, 12, 16...	85 + 30 (n - 2)/2 n = 4, 8, 12, 16...	15 + 30 (n - 2)/2 n = 2, 4, 6, 8...		
D-A3□ D-G39 D-K39	2 switches (Different side)	60	65		75	80	85	90	35		
	2 switches (Same side)	90	95		100	105	110	125	100		
	Other qty. (Different side)	60 + 30 (n - 2) n = 2, 4, 6, 8...	65 + 30 (n - 2) n = 2, 4, 6, 8...		75 + 30 (n - 2) n = 2, 4, 6, 8...	80 + 30 (n - 2) n = 2, 4, 6, 8...	85 + 30 (n - 2) n = 2, 4, 6, 8...	90 + 30 (n - 2) n = 2, 4, 6, 8...	35 + 30 (n - 2) n = 2, 3, 4...		
	Other qty. (Same side)	90 + 100 (n - 2) n = 2, 4, 6, 8...	95 + 100 (n - 2) n = 2, 4, 6, 8...		100 + 100 (n - 2) n = 2, 4, 6, 8...	105 + 100 (n - 2) n = 2, 4, 6, 8...	110 + 100 (n - 2) n = 2, 4, 6, 8...	125 + 100 (n - 2) n = 2, 4, 6, 8...	100 + 100 (n - 2) n = 2, 3, 4...		
	1 switch	60	65		75	80	85	90	10		
D-A44	2 switches (Different side)	70	75		80		85	90	35		
	2 switches (Same side)	70	75		80		85	90	55		
	Other qty. (Different side)	70 + 30 (n - 2) n = 2, 4, 6, 8...	75 + 30 (n - 2) n = 2, 4, 6, 8...		80 + 30 (n - 2) n = 2, 4, 6, 8...		85 + 30 (n - 2) n = 2, 4, 6, 8...	90 + 30 (n - 2) n = 2, 4, 6, 8...	35 + 30 (n - 2) n = 2, 3, 4...		
	Other qty. (Same side)	70 + 50 (n - 2) n = 2, 4, 6, 8...	75 + 50 (n - 2) n = 2, 4, 6, 8...		80 + 50 (n - 2) n = 2, 4, 6, 8...		85 + 50 (n - 2) n = 2, 4, 6, 8...	90 + 50 (n - 2) n = 2, 4, 6, 8...	55 + 50 (n - 2) n = 2, 3, 4...		
	1 switch	70	75		80		85	90	10		
D-A5□ D-A6□	1 switch, 2 switches (Different side, Same side)	60		80	105	110	115		15	20	
	Other qty. (Same side)	60 + 55 (n - 4)/2 n = 4, 8, 12, 16...		80 + 55 (n - 4)/2 n = 4, 8, 12, 16...	105 + 55 (n - 4)/2 n = 4, 8, 12, 16...	110 + 55 (n - 4)/2 n = 4, 8, 12, 16...	115 + 55 (n - 4)/2 n = 4, 8, 12, 16...		15 + 55 (n - 2)/2 n = 2, 4, 6, 8...	20 + 55 (n - 2)/2 n = 2, 4, 6, 8...	
D-A59W	2 switches (Different side, Same side)	60	70	85	110	115	120		20	25	
	Other qty. (Same side)	60 + 55 (n - 4)/2 n = 4, 8, 12, 16...	70 + 55 (n - 4)/2 n = 4, 8, 12, 16...	85 + 55 (n - 4)/2 n = 4, 8, 12, 16...	110 + 55 (n - 4)/2 n = 4, 8, 12, 16...	115 + 55 (n - 4)/2 n = 4, 8, 12, 16...	120 + 55 (n - 4)/2 n = 4, 8, 12, 16...		20 + 55 (n - 2)/2 n = 2, 4, 6, 8...	25 + 55 (n - 2)/2 n = 2, 4, 6, 8...	
	1 switch	60	70	85	110	115	120		15	25	
D-F5□ D-J5□ D-F5□W D-J59W D-F5BA D-F59F	2 switches (Different side, Same side)	90	95		110	115	120	130	15	25	
	Other qty. (Same side)	90 + 55 (n - 4)/2 n = 4, 8, 12, 16...	95 + 55 (n - 4)/2 n = 4, 8, 12, 16...		110 + 55 (n - 4)/2 n = 4, 8, 12, 16...	115 + 55 (n - 4)/2 n = 4, 8, 12, 16...	120 + 55 (n - 4)/2 n = 4, 8, 12, 16...	130 + 55 (n - 4)/2 n = 4, 8, 12, 16...	15 + 55 (n - 2)/2 n = 2, 4, 6, 8...	25 + 55 (n - 2)/2 n = 2, 4, 6, 8...	
	1 switch	90	95		110	115	120	130	10	25	
	2 switches (Different side, Same side)	100	105		120	125	130	140	15	25	30
	Other qty. (Same side)	100 + 55 (n - 4)/2 n = 4, 8, 12, 16...	105 + 55 (n - 4)/2 n = 4, 8, 12, 16...		120 + 55 (n - 4)/2 n = 4, 8, 12, 16...	125 + 55 (n - 4)/2 n = 4, 8, 12, 16...	130 + 55 (n - 4)/2 n = 4, 8, 12, 16...	140 + 55 (n - 4)/2 n = 4, 8, 12, 16...	15 + 55 (n - 2)/2 n = 2, 4, 6, 8...	25 + 55 (n - 2)/2 n = 2, 4, 6, 8...	30 + 55 (n - 2)/2 n = 2, 4, 6, 8...
D-Z7□ D-Z80 D-Y59□ D-Y7P D-Y7□W	1 switch, 2 switches (Different side, Same side)	80	85	90		95	100	105	15		
	Other qty.	80 + 40 (n - 4)/2 n = 4, 8, 12, 16...	85 + 40 (n - 4)/2 n = 4, 8, 12, 16...	90 + 40 (n - 4)/2 n = 4, 8, 12, 16...		95 + 40 (n - 4)/2 n = 4, 8, 12, 16...	100 + 40 (n - 4)/2 n = 4, 8, 12, 16...	105 + 40 (n - 4)/2 n = 4, 8, 12, 16...	15 + 40 (n - 2)/2 n = 2, 4, 6, 8...		
	1 switch, 2 switches (Different side, Same side)	60	65		70	75	85		10		
D-Y69□ D-Y7PV D-Y7□WV	Other qty.	60 + 30 (n - 4)/2 n = 4, 8, 12, 16...	65 + 30 (n - 4)/2 n = 4, 8, 12, 16...		70 + 30 (n - 4)/2 n = 4, 8, 12, 16...	75 + 30 (n - 4)/2 n = 4, 8, 12, 16...	85 + 30 (n - 4)/2 n = 4, 8, 12, 16...		10 + 30 (n - 2)/2 n = 2, 4, 6, 8...		
	1 switch, 2 switches (Different side, Same side)	85	90		100	105	110	115	20		
D-Y7BA	Other qty.	85 + 45 (n - 4)/2 n = 4, 8, 12, 16...	90 + 45 (n - 4)/2 n = 4, 8, 12, 16...		100 + 45 (n - 4)/2 n = 4, 8, 12, 16...	105 + 45 (n - 4)/2 n = 4, 8, 12, 16...	110 + 45 (n - 4)/2 n = 4, 8, 12, 16...	115 + 45 (n - 4)/2 n = 4, 8, 12, 16...	20 + 45 (n - 2)/2 n = 2, 4, 6, 8...		
	1 switch, 2 switches (Different side, Same side)	120		130		140		150	15		20
D-P4DW	Other qty.	120 + 65 (n - 4)/2 n = 4, 8, 12, 16...		130 + 65 (n - 4)/2 n = 4, 8, 12, 16...		140 + 65 (n - 4)/2 n = 4, 8, 12, 16...		150 + 65 (n - 4)/2 n = 4, 8, 12, 16...	15 + 65 (n - 2)/2 n = 2, 4, 6, 8...		20 + 65 (n - 2)/2 n = 2, 4, 6, 8...

Auto Switch Mounting 2

Auto Switch Proper Mounting Position (Detection at Stroke End) and Its Mounting Height



Auto Switch Proper Mounting Position

(mm)

Auto switch model	D-A9□ D-A9□V		D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV		D-A5□ D-A6□		D-A59W		D-F5□W D-J59W D-F5□ D-J5□ D-F5BA D-F59F		D-F5NT		D-A3□ D-A44 D-G39 D-K39		D-Z7□ D-Z80 D-Y59□ D-Y69□ D-Y7P D-Y7PV D-Y7□W D-Y7□WV D-Y7BA		D-P4DW	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
32	6.5	4	10.5	8	0.5	0	4.5	2	7	4.5	12	9.5	0.5	0	4	1.5	3.5	1
40	6.5	4	10.5	8	0.5	0	4.5	2	7	4.5	12	9.5	0.5	0	4	1.5	3.5	1
50	7	4.5	11	8.5	1	0	5	2.5	7.5	5	12.5	10	1	0	4.5	2	4	1.5
63	7	4.5	11	8.5	1	0	5	2.5	7.5	5	12.5	10	1	0	4.5	2	4	1.5
80	10	8.5	14	12.5	4	2.5	8	6.5	10.5	9	15.5	14	4	2.5	7.5	6	7	5.5
100	10	8.5	14	12.5	4	2.5	8	6.5	10.5	9	15.5	14	4	2.5	7.5	6	7	5.5
125	12	12	16	16	6	6	10	10	12.5	12.5	17.5	17.5	6	6	9.5	9.5	9	9

Note) Adjust the auto switch after confirming the operation to set actually.

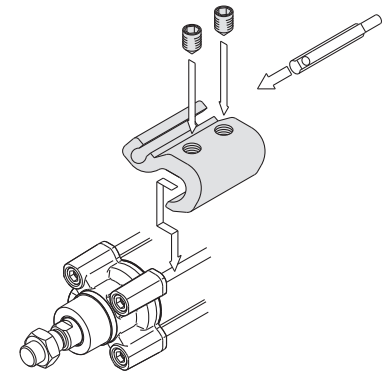
Auto Switch Proper Mounting Height

(mm)

Auto switch model	D-A9□ D-M9□ D-M9□W D-M9□A		D-A9□V		D-M9□V D-M9□WV D-M9□AV		D-A5□ D-A6□ D-A59W		D-F5□ D-J5□ D-F59F D-F5□W D-J59W D-F5BA D-F5NT		D-A3□ D-G39 D-K39		D-A44		D-Z7□ D-Z80 D-Y59□ D-Y7P D-Y7□W D-Y7BA		D-Y69□ D-Y7PV D-Y7□WV		D-P4DW	
	Hs	Ht	Hs	Ht	Hs	Ht	Hs	Ht	Hs	Ht	Hs	Ht	Hs	Ht	Hs	Ht	Hs	Ht	Hs	Ht
32	24.5	23	27.5	23	30.5	23	35	24.5	32.5	25	67	27.5	77	27.5	25.5	23	26.5	23	38	31
40	28.5	25.5	31.5	25.5	34	25.5	38.5	27.5	36.5	27.5	71.5	27.5	81.5	27.5	29.5	26	30	26	42	33
50	33.5	31	36	31	38.5	31	43.5	34.5	41	34	77	—	87	—	33.5	31	34.5	31	46.5	39
63	38.5	36	40.5	36	43	36	48.5	39.5	46	39	83.5	—	93.5	—	39	36	40	36	51.5	44
80	46.5	45	49	45	52	45	55	46.5	52.5	46.5	92.5	—	103	—	47.5	45	48.5	45	58	51.5
100	54	53.5	57	53.5	59.5	53.5	62	55	59.5	55	103	—	113.5	—	55.5	53.5	56.5	53.5	65.5	60.5
125	65.5	64.5	68.5	64.5	71	64.5	71.5	66.5	70.5	66.5	115	—	125	—	67.5	65	68.5	65	76.5	72

Auto Switch Mounting Bracket Part No.

Auto switch model	Bore size (mm)						
	ø32	ø40	ø50	ø63	ø80	ø100	ø125
D-A9□/A9□V D-M9□/M9□V D-M9□W/M9□WV D-M9□A/M9□AV	BMB5-032	BMB5-032	BA7-040	BA7-040	BA7-063	BA7-063	BA7-080
D-A3□/A44 D-G39/K39	BMB2-032	BMB2-040	BMB1-050	BMB1-063	BMB1-080	BMB1-100	BS1-125
D-A5□/A6□ D-A59W D-F5□/J5□ D-F5□W/J59W D-F59F D-F5BA D-F5NT	BT-03	BT-03	BT-05	BT-05	BT-06	BT-06	BT-08
D-P4DW	BMB3T-040	BMB3T-040	BMB3T-050	BMB3T-050	BMB3T-080	BMB3T-080	BAP2T-080
D-Z7□/Z80 D-Y59□/Y69□ D-Y7P/Y7PV D-Y7□W D-Y7□WV D-Y7BA	BMB4-032	BMB4-032	BMB4-050	BMB4-050	BA4-063	BA4-063	BA4-080



• Mounting example for D-A9□(V), M9□(V), M9□W(V), M9□A(V)

[Mounting screws set made of stainless steel]

The following set of mounting screws made of stainless steel is also available. Use it in accordance with the operating environment. (Please order the mounting bracket separately, since it is not included.)

BBA1: For D-A5/A6/F5/J5

Note 1) For details on BBA1, refer to page 51.

"D-F5BA" switch is set on the cylinder with the stainless steel screws above when shipped from factory.

When a switch is shipped independently, "BBA1" screws are attached.

Note 2) When using type D-M9□A(V) or Y7BA, please do not use the iron set screws included with the auto switch mounting bracket (BMB5-032, BA7-□□□, BMB4-□□□, BA4-□□□) shown above, instead order the set of stainless steel set screws (BBA1), and please use the stainless steel set screws (M4 x 6 L) included in BBA1.

Operating Range

Auto switch model	Bore size (mm)						
	32	40	50	63	80	100	125
D-A9□/A9□V	7	7.5	8.5	9.5	9.5	10.5	12
D-M9□/M9□V D-M9□W/M9□WV D-M9□A/M9□AV	4	4.5	5	6	6	6	7
D-Z7□/Z80	7.5	8.5	7.5	9.5	9.5	10.5	13
D-A5□/A6□	9	9	10	11	11	11	10
D-A59W	13	13	13	14	14	15	17
D-A3□/A44	9	9	10	11	11	11	10
D-Y59□/Y69□ D-Y7P/Y7□V D-Y7□W/Y7□WV D-Y7BA	5.5	5.5	7	7.5	6.5	5.5	7
D-F5□/J5□ D-F5□W/J59W D-F5BA/F5NT D-F59F	3.5	4	4	4.5	4.5	4.5	5
D-G39/K39	9	9	9	10	10	11	11
D-P4DW	4	4	4	4.5	4	4.5	4.5

* Since this is a guideline including hysteresis, not meant to be guaranteed.

(Assuming approximately ±30% dispersion.)

There may be the case it will vary substantially depending on an ambient environment.

Auto Switch Mounting 3

Besides the models listed “How to Order,” the following auto switches are applicable.
For detailed auto switch specifications, refer to Best Pneumatics No. 2.

Type	Auto switch model	Electrical entry	Features
Solid state switch	D-M9NV, M9PV, M9BV	Grommet (Perpendicular)	—
	D-Y69A, Y69B, Y7PV		—
	D-M9NWV, M9PWV, M9BWV		Diagnosis indication (2-color)
	D-Y7NWV, Y7PWV, Y7BWV		Water resistant (2-color)
	D-M9NAV, M9PAV, M9BAV		—
	D-Y59A, Y59B, Y7P	Grommet (In-line)	—
	D-F59, F5P, J59		Diagnosis indication (2-color)
	D-Y7NW, Y7PW, Y7BW		Water resistant (2-color)
	D-F59W, F5PW, J59W		With timer
	D-F5BA, Y7BA		Magnetic field resistant (2-color)
	D-F5NT		—
	D-P5DW		—
Reed switch	D-A93V, A96V	Grommet (Perpendicular)	Without indicator light
	D-A90V	Grommet (In-line)	—
	D-A67, Z80		—
	D-A53, A56, Z73, Z76		—

* Normally closed (NC = b contact) solid state switch (D-F9G, F9H, Y7G, Y7H type) are also available.

For details, refer to Best Pneumatics No. 2.

* For details about auto switches with pre-wired connector, refer to Best Pneumatics No. 2.



Specific Product Precautions

Adjustment

Warning

1. Do not open the cushion valve above the stopper.

Cushion valves are provided with a crimp (ø32) or a retaining ring (ø40 to ø100) 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.

2. Be certain to activate the air cushion at the stroke end.

When it is intended to use the cushion valve in the fully opened position, select a style with a damper. If this is not done, the tie-rods or piston rod assembly will be damaged.

3. When replacing brackets, use the hexagon wrenches shown below.

Bore size (mm)	Width across flats	Tightening torque (N·m)
32, 40	4	5.1
50, 63	5	11
80, 100	6	19.2
125	10	30.1

Mounting Bracket Tie-rod Mounting Type

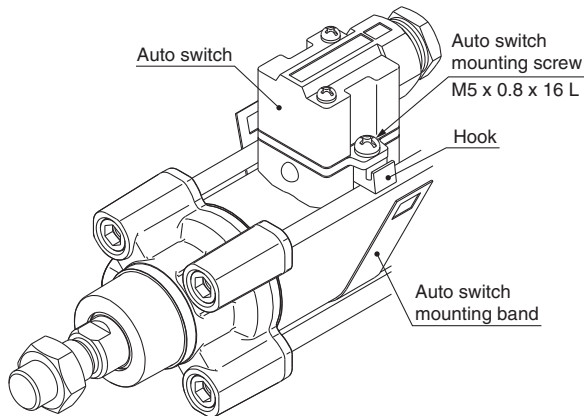
<Applicable Auto Switch>

Solid state switch ... D-G39, D-K39

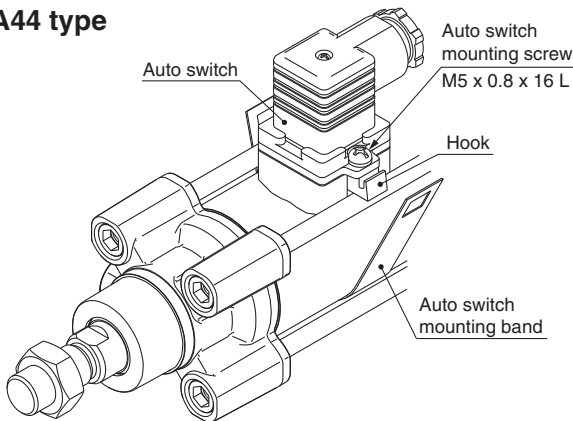
Reed switch D-A33, D-A34, D-A44

How to Mount and Move the Auto Switch

D-A3□, D-G3/K3 type



D-A44 type



1. Loosen the auto switch mounting screws at both sides to pull down the hook.
2. Put an auto switch mounting band on the cylinder tube and set it at the auto switch mounting position, and then hook the band.
3. Screw lightly the auto switch mounting screw (M5 x 0.8 x 16 L).
4. Set the whole body to the detecting position by sliding, tighten the mounting screw (M5 x 0.8 x 16 L) to secure the auto switch. (The tightening torque should be about 2 to 3 N·m.)
5. Modification of the detecting position should be made in the state of 3.

Auto Switch Mounting Bracket Part No. (Band)

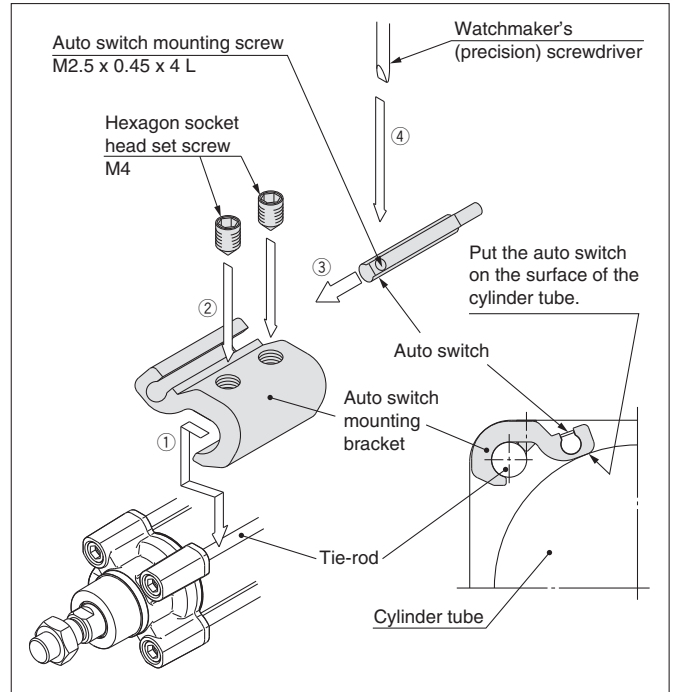
Cylinder series	Applicable bore size (mm)						
	32	40	50	63	80	100	125
C96	BMB2-032	BMB2-040	BMB1-050	BMB1-063	BMB1-080	BMB1-100	BS1-125

<Applicable Auto Switch>

Solid state switch ... D-M9N(V), D-M9P(V), D-M9B(V)
D-M9NW(V), D-M9PW(V), D-M9BW(V)
D-M9NA(V), D-M9PA(V), D-M9BA(V)

Reed switch D-A90(V), A93(V), A96(V)

How to Mount and Move the Auto Switch



1. Fix it to the detecting position with a set screw by installing an auto switch mounting bracket in cylinder tie-rod and letting the bottom surface of an auto switch mounting bracket contact the cylinder tube firmly.
2. Fix it to the detecting position with a set screw (M4). (Use a hexagon wrench.)
3. Fit an auto switch into the auto switch mounting groove to set it roughly to the mounting position for an auto switch.
4. After confirming the detecting position, tighten up the mounting screw (M2.5 x 0.45 x 4 L) attached to an auto switch, and secure the auto switch.
5. When changing the detecting position, carry out in the state of 3.

Note 1) To protect auto switches, ensure that main body of an auto switch should be embedded into auto switch mounting groove with a depth of 15 mm or more.

Note 2) Set the tightening torque of a hexagon socket head set screw (M4) to be 1.0 to 1.2 N·m.

Note 3) When tightening an auto switch mounting screw (M2.5 x 0.45 x 4 L), use a watchmaker's screwdriver with a grip diameter of 5 to 6 mm. Also, set the tightening torque to be 0.05 to 0.15 N·m. As a guide, turn 90° from the position where it comes to feel tight.

Auto Switch Mounting Bracket Part No. (Including Bracket, Set Screw)

Cylinder series	Applicable bore size (mm)						
	32	40	50	63	80	100	125
C96	BMB5-032	BMB5-032	BA7-040	BA7-040	BA7-063	BA7-063	BA7-080

Note 1) When using D-M9□A(V) type, please order stainless steel screw set BBA1 separately (page 51), and use the stainless steel set screws, after selecting set screws of the appropriate length for the cylinder series—as shown in the table above.

Note 2) Color or gloss differences in the metal surfaces have no effect on metal performance.

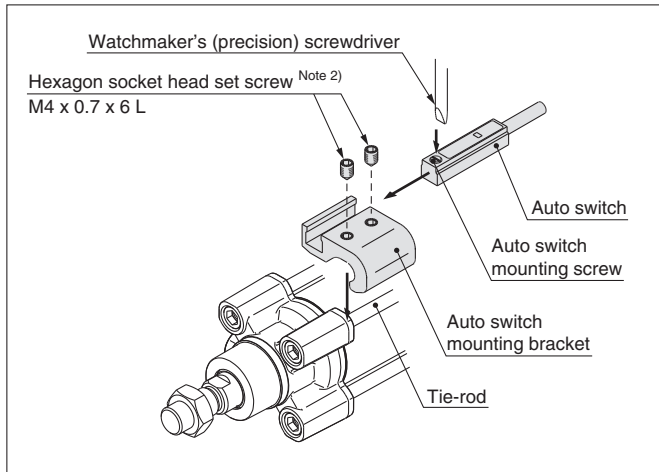
The special properties of the chromate (trivalent) applied to the main body of the auto switch mounting bracket for BA7-□ and BMB5-□ result in differences in coloration depending on the production lot, but these have no adverse impact on corrosion resistance.

Mounting Bracket Tie-rod Mounting Type

<Applicable Auto Switch>

Solid state switch ... D-Y59^A_B, Y69^A_B, D-Y7P(V)
D-Y7NW(V), Y7PW(V), Y7BW(V)
D-Y7BA
Reed switch D-Z73, Z76, Z80

How to Mount and Move the Auto Switch



Note 1) When tightening an auto switch mounting screw, use a watchmaker's screwdriver with a handle diameter of 5 to 6 mm. Also, set the tightening torque to be 0.05 to 0.1 N·m. As a guide, turn 90° from the position where it comes to feel tight. Set the tightening torque of a hexagon socket head set screw (M4 x 0.7 x 6 L) to be 1.0 to 1.2 N·m.

1. Fix it to the detecting position with a set screw by installing an auto switch mounting bracket in cylinder tie-rod and letting the bottom surface of an auto switch mounting bracket contact the cylinder tube firmly. (Use a hexagon wrench.)
2. Fit an auto switch into the auto switch mounting groove to set it roughly to the mounting position for an auto switch.
3. After confirming the detecting position, tighten up the mounting screw attached to an auto switch, and secure the auto switch.
4. When changing the detecting position, carry out in the state of 2.

* To protect auto switches, ensure that main body of an auto switch should be embedded into auto switch mounting groove with a depth of 15 mm or more.

Auto Switch Mounting Bracket Part No. (Including Bracket, Set Screw)

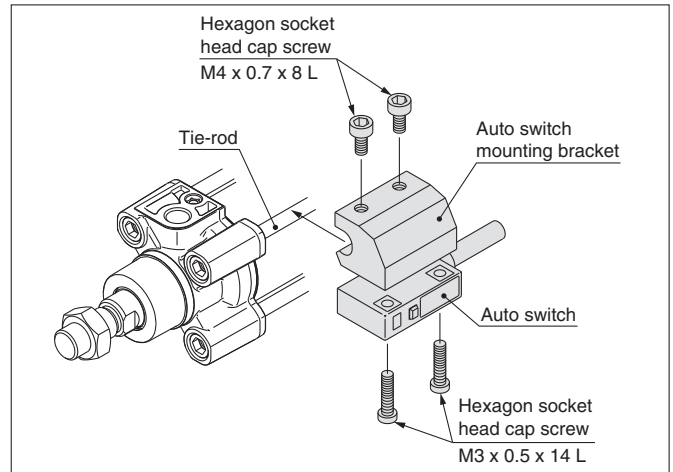
Cylinder series	Applicable bore size (mm)						
	32	40	50	63	80	100	125
C96	BMB4-032	BMB4-032	BMB4-050	BMB4-050	BA4-063	BA4-063	BA4-080

Note 2) When using D-Y7BA type, please order stainless steel screw set BBA1 separately (page 51), and use the stainless steel set screws, after selecting set screws of the appropriate length for the cylinder series — as shown in the table above.

<Applicable Auto Switch>

Solid state switch ... D-P4DW

How to Mount and Move the Auto Switch



1. Slightly screw the hexagon socket head cap screw (M4 x 0.7 x 8 L) into the M4 tapped portion of auto switch mounting bracket. (2 locations) Use caution that the tip of the hexagon socket head cap screw should not stick out to the concave portion of auto switch mounting bracket.
2. Put a hexagon socket head cap screw (M3 x 0.5 x 14 L) through the auto switch's through-hole (2 locations), and then push it down into the M3 tapped part on the auto switch mounting bracket while turning it lightly.
3. Place the concave part of the auto switch mounting bracket into the cylinder tie-rod, and slide the auto switch mounting bracket in order to set roughly to the detecting position.
4. After reconfirming the detecting position, tighten the M3 mounting screw to secure the auto switch by making the bottom face of auto switch attached to the cylinder tube. (Tightening torque of M3 screw should be 0.5 to 0.7 N·m.)
5. Tighten up M4 screw of auto switch mounting bracket to secure the auto switch mounting bracket. (Ensure that tightening torque of M4 screw should be set 1.0 to 1.2 N·m.)

Auto Switch Mounting Bracket Part No. (Including Bracket, Screw)

Cylinder series	Applicable bore size (mm)						
	32	40	50	63	80	100	125
C96	BMB3T-040	BMB3T-040	BMB3T-050	BMB3T-050	BMB3T-080	BMB3T-080	BAP2T-080

Mounting Bracket Tie-rod Mounting Type

<Applicable Auto Switch>

Solid state switch ... D-F59, D-F5P

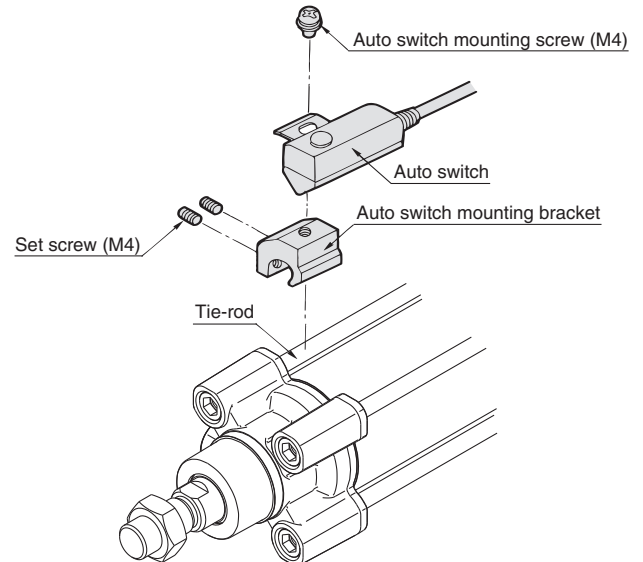
D-J59, D-J51, D-F5BA

D-F59W, D-F5PW, D-J59W

D-F59F, D-F5NT

**Reed switch D-A53, D-A54, D-A56, D-A64, D-A67
D-A59W**

1. Fix the auto switch on the auto switch mounting bracket with the auto switch mounting screw (M4) and install the set screw (M4).
2. Fit the auto switch mounting bracket into the cylinder tie-rod and then fix the auto switch at the detecting position with a set screw (M4).
(Be sure to put the auto switch on the surface of cylinder tube.) (Use a hexagon wrench.)
3. When changing the detecting position, loosen the set screw to move the auto switch and then re-fix the auto switch on the cylinder tube.
(Tightening torque of M4 screw should be 1.0 to 1.2 N·m.)



Auto Switch Mounting Bracket Part No. (Including Bracket, Screw, Set Screw)

Cylinder series	Applicable bore size (mm)						
	32	40	50	63	80	100	125
C96	BT-03	BT-03	BT-05	BT-05	BT-06	BT-06	BT-08

The following set of mounting screws made of stainless steel (including set screws) is also available. Use it in accordance with the operating environment.
(Please order the auto switch mounting bracket separately, since it is not included.)

BBA1: For D-A5/A6/F5/J5

"D-F5BA" switch is set on the cylinder with the stainless steel screws above when shipped from factory.

When a switch is shipped independently, "BBA1" screws are attached.

Auto Switch Mounting Screw Set

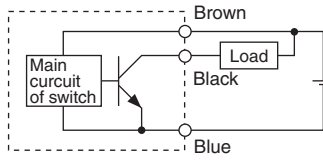
Part no.	Contents				Applicable auto switch mounting bracket part no.	Applicable auto switch
	No.	Description	Size	Quantity		
BBA1	1	Auto switch mounting screw	M4 x 0.7 x 8 L	1	BT-□□	D-A5, A6 D-F5, J5
	2	Set screw	M4 x 0.7 x 6 L	2	BT-03, BT-04, BT-05 BT-06, BT-08, BT-12	D-Z7, Z8 D-Y5, Y6, Y7
					BMA4-040, BMA4-063, BMA4-080 BMB4-032, BMB4-050	D-A9 D-M9
					BT-16, BT-18A, BT-20	D-A5, A6 D-F5, J5
	3	Set screw	M4 x 0.7 x 8 L	2	BS4-125, BS4-160 BS4-180, BS4-200	D-Z7, Z8 D-Y5, Y6, Y7
					BS5-125, BS5-160 BS5-180, BS5-200	D-A9 D-M9

Note) Use the set screw after selecting the appropriate length for the auto switch mounting bracket.

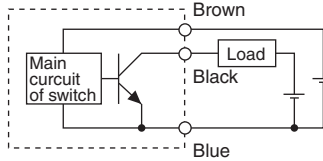
Auto Switches Connection and Example

Basic Wiring

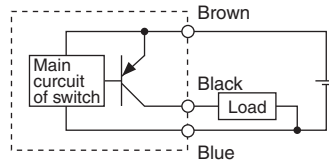
Solid state 3-wire, NPN



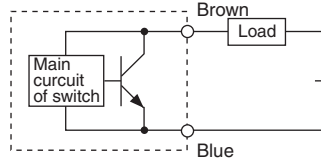
(Power supply for switch and load are separate)



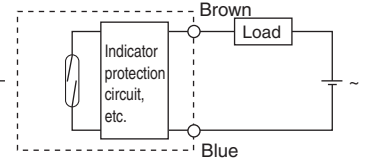
Solid state 3-wire, PNP



2-wire (Solid state)

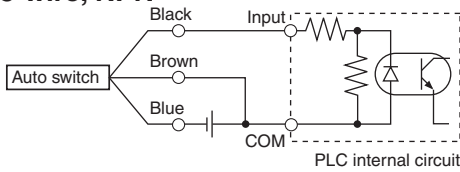


2-wire (Reed switch)

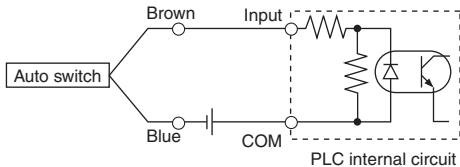


Example of Connection with PLC (Programmable Logic Controller)

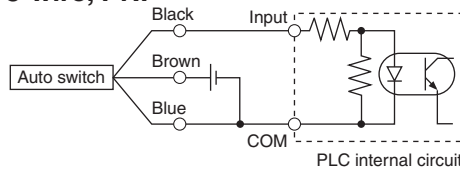
• Sink input specifications 3-wire, NPN



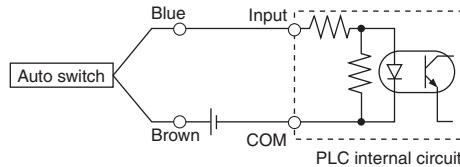
2-wire



• Source input specifications 3-wire, PNP



2-wire

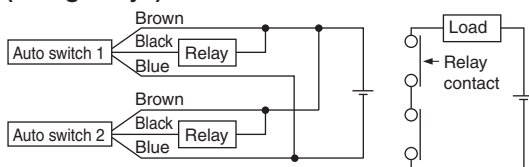


Connect according to the applicable PLC input specifications, as the connection method will vary depending on the PLC input specifications.

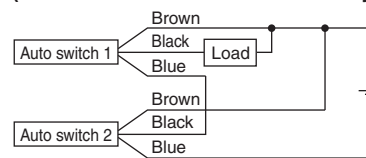
Example of AND (Series) and OR (Parallel) Connection

• 3-wire

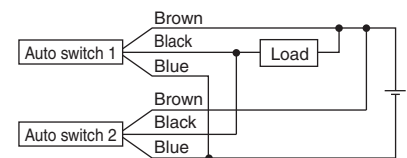
AND connection for NPN output (Using relays)



AND connection for NPN output (Performed with auto switches only)



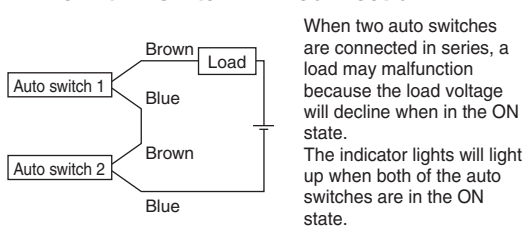
OR connection for NPN output



The indicator lights will light up when both auto switches are turned ON.

• 2-wire

2-wire with 2-switch AND connection

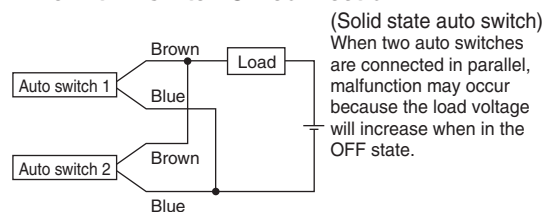


When two auto switches are connected in series, a load may malfunction because the load voltage will decline when in the ON state. The indicator lights will light up when both of the auto switches are in the ON state.

Load voltage at ON = Power supply voltage – Residual voltage x 2 pcs.
= 24 V – 4 V x 2 pcs.
= 16 V

Example: Power supply is 24 VDC
Internal voltage drop in auto switch is 4 V.

2-wire with 2-switch OR connection



(Solid state auto switch)
When two auto switches are connected in parallel, malfunction may occur because the load voltage will increase when in the OFF state.

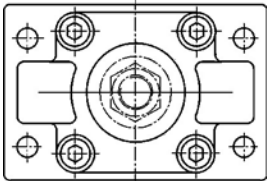
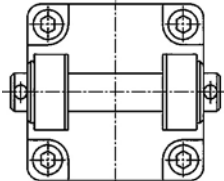
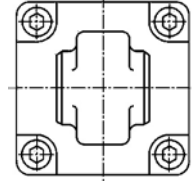
Load voltage at OFF = Leakage current x 2 pcs. x Load impedance
= 1 mA x 2 pcs. x 3 kΩ
= 6 V

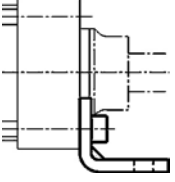
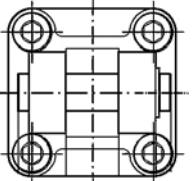
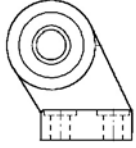
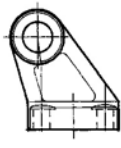
Example: Load impedance is 3 kΩ.
Leakage current from auto switch is 1 mA.

(Reed auto switch)
Because there is no current leakage, the load voltage will not increase when turned OFF. However, depending on the number of auto switches in the ON state, the indicator lights may sometimes grow dim or not light up, due to the dispersion and reduction of the current flowing to the auto switches.

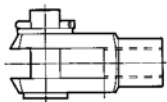
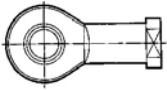
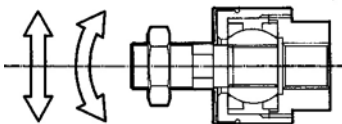
Series CP96/C96 Accessories

Cylinder Mounting Accessories/Part No.

Bore size (mm)	F	Rod/Head flange	D	Double clevis (Corresponds to E accessory)	C	Single clevis
						
		Supplied with 4 screws.		* Supplied with 4 screws, clevis pin, and safety device.		Supplied with 4 screws.
					Plain	With ball joint
	32	F5032		D5032	C5032	CS5032
	40	F5040		D5040	C5040	CS5040
	50	F5050		D5050	C5050	CS5050
	63	F5063		D5063	C5063	CS5063
	80	F5080		D5080	C5080	CS5080
	100	F5100		D5100	C5100	CS5100
125	F5125		D5125	C5125	CS5125	
	Page 44 for dimensions.		Page 54 for dimensions.		Page 54 for dimensions.	

Bore size (mm)	L Foot	DS Double clevis (for ES accessory)	ES Clevis pivot bracket with ball joint	E Clevis pivot bracket
	 Supplied with 2 pieces and 4 screws.			
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
125	L5125	DS5125	ES5125	E5125
	Page 44 for dimensions.	Page 55 for dimensions.	Page 55 for dimensions.	Page 54 for dimensions.

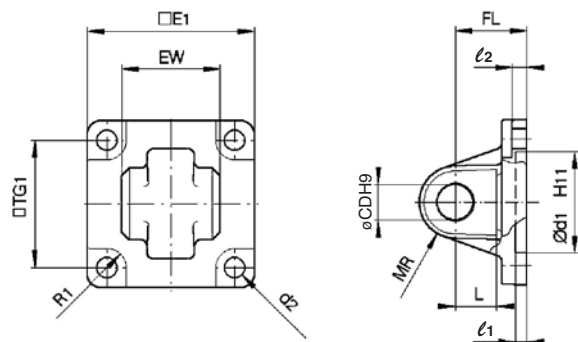
Piston Rod Mounting Accessories/Part No.

Bore size (mm)	GKM Rod clevis (ISO 8140)	KJ Piston rod ball joint (ISO 8139)	JA Floating joint
	 Supplied with clevis pin and safety device.		
32	GKM10-20	KJ10D	JA30-10-125
40	GKM12-24	KJ12D	JA40-12-125
50	GKM16-32	KJ16D	JA50-16-150
63	GKM16-32	KJ16D	JA50-16-150
80	GKM20-40	KJ20D	JA50-20-150
100	GKM20-40	KJ20D	JA50-20-150
125	GKM30-54	KJ27D	JA125-27-200
	Page 56 for dimensions.	Page 56 for dimensions.	Page 56 for dimensions.

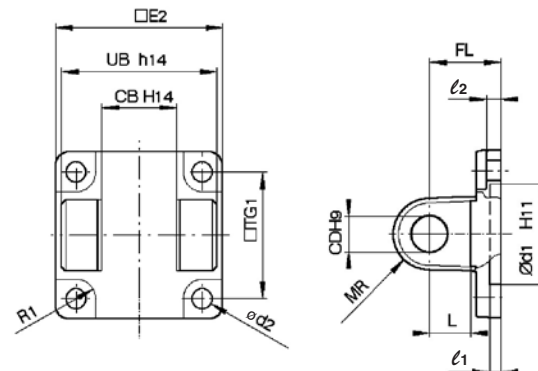
Series CP96/C96

Dimensions: Cylinder Mounting Accessories

Single clevis (C)

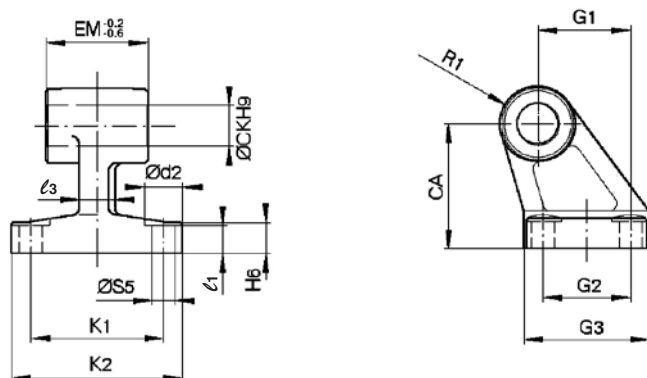


Double clevis (D)



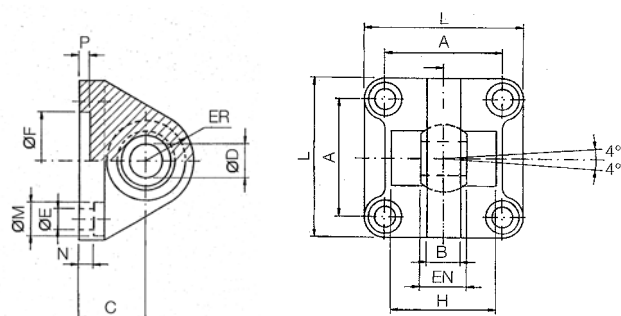
Bore size (mm)	E ₁	EW	TG ₁	FL	ℓ_1	L	ℓ_2	$\phi d1$	ϕCD	MR	$\phi d2$	R ₁	E ₂	UB	CB
32	45	26 ^{-0.2} _{-0.6}	32.5	22	5	12	5.5	30	10	9.5	6.6	6.5	48	45	26
40	51	28 ^{-0.2} _{-0.6}	38	25	5	15	5.5	35	12	12	6.6	6.5	56	52	28
50	64	32 ^{-0.2} _{-0.6}	46.5	27	5	15	6.5	40	12	12	9	8.5	64	60	32
63	74	40 ^{-0.2} _{-0.6}	56.5	32	5	20	6.5	45	16	16	9	8.5	75	70	40
80	94	50 ^{-0.2} _{-0.6}	72	36	5	20	10	45	16	16	11	11	95	90	50
100	113	60 ^{-0.2} _{-0.6}	89	41	5	25	10	55	20	20	11	12	115	110	60
125	Max.157	70 ^{-0.5} _{-1.2}	110	50	7	30	10	60	25	26	13.5	10	Max.157	130	70

Clevis pivot bracket (E)



Bore size (mm)	$\phi d2$	ϕCK	$\phi S5$	K ₁	K ₂ max.	ℓ_3 max.	G ₁	ℓ_1	G ₂	EM	G ₃ max.	CA	H ₆	R ₁
32	11	10	6.6	38	51	10	21	7	18	26 ^{-0.2} _{-0.6}	31	32	8	10
40	11	12	6.6	41	54	10	24	9	22	28 ^{-0.2} _{-0.6}	35	36	10	11
50	15	12	9	50	65	12	33	11	30	32 ^{-0.2} _{-0.6}	45	45	12	12
63	15	16	9	52	67	14	37	11	35	40 ^{-0.2} _{-0.6}	50	50	12	15
80	18	16	11	66	86	18	47	12.5	40	50 ^{-0.2} _{-0.6}	60	63	14	15
100	18	20	11	76	96	20	55	13.5	50	60 ^{-0.2} _{-0.6}	70	71	15	19
125	20	25	14	94	124	30	70	17	60	70 ^{-0.5} _{-1.5}	90	90	20	22.5

Single clevis with ball joint (CS)

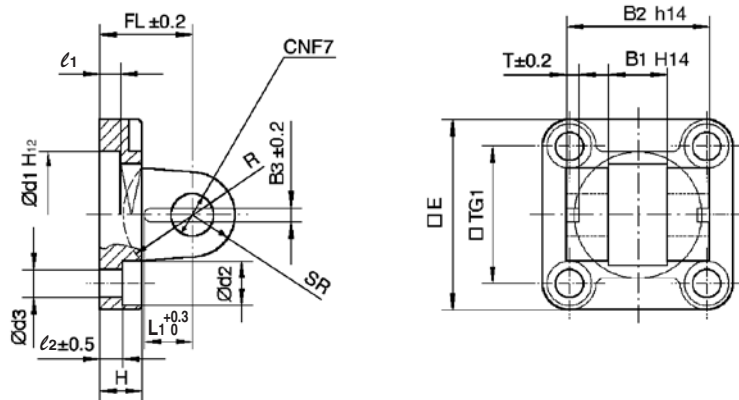


Bore size (mm)	A	B max.	C	ϕD_{H7}	EN _{0 -0.1}	ER max.	ϕF_{H11}	ϕE	L	ϕM	N	P	H _{±0.5}
32	32.5	10.5	22	10	14	15	30	6.6	45	10.5	5.5	5	—
40	38	12	25	12	16	18	35	6.6	55	11	5.5	5	—
50	46.5	15	27	16	21	20	40	9	65	15	6.5	5	51
63	56.5	15	32	16	21	23	45	9	75	15	6.5	5	—
80	72	18	36	20	25	27	45	11	95	18	10	5	70
100	89	18	41	20	25	30	55	11	115	18	10	5	—
125	110	25	50	30	37	40	60	13.5	140	20	10	7	100

* Black color

Dimensions: Cylinder Mounting Accessories

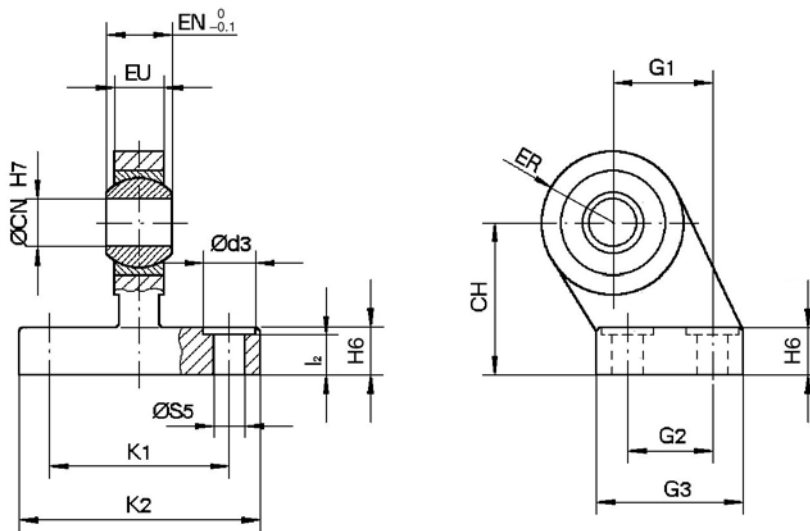
Double clevis (DS)



Bore size (mm)	E	B ₁	B ₂	B ₃	L ₁	TG ₁	T	l ₁ min.	l ₂	FL	H max.	Ød ₁	Ød ₂	Ød ₃	ØCN	SR max.	R
32	45	14	34	3.3	11.5	32.5	3	5	5.5	22	10	30	10.5	6.6	10	11	17
40	55	16	40	4.3	12	38	4	5	5.5	25	10	35	11	6.6	12	13	20
50	65	21	45	4.3	14	46.5	4	5	6.5	27	12	40	15	9	16	18	22
63	75	21	51	4.3	14	56.5	4	5	6.5	32	12	45	15	9	16	18	25
80	95	25	65	4.3	16	72	4	5	10	36	16	45	18	11	20	22	30
100	115	25	75	6.3	16	89	4	5	10	41	16	55	18	11	20	22	32
125	140	37	97	6.3	24	110	6	7	10	50	20	60	20	13.5	30	30	42

* Black color

Clevis pivot bracket with ball joint (ES)



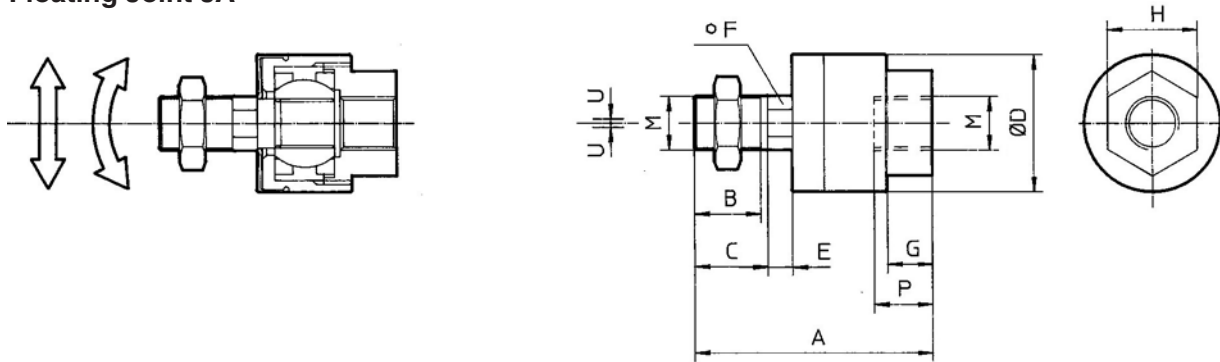
Bore size (mm)	Ød ₃	ØCN	ØS ₅	K ₁	K ₂ max.	l ₂	G ₁	G ₂	G ₃ max.	EN	EU	CH	H ₆	ER max.
32	11	10	6.6	38	51	8.5	21	18	31	14	10.5	32	10	15
40	11	12	6.6	41	54	8.5	24	22	35	16	12	36	10	18
50	15	16	9	50	65	10.5	33	30	45	21	15	45	12	20
63	15	16	9	52	67	10.5	37	35	50	21	15	50	12	23
80	18	20	11	66	86	11.5	47	40	60	25	18	63	14	27
100	18	20	11	76	96	12.5	55	50	70	25	18	71	15	30
125	20	30	13.5	94	124	17	70	60	90	37	25	90	20	40

* Black color

Series CP96/C96

Dimensions: Piston Rod Mounting Accessories

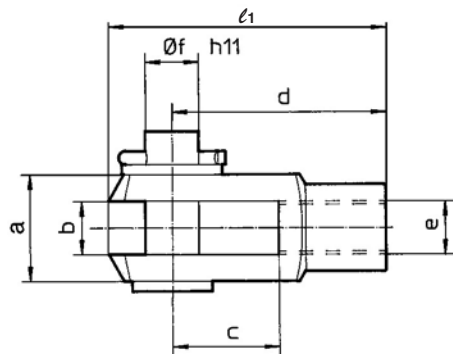
Floating Joint JA



Bore size (mm)	M	Part no.	A	B	C	ØD	E	F	G	H	P	U	Load (kN)	Weight (g)	Angle
32	M10 x 1.25	JA30-10-125	49.5	19.5	—	24	5	8	8	17	9	0.5	2.5	70	±0.5°
40	M12 x 1.25	JA40-12-125	60	20	—	31	6	11	11	22	13	0.75	4.4	160	
50, 63	M16 x 1.5	JA50-16-150	71.5	22	—	41	7.5	14	13.5	27	15	1	11	300	
80, 100	M20 x 1.5	JAH50-20-150	101	28	31	59.5	11.5	24	16	32	18	2	18	1080	
125	M27 x 2	JA125-27-200	123	34	38	66	13	27	20	41	24	2	28	1500	

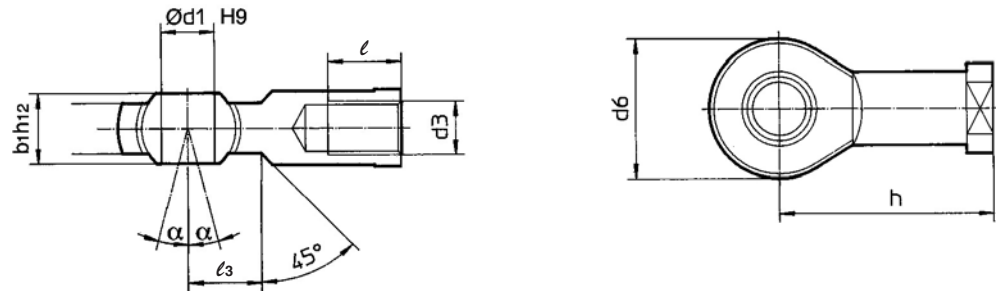
* Black color

Rod Clevis GKM (ISO 8140), Supplied with clevis pin and Safety Device



Bore size (mm)	e	Part no.	b	d	Øf h11 (Shaft)	Øf H9 (Hole)	ℓ ₁	c min.	a max.
32	M10 x 1.25	GKM10-20	10 ^{+0.5/+0.15}	40	10	10	52	20	20
40	M12 x 1.25	GKM12-24	12 ^{+0.5/+0.15}	48	12	12	62	24	24
50, 63	M16 x 1.5	GKM16-32	16 ^{+0.5/+0.15}	64	16	16	83	32	32
80, 100	M20 x 1.5	GKM20-40	20 ^{+0.5/+0.15}	80	20	20	105	40	40
125	M27 x 2	GKM30-54	30 ^{+0.5/+0.15}	110	30	30	148	54	55

Piston Rod Ball Joint KJ (ISO 8139)



Bore size (mm)	d ₃	Part no.	Ød ₁ H9	h	d ₆ max.	b ₁ h ₁₂	ℓ min.	α	ℓ ₃
32	M10 x 1.25	KJ10D	10	43	28	14	20	4°	15
40	M12 x 1.25	KJ12D	12	50	32	16	22	4°	17
50, 63	M16 x 1.5	KJ16D	16	64	42	21	28	4°	23
80, 100	M20 x 1.5	KJ20D	20	77	50	25	33	4°	27
125	M27 x 2	KJ27D	30	110	70	37	51	4°	36

ISO Standards

Compact Cylinder Double acting, Single Rod

Series C55

ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100

How to Order

C55 B 20 - 10

With auto switch CD55 B 20 - 10 - M9B S

With auto switch (Built-in magnet)

Mounting

B	Through-hole/Both ends tapped common (Standard)
L	Foot style
F	Rod side flange style
G	Head side flange style
C	Single clevis style

Bore size

20	20 mm
25	25 mm
32	32 mm
40	40 mm
50	50 mm
63	63 mm
80	80 mm
100	100 mm

Number of auto switches

Nil	2 pcs.
S	1 pc.
n	"n" pcs.

Auto switch

Nil	Without auto switch (Built-in magnet cylinder)
------------	--

* For the applicable auto switch model, refer to the table below.
* Auto switches are shipped together, (but not assembled).

Auto switch

Nil	Without auto switch (Built-in magnet cylinder)
------------	--

* For the applicable auto switch model, refer to the table below.
* Auto switches are shipped together, (but not assembled).

Rod end thread

Nil	Rod end female thread
M	Rod end male thread

* A rubber bumper comes as standard.

Cylinder stroke (mm)

Refer to page 58 for standard and intermediate strokes.

Applicable Auto Switches/Refer to Best Pneumatics No. 2 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model		Lead wire length (m)					Pre-wired connector	Applicable load			
					DC	AC	Perpendicular	In-line	0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)					
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NV	M9N	●	●	●	○	—	○	IC circuit	Relay, PLC	
				3-wire (PNP)				M9PV	M9P	●	●	●	○	—	○			
	2-wire			M9BV				M9B	●	●	●	○	—	○	—			
	3-wire (NPN)			M9NVV				M9NW	●	●	●	○	—	○		IC circuit		
	3-wire (PNP)			M9PVV				M9PW	●	●	●	○	—	○	—			
	2-wire			M9BVV				M9BW	●	●	●	○	—	○		—		
	3-wire (NPN)			**M9NAV				**M9NA	○	○	●	○	—	○	IC circuit			
	3-wire (PNP)			**M9PAV				**M9PA	○	○	●	○	—	○		—		
	2-wire			**M9BAV				**M9BA	○	○	●	○	—	○	—			
	2-wire (Non-polar)			—				—	—	—	—	—	—	—		—		
Reed switch	—		Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	A96V	A96	●	—	●	—	—		—	IC circuit
					2-wire	24 V	12 V	100 V	A93V	A93	●	—	●	—	—	—	—	—
				5 V, 12 V			100 V or less	A90V	A90	●	—	●	—	—	—	—	—	—

** Water resistant type auto switch can be mounted to the models with the above mentioned part numbers, but this does not guarantee the water resistance of the cylinder.

Lead wire length symbols: 0.5 m..... Nil (Example) M9NW
1 m..... M (Example) M9NWM
3 m..... L (Example) M9NWL
5 m..... Z (Example) M9NWZ

* Solid state auto switches marked with a "○" are produced upon receipt of order.

* There are other applicable auto switches other than the listed above. For details, refer to Best Pneumatics No. 2.
* For details about auto switches with pre-wired connector, refer to Best Pneumatics No. 2.
* For details about D-P3DW□ type, refer to the D-P3DW□ series catalog (CAT.ES20-201).
* Auto switches are shipped together, (but not assembled).

Series C55



⚠ Caution

Be sure to read before handling.

- ① Refer to back cover for Safety Instructions and "Handling Precautions for SMC Product" (M-E03-3) for Actuators and Auto Switches Precautions.
- ② This product should not be used as a stopper.
- ③ Use the PF thread fittings for this cylinder.

Mounting Bracket Part No.

Bore size (mm)	Foot	Flange	Single clevis
20	C55-L020	C55-F020	C55-C020
25	C55-L025	C55-F025	C55-C025
32	C55-L032	C55-F032	C55-C032
40	C55-L040	C55-F040	C55-C040
50	C55-L050	C55-F050	C55-C050
63	C55-L063	C55-F063	C55-C063
80	C55-L080	C55-F080	C55-C080
100	C55-L100	C55-F100	C55-C100

- Order two foot brackets per cylinder.
- Parts belonging to each bracket are as follows.
Foot, Flange, Single clevis/Body mounting bolt

Replacement Parts/Seal Kit

Bore size (mm)	Kit no.	Contents
20	CQ2B20-PS	Rod seal Piston seal Tube gasket
25	CQ2B25-PS	
32	CQ2B32-PS	
40	CQ2B40-PS	
50	CQ2B50-PS	
63	CQ2B63-PS	
80	CQ2B80-PS	
100	CQ2B100-PS	

Specifications

Type		Pneumatic (Non-lube)
Action		Double acting, Single rod
Fluid		Air
Proof pressure		1.5 MPa
Maximum operating pressure		1.0 MPa
Minimum operating pressure		0.05 MPa (ø20 to ø63), 0.03 MPa (ø80, ø100)
Ambient and fluid temperature		Without auto switch: -10 to 70°C (No freezing) With auto switch: -10 to 60°C (No freezing)
Cushion		Rubber bumper on both end
Stroke length tolerance ^{Note)}		+1.0 0 mm
Piston speed	ø20 to ø63	50 to 500 mm/s
	ø80, ø100	50 to 300 mm/s

Note) Stroke length tolerance does not include the amount of bumper change.

Standard Stroke

Bore size (mm)	Standard stroke (mm)
20 to 63	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 60, 80, 100, 125, 150
80, 100	10, 15, 20, 25, 30, 35, 40, 45, 50, 60, 80, 100, 125

Manufacture of Intermediate Stroke

Description	Dealing with the stroke by the 1 mm interval by using an exclusive body with the specified stroke
Part no.	Refer to "How to Order" for the standard model no. (page 57)
Stroke range	6 to 149
Example	Part no.: C55B32-47
	Makes 47 stroke tube

Weight

Without Auto Switch

Unit: g

Bore size (mm)	Cylinder stroke (mm)														
	5	10	15	20	25	30	35	40	45	50	60	80	100	125	150
20	111	124	137	150	163	176	189	202	215	228	254	306	357	422	487
25	152	168	183	199	214	230	246	261	277	292	323	386	448	526	603
32	250	273	295	317	339	362	384	406	428	451	495	584	673	785	896
40	315	339	364	388	412	436	461	485	509	533	582	679	776	897	1018
50	497	534	570	607	644	681	718	755	791	828	902	1049	1197	1381	1565
63	677	717	757	797	837	877	917	957	997	1037	1117	1277	1437	1638	1838
80	—	1164	1223	1281	1339	1398	1456	1514	1573	1631	1748	1981	2214	2506	—
100	—	2213	2295	2377	2459	2541	2623	2705	2787	2870	3034	3362	3690	4101	—

With Auto Switch (Built-in magnet)

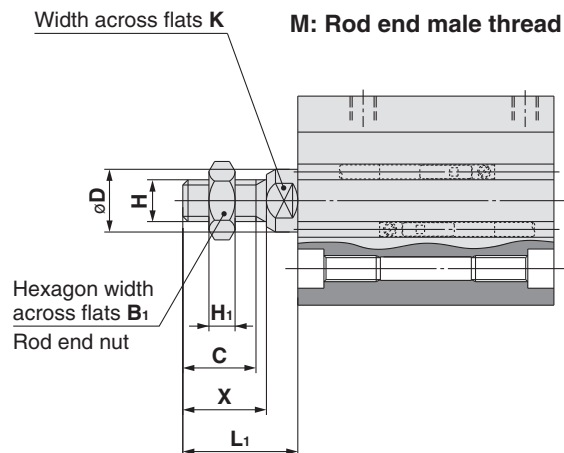
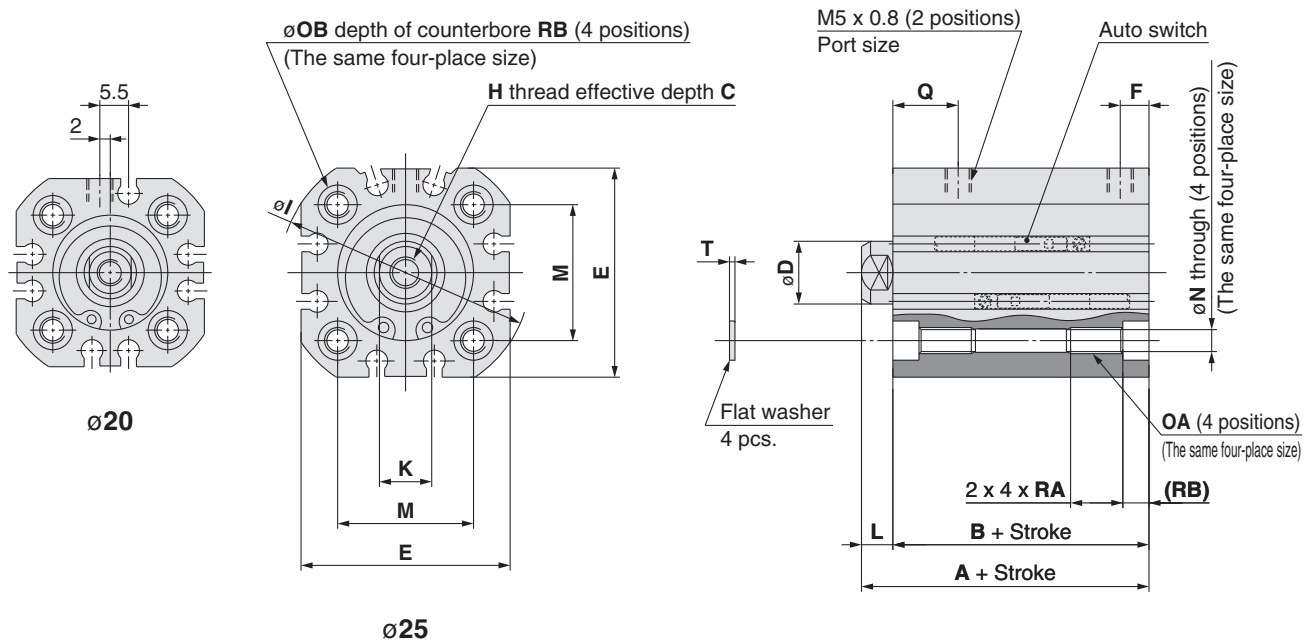
Unit: g

Bore size (mm)	Cylinder stroke (mm)														
	5	10	15	20	25	30	35	40	45	50	60	80	100	125	150
20	113	126	139	152	165	178	191	204	216	229	255	307	359	424	489
25	154	170	185	201	217	232	248	263	279	294	325	388	450	528	606
32	254	277	299	321	343	366	388	410	432	455	499	588	677	788	900
40	319	344	368	392	416	441	465	489	513	537	586	683	780	901	1022
50	502	539	575	612	649	686	723	760	796	833	907	1054	1202	1386	1570
63	685	725	765	805	845	885	925	965	1005	1045	1125	1285	1445	1645	1845
80	—	1188	1246	1305	1363	1421	1480	1538	1596	1654	1771	2004	2238	2529	—
100	—	2248	2330	2412	2494	2577	2659	2741	2823	2905	3069	3397	3726	4136	—

Add each weight of auto switches and mounting brackets when mounting an auto switches.
Refer to Best Pneumatics No. 2 for auto switch weight.

Dimensions (With and without auto switch are the same size)

ø20, ø25



Rod End Male Thread (mm)

Bore size (mm)	B ₁	C	D	H	H ₁	K	L ₁	X
20	13	14	10	M8 x 1.25	5	8	22	16
25	13	14	12	M8 x 1.25	5	10	22	16

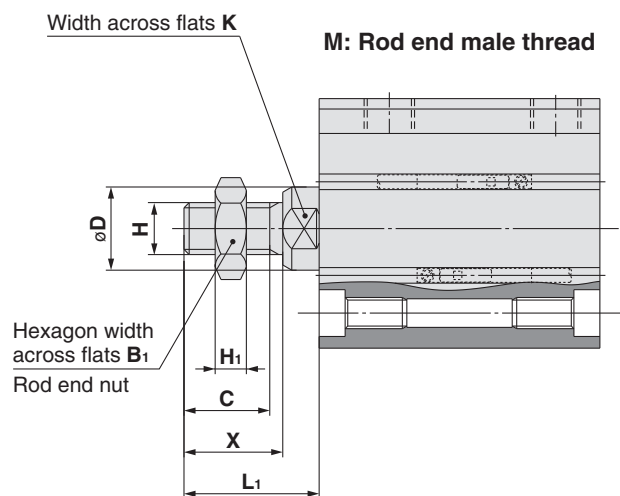
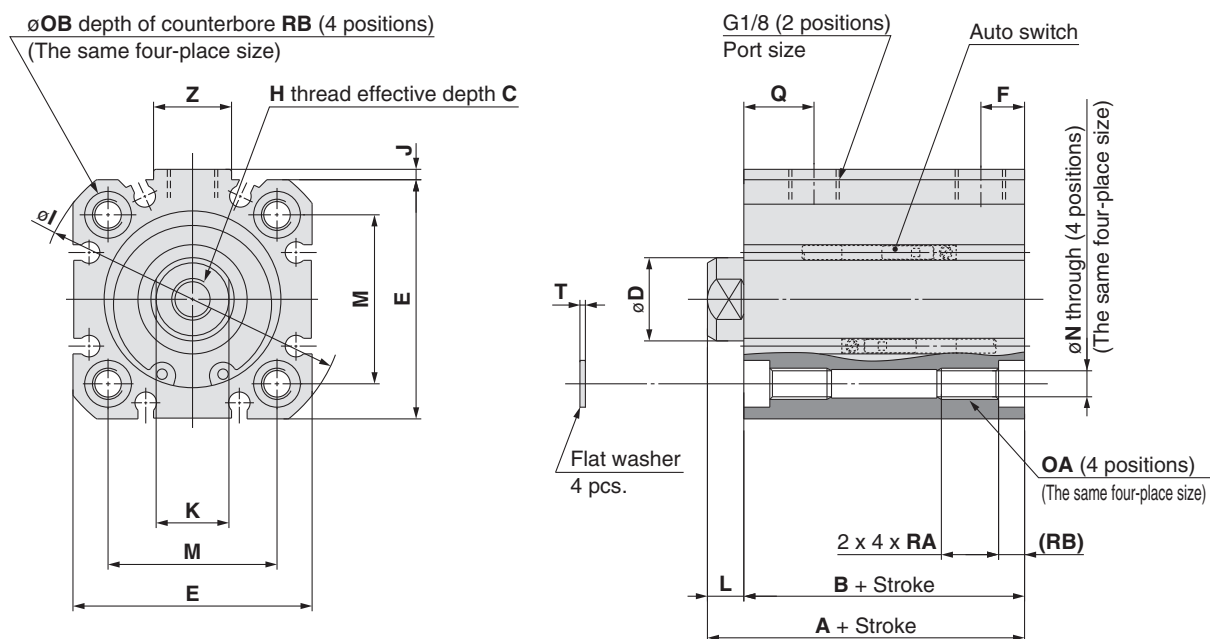
Standard Type

Bore size (mm)	A	B	C	D	E	F	H	I	K	L	M	N	OA	OB	Q	RA	RB	T
20	43	37	10	10	36	5.5	M6 x 1.0	43	8	6	22	4.5	M5 x 0.8	7.5	13	10	5	0.8
25	45	39	10	12	40	5.5	M6 x 1.0	48	10	6	26	4.5	M5 x 0.8	7.5	13	10	5	0.8

Series C55

Dimensions (With and without auto switch are the same size)

ø32 to ø63



Rod End Male Thread (mm)

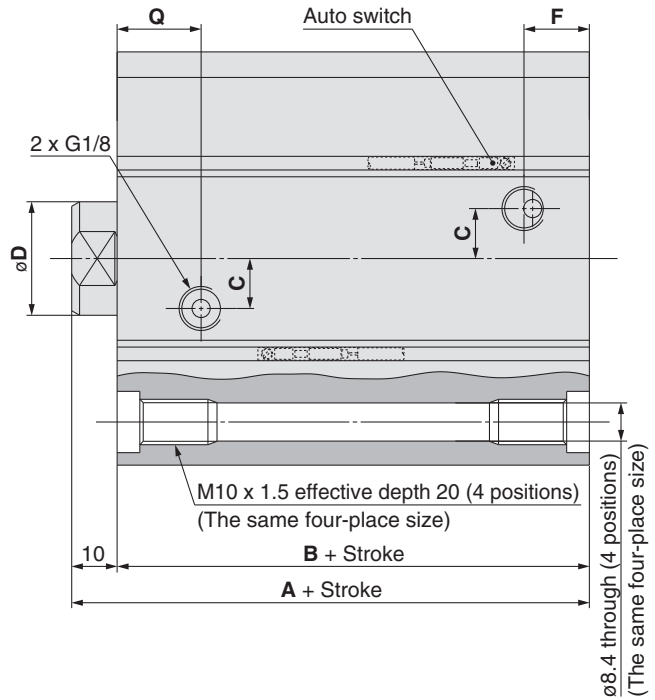
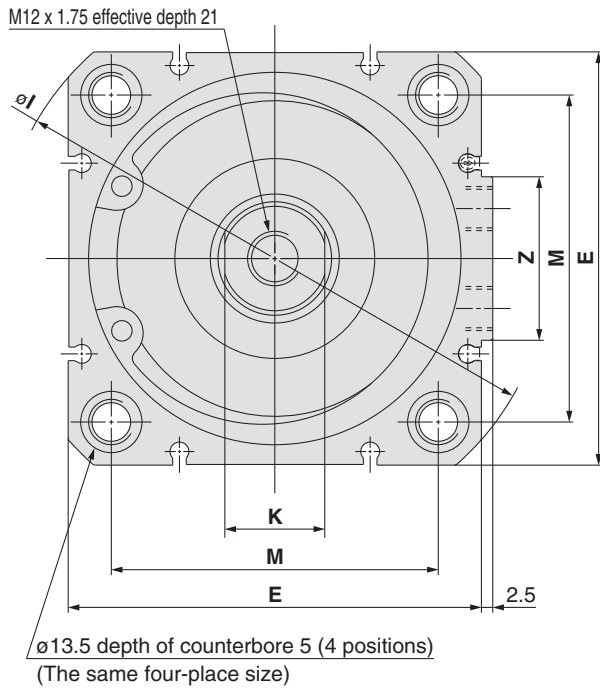
Bore size (mm)	B ₁	C	D	H	H ₁	K	L ₁	X
32	17	16.5	16	M10 x 1.25	6	14	26	19
40	17	16.5	16	M10 x 1.25	6	14	26	19
50	19	19.5	20	M12 x 1.25	7	17	30	22
63	19	19.5	20	M12 x 1.25	7	17	30	22

Standard Type

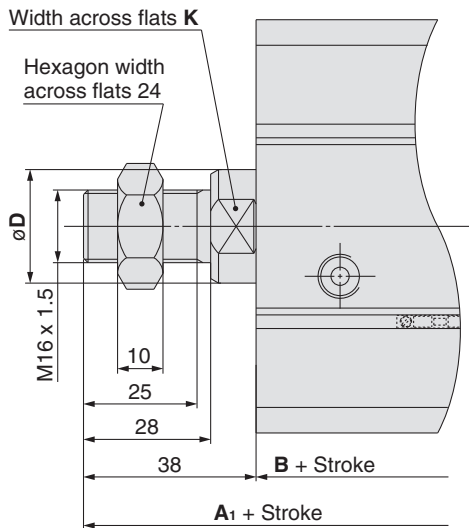
Bore size (mm)	A	B	C	D	E	F	H	I	J	K	L	M	N	OA	OB	Q	RA	RB	T	Z
32	51	44	12	16	46	8.5	M8 x 1.25	59	2	14	7	32.5	5.5	M6 x 1.0	9	14.5	11	5	1	15
40	52	45	12	16	52	9.5	M8 x 1.25	67	3	14	7	38	5.5	M6 x 1.0	9	14.5	11	5	1	17
50	53	45	16	20	64	10.5	M10 x 1.5	82	2	17	8	46.5	6.6	M8 x 1.25	10.5	13.5	15	5	1.6	17
63	57	49	16	20	74	14.5	M10 x 1.5	96	3	17	8	56.5	6.6	M8 x 1.25	10.5	15.5	15	5	1.6	17

Dimensions (With and without auto switch are the same size)

ø80, ø100



M: Rod end male thread



Standard Type

Bore size (mm)	A	B	C	D	E	F	I	K	M	Q	Z
80	64	54	11	25	91	15	121	22	72	19	36
100	77	67	14	30	111	18	145	27	89	26	42

Rod End Male Thread (mm)

Bore size (mm)	A ₁
80	92
100	106.5

Series C85

Series CP96

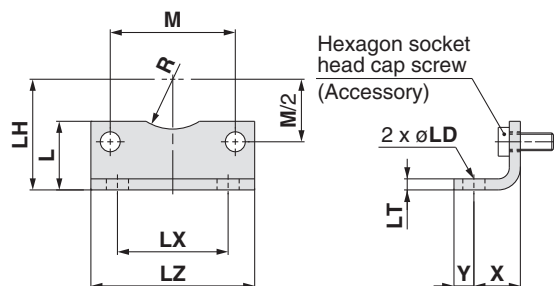
Series C96

Series C55

Series C55

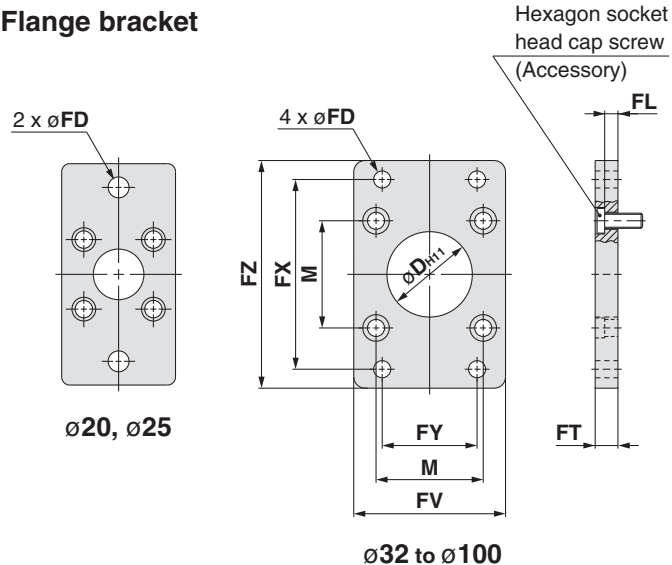
Mounting Bracket

Foot bracket



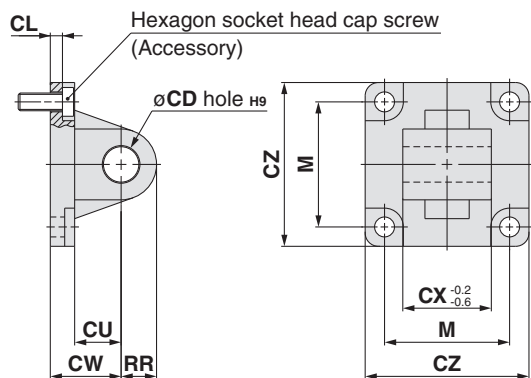
Bore size (mm)	L	LD	LH	LT	LX	LZ	M	R	X	Y	Hexagon socket head cap screw
20	22	7	27	4	22	36	22	8	16	7	M5
25	22	7	29	4	26	40	26	10	16	7	M5
32	24.5	7	33.5	4	32	46	32.5	15	16	7	M6
40	26	10	38	4	36	52	38	17.5	18	9	M6
50	31	10	45	5	45	64	46.5	20	21	9	M8
63	31	10	50	5	50	74	56.5	22.5	21	9	M8
80	38.5	12	63	6	63	96	72	—	26	11	M10
100	45	14.5	74	6	75	116	89	—	27	13	M10

Flange bracket



Bore size (mm)	D	M	FD	FL	FT	FV	FX	FY	FZ	Hexagon socket head cap screw
20	16	22	6.6	2.8	8	38	55	—	68	M5
25	16	26	6.6	2.8	8	38	60	—	73	M5
32	30	32.5	7	5	10	50	64	32	79	M6
40	35	38	9	5	10	55	72	36	90	M6
50	40	46.5	9	6	12	70	90	45	110	M8
63	45	56.5	9	6	12	80	100	50	120	M8
80	45	72	12	8	16	100	126	63	153	M10
100	55	89	14	8	16	120	150	75	178	M10

Single clevis bracket



Bore size (mm)	CD _{H9}	CL	CU	CW	CX	CZ	M	RR	Hexagon socket head cap screw
20	8	3	12	20	16	35	22	9	M5
25	8	3	12	20	16	40	26	9	M5
32	10	5.5	12	22	26	45	32.5	9.5	M6
40	12	5.5	15	25	28	51	38	12	M6
50	12	6.5	15	27	32	64	46.5	12	M8
63	16	6.5	20	32	40	74	56.5	16	M8
80	16	10	20	36	50	94	72	16	M10
100	20	10	25	41	60	113	89	20	M10

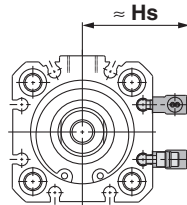
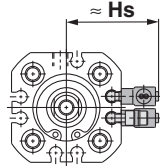
Proper Auto Switch Mounting Position (Detection at Stroke End) and Its Mounting Height

Reed auto switch
D-A9□

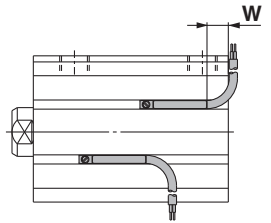
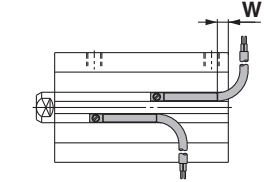
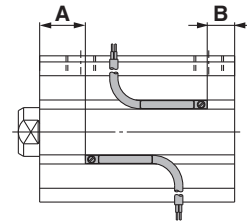
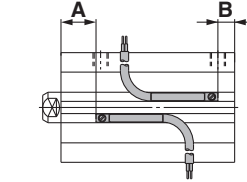
Solid state auto switch

D-M9□
D-M9□W
D-M9□A
D-P3DW□

ø20, ø25



ø32, ø40, ø50, ø63, ø80, ø100



* Figures in the table below are used as a reference when mounting the auto switches for stroke end detection.
In the case of actually setting the auto switches, adjust them after confirming their operation.

Auto switch model Bore size (mm)	D-A9□			D-M9□ D-M9□W			D-M9□A			D-P3DW□			
	A	B	W	A	B	W	A	B	W	A	B	W	Hs
20	11.5	5.5	1 (3.5)	15.5	9.5	-0.5	15.5	9.5	-2.5	6.0	0.5	-3.0	30
25	12.5	7.5	3 (5.5)	16.5	11.5	1.5	16.5	11.5	-0.5	7	2.5	-1	32
32	14.5	9.5	5 (7.5)	18.5	13.5	3.5	18.5	13.5	1.5	9.5	4	1	35
40	13	12	7.5 (10)	17	16	6	17	16	4	8	7	3.5	38
50	9.5	15.5	11 (13.5)	13.5	19.5	9.5	13.5	19.5	7.5	4.5	10.5	7	44
63	10.5	18.5	14 (16.5)	14.5	22.5	12.5	14.5	22.5	10.5	5.5	13.5	10	49
80	16.5	17.5	13 (15.5)	20.5	21.5	11.5	20.5	21.5	9.5	11.5	12.5	9	57.5
100	24.5	22.5	18 (20.5)	28.5	26.5	16.5	28.5	26.5	14.5	19.5	17.5	14	67.5

The dimension inside () is for D-A96.

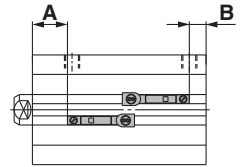
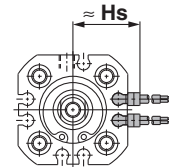
Negative figures in the table W indicate an auto switch is mounted inward from the edge of the cylinder body.

Reed auto switch
D-A9□V

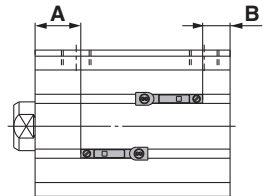
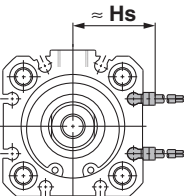
Solid state auto switch

D-M9□V
D-M9□WV
D-M9□AV

ø20, ø25



ø32, ø40, ø50, ø63, ø80, ø100



* Figures in the table below are used as a reference when mounting the auto switches for stroke end detection. In the case of actually setting the auto switches, adjust them after confirming their operation.

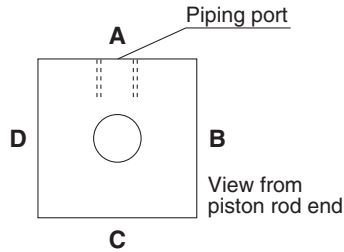
Auto switch model Bore size (mm)	D-A9□V			D-M9□V D-M9□WV D-M9□AV		
	A	B	Hs	A	B	Hs
20	11.5	5.5	22	15.5	9.5	24
25	12.5	7.5	24	16.5	11.5	26
32	14.5	9.5	27	18.5	13.5	29
40	13	12	30	17	16	32
50	9.5	15.5	36	13.5	19.5	38
63	10.5	18.5	41	14.5	22.5	43
80	16.5	17.5	49.5	20.5	21.5	52
100	24.5	22.5	60	28.5	26.5	62

Series C55

Auto Switch Mounting 2

The Number of Surfaces and Grooves Where an Auto Switch Can Be Mounted (As Direct Mounting)

The number of the surfaces and grooves where the auto switch can be mounted, by switch type, are shown in the table below.



Mounting the D-P3DW□ on a $\phi 20$ to $\phi 25$ port surface interferes with the fitting, so it needs to be mounted on a place other than the port surface.

For $\phi 32$ to $\phi 100$, if the corner of the fitting hexagon interferes with the D-P3DW□ series, adjust the tightening of the fitting to eliminate the interference.

Also, in the case of interference with an elbow type fitting, direct the port of the fitting away from the D-P3DW□ series.

If you have any other questions, please contact SMC.

Auto switch model	D-A9□, M9□				D-P3DW□			
	A (Mounting groove no.)	B (Mounting groove no.)	C (Mounting groove no.)	D (Mounting groove no.)	A (Mounting groove no.)	B (Mounting groove no.)	C (Mounting groove no.)	D (Mounting groove no.)
20	○ (1)	○ (2)	○ (2)	○ (2)	×	○ (2)	○ (2)	○ (2)
25	○ (2)	○ (2)	○ (2)	○ (2)	×	○ (2)	○ (2)	○ (2)
32	○ (2)	○ (2)	○ (2)	○ (2)	×	○ (2)	○ (2)	○ (2)
40	○ (2)	○ (2)	○ (2)	○ (2)	×	○ (2)	○ (2)	○ (2)
50	○ (2)	○ (2)	○ (2)	○ (2)	×	○ (2)	○ (2)	○ (2)
63	○ (2)	○ (2)	○ (2)	○ (2)	×	○ (2)	○ (2)	○ (2)
80	○ (2)	○ (2)	○ (2)	○ (2)	○ (2)	○ (2)	○ (2)	○ (2)
100	○ (2)	○ (2)	○ (2)	○ (2)	○ (2)	○ (2)	○ (2)	○ (2)

Operating Range

Auto switch model	Bore size (mm)							
	20	25	32	40	50	63	80	100
D-A9□(V)	9	9	9	9	9	10.5	14	10.5
D-M9□(V) D-M9□W(V) D-M9□A(V)	5	4.5	5	4	4.5	5	10	8
D-P3DW□	5	5.5	5.5	5.5	5.5	6.5	9	7

* The operating ranges are provided as guidelines including hystereses and are not guaranteed values (assuming approximately $\pm 30\%$ variations).
They may vary significantly with ambient environments.

Minimum Auto Switch Mounting Stroke

Bore size (mm)	Auto switch model No. of auto switch mounted	(mm)							
		D-A9□	D-A9□V	D-M9□	D-M9□W D-M9□A	D-M9□V	D-M9□WV	D-M9□AV	D-P3DW□
20	2 pcs.	10	10	15	15	5	10	10	15
	1 pc.	10	5	15	15	5	5	10	15
25	2 pcs.	10	10	10	15	5	10	10	15
	1 pc.	10	5	10	15	5	5	10	15
32, 40, 50	2 pcs.	10	10	10	15	5	10	10	10
	1 pc.	10	5	10	15	5	5	10	10
63	2 pcs.	10	10	10	15	5	10	10	10
	1 pc.	5	5	5	15	5	5	10	10
80, 100	2 pcs.	10	10	15	15	5	10	10	10
	1 pc.	10	5	15	15	5	5	10	10

Besides the models listed in "How to Order," the following auto switches are applicable.

- * Normally closed (NC = b contact) solid state auto switch (D-F9G/F9H type) and solid state auto switch D-F8 type are also available. For details, refer to Best Pneumatics No. 2.
- * For solid state auto switches, auto switches with a pre-wired connector are also available. Refer to Best Pneumatics No. 2 for details.

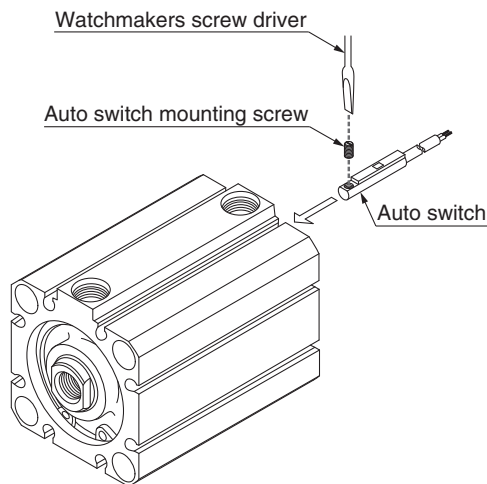
Mounting of Auto Switch/Direct Mounting Style

To mount auto switches, follow the instruction illustrated below.

<Applicable auto switch>

Solid state.....D-M9□(V)
 D-M9□W(V)
 D-M9□A(V)
Reed.....D-A9□(V)

ø20 to ø100



Use a watchmakers screwdriver with a handle 5 to 6 mm in diameter when tightening the auto switch mounting screw.

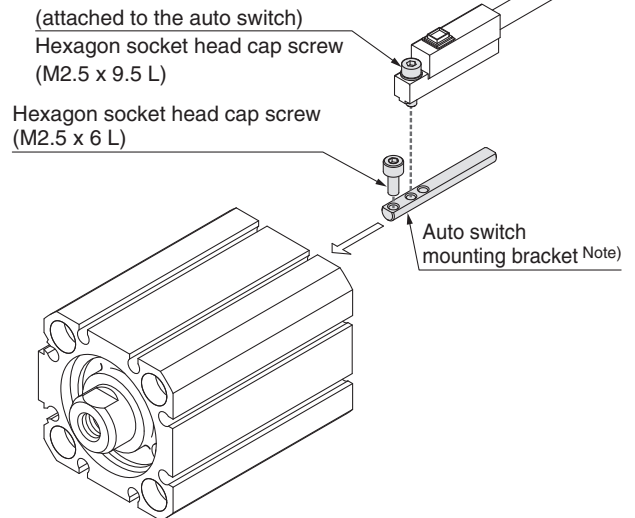
Tightening Torque of Auto Switch Mounting Screws

Auto switch model	Tightening torque (N·m)
D-M9□(V) D-M9□W(V) D-M9□A(V)	0.05 to 0.15
D-A9□(V)	0.10 to 0.20

<Applicable auto switch>

Solid state.....D-P3DW□

ø20 to ø100



Note) When the auto switch mounting bracket is ordered by its part number, it includes all the bracket and bolts in the above chart.

Applicable auto switch	Auto switch mounting bracket part no.
D-P3DW□	BQ6-032S

- Fix the auto switch and the auto switch mounting bracket temporarily by tightening the hexagon socket head cap screw (M2.5 x 9.5 L) 1 to 2 turns.
- Insert the temporarily tightened mounting bracket into the mating groove of the cylinder tube, and slide the auto switch onto the cylinder tube through the groove.
 When inserting into the mating groove of the cylinder/actuator, please hold the rear end of the auto switch (lead wire side) and the rear end of the auto switch mounting bracket together whilst working.
- Check the detecting position of the auto switch and fix the auto switch firmly with the hexagon socket head cap screw (M2.5 x 6 L, M2.5 x 9.5 L).*
- If the detecting position is changed, go back to step ②.

* The hexagon socket head cap screw (M2.5 x 6 L) is used to fix the mounting bracket and cylinder tube.
 This enables the replacement of the auto switch without adjusting the auto switch position.

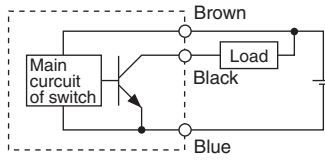
Note 1) Ensure that the auto switch is covered with the mating groove to protect the auto switch.

Note 2) The torque for tightening the hexagon socket head cap screw (M2.5 x 6 L, M2.5 x 9.5 L) is 0.2 to 0.3 N·m.

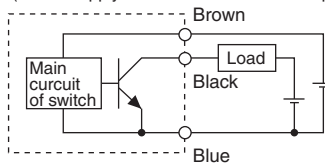
Note 3) Tighten the hexagon socket head cap screws evenly.

Basic Wiring

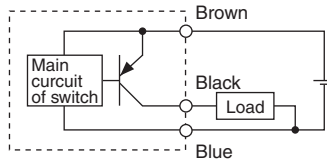
Solid state 3-wire, NPN



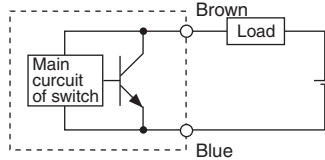
(Power supply for switch and load are separate)



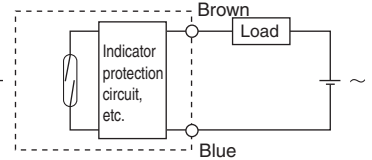
Solid state 3-wire, PNP



2-wire (Solid state)

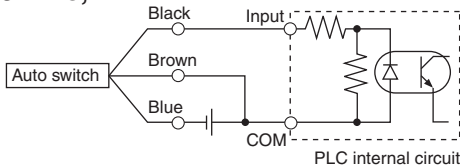


2-wire (Reed switch)

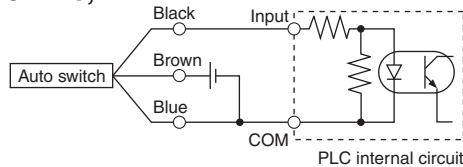


Example of Connection with PLC (Programmable Logic Controller)

• Sink input specifications 3-wire, NPN

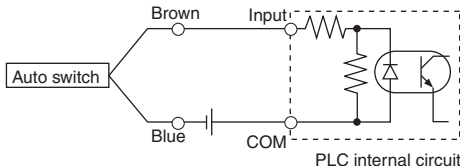


• Source input specifications 3-wire, PNP

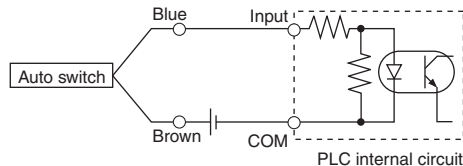


Connect according to the applicable PLC input specifications, as the connection method will vary depending on the PLC input specifications.

2-wire



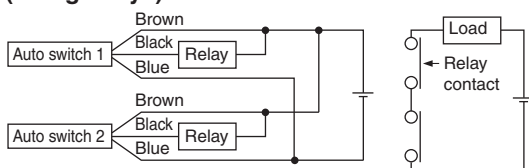
2-wire



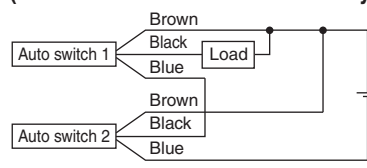
Example of AND (Series) and OR (Parallel) Connection

• 3-wire

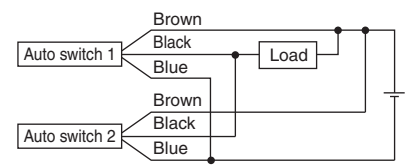
AND connection for NPN output (Using relays)



AND connection for NPN output (Performed with auto switches only)



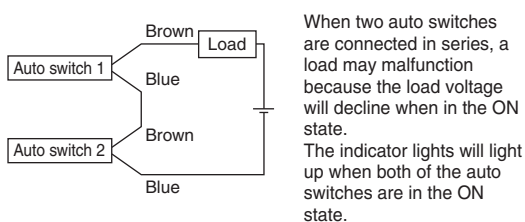
OR connection for NPN output



The indicator lights will light up when both auto switches are turned ON.

• 2-wire

2-wire with 2-switch AND connection

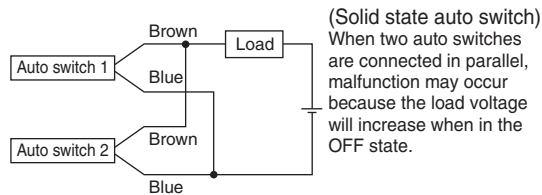


When two auto switches are connected in series, a load may malfunction because the load voltage will decline when in the ON state. The indicator lights will light up when both of the auto switches are in the ON state.

Load voltage at ON = Power supply voltage – Residual voltage x 2 pcs.
= 24 V – 4 V x 2 pcs.
= 16 V

Example: Power supply is 24 VDC
Internal voltage drop in auto switch is 4 V.

2-wire with 2-switch OR connection



(Solid state auto switch)
When two auto switches are connected in parallel, malfunction may occur because the load voltage will increase when in the OFF state.

Load voltage at OFF = Leakage current x 2 pcs. x Load impedance
= 1 mA x 2 pcs. x 3 kΩ
= 6 V

Example: Load impedance is 3 kΩ.
Leakage current from auto switch is 1 mA.

(Reed auto switch)
Because there is no current leakage, the load voltage will not increase when turned OFF. However, depending on the number of auto switches in the ON state, the indicator lights may sometimes grow dim or not light up, due to the dispersion and reduction of the current flowing to the auto switches.

Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of “**Caution**,” “**Warning**” or “**Danger**.” They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC) ^{*1)}, and other safety regulations.

-  **Caution:** **Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
-  **Warning:** **Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
-  **Danger :** **Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

- *1) ISO 4414: Pneumatic fluid power – General rules relating to systems.
 ISO 4413: Hydraulic fluid power – General rules relating to systems.
 IEC 60204-1: Safety of machinery – Electrical equipment of machines.
 (Part 1: General requirements)
 ISO 10218-1: Manipulating industrial robots - Safety.
 etc.

Warning

1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.

Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

2. Only personnel with appropriate training should operate machinery and equipment.

The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed.

1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalog.
3. An application which could have negative effects on people, property, or animals requiring special safety analysis.
4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

Caution

1. The product is provided for use in manufacturing industries.

The product herein described is basically provided for peaceful use in manufacturing industries.

If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary.

If anything is unclear, contact your nearest sales branch.

Limited warranty and Disclaimer/ Compliance Requirements

The product used is subject to the following “Limited warranty and Disclaimer” and “Compliance Requirements”.

Read and accept them before using the product.

Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered.*2)
 Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.
 This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.

*2) Vacuum pads are excluded from this 1 year warranty.

A vacuum pad is a consumable part, so it is warranted for a year after it is delivered.
 Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

 **Safety Instructions** Be sure to read “Handling Precautions for SMC Products” (M-E03-3) before using.



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D-G

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