

ISO Standards

Air Cylinder: Standard Double Acting, Single Rod **C85 Series** ø8, ø10, ø12, ø16, ø20, ø25

RoHS

How to Order

Double acting, Single rod **C D 85 N 20 - 40 C J L V - B - M9BW S -**

Head cover type

N	Basic (Integrated clevis)
E	Double end boss-cut
F	Boss-cut/Basic
Y	Head cover axial port

Bore size

8	8 mm
10	10 mm
12	12 mm
16	16 mm
20	20 mm
25	25 mm

Applicable head cover

Action	N	E	F	Y
Rubber bumper	●	●	●	●
Air cushion	●*1	—	—	—

Cylinder stroke [mm]
Refer to the next page for standard strokes.

Built-in magnet

Nil	None
D	Built-in magnet

Cushion

Nil	Rubber bumper (Standard)
C	Air cushion

Rod boot (ø20, ø25 only)

Nil	Without rod boot
J	Nylon tarpaulin (One end)
K	Heat-resistant tarpaulin (One end)

Accessory*1

Nil	None
V	Rod end
W	Double knuckle joint

*1 Refer to Mounting Brackets/Accessories on page 8 for details of accessories.
* Accessory is shipped together with the product.

Auto switch mounting type*1

A	Rail mounting
B	Band mounting

*1 The symbol is "Nil" for no magnet.

Number of auto switches

Nil	2
S	1
n	n

Auto switch

Nil	Without auto switch
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* For applicable auto switches, refer to the table below.
* Auto switches are shipped together with the product.

Mounting bracket*1

Nil	None
L	Single foot
M	Double foot
G	Flange
U	Trunnion
N	Clevis

*1 Refer to Mounting Brackets/Accessories on page 8 for details of mounting brackets.
* Mounting bracket is shipped together with the product.

Applicable mounting bracket

Action	Head cover type	L	M	G	U	N
Rubber bumper	N	●	●	●	●	●
	E	●	●	●	●	—
	F	●	—	●	●	—
	Y	●	—	●	●	—
Air cushion	N*1	●	●	●	●	●

*1 Excluding ø8

Made to order
For details, refer to page 7.

Applicable Auto Switches/Refer to the Web Catalog or Best Pneumatics 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)					
							Perpendicular	In-line	Perpendicular	In-line										
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NV	M9N	M9NV	M9N	●	●	●	○	—	○	IC circuit		
		3-wire (PNP)		M9PV				M9P	M9PV	M9P	●	●	●	○	—	○				
	Connector	2-wire		12 V				M9BV	M9B	M9BV	M9B	●	●	●	○	—	○	—		
	Diagnostic indication (2-color indicator)	Grommet		3-wire (NPN)				5 V, 12 V	M9NWV	M9NW	M9NWV	M9NW	●	●	●	○	—		○	IC circuit
				3-wire (PNP)				M9PWV	M9PW	M9PWV	M9PW	●	●	●	○	—	○			
				2-wire				12 V	M9BWV	M9BW	M9BWV	M9BW	●	●	●	○	—	○	—	
				3-wire (NPN)				5 V, 12 V	M9NAV*1	M9NA*1	M9NAV*1	M9NA*1	○	○	●	○	—	○		IC circuit
				3-wire (PNP)				5 V, 12 V	M9PAV*1	M9PA*1	M9PAV*1	M9PA*1	○	○	●	○	—	○	—	
				2-wire				12 V	M9BAV*1	M9BA*1	M9BAV*1	M9BA*1	○	○	●	○	—	○		IC circuit
	With diagnostic output (2-color indicator)	4-wire (NPN)		5 V, 12 V				—	H7NF	—	F79F	●	—	●	○	—	○	IC circuit		
Reed auto switch	—	Grommet	Yes	3-wire (NPN equivalent)	24 V	5 V	—	A96V	A96	A96V	A96	●	●	●	●	—	○		IC circuit	—
						—	200 V	—	—	A72	A72H	●	—	●	—	—	—	—	—	
				No		2-wire	12 V	100 V	A93V	A93	A93V	A93	●	●	●	●	—	○*2		
								100 V or less	A90V	A90	A90V	A90	●	●	●	●	—	○*2	IC circuit	
	Connector	No	—	—		—	C73C	A73C	—	—	●	—	●	●	●	—	—	IC circuit		
	Diagnostic indication (2-color indicator)	Grommet	Yes	2-wire		24 V or less	—	C80C	A80C	—	—	●	—	●	●	●	—		—	
						—	—	—	A79W	—	—	●	—	●	—	—	—	—		
						—	—	—	—	—	—	—	—	—	—	—	—		—	
—					—	—	—	—	—	—	—	—	—	—	—	—	—	—		

*1 Water-resistant type auto switches can be mounted on the above models, but SMC cannot guarantee water resistance.

Please contact SMC regarding water-resistant types with the above model numbers.

*2 The load voltage used is 24 VDC.

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

* Since there are other applicable auto switches than listed above, refer to page 115 for details.

* Auto switches marked with "O" are produced upon receipt of order.

* D-A9□/M9□/A7□/A80□/F7□/J7□ auto switches are shipped together, but not assembled. (For band mounting, only the auto switch mounting brackets are assembled before shipment.)

* When mounting a band on bore size ø8, ø10, or ø12, the D-A9□(V) cannot be mounted.

* When mounting a rail on bore size ø8, ø10, or ø12, the D-A9□(V) and A79W cannot be mounted.

* When mounting a rail on bore size ø20 or ø25, the D-M9□(V), M9□W(V), and M9□A(V) cannot be mounted.



C85

C85W

C85-S7

C85K

C85K-S7

C85R

C75

C75W

C75-S7

C75K

C75K-S7

C75R

CP96

CP96K

C96

C96K

C96Y

C55

Auto Switch

Made to Order

Related Products

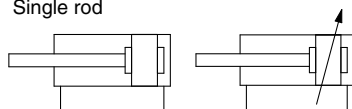
C85 Series



Symbol

Double acting,
Single rod

Air cushion



Refer to pages 105 to 115 for cylinders with auto switches.

- Auto Switch Proper Mounting Position (Detection at stroke end) and Mounting Height
- Minimum Stroke for Auto Switch Mounting
- Operating Range
- Auto Switch Mounting Brackets/Part No.



Made to Order

(For details, refer to pages 119 to 124.)

Symbol	Specifications
-XA	Change of rod end shape*1
-XB6	Heat-resistant cylinder (−10 to 150°C)*2, *3
-XB7	Cold-resistant cylinder (−40 to 70°C)*3, *4
-XB9	Low speed cylinder (10 to 50 mm/s)*4
-XC4	With heavy duty scraper*4
-XC6□	Made of stainless steel

- *1 Excludes the ø8 air cushion
- *2 Rubber bumper ø10 to ø25 only
- *3 Excludes with rod end (Accessory)
- *4 Rubber bumper ø20 and ø25 only

Specifications

Bore size [mm]		8	10	12	16	20	25
Type		Pneumatic					
Action		Double acting, Single rod					
Fluid		Air					
Proof pressure		1.5 MPa					
Max. operating pressure		1.0 MPa					
Min. operating pressure	Rubber bumper	0.1 MPa	0.08 MPa		0.05 MPa		
	Air cushion	—	0.08 MPa		0.05 MPa		
Ambient and fluid temperature		Without auto switch: −20°C to 80°C (No freezing)					
		With auto switch: −10°C to 60°C (No freezing)					
Lubricant		Not required (Non-lube)					
Stroke length tolerance		$+1.0$ 0 mm				$+1.4$ 0 mm	
Piston speed		50 to 1500 mm/s					
Cushion		Rubber bumper					
		—	Air cushion				
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

Standard Strokes

Bore size [mm]	Standard stroke [mm]*2*4	Max. stroke*3 [mm]
8*1	10, 25, 40, 50, 80, 100	200
10		
12	10, 25, 40, 50, 80, 100, 125, 160, 200	400
16		
20	10, 25, 40, 50, 80, 100, 125, 160, 200, 250, 300	1000
25		

*1 Not available with air cushion.

*2 Other strokes are available on request.

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

*4 The minimum stroke with air cushion is 25 mm.

Option: Ordering Example of Cylinder Assembly

Cylinder model: CD85N20-50CNW-B-M9BW

Head cover N: Basic (Integrated clevis)
Mounting bracket N: Clevis
Rod end bracket W: Double knuckle joint
Auto switch D-M9BW: Band mounting, 2 pcs.

* Mounting bracket, double knuckle joint, and auto switch are shipped together with the product.

⚠ Precautions

Be sure to read this before handling the products. Refer to page 219 for safety instructions. For actuator and auto switch precautions, refer to the “Handling Precautions for SMC Products” and the “Operation Manual” on the SMC website: <http://www.smcworld.com>

Mounting Brackets/Accessories

Mounting bracket/ Accessory			Standard (mounted to the body)		Mounting bracket (shipped together)							Accessory (shipped together)	
			Mounting nut	Rod end nut	Mounting nut	Foot	Flange	Trunnion	Clevis pivot bracket	Clevis pin	Pin retaining ring	Rod end	Double knuckle joint
Mounting bracket symbol	L	Single foot	● (1 pc.)	● (1 pc.)	—	● (1 pc.)	—	—	—	—	—	—	—
	M	Double foot	● (1 pc.)	● (1 pc.)	● (1 pc.)	● (2 pcs.)	—	—	—	—	—	—	—
	G	Flange	● (1 pc.)	● (1 pc.)	—	—	● (1 pc.)	—	—	—	—	—	—
	U	Trunnion	● (1 pc.)	● (1 pc.)	—	—	—	● (1 pc.)	—	—	—	—	—
	N	Clevis	● (1 pc.)	● (1 pc.)	—	—	—	—	● (1 pc.)	● (1 pc.)	● (2 pcs.)	—	—
Accessory symbol	V	Rod end	● (1 pc.)	● (1 pc.)	—	—	—	—	—	—	—	● (1 pc.)	—
	W	Double knuckle joint	● (1 pc.)	● (1 pc.)	—	—	—	—	—	—	—	—	● (1 pc.)

Mounting Bracket/Accessory Part Nos.

Mounting bracket/Accessory		Bore size [mm]					Contents	
		8	10	12	16	20		25
Mounting bracket	Rod end nut	C85NT10		C85NT16		C85NT20	C85NT25	1 rod end nut
	Mounting nut	C85SN10		C85SN16		C85SN25		1 mounting nut
	Foot (1 pc.)	C85L10A		C85L16A		C85L25A		1 foot bracket
	Foot (2 pcs. with 1 mounting nut)	C85L10B		C85L16B		C85L25B		2 foot brackets, 1 mounting nut
	Foot (1 pc. with 1 mounting nut)	C85L10C		C85L16C		C85L25C		1 foot bracket, 1 mounting nut
	Flange	C85F10		C85F16		C85F25		1 flange
	Trunnion	C85T10		C85T16		C85T25		1 trunnion
	Clevis	C85C10		C85C16		C85C25		1 clevis pivot bracket, 1 clevis pin, 2 pin retaining rings
Accessory	Rod end	KJ4D		KJ6D		KJ8D	KJ10D	1 rod end
	Double knuckle joint	GKM4-8		GKM6-12		GKM8-16	GKM10-20	1 double knuckle joint
	Floating joint	JA10-4-070		JA15-6-100		JA20-8-125	JA30-10-125	1 floating joint

* Refer to page 16 for dimensions of accessories.

Replacement Parts: For Standard Type

Bore size [mm]	Part no.	Note
20	C85A-20PS	Every set includes: 1 rod seal 1 flat washer 1 retaining ring
25	C85A-25PS	

* When replacing the seals, use **grease (GR-S-010: ordered separately)** on the sliding parts.

Weights

Bore size [mm]			8	10	12	16	20	25
Basic weight	Without magnet	C85N	37	38 (44)	77 (84)	89 (95)	179 (176)	244 (241)
		C85E	39	40	81	93	185	249
		C85F	35	37	71	79	164	227
		C85Y	35	37	72	79	165	228
	With magnet	CD85N	37	39 (44)	78 (84)	90 (96)	183 (179)	248 (245)
		CD85E	39	41	81	93	188	253
		CD85F	35	37	72	80	168	231
		CD85Y	36	37	72	80	168	232
Additional weight per 10 mm of stroke			2.1	2.3	4.1	5.1	8.1	11.3
Mounting bracket	Foot (1 pc.)	C85L□A	20		40		95	
	Foot (2 pcs. with 1 mounting nut)	C85L□B	55		105		210	
	Flange	C85F□	12		25		90	
	Trunnion	C85T□	20		50		75	
	Clevis	C85C□	20		40		85	
Accessory	Rod end	KJ□D	17		25		45	70
	Double knuckle joint	GKM□-□	10		20		50	100
	Floating joint	JA□-□-□	10		20		50	70

(): For air cushion

Calculation example: **C85N20-50NV**

- Basic weight 179 g (ø20)
 - Additional weight ... 8.1 g (at 10 mm stroke)
 - Cylinder stroke 50 mm
 - Mounting bracket: Clevis ... 85 g
 - Accessory: Rod end 45 g
- 179 + 8.1 × 50/10 + 85 + 45 = **350 g**

Stroke Selection

Relationship between cylinder size and maximum stroke

The below table shows the applicable maximum stroke (in cm units), found by calculation assuming the case where the force generated by the cylinder itself acts as buckling force on the piston rod, or piston rod and cylinder tube. Therefore, it is possible to find the applicable maximum stroke for each cylinder size using the relationship between the size of the operating pressure and the cylinder support type, regardless of the load ratio.

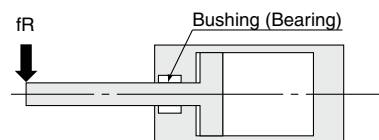
[Reference] If it is stopped with the external stopper on the cylinder extension side, even with a light load, the maximum generated force of the cylinder will act on the cylinder itself.

Mounting				Nominal symbol	Operating pressure [MPa]	Applicable maximum stroke according to buckling strength					
Support bracket nominal symbol and schematic diagram			C85								
			8			10	12	16	20	25	
Foot: M	Rod flange: G	Head flange: G	M	0.3	24	18	36	26	38	48	
			G (Rod side)	0.5	18	14	27	19	29	36	
				0.7	14	11	22	16	23	30	
				G (Head side)	0.3	9	6	15	10	15	20
			0.5		6	4	10	6	10	14	
			0.7		4	3	8	4	8	11	
			Clevis: N		Rod trunnion: U	N	0.3	22	17	35	24
		0.5	16	12	26		18	27	34		
		0.7	13	10	21		14	22	28		
Head trunnion: U			U (Rod side)	0.3	(40)*1	(40)*1	(40)*1	(40)*1	80	(100)*1	
	0.5	38		30	(40)*1	(40)*1	61	77			
	U (Head side)	0.7	32	25	(40)*1	35	51	64			
		0.3	22	17	35	24	37	47			
		0.5	16	12	26	18	27	35			
	0.7	13	10	21	14	22	28				
Foot: M	Rod flange: G	Head flange: G	M	0.3	(40)*1	(40)*1	(40)*1	(40)*1	(100)*1	(100)*1	
				G (Rod side)	0.5	(40)*1	(40)*1	(40)*1	(40)*1	89	(100)*1
					0.7	(40)*1	36	(40)*1	(40)*1	74	93
			G (Head side)		0.3	33	26	(40)*1	37	54	69
				0.5	25	19	39	27	41	52	
				0.7	20	15	32	22	33	43	
			Foot: M	Rod flange: G	Head flange: G	M	0.3	(40)*1	(40)*1	(40)*1	(40)*1
			G (Rod side)	0.5	(40)*1		(40)*1	(40)*1	(40)*1	(100)*1	(100)*1
				0.7	(40)*1		(40)*1	(40)*1	(40)*1	(100)*1	(100)*1
				G (Head side)	0.3	(40)*1	38	(40)*1	(40)*1	79	(100)*1
			0.5		37	29	(40)*1	(40)*1	60	76	
			0.7		30	23	(40)*1	34	50	63	

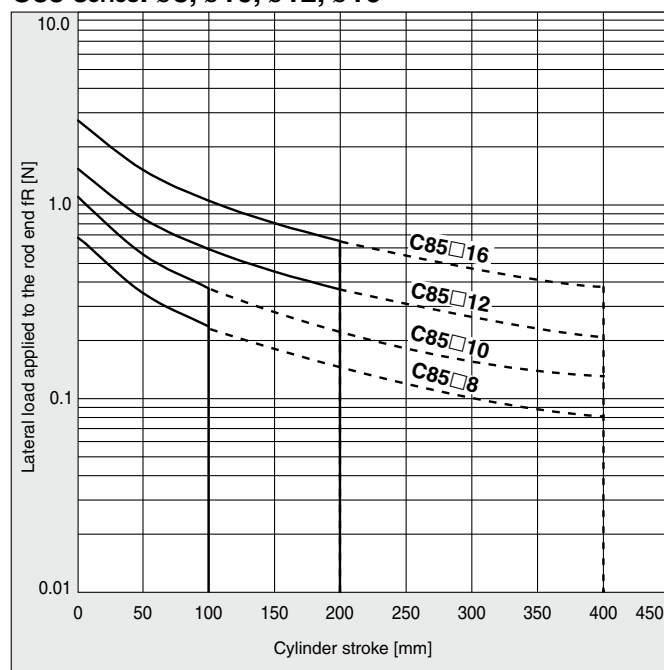
*1 The data in () are limited by max. stroke length.

The maximum stroke at which the cylinder can be operated under a lateral load

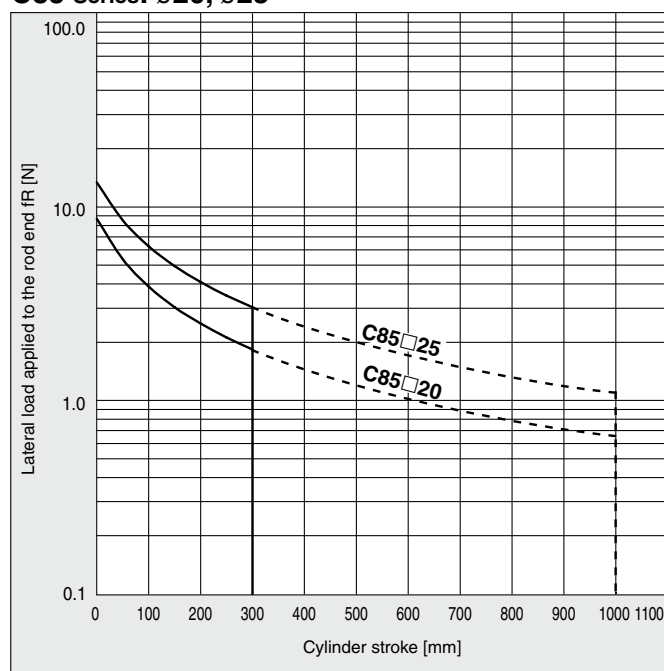
The region that does not exceed the bold solid line represents the allowable lateral load in relation to the cylinder of a given stroke length. In the graph, the range of the broken line shows that the long stroke limit has been exceeded. In this region, as a rule, operate the cylinder by providing a guide along the direction of movement.



C85 Series: ø8, ø10, ø12, ø16



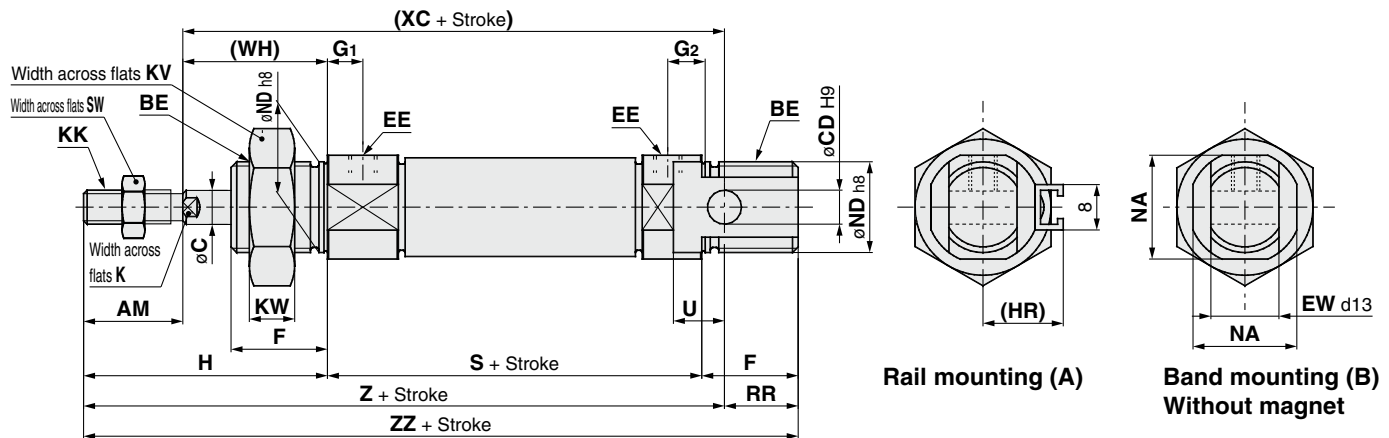
C85 Series: ø20, ø25



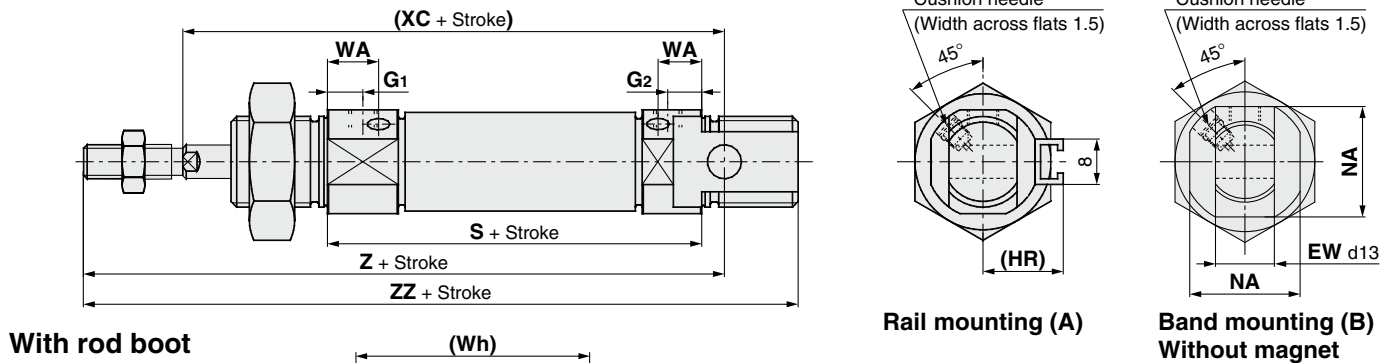
Dimensions

Basic (Integrated clevis)

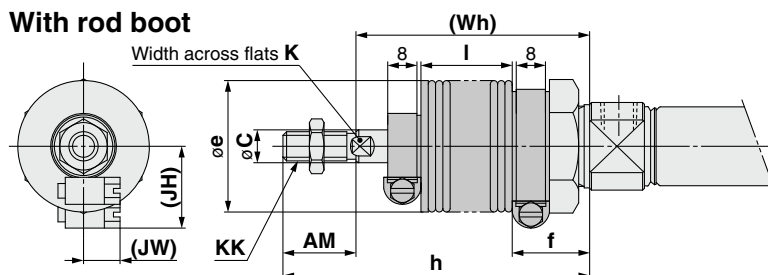
Rubber bumper: C85N **Bore size** – **Stroke** –



Air cushion: C85N **Bore size** – **Stroke** C –



With rod boot



Dimensions

Bore size	AM	BE	C	CD	EE	EW	F	G ₁	G ₂	H	(HR)	K	KK	KV	KW	NA	ND	RR	S	SW	U	WA	(WH)	(XC)	Z	ZZ
8	12	M12 x 1.25	4	4	M5 x 0.8	8	12	7	5	28	13.4	—	M4 x 0.7	19	6	15	12	10	46	7	6	—	16	64	76	86
10	12	M12 x 1.25	4	4	M5 x 0.8	8	12	7 (5.5)	5 (5.5)	28	14.2	—	M4 x 0.7	19	6	15	12	10	46 (53)	7	6	10.5	16	64 (71)	76 (83)	86 (93)
12	16	M16 x 1.5	6	6	M5 x 0.8	12	17	8 (5.5)	6 (5.5)	38	14.2	5	M6 x 1	24	8	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	M5 x 0.8	12	17	8 (5.5)	6 (5.5)	38	14.2	5	M6 x 1	24	8	18.3	16	13	56	10	9	9.5	22	82	98	111
20	20	M22 x 1.5	8	8	G1/8	16	20	8	8	44	17	6	M8 x 1.25	32	11	24	22	11	62	13	12	13	24	95	115	126
25	22	M22 x 1.5	10	8	G1/8	16	22	8	8	50	20	8	M10 x 1.25	32	11	30	22	11	65	17	12	13	28	104	126	137

(): For air cushion

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	22	6	M8 x 1.25	71	84	96	109	134	159	—
25	22	10	36	22	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	Reference	Reference	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

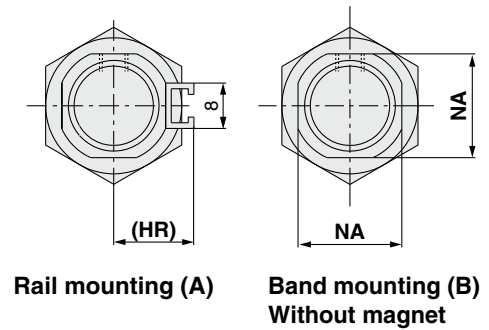
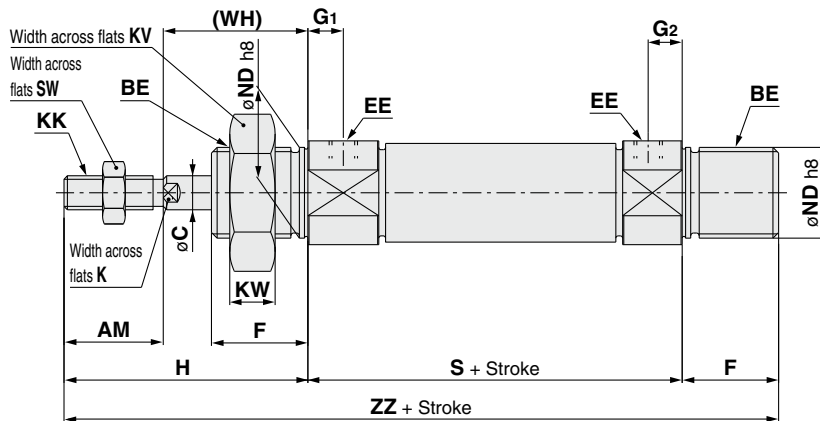
Refer to page 16 of Standard Type Single Rod for details of accessories (rod end, double knuckle joint, floating joint).

C85 Series

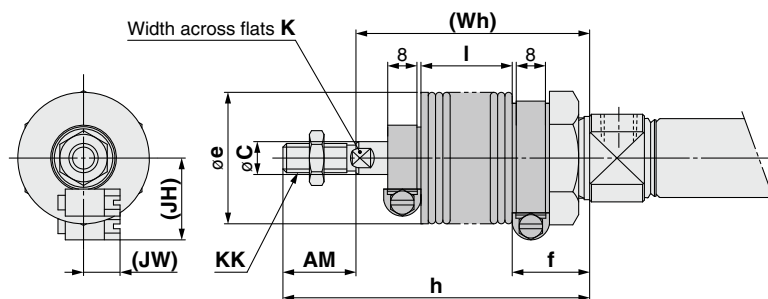
Dimensions

Double end boss-cut

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



With rod boot



Dimensions

[mm]

Bore size	AM	BE	C	EE	F	G ₁	G ₂	H	(HR)	K	KK	KV	KW	NA	ND	S	SW	(WH)	ZZ
8	12	M12 x 1.25	4	M5 x 0.8	12	7	5	28	13.4	—	M4 x 0.7	19	6	15	12	46	7	16	86
10	12	M12 x 1.25	4	M5 x 0.8	12	7	5	28	14.2	—	M4 x 0.7	19	6	15	12	46	7	16	86
12	16	M16 x 1.5	6	M5 x 0.8	17	8	6	38	14.2	5	M6 x 1	24	8	18.3	16	50	10	22	105
16	16	M16 x 1.5	6	M5 x 0.8	17	8	6	38	14.2	5	M6 x 1	24	8	18.3	16	56	10	22	111
20	20	M22 x 1.5	8	G1/8	20	8	8	44	17	6	M8 x 1.25	32	11	24	22	62	13	24	126
25	22	M22 x 1.5	10	G1/8	22	8	8	50	20	8	M10 x 1.25	32	11	30	22	65	17	28	137

With Rod Boot

[mm]

Item Bore size	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	22	6	M8 x 1.25	71	84	96	109	134	159	—
25		22	10	36	22	8	M10 x 1.25	74	87	99	112	137	162	187

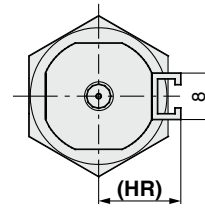
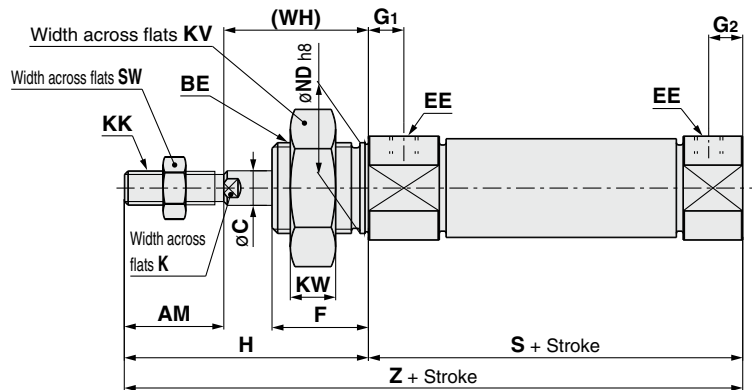
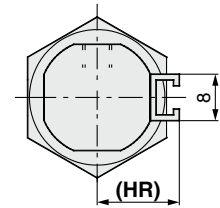
Item Bore size	Stroke	I							(JH) Reference	(JW) Reference	(Wh)						
		1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500			1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500
20		12.5	25	37.5	50	75	100	—	23.5	10.5	51	64	76	89	114	139	—
25		12.5	25	37.5	50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

Refer to page 16 of Standard Type Single Rod for details of accessories (rod end, double knuckle joint, floating joint).

Dimensions

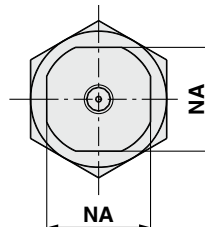
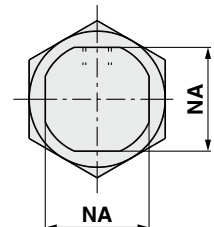
Boss-cut/Basic, Head cover axial port

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

Head cover
axial port

Boss-cut/Basic

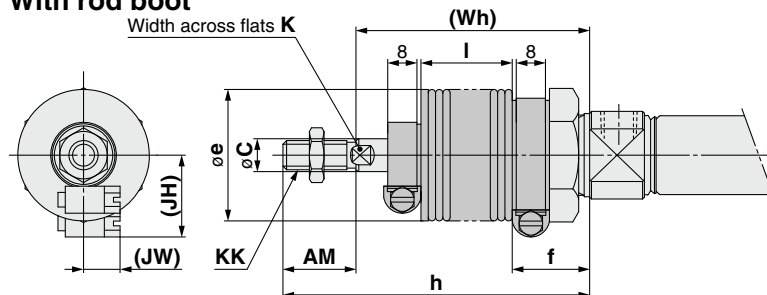
Rail mounting (A)

Head cover
axial port

Boss-cut/Basic

Band mounting (B)
Without magnet

With rod boot



Dimensions

Bore size	AM	BE	C	EE	F	G ₁	G ₂	H	(HR)	K	KK	KV	KW	NA	ND	S	SW	(WH)	Z
8	12	M12 x 1.25	4	M5 x 0.8	12	7	5	28	13.4	—	M4 x 0.7	19	6	15	12	46	7	16	74
10	12	M12 x 1.25	4	M5 x 0.8	12	7	5	28	14.2	—	M4 x 0.7	19	6	15	12	46	7	16	74
12	16	M16 x 1.5	6	M5 x 0.8	17	8	6	38	14.2	5	M6 x 1	24	8	18.3	16	50	10	22	88
16	16	M16 x 1.5	6	M5 x 0.8	17	8	6	38	14.2	5	M6 x 1	24	8	18.3	16	50	10	22	88
20	20	M22 x 1.5	8	G1/8	20	8	8	44	17	6	M8 x 1.25	32	11	24	22	62	13	24	106
25	22	M22 x 1.5	10	G1/8	22	8	8	50	20	8	M10 x 1.25	32	11	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	22	6	M8 x 1.25	71	84	96	109	134	159	—
25		22	10	36	22	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	Reference	Reference	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

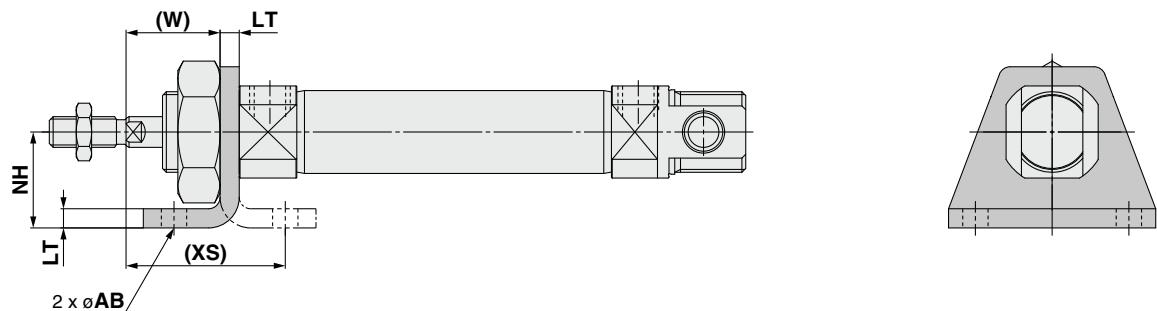
Refer to page 16 of Standard Type Single Rod for details of accessories
(rod end, double knuckle joint, floating joint).

C85 Series

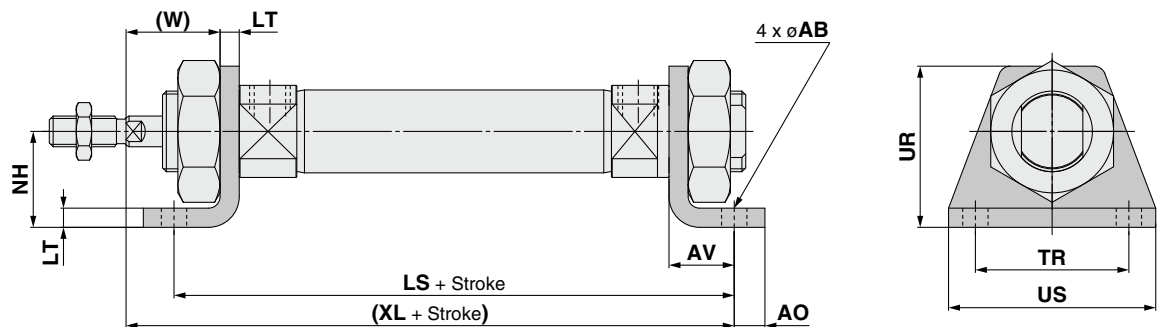
Dimensions

Bracket is shipped together with the product.

Single foot: C□85N□-□L
(With mounting bracket)



Double foot: C□85N□-□M
(With mounting bracket)



[mm]

Bore size	AB	AO	AV	LS	LT	NH	TR _{JS14}	UR	US	(W)	(XL)	(XS)
8	4.5	5	11	68	3.2	16	25	26	35	12.8	73	23.8
10	4.5	5	11	68 (75)	3.2	16	25	26	35	12.8	73 (80)	23.8
12	5.5	6	14	78 (82)	4	20	32	33	42	18	86 (90)	32
16	5.5	6	14	84	4	20	32	33	42	18	92	32
20	6.6	8	17	96	5	25	40	42	54	19	103	36
25	6.6	8	17	99	5	25	40	42	54	23	110	40

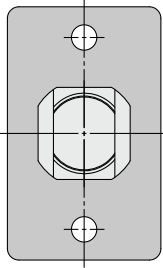
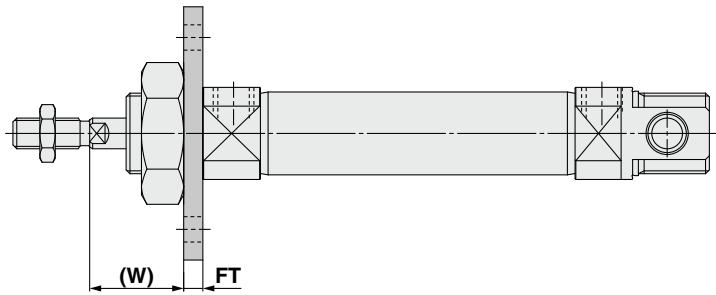
(): For air cushion

Refer to page 16 of Standard Type Single Rod for details of accessories (rod end, double knuckle joint, floating joint).

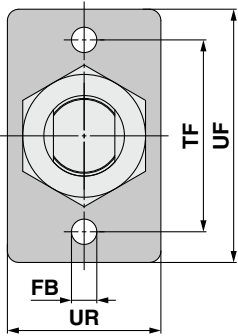
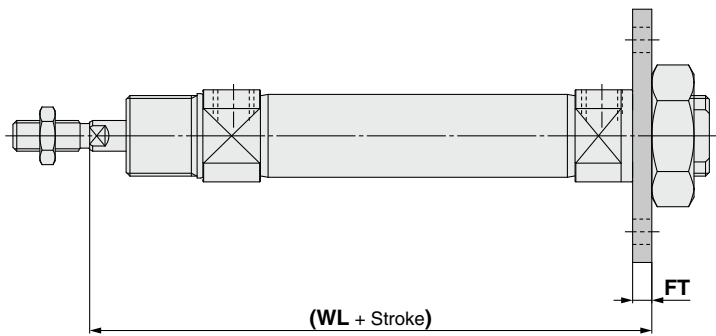
Dimensions

Bracket is shipped together with the product.

Rod flange: C□85N□-□G
(With mounting bracket)



Head flange: C□85N□-□G
(With mounting bracket)



[mm]

Bore size	FB _{H13}	FT	TF	UF	UR	(W)	(WL)
8	4.5	3.2	30	40	22	12.8	65.2
10	4.5	3.2	30	40	22	12.8	65.2 (72.2)
12	5.5	4	40	52	30	18	76 (80)
16	5.5	4	40	52	30	18	82
20	6.6	5	50	66	40	19	91
25	6.6	5	50	66	40	23	98

() : For air cushion

Refer to page 16 of Standard Type Single Rod for details of accessories (rod end, double knuckle joint, floating joint).

C85

C85W

C85-ST

C85K

C85K-ST

C85R

C75

C75W

C75-ST

C75K

C75K-ST

C75R

CP96

CP96K

C96

C96K

C96Y

C55

Auto Switch

Made to Order

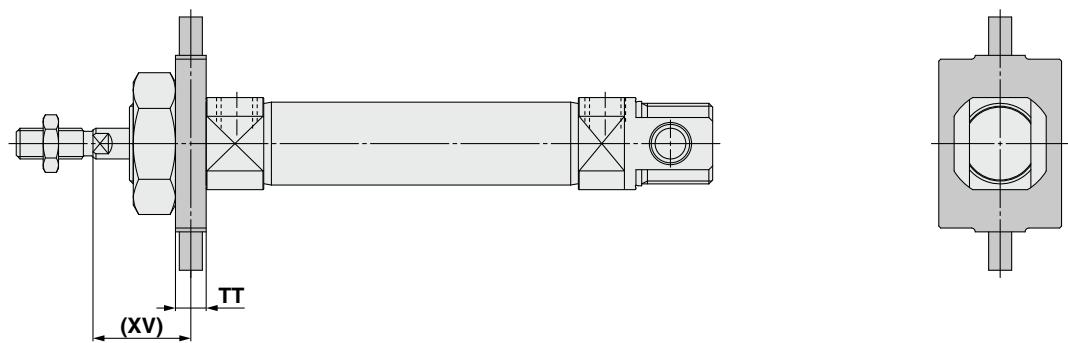
Related Products

C85 Series

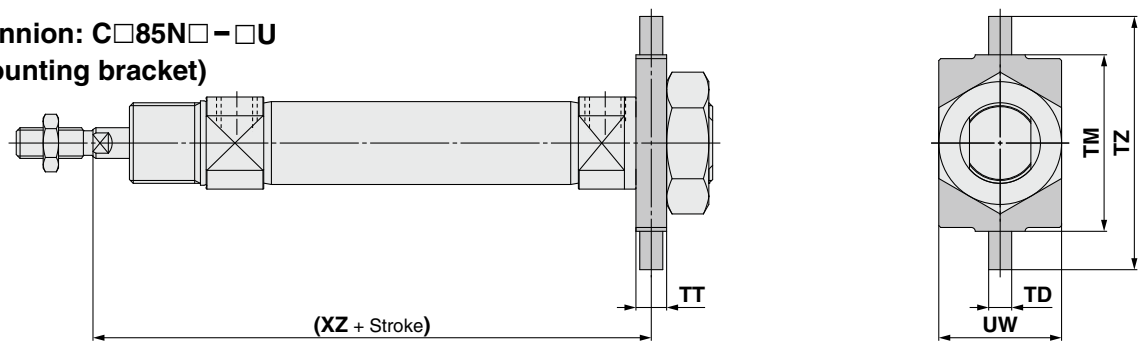
Dimensions

Bracket is shipped together with the product.

Rod trunnion: C□85N□-□U (With mounting bracket)



Head trunnion: C□85N□-□U
(With mounting bracket)

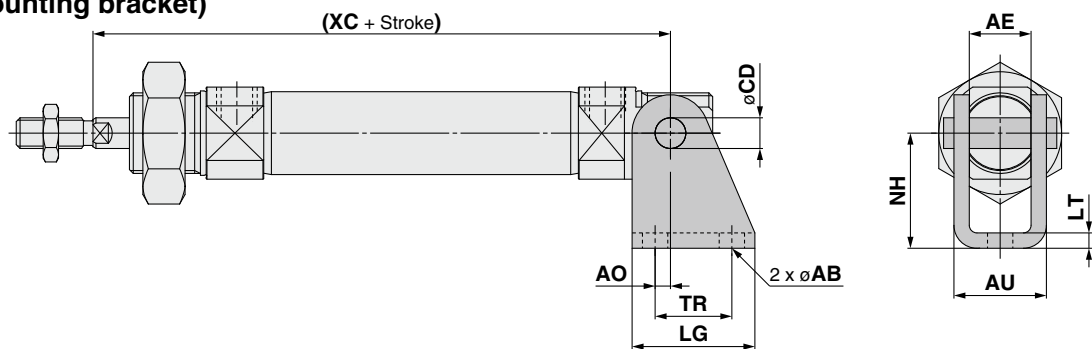


[mm]

Bore size	TD _{e8}	TM	TT	TZ	UW	(XV)	(XZ)
8	4	26	6	38	20	13	65
10	4	26	6	38	20	13	65 (72)
12	6	38	8	58	25	18	76 (80)
16	6	38	8	58	25	18	82
20	6	46	8	66	32	20	90
25	6	46	8	66	32	24	97

(): For air cushion

Clevis: C□85N□-□N
(With mounting bracket)



[mm]

Bore size	AB	AE	AO	AU	CD _{H9}	LG	LT	NH	TR	(XC)
8	4.5	8.1	1.5	13.1	4	20	2.5	24	12.5	64
10	4.5	8.1	1.5	13.1	4	20	2.5	24	12.5	64 (71)
12	5.5	12.1	2	18.5	6	25	3.2	27	15	75 (79)
16	5.5	12.1	2	18.5	6	25	3.2	27	15	82
20	6.6	16.1	4	24.1	8	32	4	30	20	95
25	6.6	16.1	4	24.1	8	32	4	30	20	104

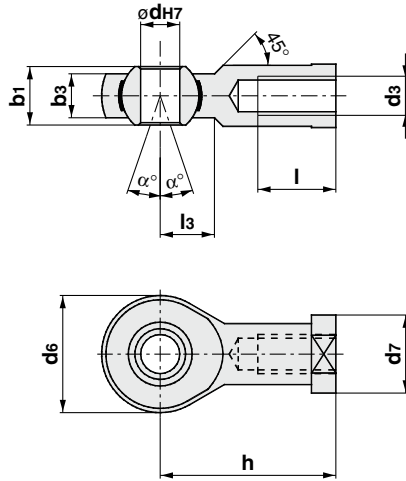
(): For air cushion

Refer to page 16 of Standard Type Single Rod for details of accessories (rod end, double knuckle joint, floating joint).

C85 Series

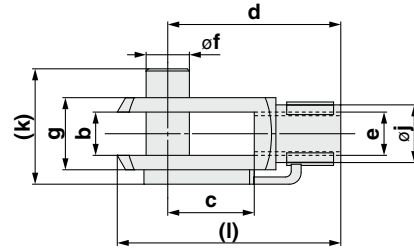
Dimensions of Accessories

Rod End



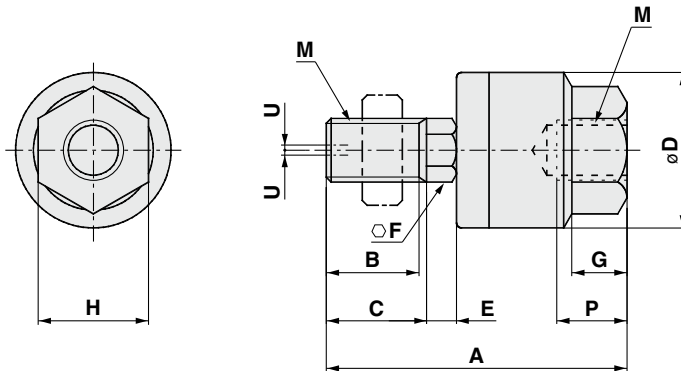
Bore size	Part no.	b1	b3	dH7	d6	d7	h	l	l3	d3	α°
8	KJ4D	8	6.0	5	18	11	27	10	10	M4 x 0.7	13
10	KJ4D	8	6.0	5	18	11	27	10	10	M4 x 0.7	13
12	KJ6D	9	6.75	6	20	13	30	12	11	M6 x 1	13
16	KJ6D	9	6.75	6	20	13	30	12	11	M6 x 1	13
20	KJ8D	12	9	8	24	16	36	16	13	M8 x 1.25	14
25	KJ10D	14	10.5	10	28	19	43	20	15	M10 x 1.25	13

Double Knuckle Joint

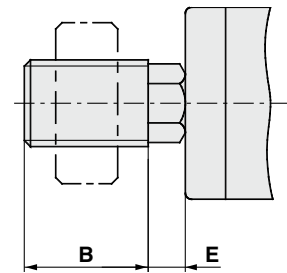


Bore size	Part no.	b	c	d	f	g	j	k	e	l
8	GKM4-8	4	8	16	4	8	8	11	M4 x 0.7	21
10	GKM4-8	4	8	16	4	8	8	11	M4 x 0.7	21
12	GKM6-12	6	12	24	6	12	10	18	M6 x 1	31
16	GKM6-12	6	12	24	6	12	10	18	M6 x 1	31
20	GKM8-16	8	16	32	8	16	14	23	M8 x 1.25	42
25	GKM10-20	10	20	40	10	20	18	27	M10 x 1.25	52

Floating Joint: JA



In the case of dimension without C



Bore size	Part no.	M		A	B	C	D	E	F	G	H	Max. 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

C85/C75 Series

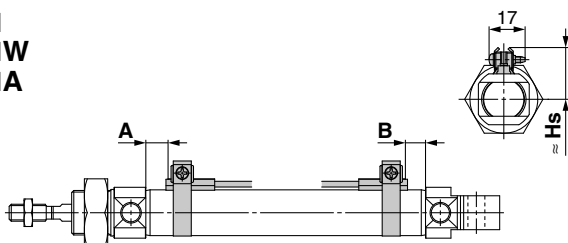
Auto Switch Mounting

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

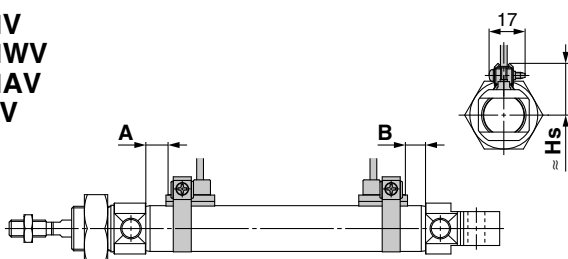
Applicable series: CD85□

Double acting/Single acting: Band mounting

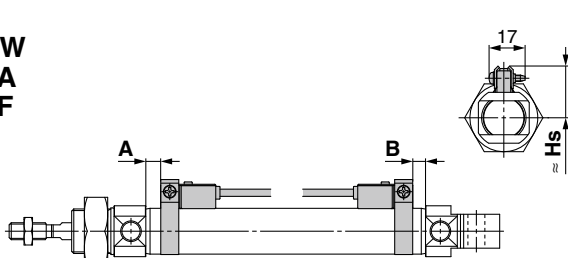
D-M9□
D-M9□W
D-M9□A
D-A9□



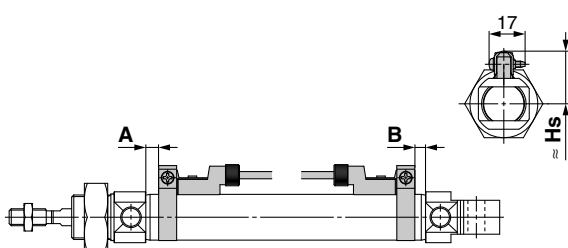
D-M9□V
D-M9□WV
D-M9□AV
D-A9□V



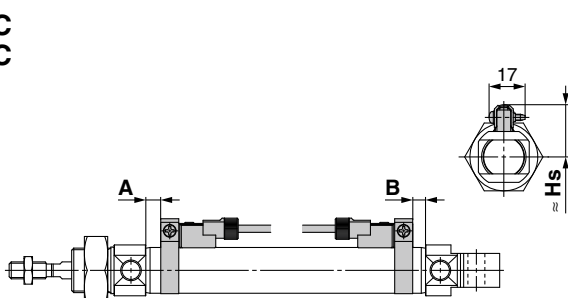
D-H7□
D-H7□W
D-H7BA
D-H7NF
D-C7□
D-C80



D-H7C

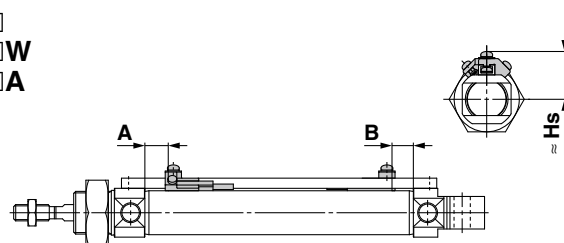


D-C73C
D-C80C

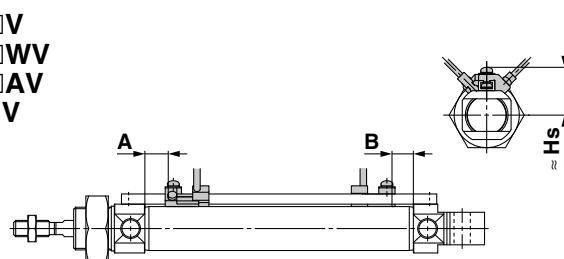


Double acting/Single acting: Rail mounting

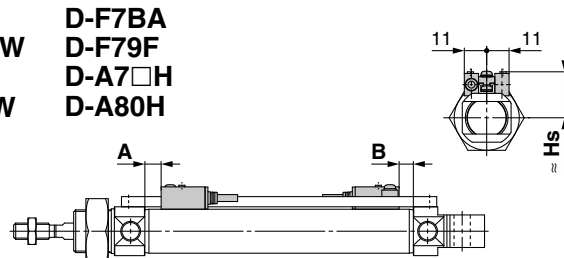
D-M9□
D-M9□W
D-M9□A
D-A9□



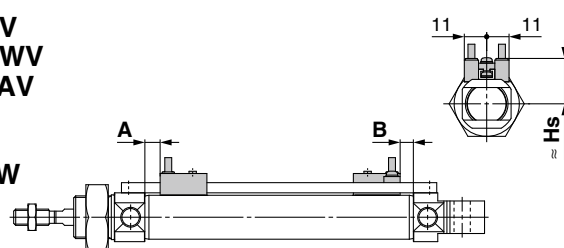
D-M9□V
D-M9□WV
D-M9□AV
D-A9□V



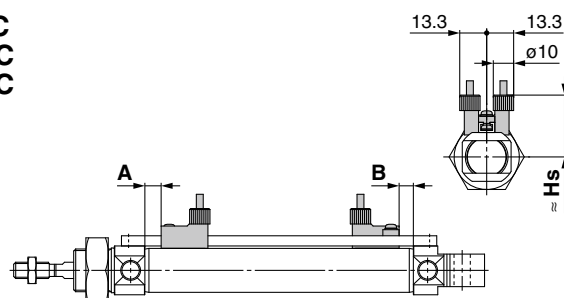
D-F7□
D-F7□W
D-J79
D-J79W
D-F7BA
D-F79F
D-A7□H
D-A80H



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



D-J79C
D-A73C
D-A80C

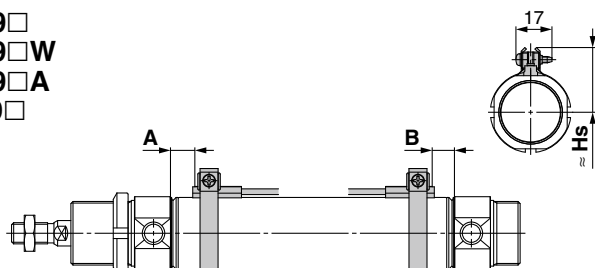


Auto Switch Proper Mounting Position (Detection at stroke end) and Mounting Height

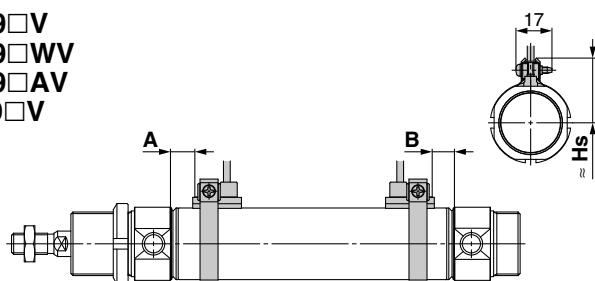
Applicable series: CD75□

Double acting/Single acting: Band mounting

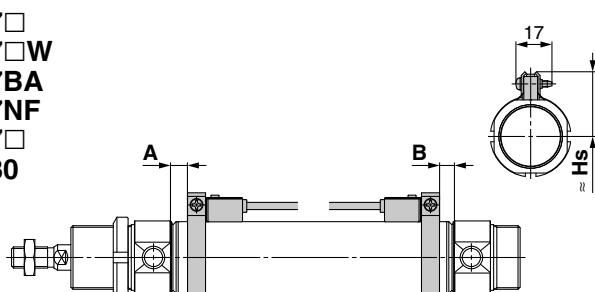
D-M9□
D-M9□W
D-M9□A
D-A9□



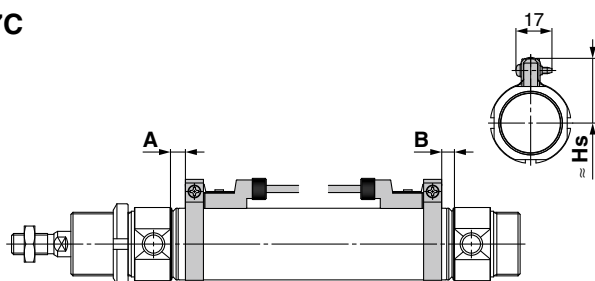
D-M9□V
D-M9□WV
D-M9□AV
D-A9□V



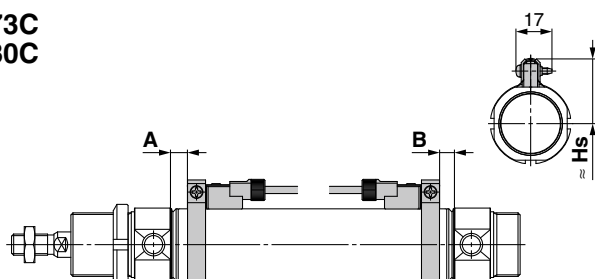
D-H7□
D-H7□W
D-H7BA
D-H7NF
D-C7□
D-C80



D-H7C

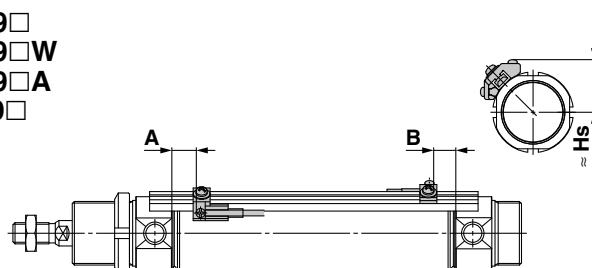


D-C73C
D-C80C

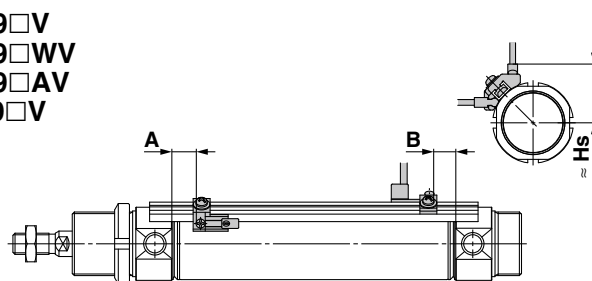


Double acting/Single acting: Rail mounting

D-M9□
D-M9□W
D-M9□A
D-A9□

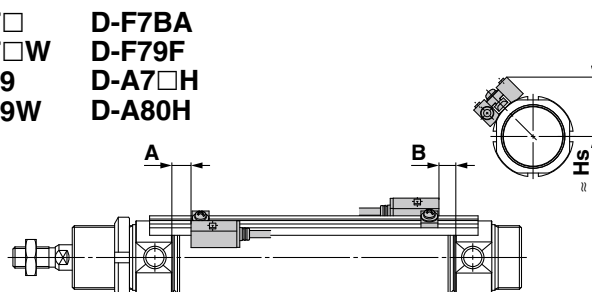


D-M9□V
D-M9□WV
D-M9□AV
D-A9□V

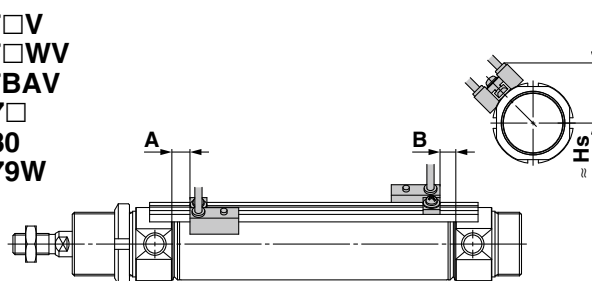


D-F7□
D-F7□W
D-J79
D-J79W

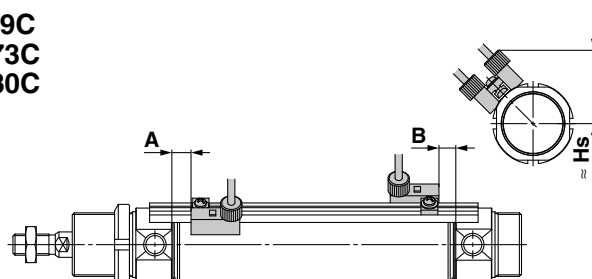
D-F7BA
D-F79F
D-A7□H
D-A80H



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



D-J79C
D-A73C
D-A80C



C85/C75 Series

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

Applicable series: CD85 (Double acting, Single rod), CD85W (Double acting, Double rod), CD85K (Non-rotating rod), CD85R (Direct mount)

Auto Switch Proper Mounting Position [mm]

Auto switch model	Band mounting							
	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV		D-A9□ D-A9□V		D-H7□ D-H7C D-H7□W D-H7BA D-H7NF		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]	3.5 (4.5)	9.5 (6.5) [3.5]	3 (4)	9 (6) [3]	4 (5)	10 (7) [4]
20	10.5 (8.5)	9.5 (7.5)	6.5 (4.5)	5.5 (3.5)	6 (4)	5 (3)	7 (5)	6 (4)
25	12 (10)	11 (9)	8 (6)	7 (5)	7.5 (5.5)	6.5 (4.5)	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.
- * D-A9□ type cannot be mounted on bore size ø8, ø10, or ø12 cylinder.
- * Adjust the auto switch after confirming the operating conditions in the actual setting.

Auto Switch Mounting Height [mm]

Auto switch model	Band mounting				
	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-A9□*1	D-M9□V D-M9□WV D-M9□AV D-A9□V*1	D-H7□ D-H7C D-H7□W D-H7BA D-H7NF D-C7□ D-C80	D-H7C	D-C73C D-C80C
Bore size	Hs	Hs	Hs	Hs	Hs
8	16	16.5	17	19	18.5
10	17.5	18	18	20	19.5
12	18.5	19	19	21	20.5
16	20.5	21	21	23	22.5
20	24.5	24.5	24.5	25.5	25
25	27	27	27	27.5	27

- *1 D-A9□(V) type cannot be mounted on bore size ø8, ø10, or ø12 cylinder.

Auto Switch Proper Mounting Position [mm]

Auto switch model	Rail mounting									
	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV		D-A9□ D-A9□V		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-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]	3.5 (4.5)	9.5 (6.5) [3.5]	5 (6)	11 (8) [5]	4.5 (5.5)	10.5 (7.5) [4.5]	2 (3)	8 (5) [2]
20	—	—	6.5 (4.5)	5.5 (3.5)	8 (6)	7 (5)	7.5 (5.5)	6.5 (4.5)	5 (3)	4 (2)
25	—	—	8 (6)	7 (5)	9.5 (7.5)	8.5 (6.5)	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.
- * D-A9□(V) and A79W types cannot be mounted on bore size ø8, ø10, or ø12 cylinder.
- * D-M9□(V), M9□W(V), and M9□A(V) types cannot be mounted on bore size ø20 or ø25 cylinder.
- * No rail mounting is available with CD85R (direct mount type).
- * Adjust the auto switch after confirming the operating conditions in the actual setting.

Auto Switch Mounting Height [mm]

Auto switch model	Rail mounting						
	D-M9□*1 D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV D-A9□*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	D-A79W*2
Bore size	Hs	Hs	Hs	Hs	Hs	Hs	Hs
8	16	16	19	21	16	22.5	—
10	17	17	20	22	17	23.5	—
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

- *1 D-M9□(V), M9□W(V), and M9□A(V) types cannot be mounted on bore size ø20 or ø25 cylinder.
- *2 D-A9□(V) and A79W types cannot be mounted on bore size ø8, ø10, or ø12 cylinder.
- *3 No rail mounting is available with CD85R (direct mount type).

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

Applicable series: CD75 (Double acting, Single rod), CD75W (Double acting, Double rod), CD75K (Non-rotating rod), CD75R (Direct mount)

Auto Switch Proper Mounting Position

Auto switch model Bore size	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV		D-A9□ D-A9□V		D-C7□ D-C80 D-C73C D-C80C		D-A73 D-A80		D-A7□H/A80H/A72 D-A73C/A80C D-F7□/J79 D-F7□W/J79W D-J79C/F7BAL D-F79F		D-H7□ D-H7C D-H7□W D-H7BAL D-H7NF		D-A79W	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B
32	11.5	10.5	7.5	6.5	8 (6)	7 (5)	8.5 (6.5)	7.5 (5.5)	9 (7)	8 (6)	7 (5)	6 (4)	6 (4)	5 (3)
40	17.5	15.5	13.5	11.5	14 (11)	12 (9)	14.5 (11.5)	12.5 (9.5)	15 (12)	13 (10)	13 (10)	11 (8)	12 (9)	10 (7)

* The value in () is for air cushion.

* The above-mentioned value is a guide for auto switch mounting positions for stroke end detection.

Adjust the auto switch after confirming the operating conditions in the actual setting.

* A/B dimensions are the distance from the cover to the end surface of the auto switch.

Auto Switch Mounting Height

Auto switch model Bore size	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV D-A9□ D-A9□V		D-C7□/C80 D-H7□ D-H7□W D-H7BAL D-H7NF		D-C73C D-C80C		D-A7□ D-A80		D-A7□H D-A80H		D-F7□/J79 D-F7□W D-J79W D-F7BAL D-F79F		D-A73C D-A80C		D-H7C		D-A79W		D-J79C	
	Hs		Hs		Hs		Hs		Hs		Hs		Hs		Hs		Hs		Hs	
32	30.5		30.5		31		30		30.5		30		36		31.5		31.5		34.5	
40	35.5		35.5		35		34.5		35		34.5		40.5		35.5		36		39	

C85/C75 Series

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

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

Auto Switch Proper Mounting Position

[mm]

Auto switch model		Bore size	A dimensions			B
			5 to 50 st	51 to 100 st	101 to 150 st	
Band mounting	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV	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-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-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-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.

* D-A9□(V) and A79W types cannot be mounted on bore size ø8, ø10, or ø12 cylinder.

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

* Adjust the auto switch after confirming the operating conditions in the actual setting.

Auto Switch Mounting Height

[mm]

Auto switch model	Band mounting				
	D-M9□ D-M9□W D-M9□A D-A9□*1	D-M9□V D-M9□WV D-M9□AV D-A9□V*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	Hs
8	16	16.5	17	19	18.5
10	17.5	18	18	20	19.5
12	18.5	19	19	21	21
16	20.5	21	21	23	23
20	24.5	24.5	24.5	25	25
25	27	27	27	27.5	27.5

*1 D-A9□(V) type cannot be mounted on bore size ø8, ø10, or ø12 cylinder.

[mm]

Auto switch model		Bore size	A dimensions			B
			5 to 50 st	51 to 100 st	101 to 150 st	
Rail mounting	D-M9□	8	17	17	17	5
	D-M9□V	10	15	15	15	5
	D-M9□W	12	16.5	16.5	16.5	6
	D-M9□WV	16	16.5	32	47.5	12
	D-M9□A					[6]
	D-M9□AV					
	D-A9□ D-A9□V D-A79W	16	12.5	28	43.5	8 [2]
		20	5 (30)	55	80	4
		25	5 (30)	55	80	5.5
	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	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
		8	15.5	15.5	15.5	3.5
		10	13.5	13.5	13.5	3.5
		12	15	15	15	4.5
	D-A73 D-A80	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□*1 D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV D-A9□*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	D-A79W*2
Bore size	Hs	Hs	Hs	Hs	Hs	Hs	Hs
8	16	16	19	21	16	22.5	—
10	17	17	20	22	17	23.5	—
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

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

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

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

Applicable series: CD75□-□S (Single acting, Spring return)

Auto Switch Proper Mounting Position

[mm]

Auto switch model	Bore size	Single acting, Spring return					
		A dimensions					B
		1 to 50 st	51 to 100 st	101 to 150 st	151 to 200 st	151 to 200 st	
D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV	32	11.5 (36.5)	61.5	86.5	111.5	136.5	10.5
	40	16.5 (41.5)	66.5	91.5	116.5	141.5	15.5
D-A9□ D-A9□V	32	7.5 (32.5)	57.5	82.5	107.5	132.5	6.5
	40	12.5 (37.5)	62.5	87.5	112.5	137.5	11.5
D-C7□/C80 D-C73C/C80C	32	8 (33)	58	83	108	—	7
	40	13 (38)	63	88	113	138	12
D-A73 D-A80	32	8.5 (33.5)	58.5	83.5	108.5	—	7.5
	40	13.5 (38.5)	63.5	88.5	113.5	138.5	12.5
D-A72/A7□H/A80H D-A73C/A80C D-F7□/F7□W D-J79/J79W D-F7□WV D-J79C D-F7BAL, D-F79F	32	9 (34)	59	84	109	—	8
	40	14 (39)	64	89	114	139	13
D-A79WL	32	6 (31)	56	81	106	—	5
	40	11 (36)	61	86	111	136	10
D-H7□/H7C/H7□W D-H7BAL, D-H7NF	32	7 (32)	57	82	107	—	6
	40	12 (37)	62	87	112	137	11

* The value in () is for air cushion.

* The above-mentioned value is a guide for auto switch mounting positions for stroke end detection.

Adjust the auto switch after confirming the operating conditions in the actual setting.

* A/B dimensions are the distance from the cover to the end surface of the auto switch.

Auto Switch Mounting Height

[mm]

Auto switch model	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV D-A9□ D-A9□V	D-C7□/C80 D-H7□ D-H7□W D-H7BAL D-H7NF	D-C73C D-C80C	D-A7□ D-A80	D-A7□H D-A80H	D-F7□/J79 D-F7□W D-J79W D-F7BAL D-F79F	D-A73C D-A80C	D-H7C	D-A79W	D-J79C
Bore size	Hs	Hs	Hs	Hs	Hs	Hs	Hs	Hs	Hs	Hs
32	30.5	30.5	31	30	30.5	30	36	31.5	31.5	34.5
40	35.5	35.5	35	34.5	35	34.5	40.5	35.5	36	39

C85/C75 Series

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

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

Auto Switch Proper 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□V D-M9□W D-M9□WV D-M9□A D-M9□AV	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-A9□ D-A9□V	16	3.5	32 [26]	58 [52]
		20	6.5	30.5	55.5
		25	8	30.5	55.5
	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-C7□ D-C80 D-C73C D-C80C	8	3	27.5	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

[mm]

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	2	30.5 [24.5]	56.5 [50.5]
		25	5	29	54
	D-A9□ D-A9□V D-A79W	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-A73 D-A80	8	3.5	28	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

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

* D-A9□(V) and A79W types cannot be mounted on bore size ø8, ø10, or ø12 cylinder.

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

* Adjust the auto switch after confirming the operating conditions in the actual setting.

Auto Switch Mounting Height

[mm]

Auto switch model	Band mounting				
	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-A9□*1	D-M9□V D-M9□WV D-M9□AV D-A9□V*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	Hs
8	16	16.5	17	19	18.5
10	17.5	18	18	20	19.5
12	18.5	19	19	21	20.5
16	20.5	21	21	23	22.5
20	24.5	24.5	24.5	25.5	25
25	27	27	27	27.5	27

*1 D-A9□(V) type cannot be mounted on bore size ø8, ø10, or ø12 cylinder.

[mm]

Auto switch model	Rail mounting						
	D-M9□*1 D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV D-A9□*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	D-A79W*2
Bore size	Hs	Hs	Hs	Hs	Hs	Hs	Hs
8	16	16	19	21	16	22.5	—
10	17	17	20	22	17	23.5	—
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

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

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

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

Applicable series: CD75□-□T (Single acting, Spring extend)

Auto Switch Proper Mounting Position

[mm]

Auto switch model	Bore size	Single acting, Spring extend					
		A	B dimensions				
			1 to 50 st	51 to 100 st	101 to 150 st	151 to 200 st	151 to 200 st
D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV	32	11.5	35.5	60.5	85.5	110.5	—
	40	16.5	40.5	65.5	90.5	115.5	140.5
D-A9□ D-A9□V	32	7.5	31.5	56.5	81.5	106.5	—
	40	12.5	36.5	61.5	86.5	111.5	136.5
D-C7□/C80 D-C73C/C80C	32	8	32	57	82	107	—
	40	13	37	62	87	112	137
D-A73 D-A80	32	8.5	32.5	57.5	82.5	107.5	—
	40	13.5	37.5	62.5	87.5	112.5	137.5
D-A72/A7□H/A80H D-A73C/A80C D-F7□/F7□W D-J79/J79W D-F7□WV D-J79C D-F7BAL, D-F79F	32	9	33	58	83	108	—
	40	14	38	63	88	113	138
D-A79WL	32	6	30	55	80	105	—
	40	11	35	60	85	110	135
D-H7□/H7C/H7□W D-H7BAL, D-H7NF	32	7	31	56	81	106	—
	40	12	36	61	86	111	136

* The value in () is for air cushion.

* The above-mentioned value is a guide for auto switch mounting positions for stroke end detection. Adjust the auto switch after confirming the operating conditions in the actual setting.

* A/B dimensions are the distance from the cover to the end surface of the auto switch.

Auto Switch Mounting Height

[mm]

Auto switch model	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV D-A9□ D-A9□V	D-C7□/C80 D-H7□ D-H7□W D-H7BAL D-H7NF	D-C73C D-C80C	D-A7□ D-A80	D-A7□H D-A80H	D-F7□/J79 D-F7□W D-J79W D-F7BAL D-F79F	D-A73C D-A80C	D-H7C	D-A79W	D-J79C
Bore size	Hs	Hs	Hs	Hs	Hs	Hs	Hs	Hs	Hs	Hs
32	30.5	30.5	31	30	30.5	30	36	31.5	31.5	34.5
40	35.5	35.5	35	34.5	35	34.5	40.5	35.5	36	39

Minimum Stroke for Auto Switch Mounting

C85: ø8, ø10, ø12, ø16 n: Number of auto switches [mm]

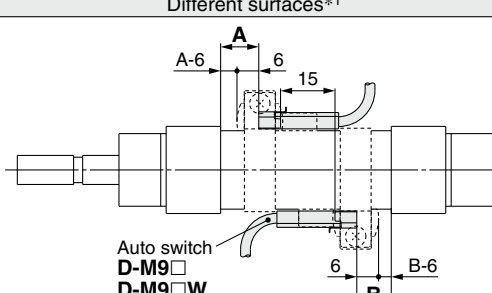
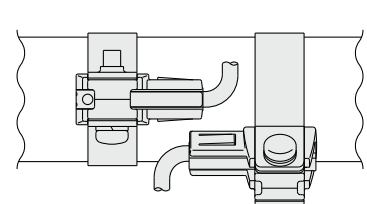
Auto switch model		Number of auto switches				
		1	2		n	
			Different surfaces	Same surface	ø8 to ø16	
					Different surfaces	Same surface
Band mounting	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV D-A9□*2 D-A9□V	10	*1 15	*1 45	15 + 35 $\frac{(n-2)}{2}$ (n = 2, 4, 6...)	45 + 15 (n - 2) (n = 2, 4, 6...)
	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...)
Rail mounting	D-M9□V D-F7□V D-J79C	5	—	5	—	10 + 10 (n - 2) (n = 4, 6...)
	D-F7□ D-J79	5	—	5	—	15 + 15 (n - 2) (n = 4, 6...)
	D-A9□V*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□*2	10	—	10	—	15 + 15 (n - 2) (n = 4, 6...)
	D-F7□WV D-F7BAV D-A79W*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...)

C85: ø20, ø25

n: Number of auto switches [mm]

Auto switch model		Number of auto switches				
		1	2		n	
			Different surfaces	Same surface	ø20, ø25	
					Different surfaces	Same surface
Band mounting	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV D-A9□ D-A9□V	10	*1 15	*1 45	15 + 45 $\frac{(n-2)}{2}$ (n = 2, 4, 6...)	45 + 45 (n - 2) (n = 2, 4, 6...)
	D-C7□ D-C80	10	15	50		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...)
Rail mounting	D-F7□V D-J79C	5	—	5	—	10 + 10 (n - 2) (n = 4, 6...)
	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...)

*1 Auto switch mounting (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 surfaces*1	Same surface*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

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

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

Minimum Stroke for Auto Switch Mounting**C75: ø32, ø40**

n: Number of auto switches [mm]

Auto switch model		Number of auto switches				
		1	2		n	
			Different surfaces	Same surface	ø32, ø40	
Band mounting	D-C73, D-C80 D-H7A1, D-H7A2 D-H7B	10	15	50		50 + 45 (n - 2)
	D-C73C D-C80C D-H7C	10	15	65	$15 + 45 \frac{(n-2)}{2}$ (n = 2, 4...)	65 + 50 (n - 2)
	D-H7NW D-H7PW D-H7BW	10	15	75		75 + 55 (n - 2)
Rail mounting	D-A73, D-A80 D-A73H, D-A80H D-A73C, D-A80C D-F79, D-J79 D-F7P, D-J79C	5	—	10	—	$15 + 35 \frac{(n-2)}{2}$ (n = 2, 4...)
	D-A79W, D-F79W D-F7PW D-J79W	10	—	15	—	

Operating Range

Auto switch model		Bore size [mm]							
		8	10	12	16	20	25	32	40
Band mounting	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV	2	2.5	2.5	3	3	3	3	3
	D-A9□*1 D-A9□V*1	—	—	—	7	6	6	6	6
	D-H7□ D-H7□W D-H7BA D-H7NF	3	3	3	4	4	4	4.5	5
	D-H7C	8	8	8	9	7	8.5	9	10
	D-C7□/C80 D-C73C/C80C	7	7	7	7	7	8	8	8
	D-M9□/M9□V*2, 3 D-M9□W/M9□WV*2, 3 D-M9□A/M9□AV*2, 3	2.5	3	3.5	3.5	—	—	—	—
Rail mounting	D-A9□*1, 3 D-A9□V*1, 3	—	—	—	6.5	5.5	6	—	—
	D-F7□/J79 D-F7□V/J79C D-F7□W/J79W D-F7□WV D-F79F D-F7BA/F7BAV	5	5	6	5	5	6	4.5	4.5
	D-A7□/A80 D-A7□H/A80H D-A73C/A80C	8	8	9	9	7	7	7.5	7.5
	D-A79W*1	—	—	—	13	10	10.5	11.5	11.5

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

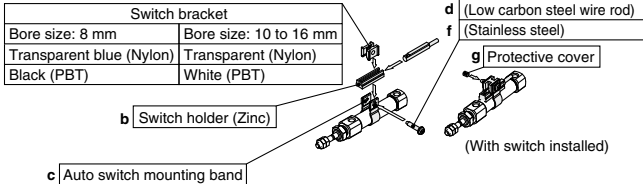
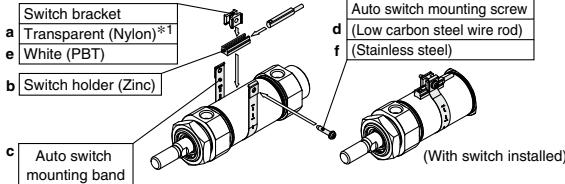
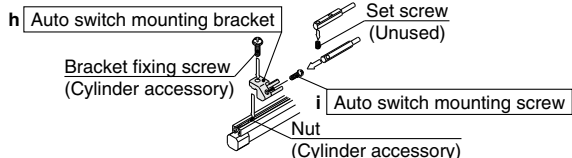
*2 When mounting a rail on bore size ø20 or ø25 cylinder, D-M9□(V), M9□W(V) and M9□A(V) types cannot be mounted.

*3 When mounting a rail on bore size ø32 or ø40 cylinder, D-M9□(V), M9□W(V), M9□A(V) and A9□(V) types cannot be mounted.

* Values which include hysteresis are for guideline purposes only, they are not a guarantee (assuming approximately ±30% dispersion) and may change substantially depending on the ambient environment.

C85/C75 Series

Auto Switch Mounting Bracket/Set Part Nos.

Auto switch mounting		Auto switch model		C85 Series						C75 Series	
				Bore size [mm]							
				ø8	ø10	ø12	ø16	ø20	ø25	ø32	ø40
Band mounting	*3 *4	D-M9□(V) D-M9□W(V) D-A9□(V)*7	*1 BJ6-008 (A set of a, b, c, d, g)	*1 BJ6-010 (A set of a, b, c, d, g)	*1 BJ6-012 (A set of a, b, c, d, g)	*1 BJ6-016 (A set of a, b, c, d, g)	*1 BM5-020 (A set of a, b, c, d)	*1 BM5-025 (A set of a, b, c, d)	*1 BM5-032 (A set of a, b, c, d)	*1 BM5-040 (A set of a, b, c, d)	
		D-M9□A(V)*2	BJ6-008S (A set of b, c, e, f, g)	BJ6-010S (A set of b, c, e, f, g)	BJ6-012S (A set of b, c, e, f, g)	BJ6-016S (A set of b, c, e, f, g)	BM5-020S (A set of b, c, e, f)	BM5-025S (A set of b, c, e, f)	BM5-032S (A set of b, c, e, f)	BM5-040S (A set of b, c, e, f)	
		When the bore size is 16 mm or less									
											
		When the bore size is 20 mm or more									
											
		D-H7□ D-H7□W D-H7NF D-C7□/C80 D-C73C/C80C	BJ2-008 (A set of c, d, g)	BJ2-010 (A set of c, d, g)	BJ2-012 (A set of c, d, g)	BJ2-016 (A set of c, d, g)	BM2-020A (A set of c and d)	BM2-025A (A set of c and d)	BM2-032A (A set of c and d)	BM2-040A (A set of c and d)	
		D-H7BA	BJ2-008S (A set of c, f, g)	BJ2-010S (A set of c, f, g)	BJ2-012S (A set of c, f, g)	BJ2-016S (A set of c, f, g)	BMA2-020AS (A set of c and f)	BMA2-025AS (A set of c and f)	BMA2-032AS (A set of c and f)	BMA2-040AS (A set of c and f)	
		D-M9□(V)*8 D-M9□W(V)*8 D-M9□A(V)*8 D-A9□(V)*7	BQ2-012 (S) (A set of h and i)								
											
Rail mounting	*5 *6										

- *1 Since the switch bracket for band mounting (made from nylon) are affected in an environment where alcohol, chloroform, methylamines, hydrochloric acid or sulfuric acid is splashed over, so it cannot be used. Please contact SMC regarding other chemicals.
- *2 When mounting a D-M9□A(V) type auto switch, if the switch bracket is mounted on the indicator light, it may damage the auto switch. Therefore, be sure to avoid mounting the switch bracket on the indicator light.
- *3 For band mounting, switch brackets are mounted on the cylinder when small switches are specified. (switches are not mounted, but packaged together).
- *4 For band mounting, when specifying the switches other than the small switches, auto switch(s) are mounted on the cylinder.
- *5 For rail mounting, the auto switches and auto switch mounting brackets are packed together (not assembled).
- *6 For rail mounting, when D-M9□A(V) is ordered separately, select the stainless steel mounting screw set BQ2-012S.
- *7 When mounting a band and/or a rail on bore size ø8, ø10 or ø12 cylinder, D-A9□(V) type cannot be mounted.
- *8 When mounting a rail on bore size ø20 or ø25 cylinder, D-M9□(V), M9□W(V) and M9□A(V) types cannot be mounted.

Auto Switch Mounting Bracket/Single Unit Part Nos.

Auto switch model	C85 Series						C75 Series	
	ø8	ø10	ø12	ø16	ø20	ø25	ø32	ø40
D-M9□(V) D-M9□W(V) D-A9□(V)	BJ2-008 (A set of c, d, g)	BJ2-010 (A set of c, d, g)	BJ2-012 (A set of c, d, g)	BJ2-016 (A set of c, d, g)	BM2-020A (A set of c and d)	BM2-025A (A set of c and d)	BM2-032A (A set of c and d)	BM2-040A (A set of c and d)
	BJ5-2 (A set of a and b)	BJ5-1 (A set of a and b)						
D-M9□A(V)	BJ2-008S (A set of c, f, g)	BJ2-010S (A set of c, f, g)	BJ2-012S (A set of c, f, g)	BJ2-016S (A set of c, f, g)	BM2-020AS (A set of c and f)	BM2-025AS (A set of c and f)	BM2-032AS (A set of c and f)	BM2-040AS (A set of c and f)
	BJ4-2 (A set of b and e)	BJ4-1 (A set of b and e)						

[Stainless Steel Mounting Screw]

The following stainless steel mounting screw kit is available. Use it in accordance with the operating environment. (Since the auto switch mounting bracket is not included, order it separately.)

BBA4: For D-C7/C8/H7 types

* Refer to the **Web Catalog** or Best Pneumatics for details on the BBA4.

When the D-H7BA type auto switch is shipped independently, the BBA4 is attached.

Other than the applicable auto switches listed in “How to Order”, the following auto switches are mountable.

Refer to Best Pneumatics for the detailed specifications.

Type	Model	Electrical entry	Features	Mounting	Applicable bore size
Reed	D-C73, C76	Grommet (In-line)	—	Band	ø8 to ø25
	D-C80		Without indicator light		
Solid state	D-H7A1, H7A2, H7B	Grommet (In-line)	—	Band	ø8 to ø25
	D-H7NW, H7PW, H7BW		Diagnostic indication (2-color indicator)		

* Normally closed (NC = b contact) solid state auto switches (D-M9□E(V)) are also available. For details, refer to Best Pneumatics.

* With pre-wired connector is also available for solid state switches. For details, refer to Best Pneumatics.

Mounting Bracket Band Mounting Type

<Applicable auto switch>

Solid state... D-M9N, M9P, M9B, M9NV, M9PV, M9BV
D-M9NW, M9PW, M9BW, M9NVV, M9PWW, M9BWW
D-M9NA, M9PA, M9BA, M9NAV, M9PAV, M9BAV
Reed..... D-A90, A93, A96, A90V, A93V, A96V

■ How to Mount and Move the Auto Switch

Mounting the Auto Switch

1. Wrap the auto switch mounting band around the cylinder where the auto switch will be mounted without bending the reinforcing plates.
2. Connect the switch holder and switch bracket, and place them between the two ends of the auto switch mounting band (1).
3. Hook the bent part of the auto switch mounting band reinforcing plates onto the upper surface of the switch bracket. Bend the base of the auto switch mounting band reinforcing plates until the through holes of the switch bracket, the through holes of the auto switch mounting band, and the holes of the M3 female thread are aligned. Adjust the switch bracket so that both ends of the auto switch mounting band are inserted into the inner walls on both side surfaces of the switch bracket. For the D-M9□A(V) type auto switch, do not install the switch bracket on the indicator light.
4. Pass the auto switch mounting screw (M3) supplied with the auto switch mounting band from the through-hole side of the auto switch mounting band and engage it with the M3 female thread of the auto switch mounting band through the through-hole in the switch bracket.
5. Tighten the auto switch mounting screw with the specified tightening torque to secure the switch bracket and switch holder.

Tightening torque for auto switch mounting screw [N·m]

Cylinder series	Bore size [mm]	
	ø8 to ø16	ø20 to ø40
C85/C75	0.8 to 1.0	0.6 to 0.7

6. Insert the auto switch into the auto switch mounting groove of the switch holder (2).
7. After checking the detection position, tighten the set screw (M2.5) supplied with the auto switch to secure the auto switch. At this time, the tightening torque for the set screw (M2.5) supplied with the auto switch must be 0.05 to 0.1 N·m. When tightening the set screw supplied with the auto switch, use a watchmaker's screw driver with a handle diameter of 5 to 6 mm.
8. Attach a protective cover to the tip of the auto switch mounting screw (M3).

Adjusting the Auto Switch Position

- (1) To make the fine adjustment, loosen the set screw (M2.5) supplied with the auto switch and slide the auto switch inside the auto switch mounting groove to adjust the position.
- (2) To move the auto switch setting position largely, loosen the screw (M3) that secures the auto switch mounting band and slide the auto switch together with the switch holder on the cylinder tube to adjust the position.

<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. **For ø16 or less:** Put a mounting bracket on the cylinder tube.
For ø20 or more: Wrap the auto switch mounting band around the cylinder where the auto switch will be mounted without bending the reinforcing plates.
2. **For ø16 or less:** 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.
For ø20 or more: Hook the bent part of the auto switch mounting band reinforcing plates onto the upper surface of the switch. Bend the base of the auto switch mounting band reinforcing plates until the through holes of the switch bracket, the through holes of the auto switch mounting band, and the holes of the M3 female thread are aligned. Adjust the switch bracket so that both ends of the auto switch mounting band are inserted into the inner walls on both side surfaces of the switch bracket.
3. Lightly thread the auto switch mounting screw (M3) 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) to secure the auto switch while properly contacting the auto switch bottom part and the cylinder tube. (The tightening torque of M3 screw should be as below.)
ø8 to ø16: 0.8 to 1.0 N·m
ø20 to ø40: 0.6 to 1.0 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). (For ø8 to ø16)

[Stainless Steel Mounting Screw]

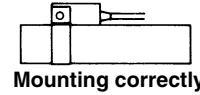
The following stainless steel mounting screw kit is available. Use it in accordance with the operating environment. (Since the auto switch mounting band is not included, order it separately.) BBA4: For D-C7/C8/H7 "D-H7BA" switch is set on the cylinder with the stainless steel screws above when shipped. When only an auto switch is shipped independently, the BBA4 is attached.

Stainless Steel Mounting Screw Set

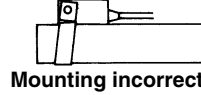
Part no.	Contents		Applicable auto switch mounting bracket part nos.	Applicable auto switch
	Description	Quantity		
BBA4	Auto switch mounting screw	1	BJ2-008S, BJ2-010S, BJ2-012S, BJ2-016S BM2-020AS, BM2-025AS, BM2-032AS, BM2-040AS	D-C7, C8 D-H7

⚠ Caution

1. Tighten screws with the proper tightening torque.
2. Set the auto switch mounting band perpendicularly to cylinder tube.

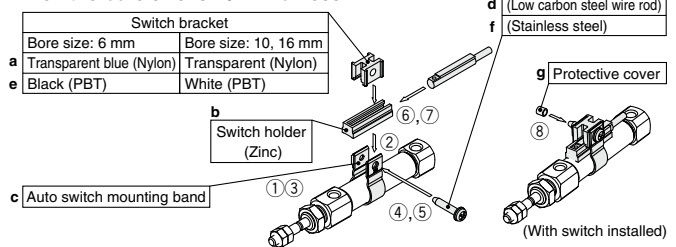


Mounting correctly

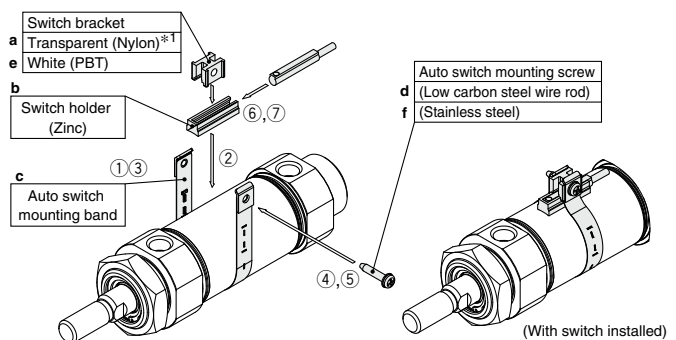


Mounting incorrectly

When the bore size is 16 mm or less

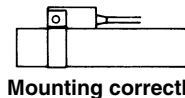


When the bore size is 20 mm or more

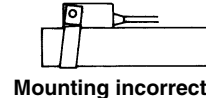


⚠ Caution

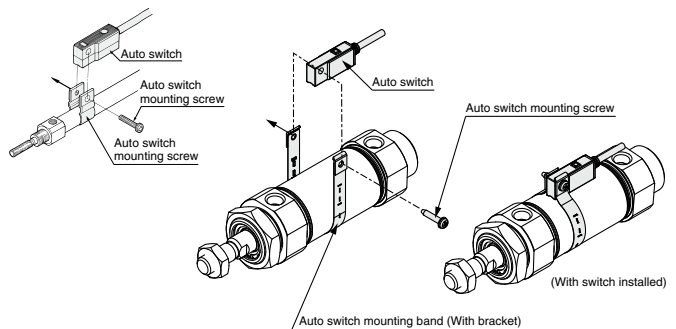
1. Tighten the screw under the specified torque when mounting auto switch.
2. Set the auto switch mounting band perpendicularly to cylinder tube.



Mounting correctly



Mounting incorrectly



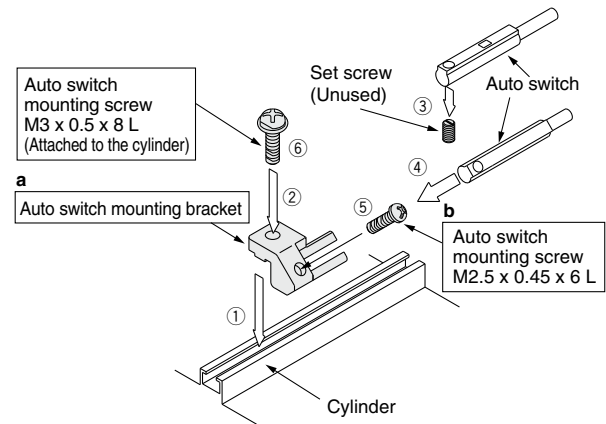
Mounting Bracket Rail Mounting Type

<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)

- Slide the auto switch mounting nut inserted into the mounting rail and set it at the auto switch mounting position.
- 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.
- Push the auto switch mounting screw lightly into the hexagon nut through the hole of the auto switch mounting arm.
- Remove the set screw (M2.5) attached to the auto switch.
- Insert the auto switch in the auto switch attachment part of the auto switch mounting bracket.
- Secure the auto switch mounting screw (M2.5). (Tightening torque of M2.5 screw: 0.1 to 0.2 N·m)
- Secure the auto switch mounting screw (3) (M3) after confirming the detecting position. (Tightening torque of M3 screw: 0.5 to 0.7 N·m)
- 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.

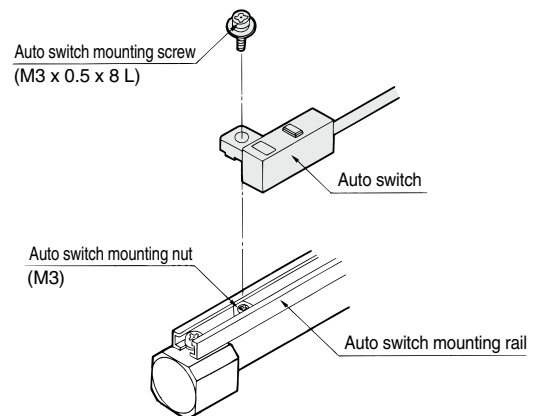
<Applicable auto switch>

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

- Slide the auto switch mounting nut (M3) inserted into the mounting rail and set it at the auto switch mounting position.
- 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.
- Push the auto switch mounting screw (M3) lightly into the mounting nut (M3) through the hole of auto switch mounting arm.
- After reconfirming the detecting position, tighten the mounting screw (M3) to secure the auto switch. (Tightening torque of M3 screw should be 0.5 to 0.7 N·m.)
- Modification of the detecting position should be made in the condition of 3.



[Stainless Steel Mounting Screw]

The following stainless steel mounting screw kit (including nuts) is available. Use it in accordance with the operating environment. (Since the auto switch spacer is not included, order it separately.)

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, the BBA2 is attached.

Stainless Steel Mounting Screw Set

Part no.	Contents				Applicable auto switch mounting bracket part nos.	Applicable auto switch
	No.	Description	Size	Quantity		
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	

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

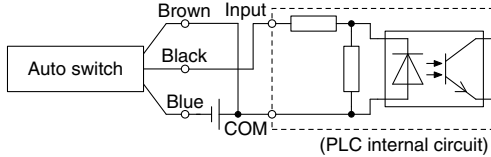
* When using D-A9□(V)/M9□(V)/M9□W(V)/M9□A(V) auto switches with BQ2-012, use stainless steel screws suitable for the auto switch mounting bracket.

Prior to Use

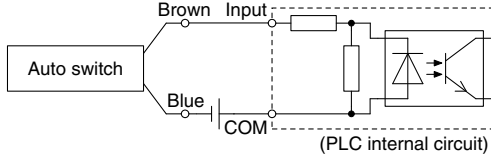
Auto Switch Connections and Examples

Sink Input Specifications

3-wire, NPN

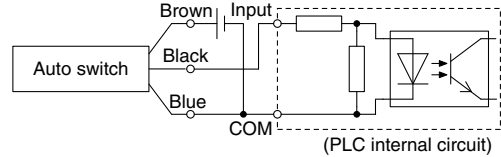


2-wire

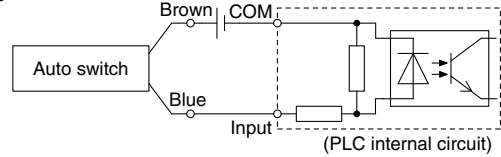


Source Input Specifications

3-wire, PNP



2-wire

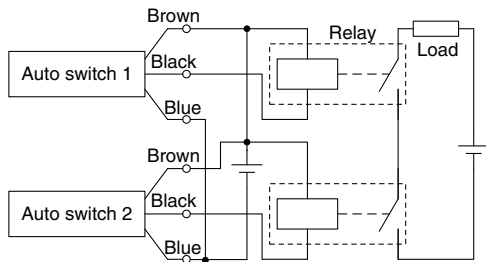


Connect according to the applicable PLC input specifications, as the connection method will vary depending on the PLC input specifications.

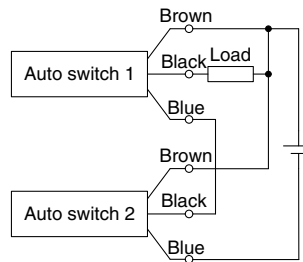
Examples of AND (Series) and OR (Parallel) Connections

* When using solid state auto switches, ensure the application is set up so the signals for the first 50 ms are invalid.

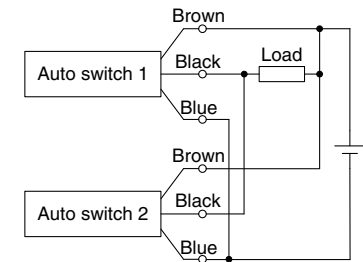
3-wire AND connection for NPN output (Using relays)



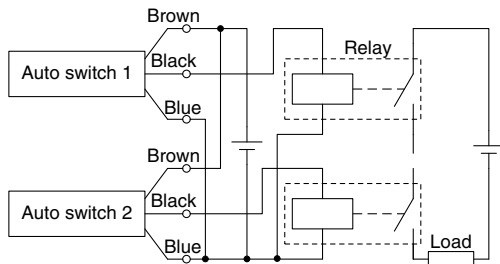
(Performed with auto switches only)



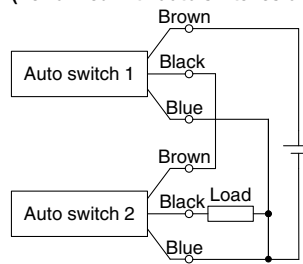
3-wire OR connection for NPN output



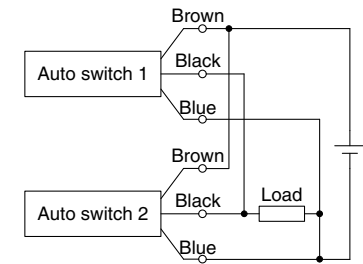
3-wire AND connection for PNP output (Using relays)



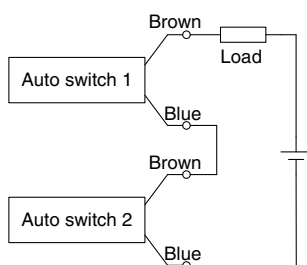
(Performed with auto switches only)



3-wire OR connection for PNP output



2-wire AND connection

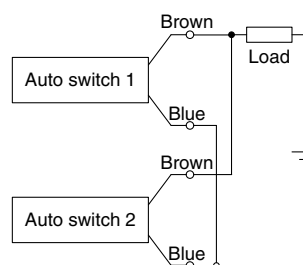


When two auto switches are connected in series, a load may malfunction because the load voltage will decline when in the ON state. The indicator lights will light up when both of the auto switches are in the ON state. Auto switches with a load voltage less than 20 V cannot be used.

$$\begin{aligned} \text{Load voltage at ON} &= \text{Power supply voltage} - \\ &\quad \text{Residual voltage} \times 2 \text{ pcs.} \\ &= 24 \text{ V} - 4 \text{ V} \times 2 \text{ pcs.} \\ &= 16 \text{ V} \end{aligned}$$

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

2-wire OR connection



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

(Reed)
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.

$$\begin{aligned} \text{Load voltage at OFF} &= \text{Leakage current} \times 2 \text{ pcs.} \times \\ &\quad \text{Load impedance} \\ &= 1 \text{ mA} \times 2 \text{ pcs.} \times 3 \text{ k}\Omega \\ &= 6 \text{ V} \end{aligned}$$

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

C85/C75 Series

Simple Specials/Made to Order



Please contact SMC for detailed specifications, delivery, and prices.

Simple Specials

The following special specifications can be ordered as a simplified Made-to-Order. Please contact your local sales representative for more details.

Symbol	Specifications	C85 (Standard)					C85K (Not-rotating rod)	
		Double acting				Single acting	Double acting	Single acting
		Single rod		Double rod		Single rod	Single rod	
		Rubber	Air	Rubber	Air	Rubber	Rubber	
-XA0 to 30	Change of rod end shape*1	●	●	●	●	●	●	●

Made to Order

Symbol	Specifications	C85 (Standard)					C85K (Not-rotating rod)	
		Double acting				Single acting	Double acting	Single acting
		Single rod		Double rod		Single rod	Single rod	
		Rubber	Air	Rubber	Air	Rubber	Rubber	
-XB6	Heat-resistant cylinder (−10 to 150°C)*2	●		●				
-XB7	Cold-resistant cylinder (−40 to 70°C)*3	●		●				
-XB9	Low speed cylinder (10 to 50 mm/s)*3	●		●				
-XC4	With heavy duty scraper*3	●		●				
-XC6□	Made of stainless steel	●	●	●	●	●	●	●

*1 Excludes the ø8 air cushion

*2 Rubber bumper ø10 to ø40 only

*3 Rubber bumper ø20, ø25, ø32 and ø40 only

*4 For front mounting, only the ø20 and ø25 are available.

*5 For XB6, XB7 and XB9, only the ø20 and ø25 are available.

C85R (Direct mount)*4		C75 (Standard)					C75K (Not-rotating rod)		C75R (Direct mount)		Symbol	Page
Double acting (Bottom side mounting)	Double acting (Front side mounting)	Double acting				Single acting	Double acting	Single acting	Double acting (Bottom side mounting)	Double acting (Front side mounting)		
Single rod		Single rod		Double rod		Single rod	Single rod		Single rod			
Rubber		Rubber	Air	Rubber	Air	Rubber	Rubber		Rubber			
●	●	●	●	●	●	●	●	●	●	●	-XA0 to 30	121

C85R (Direct mount)*4		C75 (Standard)					C75K (Not-rotating rod)		C75R (Direct mount)		Symbol	Page
Double acting (Bottom side mounting)	Double acting (Front side mounting)	Double acting				Single acting	Double acting	Single acting	Double acting (Bottom side mounting)	Double acting (Front side mounting)		
Single rod		Single rod		Double rod		Single rod	Single rod		Single rod			
Rubber		Rubber	Air	Rubber	Air	Rubber	Rubber		Rubber			
●	●	●		●					●	●	-XB6	123
●	●	●		●					●	●	-XB7	123
●	●	●		●					●	●	-XB9	124
		●									-XC4	124
●	●	●		●		●			●	●	-XC6□	124

C85

C85W

C85-S/T

C85K

C85K-S/T

C85R

C75

C75W

C75-S/T

C75K

C75K-S/T

C75R

CP96

CP96K

C96

C96K

C96Y

C55

Auto Switch

Made to Order

Related Products

C85/C75 Series Simple Specials

The following changes are dealt with through the Simple Specials System.

For details, refer to the Simple Specials
in the Web Catalog.
<http://www.smcworld.com>

1 Change of Rod End Shape

Symbol

-XA0 to XA30

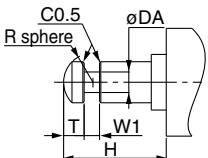
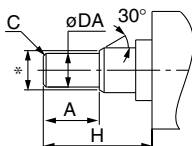
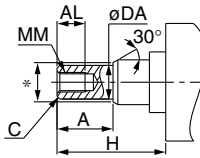
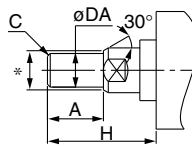
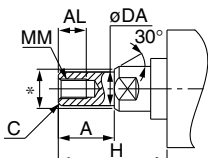
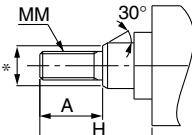
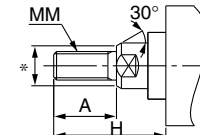
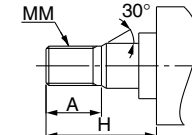
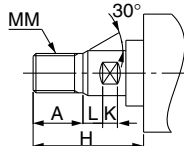
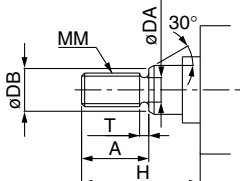
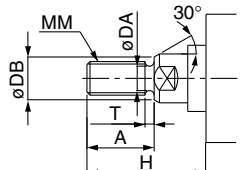
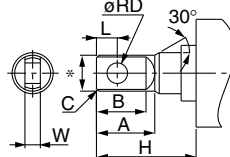
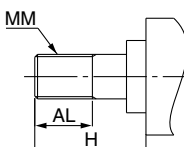
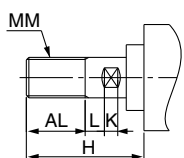
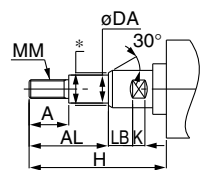
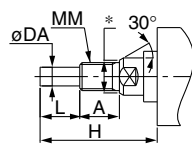
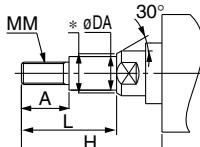
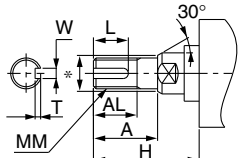
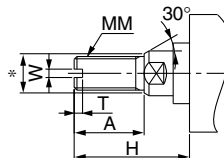
Applicable Series

Series	Description	Model	Action	Note
C85	Standard	C85	Double acting, Single rod	Excludes the ø8 air cushion
		C85W	Double acting, Double rod	Excludes the ø8 air cushion
		C85	Single acting (Spring return/extend)	
	Non-rotating rod	C85K	Double acting, Single rod	
		C85K	Single acting (Spring return/extend)	
	Direct mount	C85R	Double acting, Single rod	For front mounting, only the ø20 and ø25 are available.
C75	Standard	C75	Double acting, Single rod	
		C75W	Double acting, Double rod	
		C75	Single acting (Spring return/extend)	
	Non-rotating rod	C75K	Double acting, Single rod	
		C75K	Single acting (Spring return/extend)	
	Direct mount	C75R	Double acting, Single rod	

Precautions

- SMC will make appropriate arrangements if no dimension, tolerance, or finish instructions are given in the diagram.
- Standard dimensions marked with "*" will be as follows to the rod diameter (D). Enter any special dimension you require.
 $D \leq 6 \rightarrow D-1 \text{ mm}$, $6 < D \leq 25 \rightarrow D-2 \text{ mm}$, $D > 25 \rightarrow D-4 \text{ mm}$
- In the case of the double rod type and single acting retraction type, enter the dimensions when the rod is retracted.
- "A0" is the same shape as the standard type. (The specifications of A0 are that only dimensions A and H are changed from the standard type.)

Symbol: A0 	Symbol: A1 	Symbol: A2 	Symbol: A3
Symbol: A4 	Symbol: A5 	Symbol: A6 	Symbol: A7
Symbol: A8 	Symbol: A9 	Symbol: A10 	Symbol: A11

Symbol: A12 	Symbol: A13 	Symbol: A14 	Symbol: A15 
Symbol: A16 	Symbol: A17 	Symbol: A18 	Symbol: A19 
Symbol: A20 	Symbol: A21 	Symbol: A22 	Symbol: A23 
Symbol: A24 	Symbol: A25 	Symbol: A26 	Symbol: A27 
Symbol: A28 	Symbol: A29 	Symbol: A30 	

C85
C85W
C85-S/T
C85K
C85K-S/T
C85R
C75
C75W
C75-S/T
C75K
C75K-S/T
C75R
CP96
CP96K
C96
C96K
C96Y
C55
Auto Switch
Made to Order
Related Products

C85/C75 Series

Made to Order

Please contact SMC for detailed dimensions, specifications, and lead times.



1 Heat-resistant Cylinder (–10 to 150°C)

Symbol

-XB6

Air cylinder which changed the seal material and grease, so that it could be used even at higher temperature up to 150 from –10°C.

Applicable Series

Series	Description	Model	Action	Note
C85	Standard	C85	Double acting, Single rod	Rubber bumper ø10 to ø25 only Excludes with rod end (Accessory)
		C85W	Double acting, Double rod	Rubber bumper ø10 to ø25 only
	Direct mount	C85R	Double acting, Single rod	ø20, ø25 only Excludes with rod end (Accessory)
C75	Standard	C75	Double acting, Single rod	Rubber bumper only Excludes with rod end (Accessory)
		C75W	Double acting, Double rod	Rubber bumper only
	Direct mount	C75R	Double acting, Single rod	Excludes with rod end (Accessory)

- * Operate without lubrication from a pneumatic system lubricator.
- * Please contact SMC for details on the maintenance intervals for this cylinder, which differ from those of the standard cylinder.
- * In principle, it is impossible to make built-in magnet type and the one with auto switch. But, as for the one with auto switch, and the heat-resistant cylinder with heat-resistant auto switch, please contact SMC.
- * Piston speed is ranged from 50 to 500 mm/s.

How to Order

Standard model no.

– XB6

Heat-resistant cylinder ●

Specifications

Ambient temperature range	–10°C to 150°C
Seal material	Fluororubber
Grease	Heat-resistant grease
Auto switch	Not mountable*1
Dimensions	Same as standard
Specifications other than above	Same as standard

*1 Manufacturing built-in magnet type and the one with auto switch is impossible.

Warning Precautions

Be aware that smoking cigarettes etc. after your hands have come into contact with the grease used in this cylinder can create a gas that is hazardous to humans.

2 Cold-resistant Cylinder (–40 to 70°C)

Symbol

-XB7

Air cylinder which changed the seal material and grease, so that it could be used even at lower temperature down to –40°C.

Applicable Series

Series	Description	Model	Action	Note
C85	Standard	C85	Double acting, Single rod	Rubber bumper ø20 and ø25 only Excludes with rod end (Accessory)
		C85W	Double acting, Double rod	Rubber bumper ø20 and ø25 only
	Direct mount	C85R	Double acting, Single rod	ø20, ø25 only Excludes with rod end (Accessory)
C75	Standard	C75	Double acting, Single rod	Rubber bumper only Excludes with rod end (Accessory)
		C75W	Double acting, Double rod	Rubber bumper only
	Direct mount	C75R	Double acting, Single rod	Excludes with rod end (Accessory)

- * Operate without lubrication from a pneumatic system lubricator.
- * Use dry air which is suitable for heatless air dryer etc. not to cause the moisture to be frozen.
- * Please contact SMC for details on the maintenance intervals for this cylinder, which differ from those of the standard cylinder.
- * Manufacturing built-in magnet type and mounting an auto switch are impossible.
- * No cushion type is adopted. Piston speed is ranged from 50 to 500 mm/s.

How to Order

Standard model no.

– XB7

Cold-resistant cylinder ●

Specifications

Ambient temperature range	–40°C to 70°C
Seal material	Low nitrile rubber
Grease	Cold-resistant grease
Auto switch	Not mountable*1
Dimensions	Same as standard
Specifications other than above	Same as standard

*1 Manufacturing built-in magnet type and the one with auto switch is impossible.

Warning Precautions

Be aware that smoking cigarettes etc. after your hands have come into contact with the grease used in this cylinder can create a gas that is hazardous to humans.

3 Low Speed Cylinder (10 to 50 mm/s)

Symbol
-XB9

Even if driving at lower speeds 10 to 50 mm/s, there would be no stick-slip phenomenon and it can run smoothly.

Applicable Series

Series	Description	Model	Action	Note
C85	Standard	C85	Double acting, Single rod	Rubber bumper ø20 and ø25 only
	Direct mount	C85R	Double acting, Single rod	ø20, ø25 only
C75	Standard	C75	Double acting, Single rod	Rubber bumper only
	Direct mount	C75R	Double acting, Single rod	

How to Order

Standard model no. **- XB9**
Low speed cylinder

Specifications

Piston speed	10 to 50 mm/s
Dimensions	Same as standard
Specifications other than above	Same as standard

* Operate without lubrication from a pneumatic system lubricator.

Warning Precautions

Be aware that smoking cigarettes etc. after your hands have come into contact with the grease used in this cylinder can create a gas that is hazardous to humans.

4 With Heavy Duty Scraper

Symbol
-XC4

It is suitable for using cylinders under the environment, where there are much dusts in a surrounding area by using a heavy duty scraper on the wiper ring, or using cylinders under earth and sand exposed to the die-casted equipment, construction machinery, or industrial vehicles.

Applicable Series

Series	Description	Model	Action	Note
C85	Standard	C85	Double acting, Single rod	Rubber bumper ø20 to ø25 only
		C85W	Double acting, Double rod	Rubber bumper ø20 to ø25 only
C75	Standard	C75	Double acting, Single rod	Rubber bumper only

How to Order

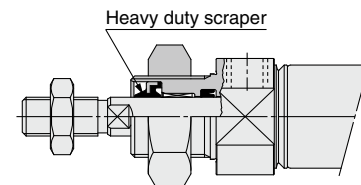
Standard model no. **- XC4**
With heavy duty scraper

Specifications: Same as standard

Caution

Either heavy duty scraper or rod seal cannot be replaced.

Construction (Dimensions are the same as standard.)



5 Made of Stainless Steel

Symbol
-XC6

Suitable for the cases it is likely to generate rust by being immersed in the water and corrosion.

Applicable Series

Series	Description	Model	Action	Note
C85	Standard	C85	Double acting, Single rod	
		C85W	Double acting, Double rod	
		C85	Single acting (Spring return/extend)	
	Non-rotating rod	C85K	Double acting, Single rod	
		C85K	Single acting (Spring return/extend)	
C75	Direct mount	C85R	Double acting, Single rod	XC6A only
		C75	Double acting, Single rod	
	Standard	C75W	Double acting, Double rod	
		C75	Single acting (Spring return/extend)	
		C75R	Double acting, Single rod	XC6A only

How to Order

Standard model no. **- XC6 A**
Made of stainless steel
Parts changed to stainless steel

A	Piston rod, Rod end nut
B	Piston rod, Rod end nut, Mounting nut

Specifications

Parts changed to stainless steel	Piston rod, Rod end nut
Specifications other than above and external dimensions	Same as standard

Description	Bore size [mm]					
	8	10	12	16	20	25
Rod end nut	C85NT08A-S	C85NT08A-S	C85NT10A-S	C85NT10A-S	C85NT20A-S	C85NT25A-S
Mounting nut	C85NT08B-S	C85NT08B-S	C85NT10B-S	C85NT10B-S	C85NT20B-S	C85NT20B-S

Description	Bore size [mm]	
	32	40
Rod end nut	C76NT32A-S	C76NT40A-S
Mounting nut	C76NT32B-S	C76NT40B-S