

# 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 (Integral clevis)
E**	Double end boss-cut
F	Boss-cut/Basic
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 32. 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**      **Cylinder stroke**

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	10, 25, 40, 50, 80, 100 125, 160, 200	400	200	200
16				
20	10, 25, 40, 50, 80, 100 125, 160, 200, 250, 300	1000	1000	500
25				

\* 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			
Accessories	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 flat 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 flat washer 1 retaining ring
25	C85K-25PS	

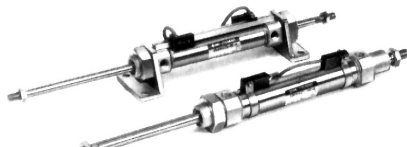
# Series C85



Rubber bumper/Single rod



Air cushion/Single rod



Rubber bumper/Double rod

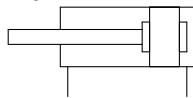


Air cushion/Double rod

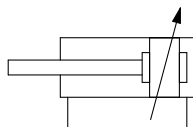


Non-rotating rod

Double acting, Single rod

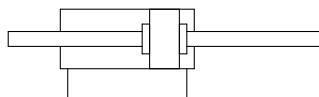


Rubber bumper

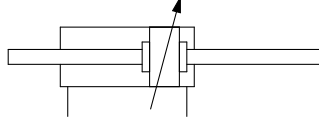


Air cushion

Double acting, Double rod



Rubber bumper



Air cushion

Non-rotating rod: 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/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 (Non-rotating: Rubber bumper only), Air cushion (Except ø8)					
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

## Weights

Bore size (mm)		8	10	12	16	20	25
Double acting	Basic weight	45	49	96	109	183 (203)	258 (286)
	Double rod	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	
Accessories	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 x 50/10 = 65 g    65 + 12 = 77 g

( ) : In the case of air cushion

## ⚠ Caution

**Be sure to read before handling.**

Refer to page 105 for Safety Instructions and "Handling Precautions for SMC Products" (M-E03-3) for Actuator and Auto Switch Precautions.

## 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.

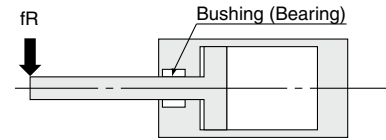
[Reference] If it is stopped with the external stopper on the cylinder extension side, even with a light load, the maximum generated force of the cylinder will act on the cylinder itself.

Mounting			Nominal symbol	Operating pressure (MPa)	Applicable maximum stroke according to buckling strength (cm)									
Support bracket nominal symbol and schematic diagram					C85									
Foot: L	Rod flange: F	Head flange: G			8	10	12	16	20	25				
			L F	0.3	24	18	36	26	38	48				
				0.5	18	14	27	19	29	36				
				0.7	14	11	22	16	23	30				
				G	0.3	9	6	15	10	15	20			
					0.5	6	4	10	6	10	14			
					0.7	4	3	8	4	8	11			
			C D	0.3	22	17	35	24	36	46				
				0.5	16	12	26	18	27	34				
				0.7	13	10	21	14	22	28				
				U	0.3	(40) *	(40) *	(40) *	(40) *	80	(100) *			
					0.5	38	30	(40) *	(40) *	61	77			
					0.7	32	25	(40) *	35	51	64			
			T	0.3	22	17	35	24	37	47				
				0.5	16	12	26	18	27	35				
				0.7	13	10	21	14	22	28				
							L F	0.3	(40) *	(40) *	(40) *	(40) *	(100) *	(100) *
								0.5	(40) *	(40) *	(40) *	(40) *	89	(100) *
								0.7	(40) *	36	(40) *	(40) *	74	93
G	0.3	33	26					(40) *	37	54	69			
	0.5	25	19					39	27	41	52			
	0.7	20	15					32	22	33	43			
			L F	0.3	(40) *	(40) *	(40) *	(40) *	(100) *	(100) *				
				0.5	(40) *	(40) *	(40) *	(40) *	(100) *	(100) *				
				0.7	(40) *	(40) *	(40) *	(40) *	(100) *	(100) *				
				G	0.3	(40) *	38	(40) *	(40) *	79	(100) *			
					0.5	37	29	(40) *	(40) *	60	76			
					0.7	30	23	(40) *	34	50	63			

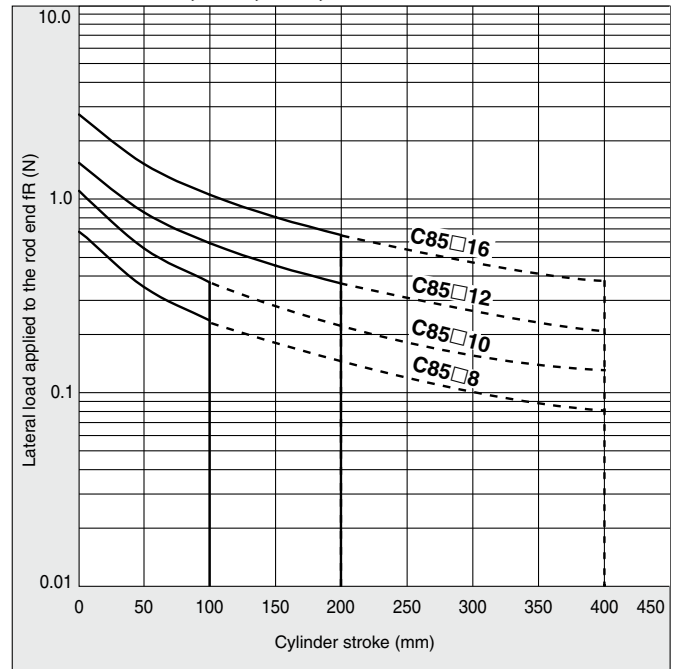
\* The data in ( ) are limited by max. stroke length.

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

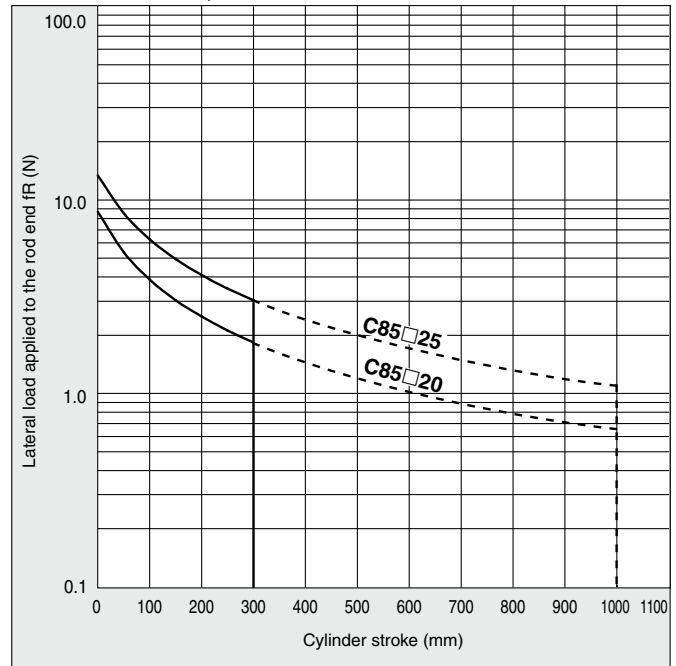
The region that does not exceed the bold solid line represents the allowable lateral load in relation to the cylinder of a given stroke length. In the graph, the range of the broken line shows that the long stroke limit has been exceeded. In this region, as a rule, operate the cylinder by providing a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



Series C85:  $\phi 8, \phi 10, \phi 12, \phi 16$



Series C85:  $\phi 20, \phi 25$

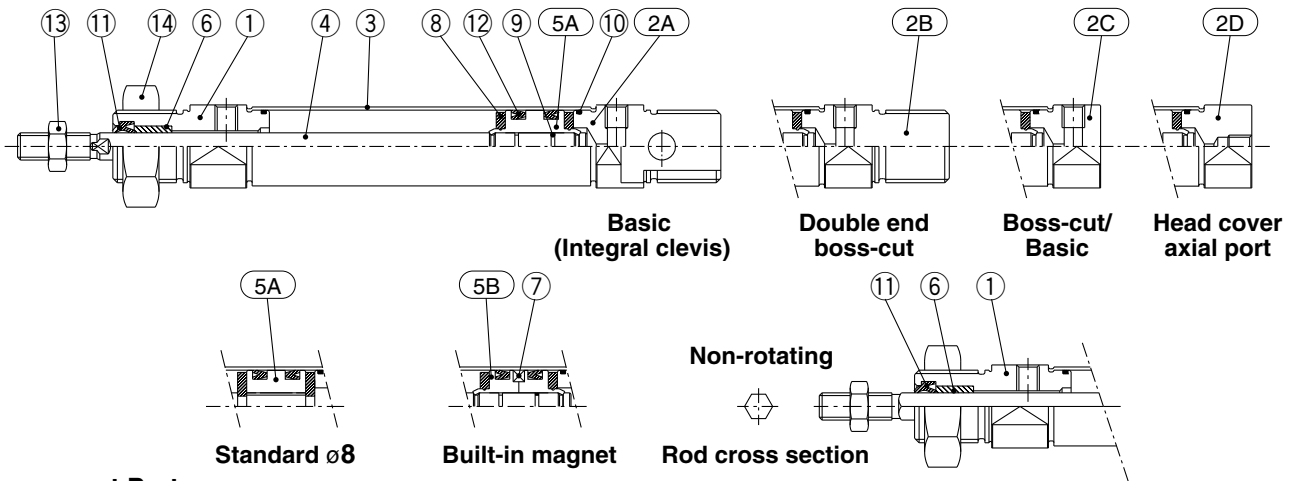


# Series C85

## Construction

### Double acting, Single rod

Rubber bumper: C□85□8 to 16 (Disassembly is not possible.)

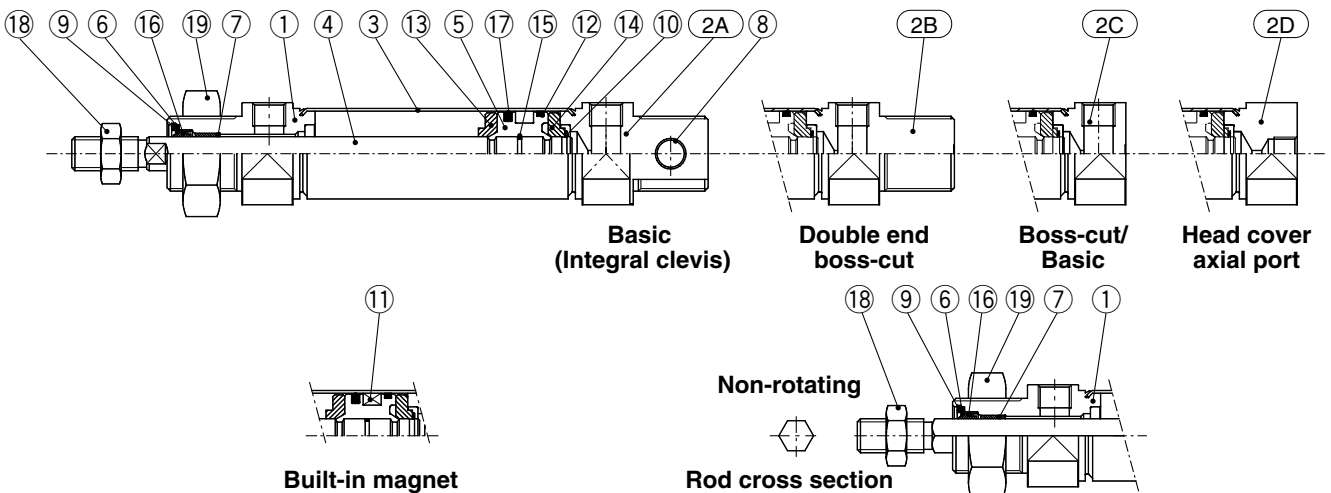


### Component Parts

No.	Description	Material	Q'ty	Note
1	Rod cover	Aluminum alloy	1	Clear anodized
2A	Head cover N	Aluminum alloy	1	Clear anodized
2B	Head cover E	Aluminum alloy	1	Clear anodized
2C	Head cover F	Aluminum alloy	1	Clear anodized
2D	Head cover Y	Aluminum alloy	1	Clear anodized
3	Cylinder tube	Stainless steel	1	
4	Piston rod	Stainless steel	1	
5A	Piston A	Brass (ø8 only), Aluminum alloy (ø10 to ø16)	1	
5B	Piston B	Brass (ø8 only), Aluminum alloy (ø10 to ø16)	2	(Switch type piston)

No.	Description	Material	Q'ty	Note
6	Bushing	Bearing alloy	1	
7	Magnet	Magnet	1	(Switch type only)
8	Bumper	Urethane	2	
9	Piston gasket	NBR	1	(2 for switch type)
10	Tube gasket	NBR	2	
11	Rod seal	NBR	1	
12	Piston seal	NBR	2	
13	Rod end nut	Carbon steel	1	Nickel plating
14	Mounting nut	Carbon steel	1	Nickel plating

### Rubber bumper: C□85□20/25



### Component Parts

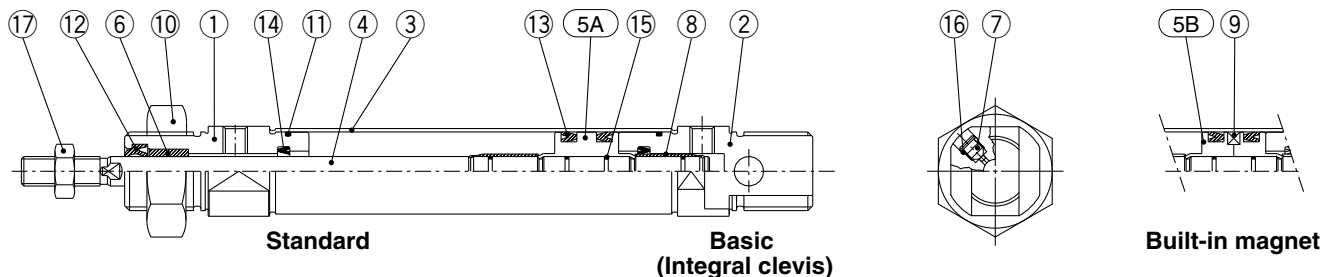
No.	Description	Material	Q'ty	Note
1	Rod cover	Aluminum alloy	1	Clear anodized
2A	Head cover N	Aluminum alloy	1	Clear anodized
2B	Head cover E	Aluminum alloy	1	Clear anodized
2C	Head cover F	Aluminum alloy	1	Clear anodized
2D	Head cover Y	Aluminum alloy	1	Clear anodized
3	Cylinder tube	Stainless steel	1	
4	Piston rod	Carbon steel	1	Hard chrome plating
5	Piston	Aluminum alloy	1	Chromated
6	Flat washer	Stainless steel	1	
7	Bushing	Bearing alloy	1	
8	Bushing	Bearing alloy	2	

No.	Description	Material	Q'ty	Note
9	Retaining ring	Carbon steel	1	Phosphate coating
10	Retaining ring	Stainless steel	1	
11	Magnet	Magnet	1	(Switch type only)
12	Wear ring	Resin	1	
13	Bumper A	Urethane	1	
14	Bumper A	Urethane	1	
15	Piston gasket	NBR	1	
16	Rod seal	NBR	1	
17	Piston seal	NBR	1	
18	Rod end nut	Carbon steel	1	Nickel plating
19	Mounting nut	Carbon steel	1	Nickel plating

**Construction**

**Double acting, Single rod**

Air cushion: C□85□10 to 16 (Disassembly is not possible.)

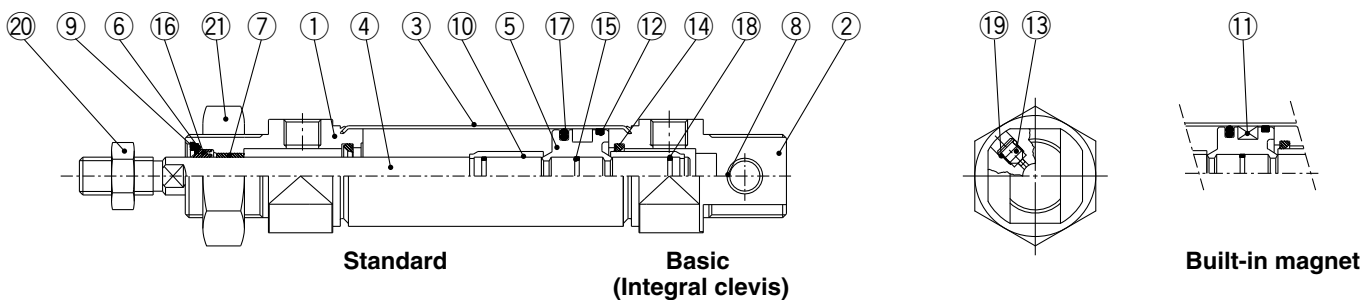


**Component Parts**

No.	Description	Material	Q'ty	Note
1	Rod cover	Aluminum alloy	1	Clear anodized
2	Head cover N	Aluminum alloy	1	Clear anodized
3	Cylinder tube	Stainless steel	1	
4	Piston rod	Stainless steel	1	
5A	Piston A	Aluminum alloy	1	
5B	Piston B	Aluminum alloy	2	(Switch type piston)
6	Bushing	Bearing alloy	1	
7	Cushion needle	Carbon steel	2	Electroless nickel plating
8	Cushion ring	Brass	2	
9	Magnet	Magnet	1	(Switch type only)

No.	Description	Material	Q'ty	Note
10	Mounting nut	Carbon steel	1	Nickel plating
11	Tube gasket	NBR	2	
12	Rod seal	NBR	1	
13	Piston seal	NBR	2	
14	Check seal	NBR	2	
15	Piston gasket and cushion ring gasket	NBR	3	(4 for switch type)
16	Needle seal	NBR	2	
17	Rod end nut	Carbon steel	1	Nickel plating

Air cushion : C□85□20/25



**Component Parts**

No.	Description	Material	Q'ty	Note
1	Rod cover	Aluminum alloy	1	Clear anodized
2	Head cover N	Aluminum alloy	1	Clear anodized
3	Cylinder tube	Stainless steel	1	
4	Piston rod	Carbon steel	1	Hard chrome plating
5	Piston	Aluminum alloy	1	Chromated
6	Flat washer	Stainless steel	1	
7	Bushing	Bearing alloy	1	
8	Bushing	Bearing alloy	1	
9	Retaining ring	Carbon steel	1	Phosphate coating
10	Cushion ring	Aluminum alloy	2	
11	Magnet	Magnet	1	(Switch type only)

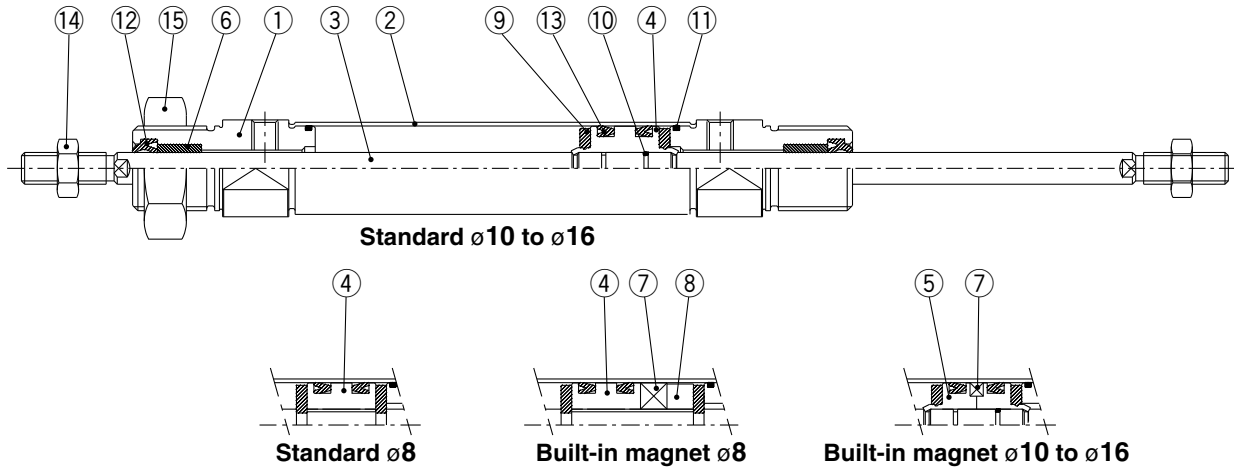
No.	Description	Material	Q'ty	Note
12	Wear ring	Resin	1	
13	Cushion needle	Carbon steel	2	Electroless nickel plating
14	Cushion seal	Urethane	2	
15	Piston gasket	NBR	1	
16	Rod seal	NBR	1	
17	Piston seal	NBR	1	
18	Cushion ring gasket	NBR	2	
19	Cushion needle seal	NBR	2	
20	Rod end nut	Carbon steel	1	Nickel plating
21	Mounting nut	Carbon steel	1	Nickel plating

# Series C85

## Construction

Double acting, Double rod

Rubber bumper: C□85WE8 to 16 (Disassembly is not possible.)

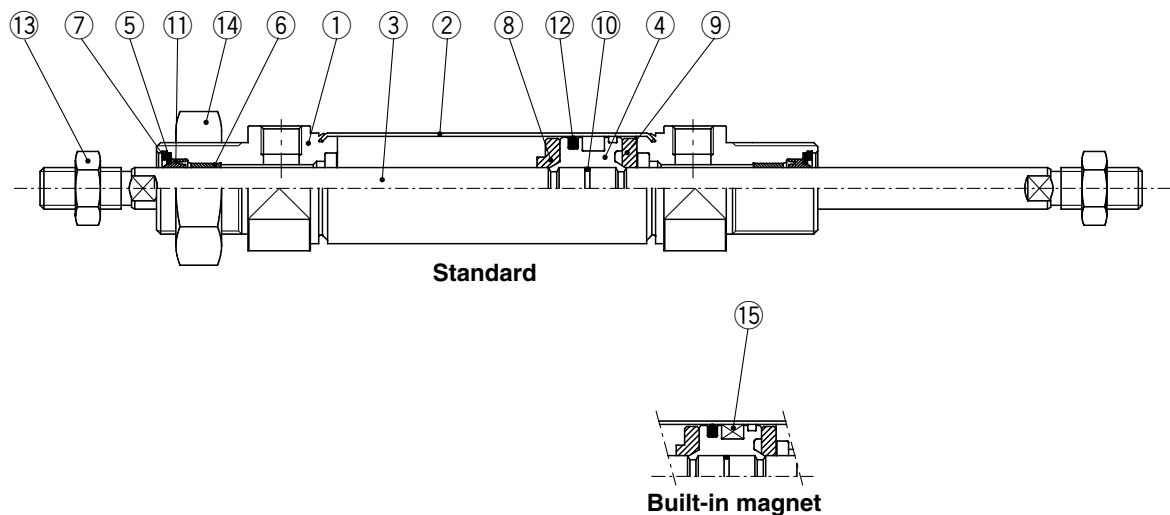


### Component Parts

No.	Description	Material	Q'ty	Note
1	Rod cover	Aluminum alloy	2	Clear anodized
2	Cylinder tube	Stainless steel	1	
3	Piston rod	Stainless steel	1	2 for ø8
4	Piston A	Brass (ø8), Aluminum alloy (ø10 to ø16)	1	
5	Piston B	Brass (ø8), Aluminum alloy (ø10 to ø16)	2	(Switch type piston)
6	Bushing	Bearing alloy	2	
7	Magnet	Magnet	1	(Switch type only)
8	Spacer	Brass	1	

No.	Description	Material	Q'ty	Note
9	Bumper	Urethane	2	
10	Piston gasket	NBR	1	(2 for switch type)
11	Tube gasket	NBR	2	
12	Rod seal	NBR	2	
13	Piston seal	NBR	2	
14	Rod end nut	Carbon steel	2	Nickel plating
15	Mounting nut	Carbon steel	1	Nickel plating

### Rubber bumper: C□85WE20/25



### Component Parts

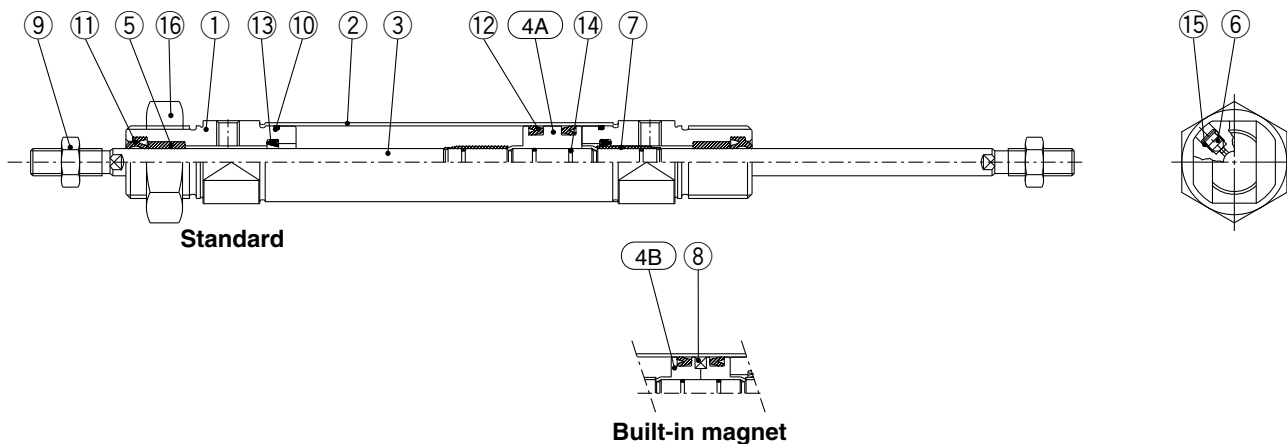
No.	Description	Material	Q'ty	Note
1	Rod cover	Aluminum alloy	2	Clear anodized
2	Cylinder tube	Stainless steel	1	
3	Piston rod	Carbon steel	1	Hard chrome plating
4	Piston	Aluminum alloy	1	Chromated
5	Flat washer	Stainless steel	2	
6	Bushing	Bearing alloy	2	
7	Retaining ring	Carbon steel	2	Phosphate coating
8	Bumper A	Urethane	1	

No.	Description	Material	Q'ty	Note
9	Bumper B	Urethane	1	
10	Piston gasket	NBR	1	
11	Rod seal	NBR	2	
12	Piston seal	NBR	1	
13	Rod end nut	Carbon steel	2	Nickel plating
14	Mounting nut	Carbon steel	1	Nickel plating
15	Magnet	Magnet	1	(Switch type only)

**Construction**

Double acting, Double rod

Air cushion: C□85WE10 to 16 (Disassembly is not possible.)

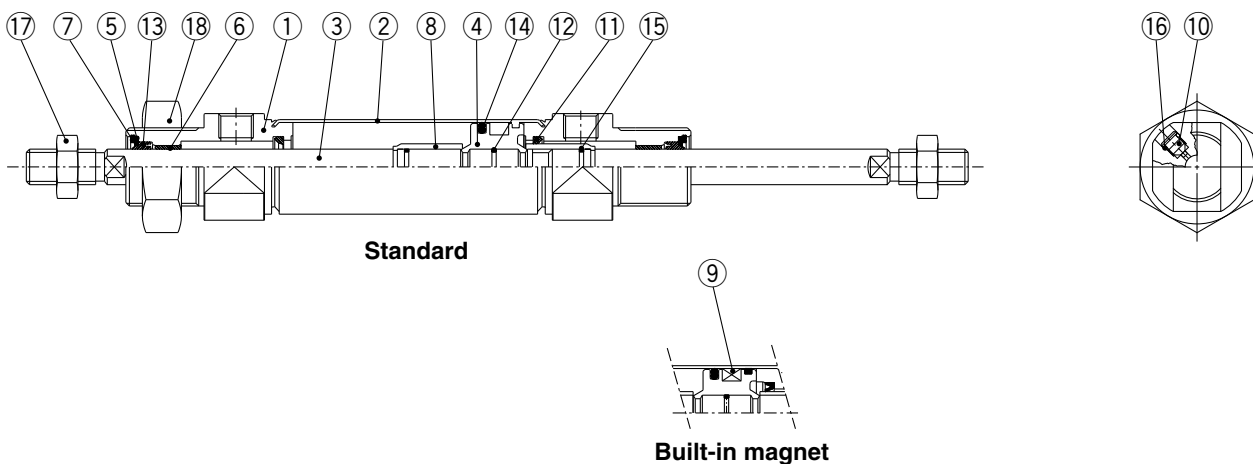


**Component Parts**

No.	Description	Material	Q'ty	Note
1	Rod cover	Aluminum alloy	2	Clear anodized
2	Cylinder tube	Stainless steel	1	
3	Piston rod	Stainless steel	1	
4A	Piston A	Aluminum alloy	1	
4B	Piston B	Aluminum alloy	2	(Switch type piston)
5	Bushing	Bearing alloy	2	
6	Cushion needle	Carbon steel	2	Electroless nickel plating
7	Cushion ring	Brass	2	
8	Magnet	Magnet	1	(Switch type only)

No.	Description	Material	Q'ty	Note
9	Rod end nut	Carbon steel	2	Nickel plating
10	Tube gasket	NBR	2	
11	Rod seal	NBR	2	
12	Piston seal	NBR	2	
13	Check seal	NBR	2	
14	Piston gasket and cushion ring gasket	NBR	3	(4 for switch type)
15	Needle seal	NBR	2	
16	Mounting nut	Carbon steel	2	Nickel plating

Air cushion: C□85WE 20/25



**Component Parts**

No.	Description	Material	Q'ty	Note
1	Rod cover	Aluminum alloy	2	Clear anodized
2	Cylinder tube	Stainless steel	1	
3	Piston rod	Carbon steel	1	Hard chrome plating
4	Piston	Aluminum alloy	1	Chromated
5	Flat washer	Stainless steel	2	
6	Bushing	Bearing alloy	2	
7	Retaining ring	Carbon steel	2	Phosphate coating
8	Cushion ring	Aluminum alloy	2	
9	Magnet	Magnet	1	(Switch type only)

No.	Description	Material	Q'ty	Note
10	Cushion needle	Carbon steel	2	Electroless nickel plating
11	Cushion seal	Urethane	2	
12	Piston gasket	NBR	1	
13	Rod seal	NBR	2	
14	Piston seal	NBR	1	
15	Cushion ring gasket	NBR	2	
16	Needle seal	NBR	2	
17	Rod end nut	Carbon steel	2	Nickel plating
18	Mounting nut	Carbon steel	1	Nickel plating

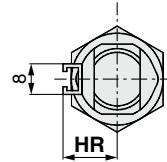
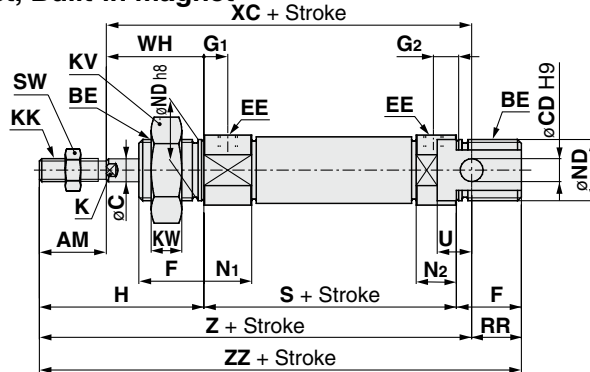
# Series C85

## Dimensions

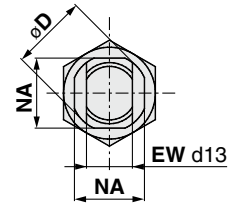
Double acting, Single rod

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

Without magnet, Built-in magnet



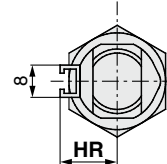
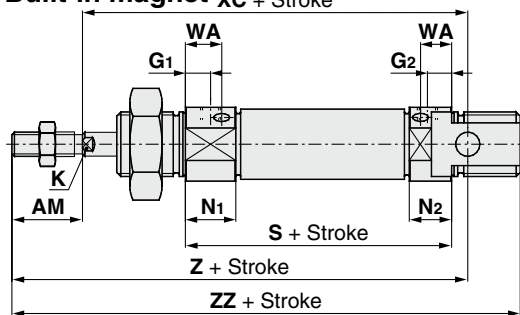
Rail mounting type (A)



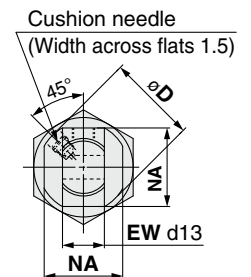
Band mounting type (B) or non-magnet

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

Without magnet, Built-in magnet

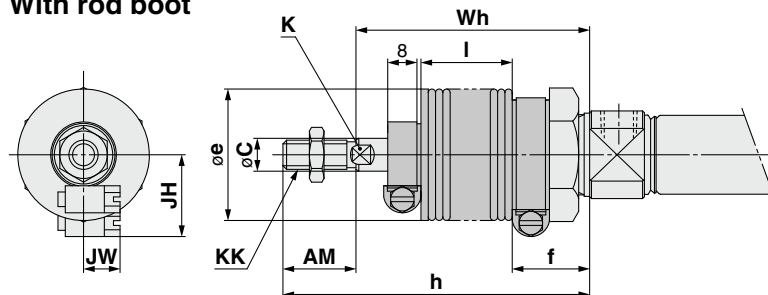


Rail mounting type (A)



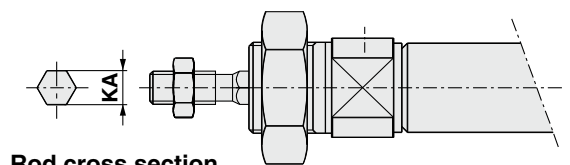
Band mounting type (B) or non-magnet

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 (98)	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

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

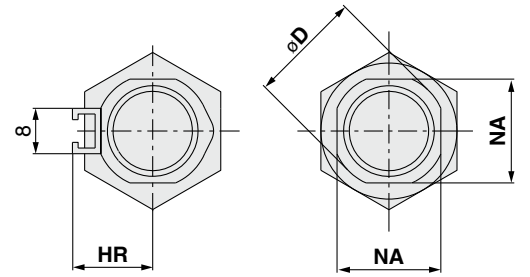
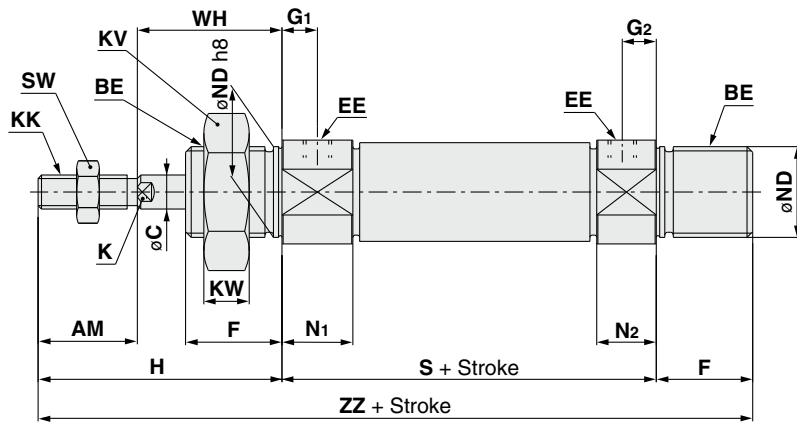


**Dimensions**

Double acting, Single rod

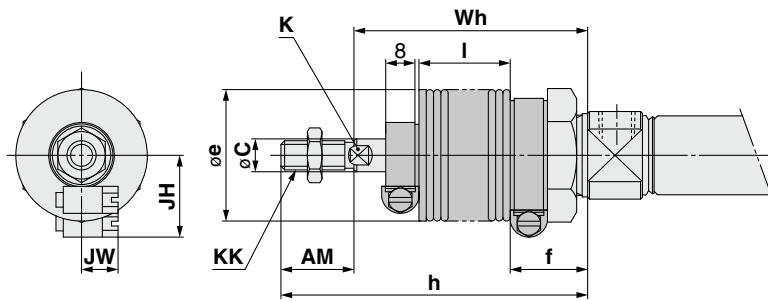
Rubber bumper: C□85E Bore size - Stroke - □

Without magnet, Built-in magnet



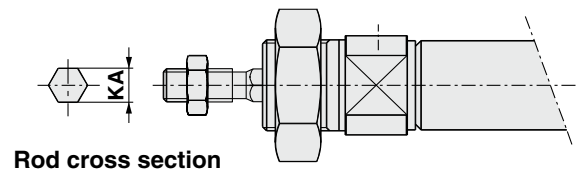
Rail mounting type (A) Band mounting type (B) or non-magnet

With rod boot



C□85KE

Non-rotating, Piston rod (Rubber bumper only)



Rod cross section

Bore size	(mm)																						
	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

Bore size	Item Stroke	(mm)													
		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	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	

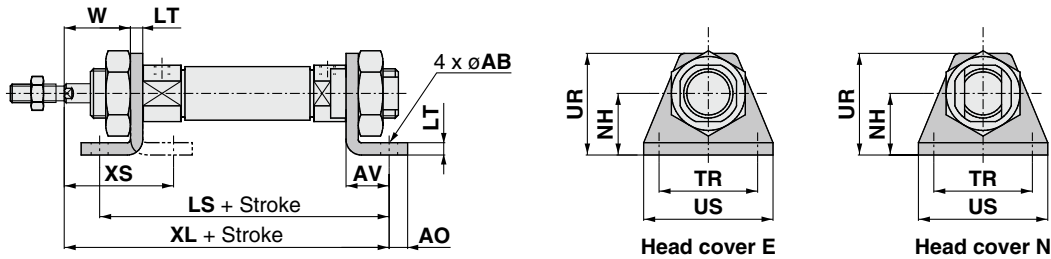
Bore size	Item Stroke	I							JH	JW	Wh						
		1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500			1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500
20	20	12.5	25	37.5	50	75	100	—	23.5	10.5	51	64	76	89	114	139	—
25	25	12.5	25	37.5	50	75	100	125	23.5	10.5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

# Series C85

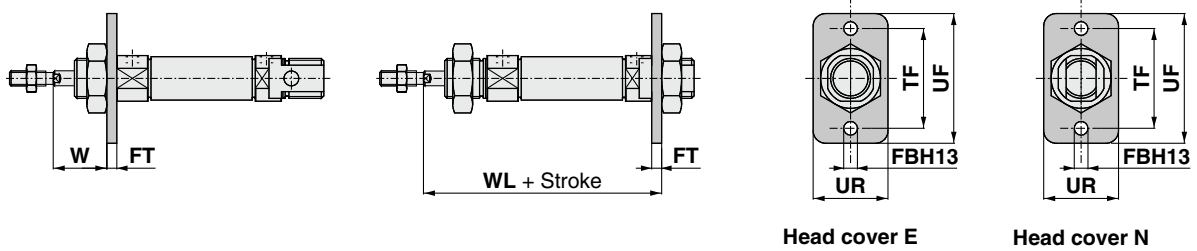
## Dimensions

### Double acting, Single rod

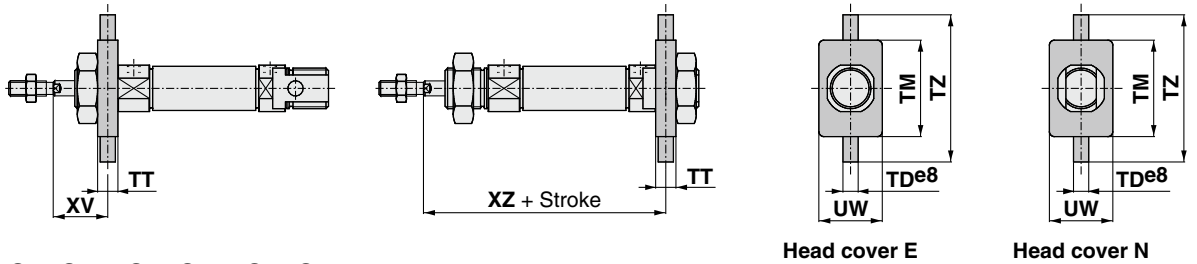
Rod foot, Head foot: C85L10<sup>A</sup><sub>B</sub>, C85L16<sup>A</sup><sub>B</sub>, C85L25<sup>A</sup><sub>B</sub>



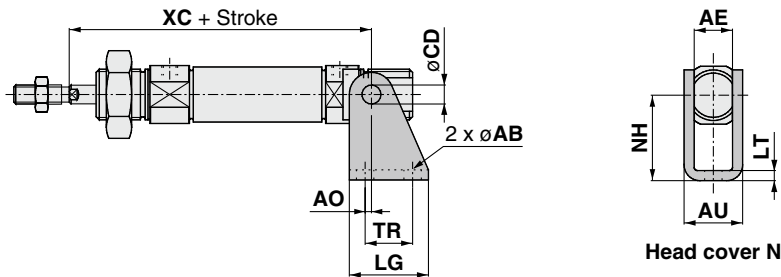
Rod flange, Head flange: C85F10, C85F16, C85F25



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

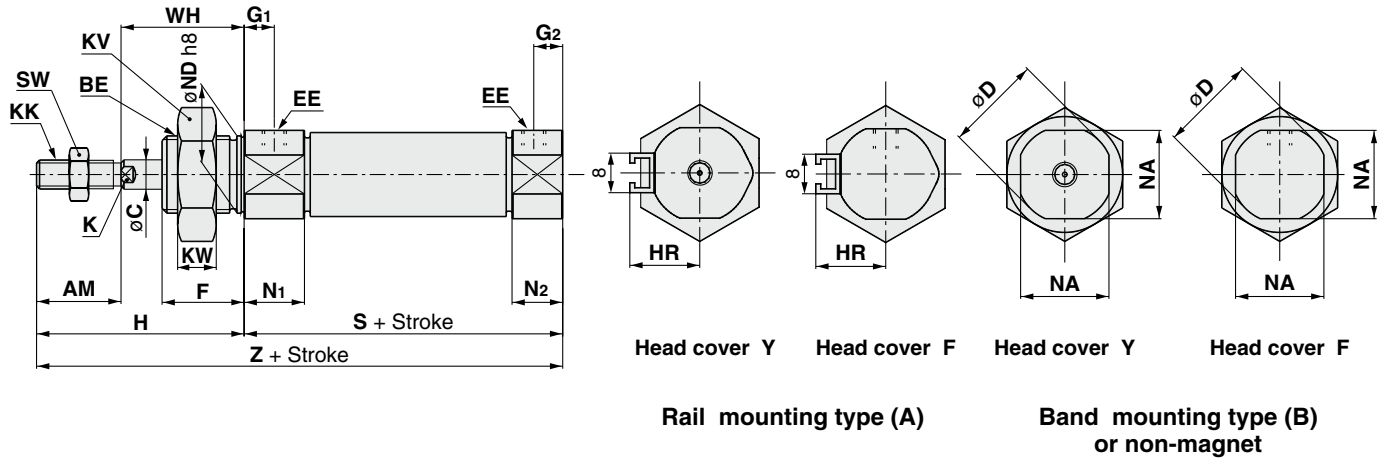
( ): In the case of air cushion.

**Dimensions**

Double acting, Single rod

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

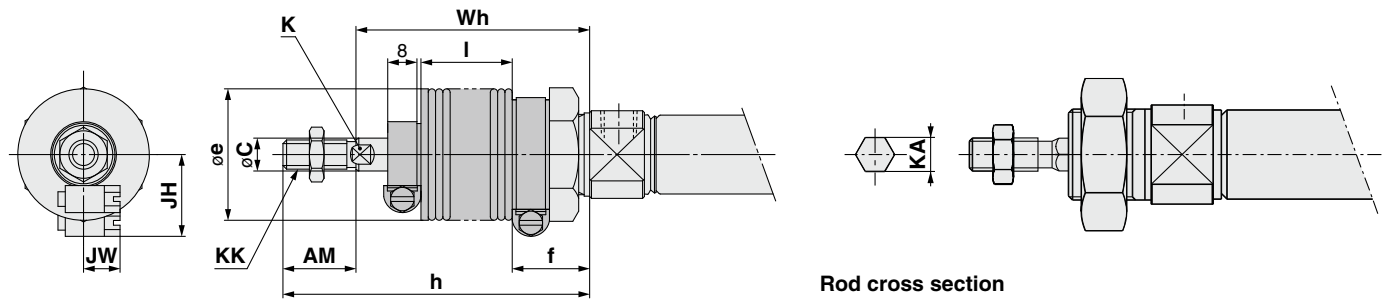
Without magnet, Built-in magnet



With rod boot

C□85KF/Y Bore size - Stroke - □

Non-rotating, Piston rod (Rubber bumper only)



Bore size	AM	BE	C	D	EE	F	G <sub>1</sub>	G <sub>2</sub>	H	HR	K	KA	KK	KV	KW	N <sub>1</sub>	N <sub>2</sub>	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	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

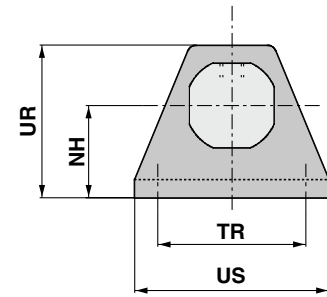
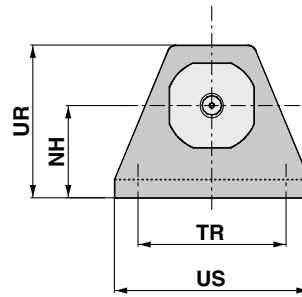
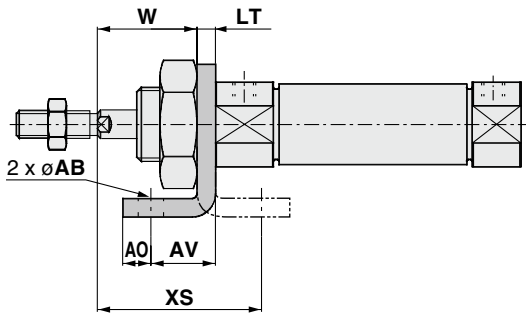
Bore size	Item Stroke	I							JH	JW	Wh						
		1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500			1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500
20	20	12.5	25	37.5	50	75	100	—	23.5	10.5	51	64	76	89	114	139	—
25	22	12.5	25	37.5	50	75	100	125	23.5	10.5	52	65	77	90	115	140	165

# Series C85

## Dimensions

Double acting, Single rod

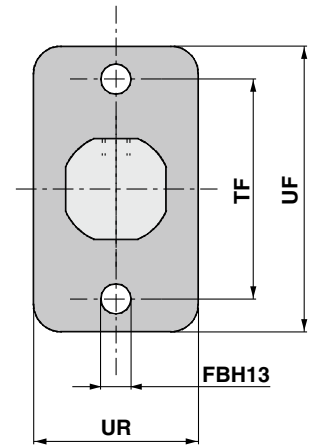
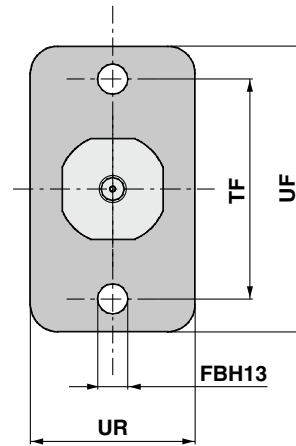
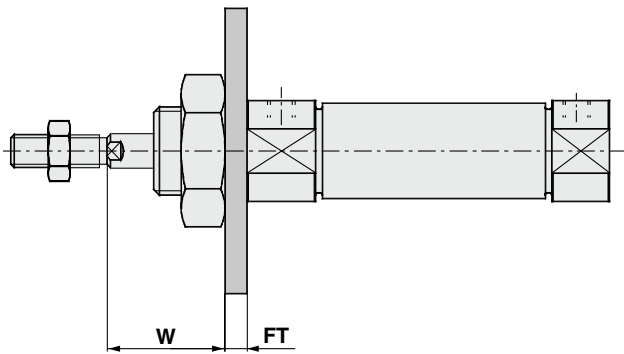
Rod foot: C85L10A, C85L16A, C85L25A



Head cover Y

Head cover F

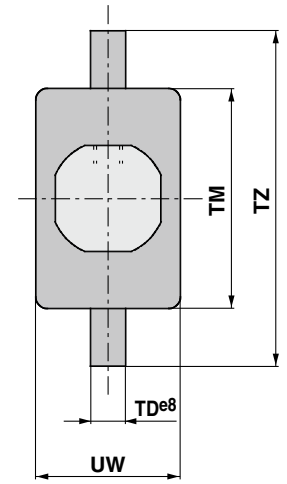
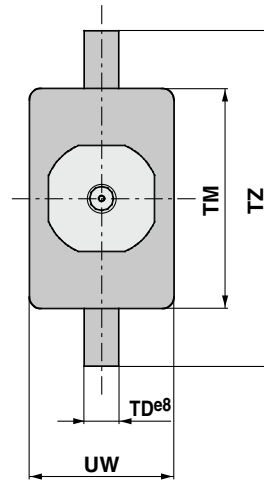
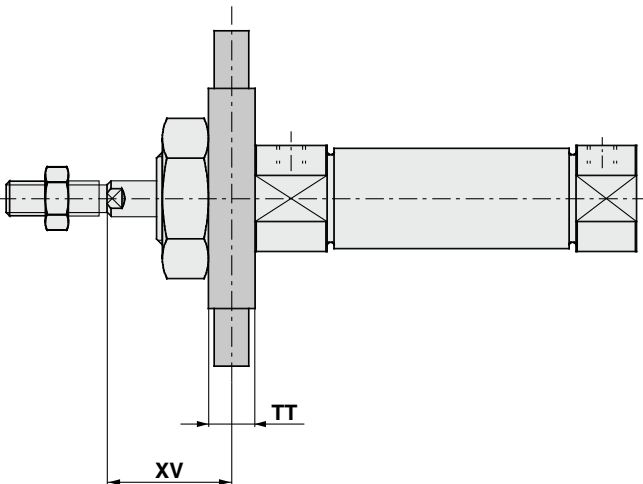
Rod flange: C85F10, C85F16, C85F25



Head cover Y

Head cover F

Rod trunnion: C85T10, C85T16, C85T25



Head cover Y

Head cover F

(mm)

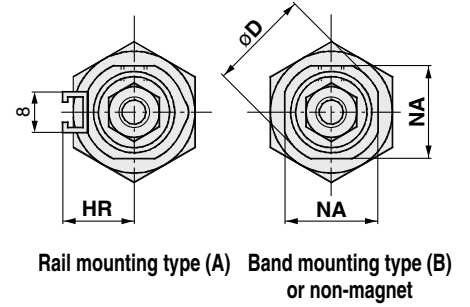
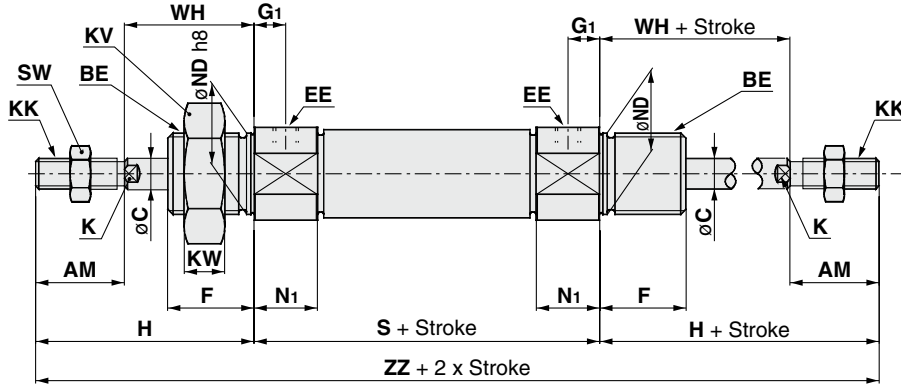
Bore size	Rod foot											Rod flange						Rod trunnion					
	AB	AO	AV	LT	NH	TR	JS14	UR	US	W	XS	FBH13	FT	TF	UF	UR	W	TD e8	TM	TT	TZ	UW	XV
8	4.5	5	11	3.2	16	25	25	26	35	12.8	23.8	4.5	3.2	30	40	22	12.8	4	26	6	38	20	13
10	4.5	5	11	3.2	16	25	25	26	35	12.8	23.8	4.5	3.2	30	40	22	12.8	4	26	6	38	20	13
12	5.5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

**Dimensions**

Double acting, Double rod

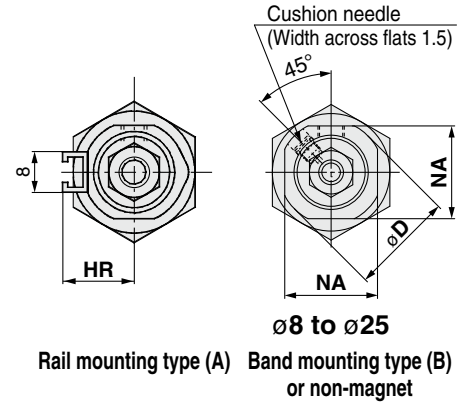
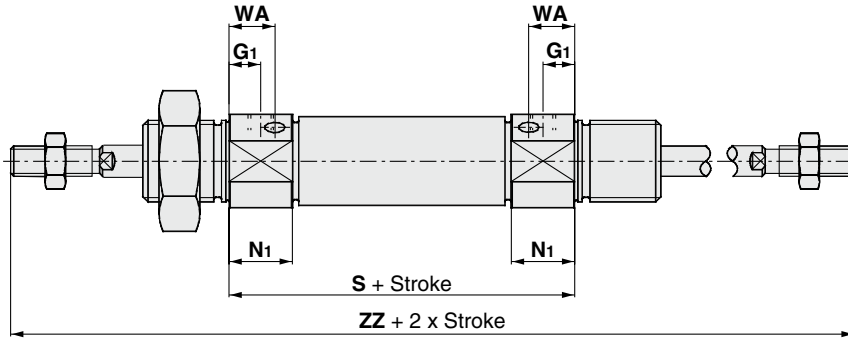
Rubber bumper: C□85WE Bore size - Stroke - □

Without magnet, Built-in magnet

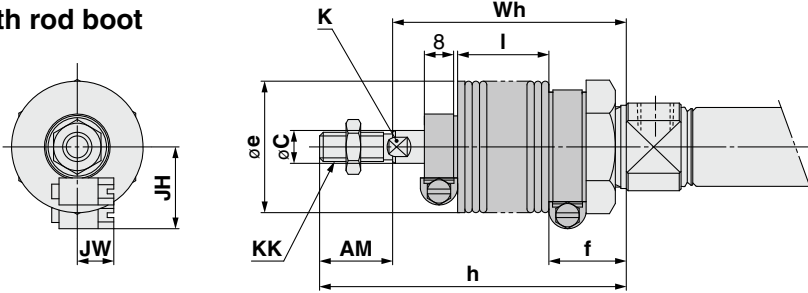


Air cushion: C□85WE Bore size - Stroke C - □

Without magnet, Built-in magnet



With rod boot



Bore size	AM	BE	C	D	EE	F	G1	H	HR	K	KK	KV	KW	N <sub>6</sub>	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

Bore size	Stroke	AM	C	e	f	K	KK	h (mm)						
								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

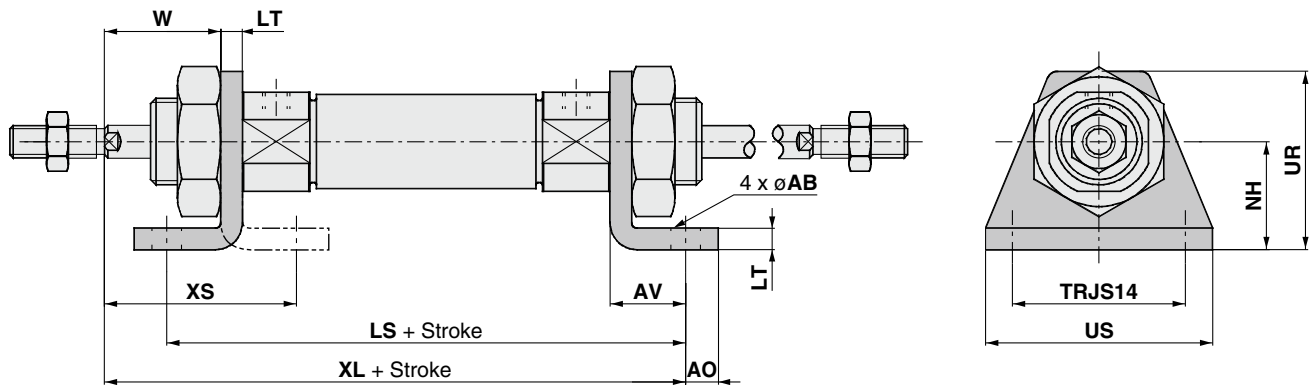
Bore size	Stroke	I (mm)							JH	JW	Wh (mm)						
		1 to 50	50 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500			1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500
20	20	12.5	25	37.5	50	75	100	—	23.5	10.5	51	64	76	89	114	139	—
25	22	12.5	25	37.5	50	75	100	125	23.5	10.5	52	65	77	90	115	140	165

# Series C85

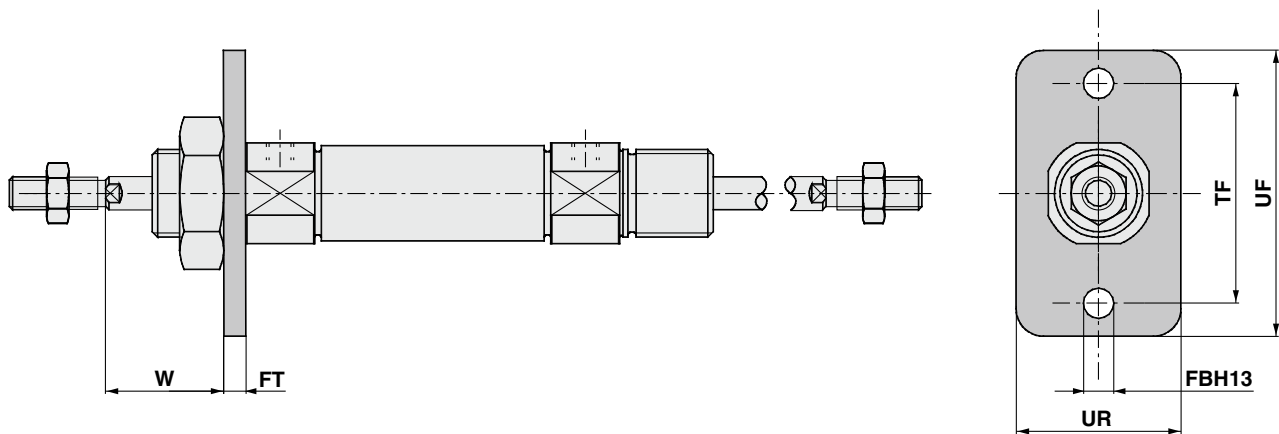
## Dimensions

Double acting, Double rod

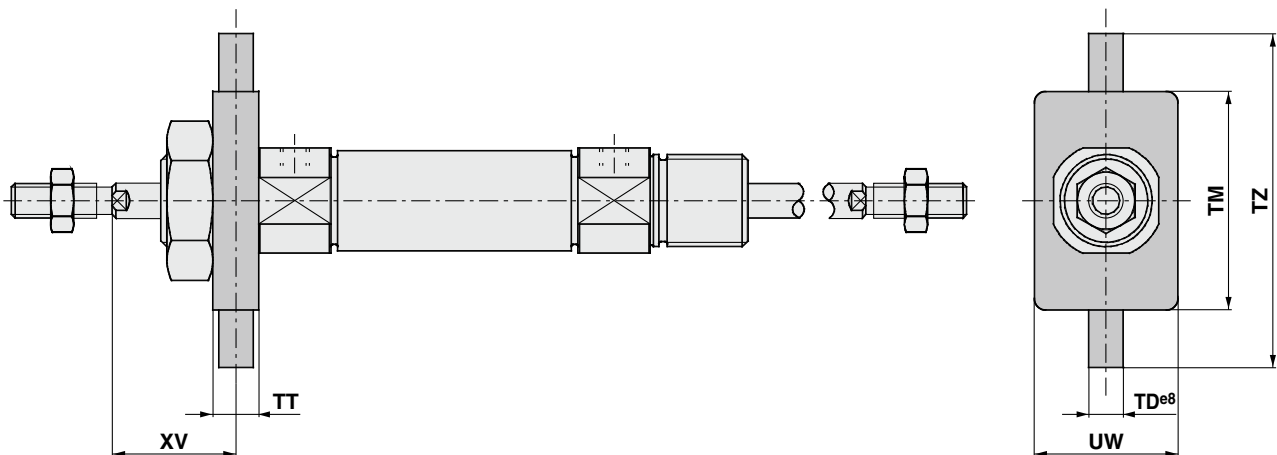
Rod foot, Head foot: C85L10<sup>A</sup><sub>B</sub>, C85L16<sup>A</sup><sub>B</sub>, C85L25<sup>A</sup><sub>B</sub>



Rod flange: C85F10, C85F16, C85F25



Rod trunnion: C85T10, C85T16, C85T25



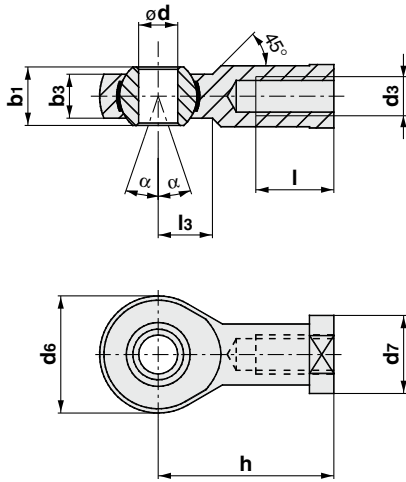
Bore size	Rod foot, Head foot											Rod flange						Rod trunnion						
	AB	AO	AV	LS	LT	NH	TR JS14	UR	US	W	XL	XS	FBH13	FT	TF	UF	UR	W	TD e8	TM	TT	TZ	UW	XV
8	4.5	5	11	70 {76}	3.2	16	25	26	35	12.8	75 {81}	23.8	4.5	3.2	30	40	22	12.8	4	26	6	38	20	13
10	4.5	5	11	70 (75)	3.2	16	25	26	35	12.8	75 (80)	23.8	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

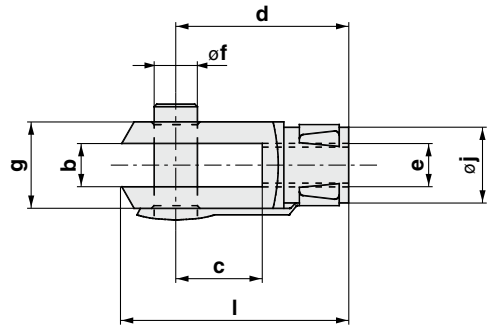
## Accessory Dimensions

### Single Knuckle Joint



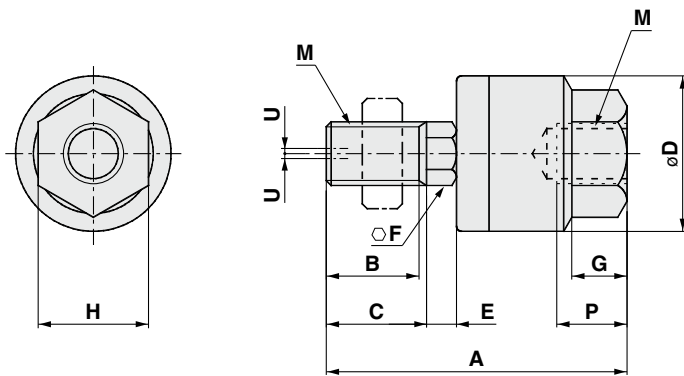
Bore size	Model	b1	b3	dh7	d6	d7	h	l	l3	d3	$\alpha^{\circ}$
8	KJ4D	8	6.0	5	18	11	27	10	10	M4 x 0.7	7.5
10	KJ4D	8	6.0	5	18	11	27	10	10	M4 x 0.7	7.5
12	KJ6D	9	6.75	6	20	13	30	12	10	M6 x 1	6.5
16	KJ6D	9	6.75	6	20	13	30	12	10	M6 x 1	6.5
20	KJ8D	12	9	8	24	16	36	16	12	M8 x 1.25	13
25	KJ10D	14	10.5	10	28	19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

### Double Knuckle Joint

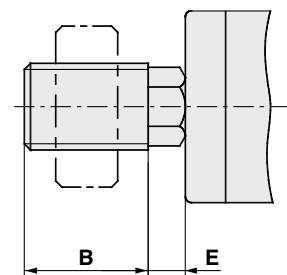


Bore size	Model	b	c	d	f	g	j	e	l
8	GKM4-8	4	8	16	4	8	6	M4 x 0.7	21
10	GKM4-8	4	8	16	4	8	6	M4 x 0.7	21
12	GKM6-12	6	12	24	6	10	8	M6 x 1	31
16	GKM6-12	6	12	24	6	10	8	M6 x 1	31
20	GKM8-16	8	16	32	8	12	10	M8 x 1.25	42
25	GKM10-20	10	20	40	10	18	12	M10 x 1.25	52

### 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 (Integral clevis)
E	Double end boss-cut
F	Boss-cut/Basic
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 32. 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**

**Cylinder 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	
Accessories	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

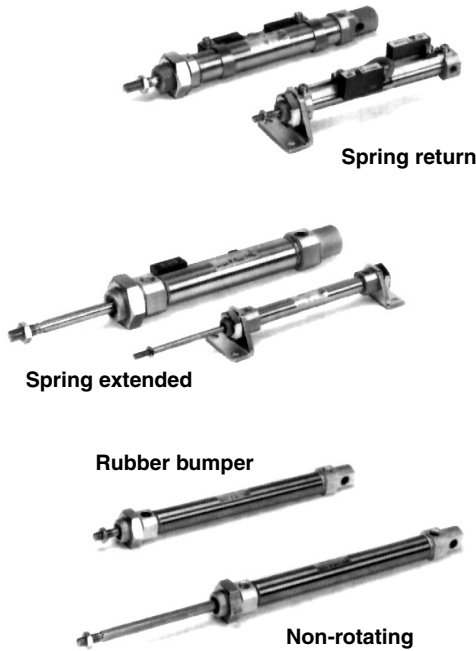
Bore size (mm)	Part no.	Note
20	C85-20PS	Every set includes: 1 rod seal 1 flat washer 1 retaining ring
25	C85-25PS	

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

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



**Specifications**



Bore size (mm)	<b>8</b>	<b>10</b>	<b>12</b>	<b>16</b>	<b>20</b>	<b>25</b>
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
	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)

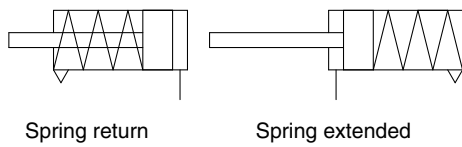
Bore size (mm)	Standard stroke (mm)	Spring force									
		10		25		50		100		150	
		Retract	Extended	Retract	Extended	Retract	Extended	Retract	Extended	Retract	Extended
<b>8</b>	10, 25, 50	4.4	4.0	4.4	3.4	4.4	2.5	—	—	—	—
<b>10</b>		6.3	5.7	6.3	4.9	6.3	3.5	—	—	—	—
<b>12</b>		7.2	6.6	7.2	5.8	7.2	4.4	—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

**Spring Extended**

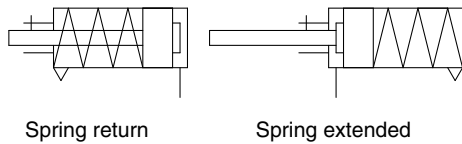
(N)

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

**Standard**



**Non-rotating**



**Caution**

**Be sure to read before handling.**

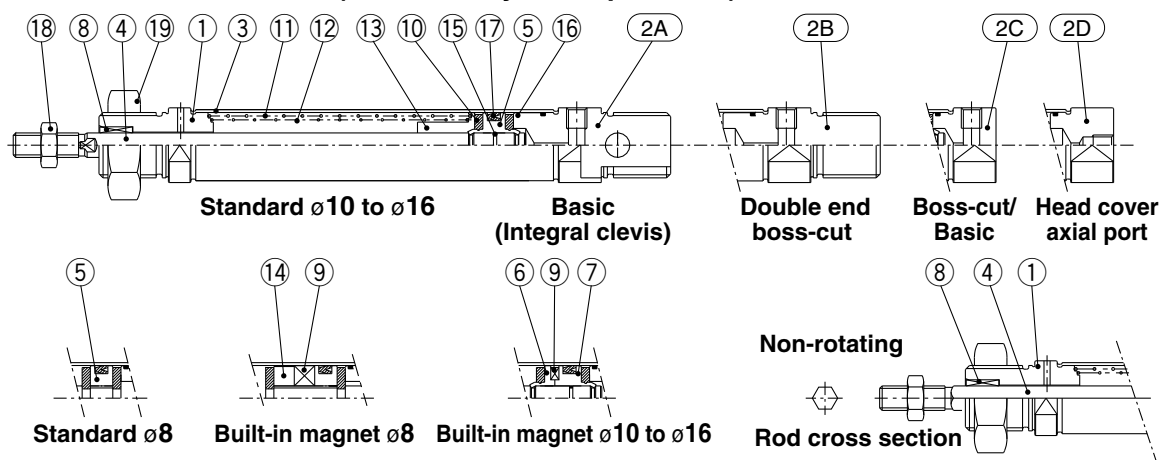
Refer to page 105 for Safety Instructions and "Handling Precautions for SMC Products" (M-E03-3) for Actuator and Auto Switch Precautions.

# Series C85

## Construction

### Single acting, Single rod

Spring return: C□85□8 to 16-□S (Disassembly is not possible.)

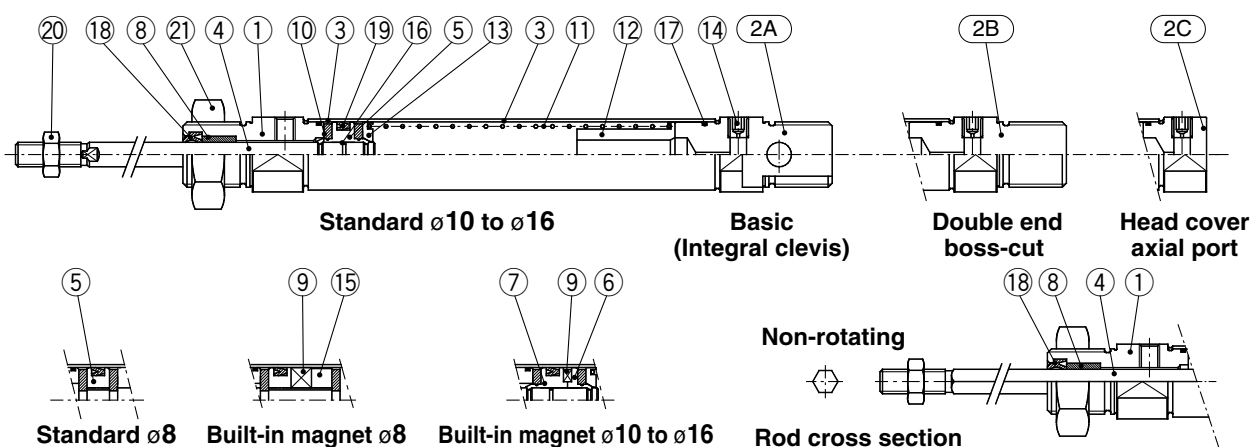


### Component Parts

No.	Description	Material	Q'ty	Note
1	Rod cover	Aluminum alloy	1	Clear anodized
2A	Head cover N	Aluminum alloy	1	Clear anodized
2B	Head cover E	Aluminum alloy	1	Clear anodized
2C	Head cover F	Aluminum alloy	1	Clear anodized
2D	Head cover Y	Aluminum alloy	1	Clear anodized
3	Cylinder tube	Stainless steel	1	
4	Piston rod	Stainless steel	1	
5	Piston	Brass (ø8), Aluminum alloy (ø10 to ø16)	1	
6	Piston A	Brass (ø8), Aluminum alloy (ø10 to ø16)	1	(Switch type only)
7	Piston B	Brass (ø8), Aluminum alloy (ø10 to ø16)	1	(Switch type only)
8	Bushing	Bearing alloy	1	

No.	Description	Material	Q'ty	Note
9	Magnet	Magnet	1	(Switch type only)
10	Bumper	Urethane	2	
11	Return spring A	Piano wire	1	
12	Return spring B	Piano wire	1	
13	Spring guide	Brass	1	
14	Spacer	Brass	1	
15	Piston gasket	NBR	1	(2 for switch type)
16	Tube gasket	NBR	1	
17	Piston seal	NBR	1	
18	Rod end nut	Carbon steel	1	Nickel plating
19	Mounting nut	Carbon steel	1	Nickel plating

Spring extended: C□85□8 to 16-□T (Disassembly is not possible.)



### Component Parts

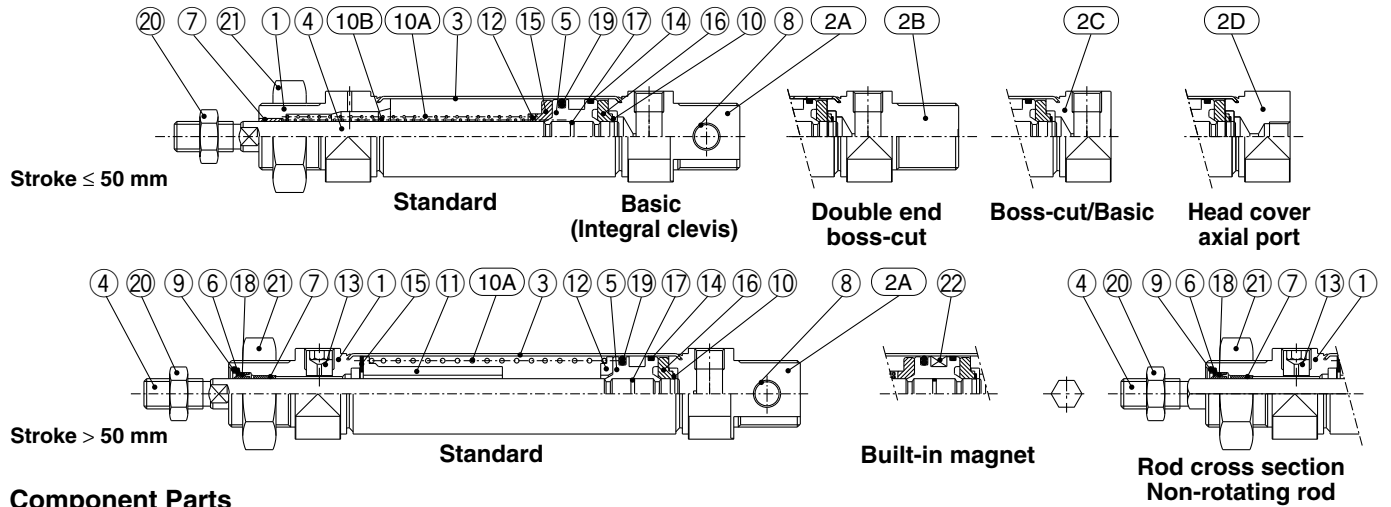
No.	Description	Material	Q'ty	Note
1	Rod cover	Aluminum alloy	1	Clear anodized
2A	Head cover N	Aluminum alloy	1	Clear anodized
2B	Head cover E	Aluminum alloy	1	Clear anodized
2C	Head cover F	Aluminum alloy	1	Clear anodized
3	Cylinder tube	Stainless steel	1	
4	Piston rod	Stainless steel	1	
5	Piston	Brass (ø8), Aluminum alloy (ø10 to ø16)	1	
6	Piston A	Brass (ø8), Aluminum alloy (ø10 to ø16)	1	(Switch type only)
7	Piston B	Brass (ø8), Aluminum alloy (ø10 to ø16)	1	(Switch type only)
8	Bushing	Bearing alloy	1	
9	Magnet	Magnet	1	(Switch type only)
10	Bumper	Urethane	2	

No.	Description	Material	Q'ty	Note
11	Return spring C	Piano wire	1	
12	Spring guide	Brass	1	
13	Spring seat	Brass	1	
14	Plug	Steel	1	
15	Spacer	Brass	1	
16	Piston gasket	NBR	1	(2 for switch type)
17	Tube gasket	NBR	1	
18	Rod seal	NBR	1	
19	Piston seal	NBR	1	
20	Rod end nut	Carbon steel	1	Nickel plating
21	Mounting nut	Carbon steel	1	Nickel plating

Construction

Single acting, Single rod

Spring return: C□85□20/25-□S

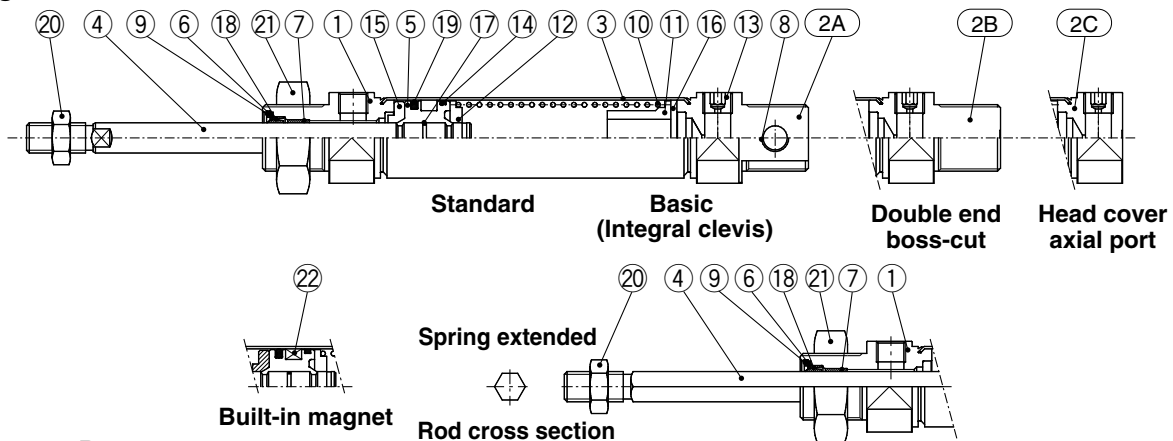


Component Parts

No.	Description	Material	Q'ty	Note
1	Rod cover	Aluminum alloy	1	Clear anodized
2A	Head cover N	Aluminum alloy	1	Clear anodized
2B	Head cover E	Aluminum alloy	1	Clear anodized
2C	Head cover F	Aluminum alloy	1	Clear anodized
2D	Head cover Y	Aluminum alloy	1	Clear anodized
3	Cylinder tube	Stainless steel	1	
4	Piston rod	Carbon steel	1	Hard chrome plating
5	Piston	Aluminum alloy	1	Chromated
6	Flat washer	Stainless steel	1	
7	Bushing	Sintered alloy	1	
8	Bushing	Sintered alloy	1	
9	Retaining ring	Carbon steel	1	Nickel plating
10	Retaining ring	Stainless steel	1	
10A	Return spring A	Piano wire	1	Zinc chromated

No.	Description	Material	Q'ty	Note
10B	Return spring B	Piano wire	1	Zinc chromated
11	Spring guide	Aluminum alloy	1	
12	Spring holder	Aluminum alloy	1	
13	Plug with fixed orifice	Copper alloy	1	
14	Wear ring	Resin	1	
15	Bumper A	Urethane	1	
16	Bumper B	Urethane	1	
17	Piston gasket	NBR	1	
18	Rod seal	NBR	1	
19	Piston seal	NBR	1	
20	Rod end nut	Carbon steel	1	Nickel plating
21	Mounting nut	Carbon steel	1	Nickel plating
22	Magnet	Magnet	1	(Switch type only)

Spring extended: C□85□20/25-□T



Component Parts

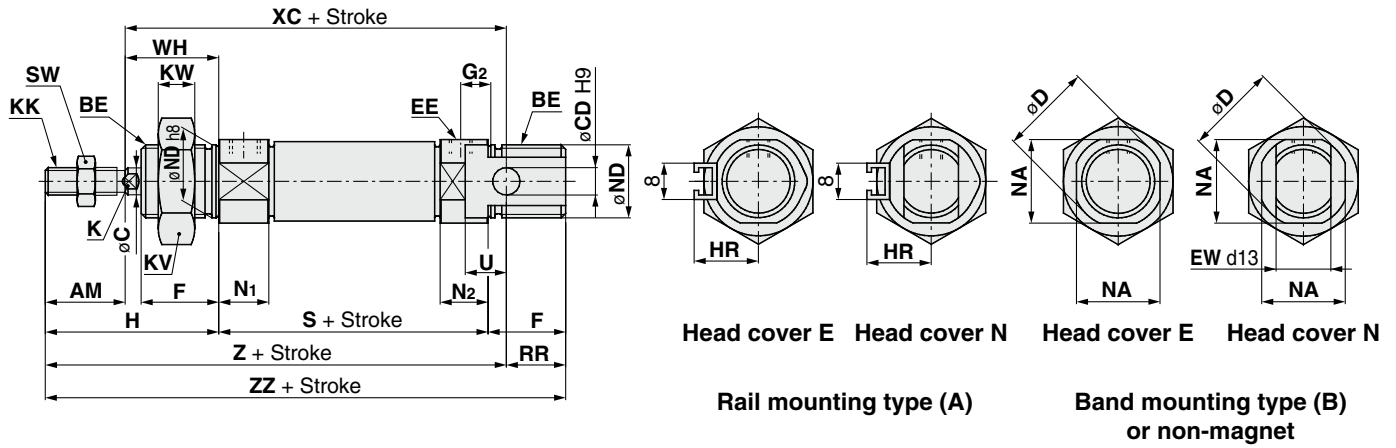
No.	Description	Material	Q'ty	Note
1	Rod cover	Aluminum alloy	1	Clear anodized
2A	Head cover N	Aluminum alloy	1	Clear anodized
2B	Head cover E	Aluminum alloy	1	Clear anodized
2C	Head cover F	Aluminum alloy	1	Clear anodized
3	Cylinder tube	Stainless steel	1	
4	Piston rod	Carbon steel	1	Hard chrome plating
5	Piston	Aluminum alloy	1	Chromated
6	Flat washer	Stainless steel	1	
7	Bushing	Bearing alloy	1	
8	Bushing	Bearing alloy	1	
9	Retaining ring	Carbon steel	1	Phosphate coating
10	Return spring	Piano wire	1	Zinc chromated

No.	Description	Material	Q'ty	Note
11	Spring guide	Aluminum alloy	1	
12	Spring guide	Aluminum alloy	1	
13	Plug with fixed orifice	Copper alloy	1	
14	Wear ring	Resin	1	
15	Bumper A	Urethane	1	
16	Bumper B	Urethane	1	
17	Piston gasket	NBR	1	
18	Rod seal	NBR	1	
19	Piston seal	NBR	1	
20	Rod end nut	Carbon steel	1	Nickel plating
21	Mounting nut	Carbon steel	1	Nickel plating
22	Magnet	Magnet	1	(Switch type only)

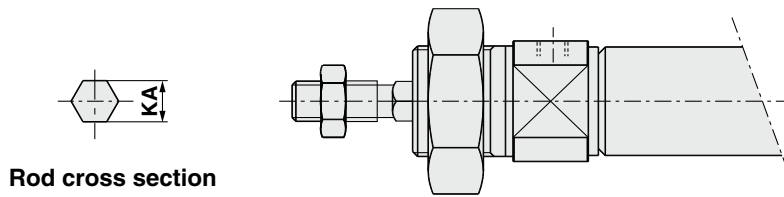
# Series C85

## Dimensions

Single acting, Spring return  
**C□85<sup>N</sup>** [Bore size] - [Stroke] S - □  
 Without magnet, Built-in magnet



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



Rod cross section

Bore size	(mm)																							
	AM	BE	C	CD	D	EE	EW	F	G <sub>2</sub>	H	HR	K	KA	KK	KV	KW	N <sub>1</sub>	N <sub>2</sub>	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

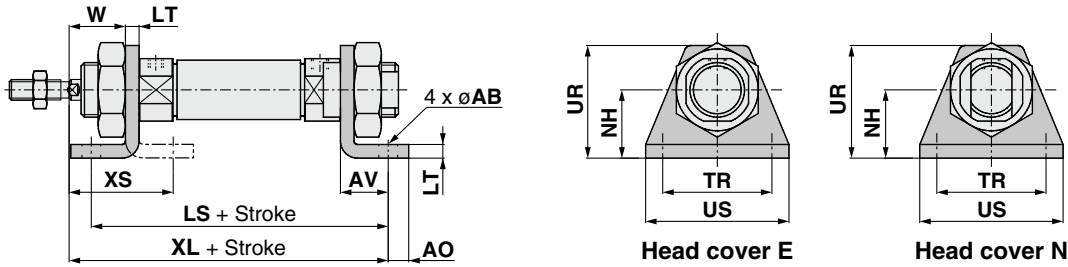
Bore size	S			XC			Z			ZZ		
	1 to 50	51 to 100	101 to 150	1 to 50	51 to 100	101 to 150	1 to 50	51 to 100	101 to 150	1 to 50	51 to 100	101 to 150
8	46 (52) {56(62)}	—	—	64 (70) {74(80)}	—	—	76 (82) {86(92)}	—	—	86 (92) {96(102)}	—	—
10	46 (50) {56(60)}	—	—	64 (68) {74(78)}	—	—	76 (80) {86(90)}	—	—	86 (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.

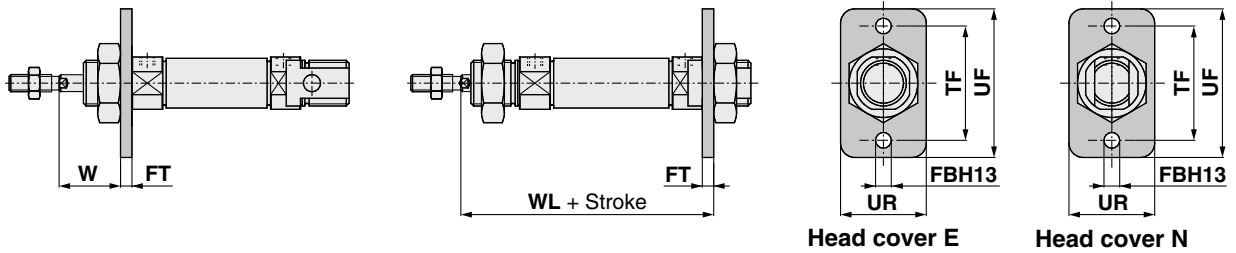
**Dimensions**

**Single acting, Spring return**

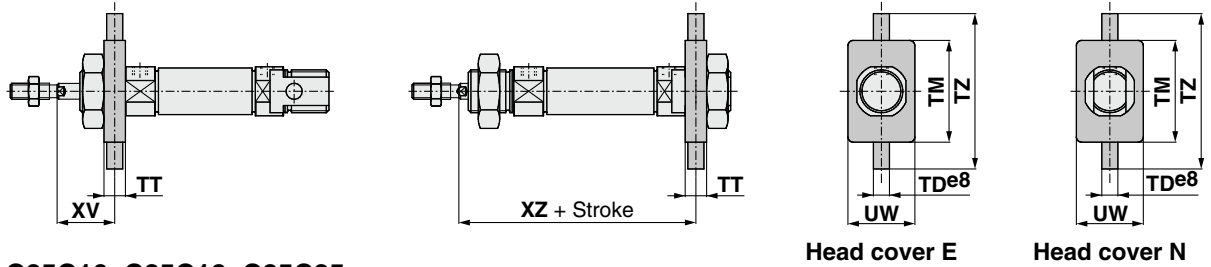
Rod foot, Head foot: C85L10<sup>A</sup><sub>B</sub>, C85L16<sup>A</sup><sub>B</sub>, C85L25<sup>A</sup><sub>B</sub>



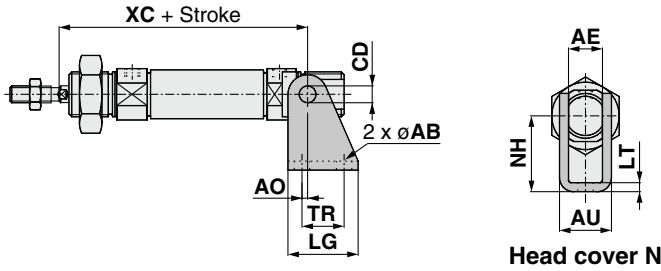
Rod flange, Head flange: C85F10, C85F16, C85F25



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		
				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	

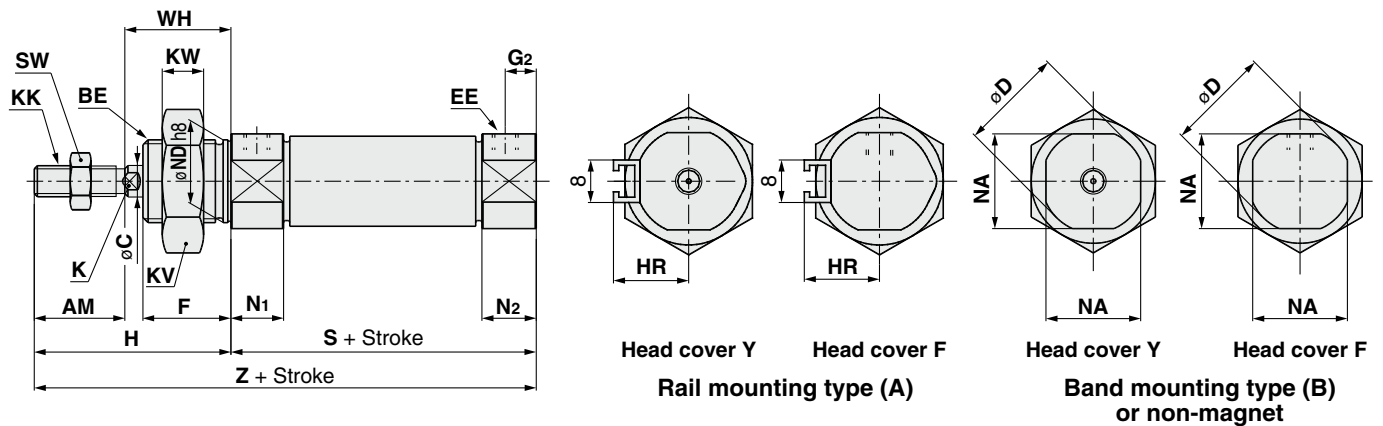
Bore size	Rod trunnion, Head trunnion									Clevis											
	TD e8	TM	TT	TZ	UW	XV	XZ			AB	AE	AO	AU	CD H9	LG	LT	NH	TR	XC		
							1 to 50	51 to 100	101 to 150										1 to 50	51 to 100	101 to 150
8	4	26	6	38	20	13	65 (71) (75(81))	—	—	4.5	8.1	1.5	13.1	4	20	2.5	24	12.5	64 (70) (74(80))	—	—
10	4	26	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.

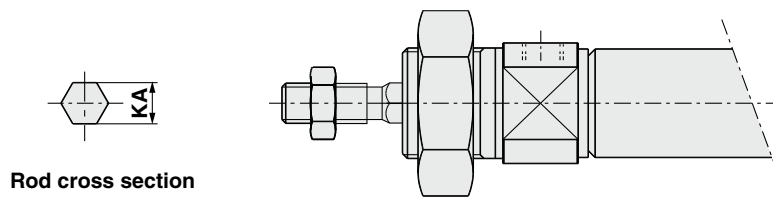
# Series C85

## Dimensions

Single acting, Spring return  
 C□85□ Bore size - Stroke S - □  
 Without magnet, Built-in magnet



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



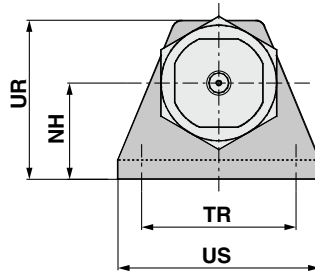
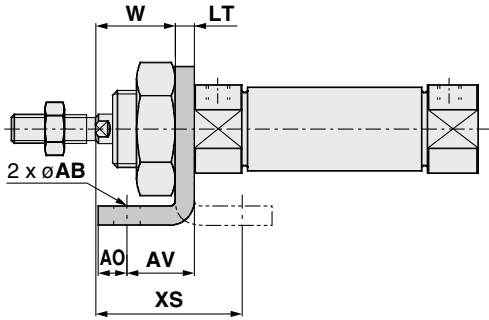
Bore size	(mm)																			
	AM	BE	C	D	EE	F	G <sub>2</sub>	H	HR	K	KA	KK	KV	KW	N <sub>1</sub>	N <sub>2</sub>	NA	ND	SW	WH
8	12	M12 x 1.25	4	16.7	M5 x 0.8	12	5	28	10	—	4.2	M4 x 0.7	19	6	5.5	9.5	15	12	7	16
10	12	M12 x 1.25	4	16.7	M5 x 0.8	12	5	28	10.5	—	4.2	M4 x 0.7	19	6	5.5	9.5	15	12	7	16
12	16	M16 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

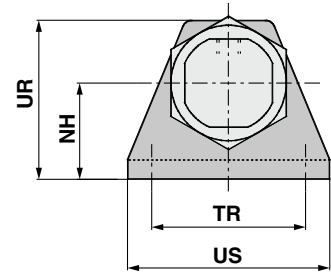
( ): In the case of auto switch style. { }: In the case of non-rotating rod.

**Dimensions**

Single acting, Spring return  
Rod foot: C85L10A, C85L16A, C85L25A

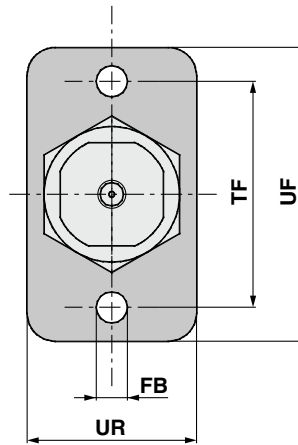
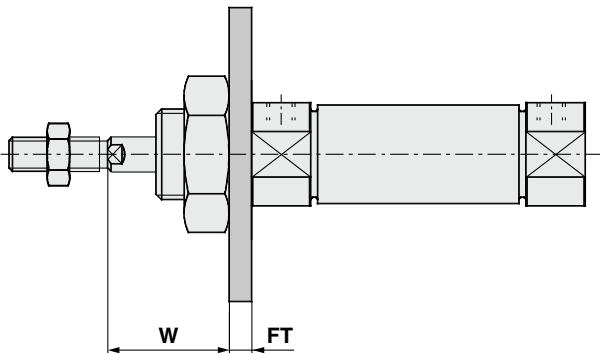


Head cover Y

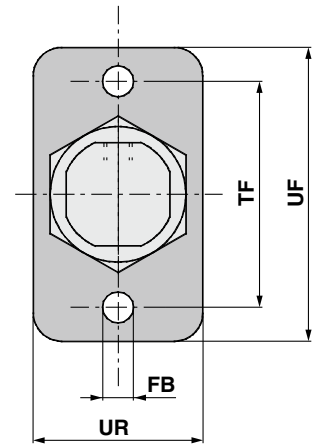


Head cover F

Rod flange: C85F10, C85F16, C85F25

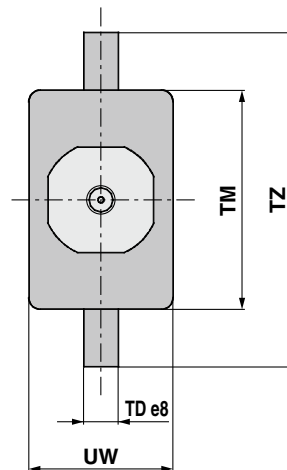
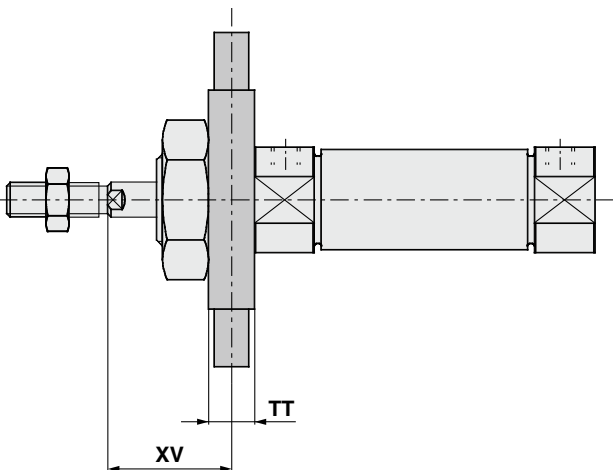


Head cover Y

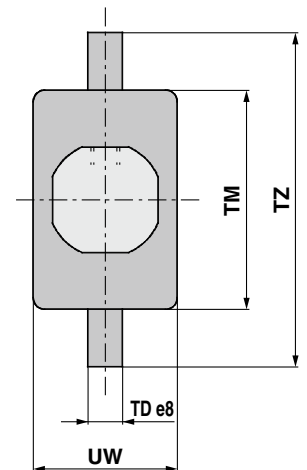


Head cover F

Rod trunnion: C85T10, C85T16, C85T25



Head cover Y



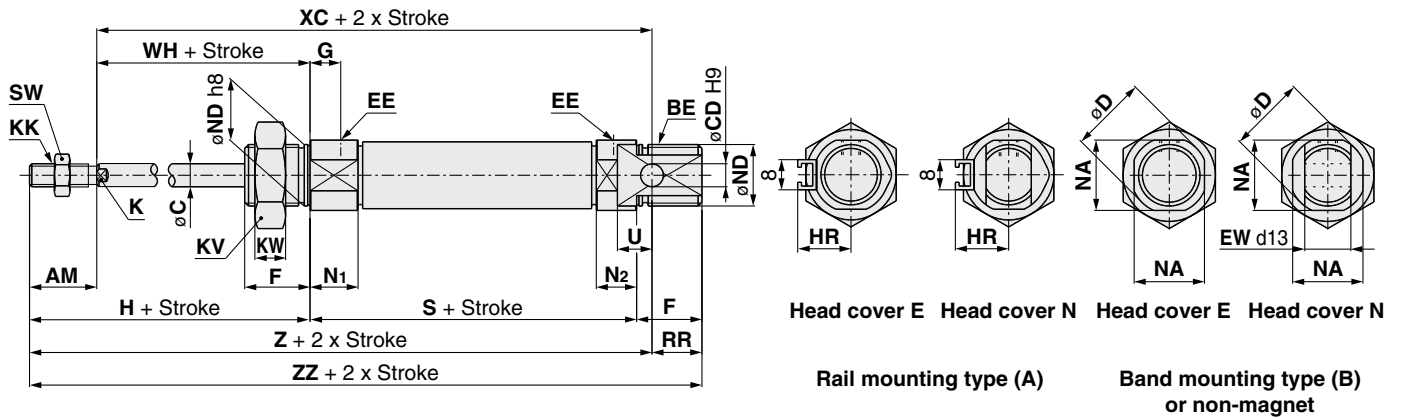
Head cover F

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	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	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	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	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	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	40	6.6	5	50	66	40	23	6	46	8	66	32	24

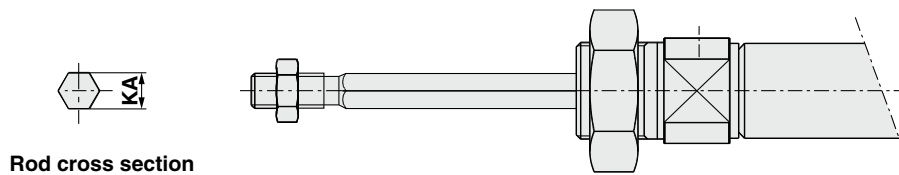
# Series C85

## Dimensions

Single acting, Spring extended  
**C**□85<sup>N</sup>/<sub>E</sub> **Bore size** - **Stroke** **T** - □  
 Without magnet, Built-in magnet



**C**□85KN/E  
 Non-rotating (Piston rod)



Bore size	(mm)																							
	AM	BE	C	CD	D	EE	EW	F	G	H	HR	K	KA	KK	KV	KW	N <sub>1</sub>	N <sub>2</sub>	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.

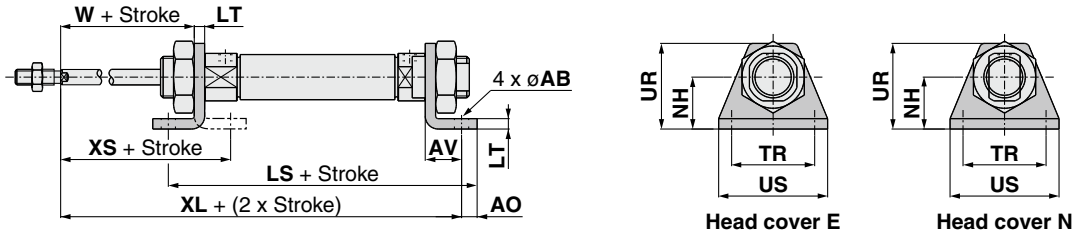


**Dimensions**

**Single acting, Spring extended**

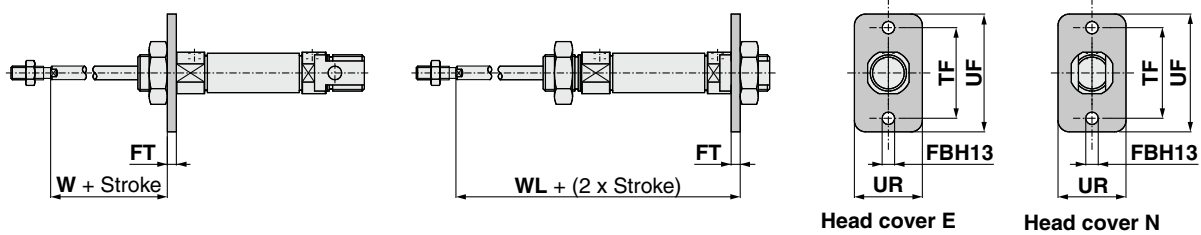
C□85N, C□85E

Rod foot, Head foot: C85L10<sup>A</sup><sub>B</sub>, C85L16<sup>A</sup><sub>B</sub>, C85L25<sup>A</sup><sub>B</sub>



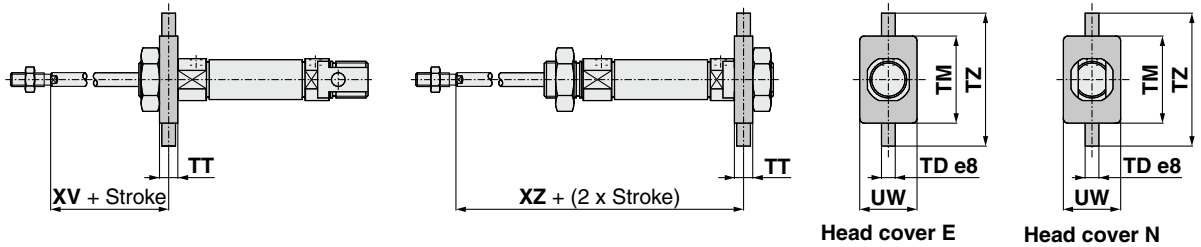
C□85N, C□85E

Rod flange, Head flange: C85F10, C85F16, C85F25



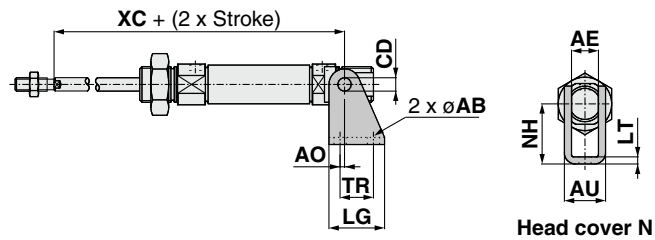
C□85N, C□85E

Rod trunnion, Head trunnion: C85T10, C85T16, C85T25



C□85N

Clevis: C85C10, C85C16, C85C25



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

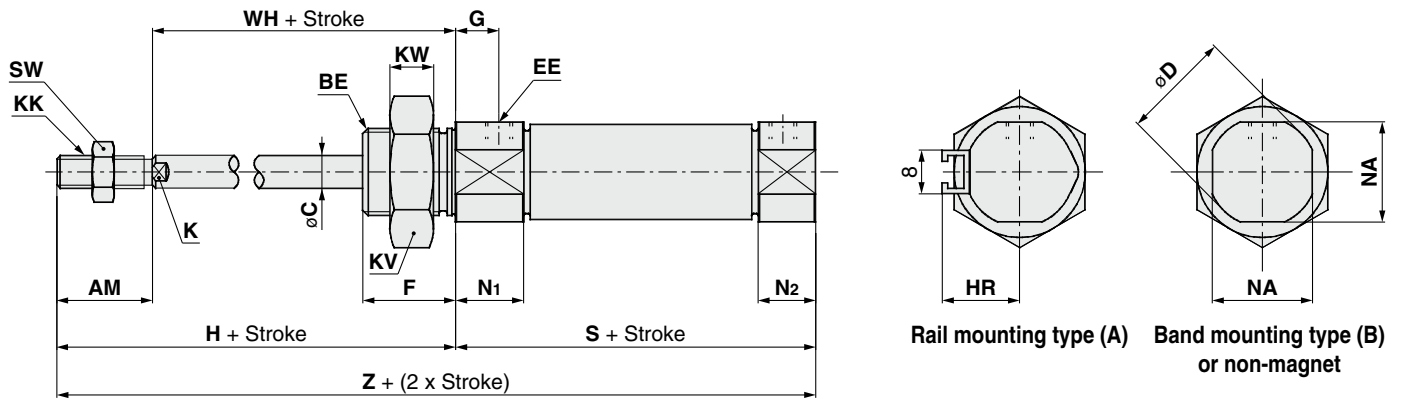
Bore size	Rod trunnion, Head trunnion									Clevis											
	TD e8	TM	TT	TZ	UW	XV	XZ			AB	AE	AO	AU	CD H9	LG	LT	NH	TR	XC		
							1 to 50	51 to 100	101 to 150										1 to 50	51 to 100	101 to 150
8	4	26	6	38	20	13	83.5 (89.5)	—	—	4.5	8.1	1.5	13.1	4	20	2.5	24	12.5	82.5 (88.5)	—	—
10	4	26	6	38	20	13	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.

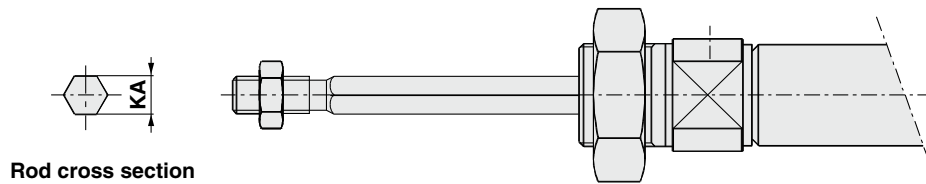
# Series C85

## Dimensions

Single acting, Spring extended  
**C**□85**F** **Bore size** - **Stroke** **T** - □  
 Without magnet, Built-in magnet



**C85KF, CD85KF**  
 Non-rotating (Piston rod)



Bore size	(mm)																		
	AM	BE	C	D	EE	F	G	H	HR	K	KA	KK	KV	KW	N <sub>1</sub>	N <sub>2</sub>	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

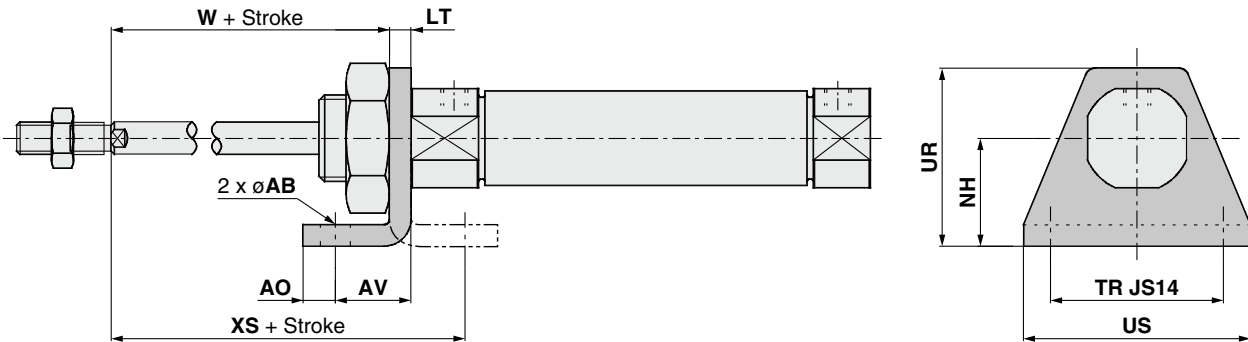
Bore size	S			Z		
	1 to 50	51 to 100	101 to 150	1 to 50	51 to 100	101 to 150
8	64.5 (70.5)	—	—	92.5 (98.5)	—	—
10	64.5 (68.5)	—	—	92.5 (96.5)	—	—
12	70 (73.5)	—	—	108 (111.5)	—	—
16	69 (72.5)	95 (98.5)	121 (124.5)	107 (110.5)	133 (136.5)	159 (162.5)
20	87	112	137	131	156	181
25	88.5	113.5	138.5	138.5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

( ): In the case of auto switch style.

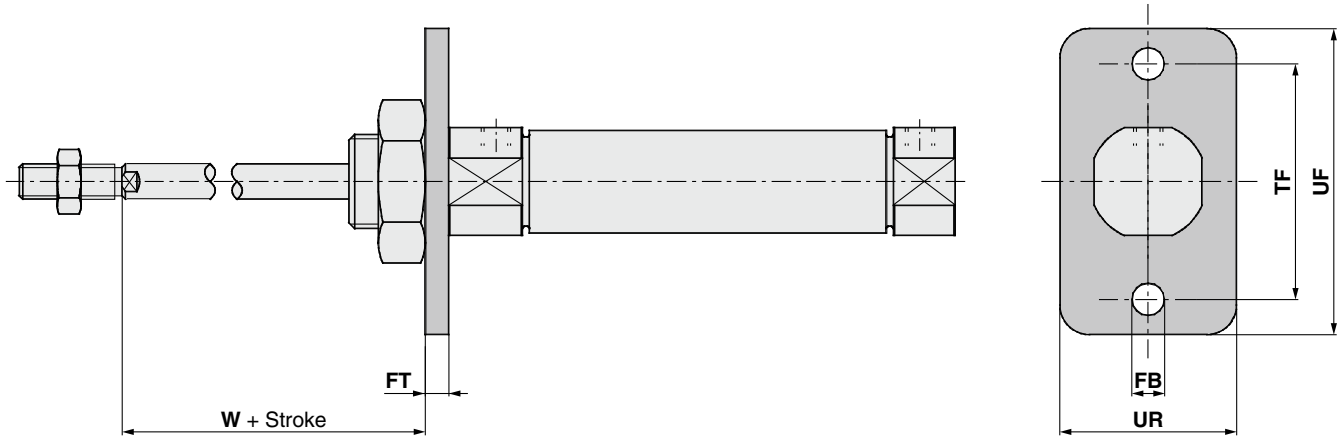
**Dimensions**

**Single acting, Spring extended**

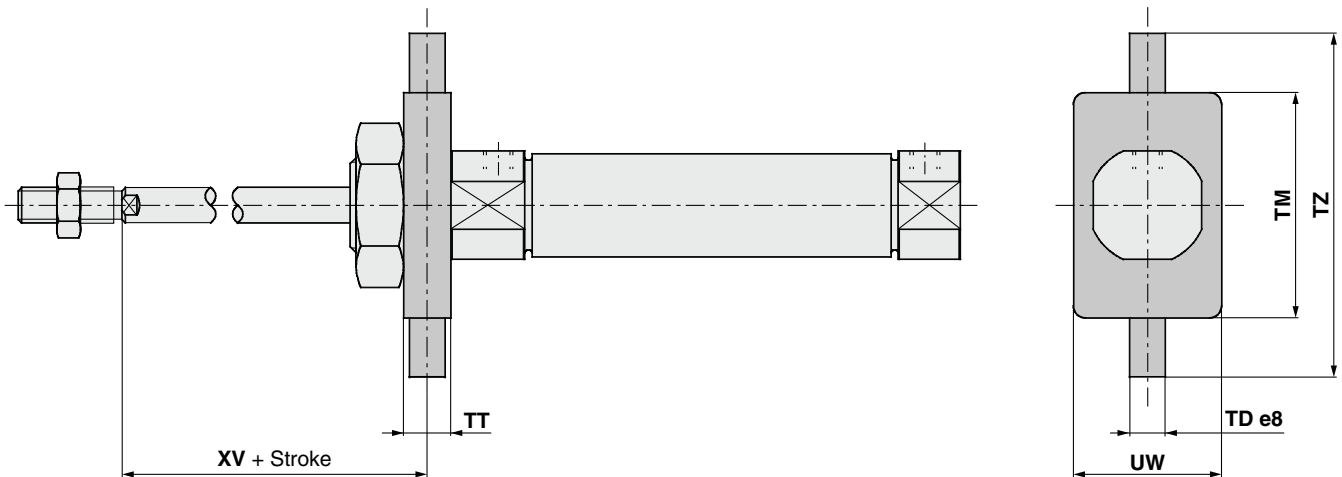
Rod foot: C85L10A, C85L16A, C85L25A



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
Y	Head cover axial port

Auto switch  
mounting

A	Rail mounting
B	Band mounting

Applicable auto switches are shown on page 32. Order auto switches and bands separately. (Auto switches and bands cannot be indicated here.)

Bore size

Cylinder stroke

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

\* 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

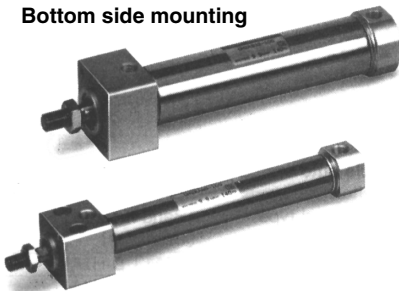
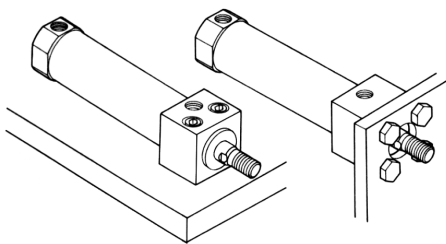
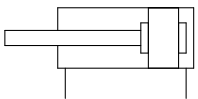
Bore size (mm)	Part no.	Note
20	C85-20PS	Every set includes: 1 rod seal 1 flat washer 1 retaining ring
25	C85-25PS	

**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****Double Acting, Single Rod****⚠ Caution**

**Be sure to read before handling.**

Refer to page 105 for Safety Instructions and "Handling Precautions for SMC Products" (M-E03-3) for Actuator and Auto Switch Precautions.

**Specifications**

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

**Weights**

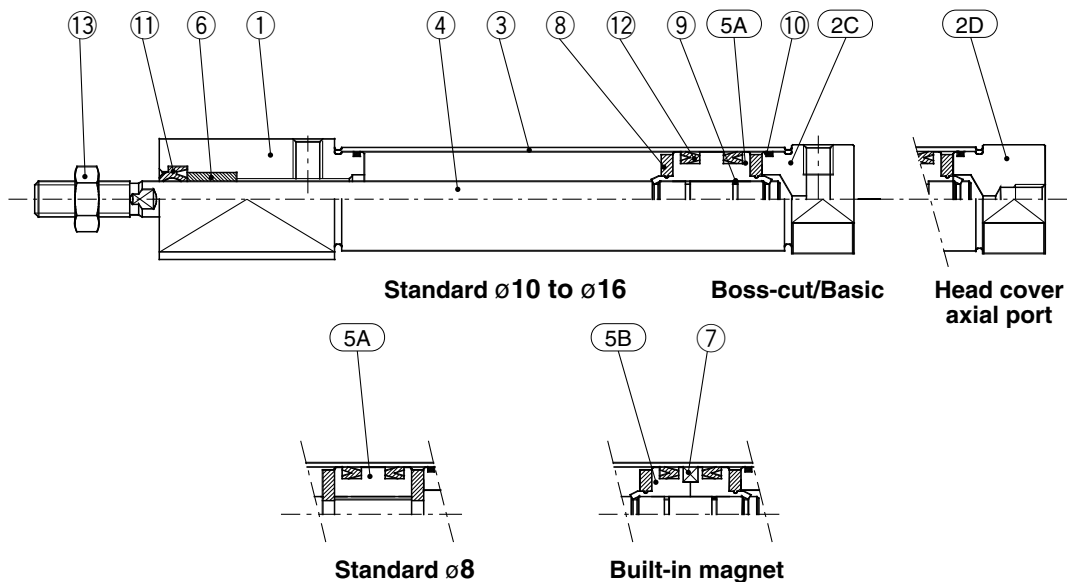
Bore size (mm)		8	10	12	16	20	25
Basic weight	Bottom side mounting	43	46	84	95	167	253
	Front side mounting	—	—	—	—	163	230
Additional weight per 10 mm of stroke		2	2.2	4.1	5.1	7.8	12.2

# Series C85R

## Construction

Double acting, Single rod

C□85RA8 to 16 (Disassembly is not possible.)

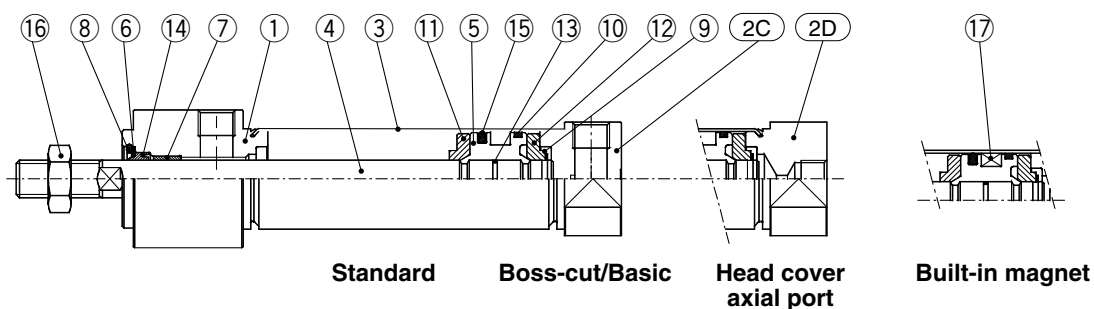


### Component Parts

No.	Description	Material	Q'ty	Note
1	Rod cover	Aluminum alloy	1	Clear anodized
2C	Head cover F	Aluminum alloy	1	Clear anodized
2D	Head cover Y	Aluminum alloy	1	Clear anodized
3	Cylinder tube	Stainless steel	1	
4	Piston rod	Stainless steel	1	
5A	Piston A	Brass (ø8), Aluminum alloy (ø10 to ø16)	1	
5B	Piston B	Brass (ø8), Aluminum alloy (ø10 to ø16)	2	(Switch type piston)
6	Bushing	Bearing alloy	1	

No.	Description	Material	Q'ty	Note
7	Magnet	Magnet	1	(Switch type only)
8	Bumper	Urethane	2	
9	Piston gasket	NBR	1	(2 for switch type)
10	Tube gasket	NBR	2	
11	Rod seal	NBR	1	
12	Piston seal	NBR	2	
13	Rod end nut	Carbon steel	1	Nickel plating

### C□85R<sub>B</sub>20/25



### Component Parts

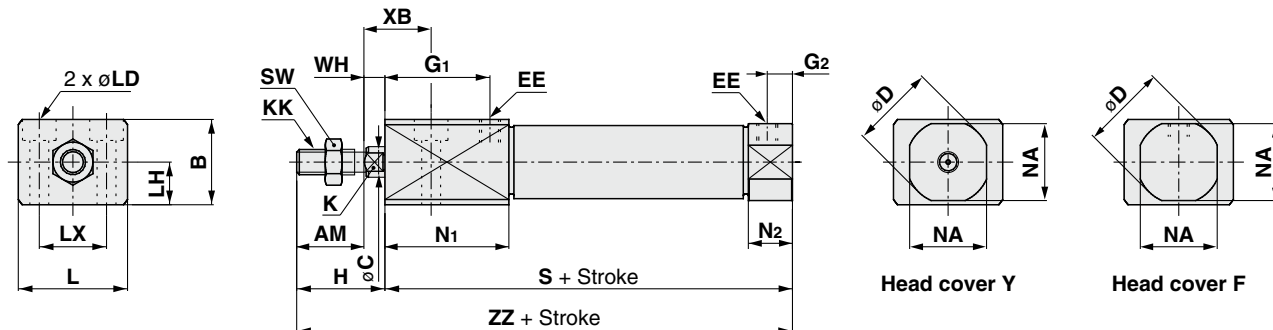
No	Description	Material	Q'ty	Note
1	Rod cover	Aluminum alloy	1	Clear anodized
2C	Head cover F	Aluminum alloy	1	Clear anodized
2D	Head cover Y	Aluminum alloy	1	Clear anodized
3	Cylinder tube	Stainless steel	1	
4	Piston rod	Carbon steel	1	Hard chrome plating
5	Piston	Aluminum alloy	1	Chromated
6	Flat washer	Stainless steel	1	
7	Bushing	Bearing alloy	1	
8	Retaining ring	Carbon steel	1	Phosphate coating

No	Description	Material	Q'ty	Note
9	Retaining ring	Stainless steel	1	
10	Wear ring	Resin	1	
11	Bumper A	Urethane	1	
12	Bumper B	Urethane	1	
13	Piston gasket	NBR	1	
14	Rod seal	NBR	1	
15	Piston seal	NBR	1	
16	Rod end nut	Carbon steel	1	Nickel plating
17	Magnet	Magnet	1	(Switch type only)

**Dimensions**

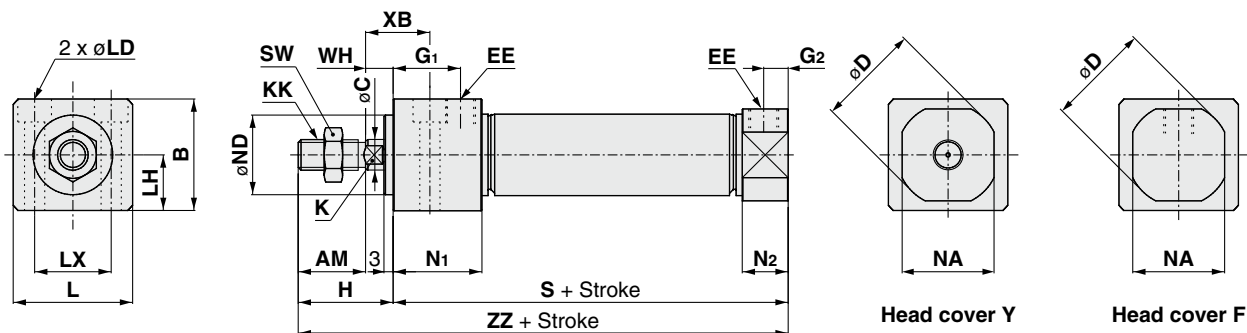
Double acting, Single rod

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



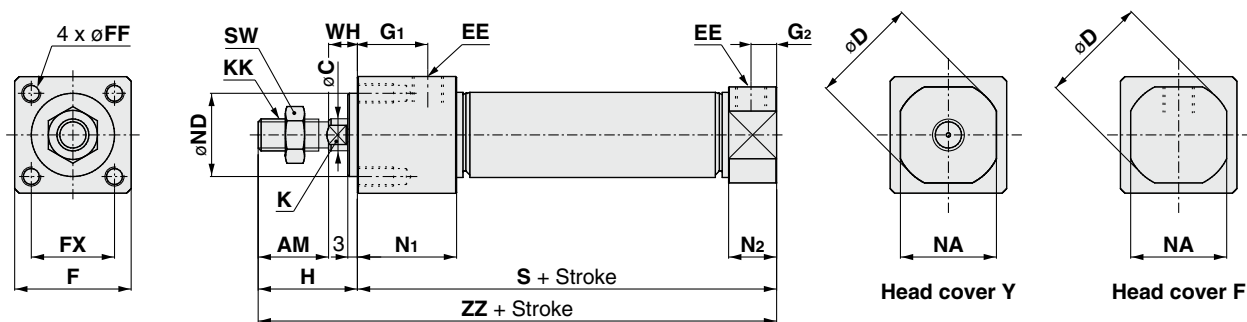
Bore size	AM	B	C	D	EE	G1	G2	H	K	KK	L	LD	LH	LX	N1	N2	NA	S	SW	WH	XB	ZZ
8	12	16	4	17	M5 x 0.8	19	5	16	—	M4 x 0.7	23	ø3.5, ø6.5 depth of counterbore 4	8	14	23.5	9.5	15	58	7	4	12	74
10	12	16	4	17	M5 x 0.8	19	5	16	—	M4 x 0.7	23	ø3.5, ø6.5 depth of counterbore 4	8	14	23.5	9.5	15	58	7	4	12	74
12	16	20	6	20	M5 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<sub>F</sub> 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 <sup>0</sup> <sub>-0.033</sub>	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 <sup>0</sup> <sub>-0.033</sub>	79	17	14	26	115

Front side mounting/C□85RB<sub>F</sub> 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 <sup>0</sup> <sub>-0.033</sub>	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 <sup>0</sup> <sub>-0.033</sub>	79	17	14	115

# Series C85 Auto Switch

Please order auto switches and mounting brackets separately.

**Applicable Auto Switches**/Refer to the 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)					
								Perpendicular	In-line										
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	24 V	—	M9N	—	—	●	●	●	○	—	○	IC	Relay, PLC		
				—			F7NV	F79	●	—	●	○	—	○					
				3-wire (PNP)			M9P	—	—	●	●	●	○	—	○				
		—		F7PV			F7P	●	—	●	○	—	○						
		2-wire		M9B			—	—	●	●	●	○	—	○					
		—		F7BV			J79	●	—	●	○	—	○						
	Connector	H7C	J79C	—	●	—	●	●	●	—	—	—	—	—					
	Diagnostic indication (2-color indication)	Grommet	Yes	3-wire (NPN)	24 V	—	M9NW	—	—	●	●	●	○	—	○	IC			
				—			F7NVW	F79W	●	—	●	○	—	○					
				3-wire (PNP)			M9PW	—	—	●	●	●	○	—	○				
		—		—			F7PW	●	—	●	○	—	○						
		2-wire		M9BW			—	—	●	●	●	○	—	○					
—		F7BWV		J79W			●	—	●	○	—	○							
Water resistant (2-color indication)	Grommet	Yes	4-wire (NPN)	24 V	—	H7BA*1	F7BAV*1	F7BA*1	—	—	●	○	—	○	—				
With diagnostic output (2-color indication)			H7NF			—	F79F	●	—	●	○	—	○	—	○				
Reed auto switch	—	Grommet	Yes	3-wire (NPN Equivalent)	24 V	—	A96**	—	A76H	●	—	●	—	—	—	IC	Relay, PLC		
				2-wire			—	A72	A72H	●	—	●	—	—	—	—		—	
							—	A73	A73H	●	—	●	●	—	—	—		—	—
							100 V	A93**	—	—	●	●	●	●	—	—		—	—
		Connector		100 V or less			A90**	A80	A80H	●	—	●	—	—	—	—		—	IC
				—			C73C	A73C	—	●	—	●	●	●	—	—		—	—
				24 V or less			C80C	A80C	—	●	—	●	●	●	—	—		—	—
	Diagnostic indication (2-color indication)	Grommet		Yes			—	—	—	—	A79W**	—	—	●	—	—		—	—

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

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

\* 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 "○" are produced upon receipt of order.

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

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

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

\* The 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 the auto switch mounting brackets are assembled before 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 Brackets/Part No.

Auto switch mounting	Auto switch model	Bore size (mm)					
		ø8	ø10	ø12	ø16	ø20	ø25
Band mounting	D-A9□ <sup>Note 4)</sup> D-M9□ D-M9□W	Note 1) ①BJ2-008 ②BJ3-1	Note 1) ①BJ2-010 ②BJ3-1	Note 1) ①BJ2-012 ②BJ3-1	Note 1) ①BJ2-016 ②BJ3-1	Note 1) ①BM2-020 ②BJ3-1	Note 1) ①BM2-025 ②BJ3-1
	D-C7□/C80 D-C73C/C80C D-H7□/H7□W D-H7BA/H7NF	BJ2-008	BJ2-010	BJ2-012	BJ2-016	BM2-020	BM2-025
Rail mounting	D-A9□ <sup>Note 4)</sup> D-A9□V <sup>Note 4)</sup> D-M9□ <sup>Note 5)</sup> D-M9□V <sup>Note 5)</sup> D-M9□W <sup>Note 5)</sup> D-M9□WV <sup>Note 5)</sup> D-M9□A <sup>Note 3)</sup> D-M9□AV <sup>Note 3)</sup>	Note 2), Note 3) BQ2-012, BQ2-012S	Note 2), Note 3) BQ2-012, BQ2-012S	Note 2), Note 3) BQ2-012, BQ2-012S	Note 2), Note 3) BQ2-012, BQ2-012S	Note 2) BQ2-012	Note 2) BQ2-012

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

Note 2) 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 3) When using D-M9□A(V), order BQ2-012S which is produced with stainless steel mounting screw.

Note 4) When mounting a band and/or a rail on bore sizes ø8, ø10 and ø12 cylinder, D-A9□(V) type cannot be mounted.

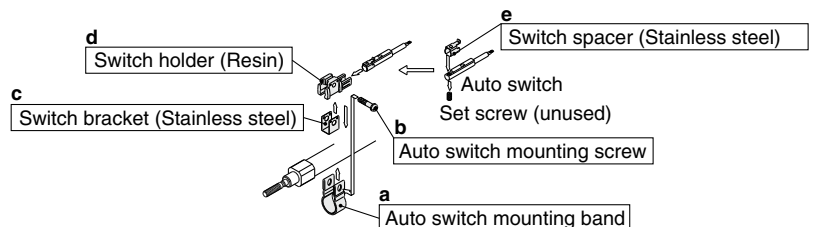
Note 5) When mounting a rail on bore sizes ø20 and ø25 cylinder, D-M9□(V), M9□W(V) and M9□A(V) types cannot be mounted.

### 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

\* Order cylinders separately.



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

Refer to the Best Pneumatics No. 2 for the detailed specifications

Type	Auto switch model	Electrical entry	Features	Mounting	Applicable bore size
Reed	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	D-M9NV, M9PV, M9BV	Grommet (Perpendicular)	—	Rail	ø8 to ø16
	D-M9NWV, M9PWV, M9BWV		Diagnostic 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		Diagnostic indication (2-color)		

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

\* With pre-wired connector is also available for solid state auto switches. For details, refer to the Best Pneumatics No. 2.

# Series C85 Auto Switch Mounting

## Minimum Stroke for Auto Switch Mounting

ø8, ø10, ø12, ø16

n: Number of auto switches (mm)

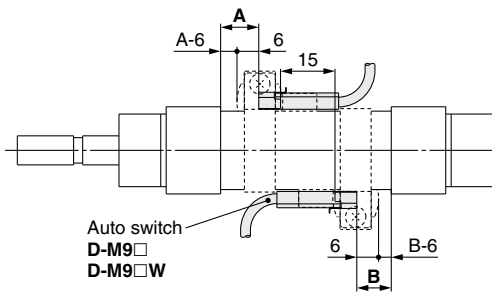
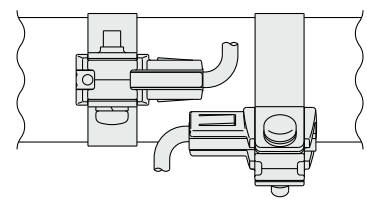
Auto switch model	Number of auto switches					
	With 1 pc.	With 2 pcs.		With n pcs.		
		Different surfaces	Same surface	ø8 to ø16		
			Different surfaces	Same surface		
Band mounting	D-M9□ D-M9□W D-A9□ (Note 2)	10	Note 1) 15	Note 1) 45	$15 + 35 \frac{(n-2)}{2}$ (n = 2, 4, 6...)	$45 + 15 (n-2)$ (n = 2, 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...)
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 (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: Number of auto switches (mm)

Auto switch model	Number of auto switches					
	With 1 pc.	With 2 pcs.		With n pcs.		
		Different surfaces	Same surface	ø20, ø25		
			Different surfaces	Same surface		
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...)
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...)

Note 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 (Note 1)	Same surface (Note 1)
	 <p>The proper auto switch mounting position is 6 mm inward from the switch holder edge.</p>	 <p>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.</p>
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		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□ Note 1)	—	—	—	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□ Note 1) 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 Note 2)	—	—	—	13	10	10.5

\* 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.

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

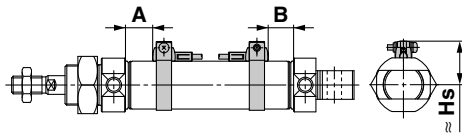
Note 2) When mounting a rail on bore sizes ø20 and ø25 cylinder, D-M9□(V), M9□W(V) and M9□A(V) types cannot be mounted.

# Series C85

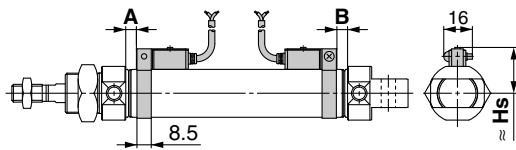
## Auto Switch Proper Mounting Position (Detection at stroke end) and Its Mounting Height

### Double/Single acting: Band Mounting

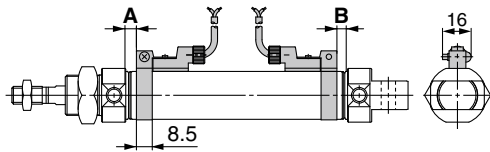
D-M9□  
D-M9□W



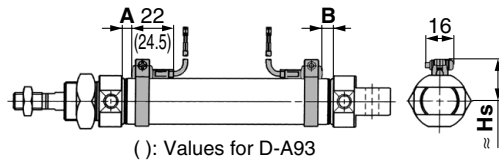
D-H7□  
D-H7□W  
D-H7BA  
D-H7NF  
D-C7□  
D-C80



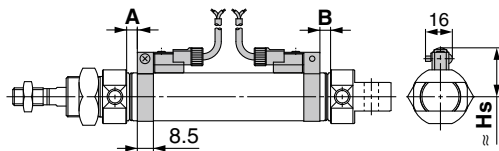
D-H7C



D-A9□

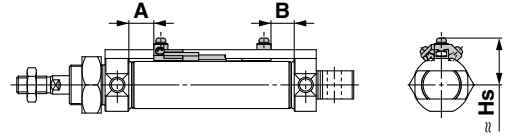


D-C73C  
D-C80C

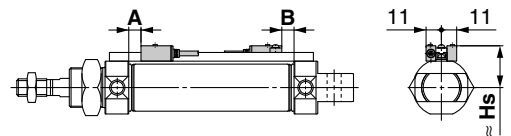


### Double/Single acting: Rail Mounting

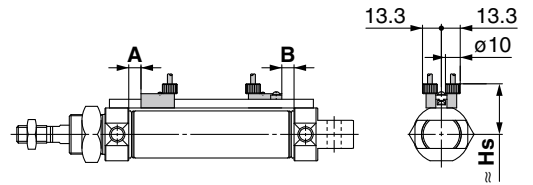
D-M9□  
D-M9□V  
D-M9□W  
D-M9□WV  
D-M9□A  
D-M9□AV



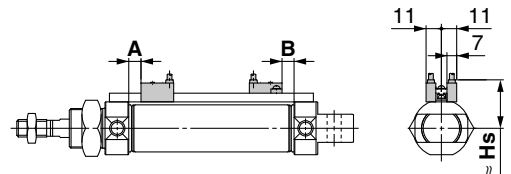
D-F7□  
D-F7□W  
D-J79  
D-J79W  
D-F7BA  
D-F79F  
D-A7□H  
D-A80H



D-J79C  
D-A73C  
D-A80C



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



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

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

### Auto Switch Proper 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	
	A	B	A	B	A	B	A	B
<b>8</b>	6.5	6.5	2	2	—	—	3	3
<b>10</b>	6.5 (7)	6.5 (7)	2 (2.5)	2 (2.5)	—	—	3 (3.5)	3 (3.5)
<b>12</b>	7.5 (8.5)	7.5 (8.5)	3 (4)	3 (4)	—	—	4 (5)	4 (5)
<b>16</b>	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]
<b>20</b>	10.5 (8.5)	9.5 (7.5)	6 (4)	5 (3)	6.5 (4.5)	5.5 (3.5)	7 (5)	6 (4)
<b>25</b>	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) Adjust the auto switch after confirming the operating condition in the actual setting.

### Auto Switch Mounting Height (mm)

Auto switch model	Band mounting				
	D-M9□ D-M9□W D-A9□ <sup>Note 1)</sup>		D-H7□ D-H7□W D-H7BA D-H7NF D-C7□ D-C80	D-H7C	D-C73C D-C80C
	Hs		Hs	Hs	Hs
<b>8</b>	15		16	19	18.5
<b>10</b>	16.5		17	20	19.5
<b>12</b>	18		18.5	21	21
<b>16</b>	20		20.5	23	23
<b>20</b>	22		22.5	25	25
<b>25</b>	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 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-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	
	A	B	A	B	A	B	A	B	A	B
<b>8</b>	5	5	4	4	—	—	3.5	3.5	—	—
<b>10</b>	5 (5.5)	5 (5.5)	4 (4.5)	4 (4.5)	—	—	3.5 (4)	3.5 (4)	—	—
<b>12</b>	6 (7)	6 (7)	5 (6)	5 (6)	—	—	4.5 (5.5)	4.5 (5.5)	—	—
<b>16</b>	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]
<b>20</b>	—	—	8 (6)	7 (5)	6.5 (4.5)	5.5 (3.5)	7.5 (5.5)	6.5 (4.5)	5 (3)	4 (2)
<b>25</b>	—	—	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) Adjust the auto switch after confirming the operating condition in the actual setting.

### Auto Switch Mounting Height (mm)

Auto switch model	Rail mounting								
	D-M9□ <sup>Note 1)</sup> D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV D-A9□ <sup>Note 2)</sup> 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 <sup>Note 2)</sup>
	Hs		Hs	Hs	Hs	Hs	Hs	Hs	Hs
<b>8</b>	19		19	21.5	23.5	18	25	—	
<b>10</b>	19		19	21.5	23.5	18	25	—	
<b>12</b>	20.5		20.5	23	25	19.5	26.5	—	
<b>16</b>	20.5		20.5	23	25	19.5	26.5	22	
<b>20</b>	23.5		23.5	26	29	22.5	29.5	25	
<b>25</b>	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 Proper Mounting Position (Detection at stroke end) and Its 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	
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) Adjust the auto switch after confirming the operating condition in the actual setting.

### Auto Switch Mounting Height

(mm)

Auto switch model	Band mounting			
	D-M9□ D-M9□W D-A9□ <sup>Note 1)</sup>	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.

(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□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  D-A9□ D-A9□V D-A79W  D-A73 D-A80	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
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	

(mm)

Auto switch model	Rail mounting						
	D-M9□ <sup>Note 1)</sup> D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV D-A9□ <sup>Note 2)</sup> 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 <sup>Note 2)</sup>
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.

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

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

**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□W	8	6.5	31	31	31
	10	6.5	29	29	29
	12	7.5	31	31	31
	16	7.5	36	62	88
			[30]	[56]	[82]
	20	10.5	34.5	59.5	84.5
25	12	34.5	59.5	84.5	
D-H7□ D-H7C D-H7□W D-H7BA D-H7NF	8	2	26.5	26.5	26.5
	10	2	24.5	24.5	24.5
	12	3	26.5	26.5	26.5
	16	3	31.5	57.5	83.5
			[25.5]	[51.5]	[77.5]
	20	6	30	55	80
25	7.5	30	55	80	
D-A9□	16	3.5	32	58	84
	20	6.5	[26]	[52]	[80]
			30.5	55.5	80.5
			30.5	55.5	80.5
D-C7□ D-C80 D-C73C D-C80C	8	3	27.5	27.5	27.5
	10	3	25.5	25.5	25.5
	12	4	27.5	27.5	27.5
	16	4	32.5	58.5	84.5
			[26.5]	[52.5]	[78.5]
	20	7	31	56	81
25	8.5	31	56	81	

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	29.5
	10	5	27.5	27.5	27.5
	12	6	29.5	29.5	29.5
	16	6	34.5	60.5	86.5
			[28.5]	[54.5]	[80.5]
	20	10.5	34.5	59.5	84.5
25	12	34.5	59.5	84.5	
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	4	28.5	28.5	28.5
	10	4	26.5	26.5	26.5
	12	5	28.5	28.5	28.5
	16	5	33.5	59.5	85.5
			[27.5]	[53.5]	[79.5]
	20	8	32	57	82
25	9.5	32	57	82	
D-A9□ D-A9□V D-A79W	16	2	30.5	56.5	82.5
	20	5	[24.5]	[50.5]	[76.5]
			29	54	79
D-A73 D-A80	25	6.5	29	54	79
	8	3.5	28	28	28
	10	3.5	26	26	26
	12	4.5	28	28	28
	16	4.5	33	59	85
	20	7.5	[27]	[53]	[79]
25	9	31.5	56.5	81.5	
25	9	31.5	56.5	81.5	

\* 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) Adjust the auto switch after confirming the operating condition in the actual setting.

**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□ 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	D-A79W	Note 2)
Bore size	Hs	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.

# 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).

#### [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 no.	Applicable auto switch
	Description	Size	Q'ty		
BBA4	Auto switch mounting screw	M3 x 0.5 x 14 L	1	BJ2-006, BJ2-010, BJ2-016	D-C7, C8 D-H7
				BM2-020, BM2-025, BM2-032, BM2-040	

### ⚠ Caution

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

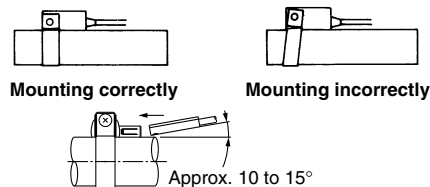
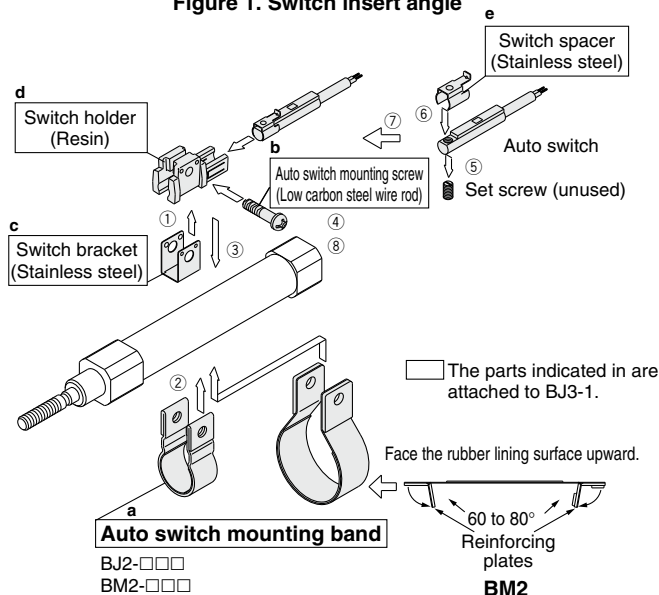


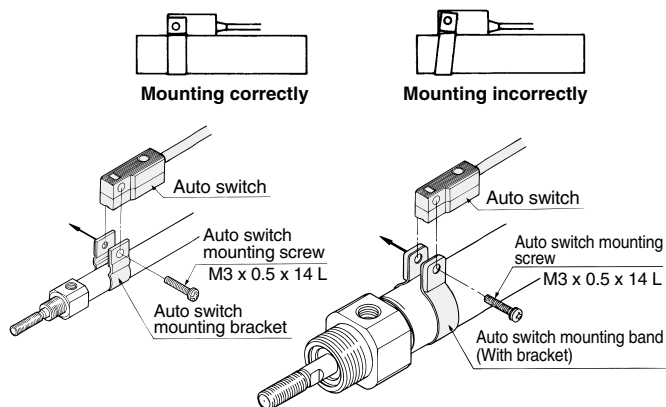
Figure 1. Switch insert angle



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.





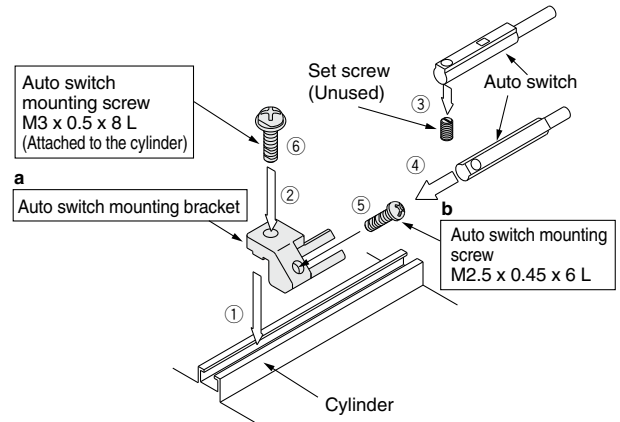
## Mounting Bracket Rail Mounting Type

### <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)

- 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 x 0.45 x 6 L). (Tightening torque of M2.5 screw: 0.1 to 0.2 N·m)
- Secure the auto switch mounting screw (3) 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.

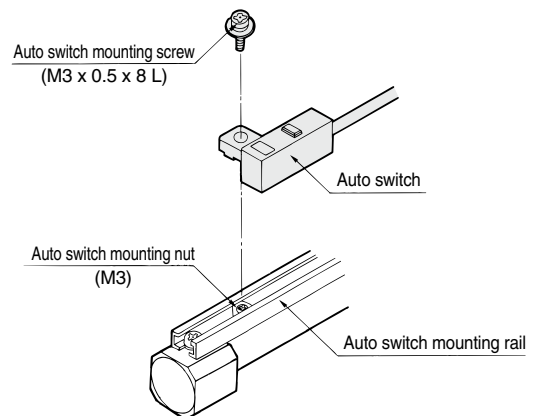
### <Applicable auto switch>

**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 x 0.5 x 8 L) lightly into the mounting nut (M3) through the hole of auto switch mounting arm.
- 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.)
- 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 no.	Applicable auto switch
	No.	Description	Size	Q'ty		
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.

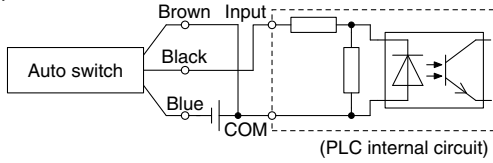
Note 2) When using D-A9□(V)/M9□(V)/M9□W(V)/M9□A(V) auto switches with BQ2-012, use stainless steel screws suitable for the auto switch mounting bracket.

# Prior to Use

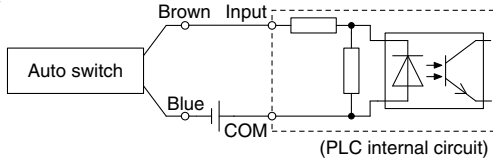
## Auto Switch Connection and Example

### Sink Input Specifications

#### 3-wire, NPN

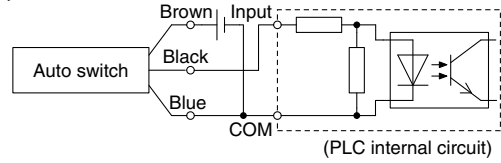


#### 2-wire

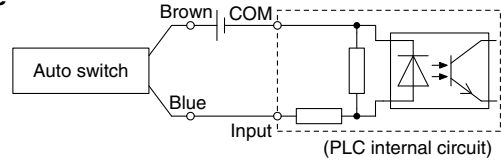


### Source Input Specifications

#### 3-wire, PNP



#### 2-wire



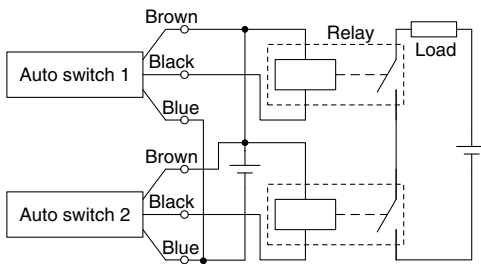
Connect according to the applicable PLC input specifications, as the connection method will vary depending on the PLC input specifications.

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

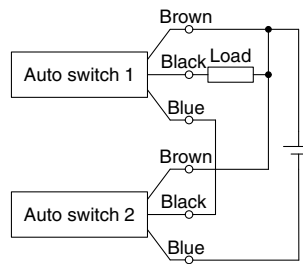
\* When using solid state auto switches, ensure the application is set up so the signals for the first 50 ms are invalid.

#### 3-wire AND connection for NPN output

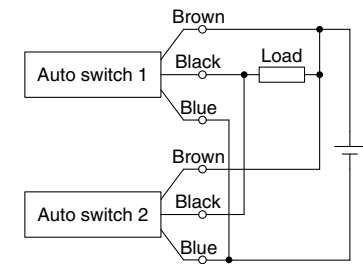
(Using relays)



(Performed with auto switches only)

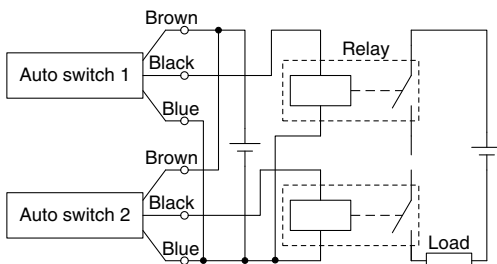


#### 3-wire OR connection for NPN output

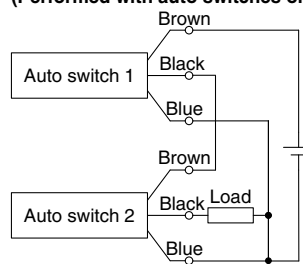


#### 3-wire AND connection for PNP output

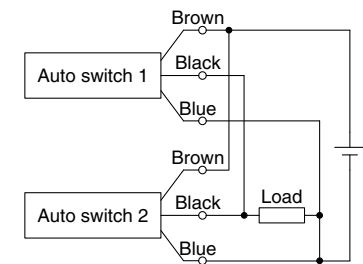
(Using relays)



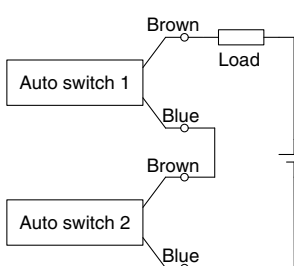
(Performed with auto switches only)



#### 3-wire OR connection for PNP output



#### 2-wire AND connection

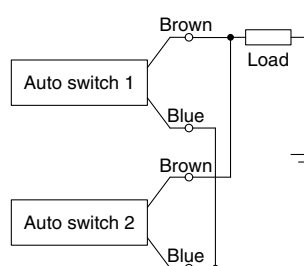


When two auto switches are connected in series, a load may malfunction because the load voltage will decline when in the ON state. The indicator lights will light up when both of the auto switches are in the ON state. Auto switches with load voltage less than 20 V cannot be used.

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

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 $\Omega$ .  
Leakage current from auto switch is 1 mA.