



Pen size cylinder——PB Series

Product series

Series name	Mounting type				Acting type	Bore size	Collocation of sensor switch	
	Basic	LB	FA	CJ			CS1-M	DS1-M
Double acting type:PB	●	●	●	●	Double acting	4		
						6	●	●
						10	●	●
Single acting type: PSB, PTB	●	●	●	●	Single acting	12	●	●
						16	●	●
Double rod type: PBD	●	●	●	●	Double acting	6	●	●
						10	●	●
						12	●	●
						16	●	●
Adjustable stroke type: PBJ	●	●	●	●		10	●	●
						12	●	●
						16	●	●
Page	234						403	

PB

Installation and application

1. When load changes in the work, the cylinder with abundant output capacity shall be selected.
2. Relative cylinder with high temperature resistance or corrosion resistance shall be chosen under the condition of high temperature or corrosion.
3. Necessary protection measure shall be taken in the environment with higher humidity, much dust or water drops, oil dust and welding dregs.
4. Dirty substances in the pipe must be eliminated before cylinder is connected with pipeline to prevent the entrance of particles into the cylinder.
5. The medium used by cylinder shall be filtered to 40 μm or below.
6. Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
7. The load of the cylinder with the diameter of Φ4 needs to be coaxial with the cylinder to avoid side load, otherwise, piston rod will be bent and deformed and damage the thread at the end of the rod. Single-acting type can not be added in return.
8. If the cylinder is dismantled and stored for a long time, Please to conduct anti-rust treatment to the surface. Anti-dust caps shall be added in air inlet and outlet ports. The front and back cover can not be dismantled, which shall be especially noticed.

Criteria for selection: Cylinder thrust

Unit: Newton(N)

Bore size (mm)	Rod size (mm)	Acting type	Pressure area (mm ²)	Operating pressure(MPa)						
				0.1	0.2	0.3	0.4	0.5	0.6	0.7
4	2	Single acting-Push side	12.6	-	0.3	1.6	2.8	4.1	5.3	6.6
		Double acting Push side	12.6	1.3	2.5	3.8	5.0	6.3	7.6	8.8
6	3	Double acting Pull side	9.4	0.9	1.9	2.8	3.8	4.7	5.6	6.6
		Single acting Push side	28.3	-	2.2	5.0	7.8	10.6	13.5	16.3
		Double acting Push side	21.2	-	0.7	2.9	5.0	7.1	9.2	11.3
		Double acting Pull side	28.3	2.8	5.7	8.5	11.3	14.2	17.0	19.8
10	4	Double acting Pull side	21.2	2.1	4.2	6.4	8.5	10.6	12.7	14.8
		Single acting Push side	78.5	-	6.2	14.1	21.9	29.8	37.6	45.5
		Double acting Push side	65.9	-	3.7	10.3	16.9	23.5	30.1	36.7
		Double acting Pull side	78.5	7.9	15.7	23.6	31.4	39.3	47.1	55.0
12	5	Double acting Pull side	65.9	6.6	13.2	19.8	26.4	33.0	39.5	46.2
		Single acting Push side	113.0	-	9.0	20.3	31.6	42.9	54.2	65.5
		Double acting Push side	93.4	-	5.1	14.4	23.8	33.1	42.4	51.8
		Double acting Pull side	113.0	11.3	22.6	33.9	45.2	56.5	67.8	79.1
16	5	Double acting Pull side	93.4	9.3	18.7	28.0	37.4	46.7	56.0	65.4
		Single acting Push side	201.0	-	14.5	34.6	54.7	74.8	94.9	115.0
		Double acting Push side	181.3	-	10.6	28.7	46.8	65.0	83.1	101.2
		Double acting Pull side	201.0	20.1	40.2	60.3	80.4	100.5	120.6	140.7
		Double acting Pull side	181.3	18.1	36.3	54.4	72.5	90.7	108.8	126.9

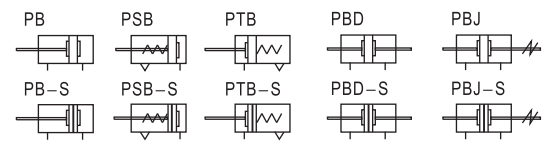


Pen size cylinder

PB Series



Symbol



Product feature

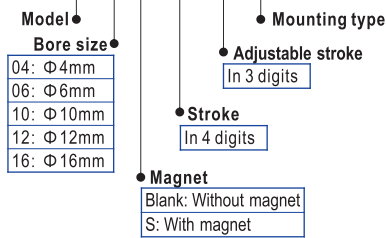
- 1. JIS standard is implemented.
- 2. It belongs to mini cylinder that has compact structure, small volume and light weight.
- 3. The guide precision of piston rod is high and no additional lubricant is needed.
- 4. PB4 and PB6 can only be front mounted. PB10, PB12 and PB16 has the flexibility of both front and rear mount.
- 5. Piston rod stainless steel barrel make the cylinder adapt general corrosive working environment.
- 6. There are cylinders and accessories with several specifications for installation for your choice.
- 7. It has small cylinder diameter and quick reaction, suitable for the working environment with higher frequency.

Ordering code

Model can to be changed Ordering code. Example:
Production type: PBJ
Bore size: 16mm
Stroke: 30mm
Adjustable stroke: 10mm
Magnet: With magnet
Mounting type: LB

Model: PBJ-16 x 30-10-S-LB

Ordering code: PBJ 16 S 0030 010 LB



Specification

Bore size(mm)		4	6	10	12	16
Acting type		Double acting, Single acting_push		Double acting, Single acting_push, Single acting_pull		
Fluid		Air(to be filtered by 40 μ m filter element)				
Operating pressure	Double acting	0.2~0.7MPa(28~100psi)(2.0~7.0bar)		0.1~0.7MPa(15~100psi)(1.0~7.0bar)		
	Single acting	0.3~0.7MPa(36~100psi)(3.0~7.0bar)		0.2~0.7MPa(28~100psi)(2.0~7.0bar)		
Proof pressure		1.1MPa(160psi)(11bar)				
Temperature °C		-20~70				
Speed range mm/s		50~500		50~800		
Stroke tolerance		+0.5 0		0~150 ^{+1.0} ₀ >150 ^{+1.4} ₀		
Cushion type		No cushion		Bumper		
Port size		Tube		M5 × 0.8		

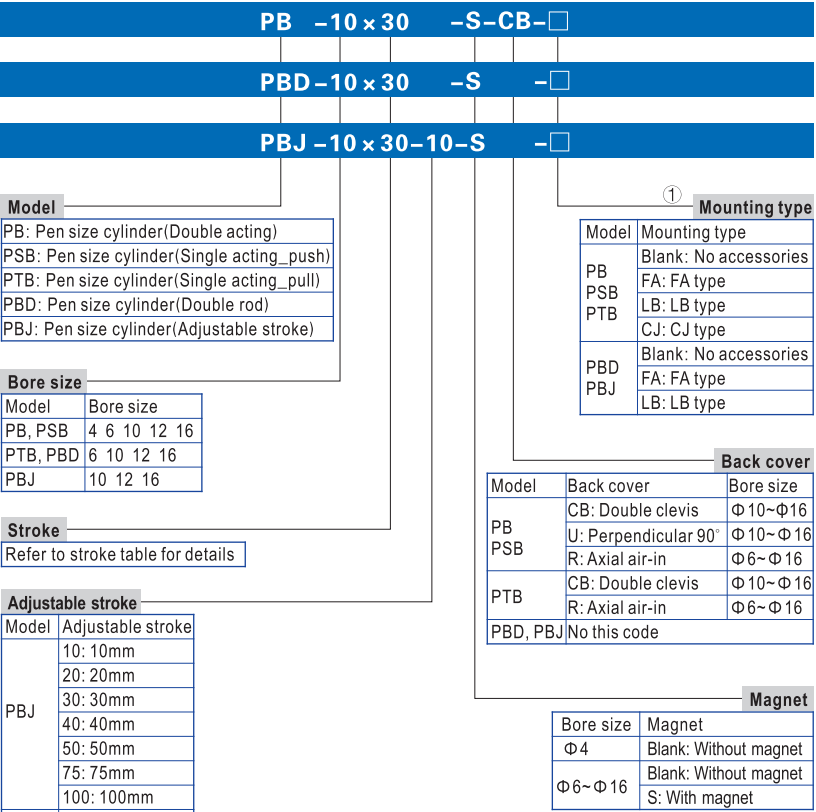
Add) Refer to P403~426 for detail of sensor switch.

Stroke

Bore size (mm)	Standard stroke (mm)															Max. std stroke	Max. stroke
Double acting	4	5	10	15	20											20	20
	6	10	15	20	25	30	40	50	60							60	60
	10	10	15	20	25	30	40	50	60	75	80	100	125	150	160	175	200
	12	10	15	20	25	30	40	50	60	75	80	100	125	150	160	175	200
	16	10	15	20	25	30	40	50	60	75	80	100	125	150	160	175	200
Single acting	4	5	10	15	20											—	—
	6	5	10	15	20	25	30	40	50	60							—
	10	5	10	15	20	25	30	40	50	60							—
	12	5	10	15	20	25	30	40	50	60							—
	16	5	10	15	20	25	30	40	50	60							—

Note) Consult us for non-standard stroke.

Explain of model



① Please refer to page 238 for accessory parts.



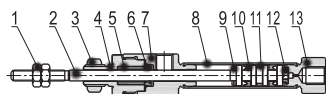
Pen size cylinder

AIRTAC

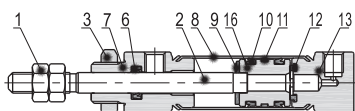
PB Series

Inner structure and material of major parts

Double acting without magnet(Φ6)



Double acting without magnet(Φ10~Φ16)

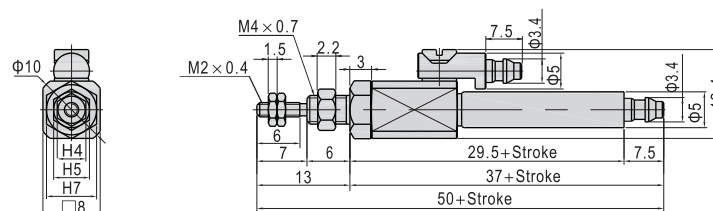


NO.	Item	Material
1	Rod nut	Carbon steel
2	Piston rod	SUS304
3	Front cover nut	Carbon steel
4	Packing retainer	Brass(Φ4)\Aluminum alloy(Others)
5	Bushing	Wear resistant material
6	Front cover O-ring	NBR
7	Front cover	Brass(Φ4)\Aluminum alloy(Others)
8	Barrel	Bronze(Φ4)\SUS304(Others)
9	Bumper	TPU
10	Piston seal	NBR
11	Wear ring	Wear resistant material
12	Bumper	TPU
13	Back cover	Brass(Φ4)\Aluminum alloy(Others)

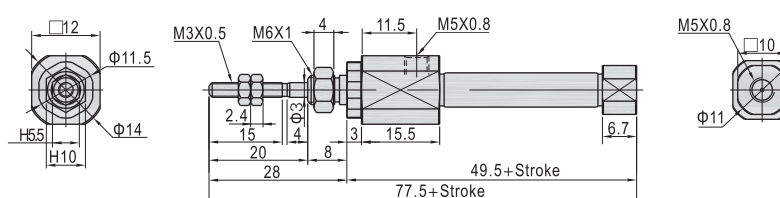
Dimensions

PB

Φ4(Without magnet)(R Type)



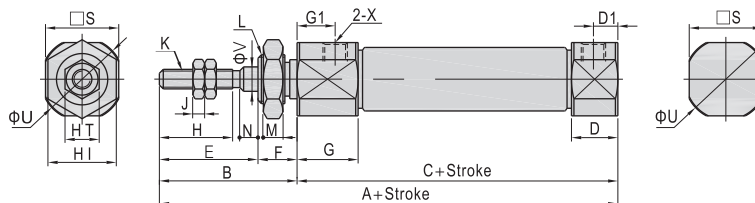
Φ6(R Type)



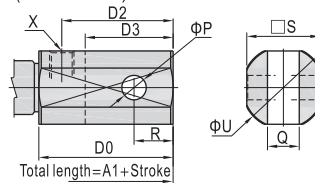
Note) Only axial air intake type of back cover is available for Φ4, Φ6mm bore size.

Φ10~Φ16

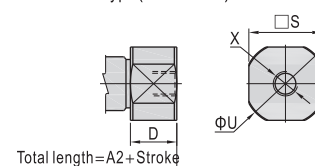
U Type(Perpendicular 90°)



CB Type(Double clevis)



R Type(Axial air-in)



Bore size\Item	A	A1	A2	B	C	D	D0	D1	D2	D3	E	F	G	G1	H	I	J
10	74	87	74	28	46	9.5	22.5	5	18	13	20	8	11.5	7.5	15	11	2.2
12	74	92	74	28	46	9.5	27.5	5	23	18	20	8	11.5	7.5	15	14	4
16	76	94	76	28	48	9.2	27.2	4.8	22.8	18	20	8	11.8	7.5	15	14	4

Bore size\Item	K	L	M	N	P	Q	R	S	T	U	V	X
10	M4×0.7	M8×1.0	4	3.5	3.3	3.3	5	12	7	14	4	M5×0.8
12	M5×0.8	M10×1.0	4	3.5	5	6.6	8	15	8	17	5	M5×0.8
16	M5×0.8	M10×1.0	4	3.5	5	6.6	8	18	8	20	5	M5×0.8

Remark: The dimensions of magnet type cylinder are the same as non-magnet type cylinder.



PB

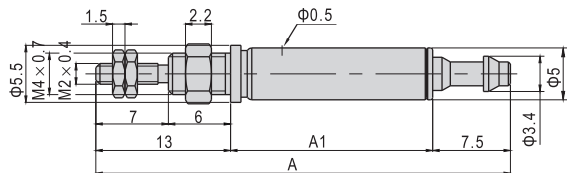
Pen size cylinder



PB Series

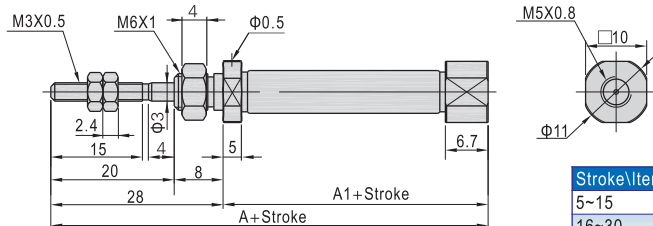
PSB

Φ4(Without magnet)(R Type)



Stroke\Item	A	A1
5	40	19.5
10	49	28.5
15	58	37.5
20	67	46.5

Φ6(R Type)

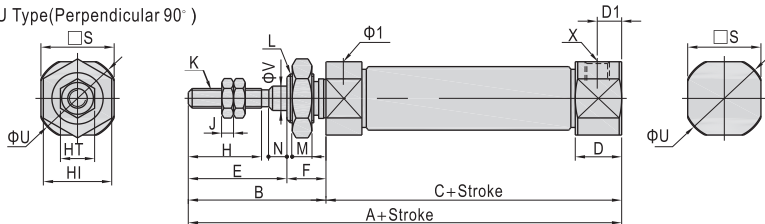


Stroke\Item	A	A1
5~15	70	42
16~30	79	51
31~45	83	55
46~60	97	69

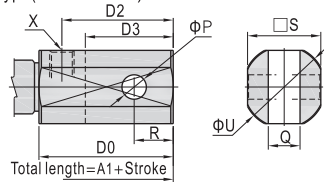
Note) Only axial air intake type of back cover is available for Φ4, Φ6mm bore size.

Φ10~Φ16

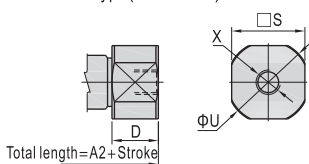
U Type(Perpendicular 90°)



CB Type(Double clevis)



R Type(Axial air-in)



Bore size \ Item	A				A1				A2			
Stroke	5~15	16~30	31~45	46~60	5~15	16~30	31~45	46~60	5~15	16~30	31~45	46~60
10	73.5	81	93	105	86.5	94	106	118	73.5	81	93	105
12	73.5	81	93	105	91.5	99	111	123	73.5	81	93	105
16	74.5	83	95	107	92.5	101	113	125	74.5	83	95	107

Bore size \ Item	C				D				E			
Stroke	B	5~15	16~30	31~45	46~60	D	D0	D1	D2	D3	F	H
10	28	45.5	53	65	77	9.5	22.5	5	18	13	20	8
12	28	45.5	53	65	77	9.5	27.5	5	23	18	20	8
16	28	46.5	55	67	79	9.2	27.2	4.8	22.8	18	20	8

Bore size \ Item	K	L	M	N	P	Q	R	S	T	U	V	X
10	M4x0.7	M8x1.0	4	3.5	3.3	3.3	5	12	7	14	4	M5x0.8
12	M5x0.8	M10x1.0	4	3.5	5	6.6	8	15	8	17	5	M5x0.8
16	M5x0.8	M10x1.0	4	3.5	5	6.6	8	18	8	20	5	M5x0.8

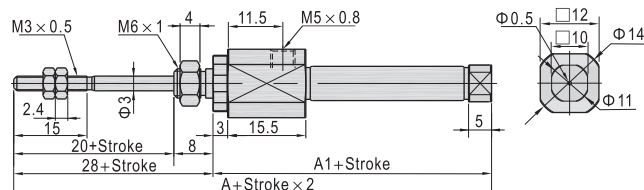
Remark: The dimensions of magnet type cylinder are the same as non-magnet type cylinder.



PB Series

AirTAC

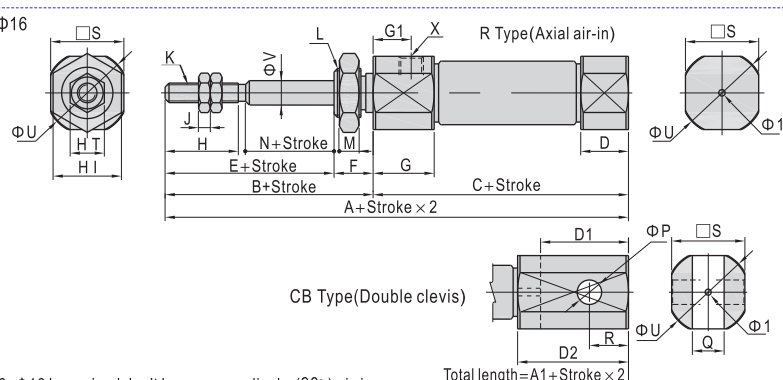
Φ6(R Type)



Stroke\Item	A	A1
5~15	82	54
16~30	91	63
31~45	95	67
46~60	109	81

Note) Only axial air intake type of back cover is available for $\Phi 6\text{mm}$ bore size.

Φ10~Φ16



Note) $\phi 10 \sim \phi 16$ bore sized don't have perpendicular (90°) air-in.

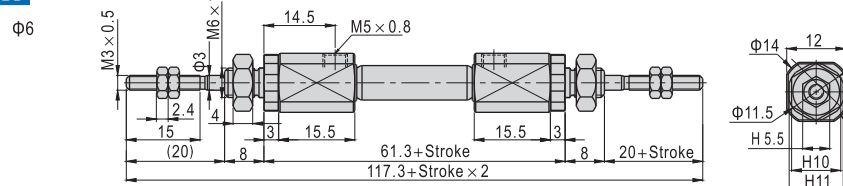
$$\text{Total length} = A1 + \text{Stroke} \times 2$$

Stroke	A				A1				B	D	C			
	5~15	16~30	31~45	46~60	5~15	16~30	31~45	46~60			5~15	16~30	31~45	46~60
10	76.5	84	96	108	89.5	97	109	121	28	5	48.5	56	68	80
12	76.5	84	96	108	94.5	102	114	126	28	5	48.5	56	68	80
16	77.5	86	98	110	95.5	104	116	128	28	5	49.5	58	70	82

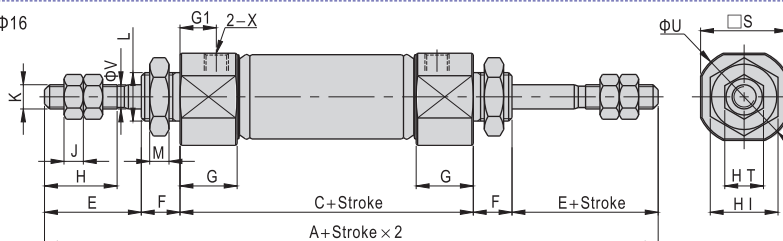
Bore size\Item	D1	D2	E	F	G	G1	H	I	J	K	L	M	N	P	Q	R	S	T	U	V	X
10	13	18	20	8	11.5	7.5	15	11	2.2	M4×0.7	M8×1.0	4	3.5	3.3	3.3	5	12	7	14	4	M5×0.8
12	18	23	20	8	11.5	7.5	15	14	4	M5×0.8	M10×1.0	4	3.5	5	6.6	8	15	8	17	5	M5×0.8
16	18	23	20	8	11.8	7.5	15	14	4	M5×0.8	M10×1.0	4	3.5	5	6.6	8	18	8	20	5	M5×0.8

Remark: The dimensions of magnet type cylinder are the same as non-magnet type cylinder.

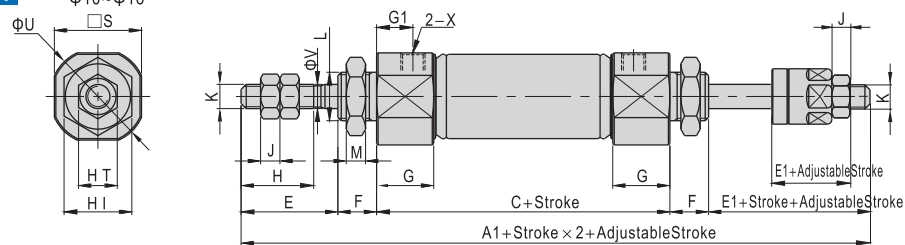
Φ6



Φ10~Φ16



ΦU $\square S$



Bore size\Item	A	A1	C	E	E1	F	G	G1	H	I	J	K	L	M	S	T	V	X
10	104	98.7	48	20	14.7	8	11.5	7.5	15	11	2.2	M4×0.7	M8×1.0	4	12	7	4	M5×0.8
12	104	101	48	20	17	8	11.5	7.5	15	14	4	M5×0.8	M10×1.0	4	15	8	5	M5×0.8
16	106.6	103.6	50.6	20	17	8	11.8	7.5	15	14	4	M5×0.8	M10×1.0	4	18	8	5	M5×0.8

Remark: The dimensions of magnet type cylinder are the same as non-magnet type cylinder.



PB

Pen size cylinder

AIRTAC

Accessories

Ordering code

F-PB 10 LB			
Accessory			① Accessory type
Model		Bore size	Mounting accessory
			LB: LB type
			FA: FA type
			CJ: CJ type ②

① Please refer to accessory list for selection and ordering information.

② CJ is attached with relevant PIN.

Accessory selection

Cylinder model		PB		PSB, PTB		PBD, PBJ	
Accessories		Standard	With magnet	Standard	With magnet	Standard	With magnet
Mounting accessory	LB	●	●	●	●	●	●
	FA	●	●	●	●	●	●
	CJ	●	●	●	●	×	×
Knuckle ①	I	●	●	●	●	●	●
	Y	●	●	●	●	●	●
	F	●	●	●	●	●	●
	U	●	●	●	●	●	●
Sensor switch ②	CS1-M	×	●	×	●	×	●
	DS1-M	×	●	×	●	×	●

① Please refer to P397~402 for knuckle detail.

② Please refer to P403~426 for detail of sensor switch.

Material of accessories

Accessories		Mounting accessories			Knuckle			
Bore size		LB	FA	CJ	I	Y	F	U
4~16		△	△	△	□	□	□	□

△——SPCC, □——Carbon steel.

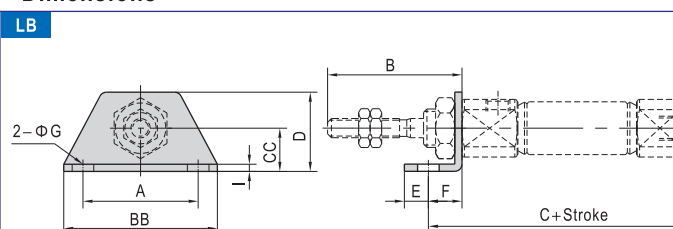
List for ordering code of accessories

Accessories		Mounting accessory	
Bore size		LB	FA
4		-	-
6		F-PB6LB	F-PB6FA
10		F-PB10LB	F-PB10FA
12			F-PB12CJ
16		F-PB12LB	F-PB12FA

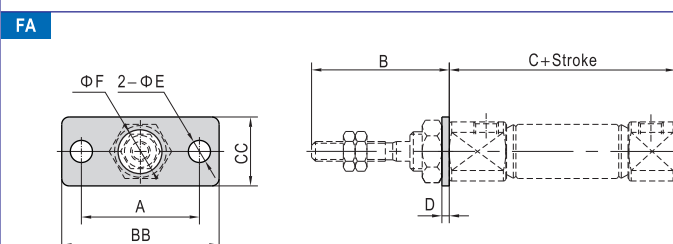
Accessories		Knuckle			
Bore size		I: I Knuckle	Y: Y Knuckle	F: F Knuckle	U: U Knuckle
4		-	-	-	-
6		-	-	F-M03040F	-
10		F-M04070IB	F-M04070YB	F-M04070F	F-M04070U
12					
16		F-M05080IB	F-M05080YB	F-M05080F	F-M05080U

Accessories		Sensor switch	
Bore size		CS1-M□	DS1-M□
4		-	-
6		CS1-M-S06	DS1-M-S06
10		CS1-M-S10	DS1-M-S10
12		CS1-M-S12	DS1-M-S12
16		CS1-M-S16	DS1-M-S16

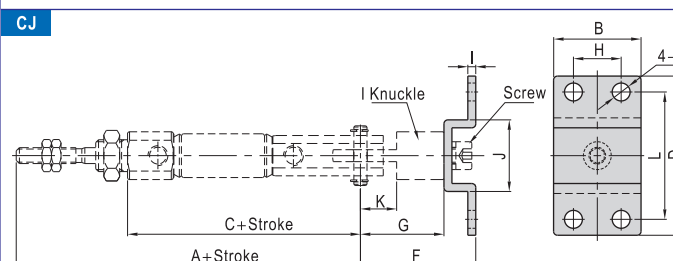
Dimensions



Bore size \ Item	A	B	BB	C	CC	D	E	F	G	I
6	24	28	32	56.5	9	16.5	5	7	4.5	1.5
10	24	28	32	53	9	16.5	5	7	4.5	1.5
12	33	28	42	55	14	25	6	9	5.5	2.5
16	33	28	42	57	14	25	6	9	5.5	2.5



Bore size \ Item	A	B	BB	C	CC	D	E	F
6	24	28	32	49.5	14	1.5	4.5	6.3
10	24	28	32	46	14	1.5	4.5	8.3
12	33	28	42	46	20	2.5	5.5	10.3
16	33	28	42	48	20	2.5	5.5	10.3



Bore size \ Item	A	B	C	D	E	F	G	H	I	J	K	L
10	82	22	54	40	4.5	29	21	12	2	18	9.1	32
12	84	28	56	48	5.5	35	25	16	2.5	20.4	14.1	38
16	86	28	58	48	5.5	35	25	16	2.5	20.4	14.1	38

Note) CJ type accessories need to be matched with I joint and I joint has to be ordered individually.

