



■ 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 larger humidity, much dust or water drops, oil dust and welding dregs;
- 4、Dirty substances in the pipe must be cleared away before cylinder is connected with pipeline to prevent the entrance of sundries into the cylinder;
- 5、The medium used by cylinder shall be filtered by the filter core of above 40um;
- 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 $\phi 4$ 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 jam cap shall be added in air intake and outlet orifices. 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 type	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	7.5	8.8
		Double acting Pull side	9.4	0.9	1.9	2.8	3.8	4.7	5.7	6.6
6	3	Single acting-Push type	28.3	—	2.2	5.0	7.8	10.6	13.5	16.3
		Single acting-Pull type	21.2	—	0.7	2.9	5.0	7.1	9.2	11.3
		Double acting Push side	28.3	2.8	5.7	8.5	11.3	14.1	17.0	19.8
		Double acting Pull side	21.2	2.1	4.2	6.4	8.5	10.6	12.7	14.8
10	4	Single acting-Push type	78.5	—	6.2	14.1	21.9	29.8	37.6	45.5
		Single acting-Pull type	65.9	—	3.7	10.3	16.9	23.5	30.1	36.7
		Double acting Push side	78.5	7.9	15.7	23.6	31.4	39.3	47.1	55.0
		Double acting Pull side	65.9	6.6	13.2	19.8	26.4	33.0	39.6	46.2
12	5	Single acting-Push type	113.0	—	9.0	20.3	31.6	42.9	54.2	65.5
		Single acting-Pull type	93.4	—	5.1	14.4	23.8	33.1	42.4	51.8
		Double acting Push side	113.0	11.3	22.6	33.9	45.2	56.5	67.8	79.1
		Double acting Pull side	93.4	9.3	18.7	28.0	37.4	46.7	56.0	65.4
16	5	Single acting-Push type	201.0	—	14.5	34.6	54.7	74.8	94.9	115.0
		Single acting-Pull type	181.3	—	10.6	28.7	46.8	65.0	83.1	101.2
		Double acting Push 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

■ Product series

Series name	Mounting type				Acting type	Bore size	Collocation of sensor switch			
	Basic	FA	CJ	LB			CS1-M	CS1-MX	CS1-MN	CS1-MP
Double acting type: PB					Double acting	4				
Single acting type: PSB、PTB					Single acting	6				
Double rod type: PBD					Double acting	10				
Adjustable stroke type: PBJ						12				
						16				
Page	IV-08						VI-39			
	IV-12									

Pen size cylinder

PB Series

AIRTAC

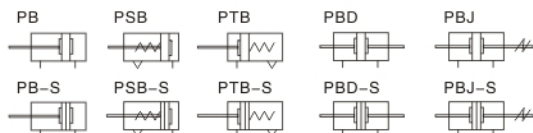


Specification

Bore size (mm)		4	6	10	12	16
Acting type		Double acting type Single acting-Push type		Double acting type Single acting-Push type Single acting-Pull type		
Fluid		Air(to be filtered by 40um filter element)				
Operating Pressure	Double acting	0.2~0.7MPa (28 ~100Psi)	0.1~0.7MPa(15 ~100Psi)			
	Single acting	0.3MPa~0.7MPa (36~100Psi)	0.2~0.7MPa(28 ~100Psi)			
Proof pressure		1. 1MPa(160Psi)				
Temperature ℃		-20~70				
Speed range		50~500 mm/s	50~800 mm/s			
Stroke tolerance		$\begin{smallmatrix} +0.5 \\ 0 \end{smallmatrix}$	$\begin{smallmatrix} 0 \sim 150^{+1.0} \\ 0 \end{smallmatrix}$ $>150^{+1.4} \\ 0 \end{smallmatrix}$			
Cushion type		NO cushion		Bumper		
Port size		Tube		M5 × 0.8		

Refer to PVI-39~VI-50 for detail of sensor switch.

Symbol



Product feature

1. JIS standard is implemented;
2. It belongs to mini cylinder that has tight 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 installed in front cover and PB10, PB12 and PB16 can be installed both in front cover and back cover;
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.

Stroke

Bore size (mm)		Standard stroke (mm)														Max. stroke	Available 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														200	200
	12	10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200														200	300
	16	10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 250 300														300	300
Single acting	4	5 10 15 20														—	—
	6	5 10 15 20 25 30 40 50 60														—	—
	10															—	—
	12															—	—
	16															—	—

Remark: Contact us for non-standard stroke.

Ordering code of PB, PSB, PTB

PB — 10 × 30 — S — CB — □									
Bore size			Stroke			Magnet			② Mounting type
Model			Back cover			S: With magnet			Blank: No accessories
PB: Pen size cylinder(Double acting type)			R: Axial air-in			Blank: Without magnet			FA: FA type
PSB: Pen size cylinder(Single acting-Push type)			U: Perpendicular(90°) air-in						LB: LB type
PTB: Pen size cylinder(Single acting-Pull type)									CJ: CJ type

① Φ4 bore size of non-magnet cylinder is optional;

② Please refer to PIV-12 for accessory parts.

Ordering code of PBD, PBJ

PBD — 10 × 30 — S — □									
Bore size			Stroke			Adjustable stroke			② Mounting type
Model			Magnet			S: With magnet			Blank: No accessories
PBD: Pen size cylinder(Double rod type)			Blank: Without magnet						FA: FA type
PBJ: Pen size cylinder(Adjustable stroke type)									LB: LB type

① PBD type cylinders do not have 4mm bore size; PBJ type cylinders do not have 4mm and 6mm bore size;

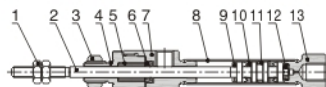
② Please see PIV-12 for detail of mounting accessories.

Pen size cylinder

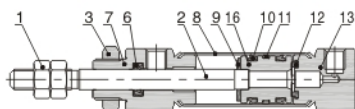
PB Series

Inner structure and material of major parts ■ Dimensions

Double acting without magnet ($\phi 6$)



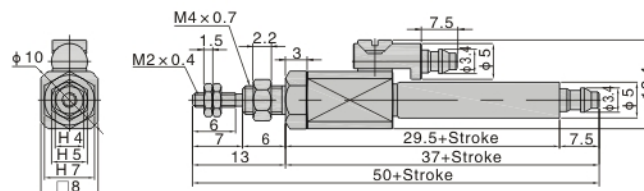
Double acting without magnet ($\phi 10 \sim \phi 16$)



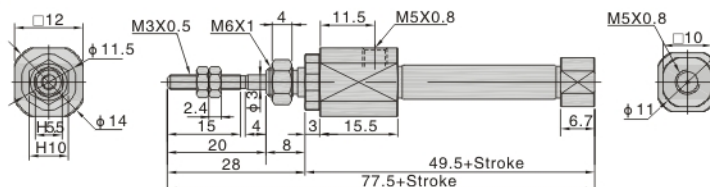
NO.	Item(Bore size)	Material	
		$\phi 4$	$\phi 6 \sim \phi 16$
1	Rod nut	Carbon steel	
2	Piston rod	SUS304	
3	Front cover nut	Carbon steel	
4	Packing retainer	Brass	Aluminum alloy
5	Bushing	Wear resistant material	
6	Front cover O-ring	NBR	
7	Front cover	Brass	Aluminum alloy
8	Barrel	Bronze	SUS304
9	Bumper	TPU	
10	Front cover packing	NBR	
11	Wear ring	Wear resistant material	
12	Bumper	TPU	
13	Back cover	Brass	Aluminum alloy

PB

$\phi 4$ (Without magnet)

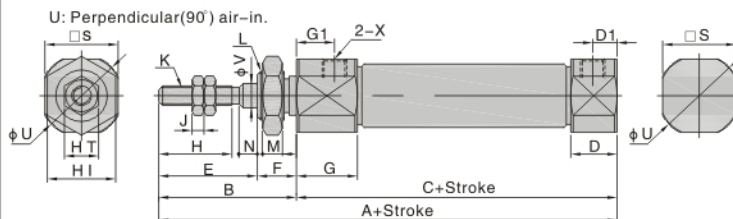


$\phi 6$

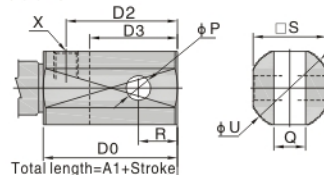


Note: Only axial air intake type of back cover is available for 6mm bore size.

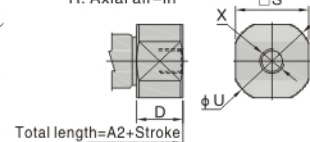
$\phi 10 \sim \phi 16$



CB: Double clevis



R: 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 $\times$ 0.7	M8 $\times$ 1.0	4	3.5	3.3	3.3	5	12	7	14	4	M5 $\times$ 0.8
12	M5 $\times$ 0.8	M10 $\times$ 1.0	4	3.5	5	6.6	8	15	8	17	5	M5 $\times$ 0.8
16	M5 $\times$ 0.8	M10 $\times$ 1.0	4	3.5	5	6.6	8	18	8	20	5	M5 $\times$ 0.8

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

Pen size cylinder

PB Series

AIRTAC

PSB											<table> <tr> <th>Stroke\Item</th><th>A</th><th>A1</th></tr> <tr> <td>5</td><td>40</td><td>19.5</td></tr> <tr> <td>10</td><td>49</td><td>28.5</td></tr> <tr> <td>15</td><td>58</td><td>37.5</td></tr> <tr> <td>20</td><td>67</td><td>46.5</td></tr> </table>		Stroke\Item	A	A1	5	40	19.5	10	49	28.5	15	58	37.5	20	67	46.5
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U: Perpendicular(90°) air-in.																											
CB: Double clevis																											
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Remark: The dimensions of magnet type cylinder are the same as non-magnet type cylinder.																											

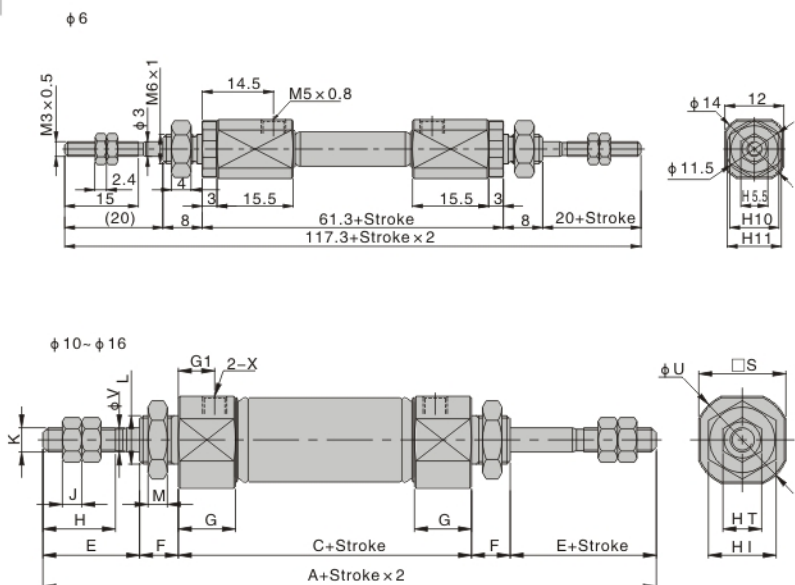
PTB											<table> <tr> <th>Stroke\Item</th><th>A</th><th>A1</th></tr> <tr> <td>5-15</td><td>82</td><td>54</td></tr> <tr> <td>16-30</td><td>91</td><td>63</td></tr> <tr> <td>31-45</td><td>95</td><td>67</td></tr> <tr> <td>46-60</td><td>109</td><td>81</td></tr> </table>		Stroke\Item	A	A1	5-15	82	54	16-30	91	63	31-45	95	67	46-60	109	81
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Remark: The dimensions of magnet type cylinder are the same as non-magnet type cylinder.																											
U: Perpendicular(90°) air-in.																											
CB: Double clevis																											
R: Axial air-in																											
Note: 10~16 bore sized don't have perpendicular(90°) air-in.																											

Pen size cylinder

PB Series

AIRTAC

PBD



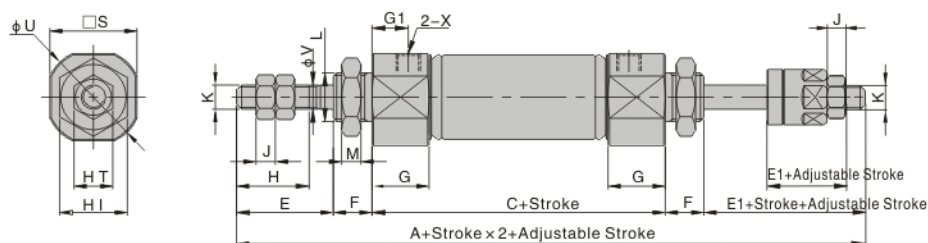
Bore size/Item	A	C	E	F	G	G1	H	I	J
10	104	48	20	8	11.5	7.5	15	11	2.2
12	104	48	20	8	11.5	7.5	15	14	4
16	106.6	50.6	20	8	11.8	7.5	15	14	4

Bore size/Item	K	L	M	S	T	V	X
10	M4 x 0.7	M8 x 1.0	4	12	7	4	M5 x 0.8
12	M5 x 0.8	M10 x 1.0	4	15	8	5	M5 x 0.8
16	M5 x 0.8	M10 x 1.0	4	18	8	5	M5 x 0.8

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

PBJ

φ10~φ16



Bore size/Item	A	C	E	E1	F	G	G1	H	I	J
10	98.7	48	20	14.7	8	11.5	7.5	15	11	2.2
12	101	48	20	17	8	11.5	7.5	15	14	4
16	103.6	50.6	20	17	8	11.8	7.5	15	14	4

Bore size/Item	K	L	M	S	T	V	X
10	M4 x 0.7	M8 x 1.0	4	12	7	4	M5 x 0.8
12	M5 x 0.8	M10 x 1.0	4	15	8	5	M5 x 0.8
16	M5 x 0.8	M10 x 1.0	4	18	8	5	M5 x 0.8

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

Pen size cylinder

Accessories

Ordering code

Accessory	F	PB	10	LB
				①
Accessory	Cylinder model	Bore size	Accessory type	
Mounting accessories	LB	FA	CJ	②
	LB Type	FA Type	CJ Type	

① Please see accessory list for detail of accessories;

② CJ is attached with relevant PIN.

Accessories for choosing list

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

①: Please refer to PVI-33~VI-38 for knuckle detail;

②: Please refer to PVI-39~VI-50 for detail of sensor switch.

Material of accessories

Mounting accessories			Joint accessories		
LB	FA	CJ	I	Y	U
SPCC			Carbon steel		

Dimensions

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

FA									
Bore size\Item	A	B	BB	C	CC	D	E	F	G
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	

CJ									
Item	A	B	C	D	E	F	G	H	I
10	82	22	54	40	4.5	29	21	12	2
12	84	28	56	48	5.5	35	25	16	2.5
16	86	28	58	48	5.5	35	25	16	2.5

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

List for ordering code of accessories

Accessories	Mounting accessory			Sensor switch
Bore size	LB	FA	CJ	
4	-	-	-	-
6	F-PB6LB	F-PB6FA	-	-
10	F-PB10LB	F-PB10FA	F-PB10CJ	CS1-M
12	F-PB12LB	F-PB12FA	F-PB12CJ	
16	F-PB16LB	F-PB16FA	F-PB16CJ	

Accessories	Knuckle			
Bore size	I:I Knuckle	Y:Y Knuckle	F:F Knuckle	U:U Knuckle
4	-	-	-	-
6	-	-	F-M03050F	-
10	F-M04070IB	F-M04070YB	F-M04070F	F-M04070U
12	F-M05080IB	F-M05080YB	F-M05080F	F-M05080U
16	F-M05080IB	F-M05080YB	F-M05080F	F-M05080U