

## Compendium of MU Series

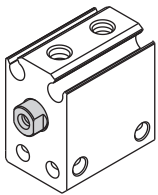
**Seven bore size are available**

Bore size: 4、6、8、10、12、16、20

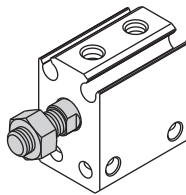
**Magnetic switch slots around the cylinder body**

There are magnetic switch slots around the cylinder body convenient to install inducting switch.

**Two kinds of rod type**



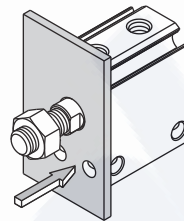
Female thread



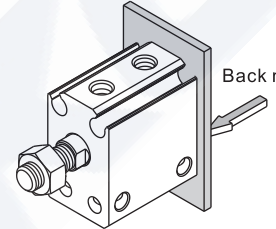
Male thread

**Mounted from 4 directions**

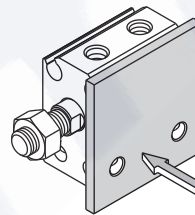
Cylinder can be mounted from 4 directions, and convenient to install and use.



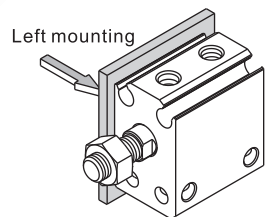
Front mounting



Back mounting



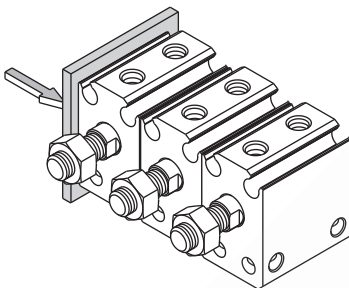
Right mounting



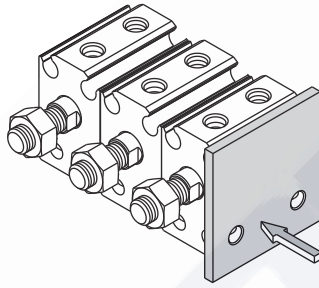
Left mounting

**Mounted side by side**

Multitudinous cylinder can be mounted side by side to save space.



Mounted side by side from left



Mounted side by side from right

### Criteria for selection: Cylinder thrust

Unit: Newton(N)

Bore size	Rod size	Acting type	Pressure area(mm <sup>2</sup> )	Operating pressure(MPa)							
				0.1	0.2	0.3	0.4	0.5	0.6	0.7	
4	2	Single acting_push	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
			Pull side	9.4	0.9	1.9	2.8	3.8	4.7	5.6	6.6
6	4	Single acting_push	28.3	-	-	5.1	7.9	10.7	13.5	16.4	
		Double acting	Push side	28.3	-	5.7	8.5	11.3	14.2	17.0	19.8
			Pull side	15.7	-	3.1	4.7	6.3	7.9	9.4	11.0
8	5	Single acting_push	50.3	-	-	8.3	13.4	18.4	23.4	28.5	
		Double acting	Push side	50.3	-	10.1	15.1	20.1	25.2	30.2	35.2
			Pull side	30.6	-	6.1	9.2	12.2	15.3	18.4	21.4
10	6	Single acting_push	78.5	-	8.7	16.5	24.4	32.2	40.1	47.9	
		Double acting	Push side	78.5	1.3	15.7	23.6	31.4	39.3	47.1	55.0
			Pull side	50.3	0.9	10.1	15.1	20.1	25.2	30.2	35.2
12	6	Single acting_push	113.1	-	13.6	24.9	36.2	47.5	58.9	70.2	
		Double acting	Push side	113.1	11.3	22.6	33.9	45.2	56.5	67.9	79.2
			Pull side	84.8	8.5	17.0	25.4	33.9	42.4	50.9	59.4
16	8	Single acting_push	201.1	-	27.0	47.1	67.2	87.3	107.4	127.5	
		Double acting	Push side	201.1	20.1	40.2	60.3	80.4	100.5	120.6	140.7
			Pull side	150.8	15.1	30.2	45.2	60.3	75.4	90.5	105.6
20	10	Single acting_push	314.2	-	36.8	68.2	99.7	131.1	162.5	193.9	
		Double acting	Push side	314.2	31.4	62.8	94.2	125.7	157.1	188.5	219.9
			Pull side	236.5	23.7	47.1	70.7	94.2	117.8	141.4	164.9

### Installation and application



- When load changes in the work, the cylinder with abundant output capacity shall be selected.
- Relative cylinder with high temperature resistance or corrosion resistance shall be chosen under the condition of high temperature or corrosion.
- Necessary protection measure shall be taken in the environment with higher humidity, much dust or water drops, oil dust and welding dregs.
- Dirty substances in the pipe must be eliminated before cylinder is connected with pipeline to prevent the entrance of particles into the cylinder.
- The medium used by cylinder shall be filtered to 40 μm or below.
- As both of the front cover and piston of the cylinder are short, typically too large stroke can not be selected.
- Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
- The cylinder shall avoid the influence of side load in operation to maintain the normal work of cylinder and extend the service life.
- If the cylinder is dismantled and stored for a long time, please 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.

# Mini free mount cylinder

## MU Series

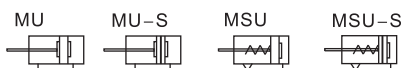


### Specification

Bore size(mm)	4	6	8	10	12	16	20
Acting type	MU: Double acting			MSU: Single acting_Pull type			
Fluid	Air(to be filtered by 40 μ m filter element)						
Operating pressure	Double acting	0.15~0.7MPa(22~100psi)					
	Single acting	0.3~0.7MPa(44~100psi)			0.2~0.7MPa(29~100psi)		
Proof pressure	1.2MPa(175psi)						
Temperature °C	-20~70						
Speed range mm/s	Double acting: 30~500			Single acting: 50~500			
Stroke tolerance	+1.0 0						
Cushion type	No					Bumper	
Port size	M3×0.5					M5×0.8	

Add) Refer to P427 for detail of sensor switch.

### Symbol



### Product feature

- JIS standard is implemented.
- Cylinder can be mounted from 4 directions, and convenient to install and use.
- Multitudinous cylinder can be mounted side by side to save space.
- The front end of the cylinder is designed with boss. Centering can be done easily.
- The internal diameter of the body is treated with rolling followed by the treatment of hard anodizing, forming an excellent abrasion resistance and durability.
- With magnet type is of the feature of position sensing.
- There are magnetic switch slots around the cylinder body, which is convenient to install inducting switch.
- The seal of piston adopts heterogeneous two-way seal structure. It has compact dimension and the function of grease reservation.

### Stroke

Bore size (mm)		Standard stroke (mm)	Max.std stroke
4	Double acting	4 6 8 10 15 20	20
	Single acting	4 6	6
6	Double acting	4 6 8 10 15 20 25 30	30
	Single acting	4 6 8	8
8	Double acting	4 6 8 10 15 20 25 30	30
	Single acting	4 6 8 10	10
10	Double acting	4 6 8 10 15 20 25 30	30
	Single acting	4 6 8 10	10
12	Double acting	5 10 15 20 25 30 35 40 45 50	50
	Single acting	5 10	10
16	Double acting	5 10 15 20 25 30 35 40 45 50	50
	Single acting	5 10	10
20	Double acting	5 10 15 20 25 30 35 40 45 50	50
	Single acting	5 10	10

- Note) 1. Please contact the company for other special strokes.  
 2. The dimensions of non-std stroke cylinder has the same dimensions as the next longer stroke std. stroke cylinder. e.g. 23mm stroke cylinder has the same dimensions of 25 std. stroke cylinder.

### Ordering code

MU  12 x 10 S   
 MSU  12 x 10 S

① ② ③ ④ ⑤ ⑥

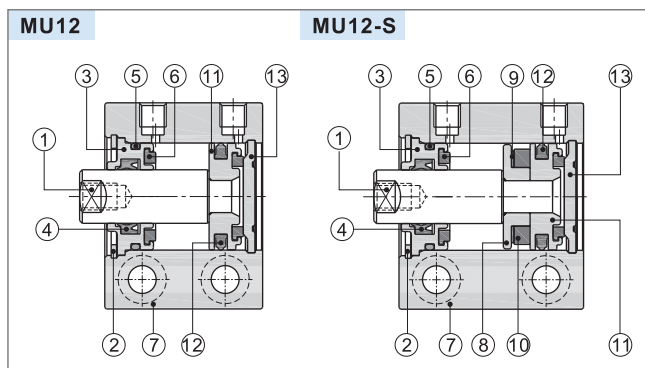
① Model	② Body mounted type	③ Bore size	④ Stroke	⑤ Magnet	⑥ Rod type
MU: Mini free mount cylinder (double acting)	No this code	4	Refer to stroke table for details	No this code(Without magnet)	Blank: No thread; B: Male thread
		6			
		8			
		10			
		12			
MSU: Mini free mount cylinder (single acting-push)	Blank: Transverse mounting R: Axial mounting	12	Blank: Without magnet S: With magnet	Blank: Female thread B: Male thread	
		16			
		20			



# Mini free mount cylinder

## MU Series

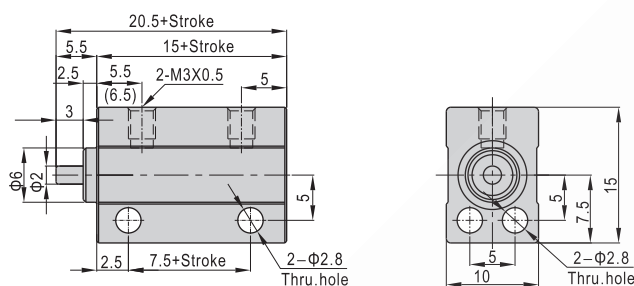
### Inner structure and material of major parts



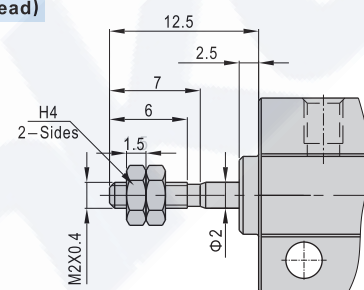
NO.	Item	Material
1	Piston rod	Stainless steel or Carbon steel with 20 μm chrome plated
2	C clip	Spring steel
3	Front cover	Aluminum alloy
4	Front cover packing	NBR
5	O-ring	NBR
6	Bumper	TPU
7	Body	Aluminum alloy
8	Magnet holder	Brass(Φ12)/Aluminum alloy(Others)
9	Magnet washer	NBR
10	Magnet	Sintered metal (Neodymium-iron-boron)
11	Piston	Brass(Φ12,16)/Aluminum alloy(Others)
12	Piston seal	NBR
13	Back cover	No(Φ12,16)/Aluminum alloy

### Dimensions

Φ4

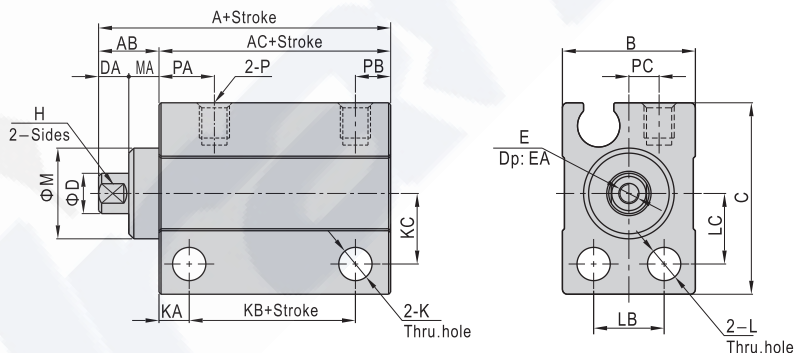


Φ4(Male thread)



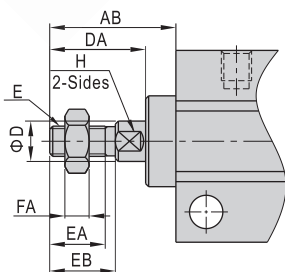
[Note] The value in the "( )" is single-acting type's value.

Φ6~Φ10



Bore size\Item	With magnet			Without magnet			AB	B	C	D		DA	E	EA	H	K	KA	KC	L	LB	LC	M	MA	P	PA	PB	PC
	A	AC	KB	A	AC	KB				MU	MSU																
6	24	18	11.5	19	13	6.5	6	13	19	4	3.5	3	M2.5×0.45	5	3.5	3.3	3	7	3.3	7	7	9	3	M3×0.5	5.5	3.5	3
8	24	18	11.5	19	13	6.5	6	13	21		5	3	M3×0.5	6	4.5	3.3	3	8	3.3	7	8	11	3	M3×0.5	5.5	3.5	3
10	24	18	11.5	19	13	6.5	6	13.5	22		6	3	M3×0.5	6	5	3.3	3	8.5	3.3	7	8.5	12	3	M3×0.5	5.5	3.5	3.5

Φ6~Φ10(Male thread)



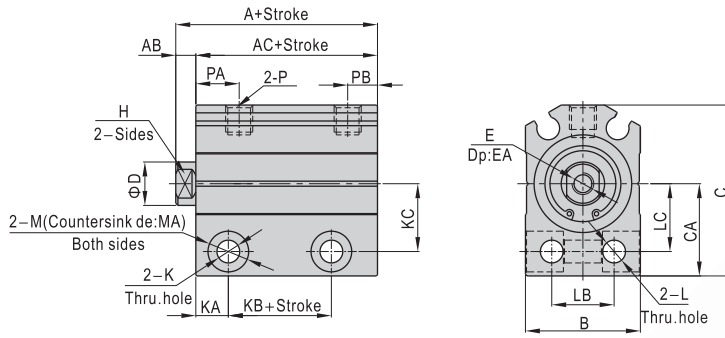
Bore size\Item	AB	D(MU)	D(MSU)	DA	E	EA	EB	FA	H
6	12.5	4	3.5	9.5	M3×0.5	5.5	6.5	2.4	3.5
8	14.5	5	5	11.5	M4×0.7	7	8.5	3	4.5
10	16.5	6	6	13.5	M5×0.8	9	10.5	4	5

[Note] The unmarked dimensions are the same as Female type.

# Mini free mount cylinder

## MU Series

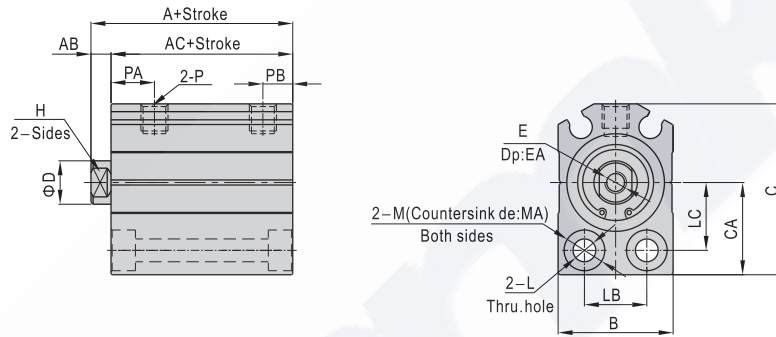
### Φ12~Φ20(Transverse mounted)



Bore size\Item	A	AC	KB	A	AC	KB	AB	B	C	CA	D	E	EA	H	K	KA	KC	L	LB	LC	M	MA	P	PA	PB
	With magnet			Without magnet																					
12	25.5(30.5)	22(27)	8.5(13.5)	20.5(25.5)	17(22)	3.5(8.5)	3.5	17	28.5	15.5	6	M3×0.5	6	5	4.3	6	11	4.3	8	11	7.5	7	M5×0.8	7.5	5
16	27(32)	23.5(28.5)	9(14)	22(27)	18.5(23.5)	4(9)	3.5	21	31.5	17	8	M4×0.7	8	6	4.3	6	12.5	4.3	11.5	12.5	7.5	7	M5×0.8	8	5.5
20	29(34)	24.5(29.5)	10.5(15.5)	24(29)	19.5(24.5)	5.5(10.5)	4.5	25	38.5	21	10	M5×0.8	7	8	5.5	7	15.5	5.5	13.5	15.5	9	9	M5×0.8	9	5.5

[Note] The value in the "( )" are single-acting type's value.

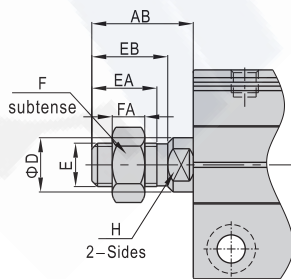
### Φ12~Φ20(Axial mounted)



Bore size\Item	A	AC	A	AC	AB	B	C	D	CA	E	EA	H	L	LB	LC	M	MA	P	PA	PB
	With magnet		Without magnet																	
12	25.5(30.5)	22(27)	20.5(25.5)	17(22)	3.5	17	28.5	6	15.5	M3×0.5	6	5	4.3	8	11	7.5	4.5	M5×0.8	7.5	5
16	27(32)	23.5(28.5)	22(27)	18.5(23.5)	3.5	21	31.5	8	17	M4×0.7	8	6	4.3	11.5	12.5	7.5	4.5	M5×0.8	8	5.5
20	29(34)	24.5(29.5)	24(29)	19.5(24.5)	4.5	25	38.5	10	21	M5×0.8	7	8	5.5	13.5	15.5	9	5.5	M5×0.8	9	5.5

[Note] The value in the "( )" are single-acting type's value.

### Φ12~Φ20(Male thread)



Bore size\Item	AB	D	E	EA	EB	F	FA	H
12	14	6	M5×0.8	9	10.5	8	4	5
16	15.5	8	M6×1.0	10	12	10	5	6
20	18.5	10	M8×1.25	12	14	12	6	8

[Note] The unmarked dimensions are the same as Female type.