Mini Free-mount Cylinder

Series CUJ

ø4, ø6, ø8, ø10

How to Order

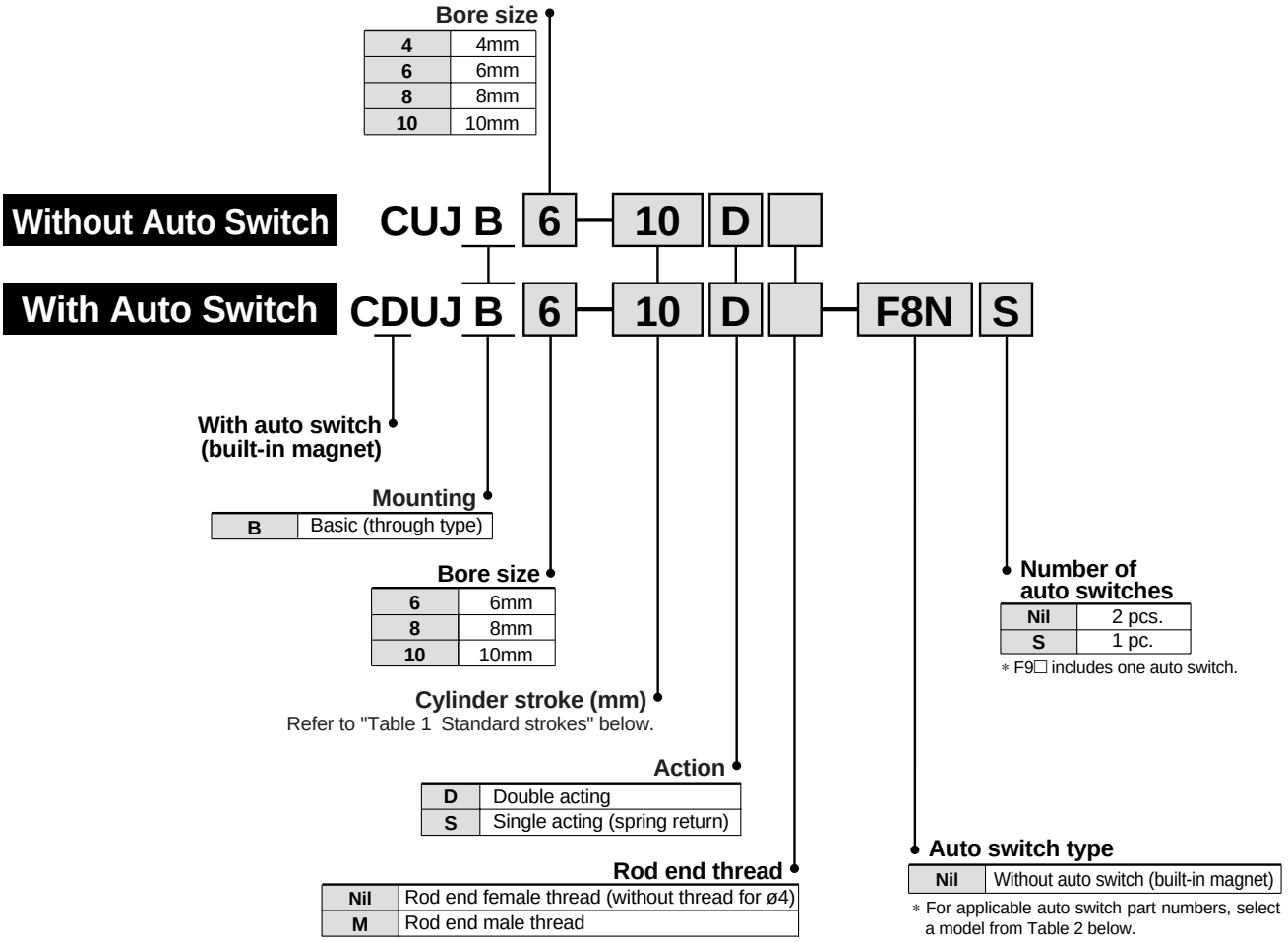


Table 1 Standard strokes

Action	Bore size (mm)	Standard stroke (mm)
Double acting	4	4, 6, 8, 10
	6	4, 6, 8, 10, 15
	8, 10	4, 6, 8, 10, 15, 20
Single acting (spring return)	4	4, 6
	6	4, 6, 8
	8, 10	4, 6, 8, 10

Table 2 Applicable auto switch models Refer to pages 11 to 14 for detailed specifications.

Type	Special function	Electrical entry	Indicator light	Wiring (output)	Load voltage			Auto switch part number		Lead wire length (m)			Applicable load	
					DC		AC	Electrical entry direction: Perpendicular	Electrical entry direction: In-line	0.5 (Nil)	3 (L)	5 (Z)		
Solid state switch	—	Grommet	Yes	3 wire (NPN)	24V	12V	—	—	F9N	●	●	○	—	Relay, PLC
								F8N	—	●	●	○		
				3 wire (PNP)				—	F9P	●	●	○		
								F8P	—	●	●	○		
				2 wire				—	F9B	●	●	○		
								F8B	—	●	●	○		

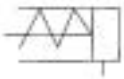
∗ Lead wire length symbols: 0.5m ..... Nil (Example) F8N
3.0m ..... L (Example) F8NL

∗ Auto switches marked with a "○" symbol are produced upon receipt of order.

Symbol

Double acting/Single rod

Single acting/Spring return



Specifications

Bore size (mm)		4	6	8	10
Action		Double acting/Single acting (spring return)			
Fluid		Air			
Proof pressure		1.05MPa			
Min. operating pressure MPa	**Double acting**	0.15MPa			0.1MPa
	Single acting (spring return)	0.35MPa	0.3MPa		0.2MPa
Max. operating pressure		0.7MPa			
Ambient and fluid temperature		Without auto switch: –10°C to 70°C (with no freezing) With auto switch: –10°C to 60°C (with no freezing)			
Cushion		None			
Lubrication		Non-lube			
Piston speed		50 to 500mm/s			
Thread tolerance		JIS class 2			
Stroke length tolerance		$^{+0.5}_{0}$			
Mounting		Through hole			

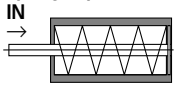
Theoretical Output/Double Acting

(N)

Bore size (mm)	Rod size (mm)	Operating direction	Piston area (mm^2)	Operating pressure (MPa)		
				0.3	0.5	0.7
4	**2**	OUT	12.6	3.76	6.28	8.79
		IN	9.4	2.82	4.71	6.59
6	**4**	OUT	28.3	8.48	14.13	19.79
		IN	15.7	4.71	7.85	10.99
8	**5**	OUT	50.3	15.07	25.13	35.18
		IN	30.6	9.18	15.31	21.44
10	**6**	OUT	78.5	23.56	39.26	54.97
		IN	50.3	15.07	25.13	35.18

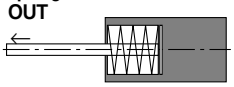
Spring Reaction Force/Single Acting

Spring in pre-loaded condition
IN



When the spring is set in the cylinder

Spring in loaded condition
OUT



When the spring is contracted by applying air

(N)

Bore size (mm)	Spring condition	Stroke (mm)			
		4	6	8	10
4	Pre-loaded	1.70	1.27	—	—
	Loaded	2.55	2.55	—	—
6	Pre-loaded	2.45	2.01	1.57	—
	Loaded	3.33	3.33	3.33	—
8	Pre-loaded	4.67	3.76	2.86	1.96
	Loaded	6.47	6.47	6.47	6.47
10	Pre-loaded	5.04	4.18	3.31	2.45
	Loaded	6.77	6.77	6.77	6.77

Weights/Double Acting

(g)

Bore size (mm)	Standard stroke (mm)						Additional weight	
	4	6	8	10	15	20	With magnet	Rod end male thread
CUJB4	7.2	7.9	8.6	9.3	—	—	—	0.4
CUJB6	12.4	13.6	14.8	16.0	18.9	—	2.7	0.8
CUJB8	15.6	17.0	18.4	19.7	23.0	26.4	3.0	1.5
CUJB10	17.9	19.4	20.8	22.3	25.9	29.5	3.2	2.6

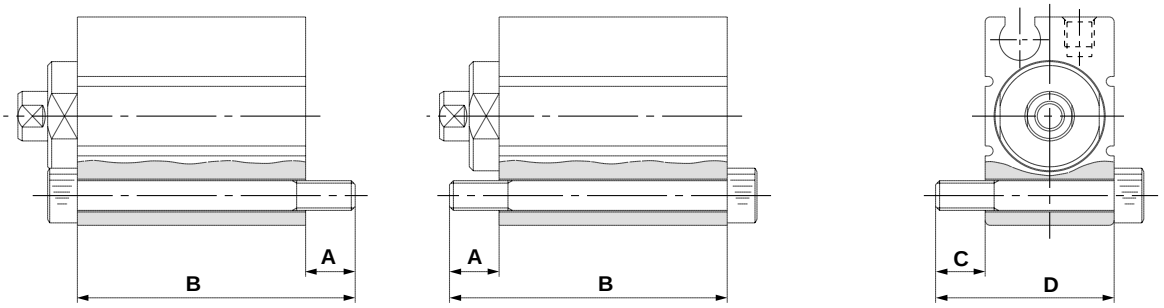
Single Acting

(g)

Bore size (mm)	Standard stroke (mm)				Additional weight	
	4	6	8	10	With magnet	Rod end male thread
CUJB4	7.2	7.9	—	—	—	0.4
CUJB6	12.8	14.0	15.2	—	2.4	0.8
CUJB8	15.8	17.2	18.6	19.9	2.5	1.5
CUJB10	17.9	19.4	20.8	22.3	2.4	2.6

Mounting

Through hole mounting bolts are available for mounting a cylinder.
To order bolts, add "CUJ-" at the beginning of the bolt description.
(Example) CUJ-M3 x 27L



Axial mounting **Side mounting**

Without Auto Switch

For axial mounting

Model	A	B	Mounting bolt
CUJB4-4	4	21	M2.5 x 21L
-6		23	M2.5 x 23L
-8		25	M2.5 x 25L
-10		27	M2.5 x 27L
CUJB6-4	5	22	M3 x 22L
-6		24	M3 x 24L
-8		26	M3 x 26L
-10		28	M3 x 28L
-15		33	M3 x 33L
CUJB8-4	5	22	M3 x 22L
-6		24	M3 x 24L
-8		26	M3 x 26L
-10		28	M3 x 28L
-15		33	M3 x 33L
-20		38	M3 x 38L
CUJB10-4	5	22	M3 x 22L
-6		24	M3 x 24L
-8		26	M3 x 26L
-10		28	M3 x 28L
-15		33	M3 x 33L
-20		38	M3 x 38L

For side mounting

Model	C	D	Mounting bolt
CUJB4-4	4	14	M2.5 x 14L
-6			
-8			
-10			
CUJB6-4	5	18	M3 x 18L
-6			
-8			
-10			
-15			
CUJB8-4	5	18	M3 x 18L
-6			
-8			
-10			
-15			
-20			
CUJB10-4	5	18	M3 x 18L
-6			
-8			
-10			
-15			
-20			

With Auto Switch

For axial mounting

Model	A	B	Mounting bolt
CDUJB6-4	5	27	M3 x 27L
-6		29	M3 x 29L
-8		31	M3 x 31L
-10		33	M3 x 33L
-15		38	M3 x 38L
CDUJB8-4	5	27	M3 x 27L
-6		29	M3 x 29L
-8		31	M3 x 31L
-10		33	M3 x 33L
-15		38	M3 x 38L
-20		43	M3 x 43L
CDUJB10-4	5	27	M3 x 27L
-6		29	M3 x 29L
-8		31	M3 x 31L
-10		33	M3 x 33L
-15		38	M3 x 38L
-20		43	M3 x 43L

For side mounting

Model	C	D	Mounting bolt
CDUJB6-4	5	18	M3 x 18L
-6			
-8			
-10			
-15			
CDUJB8-4	5	18	M3 x 18L
-6			
-8			
-10			
-15			
-20			
CDUJB10-4	5	18	M3 x 18L
-6			
-8			
-10			
-15			
-20			

■ Clean Room Series

How to Order

10 — C **D** UJB **6** — **8** **D** □ — **F8N** □

Clean room series

10	Relief type
11	Vacuum type

Magnet

Nil	Without
D	With (built-in)

Bore size

6	6mm
8	8mm
10	10mm

Stroke

The specifications are the same as those for the standard double acting type. Refer to the standard stroke table on page 1.

Rod end thread

Nil	Rod end female thread
M	Rod end male thread

Auto switch type

Nil	Without auto switch (built-in magnet)

∗ Applicable auto switch part numbers are the same as those for the standard double acting type. Refer to page 1.

Number of auto switches

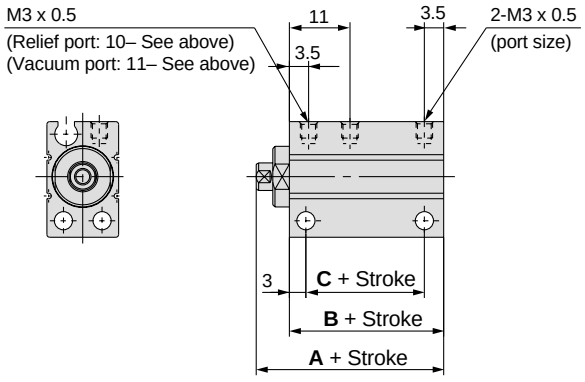
Nil	2 pcs.
S	1 pc.

Double acting

Specifications

The specifications are the same as those for the standard double acting type. Refer to page 2.

Dimensions

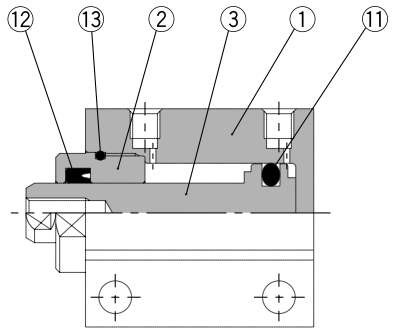


(mm)

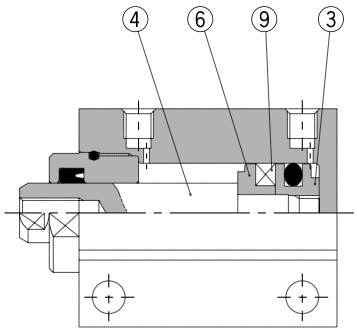
Bore size (mm)	Without auto switch			With auto switch		
	A	**B**	**C**	**A**	**B**	**C**
6, 8, 10	24	18	11.5	29	23	16.5

Construction

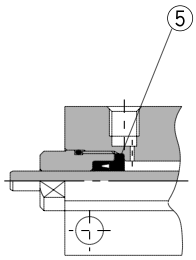
Double acting



Without magnet

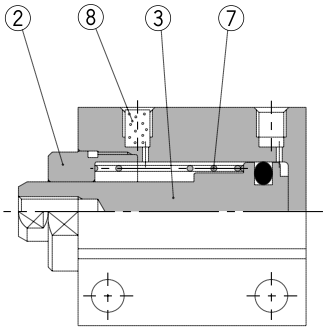


Built-in magnet

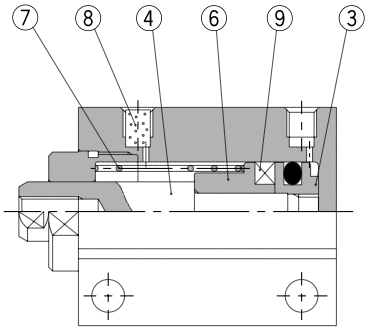


For ø4

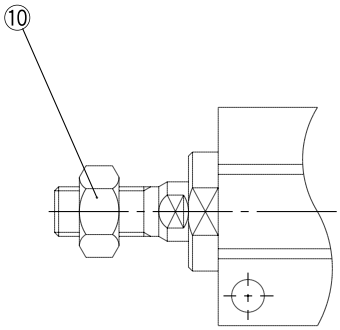
Single acting



Without magnet



Built-in magnet



Rod end male thread

Parts list

No.	Description		Material	Note
1	**Cylinder tube**		Aluminum alloy	Hard anodized
2	**Rod cover**		Bronze alloy	Electroless nickel plated
3	**Piston**	**Without switch**	Stainless steel	
		With switch	Aluminum alloy	Chromated
4	**Piston rod**		Stainless steel	
5	**Seal retainer**		Stainless steel	CUJB4 only
6	**Magnet retainer**		Aluminum alloy	Chromated
7	**Return spring**		Piano wire	
8	**Bronze element**		Sintered metal BC	
9	**Magnet**		—	
10	**Rod end nut**		Steel	Nickel plated
11	**Piston seal**		NBR	
12	**Rod seal**		NBR	
13	**Tube gasket**		NBR	

Replacement parts: Seal kits (double acting)

Bore size	Kit no.	Contents
4	CUJB4-PS	Above numbers 11, 12, 13 and an exclusive grease pack.
6	CUJB6-PS	
8	CUJB8-PS	
10	CUJB10-PS	

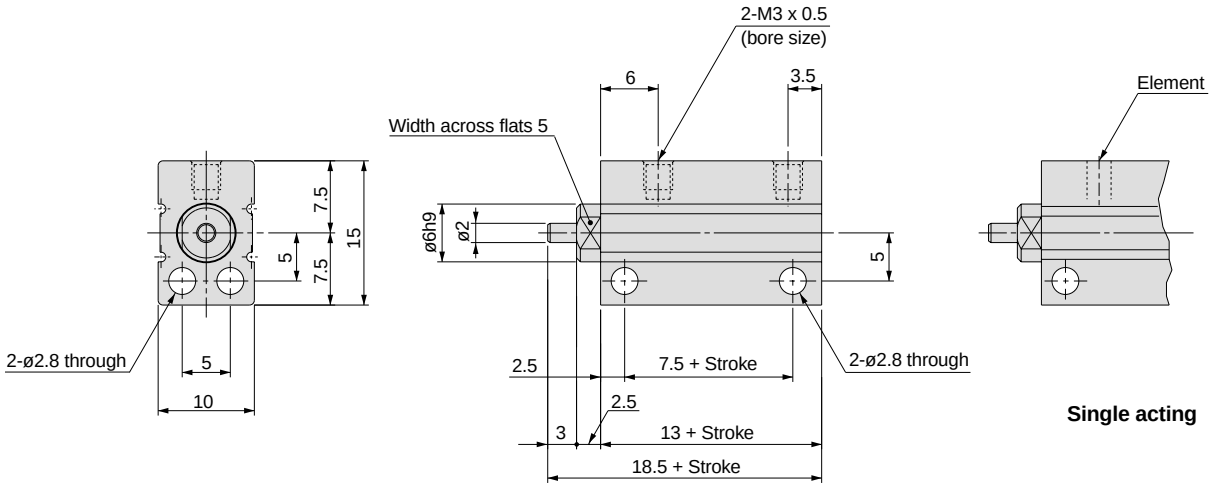
Replacement parts: Seal kits (single acting)

Bore size	Kit no.	Contents
4	CUJB4-S-PS	Above number 11 and an exclusive grease pack.
6	CUJB6-S-PS	
8	CUJB8-S-PS	
10	CUJB10-S-PS	

Dimensions for ø4 Double Acting/Single Acting

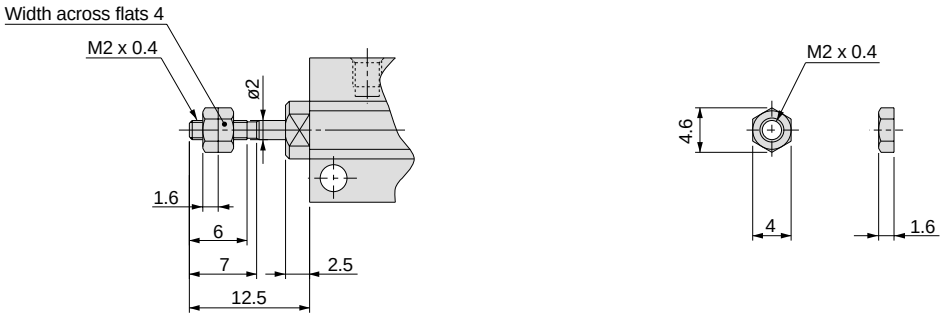
Without magnet/CUJB4

Note) The angular position of the width across flats is not fixed with respect to the tube.



Single acting

Rod end male thread

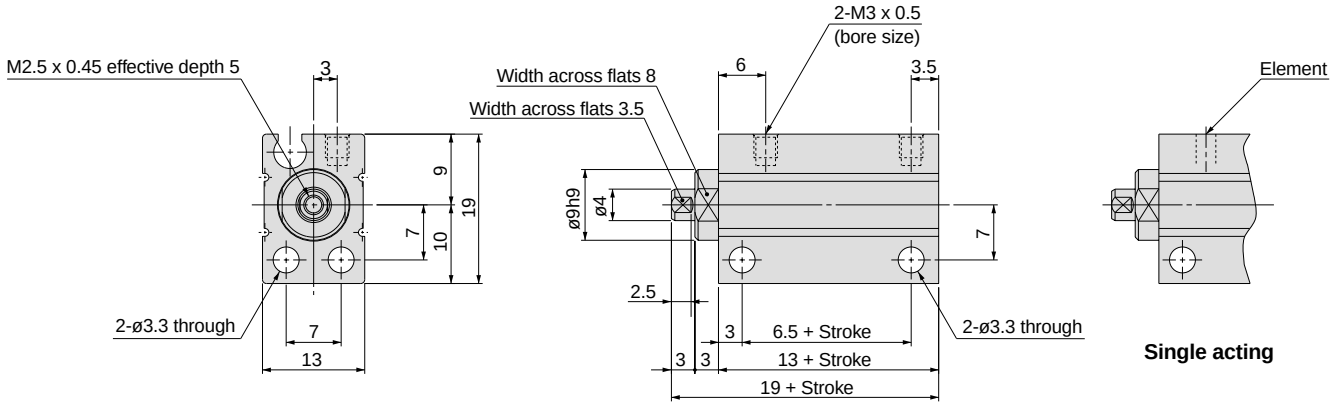


Rod end nut part no.: NTJ-004

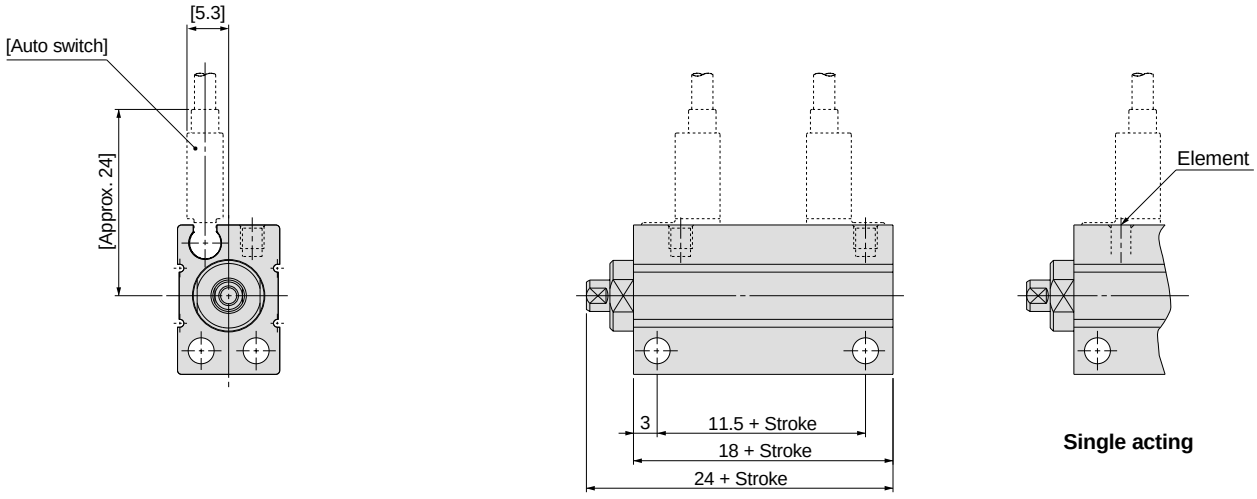
Dimensions for ø6 Double Acting/Single Acting

Without magnet/CUJB6

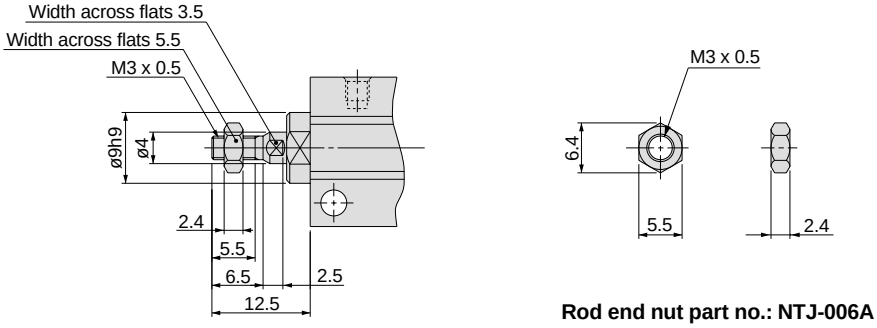
Note) The angular position of the width across flats is not fixed with respect to the tube.



Built-in magnet/CDUJB6



Rod end male thread

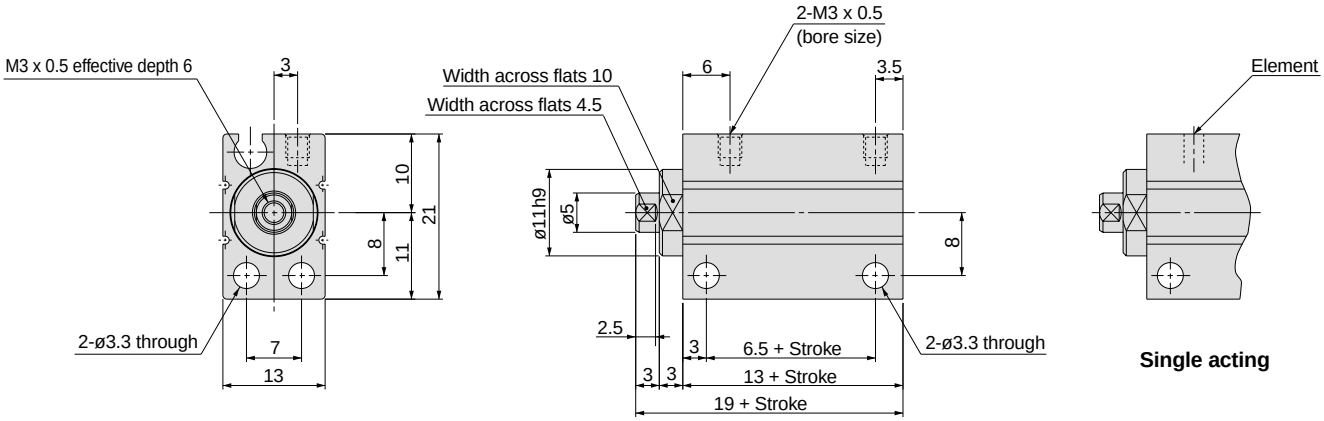


Rod end nut part no.: NTJ-006A

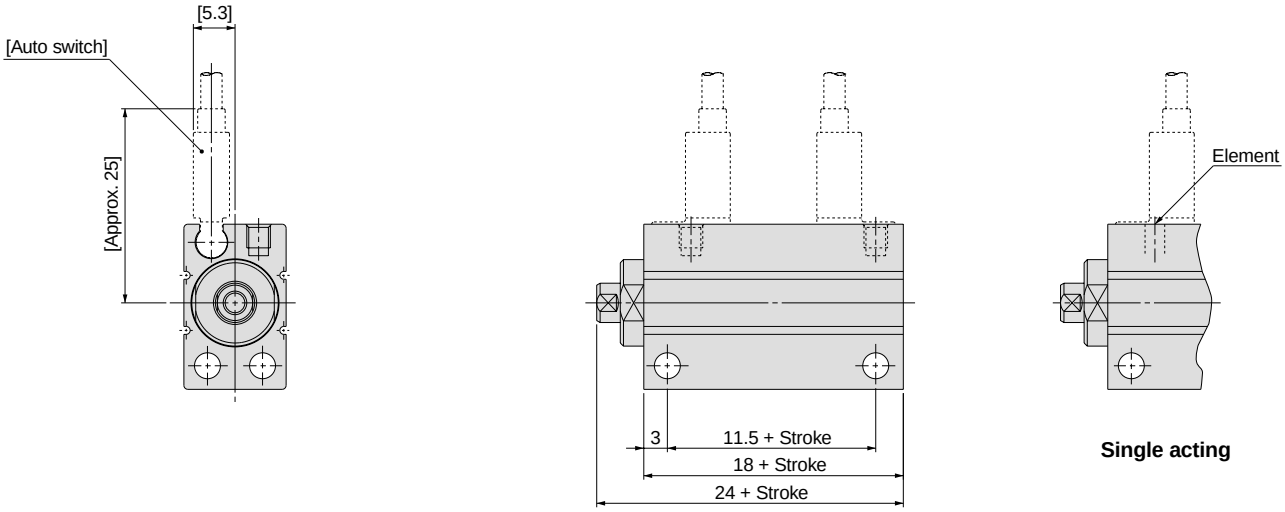
Dimensions for ø8 Double Acting/Single Acting

Without magnet/CUJB8

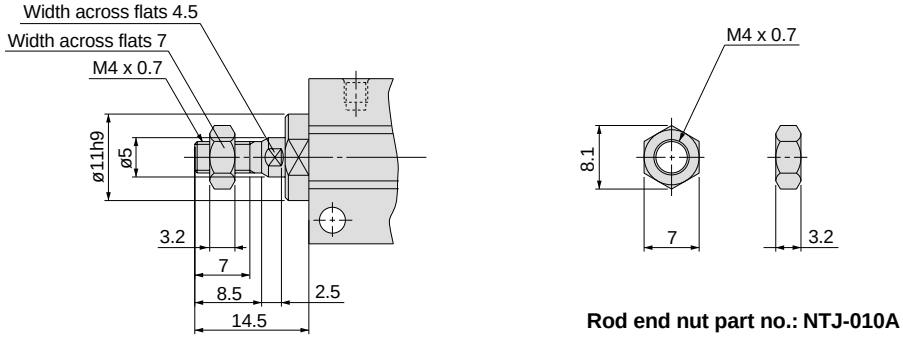
Note) The angular position of the width across flats is not fixed with respect to the tube.



Built in magnet/CDUJB8



Rod end male thread

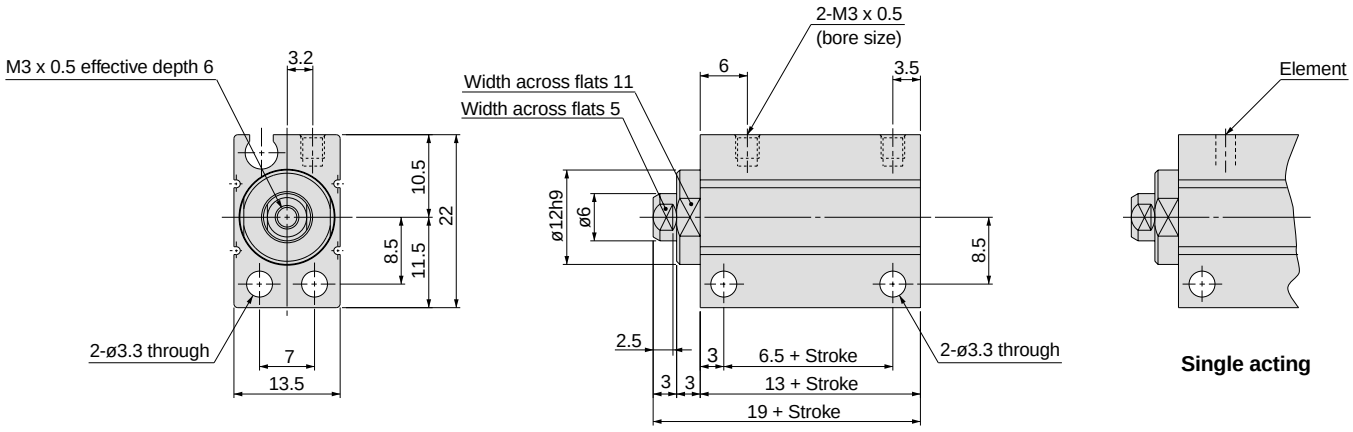


Rod end nut part no.: NTJ-010A

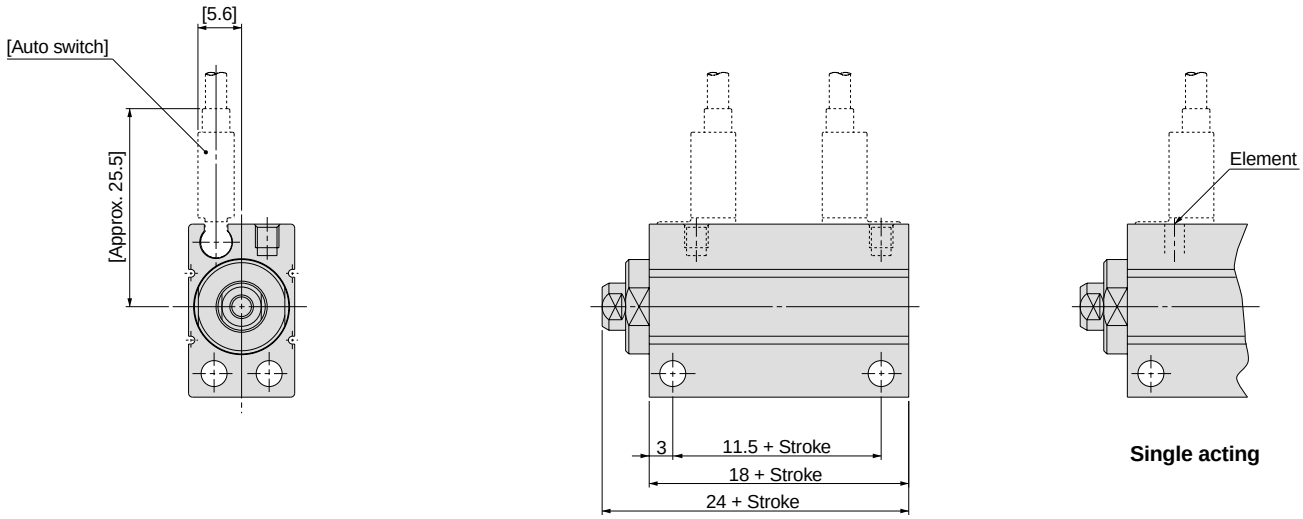
Dimensions for ø10 Double Acting/Single Acting

Without magnet/CUJB10

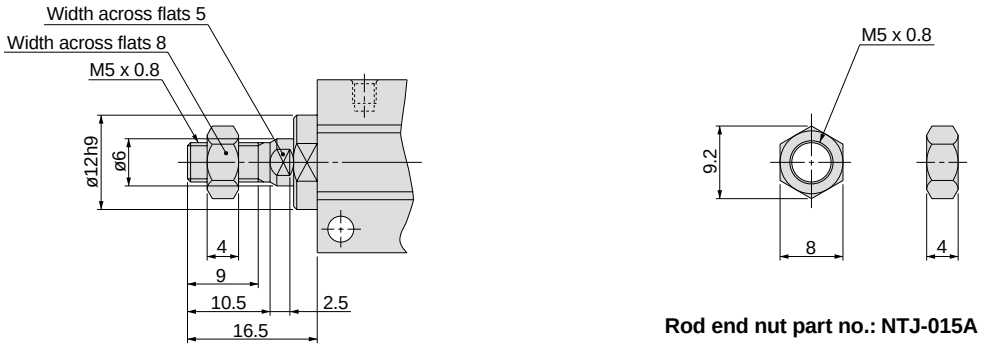
Note) The angular position of the width across flats is not fixed with respect to the tube.



Built-in magnet/CDUJB10



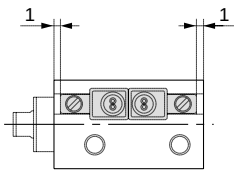
Rod end male thread



Rod end nut part no.: NTJ-015A

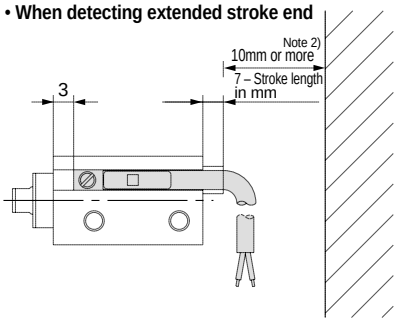
Proper Auto Switch Mounting Position for Stroke End Detection (ø6, ø8, ø10 common)

D-F8N, F8P, F8B

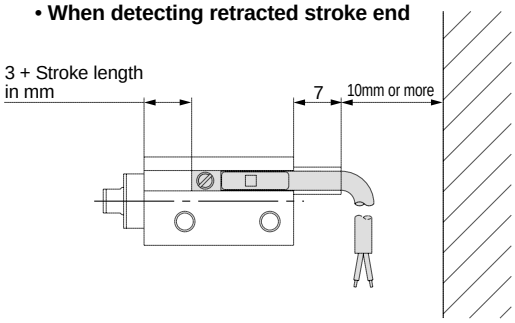


D-F9N, F9P, F9B

• When detecting extended stroke end



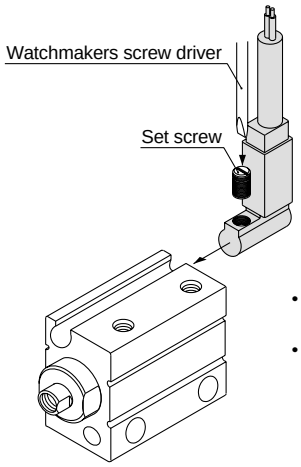
• When detecting retracted stroke end



Note 1) Solid state switch: D-F9□ includes one auto switch.

Note 2) To prevent interference caused by the lead wire, provide a clearance of 10mm or more in addition to the dimensions stated above. Negative numbers indicate recess, positive numbers indicate protrusion.

Auto Switch Mounting

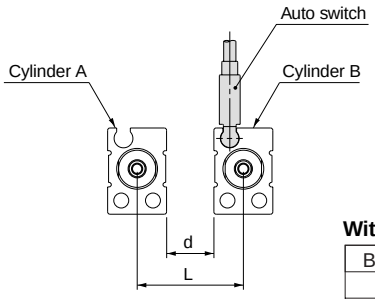


- When tightening an auto switch mounting screw, use a watchmakers screw driver with a handle of approximately 5 to 6mm in diameter.
- Use a tightening torque of approximately 0.10 to 0.20N·m.

When Using Cylinders Adjacently

1. When cylinders with auto switches are adjacent to one another as shown in the figure below, provide at least the amount of space shown in the tables below between them.

If the space is not sufficient, the magnets in adjacent cylinders may cause auto switches to malfunction.



Without shielding plate

Bore	ø6	ø8	ø10
L	19	19	19.5
d	6	6	6

With shielding plate

Bore	ø6	ø8	ø10
L	16	13.5	14
d	3	0.5	0.5

∗ The space can be reduced by attaching shielding plates (steel plates 0.2 to 0.3mm thick) to the sides of the cylinders facing each other. In the case of bore size ø6, be sure to attach a plate on Cylinder A (on the surface opposite to the switch groove).

2. In the case of bore size ø6 cylinders with auto switches, keep the switch groove side surface at least 2.5mm away from a magnetic substance.

If a magnetic substance is closer than 2.5mm, auto switches may malfunction due to a drop in magnetic force.

∗ If this surface is to be used for mounting, a spacer composed of a non-magnetic substance (aluminum, etc.) is required as shown in the figure below.