

Series 10-11-CUJ

ø6, ø8, ø10, ø12, ø16, ø20
Mini Free Mount Cylinder

How to Order

10-C D UJ B 6 8 D F8N

Clean series

10	Relief type
11	Vacuum suction type

Built-in magnet

Nil	No
D	Yes (Built-in)

Mounting direction

B Lateral mounting

S* Axial mounting

Bore size

6	6 mm
8	8 mm
10	10 mm
12	12 mm
16	16 mm
20	20 mm

Stroke

Refer to the table below.

Double acting

Number of auto switches

Nil	2 pcs.
S	1 pc.

* M9□ includes one auto switch.

Auto switch

Nil	Without auto switch
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* For the applicable auto switch model, refer to next page.

Rod end thread

Nil	Rod end female thread
M	Rod end male thread

* The minimum stroke for auto switch mounting and operating range are the same as standard products.

Model

	Model	Bore size (mm)	Port size	Lubrication	Action	Standard stroke (mm)	Auto switch mounting	Cushion
Relief type	10-CUJ□6	6	M3 x 0.5	Non-lube	Double acting, Single rod	4, 6, 8, 10, 15	○	None
	10-CUJ□8	8	M3 x 0.5			4, 6, 8, 10, 15, 20		
	10-CUJ□10	10	M3 x 0.5			4, 6, 8, 10, 15, 20		
	10-CUJ□12	12	M3 x 0.5			5, 10, 15, 20, 25, 30		Rubber bumper
	10-CUJ□16	16	M3 x 0.5			5, 10, 15, 20, 25, 30		
	10-CUJ□20	20	M5 x 0.8			5, 10, 15, 20, 25, 30, 35, 40, 45, 50		
Vacuum suction type	11-CUJ□6	6	M3 x 0.5			4, 6, 8, 10, 15		None
	11-CUJ□8	8	M3 x 0.5			4, 6, 8, 10, 15, 20		
	11-CUJ□10	10	M3 x 0.5			4, 6, 8, 10, 15, 20		
	11-CUJ□12	12	M3 x 0.5			5, 10, 15, 20, 25, 30		Rubber bumper
	11-CUJ□16	16	M3 x 0.5			5, 10, 15, 20, 25, 30		
	11-CUJ□20	20	M5 x 0.8			5, 10, 15, 20, 25, 30, 35, 40, 45, 50		

Specifications

Bore size (mm)	6	8	10	12	16	20
Action	Double acting					
Fluid	Air					
Proof pressure	1.05 MPa					
Minimum operating pressure	Double acting	0.15 MPa	0.1 MPa	0.07 MPa	0.05 MPa	
Maximum operating pressure	0.7 MPa					
Ambient and fluid temperature	Without auto switch: -10°C to 70°C (No freezing). With auto switch: -10°C to 60°C (No freezing)					
Cushion	None			Rubber bumper		
Lubrication	Non-lube					
Piston speed	50 to 400 mm/s					
Stroke length tolerance	+0.5 0			+1.0 0		
Mounting	Through-hole			CUJB: Through-hole (Lateral, axial direction: 2 locations each) CUJS: Through-hole (Axial direction: 2 locations)		
Grease	Fluorine grease					
Cleanliness class (ISO class)	10-: Class 4, 11-: Class 3					

Suction Flow Rate of Vacuum Suction Type (Reference values)

Bore size	Suction flow rate L/min (ANR)
6/8	2
10	3
12	4
16	6
20	8

Auto Switch Specifications (Refer to the **WEB catalog** for detailed specifications and auto switches not in the following table.)

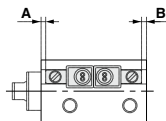
Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model		Lead wire length (m)*			Applicable load		
					DC	AC	Electrical entry direction		0.5 (Nil)	3 (L)	5 (Z)			
							Perpendicular	In-line						
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	—	M9N	●	●	○	—	Relay, PLC
				F8N				—	●	●	○			
				2-wire	12 V	—		M9B	●	●	○			
						F8B		—	●	●	○			

* Lead wire length symbols: 0.5 m.....Nil
3 m.....L

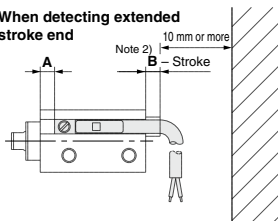
(Example) F8N
(Example) F8NL

* Auto switches marked with "○" are produced upon receipt of order.

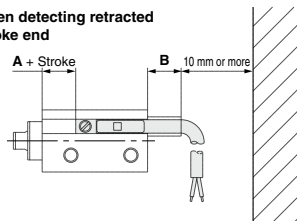
Refer to page 889 for the applicable auto switch list.

Auto switch Proper Mounting Position (Detection at Stroke End)
D-F8□

D-M9□/M9□W/M9□A

· When detecting extended stroke end



· When detecting retracted stroke end



Bore size (mm)	D-F8□				D-M9□/M9□W D-M9□A			
	Double acting		Single acting		Double acting		Single acting	
	A	B	A	B	A	B	A	B
6								
8	1	1	1	1	3	7	3	7
10								
12	2	1	3.5	1	4	7	5.5	7
16	3	1	3	1	5	6.5	5	6.5
20	5	2	5	2	7	6	7	6

Note 1) Solid state auto switch D-M9□/M9□W/M9□A: With 1 pc.

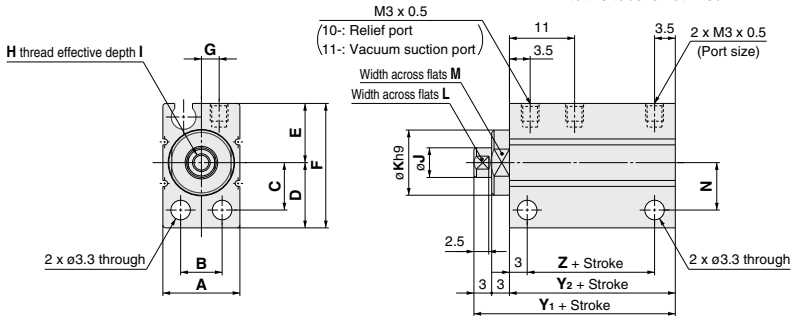
Note 2) Provide a clearance of 10 mm or more in addition to the above dimensions to prevent the lead wire interference.

Note 3) Adjust the mounting position after confirming the auto switch operation.

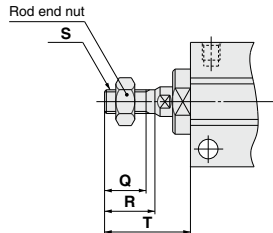
Dimensions $\varnothing 6$ to $\varnothing 10$

¹⁰
11-C(D)UJB

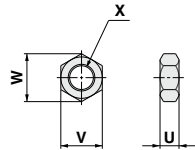
Note 1) The angular position of the width across flats with respect to the tube is not fixed.



Rod end male thread



Rod end nut (Accessory)



Rod end male thread (mm)

Bore size	Q	R	S	T
6	5.5	6.5	M3 x 0.5	12.5
8	7	8.5	M4 x 0.7	14.5
10	9	10.5	M5 x 0.8	16.5

(mm)

Part no.	Applicable bore size	U	V	W	X
NTJ-006A	6	2.4	5.5	6.4	M3 x 0.5
NTJ-010A	8	3.2	7	8.1	M4 x 0.7
NTJ-015A	10	4	8	9.2	M5 x 0.8

Standard

(mm)

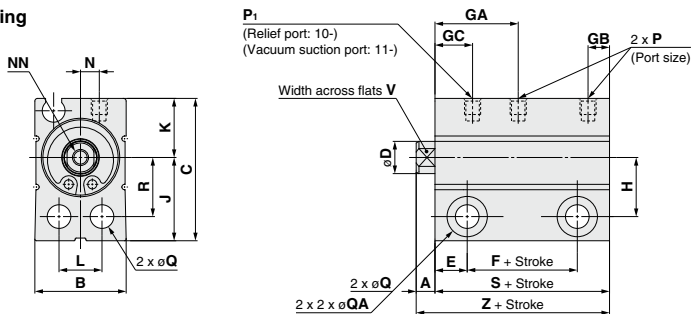
Bore size	A	B	C	D	E	F	G	H	I	J	K	L	M	N
6	13	7	7	10	9	19	3	M2.5 x 0.45	5	4	9	3.5	8	7
8	13	7	8	11	10	21	3	M3 x 0.5	6	5	11	4.5	10	8
10	13.5	7	8.5	11.5	10.5	22	3.2	M3 x 0.5	6	6	12	5	11	8.5

Bore size	Without magnet			Built-in magnet		
	Y ₁	Y ₂	Z	Y ₁	Y ₂	Z
6	24	18	11.5	29	23	16.5
8	24	18	11.5	29	23	16.5
10	24	18	11.5	29	23	16.5

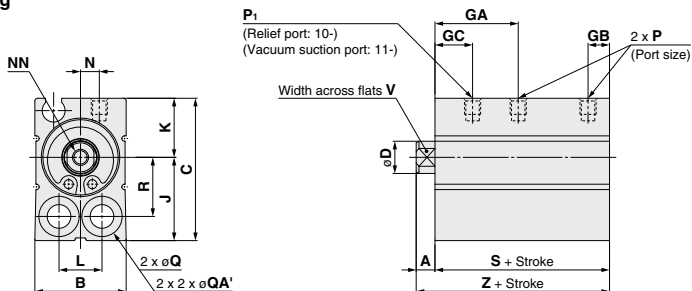
Dimensions $\varnothing 12$ to $\varnothing 20$

¹⁰/₁₁-C(D)UJB

Lateral mounting

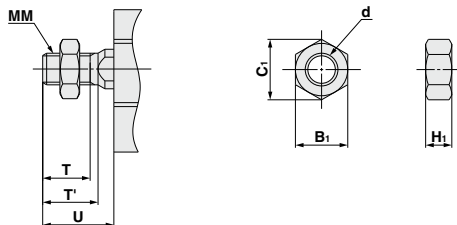


Axial mounting



Rod end male thread

Rod end nut



(mm)					
Part no.	Bore size (mm)	d	H ₁	B ₁	C ₁
NTJ-015A	12	M5 x 0.8	4	8	9.2
NT-015A	16	M6 x 1	5	10	11.5
NT-02	20	M8 x 1.25	5	13	15

(mm)														(mm)			
Bore size (mm)	A	B	C	D	E	GB	GC	H	J	K	L	MM	NN	N	P ₁	P	
12	3.5	17	26.5	6	6	4	7	11	15.5	11	8	M5 x 0.8	M3 x 0.5 effective depth of thread 6	3.5	M3 x 0.5	M3 x 0.5	
16	3.5	21	29.5	8	6	4	8.5	12.5	17	12.5	11.5	M6 x 1	M4 x 0.7 effective depth of thread 8	5.5	M3 x 0.5	M3 x 0.5	
20	4.5	25	36	10	7	5.5	8.5	15.5	21	15	13.5	M8 x 1.25	M5 x 0.8 effective depth of thread 7	7	M5 x 0.8	M5 x 0.8	

Bore size (mm)	Q	QA	QA'	R	T	T'	U	V	Without magnet				Built-in magnet			
									F	GA	S	Z	F	GA	S	Z
12	4.4 through	Counterbore diameter 7.5, depth 7	Counterbore diameter 7.5, depth 5.5	11	9	10.5	14	5	11.5	15.5	23.5	27	15.5	15.5	27.5	31
16	4.4 through	Counterbore diameter 7.5, depth 7	Counterbore diameter 7.5, depth 5.5	12.5	10	12	15.5	6	13.5	17.5	25.5	29	18	18	30	33.5
20	5.5 through	Counterbore diameter 9.5, depth 9	Counterbore diameter 9.5, depth 6.5	15.5	12	14	18.5	8	15.5	18.5	29.5	34	19.5	18.5	33.5	38

⚠ Specific Product Precautions

Be sure to read this before handling.

Design

⚠ Warning

Do not use an exhaust center.
If its use cannot be avoided, use an lurching prevention circuit, or consult with SMC.

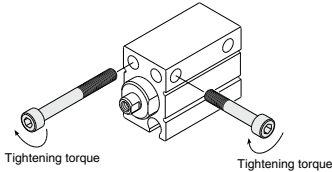
Mounting

⚠ Caution

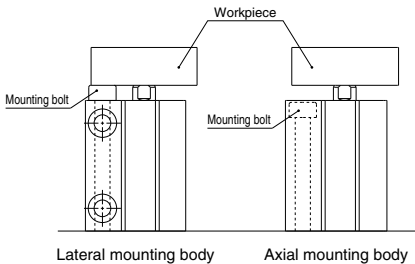
1. When mounting a mini free mount cylinder, tighten the bolts with the proper tightening torque.

Applicable bore size (mm)	Bolt	Proper tightening torque (N·m)*
6	M3 x 0.5	1.06±20% (0.848 to 1.272)
8		
10		
12	M4 x 0.7	3.27±20% (2.61 to 3.92)
16		
20	M5 x 0.8	6.6±20% (5.28 to 7.92)

* Torque coefficient: 0.2



2. Mounting the bolt from the rod side with a $\phi 12$ to $\phi 20$ lateral mounting body may result in interference with the workpiece. Use an axial mounting body.



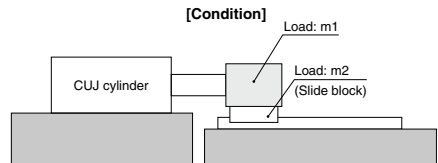
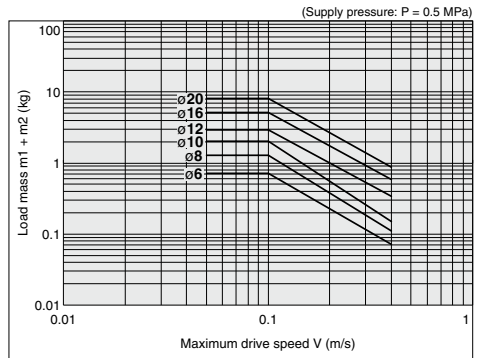
3. Use caution especially when multiple cylinders are used in parallel such as stacking because the dimensions of the body's width have plus tolerances. Contact SMC for information on a product with body width dimensions having different tolerances. ($\phi 6$, $\phi 8$, $\phi 10$ only)
4. If the cylinder's mounting surface is not sufficiently flat, it may result in malfunction. We recommend that the cylinder's mounting surface flatness should be 1/100 mm or less.

Allowable Kinetic Energy

⚠ Caution

When driving an inertial load, operate a cylinder with kinetic energy within the allowable value. The range in the chart below that is delineated by bold solid lines indicates the relationship between load mass and maximum driving speeds.

Bore size (mm)	6	8	10	12	16	20
Piston speed (m/s)	0.05 to 0.5					
Allowable kinetic energy (J)	6.25×10^{-3}	9.35×10^{-3}	12.5×10^{-3}	0.030	0.053	0.077



Directional Control Valves

Air Cylinders

Rotary Actuators

Air Grippers

Air Preparation Equipment

Modular F. R.

Pressure Control Equipment

Fittings & Tubing

Flow Control Equipment

Pressure Switches/Pressure Sensors

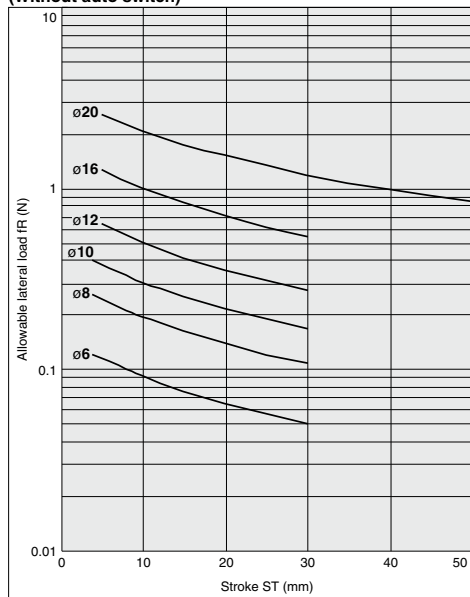
⚠ Specific Product Precautions

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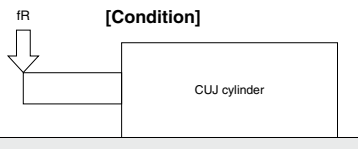
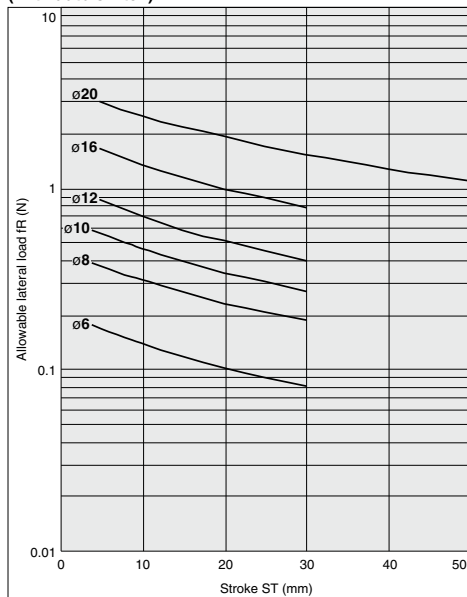
Selection

Strictly observe the limiting range of lateral load on a piston rod. (Refer to the graphs below.) If this product is used beyond the limits, it may shorten the machine life or cause damage.

**Double acting, Female thread, Without magnet
(Without auto switch)**



**Double acting, Female thread, With magnet
(With auto switch)**



⚠ Caution

Adjust the cylinder drive speed by installing a speed controller, beginning at a low speed and gradually adjusting to the specified speed.