

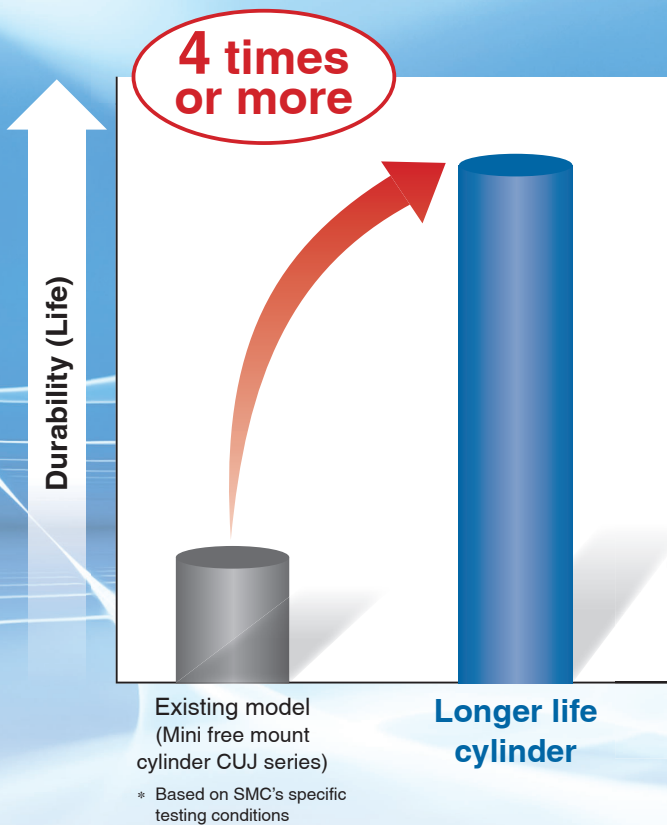
High Durability Series

# Longer Life Cylinder

New

RoHS

## New technology offers at least **4 times** better durability



- The maintenance intervals will be extended

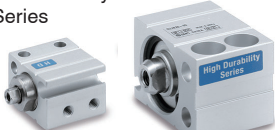


- Employs the same specification and dimensions as the existing models, CUJ Mini Free Mount Cylinder series

### High Durability Series

High Durability Series is the series name for the “special specification” that offers superior durability and environmental resistance compared to standard products.

### Series Variations

Series	Action	Model	Bore size [mm]							Cushion	Standard stroke [mm]
			4	6	8	10	12	16	20		
Mini free mount cylinder CUJ Series 	Double acting, Single rod	CUJ-XB24	•	•	•	•	•	•	•	Ø 4 to Ø 10: None Ø 12 to Ø 20: Rubber bumper	Ø 4: 4 to 10 Ø 6 to Ø 10: 4 to 30 Ø 12 to Ø 20: 5 to 50

## CUJ-XB24



CAT.EUS20-288A-UK

# CUJ-XB24 Series

Ø 4, Ø 6, Ø 8, Ø 10, Ø 12, Ø 16, Ø 20

## How to Order

Without auto switch

CUJ B 6 - 10 D - XB24

With auto switch

CDUJ B 6 - 10 D - M9BW - XB24

With auto switch magnet

1 2

3 4

5

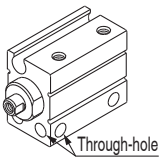
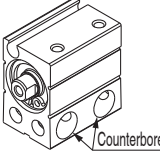
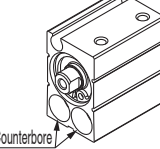
6

Longer life cylinder

Cylinder stroke [mm]

\* Refer to "Standard Strokes" on page 2.

### 1 Mounting direction

B	Through-hole	Ø 4 to Ø 10	
	Lateral mounting		
S	Axial mounting	Ø 12 to Ø 20	

### 2 Bore size

4	4 mm
6	6 mm
8	8 mm
10	10 mm
12	12 mm
16	16 mm
20	20 mm

\* Auto switches cannot be fitted on the Ø 4 mm bore size.

### 3 Action

D	Double acting
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### 4 Rod end thread

—	Rod end female threaded (Without thread for Ø 4)
M	Rod end male threaded

### 5 Auto switch

—	Without auto switch
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\* For applicable auto switches, refer to the table below.

### 6 Number of auto switches

—	2
S	1

\* M9□ : with 1 pc.

## Cylinder Model with Auto Switch Magnet

If a cylinder with an auto switch magnet and without an auto switch is required, there is no need to enter the symbol for the auto switch.

(Example) CDUJB8-15DM-XB24

## Applicable Auto Switches / Refer to the Catalogue on [www.smc.eu](http://www.smc.eu) for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model		Lead wire length [m]*2				Pre-wired connector	Applicable load	
					DC	AC	Perpendicular	In-line	0.5 (—)	1 (M)	3 (L)	5 (Z)			
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	—	M9N	●	●	●	○	○	IC circuit	Relay, PLC
				F8N			—	●	—	●	○	—			
				3-wire (PNP)	12 V		—	M9P	●	●	●	○	○	—	
				2-wire	5 V, 12 V		—	M9B	●	●	●	○	○	—	
	3-wire (NPN)			12 V	—		F8B	●	—	●	○	—	—		
	3-wire (PNP)			5 V, 12 V	—		M9NW	●	●	●	○	○	IC circuit		
	2-wire			12 V	—		M9PW	●	●	●	○	○	—		
	3-wire (NPN)			5 V, 12 V	—		M9BW	●	●	●	○	○	—		
	3-wire (PNP)	12 V	—	M9NA*1	○	○	●	○	○	IC circuit					
	2-wire	12 V	—	M9PA*1	○	○	●	○	○	circuit					
	Water resistant (2-colour indicator)	—	—	—	—	—	—	—	—	—	—	—	—		

\*1 Water-resistant type auto switches can be mounted on the above models, but SMC cannot guarantee water resistance. Please contact SMC regarding water-resistant types with the above model numbers.

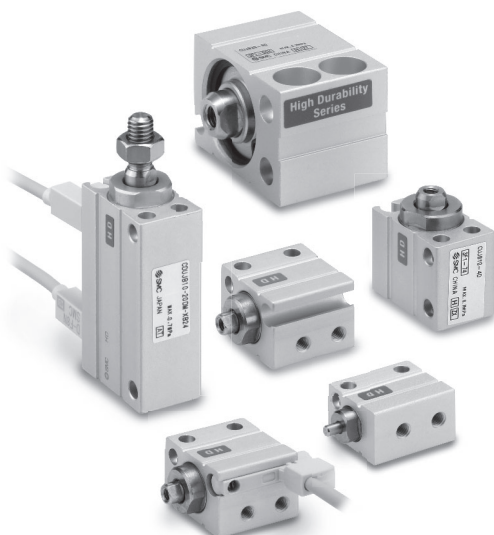
\*2 Lead wire length symbols: 0.5 m ..... (Example) M9N  
1 m ..... M (Example) M9NM  
3 m ..... L (Example) M9NL  
5 m ..... Z (Example) M9NZ

\* Solid state auto switches marked with a "○" are produced upon receipt of order

\* For 2-colour indicator, use caution on hysteresis. Refer to the Catalogue on [www.smc.eu](http://www.smc.eu).

\* For the detailed specifications of auto switches, refer to the Catalogue on [www.smc.eu](http://www.smc.eu).

\* Auto switches are shipped together with the product but do not come assembled.

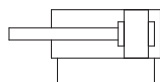


#### Symbol

Without cushion (Ø 4 to Ø 10)



Rubber bumper (Ø 12 to Ø 20)



## Specifications

Bore size [mm]	4	6	8	10	12	16	20
Action	Double acting						
Fluid	Air						
Proof pressure	1.05 MPa						
Min. operating pressure	0.15 MPa			0.1 MPa	0.07 MPa		0.05 MPa
Max. operating pressure	0.7 MPa						
Ambient and fluid temperatures	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 500 mm/s						
Stroke length tolerance	+0.5 0				+1.0 0		
Mounting	Through-hole				CUJB-XB24: Through-hole (Lateral, Axial direction: 2 locations each) CUJS-XB24: Through-hole (Axial direction: 2 locations)		

## Standard Strokes

Bore size	Standard stroke [mm]
4	4, 6, 8, 10
6	4, 6, 8, 10, 15, 20, 25, 30
8, 10	
12, 16, 20	5, 10, 15, 20, 25, 30, 35, 40, 45, 50

The mounting pitch and shape of this product with auto switch are the same as those of the Mini Free Mount Cylinder CUJ series with auto switch.  
 For details, refer to the **Catalogue on [www.smc.eu](http://www.smc.eu)**.

- Auto Switch Proper Mounting Position (Detection at stroke end) and Mounting Height
- Min. Stroke for Auto Switch Mounting
- Operating Range

#### Moisture Control Tube IDK Series

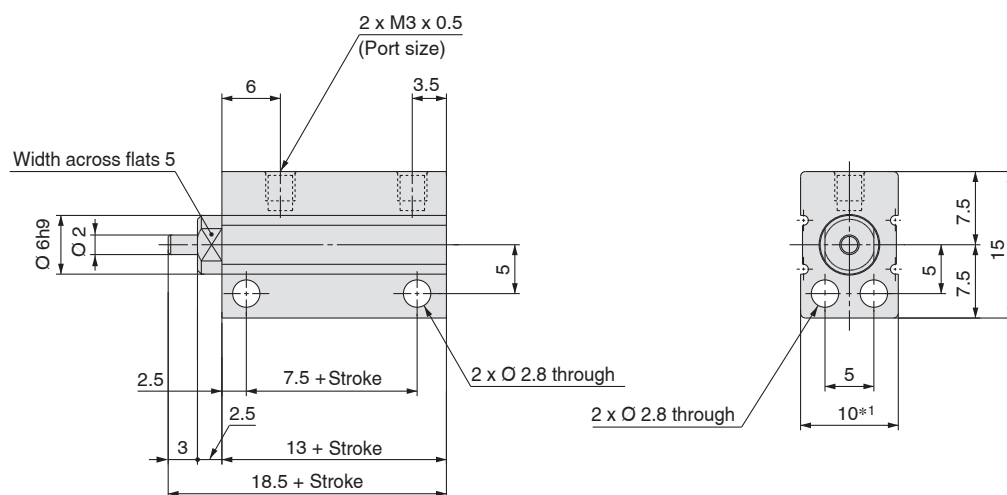
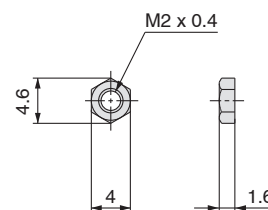
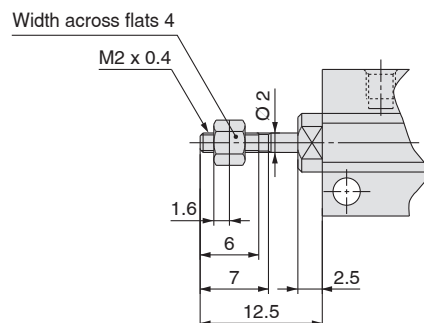
When operating an actuator with a small bore size and a short stroke at a high frequency, dew condensation (water droplets) may occur inside the piping depending on the conditions. Simply connecting the moisture control tube to the actuator will prevent dew condensation from occurring. For details, refer to the **Catalogue on [www.smc.eu](http://www.smc.eu)**.



**The allowable kinetic energy, allowable lateral loads at the rod end, theoretical output, and weight are equivalent to those of the Mini Free Mount Cylinder CUJ series. For details, refer to the **Catalogue on [www.smc.eu](http://www.smc.eu)**.**

**Bore Size:  $\varnothing 4$** **Without Auto Switch Magnet: CUJB4-XB24**

\* The position of the width across flats may not be parallel to the cylinder tube.

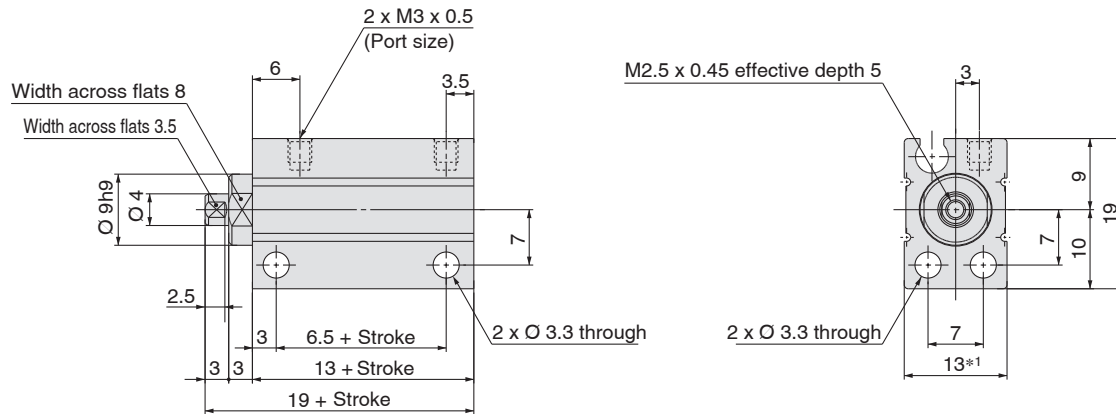
**Rod end male threaded****Rod end nut part no.: NTJ-004**

\*1 Use caution especially when multiple cylinders are used in parallel such as stacking because the body width dimensions have plus tolerances.  
Contact SMC for a product with body width dimensions having different tolerances.

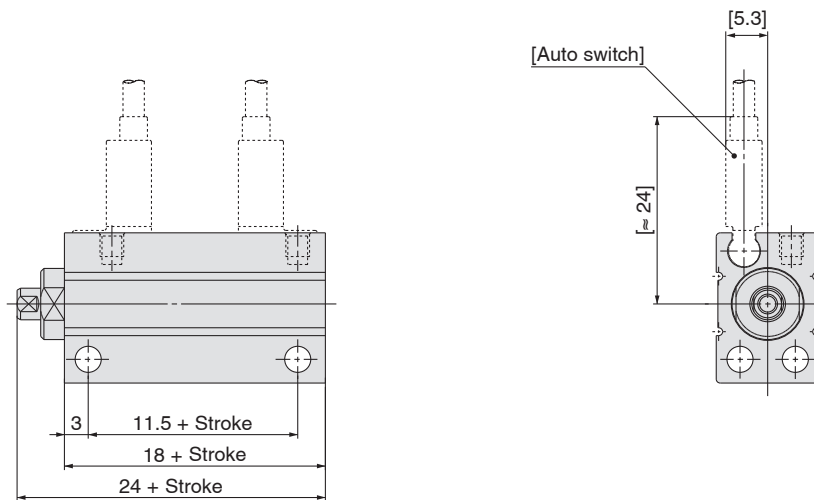
Bore Size:  $\varnothing 6$

Without Auto Switch Magnet: **CUJB6-XB24**

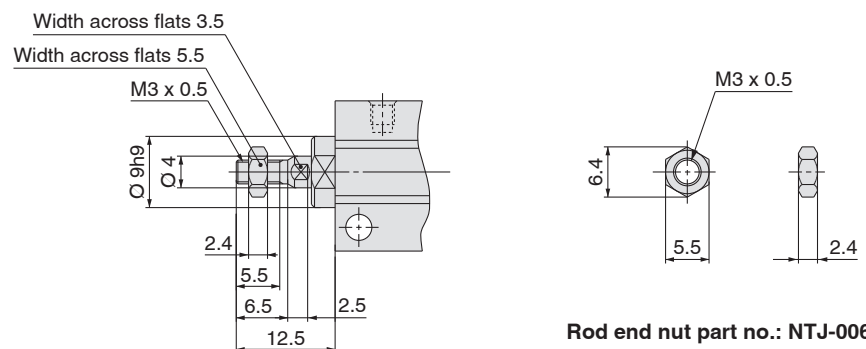
\* The position of the width across flats may not be parallel to the cylinder tube.



With Auto Switch Magnet: **CDUJB6-XB24**



Rod end male threaded

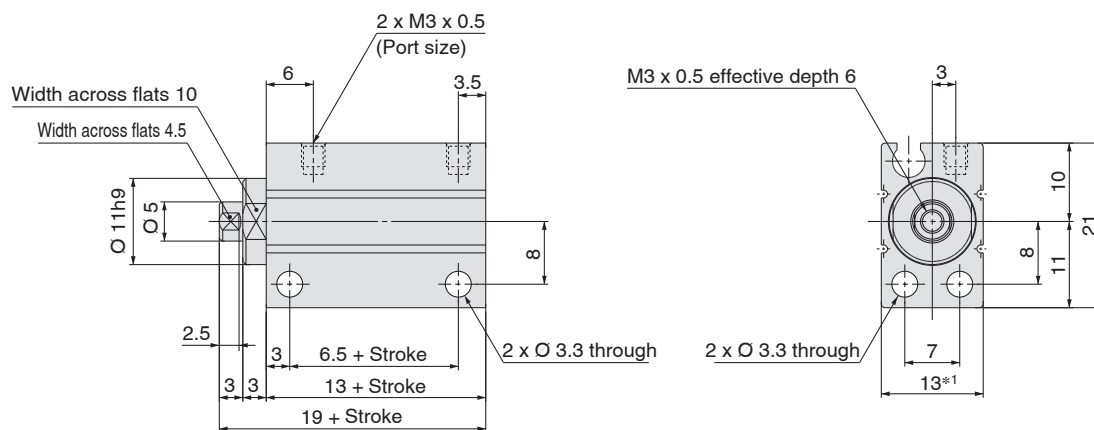
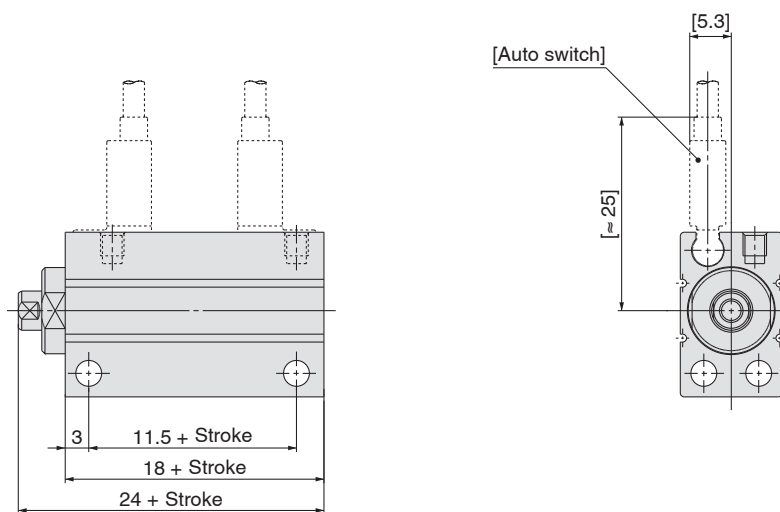
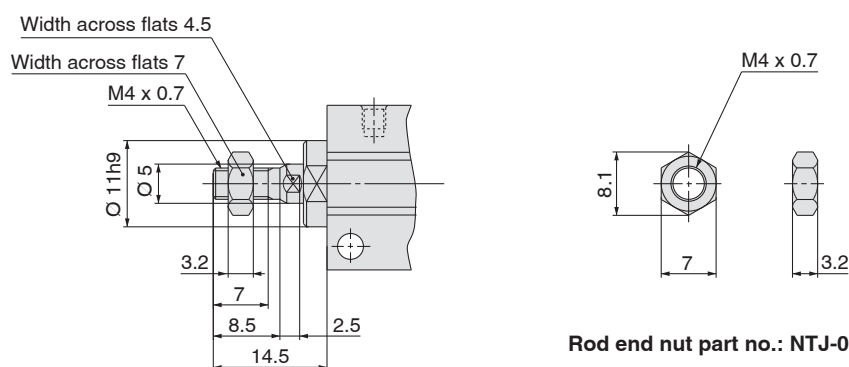


Rod end nut part no.: NTJ-006A

\*1 Use caution especially when multiple cylinders are used in parallel such as stacking because the body width dimensions have plus tolerances.  
Contact SMC for a product with body width dimensions having different tolerances.

**CUJ-XB24 Series****Bore Size:  $\varnothing 8$** **Without Auto Switch Magnet: CUJB8-XB24**

\* The position of the width across flats may not be parallel to the cylinder tube.

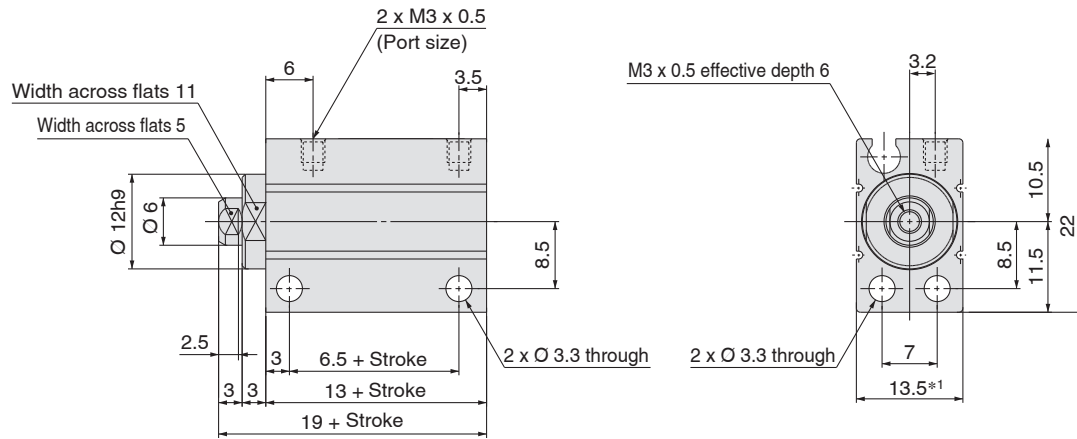
**With Auto Switch Magnet: CDUJB8-XB24****Rod end male threaded****Rod end nut part no.: NTJ-010A**

\*1 Use caution especially when multiple cylinders are used in parallel such as stacking because the body width dimensions have plus tolerances.  
Contact SMC for a product with body width dimensions having different tolerances.

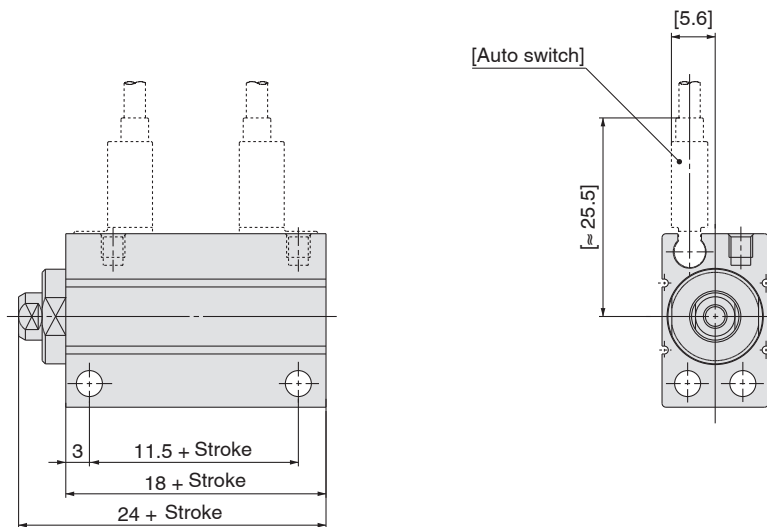
Bore Size: **Ø 10**

Without Auto Switch Magnet: **CUJB10-XB24**

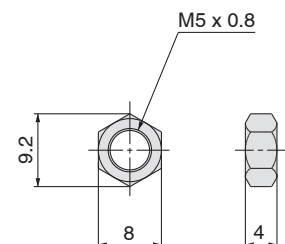
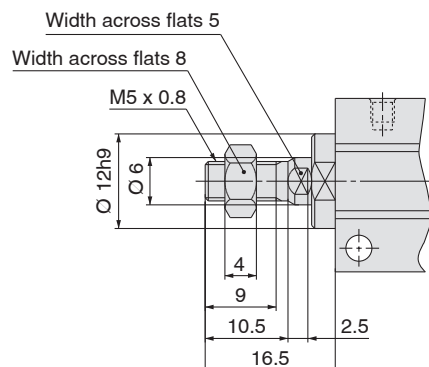
\* The position of the width across flats may not be parallel to the cylinder tube.



With Auto Switch Magnet: **CDUJB10-XB24**

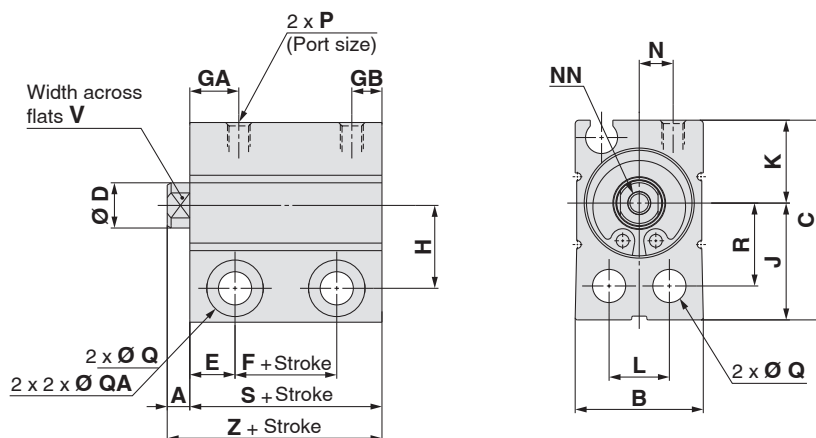
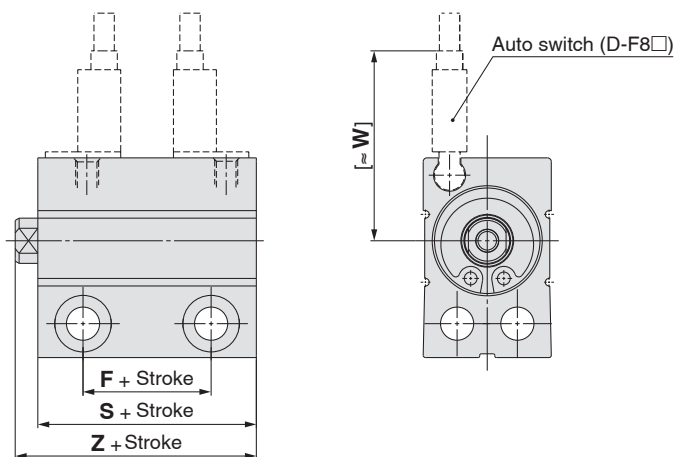
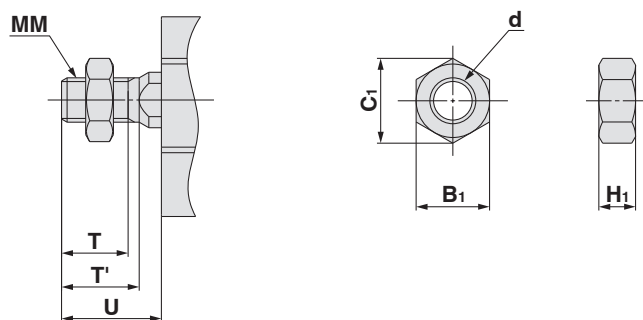


**Rod end male threaded**



**Rod end nut part no.: NTJ-015A**

\*1 Use caution especially when multiple cylinders are used in parallel such as stacking because the body width dimensions have plus tolerances.  
Contact SMC for a product with body width dimensions having different tolerances.

**CUJ-XB24 Series****Bore Size:  $\varnothing 12$ ,  $\varnothing 16$ ,  $\varnothing 20$** **Lateral Mounting****Without Auto Switch Magnet: CUJB□-XB24****With Auto Switch Magnet: CDUJB□-XB24****Rod end male threaded****Rod end nut**

Part no.	Bore size [mm]	d	H <sub>1</sub>	B <sub>1</sub>	C <sub>1</sub>
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

Bore size [mm]	A	B	C	D	E	GB	H	J	K	L	MM	NN	N	P	Q
12	3.5	17	26.5	6	6	4	11	15.5	11	8	M5 x 0.8	M3 x 0.5 effective depth of thread 6	3.5	M3 x 0.5	4.4 through
16	3.5	21	29.5	8	6	4	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	4.4 through
20	4.5	25	36	10	7	5.5	15.5	21	15	13.5	M8 x 1.25	M5 x 0.8 effective depth of thread 7	7	M5 x 0.8	5.5 through

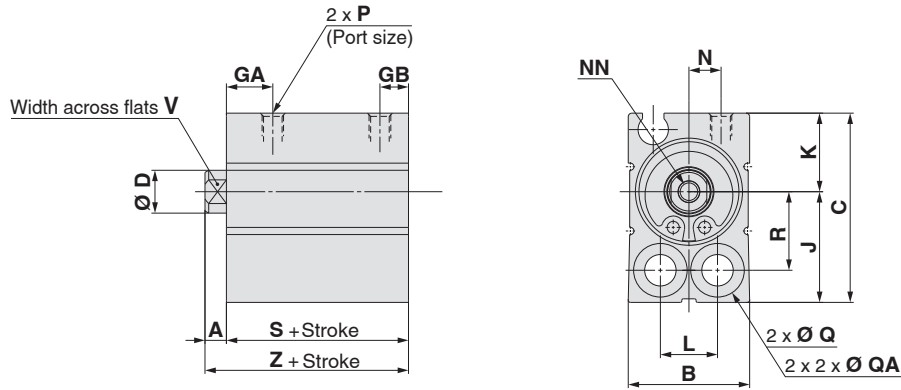
Bore size [mm]	QA	R	T	T'	U	V	W	Without magnet				Built-in magnet			
								F	GA	S	Z	F	GA	S	Z
12	7.5 depth, depth of counterbore 7	11	9	10.5	14	5	26	3.5	7.5	15.5	19	7.5	7.5	19.5	23
16	7.5 depth, depth of counterbore 7	12.5	10	12	15.5	6	27.5	4	8.5	16.5	20	8.5	9	21	24.5
20	9.5 depth, depth of counterbore 9	15.5	12	14	18.5	8	30	5.5	8.5	19.5	24	9.5	8.5	23.5	28



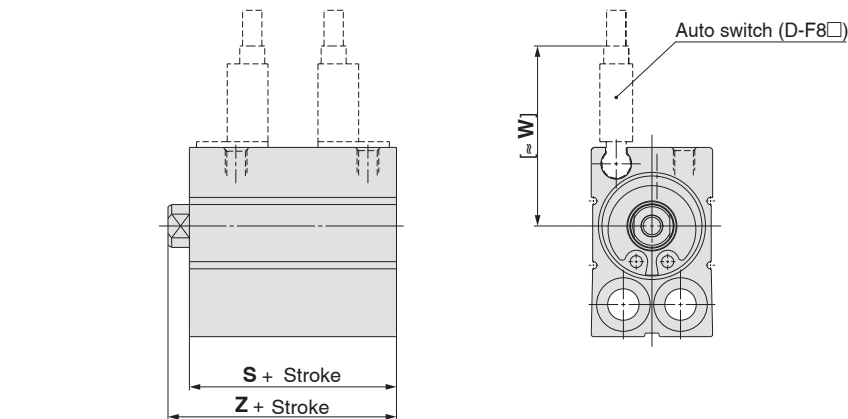
Bore Size:  $\varnothing 12, \varnothing 16, \varnothing 20$

### Axial Mounting

Without Auto Switch Magnet: CUJS□-XB24

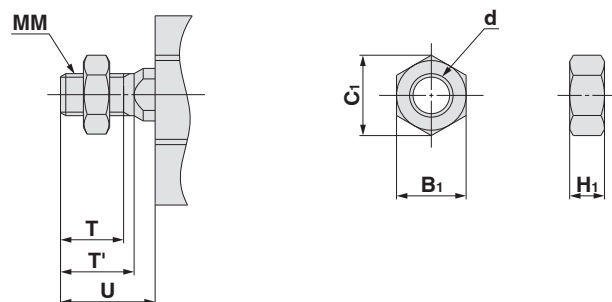


With Auto Switch Magnet: CDUJS□-XB24



Rod end male threaded

Rod end nut



Part no.	Bore size [mm]	d	H <sub>1</sub>	B <sub>1</sub>	C <sub>1</sub>
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

Bore size [mm]	A	B	C	D	GB	J	K	L	MM	NN	N	P	Q	QA
12	3.5	17	26.5	6	4	15.5	11	8	M5 x 0.8	M3 x 0.5 effective depth of thread 6	3.5	M3 x 0.5	4.4 through	7.5 depth, depth of counterbore 5.5
16	3.5	21	29.5	8	4	17	12.5	11.5	M6 x 1	M4 x 0.7 effective depth of thread 8	5.5	M3 x 0.5	4.4 through	7.5 depth, depth of counterbore 5.5
20	4.5	25	36	10	5.5	21	15	13.5	M8 x 1.25	M5 x 0.8 effective depth of thread 7	7	M5 x 0.8	5.5 through	9.5 depth, depth of counterbore 6.5

Bore size [mm]	R	T	T'	U	V	W	Without magnet			Built-in magnet		
							GA	S	Z	GA	S	Z
12	11	9	10.5	14	5	26	7.5	15.5	19	7.5	19.5	23
16	12.5	10	12	15.5	6	27.5	8.5	16.5	20	9	21	24.5
20	15.5	12	14	18.5	8	30	8.5	19.5	24	8.5	23.5	28



## Specific Product Precautions

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For actuator and auto switch precautions, refer to the “Handling Precautions for SMC Products,” the “Operation Manual,” and mini free mount cylinder CUJ series specific product precautions on the SMC website: <https://www.smc.eu>

### Mounting

#### **Caution**

**This cylinder is designed to create compact mechanical equipment and promote space saving. Thus, if it is used in the same manner as existing cylinders such as tie-rod cylinders, it may degrade the performance. Pay sufficient attention to the operating conditions when using.**

##### 1. Allowable lateral load

Lateral load that can apply to the piston rod end is limited. If a cylinder is used with a lateral load over the limit, it may cause air leakage due to abnormal friction of seals, galling of cylinder tubes and pistons, or abnormal friction of the bearing part. The lateral load applied to the piston rod must be within the allowable range indicated in this catalogue. When the load exceeds the limit, install a guide or change the bore size to suit the load in order to make the load within the allowable range.

##### 2. Connection with a workpiece

When a workpiece is mounted on the piston rod end, connect them aligning the centre of piston rod and a workpiece. If they are off-centre, lateral load is generated and phenomena mentioned in 1. may occur. In order not to apply the off-centre load, use of a floating joint is recommended.

##### 3. Simultaneous use of multiple cylinders

It is difficult to control the speed of pneumatic cylinders. The following conditions cause speed change: change in supply pressure, load, temperature and lubrication, performance difference of each cylinder, deterioration of each part over time, etc. A speed controller can be used to control the speed of multiple cylinders simultaneously for a short period of time, but depending on conditions, it may not work as desired. If multiple cylinders cannot operate simultaneously, unreasonable force is applied to the piston rod because cylinder positions may not be the same. This may cause abnormal friction of seals and bearings, and galling of cylinder tubes and pistons. Do not use an application to operate several cylinders simultaneously by adjusting cylinder speed. If this is inevitable, use a high rigid guide against load, so that the cylinder is not damaged even when the each cylinder output is slightly different.

### Retaining Ring Installation/Removal

#### **Caution**

1. For installation and removal, use an appropriate pair of pliers (tool for installing a type C retaining ring).
2. Even if a proper plier (tool for installing a type C retaining ring) is used, it is likely to inflict damage to a human body or peripheral equipment, as a retaining ring may be flown out of the tip of a plier (tool for installing a type C retaining ring). Be much careful with the popping of a retaining ring. Besides, be certain that a retaining ring is placed firmly into the groove of rod cover before supplying air at the time of installment.




### Durability of The Cylinder

**The durability of a longer life cylinder has been evaluated by comparison with the existing cylinders under SMC's test conditions.**

**The durability of a cylinder depends on the customer's operating conditions and operating environment. Therefore, durability of four times or longer will not be guaranteed under all conditions.**

## Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of “Caution,” “Warning” or “Danger.” They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC) <sup>1)</sup>, and other safety regulations.

-  **Caution:** **Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
-  **Warning:** **Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
-  **Danger:** **Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

- 1) ISO 4414: Pneumatic fluid power – General rules relating to systems.  
ISO 4413: Hydraulic fluid power – General rules relating to systems.  
IEC 60204-1: Safety of machinery – Electrical equipment of machines.  
(Part 1: General requirements)  
ISO 10218-1: Manipulating industrial robots - Safety.  
etc.

## Warning

### 1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.

Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalogue information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

### 2. Only personnel with appropriate training should operate machinery and equipment.

The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

### 3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed.

1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

### 4. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalogue.
3. An application which could have negative effects on people, property, or animals requiring special safety analysis.
4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

## Caution

### 1. The product is provided for use in manufacturing industries.

The product herein described is basically provided for peaceful use in manufacturing industries.  
If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary.  
If anything is unclear, contact your nearest sales branch.

## Limited warranty and Disclaimer/Compliance Requirements

The product used is subject to the following “Limited warranty and Disclaimer” and “Compliance Requirements”. Read and accept them before using the product.

### Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first. <sup>2)</sup> Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided. This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalogue for the particular products.
- 2) Vacuum pads are excluded from this 1 year warranty.  
A vacuum pad is a consumable part, so it is warranted for a year after it is delivered. Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

### Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

## Caution

### SMC products are not intended for use as instruments for legal metrology.

Measurement instruments that SMC manufactures or sells have not been qualified by type approval tests relevant to the metrology (measurement) laws of each country. Therefore, SMC products cannot be used for business or certification ordained by the metrology (measurement) laws of each country.

## Safety Instructions

Be sure to read “Handling Precautions for SMC Products” (M-E03-3) before using.

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Croatia	+385 (0)13707288	www.smc.hr	office@smc.hr
Czech Republic	+420 541424611	www.smc.cz	office@smc.cz
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