



Valve Mounted Cylinder

Double Acting, Single Rod

Series CVJ5

ø10, ø16

How to Order

Stroke (mm)

ø10	15, 30, 45, 60
ø16	15, 30, 45, 60

Bore size

10	10 mm
16	16 mm

Mounting style

B	Basic style
L	Axial foot style
F	Rod side flange style

Electrical entry

G	Grommet
L	L plug connector
M	M plug connector

Light/Surge voltage suppressor

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor
R	With surge voltage suppressor (No polarity)
U	With light/surge voltage suppressor (No polarity)

* Type "R", "U": DC only
* In the case of AC, since the rectifier prevents the production of surge voltage, there is no type "S".

Number of auto switches

Nil	2 pcs.
S	1 pc.
n	"n" pcs.

Without auto switch CVJ5 L 16 60 5 L

With auto switch CDVJ5 L 16 60 5 L J79W

Built-in Magnet Cylinder Model

Suffix the symbol "-A" (Rail mounting style) or "-B" (Band mounting style) to the end of the w/ auto switch cylinder part number.

Example	Rail mounting style	CDVJ5B15-60-A
	Band mounting style	CDVJ5B10-45-B

Rod extended/retracted when energized

Nil	Rod extended when energized
B	Rod retracted when energized

Solenoid valve voltage

DC specifications		AC specifications (50/60 Hz)	
5	24 VDC	1	100 VAC
6	12 VDC	2	200 VAC
V	6 VDC	3	110 VAC (115 VAC)
S	5 VDC	4	220 VAC (230 VAC)
R	3 VDC		

Auto switch

Magnet installed even without auto switch

Symbol	Auto switch mounting
A	Rail mounting style
B	Band mounting style

* For the applicable auto switch model, refer to the table below.
* Auto switch for rail mounting style is shipped together (but not assembled).

Applicable Auto Switch/Refer to page 10-20-1 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model			Lead wire length (m)*				Pre-wire connector	Applicable load									
					DC	AC	Band mounting	Rail mounting Perpendicular	In-line	0.5 (Nil)	3 (L)	5 (Z)	None (N)		IC circuit	Relay, PLC								
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	C76	—	A76H	●	●	—	—	—	—								
											—	200 V	—	A72			A72H	●	●	—	—			
	Diagnostic indication (2-color indication)	connector		Grommet	2-wire	24 V	12 V	100 V	C73	A73	A73H	●	●	●	—	—	—							
												—	—	—	C73C			A73C	—	●	●	●	●	
Solid state switch	—	Grommet	Yes	3-wire (NPN)	—	5 V, 12 V	—	H7A1	F7NV	F79	●	●	○	—	○	—								
											3-wire (PNP)	—	—	H7A2			F7PV	F7P	●	●	○	—	○	
				Diagnostic indication (2-color indication)	connector	Grommet	2-wire	24 V	12 V	—	H7B	F7BV	J79	●	●	○	—	○	—					
														—	—	—	H7C			J79C	—	●	●	●
	With diagnostic output (2-color indication)	Grommet		Grommet	4-wire (NPN)	—	5 V, 12 V	—	H7NW	F7NWV	F79W	●	●	○	—	○	—							
												—	—	—	H7PW			—	F7PW	●	●	○	—	○
												—	—	—	H7BW			F7BWV	J79W	●	●	○	—	○
												—	—	—	H7NF			—	F79F	●	●	○	—	○

* Lead wire length symbols: 0.5 m Nil (Example) C73C
3 m L (Example) C73CL
5 m Z (Example) C73CZ
None N (Example) C73CN

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

• Since there are other applicable auto switches than listed, refer to page 10-15-6 for details.
• For details about auto switches with pre-wire connector, refer to page 10-20-66.

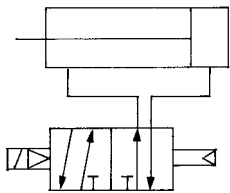
Valve Mounted Cylinder Double Acting, Single Rod Series CVJ5

Operation type can be changed to rod extended when energized or rod retracted when energized.

An auto switch cylinder with the switch installed can also be manufactured.



JIS Symbol
Double acting,
Single rod



Made to Order Made to Order Specifications
(For details, refer to page 10-21-1.)

Symbol	Specifications
-XA□	Change of rod end shape

Specifications

Action	Double acting, Single rod
Type	Non-lube
Fluid	Air
Proof pressure	1.05 MPa
Maximum operating pressure	0.7 MPa
Minimum operating pressure	0.15 MPa
Ambient and fluid temperature	-10 to 50°C (No freezing)
Cushion	Rubber bumper
Lubrication	Not required (Non-lube)
Thread tolerance	JIS Class 2
Stroke length tolerance	+1.0 0
Applicable bore size (mm)	10, 16
Effective area of valve (Cv factor)	1.8 mm ² (0.1)
Port size	M5 x 0.8
Mounting	Basic style, Axial foot style, Rod side flange style
Piston speed	ø10: 50 to 750 mm/s, ø16: 50 to 150 mm/s

Allowable Kinetic Energy

Bore size (mm)	10	16
Allowable kinetic energy	0.035	0.090

Solenoid Valve Specifications

Applicable solenoid valve model	SYJ3190		
Electrical entry	Grommet (G)/(H), L plug connector (L), M plug connector (M)		
Coil rated voltage (V) ⁽¹⁾	DC	24, 12, 6, 5, 3	
	AC 50/60 Hz	100, 110, 200, 220	
Allowable voltage	±10% of the rated voltage		
Power consumption (W) ⁽²⁾	DC	0.5 (With indicator light: 0.55)	
Apparent power (VA)	AC	100 V	0.9 (With indicator light: 1.0)
		110 V [115 V]	1.0 (With indicator light: 1.1) [1.1 (With indicator light: 1.2)]
		200 V	1.8 (With indicator light: 1.9)
		220 V [230 V]	1.9 (With indicator light: 2.0) [2.2 (With indicator light: 2.3)]

Note 1) 110 VAC and 115 VAC types and 220 VAC and 230 VAC types are common respectively.

Note 2) At the rated voltage.

Standard Stroke

Bore size (mm)	Standard stroke
10	15, 30, 45, 60
16	15, 30, 45, 60

* If types for more than the strokes indicated in the table above (61 strokes) are required, please ask SMC.

RE^A_B

REC

C□X

C□Y

MQ^Q_M

RHC

MK(2)

RS^Q_G

RS^H_A

RZQ

MI^W_S

CEP1

CE1

CE2

ML2B

C¹_{5-S}

CV

MVGQ

CC

RB

J

D-

-X

20-

Data

Series CVJ5

Minimum Stroke for Auto Switch Mounting (mm)

Auto switch mounting	Auto switch model	No. of auto switches mounted				
		2 (Same side)	2 (Different sides)	1	2	1
Band mounting style	D-C7□/C80	50	15	10	—	—
	D-H7□/H7□W D-H7NF	60	15	10	—	—
	D-C73C/C80C D-H7C	65 ^{Note)}	15	10	—	—
Rail mounting style	D-A7□/A80 D-A7□H/A80H D-A73C/A80C	—	—	—	10	5
	D-F7□/J79 D-F7□V D-J79C	—	—	—	5	5
	D-A79W/F7□W D-J79W D-F7□WV/F79F	—	—	—	15	10

Note) A type for 65 stroke is not available.

Mounting Style and Accessory/For details, refer to page 10-15-9.

Mounting		Basic style	Axial foot style	Rod side style Flange side style
Standard equipment	Mounting nut	●	●	●
	Rod end nut	●	●	●
Option	Single knuckle joint	●	●	●
	Double knuckle joint (With pin)*	●	●	●

* Knuckle pin and set ring are shipped together.

Weight (g)

Bore size (mm)		10	16
Basic weight*		74	107
Additional weight per each 15 mm of stroke		6.5	9.5
Mounting bracket weight	Axial foot style	7	19
	Rod side flange	5	13

* Mounting nut and rod end nut are included in the basic weight.

Calculation: (Example) CVJ5L10-45-1G

- Basic weight.....74 (g) (ø10)
 - Additional weight6.5/15 stroke
 - Cylinder stroke45 stroke
 - Weight of bracket7 (g) (Axial foot style)
- $$74 + 6.5/15 \times 45 + 7 = 100.5 \text{ g}$$

Mounting Bracket Part No.

Bore size (mm)	10	16
Foot	CJ-L010B	CJ-L016B
Flange	CJ-F010B	CJ-F016B

Auto Switch Mounting Bracket Part No. (Band mounting style)

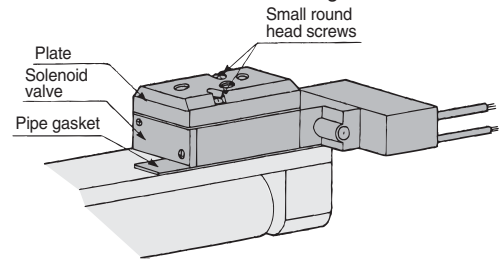
Bore size (mm)	Part no.	Note
10	BJ2-010	Common for the types of D-C7, C8 and D-H7
16	BJ2-016	

Changing between Rod Extended when Energized and Rod Retracted when Energized

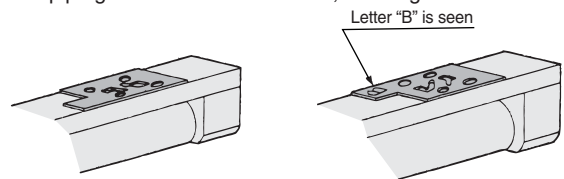
<Step>

This procedure is for changing the rod extended when energized to the rod retracted when energized.

1. Using a screwdriver, loosen the two small round head screws, and remove the plate and the solenoid valve. At this time, instead of removing the plate and the solenoid valve separately, remove them together, with the round head screws remaining inserted.

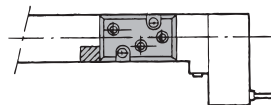


2. Turn the pipe gasket at 180° and mount, showing the letter "B".

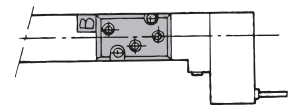


3. Install the solenoid valve and the plate, and tighten the small round head screws, with a screw driver. After tightening, press the manual button on the solenoid valve, check for any air leaks, and verify the operating conditions. When the cylinder is viewed from above, the position of the gasket is as shown in the figure below.

Rod extended when energized

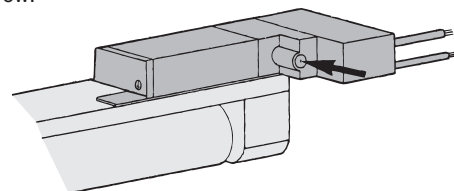


Rod retracted when energized



Manual Operation

Manual operation is possible by pushing the manual button indicated with the arrow.



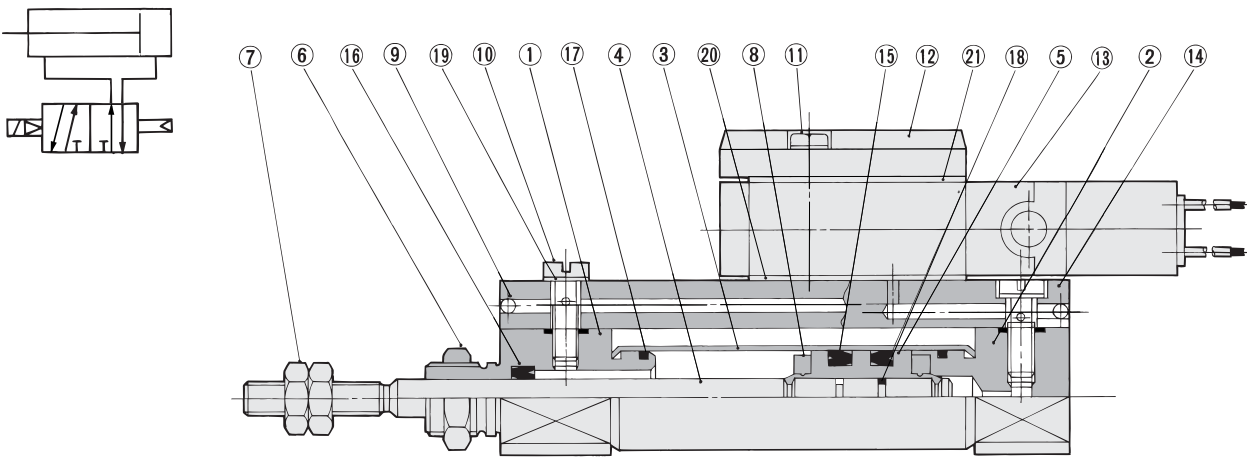
Other than the models listed in "How to Order", the following auto switches are applicable. For detailed specifications, refer to page 10-20-1.

Type	Model	Electrical entry	Features
Reed switch	D-A80	Grommet	Without indicator light
	D-A80H		
	D-A80C	Connector	
	D-C80	Grommet	
	D-C80C	Connector	
Solid state switch	D-F7NNTL	Grommet	With timer

* With pre-wire connector is available for D-F7NNTL type, too. For details, refer to page 10-20-61.

Valve Mounted Cylinder Double Acting, Single Rod Series CVJ5

Construction/(Not able to disassemble.)



Component Parts

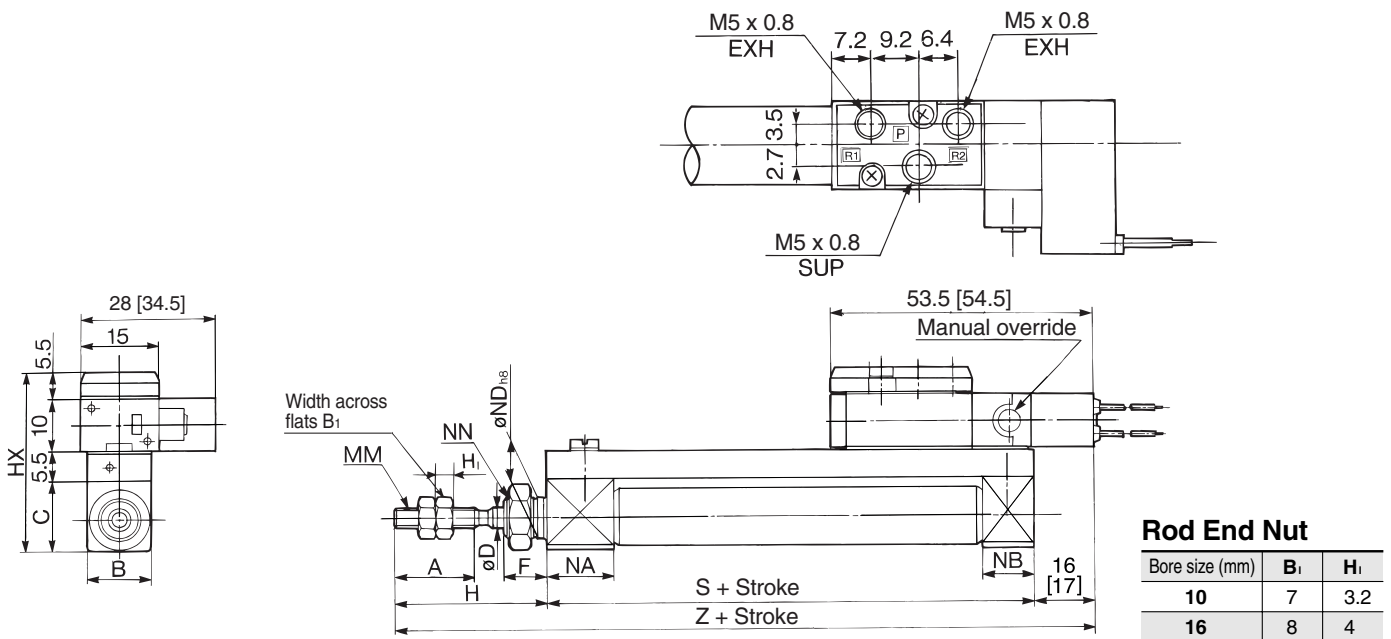
No.	Description	Material	Note
①	Rod cover	Aluminum alloy	Clear anodized
②	Head cover	Aluminum alloy	Clear anodized
③	Cylinder tube	Stainless steel	
④	Piston rod	Stainless steel	
⑤	Piston	Brass	
⑥	Mounting nut	Brass	Nickel plated
⑦	Rod end nut	Rolled steel	Nickel plated
⑧	Bumper	Urethane	
⑨	Steel ball	Carbon steel	
⑩	Stud	Brass	Electroless nickel plated
⑪	Phillips screw	Rolled steel	Black zinc chromated

No.	Description	Material	Note
⑫	Plate	Zinc alloy	
⑬	Solenoid valve	—	* Refer to the note below.
⑭	Pipe	Aluminum alloy	Clear anodized
⑮	Piston seal	NBR	
⑯	Rod seal	NBR	
⑰	Tube gasket	NBR	
⑱	Piston gasket	NBR	
⑲	Gasket	Resin	
⑳	Pipe gasket	NBR	
㉑	Plate gasket	NBR	

* How to order solenoid valves
SYJ3190- [Voltage] [Electrical entry]

Basic Style (B)

CVJ5



* []: Denotes the values of AC.

Bore size (mm)	A	B	C	D	F	H	HX	MM	NA	NB	ND	NN	S	Z
10	15	12	14	4	8	28	35	M4 x 0.7	12.5	9.5	8 ⁰ _{-0.022}	M8 x 1	46	90 [91]
16	15	18	20	5	8	28	41	M5 x 0.8	12.5	9.5	10 ⁰ _{-0.022}	M10 x 1	47	91 [92]

RE_B^A

REC

C□X

C□Y

MQ_M^Q

RHC

MK(2)

RS_G^Q

RS_A^H

RZQ

MI_S^W

CEP1

CE1

CE2

ML2B

C_G5-S

CV

MVGQ

CC

RB

J

D-

-X

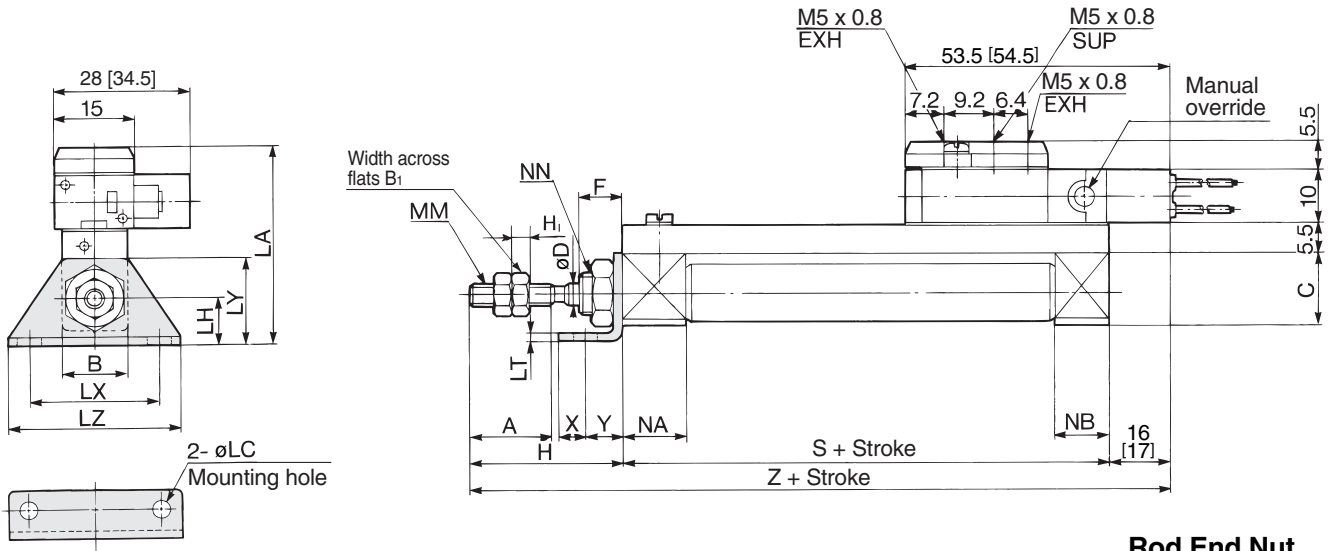
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Data

Series CVJ5

Axial Foot Style (L)

CVJ5L



Rod End Nut

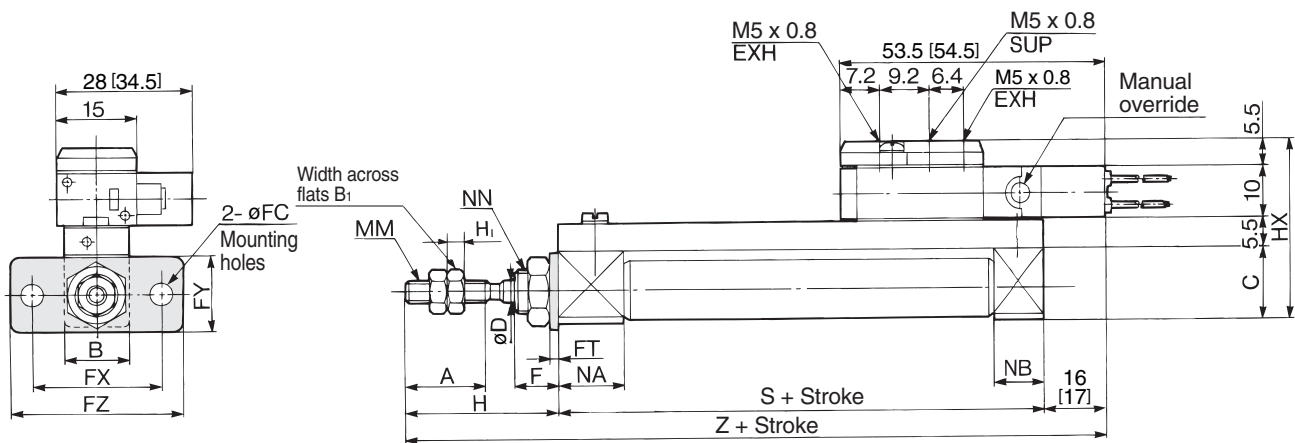
Bore size (mm)	B ₁	H ₁
10	7	3.2
16	8	4

* []: Denotes the values of AC.

Bore size (mm)	A	B	C	D	F	H	LA	LC	LH	LT	LX	LY	LZ	MM	NA	NB	NN	S	X	Y	Z
10	15	12	14	4	8	28	38	4.5	9	1.6	24	16.5	32	M4 x 0.7	12.5	9.5	M8 x 1	46	5	7	90 [91]
16	15	18	20	5	8	28	46	5.5	14	2.3	33	25	42	M5 x 0.8	12.5	9.5	M10 x 1	47	6	9	91 [92]

Rod Side Flange Style (F)

CVJ5F Rod extended/retracted when energized



Rod End Nut

Bore size (mm)	B ₁	H ₁
10	7	3.2
16	8	4

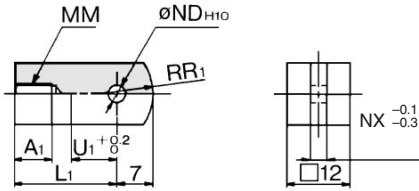
* []: Denotes the values of AC.

Bore size (mm)	A	B	C	D	F	FC	FT	FX	FY	FZ	H	HX	MM	NA	NB	NN	S	Z
10	15	12	14	4	8	4.5	1.6	24	14	32	28	35	M4 x 0.7	12.5	9.5	M8 x 1	46	90 [91]
16	15	18	20	5	8	5.5	2.3	33	20	42	28	41	M5 x 0.8	12.5	9.5	M10 x 1	47	91 [92]

Valve Mounted Cylinder Double Acting, Single Rod Series CVJ5

Accessory Dimensions

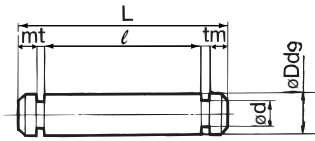
Single Knuckle Joint



Material: Rolled steel

Part no.	Applicable bore size	A ₁	L ₁	MM	ND ^{H10}	NX	R ₁	U ₁
I-J010B	10	8	21	M4 x 0.7	3.3 ^{+0.048} ₀	3.1	8	9
I-J016B	16	8	25	M5 x 0.8	5 ^{+0.048} ₀	6.4	12	14

Knuckle Pin

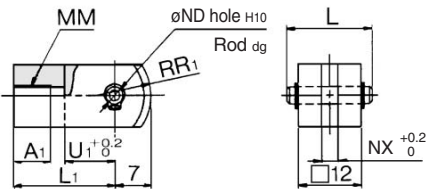


Material: Stainless steel

Part no.	Applicable bore size	Dd9	d	L	l	m	t	Applicable snap ring
IY-J010	10	3.3 ^{-0.030} _{-0.060}	3	16.2	12.2	1.7	0.3	Type C 3.2
IY-J015	16	5 ^{-0.030} _{-0.060}	4.8	16.6	12.2	1.5	0.7	Type C 5

Double Knuckle Joint

* Knuckle pin and set ring are shipped together.

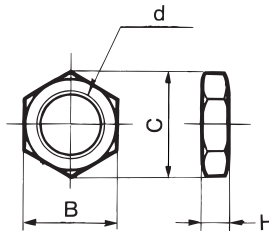


Material: Rolled steel

Part no.	Applicable bore size	A ₁	L	L ₁	MM
Y-J010B	10	8	16.2	21	M4 x 0.7
Y-J016B	16	11	16.6	21	M5 x 0.8

Part no.	ND _{d9}	ND ^{H10}	NX	R ₁	U ₁
Y-J010B	3.3 ^{-0.030} _{-0.060}	3.3 ^{+0.048} ₀	3.2	8	10
Y-J016B	5 ^{-0.030} _{-0.060}	5 ^{+0.048} ₀	6.5	12	10

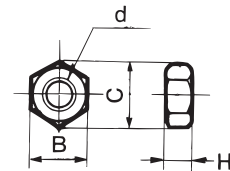
Mounting Nut



Material: Brass

Part no.	Applicable bore size	B	C	d	H
SNJ-010B	10	11	12.7	M8 x 1.0	4
SNJ-016B	16	14	16.2	M10 x 1.0	4

Rod End Nut



Material: Iron

Part no.	Applicable bore size	B	C	d	H
NTJ-010A	10	7	8.1	M4 x 0.7	3.2
NTJ-015A	16	8	9.2	M5 x 0.8	4

RE^A_B

REC

C□X

C□Y

MQ^Q_M

RHC

MK(2)

RS^Q_G

RS^H_A

RZQ

MI^W_S

CEP1

CE1

CE2

ML2B

C_G¹_{5-S}

CV

MVGQ

CC

RB

J

D-

-X

20-

Data