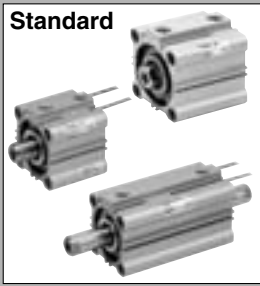
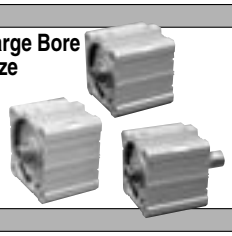
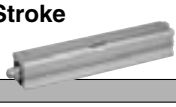
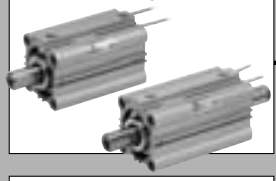
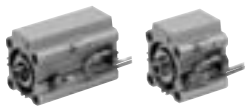
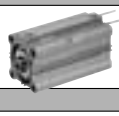
Compact Cylinder

Series CQ2

ø12,ø16,ø20,ø25,ø32,ø40,ø50,ø63,ø80,ø100,ø125,ø140,ø160,ø180,ø200

With a short overall length, the space-saving cylinder helps to make various jigs and equipment more compact.

Series Variations

Series	Action	Rod	Bore size (mm) 12 16 20 25 32 40 50 63 80 100 125 140 160 180 200	Standard stroke (mm)	Page
Standard 	Double acting	Single rod **CQ2**	● ● ● ● ● ● ● ● ● ●	ø12, ø16/5 to 30 ø20, ø25/5 to 50 ø32, ø40/5 to 100 ø50 to ø100/10 to 100	602
		Double rod **CQ2W**	● ● ● ● ● ● ● ● ● ●	ø12, ø16/5 to 30 ø20, ø25/5 to 50 ø32, ø40/5 to 100 ø50 to ø100/10 to 100	623
	Single acting	Spring return/ Spring extend **CQ2**	● ● ● ● ● ● ●	ø12 to ø40/5, 10 ø50/10, 20	639
Large Bore Size 	Double acting	Single rod **CQ2**	● ● ● ● ●	10 to 300	658
		Double rod **CQ2W**	● ● ● ● ●	10 to 300	664
Long Stroke 	Double acting	Single rod **CQ2**	● ● ● ● ● ●	125 to 300	670
Non-rotating Rod 	Double acting	Single rod **CQ2K**	● ● ● ● ● ● ● ●	ø12, ø16/5 to 30 ø20, ø25/5 to 50 ø32, ø40/5 to 100 ø50, ø63/10 to 100	679
		Double rod **CQ2KW**	● ● ● ● ● ● ●	ø12, ø16/5 to 30 ø20, ø40/5 to 50 ø50, ø63/10 to 50	693
Axial Piping (Centralized Piping Type) 	Double acting	Single rod **CQP2**	● ● ● ● ● ● ● ● ● ●	ø12, ø16/5 to 30 ø20, ø25/5 to 50 ø32, ø40/5 to 100 ø50 to ø100/10 to 100	704
	Single acting	Spring return/ Spring extend **CQP2**	● ● ● ● ● ● ●	ø12 to ø40/5, 10 ø50/10, 20	713
Anti-lateral Load 	Double acting	Single rod **CQ2□S**	● ● ● ● ● ●	ø32 to ø40/5 to 100 ø50 to ø100/10 to 100	723
With End Lock 	Double acting	Single rod **CBQ2**	● ● ● ● ● ● ●	ø20 to ø63/10 to 100 ø80, ø100/25 to 100	735
Water resistant 	Double acting	Single rod **CQ2□$^{R}_{V}$**	● ● ● ● ● ● ● ● ● ●	ø20, ø25/5 to 50 ø32, ø40/5 to 100 ø50 to ø100/10 to 100	747

Smooth cylinder (Low friction) CQ2Y 

Refer to Best Pneumatics No. 3.

Low-speed cylinder CQ2X 

Refer to Best Pneumatics No. 3.

SMC
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● : Standard
◎ : Made to Order specifications
○ : Special product (Contact SMC for details.)
— : Not available

Symbol	Specification	Applicable bore size	CQ2 (Standard) Double acting Single rod	CQ2 (Standard) Double acting Double rod	CQ2 (Standard) Single acting Single rod/Spring return	CQ2 (Standard) Single acting Single rod/Spring extend	CQ2 (Large bore size) Double acting Single rod	CQ2 (Large bore size) Double acting Double rod	CQ2 (Long stroke) Double acting Single rod	CQ2K (Not-rotating) Double acting Single rod	CQ2K (Not-rotating) Double acting Double rod	CQP2 (Axial piping) Double acting Single rod	CQP2 (Axial piping) Single acting Single rod/Spring return	CQP2 (Axial piping) Single acting Single rod/Spring extend	CQ2□S (Anti-lateral load) Double acting Single rod	CBQ2 (End lock) Double acting Single rod	CQSY (12) Smooth cylinder (Low friction) Double acting Single rod	CQ2X (12) Low-speed cylinder Double acting Single rod
			ø12 to ø100		ø12 to ø50		ø125 to ø200		ø32 to ø100	ø12 to ø63		ø12 to ø100	ø12 to ø50		ø32 to ø100	ø20 to ø100	ø32 to ø100	
Standard	Standard	ø12 to ø200	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
D	Built-in magnet	ø12 to ø200	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
CQ2□A	Both ends tapped	ø12 to ø200	●	●	●	●	●	●	●	●(4)	●(4)	○	○	○	●	●	●	●
CQ2□-□M	Rod end male thread	ø12 to ø200	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
CQ2□-□C	With rubber bumper	ø12 to ø200	●	●	○	○	●(2)	●(2)	●(2)	○(1)	○(1)	●	○	○	●(2)	●(2)	●(2)	●
CQ2□-□F	With boss in head side	ø12 to ø100	●	—	●	●	○	—	○	●	—	●(3)	●(3)	●(3)	●	○	●	●
CQ2□F	With one-touch fittings	ø32 to ø63	●	●	●	●	○	○	●	●	●	○	○	○	●	○	○	○
CQ2$^{LF}_{G}$	Foot/Flange style	ø12 to ø100	●	●	●	●	○	○	●	●(4)	●(4)	○	○	○	●	●	●	●
CQ2D	Double clevis shape	ø12 to ø100	●	—	●	●	○	—	●	●(4)	—	○	○	○	●	●	●	●
CQ2□H	Air-hydro type	ø20 to ø100	●	●	—	—	○	○	○	—	—	●	—	—	○	—	—	—
10-, 11-	Clean series	ø12 to ø100	●	○	○	○	○	○	○	○	○	○	○	○	○	○	—	●
20-	Copper and Fluorine-free	ø12 to ø100	●	●	●	●	○	○	●	●(5)	●(5)	●	●	●	●	○	—	—
CQ2□$^{R}_{V}$	Water resistant	ø20 to ø100	●	●(6)	○	○	○	○	○	—	—	●(7)	○	○	○	○	—	—
XB6	Heat-resistant cylinder (–10 to 150°C)	ø12 to ø100	◎	◎	○	○	○	○	○	○	○	◎	○	○	○	○	—	—
XB7	Cold-resistant cylinder	ø12 to ø40	◎	◎	○	○	○	○	○	○	○	◎	○	○	○	—	—	—
XB9	Low-speed cylinder (10 to 50 mm/s)	ø12 to ø100	◎	◎	○	○	○	○	○	○	○	◎	○	○	○	○	—	—
XB10	Intermediate stroke (Using exclusive body)	ø12 to ø200	◎	◎	◎	○	◎	◎	◎	◎(4)	◎(4)	○	○	○	◎	○	○	○
XB13	Low-speed cylinder (5 to 50 mm/s)	ø12 to ø100	◎	◎	○	○	○	○	○	○	○	◎	○	○	○	—	—	—
XB14	Cylinder with heat resistant auto switch	ø16 to ø63	◎	○	○	○	○	○	○	○	○	○	○	○	○	○	—	—
XC4	With heavy duty scraper	ø20 to ø100	◎	◎(6)	○	○	○	○	◎	—	—	◎(7)	○	○	○	○	—	—
XC6	Made of stainless steel (Rod, retaining ring, rod end nut stainless steel)	ø12 to ø100	◎	◎	◎	◎	○	○	◎	○	○	◎	◎	◎	◎	○	○	○
XC8	Adjustable stroke cylinder/Adjustable extension type	ø12 to ø100	◎	—	○	○	○	—	○	◎	—	○	○	○	○	○(8)	○	○
XC9	Adjustable stroke cylinder/Adjustable retraction type	ø12 to ø100	◎	—	○	○	○	—	○	◎	—	○	○	○	○	○(9)	○	○
XC10	Dual stroke cylinder/Double rod type	ø12 to ø100	◎	—	○	○	○	—	○	◎	—	—	—	—	○	○	○	○
XC11	Dual stroke cylinder/Single rod type	ø12 to ø100	◎	—	○	○	○	—	○	◎	—	○	○	○	○	○	○	○
XC26	Double clevis pins including copper pins and flat washer	ø12 to ø100	◎	—	◎	◎	○	○	◎	◎(4)	—	○	○	○	◎	◎	○	○
XC27	Double clevis pins and Double knuckle pins made of stainless steel (Stainless steel 304)	ø12 to ø100	◎	○	◎	◎	○	○	○	○	○	○	○	○	◎	○	○	○
XC35	With coil scraper	ø32 to ø100	◎	◎	○	○	○	○	○	—	—	◎	○	○	○	○	—	—
XC36	With boss on rod side	ø12 to ø100	◎	◎	◎	◎	○	○	◎(10)	◎(10)	◎(10)	◎	◎	◎	○	○	○	○
X144	Change of port position	ø12 to ø25	◎	◎	◎	◎	—	—	—	○	○	—	—	—	—	—	—	—
X202	Dimensions same as Series CQ1	ø12 to ø100	◎	—	◎	◎	—	—	—	—	—	—	—	—	—	—	—	—
X203	L dimension from the rod cover is the same as Series CQ1	ø12 to ø32	◎	—	◎	◎	—	—	—	—	—	—	—	—	—	—	—	—
X235	Change of piston rod end of double rod cylinder	ø12 to ø200	—	◎	—	—	—	◎	—	—	○	—	—	—	—	—	—	—
X271	Fluororubber seals	ø12 to ø160	◎	◎	◎	◎	◎(11)	◎(11)	◎	○	○	◎	◎	◎	◎	○	—	—
X293	Dimensions same as Series CQ1W	ø12 to ø100	—	◎	—	—	—	—	—	—	—	—	—	—	—	—	—	—
X525	Long stroke of adjustable extension stroke cylinder (XC8)	ø12 to ø100	◎	—	○	○	○	—	○	○	—	○	○	○	○	○(8)	○	○
X526	Long stroke of adjustable retraction stroke cylinder (XC9)	ø12 to ø100	◎	—	○	○	○	—	○	○	—	○	○	○	○	○(9)	○	○
X633	Intermediate stroke of double rod type	ø12 to ø160	—	◎	—	—	—	◎(11)	—	—	◎	—	—	—	—	—	—	—
X636	Long stroke of dual stroke single rod	ø12 to ø100	◎	—	○	—	○	—	○	○	—	○	○	—	○	○	○	○
X1876	With concave shape end boss on the cylinder tube head side	ø20 to ø100	◎	—	◎	◎	—	—	—	◎	—	—	—	—	◎	○	○	—

Note 1) Rubber bumper is a standard for ø12 with an auto switch.
Note 2) Rubber bumper is a standard.
Note 3) ø12 to ø16: (○), for ø20 to ø100 only (up to ø50 for the single acting type)
Note 4) ø12 to ø32: (○), for ø40 to ø63 only
Note 5) ø12: (–)
Note 6) ø20 to ø32: (○), for ø40 to ø100 only
Note 7) ø20 to ø25: (○), for ø32 to ø100 only
Note 8) Rod end lock: (–), for head end lock only
Note 9) Head end lock: (–), for rod end lock only
Note 10) A type with boss on rod side is a standard.
Note 11) ø180 to ø200: (○), for ø125 to ø160 only
Note 12) Refer to Best Pneumatics No. 3 for smooth cylinder (low friction) and low-speed cylinder.

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Compact Cylinder: Standard Type
Double Acting, Single Rod
Series CQ2
ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100

How to Order

CQ2 **B** □ **20** □ – **30** **D** □ – □

With auto switch **CDQ2** **B** □ **20** □ – **30** **D** □ – **M9BW** □ – □

With auto switch (Built-in magnet)

Mounting style

B	Through-hole (Standard)	**F**	Rod side flange style
A	Both ends tapped style	**G**	Head side flange style
L	Foot style	**D**	Double clevis style

∗ Mounting brackets are shipped together, (but not assembled).
∗ Cylinder mounting bolts are not included. Order them separately referring to "Mounting Bolt for CQ2" on pages 606 and 611.

Type

Nil	Pneumatic
H	Air-hydro (1)

Note 1) Bore sizes available for air-hydro type are ø20 to ø100.

Bore size

12	12 mm	**40**	40 mm
16	16 mm	**50**	50 mm
20	20 mm	**63**	63 mm
25	25 mm	**80**	80 mm
32	32 mm	**100**	100 mm

Port thread type

Nil	M thread	ø12 to ø25
	Rc	ø32 to ø100
TN	NPT	
TF	G	
F	Built-in One-touch fittings (2)	

Note 2) Bore sizes available w/ one-touch fittings are ø32 to ø63. Besides, it is not possible to use for air-tydro type.
Note 3) TF is not available for the air-hydro type.
∗ For the cylinders without an auto switch, M threads are compatible only for ø32 with 5 strokes.

Auto switch

Nil	Without auto switch

∗ Refer to the table below for the applicable auto switch model.

Number of auto switches

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

Body option

Nil	Standard (Rod end female thread)
F	With boss in head side
C	With rubber bumper (4)
M	Rod end male thread

∗ Combination of body options ("CM", "FC", "FM", "FCM") is available.
Note 4) Air-hydro type with rubber bumper is not available.

Action

D	Double acting

Cylinder stroke (mm)
For "Standard Stroke" and "Manufacture of intermediate of Stroke", refer to page 603.

Made to Order
(Refer to page 603 for details.)

Built-in Magnet Cylinder Model

If a built-in magnet cylinder without an auto switch is required, there is no need to enter the symbol for the auto switch.
(Example) CDQ2L32-25D

Applicable Auto Switch/Refer to pages 1263 to 1371 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC	Load voltage AC	Auto switch model: Perpendicular	Auto switch model: In-line	Lead wire length (m): 0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)	Pre-wired connector	Applicable load	
Solid state switch	—	Grommet	Yes	3-wire (NPN)	5V, 12V	—	**M9NV**	**M9N**	●	●	●	○	—	○	IC circuit	Relay, PLC
				3-wire (PNP)			**M9PV**	**M9P**	●	●	●	○	—	○		
				2-wire	12V		**M9BV**	**M9B**	●	●	●	○	—	○	—	
		Connector					**J79C**	—	●	—	●	●	●	—		
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)	5V, 12V	—	**M9NWV**	**M9NW**	●	●	●	○	—	○	IC circuit	
				3-wire (PNP)			**M9PWV**	**M9PW**	●	●	●	○	—	○		
				2-wire	12V		**M9BWV**	**M9BW**	●	●	●	○	—	○	—	
	Water resistant (2-color indication)			3-wire (NPN)	5V, 12V		**M9NAV**	**M9NA**	○	○	●	○	—	○	IC circuit	
				3-wire (PNP)			**M9PAV**	**M9PA**	○	○	●	○	—	○		
				2-wire	12V		**M9BAV**	**M9BA**	○	○	●	○	—	○	—	
	With diagnostic output (2-color indication)			4-wire	5V,12V		—	**F79F**	●	—	●	○	—	○	IC circuit	
	Magnetic field resistant (2-color indication)			2-wire (Non-polar)	—		—	**P4DW**	—	—	●	●	—	○	—	
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5V	—	**A96V**	●	—	●	—	—	—	IC circuit	—
				2-wire	24V	—	200V	**A72**	●	—	●	—	—	—	—	Relay, PLC
						12V	100V	**A93V**	●	—	●	—	—	—		
			No			5V,12V	100V or less	**A90V**	●	—	●	—	—	—	IC circuit	
		Connector	Yes			12V	—	**A73C**	●	—	●	●	●	—	—	
			No			5V,12V	24V or less	**A80C**	●	—	●	●	●	—	IC circuit	
	Diagnostic indication (2-color indication)	Grommet	Yes			—	—	**A79W**	●	—	●	—	—	—	—	

∗ Lead wire length symbols: 0.5 m ·····Nil (Example) M9NW
1 m ····· M (Example) M9NWM
3 m ····· L (Example) M9NWL
5 m ····· Z (Example) M9NWZ
None····· N (Example) J79CN

∗ Solid state auto switches marked with "○" are produced upon receipt of order.
∗ D-P4DWL type is available from ø40 up to ø100 only.
∗ Only for D-P4DWL type, an auto switch is assembled and shipped with the cylinder.

∗ There are other applicable auto switches other than the listed above. For details, refer to page 769.
∗ For details about auto switches with pre-wired connector, refer to pages 1328 and 1329.
∗ When D-A9□(V)/M9□(V)/M9□W(V)/M9□A(V)L types with ø32 to ø50 are mounted on a side other than the port side, order auto switch mounting brackets separately. Refer to page 768 for details.

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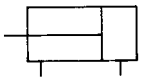
Specifications(Pneumatic)

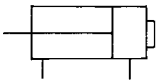
Bore size		12	16	20	25	32	40	50	63	80	100
Action		Double acting, Single rod									
Fluid		Air									
Proof pressure		1.5 MPa									
Maximum operating pressure		1.0 MPa									
Minimum operating pressure		0.07 MPa	0.05 MPa								
Ambient and fluid temperature		Without auto switch: –10 to 70°C (No freezing) With auto switch: –10 to 60°C (No freezing)									
Lubrication		Not required (Non-lube)									
Piston speed		50 to 500 mm/s									
Allowable kinetic energy J	**Standard**	0.022	0.038	0.055	0.09	0.15	0.26	0.46	0.77	1.36	2.27
	With rubber bumper	0.043	0.075	0.110	0.18	0.29	0.52	0.91	1.54	2.71	4.54
Stroke length tolerance		$^{+1.0\text{mm}}_{0}$ Note)									

Note) Stroke length tolerance dose not include the amount of bumper change.

JIS Symbol
Double acting, Single rod



JIS Symbol
With boss in head side



Specifications(Air-hydro)

Bore size	20	25	32	40	50	63	80	100
Action	Double acting, Single rod							
Fluid	Turbine oil Note)							
Proof pressure	1.5 MPa							
Maximum operating pressure	1.0 MPa							
Minimum operating pressure	0.18 MPa			0.1 MPa				
Ambient and fluid temperature	5 to 60°C							
Piston speed	5 to 50 mm/s							
Cushion	None							
Stroke length tolerance	$^{+1.0\text{mm}}_{0}$							

Note) Refer to Actuator/Common Precautions (5) on page 7.

Made to Order Specifications
(For details, refer to pages 1373 to 1565.)

Symbol	Specifications
—XA□	Change of rod end shape
—XB6	Heat resistant cylinder (–10 to 150°C) w/o auto switch only
—XB7	Cold resistant cylinder (–40 to 70°C) w/o auto switch only
—XB9	Low speed cylinder (10 to 50 mm/s)
—XB10	Intermediate stroke (Using exclusive body)
—XB11	Long stroke type, Air-hydro type only
—XB13	Low speed cylinder (5 to 50 mm/s)
—XB14	Cylinder with heat resistant auto switch ø16 to 63 only
—XC4	With heavy duty scraper, ø20 to 100 only
—XC6	Retaining ring, piston rod, rod end nut made of stainless steel
—XC8	Adjustable stroke cylinder/Adjustable extension type
—XC9	Adjustable stroke cylinder/Adjustable retraction type
—XC10	Dual stroke cylinder/Double rod type
—XC11	Dual stroke cylinder/Single rod type
—XC26	Double clevis pins include copper pins and a flat washer.
—XC27	Double clevis pins and Double knuckle pins made of stainless steel (Stainless steel 304)
—XC35	With coil scraper, ø32 to 100 only
—XC36	With boss in rod side
—XC59	Fluoro rubber for seal/Built-in hard plastic magnet, ø20 to 100 only
—X202	Same overall length dimension as Series CQ1, Except ø16, 25
—X203	Same L dimension from rod cover as Series CQ1, ø20, 32 only
—X144	Change of port location, with auto switch ø12 to 25 only
—X271	Fluororubber seals
—X525	Long stroke of adjustable extension stroke cylinder (-XC8)
—X526	Long stroke of adjustable retraction stroke cylinder (XC9)
—X636	Long stroke of dual stroke single rod
—X1876	With concave shape end boss on the cylinder tube head side

Refer to pages 760 to 769 for the specifications of cylinders with auto switches.

- Minimum auto switch mounting stroke
- Proper auto switch mounting position (detection at stroke end) and height
- Operating range
- Switch mounting bracket: Part no.

Manufacture of Intermediate Stroke

Description	Spacer is installed in the standard stroke body.		Exclusive body (-XB10)	
Part no.	Refer to "How to Order" for the standard model no. on page 602.		Suffix "-XB10" to the end of standard model no. on page 602.	
Description	Dealing with intermediate stroke by the 1 mm interval is available by using spacer with standard stroke.		Dealing with the stroke by the 1 mm interval by using an exclusive body with the stroke.	
Stroke range	Bore size	Stroke range	Bore size	Stroke range
	12, 16	1 to 29	12, 16	6 to 29
	20, 25	1 to 49	20, 25	6 to 49
	32 to 100	1 to 99	32, 40	6 to 99
			50 to 100	11 to 99
Example	Part No.: CQ2B50-57D 18 mm width spacer is installed in the standard CQ2B50-75D. B dimension is 115.5 mm.		Part no. CQ2B50-57D-XB10 Makes 57 stroke tube. B dimension is 97.5 mm.	

- Air-hydro type is excluded.
- In the case of spacer type, intermediate stroke with dumper for ø40 to ø100, it can be manufactured by 5 mm intervals in 5 mm and 55 to 95 mm.
- In the case of an exclusive body with ø32 to ø100 (-XB10) with the stroke length exceeding 50 mm, the reference values of the longitudinal dimension will be changed. Calculate length dimensions by deducting from those of 75 or 100 mm stroke models.
- Regarding the long stroke which exceeds the stroke range, refer to page 671 for the long stroke type of either CQS or CQ2.

Standard Stroke

Pneumatic

Bore size (mm)	Standard stroke (mm)
12, 16	5, 10, 15, 20, 25, 30
20, 25	5, 10, 15, 20, 25, 30, 35, 40, 45, 50
32, 40	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100
50 to 100	10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100

● When stroke exceeds the standard range, refer to page 670.

Air-hydro

Bore size (mm)	Standard stroke (mm)
20, 25	5, 10, 15, 20, 25, 30, 35, 40, 45, 50
32, 40	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100
50, 63, 80, 100	10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100

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Type

Bore size (mm)				12	16	20	25	32	40	50	63	80	100
Pneumatic	Mounting	Through-hole (Standard)		●	●	●	●	●	●	●	●	●	●
		Both ends tapped style		●	●	●	●	●	●	●	●	●	●
	Built-in magnet			●	●	●	●	●	●	●	●	●	●
	Piping	Screw-in type	—	M5 x 0.8	M5 x 0.8	M5 x 0.8	M5 x 0.8	M5 x 0.8 Rc1/8 (1)	Rc 1/8	Rc 1/4	Rc 1/4	Rc 3/8	Rc 3/8
			TN	—	—	—	—	NPT1/8	NPT1/8	NPT1/4	NPT1/4	NPT3/8	NPT3/8
			TF	—	—	—	—	G1/8	G1/8	G1/4	G1/4	G3/8	G3/8
		Built-in One-touch fittings		—	—	—	—	ø6/4 (2)	ø6/4	ø8/6	ø8/6	—	—
	Rod end male thread			●	●	●	●	●	●	●	●	●	●
	With rubber bumper			●	●	●	●	●	●	●	●	●	●
	With boss in head side			●	●	●	●	●	●	●	●	●	●
Air-hydro	Mounting	Through-hole (Standard)		—	—	●	●	●	●	●	●	●	●
		Both ends tapped style		—	—	●	●	●	●	●	●	●	●
	Built-in magnet			—	—	●	●	●	●	●	●	●	●
	Piping	Screw-in type	—	—	—	M5 x 0.8	M5 x 0.8	M5 x 0.8 Rc1/8 (1)	Rc 1/8	Rc 1/4	Rc 1/4	Rc 3/8	Rc 3/8
			TN			—	—	NPT1/8	NPT1/8	NPT1/4	NPT1/4	NPT3/8	NPT3/8
	Rod end male thread			—	—	●	●	●	●	●	●	●	●
	With boss in head side			—	—	●	●	●	●	●	●	●	●

Note 1) For a ø32 cylinder without an auto switch, M5 x 0.8 is used for 5-stroke piping dimension. Thus, do not enter a symbol for the port tread type.
Note 2) In the case of built-in fitting, the 5 mm stroke with ø32 bore is the same external dimensions as 10 mm stroke.
Note 3) One-touch fittings cannot be replaced.

Mounting Bracket Part No.

Bore size (mm)	Foot (4)	Flange	Double clevis
12	CQ-L012	CQ-F012	CQ-D012
16	CQ-L016	CQ-F016	CQ-D016
20	CQ-L020	CQ-F020	CQ-D020
25	CQ-L025	CQ-F025	CQ-D025
32	CQ-L032	CQ-F032	CQ-D032
40	CQ-L040	CQ-F040	CQ-D040
50	CQ-L050	CQ-F050	CQ-D050
63	CQ-L063	CQ-F063	CQ-D063
80	CQ-L080	CQ-F080	CQ-D080
100	CQ-L100	CQ-F100	CQ-D100

Note 4) When ordering foot bracket, order 2 pieces per cylinder.
Note 5) Parts belonging to each bracket are as follows. Foot, Flange: Body mounting bolt/Double clevis: Clevis pin, Type C retaining ring for axis, body mounting bolt

⚠ Precautions

Be sure to read before handling.
Refer to front matters 54 and 55 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.

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 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.

Mounting

⚠ Caution

Series CQ2 compact cylinders are designed to create compact mechanical equipment and promote space saving. Thus, if it is used in the same manner as conventional 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 must be within the allowable range indicated in this catalog. When the load exceeds the limit, use a double rod cylinder, install a guide, or change the bore size to suit the load in order to make the load within the allowable range. As a standard product, a lateral load resistant type that is resistant to approx. 2 times more than the conventional compact CQ2 series is also available (pages 723 to 733).

Mounting

⚠ Caution

(2) Connection with workpiece

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

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Allowable Kinetic Energy

Table (1) Load Mass and Piston Speed.

[J]

Bore size (mm)	12	16	20	25	32	40	50	63	80	100
Standard Allowable kinetic energy: Ea	0.022	0.038	0.055	0.09	0.15	0.26	0.46	0.77	1.36	2.27
With rubber bumper Allowable kinetic energy: Eb	0.043	0.075	0.110	0.18	0.29	0.52	0.91	1.54	2.71	4.54

Kinetic energy E (J)= $\frac{(m1+m2)V^2}{2}$

m1: Weight of cylinder operating part kg
m2: Load mass kg
V : Piston speed m/s

Table (2) Mass of Cylinder Movable Parts/Without Built-in Magnet (g)

Bore size (mm)	Cylinder stroke (mm)											
	5	10	15	20	25	30	35	40	45	50	75	100
12	5	6	7	8	10	11	—	—	—	—	—	—
16	9	11	13	15	17	19	—	—	—	—	—	—
20	15	18	21	24	27	31	34	37	40	44	—	—
25	24	28	33	37	42	46	51	55	60	64	—	—
32	45	52	60	68	76	84	92	100	107	115	170	209
40	64	72	80	88	96	104	112	119	127	135	190	229
50	—	117	129	141	153	166	178	190	202	214	300	361
63	—	153	165	177	190	202	214	226	239	251	337	398
80	—	270	289	308	327	347	366	385	404	423	557	653
100	—	487	515	543	570	598	625	653	681	708	901	1038

Table (3) Mass of Cylinder Movable Parts/With Built-in Magnet (g)

Bore size (mm)	Cylinder stroke (mm)											
	5	10	15	20	25	30	35	40	45	50	75	100
12	8	9	10	11	12	13	—	—	—	—	—	—
16	16	18	20	22	24	26	—	—	—	—	—	—
20	28	31	34	37	40	44	47	50	53	56	—	—
25	44	48	53	57	62	66	71	75	80	84	—	—
32	78	86	93	101	109	117	125	133	140	148	187	227
40	109	117	125	133	140	148	156	164	172	180	219	258
50	—	187	199	211	223	236	248	260	272	285	346	407
63	—	254	266	278	290	303	315	327	339	352	413	474
80	—	433	453	472	491	510	530	549	568	587	683	778
100	—	741	768	796	823	851	879	906	934	962	1099	1236

Table (4)

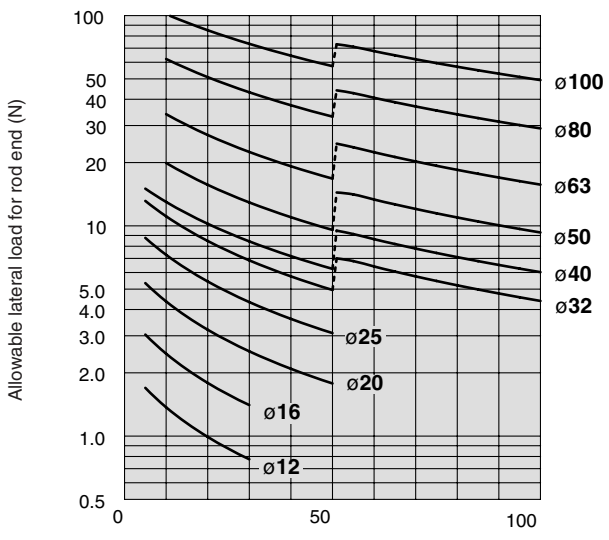
(g)

Bore size (mm)		12	16	20	25	32	40	50	63	80	100
Rod end male thread	Thread	1.5	3	6	12	26	27	53	53	120	175
	Nut	1	2	4	8	17	17	32	32	49	116
With rubber bumper		0	0	–2	–3	–3	–7	–9	–18	–31	–56

Calculation: (Example) **CDQ2B32-20DCM**
• Cylinder mass: CDQ2B32-20D ..... 101 g
• Option mass: Rod end male thread ..... 43 g
With rubber bumper ..... –3 g
141 g

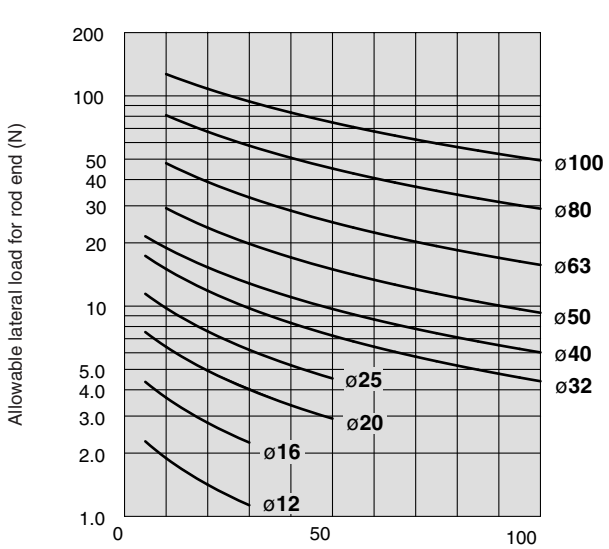
Allowable Lateral Load at Rod End

Without Auto Switch



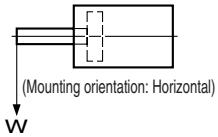
Allowable lateral load for rod end (Single rod, without switch)

With Auto Switch



Allowable lateral load for rod end (Single rod, with switch)

If an allowable lateral load at rod end is exceeding the value in the graph, we recommend anti-lateral load type cylinder be used.



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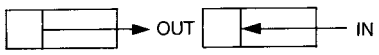
Theoretical Output



(N)

Bore size (mm)	Operating direction	Operating pressure (MPa)		
		0.3	0.5	0.7
12	IN	25	42	59
	OUT	34	57	79
16	IN	45	75	106
	OUT	60	101	141
20	IN	71	118	165
	OUT	94	157	220
25	IN	113	189	264
	OUT	147	245	344
32	IN	181	302	422
	OUT	241	402	563
40	IN	317	528	739
	OUT	377	628	880
50	IN	495	825	1150
	OUT	589	982	1370
63	IN	841	1400	1960
	OUT	935	1560	2180
80	IN	1360	2270	3170
	OUT	1510	2510	3520
100	IN	2140	3570	5000
	OUT	2360	3930	5500

Mass

(g)

Bore size (mm)	Cylinder stroke (mm)											
	5	10	15	20	25	30	35	40	45	50	75	100
12	29	35	41	47	54	60	—	—	—	—	—	—
16	42	50	59	67	76	84	—	—	—	—	—	—
20	63	75	88	101	114	127	140	152	165	178	—	—
25	86	100	115	129	144	158	173	187	202	216	—	—
32	131	152	173	193	214	235	256	277	297	318	471	576
40	206	229	252	275	298	321	344	367	390	413	597	717
50	—	369	405	441	477	514	550	586	622	659	951	1139
63	—	538	579	620	661	702	742	783	824	865	1213	1424
80	—	997	1064	1132	1200	1268	1336	1404	1471	1539	2111	2446
100	—	1738	1829	1920	2011	2101	2192	2283	2374	2464	3269	3729

Additional Mass

(g)

Bore size (mm)		12	16	20	25	32	40	50	63	80	100
Both ends tapped style		2	2	6	6	6	6	6	19	45	45
Rod end male thread	Thread	1.5	3	6	12	26	27	53	53	120	175
	Nut	1	2	4	8	17	17	32	32	49	116
With boss in head side		0.7	1.3	2	3	5	7	13	25	45	96
With rubber bumper		0	0	−2	−3	−3	−7	−9	−18	−31	−56
Built-in One-touch fittings		—	—	—	—	12	12	21	21	—	—
Foot style (Including mounting bolt)		55	67	164	186	143	155	243	324	696	1062
Rod side flange style (Including mounting bolt)		57	69	139	161	180	214	373	559	1056	1365
Rear flange style (Including mounting bolt)		54	65	133	152	165	198	348	534	1017	1309
Double clevis style (Including pin, snap ring, bolt)		32	39	88	123	151	196	393	554	1109	1887

Calculation: (Example) **CQ2D32-20DCM**

- Cylinder mass: CQ2B32-20D ····· 193 g
- Option mass: Both ends tapped style ····· 6 g
  Rod end male thread ····· 43 g
  With rubber bumper ····· −3 g
  Double clevis style ····· 151 g

390 g

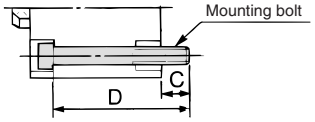
Mounting Bolt for CQ2/Without Auto Switch

Mounting method: Mounting bolt for through-hole mounting style of CQ2B is available as an option.

Ordering: Add the word "Bolt" in front of the bolts to be used.

Example) Bolt M3 x 25L 4 pcs.

Material: Chromium molybdenum steel
Surface treatment: Nickel plated



Cylinder model	C	D	Mounting bolt size
CQ2B12-5D	6.5	25	M3 x 25L
-10D		30	x 30L
-15D		35	x 35L
-20D		40	x 40L
-25D		45	x 45L
-30D		50	x 50L
CQ2B16-5D	5	25	M3 x 25L
-10D		30	x 30L
-15D		35	x 35L
-20D		40	x 40L
-25D		45	x 45L
-30D		50	x 50L
CQ2B20-5D	7.5	25	M5 x 25L
-10D		30	x 30L
-15D		35	x 35L
-20D		40	x 40L
-25D		45	x 45L
-30D		50	x 50L
-35D		55	x 55L
-40D		60	x 60L
-45D		65	x 65L
-50D		70	x 70L
CQ2B25-5D	9.5	30	M5 x 30L
-10D		35	x 35L
-15D		40	x 40L
-20D		45	x 45L
-25D		50	x 50L
-30D		55	x 55L
-35D		60	x 60L
-40D		65	x 65L
-45D		70	x 70L
-50D		75	x 75L

Cylinder model	C	D	Mounting bolt size
CQ2B32-5D	9	30	M5 x 30L
-10D		35	x 35L
-15D		40	x 40L
-20D		45	x 45L
-25D		50	x 50L
-30D		55	x 55L
-35D		60	x 60L
-40D		65	x 65L
-45D		70	x 70L
-50D		75	x 75L
-75D		110	x 110L
-100D		135	x 135L
CQ2B40-5D	7.5	35	M5 x 35L
-10D		40	x 40L
-15D		45	x 45L
-20D		50	x 50L
-25D		55	x 55L
-30D		60	x 60L
-35D		65	x 65L
-40D		70	x 70L
-45D		75	x 75L
-50D		80	x 80L
-75D		115	x 115L
-100D		140	x 140L
CQ2B50-10D	12.5	45	M6 x 45L
-15D		50	x 50L
-20D		55	x 55L
-25D		60	x 60L
-30D		65	x 65L
-35D		70	x 70L
-40D		75	x 75L
-45D		80	x 80L
-50D		85	x 85L
-75D		120	x 120L
-100D		145	x 145L

Cylinder model	C	D	Mounting bolt size
CQ2B63-10D	14.5	50	M8 x 50L
-15D		55	x 55L
-20D		60	x 60L
-25D		65	x 65L
-30D		70	x 70L
-35D		75	x 75L
-40D		80	x 80L
-45D		85	x 85L
-50D		90	x 90L
-75D		125	x 125L
-100D		150	x 150L
CQ2B80-10D	15	55	M10 x 55L
-15D		60	x 60L
-20D		65	x 65L
-25D		70	x 70L
-30D		75	x 75L
-35D		80	x 80L
-40D		85	x 85L
-45D		90	x 90L
-50D		95	x 95L
-75D		130	x 130L
-100D		155	x 155L
CQ2B100-10D	15.5	65	M10 x 65L
-15D		70	x 70L
-20D		75	x 75L
-25D		80	x 80L
-30D		85	x 85L
-35D		90	x 90L
-40D		95	x 95L
-45D		100	x 100L
-50D		105	x 105L
-75D		140	x 140L
-100D		165	x 165L

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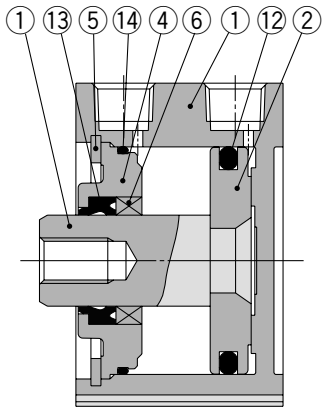
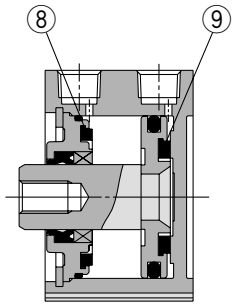
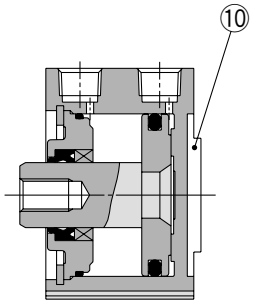
Construction



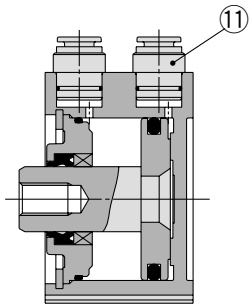
Basic style



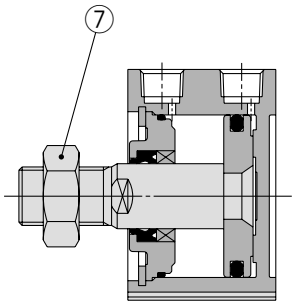
With rubber bumper



With boss in head side



Built-in One-touch fittings



Rod end male thread

Component Parts

No.	Description	Material	Note
1	**Cylinder tube**	Aluminum alloy	Hard anodized
2	**Piston**	Aluminum alloy	Chromated
3	**Piston rod**	Stainless steel	ø12 to ø25
		Carbon steel	ø32 to ø100, Hard chrome plated
4	**Collar**	Aluminum alloy	ø12 to ø40, Anodized
		Aluminum alloy casted	ø50 to ø100, Chromated, painted
5	**Retaining ring**	Carbon tool steel	Phosphate coated
6	**Bushing**	Bearing alloy	For ø50 or larger only
7	**Rod end nut**	Carbon steel	Nickel plated
8	**Bumper A**	Urethane	

No.	Description	Material	Note
9	**Bumper B**	Urethane	
10	**Centering location ring**	Aluminum alloy	Hard anodized ø20 to ø100
11	**One-touch fitting**	—	ø32 to ø63
12	**Piston seal**	NBR	
13	**Rod seal**	NBR	
14	**Gasket**	NBR	

Replacement Parts/ Seal Kit (Pneumatic)

Bore size (mm)	Kit no.	Contents
12	CQ2B12-PS	Set of nos. above ⑫, ⑬, ⑭.
16	CQ2B16-PS	
20	CQ2B20-PS	
25	CQ2B25-PS	
32	CQ2B32-PS	
40	CQ2B40-PS	
50	CQ2B50-PS	
63	CQ2B63-PS	
80	CQ2B80-PS	
100	CQ2B100-PS	

∗ Seal kit includes ⑫ ⑬ ⑭. Order the seal kit, based on each bore size.
∗ Since the grease kit does not include a grease pack, order it separately.
Grease pack part no.: GR-S-010 (10 g)

Replacement Parts/ Seal Kit (Air-hydro)

Bore size (mm)	Kit no.	Contents
20	CQ2BH20-PS	Set of nos. above ⑫, ⑬, ⑭.
25	CQ2BH25-PS	
32	CQ2BH32-PS	
40	CQ2BH40-PS	
50	CQ2BH50-PS	
63	CQ2BH63-PS	
80	CQ2BH80-PS	
100	CQ2BH100-PS	

∗ Seal kit includes ⑫ ⑬ ⑭. Order the seal kit, based on each bore size.
∗ Since the grease kit does not include a grease pack, order it separately.
Grease pack part no.: GR-S-010 (10 g)

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Clean Series

10 – C□Q2B | Bore size | – | Stroke | D (M)

- **Clean Series**
- **ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100**

10	Relief type
11	Vacuum type

The type which is applicable for using inside the clean room graded Class 100 by making an actuator's rod section a double seal construction and discharging by relief port directly to the outside of clean room.

Specifications

Action	Double acting, Single rod	
Bore size (mm)	**ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63**	**ø80, ø100**
Proof pressure	1.5 MPa	
Maximum operating pressure	1.0 MPa	
Cushion	None Note)	
Piston speed	30 to 400 mm/s	30 to 300 mm/s
Mounting	Through-hole	

Note) ø12 with switch: With rubber bumper (Standard)

For details, refer to the separate catalog, "Pneumatic Clean Series".

Copper and Fluorine-free Series (For CRT manufacturing process)

20 – C□Q2B | Bore size | – | Stroke | D (C)(M)

- **Copper and fluorine-free series**
- **ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100**

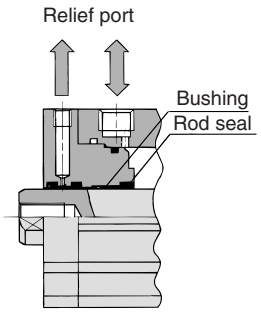
To prevent the influence of copper ions or halogen ions during CRT manufacturing processes, copper and fluorine materials are not used in the component parts.

Specifications

Action	Double acting, Single rod
Bore size (mm)	**ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100**
Proof pressure	1.5 MPa
Maximum operating pressure	1.0 MPa
Cushion	None, Rubber bumper
Piston speed	50 to 500 mm/s
Mounting	Through-hole, Both ends tapped style

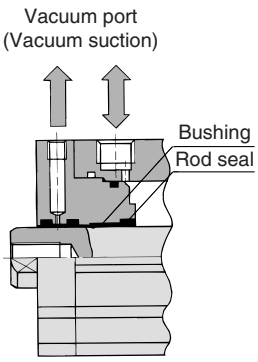
Construction

Series 10-CQ2 (Double seal type)



A relief port is provided in the area between the double rod seals to discharge the exhaust air outside of the clean room. Thus, the amount of dust generated has been reduced to 1/20 of that of an ordinary cylinder.

Series 11-CQ2 (Single seal, Vacuum suction)



Structurally identical to the "10-" series, the outer rod seal has been removed to evacuate through the vacuum port. This draws out any external air from the clearance between the rod and the cover to practically eliminate the generation of external dust. This should be used in an application that requires an even higher level of cleanliness than the 10- series.

Water Resistant

Refer to pages 747 to 759 for details.

CDQ2 | Mounting | Bore size | R – Stroke | D | Option | F7BAL | -XC6

- **With auto switch** (Built-in magnet)
- **Water resistant 2-color indication solid state switch**
- **Made to Order specifications**
- **Water resistant cylinder**

R	NBR seals (Nitrile rubber)
V	FKM seals (Fluororubber)

Ideal for use under the atmosphere having coolant for machine tools, etc. Compatible for the environment, where waterdrops are splashed around the food processing machinery and the car washers, etc.

Specifications

Action	Double acting, Single rod
Bore size (mm)	**ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100**
Cushion	None
Made to order	Snap ring/Piston rod/Rod end nut material: Stainless steel (-XC6)

∗ Specifications other than above are the same as standard, basic style.

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Smooth cylinder

CQ2 Y | **Mounting bracket** | **Bore size** | – | **Stroke** | **D(C)(M)**

Y → **Smooth cylinder**

Smooth operation with minimal sticking and slipping at low speeds.
Dual-side low friction operation is possible.

Specifications

Bore size (mm)	32	40	50	63	80	100
Model	Pneumatic (Non-lube) type					
Fluid	Air					
Proof pressure	1.05 MPa					
Maximum operating pressure	0.7 MPa					
Ambient and fluid temperature	Without auto switch: –10 to 70°C (No freezing) With auto switch: –10 to 60°C (No freezing)					
Cushion	Rubber bumper (Standard)					
Rod end thread	Female thread					
Stroke length tolerance	$^{+1.0}_{0}$					
Mounting	Through-hole					
Piston speed	5 to 500 mm/s					
Allowable leakage	0.5ℓ/min (ANR) or less					

Minimum Operating Pressure

Bore size (mm)	32	40	50	63	80	100
Minimum operating pressure (MPa)	0.02		0.01			

Refer to Best Pneumatics No. 3 for details.

Low-speed cylinder

CQ2 X | **Mounting bracket** | **Bore size** | – | **Stroke** | **D(C)(M)**

X → **Low-speed cylinder**

Smooth operation with minimal sticking and slipping at low speeds.
Starts smoothly with minimal ejection even after being rendered for hours.

Specifications

Bore size (mm)	32	40	50	63	80	100
Model	Pneumatic (Non-lube) type					
Fluid	Air					
Proof pressure	1.5 MPa					
Maximum operating pressure	1.0 MPa					
Ambient and fluid temperature	Without auto switch: –10 to 70°C (No freezing) With auto switch: –10 to 60°C (No freezing)					
Rubber bumper	None					
Rod end thread	Female thread					
Stroke length tolerance	$^{+1.0}_{0}$					
Mounting	Through-hole					
Piston speed	0.5 to 300 mm/s					

Note 1) In the case of without auto switch, M5 x 0.8 is used for 5 stroke only.

Minimum Operating Pressure

Bore size (mm)	32	40	50	63	80	100
Minimum operating pressure (MPa)	0.025		0.01			

Refer to Best Pneumatics No. 3 for details.

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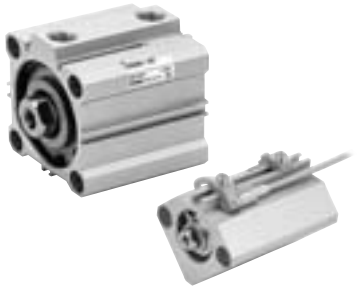
Compact Cylinder: Standard Type
Double Acting, Single rod
Series CDQ2
With Auto Switch



Refer to page below for further information on auto switches.

Auto switch specifications	P. 1263 to 1371
Proper auto switch mounting position and height	P. 760 to 769
Minimum stroke for auto switch mounting	
Operating range	
Switch mounting bracket: Part no.	

Mass

(g)

Bore size (mm)	Cylinder stroke (mm)											
	5	10	15	20	25	30	35	40	45	50	75	100
12	47	54	60	67	74	80	—	—	—	—	—	—
16	73	82	92	101	110	119	—	—	—	—	—	—
20	109	122	136	150	164	178	191	205	219	233	—	—
25	144	161	178	195	211	228	245	262	278	295	—	—
32	190	211	232	252	273	294	315	335	356	377	482	587
40	282	305	328	351	375	398	421	444	467	490	610	730
50	—	487	523	559	595	632	668	704	740	777	965	1153
63	—	696	737	778	819	860	901	941	982	1023	1235	1446
80	—	1258	1325	1393	1461	1529	1597	1665	1732	1800	2135	2469
100	—	2118	2209	2299	2390	2481	2572	2662	2753	2844	3304	3764

Additional Mass

(g)

Bore size (mm)		**12**	**16**	**20**	**25**	**32**	**40**	**50**	**63**	**80**	**100**
Both ends tapped style		1	1	3	3	6	6	6	19	45	45
Rod end male thread	Male thread	1.5	3	6	12	26	27	53	53	120	175
	Nut	1	2	4	8	17	17	32	32	49	116
With boss in head side		0.7	1.3	2	3	5	7	13	25	45	96
With rubber bumper		0	−1	−2	−3	−3	−7	−9	−18	−31	−56
Built-in One-touch fittings		—	—	—	—	12	12	21	21	—	—
Foot style (Including mounting bolt)		49	62	147	169	143	155	243	324	696	1062
Rod side flange style (Including mounting bolt)		54	67	131	153	180	214	373	559	1056	1365
Rear flange style (Including mounting bolt)		52	63	124	144	165	198	348	534	1017	1309
Double clevis style (Including pin, retaining ring, bolt)		29	35	78	114	151	196	393	554	1109	1887

Calculation: (Example) **CDQ2D32-20DCM**

- Cylinder mass: CDQ2B32-20D ..... 252 g
- Option mass: Both ends tapped style ..... 6 g
  Rod end male thread ..... 43 g
  With rubber bumper ..... −3 g
  Double clevis style ..... 151 g

  449 g

Add each mass of auto switches and mounting brackets.

Auto Switch Mounting Bracket Mass

Mounting bracket part no.	Applicable bore (mm)	Mass (g)
BQ-1	ø12 to ø25	1.5
BQ-2	ø32 to ø100	1.5
BQ2-012	ø12 to ø25	5

For the auto switch mass, refer to page 1263 to 1371.

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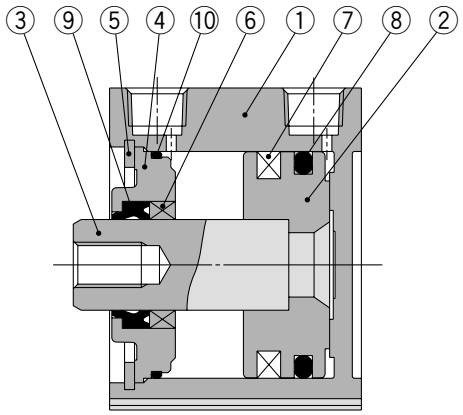
Construction



Component Parts

No.	Description	Material	Note
1	**Cylinder tube**	Aluminum alloy	Hard anodized
2	**Piston**	Aluminum alloy	Chromated
3	**Piston rod**	Stainless steel	ø12 to ø25
		Carbon steel	ø32 to ø100, Hard chrome plated
4	**Collar**	Aluminum alloy	ø12 to ø40, Anodized
		Aluminum alloy casted	ø50 to ø100, Chromated, painted
5	**Retaining ring**	Carbon tool steel	Phosphate coated
6	**Bushing**	Bearing alloy	For ø50 or larger only
7	**Magnet**	—	
8	**Piston seal**	NBR	
9	**Rod seal**	NBR	
10	**Gasket**	NBR	

Replacement Parts/Seal Kit
Pneumatic

Bore size(mm)	Kit no.	Contents
12	CQ2B12-PS	Set of nos. above ⑧, ⑨, ⑩.
16	CQ2B16-PS	
20	CQ2B20-PS	
25	CQ2B25-PS	
32	CQ2B32-PS	
40	CQ2B40-PS	
50	CQ2B50-PS	
63	CQ2B63-PS	
80	CQ2B80-PS	
100	CQ2B100-PS	

∗ Seal kits includes ⑧ ⑨ ⑩. Order the seal kit, based on each bore size.
∗ Since the grease kit does not include a grease pack, order it separately.
Grease pack part no.: GR-S-010 (10 g)

Replacement Parts/Seal Kit
Air-hydro

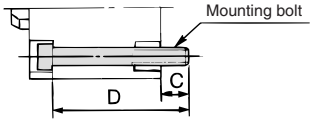
Bore size(mm)	Kit no.	Contents
20	CQ2BH20-PS	Set of nos. above ⑧, ⑨, ⑩.
25	CQ2BH25-PS	
32	CQ2BH32-PS	
40	CQ2BH40-PS	
50	CQ2BH50-PS	
63	CQ2BH63-PS	
80	CQ2BH80-PS	
100	CQ2BH100-PS	

∗ Seal kits includes ⑧ ⑨ ⑩. Order the seal kit, based on each bore size.
∗ Since the grease kit does not include a grease pack, order it separately.
Grease pack part no.: GR-S-010 (10 g)

Mounting Bolt for CDQ2/With Auto Switch

Mounting method: Mounting bolt for through-hole mounting style of CDQ2B is available as an option.
Ordering: Add the word "Bolt" in front of the bolts to be used.
Example) Bolt M3 x 35L 2 pcs.

Material: Chromium molybdenum steel
Surface treatment: Nickel plated



Cylinder model	C	D	Mounting bolt size
CDQ2B12-5D	5.5	35	M3 x 35L
-10D		40	x 40L
-15D		45	x 45L
-20D		50	x 50L
-25D		55	x 55L
-30D		65	x 60L
CDQ2B16-5D	8	40	M3 x 40L
-10D		45	x 45L
-15D		50	x 50L
-20D		55	x 55L
-25D		60	x 60L
-30D		65	x 65L
CDQ2B20-5D	10.5	40	M5 x 40L
-10D		45	x 45L
-15D		50	x 50L
-20D		55	x 55L
-25D		60	x 60L
-30D		65	x 65L
-35D		70	x 70L
-40D		75	x 75L
-45D		80	x 80L
-50D		85	x 85L
CDQ2B25-5D	9.5	40	M5 x 40L
-10D		45	x 45L
-15D		50	x 50L
-20D		55	x 55L
-25D		60	x 60L
-30D		65	x 65L
-35D		70	x 70L
-40D		75	x 75L
-45D		80	x 80L
-50D		85	x 85L

Cylinder model	C	D	Mounting bolt size
CDQ2B32-5D	9	40	M5 x 40L
-10D		45	x 45L
-15D		50	x 50L
-20D		55	x 55L
-25D		60	x 60L
-30D		65	x 65L
-35D		70	x 70L
-40D		75	x 75L
-45D		80	x 80L
-50D		85	x 85L
-75D		110	x 110L
-100D		135	x 135L
CDQ2B40-5D	7.5	45	M5 x 45L
-10D		50	x 50L
-15D		55	x 55L
-20D		60	x 60L
-25D		65	x 65L
-30D		70	x 70L
-35D		75	x 75L
-40D		80	x 80L
-45D		85	x 85L
-50D		90	x 90L
-75D		115	x 115L
-100D		140	x 140L
CDQ2B50-10D	12.5	55	M6 x 55L
-15D		60	x 60L
-20D		65	x 65L
-25D		70	x 70L
-30D		75	x 75L
-35D		80	x 80L
-40D		85	x 85L
-45D		90	x 90L
-50D		95	x 95L
-75D		120	x 120L
-100D		145	x 145L

Cylinder model	C	D	Mounting bolt size
CDQ2B63-10D	14.5	60	M8 x 60L
-15D		65	x 65L
-20D		70	x 70L
-25D		75	x 75L
-30D		80	x 80L
-35D		85	x 85L
-40D		90	x 90L
-45D		95	x 95L
-50D		100	x 100L
-75D		125	x 125L
-100D		150	x 150L
CDQ2B80-10D	15	65	M10 x 65L
-15D		70	x 70L
-20D		75	x 75L
-25D		80	x 80L
-30D		85	x 85L
-35D		90	x 90L
-40D		95	x 95L
-45D		100	x 100L
-50D		105	x 105L
-75D		130	x 130L
-100D		155	x 155L
CDQ2B100-10D	15.5	75	M10 x 75L
-15D		80	x 80L
-20D		85	x 85L
-25D		90	x 90L
-30D		95	x 95L
-35D		100	x 100L
-40D		105	x 105L
-45D		110	x 110L
-50D		115	x 115L
-75D		140	x 140L
-100D		165	x 165L

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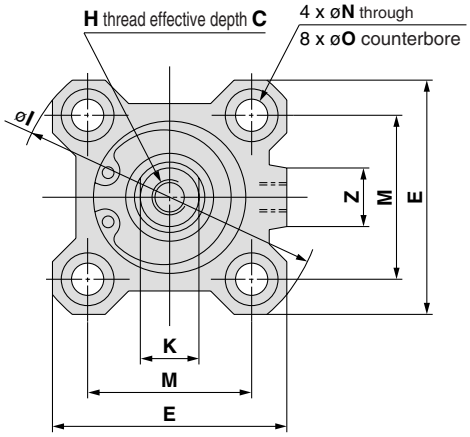
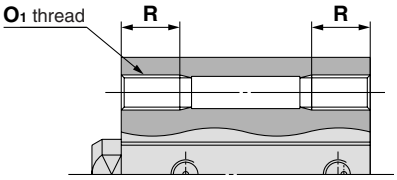
Dimensions
ø12 to ø25/ Without Auto Switch

Basic style (Through-hole): CQ2B

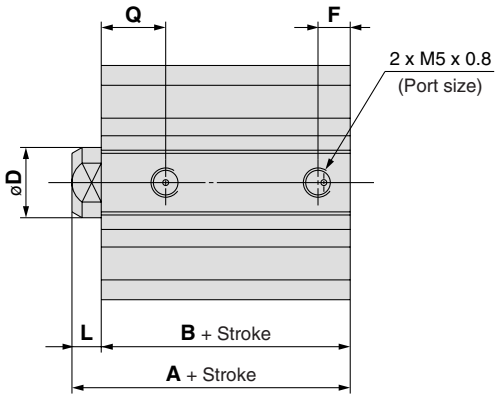


Both ends tapped style: CQ2A

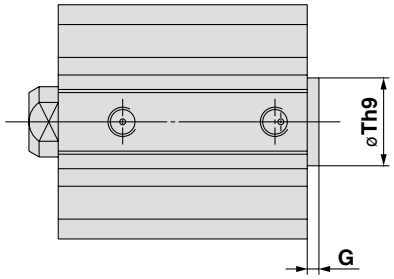


Both Ends Tapped Style (mm)

Bore size (mm)	O_1	R
12	M4 x 0.7	7
16	M4 x 0.7	7
20	M6 x 1.0	10
25	M6 x 1.0	10



With boss in head side

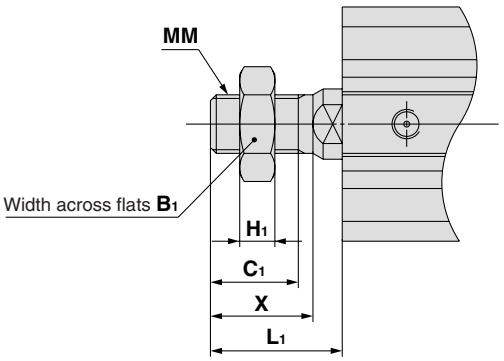


With Boss in Head Side (mm)

Bore size (mm)	G	Th9
12	1.5	$15^{0}_{-0.043}$
16	1.5	$20^{0}_{-0.052}$
20	2	$13^{0}_{-0.043}$
25	2	$15^{0}_{-0.043}$

Note) With boss in rod side : Option (Suffix "-XC36" to the end of part number.)

Rod end male thread



Rod End Male Thread (mm)

Bore size (mm)	B_1	C_1	H_1	L_1	MM	X
12	8	9	4	14	M5 x 0.8	10.5
16	10	10	5	15.5	M6 x 1.0	12
20	13	12	5	18.5	M8 x 1.25	14
25	17	15	6	22.5	M10 x 1.25	17.5

Basic Style

(mm)

Bore size (mm)	Stroke range (mm)	A	B	C	D	E	F	H	I	K	L	M	N	O	Q	Z
12	5 to 30	20.5	17	6	6	25	5	M3 x 0.5	32	5	3.5	15.5	3.5	6.5 depth 3.5	7.5	—
16	5 to 30	22	18.5	8	8	29	5.5	M4 x 0.7	38	6	3.5	20	3.5	6.5 depth 3.5	8	10
20	5 to 50	24	19.5	7	10	36	5.5	M5 x 0.8	47	8	4.5	25.5	5.5	9 depth 7	9	10
25	5 to 50	27.5	22.5	12	12	40	5.5	M6 x 1.0	52	10	5	28	5.5	9 depth 7	11	10

Note) External dimensions with rubber bumper are same as standard type as shown above.
∗ For details about the rod end nut and accessory brackets, refer to page 620.

For calculation on the longitudinal dimension of the intermediate strokes, refer to page 603.

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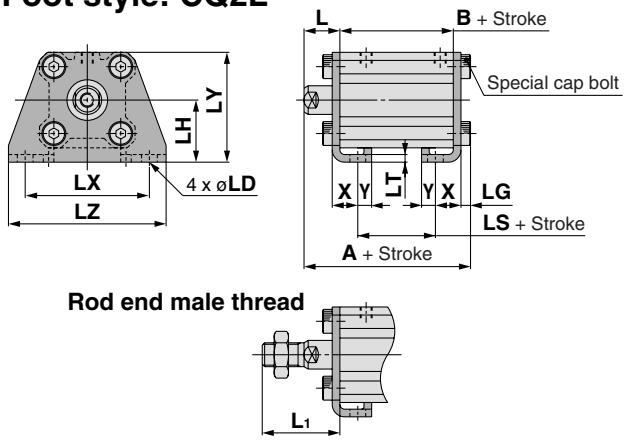
Foot style: CQ2L



Rod end male thread

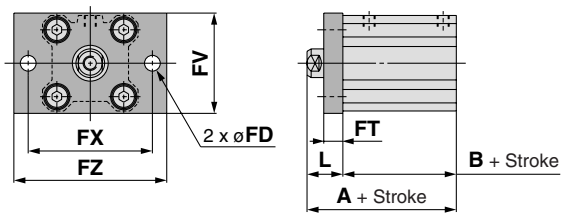
Foot Style

(mm)

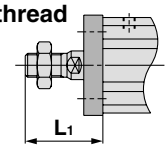
Bore size (mm)	Stroke range (mm)	A	B	L	L1	LD	LG	LH	LS	LT	LX	LY	LZ	X	Y
12	5 to 30	35.3	17	13.5	24	4.5	2.8	17	5	2	34	29.5	44	8	4.5
16	5 to 30	36.8	18.5	13.5	25.5	4.5	2.8	19	6.5	2	38	33.5	48	8	5
20	5 to 50	41.2	19.5	14.5	28.5	6.6	4	24	7.5	3.2	48	42	62	9.2	5.8
25	5 to 50	44.7	22.5	15	32.5	6.6	4	26	7.5	3.2	52	46	66	10.7	5.8

Foot bracket material: Carbon steel
Surface treatment: Nickel plated

Rod side flange style: CQ2F



Rod end male thread



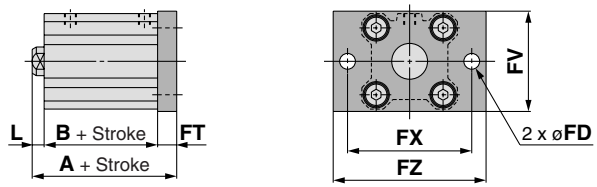
Rod Side Flange Style

(mm)

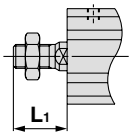
Bore size (mm)	Stroke range (mm)	A	B	FD	FT	FV	FX	FZ	L	L1
12	5 to 30	30.5	17	4.5	5.5	25	45	55	13.5	24
16	5 to 30	32	18.5	4.5	5.5	30	45	55	13.5	25.5
20	5 to 50	34	19.5	6.6	8	39	48	60	14.5	28.5
25	5 to 50	37.5	22.5	6.6	8	42	52	64	15	32.5

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

Head side flange style: CQ2G



Rod end male thread



Head Side Flange Style

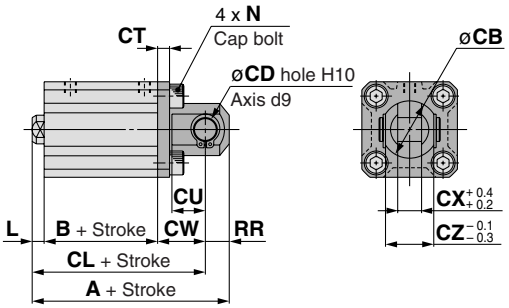
(mm)

Bore size (mm)	Stroke range (mm)	A	L	L1
12	5 to 30	26	3.5	14
16	5 to 30	27.5	3.5	15.5
20	5 to 50	32	4.5	18.5
25	5 to 50	35.5	5	22.5

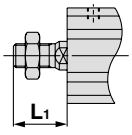
Flange bracket material: Carbon steel
Surface treatment: Nickel plated

(* Dimensions except A, L and L1 are the same as rod side flange style.)

Double clevis style: CQ2D



Rod end male thread



Double Clevis Style

(mm)

Bore size (mm)	Stroke range (mm)	A	B	CB	CD	CL	CT	CU	CW	CX	CZ	L	L1	N	RR
12	5 to 30	40.5	17	12	5	34.5	4	7	14	5	10	3.5	14	M4 x 0.7	6
16	5 to 30	43	18.5	14	5	37	4	10	15	6.5	12	3.5	15.5	M4 x 0.7	6
20	5 to 50	51	19.5	20	8	42	5	12	18	8	16	4.5	18.5	M6 x 1.0	9
25	5 to 50	57.5	22.5	24	10	47.5	5	14	20	10	20	5	22.5	M6 x 1.0	10

Double clevis bracket material: Carbon steel
Surface treatment: Nickel plated

∗ For details about the rod end nut and accessory brackets, refer to page 620.
∗∗ Double clevis pins and retaining rings are included.

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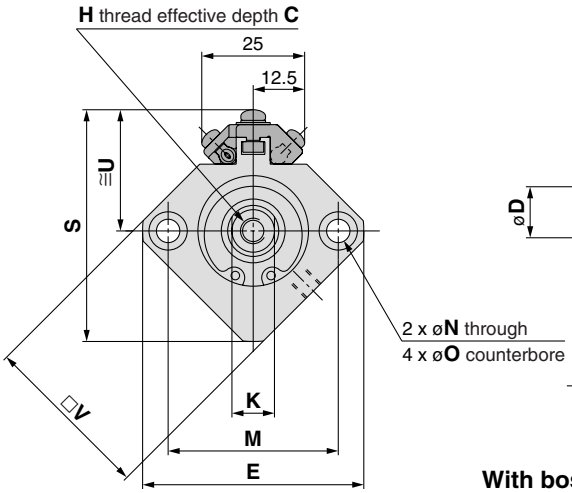
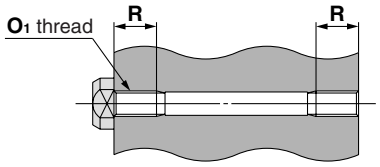
Basic style (Through-hole): CDQ2B

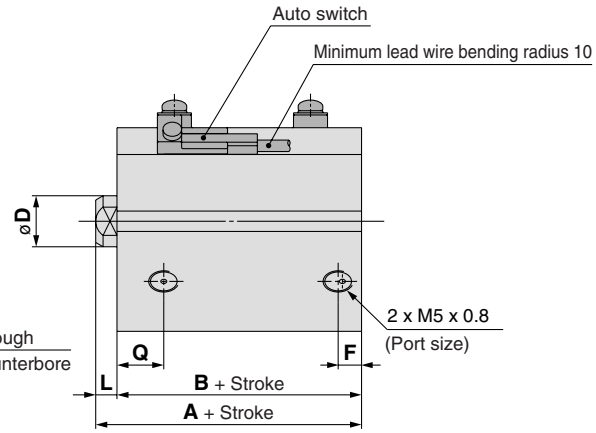


Both ends tapped style: CDQ2A

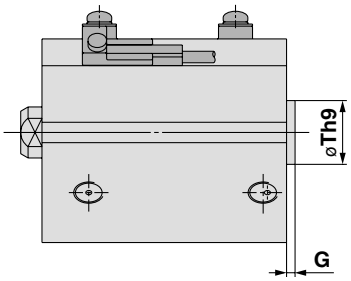


Both Ends Tapped Style (mm)

Bore size (mm)	O_1	R
12	M4 x 0.7	7
16	M4 x 0.7	7
20	M6 x 1.0	10
25	M6 x 1.0	10



With boss in head side

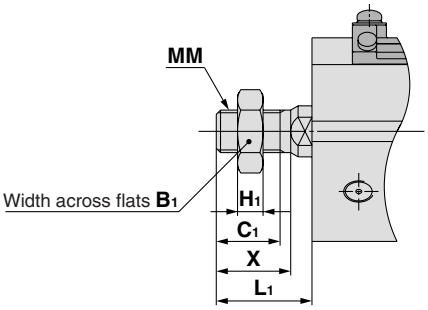


With Boss in Head Side (mm)

Bore size (mm)	G	Th9
12	1.5	$15^{0}_{-0.043}$
16	1.5	$20^{0}_{-0.052}$
20	2	$13^{0}_{-0.043}$
25	2	$15^{0}_{-0.043}$

Note) With boss in rod side : Option (Suffix "-XC36" to the end of part number.)

Rod end male thread



Rod End Male Thread (mm)

Bore size (mm)	B_1	C_1	H_1	L_1	MM	X
12	8	9	4	14	M5 x 0.8	10.5
16	10	10	5	15.5	M6 x 1.0	12
20	13	12	5	18.5	M8 x 1.25	14
25	17	15	6	22.5	M10 x 1.25	17.5

For the auto switch mounting position and its mounting height, refer to page 760 to 766.

Basic Style

(mm)

Bore size (mm)	Stroke range (mm)	A	B	C	D	E	F	H	K	L	M	N	O	Q	S	U	V
12	5 to 30	31.5	28	6	6	32	6.5	M3 x 0.5	5	3.5	22	3.5	6.5 depth 3.5	11	36.5	20.5	25
16	5 to 30	34	30.5	8	8	38	5.5	M4 x 0.7	6	3.5	28	3.5	6.5 depth 3.5	10	42.5	23.5	29
20	5 to 50	36	31.5	7	10	47	5.5	M5 x 0.8	8	4.5	36	5.5	9 depth 7	10.5	49	25.5	36
25	5 to 50	37.5	32.5	12	12	52	5.5	M6 x 1.0	10	5	40	5.5	9 depth 7	11	54.5	28.5	40

Note 2) External dimensions with rubber bumper are same as standard type as shown above.
∗ For details about the rod end nut and accessory brackets, refer to page 620.
Note 3) For calculation on the longitudinal dimension of the intermediate strokes, refer to page 603.

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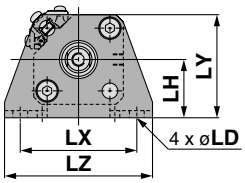
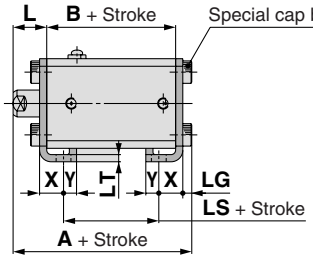
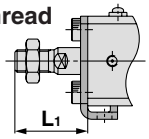
Foot style: CDQ2L





Rod end male thread



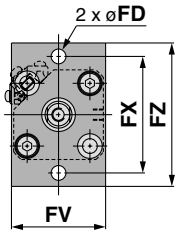
Foot Style

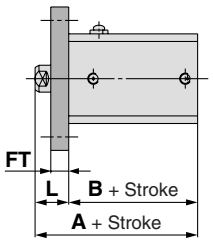
(mm)

Bore size (mm)	Stroke range (mm)	A	B	L	L_1	LD	LG	LH	LS	LT	LX	LY	LZ	X	Y
12	5 to 30	46.3	28	13.5	24	4.5	2.8	17	16	2	34	29.5	44	8	4.5
16	5 to 30	48.8	30.5	13.5	25.5	4.5	2.8	19	18.5	2	38	33.5	48	8	5
20	5 to 50	53.2	31.5	14.5	28.5	6.6	4	24	19.5	3.2	48	42	62	9.2	5.8
25	5 to 50	54.7	32.5	15	32.5	6.6	4	26	17.5	3.2	52	46	66	10.7	5.8

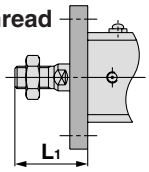
Foot bracket material: Carbon steel
Surface treatment: Nickel plated

Rod side flange style: CDQ2F





Rod end male thread



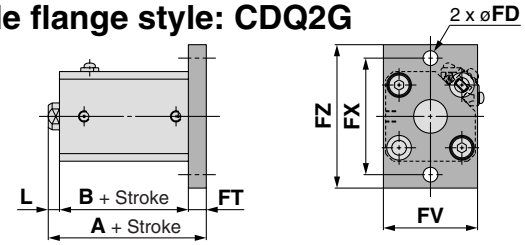
Rod Side Flange Style

(mm)

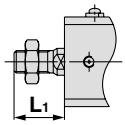
Bore size (mm)	Stroke range (mm)	A	B	FD	FT	FV	FX	FZ	L	L_1
12	5 to 30	41.5	28	4.5	5.5	25	45	55	13.5	24
16	5 to 30	44	30.5	4.5	5.5	30	45	55	13.5	25.5
20	5 to 50	46	31.5	6.6	8	39	48	60	14.5	28.5
25	5 to 50	47.5	32.5	6.6	8	42	52	64	15	32.5

Foot bracket material: Carbon steel
Surface treatment: Nickel plated

Head side flange style: CDQ2G



Rod end male thread



Head Side Flange Style

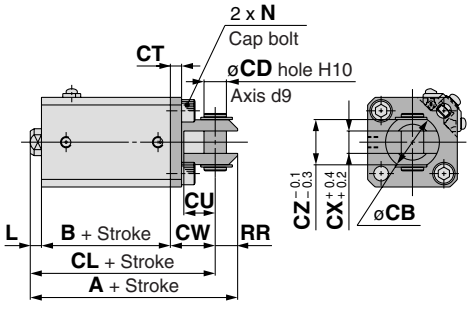
(mm)

Bore size (mm)	Stroke range (mm)	A	L	L_1
12	5 to 30	37	3.5	14
16	5 to 30	39.5	3.5	15.5
20	5 to 50	44	4.5	18.5
25	5 to 50	45.5	5	22.5

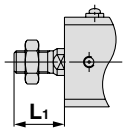
Foot bracket material: Carbon steel
Surface treatment: Nickel plated

∗ Dimensions except A, L and L1 are the same as rod side flange style.

Double clevis style: CDQ2D



Rod end male thread



Double Clevis Style

(mm)

Bore size (mm)	Stroke range (mm)	A	B	CB	CD	CL	CT	CU	CW	CX	CZ	L	L_1	N	RR
12	5 to 30	51.5	28	12	5	45.5	4	7	14	5	10	3.5	14	M4 x 0.7	6
16	5 to 30	55	30.5	14	5	49	4	10	15	6.5	12	3.5	15.5	M4 x 0.7	6
20	5 to 50	63	31.5	20	8	54	5	12	18	8	16	4.5	18.5	M6 x 1.0	9
25	5 to 50	67.5	32.5	24	10	57.5	5	14	20	10	20	5	22.5	M6 x 1.0	10

Double clevis bracket material: Carbon steel
Surface treatment: Nickel plated

∗ For details about the rod end nut and accessory brackets, refer to page 620.
∗∗ Double clevis pins and retaining rings are included.

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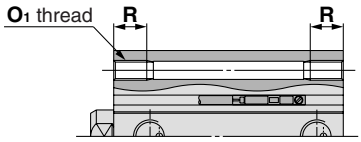
Dimensions
ø32 to ø50

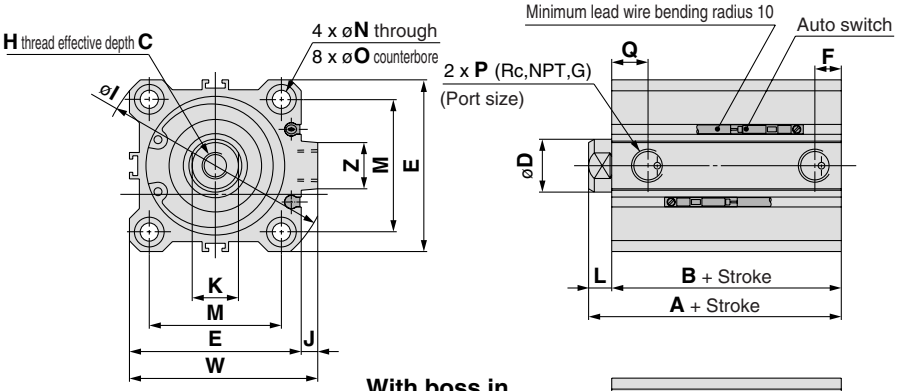
Both ends tapped style: CQ2A/CDQ2A

Basic style (Through-hole): CQ2B/CDQ2B

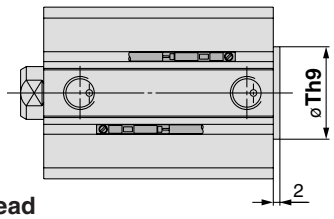


Both Ends Tapped Style (mm)

Bore size (mm)	O_1	R
32	M6 x 1.0	10
40	M6 x 1.0	10
50	M8 x 1.25	14



With boss in head side

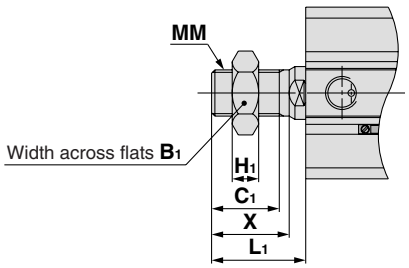


With Boss in Head Side (mm)

Bore size (mm)	Th9
32	$21^{0}_{-0.052}$
40	$28^{0}_{-0.052}$
50	$35^{0}_{-0.052}$

Note 1) With boss in rod side : Option (Suffix "-XC36" to the end of part number.)

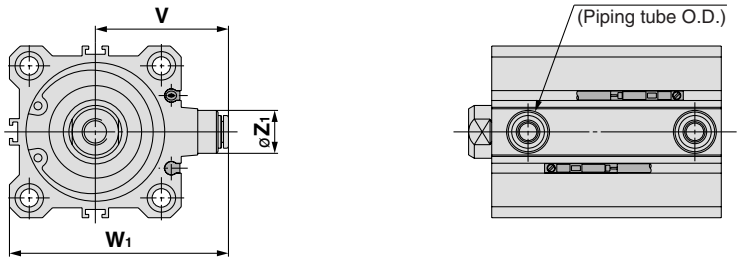
Rod end male thread



Rod End Male Thread (mm)

Bore size (mm)	B_1	C_1	H_1	L_1	MM	X
32	22	20.5	8	28.5	M14 x 1.5	23.5
40	22	20.5	8	28.5	M14 x 1.5	23.5
50	27	26	11	33.5	M18 x 1.5	28.5

Built-in One-touch fittings: ø32 to ø50



Built-in One-touch Fittings (mm)

Bore size (mm)	Z_1	P_1	V	W_1
32	13	6	36.5	59
40	13	6	40.5	66
50	16	8	50	82

Basic Style For the auto switch mounting position and its mounting height, refer to page 760 to 766. (mm)

Bore size (mm)	Stroke range (mm)	Without auto switch					With auto switch					C	D	E	H	I	J	K	L	M
		A	B	F	P	Q	A	B	F	P	Q									
32	5	30	23	5.5	M5 x 0.8	11.5	40	33	7.5	Rc1/8	10.5	13	16	45	M8 x 1.25	60	4.5	14	7	34
	10 to 50			7.5	1/8	10.5														
	75, 100	40	33																	
40	5 to 50	36.5	29.5	8	1/8	11	46.5	39.5	8	Rc1/8	11	13	16	52	M8 x 1.25	69	5	14	7	40
	75, 100	46.5	39.5																	
50	10 to 50	38.5	30.5	10.5	1/4	10.5	48.5	40.5	10.5	Rc1/4	10.5	15	20	64	M10 x 1.5	86	7	17	8	50
	75, 100	48.5	40.5																	

Bore size (mm)	N	O	S	U	W	Z
32	5.5	9 depth 7	58.5	31.5	49.5	14
40	5.5	9 depth 7	66	35	57	14
50	6.6	11 depth 8	80	41	71	19

Note 2) External dimensions with rubber bumper are same as standard type as shown above.
∗ For details about the rod end nut and accessory brackets, refer to page 620.
Note 3) For calculation on the longitudinal dimension of the intermediate strokes, refer to page 603. Because we have the spacer-installed type and the exclusive body type (-X10).

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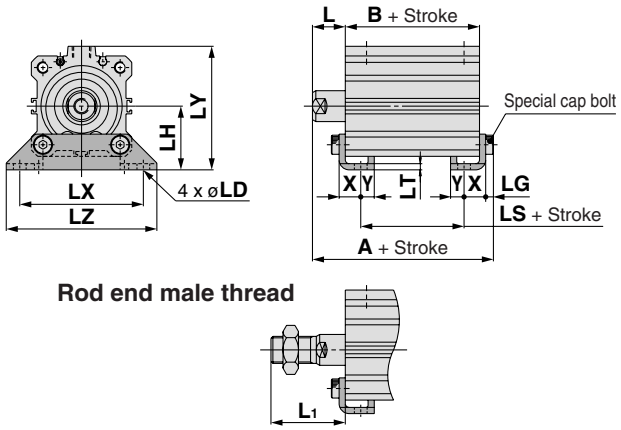
Foot style: CQ2L/CDQ2L



Rod end male thread

Foot Style

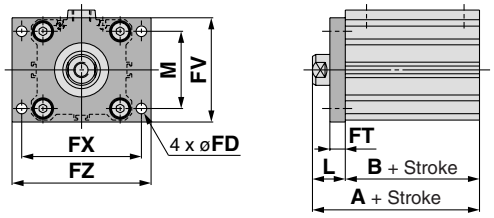
(mm)

Bore size (mm)	Stroke range (mm)	Without auto switch A	B	LS	With auto switch A	B	LS	L	L1	LD	LG	LH	LT	LX	LY
32	5 to 50	47.2	23	7	57.2	33	17	17	38.5	6.6	4	30	3.2	57	57
	75, 100	57.2	33	17											
40	5 to 50	53.7	29.5	13.5	63.7	39.5	23.5	17	38.5	6.6	4	33	3.2	64	64
	75, 100	63.7	39.5	23.5											
50	10 to 50	56.7	30.5	7.5	66.7	40.5	17.5	18	43.5	9	5	39	3.2	79	78
	75, 100	66.7	40.5	17.5											

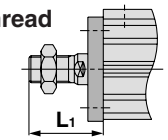
Foot bracket material: Carbon steel
Surface treatment: Nickel plated

Bore size (mm)	LZ	X	Y
32	71	11.2	5.8
40	78	11.2	7
50	95	14.7	8

Rod side flange style: CQ2F/CDQ2F



Rod end male thread



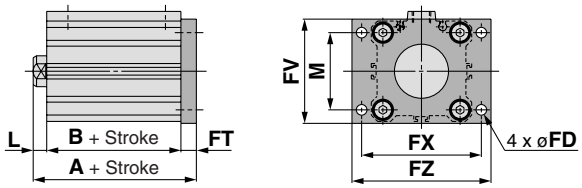
Rod Side Flange Style

(mm)

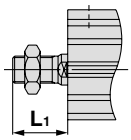
Bore size (mm)	Stroke range (mm)	Without auto switch A	B	With auto switch A	B	FD	FT	FV	FX	FZ	L	L1	M
32	5 to 50	40	23	50	33	5.5	8	48	56	65	17	38.5	34
	75, 100	50	33										
40	5 to 50	46.5	29.5	56.5	39.5	5.5	8	54	62	72	17	38.5	40
	75, 100	56.5	39.5										
50	10 to 50	48.5	30.5	58.5	40.5	6.6	9	67	76	89	18	43.5	50
	75, 100	58.5	40.5										

Foot bracket material: Carbon steel
Surface treatment: Nickel plated

Head side flange style: CQ2G/CDQ2G



Rod end male thread



Head Side Flange Style

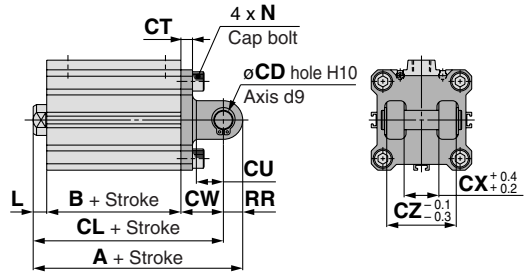
(mm)

Bore size (mm)	Stroke range (mm)	Without auto switch A	With auto switch A	L	L1
32	5 to 50	38	48	7	28.5
	75, 100	48			
40	5 to 50	44.5	54.5	7	28.5
	75, 100	54.5			
50	10 to 50	47.5	57.5	8	33.5
	75, 100	57.5			

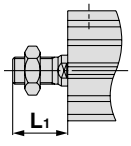
Foot bracket material: Carbon steel
Surface treatment: Nickel plated

∗ Dimensions except A, L and L1 are the same as rod side flange style.

Double clevis style: CQ2D/CDQ2D



Rod end male thread



Double Clevis Style

(mm)

Bore size (mm)	Stroke range (mm)	Without auto switch A	B	CL	With auto switch A	B	CL	CD	CT	CU	CW	CX	CZ	L	L1
32	5 to 50	60	23	50	70	33	60	10	5	14	20	18	36	7	28.5
	75, 100	70	33	60											
40	5 to 50	68.5	29.5	58.5	78.5	39.5	68.5	10	6	14	22	18	36	7	28.5
	75, 100	78.5	39.5	68.5											
50	10 to 50	80.5	30.5	66.5	90.5	40.5	76.5	14	7	20	28	22	44	8	33.5
	75, 100	90.5	40.5	76.5											

Double clevis bracket material: Cast iron
Surface treatment: Painted

Bore size (mm)	N	RR
32	M6 x 1.0	10
40	M6 x 1.0	10
50	M8 x 1.25	14

∗ For details about the rod end nut and accessory brackets, refer to page 620.
∗∗ Double clevis pins and retaining rings are included.

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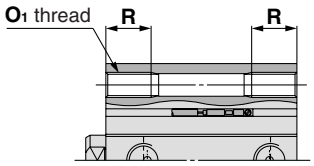
Dimensions
ø63 to ø100

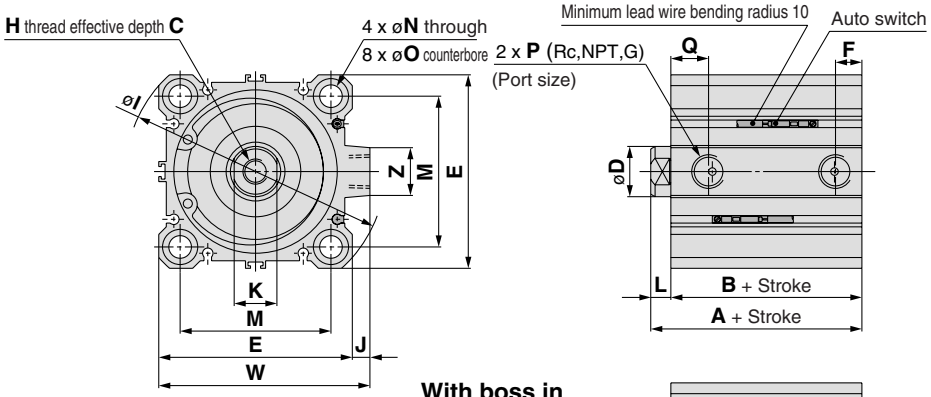
Both ends tapped style: CQ2A/CDQ2A



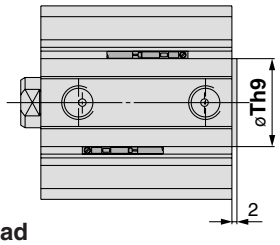
Both Ends Tapped Style (mm)

Bore size (mm)	O_1	R
63	M10 x 1.5	18
80	M12 x 1.75	22
100	M12 x 1.75	22

Basic style (Through-hole)



With boss in head side

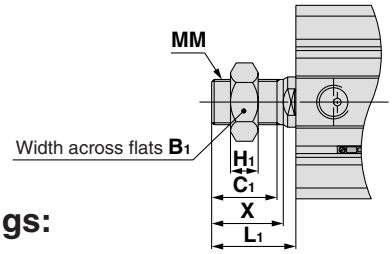


With Boss in Head Side (mm)

Bore size (mm)	Th9
63	$35^{\ 0}_{-0.052}$
80	$43^{\ 0}_{-0.052}$
100	$59^{\ 0}_{-0.052}$

Note 1) With boss in rod side : Option (Suffix "-XC36" to the end of part number.)

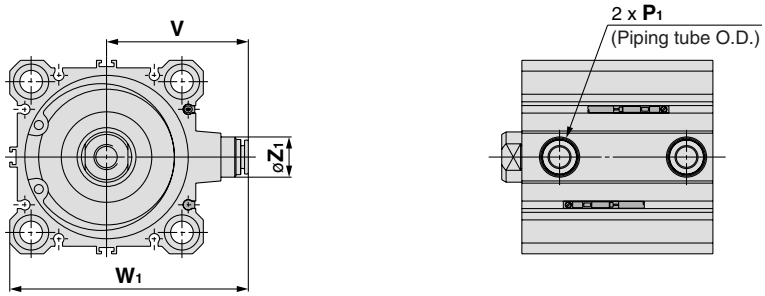
Rod end male thread



Rod End Male Thread (mm)

Bore size (mm)	B_1	C_1	H_1	L_1	MM	X
63	27	26	11	33.5	M18 x 1.5	28.5
80	32	32.5	13	43.5	M22 x 1.5	35.5
100	41	32.5	16	43.5	M26 x 1.5	35.5

Built-in One-touch fittings: ø63 to ø100



Built-in One-touch Fittings (mm)

Bore size (mm)	Z_1	P_1	V	W_1
63	16	8	56.5	95

Basic Style

For the auto switch mounting position and its mounting height, refer to page 760 to 766.

(mm)

Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch		C	D	E	F	H	I	J	K	L	M	N	O	P	Q	S
		A	B	A	B															
63	10 to 50	44	36	54	46	15	20	77	10.5	M10 x 1.5	103	7	17	8	60	9	14 depth 10.5	1/4	15	93
	75, 100	54	46																	
80	10 to 50	53.5	43.5	63.5	53.5	21	25	98	12.5	M16 x 2.0	132	6	22	10	77	11	17.5 depth 13.5	3/8	16	112.5
	75, 100	63.5	53.5																	
100	10 to 50	65	53	75	63	27	30	117	13	M20 x 2.5	156	6.5	27	12	94	11	17.5 depth 13.5	3/8	23	132.5
	75, 100	75	63																	

Bore size (mm)	U	W	Z
63	47.5	84	19
80	57.5	104	26
100	67.5	123.5	26

Note 2) External dimensions with rubber bumper are same as standard type as shown above.
∗ For details about the rod end nut and accessory brackets, refer to page 620.
Note 3) For calculation on the longitudinal dimension of the intermediate strokes, refer to page 603. Because we have the spacer-installed type and the exclusive body type (-X10).

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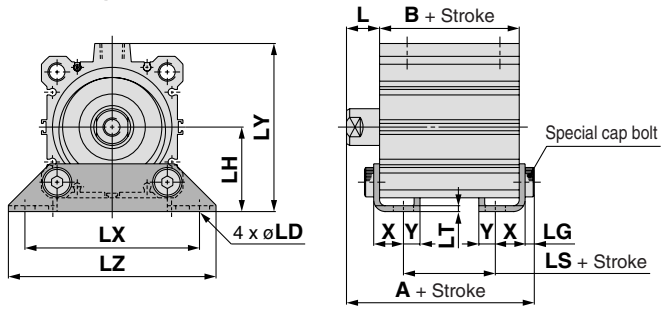
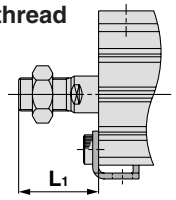
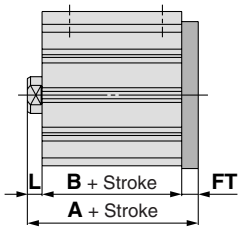
Foot style: CQ2L/CDQ2L

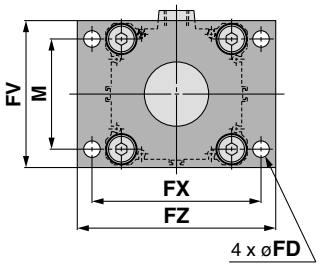


Rod end male thread

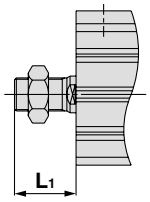


Head side flange style: CQ2G/CDQ2G

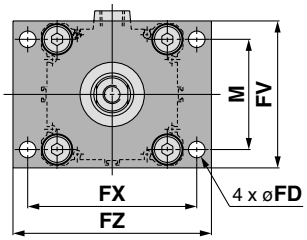


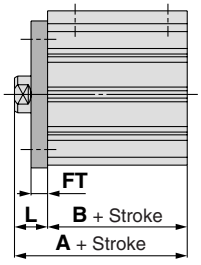


Rod end male thread

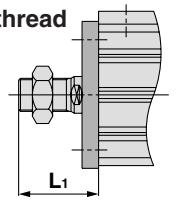


Rod side flange style: CQ2F/CDQ2F

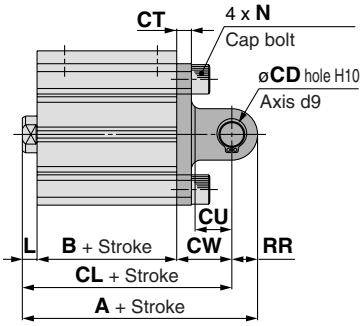


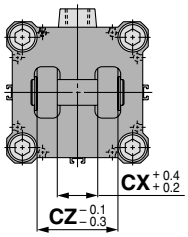


Rod end male thread

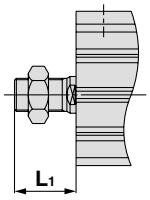


Double clevis style: CQ2D/CDQ2D





Rod end male thread



Foot Style

(mm)

Bore size (mm)	Stroke range (mm)	Without auto switch A	B	LS	With auto switch A	B	LS	L	L1	LD	LG	LH	LT
63	10 to 50	62.2	36	10	72.2	46	20	18	43.5	11	5	46	3.2
	75, 100	72.2	46	20									
80	10 to 50	75	43.5	13.5	85	53.5	23.5	20	53.5	13	7	59	4.5
	75, 100	85	53.5	23.5									
100	10 to 50	88	53	19	98	63	29	22	53.5	13	7	71	6
	75, 100	98	63	29									

Bore size (mm)	Stroke range (mm)	LX	LY	LZ	X	Y
63	10 to 50	95	91.5	113	16.2	9
	75, 100					
80	10 to 50	118	114	140	19.5	11
	75, 100					
100	10 to 50	137	136	162	23	12.5
	75, 100					

Foot bracket material: Carbon steel
Surface treatment: Nickel plated

Rod Side Flange Style

(mm)

Bore size (mm)	Stroke range (mm)	Without auto switch A	B	With auto switch A	B	FD	FT	FV	FX	FZ	L	L1	M
63	10 to 50	54	36	64	46	9	9	80	92	108	18	43.5	60
	75, 100	64	46										
80	10 to 50	63.5	43.5	73.5	53.5	11	11	99	116	134	20	53.5	77
	75, 100	73.5	53.5										
100	10 to 50	75	53	85	63	11	11	117	136	154	22	53.5	94
	75, 100	85	63										

Foot bracket material: Carbon steel
Surface treatment: Nickel plated

Head Side Flange Style

(mm)

Bore size (mm)	Stroke range (mm)	Without auto switch A	With auto switch A	L	L1
63	10 to 50	53	63	8	33.5
	75, 100	63			
80	10 to 50	64.5	74.5	10	43.5
	75, 100	74.5			
100	10 to 50	76	86	12	43.5
	75, 100	86			

∗ Dimensions except A, L and L1 are the same as rod side flange style.

Foot bracket material: Carbon steel Surface treatment: Nickel plated

Double Clevis Style

(mm)

Bore size (mm)	Stroke range (mm)	Without auto switch A	B	CL	With auto switch A	B	CL	CD	CT	CU	CW	CX
63	10 to 50	88	36	74	98	46	84	14	8	20	30	22
	75, 100	98	46	84								
80	10 to 50	109.5	43.5	91.5	119.5	53.5	101.5	18	10	27	38	28
	75, 100	119.5	53.5	101.5								
100	10 to 50	132	53	110	142	63	120	22	13	31	45	32
	75, 100	142	63	120								

Bore size (mm)	Stroke range (mm)	CZ	L	L1	N	RR
63	10 to 50	44	8	33.5	M10 x 1.5	14
	75, 100					
80	10 to 50	56	10	43.5	M12 x 1.75	18
	75, 100					
100	10 to 50	64	12	43.5	M12 x 1.75	22
	75, 100					

Double clevis bracket material: Cast iron
Surface treatment: Painted

∗ For details about the rod end nut and accessory brackets, refer to page 620.
∗∗ Double clevis pins and retaining rings are included.

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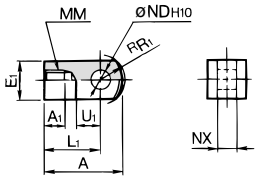
Accessory Bracket

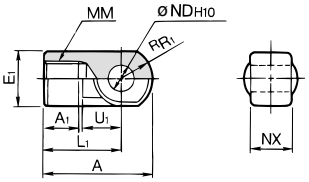
Single Knuckle Joint

For I-G012, I-Z015A
I-G02, I-G03



Material: Carbon steel
Surface treatment: Nickel plated

For I-G04, I-G05
I-G08, I-G10



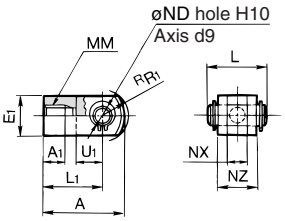
Material: Cast iron
Surface treatment: Nickel plated

(mm)

Part no.	Applicable bore size (mm)	A	A_1	E_1	L_1	MM	$^{R}R_1$	U_1	ND_{H10}	NX
I-G012	**12**	21.5	6	□10	16	M5 x 0.8	6.3	7	$5^{+0.048}_{0}$	$5^{-0.2}_{-0.4}$
I-Z015A	**16**	32	8	□12	25	M6 x 1	8.1	14	$5^{+0.048}_{0}$	$6.4^{-0.1}_{-0.3}$
I-G02	**20**	34	8.5	□16	25	M8 x 1.25	10.3	11.5	$8^{+0.058}_{0}$	$8^{-0.2}_{-0.4}$
I-G03	**25**	41	10.5	□20	30	M10 x 1.25	12.8	14	$10^{+0.058}_{0}$	$10^{-0.2}_{-0.4}$
I-G04	**32,40**	42	14	ø22	30	M14 x 1.5	12	14	$10^{+0.058}_{0}$	$18^{-0.3}_{-0.5}$
I-G05	**50,63**	56	18	ø28	40	M18 x 1.5	16	20	$14^{+0.070}_{0}$	$22^{-0.3}_{-0.5}$
I-G08	**80**	71	21	ø38	50	M22 x 1.5	21	27	$18^{+0.070}_{0}$	$28^{-0.3}_{-0.5}$
I-G10	**100**	79	21	ø44	55	M26 x 1.5	24	31	$22^{+0.084}_{0}$	$32^{-0.3}_{-0.5}$

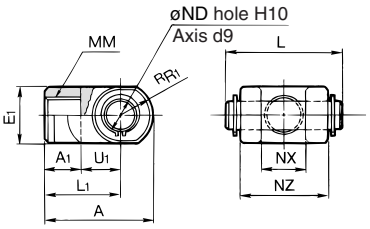
Double Knuckle Joint

For Y-G012, Y-Z015A
Y-G02, Y-G03



Material: Carbon steel
Surface treatment: Nickel plated

For Y-G04, Y-G05
Y-G08, Y-G10



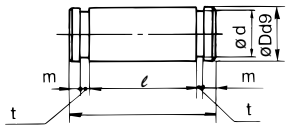
Material: Cast iron
Surface treatment: Nickel plated

(mm)

Part no.	Applicable bore size (mm)	A	A_1	E_1	L_1	MM	$^{R}R_1$	U_1	ND_{H10}	NX	NZ	L	Applicable pin part no.
Y-G012	**12**	21.5	6	□10	16	M5 x 0.8	6.3	7	$5^{+0.048}_{0}$	$5^{+0.4}_{+0.2}$	10	14.6	IY-G012
Y-Z015A	**16**	28	11	□12	21	M6 x 1	8.1	10	$5^{+0.048}_{0}$	$6.5^{+0.2}_{+0}$	12	16.6	IY-J015
Y-G02	**20**	34	8.5	□16	25	M8 x 1.25	10.3	11.5	$8^{+0.058}_{0}$	$8^{+0.4}_{+0.2}$	16	21	IY-G02
Y-G03	**25**	41	10.5	□20	30	M10 x 1.25	12.8	14	$10^{+0.058}_{0}$	$10^{+0.4}_{+0.2}$	20	25.6	IY-G03
Y-G04	**32,40**	42	16	ø22	30	M14 x 1.5	12	14	$10^{+0.058}_{0}$	$18^{+0.5}_{+0.3}$	36	41.6	IY-G04
Y-G05	**50,63**	56	20	ø28	40	M18 x 1.5	16	20	$14^{+0.070}_{0}$	$22^{+0.5}_{+0.3}$	44	50.6	IY-G05
Y-G08	**80**	71	23	ø38	50	M22 x 1.5	21	27	$18^{+0.070}_{0}$	$28^{+0.5}_{+0.3}$	56	64	IY-G08
Y-G10	**100**	79	24	ø44	55	M26 x 1.5	24	31	$22^{+0.084}_{0}$	$32^{+0.5}_{+0.3}$	64	72	IY-G10

∗ Knuckle pin and retaining ring are included.

Knuckle Pin (Common with double clevis pin)



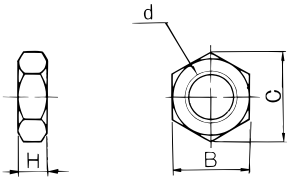
Material: Carbon steel

(mm)

Part no.	Applicable bore size (mm)	Dd9	L	d	l	m	t	Applicable snap ring
IY-G012	**12**	$5^{-0.030}_{-0.060}$	14.6	4.8	10.2	1.5	0.7	Type C 5 for axis
IY-J015	**16**	$5^{-0.030}_{-0.060}$	16.6	4.8	12.2	1.5	0.7	Type C 5 for axis
IY-G02	**20**	$8^{-0.040}_{-0.076}$	21	7.6	16.2	1.5	0.9	Type C 8 for axis
IY-G03	**25**	$10^{-0.040}_{-0.076}$	25.6	9.6	20.2	1.55	1.15	Type C 10 for axis
IY-G04	**32,40**	$10^{-0.040}_{-0.076}$	41.6	9.6	36.2	1.55	1.15	Type C 10 for axis
IY-G05	**50,63**	$14^{-0.050}_{-0.093}$	50.6	13.4	44.2	2.05	1.15	Type C 14 for axis
IY-G08	**80**	$18^{-0.050}_{-0.093}$	64	17	56.2	2.55	1.35	Type C 18 for axis
IY-G10	**100**	$22^{-0.065}_{-0.117}$	72	21	64.2	2.55	1.35	Type C 22 for axis

∗ Type C retaining rings for axis are included.

Rod End Nut



Material: Carbon steel
Surface treatment: Nickel plated

(mm)

Part no.	Applicable bore size (mm)	d	H	B	C
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	15.0
NT-03	**25**	M10 x 1.25	6	17	19.6
NT-04	**32,40**	M14 x 1.5	8	22	25.4
NT-05	**50,63**	M18 x 1.5	11	27	31.2
NT-08	**80**	M22 x 1.5	13	32	37.0
NT-10	**100**	M26 x 1.5	16	41	47.3

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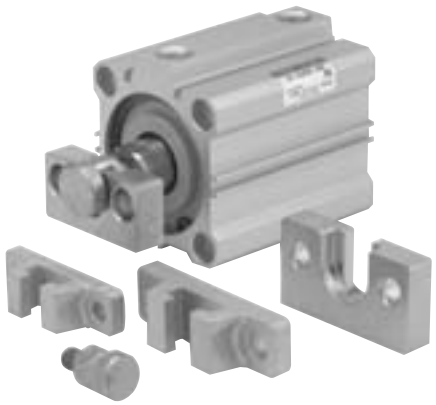
Simple Joint: ø32 to ø100



Joint and Mounting Bracket (Type A, Type B) Part No.

YA – **03**

Applicable air cylinder bore

03	For ø32, ø40
05	For ø50, ø63
08	ø80
10	ø100

Mounting bracket

YA	Type A mounting bracket
YB	Type B mounting bracket
YU	Joint

Allowable Eccentricity

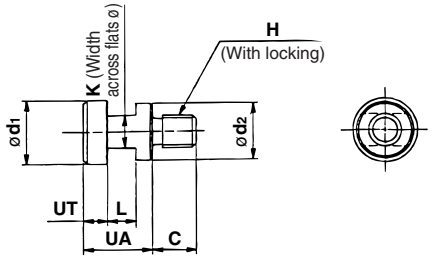
(mm)

Bore size (mm)	ø32	ø40	ø50	ø63	ø80	ø100
Eccentricity tolerance	± 1				± 1.5	± 2
Backlash	0.5					

<Ordering>
• Joints are not included with the A or B type mounting brackets. Order them separately.
(Example)
Bore size ø40 Part no.
• Type A mounting bracket part no.····· YA-03
• Joint····· YU-03

Joint and Mounting Bracket (Type A, Type B) Part No.

Bore size (mm)	Joint part no.	Applicable mounting bracket	
		Type A mounting bracket	Type B mounting bracket
32, 40	YU-03	YA-03	YB-03
50, 63	YU-05	YA-05	YB-05
80	YU-08	YA-08	YB-08
100	YU-10	YA-10	YB-10

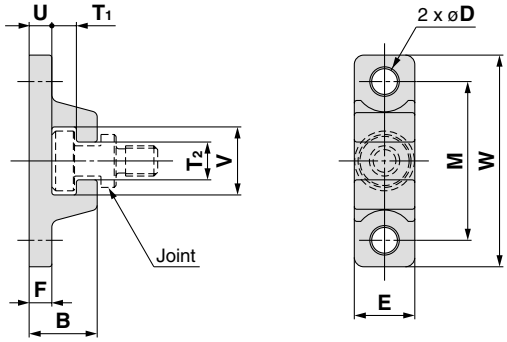


Material: Chromium molybdenum steel (Nickel plated)

(mm)

Part no.	Applicable bore size (mm)	UA	C	d_1	d_2	H	K	L	UT	Mass (g)
YU-03	**32, 40**	17	11	15.8	14	M8 x 1.25	8	7	6	25
YU-05	**50, 63**	17	13	19.8	18	M10 x 1.5	10	7	6	40
YU-08	**80**	22	20	24.8	23	M16 x 2	13	9	8	90
YU-10	**100**	26	26	29.8	28	M20 x 2.5	14	11	10	160

Type A Mounting Bracket



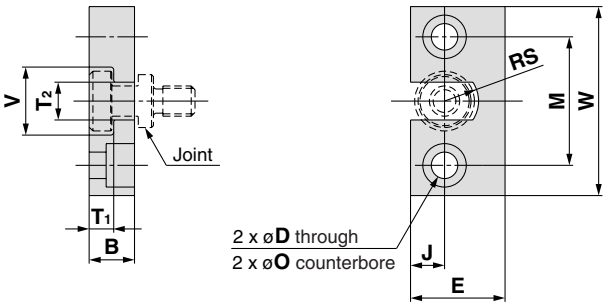
Material: Chromium molybdenum steel (Nickel plated)

(mm)

Part no.	Bore size (mm)	B	D	E	F	M	T_1	T_2
YA-03	**32, 40**	18	6.8	16	6	42	6.5	10
YA-05	**50, 63**	20	9	20	8	50	6.5	12
YA-08	**80**	26	11	25	10	62	8.5	16
YA-10	**100**	31	14	30	12	76	10.5	18

Part no.	Bore size (mm)	U	V	W	Mass (g)
YA-03	**32, 40**	6	18	56	55
YA-05	**50, 63**	8	22	67	100
YA-08	**80**	10	28	83	195
YA-10	**100**	12	36	100	340

Type B Mounting Bracket



Material: Stainless steel

(mm)

Part no.	Bore size (mm)	B	D	E	J	M	øO
YB-03	**32, 40**	12	7	25	9	34	11.5 depth 7.5
YB-05	**50, 63**	12	9	32	11	42	14.5 depth 8.5
YB-08	**80**	16	11	38	13	52	18 depth 12
YB-10	**100**	19	14	50	17	62	21 depth 14

Part no.	Bore size (mm)	T_1	T_2	V	W	RS	Mass (g)
YB-03	**32, 40**	6.5	10	18	50	9	80
YB-05	**50, 63**	6.5	12	22	60	11	120
YB-08	**80**	8.5	16	28	75	14	230
YB-10	**100**	10.5	18	36	90	18	455

Courtesy of Steven Engineering, Inc.-230 Ryan Way, South San Francisco, CA 94080-6370-Main Office: (650) 588-9200-Outside Local Area: (800) 258-9200-www.stevenengineering.com