

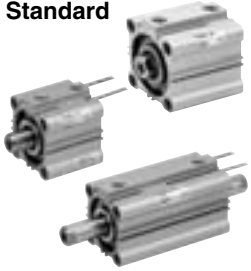
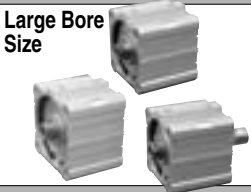
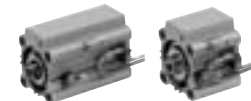
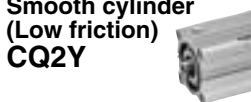
Compact Cylinder

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)	Standard stroke (mm)	Page
Standard 	Double acting	Single rod CQ2	12 16 20 25 32 40 50 63 80 100 125 140 160 180 200	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		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.				

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual

-X□

Technical data

Combinations of Standard Products and Made to Order Specifications

Series CQ2

Series CQ2

- : Standard
- ⊙ : Made to Order specifications
- : Special product (Contact SMC for details.)
- : Not available

● : Standard ○ : Made to Order specifications ○ : Special product (Contact SMC for details.) — : Not available		Series	CQ2 (Standard)				CQ2 (Large bore size)					CQ2 (Long stroke)		CQ2K (Not-rotating)		CQP2 (Axial piping)			CQ2□S (Anti-lateral load)	CBQ2 (End lock)	CQSY ⁽¹²⁾ Smooth cylinder (Low friction)	CQ2X ⁽¹²⁾ Low-speed cylinder
			Double acting		Single acting		Double acting			Double acting		Double acting		Double acting	Single acting		Double acting	Double acting	Double acting	Double acting		
			Action/Type	Single rod	Double rod	Single rod/ Spring return	Single rod/ Spring extend	Single rod	Double rod		Single rod	Double rod		Single rod	Single rod	Double rod	Single rod	Single rod/ Spring return	Single rod/ Spring extend	Single rod	Single rod	Single rod
Symbol	Specification	Applicable bore size	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		●	●	●	●	●	●	●			●	●	●	●	●	●	●	●	●	●	●
CQ2□A	Both ends tapped		●	●	●	●	●	●	●			●	● ⁽⁴⁾	● ⁽⁴⁾	○	○	○	●	●	●	●	●
CQ2□-□M	Rod end male thread		●	●	●	●	●	●	●			●	●	●	●	●	●	●	●	●	●	●
CQ2□-□C	With rubber bumper		●	●	○	○	● ⁽²⁾	● ⁽²⁾				● ⁽²⁾	○ ⁽¹⁾	○ ⁽¹⁾	●	○	○	● ⁽²⁾	● ⁽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		●	—	●	●	○	—			●	● ⁽⁴⁾	—	○	○	○	●	○	○	○	○	
CQ2□H	Air-hydro type	ø20 to ø100	●	●	—	—	○	○			○	—	—	●	—	—	○	—	—	—	—	
10-, 11-	Clean series	ø12 to ø100	●	○	○	○	○	○			○	○	○	○	○	○	○	○	○	○	○	
20-	Copper and Fluorine-free		●	●	●	●	○	○			●	● ⁽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		⊙	—	○	○	○	—			○	⊙	—	○	○	○	○	○ ⁽⁸⁾	○	○	○	
XC9	Adjustable stroke cylinder/Adjustable retraction type		⊙	—	○	○	○	—			○	⊙	—	○	○	○	○	○ ⁽⁹⁾	○	○	○	
XC10	Dual stroke cylinder/Double rod type		⊙	—	○	○	○	—			○	⊙	—	—	—	—	○	○	○	○	○	
XC11	Dual stroke cylinder/Single rod type		⊙	—	○	○	○	—			○	⊙	—	○	○	○	○	○	○	○	○	
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)		⊙	—	○	○	○	—			○	○	—	○	○	○	○	○ ⁽⁸⁾	○	○	○	
X526	Long stroke of adjustable retraction stroke cylinder (XC9)		⊙	—	○	○	○	—			○	○	—	○	○	○	○	○ ⁽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.



CUJ
CU
CQS
CQ2
RQ
CQM
MU

D-□
-X□
Individual
-X□
Technical
data

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** **-30D** **-** **-**

With auto switch **CDQ2** **B** **20** **-30D** **-** **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
TN	Rc	ø32 to ø100
TF	NPT	
F	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-hydro 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.

Number of auto switches

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

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

Auto switch

Nil	Without auto switch
------------	---------------------

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

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.

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		Auto switch model		Lead wire length (m)					Pre-wired connector	Applicable load			
					DC	AC	Perpendicular	In-line	0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)					
Solid state switch	_____	Grommet	Yes	3-wire (NPN)	24V	5V, 12V	—	M9NV	M9N	●	●	●	○	—	○	IC circuit	Relay, PLC	
		3-wire (PNP)		M9PV				M9P	●	●	●	○	—	○				
	Connector	2-wire		12V				M9BV	M9B	●	●	●	○	—	○	—		
		J79C		—				●	—	●	●	●	—					
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)				5V, 12V	M9N WV	M9N W	●	●	●	○	—	○		IC circuit
				3-wire (PNP)					M9P WV	M9P W	●	●	●	○	—	○		
	2-wire			M9B WV					M9B W	●	●	●	○	—	○	—		
	3-wire (NPN)			M9N AV					M9N A	○	○	●	○	—	○			IC circuit
	3-wire (PNP)			M9P AV					M9P A	○	○	●	○	—	○	—		
	2-wire			M9B AV					M9B A	○	○	●	○	—	○			—
	4-wire			5V, 12V					—	F79F	●	—	●	○	—	○		
	2-wire (Non-polar)			—					—	P4DW	—	—	●	●	—	○		—
Reed switch	_____	Grommet	Yes	3-wire (NPN equivalent)	24V	5V — — 200V	—	A96V	A96	●	—	●	—	—	—	IC circuit	Relay, PLC	
				—				A72	A72H	●	—	●	—	—	—			
	Connector	12V 100V		A93V				A93	●	—	●	—	—	—	—			
		5V, 12V 100V or less		A90V				A90	●	—	●	—	—	—		IC circuit		
	Grommet	12V —		A73C				—	●	—	●	●	●	—	—			
		5V, 12V 24V or less		A80C				—	●	—	●	●	●	—		IC circuit		
	— —	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.

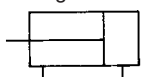
* There are other applicable auto switches other than the listed above. For details, refer to page 769.
* For details about auto switches with pre-wired connector, refer to pages 1328 and 1329.
* When D-A9□(V)/M9□(V)/M9□W(V)/M9□A(V)L types with ø32 to ø50 are mounted on a side other than the port side,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

Compact Cylinder: Standard Type Double Acting, Single Rod **Series CQ2**



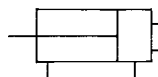
JIS Symbol

Double acting,
Single rod



JIS Symbol

With boss in
head side



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.

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		+1.0mm (Note)									

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

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	+1.0mm 0							

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

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	Bore size
	Stroke range	Stroke range
	12, 16 20, 25 32 to 100	1 to 29 1 to 49 1 to 99
Example	Part No.: CQ2B50-57D 18 mm width spacer is installed in the standard CQ2B50-75D. B dimension is 115.5 mm.	12, 16 20, 25 32, 40 50 to 100
		6 to 29 6 to 49 6 to 99 11 to 99
		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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CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual

-X□

Technical

data

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 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

- For installation and removal, use an appropriate pair of pliers (tool for installing a type C retaining ring).
- 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).

⚠ 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.

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

$$\text{Kinetic energy } E \text{ (J)} = \frac{(m_1 + m_2)V^2}{2}$$

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)

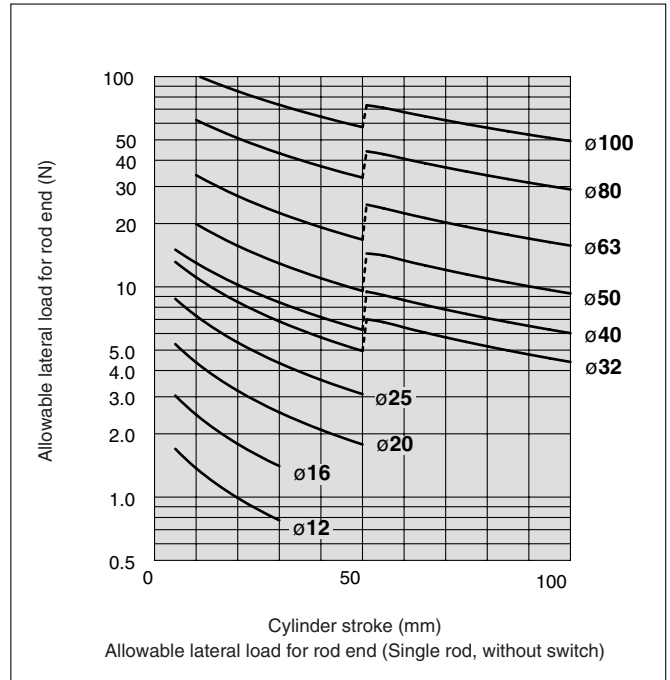
Bore size (mm)	12	16	20	25	32	40	50	63	80	100
Rod end male thread	Thread	1.5	3	6	12	26	27	53	53	120
Nut	1	2	4	8	17	17	32	32	49	116
With rubber bumper	0	0	-2	-3	-3	-7	-9	-18	-31	-56

Calculation: (Example) **CDQ2B32-20DCM**

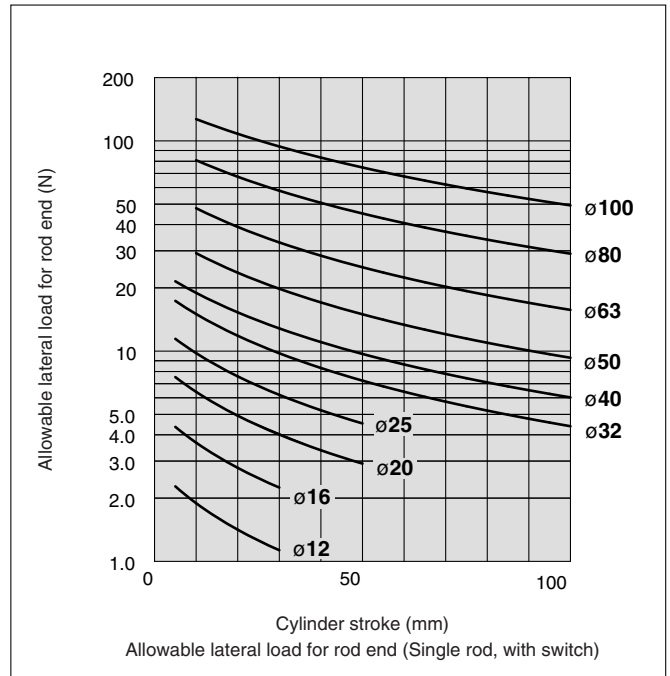
- Cylinder mass: CDQ2B32-20D101 g
- Option mass: Rod end male thread 43 g
- With rubber bumper -3 g
- 141 g

Allowable Lateral Load at Rod End

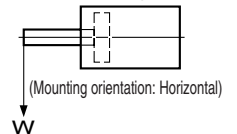
Without Auto Switch



With Auto 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.

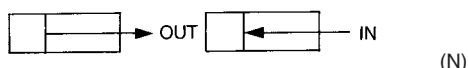


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Technical
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Series CQ2

Theoretical Output



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

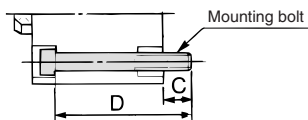
Mounting Bolt for CQ2/Without Auto Switch

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



Mass

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

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
	Nut	1	2	4	8	17	17	32	32	49
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**

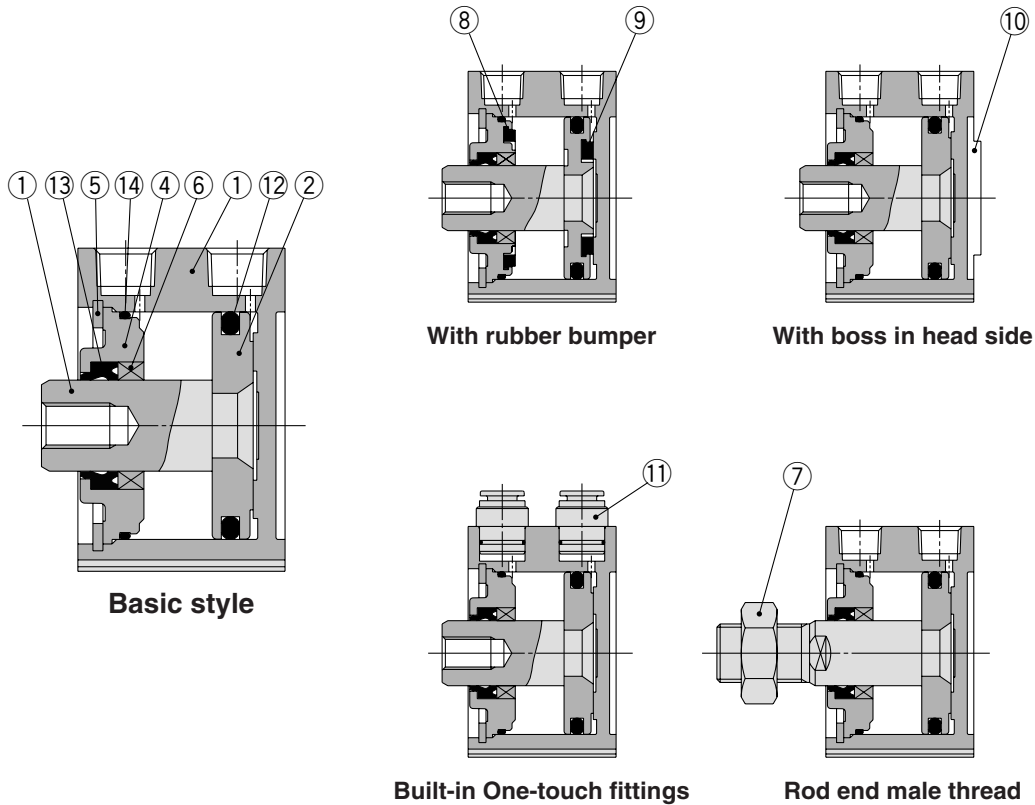
- Cylinder mass: CQ2B32-20D 193 g
- Option mass: Both ends tapped style 6 g
- Rod end male thread 43 g
- With rubber bumper -3 g
- Double clevis style 151 g
- 390 g**

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	5	50	x 50L
CQ2B16-5D		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	9.5	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	12.5	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	7.5	55	x 55L
-35D		60	x 60L
-40D		65	x 65L
-45D		70	x 70L
-50D		75	x 75L
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	12.5	60	x 60L
-35D		65	x 65L
-40D		70	x 70L
-45D		75	x 75L
-50D		80	x 80L
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	15	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	15	75	x 75L
-40D		80	x 80L
-45D		85	x 85L
-50D		90	x 90L
-75D		125	x 125L
-100D	15.5	150	x 150L
CQ2B80-10D		55	M10 x 55L
-15D		60	x 60L
-20D		65	x 65L
-25D		70	x 70L
-30D	15	75	x 75L
-35D		80	x 80L
-40D		85	x 85L
-45D		90	x 90L
-50D		95	x 95L
-75D	15.5	130	x 130L
-100D		155	x 155L
CQ2B100-10D		65	M10 x 65L
-15D		70	x 70L
-20D		75	x 75L
-25D	15.5	80	x 80L
-30D		85	x 85L
-35D		90	x 90L
-40D		95	x 95L
-45D		100	x 100L
-50D	15.5	105	x 105L
-75D		140	x 140L
-100D		165	x 165L

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	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)

CUJ

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CQS

CQ2

RQ

CQM

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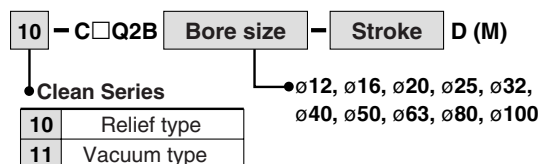
-X□

Individual
-X□

Technical
data

Series CQ2

Clean Series



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

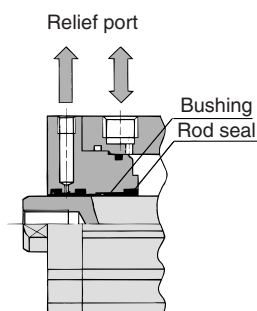
Action	Double acting, Single rod	
Bore size (mm)	ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63	ø80, ø100
Proof pressure	1.5 MPa	
Maximum operating pressure	1.0 MPa	
Cushion	None ^{Note)}	
Piston speed	30 to 400 mm/s	30 to 300 mm/s
Mounting	Through-hole	

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

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

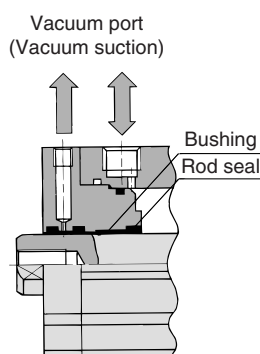
Construction

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.

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



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.

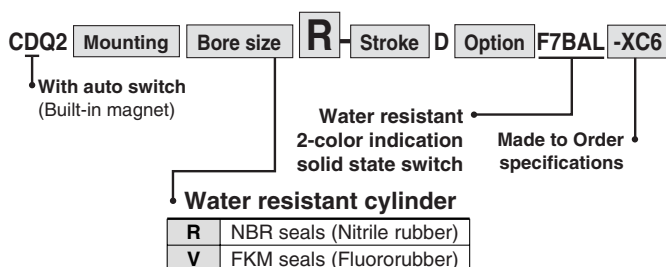


Specifications

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	

Water Resistant

Refer to pages 747 to 759 for details.



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.

Smooth cylinder

CQ2 Y Mounting bracket Bore size - Stroke D(C)(M)

• 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)

• 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.

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual
-X□

Technical
data



Mass

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

(g)

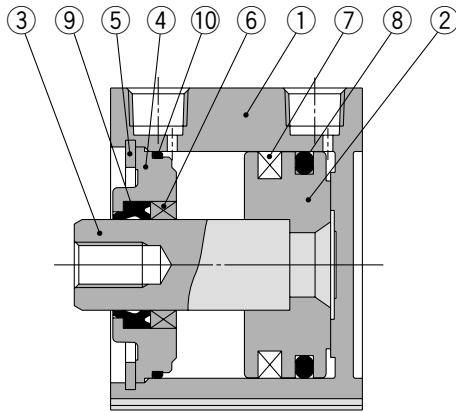
Calculation: (Example) **CDQ2D32-20DCM**

- Add each mass of auto switches and mounting brackets.

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

610

Construction



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)

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 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)

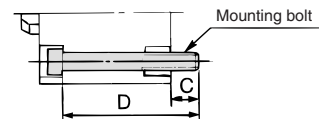
Mounting Bolt for CDQ2/With Auto Switch

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
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
CDQ2B50-10D	12.5	115	x 115L
-100D		140	x 140L
-15D		55	M6 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
-55D		95	x 95L
-60D		100	x 100L
-65D		105	x 105L
-70D		110	x 110L
-75D		115	x 115L
-80D		120	x 120L
-85D		125	x 125L
-90D		130	x 130L
-95D		135	x 135L
-100D		140	x 140L
-105D		145	x 145L

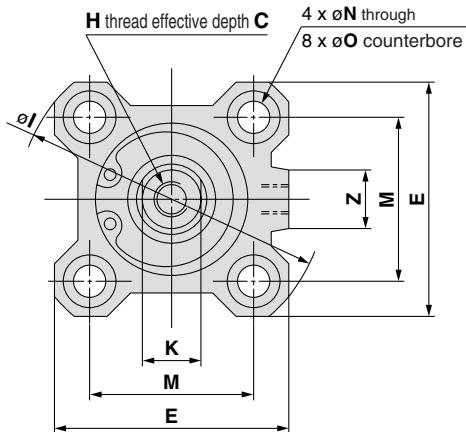
Cylinder model	C	D	Mounting bolt size
CDQ2B63-10D	14.5	60	M8 x 60L
-15D		65	x 65L
-20D		70	x 70L
-25D		75	x 75L
-30D		80	x 80L
-35D		85	x 85L
-40D		90	x 90L
-45D		95	x 95L
-50D		100	x 100L
-55D		105	x 105L
CDQ2B80-10D	15	125	x 125L
-15D		150	x 150L
-20D		65	M10 x 65L
-25D		70	x 70L
-30D		75	x 75L
-35D		80	x 80L
-40D		85	x 85L
-45D		90	x 90L
-50D		95	x 95L
-55D		100	x 100L
CDQ2B100-10D	15.5	105	x 105L
-15D		130	x 130L
-20D		155	x 155L
-25D		75	M10 x 75L
-30D		80	x 80L
-35D		85	x 85L
-40D		90	x 90L
-45D		95	x 95L
-50D		100	x 100L
-55D		105	x 105L
-60D		110	x 110L
-65D		115	x 115L
-70D		120	x 120L
-75D		125	x 125L
-80D		130	x 130L
-85D		135	x 135L
-90D		140	x 140L
-95D		145	x 145L

Series CQ2

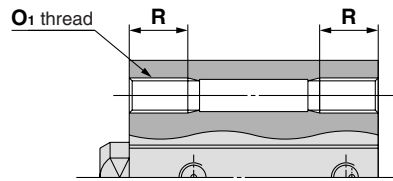
Dimensions

Ø12 to Ø25/Without Auto Switch

Basic style (Through-hole): CQ2B

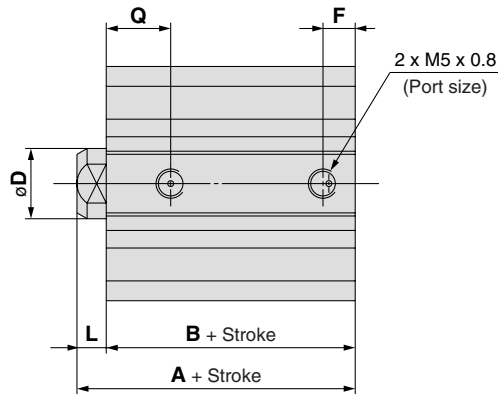


Both ends tapped style: CQ2A

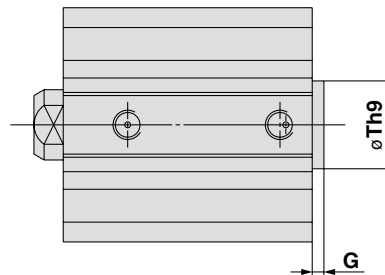


Both Ends Tapped Style (mm)

Bore size (mm)	Ø1	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

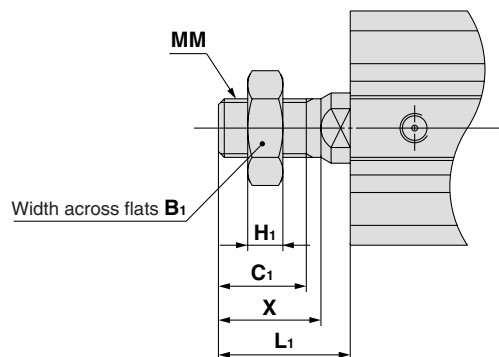


With Boss in Head Side (mm)

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)	B1	C1	H1	L1	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

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

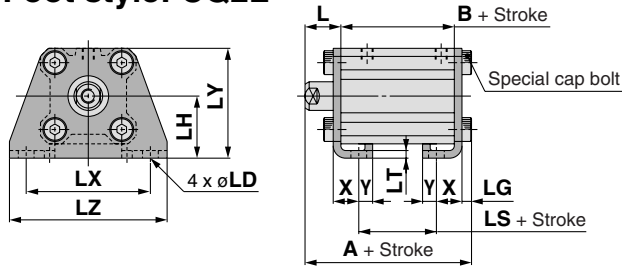
Note) External dimensions with rubber bumper are same as standard type as shown above.

* For details about the rod end nut and accessory brackets, refer to page 620.

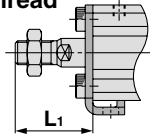


For calculation on the longitudinal dimension of the intermediate strokes, refer to page 603.

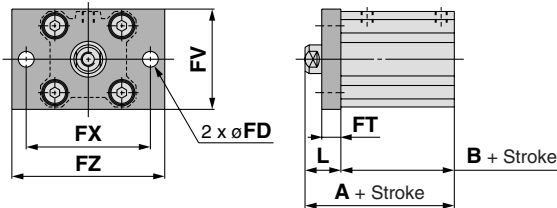
Foot style: CQ2L



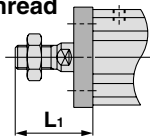
Rod end male thread



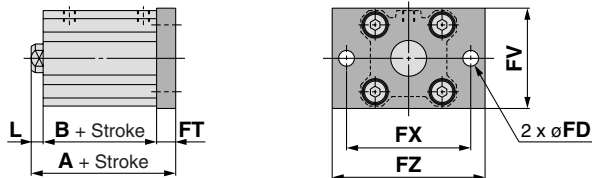
Rod side flange style: CQ2F



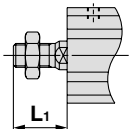
Rod end male thread



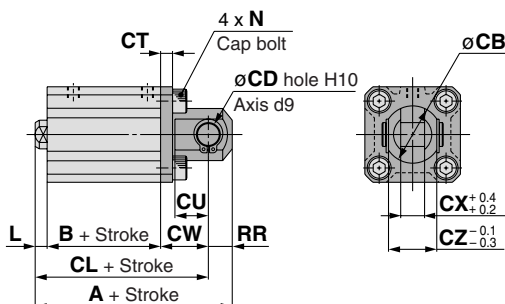
Head side flange style: CQ2G



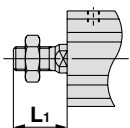
Rod end male thread



Double clevis style: CQ2D



Rod end male thread



Foot Style

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	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

Bore size (mm)	Stroke range (mm)	A	B	FD	FT	FV	FX	FZ	L	L ₁
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

Bore size (mm)	Stroke range (mm)	A	L	L ₁
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

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	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.

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual
-X□

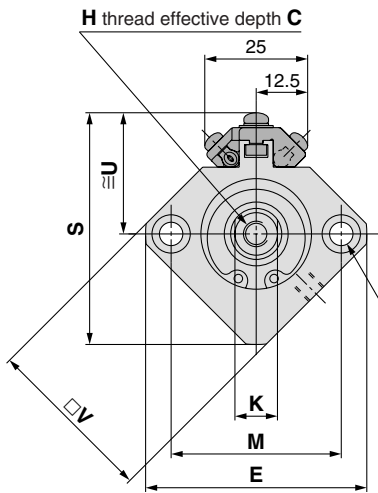
Technical
data

Series CQ2

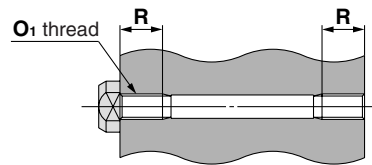
Dimensions

Ø12 to Ø25 / With Auto Switch

Basic style (Through-hole): CDQ2B

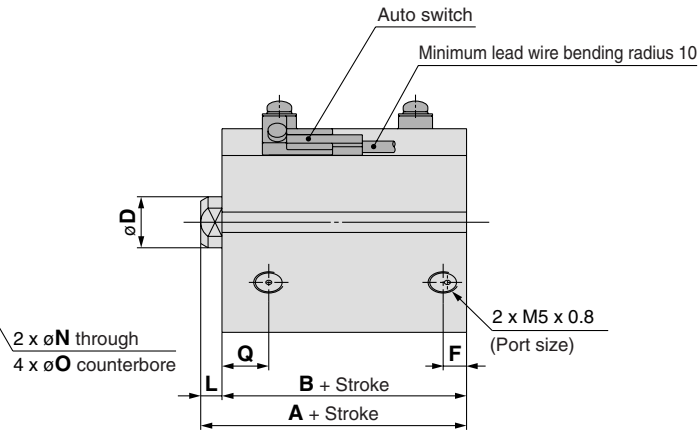


Both ends tapped style: CDQ2A

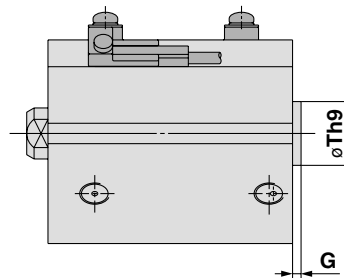


Both Ends Tapped Style (mm)

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

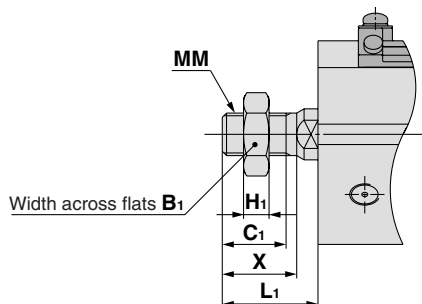


With Boss in Head Side (mm)

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

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

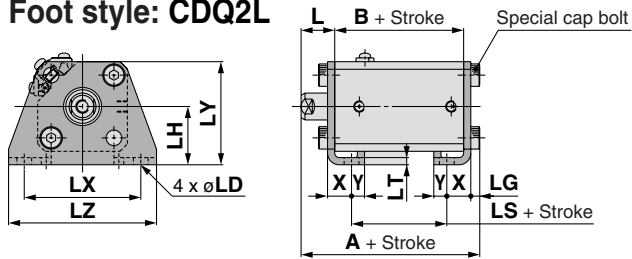


Note 2) External dimensions with rubber bumper are same as standard type as shown above.

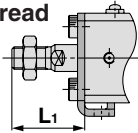
* For details about the rod end nut and accessory brackets, refer to page 620.

Note 3) For calculation on the longitudinal dimension of the intermediate strokes, refer to page 603.

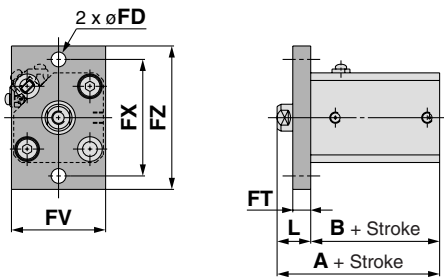
Foot style: CDQ2L



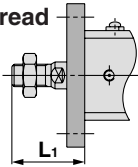
Rod end male thread



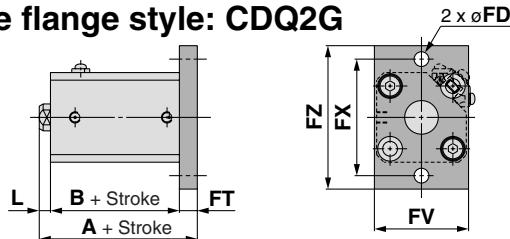
Rod side flange style: CDQ2F



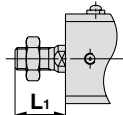
Rod end male thread



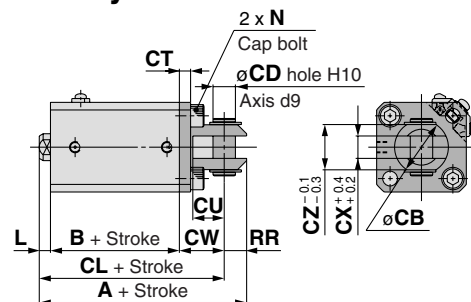
Head side flange style: CDQ2G



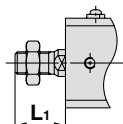
Rod end male thread



Double clevis style: CDQ2D



Rod end male thread



Foot Style

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

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

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.)

CUJ

CU

CQS

CQ2

RQ

CQM

MU

Double Clevis Style

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.

D-□

-X□

Individual
-X□

Technical
data

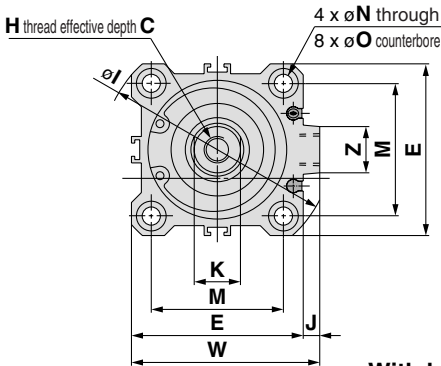
Series CQ2

Dimensions

ø32 to ø50

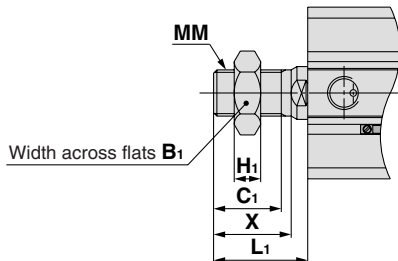
Both ends tapped style: CQ2A/CDQ2A

Basic style (Through-hole): CQ2B/CDQ2B



With boss in head side

Rod end male thread



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 (mm)

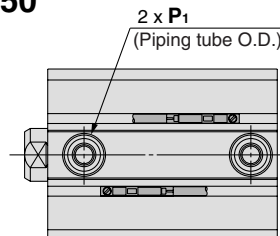
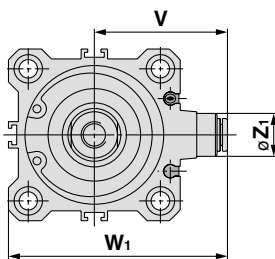
Bore size (mm)	Th9
32	21 ⁰ _{-0.052}
40	28 ⁰ _{-0.052}
50	35 ⁰ _{-0.052}

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

Rod End Male Thread (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.

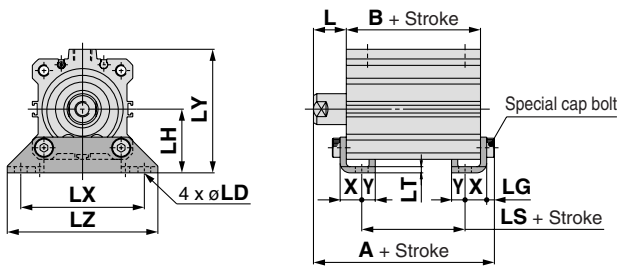
Bore size (mm)	Stroke range (mm)	Without auto switch					With auto switch					C	D	E	H	I	J	K	L	M
		A	B	F	P	Q	A	B	F	P	Q									
32	5	30	23	5.5	M5 x 0.8	11.5	40	33	7.5	Rc1/8	10.5	13	16	45	M8 x 1.25	60	4.5	14	7	34
	10 to 50	40	33	7.5	1/8	10.5	40	33	7.5	Rc1/8	10.5	13	16	45	M8 x 1.25	60	4.5	14	7	34
	75, 100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

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

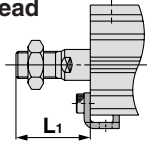


Note 2) External dimensions with rubber bumper are same as standard type as shown above.
 * For details about the rod end nut and accessory brackets, refer to page 620.
 Note 3) For calculation on the longitudinal dimension of the intermediate strokes, refer to page 603. Because we have the spacer-installed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

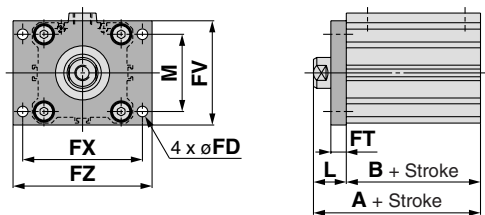
Foot style: CQ2L/CDQ2L



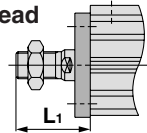
Rod end male thread



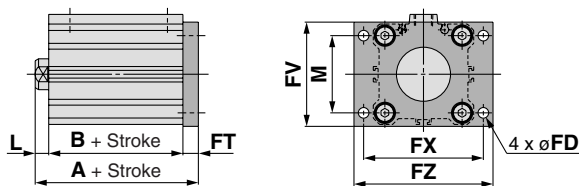
Rod side flange style: CQ2F/CDQ2F



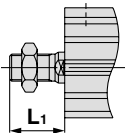
Rod end male thread



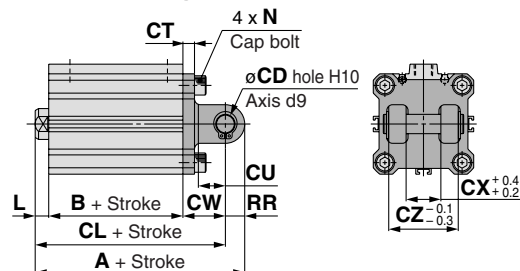
Head side flange style: CQ2G/CDQ2G



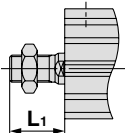
Rod end male thread



Double clevis style: CQ2D/CDQ2D



Rod end male thread



Foot Style

(mm)

Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch			L	L ₁	LD	LG	LH	LT	LX	LY
		A	B	LS	A	B	LS								
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

(mm)

Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch		FD	FT	FV	FX	FZ	L	L ₁	M
		A	B	A	B								
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

(mm)

Bore size (mm)	Stroke range (mm)	Without auto switch	With auto switch	L	L ₁
32	5 to 50	A	A	7	28.5
	75, 100	48	48		
40	5 to 50	44.5	54.5	7	28.5
	75, 100	54.5	54.5		
50	10 to 50	47.5	57.5	8	33.5
	75, 100	57.5	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

(mm)

Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch			CD	CT	CU	CW	CX	CZ	L	L ₁
		A	B	CL	A	B	CL								
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.

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual

-X□

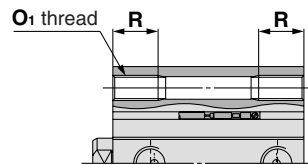
Technical data

Series CQ2

Dimensions

Ø63 to Ø100

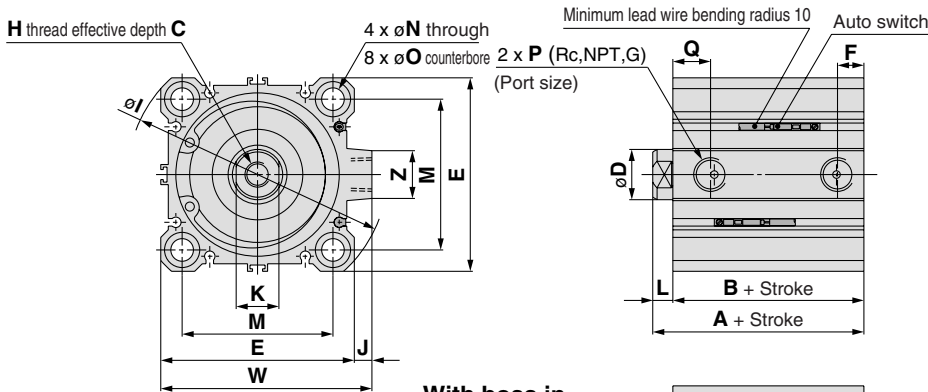
Both ends tapped style: CQ2A/CDQ2A



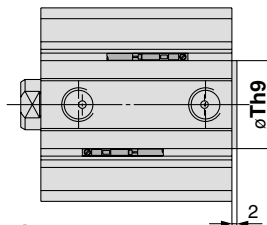
Both Ends Tapped Style (mm)

Bore size (mm)	O ₁	R
63	M10 x 1.5	18
80	M12 x 1.75	22
100	M12 x 1.75	22

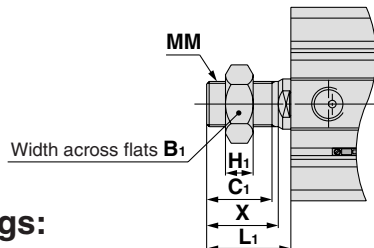
Basic style (Through-hole)



With boss in head side



Rod end male thread



With Boss in Head Side (mm)

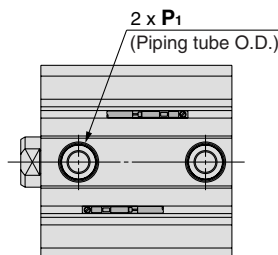
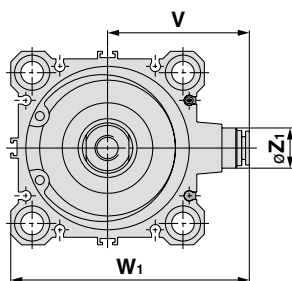
Bore size (mm)	Th9
63	35 ⁰ _{-0.052}
80	43 ⁰ _{-0.052}
100	59 ⁰ _{-0.052}

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

Rod End Male Thread (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.

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																	

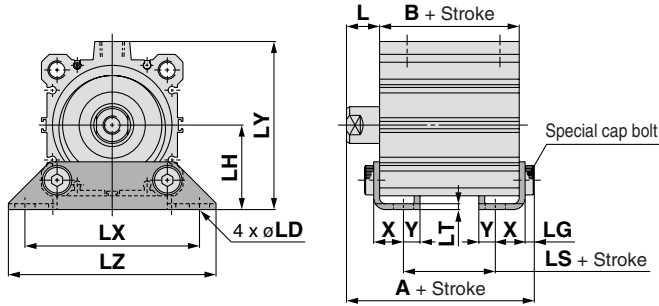
Bore size (mm)	U	W	Z
63	47.5	84	19
80	57.5	104	26
100	67.5	123.5	26



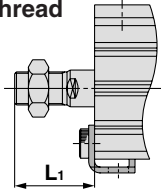
Note 2) External dimensions with rubber bumper are same as standard type as shown above.
* For details about the rod end nut and accessory brackets, refer to page 620.

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).

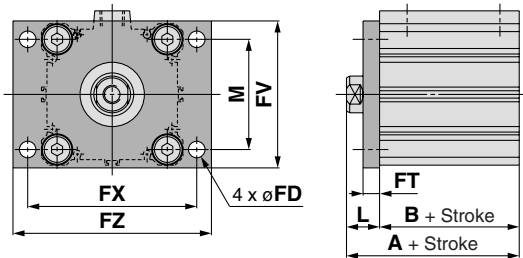
Foot style: CQ2L/CDQ2L



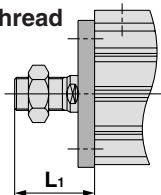
Rod end male thread



Rod side flange style: CQ2F/CDQ2F



Rod end male thread



Foot Style

(mm)

Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch			L	L ₁	LD	LG	LH	LT
		A	B	LS	A	B	LS						
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									

Foot bracket material: Carbon steel
Surface treatment: Nickel plated

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					

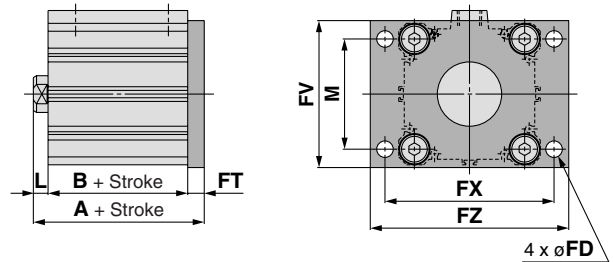
Rod Side Flange Style

(mm)

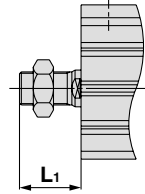
Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch		FD	FT	FV	FX	FZ	L	L ₁	M
		A	B	A	B								
63	10 to 50	54	36	64	46	9	9	80	92	108	18	43.5	60
	75, 100	64	46										
80	10 to 50	63.5	43.5	73.5	53.5	11	11	99	116	134	20	53.5	77
	75, 100	73.5	53.5										
100	10 to 50	75	53	85	63	11	11	117	136	154	22	53.5	94
	75, 100	85	63										

Foot bracket material: Carbon steel
Surface treatment: Nickel plated

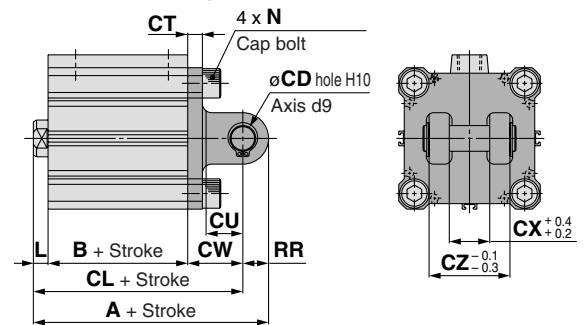
Head side flange style: CQ2G/CDQ2G



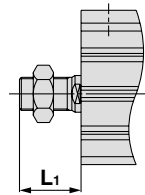
Rod end male thread



Double clevis style: CQ2D/CDQ2D



Rod end male thread



Head Side Flange Style

(mm)

Bore size (mm)	Stroke range (mm)	Without auto switch	With auto switch	L	L ₁
		A	A		
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			With auto switch			CD	CT	CU	CW	CX
		A	B	CL	A	B	CL					
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								

Double clevis bracket material: Cast iron
Surface treatment: Painted

Bore size (mm)	Stroke range (mm)	CZ	L	L ₁	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					

* For details about the rod end nut and accessory brackets, refer to page 620.

** Double clevis pins and retaining rings are included.

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual

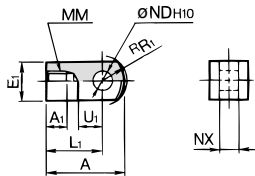
-X□

Technical data

Accessory Bracket

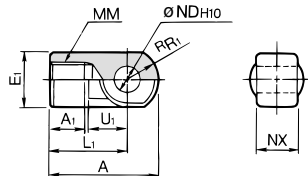
Single Knuckle Joint

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



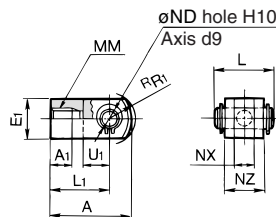
Material: Cast iron
Surface treatment: Nickel plated

Part no.	Applicable bore size (mm)	A	A ₁	E ₁	L ₁	MM	R _{R1}	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	□22	30	M14 x 1.5	12	14	10 ^{+0.058} ₀	18 ^{-0.3} _{-0.5}
I-G05	50,63	56	18	□28	40	M18 x 1.5	16	20	14 ^{+0.070} ₀	22 ^{-0.3} _{-0.5}
I-G08	80	71	21	□38	50	M22 x 1.5	21	27	18 ^{+0.070} ₀	28 ^{-0.3} _{-0.5}
I-G10	100	79	21	□44	55	M26 x 1.5	24	31	22 ^{+0.084} ₀	32 ^{-0.3} _{-0.5}

(mm)

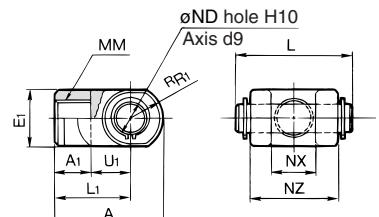
Double Knuckle Joint

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



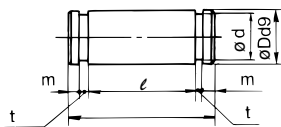
Material: Cast iron
Surface treatment: Nickel plated

Part no.	Applicable bore size (mm)	A	A ₁	E ₁	L ₁	MM	R _{R1}	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} _{-0.2}	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	□22	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	□28	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	□38	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	□44	55	M26 x 1.5	24	31	22 ^{+0.084} ₀	32 ^{+0.5} _{-0.3}	64	72	IY-G10

(mm)

* Knuckle pin and retaining ring are included.

Knuckle Pin (Common with double clevis pin)

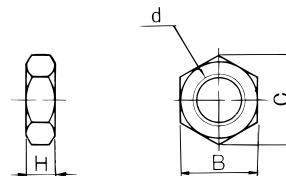


Material: Carbon steel

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.

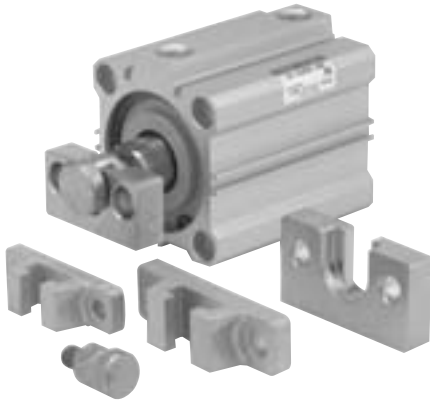
Rod End Nut



Material: Carbon steel
Surface treatment: Nickel plated

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

Simple Joint: $\phi 32$ to $\phi 100$



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

YA - 03

• Mounting bracket

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

• Applicable air cylinder bore

03	For $\phi 32, \phi 40$
05	For $\phi 50, \phi 63$
08	$\phi 80$
10	$\phi 100$

Allowable Eccentricity

(mm)

Bore size (mm)	$\phi 32$	$\phi 40$	$\phi 50$	$\phi 63$	$\phi 80$	$\phi 100$
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.

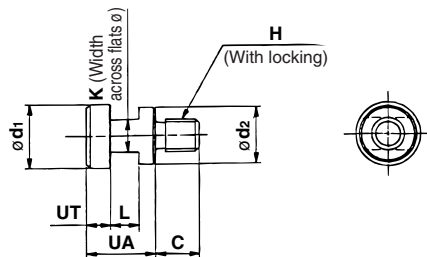
(Example)

Bore size $\phi 40$ Part no.

- Type A mounting bracket part no. YA-03
- Joint YU-03

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

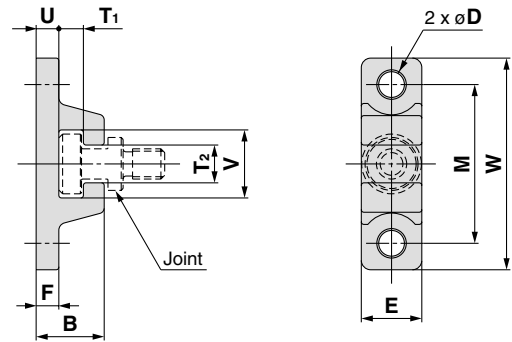
Bore size (mm)	Joint part no.	Applicable mounting bracket	
		Type A mounting bracket	Type B mounting bracket
32, 40	YU-03	YA-03	YB-03 (mm)
50, 63	YU-05	YA-05	YB-05
80	YU-08	YA-08	YB-08
100	YU-10	YA-10	YB-10



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

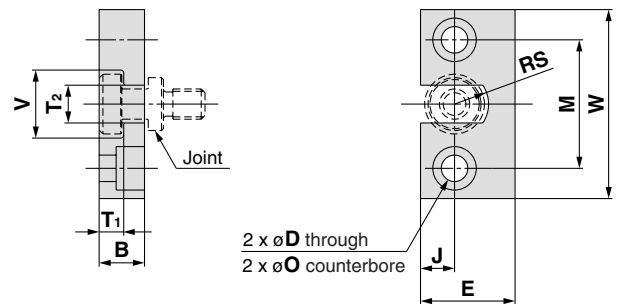


Material: Chromium molybdenum steel (Nickel plated)
(mm)

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

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual
-X□

Technical
data

Compact Cylinder: Standard Type Double Acting, Double Rod

Series CQ2W

ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100

How to Order

CQ2W **B** **20** **-30D** **-**

With auto switch **CDQ2W** **B** **20** **-30D** **-M9BW** **-**

With auto switch
(Built-in magnet)

Mounting style

B	Through-hole (Standard)	L	Foot style
A	Both ends tapped style	F	Flange style

Type

Nil	Pneumatic
H	Air-hydro ⁽¹⁾

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
TN	Rc	ø32 to ø100
TF	NPT	
F	G	
F	Built-in One-touch fittings ⁽²⁾	

Number of auto switches

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

Auto switch

Nil	Without auto switch
------------	---------------------

Body option

Nil	Standard (Rod end female thread)
C	With rubber bumper ⁽⁴⁾
M	Rod end male thread

Action

D	Double acting
----------	---------------

Cylinder stroke (mm)
For "Standard Stroke", refer to page 624.

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) CDQ2WL32-25D

Note 1) Bore sizes available for air-hydro type are ø20 to ø100.
Note 2) Bore sizes available w/ One-touch fittings are ø32 to ø63. Besides, it is not possible to use for air-hydro type.
Note 3) TF is not available for the air-hydro type.
Note 4) Air-hydro type with rubber bumper is not available.

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		Auto switch model		Lead wire length (m)					Pre-wired connector	Applicable load						
					DC	AC	Perpendicular	In-line	0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)								
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24V	5V, 12V	—	M9NV	M9N	●	●	●	○	—	○	IC circuit	Relay, PLC				
		3-wire (PNP)		M9PV				M9P	●	●	●	○	—	○	—						
	Connector	2-wire		12V				M9BV	M9B	●	●	●	○	—		○		—			
		3-wire (NPN)		5V, 12V				J79C	—	●	—	●	●	●	—	IC circuit					
	Diagnostic indication (2-color indication)	3-wire (PNP)		12V				M9NWV	M9NW	●	●	●	○	—	○			—			
		2-wire		12V				M9PWV	M9PW	●	●	●	○	—	○	IC circuit					
	Water resistant (2-color indication)	Grommet		3-wire (NPN)				5V, 12V	M9BWV	M9BW	●	●	●	○	—			○	—		
				3-wire (PNP)				12V	M9NAV	M9NA	○	○	●	○	—	○		IC circuit			
	With diagnostic output (2-color indication) Magnetic field resistant (2-color indication)	Grommet		2-wire				12V	M9PAV	M9PA	○	○	●	○	—	○			—		
				4-wire				5V, 12V	M9BAV	M9BA	○	○	●	○	—	○		IC circuit			
				2-wire (Non-polar)				—	—	F79F	●	—	●	○	—	○			—		
				—				—	P4DW	—	—	●	●	—	○	—		—			
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	24V	5V, 12V	—	A96V	A96	●	—	●	—	—	—	IC circuit	Relay, PLC				
				2-wire				—	200V	A72	A72H	●	—	●	—	—		—	—	—	
		Connector						12V	100V	A93V	A93	●	—	●	—	—		—	IC circuit		
				5V, 12V				100V or less	A90V	A90	●	—	●	—	—	—		—			
	Diagnostic indication (2-color indication)	Grommet		Yes				2-wire	12V	—	A73C	—	●	—	●	●			●	—	—
									5V, 12V	24V or less	A80C	—	●	—	●	●		●	—	—	
									—	—	A79W	—	●	—	●	—		—	—		—
									—	—	—	—	—	—	—	—		—	—	—	

- * Lead wire length symbols: 0.5 m Nil (Example) M9NV
1 m M (Example) M9NW
3 m L (Example) M9NW
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.

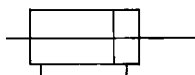
- * There are other applicable auto switches other than the listed above. For details, refer to page 769.
* For details about auto switches with pre-wired connector, refer to pages 1328 and 1329.
* When D-A9□(V)/M9□(V)/M9□W(V)/M9□A(V)L types with ø32 to ø50 are mounted on a side other than the port side,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

Series CQ2W



JIS Symbol

Double acting,
double rod



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	Heat 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)
—XB13	Low speed cylinder (5 to 50 mm/s)
—XC4	With heavy duty scraper, ø40 to 100 only
—XC6	Retaining ring, piston rod, rod end nut made of stainless steel
—XC35	With coil scraper, ø32 to 100 only
—XC36	With boss in rod side
—X293	Same full length dimension as Series CQ1W
—X144	Change of port location With auto switch, ø12 to ø25 only
—X235	Change of piston rod end of double rod cylinder
—X271	Fluororubber seals
—X633	Intermediate stroke of double rod type

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.

Specifications(Pneumatic)

Bore size		12	16	20	25	32	40	50	63	80	100
Action		Double acting, Double 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	Without cushion	0.022	0.038	0.055	0.09	0.15	0.26	0.46	0.77	1.36	2.27
	Rubber Bumper	0.043	0.075	0.11	0.18	0.29	0.52	0.91	1.54	2.71	4.54
Stroke length tolerance		+1.0mm (Note) 0									

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

Specifications(Air-hydro)

Bore size	20	25	32	40	50	63	80	100
Action	Double acting, Double 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	+1.0mm 0							

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

Standard Stroke

Pneumatic (Non-lube)		mm
Bore size	Standard stroke	
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, 63	10, 15, 20, 25, 30,	
80, 100	35, 40, 45, 50, 75, 100	

Air-hydro		mm
Bore size	Standard stroke	
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	10, 15, 20, 25, 30,	
80, 100	35, 40, 45, 50, 75, 100	

Manufacture of Intermediate Stroke

Description	Spacer is installed in the standard stroke body (5 mm).	Spacer is installed in the standard stroke (1 mm).	Exclusive body (-XB10)
Part no.	"How to Order" for the standard model no. on page 623.	Suffix "-X633 (P.1511)" to the end of standard model no. on page 623.	Suffix "-XB10" to the end of standard model no. on page 623.
Description	Dealing with the stroke by the 5 mm interval is available by installing spacer with standard stroke cylinder.	Dealing with the stroke by the 1 mm interval is available by installing spacer with standard stroke cylinder.	Dealing with the stroke by the 1 mm interval by using an exclusive body with the specified stroke.
Stroke range	Bore size	Bore size	Bore size
	Stroke range	Stroke range	Stroke range
	—	12, 16	12, 16
	—	20, 25	20, 25
	32 to 100	32, 40	32, 40
		50 to 100	50 to 100
		6 to 29	6 to 29
		6 to 49	6 to 49
	55 to 95	6 to 99	6 to 99
		11 to 99	11 to 99
		6 to 29	6 to 29
		6 to 49	6 to 49
Example	Part no.: CQ2WB50-65D CQ2WB50-75D with 10 mm spacer inside. B dimension is 125.5 mm.	Part no.: CQ2WB50-72D-X633 CQ2WB50-75D with 3 mm spacer inside. B dimension is 125.5 mm.	Part no.: CQ2WB50-65D-XB10 Makes 65 stroke tube. B dimension is 115.5 mm.

- Air-hydro type is excluded.
- In the case of spacer type, intermediate stroke with bumper for bore 40 to 100, "-X633" is not available.
- In the case of special body type for ø32 to ø100 (-XB10) with the stroke length exceeding 50 mm, standard value for longitudinal dimensions will be changed.
Subtract from 75 and 100 stroke dimensions and figure it out.

Compact Cylinder: Standard Type Double Acting, Double Rod *Series CQ2W*

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 ⁽¹⁾ Rc 1/8	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 ⁽³⁾		—	—	—	—	ø6/4 ⁽²⁾	ø6/4	ø8/6	ø8/6	—	—
	Rod end male thread		●	●	●	●	●	●	●	●	●	●	
	With rubber bumper		●	●	●	●	●	●	●	●	●	●	
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 ⁽¹⁾ Rc 1/8	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		—	—	●	●	●	●	●	●	●	●	



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 thread 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 ⁽¹⁾	Flange
12	CQ-L012	CQ-F012
16	CQ-L016	CQ-F016
20	CQ-L020	CQ-F020
25	CQ-L025	CQ-F025
32	CQ-L032	CQ-F032
40	CQ-L040	CQ-F040
50	CQ-L050	CQ-F050
63	CQ-L063	CQ-F063
80	CQ-L080	CQ-F080
100	CQ-L100	CQ-F100

Note 1) Order two foot brackets per cylinder.

Note 2) Parts belonging to each bracket are as follows.
Foot or Flange style: 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

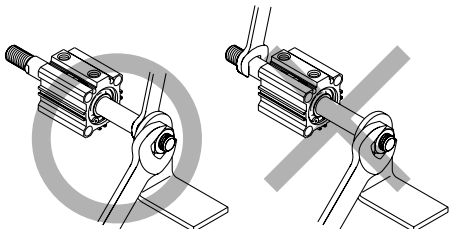
1. For installation and removal, use an appropriate pair of pliers (tool for installing a type C retaining ring).

- 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 installation.

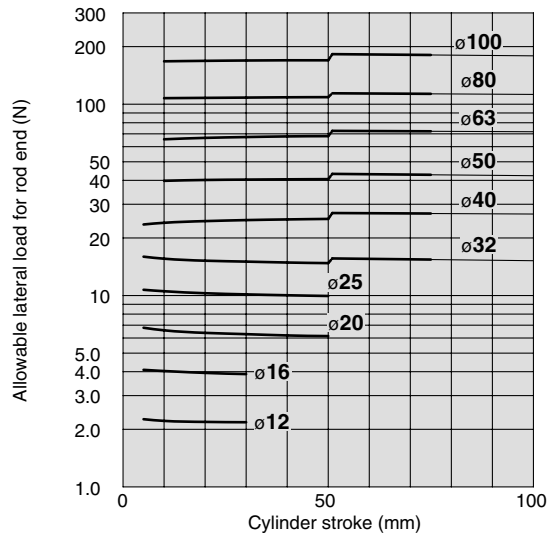
Mounting

⚠ Warning

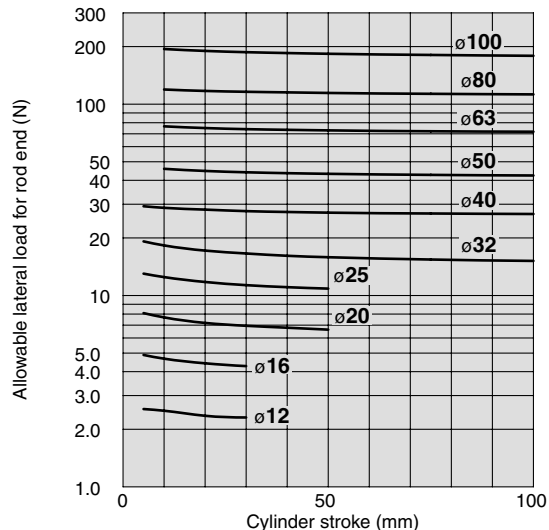
Do not apply reverse torque to the piston rods sticking out from both sides of this cylinder at the same time. The torque makes connection threads inside loosen, which may cause an accident or malfunction. Install or remove loads while the piston rod width across flats is secured. Do not fix the other side of the piston rod width across flats and apply reverse torque.



Allowable Lateral Load at Rod End



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



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

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual

-X□

Technical data

Series CQ2W

Theoretical Output

(N)

Bore size (mm)	Operating pressure (MPa)		
	0.3	0.5	0.7
12	25	42	59
16	45	75	106
20	71	118	165
25	113	189	264
32	181	302	422
40	317	528	739
50	495	825	1150
63	841	1400	1960
80	1360	2270	3170
100	2140	3570	5000

Mass

(g)

Bore size (mm)	Cylinder stroke (mm)											
	5	10	15	20	25	30	35	40	45	50	75	100
12	42	49	56	63	70	77	—	—	—	—	—	—
16	59	68	77	86	95	104	—	—	—	—	—	—
20	89	104	119	134	149	164	179	194	209	224	—	—
25	119	136	153	170	187	204	221	238	255	272	—	—
32	192	220	244	268	292	316	340	364	388	412	532	652
40	292	323	354	385	416	447	478	509	540	571	726	881
50	—	528	573	618	663	708	753	798	843	888	1113	1338
63	—	676	714	753	792	831	870	909	948	987	1182	1377
80	—	1241	1325	1409	1493	1577	1661	1745	1829	1913	2333	2753
100	—	2106	2225	2344	2463	2582	2701	2820	2939	3058	3653	4248

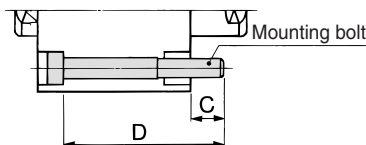
Mounting Bolt for CQ2WB/Without Auto Switch

Mounting method: Mounting bolt for through-hole mounting style of CQ2WB is available as an option.

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

Example) Bolt M3 x 35L 4 pcs.

Material: Chromium molybdenum steel
Surface treatment: Nickel plated



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	3	6	12	24	52	54	106	106	240	350
Nut	2	4	8	16	34	34	64	64	98	232
With rubber bumper	0	0	-2	-2	-3	-7	-12	-20	-34	-57
Built-in One-touch fittings	—	—	—	—	12	12	21	21	—	—
Foot style (Including mounting bolt)	57	71	170	195	159	171	267	349	735	1117
Flange style (Including mounting bolt)	57	69	139	161	180	214	373	559	1056	1365

Calculation: (Example) **CQ2WF32-20DCM**

- Cylinder mass: CQ2WB32-20D 268 g
- Option mass: Both ends tapped style 6 g
- Rod end male thread 86 g
- With rubber bumper -3 g
- Flange style 180 g
- 537 g**

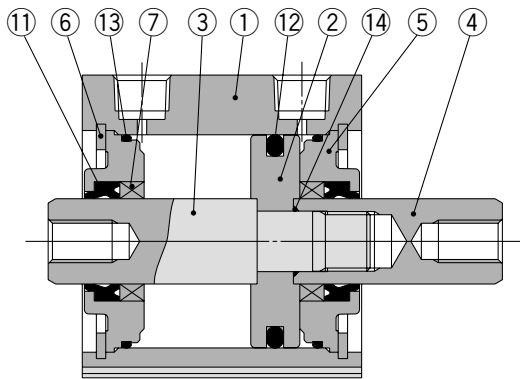
Cylinder model	C	D	Mounting bolt size
CQ2WB12-5D	8.3	35	M3 x 35L
-10D		40	x 40L
-15D		45	x 45L
-20D		50	x 50L
-25D		55	x 55L
-30D		60	x 60L
CQ2WB16-5D	7.5	35	M3 x 35L
-10D		40	x 40L
-15D		45	x 45L
-20D		50	x 50L
-25D		55	x 55L
-30D		60	x 60L
CQ2WB20-5D	6	30	M5 x 30L
-10D		35	x 35L
-15D		40	x 40L
-20D		45	x 45L
-25D		50	x 50L
-30D		55	x 55L
-35D	6	60	x 60L
-40D		65	x 65L
-45D		70	x 70L
-50D		75	x 75L
CQ2WB25-5D	8	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	8	65	x 65L
-40D		70	x 70L
-45D		75	x 75L
-50D		80	x 80L

Cylinder model	C	D	Mounting bolt size
CQ2WB32-5D	6.5	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	7	65	x 65L
-40D		70	x 70L
-45D		75	x 75L
-50D		80	x 80L
-75D		115	x 115L
-100D		140	x 140L
CQ2WB40-5D	7	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	7	75	x 75L
-40D		80	x 80L
-45D		85	x 85L
-50D		90	x 90L
-75D		125	x 125L
-100D		150	x 150L
CQ2WB50-10D	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	12.5	85	x 85L
-45D		90	x 90L
-50D		95	x 95L
-75D		130	x 130L
-100D		155	x 155L

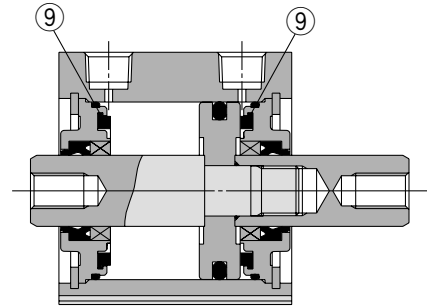
Cylinder model	C	D	Mounting bolt size
CQ2WB63-10D	13.5	55	M8 x 55L
-15D		60	x 60L
-20D		65	x 65L
-25D		70	x 70L
-30D		75	x 75L
-35D		80	x 80L
-40D	12.5	85	x 85L
-45D		90	x 90L
-50D		95	x 95L
-75D		130	x 130L
-100D		155	x 155L
CQ2WB80-10D	12.5	60	M10 x 60L
-15D		65	x 65L
-20D		70	x 70L
-25D		75	x 75L
-30D		80	x 80L
-35D		85	x 85L
-40D	12.5	90	x 90L
-45D		95	x 95L
-50D		100	x 100L
-75D		135	x 135L
-100D		160	x 160L
CQ2WB100-10D	13	70	M10 x 70L
-15D		75	x 75L
-20D		80	x 80L
-25D		85	x 85L
-30D		90	x 90L
-35D		95	x 95L
-40D	13	100	x 100L
-45D		105	x 105L
-50D		110	x 110L
-75D		145	x 145L
-100D		170	x 170L

Construction

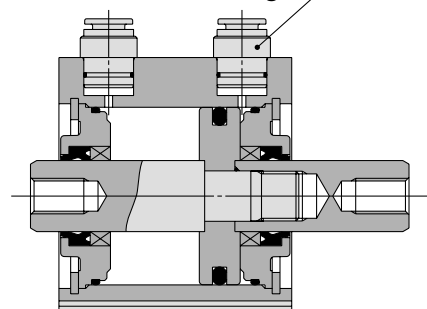
Basic style



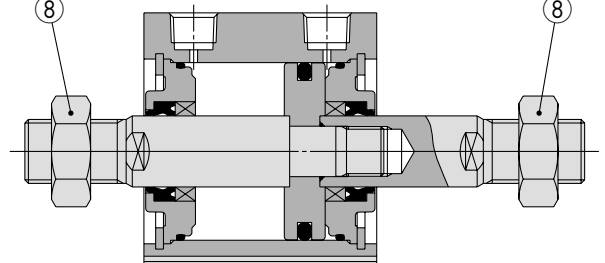
With rubber bumper



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 A	Stainless steel	ø12 to ø25
		Carbon steel	ø32 to ø100, Hard chrome plated
4	Piston rod B	Stainless steel	ø12 to ø25
		Carbon steel	ø32 to ø100, Hard chrome plated
5	Collar	Aluminum alloy	ø12 to ø40, Anodized
		Aluminum alloy casted	ø50 to ø100, Chromated, painted
6	Retaining ring	Carbon tool steel	Phosphate coated
7	Bushing	Bearing alloy	For ø50 or larger only
8	Rod end nut	Carbon steel	Nickel plated
9	Bumper	Urethane	
10	One-touch fittings	—	ø32 to ø63
11*	Rod seal	NBR	
12*	Piston seal	NBR	
13*	Tube gasket	NBR	
14	Piston gasket	NBR	

Replacement Part/Seal Kit (Pneumatic)

Bore size (mm)	Kit no.	Contents
12	CQ2WB12-PS	Set of nos. above ⑪, ⑫, ⑬
16	CQ2WB16-PS	
20	CQ2WB20-PS	
25	CQ2WB25-PS	
32	CQ2WB32-PS	
40	CQ2WB40-PS	
50	CQ2WB50-PS	
63	CQ2WB63-PS	
80	CQ2WB80-PS	
100	CQ2WB100-PS	

* Seal kit includes ⑪, ⑫, ⑬. 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 Part: Seal Kit (Air-hydro)

Bore size (mm)	Kit no.	Contents
20	CQ2WBH20-PS	Set of nos. above ⑪, ⑫, ⑬
25	CQ2WBH25-PS	
32	CQ2WBH32-PS	
40	CQ2WBH40-PS	
50	CQ2WBH50-PS	
63	CQ2WBH63-PS	
80	CQ2WBH80-PS	
100	CQ2WBH100-PS	

* Seal kit includes ⑪, ⑫, ⑬. 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)

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

20 – CQ2WB 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, Double 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
Rubber bumper	None
Piping	Screw-in piping
Piston speed	50 to 500 mm/s
Mounting	Through-hole
Auto switch	Mountable

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual

-X□

Technical

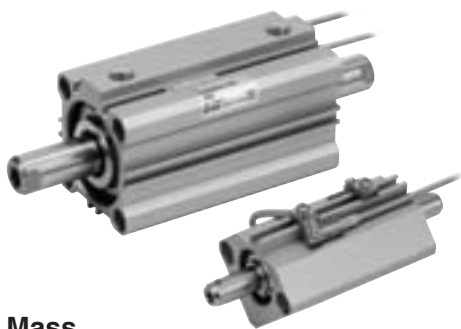
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Compact Cylinder: Standard Type

Double Acting, Double Rod

Series **CDQ2W**

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	55	63	71	79	87	95	—	—	—	—	—	—
16	88	99	110	121	132	143	—	—	—	—	—	—
20	135	152	169	186	203	220	237	254	271	288	—	—
25	182	199	216	233	250	267	284	301	318	335	—	—
32	247	271	295	319	343	367	391	415	439	463	487	511
40	370	401	432	463	494	525	556	587	618	649	680	711
50	—	647	692	737	782	827	872	917	962	1007	1052	1097
63	—	833	872	911	950	989	1028	1067	1106	1145	1184	1223
80	—	1500	1584	1668	1752	1836	1920	2004	2088	2172	2256	2340
100	—	2501	2620	2739	2858	2977	3096	3215	3334	3453	3572	3691

Additional Mass

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	3	6	12	24	52	54	106	106	240
	Nut	2	4	8	16	34	34	64	64	98
With rubber bumper	0	0	2	-2	-3	-7	-12	-19	-34	-54
Built-in One-touch fittings	—	—	—	—	12	12	21	21	—	—
Foot style (Including mounting bolt)	52	65	153	177	159	171	267	349	735	1117
Flange style (Including mounting bolt)	54	67	131	153	180	214	373	559	1056	1365

Calculation:

(Example) **CDQ2WF32-20DCM**

- Cylinder mass: CDQ2WB32-20D 319 g
- Option mass: Both ends tapped style 6 g
- Rod end male thread 86 g
- With rubber bumper -3 g
- Rod side flange style 180 g

588 g

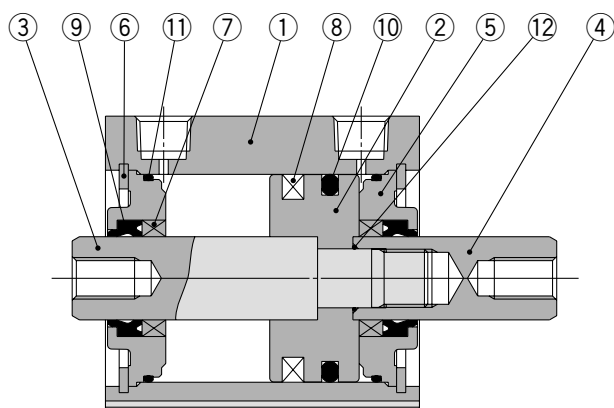
If auto switches are to be installed, the mass that corresponds to the number of auto switches and mounting brackets to be used must be added.

Switch Mounting Bracket Mass

Mounting bracket part no.	Applicable bore (mm)	Mass (g)
BQ-1	ø20, 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.

Construction



Component Parts

No.	Description	Material	Note
①	Cylinder tube	Aluminum alloy	Hard anodized
②	Piston	Aluminum alloy	Chromated
③	Piston rod A	Stainless steel	ø12 to ø25
		Carbon steel	ø32 to ø100, Hard chrome plated
④	Piston rod B	Stainless steel	ø12 to ø25
		Carbon steel	ø32 to ø100, Hard chrome plated
⑤	Collar	Aluminum alloy	ø12 to ø40, Anodized
		Aluminum alloy casted	ø50 to ø100, Chromated, painted
⑥	Retaining ring	Carbon tool steel	Phosphate coated
⑦	Bushing	Bearing alloy	For ø50 or larger only
⑧	Magnet	—	—
⑨*	Rod seal	NBR	
⑩*	Piston seal	NBR	
⑪*	Tube gasket	NBR	
⑫	Piston gasket	NBR	

Replacement Parts: Seal Kit (Pneumatic)

Bore size (mm)	Kit no.	Contents
12	CQ2WB12-PS	Set of nos. above ⑨, ⑩, ⑪
16	CQ2WB16-PS	
20	CQ2WB20-PS	
25	CQ2WB25-PS	
32	CQ2WB32-PS	
40	CQ2WB40-PS	
50	CQ2WB50-PS	
63	CQ2WB63-PS	
80	CQ2WB80-PS	
100	CQ2WB100-PS	

* Seal kit includes ⑨, ⑩, ⑪. 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	CQ2WBH20-PS	Set of nos. above ⑨, ⑩, ⑪
25	CQ2WBH25-PS	
32	CQ2WBH32-PS	
40	CQ2WBH40-PS	
50	CQ2WBH50-PS	
63	CQ2WBH63-PS	
80	CQ2WBH80-PS	
100	CQ2WBH100-PS	

* Seal kit includes ⑨, ⑩, ⑪. 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)

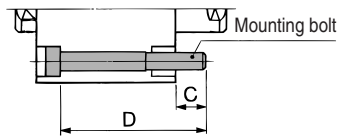
Mounting Bolt for CDQ2/With Auto Switch

Mounting method: Mounting bolt for through-hole mounting style of CDQ2WB is available as an option.

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

Example) Bolt M3 x 40L 4 pcs.

Material: Chromium molybdenum steel
Surface treatment: Nickel plated



Cylinder model	C	D	Mounting bolt size
CDQ2WB12-5DC	6.1	40	M3 x 40L
-10DC		45	x 45L
-15DC		50	x 50L
-20DC		55	x 55L
-25DC		60	x 60L
-30DC		65	x 65L
CDQ2WB16-5D	7.5	45	M3 x 45L
-10D		50	x 50L
-15D		55	x 55L
-20D		60	x 60L
-25D		65	x 65L
-30D		70	x 70L
CDQ2WB20-5D	9	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
CDQ2WB25-5D	8	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

Cylinder model	C	D	Mounting bolt size
CDQ2WB32-5D	6.5	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
CDQ2WB40-5D	7	55	M5 x 55L
-10D		60	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
CDQ2WB50-10D	12.5	65	M6 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

Cylinder model	C	D	Mounting bolt size
CDQ2WB63-10D	13.5	65	M8 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
CDQ2WB80-10D	12.5	70	M10 x 70L
-15D		75	x 75L
-20D		80	x 80L
-25D		85	x 85L
-30D		90	x 90L
-35D		95	x 95L
-40D		100	x 100L
-45D		105	x 105L
-50D		110	x 110L
-75D		135	x 135L
-100D		160	x 160L
CDQ2WB100-10D	13	80	M10 x 80L
-15D		85	x 85L
-20D		90	x 90L
-25D		95	x 95L
-30D		100	x 100L
-35D		105	x 105L
-40D		110	x 110L
-45D		115	x 115L
-50D		120	x 120L
-75D		145	x 145L
-100D		170	x 170L

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual
-X□

Technical
data

Series CQ2W

Dimensions

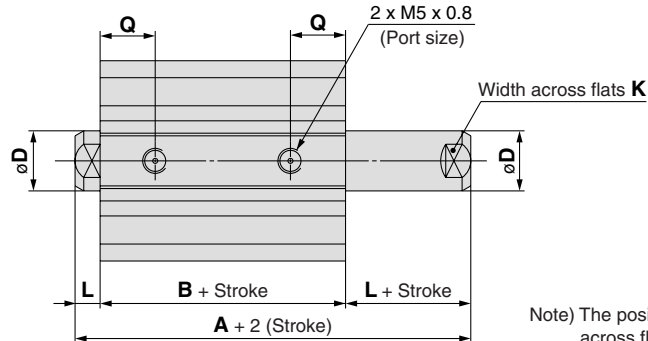
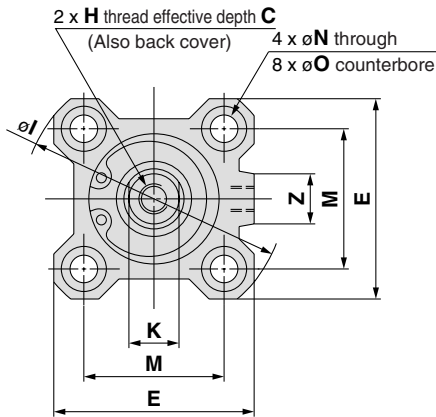
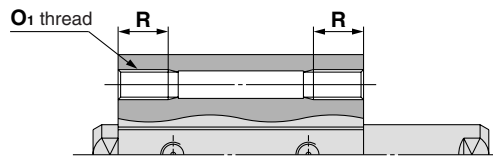
Ø12 to Ø25/Without Auto Switch

Basic style (Through-hole): CQ2WB

Both ends tapped style: CQ2WA

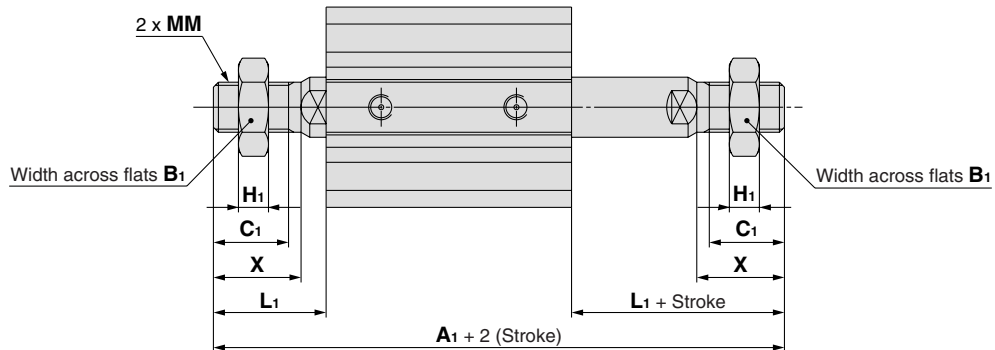
Both Ends Tapped Style (mm)

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



Note) The positions of left and right width across flats are not constant.

Rod end male thread



Rod End Male Thread (mm)

Bore size (mm)	A ₁	B ₁	C ₁	H ₁	L ₁	MM	X
12	53.2	8	9	4	14	M5 x 0.8	10.5
16	57	10	10	5	15.5	M6 x 1.0	12
20	63	13	12	5	18.5	M8 x 1.25	14
25	74	17	15	6	22.5	M10 x 1.25	17.5

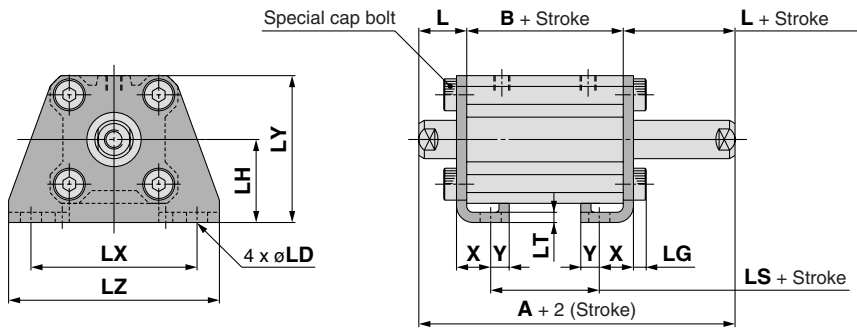
Basic Style

Bore size (mm)	Stroke range (mm)	A	B	C	D	E	H	I	K	L	M	N	O	Q	Z
12	5 to 30	32.2	25.2	6	6	25	M3 x 0.5	32	5	3.5	15.5	3.5	6.5 depth 3.5	10	—
16	5 to 30	33	26	8	8	29	M4 x 0.7	38	6	3.5	20	3.5	6.5 depth 3.5	10	10
20	5 to 50	35	26	7	10	36	M5 x 0.8	47	8	4.5	25.5	5.5	9 depth 7	9.5	10
25	5 to 50	39	29	12	12	40	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.

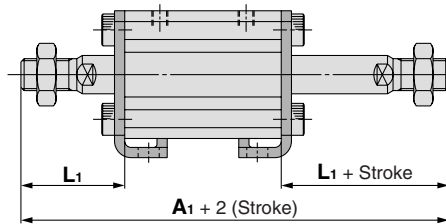
* For details about the rod end nut and accessory brackets, refer to page 620.

Foot style: CQ2WL



Note) The positions of left and right width across flats are not constant.

Rod end male thread



Rod End
Male Thread (mm)

Bore size (mm)	A ₁	L ₁
12	73.2	24
16	77	25.5
20	83	28.5
25	94	32.5

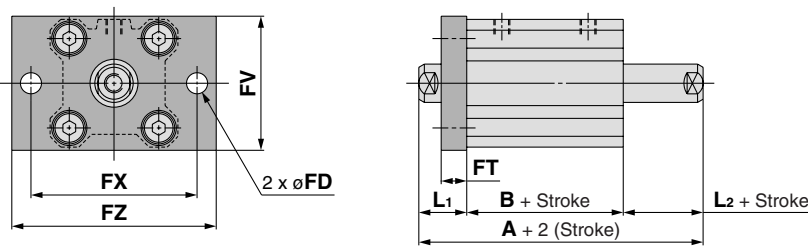
Foot Style

(mm)

Bore size (mm)	Stroke range (mm)	A	B	L	LD	LG	LH	LS	LT	LX	LY	LZ	X	Y
12	5 to 30	52.2	25.2	13.5	4.5	2.8	17	13.2	2	34	29.5	44	8	4.5
16	5 to 30	53	26	13.5	4.5	2.8	19	14	2	38	33.5	48	8	5
20	5 to 50	55	26	14.5	6.6	4	24	14	3.2	48	42	62	9.2	5.8
25	5 to 50	59	29	15	6.6	4	26	14	3.2	52	46	66	10.7	5.8

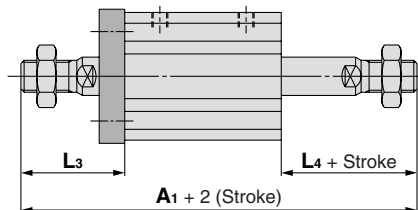
Foot bracket material: Carbon steel
Surface treatment: Nickel plated

Flange style: CQ2WF



Note) The positions of left and right width across flats are not constant.

Rod end male thread



Rod End
Male Thread (mm)

Bore size (mm)	A ₁	L ₃	L ₄
12	63.2	24	14
16	67	25.5	15.5
20	73	28.5	18.5
25	84	32.5	22.5

Flange Style

(mm)

Bore size (mm)	Stroke range (mm)	A	B	FD	FT	FV	FX	FZ	L ₁	L ₂
12	5 to 30	42.2	25.2	4.5	5.5	25	45	55	13.5	3.5
16	5 to 30	43	26	4.5	5.5	30	45	55	13.5	3.5
20	5 to 50	45	26	6.6	8	39	48	60	14.5	4.5
25	5 to 50	49	29	6.6	8	42	52	64	15	5

* For details about the rod end nut and accessory brackets, refer to page 620.

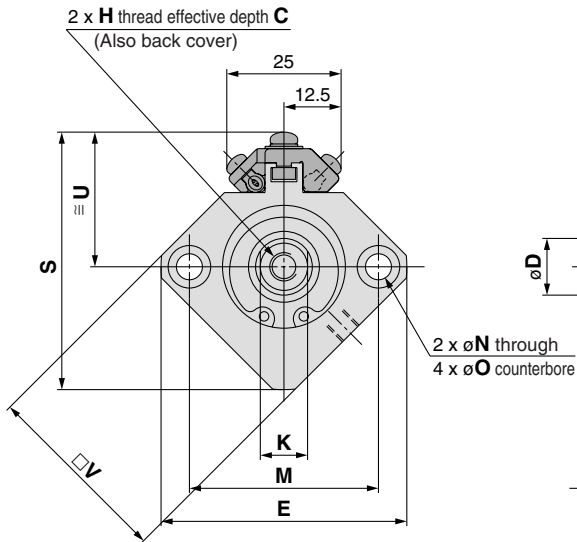
Flange bracket material: Carbon steel
Surface treatment: Nickel plated

Series CQ2W

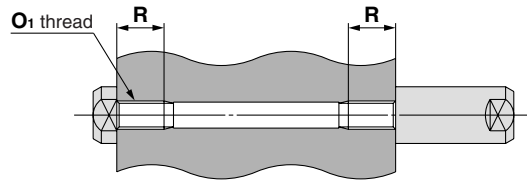
Dimensions

Ø12 to Ø25 / With Auto Switch

Basic style (Through-hole): CDQ2WB



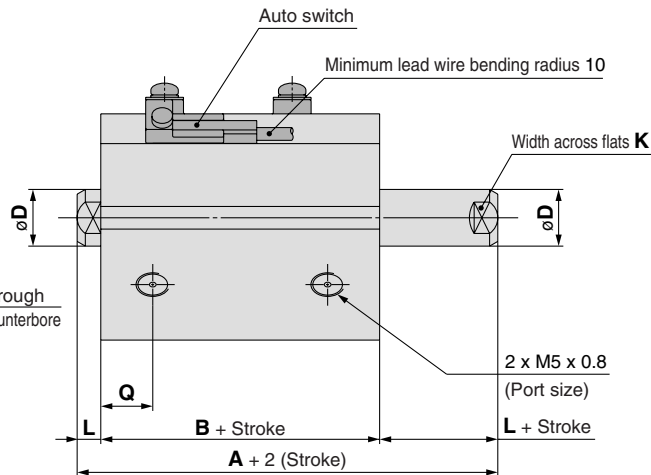
Both ends tapped style: CDQ2WA



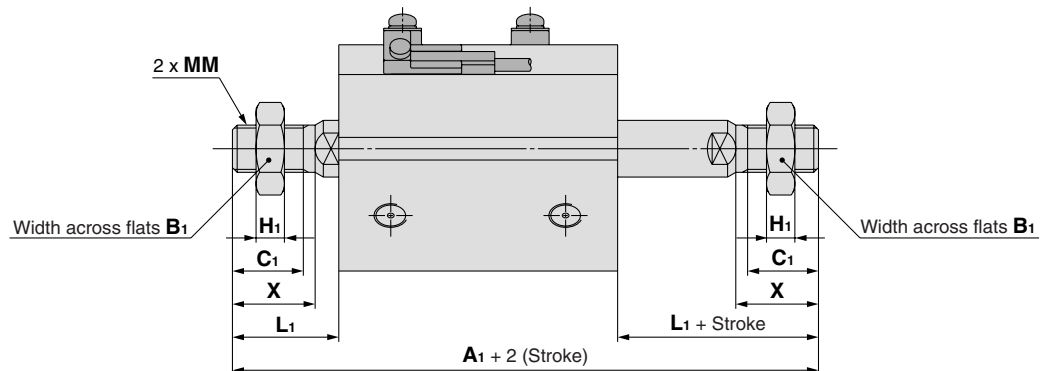
Both Ends Tapped Style (mm)

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

Note) The positions of left and right width across flats are not constant.



Rod end male thread



Rod End Male Thread (mm)

Bore size (mm)	A ₁	B ₁	C ₁	H ₁	L ₁	MM	X
12	60.4	8	9	4	14	M5 x 0.8	10.5
16	67	10	10	5	15.5	M6 x 1.0	12
20	75	13	12	5	18.5	M8 x 1.25	14
25	84	17	15	6	22.5	M10 x 1.25	17.5

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

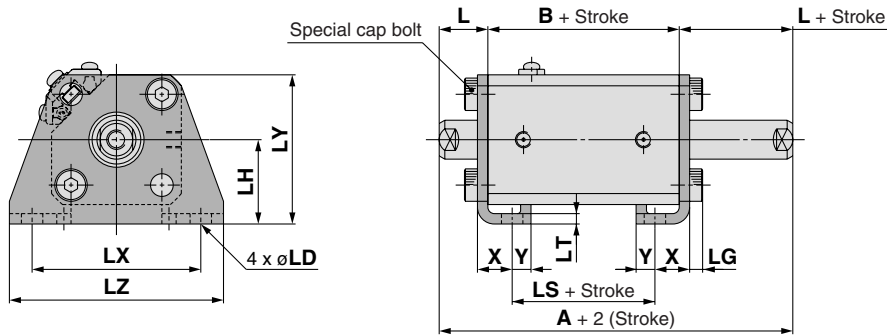
Basic Style

Bore size (mm)	Stroke range (mm)	A	B	C	D	E	H	K	L	M	N	O	Q	S	U	V
12	5 to 30	39.4	32.4	6	6	32	M3 x 0.5	5	3.5	22	3.5	6.5 depth 3.5	10.5	36.5	20.5	25
16	5 to 30	43	36	8	8	38	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	47	38	7	10	47	M5 x 0.8	8	4.5	36	5.5	9 depth 7	10.5	49	25.5	36
25	5 to 50	49	39	12	12	52	M6 x 1.0	10	5	40	5.5	9 depth 7	11	54.5	28.5	40

Note) External dimensions with rubber bumper are same as standard type as shown above.

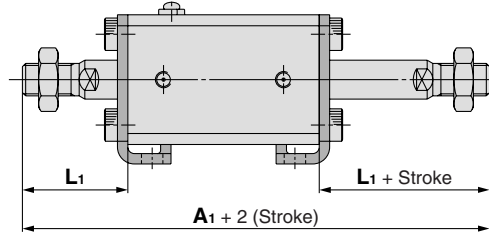
* For details about the rod end nut and accessory brackets, refer to page 620.

Foot style: CDQ2WL



Note) The positions of left and right width across flats are not constant.

Rod end male thread



Rod End Male Thread (mm)

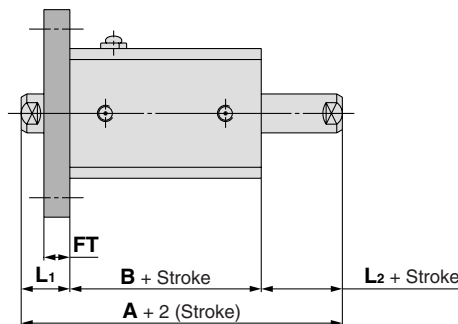
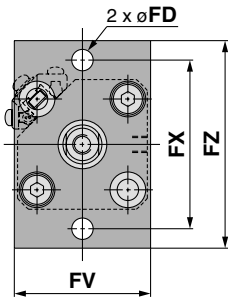
Bore size (mm)	A ₁	L ₁
12	80.4	24
16	87	25.5
20	95	28.5
25	104	32.5

Foot Style

Bore size (mm)	Stroke range (mm)	A	B	L	LD	LG	LH	LS	LT	LX	LY	LZ	X	Y
12	5 to 30	59.4	32.4	13.5	4.5	2.8	17	20.4	2	34	29.5	44	8	4.5
16	5 to 30	63	36	13.5	4.5	2.8	19	24	2	38	33.5	48	8	5
20	5 to 50	67	38	14.5	6.6	4	24	26	3.2	48	42	62	9.2	5.8
25	5 to 50	69	39	15	6.6	4	26	24	3.2	52	46	66	10.7	5.8

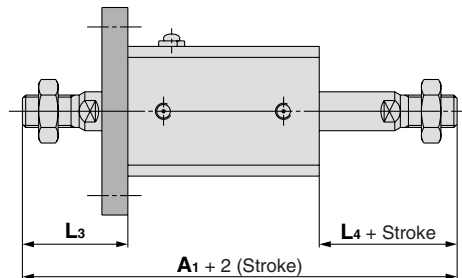
Foot bracket material: Carbon steel
Surface treatment: Nickel plated

Flange style: CDQ2WF



Note) The positions of left and right width across flats are not constant.

Rod end male thread



Rod End Male Thread (mm)

Bore size (mm)	A ₁	L ₃	L ₄
12	70.4	24	14
16	77	25.5	15.5
20	85	28.5	18.5
25	94	32.5	22.5

Flange Style

Bore size (mm)	Stroke range (mm)	A	B	FD	FT	FV	FX	FZ	L ₁	L ₂
12	5 to 30	49.4	32.4	4.5	5.5	25	45	55	13.5	3.5
16	5 to 30	53	36	4.5	5.5	30	45	55	13.5	3.5
20	5 to 50	57	38	6.6	8	39	48	60	14.5	4.5
25	5 to 50	59	39	6.6	8	42	52	64	15	5

* For details about the rod end nut and accessory brackets, refer to page 620.

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

Series CQ2W

Dimensions

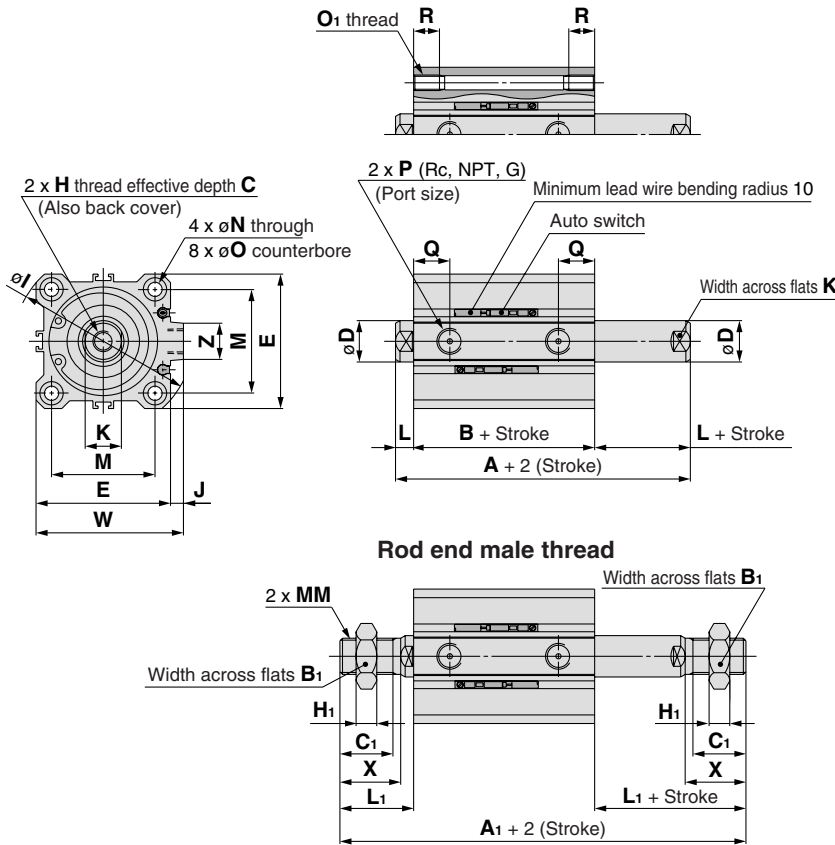
ø32 to ø50/With Auto Switch



(In the case of without auto switches, A, B and P dimensions will be only changed. Refer to the dimension table.)

Basic style (Through-hole): CQ2WB/CDQ2WB

Both ends tapped style: CQ2WA/CDQ2WA



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

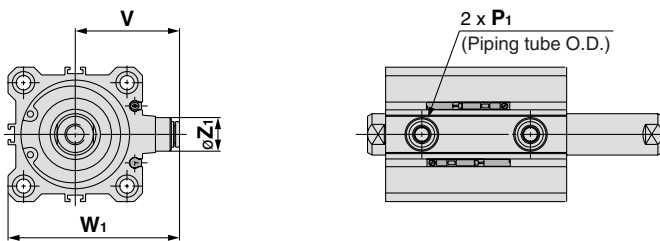
Note) The positions of left and right width across flats are not constant.

Rod End Male Thread (mm)

Bore size (mm)	Stroke range (mm)	Without auto switch	With auto switch
32	5	87.5	97.5
	10 to 50		
	75,100		
40	5 to 50	97	107
	75,100	107	
	10 to 50	107.5	
50	75,100	117.5	117.5

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)	Without auto switch	With auto switch	Z ₁	P ₁
32	V	W ₁	13	6
	38	60.5		
40	V	W ₁	13	6
	42	68		
50	V	W ₁	16	8
	50	82		

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

Basic Style

(mm)

Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch		
		A	B	P	A	B	P
32	5	44.5	30.5	M5	54.5	40.5	1/8
	10 to 50			1/8			
	75,100			1/8			
40	5 to 50	54	40	1/8	64	50	1/8
	75,100	64	50				
50	10 to 50	56.5	40.5	1/4	66.5	50.5	1/4
	75,100	66.5	50.5				

Bore size (mm)	C	D	E	H	I	J	K	L	M	N	O	Q	S	U	W	Z
32	13	16	45	M8x1.25	60	4.5	14	7	34	5.5	9 depth 7	12.5	58.5	31.5	49.5	14
40	13	16	52	M8x1.25	69	5	14	7	40	5.5	9 depth 7	14	66	35	57	14
50	15	20	64	M10x1.5	86	7	17	8	50	6.6	11 depth 8	14	80	41	71	19



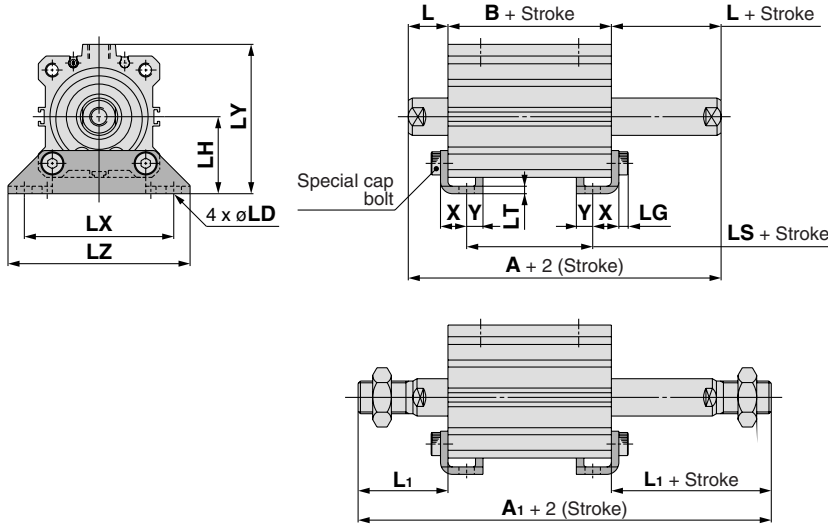
Note) External dimensions with rubber bumper are same as standard type as shown above.

* For details about the rod end nut and accessory brackets, refer to page 620.

Compact Cylinder: Standard Type Double Acting, Double Rod **Series CQ2W**

Foot style: CQ2WL/CDQ2WL

Note) The positions of left and right width across flats are not constant.



Rod End Male Thread

Bore size (mm)	Stroke range (mm)	Without auto switch	With auto switch	L ₁
		A ₁	A ₁	
32	5 to 50	107.5	117.5	38.5
	75,100	117.5		
40	5 to 50	117	127	38.5
	75,100	127		
50	10 to 50	127.5	137.5	43.5
	75,100	137.5		

Foot Style

(mm)

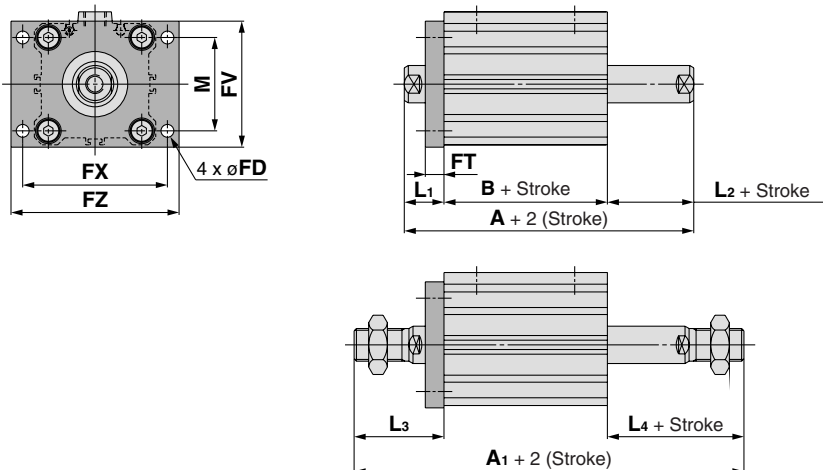
Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch		
		A	B	LS	A	B	LS
32	5 to 50	64.5	30.5	14.5	74.5	40.5	24.5
	75,100	74.5	40.5	24.5			
40	5 to 50	74	40	24	84	50	34
	75,100	84	50	34			
50	10 to 50	76.5	40.5	17.5	86.5	50.5	27.5
	75,100	86.5	50.5	27.5			

Foot bracket material: Carbon steel
Surface treatment: Nickel plated

Bore size (mm)	L	LD	LG	LH	LT	LX	LY	LZ	X	Y
32	17	6.6	4	30	3.2	57	57	71	11.2	5.8
40	17	6.6	4	33	3.2	64	64	78	11.2	7
50	18	9	5	39	3.2	79	78	95	14.7	8

Flange style: CQ2WF/CDQ2WF

Note) The positions of left and right width across flats are not constant.



Rod End Male Thread

(mm)

Bore size (mm)	Stroke range (mm)	Without auto switch	With auto switch	L ₃	L ₄
		A ₁	A ₁		
32	5 to 50	97.5	107.5	38.5	28.5
	75,100	107.5			
40	5 to 50	107	117	38.5	28.5
	75,100	117			
50	10 to 50	117.5	127.5	43.5	33.5
	75,100	127.5			

Flange Style

(mm)

Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch		FD	FT	FV	FX	FZ	L ₁	L ₂	M
		A	B	A	B								
32	5 to 50	54.5	30.5	64.5	40.5	5.5	8	48	56	65	17	7	34
	75,100	64.5	40.5										
40	5 to 50	64	40	74	50	5.5	8	54	62	72	17	7	40
	75,100	74	50										
50	10 to 50	66.5	40.5	76.5	50.5	6.6	9	67	76	89	18	8	50
	75,100	76.5	50.5										

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

Series CQ2W

Dimensions

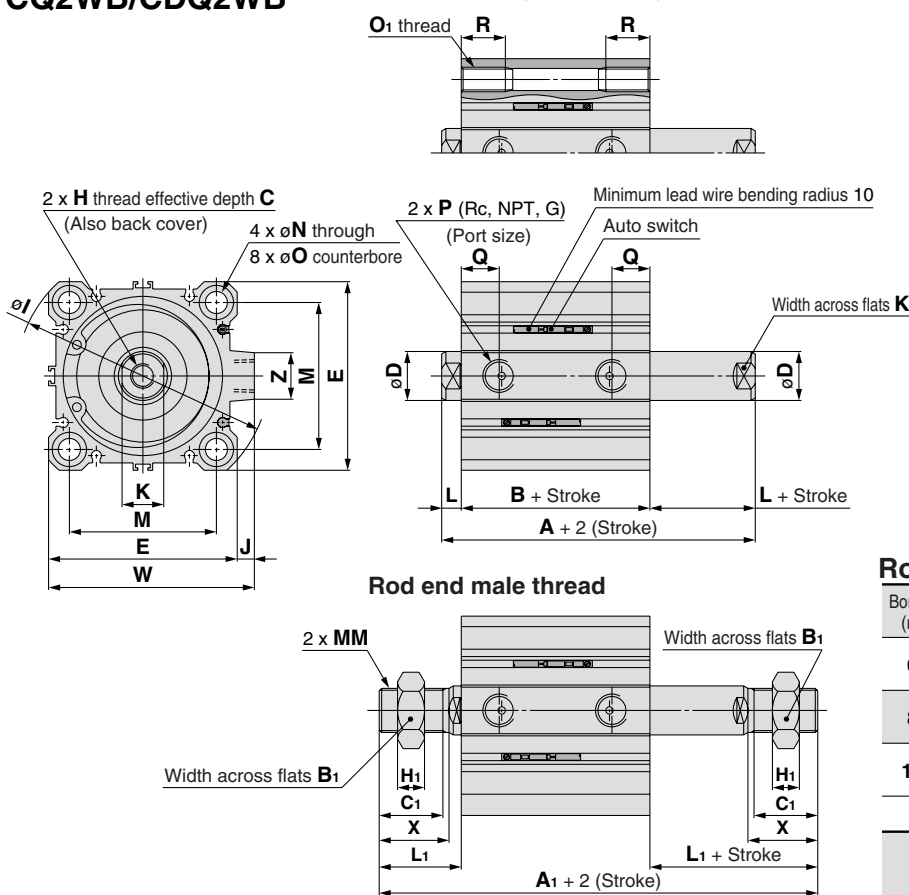
ø63 to ø100/With Auto Switch



(In the case of without auto switches, A, B and P dimensions will be only changed. Refer to the dimension table.)

Basic style (Through-hole):
CQ2WB/CDQ2WB

Both ends tapped style:
CQ2WA/CDQ2WA



Note) The positions of left and right width across flats are not constant.

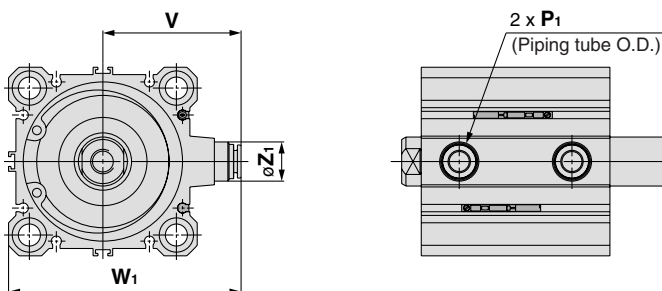
Rod End Male Thread (mm)

Bore size (mm)	Stroke range (mm)	Without auto switch	With auto switch
63	10 to 50	109	119
	75,100	119	
80	10 to 50	138	148
	75,100	148	
100	10 to 50	147.5	157.5
	75,100	157.5	

(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



Built-in One-touch Fittings (mm)

Bore size (mm)	Z ₁	P ₁	V	W ₁
63	16	8	56.5	95



* In the case of built-in One-touch fitting, the 5 mm stroke with ø32 bore is the same external dimensions as 10 mm stroke.

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

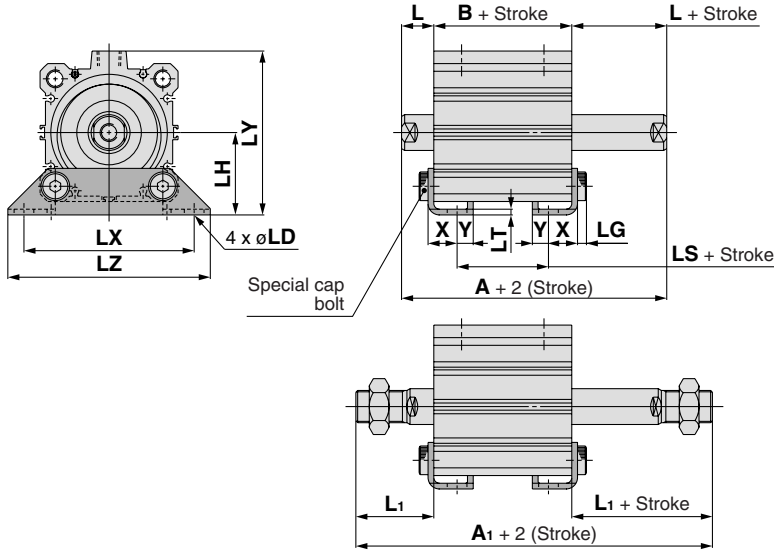
Basic Style (mm)

Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch	
		A	B	A	B
63	10 to 50	58	42	68	52
	75,100	68	52		
80	10 to 50	71	51	81	61
	75,100	81	61		
100	10 to 50	84.5	60.5	94.5	70.5
	75,100	94.5	70.5		

Bore size (mm)	C	D	E	H	I	J	K	L	M	N	O	P	Q	S	U	W	Z
63	15	20	77	M10 x 1.5	103	7	17	8	60	9	14 depth 10.5	1/4	15.5	93	47.5	84	19
80	21	25	98	M16 x 2.0	132	6	22	10	77	11	17.5 depth 13.5	3/8	18	112.5	57.5	104	26
100	27	30	117	M20 x 2.5	156	6.5	27	12	94	11	17.5 depth 13.5	3/8	22	132.5	67.5	123.5	26

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.

Foot style: CQ2WL/CDQ2WL



Note) The positions of left and right width across flats are not constant.

Rod End Male Thread

Bore size (mm)	Stroke range (mm)	Without auto switch	With auto switch	(mm)
63	10 to 50	129	139	43.5
	75,100	139		
80	10 to 50	158	168	53.5
	75,100	168		
100	10 to 50	167.5	177.5	53.5
	75,100	177.5		

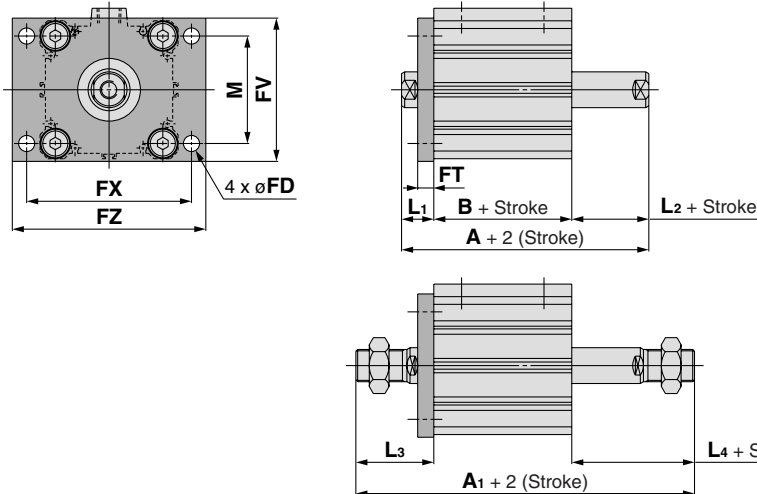
Foot Style

Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch			(mm)	
		A	B	LS	A	B	LS		
63	10 to 50	78	42	16	88	52	26		
	75,100	88	52	26					
80	10 to 50	91	51	21	101	61	31		
	75,100	101	61	31					
100	10 to 50	104.5	60.5	26.5	114.5	70.5	36.5		
	75,100	114.5	70.5	36.5					

Bore size (mm)	L	LD	LG	LH	LT	LX	LY	LZ	X	Y
63	18	11	5	46	3.2	95	91.5	113	16.2	9
80	20	13	7	59	4.5	118	114	140	19.5	11
100	22	13	7	71	6	137	136	162	23	12.5

(mm) Foot bracket material: Carbon steel
Surface treatment: Nickel plated

Flange style: CQ2WF/CDQ2WF



Note) The positions of left and right width across flats are not constant.

Rod End Male Thread

Bore size (mm)	Stroke range (mm)	Without auto switch	With auto switch	(mm)	(mm)
63	10 to 50	119	129	43.5	33.5
	75,100	129			
80	10 to 50	148	158	53.5	43.5
	75,100	158			
100	10 to 50	157.5	167.5	53.5	43.5
	75,100	167.5			

Flange Style

Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch		FD	FT	FV	FX	FZ	L1	L2	M	(mm)	
		A	B	A	B										
63	10 to 50	68	42	78	52	9	9	80	92	108	18	8	60		
	75,100	78	52												
80	10 to 50	81	51	91	61	11	11	99	116	134	20	10	77		
	75,100	91	61												
100	10 to 50	94.5	60.5	104.5	70.5	11	11	117	136	154	22	12	94		
	75,100	104.5	70.5												

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

Compact Cylinder: Standard Type

Single Acting, Single Rod

Series CQ2

ø12, ø16, ø20, ø25, ø32, ø40, ø50

How to Order

CQ2 **B** **20** **-** **10** **S** **-**

With auto switch **CDQ2** **B** **20** **-** **10** **S** **-** **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 642 and 645.

Bore size

12	12 mm	32	32 mm
16	16 mm	40	40 mm
20	20 mm	50	50 mm
25	25 mm		

Port thread type

Nil	M thread	ø12 to ø25
TN	NPT	ø32 to ø50
TF	G	
F	Built-in One-touch fittings	

Note) Bore sizes available w/ One-touch fittings are ø32 to ø50.
* For the cylinders without an auto switch, M threads are compatible only for ø32 with 5 strokes.

Made to Order
(Refer to page 640 for details.)

Number of auto switches

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

Auto switch

Nil	Without auto switch
------------	---------------------

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

Body option

Nil	Standard
F	With boss in head side
M	Rod end male thread

* Combination of body option ("FM") is available.

Action

S	Single acting, Spring return
T	Single acting, Spring extend

Cylinder stroke (mm)
For "Standard Stroke" and "Manufacture of intermediate of Stroke", refer to page 640.

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) CDQ2L32-10S

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		Auto switch model		Lead wire length (m)					Pre-wired connector	Applicable load								
					DC	AC	Perpendicular	In-line	0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)										
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24V	5V, 12V	—	M9NV	M9N	●	●	●	○	—	○	IC circuit	Relay, PLC						
		3-wire (PNP)		M9PV				M9P	●	●	●	○	—	○									
		Connector		2-wire				12V	M9BV	M9B	●	●	●	○	—			○	—				
				J79C				—	●	—	●	●	●	—									
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)		5V, 12V		M9NWV	M9NW	●	●	●	○	—	○	IC circuit							
				3-wire (PNP)				M9PWV	M9PW	●	●	●	○	—	○								
				2-wire				M9BWW	M9BW	●	●	●	○	—	○			—					
				3-wire (NPN)				M9NAV	M9NA	○	○	●	○	—	○				IC circuit				
	3-wire (PNP)			M9PAV	M9PA	○	○	●	○	—	○												
	2-wire			M9BAV	M9BA	○	○	●	○	—	○	—											
	4-wire			5V,12V	—	F79F	●	—	●	○	—	○	IC circuit										
	With diagnostic output (2-color indication)																						
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5V	—	A96V	A96	●	—	●	—	—	—	IC circuit	Relay, PLC						
								Connector	No	2-wire	24V	12V	100V	A72	A72H	●		—	●	—	—	—	—
														A93V	A93	●		—	●	—	—	—	
														5V,12V	100V or less	A90V		A90	●	—	●	—	
		12V	—	A73C	—	●	—							●	●	●		—	—				
		5V,12V	24V or less	A80C	—	●	—	●	●	●	—	—	IC circuit										
		Diagnostic indication (2-color indication)	Grommet	Yes																			

* Lead wire length symbols: 0.5 m Nil
1 m M
3 m L
5 m Z
None N

(Example) M9NW
(Example) M9NWM
(Example) M9NWL
(Example) M9NWX
(Example) J79CN

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

* 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.

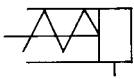
* When D-A9□(V)/M9□(V)/M9□W(V)/M9□A(V) types with ø32 to ø50 are mounted on a side other than the port side, order auto switch mounting brackets separately. Refer to page 768 for details.

Series CQ2

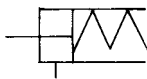


JIS Symbol

Single acting,
Spring return



Single acting,
Spring extend



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

Symbol	Specifications
—XA□	Change of rod end shape spring return type only
—XB10	Intermediate stroke (Using exclusive body) spring return type only
—XC6	Retaining ring, piston rod, rod end nut made of stainless steel
—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)
—XC36	With boss in rod side
—X144	Change of port location, ø12, to 25 only
—X202	Same overall length dimension as Series CQ1, Except ø12, 16, 25
—X203	Same L dimension from rod cover as Series CQ1, ø20, 32 only
—X271	Fluororubber seals
—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.

Specifications

Bore size	12	16	20	25	32	40	50
Action	Single acting, Single rod						
Fluid	Air						
Proof pressure	1.5 MPa						
Maximum operating pressure	1.0 MPa						
Minimum operating pressure Mpa	0.25	0.25	0.18	0.18	0.17	0.15	0.13
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	0.022	0.038	0.055	0.09	0.15	0.26	0.46
Stroke length tolerance	+1.0mm 0						

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

Standard Stroke

Bore size (mm)	Standard stroke (mm)
12, 16, 20 25, 32, 40	5, 10
50	10, 20

Manufacture of Intermediate Stroke (Single acting, Spring return type is excluded.)

Description	Spacer is installed in the standard stroke body.	
Part no.	Refer to "How to Order" for the standard model no. on page 639.	
Description	Dealing with the stroke by the 1 mm interval is available by installing spacer with standard stroke cylinder.	
Stroke range	Bore size	Stroke range
	12 to 40	1 to 9
	50	1 to 19
Example	Part no.: CQ2B20-3T CQ2B20-5T with 2 mm width spacer inside. B dimension is 24.5 mm.	

Type

Bore size (mm)			12	16	20	25	32	40	50
Pneumatic	Mounting	Through-hole (Standard)	●	●	●	●	●	●	●
		Both ends tapped style	●	●	●	●	●	●	●
	Built-in magnet		●	●	●	●	●	●	●
	Piping	Screw-in type	—	M5 × 0.8	M5 × 0.8	M5 × 0.8	M5 × 0.8 ⁽¹⁾ Rc 1/8	Rc 1/8	Rc 1/4
			TN	—	—	—	NPT 1/8	NPT 1/8	NPT 1/4
			TF	—	—	—	G 1/8	G 1/8	G 1/4
		Built-in One-touch fittings ⁽²⁾	—	—	—	—	ø6/4	ø6/4	ø8/6
	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) One-touch fittings cannot be replaced.

**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).

- 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 Bracket Part No.

Bore size (mm)	Foot ⁽¹⁾	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



Note 1) When ordering foot bracket,
order 2 pieces per cylinder.

Note 2) 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

Theoretical Output (N)

Action	Bore size (mm)	Operating pressure (Mpa)		
		0.3	0.5	0.7
Spring return	12	21	44	66
	16	45	86	126
	20	79	142	205
	25	126	224	323
	32	211	372	533
	40	338	589	841
	50	535	928	1316
Spring extend	12	14	31	48
	16	24	54	85
	20	44	91	138
	25	84	160	235
	32	152	273	393
	40	288	499	710
	50	412	742	1072

Refer to page 1569 for the Spring Reaction Force.

Mass

Action	Bore size (mm)	Cylinder stroke (mm)			
		5	10	15	20
Spring return	12	29	35	—	—
	16	42	51	—	—
	20	63	76	—	—
	25	87	101	—	—
	32	131	152	—	—
	40	206	229	—	—
	50	—	369	—	441
Spring extend	12	29	35	—	—
	16	43	50	—	—
	20	67	78	—	—
	25	92	104	—	—
	32	141	158	—	—
	40	216	235	—	—
	50	—	399	—	460

Additional Mass

Bore size (mm)		12	16	20	25	32	40	50
Both ends tapped style		2	2	6	6	6	6	6
Rod end male thread	Male thread	1.5	3	6	12	26	27	53
	Nut	1	2	4	8	17	17	32
With boss in head side		0.7	1.3	2	3	5	7	13
Built-in One-touch fittings		—	—	—	—	6	6	10.5
Foot style (Including mounting bolt)		55	67	164	186	143	155	243
Rod side flange style (Including mounting bolt)		57	69	139	161	180	214	373
Rear flange style (Including mounting bolt)		54	65	133	152	165	198	348
Double clevis style (Including pin, retaining ring, bolt)		32	39	88	123	151	196	393

Calculation: (Example) **CQ2D32-10SM**

- | | |
|---|-------------|
| • Cylinder mass: CQ2B32-10S | 152 g |
| • Option mass: Both ends tapped style | 6 g |
| Rod end male thread | 43 g |
| Double clevis style | 151 g |
| | <hr/> 352 g |

Series CQ2

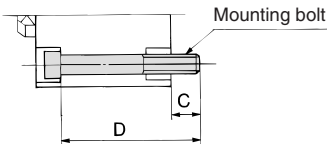
Mounting Bolt for CQ2/Without Auto Switch

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.

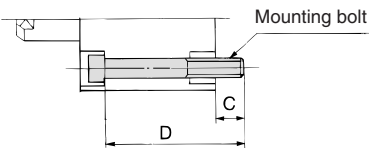
Example) Bolt M3 x 25L 4 pcs.

Material: Chromium molybdenum steel
Surface treatment: Nickel plated



Spring Return

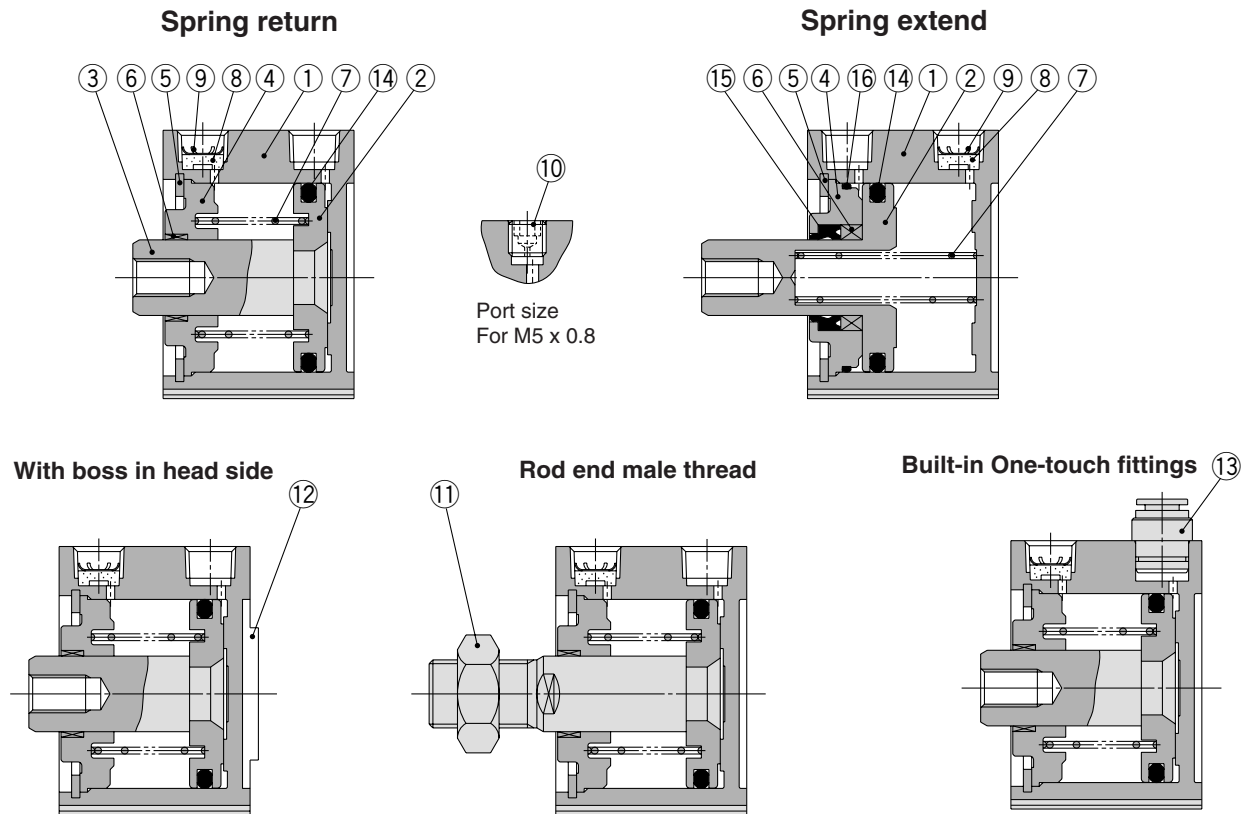
Cylinder model	C	D	Mounting bolt size
CQ2B12-5S	6.5	25	M3 x 25L
-10S		30	x 30L
CQ2B16-5S	5	25	M3 x 25L
-10S		30	x 30L
CQ2B20-5S	7.5	25	M5 x 25L
-10S		30	x 30L
CQ2B25-5S	9.5	30	M5 x 30L
-10S		35	x 35L
CQ2B32-5S	9	30	M5 x 30L
-10S		35	x 35L
CQ2B40-5S	7.5	35	M5 x 35L
-10S		40	x 40L
CQ2B50-10S	12.5	45	M6 x 45L
-20S		55	x 55L



Spring Extend

Cylinder model	C	D	Mounting bolt size
CQ2B12-5T	6.5	25	M3 x 25L
-10T		30	x 30L
CQ2B16-5T	5	25	M3 x 25L
-10T		30	x 30L
CQ2B20-5T	7.5	25	M5 x 25L
-10T		30	x 30L
CQ2B25-5T	9.5	30	M5 x 30L
-10T		35	x 35L
CQ2B32-5T	9	30	M5 x 30L
-10T		35	x 35L
CQ2B40-5T	7.5	35	M5 x 35L
-10T		40	x 40L
CQ2B50-10T	12.5	45	M6 x 45L
-20T		55	x 55L

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 ø50, Hard chrome plated
4	Collar	Aluminum alloy	ø12 to ø40, Anodized
		Aluminum alloy casted	ø50, Chromate, Painted
5	Retaining ring	Carbon tool steel	Phosphate coated
6	Bushing	Bearing alloy	ø50
7	Return spring	Piano wire	Zinc chromated
8	Bronze element	Sintered metallic BC	Port size Rc 1/8, 1/4
9	Retaining ring	Carbon tool steel	
10	Plug with fixed orifice	Alloy steel	Port size M5 x 0.8
11	Rod end nut	Carbon steel	Nickel plated
12	Centering location ring	Aluminum alloy	ø20 to ø50, Anodized
13	One-touch fitting	—	ø32 to ø50

* On spring extend (type T), piston and piston rod are integrated (stainless steel).
(Excluding ø12 and 16 of built-in magnet type)

Replacement Parts

No.	Description	Material	Note
14	Piston seal	NBR	
15	Rod seal	NBR	
16	Gasket	NBR	

Replacement Part: Seal Kit

Bore size (mm)	Single acting/Spring return	Single acting/Spring extend
12	CQ2B12-S-PS	CQ2B12-T-PS
16	CQ2B16-S-PS	CQ2B16-T-PS
20	CQ2B20-S-PS	CQ2B20-T-PS
25	CQ2B25-S-PS	CQ2B25-T-PS
32	CQ2B32-S-PS	CQ2B32-T-PS
40	CQ2B40-S-PS	CQ2B40-T-PS
50	CQ2B50-S-PS	CQ2B50-T-PS
Note	A set includes 14.	Kits include items 14, 15, 16 from the table above
How to order	* Seal kit includes 14. Order the seal kit, based on each bore size.	* Seal kit includes 14, 15, 16. 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)

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

20 — C□Q2B Bore size — Stroke $S_T(M)$
Copper and fluorine-free series ø12, ø16, ø20, ø25, ø32, ø40, ø50

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

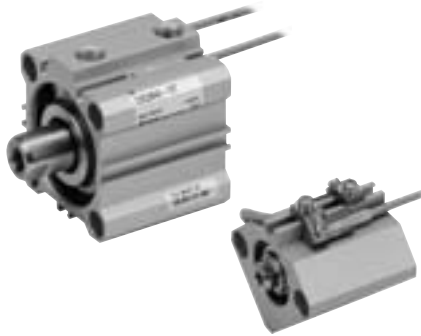
Action	Single acting, Single rod
Bore size (mm)	ø12, ø16, ø20, ø25, ø32, ø40, ø50
Proof pressure	1.5 MPa
Maximum operating pressure	1.0 MPa
Rubber bumper	None
Piping	Screw-in piping
Piston speed	50 to 500 mm/s
Mounting	Through-hole
Auto switch	Mountable

Compact Cylinder: Standard Type

Single 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)

Action	Bore size (mm)	Cylinder stroke (mm)			
		5	10	15	20
Spring return	12	48	54	—	—
	16	74	83	—	—
	20	109	123	—	—
	25	146	162	—	—
	32	190	211	—	—
	40	282	305	—	—
	50	—	487	—	559
	50	—	487	—	559
Spring extend	12	53	70	—	—
	16	73	82	—	—
	20	122	133	—	—
	25	160	175	—	—
	32	200	217	—	—
	40	292	311	—	—
	50	—	517	—	578
	50	—	517	—	578

Additional Mass

(g)

Bore size (mm)		12	16	20	25	32	40	50
Both ends tapped style		1	1	3	3	6	6	6
Rod end	Male thread	1.5	3	6	12	26	27	53
	Nut	1	2	4	8	17	17	32
With boss in head side		0.7	1.3	2	3	5	7	13
Built-in One-touch fittings		—	—	—	—	6	6	10.5
Foot style (Including mounting bolt)		49	62	147	169	143	155	243
Rod side flange style (Including mounting bolt)		54	67	131	153	180	214	373
Head side flange style (Including mounting bolt)		52	63	124	144	165	198	348
Double clevis style (Including pin, retaining ring, bolt)		29	35	78	114	151	196	393

Calculation: (Example) **CDQ2D32-10SM**

- Cylinder mass: CDQ2B32-10S 211 g
- Option mass: Both ends tapped style ... 6 g
- Rod end male thread 43 g
- Double clevis style 151 g

411 g

If auto switches are to be installed, the mass that corresponds to the number of auto switches and mounting brackets to be used must be added.

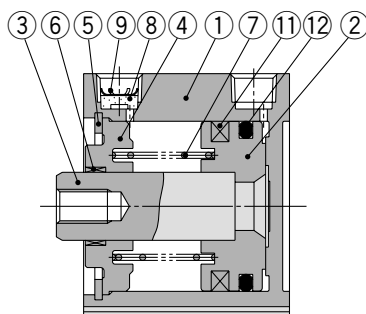
Switch Mounting Bracket Mass

Bracket	Mounting hole diameter (mm)	Mass (g)
BQ-1	ø20, ø25	1.5
BQ-2	ø32 to ø100	1.5
BQ2-012	ø12 to ø25	5

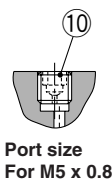
* For the auto switch mass, refer to page 1263 to 1371.

Construction

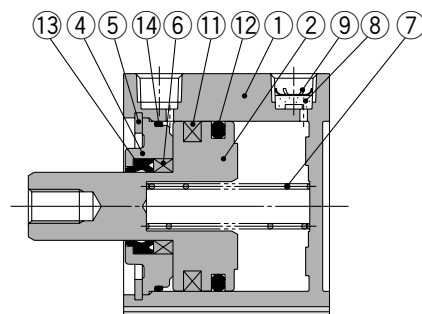
Spring return



Spring extend



Port size
For M5 x 0.8



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 ø50, Hard chrome plated
4	Collar	Aluminum alloy	ø12 to ø40, Anodized
		Aluminum alloy casted	ø50, Chromate, Painted
5	Retaining ring	Carbon tool steel	Phosphate coated
6	Bushing	Bearing alloy	ø50
7	Return spring	Piano wire	Zinc chromated
8	Bronze element	Sintered metallic BC	Port size Rc 1/8, 1/4.
9	Retaining ring	Carbon tool steel	
10	Plug with fixed orifice	Alloy steel	Port size M5 x 0.8
11	Magnet	—	

* On spring extend (type T), piston with ø20 or more and piston rod are integrated (Stainless steel).

No.	Description	Material	Note
12	Piston seal	NBR	
13	Rod seal	NBR	
14	Gasket	NBR	



Replacement Parts: Seal Kit

Since the same as standard type, single acting, single rod, refer to page 643.

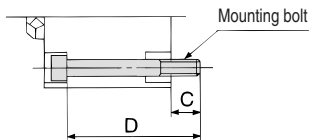
Mounting Bolt for CDQ2/With Auto Switch

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.

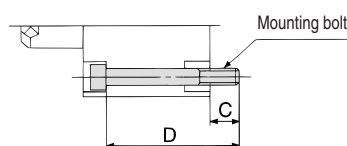
Spring return



Spring Return

Cylinder model	C	D	Mounting bolt size
CDQ2B12-5S	5.5	35	M3 x 35L
-10S		40	x 40L
CDQ2B16-5S	8	40	M3 x 40L
-10S		45	x 45L
CDQ2B20-5S	10.5	40	M5 x 40L
-10S		45	x 45L
CDQ2B25-5S	9.5	40	M5 x 40L
-10S		45	x 45L
CDQ2B32-5S	9	40	M5 x 40L
-10S		45	x 45L
CDQ2B40-5S	7.5	45	M5 x 45L
-10S		50	x 50L
CDQ2B50-10S	12.5	55	M6 x 55L
-20S		65	x 65L

Spring extend



Spring Extend

Cylinder model	C	D	Mounting bolt size
CDQ2B12-5T	6.1	40	M3 x 40L
-10T		45	x 45L
CDQ2B16-5T	8	40	M3 x 40L
-10T		45	x 45L
CDQ2B20-5T	10.5	40	M5 x 40L
-10T		45	x 45L
CDQ2B25-5T	9.5	40	M5 x 40L
-10T		45	x 45L
CDQ2B32-5T	9	40	M5 x 40L
-10T		45	x 45L
CDQ2B40-5T	7.5	45	M5 x 45L
-10T		50	x 50L
CDQ2B50-10T	12.5	55	M6 x 55L
-20T		65	x 65L

Material: Chromium molybdenum steel
Surface treatment: Nickel plated

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual
-X□

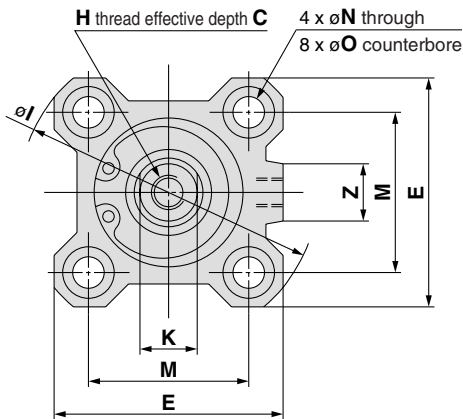
Technical
data

Series CQ2

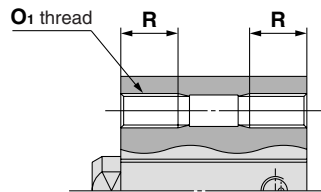
Dimensions

Ø12 to Ø25/Spring Return without Auto Switch

Basic style (Through-hole): CQ2B

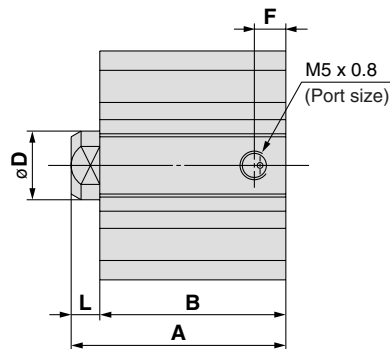


Both ends tapped style: CQ2A

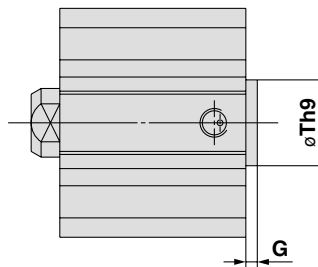


Both Ends Tapped Style (mm)

Bore size (mm)	O1	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

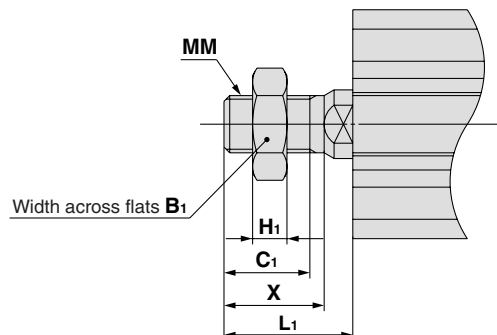


With Boss in Head Side (mm)

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)

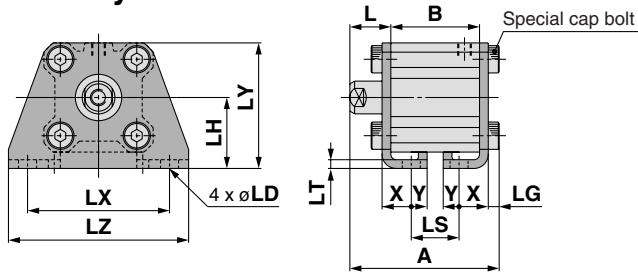
Bore size (mm)	B1	C1	H1	L1	MM	X
12	8	9	4	14	M5 x 0.8	10.5
16	10	10	5	15.5	M6 x 1.0	12
20	13	12	5	18.5	M8 x 1.25	14
25	17	15	6	22.5	M10 x 1.25	17.5

Basic Style

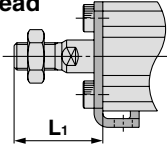
Bore size (mm)	A		B		C	D	E	F	H	I	K	L	M	N	O	Z
	5st	10st	5st	10st												
12	25.5	30.5	22	27	6	6	25	5	M3 x 0.5	32	5	3.5	15.5	3.5	6.5 depth 3.5	—
16	27	32	23.5	28.5	8	8	29	5.5	M4 x 0.7	38	6	3.5	20	3.5	6.5 depth 3.5	10
20	29	34	24.5	29.5	7	10	36	5.5	M5 x 0.8	47	8	4.5	25.5	5.5	9 depth 7	10
25	32.5	37.5	27.5	32.5	12	12	40	5.5	M6 x 1.0	52	10	5	28	5.5	9 depth 7	10

* For details about the rod end nut and accessory brackets, refer to page 620.

Foot style: CQ2L



Rod end male thread

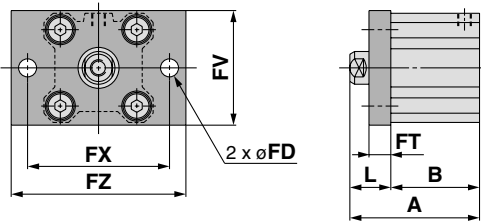


Foot Style

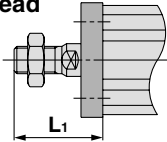
Foot Style															(mm)			
Bore size (mm)	A		B		L	L ₁	LD	LG	LH	LS		LT	LX	LY	LZ	X	Y	
	5st	10st	5st	10st						5st	10st							
12	40.3	45.3	22	27	13.5	24	4.5	2.8	17	10	15	2	34	29.5	44	8	4.5	
16	41.8	46.8	23.5	28.5	13.5	25.5	4.5	2.8	19	11.5	16.5	2	38	33.5	48	8	5	
20	46.2	51.2	24.5	29.5	14.5	28.5	6.6	4	24	12.5	17.5	3.2	48	42	62	9.2	5.8	
25	49.7	54.7	27.5	32.5	15	32.5	6.6	4	26	12.5	17.5	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

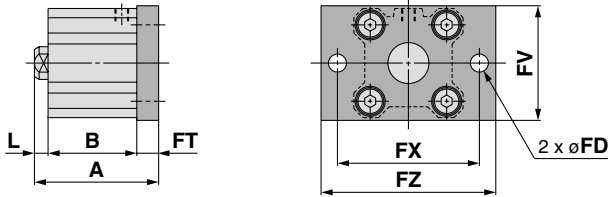


Rod Side Flange Style

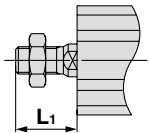
Rod Side Flange Style											(mm)	
Bore size (mm)	A		B		FD	FT	FV	FX	FZ	L	L ₁	
	5st	10st	5st	10st								
12	35.5	40.5	22	27	4.5	5.5	25	45	55	13.5	24	
16	37	42	23.5	28.5	4.5	5.5	30	45	55	13.5	25.5	
20	39	44	24.5	29.5	6.6	8	39	48	60	14.5	28.5	
25	42.5	47.5	27.5	32.5	6.6	8	42	52	64	15	32.5	

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

Head side flange style: CQ2G



Rod end male thread



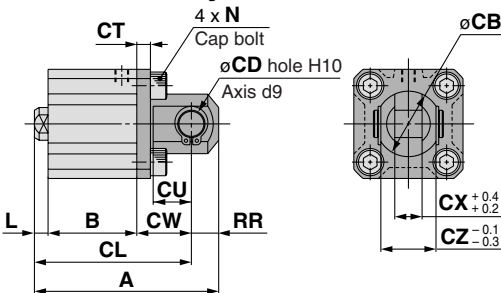
Head Side Flange Style

Bore size (mm)	A		L	L ₁
	5st	10st		
12	31	36	3.5	14
16	32.5	37.5	3.5	15.5
20	37	42	4.5	18.5
25	40.5	45.5	5	22.5

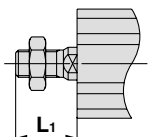
(* Dimensions except A, L and L₁ are the same as rod side flange style.)

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

Double clevis style: CQ2D



Rod end male thread



Double Clevis Style

Double Clevis Style																(mm)	
Bore size (mm)	A		B		CB	CD	CL		CT	CU	CW	CX	CZ	L	L ₁	N	RR
	5st	10st	5st	10st			5st	10st									
12	45.5	50.5	22	27	12	5	39.5	44.5	4	7	14	5	10	3.5	14	M4 x 0.7	6
16	48	53	23.5	28.5	14	5	42	47	4	10	15	6.5	12	3.5	15.5	M4 x 0.7	6
20	56	61	24.5	29.5	20	8	47	52	5	12	18	8	16	4.5	18.5	M6 x 1.0	9
25	62.5	67.5	27.5	32.5	24	10	52.5	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.

Series CQ2

Dimensions

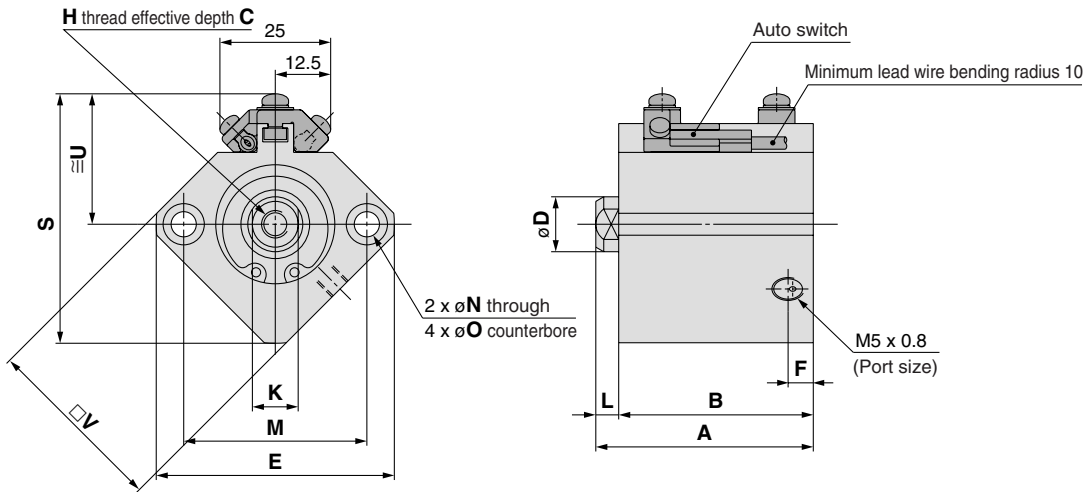
Ø12 to Ø25/Spring Return with Auto Switch

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)

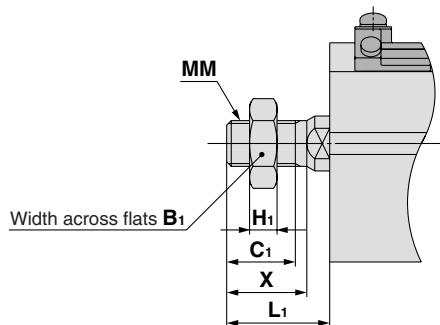
Bore size (mm)	G	Th9
12	1.5	15 ⁰ _{-0.043}
16	1.5	20 ⁰ _{-0.052}
20	2	13 ⁰ _{-0.043}
25	2	15 ⁰ _{-0.043}

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



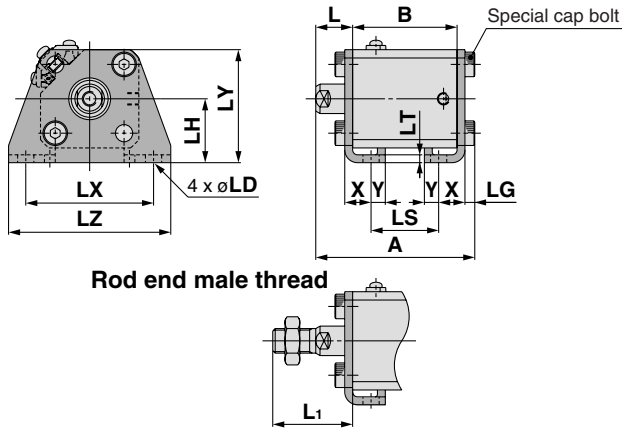
For the auto switch mounting position and its mounting height, refer to pages 760 to 766.

Basic Style

Bore size (mm)	A		B		C	D	E	F	H	K	L	M	N	O	S	U	V
	5st	10st	5st	10st													
12	36.5	41.5	33	38	6	6	32	6.5	M3 x 0.5	5	3.5	22	3.5	6.5 depth 3.5	36.5	20.5	25
16	39	44	35.5	40.5	8	8	38	5.5	M4 x 0.7	6	3.5	28	3.5	6.5 depth 3.5	42.5	23.5	29
20	41	46	36.5	41.5	7	10	47	5.5	M5 x 0.8	8	4.5	36	5.5	9 depth 7	49	25.5	36
25	42.5	47.5	37.5	42.5	12	12	52	5.5	M6 x 1.0	10	5	40	5.5	9 depth 7	54.5	28.5	40

* For details about the rod end nut and accessory brackets, refer to page 620.

Foot style: CDQ2L



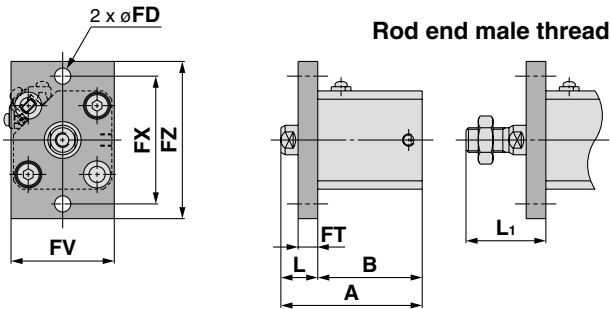
Foot Style

Bore size (mm)	A		B		L	L ₁	LD	LG	LH	LS	
	5st	10st	5st	10st						5st	10st
12	51.3	56.3	33	38	13.5	24	4.5	2.8	17	21	26
16	53.8	58.8	35.5	40.5	13.5	25.5	4.5	2.8	19	23.5	28.5
20	58.2	63.2	36.5	41.5	14.5	28.5	6.6	4	24	24.5	29.5
25	59.7	64.7	37.5	42.5	15	32.5	6.6	4	26	22.5	27.5

Bore size (mm)	LT	LX	LY	LZ	X	Y
12	2	34	29.5	44	8	4.5
16	2	38	33.5	48	8	5
20	3.2	48	42	62	9.2	5.8
25	3.2	52	46	66	10.7	5.8

Foot bracket material: Carbon steel
Surface treatment: Nickel plated

Rod side flange style: CDQ2F

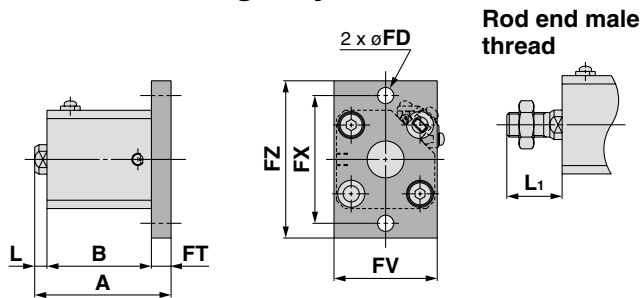


Rod Side Flange Style

Bore size (mm)	A		B		FD	FT	FV	FX	FZ	L	L ₁
	5st	10st	5st	10st							
12	46.5	51.5	33	38	4.5	5.5	25	45	55	13.5	24
16	49	54	35.5	40.5	4.5	5.5	30	45	55	13.5	25.5
20	51	56	36.5	41.5	6.6	8	39	48	60	14.5	28.5
25	52.5	57.5	37.5	42.5	6.6	8	42	52	64	15	32.5

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

Head side flange style: CDQ2G



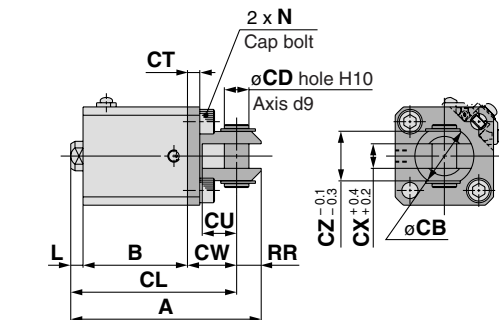
Head Side Flange Style

Bore size (mm)	A		L	L ₁
	5st	10st		
12	46.4	51.4	3.5	14
16	44.5	49.5	3.5	15.5
20	49	54	4.5	18.5
25	50.5	55.5	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: CDQ2D



Rod end male thread

Double Clevis Style

Bore size (mm)	A		B		CB	CD	CL		CT	CU	CW
	5st	10st	5st	10st			5st	10st			
12	56.5	61.5	33	38	12	5	50.5	55.5	4	7	14
16	60	65	35.5	40.5	14	5	54	59	4	10	15
20	68	73	36.5	41.5	20	8	59	64	5	12	18
25	72.5	77.5	37.5	42.5	24	10	62.5	67.5	5	14	20

Bore size (mm)	CX	CZ	L	L ₁	N	RR
12	5	10	3.5	14	M4 x 0.7	6
16	6.5	12	3.5	15.5	M4 x 0.7	6
20	8	16	4.5	18.5	M6 x 1.0	9
25	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.

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual
-X□

Technical
data

Series CQ2

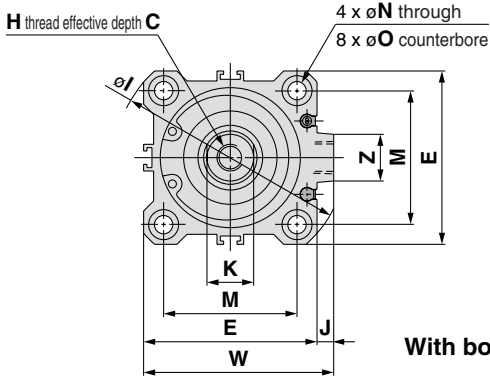
Dimensions

ø32 to ø50/Spring Return with Auto Switch

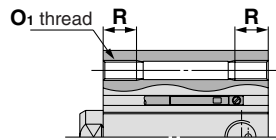


(In the case of without auto switches, A, B, F and P dimensions will be only changed. Refer to the dimension chart.)

Basic style (Through-hole): CQ2B/CDQ2B

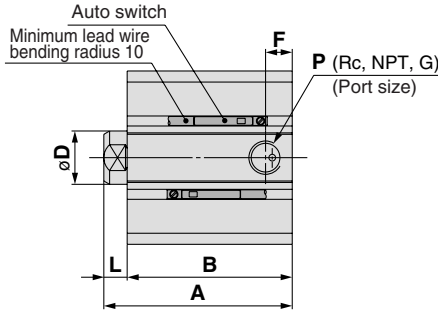


Both ends tapped style: CQ2A/CDQ2A

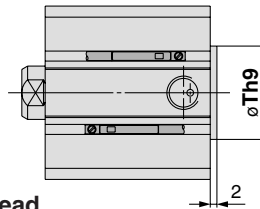


Both Ends Tapped Style (mm)

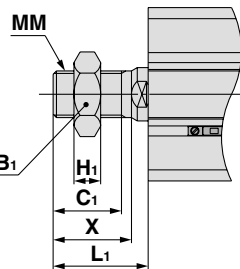
Bore size (mm)	O ₁	R
32	M6 x 1.0	10
40	M6 x 1.0	10
50	M8 x 1.25	14



With boss in head side



Rod end male thread



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

With Boss in Head Side (mm)

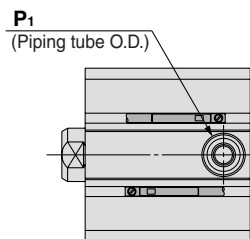
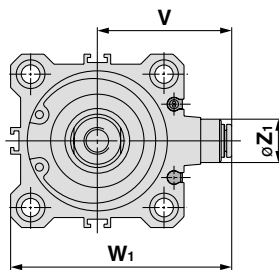
Bore size (mm)	Th9
32	21 ⁰ _{-0.052}
40	28 ⁰ _{-0.052}
50	35 ⁰ _{-0.052}

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

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	66.5
50	16	8	50	82

Basic Style

Bore size (mm)	Without auto switch												With auto switch							
	A			B			F			P			A			B			F	P
	5st	10st	20st	5st	10st	20st	5st	10st	20st	5st	10st	20st	5st	10st	20st	5st	10st	20st		
32	35	40	—	28	33	—	5.5	7.5	—	M5x0.8	1/8	—	45	50	—	38	43	—	7.5	1/8
40	41.5	46.5	—	34.5	39.5	—	8	8	—	1/8		—	51.5	56.5	—	44.5	49.5	—	8	1/8
50	—	48.5	58.5	—	40.5	50.5	—	10.5	10.5	—	1/4		—	58.5	68.5	—	50.5	60.5	10.5	1/4

Bore size (mm)	C	D	E	H	I	J	K	L	M	N	O	S	U	W	Z
32	13	16	45	M8 x 1.25	60	4.5	14	7	34	5.5	9 depth 7	58.5	31.5	49.5	14
40	13	16	52	M8 x 1.25	69	5	14	7	40	5.5	9 depth 7	66	35	57	14
50	15	20	64	M10 x 1.5	86	7	17	8	50	6.6	11 depth 8	80	41	71	19

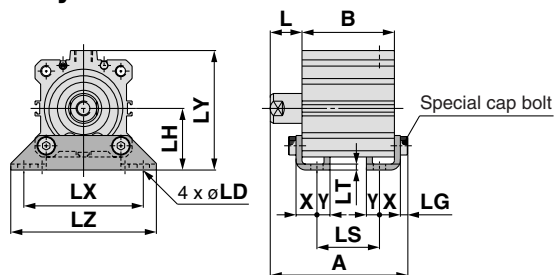


Note) A, B dimensions of ø32-5 stroke with One-touch fitting without auto switch are the same dimensions as the stroke ø32-10 without auto switch.

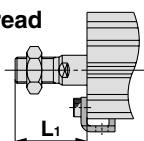


* For details about the rod end nut and accessory brackets, refer to page 620.

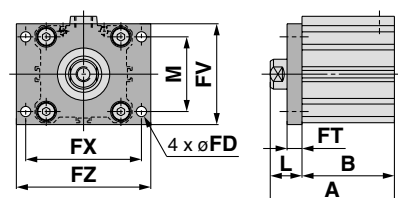
Foot style: CQ2L/CDQ2L



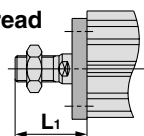
Rod end male thread



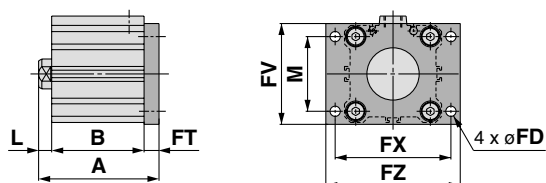
Rod side flange style: CQ2F/CDQ2F



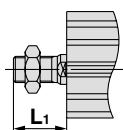
Rod end male thread



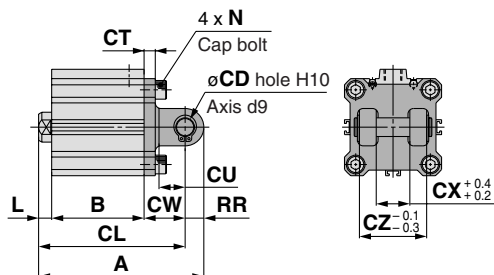
Head side flange style: CQ2G/CDQ2G



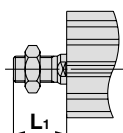
Rod end male thread



Double clevis style: CQ2D/CDQ2D



Rod end male thread



Foot Style

(mm)

Bore size (mm)	Without auto switch									With auto switch								
	A			B			LS			A			B			LS		
	5st	10st	20st	5st	10st	20st	5st	10st	20st	5st	10st	20st	5st	10st	20st	5st	10st	20st
32	52.5	57.2	—	28	33	—	12	17	—	62.2	67.2	—	38	43	—	22	27	—
40	58.7	63.7	—	34.5	39.5	—	18.5	23.5	—	68.7	73.7	—	44.5	49.5	—	28.5	33.5	—
50	—	66.7	76.7	—	40.5	50.5	—	17.5	27.5	—	76.7	86.7	—	50.5	60.5	—	27.5	37.5

Bore size (mm)	L	L ₁	LD	LH	LX	LY	LZ	X	Y
32	17	38.5	6.6	4	30	57	71	11.2	5.8
40	17	38.5	6.6	4	33	64	78	11.2	7
50	18	43.5	9	5	39	79	95	14.7	8

Foot bracket material: Carbon steel
Surface treatment: Nickel plated

Rod Side Flange Style

(mm)

Bore size (mm)	Without auto switch						With auto switch					
	A			B			A			B		
	5st	10st	20st	5st	10st	20st	5st	10st	20st	5st	10st	20st
32	45	50	—	28	33	—	55	60	—	38	43	—
40	51.5	56.5	—	34.5	39.5	—	61.5	66.5	—	44.5	49.5	—
50	—	58.5	68.5	—	40.5	50.5	—	68.5	78.5	—	50.5	60.5

Bore size (mm)	FD	FT	FV	FX	FZ	L	L ₁	M
32	5.5	8	48	56	65	17	38.5	34
40	5.5	8	54	62	72	17	38.5	40
50	6.6	9	67	76	89	18	43.5	50

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

Head Side Flange Style

(mm)

Bore size (mm)	Without auto switch			With auto switch			L	L ₁
	A			A				
	5st	10st	20st	5st	10st	20st		
32	43	48	—	53	58	—	7	28.5
40	49.5	54.5	—	59.5	64.5	—	7	28.5
50	—	57.5	67.5	—	67.5	77.5	8	33.5

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

(mm)

Bore size (mm)	Without auto switch									With auto switch								
	A			B			CL			A			B			CL		
	5st	10st	20st	5st	10st	20st	5st	10st	20st	5st	10st	20st	5st	10st	20st	5st	10st	20st
32	65	70	—	28	33	—	55	60	—	75	80	—	38	43	—	65	70	—
40	73.5	78.5	—	39.5	39.5	—	63.5	68.5	—	83.5	88.5	—	44.5	49.5	—	73.5	78.5	—
50	—	90.5	100.5	—	40.5	50.5	—	76.5	86.5	—	100.5	110.5	50.5	50.5	60.5	—	86.5	96.5

Bore size (mm)	CD	CT	CUC	WC	CX	CZ	L	L ₁	N	RR
32	10	5	14	20	18	36	7	28.5	M6 x 1.0	10
40	10	6	14	22	18	36	7	28.5	M6 x 1.0	10
50	14	7	20	28	22	44	8	33.5	M8 x 1.25	14

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.

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual

-X□

Technical

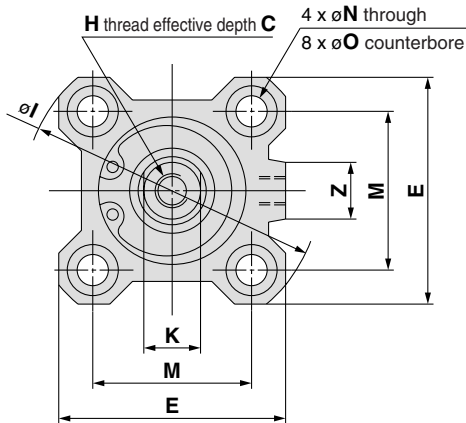
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Series CQ2

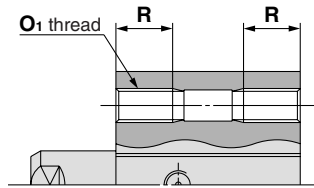
Dimensions

Ø12 to Ø25/Spring Extend without Auto Switch

Basic style (Through-hole): CQ2B

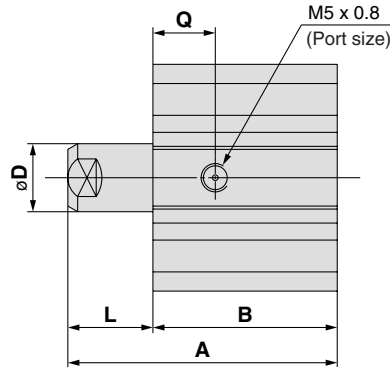


Both ends tapped style: CQ2A

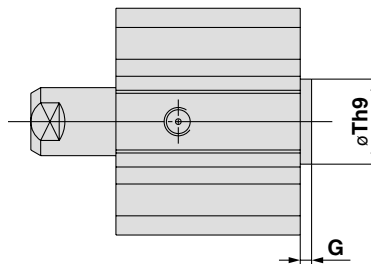


Both Ends Tapped Style (mm)

Bore size (mm)	Ø1	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

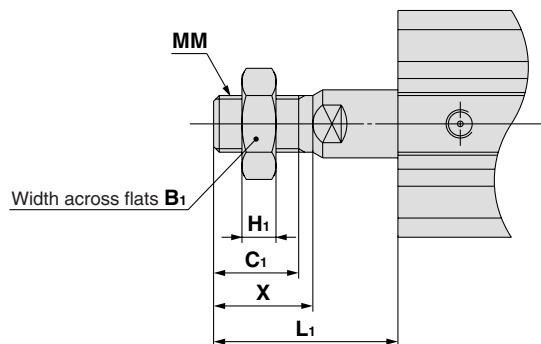


With Boss in Head Side (mm)

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)

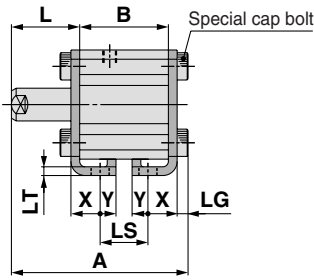
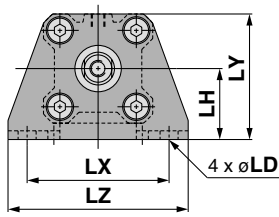
Bore size (mm)	B1	C1	H1	L1		MM	X
				5st	10st		
12	8	9	4	19	24	M5 x 0.8	10.5
16	10	10	5	20.5	25.5	M6 x 1.0	12
20	13	12	5	23.5	28.5	M8 x 1.25	14
25	17	15	6	27.5	32.5	M10 x 1.25	17.5

Basic Style

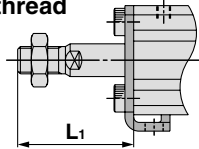
Bore size (mm)	A		B		C	D	E	H	I	K	L		M	N	O	Q	Z
	5st	10st	5st	10st							5st	10st					
12	30.5	40.5	22	27	6	6	25	M3 x 0.5	32	5	8.5	13.5	15.5	3.5	6.5 depth 3.5	7.5	—
16	32	42	23.5	28.5	8	8	29	M4 x 0.7	38	6	8.5	13.5	20	3.5	6.5 depth 3.5	8	10
20	34	44	24.5	29.5	7	10	36	M5 x 0.8	47	8	9.5	14.5	25.5	5.5	9 depth 7	9	10
25	37.5	47.5	27.5	32.5	12	12	40	M6 x 1.0	52	10	10	15	28	5.5	9 depth 7	11	10

* For details about the rod end nut and accessory brackets, refer to page 620.

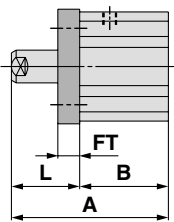
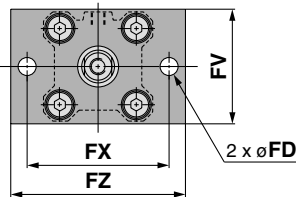
Foot style: CQ2L



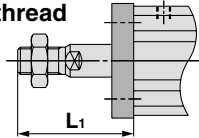
Rod end male thread



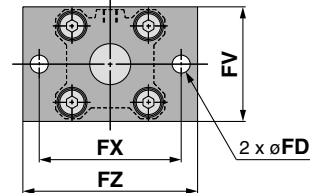
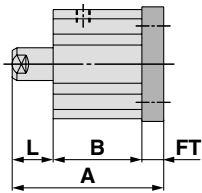
Rod side flange style: CQ2F



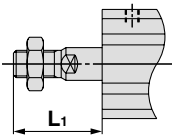
Rod end male thread



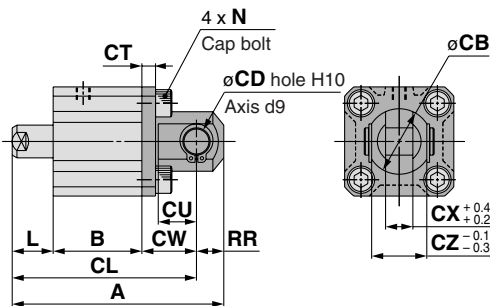
Head side flange style: CQ2G



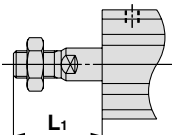
Rod end male thread



Double clevis style: CQ2D



Rod end male thread



Foot Style

Bore size (mm)	A		B		L		L ₁		LD	LG	LH	LS	
	5st	10st	5st	10st	5st	10st	5st	10st				5st	10st
12	45.3	55.3	22	27	18.5	23.5	29	34	4.5	2.8	17	10	15
16	46.8	56.8	23.5	28.5	18.5	23.5	30.5	35.5	4.5	2.8	19	11.5	16.5
20	51.2	61.2	24.5	29.5	19.5	24.5	33.5	38.5	6.6	4	24	12.5	17.5
25	54.7	64.7	27.5	32.5	20	25	37.5	42.5	6.6	4	26	12.5	17.5

Bore size (mm)	LT	LX	LY	LZ	X	Y
12	2	34	29.5	44	8	4.5
16	2	38	33.5	48	8	5
20	3.2	48	42	62	9.2	5.8
25	3.2	52	46	66	10.7	5.8

Foot bracket material: Carbon steel
Surface treatment: Nickel plated

Rod Side Flange Style

Bore size (mm)	A		B		FD	FT	FV	FX	FZ	L		L ₁	
	5st	10st	5st	10st						5st	10st	5st	10st
12	40.5	50.5	22	27	4.5	5.5	25	45	55	18.5	23.5	29	34
16	42	52	23.5	28.5	4.5	5.5	30	45	55	18.5	23.5	30.5	35.5
20	44	54	24.5	29.5	6.6	8	39	48	60	19.5	24.5	33.5	38.5
25	47.5	57.5	27.5	32.5	6.6	8	42	52	64	20	25	37.5	42.5

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

Head Side Flange Style

Bore size (mm)	A		L		L ₁	
	5st	10st	5st	10st	5st	10st
12	36	46	8.5	13.5	19	24
16	37.5	47.5	8.5	13.5	20.5	25.5
20	42	52	9.5	14.5	23.5	28.5
25	45.5	55.5	10	15	27.5	32.5

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

Bore size (mm)	A		B		CB	CD	CL		CT	CU	CW	CX	CZ
	5st	10st	5st	10st			5st	10st					
12	50.5	60.5	22	27	12	5	44.5	54.5	4	7	14	5	10
16	53	63	23.5	28.5	14	5	47	57	4	10	15	6.5	12
20	61	71	24.5	29.5	20	8	52	62	5	12	18	8	16
25	67.5	77.5	27.5	32.5	24	10	57.5	67.5	5	14	20	10	20

Bore size (mm)	L		L ₁		N	RR
	5st	10st	5st	10st		
12	8.5	13.5	19	24	M4 x 0.7	6
16	8.5	13.5	20.5	25.5	M4 x 0.7	6
20	9.5	14.5	23.5	28.5	M6 x 1.0	9
25	10	15	27.5	32.5	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.

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual

-X□

Technical

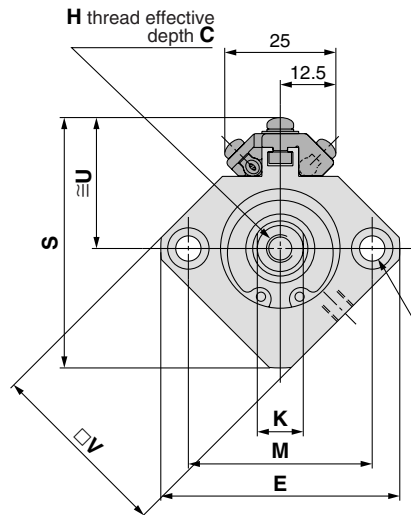
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Series CQ2

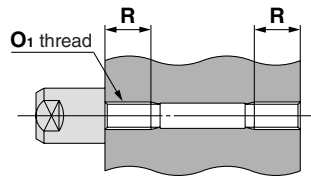
Dimensions

Ø12 to Ø25/Spring Extend with Auto Switch

Basic style (Through-hole): CDQ2B

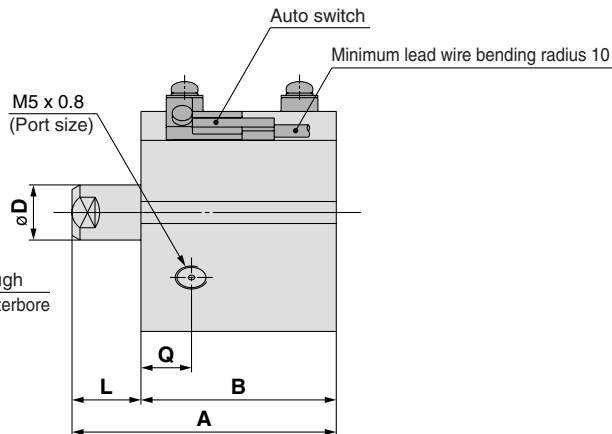


Both ends tapped style: CDQ2A

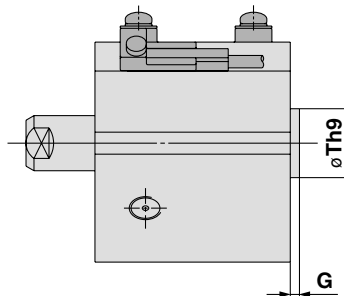


Both Ends Tapped Style (mm)

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

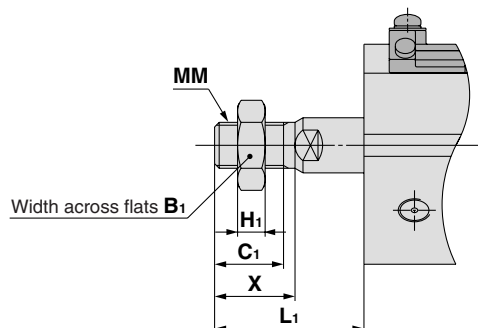


With Boss in Head Side (mm)

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
				5st	10st		
12	8	9	4	19	24	M5 x 0.8	10.5
16	10	10	5	20.5	25.5	M6 x 1.0	12
20	13	12	5	23.5	28.5	M8 x 1.25	14
25	17	15	6	27.5	32.5	M10 x 1.25	17.5



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

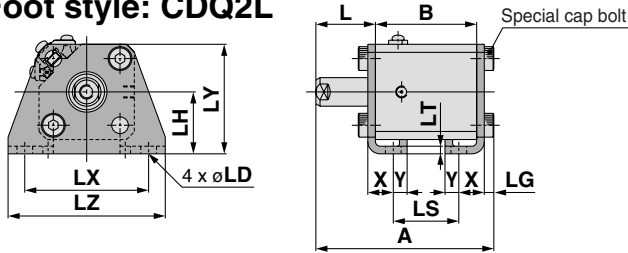
Basic Style

Bore size (mm)	A		B		C	D	E	H	K	L		M	N	O	Q	S	U	V
	5st	10st	5st	10st						5st	10st							
12	45.9	55.9	37.4	42.4	6	6	32	M3 x 0.5	5	8.5	13.5	22	3.5	6.5 depth 3.5	11	35.5	19.5	25
16	44	54	35.5	40.5	8	8	38	M4 x 0.7	6	8.5	13.5	28	3.5	6.5 depth 3.5	10	41.5	22.5	29
20	46	56	36.5	41.5	7	10	47	M5 x 0.8	8	9.5	14.5	36	5.5	9 depth 7	10.5	48	24.5	36
25	47.5	57.5	37.5	42.5	12	12	52	M6 x 1.0	10	10	15	40	5.5	9 depth 7	11	53.5	27.5	40

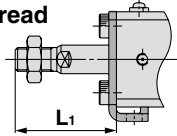


* For details about the rod end nut and accessory brackets, refer to page 620.

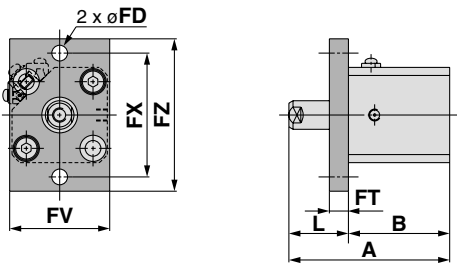
Foot style: CDQ2L



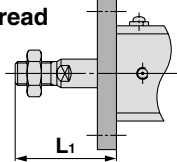
Rod end male thread



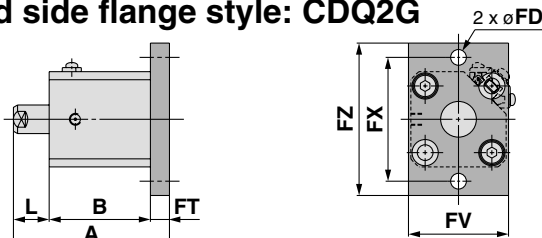
Rod side flange style: CDQ2F



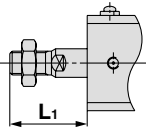
Rod end male thread



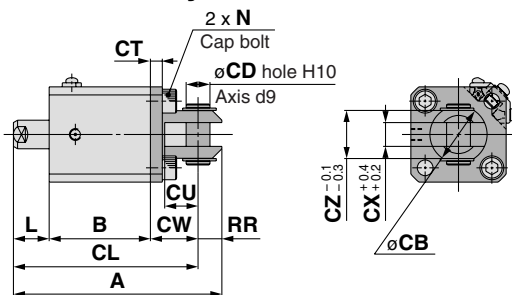
Head side flange style: CDQ2G



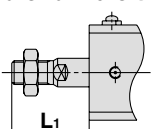
Rod end male thread



Double clevis style: CDQ2D



Rod end male thread



Foot Style

(mm)

Bore size (mm)	A		B		L		L1		LD	LG	LH	LS	
	5st	10st	5st	10st	5st	10st	5st	10st				5st	10st
12	60.7	70.7	37.4	42.4	18.5	23.5	29	34	4.5	2.8	17	25.4	30.4
16	58.8	68.8	35.5	40.5	18.5	23.5	30.5	35.5	4.5	2.8	19	23.5	28.5
20	63.2	73.2	36.5	41.5	19.5	24.5	33.5	38.5	6.6	4	24	24.5	29.5
25	64.7	74.7	37.5	42.5	20	25	37.5	42.5	6.6	4	26	22.5	27.5

Bore size (mm)	LT	LX	LY	LZ	X	Y
12	2	34	29.5	44	8	4.5
16	2	38	33.5	48	8	5
20	3.2	48	42	62	9.2	5.8
25	3.2	52	46	66	10.7	5.8

Foot bracket material: Carbon steel
Surface treatment: Nickel plated

Rod Side Flange Style

(mm)

Bore size (mm)	A		B		FD	FT	FV	FX	FZ	L		L1	
	5st	10st	5st	10st						5st	10st	5st	10st
12	55.9	65.9	37.4	42.4	4.5	5.5	25	45	55	18.5	23.5	29	34
16	54	64	35.5	40.5	4.5	5.5	30	45	55	18.5	23.5	30.5	35.5
20	56	66	36.5	41.5	6.6	8	39	48	60	19.5	24.5	33.5	38.5
25	57.5	67.5	37.5	42.5	6.6	8	42	52	64	20	25	37.5	42.5

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

Head Side Flange Style

(mm)

Bore size (mm)	A		L		L1	
	5st	10st	5st	10st	5st	10st
12	51.4	61.4	8.5	13.5	19	24
16	49.5	59.5	8.5	13.5	20.5	25.5
20	54	64	9.5	14.5	23.5	28.5
25	55.5	65.5	10	15	27.5	32.5

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

(mm)

Bore size (mm)	A		B		CB	CD	CL		CT	CU	CW	CX	CZ
	5st	10st	5st	10st			5st	10st					
12	65.9	75.9	37.4	42.4	12	5	59.9	69.9	4	7	14	5	10
16	65	75	35.5	40.5	14	5	59	69	4	10	15	6.5	12
20	73	83	36.5	41.5	20	8	64	74	5	12	18	8	16
25	77.5	87.5	37.5	42.5	24	10	67.5	77.5	5	14	20	10	20

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

Bore size (mm)	L		L1		N	RR
	5st	10st	5st	10st		
12	8.5	13.5	19	24	M4 x 0.7	6
16	8.5	13.5	20.5	25.5	M4 x 0.7	6
20	9.5	14.5	23.5	28.5	M6 x 1.0	9
25	10	15	27.5	32.5	M6 x 1.0	10

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

Series CQ2

Dimensions

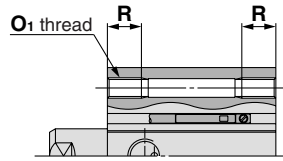
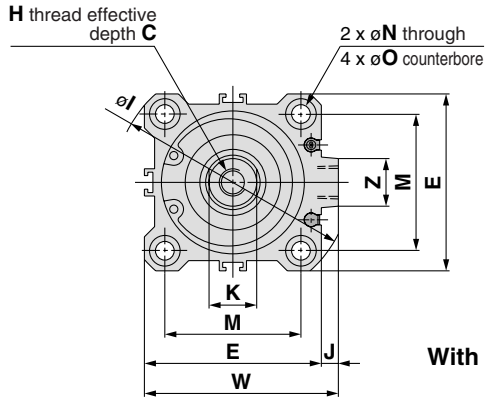
Ø32 to Ø50/Spring Extend with Auto Switch



(In the case of without auto switches, A, B, P and Q dimensions will be only changed. Refer to the dimension chart.)

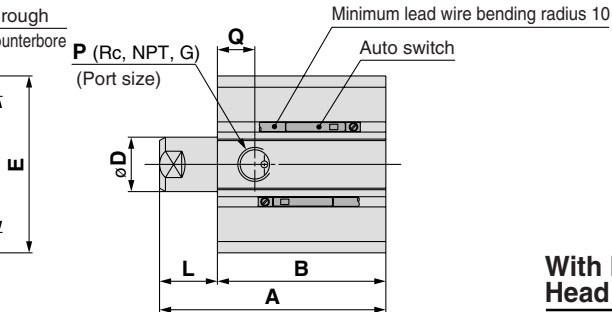
Both ends tapped style: CQ2A/CDQ2A

Basic style (Through-hole): CQ2B/CDQ2B

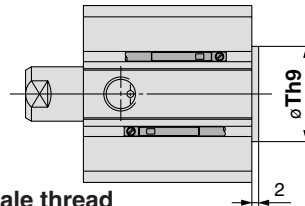


Both Ends Tapped Style (mm)

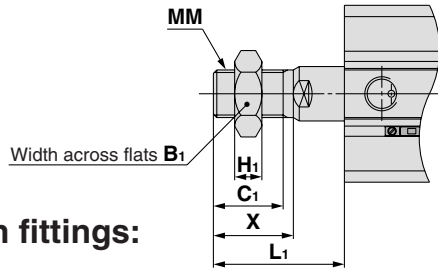
Bore size (mm)	Ø1	R
32	M6 x 1.0	10
40	M6 x 1.0	10
50	M8 x 1.25	14



With boss in head side



Rod end male thread



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

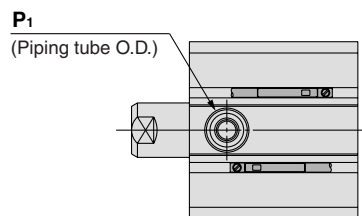
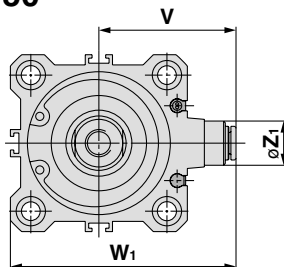
Rod End Male Thread (mm)

Bore size (mm)	B1	C1	H1	L1			MM	X
				5st	10st	20st		
32	22	20.5	8	33.5	38.5	—	M14 x 1.5	23.5
40	22	20.5	8	33.5	38.5	—	M14 x 1.5	23.5
50	27	26	11	—	43.5	53.5	M18 x 1.5	28.5

Built-in One-touch Fittings (mm)

Bore size (mm)	Z1	P1	V	W1
32	13	6	36.5	59
40	13	6	40.5	66.5
50	16	8	50	82

Built-in One-touch fittings: Ø32 to Ø50



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

Basic Style

(mm)

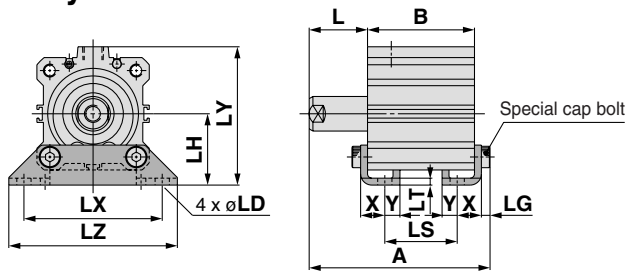
Bore size (mm)	Without auto switch												With auto switch								
	A			B			P			Q			A			B			P	Q	
	5st	10st	20st	5st	10st	20st	5st	10st	20st	5st	10st	20st	5st	10st	20st	5st	10st	20st			
32	40	50	—	28	33	—	M5 x 0.8	1/8	—	11.5	10.5	—	50	60	—	38	43	—	1/8	10.5	
40	46.5	56.5	—	34.5	39.5	—	1/8			11	11	—	56.5	66.5	—	44.5	49.5	—	1/8	11	
50	—	68.5	78.5	—	40.5	50.5	—	1/4			—	10.5	10.5	—	68.5	88.5	—	50.5	60.5	1/4	10.5

Bore size (mm)	C	D	E	H	I	J	K	L			M	N	O	S	U	W	Z
								5st	10st	20st							
32	13	16	45	M8 x 1.25	60	4.5	14	12	17	—	34	5.5	9 depth 7	58.5	31.5	49.5	14
40	13	16	52	M8 x 1.25	69	5	14	12	17	—	40	5.5	9 depth 7	66	35	57	14
50	15	20	64	M10 x 1.5	86	7	17	—	18	28	50	6.6	11 depth 8	80	41	71	19

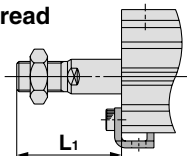


* For details about the rod end nut and accessory brackets, refer to page 620.

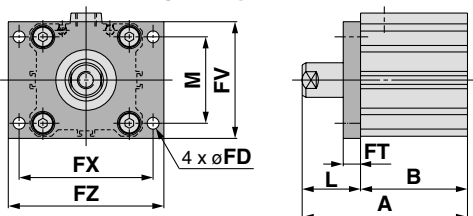
Foot style: CQ2L/CDQ2L



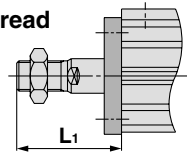
Rod end male thread



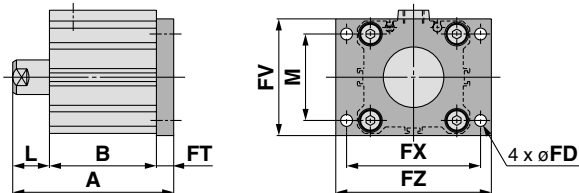
Rod side flange style: CQ2F/CDQ2F



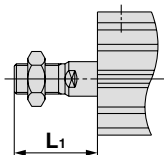
Rod end male thread



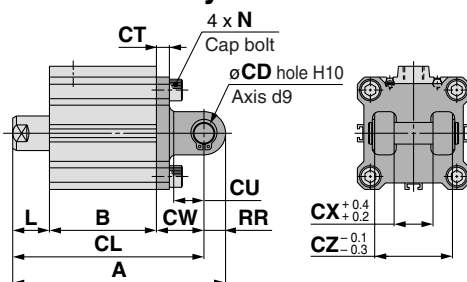
Head side flange style: CQ2G/CDQ2G



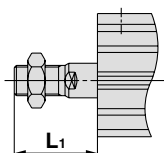
Rod end male thread



Double clevis style: CQ2D/CDQ2D



Rod end male thread



Foot Style

(mm)

Bore size (mm)	Without auto switch									With auto switch								
	A			B			LS			A			B			LS		
	5st	10st	20st	5st	10st	20st	5st	10st	20st	5st	10st	20st	5st	10st	20st	5st	10st	20st
32	57.2	67.2	—	28	33	—	12	17	—	67.2	77.2	—	38	43	—	22	27	—
40	63.7	73.7	—	34.5	39.5	—	18.5	23.5	—	73.7	83.7	—	44.5	49.5	—	28.5	33.5	—
50	—	76.7	96.7	—	40.5	50.5	—	17.5	27.5	—	86.7	106.7	—	50.5	60.5	—	27.5	37.5

Bore size (mm)	L			L1			LD	LG	LH	LX	LY	LZ	X	Y
	5st	10st	20st	5st	10st	20st								
32	22	27	—	43.5	48.5	—	6.6	4	30	57	57	71	11.2	5.8
40	22	27	—	43.5	48.5	—	6.6	4	33	64	64	78	11.2	7
50	—	28	38	—	53.5	63.5	9	5	39	79	78	95	14.7	8

Foot bracket material: Carbon steel
Surface treatment: Nickel plated

Rod Side Flange Style

(mm)

Bore size (mm)	Without auto switch						With auto switch						FD	FT	FV	FX	FZ
	A			B			A			B							
	5st	10st	20st	5st	10st	20st	5st	10st	20st	5st	10st	20st					
32	50	60	—	28	33	—	60	70	—	38	43	—	5.5	8	45	56	65
40	56.5	66.5	—	34.5	39.5	—	66.5	76.5	—	44.5	49.5	—	5.5	8	54	62	72
50	—	68.5	88.5	—	40.5	50.5	—	78.5	98.5	—	50.5	60.5	6.6	9	67	76	89

Bore size (mm)	L			L1			M
	5st	10st	20st	5st	10st	20st	
32	22	27	—	43.5	48.5	—	34
40	22	27	—	43.5	48.5	—	40
50	—	28	38	—	53.5	63.5	50

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

Head Side Flange Style

(mm)

Bore size (mm)	Without auto switch						With auto switch						L			L ₁		
	A			A														
	5st	10st	20st	5st	10st	20st	5st	10st	20st	5st	10st	20st						
32	48	58	—	58	68	—	12	17	—	33.5	38.5	—						
40	45.5	64.5	—	64.5	74.5	—	12	17	—	33.5	38.5	—						
50	—	67.5	87.5	—	77.5	97.5	—	18	28	—	43.5	53.5						

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

(mm)

Bore size (mm)	Without auto switch									With auto switch								
	A			B			CL			A			B			CL		
	5st	10st	20st	5st	10st	20st	5st	10st	20st	5st	10st	20st	5st	10st	20st	5st	10st	20st
32	70	80	—	28	33	—	60	70	—	80	90	—	38	43	—	70	80	—
40	78.5	88.5	—	34.5	39.5	—	68.5	78.5	—	88.5	98.5	—	44.5	49.5	—	78.5	88.5	—
50	—	100.5	120.5	—	40.5	50.5	—	86.5	106.5	—	110.5	130.5	—	50.5	60.5	—	96.5	116.5

Bore size (mm)	CD	CT	CU	CW	CX	CZ	L			L1		
							5st	10st	20st	5st	10st	20st
32	10	5	14	20	18	36	12	17	—	33.5	38.5	—
40	10	6	14	22	18	36	12	17	—	33.5	38.5	—
50	14	7	20	28	22	44	—	18	28	—	43.5	53.5

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.

Compact Cylinder: Large Bore Size Type

Double Acting, Single Rod

Series CQ2

ø125, ø140, ø160, ø180, ø200

How to Order

CQ2B 125 - 30 DC -

With auto switch **CDQ2B 125 - 30 DC - M9BW -**

With auto switch
(Built-in magnet)

Mounting style

B Through-hole/Both ends tapped common (Standard)

* Cylinder mounting bolts are not included.
Order them separately referring to
"Mounting Bolt for CQ2" on page 660.

Bore size

125	125 mm
140	140 mm
160	160 mm
180	180 mm
200	200 mm

Port thread type

Nil	Rc
TN	NPT
TF	G

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) CDQ2B140-30DC

Cylinder stroke (mm)

For "Standard Stroke", refer to page 659.

Number of auto switches

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

Auto switch

Nil	Without auto switch
-----	---------------------

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

Body option

Nil	Standard (Rod end female thread)
M	Rod end male thread

Cushion

C	Rubber Bumper
---	---------------

Action

D	Double acting
---	---------------

Made to Order
(Refer to page 659 for details.)

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		Auto switch model				Lead wire length (m)					Pre-wired connector	Applicable load		
					DC	AC	Perpendicular		In-line		0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)				
							ø125 to ø160	ø180, ø200	ø125 to ø160	ø180, ø200									
Solid state switch	_____	Grommet	Yes	3-wire (NPN)	24V	5V, 12V	—	M9NV		M9N		●	●	●	○	—	○	IC circuit	Relay, PLC
		3-wire (PNP)		M9PV		M9P		●	●	●	○	—	○						
	Connector	2-wire		12V		M9BV		M9B		●	●	●	○	—	○	—			
		J79C		—		●		—	●	●	●	—	—						
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)	24V	5V, 12V	—	M9N WV		M9N W		●	●	●	○	—	○	IC circuit	
				3-wire (PNP)		M9P WV		M9P W		●	●	●	○	—	○				
	Water resistant (2-color indication)			2-wire		12V		M9B WV		M9B W		●	●	●	○	—	○	—	
				3-wire (NPN)		5V, 12V		M9N AV		M9N A		○	○	●	○	—	○		
	With diagnostic output (2-color indication)	Grommet		3-wire (PNP)	12V	M9P AV		M9P A		○	○	●	○	—	○	—			
				2-wire	12V	M9B AV		M9B A		○	○	●	○	—	○				
				4-wire	5V, 12V	—		F79F	—		●	—	●	○	—	○	IC circuit		
Reed switch	_____	Grommet	Yes	3-wire (NPN equivalent)	—	5V	—	A96V		A96		●	—	●	—	—	—	IC circuit	Relay, PLC
						—		200V	A72	—		A72H	—		●	—	●		
		Connector		2-wire	24V	12V	100V	A93V		A93		●	—	●	—	—	—	—	
						5V, 12V	100V or less	A90V		A90		●	—	●	—	—	—		
	Grommet	2-wire		12V		—	A73C		—		●	—	●	●	●	—	—		
				5V, 12V		24V or less	A80C		—		●	—	●	●	●	—		IC circuit	
					—	—	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.
* ø125 to ø200 D-A9/M9 types can be mounted only with an installation groove.
(Using BMG2-012)

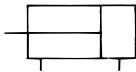
* There are other applicable auto switches other than the listed above. For details, refer to page 769.
* For details about auto switches with pre-wired connector, refer to pages 1328 and 1329.

Compact Cylinder: Large Bore Size Type Double Acting, Single Rod *Series CQ2*



JIS Symbol

Double acting,
Single rod



Made to Order Specifications
(For details, refer to pages 1401 to 1508.)

Symbol	Specifications
—XB10	Intermediate stroke (Using exclusive body)
—X271	Fluororubber seals ø125 to 160 only.



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

- For installation and removal, use an appropriate pair of pliers (tool for installing a type C retaining ring).
- 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.

Specifications

Bore size	125	140	160	180	200
Action	Double acting, Single rod				
Fluid	Air				
Proof pressure	1.5 MPa			1.05 MPa	
Maximum operating pressure	1.0 MPa			0.7 MPa	
Minimum operating pressure	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			20 to 400 mm/s	
Allowable kinetic energy J	7.4	9.8	12.4		
Stroke length tolerance	+1.4mm ^(Note) 0				

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

Standard Stroke

(mm)

Bore size (mm)	Standard stroke
125, 140, 160, 180, 200	10, 20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250, 300

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 658.	Suffix "-XB10" to the end of standard model no. on page 658.
Description	Dealing with the stroke by the 5 mm interval is available by installing spacer with standard stroke cylinder.	Dealing with the stroke by the 1 mm interval by using an exclusive body with the specified stroke.
Stroke range	Bore size	Bore size
	125 to 200	125 to 160
Stroke range	Stroke range	Stroke range
	5 to 295	11 to 299
Example	Part no.: CQ2B160-165DC CQ2B160-175DC with 10 mm width spacer. B dimension is 266 mm.	Part no.: CQ2B160-165DC-XB10 Makes 165 stroke tube. B dimension is 256 mm.

Type

Bore size (mm)				125	140	160	180	200
Pneumatic	Mounting	Through-hole/Both ends tapped (Common)		●	●	●	●	●
	Built-in magnet			●	●	●	●	●
	Piping	Screw-in type	—	Rc 3/8	Rc 3/8	Rc 3/8	Rc 1/2	Rc 1/2
			TN	NPT 3/8	NPT 3/8	NPT 3/8	NPT 1/2	NPT 1/2
			TF	G 3/8	G 3/8	G 3/8	G 1/2	G 1/2
	Rod end male thread			●	●	●	●	●
	Rubber bumper (Standard)			●	●	●	●	●

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.

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

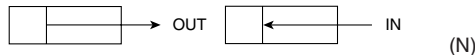
-X□

Individual
-X□

Technical
data

Series CQ2

Theoretical Output



Bore size (mm)	Operating direction	Operating pressure (MPa)		
		0.3	0.5	0.7
125	IN	3376	5627	7878
	OUT	3682	6136	8590
140	IN	4313	7188	10063
	OUT	4618	7697	10776
160	IN	5655	9425	13195
	OUT	6032	10053	14074
180	IN	7257	12095	16933
	OUT	7634	12724	17813
200	IN	9048	15080	21112
	OUT	9425	15708	21991

Mass

Without Auto Switch

Bore size (mm)	Cylinder stroke (mm)												
	10	20	30	40	50	75	100	125	150	175	200	250	300
125	5.48	5.74	6.00	6.26	6.52	7.17	7.81	8.46	9.11	9.76	10.41	11.71	13.01
140	6.49	6.78	7.08	7.38	7.68	8.42	9.17	9.91	10.66	11.40	12.15	13.64	15.13
160	8.96	9.31	9.67	10.03	10.39	11.29	12.19	13.09	13.99	14.89	15.79	17.59	19.38
180	11.97	12.39	12.81	13.24	13.67	14.73	15.80	16.87	17.93	18.99	20.05	22.18	24.31
200	15.30	15.87	16.35	16.84	17.33	18.55	19.77	20.99	22.21	23.43	24.74	27.08	29.52

Built-in Magnet

Bore size (mm)	Cylinder stroke (mm)												
	10	20	30	40	50	75	100	125	150	175	200	250	300
125	5.54	5.80	6.06	6.32	6.58	7.23	7.87	8.52	9.17	9.82	10.47	11.77	13.07
140	6.56	6.85	7.15	7.45	7.75	8.49	9.24	9.98	10.73	11.47	12.22	13.71	15.20
160	9.04	9.39	9.75	10.11	10.47	11.37	12.27	13.17	14.07	14.97	15.87	17.67	19.46
180	12.05	12.47	12.89	13.32	13.75	14.81	15.88	16.95	18.01	19.07	20.13	22.26	24.39
200	15.38	15.95	16.43	16.92	17.41	18.63	19.85	21.07	22.29	23.51	24.82	27.16	29.60

Additional Mass

Bore size (mm)		125	140	160, 180, 200
Rod end male thread	Male thread	0.31	0.31	0.48
	Nut	0.16	0.16	0.26

Calculation: (Example) **CDQ2B125-30DCM**
 • Cylinder mass: CDQ2B125-30DC..... 6.06 kg
 • Option mass: Rod end male thread..... 0.47 kg
 6.53 kg

Add the mass of auto switches and mounting brackets.

Auto Switch Mounting Bracket Mass

Mounting bracket part no.	Applicable bore size (mm)	Mass (g)
BQ-2	ø125 to ø160	1.5

For auto switch mass, refer to pages 1263 to 1371.

Mounting Bolt for CQ2

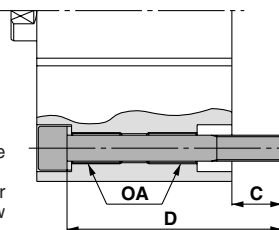
Mounting method: Mounting bolt for through-hole mounting style of CQ2B is available as an option.

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

Example) Bolt M12 x 100L 4 pcs.

Note 1) To install a through-hole type mounting bolt, make sure to use the flat washer that is provided.

Note 2) Please consult with SMC regarding mounting bolts for strokes that exceed 100 mm. Use the OA screw provided on the cylinder tube to secure the cylinder.



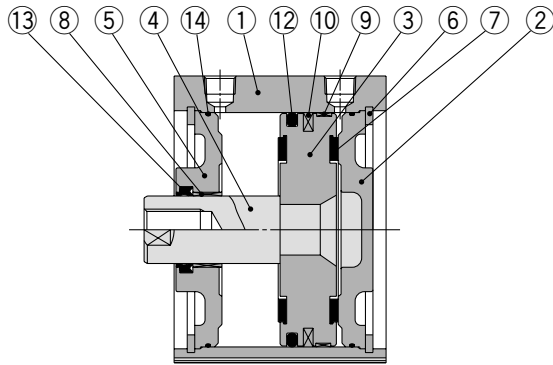
Cylinder model	C	D	Mounting bolt size
C□Q2B125-140-10DC	22.9	100	M12 x 100L
-20DC		110	x 110L
-30DC		120	x 120L
-40DC		130	x 130L
-50DC		140	x 140L
-75DC		165	x 165L
-100DC		190	x 190L
C□Q2B160-10DC	27.7	110	M14 x 110L
-20DC		120	x 120L
-30DC		130	x 130L
-40DC		140	x 140L
-50DC		150	x 150L
-75DC		175	x 175L
-100DC		200	x 200L

Cylinder model	C	D	Mounting bolt size
C□Q2B180-10DC	36	125	M18 x 125L
-20DC		135	x 135L
-30DC		145	x 145L
-40DC		155	x 155L
-50DC		165	x 165L
-75DC		190	x 190L
-100DC		215	x 215L
C□Q2B200-10DC	39	135	M18 x 135L
-20DC		145	x 145L
-30DC		155	x 155L
-40DC		165	x 165L
-50DC		175	x 175L
-75DC		200	x 200L
-100DC		225	x 225L

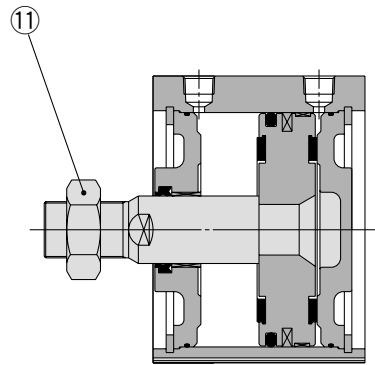
Material: Chromium molybdenum steel
 Surface treatment: Nickel plated

Construction

Double acting, Single rod



Rod end male thread



Component Parts

No.	Description	Material	Note
1	Cylinder tube	Aluminum alloy	Hard anodized
2	Head cover	Carbon steel	Nickel plated
3	Piston	Aluminum alloy	Chromated
4	Piston rod	Carbon steel	Hard chrome plated
5	Rod cover	Carbon steel	Nickel plated
6	Retaining ring	Carbon tool steel	Phosphate coated
7	Bumper	Urethane	
8	Bushing	Bearing alloy	
9	Wear ring	Resin	
10	Magnet	—	For only CDQ2B□
11	Rod end nut	Carbon steel	Nickel plated
12	Piston seal	NBR	
13	Rod seal	NBR	
14	Tube gasket	NBR	

Replacement Parts: Seal Kit

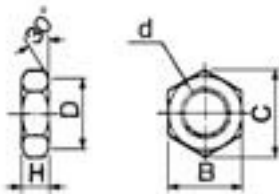
Bore size (mm)	Kit no.	Contents
125	CQ2B125-PS	Set of left nos. 12, 13, 14
140	CQ2B140-PS	
160	CQ2B160-PS	
180	CQ2B180-PS	
200	CQ2B200-PS	

* 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)

Rod End Nut



Material: Carbon steel
Surface treatment: Nickel plated

Part no.	Applicable bore size (mm)	d	H	B	C	D
NT-12	125, 140	M30 x 1.5	18	46	53.1	44
NT-16	160, 180, 200	M36 x 1.5	21	55	63.5	53

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual
-X□

Technical
data

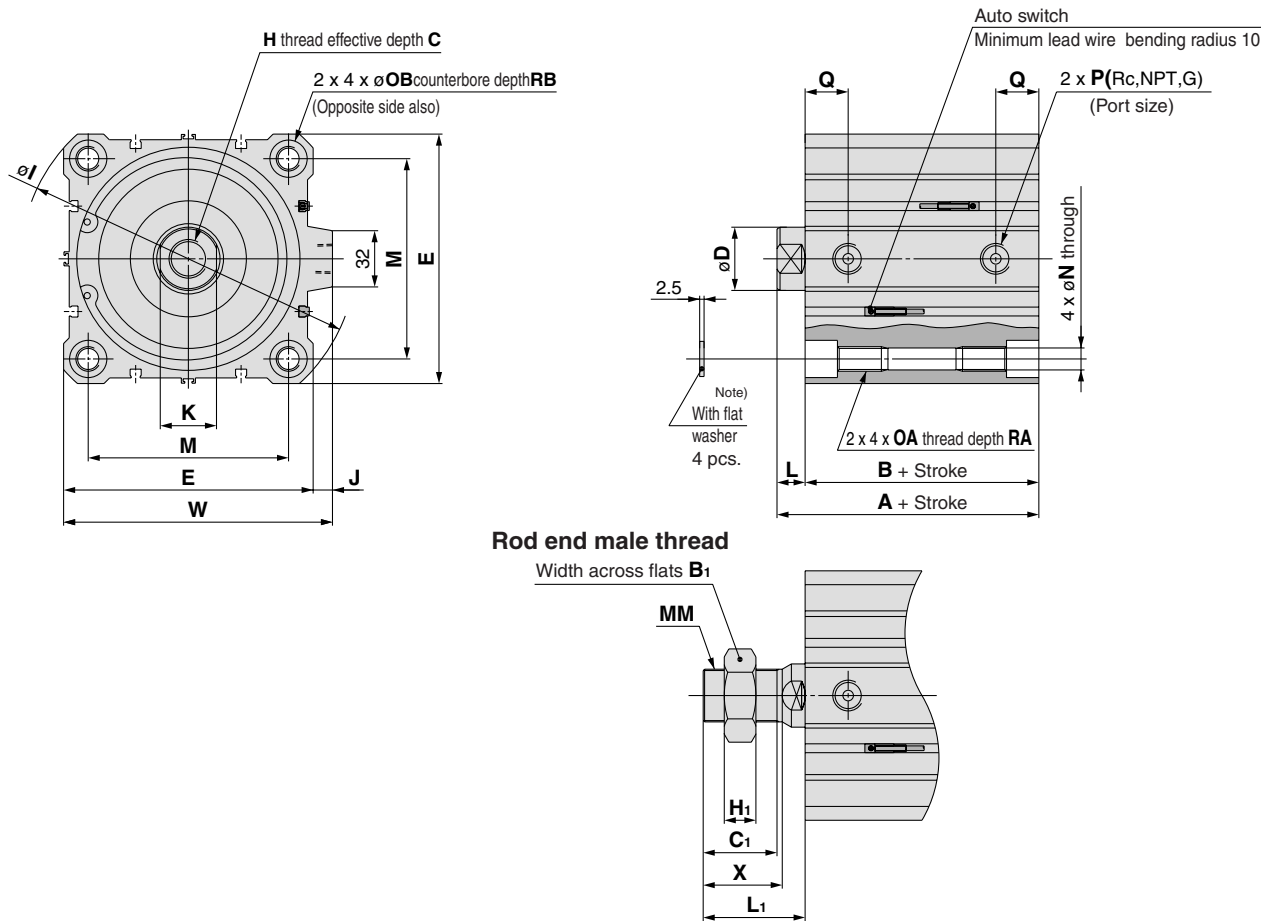
Series CQ2

Dimensions

Ø125, Ø140, Ø160

Basic style (Through-hole): C□Q2B

The dimensions are the same with or without an auto switch.



Rod End Male Thread (mm)						
Bore size (mm)	B ₁	C ₁	H ₁	L ₁	MM	X
125	46	42	18	58	M30 x 1.5	45
140	46	42	18	58	M30 x 1.5	45
160	55	47	21	64	M36 x 1.5	50

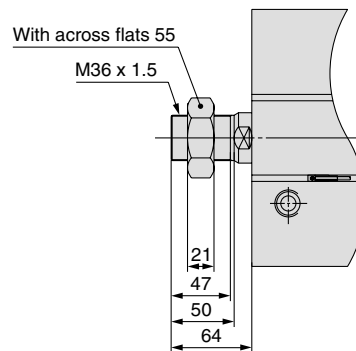
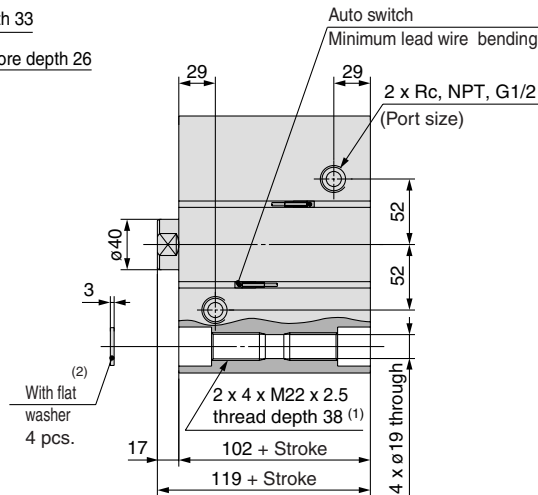
(mm)																				
Bore size (mm)	Standard stroke range	A	B	C	D	E	H	I	J	K	L	M	N	OA	OB	P	Q	RA	RB	W
125	10, 20, 30, 40, 50	99	83	30	36	142	M22 x 2.5	190	11	32	16	114	12.5	M14 x 2	21.2	3/8	24.5	25	18.4	153
140	75, 100, 125, 150	99	83	30	36	158	M22 x 2.5	210	10	32	16	128	12.5	M14 x 2	21.2	3/8	24.5	25	18.4	168
160	175, 200, 250, 300	108	91	33	40	178	M24 x 3	238	10	36	17	144	14.5	M16 x 2	24.2	3/8	27.5	28	21.2	188

Note) Be sure to use the attached plain washer for mounting, cylinder with through-holes.

Series CQ2

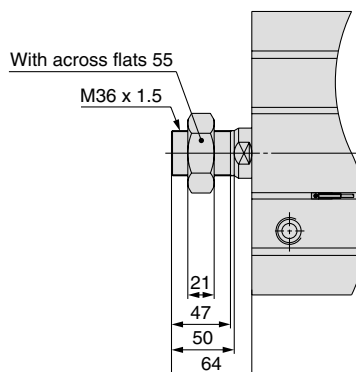
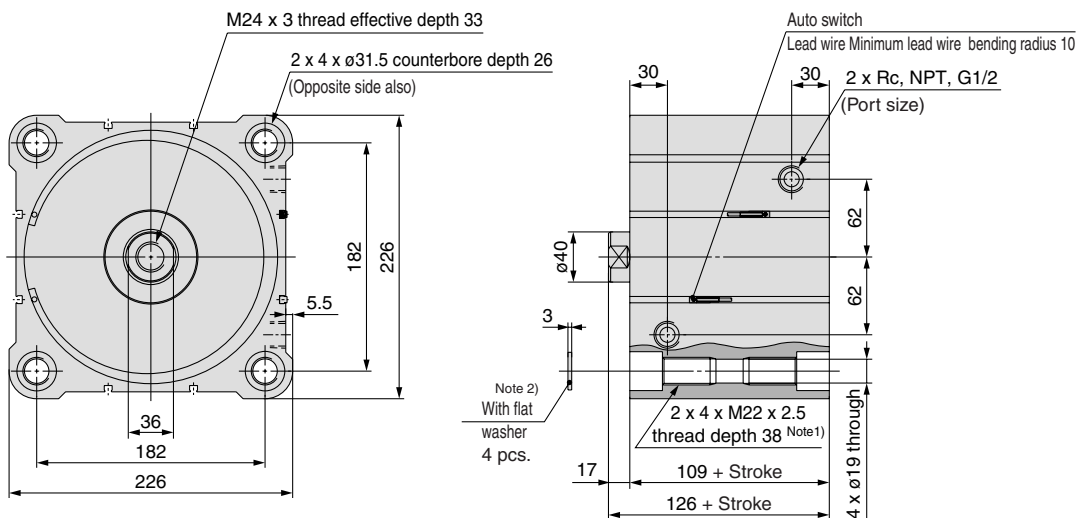
Ø180

Auto switch
Minimum lead wire bending radius 10



Note 2) Be sure to use the attached plain washer for mounting, cylinder with through-holes.

Ø200



Note 2) Be sure to use the attached plain washer for mounting, cylinder with through-holes.

MU

Technical data

Compact Cylinder: Large Bore Size Type

Double Acting, Double Rod

Series CQ2W

ø125, ø140, ø160, ø180, ø200

How to Order

CQ2WB125 **30DC**

With auto switch **CDQ2WB125** **30DC** **M9BW**

With auto switch
(Built-in magnet)

Form
W Double rod

Mounting style
B Through-hole/Both ends tapped common (Standard)

* Cylinder mounting bolts are not included. Order them separately referring to "Mounting Bolt for CQ2" on page 667.

Bore size

125	125 mm
140	140 mm
160	160 mm
180	180 mm
200	200 mm

Port thread type

Nil	Rc
TN	NPT
TF	G

Number of auto switches

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

Auto switch

Nil	Without auto switch
-----	---------------------

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

Body option

Nil	Standard (Rod end female thread)
M	Rod end male thread

Cushion
C Rubber Bumper

Action
D Double acting

Cylinder stroke (mm)
For "Standard Stroke", refer to page 665.

Made to Order
(Refer to page 665 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) CDQ2WB140-30DC

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

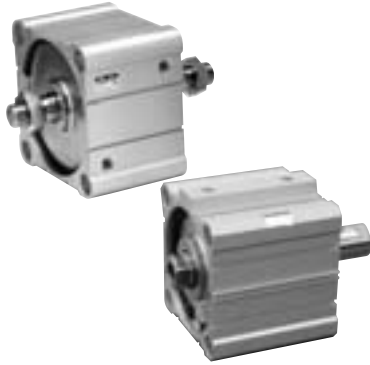
Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model				Lead wire length (m)					Pre-wired connector	Applicable load			
					DC	AC	Perpendicular		In-line		0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)					
							ø125 to ø160	ø180, ø200	ø125 to ø160	ø180, ø200										
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24V	5V, 12V	—	M9NV		M9N		●	●	●	○	—	○	IC circuit	Relay, PLC	
		3-wire (PNP)		M9PV		M9P		●	●	●	○	—	○							
	Diagnostic indication (2-color indication)	Grommet		2-wire		12V		M9BV		M9B		●	●	●	○	—	○	—		
				J79C		—		●	—	●	●	●	—							
				3-wire (NPN)		5V, 12V		M9NWV		M9NW		●	●	●	○	—	○			IC circuit
				3-wire (PNP)		12V		M9PWV		M9PW		●	●	●	○	—	○			
				2-wire		12V		M9BWV		M9BW		●	●	●	○	—	○			—
				3-wire (NPN)		5V, 12V		M9NAV		M9NA		○	○	●	○	—	○			
				3-wire (PNP)		12V		M9PAV		M9PA		○	○	●	○	—	○			
				2-wire		12V		M9BAV		M9BA		○	○	●	○	—	○			—
	4-wire	5V, 12V		—		F79F		—		●	—	●	○	—	○					
	With diagnostic output (2-color indication)																			
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent) 2-wire	—	5V	—	A96V		A96		●	—	●	—	—	—	IC circuit	Relay, PLC	
						—	200V	A72	—		A72H	—		●	—	●	—	—		—
						12V	100V	A93V		A93		●	—	●	—	—	—	—		
						5V, 12V	100V or less	A90V		A90		●	—	●	—	—	—	—		
	Diagnostic indication (2-color indication)	Connector	No			12V	—	A73C		—		●	—	●	●	●	—	—		IC circuit
						5V, 12V	24V or less	A80C		—		●	—	●	●	●	—	—		IC circuit
						—	—	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.
* ø125 to ø200 D-A9/M9 types can be mounted only with an installation groove.
(Using BMG2-012)

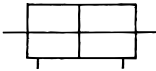
* There are other applicable auto switches other than the listed above. For details, refer to page 769.
* For details about auto switches with pre-wired connector, refer to pages 1328 and 1329.

Compact Cylinder: Large Bore Size Type Double Acting, Double Rod *Series CQ2W*



JIS Symbol

Double acting,
Double rod



Specifications

Bore size	125	140	160	180	200
Action	Double acting, Double rod				
Fluid	Air				
Proof pressure	1.5 MPa			1.05 MPa	
Maximum operating pressure	1.0 MPa			0.7 MPa	
Minimum operating pressure	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			20 to 400 mm/s	
Allowable kinetic energy J	7.4	9.8	12.4		
Stroke length tolerance	+1.4mm ^(Note) 0				

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

Standard Stroke

(mm)

Bore size (mm)	Standard stroke
125, 140, 160, 180, 200	10, 20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250, 300

Manufacture of Intermediate Stroke

Description	Spacer is installed in the standard stroke body.	Exclusive body (-XB10)
Part no.	Suffix "-X633" to the end of standard model no. on page 664.	Suffix "-XB10" to the end of standard model no. on page 664.
Description	Dealing with the stroke by the 5 mm interval is available by installing spacer with standard stroke cylinder.	Dealing with the stroke by the 1 mm interval by using an exclusive body with the specified stroke.
Stroke range	Bore size	Bore size
	125 to 160	125 to 160
Stroke range	Stroke range	Stroke range
	5 to 295	11 to 299
Example	Part no.: CQ2WB160-165DC-X633 CQ2WB160-175DC with 10 mm width spacer. B dimension is 266 mm.	Part no.: CQ2WB160-165DC-XB10 Makes 165 stroke tube. B dimension is 256 mm.



Made to Order Specifications

(For details, refer to pages 1401, 1508 and 1511.)

Symbol	Specifications
—XB10	Intermediate stroke (Using exclusive body)
—X235	Change of piston rod end for double rod type cylinder
—X271	Fluororubber seals ø125 to 160 only.
—X633	Intermediate stroke of double rod type ø125 to 160 only.

* -X633 intermediate stroke with 5 mm intervals only

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.

Type

Bore size (mm)		125	140	160	180	200
Pneumatic	Mounting	Through-hole/Both ends tapped (Common)	●	●	●	●
	Built-in magnet		●	●	●	●
	Piping	Screw-in type	—	Rc 3/8	Rc 3/8	Rc 3/8
			TN	NPT 3/8	NPT 3/8	NPT 3/8
			TF	G 3/8	G 3/8	G 3/8
	Rod end male thread		●	●	●	●
	Rubber bumper (Standard)		●	●	●	●

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual
-X□

Technical
data

⚠ 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

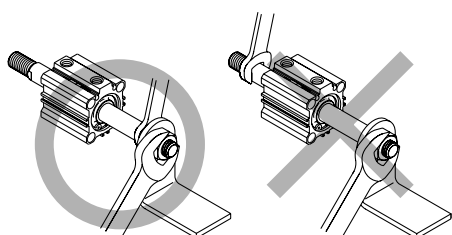
1. For installation and removal, use an appropriate pair of pliers (tool for installing a type C retaining ring).

- 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

⚠ Warning

Do not apply reverse torque to the piston rods sticking out from both sides of this cylinder at the same time. The torque makes connection threads inside loosen, which may cause an accident or malfunction. Install or remove loads while the piston rod width across flats is secured. Do not fix the other side of the piston rod width across flats and apply reverse torque.



Theoretical Output

(N)

Bore size (mm)	Operating pressure (MPa)		
	0.3	0.5	0.7
125	3376	5627	7878
140	4313	7188	10063
160	5655	9425	13195
180	7257	12095	16933
200	9048	15080	21112

Mass

Without Auto Switch

(kg)

Bore size (mm)	Cylinder stroke (mm)												
	10	20	30	40	50	75	100	125	150	175	200	250	300
125	5.71	6.02	6.34	6.68	7.02	7.87	8.71	9.56	10.41	11.26	12.11	13.81	15.50
140	6.73	7.07	7.43	7.80	8.18	9.13	10.07	11.01	11.96	12.90	13.84	15.73	17.62
160	9.26	9.69	10.12	10.58	11.04	12.18	13.33	14.47	15.62	16.76	17.91	20.20	22.49
180	12.18	12.70	13.23	13.75	14.28	15.59	16.90	18.21	19.52	20.83	22.14	24.76	27.39
200	15.63	16.22	16.80	17.39	17.97	19.44	20.91	22.37	22.84	25.30	26.77	29.70	32.63

Built-in Magnet

(kg)

Bore size (mm)	Cylinder stroke (mm)													
	10	20	30	40	50	75	100	125	150	175	200	250	300	
125	5.77	6.08	6.40	6.74	7.08	7.93	8.77	9.62	10.47	11.32	12.17	13.87	15.56	
140	6.80	7.14	7.50	7.87	8.25	9.20	10.14	11.08	12.03	12.97	13.91	15.80	17.69	
160	9.34	9.77	10.20	10.66	11.12	12.26	13.41	14.55	15.70	16.84	17.99	20.28	22.57	
180	12.26	12.78	13.31	13.83	14.36	15.67	16.98	18.29	19.60	20.91	22.22	24.84	27.47	
200	15.71	16.30	16.88	17.47	18.05	19.52	20.99	22.45	22.92	25.38	26.85	29.78	32.71	

Additional Mass

(kg)

Bore size (mm)		125	140	160, 180, 200
Rod end male thread	Male thread	0.62	0.62	0.96
	Nut	0.32	0.32	0.52

Calculation: (Example) **CDQ2WB125-30DCM**

• Cylinder mass: CDQ2WB125-30DC..... 6.40 kg

• Option mass: Rod end male thread..... 0.94 kg

7.34 kg

Add the mass of auto switches and mounting brackets.

Auto Switch Mounting Bracket Mass

Mounting bracket part no.	Applicable bore size (mm)	Mass (g)
BQ-2	ø125 to ø160	1.5

For auto switch mass, refer to pages 1263 to 1371.

Compact Cylinder: Large Size Type Double Acting, Double rod **Series CQ2W**

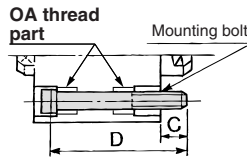
Mounting Bolt for CQ2

Mounting method: Mounting bolt for through-hole mounting style of CQ2WB is available as an option.
Ordering: Add the word "Bolt" in front of the bolts to be used.

Example) Bolt M12 x 100L 4 pcs.

Note 1) To install a through-hole type mounting bolt, make sure to use the flat washer that is provided.

Note 2) Please consult with SMC regarding mounting bolts for strokes that exceed 100 mm. Use the OA screw provided on the cylinder tube to secure the cylinder.

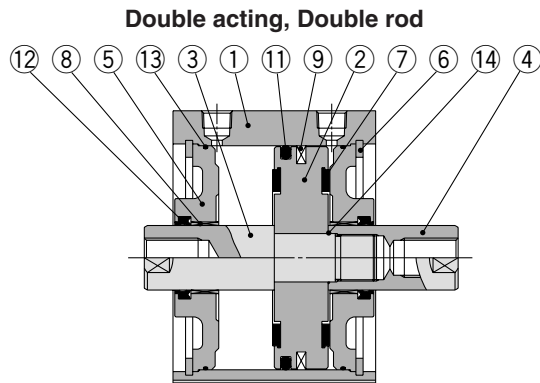


Cylinder model	C	D	Mounting bolt size
C□Q2WB125-140-10DC	22.9	100	M12 x 100L
-20DC		110	x 110L
-30DC		120	x 120L
-40DC		130	x 130L
-50DC		140	x 140L
-75DC		165	x 165L
-100DC		190	x 190L
C□Q2WB160-10DC	27.7	110	M14 x 110L
-20DC		120	x 120L
-30DC		130	x 130L
-40DC		140	x 140L
-50DC		150	x 150L
-75DC		175	x 175L
-100DC		200	x 200L

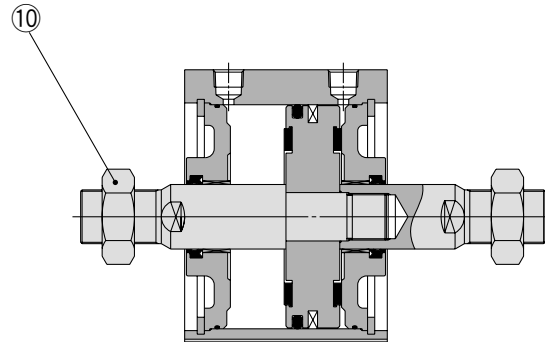
Cylinder model	C	D	Mounting bolt size
C□Q2WB180-10DC	36	125	M18 x 125L
-20DC		135	x 135L
-30DC		145	x 145L
-40DC		155	x 155L
-50DC		165	x 165L
-75DC		190	x 190L
-100DC		215	x 215L
C□Q2WB200-10DC	39	135	M18 x 135L
-20DC		145	x 145L
-30DC		155	x 155L
-40DC		165	x 165L
-50DC		175	x 175L
-75DC		200	x 200L
-100DC		225	x 225L

Material: Chromium molybdenum steel
Surface treatment: Nickel plated

Construction



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 A	Carbon steel	Hard chrome plated
4	Piston rod B	Carbon steel	Hard chrome plated
5	Rod cover	Carbon steel	Nickel plated
6	Retaining ring	Carbon tool steel	Phosphate coated
7	Bumper	Resin	
8	Bushing	Bearing alloy	For only CDQ2WB□
9	Magnet	—	Nickel plated
10	Rod end nut	Carbon steel	
11	Piston seal	NBR	
12	Rod seal	NBR	
13	Tube gasket	NBR	
14	Piston gasket	NBR	

Replacement Parts: Seal Kit

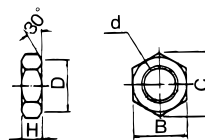
Bore size (mm)	Kit no.	Contents
125	CQ2WB125-PS	Set of left nos. ⑪, ⑫, ⑬
140	CQ2WB140-PS	
160	CQ2WB160-PS	
180	CQ2WB180-PS	
200	CQ2WB200-PS	

* Seal kit includes ⑪, ⑫, ⑬. 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)

Rod End Nut



Material: Carbon steel
Surface treatment: Nickel plated

Part no.	Applicable bore size (mm)	d	H	B	C	D
NT-12	125, 140	M30 x 1.5	18	46	53.1	44
NT-16	160, 180, 200	M36 x 1.5	21	55	63.5	53

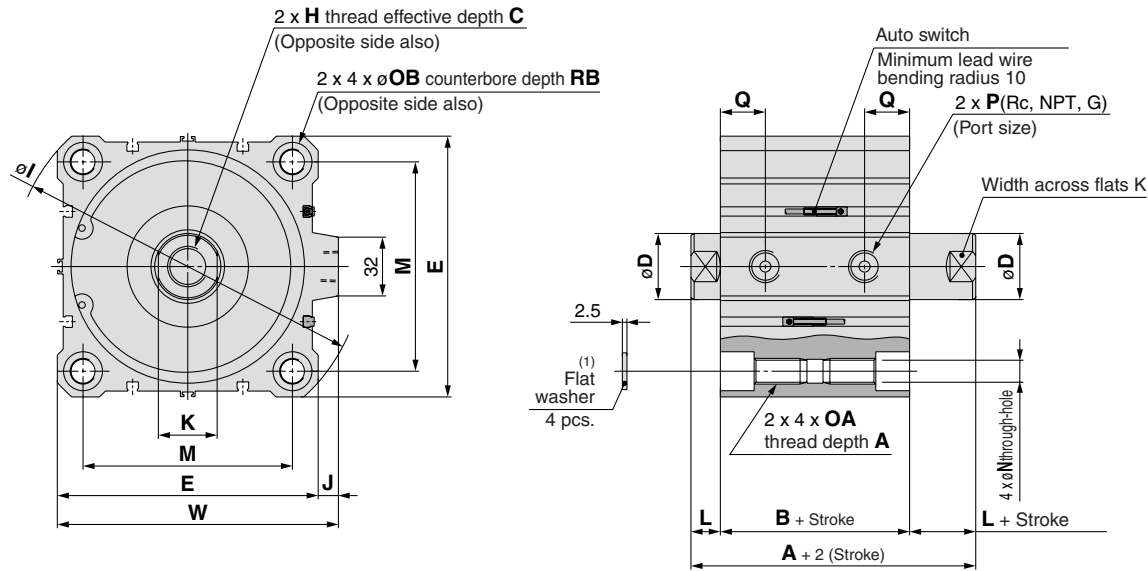
Series CQ2W

Dimensions

ø125, ø140, ø160

Basic style (Through-hole): C□Q2WB

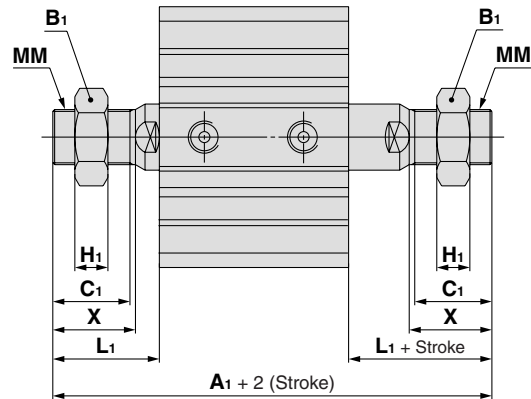
The dimensions are the same with or without an auto switch.



Rod End Male Thread

Bore size (mm)	A ₁	B ₁	C ₁	H ₁	L ₁	MM	X
125	199	46	42	18	58	M30 x 1.5	45
140	199	46	42	18	58	M30 x 1.5	45
160	219	55	47	21	64	M36 x 1.5	50

Rod end male thread



Bore size (mm)	Standard stroke range	A	B	C ⁽²⁾	D	E	H	I	J	K	L	M	N	OA	OB	P	Q	RA	RB	W
125	10, 20, 30, 40, 50	115	83	30 (22.5)	36	142	M22 x 2.5	190	11	32	16	114	12.5	M14 x 2	21.2	3/8	24.5	25	18.4	153
140	75, 100, 125, 150	115	83	30 (22.5)	36	158	M22 x 2.5	210	10	32	16	128	12.5	M14 x 2	21.2	3/8	24.5	25	18.4	168
160	175, 200, 250, 300	125	91	33 (26.5)	40	178	M24 x 3	238	10	36	17	144	14.5	M16 x 2	24.2	3/8	27.5	28	21.2	188

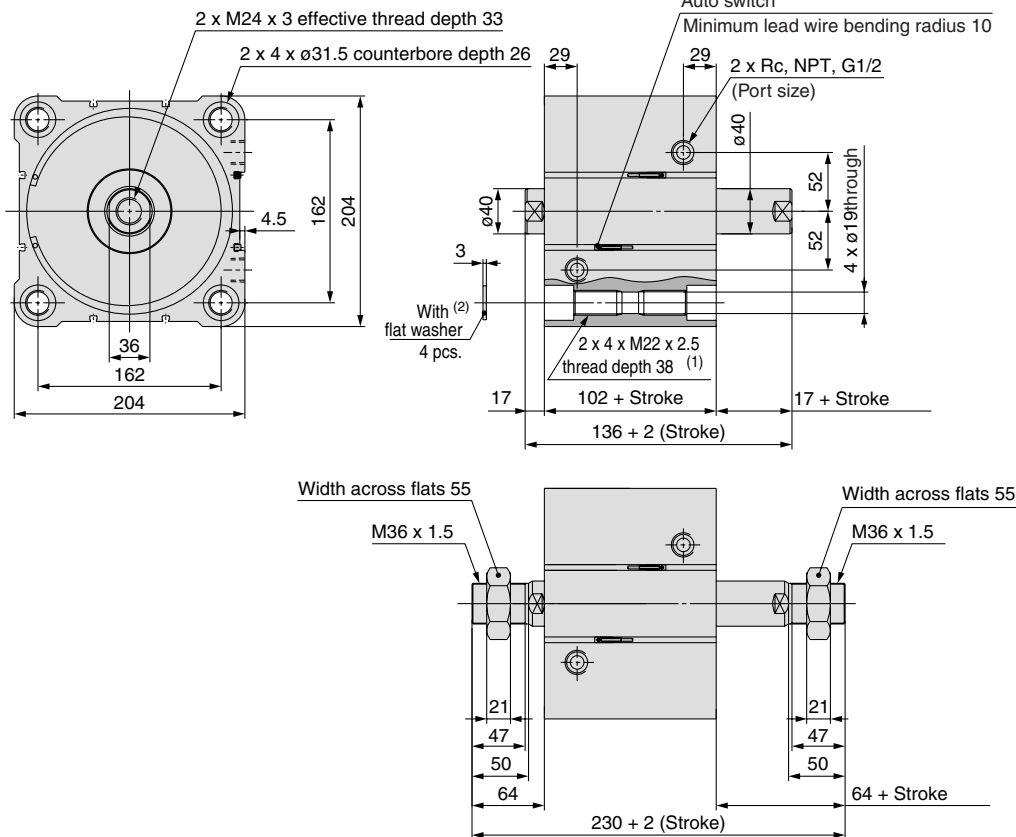
Note 1) Be sure to use the attached plain washer for mounting, cylinder with through-holes.
Note 2) () denotes the values of effective length in one side, only for the 10 stroke type.
* The position of double rod width across flats is not the same.

Compact Cylinder: Large Size Type Double Acting, Double rod **Series CQ2W**

Dimensions

ø180

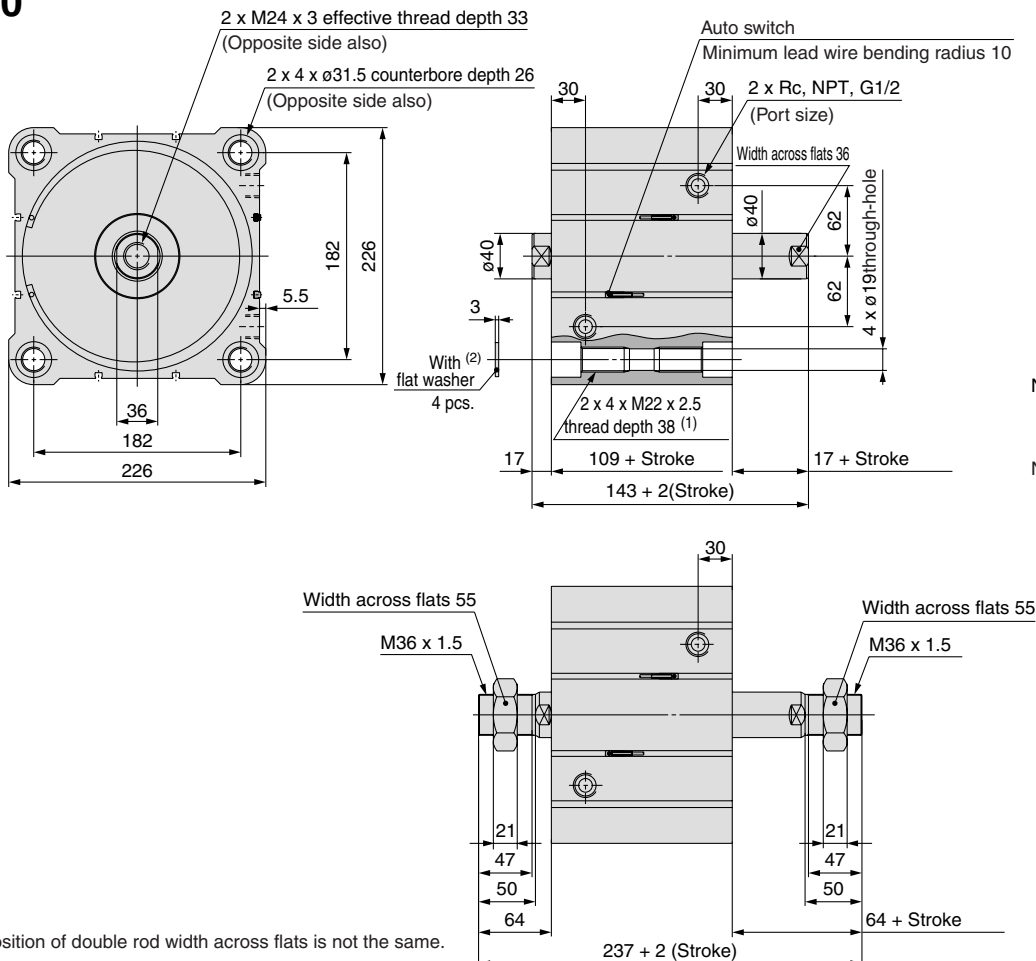
The dimensions are the same with or without an auto switch.



Note 1) In the case of 20 stroke or less, it would come with 2 x 4 x M22 x 2.5 through thread.

Note 2) Be sure to use the attached plain washer for mounting, cylinder with through-holes.

ø200



Note 1) In the case of 20 stroke or less, it would come with 2 x 4 x M22 x 2.5 through thread.

Note 2) Be sure to use the attached plain washer for mounting, cylinder with through-holes.

* The position of double rod width across flats is not the same.

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual

-X□

Technical

data

Compact Cylinder: Long Stroke Type

Double Acting, Single Rod

Series CQ2

ø32, ø40, ø50, ø63, ø80, ø100

How to Order

CQ2 **A** **32** **-** **200** **DC** **-**

With auto switch **CDQ2** **A** **32** **-** **200** **DC** **-** **M9BW** **-**

Mounting style

A	Both ends tapped style
L	Foot style
F	Rod side flange style
G	Head side flange style
D	Double clevis style

* Mounting brackets are shipped together, (but not assembled).

Bore size

32	32 mm	63	63 mm
40	40 mm	80	80 mm
50	50 mm	100	100 mm

Port thread type

Nil	Rc
TN	NPT
TF	G
F	Built-in One-touch fittings (Note)

Note) Bore sizes available w/ One-touch fittings are ø32 to ø63.

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.

Made to Order
(Refer to page 671 for details.)

Auto switch

Nil	Without auto switch
------------	---------------------

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

Body option

Nil	Standard (Rod end female thread)
M	Rod end male thread

Action

D	Double acting
----------	---------------

Cushion

C	Rubber Bumper
----------	---------------

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) CDQ2L40-200DC

Cylinder stroke (mm)
For "Standard Stroke", refer to page 671.

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		Auto switch model		Lead wire length (m)					Pre-wired connector	Applicable load						
					DC	AC	Perpendicular	In-line	0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)								
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24V	5V, 12V	—	M9NV	M9N	●	●	●	○	—	○	IC circuit	Relay, PLC				
		3-wire (PNP)		M9PV				M9P	●	●	●	○	—	○							
	Connector	2-wire		12V				M9BV	M9B	●	●	●	○	—	○			—			
								J79C	—	●	—	●	●	●	—						
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)				5V, 12V	M9NWV	M9NW	●	●	●	○	—			○	IC circuit		
				3-wire (PNP)				5V, 12V	M9PWV	M9PW	●	●	●	○	—			○	—		
	Water resistant (2-color indication)	Grommet		2-wire				12V	M9BWV	M9BW	●	●	●	○	—			○	—		
				3-wire (NPN)				5V, 12V	M9NAV	M9NA	○	○	●	○	—			○	IC circuit		
	With diagnostic output (2-color indication)	Grommet		3-wire (PNP)				5V, 12V	M9PAV	M9PA	○	○	●	○	—			○	—		
				2-wire				12V	M9BAV	M9BA	○	○	●	○	—			○	—		
	Magnetic field resistant (2-color indication)	Grommet		4-wire				5V,12V	—	F79F	●	—	●	○	—			○	IC circuit		
				2-wire (Non-polar)				—	—	P4DW	—	—	●	●	—			○	—		
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5V	—	A96V	A96	●	—	●	—	—	—	IC circuit	—				
								—	200V	A72	A72H	●	—	●	—	—		—	—		
		Connector						2-wire	24V	12V	100V	A93V	A93	●	—	●		—	—	—	—
										5V,12V	100V or less	A90V	A90	●	—	●		—	—	—	IC circuit
	Diagnostic indication (2-color indication)	Grommet			Yes	2-wire	24V	12V		—	A73C	—	●	—	●	●		●	—	—	
								5V,12V		200V or less	A80C	—	●	—	●	●		●	—	IC circuit	
								—	—	A79W	—	●	—	●	—	—		—	—		
								—	—	A79W	—	●	—	●	—	—		—	—		

* Lead wire length symbols: 0.5 m Nil (Example) M9NV
1 m M (Example) M9NW
3 m L (Example) M9NW
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.

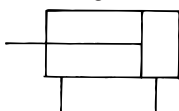
* There are other applicable auto switches other than the listed above. For details, refer to page 769.
* For details about auto switches with pre-wired connector, refer to pages 1328 and 1329.
* When D-A9□(V)/M9□(V)/M9□W(V)/M9□A(V)L types with ø32 to ø50 are mounted on a side other than the port side,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

Compact Cylinder: Long Stroke Type Double Acting, Single Rod *Series CQ2*



JIS Symbol

Double acting,
Single rod



Made to Order Specifications
(For details, refer to pages 1395 to 1498 and 1508.)

Symbol	Specifications
—XB10	Intermediate stroke (Using exclusive body)
—XC4	With heavy duty scraper
—XC6	Piston rod and rod end nut made of stainless steel
—XC26	Double clevis pins include copper pins and a flat washer.
—X271	Fluororubber seals

⚠ 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).

- 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.

Specifications

Bore size	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	0.05 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	0.29	0.52	0.91	1.54	2.71	4.54
Stroke length tolerance	+1.4mm (Note) 0					

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

Standard Stroke

Bore size (mm)	Standard stroke (mm)
32, 40, 50, 63, 80, 100	125, 150, 175, 200, 250, 300

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 670.	Suffix "-XB10" to the end of standard model no. on page 670.
Description	Dealing with the stroke by the 1 mm interval is available by installing spacer with standard stroke cylinder.	Dealing with the stroke by the 1 mm interval by using an exclusive body with the specified stroke.
Stroke range	Bore size 32 to 200	Bore size 32 to 160
	Stroke range 101 to 299	Stroke range 101 to 299
Example	Part no.: CQ2A50-166DC CQ2B50-175DC with 9 mm width spacer. B dimension is 230.5 mm.	Part no.: CQ2B50-166DC-XB10 Makes 166 stroke tube. B dimension is 221.5 mm.

Type

Bore size (mm)			32	40	50	63	80	100	
Pneumatic	Built-in magnet		●	●	●	●	●	●	
	Piping	Screw-in type type	—	Rc 1/8	Rc 1/8	Rc 1/4	Rc 1/4	Rc 3/8	Rc 3/8
			TN	NPT 1/8	NPT 1/8	NPT 1/4	NPT 1/4	NPT 3/8	NPT 3/8
			TF	G 1/8	G 1/8	G 1/4	G 1/4	G 3/8	G 3/8
	Built-in One-touch fittings ^(Note)		ø6/4	ø6/4	ø8/6	ø8/6	—	—	
Rod end male thread			●	●	●	●	●	●	

Note) One-touch fittings cannot be replaced.

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.

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual

-X□

Technical

data

Series CQ2

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

20 – C□Q2A Bore size – Stroke DC(M)

• $\phi 32, \phi 40, \phi 50, \phi 63, \phi 80, \phi 100$

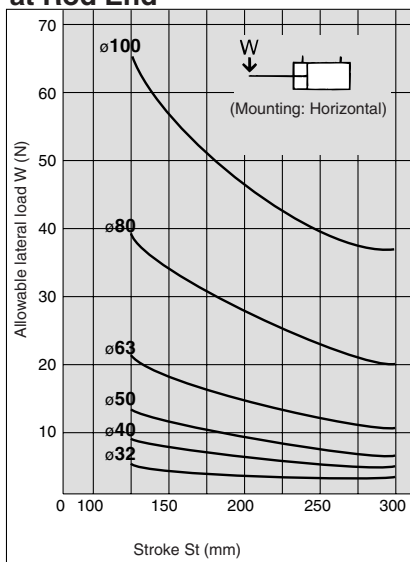
• Copper and fluorine-free series

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)	$\phi 32, \phi 40, \phi 50, \phi 63, \phi 80, \phi 100$
Proof pressure	1.5 MPa
Max. operating pressure	1.0 MPa
Rubber bumper	With (Standard equipment)
Piping	Screw-in piping, Built-in one-touch fitting
Piston speed	50 to 500 mm/S
Mounting	Both ends tapped style
Auto switch	Mountable

Allowable Lateral Load at Rod End



Mounting Bracket Part No.

Bore size (mm)	Foot (1)	Flange	Double clevis
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 1) When ordering foot bracket, order 2 pieces per cylinder.

Note 2) Parts belonging to each bracket are as follows.

Foot or Flange style: Body mounting bolt, Double clevis/Clevis pin, Body mounting bolt, Type C retaining ring for axis.



Theoretical Output

Bore size (mm)	Operating direction	Operating pressure (MPa)		
		0.3	0.5	0.7
32	IN	181	302	422
	OUT	241	402	563
40	IN	317	528	739
	OUT	377	628	880
50	IN	495	825	1155
	OUT	589	982	1374

Bore size (mm)	Operating direction	Operating pressure (MPa)		
		0.3	0.5	0.7
63	IN	841	1402	1962
	OUT	935	1559	2182
80	IN	1361	2268	3175
	OUT	1508	2513	3519
100	IN	2144	3574	5003
	OUT	2356	3927	5498

Mass

Without Auto Switch

Bore size (mm)	Cylinder stroke (mm)					
	125	150	175	200	250	300
32	754	859	965	1070	1279	1490
40	945	1063	1180	1298	1535	1770
50	1469	1650	1832	2007	2376	2739
63	1810	2018	2227	2438	2851	3268
80	3120	3456	3793	4127	4801	5474
100	4956	5374	5790	6020	7042	7875

Built-in Magnet

Bore size (mm)	Cylinder stroke (mm)					
	125	150	175	200	250	300
32	763	868	974	1079	1288	1499
40	959	1077	1194	1312	1549	1784
50	1484	1665	1847	2022	2391	2754
63	1834	2042	2251	2462	2875	3292
80	3144	3480	3817	4151	4825	5498
100	4994	5412	5828	6058	7080	7913

Additional Mass

Bore size (mm)		32	40	50	63	80	100
Rod end male thread	Male thread	26	27	53	53	120	175
	Nut	17	17	32	32	49	116
Foot style (Including mounting bolt)		147	159	253	356	685	1123
Rod side flange style (Including mounting bolt)		165	198	348	534	1017	1309
Head side flange style (Including mounting bolt)		165	198	348	534	1017	1309
Double clevis style (Including pin, retaining ring, bolt)		151	196	393	554	1109	1887

Calculation: (Example) CQ2D32-200DCM

- Cylinder mass: CQ2A32-200DC..... 1070 g
- Option mass: Rod end male thread..... 43 g
- Double clevis style..... 151 g

1264 g

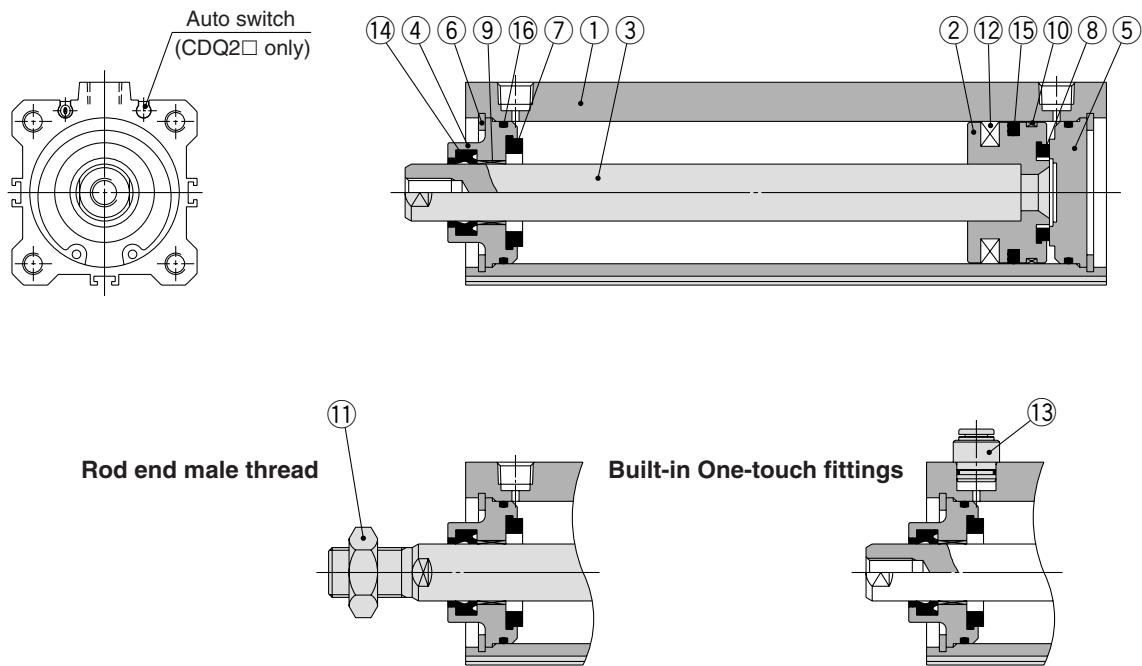
Add the mass of auto switches and mounting brackets when auto switches are mounted.

Auto Switch Mounting Bracket Mass

Mounting bracket part no.	Applicable bore size(mm)	Mass (g)
BQ-2	$\phi 32$ to $\phi 100$	1.5
BQ2-012	$\phi 32$ to $\phi 100$	5

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

Construction



Component Parts

No.	Description	Material	Note
1	Cylinder tube	Aluminum alloy	Hard anodized
2	Piston	Aluminum alloy	Chromated
3	Piston rod	Carbon steel	Hard chrome plated
4	Collar	Aluminum alloy	Anodized
5	Bottom plate	Aluminum alloy	Anodized
6	Retaining ring	Carbon tool steel	Phosphate coated
7	Bumper A	Urethane	
8	Bumper B	Urethane	
9	Bushing	Bearing alloy	
10	Wear ring	Resin	
11	Rod end nut	Carbon steel	Nickel plated
12	Magnet	—	For only CDQ2A□
13	One-touch fitting	—	ø32 to ø63
14*	Rod seal	NBR	
15*	Piston seal	NBR	
16*	Tube gasket	NBR	

Replacement Parts: Seal Kit

Bore size (mm)	Kit no.	Contents
32	CQ2A32-L-PS	Set of left nos. 14, 15, 16
40	CQ2A40-L-PS	
50	CQ2A50-L-PS	
63	CQ2A63-L-PS	
80	CQ2A80-L-PS	
100	CQ2A100-L-PS	

* Seal kit includes 14, 15, 16. 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)

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual
-X□

Technical
data

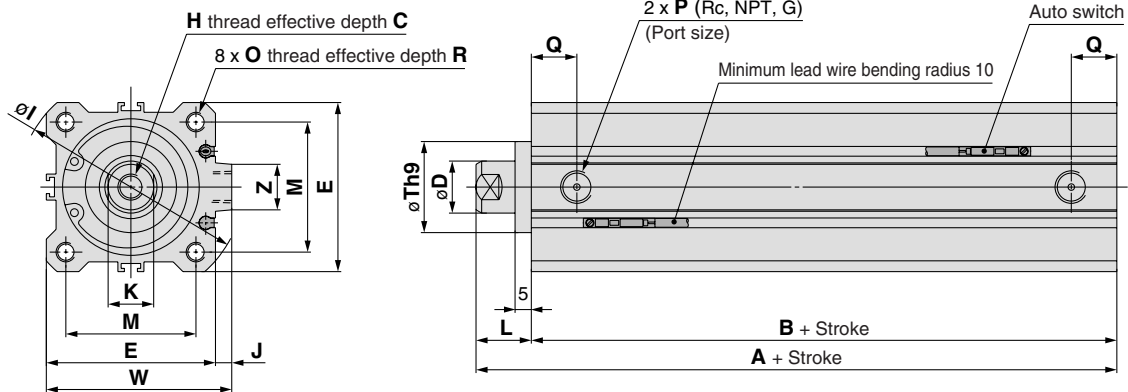
Series CQ2

Dimensions

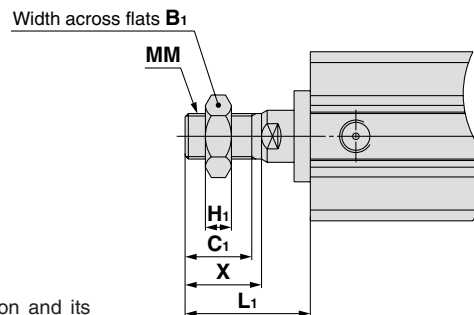
Ø32 to Ø50

Both ends tapped style: C□Q2A

The dimensions are the same with or without an auto switch.



Rod end male thread



Rod End Male Thread

Bore size (mm)	B ₁	C ₁	H ₁	L ₁	MM	X
32	22	20.5	8	38.5	M14 x 1.5	23.5
40	22	20.5	8	38.5	M14 x 1.5	23.5
50	27	26	11	43.5	M18 x 1.5	28.5

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

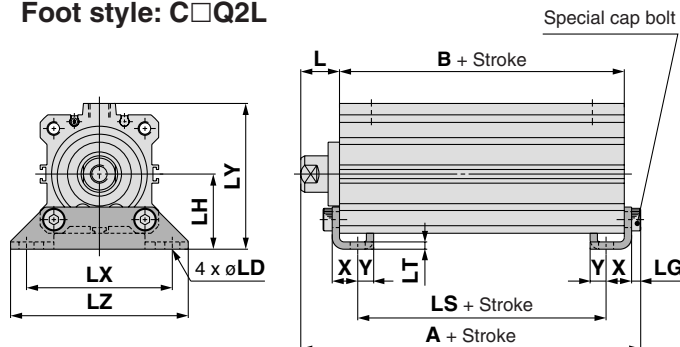
Dimensions of built-in One-touch fitting are equivalent to Series CQ2, double acting, single rod. Refer to page 616.

Both Ends Tapped Style

Bore size (mm)	Stroke range (mm)	A	B	C	D	E	H	I	J	K	L	M	O	P	Q	R	S	Th9	U	W	Z
32	(1) 125 to 200 250, 300	62.5	45.5	13	16	45	M8 x 1.25	60	4.5	14	17	34	M6 x 1.0	1/8	12.5	10	58.5	22 ⁰ _{-0.052}	31.5	49.5	14
40		72	55	13	16	52	M8 x 1.25	69	5	14	17	40	M6 x 1.0	1/8	14	10	66	28 ⁰ _{-0.052}	35	57	14
50		73.5	55.5	15	20	64	M10 x 1.5	86	7	17	18	50	M8 x 1.25	1/4	14	14	80	35 ⁰ _{-0.062}	41	71	19

Note 1) For 125 to 200 stroke, strokes are by the 25 mm interval.
Note 2) For calculation on the longitudinal dimension of the intermediate strokes, refer to page 671.

Foot style: C□Q2L



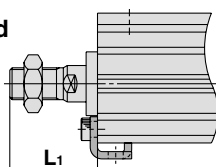
Foot style

Bore size (mm)	A	B	L	L ₁	LD	LG	LH	LS	LT	LX	LY	LZ	X	Y
32	69.7	45.5	17	38.5	6.6	4	30	29.5	3.2	57	57	71	11.2	5.8
40	79.2	55	17	38.5	6.6	4	33	39	3.2	64	64	78	11.2	7
50	81.7	55.5	18	43.5	9	5	39	32.5	3.2	79	78	95	14.7	8

Foot bracket material: Carbon steel
Surface treatment: Nickel plated

* For details about the rod end nut and accessory brackets, refer to page 620.

Rod end male thread

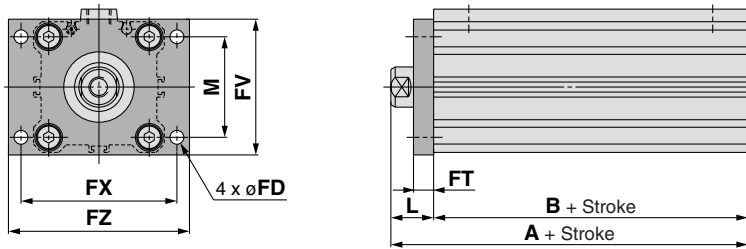


Compact Cylinder: Long Stroke Type

Double Acting, Single Rod *Series CQ2*

Rod side flange style: C□Q2F

The dimensions are the same with or without an auto switch.

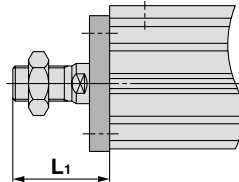


Rod Side Flange Style

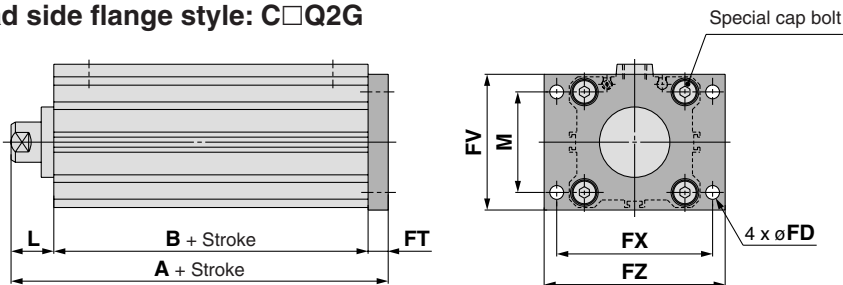
Bore size (mm)	A	B	FD	FT	FV	FX	FZ	L	L ₁	M
32	62.5	45.5	5.5	8	48	56	65	17	38.5	34
40	72	55	5.5	8	54	62	72	17	38.5	40
50	73.5	55.5	6.6	9	67	76	89	18	43.5	50

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

Rod end male thread



Head side flange style: C□Q2G



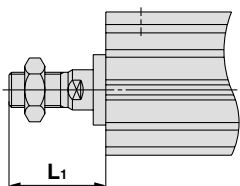
Head Side Flange Style (mm)

Bore size (mm)	A
32	70.5
40	80
50	82.5

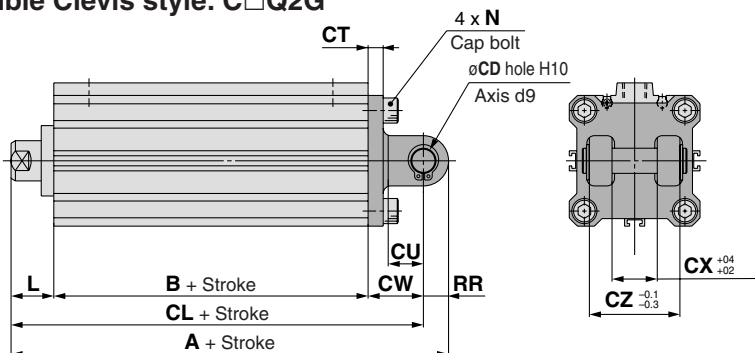
Flange bracket material: Carbon steel
Surface treatment: Nickel plated

* Dimensions except A are the same as rod side flange style.

Rod end male thread



Double Clevis style: C□Q2G



Double Clevis Style

Bore size (mm)	A	B	CD	CL	CT	CU	CW	CX	CZ
32	92.5	45.5	10	82.5	5	14	20	18	36
40	104	55	10	94	6	14	22	18	36
50	115.5	55.5	14	101.5	7	20	28	22	44

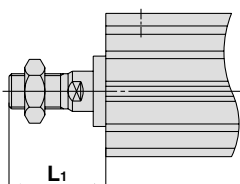
Bore size (mm)	L	L ₁	N	RR
32	17	38.5	M6 x 1.0	10
40	17	38.5	M6 x 1.0	10
50	18	43.5	M8 x 1.25	14

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 pin and retaining ring are shipped together.

Rod end male thread



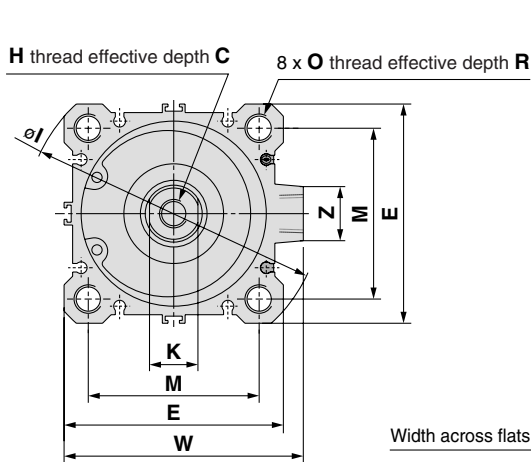
Series CQ2

Dimensions

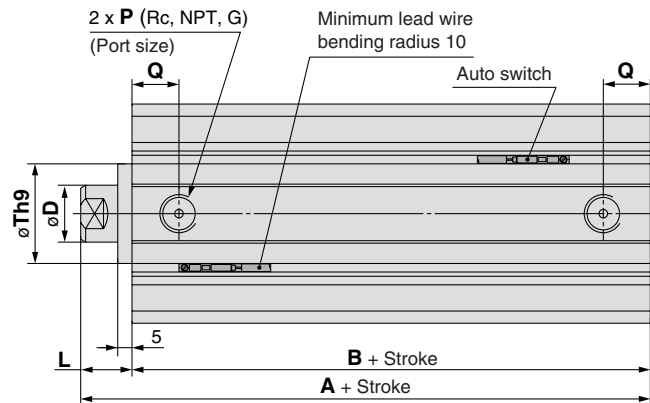
ø63 to ø100

Both ends tapped style: Series C□Q2A

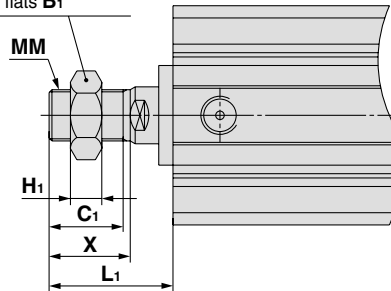
The dimensions are the same with or without an auto switch.



Rod end male thread



Width across flats B₁



Rod End Male Thread

Bore size (mm)	B ₁	C ₁	H ₁	L ₁	MM	X
63	27	26	11	43.5	M18x1.5	28.5
80	32	32.5	13	53.5	M22x1.5	35.5
100	41	32.5	16	53.5	M26x1.5	35.5

Dimensions of built-in One-touch fitting are equivalent to Series CQ2, double acting, single rod. Refer to page 618.

Both Ends Tapped Style

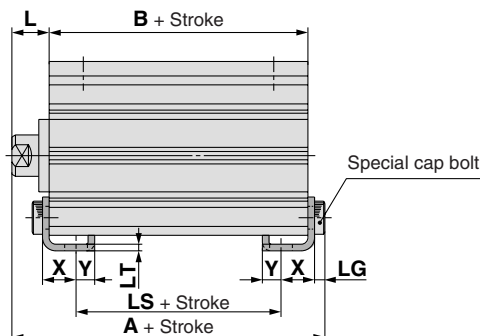
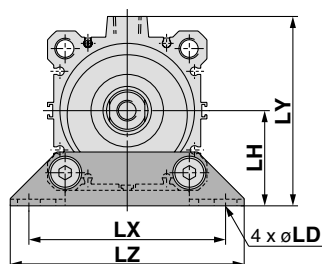
Bore size (mm)	Stroke range (mm)	A	B	C	D	E	H	I	J	K	L	M	O	P	Q	R	S	Th9	U	W	Z
63	125 to 200	75	57	15	20	77	M10 x 1.5	103	7	17	18	60	M10 x 1.5	1/4	16.5	18	93	35 ⁰ _{-0.062}	47.5	84	19
80	250, 300	86	66	21	25	98	M16 x 2.0	132	6	22	20	77	M12 x 1.75	3/8	19	22	112.5	43 ⁰ _{-0.062}	57.5	104	26
100		97.5	75.5	27	30	117	M20 x 2.5	156	6.5	27	22	94	M12 x 1.75	3/8	23	22	132.5	59 ⁰ _{-0.074}	67.5	123.5	26



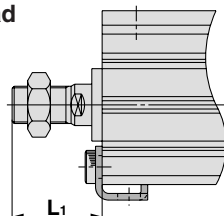
Note 1) For 125 to 200 stroke, strokes are by the 25 mm interval.

Note 2) For calculation on the longitudinal dimension of the intermediate strokes, refer to page 603.

Foot style: C□Q2L



Rod end male thread



Foot Style

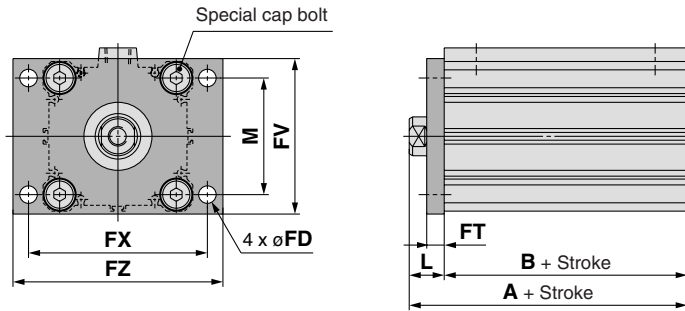
Bore size (mm)	A	B	L	L ₁	LD	LG	LH	LS	LT	LX	LY	LZ	X	Y
63	83.2	57	18	43.5	11	5	46	31	3.2	95	91.5	113	16.2	9
80	97.5	66	20	53.5	13	7	59	36	4.5	118	114	140	19.5	11
100	110.5	75.5	22	53.5	13	7	71	41.5	6	137	136	162	23	12.5

Foot bracket material: Carbon steel
Surface treatment: Nickel plated

* For details about the rod end nut and accessory brackets, refer to page 620.

Rod side flange style: C□Q2F

The dimensions are the same with or without an auto switch.

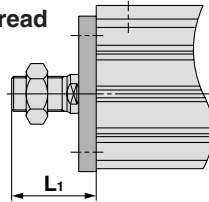


Rod Side Flange Style

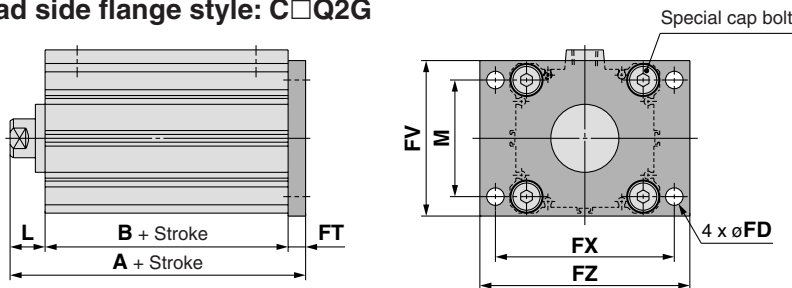
Bore size (mm)	A	B	FD	FT	FV	FX	FZ	L	L ₁	M
63	75	57	9	9	80	92	108	18	43.5	60
80	86	66	11	11	99	116	134	20	53.5	77
100	97.5	75.5	11	11	117	136	154	22	53.5	94

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

Rod end male thread



Head side flange style: C□Q2G



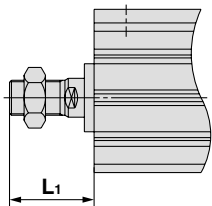
Head Side Flange Style (mm)

Bore size (mm)	A
63	84
80	97
100	108.5

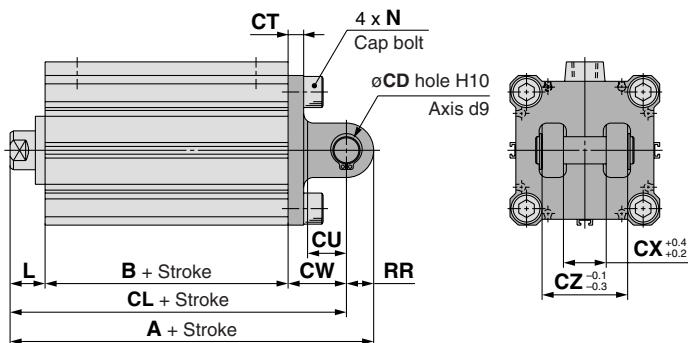
Flange bracket material: Carbon steel
Surface treatment: Nickel plated

* Dimensions except A are the same as rod side flange style.

Rod end male thread



Double clevis style: C□Q2D



Double Clevis Style

Bore size (mm)	A	B	CD	CL	CT	CU	CW	CX	CZ
63	119	57	14	105	8	20	30	22	44
80	142	66	18	124	10	27	38	28	56
100	164.5	75.5	22	142.5	13	31	45	32	64

Bore size (mm)	L	L ₁	N	RR
63	18	43.5	M10 x 1.5	14
80	20	53.5	M12 x 1.75	18
100	22	53.5	M12 x 1.75	22

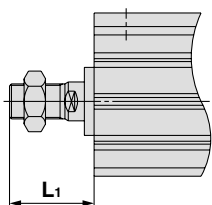
Double clevis bracket material: Cast iron
Surface treatment: Nickel plated



* For details about the rod end nut and accessory brackets, refer to page 620.

** Double clevis pin and retaining ring are shipped together.

Rod end male thread



CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual

-X□

Technical data

Compact Cylinder: Non-rotating Rod Type

Double Acting, Single Rod

Series CQ2K

ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63

How to Order

With auto switch **CDQ2K** **B** **20** **-** **30D** **-** **M9BW**

Non-rotating rod type

Mounting style

B	Through-hole (Standard)	ø12 to ø63
A	Both ends tapped style	ø40, ø50, ø63
L	Foot style	
F	Rod side flange style	
G	Head side flange 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 CQ2KB" on pages 683 and 685.

Bore size

12 (note 1)	12 mm	32	32 mm
16	16 mm	40	40 mm
20	20 mm	50	50 mm
25	25 mm	63	63 mm

Note 1) When ø12 with switch is required, the body option should be with rubber bumper (C).
Ex.) CDQ2KB12-30DC

Port thread type

Nil	M thread	ø12 to ø25
TN	Rc	ø32 to ø63
TF	NPT	
F	G	
F	Built-in One-touch fittings (Note)	

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

Number of auto switches

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

Auto switch

Nil	Without auto switch
------------	---------------------

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

Body option

Nil	Standard (Rod end female thread)
F	With boss in head side
C	With rubber bumper (Only ø12 with switch)
M	Rod end male thread

* Combination of body option (FM) is available.

Action

D	Double acting
----------	---------------

Cylinder stroke (mm)
For "Standard Stroke" and "Manufacture of Intermediate of Stroke", refer to page 680.

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) CDQ2KL32-30D

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		Auto switch model		Lead wire length (m)					Pre-wired connector	Applicable load				
					DC	AC	Perpendicular	In-line	0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)						
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V,	—	M9NV	M9N	●	●	●	○	—	○	IC circuit	Relay, PLC		
		3-wire (PNP)		12 V		M9PV		M9P	●	●	●	○	—	○					
	Connector	2-wire		12V		M9BV		M9B	●	●	●	○	—	○	—				
		3-wire (NPN)		5 V,		J79C		—	●	—	●	●	●	—					
	Diagnostic indication (2-color indication)	Grommet		3-wire (PNP)		12 V		M9NWV	M9NW	●	●	●	○	—	○	IC circuit			
				2-wire		12 V		M9PWV	M9PW	●	●	●	○	—	○				
				3-wire (NPN)		5 V,		M9BWV	M9BW	●	●	●	○	—	○	—			
				3-wire (PNP)		12 V		M9NAV	M9NA	○	○	●	○	—	○				
	Water resistant (2-color indication)	Grommet		2-wire		12 V		M9PAV	M9PA	○	○	●	○	—	○	IC circuit			
				4-wire		12 V		M9BAV	M9BA	○	○	●	○	—	○			—	
With diagnostic output (2-color indication)	Grommet	2-wire	5 V,12 V	—	F79F	●	—	●	○	—	○	IC circuit							
Magnetic field resistant (2-color indication)		2-wire (Non-polar)	—	—	P4DW	—	—	●	●	—	○		—						
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	A96V	A96	●	—	●		—	—	—	IC circuit	Relay, PLC	
				2-wire		—		200 V	A72	A72H	●	—	●	—	—	—			—
		24 V				12 V		100 V	A93V	A93	●	—	●	—	—	IC circuit			
						5 V,12 V		100 V or less	A90V	A90	●	—	●	—	—				
	12 V				—	A73C	—	●	—	●	●	●	—						
	5 V,12 V	200 V or less			A80C	—	●	—	●	●	●	IC circuit							
	Diagnostic indication (2-color indication)	Grommet			Yes	—	—	A79W	—	●	—		●	—	—	—	—		

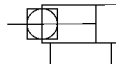
- * Lead wire length symbols: 0.5 m Nil (Example) M9NV
1 m M (Example) M9NW
3 m L (Example) M9NW
5 m Z (Example) M9NW
None N (Example) J79C
- * Solid state auto switches marked with "○" are produced upon receipt of order.
* D-P4DWL type is available from ø40 up to ø100 only.
* Only for D-P4DWL type, 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.

Series CQ2K



JIS Symbol

Non-rotating rod



Specifications

Bore size	12	16	20	25	32	40	50	63
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)	0.022	0.038	0.055	0.09	0.15	0.26	0.46	0.77
	0.043 Note 1)							
Stroke length tolerance	+1.0mm Note 2) 0							
Rod non-rotating accuracy	±2°	±1°			±0.8°			

* Bore size ø12 cylinder with a switch comes with a rubber bumper as standard.

Note 1) For cylinders with a rubber bumper (ø12 with a switch only)

Note 2) Stroke length tolerance does not include the amount of bumper change.



Made to Order Specifications (For details, refer to pages 1373 to 1498.)

Symbol	Specifications
—XA□	Change of rod end shape
—XB10	Intermediate stroke (Using exclusive body): ø40 to ø63
—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.
—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.

Standard Stroke

(mm)

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

Manufacture of Intermediate Stroke

Description	Spacer is installed in the standard stroke body.	
Part no.	Refer to "How to Order" for the standard model no. on page 679.	
Description	Dealing with the stroke by the 1 mm interval is available by installing spacer with standard stroke cylinder.	
Stroke range	Bore size	Stroke range
	12, 16	1 to 29
	20, 25	1 to 49
	32 to 63	1 to 99
Example	Part no.: CQ2KB50-57D CQ2KB50-75D with 18 mm width spacer inside. B dimension is 115.5 mm.	

Type

Bore size (mm)		12	16	20	25	32	40	50	63
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 Note 1) Rc 1/8	Rc 1/8	Rc 1/4
			TN				NPT 1/8	NPT 1/8	NPT 1/4
			TF				G 1/8	G 1/8	G 1/4
		Built-in One-touch fittings					ø6/4 Note 2)	ø6/4	ø8/6
	Rod end male thread		●	●	●	●	●	●	●
	With boss in head side		●	●	●	●	●	●	●

Note 1) For a ø32 cylinder without an auto switch, M5 x 8 is used for 5-stroke piping dimension. Thus, do not enter a symbol for the port thread 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.

Compact Cylinder: Non-rotating Rod Type Double Acting, Single rod *Series CQ2K*

⚠ 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.

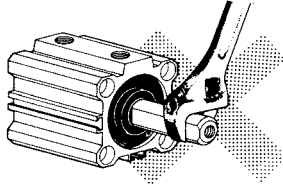
Retaining Ring Installation/Removal

⚠ Caution

- For installation and removal, use an appropriate pair of pliers (tool for installing a type C retaining ring).
- 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

- Install or remove loads while the piston rod width across flats is secured.



- Using a non-rotating rod cylinder
Avoid using the air cylinder in such a way that rotational torque would be applied to the piston rod. If rotational torque is applied, the non-rotating guide will deform, causing a loss of non-rotating accuracy.
Use the chart below as a guide for the allowable rotational torque ranges.

Allowable rotational torque	12	16	20	25	32	40	50	63
N·m or less	0.04	0.15	0.20	0.25	0.44	0.44	0.44	0.44

Operate the cylinder in such a way that the load to the piston rod is always applied in the axial direction.

- When a workpiece is secured to the end of the piston rod, ensure that the piston rod is retracted entirely, and place a wrench on the portion of the rod that protrudes beyond the section. Also, tighten in a way that prevents the tightening torque from being applied to the non-rotating guide.

Mounting Bracket Part No.

Bore size (mm)	Foot ^{Note 1)}	Flange	Double clevis
40	CQ-L040	CQ-F040	CQ-D040
50	CQ-L050	CQ-F050	CQ-D050
63	CQ-L063	CQ-F063	CQ-D063



Note 1) Order two foot brackets per cylinder.
Note 2) Parts belonging to each bracket are as follows.
Foot or Flange style/Body mounting bolt, Double clevis style: Clevis pin, Type C retaining ring for axis/Body mounting bolt.

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

Mass

(g)

Bore size (mm)	Cylinder stroke (mm)											
	5	10	15	20	25	30	35	40	45	50	75	100
12	60	67	74	81	88	95	—	—	—	—	—	—
16	58	67	76	85	94	103	—	—	—	—	—	—
20	103	117	131	145	159	173	187	201	215	229	—	—
25	137	152	167	182	197	212	227	242	257	272	—	—
32	203	223	243	263	283	303	323	343	363	383	403	423
40	215	238	261	284	307	330	353	376	399	422	445	468
50	—	381	418	455	492	529	566	603	640	677	714	751
63	—	550	592	634	676	718	760	802	844	886	928	970

Additional Mass

(g)

Bore size (mm)		12	16	20	25	32	40	50	63
Both ends tapped style		—	—	—	—	—	6	6	19
Rod end male thread	Male thread	1.5	3	6	12	26	27	53	53
	Nut	1	2	4	8	17	17	32	32
With boss in head side		0.7	1.3	2	3	5	7	13	25
Built-in One-touch fittings		—	—	—	—	12	12	21	21
Foot style (Including mounting bolt)		—	—	—	—	—	154	242	323
Rod side flange style (Including mounting bolt)		—	—	—	—	—	213	372	558
Head side flange style (Including mounting bolt)		—	—	—	—	—	198	348	534
Double clevis style (Including pin, retaining ring, bolt)		—	—	—	—	—	196	393	554

Calculation: (Example) **CQ2KD40-20DM** • Cylinder mass: CQ2KA40-20D 284 g
• Option mass: Both ends tapped style 6 g
Rod end male thread 44 g
Double clevis style 196 g
530 g

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

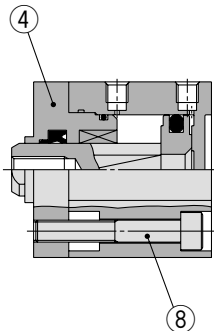
-X□

Individual
-X□

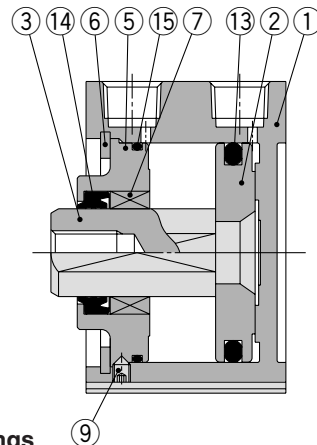
Technical
data

Construction

Basic style (Bore size ø12 to ø32)

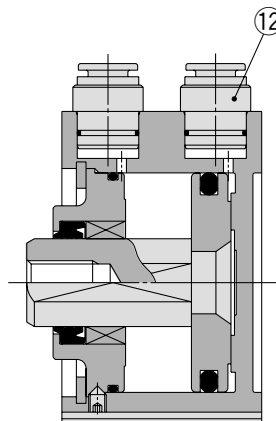
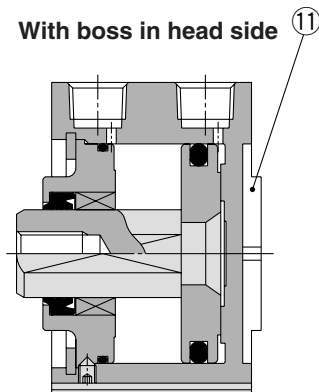


Basic style (Bore size ø40 to ø63)

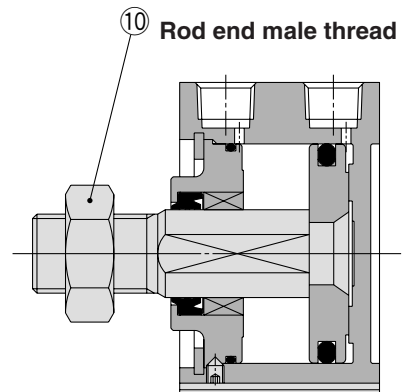


Built-in One-touch fittings

With boss in head side



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 ø63, Hard chrome plated
4	Rod cover	Brass	ø12, Electroless nickel plated
		Aluminum alloy	ø16 to ø32, Anodized
5	Collar	Aluminum alloy	ø40 to ø63, Anodized
6	Retaining ring	Carbon tool steel	Phosphate coated
7	Bushing	Oil-impregnated sintered alloy	ø16 to ø63
8	Hexagon socket head cap screw	Alloy steel	ø12 to ø32, Nickel plated
9	Hexagon socket head set screw	Alloy steel	ø40 to ø63, Nickel plated
10	Rod end nut	Carbon steel	Nickel plated
11	Centering location ring	Aluminum alloy	ø20 to ø63, Anodized
12	One-touch fitting	—	ø32 to ø63
13	Piston seal	NBR	
14	Rod seal	NBR	
15	Tube gasket	NBR	

Replacement Parts: Seal Kit

Bore size (mm)	Kit no.	Note	Bore size (mm)	Kit no.	Note
12	CQ2KB12-PS	Set of nos. above ⑬, ⑭, ⑮	32	CQ2KB32-PS	Set of nos. above ⑬, ⑭, ⑮
16	CQ2KB16-PS		40	CQ2KB40-PS	
20	CQ2KB20-PS		50	CQ2KB50-PS	
25	CQ2KB25-PS		63	CQ2KB63-PS	

* Seal kit includes ⑬, ⑭, ⑮. 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)

Compact Cylinder: Non-rotating Rod Type Double Acting, Single rod **Series CQ2K**

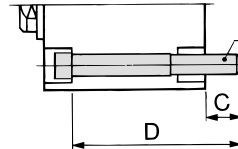
Mounting Bolt for CQ2KB/Without Auto Switch

Mounting method: Mounting bolt for through-hole mounting style of CQ2KB is available as an option.

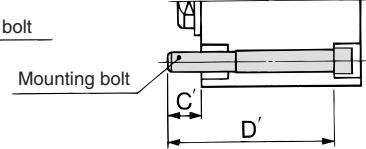
Ordering: Add the word "Bolt" in front of the bolts to be used.

Example) Bolt M3 x 30L 2 pcs.

Head side mounting style



Rod side mounting style



Cylinder model	C	D	Mounting bolt size	C'	D'	Mounting bolt size
CQ2KB12-5D	6.5	30	M3 x 30L	6.5	30	M3 x 30L
-10D		35	x 35L		35	x 35L
-15D		40	x 40L		40	x 40L
-20D		45	x 45L		45	x 45L
-25D		50	x 50L		50	x 50L
-30D		55	x 55L		55	x 55L
CQ2KB16-5D	5	30	M3 x 30L	5	30	M3 x 30L
-10D		35	x 35L		35	x 35L
-15D		40	x 40L		40	x 40L
-20D		45	x 45L		45	x 45L
-25D		50	x 50L		50	x 50L
-30D		55	x 55L		55	x 55L
CQ2KB20-5D	8	35	M5 x 35L	9.5	35	M5 x 35L
-10D		40	x 40L		40	x 40L
-15D		45	x 45L		45	x 45L
-20D		50	x 50L		50	x 50L
-25D		55	x 55L		55	x 55L
-30D		60	x 60L		60	x 60L
-35D		65	x 65L		65	x 65L
-40D		70	x 70L		70	x 70L
-45D		75	x 75L		75	x 75L
-50D		80	x 80L		80	x 80L
CQ2KB25-5D	10	40	M5 x 40L	6.5	35	M5 x 35L
-10D		45	x 45L		40	x 40L
-15D		50	x 50L		45	x 45L
-20D		55	x 55L		50	x 50L
-25D		60	x 60L		55	x 55L
-30D		65	x 65L		60	x 60L
-35D		70	x 70L		65	x 65L
-40D		75	x 75L		70	x 70L
-45D		80	x 80L		75	x 75L
-50D		85	x 85L		80	x 80L
CQ2KB32-5D	8.5	40	M5 x 40L	10	40	M5 x 40L
-10D		45	x 45L		45	x 45L
-15D		50	x 50L		50	x 50L
-20D		55	x 55L		55	x 55L
-25D		60	x 60L		60	x 60L
-30D		65	x 65L		65	x 65L
-35D		70	x 70L		70	x 70L
-40D		75	x 75L		75	x 75L
-45D		80	x 80L		80	x 80L
-50D		85	x 85L		85	x 85L
-75D		120	x 120L		120	x 120L
-100D		145	x 145L		145	x 145L

Cylinder model	C	D	Mounting bolt size	C'	D'	Mounting bolt size
CQ2KB40-5D	7.5	35	M5 x 35L	7.5	35	M5 x 35L
-10D		40	x 40L		40	x 40L
-15D		45	x 45L		45	x 45L
-20D		50	x 50L		50	x 50L
-25D		55	x 55L		55	x 55L
-30D		60	x 60L		60	x 60L
-35D		65	x 65L		65	x 65L
-40D		70	x 70L		70	x 70L
-45D		75	x 75L		75	x 75L
-50D		80	x 80L		80	x 80L
-75D		115	x 115L		115	x 115L
-100D		140	x 140L		140	x 140L
CQ2KB50-10D	12.5	45	M6 x 45L	12.5	45	M6 x 45L
-15D		50	x 50L		50	x 50L
-20D		55	x 55L		55	x 55L
-25D		60	x 60L		60	x 60L
-30D		65	x 65L		65	x 65L
-35D		70	x 70L		70	x 70L
-40D		75	x 75L		75	x 75L
-45D		80	x 80L		80	x 80L
-50D		85	x 85L		85	x 85L
-75D		120	x 120L		120	x 120L
-100D		145	x 145L		145	x 145L
CQ2KB63-10D	14.5	50	M8 x 50L	14.5	50	M8 x 50L
-15D		55	x 55L		55	x 55L
-20D		60	x 60L		60	x 60L
-25D		65	x 65L		65	x 65L
-30D		70	x 70L		70	x 70L
-35D		75	x 75L		75	x 75L
-40D		80	x 80L		80	x 80L
-45D		85	x 85L		85	x 85L
-50D		90	x 90L		90	x 90L
-75D		125	x 125L		125	x 125L
-100D		150	x 150L		150	x 150L

Material: Chromium molybdenum steel
Surface treatment: Nickel plated

CUJ

CU

CQS

CQ2

RQ

CQM

MU

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

20 — CQ2KB Bore size — Stroke D (M)

• $\phi 16, \phi 20, \phi 25, \phi 32, \phi 40, \phi 50, \phi 63$

• Copper and fluorine-free series

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)	$\phi 16, \phi 20, \phi 25, \phi 32, \phi 40, \phi 50, \phi 63$
Proof pressure	1.5 MPa
Maximum operating pressure	1.0 MPa
Rubber bumper	None
Piping	Screw-in piping
Piston speed	50 to 500 mm/s
Mounting	Through-hole
Auto switch	Mountable

D-□

-X□

Individual
-X□

Technical
data

1000000



Mass

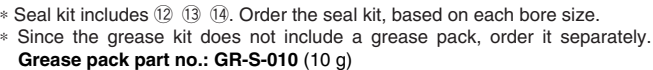
(g)

(g)

When auto switch is mounted, add the mass of number of auto switches and mounting brackets.

* For the auto switch mass, refer to pages 1263 to 1371.

Ø40 to Ø63



Compact Cylinder: Non-rotating Rod Type

Double Acting, Single rod *Series CQ2K*

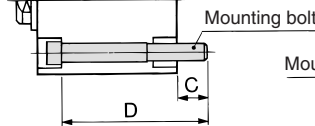
Mounting Bolt for CDQ2KB/With Auto Switch

Mounting method: Mounting bolt for through-hole mounting style of CDQ2KB is available as an option.

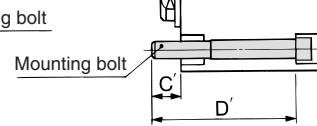
Ordering: Add the word "Bolt" in front of the bolts to be used.

Example) Bolt M3 x 35L 2 pcs.

Head side mounting style



Rod side mounting style



Cylinder model	C	D	Mounting bolt size	C'	D'	Mounting bolt size
CDQ2KB12-5DC	5.5	35	M3 x 35L	5.5	40	M3 x 40L
-10DC		40	x 40L		45	x 45L
-15DC		45	x 45L		50	x 50L
-20DC		50	x 50L		55	x 55L
-25DC		55	x 55L		60	x 60L
-30DC		60	x 60L		65	x 65L
CDQ2KB16-5D	8	40	M3 x 40L	8	45	M3 x 45L
-10D		45	x 45L		50	x 50L
-15D		50	x 50L		55	x 55L
-20D		55	x 55L		60	x 60L
-25D		60	x 60L		65	x 65L
-30D		65	x 65L		70	x 70L
CDQ2KB20-5D	10.5	40	M5 x 40L	7.5	45	M5 x 45L
-10D		45	x 45L		50	x 50L
-15D		50	x 50L		55	x 55L
-20D		55	x 55L		60	x 60L
-25D		60	x 60L		65	x 65L
-30D		65	x 65L		70	x 70L
-35D		70	x 70L		75	x 75L
-40D		75	x 75L		80	x 80L
-45D		80	x 80L		85	x 85L
-50D		85	x 85L		90	x 90L
CDQ2KB25-5D	9.5	40	M5 x 40L	6.5	45	M5 x 45L
-10D		45	x 45L		50	x 50L
-15D		50	x 50L		55	x 55L
-20D		55	x 55L		60	x 60L
-25D		60	x 60L		65	x 65L
-30D		65	x 65L		70	x 70L
-35D		70	x 70L		75	x 75L
-40D		75	x 75L		80	x 80L
-45D		80	x 80L		85	x 85L
-50D		85	x 85L		90	x 90L
CDQ2KB32-5D	8.5	50	M5 x 50L	10	50	M5 x 50L
-10D		55	x 55L		55	x 55L
-15D		60	x 60L		60	x 60L
-20D		65	x 65L		65	x 65L
-25D		70	x 70L		70	x 70L
-30D		75	x 75L		75	x 75L
-35D		80	x 80L		80	x 80L
-40D		85	x 85L		85	x 85L

Cylinder model	C	D	Mounting bolt size	C'	D'	Mounting bolt size
CDQ2KB32-40D	8.5	85	M5 x 85L	10	85	M5 x 85L
-45D		90	x 90L		90	x 90L
-50D		95	x 95L		95	x 95L
-75D		120	x 120L		120	x 120L
-100D		145	x 145L		145	x 145L
CDQ2KB40-5D	7.5	45	M5 x 45L	7.5	45	M5 x 45L
-10D		50	x 50L		50	x 50L
-15D		55	x 55L		55	x 55L
-20D		60	x 60L		60	x 60L
-25D		65	x 65L		65	x 65L
-30D		70	x 70L		70	x 70L
-35D		75	x 75L		75	x 75L
-40D		80	x 80L		80	x 80L
-45D		85	x 85L		85	x 85L
-50D		90	x 90L		90	x 90L
-75D	12.5	115	x 115L	12.5	115	x 115L
-100D		140	x 140L		140	x 140L
CDQ2KB50-10D	12.5	55	M6 x 55L	12.5	55	M6 x 55L
-15D		60	x 60L		60	x 60L
-20D		65	x 65L		65	x 65L
-25D		70	x 70L		70	x 70L
-30D		75	x 75L		75	x 75L
-35D		80	x 80L		80	x 80L
-40D		85	x 85L		85	x 85L
-45D		90	x 90L		90	x 90L
-50D		95	x 95L		95	x 95L
-75D		120	x 120L		120	x 120L
-100D	14.5	145	x 145L	14.5	145	x 145L
CDQ2KB63-10D		60	M8 x 60L		60	M8 x 60L
-15D		65	x 65L		65	x 65L
-20D		70	x 70L		70	x 70L
-25D		75	x 75L		75	x 75L
-30D		80	x 80L		80	x 80L
-35D		85	x 85L		85	x 85L
-40D		90	x 90L		90	x 90L
-45D		95	x 95L		95	x 95L
-50D		100	x 100L		100	x 100L
-75D	15	125	x 125L		125	x 125L
-100D		150	x 150L		150	x 150L

Material: Chromium molybdenum steel
Surface treatment: Nickel plated

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual
-X□

Technical
data

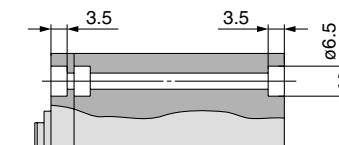
Series CQ2K

Dimensions

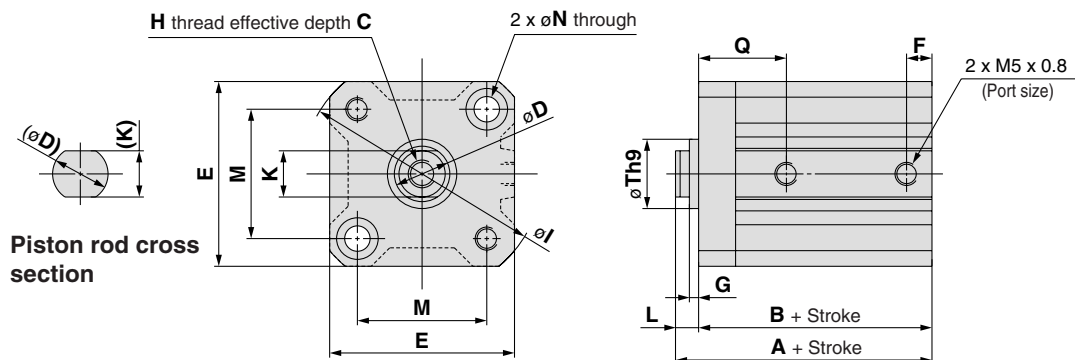
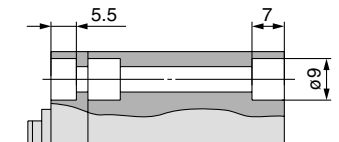
Ø12 to Ø25/Without Auto Switch

Basic style (Through-hole): CQ2KB

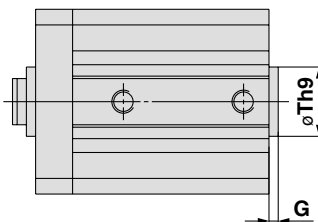
Ø12, Ø16



Ø20, Ø25



With boss in head side



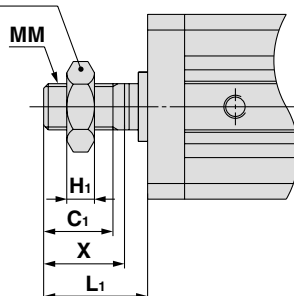
With Boss in Head Side

(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}

Rod end male thread

Hexagon width across flats B₁



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	G	H	I	K	L	M	N	Q	Th9
12	5 to 30	25.5	22	6	6	25	5	1.5	M3 x 0.5	32	5.2	3.5	15.5	3.5	12.5	15 ⁰ _{-0.043}
16	5 to 30	27	23.5	8	8	29	5.5	1.5	M4 x 0.7	38	6	3.5	20	3.5	13	20 ⁰ _{-0.052}
20	5 to 50	32	27.5	7	10	36	5.5	2	M5 x 0.8	47	8	4.5	25.5	5.5	17	13 ⁰ _{-0.043}
25	5 to 50	35.5	30.5	12	12	40	5.5	2	M6 x 1.0	52	10	5	28	5.5	19	15 ⁰ _{-0.043}



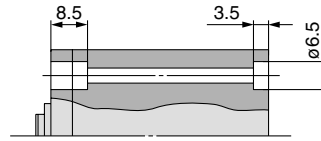
* For details about the rod end nut and accessory brackets, refer to page 620.

Dimensions

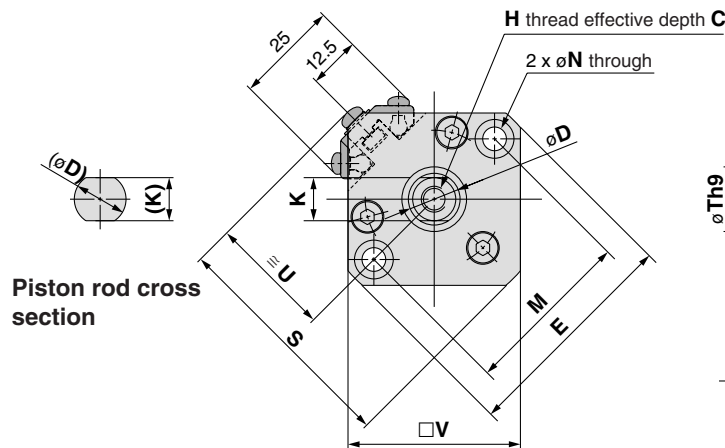
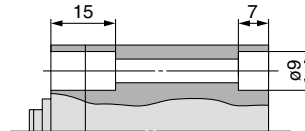
Ø12 to Ø25/With Auto Switch

Basic Style (Through-hole): CDQ2KB

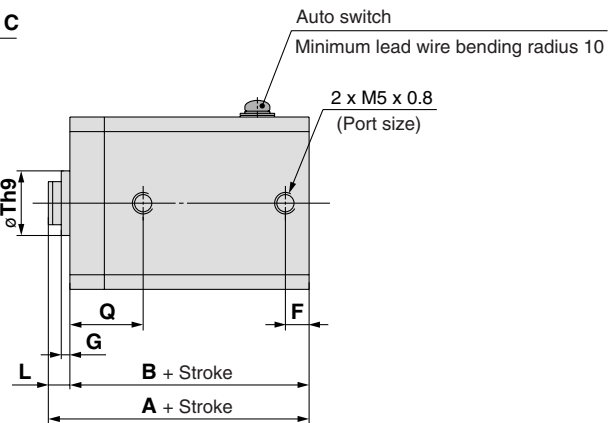
Ø12, Ø16



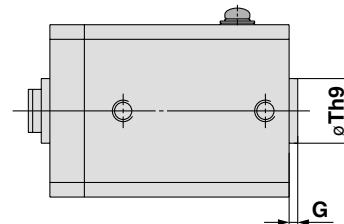
Ø20, Ø25



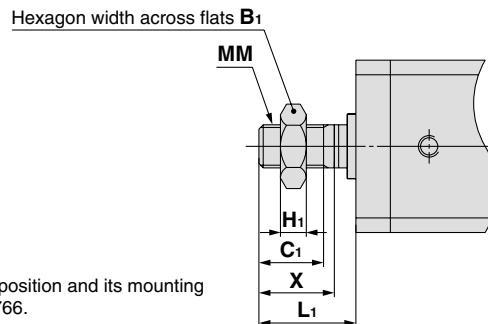
Piston rod cross section



With boss in head side



Rod end male thread



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

Rod End Male Thread

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

Bore size (mm)	Stroke range (mm)	A	B	C	D	E	F	G	H	K	L	M	N	Q	S	Th9	U	V
12	5 to 30	36.5	33	6	6	32	6.5	1.5	M3 x 0.5	5.2	3.5	22	3.5	16	36.5	15 ⁰ _{-0.043}	20.5	25
16	5 to 30	39	35.5	8	8	38	5.5	1.5	M4 x 0.7	6	3.5	28	3.5	15	42.5	20 ⁰ _{-0.052}	23.5	29
20	5 to 50	44	39.5	7	10	47	5.5	2	M5 x 0.8	8	4.5	36	5.5	18.5	49	13 ⁰ _{-0.043}	25.5	36
25	5 to 50	45.5	40.5	12	12	52	5.5	2	M6 x 1.0	10	5	40	5.5	19	54.5	15 ⁰ _{-0.043}	28.5	40



* For details about the rod end nut and accessory brackets, refer to page 620.

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

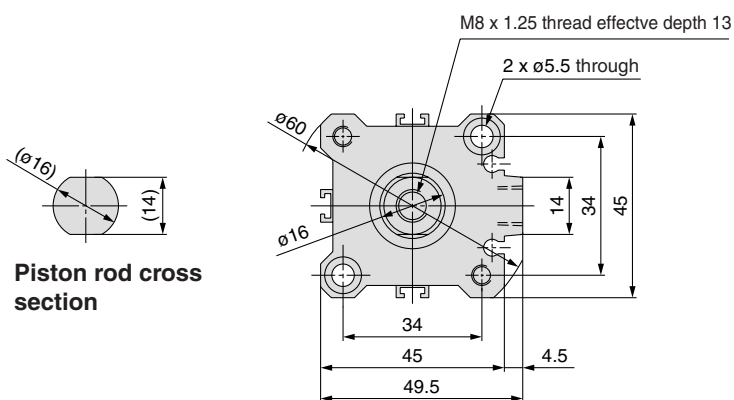
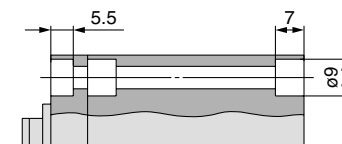
Individual
-X□

Technical
data

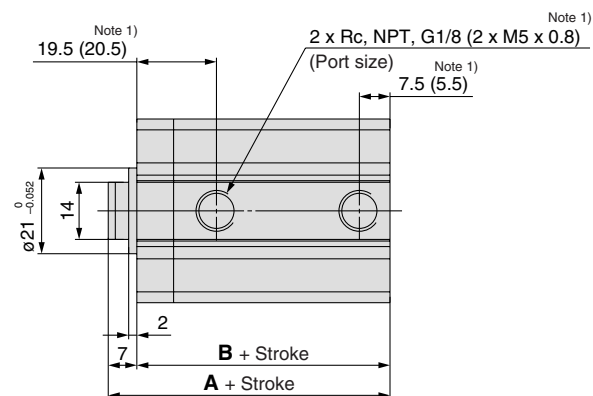
Series CQ2K

Dimensions

Ø32/Without Auto Switch



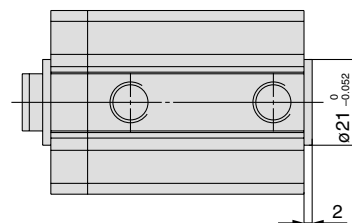
Piston rod cross section



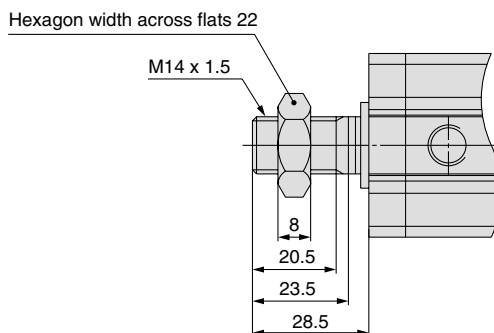
Note 1) (): denotes at stroke 5 mm

(mm)		
Stroke range	A	B
5 to 50	39	32
75, 100	49	42

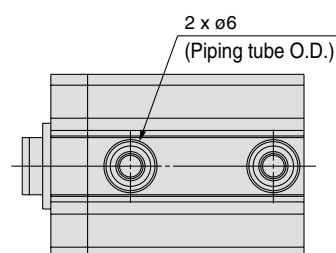
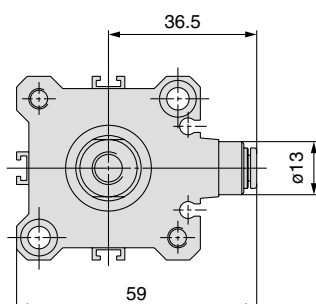
With boss in head side



Rod end male thread



Built-in One-touch fittings: Ø32

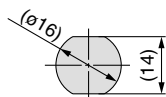


Note 2) In the case of built-in fitting, the 5 mm stroke is the same external dimensions as 10 mm stroke.

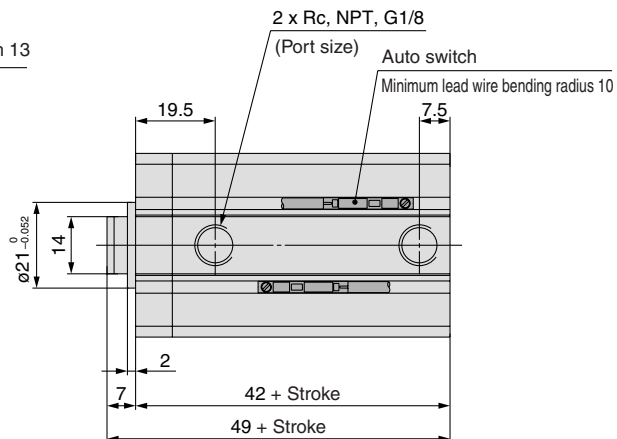
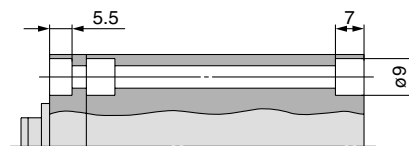
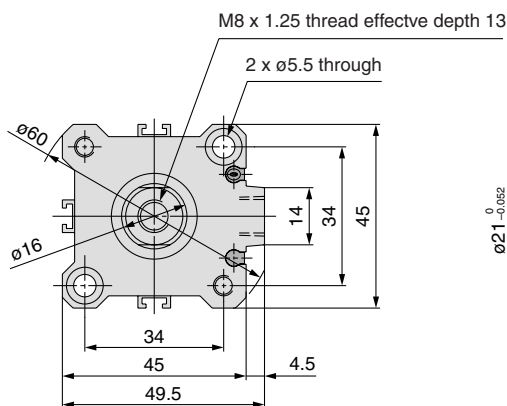
* For details about the rod end nut and accessory brackets, refer to page 620.

Dimensions

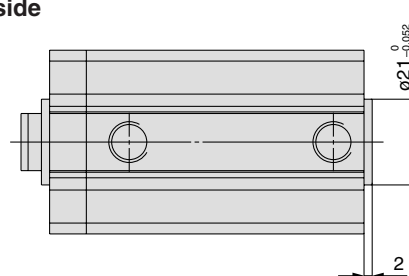
Ø32/With Auto Switch



Piston rod cross section

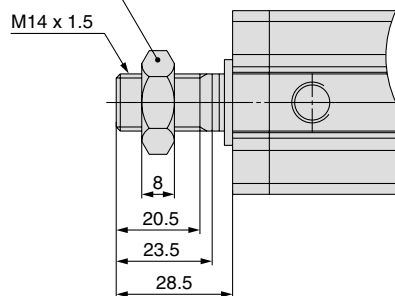


With boss in head side

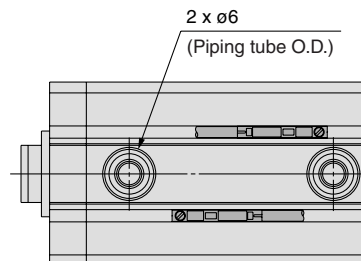
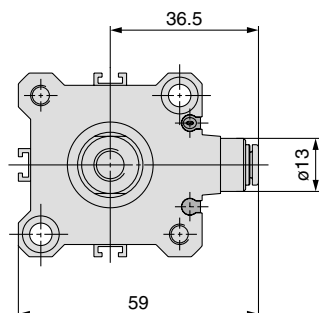


Rod end male thread

Hexagon width across flats 22



Built-in One-touch fittings: Ø32



CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual
-X□

Technical
data



* For details about the rod end nut and accessory brackets, refer to page 620.

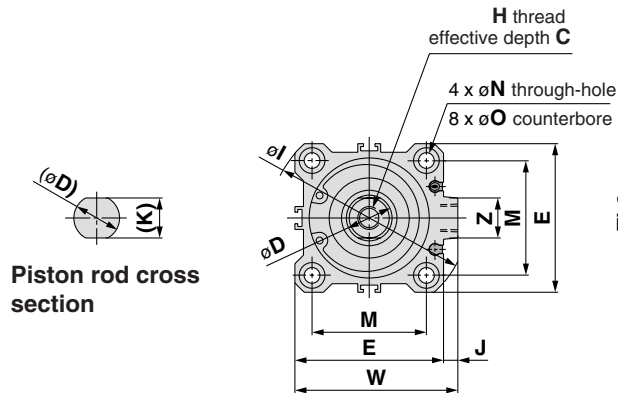
Series CQ2K

Dimensions

Ø40 to Ø63/With Auto Switch

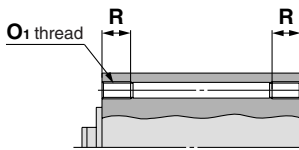
(In the case of without auto switches, A and B dimensions will be only changed. Refer to the dimension chart.)

Basic style (Through-hole): CDQ2KB



Piston rod cross section

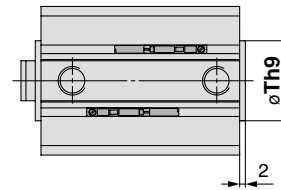
Both ends tapped style: CDQ2KA



Both Ends Tapped Style (mm)

Bore size (mm)	O ₁	R
40	M6 x 1.0	10
50	M8 x 1.25	14
63	M10 x 1.5	18

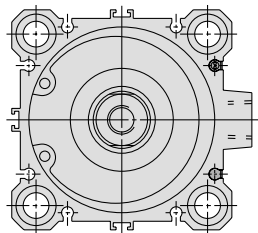
With boss in head side



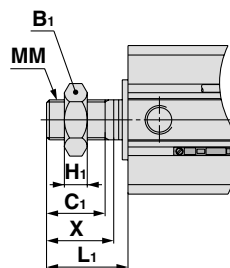
With Boss in Head Side (mm)

Bore size (mm)	Th9
40	28 ⁰ _{-0.052}
50	35 ⁰ _{-0.062}
63	35 ⁰ _{-0.062}

Rod end male thread



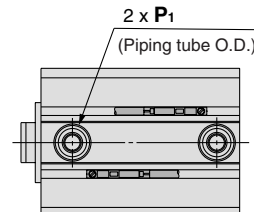
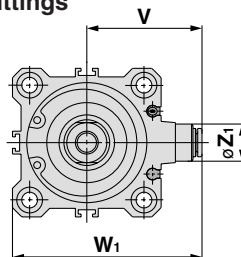
Ø63 Cylinder tube form



Rod End Male Thread (mm)

Bore size (mm)	B ₁	C ₁	H ₁	L ₁	MM	X
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
63	27	26	11	33.5	M18 x 1.5	28.5

Built-in One-touch fittings



Built-in One-touch Fittings (mm)

Bore size (mm)	Z ₁	P ₁	V	W ₁
40	13	6	40.5	66.5
50	16	8	50	82
63	16	8	56.5	95

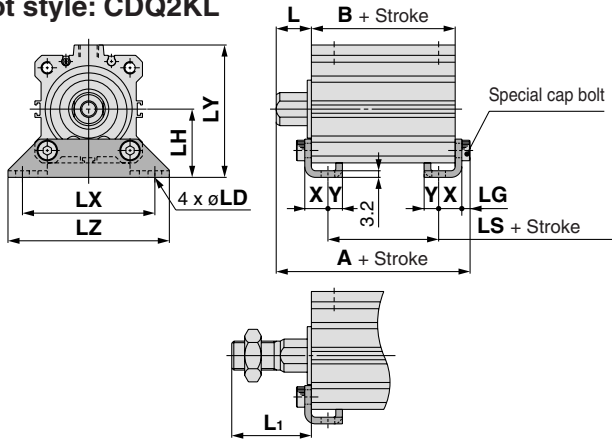
Basic Style

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	Th9	W	Z
		A	B	A	B																	
40	5 to 50	36.5	29.5	46.5	39.5	13	16	52	8	M8 x 1.25	69	5	14	7	40	5.5	9 depth 7	1/8	11	28 ⁰ _{-0.052}	57	14
	75, 100	46.5	39.5	46.5	39.5	13	16	52	8	M8 x 1.25	69	5	14	7	40	5.5	9 depth 7	1/8	11	28 ⁰ _{-0.052}	57	14
50	10 to 50	38.5	30.5	48.5	40.5	15	20	64	10.5	M10 x 1.5	86	7	18	8	50	6.6	11 depth 8	1/4	10.5	35 ⁰ _{-0.062}	71	19
	75, 100	48.5	40.5	48.5	40.5	15	20	64	10.5	M10 x 1.5	86	7	18	8	50	6.6	11 depth 8	1/4	10.5	35 ⁰ _{-0.062}	71	19
63	10 to 50	44	36	54	46	15	20	77	10.5	M10 x 1.5	103	7	18	8	60	9	14 depth 10.5	1/4	15	35 ⁰ _{-0.062}	84	19
	75, 100	54	46	54	46	15	20	77	10.5	M10 x 1.5	103	7	18	8	60	9	14 depth 10.5	1/4	15	35 ⁰ _{-0.062}	84	19

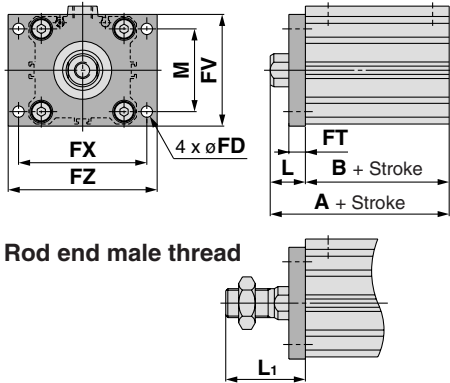
* For details about the rod end nut and accessory brackets, refer to page 620.

Compact Cylinder: Non-rotating Rod Type Double Acting, Single Rod **Series CQ2K**

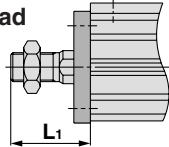
Foot style: CDQ2KL



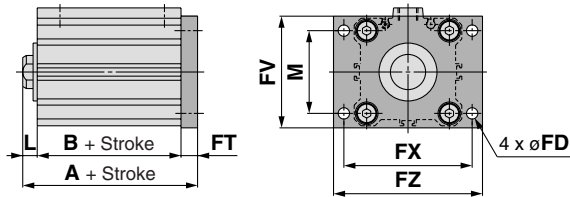
Rod side flange style: CDQ2KF



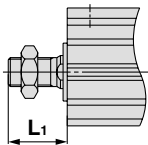
Rod end male thread



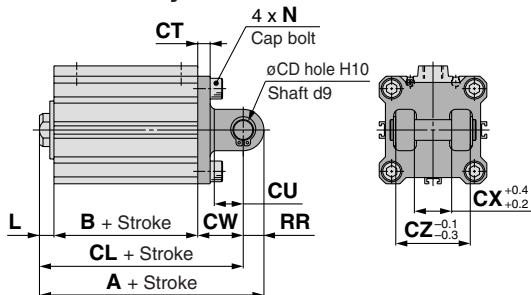
Head side flange style: CDQ2KG



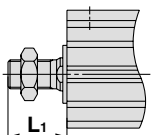
Rod end male thread



Double clevis style: CDQ2KD



Rod end male thread



* For details about the rod end nut and accessory brackets, refer to page 620.

** Clevis pins and retaining rings are included.

Foot Style

Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch			L	L ₁	LD
		A	B	LS	A	B	LS			
40	5 to 50	53.7	29.5	13.5	63.7	39.5	23.5	17	38.5	6.6
	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
	75, 100	66.7	40.5	17.5						
63	10 to 50	62.2	36	10	72.2	46	20	18	43.5	11
	75, 100	72.2	46	20						

Bore size (mm)	LG	LH	LX	LY	LZ	X	Y
40	4	33	64	64	78	11.2	7
50	5	39	79	78	95	14.7	8
63	5	46	95	91.5	113	16.2	9

Foot bracket material: Carbon steel
Surface treatment: Nickel plated

Rod Side Flange Style

Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch		FD	FT	FV	FX	FZ
		A	B	A	B					
40	5 to 50	46.5	29.5	56.5	39.5	5.5	8	54	62	72
	75, 100	56.5	39.5							
50	10 to 50	48.5	30.5	58.5	40.5	6.6	9	67	76	89
	75, 100	58.5	40.5							
63	10 to 50	54	36	64	46	9	9	80	92	108
	75, 100	64	46							

Bore size (mm)	L	L ₁	M
40	17	38.5	40
50	18	43.5	50
63	18	43.5	60

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

Head Side Flange Style

Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch		L	L ₁
		A	A	A	A		
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					
63	10 to 50	53	63	8	33.5		
	75, 100	63					

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

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

Double Clevis Style

Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch			CD	CT	CU
		A	B	CL	A	B	CL			
40	5 to 50	68.5	29.5	58.5	78.5	39.5	68.5	10	6	14
	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
	75, 100	90.5	40.5	76.5						
63	10 to 50	88	36	74	98	46	84	14	8	20
	75, 100	98	46	84						

Bore size (mm)	CW	CX	CZ	L	L ₁	N	RR
40	22	18	36	7	28.5	M6 x 1.0	10
50	28	22	44	8	33.5	M8 x 1.25	14
63	30	22	44	8	33.5	M10 x 1.5	14

Double clevis bracket material: Carbon steel
Surface Treatment: Painted

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual
-X□

Technical
data

Compact Cylinder: Non-rotating Rod Type Double Acting, Double Rod Series **CQ2KW** ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63

How to Order

CQ2KW B 20 - 30 D

With auto switch **CDQ2KW B 20 - 30 D - M9BW**

With auto switch
(Built-in magnet)

Mounting style

B	Through-hole (Standard)	ø12 to ø63
A	Both ends tapped style	
L	Foot style	ø40 to ø63
F	Flange style	

* Mounting brackets are shipped together (but not assembled).
* Cylinder mounting bolts are not included. Order them separately referring to "Mounting Bolt for CQ2KWB" on pages 697 and 699.

Bore size

12	12 mm	32	32 mm
16	16 mm	40	40 mm
20	20 mm	50	50 mm
25	25 mm	63	63 mm

Port thread type

Nil	M thread	ø12 to ø25
TN	Rc	
TF	NPT	ø32 to ø63
F	G	
F	Built-in One-touch fittings	Note)

Note) Bore sizes available w/ One-touch fittings are ø32 to ø63.
* 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.

Body option

Nil	Standard (Rod end female thread)
C	With rubber bumper (Only ø12 with switch)
M	Rod end male thread

Action

D	Double acting
----------	---------------

Cylinder stroke (mm)
For "Standard Stroke" and "Manufacture of Intermediate of Stroke", refer to page 694.

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) CDQ2KWB32-30D

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

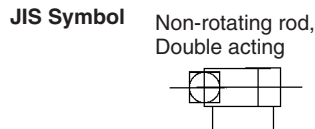
Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model		Lead wire length (m)					Pre-wired connector	Applicable load					
					DC	AC	Perpendicular	In-line	0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)							
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NV	M9N	●	●	●	○	—	○	IC circuit	Relay, PLC			
		3-wire (PNP)		M9PV				M9P	●	●	●	○	—	○						
	Connector	2-wire		12 V				M9BV	M9B	●	●	●	○	—	○	—				
		3-wire (NPN)		5 V, 12 V				J79C	—	●	—	●	●	●	—					
	Diagnostic indication (2-color indication)	3-wire (PNP)		5 V, 12 V				M9NWV	M9NW	●	●	●	○	—	○	IC circuit				
		2-wire		12 V				M9PWV	M9PW	●	●	●	○	—	○					
	Water resistant (2-color indication)	Grommet		3-wire (NPN)				5 V, 12 V	M9BWV	M9BW	●	●	●	○	—	○		—		
				3-wire (PNP)				5 V, 12 V	M9NAV	M9NA	○	○	●	○	—	○				
	2-wire			12 V				M9PAV	M9PA	○	○	●	○	—	○	IC circuit				
	4-wire			12 V				M9BAV	M9BA	○	○	●	○	—	○			—		
	With diagnostic output (2-color indication)	Grommet		5 V,12 V				—	F79F	●	—	●	○	—	○	IC circuit				
	Magnetic field resistant (2-color indication)			2-wire (Non-polar)				—	—	P4DW	—	—	●	●	—			○	—	
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	A96V	A96	●	—	●	—	—	—	IC circuit	—			
								—	200 V	A72	A72H	●	—	●	—			—	—	
		Connector		2-wire				24 V	12 V	100 V	A93V	A93	●	—	●	—		—	—	—
									5 V, 12 V	100 V or less	A90V	A90	●	—	●	—		—	—	
	Grommet	2-wire		12 V					—	A73C	—	●	—	●	●	●		—	—	
				5 V, 12 V					200 V or less	A80C	—	●	—	●	●	●		IC circuit		
				—					—	A79W	—	●	—	●	—	—				—
				Diagnostic indication (2-color indication)					—	—	—	—	—	—	—	—		—		—

* Lead wire length symbols: 0.5 m Nil (Example) M9NV
1 m M (Example) M9NW
3 m L (Example) M9NW
5 m Z (Example) M9NW
None N (Example) J79C

* 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□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.

Series CQ2KW



Specifications

Bore size	12	16	20	25	32	40	50	63
Action	Double acting, Double 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)	0.022 0.043 Note 1)	0.038	0.055	0.09	0.15	0.26	0.46	0.77
Stroke length tolerance	+1.0mm Note 2) 0							
Rod non-rotating accuracy	±2°	±1°			±0.8°			

* Bore size ø12 cylinder with a switch comes with a rubber bumper as standard.

Note 1) For cylinders with a rubber bumper (ø12 with a switch only)

Note 2) Stroke length tolerance does not include the amount of bumper change.

Standard Stroke

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, 63	10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100

Manufacture of Intermediate Stroke

Description	Spacer is installed in the standard stroke body.	
Part no.	Refer to "How to Order" for the standard model no. on page 693.	
Description	Dealing with the stroke by the 5 mm interval is available by installing spacer with standard stroke cylinder.	
Stroke range	Bore size	Stroke range
	32 to 63	55 to 95
Example	Part no.: CQ2KWB50-65D CQ2KWB50-75D with 10 mm width spacer inside. B dimension is 125.5 mm.	

Type

Bore size (mm)			12	16	20	25	32	40	50	63
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 Note 1) Rc 1/8	Rc 1/8	Rc 1/4	Rc 1/4
			TN	—	—	—	NPT 1/8	NPT 1/8	NPT 1/4	NPT 1/4
			TF	—	—	—	G 1/8	G 1/8	G 1/4	G 1/4
		Built-in One-touch fittings	—	—	—	—	ø6/4 Note 2)	ø6/4	ø8/6	ø8/6
	Rod end male thread		●	●	●	●	●	●	●	●

Note 1) For a ø32 cylinder without an auto switch, M5 x 8 is used for 5-stroke piping dimension. Thus, do not enter a symbol for the port thread 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.

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.

Compact Cylinder: Non-rotating Rod Type

Double Acting, Single rod *Series CQ2KW*

⚠ 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

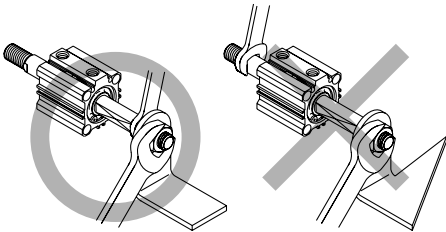
⚠ Caution

- For installation and removal, use an appropriate pair of pliers (tool for installing a type C retaining ring).
- 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

⚠ Warning

- Do not apply reverse torque to the piston rods sticking out from both sides of this cylinder at the same time. The torque makes connection threads inside loosen, which may cause an accident or malfunction. Install or remove loads while the piston rod width across flats is secured. Also, tighten by giving consideration to prevent the tightening torque from being applied to the non-rotating guide. Do not fix the other side of the piston rod width across flats and apply reverse torque



- Using a non-rotating rod cylinder
Avoid using the air cylinder in such a way that rotational torque would be applied to the piston rod. If rotational torque is applied, the non-rotating guide will deform, causing a loss of non-rotating accuracy.
Use the chart below as a guide for the allowable rotational torque ranges.

Allowable rotational torque	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63
N·m or less	0.04	0.15	0.20	0.25	0.44	0.44	0.44	0.44

Mounting Bracket Part No.

Bore size (mm)	Foot Note 1)	Flange
40	CQ-L040	CQ-F040
50	CQ-L050	CQ-F050
63	CQ-L063	CQ-F063



- Note 1) Order two foot brackets per cylinder.
Note 2) Parts belonging to each bracket are as follows.
Foot or Flange style/Body mounting bolt.

Theoretical Output

(N)

Bore size (mm)	Operating pressure (MPa)		
	0.3	0.5	0.7
12	25	42	59
16	45	75	106
20	71	118	165
25	113	189	264
32	181	302	422
40	317	528	739
50	495	825	1150
63	841	1400	1960

Mass

(g)

Bore size (mm)	Cylinder stroke (mm)											
	5	10	15	20	25	30	35	40	45	50	75	100
12	62	69	76	83	90	97	—	—	—	—	—	—
16	62	73	84	95	106	117	—	—	—	—	—	—
20	101	116	131	146	161	176	191	206	221	236	—	—
25	138	155	172	189	206	223	240	257	274	291	—	—
32	242	266	290	314	338	362	386	410	434	458	595	715
40	349	380	411	442	473	504	535	566	597	628	879	1034
50	—	548	593	638	683	728	773	818	863	908	1251	1476
63	—	772	811	850	889	928	967	1006	1045	1084	1391	1586

Additional Mass

(g)

Bore size (mm)		12	16	20	25	32	40	50	63
Rod end male thread	Male thread	3	6	12	24	52	54	106	106
	Nut	2	4	8	16	34	34	64	64
Built-in One-touch fittings		—	—	—	—	12	12	21	21
Foot style		—	—	—	—	—	155	243	324
Flange style		—	—	—	—	—	214	373	559

Calculation: (Example) **CQ2KWA40-20DM** Cylinder mass: CQ2KWB40-20D..... 442 g
Option mass: Both ends tapped style..... 6 g
Rod end male thread..... 88 g
536 g

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

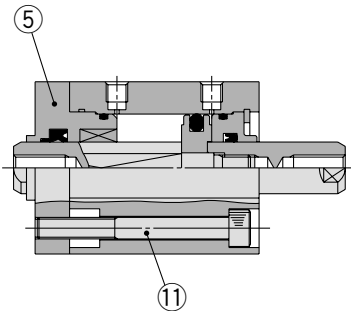
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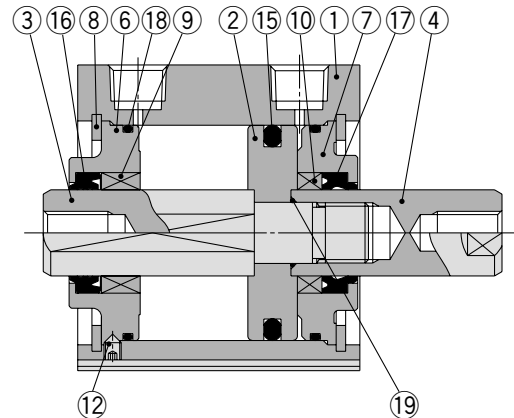
Series CQ2KW

Construction

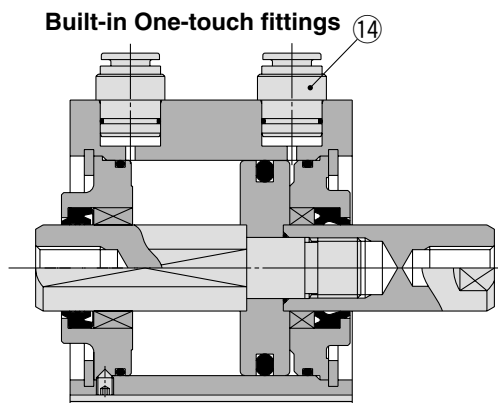
ø12 to ø32



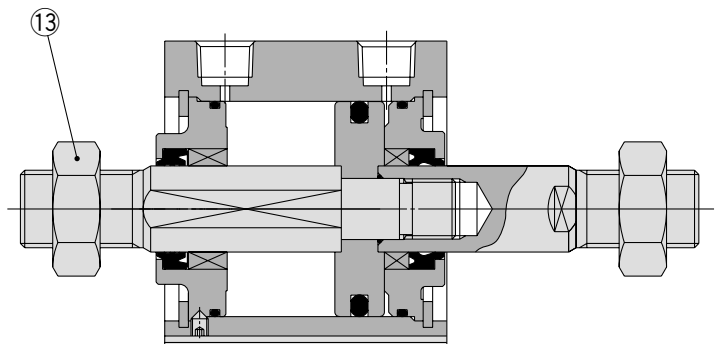
ø40 to ø63



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 A	Stainless steel	ø12 to ø25
		Carbon steel	ø32 to ø63, Hard chrome plated
4	Piston rod B	Stainless steel	ø12 to ø25
		Carbon steel	ø32 to ø63, Hard chrome plated
5	Rod cover	Brass	ø12, Electroless nickel plated
		Aluminum alloy	ø16 to ø32, Anodized
6	Collar for non-rotating	Aluminum alloy	ø40 to ø63, Anodized
7	Collar	Aluminum alloy	ø12 to ø40, Anodized
		Aluminum alloy casted	ø50 to ø63, Chromated, Painted
8	Retaining ring	Carbon tool steel	Phosphate coated
9	Bushing for non-rotating	Oil-impregnated sintered alloy	ø16 to ø63
10	Bushing	Bearing alloy	ø50, ø63
11	Hexagon socket head cap screw	Alloy steel	ø12 to ø32, Nickel plated
12	Hexagon socket head set screw	Alloy steel	ø40 to ø63, Nickel plated
13	Rod end nut	Carbon steel	Nickel plated
14	One-touch fitting	—	ø32 to ø63
15	Piston seal	NBR	
16	Rod seal for non-rotating	NBR	
17	Rod seal	NBR	
18	Gasket	NBR	
19	Piston gasket	NBR	ø32 to ø63

Replacement Parts: Seal Kit

Bore size (mm)	Kit no.	Note
12	CQ2KWB12-PS	Set of nos. above 15, 16, 17, 18
16	CQ2KWB16-PS	
20	CQ2KWB20-PS	
25	CQ2KWB25-PS	
32	CQ2KWB32-PS	
40	CQ2KWB40-PS	
50	CQ2KWB50-PS	
63	CQ2KWB63-PS	

* Seal kit includes 15, 16, 17, 18. 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)

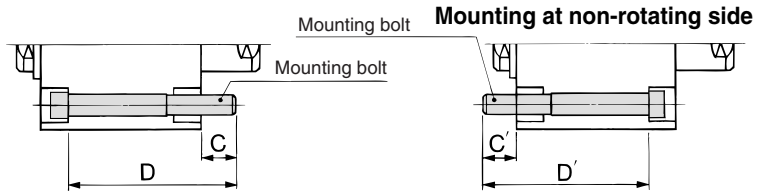
Compact Cylinder: Non-rotating Rod Type Double Acting, Single rod **Series CQ2KW**

Mounting Bolt for CQ2KWB/Without Auto Switch

Mounting method: Mounting bolt for through-hole mounting style of CQ2KWB is available as an option.

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

Example) Bolt M3 x 40L 2 pcs.



Cylinder model	C	D	Mounting bolt size	C'	D'	Mounting bolt size
CQ2KWB12-5D	8.3	40	M3 x 40L	8.3	40	M3 x 40L
-10D		45	x 45L		45	x 45L
-15D		50	x 50L		50	x 50L
-20D		55	x 55L		55	x 55L
-25D		60	x 60L		60	x 60L
-30D		65	x 65L		65	x 65L
CQ2KWB16-5D	7.5	40	M3 x 40L	7.5	40	M3 x 40L
-10D		45	x 45L		45	x 45L
-15D		50	x 50L		50	x 50L
-20D		55	x 55L		55	x 55L
-25D		60	x 60L		60	x 60L
-30D		65	x 65L		65	x 65L
CQ2KWB20-5D	6.5	40	M5 x 40L	8	40	M5 x 40L
-10D		45	x 45L		45	x 45L
-15D		50	x 50L		50	x 50L
-20D		55	x 55L		55	x 55L
-25D		60	x 60L		60	x 60L
-30D		65	x 65L		65	x 65L
-35D		70	x 70L		70	x 70L
-40D		75	x 75L		75	x 75L
-45D		80	x 80L		80	x 80L
-50D		85	x 85L		85	x 85L
CQ2KWB25-5D	8.5	45	M5 x 45L	10	45	M5 x 45L
-10D		50	x 50L		50	x 50L
-15D		55	x 55L		55	x 55L
-20D		60	x 60L		60	x 60L
-25D		65	x 65L		65	x 65L
-30D		70	x 70L		70	x 70L
-35D		75	x 75L		75	x 75L
-40D		80	x 80L		80	x 80L
-45D		85	x 85L		85	x 85L
-50D		90	x 90L		90	x 90L
CQ2KWB32-5D	11	50	M5 x 50L	7.5	45	M5 x 45L
-10D		55	x 55L		50	x 50L
-15D		60	x 60L		55	x 55L
-20D		65	x 65L		60	x 60L
-25D		70	x 70L		65	x 65L
-30D		75	x 75L		70	x 70L
-35D		80	x 80L		75	x 75L
-40D		85	x 85L		80	x 80L
-45D		90	x 90L		85	x 85L
-50D		95	x 95L		90	x 90L
-75D		130	x 130L		125	x 125L
-100D		155	x 155L		150	x 150L

Cylinder model	C	D	Mounting bolt size
CQ2KWB40-5D	7	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
CQ2KWB50-10D	12.5	125	x 125L
-75D		150	x 150L
-100D		150	x 150L
CQ2KWB63-10D	13.5	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		130	x 130L
-100D		155	x 155L

* $\phi 40$ to $\phi 63$: C' and D' dimensions are the same as C and D.

Material: Chromium molybdenum steel
Surface treatment: Nickel plated

CUJ

CU

CQS

CQ2

RQ

CQM

MU

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

20 — CQ2KWB Bore size — Stroke D (M)

• $\phi 16, \phi 20, \phi 25, \phi 32, \phi 40, \phi 50, \phi 63$

• Copper and fluorine-free series

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, Double rod
Bore size (mm)	$\phi 16, \phi 20, \phi 25, \phi 32, \phi 40, \phi 50, \phi 63$
Proof pressure	1.5 MPa
Maximum operating pressure	1.0 MPa
Rubber bumper	None
Piping	Screw-in piping
Piston speed	50 to 500 mm/s
Mounting	Through-hole
Auto switch	Mountable

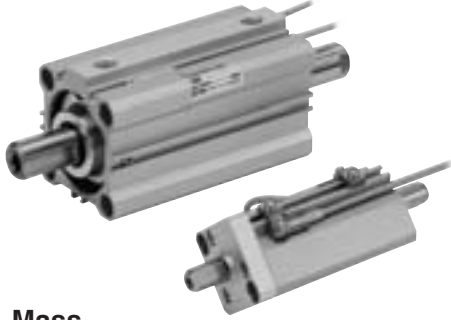
D-□

-X□

Individual
-X□

Technical
data

Non-rotating Rod, Double Acting, Single Rod Series **CDQ2KW** 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

Bore size (mm)	Cylinder stroke (mm)												(g)
	5	10	15	20	25	30	35	40	45	50	75	100	
12	82	90	98	106	114	122	—	—	—	—	—	—	
16	103	114	125	136	147	158	—	—	—	—	—	—	
20	169	186	203	220	237	254	271	288	305	322	—	—	
25	231	248	265	282	299	316	333	350	367	384	—	—	
32	270	294	318	342	366	390	414	438	462	486	606	726	
40	458	489	520	551	582	613	644	675	706	737	892	1047	
50	—	680	725	770	815	860	905	950	995	1040	1265	1490	
63	—	906	945	984	1023	1062	1101	1140	1179	1218	1413	1608	

Additional Mass

Bore size (mm)	12	16	20	25	32	40	50	63
Both ends tapped style	—	—	—	—	—	6	6	19
Rod end male thread	Male thread	3	6	12	24	52	54	106
	Nut	2	4	8	16	34	34	64
Built-in One-touch fittings	—	—	—	—	12	12	21	21

Calculation: (Example) **CDQ2KWA40-20DM**

- Cylinder mass: CDQ2KWB40-20D..... 551 g
- Option mass: Both ends tapped style..... 6 g
- Rod end male thread..... 88 g

645 g

Add the mass of auto switches and mounting brackets.

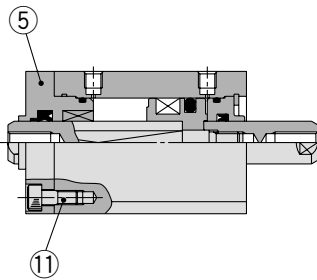
Auto Switch Mounting Bracket Mass

Mounting bracket part no.	Applicable bore size (mm)	Mass (g)
BQ-1	ø12 to ø25	1.5
BQ-2	ø32 to ø63	1.5
BQ2-012	ø12 to ø25	5

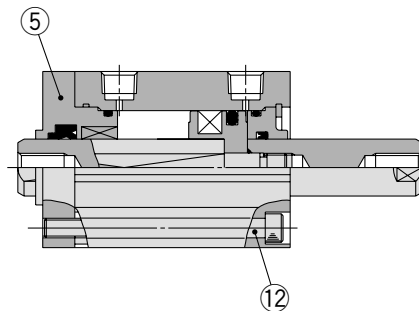
* For the auto switch mass, refer to pages 1263 and 1371.

Construction

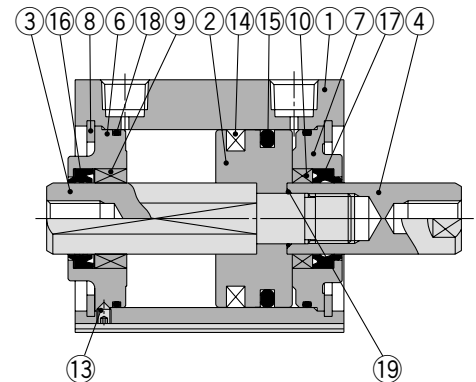
ø12 to ø25



ø32



ø40 to ø63



Component Parts

No.	Description	Material	Note
1	Cylinder tube	Aluminum alloy	Hard anodized
2	Piston	Aluminum alloy	Chromated
3	Piston rod A	Stainless steel	ø12 to ø25
		Carbon steel	ø32 to ø63, Hard chrome plated
4	Piston rod B	Stainless steel	ø12 to ø25
		Carbon steel	ø32 to ø63, Hard chrome plated
5	Rod cover	Brass	ø12, Electroless nickel plated
		Aluminum alloy	ø16 to ø32, Anodized
6	Collar for non-rotating	Aluminum alloy	ø40 to ø63, Anodized
7	Collar	Aluminum alloy	ø12 to ø40, Anodized
		Aluminum alloy casted	ø50 to ø63, Chromated, painted
8	Retaining ring	Carbon tool steel	Phosphate coated
9	Bushing for non-rotating	Oil-impregnated sintered alloy	ø16 to ø63
10	Bushing	Bearing alloy	ø50, ø63
11	Hexagon socket head cap screw	Alloy steel	ø12 to ø25, Nickel plated
12	Hexagon socket head cap screw	Alloy steel	ø32, Nickel plated
13	Hexagon socket head set screw	Alloy steel	ø40 to ø63, Nickel plated
14	Magnet	—	

No.	Description	Material	Note
15	Piston seal	NBR	
16	Rod seal for non-rotating	NBR	
17	Rod seal	NBR	
18	Gasket	NBR	
19	Piston gasket	NBR	ø32 to ø63

Replacement Parts: Seal Kit

Bore size (mm)	Kit no.	Note
12	CQ2KWB12-PS	Set of nos. above 15, 16, 17, 18
16	CQ2KWB16-PS	
20	CQ2KWB20-PS	
25	CQ2KWB25-PS	
32	CQ2KWB32-PS	
40	CQ2KWB40-PS	
50	CQ2KWB50-PS	
63	CQ2KWB63-PS	

* Seal kit includes 15, 16, 17, 18. 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)

Compact Cylinder: Non-rotating Rod Type

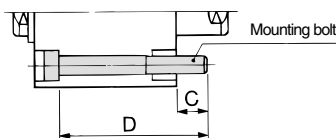
Double Acting, Single rod *Series CQ2KW*

Mounting Bolt for CDQ2KWB/With Auto Switch

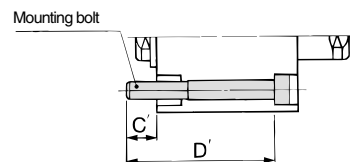
Mounting method: Mounting bolt for through-hole mounting
style of CDQ2KWB is available as an option.

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

Example) Bolt M3 x 40L 2 pcs.



Mounting at non-rotating side



Cylinder model	C	D	Mounting bolt size	C'	D'	Mounting bolt size
CDQ2KWB12-5DC	6.1	40	M3 x 40L	6.1	45	M3 x 45L
-10DC		45	x 45L		50	x 50L
-15DC		50	x 50L		55	x 55L
-20DC		55	x 55L		60	x 60L
-25DC		60	x 60L		65	x 65L
-30DC		65	x 65L		70	x 70L
CDQ2KWB16-5D	7.5	45	M3 x 45L	7.5	50	M3 x 50L
-10D		50	x 50L		55	x 55L
-15D		55	x 55L		60	x 60L
-20D		60	x 60L		65	x 65L
-25D		65	x 65L		70	x 70L
-30D		70	x 70L		75	x 75L
CDQ2KWB20-5D	9	45	M5 x 45L	11	55	M5 x 55L
-10D		50	x 50L		60	x 60L
-15D		55	x 55L		65	x 65L
-20D		60	x 60L		70	x 70L
-25D		65	x 65L		75	x 75L
-30D		70	x 70L		80	x 80L
-35D		75	x 75L		85	x 85L
-40D		80	x 80L		90	x 90L
-45D		85	x 85L		95	x 95L
-50D		90	x 90L		100	x 100L
CDQ2KWB25-5D	8	45	M5 x 45L	10	55	M5 x 55L
-10D		50	x 50L		60	x 60L
-15D		55	x 55L		65	x 65L
-20D		60	x 60L		70	x 70L
-25D		65	x 65L		75	x 75L
-30D		70	x 70L		80	x 80L
-35D		75	x 75L		85	x 85L
-40D		80	x 80L		90	x 90L
-45D		85	x 85L		95	x 95L
-50D		90	x 90L		100	x 100L
CDQ2KWB32-5D	11	60	M5 x 60L	7.5	55	M5 x 55L
-10D		65	x 65L		60	x 60L
-15D		70	x 70L		65	x 65L
-20D		75	x 75L		70	x 70L
-25D		80	x 80L		75	x 75L
-30D		85	x 85L		80	x 80L
-35D		90	x 90L		85	x 85L
-40D		95	x 95L		90	x 90L
-45D		100	x 100L		95	x 95L
-50D		105	x 105L		100	x 100L
-75D		130	x 130L		125	x 125L
-100D		155	x 155L		150	x 150L

Cylinder model	C	D	Mounting bolt size
CDQ2KWB40-5D	7	55	M5 x 55L
-10D		60	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
CDQ2KWB50-10D	12.5	65	M6 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
CDQ2KWB63-10D	13.5	65	M8 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

* $\phi 40$ to $\phi 63$: C' and D' dimensions are the same as C and D.

Material: Chromium molybdenum steel
Surface treatment: Nickel plated

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual
-X□

Technical
data

Series CQ2KW

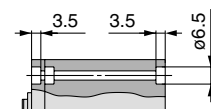
Dimensions

Ø12 to Ø32 / Without Auto Switch

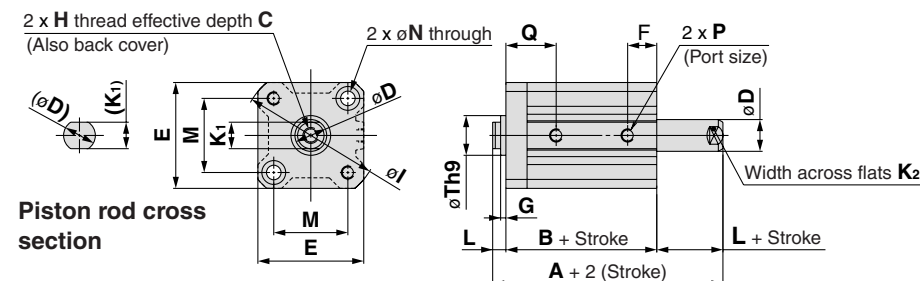
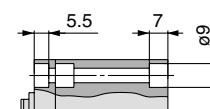
Basic style (Through-hole): CQ2KWB

Ø12 to Ø25

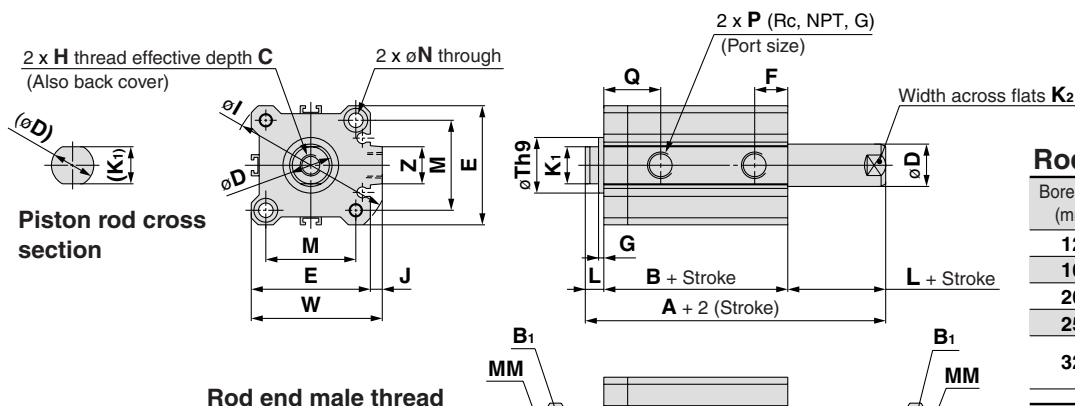
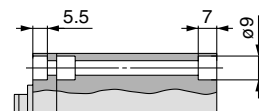
Ø12, Ø16



Ø20, Ø25



Ø32

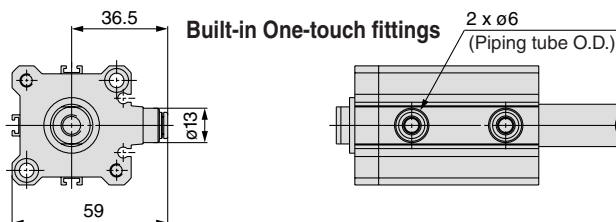


Rod End Male Thread (mm)

Bore size (mm)	Stroke range (mm)	A ₁	B ₁	C ₁	H ₁
12	5 to 30	58.2	8	9	4
16	5 to 30	62	10	10	5
20	5 to 50	71	13	12	5
25	5 to 50	82	17	15	6
32	5 to 50	96.5	22	20.5	8
	75, 100	106.5			

Bore size (mm)	L ₁	MM	X
12	14	M5 x 0.8	10.5
16	15.5	M6 x 1.0	12
20	18.5	M8 x 1.25	14
25	22.5	M10 x 1.25	17.5
32	28.5	M14 x 1.5	23.5

Built-in One-touch fittings: Ø32



* In the case of w/ One-touch fitting, the 5 mm stroke with 32 bore is the same external dimensions as 10 mm stroke.

Basic Style

Bore size (mm)	Stroke range (mm)	A	B	C	D	E	F	G	H	I	J	K ₁	K ₂	L	M	N	P	Q	Th9	W	Z
12	5 to 30	37.2	30.2	6	6	25	10	1.5	M3 x 0.5	32	—	5.2	5	3.5	15.5	3.5	M5 x 0.8	15	15 ⁰ _{-0.043}	—	—
16	5 to 30	38	31	8	8	29	10	1.5	M4 x 0.7	38	—	6	6	3.5	20	3.5	M5 x 0.8	15	20 ⁰ _{-0.052}	—	—
20	5 to 50	43	34	7	10	36	9.5	2	M5 x 0.8	47	—	8	8	4.5	25.5	5.5	M5 x 0.8	17.5	13 ⁰ _{-0.043}	—	—
25	5 to 50	47	37	12	12	40	11	2	M6 x 1.0	52	—	10	10	5	28	5.5	M5 x 0.8	19	15 ⁰ _{-0.043}	—	—
32	5	53.5	39.5	13	16	45	12.5	2	M8 x 1.25	60	4.5	14	14	7	34	5.5	M5 x 0.8	21.5	21 ⁰ _{-0.052}	49.5	14
	10 to 50																				
	75, 100																1/8				

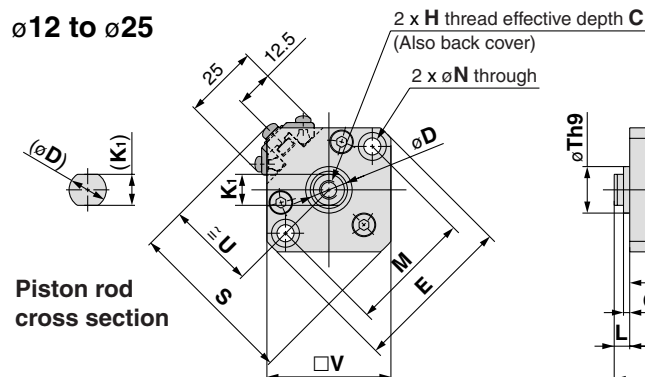
* For details about the rod end nut and accessory brackets, refer to page 620.
Note) The positions of piston rod width across flats (K₂) are not constant.

Dimensions

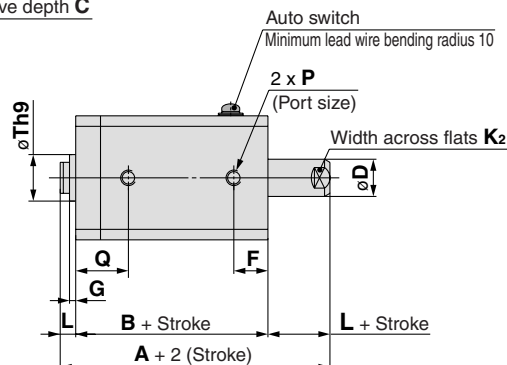
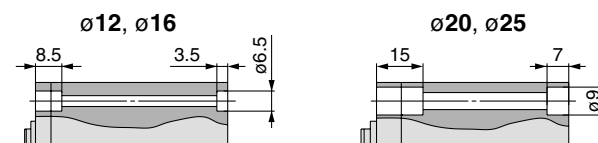
ø12 to ø32 / With Auto Switch

Basic style (Through-hole): CDQ2KWB

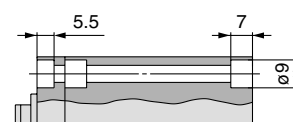
ø12 to ø25



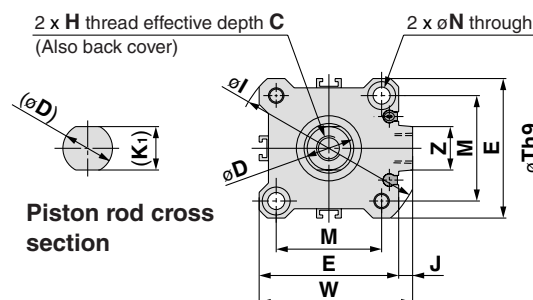
Piston rod cross section



ø32

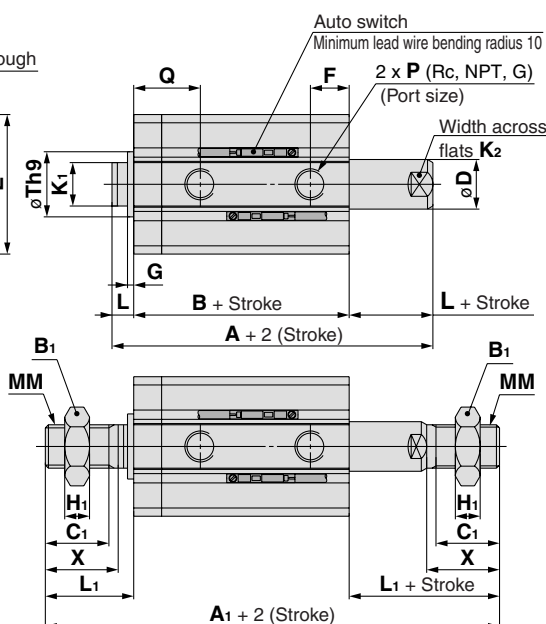


ø32



Piston rod cross section

Rod end male thread



Rod End Male Thread (mm)

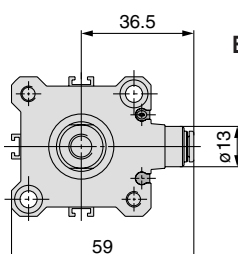
Bore size (mm)	A ₁	B ₁	C ₁	H ₁
12	65.4	8	9	4
16	72	10	10	5
20	83	13	12	5
25	92	17	15	6
32	106.5	22	20.5	8

Bore size (mm)	L ₁	MM	X
12	14	M5 x 0.8	10.5
16	15.5	M6 x 1.0	12
20	18.5	M8 x 1.25	14
25	22.5	M10 x 1.25	17.5
32	28.5	M14 x 1.5	23.5

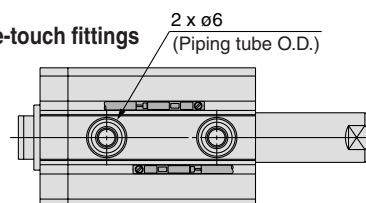
Built-in One-touch fittings: ø32



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



Built-in One-touch fittings



Basic Style

Bore size (mm)	Stroke range (mm)	A	B	C	D	E	F	G	H	I	J	K ₁	K ₂	L	M	N	P	Q	S	Th9	U	V	W	Z
12	5 to 30	44.4	37.4	6	6	32	10.5	1.5	M3 x 0.5	—	—	5.2	5	3.5	22	3.5	M5 x 0.8	15.5	36.5	15 ⁰ _{-0.043}	20.5	25	—	—
16	5 to 30	48	41	8	8	38	10	1.5	M4 x 0.7	—	—	6	6	3.5	28	3.5	M5 x 0.8	15	42.5	20 ⁰ _{-0.052}	23.5	29	—	—
20	5 to 50	55	46	7	10	47	10.5	2	M5 x 0.8	—	—	8	8	4.5	36	5.5	M5 x 0.8	18.5	49	13 ⁰ _{-0.043}	25.5	36	—	—
25	5 to 50	57	47	12	12	52	11	2	M6 x 1.0	—	—	10	10	5	40	5.5	M5 x 0.8	19	54.5	15 ⁰ _{-0.043}	28.5	40	—	—
32	5 to 50, 75, 100	63.5	49.5	13	16	45	12.5	2	M8 x 1.25	60	4.5	14	14	7	34	5.5	1/8	21.5	—	21 ⁰ _{-0.052}	—	—	49.5	14



* For details about the rod end nut and accessory brackets, refer to page 620.
Note) The positions of piston rod width across flats (K₂) are not constant.

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual

-X□

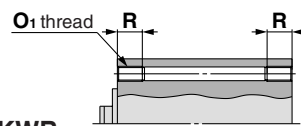
Technical data

Series CQ2KW

Dimensions

ø40 to ø63

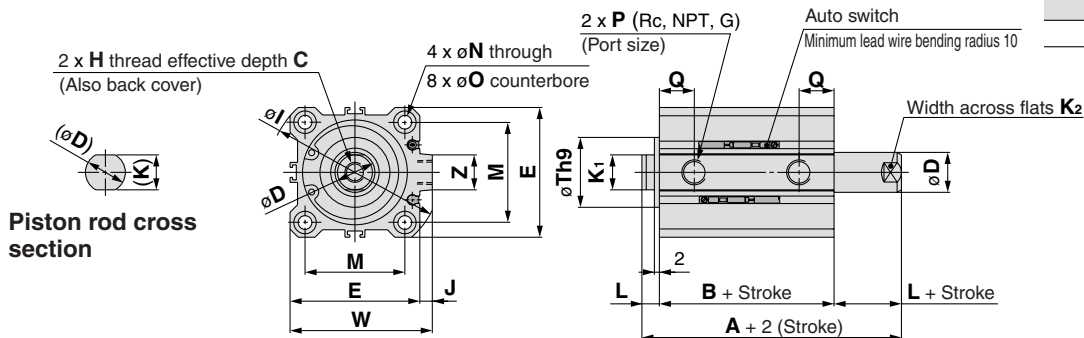
Both ends tapped style: CQ2KWA/CDQ2KWA



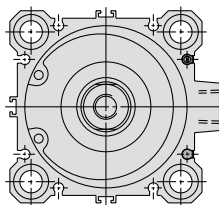
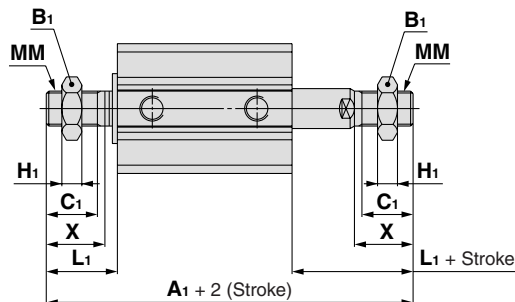
Both Ends Tapped Style (mm)

Bore size (mm)	O ₁	R
40	M6 x 1.0	10
50	M8 x 1.25	14
63	M10 x 1.5	18

Basic style (Through-hole): CQ2KWB/CDQ2KWB



Rod end male thread

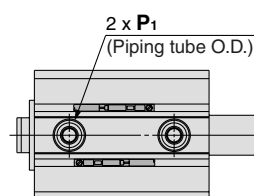
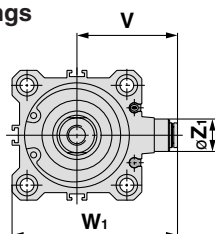


Rod End Male Thread (mm)

Bore size (mm)	Without auto switch	With auto switch	B ₁	C ₁	H ₁	L ₁	MM	X
	A ₁	A ₁						
40	97	107	22	20.5	8	28.5	M14 x 1.5	23.5
50	107.5	117.5	27	26	11	33.5	M18 x 1.5	28.5
63	109	119	27	26	11	33.5	M18 x 1.5	28.5

Cylinder tube form for ø63

Built-in One-touch fittings



Built-in One-touch Fittings (mm)

Bore size (mm)	Z ₁	P ₁	V	W ₁
40	13	6	40.5	66.5
50	16	8	50	82
63	16	8	56.5	95



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

Basic Style

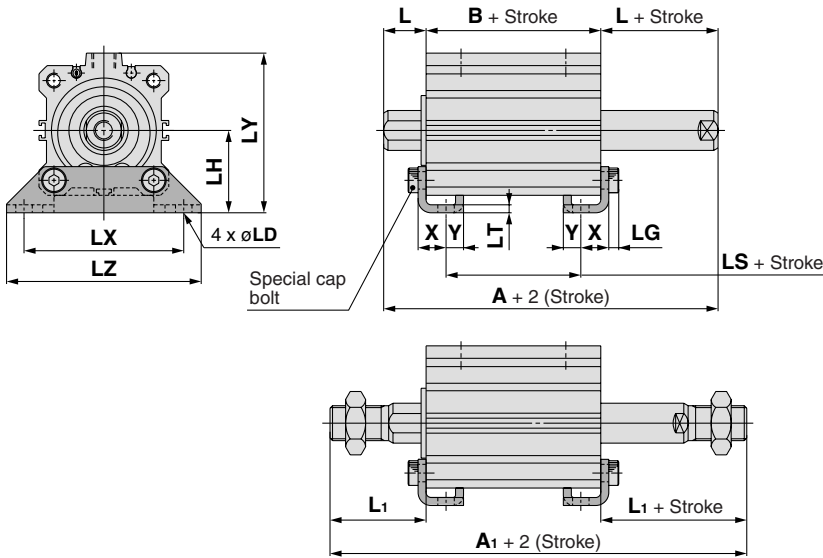
Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch		C	D	E	H	I	J	K ₁	K ₂	L	M	N	O	P	Q	Th9	W	Z
		A	B	A	B																	
40	5 to 50	54	40	64	50	13	16	52	M8 x 1.25	69	5	14	14	7	40	5.5	9 depth 7	1/8	14	28 ⁰ _{-0.052}	57	14
	75, 100	64	50																			
50	10 to 50	56.5	40.5	66.5	50.5	15	20	64	M10 x 1.5	86	7	18	17	8	50	6.6	11 depth 8	1/4	14	35 ⁰ _{-0.062}	71	19
	75, 100	66.5	50.5																			
63	10 to 50	58	42	68	52	15	20	77	M10 x 1.5	103	7	18	17	8	60	9	14 depth 10.5	1/4	15.5	35 ⁰ _{-0.062}	84	19
	75, 100	68	52																			



* For details about the rod end nut and accessory brackets, refer to page 620.

Note) The positions of piston rod width across flats (K₂) are not constant.

Foot style: CQ2KWL/CDQ2KWL



Rod End Male Thread (mm)

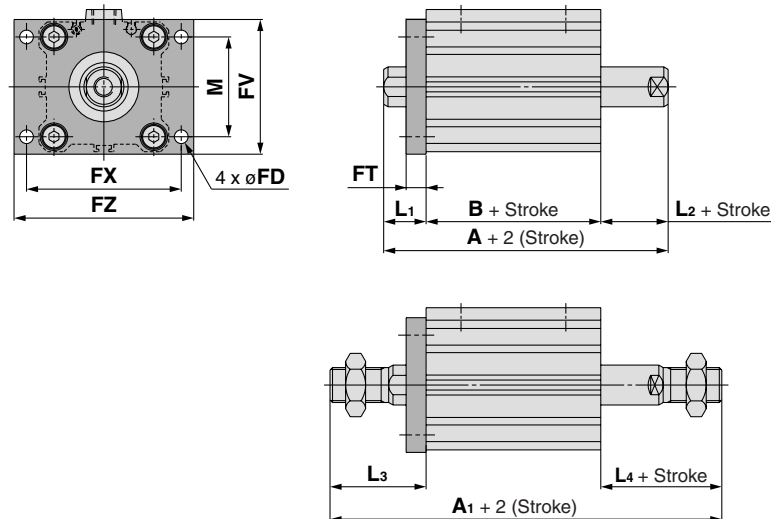
Bore size (mm)	Without auto switch	With auto switch	L ₁
40	117	127	38.5
50	127.5	137.5	43.5
63	129	139	43.5

Foot Style

Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch			L	LD	LG	LH	LT	LX	LY	LZ	X	Y
		A	B	LS	A	B	LS										
40	5 to 50	74	40	24	84	50	34	17	6.6	4	33	3.2	64	68	78	11.2	7
	75, 100	84	50	34													
50	10 to 50	76.5	40.5	17.5	86.5	50.5	27.5	18	9	5	39	3.2	79	78	95	14.7	8
	75, 100	86.5	50.5	27.5													
63	10 to 50	78	42	16	88	52	26	18	11	5	46	3.2	95	91.5	113	16.2	8
	75, 100	88	52	26													

Foot bracket material: Carbon steel
Surface treatment: Nickel plated

Flange style: CQ2KWF/CDQ2KWF



Rod End Male Thread (mm)

Bore size (mm)	Without auto switch	With auto switch	L ₃	L ₄
40	107	117	38.5	28.5
50	117.5	127.5	43.5	33.5
63	119	129	43.5	33.5



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

Flange Style

Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch		FD	FT	FV	FX	FZ	L ₁	L ₂	M
		A	B	A	B								
40	5 to 50	64	40	74	50	5.5	8	54	62	72	17	7	40
	75, 100	74	50										
50	10 to 50	66.5	40.5	76.5	50.5	6.6	9	67	76	89	18	8	50
	75, 100	76.5	50.5										
63	10 to 50	68	42	78	52	9	9	80	92	108	18	8	60
	75, 100	78	52										



* For details about the rod end nut and accessory brackets, refer to page 620.

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

Compact Cylinder: Axial Piping Type Double Acting, Single Rod Series CQP2

ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100

How to Order

CQP2B 50 -30 **D** - M9BW - -

With auto switch **CDQP2B** 50 -30 **D** - M9BW - -

Axial piping type •

Mounting style •

B Through-hole

*Cylinder mounting bolts are not included. Order them separately referring to "Mounting Bolt for CQP2" on pages 707 and 710.

Type •

Nil	Pneumatic
H	Air-hydro ^{Note)}

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

Bore size •

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

Port thread type •

Nil	M thread	ø12 to ø25
TN	NPT	ø32 to ø100
TF	G	

Made to Order
Refer to page 705 for details.

Number of auto switches

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

Auto switch

Nil	Without auto switch
-----	---------------------

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

Body option

Nil	Standard (Rod end female thread)
C	With rubber bumper ^{Note)}
M	Rod end male thread

* Combination of body option ("CM") is available.
Note) 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 705.

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) CDQP2B32-30D

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		Auto switch model		Lead wire length (m)					Pre-wired connector	Applicable load			
					DC	AC	Perpendicular	In-line	0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)					
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V,	—	M9NV	M9N	●	●	●	○	—	○	IC circuit	Relay, PLC	
		3-wire (PNP)		12 V		M9PV		M9P	●	●	●	○	—	○				
		Connector		2-wire		12 V		M9BV	M9B	●	●	●	○	—	○			
				J79C		—		●	—	●	●	●	—	—				
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)		5 V,		M9NWV	M9NW	●	●	●	○	—	○	IC circuit		
				3-wire (PNP)		12 V		M9PWW	M9PW	●	●	●	○	—	○			
				2-wire		12 V		M9BWW	M9BW	●	●	●	○	—	○			
				3-wire (NPN)		5 V,		M9NAV	M9NA	○	○	●	○	—	○			IC circuit
	3-wire (PNP)			12 V		M9PAV		M9PA	○	○	●	○	—	○				
	2-wire			12 V		M9BAV		M9BA	○	○	●	○	—	○				
	4-wire			5 V,12 V		—		F79F	●	—	●	○	—	○	IC circuit			
	2-wire (Non-polar)			—		—		P4DW	—	—	●	●	—	○	—			
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	A96V	A96	●	—	●	—	—	—	IC circuit	Relay, PLC	
				—		200 V		A72	A72H	●	—	●	—	—	—	—		
		Connector		24 V		12 V		100 V	A93V	A93	●	—	●	—	—	—		—
						5 V,12 V		100 V or less	A90V	A90	●	—	●	—	—	—		IC circuit
	12 V				—	A73C	—	●	—	●	●	●	—	—				
	5 V,12 V				200 V or less	A80C	—	●	—	●	●	●	—	—	IC circuit			
	Diagnostic indication (2-color indication)	Grommet		—	—	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) M9NWL
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.

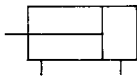
Compact Cylinder: Axial Piping Type Double Acting, Single Rod **Series CQP2**



Rod end male thread

JIS Symbol

Double acting,
Single rod



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)
—XB13	Low speed cylinder (5 to 50 mm/s)
—XC4	With heavy duty scraper, ø32 to 100 only
—XC6	Piston rod, retaining ring, rod end nut made of stainless steel
—XC35	With coil scraper
—XC36	With boss in rod side
—X271	Fluororubber seals

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.

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)	Without cushion	0.022	0.038	0.055	0.09	0.15	0.26	0.46	0.77	1.36	2.27
	Rubber Bumper	0.043	0.075	0.11	0.18	0.29	0.52	0.91	1.54	2.71	4.54
Stroke length tolerance		+1.0mm ^{Note)} 0									

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

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 50mm/s							
Cushion	None							
Stroke length tolerance	+1.0mm 0							

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

Standard Stroke

Pneumatic (Non-lube)

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, 63, 80, 100	10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100

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

Manufacture of Intermediate Stroke

Description	Spacer is installed in the standard stroke body.	
Part no.	Refer to "How to Order" for the standard model no. on page 704.	
Description	Dealing with intermediate stroke by the 1 mm interval is available by using spacer with standard stroke cylinder.	
Stroke range	Bore size	Stroke range
	12, 16	1 to 29
	20, 25	1 to 49
Example	32 to 100	1 to 99
	Part No.: CQP2B50-57D 18 mm width spacer is installed in the standard CQP2B50-75D. B dimension is 115.5 mm.	



- Air-hydro type is excluded.
- In the case of spacer type, intermediate stroke with bumper for ø40 to ø100, it can be manufactured by 5 mm intervals in 5 mm and 55 to 95 mm.

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual
-X□

Technical
data

⚠ 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

- For installation and removal, use an appropriate pair of pliers (tool for installing a type C retaining ring).
- 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.

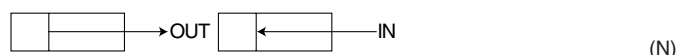
Mounting

- Do not remove the hexagon socket set screw on the side of the rod.
 - Be aware that if the hexagon socket set screw is removed with compressed air supplied to the cylinder, an internal steel ball could fly out or the compressed air could be discharged, leading to injury to humans or damage to peripheral equipment.

Type

Bore size (mm)		12	16	20	25	32	40	50	63	80	100
Pneumatic	Mounting Through-hole (Standard)	●	●	●	●	●	●	●	●	●	●
	Built-in magnet	●	●	●	●	●	●	●	●	●	●
	Piping Screw-in type	M5 x 0.8	M5 x 0.8	M5 x 0.8	M5 x 0.8	Rc 1/8 NPT 1/8 G 1/8	Rc 1/8 NPT 1/8 G 1/8	Rc 1/4 NPT 1/4 G 1/4	Rc 1/4 NPT 1/4 G 1/4	Rc 3/8 NPT 3/8 G 3/8	Rc 3/8 NPT 3/8 G 3/8
		●	●	●	●	●	●	●	●	●	●
		●	●	●	●	●	●	●	●	●	●
	Rod end male thread	●	●	●	●	●	●	●	●	●	●
Air-hydro	Mounting Through-hole (Standard)	—	—	●	●	●	●	●	●	●	●
	Built-in magnet	—	—	●	●	●	●	●	●	●	●
	Piping Screw-in type	—	—	M5 x 0.8	M5 x 0.8	Rc 1/8	Rc 1/8	Rc 1/4	Rc 1/4	Rc 3/8	Rc 3/8
		—	—	●	●	●	●	●	●	●	●

Theoretical Output



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

Bore size (mm)	Cylinder stroke (mm)											
	5	10	15	20	25	30	35	40	45	50	75	100
12	32	39	46	53	60	67	—	—	—	—	—	—
16	54	63	72	81	90	98	—	—	—	—	—	—
20	70	84	98	112	126	140	154	168	182	196	—	—
25	102	117	132	147	161	176	191	206	220	235	—	—
32	149	173	199	222	246	270	295	319	343	367	487	607
40	224	258	280	310	336	362	388	414	440	467	602	737
50	—	414	455	496	538	579	620	662	703	744	949	1154
63	—	584	632	679	727	774	822	870	917	965	1205	1445
80	—	1085	1163	1242	1320	1399	1477	1556	1634	1713	2108	2503
100	—	1894	1992	2091	2189	2287	2385	2483	2581	2679	3169	3659

Additional Mass

Bore size (mm)		12	16	20	25	32	40	50	63	80	100
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 rubber bumper		0	0	−2	−3	−3	−7	−9	−18	−31	−56

Calculation: (Example) CQP2B32-20DCM

• Cylinder mass: CQP2B32-20D..... 222 g

• Option mass: Rod end male thread..... 43 g

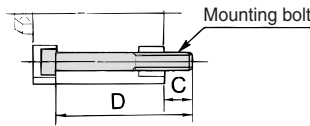
Rubber bumper..... −3 g

262 g

Mounting Bolt for CQP2/Without Auto Switch

Mounting method: Mounting bolt for through-hole mounting style of CQP2B is available as an option.
Ordering: Add the word "Bolt" in front of the bolts to be used.

Example) Bolt M3 x 25L 2 pcs.



Cylinder model	C	D	Mounting bolt size
CQP2B12-5D	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
CQP2B16-5D	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
CQP2B20-5D	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	7.5	55	x 55L
-40D		60	x 60L
-45D		65	x 65L
-50D		70	x 70L
CQP2B25-5D	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	9.5	60	x 60L
-40D		65	x 65L
-45D		70	x 70L
-50D		75	x 75L

Cylinder model	C	D	Mounting bolt size
CQP2B32-5D	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	9	60	x 60L
-40D		65	x 65L
-45D		70	x 70L
-50D		75	x 75L
-75D		110	x 110L
-100D		135	x 135L
CQP2B40-5D	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	7.5	65	x 65L
-40D		70	x 70L
-45D		75	x 75L
-50D		80	x 80L
-75D		115	x 115L
-100D		140	x 140L
CQP2B50-10D	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	12.5	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
CQP2B63-10D	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	14.5	80	x 80L
-45D		85	x 85L
-50D		90	x 90L
-75D		125	x 125L
-100D		150	x 150L
CQP2B80-10D	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	15	85	x 85L
-45D		90	x 90L
-50D		95	x 95L
-75D		130	x 130L
-100D		155	x 155L
CQP2B100-10D	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	15.5	95	x 95L
-45D		100	x 100L
-50D		105	x 105L
-75D		140	x 140L
-100D		165	x 165L

Material: Chromium molybdenum steel
Surface treatment: Nickel plated

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

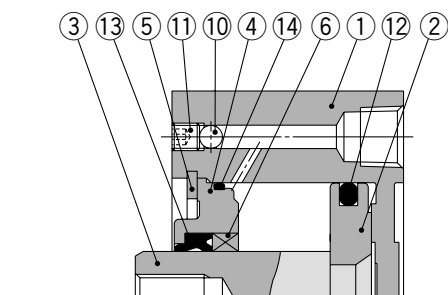
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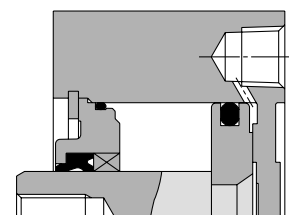
Technical
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Series CQP2

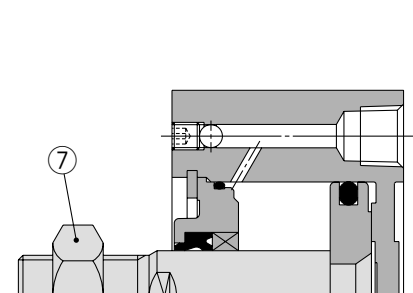
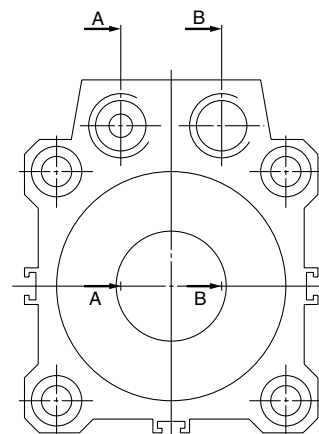
Construction



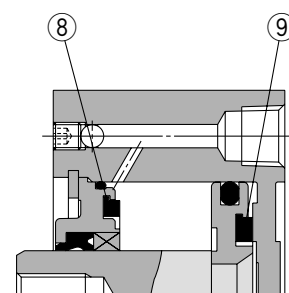
A-A section (Rod side port)



B-B section (Head side port)



Rod end male thread



With rubber bumper

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 casting	ø50 to ø100, Chromated, Painted
5	Retaining ring	Carbon tool steel	Phosphate coated
6	Bushing	Bearing alloy	ø50 to ø100
7	Rod end nut	Carbon steel	Nickel plated
8	Bumper A	Urethane	
9	Bumper B	Urethane	
10	Steel balls	Carbon steel	
11	Hexagon socket head set screw	Alloy steel	Nickel plated
12	Piston seal	NBR	
13	Rod seal	NBR	
14	Gasket	NBR	

Replacement Parts: Seal Kit

Bore size (mm)	Kit no.		Note
	Pneumatic (Non-lube)	Air-hydro	
12	CQ2B12-PS	—	Set of left nos. ⑫, ⑬, ⑭
16	CQ2B16-PS	—	
20	CQ2B20-PS	CQ2BH20-PS	
25	CQ2B25-PS	CQ2BH25-PS	
32	CQ2B32-PS	CQ2BH32-PS	
40	CQ2B40-PS	CQ2BH40-PS	
50	CQ2B50-PS	CQ2BH50-PS	
63	CQ2B63-PS	CQ2BH63-PS	
80	CQ2B80-PS	CQ2BH80-PS	
100	CQ2B100-PS	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)

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

20 — CQP2B Bore size — Stroke D

• ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100

Copper and fluorine-free series

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
Rubber bumper	None
Piping	Screw-in piping
Piston speed	50 to 500 mm/s
Mounting	Through-hole
Auto switch	Mountable

Axial Piping: Double Acting, Single Rod Series **CDQP2** 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.	

Additional Mass

Bore size (mm)		12	16	20	25	32
Rod end	Male thread	1.5	3	6	12	26
Male thread	Nut	1	2	4	8	17
With rubber bumper		0	-1	-2	-3	-3

Bore size (mm)		40	50	63	80	100
Rod end	Male thread	27	53	53	120	175
Male thread	Nut	17	32	32	49	116
With rubber bumper		-7	-9	-18	-31	-56

Mass

Bore size (mm)	Cylinder stroke (mm)											
	5	10	15	20	25	30	35	40	45	50	75	100
12	54	62	69	75	82	89	—	—	—	—	—	—
16	91	99	107	115	123	131	—	—	—	—	—	—
20	121	135	147	161	175	188	201	214	228	242	—	—
25	177	190	203	217	230	244	257	270	284	297	—	—
32	217	242	266	290	315	339	363	387	412	436	557	679
40	319	345	371	397	423	449	475	502	528	554	684	814
50	—	546	588	629	670	712	753	794	836	877	1084	1291
63	—	764	812	859	907	955	1002	1050	1098	1145	1384	1622
80	—	1377	1455	1534	1612	1691	1769	1848	1926	2005	2397	2790
100	—	2296	2394	2492	2590	2688	2786	2884	2982	3080	3570	4060

Calculation: (Example) **CDQP2B32-20DCM**
 • Cylinder mass: CDQP2B32-20D..... 290 g
 • Option mass: Rod end male thread.... 43 g
 Rubber bumper..... -3 g
 330 g

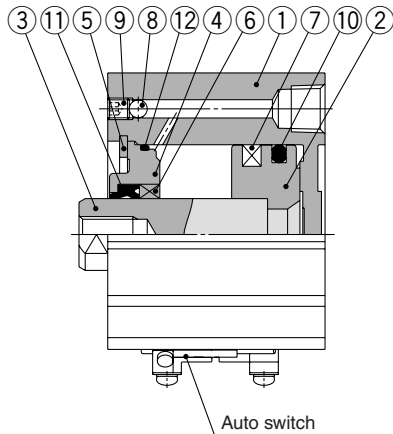
Add each mass of auto switches and mounting brackets.

Switch Mounting Bracket Mass

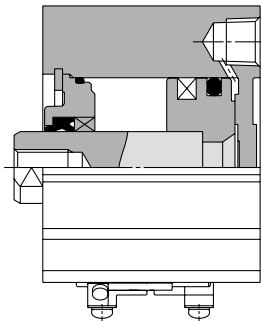
Mounting bracket part no.	Applicable bore size	Mass (g)
BQ-1	ø12 to ø25	1.5
BQ-2	ø32 to ø100	1.5
BQ2-012	ø12 to ø100	5

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

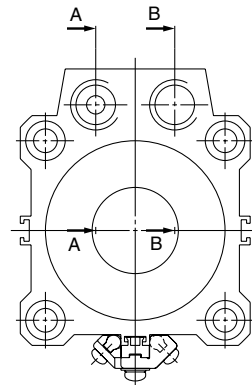
Construction



A-A section (Rod side port)



B-B section (Head side port)



Component Parts

No.	Description	Material	Note
1	Cylinder tube	Aluminum alloy	Hard anodized
2	Piston	Aluminum alloy	Chromated
3	Piston rod	Stainless steel Carbon steel	ø12 to ø25 ø32 to ø100, Hard chrome plated
4	Collar	Aluminum alloy Aluminum alloy casted	ø12 to ø40, Anodized ø50 to ø100, Chromated, painted
5	Retaining ring	Carbon tool steel	Phosphate coated
6	Bushing	Bearing alloy	ø50 to ø100
7	Magnet	—	—
8	Steel balls	Carbon steel	—
9	Hexagon socket head set screw	Alloy steel	Nickel plated
10	Piston seal	NBR	—
11	Rod seal	NBR	—
12	Gasket	NBR	—

Replacement Parts/Seal Kit

Bore size (mm)	Kit no.		Note
	Pneumatic (Non-lube)	Air-hydro	
12	CQ2B12-PS	—	Set of left nos. ⑩, ⑪, ⑫
16	CQ2B16-PS	—	
20	CQ2B20-PS	CQ2BH20-PS	
25	CQ2B25-PS	CQ2BH25-PS	
32	CQ2B32-PS	CQ2BH32-PS	
40	CQ2B40-PS	CQ2BH40-PS	
50	CQ2B50-PS	CQ2BH50-PS	
63	CQ2B63-PS	CQ2BH63-PS	
80	CQ2B80-PS	CQ2BH80-PS	
100	CQ2B100-PS	CQ2BH100-PS	

* Seal kit includes ⑩, ⑪, ⑫. Order the seal kit based on each bore size.

* Since the grease kit does not include a grease pack, order it separately.

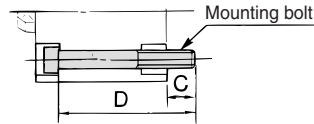
Grease pack part no.: **GR-S-010** (10 g)

Series CQP2

Mounting Bolt for CDQP2/With Auto Switch

Mounting method: Mounting bolt for through-hole mounting
style of CDQP2B 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.



Cylinder model	C	D	Mounting bolt size
CDQP2B12-5D	5.5	35	M3 x 35L
-10D		40	x 40L
-15D		45	x 45L
-20D		50	x 50L
-25D		55	x 55L
-30D		60	x 60L
CDQP2B16-5D	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
CDQP2B20-5D	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
CDQP2B25-5D	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
CDQP2B32-5D	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	7.5	110	x 110L
-100D		135	x 135L
CDQP2B40-5D		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	12.5	115	x 115L
-100D		140	x 140L
CDQP2B50-10D		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

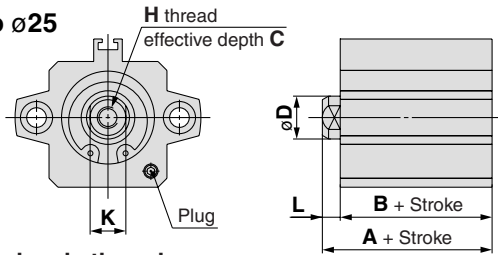
Cylinder model	C	D	Mounting bolt size
CDQP2B63-10D	14.5	60	M8 x 60L
-15D		65	x 65L
-20D		70	x 70L
-25D		75	x 75L
-30D		80	x 80L
-35D		85	x 85L
-40D		90	x 90L
-45D		95	x 95L
-50D		100	x 100L
-75D		125	x 125L
-100D	15	150	x 150L
CDQP2B80-10D		65	M10 x 65L
-15D		70	x 70L
-20D		75	x 75L
-25D		80	x 80L
-30D		85	x 85L
-35D		90	x 90L
-40D		95	x 95L
-45D		100	x 100L
-50D		105	x 105L
-75D	15.5	130	x 130L
-100D		155	x 155L
CDQP2B100-10D		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

Material: Chromium molybdenum steel
Surface treatment: Nickel plated

Dimensions

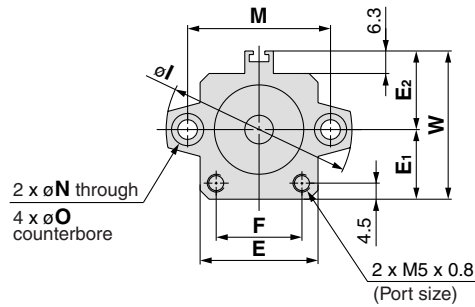
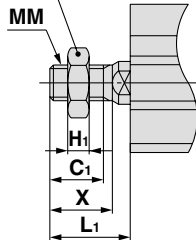
ø12 to ø100/Without Auto Switch

ø12 to ø25



Rod end male thread

Width across flats B_1



Rod End Male Thread (mm)

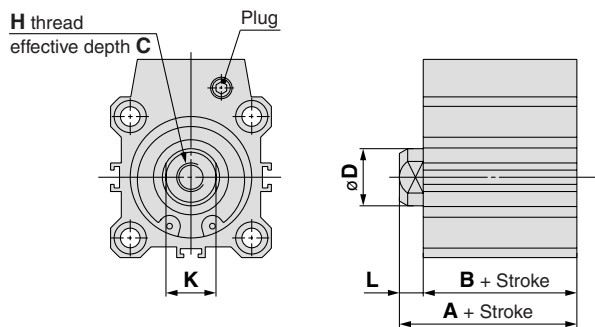
Bore size (mm)	B_1	C_1	H_1	L_1	MM	X
12	8	9	4	14	M5 x 0.8	10.5
16	10	10	5	15.5	M6 x 1.0	12
20	13	12	5	18.5	M8 x 1.25	14
25	17	15	6	22.5	M10 x 1.25	17.5

Basic Style

(mm)

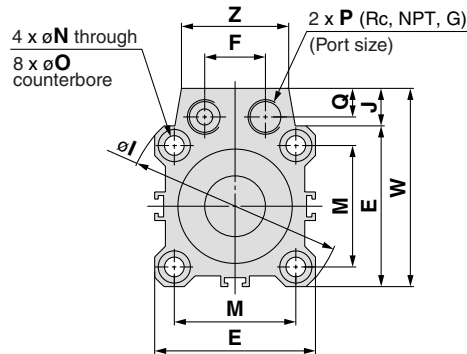
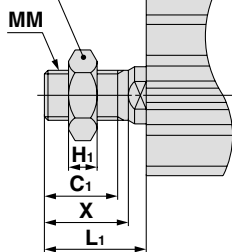
Bore size (mm)	Stroke range (mm)	A	B	C	D	E	E_1	E_2	F	H	I	K	L	M	N	O	W
12	5 to 30	20.5	17	6	6	23	13	14	14	M3 x 0.5	32	5	3.5	22	3.5	6.5 depth 3.5	27
16	5 to 30	22	18.5	8	8	26	15	17	17	M4 x 0.7	38	6	3.5	28	3.5	6.5 depth 3.5	32
20	5 to 50	24	19.5	7	10	30	17	19	21	M5 x 0.8	47	8	4.5	36	5.5	9 depth 7	36
25	5 to 50	27.5	22.5	12	12	33	19.5	22	24	M6 x 1.0	52	10	5	40	5.5	9 depth 7	41.5

ø32 to ø100



Rod end male thread

Width across flats B_1



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
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

Basic Style

(mm)

Bore size (mm)	Stroke range (mm)	A	B	C	D	E	F	H	I	J	K	L	M	N	O	P	Q	W	Z
32	5 to 50	30	23	13	16	45	17	M8 x 1.25	60	10.5	14	7	34	5.5	9 depth 7	1/8	8	55.5	30
	75,100	40	33	13	16	52	17	M8 x 1.25	69	10	14	7	40	5.5	9 depth 7	1/8	8	62	30
40	5 to 50	36.5	29.5	13	16	52	17	M8 x 1.25	69	10	14	7	40	5.5	9 depth 7	1/8	8	62	30
	75,100	46.5	39.5	13	16	52	17	M8 x 1.25	69	10	14	7	40	5.5	9 depth 7	1/8	8	62	30
50	10 to 50	38.5	30.5	15	20	64	22	M10 x 1.5	86	13	17	8	50	6.6	11 depth 8	1/4	10	77	39
	75,100	48.5	40.5	15	20	64	22	M10 x 1.5	86	13	17	8	50	6.6	11 depth 8	1/4	10	77	39
63	10 to 50	44	36	15	20	77	22	M10 x 1.5	103	13	17	8	60	9	14 depth 10.5	1/4	10	90	39
	75,100	54	46	15	20	77	22	M10 x 1.5	103	13	17	8	60	9	14 depth 10.5	1/4	10	90	39
80	10 to 50	53.5	43.5	21	25	98	26	M16 x 2.0	132	16	22	10	77	11	17.5 depth 13.5	3/8	12.5	114	48
	75,100	63.5	53.5	21	25	98	26	M16 x 2.0	132	16	22	10	77	11	17.5 depth 13.5	3/8	12.5	114	48
100	10 to 50	65	53	27	30	117	26	M20 x 2.5	156	17.5	27	12	94	11	17.5 depth 13.5	3/8	12.5	134.5	48
	75,100	75	63	27	30	117	26	M20 x 2.5	156	17.5	27	12	94	11	17.5 depth 13.5	3/8	12.5	134.5	48



Note) External dimensions with rubber bumper are the same as standard type, as shown above.

* For details about the rod end nut and accessory brackets, refer to page 620.

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual

-X□

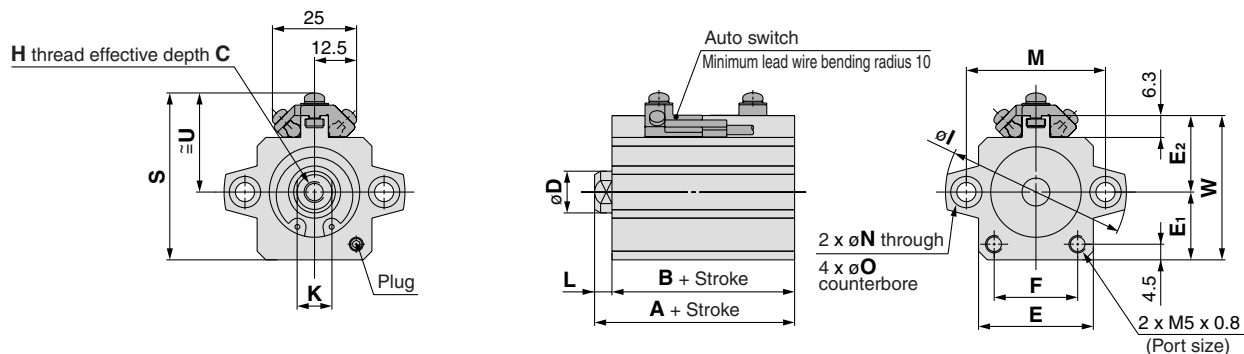
Technical data

Series CQP2

Dimensions

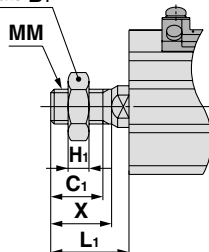
Ø12 to Ø100/ With Auto Switch

Ø12 to Ø25



Rod end male thread

Width across flats B₁



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

Rod End Male Thread (mm)

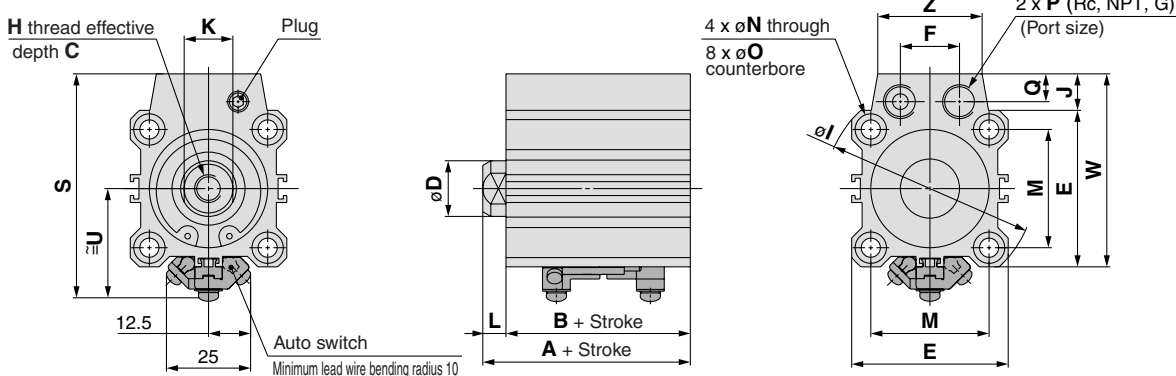
Bore size (mm)	B ₁	C ₁	H ₁	L ₁	MM	X
12	8	9	4	14	M5 x 0.8	10.5
16	10	10	5	15.5	M6 x 1.0	12
20	13	12	5	18.5	M8 x 1.25	14
25	17	15	6	22.5	M10 x 1.25	17.5

Basic Style

Bore size (mm)	Stroke range (mm)	A	B	C	D	E	E ₁	E ₂	F	H	I	K	L	M	N	O	S	U	W
12	5 to 30	31.5	28	6	6	23	13	14	14	M3 x 0.5	32	5	3.5	22	3.5	6.5 depth 3.5	33.5	20.5	27
16	5 to 30	34	30.5	8	8	26	15	17	17	M4 x 0.7	38	6	3.5	28	3.5	6.5 depth 3.5	38.5	23.5	32
20	5 to 50	36	31.5	7	10	30	17	19	21	M5 x 0.8	47	8	4.5	36	5.5	9 depth 7	42.5	25.5	36
25	5 to 50	37.5	32.5	12	12	33	19.5	22	24	M6 x 1.0	52	10	5	40	5.5	9 depth 7	48	28.5	41.5

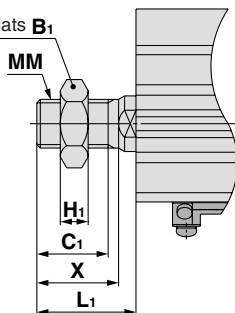
Note) External dimensions with rubber bumper are the same as standard type, as shown above.

Ø32 to Ø100



Rod end male thread

Width across flats B₁



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

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
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

Basic Style

Bore size (mm)	Stroke range (mm)	A	B	C	D	E	F	H	I	J	K	L	M	N	O	P	Q	S	U	W	Z
32	5 to 100	40	33	13	16	45	17	M8 x 1.25	60	10.5	14	7	34	5.5	9 depth 7	1/8	8	65.5	32.5	55.5	30
40	5 to 100	46.5	39.5	13	16	52	17	M8 x 1.25	69	10	14	7	40	5.5	9 depth 7	1/8	8	72	36	62	30
50	10 to 100	48.5	40.5	15	20	64	22	M10 x 1.5	86	13	17	8	50	6.6	11 depth 8	1/4	10	87	42	77	39
63	10 to 100	54	46	15	20	77	22	M10 x 1.5	103	13	17	8	60	9	14 depth 10.5	1/4	10	100	48.5	90	39
80	10 to 100	63.5	53.5	21	25	98	26	M16 x 2.0	132	16	22	10	77	11	17.5 depth 13.5	3/8	12.5	123.5	58.5	114	48
100	10 to 100	75	63	27	30	117	26	M20 x 2.5	156	17.5	27	12	94	11	17.5 depth 13.5	3/8	12.5	144.5	68.5	134.5	48

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

Compact Cylinder: Axial Piping Type

Single Acting, Single Rod

Series CQP2

ø12, ø16, ø20, ø25, ø32, ø40, ø50

How to Order

CQP2B50-10T

With auto switch **CDQP2B50-10T-M9BW**

With auto switch
(Built-in magnet)

Axial piping type

Mounting style
B Through-hole
*Cylinder mounting bolts are not included. Order them separately referring to "Mounting Bolt for CQP2" on pages 715 and 718.

Bore size

12	12 mm
16	16 mm
20	20 mm
25	25 mm
32	32 mm
40	40 mm
50	50 mm

Port thread type

Nil	M thread	ø12 to ø25
	Rc	
TN	NPT	ø32 to ø50
TF	G	

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)
M	Rod end male thread

Action

S	Single acting, Spring return
T	Single acting, Spring extend

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) CDQP2B32-10S

Cylinder stroke (mm)
For "Standard Stroke", refer to page 714.

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		Auto switch model		Lead wire length (m)					Pre-wired connector	Applicable load			
					DC	AC	Perpendicular	In-line	0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)					
Solid state switch	_____	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NV	M9N	●	●	●	○	—	○	IC circuit	Relay, PLC	
		3-wire (PNP)		M9PV				M9P	●	●	●	○	—	○				
	Connector	2-wire		12 V				M9BV	M9B	●	●	●	○	—	○	—		
		3-wire (NPN)		5 V, 12 V				M9NWV	M9NW	●	●	●	○	—	○			IC circuit
	Diagnostic indication (2-color indication)	3-wire (PNP)		12 V				M9PWV	M9PW	●	●	●	○	—	○	—		
		2-wire		12 V				M9BWV	M9BW	●	●	●	○	—	○			
		Water resistant (2-color indication)		3-wire (NPN)				5 V, 12 V	M9NAV	M9NA	○	○	●	○	—	○		IC circuit
				3-wire (PNP)				12 V	M9PAV	M9PA	○	○	●	○	—	○		
	With diagnostic output (2-color indication)			2-wire				12 V	M9BAV	M9BA	○	○	●	○	—	○		—
				4-wire				5 V,12 V	—	F79F	●	—	●	○	—	○		
Reed switch	_____	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	A96V	A96	●	—	●	—	—	—	IC circuit	—	
								—	200 V	A72	A72H	●	—	●	—	—		—
		Connector		2-wire	24 V	12 V	100 V	A93V	A93	●	—	●	—	—	—	—	IC circuit	Relay, PLC
						5 V,12 V	100 V or less	A90V	A90	●	—	●	—	—	—	—		
	12 V					—	A73C	—	●	—	●	●	●	—	—			
	5 V,12 V					200 V or less	A80C	—	●	—	●	●	●	—	—	IC circuit		
	Diagnostic indication (2-color indication)	Grommet		—	—	—	—	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

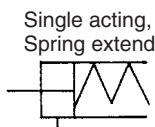
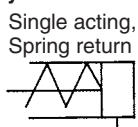
* Solid state auto switches marked with "○" are produced upon receipt of order.

* 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.

Series CQP2



JIS Symbol



Made to Order Specifications
(For details, refer to pages 1373, 1498 and 1508.)

Symbol	Specifications
—XA□	Change of rod end shape
—XC6	Piston rod and rod end nut made of stainless steel
—XC36	With boss in rod side
—X271	Fluororubber seals



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

- For installation and removal, use an appropriate pair of pliers (tool for installing a type C retaining ring).
- 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

- Do not remove the hexagon socket set screw on the side of the rod.
 - Be aware that if the hexagon socket set screw is removed with compressed air supplied to the cylinder, an internal steel ball could fly out or the compressed air could be discharged, leading to injury to humans or damage to peripheral equipment.

Specifications

Bore size	12	16	20	25	32	40	50
Action	Double acting, Single rod						
Fluid	Air						
Proof pressure	1.5 MPa						
Maximum operating pressure	1.0 MPa						
Minimum operating pressure (MPa)	0.25	0.25	0.18	0.18	0.17	0.15	0.13
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)	0.022	0.038	0.055	0.09	0.15	0.26	0.46
Stroke length tolerance	+1.0mm 0						

Standard Stroke

Bore size (mm)	Standard stroke (mm)
12	5, 10
16	
20	
25	
32	
40	10, 20
50	

Manufacture of Intermediate Stroke (Except single acting, spring return)

Description	Spacer is installed in the standard stroke body.	
Part no.	Refer to "How to Order" for the standard model no. on page 713.	
Description	Dealing with the stroke by the 1 mm interval is available by installing spacer with standard stroke cylinder.	
Stroke range	Bore size	Stroke range
	12 to 40	1 to 9
	50	1 to 19
Example	Part no.: CQP2B20-3T CQP2B20-5T with 2 mm width spacer inside. B dimension is 24.5 mm.	

Type

Bore size (mm)			12	16	20	25	32	40	50
Pneumatic	Mounting	Through-hole (Standard)	●	●	●	●	●	●	●
	Built-in magnet		●	●	●	●	●	●	●
	Piping	Screw-in type	M5 x 0.8	M5 x 0.8	M5 x 0.8	M5 x 0.8	Rc 1/8	Rc 1/8	Rc 1/4
							NPT 1/8	NPT 1/8	NPT 1/4
							G 1/8	G 1/8	G 1/4
Rod end male thread		●	●	●	●	●	●	●	

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.

Compact Cylinder: Axial Piping Type Single Acting, Single Rod **Series CQP2**

Theoretical Output

(N)

Action	Bore size (mm)	Operating pressure (MPa)		
		0.3	0.5	0.7
Spring return	12	21	44	66
	16	45	86	126
	20	79	142	205
	25	126	224	323
	32	211	372	533
	40	338	589	841
	50	535	928	1316
Spring extend	12	14	31	48
	16	24	54	85
	20	71	118	165
	25	113	189	264
	32	181	302	422
	40	317	528	739
	50	495	825	1150

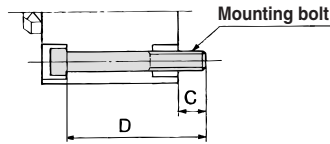
For spring force, refer to page 1569.

Mounting Bolt for CQP2/Without Auto Switch

Mounting method: Mounting bolt for through-hole mounting style of CQP2B is available as an option.

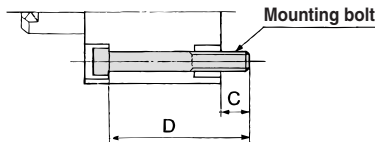
Ordering: Add the word "Bolt" in front of the bolts to be used.

Example) Bolt M3 x 25L 4 pcs.



Spring Return

Cylinder model	C	D	Mounting bolt size
CQP2B12-5S	6.5	25	M3 x 25L
-10S		30	x 30L
CQP2B16-5S	5	25	M3 x 25L
-10S		30	x 30L
CQP2B20-5S	7.5	25	M5 x 25L
-10S		30	x 30L
CQP2B25-5S	9.5	30	M5 x 30L
-10S		35	x 35L
CQP2B32-5S	9	30	M5 x 30L
-10S		35	x 35L
CQP2B40-5S	7.5	35	M5 x 35L
-10S		40	x 40L
CQP2B50-10S	12.5	45	M6 x 45L
-20S		55	x 55L



Spring Extend

Cylinder model	C	D	Mounting bolt size
CQP2B12-5T	6.5	25	M3 x 25L
-10T		30	x 30L
CQP2B16-5T	5	25	M3 x 25L
-10T		30	x 30L
CQP2B20-5T	7.5	25	M5 x 25L
-10T		30	x 30L
CQP2B25-5T	9.5	30	M5 x 30L
-10T		35	x 35L
CQP2B32-5T	9	30	M5 x 30L
-10T		35	x 35L
CQP2B40-5T	7.5	35	M5 x 35L
-10T		40	x 40L
CQP2B50-10T	12.5	45	M6 x 45L
-20T		55	x 55L

Material: Chromium molybdenum steel
Surface treatment: Nickel plated

Mass

(g)

Action	Bore size (mm)	Cylinder stroke (mm)			
		5	10	15	20
Spring return	12	33	40	—	—
	16	55	64	—	—
	20	68	83	—	—
	25	103	118	—	—
	32	149	173	—	—
	40	236	262	—	—
	50	—	426	—	691
Spring extend	12	33	40	—	—
	16	55	64	—	—
	20	73	87	—	—
	25	109	124	—	—
	32	160	180	—	—
	40	262	284	—	—
	50	—	468	—	540

Additional Mass

(g)

Bore size (mm)		12	16	20	25	32	40	50
Rod end male thread	Male thread	1.5	3	6	12	26	27	53
	Nut	1	2	4	8	17	17	32

Calculation: (Example) **CQP2B32-10SM**

- Cylinder mass: CQP2B32-10S..... 173 g
 - Option mass: Rod end male thread..... 43 g
- 216 g

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

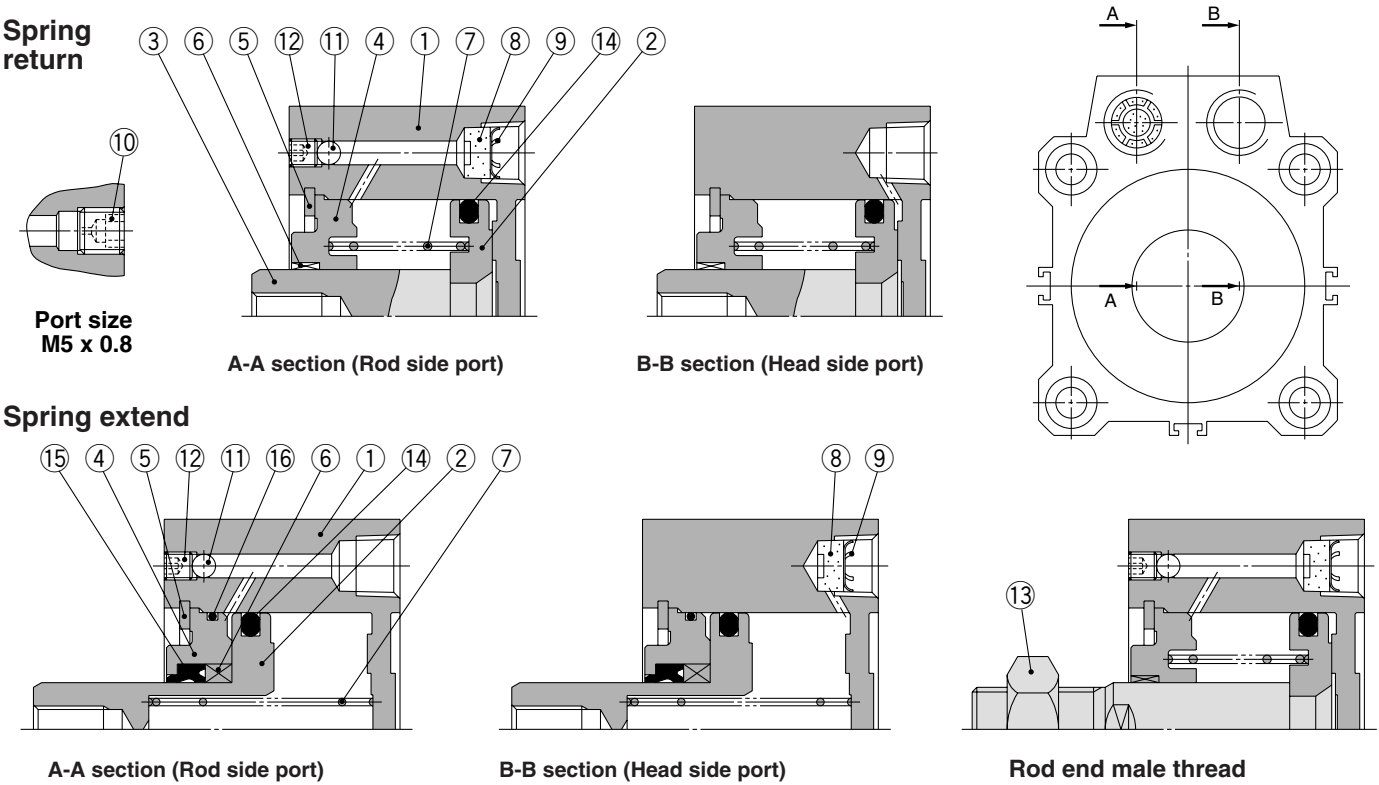
-X□

Individual
-X□

Technical
data

Series CQP2

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 ø50, Hard chrome plated
4	Collar	Aluminum alloy	ø12 to ø40, Anodized
		Aluminum alloy casted	ø50, Chromate, Painted
5	Retaining ring	Carbon tool steel	Phosphate coated
6	Bushing	Bearing alloy	
7	Return spring	Piano wire	Zinc chromated
8	Bronze element	Sintered metallic BC	Port size Rc 1/8, 1/4
9	Retaining ring	Carbon tool steel	
10	Plug with fixed orifice	Alloy steel	Port size M5 x 0.8
11	Steel balls	Carbon steel	
12	Hexagon socket head set screw	Alloy steel	Nickel plated
13	Rod end nut	Carbon steel	Nickel plated

* On spring extend (Type T), piston and piston rod are integrated (stainless steel).

No.	Description	Material	Note
14	Piston seal	NBR	
15	Rod seal	NBR	
16	Gasket	NBR	

Replacement Parts/Seal Kit

Bore size (mm)	Single acting/Spring return	Single acting/Spring extend
12	CQ2B12-S-PS	CQ2B12-T-PS
16	CQ2B16-S-PS	CQ2B16-T-PS
20	CQ2B20-S-PS	CQ2B20-T-PS
25	CQ2B25-S-PS	CQ2B25-T-PS
32	CQ2B32-S-PS	CQ2B32-T-PS
40	CQ2B40-S-PS	CQ2B40-T-PS
50	CQ2B50-S-PS	CQ2B50-T-PS
Note	A set includes 14.	Kits include items 14, 15 and 16 from the table above
How to order	* Seal kit includes 14. Order the seal kit, based on each bore size.	* Seal kit includes 14, 15, 16. 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)

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

20 — CQP2B Bore size — Stroke $\frac{S}{T}(M)$

• ø12, ø16, ø20, ø25, ø32, ø40, ø50

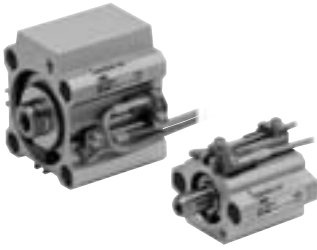
Copper and fluorine-free series

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	Single acting, Single rod
Bore size	ø12, ø16, ø20, ø25, ø32, ø40, ø50
Proof pressure	1.5 MPa
Maximum operating pressure	1.0 MPa
Rubber bumper	None
Piping	Screw-in piping
Piston speed	50 to 500 mm/s
Mounting	Through-hole
Auto switch	Mountable

Axial Piping: Single Acting, Single Rod Series **CDQP2** 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

Action	Bore size (mm)	Cylinder stroke (mm)			
		5	10	15	20
Spring return	12	55	63	—	—
	16	92	100	—	—
	20	121	135	—	—
	25	178	191	—	—
	32	217	242	—	—
	40	323	349	—	—
	50	—	558	—	641
Spring extend	12	61	69	—	—
	16	92	100	—	—
	20	126	140	—	—
	25	184	197	—	—
	32	228	253	—	—
	40	349	375	—	—
	50	—	600	—	683

Additional Mass

Bore size (mm)		12	16	20	25	32	40	50
Rod end male thread	Male thread	1.5	3	6	12	26	27	53
	Nut	1	2	4	8	17	17	32

Calculation: (Example) **CDQP2B32-10SM**
 • Cylinder mass: CDQP2B32-10S.....242 g
 • Option mass: Rod end male thread.....43 g
 285 g

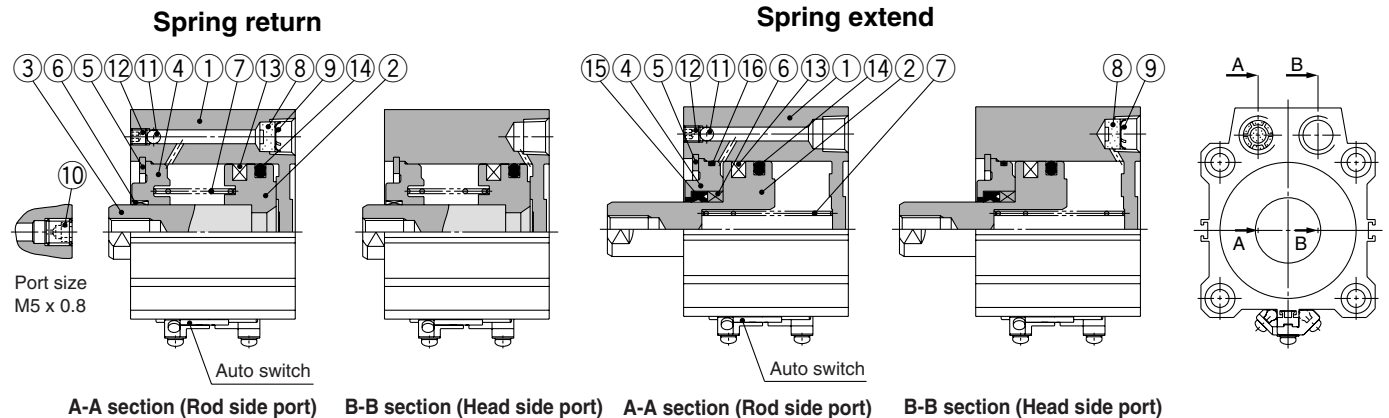
Add each mass of auto switches and mounting brackets when auto switches are mounted.

Switch Mounting Bracket Mass

Mounting bracket part no.	Applicable bore size (mm)	Mass (g)
BQ-1	ø12 to ø25	1.5
BQ-2	ø32 to ø50	1.5
BQ2-012	ø12 to ø50	5

* For the auto switch mass, refer to pages 1263 to 1371.

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 ø50, Hard chrome plated
4	Collar	Aluminum alloy	ø12 to ø40, Anodized
		Aluminum alloy casted	ø50, Chromate, Painted
5	Retaining ring	Carbon tool steel	Phosphate coated
6	Bushing	Bearing alloy	
7	Return spring	Piano wire	Zinc chromated
8	Bronze element	Sintered metallic BC	Port size Rc 1/8, 1/4
9	Retaining ring	Carbon tool steel	
10	Plug with fixed orifice	Alloy steel	Port size M5 x 0.8
11	Steel balls	Carbon steel	
12	Hexagon socket head set screw	Alloy steel	Nickel plated
13	Magnet	—	
14	Piston seal	NBR	
15	Rod seal	NBR	
16	Gasket	NBR	

* On spring extend (Type T), piston and piston rod are integrated (stainless steel).

Replacement Parts/Seal Kit

Bore size (mm)	Single acting/Spring return	Single acting/Spring extend
12	CQ2B12-S-PS	CQ2B12-T-PS
16	CQ2B16-S-PS	CQ2B16-T-PS
20	CQ2B20-S-PS	CQ2B20-T-PS
25	CQ2B25-S-PS	CQ2B25-T-PS
32	CQ2B32-S-PS	CQ2B32-T-PS
40	CQ2B40-S-PS	CQ2B40-T-PS
50	CQ2B50-S-PS	CQ2B50-T-PS
Note	A set includes (14).	Kits include items (14), (15) and (16) from the table above
How to order	* Seal kit includes (14). Order the seal kit, based on each bore size.	* Seal kit includes (14), (15), (16). 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)

CUJ
CU
CQS
CQ2
RQ
CQM
MU

D-□
-X□
Individual
-X□
Technical data

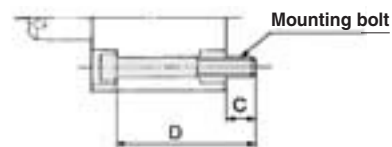
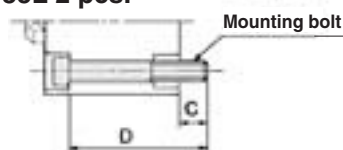
Series CQP2

Mounting Bolt for CDQP2/With Auto Switch

Mounting method: Mounting bolt for through-hole mounting
style of CDQP2B 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.



Spring Return

Cylinder model	C	D	Mounting bolt size
CDQP2B12-5S	5.5	35	M3 x 35L
-10S		40	x 40L
CDQP2B16-5S	8	40	M3 x 40L
-10S		45	x 45L
CDQP2B20-5S	10.5	40	M5 x 40L
-10S		45	x 45L
CDQP2B25-5S	9.5	40	M5 x 40L
-10S		45	x 45L
CDQP2B32-5S	9	40	M5 x 40L
-10S		45	x 45L
CDQP2B40-5S	7.5	45	M5 x 45L
-10S		50	x 50L
CDQP2B50-10S	12.5	55	M6 x 55L
-20S		60	x 60L

Spring Extend

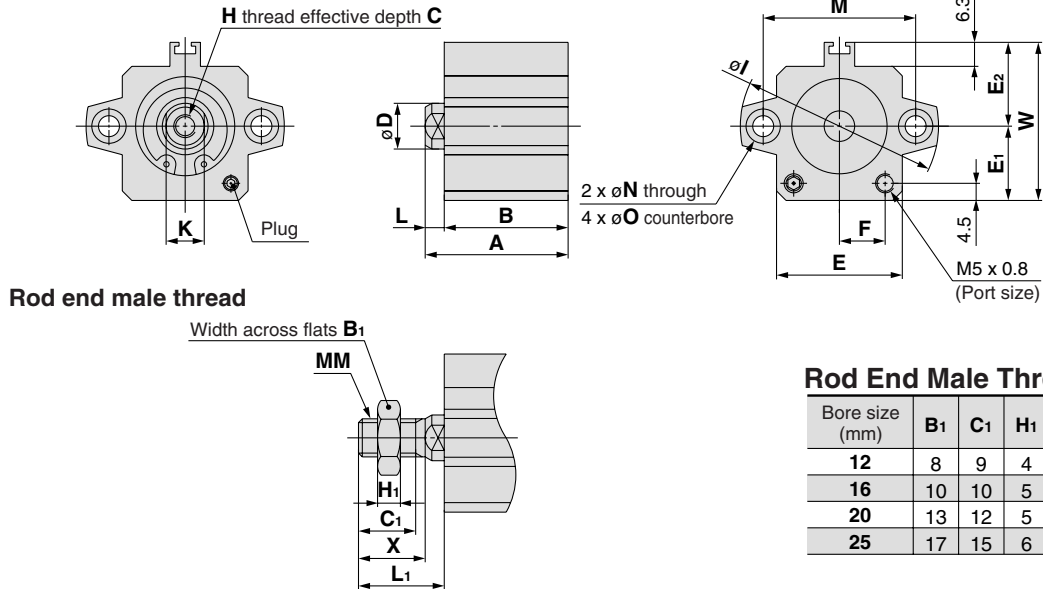
Cylinder model	C	D	Mounting bolt size
CDQP2B12-5T	6.1	40	M3 x 40L
-10T		45	x 45L
CDQP2B16-5T	8	40	M3 x 40L
-10T		45	x 45L
CDQP2B20-5T	10.5	40	M5 x 40L
-10T		45	x 45L
CDQP2B25-5T	9.5	40	M5 x 40L
-10T		45	x 45L
CDQP2B32-5T	9	40	M5 x 40L
-10T		45	x 45L
CDQP2B40-5T	7.5	45	M5 x 45L
-10T		50	x 50L
CDQP2B50-10T	12.5	55	M6 x 55L
-20T		65	x 65L

Material: Chromium molybdenum steel
Surface treatment: Nickel plated

Dimensions

ø12 to ø50/Spring Return without Auto Switch

ø12 to ø25

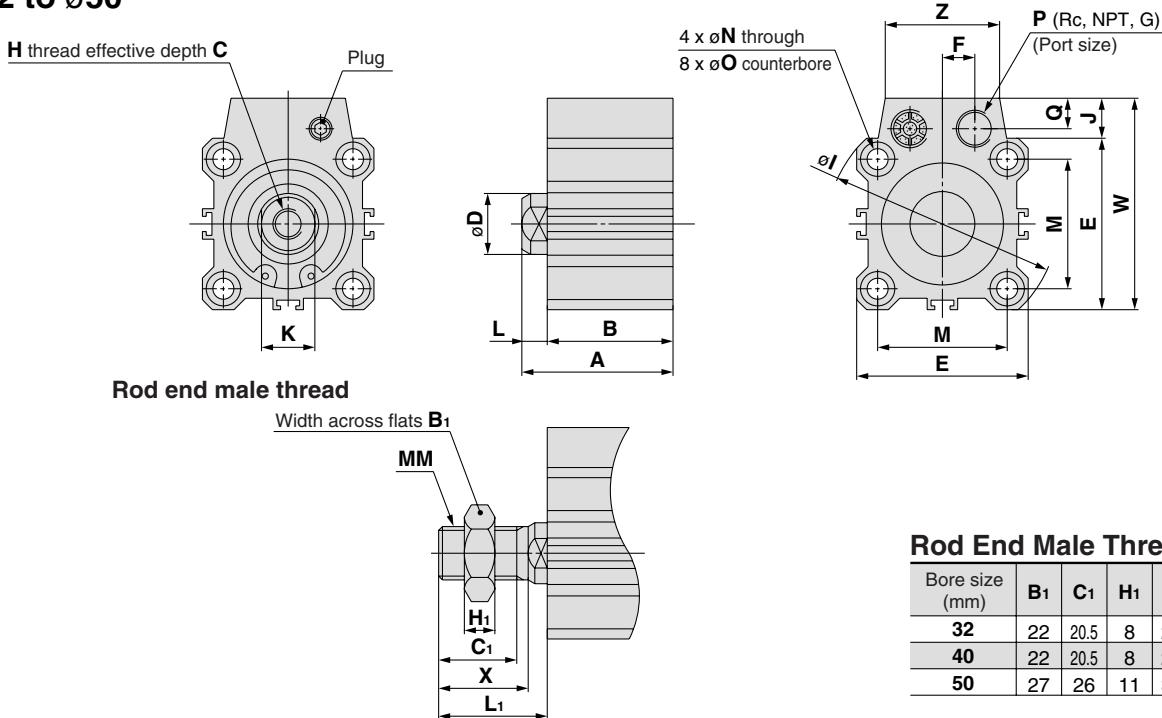


Rod End Male Thread (mm)						
Bore size (mm)	B ₁	C ₁	H ₁	L ₁	MM	X
12	8	9	4	14	M5 x 0.8	10.5
16	10	10	5	15.5	M6 x 1.0	12
20	13	12	5	18.5	M8 x 1.25	14
25	17	15	6	22.5	M10 x 1.25	17.5

Basic Style

Bore size (mm)	A		B		C	D	E	E ₁	E ₂	F	H	I	K	L	M	N	O	W
	5st	10st	5st	10st														
12	25.5	30.5	22	27	6	6	23	13	14	7	M3 x 0.5	32	5	3.5	22	3.5	6.5 depth 3.5	27
16	27	32	23.5	28.5	8	8	26	15	17	8.5	M4 x 0.7	38	6	3.5	28	3.5	6.5 depth 3.5	32
20	29	34	24.5	29.5	7	10	30	17	19	10.5	M5 x 0.8	47	8	4.5	36	5.5	9 depth 7	36
25	32.5	37.5	27.5	32.5	12	12	33	19.5	22	12	M6 x 1.0	52	10	5	40	5.5	9 depth 7	41.5

ø32 to ø50



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

Basic Style

Bore size (mm)	A			B			C	D	E	F	H	I	J	K	L	M	N	O	P	Q	W	Z
	5st	10st	20st	5st	10st	20st																
32	35	40	—	28	33	—	13	16	45	8.5	M8 x 1.25	60	10.5	14	7	34	5.5	9 depth 7	1/8	8	55.5	30
40	41.5	46.5	—	34.5	39.5	—	13	16	52	8.5	M8 x 1.25	69	10	14	7	40	5.5	9 depth 7	1/8	8	62	30
50	—	48.5	58.5	—	40.5	50.5	15	20	64	11	M10 x 1.5	86	13	17	8	50	6.6	11 depth 8	1/4	10	77	39



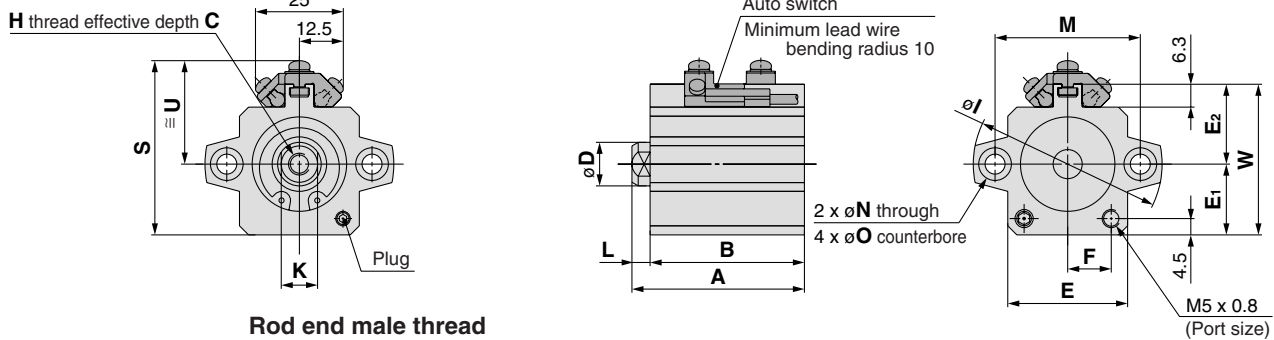
* For details about the rod end nut and accessory brackets, refer to page 620.

Series CQP2

Dimensions

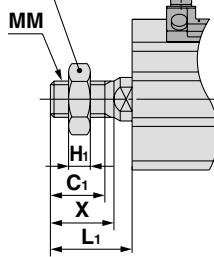
Ø12 to Ø50/Spring Return with Auto Switch

Ø12 to Ø25



Rod end male thread

Width across flats B₁



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

Rod End Male Thread

(mm)

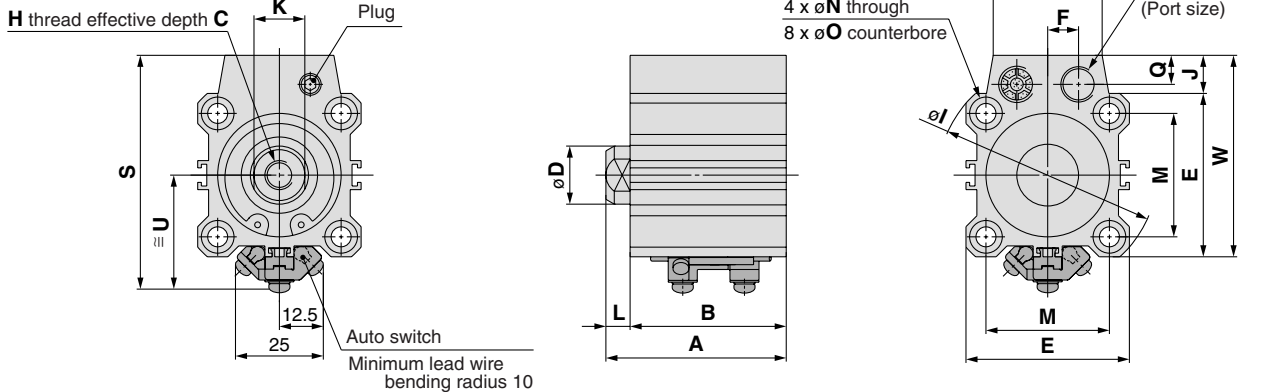
Bore size (mm)	B ₁	C ₁	H ₁	L ₁	MM	X
12	8	9	4	14	M5 x 0.8	10.5
16	10	10	5	15.5	M6 x 1.0	12
20	13	12	5	18.5	M8 x 1.25	14
25	17	15	6	22.5	M10 x 1.25	17.5

Basic Style

(mm)

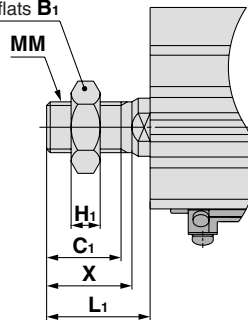
Bore size (mm)	A		B		C	D	E	E ₁	E ₂	F	H	I	K	L	M	N	O	S	U	W
	5st	10st	5st	10st																
12	36.5	41.5	33	38	6	6	23	13	14	7	M3 x 0.5	32	5	3.5	22	3.5	6.5 depth 3.5	33.5	20.5	27
16	39	44	35.5	40.5	8	8	26	15	17	8.5	M4 x 0.7	38	6	3.5	28	3.5	6.5 depth 3.5	38.5	23.5	32
20	41	46	36.5	41.5	7	10	30	17	19	10.5	M5 x 0.8	47	8	4.5	36	5.5	9 depth 7	42.5	25.5	36
25	42.5	47.5	37.5	42.5	12	12	33	19.5	22	12	M6 x 1.0	52	10	5	40	5.5	9 depth 7	48	28.5	41.5

Ø32 to Ø50



Rod end male thread

Width across flats B₁



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

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

Basic Style

(mm)

Bore size (mm)	A			B			C	D	E	F	H	I	J	K	L	M	N	O	P	Q	S	U	W	Z
	5st	10st	20st	5st	10st	20st																		
32	45	50	—	38	43	—	13	16	45	8.5	M8 x 1.25	60	10.5	14	7	34	5.5	9 depth 7	1/8	8	65.5	32.5	55.5	30
40	51.5	56.5	—	44.5	49.5	—	13	16	52	8.5	M8 x 1.25	69	10	14	7	40	5.5	9 depth 7	1/8	8	72	36	62	30
50	—	58.5	68.5	—	50.5	60.5	15	20	64	11	M10 x 1.5	86	13	17	8	50	6.6	11 depth 8	1/4	10	87	42	77	39

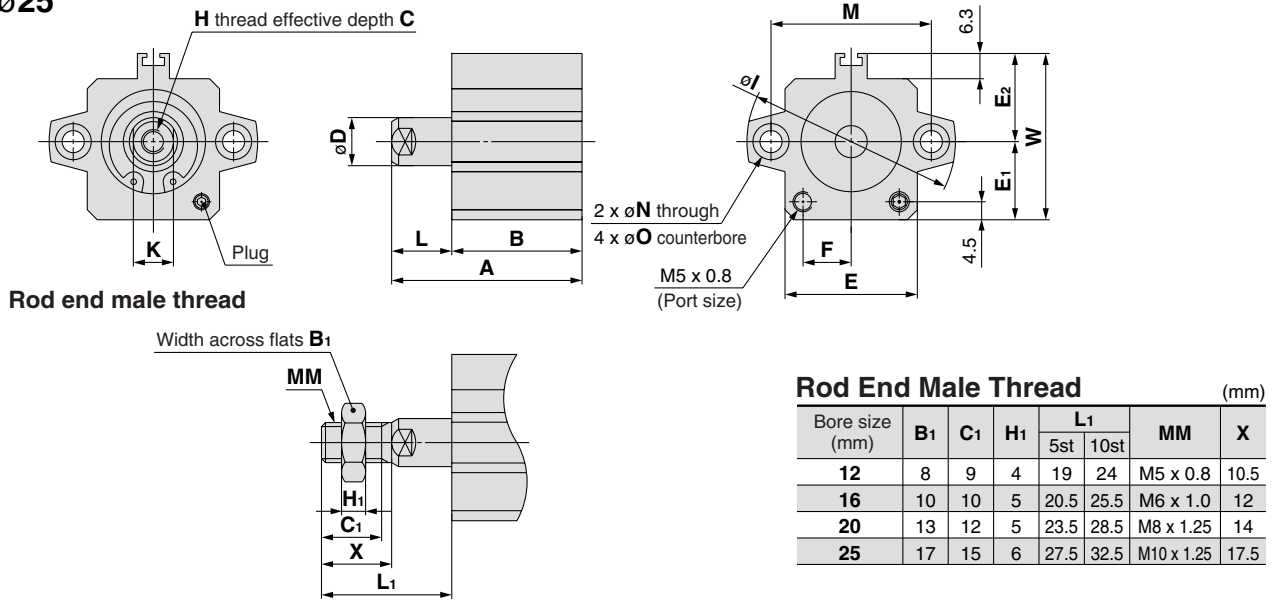


* For details about the rod end nut and accessory brackets, refer to page 620.

Dimensions

ø12 to ø50/Spring Extend without Auto Switch

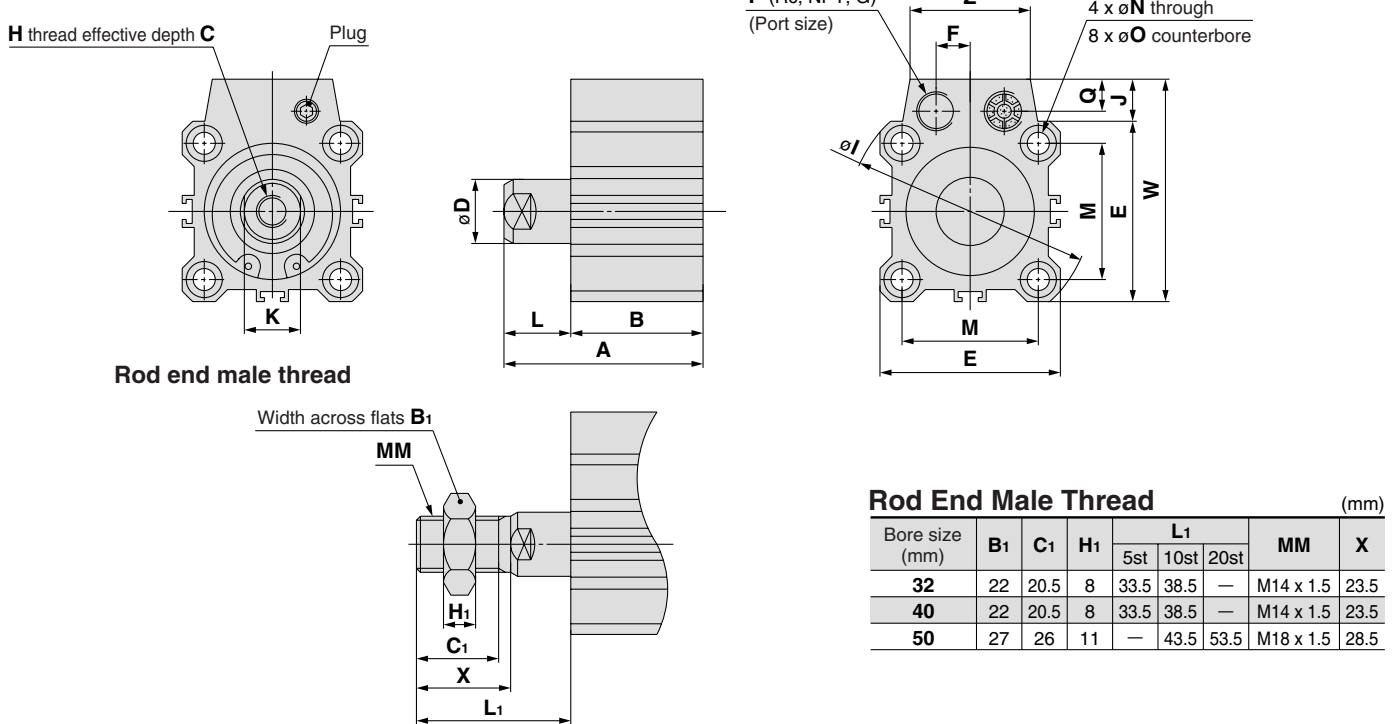
ø12 to ø25



Basic Style

Bore size (mm)	A		B		C	D	E	E ₁	E ₂	F	H	I	K	L		M	N	O	W
	5st	10st	5st	10st										5st	10st				
12	30.5	40.5	22	27	6	6	23	13	14	7	M3 x 0.5	32	5	8.5	13.5	22	3.5	6.5 depth 3.5	27
16	32	42	23.5	28.5	8	8	26	15	17	8.5	M4 x 0.7	38	6	8.5	13.5	28	3.5	6.5 depth 3.5	32
20	34	44	24.5	29.5	7	10	30	17	19	10.5	M5 x 0.8	47	8	9.5	14.5	36	5.5	9 depth 7	36
25	37.5	47.5	27.5	32.5	12	12	33	19.5	22	12	M6 x 1.0	52	10	10	15	40	5.5	9 depth 7	41.5

ø32 to ø50



Basic Style

Bore size (mm)	A			B			C	D	E	F	H	I	J	K	L			M	N	O	P	Q	W	Z
	5st	10st	20st	5st	10st	20st									5st	10st	20st							
32	40	50	—	28	33	—	13	16	45	8.5	M8 x 1.25	60	10.5	14	12	17	—	34	5.5	9 depth 7	1/8	8	55.5	30
40	46.5	56.5	—	34.5	39.5	—	13	16	52	8.5	M8 x 1.25	69	10	14	12	17	—	40	5.5	9 depth 7	1/8	8	62	30
50	—	58.5	78.5	—	40.5	50.5	15	20	64	11	M10 x 1.5	86	13	17	—	18	28	50	6.6	11 depth 8	1/4	10	77	39



* For details about the rod end nut and accessory brackets, refer to page 620.

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual

-X□

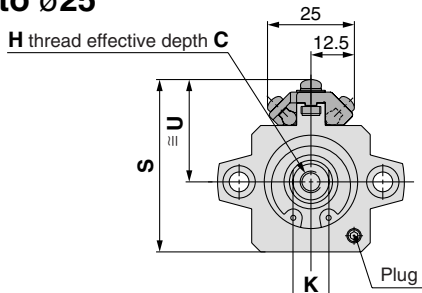
Technical data

Series CQP2

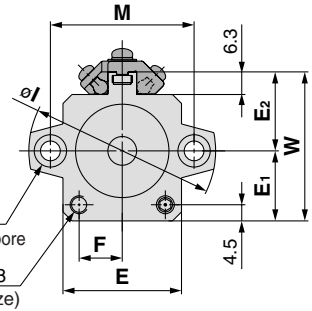
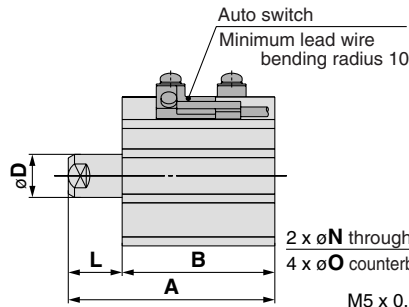
Dimensions

Ø12 to Ø50/Spring Extend with Auto Switch

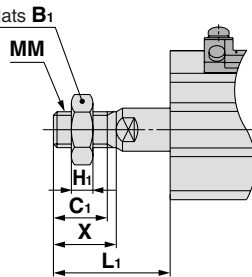
Ø12 to Ø25



Rod end male thread



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



Rod End Male Thread

(mm)

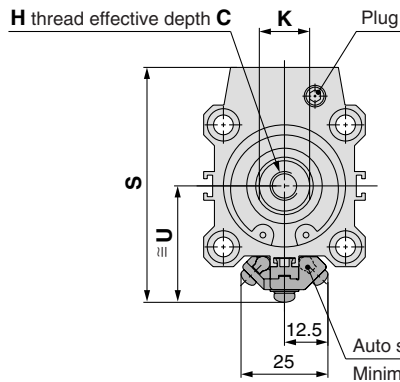
Bore size (mm)	B ₁	C ₁	H ₁	L ₁		MM	X
				5st	10st		
12	8	9	4	19	24	M5 x 0.8	10.5
16	10	10	5	20.5	25.5	M6 x 1.0	12
20	13	12	5	23.5	28.5	M8 x 1.25	14
25	17	15	6	27.5	32.5	M10 x 1.25	17.5

Basic Style

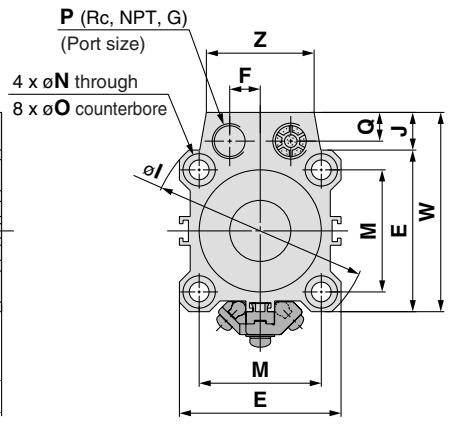
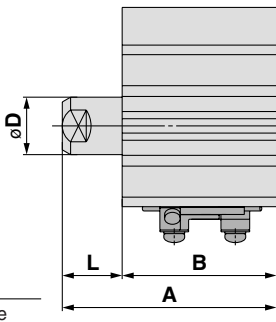
(mm)

Bore size (mm)	A		B		C	D	E	E ₁	E ₂	F	H	I	K	L		M	N	O	S	U	W
	5st	10st	5st	10st										5st	10st						
12	45.9	55.9	37.4	42.4	6	6	23	13	14	7	M3 x 0.5	32	5	8.5	13.5	22	3.5	6.5 depth 3.5	33.5	20.5	27
16	44	54	35.5	40.5	8	8	26	15	17	8.5	M4 x 0.7	38	6	8.5	13.5	28	3.5	6.5 depth 3.5	38.5	23.5	32
20	46	56	36.5	41.5	7	10	30	17	19	10.5	M5 x 0.8	47	8	9.5	14.5	36	5.5	9 depth 7	42.5	25.5	36
25	47.5	57.5	37.5	42.5	12	12	33	19.5	22	12	M6 x 1.0	52	10	10	15	40	5.5	9 depth 7	48	28.5	41.5

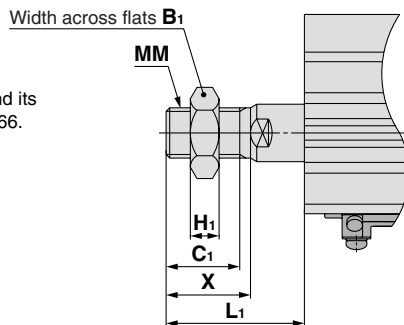
Ø32 to Ø50



Rod end male thread



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



Rod End Male Thread

(mm)

Bore size (mm)	B ₁	C ₁	H ₁	L ₁			MM	X
				5st	10st	20st		
32	22	20.5	8	33.5	38.5	—	M14 x 1.5	23.5
40	22	20.5	8	33.5	38.5	—	M14 x 1.5	23.5
50	27	26	11	—	43.5	53.5	M18 x 1.5	28.5

Basic Style

(mm)

Bore size (mm)	A			B			C	D	E	F	H	I	J	K	L			M	N	O	P	Q	S	U	W	Z
	5st	10st	20st	5st	10st	20st									5st	10st	20st									
32	50	60	—	38	43	—	13	16	45	8.5	M8 x 1.25	60	10.5	14	12	17	—	34	5.5	9 depth 7	1/8	8	62	29	55.5	30
40	56.5	66.5	—	44.5	49.5	—	13	16	52	8.5	M8 x 1.25	69	10	14	12	17	—	40	5.5	9 depth 7	1/8	8	68.5	32.5	62	30
50	—	68.5	88.5	—	50.5	60.5	15	20	64	11	M10 x 1.5	86	13	17	—	18	28	50	6.6	11 depth 8	1/4	10	83.5	38.5	77	39



* For details about the rod end nut and accessory brackets, refer to page 620.

Compact Cylinder: Anti-lateral Load Type

Series CQ2

ø32, ø40, ø50, ø63, ø80, ø100

How to Order

With auto switch **CQ2** **B** **S** **32** **-** **30** **D** **C** **-** **M9BW** **-**

Mounting style

B	Through-hole (Standard)
A	Both ends tapped style
L	Foot style
F	Rod side flange style
G	Head side flange 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 CQ2BS" on pages 728 and 729.

Form

S	Anti-lateral load type
----------	------------------------

Bore size

32	32 mm	63	63 mm
40	40 mm	80	80 mm
50	50 mm	100	100 mm

Port thread type

Nil	Rc
TN	NPT
TF	G

Cylinder stroke (mm)
For "Standard Stroke", refer to page 724.

Action

D	Double acting
----------	---------------

Number of auto switches

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

Auto switch

Nil	Without auto switch
------------	---------------------

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

Body option 2

Nil	Standard (Rod end female thread)
M	Rod end male thread

Cushion

C	Rubber bumper
----------	---------------

Body option 1

Nil	Standard
F	With boss in head side

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) CDQ2LS40-30DC

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		Auto switch model		Lead wire length (m)					Pre-wired connector	Applicable load			
					DC	AC	Perpendicular	In-line	0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)					
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NV	M9N	●	●	●	○	—	○	IC circuit	Relay, PLC	
		3-wire (PNP)		M9PV				M9P	●	●	●	○	—	○				
	Connector	2-wire		12 V				M9BV	M9B	●	●	●	○	—	○	—		
		3-wire (NPN)		5 V, 12 V				J79C	—	●	—	●	●	●	—			
	Diagnostic indication (2-color indication)	Grommet		3-wire (PNP)				5 V, 12 V	M9NWV	M9NW	●	●	●	○	—	○		IC circuit
				2-wire				12 V	M9PWV	M9PW	●	●	●	○	—	○		—
	3-wire (NPN)			5 V, 12 V				M9B WV	M9B W	●	○	●	○	—	○	IC circuit		
	3-wire (PNP)			5 V, 12 V				M9NAV	M9NA	○	○	●	○	—	○	—		
	2-wire			12 V				M9PAV	M9PA	○	○	●	○	—	○	—		
	4-wire			5 V,12 V				M9BAV	M9BA	○	○	●	○	—	○	—		
With diagnostic output (2-color indication)	—		—	F79F	●	—	●	○	—	○	IC circuit							
Magnetic field resistant (2-color indication)	2-wire (Non-polar)		—	—	P4DW	—	—	●	●	—	○	—						
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	A96V	A96	●	—	●	—	—	—	IC circuit	Relay, PLC	
								2-wire	—	200 V	A72	A72H	●	—	●	—		—
	24 V	12 V	100 V	A93V	A93	●	—		●	—	—	—	—					
		5 V,12 V	100 V or less	A90V	A90	●	—		●	—	—	—	—					
		12 V	—	A73C	—	●	—		●	●	●	—	—					
		Connector	5 V,12 V	200 V or less	A80C	—	●		—	●	●	●	—	—				
	Diagnostic indication		Grommet	Yes	—	—	A79W	—	●	—	●	—	—	—				

- * Lead wire length symbols: 0.5 m Nil (Example) M9NV
1 m M (Example) M9NW
3 m L (Example) M9NW
5 m Z (Example) M9NW
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.

Series CQ2



JIS Symbol

Double acting,
Single rod



⚠ 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

- For installation and removal, use an appropriate pair of pliers (tool for installing a type C retaining ring).
- 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.



Made to Order Specifications

(For details, refer to pages 1395 to 1498 and 1508.)

Symbol	Specifications
—XB10	Intermediate stroke (Using exclusive body)
—XC6	Piston rod and rod end nut made of stainless steel
—XC26	Double clevis pins include copper pins and a flat washer.
—XC27	Double clevis pins and double knuckle pins made of stainless steel 304
—X271	Fluororubber seals

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.

Specifications

Bore size	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	0.05 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)	0.29	0.52	0.91	1.54	2.71	4.54
Stroke length tolerance	+1.0mm (Note) 0					

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

Standard Stroke

Bore size (mm)	Standard stroke (mm)
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

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 723.	Suffix "-XB10" to the end of standard model no. on page 723.
Description	Dealing with the stroke by the 1 mm interval is available by installing spacer with standard stroke cylinder.	Dealing with the stroke by the 1 mm interval by using an exclusive body with the specified stroke.
Stroke range	Bore size	Stroke range
	32 to 100	1 to 99
Example	Part no.: CQ2BS50-57DC CQ2BS50-75DC with 18 mm width spacer. B dimension is 125.5 mm.	Part no.: CQ2BS50-57DC-XB10 Makes 57 stroke tube. B dimension is 107.5 mm.

- In the case of special body type for bore 32 to 100 (-XB10), standard value for longitudinal dimension will be changed. Subtract from 75 and 100 stroke dimensions and figure it out.

Type

Bore size (mm)		32	40	50	63	80	100
Pneumatic	Mounting	Through-hole (Standard)	●	●	●	●	●
		Both ends tapped style	●	●	●	●	●
	Built-in magnet	●	●	●	●	●	●
	Piping	Rc 1/8	Rc 1/8	Rc 1/4	Rc 1/4	Rc 3/8	Rc 3/8
	Screw-in type	NPT 1/8	NPT 1/8	NPT 1/4	NPT 1/4	NPT 3/8	NPT 3/8
		G 1/8	G 1/8	G 1/4	G 1/4	G 3/8	G 3/8
	Rod end male thread	●	●	●	●	●	●
	With rubber bumper (standard)	●	●	●	●	●	●
	With boss in head side	●	●	●	●	●	●

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

20-CQ2BS Bore size - Stroke DC(M)

Copper and fluorine-free series

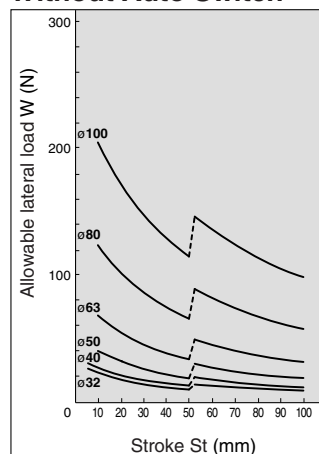
To prevent the influence of copper ions or halogen ions during CRT manufacturing processes, copper and fluorine materials are not used in the component parts.

Specifications

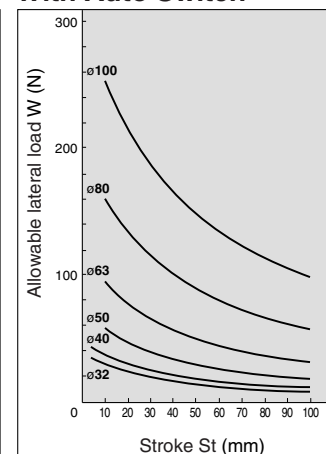
Action	Double acting, Single rod
Bore size (mm)	ø32, ø40, ø50, ø63, ø80, ø100
Proof pressure	1.5 MPa
Max. operating pressure	1.0 MPa
Rubber bumper	With (Standard equipment)
Piping	Screw-in piping
Piston speed	50 to 500 mm/s
Mounting	Both ends tapped style
Auto switch	Mountable

Allowable Load at Rod End

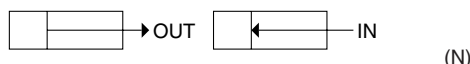
Without Auto Switch



With Auto Switch



Theoretical Output



Bore size (mm)	Operating direction	Operating pressure (MPa)		
		0.3	0.5	0.7
32	IN	181	302	422
	OUT	241	402	563
40	IN	317	528	739
	OUT	377	628	880
50	IN	495	825	1155
	OUT	589	982	1374
63	IN	841	1402	1962
	OUT	935	1559	2182
80	IN	1361	2268	3175
	OUT	1508	2513	3519
100	IN	2144	3574	5003
	OUT	2356	3927	5498

Mass

Bore size (mm)	Cylinder stroke (mm)											
	5	10	15	20	25	30	35	40	45	50	75	100
32	142	163	184	204	225	246	267	287	308	329	482	587
40	224	247	270	293	316	339	362	386	409	432	616	736
50	—	400	436	472	508	545	581	617	653	690	982	1170
63	—	589	630	671	712	753	794	835	876	916	1264	1475
80	—	1079	1147	1215	1282	1350	1418	1486	1554	1622	2194	2528
100	—	1863	1953	2044	2135	2226	2316	2407	2498	2589	3393	3853

Additional Mass

Bore size (mm)		32	40	50	63	80	100
Both ends tapped style		6	6	6	19	45	45
Rod end male thread	Male thread	26	27	53	53	120	175
	Nut	17	17	32	32	49	116
Foot style (Including mounting bolt)		143	155	243	324	696	1062
Rod side flange style (Including mounting bolt)		180	214	373	559	1056	1365
Head side flange style (Including mounting bolt)		165	198	348	534	1017	1309
Double clevis style (Including pin, retaining ring, bolt)		151	196	393	554	1109	1887

Calculation: (Example) CQ2DS32-20DCM

- Cylinder mass: CQ2BS32-20DC..... 204 g
- Option mass: Both ends tapped style..... 6 g
- Rod end male thread..... 43 g
- Double clevis style..... 151g

404 g

CUJ

CU

CQS

CQ2

RQ

CQM

MU

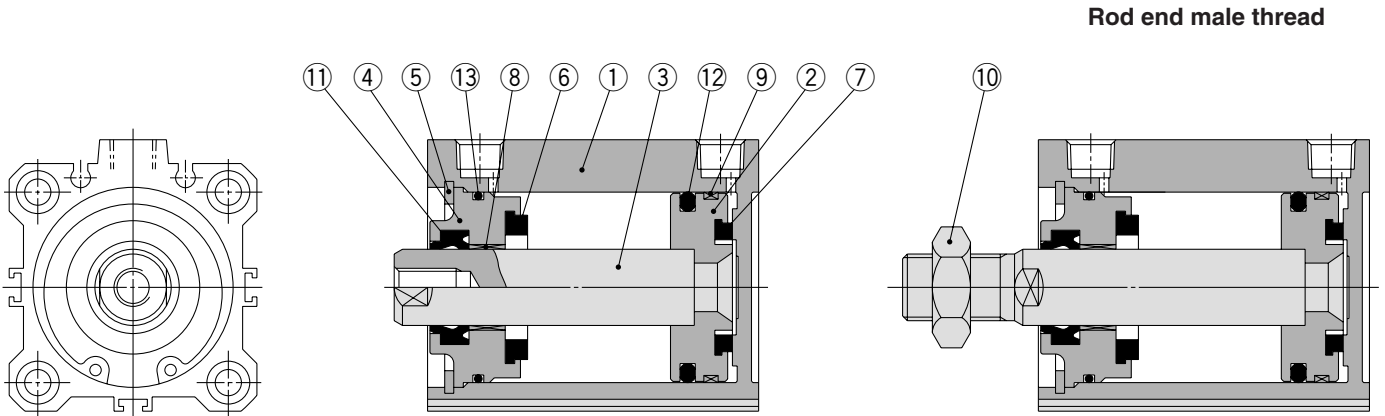
D-□

-X□

Individual
-X□

Technical
data

Construction



Component Parts

No.	Description	Material	Note
1	Cylinder tube	Aluminum alloy	Hard anodized
2	Piston	Aluminum alloy	Chromated
3	Piston rod	Carbon steel	Hard chrome plated
4	Collar	Aluminum alloy	Anodized
5	Retaining ring	Carbon tool steel	Phosphate coated
6	Bumper A	Urethane	
7	Bumper B	Urethane	
8	Bushing	Bearing alloy	
9	Wear ring	Resin	
10	Rod end nut	Carbon steel	Nickel plated
11	Rod seal	NBR	
12	Piston seal	NBR	
13	Tube gasket	NBR	

Replacement Parts: Seal Kit

Bore size (mm)	Kit no.	Contents
32	CQ2B32-PS	Set of left nos. ⑪, ⑫, ⑬
40	CQ2B40-PS	
50	CQ2B50-PS	
63	CQ2B63-PS	
80	CQ2B80-PS	
100	CQ2B100-PS	

* Seal kit includes ⑪, ⑫, ⑬. 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 Bracket Part No.

Bore size (mm)	Foot (1)	Flange	Double clevis
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 1) Order two foot brackets per cylinder.
Note 2) 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.

Compact Cylinder: Anti-lateral Load Type

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

Bore size (mm)	Cylinder stroke (mm)											
	5	10	15	20	25	30	35	40	45	50	75	100
32	201	222	243	263	284	305	326	346	367	388	493	598
40	300	323	347	370	393	416	439	462	485	508	628	748
50	—	518	554	590	626	663	699	735	771	808	996	1184
63	—	748	788	829	870	911	952	993	1034	1075	1286	1497
80	—	1340	1408	1476	1543	1611	1679	1747	1815	1883	2217	2552
100	—	2242	2333	2424	2514	2605	2696	2787	2877	2968	3428	3888

Additional Mass

Bore size (mm)	32	40	50	63	80	100
Both ends tapped style	6	6	6	19	45	45
Rod end male thread	Male thread	26	27	53	53	120
	Nut	17	17	32	32	49
Foot style (Including mounting bolt)	143	155	243	324	696	1062
Rod side flange style (Including mounting bolt)	180	214	373	559	1056	1365
Head side flange style (Including mounting bolt)	165	198	348	534	1017	1309
Double clevis style (Included pin, retaining ring, bolt)	151	196	393	554	1109	1887

With auto switch

Calculation: (Example) **CDQ2DS32-20DCM**

- Cylinder mass: CDQ2BS32-20DC..... 263 g
- Option mass: Both ends tapped style..... 6 g
- Rod end male thread..... 43 g
- Double clevis style..... 151 g

463 g

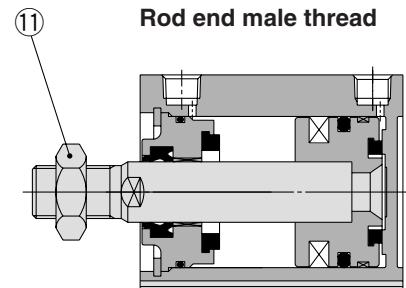
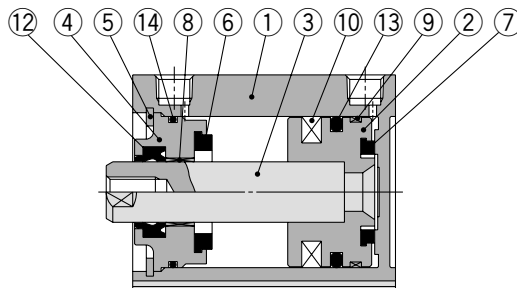
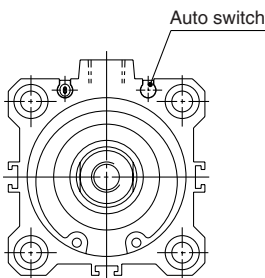
Add the mass of auto switches and mounting brackets when auto switches are mounted.

Auto Switch Mounting Bracket Mass

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

* For the auto switch mass, refer to pages 1263 to 1371.

Construction



Component Parts

No.	Description	Material	Note
1	Cylinder tube	Aluminum alloy	Hard anodized
2	Piston	Aluminum alloy	Chromated
3	Piston rod	Carbon steel	Hard chrome plated
4	Collar	Aluminum alloy	Anodized
5	Retaining ring	Carbon tool steel	Phosphate coated
6	Bumper A	Urethane	
7	Bumper B	Urethane	
8	Bushing	Bearing alloy	
9	Wear ring	Resin	
10	Magnet	—	
11	Rod end nut	Carbon steel	
12	Rod seal	NBR	
13	Piston seal	NBR	
14	Tube gasket	NBR	

Replacement Parts: Seal Kit

Bore size (mm)	Kit no.	Contents
32	CQ2B32-PS	Set of left nos. 12, 13, 14
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.

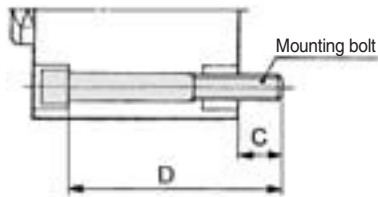
Grease pack part no.: GR-S-010 (10 g)

Series CQ2

Mounting Bolt

Mounting method: Mounting bolt for through-hole mounting style of CQ2BS is available as an option.
Ordering: Add the word "Bolt" in front of the bolts to be used.

Example) Bolt M3 x 25L 2 pcs.



Mounting Bolt for CQ2BS/Without Auto Switch

Cylinder model	C	D	Mounting bolt size
CQ2BS32- 5DC	9	40	M5 x 40L
- 10DC		45	x 45L
- 15DC		50	x 50L
- 20DC		55	x 55L
- 25DC		60	x 60L
- 30DC		65	x 65L
- 35DC		70	x 70L
- 40DC		75	x 75L
- 45DC		80	x 80L
- 50DC		85	x 85L
- 75DC		120	x 120L
-100DC		145	x 145L
CQ2BS40- 5DC	7.5	45	M5 x 45L
- 10DC		50	x 50L
- 15DC		55	x 55L
- 20DC		60	x 60L
- 25DC		65	x 65L
- 30DC		70	x 70L
- 35DC		75	x 75L
- 40DC		80	x 80L
- 45DC		85	x 85L
- 50DC		90	x 90L
- 75DC		125	x 125L
-100DC		150	x 150L
CQ2BS50- 10DC	12.5	55	M6 x 55L
- 15DC		60	x 60L
- 20DC		65	x 65L
- 25DC		70	x 70L
- 30DC		75	x 75L
- 35DC		80	x 80L
- 40DC		85	x 85L
- 45DC		90	x 90L
- 50DC		95	x 95L
- 75DC		130	x 130L
-100DC		155	x 155L

Cylinder model	C	D	Mounting bolt size
CQ2BS63- 10DC	14.5	60	M8 x 60L
- 15DC		65	x 65L
- 20DC		70	x 70L
- 25DC		75	x 75L
- 30DC		80	x 80L
- 35DC		85	x 85L
- 40DC		90	x 90L
- 45DC		95	x 95L
- 50DC		100	x 100L
- 75DC		135	x 135L
-100DC		160	x 160L
CQ2BS80- 10DC	15	65	M10 x 65L
- 15DC		70	x 70L
- 20DC		75	x 75L
- 25DC		80	x 80L
- 30DC		85	x 85L
- 35DC		90	x 90L
- 40DC		95	x 95L
- 45DC		100	x 100L
- 50DC		105	x 105L
- 75DC		140	x 140L
-100DC		165	x 165L
CQ2BS100- 10DC	15.5	75	M10 x 75L
- 15DC		80	x 80L
- 20DC		85	x 85L
- 25DC		90	x 90L
- 30DC		95	x 95L
- 35DC		100	x 100L
- 40DC		105	x 105L
- 45DC		110	x 110L
- 50DC		115	x 115L
- 75DC		150	x 150L
-100DC		175	x 175L

Material: Chromium molybdenum steel
Surface treatment: Nickel plated

Mounting Bolt for CDQ2BS/With Auto Switch (Built-in Magnet)

Cylinder model	C	D	Mounting bolt size
CDQ2BS32- 5DC	9	50	M5 x 50L
- 10DC		55	x 55L
- 15DC		60	x 60L
- 20DC		65	x 65L
- 25DC		70	x 70L
- 30DC		75	x 75L
- 35DC		80	x 80L
- 40DC		85	x 85L
- 45DC		90	x 90L
- 50DC		95	x 95L
- 75DC		120	x 120L
-100DC		145	x 145L
CDQ2BS40- 5DC	7.5	55	M5 x 55L
- 10DC		60	x 60L
- 15DC		65	x 65L
- 20DC		70	x 70L
- 25DC		75	x 75L
- 30DC		80	x 80L
- 35DC		85	x 85L
- 40DC		90	x 90L
- 45DC		95	x 95L
- 50DC		100	x 100L
- 75DC		125	x 125L
-100DC		150	x 150L
CDQ2BS50- 10DC	12.5	65	M6 x 65L
- 15DC		70	x 70L
- 20DC		75	x 75L
- 25DC		80	x 80L
- 30DC		85	x 85L
- 35DC		90	x 90L
- 40DC		95	x 95L
- 45DC		100	x 100L
- 50DC		105	x 105L
- 75DC		130	x 130L
-100DC		155	x 155L

Cylinder model	C	D	Mounting bolt size
CDQ2BS63- 10DC	14.5	70	M8 x 70L
- 15DC		75	x 75L
- 20DC		80	x 80L
- 25DC		85	x 85L
- 30DC		90	x 90L
- 35DC		95	x 95L
- 40DC		100	x 100L
- 45DC		105	x 105L
- 50DC		110	x 110L
- 75DC		135	x 135L
-100DC		160	x 160L
CDQ2BS80- 10DC	15	75	M10 x 75L
- 15DC		80	x 80L
- 20DC		85	x 85L
- 25DC		90	x 90L
- 30DC		95	x 95L
- 35DC		100	x 100L
- 40DC		105	x 105L
- 45DC		110	x 110L
- 50DC		115	x 115L
- 75DC		140	x 140L
-100DC		165	x 165L
CDQ2BS100- 10DC	15.5	85	M10 x 85L
- 15DC		90	x 90L
- 20DC		95	x 95L
- 25DC		100	x 100L
- 30DC		105	x 105L
- 35DC		110	x 110L
- 40DC		115	x 115L
- 45DC		120	x 120L
- 50DC		125	x 125L
- 75DC		150	x 150L
-100DC		175	x 175L

Material: Chromium molybdenum steel
Surface treatment: Nickel plated

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-☐

-X☐

Individual
-X☐

Technical
data

Series CQ2

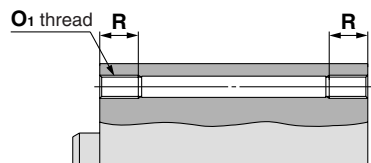
ø32 to ø50

(In the case of auto switches, A and B dimensions will be only changed. Refer to the dimension chart.)

Basic style (Through-hole): CQ2BS/CDQ2BS

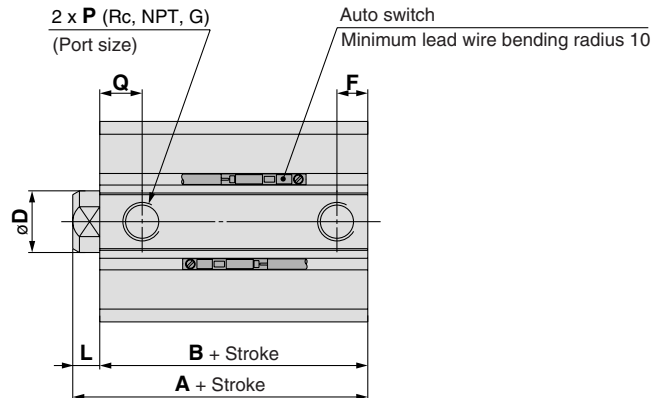
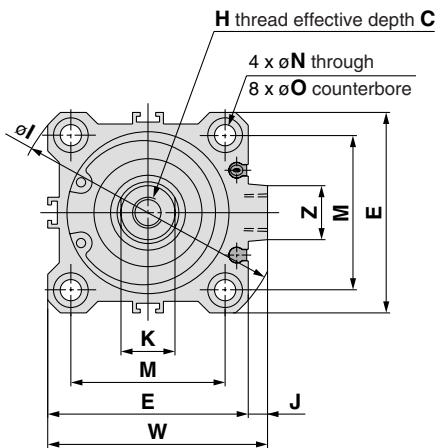
Both ends tapped style: CQ2AS/CDQ2AS

CDQ2AS

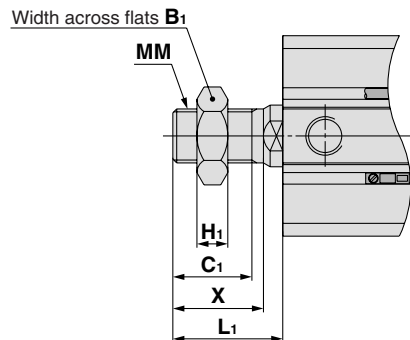


Both Ends Tapped Style (mm)

Bore size (mm)	O1	R
32	M6 x 1.0	10
40	M6 x 1.0	10
50	M8 x 1.25	14



Rod end male thread



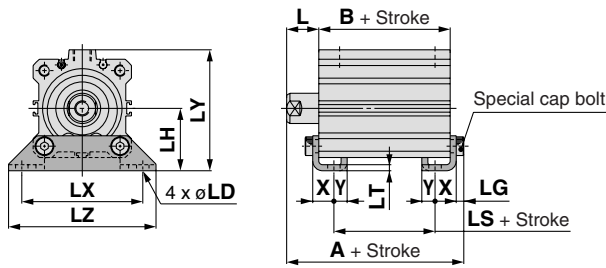
Dimensions of with boss in head side are equivalent to Series CQ2, double acting, single rod.
Refer to page 616.

Rod End Male Thread (mm)

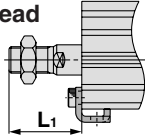
Bore size (mm)	B1	C1	H1	L1	MM	X
32	22	20.5	8	28.5	M14 x 1.5	23.5
40	22	20.5	8	28.5	M14 x 1.5	23.5
50	27	26	11	33.5	M18 x 1.5	28.5

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	W	Z
		A	B	A	B																
32	5 to 50	40	33	50	43	13	16	45	7.5	M8 x 1.25	60	4.5	14	7	34	5.5	9 depth 7	1/8	10.5	49.5	14
	75, 100	50	43																		
40	5 to 50	46.5	39.5	56.5	49.5	13	16	52	8	M8 x 1.25	69	5	14	7	40	5.5	9 depth 7	1/8	11	57	14
	75, 100	56.5	49.5																		
50	10 to 50	48.5	40.5	58.5	50.5	15	20	64	10.5	M10 x 1.5	86	7	17	8	50	6.6	11 depth 8	1/4	10.5	71	19
	75, 100	58.5	50.5																		

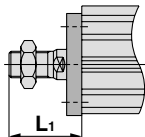
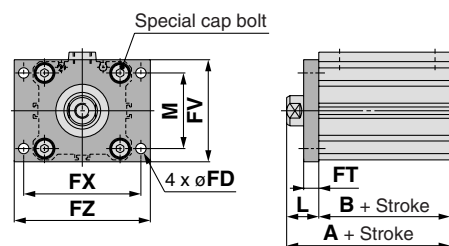
Foot style: CQ2LS/CDQ2LS



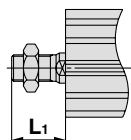
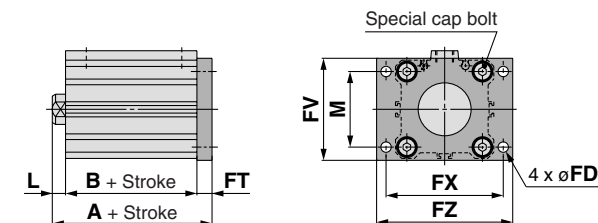
Rod end male thread



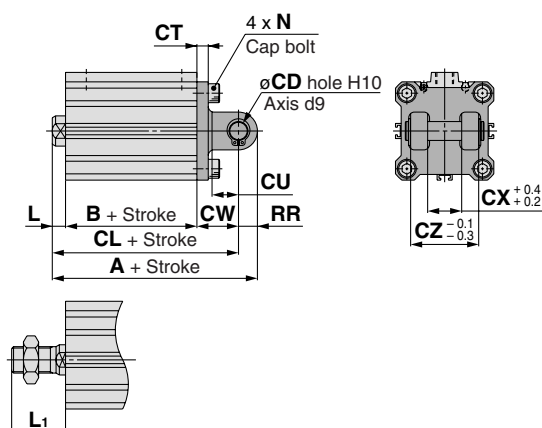
Rod side flange style: CQ2FS/CDQ2FS



Head side flange style: CQ2GS/CDQ2GS



Double clevis style: CQ2DS/CDQ2DS



Foot Style

Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch			(mm)		
		A	B	LS	A	B	LS	L	L1	LD
32	5 to 50	57.2	33	17	67.2	43	27	17	38.5	6.6
	75, 100	67.2	43	27						
40	5 to 50	63.7	39.5	23.5	73.7	49.5	33.5	17	38.5	6.6
	75, 100	73.7	49.5	33.5						
50	10 to 50	66.7	40.5	17.5	76.7	50.5	27.5	18	43.5	9
	75, 100	76.7	50.5	27.5						

Foot bracket material: Carbon steel
Surface treatment: Nickel plated

Rod Side Flange Style

Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch		(mm)				
		A	B	A	B	FD	FT	FV	FX	FZ
32	5 to 50	50	33	60	43	5.5	8	48	56	65
	75, 100	60	43							
40	5 to 50	56.5	39.5	66.5	49.5	5.5	8	54	62	72
	75, 100	66.5	49.5							
50	10 to 50	58.5	40.5	68.5	50.5	6.6	9	67	76	89
	75, 100	68.5	50.5							

Flange bracket material:
Carbon steel
Surface treatment:
Nickel plated

Head Side Flange Style

Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch		(mm)	
		A	A	A	A	L	L1
32	5 to 50	48	58	58	58	7	28.5
	75, 100	58					
40	5 to 50	54.5	64.5	64.5	64.5	7	28.5
	75, 100	64.5					
50	10 to 50	57.5	67.5	67.5	67.5	8	33.5
	75, 100	67.5					

(* Dimensions except A, L and L1 are the same as rod side flange style.)
Flange bracket material: Carbon steel
Surface treatment: Nickel plated

Double Clevis Style

Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch			(mm)		
		A	B	CL	A	B	CL	CD	CT	CU
32	5 to 50	70	33	60	80	43	70	10	5	14
	75, 100	80	43	70						
40	5 to 50	78.5	39.5	68.5	88.5	49.5	78.5	10	6	14
	75, 100	88.5	49.5	78.5						
50	10 to 50	90.5	40.5	76.5	100.5	50.5	86.5	14	7	20
	75, 100	100.5	50.5	86.5						

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.

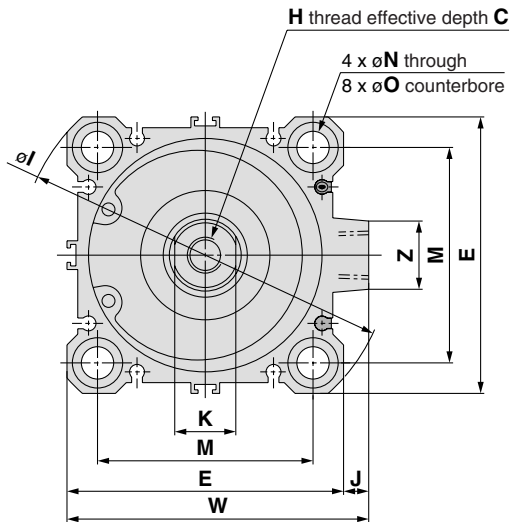
Series CQ2

ø63 to ø100

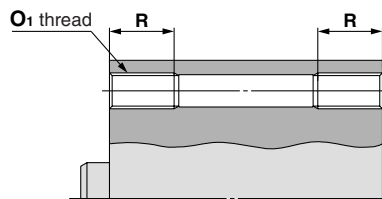
(In the case of auto switches, A and B dimensions will be only changed. Refer to the dimension chart.)

Basic style (Through-hole): CQ2BS/CDQ2BS

Dimensions of with boss in head side are equivalent to Series CQ2, double acting, single rod. Refer to page 618.

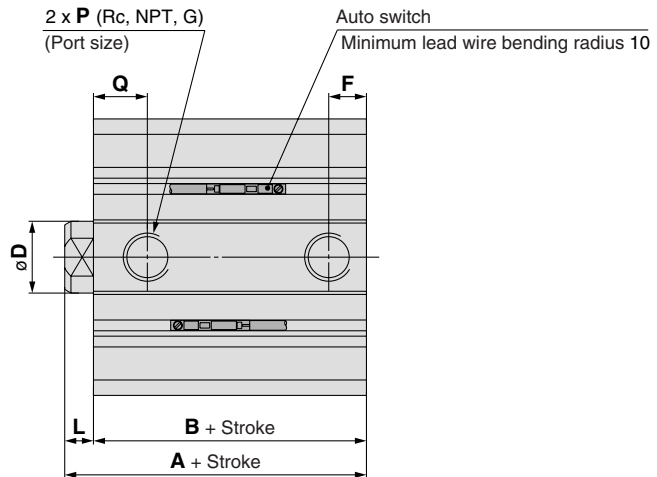


Both ends tapped style: CQ2AS/CDQ2AS

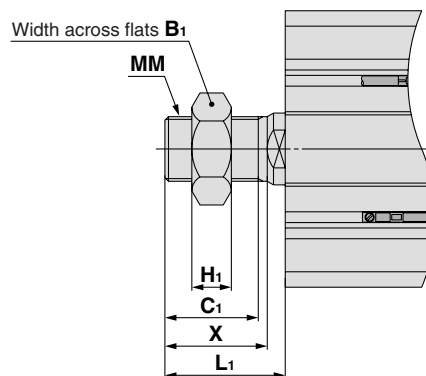


Both Ends Tapped Style

Bore size (mm)	O ₁	R
63	M10 x 1.5	18
80	M12 x 1.75	22
100	M12 x 1.75	22



Rod end male thread

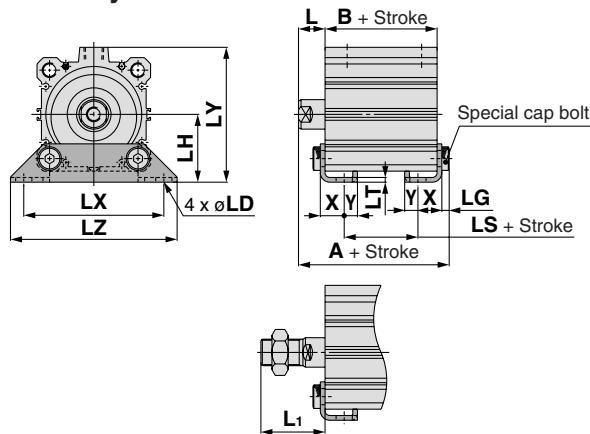


Rod End Male Thread (mm)

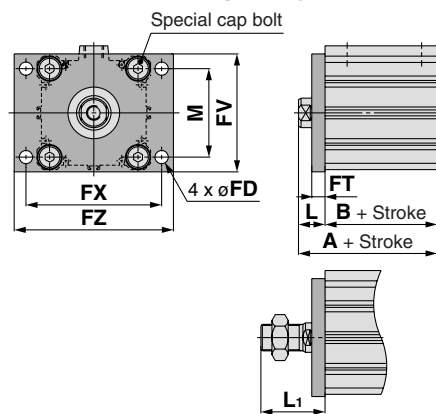
Bore size (mm)	B ₁	C ₁	H ₁	L ₁	MM	X
63	27	26	11	33.5	M18 x 1.5	28.5
80	32	32.5	13	43.5	M22 x 1.5	35.5
100	41	32.5	16	43.5	M26 x 1.5	35.5

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	W	Z
		A	B	A	B																
63	10 to 50	54	46	64	56	15	20	77	10.5	M10 x 1.5	103	7	17	8	60	9	14 depth 10.5	1/4	15	84	19
	75, 100	64	56																		
80	10 to 50	63.5	53.5	73.5	63.5	21	25	98	12.5	M16 x 2.0	132	6	22	10	77	11	17.5 depth 13.5	3/8	16	104	26
	75, 100	73.5	63.5																		
100	10 to 50	75	63	85	73	27	30	117	13	M20 x 2.5	156	6.5	27	12	94	11	17.5 depth 13.5	3/8	23	123.5	26
	75, 100	85	73																		

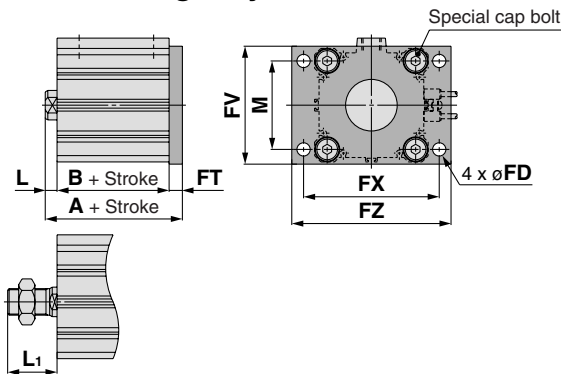
Foot style: CQ2LS/CDQ2LS



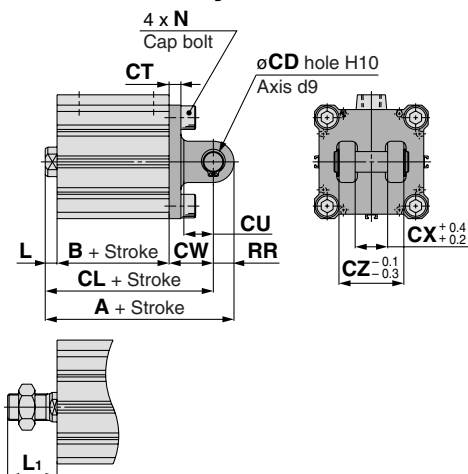
Rod side flange style: CQ2FS/CDQ2FS



Head side flange style: CQ2GS/CDQ2GS



Double clevis style: CQ2DS/CDQ2DS



Foot Style

Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch			(mm)		
		A	B	LS	A	B	LS	L	L1	LD
63	10 to 50	72.2	46	20	82.2	56	30	18	43.5	11
	75, 100	82.2	56	30						
80	10 to 50	85	53.5	23.5	95	63.5	33.5	20	53.5	13
	75, 100	95	63.5	33.5						
100	10 to 50	98	63	29	108	73	39	22	53.5	13
	75, 100	108	73	39						

Foot bracket material: Carbon steel
Surface treatment: Nickel plated

Rod Side Flange Style

Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch		(mm)				
		A	B	A	B	FD	FT	FV	FX	FZ
63	10 to 50	64	46	74	56	9	9	80	92	108
	75, 100	74	56							
80	10 to 50	73.5	53.5	83.5	63.5	11	11	99	116	134
	75, 100	83.5	63.5							
100	10 to 50	85	63	95	73	11	11	117	136	154
	75, 100	95	73							

Flange bracket material:
Carbon steel
Surface treatment:
Nickel plated

Head Side Flange Style

Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch		(mm)	
		A	A	A	A	L	L1
63	10 to 50	63	73	8	33.5		
	75, 100	73					
80	10 to 50	74.5	84.5	10	43.5		
	75, 100	84.5					
100	10 to 50	86	96	12	43.5		
	75, 100	96					

(* Dimensions except A, L and L1 are the same as rod side flange style.)
Flange bracket material: Carbon steel
Surface treatment: Nickel plated

Double Clevis Style

Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch			(mm)		
		A	B	CL	A	B	CL	CD	CT	CU
63	10 to 50	98	46	84	108	56	94	14	8	20
	75, 100	108	56	94						
80	10 to 50	119.5	53.5	101.5	129.5	63.5	111.5	18	10	27
	75, 100	129.5	63.5	111.5						
100	10 to 50	142	63	120	152	73	130	22	13	31
	75, 100	152	73	130						

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.

Compact Cylinder: With End Lock

Series *CBQ2*

ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100

How to Order

CBQ2 **B** **40** **□** - **30** **D** **C** - **H** **N**

With auto switch **CDBQ2** **B** **40** **□** - **30** **D** **C** - **H** **N** - **M9BW** **□**

Mounting style

ø20, ø25 ø32 to ø100

Symbol	Description	Symbol	Description
B	Through-hole/Both ends tapped common (Standard)	B	Through-hole (Standard) Note 2)
L	Foot style	A	Both ends tapped style
F	Rod side flange style	L	Foot style
G	Head side flange style	F	Rod side flange style
D	Double clevis style	G	Head side flange style
D	Double clevis style	D	Double clevis style

Note 1) Mounting brackets are shipped together (but not assembled).

Note 2) At the 75, and 100 strokes with ø80, ø100, both ends tapped (A) is the standard. Through-hole (B) is not available.

Note 3) Mounting brackets are shipped together, (but not assembled).

Bore size

Symbol	Symbol	Symbol	Symbol
20	20 mm	50	50 mm
25	25 mm	63	63 mm
32	32 mm	80	80 mm
40	40 mm	100	100 mm

Port thread type

Symbol	Symbol	Symbol
Nil	M thread	ø12 to ø25
TN	NPT	ø32 to ø100
TF	G	

Cylinder stroke (mm)

Lock position

Symbol	Description
H	Head end lock
R	Rod end lock

Body option

Symbol	Description
C	With rubber bumper, Rod end female thread (Standard)
CM	With rubber bumper, Rod end male thread

Action

Symbol	Description
D	Double acting

Number of auto switches

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

Auto switch

Symbol	Description
Nil	Without auto switch

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

Manual release type

Symbol	Description
N	Non-lock type
L	Lock type

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) CDBQ2L32-30DC-RL

For "Standard Stroke" and "Manufacture of intermediate of Stroke", refer to page 736.

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		Auto switch model				Lead wire length (m)					Pre-wired connector	Applicable load			
					DC	AC	Perpendicular		In-line		0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)					
							ø20, ø25	ø32 to ø100	ø20, ø25	ø32 ø40 to ø100										
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V,	—	M9NV		M9N		●	●	●	○	—	○	IC circuit	Relay, PLC	
		3-wire (PNP)		12 V		M9PV		M9P		●	●	●	○	—	○					
	Connector	2-wire		12 V		M9BV		M9B		●	●	●	○	—	○	—				
		— J79C		—		●		—	●	●	●	—	—							
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)		5 V,		M9NVW		M9NW		●	●	●	○	—	○	IC circuit		
				3-wire (PNP)		12 V		M9PWV		M9PW		●	●	●	○	—	○			
				2-wire		12 V		M9BWW		M9BW		●	●	●	○	—	○	—		
				3-wire (NPN)		5 V,		M9NAV		M9NA		○	○	●	○	—	○			
	Water resistant (2-color indication)	Grommet		3-wire (PNP)	12 V	M9PAV		M9PA		○	○	●	○	—	○	IC circuit				
				2-wire	12 V	M9BAV		M9BA		○	○	●	○	—	○		—			
	With diagnostic output (2-color indication)	Grommet		4-wire	5 V, 12 V	—		F79F		●	—	●	○	—	○	IC circuit				
				Magnetic field resistant (2-color indication)	2-wire (Non-polar)	—	—		P4DW		—	—	●	●	—	○	—			
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	A96V		A96		●	—	●	—	—	—	IC circuit	Relay, PLC	
				2-wire		—		200 V	—	A72	—	A72H	●	—	●	—	—	—		—
		Connector				12 V		100 V	A93V		A93		●	—	●	—	—	—		IC circuit
						5 V, 12 V		100 V or less	A90V		A90		●	—	●	—	—	—		
	Diagnostic indication (2-color indication)	Grommet			12 V	—	A73C		—		●	—	●	●	●	—	—			
				5 V, 12 V	24 V or less	A80C		—		●	—	●	●	●	—	IC circuit				
				—		—		A79W		—		●	—	●	—	—	—			
				—		—		—		—		●	—	●	—	—	—	—		

* Lead wire length symbols: 0.5 m Nil (Example) M9NVV
 1 m M (Example) M9NVV
 3 m L (Example) M9NVV
 5 m Z (Example) M9NVV
 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.

Series CBQ2



Specifications

Bore size	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	0.15 MPa ^{Note)}							
Ambient and fluid temperature	Without switch: -10 to 70°C (No freezing) With switch: -10 to 60°C (No freezing)							
Lubrication	Not required (Non-lube)							
Piston speed	50 to 500 mm/s							
Allowable kinetic energy (J)	0.055	0.09	0.15	0.26	0.46	0.77	1.36	2.27
Stroke length tolerance	+1.0mm 0							
Lock position	Head end, Rod end							
Holding force (Max.) (N)	215	330	550	860	1340	2140	3450	5390
Pressure for unlocking	0.15 MPa or less							
Backlash	2 mm or less							
Manual release	Non-lock type, Lock type							

Note) 0.05 MPa except for the lock unit.

Standard Stroke

Bore size (mm)	Standard stroke (mm)
20 to 63	10, 15, 20, 25, 50, 75, 100
80, 100	25, 50, 75, 100

Manufacture of Intermediate Stroke

Description	Spacer is installed in the standard stroke body.	
Part no.	Refer to "How to Order" for the standard model no. on page 735.	
Description	Dealing with the stroke by the 5 mm interval is available by installing spacer with standard stroke cylinder.	
Stroke range	Bore size	Stroke range
	20 to 100	5 to 95
Example	Part no.: CBQ2B40-45DC-HL CBQ2B40-50DC-HL with 5 mm width spacer inside.	

Mounting Bracket Part No.

Bore size (mm)	Foot ⁽¹⁾	Flange	Double clevis ⁽²⁾
20	CQS-L020	CQS-F020	CQS-D020
25	CQS-L025	CQS-F025	CQS-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 1) When ordering foot bracket, order 2 pieces per cylinder.

Note 2) Parts belonging to each bracket are as follows. Foot or Flange style: Body mounting bolt, Double clevis style: Clevis pin, type C retaining ring for axis, body mounting bolt.

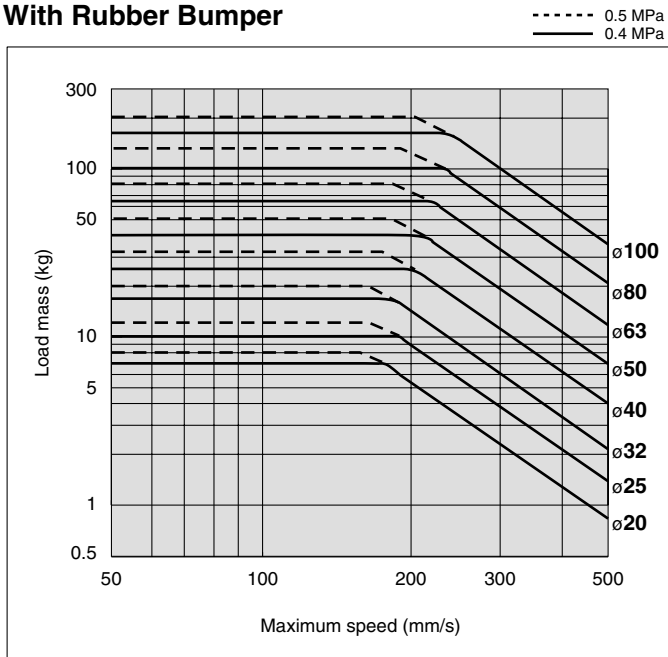
Note 3) Clevis pin and retaining ring are included with the double clevis style.

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.

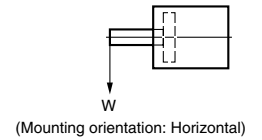
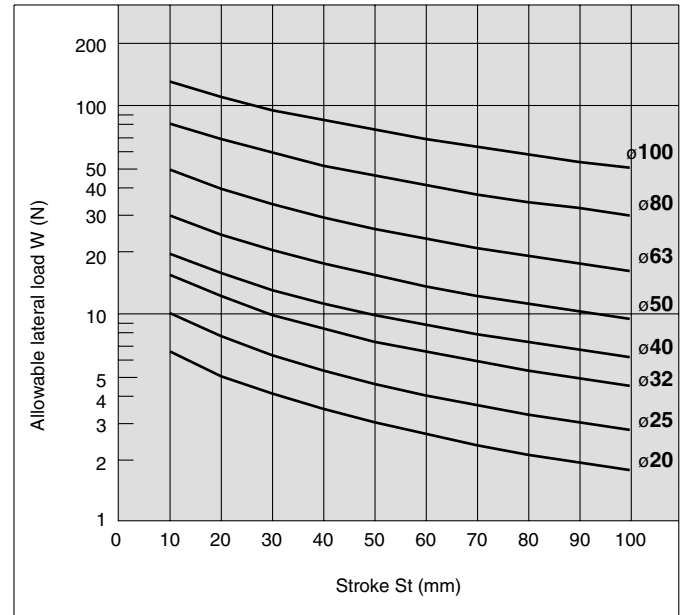
Allowable Kinetic Energy

With Rubber Bumper



Allowable Lateral Load at Rod End

With Auto Switch (Anti-lateral load)



CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual
-X□

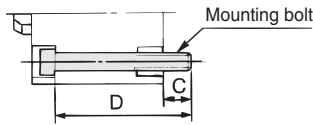
Technical
data

Series CBQ2

Mounting Bolt for CBQ2

Mounting method: Mounting bolt for through-hole mounting style of CBQ2 is available as an option.
Ordering: Add the word "Bolt" in front of the bolts to be used.

Example) Bolt M5 x 75L 4 pcs.



Be sure to use the attached flat washers when mounting $\phi 20$ and $\phi 25$ cylinders with through-holes.

With head end lock (H□)

Cylinder model	C	D	Mounting bolt size
C□BQ2B20-10DC-H□	10	75	M5 x 75L
-15DC-H□		80	x 80L
-20DC-H□		85	x 85L
-25DC-H□		90	x 90L
-50DC-H□		120	x 120L
-75DC-H□		145	x 145L
-100DC-H□	7	170	x 170L
C□BQ2B25-10DC-H□		75	M5 x 75L
-15DC-H□		80	x 80L
-20DC-H□		85	x 85L
-25DC-H□		90	x 90L
-50DC-H□		120	x 120L
-75DC-H□		145	x 145L
-100DC-H□	6.5	170	x 170L
C□BQ2B32-10DC-H□		75	M5 x 75L
-15DC-H□		80	x 80L
-20DC-H□		85	x 85L
-25DC-H□		90	x 90L
-50DC-H□		115	x 115L
-75DC-H□		140	x 140L
-100DC-H□	7	165	x 165L
C□BQ2B40-10DC-H□		85	M5 x 85L
-15DC-H□		90	x 90L
-20DC-H□		95	x 95L
-25DC-H□		100	x 100L
-50DC-H□		125	x 125L
-75DC-H□		150	x 150L
-100DC-H□		175	x 175L

Cylinder model	C	D	Mounting bolt size
C□BQ2B50-10DC-H□	12.5	90	M6 x 90L
-15DC-H□		95	x 95L
-20DC-H□		100	x 100L
-25DC-H□		105	x 105L
-50DC-H□		130	x 130L
-75DC-H□		155	x 155L
-100DC-H□	13.5	180	x 180L
C□BQ2B63-10DC-H□		90	M8 x 90L
-15DC-H□		95	x 95L
-20DC-H□		100	x 100L
-25DC-H□		105	x 105L
-50DC-H□		130	x 130L
-75DC-H□		155	x 155L
-100DC-H□	12.5	180	x 180L
C□BQ2B80-25DC-H□		135	M10 x 135L
-50DC-H□	13	160	x 160L
C□BQ2B100-25DC-H□		145	M10 x 145L
-50DC-H□		170	x 170L

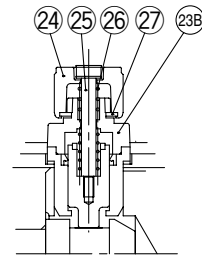
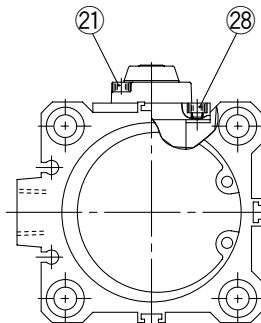
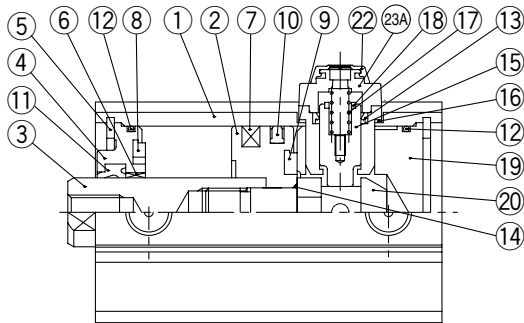
With rod end lock (R□)

Cylinder model	C	D	Mounting bolt size
C□BQ2B20-10DC-R□	6.5	65	M5 x 65L
-15DC-R□		70	x 70L
-20DC-R□		75	x 75L
-25DC-R□		80	x 80L
-50DC-R□		120	x 120L
-75DC-R□		145	x 145L
-100DC-R□	10	170	x 170L
C□BQ2B25-10DC-R□		70	M5 x 70L
-15DC-R□		75	x 75L
-20DC-R□		80	x 80L
-25DC-R□		85	x 85L
-50DC-R□		120	x 120L
-75DC-R□		145	x 145L
-100DC-R□	8.5	170	x 170L
C□BQ2B32-10DC-R□		70	M5 x 70L
-15DC-R□		75	x 75L
-20DC-R□		80	x 80L
-25DC-R□		85	x 85L
-50DC-R□		120	x 120L
-75DC-R□		145	x 145L
-100DC-R□	7	170	x 170L
C□BQ2B40-10DC-R□		75	M5 x 75L
-15DC-R□		80	x 80L
-20DC-R□		85	x 85L
-25DC-R□		90	x 90L
-50DC-R□		115	x 115L
-75DC-R□		140	x 140L
-100DC-R□	7.5	165	x 165L

Cylinder model	C	D	Mounting bolt size
C□BQ2B50-10DC-R□	12.5	80	M6 x 80L
-15DC-R□		85	x 85L
-20DC-R□		90	x 90L
-25DC-R□		95	x 95L
-50DC-R□		120	x 120L
-75DC-R□		145	x 145L
-100DC-R□	14.5	170	x 170L
C□BQ2B63-10DC-R□		85	M8 x 85L
-15DC-R□		90	x 90L
-20DC-R□		95	x 95L
-25DC-R□		100	x 100L
-50DC-R□		125	x 125L
-75DC-R□		150	x 150L
-100DC-R□	15	175	x 175L
C□BQ2B80-25DC-R□		130	M10 x 130L
-50DC-R□	15.5	155	x 155L
C□BQ2B100-25DC-R□		140	M10 x 140L
-50DC-R□		165	x 165L

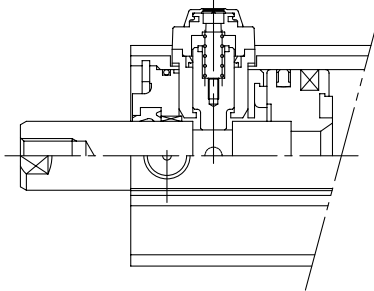
Construction

ø32 to ø63

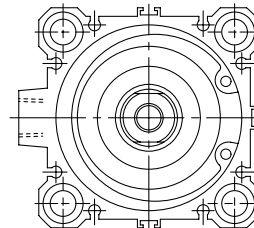
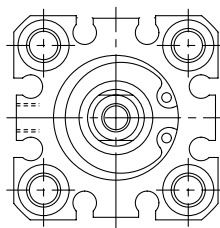


Manual release (Lock type): Suffix L

Head end lock

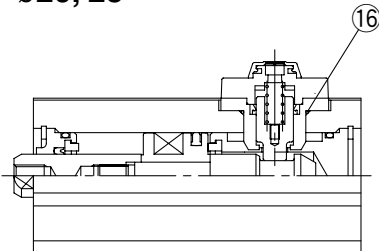


Cylinder tube form for ø32 to ø63



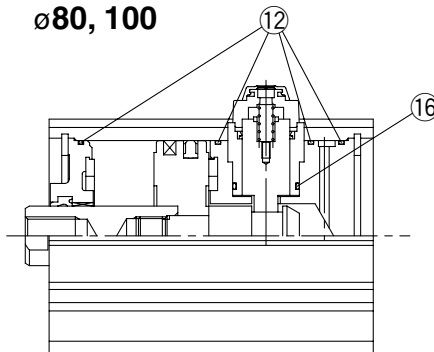
Rod end lock

ø20, 25



Cylinder tube form for ø25 or less Cylinder tube form for ø80 or more

ø80, 100



Component Parts

No.	Part	Material	Note
1	Cylinder tube	Aluminum alloy	Hard anodized
2	Piston	Aluminum alloy	Chromated
3	Piston rod	Carbon steel	Hard chrome plated
4	Collar	R□ Aluminum alloy	Anodized
		H□ Aluminum alloy	ø40 or less, Anodized
		Aluminum alloy casting	ø50 or more, Painted after chromated
5	Retaining ring	Carbon tool steel	Phosphate coated
6	Bushing	Copper alloy	R□ Used for all bore sizes H□ Used for ø40 and larger
7	Magnet	—	With auto switch
8	Bumper A	Urethane	
9	Bumper B	Urethane	
10	Piston seal	NBR	
11	Rod seal	NBR	
12	Tube gasket	NBR	Using 4 pcs. for ø80, 100
13	Lock piston seal	NBR	
14	Piston gasket	NBR	Nothing for ø20, 25
15	Lock piston	Carbon steel	Quenched, hard chrome plated
16	Gasket	NBR	
17	Lock spring	Stainless steel	
18	Bumper	Urethane	
19	Head cover	Aluminum alloy	Anodized
20	Lock bolt	Carbon steel	Quenched, Electroless nickel plated
21	Hexagon socket head cap screw	Alloy steel	Black zinc chromated
22	Rubber cap	Synthetic rubber	
23A	Cap A	Aluminum casted	Black painted
23B	Cap B	Carbon steel	Oxide film treated
24	M/O knob	Zinc die-casted	Black painted
25	M/O bolt	Alloy steel	Black zinc chromated, Red painted
26	M/O spring	Steel wire	Zinc chromated
27	Stopper ring	Rolled steel	Zinc chromated
28	Hexagon socket head cap screw	Alloy steel	Nickel plated

Replacement Parts: Seal Kit End lock type

Bore size (mm)	Kit no.	Contents
20	CBQ2B20-PS	Set of nos. above 10 11 12 13 16 21 28 and grease pack
25	CBQ2B25-PS	
32	CBQ2B32-PS	
40	CBQ2B40-PS	
50	CBQ2B50-PS	
63	CBQ2B63-PS	
80	CBQ2B80-PS	
100	CBQ2B100-PS	

* Seal kit includes 10, 11, 12, 13, 16, 21, 28. 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)

CUJ

CU

CQS

CBQ2

RQ

CQM

MU

D-□

-X□

Individual

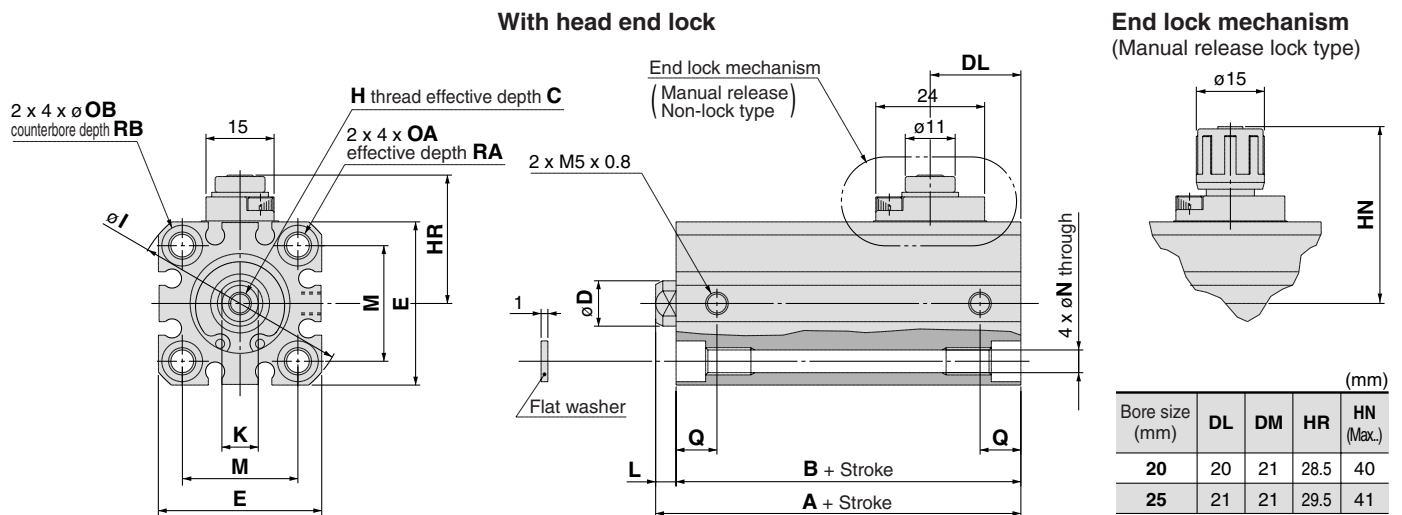
-X□

Technical data

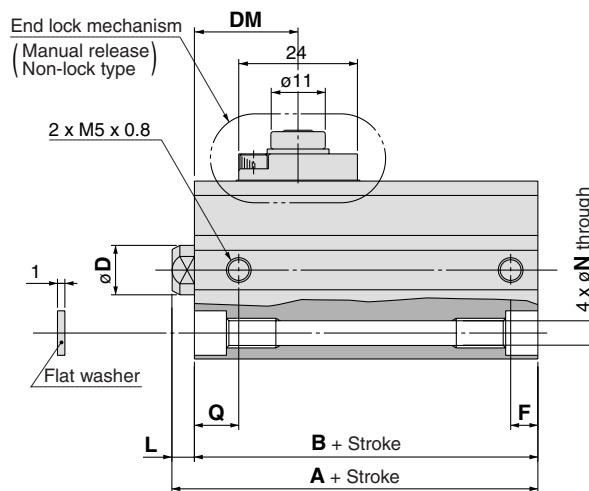
Series CBQ2

Dimensions: $\phi 20$, $\phi 25$

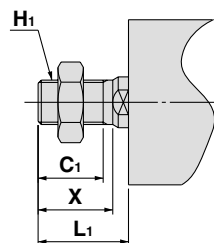
Basic style (Through-hole/Both ends tapped common): CBQ2B/CDBQ2B



With rod end lock



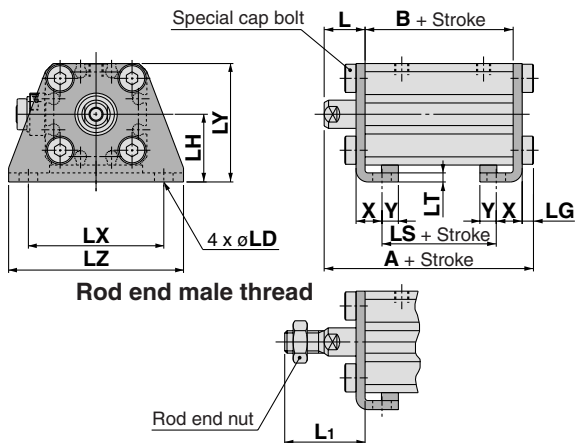
Rod end male thread



Bore size (mm)	Standard stroke	C ₁	X	H _i	L ₁
20	10, 15, 20, 25	12	14	M8 x 1.25	18.5
	50, 75, 100				28.5
25	10, 15, 20, 25	15	17.5	M10 x 1.25	22.5
	50, 75, 100				32.5

(mm)																					
Bore size (mm)	Standard stroke	With head end lock			With rod end lock				C	D	E	H	I	K	M	N	OA	OB	Q	RA	RB
		A	B	L	A	B	F	L													
20	10, 15, 20, 25	65.5	61	4.5	59	54.5	5.5	4.5	7	10	36	M5 x 0.8	47	8	25.5	5.4	M6 x 1.0	9	9	10	7
	50, 75, 100	80.5	66	14.5	80.5	66	9	14.5													
25	10, 15, 20, 25	69	64	5	62.5	57.5	5.5	5	12	12	40	M6 x 1.0	52	10	28	5.4	M6 x 1.0	9	11	10	7
	50, 75, 100	84	69	15	84	69	11	15													

Foot style: CBQ2L/CDBQ2L



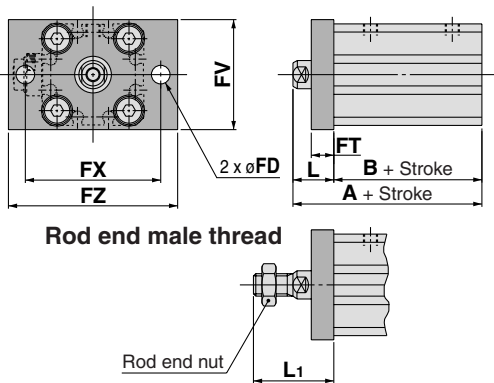
Foot Style

(mm)

Bore size (mm)	Standard stroke	With head end lock			With rod end lock		
		A	B	LS	A	B	LS
20	10, 15, 20, 25	82.7	61	49	76.2	54.5	42.5
	50, 75, 100	87.7	66	54	87.7	66	54
25	10, 15, 20, 25	86.2	64	49	79.7	57.5	42.5
	50, 75, 100	91.2	69	54	91.2	69	54

Bore size (mm)	Standard stroke	L	L ₁	LD	LG	LH	LT	LX	LY	LZ	X	Y
20	10, 15, 20, 25	14.5	28.5	6.6	4	24	3.2	48	42	62	9.2	5.8
	50, 75, 100	15	32.5	6.6	4	26	3.2	52	46	66	10.7	5.8

Rod side flange style: CBQ2F/CDBQ2F



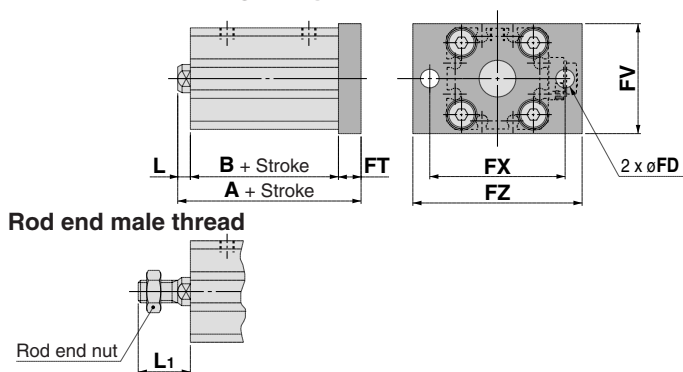
Rod Side Flange Style

(mm)

Bore size (mm)	Standard stroke	With head end lock		With rod end lock	
		A	B	A	B
20	10, 15, 20, 25	75.5	61	69	54.5
	50, 75, 100	80.5	66	80.5	66
25	10, 15, 20, 25	79	64	72.5	57.5
	50, 75, 100	84	69	84	69

Bore size (mm)	Standard stroke	FD	FT	FV	FX	FZ	L	L ₁
20	10, 15, 20, 25	6.6	8	39	48	60	14.5	28.5
	50, 75, 100	6.6	8	42	52	64	15	32.5

Head side flange style: CBQ2G/CDBQ2G



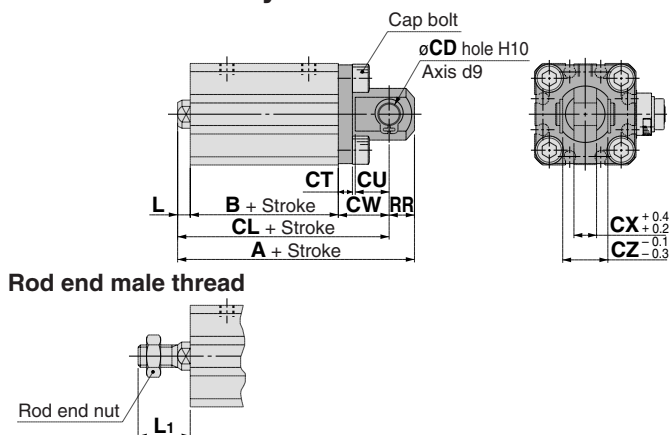
Head Side Flange Style

(mm)

Bore size (mm)	Standard stroke	With head end lock				With rod end lock			
		A	B	L	L ₁	A	B	L	L ₁
20	10, 15, 20, 25	73.5	61	4.5	18.5	67	54.5	4.5	18.5
	50, 75, 100	88.5	66	14.5	28.5	88.5	66	14.5	28.5
25	10, 15, 20, 25	77	64	5	22.5	70.5	57.5	5	22.5
	50, 75, 100	92	69	15	32.5	92	69	15	32.5

Bore size (mm)	Standard stroke	FD	FT	FV	FX	FZ
20	10, 15, 20, 25	6.6	8	39	48	60
	50, 75, 100	6.6	8	42	52	64

Double clevis style: CBQ2D/CDBQ2D



Double Clevis Style

(mm)

Bore size (mm)	Standard stroke	With head end lock					With rod end lock				
		A	B	CL	L	L ₁	A	B	CL	L	L ₁
20	10, 15, 20, 25	92.5	61	83.5	4.5	18.5	86	54.5	77	4.5	18.5
	50, 75, 100	107.5	66	98.5	14.5	28.5	107.5	66	98.5	14.5	28.5
25	10, 15, 20, 25	99	64	89	5	22.5	92.5	57.5	82.5	5	22.5
	50, 75, 100	114	69	104	15	32.5	114	69	104	15	32.5

Bore size (mm)	Standard stroke	CD	CT	CU	CW	CX	CZ	RR
20	10, 15, 20, 25	8	5	12	18	8	16	9
	50, 75, 100	10	5	14	20	10	20	10

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual
-X□

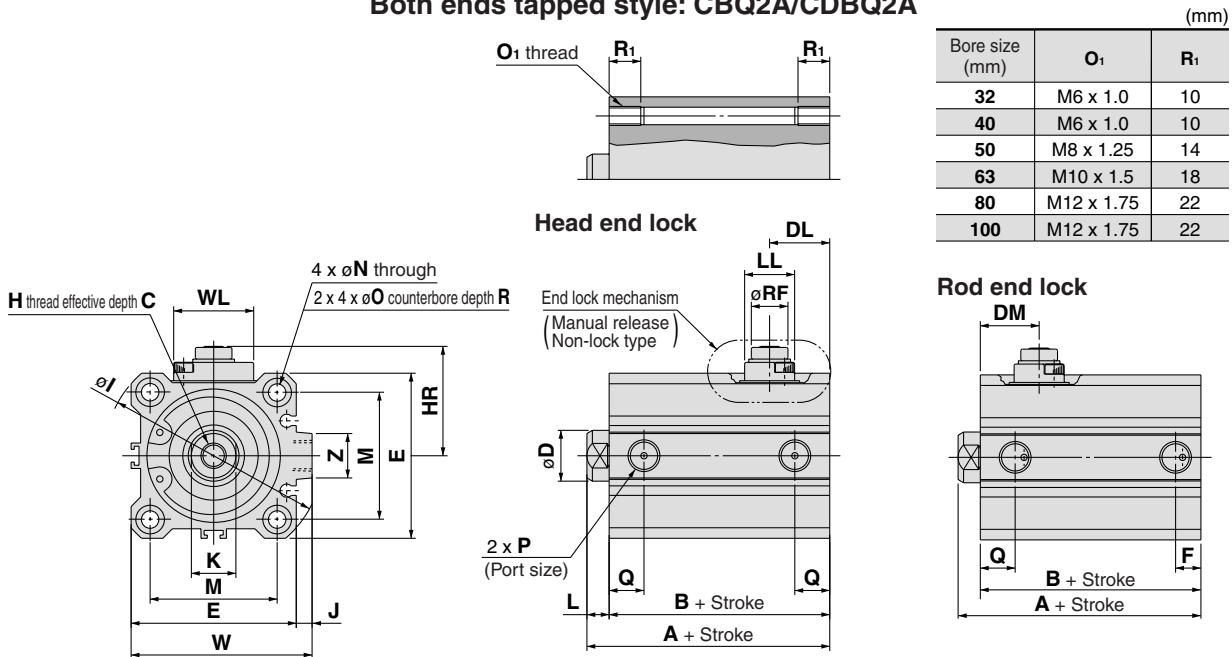
Technical
data

Series CBQ2

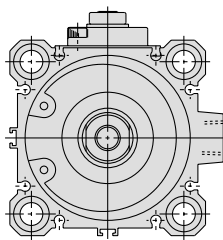
Dimensions: $\phi 32$ to $\phi 100$

Basic style (Through-hole): CBQ2B/CDBQ2B

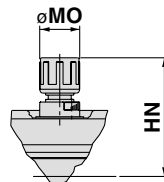
Both ends tapped style: CBQ2A/CDBQ2A



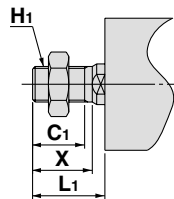
$\phi 63, \phi 80, \phi 100$
Cylinder tube form



End lock mechanism
(Manual release lock type)



Rod end male thread



End Lock Mechanism Dimensions

Bore size (mm)	DL	DM	HR	HN (Max.)	LL	MO	WL	RF
32	25	22	33.5	45	15	15	24	11
40	29	26	38.5	52.5	21	19	24	11
50	29.5	24	45	59	21	19	24	11
63	28.5	25	50	64	21	19	24	11
80	45	45.5	62	76.5	30	23	40	21
100	48	49	71.5	86	30	23	40	21

Bore size (mm)	Standard stroke	C ₁	X	H ₁	L ₁
32	10, 15, 20, 25 50, 75, 100	20.5	23.5	M14 x 1.5	28.5
40		20.5	23.5	M14 x 1.5	28.5
50		26	28.5	M18 x 1.5	33.5
63	25, 50 75, 100	26	28.5	M18 x 1.5	33.5
80		32.5	35.5	M22 x 1.5	43.5 53.5
100	25, 50 75, 100	32.5	35.5	M26 x 1.5	43.5 53.5

Bore size (mm)	Standard stroke	C	D	E	H	I	J	K	M	N	O	P	R	W	Z
32	10, 15, 20, 25 50, 75, 100	13	16	45	M8 x 1.25	60	4.5	14	34	5.5	9	Rc 1/8	7	49.5	14
40		13	16	52	M8 x 1.25	69	5	14	40	5.5	9	Rc 1/8	7	57	14
50		15	20	64	M10 x 1.5	86	7	17	50	6.6	11	Rc 1/4	8	71	19
63	25, 50, 75, 100	15	20	77	M10 x 1.5	103	7	17	60	9	14	Rc 1/4	10.5	84	19
80		21	25	98	M16 x 2.0	132	6	22	77	11	17.5*	Rc 3/8	13.5*	104	26
100		27	30	117	M20 x 2.5	156	6.5	27	94	11	17.5*	Rc 3/8	13.5*	123.5	26

* At the 75 and 100 strokes with $\phi 80, 100$, both ends tapped (A) is the standard. Through-hole (B) is not available.

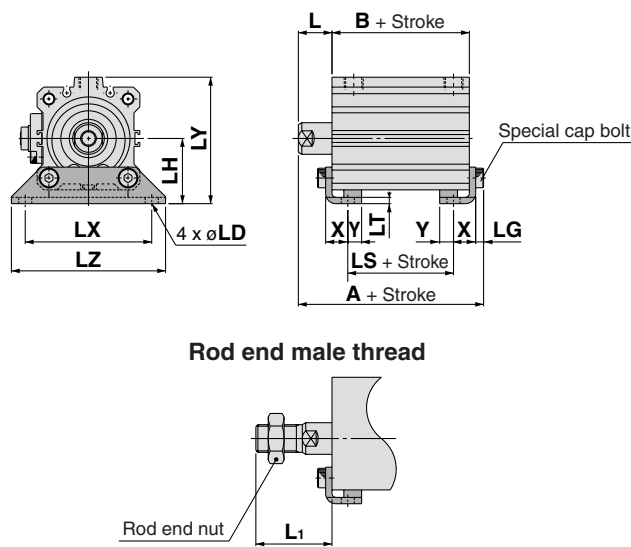
With Head End Lock

Bore size (mm)	Standard stroke	A	B	L	Q
32	10, 15, 20, 25 50, 75, 100	72.5	65.5	7	12.5
40		82	75	7	14
50		83.5	75.5	8	14
63	25, 50 75, 100	85	77	8	15.5
80		121	111	10	18
100	25, 50	132.5	120.5	12	22
	75, 100	147.5	125.5	22	23

With Rod End Lock

Bore size (mm)	Standard stroke	A	B	F	L	Q
32	10, 15, 20, 25 50, 75, 100	65	58	7.5	7	10.5
40		71.5	64.5	8	7	11
50		73.5	65.5	10.5	8	10.5
63	25, 50 75, 100	79	71	10.5	8	15
80		113.5	103.5	12.5	10	16
100	25, 50	125	113	13	12	23
	75, 100	147.5	125.5	23	22	23

Foot style: CBQ2L/CDBQ2L

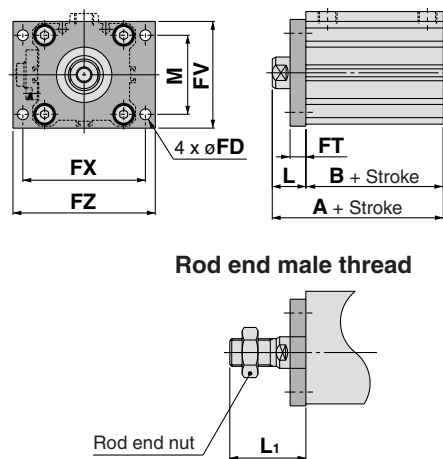


Foot Style (mm)

Bore size (mm)	Standard stroke	With head end lock			With rod end lock			L	L ₁	LD
		A	B	LS	A	B	LS			
32	10, 15, 20, 25 50, 75, 100	89.7	65.5	49.5	82.2	58	42	17	38.5	6.6
40		99.2	75	59	88.7	64.5	48.5	17	38.5	6.6
50		101.7	75.5	52.5	91.7	65.5	42.5	18	43.5	9
63		103.2	77	51	97.2	71	45	18	43.5	11
80	25, 50	142.5	111	81	135	103.5	73.5	20	53.5	13
	75, 100	147.5	116	86	147.5	116	86			
100	25, 50	155.5	120.5	86.5	148	113	79	22	53.5	13
	75, 100	160.5	125.5	91.5	160.5	125.5	91.5			

Bore size (mm)	Standard stroke	LG	LH	LT	LX	LY	LZ	X	Y
32	10, 15, 20, 25 50, 75, 100	4	30	3.2	57	57	71	11.2	5.8
40		4	33	3.2	64	64	78	11.2	7
50		5	39	3.2	79	78	95	14.7	8
63		5	46	3.2	95	91.5	113	16.2	9
80	25, 50, 75, 100	7	59	4.5	118	114	140	19.5	11
100		7	71	6	137	136	162	23	12.5

Rod side flange style: CBQ2F/CDBQ2F



Rod Side Flange Style (mm)

Bore size (mm)	Standard stroke	With head end lock		With rod end lock		FD	FT	FV	FX	FZ
		A	B	A	B					
32	10, 15, 20, 25 50, 75, 100	82.5	65.5	75	58	5.5	8	48	56	65
40		92	75	81.5	64.5	5.5	8	54	62	72
50		93.5	75.5	83.5	65.5	6.6	9	67	76	89
63		95	77	89	71	9	9	80	92	108
80	25, 50	131	111	123.5	103.5	11	11	99	116	134
	75, 100	136	116	136	116					
100	25, 50	142.5	120.5	135	113	11	11	117	136	154
	75, 100	147.5	125.5	147.5	125.5					

Bore size (mm)	Standard stroke	L	L ₁	M
32	10, 15, 20, 25 50, 75, 100	17	38.5	34
40		17	38.5	40
50		18	43.5	50
63		18	43.5	60
80	25, 50, 75, 100	20	53.5	77
100		22	53.5	94

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

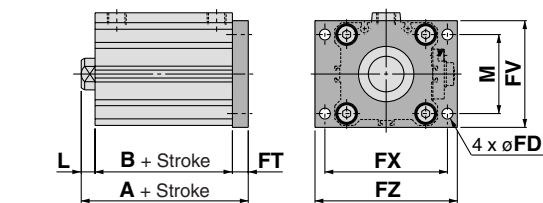
Individual
-X□

Technical
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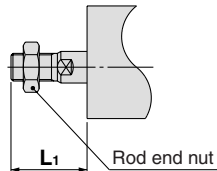
Series CBQ2

Dimensions: $\varnothing 32$ to $\varnothing 100$

Head side flange style: CBQ2G/CDBQ2G



Rod end male thread



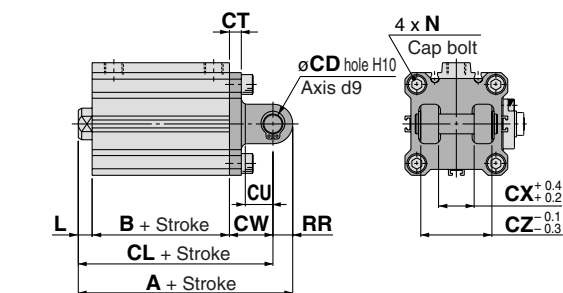
Head Side Flange Style

(mm)

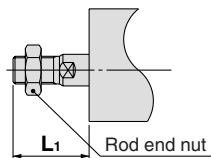
Bore size (mm)	Standard stroke	With head end lock				With rod end lock			
		A	B	L	L ₁	A	B	L	L ₁
32	10, 15, 20, 25 50, 75, 100	80.5	65.5	7	28.5	73	58	7	28.5
40		90	75	7	28.5	79.5	64.5	7	28.5
50		92.5	75.5	8	33.5	82.5	65.5	8	33.5
63		94	77	8	33.5	88	71	8	33.5
80	25, 50	132	111	10	43.5	124.5	103.5	10	43.5
	75, 100	147	116	20	53.5	147	116	20	53.5
100	25, 50	143.5	120.5	12	43.5	136	113	12	43.5
	75, 100	158.5	125.5	22	53.5	158.5	125.5	22	53.5

Bore size (mm)	Standard stroke	M	FD	FT	FV	FX	FZ
32	10, 15, 20, 25, 50, 75, 100	34	5.5	8	48	56	65
40		40	5.5	8	54	62	72
50		50	6.6	9	67	76	89
63		60	9	9	80	92	108
80		77	11	11	99	116	134
100		94	11	11	117	136	154

Double clevis style: CBQ2D/CDBQ2D



Rod end male thread



Double Clevis Style

(mm)

Bore size (mm)	Standard stroke	With head end lock			With rod end lock			CD	CT	CU	L	L ₁
		A	B	CL	A	B	CL					
32	10, 15, 20, 25 50, 75, 100	102.5	65.5	92.5	95	58	85	10	5	14	7	28.5
40		114	75	104	103.5	64.5	93.5	10	6	14	7	28.5
50		125.5	75.5	111.5	115.5	65.5	101.5	14	7	20	8	33.5
63		129	77	115	123	71	109	14	8	20	8	33.5
80	25, 50	177	111	159	169.5	103.5	151.5	18	10	27	10	43.5
	75, 100	192	116	174	192	116	174				20	53.5
100	25, 50	199.5	120.5	177.5	192	113	170	22	13	31	12	43.5
	75, 100	214.5	125.5	192.5	214.5	125.5	192.5				22	53.5

Bore size (mm)	Standard stroke	CW	CX	CZ	N	RR
32	10, 15, 20, 25 50, 75, 100	20	18	36	M6 x 1.0	10
40		22	18	36	M6 x 1.0	10
50		28	22	44	M8 x 1.25	14
63		30	22	44	M10 x 1.5	14
80	25, 50, 75, 100	38	28	56	M12 x 1.75	18
100		45	32	64	M12 x 1.75	22



Series CBQ2

Specifit Product Precautions

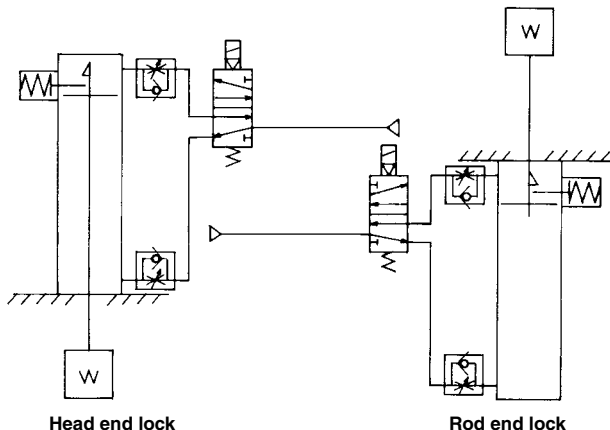
Be sure to read before handling.

Refer to front matters 54 and 55 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.

Use the Recommended Pneumatic Circuit

Caution

- This is necessary for the correct locking and unlocking actions.



Operating Precautions

Caution

1. Do not use 3 position solenoid valves.

Avoid use in combination with 3 position solenoid valves (especially closed center metal seal types). If pressure is trapped in the port on the lock mechanism side, the cylinder cannot be locked. Furthermore, even after being locked, the lock may be released after some time, due to air leaking from the solenoid valve and entering the cylinder.

2. Back pressure is required when releasing the lock.

Before starting operation, be sure to control the system so that air is supplied to the side without the lock mechanism as shown in the figure above. There is a possibility that the lock may not be released. (Refer to the section on releasing the lock.)

3. Release the lock when mounting or adjusting the cylinder.

If mounting or other work is performed when the cylinder is locked, the lock unit may be damaged.

4. Operate with a load ratio of 50% or less.

If the load ratio exceeds 50%, this may cause problems such as failure of the lock to release, or damage to the lock unit.

5. Do not operate multiple cylinders in synchronization.

Avoid applications in which two or more end lock cylinders are synchronized to move one workpiece, as one of the cylinder locks may not be able to release when required.

6. Use a speed controller with meter-out control.

Lock cannot be released occasionally by meter-in control.

7. Be sure to operate completely to the cylinder stroke end on the side with the lock.

If the cylinder piston does not reach the end of stroke, locking and unlocking may not be possible.

8. Adjust the position of an auto switch, so that it could work at the both positions where it is distanced from the stroke and a backlash (2 mm).

When a 2-color indication switch is adjusted for green indication at the stroke end, it may change to red for the backlash return, but this is not abnormal.

Operating Pressure

Caution

1. Supply air pressure of 0.15 MPa or higher to the port on the side that has the lock mechanism, as it is necessary for disengaging the lock.

Exhaust Speed

Caution

1. When the pressure on the side with the lock mechanism drops to 0.05 MPa or below, the lock engages automatically. If the piping on the side with the lock mechanism is thin and long, or if the speed controller is away from the cylinder port, the lock engagement may take some time due to decline of the exhaust speed. The same result will be caused by clogging of the silencer installed at the EXH port of the solenoid valve.

Releasing the Lock

Warning

1. Before releasing the lock, be sure to supply air to the side without the lock mechanism, so that there is no load applied to the lock mechanism when it is released. (Refer to the recommended pneumatic circuits.) If the lock is released when the port on the other side is in an exhaust state, and with a load applied to the lock unit, the lock unit may be subjected to an excessive force and be damaged. Also, it is very dangerous because the piston rod will be rushed to move.

Manual Release

Caution

1. Manual release (Non-lock type)

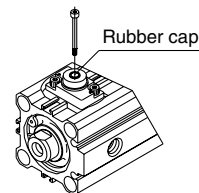
Insert the accessory bolt from the top of the rubber cap (it is not necessary to remove the rubber cap), and after screwing it into the lock piston, pull it to release the lock. If you stop pulling the bolt, the lock will return to an operational state.

Thread sizes, pulling forces and strokes are as shown below.

Bore size (mm)	Thread size	Pulling force (N)	Stroke (mm)
20, 25, 32	M2.5 x 0.45 x 25 or more	4.9	2
40, 50, 63	M3 x 0.5 x 30 or more	10	3
80, 100	M5 x 0.8 x 40 or more	24.5	3

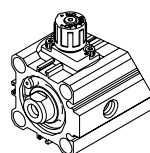
Remove the bolt for normal operation.

It can cause lock malfunction or faulty release.

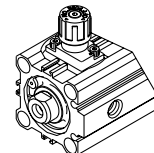


2. Manual release (Lock type)

While pushing the M/O knob, turn it 90° counterclockwise. The lock is released (and remains in a released state) by aligning the ▲ mark on the cap with the ▼ OFF mark on the M/O knob. When locking is desired, turn M/O button clockwise 90° while pushing fully, correspond ▲ on cap and ▼ ON mark on M/O button. The correct position is confirmed by a click sound "click". If not confirmed, locking is not done.



Manually locked state



Manually unlocked state

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual

-X□

Technical data

Compact Cylinder: Water Resistant Type Double Acting, Single Rod

Series CQ2

ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100

How to Order

CQ2 **B** **32** **R** - **30** **D** -

With auto switch **CDQ2** **B** **32** **R** - **30** **D** - **M9BA** -

With auto switch
(Built-in magnet)

Mounting style

B	Through-hole (Standard)	(ø20 to ø100)
A	Both ends tapped style	
L	Foot style	
F	Rod side flange style	(ø40 to ø100)
G	Head side flange 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 749 and 751.

Bore size

20	20 mm
25	25 mm
32	32 mm
40	40 mm
50	50 mm
63	63 mm
80	80 mm
100	100 mm

Port thread type

Nil	M thread
TN	NPT
TF	G

Auto switch

Nil	Without auto switch
------------	---------------------

* For the applicable auto switch model, refer to the table below.

Body option

Nil	Standard (Rod end female thread)
M	Rod end nut

Action

D	Double acting
----------	---------------

Cylinder stroke (mm)
Refer to the standard stroke table on page 748.

Water resistant cylinder

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

Made to Order
Refer to page 748 for details.

Number of auto switches

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

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) CDQ2B32R-25DM

CUJ
CU
CQS
CQ2
RQ
CQM
MU

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		Auto switch model		Lead wire length (m)				Pre-wired connector	Applicable load	
					DC	AC	Perpendicular	In-line	0.5 (Nil)	1 (M)	3 (L)	5 (Z)			
Solid state switch	Water resistant (2-color indication)	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NAV	M9NA	○	○	●	○	IC circuit	Relay, PLC
				3-wire (PNP)				M9PAV	M9PA	○	○	●	○		
				2-wire				M9BAV	M9BA	○	○	●	○		

* Lead wire length symbols: 0.5 m Nil (Example) M9BA
1 m M (Example) M9BAM
3 m L (Example) M9BAL
5 m Z (Example) M9BAZ

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

* For details about auto switches with pre-wired connector, refer to pages 1328 and 1329.

* When D- M9□A(V)L type with ø32 to ø50 is mounted on a side other than the port side, order auto switch mounting brackets separately. Refer to page 768 for details.

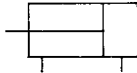
D-□
-X□
Individual
-X□
Technical data

Series CQ2



JIS Symbol

Double acting,
Single rod



Specifications

Bore size	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	0.08 MPa							
Ambient and fluid temperature	Without switch: -10 to 70°C (No freezing) With switch: -10 to 60°C (No freezing)							
Lubrication	Not required (Non-lube)							
Piston speed	50 to 500 mm/s							
Allowable kinetic energy (J)	0.055	0.09	0.15	0.26	0.46	0.77	1.36	2.27
Stroke length tolerance	+1.0mm 0							

Standard Stroke

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



Made to Order Specifications

(For details, refer to page 1426.)

Symbol	Specification/Description
—XC6	Retaining ring, piston rod, rod end nut made of stainless steel

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

- 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.	
Part no.	Refer to "How to Order" for the standard model no. on page 747.	
Description	Dealing with the stroke by the 1 mm interval is available by installing spacer with standard stroke cylinder.	
Stroke range	Bore size	Stroke range
	20, 25	1 to 49
	32 to 100	1 to 99
Example	Part no.: CQ2B50R-57D CQ2B50R-75D with 18 mm width spacer inside. B dimension is 115.5 mm.	

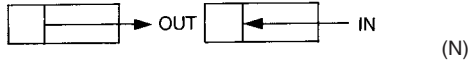
Type

Bore size (mm)			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	Note) M5 x 0.8 Rc 1/8	Rc 1/8	Rc 1/4	Rc 1/4	Rc 3/8	Rc 3/8
			TN	—	—	NPT 1/8	NPT 1/8	NPT 1/4	NPT 1/4	NPT 3/8	NPT 3/8
			TF	—	—	G 1/8	G 1/8	G 1/4	G 1/4	G 3/8	G 3/8
	Rod end male thread		●	●	●	●	●	●	●	●	

Note) 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 thread type.

Compact Cylinder: Water Resistant Type Double Acting, Single Rod **Series CQ2**

Theoretical Output



Bore size (mm)	Operating direction	Operating pressure (MPa)		
		0.3	0.5	0.7
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

Mounting Bracket Part No.

Bore size (mm)	Foot (1)	Flange	Double clevis
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 1) Order two foot brackets per cylinder.

Note 2) 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.

Mass

Without magnet CQ2B²⁰₁₀₀R-□D

Mass	5	10	15	20	25	30	35	40	45	50	75	100
Bore size	5	10	15	20	25	30	35	40	45	50	75	100
ø20	112	126	141	155	169	184	198	212	227	241	—	—
ø25	149	164	181	197	213	229	245	261	277	293	—	—
ø32	210	233	255	277	299	322	344	366	389	411	568	680
ø40	230	253	276	299	322	345	369	392	415	438	604	724
ø50	—	402	439	475	511	547	583	620	656	692	953	1141
ø63	—	574	615	656	696	737	778	819	860	901	1194	1405
ø80	—	1054	1122	1190	1258	1325	1393	1461	1529	1597	2067	2401
ø100	—	1833	1924	2015	2105	2196	2287	2378	2468	2559	3201	3661

Additional Mass

Bore size (mm)	20	25	32	40	50	63	80	100
Both ends tapped style	—	—	—	6	6	19	45	45
Rod end male thread	Male thread	6	12	26	27	53	53	120
	Nut	4	8	17	17	32	32	49
Foot style (Including mounting bolt)	—	—	—	155	243	324	696	1062
Rod side flange style (Including mounting bolt)	—	—	—	214	373	559	1056	1365
Head side flange style (Including mounting bolt)	—	—	—	198	348	534	1017	1309
Double clevis style (Included pin, retaining ring, bolt)	—	—	—	196	393	554	1109	1887

Calculation: (Example) CQ2D40R-20DM

- Cylinder mass: CQ2B40R-20D..... 299 g
- Option mass: Both ends tapped style..... 6 g
- Rod end male thread..... 44 g
- Double clevis style..... 196 g
- 545 g

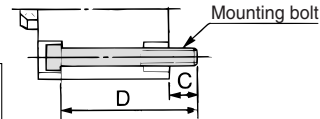
Mounting Bolt for CQ2

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
CQ2B20 ^R -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
CQ2B25 ^R -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
CQ2B32 ^R -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		120	x 120L
-100D		145	x 145L

Cylinder model	C	D	Mounting bolt size
CQ2B40 ^R -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 ^R -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	14.5	145	x 145L
CQ2B63 ^R -10D		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

Cylinder model	C	D	Mounting bolt size
CQ2B80 ^R -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	15.5	155	x 155L
CQ2B100 ^R -10D		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

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual

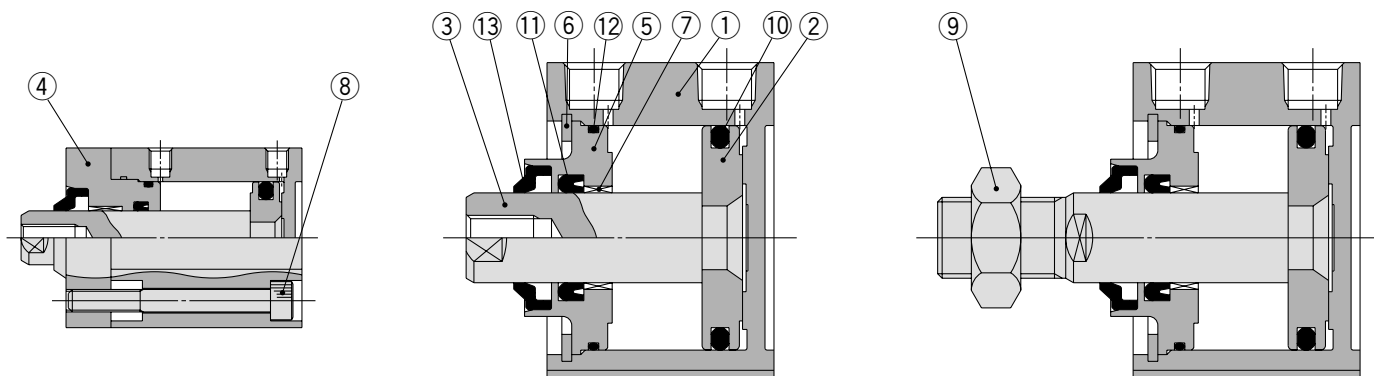
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Technical data

Construction

Basic style (Bore size ø20 to ø32) Basic style (Bore size ø40 to ø100)

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	ø20 to ø25
		Carbon steel	ø32 to ø100, Hard chrome plated
4	Rod cover	Aluminum alloy	ø20 to ø32, Anodized
5	Collar	Aluminum alloy	ø40 to ø100, Anodized
6	Retaining ring	Carbon tool steel	ø40 to ø100, Phosphate coated
7	Bushing	Oil-impregnated sintered alloy	ø20, ø25
		Bearing alloy	ø32 to ø100
8	Hexagon socket head cap screw	Chromium molybdenum steel	ø20 to ø32, Nickel plated
9	Rod end nut	Carbon steel	Nickel plated
10	Piston seal	R: NBR V: FKM	
11	Rod seal	R: NBR V: FKM	
12	Tube gasket	R: NBR V: FKM	
13	Rod scraper	R: NBR V: FKM	

* R: NBR seal (Nitrile rubber)
V: FKM seal (Fluororubber)

Replacement Parts: Seal Kit

Bore size (mm)	Kit no.		Note
	R: NBR	V: FKM	
20	CQ2B20R-PS	CQ2B20V-PS	Set of left nos. ⑩ ⑪ ⑫
25	CQ2B25R-PS	CQ2B25V-PS	
32	CQ2B32R-PS	CQ2B32V-PS	
40	CQ2B40R-PS	CQ2B40V-PS	
50	CQ2B50R-PS	CQ2B50V-PS	
63	CQ2B63R-PS	CQ2B63V-PS	
80	CQ2B80R-PS	CQ2B80V-PS	
100	CQ2B100R-PS	CQ2B100V-PS	

* Seal kit includes ⑩, ⑪, ⑫. Order the seal kit, based on each bore size.
* A rod scraper cannot be replaced independently. It is press-fitted, so replace it not only with a rod cover and collar, but also with a rod cover assembly and collar assembly. Contact SMC separately for how to order them.
* Since the grease kit does not include a grease pack, order it separately.
Grease pack part no.: GR-S-010 (10 g)

⚠ 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

- For installation and removal, use an appropriate pair of pliers (tool for installing a type C retaining ring).
- 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

- Before installing a cylinder, thoroughly flush out the piping to prevent dust or cutting chips from entering the cylinder. For the hydraulic cylinder, use the air bleed valve to release the air inside the cylinder.
- Eccentric loads applied to the piston rod dramatically shorten the service life. Use the piston rod by always applying a load in an axial direction.
- Make sure not to scratch or gouge the sliding portion of the piston rod, as this could damage the seals and lead to leaks or faulty lock-up.

Mounting

⚠ Caution

- When the cylinder is exposed to dust or sand, or is used in a place where liquid from the piston rod splashes, use the heavy duty scraper (-XC4) type.
- If there is a possibility of liquid splashing on cylinder fittings when using an air cylinder, use insert fittings, self-align fittings, piping, etc. Consider the compatibility of liquid components and piping materials before using.
- When selecting seals, generally use NBR (nitrile rubber) seals with liquids that do not contain chlorine and sulfur, and use FKM (fluoro rubber) seals with liquids that contain chlorine and sulfur. However, depending on the type and the brand of liquid (such as cleaning solvent) that splashes on the cylinder, the operating life of seals may be reduced dramatically. In cases where special additives are used, or where liquid caused trouble with the conventional nitrile or fluoro rubber seals in the past, request an investigation or set up a test period for the use of the seals.

Examples of cleaning solvents

Shimron, PA-O-5 (Daido Chemical Industry Co., Ltd.) (NBR seals)
Noritake Cool, AFG-S (Noritake Co., Ltd.) (NBR seals)
Yushiroken, S-46S (Yushiro Chemical Industry Co., Ltd.) (NBR seals)
Yushiroken, EC-50-T3 (Yushiro Chemical Industry Co., Ltd.) (NBR seals)
Yushiron Oil, No. 23 (Yushiro Chemical Industry Co., Ltd.) (FKM seals)
Daphne Cut, Hs-1 (Idemitsu Kosan Co., Ltd.) (FKM seals)

Compact Cylinder: Water Resistant Type Double Acting, Single Rod Series **CDQ2** With Auto Switch



Mass CDQ2B $\frac{20}{100} \frac{R}{V} - \square D$

(g)

Mass	5	10	15	20	25	30	35	40	45	50	75	100
Bore size	5	10	15	20	25	30	35	40	45	50	75	100
ø20	150	164	178	192	206	219	233	247	261	275	—	—
ø25	200	217	234	251	268	284	301	318	335	351	—	—
ø32	272	295	317	339	361	384	406	428	451	473	585	698
ø40	306	330	353	376	399	422	445	468	491	515	634	754
ø50	—	520	557	593	629	665	701	738	774	810	999	1187
ø63	—	732	773	814	855	895	936	977	1018	1059	1270	1481
ø80	—	1315	1383	1451	1519	1586	1654	1722	1790	1858	2192	2527
ø100	—	2213	2303	2394	2485	2576	2666	2757	2848	2939	3399	3859

Additional Mass

(g)

Bore size (mm)	20	25	32	40	50	63	80	100
Both ends tapped style	—	—	—	6	6	19	45	45
Rod end male thread	Male thread	6	12	26	27	53	120	175
	Nut	4	8	17	17	32	49	116
Foot style (Including mounting bolt)	—	—	—	155	243	324	696	1062
Rod side flange style (Including mounting bolt)	—	—	—	214	373	559	1056	1365
Head side flange style (Including mounting bolt)	—	—	—	198	348	534	1017	1309
Double clevis style (Included pin, retaining ring, bolt)	—	—	—	196	393	554	1109	1887

Calculation: (Example) **CDQ2D40R-20DM**

- Cylinder mass: CDQ2B40R-20D..... 376 g
- Option mass: Both ends tapped style..... 6 g
- Rod end male thread..... 44 g
- Double clevis style..... 196 g

622 g

Auto Switch Mounting Bracket Mass

Mounting bracket part no.	Applicable bore size (mm)	Mass (g)
BQ-1	ø20 to ø25	1.5
BQ-2	ø32 to ø100	1.5
BQ2-012S	ø20 to ø25	5

* For the auto switch mass, refer to pages 1263 to 1371.

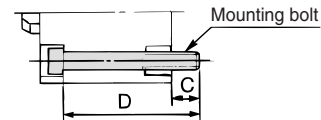
Mounting Bolt for CDQ2/With Auto Switch

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
CDQ2B20$\frac{R}{V}$-5D	10.5	50	M5 x 50L
-10D		55	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
CDQ2B25$\frac{R}{V}$-5D	9.5	50	M5 x 50L
-10D		55	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
CDQ2B32$\frac{R}{V}$-5D	9	50	M5 x 50L
-10D		55	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
CDQ2B40$\frac{R}{V}$-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$\frac{R}{V}$-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
CDQ2B63$\frac{R}{V}$-10D		60	M8 x 60L
-15D	14.5	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

Cylinder model	C	D	Mounting bolt size
CDQ2B80$\frac{R}{V}$-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$\frac{R}{V}$-10D		75	M10 x 75L
-15D	15.5	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

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

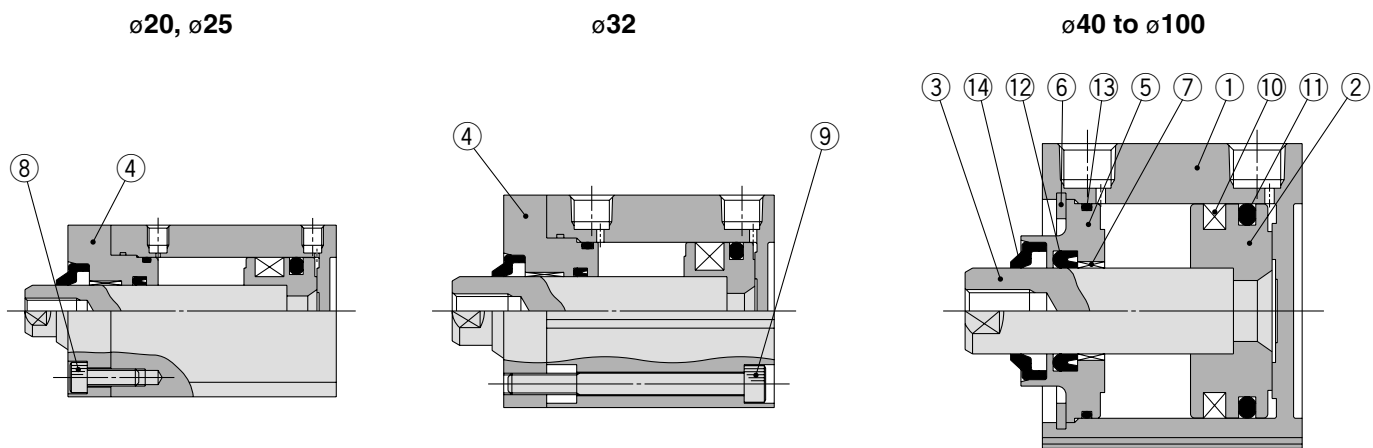
Individual

-X□

Technical data

Series CQ2

Construction



Component Parts

No.	Description	Material	Note
1	Cylinder tube	Aluminum alloy	Hard anodized
2	Piston	Aluminum alloy	Chromated
3	Piston rod	Stainless steel	ø20 to ø25
		Carbon steel	ø32 to ø100, Hard chrome plated
4	Rod cover	Aluminum alloy	ø20 to ø32, Anodized
5	Collar	Aluminum alloy	ø40 to ø100, Anodized
6	Retaining ring	Carbon tool steel	Phosphate coated
7	Bushing	Oil-impregnated sintered alloy	ø20, ø25
		Bearing alloy	ø32 to ø100
8	Hexagon socket head cap screw	Chromium molybdenum steel	ø20 to ø25, Nichel plated
9	Hexagon socket head cap screw	Chromium molybdenum steel	ø32, Nichel plated
10	Magnet	—	
11	Piston seal	R: NBR	
		V: FKM	
12	Rod seal	R: NBR	
		V: FKM	
13	Tube gasket	R: NBR	
		V: FKM	
14	Rod scraper	R: NBR	
		V: FKM	

* R: NBR seal (Nitrile rubber)
V: FKM seal (Fluororubber)

Replacement Parts: Seal Kit

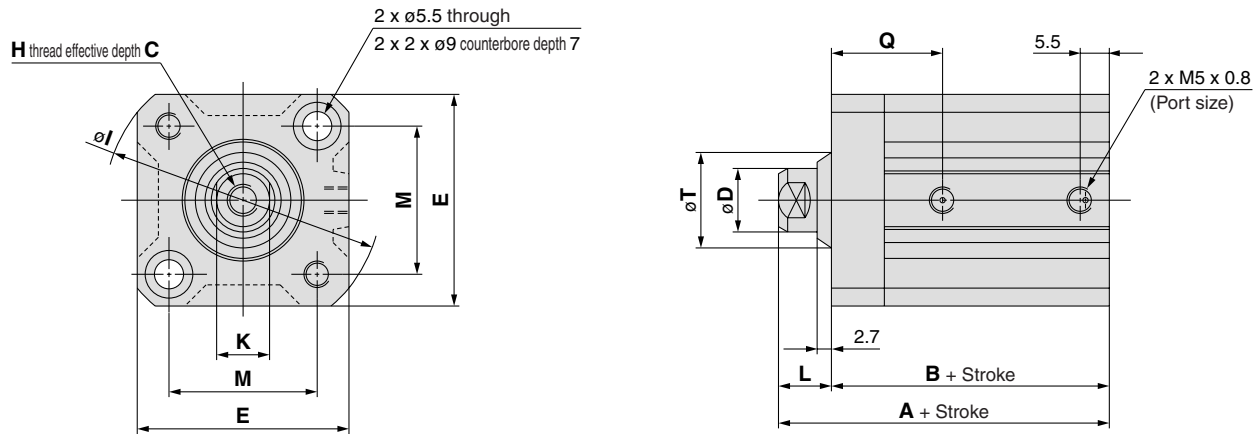
Bore size (mm)	Kit no.		Note
	R: NBR	V: FKM	
20	CQ2B20R-PS	CQ2B20V-PS	Set of left nos. ⑪ ⑫ ⑬
25	CQ2B25R-PS	CQ2B25V-PS	
32	CQ2B32R-PS	CQ2B32V-PS	
40	CQ2B40R-PS	CQ2B40V-PS	
50	CQ2B50R-PS	CQ2B50V-PS	
63	CQ2B63R-PS	CQ2B63V-PS	
80	CQ2B80R-PS	CQ2B80V-PS	
100	CQ2B100R-PS	CQ2B100V-PS	

* Seal kit includes ⑪, ⑫, ⑬ Order the seal kit, based on each bore size.
* A rod scraper cannot be replaced independently. It is press-fitted, so replace it not only with a rod cover and collar, but also with a rod cover assembly and collar assembly. Contact SMC separately for how to order them.
* Since the grease kit does not include a grease pack, order it separately.
Grease pack part no.: GR-S-010 (10 g)

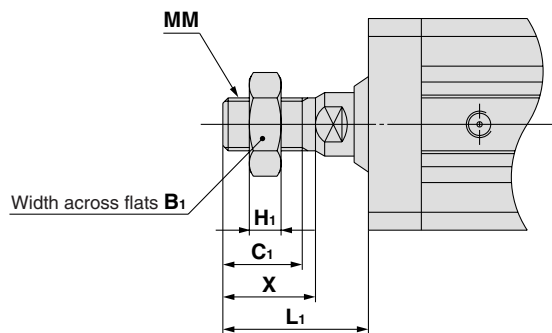
Dimensions

Ø20, Ø25/Without Auto Switch

Basic style (Through-hole): CQ2B



Rod end male thread



Rod End Male Thread (mm)

Bore size (mm)	B ₁	C ₁	H ₁	L ₁	MM	X
20	13	12	5	23.5	M8 x 1.25	14
25	17	15	6	27.5	M10 x 1.25	17.5

Basic Style

(mm)

Bore size (mm)	Stroke range (mm)	A	B	C	D	E	H	I	K	L	M	Q	T
20	5 to 50	39	29.5	7	10	36	M5 x 0.8	47	8	9.5	25.5	19	16.1
25	5 to 50	42.5	32.5	12	12	40	M6 x 1.0	52	10	10	28	21	18.1



* For details about the rod end nut and accessory brackets, refer to page 620.



* Refer to page 603 for the calculation on the longitudinal dimension of the intermediate strokes.

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual
-X□

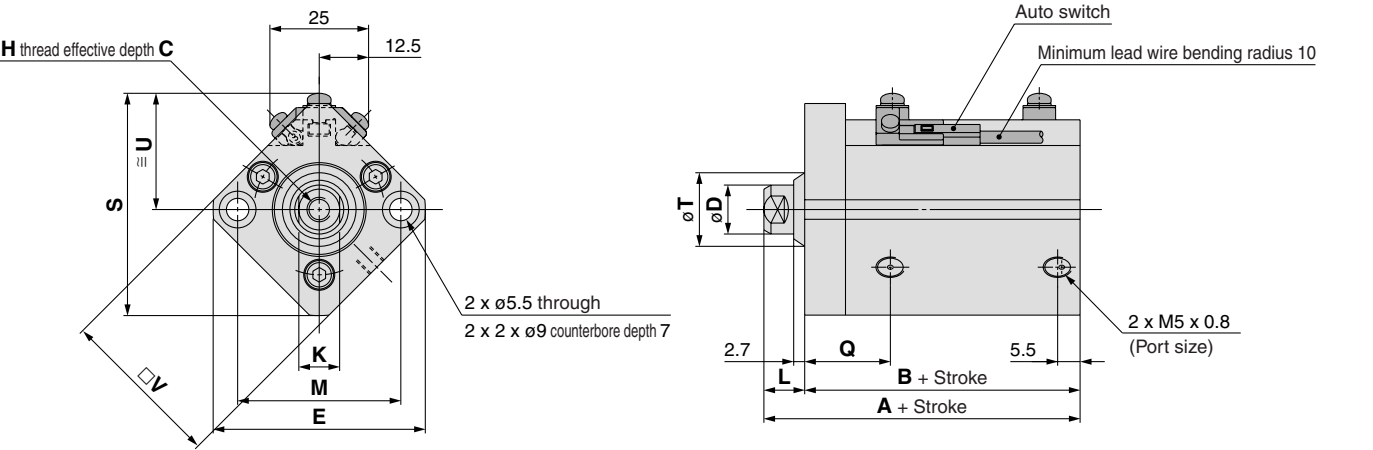
Technical
data

Series **CQ2**

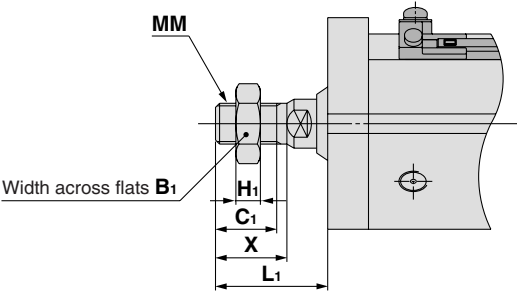
Dimensions

Ø20, Ø25/With Auto Switch

Basic style (Through-hole): **CDQ2B**



Rod end male thread



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

Rod End Male Thread (mm)						
Bore size (mm)	B ₁	C ₁	H ₁	L ₁	MM	X
20	13	12	5	23.5	M8 x 1.25	14
25	17	15	6	27.5	M10 x 1.25	17.5

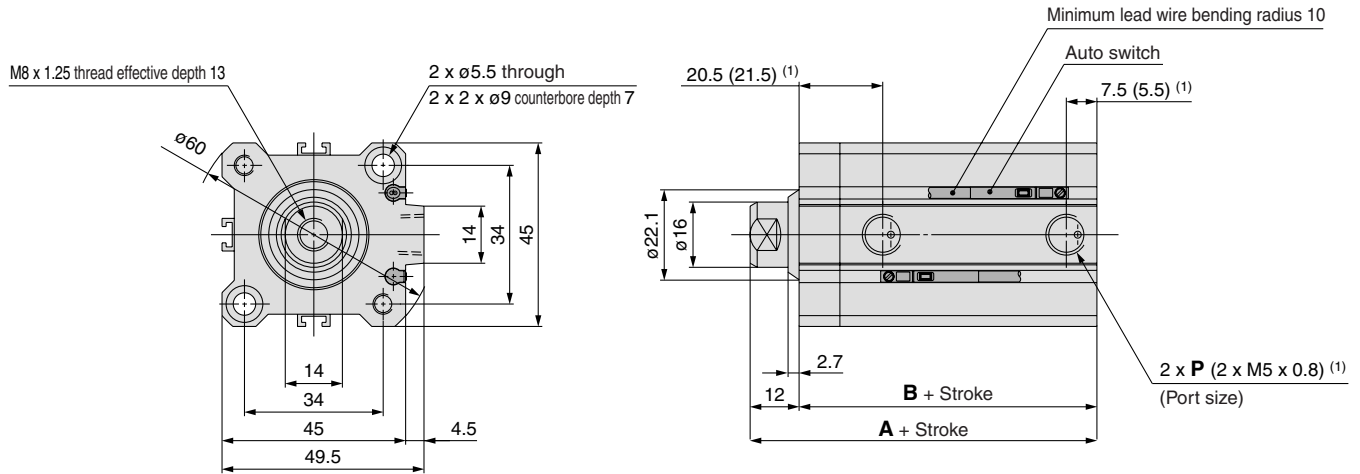
Basic Style															(mm)
Bore size (mm)	Stroke range (mm)	A	B	C	D	E	H	K	L	M	Q	S	T	U	V
20	5 to 50	51	41.5	7	10	47	M5 x 0.8	8	9.5	36	20.5	48	16.1	24.5	36
25	5 to 50	52.5	42.5	12	12	52	M6 x 1.0	10	10	40	21	53.5	18.1	27.5	40

 * For details about the rod end nut and accessory brackets, refer to page 620.

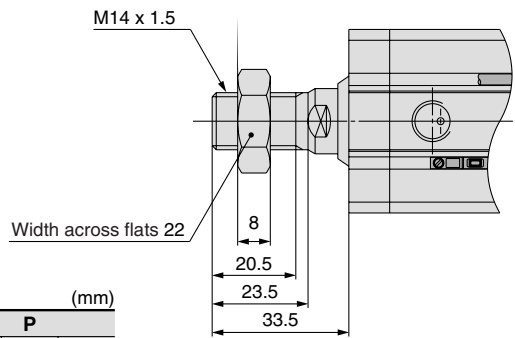
 * Refer to page 603 for the calculation on the longitudinal dimension of the intermediate strokes.

Dimensions

ø32



Rod end male thread



Note 1) () : Without an auto switch, 5 mm strokes.

Stroke range (mm)	Without auto switch		With auto switch		(mm)		
	A	B	A	B	—	TN	TF
5 to 50	45	33	55	43	Rc 1/8	NPT 1/8	G 1/8
75, 100	55	43					



* For details about the rod end nut and accessory brackets, refer to page 620.



* Refer to page 603 for the calculation on the longitudinal dimension of the intermediate strokes.

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual
-X□

Technical
data

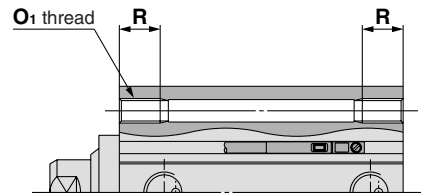
Series CQ2

Dimensions

Ø40, Ø50

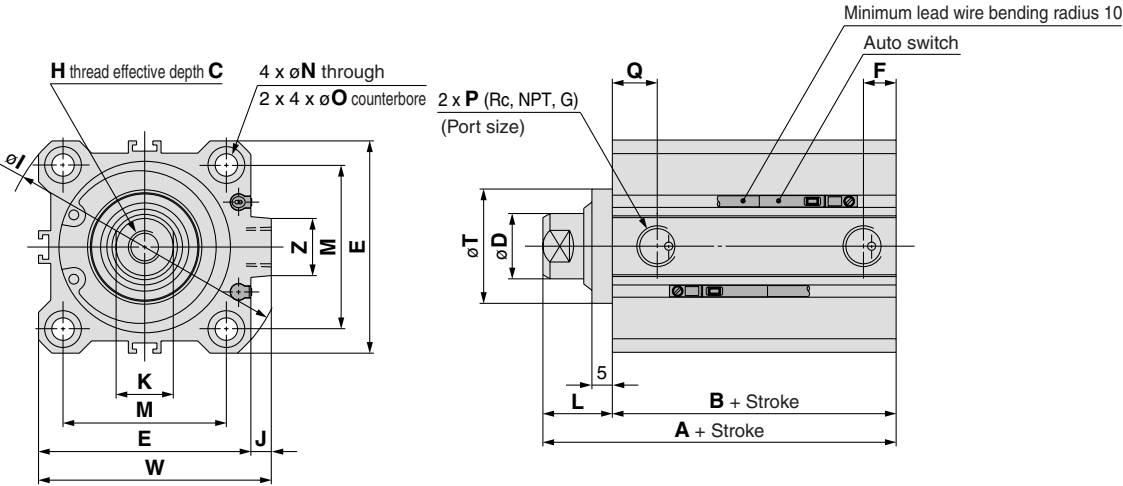
Both ends tapped style: CQ2A/CDQ2A

Basic style (Through-hole): CQ2B/CDQ2B

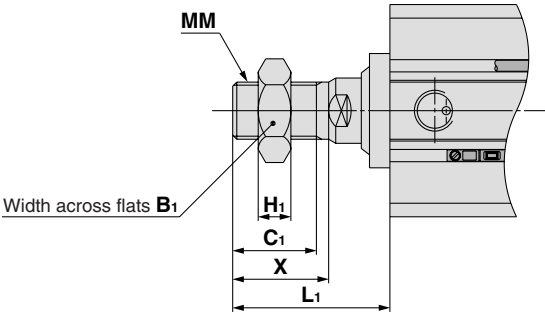


Both Ends Tapped Style (mm)

Bore size (mm)	O ₁	R
40	M6 x 1.0	10
50	M8 x 1.25	14



Rod end male thread



Rod End Male Thread (mm)

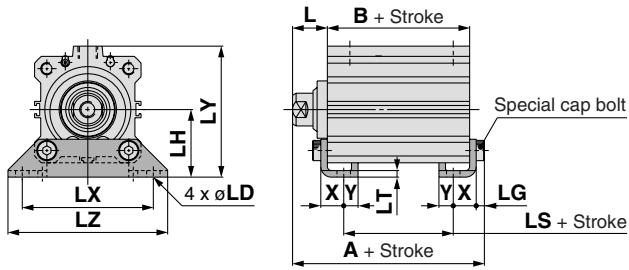
Bore size (mm)	B ₁	C ₁	H ₁	L ₁	MM	X
40	22	20.5	8	38.5	M14 x 1.5	23.5
50	27	26	11	43.5	M18 x 1.5	28.5

Basic Style For the auto switch mounting position and its mounting height, refer to pages 760 to 766.

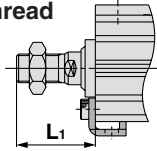
Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch		C	D	E	F	H	I	J	K	L	M	N	O	P	Q	T	W	Z
		A	B	A	B																	
40	5 to 50	46.5	29.5	56.5	39.5	13	16	52	8	M8 x 1.25	69	5	14	17	40	5.5	9 depth 7	1/8	11	28	57	14
	75, 100	56.5	39.5																			
50	10 to 50	48.5	30.5	58.5	40.5	15	20	64	10.5	M10 x 1.5	86	7	17	18	50	6.6	11 depth 8	1/4	10.5	35	71	19
	75, 100	58.5	40.5																			

Note 1) For details about the rod end nut and accessory brackets, refer to page 620.
 Note 2) Refer to page 603 for the calculation on the longitudinal dimension of the intermediate.

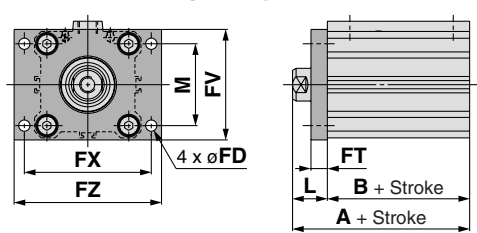
Foot style: CQ2L/CDQ2L



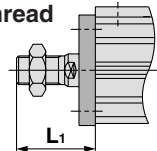
Rod end male thread



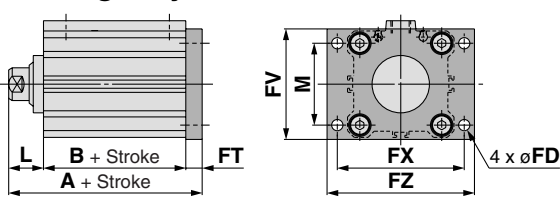
Rod side flange style: CQ2F/CDQ2F



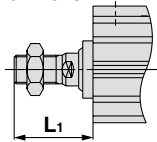
Rod end male thread



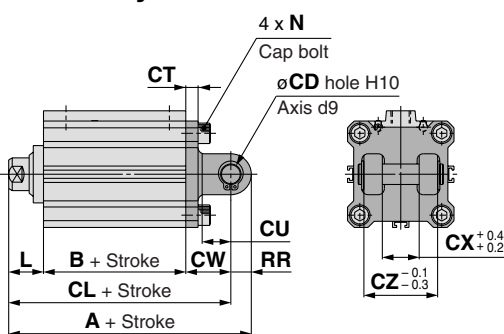
Head side flange style: CQ2G/CDQ2G



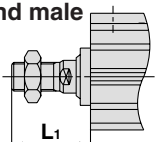
Rod end male thread



Double clevis style: CQ2D/CDQ2D



Rod end male thread



Foot Style

Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch			(mm)		
		A	B	LS	A	B	LS	L	L ₁	LD
40	5 to 50	53.7	29.5	13.5	63.7	39.5	23.5	17	38.5	6.6
	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
	75, 100	66.7	40.5	17.5						

Bore size (mm)	LG	LH	LT	LX	LY	LZ	X	Y
40	4	33	3.2	64	64	78	11.2	7
50	5	39	3.2	79	78	95	14.7	8

Foot bracket material: Carbon steel
Surface treatment: Nickel plated

Rod Side Flange Style

Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch		FD	FT	FV	FX	FZ
		A	B	A	B					
40	5 to 50	46.5	29.5	56.5	39.5	5.5	8	54	62	72
	75, 100	56.5	39.5							
50	10 to 50	48.5	30.5	58.5	40.5	6.6	9	67	76	89
	75, 100	58.5	40.5							

Bore size (mm)	L	L ₁	M
40	17	38.5	40
50	18	43.5	50

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

Head Side Flange Style (mm)

Bore size (mm)	Stroke range (mm)	Without auto switch	With auto switch
		A	A
40	5 to 50	54.5	64.5
	75, 100	64.5	
50	10 to 50	57.5	67.5
	75, 100	67.5	

(* Dimensions except A are the same as the rod side flange style.)

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

Double Clevis Style

Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch			CD	CT	CU
		A	B	CL	A	B	CL			
40	5 to 50	78.5	29.5	68.5	88.5	39.5	78.5	10	6	14
	75, 100	88.5	39.5	78.5						
50	10 to 50	90.5	30.5	76.5	100.5	40.5	86.5	14	7	20
	75, 100	100.5	40.5	86.5						

Bore size (mm)	CW	CX	CZ	L	L ₁	N	RR
40	22	18	36	7	28.5	M6 x 1.0	10
50	28	22	44	8	33.5	M8 x 1.25	14

Double clevis bracket material: Cast iron
Surface treatment: Painted

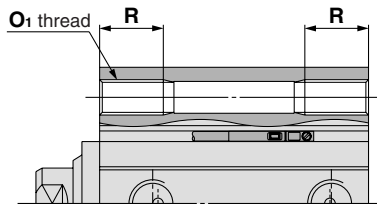
* For details about the rod end nut and accessory brackets, refer to page 620.
** Double clevis pins and retaining rings are included.

Series CQ2

Dimensions

Ø63 to Ø100

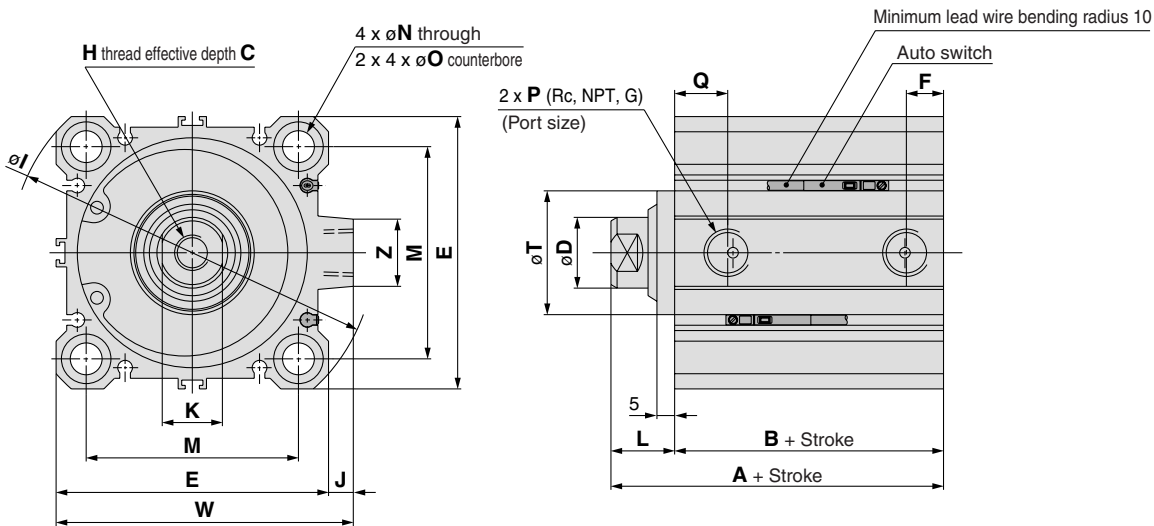
Both ends tapped style: CQ2A/CDQ2A



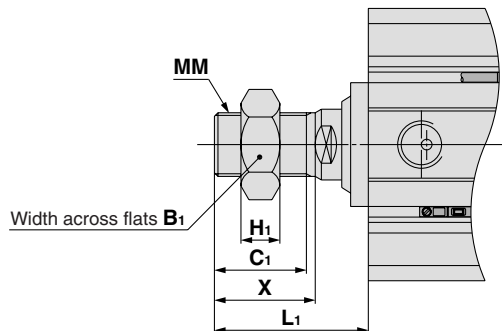
Both Ends Tapped Style (mm)

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)



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	43.5	M18 x 1.5	28.5
80	32	32.5	13	53.5	M22 x 1.5	35.5
100	41	32.5	16	53.5	M26 x 1.5	35.5

Basic Style

For the auto switch mounting position and its mounting height, refer to pages 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	T
		A	B	A	B															
63	10 to 50	54	36	64	46	15	20	77	10.5	M10 x 1.5	103	7	17	18	60	9	14 depth 10.5	1/4	15	35
	75, 100	64	46																	
80	10 to 50	63.5	43.5	73.5	53.5	21	25	98	12.5	M16 x 2.0	132	6	22	20	77	11	17.5 depth 13.5	3/8	16	43
	75, 100	73.5	53.5																	
100	10 to 50	75	53	85	63	27	30	117	13	M20 x 2.5	156	6.5	27	22	94	11	17.5 depth 13.5	3/8	23	59
	75, 100	85	63																	

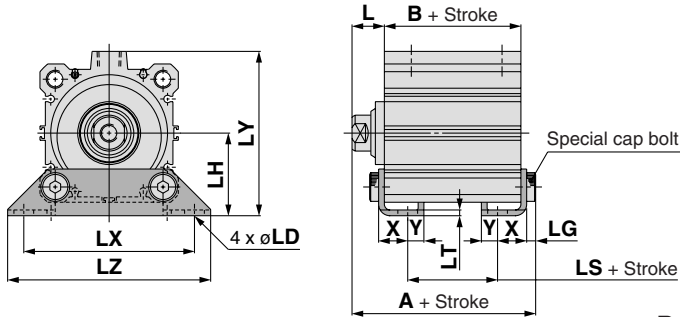


* For details about the rod end nut and accessory brackets, refer to page 620.

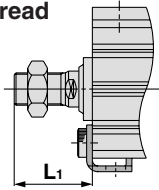
Note) Refer to page 603 for the calculation on the longitudinal dimension of the intermediate strokes.

Bore size (mm)	W	Z
63	84	19
80	104	26
100	123.5	26

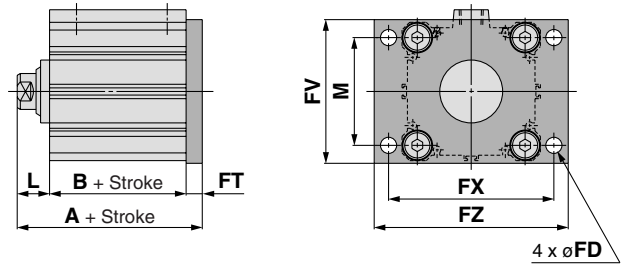
Foot style: CQ2L/CDQ2L



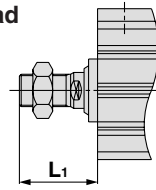
Rod end male thread



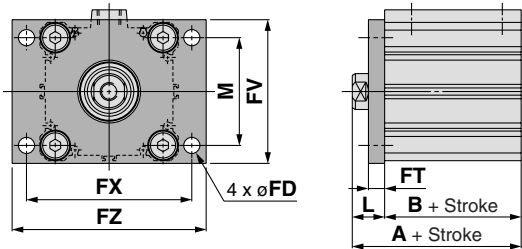
Head side flange style: CQ2G/CDQ2G



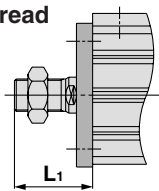
Rod end male thread



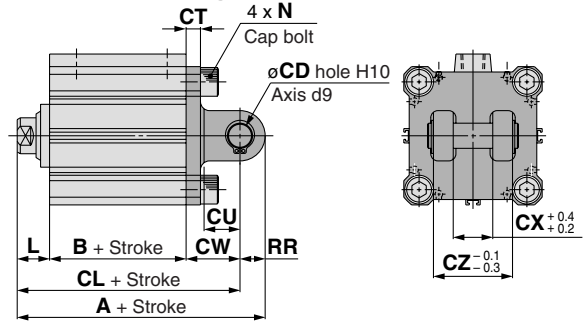
Rod side flange style: CQ2F/CDQ2F



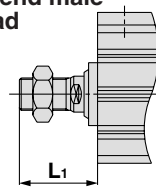
Rod end male thread



Double clevis style: CQ2D/CDQ2D



Rod end male thread



Foot Style

Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch			L	L ₁	LD	LG	LH	LT
		A	B	LS	A	B	LS						
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									

Foot bracket material: Carbon steel
Surface treatment: Nickel plated

Bore size (mm)	Stroke range (mm)	LX	LY	LZ	X	Y
63	10 to 50	54	36			
	75, 100	64	46			
80	10 to 50	63.5	43.5			
	75, 100	73.5	53.5			
100	10 to 50	75	53			
	75, 100	85	63			

Rod Side Flange Style

Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch		FD	FT	FV	FX	FZ	L	L ₁	M
		A	B	A	B								
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										

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

Head Side Flange Style

Bore size (mm)	Stroke range (mm)	Without auto switch	With auto switch
		A	A
63	10 to 50	63	
	75, 100	73	73
80	10 to 50	74.5	
	75, 100	84.5	84.5
100	10 to 50	86	
	75, 100	96	96

(* Dimensions except A are the same as the rod side flange style.)

Flange bracket material:
Carbon steel
Surface treatment:
Nickel plated

Double Clevis Style

Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch			CD	CT	CU	CW	CX
		A	B	CL	A	B	CL					
63	10 to 50	98	36	84	108	46	94	14	8	20	30	22
	75, 100	108	46	94								
80	10 to 50	119.5	43.5	101.5	129.5	53.5	111.5	18	10	27	38	28
	75, 100	129.5	53.5	111.5								
100	10 to 50	142	53	120	152	63	130	22	13	31	45	32
	75, 100	152	63	130								

Double clevis bracket material:
Cast iron
Surface treatment: Painted

Bore size (mm)	Stroke range (mm)	CZ	L	L ₁	N	RR
63	10 to 50	44	18	43.5	M10 x 1.5	14
	75, 100					
80	10 to 50	56	20	53.5	M12 x 1.75	18
	75, 100					
100	10 to 50	64	22	53.5	M12 x 1.75	22
	75, 100					

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

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual

-X□

Technical data

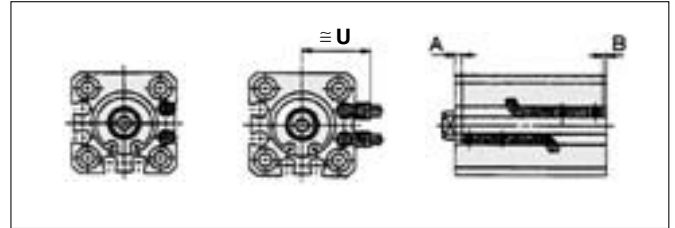
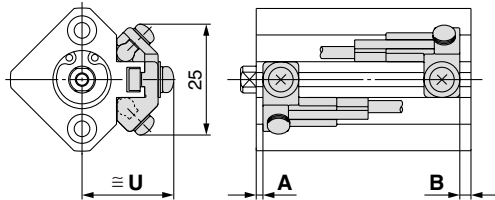
Compact Cylinder/*Series CQ2* With Auto Switch 1

1 Proper Auto Switch Mounting Position (Detection at stroke end) and Mounting Height

Applicable cylinder series: CDQ2, CDQ2W, CDQ2□□□-□S/-□T (Single acting), CDQ2K, CDQ2KW (Non-rotating), CDQP2, CDQP2□□□-□S/-□T (Axial piping), CDQ2 (Long stroke), CDQ2□S (Anti-lateral load), CDBQ2 (End lock), CDQ2□R/□V (Water resistant)

D-A9□
D-M9□
D-M9□W
D-M9□AL
D-A9□V
D-M9□V
D-M9□WV
D-M9□AVL

ø12 to ø25

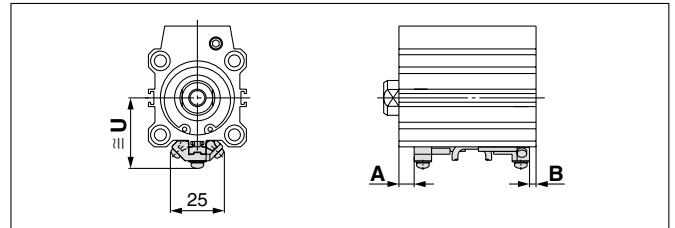
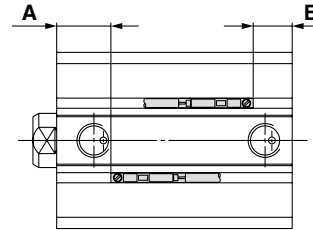
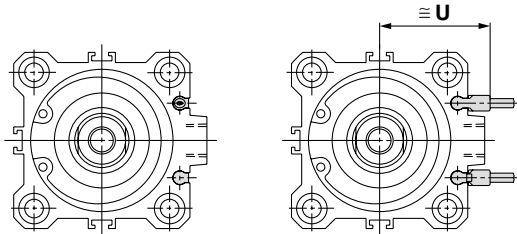


CDBQ2 (End lock, ø20, ø25)

ø32 to ø100

D-A9□
D-M9□
D-M9□W
D-M9□AL

D-A9□V
D-M9□V
D-M9□WV
D-M9□AVL

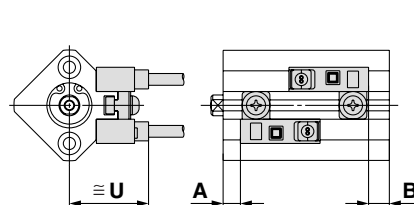


CDQP2, CDQP2□□□-□S/-□T (ø32 to ø100)

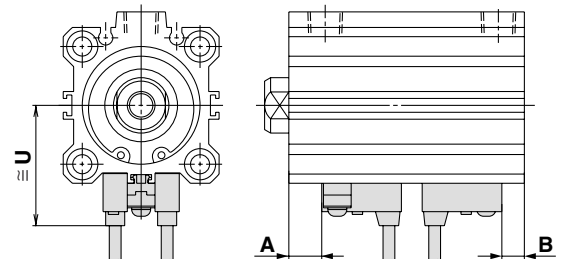
D-A7□
D-A80
D-A7□H
D-A80H
D-F7□
D-J79
D-F7□W
D-J79W
D-F79F

D-F7NTL
D-F7BAL
D-A73C
D-A80C
D-J79C
D-A79W
D-F7□WV
D-J7□V
D-F7BAVL

ø12 to ø25

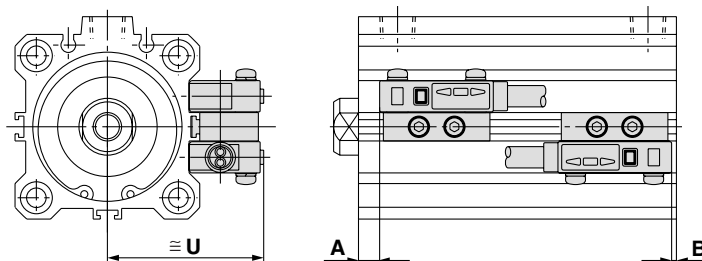


ø32 to ø100



D-P4DWL

ø40 to ø100



Proper Auto Switch Mounting Position

Applicable Cylinder Series: CDQ2 (Double acting, Single rod)

(mm)

Auto switch model Bore size	D-A9□ D-A9□V		D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□AL D-M9□AVL		D-A73 D-A80		D-A72/A7□H/A80H D-A73C/A80C/F7□ D-F79F/J79/F7□V D-J79C/F7□W D-J79W/F7□WV D-F7BAVL/F7BAL		D-F7NTL		D-A79W		D-P4DWL	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B
12	2	3	6	7	4.5	5.5	5	6	10	11	2	3	—	—
16	5	2.5	9	6.5	7.5	5	8	5.5	13	10.5	5	2.5	—	—
20	5	3.5	9	7.5	7.5	6.5	8	7	13	12	5	4	—	—
25	5.5	4	9.5	8	7.5	7	8	7.5	13	12.5	5	4.5	—	—
32	8	5	12	9	9	6	9.5	6.5	14.5	11.5	6.5	3.5	—	—
40	12	7.5	16	11.5	13	8.5	13.5	9	18.5	14	10.5	6	9	4.5
50	10	10.5	14	14.5	11	11.5	11.5	12	16.5	17	8.5	9	7	7.5
63	12.5	13.5	16.5	17.5	13.5	14.5	14	15	19	20	11	12	9.5	10.5
80	16.5	17	20.5	21	17.5	18	18	18.5	23	23.5	15	15.5	13.5	14
100	20	23	24	27	21	24	21.5	24.5	26.5	29.5	18.5	21.5	17	20

Applicable Cylinder Series: CDQ2W (Double acting, Double rod)

(mm)

Auto switch model Bore size	D-A9□ D-A9□V		D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□AL D-M9□AVL		D-A73 D-A80		D-A72/A7□H/A80H D-A73C/A80C/F7□ D-F79F/J79/F7□V D-J79C/F7□W D-J79W/F7□WV D-F7BAVL/F7BAL		D-F7NTL		D-A79W		D-P4DWL	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B
12	2	7	6	11	4.5	10	5	10.5	10	15.5	2	7.5	—	—
16	5	8	9	12	7.5	10.5	8	11	13	16	5	8	—	—
20	5	10	9	14	7.5	13	8	13.5	13	18.5	5	10.5	—	—
25	5.5	10.5	9.5	14.5	7.5	13	8	13.5	13	18.5	5	10.5	—	—
32	8	12.5	12	16.5	9	13.5	9.5	14	14.5	19	6.5	11	—	—
40	12	18	16	22	13	19	13.5	19.5	18.5	24.5	10.5	16.5	9	15
50	10	20.5	14	24.5	11	21.5	11.5	22	16.5	27	8.5	19	7	17.5
63	12.5	19.5	16.5	23.5	13.5	20.5	14	21	19	26	11	18	9.5	16.5
80	16.5	28	20.5	32	17.5	29	18	29.5	23	34.5	15	26.5	13.5	25
100	20	30.5	24	34.5	21	31.5	21.5	32	26.5	37	18.5	29	17	27.5

Applicable Cylinder Series: CDQ2□□□-□S/-□T (Single acting)

(mm)

Auto switch model Bore size	D-A9□ D-A9□V		D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□AL D-M9□AVL		D-A73 D-A80		D-A72/A7□H/A80H D-A73C/A80C/F7□ D-F79F/J79/F7□V D-J79C/F7□W D-J79W/F7□WV D-F7BAVL/F7BAL		D-F7NTL		D-A79W	
	A	B	A	B	A	B	A	B	A	B	A	B
12	2	3 (7.5)	6	7 (11.5)	4.5	5.5 (10)	5	6 (10.5)	10	11 (15.5)	2	3 (7.5)
16	5 (3)	2.5 (4.5)	9 (7)	6.5 (8.5)	7.5 (5.5)	5 (7)	8 (6)	5.5 (7.5)	13 (11)	10.5 (12.5)	5 (3)	2.5 (4.5)
20	5	3.5	9	7.5	7.5	6.5	8	7	13	12	5	4
25	5.5	4	9.5	8	7.5	7	8	7.5	13	12.5	5	4.5
32	8	5	12	9	9	6	9.5	6.5	14.5	11.5	6.5	3.5
40	12	7.5	16	11.5	13	8.5	13.5	9	18.5	14	10.5	6
50	10	10.5	14	14.5	11	11.5	11.5	12	16.5	17	8.5	9

(): For the spring extend type

Note) Adjust the auto switch after confirming the operating conditions in the actual setting.

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual
-X□

Technical
data

Compact Cylinder/*Series CQ2* With Auto Switch 2

1 Proper Auto Switch Mounting Position (Detection at stroke end) and Mounting Height

Proper Auto Switch Mounting Position

Applicable Cylinder Series: CDQ2K (Non-rotating)

(mm)

Auto switch model Bore size	D-A9□ D-A9□V		D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□AL D-M9□AVL		D-A73 D-A80		D-A72/A7□H/A80H D-A73C/A80C/F7□ D-F79F/J79/F7□V D-J79C/F7□W D-J79W/F7□WV D-F7BAVL/F7BAL		D-F7NTL		D-A79W		D-P4DWL	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B
12	7	3	11	7	9.5	5.5	10	6	15	11	7	3	—	—
16	10	2.5	14	6.5	12.5	5	13	5.5	18	10.5	10	2.5	—	—
20	13	3.5	17	7.5	15.5	6.5	16	7	21	12	13	4	—	—
25	13.5	4	17.5	8	15.5	7	16	7.5	21	12.5	13	4.5	—	—
32	17	5	21	9	18	6	18.5	6.5	23.5	11.5	15.5	3.5	—	—
40	12	7.5	16	11.5	13	8.5	13.5	9	18.5	14	10.5	6	9	4.5
50	10	10.5	14	14.5	11	11.5	11.5	12	16.5	17	8.5	9	7	7.5
63	12.5	13.5	16.5	17.5	13.5	14.5	14	15	19	20	11	12	9.5	10.5

Applicable Cylinder Series: CDQ2KW

(mm)

Auto switch model Bore size	D-A9□ D-A9□V		D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□AL D-M9□AVL		D-A73 D-A80		D-A72/A7□H/A80H D-A73C/A80C/F7□ D-F79F/J79/F7□V D-J79C/F7□W D-J79W/F7□WV D-F7BAVL/F7BAL		D-F7NTL		D-A79W		D-P4DWL	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B
12	7.5	7	11.5	11	9.5	10	10	10.5	15	15.5	7	7.5	—	—
16	10	8	14	12	12.5	10.5	13	11	18	16	10	8	—	—
20	13	10	17	14	15.5	13	16	13.5	21	18.5	13	10.5	—	—
25	13.5	10.5	17.5	14.5	15.5	13	16	13.5	21	18.5	13	10.5	—	—
32	17	12.5	21	16.5	18	13.5	18.5	14	23.5	19	15.5	11	—	—
40	12	18	16	22	13	19	13.5	19.5	18.5	24.5	10.5	16.5	9	15
50	10	20.5	14	24.5	11	21.5	11.5	22	16.5	27	8.5	19	7	17.5
63	12.5	19.5	16.5	23.5	13.5	20.5	14	21	19	26	11	18	9.5	16.5

Applicable Cylinder Series: CDQP2 (Axial piping)

(mm)

Auto switch model Bore size	D-A9□ D-A9□V		D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□AL D-M9□AVL		D-A73 D-A80		D-A72/A7□H/A80H D-A73C/A80C/F7□ D-F79F/J79/F7□V D-J79C/F7□W D-J79W/F7□WV D-F7BAVL/F7BAL		D-F7NTL		D-A79W		D-P4DWL	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B
12	2	3	6	7	4.5	5.5	5	6	10	11	2	3	—	—
16	5	2.5	9	6.5	7.5	5	8	5.5	13	10.5	5	2.5	—	—
20	5	3.5	9	7.5	7.5	6.5	8	7	13	12	5	4	—	—
25	5.5	4	9.5	8	7.5	7	8	7.5	13	12.5	5	4.5	—	—
32	6.5	3.5	10.5	7.5	9	6	9.5	6.5	14.5	11.5	6.5	3.5	—	—
40	10.5	6	14.5	10	13	8.5	13.5	9	18.5	14	10.5	6	9	4.5
50	8.5	9	12.5	13	11	11.5	11.5	12	16.5	17	8.5	9	7	7.5
63	11	12	15	16	13.5	14.5	14	15	19	20	11	12	9.5	10.5
80	14	16.5	18	20.5	17.5	18	18	18.5	23	23.5	15	15.5	13.5	14
100	18.5	21.5	22.5	25.5	21	24	21.5	24.5	26.5	29.5	18.5	21.5	17	20

Note) Adjust the auto switch after confirming the operating conditions in the actual setting.

Applicable Cylinder Series: CDQP2□□□-□S/□T (Axial piping, Single acting) (mm)

Auto switch model Bore size	D-A9□ D-A9□V		D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□AL D-M9□AVL		D-A73 D-A80		D-A72/A7□H/A80H D-A73C/A80C/F7□ D-F79F/J79/F7□V D-J79C/F7□W D-J79W/F7□WV D-F7BAVL/F7BAL		D-F7NTL		D-A79W	
	A	B	A	B	A	B	A	B	A	B	A	B
12	2	3 (7)	6	7 (11)	4.5	5.5 (10)	5	6 (10.5)	10	11 (15.5)	2	3 (7.5)
16	5 (3)	2.5 (4.5)	9 (7)	6.5 (8.5)	7.5 (5.5)	5 (7)	8 (6)	5.5 (7.5)	13 (11)	10.5 (12.5)	5 (3)	2.5 (4.5)
20	5	3.5	9	7.5	7.5	6.5	8	7	13	12	5	4
25	5.5	4	9.5	8	7.5	7	8	7.5	13	12.5	5	4.5
32	6.5	3.5	10.5	7.5	9	6	9.5	6.5	14.5	11.5	6.5	3.5
40	10.5	6	14.5	10	13	8.5	13.5	9	18.5	14	10.5	6
50	8.5	9	12.5	13	11	11.5	11.5	12	16.5	17	8.5	9

() : For the spring extend type

Applicable Cylinder Series: CDQ2 (Long stroke) (mm)

Auto switch model Bore size	D-A9□ D-A9□V		D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□AL D-M9□AVL		D-A73 D-A80		D-A72/A7□H/A80H D-A73C/A80C/F7□ D-F79F/J79/F7□V D-J79C/F7□W D-J79W/F7□WV D-F7BAVL/F7BAL		D-F7NTL		D-A79W		D-P4DWL	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B
32	8.5	16.5	12.5	20.5	9.5	17.5	10	18	15	23	7	15	—	—
40	12	22.5	16	26.5	13	23.5	13.5	24	18.5	29	10.5	21	9	19.5
50	10	23	14	27	11	24	11.5	24.5	16.5	29.5	8.5	21.5	7	20
63	12.5	24.5	16.5	28.5	13.5	25.5	14	26	19	31	11	23	9.5	21.5
80	15.5	30.5	19.5	34.5	16.5	31.5	17	32	22	37	14	29	12.5	29.5
100	18.5	37	22.5	41	19.5	38	20	38.5	25	43.5	17	35.5	15.5	34

Applicable Cylinder Series: CDQ2□S (Anti-lateral load) (mm)

Auto switch model Bore size	D-A9□ D-A9□V		D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□AL D-M9□AVL		D-A73 D-A80		D-A72/A7□H/A80H D-A73C/A80C/F7□ D-F79F/J79/F7□V D-J79C/F7□W D-J79W/F7□WV D-F7BAVL/F7BAL		D-F7NTL		D-A79W		D-P4DWL	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B
32	14	9	18	13	15	10	15.5	10.5	20.5	15.5	12.5	7.5	—	—
40	17.5	12	21.5	16	18.5	13	19	13.5	24	18.5	16	10.5	14.5	9
50	15	15.5	19	19.5	16	16.5	16.5	17	21.5	22	13.5	14	12	12.5
63	17.5	18.5	21.5	22.5	18.5	19.5	19	20	24	25	16	17	14.5	15.5
80	20.5	23	24.5	27	21.5	24	22	24.5	27	29.5	19	21.5	17.5	20
100	23.5	29.5	27.5	33.5	24.5	30.5	25	31	30	36	22	28	20.5	26.5

Note) Adjust the auto switch after confirming the operating conditions in the actual setting.

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual
-X□

Technical
data

Compact Cylinder/series CQ2 With Auto Switch 3

1 Proper Auto Switch Mounting Position (Detection at stroke end) and Mounting Height

Auto Switch Mounting Height

Applicable Cylinder Series: CDBQ2 (End lock)

(mm)

Auto switch model Bore size	D-A7□ D-A80		D-A7□H/A80H D-A73C/A80C D-F7□/J79/J79W D-F7□V/J79C D-F7□W/F7□WV D-F7BAL/F7BAVL D-F79F		D-A79W		D-A9□ D-A9□V		D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□AL D-M9□AVL		D-P4DWL	
	A	B	A	B	A	B	A	B	A	B	A	B
20 (Head end lock)	—	—	—	—	—	—	6 (11)	35 (35)	10 (15)	39 (39)	—	—
20 (Rod end lock)	—	—	—	—	—	—	31.5 (34)	3 (12)	35.5 (38)	7 (16)	—	—
25 (Head end lock)	—	—	—	—	—	—	8 (10)	37 (39)	12 (14)	41 (43)	—	—
25 (Rod end lock)	—	—	—	—	—	—	32 (35)	5.5 (14)	36 (39)	9.5 (18)	—	—
32 (Head end lock)	9	38.5	9.5	39	6.5	36	8	37.5	12	41.5	—	—
32 (Rod end lock)	36	4	36.5	4.5	33.5	1.5	35	3	39	7	—	—
40 (Head end lock)	13	44	13.5	44.5	10.5	41.5	12	43	16	47	9	40
40 (Rod end lock)	42	4.5	42.5	5	39.5	2	41	3.5	45	7.5	38	0.5
50 (Head end lock)	11	46.5	11.5	47	8.5	44	10	45.5	14	49.5	7	42.5
50 (Rod end lock)	41.5	6	42	6.5	39	3.5	40.5	5	44.5	9	37.5	2
63 (Head end lock)	13.5	45.5	14	46	11	43	12.5	44.5	16.5	48.5	9.5	41.5
63 (Rod end lock)	45.5	7.5	46	8	43	5	44.5	6.5	48.5	10.5	41.5	3.5
80 (Head end lock)	16.5 (21.5)	76.5 (76.5)	17 (22)	77 (77)	14 (19)	74 (74)	15.5 (20.5)	75.5 (75.5)	19.5 (24.5)	79.5 (79.5)	12.5 (17.5)	72.5 (72.5)
80 (Rod end lock)	66.5 (66.5)	19 (31.5)	67 (67)	19.5 (32)	64 (64)	16.5 (29)	65.5 (65.5)	18 (30.5)	69.5 (69.5)	22 (34.5)	62.5 (62.5)	15 (27.5)
100 (Head end lock)	21 (26)	81.5 (81.5)	21.5 (26.5)	82 (82)	18.5 (23.5)	79 (79)	20 (25)	80.5 (80.5)	24 (29)	84.5 (84.5)	17 (22)	77.5 (77.5)
100 (Rod end lock)	71 (69.5)	24 (38)	71.5 (70)	24.5 (38.5)	68.5 (67)	21.5 (35.5)	70 (68.5)	23 (37)	74 (72.5)	27 (41)	67 (65.5)	20 (34)

Note) Dimensions in parentheses for ø20 and ø25 are for 50, 75 and 100 strokes, and dimensions in parentheses for ø80 and ø100 are for 75 and 100 strokes.

Applicable Cylinder Series: CDQ2□R/□V (Water resistant) (mm)

Auto switch model Bore size	D-M9□AL D-M9□AVL		D-F7BAL D-F7BAVL	
	A	B	A	B
20	19	7.5	18	7
25	19.5	8	18	7.5
32	22	9	19.5	6.5
40	16	11.5	13.5	9
50	14	14.5	11.5	12
63	16.5	17.5	14	15
80	20.5	21	18	18.5
100	24	27	21.5	24.5

Note) Adjust the auto switch after confirming the operating conditions in the actual setting.

Applicable Cylinder Series: CDQ2, CDQ2W, CDQ2□□□-□S/-□T (Single acting), CDQ2K, CDQ2KW (Non-rotating), CDQ2 (Long stroke), CDQ2□S (Anti-lateral load), CDQ2□R/□V (Water resistant) (mm)

Auto switch model	D-A9□V	D-M9□V D-M9□WV D-M9□AVL	D-A7□ D-A80	D-A7□H A80H D-F7□ D-J79 D-F7□W D-J79W D-F7BAL D-F79F D-F7NTL	D-A73C D-A80C	D-F7□V D-F7□WV D-F7BAVL	D-J79C	D-A79W	D-P4DWL
Bore size	U	U	U	U	U	U	U	U	U
12	20.5	20.5	19.5	20.5	26.5	23	26	22	—
16	23.5	23.5	22.5	23.5	29.5	26	29	25	—
20	25.5	25.5	24.5	25.5	31.5	28	31	27	—
25	28.5	28.5	27.5	28.5	34.5	31	34	30	—
32	27	29	31.5	32.5	38.5	35	38	34	—
40	30.5	32.5	35	36	42	38.5	41.5	37.5	44
50	36.5	38.5	41	42	48	44.5	47.5	43.5	50
63	40	42	47.5	48.5	54.5	51	54	50	56.5
80	50	52	57.5	58.5	64.5	61	64	60	66.5
100	60	62	67.5	68.5	74.5	71	74	70	76.5

* Except for a bore size over ø32 of D-A9□(V)/M9□(V)/M9□W(V)/M9□A(V)L types, the values above are measured when the conventional switch installation groove is attached without using the auto switch mounting bracket BQ2-012.

* The auto switch mounting height when BQ2-012 is used is the same as CDQP2 (axial piping) shown below.

* The applicable auto switches for CDQ2□R/□V (water resistant) are D-M9□A(V)L and F7BA(V)L.

Applicable Cylinder Series: CDQP2, CDQP2□□□-□S/-□T (Axial piping) (mm)

Auto switch model	D-A9□ D-A9□V D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□AL D-M9□AVL	D-A7□ D-A80	D-A7□H D-A80H D-F7□ D-J79 D-F7□W D-J79W D-F7BAL D-F79F D-F7NTL	D-A73C D-A80C	D-F7□V D-F7□WV D-F7BAVL	D-J79C	D-A79W	D-P4DWL
Bore size	U	U	U	U	U	U	U	U
12	20.5	19.5	20.5	26.5	23	26	22	—
16	23.5	22.5	23.5	29.5	26	29	25	—
20	25.5	24.5	25.5	31.5	28	31	27	—
25	28.5	27.5	28.5	34.5	31	34	30	—
32	32.5	31.5	32.5	38.5	35	38	34	—
40	36	35	36	42	38.5	41.5	37.5	44
50	42	41	42	48	44.5	47.5	43.5	50
63	48.5	47.5	48.5	54.5	51	54	50	56.5
80	58.5	57.5	58.5	64.5	61	64	60	66.5
100	68.5	67.5	68.5	74.5	71	74	70	76.5

Applicable Cylinder Series: CDBQ2 (End lock) (mm)

Auto switch model	D-A7□ D-A80	D-A7□H D-A80H/J79W D-F7□/F7BAL D-J79/F79F D-F7□W/F7NTL	D-A73C D-A80C	D-F7□V D-F7□WV D-F7BAVL	D-J79C	D-A79W	D-A9□V	D-M9□V D-M9□WV D-M9□AVL	D-P4DWL
Bore size	U	U	U	U	U	U	U	U	U
20	—	—	—	—	—	—	22.5	24.5	—
25	—	—	—	—	—	—	24.5	26.5	—
32	31.5	32.5	38.5	35	38	34	27	29	—
40	35	36	42	38.5	41.5	37.5	30.5	32.5	44
50	41	42	48	44.5	47.5	43.5	36.5	38.5	50
63	47.5	48.5	54.5	51	54	50	40	42	56.5
80	57.5	58.5	64.5	61	64	60	50	52	66.5
100	67.5	68.5	74.5	71	74	70	60	62	76.5

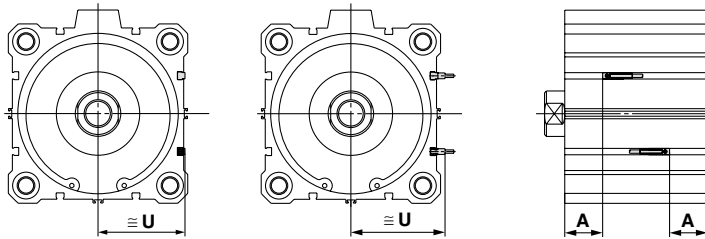
Compact Cylinder/*Series CQ2* With Auto Switch 4

1 Proper Auto Switch Mounting Position (Detection at stroke end) and Mounting Height

Applicable cylinder series: CDQ2, CDQ2W (Large bore size)

D-A9□
D-M9□
D-M9□W
D-M9□AL

D-A9□V
D-M9□V
D-M9□WV
D-M9□AVL



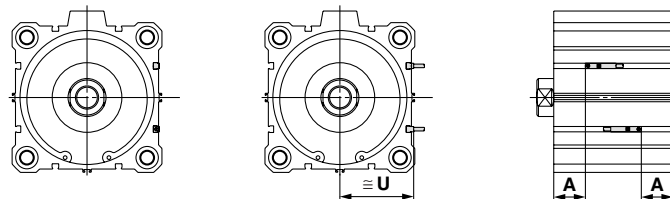
D-A7□
D-A80
D-A7□H
D-A80H
D-F7□
D-J79
D-F7□W
D-J79W
D-F79F

D-F7NTL
D-F7BAL
D-A73C
D-A80C
D-J79C
D-A79W
D-F7□WV
D-F7□V
D-F7BAVL



D-Z7□
D-Z80
D-Y59□
D-Y7P
D-Y7□W
D-Y7BAL

D-Y69□
D-Y7PV
D-Y7□WV



Proper Auto Switch Mounting Position

(mm)

Auto switch model	D-A9□ D-A9□V	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□AL D-M9□AVL	D-A73 D-A80	D-A72/7□H/A80H D-A73C/A80C D-F7□/F7□V D-F79F/F7□W D-F7□WV/J79 D-J79W/J79C D-F7BAL D-F7BAVL	D-A79W	D-F7NTL	D-Z7□/Z80 D-Y59□/Y69□ D-Y7P/Y7PV D-Y7□W/Y7□WV D-Y7BAL
Bore size	A	A	A	A	A	A	A
125	30	34	32.5	33	30	38	29
140	30	34	32.5	33	30	38	29
160	34	38	36.5	37	34	42	33
180	40.5	44.5	—	—	—	—	38.5
200	43.5	47.5	—	—	—	—	42

Note) Adjust the auto switch after confirming the operating conditions in the actual setting.

Auto Switch Mounting Height

(mm)

Auto switch model	D-A9□ D-M9□ D-M9□W D-M9□AL	D-M9□V D-M9□WV D-M9□AVL	D-A9□V D-Y69□ D-Y7PV D-Y7□WV	D-A7□ D-A80	D-A7□H D-A80H D-F7□/J79 D-F7□W D-J79W D-F7BAL D-F79F D-F7NTL	D-A73C D-A80C	D-F7□V D-F7□WV D-F7BAVL	D-J79C	D-A79W
Bore size	U	U	U	U	U	U	U	U	U
125	69.5	74	72	80	81	87	83.5	85.5	82.5
140	77.5	82	80	88	89	95	91.5	93.5	90.5
160	87.5	92	90	98	99	105	101.5	103.5	100.5
180	99.5	104	102	—	—	—	—	—	—
200	109.5	114	112	—	—	—	—	—	—

2 Minimum Auto Switch Mounting Stroke

Applicable cylinder series: CDQ2, CDQ2W, CDQ2□□□-□S/-□T (Single acting), CDQ2K, CDQ2KW (Non-rotating), CDQP2, CDQP2□□□-□S/-□T (Axial piping), CDQ2 (Long stroke), CDQ2□S (Anti-lateral load), CDBQ2 (End lock), CDQ2□R/□V (Water resistant) (mm)

No. of auto switch mounted	D-M9□V D-F7□V D-J79C	D-A9□V D-A7□ D-A80 D-A73C D-A80C	D-A9□	D-M9□WV D-M9□AVL* D-F7□WV D-F7BAVL*	D-M9□ D-M9□W D-M9□AL* D-A7□H D-A80H D-F7□ D-J79	D-A79W	D-F7□W D-J79W D-F7BAL* D-F79F D-F7NTL	D-P4DWL
1 pc.	5	5	10	10	15	15	20	15
2 pcs.	5	10	10	15	15	20	20	15

* The applicable auto switches for CDQ2□R/□V (water resistant) are D-M9□A(V)L and D-F7BA(V)L.

Applicable cylinder series: CDQ2, CDQ2W (Large bore size) (mm)

No. of auto switch mounted	D-M9□ D-M9□V D-F7□/F7□V	D-J79/J79C D-Y59□/Y69□ D-Y7P/Y7PV	D-A9□ D-A9□V D-A7□/A80	D-A73C/A80C D-A7□H/Z7□ D-Z80/A80H	D-M9□W D-M9□WV D-M9□AL D-M9□AVL D-F7□W/F7□WV	D-J79W D-F7BAL/F7BAVL D-F7NTL/F79F D-F7□W/Y7□WV D-Y7BAL	D-A79W
1 pc.	5		5		10		15
2 pcs.	5		10		15		20

3 Operating Range

Applicable cylinder series: CDQ2, CDQ2W, CDQ2□□□-□S/-□T (Single acting), CDQ2K, CDQ2KW (Non-rotating), CDQP2, CDQP2□□□-□S/-□T (Axial piping), CDQ2 (Long stroke), CDQ2□S (Anti-lateral load), CDBQ2 (End lock), CDQ2, CDQ2W (Large bore size), CDQ2□R/□V (Water resistant) (mm)

Auto switch model	Bore size														
	12	16	20	25	32	40	50	63	80	100	125	140	160	180	200
D-A9□(V)	7.5	9.5	9 [10]	9 [10]	9.5 (9.5)	9.5 (9.5)	9.5 (8.5)	11.5 (11)	9 (10)	11.5 (10.5)	12	12.5	12	10.5	9.5
D-M9□(V) D-M9□W(V) D-M9□A(V)L	3.5	5	5 [5.5]	5 [5.5]	6 (5.5)	6 (5.5)	7 (6)	7.5 (6.5)	8 (7)	8.5 (7)	8.5	8.5	9	10	10
D-A7□(H)(C) D-A80□(H)(C)	10	12	12	12	12	11	10	12	12	13	13	13	13	—	—
D-A79W	13	13	13	13	13	14	14	16	15	17	17	17	17	—	—
D-Z7□ D-Z80	—	—	—	—	—	—	—	—	—	—	14	14	14	15	15.5
D-F7□(V) D-J79(C) D-F7□W(V) D-F7BA(V)L D-F7NTL D-F79F	5.5	6	5.5	5	6	6	6	6.5	6.5	7	9	9	8.5	—	—
D-Y59□ D-Y69□ D-Y7P(V) D-Y7□W(V) D-Y7BAL	—	—	—	—	—	—	—	—	—	—	11.5	11.5	11.5	12	12
D-P4DWL	—	—	—	—	—	5	5	5	5	5.5	—	—	—	—	—

* Since the operating range is provided as a guideline including hysteresis, it cannot be guaranteed (assuming approximately ±30% dispersion). It may vary substantially depending on an ambient environment.

* Except for a bore size over ø32 of D-A9□(V)/M9□(V)/M9□W(V)/M9□A(V)L types, the values above are measured when the conventional switch installation groove is attached without using the auto switch mounting bracket BQ2-012.

* The values in parentheses for a bore size over ø32 of D-A9□(V)/M9□(V)/M9□W(V)/M9□A(V)L types indicate the operating range of the CDQP2 and CDQP2□□□-□S/-□T series when the auto switch mounting bracket BQ2-012 is used.

* The values in [] for ø20 and ø25 of D-A9□(V)/M9□(V)/M9□W(V)/M9□A(V)L Types are applicable for Series CDBQ2 (end lock).

* The applicable auto switches for CDQ2□R/□V (water resistant) are D-M9□A(V)L and F7BA(V)L.

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual

-X□

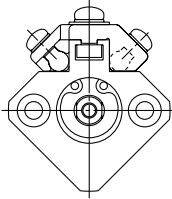
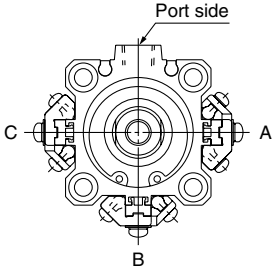
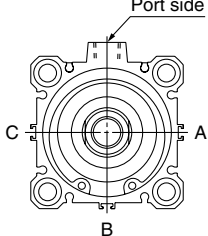
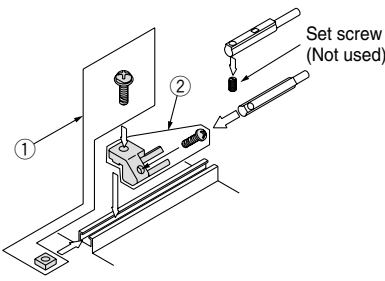
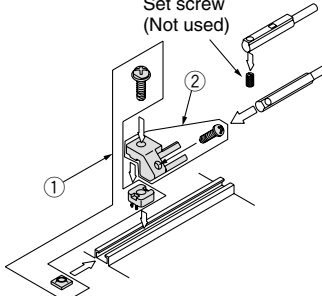
Technical

data

Compact Cylinder/*Series CQ2* With Auto Switch 5

4 Auto Switch Mounting Bracket: Part No.

Applicable cylinder series: CDQ2, CDQ2W, CDQ2□□□-□S/-□T (Single acting), CDQ2K, CDQ2KW (Non-rotating), CDQP2, CDQP2□□□-□S/-□T (Axial piping), CDQ2 (Long stroke), CDQ2□S (Anti-lateral load), CDBQ2 (End lock), CDQ2□R/□V (Water resistant)

Auto switch mounting surface	Bore size (mm)		
	ø12, ø16, ø20, ø25	ø32, ø40, ø50	ø63, ø80, ø100
			
Auto switch model	Auto switch mounting surface	Auto switch mounting surface	Auto switch mounting surface
	Auto switch mounting rail only	Port side	Port, A, B, C
D-A9□ D-A9□V D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□AL D-M9□AVL	① BQ-1 ② BQ2-012 Two kinds of auto switch bracket are used as a set. 	Auto switch mounting brackets are not required. 	Auto switch mounting brackets are not required. ⁽³⁾

Note 1) When a compact auto switch is mounted on the three sides (A, B and C above) other than the port side of CDQ2□32 to 50, auto switch mounting brackets shown above are required. Order them separately from cylinders.
(The above is also applicable when a compact auto switch is mounted using an auto switch mounting rail, but not using a compact auto switch installation groove for CDQ2□63 to 100.)

Order example
 CDQ2B32-100DM-M9BW.....1
 BQ-2.....2 pcs.
 BQ2-012.....2 pcs.

Note 2) When shipping cylinders, auto switch mounting brackets and auto switches are shipped together.

Note 3) Be sure to use BQ-2 or BQ2-012 when mounting ø63, ø80 or ø100 of the CDQP2 series.

Auto switch model	Bore size (mm)		
	ø12 to ø25	ø32	ø40 to ø100
D-A7□/A80 D-A73C/A80C D-A7□H/A80H D-A79W D-F7□/J79 D-F7□V D-J79C D-F7□W/J79W D-F7□WV D-F7BAL/F7BAVL D-F79F/F7NTL	BQ-1		BQ-2
D-P4DWL	—		BQP1-050

Note 4) When shipping cylinders, auto switch mounting brackets and auto switches are shipped together.

However, when ø40 to ø100 of D-P4DWL type are mounted, the auto switch is assembled at the time of shipment.

[Mounting screw set made of stainless steel]

The following set of mounting screws made of stainless steel is available. Use it in accordance with the operating environment. (Please order BQ-2 separately, since auto switch spacers (for BQ-2) are not included.)

BBA2: For D-A7/A8/F7/J7 types

The above stainless steel screws are used when a cylinder is shipped with D-F7BAL, F7BAVL-type auto switches.

When only an auto switch is shipped independently, BBA2 is attached.

Note 5) Refer to page 1361 for the details of BBA2.

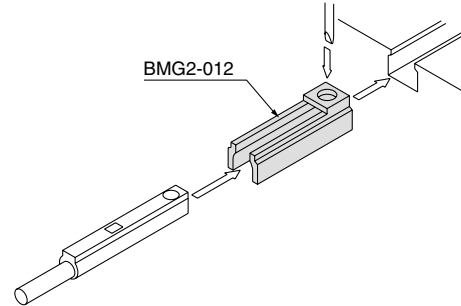
Note 6) When D-M9□A(V)L is mounted on a port side other than ø32, ø40 or ø50, order auto switch mounting brackets BQ2-012S, BQ-2 or the stainless steel screw set BBA2 separately.

Auto Switch Mounting Bracket Mass

Mounting bracket part No.	Applicable bore size	Mass (g)
BQ-1	ø12 to ø25	1.5
BQ-2	ø32 to ø100	1.5
BQ2-012	ø12 to ø25	5
BQP1-050	ø40 to ø100	16

Applicable cylinder series: CDQ2, CDQ2W (Large bore size)

Auto switch model	Bore size (mm)				
	ø125	ø140	ø160	ø180	ø200
D-A9□/A9□V D-M9□/M9□V D-M9□W/M9□WV D-M9□AL/M9□AVL	BMG2-012				
D-A7□/A80 D-A73C/A80C D-A7□H/A80H D-A79W D-F7□/J79 D-F7□V D-J79C D-F7□W/J79W D-F7□WV D-F7BAL/F7BAVL D-F79F/F7NTL	BQ-2		—		



• The above figure shows how to mount D-A9□(V)/M9□(V)/M9□W(V)/M9□A(V)L types on CDQ2 or CDQ2W (large bore size).

Auto Switch Mounting Bracket Mass

Mounting bracket part no.	Applicable cylinder size	Mass (g)
BQ-2	ø125 to ø160	1.5
BMG2-012	ø125 to ø200	3

Besides the models listed in How to Order, the following auto switches are applicable.

Refer to pages 1263 to 1371 for details.

Applicable cylinder series: CDQ2, CDQ2W, CDQ2□□□-□S/-□T (Single acting), CDQ2K, CDQ2KW (Non-rotating), CDQP2, CDQP2□□□-□S/-□T (Axial piping), CDQ2 (Long stroke), CDQ2□S (Anti-lateral load), CDBQ2 (End lock), CDQ2, CDQ2W (Large bore size), CDQ2□R/□V (Water resistant)

Auto switch type	Part no.	Electrical entry	Features	Applicable bore size
Reed	D-A73	Grommet (Perpendicular)	—	ø12 to ø160
	D-A80		Without indicator light	
	D-A73H, A76H		—	
	D-A80H	Grommet (In-line)	Without indicator light	ø125 to ø200
	D-Z73, Z76		—	
	D-Z80		Without indicator light	
Solid state	D-F7NV, F7PV, F7BV	Grommet (Perpendicular)	—	ø12 to ø160
	D-F7NWV, F7BWV		Diagnostic indication (2-color indication)	
	D-F7BAVL		Water resistant (2-color indication)	
	D-F79, F7P, J79	Grommet (In-line)	—	
	D-F79W, F7PW, J79W		Diagnostic indication (2-color indication)	
	D-F7BAL**		Water resistant (2-color indication)	
	D-F7NTL		With timer	
	D-Y69A, Y69B, Y7PV	Grommet (Perpendicular)	—	ø125 to ø200
	D-Y7NWV, Y7PWV, Y7BWV		Diagnostic indication (2-color indication)	
	D-Y59A, Y69B, Y7P		—	
	D-Y7NW, Y7PW, Y7BW	Grommet (In-line)	Diagnostic indication (2-color indication)	
	D-Y7BAL		Water resistant (2-color indication)	
	D-P5DWL		Magnetic field resistant (2-color indication)	

* For solid state auto switches, auto switches with a pre-wired connector are also available. Refer to pages 1328 and 1329 for details.

* Normally closed (NC = b contact) solid state auto switches (D-F9G/F9H/Y7G/Y7H types) are also available. Refer to pages 1290 and 1292 for details.

* The applicable auto switch for CDQ2□R/□V (water resistant) is D-F7BA(V)L.

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual
-X□

Technical
data

Smooth Cylinder

Series CQ2Y

ø32, ø40, ø50, ø63, ø80, ø100

How to Order

CQ2Y **B** **32** **-** **30** **D** **C**

With auto switch **CDQ2Y** **B** **32** **-** **30** **D** **C** **-** **M9BW**

Mounting style

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

* Mounting brackets are not mounted and are supplied loose at the time of shipment.

Bore size

32	32 mm
40	40 mm
50	50 mm
63	63 mm
80	80 mm
100	100 mm

Thread type

Nil	Rc
TN	NPT
TF	G

Cylinder stroke (mm)
Refer to "Standard Stroke" on next page.

Action

D	Double acting
----------	---------------

Cushion

C	Rubber bumper
----------	---------------

Body option

Nil	Standard (Rod end female thread)
M	Rod end male thread

With auto switch (Built-in magnet)

Number of auto switches

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

Auto switch

Nil	Without auto switch
------------	---------------------

* For the applicable auto switch model, refer to the table below.

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) CDQ2YL40-50D

Applicable Auto Switch/Refer to pages 1719 to 1827 for further information on auto switches.

Appendix 4: Applicable Auto Switch Models																				
Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model		Lead wire (m)					Pre-wired connector	Applicable load					
					DC	AC	Perpendicular	In-line	0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)							
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NV	M9N	●	●	●	○	—	○	IC circuit	Relay, PLC			
		3-wire (PNP)		M9PV				M9P	●	●	●	○	—	○						
	Connector	2-wire		12 V				M9BV	M9B	●	●	●	○	—	○	—				
		J79C		—				●	—	●	●	—	—							
	Diagnostic indication (2-color)	Grommet		3-wire (NPN)				5 V, 12 V	M9NWV	M9NW	●	●	●	○	—	○		IC circuit		
				3-wire (PNP)				5 V, 12 V	M9PWW	M9PW	●	●	●	○	—	○				
				2-wire				12 V	M9BWW	M9BW	●	●	●	○	—	○		—		
				4-wire				5 V, 12 V	—	F79F	●	—	●	○	—	○				
With diagnostic output (2-color)	Grommet	2-wire (Non-polar)		—	—	P3DW	●	—	●	●	—	○	—							
					—	P4DW	—	—	●	●	—	○								
Reed switch	—	Grommet		Yes	3-wire (Equiv. NPN)	—	5 V	—	A96V	A96	●	—	●	—	—	—	IC circuit	—		
					—				200 V	A72	A72H	●	—	●	—	—	—			
		Connector			12 V				100 V	A93V	A93	●	—	●	—	—	—		—	
					5 V, 12 V				100 V or less	A90V	A90	●	—	●	—	—	—			
	Diagnostic indication (2-color)	Grommet			2-wire	24 V	12 V	—	5 V, 12 V	24 V or less	A73C	—	●	—	●	●	●		—	IC circuit
											A80C	—	●	—	●	●	●		—	
			—								—	●	—	●	—	—	—			
			A79W								—	●	—	●	—	—	—			

* Lead wire length symbols: 0.5 m Nil (Example) M9NW * ○: Manufactured upon receipt of order.
1 m M (Example) M9NWM * D-P4DWL is available for ø40 to ø100.
3 m L (Example) M9NWL * Only D-P4DW is assembled at the time of shipment.
5 m Z (Example) M9NWZ
None N (Example) J79CN

* In addition to the models in the above table, there are some other auto switches that are applicable. For more information, refer to page 1068.
* Refer to pages 1784 and 1785 for details of auto switches with a pre-wired connector. For D-P3DW□, refer to pages 1773-1 and 1773-2.
* When D-A9□(V)/M9□(V)/M9□W(V) types with ø32 to ø50 are mounted on a side other than the port side, order auto switch mounting brackets separately. Refer to page 1067 for details.
* Auto switches are not mounted and are supplied loose at the time of shipment.

Specifications

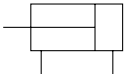
Bore size (mm)	32	40	50	63	80	100
Type	Pneumatic (Non-lube)					
Fluid	Air					
Proof pressure	1.05 MPa					
Maximum operating pressure	0.7 MPa					
Ambient and fluid temperature	Without auto switch -10 to 70°C (with no freezing)					
	With auto switch -10 to 60°C (with no freezing)					
Cushion	Rubber bumper (Standard)					
Rod end thread	Female thread					
Stroke length tolerance	+1.0 mm (Note) 0					
Mounting	Through-hole					
Operating piston speed range	5 to 500 mm/s					
Allowable leakage rate	0.5 ℓ/min (ANR) or less					

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

Minimum Operating Pressure

Unit: MPa

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

JIS Symbol**Standard Stroke**

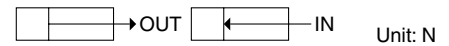
Bore size (mm)	Standard stroke (mm)
32, 40	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100
50, 63, 80, 100	10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100

Replacement Parts: Seal Kit

Bore size (mm)	Kit no.	Contents
32	CQ2Y32-PS	
40	CQ2Y40-PS	Piston seal 1 pc.
50	CQ2Y50-PS	Rod seal 1 pc.
63	CQ2Y63-PS	Gasket 1 pc.
80	CQ2Y80-PS	Grease pack (10 g) 1 pc.
100	CQ2Y100-PS	

When only grease for maintenance is necessary, please order by the following part numbers.

Grease pack part no.: GR-L-005 (5 g)
GR-L-010 (10 g)
GR-L-150 (150 g)

Theoretical Output

Bore size (mm)	Operating direction	Operating pressure (MPa)		
		0.3	0.5	0.7
32	IN	181	302	422
	OUT	241	402	563
40	IN	317	528	739
	OUT	377	628	880
50	IN	495	825	1155
	OUT	589	982	1374
63	IN	841	1402	1962
	OUT	935	1559	2182
80	IN	1361	2268	3175
	OUT	1508	2513	3519
100	IN	2144	3574	5003
	OUT	2356	3927	5498

Intermediate Stroke

Method		Installation of spacer on standard stroke body.	
Model no.		Refer to page 1056 for standard model no.	
Standard stroke	Method	Intermediate strokes at 1 mm intervals are available by using spacers with standard stroke cylinders.	
	Stroke range	Bore size (mm)	Stroke range (mm)
		32 to 100	1 to 99
Example		Part no.: CQ2YB50-57DC CQ2YB50-75DC with 18 mm width spacer inside. B dimension is 125.5 mm. Calculation:ø50, B dimension 50.5 mm (without switch) 50.5 (B dimension) + 75 (st) = 125.5 (mm)	

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

Individual
-X□

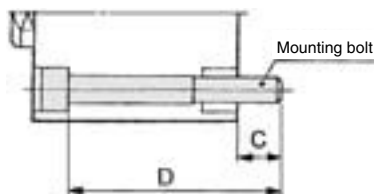
Series CQ2Y

Mounting Bolt

Mounting method: Mounting bolt for through-hole mounting style of CQ2YB is available as an option.

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

Example) Bolt M3 x 25L 2 pcs.



Mounting Bolt for CQ2YB without Auto Switch

Cylinder model	C	D	Mounting bolt size
CQ2YB32- 5DC	9	40	M5 x 40L
- 10DC		45	x 45L
- 15DC		50	x 50L
- 20DC		55	x 55L
- 25DC		60	x 60L
- 30DC		65	x 65L
- 35DC		70	x 70L
- 40DC		75	x 75L
- 45DC		80	x 80L
- 50DC		85	x 85L
- 75DC		120	x 120L
-100DC		145	x 145L
CQ2YB40- 5DC	7.5	45	M5x 45L
- 10DC		50	x 50L
- 15DC		55	x 55L
- 20DC		60	x 60L
- 25DC		65	x 65L
- 30DC		70	x 70L
- 35DC		75	x 75L
- 40DC		80	x 80L
- 45DC		85	x 85L
- 50DC		90	x 90L
- 75DC		125	x 125L
-100DC		150	x 150L
CQ2YB50- 10DC	12.5	55	M6 x 55L
- 15DC		60	x 60L
- 20DC		65	x 65L
- 25DC		70	x 70L
- 30DC		75	x 75L
- 35DC		80	x 80L
- 40DC		85	x 85L
- 45DC		90	x 90L
- 50DC		95	x 95L
- 75DC		130	x 130L
-100DC		155	x 155L

Cylinder model	C	D	Mounting bolt size
CQ2YB63- 10DC	14.5	60	M8 x 60L
- 15DC		65	x 65L
- 20DC		70	x 70L
- 25DC		75	x 75L
- 30DC		80	x 80L
- 35DC		85	x 85L
- 40DC		90	x 90L
- 45DC		95	x 95L
- 50DC		100	x 100L
- 75DC		135	x 135L
-100DC		160	x 160L
CQ2YB80- 10DC	15	65	M10 x 65L
- 15DC		70	x 70L
- 20DC		75	x 75L
- 25DC		80	x 80L
- 30DC		85	x 85L
- 35DC		90	x 90L
- 40DC		95	x 95L
- 45DC		100	x 100L
- 50DC		105	x 105L
- 75DC		140	x 140L
-100DC		165	x 165L
CQ2YB100- 10DC	15.5	75	M10 x 75L
- 15DC		80	x 80L
- 20DC		85	x 85L
- 25DC		90	x 90L
- 30DC		95	x 95L
- 35DC		100	x100L
- 40DC		105	x 105L
- 45DC		110	x 110L
- 50DC		115	x 115L
- 75DC		150	x 150L
-100DC		175	x 175L

Material: Chromium molybdenum steel
Surface material: Nickel plated

Mounting Bolt for CDQ2YB with Auto Switch (Built-in Magnet)

Cylinder model	C	D	Mounting bolt size
CDQ2YB32- 5	9	50	M5 x 50L
- 10		55	x 55L
- 15		60	x 60L
- 20		65	x 65L
- 25		70	x 70L
- 30		75	x 75L
- 35		80	x 80L
- 40		85	x 85L
- 45		90	x 90L
- 50		95	x 95L
- 75		120	x 120L
-100		145	x 145L
CDQ2YB40- 5	7.5	55	M5 x 55L
- 10		60	x 60L
- 15		65	x 65L
- 20		70	x 70L
- 25		75	x 75L
- 30		80	x 80L
- 35		85	x 85L
- 40		90	x 90L
- 45		95	x 95L
- 50		100	x 100L
- 75		125	x 125L
-100		150	x 150L
CDQ2YB50- 10	12.5	65	M6 x 65L
- 15		70	x 70L
- 20		75	x 75L
- 25		80	x 80L
- 30		85	x 85L
- 35		90	x 90L
- 40		95	x 95L
- 45		100	x 100L
- 50		105	x 105L
- 75		130	x 130L
-100		155	x 155L

Cylinder model	C	D	Mounting bolt size
CDQ2YB63- 10	14.5	70	M8 x 70L
- 15		75	x 75L
- 20		80	x 80L
- 25		85	x 85L
- 30		90	x 90L
- 35		95	x 95L
- 40		100	x 100L
- 45		105	x 105L
- 50		110	x 110L
- 75		135	x 135L
-100		160	x 160L
CDQ2YB80- 10	15	75	M10 x 75L
- 15		80	x 80L
- 20		85	x 85L
- 25		90	x 90L
- 30		95	x 95L
- 35		100	x 100L
- 40		105	x 105L
- 45		110	x 110L
- 50		115	x 115L
- 75		140	x 140L
-100		165	x 165L
CDQ2YB100- 10	15.5	85	M10 x 85L
- 15		90	x 90L
- 20		95	x 95L
- 25		100	x 100L
- 30		105	x 105L
- 35		110	x 110L
- 40		115	x 115L
- 45		120	x 120L
- 50		125	x 125L
- 75		150	x 150L
-100		175	x 175L

Material: Chromium molybdenum steel
Surface material: Nickel plated

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

Individual
-X□

Series CQ2Y

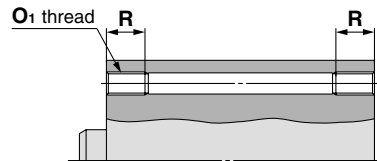
ø32 to ø50

(Types with auto switch and without auto switch only differ in the A and B dimensions. Please refer to the table below.)

Through-hole: CQ2YB/CDQ2YB

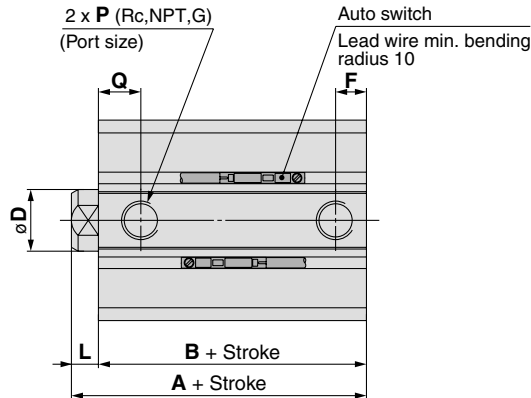
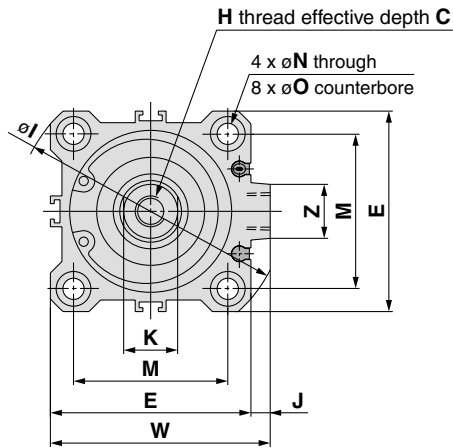
Both ends tapped style: CQ2YA/CDQ2YA

CDQ2YA

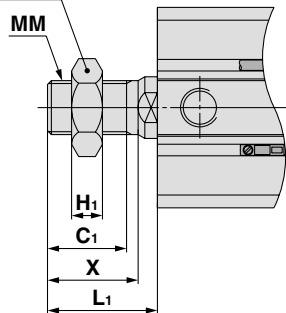


Both Ends Tapped (mm)

Bore size (mm)	O1	R
32	M6 x 1.0	10
40	M6 x 1.0	10
50	M8 x 1.25	14



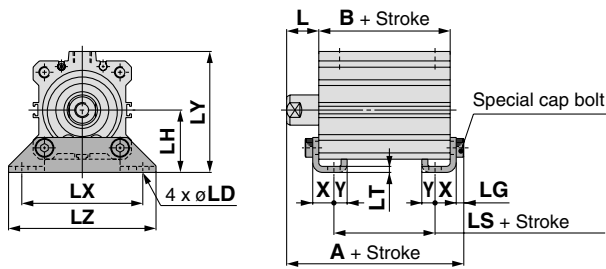
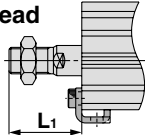
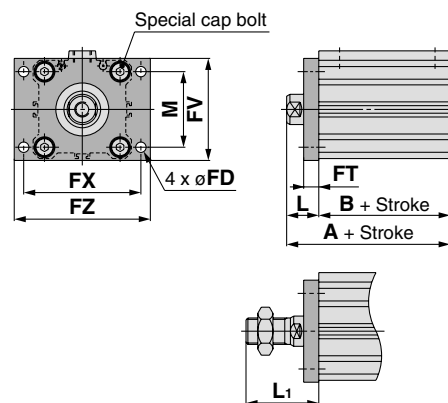
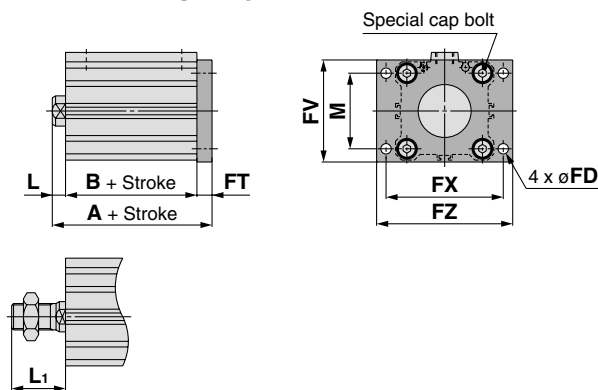
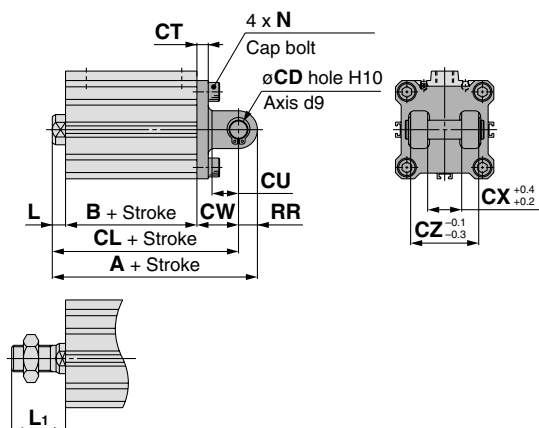
Rod end male thread



Rod End Male Thread (mm)

Bore size (mm)	B1	C1	H1	L1	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

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	W	Z
		A	B	A	B																
32	5 to 50	40	33	50	43	13	16	45	7.5	M8 x 1.25	60	4.5	14	7	34	5.5	9 depth 7	1/8	10.5	49.5	14
	75, 100	50	43																		
40	5 to 50	46.5	39.5	56.5	49.5	13	16	52	8	M8 x 1.25	69	5	14	7	40	5.5	9 depth 7	1/8	11	57	14
	75, 100	56.5	49.5																		
50	10 to 50	48.5	40.5	58.5	50.5	15	20	64	10.5	M10 x 1.5	86	7	17	8	50	6.6	11 depth 8	1/4	10.5	71	19
	75, 100	58.5	50.5																		

Foot style: CQ2YL/CDQ2YL

Rod end male thread

Rod side flange style: CQ2YF/CDQ2YF

Head side flange style: CQ2YG/CDQ2YG

Double clevis style: CQ2YD/CDQ2YD

Foot Style

(mm)

Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch			L	L ₁	LD
		A	B	LS	A	B	LS			
32	5 to 50	57.2	33	17	67.2	43	27	17	38.5	6.6
	75, 100	67.2	43	27						
40	5 to 50	63.7	39.5	23.5	73.7	49.5	33.5	17	38.5	6.6
	75, 100	73.7	49.5	33.5						
50	10 to 50	66.7	40.5	17.5	76.7	50.5	27.5	18	43.5	9
	75, 100	76.7	50.5	27.5						

Foot bracket material: Carbon steel

Surface material: Nickel plated

Rod Side Flange Style

(mm)

Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch		FD	FT	FV	FX	FZ
		A	B	A	B					
32	5 to 50	50	33	60	43	5.5	8	48	56	65
	75, 100	60	43							
40	5 to 50	56.5	39.5	66.5	49.5	5.5	8	54	62	72
	75, 100	66.5	49.5							
50	10 to 50	58.5	40.5	68.5	50.5	6.6	9	67	76	89
	75, 100	68.5	50.5							

Flange bracket material: Carbon steel

Surface material: Nickel plated

Head Side Flange Style

(mm)

Bore size (mm)	Stroke range (mm)	Without auto switch		L	L ₁
		A	A		
32	5 to 50	48	58	7	28.5
	75, 100	58			
40	5 to 50	54.5	64.5	7	28.5
	75, 100	64.5			
50	10 to 50	57.5	67.5	8	33.5
	75, 100	67.5			

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

Flange bracket material: Carbon steel
Surface material: Nickel plated

Double Clevis Style

(mm)

Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch			CD	CT	CU
		A	B	CL	A	B	CL			
32	5 to 50	70	33	60	80	43	70	10	5	14
	75, 100	80	43	70						
40	5 to 50	78.5	39.5	68.5	88.5	49.5	78.5	10	6	14
	75, 100	88.5	49.5	78.5						
50	10 to 50	90.5	40.5	76.5	100.5	50.5	86.5	14	7	20
	75, 100	100.5	50.5	86.5						

Double clevis bracket material: Cast iron

Surface treatment: Painted

* For details about the rod end nut and accessory brackets, refer to page 1142.

* Double clevis pins and retaining rings are included.

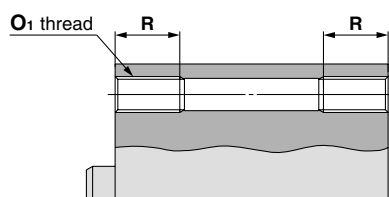
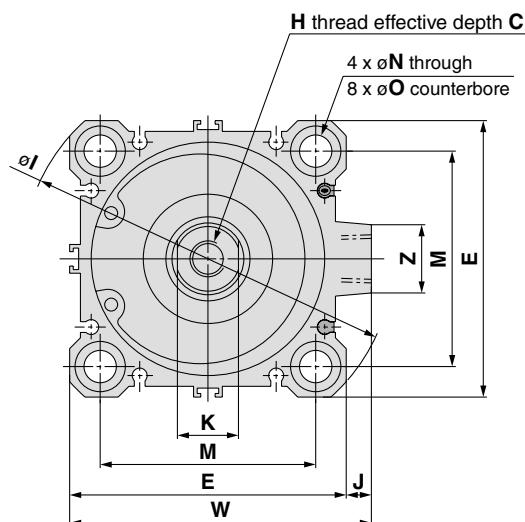
Series CQ2Y

ø63 to ø100

(Types with auto switch and without auto switch only differ in the A and B dimensions. Please refer to the table below.)

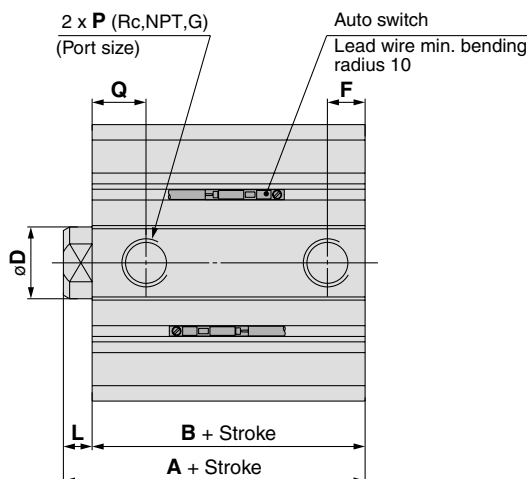
Through-hole: CQ2YB/CDQ2YB

Both ends tapped style: CQ2YA/CDQ2YA

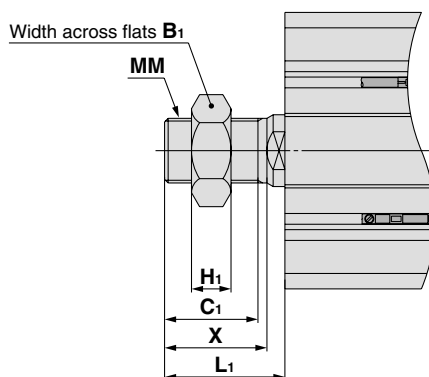


Both Ends Tapped (mm)

Bore size (mm)	O ₁	R
63	M10 x 1.5	18
80	M12 x 1.75	22
100	M12 x 1.75	22



Rod end male thread

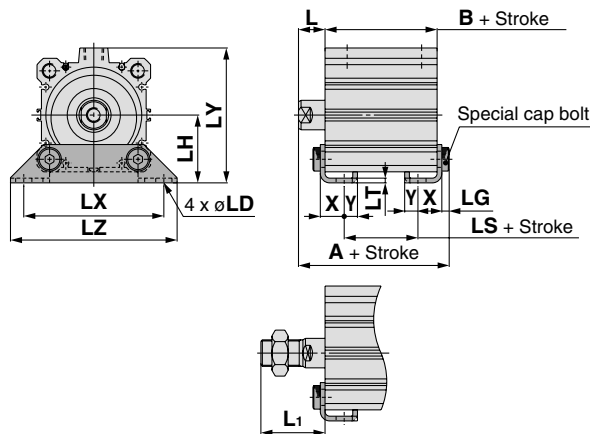


Rod End Male Thread (mm)

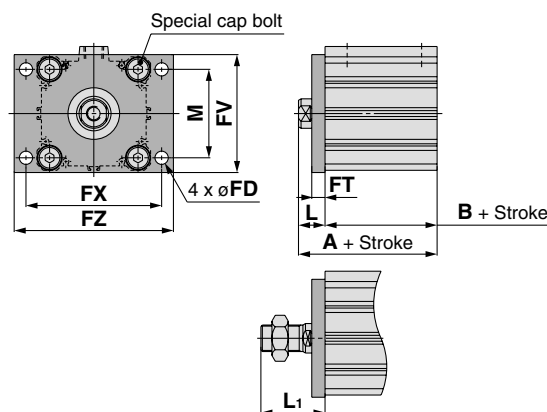
Bore size (mm)	B ₁	C ₁	H ₁	L ₁	MM	X
63	27	26	11	33.5	M18 x 1.5	28.5
80	32	32.5	13	43.5	M22 x 1.5	35.5
100	41	32.5	16	43.5	M26 x 1.5	35.5

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	W	Z
		A	B	A	B																
63	10 to 50	54	46	64	56	15	20	77	10.5	M10 x 1.5	103	7	17	8	60	9	14 depth 10.5	1/4	15	84	19
	75, 100	64	56																		
80	10 to 50	63.5	53.5	73.5	63.5	21	25	98	12.5	M16 x 2.0	132	6	22	10	77	11	17.5 depth 13.5	3/8	16	104	26
	75, 100	73.5	63.5																		
100	10 to 50	75	63	85	73	27	30	117	13	M20 x 2.5	156	6.5	27	12	94	11	17.5 depth 13.5	3/8	23	123.5	26
	75, 100	85	73																		

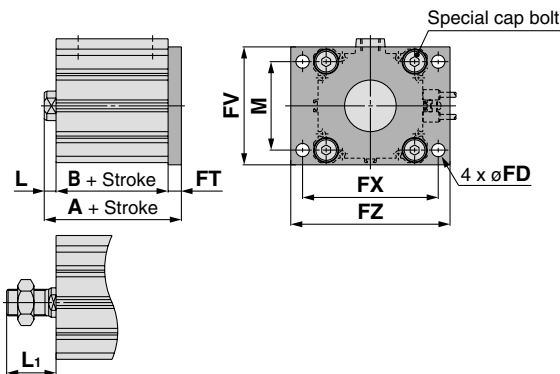
Foot style: CQ2YL/CDQ2YL



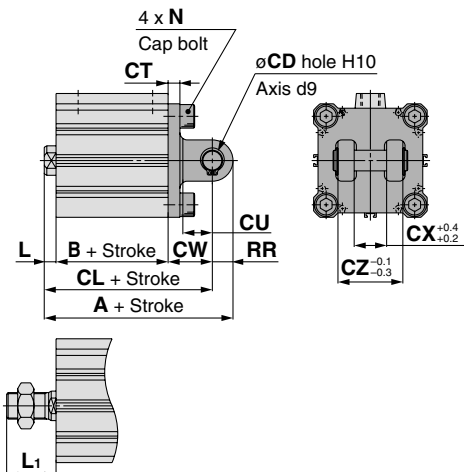
Rod side flange style: CQ2YF/CDQ2YF



Head side flange style: CQ2YG/CDQ2YG



Double clevis style: CQ2YD/CDQ2YD



Foot Style

Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch			L	L ₁	LD
		A	B	LS	A	B	LS			
63	10 to 50	72.2	46	20	82.2	56	30	18	43.5	11
	75, 100	82.2	56	30						
80	10 to 50	85	53.5	23.5	95	63.5	33.5	20	53.5	13
	75, 100	95	63.5	33.5						
100	10 to 50	98	63	29	108	73	39	22	53.5	13
	75, 100	108	73	39						

Foot bracket material: Carbon steel
Surface material: Nickel plated

Rod Side Flange Style

Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch		FD	FT	FV	FX	FZ
		A	B	A	B					
63	10 to 50	64	46	74	56	9	9	80	92	108
	75, 100	74	56							
80	10 to 50	73.5	53.5	83.5	63.5	11	11	99	116	134
	75, 100	83.5	63.5							
100	10 to 50	85	63	95	73	11	11	117	136	154
	75, 100	95	73							

Bore size (mm)	Stroke range (mm)	L	L ₁	M
63	10 to 50	18	43.5	60
	75, 100			
80	10 to 50	20	53.5	77
	75, 100			
100	10 to 50	22	53.5	94
	75, 100			

Flange bracket material: Carbon steel
Surface material: Nickel plated

Head Side Flange Style

Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch		L	L ₁
		A	B	A	B		
63	10 to 50	63		73		8	33.5
	75, 100	73					
80	10 to 50	74.5		84.5		10	43.5
	75, 100	84.5					
100	10 to 50	86		96		12	43.5
	75, 100	96					

(* Dimensions except A, L and L₁ are the same as rod side flange style.)
Flange bracket material: Carbon steel
Surface material: Nickel plated

Double Clevis Style

Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch			CD	CT	CU
		A	B	CL	A	B	CL			
63	10 to 50	98	46	84	108	56	94	14	8	20
	75, 100	108	56	94						
80	10 to 50	119.5	53.5	101.5	129.5	63.5	111.5	18	10	27
	75, 100	129.5	63.5	111.5						
100	10 to 50	142	63	120	152	73	130	22	13	31
	75, 100	152	73	130						

Bore size (mm)	Stroke range (mm)	CW	CX	CZ	L	L ₁	N	RR
63	10 to 50	30	22	44	8	33.5	M10 x 1.5	14
	75, 100							
80	10 to 50	38	28	56	10	43.5	M12 x 1.75	18
	75, 100							
100	10 to 50	45	32	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 1142.
* Double clevis pins and retaining rings are included.

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

Individual
-X□

Series CQ2Y

Mass/Without Auto Switch

(g)

Bore size (mm)	Cylinder stroke (mm)											
	5	10	15	20	25	30	35	40	45	50	75	100
32	142	163	184	204	225	246	267	287	308	329	482	587
40	224	247	270	293	316	339	362	386	409	432	616	736
50	—	400	436	472	508	545	581	617	653	690	982	1170
63	—	589	630	671	712	753	794	835	876	916	1264	1475
80	—	1079	1147	1215	1282	1350	1418	1486	1554	1622	2194	2528
100	—	1863	1953	2044	2135	2226	2316	2407	2498	2589	3393	3853

Standard stroke

Calculation: (Example) **CQ2YD32-20DCM**

• Basic mass: CQ2YB32-20DC 204 g

• Additional mass: Both ends tapped style..... 6 g

Rod end male thread..... 43 g

Double clevis style 151 g

404 g

Mass/With Auto Switch (Built-in magnet)

(g)

Bore size (mm)	Cylinder stroke (mm)											
	5	10	15	20	25	30	35	40	45	50	75	100
32	201	222	243	263	284	305	326	346	367	388	493	598
40	300	323	347	370	393	416	439	462	485	508	628	748
50	—	518	554	590	626	663	699	735	771	808	996	1184
63	—	748	788	829	870	911	952	993	1034	1075	1286	1497
80	—	1340	1408	1476	1543	1611	1679	1747	1815	1883	2217	2552
100	—	2242	2333	2424	2514	2605	2696	2787	2877	2968	3428	3888

Additional Mass

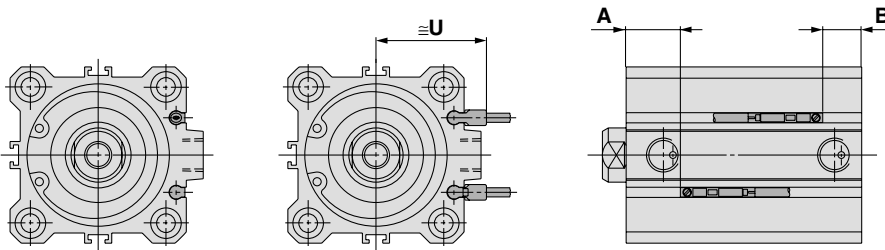
(g)

Bore size (mm)		32	40	50	63	80	100
Both ends tapped style		6	6	6	19	45	45
Rod end male thread	Male thread	26	27	53	53	120	175
	Nut	17	17	32	32	49	116
Foot style (Including mounting bolt)		143	155	243	324	696	1062
Rod side flange style (Including mounting bolt)		180	214	373	559	1056	1365
Head side flange style (Including mounting bolt)		165	198	348	534	1017	1309
Double clevis style (Including pin, retaining ring, bolt)		151	196	393	554	1109	1887

Auto Switch Proper Mounting Position (Detection at Stroke End) and Its Mounting Height

ø32 to ø100

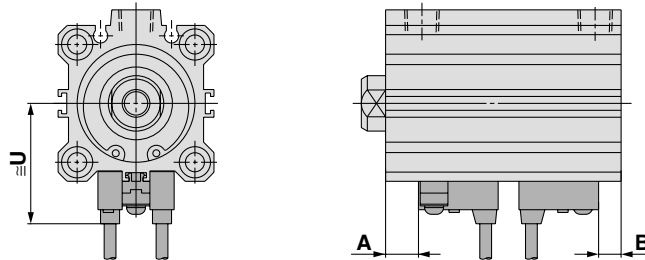
D-A9□
D-M9□
D-M9□W
D-A9□V
D-M9□V
D-M9□WV



D-A7□
D-A80
D-A7□H
D-A80H
D-F7□
D-J79
D-F7□W
D-J79W
D-F79F

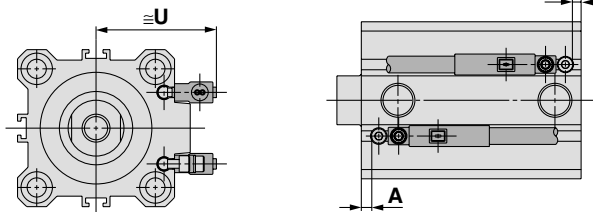
D-F7NTL
D-A73C
D-A80C
D-J79C
D-A79W
D-F7□WV
D-F7□V

ø32 to ø100



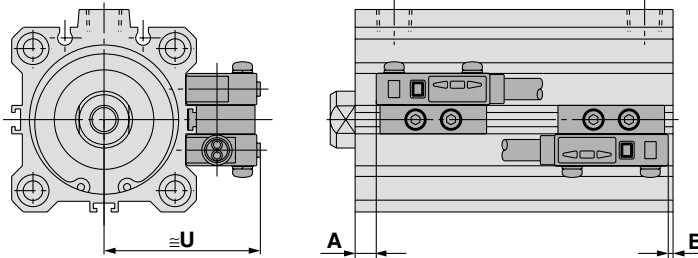
D-P3DW□

ø32 to ø100



D-P4DWL

ø40 to ø100

**Auto Switch Proper Mounting Position**

(mm)

Auto switch model Bore size	D-A9□ D-A9□V		D-M9□ D-M9□V D-M9□W D-M9□WV		D-A73 D-A80		D-A72/A7□H/A80H D-A73C/A80C/F7□ D-F79F/J79/F7□V D-J79C/F7□W D-J79W/F7□WV		D-F7NTL		D-A79W		D-P3DW□		D-P4DWL	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
32	14	9	18	13	15	10	15.5	10.5	20.5	15.5	12.5	7.5	8.5	4	—	—
40	17.5	12	21.5	16	18.5	13	19	13.5	24	18.5	16	10.5	12	6.5	14.5	9
50	15	15.5	19	19.5	16	16.5	16.5	17	21.5	22	13.5	14	9.5	9.5	12	12.5
63	17.5	18.5	21.5	22.5	18.5	19.5	19	20	24	25	16	17	12	12.5	14.5	15.5
80	20.5	23	24.5	27	21.5	24	22	24.5	27	29.5	19	21.5	15	17	17.5	20
100	23.5	29.5	27.5	33.5	24.5	30.5	25	31	30	36	22	28	18	24	20.5	26.5

Note) Adjust the auto switch after confirming the operating conditions in the actual setting.

Auto Switch Mounting Height

(mm)

Auto switch model Bore size	D-A9□V	D-M9□V D-M9□WV	D-A7□ D-A80	D-A7□H D-A80H D-F7□ D-J79	D-F7□W D-J79W D-F79F D-F7NTL	D-A73C D-A80C	D-F7□V D-F7□WV	D-J79C	D-A79W	D-P3DW□	D-P4DWL
	U	U	U	U	U	U	U	U	U	U	U
32	27	29	31.5	32.5	38.5	35	38	34	34.5	—	—
40	30.5	32.5	35	36	42	38.5	41.5	37.5	38	44	44
50	36.5	38.5	41	42	48	44.5	47.5	43.5	44	50	50
63	40	42	47.5	48.5	54.5	51	54	50	47.5	56.5	56.5
80	50	52	57.5	58.5	64.5	61	64	60	57.5	66.5	66.5
100	60	62	67.5	68.5	74.5	71	74	70	67.5	76.5	76.5

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

Individual

-X□

Series CQ2Y

Minimum Auto Switch Mounting Stroke

(mm)

Number of auto switches	D-M9□V D-F7□V D-J79C	D-A9□V D-A7□ D-A80 D-A73C D-A80C	D-A9□	D-M9□WV D-F7□WV	D-M9□ D-M9□W D-A7□H D-A80H D-F7□ D-J79	D-A79W	D-F7□W D-J79W D-F79F D-F7NTL	D-P3DW□	D-P4DWL
1 pc.	5	5	10	10	15	15	20	15	15
2 pcs.	5	10	10	15	15	20	20	15	15

Operating Range

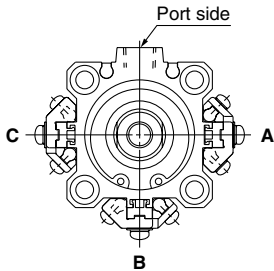
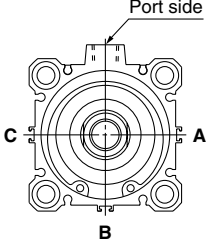
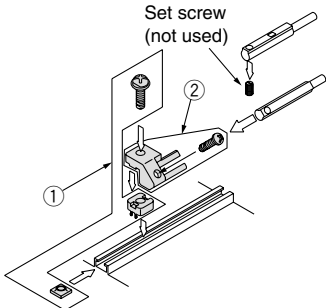
(mm)

Auto switch model	Bore size (mm)					
	32	40	50	63	80	100
D-A9□(V)	9.5	9.5	9.5	11.5	9	11.5
D-M9□(V) D-M9□W(V)	6	5.5	6.5	7.5	7.5	8.5
D-A7□(H)(C) D-A80□(H)(C)	12	11	10	12	12	13
D-A79W	13	14	14	16	15	17
D-F7□(V) D-J79(C) D-F7□W(V) D-F7NTL D-F79F	6	6	6	6.5	6.5	7
D-P3DW□	6.5	6.5	5.5	7.5	7	8.5
D-P4DWL	—	5	5	5	5	5.5

* Since this is a guideline including hysteresis, not meant to be guaranteed.
(assuming approximately ±30% dispersion.)
There may be the case it will vary substantially depending on an ambient environment.

* Auto switch mounting brackets BQ2-012 are not used for sizes over ø32 of D-A9□(V)/M9□(V)/M9□W(V) types. The above values indicate the operating range when mounted with the conventional auto switch installation groove.

Auto Switch Mounting Bracket/Part No.

Auto switch mounting surface	Bore size (mm)		
	32, 40, 50		63, 80, 100
			
Auto switch model	Auto switch mounting surface		Auto switch mounting surface
	Port side	A, B, C	Port, A, B, C side
D-A9□ D-A9□V D-M9□ D-M9□V D-M9□W D-M9□WV	No auto switch mounting bracket necessary.	①BQ-2 ②BQ2-012 Two types of auto switch mounting bracket are used as a set. 	No auto switch mounting bracket necessary.

Note 1) For CDQ2Y□32 to 50, when mounting compact auto switches on one of the three sides other than the port side (above A, B, C side) in the figure above, a separate auto switch mounting bracket is necessary as shown in the table above, so please order one separately from the cylinder.
 (The same is true when mounting compact auto switches with the auto switch mounting rail, not using the compact auto switch mounting groove, for CDQ2Y□63 to 100.)

Example

CDQ2YB32-100DM-M9BW.....1 unit

BQ-2.....2 pcs.

BQ2-012.....2 pcs.

Note 2) When the cylinder is shipped, an auto switch mounting bracket and auto switch are included in the shipment.

Auto switch model	Bore size (mm)	
	32	40 to 100
D-A7□/A80 D-A73C/A80C D-A7□H/A80H D-A79W D-F7□/J79 D-F7□V D-J79C D-F7□W/J79W D-F7□WV D-F79F/F7NTL		BQ-2
D-P3DW□		BQ3-032S
D-P4DWL	—	BQP1-050

Note) When the cylinder is shipped, an auto switch mounting bracket and auto switch are included in the shipment. However, ø40 to ø100 D-P4DWL are assembled at the time of shipment.

Auto Switch Mounting Bracket Mass

Mounting bracket part no.	Applicable cylinder bore size	Mass (g)
BQ-2	ø32 to ø100	1.5
BQ3-032S	ø32 to ø100	2.5
BQP1-050	ø40 to ø100	16

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

Individual
-X□

Series CQ2Y

Other than the applicable auto switches listed in “How to Order”, the following auto switches can be mounted.
For detailed specifications, refer to pages 1719 to 1827.

Auto switch type	Model	Electrical entry (Direction)	Features	Applicable bore size
Reed	D-A73	Grommet (Perpendicular)	—	ø32 to ø100
	D-A80		Without indicator light	
	D-A73H, A76H	Grommet (In-line)	—	
	D-A80H		Without indicator light	
Solid state	D-F7NV, F7PV, F7BV	Grommet (Perpendicular)	—	ø32 to ø100
	D-F7NWV, F7BWV		Diagnostic indication (2-color indication)	
	D-F79, F7P, J79	Grommet (In-line)	—	
	D-F79W, F7PW, J79W		Diagnostic indication (2-color indication)	
	D-F7NTL		With timer	
	D-P5DWL		Magnetic field resistant (2-color indication)	ø40 to ø100

* With pre-wired connector is available for solid state auto switches. For details, refer to pages 1784 and 1785.

* Normally closed (NC = b contact), solid state auto switches (D-F9G, F9H type) are also available. For details, refer to page 1746.



Smooth Cylinder Specific Product Precautions 1

Be sure to read before handling.

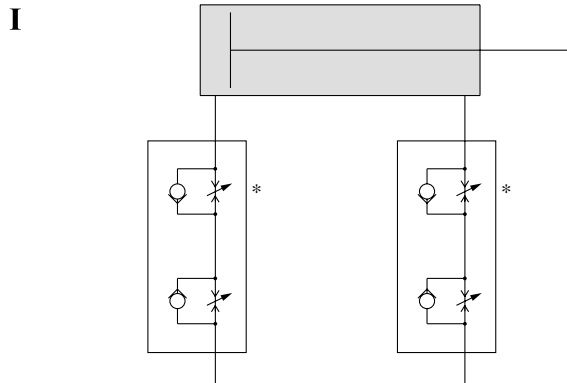
Refer to front matters 42 and 43 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.

Recommended Pneumatic Circuit

Refer to the diagrams below when controlling speed with the smooth cylinder.

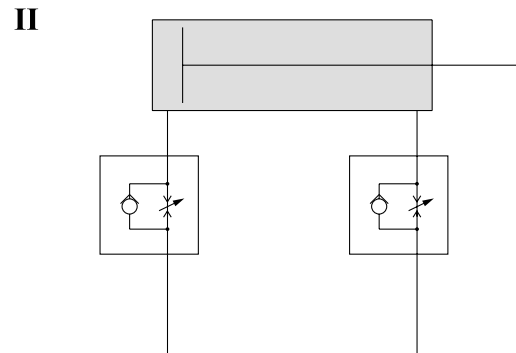
Warning

Horizontal operation (Speed control)



Dual speed controller

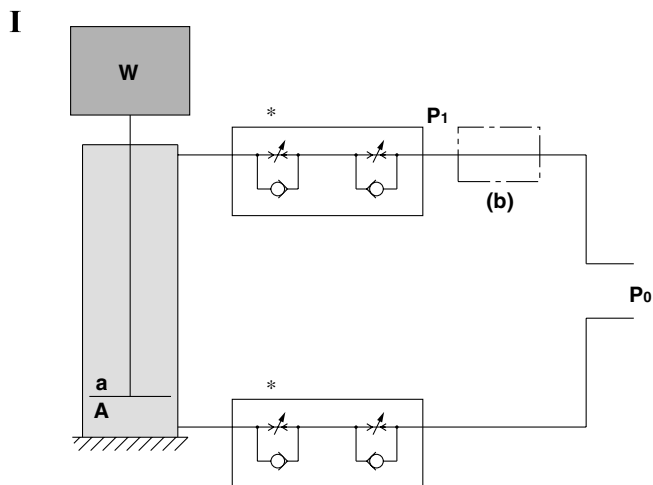
Speed is controlled by meter-out circuit. Using concurrently the meter-in circuit can alleviate the stick-slip. More stable low speed operation can be achieved than meter-in circuit alone.



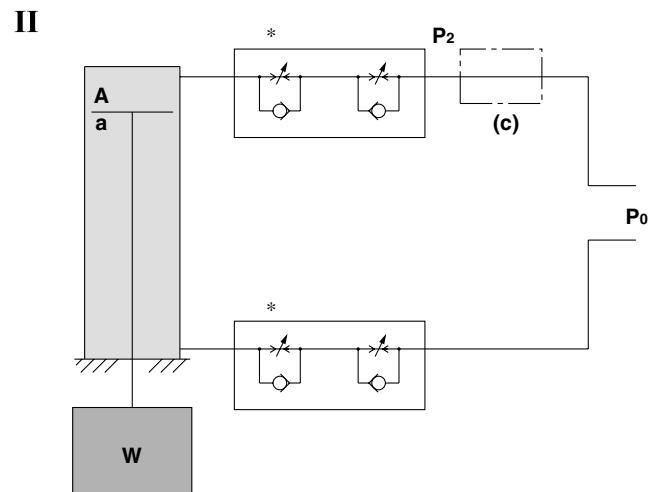
Meter-in speed controller

Meter-in speed controllers can reduce lurching while controlling the speed. The two adjustment needles facilitate adjustment.

Vertical operation (Speed control)



- (1) Speed is controlled by meter-out circuit. Using concurrently the meter-in circuit can alleviate the stick-slip.*
- (2) Depending on the size of the load, installing a regulator with check valve at position (b) can reduce lurching during descent and operation delay during ascent.
As a guide,
when $W + P_0a > P_0A$,
adjust P_1 to make $W + P_1a = P_0A$.



- (1) Speed is controlled by meter-out circuit. Using concurrently the meter-in circuit can alleviate the stick-slip.*
- (2) Installing a regulator with check valve at position (c) can reduce lurching during descent and operation delay during ascent.
As a guide,
adjust P_2 to make $W + P_2a = P_0A$.

W: Load (N) P₀: Operating pressure (MPa) P₁, P₂: Reduced pressure (MPa) a: Rod side piston area (mm²) A: Head side piston area (mm²)

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

Individual
-X□



Smooth Cylinder Specific Product Precautions 2

Be sure to read before handling.

Refer to front matters 42 and 43 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.

Lubricant

Caution

1. Operate without lubrication.

Lubrication may cause malfunction.

2. Do not use grease not specified by SMC.

Using grease other than that specified may cause malfunction.

- Order using the following part numbers when only maintenance grease is needed.

Grease

Volume	Part no.
5 g	GR-L-005
10 g	GR-L-010
150 g	GR-L-150

3. Do not wipe off grease from the sliding part of the air cylinder.

Wiping grease from the sliding part of the air cylinder forcefully may cause malfunction.

Air Source

Caution

1. Take measure to prevent pressure fluctuations.

Pressure fluctuations may cause malfunction.

Low Speed Cylinder: Standard Type Double Acting, Single Rod

Series CQ2X

ø32, ø40, ø50, ø63, ø80, ø100

How to Order

With auto switch **CDQ2X** **B** **40** **-** **30** **D** **-** **M9BW**

With auto switch (Built-in magnet)

Low speed cylinder

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 (not assembled).

Bore size

32	32 mm
40	40 mm
50	50 mm
63	63 mm
80	80 mm
100	100 mm

Port thread type

Nil	Rc	ø32 to ø100
TN	NPT	
TF	G	

* Without auto switch, ø32, 5 strokes:
M thread
The symbol is Nil when ordering the M thread.

Action

D	Double acting
----------	---------------

Standard stroke (mm)
Refer to "Standard Stroke" on page 1137.

Number of auto switches

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

Auto switch

Nil	Without auto switch
------------	---------------------

* For the applicable auto switch model, refer to the table below.

Cushion/Rod end thread

Nil	Standard (Rod end female thread)
C	With rubber bumper
M	Rod end male thread

* Combination above is possible.

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) CDQ2XL32-50D

Applicable Auto Switch/Refer to pages 1719 to 1827 for further information on auto switches.

Applicable Auto Switch																				
Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model		Lead wire length (m)					Pre-wired connector	Applicable load					
					DC	AC	Perpendicular	In-line	0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)							
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NV	M9N	●	●	●	○	—	○	IC circuit	Relay, PLC			
		3-wire (PNP)		M9PV				M9P	●	●	●	○	—	○						
	Connector	2-wire		M9BV				M9B	●	●	●	○	—	○	—					
		J79C		—				●	—	●	○	●	—	—						
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)				5 V, 12 V	M9NWV	M9NW	●	●	●	○	—	○		IC circuit		
				3-wire (PNP)				12 V	M9PWV	M9PW	●	●	●	○	—	○				
				2-wire				12 V	M9BWV	M9BW	●	●	●	○	—	○			—	
				4-wire				5 V, 12 V	—	F79F	●	—	●	○	—	○				
	With diagnostic output (2-color indication)	Magnetic field resistant (2-color indication)		2-wire (Non-polar)	—	—	P3DW	●	—	●	●	—	○	—						
					—	P4DW*	—	—	●	●	—	○								
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	A96V	A96	●	—	●	—	—	—	IC circuit	—			
				2-wire				24 V	—	200 V	A72	A72H	●	—	●	—		—	—	—
									12 V	100 V	A93V	A93	●	—	●	—		—	IC circuit	
									5 V, 12 V	100 V or less	A90V	A90	●	—	●	—		—		
		Connector			12 V	—	A73C		—	●	—	●	●	●	—	—	—			
				5 V, 12 V	24 V or less	A80C	—	●	—	●	●	●	—	—	IC circuit					
				Diagnostic indication (2-color indication)	Grommet	—	—	A79W	—	●	—	●	—	—		—		—		
						—	—	—	—	—	—	—	—	—	—					

* Lead wire length symbols: 0.5 m Nil (Example) M9NV
1 m M (Example) M9NVW
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 is compatible with ø40 to ø100.
* Only D-P4DW is assembled at the time of shipment.

* Since there are other applicable auto switches than listed, refer to page 1147 for details.
* For details about auto switches with pre-wired connector, refer to pages 1784 and 1785. For D-P3DW□, refer to pages 1773-1 and 1773-2.
* When D-A9□(V)/M9□(V)/M9W(V) types with ø32 to ø50 are mounted on a side other than the port side, order auto switch mounting brackets separately. Refer to page 1146 for details.
* Auto switches are shipped together (not assembled).

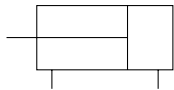
Low Speed Cylinder: Standard Type Double Acting, Single Rod **Series CQ2X**

Specifications



JIS Symbol

Double acting, Single rod



Bore size (mm)	32	40	50	63	80	100
Type	Pneumatic (Non-lube)					
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 mm (Note) 0					
Mounting	Through-hole					
Piston speed	0.5 to 300 mm/s					

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

Minimum Operating Pressure

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

Standard Stroke

Bore size (mm)	Standard stroke (mm)
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

• Manufacturing of Intermediate stroke
Intermediate strokes by the 1 mm interval are available by using spacers with standard stroke cylinders. But, as for ø40 to ø100 with damper, please consult with SMC separately.
Example) 18 mm width spacer is installed in the standard cylinder CQ2XB40-75D to make CQ2XB40-57D.

⚠ Precautions

- Be sure to read before handling.
- Refer to front matters 42 and 43 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.

Retaining Ring Installation/Removal

⚠ Caution

- For installation and removal, use an appropriate pair of pliers (tool for installing a type C retaining ring).
- 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.

Pneumatic Circuit

- Pressure supplied to cylinder should be set affordably. When the operating pressure is low, low speed operation may not be stable depending on a load condition. Besides, the maximum speed may be restricted depending on a pneumatic circuit, or operating pressure.

Maintenance

⚠ Caution

1. Replacement parts/Seal kit

Order it in accordance with the bore size.

Bore size (mm)	Kit no.	Contents
32	CQ2X32-PS	Piston seal: 1 pc.
40	CQ2X40-PS	Rod seal: 1 pc.
50	CQ2X50-PS	Gasket: 1 pc.
63	CQ2X63-PS	Grease pack (10 g): 1 pc.
80	CQ2X80-PS	
100	CQ2X100-PS	

2. Grease pack

When maintenance requires only grease, use the following part numbers to order.

Grease pack part no.:

GR-L-005 (5 g)

GR-L-010 (10 g)

GR-L-150 (150 g)

Mounting Bracket Part No.

Bore size (mm)	Foot ⁽¹⁾	Flange	Double clevis ⁽³⁾
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 1) When ordering foot bracket, order 2 pieces per cylinder.

Note 2) Parts belonging to each bracket are as follows.

Foot or Flange: Body mounting bolts
Double clevis: Clevis pin, Type C retaining ring for shaft, Body mounting bolts

Note 3) For double clevis style, clevis pin and retaining ring are shipped together.

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

Individual
-X□

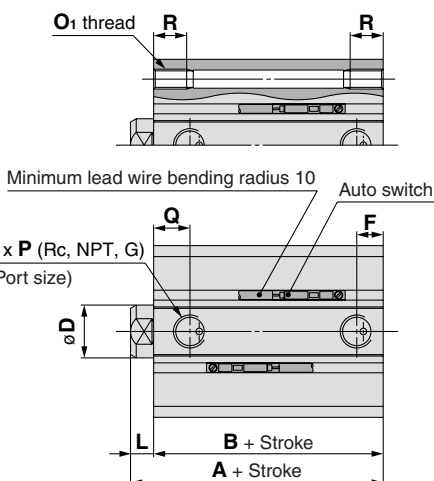
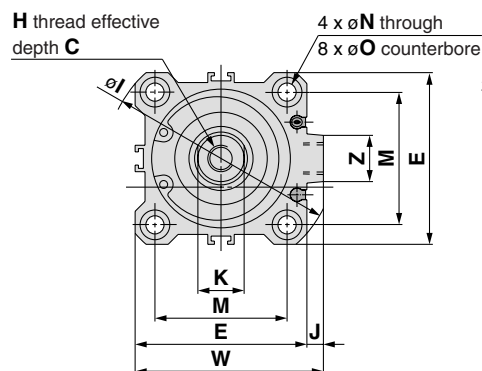
Series CQ2X

Bore size

ø32 to ø50

Both ends tapped style: CQ2XA/CDQ2XA

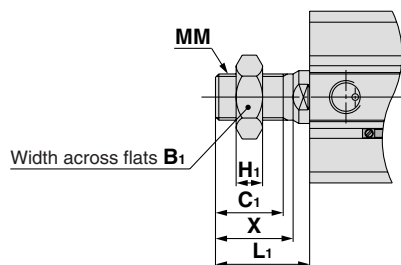
Basic style (Through hole type): CQ2XB/CDQ2XB



Both ends tapped

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

Rod end male thread



Rod End Male Thread

(mm)							
Bore size (mm)	B1	C1	H1	L1	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	

Basic Style

For the auto switch mounting position and its mounting height, refer to page 1144.

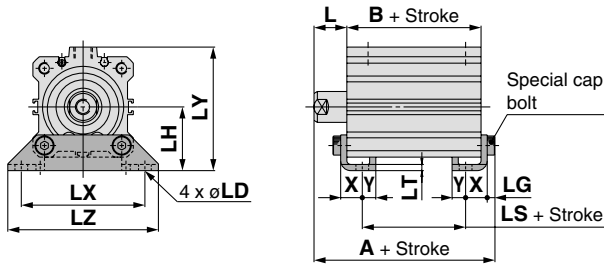
Bore size (mm)	Stroke range (mm)	Without auto switch						With auto switch						C	D	E	H	I	J	K	L	M
		A	B	F	P	Q		A	B	F	P	Q										
32	5																					
	10 to 50	30	23	5.5	M5 x 0.8	11.5		40	33	7.5	1/8	10.5		13	16	45	M8 x 1.25	60	4.5	14	7	34
	75, 100	40	33	7.5	1/8	10.5																
40	5 to 50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

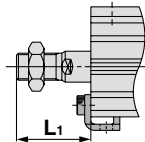


Note 1) Dimensions for rubber bumper are same as the standard style above.
 * For details about the rod end nut and accessory brackets, refer to page 1142.
 Note 2) Refer to page 1137 for calculation of the longitudinal dimension of the intermediate strokes since there is the spacer-installed type.

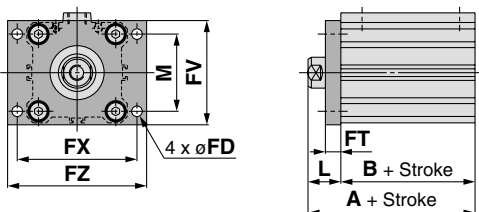
Foot style: CQ2XL/CDQ2XL



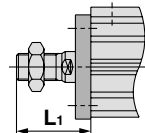
Rod end male thread



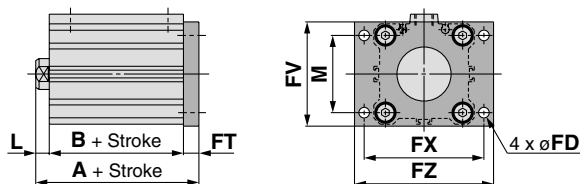
Rod side flange style: CQ2XF/CDQ2XF



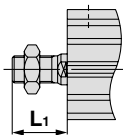
Rod end male thread



Head side flange style: CQ2XG/CDQ2XG

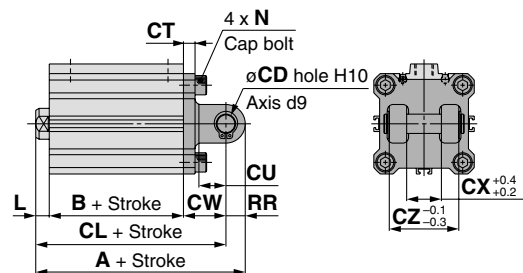


Rod end male thread

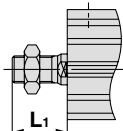


Applicable to { Head side flange style
Double clevis style

Double clevis style: CQ2XD/CDQ2XD



Rod end male thread



Foot Style

(mm)

Bore size (mm)	Standard stroke (mm)	Without auto switch			With auto switch			L	L1	LD
		A	B	LS	A	B	LS			
32	5 to 50	47.2	23	7	57.2	33	17	17	38.5	6.6
	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
	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
	75, 100	66.7	40.5	17.5						

Foot bracket material: Carbon steel
Surface material: Nickel plated

Rod Side Flange Style

(mm)

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

Foot bracket material: Carbon steel
Surface material: Nickel plated

Bore size (mm)	Standard stroke (mm)	L	L1	M
32	5 to 50	17	38.5	34
	75, 100			
40	5 to 50	17	38.5	40
	75, 100			
50	10 to 50	18	43.5	50
	75, 100			

Head Side Flange Style

(mm)

Bore size (mm)	Standard stroke (mm)	Without auto switch	With auto switch	L	L1
		A	A		
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			

(* Dimensions except A, L and L1 are the same as rod side flange style.)
Foot bracket material: Carbon steel
Surface material: Nickel plated

Double Clevis Style

(mm)

Bore size (mm)	Standard stroke (mm)	Without auto switch			With auto switch			CD	CT	CU
		A	B	CL	A	B	CL			
32	5 to 50	60	23	50	70	33	60	10	5	14
	75, 100	70	33	60						
40	5 to 50	68.5	29.5	58.5	78.5	39.5	68.5	10	6	14
	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
	75, 100	90.5	40.5	76.5						

Bore size (mm)	Standard stroke (mm)	CW	CX	CZ	L	L1	N	RR
32	5 to 50	20	18	36	7	28.5	M6 x 1.0	10
	75, 100							
40	5 to 50	22	18	36	7	28.5	M6 x 1.0	10
	75, 100							
50	10 to 50	28	22	44	8	33.5	M8 x 1.25	14
	75, 100							

Double clevis bracket material: Carbon steel
Surface treatment: Painted

* For details about the rod end nut and accessory brackets, refer to page 1142.
* Clevis pin and retaining ring are shipped together.

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

Individual
-X□

Series CQ2X

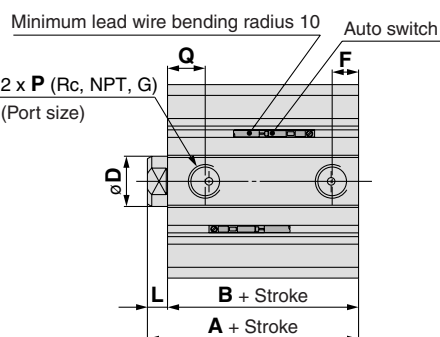
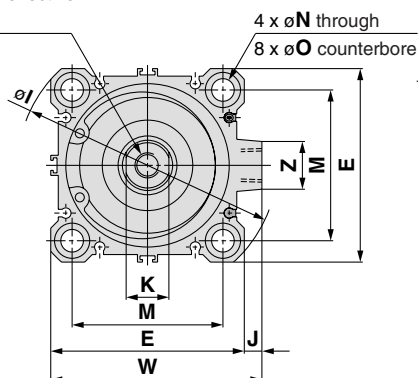
Bore size

ø63 to ø100

Both ends tapped style: CQ2XA/CDQ2XA

Basic style (Through hole type):

H thread effective depth C

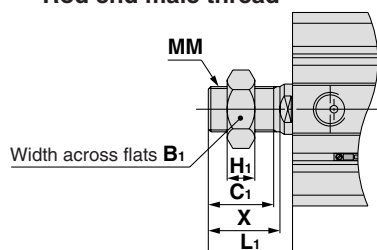


Both ends tapped

(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

Rod end male thread



Both ends tapped

(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

Basic Style For the auto switch mounting position and its mounting height, refer to page 1144.

(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	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
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	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
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	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

(mm)

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

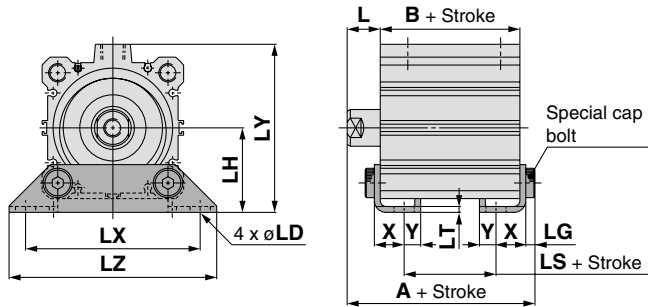


Note 1) Dimensions for rubber bumper are same as the standard style above.

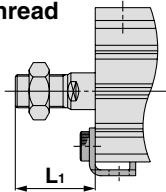
* For details about the rod end nut and accessory brackets, refer to page 1142.

Note 2) Refer to the Stroke Table on page 1137 for calculation of the longitudinal dimension of the intermediate strokes.

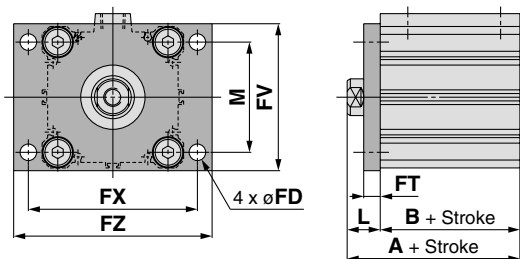
Foot style: CQ2XL/CDQ2XL



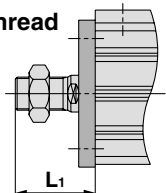
Rod end male thread



Rod side flange style: CQ2XF/CDQ2XF



Rod end male thread



Foot Style

(mm)

Bore size (mm)	Standard stroke (mm)	Without auto switch			With auto switch			L	L ₁	LD	LG	LH	LT
		A	B	LS	A	B	LS						
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									

Foot bracket material: Carbon steel
Surface material: Nickel plated

Bore size (mm)	Standard stroke (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					

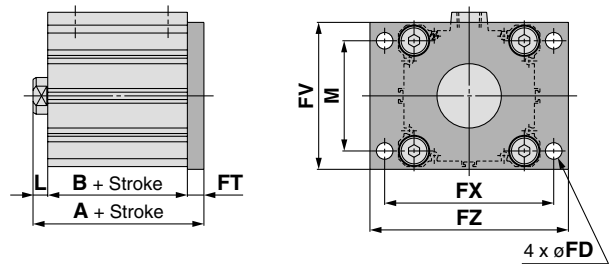
Rod Side Flange Style

(mm)

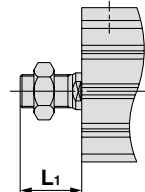
Bore size (mm)	Standard stroke (mm)	Without auto switch		With auto switch		FD	FT	FV	FX	FZ	L	L ₁	M
		A	B	A	B								
63	10 to 50	54	36	64	46	9	9	80	92	108	18	43.5	60
	75, 100	64	46										
80	10 to 50	63.5	43.5	73.5	53.5	11	11	99	116	134	20	53.5	77
	75, 100	73.5	53.5										
100	10 to 50	75	53	85	63	11	11	117	136	154	22	53.5	94
	75, 100	85	63										

Foot bracket material: Carbon steel
Surface material: Nickel plated

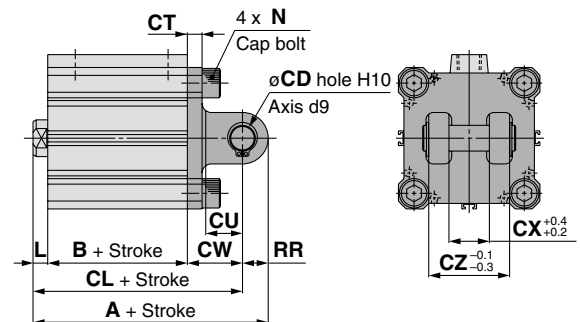
Head side flange style: CQ2XG/CDQ2XG



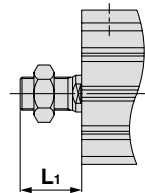
Rod end male thread



Double clevis style: CQ2XD/CDQ2XD



Rod end male thread



Head Side Flange Style

(mm)

Bore size (mm)	Standard stroke (mm)	Without auto switch	With auto switch	L	L ₁
		A	A		
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.)

Double Clevis Style

Foot bracket material: Carbon steel
Surface material: Nickel plated (mm)

Bore size (mm)	Standard stroke (mm)	Without auto switch			With auto switch			CD	CT	CU	CW	CX
		A	B	CL	A	B	CL					
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								

Double clevis bracket material:
Cast iron
Surface treatment: Painted

Bore size (mm)	Standard stroke (mm)	CZ	L	L ₁	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					

* For details about the rod end nut and accessory brackets, refer to page 1142.
* Clevis pin and retaining ring are shipped together.

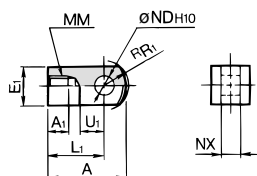
Series CQ2X

Accessory Bracket

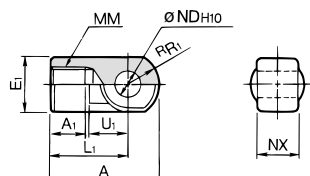
Single Knuckle Joint

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

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



Material: Carbon steel
Surface material: Nickel plated



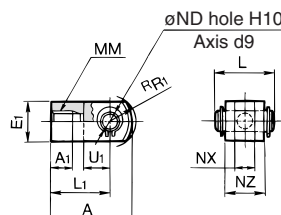
Material: Cast iron
Surface material: Nickel plated
(mm)

Part no.	Applicable bore size (mm)	A	A ₁	E ₁	L ₁	MM	^R R ₁	U ₁	ND _{H10}	NX
I-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}

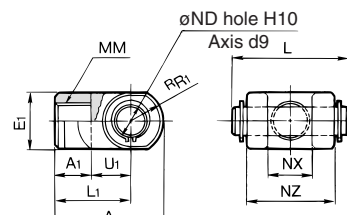
Double Knuckle Joint

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

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



Material: Carbon steel
Surface material: Nickel plated

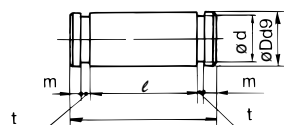


Material: Cast iron
Surface material: Nickel plated
(mm)

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-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)

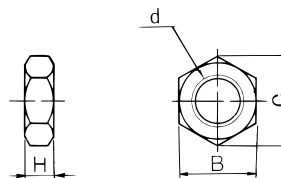


Material: Carbon steel
(mm)

Part no.	Applicable bore size (mm)	Dd9	L	d	ℓ	m	t	Applicable retaining ring
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.

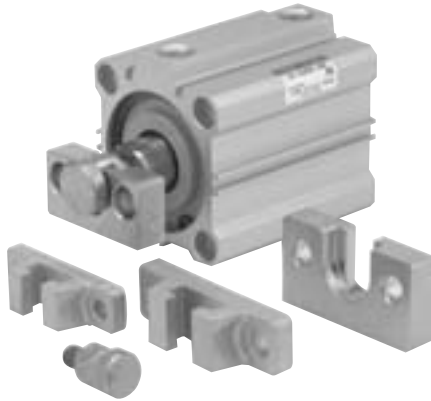
Rod End Nut



Material: Carbon steel
Surface material: Nickel plated
(mm)

Part no.	Applicable bore size (mm)	d	H	B	C
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

Simple Joint: $\phi 32$ to $\phi 100$



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

YA — **03**

• Mounting bracket

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

• Applicable air cylinder bore

03	For $\phi 32$, $\phi 40$
05	For $\phi 50$, $\phi 63$
08	For $\phi 80$
10	For $\phi 100$

Allowable Eccentricity (mm)

Bore size	$\phi 32$	$\phi 40$	$\phi 50$	$\phi 63$	$\phi 80$	$\phi 100$
Eccentricity tolerance		± 1			± 1.5	± 2
Backlash			0.5			

<Ordering>

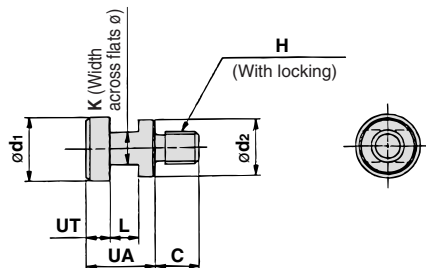
- Joints are not included with the A or B type mounting brackets.
- Order them separately.

(Example)

- Bore size $\phi 40$ Part no.
- Type A mounting bracket part no. YA-03
- Joint YU-03

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

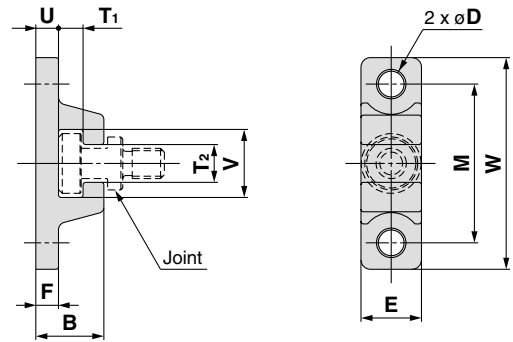
Bore size (mm)	Joint part no.	Applicable mounting bracket	
		Type A mounting bracket	Type B mounting bracket
32, 40	YU-03	YA-03	YB-03
50, 63	YU-05	YA-05	YB-05
80	YU-08	YA-08	YB-08
100	YU-10	YA-10	YB-10



Material: Chromium molybdenum steel (Nickel plated)

Part no.	Applicable bore size (mm)	UA	C	d ₁	d ₂	H	K	L	UT	Weight (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

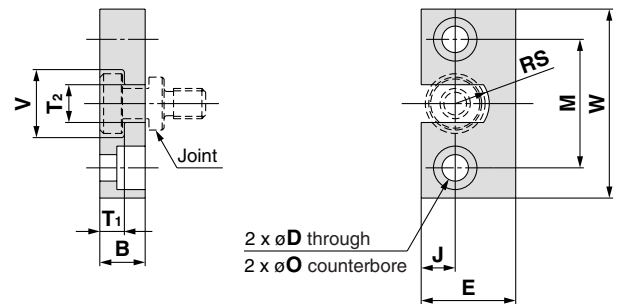


Material: Chromium molybdenum steel (Nickel plated)
(mm)

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	Weight (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	Weight (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

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

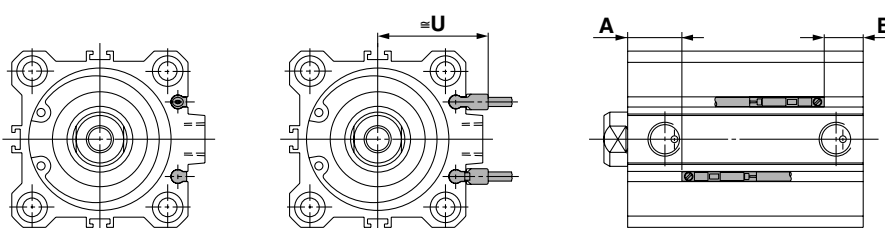
Individual
-X□

Series CQ2X

Auto Switch Proper Mounting Position (Detection at Stroke End) and Its Mounting Height

ø32 to ø100

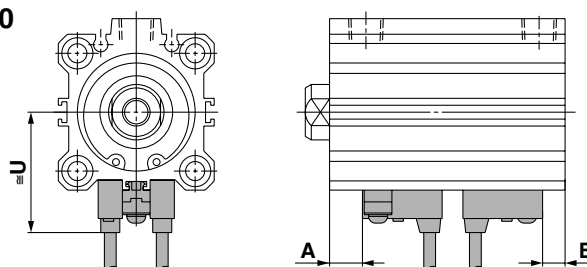
D-A9□
D-M9□
D-M9□W
D-A9□V
D-M9□V
D-M9□WV



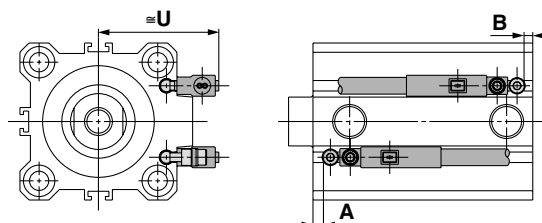
D-A7□
D-A80
D-A7□H
D-A80H
D-F7□
D-J79
D-F7□W
D-J79W
D-F79F

D-F7NTL
D-A73C
D-A80C
D-J79C
D-A79W
D-F7□WV
D-F7□V

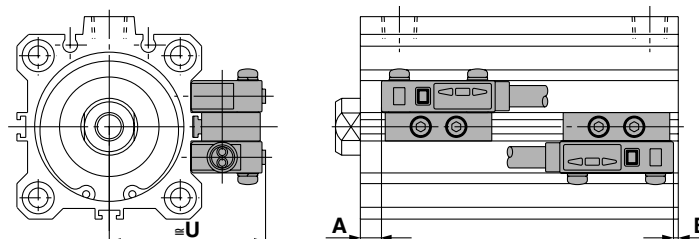
ø32 to ø100



D-P3DW□ ø32 to ø100



D-P4DWL ø40 to ø100



Auto Switch Proper Mounting Position

(mm)

Auto switch model Bore size	D-A9□ D-A9□V		D-M9□ D-M9□V D-M9□W D-M9□WV		D-A73 D-A80		D-A72/A7□H/A80H D-A73C/A80C/F7□ D-F79F/J79/F7□V D-J79C/F7□W D-J79W/F7□WV		D-F7NTL		D-A79W		D-P3DW□		D-P4DWL	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
32	8	5	12	9	9	6	9.5	6.5	14.5	11.5	6.5	3.5	2.5	0	—	—
40	12	7.5	16	11.5	13	8.5	13.5	9	18.5	14	10.5	6	6.5	2	9	4.5
50	10	10.5	14	14.5	11	11.5	11.5	12	16.5	17	8.5	9	4.5	4.5	7	7.5
63	12.5	13.5	16.5	17.5	13.5	14.5	14	15	19	20	11	12	7	7.5	9.5	10.5
80	15.5	18	19.5	22	16.5	19	17	19.5	22	24.5	14	16.5	10	12	12.5	15
100	20	23	24	27	21	24	21.5	24.5	26.5	29.5	18.5	21.5	14.5	17.5	17	20

Note) Adjust the auto switch after confirming the operating conditions in the actual setting.

Auto Switch Mounting Height

(mm)

Auto switch model Bore size	D-A9□V	D-M9□V D-M9□WV	D-A7□ D-A80	D-A7□H D-A80H D-F7□/D-J79 D-F7□W D-J79W D-F79F D-F7NTL	D-A73C D-A80C	D-F7□V D-F7□WV	D-J79C	D-A79W	D-P3DW□	D-P4DWL
	U	U	U	U	U	U	U	U	U	U
32	27	29	31.5	32.5	38.5	35	38	34	34.5	—
40	30.5	32.5	35	36	42	38.5	41.5	37.5	38	44
50	36.5	38.5	41	42	48	44.5	47.5	43.5	44	50
63	40	42	47.5	48.5	54.5	51	54	50	47.5	56.5
80	50	52	57.5	58.5	64.5	61	64	60	57.5	66.5
100	60	62	67.5	68.5	74.5	71	74	70	67.5	76.5

Minimum Auto Switch Mounting Stroke

(mm)

No. of auto switches mounted	D-M9□V D-F7□V D-J79C	D-A9□V D-A7□ D-A80 D-A73C D-A80C	D-A9□	D-M9□WV D-F7□WV	D-M9□ D-M9□W D-A7□H D-A80H D-F7□ D-J79	D-A79W	D-F7□W D-J79W D-F79F D-F7NTL	D-P3DW□	D-P4PW
1 pc.	5	5	10	10	15	15	20	15	15
2 pcs.	5	10	10	15	15	20	20	15	15

Operating Range

(mm)

Auto switch model	Bore size					
	32	40	50	63	80	100
D-A9□ (V)	9.5	9.5	9.5	11.5	9	11.5
D-M9□ (V) D-M9□W (V)	6	5.5	6.5	7.5	7.5	8.5
D-A7□ (H) (C) D-A80□ (H) (C)	12	11	10	12	12	13
D-A79W	13	14	14	16	15	17
D-F7□ (V) D-J79 (C) D-F7□W (V) D-F7NTL D-F79F	6	6	6	6.5	6.5	7
D-P3DW□	6.5	6.5	5.5	7.5	7	8.5
D-P4DWL	—	5	5	5	5	5.5

- * Since this is a guideline including hysteresis, not meant to be guaranteed. (assuming approximately ±30% dispersion.)
There may be the case it will vary substantially depending on an ambient environment.
- * Auto switch mounting brackets BQ2-012 are not used for sizes over ø32 of D-A9□(V)/M9□(V)/M9□W(V) types. The above values indicate the operating range when mounted with the conventional auto switch installation groove.

REA

REB

REC

C□Y

C□X

MQ

RHC

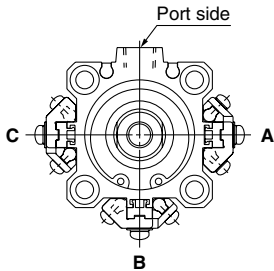
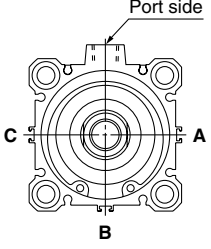
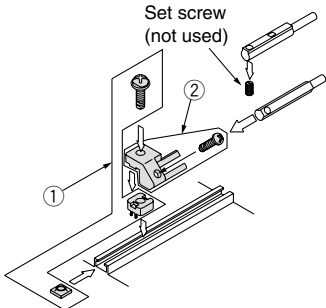
RZQ

D-□

-X□

Individual
-X□

Auto Switch Mounting Bracket/Part No.

Auto switch mounting surface	Bore size (mm)		
	ø32, ø40, ø50		ø63, ø80, ø100
			
Auto switch model	Auto switch mounting surface		Auto switch mounting surface
	Port side	A, B, C side	Port, A, B, C side
D-A9□ D-A9□V D-M9□ D-M9□V D-M9□W D-M9□WV	No auto switch mounting bracket necessary.	①BQ-2 ②BQ2-012 Two types of auto switch mounting bracket are used as a set. 	No auto switch mounting bracket necessary.

Note 1) For CDQ2□32 to 50, when a compact auto switch is mounted on the three sides (A, B and C above) other than the port side of bore sizes ø32 to ø50, the auto switch mounting brackets above are required. Order them separately from cylinders. (It is the same as when mounting compact cylinders with an auto switch mounting rail, but not with a compact auto switch installation groove for CDQ2□63 to 100.)

Example

CDQ2XB32-100DM-M9BW.....1 unit

BQ-2.....2 pcs.

BQ2-012.....2 pcs.

Note 2) When the cylinder is shipped, an auto switch mounting bracket and auto switch are included in the shipment.

Auto switch model	Bore size (mm)	
	ø32	ø40 to ø100
D-A7□/A80 D-A73C/A80C D-A7□H/A80H D-A79W D-F7□/J79 D-F7□V D-J79C D-F7□W/J79W D-F7□WV D-F79F/F7NTL		BQ-2
D-P3DW□		BQ3-032S
D-P4DWL	—	BQP1-050

Note) When the cylinder is shipped, an auto switch mounting bracket and auto switch are included in the shipment. However, ø40 to ø100 D-P4DWL are assembled at the time of shipment.

Auto Switch Mounting Bracket Mass

Auto switch mounting bracket part no.	Applicable cylinder bore size	Mass (g)
BQ-2	ø32 to ø100	1.5
BQ3-032S	ø32 to ø100	2.5
BQP1-050	ø40 to ø100	16

Other than the applicable auto switches listed in “How to Order”, the following auto switches can be mounted.
For detailed specifications, refer to pages 1719 to 1827.

Auto switch type	Model	Electrical entry (Direction)	Features	Applicable bore size
Reed	D-A73	Grommet (Perpendicular)	—	ø32 to ø100
	D-A80		Without indicator light	
	D-A73H, A76H	Grommet (in-line)	—	
	D-A80H		Without indicator light	
Solid state	D-F7NV, F7PV, F7BV	Grommet (Perpendicular)	—	ø32 to ø100
	D-F7NWV, F7BWV		Diagnostic indication (2-color indication)	
	D-F79, F7P, J79	Grommet (in-line)	—	
	D-F79W, F7PW, J79W		Diagnostic indication (2-color indication)	
	D-F7NTL		With timer	
	D-P5DWL		Magnetic field resistant (2-color indication)	

* With pre-wired connector is available for solid state auto switches. For details, refer to pages 1784 to 1785.

* Normally closed (NC = b contact) solid state auto switches (D-F9G/F9H/Y7G/Y7H types) are also available. Refer to pages 1746 and 1748 for details.

REA
REB
REC
C□Y
C□X
MQ
RHC
RZQ

D-□
-X□
Individual
-X□

Related Products:

Speed Controller for Low Speed Operation

The effective area of controlled flow is approximately 1/10 of the standard type.
These controllers are suitable for controlling the speed of microspeed cylinders.
The dual type speed controller is especially suitable for cylinders with a small bore size.

Elbow/Universal Type



Air Flow/Effective Area

Model		AS12□1FM-M5 AS13□1FM-M5	AS22□1FM-□01 AS23□1FM-□01		AS22□1FM-□02 AS23□1FM-□02		
Tubing O.D.	Metric size	ø3.2, ø4, ø6	ø3.2, ø4	ø6, ø8	ø4	ø6	ø8, ø10
	Inch size	ø1/8", ø5/32", ø3/16" ø1/4"	ø1/8", ø5/32"	ø3/16", ø1/4" ø5/16"	ø5/32"	ø3/16"	ø1/4", ø5/16" ø3/8"
Controlled flow	Air flow (l/min (ANR))	7	12		38		
	Effective area (mm ²)	0.1	0.2		0.6		
Free flow	Flow rate (l/min (ANR))	100	180	230	260	390	460
	Effective area (mm ²)	1.5	2.7	3.5	4	6	7

Note) Supply pressure: 0.5 MPa, Temperature: 20°C

In-line Type



Air Flow/Effective Area

Model		AS1001FM	AS2001FM		AS2051FM	
Tubing O.D.	Metric size	ø3.2, ø4, ø6	ø4	ø6	ø6	ø8
	Inch size	ø1/8", ø5/32", ø3/16" ø1/4"	ø5/32"	ø3/16", ø1/4"	ø3/16"	ø1/4", ø5/16"
Controlled flow	Air flow (l/min (ANR))	7	12		38	
	Effective area (mm ²)	0.1	0.2		0.6	
Free flow	Flow rate (l/min (ANR))	100	130	230	290	460
	Effective area (mm ²)	1.5	2	3.5	4.5	7

Note) Supply pressure: 0.5 MPa, Temperature: 20°C

Elbow Type (Metal body)



Air Flow/Effective Area

Model		AS12□0M		AS22□0M-□01		AS22□0M-□02		
Port size		Cylinder side	M5 x 0.8	10-32 UNF	R 1/8	NPT 1/8	R 1/4	NPT 1/4
		Tube side			Rc 1/8		Rc 1/4	
Controlled flow	Air flow (ℓ/min (ANR))	7		12		38		
	Effective area (mm ²)	0.1		0.2		0.6		
Free flow	Flow rate (ℓ/min (ANR))	105		280		420		
	Effective area (mm ²)	1.6		4.3		6.5		

Note) Supply pressure: 0.5 MPa, Temperature: 20°C

Dual Type



Air Flow/Effective Area

Model		ASD230FM-M5	ASD330FM-□01	ASD430FM-□02	
Tubing O.D.	Metric size	ø4, ø6	ø6, ø8	ø6	ø8, ø10
	Inch size	ø1/8", ø5/32" ø3/16", ø1/4"	ø3/16", ø1/4"	—	ø1/4", ø5/16" ø3/8"
Controlled flow (Free flow)	Air flow (l/min (ANR))	7	12	38	
	Effective area (mm ²)	0.1	0.2	0.6	

Note) Supply pressure: 0.5 MPa, Temperature: 20°C

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

Individual
-X□



Low Speed Cylinder Specific Product Precautions

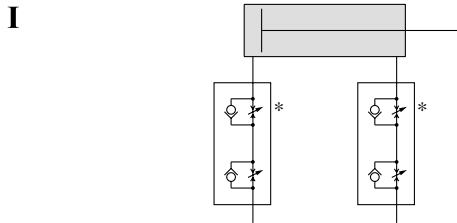
Be sure to read before handling.

Refer to front matters 42 and 43 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.

Recommended Pneumatic Circuit

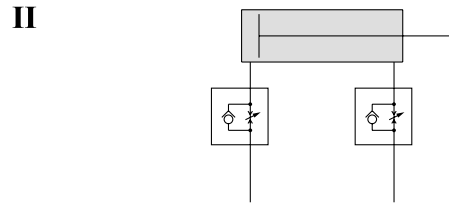
Warning

Horizontal Operation



Dual speed controller

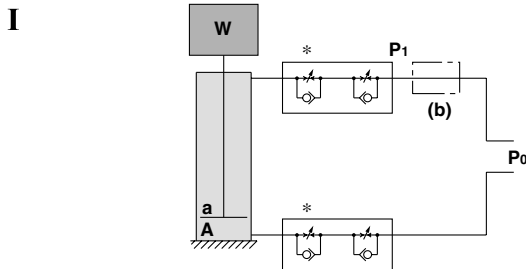
Speed is controlled by meter-out circuit. Using concurrently the meter-in circuit can alleviate the stick-slip. More stable low speed operation can be achieved than meter-in circuit alone.



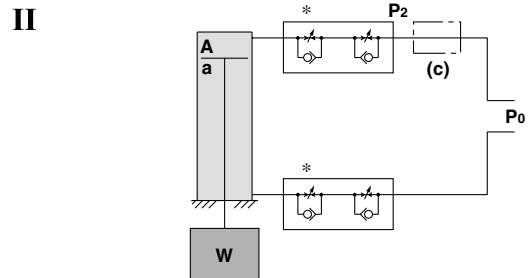
Meter-in speed controller

Meter-in speed controllers can reduce lurching while controlling the speed. The two adjustment needles facilitate adjustment.

Vertical Operation



- (1) Speed is controlled by meter-out circuit. Using concurrently the meter-in circuit can alleviate the stick-slip.*
- (2) Depending on the size of the load, installing a regulator with check valve at position (b) can deduce lurching during descent and operation delay during ascent.
As a guide,
when $W + P_0a > P_0A$,
adjust P_1 to make $W + P_1a = P_0A$.



- (1) Speed is controlled by meter-out circuit. Using concurrently the meter-in circuit can alleviate the stick-slip.*
- (2) Installing a regulator with check valve at position (c) can reduce lurching during descent and operation delay during ascent.
As a guide,
adjust P_2 to make $W + P_2A = P_0a$.

W: Load (N) P₀: Operating pressure (MPa) P₁, P₂: Reduced pressure (MPa) a: Rod side piston area (mm²) A: Head side piston area (mm²)

Warning

Since C□J2X, C□UX10 are subject to internal leakage due to their construction, the speed may not be fully controlled with the meter-out controller (*) during low speed operation.

Selection

Caution

- 1. Operate within the standard strokes.**
Operating with the stroke exceeding the standard stroke may cause malfunction.
- 2. Provide a construction that does not apply a lateral load to the cylinder.**
Applying a lateral load to the cylinder may cause malfunction.
- 3. Do not use the product at a high frequency.**
Use it at 30 cpm or less as a guideline.
- 4. Do not wipe out the grease in the sliding part of the air cylinder.**
Doing so forcefully may cause malfunction.

Pneumatic Circuit

Caution

- 1. The piping length between the speed controller and the cylinder port must be kept as short as possible.**
If the speed controller and the cylinder port are far apart, speed adjustment may be unstable.
- 2. Use a low speed controller to easily adjust for low speed operation or a dual speed controller (Series ASD) to prevent cylinders from popping out.**
(When the low speed controller is used, the maximum speed may be limited.)