

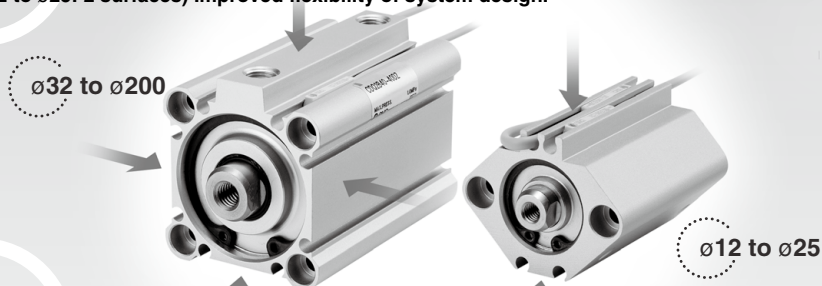
Compact Cylinder

Series CQ2

Remodeled with a new body to get more flexibility!

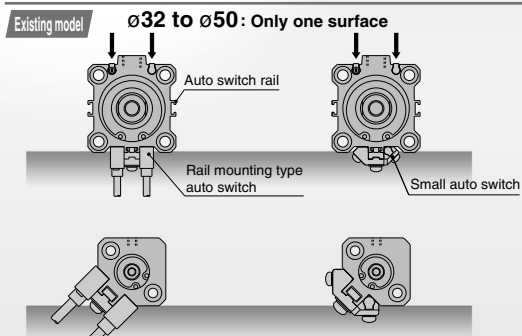
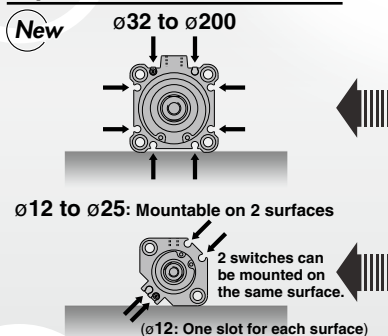
Can mount small auto switches on 4 surfaces.

Auto switches can be mounted on any of the 4 surfaces, depending on the installation conditions.
($\phi 12$ to $\phi 25$: 2 surfaces) Improved flexibility of system design.



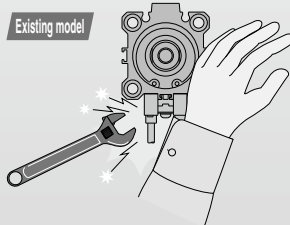
Auto switch mounting rail removed
A round slot for mounting small auto switches is provided on 4 surfaces.

Available up to $\phi 200$



No projection of auto switch

- Prevention of damage to auto switch
 - Sleeves cannot get caught in the auto switch and its mounting rail.
 - ➡ Improved ease of work and safety
 - Reduction in labor for design
- There is no need to check for interference with a machine, because the outer dimensions of the cylinder do not change when the auto switch is mounted.



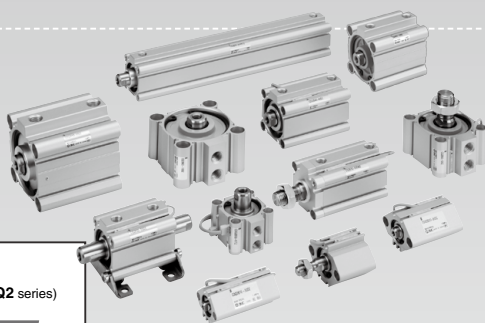
Exclusive bodies (-XB10) for $\phi 32$ to $\phi 100$ intermediate strokes (50 st or more) now kept in inventory*, enabling shorter delivery times. * Formerly produced upon receipt of order

Bore size (mm)	Stroke									
	50	55	60	65	70	75	80	85	90	95 100
$\phi 32$ to $\phi 100$	◆	●	●	●	●	◆	●	●	●	◆

◆ Standard stroke ● Currently stocked intermediate stroke

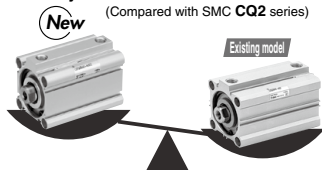
CJ
CU
CQS
CQ2-Z
RQ
CQM
CQU
MU-Z

D-☐
-X☐
Technical data



Lighter weight

Reduced by **5 to 13%**
(Compared with SMC CQ2 series)



The body strength (kinetic energy, allowable load, withstand pressure, etc.) is the same as the existing product.

Contribution to environment and ecology
Reduction of CO₂ discharge by 1300 t by less use of aluminum

Weight

(Stroke 50 mm, built-in magnet, female thread and with rubber bumper) (g)

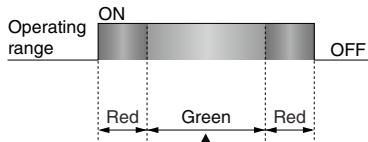
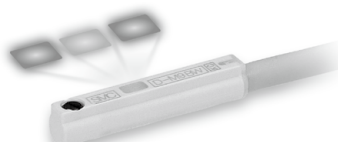
Bore size – Stroke	ø40-50 st
New CQ2	456(483)
Existing model CQ2	483(527)

(): With male thread

Small auto switch

2-color indication solid state auto switch

○ Appropriate setting of the mounting position can be performed without mistakes.

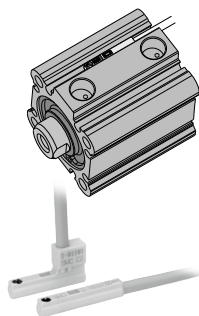


A green light lights up at the optimum operating range.

Optimum operating range

Even if 2-color indication solid state auto switches are fixed at the optimum operating range (the green light lights up), the operation may become unstable depending on the installation environment or magnetic field disturbance. (Magnetic body, external magnetic field, proximal installation of cylinders with built-in magnet and actuators, temperature change, other factors for magnetic force fluctuation during operation, etc.)

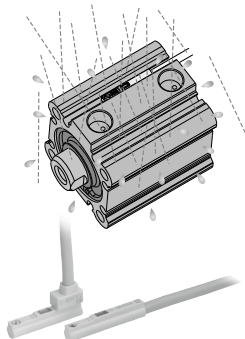
For general environments



D-M9□W(V)

Water resistant type

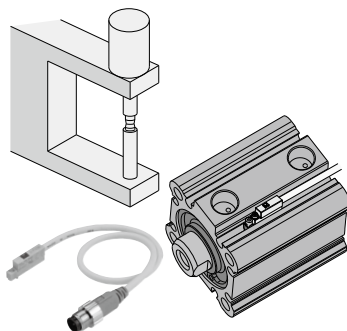
For environments exposed to water and coolant



D-M9□A(V)

Magnetic field resistant type

For use with AC spot welders, which generate strong magnetic field



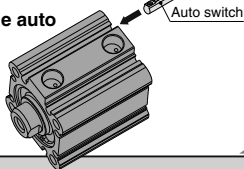
D-P3DW

Reduction in labor for work

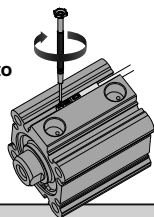
- Reduction in number of components
- No loss of components

New

- 1 Insert the auto switch.

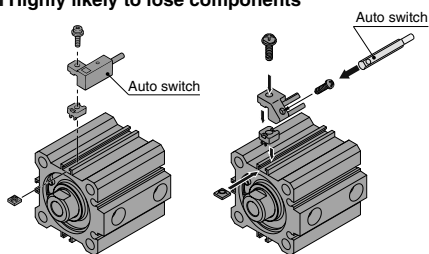


- 2 Fix the auto switch.

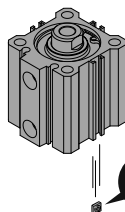


- Takes a lot of labor and time because there are many components.
- Highly likely to lose components

Existing model



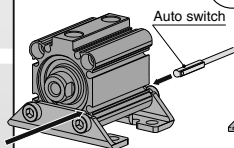
The nuts and screws may fall out when installed vertically.



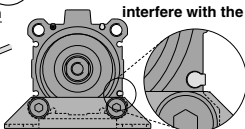
Reduction in labor for design

- The auto switch can be replaced with the foot brackets mounted.

New

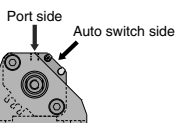
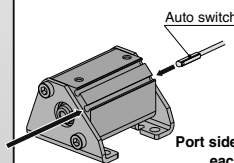
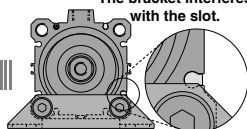


The bracket does not interfere with the slot.

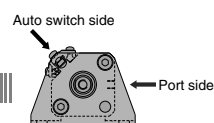


Existing model

The bracket interferes with the slot.

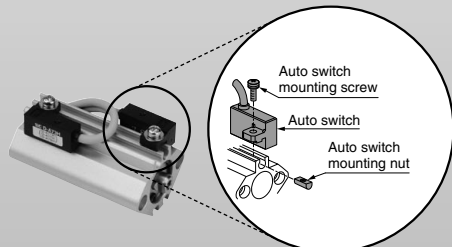
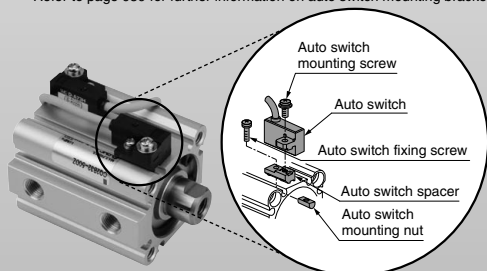


Port side and auto switch side are near each other for easy handling.



- The rail mounting type auto switch can be mounted.

Refer to page 959 for further information on auto switch mounting bracket.



CUJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

MU-Z

D-□

-X□

Technical data

Reduction
in labor
for order

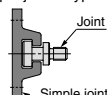
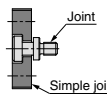
Part numbers with rod end bracket and/or mounting bolt

This reduces the steps to order the cylinder, rod end bracket, and mounting bolt separately.

Applicable cylinders: C(D)Q2, C(D)Q2□□□□S/-□T (Single acting)

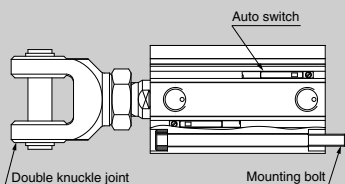
Example) **CDQ2B32-30DMZ- L W -M9BW**

Mounting bolt	
Nil	No mounting bolt
L	Mounting bolt is shipped together. 

Rod end bracket	
Nil	No bracket and bolt
D	Simple joint A type + Joint 
E	Simple joint B type + Joint 
V	Single knuckle joint 
W	Double knuckle joint 

Ordering Example of Cylinder Assembly

Cylinder model: **CDQ2B32-30DMZ-LW-M9BW**



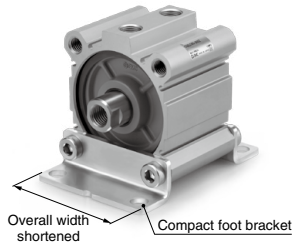
Mounting bracket B : Through-hole (Standard)
Mounting bolt L : Yes
Rod end bracket W : Double knuckle joint
Auto switch D-M9BW : 2 pcs.

* Mounting bolt, single knuckle joint and auto switch are shipped together with the product.

Reduction of installation space

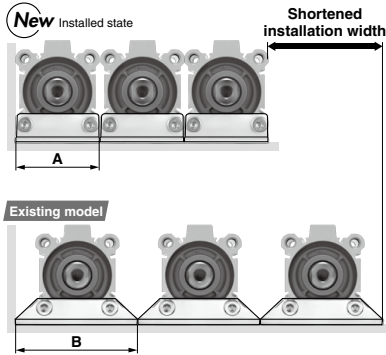
Added compact type foot brackets.

- Compact foot bracket has the same width as the cylinder
- Overall width reduced by up to **43%** (for $\phi 12$)



■ More compact installation space possible

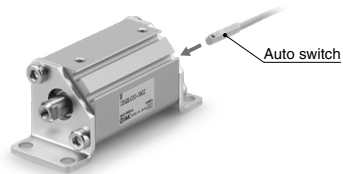
- Short pitch mounting is possible.
- Allows installation close against a wall.



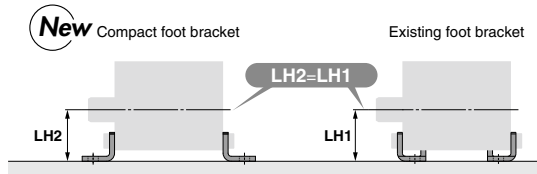
Bore size (mm)	New Compact foot type width A (mm)	Existing foot type width B (mm)	Reduced width for short pitch mounting (mm)		
			1 unit	2 units	3 units
12	25	44	19	38	57
16	29	48	19	38	57
20	36	62	26	52	78
25	40	66	26	52	78
32	45	71	26	52	78
40	52	78	26	52	78
50	64	95	31	62	93
63	77	113	36	72	108
80	98	140	42	84	126
100	117	162	45	90	135

* Short pitch mounting is possible only without auto switch.
Consult with SMC for mounting with auto switch.

- Small auto switch can be mounted with compact foot brackets attached.



- Height from the bottom of brackets to the center of a cylinder is the same as the existing model.

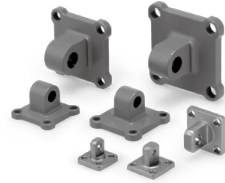


Applicable cylinders: C(D)Q2, C(D)Q2W, C(D)Q2 (Single acting) (Spring return/Spring extend), C(D)Q2K, C(D)Q2KW (Non-rotating), C(D)Q2 (Long stroke), C(D)Q2□S (Anti-lateral load), C(D)BQ2 (End lock), C(D)Q2□R/□V (Water resistant)

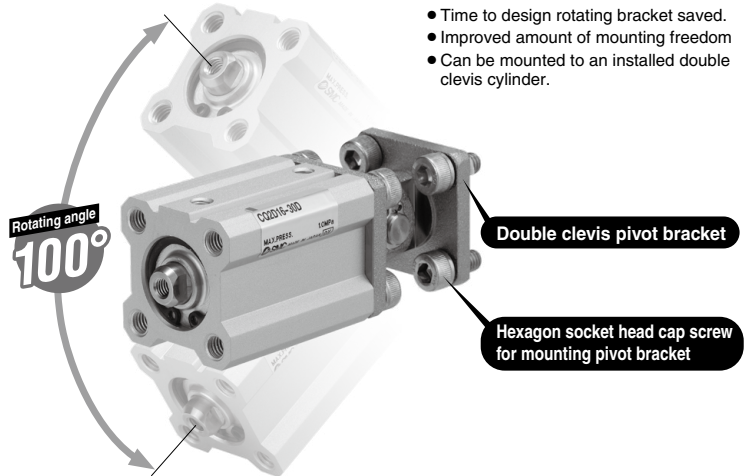
Reduction
in labor
for design

Added pivot brackets for double clevis.

■ Rotating angle: Max. **100°**
(For $\phi 12$, $\phi 16$)



- Time to design rotating bracket saved.
- Improved amount of mounting freedom
- Can be mounted to an installed double clevis cylinder.



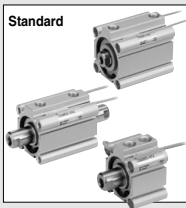
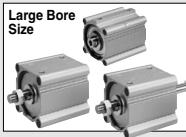
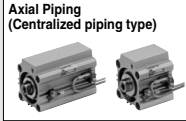
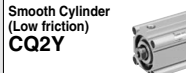
Applicable cylinders: CQ2 (Bore size $\phi 12$ to $\phi 100$, Mounting bracket, Applicable only to double clevis.)

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	Type	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	785
		Double rod CQ2W		ø12, ø16: 5 to 30 ø20, ø25: 5 to 50 ø32, ø40: 5 to 100 ø50 to ø100: 10 to 100	807
	Single acting	Spring return/ Spring extend CQ2		ø12 to ø40: 5, 10 ø50: 10, 20	823
Large Bore Size 	Double acting	Single rod CQ2		10 to 300	842
		Double rod CQ2W		10 to 300	848
Long Stroke 	Double acting	Single rod CQ2		125 to 300	854
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	863
		Double rod CQ2KW		ø12, ø16: 5 to 30 ø20, ø25: 5 to 50 ø32, ø40: 5 to 100 ø50, ø63: 10 to 100	877
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	888
	Single acting	Spring return/ Spring extend CQP2		ø12 to ø40: 5, 10 ø50: 10, 20	897
Anti-lateral Load 	Double acting	Single rod CQ2□S		ø32 to ø40: 5 to 100 ø50 to ø100: 10 to 100	913
With End Lock 	Double acting	Single rod CBQ2		ø20 to ø63: 10 to 100 ø80, ø100: 25 to 100	925
Water Resistant 	Double acting	Single rod CQ2□□		ø20, ø25: 5 to 50 ø32, ø40: 5 to 100 ø50 to ø100: 10 to 100	941
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-Z

RQ

CQM

CQU

MU-Z

D-□

-X□

Technical data

Combinations of Standard Products and Made

Series CQ2

● : Standard
○ : Made to Order
○ : Special product (For details, please contact SMC.)
— : Not available

Symbol	Specifications	Applicable bore size	ø12 to ø100		ø12 to ø50		ø125 to ø200		
Standard	Standard product	ø12 to ø100	●	●	●	●	●	●	
D	Built-in magnet		●	●	●	●	●	●	
CQ2□A	Both ends tapped		●	●	●	●	●	●	
CQ2□-□M	Rod end male thread		●	●	●	●	●	●	
CQ2□-□C	With rubber bumper		●	●	○	○	● ^{Note 2)}	● ^{Note 2)}	
CQ2□-□F	With boss on head end	ø32 to ø63	●	—	●	●	○	○	
CQ2□F	With One-touch fittings		●	●	●	●	○	○	
CQ2 ^{LF} _G	Foot/Flange		●	●	●	●	○	○	
CQ2D	Double clevis	ø12 to ø100	●	—	●	●	○	—	
CQ2□H	Air-hydro type	ø20 to ø100	●	●	—	—	○	○	
10-, 11-	Clean series	ø12 to ø200	●	○	○	○	○	○	
25-	Copper (Cu)-free ^{Note 15)}		○	○	○	○	○	○	
25A	Copper (Cu) and zinc (Zn)-free ^{Note 15)}		●	○	○	○	○	○	
20-	Copper ^{Note 14)} and fluorine-free series		●	●	●	●	●	●	
CQ2□ ^R	Water resistant	ø20 to ø100	●	● ^{Note 6)}	○	○	○	○	
CQ2□IM	Cylinder with Stable Lubrication Function (Lube-retainer) ^{Note 9)}	ø32 to ø100	●	○	○	○	—	—	
XB6	Heat resistant cylinder (–10 to 150°C)	ø12 to ø100	○	○	○	○	○	○	
XB7	Cold resistant cylinder (–40 to 70°C)	ø12 to ø40	○	○	○	○	○	○	
XB9	Low-speed cylinder (10 to 50 mm/s)	ø12 to ø100	○	○	○	○	○	○	
XB10	Intermediate stroke (Exclusive body type)	ø12 to ø200	○	○	○	○	○	○	
XB10A	Intermediate stroke (Spacer-installed type)	ø32 to ø100	○	○	○	○	○	○	
XB11	Long stroke (Air-hydro type only)	ø20 to ø100	○	—	—	—	—	—	
XB13	Low-speed cylinder (5 to 50 mm/s)	ø12 to ø100	○	○	○	○	○	○	
XB14	Cylinder with heat resistant auto switch	ø16 to ø63	○	○	○	○	○	○	
XC2(A)	Rod end length, 10 mm increased (For foot and flange bracket)	ø12 to ø100	○	○	○	○	—	—	
XC4	With heavy-duty scraper	ø20 to ø100	○	○ ^{Note 6)}	○	○	○	○	
XC6	Piston rod/Retaining ring/Rod end nut material: Stainless steel	ø12 to ø100	○	○	○	○	○	○	
XC8	Adjustable stroke cylinder/Adjustable extension type		○	—	○	○	○	—	
XC9	Adjustable stroke cylinder/Adjustable retraction type		○	—	○	○	○	—	
XC10	Dual stroke cylinder/Double rod		○	—	○	○	○	—	
XC11	Dual stroke cylinder/Single rod		○	—	○	○	○	—	
XC26	With split pins for double clevis pin/double knuckle joint pin and flat washers		○	—	○	○	○	○	
XC27	Double clevis pin/Double knuckle joint pin material: Stainless steel 304		○	○	○	○	○	○	
XC35	With coil scraper	ø32 to ø100	○	○	○	○	○	○	
XC36	With boss on rod end	ø12 to ø100	○	○	○	○	○	○	
XC85	Grease for food processing machines		○	○	○	○	○	○	
XC92	Dust resistant actuator	ø32 to ø100	○	○	○	○	○	○	
X144	Special port location	ø12 to ø25	○	○	○	○	—	—	
X202	Full length dimension is the same as Series CQ1.	ø12 to ø100	○	—	○	○	—	—	
X203	L dimension from rod cover is the same as Series CQ1.	ø12 to ø32	○	—	○	○	—	—	
X235	Special rod end for double rod cylinder	ø12 to ø200	—	○	—	—	—	○	
X271	Fluororubber seals	ø12 to ø160	○	○	○	○	○ ^{Note 12)}	○ ^{Note 12)}	
X293	Full length dimension is the same as Series CQ1W.	ø12 to ø100	—	○	—	—	—	—	
X525	Long stroke of adjustable extension stroke cylinder (-XC8)		○	—	○	○	○	—	
X526	Long stroke of adjustable retraction stroke cylinder (-XC9)		○	—	○	○	○	—	
X633	Intermediate stroke of double rod cylinder		ø12 to ø200	—	○	—	—	—	○
X636	Long stroke of dual stroke single rod cylinder	ø12 to ø100	○	—	○	—	○	—	
X1876	Cylinder tube: With concave boss on head end	ø20 to ø100	○	○	○	○	—	—	

Note 1) ø12 with auto switch: With rubber bumper (Standard)

Note 2) With rubber bumper (Standard)

Note 3) ø12 to ø16: (○), for ø20 to ø100 only (up to ø50 for 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) Only the products with an auto switch and without rubber bumper are compatible.

to Order Specifications

Series CQ2

[illegible]

Note 10) Head end lock: (-), for rod end lock only
 Note 11) With boss on rod end (Standard)
 Note 12) $\varnothing 180$ to $\varnothing 200$: (O), for $\varnothing 125$ to $\varnothing 160$ only

Note 13) The body shape is the same as the existing product.
 Note 14) Copper-free for the externally exposed part.
 Note 15) For details, refer to the SMC website.

CUJ

CU

CQS

CQ2
-Z

RQ

CQM

CQU

MU
-Z

D-☐

-X ☐

Technical data

Compact Cylinder: Standard Double Acting, Single Rod

Series CQ2

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

How to Order

Without auto switch
ø12 to ø25

CQ2 B 20 - 30 D

Without auto switch
ø32 to ø100

CQ2 B 32 - 30 D Z

With auto switch

CDQ2 B 32 - 30 D M Z - L W - M9BW

Mounting

B	Through-hole (Standard)	F	Rod flange
A	Both ends tapped	G	Head flange
L	Foot	D	Double clevis
LC	Compact foot		

- * 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 790 and 795.

Type

Nil	Pneumatic
H	Air-hydro (Note 1)

Note 1) 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	
F	Built-in One-touch fittings (Note 2)	

Note 2) Bore sizes available with 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 air-hydro type.
Note 4) For cylinders without auto switch, M threads are compatible only for ø32-5 mm stroke.

Mounting bolt

Nil	None
L	Shipped together

- * Mounting bolt is shipped together only when the mounting bracket is "B".
- * For details about the mounting bolt sizes, refer to pages 790 and 795.
- * Mounting bolt is shipped together.

Auto switch mounting groove

Z	ø12 to ø25	2 surfaces
	ø32 to ø100	4 surfaces

Number of auto switches

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

Auto switch

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

* Refer to the below table for applicable auto switches.

Made to Order

Refer to the next page for details.

Rod end bracket (Refer to pages 804 and 805.)

Nil	None
D	Simple joint A type + Joint
E	Simple joint B type + Joint
V	Single knuckle joint
W	Double knuckle joint

- * The single knuckle joint and double knuckle joint cannot be mounted for the rod end female thread.
- * A knuckle joint pin is not provided with the single knuckle joint.
- * The simple joint A and B types cannot be mounted for the rod end male thread.
- * Rod end bracket is shipped together.

Body option

Nil	Standard (Rod end female thread)
F	With boss on head end
C	With rubber bumper (Note 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
----------	---------------

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) CDQ2L32-25DZ

Cylinder stroke (mm)

Refer to page 785 and 786 for standard strokes and intermediate strokes.

Applicable Auto Switches/Refer to pages 1559 to 1673 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 auto switch	Diagnostic indication (2-color indication)	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	M9NV	M9N	●	●	●	○	—	○	Relay, PLC	IC circuit
				2-wire (NPN)	12 V	—	M9PV	M9P	●	●	●	○	—	○		
				3-wire (PNP)	5 V, 12 V	—	M9BV	M9B	●	●	●	○	—	○		
	Water resistant (2-color indication)	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	M9NVW	M9NW	●	●	●	○	—	○		
				2-wire (PNP)	12 V	—	M9PVW	M9PW	●	●	●	○	—	○		
				3-wire (PNP)	5 V, 12 V	—	M9BWW	M9BW	●	●	●	○	—	○		
Read auto switch	Magnetic field resistant (2-color indication)	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	M9NAV ^{*1}	M9NA ^{*1}	○	○	○	●	—	—	Relay, PLC	IC circuit
				3-wire (PNP)	5 V, 12 V	—	M9PAV ^{*1}	M9PA ^{*1}	○	○	○	●	—	—		
				2-wire (NPN equivalent)	12 V	—	M9BAV ^{*1}	M9BA ^{*1}	○	○	○	●	—	—		
				2-wire (Non-polar)	—	—	—	P3DW	●	●	●	—	—	—		
Read auto switch	—	Grommet	No	3-wire (NPN equivalent)	5 V	—	A96V	A96	●	●	●	—	—	—	Relay, PLC	IC circuit
				2-wire	12 V	100 V	A93V ^{*2}	A93	●	●	●	—	—	—		
				—	5 V, 12 V	100 V or less	A90V	A90	●	●	●	—	—	—		

*1 Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.

*2 If water resistance is needed, we recommend water resistant cylinders be used. (Page 941)

*2 1 m type lead wire is only applicable to D-A93.

* Lead wire length symbols: 0.5 m Nil (Example) M9NV
1 m M (Example) M9NVW
3 m L (Example) M9NVWL
5 m Z (Example) M9NVWZ

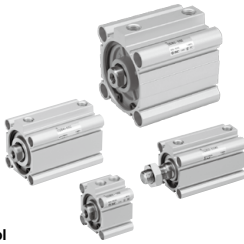
* Solid state auto switches marked with "○" are produced upon receipt of order.

* The D-P3DW type is available from ø32 to ø100 only.

* There are other applicable auto switches other than the listed above. For details, refer to page 960.

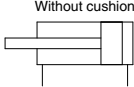
* For details about auto switches with pre-wired connector, refer to pages 1626 and 1627.

Series CQ2



Symbol

Without cushion



Made to Order: Individual Specifications
(For details, refer to pages 964 to 973.)

Symbol	Specifications
-X144	Special port location, with auto switch ø12 to ø25 only
-X202	Full length dimension is the same as Series CQ1, Except ø16, ø25.
-X203	L dimension from rod cover is the same as Series CQ1, ø20, ø32 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 cylinder
-X1876	Cylinder tube: With concave boss on head end

Made to Order

(For details, refer to pages 1675 to 1818.)

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 (Exclusive body type)
-XB10A	Intermediate stroke (Spacer-installed type)
-XB11	Long stroke (Air-hydro type only)
-XB13	Low-speed cylinder (5 to 50 mm/s)
-XB14	Cylinder with heat resistant auto switch ø16 to ø63 only
-XC2(A)	Rod end length, 10 mm increased (For foot and flange bracket)
-XC4	With heavy-duty scraper, ø20 to ø100 only
-XC6	Piston rod/Retaining ring/Rod end nut material: Stainless steel
-XC8	Adjustable stroke cylinder/Adjustable extension type
-XC9	Adjustable stroke cylinder/Adjustable retraction type
-XC10	Dual stroke cylinder/Double rod
-XC11	Dual stroke cylinder/Single rod
-XC26	With split pins for double clevis pin/ double knuckle joint pin and flat washers
-XC27	Double clevis pin/Double knuckle joint pin material: Stainless steel 304
-XC35	With coil scraper, ø32 to ø100 only
-XC36	With boss on rod end
-XC85	Grease for food processing equipment
-XC92	Dust resistant actuator

Moisture Control Tube Series IDK



When operating an actuator with a small diameter and a short stroke at a high frequency, the dew condensation (water droplet) may occur inside the piping depending on the conditions.

Simply connecting the moisture control tube to the actuator will prevent dew condensation from occurring. For details, refer to [Series IDK in the WEB catalog](#).

Specifications

Pneumatic type

Bore size (mm)		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	0.11	0.18	0.29	0.52	0.91	1.54	2.71	4.54
Stroke length tolerance		0 +1.0 mm (Note)									

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

Air-hydro type

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

Note) Refer to page 7 for Actuator Precautions (5).

Standard Strokes

Pneumatic type

Bore size	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

- For long strokes exceeding the standard stroke range, refer to page 854.
- For intermediate strokes, refer to page 787.

Air-hydro type

Bore size	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

Mounting Brackets/Part No.

Bore size (mm)	Model	Foot Note 1)	Compact foot Note 1)	Flange	Double clevis
12	Without switch	CQ2□□-□D	CQ-L012	CQ-F012	CQ-D012
	With switch	CQ2□□-□DZ	CQ-LZ12		
16	Without switch	CQ2□□-□D	CQ-L016	CQ-F016	CQ-D016
	With switch	CQ2□□-□DZ	CQ-LZ16		
20	Without switch	CQ2□□-□D	CQ-L020	CQ-F020	CQ-D020
	With switch	CQ2□□-□DZ	CQ-LZ20		
25	Without switch	CQ2□□-□D	CQ-L025	CQ-F025	CQ-D025
	With switch	CQ2□□-□DZ	CQ-LZ25		
32	C(D)Q2□□-□DZ	CQ-L032	CQ-LC032	CQ-F032	CQ-D032
40	C(D)Q2□□-□DZ	CQ-L040	CQ-LC040	CQ-F040	CQ-D040
50	C(D)Q2□□-□DZ	CQ-L050	CQ-LC050	CQ-F050	CQ-D050
63	C(D)Q2□□-□DZ	CQ-L063	CQ-LC063	CQ-F063	CQ-D063
80	C(D)Q2□□-□DZ	CQ-L080	CQ-LC080	CQ-F080	CQ-D080
100	C(D)Q2□□-□DZ	CQ-L100	CQ-LC100	CQ-F100	CQ-D100

Note 1) When ordering foot and compact foot brackets, the required quantity will be different depending on the bore size. ø12 to ø25:

- Without switch: Order 2 pieces per cylinder.
- With switch: Order 1 piece per cylinder. (Part number for a set of 2 foot brackets)

ø32 to ø100:

- Order 2 pieces per cylinder.

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

Foot, Compact foot, Flange: Body mounting bolts

Double clevis: Clevis pin, Type C retaining rings for axis, Body mounting bolts

Refer to pages 954 to 960 for the specifications of cylinders with autoswitches.

- Auto switch proper mounting position (detection at stroke end) and its mounting height
- Minimum stroke for auto switch mounting
- Operating range
- Auto switch mounting brackets/Part no.

Manufacture of Intermediate Strokes (Except air-hydro type)

* Pay attention to the mounting dimensions since the intermediate strokes (ø32 to ø100) can be manufactured in three types.

Ordering example: 57 mm stroke

CQ2B32-57 DZ-□

Stroke

Stroke suffix

Nil	A 18 mm spacer is installed on 75 mm stroke tube.	⇒ 1
XB10A	A 3 mm spacer is installed on 60 mm stroke tube.	⇒ 2
XB10	Makes 57 mm stroke tube.	⇒ 3

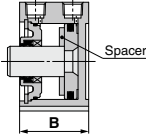
1. Spacer-installed type 1: Standard model number

- A spacer is installed on the standard strokes (page 786).
- Available in 1 mm intervals
- A spacer is installed on tubes with a stroke longer than the specified stroke (◆).

◆: Standard stroke

Bore size (mm)	Stroke range	Type	Stroke																			
			5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
12, 16	1 to 29	Spacer-installed type 1	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
20, 25	1 to 49		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
32, 40	1 to 99		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
50 to 100	1 to 99		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆

Ordering example: ø32-57 mm stroke, with through-hole and without auto switch

Type	Spacer-installed type 1
Part no.	Standard model number
Order no.	CQ2B32-57DZ
Description	• Uses a standard stroke (75 mm) tube. • Makes 57 mm stroke with 18 mm spacer inside. • The B dimension is 108 mm. 

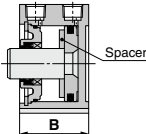
2. Spacer-installed type 2: Suffix "-XB10A" (ø32 to ø100: Intermediate strokes of 51 mm or more)

- A spacer is installed on the "3. Exclusive body type (XB10)" inventory tubes for 55, 60, 65, 70, 80, 85, 90 and 95 strokes.
- Available in 1 mm intervals
- A spacer is installed on tubes with a stroke longer than the specified stroke (◆).

◆: Standard stroke ●: Stroke in stock

Bore size (mm)	Stroke range	Type	Stroke															
			55	60	65	70	*	75	80	85	90	95	*	100				
32, 40	51 to 94	Spacer-installed type 2	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
50 to 100	51 to 94		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆

Ordering example: ø32-57 mm stroke, with through-hole and without auto switch

Type	Spacer-installed type 2
Part no.	Suffix "-XB10A" to the end of standard model number.
Order no.	CQ2B32-57DZ-XB10A
Description	• Uses an exclusive tube (60 mm stroke) in "3". • Makes 57 mm stroke with 3 mm spacer inside. • The B dimension is 93 mm. 

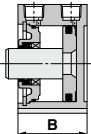
3. Exclusive body type: Suffix "-XB10"

- Exclusive tubes can be manufactured for specified strokes upon request.
- Available in 1 mm intervals
- Exclusive tubes for 55, 60, 65, 70, 80, 85, 90 and 95 strokes are kept in inventory, enabling shorter delivery times.

Bore size (mm)	Stroke range	Type
12, 16	6 to 29	Exclusive tube
20, 25	6 to 49	
32, 40	6 to 99	
50 to 100	11 to 99	

Note) In the case of exclusive body type with ø32 to ø100 (-XB10) with the stroke length exceeding 50 mm, reference values of the longitudinal dimension (A/B dimension) will be the same as those with auto switch. Refer to page 1705 for details.

Ordering example: ø32-57 mm stroke, with through-hole and without auto switch

Type	Exclusive body type
Part no.	Suffix "-XB10" to the end of standard model number.
Order no.	CQ2B32-57DZ-XB10
Description	• Makes 57 mm stroke tube. • The B dimension is 90 mm. 

CUJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

MU-Z

D-□

-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 Note 1) Rc1/8	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
		TF	—	—	—	—	G1/8	G1/8	G1/4	G1/4	G3/8	G3/8
		Built-in One-touch fittings ^{Note 1)}		—	—	—	—	ø6 ^{Note 2)}	ø6	ø8	ø8	—
	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 Note 1) Rc1/8	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 tread type.
Note 2) The dimension of the ø32-5 mm stroke with built-in One-touch fittings is the same as that of the 10 mm stroke cylinder tube.
Note 3) One-touch fittings cannot be replaced.

Retaining Ring Installation/Removal

 Caution

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

Mounting

 Caution

The CQ2 series 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 rod 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, an anti-lateral load type cylinder that is resistant to approx. 2 times more than the conventional compact CQ2 series is also available (page 913).

Mounting

2. Connection with a work piece

When a work piece is mounted on the piston rod end, connect them aligning the center of piston rod and a work piece. 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. As 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.

Load Mass and Piston Speed

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

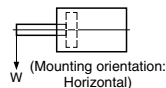
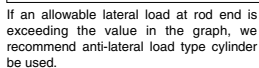
V: Piston speed

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

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	18	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

141 g

Without Auto Switch



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

Weight

Weight

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	125	145	165	184	204	224	244	263	283	303	448	547
40	187	208	230	251	273	294	315	337	358	380	552	664
50	—	339	372	405	438	471	504	537	570	603	872	1043
63	—	480	518	556	594	632	670	708	746	784	1112	1308
80	—	916	976	1036	1097	1157	1217	1277	1338	1398	1917	2215
100	—	1608	1688	1768	1849	1929	2010	2090	2170	2251	2982	3391

Mounting Bolt for CQ2B/Without Auto Switch

Mounting method: Mounting bolt for through-hole mounting of the CQ2B is available as an option. Refer to the following for ordering procedures. Order the actual number of bolts that will be used.

Example) CQ-M3 x 25L 4 pcs.

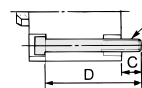
Material: Chromium molybdenum steel
Surface treatment: Zinc chromated

Additional Weight

Bore size (mm)	12	16	20	25	32	40	50	63	80	100
Both ends tapped	2	2	6	6	6	6	6	19	45	45
Rod end Male thread	1.5	3	6	12	26	27	53	53	120	175
male thread Nut	1	2	4	8	17	17	32	32	49	116
With boss on head end	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 (Including mounting bolts)	55	67	164	186	142	154	243	317	683	1052
Compact foot (Including mounting bolts)	41	51	121	140	99	114	177	241	501	770
Rod flange (Including mounting bolts)	57	69	139	161	180	214	373	559	1056	1365
Head flange (Including mounting bolts)	54	65	133	152	165	198	348	534	1017	1309
Double clevis (Including pin, retaining rings, bolts)	32	39	88	123	151	196	393	554	1109	1887

Calculation: (Example) CQ2D32-20DCMZ

- Basic weight: CQ2B32-20DZ 184 g
- Additional weight: Both ends tapped 6 g
- Rod end male thread 43 g
- With rubber bumper 3 g
- Double clevis 151 g

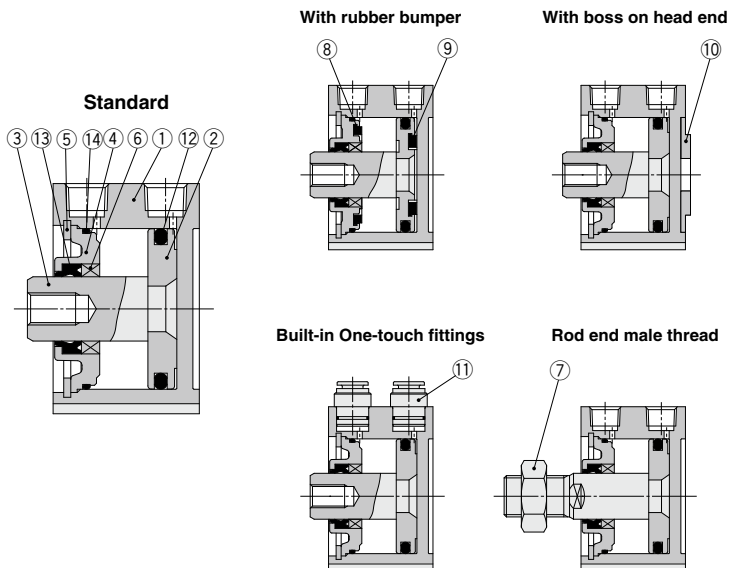


Cylinder model	C	D	Mounting bolt part no.
CQ2B12-5D	6.5	25	CQ-M3 x 25L
-10D		30	x 30L
-15D		35	x 35L
-20D		40	x 40L
-25D		45	x 45L
CQ2B16-5D	5	25	CQ-M3 x 25L
-10D		30	x 30L
-15D		35	x 35L
-20D		40	x 40L
-25D		45	x 45L
CQ2B20-5D	7.5	25	CQ-M5 x 25L
-10D		30	x 30L
-15D		35	x 35L
-20D		40	x 40L
-25D		45	x 45L
CQ2B25-5D	9.5	30	CQ-M5 x 30L
-10D		35	x 35L
-15D		40	x 40L
-20D		45	x 45L
-25D		50	x 50L
CQ2B32-5DZ	9	30	CQ-M5 x 30L
-10DZ		35	x 35L
-15DZ		40	x 40L
-20DZ		45	x 45L
-25DZ		50	x 50L
-30DZ	9	55	x 55L
-35DZ		60	x 60L
-40DZ		65	x 65L
-45DZ		70	x 70L
-50DZ		75	x 75L
-55DZ-XB10	9	90	x 90L
-60DZ-XB10		95	x 95L
-65DZ-XB10		100	x 100L
-70DZ-XB10		105	x 105L
-75DZ		110	x 110L
-80DZ-XB10	14.5	115	x 115L
-85DZ-XB10		120	x 120L
-90DZ-XB10		125	x 125L
-95DZ-XB10		130	x 130L
-100DZ		135	x 135L

Cylinder model	C	D	Mounting bolt part no.
CQ2B40-5DZ	7.5	35	CQ-M5 x 35L
-10DZ		40	x 40L
-15DZ		45	x 45L
-20DZ		50	x 50L
-25DZ		55	x 55L
CQ2B50-10DZ	12.5	45	CQ-M6 x 45L
-15DZ		50	x 50L
-20DZ		55	x 55L
-25DZ		60	x 60L
-30DZ		65	x 65L
CQ2B63-10DZ	14.5	50	CQ-M8 x 50L
-15DZ		55	x 55L
-20DZ		60	x 60L
-25DZ		65	x 65L
-30DZ		70	x 70L
-35DZ	14.5	75	x 75L
-40DZ		80	x 80L
-45DZ		85	x 85L
-50DZ		90	x 90L
-55DZ-XB10		105	x 105L
-60DZ-XB10	14.5	110	x 110L
-65DZ-XB10		115	x 115L
-70DZ-XB10		120	x 120L
-75DZ		125	x 125L
-80DZ-XB10		130	x 130L
-85DZ-XB10	14.5	135	x 135L
-90DZ-XB10		140	x 140L
-95DZ-XB10		145	x 145L
-100DZ		150	x 150L

Cylinder model	C	D	Mounting bolt part no.
CQ2B80-10DZ	15	55	CQ-M10 x 55L
-15DZ		60	x 60L
-20DZ		65	x 65L
-25DZ		70	x 70L
-30DZ		75	x 75L
CQ2B100-10DZ	15.5	80	x 80L
-15DZ		85	x 85L
-20DZ		90	x 90L
-25DZ		95	x 95L
-30DZ		100	x 100L
CQ2B120-10DZ	15.5	105	x 105L
-15DZ		110	x 110L
-20DZ		115	x 115L
-25DZ		120	x 120L
-30DZ		125	x 125L
-35DZ	15.5	130	x 130L
-40DZ		135	x 135L
-45DZ		140	x 140L
-50DZ		145	x 145L
-55DZ-XB10		150	x 150L
-60DZ-XB10	15.5	155	x 155L
-65DZ-XB10		160	x 160L
-70DZ-XB10		165	x 165L
-75DZ		170	x 170L
-80DZ-XB10		175	x 175L
-85DZ-XB10	15.5	180	x 180L
-90DZ-XB10		185	x 185L
-95DZ-XB10		190	x 190L
-100DZ		195	x 195L

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 more only
7	Rod end nut	Carbon steel	Zinc chromated
8	Bumper A	Urethane	

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

Replacement Parts/Seal Kit (Pneumatic type)

Bore size (mm)	Kit no.	Contents
12	CQ2B12-PS	Kits include items 12, 13, 14 from the table.
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 seal 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 type)

Bore size (mm)	Kit no.	Contents
20	CQ2BH20-PS	Kits include items 12, 13, 14 from the table.
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 seal kit does not include a grease pack, order it separately.
Grease pack part no.: GR-S-010 (10 g)

CJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

MU-Z

D-□

-X□

Technical data

Series CQ2

Clean Series

10 – **C** ☐ **Q2B** **Bore size** – **Stroke** **D(M)Z⁻¹**

*1 "Z" is not available for ø12 to ø25 without auto switches.

Clean series

10	Relief type
11	Vacuum type

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

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

Bore size (mm)	12	16	20	25	32	40	50	63	80	100
Action	Double acting, Single rod									
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									

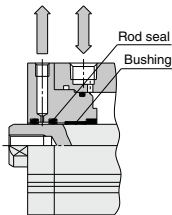
Note) ø12 with auto switch: With rubber bumper (Standard)

For details, refer to the separate catalog (CAT.E02-23), "Pneumatics Equipment for Clean Room."

Construction

10-CQ2 series
(Double seal)

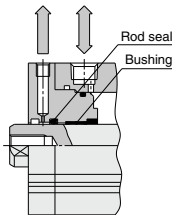
Relief port



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.

11-CQ2 series
(Single seal, Vacuum suction)

Vacuum port
(Vacuum suction)



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

Water Resistant

Refer to pages 941 to 953 for details.

CDQ2 **Mounting** **Bore size** **R** - **Stroke** **D** **Option** **Z**^{*2} - **M9BAL** **-XC6** **Suffix**

• With auto switch
(Built-in magnet)

• Water resistant cylinder
R NBR seals (Nitrile rubber)
V FKM seals (Fluororubber)

Water resistant
2-color indication
solid state auto switch

Made to Order

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.



Nil	Piston rod/Retaining ring/Rod end nut material: Stainless steel
A	Piston rod/Rod end nut/Cover holding bolt material: Stainless steel

(Note) -XC6A: ø20 to ø32 only

*2 "Z" is not available for ø20 and ø25 without auto switches.

Specifications

Bore size (mm)	20	25	32	40	50	63	80	100
Action	Double acting, Single rod							
Cushion	None							
Made to Order	Piston rod/Retaining ring/Rod end nut material: Stainless steel (-XC6)							

* The specifications other than above are the same as those of the standard.
Some dimensions may vary from those of the standard. Refer to page 941 for details.

Compact Cylinder with Stable Lubrication Function (Lub-retainer)

CDQ2 **Mounting style** **Bore size** **M** - **Stroke** **D** **Body option** **Z** **Mounting bolt** **Rod end thread** - **Auto switch**

• With auto switch
(Built-in magnet)

• With stable lubrication function (Lub-retainer)

* Available only
for with auto
switch.

Specifications

Bore size (mm)	32, 40, 50, 63, 80, 100
Action	Double acting, Single rod
Minimum operating pressure	0.1 MPa
Piston speed	50 to 500 mm/s
Cushion	None

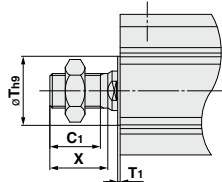
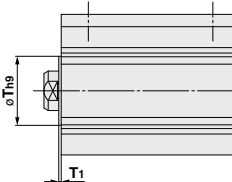
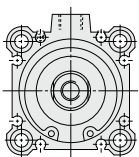
* Specifications other than those shown above are the same as the standard model.



Dimensions (Dimensions other than those shown below are the same as the standard model.)

ø32 to ø100

DMZ: Rod end male thread



Bore size	T	T ₁	C ₁	X
32	22	1	20.5	23.5
40	28	1	20.5	23.5
50	35	2	24	26.5
63	35	2	24	26.5
80	—	—	32.5	35.5
100	—	—	32.5	35.5

* The mounting dimensions of the mounting bracket are the same as the standard model.

For details, refer to the WEB catalog.

Standard: Double Acting, Single Rod

Series CDQ2

With Auto Switch



Refer to the below pages for further information on auto switches.

Auto switch proper mounting position and its mounting height	P.954 to 960
Minimum stroke for auto switch mounting	
Operating range	
Auto switch mounting brackets/Part no.	

Weight

Weight

Bore size (mm)	Cylinder stroke (mm)												(g)
	5	10	15	20	25	30	35	40	45	50	75	100	
12	43	49	55	61	67	73	—	—	—	—	—	—	—
16	64	71	79	87	95	102	—	—	—	—	—	—	—
20	94	106	118	131	143	155	167	179	191	203	—	—	—
25	134	149	164	180	195	210	226	241	256	272	—	—	—
32	182	202	222	241	261	281	300	320	340	359	459	558	—
40	269	290	312	333	355	376	398	420	441	463	575	687	—
50	—	455	488	521	554	587	620	653	686	719	891	1062	—
63	—	627	665	703	741	779	817	855	893	931	1129	1326	—
80	—	1162	1222	1282	1342	1403	1463	1524	1584	1644	1941	2237	—
100	—	1966	2047	2127	2208	2288	2368	2449	2529	2610	3018	3426	—

Additional Weight

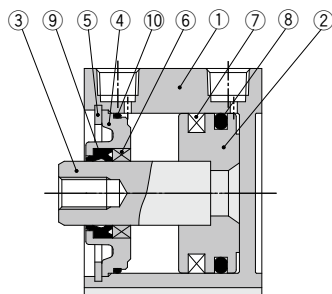
Bore size (mm)	12	16	20	25	32	40	50	63	80	100	(g)
Both ends tapped	1	1	3	3	6	6	6	19	45	45	—
Rod end Male thread	1.5	3	6	12	26	27	53	53	120	175	—
male thread Nut	1	2	4	8	17	17	32	32	49	116	—
With boss on head end	0.7	1.3	2	3	5	7	13	25	45	96	—
With rubber bumper	0	0	-2	-3	-7	-9	-18	-31	-56	—	—
Built-in One-touch fittings	—	—	—	—	12	12	21	21	—	—	—
Foot (Including mounting bolts)	49	62	147	169	142	154	243	317	683	1052	—
Compact foot (Including mounting bolts)	32	40	97	116	99	114	117	241	501	770	—
Rod flange (Including mounting bolts)	54	67	131	153	180	214	373	559	1056	1365	—
Head flange (Including mounting bolts)	52	63	124	144	165	198	348	534	1017	1309	—
Double clevis (Including pin, retaining rings, bolts)	29	35	78	114	151	196	393	554	1109	1887	—

Calculation: (Example) CDQ2B32-20DCMZ

- Basic weight: CDQ2B32-20DCMZ 241 g
- Additional weight: Both ends tapped 6 g
- Rod end male thread 43 g
- With rubber bumper -3 g
- Double clevis 151 g
- 438 g

Add each weight of auto switches when auto switches are mounted.

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 more only
7	Magnet	—	—
8	Piston seal	NBR	—
9	Rod seal	NBR	—
10	Gasket	NBR	—

Replacement Parts/Seal Kit (Pneumatic type)

Bore size (mm)	Kit no.	Contents
12	CQ2B12-PS	Kits include items ⑧, ⑨, ⑩ from the table.
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 ⑧, ⑨, ⑩. Order the seal kit, based on each bore size.

* Since the seal 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 type)

Bore size (mm)	Kit no.	Contents
20	CQ2BH20-PS	Kits include items ⑧, ⑨, ⑩ from the table.
25	CQ2BH25-PS	
32	CQ2BH32-PS	
40	CQ2BH40-PS	
50	CQ2BH50-PS	
63	CQ2BH63-PS	
80	CQ2BH80-PS	
100	CQ2BH100-PS	

* Seal kit includes ⑧, ⑨, ⑩. Order the seal kit, based on each bore size.

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

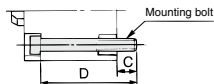
Grease pack part no.: GR-S-010 (10 g)

Mounting Bolt for CDQ2B/With Auto Switch

Mounting method: Mounting bolt for through-hole mounting of the CDQ2B is available as an option. Refer to the following for ordering procedures. Order the actual number of bolts that will be used.

Example) CQ-M3 x 35L 2 pcs.

Material: Chromium molybdenum steel
Surface treatment: Zinc chromated



Cylinder model	C	D	Mounting bolt part no.
CDQ2B12-5DZ	5.5	35	CQ-M3 x 35L
-10DZ		40	x 40L
-15DZ		45	x 45L
-20DZ		50	x 50L
-25DZ		55	x 55L
-30DZ		65	x 60L
CDQ2B16-5DZ	8	40	CQ-M3 x 40L
-10DZ		45	x 45L
-15DZ		50	x 50L
-20DZ		55	x 55L
-25DZ		60	x 60L
-30DZ		65	x 65L
CDQ2B20-5DZ	10.5	40	CQ-M5 x 40L
-10DZ		45	x 45L
-15DZ		50	x 50L
-20DZ		55	x 55L
-25DZ		60	x 60L
-30DZ		65	x 65L
-35DZ	10.5	70	x 70L
-40DZ		75	x 75L
-45DZ		80	x 80L
-50DZ		85	x 85L
CDQ2B25-5DZ	9.5	40	CQ-M5 x 40L
-10DZ		45	x 45L
-15DZ		50	x 50L
-20DZ		55	x 55L
-25DZ		60	x 60L
-30DZ		65	x 65L
-35DZ	9.5	70	x 70L
-40DZ		75	x 75L
-45DZ		80	x 80L
-50DZ		85	x 85L
CDQ2B32-5DZ	9	40	CQ-M5 x 40L
-10DZ		45	x 45L
-15DZ		50	x 50L
-20DZ		55	x 55L
-25DZ		60	x 60L
-30DZ	9	65	x 65L
-35DZ		70	x 70L
-40DZ		75	x 75L
-45DZ		80	x 80L
-50DZ		85	x 85L
-55DZ-XB10	9	90	x 90L
-60DZ-XB10		95	x 95L
-65DZ-XB10		100	x 100L
-70DZ-XB10		105	x 105L
-75DZ		110	x 110L
-80DZ-XB10	9	115	x 115L
-85DZ-XB10		120	x 120L
-90DZ-XB10		125	x 125L
-95DZ-XB10		130	x 130L
-100DZ		135	x 135L

Cylinder model	C	D	Mounting bolt part no.
CDQ2B40-5DZ	7.5	45	CQ-M5 x 45L
-10DZ		50	x 50L
-15DZ		55	x 55L
-20DZ		60	x 60L
-25DZ		65	x 65L
-30DZ	7.5	70	x 70L
-35DZ		75	x 75L
-40DZ		80	x 80L
-45DZ		85	x 85L
-50DZ		90	x 90L
-55DZ-XB10	7.5	95	x 95L
-60DZ-XB10		100	x 100L
-65DZ-XB10		105	x 105L
-70DZ-XB10		110	x 110L
-75DZ		115	x 115L
-80DZ-XB10	12.5	120	x 120L
-85DZ-XB10		125	x 125L
-90DZ-XB10		130	x 130L
-95DZ-XB10		135	x 135L
-100DZ		140	x 140L
CDQ2B50-10DZ	12.5	55	CQ-M6 x 55L
-15DZ		60	x 60L
-20DZ		65	x 65L
-25DZ		70	x 70L
-30DZ		75	x 75L
-35DZ	12.5	80	x 80L
-40DZ		85	x 85L
-45DZ		90	x 90L
-50DZ		95	x 95L
-55DZ-XB10		100	x 100L
-60DZ-XB10	12.5	105	x 105L
-65DZ-XB10		110	x 110L
-70DZ-XB10		115	x 115L
-75DZ		120	x 120L
-80DZ-XB10		125	x 125L
-85DZ-XB10	14.5	130	x 130L
-90DZ-XB10		135	x 135L
-95DZ-XB10		140	x 140L
-100DZ		145	x 145L
CDQ2B63-10DZ	14.5	60	CQ-M8 x 60L
-15DZ		65	x 65L
-20DZ		70	x 70L
-25DZ		75	x 75L
-30DZ		80	x 80L
-35DZ	14.5	85	x 85L
-40DZ		90	x 90L
-45DZ		95	x 95L
-50DZ		100	x 100L
-55DZ-XB10		105	x 105L
-60DZ-XB10	14.5	110	x 110L
-65DZ-XB10		115	x 115L
-70DZ-XB10		120	x 120L
-75DZ		125	x 125L
-80DZ-XB10		130	x 130L
-85DZ-XB10	14.5	135	x 135L
-90DZ-XB10		140	x 140L
-95DZ-XB10		145	x 145L
-100DZ		150	x 150L

Cylinder model	C	D	Mounting bolt part no.
CDQ2B80-10DZ	15	65	CQ-M10 x 65L
-15DZ		70	x 70L
-20DZ		75	x 75L
-25DZ		80	x 80L
-30DZ		85	x 85L
-35DZ	15	90	x 90L
-40DZ		95	x 95L
-45DZ		100	x 100L
-50DZ		105	x 105L
-55DZ-XB10		110	x 110L
-60DZ-XB10	15.5	115	x 115L
-65DZ-XB10		120	x 120L
-70DZ-XB10		125	x 125L
-75DZ		130	x 130L
-80DZ-XB10		135	x 135L
-85DZ-XB10	15.5	140	x 140L
-90DZ-XB10		145	x 145L
-95DZ-XB10		150	x 150L
-100DZ		155	x 155L
CDQ2B100-10DZ	15.5	75	CQ-M10 x 75L
-15DZ		80	x 80L
-20DZ		85	x 85L
-25DZ		90	x 90L
-30DZ		95	x 95L
-35DZ	15.5	100	x 100L
-40DZ		105	x 105L
-45DZ		110	x 110L
-50DZ		115	x 115L
-55DZ-XB10		120	x 120L
-60DZ-XB10	15.5	125	x 125L
-65DZ-XB10		130	x 130L
-70DZ-XB10		135	x 135L
-75DZ		140	x 140L
-80DZ-XB10		145	x 145L
-85DZ-XB10	15.5	150	x 150L
-90DZ-XB10		155	x 155L
-95DZ-XB10		160	x 160L
-100DZ		165	x 165L

CUJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

MU-Z

D-□

-X□

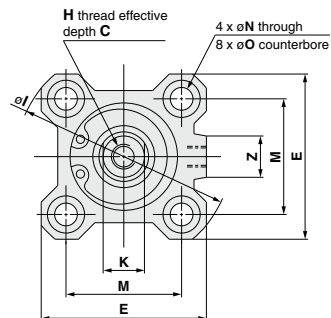
Technical data

Series CQ2

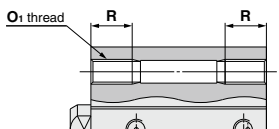
Dimensions

Ø12 to Ø25/Without Auto Switch

Standard (Through-hole): CQ2B

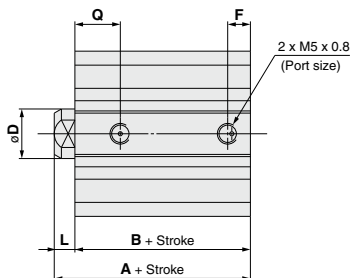


Both ends tapped: CQ2A

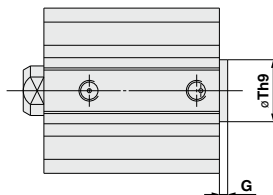


Both Ends Tapped (mm)

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 on head end

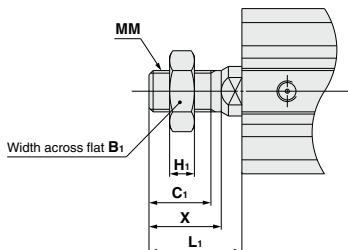


With Boss on Head End (mm)

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

Note 1) With boss on rod end: Option (Suffix "XC36" to the end of model 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

Standard

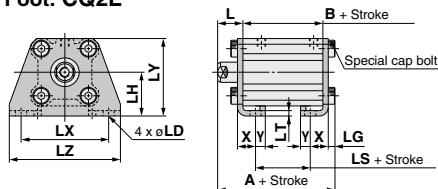
Bore size (mm)	Stroke range (mm)	A	B	C	D	E	F	H	I	K	L	M	N	O	Q	Z
12	5 to 30	20.5	17	6	6	25	5	M3 x 0.5	32	5	3.5	15.5	3.5	6.5 depth 3.5	7.5	—
16	5 to 30	22	18.5	8	8	29	5.5	M4 x 0.7	38	6	3.5	20	3.5	6.5 depth 3.5	8	10
20	5 to 50	24	19.5	7	10	36	5.5	M5 x 0.8	47	8	4.5	25.5	5.5	9 depth 7	8	10
25	5 to 50	27.5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

Note 2) The external dimensions with rubber bumper are same as those of the standard, as shown above.

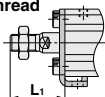
* For details about the rod end nut and accessory brackets, refer to page 804.

Note 3) For calculation on the longitudinal dimension of intermediate strokes, refer to page 787.

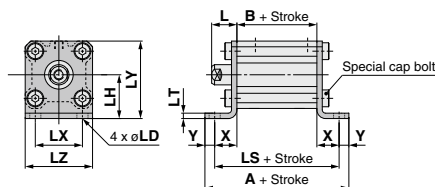
Foot: CQ2L



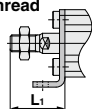
Rod end male thread



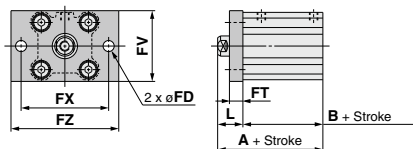
Compact foot: CQ2LC



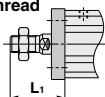
Rod end male thread



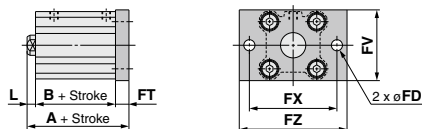
Rod flange: CQ2F



Rod end male thread



Head flange: CQ2G



Rod end male thread



Foot

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

Compact Foot

Bore size (mm)	Stroke range (mm)	A	B	L	L ₁	LD	LH	LS	LT	LX	LY	LZ	X	Y
12	5 to 30	44.6	17	13.5	24	4.5	17	35.6	2	15.5	29.5	25	9.3	4.5
16	5 to 30	47.1	18.5	13.5	25.5	4.5	19	37.1	2	20	33.5	29	9.3	5
20	5 to 50	57.5	19.5	14.5	28.5	6.6	24	45.9	3.2	25.5	42	36	13.2	5.8
25	5 to 50	60.5	22.5	15	32.5	6.6	26	48.9	3.2	28	46	40	13.2	5.8

Compact foot bracket material: Carbon steel
Surface treatment: Zinc chromated

Rod Flange

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 Flange

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

* For details about the rod end nut and accessory brackets, refer to page 804.

CJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

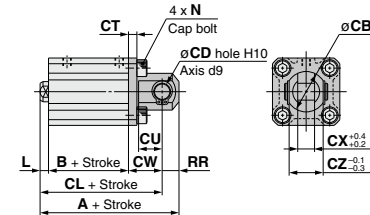
MU-Z

D-□

-X□

Technical data

Double clevis: CQ2D



Rod end male thread



Double Clevis

(mm)

Bore size (mm)	Stroke range (mm)	A	B	CB	CD	CL	CT	CU	CW	CX	CZ	L	L ₁	N	RR
12	5 to 30	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 804.
- * Double clevis pin and retaining rings are included.

CJ

CU

CQS

CQ2
-Z

RQ

CQM

CQU

MU
-Z

D-□

-X□

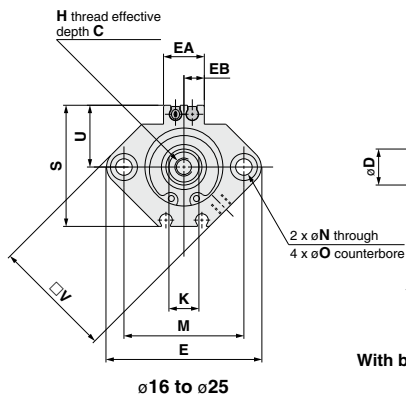
Technical
data

Series CQ2

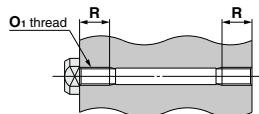
Dimensions

Ø12 to Ø25/With Auto Switch

Standard (Through-hole): CDQ2B



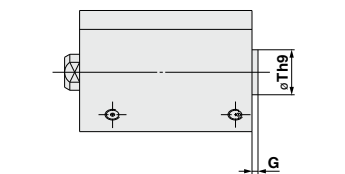
Both ends tapped: CDQ2A



Both Ends Tapped (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

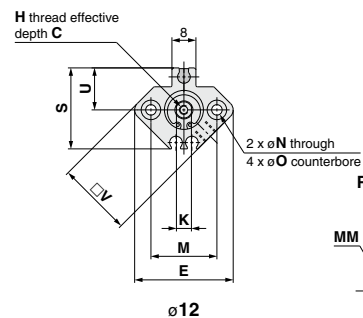
With boss on head end



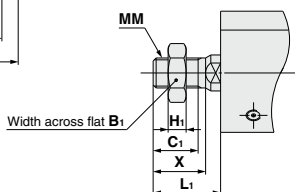
With Boss on Head End (mm)

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 1) With boss on rod end: Option (Suffix "-XC36" to the end of model 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

Standard For auto switch proper mounting position and its mounting height, refer to pages 954 to 960.

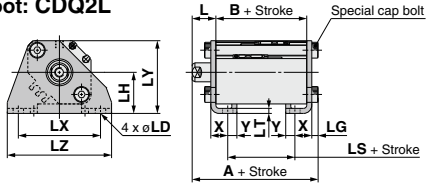
Bore size (mm)	Stroke range (mm)	A	B	C	D	E	EA	EB	F	H	K	L	M	N	O	Q	S	U	V
12	5 to 30	31.5	28	6	6	33	—	—	6.5	M3 x 0.5	5	3.5	22	3.5	6.5 depth 3.5	11	27.5	14	25
16	5 to 30	34	30.5	8	8	37	13.2	6.6	5.5	M4 x 0.7	6	3.5	28	3.5	6.5 depth 3.5	10	29.5	15	29
20	5 to 50	36	31.5	7	10	47	13.6	6.8	5.5	M5 x 0.8	8	4.5	36	5.5	9 depth 7	8	35.5	18	36
25	5 to 50	37.5	32.5	12	12	52	13.6	6.8	5.5	M6 x 1.0	10	5	40	5.5	9 depth 7	9	40.5	21	40

Note 2) The external dimensions with rubber bumper are same as those of the standard, as shown above.

* For details about the rod end nut and accessory brackets, refer to page 804.

Note 3) For calculation on the longitudinal dimension of intermediate strokes, refer to page 787.

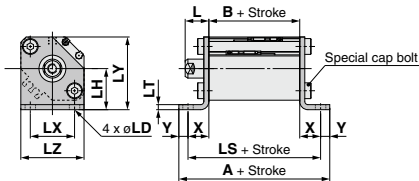
Foot: CDQ2L



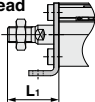
Rod end male thread



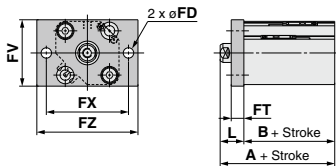
Compact foot: CDQ2LC



Rod end male thread



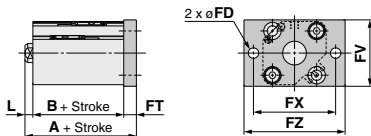
Rod flange: CDQ2F



Rod end male thread



Head flange: CDQ2G



Rod end male thread



Foot

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

Compact Foot

Bore size (mm)	Stroke range (mm)	A	B	L	L ₁	LD	LH	LS	LT	LX	LY	LZ	X	Y
12	5 to 30	55.6	28	13.5	24	4.5	17	46.6	2	15.5	29.5	25	9.3	4.5
16	5 to 30	59.1	30.5	13.5	25.5	4.5	19	49.1	2	20	33.5	29	9.3	5
20	5 to 50	69.5	31.5	14.5	28.5	6.6	24	57.9	3.2	25.5	42	36	13.2	5.8
25	5 to 50	70.5	32.5	15	32.5	6.6	26	58.9	3.2	28	46	40	13.2	5.8

Compact foot bracket material: Carbon steel
Surface treatment: Zinc chromated

Rod Flange

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

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

Head Flange

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

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

* For details about the rod end nut and accessory brackets, refer to page 804.

CUJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

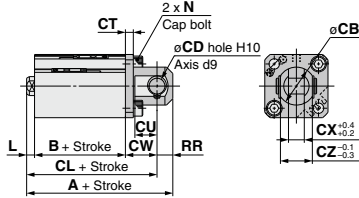
MU-Z

D-□

-X□

Technical data

Double clevis: CDQ2D



Rod end male thread



Double Clevis

(mm)

Bore size (mm)	Stroke range (mm)	A	B	CB	CD	CL	CT	CU	CW	CX	CZ	L	L ₁	N	RR
12	5 to 30	51.5	28	12	5	45.5	4	7	14	5	10	3.5	14	M4 x 0.7	6
16	5 to 30	55	30.5	14	5	49	4	10	15	6.5	12	3.5	15.5	M4 x 0.7	6
20	5 to 50	63	31.5	20	8	54	5	12	18	8	16	4.5	18.5	M6 x 1.0	9
25	5 to 50	67.5	32.5	24	10	57.5	5	14	20	10	20	5	22.5	M6 x 1.0	10

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

- * For details about the rod end nut and accessory brackets, refer to page 804.
- * Double clevis pin and retaining rings are included.

CUJ
CU
CQS
CQ2-Z
RQ
CQM
CQU
MU-Z

D-□
-X□
Technical data

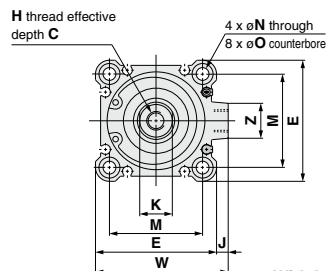
Series CQ2

Dimensions

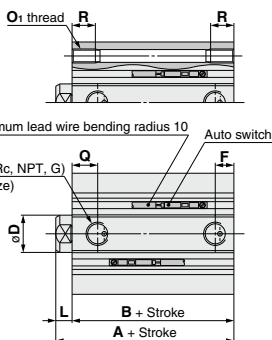
Ø32 to Ø50/With Auto Switch

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

Standard (Through-hole): CQ2B/CDQ2B



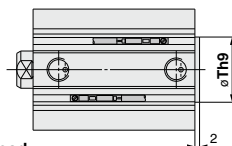
Both ends tapped: CQ2A/CDQ2A



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

With boss on head end

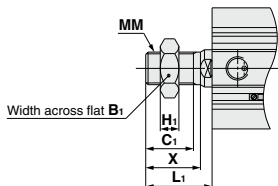


With Boss on Head End (mm)

Bore size (mm)	Th9
32	21 ⁰ / _{-0.052}
40	28 ⁰ / _{-0.052}
50	35 ⁰ / _{-0.062}

Note 1) With boss on rod end: Option (Suffix "-XC36" to the end of model number.)

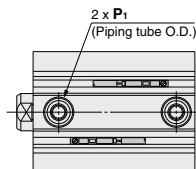
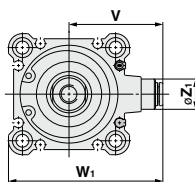
Rod end male thread



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

Built-in One-touch fittings: Ø32 to Ø50



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
50	16	8	50	82

Note 2) The dimensions of the Ø32-5 mm stroke with built-in One-touch fittings is the same as that of the 10 mm stroke cylinder tube.

Standard For auto switch proper mounting position and its mounting height, refer to pages 954 to 960.

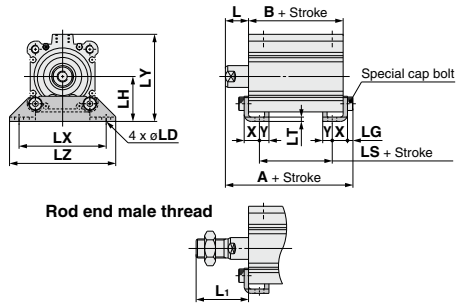
Bore size (mm)	Stroke range (mm)	Without auto switch					With auto switch					C	D	E	H	J	K	L	M	N
		A	B	F	P	Q	A	B	F	P	Q									
32	5	30	23	5.5	M5 x 0.8	10	40	33	7.5	1/8	10	13	16	45	M8 x 1.25	4.5	14	7	34	5.5
	10 to 50	40	33	7.5	1/8	12.5	46.5	39.5	7.5	1/8	12.5	13	16	52	M8 x 1.25	5	14	7	40	5.5
	75, 100	48.5	40.5	10.5	1/4	10.5	48.5	40.5	10.5	1/4	10.5	15	20	64	M10 x 1.5	7	17	8	50	6.6

Bore size (mm)	O	W	Z
32	9 depth 7	49.5	14
40	9 depth 7	57	15
50	11 depth 8	71	19

Note 3) The external dimensions with rubber bumper are same as those of the standard, as shown above.
* For details about the rod end nut and accessory brackets, refer to page 804.

Note 4) For calculation on the longitudinal dimension of intermediate strokes, refer to page 787. The spacer-installed type (Standard, -XB10A) and the exclusive body type (-XB10) are available.

Foot: CQ2L/CDQ2L



Rod end male thread

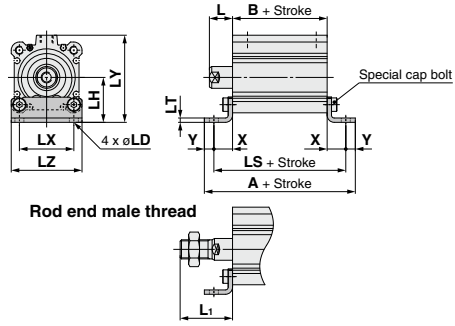
Foot

Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch			(mm)							
		A	B	LS	A	B	LS	L	L ₁	LD	LG	LH	LT	LX	LY
32	5 to 50	47.2	23	7	57.2	33	17	17	38.5	6.6	4	30	3.2	57	57
	75, 100	57.2	33	17											
40	5 to 50	53.7	29.5	13.5	63.7	39.5	23.5	17	38.5	6.6	4	33	3.2	64	64
	75, 100	63.7	39.5	23.5											
50	10 to 50	56.7	30.5	7.5	66.7	40.5	17.5	18	43.5	9	5	39	3.2	79	78
	75, 100	66.7	40.5	17.5											

Foot bracket material: Carbon steel
Surface treatment: Nickel plated

Bore size (mm)	LZ	X	Y
32	71	112	5.8
40	78	112	7
50	95	147	8

Compact foot: CQ2LC/CDQ2LC



Rod end male thread

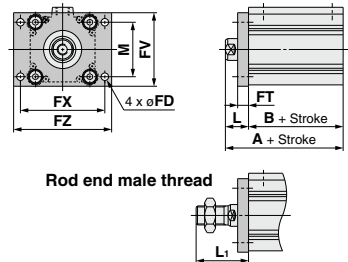
Compact Foot

Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch			(mm)							
		A	B	LS	A	B	LS	L	L ₁	LD	LH	LT	LX	LY	LZ
32	5 to 50	62	23	50.4	72	33	60.4	17	38.5	6.6	30	3.2	34	57	45
	75, 100	72	33	60.4											
40	5 to 50	70.9	28.5	56.9	80.9	39.5	66.9	17	38.5	6.6	33	3.2	40	64	52
	75, 100	80.9	39.5	66.9											
50	10 to 50	79.9	30.5	63.9	89.9	40.5	73.9	18	43.5	9	39	3.2	50	78	64
	75, 100	89.9	40.5	73.9											

Compact foot bracket material: Carbon steel
Surface treatment: Zinc chromated

Bore size (mm)	X	Y
32	13.7	5.8
40	13.7	7
50	16.7	8

Rod flange: CQ2F/CDQ2F



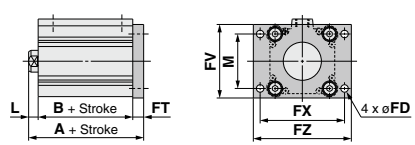
Rod end male thread

Rod Flange

Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch		(mm)									
		A	B	A	B	FD	FT	FV	FX	FZ	L	L ₁	M		
32	5 to 50	40	23	50	33	5.5	8	48	56	65	17	38.5	34		
	75, 100	50	33												
40	5 to 50	46.5	29.5	56.5	39.5	5.5	8	54	62	72	17	38.5	40		
	75, 100	56.5	39.5												
50	10 to 50	48.5	30.5	58.5	40.5	6.6	9	67	76	89	18	43.5	50		
	75, 100	58.5	40.5												

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

Head flange: CQ2G/CDQ2G



Rod end male thread

Head Flange

Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch		(mm)		(* The dimensions except A, L and L ₁ are the same as those of the rod flange.)
		A	A	A	A	L	L ₁	
32	5 to 50	38	48	7	28.5			
	75, 100	44.5	54.5					
40	5 to 50	44.5	54.5	7	28.5			
	75, 100	54.5	64.5					
50	10 to 50	47.5	57.5	8	33.5			
	75, 100	57.5	67.5					

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

* For details about the rod end nut and accessory brackets, refer to page 804.

CJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

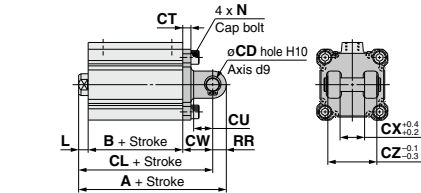
MU-Z

D-□

-X□

Technical data

Double clevis: CQ2D/CDQ2D



Rod end male thread



Double Clevis

(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 804.
- * Double clevis pin and retaining rings are included.

CUJ

CU

CQS

CQ2
-Z

RQ

CQM

CQU

MU
-Z

D-□

-X□

Technical
data

Series CQ2

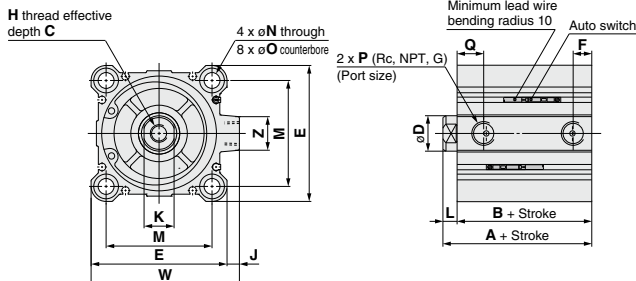
Dimensions

Ø63 to Ø100/With Auto Switch

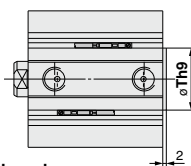
(In the case of without auto switches, the A, B dimensions will be only changed. Refer to the dimension table.)

Both ends tapped: CQ2A/CDQ2A

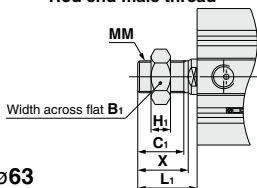
Standard (Through-hole): CQ2B/CDQ2B



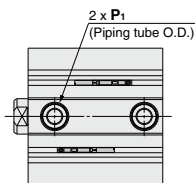
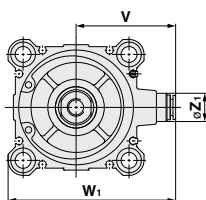
With boss on head end



Rod end male thread



Built-in One-touch fittings: Ø63



Both Ends Tapped

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

With Boss on Head End

Bore size (mm)	Th9
63	35 ^{+0.062} _{-0.062}
80	43 ^{+0.062} _{-0.062}
100	59 ^{+0.074} _{-0.074}

Note 1) With boss on rod end: Option (Suffix "-XC36" to the end of model number.)

Rod End Male Thread

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

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

Standard

For auto switch proper mounting position and its mounting height, refer to pages 954 to 960.

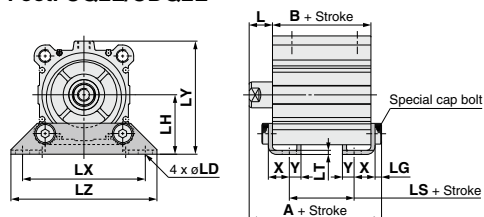
Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch		C	D	E	F	H	J	K	L	M	N	O	P	Q	W	Z
		A	B	A	B															
63	10 to 50	44	36	54	46	15	20	77	10.5	M10 x 1.5	7	17	8	60	9	14 depth 10.5	1/4	15	84	19
	75, 100	54	46	63.5	53.5	21	25	98	12.5	M16 x 2.0	6	22	10	77	11	17.5 depth 13.5	3/8	16	104	25
80	10 to 50	53.5	43.5	63.5	53.5	21	25	98	12.5	M16 x 2.0	6	22	10	77	11	17.5 depth 13.5	3/8	16	104	25
	75, 100	63.5	53.5	75	63	27	30	117	13	M20 x 2.5	6.5	27	12	94	11	17.5 depth 13.5	3/8	23	123.5	25
100	10 to 50	65	53	75	63	27	30	117	13	M20 x 2.5	6.5	27	12	94	11	17.5 depth 13.5	3/8	23	123.5	25
	75, 100	75	63	85	73	33	36	137	15	M24 x 3.0	7.5	33	14	111	13	17.5 depth 13.5	3/8	29	143.5	25

Note 2) The external dimensions with rubber bumper are same as those of the standard, as shown above.

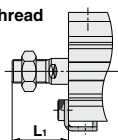
* For details about the rod end nut and accessory brackets, refer to page 804.

Note 3) For calculation on the longitudinal dimension of intermediate strokes, refer to page 787.

Foot: CQ2L/CDQ2L



Rod end male thread



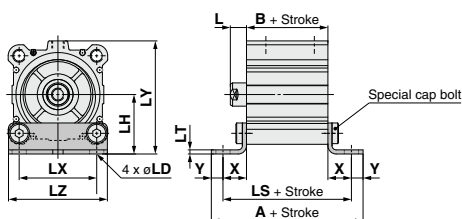
Foot

Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch								
		A	B	LS	A	B	LS	L	L ₁	LD	LH	LT	LT
63	10 to 50	62.2	36	10	72.2	46	20	18	43.5	11	5	46	3.2
	75, 100	72.2	46	20									
80	10 to 50	75	43.5	13.5	85	53.5	23.5	20	53.5	13	7	59	4.5
	75, 100	85	53.5	23.5									
100	10 to 50	88	53	19	98	63	29	22	53.5	13	7	71	6
	75, 100	98	63	29									

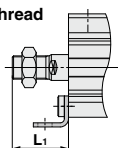
Foot bracket material: Carbon steel
Surface treatment: Nickel plated

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					

Compact foot: CQ2LC/CDQ2LC



Rod end male thread



Compact Foot

Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch								
		A	B	LS	A	B	LS	L	L ₁	LD	LH	LT	LX
63	10 to 50	50.4	36	72.4	100.4	46	82.4	18	43.5	11	46	3.2	60
	75, 100	100.4	46	82.4									
80	10 to 50	110.5	43.5	88.5	120.5	53.5	98.5	20	53.5	13	59	4.5	77
	75, 100	120.5	53.5	98.5									
100	10 to 50	126	53	101	136	63	111	22	53.5	13	71	6	94
	75, 100	136	63	111									

Compact foot bracket material: Carbon steel
Surface treatment: Zinc chromated

* For details about the rod end nut and accessory brackets, refer to page 804.

CJ

CU

CQS

CQ2
-Z

RQ

CQM

CQU

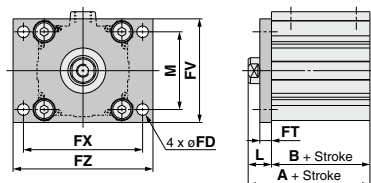
MU
-Z

D-□

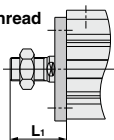
-X□

Technical
data

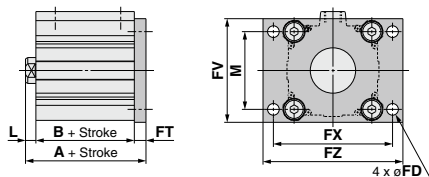
Rod flange: CQ2F/CDQ2F



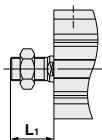
Rod end male thread



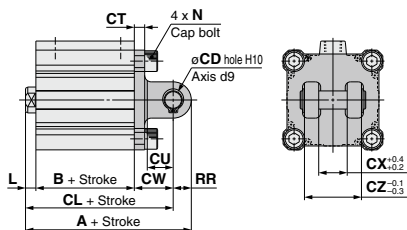
Head flange: CQ2G/CDQ2G



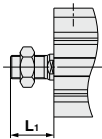
Rod end male thread



Double clevis: CQ2D/CDQ2D



Rod end male thread



Rod Flange

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 Flange

Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch		L	L ₁
		A	B	A	B		
63	10 to 50	53	74	63	84	8	33.5
	75, 100	63					
80	10 to 50	64.5	91.5	74.5	101.5	10	43.5
	75, 100	74.5					
100	10 to 50	76	101.5	86	120	12	43.5
	75, 100	86					

* The dimensions except A, L and L₁ are the same as those of the rod flange.

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

Double Clevis

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 804.
* Double clevis pin and retaining rings are included.

CJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

MU-Z

D-□

-X□

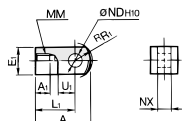
Technical data

Series CQ2

Accessory Brackets

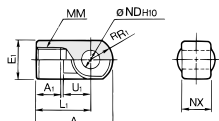
Single Knuckle Joint

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



Material: Carbon steel
Surface treatment: Nickel plated

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



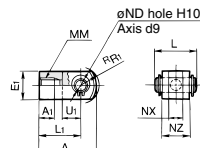
Material: Cast iron
Surface treatment: Nickel plated

Part no.	Applicable bore size (mm)	A	A ₁	E ₁	L ₁	MM	^a R ₁	U ₁	NDH ₁₀	NX
I-G012	12	21.5	6	□10	16	M5 x 0.8	6.3	7	5 ^{+0.048} _{-0.048}	5 ^{+0.2} _{-0.2}
I-Z015A	16	32	8	□12	25	M6 x 1	8.1	14	5 ^{+0.048} _{-0.048}	6.4 ^{+0.3} _{-0.3}
I-G02	20	34	8.5	□16	25	M8 x 1.25	10.3	11.5	8 ^{+0.058} _{-0.058}	8 ^{+0.2} _{-0.2}
I-G03	25	41	10.5	□20	30	M10 x 1.25	12.8	14	10 ^{+0.058} _{-0.058}	10 ^{+0.2} _{-0.2}
I-G04	32, 40	42	14	□22	30	M14 x 1.5	12	14	10 ^{+0.058} _{-0.058}	18 ^{+0.3} _{-0.3}
I-G05	50, 63	56	18	□28	40	M18 x 1.5	16	20	14 ^{+0.070} _{-0.070}	22 ^{+0.3} _{-0.3}
I-G08	80	71	21	□38	50	M22 x 1.5	21	27	18 ^{+0.070} _{-0.070}	28 ^{+0.3} _{-0.3}
I-G10	100	79	21	□44	55	M26 x 1.5	24	31	22 ^{+0.084} _{-0.084}	32 ^{+0.3} _{-0.3}

(mm)

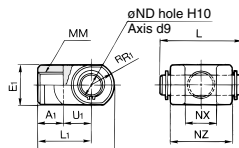
Double Knuckle Joint

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



Material: Carbon steel
Surface treatment: Nickel plated

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

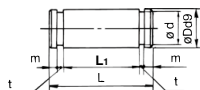


Material: Cast iron
Surface treatment: Nickel plated

Part no.	Applicable bore size (mm)	A	A ₁	E ₁	L ₁	MM	^a R ₁	U ₁	NDH ₁₀	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} _{-0.048}	5 ^{+0.2} _{-0.2}	10	14.6	IY-G012
Y-Z015A	16	28	11	□12	21	M6 x 1	8.1	10	5 ^{+0.048} _{-0.048}	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} _{-0.058}	8 ^{+0.2} _{-0.2}	16	21	IY-G02
Y-G03	25	41	10.5	□20	30	M10 x 1.25	12.8	14	10 ^{+0.058} _{-0.058}	10 ^{+0.2} _{-0.2}	20	25.6	IY-G03
Y-G04	32, 40	42	16	□22	30	M14 x 1.5	12	14	10 ^{+0.058} _{-0.058}	18 ^{+0.3} _{-0.3}	36	41.6	IY-G04
Y-G05	50, 63	56	20	□28	40	M18 x 1.5	16	20	14 ^{+0.070} _{-0.070}	22 ^{+0.3} _{-0.3}	44	50.6	IY-G05
Y-G08	80	71	23	□38	50	M22 x 1.5	21	27	18 ^{+0.070} _{-0.070}	28 ^{+0.3} _{-0.3}	56	64	IY-G08
Y-G10	100	79	24	□44	55	M26 x 1.5	24	31	22 ^{+0.084} _{-0.084}	32 ^{+0.3} _{-0.3}	64	72	IY-G10

* Knuckle pin and retaining rings are included.

Knuckle Pin (Common with double clevis pin)

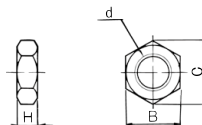


Material: Carbon steel
(mm)

Part no.	Applicable bore size (mm)	Dd9	L	d	L ₁	m	t	Applicable retaining ring
IY-G012	12	5 ^{+0.030} _{-0.030}	14.6	4.8	10.2	1.5	0.7	Type C5 for axis
IY-J015	16	5 ^{+0.030} _{-0.030}	16.6	4.8	12.2	1.5	0.7	Type C5 for axis
IY-G02	20	8 ^{+0.040} _{-0.076}	21	7.6	16.2	1.5	0.9	Type C8 for axis
IY-G03	25	10 ^{+0.040} _{-0.076}	25.6	9.6	20.2	1.55	1.15	Type C10 for axis
IY-G04	32, 40	10 ^{+0.040} _{-0.076}	41.6	9.6	36.2	1.55	1.15	Type C10 for axis
IY-G05	50, 63	14 ^{+0.050} _{-0.093}	50.6	13.4	44.2	2.05	1.15	Type C14 for axis
IY-G08	80	18 ^{+0.050} _{-0.093}	64	17	56.2	2.55	1.35	Type C18 for axis
IY-G10	100	22 ^{+0.055} _{-0.117}	72	21	64.2	2.55	1.35	Type C22 for axis

* Type C retaining rings for axis are included.

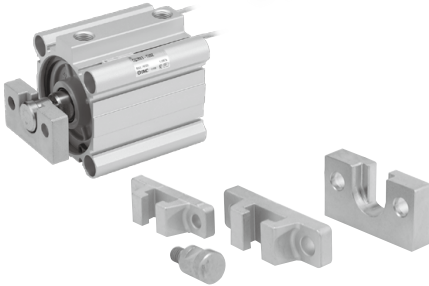
Rod End Nut



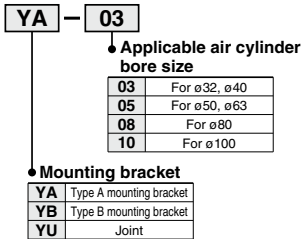
Material: Carbon steel
Surface treatment: Zinc chromated
(mm)

Part no.	Applicable bore size (mm)	d	H	B	C
NTJ-015A	12	M5 x 0.8	4	8	9.2
NT-015A	16	M6 x 1	5	10	11.5
NT-02	20	M8 x 1.25	5	13	15.0
NT-03	25	M10 x 1.25	6	17	19.6
NT-04	32, 40	M14 x 1.5	8	22	25.4
NT-05	50, 63	M18 x 1.5	11	27	31.2
NT-08	80	M22 x 1.5	13	32	37.0
NT-10	100	M26 x 1.5	16	41	47.3

Simple Joint (CQ2): $\phi 32$ to $\phi 100$



Joint/Mounting Bracket (Type A/B)/Part No.



Allowable Eccentricity (mm)	
Bore size (mm)	32 40 50 63 80 100
Eccentricity tolerance	± 1 ± 1.5 ± 2
Backlash	0.5

<Ordering>

• Joints are not included with type A or B mounting brackets.

• Order them separately.

(Example)

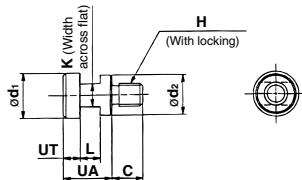
Bore size $\phi 40$ Part no.

• Type A mounting bracket YA-03

• Joint YU-03

Joint/Mounting Bracket (Type A/B)/Part No.

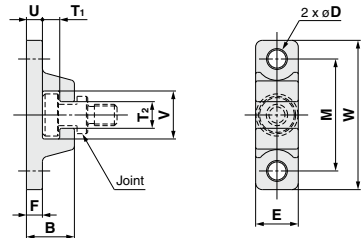
Bore size (mm)	Joint	Applicable mounting bracket	
		Type A mounting bracket	Type B mounting bracket
32, 40	YU-03	YA-03	YB-03
50, 63	YU-05	YA-05	YB-05
80	YU-08	YA-08	YB-08
100	YU-10	YA-10	YB-10



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

Part no.	Applicable bore size (mm)	UA	C	d ₁	d ₂	H	K	L	UT	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

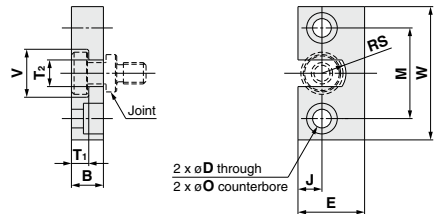


Material: Chromium molybdenum steel (Nickel plated)
(mm)

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

CUJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

MU-Z

D-□

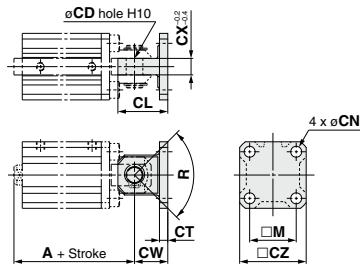
-X□

Technical data

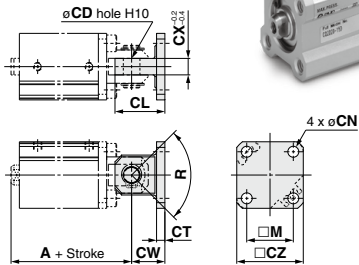
Double Clevis Pivot Bracket

Bore size **ø12 to ø25**

Without auto switch



With auto switch

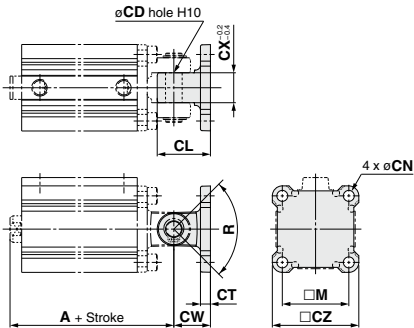


Bracket part no.	Bore size	Stroke range	A		CW	CT	CL	CX	CD	M	CZ	R	CN	Hexagon socket head cap screw for mounting pivot bracket (Accessory)
			Without auto switch	With auto switch										
CQ-C012	12	5 to 30	34.5	45.5	14	4	19	5	5	15.5	25	100°	4.5	M4 x 10L
CQ-C016	16	5 to 30	37	49	15	4	21	6.5	5	20	28	100°	4.5	M4 x 10L
CQ-C020	20	5 to 50	42	54	18	5	27	8	8	25.5	35	80°	6.6	M6 x 12L
CQ-C025	25	5 to 50	47.5	57.5	20	5	30	10	10	28	40	90°	6.6	M6 x 12L

* The double clevis pin and retaining ring are not included. Double clevis pivot bracket material: Carbon steel
Surface treatment: Nickel plated

Bore size **ø32 to ø100**

Without auto switch, With auto switch



Bracket part no.	Bore size	Stroke range	A		CW	CT	CL	CX	CD	M	CZ	R	CN	Hexagon socket head cap screw for mounting pivot bracket (Accessory)
			Without auto switch	With auto switch										
CQ-C032	32	5 to 50	50	60	20	5	30	18	10	34	45	80°	6.6	M6 x 12L
		75, 100	60											
		5 to 50	58.5											
CQ-C040	40	75, 100	68.5	68.5	22	6	32	18	10	40	52	80°	6.6	M6 x 14L
		10 to 50	66.5											
CQ-C050	50	75, 100	76.5	76.5	28	7	42	22	14	50	64	80°	9	M8 x 16L
		10 to 50	74											
CQ-C063	63	75, 100	84	84	30	8	44	22	14	60	77	60°	11	M10 x 20L
		10 to 50	91.5											
CQ-C080	80	75, 100	101.5	101.5	38	10	56	28	18	77	98	70°	13.5	M12 x 25L
		10 to 50	110											
CQ-C100	100	75, 100	120	120	45	13	67	32	22	94	117	70°	13.5	M12 x 30L
		10 to 50	110											

* The double clevis pin and retaining ring are not included. Double clevis pivot bracket material: Cast iron
Surface treatment: Painted

Compact Cylinder: Standard Double Acting, Double Rod Series CQ2W

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

How to Order

Without auto switch
ø12 to ø25

Without auto switch
ø32 to ø100

With auto switch

CQ2W B 20 - 30 D

CQ2W B 32 - 30 D Z

CDQ2W B 32 - 30 DM Z M9BW

Mounting			
B	Through-hole (Standard)	LC	Compact foot
A	Both ends tapped	F	Flange
L	Foot		

- * 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 810 and 813.

With auto switch
(Built-in magnet)

Type	
Nil	Pneumatic
H	Air-hydro (Note 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

Auto switch mounting groove	
Z	ø12 to ø25 2 surfaces
	ø32 to ø100 4 surfaces

Body option

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

- * Combination of body options ("CM") is available.
- Note 4) Air-hydro type with rubber bumper is not available.

Number of auto switches

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

Auto switch

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

* Refer to the below table for applicable auto switches.

Made to Order

Refer to page 808 for details.

Action

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

Port thread type

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

Note 2) Bore sizes available with 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 cylinders without auto switch, M threads are compatible only for ø32-5 mm stroke.

Cylinder stroke (mm)

Refer to page 808 for standard strokes.

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) CDQ2WL32-25DZ

Applicable Auto Switches

Refer to pages 1559 to 1673 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 auto switch	—	Grommet	Yes	3-wire (NPN)	24 V	—	M9NV	M9N	●	●	●	○	—	○	IC circuit	Relay, PLC	
	Diagnostic indication (2-color indication)			3-wire (PNP)			5 V, 12 V	M9PV	M9P	●	●	●	○	—			—
				2-wire			12 V	M9BV	M9B	●	●	○	—	—			
				3-wire (NPN)			5 V, 12 V	M9NVV	M9NW	●	●	○	—	—			
				3-wire (PNP)			12 V	M9PVV	M9PW	●	●	○	—	—			
	Water resistant (2-color indication)			2-wire			12 V	M9BWW	M9BW	●	●	○	—	—			—
				3-wire (NPN)			5 V, 12 V	M9NAV ^{*1}	M9NA ^{*1}	○	○	○	—	—			—
				3-wire (PNP)			12 V	M9PAV ^{*1}	M9PA ^{*1}	○	○	○	—	—			—
2-wire		12 V	M9BAV ^{*1}	M9BA ^{*1}	○	○	○	—	—	—							
Magnetic field resistant (2-color indication)	2-wire (Non-polar)	—	—	—	P3DW	●	—	●	—	—	—	—					
Reed auto switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	A96V	A96	●	—	●	—	—	IC circuit	—	
	No		2-wire	24 V	12 V	100 V	A93V ^{*2}	A93	●	●	●	—	—	—	—	Relay, PLC	
					5 V, 12 V	100 V or less	A90V	A90	●	●	●	—	—	—	IC circuit		

*1 Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.

Consult with SMC regarding water resistant types with the above model numbers.

*2 1 m type lead wire is only applicable to D-A93.

* 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

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

* The D-P3DW type is available from ø32 to ø100 only.

* There are other applicable auto switches other than the listed above. For details, refer to page 960.

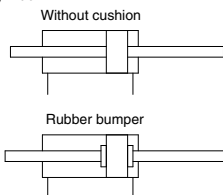
* For details about auto switches with pre-wired connector, refer to pages 1626 and 1627



Series CQ2W



Symbol



Made to Order: Individual Specifications
(For details, refer to pages 964 to 973.)

Symbol	Specifications
-X144	Special port location, with auto switch ø12 to ø25 only
-X235	Special rod end for double rod cylinder
-X271	Fluororubber seals
-X293	Full length dimension is the same as Series CQ1W.
-X633	Intermediate stroke of double rod cylinder

Made to Order

(For details, refer to pages 1675 to 1818.)

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 (Exclusive body type)
-XB13	Low-speed cylinder (5 to 50 mm/s)
-XC2(A)	Rod end length, 10 mm increased (For foot and flange bracket)
-XC4	With heavy-duty scraper, ø40 to ø100 only
-XC6	Piston rod/Retaining ring/Rod end nut material: Stainless steel
-XC35	With coil scraper, ø32 to ø100 only
-XC36	With boss on rod end
-XC85	Grease for food processing equipment

Moisture Control Tube Series IDK



When operating an actuator with a small diameter and a short stroke at a high frequency, the dew condensation (water droplet) may occur inside the piping depending on the conditions.

Simply connecting the moisture control tube to the actuator will prevent dew condensation from occurring. For details, refer to [Series IDK in the WEB catalog](#).

Specifications

Pneumatic type

Bore size (mm)		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)	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	0.11	0.18	0.29	0.52	0.91	1.54	2.71	4.54
Stroke length tolerance		+1.0 mm (Note)									

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

Air-hydro type

Bore size (mm)	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	+1.0 mm							

Note) Refer to page 7 for Actuator Precautions (5).

Standard Strokes

Pneumatic type (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 type	(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 Strokes

Type	A spacer is installed in the standard stroke body. (5 mm intervals)	A spacer is installed in the standard stroke body. (1 mm intervals)	Exclusive body (-XB10)
Part no.	Refer to "How to Order" for the standard model number. (P. 807)	Suffix "-X633" (P. 807) to the end of standard model number. (P. 971)	Suffix "-XB10" to the end of standard model number. (P. 807)
Description	Strokes in 5 mm intervals are available by installing a spacer in the standard stroke cylinder.	Strokes in 1 mm intervals are available by installing a spacer in the standard stroke cylinder.	Strokes in 1 mm intervals are available by using an exclusive body with the specified stroke.
Stroke range	Bore size	Bore size	Bore size
	Stroke range	Stroke range	Stroke range
	Stroke range	Stroke range	Stroke range
Example	Part no.: CQ2WB50-65DZ CQ2WB50-75DZ with 10 mm width spacer inside The B dimension is 125.5 mm.	Part no.: CQ2WB50-72DZ-X633 CQ2WB50-75DZ with 3 mm width spacer inside The B dimension is 125.5 mm.	Part no.: CQ2WB50-65DZ-XB10 Makes 65 mm stroke tube. The B dimension is 115.5 mm.

- Except air-hydro type
- In the case of spacer type, intermediate strokes with bumper for ø40 to ø100, "-X633" is not available.
- In the case of exclusive body type with ø32 to ø100 (-XB10) with the stroke length exceeding 50 mm, reference values of the longitudinal dimension will be changed.
Calculate length dimensions by deducting from those of 75 or 100 mm stroke models.

Refer to pages 954 to 960 for the specifications of cylinders with autoswitches.

- Auto switch proper mounting position (detection at stroke end) and its mounting height
- Minimum stroke for auto switch mounting
- Operating range
- Auto switch mounting brackets/Part no.

Type

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

Note 1) ø32 without auto switch; M5 x 0.8 is used for 5 mm stroking dimension.

Thus, do not enter a symbol for the port thread type.

Note 2) The dimension of the ø32-5 mm stroke with built-in One-touch fittings is the same as that of the 10 mm stroke cylinder tube.

Note 3) One-touch fittings cannot be replaced.

Retaining Ring Installation/Removal

⚠ Caution

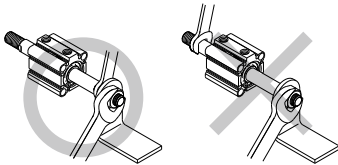
- For installation and removal, use an appropriate pair of pliers (tool for installing a type C retaining ring).
- Even if a proper plier (tool for installing a type C retaining ring) is used, it is likely to inflict damage to a human body or peripheral equipment, as a retaining ring may be flown out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

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 flat is secured. Do not fix the other side of the piston rod width across flat and apply reverse torque.



Mounting Brackets/Part No.

Bore size (mm)	Model	Foot	Compact foot	Flange
12	Without switch	CQ200-0D	CQ-L012	CQ-LC012
	With switch	CQ200-0DZ	CQ-LZ12	CQ-LCZ12
16	Without switch	CQ200-0D	CQ-L016	CQ-LC016
	With switch	CQ200-0DZ	CQ-LZ16	CQ-LCZ16
20	Without switch	CQ200-0D	CQ-L020	CQ-LC020
	With switch	CQ200-0DZ	CQ-LZ20	CQ-LCZ20
25	Without switch	CQ200-0D	CQ-L025	CQ-LC025
	With switch	CQ200-0DZ	CQ-LZ25	CQ-LCZ25
32	CQ200-0DZ	CQ-L032	CQ-LC032	CQ-F032
40	CQ200-0DZ	CQ-L040	CQ-LC040	CQ-F040
50	CQ200-0DZ	CQ-L050	CQ-LC050	CQ-F050
63	CQ200-0DZ	CQ-L063	CQ-LC063	CQ-F063
80	CQ200-0DZ	CQ-L080	CQ-LC080	CQ-F080
100	CQ200-0DZ	CQ-L100	CQ-LC100	CQ-F100

Note 4) When ordering foot and compact foot brackets, the required quantity will be different depending on the bore size.

ø12 to ø25:

• Without switch: Order 2 pieces per cylinder.

• With switch: Order 1 piece per cylinder. (Part number for a set of 2 foot brackets)

ø32 to ø100:

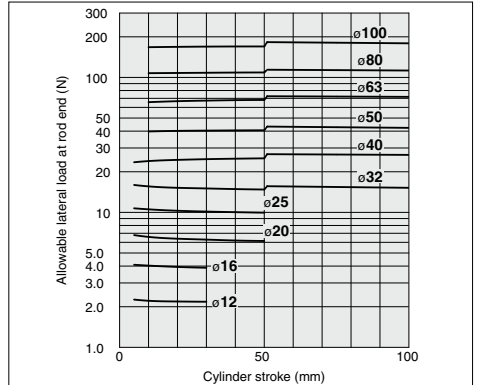
• Order 2 pieces per cylinder.

Note 5) Parts belonging to each bracket are as follows.

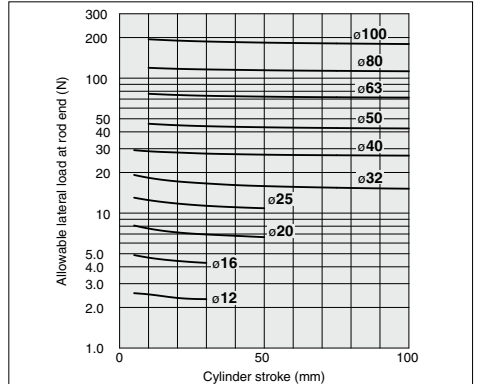
Foot, Compact foot, Flange: Body mounting bolts

Allowable Lateral Load at Rod End

Without Auto Switch



With Auto Switch



CUJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

MU-Z

D-□

-X□

Technical data

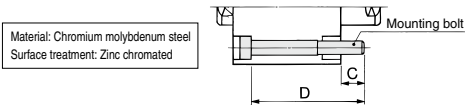
Theoretical Output

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

Mounting Bolt for CQ2WB/Without Auto Switch

Mounting method: Mounting bolt for through-hole mounting of the CQ2WB is available as an option. Refer to the following for ordering procedures. Order the actual number of bolts that will be used.

Example) CQ-M3 x 35L 4 pcs.



Cylinder model	C	D	Mounting bolt part no.
CQ2WB12-5D	8.3	35	CQ-M3 x 35L
-10D		40	x 40L
-15D		45	x 45L
-20D		50	x 50L
-25D		55	x 55L
-30D	7.5	60	x 60L
CQ2WB16-5D		35	CQ-M3 x 35L
-10D		40	x 40L
-15D		45	x 45L
-20D		50	x 50L
-25D	6	55	x 55L
-30D		60	x 60L
CQ2WB20-5D		30	CQ-M5 x 30L
-10D		35	x 35L
-15D		40	x 40L
-20D		45	x 45L
-25D	7	50	x 50L
-30D		55	x 55L
-35D		60	x 60L
-40D		65	x 65L
-45D		70	x 70L
-50D	8	75	x 75L
CQ2WB25-5D		35	CQ-M5 x 35L
-10D		40	x 40L
-15D		45	x 45L
-20D		50	x 50L
-25D	12.5	55	x 55L
-30D		60	x 60L
-35D		65	x 65L
-40D		70	x 70L
-45D		75	x 75L
-50D		80	x 80L

Cylinder model	C	D	Mounting bolt part no.
CQ2WB32-5DZ	6.5	35	CQ-M5 x 35L
-10DZ		40	x 40L
-15DZ		45	x 45L
-20DZ		50	x 50L
-25DZ		55	x 55L
-30DZ	7	60	x 60L
-35DZ		65	x 65L
-40DZ		70	x 70L
-45DZ		75	x 75L
-50DZ		80	x 80L
-75DZ	7	115	x 115L
-100DZ		140	x 140L
CQ2WB40-5DZ	7	45	CQ-M5 x 45L
-10DZ		50	x 50L
-15DZ		55	x 55L
-20DZ		60	x 60L
-25DZ		65	x 65L
-30DZ	12.5	70	x 70L
-35DZ		75	x 75L
-40DZ		80	x 80L
-45DZ		85	x 85L
-50DZ		90	x 90L
-75DZ	12.5	125	x 125L
-100DZ		150	x 150L
CQ2WB50-10DZ	12.5	55	CQ-M6 x 55L
-15DZ		60	x 60L
-20DZ		65	x 65L
-25DZ		70	x 70L
-30DZ		75	x 75L
-35DZ	12.5	80	x 80L
-40DZ		85	x 85L
-45DZ		90	x 90L
-50DZ		95	x 95L
-75DZ		130	x 130L
-100DZ		155	x 155L

Cylinder model	C	D	Mounting bolt part no.
CQ2WB63-10DZ	13.5	55	CQ-M8 x 55L
-15DZ		60	x 60L
-20DZ		65	x 65L
-25DZ		70	x 70L
-30DZ		75	x 75L
-35DZ	12.5	80	x 80L
-40DZ		85	x 85L
-45DZ		90	x 90L
-50DZ		95	x 95L
-75DZ		130	x 130L
-100DZ	12.5	155	x 155L
CQ2WB80-10DZ		60	CQ-M10 x 60L
-15DZ		65	x 65L
-20DZ		70	x 70L
-25DZ		75	x 75L
-30DZ	13	80	x 80L
-35DZ		85	x 85L
-40DZ		90	x 90L
-45DZ		95	x 95L
-50DZ		100	x 100L
-75DZ	13	135	x 135L
-100DZ		160	x 160L
CQ2WB100-10DZ		70	CQ-M10 x 70L
-15DZ		75	x 75L
-20DZ		80	x 80L
-25DZ	13	85	x 85L
-30DZ		90	x 90L
-35DZ		95	x 95L
-40DZ		100	x 100L
-45DZ		105	x 105L
-50DZ	13	110	x 110L
-75DZ		145	x 145L
-100DZ		170	x 170L

Weight

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	185	212	235	257	280	303	326	349	372	395	555	670
40	279	308	337	367	396	426	455	484	514	543	749	896
50	—	497	538	580	622	664	705	747	789	830	1122	1331
63	—	646	682	718	754	790	826	862	899	935	1187	1368
80	—	1149	1225	1302	1378	1455	1531	1608	1684	1760	2296	2678
100	—	1960	2068	2177	2286	2394	2503	2612	2720	2829	3589	4132

Additional Weight

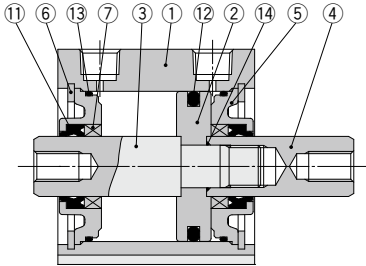
Bore size (mm)	12	16	20	25	32	40	50	63	80	100
Both ends tapped	2	2	6	6	6	6	6	19	45	45
Rod end male thread	Male thread	3	6	12	24	52	54	106	106	240
Nut	Nut	2	4	8	16	34	34	64	64	98
With rubber bumper	0	0	-2	-2	-3	-7	-12	-20	-34	-57
Built-in One-touch fittings	—	—	—	—	12	12	21	21	—	—
Foot (Including mounting bolts)	57	71	170	195	158	170	267	342	722	1170
Compact foot (Including mounting bolts)	41	51	121	140	99	114	177	241	501	717
Flange (Including mounting bolts)	57	69	139	161	180	214	373	559	1056	1365

Calculation: (Example) CQ2WF32-20DCMZ

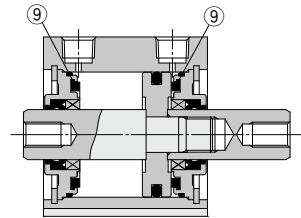
- Basic weight: CQ2WB32-20DZ 257 g
 - Additional weight: Both ends tapped 6 g
 - Rod end male thread 86 g
 - With rubber bumper -3 g
 - Flange 180 g
- 526 g

Construction

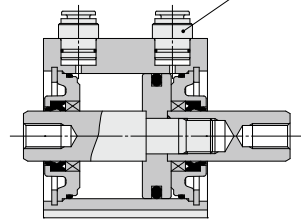
Standard



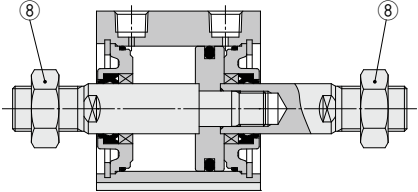
With rubber bumper



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 more only
8	Rod end nut	Carbon steel	Zinc chromated
9	Bumper	Urethane	
10	One-touch fitting	—	ø32 to ø63
11*	Rod seal	NBR	
12*	Piston seal	NBR	
13*	Tube gasket	NBR	
14	Piston gasket	NBR	

Replacement Parts/Seal Kit (Pneumatic type)

Bore size (mm)	Kit no.	Contents
12	CQ2WB12-PS	Kits include items ⑪, ⑫, ⑬ from the table.
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 seal 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 type)

Bore size (mm)	Kit no.	Contents
20	CQ2WBH20-PS	Kits include items ⑪, ⑫, ⑬ from the table.
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 seal kit does not include a grease pack, order it separately.

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

Standard: Double Acting, Double Rod

Series CDQ2W

With Auto Switch



Refer to the below pages for further information on auto switches.

Auto switch proper mounting position and its mounting height	P.954 to 960
Minimum stroke for auto switch mounting	
Operating range	
Auto switch mounting brackets/Part no.	

Weight

Weight

Bore size (mm)	Cylinder stroke (mm)												(g)
	5	10	15	20	25	30	35	40	45	50	75	100	
12	50	58	65	73	80	87	—	—	—	—	—	—	
16	77	87	96	106	115	125	—	—	—	—	—	—	
20	120	136	151	166	182	197	212	228	243	258	—	—	
25	170	185	201	216	232	247	263	279	294	310	—	—	
32	238	260	283	306	329	352	375	398	421	444	558	673	
40	353	383	412	442	471	500	530	559	589	618	765	912	
50	—	609	645	681	716	752	788	823	859	895	1073	1252	
63	—	798	840	882	924	966	1008	1051	1093	1135	1346	1556	
80	—	1393	1469	1546	1622	1699	1775	1851	1928	2004	2387	2769	
100	—	2334	2443	2551	2660	2769	2877	2986	3094	3203	3746	4289	

Additional Weight

Bore size (mm)	12	16	20	25	32	40	50	63	80	100	(g)
Both ends tapped	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	350
	Nut	2	4	8	16	34	34	64	64	98	232
With rubber bumper	0	0	-2	-2	-3	-7	-12	-19	-34	-54	
Built-in One-touch fittings	—	—	—	—	12	12	21	21	—	—	
Foot (Including mounting bolts)	52	65	153	177	158	170	267	342	722	1107	
Compact foot (Including mounting bolts)	32	40	97	116	99	114	177	241	501	770	
Flange (Including mounting bolts)	54	67	131	153	180	214	373	559	1056	1365	

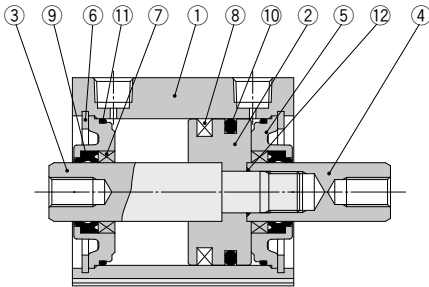
Calculation: (Example) **CDQ2WF32-20DCMZ**

- Basic weight: CDQ2WB32-20DZ 306 g
- Additional weight: Both ends tapped 6 g
- Rod end male thread 86 g
- With rubber bumper -3 g
- Rod flange 180 g

575 g

Add each weight of auto switches when auto switches are mounted.

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 more only
8	Magnet	—	—
9*	Rod seal	NBR	
10*	Piston seal	NBR	
11*	Tube gasket	NBR	
12	Piston gasket	NBR	

Replacement Parts/Seal Kit (Pneumatic type)

Bore size (mm)	Kit no.	Contents
12	CQ2WB12-PS	Kits include items ⑨, ⑩, ⑪ from the table.
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 seal 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 type)

Bore size (mm)	Kit no.	Contents
20	CQ2WBH20-PS	Kits include items ⑨, ⑩, ⑪ from the table.
25	CQ2WBH25-PS	
32	CQ2WBH32-PS	
40	CQ2WBH40-PS	
50	CQ2WBH50-PS	
63	CQ2WBH63-PS	
80	CQ2WBH80-PS	
100	CQ2WBH100-PS	

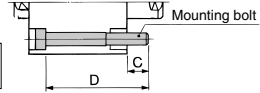
- * Seal kit includes ⑨, ⑩, ⑪. Order the seal kit, based on each bore size.
- * Since the seal kit does not include a grease pack, order it separately.
- * Grease pack part no.: GR-S-010 (10 g)

Mounting Bolt for CDQ2WB/With Auto Switch

Mounting method: Mounting bolt for through-hole mounting of the CDQ2WB is available as an option. Refer to the following for ordering procedures. Order the actual number of bolts that will be used.

Example) CQ-M3 x 40L 2 pcs.

Material: Chromium molybdenum steel
Surface treatment: Zinc chromated



Cylinder model	C	D	Mounting bolt part no.
CDQ2WB12-5DCZ	40	CQ-M3 x 40L	
-10DCZ	45	x 45L	
-15DCZ	50	x 50L	
-20DCZ	55	x 55L	
-25DCZ	60	x 60L	
-30DCZ	65	x 65L	
CDQ2WB16-5DZ	45	CQ-M3 x 45L	
-10DZ	50	x 50L	
-15DZ	55	x 55L	
-20DZ	60	x 60L	
-25DZ	65	x 65L	
-30DZ	70	x 70L	
CDQ2WB20-5DZ	45	CQ-M5 x 45L	
-10DZ	50	x 50L	
-15DZ	55	x 55L	
-20DZ	60	x 60L	
-25DZ	65	x 65L	
-30DZ	70	x 70L	
-35DZ	75	x 75L	
-40DZ	80	x 80L	
-45DZ	85	x 85L	
-50DZ	90	x 90L	
CDQ2WB25-5DZ	45	CQ-M5 x 45L	
-10DZ	50	x 50L	
-15DZ	55	x 55L	
-20DZ	60	x 60L	
-25DZ	65	x 65L	
-30DZ	70	x 70L	
-35DZ	75	x 75L	
-40DZ	80	x 80L	
-45DZ	85	x 85L	
-50DZ	90	x 90L	

Cylinder model	C	D	Mounting bolt part no.
CDQ2WB32-5DZ	45	CQ-M5 x 45L	
-10DZ	50	x 50L	
-15DZ	55	x 55L	
-20DZ	60	x 60L	
-25DZ	65	x 65L	
-30DZ	70	x 70L	
-35DZ	75	x 75L	
-40DZ	80	x 80L	
-45DZ	85	x 85L	
-50DZ	90	x 90L	
-75DZ	115	x 115L	
-100DZ	140	x 140L	
CDQ2WB40-5DZ	55	CQ-M5 x 55L	
-10DZ	60	x 60L	
-15DZ	65	x 65L	
-20DZ	70	x 70L	
-25DZ	75	x 75L	
-30DZ	80	x 80L	
-35DZ	85	x 85L	
-40DZ	90	x 90L	
-45DZ	95	x 95L	
-50DZ	100	x 100L	
-75DZ	125	x 125L	
-100DZ	150	x 150L	
CDQ2WB50-10DZ	65	CQ-M6 x 65L	
-15DZ	70	x 70L	
-20DZ	75	x 75L	
-25DZ	80	x 80L	
-30DZ	85	x 85L	
-35DZ	90	x 90L	
-40DZ	95	x 95L	
-45DZ	100	x 100L	
-50DZ	105	x 105L	
-75DZ	130	x 130L	
-100DZ	155	x 155L	

Cylinder model	C	D	Mounting bolt part no.
CDQ2WB63-10DZ	65	CQ-M8 x 65L	
-15DZ	70	x 70L	
-20DZ	75	x 75L	
-25DZ	80	x 80L	
-30DZ	85	x 85L	
-35DZ	90	x 90L	
-40DZ	95	x 95L	
-45DZ	100	x 100L	
-50DZ	105	x 105L	
-75DZ	130	x 130L	
-100DZ	155	x 155L	
CDQ2WB80-10DZ	70	CQ-M10 x 70L	
-15DZ	75	x 75L	
-20DZ	80	x 80L	
-25DZ	85	x 85L	
-30DZ	90	x 90L	
-35DZ	95	x 95L	
-40DZ	100	x 100L	
-45DZ	105	x 105L	
-50DZ	110	x 110L	
-75DZ	135	x 135L	
-100DZ	160	x 160L	
CDQ2WB100-10DZ	80	CQ-M10 x 80L	
-15DZ	85	x 85L	
-20DZ	90	x 90L	
-25DZ	95	x 95L	
-30DZ	100	x 100L	
-35DZ	105	x 105L	
-40DZ	110	x 110L	
-45DZ	115	x 115L	
-50DZ	120	x 120L	
-75DZ	145	x 145L	
-100DZ	170	x 170L	

CJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

MU-Z

D-□

-X□

Technical data

Series CQ2W

Dimensions

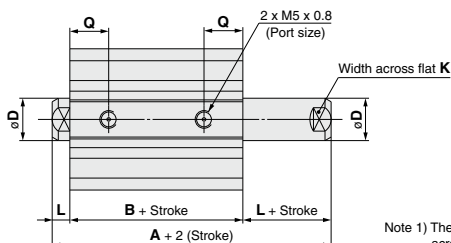
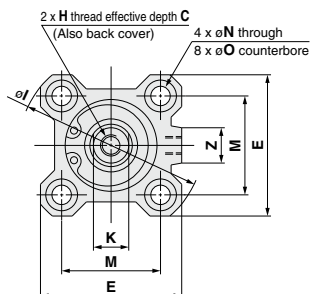
Ø12 to Ø25/Without Auto Switch

Both ends tapped: CQ2WA

Standard (Through-hole): CQ2WB

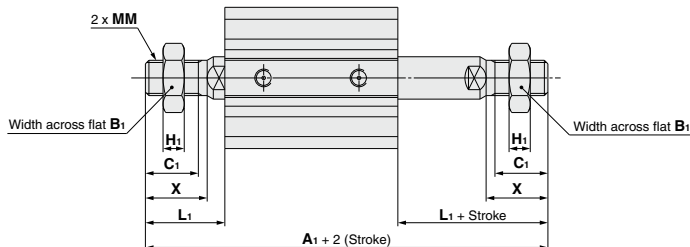
Both Ends
Tapped

(mm)			
Bore size (mm)	O ₁ thread	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 1) 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

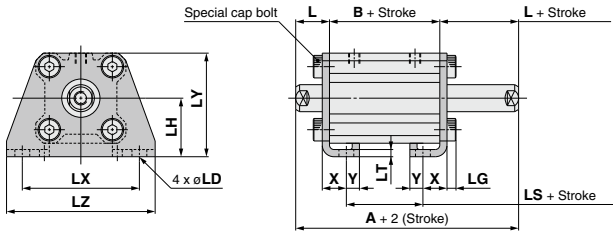
Standard

(mm)														
Bore size (mm)	Stroke range (mm)	A	B	C	D	E	H	I	K	L	M	N	O	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
20	5 to 50	35	26	7	10	36	M5 x 0.8	47	8	4.5	25.5	5.5	9 depth 7	8
25	5 to 50	39	29	12	12	40	M6 x 1.0	52	10	5	28	5.5	9 depth 7	9

Note 2) The external dimensions with rubber bumper are same as those of the standard, as shown above.

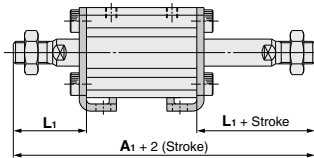
* For details about the rod end nut and accessory brackets, refer to page 804.

Foot: 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)	A1	L1
12	73.2	24
16	77	25.5
20	83	28.5
25	94	32.5

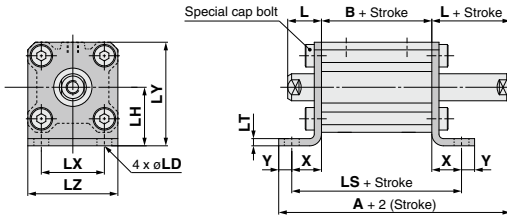
Foot

(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

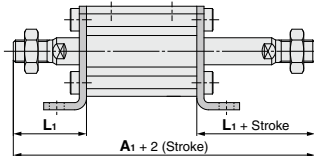
Foot bracket material: Carbon steel
Surface treatment: Nickel plated

Compact foot: CQ2WLC



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)	A1	L1
12	73.2	24
16	77	25.5
20	83	28.5
25	94	32.5

Compact Foot

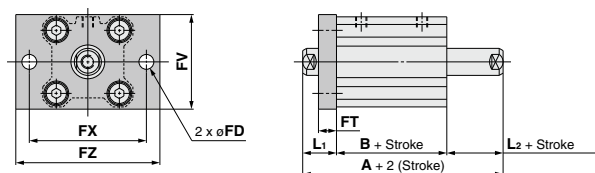
(mm)

Bore size (mm)	Stroke range (mm)	A	B	L	LD	LH	LS	LT	LX	LY	LZ	X	Y
12	5 to 30	52.5	25.2	13.5	4.5	17	43.8	2	15.5	29.5	25	9.3	4.5
16	5 to 30	53.8	26	13.5	4.5	19	44.6	2	20	33.5	29	9.3	5
20	5 to 50	59.5	26	14.5	6.6	24	52.4	3.2	25.5	42	36	13.2	5.8
25	5 to 50	63	29	15	6.6	26	55.4	3.2	28	46	40	13.2	5.8

* For details about the rod end nut and accessory brackets, refer to page 804.

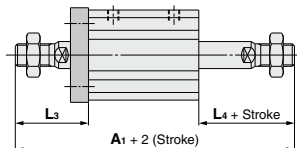
Compact foot bracket material: Carbon steel
Surface treatment: Zinc chromated

Flange: CQ2WF



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

Rod end male thread



Rod End Male Thread

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

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 804.

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

CJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

MU-Z

D-□

-X□

Technical data

Series CQ2W

Dimensions

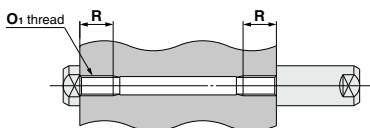
Ø12 to Ø25/With Auto Switch

Both Ends Tapped

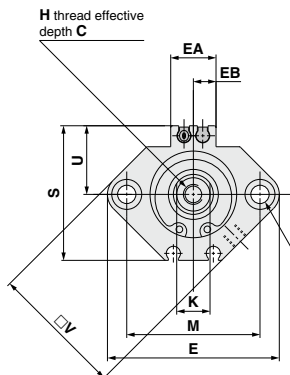
Bore size (mm)	O ₁	R
12	M4 x 0.7	7
16	M4 x 0.7	7
20	M6 x 1.0	10
25	M6 x 1.0	10

Both ends tapped: CDQ2WA

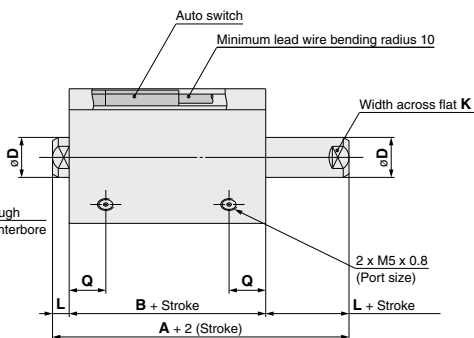
Standard (Through-hole): CDQ2WB



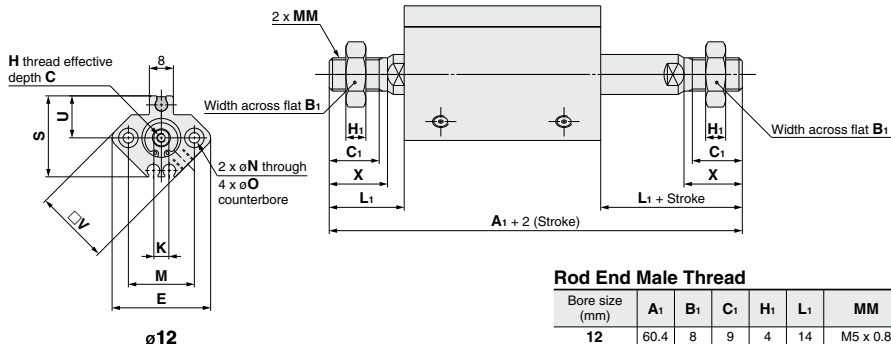
Note 1) The positions of left and right width across flats are not constant.



Ø16 to Ø25



Rod end male thread



Ø12

Rod End Male Thread

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

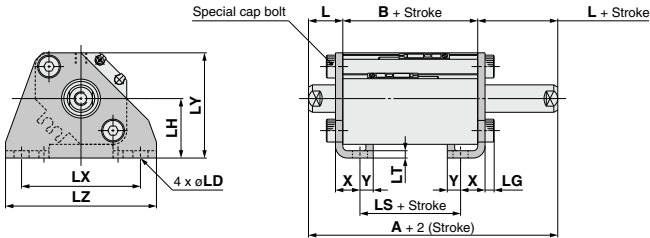
Standard For auto switch proper mounting position and its mounting height, refer to pages 954 to 960.

Bore size (mm)	Stroke range (mm)	A	B	C	D	E	EA	EB	H	K	L	M	N	O	Q	S	U	V
12	5 to 30	39.4	32.4	6	6	33	—	—	M3 x 0.5	5	3.5	22	3.5	6.5 depth 3.5	10.5	27.5	14	25
16	5 to 30	43	36	8	8	37	13.2	6.6	M4 x 0.7	6	3.5	28	3.5	6.5 depth 3.5	10	29.5	15	29
20	5 to 50	47	38	7	10	47	13.6	6.8	M5 x 0.8	8	4.5	36	5.5	9 depth 7	8	35.5	18	36
25	5 to 50	49	39	12	12	52	13.6	6.8	M6 x 1.0	10	5	40	5.5	9 depth 7	9	40.5	21	40

Note 2) The external dimensions with rubber bumper are same as those of the standard, as shown above.

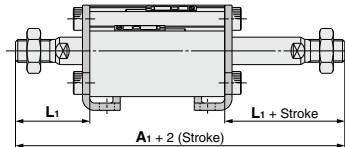
* For details about the rod end nut and accessory brackets, refer to page 804.

Foot: CDQ2WL



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

Rod end male thread



Rod End Male Thread (mm)

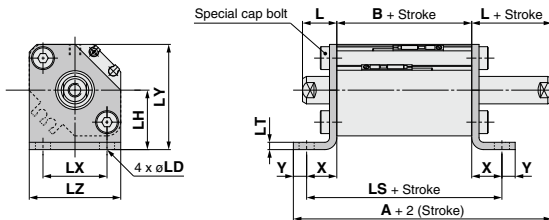
Bore size (mm)	A ₁	L ₁
12	80.4	24
16	87	25.5
20	95	28.5
25	104	32.5

Foot

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

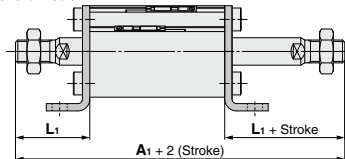
Foot bracket material: Carbon steel
Surface treatment: Nickel plated

Compact foot: CDQ2WLC



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

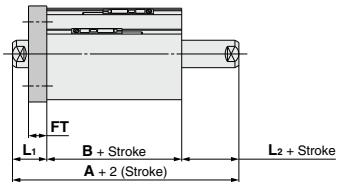
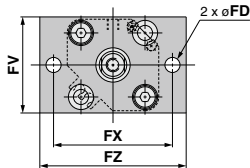
Compact Foot

Bore size (mm)	Stroke range (mm)	A	B	L	LD	LH	LS	LT	LX	LY	LZ	X	Y
12	5 to 30	59.7	32.4	13.5	4.5	17	51	2	15.5	29.5	25	9.3	4.5
16	5 to 30	63.8	36	13.5	4.5	19	54.6	2	20	33.5	29	9.3	5
20	5 to 50	71.5	38	14.5	6.6	24	64.4	3.2	25.5	42	36	13.2	5.8
25	5 to 50	73	39	15	6.6	26	65.4	3.2	28	46	40	13.2	5.8

* For details about the rod end nut and accessory brackets, refer to page 804.

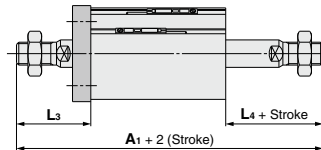
Compact foot bracket material: Carbon steel
Surface treatment: Zinc chromated

Flange: CDQ2WF



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

Rod end male thread



Rod End Male Thread

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

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 804.

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

CUJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

MU-Z

D-□

-X□

Technical data

Series CQ2W

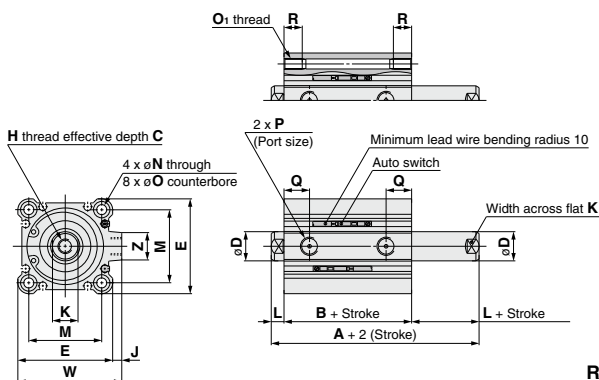
Dimensions

Ø32 to Ø50/With Auto Switch

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

Standard (Through-hole): CQ2WB/CDQ2WB

Both ends tapped: CQ2WA/CDQ2WA

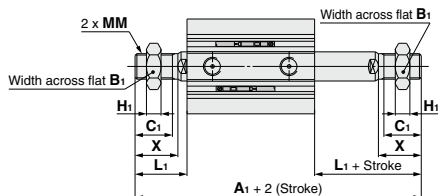


Both Ends Tapped

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

Rod end male thread

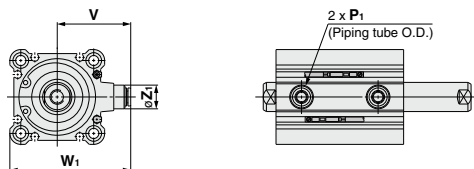


Rod End Male Thread

Bore size (mm)	Stroke range (mm)	Without auto switch	With auto switch
32	5	A ₁	A ₁
	10 to 50	87.5	97.5
	75, 100	97.5	
40	5 to 50	97	107
	75, 100	107	
	10 to 50	107.5	117.5
50	10 to 50	107.5	
	75, 100	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

Bore size (mm)	Without auto switch	With auto switch	Z ₁	P ₁
32	V	W ₁	V	W ₁
32	38	60.5	36.5	59
40	42	68	40.5	66.5
50	50	82	50	82
			16	8

Standard

For auto switch proper mounting position and its mounting height, refer to pages 954 to 960.

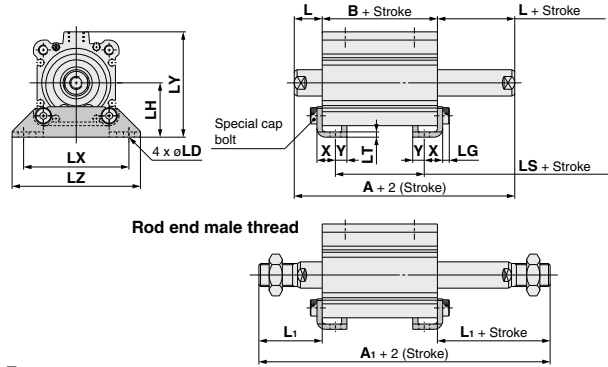
Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch		
		A	B	P	A	B	P
32	5	44.5	30.5	M5	54.5	40.5	1/8
	10 to 50						
	75, 100	54.5	40.5	1/8			
40	5 to 50	54	40		64	50	1/8
	75, 100	64	50	1/8			
	10 to 50	56.5	40.5				
50	10 to 50	56.5	40.5		66.5	50.5	1/4
	75, 100	66.5	50.5	1/4			

Bore size (mm)	C	D	E	H	J	K	L	M	N	O	Q	W	Z
32	13	16	45	M8 x 1.25	4.5	14	7	34	5.5	9 depth 7	10	49.5	14
40	13	16	52	M8 x 1.25	5	14	7	40	5.5	9 depth 7	12.5	57	15
50	15	20	64	M10 x 1.5	7	17	8	50	6.6	11 depth 8	14	71	19

Note 2) The external dimensions with rubber bumper are same as those of the standard, as shown above.

* For details about the rod end nut and accessory brackets, refer to page 804.

Foot: CQ2WL/CDQ2WL



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 A ₁	With auto switch A ₁	L 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		

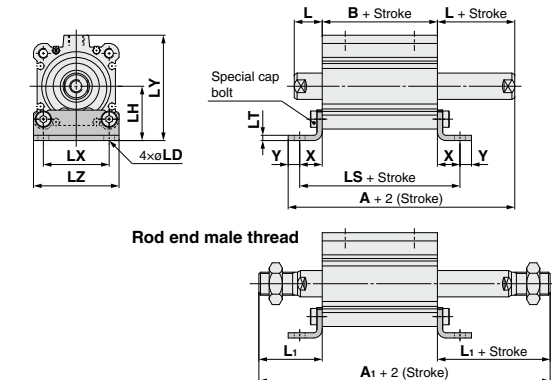
Foot

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			

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

Foot bracket material:
Carbon steel
Surface treatment:
Nickel plated

Compact foot: CQ2WLC/CDQ2WLC



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

Rod End Male Thread (mm)

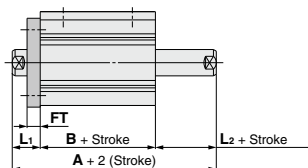
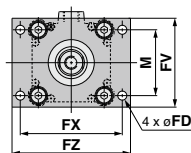
Bore size (mm)	Stroke range (mm)	Without auto switch A ₁	With auto switch A ₁	L ₁
32	5 to 50	107.5	117.5	38.5
	75, 100	117.5		
40	5 to 50	117	127	38.5
	75, 100	127		
50	10 to 50	127.5	137.5	43.5
	75, 100	137.5		

Compact Foot

Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch			L	LD	LH	LT	LX	LY	LZ	X	Y
		A	B	LS	A	B	LS									
32	5 to 50	67	30.5	57.9	77	40.5	67.9	17	6.6	30	3.2	34	57	45	13.7	5.8
	75, 100	77	40.5	67.9												
40	5 to 50	77.7	40	67.4	87.7	50	77.4	17	6.6	33	3.2	40	64	52	13.7	7
	75, 100	87.7	50	77.4												
50	10 to 50	83.2	40.5	73.9	93.2	50.5	83.9	18	9	39	3.2	50	78	64	16.7	8
	75, 100	93.2	50.5	83.9												

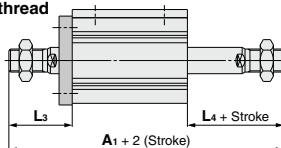
Compact foot bracket material: Carbon steel
Surface treatment: Zinc chromated

Flange: CQ2WF/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)	Stroke range (mm)	Without auto switch A ₁	With auto switch A ₁	L ₃	L ₄
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 (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

CUJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

MU-Z

D-□

-X□

Technical data

Series CQ2W

Dimensions

Ø63 to Ø100/With Auto Switch

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

Both ends tapped: CQ2WA/CDQ2WA

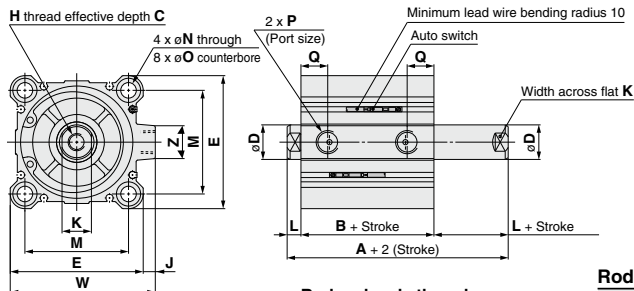
Standard (Through-hole): CQ2WB/CDQ2WB

Both Ends

Tapped

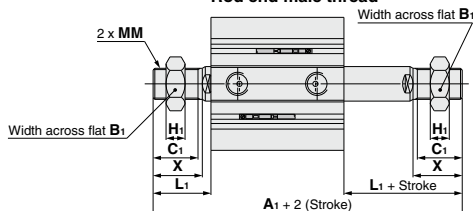
(mm)

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



Note 1) The positions of left and right width across flats are not constant.

Rod end male thread



Rod End Male Thread

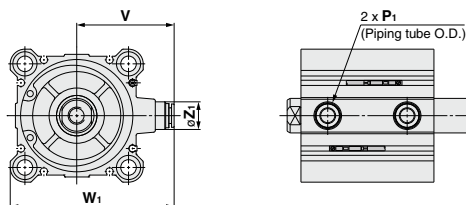
(mm)

Bore size (mm)	Stroke range (mm)	Without auto switch	With auto switch
63	10 to 50	A ₁	A ₁
	75, 100	109	119
	10 to 50	138	148
80	75, 100	148	157.5
	10 to 50	147.5	157.5
	75, 100	157.5	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

* The dimension of the ø32-5 mm stroke with built-in One-touch fittings is the same as that of the 10 mm stroke cylinder tube.

For auto switch proper mounting position and its mounting height, refer to pages 954 to 960.

Standard

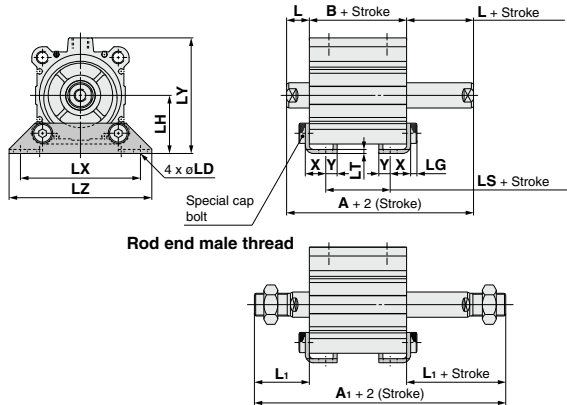
Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch	
		A	B	A	B
63	10 to 50	58	42	68	52
	75, 100	68	52		
80	10 to 50	71	51	81	61
	75, 100	81	61		
100	10 to 50	84.5	60.5	94.5	70.5
	75, 100	94.5	70.5		

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

Note 2) The external dimensions with rubber bumper are same as those of the standard, as shown above.

* For details about the rod end nut and accessory brackets, refer to page 804.

Foot: CQ2WL/CDQ2WL



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

Rod End Male Thread

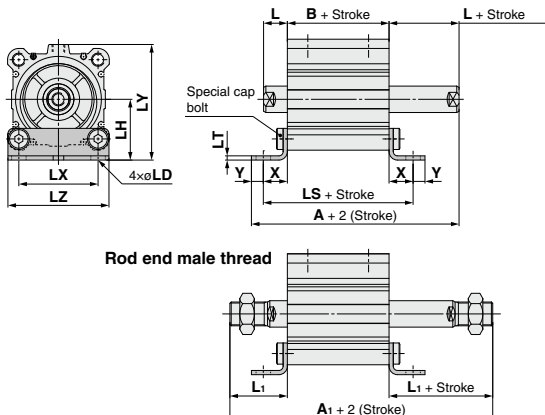
Bore size (mm)	Stroke range (mm)	Without auto switch	With auto switch	(mm)
		A ₁	A ₁	L ₁
63	10 to 50	129	139	43.5
	75, 100	139		
80	10 to 50	158	168	53.5
	75, 100	168		
100	10 to 50	167.5	177.5	53.5
	75, 100	177.5		

Foot

Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch			(mm)									
		A	B	LS	A	B	LS	L	LD	LG	LH	LT	LX	LY	LZ	X	Y
63	10 to 50	78	42	16	88	52	26	18	11	5	46	3.2	95	91.5	113	16.2	9
	75, 100	88	52	26													
80	10 to 50	91	51	21	101	61	31	20	13	7	59	4.5	118	114	140	19.5	11
	75, 100	101	61	31													
100	10 to 50	104.5	60.5	26.5	114.5	70.5	36.5	22	13	7	71	6	137	136	162	23	12.5
	75, 100	114.5	70.5	36.5													

Foot bracket material: Carbon steel
Surface treatment: Nickel plated

Compact foot: CQ2WLC/CDQ2WLC



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

Rod End Male Thread

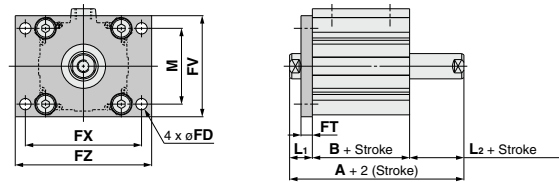
Bore size (mm)	Stroke range (mm)	Without auto switch	With auto switch	(mm)
		A ₁	A ₁	L ₁
63	10 to 50	129	139	43.5
	75, 100	139		
80	10 to 50	158	168	53.5
	75, 100	168		
100	10 to 50	167.5	177.5	53.5
	75, 100	177.5		

Compact Foot

Compact Foot																	(mm)
Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch			L	LD	LH	LT	LX	LY	LZ	X	Y	
		A	B	LS	A	B	LS										
63	10 to 50	87.2	42	78.4	97.2	52	88.4	18	11	46	3.2	60	91.5	77	18.2	9	
	75, 100	97.2	52	88.4													
80	10 to 50	104.5	51	96	114.5	61	106	20	13	59	4.5	77	114	98	22.5	11	
	75, 100	114.5	61	106													
100	10 to 50	119	60.5	108.5	129	70.5	118.5	22	13	71	6	94	136	117	24	12.5	
	75, 100	129	70.5	118.5													

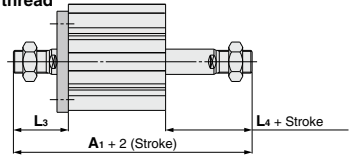
Compact foot bracket material: Carbon steel
Surface treatment: Zinc chromated

Flange: CQ2WF/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)	Stroke range (mm)	Without auto switch A ₁	With auto switch A ₁	L ₃	L ₄
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

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								
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

CUJ

CU

CQS

CQ2
-Z

RQ

CQM

CQU

MU
-Z

D-□

-X□

Technical
data

Compact Cylinder: Standard Single Acting, Single Rod Series CQ2

ø12, ø16, ø20, ø25, ø32, ø40, ø50

How to Order

Without auto switch
ø12 to ø25

Without auto switch
ø32 to ø50

With auto switch

CQ2 B 20 - 10 S -

CQ2 B 32 - 10 S Z -

CDQ2 B 32 - 10 S M Z - L W - M9BW -

With auto switch
(Built-in magnet)

Mounting

B	Through-hole (Standard)	F	Rod flange
A	Both ends tapped	G	Head flange
L	Foot	D	Double clevis
LC	Compact foot		

- * 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 826 and 827.

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
	G	
TF	Built-in One-touch fittings	Note 1)

Note 1) Bore sizes available with One-touch fittings are ø32 to ø50.

* For cylinders without auto switch, M threads are compatible only for ø32-5 mm stroke model.

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) CDQ2L32-10SZ

Mounting bolt

Nil	None
L	Shipped together

- * Mounting bolt is shipped together only when the mounting bracket is "B".
- * For details about the mounting bolt sizes, refer to pages 826 and 829.
- * Mounting bolt is shipped together.

Auto switch mounting groove

Z	ø12 to ø25 2 surfaces
	ø32 to ø50 4 surfaces

Body option

Nil	Standard
F	With boss on head end
M	Rod end male thread

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

Action

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

Cylinder stroke (mm)

Refer to the next page for standard strokes.

Number of auto switches

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

Auto switch

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

* Refer to the below table for applicable auto switches.

Made to Order

Refer to the next page for details.

Rod end bracket

(Refer to pages 804 and 805.)

Nil	None
D	Simple joint A type + Joint
E	Simple joint B type + Joint
V	Single knuckle joint
W	Double knuckle joint

- * The single knuckle joint and double knuckle joint cannot be mounted for the rod end female thread.
- * A knuckle joint pin is not provided with the single knuckle joint.
- * The simple joint A and B types cannot be mounted for the rod end male thread.
- * Rod end bracket is shipped together.

Applicable Auto Switches/Refer to pages 1559 to 1673 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 auto switch	—	Grommet	Yes	3-wire (NPN)	24 V	—	M9NV	M9N	●	●	●	○	—	○	IC circuit	Relay, PLC	
	3-wire (PNP)			12 V			M9PV	M9P	●	●	●	○	—	○	—		
	2-wire			12 V			M9BV	M9B	●	●	●	○	—	○	—		
	3-wire (NPN)			5 V			M9NVW	M9NW	●	●	●	○	—	○	IC circuit		
	3-wire (PNP)			12 V			M9PVW	M9PW	●	●	●	○	—	○	—		
	2-wire			12 V			M9BVW	M9BW	●	●	●	○	—	○	—		
	3-wire (NPN)			5 V			M9NAV ^{*1}	M9NA ^{*1}	○	○	○	●	—	○	IC circuit		
	3-wire (PNP)			12 V			M9PAV ^{*1}	M9PA ^{*1}	○	○	○	●	—	○	—		
				2-wire	12 V		M9BAV ^{*1}	M9BA ^{*1}	○	○	●	○	—	○	—		
Reed auto switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	A96V	A96	●	—	●	—	—	—	IC circuit	—
			No	2-wire	24 V	5 V, 12 V or less	100 V	A93V ^{*2}	A93	●	●	●	●	—	—	—	—
							A90V	A90	●	—	●	—	—	—	—	IC circuit	

*1 Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.

Consult with SMC regarding water resistant types with the above model numbers.

*2 1 m type lead wire is only applicable to D-A93.

* Lead wire length symbols: 0.5 m Nil (Example) M9NV
1 m M (Example) M9NVW
3 m L (Example) M9NW
5 m Z (Example) M9NVZ

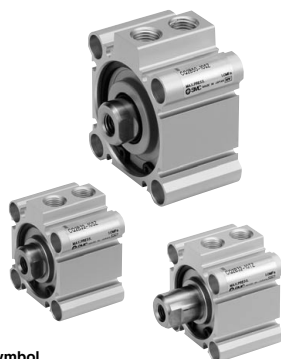
* Solid state auto switches marked with "○" are produced upon receipt of order.

* There are other applicable auto switches other than the listed above. For details, refer to page 960.

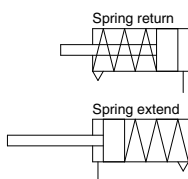
* For details about auto switches with pre-wired connector, refer to pages 1626 and 1627.



Series CQ2



Symbol



Made to Order: Individual Specifications
(For details, refer to pages 964 to 973.)

Symbol	Specifications
-X144	Special port location, with auto switch $\phi 12$ to $\phi 25$ only
-X202	Full length dimension is the same as Series CQ1, Except $\phi 12$, $\phi 16$, $\phi 25$.
-X203	L dimension from rod cover is the same as Series CQ1, $\phi 20$, $\phi 32$ only.
-X271	Fluororubber seals
-X1876	Cylinder tube: With concave boss on head end

Made to Order

(For details, refer to pages 1675 to 1818.)

Symbol	Specifications
-XA□	Change of rod end shape, spring return type only
-XB10	Intermediate stroke (Exclusive body type), Spring return type only
-XC2(A)	Rod end length, 10 mm increased (For foot and flange bracket)
-XC6	Piston rod/Retaining ring/Rod end nut material: Stainless steel
-XC26	With split pins for double clevis pin/ double knuckle joint pin and flat washers
-XC27	Double clevis pin/Double knuckle joint pin material: Stainless steel 304
-XC36	With boss on rod end
-XC85	Grease for food processing equipment

Moisture Control Tube Series IDK



When operating an actuator with a small diameter and a short stroke at a high frequency, the dew condensation (water droplet) may occur inside the piping depending on the conditions.

Simply connecting the moisture control tube to the actuator will prevent dew condensation from occurring. For details, refer to [Series IDK in the WEB catalog](#).

Specifications

Bore size (mm)	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	+1.0 mm 0						

Standard Strokes

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

Manufacture of Intermediate Strokes

(Except single acting, spring return type)

Type	A spacer is installed in the standard stroke body.	
Part no.	Refer to "How to Order" for the standard model number. (P. 823)	
Description	Strokes in 1 mm intervals are available by installing a spacer in the 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 The 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	●	●	●	●	●	●	●	
	Built-in magnet		●	●	●	●	●	●		
	Piping	Pipe thread	—	M5 x 0.8	M5 x 0.8	M5 x 0.8	M5 x 0.8	Note 1) M5 x 0.8 Rc1/8	Rc1/8	Rc1/4
			TN	—	—	—	—	NPT1/8	NPT1/8	NPT1/4
			TF	—	—	—	—	G1/8	G1/8	G1/4
		Built-in One-touch fittings Note 2)		—	—	—	—	ø6/4	ø6/4	ø8/6
	Rod end male thread		●	●	●	●	●	●	●	
	With boss on head end		●	●	●	●	●	●	●	

Note 1) $\phi 32$ without auto switch: M5 x 0.8 is used for 5 mm stroke piping dimension.

Thus, do not enter a symbol for the port thread type.

Note 2) One-touch fittings cannot be replaced.

Refer to pages 954 to 960 for the specifications of cylinders with autoswitches.

- Auto switch proper mounting position (detection at stroke end) and its mounting height
- Minimum stroke for auto switch mounting
- Operating range
- Auto switch mounting brackets/Part no.

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 a type C retaining ring) is used, it is likely to inflict damage to a human body or peripheral equipment, as a retaining ring may be flown out of the tip of a plier (tool for installing a type C retaining ring). Be much careful with the popping of a retaining ring. Besides, be certain that a retaining ring is placed firmly into the groove of rod cover before supplying air at the time of installment.

Spring Force

Single Acting, Spring Return (N)

Bore size (mm)	Stroke (mm)	Spring reaction force (N)	
		Second	First
12	5	13	8.6
	10	13	3.9
16	5	15	10.3
	10	15	5.9
20	5	15	10
	10	15	5.9
25	5	20	16
	10	20	11
32	5	30	23
	10	30	16
40	5	30	13
	10	39	21
50	10	50	30
	20	54	24

Single Acting, Spring Extend (N)

Bore size (mm)	Stroke (mm)	Spring reaction force (N)	
		Second	First
12	5	11	2.9
	10	9.7	2.8
16	5	20	3.9
	10	20	3.9
20	5	27	5.3
	10	27	5.9
25	5	29	9.8
	10	29	9.8
32	5	29	20
	10	29	20
40	5	29	20
	10	29	20
50	10	83	24
	20	83	24

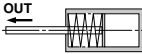
Single acting, Spring return

Spring state with first mounting load



When spring is set in cylinder

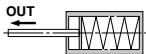
Spring state with second mounting load



When spring is compressed with air

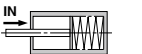
Single acting, Spring extend

Spring state with first mounting load



When spring is set in cylinder

Spring state with second mounting load



When spring is compressed with air

Mounting Brackets/Part No.

Bore size (mm)	Model	Foot ^{Note 1)}	Compact foot ^{Note 1)}	Flange	Double clevis
12	Without switch	CQ2□□-□□	CQ-L012	CQ-LC012	CQ-F012
	With switch	CQ2□□-□□Z	CQ-L212	CQ-LC212	CQ-D012
16	Without switch	CQ2□□-□□	CQ-L016	CQ-LC016	CQ-F016
	With switch	CQ2□□-□□Z	CQ-L216	CQ-LC216	CQ-D016
20	Without switch	CQ2□□-□□	CQ-L020	CQ-LC020	CQ-F020
	With switch	CQ2□□-□□Z	CQ-L220	CQ-LC220	CQ-D020
25	Without switch	CQ2□□-□□	CQ-L025	CQ-LC025	CQ-F025
	With switch	CQ2□□-□□Z	CQ-L225	CQ-LC225	CQ-D025
32	C□□□□□□□□	CQ-L032	CQ-LC032	CQ-F032	CQ-D032
40	C□□□□□□□□	CQ-L040	CQ-LC040	CQ-F040	CQ-D040
50	C□□□□□□□□	CQ-L050	CQ-LC050	CQ-F050	CQ-D050

Note 1) When ordering foot and compact foot brackets, the required quantity will be different depending on the bore size.

ø12 to ø25:

• Without switch: Order 2 pieces per cylinder.

• With switch: Order 1 piece per cylinder. (Part number for a set of 2 foot brackets)

ø32 to ø50:

• Order 2 pieces per cylinder.

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

Foot, Compact foot, Flange: Body mounting bolts

Double clevis: Clevis pin, Type C retaining rings for axis, Body mounting bolts

Theoretical Output

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
Spring extend	50	535	928	1316
	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

Weight

Weight (g)

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	125	145	—	—
	40	196	217	—	—
Spring extend	50	—	357	—	426
	12	29	35	—	—
	16	43	50	—	—
	20	67	78	—	—
	25	92	104	—	—
	32	135	151	—	—
	40	206	223	—	—
	50	—	374	—	429

Additional Weight

Bore size (mm)		12	16	20	25	32	40	50
Both ends tapped		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 on head end		0.7	1.3	2	3	5	7	13
Built-in One-touch fittings		—	—	—	—	6	6	10.5
Foot (Including mounting bolts)		55	67	164	186	142	154	243
Compact foot (Including mounting bolts)		41	51	121	140	99	114	177
Rod flange (Including mounting bolts)		57	69	139	161	180	214	373
Head flange (Including mounting bolts)		54	65	133	152	165	198	348
Double clevis (Including pin, retaining rings, bolts)		32	39	88	123	151	196	393

Calculation: (Example) CQ2B32-10SMZ

• Basic weight: CQ2B32-10SZ 145 g

• Additional weight: Both ends tapped 6 g

Rod end male thread 43 g

Double clevis 151 g

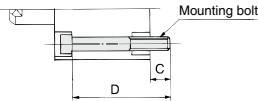
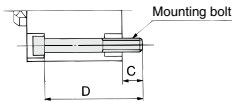
345 g

Mounting Bolt for CQ2B/Without Auto Switch

Mounting method: Mounting bolt for through-hole mounting of the CQ2B is available as an option. Refer to the following for ordering procedures. Order the actual number of bolts that will be used.

Example) CQ-M3 x 25L 4 pcs.

Material: Chromium molybdenum steel
Surface treatment: Zinc chromated



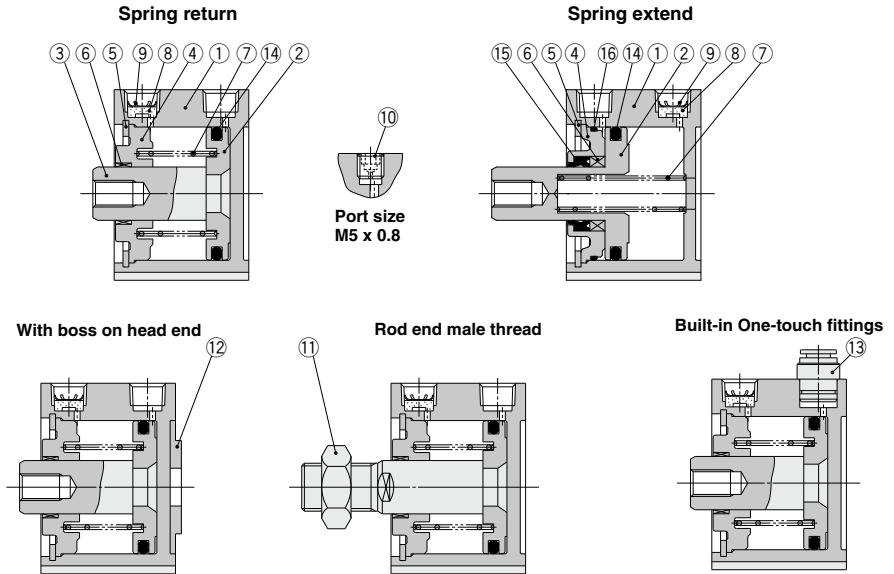
Spring Return

Cylinder model	C	D	Mounting bolt part no.
CQ2B12-5S	6.5	25	CQ-M3 x 25L
-10S		30	x 30L
CQ2B16-5S	5	25	CQ-M3 x 25L
-10S		30	x 30L
CQ2B20-5S	7.5	25	CQ-M5 x 25L
-10S		30	x 30L
CQ2B25-5S	9.5	30	CQ-M5 x 30L
-10S		35	x 35L
CQ2B32-5SZ	9	30	CQ-M5 x 30L
-10SZ		35	x 35L
CQ2B40-5SZ	7.5	35	CQ-M5 x 35L
-10SZ		40	x 40L
CQ2B50-10SZ	12.5	45	CQ-M6 x 45L
-20SZ		55	x 55L

Spring Extend

Cylinder model	C	D	Mounting bolt part no.
CQ2B12-5T	6.5	25	CQ-M3 x 25L
-10T		30	x 30L
CQ2B16-5T	5	25	CQ-M3 x 25L
-10T		30	x 30L
CQ2B20-5T	7.5	25	CQ-M5 x 25L
-10T		30	x 30L
CQ2B25-5T	9.5	30	CQ-M5 x 30L
-10T		35	x 35L
CQ2B32-5TZ	9	30	CQ-M5 x 30L
-10TZ		35	x 35L
CQ2B40-5TZ	7.5	35	CQ-M5 x 35L
-10TZ		40	x 40L
CQ2B50-10TZ	12.5	45	CQ-M6 x 45L
-20TZ		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, Chromated, 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	
9	Retaining ring	Carbon tool steel	Port size Rc1/8, 1/4
10	Plug with fixed orifice	Alloy steel	Port size M5 x 0.8
11	Rod end nut	Carbon steel	Zinc chromated
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).
(Except ø12 and ø16 of built-in magnet type)

Replacement Parts

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
Contents	Kits include item 14 from the above table.	Kits include items 14, 15, 16 from the above table.
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 seal kit does not include a grease pack, order it separately.
Grease pack part no.: GR-S-010 (10 g)

CUJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

MU-Z

D-□

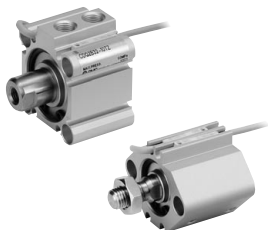
-X□

Technical data

Standard: Single Acting, Single Rod

Series **CDQ2**

With Auto Switch



Refer to the below pages for further information on auto switches.

Auto switch proper mounting position and its mounting height	P.954 to 960
Minimum stroke for auto switch mounting	
Operating range	
Auto switch mounting brackets/Part no.	

Weight

Weight

Action	Bore size (mm)	Cylinder stroke (mm)			
		5	10	15	20
Spring return	12	44	49	—	—
	16	64	72	—	—
	20	97	109	—	—
	25	135	150	—	—
	32	182	202	—	—
	40	269	290	—	—
	50	—	456	—	521
Spring extend	12	49	65	—	—
	16	63	71	—	—
	20	110	119	—	—
	25	149	163	—	—
	32	192	208	—	—
	40	279	296	—	—
	50	—	486	—	540

Additional Weight

Bore size (mm)		12	16	20	25	32	40	50
Both ends tapped		1	1	3	3	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 on head end		0.7	1.3	2	3	5	7	13
Built-in One-touch fittings		—	—	—	—	6	6	10.5
Foot (Including mounting bolts)		49	62	147	169	142	154	243
Compact foot (Including mounting bolts)		32	40	97	116	99	114	177
Rod flange (Including mounting bolts)		54	67	131	153	180	214	373
Head flange (Including mounting bolts)		52	63	124	144	165	198	348
Double clevis (Including pin, retaining rings, bolts)		29	35	78	114	151	196	393

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

• Basic weight: CDQ2B32-10SZ 202 g

• Additional weight: Both ends tapped 6 g

Rod end male thread 43 g

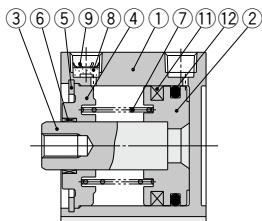
Double clevis 151 g

402 g

Add each weight of auto switches when auto switches are mounted.

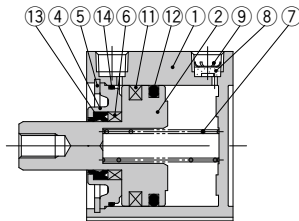
Construction

Spring return



Port size
M5 x 0.8

Spring extend



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, Chromated, 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	
9	Retaining ring	Carbon tool steel	Port size Rc1/8, 1/4
10	Plug with fixed orifice	Alloy steel	Port size M5 x 0.8
11	Magnet	—	

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

Replacement Parts/Seal Kit

Since the same as those of the standard, single acting, single rod, refer to page 827.

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

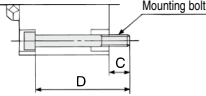
Mounting Bolt for CDQ2B/With Auto Switch

Mounting method: Mounting bolt for through-hole mounting of the CDQ2B is available as an option. Refer to the following for ordering procedures. Order the actual number of bolts that will be used.

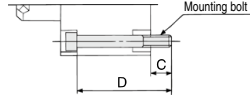
Example) CQ-M3 x 35L 2 pcs.

Material: Chromium molybdenum steel
Surface treatment: Zinc chromated

Spring return



Spring extend



Spring Return

Cylinder model	C	D	Mounting bolt part no.
CDQ2B12-5SZ	5.5	35	CQ-M3 x 35L
-10SZ		40	x 40L
CDQ2B16-5SZ	8	40	CQ-M3 x 40L
-10SZ		45	x 45L
CDQ2B20-5SZ	10.5	40	CQ-M5 x 40L
-10SZ		45	x 45L
CDQ2B25-5SZ	9.5	40	CQ-M5 x 40L
-10SZ		45	x 45L
CDQ2B32-5SZ	9	40	CQ-M5 x 40L
-10SZ		45	x 45L
CDQ2B40-5SZ	7.5	45	CQ-M5 x 45L
-10SZ		50	x 50L
CDQ2B50-10SZ	12.5	55	CQ-M6 x 55L
-20SZ		65	x 65L

Spring Extend

Cylinder model	C	D	Mounting bolt part no.
CDQ2B12-5TZ	6.1	40	CQ-M3 x 40L
-10TZ		45	x 45L
CDQ2B16-5TZ	8	40	CQ-M3 x 40L
-10TZ		45	x 45L
CDQ2B20-5TZ	10.5	40	CQ-M5 x 40L
-10TZ		45	x 45L
CDQ2B25-5TZ	9.5	40	CQ-M5 x 40L
-10TZ		45	x 45L
CDQ2B32-5TZ	9	40	CQ-M5 x 40L
-10TZ		45	x 45L
CDQ2B40-5TZ	7.5	45	CQ-M5 x 45L
-10TZ		50	x 50L
CDQ2B50-10TZ	12.5	55	CQ-M6 x 55L
-20TZ		65	x 65L

CUJ

CU

CQS

CQ2
-Z

RQ

CQM

CQU

MU
-Z

D-□

-X□

Technical
data

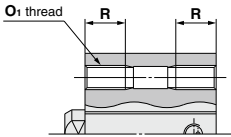
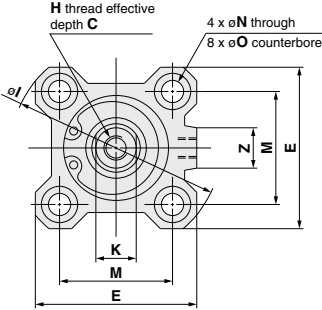
Series CQ2

Dimensions

Ø12 to Ø25/Spring Return Without Auto Switch

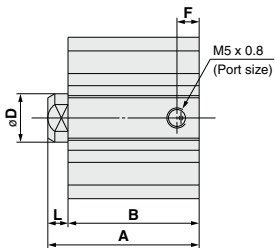
Both ends tapped: CQ2A

Standard (Through-hole): CQ2B

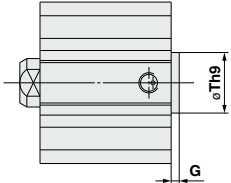


Both Ends Tapped (mm)

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 on head end

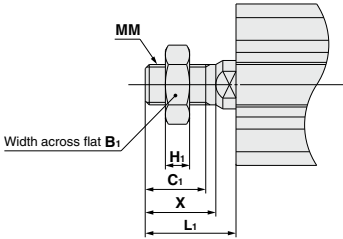


With Boss on Head End (mm)

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 on rod end: Option (Suffix "-XC36" to the end of model 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

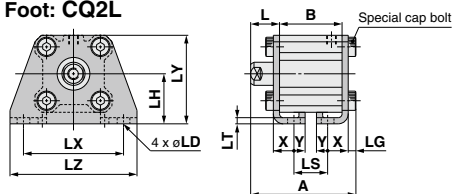
Standard

(mm)

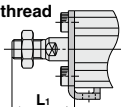
Bore size (mm)	Stroke (mm)	A	B	C	D	E	F	H	I	K	L	M	N	O	Z
12	5	25.5	22	6	6	25	5	M3 x 0.5	32	5	3.5	15.5	3.5	6.5 depth 3.5	—
	10	30.5	27												
16	5	27	23.5	8	8	29	5.5	M4 x 0.7	38	6	3.5	20	3.5	6.5 depth 3.5	10
	10	32	28.5												
20	5	29	24.5	7	10	36	5.5	M5 x 0.8	47	8	4.5	25.5	5.5	9 depth 7	10
	10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

* For details about the rod end nut and accessory brackets, refer to page 804.

Foot: CQ2L



Rod end male thread



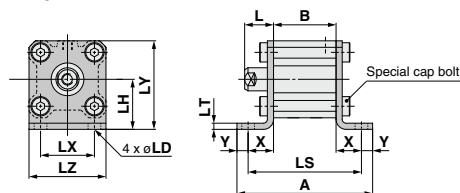
Foot

Bore size (mm)	A		B		L	L ₁	LD	LG	LH	LS	
	5st	10st	5st	10st						5st	10st
12	40.3	45.3	22	27	13.5	24	4.5	2.8	17	10	15
16	41.8	46.8	23.5	28.5	13.5	25.5	4.5	2.8	19	11.5	16.5
20	46.2	51.2	24.5	29.5	14.5	28.5	6.6	4	24	12.5	17.5
25	49.7	54.7	27.5	32.5	15	32.5	6.6	4	26	12.5	17.5

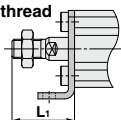
Bore size (mm)	LT	LX	LY	LZ	X	Y
12	2	34	29.5	44	8	4.5
16	2	38	33.5	48	8	5
20	3.2	48	42	62	9.2	5.8
25	3.2	52	46	66	10.7	5.8

Foot bracket material: Carbon steel
Surface treatment: Nickel plated

Compact foot: CQ2LC



Rod end male thread



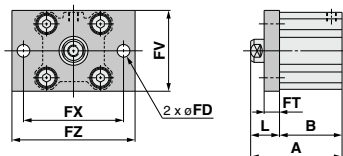
Compact Foot

Bore size (mm)	A		B		L	L ₁	LD	LH	LS		LT
	5st	10st	5st	10st					5st	10st	
12	49.6	54.6	22	27	13.5	24	4.5	17	40.6	45.6	2
16	52.1	57.1	23.5	28.5	13.5	25.5	4.5	19	42.1	47.1	2
20	62.5	67.5	24.5	29.5	14.5	28.5	6.6	24	50.9	55.9	3.2
25	65.5	70.5	27.5	32.5	15	32.5	6.6	26	53.9	58.9	3.2

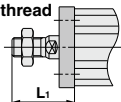
Bore size (mm)	LX	LY	LZ	X	Y
12	15.5	29.5	25	9.3	4.5
16	20	33.5	29	9.3	5
20	25.5	42	36	13.2	5.8
25	28	46	40	13.2	5.8

Compact foot bracket material: Carbon steel
Surface treatment: Zinc chromated

Rod flange: CQ2F



Rod end male thread

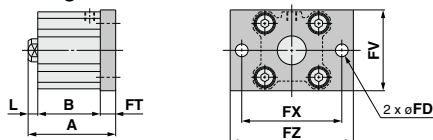


Rod Flange

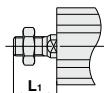
Bore size (mm)	A		B		FD	FT	FV	FX	FZ	L	L ₁
	5st	10st	5st	10st							
12	35.5	40.5	22	27	4.5	5.5	25	45	55	13.5	24
16	37	42	23.5	28.5	4.5	5.5	30	45	55	13.5	25.5
20	39	44	24.5	29.5	6.6	8	39	48	60	14.5	28.5
25	42.5	47.5	27.5	32.5	6.6	8	42	52	64	15	32.5

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

Head flange: CQ2G



Rod end male thread



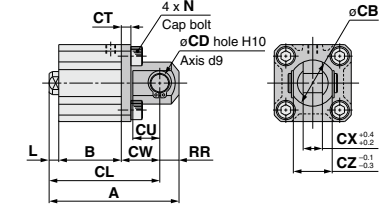
Head Flange

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

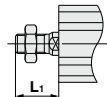
Flange bracket material: Carbon steel
Surface treatment: Nickel plated

* For details about the rod end nut and accessory brackets, refer to page 804.

Double clevis: CQ2D



Rod end male thread



Double Clevis

Bore size (mm)	A		B		CB	CD	CL		CT	CU	CW
	5st	10st	5st	10st			5st	10st			
12	45.5	50.5	22	27	12	5	39.5	44.5	4	7	14
16	48	53	23.5	28.5	14	5	42	47	4	10	15
20	56	61	24.5	29.5	20	8	47	52	5	12	18
25	62.5	67.5	27.5	32.5	24	10	52.5	57.5	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 804.
- * Double clevis pin and retaining rings are included.

- CUJ
- CU
- CQS
- CQ2-Z
- RQ
- CQM
- CQU
- MU-Z

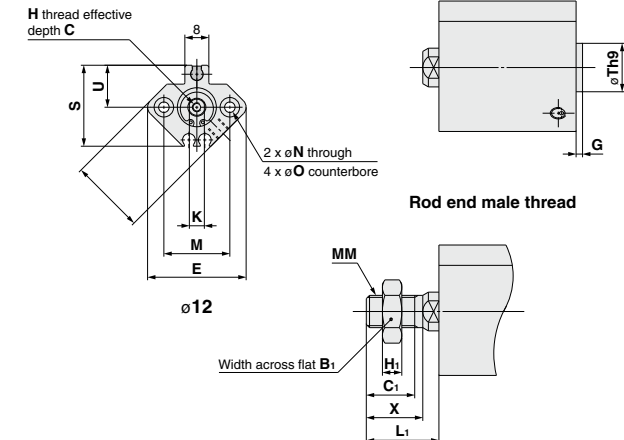
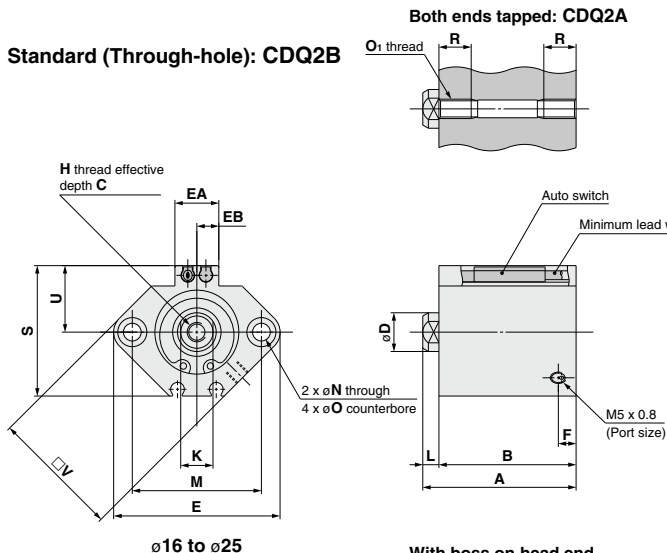
- D-□
- X□
- Technical data

Series CQ2

Dimensions

ø12 to ø25/Spring Return With Auto Switch

Standard (Through-hole): CDQ2B

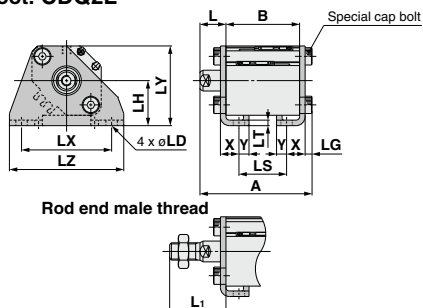


Standard For auto switch proper mounting position and its mounting height, refer to pages 954 to 960.

Bore size (mm)	Stroke (mm)	A	B	C	D	E	EA	EB	F	H	K	L	M	N	O	S	U	V
12	5	36.5	33	6	6	33	—	—	6.5	M3 x 0.5	5	3.5	22	3.5	6.5 depth 3.5	27.5	14	25
	10	41.5	38															
16	5	39	35.5	8	8	37	13.2	6.6	5.5	M4 x 0.7	6	3.5	28	3.5	6.5 depth 3.5	29.5	15	29
	10	44	40.5															
20	5	41	36.5	7	10	47	13.6	6.8	5.5	M5 x 0.8	8	4.5	36	5.5	9 depth 7	35.5	18	36
	10	46	41.5															
25	5	42.5	37.5	12	12	52	13.6	6.8	5.5	M6 x 1.0	10	5	40	5.5	9 depth 7	40.5	21	40
	10	47.5	42.5															

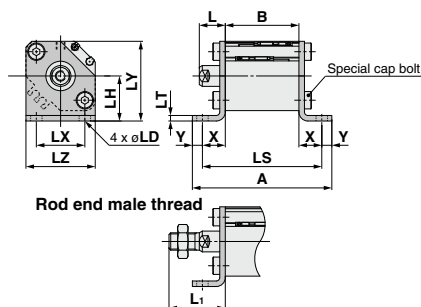
* For details about the rod end nut and accessory brackets, refer to page 804.

Foot: CDQ2L



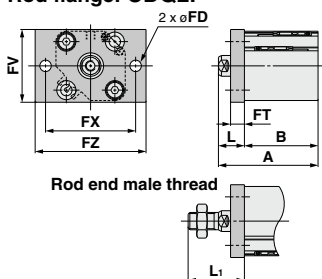
Rod end male thread

Compact foot: CDQ2LC



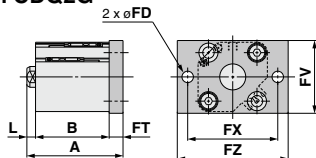
Rod end male thread

Rod flange: CDQ2F

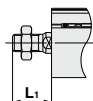


Rod end male thread

Head flange: CDQ2G



Rod end male thread



Foot

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

Compact Foot

Bore size (mm)	A		B		L	L ₁	LD	LH	LS		LT
	5st	10st	5st	10st					5st	10st	
12	60.6	65.6	33	38	13.5	24	4.5	17	51.6	56.6	2
16	64.1	69.1	35.5	40.5	13.5	25.5	4.5	19	54.1	59.1	2
20	74.5	79.5	36.5	41.5	14.5	28.5	6.6	24	62.9	67.9	3.2
25	75.5	80.5	37.5	42.5	15	32.5	6.6	26	63.9	68.9	3.2

Bore size (mm)	LX	LY	LZ	X	Y
12	15.5	29.5	25	9.3	4.5
16	20	33.5	29	9.3	5
20	25.5	42	36	13.2	5.8
25	28	46	40	13.2	5.8

Compact foot bracket material: Carbon steel
Surface treatment: Zinc chromated

Rod Flange

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

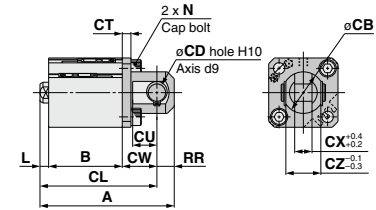
Head Flange

Bore size (mm)	A		L	L ₁	(* The dimensions except A, L and L ₁ are the same as those of the rod flange.)
	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

* For details about the rod end nut and accessory brackets, refer to page 804.

Double clevis: CDQ2D



Rod end male thread



Double Clevis

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 804.
- * Double clevis pin and retaining rings are included.

CJ

CU

CQS

CQ2
-Z

RQ

CQM

CQU

MU
-Z

D-□

-X□

Technical
data

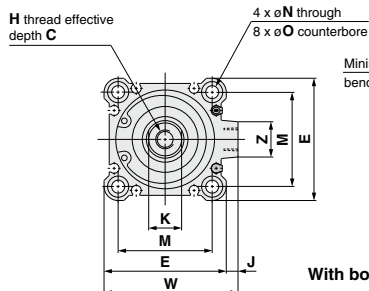
Series CQ2

Dimensions

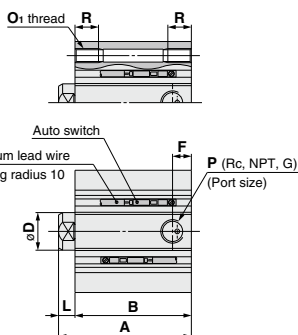
ø32 to ø50/Spring Return With Auto Switch

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

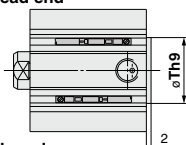
Standard (Through-hole): CQ2B/CDQ2B



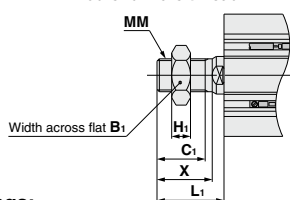
Both ends tapped: CQ2A/CDQ2A



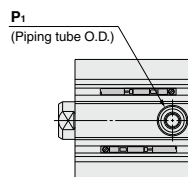
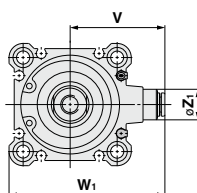
With boss on head end



Rod end male thread



Built-in One-touch fittings: ø32 to ø50



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

With Boss on Head End (mm)

Bore size (mm)	Th9
32	21 ^{0.050}
40	28 ^{0.050}
50	35 ^{0.050}

Note 1) With boss on rod end: Option (Suffix "-XC36" to the end of model number.)

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

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

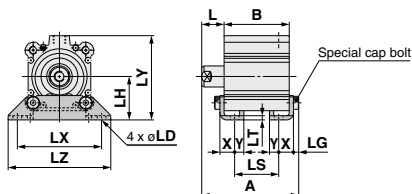
Standard For auto switch proper mounting position and its mounting height, refer to pages 954 to 960.

Bore size (mm)	Stroke (mm)	Without auto switch				With auto switch				C	D	E	H	J	K	L	M	N	O	W	Z
		A	B	F	P	A	B	F	P												
32	5	35	28	5.5	M5 x 0.8	45	38	7.5	1/8	13	16	45	M8 x 1.25	4.5	14	7	34	5.5	9 depth 7	49.5	14
	10	40	33	7.5	1/8	50	43	7.5	1/8	13	16	45	M8 x 1.25	4.5	14	7	34	5.5	9 depth 7	49.5	14
40	5	41.5	34.5	7.5	1/8	51.5	44.5	7.5	1/8	13	16	52	M8 x 1.25	5	14	7	40	5.5	9 depth 7	57	15
	10	46.5	39.5	10.5	1/4	56.5	49.5	10.5	1/4	15	20	64	M10 x 1.5	7	17	8	50	6.6	11 depth 8	71	19
50	10	48.5	40.5	10.5	1/4	58.5	50.5	10.5	1/4	15	20	64	M10 x 1.5	7	17	8	50	6.6	11 depth 8	71	19
	20	58.5	50.5	10.5	1/4	68.5	60.5	10.5	1/4	15	20	64	M10 x 1.5	7	17	8	50	6.6	11 depth 8	71	19

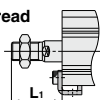
Note 2) The A, B dimensions of the ø32-5 mm stroke with built-in One-touch fittings without auto switch are the same as those of the ø32-10 mm stroke without auto switch.

* For details about the rod end nut and accessory brackets, refer to page 804.

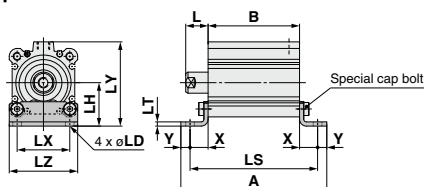
Foot: CQ2L/CDQ2L



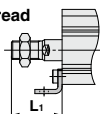
Rod end male thread



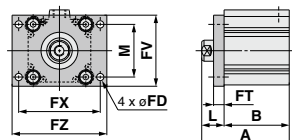
Compact foot: CQ2LC/CDQ2LC



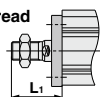
Rod end male thread



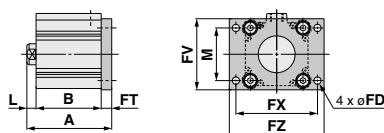
Rod flange: CQ2F/CDQ2F



Rod end male thread



Head flange: CQ2G/CDQ2G



Rod end male thread



Foot

(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
32	52.2	57.2	—	28	33	—	12	17	—	62.2	67.2	—
40	58.7	63.7	—	34.5	39.5	—	18.5	23.5	—	68.7	73.7	—
50	—	66.7	76.7	—	40.5	50.5	—	17.5	27.5	—	76.7	86.7

Bore size (mm)	L	L ₁	LD	LG	LH	LT	LX	LY	LZ	X	Y
32	17	38.5	6.6	4	30	32	57	57	71	112	5.8
40	17	38.5	6.6	4	33	32	64	64	78	112	7
50	18	43.5	9	5	39	32	79	78	95	147	8

Foot bracket material: Carbon steel
Surface treatment: Nickel plated

Compact Foot

(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
32	67	72	—	28	33	—	55.4	60.4	—	77	82	—
40	75.9	80.9	—	34.5	39.5	—	61.9	66.9	—	85.9	90.9	—
50	—	89.9	99.9	—	40.5	50.5	—	73.9	83.9	—	99.9	109.9

Bore size (mm)	L	L ₁	LD	LG	LH	LT	LX	LY	LZ	X	Y
32	17	38.5	6.6	30	32	34	57	45	13.7	5.8	—
40	17	38.5	6.6	33	32	40	64	52	13.7	7	—
50	18	43.5	9	39	32	50	78	64	16.7	8	—

Compact foot bracket material: Carbon steel
Surface treatment: Zinc chromated

Rod Flange

(mm)

Bore size (mm)	Without auto switch						With auto switch					
	A		B		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 Flange

(mm)

Bore size (mm)							(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

(* The dimensions except A, L and L₁ are the same as those of the rod flange.)

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

* For details about the rod end nut and accessory brackets, refer to page 804.

CUJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

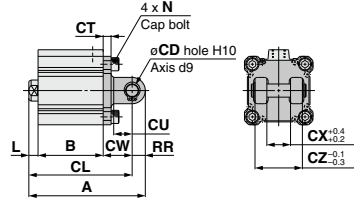
MU-Z

D-□

-X□

Technical data

Double clevis: CQ2D/CDQ2D



Rod end male thread



Double Clevis (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
32	65	70	—	28	33	—	55	60	—	75	80	—
40	73.5	78.5	—	34.5	39.5	—	63.5	68.5	—	83.5	88.5	—
50	—	90.5	100.5	—	40.5	50.5	—	76.5	86.5	—	100.5	110.5

Bore size (mm)	CD	CT	CU	CW	CX	CZ	L	L1	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	M6 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 804.
- * Double clevis pin and retaining rings are included.

CQ2D

CQ2D

CQ2D

CQ2D-Z

CQ2D

CQ2D

CQ2D

CQ2D

CQ2D-Z

D-□

-X□

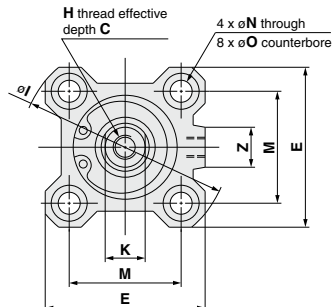
Technical data

Series CQ2

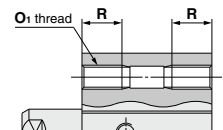
Dimensions

Ø12 to Ø25/Spring Extend Without Auto Switch

Standard (Through-hole): CQ2B



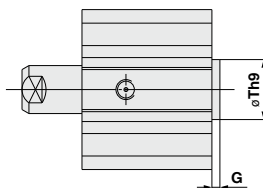
Both ends tapped: CQ2A



Both Ends Tapped

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 on head end

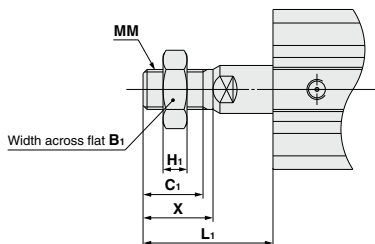


With Boss on Head End

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 on rod end: Option (Suffix "-XC36" to the end of model number.)

Rod end male thread



Rod End Male Thread

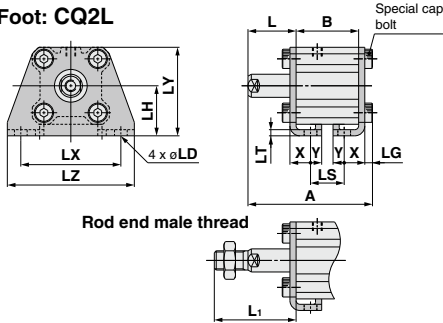
Bore size (mm)	B ₁	C ₁	H ₁	L ₁ 5st 10st	MM	X
12	8	9	4	19 24	M5 x 0.8	10.5
16	10	10	5	20.5 25.5	M6 x 1.0	12
20	13	12	5	23.5 28.5	M8 x 1.25	14
25	17	15	6	27.5 32.5	M10 x 1.25	17.5

Standard

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

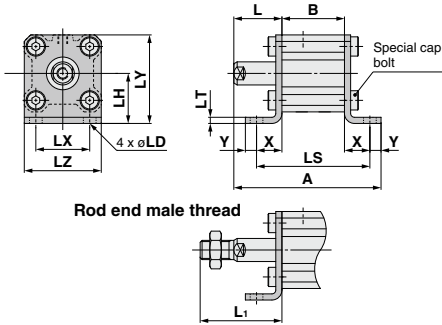
* For details about the rod end nut and accessory brackets, refer to page 804.

Foot: CQ2L



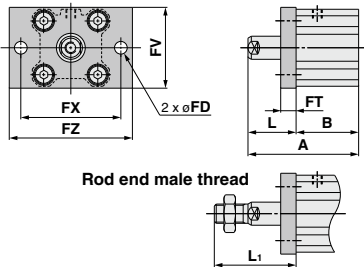
Rod end male thread

Compact foot: CQ2LC



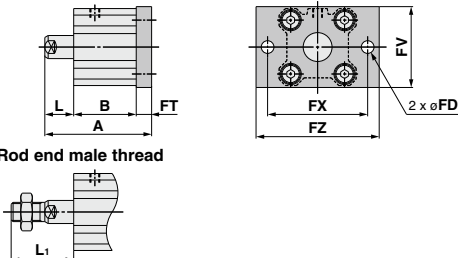
Rod end male thread

Rod flange: CQ2F



Rod end male thread

Head flange: CQ2G



Rod end male thread

Foot

Foot													(mm)	
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

Compact Foot

Compact Foot													(mm)
Bore size (mm)	A		B		L		L ₁		LD	LH	LS		LT
	5st	10st	5st	10st	5st	10st	5st	10st			5st	10st	
12	54.3	64.3	22	27	18.5	23.5	29	34	4.5	17	40.6	45.6	2
16	56.3	66.3	23.5	28.5	18.5	23.5	30.5	35.5	4.5	19	42.1	47.1	2
20	63	73	24.5	29.5	19.5	24.5	33.5	38.5	6.6	24	50.9	55.9	3.2
25	66.5	76.5	27.5	32.5	20	25	37.5	42.5	6.6	26	53.9	58.9	3.2

Bore size (mm)	LX	LY	LZ	X	Y
12	15.5	29.5	25	9.3	4.5
16	20	33.5	29	9.3	5
20	25.5	42	36	13.2	5.8
25	28	46	40	13.2	5.8

Compact foot bracket material: Carbon steel
Surface treatment: Zinc chromated

Rod Flange

Rod Flange													(mm)
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 Flange

(mm)						
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

* For details about the rod end nut and accessory brackets, refer to page 804.

CJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

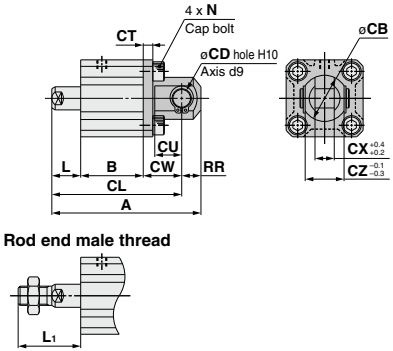
MU-Z

D-□

-X□

Technical data

Double clevis: CQ2D



Double Clevis

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 804.
- * Double clevis pin and retaining rings are included.

CJ

CU

CQS

CQ2
-Z

RQ

CQM

CQU

MU
-Z

D-□

-X□

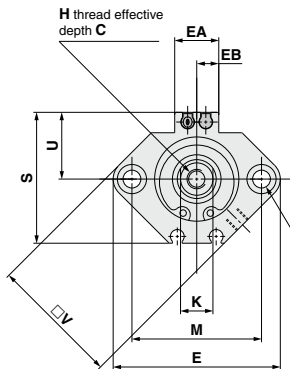
Technical
data

Series CQ2

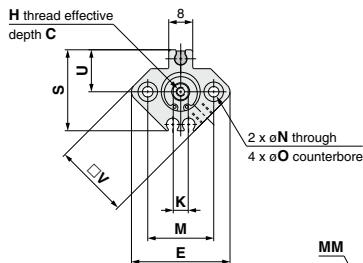
Dimensions

Ø12 to Ø25/Spring Extend With Auto Switch

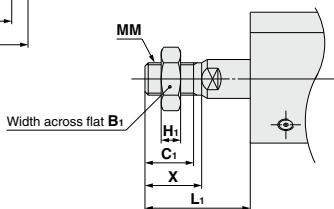
Standard (Through-hole): CDQ2B



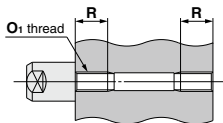
Ø16 to Ø25



Ø12

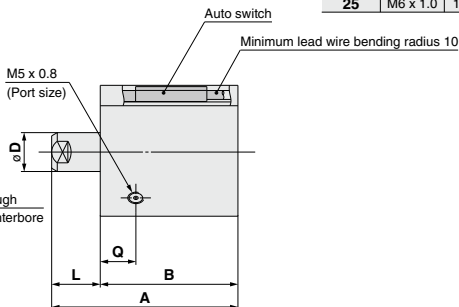


Both ends tapped: CDQ2A

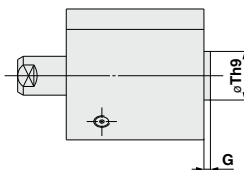


Both Ends Tapped

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 on head end



With Boss on Head End

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

Note) With boss on rod end: Option (Suffix "-XC36" to the end of model number.)

Rod end male thread

Rod End Male Thread

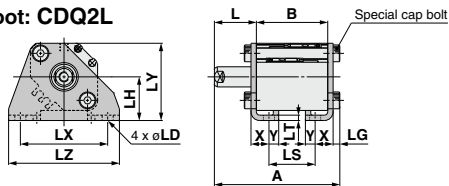
Bore size (mm)	B1	C1	H1	L1	MM	X
				5st	10st	
12	8	9	4	19	24	M5 x 0.8 10.5
16	10	10	5	20.5	25.5	M6 x 1.0 12
20	13	12	5	23.5	28.5	M8 x 1.25 14
25	17	15	6	27.5	32.5	M10 x 1.25 17.5

Standard For auto switch proper mounting position and its mounting height, refer to pages 954 to 960.

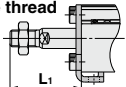
Bore size (mm)	Stroke (mm)	A	B	C	D	E	EA	EB	H	K	L	M	N	O	Q	S	U	V
12	5	45.9	37.4	6	6	33	—	—	M3 x 0.5	5	8.5	22	3.5	6.5 depth 3.5	11	27.5	14	25
	10	55.9	42.4								13.5							
16	5	44	35.5	8	8	37	13.2	6.6	M4 x 0.7	6	8.5	28	3.5	6.5 depth 3.5	10	29.5	15	29
	10	54	40.5								13.5							
20	5	46	36.5	7	10	47	13.6	6.8	M5 x 0.8	8	9.5	36	5.5	9 depth 7	8	35.5	18	36
	10	56	41.5								14.5							
25	5	47.5	37.5	12	12	52	13.6	6.8	M6 x 1.0	10	10	40	5.5	9 depth 7	9	40.5	21	40
	10	57.5	42.5								15							

* For details about the rod end nut and accessory brackets, refer to page 804.

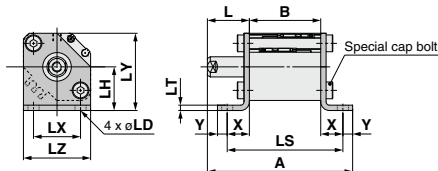
Foot: CDQ2L



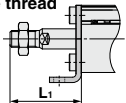
Rod end male thread



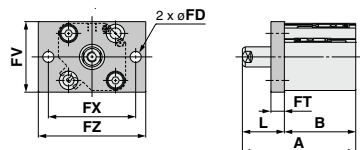
Compact foot: CDQ2LC



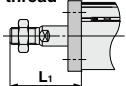
Rod end male thread



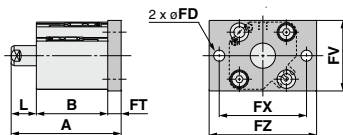
Rod flange: CDQ2F



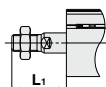
Rod end male thread



Head flange: CDQ2G



Rod end male thread



Foot

Foot												(mm)	
Bore size (mm)	A		B		L		L ₁		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

Compact Foot

Compact Foot													(mm)	
Bore size (mm)	A		B		L		L ₁		LD	LH	LS		LT	
	5st	10st	5st	10st	5st	10st	5st	10st			5st	10st		
12	69.7	79.7	37.4	42.4	18.5	23.5	29	34	4.5	17	56	61	2	
16	68.3	78.3	35.5	40.5	18.5	23.5	30.5	35.5	4.5	19	54.1	59.1	2	
20	75	85	36.5	41.5	19.5	24.5	33.5	38.5	6.6	24	62.9	67.9	3.2	
25	76.5	86.5	37.5	42.5	20	25	37.5	42.5	6.6	26	63.9	68.9	3.2	

Bore size (mm)	LX	LY	LZ	X	Y
12	15.5	29.5	25	9.3	4.5
16	20	33.5	29	9.3	5
20	25.5	42	36	13.2	5.8
25	28	46	40	13.2	5.8

Compact foot bracket material: Carbon steel
Surface treatment: Zinc chromated

Rod Flange

Rod Flange													(mm)	
Bore size (mm)	A		B		FD	FT	FV	FX	FZ	L		L ₁		
	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 Flange

		(mm)									
Bore size (mm)	A		L		L ₁						
	5st	10st	5st	10st	5st	10st	* The dimensions except A, L and L ₁ are the same as those of the rod flange.				
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

* For details about the rod end nut and accessory brackets, refer to page 804.

CJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

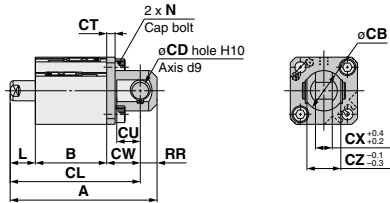
MU-Z

D-□

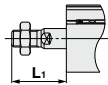
-X□

Technical data

Double clevis: CDQ2D



Rod end male thread



Double Clevis

(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

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

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

* For details about the rod end nut and accessory brackets, refer to page 804.
* Double clevis pin and retaining rings are included.

CJ
CU
CQS
CQ2-Z
RQ
CQM
CQU
MU-Z

D-□
-X□
Technical data

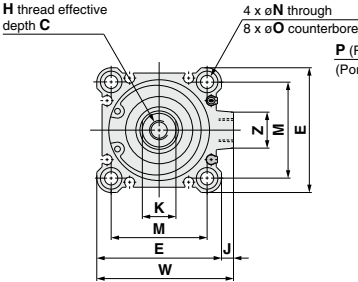
Series **CQ2**

Dimensions

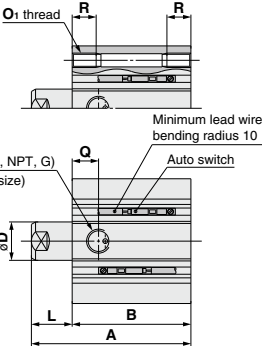
ø32 to ø50/Spring Extend With Auto Switch

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

Standard (Through-hole):
CQ2B/CDQ2B



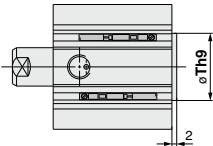
Both ends tapped: CQ2A/CDQ2A



Both Ends
Tapped (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 on head end

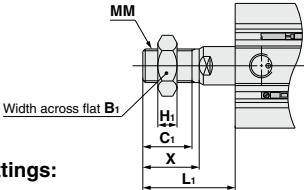


With Boss on
Head End (mm)

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

(Note) With boss on rod end: Option
(Suffix "-XC36" to the end of model number.)

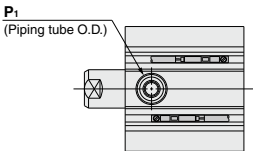
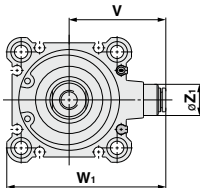
Rod end male thread



Rod End Male Thread (mm)

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

Built-in One-touch fittings:
ø32 to ø50



Built-in One-touch
Fittings (mm)

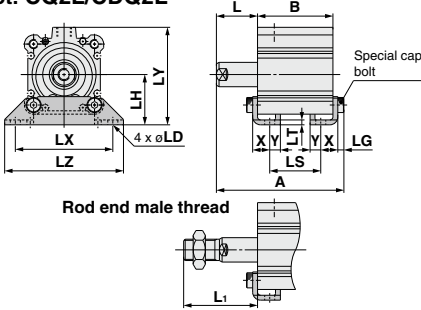
Bore size (mm)	Z ₁	P ₁	V	W ₁
32	13	6	36.5	59
40	13	6	40.5	66.5
50	16	8	50	82

Standard For auto switch proper mounting position and its mounting height, refer to pages 954 to 960.

Bore size (mm)	Stroke (mm)	Without auto switch				With auto switch												
		A	B	P	Q	A	B	P	Q	C	D	E	H	J	K	L	M	N
32	5	40	28	M5 x 0.8	10	50	38	1/8	10	13	16	45	M8 x 1.25	4.5	14	12	34	5.5
	10	50	33	1/8	—	60	43	—	—	—	—	—	—	—	—	17	—	9 depth 7
40	5	46.5	34.5	—	12.5	56.5	44.5	—	—	—	—	—	—	—	—	12	40	5.5
	10	56.5	39.5	1/8	—	66.5	49.5	1/8	12.5	13	16	52	M8 x 1.25	5	14	17	—	9 depth 7
50	10	58.5	40.5	—	10.5	68.5	50.5	—	—	—	—	—	—	—	—	18	50	6.6
	20	78.5	50.5	1/4	—	88.5	60.5	1/4	10.5	15	20	64	M10 x 1.5	7	17	28	—	11 depth 8

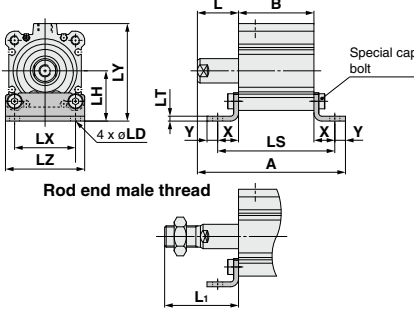
* For details about the rod end nut and accessory brackets, refer to page 804.

Foot: CQ2L/CDQ2L



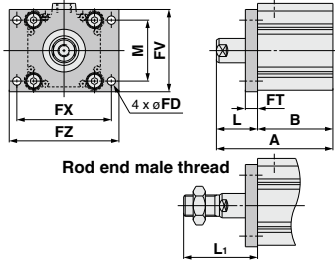
Rod end male thread

Compact foot: CQ2LC/CDQ2LC



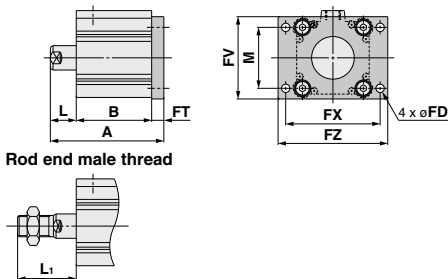
Rod end male thread

Rod flange: CQ2F/CDQ2F



Rod end male thread

Head flange: CQ2G/CDQ2G



Rod end male thread

Foot

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			L ₁			LD	LG	LH	LT	LX	LY	LZ	X	Y
32	22	27	—	43.5	48.5	—	6.6	4	30	3.2	57	57	71	11.2	5.8
40	22	27	—	43.5	48.5	—	6.6	4	33	3.2	64	64	78	11.2	7
50	—	28	38	—	53.5	63.5	9	5	39	3.2	79	78	95	14.7	8

Foot bracket material: Carbon steel
Surface treatment: Nickel plated

Compact Foot

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	68.5	79.5	—	28	33	—	55.4	60.4	—	79.5	89.5	—	38	43	—	65.4	70.4	—
40	77.2	87.2	—	34.5	39.5	—	61.9	66.9	—	87.2	97.2	—	44.5	49.5	—	71.9	76.9	—
50	—	93.2	113.2	—	40.5	50.5	—	73.9	83.9	—	103.2	123.2	—	50.5	60.5	—	83.9	93.9

Bore size (mm)	L			L ₁			LD	LH	LT	LX	LY	LZ	X	Y
32	22	27	—	43.5	48.5	—	6.6	30	3.2	34	57	45	13.7	5.8
40	22	27	—	43.5	48.5	—	6.6	33	3.2	40	64	52	13.7	7
50	—	28	38	—	53.5	63.5	9	39	3.2	50	78	64	16.7	8

Compact foot bracket material: Carbon steel
Surface treatment: Zinc chromated

Rod Flange

Bore size (mm)	Without auto switch						With auto switch									
	A			B			A			B			FD	FT	FV	FZ
	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
40	56.5	66.5	—	34.5	39.5	—	66.5	76.5	—	44.5	49.5	—	5.5	8	54	62
50	—	68.5	88.5	—	40.5	50.5	—	78.5	98.5	—	50.5	60.5	6.6	9	67	76

Bore size (mm)	L			L ₁			M
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

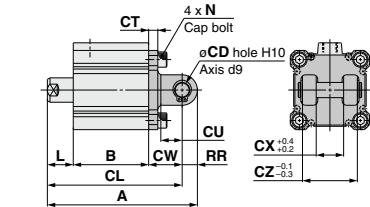
Head Flange

Bore size (mm)	Without auto switch						With auto switch						L		L ₁			
	A			A			A			A			L		L ₁			
	5st	10st	20st	5st	10st	20st	5st	10st	20st	5st	10st	20st	5st	10st	5st	10st	20st	20st
32	48	58	—	58	68	—	12	17	—	33.5	38.5	—	* The dimensions except A, L and L ₁ are the same as those of the rod flange.					
40	54.5	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						

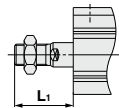
Flange bracket material: Carbon steel
Surface treatment: Nickel plated

* For details about the rod end nut and accessory brackets, refer to page 804.

Double clevis: CQ2D/CDQ2D



Rod end male thread



Double Clevis

(mm)

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

Bore size (mm)	CD		CT		CU		CW		CX		CZ		L		L1		N		RR
	5st	10st	20st	5st	10st	20st	5st	10st	20st	5st	10st	20st	5st	10st	20st	5st	10st	20st	
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
32	10	5	14	20	18	36	12	17	—	33.5	38.5	—	—	—	—	—	M6 x 1.0	10	
40	10	6	14	22	18	36	12	17	—	33.5	38.5	—	—	—	—	—	M6 x 1.0	10	
50	14	7	20	28	22	44	—	18	28	—	43.5	53.5	—	—	—	—	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 804.
- * Double clevis pin and retaining rings are included.

CJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

MU-Z

D-□

-X□

Technical data

Compact Cylinder: Large Bore Size

Double Acting, Single Rod

Series CQ2

ø125, ø140, ø160, ø180, ø200

How to Order

Without auto switch

CQ2B 125 - 30 DC Z -

With auto switch

CDQ2B 125 - 30 DC Z - M9BW

With auto switch
(Built-in magnet)

Mounting

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 844.

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

Cylinder stroke (mm)

Refer to page 843 for standard strokes.

Action

D Double acting

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) CDQ2B140-30DCZ

Made to Order
Refer to page 843 for details.

Number of auto switches

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

Auto switch

Nil Without auto switch

* Refer to the below table for applicable auto switches.

Auto switch mounting groove

Z ø125 to ø200 4 surfaces

Body option

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

Cushion

C Rubber bumper

Applicable Auto Switches/Refer to pages 1559 to 1673 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 auto switch	—	Grommet	Yes	3-wire (NPN)	24 V	—	M9NV	M9N	●	●	●	○	—	○	IC circuit	Relay, PLC
	3-wire (PNP)			5 V, 12 V			M9PV	M9P	●	●	●	○	—	○		
	2-wire			12 V			M9BV	M9B	●	●	●	○	—	○		
	3-wire (NPN)			5 V, 12 V			M9NVW	M9NW	●	●	●	○	—	○		
	3-wire (PNP)			12 V			M9PWV	M9PW	●	●	●	○	—	○		
	2-wire			12 V			M9BWW	M9BW	●	●	●	○	—	○		
	3-wire (NPN)			5 V, 12 V			M9NAV ^{*1}	M9NA ^{*1}	○	○	●	○	—	○		
	3-wire (PNP)			12 V			M9PAV ^{*1}	M9PA ^{*1}	○	○	●	○	—	○		
2-wire	12 V	M9BAV ^{*1}	M9BA ^{*1}	○	○	○	○	—	○	—						
Reed auto switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	A96V	A96	●	—	●	—	—	—	—
	No		2-wire	24 V	12 V	100 V	A93V ^{*2}	A93	●	●	●	●	—	—	—	Relay, PLC
					5 V, 12 V or less	A90V	A90	●	—	●	—	—	—	—	IC circuit	

*1 Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance. Consult with SMC regarding water resistant types with the above model numbers.

*2 1 m type lead wire is only applicable to D-A93.

* Lead wire length symbols: 0.5 m Nil (Example) M9NV
1 m M (Example) M9NWX
3 m L (Example) M9NWL
5 m Z (Example) M9NWZ

* 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 960.

* For details about auto switches with pre-wired connector, refer to pages 1626 and 1627.

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

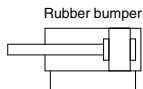
Specifications



Bore size (mm)	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	+1.4 mm (Note)				

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

Symbol



Standard Strokes

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



Made to Order: Individual Specifications
(For details, refer to page 968.)

Symbol	Specifications
-X271	Fluororubber seals, ø125 to ø160 only

Made to Order

(For details, refer to pages 1675 to 1818.)

Symbol	Specifications
-XA□	Change of rod end shape
-XB10	Intermediate stroke (Exclusive body type)
-XC85	Grease for food processing equipment

Manufacture of Intermediate Strokes

Type	A spacer is installed in the standard stroke body.	Exclusive body (-XB10)
Part no.	Refer to "How to Order" for the standard model number. (P. 842)	Suffix "-XB10" to the end of standard model number. (P. 842)
Description	Strokes in 5 mm intervals are available by installing a spacer in the standard stroke cylinder.	Strokes in 1 mm intervals are available by using an exclusive body with the specified stroke.
Stroke range	5 to 295	11 to 299
Example	Part no.: CQ2B160-165DCZ CQ2B160-175DCZ with 10 mm width spacer inside The B dimension is 266 mm.	Part no.: CQ2B160-165DCZ-XB10 Makes 165 mm stroke tube. The B dimension is 256 mm.

Refer to pages 954 to 960 for the specifications of cylinders with autoswitches.

- Auto switch proper mounting position (detection at stroke end) and its mounting height
- Minimum stroke for auto switch mounting
- Operating range
- Auto switch mounting brackets/Part no.

CUJ

CU

CQS

CQ2

-Z

RQ

CQM

CQU

MU

-Z

D-□

-X□

Technical data

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

Weight

Without Auto Switch

Bore size (mm)	Cylinder stroke (mm)												(kg)
	10	20	30	40	50	75	100	125	150	175	200	250	300
125	5.24	5.48	5.71	5.94	6.18	6.76	7.35	7.93	8.52	9.10	9.69	10.86	12.03
140	6.19	6.44	6.71	6.98	7.25	7.90	8.57	9.23	9.90	10.56	11.23	12.55	13.88
160	8.57	8.88	9.20	9.52	9.84	10.64	11.44	12.25	13.05	13.85	14.65	16.26	17.85
180	11.54	11.92	12.31	12.70	13.09	14.05	15.03	16.00	16.97	17.93	18.90	20.84	22.78
200	14.56	15.07	15.49	15.92	16.34	17.41	18.47	19.54	20.60	21.67	22.82	24.85	26.99

With Auto Switch

Bore size (mm)	Cylinder stroke (mm)												(kg)
	10	20	30	40	50	75	100	125	150	175	200	250	300
125	5.30	5.54	5.77	6.01	6.24	6.83	7.40	7.99	8.58	9.16	9.75	10.92	12.09
140	6.26	6.51	6.78	7.05	7.32	7.97	8.64	9.30	9.97	10.63	11.30	12.62	13.95
160	8.65	8.96	9.28	9.60	9.92	10.72	11.52	12.33	13.13	13.93	14.73	16.34	17.93
180	11.62	12.00	12.39	12.78	13.17	14.13	15.11	16.08	17.05	18.01	18.98	20.92	22.86
200	14.64	15.15	15.57	16.00	16.42	17.49	18.55	19.62	20.68	21.75	22.90	24.93	27.07

Additional Weight

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) **CDQ2B125-30DCMZ**

• Basic weight: CDQ2B125-30DCZ..... 5.77 kg

• Additional weight: Rod end male thread... 0.47 kg
6.24 kg

Mounting Bolt for CQ2B

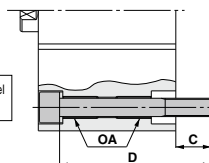
Mounting method: Mounting bolt for through-hole mounting of the C(D)Q2B is available as an option. Refer to the following for ordering procedures. Order the actual number of bolts that will be used.

Example) CQ-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) For mounting bolts for the stroke length exceeding 100 mm, use the OA screw provided on the cylinder tube to secure the cylinder.

Material: Chromium molybdenum steel
Surface treatment: Zinc chromated

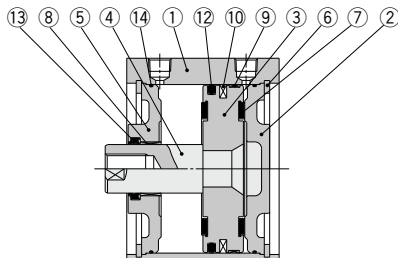


Cylinder model	C	D	Mounting bolt part no.
C□Q2B125/140-10DCZ	22.9	100	CQ-M12 x 100L
-20DCZ		110	x 110L
-30DCZ		120	x 120L
-40DCZ		130	x 130L
-50DCZ		140	x 140L
-75DCZ		165	x 165L
-100DCZ		190	x 190L
C□Q2B160-10DCZ	27.7	110	CQ-M14 x 110L
-20DCZ		120	x 120L
-30DCZ		130	x 130L
-40DCZ		140	x 140L
-50DCZ		150	x 150L
-75DCZ		175	x 175L
-100DCZ		200	x 200L

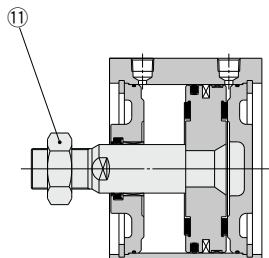
Cylinder model	C	D	Mounting bolt part no.
C□Q2B180-10DCZ	36	125	CQ-M18 x 125L
-20DCZ		135	x 135L
-30DCZ		145	x 145L
-40DCZ		155	x 155L
-50DCZ		165	x 165L
-75DCZ		190	x 190L
-100DCZ		215	x 215L
C□Q2B200-10DCZ	39	135	CQ-M18 x 135L
-20DCZ		145	x 145L
-30DCZ		155	x 155L
-40DCZ		165	x 165L
-50DCZ		175	x 175L
-75DCZ		200	x 200L
-100DCZ		225	x 225L

Construction

Standard



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 CDQ2B□ only
11	Rod end nut	Carbon steel	Nickel plated
12	Piston seal	NBR	
13	Rod seal	NBR	
14	Tube gasket	NBR	

Replacement Parts/Seal Kit

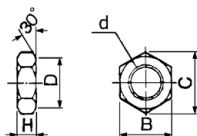
Bore size (mm)	Kit no.	Contents
125	CQ2B125-PS	Kits include items 12, 13, 14 from the table.
140	CQ2B140-PS	
160	CQ2B160-PS	
180	CQ2B180-PS	
200	CQ2B200-PS	

* Seal kit includes 12, 13, 14. Order the seal kit, based on each bore size.

* Since the seal 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

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 a type C retaining ring) is used, it is likely to inflict damage to a human body or peripheral equipment, as a retaining ring may be flown out of the tip of a plier (tool for installing a type C retaining ring). Be much careful with the popping of a retaining ring. Besides, be certain that a retaining ring is placed firmly into the groove of rod cover before supplying air at the time of installment.

CUJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

MU-Z

D-□

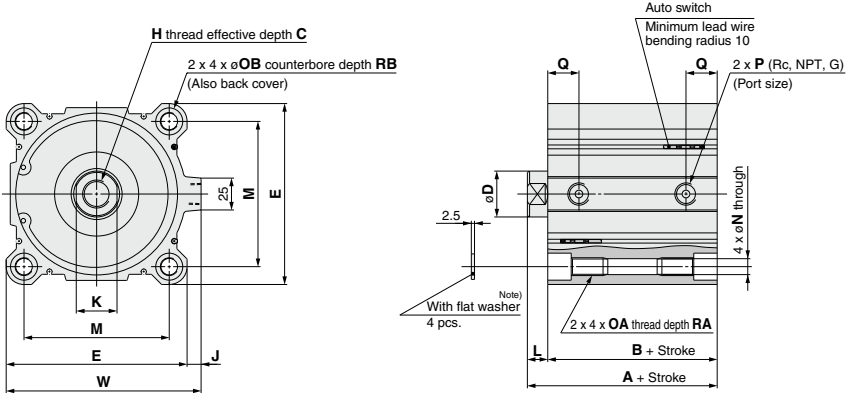
-X□

Technical data

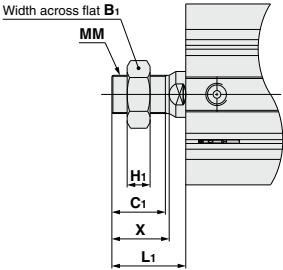
Series **CQ2** Dimensions **ø125 to ø160**

Standard (Through-hole): C□Q2B

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



Rod end male thread



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	A	B	C	D	E	H	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	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	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	10	36	17	144	14.5	M16 x 2	24.2	3/8	27.5	28	21.2	188

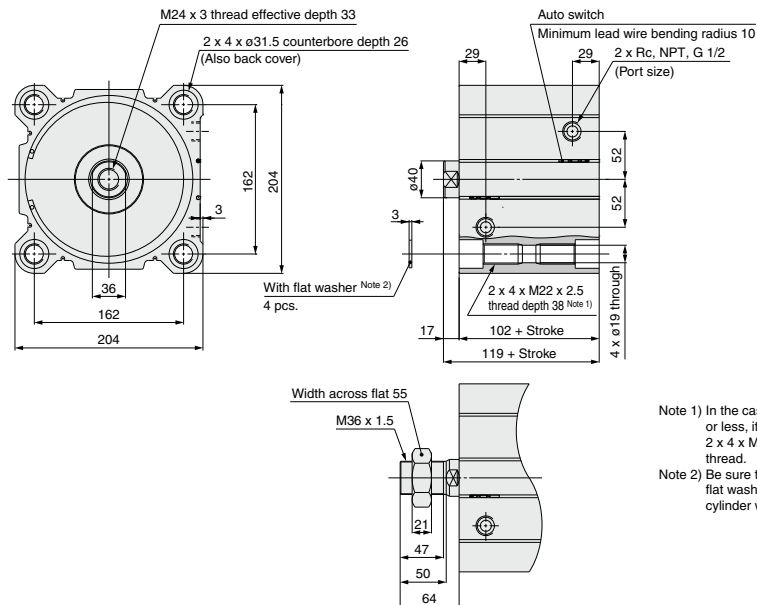
Note) Be sure to use the attached flat washer for mounting cylinder with through-holes.

Dimensions

Ø180, Ø200

Ø180

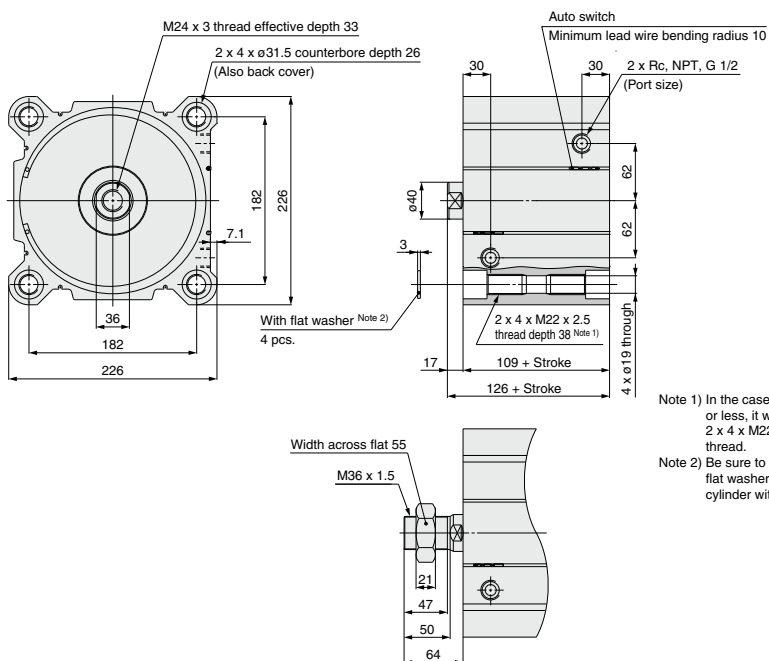
The dimensions are the same with or without an auto switch.



Note 1) In the case of 20 mm 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 flat washer for mounting cylinder with through-holes.

Ø200



Note 1) In the case of 20 mm 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 flat washer for mounting cylinder with through-holes.

CUJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

MU-Z

D-□

-X□

Technical data

Compact Cylinder: Large Bore Size Double Acting, Double Rod

Series CQ2W

ø125, ø140, ø160, ø180, ø200

How to Order

Without auto switch

CQ2WB 125 ☐ - **30 DC** ☐ **Z** - ☐

With auto switch

CDQ2WB 125 ☐ - **30 DC** ☐ **Z** - **M9BW** ☐ - ☐

With auto switch
(Built-in magnet)

Type
W Double rod

Mounting

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

* Cylinder mounting bolts are not included. Order them separately referring to "Mounting Bolt for CQ2WB" on page 851.

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) CDQ2WB140-30DCZ

Cylinder stroke (mm)

Refer to page 849 for standard strokes.

Made to Order
Refer to page 849 for details.

Number of auto switches

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

Auto switch

Nil Without auto switch

* Refer to the below table for applicable auto switches.

Auto switch mounting groove

Z ø125 to ø200 4 surfaces

Body option

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

Cushion

C Rubber bumper

Action

D Double acting

Applicable Auto Switches

Refer to pages 1559 to 1673 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 auto switch	Diagnostic indication (2-color indication)	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	M9NV	M9N	●	●	●	○	—	○	IC circuit
				3-wire (PNP)	12 V		M9PV	M9P	●	●	●	○	—	○	—
				2-wire	12 V		M9BV	M9B	●	●	●	○	—	○	—
				3-wire (NPN)	5 V, 12 V		M9NVW	M9NW	●	●	●	○	—	○	IC circuit
	Water resistant (2-color indication)	Grommet	Yes	3-wire (PNP)	5 V, 12 V		M9PWV	M9PW	●	●	●	○	—	○	—
				2-wire	12 V		M9BWV	M9BW	●	●	●	○	—	○	—
				3-wire (NPN)	5 V, 12 V		M9NAV *1	M9NA *1	○	○	○	○	—	○	IC circuit
				3-wire (PNP)	5 V, 12 V		M9PAV *1	M9PA *1	○	○	○	○	—	○	—
Reed auto switch	—	Grommet	Yes	2-wire	12 V	100 V	M9BAV *1	M9BA *1	○	○	○	○	—	○	—
				3-wire (NPN equivalent)	5 V, 12 V		A96V	A96	●	●	●	—	—	—	IC circuit
				2-wire	24 V		A93V *2	A93	●	●	●	—	—	—	—
			No	2-wire	5 V, 12 V	100 V or less	A90V	A90	●	—	●	—	—	—	IC circuit

*1 Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance. Consult with SMC regarding water resistant types with the above model numbers.

*2 1 m type lead wire is only applicable to D-A93.

* 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

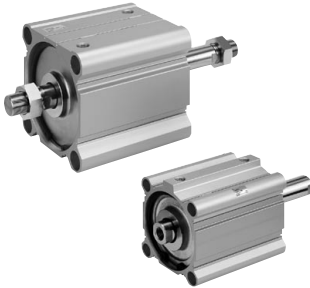
* Solid state auto switches marked with "○" are produced upon receipt of order.

* There are other applicable auto switches other than the listed above. For details, refer to page 960.

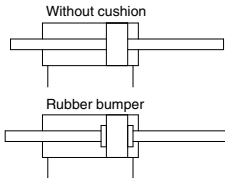
* For details about auto switches with pre-wired connector, refer to pages 1626 and 1627.

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

Specifications



Symbol



Made to Order: Individual Specifications
(For details, refer to pages 968 to 971.)

Symbol	Specifications
-X235	Special rod end for double rod cylinder
-X271	Fluororubber seals, ø125 to ø160 only
-X633	Intermediate stroke of double rod cylinder,

Made to Order

(For details, refer to pages 1675 to 1818.)

Symbol	Specifications
-XA□	Change of rod end shape
-XB10	Intermediate stroke (Exclusive body type)
-XC85	Grease for food processing equipment

* -X633: Intermediate stroke in 5 mm intervals only

Bore size (mm)	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	+1.4 mm (Note) 0				

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

Standard Strokes

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

Manufacture of Intermediate Strokes

Type	A spacer is installed in the standard stroke body.	Exclusive body (-XB10)
Part no.	Suffix "-X633" to the end of standard model number. (P. 848)	Suffix "-XB10" to the end of standard model number. (P. 848)
Description	Strokes in 5 mm intervals are available by installing a spacer in the standard stroke cylinder.	Strokes in 1 mm intervals are available by using an exclusive body with the specified stroke.
Stroke range	5 to 295	11 to 299
Example	Part no.: CQ2WB160-165DCZ-X633 CQ2WB160-175DCZ with 10 mm width spacer inside The B dimension is 266 mm.	Part no.: CQ2WB160-165DCZ-XB10 Makes 165 mm stroke tube. The B dimension is 256 mm.

Refer to pages 954 to 960 for the specifications of cylinders with autoswitches.

- Auto switch proper mounting position (detection at stroke end) and its mounting height
- Minimum stroke for auto switch mounting
- Operating range
- Auto switch mounting brackets/Part no.

CUJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

MU-Z

D-□

-X□

Technical data

Retaining Ring Installation/Removal

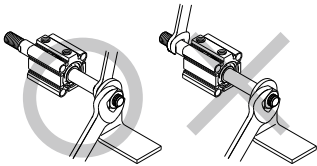
⚠ Caution

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

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 flat is secured. Do not fix the other side of the piston rod width across flat and apply reverse torque.



Theoretical Output

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

Weight

Without Auto Switch

Bore size (mm)	Cylinder stroke (mm)												
	10	20	30	40	50	75	100	125	150	175	200	250	300
125	5.47	5.76	6.05	6.37	6.68	7.47	8.24	9.03	9.82	10.60	11.39	12.96	14.52
140	6.43	6.73	7.06	7.40	7.75	8.61	9.47	10.33	11.20	12.06	12.92	14.64	16.37
160	8.87	9.26	9.65	10.07	10.49	11.53	12.58	13.63	14.68	15.72	16.77	18.87	20.96
180	11.75	12.23	12.73	13.21	13.70	14.91	16.13	17.34	18.56	19.77	20.99	23.42	25.86
200	14.89	15.42	15.94	16.47	16.98	18.30	19.61	20.92	21.23	23.54	24.85	27.47	30.10

With Auto Switch

Bore size (mm)	Cylinder stroke (mm)												
	10	20	30	40	50	75	100	125	150	175	200	250	300
125	5.53	5.82	6.11	6.43	6.74	7.53	8.30	9.09	9.88	10.66	11.45	13.02	14.58
140	6.50	6.80	7.13	7.47	7.82	8.68	9.54	10.40	11.27	12.13	12.99	14.71	16.44
160	8.95	9.34	9.73	10.15	10.57	11.61	12.66	13.71	14.76	15.80	16.85	18.95	21.04
180	11.83	12.31	12.81	13.29	13.78	14.99	16.21	17.42	18.64	19.85	21.07	23.50	25.94
200	14.97	15.50	16.02	16.55	17.06	18.38	19.69	21.00	21.31	23.62	24.93	27.55	30.18

Additional Weight

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) **CDQ2WB125-30DCMZ**

- Basic weight: CDQ2WB125-30DCZ6.11 kg
- Additional weight: Rod end male thread0.94 kg

7.05 kg

Mounting Bolt for CQ2WB

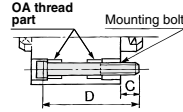
Mounting method: Mounting bolt for through-hole mounting of the C(D)Q2WB is available as an option. Refer to the following for ordering procedures. Order the actual number of bolts that will be used.

Example) CQ-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) For mounting bolts for the stroke length exceeding 100 mm, use the OA screw provided on the cylinder tube to secure the cylinder.

Material: Chromium molybdenum steel
Surface treatment: Zinc chromated

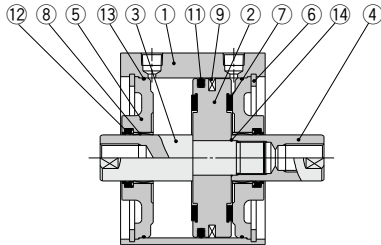


Cylinder model	C	D	Mounting bolt part no.
C□Q2WB125/140-10DCZ	22.9	100	CQ-M12 x 100L
-20DCZ		110	x 110L
-30DCZ		120	x 120L
-40DCZ		130	x 130L
-50DCZ		140	x 140L
-75DCZ		165	x 165L
-100DCZ		190	x 190L
C□Q2WB160-10DCZ	27.7	110	CQ-M14 x 110L
-20DCZ		120	x 120L
-30DCZ		130	x 130L
-40DCZ		140	x 140L
-50DCZ		150	x 150L
-75DCZ		175	x 175L
-100DCZ		200	x 200L

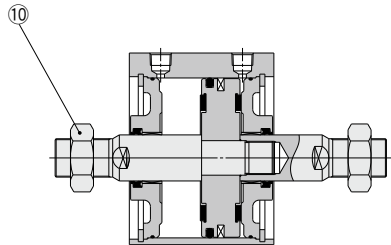
Cylinder model	C	D	Mounting bolt part no.
C□Q2WB180-10DCZ	36	125	CQ-M18 x 125L
-20DCZ		135	x 135L
-30DCZ		145	x 145L
-40DCZ		155	x 155L
-50DCZ		165	x 165L
-75DCZ		190	x 190L
-100DCZ		215	x 215L
C□Q2WB200-10DCZ	39	135	CQ-M18 x 135L
-20DCZ		145	x 145L
-30DCZ		155	x 155L
-40DCZ		165	x 165L
-50DCZ		175	x 175L
-75DCZ		200	x 200L
-100DCZ		225	x 225L

Construction

Standard



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	
9	Magnet	—	For CDQ2WB□ only
10	Rod end nut	Carbon steel	Nickel plated
11	Piston seal	NBR	
12	Rod seal	NBR	
13	Tube gasket	NBR	
14	Piston gasket	NBR	

Replacement Parts/Seal Kit

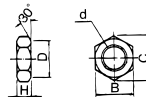
Bore size (mm)	Kit no.	Contents
125	CQ2WB125-PS	Kits include items ⑪, ⑫, ⑬ from the table.
140	CQ2WB140-PS	
160	CQ2WB160-PS	
180	CQ2WB180-PS	
200	CQ2WB200-PS	

* Seal kit includes ⑪, ⑫, ⑬. Order the seal kit, based on each bore size.

* Since the seal 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

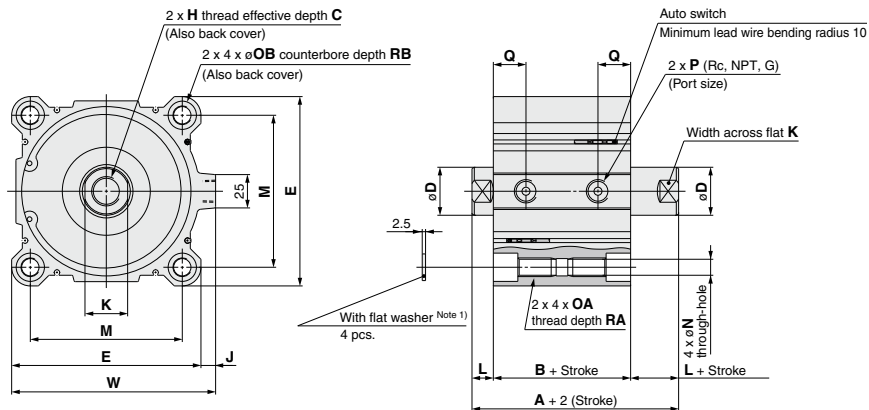
Series CQ2W

Dimensions

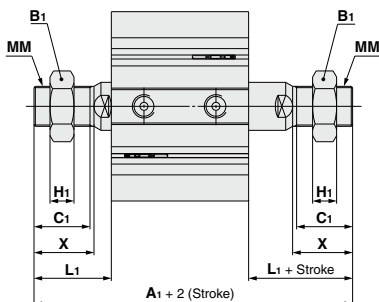
ø125 to ø160

Standard (Through-hole): C□Q2WB

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



Rod end male thread



Rod End Male Thread

(mm)

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

Bore size (mm)	Standard stroke	A	B	C ^{Note 2)}	D	E	H	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	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	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	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 flat washer for mounting cylinder with through-holes.

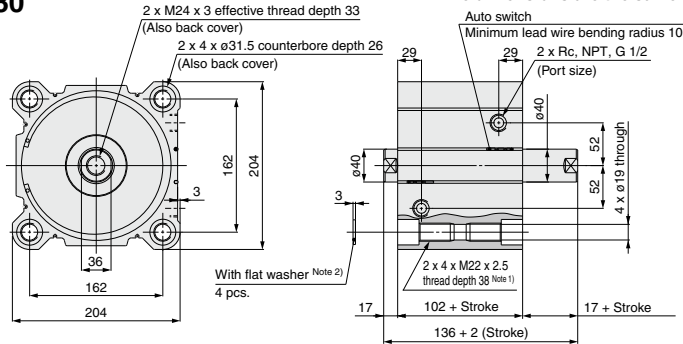
Note 2) (): Values of effective length in one side, only for 10 mm stroke model

* The positions of double rod width across flats are not the same.

Dimensions

Ø180, Ø200

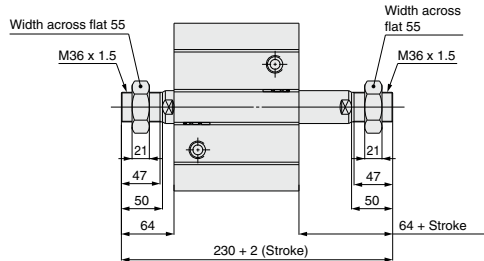
Ø180



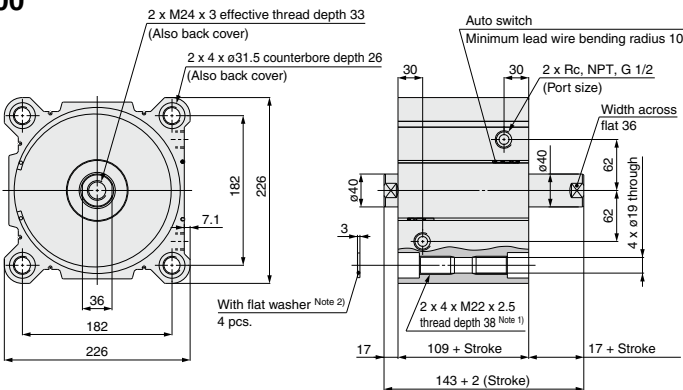
The dimensions are the same with or without an auto switch.

Note 1) In the case of 20 mm 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 flat washer for mounting cylinder with through-holes.

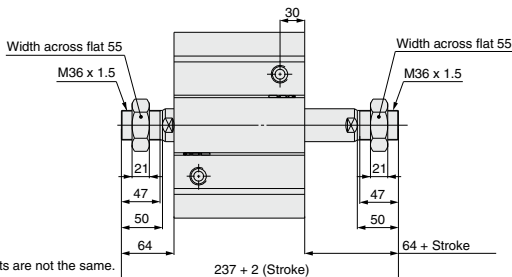


Ø200



Note 1) In the case of 20 mm 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 flat washer for mounting cylinder with through-holes.



* The positions of double rod width across flats are not the same.

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

ø32, ø40, ø50, ø63, ø80, ø100

How to Order

Without auto switch

CQ2 A 32 - 200 DC Z -

With auto switch

CDQ2 A 32 - 200 DC Z - M9BW -

With auto switch
(Built-in magnet)

Mounting

A	Both ends tapped
L	Foot
LC	Compact foot
F	Rod flange
G	Head flange
D	Double clevis

* Mounting brackets are shipped together (but 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
TN	NPT
TF	G
F	Built-in One-touch fittings (Note 1)

Note 1) Bore sizes available with One-touch fittings are ø32 to ø63.

Cylinder stroke (mm)

Refer to page 855 for standard strokes.

Action

D Double acting

Cushion

C Rubber bumper

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

Made to Order

Refer to page 855 for details.

Auto switch

Nil Without auto switch

* Refer to the below table for applicable auto switches.

Auto switch mounting groove

Z 4 surfaces

Body option

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

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) CDQ2L40-200DCZ

Applicable Auto Switches

Refer to pages 1559 to 1673 for further information on auto switches.
Refer to pages 1614 and 1615 for the D-P3DW type.

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 auto switch	Diagnostic indication (2-color indication)	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	M9NV	M9N	●	●	○	—	—	—	IC circuit	Relay, PLC
				3-wire (PNP)			M9PV	M9P	●	●	○	—	—	—	—	
				2-wire			M9BV	M9B	●	●	○	—	—	—	—	
				3-wire (NPN)			M9NWV	M9NW	●	●	○	—	—	—	—	
	Water resistant (2-color indication)	Grommet	Yes	3-wire (PNP)			M9PWV	M9PW	●	●	○	—	—	—	IC circuit	
				2-wire			M9BWV	M9BW	●	●	○	—	—	—	—	
				3-wire (NPN)			M9NAV ^{*1}	M9NA ^{*1}	●	○	○	—	—	—	—	
				3-wire (PNP)			M9PAV ^{*1}	M9PA ^{*1}	○	○	●	—	—	—	—	
Reed auto switch	Magnetic field resistant (2-color indication)	Grommet	Yes	2-wire (Non-polar)	24 V	5 V, 12 V	M9BAV ^{*1}	M9BA ^{*1}	○	○	○	—	—	—	—	IC circuit
				3-wire (NPN equivalent)			—	P3DW	●	—	●	—	—	—	—	
Reed auto switch		Grommet	No	3-wire (NPN equivalent)	24 V	12 V	A96V	A96	●	—	●	—	—	—	IC circuit	Relay, PLC
				2-wire			A93V ^{*2}	A93	●	●	●	—	—	—	—	
Reed auto switch		Grommet	No	3-wire (NPN equivalent)	24 V	100 V	A90V	A90	●	—	●	—	—	—	IC circuit	Relay, PLC
				2-wire			—	—	●	—	●	—	—	—	—	

*1 Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.

Consult with SMC regarding water resistant types with the above model numbers.

*2 1 m type lead wire is only applicable to D-A93.

* Lead wire length symbols: 0.5 m Nil (Example) M9NW
1 m M (Example) M9NWM
3 m L (Example) M9NWL
5 m Z (Example) M9NWX

* 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 960.

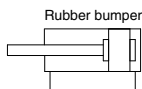
* For details about auto switches with pre-wired connector, refer to pages 1626 and 1627.

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

Specifications



Symbol



Made to Order: Individual Specifications
(For details, refer to page 968.)

Symbol	Specifications
-X271	Fluororubber seals

Made to Order

(For details, refer to pages 1675 to 1818.)

Symbol	Specifications
-XA□	Change of rod end shape
-XB10	Intermediate stroke (Exclusive body type)
-XC4	With heavy-duty scraper
-XC6	Piston rod/Retaining ring/Rod end nut material: Stainless steel
-XC26	With split pins for double clevis pin/ double knuckle joint pin and flat washers
-XC85	Grease for food processing equipment

Bore size (mm)	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	+1.4 mm Note) 0					

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

Standard Strokes

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

(mm)

Manufacture of Intermediate Strokes

Type	A spacer is installed in the standard stroke body.	Exclusive body (-XB10)
Part no.	Refer to "How to Order" for the standard model number. (P. 854)	Suffix "-XB10" to the end of standard model number. (P. 854)
Description	Strokes in 1 mm intervals are available by installing a spacer in the standard stroke cylinder.	Strokes in 1 mm intervals are available by using an exclusive body with the specified stroke.
Stroke range	101 to 299	101 to 299
Example	Part no.: CQ2A50-166DCZ CQ2A50-175DCZ with 9 mm width spacer inside The B dimension is 230.5 mm.	Part no.: CQ2A50-166DCZ-XB10 Makes 166 mm stroke tube. The B dimension is 221.5 mm.

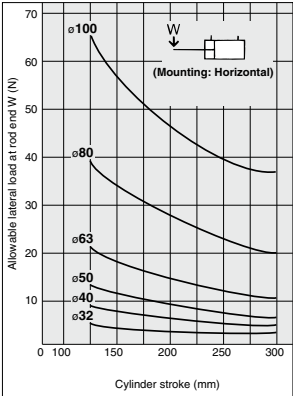
Type

Bore size (mm)			32	40	50	63	80	100	
Pneumatic	Built-in magnet		●	●	●	●	●	●	
	Piping	Pipe thread	—	Rc1/8	Rc1/8	Rc1/4	Rc1/4	Rc3/8	Rc3/8
			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 ^(Note)		ø6	ø6	ø8	ø8	—	—	
	Rod end male thread		●	●	●	●	●	●	

Note) One-touch fittings cannot be replaced.

Refer to pages 954 to 960 for the specifications of cylinders with auto switches.
• Auto switch proper mounting position (detection at stroke end) and its mounting height • Minimum stroke for auto switch mounting • Operating range • Auto switch mounting brackets/Part no.

Allowable Lateral Load
at Rod End



Mounting Brackets/ Part No.

Bore size (mm)	Foot Note 1)	Compact foot Note 1)	Flange	Double clevis
32	CQ-L032	CQ-LC032	CQ-F032	CQ-D032
40	CQ-L040	CQ-LC040	CQ-F040	CQ-D040
50	CQ-L050	CQ-LC050	CQ-F050	CQ-D050
63	CQ-L063	CQ-LC063	CQ-F063	CQ-D063
80	CQ-L080	CQ-LC080	CQ-F080	CQ-D080
100	CQ-L100	CQ-LC100	CQ-F100	CQ-D100

Note 1) When ordering foot and compact foot brackets, order 2 pieces per cylinder.
Note 2) Parts belonging to each bracket are as follows.
Foot, Compact foot, Flange: Body mounting bolts
Double clevis: Clevis pin, Body mounting bolts,
Type C retaining rings 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

Weight

Without Auto Switch

Bore size (mm)	Cylinder stroke (mm)					
	125	150	175	200	250	300
32	708	817	918	1017	1215	1415
40	888	997	1107	1217	1438	1657
50	1352	1517	1682	1841	2177	2507
63	1706	1900	2095	2292	2676	3065
80	2832	3130	3429	3725	4324	4921
100	4540	4906	5270	5634	6367	7096

With Auto Switch

Bore size (mm)	Cylinder stroke (mm)					
	125	150	175	200	250	300
32	726	826	927	1026	1224	1424
40	902	1012	1121	1231	1451	1671
50	1367	1532	1697	1856	2192	2522
63	1730	1924	2119	2316	2700	3089
80	2856	3154	3453	3749	4348	4945
100	4578	4944	5308	5672	6405	7134

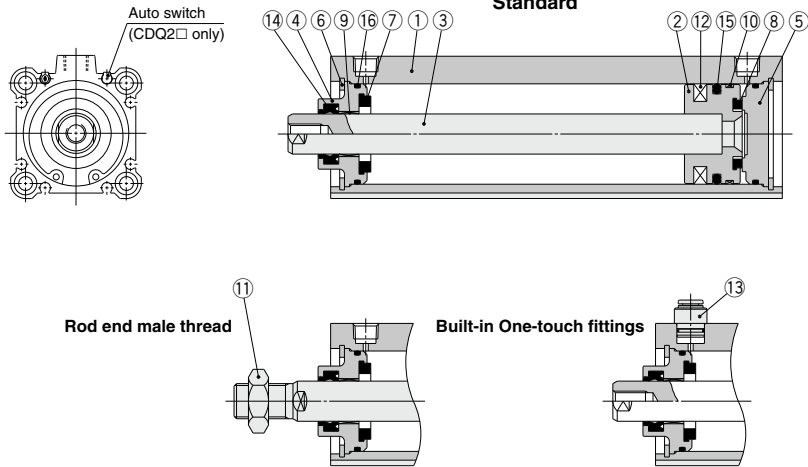
Additional Weight

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 (Including mounting bolts)		146	158	253	349	672	1113
Compact foot (Including mounting bolts)		99	114	177	241	501	770
Rod flange (Including mounting bolts)		165	198	348	534	1017	1309
Head flange (Including mounting bolts)		165	198	348	534	1017	1309
Double clevis (Including pin, retaining rings, bolts)		151	196	393	554	1109	1887

Calculation: (Example) **CQ2D32-200DCMZ**
• Basic weight: CQ2A32-200DCZ 1017 g
• Additional weight: Rod end male thread 43 g
Double clevis 151 g
1211 g

Add each weight of auto switches when
auto switches are mounted.

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	Zinc chromated
12	Magnet	—	For CDQ2A□ only
13	One-touch fitting	—	ø32 to ø63
14	Rod seal	NBR	
15	Piston seal	NBR	
16	Tube gasket	NBR	

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 a type C retaining ring) is used, it is likely to inflict damage to a human body or peripheral equipment, as a retaining ring may be flown out of the tip of a plier (tool for installing a type C retaining ring). Be much careful with the popping of a retaining ring. Besides, be certain that a retaining ring is placed firmly into the groove of rod cover before supplying air at the time of installment.

Replacement Parts/Seal Kit

Bore size (mm)	Kit no.	Contents
32	CQ2A32-L-PS	Kits include items 14, 15, 16 from the table.
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 seal kit does not include a grease pack, order it separately.

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

CJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

MU-Z

D-□

-X□

Technical data

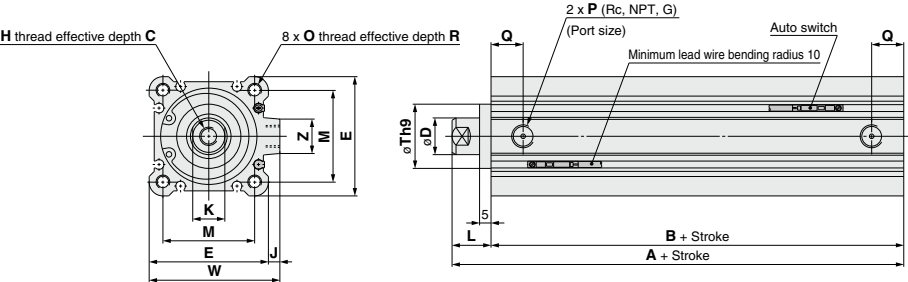
Series CQ2

Dimensions

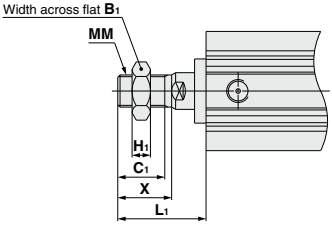
ø32 to ø50

Both ends tapped: C□Q2A

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



Rod end male thread



Rod End Male Thread (mm)						
Bore size (mm)	B ₁	C ₁	H ₁	L ₁	MM	X
32	22	20.5	8	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

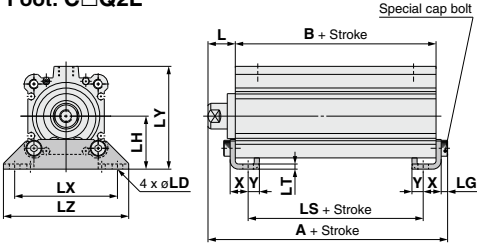
The dimensions with built-in One-touch fittings are equivalent to those of the CQ2 series, double acting, single rod. Refer to page 800.

Both Ends Tapped For auto switch proper mounting position and its mounting height, refer to pages 954 to 960. (mm)

Bore size (mm)	Stroke range (mm)	A	B	C	D	E	H	J	K	L	M	O	P	Q	R	Th9	W	Z
32	125 to 200 Note 1)	62.5	45.5	13	16	45	M8 x 1.25	4.5	14	17	34	M6 x 1.0	1/8	10	10	22 ^{0.002}	49.5	14
		72	55	13	16	52	M8 x 1.25	5	14	17	40	M6 x 1.0	1/8	12.5	10	28 ^{0.002}	57	15
		73.5	55.5	15	20	64	M10 x 1.5	7	17	18	50	M8 x 1.25	1/4	14	14	35 ^{0.002}	71	19

Note 1) For 125 to 200 strokes, strokes are available in 25 mm intervals.
 Note 2) For calculation on the longitudinal dimension of intermediate strokes, refer to page 855.

Foot: C□Q2L

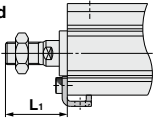


Foot															(mm)
Bore size (mm)	A	B	L	L ₁	LD	LG	LH	LS	LT	LX	LY	LZ	X	Y	
32	69.7	45.5	17	38.5	6.6	4	30	29.5	3.2	57	57	71	11.2	5.8	
40	79.2	55	17	38.5	6.6	4	33	39	3.2	64	64	78	11.2	7	
50	81.7	55.5	18	43.5	9	5	39	32.5	3.2	79	78	95	14.7	8	

Foot bracket material: Carbon steel
 Surface treatment: Nickel plated

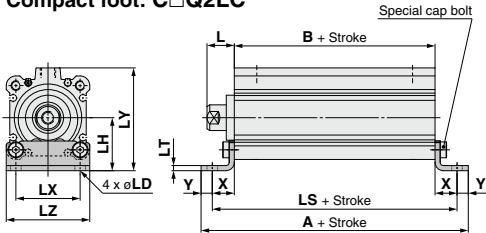
* For details about the rod end nut and accessory brackets, refer to page 804.

Rod end male thread



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

Compact foot: C□Q2LC

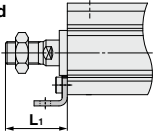


Compact Foot

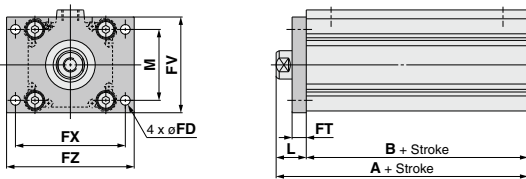
Bore size (mm)	A	B	L	L1	LD	LH	LS	LT	LX	LY	LZ	X	Y
32	84.5	45.5	17	38.5	6.6	30	72.9	3.2	34	57	45	13.7	5.8
40	96.4	55	17	38.5	6.6	33	82.4	3.2	40	64	52	13.7	7
50	104.9	55.5	18	43.5	9	39	88.9	3.2	50	78	64	16.7	8

Compact foot bracket material: Carbon steel
Surface treatment: Zinc chromated

Rod end male thread



Rod flange: C□Q2F

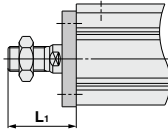


Rod Flange

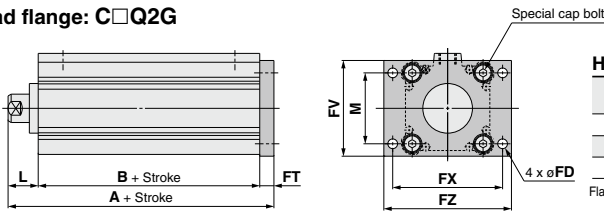
Bore size (mm)	A	B	FD	FT	FV	FX	FZ	L	L1	M
32	62.5	45.5	5.5	8	48	56	65	17	38.5	34
40	72	55	5.5	8	54	62	72	17	38.5	40
50	73.5	55.5	6.6	9	67	76	89	18	43.5	50

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

Rod end male thread



Head flange: C□Q2G



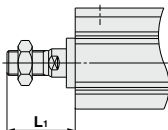
Head Flange

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

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

(*) The dimensions except A are the same as those of the rod flange.

Rod end male thread

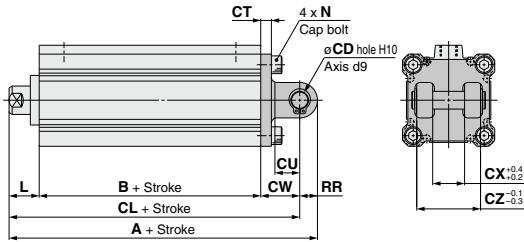


* For details about the rod end nut and accessory brackets, refer to page 804.

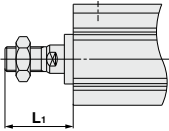
Compact Cylinder: Long Stroke Double Acting, Single Rod *Series CQ2*

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

Double clevis: C□Q2D



Rod end male thread



Double Clevis

(mm)

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	L1	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 804.
- * Double clevis pin and retaining rings are shipped together.

CUJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

MU-Z

D-□

-X□

Technical data

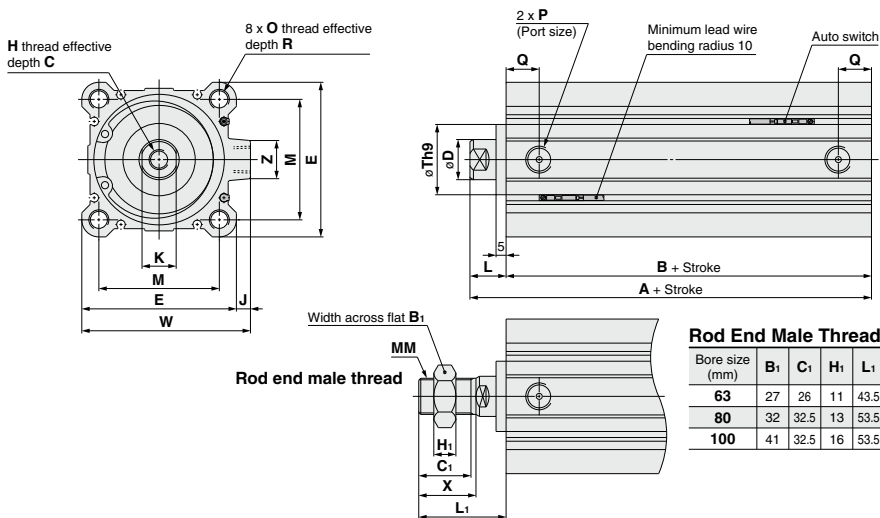
Series CQ2

Dimensions

ø63 to ø100

Both ends tapped: C□Q2A

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
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

The dimensions with built-in One-touch fittings are equivalent to those of the CQ2 series, double acting, single rod. Refer to page 802.

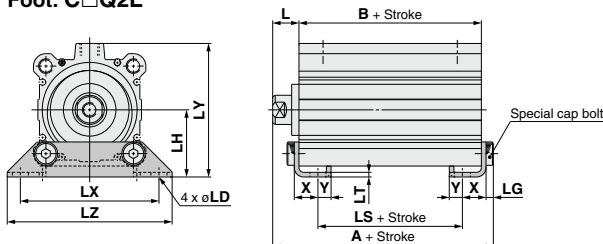
Both Ends Tapped For auto switch proper mounting position and its mounting height, refer to pages 954 to 960. (mm)

Bore size (mm)	Stroke range (mm)	A	B	C	D	E	H	J	K	L	M	O	P	Q	R	Th9	W	Z
63	125 to 200 (Note 1) 250, 300	75	57	15	20	77	M10 x 1.5	7	17	18	60	M10 x 1.5	1/4	16.5	18	35 ^{+0.002} _{-0.002}	84	19
80		86	66	21	25	98	M16 x 2.0	6	22	20	77	M12 x 1.75	3/8	19	22	43 ^{+0.002} _{-0.002}	104	25
100		97.5	75.5	27	30	117	M20 x 2.5	6.5	27	22	94	M12 x 1.75	3/8	23	22	59 ^{+0.002} _{-0.002}	123.5	25

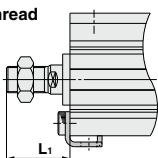
Note 1) For 125 to 200 strokes, strokes are available in 25 mm intervals.

Note 2) For calculation on the longitudinal dimension of intermediate strokes, refer to page 855.

Foot: C□Q2L



Rod end male thread



Foot (mm)

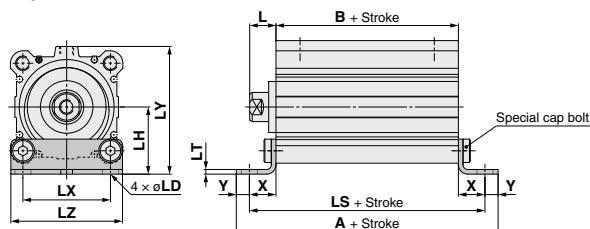
Bore size (mm)	A	B	L	L ₁	LD	LG	LH	LS	LT	LX	LY	LZ	X	Y
63	832	57	18	43.5	11	5	46	31	3.2	95	91.5	113	16.2	9
80	97.5	66	20	53.5	13	7	59	36	4.5	118	114	140	19.5	11
100	110.5	75.5	22	53.5	13	7	71	41.5	6	137	136	162	23	12.5

Foot bracket material: Carbon steel
Surface treatment: Nickel plated

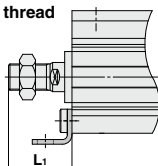
* For details about the rod end nut and accessory brackets, refer to page 804.

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

Compact foot: C□Q2LC



Rod end male thread

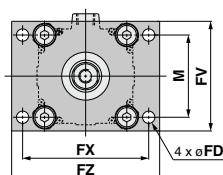


Compact Foot

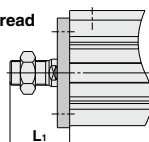
Bore size (mm)	A	B	L	L ₁	LD	LH	LS	LT	LX	LY	LZ	X	Y
63	111.4	57	18	43.5	11	46	93.4	3.2	60	91.5	77	18.2	9
80	133	66	20	53.5	13	59	111	4.5	77	114	98	22.5	11
100	148.5	75.5	22	53.5	13	71	123.5	6	94	136	117	24	12.5

Compact foot bracket material: Carbon steel
Surface treatment: Zinc chromated

Rod flange: C□Q2F



Rod end male thread

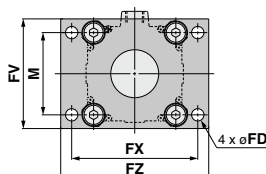
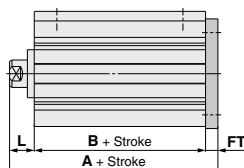


Rod Flange

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

Head flange: C□Q2G



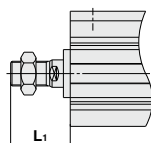
Head Flange

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

(*) The dimensions except A are the same as those of the rod flange.

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

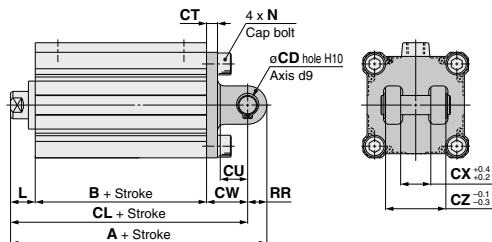
Rod end male thread



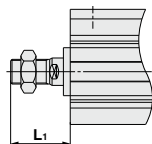
* For details about the rod end nut and accessory brackets, refer to page 804.

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

Double clevis: C□Q2D



Rod end male thread



Double Clevis

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	L1	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 804.
- * Double clevis pin and retaining rings are shipped together.

CUJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

MU-Z

D-□

-X□

Technical data

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

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

How to Order

Without auto switch
ø12 to ø25

Without auto switch
ø32 to ø63

With auto switch

With auto switch
(Built-in magnet)

Non-rotating rod

Mounting

B	Through-hole (Standard)	ø12 to ø63
A	Both ends tapped	
L	Foot	
LC	Compact foot	ø40, ø50, ø63
F	Rod flange	
G	Head flange	
D	Double clevis	

- * 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 867 and 869.

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

Note 1) When ø12 with auto switch is required, the body option should be with rubber bumper (C).

Example) CDQ2KB12-30DCZ

Port thread type

Nil	M thread	ø12 to ø25
	Rc	
TN	NPT	ø32 to ø63
TF	G	
F	Built-in One-touch fittings	Note 2)

Note 2) Bore sizes available with One-touch fittings are ø32 to ø63.

* For cylinders without auto switch, M threads are compatible only for ø32-5 mm stroke model.

Cylinder stroke (mm)

Refer to page 864 for standard strokes.

Refer to pages 1559 to 1673 for further information on auto switches.
Refer to pages 1614 and 1615 for the D-P3DW type.

Applicable 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 auto switch	Diagnostic indication (2-color indication)	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	M9NV	M9N	●	●	○	—	—	—	IC circuit
				3-wire (PNP)	12 V	—	M9PV	M9P	●	●	○	—	—	—	—
				2-wire	12 V	—	M9BV	M9B	●	●	○	—	—	—	—
				3-wire (NPN)	5 V, 12 V	—	M9NV	M9NW	●	●	○	—	—	—	IC circuit
	Water resistant (2-color indication)	Grommet	Yes	3-wire (PNP)	12 V	—	M9PV	M9PW	●	●	○	—	—	—	IC circuit
				2-wire	12 V	—	M9BV	M9BW	●	●	○	—	—	—	—
	Magnetic field resistant (2-color indication)	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	M9NAV ^{*1}	M9NA ^{*1}	○	○	○	—	—	—	—
				3-wire (PNP)	12 V	—	M9PAV ^{*1}	M9PA ^{*1}	○	○	○	—	—	—	—
Reed auto switch	—	Grommet	No	2-wire	—	—	M9BAV ^{*1}	M9BA ^{*1}	○	○	○	—	—	—	—
				2-wire (Non-polar)	—	—	—	P3DW	●	—	●	—	—	—	—
				3-wire (NPN equivalent)	—	5 V	A96V	A96	●	—	●	—	—	—	IC circuit
				2-wire	24 V	12 V 100 V 5 V, 12 V 100 V or less	A93V ^{*2}	A93	●	●	●	—	—	—	Relay, PLC
							A90V	A90	●	●	●	—	—	—	IC circuit

*1 Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.

Consult with SMC regarding water resistant types with the above model numbers.

*2 1 m type lead wire is only applicable to D-A93.

* Lead wire length symbols: 0.5 m Nil (Example) M9NW
1 m M (Example) M9NWM
3 m L (Example) M9NWL
5 m Z (Example) M9NWX

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

* The D-P3DW type is available from ø32 to ø63 only.

* There are other applicable auto switches other than the listed above. For details, refer to page 960.

* For details about auto switches with pre-wired connector, refer to pages 1626 and 1627.

Number of auto switches

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

Auto switch

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

* Refer to the below table for applicable auto switches.

Auto switch mounting groove

Z	ø12 to ø25	2 surfaces
	ø32 to ø63	4 surfaces

Made to Order

Refer to page 864 for details.

Body option

Nil	Standard (Rod end female thread)
F	With boss on head end
C	With rubber bumper (ø12 with auto switch only)
M	Rod end male thread

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

Action

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

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) CDQ2KB32-30DZ

CUJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

MU-Z

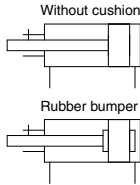
D-□

-X□

Technical data



Symbol



Made to Order: Individual Specifications
(For details, refer to page 973.)

Symbol	Specifications
-X1876	Cylinder tube: With concave boss on head end

Made to Order
(For details, refer to pages 1675 to 1818.)

Symbol	Specifications
-XA□	Change of rod end shape
-XB10	Intermediate stroke (Exclusive body type): ø40 to ø63
-XC2(A)	Rod end length, 10 mm increased (For foot and flange bracket)
-XC8	Adjustable stroke cylinder/Adjustable extension type
-XC9	Adjustable stroke cylinder/Adjustable retraction type
-XC10	Dual stroke cylinder/Double rod
-XC11	Dual stroke cylinder/Single rod
-XC26	With split pins for double clevis pin/ double knuckle joint pin and flat washers

Refer to pages 954 to 960 for the specifications of cylinders with autoswitches.

- Auto switch proper mounting position (detection at stroke end) and its mounting height
- Minimum stroke for auto switch mounting
- Operating range
- Auto switch mounting brackets/Part no.

Moisture Control Tube Series IDK



When operating an actuator with a small diameter and a short stroke at a high frequency, the dew condensation (water droplet) may occur inside the piping depending on the conditions.

Simply connecting the moisture control tube to the actuator will prevent dew condensation from occurring. For details, refer to [Series IDK in the WEB catalog](#).

Specifications

Bore size (mm)	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 0.043 Note 1)	0.038	0.055	0.09	0.15	0.26	0.46	0.77
Stroke length tolerance	+1.0 mm Note 2) 0							
Rod non-rotating accuracy	±2°		±1°			±0.8°		

* ø12 with auto switch: With rubber bumper (Standard)

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

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

Standard Strokes

Bore size	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 Strokes

Type	A spacer is installed in the standard stroke body.	
Part no.	Refer to "How to Order" for the standard model number. (P. 863)	
Description	Strokes in 1 mm intervals are available by installing a spacer in the 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.: CQ2KB50-57DZ CQ2KB50-75DZ with 18 mm width spacer inside The B dimension is 115.5 mm.	

Type

Bore size (mm)		12	16	20	25	32	40	50	63	
Mounting	Through-hole (Standard)	●	●	●	●	●	●	●	●	
	Both ends tapped	—	—	—	—	—	—	●	●	
Built-in magnet		●	●	●	●	●	●	●	●	
Pneumatic	Piping	—	M5 x 0.8	M5 x 0.8	M5 x 0.8	M5 x 0.8	Note 1) M5 x 0.8 Rc1/8	Rc1/8	Rc1/4	Rc1/4
		TF	—	—	—	—	NPT1/8	NPT1/8	NPT1/4	NPT1/4
		TN	—	—	—	—	G1/8	G1/8	G1/4	G1/4
		Built-in One-touch fittings	—	—	—	—	Note 2) ø6	ø6	ø8	ø8
	Rod end male thread		●	●	●	●	●	●	●	●
	With boss on head end		●	●	●	●	●	●	●	●

Note 1) ø32 without auto switch: M5 x 0.8 is used for 5 mm stroke piping dimension.

Thus, do not enter a symbol for the port thread type.

Note 2) The dimensions of the ø32-5 mm stroke with built-in One-touch fittings are the same as those of the 10 mm stroke cylinder tube.

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

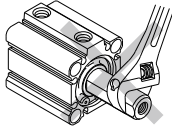
Retaining Ring Installation/Removal

⚠ 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 a type C retaining ring) is used, it is likely to inflict damage to a human body or peripheral equipment, as a retaining ring may be flown out of the tip of a plier (tool for installing a type C retaining ring). Be much careful with the popping of a retaining ring. Besides, be certain that a retaining ring is placed firmly into the groove of rod cover before supplying air at the time of installment.

Mounting

- Install or remove loads while the piston rod width across flat 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 below table 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 work piece 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 Brackets/Part No.

Bore size (mm)	Foot ^{Note 1)}	Compact foot ^{Note 1)}	Flange	Double clevis
40	CQ-L040	CQ-LC040	CQ-F040	CQ-D040
50	CQ-L050	CQ-LC050	CQ-F050	CQ-D050
63	CQ-L063	CQ-LC063	CQ-F063	CQ-D063

Note 1) When ordering foot and compact foot brackets, order 2 pieces per cylinder.

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

Foot, Compact foot, Flange: Body mounting bolts Double clevis: Clevis pin, Body mounting bolts, Type C retaining rings for axis

Theoretical Output

Bore size (mm)	Operating direction	Operating pressure (MPa)			(N)
		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	

Weight

Weight

Bore size (mm)	Cylinder stroke (mm)												(g)
	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	196	215	234	253	272	291	310	329	347	366	506	601	
40	205	226	248	269	291	312	333	355	376	398	570	682	
50	—	356	390	424	457	491	525	559	592	626	901	1075	
63	—	524	563	602	641	680	720	759	798	837	1173	1375	

Additional Weight

Bore size (mm)	12	16	20	25	32	40	50	63	(g)
Both ends tapped	—	—	—	—	—	6	6	19	
Rod end male thread	Male thread		1.5	3	6	12	26	53	53
	Nut		1	2	4	8	17	32	32
With boss on head end	0.7	1.3	2	3	5	7	13	25	
Built-in One-touch fittings	—	—	—	—	12	12	21	21	
Foot (Including mounting bolts)	—	—	—	—	—	153	242	316	
Compact foot (Including mounting bolts)	41	51	121	140	99	114	177	241	
Rod flange (Including mounting bolts)	—	—	—	—	—	213	372	558	
Head flange (Including mounting bolts)	—	—	—	—	—	198	348	534	
Double clevis (Including pin, retaining rings, bolts)	—	—	—	—	—	196	393	554	

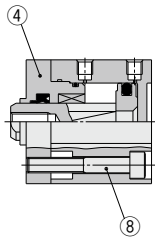
Calculation: (Example) **CQ2KD40-20DMZ**

- Basic weight: CQ2KB40-20DZ 269 g
- Additional weight: Both ends tapped 6 g
- Rod end male thread 44 g
- Double clevis 196 g

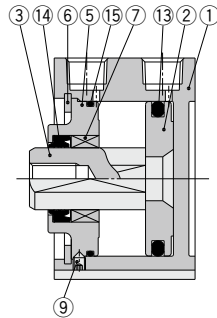
515 g

Construction

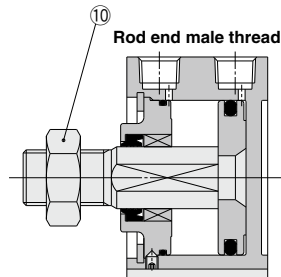
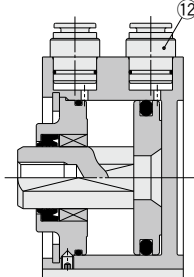
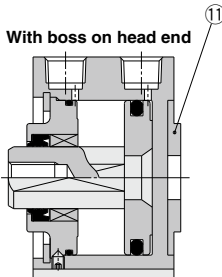
Standard (ø12 to ø32)



Standard (ø40 to ø63)



Built-in One-touch fittings



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 set screw	Alloy steel	ø40 to ø63, Nickel plated
10	Rod end nut	Carbon steel	Zinc chromated
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.	Contents
12	CQ2KB12-PS	Kits include items 13, 14, 15 from the table.
16	CQ2KB16-PS	
20	CQ2KB20-PS	
25	CQ2KB25-PS	
32	CQ2KB32-PS	
40	CQ2KB40-PS	
50	CQ2KB50-PS	
63	CQ2KB63-PS	

* Seal kit includes 13, 14, 15. Order the seal kit based on each bore size.

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

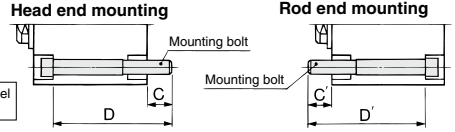
Grease pack part no.: GR-S-010 (10 g)

Mounting Bolt for CQ2KB/Without Auto Switch

Mounting method: Mounting bolt for through-hole mounting of the CQ2KB is available as an option. Refer to the following for ordering procedures. Order the actual number of bolts that will be used.

Example) CQ-M3 x 30L 2 pcs.

Material: Chromium molybdenum steel
Surface treatment: Zinc chromated



Cylinder model	C	D	Mounting bolt part no.	C'	D'	Mounting bolt part no.
CQ2KB12-5D		30	CQ-M3 x 30L		30	CQ-M3 x 30L
-10D	6.5	35	x 35L	6.5	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		30	CQ-M3 x 30L		30	CQ-M3 x 30L
-10D	5	35	x 35L	5	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		35	CQ-M5 x 35L		35	CQ-M5 x 35L
-10D	8	40	x 40L	9.5	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		40	CQ-M5 x 40L		35	CQ-M5 x 35L
-10D	10	45	x 45L	6.5	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
CQ2KB32-5DZ		40	CQ-M5 x 40L		40	CQ-M5 x 40L
-10DZ	8.5	45	x 45L	10	45	x 45L
-15DZ		50	x 50L		50	x 50L
-20DZ		55	x 55L		55	x 55L
-25DZ		60	x 60L		60	x 60L
-30DZ		65	x 65L		65	x 65L
-35DZ		70	x 70L		70	x 70L
-40DZ		75	x 75L		75	x 75L
-45DZ		80	x 80L		80	x 80L
-50DZ		85	x 85L		85	x 85L
-75DZ		120	x 120L		120	x 120L
-100DZ		145	x 145L		145	x 145L

Cylinder model	C	D	Mounting bolt part no.	C'	D'	Mounting bolt part no.
CQ2KB40-5DZ		35	CQ-M5 x 35L		35	CQ-M5 x 35L
-10DZ	7.5	40	x 40L	7.5	40	x 40L
-15DZ		45	x 45L		45	x 45L
-20DZ		50	x 50L		50	x 50L
-25DZ		55	x 55L		55	x 55L
-30DZ		60	x 60L		60	x 60L
-35DZ		65	x 65L		65	x 65L
-40DZ		70	x 70L		70	x 70L
-45DZ		75	x 75L		75	x 75L
-50DZ		80	x 80L		80	x 80L
-75DZ		115	x 115L		115	x 115L
-100DZ		140	x 140L		140	x 140L
CQ2KB50-10DZ		45	CQ-M6 x 45L		45	CQ-M6 x 45L
-15DZ	12.5	50	x 50L	12.5	50	x 50L
-20DZ		55	x 55L		55	x 55L
-25DZ		60	x 60L		60	x 60L
-30DZ		65	x 65L		65	x 65L
-35DZ		70	x 70L		70	x 70L
-40DZ		75	x 75L		75	x 75L
-45DZ		80	x 80L		80	x 80L
-50DZ		85	x 85L		85	x 85L
-75DZ		120	x 120L		120	x 120L
-100DZ		145	x 145L		145	x 145L
CQ2KB63-10DZ		50	CQ-M8 x 50L		50	CQ-M8 x 50L
-15DZ	14.5	55	x 55L	14.5	55	x 55L
-20DZ		60	x 60L		60	x 60L
-25DZ		65	x 65L		65	x 65L
-30DZ		70	x 70L		70	x 70L
-35DZ		75	x 75L		75	x 75L
-40DZ		80	x 80L		80	x 80L
-45DZ		85	x 85L		85	x 85L
-50DZ		90	x 90L		90	x 90L
-75DZ		125	x 125L		125	x 125L
-100DZ		150	x 150L		150	x 150L

CUJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

MU-Z

D-□

-X□

Technical data

Non-rotating Rod: Double Acting, Single Rod Series **CDQ2K** With Auto Switch



Refer to the below pages for further information on auto switches.

Auto switch proper mounting position and its mounting height	P.954 to 960
Minimum stroke for auto switch mounting	
Operating range	
Auto switch mounting brackets/Part no.	

Weight

Weight

Bore size (mm)	Cylinder stroke (mm)										(g)
	5	10	15	20	25	30	35	40	45	50	
12	71	77	83	89	96	102	—	—	—	—	—
16	74	82	89	97	105	113	—	—	—	—	—
20	119	132	144	156	168	180	192	204	217	229	—
25	162	177	192	208	223	238	254	269	284	300	—
32	227	247	266	286	306	326	345	365	385	404	504
40	240	261	283	305	326	348	369	391	413	434	546
50	—	433	466	499	532	565	598	630	663	697	869
63	—	622	660	698	736	774	812	850	888	926	1124

Additional Weight

Bore size (mm)	12	16	20	25	32	40	50	63	(g)
Both ends tapped	—	—	—	—	—	6	6	19	
Rod end male thread	1.5	3	6	12	26	27	53	53	
Nut	1	2	4	8	17	17	32	32	
With boss on head end	0.7	1.3	2	3	5	7	13	25	
Built-in One-touch fittings	—	—	—	—	12	12	21	21	
Foot (Including mounting bolts)	—	—	—	—	—	153	242	316	
Compact foot (Including mounting bolts)	32	40	97	116	99	114	177	241	
Rod flange (Including mounting bolts)	—	—	—	—	—	213	372	558	
Head flange (Including mounting bolts)	—	—	—	—	—	198	348	534	
Double clevis (Including pin, retaining rings and bolts)	—	—	—	—	—	196	393	554	

Calculation: (Example) **CDQ2KD40-25DMZ**

- Basic weight: CDQ2KB40-25DZ 326 g
- Additional weight: Both ends tapped 6 g
- Rod end male thread 44 g
- Double clevis 196 g

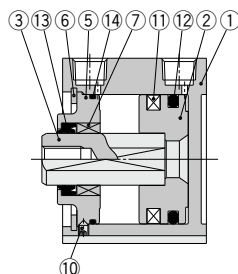
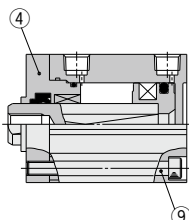
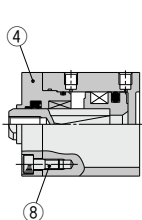
Add each weight of auto switches when auto switches are mounted.

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	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 ø25, Zinc chromated
9	Hexagon socket head cap screw	Alloy steel	ø32, Zinc chromated
10	Hexagon socket set screw	Alloy steel	ø40 to ø63, Zinc chromated
11	Magnet	—	—
12	Piston seal	NBR	—
13	Rod seal	NBR	—
14	Tube gasket	NBR	—

Replacement Parts/Seal Kit (Pneumatic type (Non-lube))

Bore size (mm)	Kit no.	Contents
12	CQ2KB12-PS	Kits include items 12, 13, 14 from the table.
16	CQ2KB16-PS	
20	CQ2KB20-PS	
25	CQ2KB25-PS	
32	CQ2KB32-PS	
40	CQ2KB40-PS	
50	CQ2KB50-PS	
63	CQ2KB63-PS	

* Seal kit includes 12, 13, 14. Order the seal kit, based on each bore size.

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

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

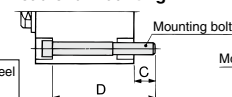
Mounting Bolt for CDQ2KB/With Auto Switch

Mounting method: Mounting bolt for through-hole mounting of the CDQ2KB is available as an option. Refer to the following for ordering procedures. Order the actual number of bolts that will be used.

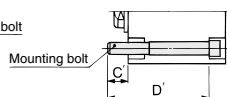
Example) CQ-M3 x 35L 2 pcs.

Material: Chromium molybdenum steel
Surface treatment: Zinc chromated

Head end mounting



Rod end mounting



Cylinder model	C	D	Mounting bolt part no.	C'	D'	Mounting bolt part no.
CDQ2KB12-5DCZ	5.5	35	CQ-M3 x 35L	5.5	40	CQ-M3 x 40L
-10DCZ		40	x 40L		45	x 45L
-15DCZ		45	x 45L		50	x 50L
-20DCZ		50	x 50L		55	x 55L
-25DCZ		55	x 55L		60	x 60L
-30DCZ	8	60	x 60L	8	65	x 65L
CDQ2KB16-5DZ		40	CQ-M3 x 40L		45	CQ-M3 x 45L
-10DZ		45	x 45L		50	x 50L
-15DZ		50	x 50L		55	x 55L
-20DZ		55	x 55L		60	x 60L
-25DZ	10.5	60	x 60L	7.5	65	x 65L
-30DZ		65	x 65L		70	x 70L
CDQ2KB20-5DZ		40	CQ-M5 x 40L		45	CQ-M5 x 45L
-10DZ		45	x 45L		50	x 50L
-15DZ		50	x 50L		55	x 55L
-20DZ	10.5	55	x 55L	7.5	60	x 60L
-25DZ		60	x 60L		65	x 65L
-30DZ		65	x 65L		70	x 70L
-35DZ		70	x 70L		75	x 75L
-40DZ		75	x 75L		80	x 80L
-45DZ	9.5	80	x 80L	6.5	85	x 85L
-50DZ		85	x 85L		90	x 90L
CDQ2KB25-5DZ		40	CQ-M5 x 40L		45	CQ-M5 x 45L
-10DZ		45	x 45L		50	x 50L
-15DZ		50	x 50L		55	x 55L
-20DZ	9.5	55	x 55L	6.5	60	x 60L
-25DZ		60	x 60L		65	x 65L
-30DZ		65	x 65L		70	x 70L
-35DZ		70	x 70L		75	x 75L
-40DZ		75	x 75L		80	x 80L
-45DZ	8.5	80	x 80L	10	85	x 85L
-50DZ		85	x 85L		90	x 90L
CDQ2KB32-5DZ		50	CQ-M5 x 50L		50	CQ-M5 x 50L
-10DZ		55	x 55L		55	x 55L
-15DZ		60	x 60L		60	x 60L
-20DZ	8.5	65	x 65L	10	65	x 65L
-25DZ		70	x 70L		70	x 70L
-30DZ		75	x 75L		75	x 75L
-35DZ		80	x 80L		80	x 80L

Cylinder model	C	D	Mounting bolt part no.	C'	D'	Mounting bolt part no.
CDQ2KB32-40DZ	8.5	85	CQ-M5 x 85L	10	85	CQ-M5 x 85L
-45DZ		90	x 90L		90	x 90L
-50DZ		95	x 95L		95	x 95L
-75DZ		120	x 120L		120	x 120L
-100DZ		145	x 145L		145	x 145L
CDQ2KB40-5DZ	7.5	45	CQ-M5 x 45L	7.5	45	CQ-M5 x 45L
-10DZ		50	x 50L		50	x 50L
-15DZ		55	x 55L		55	x 55L
-20DZ		60	x 60L		60	x 60L
-25DZ		65	x 65L		65	x 65L
-30DZ	7.5	70	x 70L	7.5	70	x 70L
-35DZ		75	x 75L		75	x 75L
-40DZ		80	x 80L		80	x 80L
-45DZ		85	x 85L		85	x 85L
-50DZ		90	x 90L		90	x 90L
-75DZ	12.5	115	x 115L	12.5	115	x 115L
-100DZ		140	x 140L		140	x 140L
CDQ2KB50-10DZ		55	CQ-M6 x 55L		55	CQ-M6 x 55L
-15DZ		60	x 60L		60	x 60L
-20DZ		65	x 65L		65	x 65L
-25DZ	12.5	70	x 70L	12.5	70	x 70L
-30DZ		75	x 75L		75	x 75L
-35DZ		80	x 80L		80	x 80L
-40DZ		85	x 85L		85	x 85L
-45DZ		90	x 90L		90	x 90L
-50DZ	14.5	95	x 95L	14.5	95	x 95L
-75DZ		120	x 120L		120	x 120L
-100DZ		145	x 145L		145	x 145L
CDQ2KB63-10DZ		60	CQ-M8 x 60L		60	CQ-M8 x 60L
-15DZ		65	x 65L		65	x 65L
-20DZ	14.5	70	x 70L	14.5	70	x 70L
-25DZ		75	x 75L		75	x 75L
-30DZ		80	x 80L		80	x 80L
-35DZ		85	x 85L		85	x 85L
-40DZ		90	x 90L		90	x 90L
-45DZ	14.5	95	x 95L	14.5	95	x 95L
-50DZ		100	x 100L		100	x 100L
-75DZ		125	x 125L		125	x 125L
-100DZ		150	x 150L		150	x 150L

CJ

CU

CQS

CQ2

RQ

CQM

CQU

MU

-Z

D-□

-X□

Technical data

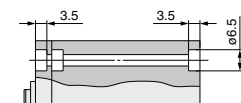
Series CQ2K

Dimensions

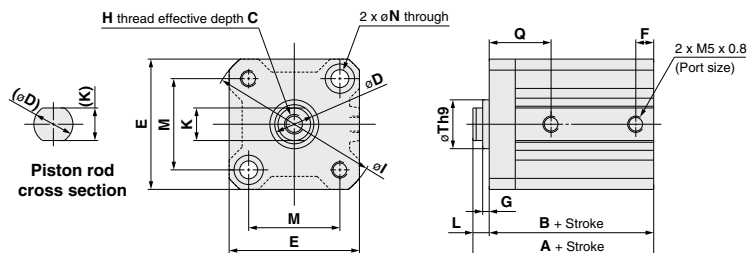
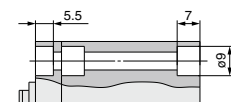
Ø12 to Ø25/Without Auto Switch

Standard (Through-hole): CQ2KB

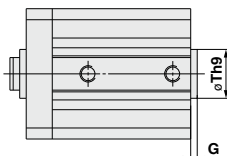
Ø12, Ø16



Ø20, Ø25



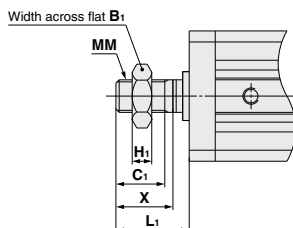
With boss on head end



With Boss on Head End (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



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

Standard

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	16	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	17	15 ⁰ _{-0.043}

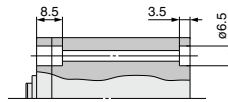
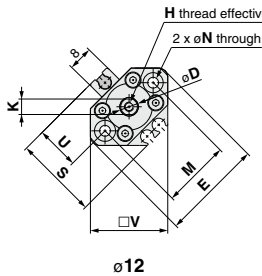
* For details about the rod end nut and accessory brackets, refer to page 804.

Dimensions

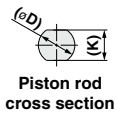
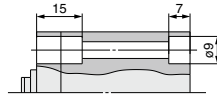
Ø12 to Ø25/With Auto Switch

Standard (Through-hole): CDQ2KB

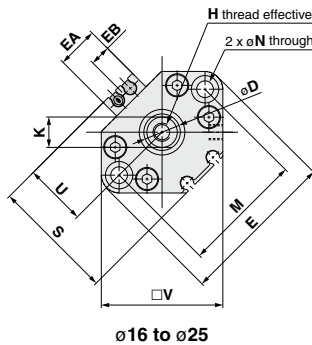
Ø12, Ø16



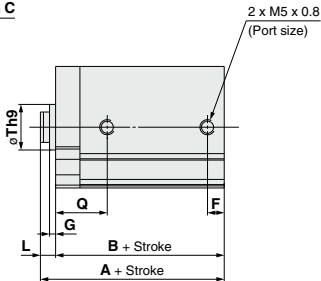
Ø20, Ø25



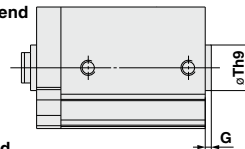
Piston rod cross section



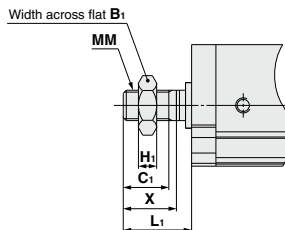
Ø16 to Ø25



With boss on head end



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

Standard For auto switch proper mounting position and its mounting height, refer to pages 954 to 960.

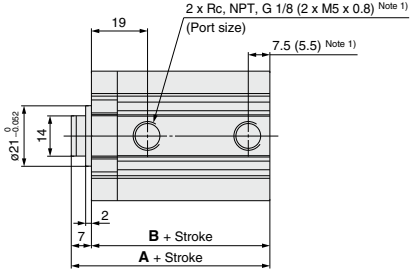
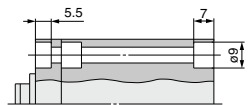
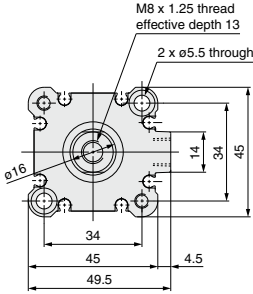
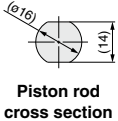
For slide motion from front mounting position and its mounting height, refer to pages 36 to 40																				
Bore size (mm)	Stroke range (mm)	A	B	C	D	E	EA	EB	F	G	H	K	L	M	N	Q	S	Th9	U	V
12	5 to 30	36.5	33	6	6	33	—	—	6.5	1.5	M3 x 0.5	5.2	3.5	22	3.5	16	27.5	15 ⁰ _{-0.043}	14	25
16	5 to 30	39	35.5	8	8	37	13.2	6.6	5.5	1.5	M4 x 0.7	6	3.5	28	3.5	15	29.5	20 ⁰ _{-0.052}	15	29
20	5 to 50	44	39.5	7	10	47	13.6	6.8	5.5	2	M5 x 0.8	8	4.5	36	5.5	16	35.5	13 ⁰ _{-0.043}	18	36
25	5 to 50	45.5	40.5	12	12	52	13.6	6.8	5.5	2	M6 x 1.0	10	5	40	5.5	17	40.5	15 ⁰ _{-0.043}	21	40

* For details about the rod end nut and accessory brackets, refer to page 804.

Series CQ2K

Dimensions

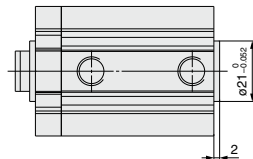
Ø32/Without Auto Switch



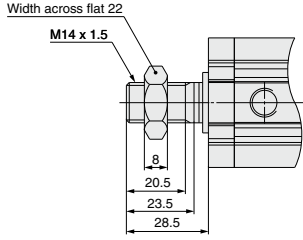
Note 1) (): Stroke 5 mm

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

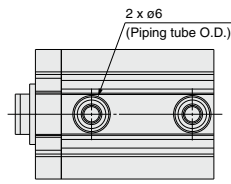
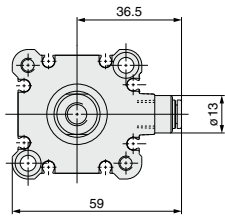
With boss on head end



Rod end male thread



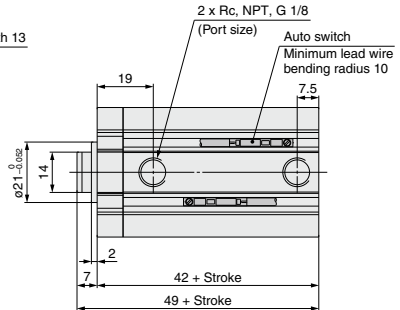
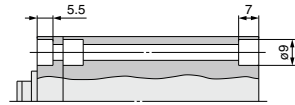
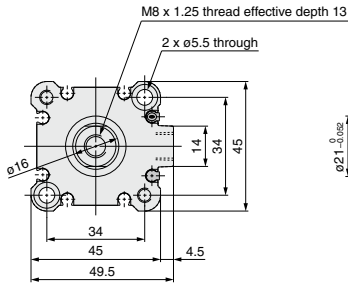
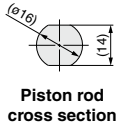
Built-in One-touch fittings: Ø32



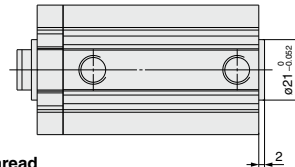
Note 2) The dimensions of the Ø32-5 mm stroke with built-in One-touch fittings are the same as those of the 10 mm stroke cylinder tube.
* For details about the rod end nut and accessory brackets, refer to page 804.

Dimensions

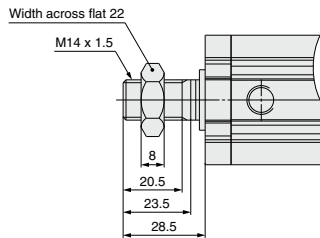
Ø32/With Auto Switch



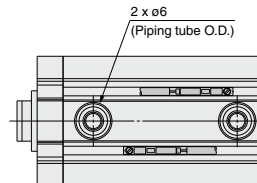
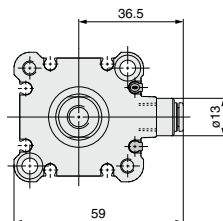
With boss on head end



Rod end male thread



Built-in One-touch fittings: Ø32



* For details about the rod end nut and accessory brackets, refer to page 804.

Series CQ2K

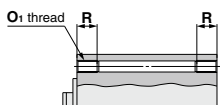
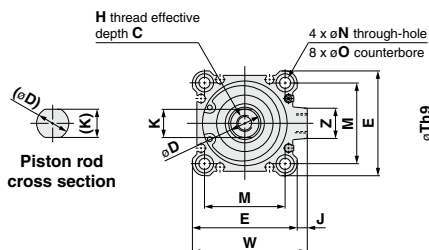
Dimensions

ø40 to ø63/With Auto Switch

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

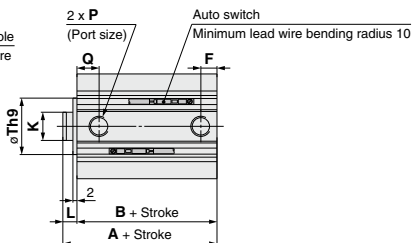
Both ends tapped: CDQ2KA

Standard (Through-hole): CDQ2KB

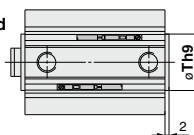


Both Ends Tapped

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



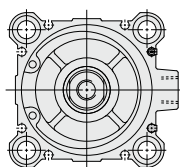
With boss on head end



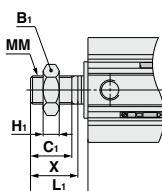
With Boss on Head End

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

Rod end male thread



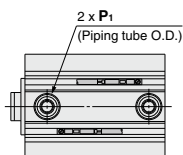
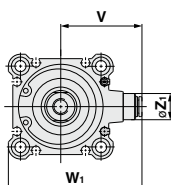
Cylinder tube form
ø63



Rod End Male Thread

Bore size	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: ø40 to ø63



Built-in One-touch Fittings

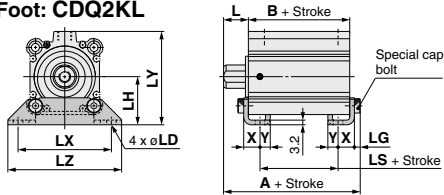
Bore size (mm)	Z ₁	P ₁	V	W ₁
40	13	6	40.5	66.5
50	16	8	50	82
63	16	8	56.5	95

Standard

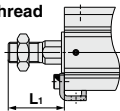
Standard																			(mm)		
Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch		C	D	E	F	H	J	K	L	M	N	O	P	Q	Th9	W	Z
40	5 to 50	36.5	29.5	46.5	39.5	13	16	52	7.5	M8 x 1.25	5	14	7	40	5.5	9 depth 7	1/8	12.5	28 ⁰ _{-0.052}	57	15
	75, 100	46.5	39.5																		
	10 to 50	38.5	30.5	48.5	40.5	15	20	64	10.5	M10 x 1.5	7	18	8	50	6.6	11 depth 8	1/4	10.5	35 ⁰ _{-0.062}	71	19
50	75, 100	48.5	40.5																		
	10 to 50	44	36	54	46	15	20	77	10.5	M10 x 1.5	7	18	8	60	9	14 depth 10.5	1/4	15	35 ⁰ _{-0.062}	84	19
	75, 100	54	46																		

* For details about the rod end nut and accessory brackets, refer to page 804.

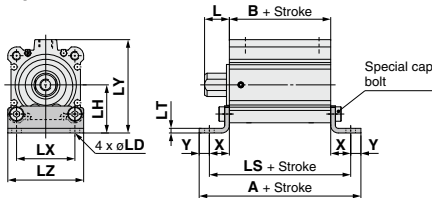
Foot: CDQ2KL



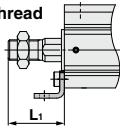
Rod end male thread



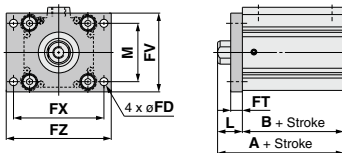
Compact foot: CQ2KLC/CDQ2KLC



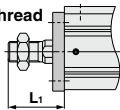
Rod end male thread



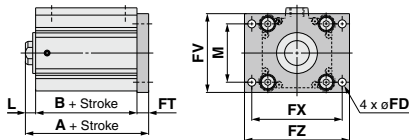
Rod flange: CDQ2KF



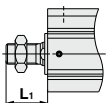
Rod end male thread



Head flange: CDQ2KG



Rod end male thread



* For details about the rod end nut and accessory brackets, refer to page 804.

Foot

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

Compact Foot

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	70.9	29.5	56.9	80.9	39.5	66.9	17	38.5	6.6
	75, 100	80.9	39.5	66.9						
50	10 to 50	79.9	30.5	63.9	89.9	40.5	73.9	18	43.5	9
	75, 100	89.9	40.5	73.9						
63	10 to 50	90.4	36	72.4	100.4	46	82.4	18	43.5	11
	75, 100	100.4	46	82.4						

Bore size (mm)	LH	LT	LX	LY	LZ	X	Y
40	33	3.2	40	64	52	13.7	7
50	39	3.2	50	78	64	16.7	8
63	46	3.2	60	91.5	77	18.2	9

Compact foot bracket material: Carbon steel
Surface treatment: Zinc chromated

Rod Flange

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 Flange

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					

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

(* The dimensions except A, L and L₁ are the same as those of the rod flange.)

CUJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

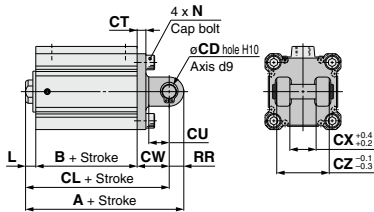
MU-Z

D-□

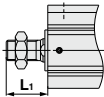
-X□

Technical data

Double clevis: CDQ2KD



Rod end male thread



- * For details about the rod end nut and accessory brackets, refer to page 804.
- * Double clevis pin and retaining rings are included.

Double Clevis

(mm)

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	L1	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: Cast iron
Surface treatment: Painted

CJ

CU

CQS

CQ2
-Z

RQ

CQM

CQU

MU
-Z

D-□

-X□

Technical
data

Compact Cylinder: Non-rotating Rod Double Acting, Double Rod

Series CQ2KW

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

How to Order

Without auto switch
ø12 to ø25

Without auto switch
ø32 to ø63

With auto switch

CQ2KW B 20 - 30 D

CQ2KW B 32 - 30 D Z

CDQ2KW B 32 - 30 D Z - M9BW

With auto switch
(Built-in magnet)

Mounting

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

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

* Cylinder mounting bolts are not included. Order them separately referring to "Mounting Bolt for CQ2KW" on pages 881 and 883.

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
	Rc	
TN	NPT	ø32 to ø63
TF	G	
F	Built-in One-touch fittings	Note 1)

Note 1) Bore sizes available with One-touch fittings are ø32 to ø63.

* For cylinders without auto switch, M threads are compatible only for ø32-5 mm stroke model.

Number of auto switches

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

Auto switch

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

* Refer to the below table for applicable auto switches.

Auto switch mounting groove

Z	ø12 to ø25	2 surfaces
	ø32 to ø63	4 surfaces

Body option

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

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) CDQ2KWB32-30DZ

Cylinder stroke (mm)

Refer to page 878 for standard strokes.

Action

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

Applicable Auto Switches/Refer to pages 1559 to 1673 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 auto switch	Diagnostic indication (2-color indication)	Grommet	Yes	3-wire (NPN)	5 V	—	M9NV	M9N	●	●	○	—	—	—	IC circuit	Relay, PLC
				3-wire (PNP)	12 V	—	M9PV	M9P	●	●	○	—	—	—	IC circuit	
				2-wire	12 V	—	M9BV	M9B	●	●	○	—	—	—	—	
				3-wire (NPN)	5 V	—	M9NWW	M9NW	●	●	○	—	—	—	—	
	Water resistant (2-color indication)	Grommet	Yes	3-wire (PNP)	5 V	—	M9PW	M9PW	●	●	○	—	—	—	IC circuit	
				2-wire	12 V	—	M9BWW	M9BW	●	●	○	—	—	—	—	
				3-wire (NPN)	5 V	—	M9NAV ^{*1}	M9NA ^{*1}	○	○	●	○	—	—	IC circuit	
				3-wire (PNP)	12 V	—	M9PAV ^{*1}	M9PA ^{*1}	○	○	●	○	—	—	—	
	Magnetic field resistant (2-color indication)	Grommet	Yes	2-wire	12 V	—	M9BAV ^{*1}	M9BA ^{*1}	○	○	●	○	—	—	—	
				2-wire (Non-polar)	—	—	—	P3DW	●	—	●	●	—	—	—	
Reed auto switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	A96V	A96	●	—	●	—	—	—	IC circuit	—
				2-wire	24 V	12 V	A93V ^{*2}	A93	●	●	●	—	—	—	—	Relay, PLC
			No		5 V, 12 V	100 V or less	A90V	A90	●	—	●	—	—	—	IC circuit	—

*1 Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance. Consult with SMC regarding water resistant types with the above model numbers.

*2 1 m type lead wire is only applicable to D-A93.

* 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

* Solid state auto switches marked with "○" are produced upon receipt of order.
* The D-P3DW type is available from ø32 to ø63 only.

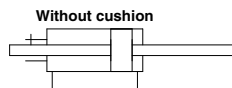
* There are other applicable auto switches other than the listed above. For details, refer to page 960.

* For details about auto switches with pre-wired connector, refer to pages 1626 and 1627.

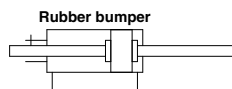




Symbol



Without cushion



Rubber bumper



Made to Order: Individual Specifications
(For details, refer to page 971.)

Symbol	Specifications
-X633	Intermediate stroke of double rod cylinder

Made to Order

(For details, refer to pages 1675 to 1818.)

Symbol	Specifications
-XA□	Change of rod end shape
-XB10	Intermediate stroke (Exclusive body type)
-XC2(A)	Rod end length, 10 mm increased (For foot and flange bracket)

* -X633: Intermediate stroke in 5 mm intervals only

Moisture Control Tube Series IDK



When operating an actuator with a small diameter and a short stroke at a high frequency, the dew condensation (water droplet) may occur inside the piping depending on the conditions.

Simply connecting the moisture control tube to the actuator will prevent dew condensation from occurring. For details, refer to [Series IDK in the WEB catalog](#).

Specifications

Bore size (mm)	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	+1.0 mm Note 2) 0							
Rod non-rotating accuracy	±2°		±1°			±0.8°		

* ø12 with auto switch: With rubber bumper (Standard)

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

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

Standard Strokes

Bore size	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, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100
50, 63	10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100

Manufacture of Intermediate Strokes

Type	A spacer is installed in the standard stroke body.
Part no.	Refer to "How to Order" for the standard model number. (P. 877)
Description	Strokes in 5 mm intervals are available by installing a spacer in the standard stroke cylinder.
Stroke range	Bore size: 32 to 63 Stroke range: 55 to 95
Example	Part no.: CQ2KWB50-65DZ CQ2KWB50-75DZ with 10 mm width spacer inside The B dimension is 125.5 mm.

Type

Bore size (mm)	12	16	20	25	32	40	50	63
Pneumatic	Through-hole (Standard)	●	●	●	●	●	●	●
	Both ends tapped	—	—	—	—	—	●	●
	Built-in magnet	●	●	●	●	●	●	●
	Piping	—	M5 x 0.8	M5 x 0.8	M5 x 0.8	M5 x 0.8 Note 1)	Rc1/8	Rc1/4
		—	—	—	—	NPT1/8	NPT1/8	NPT1/4
		—	—	—	—	G1/8	G1/8	G1/4
		—	—	—	—	ø6	ø6	ø8
	Built-in one-touch fittings	—	—	—	—	ø6	ø6	ø8
	Rod end male thread	●	●	●	●	●	●	●

Note 1) ø32 without auto switch: M5 x 0.8 is used for 5 mm stroke piping dimension.

Thus, do not enter a symbol for the port thread type.

Note 2) The dimensions of the ø32-5 mm stroke with built-in One-touch fittings are the same as those of the 10 mm stroke cylinder tube.

Refer to pages 954 to 960 for the specifications of cylinders with autoswitches.

- Auto switch proper mounting position (detection at stroke end) and its mounting height
- Minimum stroke for auto switch mounting
- Operating range
- Auto switch mounting brackets/Part no.

Retaining Ring Installation/Removal

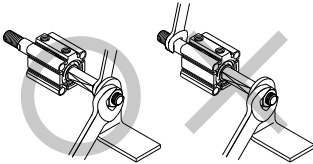
⚠ Caution

- 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 a type C retaining ring) is used, it is likely to inflict damage to a human body or peripheral equipment, as a retaining ring may be flown out of the tip of a plier (tool for installing a type C retaining ring). Be much careful with the popping of a retaining ring. Besides, be certain that a retaining ring is placed firmly into the groove of rod cover before supplying air at the time of installment.

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 flat 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 flat 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 below table 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 Brackets/Part No.

Bore size (mm)	Foot Note 1)	Compact foot Note 1)	Flange
40	CQ-L040	CQ-LC040	CQ-F040
50	CQ-L050	CQ-LC050	CQ-F050
63	CQ-L063	CQ-LC063	CQ-F063

Note 1) When ordering foot and compact foot brackets, order 2 pieces per cylinder.

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

Foot, Compact foot, Flange: Body mounting bolts

Theoretical Output

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

Weight

Weight

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	233	256	279	302	325	348	371	394	417	440	600	715
40	336	365	394	424	453	483	512	541	571	600	806	953
50	—	517	558	600	642	684	725	767	809	850	1142	1351
63	—	742	779	815	851	887	923	959	995	1032	1285	1465

Additional Weight

Bore size (mm)		12	16	20	25	32	40	50	63
Both ends tapped		—	—	—	—	—	6	6	19
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 (Including mounting bolts)		—	—	—	—	—	154	243	317
Compact foot (Including mounting bolts)		—	—	—	—	—	114	177	241
Flange (Including mounting bolts)		—	—	—	—	—	214	373	559

Calculation: (Example) **CQ2KWA40-20DMZ**

- Basic weight: CQ2KWB40-20DZ 424 g
- Additional weight: Both ends tapped 6 g
- Rod end male thread 88 g

518 g

CJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

MU-Z

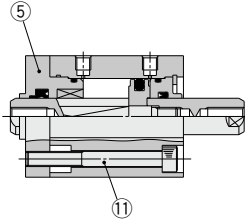
D-□

-X□

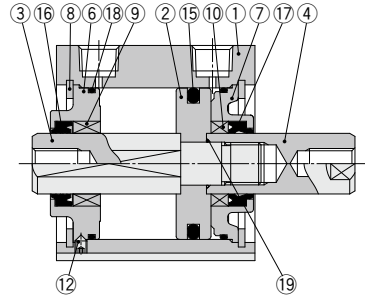
Technical data

Construction

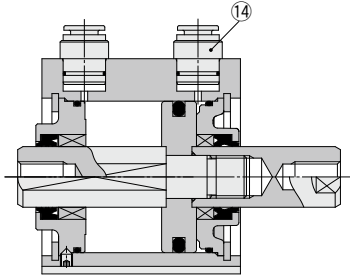
Standard (ø12 to ø32)



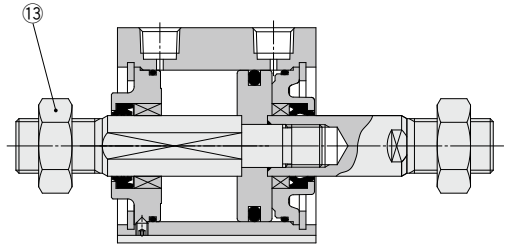
Standard (ø40 to ø63)



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, Zinc chromated
12	Hexagon socket set screw	Alloy steel	ø40 to ø63, Zinc chromated
13	Rod end nut	Carbon steel	Zinc chromated
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.	Contents
12	CQ2KWB12-PS	Kits include items 15, 16, 17, 18 from the table.
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 seal kit does not include a grease pack, order it separately.

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

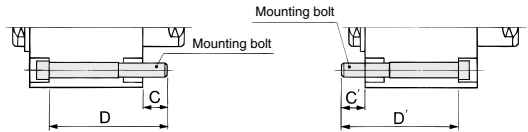
Mounting Bolt for CQ2KWB/Without Auto Switch

Mounting method: Mounting bolt for through-hole mounting of the CQ2KWB is available as an option. Refer to the following for ordering procedures. Order the actual number of bolts that will be used.

Example) CQ-M3 x 40L 2 pcs.

Material: Chromium molybdenum steel
Surface treatment: Zinc chromated

Non-rotating rod end mounting



Cylinder model	C	D	Mounting bolt part no.	C'	D'	Mounting bolt part no.
CQ2KWB12-5D		40	CQ-M3 x 40L	40	CQ-M3 x 40L	
-10D		45	x 45L	45	x 45L	
-15D	8.3	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		40	CQ-M3 x 40L	40	CQ-M3 x 40L	
-10D		45	x 45L	45	x 45L	
-15D	7.5	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		40	CQ-M5 x 40L	40	CQ-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	6.5	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		45	CQ-M5 x 45L	45	CQ-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	8.5	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	
CQ2KWB32-5DZ		50	CQ-M5 x 50L	45	CQ-M5 x 45L	
-10DZ		55	x 55L	50	x 50L	
-15DZ		60	x 60L	55	x 55L	
-20DZ		65	x 65L	60	x 60L	
-25DZ		70	x 70L	65	x 65L	
-30DZ	11	75	x 75L	70	x 70L	
-35DZ		80	x 80L	75	x 75L	
-40DZ		85	x 85L	80	x 80L	
-45DZ		90	x 90L	85	x 85L	
-50DZ		95	x 95L	90	x 90L	
-75DZ		130	x 130L	125	x 125L	
-100DZ		155	x 155L	150	x 150L	

Cylinder model	C	D	Mounting bolt part no.
CQ2KWB40-5DZ		45	CQ-M5 x 45L
-10DZ		50	x 50L
-15DZ		55	x 55L
-20DZ		60	x 60L
-25DZ		65	x 65L
-30DZ	7	70	x 70L
-35DZ		75	x 75L
-40DZ		80	x 80L
-45DZ		85	x 85L
-50DZ		90	x 90L
-75DZ		125	x 125L
-100DZ		150	x 150L
CQ2KWB50-10DZ		55	CQ-M6 x 55L
-15DZ		60	x 60L
-20DZ		65	x 65L
-25DZ		70	x 70L
-30DZ	12.5	75	x 75L
-35DZ		80	x 80L
-40DZ		85	x 85L
-45DZ		90	x 90L
-50DZ		95	x 95L
-75DZ		130	x 130L
-100DZ		155	x 155L
CQ2KWB63-10DZ		55	CQ-M8 x 55L
-15DZ		60	x 60L
-20DZ		65	x 65L
-25DZ		70	x 70L
-30DZ	13.5	75	x 75L
-35DZ		80	x 80L
-40DZ		85	x 85L
-45DZ		90	x 90L
-50DZ		95	x 95L
-75DZ		130	x 130L
-100DZ		155	x 155L

* ø40 to ø63: The C' and D' dimensions are the same as those of C and D.

CUJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

MU-Z

D-□

-X□

Technical data

Non-rotating Rod: Double Acting, Double Rod Series **CDQ2KW** With Auto Switch



Refer to the below pages for further information on auto switches.

Auto switch proper mounting position and its mounting height	P.954 to 960
Minimum stroke for auto switch mounting	
Operating range	
Auto switch mounting brackets/Part no.	

Weight

Weight

(g)

Bore size (mm)	Cylinder stroke (mm)											
	5	10	15	20	25	30	35	40	45	50	75	100
12	76	83	90	98	105	113	—	—	—	—	—	—
16	89	99	109	118	128	138	—	—	—	—	—	—
20	148	164	179	194	210	225	240	256	271	286	—	—
25	213	228	244	259	275	291	306	322	337	353	—	—
32	259	282	305	328	351	374	397	420	443	466	580	695
40	441	471	500	530	559	588	618	647	677	706	853	1000
50	—	642	684	726	767	809	851	892	934	976	1184	1393
63	—	871	907	943	979	1015	1051	1088	1124	1160	1341	1521

Additional Weight

(g)

Bore size (mm)	12	16	20	25	32	40	50	63
Both ends tapped	—	—	—	—	—	6	6	19
Rod end 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 (Including mounting bolts)	—	—	—	—	—	154	243	317
Compact foot (Including mounting bolts)	—	—	—	—	—	114	177	241
Flange (Including mounting bolts)	—	—	—	—	—	214	373	559

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

• Basic weight: CDQ2KWB40-20DZ 530 g

• Additional weight: Both ends tapped 6 g

Rod end male thread 88 g

624 g

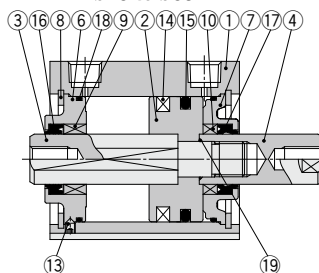
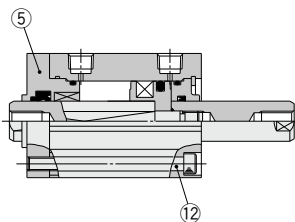
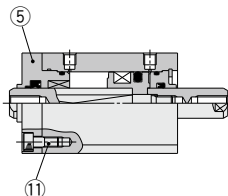
Add each weight of auto switches when auto switches are mounted.

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 ø63, Anodized
6	Collar for non-rotating	Aluminum alloy	ø40 to ø63, Anodized
		Aluminum alloy	ø12 to ø40, Anodized
7	Collar	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, Zinc chromated
12	Hexagon socket head cap screw	Alloy steel	ø32, Zinc chromated
13	Hexagon socket set screw	Alloy steel	ø40 to ø63, Zinc chromated
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.	Contents
12	CQ2KWB12-PS	Kits include items 15, 16, 17, 18 from the table.
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 seal kit does not include a grease pack, order it separately.

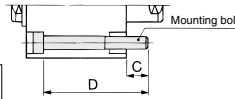
Grease pack part no.: GR-S-010 (10 g)

Mounting Bolt for CDQ2KWB/With Auto Switch

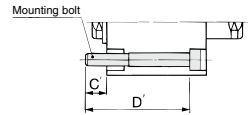
Mounting method: Mounting bolt for through-hole mounting of the CDQ2KWB is available as an option. Refer to the following for ordering procedures. Order the actual number of bolts that will be used.

Example) CQ-M3 x 40L 2 pcs.

Material: Chromium molybdenum steel
Surface treatment: Zinc chromated



Non-rotating rod end mounting



Cylinder model	C	D	Mounting bolt part no.	C'	D'	Mounting bolt part no.
CDQ2KWB12-5DCZ	6.1	40	CQ-M3 x 40L	6.1	45	CQ-M3 x 45L
-10DCZ		45	x 45L		50	x 50L
-15DCZ		50	x 50L		55	x 55L
-20DCZ		55	x 55L		60	x 60L
-25DCZ		60	x 60L		65	x 65L
-30DCZ	7.5	65	x 65L		70	x 70L
CDQ2KWB16-5DZ		45	CQ-M3 x 45L	7.5	50	CQ-M3 x 50L
-10DZ		50	x 50L		55	x 55L
-15DZ		55	x 55L		60	x 60L
-20DZ		60	x 60L		65	x 65L
-25DZ		65	x 65L		70	x 70L
-30DZ	9	70	x 70L		75	x 75L
CDQ2KWB20-5DZ		45	CQ-M5 x 45L	11	55	CQ-M5 x 55L
-10DZ		50	x 50L		60	x 60L
-15DZ		55	x 55L		65	x 65L
-20DZ		60	x 60L		70	x 70L
-25DZ		65	x 65L		75	x 75L
-30DZ	8	70	x 70L	10	80	x 80L
-35DZ		75	x 75L		85	x 85L
-40DZ		80	x 80L		90	x 90L
-45DZ		85	x 85L		95	x 95L
-50DZ		90	x 90L		100	x 100L
CDQ2KWB25-5DZ	8	45	CQ-M5 x 45L	10	55	CQ-M5 x 55L
-10DZ		50	x 50L		60	x 60L
-15DZ		55	x 55L		65	x 65L
-20DZ		60	x 60L		70	x 70L
-25DZ		65	x 65L		75	x 75L
-30DZ	11	70	x 70L		80	x 80L
-35DZ		75	x 75L		85	x 85L
-40DZ		80	x 80L		90	x 90L
-45DZ		85	x 85L		95	x 95L
-50DZ		90	x 90L		100	x 100L
CDQ2KWB32-5DZ	11	60	CQ-M5 x 60L	7.5	55	CQ-M5 x 55L
-10DZ		65	x 65L		60	x 60L
-15DZ		70	x 70L		65	x 65L
-20DZ		75	x 75L		70	x 70L
-25DZ		80	x 80L		75	x 75L
-30DZ	11	85	x 85L		80	x 80L
-35DZ		90	x 90L		85	x 85L
-40DZ		95	x 95L		90	x 90L
-45DZ		100	x 100L		95	x 95L
-50DZ		105	x 105L		100	x 100L
-75DZ	11	130	x 130L		125	x 125L
-100DZ		155	x 155L		150	x 150L

Cylinder model	C	D	Mounting bolt part no.
CDQ2KWB40-5DZ	7	55	CQ-M5 x 55L
-10DZ		60	x 60L
-15DZ		65	x 65L
-20DZ		70	x 70L
-25DZ		75	x 75L
-30DZ		80	x 80L
-35DZ		85	x 85L
-40DZ		90	x 90L
-45DZ		95	x 95L
-50DZ		100	x 100L
-75DZ	12.5	125	x 125L
-100DZ		150	x 150L
CDQ2KWB50-10DZ		65	CQ-M6 x 65L
-15DZ		70	x 70L
-20DZ		75	x 75L
-25DZ		80	x 80L
-30DZ		85	x 85L
-35DZ		90	x 90L
-40DZ		95	x 95L
-45DZ		100	x 100L
-50DZ	13.5	105	x 105L
-75DZ		130	x 130L
-100DZ		155	x 155L
CDQ2KWB63-10DZ		65	CQ-M8 x 65L
-15DZ		70	x 70L
-20DZ		75	x 75L
-25DZ		80	x 80L
-30DZ		85	x 85L
-35DZ		90	x 90L
-40DZ		95	x 95L
-45DZ		100	x 100L
-50DZ	13.5	105	x 105L
-75DZ		130	x 130L
-100DZ		155	x 155L

* ø40 to ø63: The C' and D' dimensions are the same as those of C and D.

CJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

MU-Z

D-□

-X□

Technical data

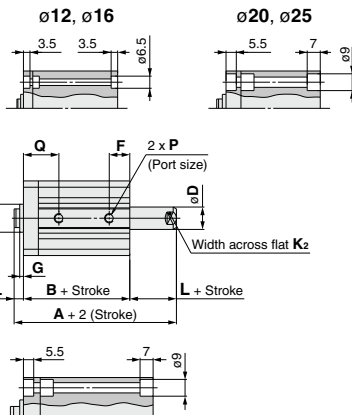
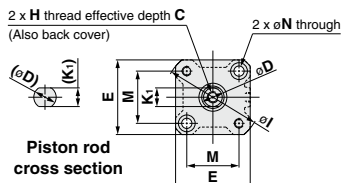
Series CQ2KW

Dimensions

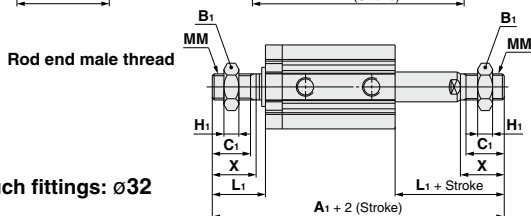
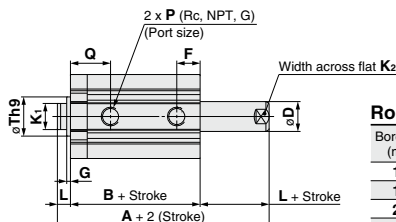
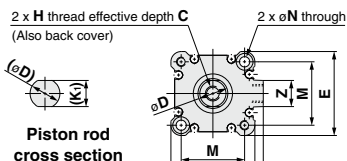
Ø12 to Ø32/Without Auto Switch

Standard (Through-hole): CQ2KWB

Ø12 to Ø25



Ø32

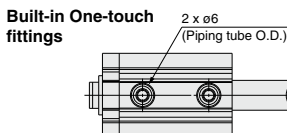
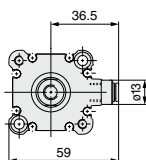


Rod End Male Thread (mm)

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



* The dimensions of ø32-5 mm stroke with built-in One-touch fittings are the same as those of the 10 mm stroke cylinder tube. (mm)

Standard

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 ^{0.043}	—	—
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 ^{0.052}	—	—
20	5 to 50	43	34	7	10	36	8	2	M5 x 0.8	47	—	8	8	4.5	25.5	5.5	M5 x 0.8	16	13 ^{0.043}	—	—
25	5 to 50	47	37	12	12	40	9	2	M6 x 1.0	52	—	10	10	5	28	5.5	M5 x 0.8	17	15 ^{0.043}	—	—
32	5	53.5	39.5	13	16	45	10	2	M8 x 1.25	—	4.5	14	14	7	34	5.5	M5 x 0.8	19	21 ^{0.052}	49.5	14
	10 to 50	—	—														1/8				
	75, 100	63.5	49.5														—				

* For details about the rod end nut and accessory brackets, refer to page 804.

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

Ø12 to Ø32/With Auto Switch

Standard (Through-hole): CDQ2KWB

Ø12, Ø16

Ø20, Ø25

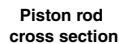
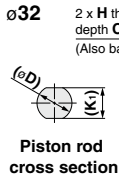
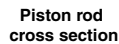
Ø32

Piston rod cross section

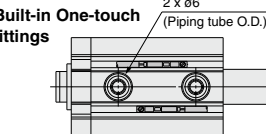
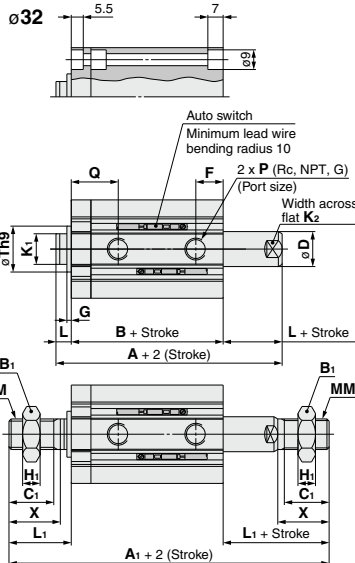
Technical drawings showing the dimensions and specifications for the CDQ2KWB solenoid valve, including standard (through-hole) and piston rod cross-section views for various port sizes (Ø12, Ø16, Ø20, Ø25, Ø32).

Dimensions and Specifications:

- Port Sizes:** Ø12, Ø16, Ø20, Ø25, Ø32
- Thread Effective Depth (C):** 2 x H (Also back cover), 2 x ØN through
- Port Size (P):** 2 x P (Port size)
- Width across flat (K₂):** Width across flat K₂
- Stroke:** B + Stroke, L + Stroke
- Overall Dimensions:** A + 2 (Stroke), A + 2 (Stroke)
- Minimum lead wire:** Auto switch, Minimum lead wire



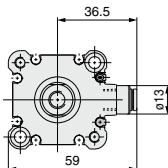
Ø32



Built-in One-touch fittings

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



Standard For auto switch proper mounting position and its mounting height, refer to pages 954 to 960. (mm)

Bore size (mm)	Stroke range (mm)	A	B	C	D	E	EA	EB	F	G	H	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	33	—	—	10.5	1.5	M3 x 0.5	—	5.2	5	3.5	22	3.5	M5 x 0.8	15.5	27.5	15 _{-0.043} ^{0.043}	14	25	—	—
16	5 to 30	48	41	8	8	37	13.2	6.6	10	1.5	M4 x 0.7	—	6	6	3.5	22	3.5	M5 x 0.8	15	29.5	20 _{-0.052} ^{0.052}	15	29	—	—
20	5 to 50	55	46	7	10	47	13.6	6.8	8	2	M5 x 0.8	—	8	8	4.5	36	5.5	M5 x 0.8	16	35.5	13 _{-0.043} ^{0.043}	14	36	—	—
25	5 to 50	57	47	12	12	52	13.6	6.8	9	2	M6 x 1.0	—	10	10	5	40	5.5	M5 x 0.8	17	40.5	15 _{-0.043} ^{0.043}	14	40	—	—
32	5 to 50, 75 to 100	63.5	49.5	13	16	45	—	—	10	2	M6 x 1.25	4.5	14	14	7	34	5.5	1/8	19	—	21 _{-0.063} ^{0.063}	—	—	49.5	14

CUJ

CU

CQS

CQ2
-Z

RQ

CQM

CQU

MU
-Z

D-

-X ☐

Technical data

Series CQ2KW

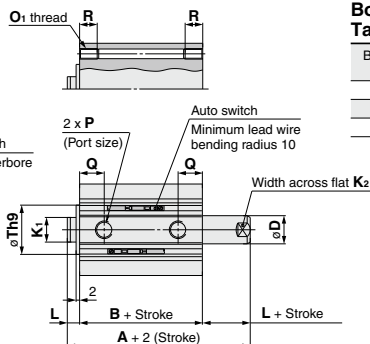
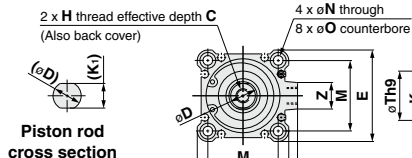
Dimensions

ø40 to ø63/With Auto Switch

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

Both ends tapped: CQ2KWA/CDQ2KWA

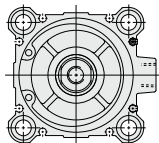
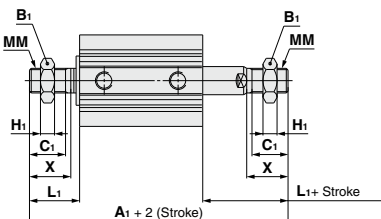
Standard (Through-hole): CQ2KWB/CDQ2KWB



Both Ends Tapped

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

Rod end male thread



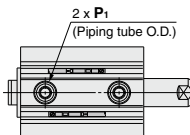
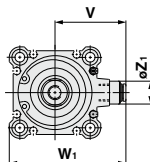
Cylinder tube form
ø63

Rod End Male Thread

Bore size (mm)	Stroke range (mm)	A ₁		B ₁	C ₁	H ₁	L ₁	MM	X
		Without auto switch	With auto switch						
40	5 to 50	97		107	22	20.5	8	28.5	M14 x 1.5
	75, 100	107							
50	10 to 50	107.5		117.5	27	26	11	33.5	M18 x 1.5
	75, 100	117.5							
63	10 to 50	109		119	27	26	11	33.5	M18 x 1.5
	75, 100	119							

Built-in One-touch fittings:

ø40 to ø63



Built-in One-touch Fittings

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

Standard

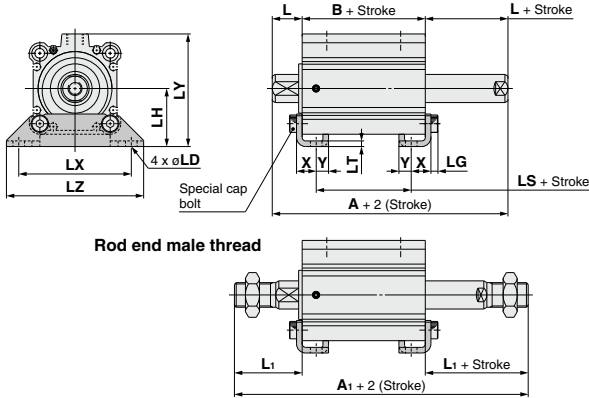
For auto switch proper mounting position and its mounting height, refer to pages 954 to 960.

Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch		C	D	E	H	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	5	14	14	7	40	5.5	9 depth 7	1/8	12.5	28 ⁰ _{-0.052}	57	15
	75, 100	64	50																		
50	10 to 50	56.5	40.5	66.5	50.5	15	20	64	M10 x 1.5	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	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 804.

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

Foot: CQ2KWL/CDQ2KWL



Rod End Male Thread

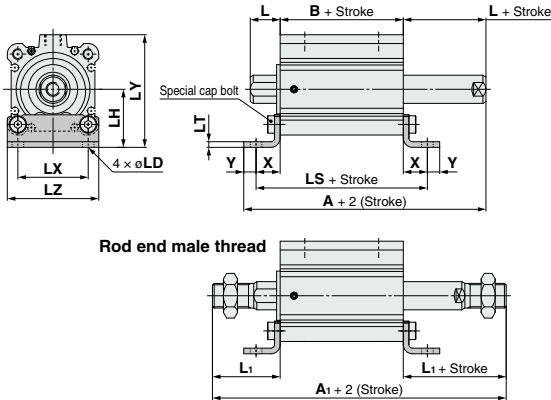
Bore size (mm)	Stroke range (mm)	A ₁		L ₁
		Without auto switch	With auto switch	
40	5 to 50	117	127	38.5
	75, 100	127		
50	10 to 50	127.5	137.5	43.5
	75, 100	137.5		
63	10 to 50	129	139	43.5
	75, 100	139		

Foot

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

Compact foot: CQ2KWLC/CDQ2KWLC



Rod End Male Thread

Bore size (mm)	Stroke range (mm)	A ₁		L ₁
		Without auto switch	With auto switch	
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		
63	10 to 50	129	139	43.5
	75, 100	139		

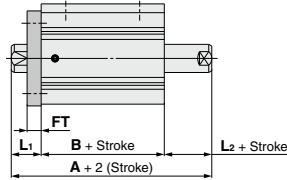
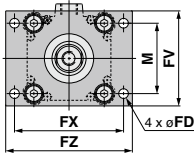
Compact Foot

Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch			L	LD	LH	LT	LX	LY	LZ	X	Y
		A	B	LS	A	B	LS									
40	5 to 50	81.4	40	67.4	91.4	50	77.4	17	6.6	33	3.2	40	64	52	13.7	7
	75, 100	91.4	50	77.4												
50	10 to 50	89.9	40.5	73.9	99.9	50.5	83.9	18	9	39	3.2	50	78	64	16.7	8
	75, 100	99.9	50.5	83.9												
63	10 to 50	96.4	42	78.4	106.4	52	88.4	18	11	46	3.2	60	91.5	77	18.2	9
	75, 100	106.4	52	88.4												

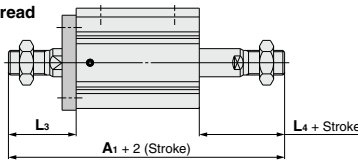
* For details about the rod end nut and accessory brackets, refer to page 804.

Compact foot bracket material: Carbon steel
Surface treatment: Zinc chromated

Flange: CQ2KWF/CDQ2KWF



Rod end male thread



Rod End Male Thread

Bore size (mm)	Stroke range (mm)	A ₁		L ₃	L ₄
		Without auto switch	With auto switch		
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			
63	10 to 50	119	129	43.5	33.5
	75, 100	129			

Flange For auto switch proper mounting position and its mounting height, refer to pages 954 to 960. (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								
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 804.

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

CUJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

MU-Z

D-□

-X□

Technical data

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

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

How to Order

Without auto switch

CQP2B 50 30 **D**

With auto switch

CDQP2B 50 30 **D** **M9BW**

With auto switch
(Built-in magnet)

● **Made to Order**
Refer to page 889 for details.

● **Number of auto switches**

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

● **Auto switch**

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

* Refer to the below table for applicable auto switches.

● **Body option**

Nil	Standard (Rod end female thread)
C	With rubber bumper Note 2)
M	Rod end male thread

* Combination of body option ("CM") is available.
Note 2) Air-hydro type with rubber bumper is not available.

● **Action**

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

● **Cylinder stroke (mm)**

Refer to page 889 for standard strokes.

* Cylinder mounting bolts are not included.
Order them separately referring to "Mounting Bolt for CQP2" on pages 891 and 894.

● **Type**

Nil	Pneumatic
H	Air-hydro Note 1)

Note 1) 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	Rc	ø32 to ø100
TF	NPT	ø32 to ø100
	G	ø32 to ø100

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 Switches/Refer to pages 1559 to 1673 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 auto switch	—	Grommet		3-wire (NPN)	5 V, 12 V	—	M9NV	M9N	●	●	○	—	—	○	Relay, PLC
		Connector		3-wire (PNP)	12 V		M9PV	M9P	●	●	●	○	—	○	
	Diagnostic indication (2-color indication)		Yes	2-wire	12 V		M9BV	M9B	●	●	●	○	—	○	
				3-wire (NPN)	5 V, 12 V		J79C	—	●	●	●	●	—	—	
	Water resistant (2-color indication)	Grommet		3-wire (PNP)	5 V, 12 V		M9NVV	M9NW	●	●	●	○	—	○	
				2-wire	12 V		M9PVV	M9PW	●	●	●	○	—	○	
	With diagnostic output (2-color indication)		Yes	3-wire (NPN)	5 V, 12 V		M9BWW	M9BW	●	●	●	○	—	○	
		Grommet		3-wire (PNP)	5 V, 12 V		M9NAV ^{*1}	M9NA ^{*1}	○	○	●	○	—	○	
	Magnetic field resistant (2-color indication)		Yes	2-wire	12 V		M9PAV ^{*1}	M9PA ^{*1}	○	○	●	○	—	○	
		Connector		4-wire	5 V, 12 V		M9BAV ^{*1}	M9BA ^{*1}	○	○	●	○	—	○	
Reed auto switch	—	Grommet	Yes	3-wire (NPN equivalent)	5 V	—	A96V	A96	●	—	●	—	—	—	Relay, PLC
		Connector		2-wire	—	—	F79F	—	○	○	○	○	—	○	
	Diagnostic indication (2-color indication)		Yes	3-wire (NPN equivalent)	5 V	—	P4DW	—	—	●	●	—	—	—	
			No	2-wire	—	—	A72	A72H	●	—	●	—	—	—	
			Yes	3-wire (NPN equivalent)	12 V	100 V	A93V ^{*2}	A93	●	●	●	—	—	—	
			No	2-wire	5 V, 12 V	100 V or less	A90V	A90	●	●	●	—	—	—	
			Yes	3-wire (NPN equivalent)	12 V	—	A73C	—	●	—	●	●	—	—	
			No	2-wire	5 V, 12 V	24 V or less	A80C	—	●	—	●	●	—	—	
			Yes	3-wire (NPN equivalent)	—	—	A79W	—	●	—	●	—	—	—	
			No	2-wire	—	—	—	—	—	—	—	—	—	—	

*1 Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.

*2 1 m type lead wire is only applicable to D-A93.

* 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 "O" are produced upon receipt of order.
* The D-P4DW type is available from ø40 to ø100 only.
* Only for the D-P4DW type, an auto switch is assembled and shipped with the cylinder.

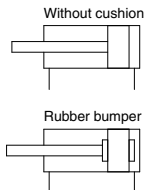
* There are other applicable auto switches other than the listed above. For details, refer to page 912.

* For details about auto switches with pre-wired connector, refer to pages 1626 and 1627.

Rod end
male thread



Symbol



Made to Order: Individual Specifications
(For details, refer to page 968.)

Symbol	Specifications
-X271	Fluororubber seals

Made to Order
(For details, refer to pages 1675 to 1818.)

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 ø100 only
-XC6	Piston rod/Retaining ring/Rod end nut material: Stainless steel
-XC35	With coil scraper
-XC36	With boss on rod end
-XC85	Grease for food processing equipment

Refer to pages 908 to 912 for the specifications of cylinders with autoswitches.

- Auto switch proper mounting position (detection at stroke end) and its mounting height
- Minimum stroke for auto switch mounting
- Operating range
- Auto switch mounting brackets/Part no.

Moisture Control Tube Series IDK



When operating an actuator with a small diameter and a short stroke at a high frequency, the dew condensation (water droplet) may occur inside the piping depending on the conditions.

Simply connecting the moisture control tube to the actuator will prevent dew condensation from occurring. For details, refer to [Series IDK in the WEB catalog](#).

Specifications

Pneumatic type

Bore size (mm)	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
	With 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	+1.0 mm (Note)										

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

Air-hydro type

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

Note) Refer to page 7 for Actuator Precautions (5).

Standard Strokes

Pneumatic type (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, 80, 100	10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100

Air-hydro type (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, 80, 100	10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100

Manufacture of Intermediate Strokes

Type	A spacer is installed in the standard stroke body.	
Part no.	Refer to "How to Order" for the standard model number. (P. 988)	
Description	Strokes in 1 mm intervals are available by installing a spacer in the standard stroke cylinder.	
Stroke range	Bore size	Stroke range
	12, 16	1 to 29
	20, 25	1 to 49
	32 to 100	1 to 99
Example	Part no.: CQP2B50-57D CQP2B50-75D with 18 mm width spacer inside The B dimension is 115.5 mm.	

- Except air-hydro type
- In the case of spacer type, intermediate strokes with bumper for ø40 to ø100, it can be manufactured in 5 mm intervals in 5 mm and 55 to 95 mm.

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 a type C retaining ring) is used, it is likely to inflict damage to a human body or peripheral equipment, as a retaining ring may be flown out of the tip of a plier (tool for installing a type C retaining ring). Be much careful with the popping of a retaining ring. Besides, be certain that a retaining ring is placed firmly into the groove of rod cover before supplying air at the time of installment.

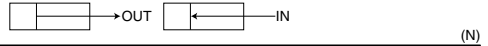
Mounting/Removal

- 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	Pipe thread	M5 x 0.8	M5 x 0.8	M5 x 0.8	M5 x 0.8	Rc1/8 NPT1/8	Rc1/8 NPT1/8	Rc1/4 NPT1/4	Rc1/4 NPT1/4	Rc3/8 NPT3/8	Rc3/8 NPT3/8
	Rod end male thread		●	●	●	●	●	●	●	●	●	●
	With rubber bumper		●	●	●	●	●	●	●	●	●	●
Air-hydro	Mounting Through-hole (Standard)	—	—	—	—	●	●	●	●	●	●	
	Built-in magnet	—	—	●	●	●	●	●	●	●	●	
	Piping	Pipe thread	—	—	M5 x 0.8	M5 x 0.8	Rc1/8	Rc1/8	Rc1/4	Rc1/4	Rc3/8	Rc3/8
	Rod end male thread		—	—	●	●	●	●	●	●	●	●

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

Weight

Bore size (mm)	Cylinder stroke (mm)										
	5	10	15	20	25	30	35	40	45	50	75
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
40	224	258	280	310	336	362	388	414	440	467	602
50	—	414	455	496	538	579	620	662	703	744	949
63	—	584	632	679	727	774	822	870	917	965	1205
80	—	1085	1163	1242	1320	1399	1477	1556	1634	1713	2108
100	—	1894	1992	2091	2189	2287	2385	2483	2581	2679	3169

Additional Weight

Bore size (mm)		12	16	20	25	32	40	50	63	80	100
Rod end	Male thread	1.5	3	6	12	26	27	53	53	120	175
male thread	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

• Basic weight: CQP2B32-20D 222 g

• Additional weight: Rod end male thread 43 g

With rubber bumper -3 g

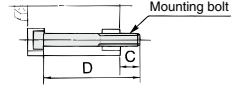
262 g

Mounting Bolt for CQP2B/Without Auto Switch

Mounting method: Mounting bolt for through-hole mounting of the CQP2B is available as an option. Refer to the following for ordering procedures. Order the actual number of bolts that will be used.

Example) CQ-M3 x 25L 2 pcs.

Material: Chromium molybdenum steel
Surface treatment: Zinc chromated



Cylinder model	C	D	Mounting bolt part no.
CQP2B12-5D		25	CQ-M3 x 25L
-10D	6.5	30	x 30L
-15D		35	x 35L
-20D		40	x 40L
-25D		45	x 45L
-30D		50	x 50L
CQP2B16-5D		25	CQ-M3 x 25L
-10D	5	30	x 30L
-15D		35	x 35L
-20D		40	x 40L
-25D		45	x 45L
-30D		50	x 50L
CQP2B20-5D		25	CQ-M5 x 25L
-10D	7.5	30	x 30L
-15D		35	x 35L
-20D		40	x 40L
-25D		45	x 45L
-30D		50	x 50L
-35D		55	x 55L
-40D		60	x 60L
-45D		65	x 65L
-50D		70	x 70L
CQP2B25-5D		30	CQ-M5 x 30L
-10D	9.5	35	x 35L
-15D		40	x 40L
-20D		45	x 45L
-25D		50	x 50L
-30D		55	x 55L
-35D		60	x 60L
-40D		65	x 65L
-45D		70	x 70L
-50D		75	x 75L

Cylinder model	C	D	Mounting bolt part no.
CQP2B32-5D		30	CQ-M5 x 30L
-10D	9	35	x 35L
-15D		40	x 40L
-20D		45	x 45L
-25D		50	x 50L
-30D		55	x 55L
-35D		60	x 60L
-40D		65	x 65L
-45D		70	x 70L
-50D		75	x 75L
-75D		110	x 110L
-100D		135	x 135L
CQP2B40-5D		35	CQ-M5 x 35L
-10D	7.5	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
CQP2B50-10D		45	CQ-M6 x 45L
-15D	12.5	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 part no.
CQP2B63-10D		50	CQ-M8 x 50L
-15D	14.5	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
CQP2B80-10D		55	CQ-M10 x 55L
-15D	15	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
CQP2B100-10D		65	CQ-M10 x 65L
-15D	15.5	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-Z

RQ

CQM

CQU

MU-Z

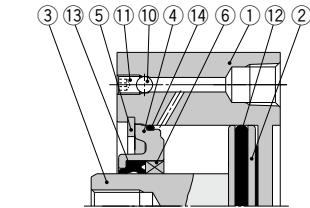
D-□

-X□

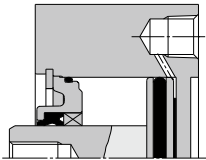
Technical data

Construction

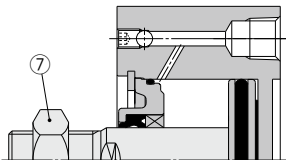
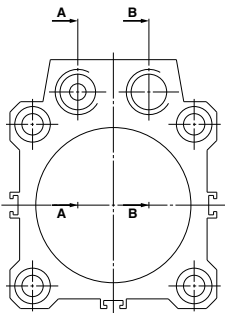
Standard



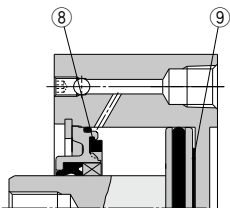
A-A section (Port on rod end)



B-B section (Port on head end)



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 casted	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	Zinc chromated
8	Bumper A	Urethane	
9	Bumper B	Urethane	
10	Steel ball	Carbon steel	
11	Hexagon socket set screw	Alloy steel	Zinc chromated
12	Piston seal	NBR	
13	Rod seal	NBR	
14	Gasket	NBR	

Replacement Parts/Seal Kit

Bore size (mm)	Kit no.		Contents
	Pneumatic type (Non-lube)	Air-hydro type	
12	CQ2B12-PS	—	Kits include items 12, 13, 14 from the table.
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.

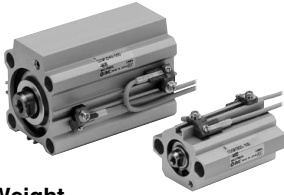
* Since the seal kit does not include a grease pack, order it separately.

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

Axial Piping: Double Acting, Single Rod

Series **CDQP2**

With Auto Switch



Refer to the below pages for further information on auto switches.

Auto switch proper mounting position and its mountig height	P.908 to 912
Minimum stroke for auto switch mounting	
Operating range	
Auto switch mounting brackets/Part no.	

Weight

Additional Weight

Bore size (mm)	12	16	20	25	32
Rod end male thread	1.5	3	6	12	26
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
Nut	17	32	32	49	116
With rubber bumper	-7	-9	-18	-31	-56

Weight

Bore size (mm)	Cylinder stroke (mm)										(g)
	5	10	15	20	25	30	35	40	45	50	
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
40	319	345	371	397	423	449	475	502	528	554	684
50	—	546	588	629	670	712	753	794	836	877	1084
63	—	764	812	859	907	955	1002	1050	1098	1145	1384
80	—	1377	1455	1534	1612	1691	1769	1848	1926	2005	2397
100	—	2296	2394	2492	2590	2688	2786	2884	2982	3080	3570

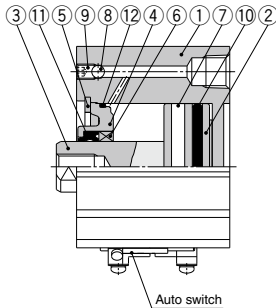
Calculation: (Example) **CDQP2B32-20DCM**
 • Basic weight: CDQP2B32-20D 290 g
 • Additional weight: Rod end male thread 43 g
 With rubber bumper -3 g
 330 g

Add each weight of auto switches when auto switches are mounted.

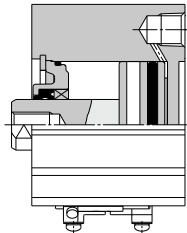
Auto Switch Mounting Bracket/Weight

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

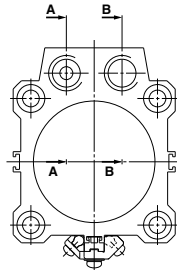
Construction



A-A section (Port on rod end)



B-B section (Port on head end)



Component Parts

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

Replacement Parts/Seal Kit

Bore size (mm)	Kit no.		Contents
	Pneumatic type (Non-lube)	Air-hydro type	
12	CQ2B12-PS	—	Kits include items ⑩, ⑪, ⑫ from the table.
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 seal kit does not include a grease pack, order it separately.

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

CJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

MU-Z

D-□

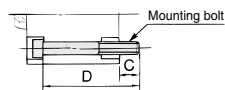
-X□

Technical data

Mounting Bolt for CDQP2B/With Auto Switch

Mounting method: Mounting bolt for through-hole mounting of the CDQP2B is available as an option. Refer to the following for ordering procedures. Order the actual number of bolts that will be used.

Material: Chromium molybdenum steel
Surface treatment: Zinc chromated



Example) CQ-M3 x 35L 2 pcs.

Cylinder model	C	D	Mounting bolt part no.
CDQP2B12-5D		35	CQ-M3 x 35L
-10D	5.5	40	x 40L
-15D		45	x 45L
-20D		50	x 50L
-25D		55	x 55L
-30D		60	x 60L
CDQP2B16-5D		40	CQ-M3 x 40L
-10D	8	45	x 45L
-15D		50	x 50L
-20D		55	x 55L
-25D		60	x 60L
-30D		65	x 65L
CDQP2B20-5D		40	CQ-M5 x 40L
-10D	10.5	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		40	CQ-M5 x 40L
-10D	9.5	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

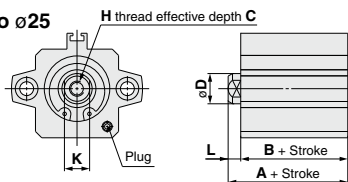
Cylinder model	C	D	Mounting bolt part no.
CDQP2B32-5D		40	CQ-M5 x 40L
-10D	9	45	x 45L
-15D		50	x 50L
-20D		55	x 55L
-25D		60	x 60L
-30D		65	x 65L
-35D		70	x 70L
-40D		75	x 75L
-45D		80	x 80L
-50D		85	x 85L
-75D		110	x 110L
-100D		135	x 135L
CDQP2B40-5D		45	CQ-M5 x 45L
-10D	7.5	50	x 50L
-15D		55	x 55L
-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
CDQP2B50-10D		55	CQ-M6 x 55L
-15D	12.5	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 part no.
CDQP2B63-10D		60	CQ-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
CDQP2B80-10D		65	CQ-M10 x 65L
-15D	15	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
CDQP2B100-10D		75	CQ-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

Dimensions

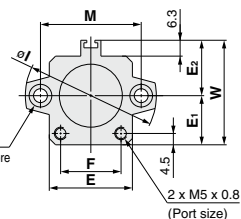
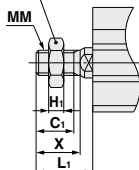
ø12 to ø100/Without Auto Switch

ø12 to ø25



Rod end male thread

Width across flat 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

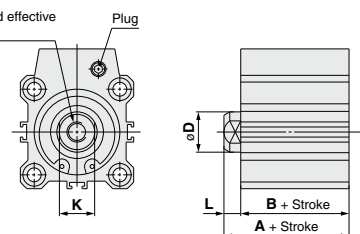
Standard

(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

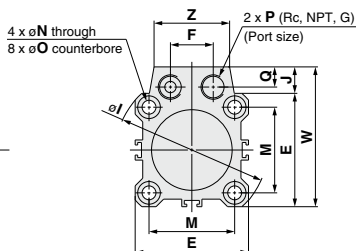
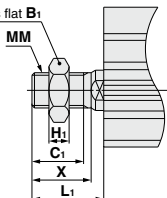
ø32 to ø100

H thread effective depth C



Rod end male thread

Width across flat B₁



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

Standard

(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
	75, 100	36.5	29.5	15	20	64	22	M10 x 1.5	86	13	17	8	50	6.6	11 depth 8	1/4	10	77	39
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	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	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
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
	75, 100	44	36	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	64	22	M10 x 1.5	86	13	17	8	50	6.6	11 depth 8	1/4	10	77	39
	75, 100	54	46	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	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
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
	75, 100	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
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
	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) The external dimensions with rubber bumper are the same as those of the standard, as shown above.

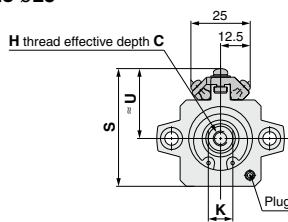
* For details about the rod end nut and accessory brackets, refer to page 804.

Series CQP2

Dimensions

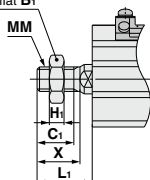
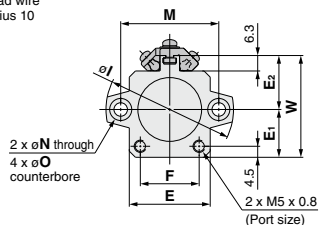
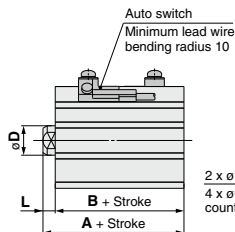
ø12 to ø100/With Auto Switch

ø12 to ø25



Rod end male thread

Width across flat 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

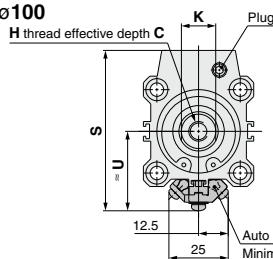
Standard

For auto switch proper mounting position and its mounting height, refer to pages 908 to 912.

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

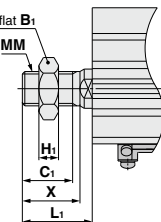
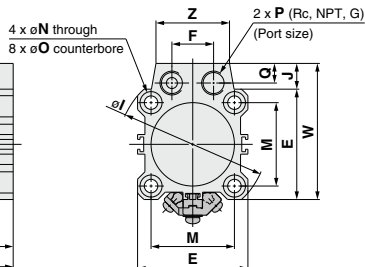
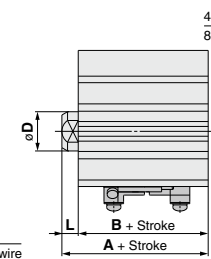
Note) The external dimensions with rubber bumper are the same as those of the standard, as shown above.

ø32 to ø100



Rod end male thread

Width across flat B₁



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

Standard

For auto switch proper mounting position and its mounting height, refer to pages 908 to 912.

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) The external dimensions with rubber bumper are the same as those of the standard, as shown above. * For details about the rod end nut and accessory brackets, refer to page 804.

Compact Cylinder: Axial Piping Single Acting, Single Rod Series **CQP2** ø12, ø16, ø20, ø25, ø32, ø40, ø50

How to Order

Without auto switch

CQP2B50 - **10T** -

With auto switch

CDQP2B50 - **10T** - **M9BW** -

With auto switch
(Built-in magnet)

Axial piping

Mounting

B Through-hole

* Cylinder mounting bolts are not included.
Order them separately referring to
"Mounting Bolt for CQP2" on pages 899
and 902.

Bore size

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

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

Port thread type

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

Number of auto switches

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

Auto switch

Nil Without auto switch

* Refer to the below table for applicable auto switches.

Body option

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

Action

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

Cylinder stroke (mm)

Refer to page 898 for standard strokes.

Applicable Auto Switches

Refer to pages 1559 to 1673 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 auto switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	M9NV	M9N	●	●	○	—	—	○	IC circuit	
				3-wire (PNP)		12 V	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)		12 V	M9NVV	M9NW	●	●	○	—	—	○		IC circuit
				2-wire		12 V	M9PWV	M9PW	●	●	○	—	—	○		
	Water resistant (2-color indication)	Grommet		3-wire (NPN)	5 V, 12 V	M9BWW	M9BW	●	●	○	—	—	—	—		
				3-wire (PNP)	12 V	M9NAV ^{*1}	M9NA ^{*1}	○	○	○	—	—	○			
	With diagnostic output (2-color indication)	Grommet	2-wire	12 V	M9PAV ^{*1}	M9PA ^{*1}	○	○	●	○	—	○	—	—		
			4-wire	5 V, 12 V	—	F79F	●	—	●	○	—	○	—	—		
Reed auto switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	A96V	A96	●	—	●	—	—	—	IC circuit	—
				—		200 V	A72	A72H	—	●	—	—	—	—		
				12 V		100 V	A93V ^{*2}	A93	—	●	—	—	—	—		
				5 V, 12 V		100 V or less	A90V	A90	—	●	—	●	—	—		
		Connector	No	2-wire	12 V	A73C	—	●	—	●	●	—	—	—		
					5 V, 12 V	24 V or less	A80C	—	●	—	●	●	—		—	IC circuit
		Diagnostic indication (2-color indication)	Grommet	Yes	—	—	—	A79W	—	●	—	—	—	—	—	

*1 Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.

Consult with SMC regarding water resistant types with the above model numbers.

*2 1 m type lead wire is only applicable to D-A93.

* Lead wire length symbols: 0.5 m Nil (Example) M9NV
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 912.

* For details about auto switches with pre-wired connector, refer to pages 1626 and 1627.



CUJ

CU

CQS

CQZ

RQ

CQM

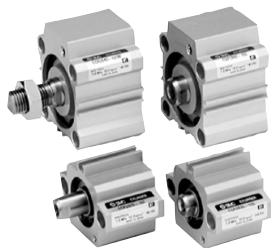
CQU

MU-Z

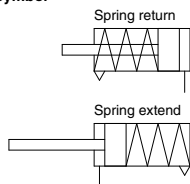
D-□

-X□

Technical data



Symbol



Made to Order: Individual Specifications
(For details, refer to page 968.)

Symbol	Specifications
-X271	Fluororubber seals

Made to Order

(For details, refer to pages 1675 to 1818.)

Symbol	Specifications
-XA□	Change of rod end shape
-XC6	Piston rod/Retaining ring/Rod end nut material: Stainless steel
-XC36	With boss on rod end
-XC85	Grease for food processing equipment

Refer to pages 908 to 912 for the specifications of cylinders with autoswitches.

- Auto switch proper mounting position (detection at stroke end) and its mounting height
- Minimum stroke for auto switch mounting
- Operating range
- Auto switch mounting brackets/Part no.

Moisture Control Tube Series IDK

When operating an actuator with a small diameter and a short stroke at a high frequency, the dew condensation (water droplet) may occur inside the piping depending on the conditions.

Simply connecting the moisture control tube to the actuator will prevent dew condensation from occurring. For details, refer to [Series IDK in the WEB catalog](#).



Specifications

Bore size (mm)	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	+1.0 mm 0						

Standard Strokes

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

Manufacture of Intermediate Strokes

(Except single acting, spring return)

Type	A spacer is installed in the standard stroke body.	
Part no.	Refer to "How to Order" for the standard model number. (P. 897)	
Description	Strokes in 1 mm intervals are available by installing a spacer in the standard stroke cylinder.	
Stroke range	Bore size	Stroke range
	12 to 40 50	1 to 9 1 to 19
Example	Part no.: CQP2B20-3T CQP2B20-5T with 2 mm width spacer inside The 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	Pipe thread	M5 x 0.8	M5 x 0.8	M5 x 0.8	Rc1/8	Rc1/8	Rc1/4
						NPT1/8	NPT1/8	NPT1/4
Pneumatic	Rod end male thread		●	●	●	G1/8	G1/8	G1/4
						●	●	●

Retaining Ring Installation/Removal

⚠ Caution

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

Mounting/Removal

1. 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.

Theoretical Output

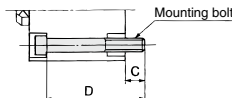
(N)				
Action	Bore size (mm)	Operating pressure (MPa)		
		0.3	0.5	0.7
Spring return	12	21	44	66
	16	45	86	126
	20	79	142	205
	25	126	224	323
	32	211	372	533
	40	338	589	841
Spring extend	50	535	928	1316
	12	14	31	48
	16	24	54	85
	20	71	118	165
	25	113	189	264
	32	181	302	422
	40	317	528	739
	50	495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

Mounting Bolt for CQP2B/Without Auto Switch

Mounting method: Mounting bolt for through-hole mounting of the CQP2B is available as an option. Refer to the following for ordering procedures. Order the actual number of bolts that will be used.

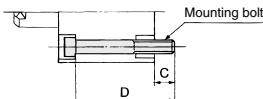
Example) CQ-M3 x 25L 2 pcs.

Material: Chromium molybdenum steel
Surface treatment: Zinc chromated



Spring Return

Cylinder model	C	D	Mounting bolt part no.
CQP2B12-5S	6.5	25	CQ-M3 x 25L
-10S		30	x 30L
CQP2B16-5S	5	25	CQ-M3 x 25L
-10S		30	x 30L
CQP2B20-5S	7.5	25	CQ-M5 x 25L
-10S		30	x 30L
CQP2B25-5S	9.5	30	CQ-M5 x 30L
-10S		35	x 35L
CQP2B32-5S	9	30	CQ-M5 x 30L
-10S		35	x 35L
CQP2B40-5S	7.5	35	CQ-M5 x 35L
-10S		40	x 40L
CQP2B50-10S	12.5	45	CQ-M6 x 45L
-20S		55	x 55L



Spring Extend

Cylinder model	C	D	Mounting bolt part no.
CQP2B12-5T	6.5	25	CQ-M3 x 25L
-10T		30	x 30L
CQP2B16-5T	5	25	CQ-M3 x 25L
-10T		30	x 30L
CQP2B20-5T	7.5	25	CQ-M5 x 25L
-10T		30	x 30L
CQP2B25-5T	9.5	30	CQ-M5 x 30L
-10T		35	x 35L
CQP2B32-5T	9	30	CQ-M5 x 30L
-10T		35	x 35L
CQP2B40-5T	7.5	35	CQ-M5 x 35L
-10T		40	x 40L
CQP2B50-10T	12.5	45	CQ-M6 x 45L
-20T		55	x 55L

Weight

(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	—	—
Spring extend	50	—	426	—	691
	12	33	40	—	—
	16	55	64	—	—
	20	73	87	—	—
	25	109	124	—	—
	32	160	180	—	—
	40	262	284	—	—
	50	—	468	—	540

Additional Weight

(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

- Basic weight: CQP2B32-10S173 g
 - Additional weight: Rod end male thread 43 g
- 216 g

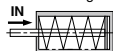
Spring Force

Single Acting, Spring Return (N)

Bore size (mm)	Stroke (mm)	Spring reaction force (N)	
		Second	First
12	5	13	8.6
	10	13	3.9
16	5	15	10.3
	10	15	5.9
20	5	15	10
	10	15	5.9
25	5	20	16
	10	20	11
32	5	30	23
	10	30	16
40	5	30	13
	10	39	21
50	10	50	30
	20	54	24

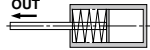
Single acting, Spring return

Spring state with first mounting load



When spring is set in cylinder

Spring state with second mounting load



When spring is compressed with air

Single Acting, Spring Extend (N)

Bore size (mm)	Stroke (mm)	Spring reaction force (N)	
		Second	First
12	5	11	2.9
	10	9.7	2.8
16	5	20	3.9
	10	20	3.9
20	5	27	5.3
	10	27	5.9
25	5	29	9.8
	10	29	9.8
32	5	29	20
	10	29	20
40	5	29	20
	10	29	20
50	10	83	24
	20	83	24

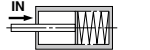
Single acting, Spring extend

Spring state with first mounting load



When spring is set in cylinder

Spring state with second mounting load



When spring is compressed with air

CUJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

MU-Z

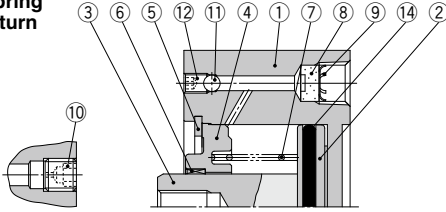
D-□

-X□

Technical data

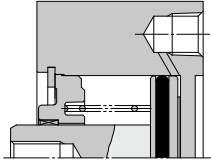
Construction

Spring return

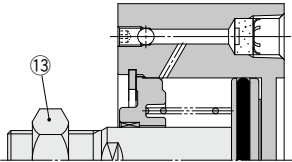
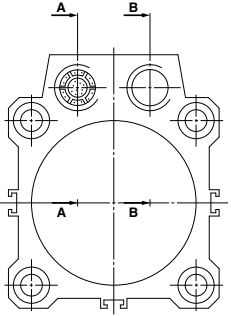


Port size
M5 x 0.8

A-A section (Port on rod end)

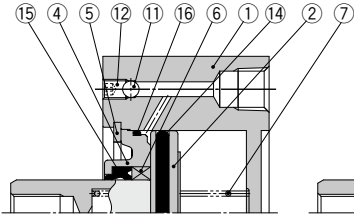


B-B section (Port on head end)

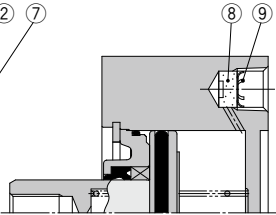


Rod end male thread

Spring extend



A-A section (Port on rod end)



B-B section (Port on head end)

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 Rc1/8, 1/4
9	Retaining ring	Carbon tool steel	
10	Plug with fixed orifice	Alloy steel	Port size M5 x 0.8
11	Steel ball	Carbon steel	
12	Hexagon socket head set screw	Alloy steel	Zinc chromated
13	Rod end nut	Carbon steel	Zinc chromated

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

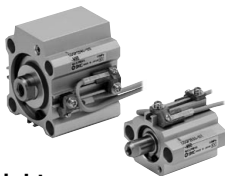
No.	Description	Material	Note
14	Piston seal	NBR	
15	Rod seal	NBR	
16	Gasket	NBR	

Replacement Parts/Seal Kit

Bore size (mm)	Kit no. (Single acting/Spring return)	Kit no. (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
Contents	Kits include item 14 from the table.	Kits include items 14, 15, 16 from the table.
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 seal kit does not include a grease pack, order it separately.
Grease pack part no.: GR-S-010 (10 g)

Axial Piping: Single Acting, Single Rod Series **CDQP2** With Auto Switch



Refer to the below pages for further information on auto switches.

Auto switch proper mounting position and its mounting height	P.908 to 912
Minimum stroke for auto switch mounting	
Operating range	
Auto switch mounting brackets/Part no.	

Weight

Weight

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 Weight

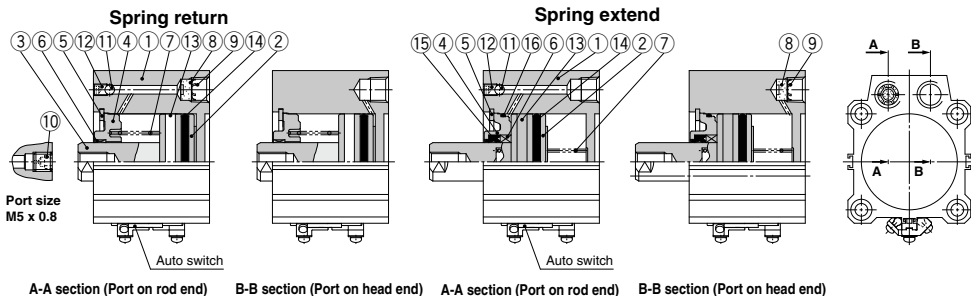
Bore size (mm)		12	16	20	25	32	40	50
Rod end male thread	Male thread	1.5	3	6	12	26	27	53
	Nut	1	2	4	8	17	17	32

Calculation: (Example) **CDQP2B32-10SM**

- Basic weight: CDQP2B32-10S 242 g
- Additional weight: Rod end male thread... 43 g

Add each weight of auto switches when auto switches are mounted.

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 Rc1/8, 1/4
9	Retaining ring	Carbon tool steel	
10	Plug with fixed orifice	Alloy steel	Port size M5 x 0.8
11	Steel ball	Carbon steel	
12	Hexagon socket set screw	Alloy steel	Zinc chromated
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)	Kit no. (Single acting/Spring return)	Kit no. (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
Contents	Kits include item 14 from the table.	Kits include items 14, 15, 16 from the table.
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.

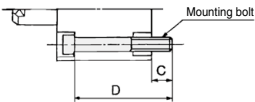
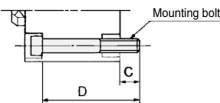
* Since the seal kit does not include a grease pack, order it separately.
Grease pack part no.: GR-S-010 (10 g)

Mounting Bolt for CDQP2B/With Auto Switch

Mounting method: Mounting bolt for through-hole mounting of the CDQP2B is available as an option. Refer to the following for ordering procedures. Order the actual number of bolts that will be used.

Example) CQ-M3 x 35L 2 pcs.

Material: Chromium molybdenum steel
Surface treatment: Zinc chromated



Spring Return

Cylinder model	C	D	Mounting bolt part no.
CDQP2B12-5S	5.5	35	CQ-M3 x 35L
-10S		40	x 40L
CDQP2B16-5S	8	40	CQ-M3 x 40L
-10S		45	x 45L
CDQP2B20-5S	10.5	40	CQ-M5 x 40L
-10S		45	x 45L
CDQP2B25-5S	9.5	40	CQ-M5 x 40L
-10S		45	x 45L
CDQP2B32-5S	9	40	CQ-M5 x 40L
-10S		45	x 45L
CDQP2B40-5S	7.5	45	CQ-M5 x 45L
-10S		50	x 50L
CDQP2B50-10S	12.5	55	CQ-M6 x 55L
-20S		60	x 60L

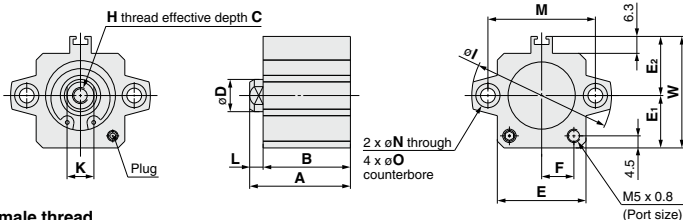
Spring Extend

Cylinder model	C	D	Mounting bolt part no.
CDQP2B12-5T	6.1	40	CQ-M3 x 40L
-10T		45	x 45L
CDQP2B16-5T	8	40	CQ-M3 x 40L
-10T		45	x 45L
CDQP2B20-5T	10.5	40	CQ-M5 x 40L
-10T		45	x 45L
CDQP2B25-5T	9.5	40	CQ-M5 x 40L
-10T		45	x 45L
CDQP2B32-5T	9	40	CQ-M5 x 40L
-10T		45	x 45L
CDQP2B40-5T	7.5	45	CQ-M5 x 45L
-10T		50	x 50L
CDQP2B50-10T	12.5	55	CQ-M6 x 55L
-20T		65	x 65L

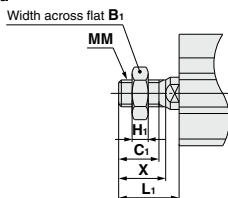
Dimensions

ø12 to ø50/Spring Return Without Auto Switch

ø12 to ø25



Rod end male thread



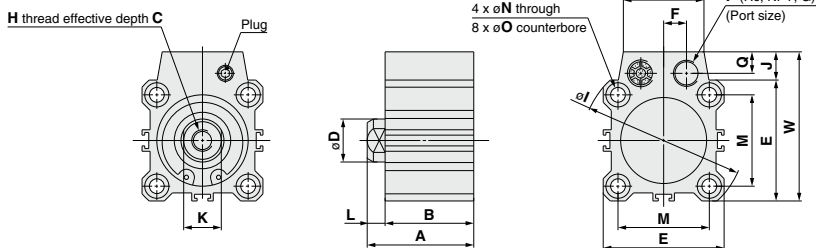
Rod End Male Thread

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

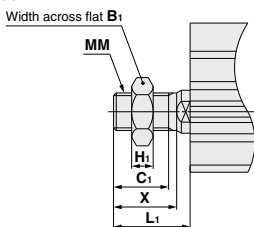
Standard

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



Rod End Male Thread

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

Standard

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

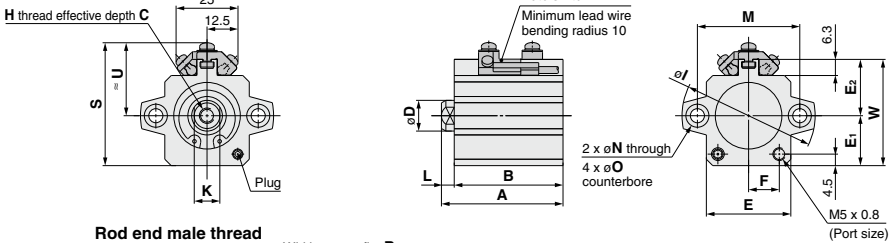
* For details about the rod end nut and accessory brackets, refer to page 804.

Series CQP2

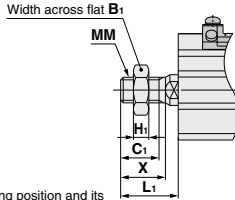
Dimensions

ø12 to ø50/Spring Return With Auto Switch

ø12 to ø25



Rod end male thread



Rod End Male Thread

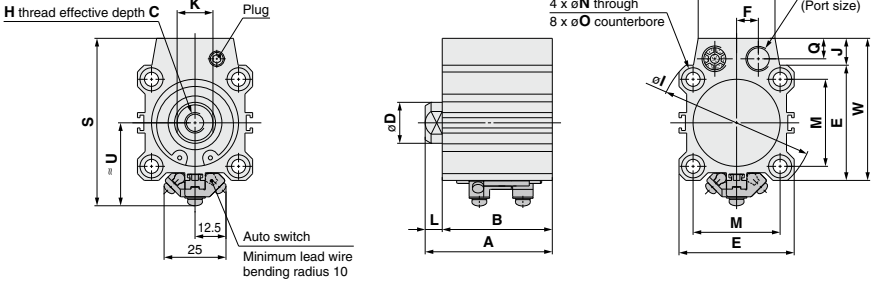
Bore size (mm)	B ₁	C ₁	H ₁	L ₁	MM	X
12	8	9	4	14	M5 x 0.8	10.5
16	10	10	5	15.5	M6 x 1.0	12
20	13	12	5	18.5	M8 x 1.25	14
25	17	15	6	22.5	M10 x 1.25	17.5

Standard

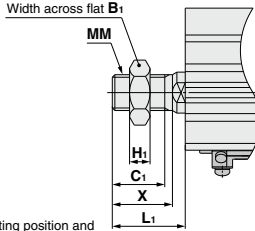
For auto switch proper mounting position and its mounting height, refer to pages 908 to 912.

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



Rod End Male Thread

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

Standard

For auto switch proper mounting position and its mounting height, refer to pages 908 to 912.

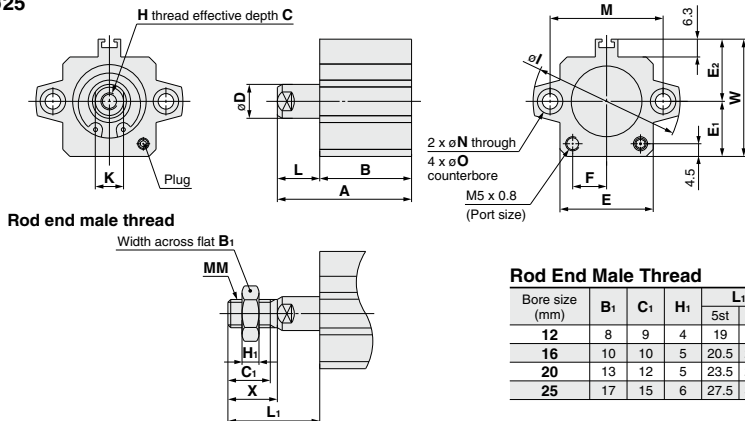
Bore size (mm)	A			B			C	D	E	F	H	I	J	K	L	M	N	O	P	Q	S	U	W	Z
	5st	10st	20st	5st	10st	20st																		
32	45	50	—	38	43	—	13	16	45	8.5	M8 x 1.25	60	10.5	14	7	34	5.5	9 depth 7	1/8	8	65.5	32.5	55.5	30
40	51.5	56.5	—	44.5	49.5	—	13	16	52	8.5	M8 x 1.25	69	10	14	7	40	5.5	9 depth 7	1/8	8	72	36	62	30
50	—	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 804.

Dimensions

ø12 to ø50/Spring Extend Without Auto Switch

ø12 to ø25

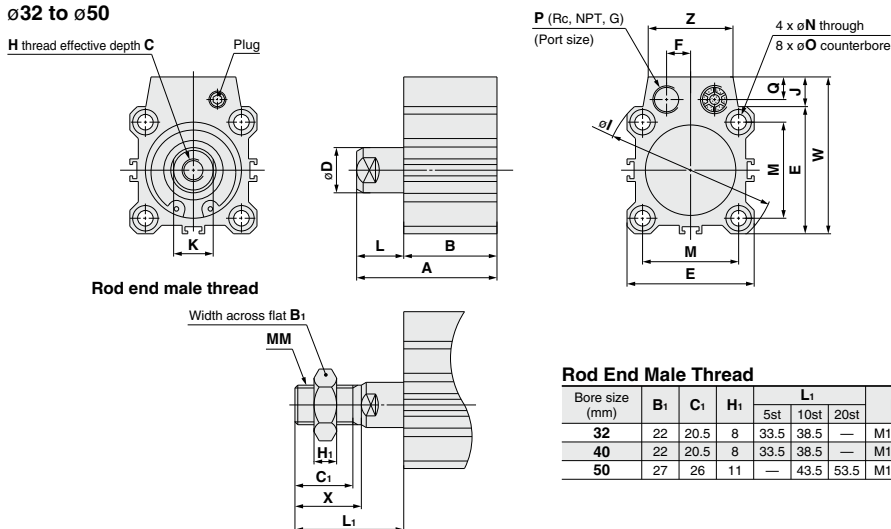


Bore size (mm)		B ₁		C ₁		H ₁		L ₁		MM	X
								5st	10st		
12	8	9	4	19	24	M5 x 0.8	10.5				
16	10	10	5	20.5	25.5	M6 x 1.0	12				
20	13	12	5	23.5	28.5	M8 x 1.25	14				
25	17	15	6	27.5	32.5	M10 x 1.25	17.5				

Standard

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



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

Standard

Standard																							(mm)	
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

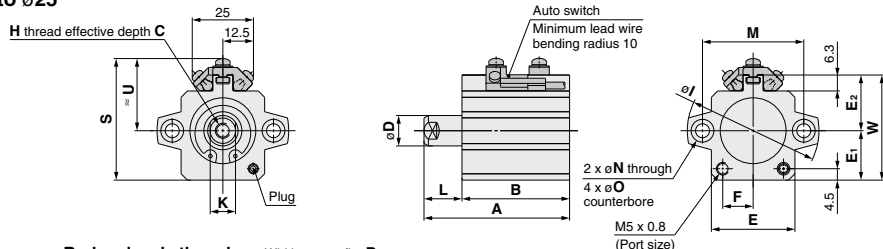
* For details about the rod end nut and accessory brackets, refer to page 804.

Series CQP2

Dimensions

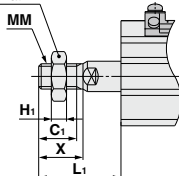
ø12 to ø50/Spring Extend With Auto Switch

ø12 to ø25



Rod end male thread

Width across flat B_1



Rod End Male Thread

(mm)

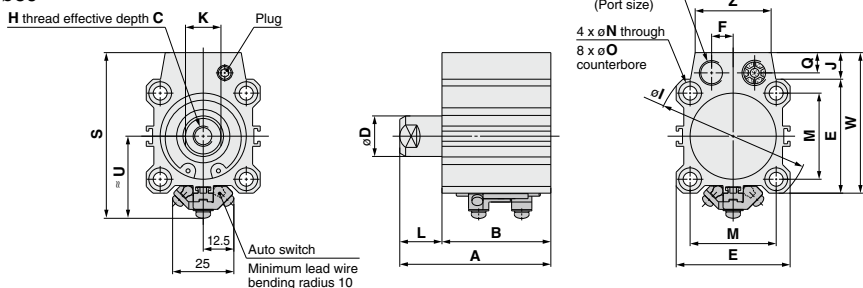
Bore size (mm)	B_1	C_1	H_1	L_1			MM	X
				5st	10st			
12	8	9	4	19	24		M5 x 0.8	10.5
16	10	10	5	20.5	25.5		M6 x 1.0	12
20	13	12	5	23.5	28.5		M8 x 1.25	14
25	17	15	6	27.5	32.5		M10 x 1.25	17.5

Standard For auto switch proper mounting position and its mounting height, refer to pages 908 to 912.

(mm)

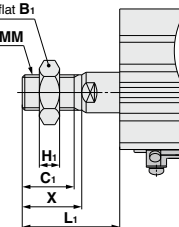
Bore size (mm)	A		B		C	D	E	E_1	E_2	F	H	I	K	L		M	N	O	S	U	W
	5st	10st	5st	10st										5st	10st						
12	45.9	55.9	37.4	42.4	6	6	23	13	14	7	M3 x 0.5	32	5	8.5	13.5	22	3.5	6.5 depth 3.5	33.5	20.5	27
16	44	54	35.5	40.5	8	8	26	15	17	8.5	M4 x 0.7	38	6	8.5	13.5	28	3.5	6.5 depth 3.5	38.5	23.5	32
20	46	56	36.5	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

Width across flat B_1



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

Standard For auto switch proper mounting position and its mounting height, refer to pages 908 to 912.

(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 804.

CUJ
CU
CQS
CQ2
-Z
RQ
CQM
CQU
MU
-Z

D-□
-X□
Technical data

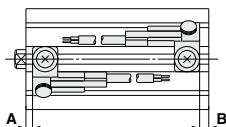
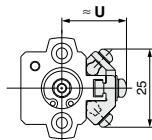
Axial Piping Series **CDQP2** With Auto Switch 1

1 Auto Switch Proper Mounting Position (Detection at Stroke End) and its Mounting Height

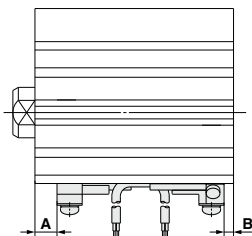
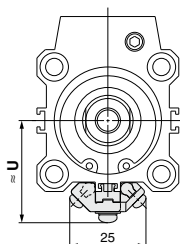
Applicable Cylinder Series: CDQP2, CDQP2□□□-□S/-□T (Axial piping)

D-A9□
D-M9□
D-M9□W
D-M9□A
D-A9□V
D-M9□V
D-M9□WV
D-M9□AV

ø12 to ø25



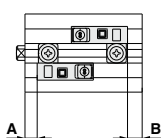
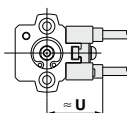
ø32 to ø100



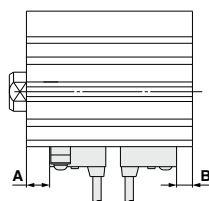
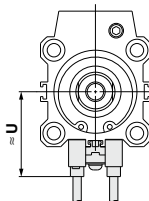
D-A7□
D-A80
D-A7□H
D-A80H
D-F7□
D-J79
D-F7□W
D-J79W
D-F79F

D-F7NT
D-F7BA
D-A73C
D-A80C
D-J79C
D-A79W
D-F7□WV
D-F7□V
D-F7BAV

ø12 to ø25

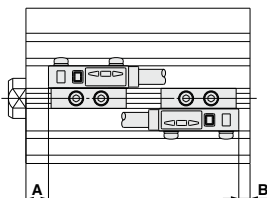
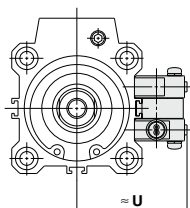


ø32 to ø100



D-P4DW

ø40 to ø100



Auto Switch Proper Mounting Position

Applicable Cylinder Series: CDQP2 (Axial piping)

(mm)

Auto switch model	D-A9□ D-A9□V		D-M9□ D-M9□V D-M9□WV D-M9□A D-M9□AV		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-F7BAV/F7BA		D-F7NT		D-A79W		D-P4DW	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B
Bore size														
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	D-A9□ D-A9□V		D-M9□ D-M9□V D-M9□WV D-M9□A D-M9□AV		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-F7BAV/F7BA		D-F7NT		D-A79W	
	A	B	A	B	A	B	A	B	A	B	A	B
Bore size												
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

() : Spring extend type

Note) Adjust the auto switch after confirming the operating conditions in the actual setting.

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□WV D-M9□A D-M9□AV		D-A7□ D-A80		D-A7□H D-A80H D-F7□ D-J79 D-F7□W D-J79W D-F7BA D-F79F D-F7NT		D-A73C D-A80C		D-F7□V D-F7□WV D-F7BAV		D-J79C		D-A79W		D-P4DW	
	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Bore size																
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								

Note) The applicable auto switches for the CDQP2□□□-□S/-□T (single acting) are those except for the D-P4DW type.

CUJ

CU

CQS

CQ2
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RQ

CQM

CQU

MU
Z

D-□

-X□

Technical
data

Axial Piping Series **CDQP2** With Auto Switch 2

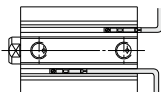
2 Minimum Stroke for Auto Switch Mounting

Applicable Cylinder Series: CDQP2, CDQP2□□□-□S/-□T (Axial piping)

(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-M9□AV D-F7□WV D-F7BAV	D-M9□ D-F7□ D-J79	D-M9□W D-M9□A	D-A7□H D-A80H	D-A79W	D-F7□W D-J79W D-F7BA D-F79F D-F7NT	D-P4DW
With 1 pc.	5	5	10(5)	10	15(5)	15(10)	15(5)	15	20(10)	15
With 2 pcs.	5	10	10	15	15(5)	15	15(10)	20	20(15)	15

Note) The dimension stated in () shows the minimum stroke for the auto switch mounting when the auto switch does not project from the end surface of the cylinder body and hinder the lead wire bending space. (Refer to the figure below.)
The auto switch and auto switch mounting bracket are ordered separately.



Note) The applicable auto switches for the CDQP2□□□-□S/-□T (single acting) are those except for the D-P4DW type.

3 Operating Range

Applicable Cylinder Series: CDQP2, CDQP2□□□-□S/-□T (Axial piping)

(mm)

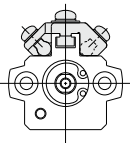
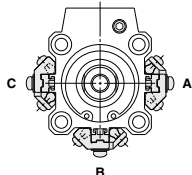
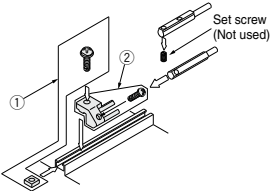
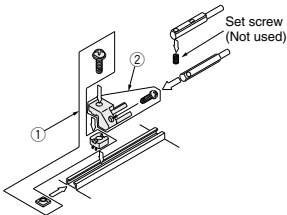
Auto switch model	Bore size									
	12	16	20	25	32	40	50	63	80	100
D-A9□(V)	7.5	9.5	9	9	9.5	9.5	8.5	11	10	10.5
D-M9□(V) D-M9□W(V) D-M9□A(V)	3.5	5	5	5	5.5	5.5	6	6.5	7	7
D-A7□(H)(C) D-A80□(H)(C)	10	12	12	12	12	11	10	12	12	13
D-A79W	13	13	13	13	13	14	14	16	15	17
D-F7□(V) D-J79(C) D-F7□W(V) D-F7BA(V) D-F7NT D-F79F	5.5	6	5.5	5	6	6	6	6.5	6.5	7
D-P4DW	—	—	—	—	—	5	5	5	5	5.5

* Values which include hysteresis are for guideline purposes only, they are not a guarantee (assuming approximately ±30% dispersion) and may change substantially depending on the ambient environment.

Note) The applicable auto switches for the CDQP2□□□-□S/-□T (single acting) are those except for the D-P4DW type.

4 Auto Switch Mounting Brackets/Part No.

Applicable Cylinder Series: CDQP2, CDQP2□□□-□S/-□T (Axial piping)

Auto switch mounting surface	Bore size (mm)	
	ø12, ø16, ø20, ø25	ø32 to ø100
		
Auto switch model	Auto switch mounting surface	Auto switch mounting surface
	Auto switch mounting rail side only	A/B/C side
D-A9□ D-A9□V D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV	① BQ-1 ② BQ2-012 Two kinds of auto switch brackets are used as a set. 	① BQ-2 ② BQ2-012 Two kinds of auto switch brackets are used as a set. 

Note 1) When shipping cylinders, auto switch mounting brackets and auto switches are shipped together.

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-F7BA/F7BAV D-F79F/F7NT	BQ-1		BQ-2
D-P4DW	—		BQP1-050

Note 2) When shipping cylinders, auto switch mounting brackets and auto switches are shipped together.

However, when the D-P4DW type with ø40 to ø100 is mounted, the auto switch is assembled at the time of shipment.

Note 3) Refer to pages 1658 to 1660 for further information on auto switch mounting method.

[Stainless Steel Mounting Screw Kit]

The following stainless steel mounting screw kit (with nuts) is available. Use it in accordance with the operating environment. (Since auto switch spacer (for BQ-2) is not included, order BQ-2 separately.)

BBA2: For D-A7/A8/F7/J7 types

The above stainless steel screws are used when a cylinder is shipped with the D-F7BA/F7BAV auto switches.

When only an auto switch is shipped independently, BBA2 is attached.

Note 4) Refer to page 1659 for details of BBA2.

Note 5) When the D-M9□A(V) type is mounted, order auto switch mounting brackets BQ2-012S, BQ-2 or the stainless steel mounting screw kit BBA2 separately.

Auto Switch Mounting Bracket/Weight

Mounting bracket part no.	Applicable bore size	Weight (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

CUJ

CU

CQS

CQ2

-Z

RQ

CQM

CQU

MU

-Z

D-□

-X□

Technical data

Axial Piping

Series **CDQP2**

With Auto Switch 3

Other than the applicable auto switches listed in “How to Order”, the following auto switches are mountable. Refer to pages 1559 to 1673 for detailed specifications.

Applicable Cylinder Series: CDQP2□□□-□S/-□T (Axial piping)

Auto switch type	Model	Electrical entry	Features	Applicable bore size
Reed	D-A73	Grommet (Perpendicular)	—	ø12 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)	—	ø12 to ø100
	D-F7NWV, F7BWV		Diagnostic indication (2-color indication)	
	D-F7BAV	Grommet (In-line)	Water resistant (2-color indication)	
	D-F79, F7P, J79		—	
	D-F79W, F7PW, J79W		Diagnostic indication (2-color indication)	
	D-F7BA		Water resistant (2-color indication)	
	D-F7NT	Grommet (In-line)	With timer	ø40 to ø100
	D-P5DW		Magnetic field resistant (2-color indication)	

* With pre-wired connector is also available for solid state auto switches. For details, refer to pages 1626 and 1627.

* Normally closed (NC = b contact) solid state auto switches (D-F9G/F9H) are also available. For details, refer to page 1577.

* The applicable auto switches for the CDQP2□□□-□S/-□T (single acting) are those except for the D-P4DW type.

* When using a magnetic field resistant solid state auto switch D-P3DW type, please contact SMC separately. (Applicable bore size: ø32 to ø100)

* Heat resistant solid state auto switch (D-F7NJ) is not applicable.

* Regarding the D-P5DW, please contact SMC separately.

Compact Cylinder: Anti-lateral Load

Series CQ2

ø32, ø40, ø50, ø63, ø80, ø100

How to Order

Without auto switch

CQ2 **B** **S** 32 **-** 30 **D** **C** **Z** **-**

With auto switch

CDQ2 **B** **S** 32 **-** 30 **D** **C** **Z** **-** **M9BW** **-**

With auto switch
(Built-in magnet)

Mounting

B	Through-hole (Standard)
A	Both ends tapped
L	Foot
LC	Compact foot
F	Rod flange
G	Head flange
D	Double clevis

* 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 918 and 919.

Type

S Anti-lateral load

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
TN	NPT
TF	G
F	Built-in One-touch Fittings (Note 1)

Note 1) Bore sizes available with One-touch fittings are ø32 to ø63. Besides, it is not possible to use for air-hydraulic 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) CDQ2LS40-30DCZ

Cylinder stroke (mm)

Refer to page 914 for standard strokes.

Action

D Double acting

Made to Order
Refer to page 914 for details.

Number of auto switches

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

Auto switch

Nil Without auto switch

* Refer to the below table for applicable auto switches.

Auto switch mounting groove

Z 4 surfaces

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 on head end

Applicable Auto Switches

Refer to pages 1559 to 1673 for further information on auto switches.

Refer to pages 1614 and 1615 for the D-P3DW type.

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 auto switch	Diagnostic indication (2-color indication)	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	M9NV	M9N	●	●	○	—	—	IC circuit	Relay, PLC
				3-wire (PNP)	12 V		M9PV	M9P	●	●	○	—	—		
				2-wire	12 V		M9BV	M9B	●	●	○	—	—		
				3-wire (NPN)	5 V, 12 V		M9NVW	M9NW	●	●	○	—	—		
				3-wire (PNP)	5 V, 12 V		M9PVW	M9PW	●	●	○	—	—		
				2-wire	12 V		M9BWV	M9BW	●	●	○	—	—		
				3-wire (NPN)	5 V, 12 V		M9NAV *1	M9NA *1	○	○	○	—	—		
				3-wire (PNP)	5 V, 12 V		M9PAV *1	M9PA *1	○	○	○	—	—		
				2-wire	12 V		M9BAV *1	M9BA *1	○	○	○	—	—		
				2-wire (Non-polar)	—		—	P3DW	○	—	●	●	—		
Reed auto switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	A96V	A96	●	—	●	—	—	IC circuit	—
				2-wire	24 V	12 V	A93V *2	A93	●	●	●	—	—		
				—	5 V, 12 V	100 V or less	A90V	A90	●	—	●	—	—		
				—	—	—	—	—	—	—	—	—	—		

*1 Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.

*2 Consult with SMC regarding water resistant types with the above model numbers.

* Lead wire length symbols: 0.5 m Nil

(Example) M9NW

1 m M

(Example) M9NWL

3 m L

(Example) M9NL

5 m Z

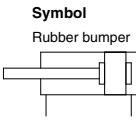
(Example) M9NZ

* 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 960.

* For details about auto switches with pre-wired connector, refer to pages 1626 and 1627.





Made to Order
Made to Order: Individual Specifications
(For details, refer to page 968.)

Symbol	Specifications
-X271	Fluororubber seals

Made to Order
(For details, refer to pages 1699 to 1818.)

Symbol	Specifications
-XA□	Change of rod end shape
-XB10	Intermediate stroke (Exclusive body type)
-XC6	Piston rod/Retaining ring/Rod end nut material: Stainless steel
-XC26	With split pins for double clevis pin/ double knuckle joint pin and flat washers
-XC27	Double clevis pin/Double knuckle joint pin material: Stainless steel 304
-XC85	Grease for food processing equipment

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 a type C retaining ring) is used, it is likely to inflict damage to a human body or peripheral equipment, as a retaining ring may be flown out of the tip of a plier (tool for installing a type C retaining ring). Be much careful with the popping of a retaining ring. Besides, be certain that a retaining ring is placed firmly into the groove of rod cover before supplying air at the time of installment.

Specifications

Bore size (mm)	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	+1.0 mm (Note) 0					

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

Standard Strokes

Bore size	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 Strokes

Type	A spacer is installed in the standard stroke body.	Exclusive body (-XB10)
Part no.	Refer to "How to Order" for the standard model number. (P. 913)	Suffix "-XB10" to the end of standard model number. (P. 913)
Description	Strokes in 1 mm intervals are available by installing a spacer in the standard stroke cylinder.	Strokes in 1 mm intervals are available by using an exclusive body with the specified stroke.
Stroke range	Bore size	Bore size
	32 to 100	32, 40 50 to 100
Stroke range	Stroke range	Stroke range
	1 to 99	6 to 99 11 to 99
Example	Part no.: CQ2BS50-57DCZ CQ2BS50-75DCZ with 18 mm width spacer inside The B dimension is 125.5 mm.	Part no.: CQ2BS50-57DCZ-XB10 Makes 57 stroke tube. The B dimension is 107.5 mm.

- In the case of exclusive body type with ø32 to ø100 (-XB10) with the stroke length exceeding 50 mm, reference values of the longitudinal dimension will be changed.
Calculate length dimensions by deducting from those of 75 or 100 mm stroke models.

Type

Bore size (mm)			32	40	50	63	80	100	
Pneumatic	Mounting	Through-hole (Standard)	●	●	●	●	●	●	
		Both ends tapped	●	●	●	●	●	●	
	Built-in magnet		●	●	●	●	●	●	
	Piping	Pipe thread	—	Rc1/8	Rc1/8	Rc1/4	Rc1/4	Rc3/8	Rc3/8
			TF	NPT1/8	NPT1/8	NPT1/4	NPT1/4	NPT3/8	NPT3/8
		Built-in One-touch Fittings Note 3	TF	G1/8	G1/8	G1/4	G1/4	G3/8	G3/8
			ø6 Note 1	ø6	ø8	ø8	—	—	
	Rod end male thread		●	●	●	●	●	●	
	With rubber bumper (Standard)		●	●	●	●	●	●	
	With boss on head end		●	●	●	●	●	●	

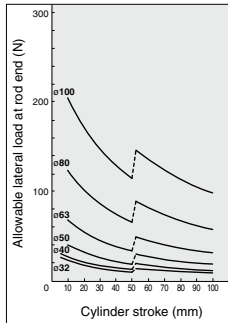
Note 1) The dimension of the ø32-5 mm stroke with built-in One-touch fittings is the same as that of the 10 mm stroke cylinder tube.

Note 2) One-touch fittings cannot be replaced.

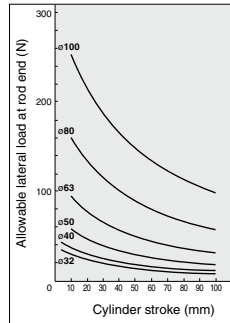
Refer to pages 954 to 960 for the specifications of cylinders with autoswitches.
• Auto switch proper mounting position (detection at stroke end) and its mounting height
• Minimum stroke for auto switch mounting
• Operating range
• Auto switch mounting brackets/Part no.

Allowable Lateral Load at Rod End

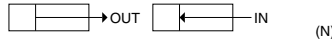
Without Auto Switch



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

Weight

Weight

Bore size (mm)	Cylinder stroke (mm)											
	5	10	15	20	25	30	35	40	45	50	75	100
32	134	154	174	193	213	233	252	272	291	311	457	556
40	211	232	254	275	297	318	340	361	383	404	577	689
50	—	369	402	435	467	500	533	566	598	632	902	1073
63	—	557	595	633	671	709	747	786	824	862	1189	1386
80	—	983	1043	1104	1164	1224	1284	1345	1405	1465	1985	2281
100	—	1711	1792	1872	1952	2033	2113	2194	2274	2354	3086	3494

Additional Weight

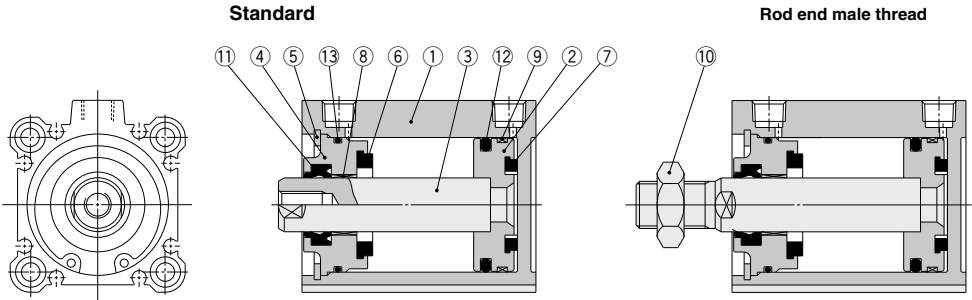
Bore size (mm)		32	40	50	63	80	100
Both ends tapped		6	6	6	19	45	45
Rod end male thread	Male thread	26	27	53	53	120	175
	Nut	17	17	32	32	49	116
Foot (Including mounting bolts)		142	154	243	320	690	1057
Compact foot (Including mounting bolts)		99	114	177	241	501	770
Rod flange (Including mounting bolts)		180	214	373	559	1056	1365
Head flange (Including mounting bolts)		165	198	348	534	1017	1309
Double clevis (Including pin, retaining rings, bolts)		151	196	393	554	1109	1887

Calculation: (Example) **CQ2DS32-20DCMZ**

- Basic weight: CQ2BS32-20DCZ 193 g
- Additional weight: Both ends tapped 6 g
- Rod end male thread 43 g
- Double clevis 151 g

393 g

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	Zinc chromated
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	Kits include items ⑪, ⑫, ⑬ from the table.
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 seal kit does not include a grease pack, order it separately.

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

Mounting Brackets/Part No.

Bore size (mm)	Foot Note 1)	Compact foot Note 1)	Flange	Double clevis
32	CQ-L032	CQ-LC032	CQ-F032	CQ-D032
40	CQ-L040	CQ-LC040	CQ-F040	CQ-D040
50	CQ-L050	CQ-LC050	CQ-F050	CQ-D050
63	CQ-L063	CQ-LC063	CQ-F063	CQ-D063
80	CQ-L080	CQ-LC080	CQ-F080	CQ-D080
100	CQ-L100	CQ-LC100	CQ-F100	CQ-D100

- Note 1) When ordering foot and compact foot brackets, order 2 pieces per cylinder.
- Note 2) Parts belonging to each bracket are as follows.
Foot, Compact foot, Flange: Body mounting bolts
Double clevis: Clevis pin, Type C retaining rings for axis, Body mounting bolts

Anti-lateral Load Series **CDQ2** With Auto Switch



Refer to the below pages for further information on auto switches.

Auto switch proper mounting position and its mounting height	P.954 to 960
Minimum stroke for auto switch mounting	
Operating range	
Auto switch mounting brackets/Part no.	

Weight

Weight

Bore size (mm)	Cylinder stroke (mm)												(g)
	5	10	15	20	25	30	35	40	45	50	75	100	
32	191	211	230	250	270	289	309	329	348	368	468	567	
40	284	305	327	348	369	391	412	434	455	477	589	701	
50	—	480	513	546	579	611	644	677	710	743	915	1087	
63	—	710	748	787	825	863	901	939	977	1015	1211	1408	
80	—	1229	1289	1350	1410	1470	1530	1591	1651	1711	2008	2305	
100	—	2070	2150	2231	2311	2391	2472	2552	2633	2713	3121	3529	

Additional Weight

Bore size (mm)	32	40	50	63	80	100	(g)
Both ends tapped	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 (Including mounting bolts)	142	154	243	320	690	1057	
Compact foot (Including mounting bolts)	99	114	177	241	501	770	
Rod flange (Including mounting bolts)	180	214	373	559	1056	1365	
Head flange (Including mounting bolts)	165	198	348	534	1017	1309	
Double clevis (Including pin, retaining rings, bolts)	151	196	393	554	1109	1887	

Calculation: (Example) **CDQ2DS32-20DCMZ**

• Basic weight: CDQ2BS32-20DCZ.....250 g

• Additional weight: Both ends tapped.....6 g

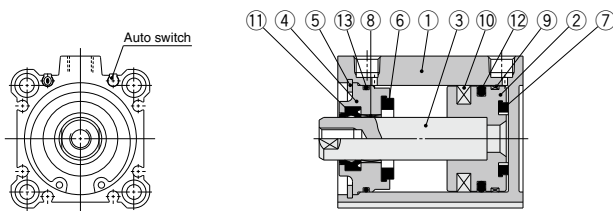
Rod end male thread.....43 g

Double clevis.....151 g

450 g

Add each weight of auto switches when auto switches are mounted.

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 seal	NBR	
12	Piston seal	NBR	
13	Tube gasket	NBR	

Replacement Parts/Seal Kit

Bore size (mm)	Kit no.	Contents
32	CQ2B32-PS	Kits include items ⑪, ⑫, ⑬ from the table.
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 seal kit does not include a grease pack, order it separately.

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

CUJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

MU-Z

D-□

-X□

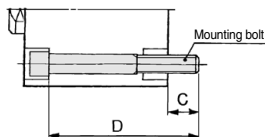
Technical data

Mounting Bolt for CQ2BS/Without Auto Switch

Mounting method: Mounting bolt for through-hole mounting of the CQ2BS is available as an option. Refer to the following for ordering procedures. Order the actual number of bolts that will be used.

Example) CQ-M5 x 40L 4 pcs.

Material: Chromium molybdenum steel
Surface treatment: Zinc chromated



Cylinder model	C	D	Mounting bolt part no.
CQ2BS32-5DCZ	9	40	CQ-M5 x 40L
-10DCZ		45	x 45L
-15DCZ		50	x 50L
-20DCZ		55	x 55L
-25DCZ		60	x 60L
-30DCZ		65	x 65L
-35DCZ		70	x 70L
-40DCZ		75	x 75L
-45DCZ		80	x 80L
-50DCZ		85	x 85L
-75DCZ		120	x 120L
-100DCZ		145	x 145L
CQ2BS40-5DCZ	7.5	45	CQ-M5 x 45L
-10DCZ		50	x 50L
-15DCZ		55	x 55L
-20DCZ		60	x 60L
-25DCZ		65	x 65L
-30DCZ		70	x 70L
-35DCZ		75	x 75L
-40DCZ		80	x 80L
-45DCZ		85	x 85L
-50DCZ		90	x 90L
-75DCZ		125	x 125L
-100DCZ		150	x 150L
CQ2BS50-10DCZ	12.5	55	CQ-M6 x 55L
-15DCZ		60	x 60L
-20DCZ		65	x 65L
-25DCZ		70	x 70L
-30DCZ		75	x 75L
-35DCZ		80	x 80L
-40DCZ		85	x 85L
-45DCZ		90	x 90L
-50DCZ		95	x 95L
-75DCZ		130	x 130L
-100DCZ		155	x 155L

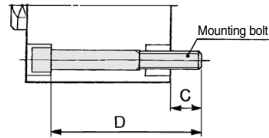
Cylinder model	C	D	Mounting bolt part no.
CQ2BS63-10DCZ	14.5	60	CQ-M8 x 60L
-15DCZ		65	x 65L
-20DCZ		70	x 70L
-25DCZ		75	x 75L
-30DCZ		80	x 80L
-35DCZ		85	x 85L
-40DCZ		90	x 90L
-45DCZ		95	x 95L
-50DCZ		100	x 100L
-75DCZ		135	x 135L
-100DCZ		160	x 160L
CQ2BS80-10DCZ	15	65	CQ-M10 x 65L
-15DCZ		70	x 70L
-20DCZ		75	x 75L
-25DCZ		80	x 80L
-30DCZ		85	x 85L
-35DCZ		90	x 90L
-40DCZ		95	x 95L
-45DCZ		100	x 100L
-50DCZ		105	x 105L
-75DCZ		140	x 140L
-100DCZ		165	x 165L
CQ2BS100-10DCZ	15.5	75	CQ-M10 x 75L
-15DCZ		80	x 80L
-20DCZ		85	x 85L
-25DCZ		90	x 90L
-30DCZ		95	x 95L
-35DCZ		100	x 100L
-40DCZ		105	x 105L
-45DCZ		110	x 110L
-50DCZ		115	x 115L
-75DCZ		150	x 150L
-100DCZ		175	x 175L

Mounting Bolt for CDQ2BS/With Auto Switch

Mounting method: Mounting bolt for through-hole mounting of the CDQ2BS is available as an option. Refer to the following for ordering procedures. Order the actual number of bolts that will be used.

Example) CQ-M5 x 50L 4 pcs.

Material: Chromium molybdenum steel
Surface treatment: Zinc chromated



Cylinder model	C	D	Mounting bolt part no.
CDQ2BS32-5DCZ	9	50	CQ-M5 x 50L
-10DCZ		55	x 55L
-15DCZ		60	x 60L
-20DCZ		65	x 65L
-25DCZ		70	x 70L
-30DCZ		75	x 75L
-35DCZ		80	x 80L
-40DCZ		85	x 85L
-45DCZ		90	x 90L
-50DCZ		95	x 95L
-75DCZ		120	x 120L
-100DCZ		145	x 145L
CDQ2BS40-5DCZ	7.5	55	CQ-M5 x 55L
-10DCZ		60	x 60L
-15DCZ		65	x 65L
-20DCZ		70	x 70L
-25DCZ		75	x 75L
-30DCZ		80	x 80L
-35DCZ		85	x 85L
-40DCZ		90	x 90L
-45DCZ		95	x 95L
-50DCZ		100	x 100L
-75DCZ		125	x 125L
-100DCZ		150	x 150L
CDQ2BS50-10DCZ	12.5	65	CQ-M6 x 65L
-15DCZ		70	x 70L
-20DCZ		75	x 75L
-25DCZ		80	x 80L
-30DCZ		85	x 85L
-35DCZ		90	x 90L
-40DCZ		95	x 95L
-45DCZ		100	x 100L
-50DCZ		105	x 105L
-75DCZ		130	x 130L
-100DCZ		155	x 155L

Cylinder model	C	D	Mounting bolt part no.
CDQ2BS63-10DCZ	14.5	70	CQ-M8 x 70L
-15DCZ		75	x 75L
-20DCZ		80	x 80L
-25DCZ		85	x 85L
-30DCZ		90	x 90L
-35DCZ		95	x 95L
-40DCZ		100	x 100L
-45DCZ		105	x 105L
-50DCZ		110	x 110L
-75DCZ		135	x 135L
-100DCZ		160	x 160L
CDQ2BS80-10DCZ	15	75	CQ-M10 x 75L
-15DCZ		80	x 80L
-20DCZ		85	x 85L
-25DCZ		90	x 90L
-30DCZ		95	x 95L
-35DCZ		100	x 100L
-40DCZ		105	x 105L
-45DCZ		110	x 110L
-50DCZ		115	x 115L
-75DCZ		140	x 140L
-100DCZ		165	x 165L
CDQ2BS100-10DCZ	15.5	85	CQ-M10 x 85L
-15DCZ		90	x 90L
-20DCZ		95	x 95L
-25DCZ		100	x 100L
-30DCZ		105	x 105L
-35DCZ		110	x 110L
-40DCZ		115	x 115L
-45DCZ		120	x 120L
-50DCZ		125	x 125L
-75DCZ		150	x 150L
-100DCZ		175	x 175L

CJ

CU

CQS

CQ2
-Z

RQ

CQM

CQU

MU
-Z

D-□

-X□

Technical
data

Series CQ2

Dimensions

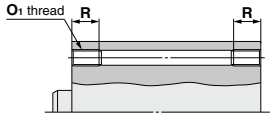
Ø32 to Ø50/With Auto Switch

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

Standard (Through-hole): CQ2BS/CDQ2BS

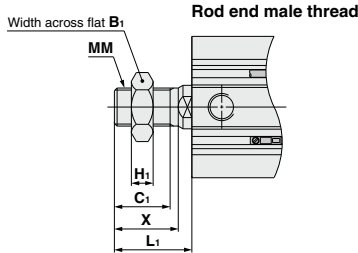
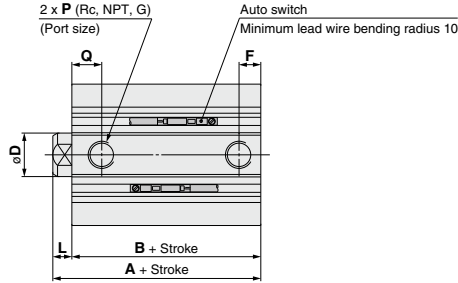
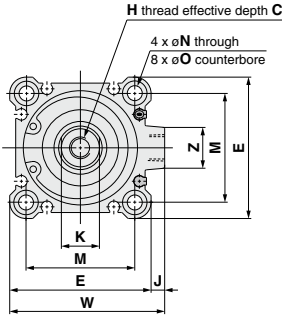
Both ends tapped: CQ2AS/CDQ2AS

CDQ2AS



Both Ends Tapped

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



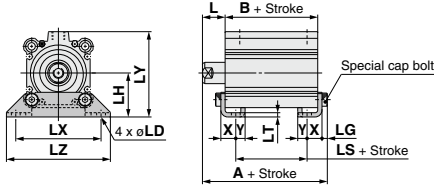
The dimensions with boss on head end are equivalent to those of the CQ2 series, double acting, single rod. Refer to page 800.

Rod End Male Thread

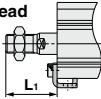
Bore size (mm)	B ₁	C ₁	H ₁	L ₁	MM	X
32	22	20.5	8	28.5	M14 x 1.5	23.5
40	22	20.5	8	28.5	M14 x 1.5	23.5
50	27	26	11	33.5	M18 x 1.5	28.5

Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch		C	D	E	F	H	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	4.5	14	7	34	5.5	9 depth 7	1/8	10	49.5	14
	75, 100	50	43																	
40	5 to 50	46.5	39.5	56.5	49.5	13	16	52	7.5	M8 x 1.25	5	14	7	40	5.5	9 depth 7	1/8	12.5	57	15
	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	7	17	8	50	6.6	11 depth 8	1/4	10.5	71	19
	75, 100	58.5	50.5																	

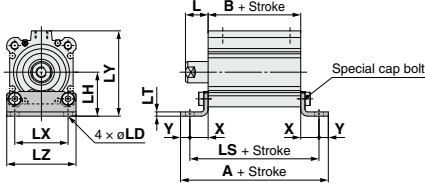
Foot: CQ2LS/CDQ2LS



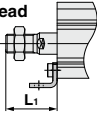
Rod end male thread



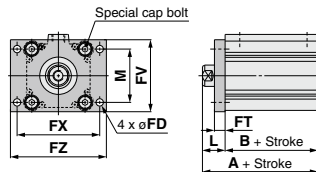
Compact foot: CQ2LCS/CDQ2LCS



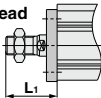
Rod end male thread



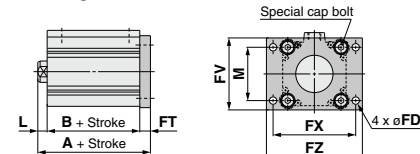
Rod flange: CQ2FS/CDQ2FS



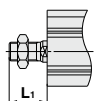
Rod end male thread



Head flange: CQ2GS/CDQ2GS



Rod end male thread



Foot

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

Compact Foot

Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch			(mm)		
		A	B	LS	A	B	LS	L	L ₁	LD
32	5 to 50	72	33	60.4	82	43	70.4	17	38.5	6.6
	75, 100	82	43	70.4						
40	5 to 50	80.9	39.5	66.9	90.9	49.5	76.9	17	38.5	6.6
	75, 100	90.9	49.5	76.9						
50	10 to 50	89.9	40.5	73.9	99.9	50.5	83.9	18	43.5	9
	75, 100	99.9	50.5	83.9						

Compact foot bracket material: Carbon steel
Surface treatment: Zinc chromated

Rod Flange

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							

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

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

Head Flange

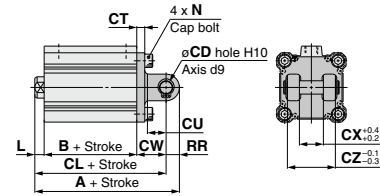
Bore size (mm)	Stroke range (mm)	Without auto switch	With auto switch	(mm)	
		A	A	L	L ₁
32	5 to 50	48	58	7	28.5
	75, 100	58			
40	5 to 50	54.5	64.5	7	28.5
	75, 100	64.5			
50	10 to 50	57.5	67.5	8	33.5
	75, 100	67.5			

* The dimensions except A, L and L₁ are the same as those of the rod flange.

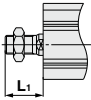
Flange bracket material: Carbon steel
Surface treatment: Nickel plated

* For details about the rod end nut and accessory brackets, refer to page 804.

Double clevis: CQ2DS/CDQ2DS



Rod end male thread



Double Clevis

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						
Bore size (mm)	Stroke range (mm)	CW	CX	CZ	L	L ₁	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: Cast iron

Surface treatment: Painted

* For details about the rod end nut and accessory brackets, refer to page 804.

* Double clevis pin and retaining rings are included.

CJ

CU

CQS

CQ2
-Z

RQ

CQM

CQU

MU
-Z

D-□

-X□

Technical
data

Series **CQ2**

Dimensions

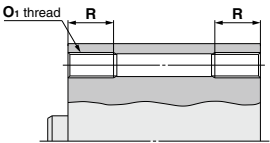
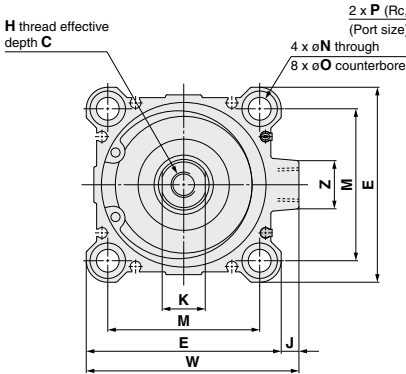
Ø63 to Ø100/With Auto Switch

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

Standard (Through-hole): **CQ2BS/CDQ2BS**

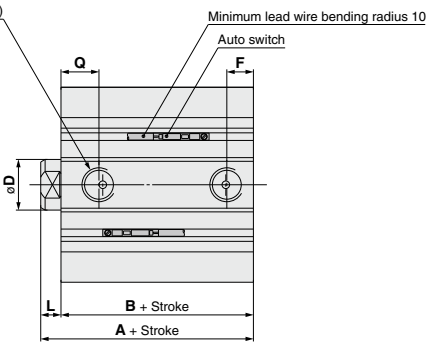
Both ends tapped: **CQ2AS/CDQ2AS**

The dimensions with boss on head end are equivalent to those of the CQ2 series, double acting, single rod. Refer to page 802.

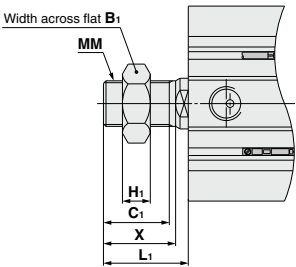


Both Ends Tapped

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



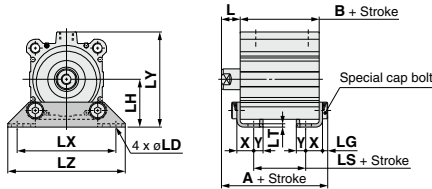
Rod End Male Thread

(mm)

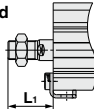
Bore size (mm)	B ₁	C ₁	H ₁	L ₁	MM	X
63	27	26	11	33.5	M18 x 1.5	28.5
80	32	32.5	13	43.5	M22 x 1.5	35.5
100	41	32.5	16	43.5	M26 x 1.5	35.5

Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch		(mm)															
		A	B	A	B	C	D	E	F	H	J	K	L	M	N	O	P	Q	W	Z	
63	10 to 50	54	46	64	56	15	20	77	10.5	M10 x 1.5	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	6	22	10	77	11	17.5 depth 13.5	3/8	16	104	25	
	75, 100	73.5	63.5																		
100	10 to 50	75	63	85	73	27	30	117	13	M20 x 2.5	6.5	27	12	94	11	17.5 depth 13.5	3/8	23	123.5	25	
	75, 100	85	73																		

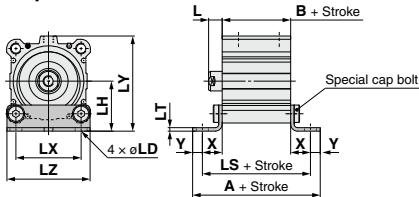
Foot: CQ2LS/CDQ2LS



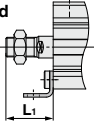
Rod end male thread



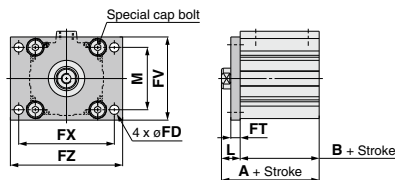
Compact foot: CQ2LCS/CDQ2LCS



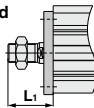
Rod end male thread



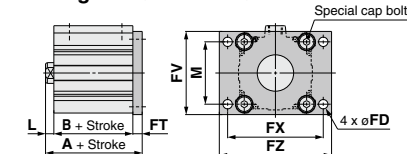
Rod flange: CQ2FS/CDQ2FS



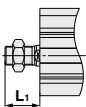
Rod end male thread



Head flange: CQ2GS/CDQ2GS



Rod end male thread



Foot

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

Compact Foot

Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch			(mm)		
		A	B	LS	A	B	LS	L	L ₁	LD
63	10 to 50	100.4	46	82.4	110.4	56	92.4	18	43.5	11
	75, 100	110.4	56	92.4						
80	10 to 50	120.5	53.5	98.5	130.5	63.5	108.5	20	53.5	13
	75, 100	130.5	63.5	108.5						
100	10 to 50	136	63	111	146	73	121	22	53.5	13
	75, 100	146	73	121						

Compact foot bracket material: Carbon steel
Surface treatment: Zinc chromated

Rod Flange

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							

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

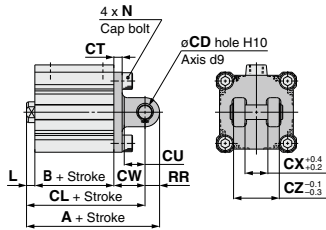
Head Flange

Bore size (mm)	Stroke range (mm)	Without auto switch	With auto switch	(mm)	
		A	A	L	L ₁
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			

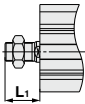
(* The dimensions except A, L and L₁ are the same as those of the rod flange.)
Flange bracket material: Carbon steel
Surface treatment: Nickel plated

* For details about the rod end nut and accessory brackets, refer to page 804.

Double clevis: CQ2DS/CDQ2DS



Rod end male thread



Double Clevis

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						
	75, 100	108	56	94	108	56	94	14	8	20
80	10 to 50	119.5	53.5	101.5						
	75, 100	129.5	63.5	111.5	129.5	63.5	111.5	18	10	27
100	10 to 50	142	63	120						
	75, 100	152	73	130	152	73	130	22	13	31

Bore size (mm)	Stroke range (mm)	CW	CX	CZ	L	L ₁	N	RR
63	10 to 50							
	75, 100	30	22	44	8	33.5	M10 x 1.5	14
80	10 to 50							
	75, 100	38	28	56	10	43.5	M12 x 1.75	18
100	10 to 50							
	75, 100	45	32	64	12	43.5	M12 x 1.75	22

Double clevis bracket material: Cast iron

Surface treatment: Painted

* For details about the rod end nut and accessory brackets, refer to page 804.

* Double clevis pin and retaining rings are included.

CJ

CU

CQS

CQ2
-Z

RQ

CQM

CQU

MU
-Z

D-□

-X□

Technical
data

Compact Cylinder: With End Lock

Series *CBQ2*

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

How to Order

Without auto switch

CBQ2 B 40 - 30 DC - H N -

With auto switch

CDBQ2 B 40 - 30 DC - H N - M9BW -

With auto switch
(Built-in magnet)

Mounting

ø20, ø25

ø32 to ø100

B	Through-hole (Both ends tapped common) (Standard)	B	Through-hole (Standard) (Note 2)
L	Foot	A	Both ends tapped
LC	Compact foot	L	Foot
F	Rod flange	LC	Compact foot
G	Head flange	F	Rod flange
D	Double clevis	G	Head flange
		D	Double clevis

Note 1) Mounting brackets are shipped together (but not assembled).

Note 2) At the 75 and 100 mm 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

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

Nil	M thread	ø20, ø25
	Rc	
TN	NPT	ø32 to ø100
TF	G	

Cylinder stroke (mm)

Refer to page 926 for standard strokes and intermediate strokes.

Number of auto switches

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

Auto switch

Nil Without auto switch

* Refer to the below table for applicable auto switches.

Manual release type

N	Non-lock type
L	Lock type

Lock position

H	Head end lock
R	Rod end lock

Body option

Nil	Rod end female thread
M	Rod end male thread

Cushion

C Rubber bumper

Action

D Double acting

Made to Order

Refer to page 926 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) CDBQ2L32-30DC-RL

Applicable Auto Switches (Refer to pages 1559 to 1673 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 auto switch	Diagnostic indication (2-color indication)	Grommet	No	3-wire (NPN)	5 V, 12 V	—	M9NV	M9N	●	●	●	—	—	—	Relay, PLC
				3-wire (PNP)	12 V		M9PV	M9P	●	●	●	—	—	—	
		Connector	Yes	2-wire	12 V		M9BV	M9B	●	●	●	—	—	—	
				—	—		J79C	—	●	●	●	—	—	—	
	Water resistant (2-color indication)	Grommet	Yes	3-wire (NPN)	5 V, 12 V		M9NVW	M9NW	●	●	●	—	—	—	
				3-wire (PNP)	12 V		M9PVW	M9PW	●	●	●	—	—	—	
		Connector	Yes	2-wire	12 V		M9BVW	M9BW	●	●	●	—	—	—	
				—	—		M9NAV ^{*1}	M9NA ^{*1}	○	○	●	—	—	—	
	With diagnostic output (2-color indication)	Grommet	Yes	3-wire (PNP)	12 V		M9PAV ^{*1}	M9PA ^{*1}	○	○	●	—	—	—	
				2-wire	12 V		M9BAV ^{*1}	M9BA ^{*1}	○	○	●	—	—	—	
Reed auto switch	Diagnostic indication (2-color indication)	Grommet	Yes	4-wire	5 V, 12 V		—	F79F	—	●	●	●	—	—	Relay, PLC
				2-wire (Non-polar)	—		—	P4DW	—	●	●	●	—	—	
	Water resistant (2-color indication)	Grommet	Yes	3-wire (NPN equivalent)	5 V		A96V	A96	●	—	●	—	—	—	
				—	—		A72	A72H	●	—	●	—	—	—	
		Connector	No	2-wire	12 V		A93V ^{*2}	A93	●	●	●	—	—	—	
				—	5 V, 12 V		A90V	A90	●	—	●	—	—	—	
	Diagnostic indication (2-color indication)	Grommet	Yes	2-wire	12 V		A73C	—	●	—	●	—	—	—	
				—	5 V, 12 V		A80C	—	●	—	●	—	—	—	
	Diagnostic indication (2-color indication)	Grommet	Yes	2-wire	5 V, 12 V		A79W	—	●	—	●	—	—	—	
				—	24 V or less		—	—	●	—	●	—	—	—	

*1 Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.

Consult with SMC regarding water resistant types with the above model numbers.

*2 1 m type lead wire is only applicable to D-A93.

* Lead wire length symbols: 0.5 m Nil (Example) M9NV
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 "C" are produced upon receipt of order.

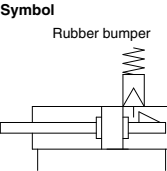
* The D-P4DW type is available from ø40 to ø100 only.

* Only for the D-P4DW 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 940.

* For details about auto switches with pre-wired connector, refer to pages 1626 and 1627.

* When the D-A93(V)/M93(V)/M93A(V) types with ø32 to ø50 are mounted on a surface other than the port side, order auto switch mounting brackets separately. Refer to page 939 for details.



Made to Order
(For details, refer to pages 1699 to 1818.)

Symbol	Specifications
-XB10	Intermediate stroke (Using exclusive body)
-XC26	With split pins for double clevis pin/ double knuckle joint pin and flat washers
-XC85	Grease for food processing equipment

Refer to pages 936 to 940 for the specifications of cylinders with autoswitches.

- Auto switch proper mounting position (detection at stroke end) and its mounting height
- Minimum stroke for auto switch mounting
- Operating range
- Auto switch mounting brackets/Part no.

Moisture Control Tube Series IDK



When operating an actuator with a small diameter and a short stroke at a high frequency, the dew condensation (water droplet) may occur inside the piping depending on the conditions.

Simply connecting the moisture control tube to the actuator will prevent dew condensation from occurring. For details, refer to [Series IDK in the WEB catalog](#).

Specifications

Bore size (mm)	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 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)	0.055	0.09	0.15	0.26	0.46	0.77	1.36	2.27
Stroke length tolerance	+1.0 mm 0							
Lock position	Head end, Rod end							
Holding force (Max.) (N)	215	330	550	860	1340	2140	3450	5390
Backlash	2 mm or less							
Manual release	Non-lock type, Lock type							

Note) 0.05 MPa except for the end lock unit

Standard Strokes

Bore size	Standard stroke
20, 25, 32, 40, 50, 63	10, 15, 20, 25, 50, 75, 100
80, 100	25, 50, 75, 100

Manufacture of Intermediate Strokes

Type	A spacer is installed in the standard stroke body.	Exclusive body (-XB10)
Part no.	Refer to "How to Order" for the standard model number. (P. 925)	Suffix "-XB10" to the end of standard model no. on page 925.
Description	Strokes in 5 mm intervals are available by installing a spacer in the 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 20 to 100	Stroke range 5 to 95
Example	Part no.: CBQ2B40-45DC-HL CBQ2B40-50DC-HL with 5 mm width spacer inside. B dimension is 125 mm.	Part no.: CBQ2B40-45DC-HL-XB10 Makes 45 stroke tube. B dimension is 120 mm.

In the case of an exclusive body type for ø20, ø25, ø80 and ø100 (-XB10) with the stroke length exceeding 25 mm, the reference values of the longitudinal dimension will be changed. Subtract from 50, 75 and 100 stroke dimensions and figure it out.

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	Rc 1/8	Rc 1/8	Rc 1/4
			—	M5 x 0.8	M5 x 0.8	Rc 1/8	Rc 1/8	Rc 1/4
			—	M5 x 0.8	M5 x 0.8	Rc 1/8	Rc 1/8	Rc 1/4
			—	M5 x 0.8	M5 x 0.8	Rc 1/8	Rc 1/8	Rc 1/4
	Rod end male thread	—	—	NPT1/8	NPT1/8	NPT1/4	NPT1/4	NPT3/8
		—	—	NPT1/8	NPT1/8	NPT1/4	NPT1/4	NPT3/8
	With rubber bumper (Standard)		●	●	●	●	●	●

Mounting Brackets/Part No.

Bore size (mm)	Foot ^{Note 1)}	Compact foot ^{Note 1)}	Flange	Double clevis ^{Note 2)}
20	CQS-L020	CQS-LC020	CQS-F020	CQS-D020
25	CQS-L025	CQS-LC025	CQS-F025	CQS-D025
32	CQ-L032	CQ-LC032	CQ-F032	CQ-D032
40	CQ-L040	CQ-LC040	CQ-F040	CQ-D040
50	CQ-L050	CQ-LC050	CQ-F050	CQ-D050
63	CQ-L063	CQ-LC063	CQ-F063	CQ-D063
80	CQ-L080	CQ-LC080	CQ-F080	CQ-D080
100	CQ-L100	CQ-LC100	CQ-F100	CQ-D100

Note 1) When ordering foot and compact foot brackets, order 2 pieces per cylinder.

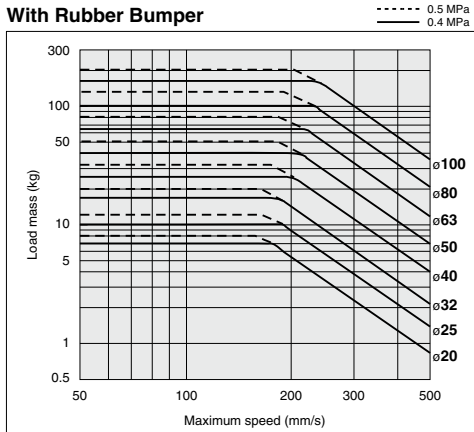
Note 2) Parts belonging to each bracket are as follows. Foot, Compact foot, Flange: Body mounting bolts

Double clevis: Clevis pin, Type C retaining rings for axis, Body mounting bolts

Note 3) Clevis pin and retaining rings are included with double clevis.

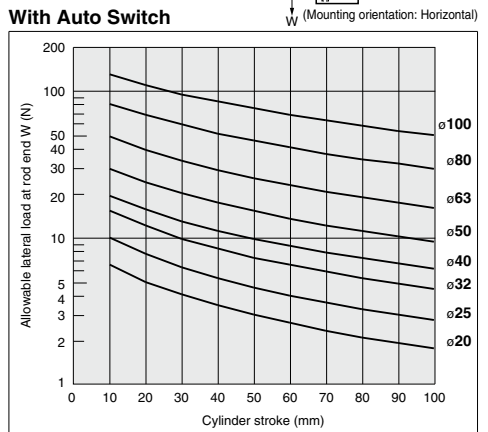
Allowable Kinetic Energy

With Rubber Bumper



Allowable Lateral Load at Rod End

With Auto Switch



Weight

Without Auto Switch, Non-lock Type (-□N)

Bore size (mm)	Cylinder stroke (mm)						(g)
	10	15	20	25	50	75	100
20	211	224	237	249	313	416	480
25	278	294	310	325	405	534	613
32	378	399	419	440	544	649	754
40	540	563	586	610	725	845	965
50	868	904	940	976	1158	1346	1534
63	—	—	—	1220	1424	1636	1847
80	—	—	—	2821	3160	3495	3829
100	—	—	—	4306	4760	5220	5680

Additional Weight

Bore size (mm)	20	25	32	40	50	63	80	100
Lock type (-□L)	10	10	10	20	20	20	30	30
With auto switch	5	6	11	13	18	22	24	35
Both ends tapped	—	—	6	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 (Including mounting bolts)	159(153)	181(172)	143	155	243	324	696	1062
Rod flange (Including mounting bolts)	143(137)	180(171)	180	214	373	559	1056	1365
Head flange (Including mounting bolts)	137	171	165	198	348	534	1017	1309
Double clevis (Including pin, retaining rings, bolts)	92	127	151	196	393	554	1109	1887

() : 50 stroke or more

Calculation: (Example) CBQ2B32-50DCM-HN

●Basic weight : CBQ2B32-50DC-HN 544 g

●Additional weight: Rod end male thread 43 g (26 g+17 g)

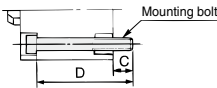
Total 587 g

Mounting Bolt for CBQ2

Mounting method: Mounting bolt for through-hole mounting of the C(D)BQ2 is available as an option. Refer to the following for ordering procedures. Order the actual number of bolts that will be used.

Example) CQ-M5 x 75L 4 pcs.

Note) Be sure to use the attached flat washers when mounting ø20 and ø25 cylinders with through-holes.



Material: Chromium molybdenum steel
Surface treatment: Zinc chromated

With Head End Lock (H□)

Cylinder model	C	D	Mounting bolt part no.
C□BQ2B20-10DC-H□	10	75	CQ-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□		170	x 170L
C□BQ2B25-10DC-H□	7	75	CQ-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□		170	x 170L
C□BQ2B32-10DC-H□	6.5	75	CQ-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□		165	x 165L
C□BQ2B40-10DC-H□	7	85	CQ-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 part no.
C□BQ2B50-10DC-H□	12.5	90	CQ-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□		180	x 180L
C□BQ2B63-10DC-H□	13.5	90	CQ-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□		180	x 180L
C□BQ2B80-25DC-H□	12.5	135	CQ-M10 x 135L
-50DC-H□		160	x 160L
C□BQ2B100-25DC-H□	13	145	CQ-M10 x 145L
-50DC-H□		170	x 170L

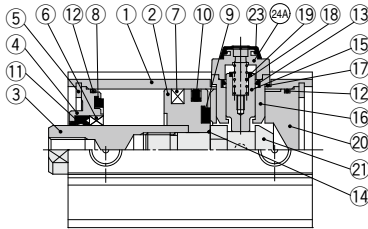
With Rod End Lock (R□)

Cylinder model	C	D	Mounting bolt part no.
C□BQ2B20-10DC-R□	6.5	65	CQ-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	CQ-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□	7	145	x 145L
-100DC-R□		170	x 170L
C□BQ2B32-10DC-R□		70	CQ-M5 x 70L
-15DC-R□		75	x 75L
-20DC-R□		80	x 80L
-25DC-R□		85	x 85L
-50DC-R□	9	110	x 110L
-75DC-R□		135	x 135L
-100DC-R□		160	x 160L
C□BQ2B40-10DC-R□		75	CQ-M5 x 75L
-15DC-R□		80	x 80L
-20DC-R□		85	x 85L
-25DC-R□	7.5	90	x 90L
-50DC-R□		115	x 115L
-75DC-R□		140	x 140L
-100DC-R□		165	x 165L

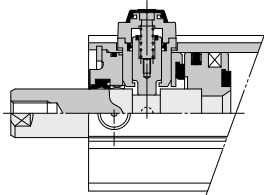
Cylinder model	C	D	Mounting bolt part no.
C□BQ2B50-10DC-R□	12.5	80	CQ-M6 x 80L
-15DC-R□		85	x 85L
-20DC-R□		90	x 90L
-25DC-R□		95	x 95L
-50DC-R□		120	x 120L
-75DC-R□		145	x 145L
-100DC-R□		170	x 170L
C□BQ2B63-10DC-R□	14.5	85	CQ-M8 x 85L
-15DC-R□		90	x 90L
-20DC-R□		95	x 95L
-25DC-R□		100	x 100L
-50DC-R□		125	x 125L
-75DC-R□		150	x 150L
-100DC-R□		175	x 175L
C□BQ2B80-25DC-R□	15	130	CQ-M10 x 130L
-50DC-R□		155	x 155L
C□BQ2B100-25DC-R□	15.5	140	CQ-M10 x 140L
-50DC-R□		165	x 165L

Construction

ø32 to ø63

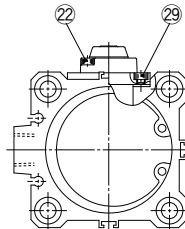
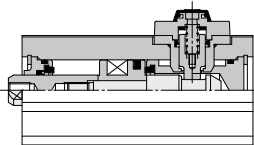


Head end lock

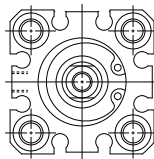


Rod end lock

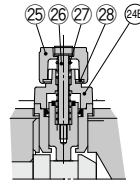
ø20, 25



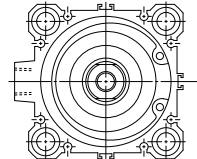
Cylinder tube form
ø32 to ø63



Cylinder tube form
ø25 or less

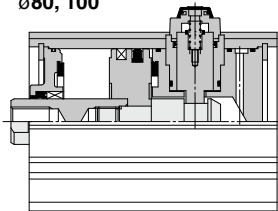


Manual release (Lock type): Suffix L



Cylinder tube form
ø80 or more

ø80, 100



Component Parts

No.	Description	Material	Qty.	Note
1	Cylinder tube	Aluminum alloy	1	Hard anodized
2	Piston	Aluminum alloy	1	Chromated
3	Piston rod	Carbon steel	1	Hard chrome plated
4	Collar	Aluminum bearing alloy	1	ø40 or less, Anodized
		Aluminum alloy casted	1	ø50 or more, Painted after chromated
5	Retaining ring	Carbon tool steel	2	Phosphate coated
6	Bushing	Lead-bronze casted	1	For ø50 or larger only
7	Magnet	—	1	With auto switch
8	Bumper A	Urethane	1	
9	Bumper B	Urethane	1	
10	Piston seal	NBR	1	
11	Rod seal	NBR	1	
12	Tube gasket	NBR	2	Using 4 pcs. for ø80, ø100
13	Lock piston seal	NBR	1	
14	Piston gasket	NBR	1	
15	Lock piston	Carbon steel	1	Quenched, Electroless nickel plated
16	Lock holder	Brass	1	Electroless nickel plated
17	Gasket	NBR	1	
18	Lock spring	Stainless steel	1	
19	Bumper	Urethane	1	
20	Head cover	Aluminum alloy	1	Anodized
21	Lock bolt	Carbon steel	1	Quenched, Electroless nickel plated
22	Hexagon socket head cap screw	Alloy steel	2	Black zinc chromated
23	Rubber cap	Synthetic rubber	1	
24A	Cap A	Aluminum casted	1	Black painted
24B	Cap B	Carbon steel	1	Black painted
25	M/O knob	Zinc die-casted	1	Black painted

No.	Description	Material	Qty.	Note
26	M/O bolt	Alloy steel	1	Black zinc chromated
27	M/O spring	Steel wire	1	Zinc chromated
28	Stopper ring	Rolled steel	1	Zinc chromated
29	Hexagon socket head cap screw	Alloy steel	2	Zinc chromated

Replacement Parts/Seal Kit (End lock type)

Bore size (mm)	Kit no.	Contents
20	CBQ2B20-PS	Kits include items 10, 11, 12, 13, 17, 22, 23 from the table and a 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, 17, 22, 23. Order the seal kit based on each bore size.

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

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

CUI

CU

CQS

CQ2-Z

RQ

CQM

CQU

MU-Z

D-□

-X□

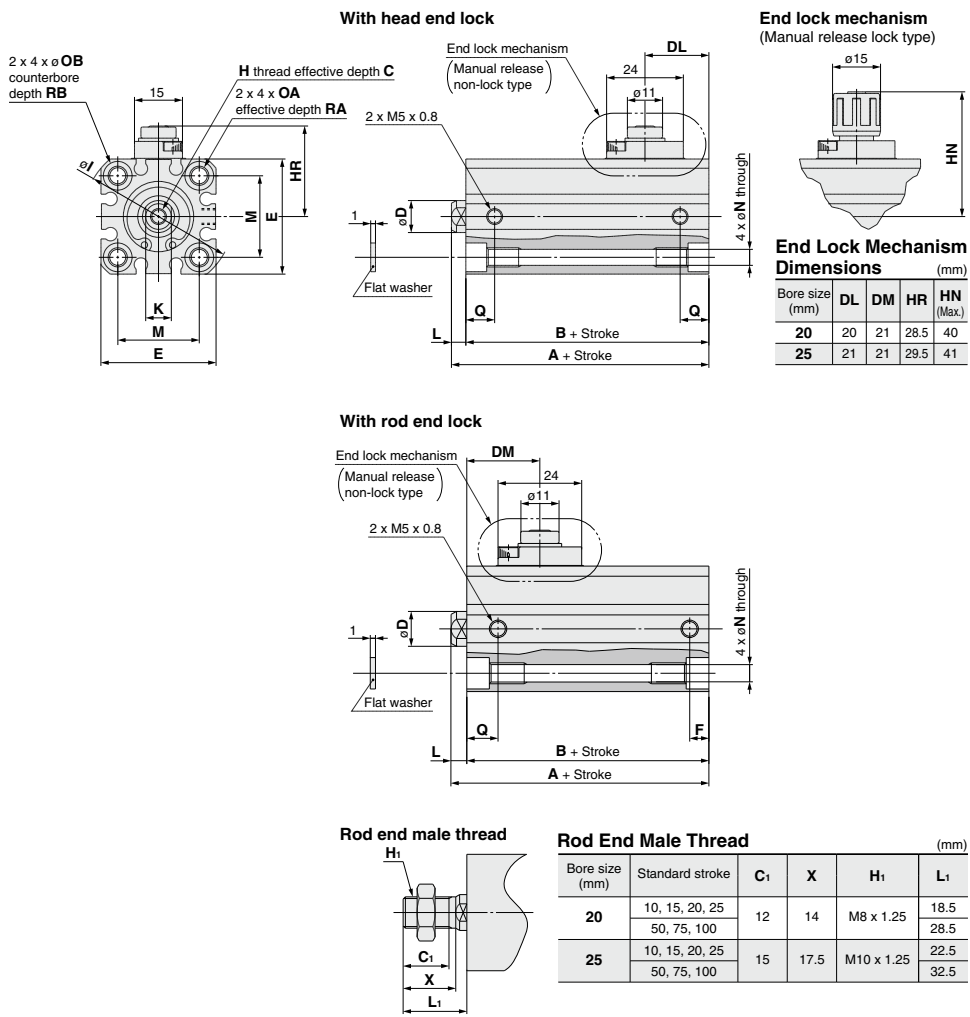
Technical data

Series CBQ2

Dimensions

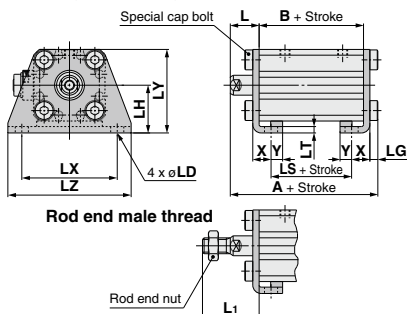
Ø20, Ø25

Standard (Through-hole/Both ends tapped common):
CBQ2B/CDBQ2B



(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: CBQ2L/CDBQ2L



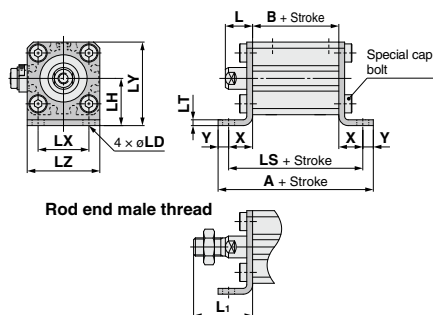
Foot

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	LH	LG	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
25	50, 75, 100	15	32.5	6.6	4	26	3.2	52	46	66	10.7	5.8

Foot bracket material: Carbon steel
Surface treatment: Nickel plated

Compact foot: CBQ2LC/CDBQ2LC



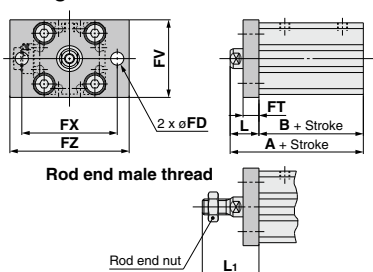
Compact Foot

Bore size (mm)	Standard stroke	With head end lock			With rod end lock		
		A	B	LS	A	B	LS
20	10, 15, 20, 25	99	61	87.4	92.5	54.5	80.9
	50, 75, 100	104	66	92.4	104	66	92.4
25	10, 15, 20, 25	102	64	90.4	95.5	57.5	83.9
	50, 75, 100	107	69	95.4	107	69	95.4

Bore size (mm)	Standard stroke	L	L ₁	LD	LH	LT	LX	LY	LZ	X	Y
20	10, 15, 20, 25	14.5	28.5	6.6	24	3.2	25.5	42	36	13.2	5.8
25	50, 75, 100	15	32.5	6.6	26	3.2	28	46	40	13.2	5.8

Compact foot bracket material: Carbon steel
Surface treatment: Zinc chromated

Rod flange: CBQ2F/CDBQ2F



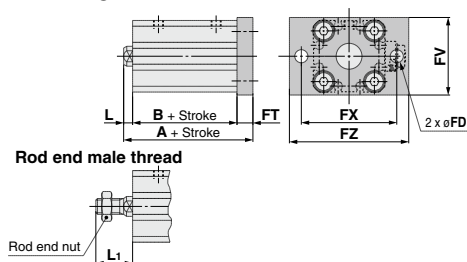
Rod Flange

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
25	50, 75, 100	6.6	8	42	52	64	15	32.5

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

Head flange: CBQ2G/CDBQ2G



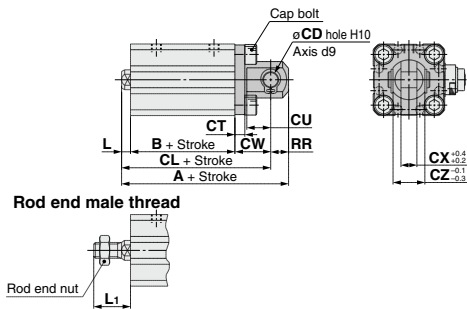
Head Flange

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
25	50, 75, 100	6.6	8	42	52	64

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

Double clevis: **CBQ2D/CDBQ2D**



Double Clevis (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
25	50, 75, 100	10	5	14	20	10	20	10

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

CUJ

CU

CQS

CBQ2-Z

RQ

CQM

CQU

MU-Z

D-□

-X□

Technical data

Series CBQ2

Dimensions

ø32 to ø100

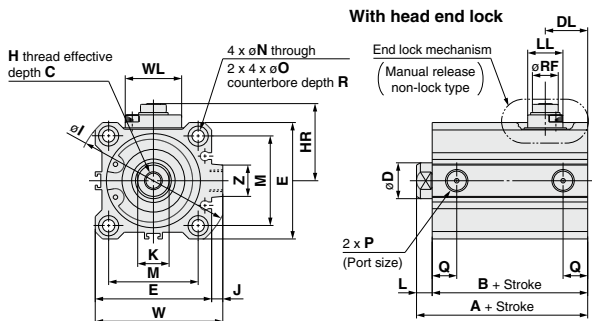
Standard (Through-hole):

CBQ2B/CDBQ2B

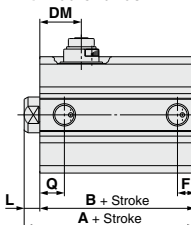
Both ends tapped: CBQ2A/CDBQ2A

Both Ends Tapped (mm)

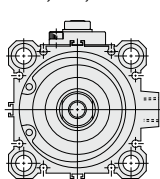
Bore size (mm)	O ₁	R ₁
32	M6 x 1.0	10
40	M6 x 1.0	10
50	M8 x 1.25	14
63	M10 x 1.5	18
80	M12 x 1.75	22
100	M12 x 1.75	22



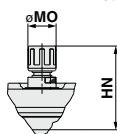
With rod end lock



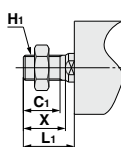
Cylinder tube form
ø63, ø80, ø100



End lock mechanism
(Manual release lock type)



Rod end male thread



End Lock Mechanism Dimensions (mm)

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

Rod End Male Thread (mm)

Bore size (mm)	Standard stroke	C ₁	X	H ₁	L ₁
32		20.5	23.5	M14 x 1.5	28.5
40	10, 15, 20, 25	20.5	23.5	M14 x 1.5	28.5
50	50, 75, 100	26	28.5	M18 x 1.5	33.5
63		26	28.5	M18 x 1.5	33.5
80	25, 50	32.5	35.5	M22 x 1.5	43.5
	75, 100				53.5
100	25, 50	32.5	35.5	M26 x 1.5	43.5
	75, 100				53.5

Bore size (mm)	Standard stroke	C	D	E	H	I	J	K	M	N	O	P	R	W	Z
32		13	16	45	M8 x 1.25	60	4.5	14	34	5.5	9	Rc1/8	7	49.5	14
40	10, 15, 20, 25	13	16	52	M8 x 1.25	69	5	14	40	5.5	9	Rc1/8	7	57	14
50	50, 75, 100	15	20	64	M10 x 1.5	86	7	17	50	6.6	11	Rc1/4	8	71	19
63		15	20	77	M10 x 1.5	103	7	17	60	9	14	Rc1/4	10.5	84	19
80	25, 50, 75, 100	21	25	98	M16 x 2.0	132	6	22	77	11	17.5*	Rc3/8	13.5*	104	26
100		27	30	117	M20 x 2.5	156	6.5	27	94	11	17.5*	Rc3/8	13.5*	123.5	26

* At the 75 and 100 mm strokes with ø80, ø100, both ends tapped (A) is the standard. Through-hole (B) is not available.

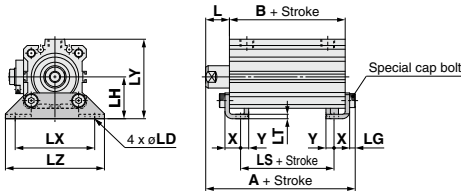
With Head End Lock (mm)

Bore size (mm)	Standard stroke	A	B	L	Q
32		72.5	65.5	7	12.5
40	10, 15, 20, 25	82	75	7	14
50	50, 75, 100	83.5	75.5	8	14
63		85	77	8	15.5
80	25, 50	121	111	10	18
	75, 100	136	116	20	19
100	25, 50	132.5	120.5	12	22
	75, 100	147.5	125.5	22	23

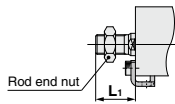
With Rod End Lock (mm)

Bore size (mm)	Standard stroke	A	B	F	L	Q
32		65	58	7.5	7	10.5
40	10, 15, 20, 25	71.5	64.5	8	7	11
50	50, 75, 100	73.5	65.5	10.5	8	10.5
63		79	71	10.5	8	15
80	25, 50	113.5	103.5	12.5	10	16
	75, 100	136	116	19	20	19
100	25, 50	125	113	13	12	23
	75, 100	147.5	125.5	23	22	23

Foot: CBQ2L/CDBQ2L



Rod end male thread



Foot

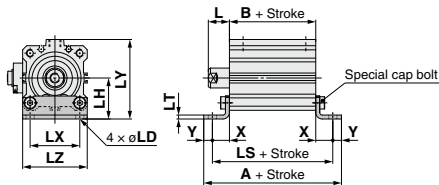
Bore size (mm)	Standard stroke	With head end lock			With rod end lock			(mm)		
		A	B	LS	A	B	LS	L	L ₁	LD
32	10, 15, 20, 25 50, 75, 100	89.7	65.5	49.5	82.2	58	42	17	38.5	6.6
40		99.2	75	59	88.7	64.5	48.5	17	38.5	6.6
50		101.7	75.5	52.5	91.7	65.5	42.5	18	43.5	9
63	25, 50 75, 100	103.2	77	51	97.2	71	45	18	43.5	11
80		142.5	111	81	135	103.5	73.5	20	53.5	13
100		147.5	116	86	147.5	116	86	20	53.5	13
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	25, 50, 75, 100	5	46	3.2	95	91.5	113	16.2	9
80		7	59	4.5	118	114	140	19.5	11
100		7	71	6	137	136	162	23	12.5

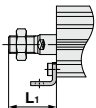
Foot bracket material: Carbon steel

Surface treatment: Nickel plated

Compact foot: CBQ2LC/CDBQ2LC



Rod end male thread



Compact Foot

Bore size (mm)	Standard stroke	With head end lock			With rod end lock			(mm)		
		A	B	LS	A	B	LS	L	L ₁	LD
32	10, 15, 20, 25 50, 75, 100	104.5	65.5	92.9	97	58	85.4	17	38.5	6.6
40		116.4	75	102.4	105.9	64.5	91.9	17	38.5	6.6
50		124.9	75.5	108.9	114.9	65.5	98.9	18	43.5	9
63	25, 50 75, 100	131.4	77	113.4	125.4	71	107.4	18	43.5	11
80		178	111	156	170.5	103.5	148.5	20	53.5	13
100		183	116	161	183	116	161	20	53.5	13
100	25, 50	193.5	120.5	168.5	186	113	161	22	53.5	13
	75, 100	198.5	125.5	173.5	198.5	125.5	173.5			

Bore size (mm)	Standard stroke	LH	LT	LX	LY	LZ	X	Y
32	10, 15, 20, 25 50, 75, 100	30	3.2	34	57	45	13.7	5.8
40		33	3.2	40	64	52	13.7	7
50		39	3.2	50	78	64	16.7	8
63	25, 50, 75, 100	46	3.2	60	91.5	77	18.2	9
80		59	4.5	77	114	98	22.5	11
100		71	6	94	136	117	24	12.5

Compact foot bracket material: Carbon steel

Surface treatment: Zinc chromated

CUJ

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CQM

CQU

MU

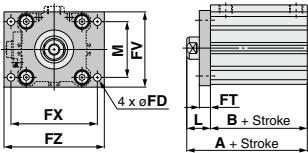
-Z

D-□

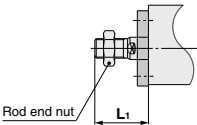
-X□

Technical data

Rod flange: CBQ2F/CDBQ2F



Rod end male thread



Rod Flange (mm)

Bore size (mm)	Standard stroke	With head end lock		With rod end lock		FD	FT	FV	FX	FZ
		A	B	A	B					
32		82.5	65.5	75	58	5.5	8	48	56	65
40	10, 15, 20, 25	92	75	81.5	64.5	5.5	8	54	62	72
50	50, 75, 100	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	L1	M
32		17	38.5	34
40	10, 15, 20, 25	17	38.5	40
50	50, 75, 100	18	43.5	50
63		18	43.5	60
80	25, 50, 75, 100	20	53.5	77
100		22	53.5	94

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

CUJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

MU-Z

D-□

-X□

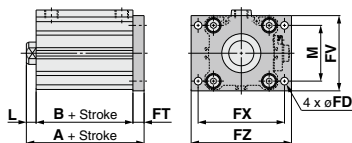
Technical data

Series CBQ2

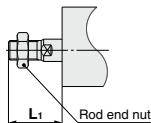
Dimensions

ø32 to ø100

Head flange: CBQ2G/CDBQ2G



Rod end male thread



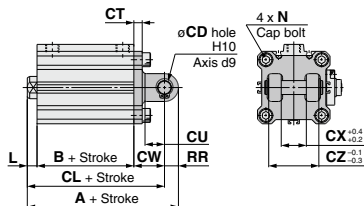
Head Flange

Bore size (mm)	Standard stroke	(mm)							
		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

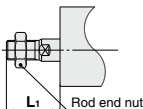
Bore size (mm)	Standard stroke	M	FD	FT	FV	FX	FZ
32	10, 15, 20, 25 50, 75, 100	34	5.5	8	48	56	65
40		40	5.5	8	54	62	72
50		50	6.6	9	67	76	89
63		60	9	9	80	92	108
80	25, 50	77	11	11	99	116	134
100	75, 100	94	11	11	117	136	154

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

Double clevis: CBQ2D/CDBQ2D



Rod end male thread



Double Clevis

Bore size (mm)	Standard stroke	(mm)							
		With head end lock				With rod end lock			
		A	B	CL	A	B	CL	CD	CT
32	10, 15, 20, 25 50, 75, 100	102.5	65.5	92.5	95	58	85	10	5
40		114	75	104	103.5	64.5	93.5	10	6
50		125.5	75.5	111.5	115.5	65.5	101.5	14	7
63		129	77	115	123	71	109	14	8
80	25, 50	177	111	159	169.5	103.5	151.5	18	10
	75, 100	192	116	174	192	116	174		20
100	25, 50	199.5	120.5	177.5	192	113	170		12
	75, 100	214.5	125.5	192.5	214.5	125.5	192.5	22	13

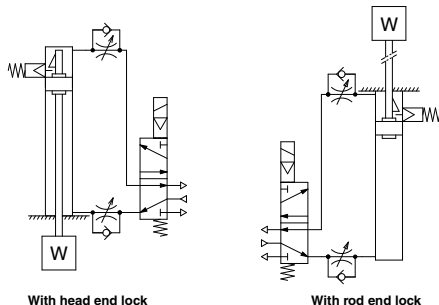
Bore size (mm)	Standard stroke	CW	CX	CZ	N	RR
32	10, 15, 20, 25 50, 75, 100	20	18	36	M6 x 1.0	10
40		22	18	36	M6 x 1.0	10
50		28	22	44	M8 x 1.25	14
63		30	22	44	M10 x 1.5	14
80	25, 50, 75, 100	38	28	56	M12 x 1.75	18
100		45	32	64	M12 x 1.75	22

Double clevis bracket material: Cast iron
Surface treatment: Painted

Use the Recommended Pneumatic Circuit

⚠ Caution

- This is necessary for the correct locking and unlocking actions.



Operating Precautions

⚠ Caution

- 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.
- Back pressure is required for 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 above figure. There is a possibility that the lock may not be released. (Refer to the section on releasing the lock.)
- Release the lock for mounting or adjusting the cylinder.**
If mounting or other work is performed when the cylinder is locked, the lock unit may be damaged.
- 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.
- Do not operate multiple cylinders in synchronization.**
Avoid applications in which two or more end lock cylinders are synchronized to move one work piece, as one of the cylinder locks may not be able to release when required.
- Use a speed controller with meter-out control.**
Lock cannot be released occasionally by meter-in control.
- 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.
- 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

- 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 releasing the lock.

Exhaust Speed

⚠ Caution

- 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

- 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

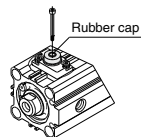
1. Manual release (Non-lock type)

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.

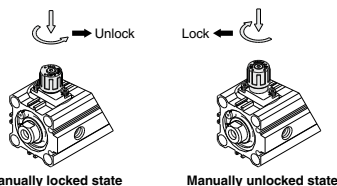
Bore size (mm)	Thread size	Pulling force (N)	Stroke (mm)
20, 25, 32	M2.5 x 0.45 x 25 L or more	4.9	2
40, 50, 63	M3 x 0.5 x 30 L or more	10	3
80, 100	M5 x 0.8 x 40 L or more	24.5	3

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 the M/O knob clockwise 90° while pushing fully, correspond ▲ on cap and ▼ ON mark on the M/O knob. The correct position is confirmed by a click sound "click". If not confirmed, locking is not done.



CUJ

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CQS

CQ2-Z

RQ

CQM

CQU

MU-Z

D-□

-X□

Technical data

With End Lock

Series **CDBQ2**

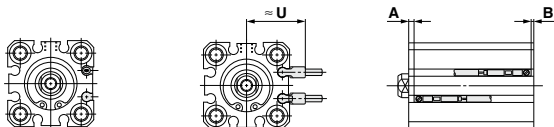
With Auto Switch 1

1 Auto Switch Proper Mounting Position (Detection at Stroke End) and its Mounting Height

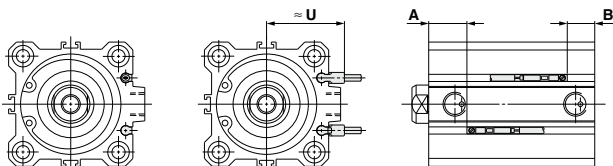
Applicable Cylinder Series: CDBQ2 (With end lock)

D-A9□
D-M9□
D-M9□W
D-M9□A
D-A9□V
D-M9□V
D-M9□WV
D-M9□AV

ø20, ø25



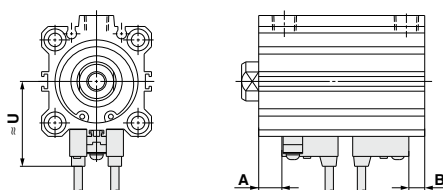
ø32 to ø100



D-A7□
D-A80
D-A7□H
D-A80H
D-F7□
D-J79
D-F7□W
D-J79W
D-F79F

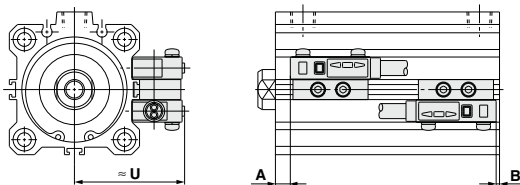
D-F7NT
D-F7BA
D-A73C
D-A80C
D-J79C
D-A79W
D-F7□WV
D-F7□V
D-F7BAV

ø32 to ø100



D-P4DW

ø40 to ø100



Auto Switch Mounting Height**Applicable Cylinder Series: CDBQ2 (With end lock)**

(mm)

Auto switch model Bore size	D-A7□ D-A80		D-A7□H/A80H D-A73C/A80C D-F7□V/J79W D-F7□W/F7□WV D-F7BA/F7BAV D-F79F/F7NT		D-A79W		D-A9□ D-A9□V		D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV		D-P4DW	
	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) The dimensions in parentheses for ø20 and ø25 are for 50, 75 and 100 mm strokes, and the dimensions in parentheses for ø80 and ø100 are for 75 and 100 mm strokes. Adjust the auto switch after confirming the operating conditions in the actual setting.

Applicable Cylinder Series: CDBQ2 (With end lock)

(mm)

Auto switch model Bore size	D-A7□ D-A80	D-A7□H D-A80H/J79W D-F7□/F7BA D-J79/F79F D-F7□W/F7NT	D-A73C D-A80C	D-F7□V D-F7□WV D-F7BAV	D-J79C	D-A79W	D-A9□V	D-M9□V D-M9□WV D-M9□AV	D-P4DW
	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

CUJ

CU

CQS

CQ2
-Z

RQ

CQM

CQU

MU
-Z

D-□

-X□

Technical
data

With End Lock Series **CDBQ2** With Auto Switch 2

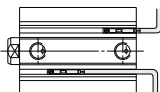
2 Minimum Stroke for Auto Switch Mounting

Applicable Cylinder Series: CDBQ2 (With end lock)

(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-M9□AV D-F7□WV D-F7BAV	D-M9□ D-F7□ D-J79	D-M9□W D-M9□A	D-A7□H D-A80H	D-A79W	D-F7□W D-J79W D-F7BA D-F79F D-F7NT	D-P4DW
With 1 pc.	5	5	10(5)	10	15(5)	15(10)	15(5)	15	20(10)	15
With 2 pcs.	5	10	10	15	15(5)	15(5)	15(10)	20	20(15)	15

Note) The dimension stated in () shows the minimum stroke for the auto switch mounting when the auto switch does not project from the end surface of the cylinder body and hinder the lead wire bending space. (Refer to the figure below.)
The auto switch and auto switch mounting bracket are ordered separately.



3 Operating Range

Applicable Cylinder Series: CDBQ2 (With end lock)

(mm)

Auto switch model	Bore size							
	20	25	32	40	50	63	80	100
D-A9□(V)	10	10	9.5 (9.5)	9.5 (9.5)	9.5 (8.5)	11.5 (11)	9 (10)	11.5 (10.5)
D-M9□(V) D-M9□W(V) D-M9□A(V)	5.5	5.5	6 (5.5)	6 (5.5)	7 (6)	7.5 (6.5)	8 (7)	8.5 (7)
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-F7BA(V) D-F7NT D-F79F	—	—	6	6	6	6.5	6.5	7
D-P4DW	—	—	—	5	5	5	5	5.5

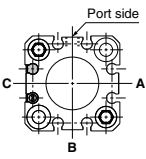
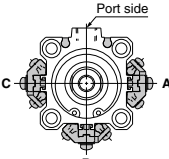
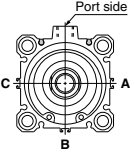
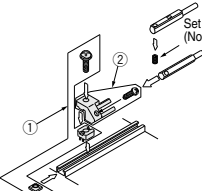
* Values which include hysteresis are for guideline purposes only, they are not a guarantee (assuming approximately ±30% dispersion) and may change substantially depending on the ambient environment.

* The values for ø32 or more of the D-A9□(V)/M9□(V)/M9□W(V)/M9□A(V) types indicate the operating range when the conventional switch installation groove is attached without using the auto switch mounting bracket BQ2-012.

* The values in parentheses for ø32 or more of the D-A9□(V)/M9□(V)/M9□W(V)/M9□A(V) types indicate the operating range when the auto switch mounting bracket BQ2-012 is used.

4 Auto Switch Mounting Brackets/Part No.

Applicable Cylinder Series: CDBQ2 (With end lock)

Auto switch mounting surface	Bore size (mm)		
	ø20, ø25	ø32, ø40, ø50	ø63, ø80, ø100
			
Auto switch model	Auto switch mounting surface	Auto switch mounting surface	Auto switch mounting surface
	Port/A/B/C side	Port side	A/B/C side
D-A9□ D-A9□V D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV	Auto switch mounting brackets are not required.	Auto switch mounting brackets are not required. 	Auto switch mounting brackets are not required.

Note 1) When a compact auto switch is mounted on the three sides (A, B and C above) other than the port side of ø32 to ø50 cylinders, 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 ø63 to ø100 cylinders.)

Ordering example
 CDBQ2B32-50D-M9BW.....1 pc.
 BQ-2.....2 pcs.
 BQ2-012.....2 pcs.

Note 2) When shipping cylinders, auto switch mounting brackets and auto switches are shipped together.

Auto switch model	Bore size (mm)					
	32	40	50	63	80	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-F7BA/F7BAV D-F79F/F7NT						
D-P4DW	—					

Note 3) When shipping cylinders, auto switch mounting brackets and auto switches are shipped together.

Note 4) Refer to pages 1658 to 1660 for further information on auto switch mounting method.

[Stainless Steel Mounting Screw Kit]

The following stainless steel mounting screw kit (with nuts) is available. Use it in accordance with the operating environment. (Since auto switch spacer (for BQ-2) is not included, order BQ-2 separately.)

BBA2: For D-A7/A8/F7/J7 types

The above stainless steel mounting screws are used when a cylinder is shipped with the D-F7BA/F7BAV auto switches.

When only an auto switch is shipped independently, BBA2 is attached.

Note 5) Refer to page 1659 for details of BBA2.

Note 6) When the D-M9□(V) type 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 mounting screw kit BBA2 separately.

Auto Switch Mounting Bracket/Weight

Mounting bracket part no.	Weight (g)
BQ-2	1.5
BQ2-012	5
BQP1-050	16

CJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

MU

-Z

D-□

-X□

Technical data

With End Lock

Series **CDBQ2**

With Auto Switch 3

Other than the applicable auto switches listed in “How to Order”, the following auto switches are mountable. Refer to page 1559 to 1673 for detailed specifications.

Applicable Cylinder Series: CDBQ2 (With end lock)

Auto switch type	Model	Electrical entry	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-F7NWW, F7BWW		Diagnostic indication (2-color indication)	
	D-F7BAV		Water resistant (2-color indication)	
	D-F79, F7P, J79	Grommet (In-line)	—	
	D-F79W, F7PW, J79W		Diagnostic indication (2-color indication)	
	D-F7BA		Water resistant (2-color indication)	
	D-F7NT		With timer	
	D-P5DW	Grommet (In-line)	Magnetic field resistant (2-color indication)	ø40 to ø100

* With pre-wired connector is also available for solid state auto switches. For details, refer to page 1626 and 1627.

* Normally closed (NC = b contact) solid state auto switches (D-F9G/F9H) are also available. For details, refer to page 1577.

* When using a magnetic field resistant solid state auto switch D-P3DW type, please contact SMC separately. (Applicable bore size: ø32 to ø100)

* Heat resistant solid state auto switch (D-F7NJ) is not applicable.

* Regarding the D-P5DW, please contact SMC separately.

Compact Cylinder: Water Resistant Double Acting, Single Rod Series CQ2

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

How to Order

Without auto switch
ø20, ø25

CQ2 B 20 R 30 D

Without auto switch
ø32 to ø100

CQ2 B 32 R 30 D Z

With auto switch

CDQ2 B 32 R 30 D Z M9BA

With auto switch
(Built-in magnet)

Mounting

B	Through-hole (Standard)	(ø20 to ø100)
A	Both ends tapped	
L	Foot	
LC	Compact foot	(ø40 to ø100)
F	Rod flange	
G	Head flange	
D	Double clevis	

- * Mounting brackets are shipped together (but not assembled).
- * Cylinder mounting bolts are not included. Order them separately referring to "Mounting Bolts for CQ2" on page 943 and "Mounting Bolts for CDQ2" on page 945.

Bore size

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

Port thread type

Nil	M thread
	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) CDQ2B32R-25DMZ

Number of auto switches

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

Made to Order

Refer to the next page for details.

Auto switch

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

- * Refer to the below table for applicable auto switches.

Auto switch mounting groove

Z	ø20 to ø25	2 surfaces
	ø32 to ø100	4 surfaces

Body option

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

Action

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

Cylinder stroke (mm)

For "Standard Strokes", refer to page 942.

Water resistant cylinder

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

Applicable Auto Switches

Refer to pages 1559 to 1673 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 auto 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		12 V		M9BAV	M9BA	○	○	●	○	○		

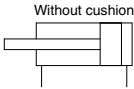
* Lead wire length symbols: 0.5 m Nil (Example) M9BA
1 m M (Example) M9BAL
3 m L (Example) M9BAL
5 m Z (Example) M9BAZ

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

* For details about auto switches with pre-wired connector, refer to pages 1626 and 1627 in Best Pneumatics No. 2.



Symbol



Made to Order
(For details, refer to pages 1699 to 1818.)

Symbol	Specifications
-XC6(A)	Piston rod/Retaining ring/Rod end nut material: Stainless steel

Refer to pages 954 to 960 for the specifications of cylinders with autoswitches.

- Auto switch proper mounting position (detection at stroke end) and its mounting height
- Minimum stroke for auto switch mounting
- Operating range
- Auto switch mounting brackets/Part no.

Moisture Control Tube Series IDK



When operating an actuator with a small diameter and a short stroke at a high frequency, the dew condensation (water droplet) may occur inside the piping depending on the conditions. Simply connecting the moisture control tube to the actuator will prevent dew condensation from occurring. For details, refer to [Series IDK in the WEB catalog](#).

Specifications

Bore size (mm)	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 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)	0.055	0.09	0.15	0.26	0.46	0.77	1.36	2.27
Stroke length tolerance	+1.0 mm 0							

Standard Strokes

Bore size	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 Strokes

Type	A spacer is installed in the standard stroke body.	
Part no.	Refer to "How to Order" for the standard model number. (P. 941)	
Description	Strokes in 1 mm intervals are available by installing a spacer in the standard stroke cylinder.	
Stroke range	Bore size	Stroke range
	20, 25	1 to 49
	32 to 100	1 to 99
Example	Part no.: CQ2B50R-57DZ CQ2B50R-75DZ with 18 mm width spacer inside The 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	—	—	—	●	●	●	●	●
	Built-in magnet		●	●	●	●	●	●	●	●
	Piping	Pipe thread	—	M5 x 0.8	M5 x 0.8	Note) M5 x 0.8 Rc1/8	Rc1/8	Rc1/4	Rc1/4	Rc3/8
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
Rod end male thread		●	●	●	●	●	●	●	●	

Note) ø32 without auto switch: M5 x 0.8 is used for 5 mm strokekeeping dimension.
Thus, do not enter a symbol for the port thread type.

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 Brackets/Part No.

Bore size (mm)	Foot (Note 1)	Compact foot (Note 1)	Flange	Double clevis
40	CQ-L040	CQ-LC040	CQ-F040	CQ-D040
50	CQ-L050	CQ-LC050	CQ-F050	CQ-D050
63	CQ-L063	CQ-LC063	CQ-F063	CQ-D063
80	CQ-L080	CQ-LC080	CQ-F080	CQ-D080
100	CQ-L100	CQ-LC100	CQ-F100	CQ-D100

Note 1) When ordering foot and compact foot brackets, order 2 pieces per cylinder.
Note 2) Parts belonging to each bracket are as follows.

Foot, Compact foot, Flange: Body mounting bolts

Double clevis: Clevis pin, Type C retaining rings for axis, Body mounting bolts

Weight

Weight Without Auto Switch

Stroke	5	10	15	20	25	30	35	40	45	50	75	100
Bore size												
ø20	112	126	141	155	169	184	198	212	227	241	—	—
ø25	149	165	182	197	213	229	245	261	277	293	—	—
ø32	203	224	246	267	288	309	330	352	373	394	544	650
ø40	220	241	263	284	306	327	349	371	392	414	568	680
ø50	—	378	411	444	476	509	542	575	608	641	879	1051
ø63	—	547	585	623	662	700	738	776	814	852	1125	1321
ø80	—	973	1034	1094	1154	1214	1275	1335	1395	1455	1873	2169
ø100	—	1703	1783	1863	1944	2024	2104	2185	2265	2345	2915	3323

Additional Weight

Bore size (mm)	20	25	32	40	50	63	80	100
Both ends tapped	—	—	—	6	6	19	45	45
Rod end male thread	Male thread		6	12	26	27	53	120
	Nut		4	8	17	17	32	49
Foot (Including mounting bolts)	—	—	—	154	243	320	690	1057
Compact foot (Including mounting bolts)	—	—	—	114	177	241	501	770
Rod flange (Including mounting bolts)	—	—	—	214	373	559	1056	1365
Head flange (Including mounting bolts)	—	—	—	198	348	534	1017	1309
Double clevis (Including pin, retaining rings, bolts)	—	—	—	196	393	554	1109	1887

Calculation: (Example) CQ2D40R-20DMZ

- Basic weight: CQ2B40R-20DZ 284 g
- Additional weight: Both ends tapped 6 g
- Rod end male thread 44 g
- Double clevis 196 g
- 530 g

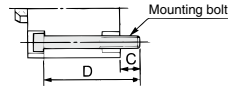
Add each weight of auto switches when auto switches are mounted.

Mounting Bolt for CQ2B/Without Auto Switch

Mounting method: Mounting bolt for through-hole mounting of the CQ2B is available as an option. Refer to the following for ordering procedures. Order the actual number of bolts that will be used.

Example) CQ-M5 x 35L 2 pcs.

Material: Chromium molybdenum steel
Surface treatment: Zinc chromated



Cylinder model	C	D	Mounting bolt part no.
CQ2B20 ³ -5D	7.5	35	CQ-M5 x 35L
		40	x 40L
		45	x 45L
		50	x 50L
		55	x 55L
		60	x 60L
		65	x 65L
		70	x 70L
		75	x 75L
		80	x 80L
CQ2B25 ³ -5D	40	CQ-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 ³ -5DZ	40	CQ-M5 x 40L	
-10DZ	45	x 45L	
-15DZ	50	x 50L	
-20DZ	55	x 55L	
-25DZ	60	x 60L	
-30DZ	65	x 65L	
-35DZ	70	x 70L	
-40DZ	75	x 75L	
-45DZ	80	x 80L	
-50DZ	85	x 85L	
-75DZ	120	x 120L	
-100DZ	145	x 145L	

Cylinder model	C	D	Mounting bolt part no.
CQ2B40 ³ -5DZ	7.5	35	CQ-M5 x 35L
		40	x 40L
		45	x 45L
		50	x 50L
		55	x 55L
		60	x 60L
		65	x 65L
		70	x 70L
		75	x 75L
		80	x 80L
-75DZ	115	x 115L	
-100DZ	140	x 140L	
CQ2B50 ³ -10DZ	45	CQ-M6 x 45L	
-15DZ	50	x 50L	
-20DZ	55	x 55L	
-25DZ	60	x 60L	
-30DZ	65	x 65L	
-35DZ	70	x 70L	
-40DZ	75	x 75L	
-45DZ	80	x 80L	
-50DZ	85	x 85L	
-75DZ	120	x 120L	
-100DZ	145	x 145L	
CQ2B63 ³ -10DZ	50	CQ-M8 x 50L	
-15DZ	55	x 55L	
-20DZ	60	x 60L	
-25DZ	65	x 65L	
-30DZ	70	x 70L	
-35DZ	75	x 75L	
-40DZ	80	x 80L	
-45DZ	85	x 85L	
-50DZ	90	x 90L	
-75DZ	125	x 125L	
-100DZ	150	x 150L	

Cylinder model	C	D	Mounting bolt part no.
CQ2B80 ³ -10DZ	15	55	CQ-M10 x 55L
		60	x 60L
		65	x 65L
		70	x 70L
		75	x 75L
		80	x 80L
		85	x 85L
		90	x 90L
		95	x 95L
		130	x 130L
-100DZ	155	x 155L	
CQ2B100 ³ -5DZ	65	CQ-M10 x 65L	
-15DZ	70	x 70L	
-20DZ	75	x 75L	
-25DZ	80	x 80L	
-30DZ	85	x 85L	
-35DZ	90	x 90L	
-40DZ	95	x 95L	
-45DZ	100	x 100L	
-50DZ	105	x 105L	
-75DZ	140	x 140L	
-100DZ	165	x 165L	

CJ

CU

CQS

CQ2Z

RQ

CQM

CQU

MU-Z

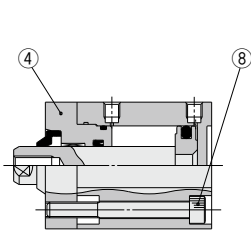
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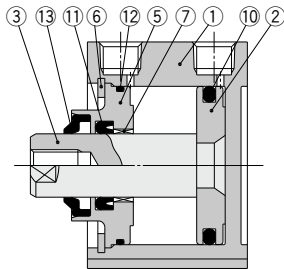
Technical data

Construction

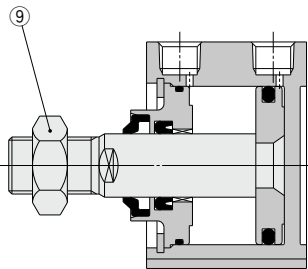
Standard (ø20 to ø32)



Standard (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
4	Rod cover	Carbon steel	ø32 to ø100, Hard chrome plated
5	Collar	Aluminum alloy	ø20 to ø32, Anodized
6	Retaining ring	Carbon tool steel	ø40 to ø100, Phosphate coated
7	Bushing	Oil-impregnated sintered alloy	ø20, ø25
8	Hexagon socket head cap screw	Bearing alloy	ø32 to ø100
9	Rod end nut	Chromium molybdenum steel	ø20 to ø32, Zinc chromated
10	Piston seal	Carbon steel	Zinc chromated
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.		Contents
	R: NBR	V: FKM	
20	CQ2B20R-PS	CQ2B20V-PS	Kits include items ⑩, ⑪, ⑫ from the table.
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 seal kit does not include a grease pack, order it separately.

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

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 a type C retaining ring) is used, it is likely to inflict damage to a human body or peripheral equipment, as a retaining ring may be flown out of the tip of a plier (tool for installing a type C retaining ring). Be much careful with the popping of a retaining ring. Besides, be certain that a retaining ring is placed firmly into the groove of rod cover before supplying air at the time of installment.

Handling Precautions

⚠ Caution

- Before installing a cylinder, thoroughly flush out the piping to prevent dust or cutting chips from entering the cylinder. For hydraulic cylinders, 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 leakage.

Handling Precautions

⚠ 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, steel 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 coolant liquid) that splashes on the cylinder, the operating life of seals may be reduced dramatically.

Examples of coolant liquid

Shimiron, 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)

Water Resistant: Double Acting, Single Rod Series **CDQ2** With Auto Switch



Weight

Weight

(g)

Stroke	5	10	15	20	25	30	35	40	45	50	75	100
Bore size												
ø20	130	142	155	167	179	191	204	216	228	240	—	—
ø25	182	197	213	228	244	259	275	290	306	320	—	—
ø32	263	284	305	327	348	369	390	412	433	454	561	668
ø40	293	315	336	358	379	401	422	444	465	487	598	710
ø50	—	489	522	555	588	620	653	687	720	753	925	1097
ø63	—	700	738	776	814	852	890	928	966	1004	1201	1397
ø80	—	1219	1279	1340	1400	1460	1520	1581	1641	1701	1998	2295
ø100	—	2061	2142	2222	2302	2383	2463	2543	2624	2704	3112	3520

Additional Weight

(g)

Bore size (mm)	20	25	32	40	50	63	80	100
Both ends tapped	—	—	—	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 (Including mounting bolts)	—	—	—	154	243	320	690	1057
Rod flange (Including mounting bolts)	—	—	—	214	373	559	1056	1365
Head flange (Including mounting bolts)	—	—	—	198	348	534	1017	1309
Double clevis (Including pin, retaining rings, bolts)	—	—	—	196	393	554	1109	1887

Calculation: (Example) **CDQ2D40R-20DMZ**
 • Basic weight: CDQ2B40R-20DZ 358 g
 • Additional weight: Both ends tapped 6 g
 Rod end male thread ... 44 g
 Double clevis 196 g
 604 g

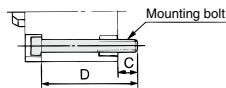
Add each weight of auto switches when auto switches are mounted.

Mounting Bolt for CDQ2B/With Auto Switch

Mounting method: Mounting bolt for through-hole mounting of the CDQ2B is available as an option. Refer to the following for ordering procedures. Order the actual number of bolts that will be used.

Example) **CQ-M5 x 50L 2 pcs.**

Material: Chromium molybdenum steel
Surface treatment: Zinc chromated



Cylinder model	C	D	Mounting bolt part no.
CDQ2B20⁵-5DZ	50	50	CQ-M5 x 50L
-10DZ	55	x 55L	
-15DZ	60	x 60L	
-20DZ	65	x 65L	
-25DZ	70	x 70L	
-30DZ	75	x 75L	
-35DZ	80	x 80L	
-40DZ	85	x 85L	
-45DZ	90	x 90L	
-50DZ	95	x 95L	
CDQ2B25⁵-5DZ	50	50	CQ-M5 x 50L
-10DZ	55	x 55L	
-15DZ	60	x 60L	
-20DZ	65	x 65L	
-25DZ	70	x 70L	
-30DZ	75	x 75L	
-35DZ	80	x 80L	
-40DZ	85	x 85L	
-45DZ	90	x 90L	
-50DZ	95	x 95L	
CDQ2B32⁵-5DZ	50	50	CQ-M5 x 50L
-10DZ	55	x 55L	
-15DZ	60	x 60L	
-20DZ	65	x 65L	
-25DZ	70	x 70L	
-30DZ	75	x 75L	
-35DZ	80	x 80L	
-40DZ	85	x 85L	
-45DZ	90	x 90L	
-50DZ	95	x 95L	
-75DZ	120	x 120L	
-100DZ	145	x 145L	

Cylinder model	C	D	Mounting bolt part no.
CDQ2B40⁵-5DZ	45	45	CQ-M5 x 45L
-10DZ	50	x 50L	
-15DZ	55	x 55L	
-20DZ	60	x 60L	
-25DZ	65	x 65L	
-30DZ	70	x 70L	
-35DZ	75	x 75L	
-40DZ	80	x 80L	
-45DZ	85	x 85L	
-50DZ	90	x 90L	
-75DZ	115	x 115L	
-100DZ	140	x 140L	
CDQ2B50⁵-10DZ	55	55	CQ-M6 x 55L
-15DZ	60	x 60L	
-20DZ	65	x 65L	
-25DZ	70	x 70L	
-30DZ	75	x 75L	
-35DZ	80	x 80L	
-40DZ	85	x 85L	
-45DZ	90	x 90L	
-50DZ	95	x 95L	
-75DZ	120	x 120L	
-100DZ	145	x 145L	
CDQ2B63⁵-10DZ	60	60	CQ-M8 x 60L
-15DZ	65	x 65L	
-20DZ	70	x 70L	
-25DZ	75	x 75L	
-30DZ	80	x 80L	
-35DZ	85	x 85L	
-40DZ	90	x 90L	
-45DZ	95	x 95L	
-50DZ	100	x 100L	
-75DZ	125	x 125L	
-100DZ	150	x 150L	

Cylinder model	C	D	Mounting bolt part no.
CDQ2B80⁵-10DZ	65	65	CQ-M10 x 65L
-15DZ	70	x 70L	
-20DZ	75	x 75L	
-25DZ	80	x 80L	
-30DZ	85	x 85L	
-35DZ	90	x 90L	
-40DZ	95	x 95L	
-45DZ	100	x 100L	
-50DZ	105	x 105L	
-75DZ	130	x 130L	
-100DZ	155	x 155L	
CDQ2B100⁵-10DZ	75	75	CQ-M10 x 75L
-15DZ	80	x 80L	
-20DZ	85	x 85L	
-25DZ	90	x 90L	
-30DZ	95	x 95L	
-35DZ	100	x 100L	
-40DZ	105	x 105L	
-45DZ	110	x 110L	
-50DZ	115	x 115L	
-75DZ	140	x 140L	
-100DZ	165	x 165L	

CJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

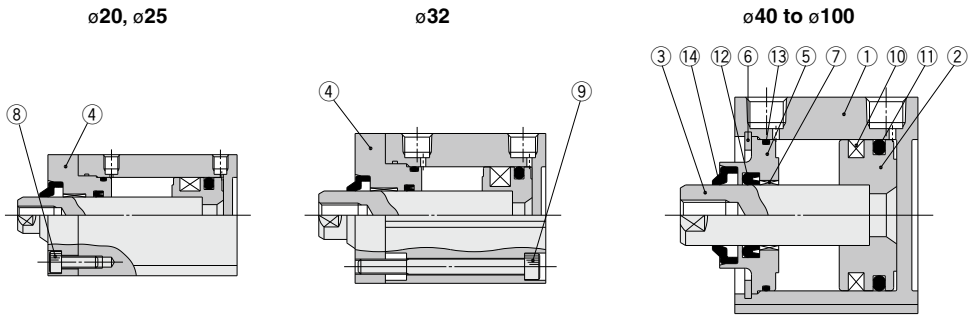
MU-Z

D-□

-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	Stainless steel	ø20 to ø25
4	Rod cover	Carbon steel	ø32 to ø100, Hard chrome plated
5	Collar	Aluminum alloy	ø20 to ø32, Anodized
6	Retaining ring	Carbon tool steel	ø40 to ø100, Anodized
7	Bushing	Oil-impregnated sintered alloy	Phosphate coated
8	Hexagon socket head cap screw	Bearing alloy	ø20, ø25
9	Hexagon socket head cap screw	Oil-impregnated sintered alloy	ø32 to ø100
10	Magnet	Chromium molybdenum steel	ø20 to ø25, Zinc chromated
11	Piston seal	Chromium molybdenum steel	ø32, Zinc chromated
12	Rod seal	—	—
13	Tube gasket	R: NBR	—
14	Rod scraper	V: FKM	—

* R: NBR seal (Nitrile rubber)
V: FKM seal (Fluororubber)

Replacement Parts/Seal Kit

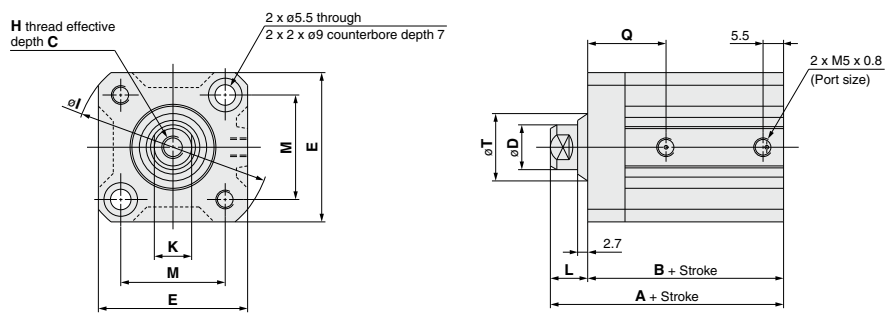
Bore size (mm)	Kit no.		Contents
	R: NBR	V: FKM	
20	CQ2B20R-PS	CQ2B20V-PS	Kits include items 11, 12, 13 from the table.
25	CQ2B25R-PS	CQ2B25V-PS	
32	CQ2B32R-PS	CQ2B32V-PS	
40	CQ2B40R-PS	CQ2B40V-PS	
50	CQ2B50R-PS	CQ2B50V-PS	
63	CQ2B63R-PS	CQ2B63V-PS	
80	CQ2B80R-PS	CQ2B80V-PS	
100	CQ2B100R-PS	CQ2B100V-PS	

* 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 seal kit does not include a grease pack, order it separately.
Grease pack part no.: GR-S-010 (10 g)

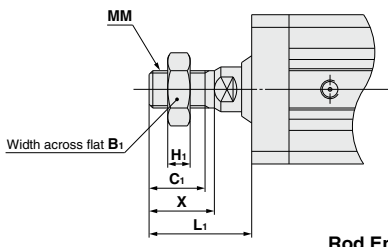
Dimensions

Ø20, Ø25/Without Auto Switch

Standard (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

Standard

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	18	16.1
25	5 to 50	42.5	32.5	12	12	40	M6 x 1.0	52	10	10	28	19	18.1

* For details about the rod end nut and accessory brackets, refer to page 804.
* Refer to page 942 for the calculation on the longitudinal dimension of intermediate strokes.

CJ

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CQ2-Z

RQ

CQM

CQU

MU-Z

D-□

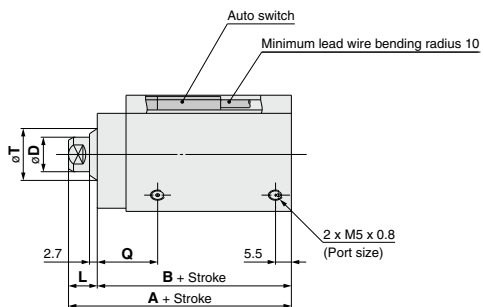
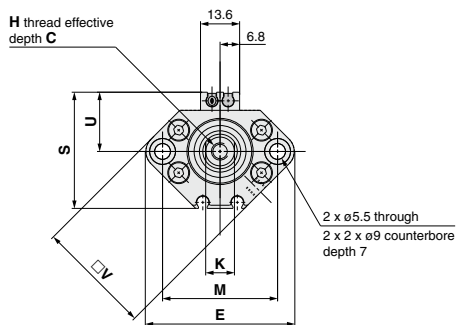
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Technical data

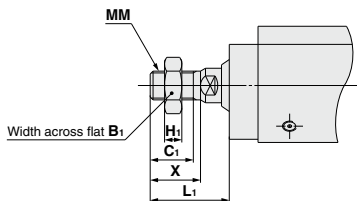
Dimensions

Ø20, Ø25/With Auto Switch

Standard (Through-hole): CDQ2B



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

Standard For auto switch proper mounting position and its mounting height, refer to pages 954 to 960. (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	18	35.5	16.1	18	36
25	5 to 50	52.5	42.5	12	12	52	M6 x 1.0	10	10	40	19	40.5	18.1	21	40

* For details about the rod end nut and accessory brackets, refer to page 804.

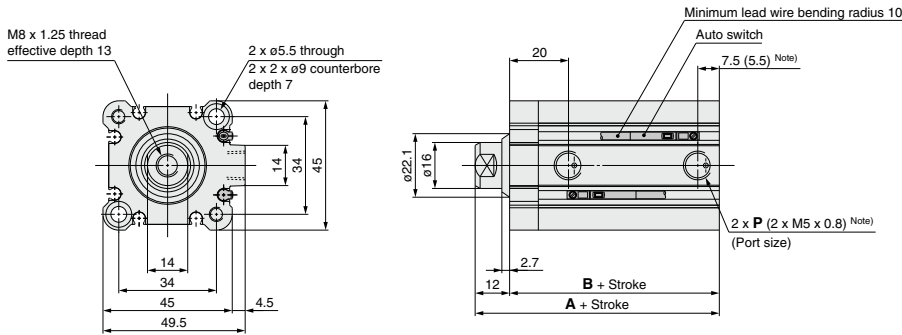
* Refer to page 942 for the calculation on the longitudinal dimension of intermediate strokes.

Compact Cylinder: Water Resistant
Double Acting, Single Rod **Series CQ2**

Dimensions

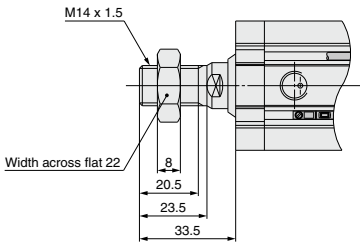
Ø32/With Auto Switch

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



Rod end male thread

Note) (): Without auto switch, 5 mm strokes



Stroke range (mm)	Without auto switch		With auto switch		P		
	A	B	A	B	—	TN	TF
5 to 50	45	33	55	43	Rc1/8	NPT1/8	G1/8
75, 100	55	43					

* For details about the rod end nut and accessory brackets, refer to page 804.
* Refer to page 942 for the calculation on the longitudinal dimension of intermediate strokes.

CJ
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CQS
CQ2
Z
RQ
CQM
CQU
MU
Z

D-
-X
Technical data

Series CQ2

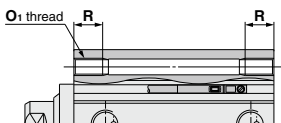
Dimensions

Ø40, Ø50/With Auto Switch

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

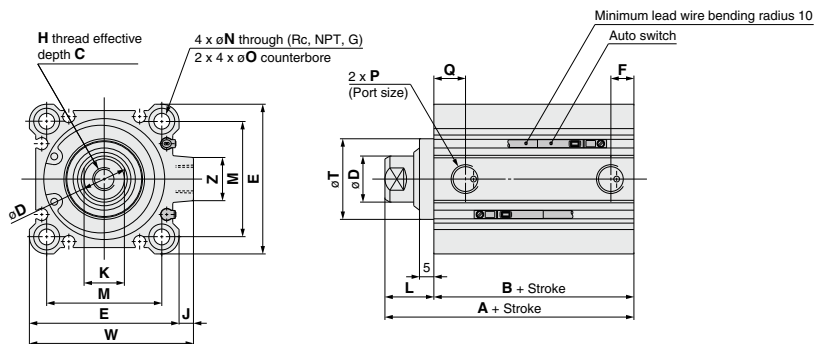
Both ends tapped: CQ2A/CDQ2A

Standard (Through-hole): CQ2B/CDQ2B

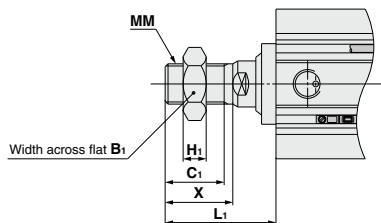


Both Ends Tapped

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

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

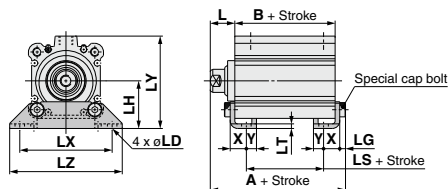
Standard For auto switch proper mounting position and its mounting height, refer to pages 954 to 960.

Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch		C	D	E	F	H	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	7.5	M8 x 1.25	5	14	17	40	5.5	9 depth 7	1/8	12.5	28	57	15
	75, 100	56.5	39.5																		
	10 to 50	48.5	30.5	58.5	40.5	15	20	64	10.5	M10 x 1.5	7	17	18	50	6.6	11 depth 8	1/4	10.5	35	71	19
50	75, 100	58.5	40.5																		

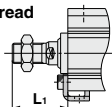
Note 1) For details about the rod end nut and accessory brackets, refer to page 804.

Note 2) Refer to page 942 for the calculation on the longitudinal dimension of intermediate strokes.

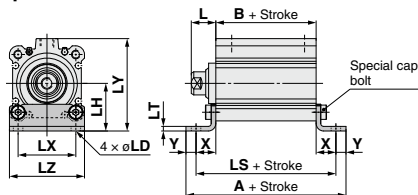
Foot: CQ2L/CDQ2L



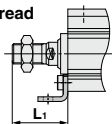
Rod end male thread



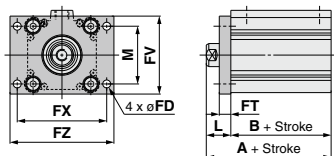
Compact foot: CQ2LC/CDQ2LC



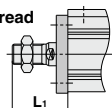
Rod end male thread



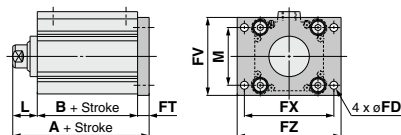
Rod flange: CQ2F/CDQ2F



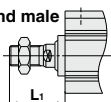
Rod end male thread



Head flange: CQ2G/CDQ2G



Rod end male thread



Foot

Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch					
		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

Compact Foot

Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch					
		A	B	LS	A	B	LS	L	L ₁	LD
40	5 to 50	70.9	29.5	56.9	80.9	39.5	66.9	17	38.5	6.6
	75, 100	80.9	39.5	66.9						
50	10 to 50	79.9	30.5	63.9	89.9	40.5	73.9	18	43.5	9
	75, 100	89.9	40.5	73.9						

Bore size (mm)	LH	LT	LX	LY	LZ	X	Y
40	33	3.2	40	64	52	13.7	7
50	39	3.2	50	78	64	16.7	8

Compact foot bracket material: Carbon steel
Surface treatment: Zinc chromated

Rod Flange

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 Flange

Bore size (mm)	Stroke range (mm)	Without auto switch	With auto switch	* The dimensions except A are the same as those of the rod flange.
		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		

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

* For details about the rod end nut and accessory brackets, refer to page 804.

CJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

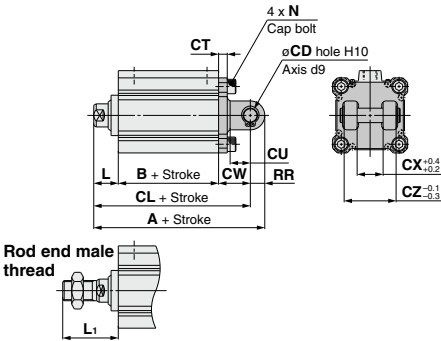
MU-Z

D-□

-X□

Technical data

Double clevis: CQ2D/CDQ2D



Double Clevis

Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch			(mm)		
		A	B	CL	A	B	CL	CD	CT	CU
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						
	10 to 50	90.5	30.5	76.5						
50	75, 100	100.5	40.5	86.5	100.5	40.5	86.5	14	7	20

Bore size (mm)	CW	CX	CZ	L	L ₁	N	RR
40	22	18	36	17	38.5	M6 x 1.0	10
50	28	22	44	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 804.
- * Double clevis pin and retaining rings are included.

CUJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

MU-Z

D-□

-X□

Technical data

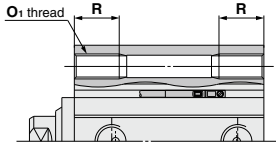
Series CQ2

Dimensions

Ø63 to Ø100/With Auto Switch

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

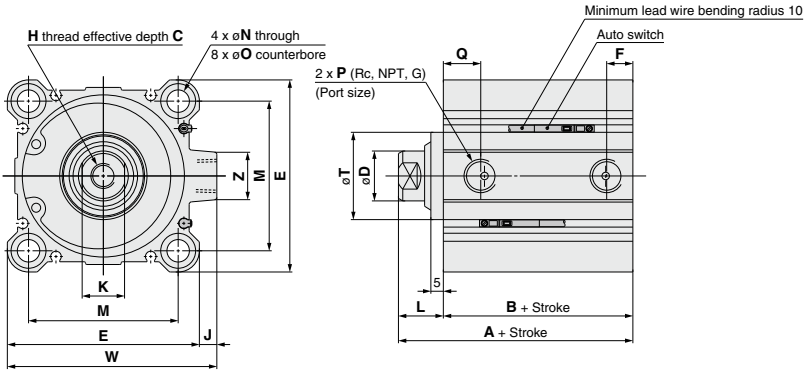
Both ends tapped: CQ2A/CDQ2A



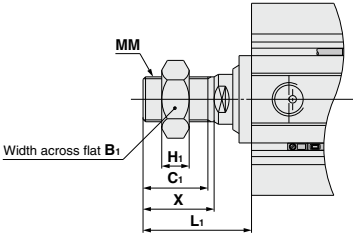
Both Ends Tapped

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

Standard (Through-hole): CQ2B/CDQ2B



Rod end male thread



Rod End Male Thread

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

Standard

For auto switch proper mounting position and its mounting height, refer to pages 954 to 960.

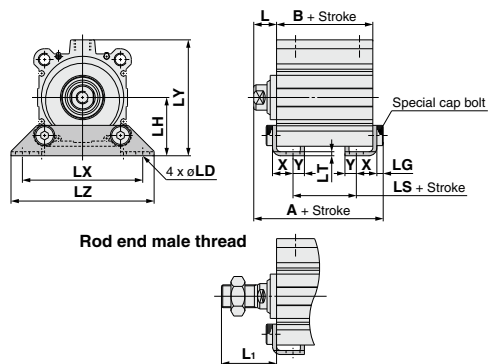
Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch		C	D	E	F	H	J	K	L	M	N	O	P	Q	T
		A	B	A	B														
63	10 to 50	54	36	64	46	15	20	77	10.5	M10 x 1.5	7	17	18	60	9	14 depth 10.5	1/4	15	35
	75, 100	64	46																
80	10 to 50	63.5	43.5	73.5	53.5	21	25	98	12.5	M16 x 2.0	6	22	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	6.5	27	22	94	11	17.5 depth 13.5	3/8	23	59
	75, 100	85	63																

(mm)

Bore size (mm)	W	Z
63	84	19
80	104	25
100	123.5	25

* For details about the rod end nut and accessory brackets, refer to page 804.
Note) Refer to page 942 for the calculation on the longitudinal dimension of intermediate strokes.

Foot: CQ2L/CDQ2L



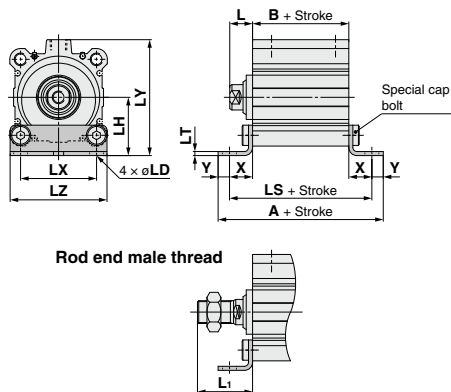
Foot

Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch			(mm)					
		A	B	LS	A	B	LS	L	L ₁	LD	LG	LH	LT
63	10 to 50	62.2	36	10	72.2	46	20	18	43.5	11	5	46	3.2
	75, 100	72.2	46	20									
	10 to 50	75	43.5	13.5	85	53.5	23.5	20	53.5	13	7	59	4.5
80	75, 100	85	53.5	23.5									
	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					
	10 to 50	118	114	140	19.5	11
80	75, 100					
	10 to 50	137	136	162	23	12.5
	75, 100					

Compact foot: CQ2LC/CDQ2LC



Compact Foot

Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch			(mm)					
		A	B	LS	A	B	LS	L	L ₁	LD	LH	LT	LX
63	10 to 50	90.4	36	72.4	100.4	46	82.4	18	43.5	11	46	3.2	60
	75, 100	100.4	46	82.4									
	10 to 50	110.5	43.5	88.5	120.5	53.5	98.5	20	53.5	13	59	4.5	77
80	75, 100	120.5	53.5	98.5									
	10 to 50	126	53	101	136	63	111	22	53.5	13	71	6	94
	75, 100	136	63	111									

Compact foot bracket material: Carbon steel
Surface treatment: Zinc chromated

Bore size (mm)	Stroke range (mm)	LY	LZ	X	Y
63	10 to 50	91.5	77	18.2	9
	75, 100				
	10 to 50	114	98	22.5	11
80	75, 100				
	10 to 50	136	117	24	12.5
	75, 100				

* For details about the rod end nut and accessory brackets, refer to page 804.

CUJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

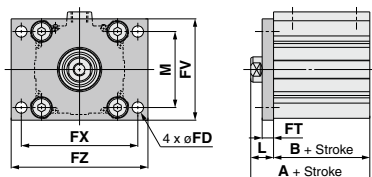
MU-Z

D-□

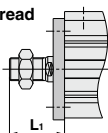
-X□

Technical data

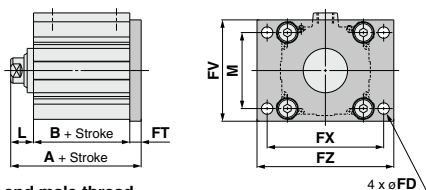
Rod flange: CQ2F/CDQ2F



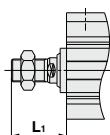
Rod end male thread



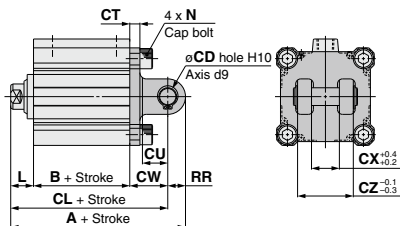
Head flange: CQ2G/CDQ2G



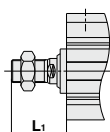
Rod end male thread



Double clevis: CQ2D/CDQ2D



Rod end male thread



Rod Flange

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 Flange

Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch									
		A	B	A	B								
63	10 to 50	63		73									
	75, 100	73											
80	10 to 50	74.5		84.5									
	75, 100	84.5											
100	10 to 50	86		96									
	75, 100	96											

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

(* The dimensions except A are the same as those of the rod flange.)

Double Clevis

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 804.
* Double clevis pin and retaining rings are included.

CJ

CU

CQS

CQ2
Z

RQ

CQM

CQU

MU
Z

D-□

-X□

Technical
data

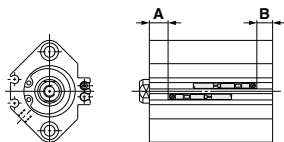
Compact Cylinder Series **CDQ2** With Auto Switch 1

1 Auto Switch Proper Mounting Position (Detection at Stroke End) and its Mounting Height

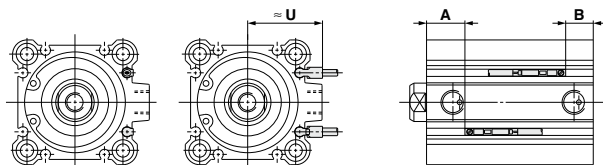
Applicable Cylinder Series: CDQ2, CDQ2W, CDQ2□□□-□S/-□T (Single acting), CDQ2, CDQ2W (Large bore size), CDQ2K, CDQ2KW (Non-rotating rod), CDQ2 (Long stroke), CDQ2□S (Anti-lateral load), CDQ2□R/□V (Water resistant)

D-A9□
D-M9□
D-M9□W
D-M9□A
D-A9□V
D-M9□V
D-M9□WV
D-M9□AV

ø12 to ø25



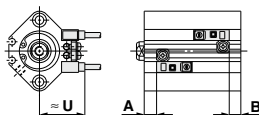
ø32 to ø200



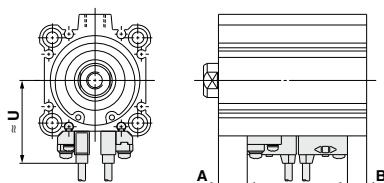
D-A7□
D-A80
D-A7□H
D-A80H
D-F7□
D-J79
D-F7□W
D-J79W
D-F79F

D-F7NT
D-F7BA
D-A73C
D-A80C
D-J79C
D-A79W
D-F7□WV
D-F7□V
D-F7BAV

ø12 to ø25

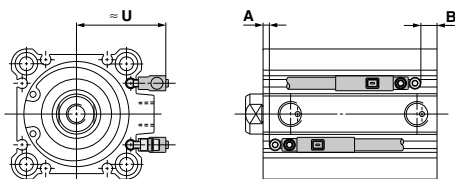


ø32 to ø160



D-P3DW

ø32 to ø100



Auto Switch Proper 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□WV D-M9□A D-M9□AV		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-F7BAV/F7BA		D-F7NT		D-A79W		D-P3DW	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B
12	3.5	4.5	7.5	8.5	4.5	5.5	5	6	10	11	2	3	—	—
16	6.5	4	10.5	8	7.5	5	8	5.5	13	10.5	5	2.5	—	—
20	6.5	5	10.5	9	7.5	6	8	6.5	13	11.5	5	3.5	—	—
25	7	5.5	11	9.5	8	6.5	8.5	7	13.5	12	5.5	4	—	—
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
50	10	10.5	14	14.5	11	11.5	11.5	12	16.5	17	8.5	9	4.5	4.5
63	12.5	13.5	16.5	17.5	13.5	14.5	14	15	19	20	11	12	7	7.5
80	15.5	18	19.5	22	16.5	19	17	19.5	22	24.5	14	16.5	10	12
100	20	23	24	27	21	24	21.5	24.5	26.5	29.5	18.5	21.5	14.5	17.5

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□A D-M9□AV		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-F7BAV/F7BA		D-F7NT		D-A79W		D-P3DW	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B
12	3.5	9	7.5	13	4.5	10	5	10.5	10	15.5	2	7.5	—	—
16	6.5	9.5	10.5	13.5	7.5	10.5	8	11	13	16	5	8	—	—
20	6.5	11.5	10.5	15.5	7.5	12.5	8	13	13	18	5	10	—	—
25	7	12	11	16	8	13	8.5	13.5	13.5	18.5	5.5	10.5	—	—
32	8	12.5	12	16.5	9	13.5	9.5	14	14.5	19	6.5	11	2.5	7
40	12	18	16	22	13	19	13.5	19.5	18.5	24.5	10.5	16.5	6.5	12.5
50	10	20.5	14	24.5	11	21.5	11.5	22	16.5	27	8.5	19	4.5	14.5
63	12.5	19.5	16.5	23.5	13.5	20.5	14	21	19	26	11	18	7	13.5
80	15.5	25.5	19.5	29.5	16.5	26.5	17	27	22	32	14	24	10	19.5
100	20	30.5	24	34.5	21	31.5	21.5	32	26.5	37	18.5	29	14.5	25

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□WV D-M9□A D-M9□AV		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-F7BAV/F7BA		D-F7NT		D-A79W	
	A	B	A	B	A	B	A	B	A	B	A	B
12	3.5	4.5 (9)	7.5	8.5 (13)	4.5	5.5 (10)	5	6 (10.5)	10	11 (15.5)	2	3 (7.5)
16	6.5 (4.5)	4 (6)	10.5 (8.5)	8 (10)	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	6.5	5	10.5	9	7.5	6	8	6.5	13	11.5	5	3.5
25	7	5.5	11	9.5	8	6.5	8.5	7	13.5	12	5.5	4
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

(): Spring extend type

Note) Adjust the auto switch after confirming the operating conditions in the actual setting.

CUJ

CU

CQS

CQ2
-Z

RQ

CQM

CQU

MU

-Z

D-□

-X□

Technical
data

Compact Cylinder

Series **CDQ2**

With Auto Switch 2

1 Auto Switch Proper Mounting Position (Detection at Stroke End) and its Mounting Height

Auto Switch Proper Mounting Position

Applicable Cylinder Series: CDQ2, CDQ2W (Large bore size)

(mm)

Auto switch model	D-A9□ D-A9□V		D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV		D-A73 D-A80		D-A72/A7□H/A80H D-A73C/A80C D-F7□/F7□V D-F79F/F7□W D-F7□WV/J79 D-J79W/J79C D-F7BA D-F7BAV		D-A79W		D-F7NT	
Bore size	A	B	A	B	A	B	A	B	A	B	A	B
125	30	30	34	34	32.5	32.5	33	33	30	30	38	38
140	30	30	34	34	32.5	32.5	33	33	30	30	38	38
160	34	34	38	38	36.5	36.5	37	37	34	34	42	42
180	40.5	40.5	44.5	44.5	—	—	—	—	—	—	—	—
200	43.5	43.5	47.5	47.5	—	—	—	—	—	—	—	—

Applicable Cylinder Series: CDQ2 (Long stroke)

(mm)

Auto switch model	D-A9□ D-A9□V		D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV		D-A73 D-A80		D-A72/A7□H/A80H D-A73C/A80C/F7□ D-F79F/J79F7□V D-J79C/F7□W D-J79W/F7□WV D-F7BAV/F7BA		D-F7NT		D-A79W		D-P3DW	
Bore size	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	3	11
40	12	22.5	16	26.5	13	23.5	13.5	24	18.5	29	10.5	21	6.5	17
50	10	25.5	14	29.5	11	26.5	11.5	27	16.5	32	8.5	24	4.5	19.5
63	12.5	24.5	16.5	28.5	13.5	25.5	14	26	19	31	11	23	7	18.5
80	15.5	30.5	19.5	34.5	16.5	31.5	17	32	22	37	14	29	10	24.5
100	18.5	37	22.5	41	19.5	38	20	38.5	25	43.5	17	35.5	13	31

Applicable Cylinder Series: CDQ2K (Non-rotating rod)

(mm)

Auto switch model	D-A9□ D-A9□V		D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV		D-A73 D-A80		D-A72/A7□H/A80H D-A73C/A80C/F7□ D-F79F/J79F7□V D-J79C/F7□W D-J79W/F7□WV D-F7BAV/F7BA		D-F7NT		D-A79W		D-P3DW	
Bore size	A	B	A	B	A	B	A	B	A	B	A	B	A	B
12	8.5	4.5	12.5	8.5	9.5	5.5	10	6	15	11	7	3	—	—
16	11.5	4	15.5	8	12.5	5	13	5.5	18	10.5	10	2.5	—	—
20	14.5	5	18.5	9	15.5	6	16	6.5	21	11.5	13	3.5	—	—
25	15	5.5	19	9.5	16	6.5	16.5	7	21.5	12	13	4	—	—
32	17	5	21	9	18	6	18.5	6.5	23.5	11.5	15.5	3.5	11.5	0
40	12	7.5	16	11.5	13	8.5	13.5	9	18.5	14	10.5	6	6.5	2
50	10	10.5	14	14.5	11	11.5	11.5	12	16.5	17	8.5	9	4.5	4.5
63	12.5	13.5	16.5	17.5	13.5	14.5	14	15	19	20	11	12	7	7.5

Applicable Cylinder Series: CDQ2KW

(mm)

Auto switch model	D-A9□ D-A9□V		D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV		D-A73 D-A80		D-A72/A7□H/A80H D-A73C/A80C/F7□ D-F79F/J79F7□V D-J79C/F7□W D-J79W/F7□WV D-F7BAV/F7BA		D-F7NT		D-A79W		D-P3DW	
Bore size	A	B	A	B	A	B	A	B	A	B	A	B	A	B
12	9	9	13	13	9.5	10	10	10.5	15	15.5	7.5	7.5	—	—
16	11.5	9.5	15.5	13.5	12.5	10.5	13	11	18	16	10	8	—	—
20	14.5	11.5	18.5	15.5	15.5	12.5	16	13	21	18	13	10	—	—
25	15	12	19	16	16	13	16.5	13.5	21.5	18.5	13.5	10.5	—	—
32	17	12.5	21	16.5	18	13.5	18.5	14	23.5	19	15.5	11	11.5	7
40	12	18	16	22	13	19	13.5	19.5	18.5	24.5	10.5	16.5	6.5	12.5
50	10	20.5	14	24.5	11	21.5	11.5	22	16.5	27	8.5	19	4.5	14.5
63	12.5	19.5	16.5	23.5	13.5	20.5	14	21	19	26	11	18	7	13.5

Note) Adjust the auto switch after confirming the operating conditions in the actual setting.

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□WV D-M9□A D-M9□AV		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-F7BAV/F7BA		D-F7NT		D-A79W		D-P3DW	
	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	3.5
40	17.5	12	21.5	16	18.5	13	19	13.5	24	18.5	16	10.5	11.5	6.5
50	15	15.5	19	19.5	16	16.5	16.5	17	21.5	22	13.5	14	9.5	9.5
63	17.5	18.5	21.5	22.5	18.5	19.5	19	20	24	25	16	17	12	12.5
80	20.5	23	24.5	27	21.5	24	22	24.5	27	29.5	19	21.5	15	17
100	23.5	29.5	27.5	33.5	24.5	30.5	25	31	30	36	22	28	18	23.5

Note) Adjust the auto switch after confirming the operating conditions in the actual setting.

Applicable Cylinder Series:**CDQ2□R/□V (Water resistant)**

(mm)

Auto switch model Bore size	D-M9□A D-M9□AV		D-F7BA D-F7BAV	
	A	B	A	B
20	19	7.5	18	6.5
25	19.5	8	18	7
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	19.5	22	17	19.5
100	24	27	21.5	24.5

Note) Adjust the auto switch after confirming the operating conditions in the actual setting.

Auto Switch Mounting Height**Applicable Cylinder Series: CDQ2, CDQ2W, CDQ2□□□-□S/□T (Single acting), CDQ2K, CDQ2KW (Non-rotating rod), CDQ2 (Long stroke), CDQ2□S (Anti-lateral load), CDQ2□R/□V (Water resistant)**

(mm)

Auto switch model Bore size	D-M9□V	D-A9□V	D-F7□J79 D-F7□W/J79W D-F7BA D-F79F/F7NT D-A7□H/A80H	D-F7□V D-F7□WV	D-J79C	D-A7□ D-A80	D-A73C D-A80C	D-A79W	D-P3DW
	U	U	U	U	U	U	U	U	U
12	21.5	19	21.5	23.5	26.5	21	27.5	24.5	—
16	22.5	20	22.5	24.5	27.5	22	28.5	25.5	—
20	25	23	25.5	27.5	30	24.5	31	28	—
25	28	26	28	30.5	32.5	27.5	34	31	—
32	30	27.5	36	36.5	39.5	34	40.5	37.5	33
40	32	30	38	40	42.5	37.5	43.5	40.5	36.5
50	37.5	35	43.5	45	48	43	49	46	42
63	42.5	40.5	48.5	50.5	53.5	48	54.5	51.5	47
80	51	49	57	59	61.5	56.5	62.5	59.5	55.5
100	59	57	65.5	67	70	64.5	71	68	65.5

* The applicable auto switches for the CDQ2□R/□V (water resistant) are the D-M9□A(V) type.

* The applicable auto switches for the CDQ2□□□-□S/□T (single acting) are those except for the D-P3DW type.

* The D-P3DW type is available from ø32 to ø100.

Applicable Cylinder Series: CDQ2, CDQ2W (Large bore size)

(mm)

Auto switch model Bore size	D-M9□V D-M9□WV D-M9□AV	D-A9□V	D-A7□ D-A80	D-A7□H/A80H D-F7□J79 D-F7□W/J79W D-F7BA D-F79F/F7NT	D-A73C D-A80C	D-F7□V D-F7□WV D-F7BAV	D-J79C	D-A79W
	U	U	U	U	U	U	U	U
125	69.5	67.5	75.5	76.5	82.5	79	81	78
140	76.5	74.5	82.5	83.5	89.5	86	88	85
160	85.5	83.5	91.5	92.5	98.5	95	97	94
180	105.5	103.5	—	—	—	—	—	—
200	112.5	110.5	—	—	—	—	—	—

CUJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

MU-Z

D-□

-X□

Technical data

Compact Cylinder Series **CDQ2** With Auto Switch 3

2 Minimum Stroke for Auto Switch Mounting

Applicable Cylinder Series: CDQ2, CDQ2W, CDQ2□□□-□S/□T (Single acting), CDQ2K, CDQ2KW (Non-rotating rod), CDQ2 (Long stroke), CDQ2□S (Anti-lateral load), CDQ2□R/□V (Water resistant)

(mm)

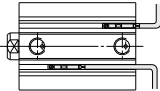
Number of auto switches	D-M9□V D-F7□V D-J79C	D-A9□V D-A7□ D-A80 D-A73C D-A80C	D-A9□	D-M9□WV D-M9□AV* D-F7□WV D-F7BAV	D-M9□ D-F7□ D-J79	D-M9□W D-M9□A*	D-A7□H D-A80H	D-A79W	D-F7□W D-J79W D-F7BA D-F79F D-F7NT	D-P3DW
With 1 pc.	5	5	10(5)	10	15(5)	15(10)	15(5)	15	20(10)	15
With 2 pcs.	5	10	10	15	15(5)	15	15(10)	20	20(15)	15

* The applicable auto switches for the CDQ2□R/□V (water resistant) are the D-M9□A(V) type.

Applicable Cylinder Series: CDQ2, CDQ2W (Large bore size) (mm)

Number of auto switches	D-M9□ D-M9□V D-F7□ D-F7□V D-J79 D-J79C	D-A9□ D-A9□V D-A7□ D-A80 D-A73C D-A80C D-A7□H D-A80H	D-M9□W D-M9□WV D-M9□A D-M9□AV	D-F7□W D-F7□WV D-J79W D-F7BA D-F7BAV D-F7NT D-F79F	D-A79W
With 1 pc.	5	5	10		15
With 2 pcs.	5	10	15		20

Note) The dimension stated in () shows the minimum stroke for the auto switch mounting when the auto switch does not project from the end surface of the cylinder body and hinder the lead wire bending space. (Refer to the figure below.)
The auto switch and auto switch mounting bracket are ordered separately.



3 Operating Range

Applicable Cylinder Series: CDQ2, CDQ2W, CDQ2□□□-□S/□T (Single acting), CDQ2K, CDQ2KW (Non-rotating rod), CDQ2 (Long stroke), CDQ2□S (Anti-lateral load), 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	10	9	9	9.5	9.5	11	10.5	10.5	13.5	12.5	12	13	12.5
D-M9□(V) D-M9□W(V) D-M9□A(V)*	3	5	5.5	5.5	5	5	6	6.5	7	7.5	7.5	8	7.5	7.5	8.5
D-A7□(H)(C) D-A80□(H)(C)	9.5	12	12	11	10.5	11.5	11	13	11.5	11.5	16.5	15	14.5	—	—
D-A79W	13	14.5	15.5	14	14	15.5	14.5	17	15	15.5	19.5	18	17.5	—	—
D-F7□(V) D-J79(C) D-F7□W(V) D-F7BA(V) D-F7NT D-F79F	4.5	5.5	5	5	5	5	5	6	7	8	7.5	7.5	7.5	—	—
D-P3DW	—	—	—	—	3	4.5	4.5	6	5.5	6.5	—	—	—	—	—

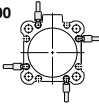
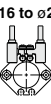
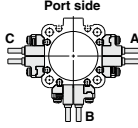
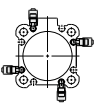
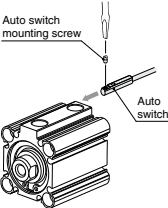
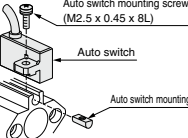
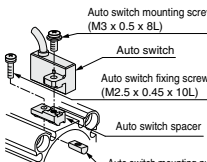
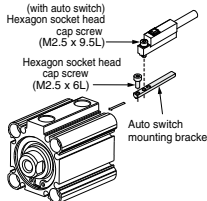
* Values which include hysteresis are for guideline purposes only, they are not a guarantee (assuming approximately ±30% dispersion) and may change substantially depending on the ambient environment.

* The applicable auto switches for the CDQ2□R/□V (water resistant) are the D-M9□A(V) type.

* The applicable auto switches for the CDQ2□□□-□S/□T (single acting) are those except for the D-P3DW type.

4 Auto Switch Mounting Brackets/Part No.

Applicable Cylinder Series: CDQ2, CDQ2W, CDQ2□□□-□S/□T (Single acting), CDQ2, CDQ2W (Large bore size), CDQ2K, CDQ2KW (Non-rotating rod), CDQ2 (Long stroke), CDQ2□S (Anti-lateral load), CDQ2□R/□V (Water resistant)

Applicable auto switch	D-M9□/M9□V D-M9□W/M9□WV D-M9□A/M9□AV D-A9□/A9□V	D-F7□/F7□V/J79/J79C/F7□W/J79W/F7□WV D-F7BA/F7BAV/F79F/F7NT D-A7□/A80/A7□H/A80H/A73C/A80C/A79W	D-P3DW									
Bore size (mm)	ø12 to ø200	ø12 to ø25	ø32 to ø160	ø32 to ø100								
Auto switch mounting bracket part no.	—	BQ4-012	BQ5-032	BQ6-032S								
Auto switch mounting bracket fitting parts lineup/Weight	—	• Auto switch mounting screw (M2.5 x 8L) • Auto switch mounting nut Weight: 1.5 g When requesting the enclosure of the auto switch mounting brackets (2 pcs.) with the cylinder for shipment, add "BQ" to the end of the cylinder model number. Standard model no. +BQ Example) CDQ2B32-30DZ-BQ/ CDQ2B32-30DZ-BQ-XC4 (Made to Order)	• Auto switch fixing screw (M2.5 x 10L) • Auto switch mounting screw (M3 x 8L) • Auto switch spacer • Auto switch mounting nut Weight: 3.5 g	• Hexagon socket head cap screw (M2.5 x 6L) • Auto switch mounting bracket (nut) Weight: 5 g								
Auto switch mounting surface	Surfaces with auto switch mounting slot ø12  ø16 to ø25  ø32 to ø200 	Auto switch mounting rail side only ø12  ø16 to ø25 	A/B/C side except port side 	Surfaces with auto switch mounting slot 								
Mounting of auto switch	 Auto switch mounting screw Auto switch • When tightening the auto switch mounting screw, use a watchmakers' screwdriver with a handle 5 to 6 mm in diameter. Tightening torque for auto switch mounting screw (N·m) <table><thead><tr><th>Auto switch model</th><th>Tightening torque</th></tr></thead><tbody><tr><td>D-M9□(V)</td><td rowspan="2">0.05 to 0.15</td></tr><tr><td>D-M9□W(V)</td></tr><tr><td>D-M9□A(V)</td><td rowspan="2">0.10 to 0.20</td></tr><tr><td>D-A9□(V)</td></tr></tbody></table>	Auto switch model	Tightening torque	D-M9□(V)	0.05 to 0.15	D-M9□W(V)	D-M9□A(V)	0.10 to 0.20	D-A9□(V)	 Auto switch mounting screw (M2.5 x 0.45 x 8L) Auto switch Auto switch mounting nut ① Insert the nut into the auto switch mounting slot on the cylinder tube, and place it in the roughly estimated setting position. ② Engage the ridge on the auto switch mounting arm with the recess in the cylinder tube rail, and slide it to the position of the nut. ③ Gently screw the auto switch mounting screw into the thread of the auto switch mounting nut through the mounting hole on the auto switch mounting arm. ④ Confirm where the mounting position is, and tighten the auto switch mounting screw to fix the auto switch. The tightening torque of the M2.5 screw must be 0.25 to 0.35 N·m. ⑤ The detection position can be changed under the conditions in step ③.	 Auto switch mounting screw (M3 x 0.5 x 8L) Auto switch Auto switch fixing screw (M2.5 x 0.45 x 10L) Auto switch spacer Auto switch mounting nut ① Insert the nut into the auto switch mounting slot on the cylinder tube, and place it in the roughly estimated setting position. ② With the lower tapered part of the auto switch spacer facing the outside of the cylinder tube, line up the M2.5 through hole with the M2.5 female thread of the auto switch mounting nut. ③ Gently screw the auto switch mounting nut fixing screw (M2.5) into the thread of the auto switch mounting nut through the mounting hole. ④ Engage the ridge on the auto switch mounting arm with the recess in the auto switch spacer. ⑤ Tighten the auto switch mounting screw (M3) to fix the auto switch. The tightening torque of the M3 screw must be 0.35 to 0.45 N·m. ⑥ Confirm where the mounting position is, and tighten the auto switch fixing screw (M2.5) to fix the auto switch mounting nut. The tightening torque of the M2.5 screw must be 0.25 to 0.35 N·m. ⑦ The detection position can be changed under the conditions in step ⑤.	 Auto switch mounting screw (M2.5 x 6L, M2.5 x 9.5L)* Hexagon socket head cap screw (M2.5 x 9.5L) Hexagon socket head cap screw (M2.5 x 6L) Auto switch mounting bracket ① Fix the auto switch and the auto switch mounting bracket temporarily by tightening the hexagon socket head cap screw (M2.5 x 9.5L) 1 to 2 turns. ② Insert the temporarily tightened mounting bracket into the mating groove of the cylinder tube, and slide the auto switch onto the cylinder tube through the groove. Insert the auto switch onto the cylinder/actuator through the groove with the back part of the auto switch (lead wire side) and the back part of the auto switch mounting bracket. ③ Check the detecting position of the auto switch and fix the auto switch firmly with the hexagon socket head cap screw (M2.5 x 6L, M2.5 x 9.5L).* ④ If the detecting position is changed, go back to step ②. *The hexagon socket head cap screw (M2.5 x 6L) is used to fix the mounting bracket and cylinder tube. This enables the replacement of the auto switch without adjusting the auto switch position. Note 1) Ensure that the auto switch is covered with the mating groove to protect the auto switch. Note 2) The tightening torque of the hexagon socket head cap screw (M2.5 x 6L, M2.5 x 9.5L) must be 0.2 to 0.3 N·m. Note 3) Tighten the hexagon socket head cap screws evenly. (with auto switch) Hexagon socket head cap screw (M2.5 x 9.5L) Hexagon socket head cap screw (M2.5 x 6L)
Auto switch model	Tightening torque											
D-M9□(V)	0.05 to 0.15											
D-M9□W(V)												
D-M9□A(V)	0.10 to 0.20											
D-A9□(V)												

Note) Auto switch mounting bracket and auto switch are enclosed with the cylinder for shipment. For an environment that needs the water resistant auto switch, select the D-M9□A(V) type.

* The auto switch mounting bracket for the D-F7BA(V) type uses BQ4-012 and BQ5-032 normal specifications (metal screw).

* The auto switches applicable to the CDQ2□R/□V (water resistant) is the D-M9□A(V) type.

* The applicable auto switches for the CDQ2□□□-S/□T (single acting) are those except for the D-P3DW type.

Compact Cylinder

Series **CDQ2**

With Auto Switch 4

Other than the applicable auto switches listed in “How to Order”, the following auto switches are mountable. Refer to pages 1559 to 1673 for detailed specifications.

Applicable Cylinder Series: CDQ2, CDQ2W, CDQ2□□□-□S/□T (Single acting), CDQ2, CDQ2W (Large bore size), CDQ2K, CDQ2KW (Non-rotating rod), CDQ2 (Long stroke), CDQ2□S (Anti-lateral load)

Auto switch type	Model	Electrical entry	Features	Applicable bore size
Reed	D-A72	Grommet (Perpendicular)	—	ø12 to ø100 ø125 to ø160
	D-A73		—	
	D-A80		Without indicator light	
	D-A79W		Diagnostic indication (2-color indication)	
	D-A73C	Connector (Perpendicular)	—	
	D-A80C		Without indicator light	
	D-A72H		—	
	D-A73H, A76H		—	
Solid state	D-A80H	Grommet (In-line)	Without indicator light	
	D-F7NV, F7PV, F7BV	Grommet (Perpendicular)	—	
	D-F7NWW, F7BWW		Diagnostic indication (2-color indication)	
	D-F7BAV		Water resistant (2-color indication)	
	D-J79C	Connector (Perpendicular)	—	
	D-F79, F7P, J79	Grommet (In-line)	—	
	D-F79W, F7PW, J79W		Diagnostic indication (2-color indication)	
	D-F7BA		Water resistant (2-color indication)	
	D-F79F		Diagnostic indication (2-color indication)	
	D-F7NT		With timer	

* With pre-wired connector is also available for solid state auto switches. For details, refer to pages 1626 and 1627.

* Normally closed (NC = b contact) solid state auto switches (D-F9G/F9H) are also available. For details, refer to page 1577.

* Trimmer auto switch (D-F7K) and heat resistant solid state auto switch (D-F7NJ) are not available.

CUJ
CU
CQS
CQ2
-Z
RQ
CQM
CQU
MU
-Z

D-□
-X□
Technical data

CUJ
CU
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CQ2
-Z
RQ
CQM
CQU
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-Z

D-□
-X□
Technical data

1 Special Port Location

Symbol

-X144

This style is available for changing port location. (Only for auto switches $\phi 12$ to $\phi 25$)

How to Order

CDQ2 Standard model no. — X144 B

Special port location

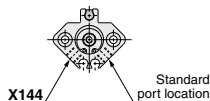
In the case of CDQ2□20, 25,
specify the port location with
B, C and D.

* **Specifications: Same as standard**

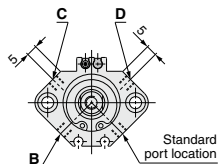
Applicable model

Action	Note
Double acting, Single rod	Applicable to $\phi 12$ to $\phi 25$
Double acting, Double rod	
Single acting (Spring return/extend)	

$\phi 12, \phi 16$



$\phi 20, \phi 25$



2 Full Length Dimension is the Same as the CQ1 Series.

-X202

C□Q2 **Mounting** **Bore size** — **Stroke** **Action** **Option** (Z) — X202

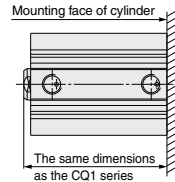
In a single rod cylinder of the CQ2 series, the A dimension (from the head face to the rod end) and the rod end female thread size are the same as those of the CQ1 series (former model).

* **Specifications: Same as standard**

Applicable Model

	Action	Note
Single rod	Double acting (Rubber bumper)	Applicable to ø12, ø20, ø32, ø40, ø50, ø63, ø80, ø100
	Single acting (Spring return/ Spring extend)	Applicable to ø12, ø20, ø32, ø40, ø50

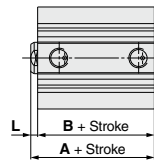
Note 1) ø16 and ø25 are the new models so that they are not applicable.
Note 2) Strokes except mentioned below are available as standard products.



Dimensions (Without auto switch)

Double acting,
Single rod: Female thread

H thread effective depth C



Bore size		ø12		ø20		ø32		ø40		ø50		ø63		ø80		ø100	
Stroke (mm)		15, 25		5, 10 20, 30 40, 50		15, 25 35, 45		5, 10 20, 30 40, 50		15, 25 35, 45		10, 20 30, 40 50		15, 25 35, 45		10, 20 30, 40 50	
Symbol																	
A		25.5	23(25)	28	26.5 (28.5)	31.5	33	38	34	39	39.5	44.5	47	52	56.5	61.5	
B		22	19.5	24.5	23	28	29.5	34.5	30.5	35.5	36	41	43.5	48.5	53	58	
L		3.5	3.5 (5.5)	3.5	3.5 (5.5)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
H		M3 x 0.5	M5 x 0.8	M6 x 1.0*	M6 x 1.0*	M8 x 1.25*	M10 x 1.5	M16 x 2.0	M20 x 2.5								
C		6	7	9*	11*	13*	15	21	27								

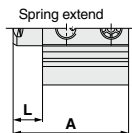
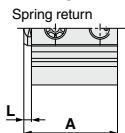
Note 1) (): Stroke 10 mm * The H/C dimensions of ø32, ø40 and ø50 are different from those of the new CQ2 series model.

75 st, 100 st

Bore size Stroke	ø32	ø40	ø50	ø63	ø80	ø100
Symbol	75 100	75 100	75 100	75 100	75 100	75 100
A	36.5	43	44	49.5	57	66.5
B	33	39.5	40.5	46	53.5	63
L	3.5	3.5	3.5	3.5	3.5	3.5

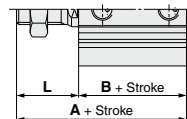
Note 1) The H/C dimensions are the same as above.

Single acting



Action	ø20	ø32	ø40	ø50
Single acting, Spring return	28 35	31.5 38.5	38 43	44 54
Single acting, Spring extend	3.5 5.5	3.5 5.5	3.5	3.5
Single acting, Spring extend	8.5 15.5	8.5 15.5	8.5 13.5	13.5 23.5

Double acting: Rod end male thread



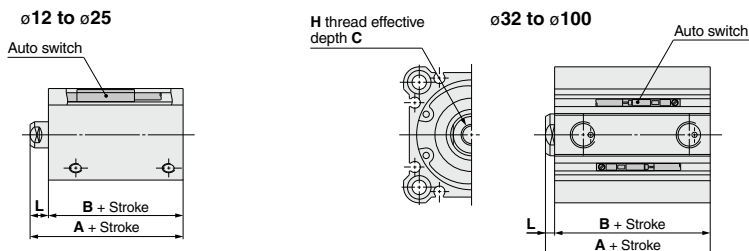
Bore size		ø12		ø20		ø32		ø40		ø50		ø63		ø80		ø100	
Stroke	Symbol	15, 25		10	15, 25 35, 45	10	15, 25 35, 45	15, 25 35, 45	15, 25 35, 45	15, 25 35, 45	15, 25 35, 45	15, 25 35, 45	15, 25 35, 45	15, 25 35, 45	15, 25 35, 45	15, 25 35, 45	15, 25 35, 45
A		36	40	43	53.5	56.5	63	69	74.5	92	101.5						
B		22	19.5	24.5	23	28	34.5	35.5	41	48.5	58						
L		14	20.5	18.5	30.5	28.5	28.5	33.5	33.5	43.5	43.5						

2 Full Length Dimension is the Same as the CQ1 Series.

-X202

Dimensions (With auto switch)

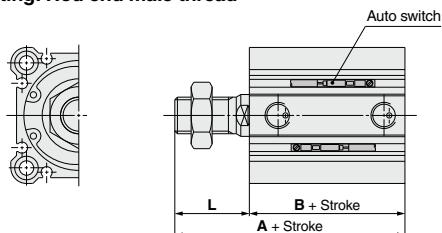
Double acting, Single rod: Female thread



		Bore size														
		ø12	ø20			ø32		ø40		ø50		ø63		ø80		ø100
Stroke (mm)		15, 25	5, 10, 20, 30, 40, 50	15, 25 35, 45	10, 20, 30 40, 50, 75 100	5, 15, 25 35, 45	10, 20, 30 40, 50, 75 100	5, 15, 25 35, 45	10, 20, 30 40, 50, 75 100	15, 25 35, 45	10, 20, 30 40, 50, 75 100	15, 25 35, 45	10, 20, 30 40, 50, 75 100	15, 25 35, 45	10, 20, 30 40, 50, 75 100	15, 25 35, 45
Symbol																
A		36.5	38.5	43.5	36.5	41.5	43	48	44	49	49.5	54.5	57	62	66.5	71.5
B		33	31.5	36.5	33	38	39.5	44.5	40.5	45.5	46	51	53.5	58.5	63	68
L		3.5	7	7	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
H		M3 x 0.5	M5 x 0.8	M6 x 1.0 *		M6 x 1.0 *		M8 x 1.25 *		M10 x 1.5		M16 x 2.0		M20 x 2.5		
C		6	7	9 *		11 *		13 *		15		21		27		

* The H/C dimensions of ø32, ø40 and ø50 are different from those of the new CQ2 series model.

Double acting: Rod end male thread



Bore size		ø12	ø20		ø32	ø40	ø50	ø63	ø80	ø100
Stroke (mm)	Symbol	15, 25	5, 10 20, 30 40, 50	15, 25 35, 45	5, 15, 25 35, 45	5, 15, 25 35, 45	15, 25 35, 45	15, 25 35, 45	15, 25 35, 45	15, 25 35, 45
A		47	53.5	58.5	66.5	73	79	84.5	102	111.5
B	33	31.5	36.5	38	44.5	45.5	51	58.5	68	
L	14	22	22	28.5	28.5	33.5	33.5	43.5	43.5	

3 L Dimension from Rod Cover is the Same as the CQ1 Series.

Symbol
-X203

C□Q2 **Mounting** **Bore size** — **10** **Action** **Option** **Z — X203**

In a single rod cylinder of the CQ2 series, the L dimension (from the rod face to the rod end) and the rod end female thread size are the same as the CQ1 series (former model).

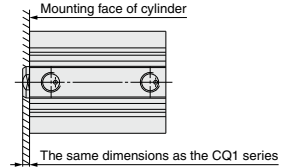
* **Specifications: Same as standard**

Applicable Model

Action			Note
Single rod	Female thread	Double acting Rubber bumper	Applicable to ø20, ø32, (ø40), (ø50), (ø63), (ø80), (ø100)
		Single acting (Spring return, Spring extend)	Applicable to ø20, ø32, (ø40), (ø50)
	Male thread	Available as the standard, CQ2 series	

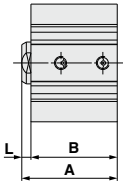
Note 1) ø16 and ø25 are the new models so that they are not applicable.

Note 2) (): Same dimensions as for those of -X202



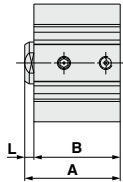
Dimensions: Applicable to CQ2B²⁰₃₂-10D(C)Z Only

Double acting, Single rod



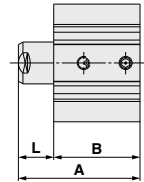
Symbol	Bore size	
	ø20	ø32
A	33	36.5
B	29.5	33
L	3.5	3.5

Single acting, Spring return



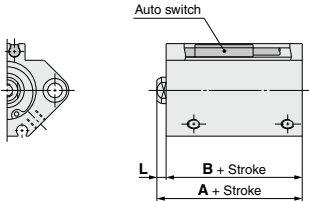
Symbol	Bore size	
	ø20	ø32
A	33	36.5
B	29.5	33
L	3.5	3.5

Single acting, Spring extend



Symbol	Bore size	
	ø20	ø32
A	43	46.5
B	29.5	33
L	13.5	13.5

With Auto Switch: Applicable to CDQ2B-□D(C)(Z) Only



Symbol	Bore size	
	ø20	
Stroke	5, 10	15, 25
	20, 30	35, 45
Symbol	40, 50	35, 45
	35, 45	35, 45
A	35	40
B	31.5	36.5
L	3.5	3.5

CUJ

CU

CQS

CQ2-Z

RQ

CQM

CQU

MU-Z

D-□

-X□

Technical data

Series CQ2

Made to Order: Individual Specifications 3

Please contact SMC for detailed dimensions, specifications, and lead times.



Symbol

4 Special Rod End for Double Rod Cylinder

-X235

Male thread is used at one piston rod end of double rod cylinder and female thread is used at the other end.

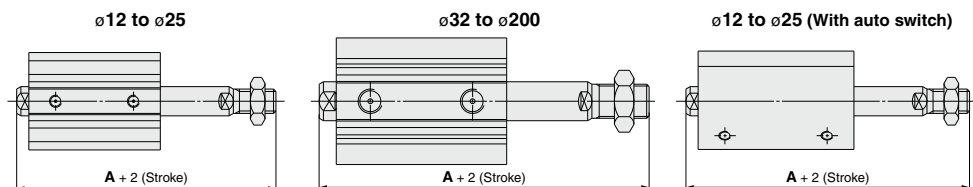
C□Q2W Standard model no. — X235

• Piston rod end
Male thread, Female thread

Note 1) For mounting a bracket, please contact SMC.

Note 2) The body option symbol "M" (Rod end male thread) is excluded from the model number.

* Specifications: Same as standard



Bore size (mm)	A	
	50 stroke or less	75 stroke or more
12	42.7 (49.9)	—
16	45 (55)	—
20	49 (61)	—
25	56.5 (66.5)	—
32	66 (76)	76 (76)
40	75.5 (85.5)	85.5 (85.5)
50	82 (92)	92 (92)
63	83.5 (93.5)	93.5 (93.5)
80	104.5 (114.5)	114.5 (114.5)
100	116 (126)	126 (126)
125	157	
140	157	
160	172	
180	183	
200	190	

Note () : Dimensions with auto switch

Symbol

5 Fluororubber Seals

-X271

Material for seals has been changed to fluororubber.

C□Q2 Standard model no. — X271

• Fluororubber seals

* Specifications: Same as standard

* All variations except non-rotating rod is available.

Only ø125 to ø160 is available for the large bore size type.

Note) With rubber bumper: There is no change of the bumper material.

Symbol

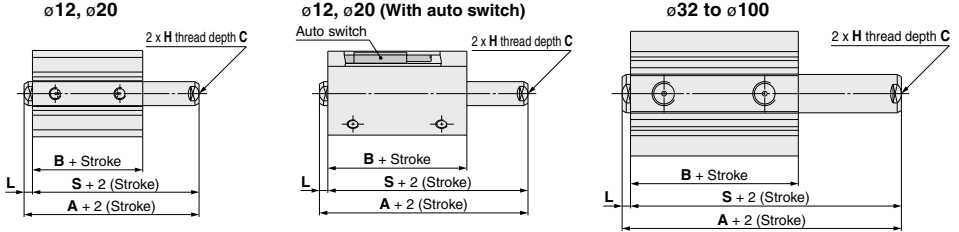
6 Full Length Dimension is the Same as the CQ1W Series.

-X293

C□Q2W Standard model no. — X293

The same dimensions as the CQ1W ↓

* Specifications: Same as standard



Without Auto Switch

Symbol	12		20			32			40			50			63			80			100					
	5	10	5	10	15	5	10	15	15	5	10	15	10	20	30	40	15	25	35	10	20	30	40	15	25	35
	10	20	15	5	10	20	30	40	25	35	40	50	25	35	40	50	25	35	40	50	25	35	40	50	25	35
A	33	33	38	37	38	43	46.5	51.5	47.5	52.5	53	58	60.5	65.5	70	75										
B	25.2	26	31	30.5	30.5	35.5	40	45	40.5	45.5	42	47	51	56	60.5	65.5										
L	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5										
S	29.5	29.5	34.5	33.5	34.5	39.5	43	48	44	49	49.5	54.5	57	62	66.5	71.5										
H	M3 x 0.5	M5 x 0.8	M5 x 0.8	M6 x 1	M6 x 1	M6 x 1	M6 x 1	M6 x 1	M8 x 1.25	M8 x 1.25	M10 x 1.5	M10 x 1.5	M12 x 2	M16 x 2	M16 x 2	M20 x 2.5	M20 x 2.5									
C	6	7	7	9	9	9	9	9	9	9	13	13	15	15	21	21	27	27								

With Auto Switch

Symbol	12		20		32		40		50		63		80		100	
	Stroke (mm)	5 10	5 15	10 20	5 15	10 20	5 15	10 20	5 15	10 20	5 15	10 20	5 15	10 20	5 15	10 20
A	40	47	52	48	53	56.5	61.5	57.5	62.5	63	68	70.5	75.5	80	85	
B	32.4	38	43	40.5	45.5	50	55	50.5	55.5	52	57	61	66	70.5	75.5	
L	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
S	36	43.5	48.5	44.5	49.5	53	58	54	59	59.5	64.5	67	72	76.5	81.5	
H	M3 x 0.5	M5 x 0.8	M5 x 0.8	M6 x 1	M6 x 1	M6 x 1	M6 x 1	M8 x 1.25	M8 x 1.25	M10 x 1.5	M10 x 1.5	M16 x 2	M16 x 2	M20 x 2.5	M20 x 2.5	
C	6	7	7	9	9	9	9	13	13	15	15	21	21	27	27	

CJ

CJ

CQ

CQ

RQ

CQ

CQ

MU

-Z

D-□

-X□

Technical data

7 Long Stroke of Adjustable Extension Stroke Cylinder (-XC8)

-X525

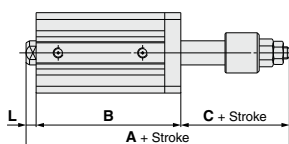
C□Q2 Mounting Bore size — Stroke D(M)(Z) — X525

↓ Long stroke of -XC8

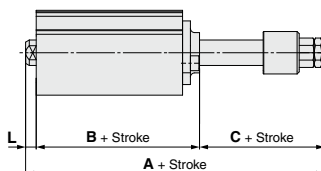
* **Specifications: Same as standard**

Note) For tap mounting (ø12 to ø25—without switch) and bracket mounting, please contact SMC.

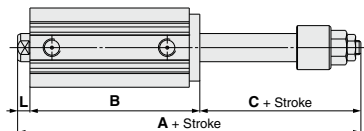
ø12 to ø25 (Without auto switch)



ø12 to ø25 (With auto switch)



ø32 to ø100



ø12, ø16

Bore size	A				B				C	L	Applicable stroke
	35st	40st	45st	50st	35st	40st	45st	50st			
12	99.9	104.9	109.9	114.9	72.4	77.4	82.4	87.4	24	3.5	35, 40
16	104.5	109.9	114.9	119.5	77	82	87	92	24	3.5	45, 50

ø20 to ø100

Bore size	A							B					C	L	Applicable stroke
	55 to 75st	80 to 100st	105 to 125st	130 to 150st	155 to 175st	180 to 200st	55 to 75st	80 to 100st	105 to 125st	130 to 150st	155 to 175st	180 to 200st			
20	155.5	180.5	—	—	—	—	122	147	—	—	—	—	29	4.5	55 to 100
25	156	181	—	—	—	—	122	147	—	—	—	—	29	5	
32	—	—	213.5	238.5	263.5	288.5	—	—	171.5	196.5	221.5	246.5	35	7	105 to 200
40	—	—	223	248	273	298	—	—	181	206	231	256	35	7	
50	—	—	235.5	260.5	285.5	310.5	—	—	183.5	208.5	233.5	258.5	44	8	
63	—	—	237	262	287	312	—	—	187	212	237	262	42	8	
80	—	—	260	285	310	335	—	—	198	223	248	273	52	10	105 to 200
100	—	—	273.5	298.5	323.5	348.5	—	—	209.5	234.5	259.5	284.5	52	12	

Note 1) The dimensions are the same with or without auto switch.

Note 2) Applicable stroke: Available in 5 mm intervals

8 Long Stroke of Adjustable Retraction Stroke Cylinder (-XC9)

Symbol

-X526

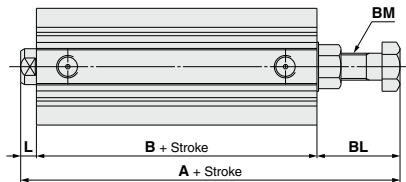
C□Q2 Mounting Bore size — Stroke D(M)(Z) — X526

Long stroke of -XC9

Note) For models with a bracket, please contact SMC.

* Specifications: Same as standard

Dimensions



Bore size	Symbol	A	B	L	BL	BM	Applicable stroke
12		59.2 (56.4)	32.4	3.5	23.3 (20.5)	M5 x 0.8	35, 40, 45, 50
16		64	37	3.5	23.5	M6 x 1.0	
20		74	39	4.5	30.5	M8 x 1.25	
25		73.5	39	5	29.5	M8 x 1.25	
32		75.5	40.5	7	28	M8 x 1.25	125, 150 175, 200
40		94	50	7	37	M12 x 1.5	
50		94.5	50.5	8	36	M12 x 1.5	
63		98.5	52	8	38.5	M16 x 1.5	
80		119.5	91	10	48.5	M20 x 1.5	
100		135	70.5	12	52.5	M24 x 1.5	

Note 1) (): Dimensions with auto switch

Note 2) Intermediate strokes (available in 5 mm intervals) are available with a spacer.

The dimensions are the same as those of 75, 100, 125, 150, 175, 200 mm strokes.

9 Intermediate Stroke of Double Rod Cylinder

Symbol

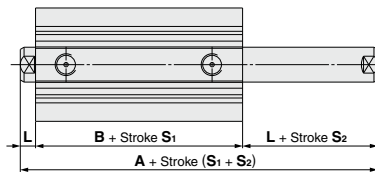
-X633

C□Q2W
C□Q2KW Standard model no. — X633

Note) For models with a bracket, please contact SMC.

* Specifications: Same as standard

Dimensions



Bore size	Symbol	A	B	L	Stroke S1	Stroke S2
12		32.2 (39.4)	25.2 (32.4)	3.5	In the case of 5 to 30 stroke, 5 mm intervals	In the case of 5 to 30 stroke, 1 mm intervals
16		33 (43)	26 (36)	3.5		
20		35 (47)	26 (38)	4.5	In the case of 5 to 50 stroke, 5 mm intervals	In the case of 5 to 50 stroke, 1 mm intervals
25		39 (49)	29 (39)	5		
32		44.5 (54.5)	30.5 (40.5)	7	In the case of 5 to 50 stroke, 5 mm intervals In the case of 50 to 100 stroke, 25 mm intervals	In the case of 5 to 100 stroke, 1 mm intervals
40		54 (64)	40 (50)	7		
50		56.5 (66.5)	40.5 (50.5)	8	In the case of 10 to 50 stroke, 5 mm intervals In the case of 50 to 100 stroke, 25 mm intervals	In the case of 10 to 100 stroke, 1 mm intervals
63		58 (68)	42 (52)	8		
80		71 (81)	51 (61)	10	In the case of 10 to 50 stroke, 10 mm intervals In the case of 50 to 200 stroke, 25 mm intervals In the case of 200 to 300 stroke, 50 mm intervals	In the case of 10 to 300 stroke, 1 mm intervals
100		84.5 (94.5)	60.5 (70.5)	12		
125		115	83	16		
140		115	83	16		
160		125	91	17		
180		136	102	17		
200		143	109	17		

Note 1) (): Dimensions with auto switch

Note 2) Installing a spacer inside the standard cylinder tube, stroke S1 has 5 mm intervals for controlling intermediate strokes in 1 mm intervals.

Example) In the case of CDQ2WB40-18DZ, stroke S1 is 20 mm and stroke S2 is 18 mm.

Note 3) For ø40 to ø100 cylinders with bumper, please consult with SMC.

Series CQ2

Made to Order: Individual Specifications 5

Please contact SMC for detailed dimensions, specifications, and lead times.



10 Long Stroke of Dual Stroke Single Rod Cylinder

Symbol

-X636

C□Q2B Bore size — Stroke S₁ + Stroke S₂—S₁ D (C)(M)(Z) — X636

* Specifications: Same as standard

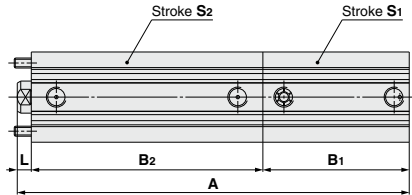
Long stroke of -XC11

Applicable Stroke (mm)

Bore size	Stroke
ø12, ø16	Stroke S ₂ : Up to 50 mm
ø20 to ø100	Stroke S ₂ : Up to 100 mm

Note) For tap mounting and bracket mounting, please contact SMC.

Series CQ2



Bore Size: ø12, ø16

Symbol	A	B ₁	B ₂	L	Stroke range	
					S ₁	S ₂
Bore size						
ø12	52.9 (63.9) + Stroke (S ₁ + S ₂)	17 (28) + Stroke S ₁	32.4 + Stroke S ₂	3.5	5 to 30	35 to 50
ø16	58 (70) + Stroke (S ₁ + S ₂)	18.5 (30.5) + Stroke S ₁	36 + Stroke S ₂	3.5	5 to 30	35 to 50

Bore Size: ø20, ø25

Symbol Stroke	A		B ₁	B ₂		L	Stroke range	
	Stroke S ₂			Stroke S ₂			S ₁	S ₂
	55 to 75	80 to 100		55 to 75	80 to 100			
Bore size								
ø20	137 (149) + Stroke S ₁	162 (174) + Stroke S ₁	19.5 (31.5) + Stroke S ₁	113	138	4.5	5 to 50	55 to 100
ø25	141.5 (151.5) + Stroke S ₁	166.5 (176.5) + Stroke S ₁	22.5 (32.5) + Stroke S ₁	114	139	5	5 to 50	55 to 100

Bore Size: ø32 to ø100

Bore size	Symbol	A					B ₁			B ₂		L	Stroke range	
		Stroke S ₂ 55 to 75		Stroke S ₂ 80 to 100			Stroke S ₁			Stroke S ₂			S ₁	S ₂
		Stroke S ₁		Stroke S ₁			≤ 50	55 to 75	80 to 100	55 to 75	80 to 100			
		≤ 55	55 to 75	≤ 50	55 to 75	80 to 100								
ø32		145.4 (155.5) + Stroke S ₁	230.5	170.5 (180.5) + Stroke S ₁	255.5	280.5	23 (33) + Stroke S ₁	108	133	115.5	140.5	7	5 to 100	55 to 100
ø40		161.5 (171.5) + Stroke S ₁	246.5	186.5 (196.5) + Stroke S ₁	271.5	296.5	29.5 (39.5) + Stroke S ₁	114.5	139.5	125	150	7	5 to 100	55 to 100
ø50		164 (174) + Stroke S ₁	249	189 (199) + Stroke S ₁	274	299	30.5 (40.5) + Stroke S ₁	115.5	140.5	125.5	150.5	8	10 to 100	55 to 100
ø63		171 (181) + Stroke S ₁	256	196 (206) + Stroke S ₁	281	306	36 (46) + Stroke S ₁	121	146	127	152	8	10 to 100	55 to 100
ø80		189.5 (199.5) + Stroke S ₁	274.5	214.5 (224.5) + Stroke S ₁	299.5	324.5	43.5 (53.5) + Stroke S ₁	128.5	153.5	136	161	10	10 to 100	55 to 100
ø100		210.5 (220.5) + Stroke S ₁	295.5	235.5 (245.5) + Stroke S ₁	320.5	345.5	53 (63) + Stroke S ₁	138	163	145.5	170.5	12	10 to 100	55 to 100

Note 1) (): Dimensions with auto switch

Note 2) Applicable stroke: Available in 5 mm intervals

11 Cylinder Tube: With Concave Boss on Head End

Symbol

-X1876

C□Q2

C□Q2K

C□Q2□S

Mounting

Bore size

Stroke

D(C)(M)(Z)

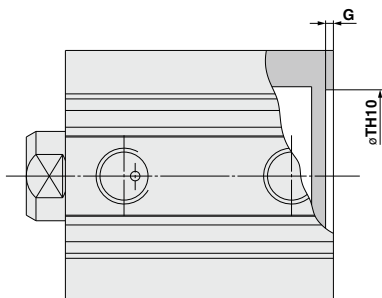
 $S(M)(Z)$
$$T(M)(Z)$$

— X1876

- **With concave boss on head end**

* Specifications: Same as standard

Note) Except ø12, ø16 and ø125 to ø200



Bore size (mm)	TH10	G
20	19.3 ^{+0.084} ₀	1.4
25	23.8 ^{+0.084} ₀	1.4
32	30.9 ^{+0.100} ₀	1.4
40	39.3 ^{+0.100} ₀	1.3
50	48.7 ^{+0.100} ₀	2.1
63	61.5 ^{+0.120} ₀	2.4
80	78.3 ^{+0.120} ₀	2.7
100	98.9 ^{+0.140} ₀	2.8

CUJ

CU

CQS

CQ2
-Z

RQ**CQM**

CQU

MU
-Z

D-☐

-X□

Technical data