

Compact Cylinder: Standard Double Acting, Single Rod

CQ2 Series

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 778 and 783.

Type

N	Pneumatic
H	Air-hydro (Note 1)

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

With auto switch
(Built-in magnet)

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

N	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 air-hydro type.

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

Mounting bolt

N	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 778 and 783.
- * Mounting bolt is shipped together.
- * Order mounting bolts separately for made to order specifications.

Number of auto switches

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

Auto switch

N	Without auto switch
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* Refer to the below table for applicable auto switches.

Made to Order

Refer to the next page for details.

Auto switch mounting groove

Z	ø12 to ø25	2 surfaces
	ø32 to ø100	4 surfaces

Body option

N	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.

Rod end bracket (Refer to pages 796 and 797.)

N	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.

* Bore sizes available with the simple joint (D, E) are 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) CDQ2L32-25DZ

Cylinder stroke (mm)

Refer to page 774 and 775 for standard strokes and intermediate strokes.

Action

D	Double acting
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Applicable Auto Switches

Refer to pages 1575 to 1701 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 (N)	1 (M)	3 (L)	5 (Z)	None (N)			
Solid state auto switch	—	—	—	3-wire (NPN)	5 V,	—	M9NV	M9N	●	●	○	—	—	○	IC circuit	
				3-wire (PNP)	12 V		M9PV	M9P	●	●	○	—	○			
				2-wire	12 V		M9BV	M9B	●	●	○	—	○	—		
				3-wire (NPN)	5 V,		M9NVW	M9NW	●	●	○	—	○			IC circuit
	Diagnostic indication (2-color indicator)	Grommet	Yes	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}	○	○	○	●	○				
Water resistant (2-color indicator)	—	—	—	2-wire	12 V	M9BAV^{*1}	M9BA^{*1}	○	○	○	●	○	—	—		
				Magnetic field resistant (2-color indicator)	—	—	—	P3DWA	●	—	●	—	○	—	—	
Reed auto switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	A96V	A96	●	—	●	—	—	—	IC circuit	—
				2-wire	24 V	A93V^{*2}	A93	●	●	●	—	—	—	—	—	Relay, PLC
			No	2-wire	24 V	5 V, 12 V	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.

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

* Lead wire length symbols: 0.5 m N
1 m M
3 m L
5 m Z
(Example) M9NV (Example) M9NW (Example) M9NVW (Example) M9NWV (Example) M9NVWZ (Example) M9NWZ

* Solid state auto switches marked with "○" are produced upon receipt of order.
* The D-P3DWA□ type is available from ø25 to ø100 only.

* There are other applicable auto switches other than the listed above. For details, refer to page 970.

* For details about auto switches with pre-wired connector, refer to pages 1648 and 1649.

CQ2 Series



Symbol

Without cushion



Made to Order: Individual Specifications
(For details, refer to pages 971 to 980.)

Symbol	Specifications
-X144	Special port location, with auto switch $\phi 12$ to $\phi 25$ only
-X202	Full length dimension is the same as the CQ1 series, Except $\phi 16$, $\phi 25$.
-X203	L dimension from rod cover is the same as the CQ1 series, $\phi 20$, $\phi 32$ 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

[Click here for details](#)

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)
-XB13	Low-speed cylinder (5 to 50 mm/s)
-XB14	Cylinder with heat resistant auto switch $\phi 16$ to $\phi 63$ only
-XC2(A)	Rod end length, 10 mm increased (For foot and flange bracket)
-XC4	With heavy-duty scraper, $\phi 20$ to $\phi 100$ 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
-XC26□	Double clevis width/Double knuckle width 12.5 mm, 16.5 mm, 19.5 mm: With double clevis and double knuckle joint
-XC27	Double clevis pin/Double knuckle joint pin material: Stainless steel 304
-XC35	With coil scraper, $\phi 32$ to $\phi 100$ only
-XC36	With boss on rod end
-XC85	Grease for food processing equipment
-XC88	Spatter resistant coil scraper, Lube-retainer, Grease for welding (Piston rod: Stainless steel 304)
-XC89	Spatter resistant coil scraper, Lube-retainer, Grease for welding (Piston rod: S45C)
-XC91	Spatter resistant coil scraper, Grease for welding (Piston rod: S45C)
-XC92	Dust resistant actuator

Moisture Control Tube IDK Series



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 the [IDK series in the Best Pneumatics No. 6](#).

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		+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									

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									

- For long strokes exceeding the standard stroke range, refer to page 856.
- For intermediate strokes, refer to page 775.

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	CQ-D012
	With switch	CDQ2□□□□DZ	CQ-LZ12	CQ-LCZ12		
16	Without switch	CQ2□□□□□	CQ-L016	CQ-LC016	CQ-F016	CQ-D016
	With switch	CDQ2□□□□DZ	CQ-LZ16	CQ-LCZ16		
20	Without switch	CQ2□□□□□	CQ-L020	CQ-LC020	CQ-F020	CQ-D020
	With switch	CDQ2□□□□DZ	CQ-LZ20	CQ-LCZ20		
25	Without switch	CQ2□□□□□	CQ-L025	CQ-LC025	CQ-F025	CQ-D025
	With switch	CDQ2□□□□DZ	CQ-LZ25	CQ-LCZ25		
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. $\phi 12$ to $\phi 25$:

- Without switch: Order 2 pieces per cylinder.
- With switch: Order 1 piece per cylinder. (Part number for a set of 2 foot brackets) $\phi 32$ to $\phi 100$:
- 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) For details about accessories (options), refer to pages 796 to 798.

Refer to pages 964 to 970 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 ($\phi 32$ to $\phi 100$) 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 774).
- Available in 1 mm increments
- 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: $\phi 32$ -57 mm stroke, with through-hole and without auto switch

Type	Spacer-installed type 1	
Part no.	Standard model number	
Order no.	CQ2B32-57DZ	
Ordering example	Description	<ul style="list-style-type: none"> • 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" ($\phi 32$ to $\phi 100$: 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 increments
- 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: $\phi 32$ -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	
Ordering example	Description	<ul style="list-style-type: none"> • Uses an exclusive tube (60 mm stroke) in "3". • Makes 57 mm stroke with 3 mm spacer inside. • The B dimension is 93 mm.

Note) Specify a spacer-installed type 1 with standard model number for ordering an intermediate stroke with a * mark. Refer to page 1738 for details.

3. Exclusive body type: Suffix "-XB10"

- Exclusive tubes can be manufactured for specified strokes upon request.
- Available in 1 mm increments
- 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 $\phi 32$ to $\phi 100$ (-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 1733 for details.

Ordering example: $\phi 32$ -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	
Ordering example	Description	<ul style="list-style-type: none"> • Makes 57 mm stroke tube. • The B dimension is 90 mm.

CJ

CU

CQS

JCQ

CQ2

RQ

CQM

CQU

MU

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 type	●	●	●	●	●	●	●	●	●	
		Built-in magnet	●	●	●	●	●	●	●	●	●	
	Piping	Screw-in type	—	M5 x 0.8	M5 x 0.8	M5 x 0.8	M5 x 0.8	<small>Note 1)</small> Rc 1/8	Rc 1/8	Rc 1/4	Rc 1/4	Rc 3/8
			TN	—	—	—	—	NPT1/8	NPT1/8	NPT1/4	NPT3/8	NPT3/8
		TF	—	—	—	—	G1/8	G1/8	G1/4	G3/8	G3/8	
		Built-in One-touch fittings <small>Note 3)</small>	—	—	—	—	ø6 <small>Note 2)</small>	ø6	ø8	ø8	—	—
	Rod end male thread	●	●	●	●	●	●	●	●	●	●	
	With rubber bumper	●	●	●	●	●	●	●	●	●	●	
	Air-hydraulic	Mounting	Through-hole (Standard)	—	—	●	●	●	●	●	●	●
Both ends tapped type			—	—	●	●	●	●	●	●	●	
Built-in magnet			—	—	●	●	●	●	●	●	●	
Piping		Screw-in type	—	—	M5 x 0.8	M5 x 0.8	<small>Note 1)</small> Rc 1/8	Rc 1/8	Rc 1/4	Rc 1/4	Rc 3/8	
			TN	—	—	—	NPT1/8	NPT1/8	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

- 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

⚠ 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 current 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 current compact CQ2 series is also available (page 917).

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.

Allowable Kinetic Energy

Load Mass and Piston Speed

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

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

m1: Mass of cylinder movable parts kg
m2: Load mass kg
V: Piston speed m/s

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

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

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

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

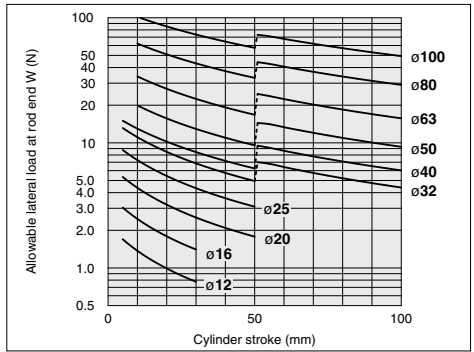
Additional Mass of Cylinder Movable Parts (g)

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

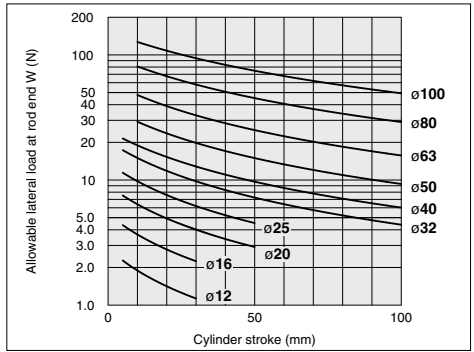
Calculation: (Example) **CDQ2B32-20DCMZ**
• Basic mass: CDQ2B32-20DZ 101 g
• Additional mass: Rod end male thread 43 g
With rubber bumper -3 g
141 g

Allowable Lateral Load at Rod End

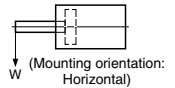
Without Auto Switch



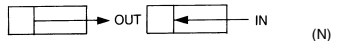
With Auto Switch



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



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

CJ

CU

CQS

JCQ

CQ2

RQ

CQM

CQU

MU

D-□

-X□

Technical Data

CQ2 Series

Weight

Weight

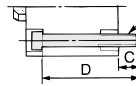
Bore size (mm)	Cylinder stroke (mm)											
	5	10	15	20	25	30	35	40	45	50	75	100
12	29	35	41	47	54	60	—	—	—	—	—	—
16	42	50	59	67	76	84	—	—	—	—	—	—
20	63	75	88	101	114	127	140	152	165	178	—	—
25	86	100	115	129	144	158	173	187	202	216	—	—
32	125	145	165	184	204	224	244	263	283	303	448	547
40	187	208	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



Mounting bolt 381 g

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
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	96
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	1066	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

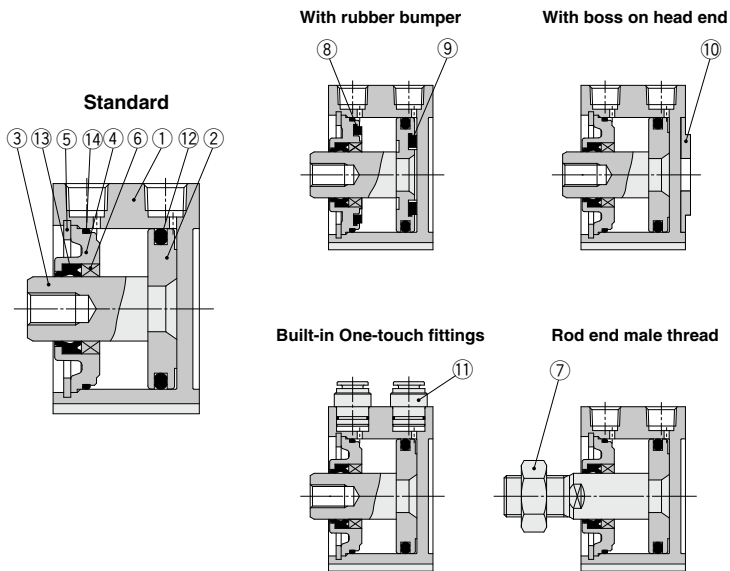
- Basic weight: CQ2B32-20DZ 184 g
- Additional weight: Both ends tapped 6 g
- Rod end male thread 43 g
- With rubber bumper -3 g
- Double clevis 151 g

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
-30D	50	x 50L	
CQ2B16-5D	5	25	CQ-M3 x 25L
-10D		30	x 30L
-15D		35	x 35L
-20D		40	x 40L
-25D		45	x 45L
-30D	50	x 50L	
CQ2B20-5D	7.5	25	CQ-M5 x 25L
-10D		30	x 30L
-15D		35	x 35L
-20D		40	x 40L
-25D		45	x 45L
-30D	50	x 50L	
-35D	55	x 55L	
-40D	60	x 60L	
-45D	65	x 65L	
-50D	70	x 70L	
CQ2B25-5D	9.5	30	CQ-M5 x 30L
-10D		35	x 35L
-15D		40	x 40L
-20D		45	x 45L
-25D		50	x 50L
-30D	55	x 55L	
-35D	60	x 60L	
-40D	65	x 65L	
-45D	70	x 70L	
-50D	75	x 75L	
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	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		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
-30DZ		60	x 60L
-35DZ		65	x 65L
-40DZ		70	x 70L
-45DZ		75	x 75L
-50DZ		80	x 80L
-55DZ-XB10		95	x 95L
-60DZ-XB10		100	x 100L
-65DZ-XB10		105	x 105L
-70DZ-XB10		110	x 110L
-75DZ		115	x 115L
-80DZ-XB10	120	x 120L	
-85DZ-XB10	125	x 125L	
-90DZ-XB10	130	x 130L	
-95DZ-XB10	135	x 135L	
-100DZ	140	x 140L	
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
-35DZ		70	x 70L
-40DZ		75	x 75L
-45DZ		80	x 80L
-50DZ		85	x 85L
-55DZ-XB10		100	x 100L
-60DZ-XB10		105	x 105L
-65DZ-XB10		110	x 110L
-70DZ-XB10		115	x 115L
-75DZ		120	x 120L
-80DZ-XB10		125	x 125L
-85DZ-XB10	130	x 130L	
-90DZ-XB10	135	x 135L	
-95DZ-XB10	140	x 140L	
-100DZ	145	x 145L	
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		75	x 75L
-40DZ		80	x 80L
-45DZ		85	x 85L
-50DZ		90	x 90L
-55DZ-XB10		105	x 105L
-60DZ-XB10		110	x 110L
-65DZ-XB10		115	x 115L
-70DZ-XB10		120	x 120L
-75DZ		125	x 125L
-80DZ-XB10		130	x 130L
-85DZ-XB10	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
-35DZ		80	x 80L
-40DZ		85	x 85L
-45DZ		90	x 90L
-50DZ		95	x 95L
-55DZ-XB10		110	x 110L
-60DZ-XB10		115	x 115L
-65DZ-XB10		120	x 120L
-70DZ-XB10		125	x 125L
-75DZ		130	x 130L
-80DZ-XB10		135	x 135L
-85DZ-XB10	140	x 140L	
-90DZ-XB10	145	x 145L	
-95DZ-XB10	150	x 150L	
-100DZ	155	x 155L	
CQ2B100-10DZ	15.5	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
-55DZ-XB10		120	x 120L
-60DZ-XB10		125	x 125L
-65DZ-XB10		130	x 130L
-70DZ-XB10		135	x 135L
-75DZ		140	x 140L
-80DZ-XB10		145	x 145L
-85DZ-XB10	150	x 150L	
-90DZ-XB10	155	x 155L	
-95DZ-XB10	160	x 160L	
-100DZ	165	x 165L	

Construction



Component Parts

No.	Description	Material	Note
1	Cylinder tube	Aluminum alloy	Hard anodized
2	Piston	Aluminum alloy	
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	

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)

* 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

JCQ

CQ2

RQ

CQM

CQU

MU

D-□

-X□

Technical Data

CQ2 Series

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 ISO Class 4 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									

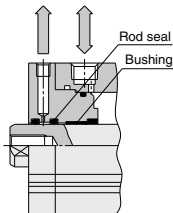
Note) ø12 with auto switch: With rubber bumper (Standard)

For details, refer to the separate catalog (CAT.E02-23), "Pneumatic Clean Series".

Construction

10-CQ2 series (Double seal)

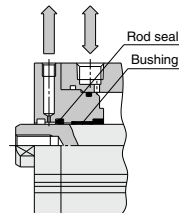
Relief port



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 949 to 963 for details.

CDQ2 [Mounting] [Bore size] **R** - [Stroke] **D** [Option] **Z**² - **M9BAL** - **-XC6** []

• With auto switch
(Built-in magnet)

• Water resistant cylinder

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

• Water resistant
2-color indicator
solid state auto switch

Made to Order

Suffix

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.

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



Specifications

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 949 for details.

Compact Cylinder with Stable Lubrication Function (Lube-retainer)

CDQ2 [Mounting type] [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 (Lube-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

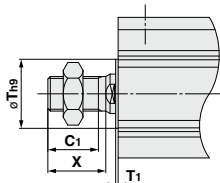
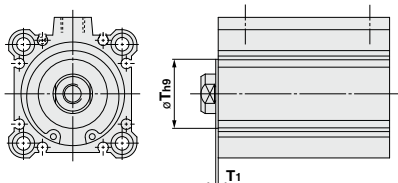
* Specifications other than those shown above are the same as the standard model.



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**.

- CUJ
- CU
- CQS
- JCQ
- CQ2**
- RQ
- CQM
- CQU
- MU

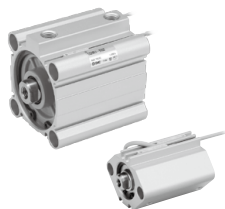
- D-□
- X□

Technical Data

Standard: Double Acting, Single Rod

CDQ2 Series

With Auto Switch



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

Auto switch proper mounting position and its mounting height	P.964 to 970
Minimum stroke for auto switch mounting	
Operating range	
Auto switch mounting brackets/Part no.	

Weight

Weight

Bore size (mm)	Cylinder stroke (mm)											
	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
	Both ends tapped	1	1	3	3	6	6	6	19	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)	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

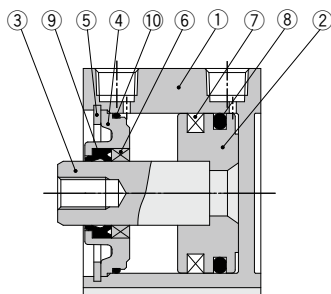
Calculation: (Example) **CDQ2D32-20DCMZ**

- Basic weight: CDQ2B32-20DZ..... 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	
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.

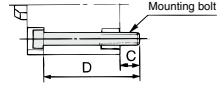
Grease pack part no.: GR-S-010 (10 g)

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		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		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		65	x 65L
-35DZ		70	x 70L
-40DZ		75	x 75L
-45DZ		80	x 80L
-50DZ		85	x 85L
-55DZ-XB10		90	x 90L
-60DZ-XB10		95	x 95L
-65DZ-XB10		100	x 100L
-70DZ-XB10		105	x 105L
-75DZ		110	x 110L
-80DZ-XB10	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		70	x 70L
-35DZ		75	x 75L
-40DZ		80	x 80L
-45DZ		85	x 85L
-50DZ		90	x 90L
-55DZ-XB10		95	x 95L
-60DZ-XB10		100	x 100L
-65DZ-XB10		105	x 105L
-70DZ-XB10		110	x 110L
-75DZ		115	x 115L
-80DZ-XB10	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		80	x 80L
-40DZ		85	x 85L
-45DZ		90	x 90L
-50DZ		95	x 95L
-55DZ-XB10		100	x 100L
-60DZ-XB10		105	x 105L
-65DZ-XB10		110	x 110L
-70DZ-XB10		115	x 115L
-75DZ		120	x 120L
-80DZ-XB10		125	x 125L
-85DZ-XB10	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		85	x 85L
-40DZ		90	x 90L
-45DZ		95	x 95L
-50DZ		100	x 100L
-55DZ-XB10		105	x 105L
-60DZ-XB10		110	x 110L
-65DZ-XB10		115	x 115L
-70DZ-XB10		120	x 120L
-75DZ		125	x 125L
-80DZ-XB10		130	x 130L
-85DZ-XB10	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		90	x 90L
-40DZ		95	x 95L
-45DZ		100	x 100L
-50DZ		105	x 105L
-55DZ-XB10		110	x 110L
-60DZ-XB10		115	x 115L
-65DZ-XB10		120	x 120L
-70DZ-XB10		125	x 125L
-75DZ		130	x 130L
-80DZ-XB10		135	x 135L
-85DZ-XB10	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		100	x 100L
-40DZ		105	x 105L
-45DZ		110	x 110L
-50DZ		115	x 115L
-55DZ-XB10		120	x 120L
-60DZ-XB10		125	x 125L
-65DZ-XB10		130	x 130L
-70DZ-XB10		135	x 135L
-75DZ		140	x 140L
-80DZ-XB10		145	x 145L
-85DZ-XB10	150	x 150L	
-90DZ-XB10	155	x 155L	
-95DZ-XB10	160	x 160L	
-100DZ	165	x 165L	

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

- D-□
- X□

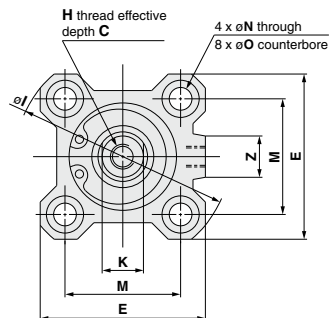
Technical Data

CQ2 Series

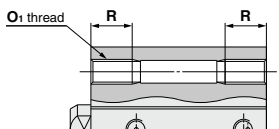
Dimensions

Ø12 to Ø25/Without Auto Switch

Standard (Through-hole): CQ2B

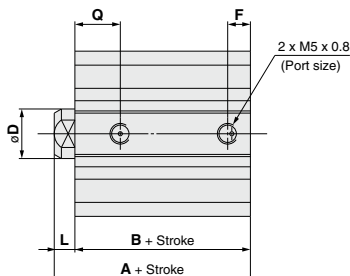


Both ends tapped: CQ2A

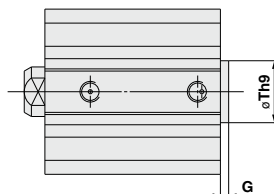


Both Ends Tapped (mm)

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



With boss on head end

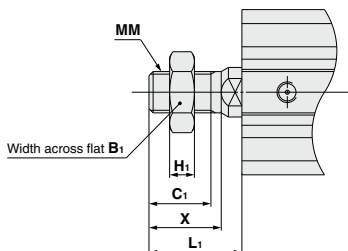


With Boss on Head End (mm)

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)	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

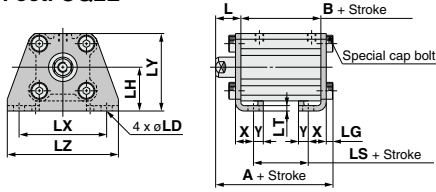
Bore size (mm)	Stroke range (mm)	A	B	C	D	E	F	H	I	K	L	M	N	O	Q	Z
12	5 to 30	20.5	17	6	6	25	5	M3 x 0.5	32	5	3.5	15.5	3.5	6.5 depth 3.5	7.5	-
16	5 to 30	22	18.5	8	8	29	5.5	M4 x 0.7	38	6	3.5	20	3.5	6.5 depth 3.5	8	10
20	5 to 50	24	19.5	7	10	36	5.5	M5 x 0.8	47	8	4.5	25.5	5.5	9 depth 7	8	10
25	5 to 50	27.5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

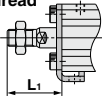
* For details about the rod end nut and accessory brackets, refer to pages 796 to 798.

Note 3) For calculation on the longitudinal dimension of intermediate strokes, refer to page 775.

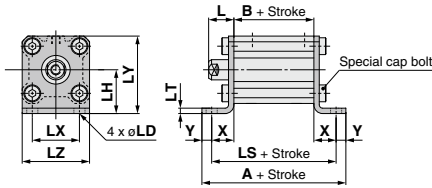
Foot: CQ2L



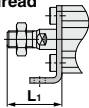
Rod end male thread



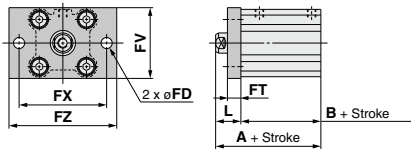
Compact foot: CQ2LC



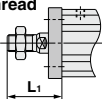
Rod end male thread



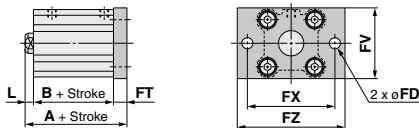
Rod flange: CQ2F



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

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

* For details about the rod end nut and accessory brackets, refer to pages 796 to 798.

CJ

CU

CQS

JCQ

CQ2

RQ

CQM

CQU

MU

D-□

-X□

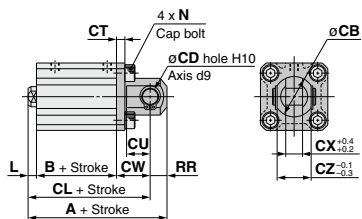
Technical Data

CQ2 Series

Dimensions

Ø12 to Ø25/Without Auto Switch

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

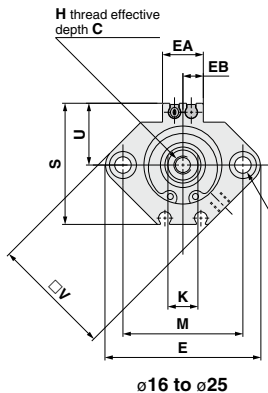
* For details about the rod end nut and accessory brackets, refer to pages 796 to 798.

* Double clevis pin and retaining rings are included.

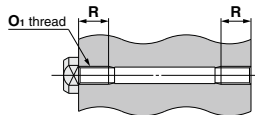
Dimensions

Ø12 to Ø25/With Auto Switch

**Standard (Through-hole):
CDQ2B**



Both ends tapped: CDQ2A



Both Ends Tapped (mm)

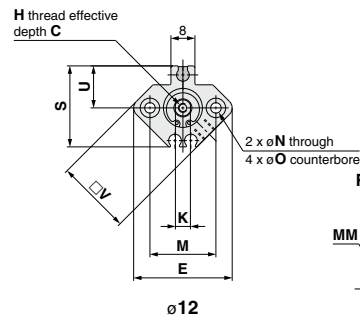
Bore size (mm)	Ø1	R
12	M4 x 0.7	7
16	M4 x 0.7	7
20	M6 x 1.0	10
25	M6 x 1.0	10

With boss on head end

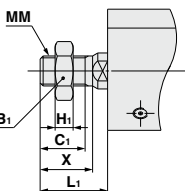
With Boss on Head End (mm)

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 964 to 970.

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 pages 796 to 798.

Note 3) For calculation on the longitudinal dimension of intermediate strokes, refer to page 775.

- CUJ
- CU
- CQS
- JCQ
- CQ2**
- RQ
- CQM
- CQU
- MU

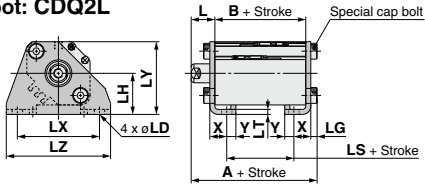
- D-□
- X□
- Technical Data

CQ2 Series

Dimensions

Ø12 to Ø25/With Auto Switch

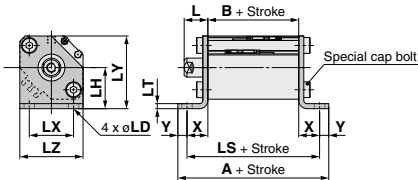
Foot: CDQ2L



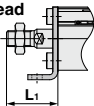
Rod end male thread



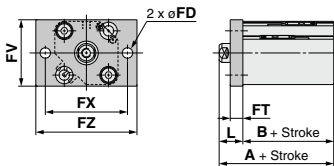
Compact foot: CDQ2LC



Rod end male thread



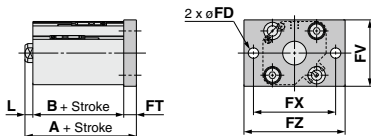
Rod flange: CDQ2F



Rod end male thread



Head flange: CDQ2G



Rod end male thread



Foot

		(mm)													
Bore size (mm)	Stroke range (mm)	A	B	L	L ₁	LD	LG	LH	LS	LT	LX	LY	LZ	X	Y
12	5 to 30	46.3	28	13.5	24	4.5	2.8	17	16	2	34	29.5	44	8	4.5
16	5 to 30	48.8	30.5	13.5	25.5	4.5	2.8	19	18.5	2	38	33.5	48	8	5
20	5 to 50	53.2	31.5	14.5	28.5	6.6	4	24	19.5	3.2	48	42	62	9.2	5.8
25	5 to 50	54.7	32.5	15	32.5	6.6	4	26	17.5	3.2	52	46	66	10.7	5.8

Foot bracket material: Carbon steel
Surface treatment: Nickel plated

Compact Foot

		(mm)												
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

		(mm)										
Bore size (mm)	Stroke range (mm)	A	B	FD	FT	FV	FX	FZ	L	L ₁		
12	5 to 30	41.5	28	4.5	5.5	25	45	55	13.5	24		
16	5 to 30	44	30.5	4.5	5.5	30	45	55	13.5	25.5		
20	5 to 50	46	31.5	6.6	8	39	48	60	14.5	28.5		
25	5 to 50	47.5	32.5	6.6	8	42	52	64	15	32.5		

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

Head Flange

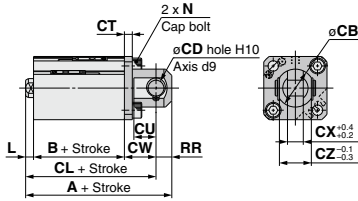
		(mm)		
Bore size (mm)	Stroke range (mm)	A	L	L ₁
12	5 to 30	37	3.5	14
16	5 to 30	39.5	3.5	15.5
20	5 to 50	44	4.5	18.5
25	5 to 50	45.5	5	22.5

(*) 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 pages 796 to 798.

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 pages 796 to 798.

* Double clevis pin and retaining rings are included.

CUJ

CU

CQS

JCQ

CQ2

RQ

CQM

CQU

MU

D-□

-X□

Technical
Data

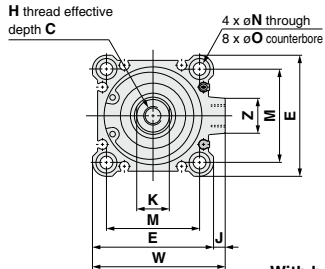
CQ2 Series

Dimensions

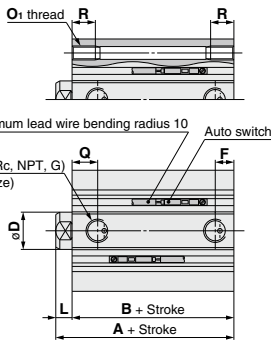
Ø32 to Ø50/With Auto Switch

(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



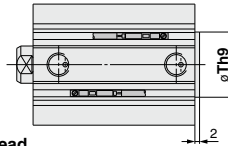
Both ends tapped: CQ2A/CDQ2A



Both Ends Tapped (mm)

Bore size (mm)	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

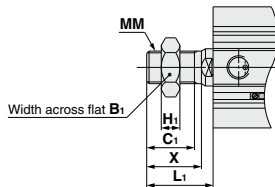


With Boss on Head End (mm)

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

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

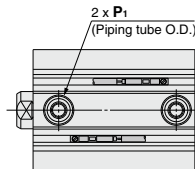
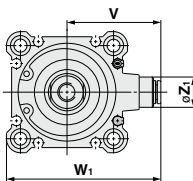
Rod end male thread



Rod End Male Thread (mm)

Bore size (mm)	B ₁	C ₁	H ₁	L ₁	MM	X
32	22	20.5	8	28.5	M14 x 1.5	23.5
40	22	20.5	8	28.5	M14 x 1.5	23.5
50	27	26	11	33.5	M18 x 1.5	28.5

Built-in One-touch fittings: Ø32 to Ø50



Built-in One-touch Fittings (mm)

Bore size (mm)	Z ₁	P ₁	V	W ₁
32	13	6	36.5	59
40	13	6	40.5	66
50	16	8	50	82

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 964 to 970.

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	6.0
40	5 to 50	36.5	29.5	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	46.5	39.5	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	6.0
	10 to 50	38.5	30.5	10.5	1/4	10.5	48.5	40.5	10.5	1/4	10.5	15	20	64	M10 x 1.5	7	17	8	50	6.0
50	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	6.0

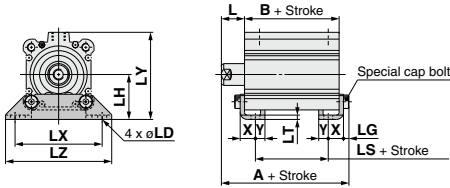
Bore size (mm)	O	W	Z
32	9 depth 7	49.5	14
40	9 depth 7	57	15
50	11 depth 8	71	19

Note 3) The external dimensions with rubber bumper are same as those of the standard, as shown above.

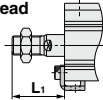
* For details about the rod end nut and accessory brackets, refer to pages 796 to 798.

Note 4) For calculation on the longitudinal dimension of intermediate strokes, refer to page 775. The spacer-installed type (Standard, -XB10A) and the exclusive body type (-XB10) are available.

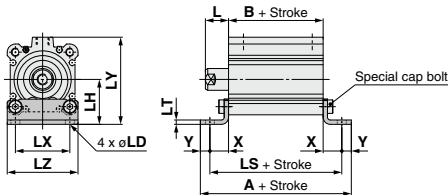
Foot: CQ2L/CDQ2L



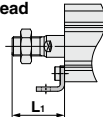
Rod end male thread



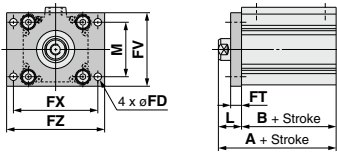
Compact foot: CQ2LC/CDQ2LC



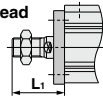
Rod end male thread



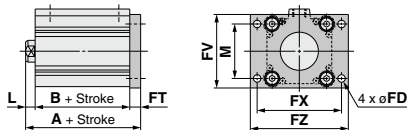
Rod flange: CQ2F/CDQ2F



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			L	L ₁	LD	LG	LH	LT	LX	LY
		A	B	LS	A	B	LS								
32	5 to 50	47.2	23	7	57.2	33	17	17	38.5	6.6	4	30	3.2	57	57
	75, 100	57.2	33	17											
40	5 to 50	53.7	29.5	13.5	63.7	39.5	23.5	17	38.5	6.6	4	33	3.2	64	64
	75, 100	63.7	39.5	23.5											
50	10 to 50	58.7	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	14.7	8

Compact Foot

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

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

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		
32	5 to 50	38	48	48	7	28.5	
	75, 100	48					
40	5 to 50	44.5	54.5	54.5	7	28.5	
	75, 100	54.5					
50	10 to 50	47.5	57.5	57.5	8	33.5	
	75, 100	57.5					

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

* For details about the rod end nut and accessory brackets, refer to pages 796 to 798.

CUJ

CU

CQS

JCQ

CQ2

RQ

CQM

CQU

MU

D-□

-X□

Technical Data

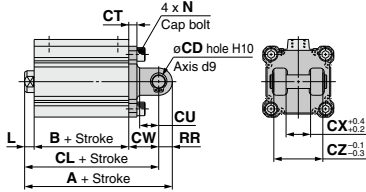
CQ2 Series

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.)

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	L1
		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 pages 796 to 798.

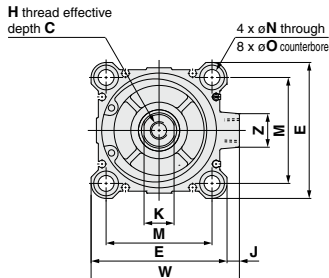
* Double clevis pin and retaining rings are included.

Dimensions

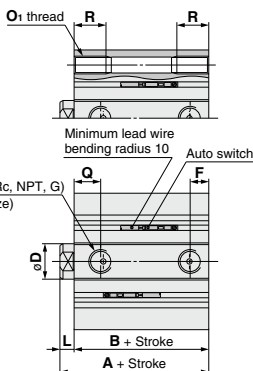
Ø63 to Ø100/with Auto Switch

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

**Standard (Through-hole):
CQ2B/CDQ2B**



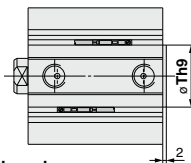
Both ends tapped: CQ2A/CDQ2A



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

With boss on head end

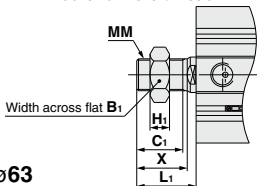


With Boss on Head End (mm)

Bore size (mm)	Th9
63	35 ⁰ _{-0.062}
80	43 ⁰ _{-0.062}
100	59 ⁰ _{-0.074}

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

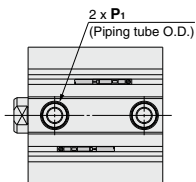
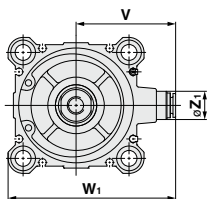
Rod end male thread



Rod End Male Thread (mm)

Bore size (mm)	B ₁	C ₁	H ₁	L ₁	MM	X
63	27	26	11	33.5	M18 x 1.5	28.5
80	32	32.5	13	43.5	M22 x 1.5	35.5
100	41	32.5	16	43.5	M26 x 1.5	35.5

Built-in One-touch fittings: Ø63



Built-in One-touch Fittings (mm)

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 964 to 970.

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																	
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																	
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																	

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 pages 796 to 798.

Note 3) For calculation on the longitudinal dimension of intermediate strokes, refer to page 775.

CJ
CU
CQS
JCQ
CQ2
RQ
CQM
CQU
MU

D-□
-X□
Technical Data

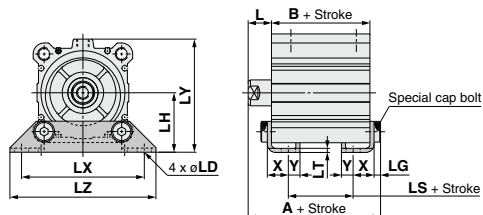
CQ2 Series

Dimensions

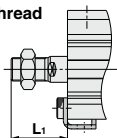
Ø63 to Ø100/With Auto Switch

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

Foot: CQ2L/CDQ2L



Rod end male thread



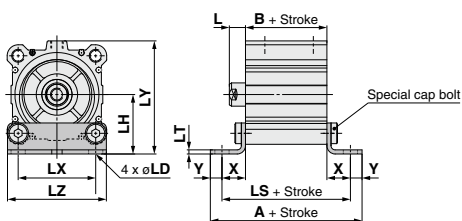
Foot

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

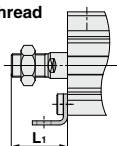
Foot bracket material: Carbon steel
Surface treatment: Nickel plated

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

Compact foot: CQ2LC/CDQ2LC



Rod end male thread



Compact Foot

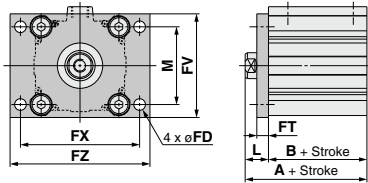
Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch			(mm)					
		A	B	LS	A	B	LS	L	L ₁	LD	LH	LT	LX
		63	10 to 50 75, 100	90.4 100.4	36 46	72.4 82.4	100.4	46	82.4	18	43.5	11	46
80	10 to 50 75, 100	110.5 120.5	43.5 53.5	88.5 98.5	120.5	53.5	98.5	20	53.5	13	59	4.5	77
100	10 to 50 75, 100	126 136	53 63	101 111	136	63	111	22	53.5	13	71	6	94

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

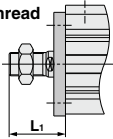
Bore size (mm)	Stroke range (mm)	LY	LZ	X	Y
63	10 to 50 75, 100	91.5	77	18.2	9
80	10 to 50 75, 100	114	98	22.5	11
100	10 to 50 75, 100	136	117	24	12.5

* For details about the rod end nut and accessory brackets, refer to pages 796 to 798.

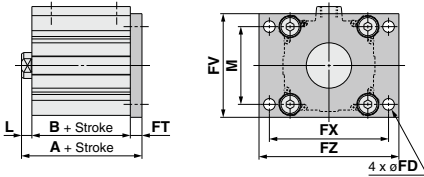
Rod flange: CQ2F/CDQ2F



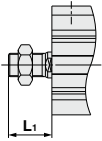
Rod end male thread



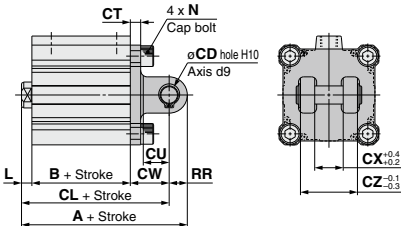
Head flange: CQ2G/CDQ2G



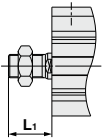
Rod end male thread



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		63		8	33.5
	75, 100	63					
80	10 to 50	64.5		74.5		10	43.5
	75, 100	74.5					
100	10 to 50	76		86		12	43.5
	75, 100	86					

* 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

* For details about the rod end nut and accessory brackets, refer to pages 796 to 798.

* Double clevis pin and retaining rings are included.

CJW

CU

CQS

JCW

CQ2

RQ

CQM

CQU

MU

D-□

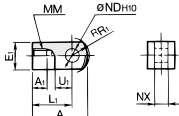
-X□

Technical Data

Accessory Brackets

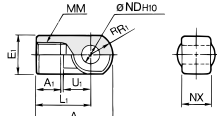
Single Knuckle Joint

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



Material: Carbon steel
Surface treatment: Nickel plated

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

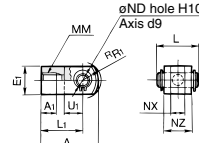


Material: Cast iron
Surface treatment: Nickel plated

Part no.	Applicable bore size (mm)	A	A ₁	E ₁	L ₁	MM	[°] R ₁	U ₁	ND _{H10}	NX
I-G012	12	21.5	6	□10	16	M5 x 0.8	6.3	7	5 ^{+0.048} _{-0.2}	5 ^{-0.2} _{-0.4}
I-Z015A	16	32	8	□12	25	M6 x 1	8.1	14	5 ^{+0.048} _{-0.2}	6.4 ^{-0.1} _{-0.3}
I-G02	20	34	8.5	□16	25	M8 x 1.25	10.3	11.5	8 ^{+0.058} _{-0.2}	8 ^{-0.2} _{-0.4}
I-G03	25	41	10.5	□20	30	M10 x 1.25	12.8	14	10 ^{+0.058} _{-0.2}	10 ^{-0.2} _{-0.4}
I-G04	32, 40	42	14	□22	30	M14 x 1.5	12	14	10 ^{+0.058} _{-0.2}	18 ^{-0.2} _{-0.4}
I-G05	50, 63	56	18	□28	40	M18 x 1.5	16	20	14 ^{+0.070} _{-0.2}	22 ^{-0.2} _{-0.4}
I-G08	80	71	21	□38	50	M22 x 1.5	21	27	18 ^{+0.070} _{-0.2}	28 ^{-0.2} _{-0.4}
I-G10	100	79	21	□44	55	M26 x 1.5	24	31	22 ^{+0.084} _{-0.2}	32 ^{-0.2} _{-0.4}

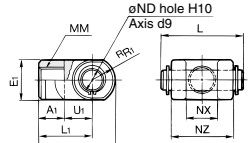
Double Knuckle Joint

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



Material: Carbon steel
Surface treatment: Nickel plated

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

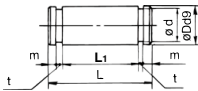


Material: Cast iron
Surface treatment: Nickel plated

Part no.	Applicable bore size (mm)	A	A ₁	E ₁	L ₁	MM	[°] R ₁	U ₁	ND _{H10}	NX	NZ	L	Applicable pin part no.
Y-G012	12	21.5	6	□10	16	M5 x 0.8	6.3	7	5 ^{+0.048} _{-0.2}	5 ^{-0.2} _{-0.4}	10	14.6	IY-G012
Y-Z015A	16	28	11	□12	21	M6 x 1	8.1	10	5 ^{+0.048} _{-0.2}	6.5 ^{-0.2} _{-0.4}	12	16.6	IY-J015
Y-G02	20	34	8.5	□16	25	M8 x 1.25	10.3	11.5	8 ^{+0.058} _{-0.2}	8 ^{-0.2} _{-0.4}	16	21	IY-G02
Y-G03	25	41	10.5	□20	30	M10 x 1.25	12.8	14	10 ^{+0.058} _{-0.2}	10 ^{-0.2} _{-0.4}	20	25.8	IY-G03
Y-G04	32, 40	42	16	□22	30	M14 x 1.5	12	14	10 ^{+0.058} _{-0.2}	18 ^{-0.2} _{-0.4}	36	41.6	IY-G04
Y-G05	50, 63	56	20	□28	40	M18 x 1.5	16	20	14 ^{+0.070} _{-0.2}	22 ^{-0.2} _{-0.4}	44	50.6	IY-G05
Y-G08	80	71	23	□38	50	M22 x 1.5	21	27	18 ^{+0.070} _{-0.2}	28 ^{-0.2} _{-0.4}	56	64	IY-G08
Y-G10	100	79	24	□44	55	M26 x 1.5	24	31	22 ^{+0.084} _{-0.2}	32 ^{-0.2} _{-0.4}	64	72	IY-G10

* Knuckle pin and retaining rings are included.

Knuckle Pin (Common with double clevis pin)

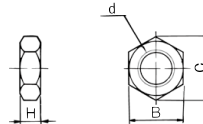


Material: Carbon steel
(mm)

Part no.	Applicable bore size (mm)	Dd9	L	d	L ₁	m	t	Applicable retaining ring
IY-G012	12	5 ^{-0.030} _{-0.050}	14.6	4.8	10.2	1.5	0.7	Type C5 for axis
IY-J015	16	5 ^{-0.030} _{-0.050}	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 ^{-0.065} _{-0.117}	72	21	64.2	2.55	1.35	Type C22 for axis

* Type C retaining rings for axis are included.

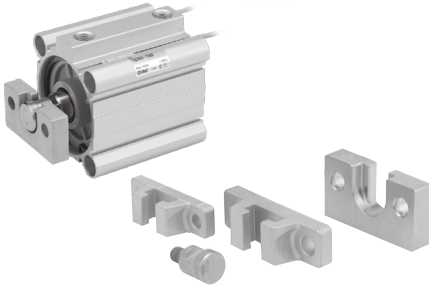
Rod End Nut



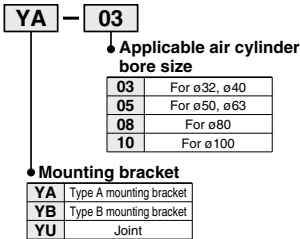
Material: Carbon steel
Surface treatment: Zinc chromated
(mm)

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)

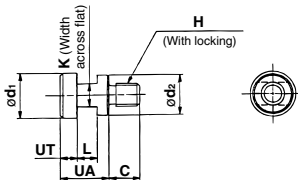
Bore size $\phi 40$ Part no.

• Type A mounting bracket YA-03

• Joint YU-03

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

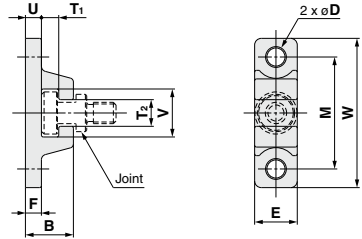
Bore size (mm)	Joint	Applicable mounting bracket	
		Type A mounting bracket	Type B mounting bracket
32, 40	YU-03	YA-03	YB-03
50, 63	YU-05	YA-05	YB-05
80	YU-08	YA-08	YB-08
100	YU-10	YA-10	YB-10



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

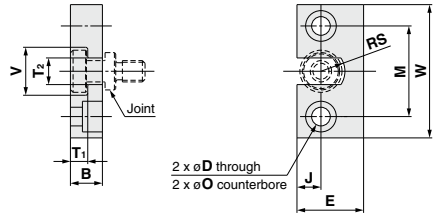


Material: Chromium molybdenum steel (Nickel plated) (mm)

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

JCQ

CQ2

RQ

CQM

CQU

MU

D-□

-X□

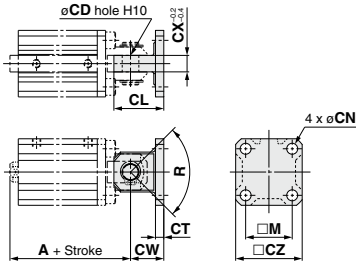
Technical Data

CQ2 Series

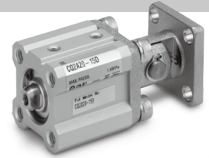
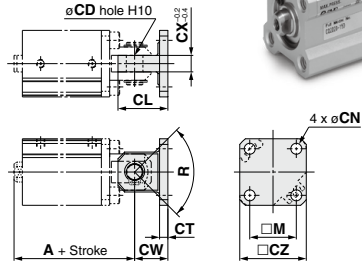
Double Clevis Pivot Bracket

Bore size $\varnothing 12$ to $\varnothing 25$

Without auto switch



With auto switch



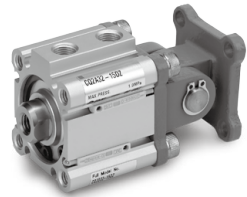
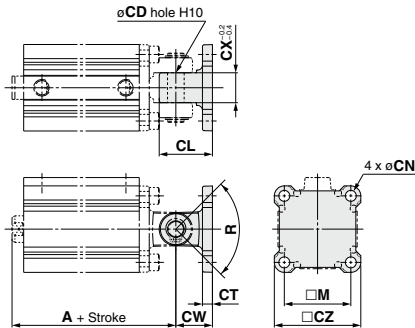
Bracket part no.	Bore size	Stroke range	A		CW	CT	CL	CX	CD	M	CZ	R	CN	Hexagon socket head cap screw for mounting pivot bracket (Accessory)
			Without auto switch	With auto switch										
CQ-C012	12	5 to 30	34.5	45.5	14	4	19	5	5	15.5	25	100°	4.5	M4 x 10L
CQ-C016	16	5 to 30	37	49	15	4	21	6.5	5	20	28	100°	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 $\varnothing 32$ to $\varnothing 100$

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											
CQ-C040	40	5 to 50	58.5	68.5	22	6	32	18	10	40	52	80°	6.6	M6 x 14L
		75, 100	68.5											
CQ-C050	50	10 to 50	66.5	76.5	28	7	42	22	14	50	64	80°	9	M8 x 16L
		75, 100	76.5											
CQ-C063	63	10 to 50	74	84	30	8	44	22	14	60	77	60°	11	M10 x 20L
		75, 100	84											
CQ-C080	80	10 to 50	91.5	101.5	38	10	56	28	18	77	98	70°	13.5	M12 x 25L
		75, 100	101.5											
CQ-C100	100	10 to 50	110	120	45	13	67	32	22	94	117	70°	13.5	M12 x 30L
		75, 100	120											

* The double clevis pin and retaining ring are not included.

Double clevis pivot bracket material: Cast iron
Surface treatment: Painted