

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

CQ2K B 20 - 30 D — **CQ2K B 32 - 30 D Z** — **CDQ2K B 32 - 30 D Z - M9BW**

With auto switch
(Built-in magnet)

Non-rotating rod

Mounting

B	Through-hole (Standard)	ø12 to ø63
A	Both ends tapped	
L	Foot	
F	Rod flange	ø40, ø50, ø63
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 C(D)Q2KB" on pages 82 and 84.

Bore size

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

Note 1) When ø12 with 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 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.

Auto switch mounting groove

Z	ø12 to ø25	2 surfaces
	ø32 to ø63	4 surfaces

Made to Order
Refer to the next page 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) CDQ2KL32-30DZ

Applicable Auto Switches Refer to pages 1263 to 1371 in Best Pneumatics No. 2 for further information on auto switches.
Refer to the individual catalog (ES20-201) 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	—	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	●	●	●	○	—	○						
	Diagnostic indication (2-color indication)			3-wire (NPN)				5 V, 12 V	M9NVV	M9NV	●	●	●	○	—	○		IC circuit		
	Water resistant (2-color indication)			3-wire (PNP)				12 V	M9PVV	M9PV	●	●	●	○	—	○				
				2-wire				12 V	M9BVV	M9B	●	●	●	○	—	○				
				3-wire (NPN)				5 V, 12 V	M9NAV**	M9NA**	○	○	●	○	—	○		IC circuit		
				3-wire (PNP)				12 V	M9PAV**	M9PA**	○	○	●	○	—	○				
	2-wire			12 V				M9BAV**	M9BA**	○	○	●	○	—	○					
	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	Relay, PLC			
				2-wire				24 V	12 V	100 V	A93V	A93	●	—	●	—		—	—	—
									5 V, 12 V	100 V or less	A90V	A90	●	—	●	—		—	—	—

* 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.

* 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 175.

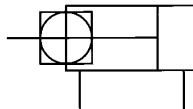
* For details about auto switches with pre-wired connector, refer to pages 1328 and 1329 in Best Pneumatics No. 2.

Series CQ2K



Symbol

Non-rotating rod



Made to Order

(For details, refer to pages 177 to 207.)

Symbol	Specifications
-XA□	Special rod end shape
-XB10	Intermediate stroke (Exclusive body type): ø40 to ø63
-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
-X1876	Cylinder tube: With concave boss on head end

Refer to pages 169 to 175 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.

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	0.038	0.055	0.09	0.15	0.26	0.46	0.77
	0.043 Note 1)							
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. 78)	
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	
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) Rc1/8	Rc1/8	Rc1/4	Rc1/4	
			TN	—	—	—	—	NPT1/8	NPT1/8	NPT1/4	NPT1/4
			TF	—	—	—	—	G1/8	G1/8	G1/4	G1/4
		Built-in one-touch fittings		—	—	—	—	ø6/4 Note 2)	ø6/4	ø8/6	ø8/6
	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.

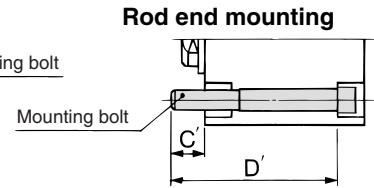
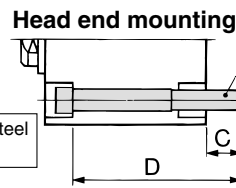
Note 2) The dimensions of the ø32-5 mm stroke with built-in one-touch fittings are the same as those of the 10 mm stroke cylinder tube.

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-M3x30L 2 pcs.

Material: Chromium molybdenum steel
Surface treatment: Nickel plated



Cylinder model	C	D	Mounting bolt part no.	C'	D'	Mounting bolt part no.
CQ2KB12-5D	6.5	30	CQ-M3 x 30L	6.5	30	CQ-M3 x 30L
-10D		35	x 35L		35	x 35L
-15D		40	x 40L		40	x 40L
-20D		45	x 45L		45	x 45L
-25D		50	x 50L		50	x 50L
-30D		55	x 55L		55	x 55L
CQ2KB16-5D	5	30	CQ-M3 x 30L	5	30	CQ-M3 x 30L
-10D		35	x 35L		35	x 35L
-15D		40	x 40L		40	x 40L
-20D		45	x 45L		45	x 45L
-25D		50	x 50L		50	x 50L
-30D		55	x 55L		55	x 55L
CQ2KB20-5D	8	35	CQ-M5 x 35L	9.5	35	CQ-M5 x 35L
-10D		40	x 40L		40	x 40L
-15D		45	x 45L		45	x 45L
-20D		50	x 50L		50	x 50L
-25D		55	x 55L		55	x 55L
-30D		60	x 60L		60	x 60L
-35D		65	x 65L		65	x 65L
-40D		70	x 70L		70	x 70L
-45D		75	x 75L		75	x 75L
-50D		80	x 80L		80	x 80L
CQ2KB25-5D	10	40	CQ-M5 x 40L	6.5	35	CQ-M5 x 35L
-10D		45	x 45L		40	x 40L
-15D		50	x 50L		45	x 45L
-20D		55	x 55L		50	x 50L
-25D		60	x 60L		55	x 55L
-30D		65	x 65L		60	x 60L
-35D		70	x 70L		65	x 65L
-40D		75	x 75L		70	x 70L
-45D		80	x 80L		75	x 75L
-50D		85	x 85L		80	x 80L
CQ2KB32-5DZ	8.5	40	CQ-M5 x 40L	10	40	CQ-M5 x 40L
-10DZ		45	x 45L		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	7.5	35	CQ-M5 x 35L	7.5	35	CQ-M5 x 35L
-10DZ		40	x 40L		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	12.5	115	x 115L	12.5	115	x 115L
-100DZ		140	x 140L		140	x 140L
CQ2KB50-10DZ		45	CQ-M6 x 45L		45	CQ-M6 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	14.5	85	x 85L	14.5	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		55	x 55L		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

Copper and Fluorine-free Series (For CRT Manufacturing Process)

20 — CQ2KB Bore size — Stroke D(M)Z

• Copper and fluorine-free series • $\phi 16, \phi 20, \phi 25, \phi 32$
 $\phi 40, \phi 50, \phi 63$

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

Specifications

Bore size (mm)	16	20	25	32	40	50	63
Action	Double acting, Single rod						
Proof pressure	1.5 MPa						
Max. operating pressure	1.0 MPa						
Rubber bumper	None						
Piping	Pipe thread						
Piston speed	50 to 500 mm/s						
Mounting	Through-hole						
Auto switch	Mountable						