

# Compact Cylinder

New

*Remodeled with a new body to get more flexibility! □*

## Can mount small auto switches on 4 surfaces.

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

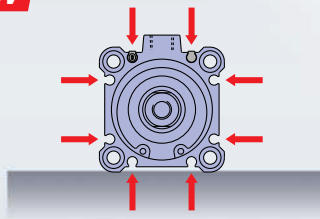


Auto switch mounting rail removed  
A round slot for mounting small auto switches  
is provided on 4 surfaces.

**NEW**

Available up to  $\phi 200$

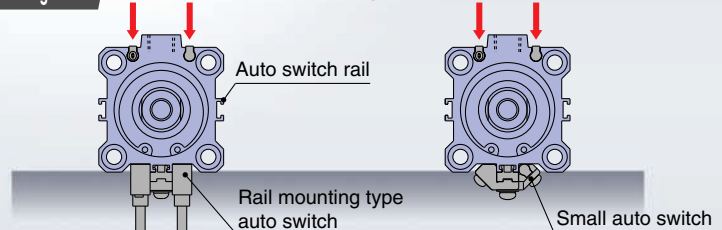
**NEW**  $\phi 32$  to  $\phi 200$



$\phi 12$  to  $\phi 25$ : Mountable on 2 surfaces

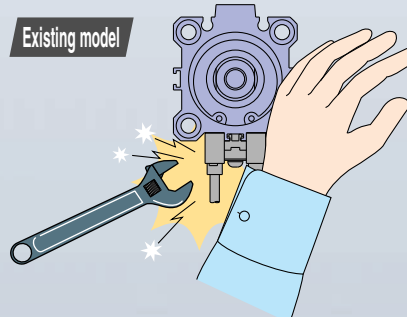


Existing model  $\phi 32$  to  $\phi 50$ : Only one surface



## No projection of auto switch

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



**NEW**

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

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

◆ Standard stroke ● Currently stocked intermediate stroke

Series CQ2



CAT.ES20-205B

# Compact Cylinder: Standard Double Acting, Single Rod Series CQ2

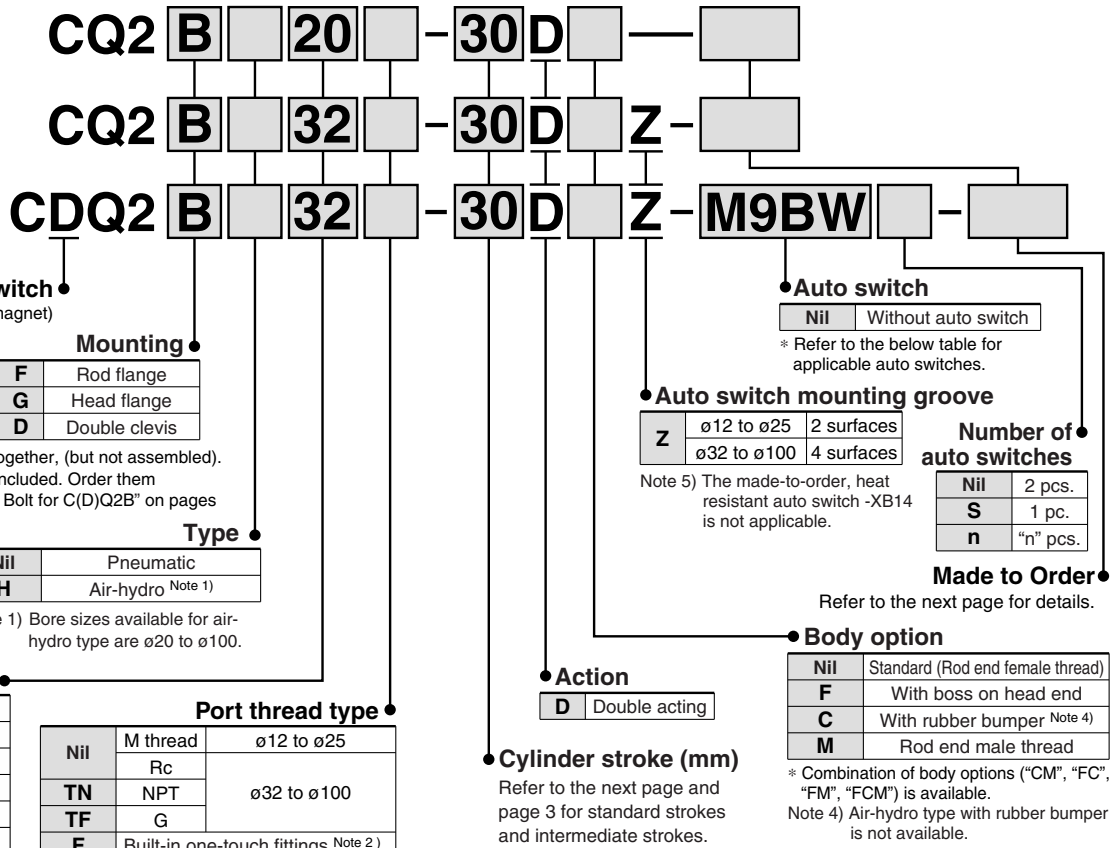
ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100

## How to Order

Without auto switch  
ø12 to ø25

Without auto switch  
ø32 to ø100

With auto switch



## 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

Refer to pages 1263 to 1371 in Best Pneumatics No. 2 for further information on auto switches.  
Applicable Auto Switches/Refer to the individual catalog (ES20-201) for the D-P3DW type.

Applicable Auto Switch Selection Chart for the individual catalog (2020-2021) for the E-702W 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	●	●	●	○	—	○							
	3-wire (NPN)			5 V, 12 V				M9NWV	M9NW	●	●	●	○	—	○	IC circuit					
	3-wire (PNP)							M9PWV	M9PW	●	●	●	○	—	○						
	2-wire							M9BWV	M9BW	●	●	●	○	—	○						
	3-wire (NPN)			5 V, 12 V				M9NAV**	M9NA**	○	○	●	○	—	○	IC circuit					
	3-wire (PNP)							M9PAV**	M9PA**	○	○	●	○	—	○						
	2-wire							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	—				
				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.  
If water resistance is needed, we recommend water resistant cylinders be used. (Page 156)

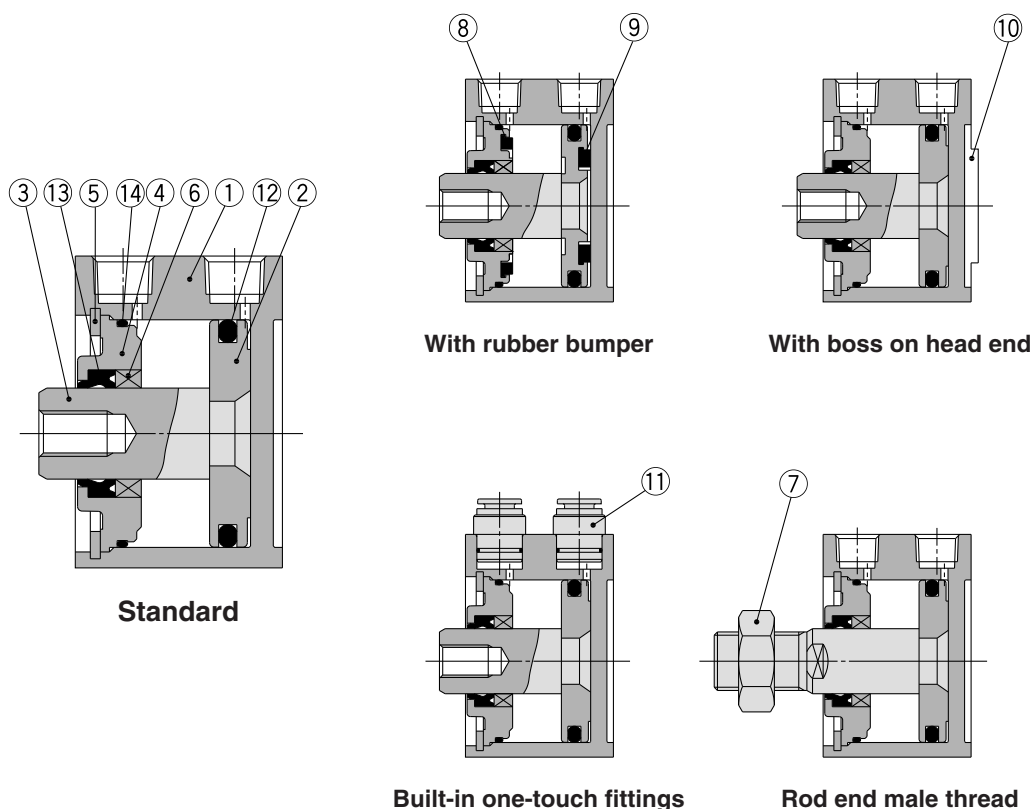
\* Lead wire length symbols: 0.5 m ..... Nil (Example) M9NV  
1 m ..... M (Example) M9NWM  
3 m ..... L (Example) M9NWL  
5 m ..... Z (Example) M9NWX

\* Solid state auto switches marked with "○" are produced upon receipt of order.  
\* The D-P3DW□ type is available from ø32 to ø100 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.

## Construction



## Component Parts

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

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

## Replacement Parts/Seal Kit (Pneumatic type)

Bore size (mm)	Kit no.	Contents
12	CQ2B12-PS	Kits include items 12, 13, 14 from the table.
16	CQ2B16-PS	
20	CQ2B20-PS	
25	CQ2B25-PS	
32	CQ2B32-PS	
40	CQ2B40-PS	
50	CQ2B50-PS	
63	CQ2B63-PS	
80	CQ2B80-PS	
100	CQ2B100-PS	

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

## Replacement Parts/Seal Kit (Air-hydro type)

Bore size (mm)	Kit no.	Contents
20	CQ2BH20-PS	Kits include items 12, 13, 14 from the table.
25	CQ2BH25-PS	
32	CQ2BH32-PS	
40	CQ2BH40-PS	
50	CQ2BH50-PS	
63	CQ2BH63-PS	
80	CQ2BH80-PS	
100	CQ2BH100-PS	

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

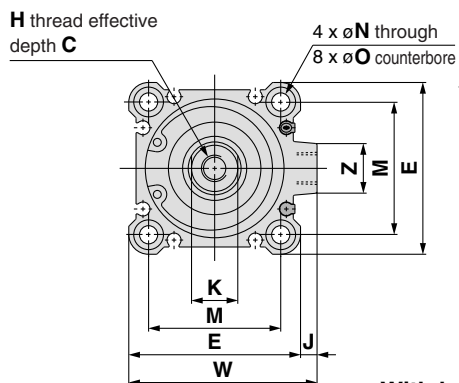
# Series CQ2

## Dimensions

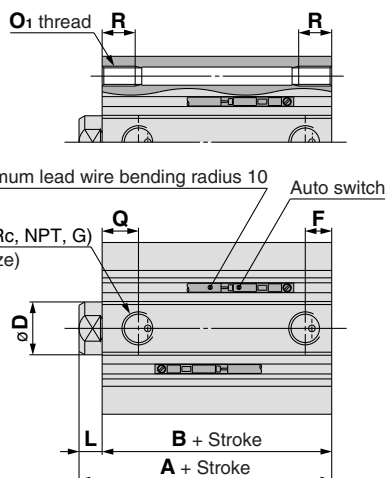
### Ø32 to Ø50/With Auto Switch

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

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



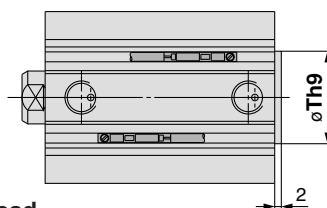
#### Both ends tapped: CQ2A/CDQ2A



#### Both Ends Tapped (mm)

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

#### With boss on head end

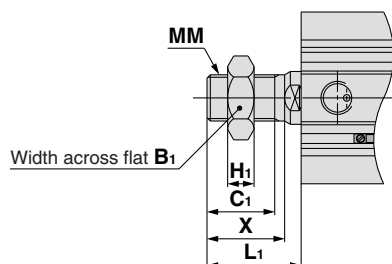


#### With Boss on Head End (mm)

Bore size (mm)	Th9
32	21 <sup>0</sup> <sub>-0.052</sub>
40	28 <sup>0</sup> <sub>-0.052</sub>
50	35 <sup>0</sup> <sub>-0.062</sub>

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

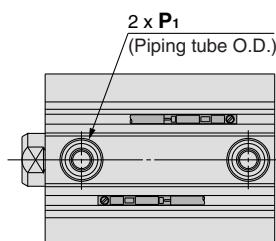
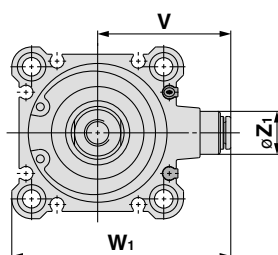
#### Rod end male thread



#### Rod End Male Thread (mm)

Bore size (mm)	B <sub>1</sub>	C <sub>1</sub>	H <sub>1</sub>	L <sub>1</sub>	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 <sub>1</sub>	P <sub>1</sub>	V	W <sub>1</sub>
32	13	6	36.5	59
40	13	6	40.5	66
50	16	8	50	82

#### Standard For auto switch proper mounting position and its mounting height, refer to pages 169 to 175.

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	11.5	40	33	7.5	1/8	10.5	13	16	45	M8 x 1.25	4.5	14	7	34	5.5
	10 to 50	40	33	7.5	1/8	10.5	40	33	7.5	1/8	10.5	13	16	45	M8 x 1.25	4.5	14	7	34	5.5
	75, 100	40	33	7.5	1/8	10.5	40	33	7.5	1/8	10.5	13	16	45	M8 x 1.25	4.5	14	7	34	5.5
40	5 to 50	36.5	29.5	8	1/8	11	46.5	39.5	8	1/8	11	13	16	52	M8 x 1.25	5	14	7	40	5.5
	75, 100	46.5	39.5	8	1/8	11	46.5	39.5	8	1/8	11	13	16	52	M8 x 1.25	5	14	7	40	5.5
	10 to 50	38.5	30.5	10.5	1/4	10.5	48.5	40.5	10.5	1/4	10.5	15	20	64	M10 x 1.5	7	17	8	50	6.6
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	6.6

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

Note 2) The external dimensions with rubber bumper are same as those of the standard, as shown above.  
\* For details about the rod end nut and accessory brackets, refer to page 19.

Note 3) For calculation on the longitudinal dimension of intermediate strokes, refer to page 3. The spacer-installed type (Standard, -XB10A) and the exclusive body type (-XB10) are available.