

Compact Cylinder: Standard Type Single Acting, Single Rod

Series CQS

ø12, ø16, ø20, ø25

How to Order

With auto switch **CDQS** **B** **20** - **10** **S** **□** - **M9BW** **□** - **□**

With auto switch
(Built-in magnet)

Mounting style

B	Through-hole/Both ends tapped common (Standard)
L	Foot style
F	Rod side flange style
G	Head side flange style
D	Double clevis style

* Mounting brackets are shipped together, (but not assembled).
* Cylinder mounting bolts are not included. Order them separately referring to "Mounting Bolt for CQS" on page 569.

Bore size

12	12 mm
16	16 mm
20	20 mm
25	25 mm

Cylinder stroke (mm)

Standard Stroke

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

For "Manufacture of Intermediate Strokes", refer to page 568.

Number of auto switches

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

Auto switch

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

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

Body option

Nil	Standard (Rod end female thread)
M	Rod end male thread
F	Boss on head side

Action

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

Built-in Magnet Cylinder Model

If a built-in magnet cylinder without an auto switch is required, there is no need to enter the symbol for the auto switch.
(Example) CDQSL25-10T

Made to Order
Refer to page 568 for details.

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

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model		Lead wire length (m)				Pre-wired connector	Applicable load		
					DC		AC	Perpendicular	In-line	0.5 (Nil)	1 (M)	3 (L)				5 (Z)
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NV	M9N	●	●	●	○	○	IC circuit	Relay, PLC
				3-wire (PNP)		12 V		M9PV	M9P	●	●	●	○	○		
	2-wire			M9BV				M9B	●	●	●	○	○			
	3-wire (NPN)			5 V, 12 V		M9NWV		M9NW	●	●	●	○	○			
	3-wire (PNP)			5 V, 12 V	M9PWV	M9PW		●	●	●	○	○	IC circuit			
	2-wire				M9BWV	M9BW		●	●	●	○	○				
	3-wire (NPN)				M9NAV	M9NA		○	○	●	○	○				
	3-wire (PNP)				M9PAV	M9PA		○	○	●	○	○				
	Water resistant (2-color indication)	2-wire	12 V	M9BAV	M9BA	○	○	●	○	○	—					
		—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	A96V	A96	●	—	●	—	—	IC circuit
No	2-wire				24 V	12 V	100 V	A93V	A93	●	—	●	—	—	—	—
						100 V or less	A90V	A90	●	—	●	—	—	—	IC circuit	

* 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.

* Since there are other applicable auto switches than listed, refer to page 597 for details.

* For details about auto switches with pre-wired connector, refer to pages 1328 and 1329.

* Auto switches are shipped together (not assembled).

Note) There is the case A9□V/M9□V/M9□WV/M9□AVL type auto switches cannot be mounted on the port surface, depending on the cylinder's stroke and the fitting size for piping. Consult with SMC for details.

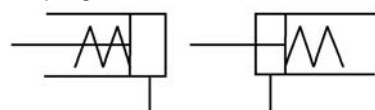
Series CQS



JIS Symbol

Single acting,
Spring return

Single acting,
Spring extend



Made to Order Specifications

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

Symbol	Specifications
-XA□	Change of rod end shape
-XB10	Intermediate stroke (Using exclusive body), Extension type only
-XC6	Piston rod, retaining ring, rod end nut made of stainless steel
-XC36	With boss on rod side, ø12 and ø16 only
-X271	Fluororubber seals
-X1876	With concave shape end boss on the cylinder tube head side

Body Option

Description	Application
Rod end male thread	Available for all standard models of single acting, single rod.

Mounting Bracket Part No.

Bore size (mm)	Foot ⁽¹⁾	Flange	Double clevis
12	CQS-L012	CQS-F012	CQS-D012
16	CQS-L016	CQS-F016	CQS-D016
20	CQS-L020	CQS-F020	CQS-D020
25	CQS-L025	CQS-F025	CQS-D025



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

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

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

Standard Specifications

Bore size (mm)	12	16	20	25
Action	Single acting, Single rod			
Fluid	Air			
Lubrication	Not required (Non-lube)			
Proof pressure	1.5 MPa			
Maximum operating pressure	1.0 MPa			
Minimum operating pressure	0.25 MPa		0.18 MPa	
Ambient and fluid temperature	Without auto switch: −10 to 70°C (No freezing)			
	With auto switch: −10 to 60°C (No freezing)			
Cushion	None			
Rod end thread	Female thread			
Stroke length tolerance	+1.0 mm 0			
Mounting	Through-hole/Both ends tapped common			
Piston speed	50 to 500 mm/s			
Allowable kinetic energy (J)	0.022	0.038	0.055	0.09

Theoretical Output

(N)

Action	Bore size (mm)	Rod size (mm)	Operating direction	Piston area (mm ²)	Operating pressure (MPa)			Retracted side	Extended side
					0.3	0.5	0.7		
Spring return	12	6	IN	—	20	43	65	14	4
			OUT	113					
	16	8	IN	—	45	86	126	15	6
			OUT	201					
	20	10	IN	—	78	141	204	15	6
			OUT	314					
Spring extend	12	6	IN	84.8	14	31	48	10	3
			OUT	—					
	16	8	IN	151	24	54	85	19	4
			OUT	—					
	20	10	IN	236	44	91	138	27	5
			OUT	—					
	25	12	IN	378	84	160	235	29	10
			OUT	—					

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

Description	Spacer is installed in the standard stroke body.
Part no.	Refer to "How to Order" for the standard model no. (page 567).
Description	Intermediate strokes by the 1 mm interval are available by using spacers with standard stroke cylinders.
Stroke range	Bore size 12 to 25 Stroke range 1 to 9
Example	Part no.: CQSB20-3T CQSB20-5T with 2 mm width spacer inside. B dimension is 24.5 mm.

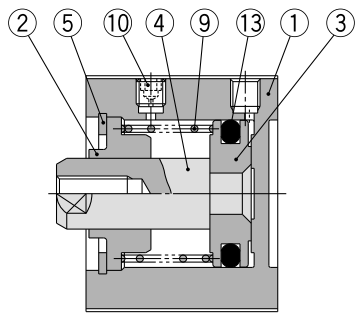
Refer to pages 595 to 597 for cylinders with auto switches.

- Minimum auto switch mounting stroke
- Proper auto switch mounting position (detection at stroke end) and mounting height
- Operating range
- Switch mounting bracket/Part no.

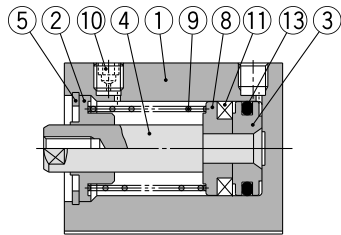
Series CQS

Construction

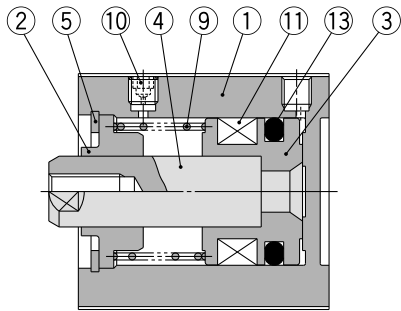
Single acting, Spring return



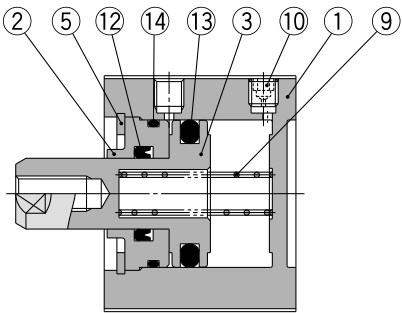
Single acting, Spring return/With auto switch (Built-in magnet) ø12, 16



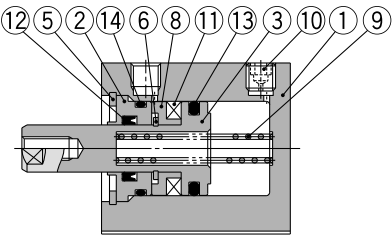
ø20, 25



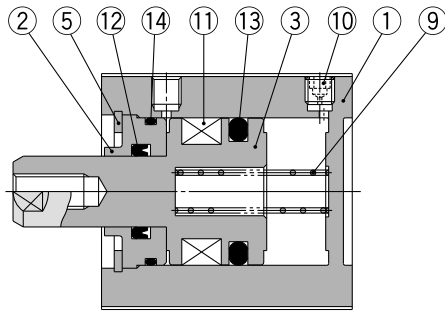
Single acting, Spring extend



Single acting, Spring extend/With auto switch (Built-in magnet) ø12, 16



ø20, 25



Component Parts

No.	Description	Material	Note
1	Cylinder tube	Aluminum alloy	Hard anodized
2	Collar	Aluminum alloy	Anodized
3	Piston	Aluminum alloy	Single acting, Spring return
		Stainless steel	Single acting, Spring extend
4	Piston rod	Stainless steel	
5	Retaining ring	Carbon tool steel	Phosphate coated
6	Retaining ring	Carbon tool steel	Nickel plated
7	Rod end nut	Carbon steel	Nickel plated
8	Spacer for switch type	Aluminum alloy	Chromated
9	Return spring	Piano wire	Zinc chromated
10	Plug with fixed orifice	Alloy steel	Nickel plated
11	Magnet	—	
12*	Rod seal	NBR	
13*	Piston seal	NBR	
14*	Tube gasket	NBR	

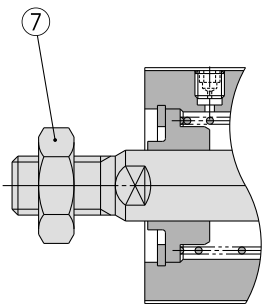
Replacement Parts/Seal Kit Single acting, Spring return

Bore size (mm)	Kit no.	Contents
12	CQSB12-S-PS	Set of nos. above 13
16	CQSB16-S-PS	
20	CQSB20-S-PS	
25	CQSB25-S-PS	

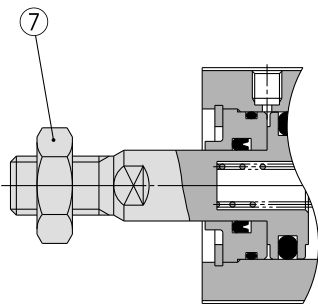
* Seal kit includes 13. Order the seal kit, based on each bore size.
* Since the seal kit does not include a grease pack, order it separately.
Grease pack part no.: GR-S-010 (10 g)

Rod end male thread

Single acting, Spring return



Single acting, Spring extend



Replacement Parts/Seal Kit Single acting, Spring extend

Bore size (mm)	Kit no.	Contents
12	CQSB12-T-PS	Set of nos. above 12, 13, 14
16	CQSB16-T-PS	
20	CQSB20-T-PS	
25	CQSB25-T-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)