

# High Durability Series

# Longer Life Cylinder Double Acting, Single Rod

# CQS-XB24

ø12, ø16, ø20, ø25



## How to Order

**Without auto switch** CQS **B** **20** - **30** **D**   - **XB24**

**With auto switch** **CDQS** **B** **20** - **30** **D**   - **M9BW**   - **XB24**

**With auto switch** (Built-in magnet)

**Mounting**

<b>B</b>	Through-hole/Both ends tapped common (Standard)
<b>L</b>	Foot bracket
<b>LC</b>	Compact foot bracket
<b>F</b>	Rod flange
<b>G</b>	Head flange
<b>D</b>	Double clevis

\* Mounting brackets are shipped together with the product but do not come assembled.

**Bore size**

<b>12</b>	12 mm
<b>16</b>	16 mm
<b>20</b>	20 mm
<b>25</b>	25 mm

**Cylinder stroke [mm]**

Bore size	Standard stroke
<b>12, 16</b>	5, 10, 15, 20, 25, 30
<b>20</b>	5, 10, 15, 20, 25, 30, 35, 40, 45, 50
<b>25</b>	30, 35, 40, 45, 50

**Number of auto switches**

<b>Nil</b>	2
<b>S</b>	1
<b>n</b>	n

**Auto switch**

<b>Nil</b>	Without auto switch
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\* For applicable auto switches, refer to the table below.

**Body option**

<b>Nil</b>	Standard
<b>C</b>	With rubber bumper
<b>M</b>	Rod end male thread

\* Combination of body options is available. CM

**Action**

<b>D</b>	Double acting
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**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) CDQSL25-30D-XB24

## Applicable Auto Switches / Refer to the Web Catalog for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model		Lead wire length [m]				Pre-wired connector	Applicable load				
					DC	AC	Perpendicular	In-line	0.5 (Nil)	1 (M)	3 (L)	5 (Z)						
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	M9NV	M9N	●	●	●	○	○	IC circuit	Relay, PLC			
				3-wire (PNP)					●	●	●	○						
				2-wire	12 V				●	●	●	○						
				3-wire (NPN)	5 V, 12 V				●	●	●	○						
	3-wire (PNP)			●					●	●	○							
	Diagnostic indication (2-color indicator)			2-wire	12 V				●	●	●	○						
				3-wire (NPN)	5 V, 12 V				●	●	●	○						
	Water resistant (2-color indicator)			3-wire (PNP)					12 V	●	●	●				○		
				2-wire	12 V				●	●	●	○						
	Magnetic field resistant (2-color indicator)			3-wire (NPN)	5 V, 12 V				○	○	●	○						
3-wire (PNP)		○	○	●		○												
Reed auto switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	—	A96V	A96	●	—	●	—	—	IC circuit	—			
				2-wire					24 V	12 V	100 V	●				●	●	●
				No	24 V				100 V or less	A93V*2	A93	●				●	●	●
									100 V or less	A90V	A90	●				—	●	—

\*1 Water-resistant type auto switches can be mounted on the models, but SMC cannot guarantee water resistance.

Please contact SMC regarding water-resistant types with the above model numbers.

\*2 The 1 m lead wire is only applicable to the D-A93.

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

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

\*\* Available only for ø25.

It is mounted away from the port side to avoid interference with fittings.

\* Since there are applicable auto switches other than those listed above, refer to the Web Catalog for details.

\* The installation of auto switches is equivalent to that for the CQS Compact Cylinder series. For details, refer to the Web Catalog.

## Specifications

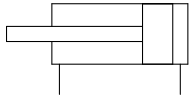


Bore size [mm]	12	16	20	25	
<b>Action</b>	Double acting, Single rod				
<b>Fluid</b>	Air				
<b>Lubrication</b>	Not required (Non-lube)				
<b>Proof pressure</b>	1.5 MPa				
<b>Max. operating pressure</b>	1.0 MPa				
<b>Min. operating pressure</b>	0.07 MPa	0.05 MPa			
<b>Ambient and fluid temperatures</b>	Without auto switch: -10 to 70°C (No freezing)				
	With auto switch: -10 to 60°C (No freezing)				
<b>Cushion</b>	None, Rubber bumper				
<b>Stroke length tolerance</b>	+1.0 <sup>*1</sup> 0				
<b>Piston speed</b>	50 to 500 mm/s				
<b>Allowable kinetic energy [J]</b>	Without cushion	0.022	0.038	0.055	0.09
	With rubber bumper	0.043	0.075	0.11	0.18

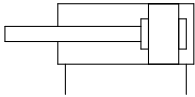
\*1 Stroke length tolerance does not include the deflection of the bumper.

### Symbol

Without cushion



Rubber bumper



**Made to Order**

For details, refer to the **Web Catalog**.

Symbol	Specifications
-XA□	Change of rod end shape

\* Only applicable to the -XA6, 7, 17, and 18

## Mounting Bracket Part Nos.

Bore size [mm]	Foot bracket*1	Compact foot bracket*1	Flange	Double clevis
<b>12</b>	CQS-L012	CQS-LC012	CQS-F012	CQS-D012
<b>16</b>	CQS-L016	CQS-LC016	CQS-F016	CQS-D016
<b>20</b>	CQS-L020	CQS-LC020	CQS-F020	CQS-D020
<b>25</b>	CQS-L025	CQS-LC025	CQS-F025	CQS-D025

\*1 When ordering foot and compact foot brackets, order 2 pieces per cylinder.

\* Parts included with each type of bracket are as follows.

Foot bracket, Compact foot bracket, Flange: Body mounting bolts

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

The mounting pitch and shape of this product with auto switch are the same as those of the Compact Cylinder CQS series with auto switch. For details, refer to the **Web Catalog**.

- Auto Switch Proper Mounting Position (Detection at stroke end) and Mounting Height
- Min. Stroke for Auto Switch Mounting
- Operating Range
- Auto Switch Mounting Brackets/Part Nos.

### Moisture Control Tube IDK Series



When operating an actuator with a small bore size and a short stroke at a high frequency, dew condensation (water droplets) 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 **Web Catalog**.

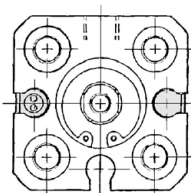
**The allowable kinetic energy, allowable loads at the rod end, theoretical output, weight, accessory, and mounting bolts for a through hole are equivalent to those of the Compact Cylinder CQS series. For details, refer to the Web Catalog.**

# CQS-XB24

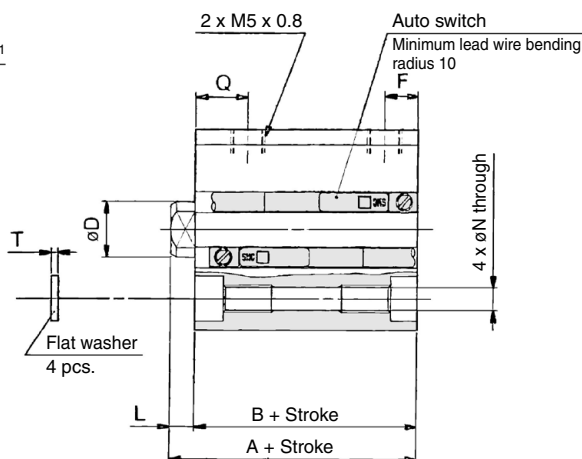
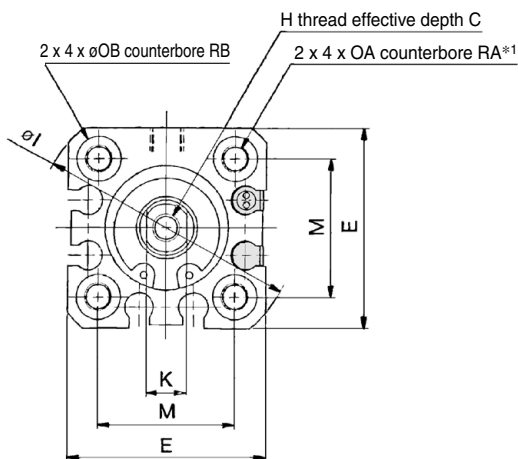
Dimensions:  $\varnothing 12$  to  $\varnothing 25$

Standard (Through-hole/Both ends tapped common): CQSB/CDQSB-XB24

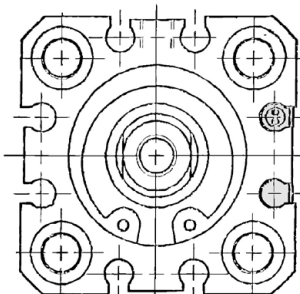
$\varnothing 12$



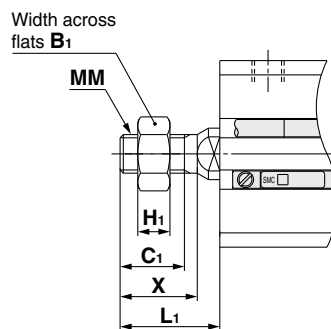
$\varnothing 16$



$\varnothing 20, \varnothing 25$



### Rod end male thread



### Rod End Male Thread

Bore size	B <sub>1</sub>	C <sub>1</sub>	H <sub>1</sub>	L <sub>1</sub>	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

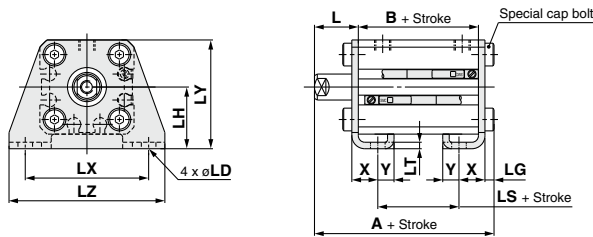
### Standard

Bore size	Standard stroke range	Standard stroke								C	D	E	H	I	K	M	N	OA	OB	Q	RA	RB	T
		Without auto switch				With auto switch																	
		A	B	F	L	A	B	F	L														
12	5 to 30	20.5	17	5	3.5	25.5	22	5	3.5	6	6	25	M3 x 0.5	32	5	15.5	3.5	M4 x 0.7	6.5	7.5	7	4	0.5
16	5 to 30	20.5	17	5	3.5	25.5	22	5	3.5	8	8	29	M4 x 0.7	38	6	20	3.5	M4 x 0.7	6.5	7.5	7	4	0.5
20	5 to 50	24	19.5	5.5	4.5	34	29.5	5.5	4.5	7	10	36	M5 x 0.8	47	8	25.5	5.4	M6 x 1.0	9	8	10	7	1
25	5 to 50	27.5	22.5	5.5	5	37.5	32.5	5.5	5	12	12	40	M6 x 1.0	52	10	28	5.4	M6 x 1.0	9	9	10	7	1

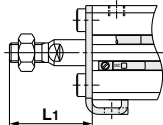
\*1 For the following bore/stroke sizes through-hole is threaded over the entire length: Standard  $\varnothing 12$  and  $\varnothing 16$ ; 5 stroke,  $\varnothing 20$ ; 5 to 15 stroke,  $\varnothing 25$ ; 5 to 10 stroke,  $\varnothing 20$  with auto switch built-in magnet; 5 stroke.

# Dimensions: $\varnothing 12$ to $\varnothing 25$

## Foot bracket: CQSL/CDQSL-XB24



### Rod end male thread



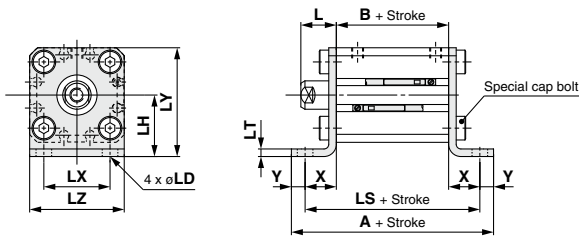
## Foot Bracket

Bore size	Standard stroke range	Without auto switch			With auto switch		
		A	B	LS	A	B	LS
12	5 to 30	35.3	17	5	40.3	22	10
16	5 to 30	35.3	17	5	40.3	22	10
20	5 to 50	41.2	19.5	7.5	51.2	29.5	17.5
25	5 to 50	44.7	22.5	7.5	54.7	32.5	17.5

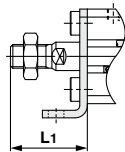
  

Bore size	L	L1	LD	LG	LH	LT	LX	LY	LZ	X	Y
12	13.5	24	4.5	2.8	17	2	34	29.5	44	8	4.5
16	13.5	25.5	4.5	2.8	19	2	38	33.5	48	8	5
20	14.5	28.5	6.6	4	24	3.2	48	42	62	9.2	5.8
25	15	32.5	6.6	4	26	3.2	52	46	66	10.7	5.8

## Compact foot bracket: CQSLC/CDQSLC-XB24



### Rod end male thread



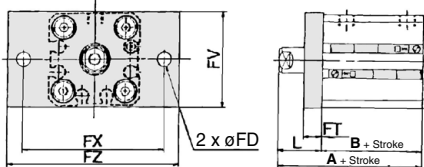
## Compact Foot Bracket

Bore size	Standard stroke range	Without auto switch			With auto switch		
		A	B	LS	A	B	LS
12	5 to 30	44.6	17	35.6	49.6	22	40.6
16	5 to 30	45.6	17	35.6	50.6	22	40.6
20	5 to 50	57.5	19.5	45.9	67.5	29.5	55.9
25	5 to 50	60.5	22.5	48.9	70.5	32.5	58.9

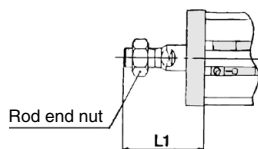
  

Bore size	L	L1	LD	LH	LT	LX	LY	LZ	X	Y
12	13.5	24	4.5	17	2	15.5	29.5	25	9.3	4.5
16	13.5	25.5	4.5	19	2	20	33.5	29	9.3	5
20	14.5	28.5	6.6	24	3.2	25.5	42	36	13.2	5.8
25	15	32.5	6.6	26	3.2	28	46	40	13.2	5.8

## Rod flange: CQSF/CDQSF-XB24



### Rod end male thread



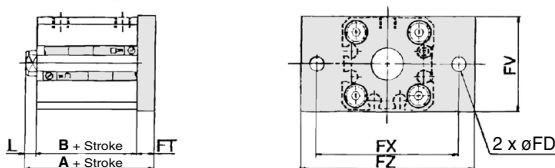
## Rod Flange

Bore size	Standard stroke range	Without auto switch		With auto switch	
		A	B	A	B
12	5 to 30	30.5	17	35.5	22
16	5 to 30	30.5	17	35.5	22
20	5 to 50	34	19.5	44	29.5
25	5 to 50	37.5	22.5	47.5	32.5

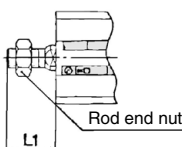
  

Bore size	FD	FT	FV	FX	FZ	L	L1
12	4.5	5.5	25	45	55	13.5	24
16	4.5	5.5	30	45	55	13.5	25.5
20	6.6	8	39	48	60	14.5	28.5
25	6.6	8	42	52	64	15	32.5

## Head flange: CQSG/CDQSG-XB24



### Rod end male thread



## Head Flange

Bore size	Standard stroke range	Without auto switch				With auto switch			
		A	B	L	L1	A	B	L	L1
12	5 to 30	26	17	3.5	14	31	22	3.5	14
16	5 to 30	26	17	3.5	15.5	31	22	3.5	15.5
20	5 to 50	32	19.5	4.5	18.5	42	29.5	4.5	18.5
25	5 to 50	35.5	22.5	5	22.5	45.5	32.5	5	22.5

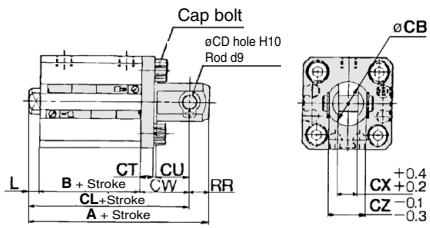
  

Bore size	FD	FT	FV	FX	FZ
12	4.5	5.5	25	45	55
16	4.5	5.5	30	45	55
20	6.6	8	39	48	60
25	6.6	8	42	52	64

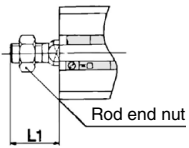
# CQS-XB24

Dimensions:  $\varnothing 12$  to  $\varnothing 25$

## Double clevis: CQSD/CDQSD-XB24



### Rod end male thread



## Double Clevis

[mm]

Bore size	Standard stroke range	Without auto switch					With auto switch				
		A	B	CL	L	L <sub>1</sub>	A	B	CL	L	L <sub>1</sub>
12	5 to 30	40.5	17	34.5	3.5	14	45.5	22	39.5	3.5	14
16	5 to 30	41.5	17	35.5	3.5	15.5	46.5	22	40.5	3.5	15.5
20	5 to 50	51	19.5	42	4.5	18.5	61	29.5	52	4.5	18.5
25	5 to 50	57.5	22.5	47.5	5	22.5	67.5	32.5	57.5	5	22.5

Bore size	CB	CD	CT	CU	CW	CX	CZ	RR
12	12	5	4	7	14	5	10	6
16	14	5	4	10	15	6.5	12	6
20	20	8	5	12	18	8	16	9
25	24	10	5	14	20	10	20	10