Compact Cylinder

CQS Series

ø12, ø16, ø20, ø25

Ideal for machine designs with small space requirements

The "D-M9" auto switch will not protrude from switch mounting groove.

Auto switch mounting allows for flexible designing requirements

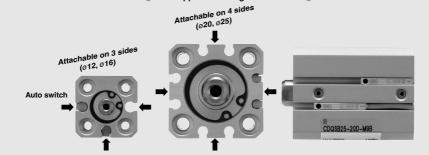
3 faces on Ø12, Ø16, and all 4 faces including port side on Ø20, Ø25.

Square body shape gives you flexibility for designing machine.

Cross-section of a cylinder tube is the same configuration regardless of w/ switch or w/o switch.

Non-rotating accuracy Non-rotating rod

Hexagonal cross sectional shape piston rod for high non-rotation accuracy. $\wp12$, $\wp16 - \pm1^\circ$ $\wp20$, $\wp25 - \pm0.7^\circ$



2 way basic mounting:

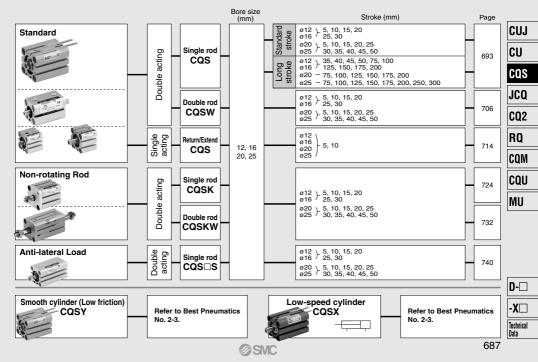
tapped

Through-hole or both ends

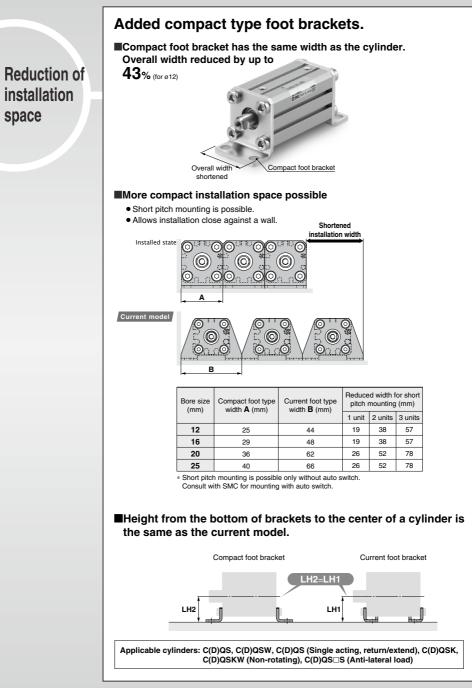
Basic mounting is 2 way. You can

ends tapped mounting.

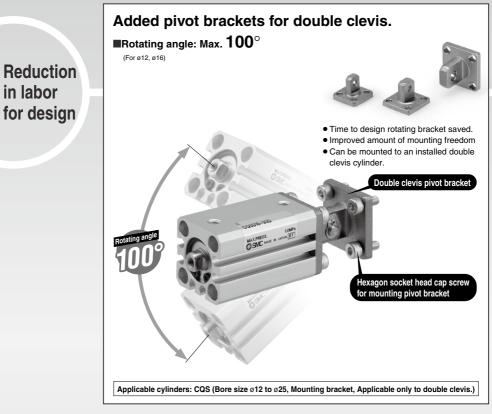
choose either through-hole or both



CQS Series Compact Cylinder



CQS Series Compact Cylinder



in labor

CUJ CU CQS JCQ CQ2 RQ COM CQU MU



Combinations of Standard Products and Made

CQS Series

●: Standard		Series	-	CC (Stan			
©: Made to O	order specifications	Action/	Double	acting		acting	
○: Special pro —: Not availab	oduct (Contact SMC for details.) ble	Туре	Single rod	Double rod	Single rod/ Extension	Single rod/ Retraction	
Symbol	Specification	Applicable bore size		ø12 te	o ø25		
Standard	Standard		•		•	•	
D	Built-in magnet		•	•	•	•	
CQS□-□M	Rod end male thread		•	•	•	•	
CQS□-□C	With rubber bumper		•	•	0	0	
CQS□-□F	With boss on head end	ø12 to ø25	•	_	•	•	
	Foot, Flange	012 10 025	•	•	•	•	
CQSD	Double clevis type		•	_	•	•	
10-, 11-	Clean series		•	0	0	0	
25A-	Copper (Cu) and zinc (Zn)-free (5)		•	0	0	0	
20-	Copper ⁽⁴⁾ and Fluorine-free		•	•	•	•	
CQS⊡M	Cylinder with Stable Lubrication Function (Lube-retainer) (6)	ø20 to ø25	•	0	0	0	
XB6	Heat-resistant cylinder (-10 to 150 °C)		O	O	0	0	
ХВ7	Cold-resistant cylinder (-40 to 70 °C)		O	O	0	0	
ХВ9	Low-speed cylinder (5 to 50 mm/s)		O	O	0	0	
XB10	Intermediate stroke (Using exclusive body)		O	O	O	0	
XB13	Low-speed cylinder (5 to 50 mm/s)		O	O	0	0	
XC6	Piston rod, retaining ring, rod end nut made of stainless steel		O	O	O	0	
XC8	Adjustable stroke cylinder/Adjustable extension type		O	_	0	0	
XC9	Adjustable stroke cylinder/Adjustable retraction type		O		0	0	
XC10	Dual stroke cylinder/Double rod type		O	_	O	0	
XC11	Dual stroke cylinder/Single rod type	ø12 to ø25	O		0	0	
XC36	With boss on rod side		O	O	O	0	
XC85	Grease for food processing equipment		O	O	O	0	
XC92	Dust resistant cylinder		0	0	0	0	
X235	Change of piston rod end of double rod cylinder		_	O	_	_	
X271	Fluororubber seal		O	O	O	0	
X525	Long stroke of adjustable extension stroke cylinder (-XC8)		0	_	0	0	
X526	Long stroke of adjustable retraction stroke cylinder (-XC9)		0	_	0	0	
X633	Intermediate stroke of double rod type		_	0	_	_	
X636	Long stroke of dual stroke single rod		0	_	0	_	
X1876	With concave shape end boss on the cylinder tube head side	ø20, ø25	0	_	O	0	

Note 1) A rubber bumper comes as standard.

Note 2) For ø12 and ø16 only. (O) for ø20 and ø25. Note 3) Refer to Best Pneumatics No. 2-3 for low-speed cylinders. Note 4) Copper-free for the externally exposed part. For details, refer to the Web Catalog. Note 5) For details, refer to the SMC website.

Note 6) Only the products with an auto switch and without rubber bumper are compatible.

to Order Specifications

CQS Series

_						
	CQSK (Non-rotating rod) Double acting		CQS (Long stroke)	CQS⊡S (Anti-lateral load)	CQSY Smooth cylinder (Low friction) (3)	CQSX Low-speed cylinder (3)
	Double acting Single rod Double rod		Double acting	Double acting	Double acting	Double acting
	Single rod	Double rod	Single rod	Single rod	Single rod	Single rod
			1	ø12 to ø25	•	
	•		•	•	•	•
	•	•	•	•	•	•
	• •		•	•	•	•
	0	0	• (1)	• (1)	• (1)	•
	•	_	0	•	0	0
	•	•	•	•	•	•
	•	_	•	•	•	
	0	0	0	0	_	•
	0	0	•	•	0	0
	0	0	•	•	_	_
	_		0	0	0	0
	0	0	0	0	—	_
	0	0	0	0	_	_
	0	0	0	0	_	_
	0	0	O	O	0	0
	0	0	0	0	_	_
	0	O	O	O	0	0
	0	_	0	0	0	0
	0	_	0	0	0	0
	0	_	0	0	0	0
	0	_	0	0	0	0
	0	0	© ⁽²⁾	O ⁽²⁾	O ⁽²⁾	O ⁽²⁾
	0	0	O	0	_	_
	_	-	0	0	_	_
	_	0		_	_	_
	0	0	O	0	—	_
	0	—	0	0	0	0
	0	-	0	0	0	0
	—	O	_	—	—	_
	0	—	0	0	0	0
	0		_	0	0	_

D-□ -**X**□

Technical Data



CQS Series Specific Product Precautions

Be sure to read this before handling the products.Refer to back page 50 for Safety Instructions and pages 3 to 12 for Actuator and Auto Switch Precautions.

Allowable Lateral Load at Rod End

Operating Precautions

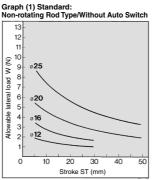
Caution

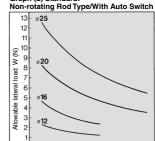
- All loads to piston rod must be applied in axial direction only.
 - When a lateral load is applied unavoidably, ensure that it should not exceed the allowable lateral load to the rod end as specified in graph (1) to (5).
 - When installing a cylinder, centering should be required accurately.
 - Adoption of guide mechanism is strongly recommended for the case when CQS is used as stopper to prevent non-rotating piston rod from side loads.
- 2. When a workpiece is secured to the end of the piston rod, ensure that the piston rod is retracted entirely, and place a wrench on the portion of the rod that protrudes beyond the section. Also, tighten by giving consideration to prevent the tightening torque from being applied to the non-rotating guide.

Retaining Ring Installation/Removal

▲Caution

- 1. For installation and removal, use an appropriate pair of pliers (tool for installing a type C retaining ring).
- 2. Even if a proper plier (tool for installing 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.





Stroke ST (mm)

Anti-lateral Load Type/With Auto Switch

(Mounting orientation: Horizontal)

۲

Graph (2) Standard:

10 20 30 40 50

Graph (4)

30-

25

15

10 0**16**

5

0

a 20

ø12

10 20

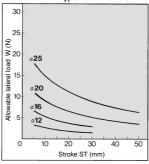
Ź

≥ 20

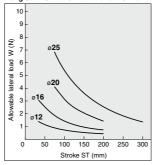
Allowable lateral load



Anti-lateral Load Type/Without Auto Switch



Graph (5) Long Stroke/With & Without Auto Switch



Note 1) Graph (1) to (5): Rod end female thread

Stroke ST (mm)

30

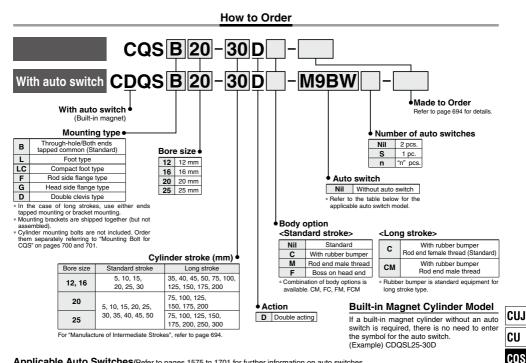
40 50

Note 2) Lateral load allowance varies depending upon rod end shape dimensions or load value (distance to the center of the gravity of load). Please consult with SMC.

SMC

Compact Cylinder: Standard Type **Double Acting, Single Rod** CQS Series

ø12, ø16, ø20, ø25



Applicable Auto Switches/Refer to pages 1575 to 1701 for further information on auto switches.

			1 1 1		1	oad volta		Auto outit	tch model	Lead	wiro	lonat	h (m)				
		Electrical	흔	Wiring	L	.oau voita	ige	Auto swi	Ich model		wire		1 (11)	Pre-wired			JCQ
Туре	Special function	entry	ndicator light	(Output)	г	oc	AC	Perpendicular	In-line	0.5	1	3	5	connector	Applical	ole load	JUU
		,	臣	(reipenuiculai	111-11110	(Nil)	Nil) (M)		(Z)				
				3-wire (NPN)		5 V. 12 V		M9NV	M9N	•	٠	٠	0	0	IC circuit		CQ2
5	_			3-wire (PNP)		15 V, 12 V		M9PV	M9P	•	•	•	0	0	IC CITCUIL		
switch				2-wire	1	12 V	1	M9BV	M9B	٠	٠	٠	0	0	_		RQ
	Discuss still in discation	1		3-wire (NPN)		- 1 40.14	1	M9NWV	M9NW	•	۲	•	0	0	IC circuit		IIU
auto	Diagnostic indication (2-color indicator)	Grommet	Voo	3-wire (PNP)	24 V	5 V, 12 V		M9PWV	M9PW	•	•	•	0	0	IC CIrcuit	Relay,	COM
		Giommer	lies	2-wire	24 V	12 V	1 -	M9BWV	M9BW	•	•	•	0	0	I	PLC	GUIN
state	Water resistant	1		3-wire (NPN)	1	5 V. 12 V	1	M9NAV*1	M9NA*1	0	0	•	0	0	IC circuit		
	(2-color indicator)			3-wire (PNP)]	5 V, 12 V		M9PAV*1	M9PA*1	0	0	۲	0	0	IC circuit		CQU
Solid				2-wire]	12 V]	M9BAV*1	M9BA*1	0	0	•	0	0			
•,	Magnetic field resistant (2-color indicator)	1		2-wire (Non-polar)	1	-	1	_	P3DWA**	٠	-	•	•	0			MU
Reed auto switch		Grommet	Yes	3-wire (NPN equivalent)	_	5 V	-	A96V	A96	•	-	•	-	-	IC circuit	—	
to s	-	Gioinnet		2-wire	24 V	12 V	100 V	A93V*2	A93	٠	۲	•	•	-	—	Relay,	
au			No	2-wire	24 V	12 V	100 V or less	A90V	A90	•	-	•	-	-	IC circuit	PLC	

*1 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.

*2 1 m type lead wire is only applicable to 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) M9NWZ

* Since there are other applicable auto switches than listed, refer to page 749 for details

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

Auto switches are shipped together (not assembled)

Note) There is the case D-A9=V/M9=V/M9=WV/M9=AV 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.

** Available only for ø25.



D-

-X

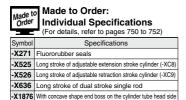
SMC

* Solid state auto switches marked with "O" are produced upon receipt of order.

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



Symbol Without cushion Rubber bumper



Made to Order Specifications

Click h	ere for details
Symbol	Specifications
-XA□	Change of rod end shape
-XB6	Heat-resistant cylinder (-10 to 150 °C) (without an auto switch)
-XB7	Cold-resistant cylinder (–40 to 70 $^\circ\text{C})$ (without an auto switch)
-XB9	Low speed cylinder (10 to 50 mm/s)
-XB10	Intermediate stroke (Using exclusive body)
-XB13	Low speed cylinder (5 to 50 mm/s)
-XC6	Piston rod, retaining ring, rod end nut made of stainless steel
-XC8	Adjustable stroke cylinder/Adjustable extension type
-XC9	Adjustable stroke cylinder/Adjustable retraction type
-XC10	Dual stroke cylinder/Double rod type
-XC11	Dual stroke cylinder/Single rod type
-XC36	With boss in rod side
-XC85	Grease for food processing equipment
-XC92	Dust resistant cylinder

Body Option

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

* Rubber bumper is standard equipment for long stroke type.

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 <u>the IDK series in the</u> <u>Best Pneumatics No. 6.</u>

Specifications

Bore size (n	nm)	12 16 20 25						
Action		Double acting, Single rod						
Fluid			A	ir				
Lubrication			Not required	I (Non-lube)				
Proof pressure			1.5 N	ИРа				
Maximum operating press	sure		1.0 M	ИРа				
Minimum operating press	ure	0.07	MPa	0.05	MPa			
Amplant and fluid townso	-	Without aut	to switch: -1	0 to 70°C (N	o freezing)			
Ambient and fluid temper	ature	With auto switch: -10 to 60°C (No freezing)						
Cushion		None, Rubber bumper *						
Rod end thread		Female thread						
Stroke length tolerance		Stand	ard stroke: +1	^{.0} Long strol	<pre>(e: +1.4 *)</pre>			
Piston speed		50 to 500 mm/s						
	Standard type	0.022 0.038		0.055	0.09			
Allowable kinetic energy (J)	With rubber bumper	0.043	0.075	0.11	0.18			

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

* Only rubber bumper is available for the long stroke type.

Theoretica	al Output			-+ OUT	•	(N)
Bore size	Rod size	Operating	Piston area	Operat	ing pressure	e (MPa)
(mm)	(mm)	direction	(mm ²)	0.3	0.5	0.7
12	6	IN	84.8	25	42	59
12	0	OUT	113	34	57	79
16	8	IN	151	45	75	106
10	0	OUT	201	60	101	141
20	10	IN	236	71	118	165
20	10	OUT	314	94	157	220
25	12	IN	378	113	189	264
25	12	OUT	491	147	245	344

Manufacture of Intermediate Stroke

Desc	ription	Spacer is in standard str	istalled in the roke body.	Exclusive body (-XB10)				
Par	t no.	Refer to "How to Oro model no. (page 69	der" for the standard 3).	Suffix "-XB10" to the end of standard model no. (page 693).				
Standard	Description	Intermediate stroke increments are ava spacers with standa		Dealing with the stroke in 1 mm increments by using an exclusive body with the specified stroke.				
stroke		Bore size	Stroke range	Bore size	Stroke range			
	Stroke range	12, 16	1 to 29	12, 16	6 to 29			
		20, 25	1 to 49	20, 25 6 to 49				
	Description	Intermediate stroke increments are ava spacers with standa		Dealing with the stroke in 1 mm increments by using an exclusive body with the specified stroke.				
Long stroke		Bore size	Stroke range	Bore size	Stroke range			
	Stroke range	12, 16	31 to 199	12, 16	31 to 199			
	g-	20	51 to 199	20	51 to 199			
		25	51 to 299	25	51 to 299			
Exa	mple	Part no.: CQSB25 CQSB25-50D wit spacer inside. B dimension is 72	h 3 mm width	Part no.: CQSB25-47D-XB10 Makes 47 stroke tube. B dimension is 69.5 mm.				

Refer to pages 747 to 749 for cylinders with auto switches.

· Minimum auto switch mounting stroke

· Proper auto switch mounting position (detection at stroke end) and mounting height

Operating range

• Auto switch mounting bracket/Part no.

SMC

Compact Cylinder: Standard Type Double Acting, Single Rod CQS Series

Weight/Without Auto Switch

Bore size							(Cyline	der s	troke	(mm	I)						
(mm)	5	10	15	20	25	30	35	40	45	50	75	100	125	150	175	200	250	300
12	29	36	42	49	56	63	93	100	107	113	147	180	213	246	279	312	—	-
16	38	47	56	64	73	82	119	128	136	145	187	229	271	313	355	397	—	-
20	63	75	88	101	114	127	140	153	166	178	306	370	434	498	562	627	—	-
25	91	107	123	139	155	171	186	202	218	234	399	478	557	636	715	794	952	1110

For standard stroke

(q)

(q)

Calculation: (Example) CQSD20-20DCM
Cylinder weight: CQSB20-20D101 g
Additional weight: Rod end male thread10 g
Additional weight: Rubber bumper
Additional weight: Double clevis type92 g
201 g

Weight/With Auto Switch (Built-in magnet)

Bore size							(Cylin	der s	troke	(mm	ı)						
(mm)	5	10	15	20	25	30	35	40	45	50	75	100	125	150	175	200	250	300
12	37	43	50	57	63	70	94	101	108	114	148	181	214	247	280	313	—	-
16	48	57	66	74	83	92	121	129	137	146	188	231	273	315	357	399	—	—
20	93	106	119	132	144	157	170	182	195	208	311	375	439	503	567	632	—	-
25	134	150	166	182	197	213	229	245	261	277	406	485	564	643	721	800	958	1116

Additional Weight

(g) Bore size (mm) 12 16 20 25 Male thread 1.5 3 6 12 Rod end male thread Nut 1 2 4 8 With boss on head end 0.7 1.3 2 3 Rubber bumper * (No need to add for long stroke) 0 1 -2 -3 Compact foot type (Including mounting bolt) 41 (39) 51 (47) 121 (115) 140 (131) Foot type (Including mounting bolt) 65 (61) 159 (153) 181 (172) 55 (53) Rod side flange type (Including mounting bolt) 58 (56) 70 (66) 143 (137) 180 (171) Head side flange type (Including mounting bolt) 56 66 137 171 Double clevis type (Including pin, snap ring, bolt) 34 40 92 127

(): denotes the values of long stroke model.

Mounting Bracket Part No.

Bore size (mm)	Foot (1)	Compact foot ⁽¹⁾	Flange	Double clevis
12	CQS-L012	CQS-LC012	CQS-F012	CQS-D012
16	CQS-L016	CQS-LC016	CQS-F016	CQS-D016
20	CQS-L020	CQS-LC020	CQS-F020	CQS-D020
25	CQS-L025	CQS-LC025	CQS-F025	CQS-D025

Note1) When ordering foot and compact foot brackets, order 2 pieces per cylinder.

Note2) Parts belonging to each bracket are as follows. Foot, Compact foot, Flange type: Body mounting bolt Double clevis type: Clevis pin, Type C retaining ring for axis, Body mounting bolt.

CU
CQS
JCQ
CQ2
RQ
CQM
CQU
MU

CUJ



695 A

Allowable Kinetic Energy

Load Mass and Piston Speed [J]										
Bore size (mm)	12	16	20	25						
Standard/ Allowable kinetic energy: Ea	0.022	0.038	0.055	0.09						
With rubber bumper/ Allowable kinetic energy: Eb	0.043	0.075	0.110	0.18						

Kinetic energy E (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 Movable Parts/Without Built-in Magnet: CQSB -- D(C)(M) (g)

Bore size							(Cylind	der st	troke	(mm	ı)						
(mm)	5	10	15	20	25	30	35	40	45	50	75	100	125	150	175	200	250	300
12	5	6	7	8	9	11	16	17	18	19	25	30	36	41	47	53	-	-
16	8	10	12	14	16	18	28	30	32	34	44	54	64	74	84	94	—	—
20	15	18	21	24	28	31	34	37	40	43	73	88	104	119	135	150	—	—
25	23	28	32	37	41	46	50	55	59	64	112	135	157	179	202	224	269	314

Mass of Movable Parts/With Built-in Magnet: CDQSB -- D(C)(M) (g)

Bore size							(Cyline	der st	troke	(mm	I)						
(mm)	5	10	15	20	25	30	35	40	45	50	75	100	125	150	175	200	250	300
12	5	7	8	9	10	11	16	18	19	20	25	31	37	42	48	53	—	-
16	9	11	13	15	17	19	29	31	33	35	45	55	65	75	85	95	—	-
20	21	24	27	30	33	36	39	42	46	49	78	93	109	124	140	155	—	-
25	37	42	46	51	55	59	64	68	73	77	118	141	163	186	208	230	275	320

Additional Mass of Movable Parts

(g)

Bore size (mm)	12	16	20	25	
Bod end male thread	Male thread	2	3	6	13
Rod end male thread	Nut	1	2	4	8
Rubber bumper (No need to add for lo	ng stroke)	0	-1	-2	-2
Foot type, Rod side flange type (No need	2	4	6	9	

Calculation: (Example) CQSB20-20DCM

Basic mass: CQSB20-20D 24 g	
Additional mass: Rod end male thread 10 g	
: With rubber bumper –2 g	
Total 32 g	

Clean Series (Standard stroke is only available.)

10 - C(D)QSB Bore size - Stroke D(M)

c	lean	Sei	ries

10	Relief type
11	Vacuum type

The type which is 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

Action	Double acting, Single rod
Bore size (mm)	ø12, ø16, ø20, ø25
Proof pressure	1.5 MPa
Maximum operating pressure	1.0 MPa
Rubber bumper	None
Piping	Screw-in piping
Piston speed	30 to 400 mm/s
Mounting	Through-hole/Both ends tapped common
Auto switch	Mountable

Note) For details, please contact SMC.

Smooth Cylinder

CQS Y Mounting Bore size Stroke DC(M)

Smooth Cylinder

Smooth operation with a little sticking and slipping at low speed.

Dual-side low friction operation is possible.



Some of the parts are different from the dimensions of the double acting, single rod type. Refer to Best Pneumatics No. 2-3.

Low-speed Cylinder

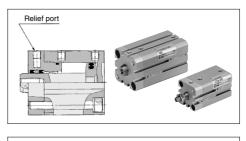


Smooth operation with a little sticking and slipping at low speed.

Can start smoothly with a little ejection even after being rendered for hours.



The dimensions are the same as the double acting, single rod type. Refer to Best Pneumatics No. 2-3.



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

Specifications

opecifications									
Bore size (mm)	12	16	20	25					
Туре	Type Pneumatic (Non-lube)								
Action	Double acting, Single rod								
Fluid		A	ir						
Proof pressure		1.05	MPa						
Maximum operating pressure 0.7 MPa									
Ambient and fluid	Without auto switch: -10 to 70°C (No freezing)								
temperature	With auto switch: -10 to 60°C (No freezing)								
Cushion		None, Rubb	er bumper*						
Rod end thread		Female	thread						
Stroke length tolerance	+1.0 *								
Mounting	Through-hole/Both ends tapped common								
Piston speed		50 to 50	0 mm/s						
Allowable leakage		0.5 L/min (A	NR) or less						

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

Minimum operating pressure (MPa)											
Bore size (mm) 12 16 20 25											
Minimum operating pressure	0.	02									

Specifications Bore size (mm) 12 16 20 25 Туре Pneumatic (Non-lube) Action Double acting, Single rod Fluid Air Proof pressure 1.5 MPa Maximum operating pressure 1.0 MPa Without auto switch: -10 to 70°C (No freezing) Ambient and fluid With auto switch: -10 to 60°C temperature Rubber bumper None, Rubber bumper* Rod end thread Female thread Stroke length tolerance Standard stroke ⁺¹ Mounting Through-hole/Both ends tapped common ø12, ø16: 1 to 300 mm/s Piston speed ø20, ø25: 0.5 to 300 mm/s * Stroke length tolerance does not include the deflection of the bumper.

Minimum operating pressure

	12	16	20	25	Technical
Minimum operating pressure	0.03	0.03	0.025	0.025	Data

D-

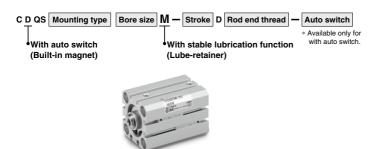
-X□



697

(MPa)

Compact Cylinder with Stable Lubrication Function (Lube-retainer)



Specifications

Bore size (mm)	20, 25
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.

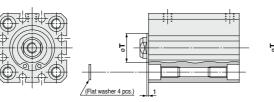
Dimensions (Dimensions other than those shown below are the same as the standard model.)

(mm)

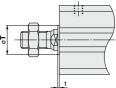
т

15

18



DM: Rod end male thread



Mounting Bracket Part No.

Bore size (mm)	Foot	Compact foot	Flange
20	CQS-LM020	CQS-LCM020	CQS-FM020
25	CQS-LM025	CQS-LCM025	CQS-FM025

* The double clevis type is the same as the standard model.

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

bracket are the same as the standard model.

Standard stroke

5, 10, 15, 20, 25, 30,

35, 40, 45, 50

* The mounting dimensions of the mounting

For details, refer to the Web Catalog.

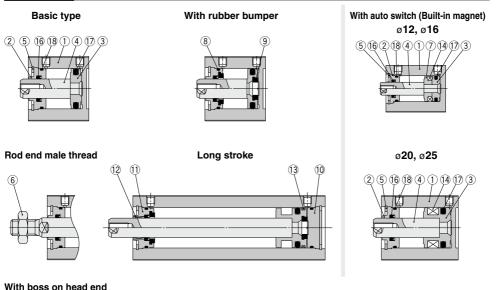
Bore size

20

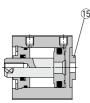
25

Compact Cylinder: Standard Type Double Acting, Single Rod CQS Series

Construction



With boss on head end



Component Parts

	P		
No.	Description	Material	Note
1	Cylinder tube	Aluminum alloy Hard anodiz	
2	Collar	Aluminum alloy Anodized	
3	Piston	Aluminum alloy	
4	Piston rod	Stainless steel	
5	Retaining ring	Carbon tool steel Phosphate of	
6	Rod end nut	Carbon steel	Zinc chromated
7	Spacer for switch type	Aluminum alloy	Chromated
8	Bumper A	Urethane	
9	Bumper B	Urethane	
10	Bottom plate	Aluminum alloy	Anodized

Component Parts

•••••						
No.	Descriptio	n	Mater	Materia		
11	Collar		Aluminum	n alloy	Anodized	CQ2
12	Bushing		Oil-impregnated s	sintered alloy		
13	Wear ring		Resi	n		RQ
14	Magnet		_			nu
15	Centering locati	on ring	Aluminum	n alloy	Anodized	0.014
16*	Rod seal		NBF	1		CQM
17*	17* Piston seal		NBF	NBR		
18*	Tube gasket		NBF	1		CQU
Benl	acoment Parte	Soal K	Seal Kit (Basic type)		ouo	
nepi	accilient i arts.	. Ocal I	tit (Dasie type	c)		
B	ore size (mm)		Kit no.	Cor	ntents	MU
	12	C	QSB12-PS			

12	CQSB12-PS	
16	CQSB16-PS	Set of nos. above
20	CQSB20-PS	6, 17, 18
25	CQSB25-PS	

Replacement Parts: Seal Kit (Long stroke)

Bore size (mm)	Kit no.	Contents
12	CQSB12-L-PS	
16	CQSB16-L-PS	Set of nos. above
20	CQSB20-L-PS	16, 17, 18
25	CQSB25-L-PS	

* Seal kit includes (6, (0, (9, 0). Order the seal kit, based on each bore size. (The long stroke type includes 2 tube gaskets.) * Since the seal kit does not include a grease pack, order it separately.

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



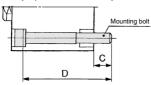
CUJ CU CQS JCQ

Mounting Bolt for CQS without Auto Switch

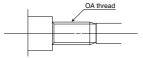
Mounting method: Mounting bolt for through-hole mounting type of CQSB is available as an option.

Refer to the following for ordering procedures. Order the actual number of bolts that will be used.

Example) CQ-M3x25L 4 pcs.



Note 1) The appropriate plain washer must be used for through-hole mounting. Note 2) Please contact SMC for details concerning the mounting bolts to be used with ø12 and ø16 that exceed 30 mm strokes, or ø20 and cole that exceed 50 pm strokes. ø25 that exceed 50 mm strokes.



Cylinder model CQSB12–5D –10D –15D –20D –25D	C 6.5	D 25 30	Mounting bolt part no. CQ-M3 x 25L
-10D -15D -20D	6.5		CQ-M3 x 25L
-15D -20D	6.5	30	
-20D	6.5		x 30L
	0.5	35	x 35L
-25D	40 45 50	40	x 40L
		45	x 45L
-30D		x 50L	
-35DC			
-40DC			
-45DC			
-50DC			cylinder by
-75DC			A screws that
-100DC	are provided with t cylinder tube.		
-125DC			0.
-150DC			
-175DC			
-200DC			
CQSB16-5D		25	CQ-M3 x 25L
-10D		30	x 30L
-15D	6.5	35	x 35L
-20D	0.5	40	x 40L
–25D		45	x 45L
-30D		50	x 50L
-35DC			
-40DC			
-45DC			
-50DC			cylinder by
-75DC			A screws that ed with the
-100DC		provia ler tub	
-125DC			
-150DC			
-175DC			
-200DC			

Cylinder model	С	D	Mounting bolt part no.
CQSB20-5D		25	CQ-M5 x 25L
-10D		30	x 30L
-15D		35	x 35L
-20D		40	x 40L
-25D	6.5	45	x 45L
-30D	0.5	50	x 50L
-35D		55	x 55L
-40D		60	x 60L
-45D		65	x 65L
-50D		70	x 70L
-75DC			
-100DC			cylinder by
-125DC			A screws that
-150DC	are provided with the		
-175DC	cylinder tube.		e.
-200DC			
CQSB25-5D		30	CQ-M5 x 30L
-10D		35	x 35L
-15D		40	x 40L
-20D		45	x 45L
–25D	8.5	50	x 50L
-30D	8.5	55	x 55L
–35D		60	x 60L
-40D		65	x 65L
-45D		70	x 70L
-50D		75	x 75L
-75DC			
-100DC			
			cylinder by
-100DC	using	the C	A screws that
-100DC -125DC	using are	the C provid	A screws that ed with the
-100DC -125DC -150DC	using are	the C	A screws that ed with the
-100DC -125DC -150DC -175DC	using are	the C provid	A screws that ed with the

Material: Chromium molybdenum steel Surface treatment: Nickel plated

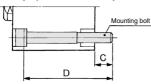
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Mounting Bolt for CDQS with Auto Switch

Mounting method: Mounting bolt for through-hole mounting type of CDQSB is available as an option.

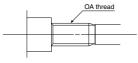
Refer to the following for ordering procedures. Order the actual number of bolts that will be used.

Example) CQ-M3x30L 4 pcs.



Note 1) The appropriate plain washer must be used for through-hole mounting. Note 2) Please contact SMC for details concerning

lote 2) Please contact SMC for details concerning the mounting bolts to be used with ø12 and ø16 that exceed 30 mm strokes, or ø20 and ø25 that exceed 50 mm strokes.



Accessory

For accessory bracket for the **CQS series**, refer to page 796, since it is commonly used with the **CQ2 series**.

- Single knuckle joint
 Pin for knuckle
- Double knuckle joint
 F
 - Rod end nut

Cylinder model	С	D	Mounting bolt part no.	
CDQSB12-5D		30	CQ-M3 x 30L	
-10D]	35	x 35L	
-15D	6.5	40	x 40L	
-20D	1 0.5	45	x 45L	
-25D]	50	x 50L	
-30D	1	55	x 55L	
-35DC				
-40DC				
-45DC				
-50DC			e cylinder by	
-75DC			A screws that	
-100DC		are provided with the cylinder tube.		
-125DC				
-150DC				
-175DC]			
-200DC				
CDQSB16–5D		30	CQ-M3 x 30L	
-10D		35	x 35L	
–15D	6.5	40	x 40L	
-20D	0.5	45	x 45L	
–25D		50	x 50L	
-30D		55	x 55L	
-35DC				
-40DC				
-45DC				
-50DC			cylinder by	
-75DC			A screws that ed with the	
-100DC		provia ler tub		
-125DC			0.	
-150DC				
-175DC				
-200DC				

Cylinder model	С	D	Mounting bolt part no.
CDQSB20-5D		35	CQ-M5 x 35L
-10D		40	x 40L
–15D		45	x 45L
-20D]	50	x 50L
–25D	6.5	55	x 55L
-30D	0.5	60	x 60L
–35D]	65	x 65L
-40D		70	x 70L
–45D		75	x 75L
–50D	1	80	x 80L
-75DC			
-100DC			cylinder by
-125DC			A screws that ed with the
-150DC		ler tub	
-175DC	- oy		0.
-200DC			
CDQSB25–5D		40	CQ-M5 x 40L
-10D		45	x 45L
-15D		50	x 50L
-20D		55	x 55L
–25D	8.5	60	x 60L
-30D		65	x 65L
–35D		70	x 70L
-40D		75	x 75L
-45D		80	x 80L
-50D		85	x 85L
-75DC			
-100DC	Sacu	ra thr	e cylinder by
-125DC			A screws that
-150DC			ed with the
-175DC	cyline	ier tub	e.
-200DC			
-250DC			
-300DC			
M			

Material: Chromium molybdenum steel Surface treatment: Zinc chromated

CUJ
CU
CQS
JCQ
CQ2
RQ
CQM
CQU
MU



Dimensions: Ø12 to Ø25

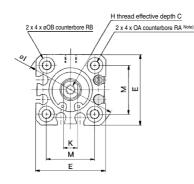
Basic type (Through-hole/Both ends tapped common): CQSB/CDQSB

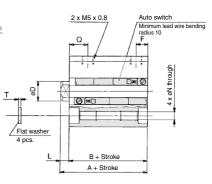
* For the auto switch mounting position and its mounting height, refer to page 747.



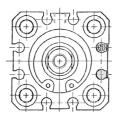


ø12

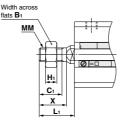




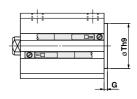
ø20, ø25



Rod end male thread



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 _0.052
20	2	13 ⁰ _0.043
25	2	15 ⁰ _{-0.043}

Note1) The product with boss on head end is applicable to only the standard stroke. Note2) With boss on rod end : Option (Suffix "-XC36" to the end of part number.) Note that only bore sizes o12 and o16 are applicable to the long stroke.

· Length with intermediate stroke

- Spacer --- The dimensions will be identical to those of the nearest long stroke. Those that exceed the standard stroke will have the long stroke dimensions.
- (2) Exclusive body (-XB10)....Add stroke. Also, the stroke length that exceeds the standard stroke would be the long stroke dimension.

Bore size (mm)	B1	C1		Standard stroke	Long stroke	мм	x
(11111)				L1	L1		
12	8	9	4	14	24	M5 x 0.8	10.5
16	10	10	5	15.5	25.5	M6 x 1.0	12
20	13	12	5	18.5	28.5	M8 x 1.25	14
25	17	15	6	22.5	32.5	M10 x 1.25	17.5

Rod End Male Thread

Basic Type

																												_
(mm) range –	<u> </u>	out a			rd stro Wi	oke th au	to sw	itch	Long stroke	<u> </u>	Long stroke Without auto switch		с	D	E	н		к	м	N	OA	ов	Q	RA	RB	т		
(mm)	(mm)	A	В	F	L	Α	В	F	L	range (mm)	Α	в	F	L									-	-				
12	5 to 30	20.5	17	5	3.5	25.5	22	5	3.5	35 to 200	45.5	32	7.5	13.5	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	35 to 200	45.5	32	7.5	13.5	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	75 to 200	55.5	41	8	14.5	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	75 to 300	59	44	9	15	12	12	40	M6 x 1.0	52	10	28	5.4	M6 x 1.0	9	9	10	7	1

Note 1) For the following bore/stroke sizes through-hole is threaded over the entire length: Basic type ø12 and ø16; 5 stroke, ø20; 5 to 15 stroke, ø25; 5 to 10 stroke, ø20 with auto switch built-in magnet; 5 stroke.

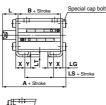
Note 2) Rubber bumper type has the same dimensions as those indicated above. * For details about the rod end nut and accessory brackets, refer to page 796.



Foot type: CQSL/CDQSL



Rod end male thread

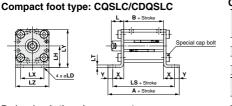


Foot Type

	00												
Bore size	Stan	dard			andar				- ot	ong roke		ng stro	
		iqe	Withou	ut auto	switch	With	n auto :	switch		nge	Without	/With aut	to switch
(mm)		m)	Α	В	LS	Α	В	LS		nm)	Α	В	LS
12	5 to	30	35.3	17	5	40.3	22	10	35 1	io 200	50.3	32	20
16	5 to	30	35.3	17	5	40.3	22	10	35 1	o 200	50.3	32	20
20	5 to	50	41.2	19.5	7.5	51.2	29.5	17.5	75 t	o 200	62.7	41	29
25	5 to	50	44.7	22.5	7.5	54.7	32.5	17.5	75 1	o 300	66.2	44	29
Bore size (mm)	L	L1	LD	LG	i LI	н	LT	LY	LZ	x	Y		
12	13.5	24	4.5	2.8	17	7	2	34	29.5	44	8	4.5	
16	13.5	25.5	4.5 2.8 19 2 38 3							48	8	5	
20	14.5	28.5	6.6 4 24		4 ;	3.2	48	42 62		9.2	5.8		
25	15	32.5	6.6 4 26 3.2 52							66	10.7	5.8	
							Foot	brack	ket ma	terial:	Carbo	n stee	el

Surface treatment: Nickel plated

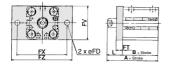
Compact Foot Type



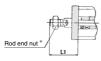
Rod end male thread



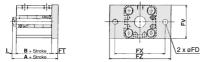
Rod side flange type: CQSF/CDQSF



Rod end male thread



Head side flange type: CQSG/CDQSG



Rod end male thread



		Stan			St	andaı	d stro	oke			ong	Lor	ng str	oke
	Bore size	stro	oke nge	Withou	ut auto	switch	With	auto :	switch		roke inge	Without/	With aut	to switch
	(mm)	(m		Α	в	LS	Α	В	LS		nm)	Α	в	LS
	12	5 to	30	44.6	17	35.6	49.6	22	40.6	35 1	to 200	59.6	32	50.6
	16	5 to	30	45.6	17	35.6	50.6	22	40.6	35 1	35 to 200		32	50.6
	20	5 to	50	57.5 19.5 45.9		67.5	29.5	55.9	75 1	to 200	79	41	67.4	
1	25	5 to	50	60.5	22.5	48.9	70.5 32.5		58.9	75	to 300	82	44	70.4
I	Bore size (mm)	L	L1	LD	.D LH		τl	x	LY	LΖ	x	Y		
	12	13.5	24	4.5	17	2	1	5.5	29.5	25	9.3	4.5		
1	16	13.5	25.5	4.5	19	2	: 2	20 :	33.5	29	9.3	5		
	20	14.5	28.5	6.6	24	3.	2 2	5.5	42	36	13.2	5.8		
	25	15	32.5	6.6	26	3.	3.2 28		46	40	13.2	5.8		
					Con						Carbor			

Surface treatment: Zinc chromated

Bod Side Flange Type

	- i iu	nge	1900								
Bore size	Stan			Standar			Long	<u> </u>		stroke	CUJ
(mm)	ran	ge	without a	uto switch	with au	to switch	rang	e	Without/With		000
((()))	(mi	m)	A	в	Α	в	(mm)	Α	в	
12	5 to	30	30.5	17	35.5	22	35 to 2	200	45.5	32	CU
16	5 to	30	30.5	17	35.5	22	35 to 2	200	45.5	32	
20	5 to	50	34	19.5	44	29.5	75 to 2	200	55.5	41	COS
25	5 to	50	37.5	22.5	47.5	32.5	75 to 3	300	59	44	040
Bore size (mm)	FD	FT	FV	FX	FZ	L	L1				JCQ
12	4.5	5.5	25	45	55	13.5	24				CQ2
16	4.5	5.5	30	45	55	13.5	25.5				υuz
20	6.6	8	39	48	60	14.5	28.5				
25	6.6	8	42	52	64	15	32.5				RQ
			Flange	bracket	materi	al: Carb	on steel				
			Š	urface t	reatmei	nt: Nicke	el plated				CQM

Head Side Flange Type

			•											
				Sta	andar	d stro	oke			Long	L	.ong	strok	е
		With	iout a	uto si	vitch	Wi	th aut	o swi	tch		Witho	ut/Witl	n auto	switch
(mm)	(mm)	Α	в	L	L1	Α	в	L	Lı	(mm)	Α	в	L	Lı
12	5 to 30	26	17	3.5	14	31	22	3.5	14	35 to 200	51	32	13.5	24
16	5 to 30	26	17	3.5	15.5	31	22	3.5	15.5	35 to 200	51	32	13.5	25.5
20	5 to 50	32	19.5	4.5	18.5	42	29.5	4.5	18.5	75 to 200	63.5	41	14.5	28.5
25	5 to 50	35.5	22.5	5	22.5	45.5	32.5	5	22.5	75 to 300	67	44	15	32.5
	16 20	Bore size (mm) stroke range (mm) 12 5 to 30 16 5 to 30 20 5 to 50	range (mm) with A 12 5 to 30 26 16 5 to 30 26 20 5 to 50 32	Standard stroke (mm) Without a 12 5 to 30 26 17 16 5 to 30 26 17 20 5 to 50 32 19.5	Standard (mm) Standard stroke (mm) Without auto sr (mm) Sta 12 5 to 30 26 17 3.5 16 5 to 30 26 17 3.5 20 5 to 50 32 19.5 4.5	Standard (mm) Standard (mm) Standard (mm) Standard Without auto switch 12 5 to 30 26 17 3.5 1.4 16 5 to 30 26 17 3.5 18.5 20 5 to 50 32 19.5 4.5 18.5	Standard ströke (mm) Standard str Without auto switch Without auto switch <th>Standard stroke (mm) Standard stroke Without auto switch (mm) Without auto switch (mm) With aut auto switch With aut auto switch 12 5 to 30 26 17 3.5 14 31 22 16 5 to 30 26 17 3.5 15.5 31 22 20 5 to 50 32 19.5 4.5 18.5 42 29.5</th> <th>Standard stroke (mm) Standard stroke Without auto switch With auto swi With auto swi 12 5 to 30 26 17 3.5 14 31 22 3.5 16 5 to 30 26 17 3.5 15.5 31 22 3.5 20 5 to 50 32 19.5 4.5 18.5 42 29.5 4.5</th> <th>Standard stroke (mm) Standard stroke Without auto switch With auto switch With auto switch 12 5 to 30 26 17 3.5 14 31 22 3.5 14 16 5 to 30 26 17 3.5 14.5 31 22 3.5 18.5 20 5 to 50 32 19.5 4.5 18.5 42 29.5 4.5 18.5</th> <th>Standard stroke (mm) Long stroke (mm) Long stroke (mm) Long Without auto switch Long Without auto switch Long stroke range (mm) 12 5 to 30 26 17 3.5 14 31 22 3.5 14 35 to 200 16 5 to 30 26 17 3.5 18.5 31 22 3.5 18.5 75 to 200 20 5 to 50 32 19.5 4.5 18.5 4.2 29.5 4.5 18.5 75 to 200</th> <th>Standard stroke (mm) Long stroke (mm) Long Without auto switch With stroke range (mm) Long Without auto switch With without switch Long range range (mm) L With range (mm) L With range r</th> <th>Standard stroke (mm) Long stroke (mm) Long Without auto switch Long Without/With auto switch Long minitize 12 5 to 30 26 17 3.5 14 31 22 3.5 14 35 14.3 35 10 51 35 35 31 22 3.5 14.3 35 15.5 31 22 3.5 15.5 35 200 51 32 20 5 to 30 26 17 3.5 15.5 31 22 3.5 15.5 35 20 51 32 33 34 35 34 35 34 35 34 35 34 35 34 35 36 36 36 35 34 34 35 36 36 36 36 36 34 20 5 5 5 36 32 36 35 41</th> <th>Standard stroke (mm) Long strok without auto switch Long strok without auto switch 12 5 to 30 26 17 3.5 14 31 22 3.5 14 35 to 20 51 32 13.5 16 5 to 30 26 17 3.5 14.5 32 35.5 15.5 35 to 200 61 32 13.5 20 5 to 50 32 13.5 34 22 3.5 15.5 35 to 200 61 32 13.5 20 5 to 50 32 13.5 34 29.5 4.5 18.5 75 to 200 63.5 41 14.5</th>	Standard stroke (mm) Standard stroke Without auto switch (mm) Without auto switch (mm) With aut auto switch With aut auto switch 12 5 to 30 26 17 3.5 14 31 22 16 5 to 30 26 17 3.5 15.5 31 22 20 5 to 50 32 19.5 4.5 18.5 42 29.5	Standard stroke (mm) Standard stroke Without auto switch With auto swi With auto swi 12 5 to 30 26 17 3.5 14 31 22 3.5 16 5 to 30 26 17 3.5 15.5 31 22 3.5 20 5 to 50 32 19.5 4.5 18.5 42 29.5 4.5	Standard stroke (mm) Standard stroke Without auto switch With auto switch With auto switch 12 5 to 30 26 17 3.5 14 31 22 3.5 14 16 5 to 30 26 17 3.5 14.5 31 22 3.5 18.5 20 5 to 50 32 19.5 4.5 18.5 42 29.5 4.5 18.5	Standard stroke (mm) Long stroke (mm) Long stroke (mm) Long Without auto switch Long Without auto switch Long stroke range (mm) 12 5 to 30 26 17 3.5 14 31 22 3.5 14 35 to 200 16 5 to 30 26 17 3.5 18.5 31 22 3.5 18.5 75 to 200 20 5 to 50 32 19.5 4.5 18.5 4.2 29.5 4.5 18.5 75 to 200	Standard stroke (mm) Long stroke (mm) Long Without auto switch With stroke range (mm) Long Without auto switch With without switch Long range range (mm) L With range (mm) L With range r	Standard stroke (mm) Long stroke (mm) Long Without auto switch Long Without/With auto switch Long minitize 12 5 to 30 26 17 3.5 14 31 22 3.5 14 35 14.3 35 10 51 35 35 31 22 3.5 14.3 35 15.5 31 22 3.5 15.5 35 200 51 32 20 5 to 30 26 17 3.5 15.5 31 22 3.5 15.5 35 20 51 32 33 34 35 34 35 34 35 34 35 34 35 34 35 36 36 36 35 34 34 35 36 36 36 36 36 34 20 5 5 5 36 32 36 35 41	Standard stroke (mm) Long strok without auto switch Long strok without auto switch 12 5 to 30 26 17 3.5 14 31 22 3.5 14 35 to 20 51 32 13.5 16 5 to 30 26 17 3.5 14.5 32 35.5 15.5 35 to 200 61 32 13.5 20 5 to 50 32 13.5 34 22 3.5 15.5 35 to 200 61 32 13.5 20 5 to 50 32 13.5 34 29.5 4.5 18.5 75 to 200 63.5 41 14.5

Bore size (mm)	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											
Flange bracket material: Carbon steel											

D-🗆
-X□
Technical Data

CQU

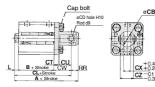
MU

Surface treatment: Nickel plated * For details about the rod end nut and accessory brackets, refer to page 796.

@SMC

Dimensions: ø12 to ø25

Double clevis type: CQSD/CDQSD



Rod end male thread

Rod end nut *	

Double Cevis Type

Double	Standard Standard stroke Long Long stroke																	
	Standa					St	andar	d stro	oke		Long		Lor	ng str	oke			
Bore size	strok rang		W	/ithou	t auto	swit	ch	,	With	auto s	switch	٦	stroke	With	out/V	Vith a	uto si	vitch
(mm)	(mm		Α	В	CL	L L1 A B CL L L1						L1	(mm)	Α	в	CL	L	L1
12	5 to 3	30	40.5	17	34.5	3.5	14	45.5	22	39.5	3.5	14	35 to 200	65.5	32	59.5	13.5	24
16	5 to 3	30	41.5	17	35.5	3.5	15.5	46.5	22	40.5	3.5	15.5	35 to 200	66.5	32	60.5	13.5	25.5
20	5 to 5	50	51	19.5	42	4.5	18.5	61	29.5	52	4.5	18.5	75 to 200	82.5	41	73.5	14.5	28.5
25	5 to 5	50	57.5	22.5	47.5	5	22.5	67.5	32.5	57.5	5	22.5	75 to 300	89	44	79	15	32.5
Bore size (mm)	СВ	c	D	ст	с	U	cw	C	x	cz	RF	3						
12	12		5	4	7	7	14	5		10	6							
16	14		5	4	1	0	15	6.	5	12	6							

Double clevis bracket material: Carbon steel Surface treatment: Nickel plated

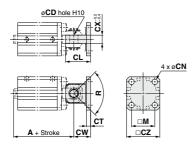
* For details about the double clevis pivot bracket, refer to page 705.
 * For details about the rod end nut and accessory brackets, refer to page 796.

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CQS Series Accessory Dimensions

Double Clevis Pivot Bracket

Bore size Ø12 to Ø25





														(mm)
Bracket	Bore	Stroke	4	4	cw	СТ	CL	сх	CD	м	cz	в	CN	Hexagon socket head cap screw for
part no.	size	range	Without auto switch	With auto switch	CW				00	IVI	02	n	CN	mounting pivot bracket (Accessory)
CQ-C012	12	5 to 30	34.5	39.5	14	4	19	5	5	15.5	25	100°	4.5	M4 x 10L
CQ-C016	16	5 to 30	35.5	40.5	15	4	21	6.5	5	20	28	100°	4.5	M4 x 10L
CQ-C020	20	5 to 50	42	52	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

CUJ
CU
CQS
JCQ
CQ2
RQ
CQM
CQU
MU



Compact Cylinder: Standard Type **Double Acting, Double Rod** COSW Series ø12, ø16, ø20, ø25

How to Order CQSW B 20 - 30 D C CDQSW B 20-30 D C-M9BW With auto switch Made to Order With auto switch Refer to page 707 for details. (Built-in magnet) Mounting type Number of auto switches B Through-hole/Both ends tapped common (Standard) Foot type 2 pcs. L Nil LC 1 pc. Compact foot type s F Flange type "n" pcs. n * Mounting brackets are shipped together (but not assembled). Auto switch Cylinder mounting bolts are not included. Order them separately referring to "Mounting Bolt for CQSW" on page 710. Nil Without auto switch * Refer to the table below for the Bore size applicable auto switch model 12 12 mm 16 16 mm Body option 20 20 mm Standard Nil 25 25 mm С With rubber bumper М Rod end male thread Cylinder stroke (mm) Combination of body options is Standard Stroke available, CM Bore size (mm) Standard stroke (mm) 12, 16 5, 10, 15, 20, 25, 30 Action Built-in Magnet Cylinder Model 20.25 5, 10, 15, 20, 25, 30, 35, 40, 45, 50 D Double acting If a built-in magnet cylinder without an auto For "Manufacture of Intermediate Strokes", refer to page 707 switch is required, there is no need to enter

Annlicable Auto Switches/Refer to pages 1575 to 1701 for further information on auto switches

	neuble Auto Own		_	to pageo tor														
		El a stational	Ight	Marine an	L	oad volta	ge	Auto swit	ch model	Lead	wire	lengt						
Туре	Special function	Electrical entry	Indicator	Wiring (Output)	D	С	AC	Perpendicular	In-line	0.5 (Nil)	1 (M)	3 (L)	1 2	Pre-wired connector	Applicat IC circuit IC circuit IC circuit IC circuit IC circuit IC circuit IC circuit	able load		
				3-wire (NPN)		5 V. 12 V		M9NV	M9N	•	•	•	0	0				
- H	-			3-wire (PNP)		5 V, 12 V		M9PV	M9P	٠	•	•	0	0	IC circuit			
switch				2-wire		12 V	1	M9BV	M9B	٠	•	•	0	0	Ι			
ő	Diagnostic indication			3-wire (NPN)	1 [5 V 40 V	5 V 40 V	5 V. 12 V		M9NWV	WV M9NW		•	۰	0	0		
auto	(2-color indicator)	3-wire (PNP)	24 V		M9PWV	M9PW	٠	•	•	0	0	IC circuit	Relay,					
		Grommet		2-wire	24 V	12 V	_	M9BWV	M9BW	٠	•	•	0	0	l	PLC		
state	Water resistant			3-wire (NPN)		5 V, 12 V		M9NAV*1	M9NA*1	0	0	•	0	0				
ē	(2-color indicator)			3-wire (PNP)				M9PAV*1	M9PA*1	0	0	٠	0	0	IC circuit			
Solid		ior indicator)		2-wire		12 V]	M9BAV*1	M9BA*1	0	0	•	0	0				
•••	Magnetic field resistant (2-color indicator)			2-wire (Non-polar)		-		-	P3DWA**	•	-	•	•	0	_			
Reed auto switch		Orrest	— Grommet	Yes	3-wire (NPN equivalent)	_	5 V	_	A96V	A96	•	-	•	-	_	IC circuit	_	
Be s		Giornmet		2-wire	24 V	12 V	100 V	A93V*2	A93	•	•	۲	•	-	—	Relay,		
au			No	2-wire	24 V	12 V	100 V or less	A90V	A90	٠	-	٠	-	_	IC circuit IC circuit IC circuit IC circuit	PLC		

*1 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.

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

* Solid state auto switches marked with "O" are produced upon receipt of order. ** Available only for ø25. It is mounted away from the port side to avoid interference with fittings

the symbol for the auto switch. (Example) CDQSWL25-30D

* 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

* Since there are other applicable auto switches than listed, refer to page 749 for details

For details about auto switches with pre-wired connector, refer to pages 1648 and 1649.
 Auto switches are shipped together (not assembled).

Note) There is the case D-A9 V/M9 V/M9 V/M9 AV 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.



Compact Cylinder: Standard Type Double Acting, Double Rod CQSW Series







	Order	
1	-	

Individual Specifications

	(For details, refer to pages 750 and 751.)
Symbol	Specifications
-X235	Change of piston rod end of double rod cylinder
-X271	Fluororubber seals
-X633	Intermediate stroke of double rod cylinder

Made to Order Specifications

Click he	ere for details
Symbol	Specifications
-XA□	Change of rod end shape
-XB6	Heat-resistant cylinder (-10 to 150 °C) (without an auto switch)
-XB7	Cold-resistant cylinder (-40 to 70 °C) (without an auto switch)
-XB9	Low speed cylinder (10 to 50 mm/s)
-XB10	Intermediate stroke (Using exclusive body)
-XB13	Low speed cylinder (5 to 50 mm/s)
-XC6	Piston rod, retaining ring, rod end nut made of stainless steel
-XC36	With boss in rod side
-XC85	Grease for food processing equipment

Body Option

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

Mounting Bracket Part No.

Bore size (mm)	Foot (1)	Compact foot (1)	Flange
12	CQS-L012	CQS-LC012	CQS-F012
16	CQS-L016	CQS-LC016	CQS-F016
20	CQS-L020	CQS-LC020	CQS-F020
25	CQS-L025	CQS-LC025	CQS-F025

Note 1) When ordering foot and compact foot brackets, order 2 pieces per cylinder.

Note 2) Parts belonging to each bracket are as follows. Foot, Compact foot, Flange type: Body mounting bolt

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 <u>the IDK series in the</u> <u>Best Pneumatics No. 6.</u>

Specifications

Bore size (m	m)	12	16	20	25	
Action		Double acting	g, Double rod			
Fluid		Air				
Lubrication	brication Not required (Non-lube)					
Proof pressure			1.5	MPa		
Maximum operating pres	1.0 MPa					
Minimum operating press	0.07 MPa 0.05 MPa					
Ambient and fluid tempe	Without auto switch: -10 to 70°C (No freezing)					
Amplent and huid tempe	rature	With auto switch: -10 to 60°C (No freezing)				
Cushion			None, Rubl	oer bumper		
Rod end thread			Female	thread		
Stroke length tolerance			+1	1.0 mm *)		
Piston speed		50 to 500 mm/s				
Allowable kinetic energy (J)	Standard type	0.022	0.038	0.055	0.09	
Allowable kinetic energy (J)	With rubber bumper	0.043	0.075	0.11	0.18	

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

Theoretical Output

i neoretical O	utput					(N)
Bore size	Rod size	Operating	Piston area	Operatir	ıg pressui	re (MPa)
(mm)	(mm)	direction	(mm²)	0.3	0.5	0.7
12	6	IN OLD OF		40	50	
12	0	OUT	84.8	25	42	59
16	8	IN	454	45	75	100
10	0	OUT	151	45	75	106
20	10	IN	000			4.05
20	10	OUT	236	71	118	165
25	12	IN	070	110	100	004
25	12	OUT	378	113	189	264

Manufacture of Intermediate Stroke

			Day (-ADIO)	
Suffix "-X633" to the	e end of standard	Suffix "-XB10" to the end of standard		
model no. (page 70	6).	model no. (page 706).		
Intermediate strokes	s in 1 mm	Dealing with the stre	oke in 1 mm	
increments are avai	lable by using	increments by using an exclusive body		
spacers with standa	rd stroke cylinders.	with the specified st	roke.	
Bore size	Stroke range	Bore size	Stroke range	
12, 16	6 to 29	12, 16	1 to 29	
20, 25	6 to 49	20, 25	1 to 49	
Part no.: CQSWB25	5-47D-X633	Part no.: CQSWB2	5-47D-XB10	
CQSWB25-50D wit	h 3 mm width	model no. (page 706). Dealing with the stroke in 1 mm increments by using an exclusive body with the specified stroke. Bore size Stroke range 12, 16 1 to 29		
spacer inside.		B dimension is 76 r	nm.	
B dimension is 79 r	nm.		D6). roke in 1 mm g an exclusive body stroke. Stroke range 1 to 29 1 to 49 25-47D-XB10 ube.	
F S	ntermediate stroke: ncrements are avai ppacers with standa Bore size 12, 16 20, 25 Part no.: CQSWB25 CQSWB25-50D with ppacer inside.	12, 16 6 to 29 20, 25 6 to 49 Part no.: CQSWB25-47D-X633 CQSWB25-50D with 3 mm width	Intermediate strokes in 1 mm Dealing with the struincrements are available by using ppacers with standard stroke cylinders. with the specified st Bore size Stroke range Bore size 12, 16 6 to 29 12, 16 20, 25 6 to 49 20, 25 Part no.: CQSWB25-47D-X633 Part no.: CQSWB25-47D-X633 QSWB25-50D with 3 mm width B dimension is 76 r	

Refer to pages 747 to 749 for cylinders with auto switches.

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



CUJ

CU CQS JCQ

CQ2 RQ CQM

CQU

MU

SMC

Weight/Without Auto Switch

Bore size		Cylinder stroke (mm)										
(mm)	5	10	15	20	25	30	35	40	45	50		
12	38	46	54	62	69	77	-	-	-	-		
16	50	61	71	81	92	102	-	-	-	-		
20	89	104	120	136	152	167	183	199	215	231		
25	127	146	166	186	206	227	247	267	287	308		

Weight/With Auto Switch (Built-in magnet)

Bore size		Cylinder stroke (mm)										
(mm)	5	10	15	20	25	30	35	40	45	50		
12	46	54	62	70	77	85	-	-	-	-		
16	60	71	81	91	102	112	-	-	-	-		
20	119	134	150	166	182	198	214	230	245	261		
25	154	174	195	215	235	255	276	296	316	336		

Additional Weight

Bore size (mm)		12	16	20	25
De des des de there ed	Male thread	3	6	12	24
Rod end male thread	Nut	2	4	8	16
With rubber bumper		0	-1	-2	-2
Foot type (Including mounting bo	olt)	55	65	159	181
Compact foot type (Including mo	41	51	121	140	
Rod side flange type (Including r	58	70	143	180	

Calculation: (Example) CQSWF12-10DM

Cylinder weight: CQSWB12-10D------46 g
 Additional weight: Rod end male thread------5 g
 Rod side flange type-------58 g

100 side hange type

109 g

Caution Retaining Ring Installation/Removal

- 1. For installation and removal, use an appropri-
- ate pair of pliers (tool for installing a type C retaining ring).2. Even if a proper plier (tool for installing type
- 2. Even if a proper plier (tool for installing 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.

≜ Warning

(q)

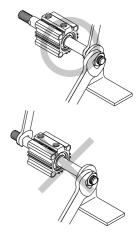
(q)

(a)

Mounting

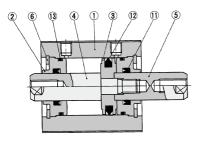
Do not apply the reverse torque to the piston rods sticking out from both sides of this cylinder at the same time. The torque makes connection threads inside lossen, which may cause an accident or malfunction.

Install or remove a load while the piston rod width across flats are secured. Do not fix the other side of piston rod width across flat and apply the reverse torque.



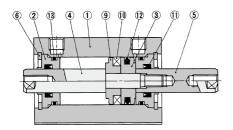
Construction

Basic type



With auto switch (Built-in magnet)





Component Parts

No.	Description	Material	Note
1	Cylinder tube	Aluminum alloy	Hard anodized
2	Collar	Aluminum alloy	Anodized
3	Piston	Aluminum alloy	
4	Piston rod A	Stainless steel	
5	Piston rod B	Stainless steel	
6	Retaining ring	Carbon tool steel	Phosphate coated
7	Rod end nut	Carbon steel	Zinc chromated
8	Bumper	Urethane	
9	Spacer for switch	Aluminum alloy	Chromated
10	Magnet	_	
11	Rod seal	NBR	
12	Piston seal	NBR	
13	Tube gasket	NBR	

Replacement Parts/Seal Kit

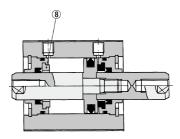
Bore size (mm)	Kit no.	Contents					
12	CQSWB12-PS						
16	CQSWB16-PS	Set of nos. above (1), (2), (3)					
20	CQSWB20-PS	Set of hos. above (1), (2), (3					
25	CQSWB25-PS						

SMC

* Seal kit includes (1), (2), (3). Order the seal kit, based on each bore size.

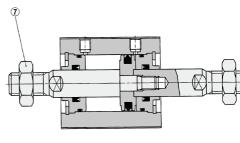
* Since the seal kit does not include a grease pack, order it separately. Grease pack part no.: GR-S-010 (10 g)

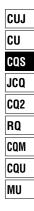
With rubber bumper



ø20, ø25

Rod end male thread





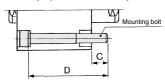
D--X Technical Data

Mounting Bolt for CQSW

Mounting method: Mounting bolt for through-hole mounting type of CQSW 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 4 pcs.



		_	
Cylinder model	С	D	Mounting bolt part no.
CQSWB12-5D		30	CQ-M3 x 30L
-10D		35	x 35L
-15D	6.5	40	x 40L
-20D	0.5	45	x 45L
-25D		50	x 50L
-30D		55	x 55L
CQSWB16-5D		30	CQ-M3 x 30L
-10D		35	x 35L
-15D	6.5	40	x 40L
-20D	0.5	45	x 45L
-25D		50	x 50L
-30D		55	x 55L
CQSWB20-5D		35	CQ-M5 x 35L
-10D	10	40	x 40L
-15D	10	45	x 45L
-20D		50	x 50L

Cylinder model	С	D	Mounting bolt part no.
CQSWB20-25D		55	CQ-M5 x 55L
-30D		60	x 60L
-35D	10	65	x 65L
-40D	10	70	x 70L
-45D		75	x 75L
-50D		80	x 80L
CQSWB25-5D		35	CQ-M5 x 35L
-10D		40	x 40L
-15D		45	x 45L
-20D		50	x 50L
-25D	7	55	x 55L
-30D	1	60	x 60L
-35D		65	x 65L
-40D		70	x 70L
-45D		75	x 75L
-50D		80	x 80L

Note) When mounting a cylinder with throughhole, be sure to use the attached plain washer.

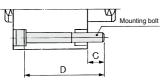
Material: Chromium molybdenum steel Surface treatment: Zinc chromated

Mounting Bolt for CDQSW with Auto Switch

Mounting method: Mounting bolt for through-hole mounting type of CDQSW is available as an option.

Refer to the following for ordering procedures. Order the actual number of bolts that will be used.

Example) CQ-M3x35L 4 pcs.



CDQSWB12-5D		35	CQ-M3 x 35L
-10D		40	x 40L
-15D	6.5	45	x 45L
-20D	0.5	50	x 50L
-25D		55	x 55L
-30D		60	x 60L
CDQSWB16-5D		35	CQ-M3 x 35L
-10D		40	x 40L
-15D	6.5	45	x 45L
-20D	0.5	50	x 50L
-25D		55	x 55L
-30D		60	x 60L
CDQSWB20-5D		45	CQ-M5 x 45L
-10D	10	50	x 50L
-15D	10	55	x 55L
-20D		60	x 60L

Cylinder model C D Mounting bolt part no.

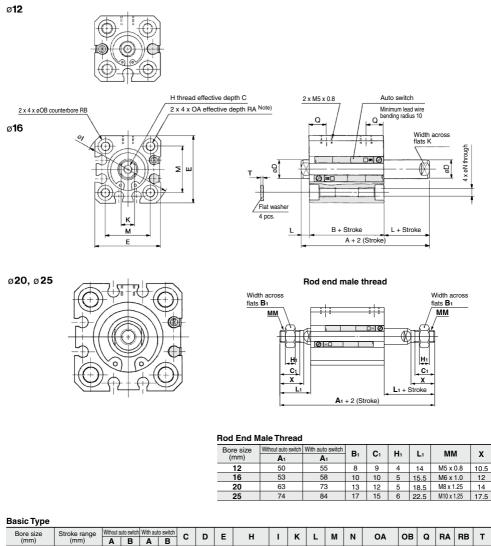
	-	-	
Cylinder model	С	D	Mounting bolt part no.
CDQSWB20-25D		65	CQ-M5 x 65L
-30D		70	x 70L
-35D	10	75	x 75L
-40D	10	80	x 80L
-45D		85	x 85L
-50D		90	x 90L
CDQSWB25-5D		45	CQ-M5 x 45L
-10D		50	x 50L
-15D		55	x 55L
-20D		60	x 60L
-25D	-	65	x 65L
-30D	7	70	x 70L
-35D		75	x 75L
-40D		80	x 80L
-45D		85	x 85L
-50D		90	x 90L

Note) When mounting a cylinder with throughhole, be sure to use the attached plain washer.

Material: Chromium molybdenum steel Surface treatment: Zinc chromated

Dimensions: Ø12 to Ø25

Basic type (Through-hole/Both ends tapped common): CQSWB/CDQSWB



Bore size	Stroke range	manoura	uto Sinton	maraa	to Switch	^	D		н		· •		M	N	OA	OB	Q	RA	RB	. T	
(mm)	(mm)	Α	В	Α	В	C			п		r.	L .	IVI	IN	UA	ОВ	Q	nA	nD	•	
12	5 to 30	29	22	34	27	6	6	25	M3 x 0.5	32	5	3.5	15.5	3.5	M4 x 0.7	6.5	7.5	7	4	0.5	
16	5 to 30	29	22	34	27	8	8	29	M4 x 0.7	38	6	3.5	20	3.5	M4 x 0.7	6.5	7.5	7	4	0.5	
20	5 to 50	35	26	45	36	7	10	36	M5 x 0.8	47	8	4.5	25.5	5.4	M6 x 1.0	9	8	10	7	1	Г
25	5 to 50	39	29	49	39	12	12	40	M6 x 1.0	52	10	5	28	5.4	M6 x 1.0	9	9	10	7	1	
loto 1) Ear bar	nia tuna a20 an	4 0 0 5 1	with E	otroko	throu	ich ha		brood	od over the	ontiro	longth										L

SMC

Note 1) For basic type ø20 and ø25 with 5 stroke, through-hole is threaded over the entire length

Note 2) Rubber bumper type has the same dimensions as those indicated above Note 3) The positions of width across flats on both sides are not the same.

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

CUJ

CU

CQS

JCQ

CQ2 RQ

COM

CQU

MU

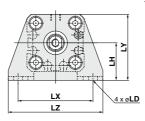
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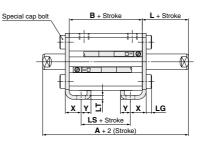
-X

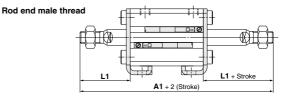
Technical Data

Dimensions: ø12 to ø25

Foot type: CQSWL/CDQSWL





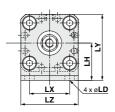


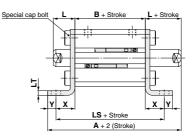
Foot Type

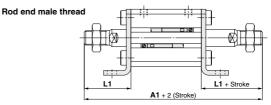
	-																			
Bore size	Stroke range	Wit	hout a	uto sw	itch	With auto switch			L1	10	LG	LH	ιт	LX	1 V	17	v	Y		
(mm)	(mm)	Α	A1	В	LS	Α	A1	В	LS	-	-	LD	LG	сп		ᅛ	L1	12	^	T
12	5 to 30	49	70	22	10	54	75	27	15	13.5	24	4.5	2.8	17	2	34	29.5	44	8	4.5
16	5 to 30	49	73	22	10	54	78	27	15	13.5	25.5	4.5	2.8	19	2	38	33.5	48	8	5
20	5 to 50	55	83	26	14	65	93	36	24	14.5	28.5	6.6	4	24	3.2	48	42	62	9.2	5.8
25	5 to 50	59	94	29	14	69	104	39	24	15	32.5	6.6	4	26	3.2	52	46	66	10.7	5.8
															-					

Foot bracket material: Carbon steel Surface treatment: Nickel plated

Compact foot type: CQSWLC/CDQSWLC







Compact Foot Type

Bore size	Stroke range	Wit	hout a	uto sw	vitch	W	ith aut	o swit	ch		14		LH	1.7	1.2	1.V	17		v
(mm)	(mm)	Α	A1	В	LS	Α	A1	В	LS	-	-	LD	гп	-	ᅛ	LT	12	^	T
12	5 to 30	49.3	70	22	40.6	54.3	75	27	45.6	13.5	24	4.5	17	2	15.5	29.5	25	9.3	4.5
16	5 to 30	49.8	73	22	40.6	54.8	78	27	45.6	13.5	25.5	4.5	19	2	20	33.5	29	9.3	5
20	5 to 50	59.5	83	26	52.4	69.5	93	36	62.4	14.5	28.5	6.6	24	3.2	25.5	42	36	13.2	5.8
25	5 to 50	63	94	29	55.4	73	104	39	65.4	15	32.5	6.6	26	32	28	46	40	13.2	5.8

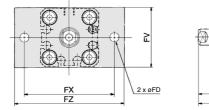
* For details about the rod end nut and accessory brackets, refer to page 796.

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

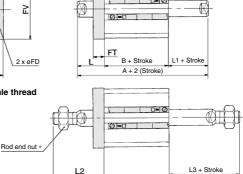


Dimensions: Ø12 to Ø25

Flange type: CQSWF/CDQSWF



Rod end male thread



A1 + 2 (Stroke)

Flange Type

Bore size	Stroke range	Witho	ut auto :	switch	With	auto sv	vitch	FD	FT	FV	FX	FZ		14	L2	L3
(mm)	(mm)	Α	A1	В	A	A1	B	FU		FV	FA	FZ	- L			L3
12	5 to 30	39	60	22	44	65	27	4.5	5.5	25	45	55	13.5	3.5	24	14
16	5 to 30	39	63	22	44	68	27	4.5	5.5	30	45	55	13.5	3.5	25.5	15.5
20	5 to 50	45	73	26	55	83	36	6.6	8	39	48	60	14.5	4.5	28.5	18.5
25	5 to 50	49	84	29	59	94	39	6.6	8	42	52	64	15	5	32.5	22.5

SMC

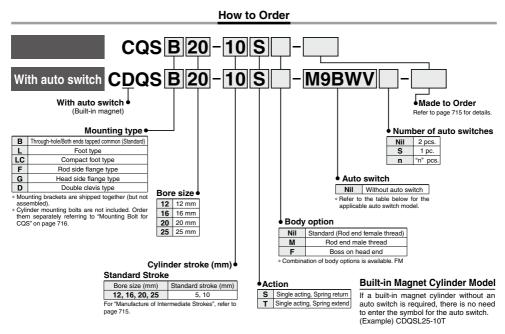
* For details about the rod end nut and accessory brackets, refer to page 796. Note 1) The positions of width across flats on both sides are not the same.

Flange bracket material: Carbon steel Surface treatment: Nickel plated

CUJ
CU
CQS
JCQ
CQ2
RQ
CQM
CQU
MU



Compact Cylinder: Standard Type Single Acting, Single Rod CQS Series ø12, ø16, ø20, ø25



Applicable Auto Switches/Refer to pages 1575 to 1701 for further information on auto switches.

		Electrical	ight	Marine a	L	oad volta	ge	Auto swite	ch model	Lead	wire	lengt	n (m)	Dura under al																	
Туре		Electrical entry	Indicator light	Wiring (Output)	D	C	AC	Perpendicular	In-line	0.5 (Nil)	1 (M)	3 (L)		Pre-wired connector		ole load															
-E				3-wire (NPN)		5 V. 12 V	M9NV	(M9N)	•	•	•	\circ	0	IC circuit																	
switch	—			3-wire (PNP)		5 V, 12 V	M9PV		(M9P)	•	•	•	\circ	0	IC CITCUIL																
s				2-wire		12 V		M9BV	(M9B)	•	•	•	0	0	-	_															
auto	Diagnostic indication			3-wire (NPN)		EV 101	5 V 10	- EV		1	1						5 V, 12 V		M9NWV	(M9NW)	•	•	•	0	0	IC circuit					
a a	(2-color indicator) Gromm	Grommet	Yes	3-wire (PNP)		4 V 5 V, 12 V 12 V	· · ·	M9PWV	(M9PW)	٠	•	•	0	0		Relay,															
state				2-wire			12 V	1	M9BWV	(M9BW)	•	•	•	0	0	—	PLC														
To To	Water resistant			3-wire (NPN)	5 V 10 V		EV 10 V	M9NAV*1	(M9NA)*1	0	0	•	0	0	IC circuit																
Solid	(2-color indicator)			3-wire (PNP)		5 V, 12 V	5 V, 12 V	5 V, 12 V	5 V, 12 V	5 v, 12 v	5 V, 12 V	15 V, 12 V	15 V, 12 V	15 v, 12 v	15 V, 12 V	5 V, 12 V	v, 12 v	M9PAV*1	(M9PA)*1	0	0	•	0	0	IC circuit						
																			2-wire		12 V		M9BAV*1	(M9BA)*1	0	0	•	0	0		
Reed auto switch		— Grommet	Yes	3-wire (NPN equivalent)	—	5 V	-	A96V	A96	•	-	•	_	-	IC circuit	-															
5 Be	—		Grommet	2-wire		12 V	100 V	A93V*2	A93	٠	•	•	٠	—	—	Relay,															
aut					No	2-wire	24 V	12 V	100 V or less	A90V	A90	٠	-		-	—	IC circuit	PLC													

*1 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.

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

* Lead wire length symbols: 0.5 m Nil (Example) M9NWV

1 m······ M (Example) M9NWVM

3 m······ L (Example) M9NWVL 5 m······ Z (Example) M9NWVZ

* Since there are other applicable auto switches than listed, refer to page 749 for details * For details about auto switches with pre-wired connector, refer to pages 1648 and 1649.

Auto switches are shipped together (not assembled). Note 1) There is the case D-A9_UV/M9_UV/M9_UV/M9_AV 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

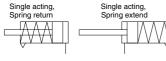
* Solid state auto switches marked with "O" are produced upon receipt of order.

Note 2) The D-M9 (in-line entry) type auto switch in () cannot be mounted due to the manufacturable stroke. When this auto switch satisfies the conditions stated in Note 3) on page 749, it can be ordered separately.

Compact Cylinder: Standard Type Single Acting, Single Rod **CQS Series**



Symbol



ide to irder	Made to Order: Individual Specifications (For details, refer to pages 750 and 752.)
_	(i of dotailo, foror to pageo foo and fooi)

Symbol	Specifications
-X271	Fluororubber seals
-X1876	With concave shape end boss on the cylinder tube head side

Made to Order Specifications

Click he	Click here for details				
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				
-XC85	Grease for food processing equipment				

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) Compact foot (1)		Flange	Double clevis
12	CQS-L012	CQS-LC012	CQS-F012	CQS-D012
16	CQS-L016	CQS-LC016	CQS-F016	CQS-D016
20	CQS-L020	CQS-LC020	CQS-F020	CQS-D020
25	CQS-L025	CQS-LC025	CQS-F025	CQS-D025

Note 1) When ordering foot and compact foot brackets, order 2 pieces per cylinder.

Note 2) Parts belonging to each bracket are as follows. Foot, Compact foot, Flange type: Body mounting bolt Double clevis type: Clevis pin, Type C retaining ring for axis, Body mounting bolt.

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.

Standard Specifications

Bore size (mm)	12	16	20	25		
Action		Single acting	ing, Single rod			
Fluid		A	ir			
Lubrication		Not required	d (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)					
Ambient and huid temperature	With auto switch: -10 to 60°C (No freezing)					
Cushion	None					
Rod end thread	Female thread					
Stroke length tolerance	+1.0 mm 0					
Piston speed		50 to 50	00 mm/s			
Allowable kinetic energy (J)	0.022	0.038	0.055	0.09		

Theoretical Output

heor	retical (Dutput							(N)		
Action	Bore size	Rod size Operating		Piston area	Operatir	ng pressu	re (MPa)	Retracted	Extended		
ACTION	(mm)	(mm)	direction	(mm ²)	0.3	0.5	0.7	side	side		
	12	6	IN	-	20	43	65	14	4		
	12	0	OUT	113	20	43	65	14	4		
E	16	8	IN	-	45	86	126	15	6		
retu	10	•	OUT	201	45				0		
Spring return	20	10	IN	-	78	141	204	15	6		
Spi		10	OUT	314					0		
	25	12	IN	-	126	224	323	21	11		
		12	OUT	491		224	525				
	12	10	10	6	IN	84.8	14	31	48	10	3
		0	OUT	-	14	31	40	10	3		
pue	16	8	IN	151	24	54	85	10	4		
exte	10	0	OUT	-	24	54	65	19			
Spring extend		10	IN	236	44	91	100	27	5		
Spr	20	20 10	OUT	-	44	91	138	21	5		
	05	10	IN	378		100			10		
	25	25	12	OUT	-	84	160	235	29	10	

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

ngle acting, S	pring retract type is exc	luded.)	JCQ				
Description	Spacer is installed in the	standard stroke body.	JUQ				
Part no.	Refer to "How to Order" for the sta	Refer to "How to Order" for the standard model no. (page 714).					
Description	Intermediate strokes in 1 mm increa with standard stroke cylinders.	ments are available by using spacers	RQ				
Stroke range	Bore size	Stroke range	CQM				
Stroke range	12 to 25	1 to 9	UUM				
Example	Part no.: CQSB20-3T CQSB20-5T with 2 mm width space	er inside.	CQU				
	B dimension is 24.5 mm.		MU				

Refer to pages 747 to 749 for cylinders with auto switches.

- · Minimum auto switch mounting stroke
- · Proper auto switch mounting position (detection at stroke end) and mounting height
- · Operating range



CUJ

CU CQS

Weight/Without Auto Switch Spring return (Spring extend)

Bore size	Cylinder st	troke (mm)
(mm)	5	10
12	29 (31)	36 (37)
16	39 (39)	48 (47)
20	63 (68)	76 (79)
25	92 (98)	108 (113)

* (): Denotes the values of spring extend.

A -1 -1 14 - -- - 1 3 A / - 1 -- 1- 4

Weight/With Auto Switch (Built-in magnet) Spring return (Spring extend) (g)

Bore size	Cylinder stroke (mm)				
(mm)	5	10			
12	37 (39)	44 (45)			
16	49 (51)	58 (59)			
20	94 (104)	107 (115)			
25	130 (150)	146 (165)			
· · · ·					

*(): Denotes the values of spring extend.

dditional weight (g)							
Bore size (mm)	12	16	20	25			
Rod end male thread	Male thread	1.5	3	6	12		
	Nut	1	2	4	8		
Foot type (Including mounting bolt)	55	65	159	181			
Compact foot type (Including mounti	41	51	121	140			
Rod side flange type (Including mou	Rod side flange type (Including mounting bolt)			143	180		
Head side flange type (Including mo	56	66	137	171			
Double clevis type (Including pin, ret	34	40	92	127			

(a)

Calculation: (Example) CQSG16-10S

Cylinder weight: CQSB16-10S------48 g

Additional weight: Head side flange type ------66 g

114 g

Mounting Bolt for CQS without Auto Switch

Mounting method: Mounting bolt for through-hole mounting type of CQS is available as an option.

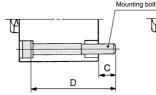
Refer to the following for ordering procedures.

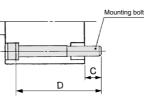
Order the actual number of bolts that will be used.

Example) CQ-M3x25L 4 pcs.

Single acting, Spring return

Single acting, Spring extend





Note) When mounting a cylinder with through-hole, be sure to use the attached plain washer.

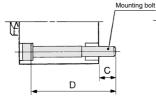
Mounting Bolt for CDQS with Auto Switch

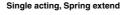
Mounting method: Mounting bolt for through-hole mounting type of CDQS is available as an option. Refer to the following for ordering procedures.

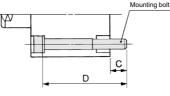
Order the actual number of bolts that will be used

Example) CQ-M3x30L 4 pcs.

Single acting, Spring return







Note) When mounting a cylinder with through-hole, be sure to use the attached plain washer.

Caution Retaining Ring Installation/Removal

- For installation and removal, use an appropriate pair of pliers (tool for installing a type C retaining ring).
- 2. Even if a proper plier (tool for installing 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.

Single Acting, S	pring	Single Acting, Spring Return													
Cylinder model	С	D	Mounting bolt part no.												
CQSB12-5S	6.5	25	CQ-M3 x 25L												
-10S	0.5	30	x 30L												
CQSB16-5S	6.5	25	CQ-M3 x 25L												
-10S	0.5	30	x 30L												
CQSB20-5S	6.5	25	CQ-M5 x 25L												
-10S	0.5	30	x 30L												
CQSB25-5S	8.5	30	CQ-M5 x 30L												
-10S	0.5	35	x 35L												

Single Acting, Spring Extend

enigie / teting, e	P										
Cylinder model	С	D	Mounting bolt part no.								
CQSB12-5T	6.5	25	CQ-M3 x 25L								
-10T	0.5	30	x 30L								
CQSB16-5T	6.5	25	CQ-M3 x 25L								
-10T	0.5	30	x 30L								
CQSB20-5T	6.5	25	CQ-M5 x 25L								
-10T	0.5	30	x 30L								
CQSB25-5T	8.5	30	CQ-M5 x 30L								
-10T	0.5	35	x 35L								
Material: Chromium molybdenum steel											

Surface treatment: Zinc chromated

Single Acting, Spring Return

onigie Acting, o	pring	neu	
Cylinder model	С	D	Mounting bolt part no.
CDQSB12-5S	6.5	30	CQ-M3 x 30L
-10S	0.5	35	x 35L
CDQSB16-5S	6.5	30	CQ-M3 x 30L
-10S	0.5	35	x 35L
CDQSB20-5S	6.5	35	CQ-M5 x 35L
-10S	0.5	40	x 40L
CDQSB25-5S	8.5	40	CQ-M5 x 40L
-10S	0.5	45	45L

Single Acting, Spring Extend

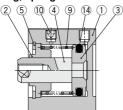
Cylinder model	С	D	Mounting bolt part no.
CDQSB12-5T	6.5	30	CQ-M3 x 30L
-10T	0.5	35	x 35L
CDQSB16-5T	6.5	30	CQ-M3 x 30L
-10T	0.5	35	x 35L
CDQSB20-5T	6.5	35	CQ-M5 x 35L
-10T	0.5	40	x 40L
CDQSB25-5T	8.5	40	CQ-M5 x 40L
-10T	0.5	45	x 45L

Material: Chromium molybdenum steel Surface treatment: Zinc chromated

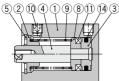


Construction

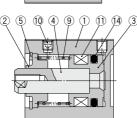
Single acting, Spring return



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



ø**20, 25**



Component Parts

No.	Description	Material	Note
1	Cylinder tube	Aluminum alloy	Hard anodized
2	Collar	Aluminum alloy	Anodized
3	Distan	Aluminum alloy	Single acting, Spring return
3	Piston	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	Zinc chromated
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	Centering location ring	Aluminum alloy	Anodized
13 *	Rod seal	NBR	
14 *	Piston seal	NBR	
15 *	Tube gasket	NBR	

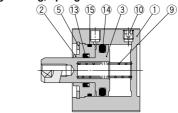
Replacement Parts/Seal Kit Single acting. Spring return

<u> </u>		
Bore size (mm)	Kit no.	Contents
12	CQSB12-S-PS	
16	CQSB16-S-PS	Set of nos, above 14
20	CQSB20-S-PS	Set of hos. above (14
25	CQSB25-S-PS	

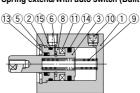
* Seal kit includes (4). Order the seal kit, based on each bore size.

* Since the seal kit does not include a grease pack, order it separately. Grease pack part no.: GR-S-010 (10 g)

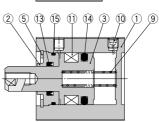
Single acting, Spring extend



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

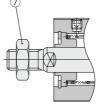


ø20, 25



Rod end male thread

Single acting, Spring return Single acting, Spring extend With boss on head end

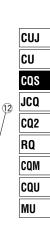




Replacement Parts/Seal Kit Single acting, Spring extend

Bore size (mm)	Kit no.	Contents
12	CQSB12-T-PS	
16	CQSB16-T-PS	Set of nos. above
20	CQSB20-T-PS	13, 14, 15
25	CQSB25-T-PS	

* Seal kit includes (3), (4), (5). 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)



D--X🗆 Technical Data

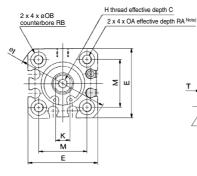
Dimensions: Ø12 to Ø25/Single Acting, Spring Return

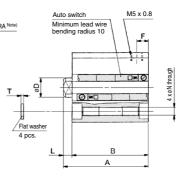
Basic type (Through-hole/Both ends tapped common): CQSB/CDQSB



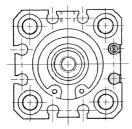


ø12

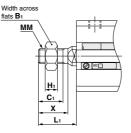




ø20, ø25



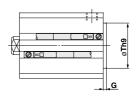
Rod end male thread



Rod End Male Thread

Bore size (mm)	B ₁	C 1	H1	L ₁	MM	Х
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

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

Basic Type

Bore size (mm)	Ctealia range	Without auto switch			witch	With auto switch																		
	Stroke range (mm)		4	1	В		4	E	3	С	D	Е	F	н	1	ĸ	L	M	Ν	OA	ΟВ	RA	RB	Т
	(((((()))))))))))))))))))))))))))))))))	5 ST	10 ST	5 ST	10 ST	5 ST	10 ST	5 ST	10 ST															
12		25.5	30.5	22	27	30.5	35.5	27	32	6	6	25	5	M3 x 0.5	32	5	3.5	15.5	3.5	M4 x 0.7	6.5	7	4	0.5
16	5.40	25.5	30.5	22	27	30.5	35.5	27	32	8	8	29	5	M4 x 0.7	38	6	3.5	20	3.5	M4 x 0.7	6.5	7	4	0.5
20	5, 10	29	34	24.5	29.5	39	44	34.5	39.5	7	10	36	5.5	M5 x 0.8	47	8	4.5	25.5	5.4	M6 x 1.0	9	10	7	1
25	1	32.5	37.5	27.5	32.5	42.5	47.5	37.5	42.5	12	12	40	5.5	M6 x 1.0	52	10	5	28	5.4	M6 x 1.0	9	10	7	1

Note) For basic type ø12 and ø16 with 5 stroke, through-hole is threaded over the entire length.

For basic type ø20, ø25 with 5 and 10 stroke, through-hole is threaded over the entire length. With auto switch (Built-in magnet)/ø20; 5 stroke.

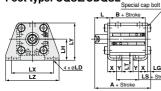
* For details about the rod end nut and accessory brackets, refer to page 796.

Dimensions: ø12 to ø25/Single Acting, Spring Return

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Foot type: CQSL/CDQSL



Foot Type

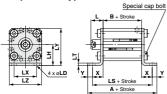
	.,																	
Bore size Stroke range		Witho	ut auto	switch	With auto switch				1.		10		1.7	1.2	LY	17	v	Y
(mm)	(mm) -	Α	в	LS	A	в	LS	L .	L1	LD	LG	гп		L.	LT	ᄕ	^	1
12		35.3	17	5	40.3	22	10	13.5	24	4.5	2.8	17	2	34	29.5	44	8	4.5
16	5. 10	35.3	17	5	40.3	22	10	13.5	25.5	4.5	2.8	19	2	38	33.5	48	8	5
20] 0, 10	41.2	19.5	7.5	51.2	29.5	17.5	14.5	28.5	6.6	4	24	3.2	48	42	62	9.2	5.8
25]	44.7	22.5	7.5	54.7	32.5	17.5	15	32.5	6.6	4	26	3.2	52	46	66	10.7	5.8

Rod end male thread



Foot bracket material: Carbon steel Surface treatment: Nickel plated

Compact foot type: CQSLC/CDQSLC



Compact Foot Type

oomp			' J P'	•													
Bore size Strok (mm) (r	Stroke range	Witho	ut auto	switch	With	auto s	witch		1.			1.7	1.2	LY	17	v	Y
	(mm)	Α		LS	Α		LS	L .	L1	LD	сп		ᅛ	LT	ᄕ	^	T
12		44.6	17	35.6	49.6	22	40.6	13.5	24	4.5	17	2	15.5	29.5	25	9.3	4.5
16	5, 10	45.6	17	35.6	50.6	22	40.6	13.5	25.5	4.5	19	2	20	33.5	29	9.3	5
20	5, 10	57.5	19.5	45.9	67.5	29.5	55.9	14.5	28.5	6.6	24	3.2	25.5	42	36	13.2	5.8
25		60.5	22.5	48.9	70.5	32.5	58.9	15	32.5	6.6	26	3.2	28	46	40	13.2	5.8
									Con	nnact	foot	brack	ot m	atoria	l' Ca	rhon	staal

Surface treatment: Zinc chromated

Rod end male thread

Rod side flange type: CQSF/CDQSF

Rod Side Flange Type

Stroke range	Without auto switch		With aut	o switch				FV			
(mm) ⁻	Α	В	Α	В	FU	FI	FV	FX	FZ	L	Lı
	30.5	17	35.5	22	4.5	5.5	25	45	55	13.5	24
5 10	30.5	17	35.5	22	4.5	5.5	30	45	55	13.5	25.5
0, 10	34	19.5	44	29.5	6.6	8	39	48	60	14.5	28.5
	37.5	22.5	47.5	32.5	6.6	8	42	52	64	15	32.5
		(mm) A 30.5 5, 10 34	(mm) A B 30.5 17 5, 10 30.5 17 34 19.5	(mm) A B A 30.5 17 35.5 30.5 17 35.5 34 19.5 44	(mm) A B A B 30.5 17 35.5 22 30.5 17 35.5 22 34 19.5 44 29.5	30.5 17 35.5 22 4.5 5, 10 30.5 17 35.5 22 4.5 34 19.5 44 29.5 6.6	(mm) A B A B PI PI 30.5 17 35.5 22 4.5 5.5 30.5 17 35.5 22 4.5 5.5 30.5 17 35.5 22 4.5 5.5 34 19.5 44 29.5 6.6 8	(mm) A B A B P F1 FV 30.5 17 35.5 22 4.5 5.5 25 5,10 30.5 17 35.5 22 4.5 5.5 30 34 19.5 44 29.5 6.6 8 39	(mm) A B A B PD FI FV FX 30.5 17 35.5 22 4.5 5.5 30.4 5.5 30.4 5.5 30.4 5.5 30.4 5.5 30.4 48 30.5 17 35.5 22 4.5 5.5 30.4 5.5 30.4 5.5 30.4 5.5 30.4 5.5 30.4 5.5 30.5 4.5 5.5 30.5 4.5 5.5 30.4 5.5 30.5 4.5 5.5 30.5 4.5 5.5 30.5 4.5 5.5 30.5 4.5 5.5 30.5 4.5 5.5 30.5 4.5 5.5 30.5 4.5 5.5 30.5 4.5 5.5 5.5 30.5 4.5 5.5 30.5 4.5 5.5 30.5 4.5 5.5 30.5 4.5 5.5 5.5 30.5 4.5 5.5 30.5 4.5 5.5 5.5 5.5	(mm) A B A B PD F1 FV FZ 30.5 17 35.5 22 4.5 5.5 25 45 55 5, 10 30.5 17 35.5 22 4.5 5.5 30.4 55 34 19.5 44 29.5 6.6 8 39 48 60	(mm) A B A B PJ PJ PV PA PZ L 30.5 17 35.5 22 4.5 5.5 25 45 5.5 13.5 5, 10 34 19.5 44 29.5 6.6 8 39 48 60 14.5

Flange bracket material: Carbon steel Surface treatment: Nickel plated

CQS
JCQ
CQ2
RQ
CQM
CQU
MU

CUJ

CU

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Technical Data

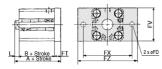
Rod end male thread

Ot to



2 x øFD

Head side flange type: CQSG/CDQSG



Rod end male thread



Head Side Flance Type

nouu e			• 7 P	•								
Bore size	Stroke range Without auto swite		uto switch	With auto switch		FD	FT	FV	FX	FZ		L
(mm)	(mm) -	Α	В	Α	В	FD		гv		F2	L	
12		26	17	31	22	4.5	5.5	25	45	55	3.5	14
16	5.10	26	17	31	22	4.5	5.5	30	45	55	3.5	15.5
20	5, 10	32	19.5	42	29.5	6.6	8	39	48	60	4.5	18.5
25		35.5	22.5	45.5	32.5	6.6	8	42	52	64	5	22.5
							-			1.1.2.1	0 1	

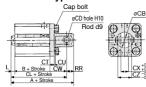
Flange bracket material: Carbon steel Surface treatment: Nickel plated

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

	-Х
[Tech Data

Dimensions: ø12 to ø25/Single Acting, Spring Return

Double clevis type: CQSD/CDQSD



Double Clevis Type

Bore size	ze Stroke range Without auto switch		With	With auto switch			~ D	ст	~	~~~	~~	cz		1.	BB		
(mm)	(mm)	Α	В	CL	Α	В	CL	СВ	CD	CI	00	0.11	0	02	-	L 1	nn
12		40.5	17	34.5	45.5	22	39.5	12	5	4	7	14	5	10	3.5	14	6
16	5, 10	41.5	17	35.5	46.5	22	40.5	14	5	4	10	15	6.5	12	3.5	15.5	6
20		51	19.5	42	61	29.5	52	20	8	5	12	18	8	16	4.5	18.5	9
25		57.5	22.5	47.5	67.5	32.5	57.5	24	10	5	14	20	10	20	5	22.5	10
-									Doul	hla cl	ovie	brack	ot m	atoria	l' Ca	rhon	stool

Surface treatment: Nickel plated

* For details about the double clevis pivot bracket, refer to page 705.

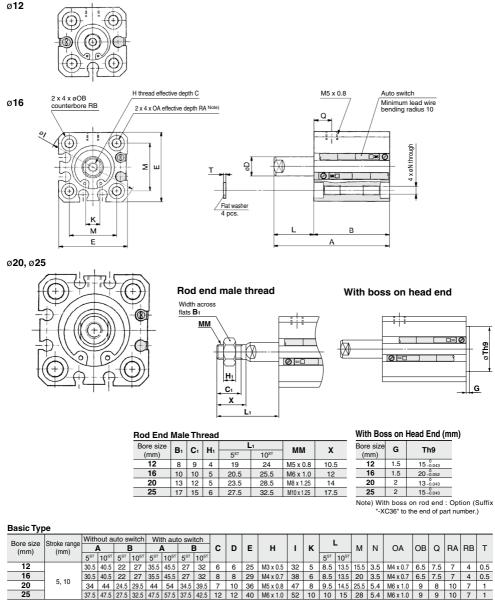
* For details about the rod end nut and accessory brackets, refer to page 796.

Rod end male thread



Dimensions: ø12 to ø25/Single Acting, Spring Extend

Basic type (Through-hole/Both ends tapped common): CQSB/CDQSB



Note) For basic type ø12 and ø16 with 5 stroke, through-hole is threaded over the entire length. For basic type ø20, ø25 with 5 and 10 stroke, through-hole is threaded over the entire length. With auto switch (Built-in magnet)/ø20; 5 stroke.

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

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CUJ

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CQS

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Technical

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Dimensions: ø12 to ø25/Single Acting, Spring Extend

L + S

18.

Special cap bolt

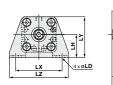
B + Stroke

v 5 v

A + 2 (Stroke)

LG

Foot type: CQSL/CDQSL



Rod end male thread

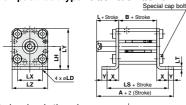


Foot Type

Foot Type												
Bore size	Stroke	e range	Witho	ut auto	switch	With	auto s	witcl	h			
(mm)	(m	nm)	Α	В	LS	Α	В	LS	3			
12			35.3	17	5	40.3 22		10)			
16	-	10	35.3	17	5	40.3	22	10)			
20	5,	10	41.2	19.5	7.5	51.2	29.5	17.	5			
25			44.7	22.5	7.5	54.7	32.5	17.	5			
					-		_	_				
Bore size (mm)	L	Lı	LD	LG	LH	L	г г	.x	LY	LZ	x	Y
	L 13.5	L 1 24	LD 4.5	LG 2.8	LH 17	L1 2		.X	LY 29.5	LZ 44	X 8	Y 4.5
(mm)	L 13.5 13.5			-			3					
(mm) 12		24	4.5	2.8	17	2	3	84	29.5	44	8	4.5
(mm) 12 16	13.5	24 25.5	4.5 4.5	2.8 2.8	17 19	2	3	84 88	29.5 33.5	44 48	8 8	4.5 5

Surface treatment: Nickel plated

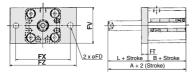
Compact foot type: CQSLC/CDQSLC



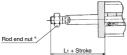
Rod end male thread

L1 + Stroke

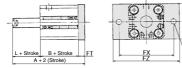
Rod side flange type: CQSF/CDQSF



Rod end male thread



Head side flange type: CQSG/CDQSG



Rod end male thread



Compact Foot Type

Bore size	Stroke	e range	Witho	ut auto :	switch	With	auto :	swite	ch		
(mm)	(m	(mm)		В	LS	Α	В	L	S		
12				17	35.6	49.3	22	40	.6		
16	-	10	44.8	17	35.6	49.8	22	40	.6		
20	5, 10		53	19.5	45.9	63	29.5	55	.9		
25	1		56.5	22.5	48.9	66.5	32.5	58	.9		
Bore size (mm)	L	L1	LD	LH	LT	IJ	(1	Y	LZ	х	Y
12	13.5	24	4.5	17	2	15.	5 2	9.5	25	9.3	4.5
16	13.5	25.5	4.5	19	2	20) 3	3.5	29	9.3	5
20	14.5	28.5	6.6	24	3.2	25.	5 4	12	36	13.2	5.8
25	15	32.5	6.6	26	3.2	28		16	40	13.2	5.8

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

Rod Side Flange Type

		.9-	7 F	-								
Bore size	Stroke range	Without a	Without auto switch With auto switch			FD	ET	FV	EV	57		L
(mm)	(mm)	Α	В	Α	в	FD	гі	ГV	FA	F2	-	-
12		30.5	17	35.5	22	4.5	5.5	25	45	55	13.5	24
16	5, 10	30.5	17	35.5	22	4.5	5.5	30	45	55	13.5	25.5
20	5, 10	34	19.5	44	29.5	6.6	8	39	48	60	14.5	28.5
25		37.5	22.5	47.5	32.5	6.6	8	42	52	64	15	32.5
Flange bracket material: Carbon steel												

Surface treatment: Nickel plated

Head Side Flange Type

1	Bore size	Stroke range	Without a	uto switch	With aut	o switch	FD	ET	EV	FX	FZ		L
. >	(mm)	(mm)	Α	В	Α	В	Fυ	гі	FV	ГЛ	F2	L .	L1
- 4	12		26	17	31	22	4.5	5.5	25	45	55	3.5	14
	16	5, 10	26	17	31	22	4.5	5.5	30	45	55	3.5	15.5
	20	5, 10	32	19.5	42	29.5	6.6	8	39	48	60	4.5	18.5
\2xøFD	25		35.5	22.5	45.5	32.5	6.6	8	42	52	64	5	22.5
							Fla						n steel
								Su	rrace	treatm	ient: iv	lickei	plated

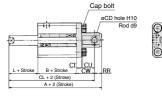
* For details about the rod end nut and accessory brackets, refer to page 796.

SMC

Dimensions: ø12 to ø25/Single Acting, Spring Extend

øСВ

Double clevis type: CQSD/CDQSD



Rod end male thread

B	
	L1 + Stroke

Double Clevis Type

	210 410	ועיי													
Bore size	Bore size Stroke range					uto	swite	ch	Wit	h	auto s	witch			
(mm)	(mn	ר) [–]		Α	E	3	CI	-	Α		В	CL			
12			4	0.5	1	7	34.	5	45.5	5	22	39.5			
16		~	4	1.5	1	7	35.	5	46.5	5	22	40.5			
20	5, 1	0	Ę	51	19	.5	42	2	61		29.5	52			
25			5	7.5	22	.5	47.	5	67.5	5	32.5	57.5			
Bore size (mm)	СВ	CD		С	г	С	U	c	w		сх	cz	L	Lı	RR
12	12	5		4		7	7		14		5	10	3.5	14	6
16	14	5		4		1	0	-	15		6.5	12	3.5	15.5	6
20	20	8		5		1	2		18		8	16	4.5	18.5	9
25	24	10		5		1	4	2	20		10	20	5	22.5	10
									Do	ub	ole clev	is brack	et mater	ial: Carb	on steel

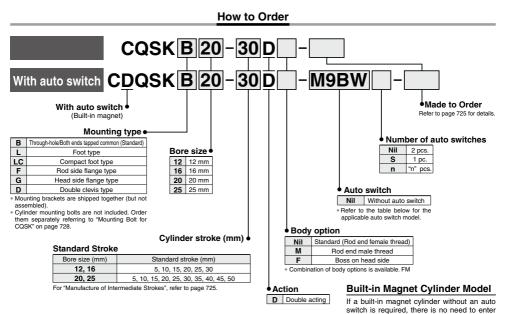
Double clevis bracket material: Carbon steel Surface treatment: Nickel plated

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

CUJ
CU
CQS
JCQ
CQ2
RQ
CQM
CQU
MU



Compact Cylinder: Non-rotating Rod Type **Double Acting, Single Rod** QSK Series ø12, ø16, ø20, ø25



the symbol for the auto switch. (Example) CDQSKL25-30D

Applicable Auto Switches/Refer to pages 1575 to 1701 for further information on auto switches.

		Electrical	light	Wiring	L	oad volta	ge	Auto swite	ch model	Lead	wire I	engt	h (m)	Pre-wired										
Туре	Special function	entry	Indicator	(Output)	DC		AC	Perpendicular	In-line	0.5 (Nil)	1 (M)	3 (L)	5	connector	Applica	ble load								
£				3-wire (NPN)		5 V. 12 V		M9NV	M9N	•	•	•	\circ	0	IC circuit									
switch	-			3-wire (PNP)		5 V, 12 V		M9PV	M9P	•	•	•	\circ	0	IC CITCUIL									
				2-wire		12 V		12 V		M9BV	M9B	•	٠	٠	\circ	0	—							
auto	Diagnostic indication			3-wire (NPN)		v 5 V, 12 V	5 V 10 V	EV 10 V	EV 10 V	5 V 10 V		5 V 10 V		5 V 12 V		M9NWV	M9NW	•	•	۲	\circ	0	IC circuit	
	(2-color indicator)	Grommet	Yes	3-wire (PNP)	24 V			M9PWV	M9PW	•	•	•	$^{\circ}$	0	IC CITCUIL	Helay,								
state				2-wire		1	12 V	1	M9BWV	M9BW	•	٠	٠	\circ	0	—	PLC							
l st	Water resistant			3-wire (NPN)		5 V, 12 V	1	M9NAV*1	M9NA*1	0	0	۲	\circ	0	IC circuit									
Solid	(2-color indicator)			3-wire (PNP)			5 V, 12 V		M9PAV*1	M9PA*1	0	0	۲	\circ	0	IC CIrcuit								
ŭ				2-wire		12 V	1	M9BAV*1	M9BA*1	0	0	٠	\circ	0	—									
ed witch	Grommet 4 Yes (3-wire (NPN equivalent)	-	5 V	-	A96V	A96	•	-	•	-	-	IC circuit	-										
Re to s			2-wire	24 V	12 V	100 V	A93V*2	A93	٠	٠	۲	۲	_	_	Relay,									
au										No	2-wile	24 V	12 V	100 V or less	A90V	A90	•	-	۲	-	-	IC circuit	PLC	

*1 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.

*2 1 m type lead wire is only applicable to 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) M9NWZ

* Since there are other applicable auto switches than listed, refer to page 749 for details

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

* Auto switches are shipped together (not assembled). Note) There is the case D-A9□V/M9□V/M9□WV/M9□AV 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

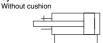


* Solid state auto switches marked with "O" are produced upon receipt of order.

Compact Cylinder: Non-rotating Rod Type Double Acting, Single Rod **CQSK Series**



Symbol



Made to Order: Order Individual Specifications

Symbol Specifications

-X1876 With concave shape end boss on the cylinder tube head side

Made to Order Specifications

Click here for details									
Symbol	Specifications								
-XA🗆	Change of Rod End Shape								
-XC6 Piston rod and rod end nut made of stainless steel									
-XC8	Adjustable stroke cylinder/Adjustable extension type								
-XC9	Adjustable stroke cylinder/Adjustable retraction type								
-XC10	Dual stroke cylinder/Double rod type								
-XC11	Dual stroke cylinder/Single rod type								

Standard Specifications

Bore size (mm)	12 16 20 25							
Action	Double acting, Single rod							
Fluid	Air							
Lubrication		Not required	d (Non-lube)					
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)							
Ambient and huid temperature	With aut	o switch: -10	to 60°C (No	i0°C (No freezing)				
Cushion		No	ne					
Rod end thread		Female	thread					
Stroke length tolerance		+1.0) mm					
Piston speed		50 to 50	00 mm/s					
Allowable kinetic energy (J)	0.022	0.038	0.055	0.09				
Rod non-rotating accuracy	±	1°	±0	.7°				

Theoretical O	utput							
Bore size	Rod width across	Action	Piston area Operating pressu					
(mm)	flats (mm)	Action	(mm²)	0.3	0.5	0.7		
12	5.2	IN	90	27	45	63		
12	5.2	OUT	113	34	57	79		
16	6.2	IN	168	50	84	117		
10	0.2	OUT	201	60	101	141		
20	8.2	IN	256	77	128	179		
20	0.2	OUT	314	94	157	220		
05	10.2	IN	401	120	200	281		
25	10.2	OUT	491	147	245	344		

Body Option

Description	Application
Rod end male thread	Available for all non-rotating rod type.

Mounting Bracket Part No.

Bore size (mm)	Foot (1)	Compact foot ⁽¹⁾	Flange	Double clevis
12	CQSK-L012	CQSK-LC012	CQSK-F012	CQSK-D012
16	CQSK-L016	CQSK-LC016	CQSK-F016	CQSK-D016
20	CQSK-L020	CQSK-LC020	CQSK-F020	CQSK-D020
25	CQSK-L025	CQSK-LC025	CQSK-F025	CQSK-D025

Note 1) When ordering foot and compact foot brackets, order 2 pieces per cylinder.

Note 2) Parts belonging to each bracket are as follows. Foot, Compact foot, Flange type: Body mounting bolt

Double clevis type: Clevis pin, Type C retaining ring for axis, Body mounting bolt.

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 <u>the IDK series in the</u> <u>Best Pneumatics No. 6.</u>

Manufacture of Intermediate Stroke

Descrip	otion	Spacer is installed in the standard stroke body.							
Parti	10.	Refer to "How to Order" for th	e standard model no. (page 724).						
	Description		ntermediate strokes in 1 mm increments are available by using spacers with standard stroke cylinders.						
Standard stroke		Bore size	Stroke range						
	Stroke range	12, 16	1 to 29						
		20, 25	1 to 49						
Exam	ple	Part no.: CQSKB25-47D CQSKB25-50D with 3 mm width spacer inside. B dimension is 77.5 mm.							

Refer to pages 747 to 749 for cylinders with auto switches.

· Minimum auto switch mounting stroke

- Proper auto switch mounting position (detection at stroke end) and mounting height
- Operating range

-
D- □
-X□
Technical
Technical
Data

CUJ

CU Cos

JCQ CQ2 RQ

COM

CQU

MU



CQSK Series

Weight/Without Auto Switch

Bore size		Cylinder stroke (mm)										
(mm)	5	10	15	20	25	30	35	40	45	50		
12	39	46	53	60	67	74	-	-	-	-		
16	52	61	69	78	86	95	-	-	-	-		
20	89	102	116	129	143	156	170	183	197	211		
25	124	141	157	174	190	207	224	240	257	273		

Calculation: (Example) CQSKF20-5DM •

(g)

Cylinder weight: CQSKB20-5D
Additional weight: Rod end male thread10 g
: Rod side flange type142 g
241 g

Weight/With Auto Switch (Built-in magnet)

Weight/With	Auto S	Switc	h (Bu	ilt-in	magr	net)				(g)				
Bore size	Cylinder stroke (mm)													
(mm)	5	10	15	20	25	30	35	40	45	50				
12	47	54	62	69	76	83	-	-	-	-				
16	63	71	80	88	97	106	-	-	-	-				
20	122	136	149	163	176	190	203	217	230	244				
25	168	185	201	218	235	251	268	284	301	317				

Additional Weight

Additional Weight					(g)
Bore size (mm)		12	16	20	25
Bod end male thread	Male thread	1.5	3	6	12
Rod end male thread	1	2	4	8	
With boss on head end		0.7	1.3	2	3
Foot type (Including mounting bolt)		55	64	158	179
Compact foot type (Including moun	ting bolt)	41	51	121	140
Rod side flange type (Including mo	unting bolt)	58	69	142	178
Head side flange type (Including m	ounting bolt)	56	66	137	171
Double clevis type (Including pin, re	etaining ring, bolt)	34	40	92	127

With auto switch (Built-in magnet)

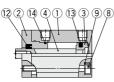
(12)(7)(2)(14)(4)

12 (2) (14 (4) (1) (5) (6) (13 (3) (9) (8)

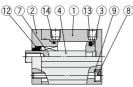
(6)(13)(3)(9)(8)

Construction

Basic type

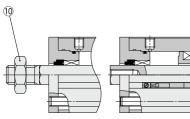


ø16, ø20, ø25



Rod end male thread

With boss on head end



Component Parts

No.	Description	Material	Note
1	Cylinder tube	Aluminum alloy	Hard anodized
2	Rod cover	Aluminum alloy	Anodized
3	Piston	Aluminum alloy	
4	Piston rod	Stainless steel	
5	Spacer for switch type	Aluminum alloy	Chromated
6	Magnet	—	
7	Non-rotating guide	Oil impregnated sintered alloy	ø16, ø20 and ø25
8	Hexagon socket head cap screw	Alloy steel	Nickel plated
9	Plain washer	Rolled steel	Nickel plated
10	Rod end nut	Carbon steel	Zinc chromated
11	Centering location ring	Aluminum alloy	Anodized
12*	Rod seal	NBR	
13*	Piston seal	NBR	
14*	Tube gasket	NBR	

Replacement Parts/Seal Kit

Bore size (mm)	Kit no.	Contents
12	CQSKB12-PS	
16	CQSKB16-PS	Set of nos. above 12, 13, 14.
20	CQSKB20-PS	Set of hos. above @ , (3 , (4.
25	CQSKB25-PS	

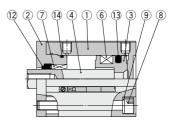
 \ast Seal kit includes $\textcircled{1}{2}$, 3 , $\textcircled{4}{3}$. Order the seal kit, based on each bore size.

* Since the seal kit does not include a grease pack, order it separately. Grease pack part no.: GR-S-010 (10 g)

ø**20,** ø**25**

ø12

ø16



A Precautions

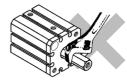
Operating Precautions

▲Caution

 Any kind of operation producing rotational torque to piston rod must be considered. The non-rotating guide would be deformed and the accuracy would be compromised. Refer to the table below for rotation torque allowance.

Allowable rotational torque	ø12	ø16	ø 20	ø 25
(N·m) or less	0.04	0.04	0.2	0.25

- 2. Load to piston rod must always be in an axial direction.
- 3. When a workpiece is secured to the end of the piston rod, ensure that the piston rod is retracted entirely, and place a wrench on the portion of the rod that protrudes beyond the section. Also, tighten by giving consideration to prevent the tightening torque from being applied to the non-rotating guide.





CUJ

COS JCO

CO2

RQ

COM

CQU Mu



∕⊘SMC

CQSK Series

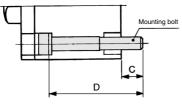
Mounting Bolt for CQSK

Mounting method: Mounting bolt for through-hole mounting type of CQSK is available as an option. Refer to the following for ordering procedures.

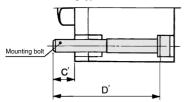
Order the actual number of bolts that will be used.

Example) CQ-M3x25L 2 pcs.

Head side mounting type



Rod side mounting type



Note) When mounting a cylinder with through-hole, be sure to use the attached plain washer.

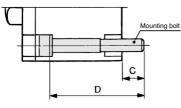
Mounting Bolt for CDQSK

Mounting method: Mounting bolt for through-hole mounting type of CDQSK is available as an option.

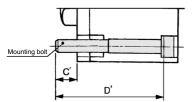
Refer to the following for ordering procedures. Order the actual number of bolts that will be used.

Example) CQ-M3x30L 2 pcs.

Head side mounting type



Rod side mounting type



Note) When mounting a cylinder with through-hole, be sure to use the attached plain washer.

Cylinder model	С	D	Mounting bolt part no.	C'	D'	Mounting bolt part no.
CQSKB12-5D		25	CQ-M3 x 25L		30	CQ-M3 x 30L
-10D	1	30	x 30L		35	x 35L
-15D	1	35	x 35L		40	x 40L
-20D	6.5	40	x 40L	6.5	45	x 45L
-25D	1	45	x 45L	l l	50	x 50L
-30D	1	50	x 50L		55	x 55L
CQSKB16-5D		25	CQ-M3 x 25L		30	CQ-M3 x 30L
-10D	1	30	x 30L		35	x 35L
-15D	6.5	35	x 35L	6.5	40	x 40L
-20D	0.5	40	x 40L	0.5	45	x 45L
-25D		45	x 45L		50	x 50L
-30D		50	x 50L		55	x 55L
CQSKB20-5D		25	CQ-M5 x 25L		30	CQ-M5 x 30L
-10D		30	x 30L		35	x 35L
-15D]	35	x 35L		40	x 40L
-20D		40	x 40L	6.5	45	x 45L
-25D		45	x 45L		50	x 50L
-30D	6.5	50	x 50L		55	x 55L
-35D		55	x 55L		60	x 60L
-40D		60	x 60L		65	x 65L
-45D		65	x 65L		70	x 70L
-50D		70	x 70L		75	x 75L
CQSKB25-5D		30	CQ-M5 x 30L		35	CQ-M5 x 35L
-10D		35	x 35L		40	x 40L
-15D		40	x 40L		45	x 45L
-20D		45	x 45L		50	x 50L
-25D	8.5	50	x 50L	8.5	55	x 55L
-30D	0.5	55	x 55L	0.5	60	x 60L
-35D		60	x 60L		65	x 65L
-40D		65	x 65L		70	x 70L
-45D		70	x 70L		75	x 75L
-50D		75	x 75L		80	x 80L

Material: Chromium molybdenum steel

Surface treatment: Zinc chromated

Cylinder model	С	D	Mounting bolt part no.	C'	D'	Mounting bolt part no.
CDQSKB12-5D		30	CQ-M3 x 30L		35	CQ-M3 x 35L
-10D		35	x 35L		40	x 40L
-15D		40	x 40L		45	x 45L
-20D	6.5	45	x 45L	6.5	50	x 50L
-25D		50	x 50L		55	x 55L
-30D		55	x 55L		60	x 60L
CDQSKB16-5D		30	CQ-M3 x 30L		35	CQ-M3 x 35L
-10D		35	x 35L		40	x 40L
-15D		40	x 40L		45	x 45L
-20D	6.5	45	x 45L	6.5	50	x 50L
-25D		50	x 50L		55	x 55L
-30D		55	x 55L		60	x 60L
CDQSKB20-5D		35	CQ-M5 x 35L		40	CQ-M5 x 40L
-10D		40	x 40L		45	x 45L
-15D		45	x 45L	6.5	50	x 50L
-20D		50	x 50L		55	x 55L
-25D		55	x 55L		60	x 60L
-30D	6.5	60	x 60L		65	x 65L
-35D		65	x 65L		70	x 70L
-40D		70	x 70L		75	x 75L
-45D		75	x 75L		80	x 80L
-50D		80	x 80L		85	x 85L
CDQSKB25-5D		40	CQ-M5 x 40L		45	CQ-M5 x 45L
-10D		45	x 45L		50	x 50L
-15D		50	x 50L		55	x 55L
-20D		55	x 55L		60	x 60L
-25D	8.5	60	x 60L	8.5	65	x 65L
-30D	0.5	65	x 65L	0.0	70	x 70L
-35D		70	x 70L		75	x 75L
-40D		75	x 75L		80	x 80L
-45D		80	x 80L		85	x 85L
-50D		85	x 85L		90	x 90L

Material: Chromium molybdenum steel Surface treatment: Zinc chromated



Dimensions: ø12 to ø25

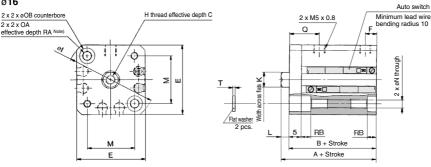
Basic type (Through-hole/Both ends tapped common): CQSK/CDQSK

* For the auto switch mounting position and its mounting height, refer to page 748

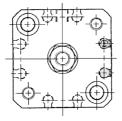
ø12







ø20, ø25



Rod end male thread

Rod End Male Thread

12

16 20

25

Bore size (mm) B1 C1 H1 L1

8 9 4

13 12 5



Bore size G

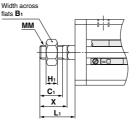
(mm)

12 1.5

16 1.5

20 2

25



MM X

14 M5 x 0.8 10.5

18.5 M8 x 1.25 14

10 10 5 15.5 M6 x 1.0 12

17 15 6 22.5 M10x1.25 17.5

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		5		 Da	10	
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With Boss on Head End (mm)

2

Th9

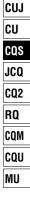
15_0.043

20_0_0

13_{-0.043}

15_0.043

With boss on head end



D-

-X

Technical Data

©Th9

Basic Type

Bore size (mm)	Stroke range (mm)	Without a	uto switch B	With au A	to switch B	с	Е	F	н	I	к	L	М	Ν	OA	ов	Q	RA	RB	т
12	5 to 30	25.5	22	30.5	27	6	25	5	M3 x 0.5	32	5.2	3.5	15.5	3.5	M4 x 0.7	6.5	12.5	7	4	0.5
16	5 to 30	25.5	22	30.5	27	8	29	5	M4 x 0.7	38	6.2	3.5	20	3.5	M4 x 0.7	6.5	12.5	7	4	0.5
20	5 to 50	29	24.5	39	34.5	7	36	5.5	M5 x 0.8	47	8.2	4.5	25.5	5.4	M6 x 1.0	9	13	10	7	1
25	5 to 50	32.5	27.5	42.5	37.5	12	40	5.5	M6 x 1.0	52	10.2	5	28	5.4	M6 x 1.0	9	14	10	7	1

Note) For basic type ø12 and ø16 with 5 stroke, through-hole is threaded over the entire length. For basic type ø20 with 5 to 15 stroke, through-hole is threaded over the entire length.

For basic type ø25 with 5 and 10 stroke, through-hole is threaded over the entire length.

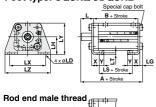
Note) With auto switch (Built-in magnet): ø20; 5 stroke

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



Dimensions: Ø12 to Ø25

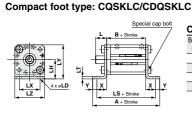
Foot type: CQSKL/CDQSKL



Foot Type

Bore size	Stroke range	Witho	ut auto	switch	With	With auto switch			1.	1.0	16		ιт	1.7	LY	17	v	v
(mm)	(mm)	Α	В	LS	Α	в	LS	-	L 1		LG	LU					^	
12	5 to 30	40.3	22	10	45.3	27	15	13.5	24	4.5	2.8	17	2	34	29.5	44	8	4.5
16	5 to 30	40.3	22	10	45.3	27	15	13.5	25.5	4.5	2.8	19	2	38	33.5	48	8	5
20	5 to 50	46.2	24.5	12.5	56.2	34.5	22.5	14.5	28.5	6.6	4	24	3.2	48	42	62	9.2	5.8
25	5 to 50	49.7	27.5	12.5	59.7	37.5	22.5	15	32.5	6.6	4	26	3.2	52	46	66	10.7	5.8
												F				1. 0-		-

Foot bracket material: Carbon steel Surface treatment: Nickel plated



Compact Foot Type

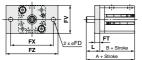
oomp	40110	01	יאני	U													
Bore size	Stroke range	Witho	ut auto	switch	With	auto s	witch		1.	1.0		1.7	1.2	LY	17	v	v
(mm)	(mm)	Α	в	LS	Α	в	LS	-	L1		гп			LT		^	T
12	5 to 30	49.6	22	40.6	54.6	27	45.6	13.5	24	4.5	17	2	15.5	29.5	25	9.3	4.5
16	5 to 30	50.6	22	40.6	55.6	27	45.6	13.5	25.5	4.5	19	2	20	33.5	29	9.3	5
20	5 to 50	62.5	24.5	50.9	72.5	34.5	60.9	14.5	28.5	6.6	24	3.2	25.5	42	36	13.2	5.8
25	5 to 50	65.5	27.5	53.9	75.5	37.5	63.9	15	32.5	6.6	26	3.2	28	46	40	13.2	5.8
									~								

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

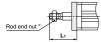
Rod end male thread



Rod side flange type: CQSKF/CDQSKF



Rod end male thread



Head side flange type: CQSKG/CDQSKG



Rod end male thread



Rod Side Flange Type

		<u> </u>	<u> </u>									
Bore size	Stroke range	Without a	Nithout auto switch		With auto switch		FT	EV	FX	E7		1.
(mm)	(mm)	Α	В	Α	в	FD	гі	FV	FA	FZ.	-	L1
12	5 to 30	35.5	22	40.5	27	4.5	5.5	25	45	55	13.5	24
16	5 to 30	35.5	22	40.5	27	4.5	5.5	30	45	55	13.5	25.5
20	5 to 50	39	24.5	49	34.5	6.6	8	39	48	60	14.5	28.5
25	5 to 50	42.5	27.5	52.5	37.5	6.6	8	42	52	64	15	32.5
Flange bracket material: Carbon stee											n steel	

Surface treatment: Nickel plated

Head Side Flange Type

Bore size	Stroke range	Without a	uto switch	With aut	to switch	FD	FT	EV	FX	E7		1.
(mm)	(mm)	Α	В	Α	В	гIJ	F 1	гv	FA	FZ	L .	
12	5 to 30	31	22	36	27	4.5	5.5	25	45	55	3.5	14
16	5 to 30	31	22	36	27	4.5	5.5	30	45	55	3.5	15.5
20	5 to 50	37	24.5	47	34.5	6.6	8	39	48	60	4.5	18.5
25	5 to 50	40.5	27.5	50.5	37.5	6.6	8	42	52	64	5	22.5
	Elange bracket material: Carbon stee									steel		

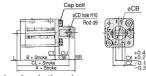
Surface treatment: Nickel plated

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

SMC

Dimensions: ø12 to ø25

Double clevis type: CQSKD/CDQSKD



Double Clevis Type

Bore size	Stroke range	Witho	ut auto	switch	With	auto s	witch	CB	CD	ст	CII	CW/	CY	C 7		Lı	RR
(mm)	(mm)	Α	В	CL	Α	В	CL	СВ	CD	01	00	0.00	0	02	L .	-	nn
12	5 to 30	45.5	22	39.5	50.5	27	44.5	12	5	4	7	14	5	10	3.5	14	6
16	5 to 30	46.5	22	40.5	51.5	27	45.5	14	5	4	10	15	6.5	12	3.5	15.5	6
20	5 to 50	56	24.5	47	66	34.5	57	20	8	5	12	18	8	16	4.5	18.5	9
25	5 to 50	62.5	27.5	52.5	72.5	37.5	62.5	24	10	5	14	20	10	20	5	22.5	10
Double clevis bracket material: Carbon steel										steel							

Double clevis bracket material: Carbon steel Surface treatment: Nickel plated

* For details about the double clevis pivot bracket, refer to page 705.

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

Rod end male thread

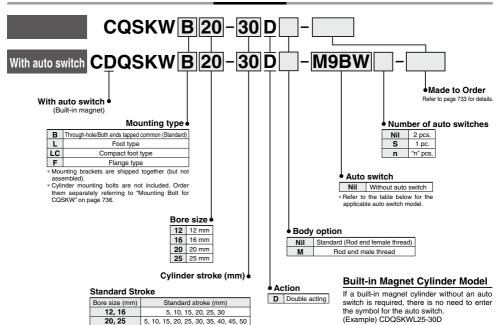


CUJ
CU
CQS
JCQ
CQ2
RQ
CQM
CQU
MU



Compact Cylinder: Non-rotating Rod Type **Double Acting, Double Rod QSKW** Series ø12, ø16, ø20, ø25

How to Order



Applicable Auto Switches/Refer to pages 1575 to 1701 for further information on auto switches.

			ight		Ŀ	oad volta	ige	Auto swit	ch model	Lead	wire I	engt	n (m)			
Туре	Special function	Electrical entry	Indicator light	Wiring (Output)	DC		AC	Perpendicular	In-line	0.5 (Nil)	1 (M)	3 (L)	5	Pre-wired connector	Applicable load	
£				3-wire (NPN)		5 V, 12 V		M9NV	M9N	•	•	٠	0	0	IC circuit	
switch	—			3-wire (PNP)]			M9PV	M9P	•	•	٠	0	0	IC circuit	
				2-wire		12 V	1	M9BV	M9B	•	٠	٠	0	0	I	
욕	Diagnostic indication (2-color indicator) Gromme	Grommet		3-wire (NPN)		4 V 5 V, 12 V]	M9NWV	M9NW	•	•	٠	0	0	IC circuit	Relay,
al			Yes	3-wire (PNP)	24 V		-	M9PWV	M9PW	•	•	٠	0	0	IC circuit	
state				2-wire		12 V	1	M9BWV	M9BW	•	٠	٠	0	0	I	PLC
	Water resistant	7		3-wire (NPN)		5 V. 12 V]	M9NAV*1	M9NA*1	0	0	٠	0	0	IC circuit	
Solid	(2-color indicator)			3-wire (PNP)		5 V, 12 V		M9PAV*1	M9PA*1	0	0	٠	0	0	IC circuit	
Ň				2-wire		12 V	1	M9BAV*1	M9BA*1	0	0	٠	0	0	I	
Reed auto switch	0		Yes	3-wire (NPN equivalent)	—	5 V	-	A96V	A96	•	-	•	-	-	IC circuit	Ι
to s	_	Grommet		2-wire 24 V	10.1/	100 V	A93V*2	A93	•	۲	٠	٠	—	-	Relay,	
au			No		12 V	100 V or less	A90V	A90		—	۲	-	—	IC circuit	PLC	

*1 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.

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

* Lead wire length symbols: 0.5 m Nil (Example) M9NW

1 m······ M (Example) M9NWM

* Since there are other applicable auto switches than listed, refer to page 749 for details

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

Auto switches are shipped together (not assembled). Note) There is the case D-A9UV/M9UV/M9UWV/M9UAV 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. ∕⊘SMC

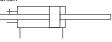
* Solid state auto switches marked with "O" are produced upon receipt of order.

³ m······ L (Example) M9NWL 5 m······ Z (Example) M9NWZ

Compact Cylinder: Non-rotating Rod Type Double Acting, Double Rod **CQSKW Series**



Symbol Without cushion



Made to Order	Made to Order: Individual Specifications (For details, refer to page 751)
Symbol	Specifications

-X633 Intermediate stroke of double rod cylinder

Made to Order Specifications

Click h	ere for details
Symbol	Specifications
-XA□	Change of rod end shape
-XC6	Piston rod, retaining ring, rod end nut made of stainless steel

Body Option

Description	Application
Rod end male thread	Available for all non-rotating rod type.

Mounting Bracket Part No.

Bore size (mm)	Foot (1)	Compact foot (1)	Flang
12	CQSK-L012	CQSK-LC012	CQSK-F012
16	CQSK-L016	CQSK-LC016	CQSK-F016
20	CQSK-L020	CQSK-LC020	CQSK-F020
25	CQSK-L025	CQSK-LC025	CQSK-F025

Note 1) When ordering foot and compact foot brackets,

order 2 pieces per cylinder. Note 2) Parts belonging to each bracket are as follows. Foot, Compact foot, Flange type: Body mounting bolt

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

Bore size (mm)	12	16	20	25				
Action		Double actin	g, Single rod					
Fluid		A	vir					
Lubrication	Not required (Non-lube)							
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)							
Ambient and huid temperature	With aut	With auto switch: -10 to 60°C (No freezing)						
Cushion		No	one					
Rod end thread		Female	e thread					
Stroke length tolerance		+1.0) mm					
Piston speed		50 to 50	00 mm/s					
Allowable kinetic energy (J) 0.022 0.038 0.055 0.09								
Rod non-rotating accuracy	±	1°	±0	.7°				

(NI)

Theoretical Output

inicerenear e	acpat				(11)			
Bore size	Rod width across	Piston area	Operating pressure (MPa)					
(mm)	flats (mm)	(mm²)	0.3	0.5	0.7			
12	5.2	90	27	45	63			
16	6.2	168	50	84	117			
20	8.2	256	77	128	179			
25	10.2	401	120	200	281			

Manufacture of Intermediate Stroke

Description	Spacer is installed in the standard stroke body.				
Part no.	Suffix "-X633" to the end of standard model no. (page 706).				
Description	Intermediate strokes in 1 mm increments are available by using spacers with standard stroke cylinders.				
Stroke range	Bore size	Stroke range			
	12, 16	6 to 29			
	20, 25	6 to 49			
Example	Part no.: CQSKW25–47D–X633 CQSKWB25-50D with 3 mm width spacer inside. B dimension is 84 mm.				

	20, 20	01040				
xample	Part no.: CQSKW25–47D–X633 CQSKWB25-50D with 3 mm width spacer inside. B dimension is 84 mm.					
Refer to pages 747 to 749 for cylinders with auto switches.						

· Minimum auto switch mounting stroke

· Proper auto switch mounting position (detection at stroke end) and mounting height Operating range

CUJ

CU CQS JCQ

CQ2

	D- □
	-X□
	Technical Data
-	~

CQSKW Series

Weight/Without Auto Switch

Bore size	Cylinder stroke (mm)									
(mm)	5	10	15	20	25	30	35	40	45	50
12	48	56	65	73	80	88	-	-	-	-
16	64	75	84	95	105	115	-	-	-	-
20	115	131	148	164	191	196	213	229	246	264
25	160	180	200	221	241	263	285	305	320	347

Weight/With Auto Switch (Built-in magnet)

Bore size										
(mm)	5	10	15	20	25	30	35	40	45	50
12	56	65	74	82	90	98	-	-	-	-
16	75	85	95	105	116	126	-	-	-	-
20	148	164	180	197	214	231	247	265	280	297
25	188	209	230	251	273	293	315	335	356	376

Additional Weight

Bore size (mm)	12	16	20	25	
Rod end male thread	Male thread		3	6	12
Hou enu maie uneau	Nut	1	2	4	8
Foot type (Including mounting bo	55	64	158	179	
Compact foot type (Including mo	41	51	121	140	
Rod side flange type (Including r	Rod side flange type (Including mounting bolt)			142	178

Calculation: (Example) CQSKWF20-5DM

: Rod side flange type ------142 g

267 a

APrecautions

Operating Precautions

▲Warning

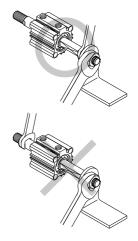
(q)

(g)

(a)

 Do not apply the reverse torque to the piston rods sticking out from both sides of this cylinder at the same time. The torque makes connection threads inside loosen, which may cause an accident or malfunction.

Install or remove a load while the piston rod width across flats are secured. Do not fix the other side of piston rod width across flat and apply the reverse torque.



∆Caution

 Any kind of operation producing rotational torque to piston rod must be considered. The non-rotating guide would be deformed and the accuracy would be compromised.

Refer to the table below for rotation torque allowance.

Allowable rotational torque	ø12	ø 16	ø 20	ø 25
(N·m) or less	0.04	0.04	0.2	0.25

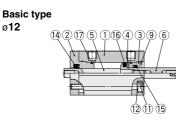
2. Load to piston rod must always be in an axial direction.

Retaining Ring Installation/Removal

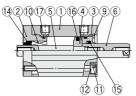
Caution

- For installation and removal, use an appropriate pair of pliers (tool for installing a type C retaining ring).
- 2. Even if a proper plier (tool for installing 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.

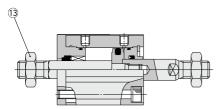
Construction



ø16, ø20, ø25



Rod end male thread



Component Parts

No.	Description	Material	Note
1	Cylinder tube	Aluminum alloy	Hard anodized
2	Rod cover	Aluminum alloy	Anodized
3	Collar	Aluminum alloy	Anodized
4	Piston	Aluminum alloy	
5	Piston rod A	Stainless steel	
6	Piston rod B	Stainless steel	
7	Spacer for switch type	Aluminum alloy	Chromated
8	Magnet		
9	Retaining ring	Carbon tool steel	Phosphate coated
10	Non-rotating guide	Oil impregnated sintered alloy	ø16, ø20 and ø25
11	Hexagon socket head cap screw	Alloy steel	Nickel plated
12	Plain washer	Rolled steel	Nickel plated
13	Rod end nut	Carbon steel	Zinc chromated
14*	Rod seal for non-rotating	NBR	
15*	Rod seal	NBR	
16*	Piston seal	NBR	
17*	Tube gasket	NBR	

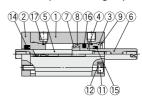
Replacement Parts/Seal Kit

Bore size (mm)	Kit no.	Contents				
12	CQSKWB12-PS					
16	CQSKWB16-PS	Set of nos. above (14, (15, (16, (17).				
20	CQSKWB20-PS	Set 01 1103. above (B, (B, (B, (B,				
25	CQSKWB25-PS					

* Seal kit includes (4, (5, (6, (7). Order the seal kit, based on each bore size.

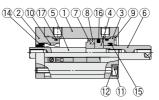
* Since the seal kit does not include a grease pack, order it separately. Grease pack part no.: GR-S-010 (10 g)

With auto switch (Built-in magnet)



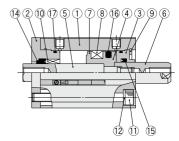
ø**16**

ø12



ø**20,** ø**25**

SMC



CUJ
CU
CQS
JCQ
CQ2
RQ
CQM
CQU
MU



CQSKW Series

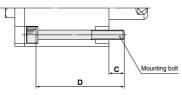
Mounting Bolt for CQSKW

Mounting method: Mounting bolt for through-hole mounting type of CQSKW is available as an option. Refer to the following for ordering procedures.

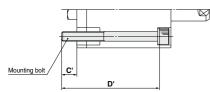
Order the actual number of bolts that will be used.

Example) CQ-M3x30L 2 pcs.

Round rod side mounting



Non-rotating rod side mounting



Note) When mounting a cylinder with through-hole, be sure to use the attached plain washer.

Cylinder model	С	D	Mounting bolt part no.	C'	D'	Mounting bolt part no.
CQSKWB12-5D	- J	25	CQ-M3 x 30L		30	CQ-M3 x 35L
-10D		30	x 35L		35	x 40L
-10D -15D	1	35	x 40L	6.5	40	x 45L
-20D	6.5	40	x 45L		40	x 40L
-25D	1	45	x 50L		50	x 55L
-30D	1	50	x 55L		55	x 60L
CQSKWB16-5D		25	CQ-M3 x 30L		30	CQ-M3 x 35L
-10D	1	30	x 35L		35	x 40L
-15D	1	35	x 40L		40	x 45L
-20D	6.5	40	x 45L	6.5	45	x 50L
-25D	1	45	x 50L		50	x 55L
-30D	1	50	x 55L		55	x 60L
CQSKWB20-5D		25	CQ-M5 x 35L	10	30	CQ-M5 x 40L
-10D		30	x 40L		35	x 45L
-15D		35	x 45L		40	x 50L
-20D	1	40	x 50L		45	x 55L
-25D	1	45	x 55L		50	x 60L
-30D	10	50	x 60L		55	x 65L
-35D]	55	x 65L		60	x 70L
-40D		60	x 70L		65	x 75L
-45D]	65	x 75L		70	x 80L
-50D		70	x 80L		75	x 85L
CQSKWB25-5D		30	CQ-M5 x 35L		35	CQ-M5 x 40L
-10D		35	x 40L		40	x 45L
-15D		40	x 45L		45	x 50L
-20D		45	x 50L		50	x 55L
-25D	7	50	x 55L	7	55	x 60L
-30D		55	x 60L	'	60	x 65L
-35D		60	x 65L		65	x 70L
-40D		65	x 70L		70	x 75L
-45D		70	x 75L		75	x 80L
-50D		75	x 80L		80	x 85L
			Motorial	Chromi		lybdenum steel

Material: Chromium molybdenum steel Surface treatment: Zinc chromated

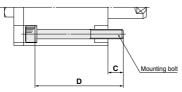
Mounting Bolt for CQSKW

Mounting method: Mounting bolt for through-hole mounting type of CDQSKW is available as an option. Refer to the following for ordering procedures.

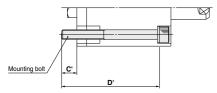
Order the actual number of bolts that will be used.

Example) CQ-M3x35L 2 pcs.

Round rod side mounting



Non-rotating rod side mounting



Note) When mounting a cylinder with through-hole, be sure to use the attached plain washer.

Outline days are a day	~	D	Manafaa haltaadaa	C'	D'	Menalize helt and as
Cylinder model	С	D	Mounting bolt part no.	<u> </u>	_	Mounting bolt part no.
CDQSKWB12-5D		30	CQ-M3 x 35L		35	CQ-M3 x 40L
-10D		35	x 40L		40	x 45L
-15D	6.5	40	x 45L	6.5	45	x 50L
-20D		45	x 50L	0.0	50	x 55L
-25D		50	x 55L		55	x 60L
-30D		55	x 60L		60	x 65L
CDQSKWB16-5D		30	CQ-M3 x 35L		35	CQ-M3 x 40L
-10D		35	x 40L		40	x 45L
-15D	6.5	40	x 45L	6.5	45	x 50L
-20D	0.0	45	x 50L	0.0	50	x 55L
-25D		50	x 55L		55	x 60L
-30D		55	x 60L		60	x 65L
CDQSKWB20-5D		35	CQ-M5 x 45L	10	40	x 50L
-10D		40	x 50L		45	x 55L
-15D		45	x 55L		50	x 60L
-20D		50	x 60L		55	x 65L
-25D		55	x 65L		60	x 70L
-30D	10	60	x 70L		65	x 75l
-35D		65	x 75L		70	x 80I
-40D		70	x 80L		75	x 85l
-45D		75	x 85L		80	x 90l
-50D		80	x 90L		85	x 95l
CDQSKWB25-5D		40	CQ-M5 x 45L		45	CQ-M5 x 50L
-10D		45	x 50L		50	x 55L
-15D		50	x 55L		55	x 60L
-20D		55	x 60L		60	x 65L
-25D	-	60	x 65L	-	65	x 70L
-30D	7	65	x 70L	7	70	x 75l
-35D		70	x 75L		75	× 80L
-40D		75	x 80L		80	x 85l
-45D		80	x 85L		85	x 90L
-50D		85	x 90L		90	x 95L

Material: Chromium molybdenum steel Surface treatment: Zinc chromated



Dimensions: Ø12 to Ø25

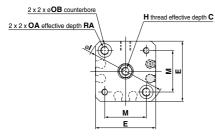
Basic type (Through-hole/Both ends tapped common): CQSKW/CDQSKW

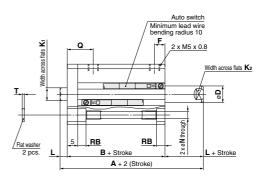
* For the auto switch mounting position and its mounting height, refer to page 748.



ø16

ø12





ø20, ø25



Rod end male thread

Rod End Male Thread Bore size

(mm)

12

16

20

25

Without auto switch With auto switch

A₁

55

58

68

79

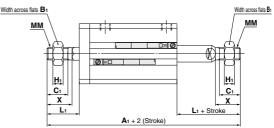
A₁

60

63

78

89



B₁ C1 Hı Lı

8 9 4 14

10

13 12 5

17 15 6

10

5

CQS
JCQ
CQ2
RQ
CQM
CQU
MU

ММ х

15.5 M6 x 1.0 12

22.5 M10 x 1.25 17.5

18.5 M8 x 1.25

M5 x 0.8 10.5

14

CUJ

CU

Basic Type

Bore size	Stroke range	Without a	uto switch	With aut	to switch	~	n	E	E	ш		K .	K ₂		м	N	OA	ОВ	<u> </u>	RA	RB	т
(mm)	(mm) -	Α	В	Α	В	C		-	F		•	K 1	R 2	L .		IN	UA		Q	nA	nD	
12	5 to 30	34	27	39	32	6	6	25	7.5	M3 x 0.5	32	5.2	5	3.5	15.5	3.5	M4 x 0.7	6.5	12.5	7	4	0.5
16	5 to 30	34	27	39	32	8	8	29	7.5	M4 x 0.7	38	6.2	6	3.5	20	3.5	M4 x 0.7	6.5	12.5	7	4	0.5
20	5 to 50	40	31	50	41	7	10	36	8	M5 x 0.8	47	8.2	8	4.5	25.5	5.4	M6 x 1.0	9	13	10	7	1
25	5 to 50	44	34	54	44	12	12	40	9	M6 x 1.0	52	10.2	10	5	28	5.4	M6 x 1.0	9	14	10	7	1

Note 1) For basic type ø20 and ø25 with 5 stroke, through-hole is threaded over the entire length.

Note 2) The positions of width across flats (K2) on both sides are not the same.

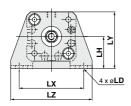
* For details about the rod end nut and accessory brackets, refer to page 796.

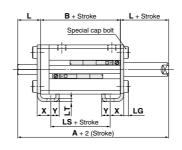


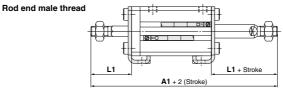
CQSKW Series

Dimensions: ø12 to ø25

Foot type: CQSKWL/CDQSKWL





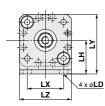


Foot Type

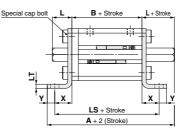
Bore size Stroke range		Without auto switch			With auto switch				L1	10	LG	тн	1.7	1.2	1 V	17	v	v		
(mm)	(mm)	Α	A1	В	LS	Α	A1	В	LS	L	-		LG	сп		ᅛ	LI		^	T
12	5 to 30	54	75	27	15	59	80	32	20	13.5	24	4.5	2.8	17	2	34	29.5	44	8	4.5
16	5 to 30	54	78	27	15	59	83	32	20	13.5	25.5	4.5	2.8	19	2	38	33.5	48	8	5
20	5 to 50	60	88	31	19	70	98	41	29	14.5	28.5	6.6	4	24	3.2	48	42	62	9.2	5.8
25	5 to 50	64	99	34	19	74	109	44	29	15	32.5	6.6	4	26	3.2	52	46	66	10.7	5.8

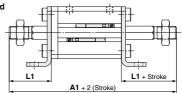
Foot bracket material: Carbon steel Surface treatment: Nickel plated

Compact foot type CQSKWLC/CDQSKWLC



Rod end male thread





Compact Foot Type

Bore size	Stroke range	Wit	hout a	uto sw	vitch	W	ith aut	o swit	ch		14	LD	LH	1.7	1.2	1.2	17	v	v
(mm)	(mm)	Α	A1	В	LS	Α	A1	В	LS	-	-	LD	гп	L1	ᅛ	LT	12	^	T
12	5 to 30	54.3	75	27	45.6	59.3	80	32	50.6	13.5	24	4.5	17	2	15.5	29.5	25	9.3	4.5
16	5 to 30	54.8	78	27	45.6	59.8	83	32	50.6	13.5	25.5	4.5	19	2	20	33.5	29	9.3	5
20	5 to 50	64.5	88	31	57.4	74.5	98	41	67.4	14.5	28.5	6.6	24	3.2	25.5	42	36	13.2	5.8
25	5 to 50	68	99	34	60.4	78	109	44	70.4	15	32.5	6.6	26	3.2	28	46	40	13.2	5.8

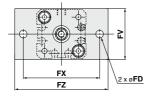
* For details about the rod end nut and accessory brackets, refer to page 796.

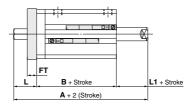
Compact foot bracket material: Carbon steel Surface treatment: Zinc chromated

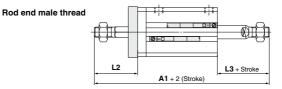


Dimensions: Ø12 to Ø25

Flange type: CQSKWF/CDQSKWF







Flange Type

Bore size	Stroke range	Witho	ut auto :	switch	With	auto sv	vitch	FD	FT	FV	FX	FZ		14	L2	L3
(mm)	(mm)	Α	A1	В	Α	A1	В	FD	F1	FV	ГЛ	FZ	L.	L.I	L2	L3
12	5 to 30	44	65	27	49	70	32	4.5	5.5	25	45	55	13.5	3.5	24	14
16	5 to 30	44	68	27	49	73	32	4.5	5.5	30	45	55	13.5	3.5	25.5	15.5
20	5 to 50	50	78	31	60	88	41	6.6	8	39	48	60	14.5	4.5	28.5	18.5
25	5 to 50	54	89	34	64	99	44	6.6	8	42	52	64	15	5	32.5	22.5

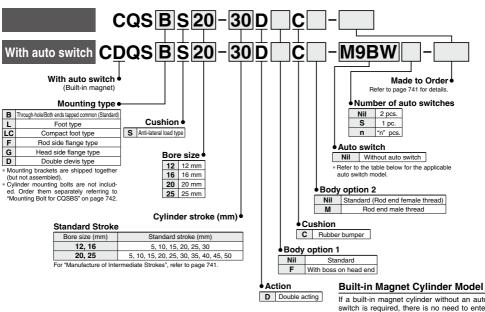
* For details about the rod end nut and accessory brackets, refer to page 796. Note 1) The positions of piston rod width across flats (right side) are not constant. Flange bracket material: Carbon steel Surface treatment: Nickel plated

CUJ
CU
CQS
JCQ
CQ2
RQ
CQM
CQU
MU



Compact Cylinder: Anti-lateral Load Type COS Series ø12, ø16, ø20, ø25

How to Order



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) CDQSLS12-25D

Applicable Auto Switches/Refer to pages 1575 to 1701 for further information on auto switches.

<u> </u>			light		Ŀ	oad volta	ae	Auto swit	ch model	Lead	wire	lengt	h (m)	_		
Туре	Special function	Electrical entry	Indicator li	Wiring (Output)	D	C	AC	Perpendicular	In-line	0.5 (Nil)	1 (M)	3 (L)	5	Pre-wired connector	Applical	ble load
£				3-wire (NPN)		5 V, 12 V		M9NV	M9N	•	•	•	\circ	0	IC circuit	
switch	—			3-wire (PNP)		5 V, 12 V		M9PV	M9P	•	•	•	\circ	0	IC circuit	
				2-wire		12 V		M9BV	M9B	•	•	•	$^{\circ}$	0	-	
auto	Diagnostic indication	1		3-wire (NPN)		5 V. 12 V		M9NWV	M9NW	•	•	•	\circ	0	IC circuit	1
		Grommet	Yes	3-wire (PNP) 24 V 2-wire	24 V	J V, 12 V	-	M9PWV	M9PW	•	•	•	\circ	0	IC CITCUIL	Relay,
state					12 V		M9BWV	M9BW	•	•	•	$^{\circ}$	0	-	PLC	
1st	Water resistant	1		3-wire (NPN)		5 V. 12 V		M9NAV*1	M9NA*1	0	0	•	\circ	0	IC circuit	
Solid	(2-color indicator)			3-wire (PNP)		5 V, 12 V		M9PAV*1	M9PA*1	0	0	•	$^{\circ}$	0	IC CITCUIL	
Ň				2-wire		12 V		M9BAV*1	M9BA*1	0	0	•	\circ	0	—	1
Reed auto switch		Crommet	Yes	3-wire (NPN equivalent)	-	5 V	-	A96V	A96	•	-	•	-	-	IC circuit	_
to Be	_	Grommet		0.00	04.14	12 V	100 V	A93V*2	A93	•	٠	•	٠	—	—	Relay,
au			No	2-wire	e 24 V	12 V	100 V or less	A90V	A90	•	-	•	—	—	IC circuit	PLC

*1 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.

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

* Lead wire length symbols: 0.5 m Nil (Example) M9NW

1 m M (Example) M9NWM

* Since there are other applicable auto switches than listed, refer to page 749 for details. * For details about auto switches with pre-wired connector, refer to pages 1648 and 1649.

* Auto switches are shipped together (not assembled)

Note) There is the case D-A9 V/M9 V/M9 V/M9 V/M9 AV 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.



* Solid state auto switches marked with "O" are produced upon receipt of order.

³ m······ L (Example) M9NWL 5 m······ Z (Example) M9NWZ

Compact Cylinder: Anti-lateral Load Type CQS Series



Symbol

Rubber bumper



Made to Order	Made to Order: Individual Specifications (For details, refer to pages 750 and 752.)
Symbol	Specifications
-X271	Fluororubber seals
-X1876	With concave shape end boss on the cylinder tube head side

Made to Order Specifications

Click he	ere for details
Symbol	Specifications
-XA🗆	Change of Rod End Shape
-XB10	Intermediate stroke (Using exclusive body)
-XC6	Piston rod, retaining ring, rod end nut made of stainless steel
-XC85	Grease for food processing equipment

Body Option

Description	Application
Rod end male thread	Available for Double acting, Single rod models.

Mounting Bracket Part No.

Bore size (mm)	Foot (1)	Compact foot ⁽¹⁾	Flange	Double clevis
12	CQS-L012	CQS-LC012	CQS-F012	CQS-D012
16	CQS-L016	CQS-LC016	CQS-F016	CQS-D016
20	CQS-L020	CQS-LC020	CQS-F020	CQS-D020
25	CQS-L025	CQS-LC025	CQS-F025	CQS-D025

Note1) When ordering foot and compact foot brackets, order 2 pieces per cylinder.

Note2) Parts belonging to each bracket are as follows Foot, Compact foot, Flange type: Body mounting bolt Double clevis type: Clevis pin, type C retaining ring for axis, Body mounting bolt

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.

Standard Specifications

Bore size (mm)	12	16	20	25					
Action	Double acting, Single rod								
Fluid		A	vir						
Lubrication		Not require	d (Non-lube)						
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)								
Ambient and huid temperature	With aut	o switch: -10	to 60°C (No	freezing)					
Cushion		Rubber	bumper*						
Rod end thread		Female	e thread						
Stroke length tolerance	+1.0 mm *								
Piston speed		50 to 50	00 mm/s						
Allowable kinetic energy (J)	0.043	0.075	0.11	0.18					

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

Theoretica	al Output			→OUT		(N)
Bore size	Rod size	Operating	Piston area	Operati	ng pressure	(MPa)
(mm)	(mm)	direction	direction (mm ²)	0.3	0.5	0.7
12	6	IN	84.8	25	42	59
12	0	OUT	113	34	57	79
16	8	IN	151	45	75	106
10	°	OUT	201	60	101	141
20	10	IN	236	71	118	165
20	10	OUT	314	94	157	220
25	12	IN	378	113	189	264
25	12	OUT	491	147	245	344

Manufacture of Intermediate Stroke

Descri	ption	Spacer is installed in the		
Part no.		Refer to "How to Order" for the standard model no. (page 740).		
	Description	Intermediate strokes in 1 mm spacers with standard stroke	increments are available by using cylinders.	CU
Standard stroke		Bore size	Stroke range	
	Stroke range	12, 16	1 to 29	COS
		20, 25	1 to 49	
Example		Part no.: CQSBS25–47D CQSBS25-50D with 3 mm width spacer inside.		
Exam	ipie	B dimension is 77.5 mm.		
				DO
				KU

Refer to pages 747 to 749 for cylinders with auto switches.

· Minimum auto switch mounting stroke

· Proper auto switch mounting position (detection at stroke end) and mounting height · Operating range



COM

CQU

MU

SMC

CQS

Weight/Without Auto Switch

Bore size				Су	linder s	troke (m	ım)			
(mm)	5	10	15	20	25	30	35	40	45	50
12	37	43	50	57	63	70	-	-	-	-
16	49	57	66	74	83	92	-	-	-	-
20	75	88	101	114	127	140	153	165	178	191
25	109	125	140	156	172	188	204	220	236	252

Weight/With Auto Switch (Built-in magnet)

Bore size				Су	linder s	roke (m	m)			
(mm)	5	10	15	20	25	30	35	40	45	50
12	45	51	58	65	71	78	-	-	-	-
16	59	67	76	85	94	103	-	-	-	-
20	106	119	132	145	157	170	183	195	208	221
25	151	167	183	199	215	231	246	262	278	294

Additional Weight

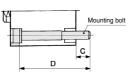
Additional Weight (g)					
Bore size (mm)		12	16	20	25
Rod end male thread	Male thread	1.5	3	6	12
	Nut	1	2	4	8
With boss on head end		0.7	1.3	2	3
Foot type (Including mounting bolt)		55	65	159	181
Compact foot type (Including mounting bolt)		41	51	121	140
Rod side flange type (Including mounting bolt)		58	70	143	180
Head side flange type (Including mounting bolt)		56	66	137	171
Double clevis type (Including pin, reta	ining ring, bolt)	34	40	92	127

Mounting Bolt for CQSBS

Mounting method: Mounting bolt for through-hole mounting type of CQSBS 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 4 pcs.



Note) When mounting a cylinder with through-hole, be sure to use the attached plain washer.

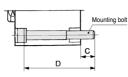
Cylinder model	С	D	Mounting bolt part no.
CQSBS12-5DC	6.5	30	CQ-M3 x 30L
-10DC		35	x 35L
-15DC		40	x 40L
-20DC		45	x 45L
-25DC		50	x 50L
-30DC		55	x 55L
CQSBS16-5DC	6.5	30	CQ-M3 x 30L
-10DC		35	x 35L
-15DC		40	x 40L
-20DC	0.5	45	x 45L
-25DC		50	x 50L
-30DC		55	x 55L
CQSBS20-5DC		30	CQ-M5 x 30L
-10DC	6.5	35	x 35L
-15DC	0.5	40	x 40L
-20DC		45	x 45L

Cylinder model	С	D	Mounting bolt part no.
CQSBS20-25DC		50	CQ-M5 x 50L
-30DC		55	x 55L
-35DC		60	x 60L
-40DC	6.5	65	x 65L
-45DC		70	x 70L
-50DC		75	x 75L
CQSBS25-5DC		35	CQ-M5 x 35L
-10DC		40	x 40L
-15DC		45	x 45L
-20DC		50	x 50L
-25DC	8.5	55	x 55L
-30DC	0.5	60	x 60L
-35DC		65	x 65L
-40DC		70	x 70L
-45DC		75	x 75L
-50DC		80	x 80L
Material: Chromium molybdenum steel			

Mounting Bolt for CDQSBS with Auto Switch

Mounting method: Mounting bolt for through-hole mounting type of CQQSBS is available as an option. Refer to the following for ordering procedures. Order the actual number of bolts that will be used.

Example) CQ-M3x35L 4 pcs.



Note) When mounting a cylinder with through-hole, be sure to use the attached plain washer.

Cylinder model	С	D	Mounting bolt part no.
CDQSBS12-5DC		35	CQ-M3 x 35L
-10DC	6.5	40	x 40L
-15DC		45	x 45L
-20DC		50	x 50L
-25DC		55	x 55L
-30DC		60	x 60L
CDQSBS16-5DC	6.5	35	CQ-M3 x 35L
-10DC		40	x 40L
-15DC		45	x 45L
-20DC	0.5	50	x 50L
-25DC		55	x 55L
-30DC		60	x 60L
CDQSBS20-5DC		40	CQ-M5 x 40L
-10DC	66	45	x 45L
-15DC	6.5	50	x 50L
-20DC		55	x 55L

Cylinder model С D Mounting bolt part no. CDQSBS20-25DC 60 CQ-M5 x 60L -30DC 65 x 65L -35DC x 70L 70 6.5 -40DC 75 x 75L -45DC 80 x 80L -50DC 85 x 85L CDQSBS25-5DC 45 CQ-M5 x 45L -10DC 50 x 50L -15DC 55 x 55L -20DC 60 x 60L -25DC 65 x 65L 8.5 -30DC 70 x 70L

Surface treatment: Zinc chromated

-35DC 75 x 75L -40DC x 80L 80 -45DC 85 x 85L -50DC x 90L 90

Material: Chromium molybdenum steel Surface treatment: Zinc chromated

For standard strokes

(g)

(g)

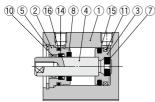
Calculation: (Example) CQSDS20-20DCM
Cylinder weight: CQSBS20-20DC114 g
Additional weight: Rod end male thread10 g
: Double clevis type ······ 92 g
216 g



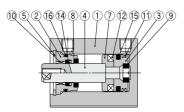
Compact Cylinder: Anti-lateral Load Type CQS Series

Construction

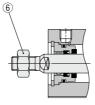
Basic type



With auto switch (Built-in magnet) ø12, ø16

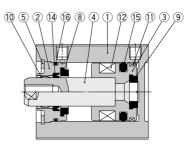


Rod end male thread



With boss on head end

ø**20**, ø**25**



Component Parts

No.	Description	Material	Note
1	Cylinder tube	Aluminum alloy	Hard anodized
2	Collar	Aluminum alloy	Anodized
3	Piston	Aluminum alloy	
4	Piston rod	Stainless steel	
5	Retaining ring	Carbon tool steel	Phosphate coated
6	Rod end nut	Carbon steel	Zinc chromated
7	Spacer for switch type	Aluminum alloy	Chromated
8	Bumper A	Urethane	
9	Bumper B	Urethane	
10	Bushing	Oil-impregnated sintered alloy	
11	Wear ring	Resin	
12	Magnet	—	
13	Centering location ring	Aluminum alloy	Anodized
14*	Rod seal	NBR	
15*	Piston seal	NBR	
16*	Tube gasket	NBR	

Replacement Parts/Seal Kit

Kit no.	Contents	
CQSB12-PS		
CQSB16-PS		
CQSB20-PS	Set of nos. above 14, 15, 16.	
CQSB25-PS		
	CQSB12-PS CQSB16-PS CQSB20-PS	

* Seal kit includes (4, (5, (6. 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)

\mathbb{X} \bigtriangledown

CUJ
CU
CQS
JCQ
CQ2
RQ
CQM
CQU
MU

(13)



CQS Series

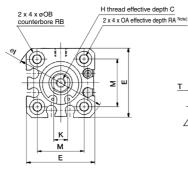
Dimensions: Ø12 to Ø25

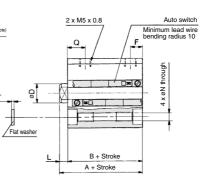
Basic type (Through-hole/Both ends tapped common): CQSBS/CDQSBS



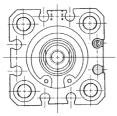


ø12





ø20, ø25



Rod end male thread

 Bore size (mm)
 B1
 C1
 H1
 L1

8 9 4

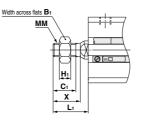
10 10 5

12

16

20

25



MM X

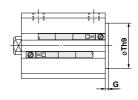
15.5 M6 x 1.0 12

14 M5 x 0.8 10.5

13 12 5 18.5 M8 x 1.25 14

17 15 6 22.5 M10 x 1.25 17.5

With boss on head end



With Boss on Head End (mm)

Bore size (mm)	G	Th9
12	1.5	15_0_0
16	1.5	20_0.052
20	2	13_0_043
25	2	15_0.043

Note) With boss on rod end: Option (Suffix "-XC36" to the end of part number.) Note that only bore sizes ø12 and ø16 are applicable to the long stroke.

Basic Type

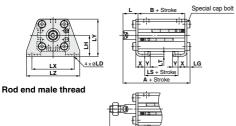
Bore size	Stroke range	Without a	uto switch	With au	to switch	<u> </u>	D	E	E	ы		v		м	N	OA	ов	~	RA	RB	т
(mm)	(mm)	Α	B	Α	В	C		E	F	п	· ·	n l	L .	IVI		UA		a	nA	nD	•
12	5 to 30	25.5	22	30.5	27	6	6	25	5	M3 x 0.5	32	5	3.5	15.5	3.5	M4 x 0.7	6.5	7.5	7	4	0.5
16	5 to 30	25.5	22	30.5	27	8	8	29	5	M4 x 0.7	38	6	3.5	20	3.5	M4 x 0.7	6.5	7.5	7	4	0.5
20	5 to 50	29	24.5	39	34.5	7	10	36	5.5	M5 x 0.8	47	8	4.5	25.5	5.4	M6 x 1.0	9	8	10	7	1
25	5 to 50	32.5	27.5	42.5	37.5	12	12	40	5.5	M6 x 1.0	52	10	5	28	5.4	M6 x 1.0	9	9	10	7	1

Note) For basic type 5 to10 stroke with ø20 and 5 stroke with ø25, through-hole is threaded over the entire length. * For details about the rod end nut and accessory brackets, refer to page 796.

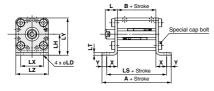


Dimensions: Ø12 to Ø25

Foot type: CQSLS/CDQSLS



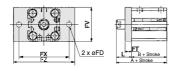
Compact foot type: CQSLCS/CDQSLCS



Rod end male thread



Rod side flange type: CQSFS/CDQSFS

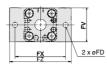


Rod end male thread



Head side flange type: CQSGS/CDQSGS





Rod end male thread



Foot Type

rootryp	e										
Bore size	Stro	ke rar	nge	Witho	out au	to sv	witch	Wit	h aut	o swit	ch
(mm)		(mm)	- [Α	B		LS	Α	E	3	LS
12	5	to 30		40.3	22	2	10	45.3	2	7	15
16	5	to 30		40.3	22	2	10	45.3	2	7	15
20	5	to 50		46.2	24.	5	12.5	56.2	34	.5	22.5
25	5	5 to 50		49.7	27.	5	12.5	59.7	37	.5	22.5
Bore size (mm)			LD	LG	LH	LT	LX	LY	LΖ	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
						For	t brack	et mate	erial: (Carbo	n steel

Surface treatment: Nickel plated

Compact Foot Type

Bore size Stroke range Without auto switch With auto switch														
Bore size	Stro	ke rar	nge [Witho	out au	to s	swi	itch	Wit	h aut	o sv	/itch		
(mm)		(mm)	Ĩ	Α	B			LS	Α	E	3	LS		
12	5	to 30		49.6	22	2	40.6		54.6	2	7	45.6		
16	5	to 30		50.6	22	2	4	0.6	55.6	2	7	45.6		
20	5	to 50		62.5	24.5 50.9			72.5	34	.5	60.9			
25	5	to 50		65.5	27.	.5 5		3.9	75.5	37	.5	63.9		
Bore size (mm)	L	L1	LD	LH	LT	L	x	LY	LZ	х	Y			
12	13.5	24	4.5	17	2	15	.5	29.5	25	9.3	4.5	5		
16	13.5	25.5	4.5	19	2	2	0 33.5		29	9.3	5			
20	14.5	28.5	6.6	24	3.2	25	.5	42	36	13.2	5.8	3		
25	15				3.2	2	8	46	40	13.2	5.8	3		
			С	ompac					erial: C nt: Zind					

Rod Side Flange Type

		<u> </u>							
Bore size	Stroke	e range	Witho	ut a	uto s	witch	W	lith aut	o switch
(mm)	(n	nm)	A		I	3		Α	в
12	5 t	o 30	35.	5	2	2	4	0.5	27
16	5 t	o 30	35.	5	2	2	4	0.5	27
20	5 t	o 50	39		24	1.5		49	34.5
25	5 t	o 50	42.	5	27	7.5	5	52.5	37.5
Bore size							_		
(mm)	FD	FT	FV	FV F		FZ	2	L	L1
12	4.5	5.5	25	4	15	55	;	13.5	24
16	4.5	5.5	30	4	15	55	;	13.5	25.5
20			39	4	8	60)	14.5	28.5
25	6.6	8	42	42 5		64	l 15		32.5
		F	lange l	orac	ket	mate	eria	I: Carb	on steel

Flange bracket material: Carbon steel Surface treatment: Nickel plated

Head Side Flange Type

neau Siu	5 I 1a	nge	iyhe						
Bore size	Stroke	e range	Witho	ut a	uto s	witch	W	lith aut	o switch
(mm)	(n	nm)	A			3		A	В
12	5 t	o 30	31		2	2		36	27
16	5 t	o 30	31		2	2		36	27
20	5 t	o 50	37	,	24	1.5		47	34.5
25	5 t	o 50	40.	5	27	7.5	5	50.5	37.5
Bore size (mm)	FD	FT	FV	F	x	FZ	z	L	L1
12	4.5	5.5	25	4	5	55	;	3.5	14
16	4.5	5.5	30	4	15	55	;	3.5	15.5
20	6.6	8	39	4	8	60)	4.5	18.5
25	6.6	8	42	5	52	64	ļ.	5	22.5
		F							oon steel el plated

D-🗆
-X□
Technical

Data

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



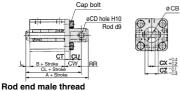
UU	J
CU	
CQ	S
JC	נ
CQ	2
RQ	
CQI	N
CQ	U
MU	

CUL

CQS Series

Dimensions: ø12 to ø25

Double clevis type: CQSDS/CDQSDS





Double Clevis Type

	Bore size Stroke range Without auto switch With auto switch														
Bore size	Stroke	e range	Witho	ut auto	switch	With	auto s	witch							
(mm)	(m	ım)	Α	В	CL	Α	В	CL							
12	5 t	o 30	45.5	22	39.5	50.5	27	44.5							
16	5 t	o 30	46.5	22	40.5	51.5	27	45.5							
20	5 t	5 to 50		24.5	47	66	34.5	57							
25	5 t	5 to 50		27.5	52.5	72.5	37.5	62.5							
Bore size (mm)	СВ	CB CD		CU	cw	сх	cz	L	Lı	RR					
12	12	5	4	7	14	5	10	3.5	14	6					
16	14 5		4	10	15	6.5	12	3.5	15.5	6					
20	20	8	5	12	18	8	16	4.5	18.5	9					
25	24	10	5	14	20	10	20	5	22.5	10					
				-		A		111 211	Carbo						

Double clevis bracket material: Carbon steel Surface treatment: Nickel plated

For details about the double clevis pivot bracket, refer to page 705.
 For details about the rod end nut and accessory brackets, refer to page 796.

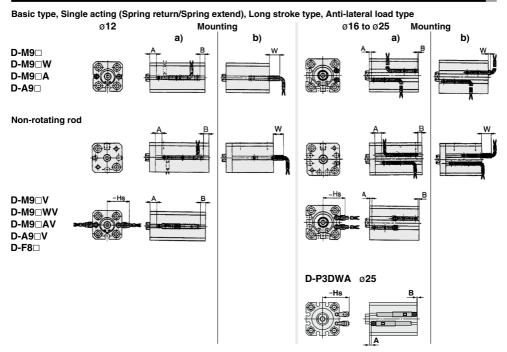
CUJ
CU
CQS
JCQ
CQ2
RQ
CQM
CQU
MU





CQS Series **Auto Switch Mounting**

Proper Auto Switch Mounting Position (Detection at stroke end) and Its Mounting Height



Proper Auto Switch Mounting Position (Detection at stroke end)

Auto switch	D-M	9□/M9	W	D-M9□V	//M9⊡WV	/M9□AV	D	-M9□.	Α		D-A9□]	0)-A9⊡'	v		D-F8□	1	D	-P3DW	Α
Bore size model	Α	В	W	A	В	Hs	Α	В	w	Α	В	W	Α	В	Hs	Α	В	Hs	Α	В	Hs
ingle rod	Basic	c type,	Singl	e actir	ng (Sp	ring re	turn/S	pring	exten	d), Noi	n-rotat	ing ro	d	[]: Den	otes the	values o	f D-A93.	(): Den	otes the	values o	f type
12	5.5 (6.5)	3.5 (4.5)	5.5 (6.5)	5.5 (6.5)	4.5 (3.5)	19.5	5.5 (6.5)	4.5 (3.5)	7.5 (8.5)	1.5 (2.5)	0	1.5 [4] (2.5 [5])	1.5 (2.5)	0	17	3.5	2.5	27	_	-	-
16	6	4	6	6	4	21.5	6	4	8	2	0	2 [4.5]	2	0	19	4	2	29	_	_	-
20	10	7.5	2.5	10	7.5	25	10	7.5	4.5	6	3.5	-1.5 [1]	6	3.5	22.5	8.5	5	32.5	-	-	-
25	11	9.5	0.5	11	9.5	27	11	9.5	2.5	7	5.5	-3.5 [-1]	7	5.5	24.5	9	7.5	34.5	6.5	5	33
.ong stro	ke																				
12	9	11	-1	9	11	19.5	9	11	1	5	7	-5 [-2.5]	5	7	17	7	9	27	_	—	-
16	9.5	10.5	-0.5	9.5	10.5	21.5	9.5	10.5	1.5	5.5	6	-4.5 [-2]	5.5	6	19	7.5	8.5	29	_	—	-
20	13	16	-6	13	16	25	13	16	-4	9	12	-10 [-7.5]	9	12	22.5	11	14	32.5	-	-	-
25	14	18	-8	14	18	27	14	18	-6	10	14	-12 [-9.5]	10	14	24.5	12	16	34.5	9.5	13.5	33
Anti-later	al loa	d typ	е																		
12	10	5	5	10	5	19.5	10	5	7	6	1	1 [3.5]	6	1	17	8	3	27	-	—	-
16	9.5	9	4.5	9.5	9	21.5	9.5	9	6.5	5.5	5	0.5 [3]	5.5	5	19	7.5	3.5	29	_	—	-
20	13	9.5	0.5	13	9.5	25	13	9.5	2.5	9	5.5	-3.5 [-1]	9	5.5	22.5	11	7.5	32.5	_	-	-
25	14	11.5	-1.5	14	11.5	27	14	11.5	0.5	10	7.5	-5.5 [-3]	10	7.5	24.5	12	9.5	34.5	9.5	7	33

12	5.5	9.5	0.5	5.5	9.5	19.5	5.5	9.5	2.5	1.5	5.5	-3.5 [1]	1.5	5.5	17	3.5	7.5	27	-	—	—
16	6	9	1	6	9	21.5	6	9	3	2	5	-3 [-0.5]	2	5	19	4	7	29	_	—	_
20	10	14	-4	10	14	25	10	14	-2	6	10	-8 [-5.5]	6	10	22.5	8	12	32.5	_	_	-
25	11	16	-6	11	16	27	11	16	-4	7	12	-10 [-7.5]	7	12	24.5	9	14	34.5	6.5	11.5	33

Note 1) Negative figures in the table W indicate an auto switch is mounted inward from the edge of the cylinder body.

Note 2) The D-M90/M90W and M90A cannot be installed on the single acting: single rod type.

Note 3) Adjust the auto switch after confirming the operating conditions in the actual setting. Note 4) The D-P3DWAD is available only for ø25.



Auto Switch Mounting CQS Series

Operating Range

				(mm				
Auto switch model		Bore size (mm)						
Auto switch model	12	16	20	25				
D-M9□/M9□V D-M9□W/M9□WV D-M9□A/M9□AV	3	4	5.5	5.5				
D-A9□/A9□V	6	7.5	10	10				
D-F8	2.5	3	4	4				
D-P3DWA	_	—	_	6				

* Since this is a guideline including hysteresis, not meant to be guaranteed. (assuming approximately ±30% dispersion.) There may be the case it will vary substantially depending on an ambient environment.

Minimum Auto Switch Mounting Stroke

								(mm)
No. of auto switch mounted	D-M9⊡V	D-M9⊡WV D-M9⊡AV	D-A9 □	D-A9⊡V		D-M9⊟W D-M9⊟A	D-F8□	D-P3DWA
1 pc.	5	10	10 (5)	5	15 (5)	15 (10)	5	15
2 pcs.	5	10	10	10	15 (5)	15 (10)	5	15

Note 1) The D-M9□/M9□W/M9□A and P3DWA□ cannot be installed on the single acting: single rod type. Note 2) Available only for ø25.

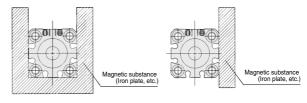
Note 3) As the dimension stated in () shows the minimum mountable stroke when the auto switch does not project from the end face of the cylinder body and the lead wire bending space is not hindered, the auto switch needs to be ordered separately. (Refer to the figure below.)



Precautions

-----E. Be sure to read this before handling the products.

- Refer to back page 50 for Safety Instructions and pages 3 to 12 for Actuator and Auto Switch Precautions.
- If the cylinder is used in an application in which a magnetic material is placed in close contact around the cylinder as shown in the graph on the right (including cases in which even one of the sides is in close contact) the operation of auto switches could become unstable. Therefore, please check with SMC for this type of application.



			C
	Other than the applicable auto switches listed in "How to Order", the following auto switches can be mounted. * Normally closed (NC = b contact), solid state auto switch (D-F9G/F9H type, and D-F8 type) are also available. For details, refer to pages 1592 and 1593.		C J
1	* For solid state auto switches, auto switches with a pre-wired connector are also available. Refer to pages 1648 and 1649 for details.	۱ļ	_



Made to Order: Individual Specifications 1

contact SMC for detailed dimensions. specifications and lead times.



1 Special Piston Rod End for Double Rod Type Cylinder

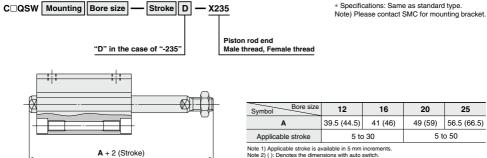
CQS Series



Symbol

-X525

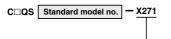
Male thread is used at one piston rod end of double rod type cylinder and female thread is used at the other end.



Symbol Bore size	12	16	20	25	
A	39.5 (44.5)	41 (46)	49 (59)	56.5 (66.5)	
Applicable stroke	5 to	o 30	5 t	o 50	

	Symbol
rubber for Seals	-X271

Material for seals is changed to fluororubber.



Fluororubber for seals

All series variations except non-rotating piston rod type of the CQS series is available. Specifications are the same as for each variation of CQS.

3 Long Stroke of Adjustable Extension Stroke Cylinder (-XC8)

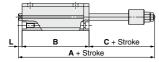
CDQS Mounting Bore size Stroke D(M) - X525

> Lona stroke of XC8

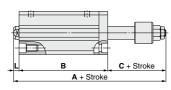
Specifications are the same as for -XC8 of the CQ2/CQS series. Refer to "Made to Order Common Specifications". Note) For the tap mounting type (ø12 to ø25-without switch) and mounting bracket, please contact SMC.

ø12. ø16

2 Fluoro



ø20, ø25



ø12. ø16

Symbol	Α			В				с		Applicable stroke	
Bore (mm)	35st	40st	45st	50st	35st	40st	45st	50st	U	-	Applicable stroke
12	91.1 (96.1)	96.1 (101.1)	101.1 (106.1)	106.1 (111.1)	62 (67)	67 (72)	72 (77)	77 (87)	25.6	3.5	35, 40, 45, 50
16	91.5 (96.5)	96.5 (101.5)	101.5 (106.5)	106.5 (111.5)	62 (67)	67 (72)	72 (77)	77 (87)	26	3.5	35, 40, 45, 50

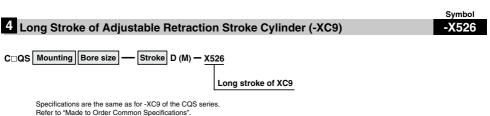
a20 a25

010, 010							
Symbol	Α		I	3			
Stroffe Bore (mm)	55 to 75st	80 to 100st	55 to 75st	80 to 100st	с	L	Applicable stroke
20	142.5 (152.5)	167.5 (177.5)	109 (119)	134 (144)	29	4.5	55 to 100
25	146 (156)	171 (181)	112 (122)	137 (147)	29	5	55 10 100

Note 1) (): Denotes dimensions with auto switch. Note 2) Applicable stroke is available in 5 mm increments.

SMC

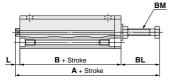




Note) Please contact SMC for bracket type.

Dimensions

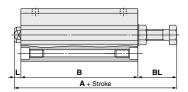
ø12, ø16



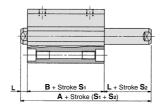
Symbol Bore (mm)	A	в	L	BL	вм	Applicable stroke
12	69.8	37	3.5	29.3	M5 x 0.8	35, 40, 45, 50,
16	69.5	37	3.5	29	M6 x 1.0	75, 100
20	76	41	4.5	30.5	M8 x 1.25	75,100, 125, 150, 175, 200
25	78.5	44	5	29.5	M8 x 1.25	75, 100, 125, 150, 175, 200, 250, 300

Note 1) Intermediate stroke type (available in 5 mm increments) is for spacer so that dimensions are the same as for each type of 75, 100, 125, 150, 175, 200, 250, 300 stroke.

ø20, ø25



5 Intermediate Stroke of Double Rod Type -X633 C_QSW C_QSKW Standard model no. -X633 * Specifications: Same as standard type. Note) Please contact SMC for bracket type. CQM Dimensions MU			CQS
CQ2 CQSKW Standard model no X633 * Specifications: Same as standard type. Note) Please contact SMC for bracket type. Dimensions	5 Intermediate Strake of Double Red Tune	1	JCQ
C QSKW Standard indeering. XSSS RQ * Specifications: Same as standard type. Note) Please contact SMC for bracket type. CQM Dimensions CQU		-7033	CQ2
Note) Please contact SMC for bracket type.	C□QSW C□QSKW Standard model no — X633		RQ
Dimensions			CQM
	Dimensions		CQU
Symbol cropsew			MU



Symbol	C(D)	QSW	C(D)QSKW					
Bore (mm)	Α	в	Α	в	L	Stroke S1	Stroke S2	
12	29 (34)	22 (27)	34 (39)	27 (32)	3.5	In the case of 5 to 30	In the case of 6 to 29	
16	29 (34)	22 (27)	34 (39)	27 (32)	3.5	stroke 5 mm intervals	stroke 1 mm intervals	
20	35 (45)	26 (36)	40 (50)	31 (41)	4.5	In the case of 5 to 50	In the case of 6 to 49	
25	39 (49)	29 (39)	44 (54)	34 (44)	5	stroke 5 mm intervals	stroke 1 mm intervals	
Note 1) (); Denotes the dimensions with auto switch.								

Note 2) Installing a spacer inside the standard cylinder tube, stroke S1 has 5 mm intervals for controlling intermediate strokes in 1 mm increments. Example) In the case of CDQ2WB40-18D, stroke S1 is 20 mm and stroke S2 is 18 mm.



CUJ

CU

CQS Series Made to Order: Individual Specifications 2

Please contact SMC for detailed dimensions, specifications and lead times.



Symbol

-X636

6 Long Stroke of Dual Stroke Single Rod Type

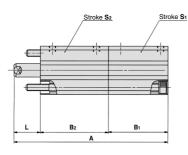
C□QSB Bore size - Stroke S1 + Stroke S2-S1 DC (M) - X636 Long stroke of

XC11

Applicable stroke	mm
Bore size	Stroke
ø12, ø16	Max. stroke S2: up to 50 mm
ø 20 , ø 25	Max. stroke S2: up to 100 mm
	•

Specifications are the same as for -XC11 of the CQS series. Refer to "Made to Order Common Specifications".

Note) Please contact SMC for tap mounting type and bracket mounting type.



Bore size:	. ø 12 , ø 16	
Symbol	Α	Bı

Symbol		B1	B2	L	Stroke range	
Bore	A	B1	D2		S 1	\$2
ø 12	62.5 (67.5) + Stroke (S1 + S2)	17 (22) + Stroke S1	32 + Stroke S ₂	13.5	5 to 30	35 to 50
ø 16	62.5 (67.5) + Stroke (S1 + S2)	17 (22) + Stroke S1	32 + Stroke S ₂	13.5	5 to 30	35 to 50

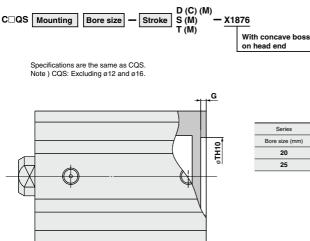
Bore size: ø20, ø25

Symbol Α B₂ Stroke range Stroke S: B1 Stroke S2 L S1 S₂ 55 to 75 80 to 100 55 to 75 80 to 100 Bore 150 (160) 175 (185) 19.5 (29.5) ø**20** 116 141 14.5 5 to 50 55 to 100 + Stroke S1 + St ke S1 + Stroke S 156.5 (166.5) 181.5 (191.5) 22.5 (32.5) ø25 144 5 to 50 55 to 100 119 15 + Stroke S1 + St ke S1 + St oke S

Note 1) (): Denotes the dimensions with auto switch.

Note 2) Applicable stroke is available in 5 mm increments.

7 Cylinder Tube: With Concave Boss on Head End



Series	CQS			
Bore size (mm)	TH10	G		
20	19.3 ^{+ 0.084}	1.4		
25	23.8 ^{+ 0.084}	1.4		

Symbol

-X1876

mm