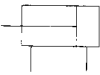


Compact Cylinder: Standard Type Double Acting, Single Rod Series CQS



JIS Symbol



Allowable Kinetic Energy (J)

Bore size (mm)	12	16	20	25
Standard	0.022	0.038	0.055	0.09
With rubber bumper	0.043	0.075	0.11	0.18

Minimum Operating Pressure (MPa)

Bore size (mm)	12	16	20	25
Minimum operating pressure	0.07	0.07	0.05	0.05

Body Option

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

* Rubber bumper is standard equipment for long stroke type.

Mounting Bracket Part No.

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

- Note 1) Order two foot brackets per cylinder.
 Note 2) Parts belonging to each bracket are as follows.
 Foot or Flange style: Body mounting bolt
 Double clevis style: Clevis pin, Type C snap ring for axis, Body mounting bolt.

Specifications

Type	Pneumatic (Non-lube)
Action	Double acting, Single rod
Fluid	Air
Proof pressure	1.5 MPa
Maximum operating pressure	1.0 MPa
Ambient and fluid temperature	Without auto switch: -10 to 70°C (No freezing) With auto switch: -10 to 60°C (No freezing)
Rubber bumper	Standard stroke: None, Long stroke: Standard equipment
Rod end thread	Female thread
Rod end thread tolerance	JIS Class 2
Stroke length tolerance	Standard stroke: $+1.0_0$ Long stroke: $+1.4_0$
Mounting	Through-hole/Both ends tapped common
Piston speed	50 to 500 mm/s

Minimum Stroke for Auto Switch Mounting (mm)

No. of auto switches mounted	D-A9□, D-F9□WV	D-A9□V	D-M9□, D-F9□W	D-M9□V	D-F9BAL
2	10	10	15 ^{Note)}	5	25 ^{Note)}
1	10 ^{Note)}	5	15 ^{Note)}	5	25 ^{Note)}

Note) Please consult with SMC for shorter stroke length than indicated in the table.

Theoretical Output

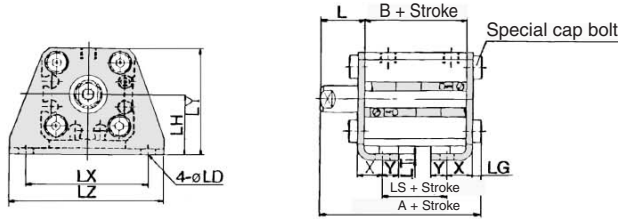
Bore size (mm)	Rod size (mm)	Operating direction	Piston area (mm ²)	Operating pressure (MPa)		
				0.3	0.5	0.7
12	6	IN	84.8	25	42	59
		OUT	113	34	57	79
16	8	IN	151	45	75	106
		OUT	201	60	101	141
20	10	IN	236	71	118	165
		OUT	314	94	157	220
25	12	IN	378	113	189	264
		OUT	491	147	245	344

Manufacture of Intermediate Stroke

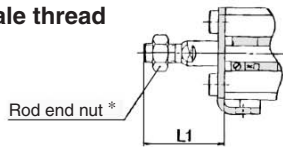
Description		Spacer is installed in the standard stroke body.	Exclusive body (-XB10)		
Part no.		Refer to "How to Order" for the standard model no. (page at left)	Suffix "-XB10" to the end of standard model no. (page at left)		
Standard stroke	Description	Intermediate strokes by the 1 mm interval are available by using spacers with standard stroke cylinders.	Dealing with the stroke by the 1 mm interval by using an exclusive body with the specified stroke		
	Stroke range	Bore size	Stroke range	Bore size	Stroke range
		12, 16	1 to 29	12, 16	6 to 29
		20, 25	1 to 49	20, 25	6 to 49
Long stroke	Description	Intermediate strokes by the 1 mm interval are available by using spacers with standard stroke cylinders.	Dealing with the stroke by the 1 mm interval by using an exclusive body with the specified stroke		
	Stroke range	Bore size	Stroke range	Bore size	Stroke range
		12, 16	31 to 99	12, 16	31 to 99
		20	51 to 199	20	51 to 199
		25	51 to 299	25	51 to 299
Example		Part no.: CQSB25-47D CQSB25-50D with 3 mm width spacer inside. B dimension is 72.5 mm.	Part no.: CQSB25-47D-XB10 Makes 47 stroke tube. B dimension is 69.5 mm.		

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

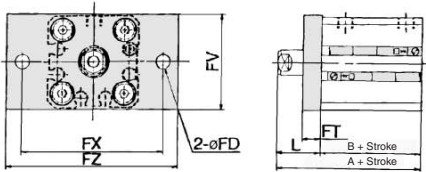
Foot style: CQSL/CDQSL



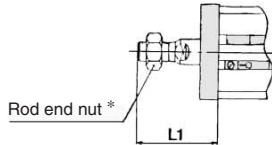
Rod end male thread



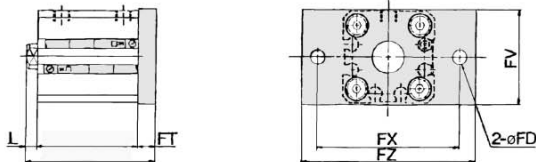
Rod side flange style: CQSF/CDQSF



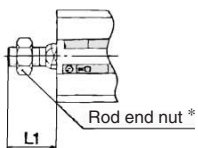
Rod end male thread



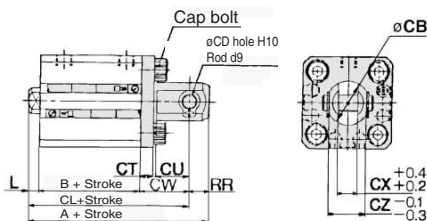
Head side flange style: CQSG/CDQSG



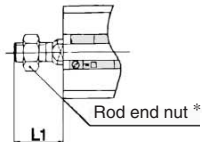
Rod end male thread



Double clevis style: CQSD/CDQSD



Rod end male thread



Foot Style

Bore size (mm)	Standard stroke range (mm)	Standard stroke						Long stroke range (mm)	Long stroke		
		Without auto switch			With auto switch				Without/With auto switch		
		A	B	LS	A	B	LS		A	B	LS
12	5 to 30	35.3	17	5	40.3	22	10	35 to 100	50.3	32	20
16	5 to 30	35.3	17	5	40.3	22	10	35 to 100	50.3	32	20
20	5 to 50	41.2	19.5	7.5	51.2	29.5	17.5	75 to 200	62.7	41	29
25	5 to 50	44.7	22.5	7.5	54.7	32.5	17.5	75 to 300	66.2	44	29

Bore size (mm)	L	L ₁	LD	LG	LH	LT	LX	LY	LZ	X	Y
12	13.5	24	4.5	2.8	17	2	34	29.5	44	8	4.5
16	13.5	25.5	4.5	2.8	19	2	38	33.5	48	8	5
20	14.5	28.5	6.6	4	24	3.2	48	42	62	9.2	5.8
25	15	32.5	6.6	4	26	3.2	52	46	66	10.7	5.8

Foot bracket material: Carbon steel

Rod Side Flange Style

Bore size (mm)	Standard stroke range (mm)	Standard stroke				Long stroke range (mm)	Long stroke	
		Without auto switch		With auto switch			Without/With auto switch	
		A	B	A	B		A	B
12	5 to 30	30.5	17	35.5	22	35 to 100	45.5	32
16	5 to 30	30.5	17	35.5	22	35 to 100	45.5	32
20	5 to 50	34	19.5	44	29.5	75 to 200	55.5	41
25	5 to 50	37.5	22.5	47.5	32.5	75 to 300	59	44

Bore size (mm)	FD	FT	FV	FX	FZ	L	L ₁
12	4.5	5.5	25	45	55	13.5	24
16	4.5	5.5	30	45	55	13.5	25.5
20	6.6	8	39	48	60	14.5	28.5
25	6.6	8	42	52	64	15	32.5

Flange bracket material: Carbon steel

Head Side Flange Style

Bore size (mm)	Standard stroke range (mm)	Standard stroke								Long stroke range (mm)	Long stroke			
		Without auto switch				With auto switch					Without/With auto switch			
		A	B	L	L ₁	A	B	L	L ₁		A	B	L	L ₁
12	5 to 30	26	17	3.5	14	31	22	3.5	14	35 to 100	51	32	13.5	24
16	5 to 30	26	17	3.5	15.5	31	22	3.5	15.5	35 to 100	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

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

Double Clevis Style

Bore size (mm)	Standard stroke range (mm)	Standard stroke										Long stroke range (mm)	Long stroke				
		Without auto switch					With auto switch						Without/With auto switch				
		A	B	CL	L	L ₁	A	B	CL	L	L ₁		A	B	CL	L	L ₁
12	5 to 30	40.5	17	34.5	3.5	14	45.5	22	39.5	3.5	14	35 to 100	65.5	32	59.5	13.5	24
16	5 to 30	41.5	17	35.5	3.5	15.5	46.5	22	40.5	3.5	15.5	35 to 100	66.5	32	60.5	13.5	25.5
20	5 to 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 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)	CB	CD	CT	CU	CW	CX	CZ	RR
12	12	5	4	7	14	5	10	6
16	14	5	4	10	15	6.5	12	6
20	20	8	5	12	18	8	16	9
25	24	10	5	14	20	10	20	10

Double clevis bracket material: Carbon steel

* For details about the rod end nut and accessory brackets, refer to page 7-6-20.

CUJ

CU

CQS

CQM

CQ2

RQ

MU

D-

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20-

Data

Compact Cylinder: Standard Type Single Acting, Single Rod, Spring Return/Extend Series CQS



JIS Symbol

Single acting,
Spring return

Single acting,
Spring extend



⚠ Caution

Snap Ring Installation/Removal

- For installation and removal, use an appropriate pair of pliers (tool for installing a type C snap ring).
- Even if a proper plier (tool for installing type C snap ring) is used, it is likely to inflict damage to a human body or peripheral equipment, as a snap ring may be flown out of the tip of a plier (tool for installing a type C snap ring). Be much careful with the popping of a snap ring. Besides, be certain that a snap ring is placed firmly into the groove of rod cover before supplying air at the time of installment.

Allowable Kinetic Energy (J)

Bore size (mm)	12	16	20	25
Standard	0.022	0.038	0.055	0.09
With rubber bumper	0.043	0.075	0.11	0.18

Minimum Operating Pressure (MPa)

Bore size (mm)	12	16	20	25
Minimum operating pressure	0.25	0.25	0.18	0.18

Body Option

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

Mounting Bracket Part No.

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

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

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

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

Standard Specifications

Type	Pneumatic (Non-lube)
Action	Single acting, Single rod
Fluid	Air
Proof pressure	1.5 MPa
Maximum operating pressure	1.0 MPa
Ambient and fluid temperature	Without auto switch: -10 to 70°C (No freezing) With auto switch: -10 to 60°C (No freezing)
Rubber bumper	None
Rod end thread	Female thread
Rod end thread tolerance	JIS Class 2
Stroke length tolerance	+1.0 0
Mounting	Through-hole/Both ends tapped common
Piston speed	50 to 500 mm/s

Minimum Stroke for Auto Switch Mounting (mm)

No. of auto switches mounted	D-A9□, D-F9□WV	D-A9□V	D-M9□V
2	10	10	5
1	10 (Note)	5	5

Note) Please consult with SMC for shorter stroke length than indicated in the table.

Theoretical Output (N)

Action	Bore size (mm)	Rod size (mm)	Operating direction	Piston area (mm ²)	Operating pressure (MPa)			Retracted side	Extended side
					0.3	0.5	0.7		
Spring return	12	6	IN	—	20	43	65	14	4
			OUT	113					
	16	8	IN	—	45	86	126	15	6
			OUT	201					
	20	10	IN	—	78	141	204	15	6
			OUT	314					
	25	12	IN	—	126	224	323	21	11
			OUT	491					
Spring extend	12	6	IN	84.8	14	31	48	10	3
			OUT	—					
	16	8	IN	151	24	54	85	19	4
			OUT	—					
	20	10	IN	236	44	91	138	27	5
			OUT	—					
	25	12	IN	378	84	160	235	29	10
			OUT	—					

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

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

CUJ

CU

CQS

CQM

CQ2

RQ

MU

D-

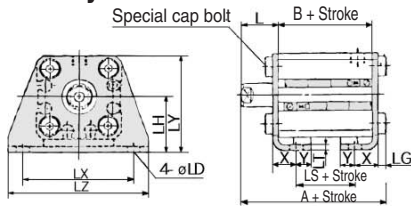
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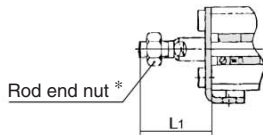
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Compact Cylinder: Standard Type Single Acting, Single Rod, Spring Return/Extend Series CQS

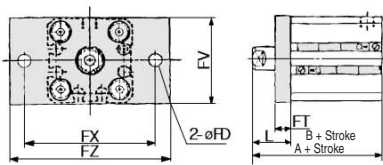
Foot style: CQSL/CDQSL



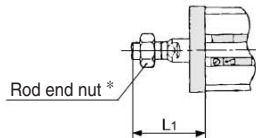
Rod end male thread



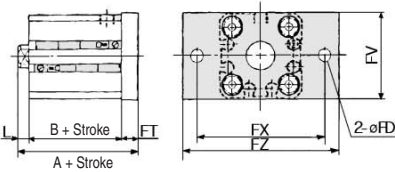
Rod side flange style: CQSF/CDQSF



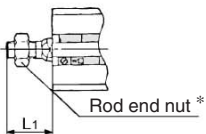
Rod end male thread



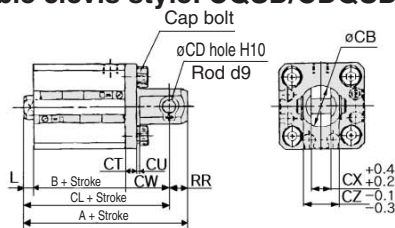
Head side flange style: CQSG/CDQSG



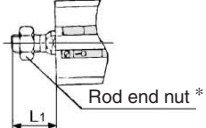
Rod end male thread



Double clevis style: CQSD/CDQSD



Rod end male thread



Foot Style

Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch			L	L ₁	LD	LG	LH	LT	LX	LY	LZ	X	Y
		A	B	LS	A	B	LS											
12	5, 10	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		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		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

Foot bracket material: Carbon steel

Rod Side Flange Style

Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch		FD	FT	FV	FX	FZ	L	L ₁
		A	B	A	B							
12	5, 10	30.5	17	35.5	22	4.5	5.5	25	45	55	13.5	24
16		30.5	17	35.5	22	4.5	5.5	30	45	55	13.5	25.5
20		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

Head Side Flange Style

Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch		FD	FT	FV	FX	FZ	L	L ₁
		A	B	A	B							
12	5, 10	26	17	31	22	4.5	5.5	25	45	55	3.5	14
16		26	17	31	22	4.5	5.5	30	45	55	3.5	15.5
20		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

Flange bracket material: Carbon steel

Double Clevis Style

Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch			CB	CD	CT	CU	CW	CX	CZ	L	L ₁	RR
		A	B	CL	A	B	CL										
12	5, 10	40.5	17	34.5	45.5	22	39.5	12	5	4	7	14	5	10	3.5	14	6
16		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

Double clevis bracket material: Carbon steel

* For details about the rod end nut and accessory brackets, refer to page 7-6-20.

CUJ

CU

CQS

CQM

CQ2

RQ

MU

D-

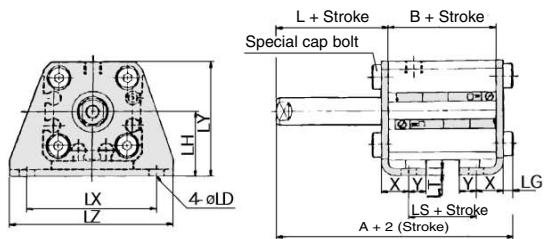
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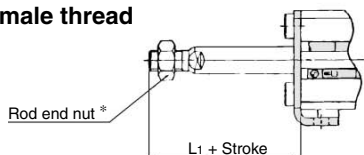
Data

Compact Cylinder: Standard Type Single Acting, Single Rod, Spring Return/Extend Series CQS

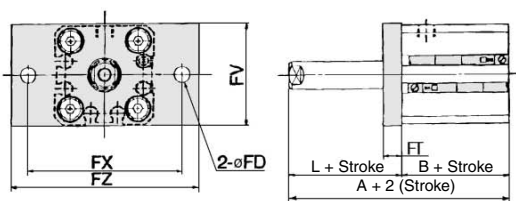
Foot style: CQSL/CDQSL



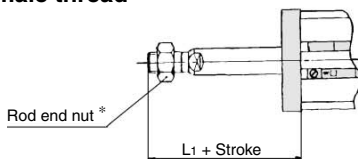
Rod end male thread



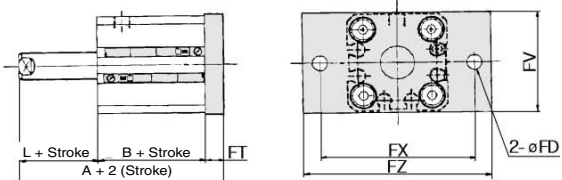
Rod side flange style: CQSF/CDQSF



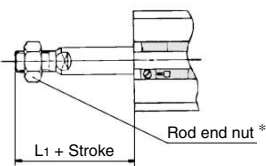
Rod end male thread



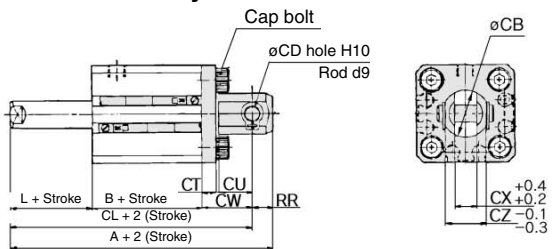
Head side flange style: CQSG/CDQSG



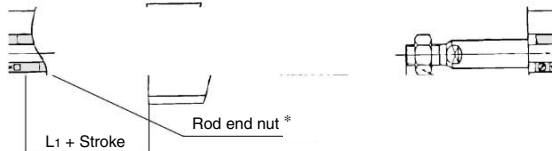
Rod end male thread



Double clevis style: CQSD/CDQSD



Rod end male thread



Foot Style

Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch		
		A	B	LS	A	B	LS
12	5, 10	35.3	17	5	40.3	22	10
16		35.3	17	5	40.3	22	10
20		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	L ₁	LD	LG	LH	LT	LX	LY	LZ	X	Y
12	13.5	24	4.5	2.8	17	2	34	29.5	44	8	4.5
16	13.5	25.5	4.5	2.8	19	2	38	33.5	48	8	5
20	14.5	28.5	6.6	4	24	3.2	48	42	62	9.2	5.8
25	15	32.5	6.6	4	26	3.2	52	46	66	10.7	5.8

Foot bracket material: Carbon steel

Rod Side Flange Style

Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch		FD	FT	FV	FX	FZ	L	L ₁
		A	B	A	B							
12	5, 10	30.5	17	35.5	22	4.5	5.5	25	45	55	13.5	24
16		30.5	17	35.5	22	4.5	5.5	30	45	55	13.5	25.5
20		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

Head Side Flange Style

Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch		FD	FT	FV	FX	FZ	L	L ₁
		A	B	A	B							
12	5, 10	26	17	31	22	4.5	5.5	25	45	55	3.5	14
16		26	17	31	22	4.5	5.5	30	45	55	3.5	15.5
20		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

Flange bracket material: Carbon steel

Double Clevis Style

Bore size (mm)	Stroke range (mm)	Without auto switch			Without auto switch		
		A	B	CL	A	B	CL
12	5, 10	40.5	17	34.5	45.5	22	39.5
16		41.5	17	35.5	46.5	22	40.5
20		51	19.5	42	61	29.5	52
25		57.5	22.5	47.5	67.5	32.5	57.5

Bore size (mm)	CB	CD	CT	CU	CW	CX	CZ	L	L ₁	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

Double clevis bracket material: Carbon steel

* For details about the rod end nut and accessory brackets, refer to page 7-6-20.

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



JIS Symbol



⚠ Caution

Snap Ring Installation/Removal

- For installation and removal, use an appropriate pair of pliers (tool for installing a type C snap ring).
- Even if a proper plier (tool for installing type C snap ring) is used, it is likely to inflict damage to a human body or peripheral equipment, as a snap ring may be flown out of the tip of a plier (tool for installing a type C snap ring). Be much careful with the popping of a snap ring. Besides, be certain that a snap ring is placed firmly into the groove of rod cover before supplying air at the time of installment.

Mounting

- When removing a load, be sure to secure the wrench flats of the piston rod on the load side.
- If this is done without securing the piston rod on the load side, be aware that the coupled (screwed-in) portion of the piston rod could become loosened.

Minimum Operating Pressure (MPa)

Bore size (mm)	12	16	20	25
Minimum operating pressure	0.07	0.07	0.05	0.05

Allowable Kinetic Energy (J)

Bore size (mm)	12	16	20	25
Standard	0.022	0.038	0.055	0.09
With rubber bumper	0.043	0.075	0.11	0.18

Body Option

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

Mounting Bracket Part No.

Bore size (mm)	Foot ⁽¹⁾	Flange
12	CQS-L012	CQS-F012
16	CQS-L016	CQS-F016
20	CQS-L020	CQS-F020
25	CQS-L025	CQS-F025

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

Note 2) Parts belonging to each bracket are as follows.
Foot or Flange style: Body mounting bolt

Standard Specifications

Type	Pneumatic (Non-lube)
Action	Double acting, Double rod
Fluid	Air
Proof pressure	1.5 MPa
Maximum operating pressure	1.0 MPa
Ambient and fluid temperature	Without auto switch: -10 to 70°C (No freezing) With auto switch: -10 to 60°C (No freezing)
Rubber bumper	None
Rod end thread	Female thread
Rod end thread tolerance	JIS Class 2
Stroke length tolerance	+1.0 0
Mounting	Through-hole/Both ends tapped common
Piston speed	50 to 500 mm/s

Minimum Stroke for Auto Switch Mounting (mm)

No. of auto switches mounted	D-A9□, D-F9□WV	D-A9□V	D-M9□, D-F9□W	D-M9□V	D-F9BAL
2	10	10	15 ^{Note)}	5	25 ^{Note)}
1	10 ^{Note)}	5	15 ^{Note)}	5	25 ^{Note)}

Note) Please consult with SMC for shorter stroke length than indicated in the table.

Theoretical Output (N)

Bore size (mm)	Rod size (mm)	Operating direction	Piston area (mm ²)	Operating pressure (MPa)		
				0.3	0.5	0.7
12	6	IN	84.8	25	42	59
		OUT				
16	8	IN	151	45	75	106
		OUT				
20	10	IN	236	71	118	165
		OUT				
25	12	IN	378	113	189	264
		OUT				

Manufacture of Intermediate Stroke

Description		Spacer is installed in the standard stroke body.	
Part no.	Refer to "How to Order" for the standard model no. (page at left)		
Standard stroke	Description	Intermediate strokes by the 1 mm interval are available by using spacers with standard stroke cylinders.	
	Stroke range	Bore size	Stroke range
		12, 16	1 to 29
20, 25	1 to 49		
Example	Part no.: CQSWB25-47D CQSWB25-50D with 3 mm width spacer inside. B dimension is 79 mm.		

CUJ

CU

CQS

CQM

CQ2

RQ

MU

D-

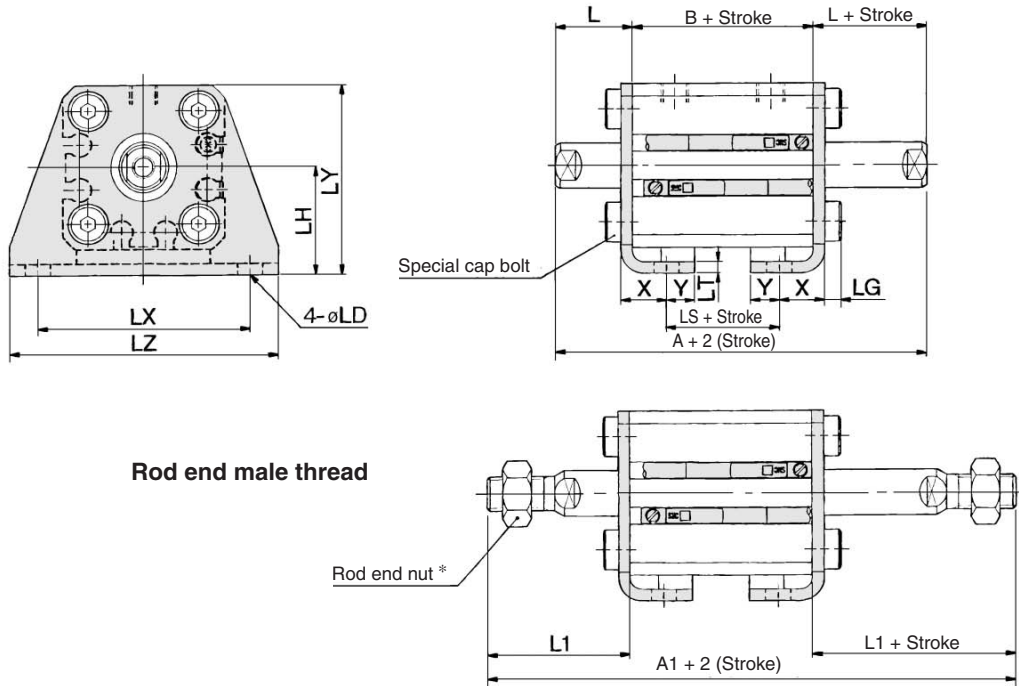
-X

20-

Data

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

Foot style: CQSWL/CDQSWL

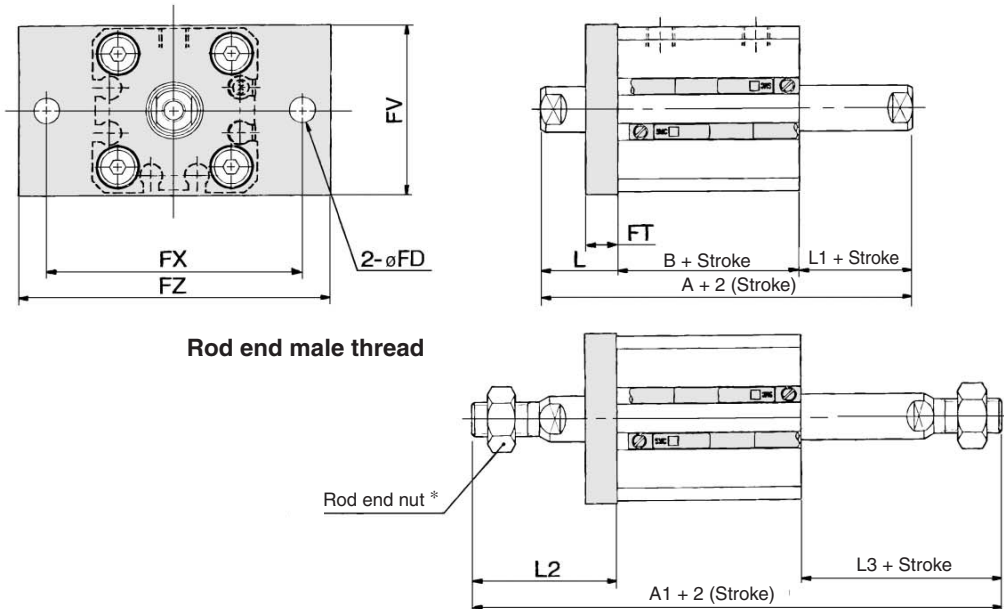


Foot Style

Bore size (mm)	Stroke range (mm)	Without auto switch				With auto switch				L	L1	LD	LG	LH	LT	LX	LY	LZ	X	Y
		A	A1	B	LS	A	A1	B	LS											
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

Flange style: CQSWF/CDQSWF



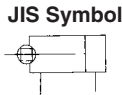
Flange Style

Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch			FD	FT	FV	FX	FZ	L	L1	L2	L3
		A	A1	B	A	A1	B									
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

* For details about the rod end nut and accessory brackets, refer to page 7-6-20.

Flange bracket material: Carbon steel

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



⚠ Caution

Snap Ring Installation/Removal

- For installation and removal, use an appropriate pair of pliers (tool for installing a type C snap ring).
- Even if a proper plier (tool for installing type C snap ring) is used, it is likely to inflict damage to a human body or peripheral equipment, as a snap ring may be flown out of the tip of a plier (tool for installing a type C snap ring). Be much careful with the popping of a snap ring. Besides, be certain that a snap ring is placed firmly into the groove of rod cover before supplying air at the time of installment.

Allowable Kinetic Energy (J)

Bore size (mm)	12	16	20	25
Allowable kinetic energy	0.022	0.038	0.055	0.09

Minimum Operating Pressure (MPa)

Bore size (mm)	12	16	20	25
Min. operating pressure	0.07	0.07	0.05	0.05

Non-rotating Accuracy

Bore size (mm)	12	16	20	25
Rod non-rotating accuracy	±1°		±0.7°	

Body Option

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

Mounting Bracket Part No.

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

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

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

Foot or Flange style: Body mounting bolt

Double clevis style: Clevis pin, Type C snap ring for axis, Body mounting bolt.

Double acting, double rod type is now available. Please contact SMC for details.

Standard Specifications

Type	Pneumatic (Non-lube)
Action	Double acting, Single rod
Fluid	Air
Proof pressure	1.5 MPa
Maximum operating pressure	1.0 MPa
Ambient and fluid temperature	Without auto switch: -10 to 70°C (No freezing) With auto switch: -10 to 60°C (No freezing)
Rubber bumper	None
Rod end thread	Female thread
Rod end thread tolerance	JIS Class 2
Stroke length tolerance	+1.0 0
Mounting	Through-hole/Both ends tapped common
Piston speed	50 to 500 mm/s

Minimum Stroke for Auto Switch Mounting (mm)

No. of auto switches mounted	D-A9□, D-F9□WV	D-A9□V	D-M9□, D-F9□W	D-M9□V	D-F9BAL
2	10	10	15 ^{Note)}	5	25 ^{Note)}
1	10 ^{Note)}	5	15 ^{Note)}	5	25 ^{Note)}

Note) Please consult with SMC for shorter stroke length than indicated in the table.

Theoretical Output (N)

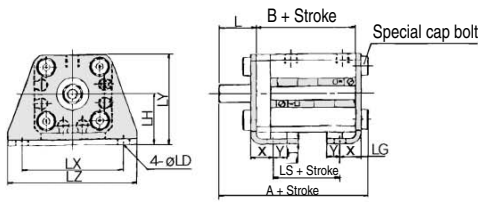
Bore size (mm)	Rod width across flats (mm)	Action	Piston area (mm ²)	Operating pressure (MPa)		
				0.3	0.5	0.7
12	5.2	IN	90	27	45	63
		OUT	113	34	57	79
16	6.2	IN	168	50	84	117
		OUT	201	60	101	141
20	8.2	IN	256	77	128	179
		OUT	314	94	157	220
25	10.2	IN	401	120	200	281
		OUT	491	147	245	344

Manufacture of Intermediate Stroke

Description		Spacer is installed in the standard stroke body.	
Part no.		Refer to "How to Order" for the standard model no. (page at left)	
Standard stroke	Description	Intermediate strokes by the 1 mm interval are available by using spacers with standard stroke cylinders.	
	Stroke range	Bore size	Stroke range
		12, 16	1 to 29
20, 25	1 to 49		
Example		Part no.: CQSKB25-47D CQSKB25-50D with 3 mm width spacer inside. B dimension is 77.5 mm.	

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

Foot style: CQSKL/CDQSKL

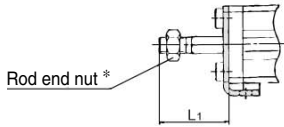


Foot Style

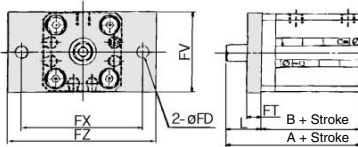
Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch			L	L ₁	LD	LG	LH	LT	LX	LY	LZ	X	Y
		A	B	LS	A	B	LS											
12	5 to 30	40.3	22	10	45.3	27	15	13.5	24	4.5	2.8	17	2	34	29.5	44	8	4.5
16	5 to 30	40.3	22	10	45.3	27	15	13.5	25.5	4.5	2.8	19	2	38	33.5	48	8	5
20	5 to 50	46.2	24.5	12.5	56.2	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

Foot bracket material: Carbon steel

Rod end male thread



Rod side flange style: CQSKF/CDQSKF

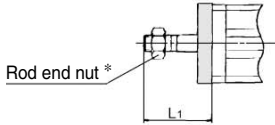


Rod Side Flange Style

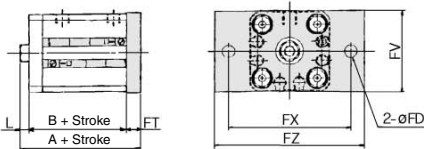
Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch		FD	FT	FV	FX	FZ	L	L ₁
		A	B	A	B							
12	5 to 30	35.5	22	40.5	27	4.5	5.5	25	45	55	13.5	24
16	5 to 30	35.5	22	40.5	27	4.5	5.5	30	45	55	13.5	25.5
20	5 to 50	39	24.5	49	34.5	6.6	8	39	48	60	14.5	28.5
25	5 to 50	42.5	27.5	52.5	37.5	6.6	8	42	52	64	15	32.5

Flange bracket material: Carbon steel

Rod end male thread



Head side flange style: CQSKG/CDQSKG

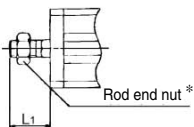


Head Side Flange Style

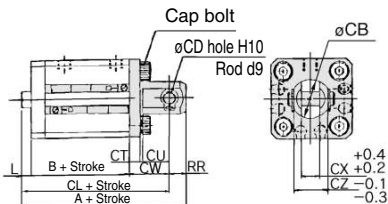
Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch		FD	FT	FV	FX	FZ	L	L ₁
		A	B	A	B							
12	5 to 30	31	22	36	27	4.5	5.5	25	45	55	3.5	14
16	5 to 30	31	22	36	27	4.5	5.5	30	45	55	3.5	15.5
20	5 to 50	37	24.5	47	34.5	6.6	8	39	48	60	4.5	18.5
25	5 to 50	40.5	27.5	50.5	37.5	6.6	8	42	52	64	5	22.5

Flange bracket material: Carbon steel

Rod end male thread



Double clevis style: CQSKD/CDQSKD



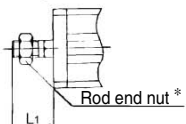
Double Clevis Style

Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch			CB	CD	CT	CU	CW	CX	CZ	L	L ₁	RR
		A	B	CL	A	B	CL										
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

* For details about the rod end nut and accessory brackets, refer to page 7-6-20.

Rod end male thread



Compact Cylinder: Anti-lateral Load Type Double Acting, Single Rod



Standard Specifications

Type	Pneumatic (Non-lube)
Action	Double acting, Single rod
Fluid	Air
Proof pressure	1.5 MPa
Maximum operating pressure	1.0 MPa
Ambient and fluid temperature	Without auto switch: -10 to 70°C (No freezing) With auto switch: -10 to 60°C (No freezing)
Rubber bumper	Standard equipment
Rod end thread	Female thread
Rod end thread tolerance	JIS Class 2
Stroke length tolerance	+1.0 0
Mounting	Through-hole/Both ends tapped common
Piston speed	50 to 500 mm/s

CUJ

CU

CQS

CQM

CQ2

RQ

MU

D-

-X

20-

Data

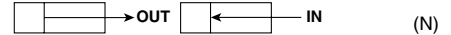
Minimum Stroke for Auto Switch Mounting

No. of auto switches mounted	D-A9□, D-F9□WV	D-A9□V	D-M9□, D-F9□W	D-M9□V	D-F9BAL
2	10	10	15 (Note)	5	25 (Note)
1	10 (Note)	5	15 (Note)	5	25 (Note)

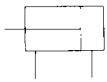
Note) Please consult with SMC for shorter stroke length than indicated in the table.

Theoretical Output

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



JIS Symbol



Allowable Kinetic Energy

(J)

Bore size (mm)	12	16	20	25
Allowable kinetic energy	0.043	0.075	0.11	0.18

Minimum Operating Pressure

(MPa)

Bore size (mm)	12	16	20	25
Minimum operating pressure	0.07	0.07	0.05	0.05

Body Option

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

Mounting Bracket Part No.

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



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

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

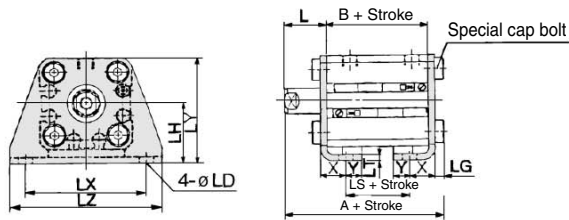
Foot or Flange style: Body mounting bolt
Double clevis style: Clevis pin, type C snap ring for axis, Body mounting bolt

Manufacture of Intermediate Stroke

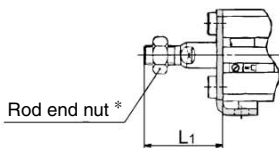
Description		Spacer is installed in the standard stroke body.	
Part no.		Refer to "How to Order" for the standard model no. (page at left)	
Standard stroke	Description	Intermediate strokes by the 1 mm interval are available by using spacers with standard stroke cylinders.	
	Stroke range	Bore size	Stroke range
		12, 16 20, 25	1 to 29 1 to 49
Example	Part no.: CQSBS25-47D CQSBS25-50D with 3 mm width spacer inside. B dimension is 77.5 mm.		

Compact Cylinder: Anti-lateral Load Type Double Acting, Single Rod

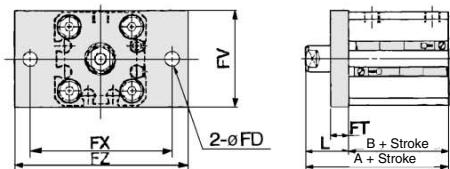
Foot style: CQSL/CDQSL



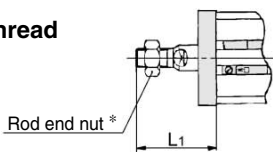
Rod end male thread



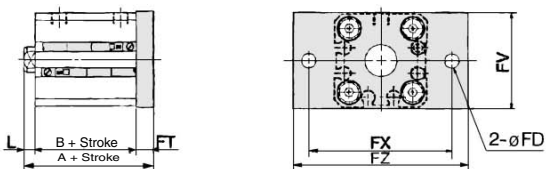
Rod side flange style: CQSFS/CDQSFS



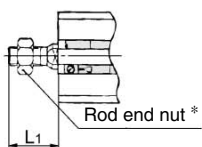
Rod end male thread



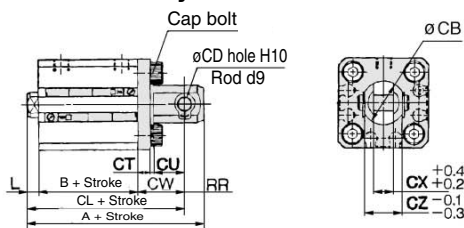
Head side flange style: CQSGS/CDQSGS



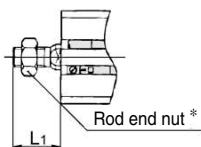
Rod end male thread



Double clevis style: CQSDS/CDQSDS



Rod end male thread



Foot Style

Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch		
		A	B	LS	A	B	LS
12	5 to 30	40.3	22	10	45.3	27	15
16	5 to 30	40.3	22	10	45.3	27	15
20	5 to 50	46.2	24.5	12.5	56.2	34.5	22.5
25	5 to 50	49.7	27.5	12.5	59.7	37.5	22.5

Bore size (mm)	L	L ₁	LD	LG	LH	LT	LX	LY	LZ	X	Y
12	13.5	24	4.5	2.8	17	2	34	29.5	44	8	4.5
16	13.5	25.5	4.5	2.8	19	2	38	33.5	48	8	5
20	14.5	28.5	6.6	4	24	3.2	48	42	62	9.2	5.8
25	15	32.5	6.6	4	26	3.2	52	46	66	10.7	5.8

Foot bracket material: Carbon steel

Rod Side Flange Style

Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch	
		A	B	A	B
12	5 to 30	35.5	22	40.5	27
16	5 to 30	35.5	22	40.5	27
20	5 to 50	39	24.5	49	34.5
25	5 to 50	42.5	27.5	52.5	37.5

Bore size (mm)	FD	FT	FV	FX	FZ	L	L ₁
12	4.5	5.5	25	45	55	13.5	24
16	4.5	5.5	30	45	55	13.5	25.5
20	6.6	8	39	48	60	14.5	28.5
25	6.6	8	42	52	64	15	32.5

Flange bracket material: Carbon steel

Head Side Flange Style

Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch	
		A	B	A	B
12	5 to 30	31	22	36	27
16	5 to 30	31	22	36	27
20	5 to 50	37	24.5	47	34.5
25	5 to 50	40.5	27.5	50.5	37.5

Bore size (mm)	FD	FT	FV	FX	FZ	L	L ₁
12	4.5	5.5	25	45	55	3.5	14
16	4.5	5.5	30	45	55	3.5	15.5
20	6.6	8	39	48	60	4.5	18.5
25	6.6	8	42	52	64	5	22.5

Flange bracket material: Carbon steel

Double Clevis Style

Bore size (mm)	Stroke range (mm)	Without auto switch			With auto switch		
		A	B	CL	A	B	CL
12	5 to 30	45.5	22	39.5	50.5	27	44.5
16	5 to 30	46.5	22	40.5	51.5	27	45.5
20	5 to 50	56	24.5	47	66	34.5	57
25	5 to 50	62.5	27.5	52.5	72.5	37.5	62.5

Bore size (mm)	CB	CD	CT	CU	CW	CX	CZ	L	L ₁	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

Double clevis bracket material: Carbon steel

* For details about the rod end nut and accessory brackets, refer to page 7-6-20.

Series CQSX

ø12, ø16, ø20, ø25

The dimensions are the same as the standard double acting single rod cylinder; refer to the series CQS/CDQS section in "Best Pneumatics No. 2"

How to Order

Without
Auto Switch

CQSX B 20 30 D

With
Auto Switch

CDQSX B 20 30 D A90

With auto switch
(built-in magnet)

Microspeed cylinder

Mounting

B	Through hole/ Double end tapped common (standard)
L	Foot type
F	Front flange type
G	Rear flange type
D	Double clevis type

Bore size

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

Cylinder stroke (mm)

Bore size (mm)	Standard stroke (mm)
12, 16	5, 10, 15, 20, 25, 30
20	5, 10, 15, 20, 25, 30, 35, 40, 45, 50
25	

• **Manufacturing intermediate strokes**
Intermediate strokes can be manufactured in 1mm increments by installing spacers in a standard stroke cylinder. The cylinder length is the same as the longer standard cylinder.

Example) For CQSXB25-47D, a 3mm width spacer is installed in a standard stroke CQSXB25-50D cylinder.

Mounting bracket part numbers

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

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

Note 2) Accessories for each bracket are as follows.

Foot/Flange types: Body mounting screws
Double clevis type: Clevis pins, C type snap ring for shaft, and body mounting screws

Number of auto switches

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

Auto switch type

Nil	Without auto switch (built-in magnet)
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* Select an auto switch model number from the table below.

Cushion/Rod end threads

Nil	Standard (rod end female threads)
C	With rubber bumper
M	Rod end male threads

* Combination of the above specifications is possible.

Action

D	Double acting
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Auto switch specifications

Type	Special function	Electrical entry	Indicator light	Wiring (output)	Load voltage		Auto switch model		Lead wire length (m) [*]			Applicable load	
					DC	AC	Perpendicular	In-line	0.5 (Nil)	3 (L)	5 (Z)		
Reed switch	—	Grommet	No	2 wire	24V	100V or less	A90V	A90	●	●	—	IC circuit	Relay, PLC
						12V	A93V	A93	●	●	—	—	
Solid state switch	—	Grommet	Yes	3 wire (NPN equiv.)	24V	5V	A96V	A96	●	●	—	IC circuit	
						5V 12V	F9NV	F9N	●	●	○	IC circuit	
						12V	F9PV	F9P	●	●	○	—	
						12V	F9BV	F9B	●	●	○	—	
						5V 12V	F9NWV	F9NW	●	●	○	IC circuit	
						12V	F9PWV	F9PW	●	●	○	IC circuit	
Reed switch	—	Grommet	No	2 wire	24V	100V or less	A90V	A90	●	●	—	IC circuit	
						12V	A93V	A93	●	●	—	—	

* Lead wire length symbols: 0.5m Nil (Example) A93

3m L (Example) A93L

5m Z (Example) F9NWZ

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