

Compact Cylinder with Lock Double Acting, Single Rod Series *CLQ*

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

How to Order

Without auto switch

CLQ B 40 30 D F

With auto switch

CDLQ B 40 30 D F F9BW S

Built-in magnet

Mounting style

ø20, ø25		ø32 to ø100	
B	Through-hole/ Both ends tapped common (Standard)	B	Through-hole (Standard)
L	Foot style	A	Both ends tapped style
F	Rod side flange style	L	Foot style
G	Head side flange style	F	Rod side flange style
D	Double clevis style	G	Head side flange style
		D	Double clevis style

* Mounting bracket is shipped together, (but not assembled).

Bore size

20	25	32	40	50	63	80	100
20 mm	25 mm	32 mm	40 mm	50 mm	63 mm	80 mm	100 mm

Cylinder stroke (mm)

For "Standard strokes" and "Manufacture of Intermediate of Stroke", refer to page 9-10-9.

Thread type

Nil	Rc
TN	NPT

Number of auto switches

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

Auto switch

Nil	Without auto switch (Built-in magnet)

* For the applicable auto switch model, refer to the table below.
* Auto switches are shipped together, (but not assembled).

Locking direction

F	Extension locking
B	Retraction locking

Body option

Nil	Standard (Rod end female thread)
C	With rubber bumper
M	Rod end male thread
CM	With rubber bumper, Rod end male thread

Action

D	Double acting

Applicable Auto Switch/Refer to page 9-15-1 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage			Rail mounting		Direct mounting		Lead wire length (m)*				Pre-wire connector	Applicable load		
					DC	AC	ø32 to ø100		ø20 to ø100		0.5 (Nil)	3 (L)	5 (Z)	None (N)					
							Perpendicular	In-line	Perpendicular	In-line									
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	—	A76H	A96V	A96	●	●	—	—	—	IC circuit	—	
					—	—	200 V	A72	A72H	—	—	●	●	—	—	—			
		Connector	2-wire	24 V	12 V	100 V	A73	A73H	—	—	●	●	●	—	—	—			
						—	A73C	—	—	—	—	●	●	●	●		—		
	Diagnostic indication (2-color indication)	Grommet	—	—	A79W	—	—	—	●	●	—	—	—	—					
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	F7NV	F79	M9NV	M9N	●	●	○	—	○	IC circuit	Relay, PLC	
								3-wire (PNP)	F7PV	F7P	M9PV	M9P	●	●	○	—			○
								2-wire	F7BV	J79	M9BV	M9B	●	●	○	—			○
		Connector		J79C				—	—	—	●	●	●	●	—	—			
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)				5 V, 12 V	F7NVW	F79W	F9NVW	F9NW	●	●	○	—	○		IC circuit
				3-wire (PNP)					—	F7PW	F9PWV	F9PW	●	●	○	—	○		
				With diagnostic output (2-color indication)	2-wire	12 V			F7BWV	J79W	F9BWV	F9BW	●	●	○	—	○		—
									—	F7BA	—	F9BA	—	—	●	○	—		
	With diagnostic output (2-color indication)	—		—	—	—		—	—	—	●	●	○	—	○	IC circuit			

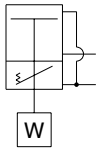
- * Lead wire length symbols: 0.5 m..... Nil (Example) A73C 5 m.....Z (Example) A73CZ 3 m..... L (Example) A73CL None.... N (Example) A73CN
- * Solid state switches marked with "○" are produced upon receipt of order.
- Since there are other applicable auto switches than listed, refer to page 9-10-28 for details.
- For details about auto switches with pre-wire connector, refer to page 9-15-66.

Compact Cylinder with Lock Double Acting, Single Rod **Series CLQ**

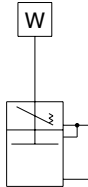


JIS Symbol

Extension locking



Retraction locking



Made to Order Specifications
(For details, refer to page 9-16-1.)

Symbol	Specifications
-XA□	Change of rod end shape

Cylinder Specifications

Bore size (mm)	20	25	32	40	50	63	80	100
Action	Double acting, Single rod							
Fluid	Air							
Proof pressure	1.5 MPa							
Maximum operating pressure	1.0 MPa							
Minimum operating pressure	0.2 MPa ^{Note)}							
Ambient and fluid temperature	Without auto switch: -10 to 70°C (No freezing) With auto switch: -10 to 60°C (No freezing)							
Lubrication	Non-lube							
Piston speed	50 to 500 mm/s							
Stroke length tolerance	$^{+0.1}_0$ mm							
Cushion	None or rubber bumper							
Rod end thread tolerance	JIS Class 2							
Port size	M5 x 0.8		Rc 1/8		Rc 1/4		Rc 3/8	

Note) The minimum operating pressure of the cylinder is 0.1 MPa when the cylinder and lock are connected to separate ports.

Lock Specifications

Bore size (mm)	20	25	32	40	50	63	80	100
Locking action	Spring locking (Exhaust locking)							
Unlocking pressure	0.2 MPa or more							
Lock starting pressure	0.05 MPa or less							
Locking direction	One direction (Either extension locking or retraction locking)							
Unlocking port size	M5 x 0.8		Rc 1/8				Rc 1/4	
Holding force (N) (Maximum static load)	157	245	402	629	982	1559	2513	3927
	Equivalent to 0.5 MPa							

Standard Stroke

Bore size (mm)	Standard stroke (mm)
20, 25	5, 10, 15, 20, 25, 30, 35, 40, 45, 50
32, 40, 50, 63, 80, 100	10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100

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. on page 9-10-8.	
Method	Dealing with the stroke by the 1 mm interval is available by installing spacer with standard stroke cylinder.	
Stroke range	Bore size (mm)	Stroke range (mm)
	20, 25	1 to 50
	32, 40, 50, 63, 80, 100	1 to 100
Example	Part no.: CLQB40-47D-B A 3 mm spacer is installed in standard cylinder CLQB40-50D-B. B dimension is 79.5 mm.	

Note) Please consult with SMC regarding intermediate strokes for sizes ø40 through ø100 with rubber bumpers.

CL

CL1

MLGC

CNG

MNB

CNA

CNS

CLS

CLQ

MLGP

RLQ

MLU

ML1C

D-

-X

20-

Data

Series CLQ

Mounting Bracket Part No.

Bore size (mm)	Foot ⁽¹⁾	Flange	Double clevis ⁽³⁾
20	CLQ-L020	CLQ-F020	CLQ-D020
25	CLQ-L025	CLQ-F025	CLQ-D025
32	CLQ-L032	CLQ-F032	CLQ-D032
40	CLQ-L040	CLQ-F040	CLQ-D040
50	CLQ-L050	CLQ-F050	CLQ-D050
63	CLQ-L063	CLQ-F063	CLQ-D063
80	CLQ-L080	CLQ-F080	CLQ-D080
100	CLQ-L100	CLQ-F100	CLQ-D100

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

Note 2) Parts belonging to each bracket are as follows. Foot, Flange: Body mounting screws, Double clevis: Clevis pin, C type snap ring for shaft, Body mounting screws, Flat washer.

Note 3) Clevis pin and snap ring are included with the double clevis style.

Auto Switch Mounting Bracket/ Part No. (Rail mounting style)

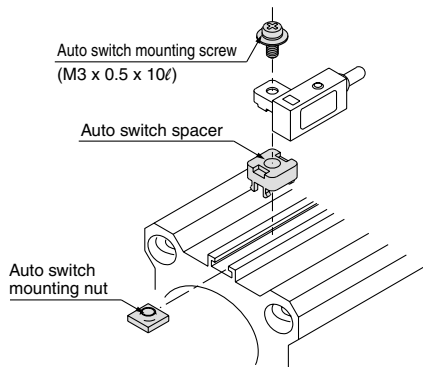
Bore size (mm)	Mounting bracket part no.	Note
32, 40 50, 63 80, 100	BQ-2	- Switch mounting screw (M3 x 0.5 x 10ϕ) - Switch spacer - Switch mounting nut
Applicable auto switch		
Reed switch		Solid state switch
D-A7□/A80		D-F7□/J79
D-A73C/A80C		D-F7□V
D-A7□H/A80H		D-J79C
D-A79W		D-F7□W/J79W
		D-F7□WV
		D-F7BAL/F7BAVL
		D-F79F
		D-F7NTL

[Mounting screws set made of stainless steel]

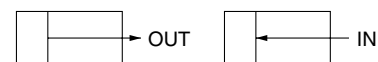
The set of stainless steel mounting screws (with nuts) described below is available and can be used depending on the operating environment. (Since the spacer is not included, order it separately.) **BBA2**: For D-A7/A8/F7/J7

The above stainless steel screw kit is used for water resistant auto switch types D-F7BAL and F7BAVL when they are shipped mounted on a cylinder.

When only a switch is shipped independently, "BBA2" screws are attached.



Theoretical Output



Bore size (mm)	Operating direction	Operating pressure (MPa)		
		0.3	0.5	0.7
20	IN	71	118	165
	OUT	94	157	220
25	IN	113	189	264
	OUT	147	245	344
32	IN	181	302	422
	OUT	241	402	563
40	IN	317	528	739
	OUT	377	628	880
50	IN	495	825	1150
	OUT	589	982	1370
63	IN	841	1400	1960
	OUT	935	1560	2180
80	IN	1360	2270	3170
	OUT	1510	2510	3520
100	IN	2140	3570	5000
	OUT	2360	3930	5500

Weight

Basic Weight: Mounting/Through-hole (Type B)

Bore size (mm)	Standard stroke (mm)											
	5	10	15	20	25	30	35	40	45	50	75	100
20 *	184	199	213	227	241	255	270	284	298	312	—	—
25 *	260	278	295	312	329	346	364	381	398	415	—	—
32	—	407	430	453	475	498	521	544	566	589	754	867
40	—	514	537	560	583	606	630	653	676	699	883	1003
50	—	838	874	910	947	983	1019	1055	1092	1128	1421	1609
63	—	1202	1242	1283	1324	1365	1406	1447	1488	1529	1877	2088
80	—	2229	2297	2364	2432	2500	2568	2636	2704	2771	3344	3678
100	—	3770	3860	3951	4041	4132	4223	4313	4404	4495	5299	5759

* Through-hole and both ends tapped are common for sizes ϕ 20 and ϕ 25.

Basic Weight: Mounting/Both Ends Tapped (Type A)

Bore size (mm)	Standard stroke (mm)										
	10	15	20	25	30	35	40	45	50	75	100
32	405	429	453	475	499	523	546	569	593	763	879
40	542	568	593	619	644	670	695	721	746	947	1079
50	883	922	962	1002	1041	1081	1121	1161	1200	1517	1723
63	1330	1377	1424	1471	1518	1565	1613	1660	1707	2099	2341
80	2468	2545	2623	2700	2778	2856	2933	3011	3089	3729	4113
100	4054	4154	4254	4355	4455	4556	4656	4757	4857	5730	6239

Additional Weight

Bore size (mm)	20	25	32	40	50	63	80	100
Magnet	35	45	64	77	118	158	261	380
Rod end male thread	Thread	6	12	26	27	53	53	120
	Nut	4	8	17	17	32	32	49
With rubber bumper	—2	—3	—3	—7	—9	—18	—31	—56
Foot style (Including mounting bolt)	152	174	137	149	221	288	638	1009
Rod side flange style (Including mounting bolt)	127	149	174	208	351	523	998	1307
Head side flange style (Including mounting bolt)	121	140	159	192	326	498	959	1251
Double clevis style (Including pin, snap ring, bolt and flat washer)	76	111	145	190	373	518	1064	1839

Calculation: (Example) CDLQD32-20DCM-B

- Basic weight : CLQA32-20D-.....453 g
- Additional weight: Magnet.....64 g
- Rod end male thread.....43 g
- With rubber bumper.....-3 g
- Double clevis.....145 g

When auto switches are mounted, add the weight of the auto switch and mounting bracket multiplied by the quantity.

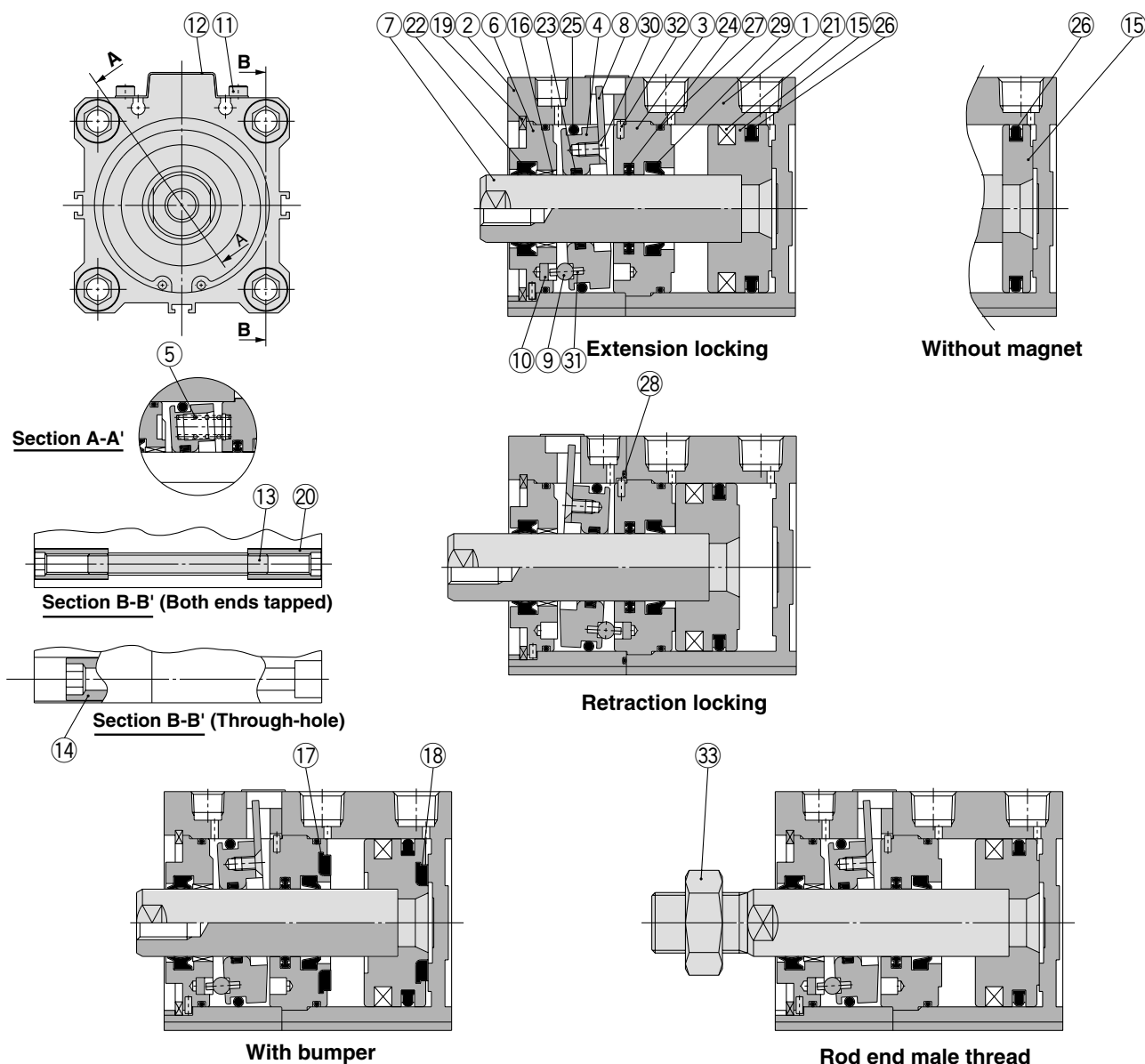
Auto Switch Mounting Bracket Weight

Mounting bracket part no.	Applicable bore size (mm)	Weight (g)
BQ-2	32 to 100	1.5

For the auto switch weight, refer to page 9-15-1.

Compact Cylinder with Lock Double Acting, Single Rod **Series CLQ**

Construction: ø40 to ø100



CL
CL1
MLGC
CNG
MNB
CNA
CNS
CLS
CLQ
MLGP
RLQ
MLU
ML1C
D-
-X
20-
Data

Component Parts

No.	Description	Material	Note
①	Cylinder tube	Aluminum alloy	Hard anodized
②	Lock body	Aluminum alloy	Hard anodized
③	Intermediate collar	Aluminum alloy	Chromated
④	Lock ring	Carbon steel	Heat treated
⑤	Brake spring	Steel wire	Zinc chromated
⑥	Collar	Aluminum bearing alloy	ø40: Hard anodized
		Aluminum alloy casted	ø50 to ø100: Chromated, painted
⑦	Piston rod	Carbon steel	Hard chrome plated
⑧	Lever	Stainless steel	
⑨	Pivot pin	Carbon steel	Zinc chromated
⑩	Pivot key	Carbon steel	Zinc chromated
⑪	Dust cover holding bolt	Chromium molybdenum steel	Nickel plated
⑫	Dust cover	Rolled steel	Nickel plated
⑬	Tie-rod	Rolled steel	ø40, Chromated
		Carbon steel	ø50 or larger, Chromated
⑭	Unit holding bolt	Carbon steel	Nickel plated
⑮	Piston	Aluminum alloy	Chromated
⑯	Bushing	Lead-bronze casted	For ø50 or larger only

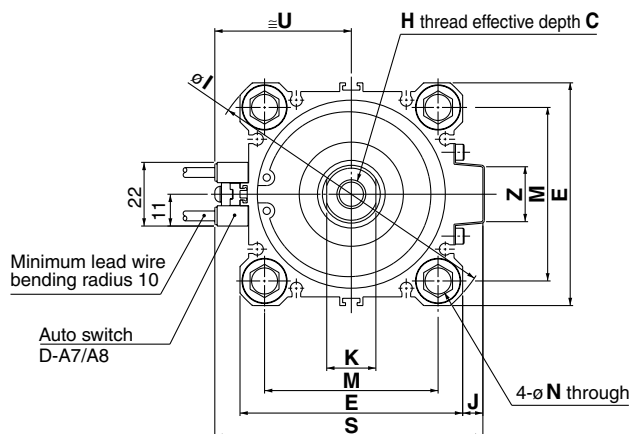
Note) The sectional drawing above shows the locked condition.

No.	Description	Material	Note
⑰	Bumper A	Urethane	
⑱	Bumper B	Urethane	
⑲	Snap ring	Carbon tool steel	Phosphate coated
⑳	Tie-rod nut	Carbon steel	Nickel plated
㉑	Magnet	—	
㉒	Rod seal A	NBR	
㉓	Rod seal B	NBR	
㉔	Rod seal C	NBR	
㉕	Piston seal A	NBR	
㉖	Piston seal B	NBR	
㉗	Tube gasket A	NBR	
㉘	Tube gasket B	NBR	
㉙	Scraper	NBR	
㉚	Hexagon socket countersunk head screw	Chromium molybdenum steel	Nickel plated
㉛	Spring pin	Carbon steel	JIS B 2808
㉜	Parallel pin	Stainless steel	JIS B 1354
㉝	Rod end nut	Carbon steel	Nickel plated

Series CLQ

Dimensions: $\phi 63$, $\phi 80$, $\phi 100$

Basic style (Through-hole): C□LQB63/80/100



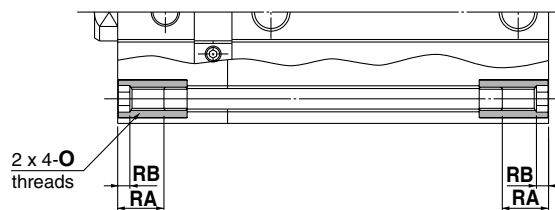
Retraction Locking

Bore size (mm)	V1
63	30.5
80	35.5
100	40.5

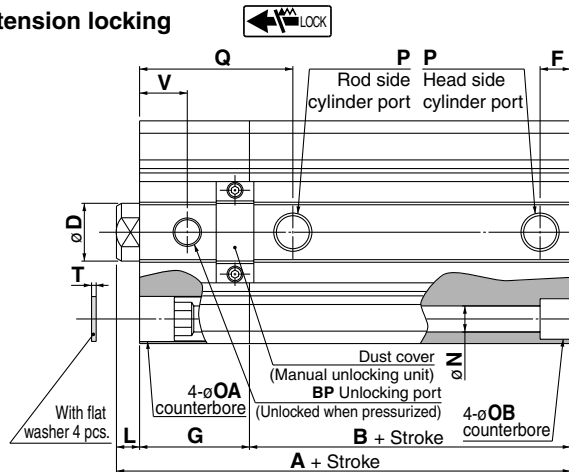
Rod End Male Thread

Bore size (mm)	C1	X	H1	H2	L1
63	26	28.5	M18 x 1.5	11	33.5
80	32.5	35.5	M22 x 1.5	13	43.5
100	32.5	35.5	M26 x 1.5	16	43.5

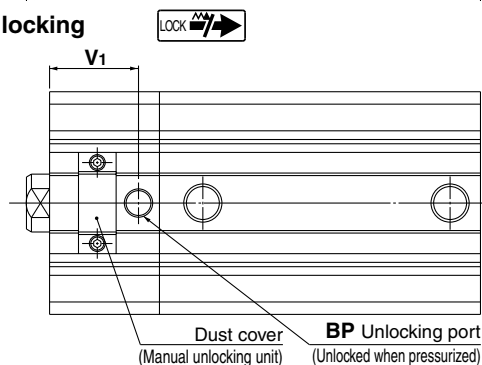
Both ends tapped style: C□LQA63/80/100



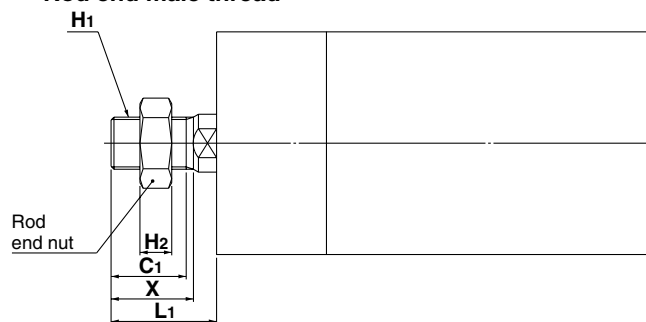
Extension locking



Retraction locking



Rod end male thread



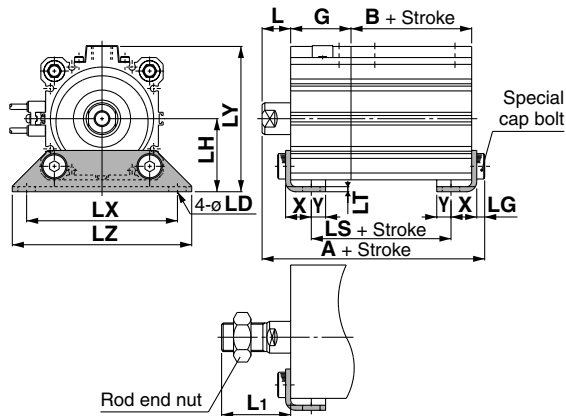
Note) Be sure to use the attached flat washers when mounting a cylinder from the rod side.

Bore size (mm)	Stroke range	Without auto switch		With auto switch		BP	C	D	E	F	G	H	I	J	K	L	M	N	O	OA	OB	P	Q	RA	RB	S	T	U	V	Z
		A	B	A	B																									
63	10 to 50	82	36	92	46	Rc 1/8	15	20	77	10.5	38	M10 x 1.5	103	7	17	8	60	9	M8 x 1.25	15.6 depth 12	14 depth 10.5	Rc 1/4	53	16	4.2	93	1.6	47.5	16.5	19
	75, 100	92	46																											
80	10 to 50	96.5	43.5	106.5	53.5	Rc 1/4	21	25	98	12.5	43	M16 x 2.0	132	6	22	10	77	11	M10 x 1.5	19.6 depth 15.5	17.5 depth 13.5	Rc 3/8	59	16	4.2	112.5	2	57.5	18.5	26
	75, 100	106.5	53.5																											
100	10 to 50	115	53	125	63	Rc 1/8	27	30	117	13	50	M20 x 2.5	156	6.5	27	12	94	11	M10 x 1.5	19.6 depth 15.5	17.5 depth 13.5	Rc 3/8	73	16	4.2	132.5	2	67.5	23	26
	75, 100	125	63																											

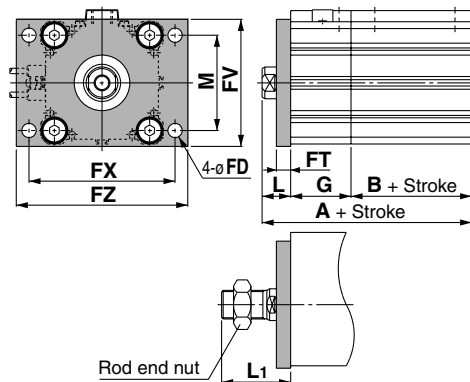
Compact Cylinder with Lock Double Acting, Single Rod **Series CLQ**

Dimensions: $\phi 63$, $\phi 80$, $\phi 100$

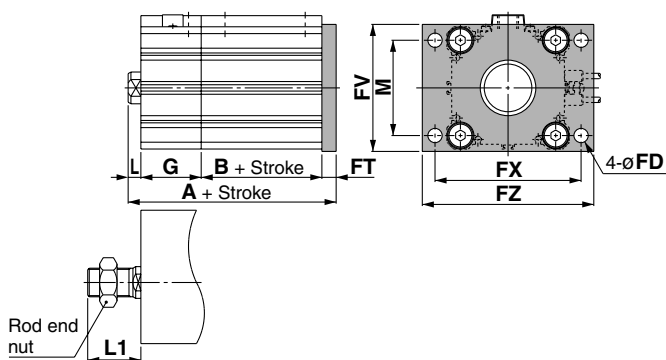
Foot style: CLQL/CDLQL



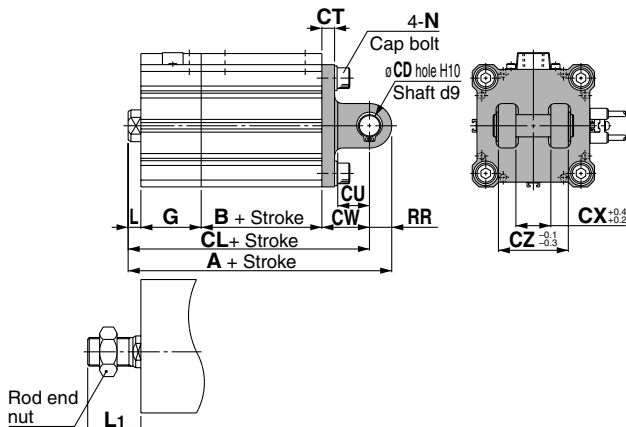
Rod side flange style: CLQF/CDLQF



Head Side flange style: CLQG/CDLQG



Double clevis style: CLQD/CDLQD



Foot Style

Bore size (mm)	Stroke range	Without auto switch			With auto switch			G	L
		A	B	LS	A	B	LS		
63	10 to 50	100.2	36	48	110.2	46	58	38	18
	75, 100	110.2	46	58					
80	10 to 50	118	43.5	56.5	128	53.5	66.5	43	20
	75, 100	128	53.5	66.5					
100	10 to 50	138	53	69	148	63	79	50	22
	75, 100	148	63	79					

Rod Side Flange Style

Bore size (mm)	Stroke range	Without auto switch		With auto switch		FD	FT	FV	FX	FZ	G	L	L1	M
		A	B	A	B									
63	10 to 50	92	36	102	46	9	9	80	92	108	38	18	43.5	60
	75, 100	102	46											
80	10 to 50	106.5	43.5	116.5	53.5	11	11	99	116	134	43	20	53.5	77
	75, 100	116.5	53.5											
100	10 to 50	125	53	135	63	11	11	117	136	154	50	22	53.5	94
	75, 100	135	63											

Head Side Flange Style

Bore size (mm)	Stroke range	Without auto switch		With auto switch		FD	FT	FV	FX	FZ	G	L	L1	M
		A	B	A	B									
63	10 to 50	91	36	101	46	9	9	80	92	108	38	8	33.5	60
	75, 100	101	46											
80	10 to 50	107.5	43.5	117.5	53.5	11	11	99	116	134	43	10	43.5	77
	75, 100	117.5	53.5											
100	10 to 50	126	53	136	63	11	11	117	136	154	50	12	43.5	94
	75, 100	136	63											

Double Clevis Style

Bore size (mm)	Stroke range	Without auto switch			With auto switch			CD	CT
		A	B	CL	A	B	CL		
63	10 to 50	126	36	112	136	46	122	14	8
	75, 100	136	46	122					
80	10 to 50	152.5	43.5	134.5	162.5	53.5	144.5	18	10
	75, 100	162.5	53.5	144.5					
100	10 to 50	182	53	160	192	63	170	22	13
	75, 100	192	63	170					

Bore size (mm)	CU	CW	CX	CZ	G	L	L1	N	RR
63	20	30	22	44	38	8	33.5	M8 x 1.25	14
80	27	38	28	56	43	10	43.5	M10 x 1.5	18
100	31	45	32	64	50	12	43.5	M10 x 1.5	22

CL

CL1

MLGC

CNG

MNB

CNA

CNS

CLS

CLQ

MLGP

RLQ

MLU

ML1C

D-

-X

20-

Data