

Compact Cylinder with Lock

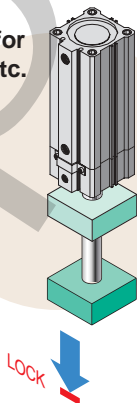
Series CLQ

Ø20, Ø25, Ø32, Ø40, Ø50, Ø63, Ø80, Ø100

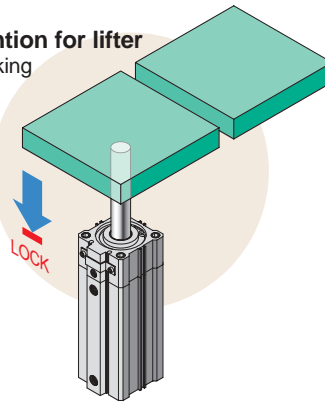


Maintains cylinder position when supply pressure falls or residual pressure is released

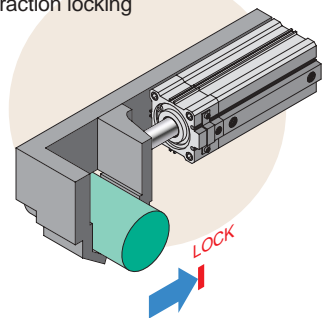
Drop prevention for
press fitting jig, etc.
Extension locking



Drop prevention for lifter
Retraction locking



Holding a clamped condition
Retraction locking



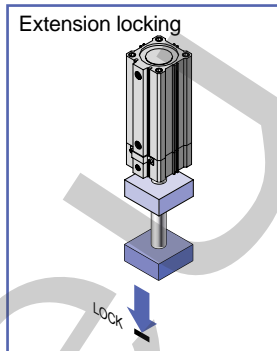
Series CLQ

Locking is possible at any position within the entire stroke

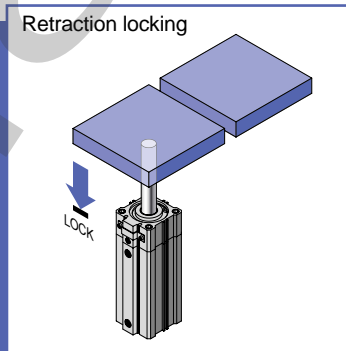
Can be locked at any desired position

- Drop prevention for mid-stroke emergency stops
- Locking position can be changed to accommodate external stopper positions and thickness of clamped work pieces

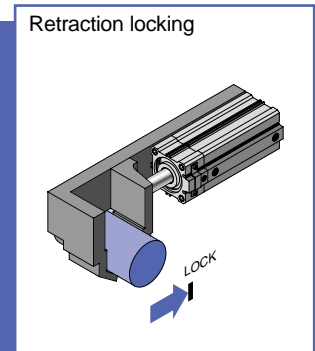
Drop prevention for press fitting jig, etc.



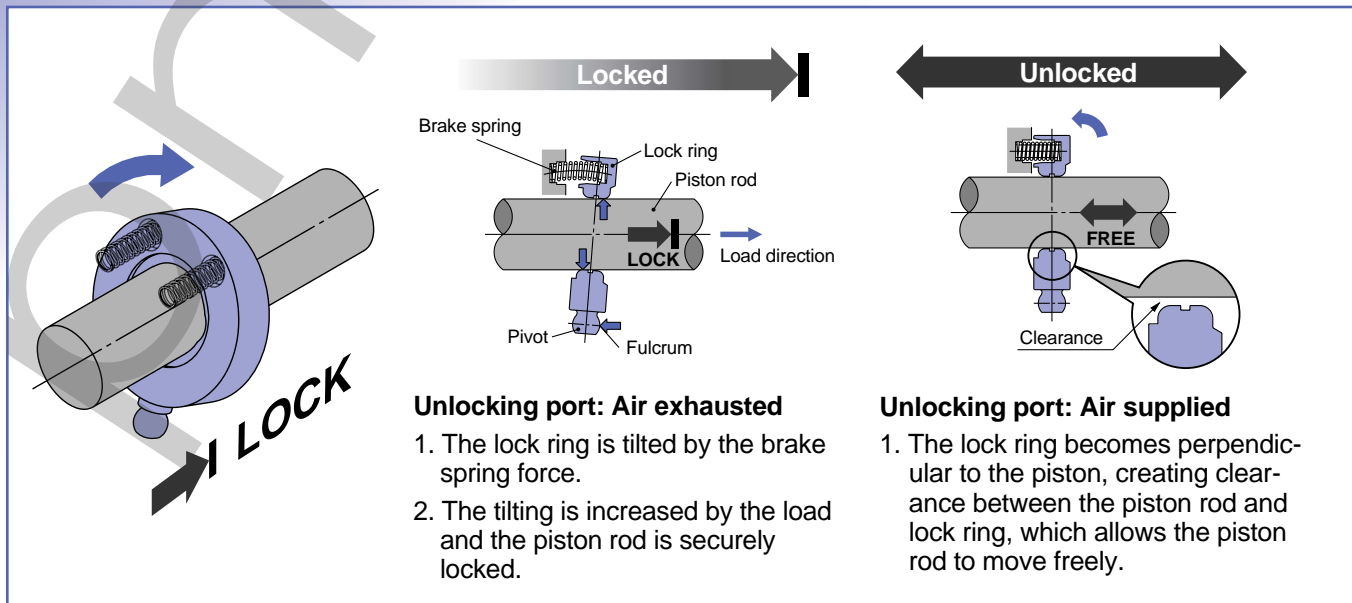
Drop prevention for lifter



Holding a clamped condition



Simple construction/Simple and reliable locking system



Compact Cylinder with Lock

∅20, ∅25, ∅32, ∅40, ∅50, ∅63, ∅80, ∅100

Low profile with compact lock unit

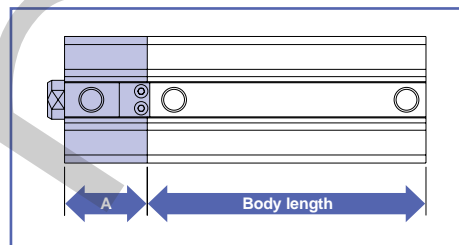
- Lock unit length

27mm to 50mm

- The lock unit does not project beyond the cylinder's external dimensions

Lock unit thickness (mm)

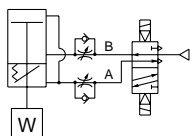
Bore size (mm)	A
20	27
25	31
32	32
40	34
50	35
63	38
80	43
100	50



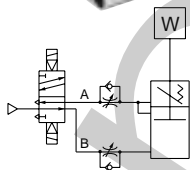
Locking direction is selectable.

(Must be selected at time of order.)

Extension locking

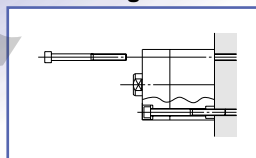


Retraction locking

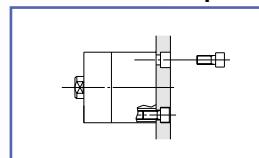


Two types of mounting

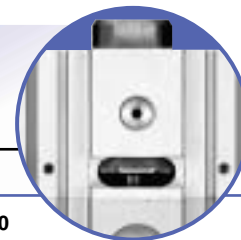
Through holes



Double end taps

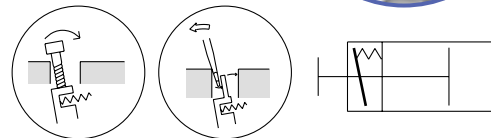


Easy manual unlocking



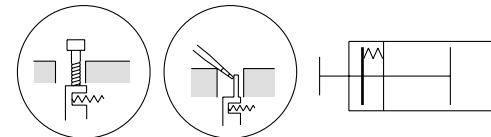
Locked

∅20 to ∅32 ∅40 to ∅100



Unlocked

∅20 to ∅32 ∅40 to ∅100



Wide variations from ∅20 to ∅100

Series	Mounting	Locking direction	Bore size (mm)	Standard stroke (mm)														
				5	10	15	20	25	30	35	40	45	50	75	100			
CLQ	Through holes, double end taps common	Extension locking	20	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
			25	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
			32		●	●	●	●	●	●	●	●	●	●	●	●	●	●
			40		●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Through holes / Double end taps	Retraction locking	50		●	●	●	●	●	●	●	●	●	●	●	●	●	
			63		●	●	●	●	●	●	●	●	●	●	●	●	●	
			80		●	●	●	●	●	●	●	●	●	●	●	●	●	
			100		●	●	●	●	●	●	●	●	●	●	●	●	●	

Compact Cylinder with lock Double Acting: Single Rod

Series CLQ

∅20, ∅25, ∅32, ∅40, ∅50, ∅63, ∅80, ∅100

How to Order

Without Auto Switch

CLQ **B** **40** — **30** **D** — **F**

With Auto Switch

CDLQ **B** **40** — **30** **D** — **F** — **A73** **S**

With auto switch
(built-in magnet)

∅20, ∅25

∅32 to ∅100

Mounting

∅20, ∅25		∅32 to ∅100	
B	Through hole/Double end tapped common (standard)	B	Through hole (standard)
L	Foot type	A	Double end tapped
F	Front flange type	L	Foot type
G	Rear flange type	F	Front flange type
D	Double clevis type	G	Rear flange type
		D	Double clevis type

* Mounting brackets are packed together when shipped (unassembled).

Bore size

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

Cylinder Stroke (mm)

Refer to page 2 for standard strokes and intermediate strokes.

Number of auto switches

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

Auto switch type

Nil	Without auto switch (built-in magnet cylinder)
------------	--

* Select auto switch models from the table below.

Locking direction

F	Extension locking
B	Retraction locking

Body option

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

Action

D	Double acting
----------	---------------

Mounting bracket part nos.

Bore size (mm)	Note 1)		Note 3)
	Foot	Flange	Double clevis
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 using foot brackets, order 2 pcs. for each cylinder.

Note 2) The parts included with each bracket are shown below.

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 type

Auto switch specifications

Type	Special function	Electrical entry	Indicator/light	Wiring (output)	Load voltage		Rail mount		Direct mount		Lead wire length (m)*				Applicable load												
					DC	AC	∅32 to ∅100		∅20 to ∅100		0.5 (Nil)	3 (Z)	5	None (N)													
							Perpendicular	In-line	Perpendicular	In-line																	
Reed switch	—	Grommet	Yes	3 wire (NPN equiv.)	—	5V	—	A76H	A96V	A96	●	●	—	—	IC circuit												
											24V	200V	A72	A72H		—	—	●	●	—	—						
													A73	A73H		—	—	●	●	●	—						
											24V	100V	12V	100V or less		A80	A80H	A90V	A90	●	●	—	—	IC circuit			
																				12V	—	—	—		●	●	●
											24V	24V or less	5V, 12V	24V or less		A80C	—	—	—	●	●	●	●	IC circuit			
—	—	—	—	●	●	—	—																				
Solid state switch	—	Grommet	Yes	3 wire (NPN)	—	5V, 12V	—	F7NV	F79	F9NV	F9N	●	●	○	—	IC circuit											
												12V	—	—	—		—	—	—	—	—	—	—				
																								F7PV	F7P	F9PV	F9P
												12V	—	—	—		—	—	—	—	—	—	—	—	—		
																										F7BV	J79
												12V	—	—	—		—	—	—	—	—	—	—	—	—	—	
																											J79C
												12V	—	—	—		—	—	—	—	—	—	—	—	—	—	—
												12V	—	—	—		—	—	—	—	—	—	—	—	—	—	—
—	F7PW	F9PWV	F9PW	●	●	○	—																				
12V	—	—	—	—	—	—	—	—	—	—	—	—	—	—													
															F7BWW	J79W	F9BWW	F9BW	●	●	○	—					
12V	—	—	—	—	—	—	—	—	—	—	—	—	—	—													
															—	F7BA	—	F9BA	—	●	○	—					
5V, 12V	—	—	—	—	—	—	—	—	—	—	—	—	—	—													
															—	F7NT	—	—	—	●	○	—					
5V, 12V	—	—	—	—	—	—	—	—	—	—	—	—	—	—													
															—	F79F	—	—	—	●	○	—					
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—													
															—	F7LF	—	—	—	●	○	—					

* Lead wire length symbols 0.5m Nil (Example) A80C 5m Z (Example) A80CZ
3m L (Example) A80CL None N (Example) A80CN

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

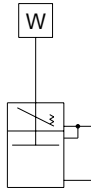
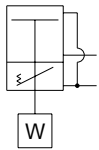
Cylinder Specifications



Symbols

Extension locking

Retraction locking



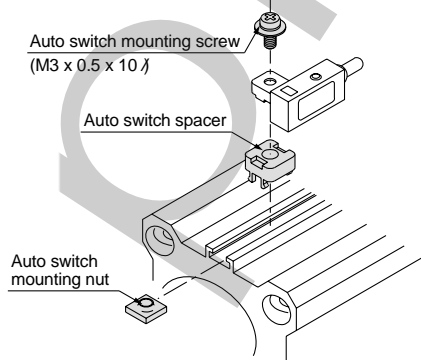
Auto Switch Mounting Bracket Part Nos. (Rail Mount)

Bore size (mm)	Bracket no.	Note
32, 40 50, 63 80, 100	BQ-2	<ul style="list-style-type: none"> Switch mounting screw (M3 x 0.5 x 10 λ) Switch spacer Switch mounting nut

Applicable switch	
Reed switch	Solid state switch
D-A7□/A80 D-A73C/A80C D-A7□H/A80H D-A79W	D-F7□/J79 D-F7□V D-J79C D-F7□W/J79W D-F7□WV D-F7BAL D-F7□F D-F7NTL

[Stainless steel mounting screw kit]
Use the following stainless steel mounting screw kit (includes nut) depending on the operating environment.
(Auto switch spacer must be ordered separately.)
BBA2: For D-A7/A8/F7/J7

The above stainless steel screw kit is used for water resistant auto switch type D-F7BAL when it is shipped mounted on a cylinder.
Also, BBA2 is included when an auto switch alone is shipped.



Bore size (mm)	20	25	32	40	50	63	80	100
Action	Double acting single rod							
Fluid	Air							
Proof pressure	1.5MPa							
Maximum operating pressure	1.0MPa							
Minimum operating pressure	0.2MPa (Note)							
Ambient and fluid temperature	Without auto switch: -10 to 70°C (with no freezing) With auto switch: -10 to 60°C (with no freezing)							
Lubrication	Non-lube							
Piston speed	50 to 500mm/s							
Stroke length tolerance	$^{+1.0}_0$ 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 0.1MPa 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	0.2MPa or more							
Locking pressure	0.05MPa or less							
Locking direction	One direction (extension locking, retraction locking, each type)							
Unlocking port size	M5 x 0.8		Rc 1/8				Rc 1/4	
Holding force N (Maximum static load)	157	245	403	629	982	1559	2514	3927
	Equivalent to 0.5MPa							

Standard Strokes

Bore size (mm)	Standard stroke (m)
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 Strokes

Method	Spacers installed in standard stroke body	
Part number	Refer to standard part number and ordering on page 1.	
Method	Strokes are available in 1mm increments by installing spacers in standard stroke cylinders	
Stroke range	Bore size (mm)	Stroke range (mm)
	20, 25	1 to 50
	32, 40, 50, 63, 80, 100	1 to 100
Example	Part number: CLQB40-47D-B A 3 mm spacer is installed in standard cylinder CLQB40-50D-B. The B dimension is 79.5mm.	

(Note) Consult P/A regarding intermediate strokes for sizes ϕ 40 through ϕ 100 with rubber bumpers.

Series CLQ

Theoretical Output



Unit: N

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

Weights

Basic weight: Mounting hole through (type B)

Unit: g

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

* The through hole and double end tap are common for sizes ø20 and ø25.

Basic weight: Mounting hole double end tapped (type A)

Unit: g

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

Unit: g

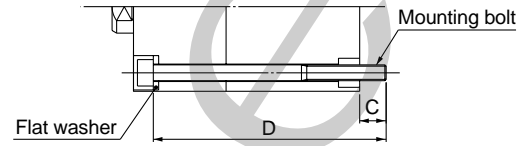
Bore size (mm)	20	25	32	40	50	63	80	100
Magnet	35	45	64	77	118	158	261	380
Rod end male threads	Threads	6	12	26	27	53	53	120
	Nut	4	8	17	17	32	32	49
With rubber cushion	-2	-3	-3	-7	-9	-18	-31	-56
Foot type (includes mounting bolt)	152	174	137	149	221	288	638	1009
Front flange type (includes mounting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

Calculation (example) **CDLQD32-20DCM-B**

- **Basic weight:** CLQA32-20D-* 453g
- **Additional weight:** Magnet 64g
- Rod end male threads 43g
- With rubber cushion -3g
- Double clevis type 145g
- 702g

Mounting Bolts for C□LQB

Mounting: Mounting bolts are available for the through hole type C□LQB.
Ordering : Add the word "Bolt" in front of the bolts to be used.
Example) Bolt M6 x 90 // 4 pcs.



Note) When mounting ø50 to ø100 cylinders from the rod side, be sure to use the attached flat washers because the bearing surface is limited.

CLQB/Without built-in magnet

Model	C	D	Mounting bolt
CLQB20-5D	10.5	55	M5 x 55/
-10D		60	x 60/
-15D		65	x 65/
-20D		70	x 70/
-25D		75	x 75/
-30D		80	x 80/
-35D		85	x 85/
-40D		90	x 90/
-45D		95	x 95/
-50D		100	x 100/
CLQB25-5D	8.5	60	M5 x 60/
-10D		65	x 65/
-15D		70	x 70/
-20D		75	x 75/
-25D		80	x 80/
-30D		85	x 85/
-35D		90	x 90/
-40D		95	x 95/
-45D		100	x 100/
-50D		105	x 105/

Model	C	D	Mounting bolt
CLQB32-10D	7	65	M5 x 65/
-15D		70	x 70/
-20D		75	x 75/
-25D		80	x 80/
-30D		85	x 85/
-35D		90	x 90/
-40D		95	x 95/
-45D		100	x 100/
-50D		105	x 105/
-75D		140	x 140/
-100D	165	x 165/	
CLQB40-10D	8.5	75	M5 x 75/
-15D		80	x 80/
-20D		85	x 85/
-25D		90	x 90/
-30D		95	x 95/
-35D		100	x 100/
-40D		105	x 105/
-45D		110	x 110/
-50D		115	x 115/
-75D		150	x 150/
-100D	175	x 175/	

Model	C	D	Mounting bolt
CLQB50-10D	12.5	80	M6 x 80/
-15D		85	x 85/
-20D		90	x 90/
-25D		95	x 95/
-30D		100	x 100/
-35D		105	x 105/
-40D		110	x 110/
-45D		115	x 115/
-50D		120	x 120/
-75D		155	x 155/
-100D	180	x 180/	
CLQB63-10D	16.5	90	M8 x 90/
-15D		95	x 95/
-20D		100	x 100/
-25D		105	x 105/
-30D		110	x 110/
-35D		115	x 115/
-40D		120	x 120/
-45D		125	x 125/
-50D		130	x 130/
-75D		165	x 165/
-100D	190	x 190/	

Model	C	D	Mounting bolt
CLQB80-10D	17	100	M10 x 100/
-15D		105	x 105/
-20D		110	x 110/
-25D		115	x 115/
-30D		120	x 120/
-35D		125	x 125/
-40D		130	x 130/
-45D		135	x 135/
-50D		140	x 140/
-75D		175	x 175/
-100D	200	x 200/	
CLQB100-10D	15.5	115	M10 x 115/
-15D		120	x 120/
-20D		125	x 125/
-25D		130	x 130/
-30D		135	x 135/
-35D		140	x 140/
-40D		145	x 145/
-45D		150	x 150/
-50D		155	x 155/
-75D		190	x 190/
-100D	215	x 215/	

CDLQB/With built-in magnet

Model	C	D	Mounting bolt
CDLQB20-5D	10.5	65	M5 x 65/
-10D		70	x 70/
-15D		75	x 75/
-20D		80	x 80/
-25D		85	x 85/
-30D		90	x 90/
-35D		95	x 95/
-40D		100	x 100/
-45D		105	x 105/
-50D		110	x 110/
CDLQB25-5D	8.5	70	M5 x 70/
-10D		75	x 75/
-15D		80	x 80/
-20D		85	x 85/
-25D		90	x 90/
-30D		95	x 95/
-35D		100	x 100/
-40D		105	x 105/
-45D		110	x 110/
-50D		115	x 115/

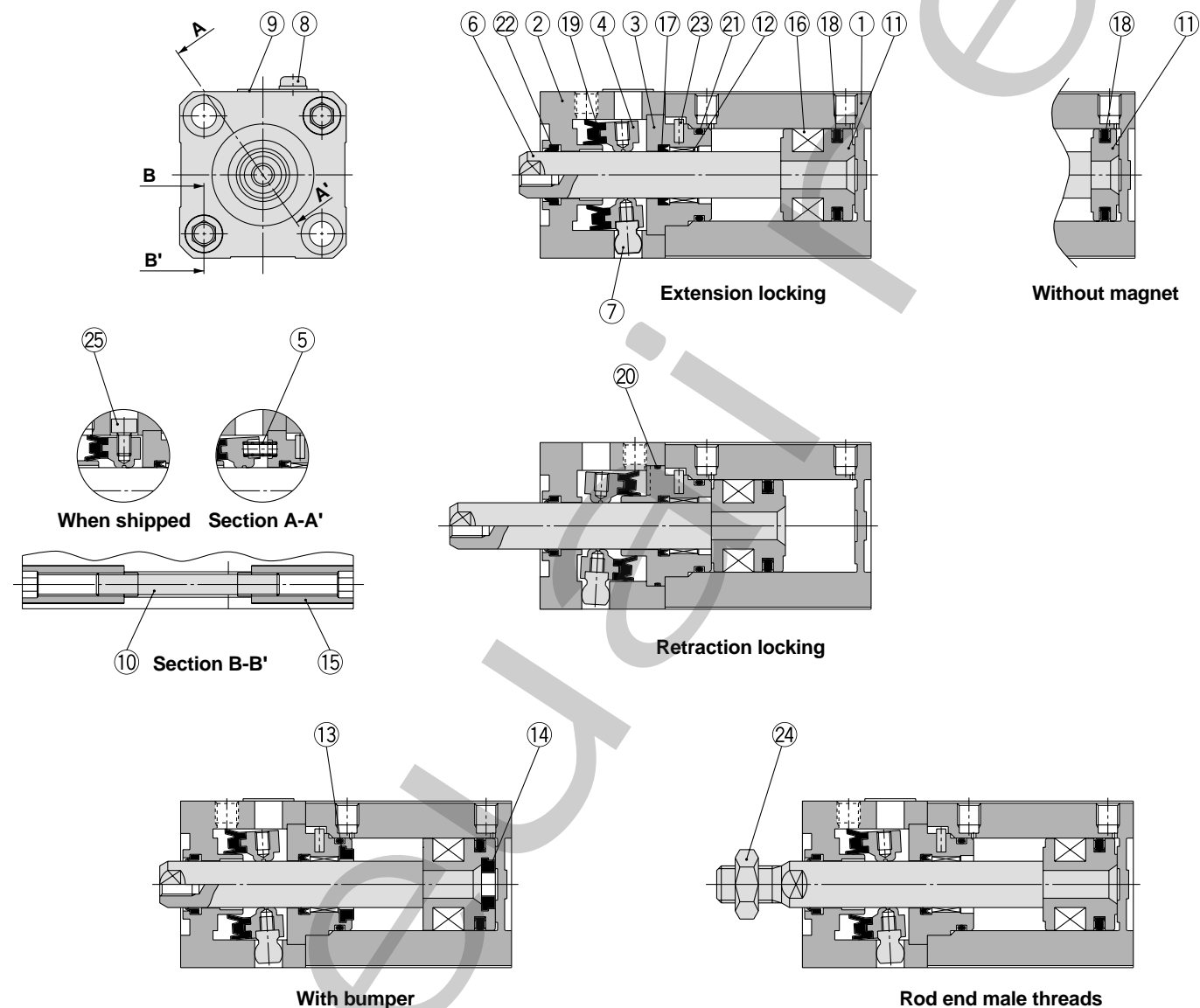
Model	C	D	Mounting bolt
CDLQB32-10D	7	75	M5 x 75/
-15D		80	x 80/
-20D		85	x 85/
-25D		90	x 90/
-30D		95	x 95/
-35D		100	x 100/
-40D		105	x 105/
-45D		110	x 110/
-50D		115	x 115/
-75D		140	x 140/
-100D	165	x 165/	
CDLQB40-10D	8.5	85	M5 x 85/
-15D		90	x 90/
-20D		95	x 95/
-25D		100	x 100/
-30D		105	x 105/
-35D		110	x 110/
-40D		115	x 115/
-45D		120	x 120/
-50D		125	x 125/
-75D		150	x 150/
-100D	175	x 175/	

Model	C	D	Mounting bolt
CDLQB50-10D	12.5	90	M6 x 90/
-15D		95	x 95/
-20D		100	x 100/
-25D		105	x 105/
-30D		110	x 110/
-35D		115	x 115/
-40D		120	x 120/
-45D		125	x 125/
-50D		130	x 130/
-75D		155	x 155/
-100D	180	x 180/	
CDLQB63-10D	16.5	100	M8 x 100/
-15D		105	x 105/
-20D		110	x 110/
-25D		115	x 115/
-30D		120	x 120/
-35D		125	x 125/
-40D		130	x 130/
-45D		135	x 135/
-50D		140	x 140/
-75D		165	x 165/
-100D	190	x 190/	

Model	C	D	Mounting bolt
CDLQB80-10D	17	110	M10 x 110/
-15D		115	x 115/
-20D		120	x 120/
-25D		125	x 125/
-30D		130	x 130/
-35D		135	x 135/
-40D		140	x 140/
-45D		145	x 145/
-50D		150	x 150/
-75D		175	x 175/
-100D	200	x 200/	
CDLQB100-10D	15.5	125	M10 x 125/
-15D		130	x 130/
-20D		135	x 135/
-25D		140	x 140/
-30D		145	x 145/
-35D		150	x 150/
-40D		155	x 155/
-45D		160	x 160/
-50D		165	x 165/
-75D		190	x 190/
-100D	215	x 215/	

Series CLQ

Construction/ø20 to ø32



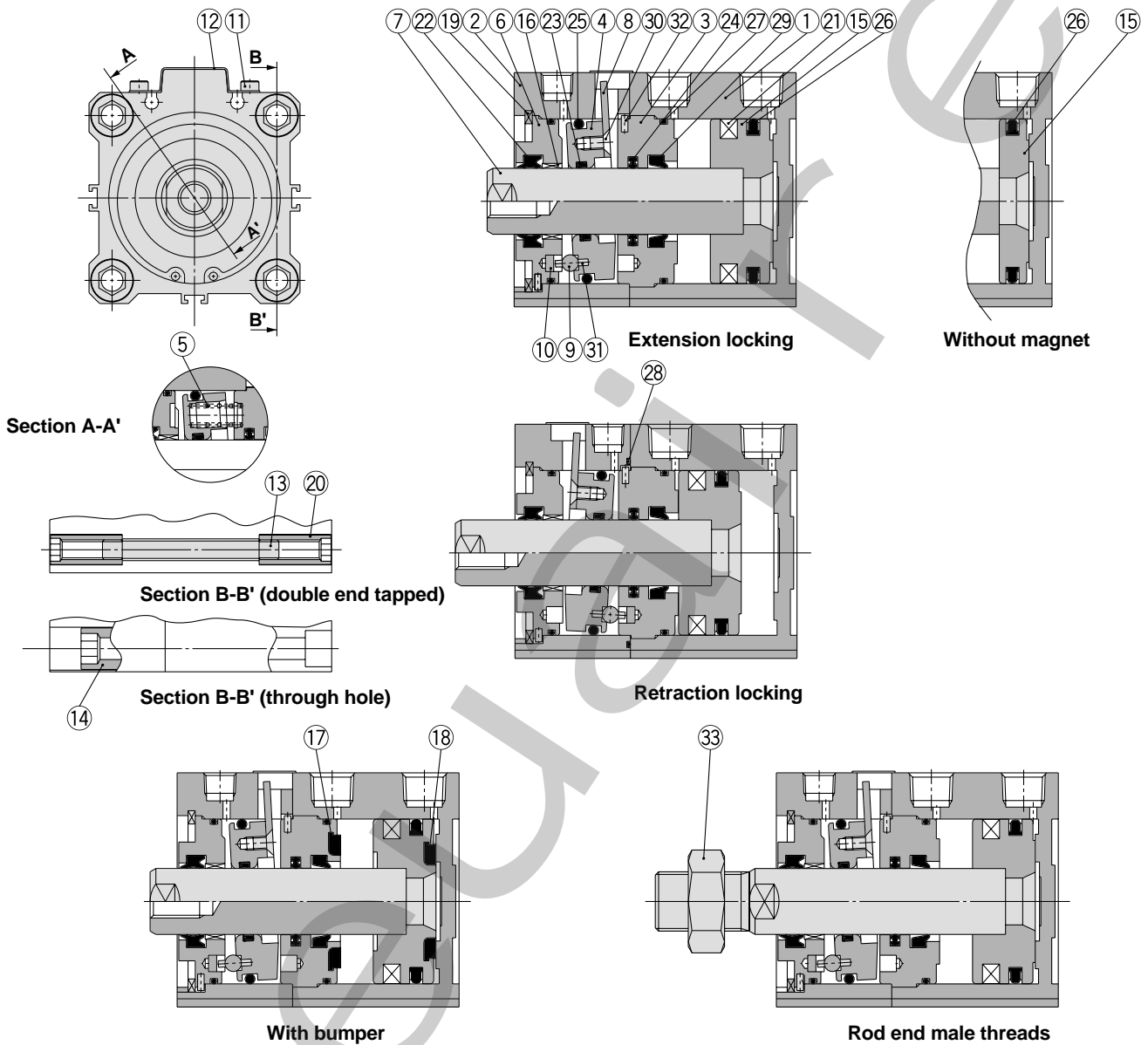
Note) The sectional drawing above shows the locked condition. (A bolt is used to maintain the cylinder in the unlocked condition when shipped.)

Parts list

No.	Description	Material	Note
1	Cylinder tube	Aluminum alloy	Hard anodized
2	Lock body	Aluminum alloy	Hard anodized
3	Intermediate collar	Aluminum alloy	Extension locking: Chromated Retraction locking: Hard anodized
4	Lock ring	Carbon steel	Heat treated
5	Brake spring	Steel wire	Zinc chromated
6	Piston rod	Stainless steel	ø20, 25: Hard chrome plated
		Carbon steel	ø32: Hard chrome plated
7	Pivot	Chrome molybdenum steel	Electroless nickel plated
8	Dust cover holding bolt	Carbon steel	Nickel plated
9	Dust cover	Stainless steel	
10	Tie-rod	Rolled steel	ø20: Nickel plated
			ø25: Zinc chromated
			ø32: Black zinc chromated
11	Piston	Aluminum alloy	Chromated

No.	Description	Material	Note
12	Bushing	Oil-impregnated sintered alloy	ø20, 25
		Die-cast lead-bronze	ø32
13	Bumper A	Urethane	
14	Bumper B	Urethane	
15	Tie-rod nut	Carbon steel	Nickel plated
16	Magnet	—	
17	Rod seal	NBR	
18	Piston seal	NBR	
19	Lock ring seal	NBR	
20	Tube gasket A	NBR	
21	Tube gasket B	NBR	
22	Scraper	NBR	
23	Parallel pin	Stainless steel	JIS B1354
24	Rod end nut	Carbon steel	Nickel plated
25	Unlocking bolt	Chrome molybdenum steel	Nickel plated

Construction/ø40 to ø100



Note) The sectional drawing above shows the locked condition.

Parts list

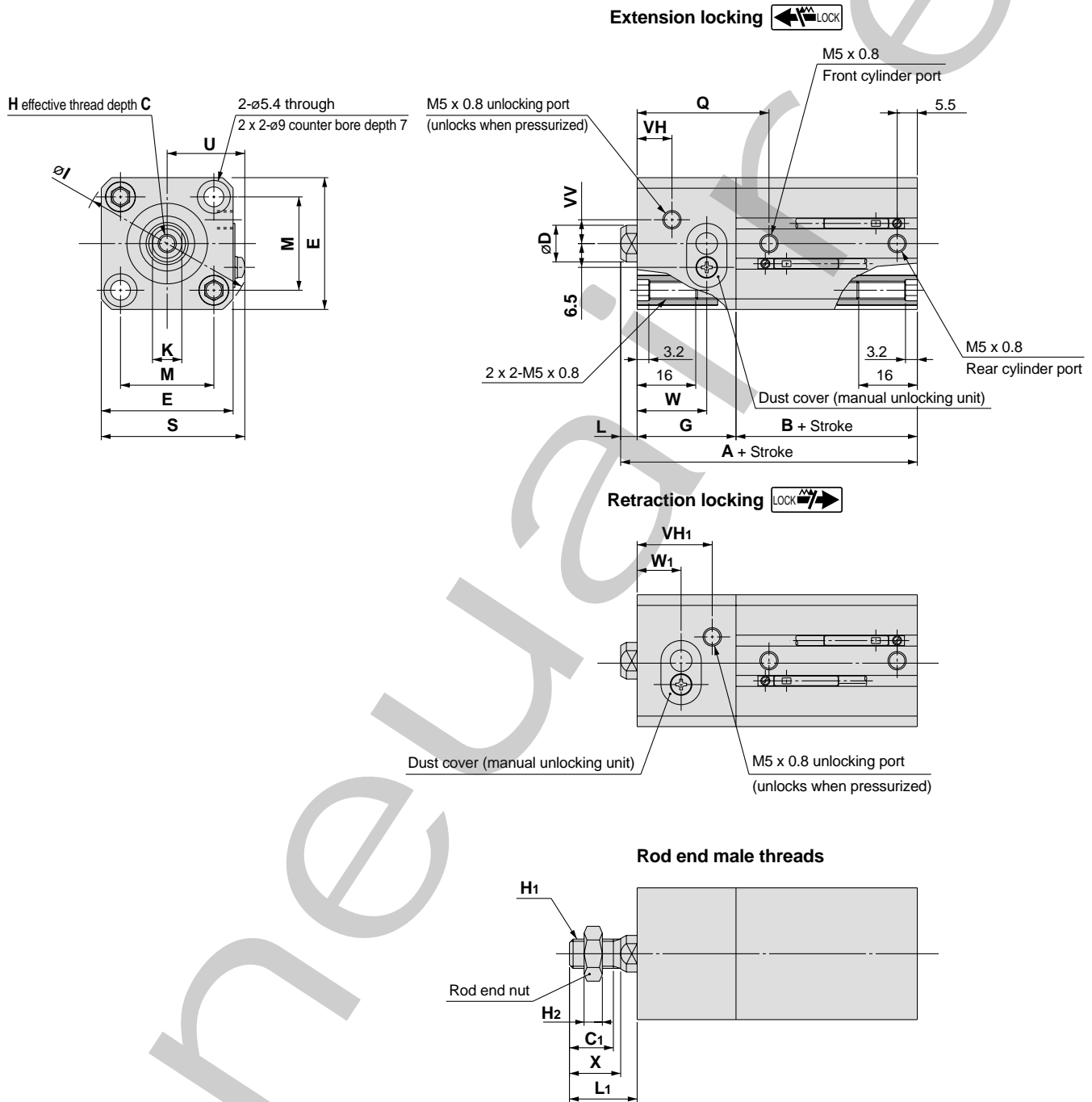
No.	Description	Material	Note
1	Cylinder tube	Aluminum alloy	Hard anodized
2	Lock body	Aluminum alloy	Hard anodized
3	Intermediate collar	Aluminum alloy	Chromated
4	Lock ring	Carbon steel	Heat treated
5	Brake spring	Steel wire	Zinc chromated
6	Collar	Aluminum alloy Die-cast aluminum alloy	ø40: Hard anodized ø50 to ø100: Chromated, coated
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	Chrome molybdenum steel	Nickel plated
12	Dust cover	Rolled steel	Nickel plated
13	Tie-rod	Rolled steel Carbon steel	ø40, Chromated ø50 or larger, Chromated
14	Unit holding bolt	Carbon steel	Nickel plated
15	Piston	Aluminum alloy	Chromated
16	Bushing	Die-cast lead-bronze	For ø50 or larger only

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	Chrome molybdenum steel	Nickel plated
31	Spring pin	Carbon steel	JIS B2808
32	Parallel pin	Stainless steel	JIS B1354
33	Rod end nut	Carbon steel	Nickel plated

Series CLQ

Dimensions/ø20, ø25

Standard type (through hole/double end tapped): C□LQB20/25



Bore size (mm)	Stroke range	Without auto switch		With auto switch		C	D	E	G	H	I	K	L	M	Q	S	U	VH	VV	W
		A	B	A	B															
20	5 to 50	51	19.5	61	29.5	7	10	36	27	M5 x 0.8	47	8	4.5	25.5	36	39.2	21.2	9.5	6.5	19
25	5 to 50	58.5	22.5	68.5	32.5	12	12	40	31	M6 x 1.0	52	10	5	28	42	43.2	23.2	10	7	21.5

For retraction locking (mm)

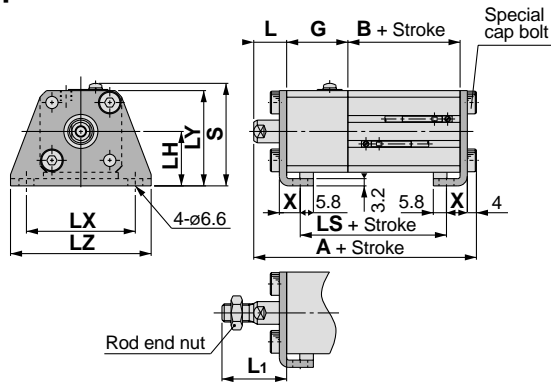
Bore size (mm)	VH ₁	W ₁
20	20.5	12
25	23	14.5

For rod end male threads (mm)

Bore size (mm)	C ₁	X	H ₁	H ₂	L ₁
20	12	14	M8 x 1.25	5	18.5
25	15	17.5	M10 x 1.25	6	22.5

Dimensions/ø20, ø25

Foot type: CLQL/CDLQL

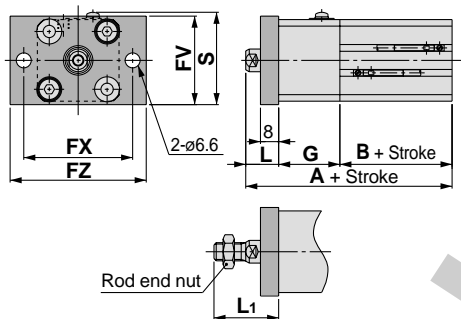


Foot type (mm)

Bore size (mm)	Stroke range	Without auto switch			With auto switch		
		A	B	LS	A	B	LS
20	5 to 50	68.2	19.5	34.5	78.2	29.5	44.5
25	5 to 50	75.7	22.5	38.5	85.7	32.5	48.5

Bore size (mm)	G	L	L ₁	LH	LX	LY	LZ	X	S
20	27	14.5	28.5	24	48	42	62	9.2	45.2
25	31	15	32.5	26	52	46	66	10.7	49.2

Front flange type: CLQF/CDLQF

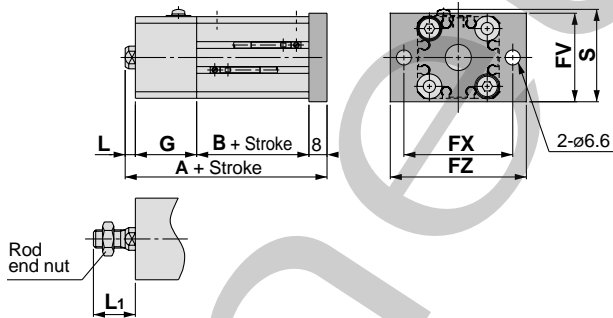


Front flange type (mm)

Bore size (mm)	Stroke range	Without auto switch		With auto switch	
		A	B	A	B
20	5 to 50	61	19.5	71	29.5
25	5 to 50	68.5	22.5	78.5	32.5

Bore size (mm)	FV	FX	FZ	G	L	L ₁	S
20	39	48	60	27	14.5	28.5	40.7
25	42	52	64	31	15	32.5	44.2

Rear flange type: CLQG/CDLQG

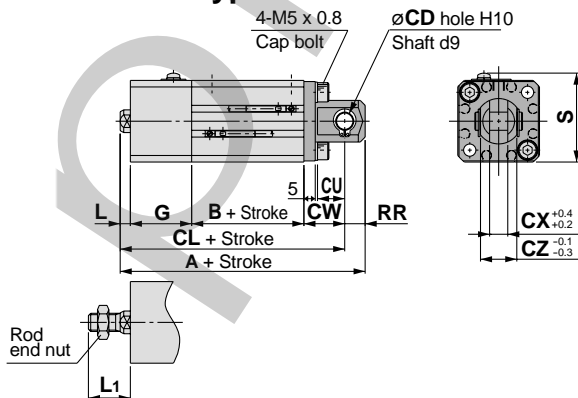


Rear flange type (mm)

Bore size (mm)	Stroke range	Without auto switch		With auto switch	
		A	B	A	B
20	5 to 50	59	19.5	69	29.5
25	5 to 50	66.5	22.5	76.5	32.5

Bore size (mm)	FV	FX	FZ	G	L	L ₁	S
20	39	48	60	27	4.5	18.5	40.7
25	42	52	64	31	5	22.5	44.2

Double clevis type: CLQD/CDLQD



Double clevis type (mm)

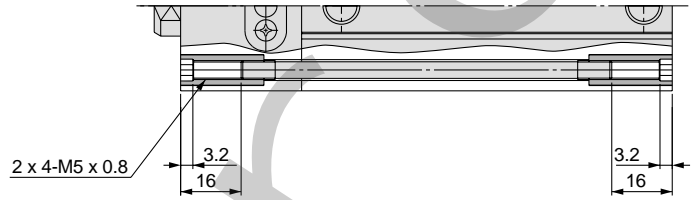
Bore size (mm)	Stroke range	Without auto switch			With auto switch		
		A	B	CL	A	B	CL
20	5 to 50	78	19.5	69	88	29.5	79
25	5 to 50	88.5	22.5	78.5	98.5	32.5	88.5

Bore size (mm)	CD	CU	CW	CX	CZ	G	L	L ₁	RR	S
20	8	12	18	8	16	27	4.5	18.5	9	39.2
25	10	14	20	10	20	31	5	22.5	10	43.2

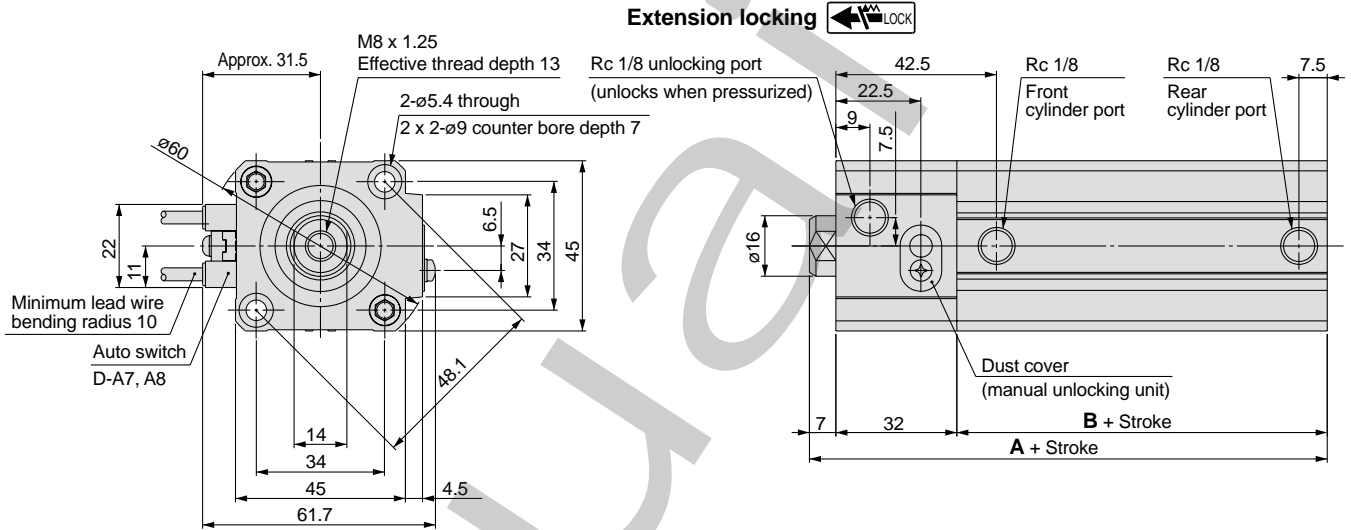
Series CLQ

Dimensions/ø32

Double end tapped: C□LQA32



Standard type (through hole): C□LQB32



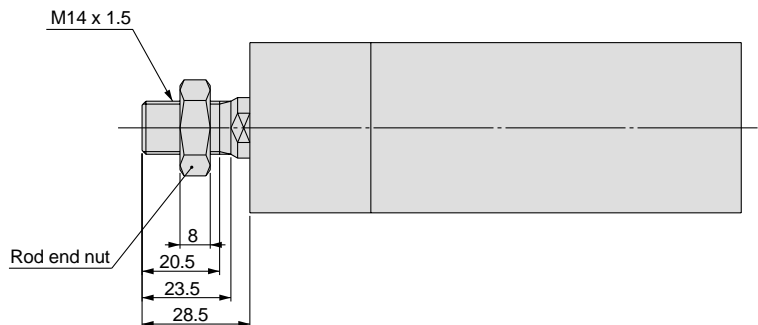
Extension locking

Retraction locking

(mm)

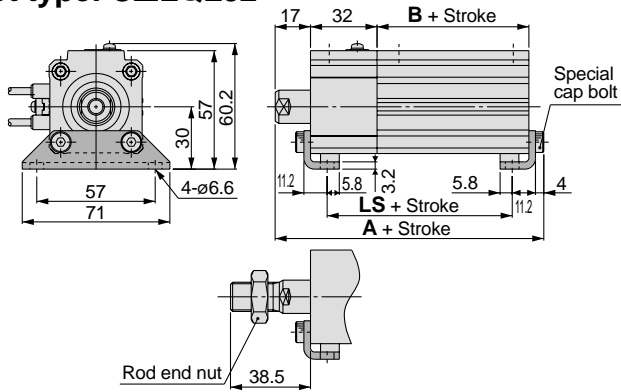
Bore size (mm)	Stroke range	Without auto switch		With auto switch	
		A	B	A	B
32	10 to 50	62	23	72	33
	75, 100	72	33		

Rod end male threads



Dimensions/ø32

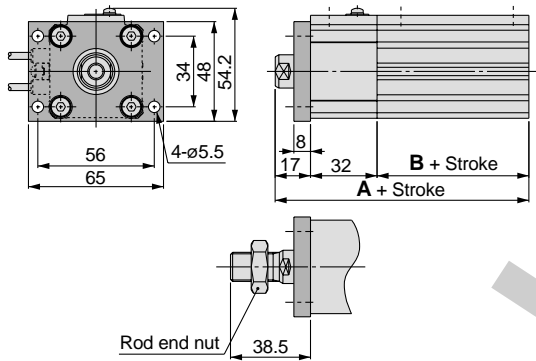
Foot type: C□LQL32



Foot type (mm)

Bore size (mm)	Stroke range	Without auto switch			With auto switch		
		A	B	LS	A	B	LS
32	10 to 50	79.2	23	39	89.2	33	49
	75, 100	89.2	33	49			

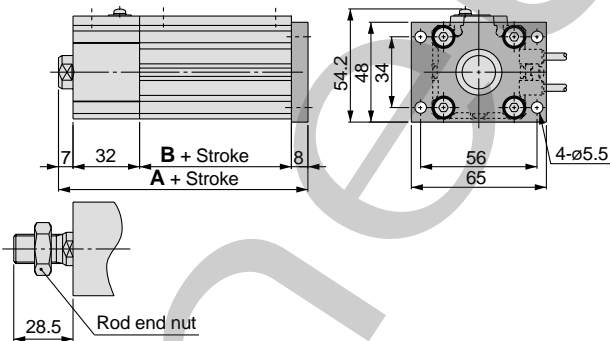
Front flange type: C□LQF32



Front flange type (mm)

Bore size (mm)	Stroke range	Without auto switch		With auto switch	
		A	B	A	B
32	10 to 50	72	23	82	33
	75, 100	82	33		

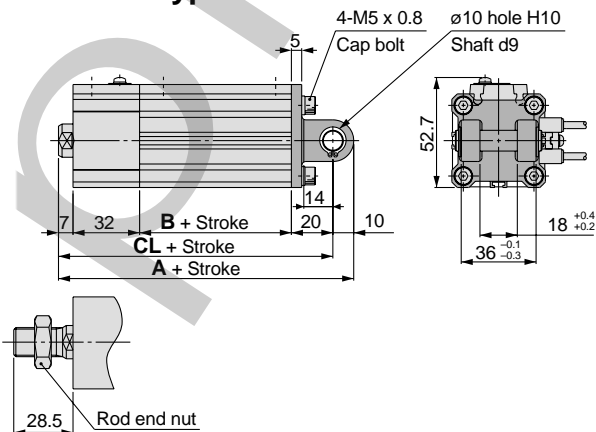
Rear flange type: C□LQG32



Rear flange type (mm)

Bore size (mm)	Stroke range	Without auto switch		With auto switch	
		A	B	A	B
32	10 to 50	70	23	80	33
	75, 100	80	33		

Double clevis type: C□LQD32



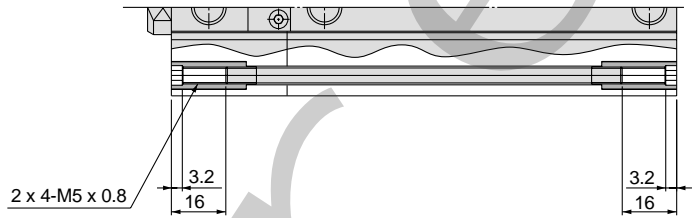
Double clevis type (mm)

Bore size (mm)	Stroke range	Without auto switch			With auto switch		
		A	B	CL	A	B	CL
32	10 to 50	92	23	82	102	33	92
	75, 100	102	33	92			

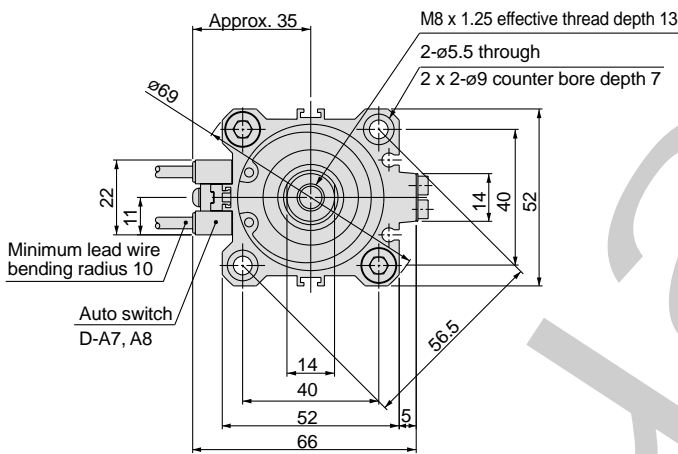
Series CLQ

Dimensions/ø40

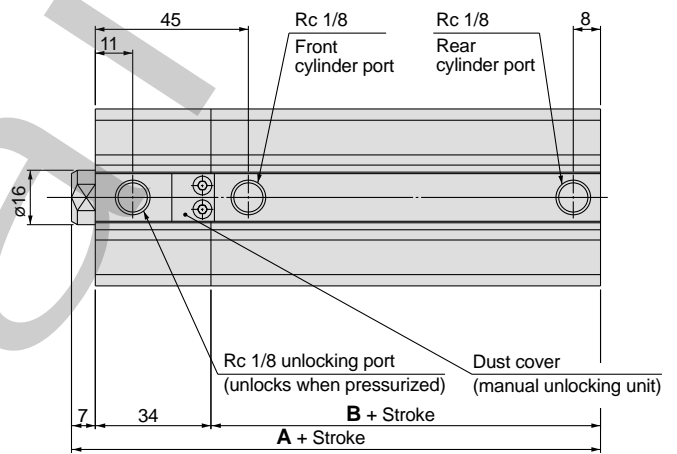
Double end tapped: C□LQA40



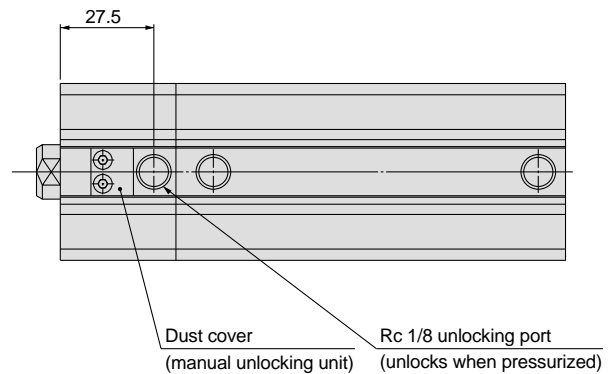
Standard type (through hole): C□LQB40



Extension locking



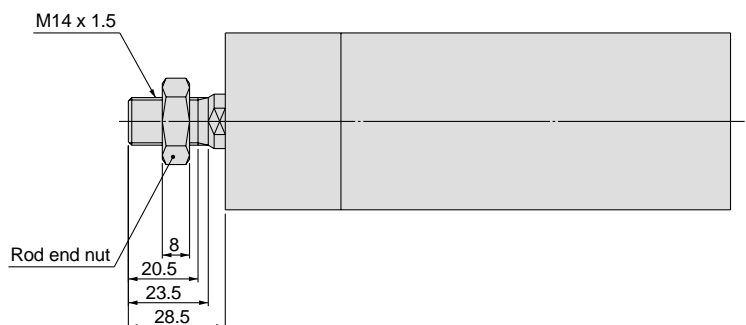
Retraction locking



A, B dimensions

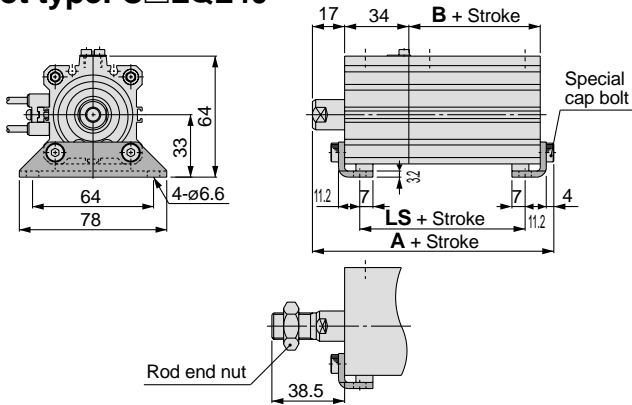
Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch	
		A	B	A	B
40	10 to 50	70.5	29.5	80.5	39.5
	75, 100	80.5	39.5		

Rod end male threads



Dimensions/ø40

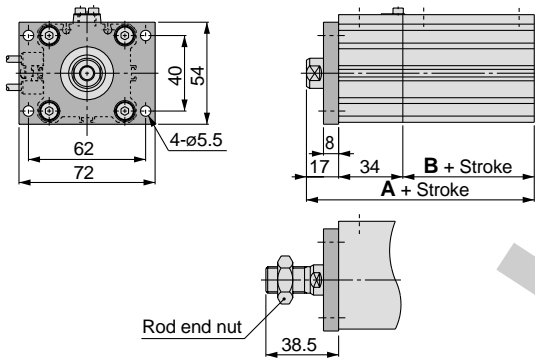
Foot type: C□LQL40



Foot type (mm)

Bore size (mm)	Stroke range	Without auto switch			With auto switch		
		A	B	LS	A	B	LS
40	10 to 50	87.7	29.5	47.5	97.7	39.5	57.5
	75, 100	97.7	39.5	57.5			

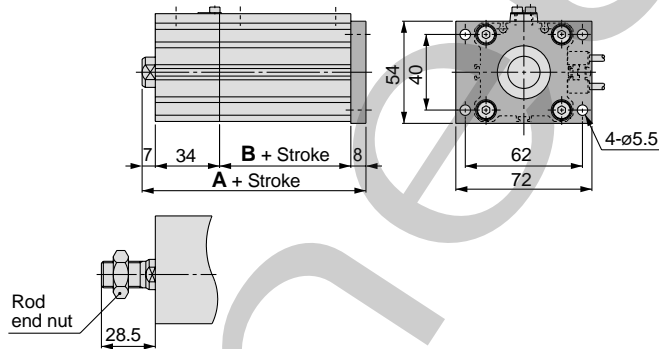
Front flange type: C□LQF40



Front flange type (mm)

Bore size (mm)	Stroke range	Without auto switch		With auto switch	
		A	B	A	B
40	10 to 50	80.5	29.5	90.5	39.5
	75, 100	90.5	39.5		

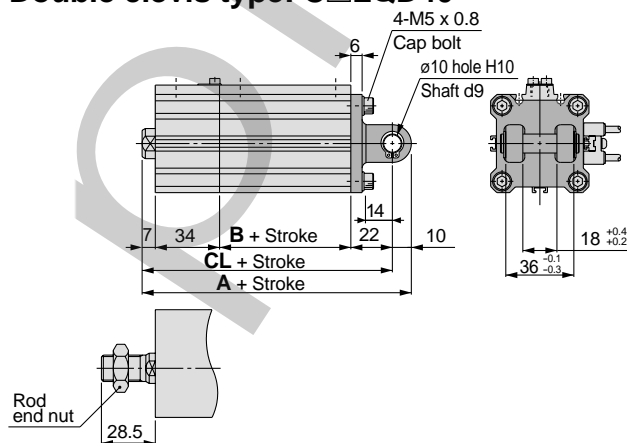
Rear flange type: C□LQG40



Rear flange type (mm)

Bore size (mm)	Stroke range	Without auto switch		With auto switch	
		A	B	A	B
40	10 to 50	78.5	29.5	88.5	39.5
	75, 100	88.5	39.5		

Double clevis type: C□LQD40



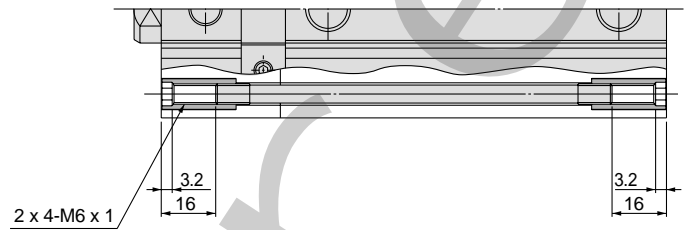
Double clevis type (mm)

Bore size (mm)	Stroke range	Without auto switch			With auto switch		
		A	B	CL	A	B	CL
40	10 to 50	102.5	29.5	92.5	112.5	39.5	102.5
	75, 100	112.5	39.5	102.5			

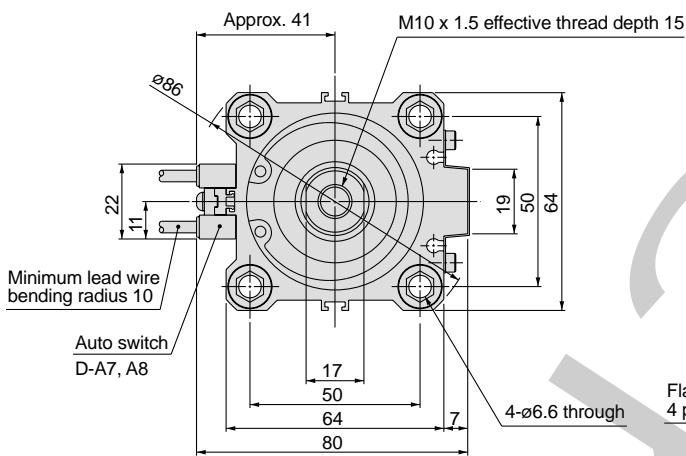
Series CLQ

Dimensions/ø50

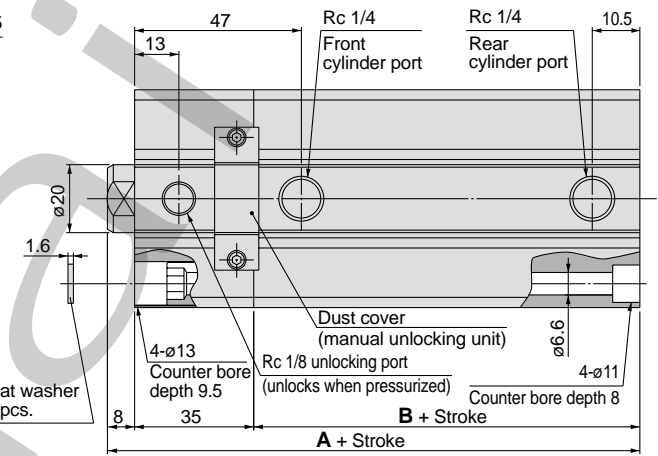
Double end tapped: C□LQA50



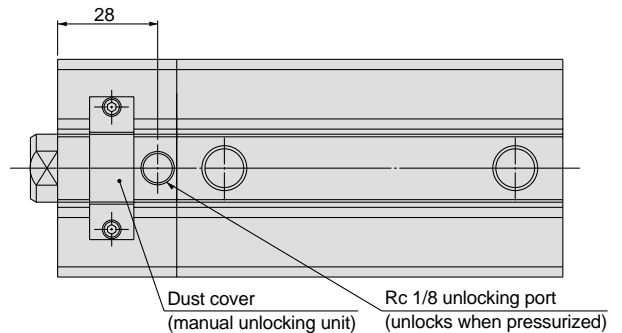
Standard type (through hole): C□LQB50



Extension locking



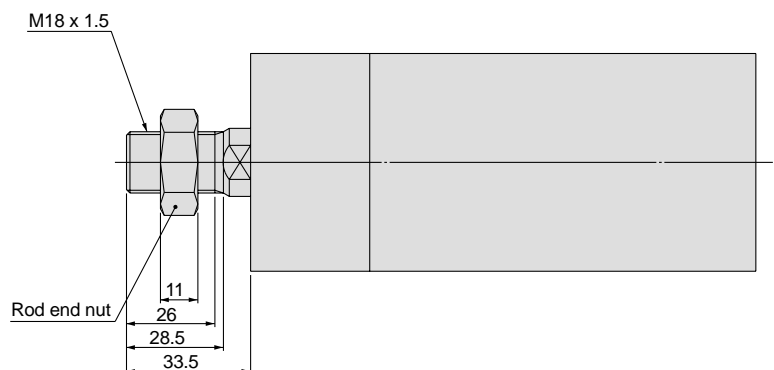
Retraction locking



A, B dimensions

Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch	
		A	B	A	B
50	10 to 50	73.5	30.5	83.5	40.5
	75, 100	83.5	40.5		

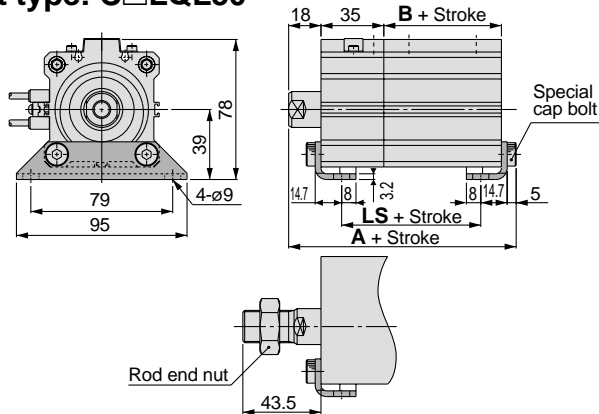
Rod end male threads



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

Dimensions/ø50

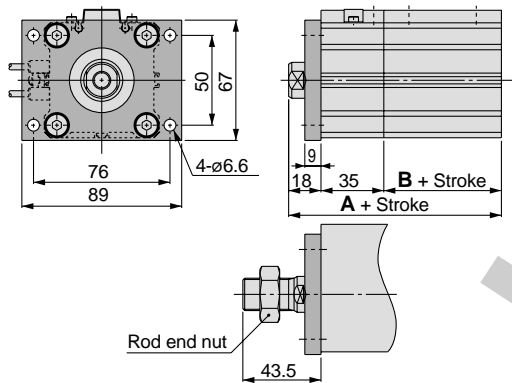
Foot type: C□LQL50



Foot type (mm)

Bore size (mm)	Stroke range	Without auto switch			With auto switch		
		A	B	LS	A	B	LS
50	10 to 50	91.7	30.5	42.5	101.7	40.5	52.5
	75, 100	101.7	40.5	52.5			

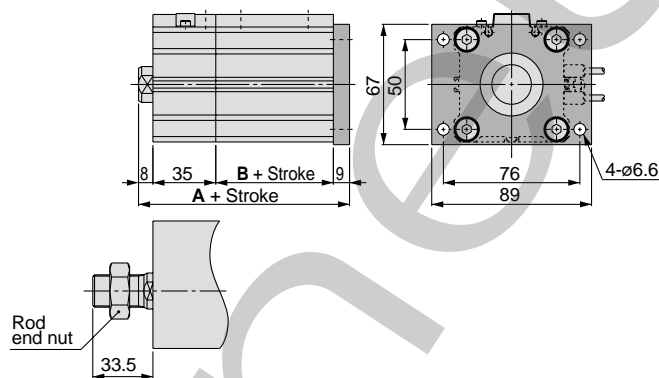
Front flange type: C□LQF50



Front flange type (mm)

Bore size (mm)	Stroke range	Without auto switch		With auto switch	
		A	B	A	B
50	10 to 50	83.5	30.5	93.5	40.5
	75, 100	93.5	40.5		

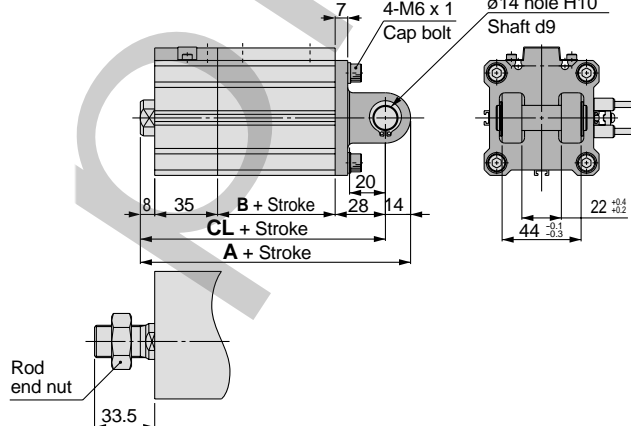
Rear flange type: C□LQG50



Rear flange type (mm)

Bore size (mm)	Stroke range	Without auto switch		With auto switch	
		A	B	A	B
50	10 to 50	82.5	30.5	92.5	40.5
	75, 100	92.5	40.5		

Double clevis type: C□LQD50



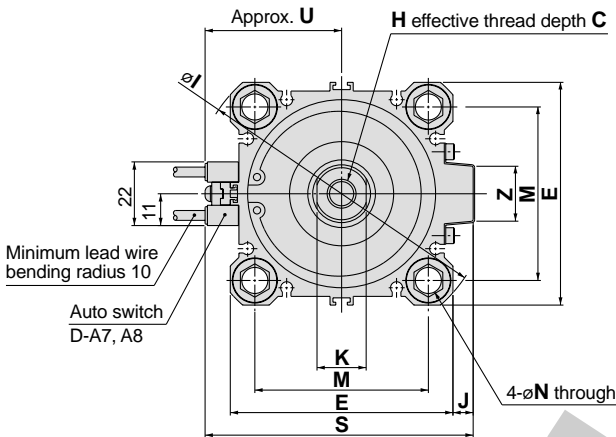
Double clevis type (mm)

Bore size (mm)	Stroke range	Without auto switch			With auto switch		
		A	B	CL	A	B	CL
50	10 to 50	115.5	30.5	101.5	125.5	40.5	111.5
	75, 100	125.5	40.5	111.5			

Series CLQ

Dimensions/ $\varnothing 63$, $\varnothing 80$, $\varnothing 100$

Standard type (through hole): C□LQB63/80/100



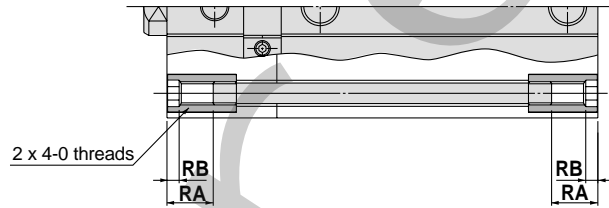
For retraction locking (mm)

Bore size (mm)	V ₁
63	30.5
80	35.5
100	40.5

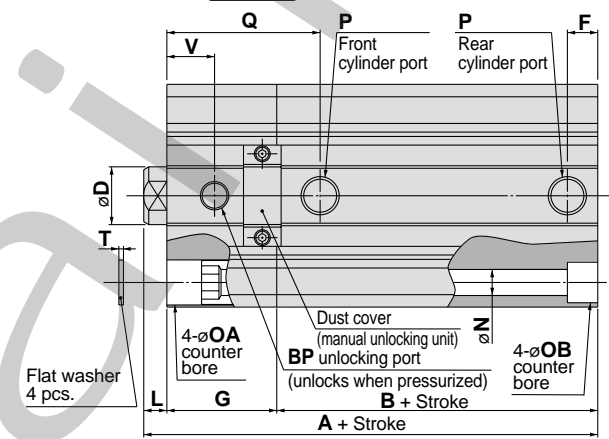
For rod end male threads (mm)

Bore size (mm)	C ₁	X	H ₁	H ₂	L ₁
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

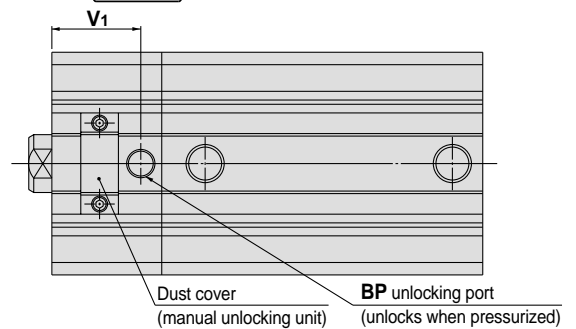
Double end tapped: C□LQA63/80/100



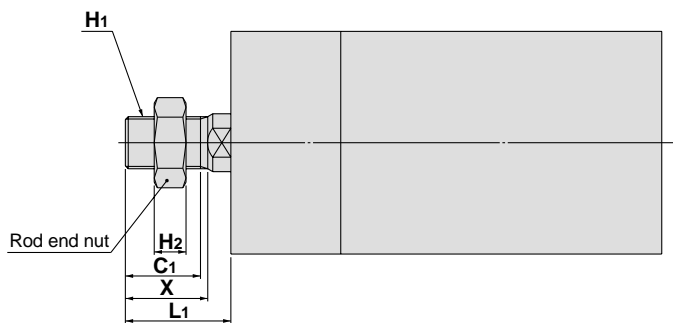
Extension locking



Retraction locking



Rod end male threads

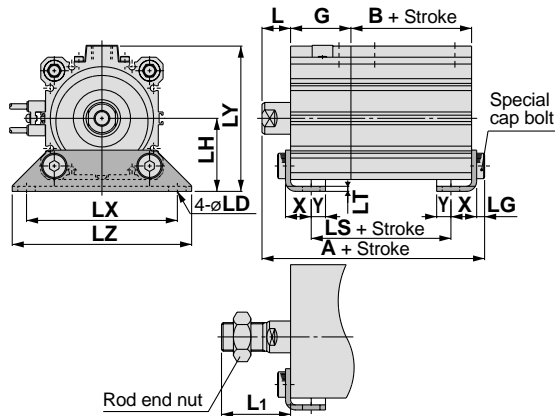


Note) Be sure to use the attached flat washers when mounting a cylinder from the rod side.

Bore size (mm)	Stroke range (mm)	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 1/8	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 1/4	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																											

Dimensions/ø63, ø80, ø100

Foot type: CLQL/CDLQL

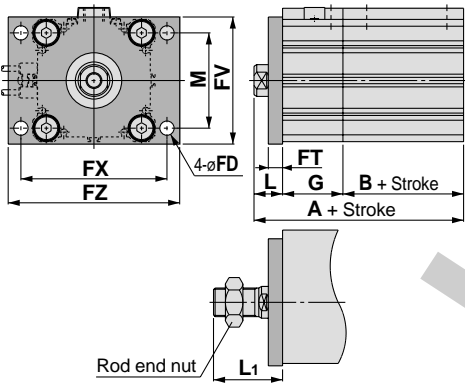


Foot type (mm)

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					

Bore size (mm)	L1	LD	LG	LH	LT	LX	LY	LZ	X	Y
63	43.5	11	5	46	3.2	95	91.5	113	16.2	9
80	53.5	13	7	59	4.5	118	114	140	19.5	11
100	53.5	13	7	71	6	137	136	162	23	12.5

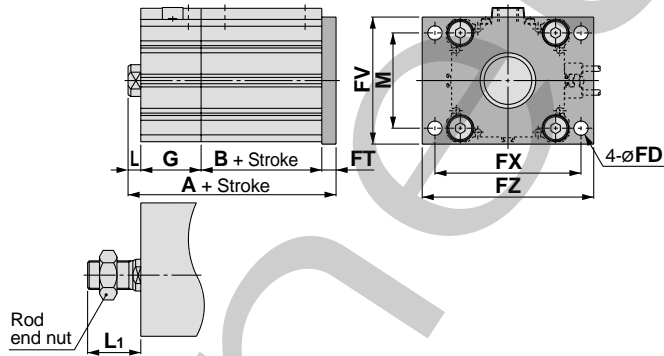
Front flange type: CLQF/CDLQF



Front flange type (mm)

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											

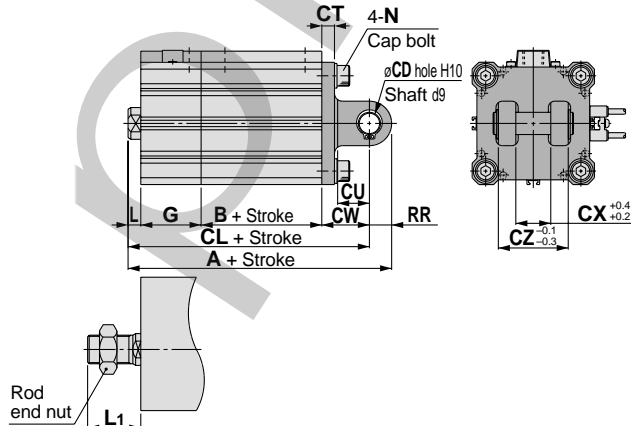
Rear flange type: CLQG/CDLQG



Rear flange type (mm)

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 type: CLQD/CDLQD



Double clevis type (mm)

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

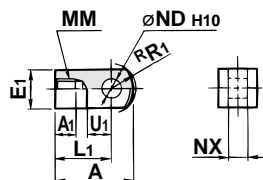
Series CLQ

Accessories

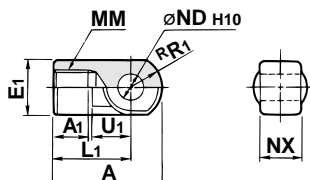
Single knuckle joint

I-G02, I-G03

I-G04, I-G05
I-G08, I-G10



Material: Rolled steel

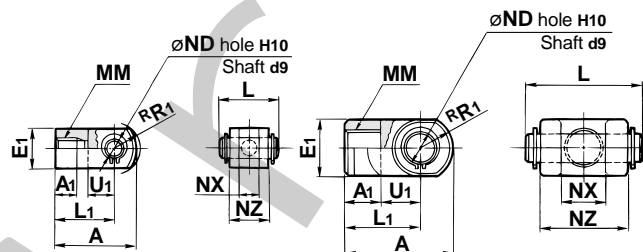


Material: Cast iron

Double knuckle joint

Y-G02, Y-G03

Y-G04, Y-G05
Y-G08, Y-G10



Material: Rolled steel

Material: Cast iron

Part no.	Applicable bore size (mm)	A	A1	E1	L1	MM	RR1	U1	ND	NX
I-G02	20	34	8.5	□16	25	M8 x 1.25	10.3	11.5	8 ^{+0.058} ₀	8 ^{-0.2} _{-0.4}
I-G03	25	41	10.5	□20	30	M10 x 1.25	12.8	14	10 ^{+0.058} ₀	10 ^{-0.2} _{-0.4}
I-G04	32, 40	42	14	∅22	30	M14 x 1.5	12	14	10 ^{+0.058} ₀	18 ^{-0.3} _{-0.5}
I-G05	50, 63	56	18	∅28	40	M18 x 1.5	16	20	14 ^{+0.070} ₀	22 ^{-0.3} _{-0.5}
I-G08	80	71	21	∅38	50	M22 x 1.5	21	27	18 ^{+0.070} ₀	28 ^{-0.3} _{-0.5}
I-G10	100	79	21	∅44	55	M26 x 1.5	24	31	22 ^{+0.084} ₀	32 ^{-0.3} _{-0.5}

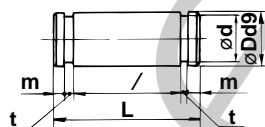
(mm)

Part no.	Applicable bore size (mm)	A	A1	E1	L1	MM	RR1	U1	ND	NX	NZ	L	Applicable pin no.
Y-G02	20	34	8.5	□16	25	M8 x 1.25	10.3	11.5	8 ^{+0.058} ₀	8 ^{+0.4} _{+0.2}	16	21	IY-G02
Y-G03	25	41	10.5	□20	30	M10 x 1.25	12.8	14	10 ^{+0.058} ₀	10 ^{+0.4} _{+0.2}	20	25.6	IY-G03
Y-G04	32, 40	42	16	∅22	30	M14 x 1.5	12	14	10 ^{+0.058} ₀	18 ^{+0.5} _{+0.3}	36	41.6	IY-G04
Y-G05	50, 63	56	20	∅28	40	M18 x 1.5	16	20	14 ^{+0.070} ₀	22 ^{+0.5} _{+0.3}	44	50.6	IY-G05
Y-G08	80	71	23	∅38	50	M22 x 1.5	21	27	18 ^{+0.070} ₀	28 ^{+0.5} _{+0.3}	56	64	IY-G08
Y-G10	100	79	24	∅44	55	M26 x 1.5	24	31	22 ^{+0.084} ₀	32 ^{+0.5} _{+0.3}	64	72	IY-G10

(mm)

* Knuckle pin and snap rings are included.

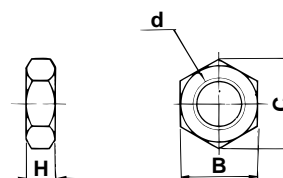
Knuckle pin (common with double clevis pin)



Material: Carbon steel
(mm)

Part no.	Applicable bore size (mm)	D	L	d	/	m	t	Snap ring
IY-G02	20	8 ^{-0.040} _{-0.076}	21	7.6	16.2	1.5	0.9	C type 8 for shaft
IY-G03	25	10 ^{-0.040} _{-0.076}	25.6	9.6	20.2	1.55	1.15	C type 10 for shaft
IY-G04	32, 40	10 ^{-0.040} _{-0.076}	41.6	9.6	36.2	1.55	1.15	C type 10 for shaft
IY-G05	50, 63	14 ^{-0.050} _{-0.093}	50.6	13.4	44.2	2.05	1.15	C type 14 for shaft
IY-G08	80	18 ^{-0.050} _{-0.093}	64	17	56.2	2.55	1.35	C type 18 for shaft
IY-G10	100	22 ^{-0.065} _{-0.117}	72	21	64.2	2.55	1.35	C type 22 for shaft

Rod end nut



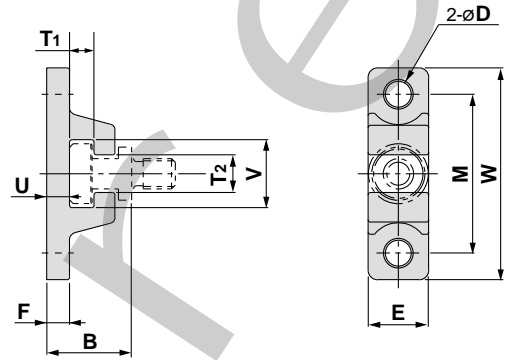
Material: Rolled steel
(mm)

Part no.	Applicable bore size (mm)	d	H	B	C
NT-02	20	M8 x 1.25	5	13	15.0
NT-03	25	M10 x 1.25	6	17	19.6
NT-04	32, 40	M14 x 1.5	8	22	25.4
NT-05	50, 63	M18 x 1.5	11	27	31.2
NT-08	80	M22 x 1.5	13	32	37.0
NT-10	100	M26 x 1.5	16	41	47.3

Simple Joint/ø32 to ø100



A type mounting brackets



Joint and mounting brackets (A, B type) part nos.



• Applicable cylinder bore size

03	ø32, ø40
05	ø50, ø63
08	ø80
10	ø100

• Mounting bracket

YA	A type mounting bracket
YB	B type mounting bracket
YU	Joint

Bore size (mm)	Joint	Applicable mounting brackets	
		A type	B type
32, 40	YU-03	YA-03	YB-03
50, 63	YU-05	YA-05	YB-05
80	YU-08	YA-08	YB-08
100	YU-10	YA-10	YB-10

Allowable eccentricity (mm)

Bore size	32	40	50	63	80	100
Eccentricity tolerance		±1			±1.5	±2
Backlash			0.5			

<Ordering method>

• Joints are not included with A type and B type mounting brackets.

Order them separately.

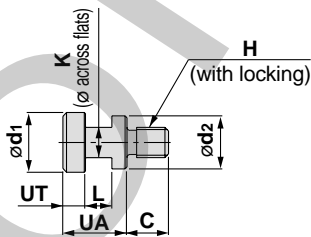
(Example)

For bore size ø40 Part number

• A type mounting bracket YA-03

• Joint YU-03

Joints



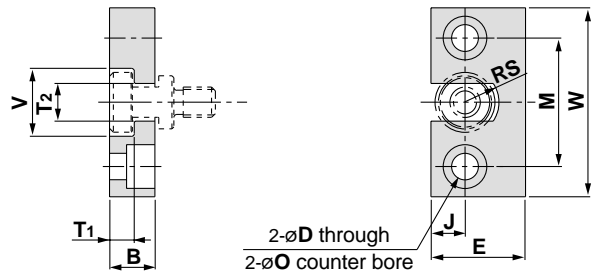
Part no.	Applicable bore size (mm)	UA	C	d1	d2	H	K	L	UT	Weight (g)
YU-03	32, 40	17	11	15.8	14	M8 x 1.25	8	7	6	25
YU-05	50, 63	17	13	19.8	18	M10 x 1.5	10	7	6	40
YU-08	80	22	20	24.8	23	M16 x 2	13	9	8	90
YU-10	100	26	26	29.8	28	M20 x 2.5	14	11	10	160

(mm)

Part no.	Bore size (mm)	B	D	E	F	M	T1	T2
YA-03	32, 40	18	6.8	16	6	42	6.5	10
YA-05	50, 63	20	9	20	8	50	6.5	12
YA-08	80	26	11	25	10	62	8.5	16
YA-10	100	31	14	30	12	76	10.5	18

Part no.	Bore size (mm)	U	V	W	Weight (g)
YA-03	32, 40	6	18	56	55
YA-05	50, 63	8	22	67	100
YA-08	80	10	28	83	195
YA-10	100	12	36	100	340

B type mounting brackets



(mm)

Part no.	Bore size (mm)	B	D	E	J	M	O
YB-03	32, 40	12	7	25	9	34	11.5, depth 7.5
YB-05	50, 63	12	9	32	11	42	14.5, depth 8.5
YB-08	80	16	11	38	13	52	18, depth 12
YB-10	100	19	14	50	17	62	21, depth 14

Part no.	Bore size (mm)	T1	T2	V	W	RS	Weight (g)
YB-03	32, 40	6.5	10	18	50	9	80
YB-05	50, 63	6.5	12	22	60	11	120
YB-08	80	8.5	16	28	75	14	230
YB-10	100	10.5	18	36	90	18	455

Series CLQ Auto Switch Specifications

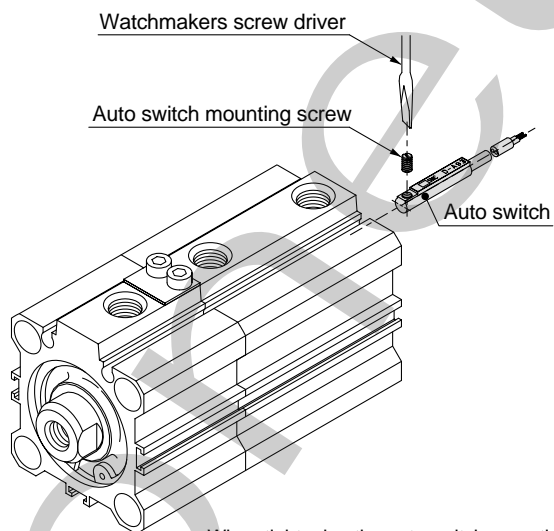
Applicable Auto Switches

Auto switch type	Auto switch model	Electrical entry/Function	Applicable bore size	
Reed switch	D-A7□/A80	Grommet (perpendicular)	ø32 to ø100	
	D-A7□H/A80H	Grommet (in-line)		
	D-A73C/A80C	Connector		
	D-A79W	Grommet (2 color indication, perpendicular)	ø20 to ø100	
	D-A9□	Grommet (in-line)		
Solid state switch	D-A9□V	Grommet (perpendicular)	ø32 to ø100	
	D-F7□/J79	Grommet (in-line)		
	D-F7□V	Grommet (perpendicular)		
	D-J79C	Connector		
	D-F7□W/J79W	Grommet (2 color indication, in-line)		
	D-F7□WV	Grommet (2 color indication, perpendicular)		
	D-F7BAL	Grommet (2 color indication, water resistant, in-line)		
	D-F79F	Grommet (2 color indication, with diagnostic output, in-line)		
	D-F7LF	Grommet (2 color indication, latch type with diagnostic output, in-line)		
	D-F7NTL	Grommet (with timer, in-line)		
	D-F9□	Grommet (in-line)		ø20 to ø100
	D-F9□V	Grommet (perpendicular)		
	D-F9□W	Grommet (2 color indication, in-line)		
D-F9□WV	Grommet (2 color indication, perpendicular)			
D-F9BAL	Grommet (2 color indication, water resistant, in-line)			

Auto Switch Mounting

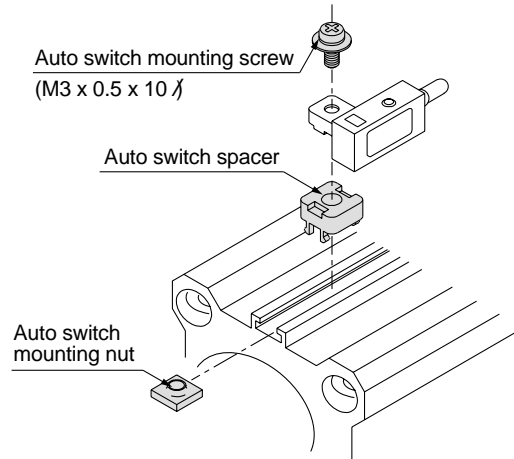
Follow the procedures below to mount auto switches.

ø20 to ø100/Direct mount



- When tightening the auto switch mounting screw, use a watchmakers screw driver with a handle about 5 to 6mm in diameter. Tighten with a torque of 0.10 to 0.20N-m.

ø32 to ø100/Rail mount

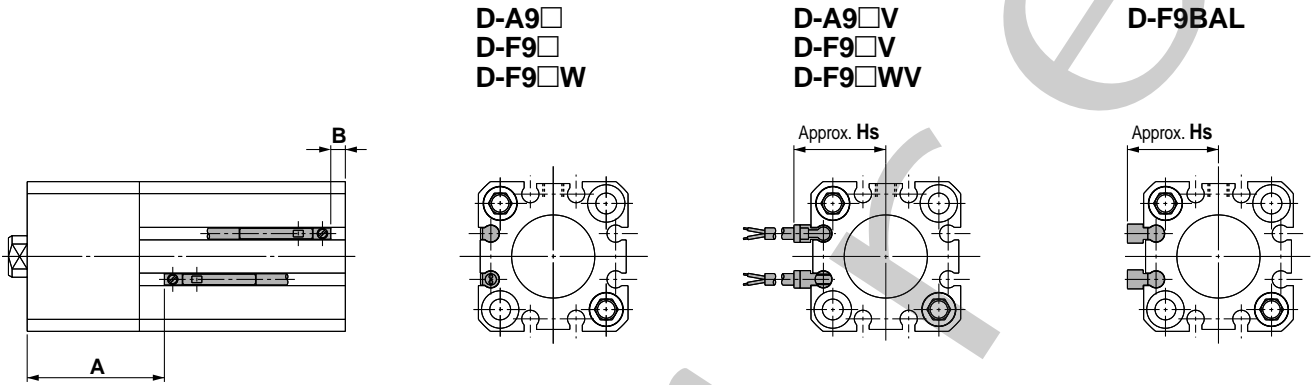


- Use a tightening torque of 0.5 to 0.7N-m for auto switch mounting screws.

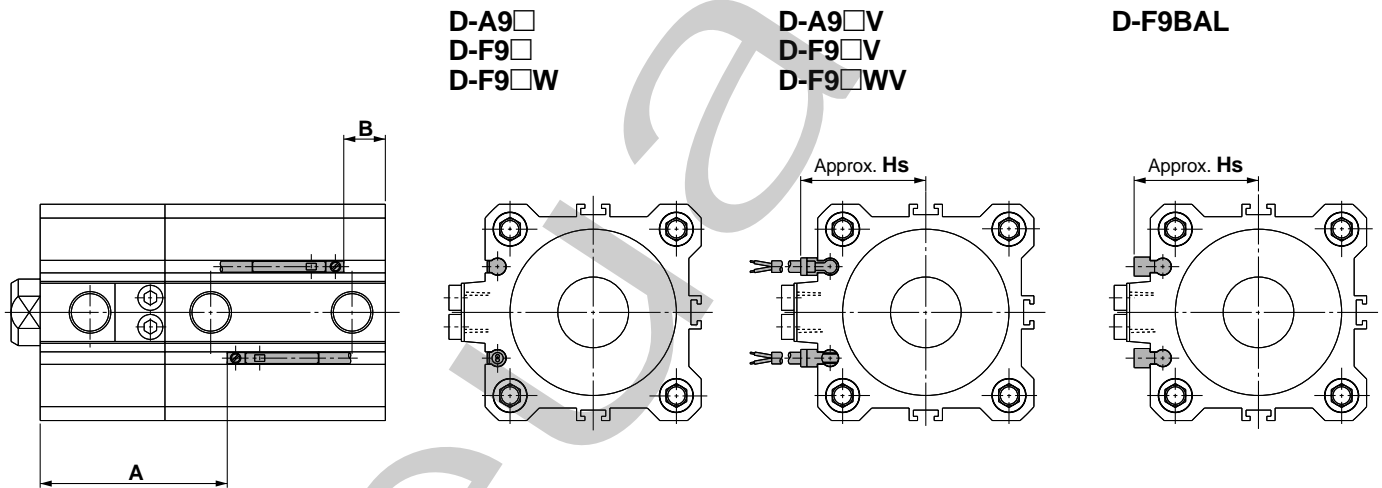
* Auto switch mounting brackets are packed together for cylinders with built-in magnets.

Auto Switches/Proper Mounting Positions and Height for Stroke End Detection

ø20, ø25



ø32 to ø100



Proper auto switch mounting positions (mm)

Bore size (mm)	D-A9□ D-A9□V		D-F9□ D-F9□V D-F9□W D-F9□WV		D-F9BAL	
	A	B	A	B	A	B
	20	33	3.5	37	7.5	36
25	38	5.5	42	9.5	41	8.5
32	40	5	44	9	43	8
40	46	7.5	50	11.5	49	10.5
50	45	10.5	49	14.5	48	13.5
63	50.5	13.5	54.5	17.5	53.5	16.5
80	59.5	17	63.5	21	62.5	20
100	70	23	74	27	73	26

Auto switch mounting height (mm)

Bore size (mm)	D-A9□V	D-F9□V D-F9□WV	D-F9BAL
	Hs	Hs	Hs
20	22.5	25	22
25	24.5	27	24
32	27	29	26.5
40	30.5	32.5	30
50	36.5	38.5	36
63	40	42	39.5
80	50	52	49.5
100	60	62	59.5

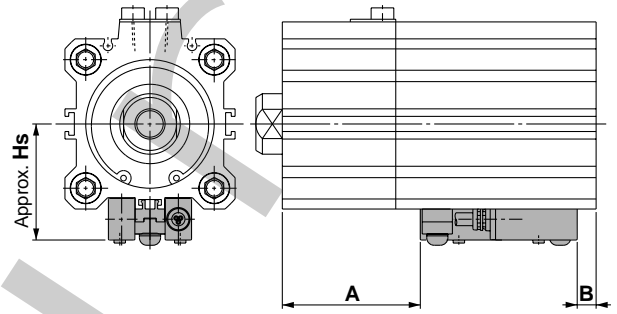
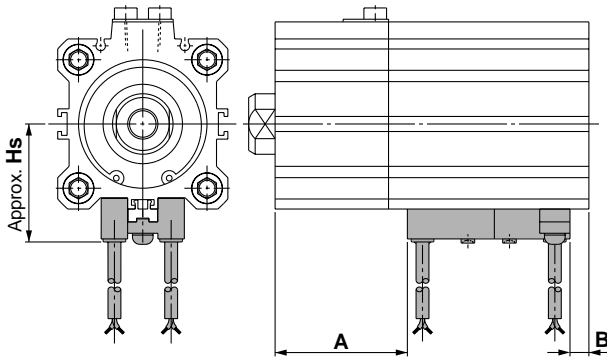
Series CLQ

Auto Switches/Proper Mounting Positions and Height for Stroke End Detection

ø32 to ø100

D-A7□
D-A80

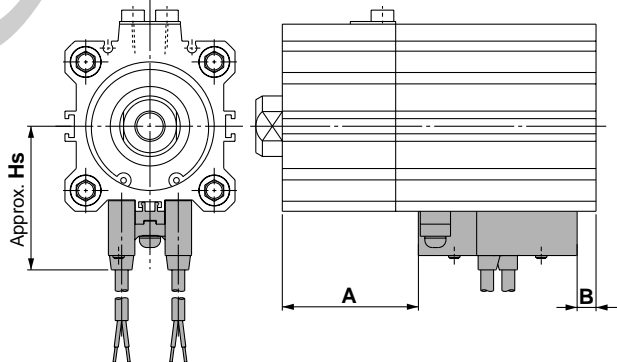
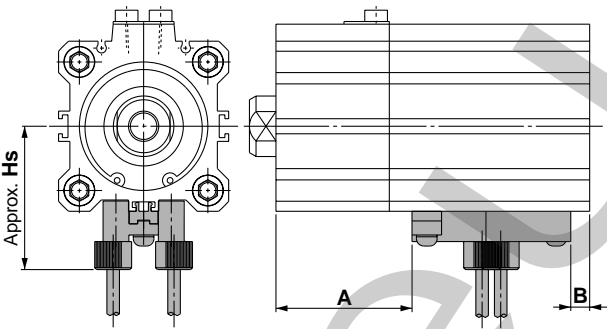
D-A7□H D-J79W
D-A80H D-F7□F
D-F7□ D-F7NT
D-J79 D-F7BAL
D-F7□W



ø32 to ø100

D-A73C
D-A80C
D-J79C

D-A79W
D-F7□WV
D-F7□V



Proper auto switch mounting positions (mm)

Bore size (mm)	D-A7□/A80		D-A7□H/A80H D-A73C/A80C D-F7□/J79 D-F7□V/J79C		D-A79W		D-F79W D-F7BA D-F7□W D-F7□F D-J79W D-F7□WV	
	A	B	A	B	A	B	A	B
20	—	—	—	—	—	—	—	—
25	—	—	—	—	—	—	—	—
32	41	6	41.5	6.5	38.5	3.5	45.5	10.5
40	47	8.5	47.5	9	44.5	6	51.5	13
50	46	11.5	46.5	12	43.5	9	50.5	16
63	51.5	14.5	52	15	49	12	56	19
80	60.5	18	61	18.5	58	15.5	65	22.5
100	71	24	71.5	24.5	68.5	21.5	75.5	28.5

Auto switch mounting height (mm)

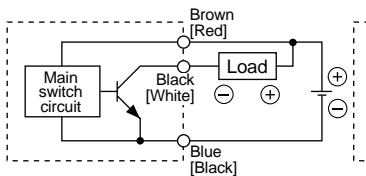
Bore size (mm)	D-A7□ D-A80	D-A7□H D-A80H D-F7□ D-J79 D-F7□W	D-J79W D-F7BAL D-F7□F D-F7NTL	D-A73C D-A80C	D-F7□V D-F7□WV	D-J79C	D-A79W
	Hs	Hs	Hs	Hs	Hs	Hs	Hs
20	—	—	—	—	—	—	—
25	—	—	—	—	—	—	—
32	31.5	32.5	38.5	35	38	34	—
40	35	36	42	38.5	41.5	37.5	—
50	41	42	48	44.5	47.5	43.5	—
63	47.5	48.5	54.5	51	54	50	—
80	57.5	58.5	64.5	61	64	60	—
100	67.5	68.5	74.5	71	74	70	—

Series CLQ Auto Switch Connections and Examples

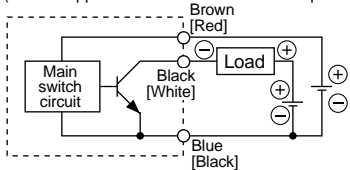
Basic Wiring

Lead wire colors inside [] are those prior to conformity with IEC standards.

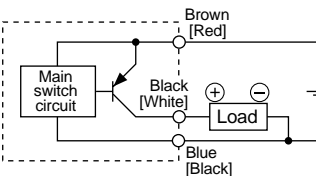
Solid state 3 wire, NPN



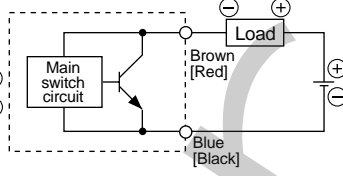
(Power supplies for switch and load are separate.)



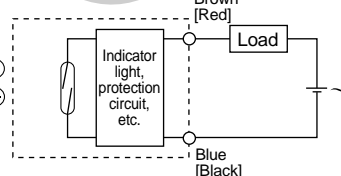
Solid state 3 wire, PNP



2 wire (Solid state)



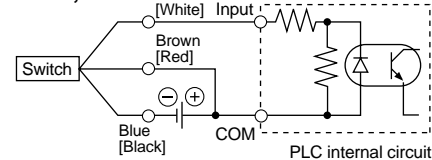
2 wire (Reed switch)



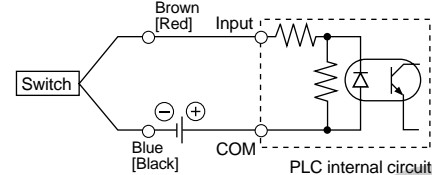
Examples of Connection to PLC

Sink input specifications

3 wire, NPN

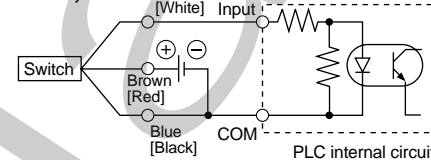


2 wire

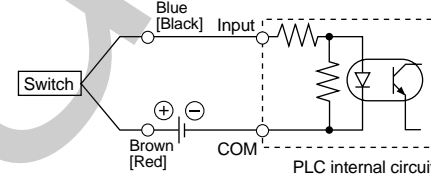


Source input specifications

3 wire, PNP



2 wire

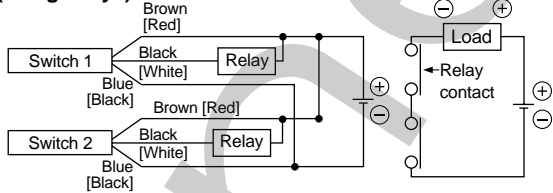


Connect according to the applicable PLC input specifications, as the connection method will vary depending on the PLC input specifications.

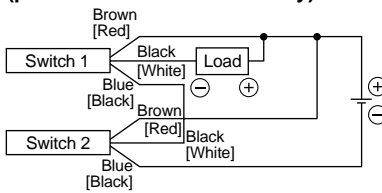
Connection Examples for AND (Series) and OR (Parallel)

3 wire

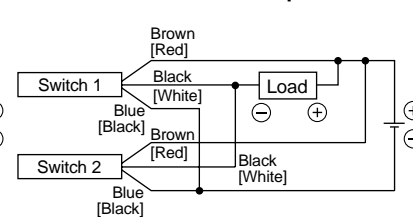
AND connection for NPN output (using relays)



AND connection for NPN output (performed with switches only)

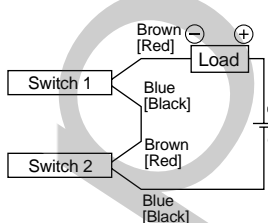


OR connection for NPN output



The indicator lights will light up when both switches are turned ON.

2 wire with 2 switch AND connection

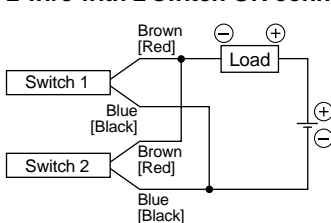


When two switches are connected in series, a load may malfunction because the load voltage will decline when in the ON state. The indicator lights will light up if both of the switches are in the ON state.

$$\begin{aligned} \text{Load voltage at ON} &= \text{Power supply voltage} - \text{Internal voltage drop} \times 2 \text{ pcs.} \\ &= 24\text{V} - 4\text{V} \times 2 \text{ pcs.} \\ &= 16\text{V} \end{aligned}$$

Example: Power supply is 24VDC
Internal voltage drop in switch is 4V

2 wire with 2 switch OR connection



(Solid state)
When two switches are connected in parallel, malfunction may occur because the load voltage will increase when in the OFF state.

(Reed switch)
Because there is no current leakage, the load voltage will not increase when turned OFF. However, depending on the number of switches in the ON state, the indicator lights may sometimes dim or not light up, because of dispersion and reduction of the current flowing to the switches.

$$\begin{aligned} \text{Load voltage at OFF} &= \text{Leakage current} \times 2 \text{ pcs.} \times \text{Load impedance} \\ &= 1\text{mA} \times 2 \text{ pcs.} \times 3\text{k}\Omega \\ &= 6\text{V} \end{aligned}$$

Example: Load impedance is 3kΩ
Leakage current from switch is 1mA