Compact Cylinder: Standard Type
Double Acting, Single Rod
Series CQ2
ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100

How to Order

Without auto switch CQ2 B □ 20 □ – 30 D □

With auto switch CDQ2 B □ 20 □ – 30 D □ – J79W S

Built-in magnet

Mounting style

B	Through-hole (Standard)	F	Rod side flange style
A	Both ends tapped style	G	Head side flange style
L	Foot style	D	Double clevis style

∗ Mounting brackets are shipped together, (but not assembled).

Type

Nil	Pneumatic
H	Air-hydro Note)

Note) Bore sizes available for air-hydro type are ø20 to ø100.

Bore size

12	12 mm	40	40 mm
16	16 mm	50	50 mm
20	20 mm	63	63 mm
25	25 mm	80	80 mm
32	32 mm	100	100 mm

Piping

Nil	Screw-in piping
F	Built-in One-touch fittings Note)

Note) Bore sizes available w/ One-touch fittings are ø32 to ø63. Besides, it is not possible to use for air-tydro type.

Cylinder stroke (mm)

For "Standard Stroke" and "Manufacture of intermediate of Stroke", refer to page 7-6-3.

Action

D	Double acting

Body option

Nil	Standard (Rod end female thread)
F	With boss in head side
C	With rubber bumper
M	Rod end male thread Note)

∗ Combination of body options ("CM", "FC", "FM", "FCM") is available.
Note) Air-hydro type with rubber bumper is not available.

Auto switch

Nil	Without auto switch (Built-in magnet)

∗ For the applicable auto switch model, refer to the table below.

Number of auto switches

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

Applicable Auto Switch/Refer to page 7-9-1 for further information on auto switches.

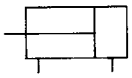
Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC	Load voltage DC	Load voltage AC	Rail mounting ø12 to ø100 Perpendicular	Rail mounting ø12 to ø100 In-line	Direct mounting ø32 to ø100 Perpendicular	Direct mounting ø32 to ø100 In-line	Lead wire length (m) ∗ 0.5 (Nil)	3 (L)	5 (Z)	None (N)	Pre-wire connector	Applicable load	
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5V	—	—	A76H	A96V	A96	●	●	—	—	—	IC circuit	—
				2-wire	—	—	200 V	A72	A72H	—	—	●	●	—	—	—	—	Relay, PLC
					24 V	12 V	100 V	A73	A73H	—	—	●	●	●	—	—		
								—	—	A93V	A93	●	●	—	—	—		
		Connector					—	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		12 V		F7BV	J79	M9BV	M9B	●	●	○	—	○	—	
		Connector						J79C	—	—	—	●	●	●	●	—		
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)		5 V, 12 V		F7NWV	F79W	F9NWV	F9NW	●	●	○	—	○	IC circuit	
				3-wire (PNP)				—	F7PW	F9PWV	F9PW	●	●	○	—	○		
				2-wire		12 V		F7BWV	J79W	F9BWV	F9BW	●	●	○	—	○		
	Water resistant (2-color indication)							—	F7BA	—	F9BA	—	●	○	—	○	—	
								F7BAV	—	—	—	—	●	○	—	—		
	With diagnostic output (2-color indication)			4-wire (NPN)		5 V, 12 V		—	F79F	—	—	●	●	○	—	○	IC circuit	
	Magnetic field resistant (2-color indication)			2-wire		—		—	P5DW	—	—	—	●	●	—	○	—	

∗ Lead wire length symbols: 0.5 m ····· Nil (Example) A73C
3 m ····· L (Example) A73CL
5 m ····· Z (Example) A73CZ
None ····· N (Example) A73CN

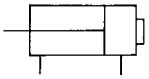
∗ Solid state switches marked with "○" are produced upon receipt of order.

• D-P5DWL type is available from ø40 up to ø100 only.
• There are other applicable auto switches other than the listed above. For details, refer to page 7-6-23.
• For details about auto switches with pre-wire connector, refer to page 7-9-36.

JIS Symbol
Double acting, Single rod



JIS Symbol
With boss in head side



Standard Stroke

Pneumatic

Bore size (mm)	Standard stroke (mm)
12, 16	5, 10, 15, 20, 25, 30
20, 25	5, 10, 15, 20, 25, 30, 35, 40, 45, 50
32, 40	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100
50 to 100	10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100

● When stroke exceeds the standard range, refer to page 7-6-121.

Air-hydro

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

Mounting Bracket Part No.

Bore size (mm)	Foot [4]	Flange	Double clevis [5]
12	CQ-L012	CQ-F012	CQ-D012
16	CQ-L016	CQ-F016	CQ-D016
20	CQ-L020	CQ-F020	CQ-D020
25	CQ-L025	CQ-F025	CQ-D025
32	CQ-L032	CQ-F032	CQ-D032
40	CQ-L040	CQ-F040	CQ-D040
50	CQ-L050	CQ-F050	CQ-D050
63	CQ-L063	CQ-F063	CQ-D063
80	CQ-L080	CQ-F080	CQ-D080
100	CQ-L100	CQ-F100	CQ-D100

Note 4) When ordering foot bracket, order 2 pieces per cylinder.
Note 5) Parts belonging to each bracket are as follows. Foot, Flange: Body mounting bolt/Double clevis: Clevis pin, Type C snap ring for axis, body mounting bolt

Type

Bore size (mm)			12	16	20	25	32	40	50	63	80	100
Pneumatic	Mounting	Through-hole (Standard)	●	●	●	●	●	●	●	●	●	●
		Both ends tapped style	●	●	●	●	●	●	●	●	●	●
	Built-in magnet		●	●	●	●	●	●	●	●	●	●
	Piping	Screw-in type	M5 x 0.8	M5 x 0.8	M5 x 0.8	M5 x 0.8	M5 x 0.8 Rc 1/8 [1]	Rc 1/8	Rc 1/4	Rc 1/4	Rc 3/8	Rc 3/8
		Built-in One-touch fittings	—	—	—	—	ø6/4 [2]	ø6/4	ø8/6	ø8/6	—	—
	Rod end male thread		●	●	●	●	●	●	●	●	●	●
	With rubber bumper		●	●	●	●	●	●	●	●	●	●
	With boss in head side		●	●	●	●	●	●	●	●	●	●
Air-hydro	Mounting	Through-hole (Standard)	—	—	●	●	●	●	●	●	●	●
		Both ends tapped style	—	—	●	●	●	●	●	●	●	●
	Built-in magnet		—	—	●	●	●	●	●	●	●	●
	Piping	Screw-in type	—	—	M5 x 0.8	M5 x 0.8	M5 x 0.8 Rc 1/8 [1]	Rc 1/8	Rc 1/4	Rc 1/4	Rc 3/8	Rc 3/8
	Rod end male thread		—	—	●	●	●	●	●	●	●	●
	With boss in head side		—	—	●	●	●	●	●	●	●	●

Note 1) In the case of without auto switch, M5 x 0.8 is used for 5 stroke only.
Note 2) In the case of built-in fitting, the 5 mm stroke with ø32 bore is the same external dimensions as 10 mm stroke.

Specifications

Type	Pneumatic (Non-lube)	Air-hydro
Fluid	Air	Turbine oil [3]
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)	Air-hydro 5 to 60°C
Rubber bumper	None	——
Rod end thread	Female thread	
Rod end thread tolerance	JIS class 2	
Stroke length tolerance	$^{+1.0}_{0}$	
Mounting	Through-hole	
Piston speed	50 to 500 mm/s	5 to 50 mm/s

Note 3) For caution on handling, refer to page 7-13-6.
∗ For applications involving lateral loads, refer to anti-lateral load type on page 7-13-132.

Minimum Operating Pressure

(MPa)

Bore size (mm)	12	16	20	25	32	40	50	63	80	100
Pneumatic (Non-lube)	0.07		0.05							
Air-hydro	—		0.18			0.10				

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. on page 7-6-2.		Suffix "-XB10" to the end of standard model no. on page 7-6-2.	
Description	Dealing with intermediate stroke by the 1 mm interval is available by using spacer with standard stroke cylinder.		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
	32 to 100	1 to 99	32, 40	6 to 99
			50 to 100	11 to 99
Example	Part No.: CQ2B50-57D 18 mm width spacer is installed in the standard CQ2B50-75D. B dimension is 115.5 mm.		Part no. CQ2B50-57D-XB10 Makes 57 stroke tube. B dimension is 97.5 mm.	

- Air-hydro type is excluded.
- In the case of spacer type, intermediate stroke with damper for ø40 to ø100, it can be manufactured by 5 mm intervals in 5 mm and 55 to 95 mm.
- In the case of an exclusive body with ø32 to ø100 (-XB10) with the stroke length exceeding 50 mm, the reference values of the longitudinal dimension will be changed. Calculate length dimensions by deducting from those of 75 or 100 mm stroke models.
- Regarding the long stroke which exceeds the stroke range, refer to page 7-6-121 for the long stroke type of either CQ2 or CQS.

Made to Order Specifications
(For details, refer to page 7-10-1.)

Symbol	Specifications
-XA□	Change of rod end shape
-XB6	Heat resistant cylinder (150°C) w/o auto switch only
-XB7	Cold resistant cylinder w/o auto switch only
-XB9	Low speed cylinder (10 to 50 mm/s)
-XB10	Intermediate stroke (Using exclusive body)
-XB11	Long stroke type, Air-hydro type only
-XB13	Low speed cylinder (5 to 50 mm/s)
-XB14	Cylinder with heat resistant auto switch ø16 to 63 only
-XB18	Low friction cylinder, ø32 to 100 only
-XC4	With heavy duty scraper, ø20 to 100 only
-XC6	Piston rod and rod end nut made of stainless steel
-XC8	Adjustable stroke cylinder/Adjustable extension type
-XC9	Adjustable stroke cylinder/Adjustable retraction type
-XC10	Dual stroke cylinder/Double rod type
-XC11	Dual stroke cylinder/Single rod type
-XC18	NPT finish piping port
-XC35	With coil scraper, ø32 to 100 only
-XC36	With boss in rod side
-XC58	Water resistance improved type/Built-in hard plastic magnet, ø20 to 100 only
-XC59	Fluoro rubber for seal/Built-in hard plastic magnet, ø20 to 100 only
-X202	Same overall length dimension as Series CQ1, Except ø16, 25
-X203	Same L dimension from rod cover as Series CQ1, ø20, 32 only
-X293	Same overall length as Series CQ1W, Except ø16, 25
-X144	Change of port location, ø12 to 25 only
-X271	Fluoro rubber for seals
-X525	Long stroke of adjustable extension stroke cylinder (-XC8)
-X526	Long stroke of adjustable retraction stroke cylinder (-XC9)
-X636	Intermediate stroke of double rod type

⚠Precautions

Be sure to read before handling. For Safety Instructions and Actuator Precautions, refer to pages 7-13-3 to 7-13-6.

⚠Caution

Snap Ring Installation/Removal

1. For installation and removal, use an appropriate pair of pliers (tool for installing a type C snap ring).

2. 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

Table (1) Load Weight and Piston Speed (J)

Bore size (mm)	12	16	20	25	32	40	50	63	80	100
Standard Allowable kinetic energy: Ea	0.022	0.038	0.055	0.09	0.15	0.26	0.46	0.77	1.36	2.27
With rubber bumper Allowable kinetic energy: Eb	0.043	0.075	0.110	0.18	0.29	0.52	0.91	1.54	2.71	4.54

Kinetic energy $E\ (J) = \frac{(m1+m2)\ V^2}{2}$

m1: Weight of cylinder operating part kg
m2: Load weight kg
V: Piston speed m/s

Table (2) Weight of Cylinder Movable Parts/Without Built-in Magnet (g)

Bore size (mm)	Cylinder stroke (mm)											
	5	10	15	20	25	30	35	40	45	50	75	100
12	5	6	7	8	10	11	—	—	—	—	—	—
16	9	11	13	15	17	19	—	—	—	—	—	—
20	15	18	21	24	27	31	34	37	40	44	—	—
25	24	28	33	37	42	46	51	55	60	64	—	—
32	45	52	60	68	76	84	92	100	107	115	170	209
40	64	72	80	88	96	104	112	119	127	135	190	229
50	—	117	129	141	153	166	178	190	202	214	300	361
63	—	153	165	177	190	202	214	226	239	251	337	398
80	—	270	289	308	327	347	366	385	404	423	557	653
100	—	487	515	543	570	598	625	653	681	708	901	1038

Table (3) Weight of Cylinder Movable Parts/With Built-in Magnet (g)

Bore size (mm)	Cylinder stroke (mm)											
	5	10	15	20	25	30	35	40	45	50	75	100
12	8	9	10	11	12	13	—	—	—	—	—	—
16	16	18	20	22	24	26	—	—	—	—	—	—
20	28	31	34	37	40	44	47	50	53	56	—	—
25	44	48	53	57	62	66	71	75	80	84	—	—
32	78	86	93	101	109	117	125	133	140	148	187	227
40	109	117	125	133	140	148	156	164	172	180	219	258
50	—	187	199	211	223	236	248	260	272	285	346	407
63	—	254	266	278	290	303	315	327	339	352	413	474
80	—	433	453	472	491	510	530	549	568	587	683	778
100	—	741	768	796	823	851	879	906	934	962	1099	1236

Table (4) (g)

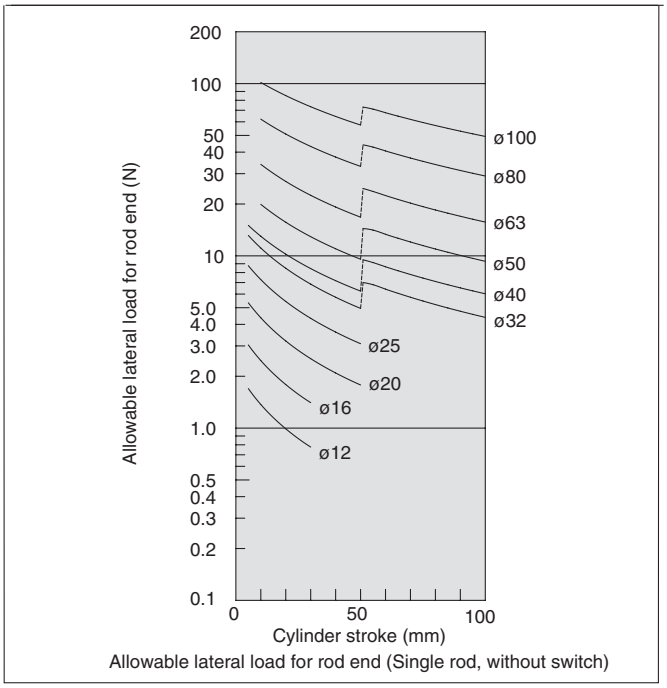
Bore size (mm)		12	16	20	25	32	40	50	63	80	100
Rod end male thread	Thread	1.5	3	6	12	26	27	53	53	120	175
	Nut	1	2	4	8	17	17	32	32	49	116
With rubber bumper		0	0	–2	–3	–3	–7	–9	–18	–31	–56

Calculation: (Example) CDQ2B32-20DCM
- Cylinder weight: CDQ2B32-20D·····101 g
- Option weight: Rod end male thread····· 43 g
  Rubber bumper·····–3 g

141 g

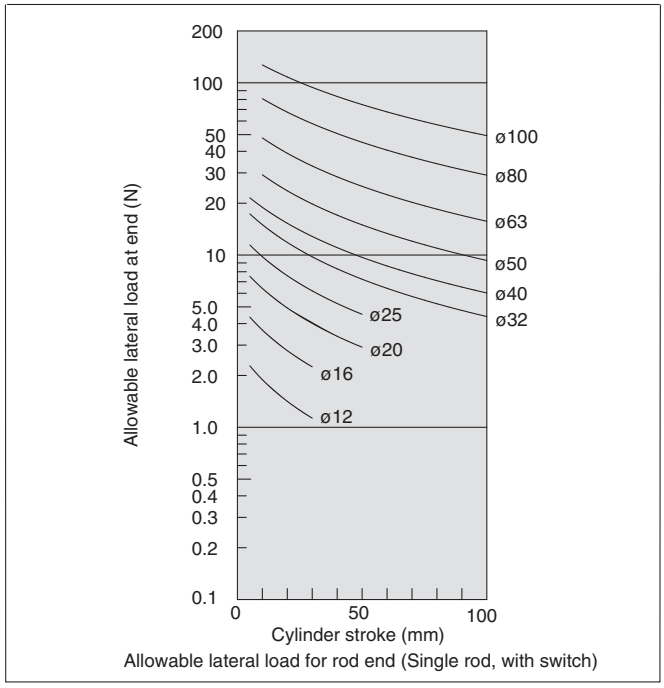
Allowable Lateral Load at Rod End

Without Auto Switch



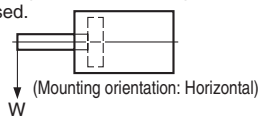
Allowable lateral load for rod end (Single rod, without switch)

With Auto Switch



Allowable lateral load for rod end (Single rod, with switch)

If an allowable lateral load at rod end is exceeding the value in the graph, we recommend anti-lateral load type cylinder be used.



Theoretical Output

(N)

Bore size (mm)	Operating direction	Operating pressure (MPa)		
		0.3	0.5	0.7
12	IN	25	42	59
	OUT	34	57	79
16	IN	45	75	106
	OUT	60	101	141
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

(g)

Bore size (mm)	Cylinder stroke (mm)											
	5	10	15	20	25	30	35	40	45	50	75	100
12	29	35	41	47	54	60	—	—	—	—	—	—
16	42	50	59	67	76	84	—	—	—	—	—	—
20	63	75	88	101	114	127	140	152	165	178	—	—
25	86	100	115	129	144	158	173	187	202	216	—	—
32	131	152	173	193	214	235	256	277	297	318	471	576
40	206	229	252	275	298	321	344	367	390	413	597	717
50	—	369	405	441	477	514	550	586	622	659	951	1139
63	—	538	579	620	661	702	742	783	824	865	1213	1424
80	—	997	1064	1132	1200	1268	1336	1404	1471	1539	2111	2446
100	—	1738	1829	1920	2011	2101	2192	2283	2374	2464	3269	3729

Additional Weight

(g)

Bore size (mm)		12	16	20	25	32	40	50	63	80	100
Both ends tapped style		2	2	6	6	6	6	6	19	45	45
Rod end male thread	Thread	1.5	3	6	12	26	27	53	53	120	175
	Nut	1	2	4	8	17	17	32	32	49	116
With boss in head side		0.7	1.3	2	3	5	7	13	25	45	96
With rubber bumper		0	0	–2	–3	–3	–7	–9	–18	–31	–56
Built-in One-touch fittings		—	—	—	—	12	12	21	21	—	—
Foot style (Including mounting bolt)		55	67	164	186	143	155	243	324	696	1062
Rod side flange style (Including mounting bolt)		57	69	139	161	180	214	373	559	1056	1365
Rear flange style (Including mounting bolt)		54	65	133	152	165	198	348	534	1017	1309
Double clevis style (Including pin, snap ring, bolt)		32	39	88	123	151	196	393	554	1109	1887

Calculation: (Example) CQ2D32-20DCM

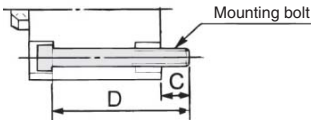
- Cylinder weight: CQ2B32-20D ····· 193 g
- Option weight: Both ends tapped style ····· 6 g
  Rod end male thread ····· 43 g
  Rubber bumper ····· –3 g
  Double clevis style ····· 151 g

390 g

Mounting Bolt for CQ2

Mounting method: Mounting bolt for through-hole mounting style of CQ2B is available as an option.

Ordering: Add the word "Bolt" in front of the bolts to be used.
Example) Bolt M3 x 25ℓ 4 pcs.

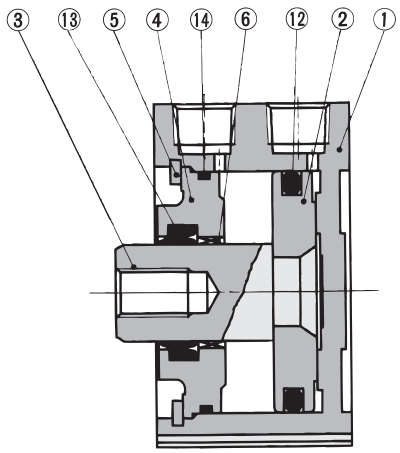


Model	C	D	Mounting bolt
CQ2B12-5D	6.5	25	M3 x 25ℓ
-10D		30	x 30ℓ
-15D		35	x 35ℓ
-20D		40	x 40ℓ
-25D		45	x 45ℓ
-30D		50	x 50ℓ
CQ2B16-5D	5	25	M3 x 25ℓ
-10D		30	x 30ℓ
-15D		35	x 35ℓ
-20D		40	x 40ℓ
-25D		45	x 45ℓ
-30D		50	x 50ℓ
CQ2B20-5D	7.5	25	M5 x 25ℓ
-10D		30	x 30ℓ
-15D		35	x 35ℓ
-20D		40	x 40ℓ
-25D		45	x 45ℓ
-30D		50	x 50ℓ
-35D		55	x 55ℓ
-40D		60	x 60ℓ
-45D		65	x 65ℓ
-50D		70	x 70ℓ
CQ2B25-5D	9.5	30	M5 x 30ℓ
-10D		35	x 35ℓ
-15D		40	x 40ℓ
-20D		45	x 45ℓ
-25D		50	x 50ℓ
-30D		55	x 55ℓ
-35D		60	x 60ℓ
-40D		65	x 65ℓ
-45D		70	x 70ℓ
-50D		75	x 75ℓ

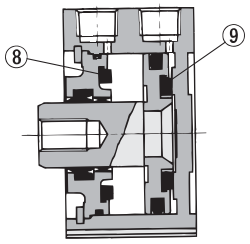
Model	C	D	Mounting bolt
CQ2B32-5D	9	30	M5 x 30ℓ
-10D		35	x 35ℓ
-15D		40	x 40ℓ
-20D		45	x 45ℓ
-25D		50	x 50ℓ
-30D		55	x 55ℓ
-35D		60	x 60ℓ
-40D		65	x 65ℓ
-45D		70	x 70ℓ
-50D		75	x 75ℓ
-75D		110	x 110ℓ
-100D		135	x 135ℓ
CQ2B40-5D	7.5	35	M5 x 35ℓ
-10D		40	x 40ℓ
-15D		45	x 45ℓ
-20D		50	x 50ℓ
-25D		55	x 55ℓ
-30D		60	x 60ℓ
-35D		65	x 65ℓ
-40D		70	x 70ℓ
-45D		75	x 75ℓ
-50D		80	x 80ℓ
-75D		115	x 115ℓ
-100D		140	x 140ℓ
CQ2B50-10D	12.5	45	M6 x 45ℓ
-15D		50	x 50ℓ
-20D		55	x 55ℓ
-25D		60	x 60ℓ
-30D		65	x 65ℓ
-35D		70	x 70ℓ
-40D		75	x 75ℓ
-45D		80	x 80ℓ
-50D		85	x 85ℓ
-75D		120	x 120ℓ
-100D		145	x 145ℓ

Model	C	D	Mounting bolt
CQ2B63-10D	14.5	50	M8 x 50ℓ
-15D		55	x 55ℓ
-20D		60	x 60ℓ
-25D		65	x 65ℓ
-30D		70	x 70ℓ
-35D		75	x 75ℓ
-40D		80	x 80ℓ
-45D		85	x 85ℓ
-50D		90	x 90ℓ
-75D		125	x 125ℓ
-100D		150	x 150ℓ
CQ2B80-10D	15	55	M10 x 55ℓ
-15D		60	x 60ℓ
-20D		65	x 65ℓ
-25D		70	x 70ℓ
-30D		75	x 75ℓ
-35D		80	x 80ℓ
-40D		85	x 85ℓ
-45D		90	x 90ℓ
-50D		95	x 95ℓ
-75D		130	x 130ℓ
-100D		155	x 155ℓ
CQ2B100-10D	15.5	65	M10 x 65ℓ
-15D		70	x 70ℓ
-20D		75	x 75ℓ
-25D		80	x 80ℓ
-30D		85	x 85ℓ
-35D		90	x 90ℓ
-40D		95	x 95ℓ
-45D		100	x 100ℓ
-50D		105	x 105ℓ
-75D		140	x 140ℓ
-100D		165	x 165ℓ

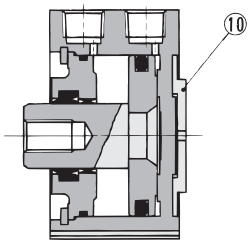
Construction



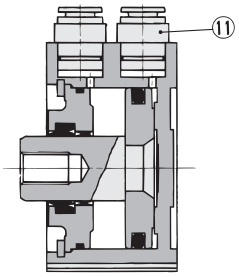
Basic style



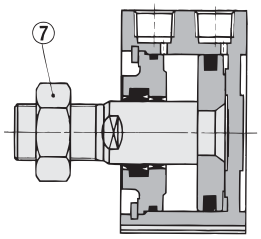
With rubber bumper



With boss in head side



Built-in One-touch fittings



Rod end male thread

Component Parts

No.	Description	Material	Note
①	Cylinder tube	Aluminum alloy	Hard anodized
②	Piston *	Aluminum alloy	Chromated
③	Piston rod *	Stainless steel	ø12 to ø25
		Carbon steel	ø32 to ø100, Hard chrome plated
④	Collar	Aluminum alloy	ø12 to ø40, Anodized
		Aluminum alloy casted	ø50 to ø100, Chromated, painted
⑤	Snap ring	Carbon tool steel	Phosphate coated
⑥	Bushing	Lead-bronze casted	For ø50 or larger only
⑦	Rod end nut	Carbon steel	Nickel plated
⑧	Bumper A	Urethane	

No.	Description	Material	Note
⑨	Bumper B	Resin	
⑩	Centering location ring	Aluminum alloy	Hard anodized ø20 to ø100
⑪	One-touch fitting	—	ø32 to ø63
⑫	Piston seal	NBR	
⑬	Rod seal	NBR	
⑭	Gasket	NBR	

* On bore size ø12 to ø25 with rubber bumper style, piston and piston rod are integrated (Stainless steel).

Replacement Parts: Seal Kit

Series	Bore size (mm)	Kit no.	Contents
Pneumatic	12	CQ2B12-PS	Set of nos. above ⑫, ⑬, ⑭
	16	CQ2B16-PS	
	20	CQ2B20-PS	
	25	CQ2B25-PS	
	32	CQ2B32-PS	
	40	CQ2B40-PS	
	50	CQ2B50-PS	
	63	CQ2B63-PS	
	80	CQ2B80-PS	
	100	CQ2B100-PS	

Series	Bore size (mm)	Kit no.	Contents
Air-hydro	20	CQ2BH20-PS	Set of nos. above ⑫, ⑬, ⑭
	25	CQ2BH25-PS	
	32	CQ2BH32-PS	
	40	CQ2BH40-PS	
	50	CQ2BH50-PS	
	63	CQ2BH63-PS	
	80	CQ2BH80-PS	
	100	CQ2BH100-PS	

* Seal kit includes ⑫ ⑬ ⑭ Order the seal kit, based on each bore size.

Auto Switch Mounting Bracket Part No.

Bore size (mm)	Mounting bracket part no.	Note	Applicable auto switch	
			Reed switch	Solid state switch
12, 16 20, 25	BQ-1	• Switch mounting screw (M3 x 0.5 x 8ℓ) • Square nut	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/F7BAVL D-F79F D-F7NTL
32, 40 50, 63 80, 100	BQ-2	• Switch mounting screw (M3 x 0.5 x 10ℓ) • Switch spacer • Switch mounting nut		
40 to 100	BQP1-050	• Switch mounting bracket • Switch mounting nut • Hexagon hole cap bolt (M3 x 0.5 x 14ℓ spring washer 2 pcs.) • Round head Phillips screw (M3 x 0.5 x 16ℓ springwasher 2 pcs.)	—	D-P5DWL

[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
D-F7BAL/F7BAVL switch is set on the cylinder with the stainless steel screws above when shipped.
When only a switch is shipped independently, BBA2 screws are attached.

Clean Series

10 — **CQ2B** **Bore size** — **Stroke** **D(M)**

- **Clean Series**
  - **10**-Relief type
  - **11**-Vacuum type
- **ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63**

The type which is applicable for using inside the clean room graded Class 100 by making an actuator's rod section a double seal construction and discharging by relief port directly to the outside of clean room.

Specifications

Action	Double acting, Single rod
Bore size (mm)	12, 16, 20, 25, 32, 40, 50, 63
Proof pressure	1.5 MPa
Maximum operating pressure	1.0 MPa
Rubber bumper	None Note)
Piping	Screw-in piping
Piston speed	50 to 500 mm/s
Mounting	Through-hole
Auto switch	Mountable

Note) ø12 with switch: With rubber bumper (Standard)

For details, refer to the separate catalog, "Pneumatic Clean Series".

Copper-free (For CRT manufacturing process)

20 — **CQ2B** **Bore size** — **Stroke** **D(C)(M)**

- **Copper-free**
- **ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100**

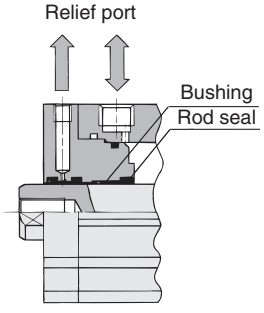
To prevent the influence of copper ions or halogen ions during CRT manufacturing processes, copper and fluorine materials are not used in the component parts.

Specifications

Action	Double acting, Single rod
Bore size (mm)	12, 16, 20, 25, 32, 40, 50, 63, 80, 100
Proof pressure	1.5 MPa
Maximum operating pressure	1.0 MPa
Rubber bumper	With, None
Piping	Screw-in piping
Piston speed	50 to 500 mm/s
Mounting	Both ends tapped style
Auto switch	Mountable

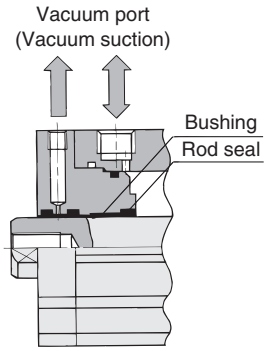
Construction

Series 10-CQ2 (Double seal type)



A relief port is provided in the area between the double rod seals to discharge the exhaust air outside of the clean room. Thus, the amount of dust generated has been reduced to 1/20 of that of an ordinary cylinder.

Series 11-CQ2 (Single seal, Vacuume suction)



Structurally identical to the "10-" series, the outer rod seal has been removed to evacuate through the vacuum port. This draws out any external air from the clearance between the rod and the cover to practically eliminate the generation of external dust. This should be used in an application that requires an even higher level of cleanliness than the 10- series.

Water Resistant

CDQ2 **Mounting** **Bore size** **R** — **Stroke** **D** **Option** **F7BAL** **-XC6**

- With auto switch (Built-in magnet)
- Water resistant 2-color indication solid state switch
- Made to Order specifications

Water resistant cylinder

R	NBR seals (Nitrile rubber)
V	FKM seals (Fluoro rubber)

Ideal for use under the atmosphere having coolant for machine tools, etc. Compatible for the environment, where waterdrops are splashed around the food processing machinery and the car washers, etc.

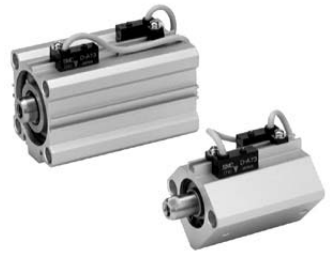
Specifications

Action	Double acting, Single rod
Bore size (mm)	20, 25, 32, 40, 50, 63, 80, 100
Cushion	None
Auto switch mounting	Rail mounting (D-F7BAL)
Made to order	Piston rod/Rod end nut material: Stainless steel (-XC6)

∗ Specifications other than above are the same as standard, basic style.

For detailed specifications, refer to the separate catalog.

* Refer to page 7-9-1 for further information on auto switches.



Minimum Stroke for Auto Switch Mounting

(mm)

No. of auto switches mounted	D-F7□V D-J79C D-F9□V	D-A7□ D-A80 D-A73C D-A80C D-A9□V	D-F7□WV D-F9□WV D-F7BAVL	D-A7□H D-A80H D-F7□ D-J79 D-M9□ D-F9□W	D-A79W	D-F7□W D-J79W D-F7BAL D-F79F D-F9BAL	D-A9□	D-P5DWL
1 pc.	5	5	10	15	15	20	10	30
2 pcs.	5	10	15	15	20	20	10	30

Weight

(g)

Bore size (mm)	Cylinder stroke (mm)											
	5	10	15	20	25	30	35	40	45	50	75	100
12	47	54	60	67	74	80	—	—	—	—	—	—
16	73	82	92	101	110	119	—	—	—	—	—	—
20	109	122	136	150	164	178	191	205	219	233	—	—
25	144	161	178	195	211	228	245	262	278	295	—	—
32	190	211	232	252	273	294	315	335	356	377	482	587
40	282	305	328	351	375	398	421	444	467	490	610	730
50	—	487	523	559	595	632	668	704	740	777	965	1153
63	—	696	737	778	819	860	901	941	982	1023	1235	1446
80	—	1258	1325	1393	1461	1529	1597	1665	1732	1800	2135	2469
100	—	2118	2209	2299	2390	2481	2572	2662	2753	2844	3304	3764

Additional Weight

(g)

Bore size (mm)		12	16	20	25	32	40	50	63	80	100
Both ends tapped style		1	1	3	3	6	6	6	19	45	45
Rod end male thread	Male thread	1.5	3	6	12	26	27	53	53	120	175
	Nut	1	2	4	8	17	17	32	32	49	116
With boss in head side		0.7	1.3	2	3	5	7	13	25	45	96
With rubber bumper		0	–1	–2	–3	–3	–7	–9	–18	–31	–56
Built-in One-touch fittings		—	—	—	—	12	12	21	21	—	—
Foot style (Including mounting bolt)		49	62	147	169	143	155	243	324	696	1062
Rod side flange style (Including mounting bolt)		54	67	131	153	180	214	373	559	1056	1365
Rear flange style (Including mounting bolt)		52	63	124	144	165	198	348	534	1017	1309
Double clevis style (Including pin, snap ring, bolt)		29	35	78	114	151	196	393	554	1109	1887

Calculation: (Example) CDQ2D32-20DCM

- Cylinder weight: CDQ2B32-20D·····252 g
- Option weight: Both ends tapped style·····6 g
  Rod end male thread·····43 g
  Rubber bumper·····–3 g
  Double clevis style·····151 g

449 g

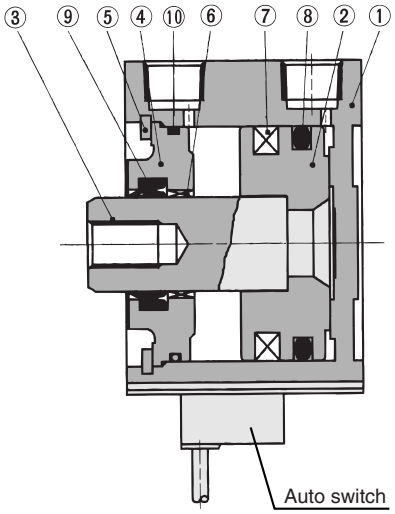
Add each weight of auto switches and mounting brackets.

Auto Switch Mounting Bracket Weight

Mounting bracket part no.	Applicable bore (mm)	Weight (g)
BQ-1	12 to 25	1.5
BQ-2	32 to 100	1.5

For the auto switch weight, refer to page 7-9-1.

Construction



Component Parts

No.	Description	Material	Note
①	Cylinder tube	Aluminum alloy	Hard anodized
②	Piston	Aluminum alloy	Chromated
③	Piston rod	Stainless steel	ø12 to ø25
		Carbon steel	ø32 to ø100, Hard chrome plated
④	Collar	Aluminum alloy	ø12 to ø40, Anodized
		Aluminum alloy casted	ø50 to ø100, Chromated, painted
⑤	Snap ring	Carbon tool steel	Phosphate coated
⑥	Bushing	Lead-bronze casted	For ø50 or larger only
⑦	Magnet	—	
⑧	Piston seal	NBR	
⑨	Rod seal	NBR	
⑩	Gasket	NBR	

Replacement Parts: Seal Kit

Series	Bore size (mm)	Kit no.	Contents
Pneumatic	12	CQ2B12-PS	Set of nos. above ⑧, ⑨, ⑩.
	16	CQ2B16-PS	
	20	CQ2B20-PS	
	25	CQ2B25-PS	
	32	CQ2B32-PS	
	40	CQ2B40-PS	
	50	CQ2B50-PS	
	63	CQ2B63-PS	
	80	CQ2B80-PS	
	100	CQ2B100-PS	

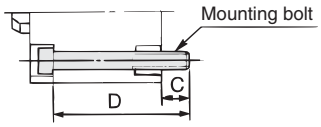
Replacement Parts: Seal Kit

Series	Bore size (mm)	Kit no.	Contents
Air-hydro	20	CQ2BH20-PS	Set of nos. above ⑧, ⑨, ⑩.
	25	CQ2BH25-PS	
	32	CQ2BH32-PS	
	40	CQ2BH40-PS	
	50	CQ2BH50-PS	
	63	CQ2BH63-PS	
	80	CQ2BH80-PS	
	100	CQ2BH100-PS	

∗ Seal kits includes ⑧ ⑨ ⑩. Order the seal kit, based on each bore size.

Mounting Bolt for CDQ2 with Auto Switch

Mounting method: Mounting bolt for through-hole mounting style of CDQ2B is available as an option.
Ordering: Add the word "Bolt" in front of the bolts to be used.
Example) Bolt M3 x 35ℓ 2 pcs.



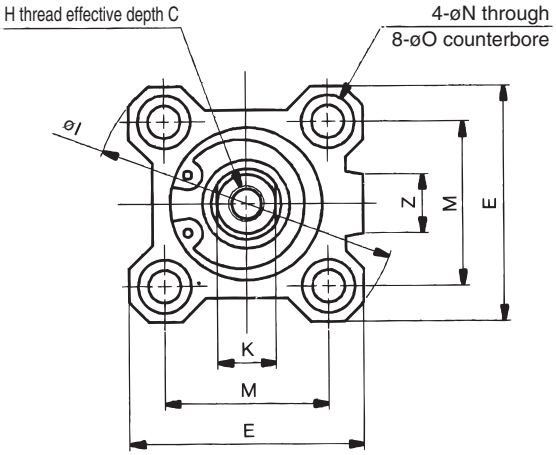
Model	C	D	Mounting bolt
CDQ2B12-5D	5.5	35	M3 x 35ℓ
-10D		40	x 40ℓ
-15D		45	x 45ℓ
-20D		50	x 50ℓ
-25D		55	x 55ℓ
-30D		65	x 60ℓ
CDQ2B16-5D	8	40	M3 x 40ℓ
-10D		45	x 45ℓ
-15D		50	x 50ℓ
-20D		55	x 55ℓ
-25D		60	x 60ℓ
-30D		65	x 65ℓ
CDQ2B20-5D	10.5	40	M5 x 40ℓ
-10D		45	x 45ℓ
-15D		50	x 50ℓ
-20D		55	x 55ℓ
-25D		60	x 60ℓ
-30D		65	x 65ℓ
-35D		70	x 70ℓ
-40D		75	x 75ℓ
-45D		80	x 80ℓ
-50D		85	x 85ℓ
CDQ2B25-5D	9.5	40	M5 x 40ℓ
-10D		45	x 45ℓ
-15D		50	x 50ℓ
-20D		55	x 55ℓ
-25D		60	x 60ℓ
-30D		65	x 65ℓ
-35D		70	x 70ℓ
-40D		75	x 75ℓ
-45D		80	x 80ℓ
-50D		85	x 85ℓ

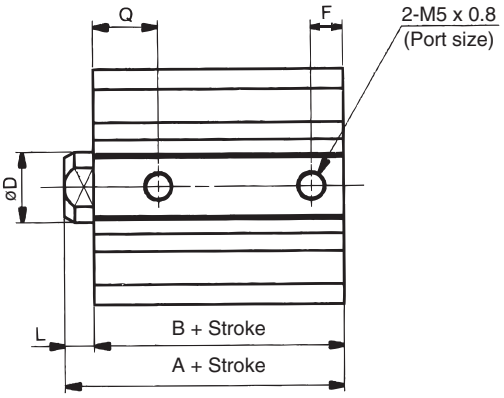
Model	C	D	Mounting bolt
CDQ2B32-5D	9	40	M5 x 40ℓ
-10D		45	x 45ℓ
-15D		50	x 50ℓ
-20D		55	x 55ℓ
-25D		60	x 60ℓ
-30D		65	x 65ℓ
-35D		70	x 70ℓ
-40D		75	x 75ℓ
-45D		80	x 80ℓ
-50D		85	x 85ℓ
-75D		110	x 110ℓ
-100D		135	x 135ℓ
CDQ2B40-5D	7.5	45	M5 x 45ℓ
-10D		50	x 50ℓ
-15D		55	x 55ℓ
-20D		60	x 60ℓ
-25D		65	x 65ℓ
-30D		70	x 70ℓ
-35D		75	x 75ℓ
-40D		80	x 80ℓ
-45D		85	x 85ℓ
-50D		90	x 90ℓ
-75D		115	x 115ℓ
-100D		140	x 140ℓ
CDQ2B50-10D	12.5	55	M6 x 55ℓ
-15D		60	x 60ℓ
-20D		65	x 65ℓ
-25D		70	x 70ℓ
-30D		75	x 75ℓ
-35D		80	x 80ℓ
-40D		85	x 85ℓ
-45D		90	x 90ℓ
-50D		95	x 95ℓ
-75D		120	x 120ℓ
-100D		145	x 145ℓ

Model	C	D	Mounting bolt
CDQ2B63-10D	14.5	60	M8 x 60ℓ
-15D		65	x 65ℓ
-20D		70	x 70ℓ
-25D		75	x 75ℓ
-30D		80	x 80ℓ
-35D		85	x 85ℓ
-40D		90	x 90ℓ
-45D		95	x 95ℓ
-50D		100	x 100ℓ
-75D		125	x 125ℓ
-100D		150	x 150ℓ
CDQ2B80-10D	15	65	M10 x 65ℓ
-15D		70	x 70ℓ
-20D		75	x 75ℓ
-25D		80	x 80ℓ
-30D		85	x 85ℓ
-35D		90	x 90ℓ
-40D		95	x 95ℓ
-45D		100	x 100ℓ
-50D		105	x 105ℓ
-75D		130	x 130ℓ
-100D		155	x 155ℓ
CDQ2B100-10D	15.5	75	M10 x 75ℓ
-15D		80	x 80ℓ
-20D		85	x 85ℓ
-25D		90	x 90ℓ
-30D		95	x 95ℓ
-35D		100	x 100ℓ
-40D		105	x 105ℓ
-45D		110	x 110ℓ
-50D		115	x 115ℓ
-75D		140	x 140ℓ
-100D		165	x 165ℓ

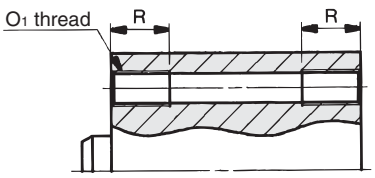
Dimensions: ø12 to ø25

Basic style (Through-hole): CQ2B





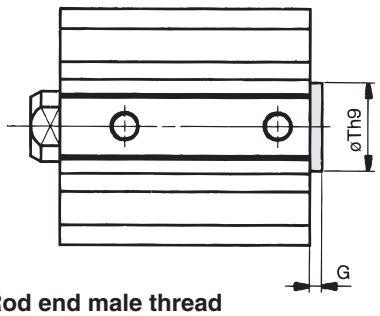
Both ends tapped style: CQ2A



Both Ends Tapped Style

Bore size (mm)	O_1	R
12	M4 x 0.7	7
16	M4 x 0.7	7
20	M6 x 1.0	10
25	M6 x 1.0	10

With boss in head side

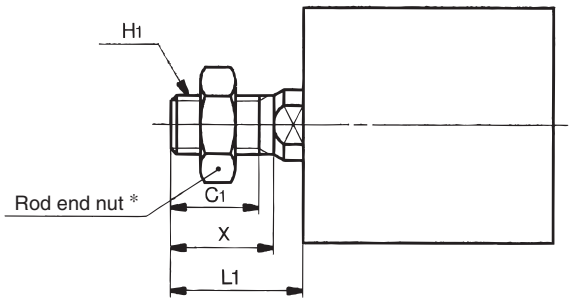


With Boss in Head Side

Bore size (mm)	G	Th9
12	1.5	$15^{0}_{-0.043}$
16	1.5	$20^{0}_{-0.052}$
20	2	$13^{0}_{-0.043}$
25	2	$15^{0}_{-0.043}$

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

Rod end male thread



Rod End Male Thread

Bore size (mm)	C_1	X	H_1	L_1
12	9	10.5	M5 x 0.8	14
16	10	12	M6 x 1.0	15.5
20	12	14	M8 x 1.25	18.5
25	15	17.5	M10 x 1.25	22.5

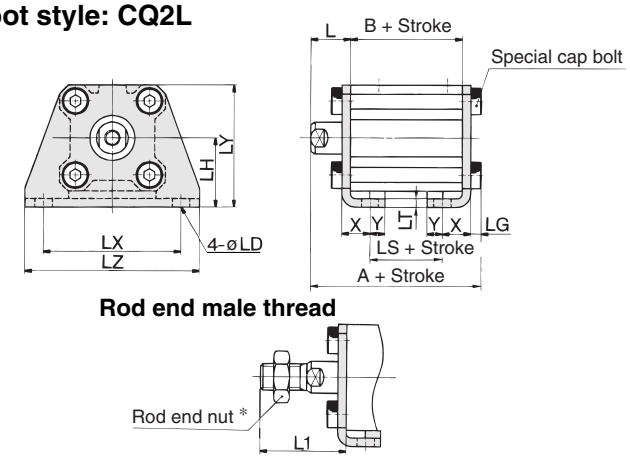
Basic Style

Bore size (mm)	Stroke range (mm)	A	B	C	D	E	F	H	I	K	L	M	N	O	Q	Z
12	5 to 30	20.5	17	6	6	25	5	M3 x 0.5	32	5	3.5	15.5	3.5	6.5 depth 3.5	7.5	—
16	5 to 30	22	18.5	8	8	29	5.5	M4 x 0.7	38	6	3.5	20	3.5	6.5 depth 3.5	8	10
20	5 to 50	24	19.5	7	10	36	5.5	M5 x 0.8	47	8	4.5	25.5	5.5	9 depth 7	9	10
25	5 to 50	27.5	22.5	12	12	40	5.5	M6 x 1.0	52	10	5	28	5.5	9 depth 7	11	10

Note) External dimensions with rubber bumper are same as standard type as shown above.
* For details about the rod end nut and accessory brackets, refer to page 7-6-20.

For calculation on the longitudinal dimension of the intermediate strokes, refer to page 7-6-3.

Foot style: CQ2L

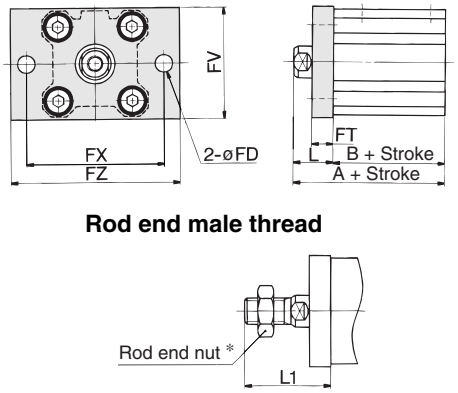


Foot Style

Bore size (mm)	Stroke range (mm)	A	B	L	L1	LD	LG	LH	LS	LT	LX	LY	LZ	X	Y
12	5 to 30	35.3	17	13.5	24	4.5	2.8	17	5	2	34	29.5	44	8	4.5
16	5 to 30	36.8	18.5	13.5	25.5	4.5	2.8	19	6.5	2	38	33.5	48	8	5
20	5 to 50	41.2	19.5	14.5	28.5	6.6	4	24	7.5	3.2	48	42	62	9.2	5.8
25	5 to 50	44.7	22.5	15	32.5	6.6	4	26	7.5	3.2	52	46	66	10.7	5.8

Foot bracket material: Carbon steel

Rod side flange style: CQ2F

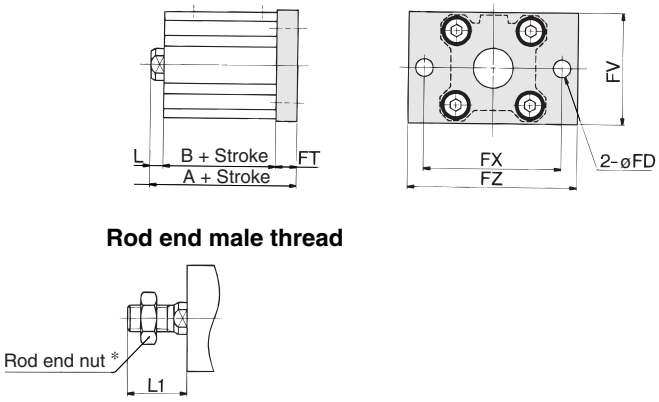


Rod Side Flange Style

Bore size (mm)	Stroke range (mm)	A	B	FD	FT	FV	FX	FZ	L	L1
12	5 to 30	30.5	17	4.5	5.5	25	45	55	13.5	24
16	5 to 30	32	18.5	4.5	5.5	30	45	55	13.5	25.5
20	5 to 50	34	19.5	6.6	8	39	48	60	14.5	28.5
25	5 to 50	37.5	22.5	6.6	8	42	52	64	15	32.5

Flange bracket material: Carbon steel

Head side flange style: CQ2G



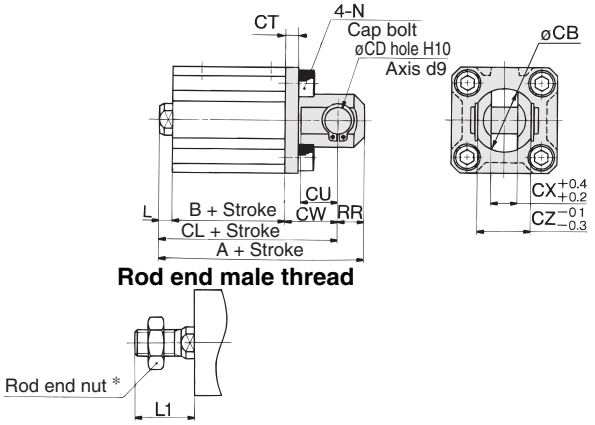
Head Side Flange Style

Bore size (mm)	Stroke range (mm)	A	L	L1
12	5 to 30	26	3.5	14
16	5 to 30	27.5	3.5	15.5
20	5 to 50	32	4.5	18.5
25	5 to 50	35.5	5	22.5

Flange bracket material: Carbon steel

(* Dimensions except A, L and L1 are the same as rod side flange style.)

Double clevis style: CQ2D



Double Clevis Style

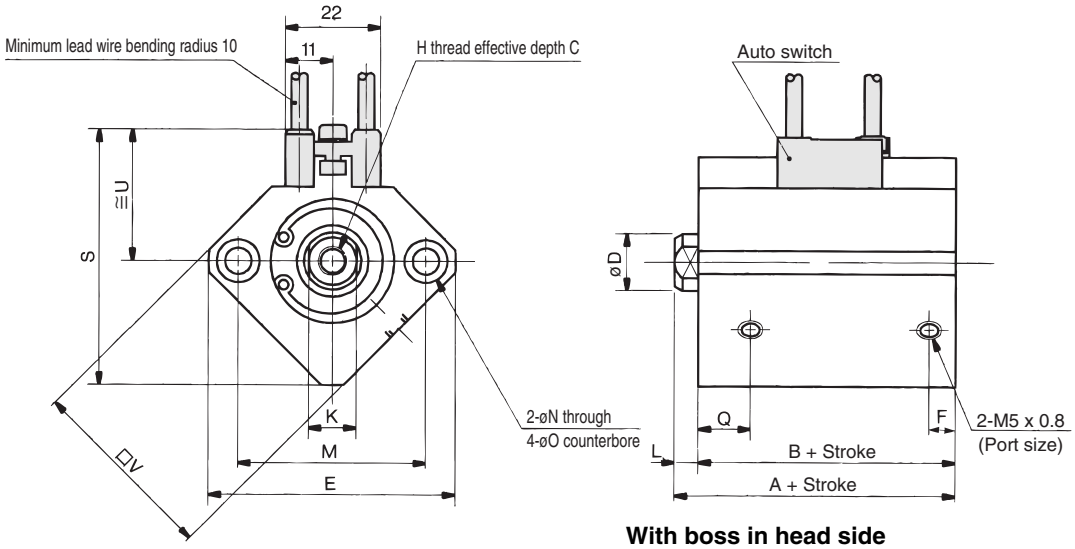
Bore size (mm)	Stroke range (mm)	A	B	CB	CD	CL	CT	CU	CW	CX	CZ	L	L1	N	RR
12	5 to 30	40.5	17	12	5	34.5	4	7	14	5	10	3.5	14	M4 x 0.7	6
16	5 to 30	43	18.5	14	5	37	4	10	15	6.5	12	3.5	15.5	M4 x 0.7	6
20	5 to 50	51	19.5	20	8	42	5	12	18	8	16	4.5	18.5	M6 x 1.0	9
25	5 to 50	57.5	22.5	24	10	47.5	5	14	20	10	20	5	22.5	M6 x 1.0	10

Double clevis bracket material: Carbon steel

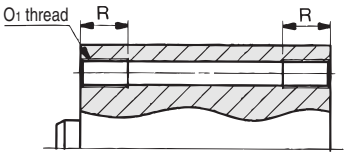
∗ For details about the rod end nut and accessory brackets, refer to page 7-6-20.
∗∗ Clevis pin and snap ring are shipped together.

Dimensions: ø12 to ø25/With Auto Switch

Basic style (Through-hole): CDQ2B



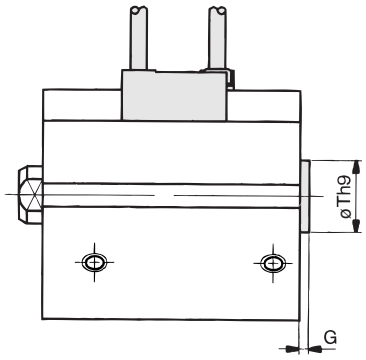
Both ends tapped style: CDQ2A



Both Ends Tapped Style

Bore size (mm)	O_1	R
12	M4 x 0.7	7
16	M4 x 0.7	7
20	M6 x 1.0	10
25	M6 x 1.0	10

With boss in head side

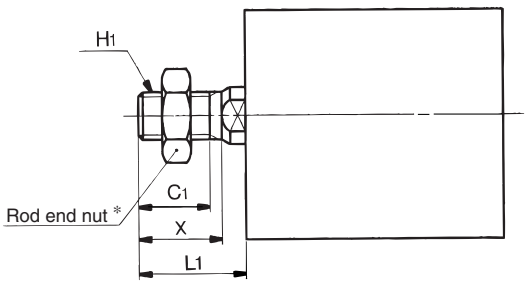


With Boss in Head Side

Bore size (mm)	G	Th9
12	1.5	$15^{\ 0}_{-0.043}$
16	1.5	$20^{\ 0}_{-0.052}$
20	2	$13^{\ 0}_{-0.043}$
25	2	$15^{\ 0}_{-0.043}$

Note 1) With boss in rod side: Option
(Suffix "-XC36" to the end of part number.)

Rod end male thread



Rod End Male Thread

Bore size (mm)	C_1	X	H_1	L1
12	9	10.5	M5 x 0.8	14
16	10	12	M6 x 1.0	15.5
20	12	14	M8 x 1.25	18.5
25	15	17.5	M10 x 1.25	22.5

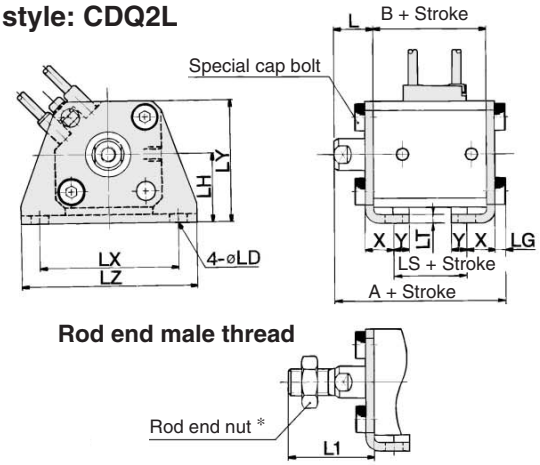
Auto switch shown above is D-A73 type and D-A80 type.
For the auto switch mounting position and its mounting height, refer to page 7-6-22.

Basic Style

Bore size (mm)	Stroke range (mm)	A	B	C	D	E	F	H	K	L	M	N	O	Q	S	U	V
12	5 to 30	31.5	28	6	6	32	6.5	M3 x 0.5	5	3.5	22	3.5	6.5 depth 3.5	11	35.5	19.5	25
16	5 to 30	34	30.5	8	8	38	5.5	M4 x 0.7	6	3.5	28	3.5	6.5 depth 3.5	10	41.5	22.5	29
20	5 to 50	36	31.5	7	10	47	5.5	M5 x 0.8	8	4.5	36	5.5	9 depth 7	10.5	48	24.5	36
25	5 to 50	37.5	32.5	12	12	52	5.5	M6 x 1.0	10	5	40	5.5	9 depth 7	11	53.5	27.5	40

Note 2) External dimensions with rubber bumper are same as standard type as shown above.
* For details about the rod end nut and accessory brackets, refer to page 7-6-20.
Note 3) For calculation on the longitudinal dimension of the intermediate strokes, refer to page 7-6-3.

Foot style: CDQ2L

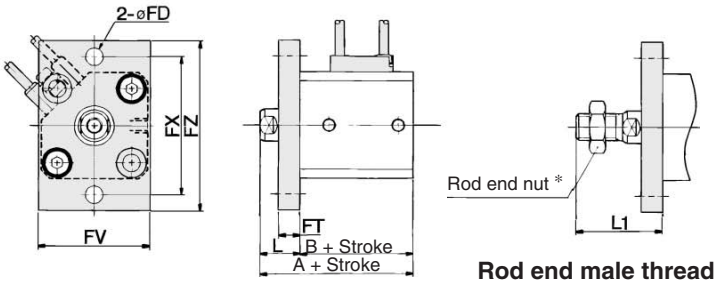


Foot Style

Bore size (mm)	Stroke range (mm)	A	B	L	L1	LD	LG	LH	LS	LT	LX	LY	LZ	X	Y
12	5 to 30	46.3	28	13.5	24	4.5	2.8	17	16	2	34	29.5	44	8	4.5
16	5 to 30	48.8	30.5	13.5	25.5	4.5	2.8	19	18.5	2	38	33.5	48	8	5
20	5 to 50	53.2	31.5	14.5	28.5	6.6	4	24	19.5	3.2	48	42	62	9.2	5.8
25	5 to 50	54.7	32.5	15	32.5	6.6	4	26	17.5	3.2	52	46	66	10.7	5.8

Foot bracket material: Carbon steel

Rod side flange style: CDQ2F

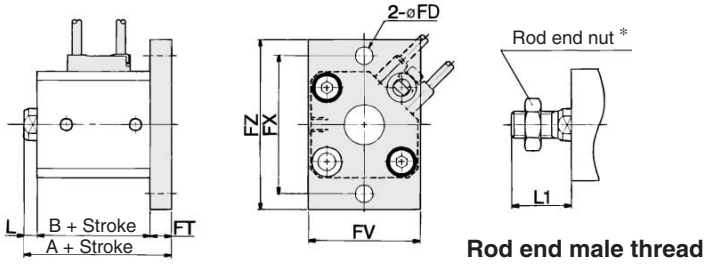


Rod Side Flange Style

Bore size (mm)	Stroke range (mm)	A	B	FD	FT	FV	FX	FZ	L	L1
12	5 to 30	41.5	28	4.5	5.5	25	45	55	13.5	24
16	5 to 30	44	30.5	4.5	5.5	30	45	55	13.5	25.5
20	5 to 50	46	31.5	6.6	8	39	48	60	14.5	28.5
25	5 to 50	47.5	32.5	6.6	8	42	52	64	15	32.5

Flange bracket material: Carbon steel

Head side flange style: CDQ2G



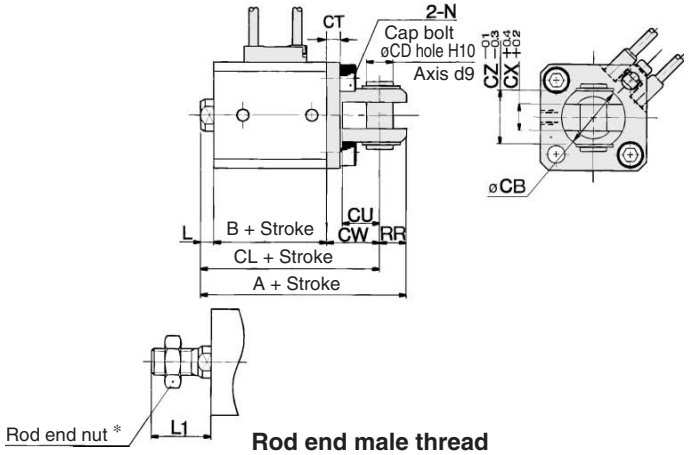
Head Side Flange Style

Bore size (mm)	Stroke range (mm)	A	L	L1
12	5 to 30	37	3.5	14
16	5 to 30	39.5	3.5	15.5
20	5 to 50	44	4.5	18.5
25	5 to 50	45.5	5	22.5

Flange bracket material: Carbon steel

(* Dimensions except A, L and L1 are the same as rod side flange style.)

Double clevis style: CDQ2G



Double Clevis Style

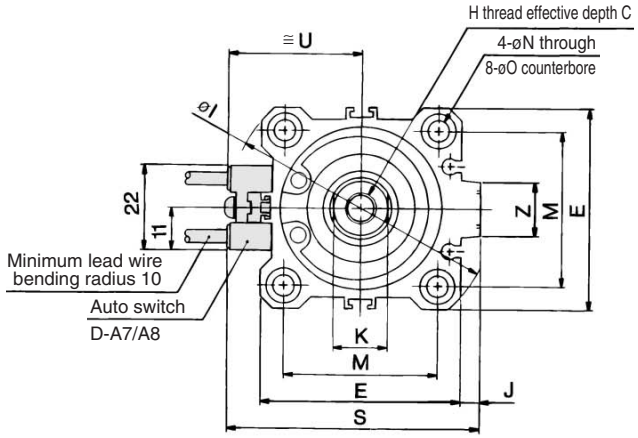
Bore size (mm)	Stroke range (mm)	A	B	CB	CD	CL	CT	CU	CW	CX	CZ	L	L1	N	RR
12	5 to 30	51.5	28	12	5	45.5	4	7	14	5	10	3.5	14	M4 x 0.7	6
16	5 to 30	55	30.5	14	5	49	4	10	15	6.5	12	3.5	15.5	M4 x 0.7	6
20	5 to 50	63	31.5	20	8	54	5	12	18	8	16	4.5	18.5	M6 x 1.0	9
25	5 to 50	67.5	32.5	24	10	57.5	5	14	20	10	20	5	22.5	M6 x 1.0	10

Double clevis bracket material: Carbon steel

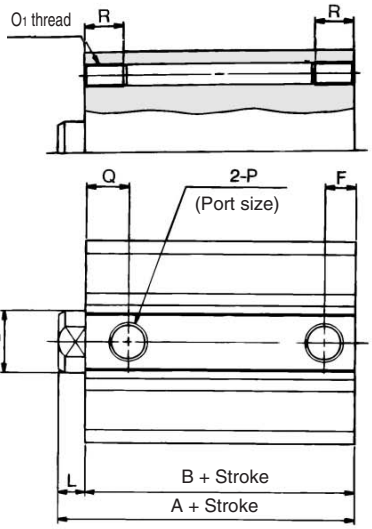
∗ For details about the rod end nut and accessory brackets, refer to page 7-6-20.
∗∗ Clevis pin and snap ring are shipped together.

Dimensions: ø32 to ø50

Basic style (Through-hole): CQ2B/CDQ2B



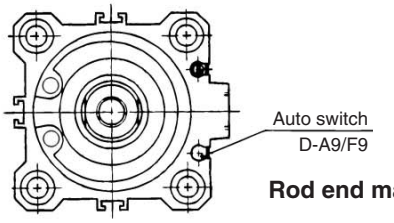
Both ends tapped style: CDQ2A

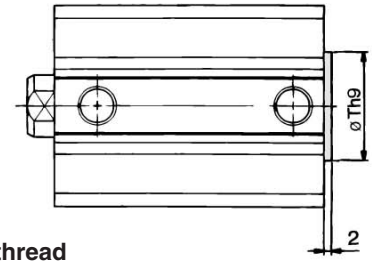


Both Ends Tapped Style

Bore size (mm)	O_1	R
32	M6 x 1.0	10
40	M6 x 1.0	10
50	M8 x 1.25	14

With boss in head side

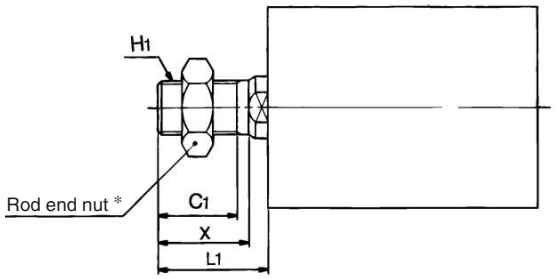




With Boss in Head Side

Bore size (mm)	Th9
32	$21^{\ 0}_{-0.052}$
40	$28^{\ 0}_{-0.052}$
50	$35^{\ 0}_{-0.062}$

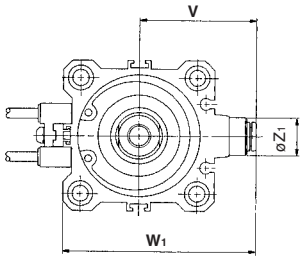
Rod end male thread

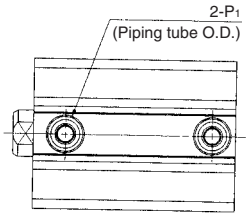


Rod End Male Thread

Bore size (mm)	C_1	X	H_1	L1
32	20.5	23.5	M14 x 1.5	28.5
40	20.5	23.5	M14 x 1.5	28.5
50	26	28.5	M18 x 1.5	33.5

Built-in One-touch fittings: ø32 to ø50





Built-in One-touch Fittings

Bore size (mm)	Z_1	P_1	V	W_1
32	13	6	36.5	59
40	13	6	40.5	66
50	16	8	50	82

Basic Style

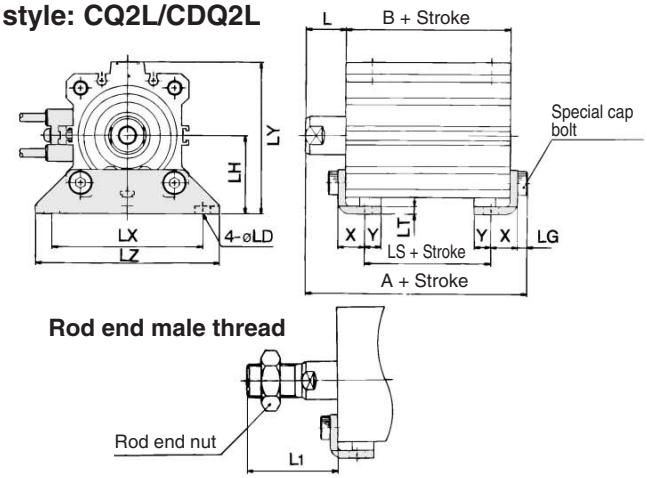
Auto switch shown above is D-A73 type and D-A80 type. For the auto switch mounting position and its mounting height, refer to page 7-6-22.

Bore size (mm)	Stroke range (mm)	Without auto switch					With auto switch					C	D	E	H	I	J	K	L	M
		A	B	F	P	Q	A	B	F	P	Q									
32	5	30	23	5.5	M5 x 0.8	11.5	40	33	7.5	Rc 1/8	10.5	13	16	45	M8 x 1.25	60	4.5	14	7	34
	10 to 50			7.5	Rc 1/8	10.5														
	75, 100	40	33																	
40	5 to 50	36.5	29.5	8	Rc 1/8	11	46.5	39.5	8	Rc 1/8	11	13	16	52	M8 x 1.25	69	5	14	7	40
	75, 100	46.5	39.5																	
50	10 to 50	38.5	30.5	10.5	Rc 1/4	10.5	48.5	40.5	10.5	Rc 1/4	10.5	15	20	64	M10 x 1.5	86	7	17	8	50
	75, 100	48.5	40.5																	

Bore size (mm)	N	O	S	U	Z
32	5.5	9 depth 7	58.5	31.5	14
40	5.5	9 depth 7	66	35	14
50	6.6	11 depth 8	80	41	19

Note 1) External dimensions with rubber bumper are same as standard type as shown above.
* For details about the rod end nut and accessory brackets, refer to page 7-6-20.
Note 2) For calculation on the longitudinal dimension of the intermediate strokes, refer to page 7-6-3. Because we have the spacer-installed type and the exclusive body type (-X10).

Foot style: CQ2L/CDQ2L



Rod end male thread

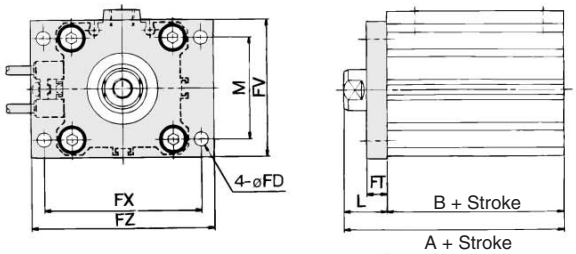
Foot Style

Bore size (mm)	Stroke range (mm)	Without auto switch A	B	LS	With auto switch A	B	LS	L	L1	LD	LG	LH	LT	LX	LY
32	5 to 50	47.2	23	7	57.2	33	17	17	38.5	6.6	4	30	3.2	57	57
	75, 100	57.2	33	17											
40	5 to 50	53.7	29.5	13.5	63.7	39.5	23.5	17	38.5	6.6	4	33	3.2	64	64
	75, 100	63.7	39.5	23.5											
50	10 to 50	56.7	30.5	7.5	66.7	40.5	17.5	18	43.5	9	5	39	3.2	79	78
	75, 100	66.7	40.5	17.5											

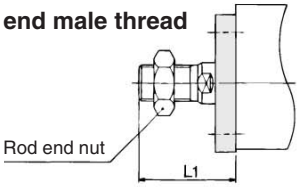
Foot bracket material: Carbon steel

Bore size (mm)	LZ	X	Y
32	71	11.2	5.8
40	78	11.2	7
50	95	14.7	8

Rod side flange style: C□Q2F



Rod end male thread

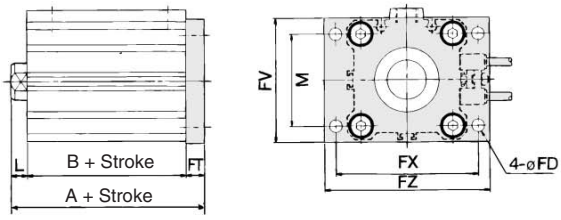


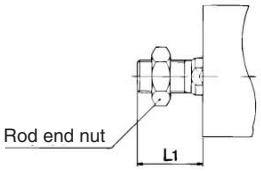
Rod Side Flange Style

Bore size (mm)	Stroke range (mm)	Without auto switch A	B	With auto switch A	B	FD	FT	FV	FX	FZ	L	L1	M
32	5 to 50	40	23	50	33	5.5	8	48	56	65	17	38.5	34
	75, 100	50	33										
40	5 to 50	46.5	29.5	56.5	39.5	5.5	8	54	62	72	17	38.5	40
	75, 100	56.5	39.5										
50	10 to 50	48.5	30.5	58.5	40.5	6.6	9	67	76	89	18	43.5	50
	75, 100	58.5	40.5										

Flange bracket material: Carbon steel

Head side flange style: CD2G/CDQ2G





Applicable to { Head side flange style / Double clevis style

Rod end male thread

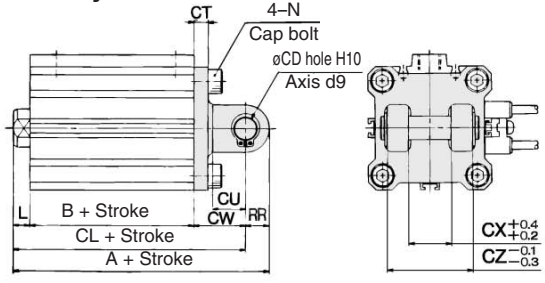
Head Side Flange Style

Bore size (mm)	Stroke range (mm)	Without auto switch A	With auto switch A	L	L1
32	5 to 50	38	48	7	28.5
	75, 100	48			
40	5 to 50	44.5	54.5	7	28.5
	75, 100	54.5			
50	10 to 50	47.5	57.5	8	33.5
	75, 100	57.5			

Flange bracket material: Carbon steel

∗ Dimensions except A, L and L1 are the same as rod side flange style.

Double clevis style: CQ2D/CPQ2D



Double Clevis Style

Bore size (mm)	Stroke range (mm)	Without auto switch A	B	CL	With auto switch A	B	CL	CD	CT	CU	CW	CX	CZ	L	L1
32	5 to 50	60	23	50	70	33	60	10	5	14	20	18	36	7	28.5
	75, 100	70	33	60											
40	5 to 50	68.5	29.5	58.5	78.5	39.5	68.5	10	6	14	22	18	36	7	28.5
	75, 100	78.5	39.5	68.5											
50	10 to 50	80.5	30.5	66.5	90.5	40.5	76.5	14	7	20	28	22	44	8	33.5
	75, 100	90.5	40.5	76.5											

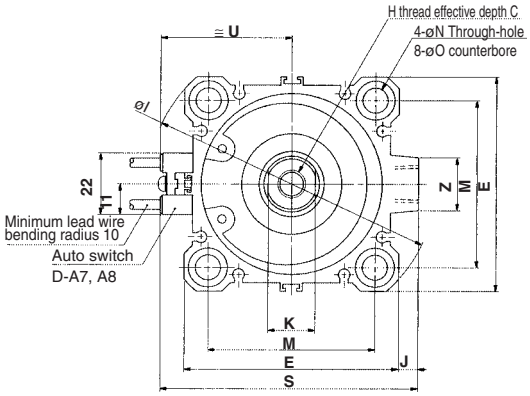
Double clevis bracket material: Cast iron

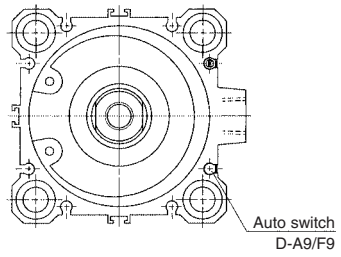
Bore size (mm)	N	RR
32	M6 x 1.0	10
40	M6 x 1.0	10
50	M8 x 1.25	14

∗ For details about the rod end nut and accessory brackets, refer to page 7-6-20.
∗∗ Clevis pin and snap ring are shipped together.

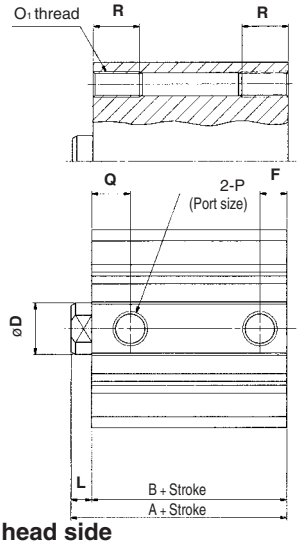
Dimensions: ø63 to ø100

Basic style (Through-hole)

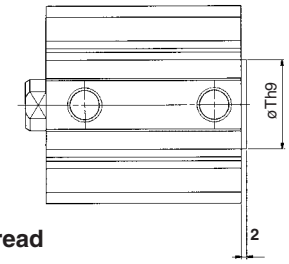




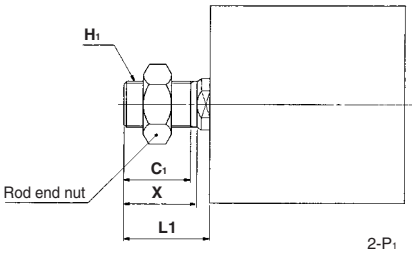
Both ends tapped style: CQ2A/CDQ2A



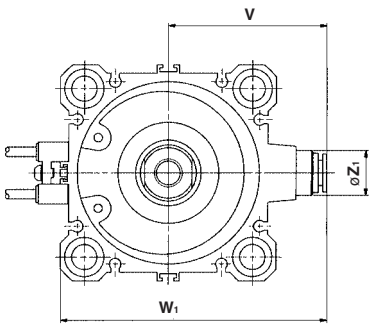
With boss in head side

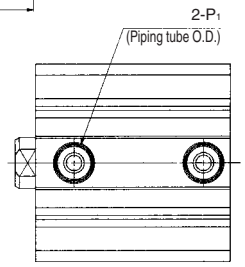


Rod end male thread



Basic style (Through-hole)





Both Ends Tapped Style

Bore size (mm)	O_1	R
63	M10 x 1.5	18
80	M12 x 1.75	22
100	M12 x 1.75	22

With Boss in Head Side

Bore size (mm)	Th9
63	$35^{\ 0}_{-0.062}$
80	$43^{\ 0}_{-0.062}$
100	$59^{\ 0}_{-0.074}$

Note 1) With boss in rod side: Option
(Suffix "-XC36" to the end of part number.)

Rod End Male Thread

Bore size (mm)	C_1	X	H_1	L1
63	26	28.5	M18 x 1.5	33.5
80	32.5	35.5	M22 x 1.5	43.5
100	32.5	35.5	M26 x 1.5	43.5

Built-in One-touch Fittings

Bore size (mm)	Z_1	P_1	V	W_1
63	16	8	56.5	95

Basic Style

Auto switch shown above is D-A73 type and D-A80 type. For the auto switch mounting position and its mounting height, refer to page 7-6-22.

Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch		C	D	E	F	H	I	J	K	L	M	N	O	P	Q	S
		A	B	A	B															
63	10 to 50	44	36	54	46	15	20	77	10.5	M10 x 1.5	103	7	17	8	60	9	14 depth 10.5	Rc 1/4	15	93
	75, 100	54	46																	
80	10 to 50	53.5	43.5	63.5	53.5	21	25	98	12.5	M16 x 2.0	132	6	22	10	77	11	17.5 depth 13.5	Rc 3/8	16	112.5
	75, 100	63.5	53.5																	
100	10 to 50	65	53	75	63	27	30	117	13	M20 x 2.5	156	6.5	27	12	94	11	17.5 depth 13.5	Rc 3/8	23	132.5
	75, 100	75	63																	

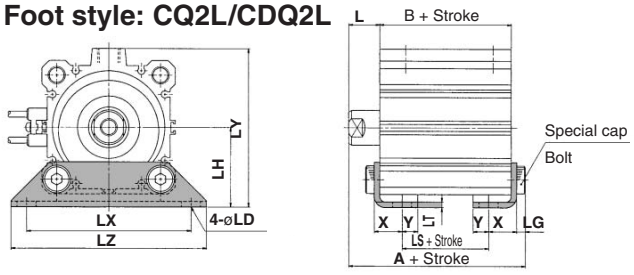
Bore size (mm)	U	Z
63	47.5	19
80	57.5	26
100	67.5	26

Note 2) External dimensions with rubber bumper are same as standard type as shown above.

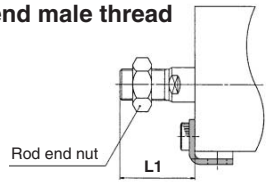
∗ For details about the rod end nut and accessory brackets, refer to page 7-6-20.

Note 3) For calculation on the longitudinal dimension of the intermediate strokes, refer to page 7-6-3.

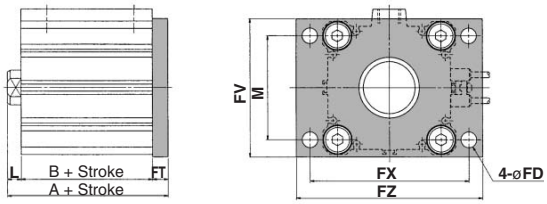
Foot style: CQ2L/CDQ2L



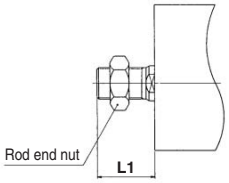
Rod end male thread



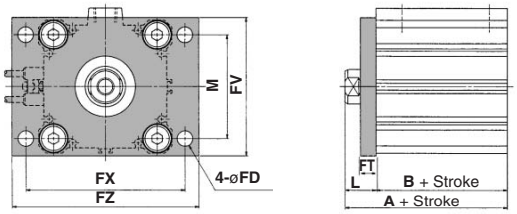
Head side flange style: CQ2G/CDQ2G



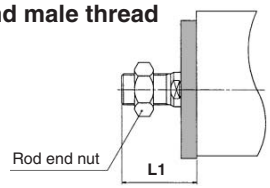
Rod end male thread



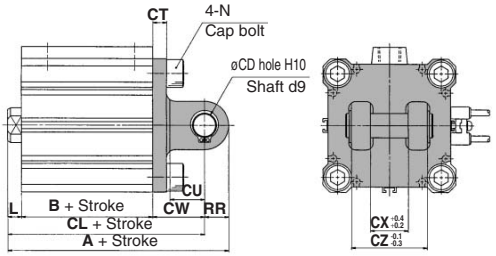
Rod side flange style: CQ2F/CDQ2F



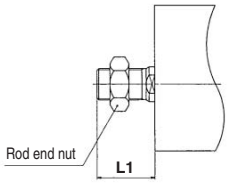
Rod end male thread



Double clevis style: CQ2D/CDQ2D



Rod end male thread



Foot Style

Bore size (mm)	Stroke range (mm)	Without auto switch A	B	LS	With auto switch A	B	LS	L	L1	LD	LG	LH	LT
63	10 to 50	62.2	36	10	72.2	46	20	18	43.5	11	5	46	3.2
	75, 100	72.2	46	20									
80	10 to 50	75	43.5	13.5	85	53.5	23.5	20	53.5	13	7	59	4.5
	75, 100	85	53.5	23.5									
100	10 to 50	88	53	19	98	63	29	22	53.5	13	7	71	6
	75, 100	98	63	29									

Foot bracket material: Carbon steel

Bore size (mm)	Stroke range (mm)	LX	LY	LZ	X	Y
63	10 to 50 75, 100	95	91.5	113	16.2	9
80	10 to 50 75, 100	118	114	140	19.5	11
100	10 to 50 75, 100	137	136	162	23	12.5

Rod Side Flange Style

Bore size (mm)	Stroke range (mm)	Without auto switch A	B	With auto switch A	B	FD	FT	FV	FX	FZ	L	L1	M
63	10 to 50	54	36	64	46	9	9	80	92	108	18	43.5	60
	75, 100	64	46										
80	10 to 50	63.5	43.5	73.5	53.5	11	11	99	116	134	20	53.5	77
	75, 100	73.5	53.5										
100	10 to 50	75	53	85	63	11	11	117	136	154	22	53.5	94
	75, 100	85	63										

Flange bracket material: Carbon steel

Head Side Flange Style

Bore size (mm)	Stroke range (mm)	Without auto switch A	With auto switch A	L	L1
63	10 to 50	53	63	8	33.5
	75, 100	63			
80	10 to 50	64.5	74.5	10	43.5
	75, 100	74.5			
100	10 to 50	76	86	12	43.5
	75, 100	86			

Flange bracket material: Carbon steel

∗ Dimensions except A, L and L1 are the same as rod side flange style.

Double Clevis Style

Bore size (mm)	Stroke range (mm)	Without auto switch A	B	With auto switch A	B	CD	CL	CT	CU	CW	CX	CZ	L
63	10 to 50	88	36	98	46	14	84	8	20	30	22	44	8
	75, 100	98	46										
80	10 to 50	109.5	43.5	119.5	53.5	18	101.5	10	27	38	28	56	10
	75, 100	119.5	53.5										
100	10 to 50	132	53	142	63	22	120	13	31	45	32	64	12
	75, 100	142	63										

Double clevis bracket material: Cast iron

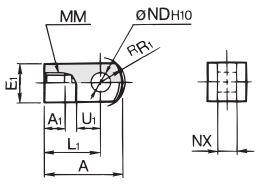
Bore size (mm)	Stroke range (mm)	L1	N	RR
63	10 to 50 75, 100	33.5	M10 x 1.5	14
80	10 to 50 75, 100	43.5	M12 x 1.75	18
100	10 to 50 75, 100	43.5	M12 x 1.75	22

∗ For details about the rod end nut and accessory brackets, refer to page 7-6-20.
∗ Clevis pin and set ring are shipped together.

Accessory Bracket

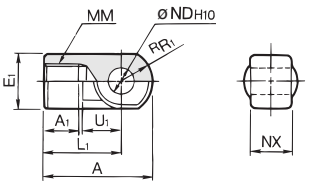
Single Knuckle Joint

For I-G012, I-Z015A
I-G02, I-G03



Material: Carbon steel

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

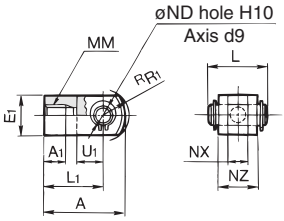


Material: Cast iron

Part no.	Applicable bore size (mm)	A	A_1	E_1	L_1	MM	$^{R}R_1$	U_1	ND_{H10}	NX
I-G012	**12**	21.5	6	□10	16	M5 x 0.8	6.3	7	$5^{+0.048}_{0}$	$5^{-0.2}_{-0.4}$
I-Z015A	**16**	32	8	□12	25	M6 x 1	8.1	14	$5^{+0.048}_{0}$	$6.4^{-0.1}_{-0.3}$
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	ø22	30	M14 x 1.5	12	14	$10^{+0.058}_{0}$	$18^{-0.3}_{-0.5}$
I-G05	**50, 63**	56	18	ø28	40	M18 x 1.5	16	20	$14^{+0.070}_{0}$	$22^{-0.3}_{-0.5}$
I-G08	**80**	71	21	ø38	50	M22 x 1.5	21	27	$18^{+0.070}_{0}$	$28^{-0.3}_{-0.5}$
I-G10	**100**	79	21	ø44	55	M26 x 1.5	24	31	$22^{+0.084}_{0}$	$32^{-0.3}_{-0.5}$

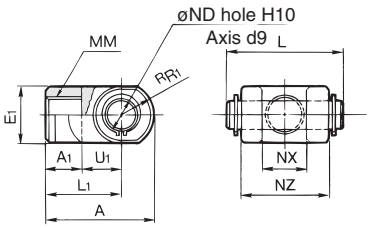
Double Knuckle Joint

For Y-G012, Y-Z015A
Y-G02, Y-G03



Material: Carbon steel

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

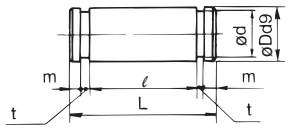


Material: Cast iron

Part no.	Applicable bore size (mm)	A	A_1	E_1	L_1	MM	$^{R}R_1$	U_1	ND_{H10}	NX	NZ	L	Applicable pin part no.
Y-G012	**12**	21.5	6	□10	16	M5 x 0.8	6.3	7	$5^{+0.048}_{0}$	$5^{+0.4}_{+0.2}$	10	14.6	IY-G012
Y-Z015A	**16**	28	11	□12	21	M6 x 1	8.1	10	$5^{+0.048}_{0}$	$6.5^{+0.2}_{0}$	12	16.6	IY-J015
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	ø22	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	ø28	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	ø38	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	ø44	55	M26 x 1.5	24	31	$22^{+0.084}_{0}$	$32^{+0.5}_{+0.3}$	64	72	IY-G10

∗ Knuckle pin and snap ring are included.

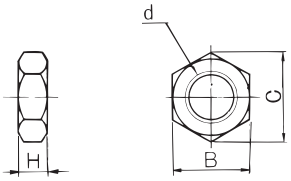
Knuckle Pin (Common with double clevis pin)



Material: Carbon steel

Part no.	Applicable bore size (mm)	Dd9	L	d	ℓ	m	t	Applicable snap ring
IY-G012	**12**	$5^{-0.030}_{-0.060}$	14.6	4.8	10.2	1.5	0.7	Type C 5 for axis
IY-J015	**16**	$5^{-0.030}_{-0.060}$	16.6	4.8	12.2	1.5	0.7	Type C 5 for axis
IY-G02	**20**	$8^{-0.040}_{-0.076}$	21	7.6	16.2	1.5	0.9	Type C 8 for axis
IY-G03	**25**	$10^{-0.040}_{-0.076}$	25.6	9.6	20.2	1.55	1.15	Type C 10 for axis
IY-G04	**32, 40**	$10^{-0.040}_{-0.076}$	41.6	9.6	36.2	1.55	1.15	Type C 10 for axis
IY-G05	**50, 63**	$14^{-0.050}_{-0.093}$	50.6	13.4	44.2	2.05	1.15	Type C 14 for axis
IY-G08	**80**	$18^{-0.050}_{-0.093}$	64	17	56.2	2.55	1.35	Type C 18 for axis
IY-G10	**100**	$22^{-0.065}_{-0.117}$	72	21	64.2	2.55	1.35	Type C 22 for axis

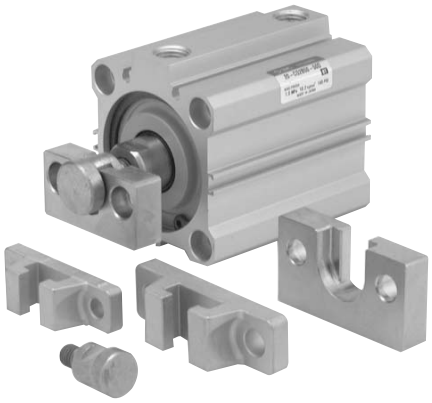
Rod End Nut



Material: Carbon steel

Part no.	Applicable bore size (mm)	d	H	B	C
NTJ-015A	**12**	M5 x 0.8	4	8	9.2
NT-015A	**16**	M6 x 1	5	10	11.5
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



Joint and Mounting Bracket (Type A, Type B) Part No.

YA — **03**

Mounting bracket

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

Applicable air cylinder bore

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

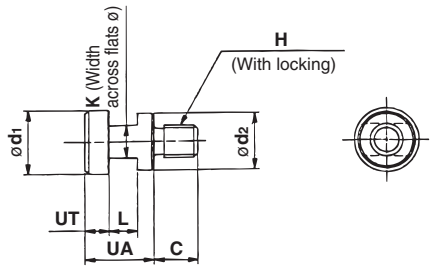
Allowable Eccentricity

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

<Ordering>
• Joints are not included with the A or B type mounting brackets. Order them separately.
(Example)
Bore size ø40 Part no.
• Type A mounting bracket part no.····· YA-03
• Joint····· YU-03

Joint Part No.

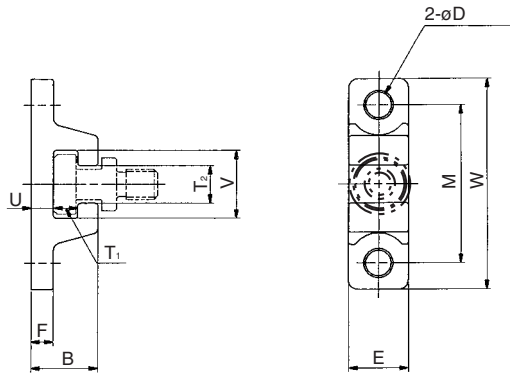
Bore size (mm)	Joint part no.	Applicable mounting bracket		Weight (g)
		Type A mounting bracket	Type B mounting bracket	
32, 40	**YU-03**	**YA-03**	**YB-03**	25
50, 63	**YU-05**	**YA-05**	**YB-05**	40
80	**YU-08**	**YA-08**	**YB-08**	90
100	**YU-10**	**YA-10**	**YB-10**	160



Material: Chromium molybdenum steel (Nickel plated)

Part no.	Applicable bore size (mm)	UA	C	d_1	d_2	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

Type A Mounting Bracket

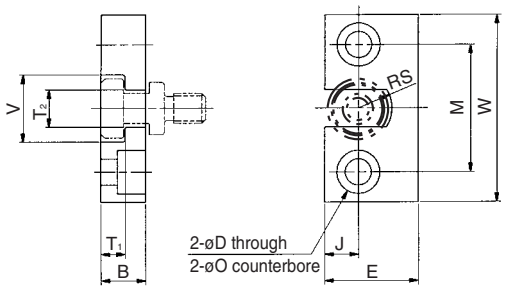


Material: Chromium molybdenum steel (Nickel plated)

Part no.	Bore size (mm)	B	D	E	F	M	T_1	T_2
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

Type B Mounting Bracket



Material: Precision die-casting material equivalent to stainless steel 304

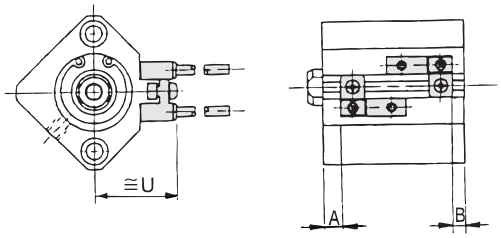
Part no.	Bore size (mm)	B	D	E	J	M	øO
YB-03	**32, 40**	12	7	25	9	34	11.5 depth 7.5
YB-05	**50, 63**	12	9	32	11	42	14.5 depth 8.5
YB-08	**80**	16	11	38	13	52	18 depth 12
YB-10	**100**	19	14	50	17	62	21 depth 14

Part no.	Bore size (mm)	T_1	T_2	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

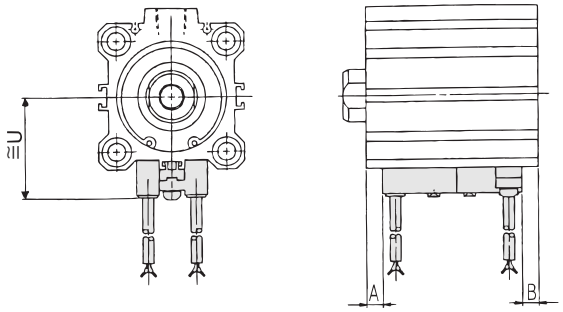
Proper Auto Switch Mounting Position (Detection at stroke end) and Its Mounting Height

D-A7□
D-A80

ø12 to ø25

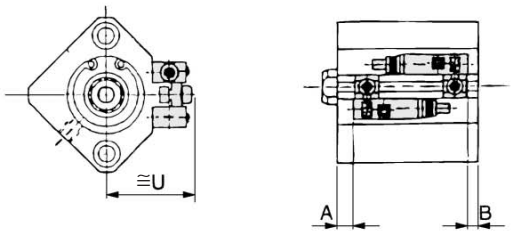


ø32 to ø100

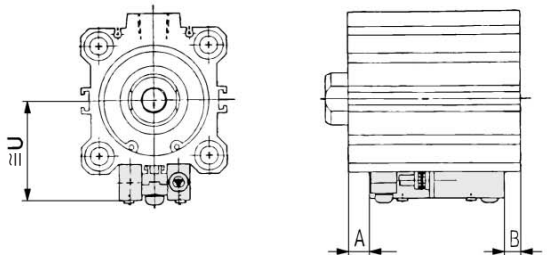


D-A7□H
D-A80H
D-F7□
D-J79
D-F7□W
D-J79W
D-F79F
D-F7NTL
D-F7BAL

ø12 to ø25

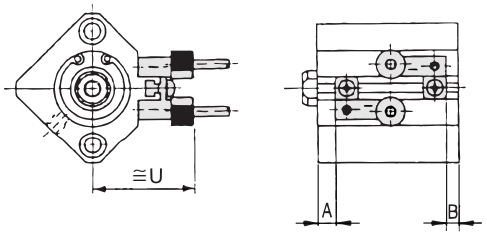


ø32 to ø100

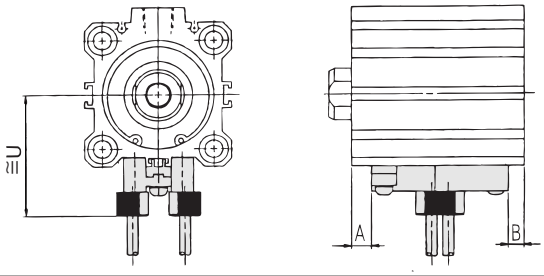


D-A73C
D-A80C
D-J79C

ø12 to ø25

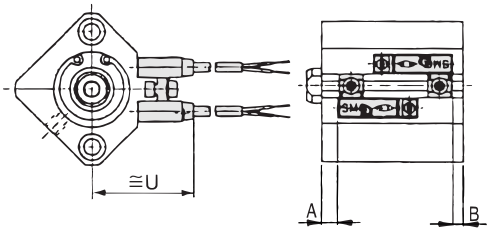


ø32 to ø100

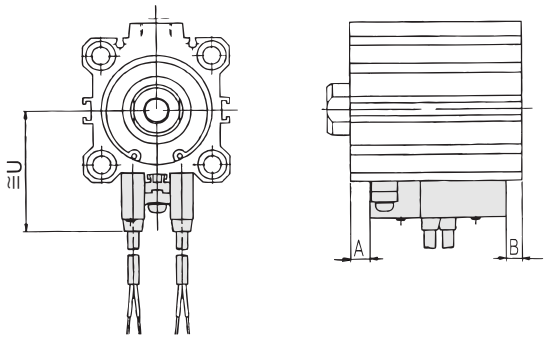


D-A79W
D-F7□WV
D-F7□V
D-F7BAVL

ø12 to ø25

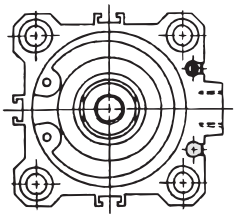


ø32 to ø100

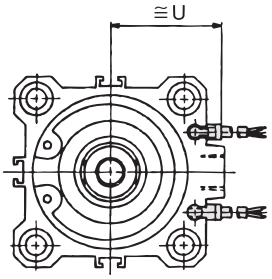


ø32 to ø100

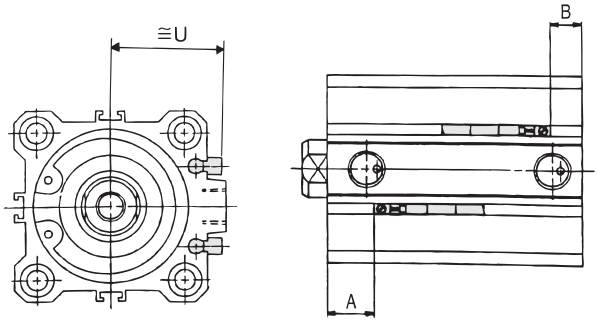
D-A9□
D-M9□
D-F9□W



D-A9□V
D-M9□V
D-F9□WV



D-F9BAL



Operating Range

Auto switch model	Bore size (mm)														
	12	**16**	**20**	**25**	**32**	**40**	**50**	**63**	**80**	**100**	**125**	**140**	**160**	**180**	**200**
D-A7□(H)(C) **D-A80□(H)(C)**	10	12	12	12	12	11	10	12	12	13	13	13	13	—	—
D-A9□(V)	—	—	—	—	9.5	9.5	9.5	11.5	9	11.5	—	—	—	—	—
D-Z7□ **D-Z80**	—	—	—	—	—	—	—	—	—	—	14	14	14	15	15.5
D-F7□(V) **D-J79(C)** **D-F7□W(V)** **D-F7BA(V)L** **D-F7NTL** **D-F79F**	5.5	6	5.5	5	6	6	6	6.5	6.5	7	9	9	8.5	—	—
D-F9□(V) **D-F9□W(V)** **D-F9BA(V)L** **D-Y59□**	—	—	—	—	5.5	5.5	5.5	6.5	5.5	6.5	—	—	—	—	—
D-Y69□ **D-Y7P(V)** **D-Y7□W(V)**	—	—	—	—	—	—	—	—	—	—	11.5	11.5	11.5	12	12
D-Y7BAL	—	—	—	—	—	—	—	—	—	—	5.5	5.5	5.5	6	6
D-P5DW	—	—	—	—	—	5	5	5	5	5.5	—	—	—	—	—

∗ Since this is a guideline including hysteresis, not meant to be guaranteed. (Assuming approximately ±30% dispersion)
There may be the case to change substantially depending on an ambient environment.

Other than the applicable auto switches listed in “How to Order”, the following auto switches can be mounted. For detailed specifications, refer to page 7-9-1.

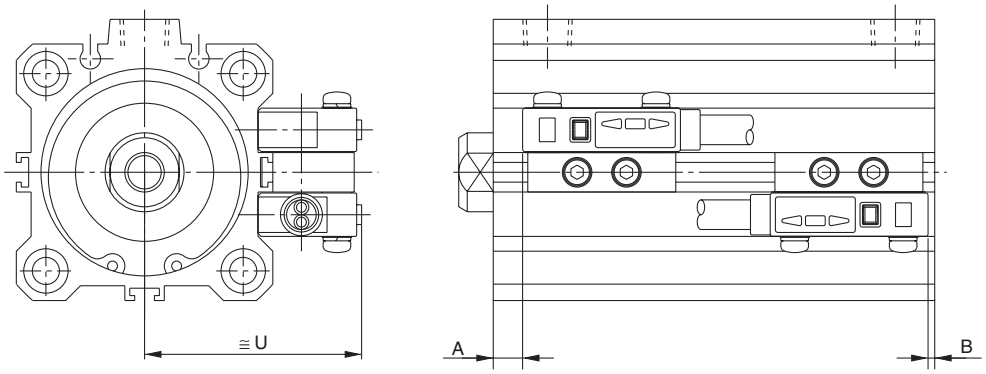
Type	Model	Electrical entry (Fetching direction)	Features	Applicable bore size (mm)
Reed switch	D-A80	Grommet (Perpendicular)	Without indicator light	12 to 160
	D-A80H	Grommet (In-line)		
	D-A80C	Connector (Perpendicular)		
	D-Z80	Grommet (In-line)		125 to 200
	D-A90	Grommet (In-line)		32 to 100
	D-A90V	Grommet (Perpendicular)		
Solid state switch	D-F7NTL	Grommet (In-line)	With timer	12 to 160

∗ With pre-wire connector is available for D-F7NTL type, too. For details, refer to page 7-9-36.
∗ Normally closed (NC = b contact), solid state switches (D-F9G/F9H/Y7G/Y7H type) are available, too. For details, refer to page 7-9-23 and 24.

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

ø40 to ø100

D-P5DWL



Proper Auto Switch Mounting Position

Bore size (mm)	D-A7□/A80		D-A7□H/A80H D-A73C/A80C D-F7□/J79/J79W D-F7□V/J79C D-F7□W/F7□WV D-F7BAL/F7BAVL D-F79F		D-A79W		D-A9□ D-A9□V		D-M9□ D-M9□V D-F9□W D-F9□WV		D-F9BAL		D-P5DWL	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B
12	4.5	5.5	5	6	2	3	—	—	—	—	—	—	—	—
16	7.5	5	8	5.5	5	2.5	—	—	—	—	—	—	—	—
20	7.5	6.5	8	7	5	4	—	—	—	—	—	—	—	—
25	7.5	7	8	7.5	5	4.5	—	—	—	—	—	—	—	—
32	9.0	6	9.5	6.5	6.5	3.5	8	5	12	9	11	8	—	—
40	13	8.5	13.5	9	10.5	6	12	7.5	16	11.5	15	10.5	9	4.5
50	11	11.5	11.5	12	8.5	9	10	10.5	14	14.5	13	13.5	7	7.5
63	13.5	14.5	14	15	11	12	12.5	13.5	16.5	17.5	15.5	16.5	9.5	10.5
80	17.5	18	18	18.5	15	15.5	16.5	17	20.5	21	19.5	20	13.5	14
100	21	24	21.5	24.5	18.5	21.5	20	23	24	27	23	26	17	20

Auto Switch Mounting Height

Bore size (mm)	D-A7□ D-A80	D-A7□H D-A80H D-F7□ D-J79 D-F7□W D-J79W D-F7BAL D-F79F D-F7NTL	D-A73C D-A80C	D-F7□V D-F7□WV D-F7BAVL	D-J79C	D-A79W	D-A9□V	D-M9□V D-F9□WV	D-F9BAL	D-P5DWL
	U	U	U	U	U	U	U	U	U	U
12	19.5	20.5	26.5	23	26	22	—	—	—	—
16	22.5	23.5	29.5	26	29	25	—	—	—	—
20	24.5	25.5	31.5	28	31	27	—	—	—	—
25	27.5	28.5	34.5	31	34	30	—	—	—	—
32	31.5	32.5	38.5	35	38	34	27	29	26.5	—
40	35	36	42	38.5	41.5	37.5	30.5	32.5	30	44
50	41	42	48	44.5	47.5	43.5	36.5	38.5	36	50
63	47.5	48.5	54.5	51	54	50	40	42	39.5	56.5
80	57.5	58.5	64.5	61	64	60	50	52	49.5	66.5
100	67.5	68.5	74.5	71	74	70	60	62	59.5	76.5

Compact Cylinder: Long Stroke Type
Double Acting, Single Rod
Series CQ2
ø32, ø40, ø50, ø63, ø80, ø100

How to Order

Without auto switch CQ2 | A | 32 | — | 200 | DC |

With auto switch CDQ2 | A | 32 | — | 200 | DC | — | F9BW | S |

Built-in magnet

Mounting style

A	Both ends tapped style
L	Foot style
F	Rod side flange style
G	Head side flange style
D	Double clevis style

∗ Mounting brackets are shipped together, (not assembled).

Bore size

32	32 mm
40	40 mm
50	50 mm
63	63 mm
80	80 mm
100	100 mm

Piping

Nil	Screw-in piping
F	Built-in One-touch fittings Note)

Note) Bore sizes available w/ One-touch fittings are ø32 to ø63.

Cylinder stroke (mm)
Refer to "Standard Stroke" on page 7-6-122.

Action

D	Double acting

Cushion

C	Rubber bumper

Body option

Nil	Standard (Rod end female thread)
M	Rod end male thread

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). (Except D-P5DWL)

Number of auto switches

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

Applicable Auto Switch/Refer to page 7-9-1 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC	Load voltage DC	Load voltage AC	Rail mounting Perpendicular	Rail mounting In-line	Direct mounting Perpendicular	Direct mounting In-line	Lead wire length (m) ∗ 0.5 (Nil)	3 (L)	5 (Z)	None (N)	Pre-wire connector	Applicable load	
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	—	A76H	A96V	A96	●	●	—	—	—	IC circuit	—
				2-wire	—	—	200 V	A72	A72H	—	—	●	●	—	—	—	—	Relay, PLC
					24 V	12 V	100 V	A73	A73H	—	—	●	●	●	—	—		
								—	—	A93V	A93	●	●	—	—	—		
		Connector				12 V	—	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		12 V		F7BV	J79	M9BV	M9B	●	●	○	—	○	—	
		Connector						J79C	—	—	—	●	●	●	●	—		
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)		5 V, 12 V		F7NWV	F79W	F9NWV	F9NW	●	●	○	—	○	IC circuit	
				3-wire (PNP)				—	F7PW	F9PWV	F9PW	●	●	○	—	○		
				2-wire		12 V		F7BWV	J79W	F9BWV	F9BW	●	●	○	—	○	—	
	Water resistant (2-color indication)							—	F7BA	—	F9BA	—	●	○	—	○		
								F7BAV	—	—	—	—	●	○	—	—		
	With diagnostic output (2-color indication)			4-wire (NPN)		5 V, 12 V		—	F79F	—	—	●	●	○	—	○	IC circuit	
	Magnetic field resistant (2-color indication)			2-wire		—		—	P5DW	—	—	—	●	●	—	○	—	

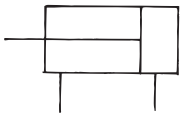
∗ Lead wire length symbols: 0.5 m·····Nil (Example) A73C
3 m·····L (Example) A73CL
5 m·····Z (Example) A73CZ
None·····N (Example) A73CN

∗ Solid state switches marked with "○" are produced upon receipt of order.

• D-P5DWL type is available from ø40 up to ø100 only.
• There are other applicable auto switches other than the listed above. For details, refer to page 7-6-23.
• For details about auto switches with pre-wire connector, refer to page 7-9-36.

JIS Symbol

Double acting,
Single rod



Made to Order

Made to Order Specifications (For details, refer to page 7-10-1.)

Symbol	Specifications
-XB10	Intermediate stroke (Using exclusive body)
-XC4	With heavy duty scraper
-XC6	Piston rod and rod end nut made of stainless steel
-XC18	NPT finish piping port
-X271	Fluoro rubber for seals

⚠ Precautions

Be sure to read before handling. For Safety Instructions and Actuator Precautions, refer to pages 7-13-3 to 7-13-6.

⚠ Caution

Snap Ring Installation/Removal

1. For installation and removal, use an appropriate pair of pliers (tool for installing a type C snap ring).
2. 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.

Type

Bore size (mm)			32	40	50	63	80	100
Pneumatic	Built-in magnet		●	●	●	●	●	●
	Piping	Screw-in type type	Rc 1/8	Rc 1/8	Rc 1/4	Rc 1/4	Rc 3/8	Rc 3/8
		Built-in One-touch fittings	ø6/4	ø6/4	ø8/6	ø8/6	—	—
	Rod end male thread		●	●	●	●	●	●

Specifications

Type	Pneumatic (Non-lube)
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)
Cushion	Rubber bumper (Standard equipment)
Rod end thread	Female thread
Rod end thread tolerance	JIS Class 2
Stroke length tolerance	$^{+1.4}_{0}$
Mounting	Both ends tapped style
Piston speed	50 to 500 mm/s

Minimum Operating Pressure

(MPa)

Bore size (mm)	32	40	50	63	80	100
Minimum operating pressure	0.05					

Allowable Kinetic Energy

(J)

Bore size (mm)	12	16	20	25	32	40	50	63	80	100
Allowable kinetic energy	0.043	0.075	0.11	0.18	0.29	0.52	0.91	1.54	2.71	4.54

Standard Stroke

Bore size (mm)	Standard stroke
32, 40, 50, 63, 80, 100	125, 150, 175, 200, 250, 300

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. on page 7-6-121.		Suffix "-XB10" to the end of standard model no. on page 7-6-121.	
Description	Dealing with the stroke by the 1 mm interval is available by installing spacer with standard stroke cylinder.		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
	32 to 200	101 to 299	32 to 160	101 to 299
Example	Part no.: CQ2A50-166DC CQ2A50-175DC with 9 mm width spacer. B dimension is 230.5 mm.		Part no.: CQ2B50-166DC-XB10 Makes 166 stroke tube. B dimension is 221.5 mm.	

Copper-free (For CRT manufacturing process)

20 — CQ2A | Bore size | — | Stroke | DC(M)

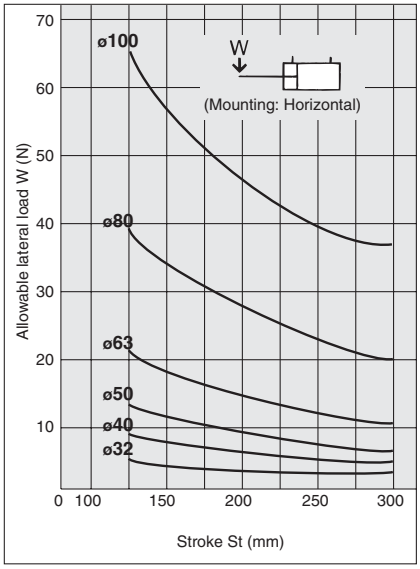
- 20: Copper-free
- Bore size: ø32, ø40, ø50, ø63, ø80, ø100
- Stroke

To prevent the influence of copper ions or halogen ions during CRT manufacturing processes, copper and fluorine materials are not used in the component parts.

Specifications

Action	Double acting, Single rod
Bore size (mm)	32, 40, 50, 63, 80, 100
Proof pressure	1.5 MPa
Max. operating pressure	1.0 MPa
Rubber bumper	With (Standard equipment)
Piping	Screw-in piping
Piston speed	50 to 500 mm/S
Mounting	Both ends tapped style
Auto switch	Mountable

Allowable Lateral Load at Rod End



Mounting Bracket Part No.

Bore size (mm)	Foot (2)	Flange	Double clevis
32	CQ-L032	CQ-F032	CQ-D032
40	CQ-L040	CQ-F040	CQ-D040
50	CQ-L050	CQ-F050	CQ-D050
63	CQ-L063	CQ-F063	CQ-D063
80	CQ-L080	CQ-F080	CQ-D080
100	CQ-L100	CQ-F100	CQ-D100

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

Note 3) Parts belonging to each bracket are as follows.
Foot or Flange style: Body mounting bolt, Double clevis/Clevis pin, Body mounting bolt, C shape snap ring for axis.

Theoretical Output

(N)

Bore size (mm)	Operating direction	Operating pressure (MPa) 0.3	0.5	0.7
32	IN	181	302	422
	OUT	241	402	563
40	IN	317	528	739
	OUT	377	628	880
50	IN	495	825	1155
	OUT	589	982	1374
63	IN	841	1402	1962
	OUT	935	1559	2182
80	IN	1361	2268	3175
	OUT	1508	2513	3519
100	IN	2144	3574	5003
	OUT	2356	3927	5498

Weight

Without Auto Switch

(g)

Bore size (mm)	Cylinder stroke (mm) 125	150	175	200	250	300
32	754	859	965	1070	1279	1490
40	945	1063	1180	1298	1535	1770
50	1469	1650	1832	2007	2376	2739
63	1810	2018	2227	2438	2851	3268
80	3120	3456	3793	4127	4801	5474
100	4956	5374	5790	6020	7042	7875

Built-in Magnet

(g)

Bore size (mm)	Cylinder stroke (mm) 125	150	175	200	250	300
32	763	868	974	1079	1288	1499
40	959	1077	1194	1312	1549	1784
50	1484	1665	1847	2022	2391	2754
63	1834	2042	2251	2462	2875	3292
80	3144	3480	3817	4151	4825	5498
100	4994	5412	5828	6058	7080	7913

Additional Weight

(g)

Bore size (mm)		32	40	50	63	80	100
Rod end male thread	Male thread	26	27	53	53	120	175
	Nut	17	17	32	32	49	116
Foot style (Including mounting bolt)		147	159	253	356	685	1123
Rod side flange style (Including mounting bolt)		165	198	348	534	1017	1309
Head side flange style (Including mounting bolt)		165	198	348	534	1017	1309
Double clevis style (Including pin, snap ring, bolt)		151	196	393	554	1109	1887

Calculation: (Example) CQ2D32-200DCM
- Cylinder weight: CQ2A32-200DC····· 1070 g
- Option weight: Rod end male thread····· 43 g
  Double clevis style····· 151 g

1264 g

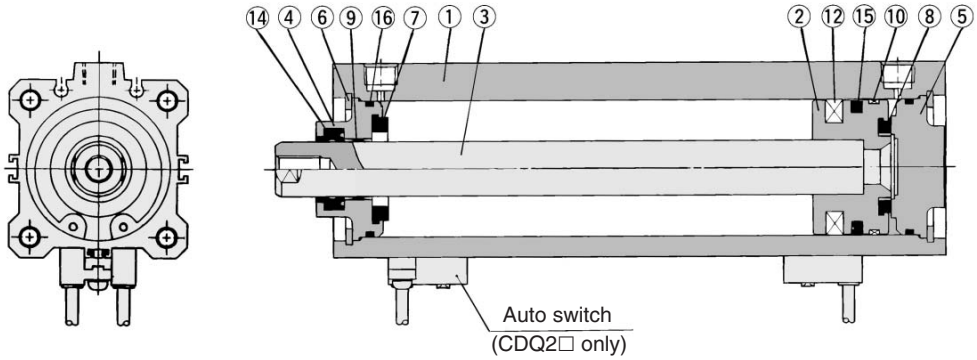
Add the weight of auto switches and mounting brackets when auto switches are mounted.

Auto Switch Mounting Bracket Weight

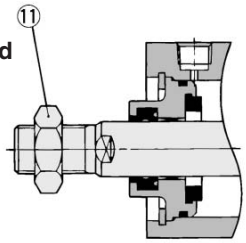
Mounting bracket part no.	Applicable bore size(mm)	Weight (g)
BQ-2	32 to 100	1.5

For the auto switch weight, refer to page 7-9-1.

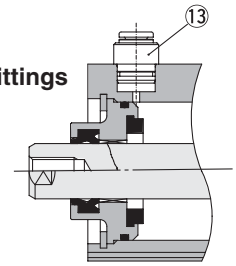
Construction



Rod end male thread



Built-in One-touch fittings



Component Parts

No.	Description	Material	Note
①	Cylinder tube	Aluminum alloy	Hard anodized
②	Piston	Aluminum alloy	Chromated
③	Piston rod	Carbon steel	Hard chrome plated
④	Collar	Aluminum alloy	Anodized
⑤	Bottom plate	Aluminum alloy	Anodized
⑥	Snap ring	Carbon tool steel	Phosphate coated
⑦	Bumper A	Urethane	
⑧	Bumper B	Urethane	
⑨	Bushing	Phosphor bronze alloy	
⑩	Wear ring	Resin	
⑪	Rod end nut	Carbon steel	Nickel plated
⑫	Magnet	—	For only CDQ2□A
⑬	One-touch fitting	—	ø32 to ø63
⑭*	Rod seal	NBR	
⑮*	Piston seal	NBR	
⑯*	Tube gasket	NBR	

Replacement Parts: Seal Kit

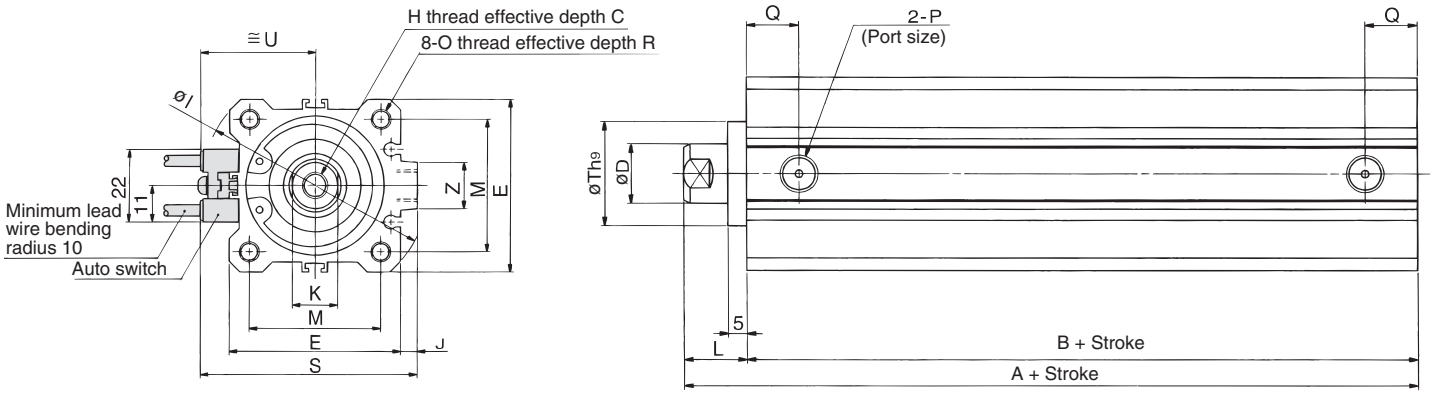
Bore size (mm)	Kit no.	Contents
32	CQ2A32-L-PS	Set of left nos. ⑭, ⑮, ⑯
40	CQ2A40-L-PS	
50	CQ2A50-L-PS	
63	CQ2A63-L-PS	
80	CQ2A80-L-PS	
100	CQ2A100-L-PS	

* Seal kit includes ⑭, ⑮, ⑯. Order the seal kit, based on each bore size.

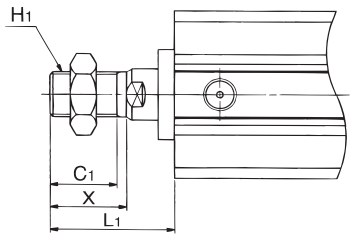
Dimensions: ø32 to ø50

The dimensions are the same with or without an auto switch.

Both ends tapped style: C□Q2A



Rod end male thread



Rod End Male Thread

Bore size (mm)	C1	H1	L1	X
32	20.5	M14 x 1.5	38.5	23.5
40	20.5	M14 x 1.5	38.5	23.5
50	26	M18 x 1.5	43.5	28.5

Auto switch shown above is D-A73 and D-A80.
For the auto switch mounting position and its mounting height, refer to page 7-6-130.

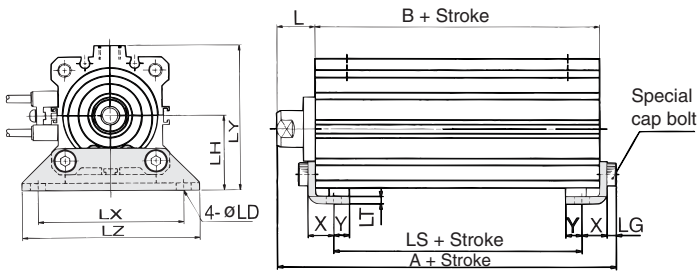
Dimensions of built-in One-touch fitting are equivalent to Series CQ2, double acting, single rod. Refer to page 7-6-16.

Both Ends Tapped Style

Bore size (mm)	Stroke range (mm)	A	B	C	D	E	H	I	J	K	L	M	O	P	Q	R	S	Th9	U	Z
32	(1) 125 to 200 250, 300	62.5	45.5	13	16	45	M8 x 1.25	60	4.5	14	17	34	M6 x 1.0	Rc 1/8	12.5	10	58.5	$22^{\ 0}_{-0.052}$	31.5	14
40		72	55	13	16	52	M8 x 1.25	69	5	14	17	40	M6 x 1.0	Rc 1/8	14	10	66	$28^{\ 0}_{-0.052}$	35	14
50		73.5	55.5	15	20	64	M10 x 1.5	86	7	17	18	50	M8 x 1.25	Rc 1/4	14	14	80	$35^{\ 0}_{-0.062}$	41	19

Note 1) For 125 to 200 stroke, strokes are by the 25 mm interval.
Note 2) For calculation on the longitudinal dimension of the intermediate strokes, refer to page 7-6-122.

Foot style: C□Q2L



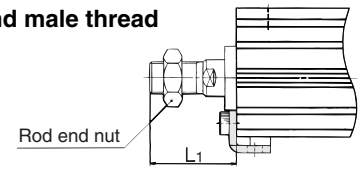
Foot Style

Bore size (mm)	A	B	L	L1	LD	LG	LH	LS	LT	LX	LY	LZ	X	Y
32	69.7	45.5	17	38.5	6.6	4	30	29.5	3.2	57	57	71	11.2	5.8
40	79.2	55	17	38.5	6.6	4	33	39	3.2	64	64	78	11.2	7
50	81.7	55.5	18	43.5	9	5	39	32.5	3.2	79	78	95	14.7	8

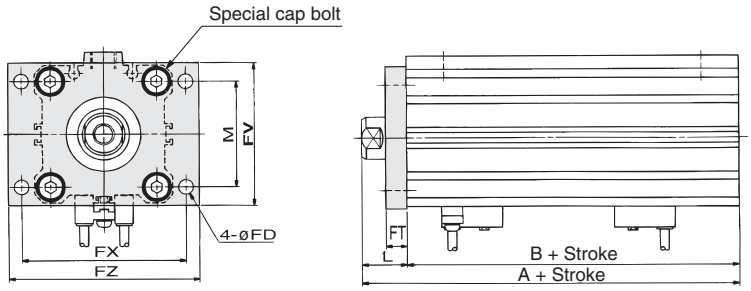
Foot bracket material: Carbon steel

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

Rod end male thread



Rod side flange style: C□Q2F

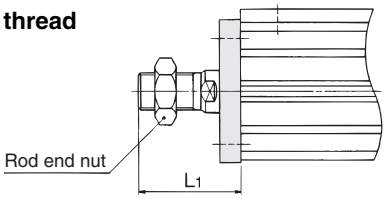


Rod Side Flange Style

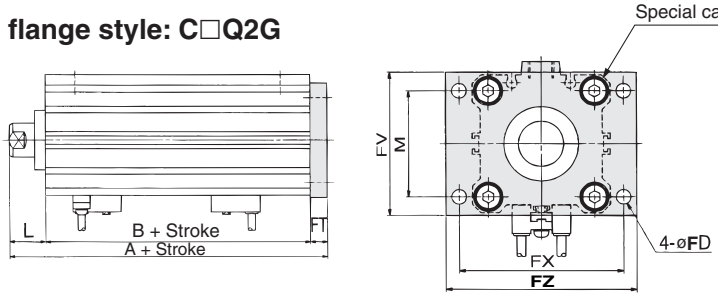
Bore size (mm)	A	B	FD	FT	FV	FX	FZ	L	L1	M
32	62.5	45.5	5.5	8	48	56	65	17	38.5	34
40	72	55	5.5	8	54	62	72	17	38.5	40
50	73.5	55.5	6.6	9	67	76	89	18	43.5	50

Flange bracket material: Carbon steel

Rod end male thread



Head side side flange style: C□Q2G



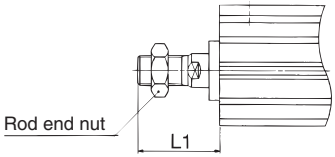
Head Side Flange Style

Bore size (mm)	A
32	70.5
40	80
50	82.5

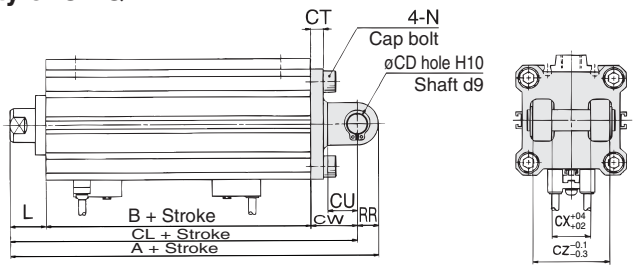
Flange bracket material: Carbon steel

∗ Dimensions except A are the same as rod side flange style.

Rod end male thread



Double clevis style: C□Q2D



Double Clevis Style

Bore size (mm)	A	B	CD	CL	CT	CU	CW	CX	CZ
32	92.5	45.5	10	82.5	5	14	20	18	36
40	104	55	10	94	6	14	22	18	36
50	115.5	55.5	14	101.5	7	20	28	22	44

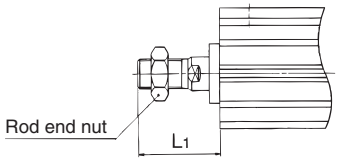
Bore size (mm)	L	L1	N	RR
32	17	38.5	M6 x 1.0	10
40	17	38.5	M6 x 1.0	10
50	18	43.5	M8 x 1.25	14

Double clevis bracket material: Cast iron

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

∗∗ Clevis pin and snap ring are shipped together.

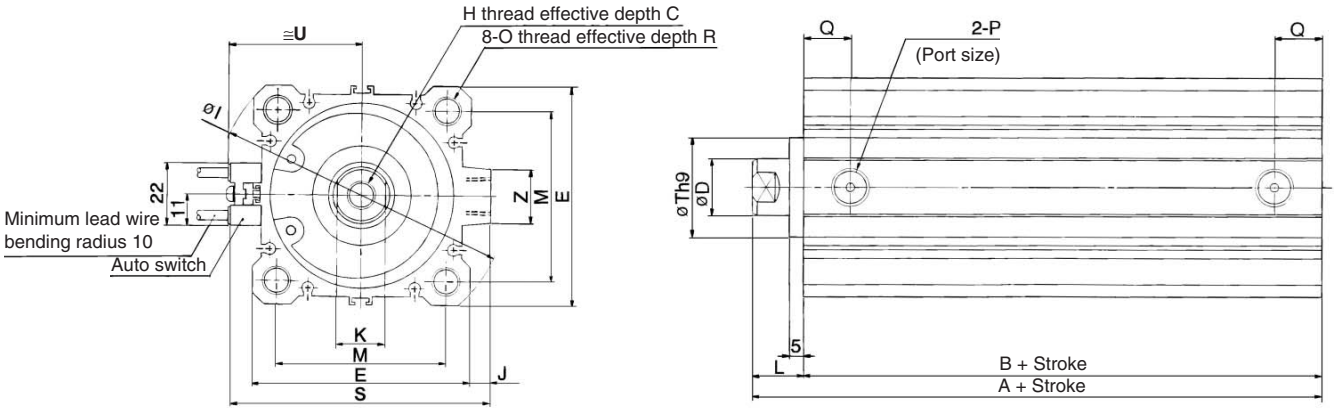
Rod end male thread



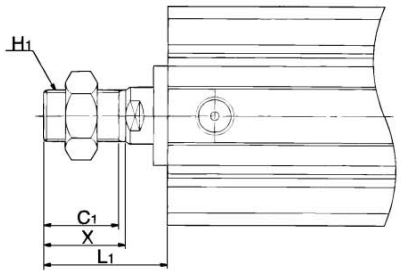
Dimensions: ø63 to ø100

The dimensions are the same with or without an auto switch.

Both ends tapped style: Series C□Q2A



Rod end male thread



Rod End Male Thread

Bore size (mm)	C1	H1	L1	X
63	26	M18 x 1.5	43.5	28.5
80	32.5	M22 x 1.5	53.5	35.5
100	32.5	M26 x 1.5	53.5	35.5

Auto switch shown above is D-A73 and D-A80.
For the auto switch mounting position and its mounting height, refer to page 7-6-130.

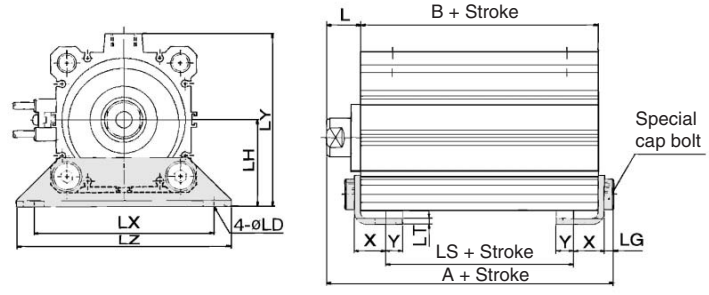
Dimensions of built-in One-touch fitting are equivalent to Series CQ2, double acting, single rod. Refer to page 7-6-18.

Both Ends Tapped Style

Bore size (mm)	Stroke range (mm)	A	B	C	D	E	H	I	J	K	L	M	O	P	Q	R	S	Th9	U	Z
63	125 to 200 (1) 250, 300	75	57	15	20	77	M10 x 1.5	103	7	17	18	60	M10 x 1.5	Rc 1/4	16.5	18	93	$35^{\ 0}_{-0.062}$	47.5	19
80		86	66	21	25	98	M16 x 2.0	132	6	22	20	77	M12 x 1.75	Rc 3/8	19	22	112.5	$43^{\ 0}_{-0.062}$	57.5	26
100		97.5	75.5	27	30	117	M20 x 2.5	156	6.5	27	22	94	M12 x 1.75	Rc 3/8	23	22	132.5	$59^{\ 0}_{-0.074}$	67.5	26

Note 1) For 125 to 200 stroke, strokes are by the 25 mm interval.
Note 2) For calculation on the longitudinal dimension of the intermediate strokes, refer to page 7-6-3.

Foot style: C□Q2L



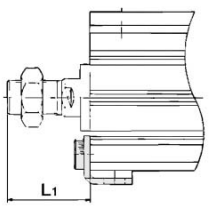
Foot Style

Bore size (mm)	A	B	L	L1	LD	LG	LH	LS	LT	LX	LY	LZ	X	Y
63	83.2	57	18	43.5	11	5	46	31	3.2	95	91.5	113	16.2	9
80	97.5	66	20	53.5	13	7	59	36	4.5	118	114	140	19.5	11
100	110.5	75.5	22	53.5	13	7	71	41.5	6	137	136	162	23	12.5

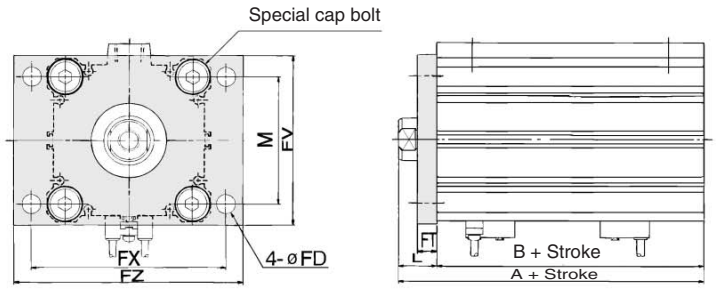
Foot bracket material: Carbon steel

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

Rod end male thread



Rod side flange style: C□Q2F

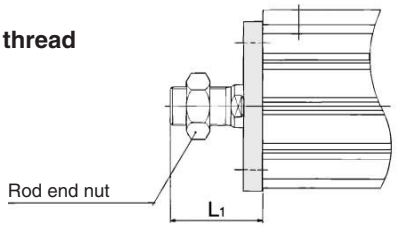


Rod Side Flange Style

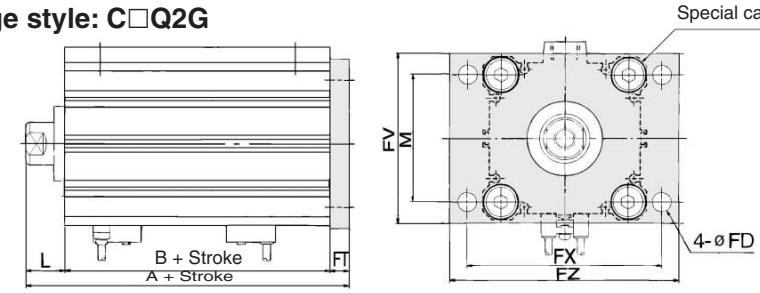
Bore size (mm)	A	B	FD	FT	FV	FX	FZ	L	L1	M
63	75	57	9	9	80	92	108	18	43.5	60
80	86	66	11	11	99	116	134	20	53.5	77
100	97.5	75.5	11	11	117	136	154	22	53.5	94

Flange bracket material: Carbon steel

Rod end male thread



Head side flange style: C□Q2G

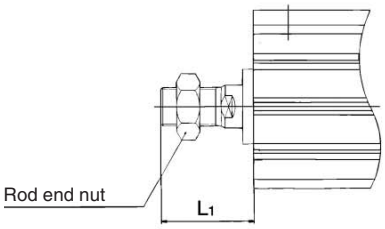


Head Side Flange Style

Bore size (mm)	A
63	84
80	97
100	108.5

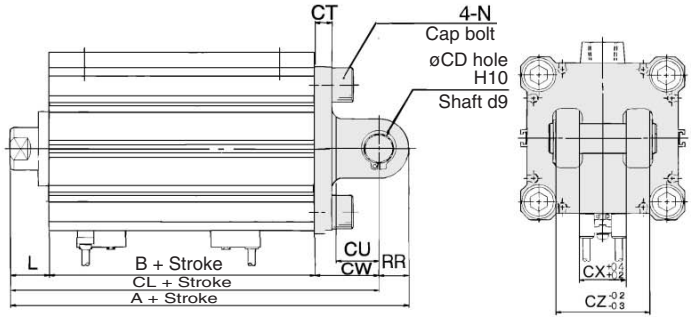
Flange bracket material: Carbon steel

∗ Dimensions except A are the same as rod side flange style.



Rod end male thread

Double clevis style: C□Q2D



Double Clevis Style

Bore size (mm)	A	B	CD	CL	CT	CU	CW	CX	CZ
63	119	57	14	105	8	20	30	22	44
80	142	66	18	124	10	27	38	28	56
100	164.5	75.5	22	142.5	13	31	45	32	64

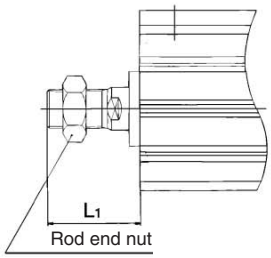
Bore size (mm)	L	L1	N	RR
63	18	43.5	M10 x 1.5	14
80	20	53.5	M12 x 1.75	18
100	22	53.5	M12 x 1.75	22

Double clevis bracket material: Cast iron

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

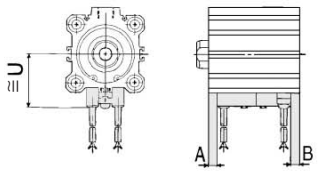
∗∗ Clevis pin and snap ring are attached.

Rod end male thread

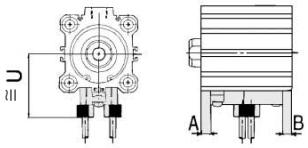


Proper Auto Switch Mounting Position (Detection at stroke end) and Its Mounting Height

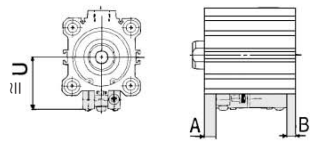
D-A7□
D-A80



D-A73C
D-A80C
D-J79C

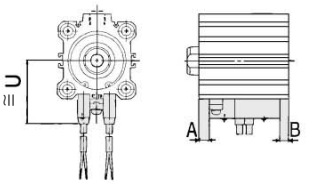


D-A7□H **D-F7□W**
D-A80H **D-J79W**
D-F7□ **D-F79F**
D-J79 **D-F7NTL**
D-F7BAL

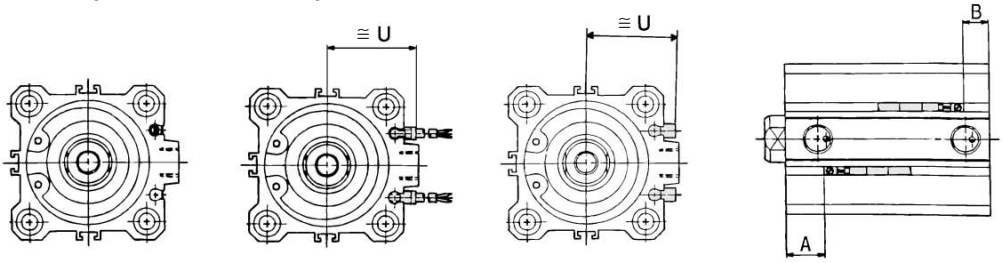


D-A79W
D-F7□WV
D-F7□V
D-F7BAVL

D-F9BAL

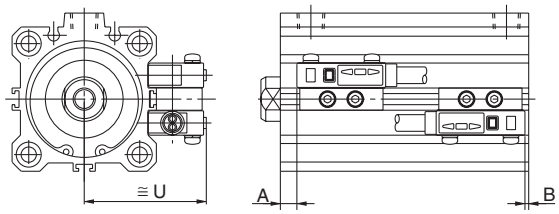


D-A9□ **D-A9□V**
D-M9□ **D-M9□V**
D-F9□W **D-F9□WV**



ø40 to ø100

D-P5DWL



Proper Auto Switch Mounting Position

Bore size (mm)	D-A7□ D-A80		D-A7□H D-A80H D-A73C D-A80C D-F7□ D-F79F D-J79 D-F7□V D-J79C D-F7□W D-J79W D-F7□WV D-F7BAL D-F7BAVL		D-A79W		D-A9□ D-A9□V		D-M9□ D-M9□V D-F9□W D-F9□WV		D-F9BAL		D-P5DWL	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B
32	9.5	17.5	10	18	7	15	8.5	16.5	12.5	20.5	11.5	19.5	—	—
40	13	23.5	13.5	24	10.5	21	12	22.5	16	26.5	15	25.5	9	19.5
50	11	24	11.5	24.5	8.5	21.5	10	23	14	27	13	26	7	20
63	13.5	25.5	14	26	11	23	12.5	24.5	16.5	28.5	15.5	27.5	9.5	21.5
80	16.5	31.5	17	32	14	29	15.5	30.5	19.5	34.5	18.5	33.5	12.5	29.5
100	19.5	38	20	38.5	17	35.5	18.5	37	22.5	41	21.5	40	15.5	34

Auto Switch Mounting Height

(mm)

D-A7□ D-A80	D-A7□H D-A80H D-F7□ D-J79 D-F7□W D-J79W D-F7BAL D-F79F D-F7NTL	D-A73C D-A80C	D-F7□V D-F7□WV D-F7BAVL	D-J79C	D-A79W	D-A9□V	D-M9□V D-F9□WV	D-F9BAL	D-P5DWL
U	U	U	U	U	U	U	U	U	U
31.5	32.5	38.5	35	38	34	27	29	26.5	—
35	36	42	38.5	41.5	37.5	30.5	32.5	30	44
41	42	48	44.5	47.5	43.5	36.5	38.5	36	50
47.5	48.5	54.5	51	54	50	40	42	39.5	56.5
57.5	58.5	64.5	61	64	60	50	52	49.5	66.5
67.5	68.5	74.5	71	74	70	60	62	59.5	76.5

Auto Switch Mounting Bracket Part No.

Bore size (mm)	Mounting bracket part no.	Note	Applicable auto switch	
			Reed switch	Solid state switch
32, **40** **50**, **63** **80**, **100**	BQ-2	• Switch mounting screw (M3 x 0.5 x 10ℓ) • Switch spacer • Switch mounting nut	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/F7BAVL D-F79F, D-F7NTL
40 to 100	BQP1-050	• Switch mounting bracket • Switch mounting nut • Hexagon socket head cap bolt (M3 x 0.5 x 14ℓ spring washer 2 pcs.) • Round head Phillips screw (M3 x 0.5 x 16ℓ spring washer 2 pcs.)	—	D-P5DWL

∗ 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
"D-F7BAL/F7BAVL" switch is set on the cylinder with the stainless steel screws above when shipped.
When only a switch is shipped independently, "BBA2" screws are attached.