







Compact Cylinder

# NCQ2/CQ2 Series

ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100, ø125, ø140, ø160

The cylinder is designed with ultra compact overall dimensions offering space saving features. Ideal for use on applications requiring compact size fixtures and equipment.

Series Variation	Action	Style	Standard Built in magnet Mounting thread (A) type Rod end M thread W/ rubber cushion End boss CQ2	Bore size (mm)	Std Stroke (mm)	Page
	Double Acting	Single rod (N)CQ2	●●●●●●●●●●●●●●●●●●●●	12, 16, 20, 25 32, 40, 50, 63 80, 100	ø12-ø16/5-30 ø20-ø25/5-50 ø32-ø40/5-100 ø50-ø100/10-100	2
		Double rod (N)CQ2W	●●●●●●●●●●●●●●●●●●●●	12, 16, 20, 25 32, 40, 50, 63 80, 100	ø12-ø16/5-30 ø20-ø40/5-50 ø50-ø100/10-50	24
	Single Acting	Extension/Retraction (N)CQ2	●●●●●●●●●●●●●●●●●●●●	12, 16, 20, 25 32, 40, 50	ø12-ø40/5,10 ø50/10,20	38
	Double Acting	Single rod (N)CQ2K	●●●●●●●●●●●●●●●●●●●●	12, 16, 20, 25 32, 40, 50, 63	ø12, ø16/5-30 ø20, ø25/5-50 ø32, ø40/5-100 ø50, ø63/10-100	60
		Double rod CQ2KW	●●●●●●●●●●●●●●●●●●●●	12, 16, 20, 25 32, 40, 50, 63	ø12, ø16/5-30 ø20-ø40/5-50 ø50, ø63/10-50	74
	Double Acting	Single rod CQ2	●●●●●●●●●●●●●●●●●●●●	125, 140, 160	10-300	84
		Double rod CQ2W	●●●●●●●●●●●●●●●●●●●●	125, 140, 160	10-300	88
	Double Acting	Single rod CQ2	●●●●●●●●●●●●●●●●●●●●	32, 40, 50 63, 80, 100	125-300	92

W/ one touch fitting (bore size ø22-ø63)  
Foot / flange mounting  
Clevvis mounting  
Copper free  
Air-Hydro (bore size ø20-ø100)  
Clean Room Series (Bore size ø12-ø63)

Applicable Auto Switch

Reed switch	D-A7•A8, D-A73C•A80C D-A7□H•A80H, D-A79W
Solid State	D-F7□•J79, D-F7□V, D-J79C, D-F7□W•J79W, D-F7□WV, D-F7BAL, D-F7□F, D-F7NTL

Made To Order

CQ2 Series made to order spec: see p. 98

Switch specifications see pg. 13



# Compact Cylinder: Standard/ Double Acting Single Rod NCQ2 / CQ2 Series

ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100

## How To Order

**NCQ2** **B** **H** **20** **F** **30** **D** **C**

**W/ Auto Switch** **NCQDQ2** **B** **H** **20** **F** **30** **D** **C** **A73** **S**

**Mounting**

<b>B</b>	Through hole	<b>F</b>	Rod side flange
<b>A</b>	Both ends tapped	<b>G</b>	Head side flange
<b>L</b>	Foot	<b>D</b>	Double Clevis

**Style**

-	Air pressure
<b>H</b>	See note 1) Air Hydro

Note 1) The available air-hydro bore sizes: ø20~ø100, CQ2 only.

**Bore Size**

<b>12</b>	12mm (1/2" Nom.)	<b>40</b>	40mm (1-1/2" Nom.)
<b>16</b>	16mm (5/8" Nom.)	<b>50</b>	50mm (2" Nom.)
<b>20</b>	20mm (3/4" Nom.)	<b>63</b>	63mm (2-1/2" Nom.)
<b>25</b>	25mm (1" Nom.)	<b>80</b>	80mm (3-1/4" Nom.)
<b>32</b>	32mm (1-1/4" Nom.)	<b>100</b>	100mm (4" Nom.)

**Piping**

-	Threaded ports
<b>F</b>	See note 2) Built-in one-touch fitting

Note 2) Available built-in one touch fitting bore size: ø32~ø63.  
Not applicable for Air-Hydro type CQ2

**Cylinder Stroke (mm)**

Please refer to p.3 for standard strokes

**Action**

<b>D</b>	Double
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**Auto Switch**

-	2 pcs.
<b>S</b>	1 pcs.
<b>n</b>	n pcs.

**Auto Switch Capability**

-	Without Auto Switch
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**Auto Switch Specifications**

Type	Autoswitch		Indicator light	Wire (Output type)	Load Voltage		
	Perpendicular entry	In-line entry			DC	AC	
Reed switch	—	A76H	Yes	3 Wire	—	5V	
	A72	A72H			—	200V	
	A73	A73H			12V	100V	
	A80	A80H	No	2 Wire	24V	5V, 12V	100V
	A73C	—				12V	—
	A80C	—				5V, 12V	24V
	A79W	—				—	—
Solid State Switch	F7NV	F79	Yes	3 Wire NPN	24V	5V, 12V	
	F7PV	F7P		3 Wire PNP			
	F7BV	J79		2 Wire	12V		
	J79C	—					
	F7NVV	F79W		3 Wire NPN	24V	5V, 12V	
	—	F7PW		3 Wire PNP			
	F7BVV	J79W		2 Wire			12V
	—	F7BAL		3 Wire NPN	24V	5V, 12V	
	—	F7NTL					
	—	F79F					
	—	F7LF					
—	—	4 Wire NPN	—	—			

### Mounting Kits

Bore Size (mm)	Note 4) Foot	Flange	Note 6) Double clevis
12	(N)CQ-L012	(N)CQ-F012	(N)CQ-D012
16	(N)CQ-L016	(N)CQ-F016	(N)CQ-D016
20	(N)CQ-L020	(N)CQ-F020	(N)CQ-D020
25	(N)CQ-L025	(N)CQ-F025	(N)CQ-D025
32	(N)CQ-L032	(N)CQ-F032	(N)CQ-D032
40	(N)CQ-L040	(N)CQ-F040	(N)CQ-D040
50	(N)CQ-L050	(N)CQ-F050	(N)CQ-D050
63	(N)CQ-L063	(N)CQ-F063	(N)CQ-D063
80	(N)CQ-L080	(N)CQ-F080	(N)CQ-D080
100	(N)CQ-L100	(N)CQ-F100	(N)CQ-D100

Note 4) If foot bracket is required for a cylinder, order a pair

Note 5) Each bracket comes with the following accessories;  
Foot / Flange; Body mounting bolt  
Double clevis; Clevis pin, Axis C style snap ring,  
Body mounting bolt

Note 6) The double-clevis is packaged with clevis pin and snap ring.

• Load length 0.5m.....Std. Connector A80C 5m.....Z Connector A80CZ  
3m.....L A80CL No lead.....N A80CN

### Body Option

-	Std. (Female thread)
<b>C</b>	Note 3) W/ rubber cushion
<b>M</b>	Male thread
<b>F</b>	Head end boss

\* Body option combination is available such as CM, FC, FM, and FCM.

Note 3) W/ Rubber cushion is not available for the air-hydraulic type.





Standard /  
Double Acting Single rod

# (N)CQ2 Series

## Model



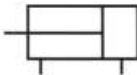
Bore Size		12	16	20	25	32	40	50	63	80	100	
Air-Pressure Type	Mounting	Through hole (std)	●	●	●	●	●	●	●	●	●	
		Both ends tapped	●	●	●	●	●	●	●	●	●	
	Built-In Magnet		●	●	●	●	●	●	●	●	●	
	Piping Method	Threaded PT or NPT	M5x 0.8	M5x 0.8	M5x 0.8	M5x 0.8	Note 1 M5x 0.8 1/8	1/8	1/4	1/4	3/8	3/8
		Built-In One Touch Fitting	-	-	-	-	Note 2 6/4	6/4	8/6	8/6	-	-
	Rod End Male Thread		●	●	●	●	●	●	●	●	●	●
W/Rubber Cushion		●	●	●	●	●	●	●	●	●	●	
W/Head End boss		●	●	●	●	●	●	●	●	●	●	
Air-Hydro Type	Mounting	Through hole (std)	-	-	●	●	●	●	●	●	●	
		Both ends tapped	-	-	●	●	●	●	●	●	●	
	Built-In Magnet		-	-	●	●	●	●	●	●	●	
	Piping Method	Threaded PT or NPT	-	-	M5x 0.8	M5x 0.8	Note 1 M5x 0.8 1/8	1/8	1/4	1/4	3/8	3/8
		Rod End Male Thread	-	-	●	●	●	●	●	●	●	●
	W/ Head End boss		-	-	●	●	●	●	●	●	●	●

Note 1) In cases without autoswitch, only 5 stroke uses M5x0.8

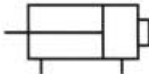
Note 2) In case of built-in fitting, the external tube dimension for ø 32, 5 stroke and 10 stroke are the same.

## Standard Specifications

Double acting/  
Single rod



Head end boss



Model	Air Pressure (Non-Lube)	Air-hydraulic
Media	Air	Hydraulic oil
Proof Pressure	217psi {15.3kgf/cm <sup>2</sup> }	
Max. Operating Pressure	145psi {10.2kgf/cm <sup>2</sup> }	
Ambient and Media temp.	15~160°F{-10°C~+70°C} (At freezing temp. air must be dry)	
Rubber cushion	None	-
Rod end thread	Female Thread (std.)	
Rod end thread tolerance	JIS Class II	
Stroke Length tolerance	+1.0 0 mm	
Mounting	Through hole (std.)	
Piston Speed	2~20in/s (50~500mm/s)	.002~8 in/s(0.5~200mm/s)

## Min. Operating Pressure

psi

Bore size	12	16	20	25	32	40	50	63	80	100
Air pressure type (non-lube)	10.15	10.15	7.25	7.25	7.25	7.25	7.25	7.25	7.25	7.25
Air-hydro	-	-	26.1	26.1	26.1	14.5	14.5	14.5	14.5	14.5

## Cautions

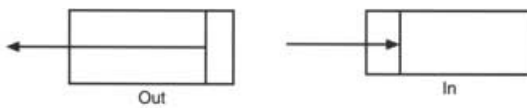
- When mounting, completely flush piping and be careful that dust and chips do not enter the cylinder.
- The Piston rod load should always be aligned with the cylinder axis.
  - Cylinder installation requires accurate alignment.
  - When used as a stopper, avoid side loading of the piston rod.
- Prevent damage to the piston rod. A damaged piston rod will lead to damage of the rod seal and result in leakage.

## Standard stroke

Air pressure type (non-lube)		mm	Air-Hydro		mm
Bore size	Standard stroke		Bore size	Standard stroke	
12,16	5,10,15,20,25,30		20,25	5,10,15,20,25,30,35,40,45,50	
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	
32,40	5,10,15,20,25,30,35,40,45,50,75,100		50,63	10,15,20,25,30,35,40,45,50,75,100	
50,63	10,15,20,25,30,35,40,45,50,75,100		80,100	45,50,75,100	

• Available intermediate stroke.

Intermediate strokes in 1mm increments are available by installing a spacer into the STD. stroke cylinder. Contact an SMC representative for ø40-ø100 intermediate stroke cylinder with bumper. Example] CQ2B50-57D can be made by installing a 18 mm (w)spacer into the std. cylinder CQ2B50-75D. 5mm Incremental Stroke (spacers) done as standard.



**Weight/Double acting: Single rod type**

lbs

**Double Acting Single Rod** lbf

Bore size	Rod direction	Operating pressures PSI		
		50	75	100
12	OUT	8.7	13.1	17.5
	IN	6.6	9.8	13.1
16	OUT	15.6	23.4	31.2
	IN	11.7	17.5	23.4
20	OUT	24.3	36.5	48.6
	IN	18.2	27.3	36.5
25	OUT	38.0	57.0	76.0
	IN	29.3	43.9	58.5
32	OUT	62.3	93.5	125
	IN	46.8	70.1	93.5
40	OUT	97.4	146	195
	IN	81.8	123	164
50	OUT	152	228	304
	IN	128	192	256
63	OUT	242	362	483
	IN	217	326	434
80	OUT	390	584	779
	IN	352	527	703
100	OUT	609	913	1217
	IN	554	831	1108

Bore size	Stroke											
	5	10	15	20	25	30	35	40	45	50	75	100
12	0.088	0.104	0.119	0.135	0.150	0.165	-	-	-	-	-	-
16	0.135	0.159	0.183	0.207	0.232	0.256	-	-	-	-	-	-
20	0.021	0.247	0.291	0.335	0.381	0.426	0.470	0.516	0.560	0.604	-	-
25	0.260	0.306	0.353	0.399	0.448	0.494	0.540	0.587	0.633	0.681	-	-
32	0.346	0.397	0.445	0.496	0.547	0.595	0.644	0.697	0.747	0.798	1.15	1.40
40	0.600	0.648	0.697	0.745	0.794	0.842	0.891	0.939	0.988	1.04	1.37	1.62
50	-	0.884	0.968	1.05	1.13	1.21	1.30	1.38	1.46	1.55	2.11	2.43
63	-	1.43	1.51	1.60	1.69	1.78	1.87	1.96	2.04	2.13	2.77	3.23
80	-	3.18	3.38	3.58	3.78	3.98	4.18	4.38	4.58	4.78	6.24	7.27
100	-	4.87	5.10	5.34	5.57	5.80	6.04	6.27	6.50	6.74	8.38	9.52

**Weight Adder**

lbs.

Bore size	12	16	20	25	32	40	50	63	80	100
Both ends tapped	0.004	0.004	0.013	0.013	0.013	0.013	0.013	0.042	0.099	0.099
Rod end M thread	Thread	0.003	0.007	0.013	0.026	0.057	0.060	0.117	0.117	0.265
	Nut	0.002	0.004	0.009	0.018	0.037	0.037	0.071	0.071	0.108
Head end boss	0.002	0.003	0.004	0.007	0.011	0.015	0.029	0.055	0.099	0.212
W/ rubber cushion	0.000	0.000	-0.004	-0.007	-0.007	-0.015	-0.020	-0.040	-0.068	-0.123
W/ one touch fitting	-	-	-	-	0.026	0.026	0.046	0.046	-	-
Foot mounting*	0.121	0.148	0.362	0.410	0.315	0.342	0.536	0.714	1.535	2.342
Rod side flange*	0.126	0.152	0.306	0.355	0.397	0.472	0.822	1.233	2.328	3.010
Head side flange*	0.119	0.143	0.293	0.335	0.364	0.437	0.767	1.177	2.242	2.886
Double clevis**	0.071	0.086	0.194	0.271	0.333	0.432	0.867	1.222	2.445	4.161

\*(incl. mounting bolt) \*\* (incl. pin, snap ring, bolt)

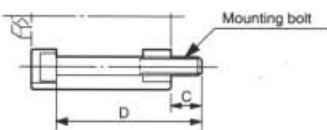
**How to obtain the total weight (lbs)**

NCQ2D32-20DCM

<b>Std wt.:</b>	NCQ2B32-20D	.496
<b>Wt. adder:</b>	Mounting end (both) tap	0.013
	Rod end M thread	.057
	W/ rubber cushion	-0.007
	Double clevis	.333
	<b>Total</b>	<b>.892</b>

**Mounting Bolt For (N)CQ2**

Special long mounting bolt for through hole mounting is available as an option.  
 How to Order:  
 Specify the required bolts  
 Example) Bolt M3x35L 4pcs.



Thread	Pitch
M3	0.5
M5	0.8
M6	1.0
M8	1.25
M10	1.5

Model	C	D	Mounting bolt
(N)CQ2B12-5D	6.5	25	M3x25L
-10D		30	x30L
-15D		35	x35L
-20D		40	x40L
-25D		45	x45L
-30D		50	x50L
(N)CQ2B16-5D	5	25	M3x25L
-10D		30	x30L
-15D		35	x35L
-20D		40	x40L
-25D		45	x45L
-30D		50	x50L
(N)CQ2B20-5D	7.5	25	M5x25L
-10D		30	x30L
-15D		35	x35L
-20D		40	x50L
-25D		45	x45L
-30D		50	x50L
-35D		55	x55L
(N)CQ2B25-5D	9.5	30	M5x30L
-10D		35	x35L
-15D		40	x40L
-20D		45	x45L
-25D		50	x50L
-30D		55	x55L
-35D		60	x60L
-40D		65	x65L
-50D		70	x70L

Model	C	D	Mounting bolt	
(N)CQ2B32-5D	9	30	M5x30L	
-10D		35	x35L	
-15D		40	x40L	
-20D		45	x45L	
-25D		50	x50L	
-30D		55	x55L	
-35D		60	x60L	
-40D		65	x65L	
-50D		70	x70L	
-75D		110	x110L	
(N)CQ2B40-5D	7.5	35	M5x35L	
-10D		40	x40L	
-15D		45	x45L	
-20D		50	x50L	
-25D		55	x55L	
-30D		60	x60L	
-35D		65	x65L	
-40D		70	x70L	
-45D		75	x75L	
-50D		80	x80L	
(N)CQ2B50-10D	12.5	115	x115L	
-10D		140	x140L	
(N)CQ2B50-10D		12.5	45	M6x45L
-15D			50	x50L
-20D			55	x55L
-25D			60	x60L
-30D			65	x65L
-35D			70	x70L
-40D			75	x75L
-45D			80	x80L
-50D	85		x85L	
-75D	120		x120L	
-100D	145	x145L		

Model	C	D	Mounting bolt
(N)CQ2B63-10D	14.5	50	M8x50L
-15D		55	x55L
-20D		60	x60L
-25D		65	x65L
-30D		70	x70L
-35D		75	x75L
-40D		80	x80L
-45D		85	x85L
-50D		90	x90L
-75D		125	x125L
(N)CQ2B80-10D	15	55	M10x55L
-15D		60	x60L
-20D		65	x65L
-25D		70	x70L
-30D		75	x75L
-35D		80	x80L
-40D		85	x85L
-45D		90	x90L
-50D		95	x95L
-75D		130	x130L
(N)CQ2B100-10D	15.5	65	M10x65L
-15D		70	x70L
-20D		75	x75L
-25D		80	x80L
-30D		85	x85L
-35D		90	x90L
-40D		95	x95L
-45D		100	x100L
-50D		105	x105L
-75D		140	x140L
-100D	165	x165L	



### Clean Room Series Air Cylinder

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

- Clean series  
10- Relief type  
11- Vacuum type
- $\phi 12, \phi 16, \phi 20, \phi 25, \phi 32, \phi 40, \phi 50, \phi 63$

The double sealing structure of the rod end is designed to exhaust the air through a relief port directly to the outside of clean room. Can be used for class 100 clean room application.



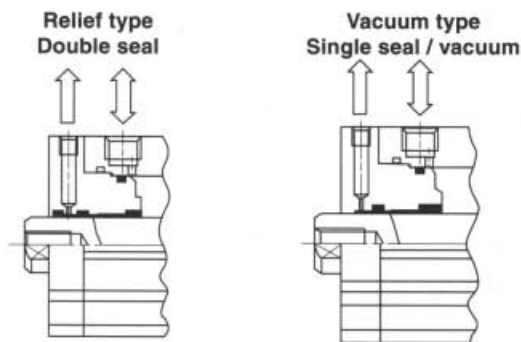
### Specifications

Action	Double acting single rod
Bore Size	$\phi 12, \phi 16, \phi 20, \phi 25, \phi 32, \phi 40, \phi 50, \phi 63$
Proof pressure	217psi, {15.3kgf / cm <sup>2</sup> }
Max. operating pressure	145psi {10.2kgf / cm <sup>2</sup> }
Rubber cushion	None
Piping	Threaded piping
Piston speed	2~20 in / sec (50~500mm / s)
Mounting	Through hole
Auto switch capability	Capable

Consult SMC for more detailed information.

Note) In case of  $\phi 12$  with auto switch, rubber cushion is standard.

### Construction



The **relief porting type** exhausts the air between the two rod seals, offering less dust and contamination (1/20 of conventional cylinders).

The **Vacuum type** structure is exactly the same as 10 Series. However, removing the outer seal allows atmospheric air to be drawn out by vacuum through the clearance between the rod and cover.

By doing so, the dust generated from the outside becomes almost non-existent. Can be used for higher degree of cleanliness than a standard cylinder.

### Copper Free Series Air Cylinder

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

- Copper Free series
- $\phi 50, \phi 63, \phi 80, \phi 100$

Changed surface treatment and material to electroless nickel plated and copper free, respectively, to remove copper ion so that no interference will occur when used in cathode ray tube manufacturing process.

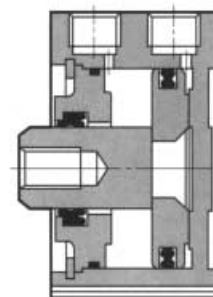


### Specifications

Action	Double acting single rod
Bore Size	$\phi 50, \phi 63, \phi 80, \phi 100$
Proof pressure	217psi, {15.3kgf / cm <sup>2</sup> }
Max. operating pressure	145psi {10.2kgf / cm <sup>2</sup> }
Rubber cushion	With & without
Piping	Threaded piping
Piston speed	2~20 in / sec (50~500mm / s)
Mounting	Through hole, both ends tapping
Auto switch capability	Capable

Consult SMC for more detailed information.

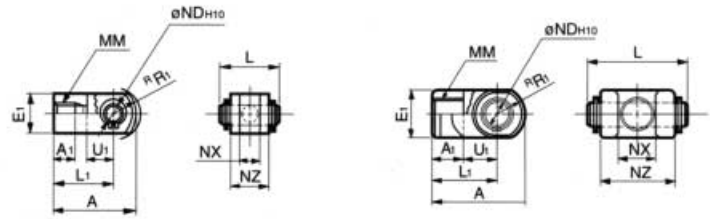
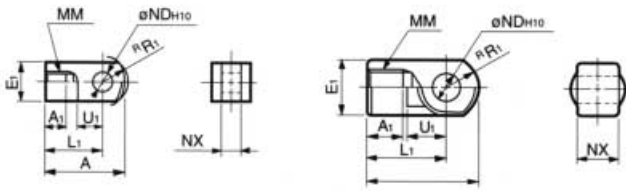
### Construction



Accessories

**SINGLE ROD CLEVIS (ROD EYE)**

**DOUBLE ROD CLEVIS (ROD EYE)**



**CQ2 - Single Rod Clevis**

mm

Part Number	Applicable bore size	A	A <sub>1</sub>	E <sub>1</sub>	L <sub>1</sub>	MM	<sup>R</sup> R <sub>1</sub>	U <sub>1</sub>	ND <sub>H10</sub>	NX
I-G012	12	21.5	6	□10	16	M5x0.8	6.3	7	5 <sup>+0.048</sup> <sub>0</sub>	5 <sup>-0.2</sup> <sub>-0.4</sub>
I-Z015	16	32	8	□12	25	M6x1	8.1	14	5 <sup>+0.048</sup> <sub>0</sub>	6.4 <sup>-0.1</sup> <sub>-0.3</sub>
I-G02	20	34	8.5	□16	25	M8x1.25	10.3	11.5	8 <sup>+0.058</sup> <sub>0</sub>	8 <sup>-0.2</sup> <sub>-0.4</sub>
I-G03	25	41	10.5	□20	30	M10x1.25	12.8	14	10 <sup>+0.058</sup> <sub>0</sub>	10 <sup>-0.2</sup> <sub>-0.4</sub>
I-G04	32,40	42	14	∅22	30	M14x1.5	12	14	10 <sup>+0.058</sup> <sub>0</sub>	18 <sup>-0.3</sup> <sub>-0.5</sub>
I-G05	50,63	56	18	∅28	40	M18x1.5	16	20	14 <sup>+0.070</sup> <sub>0</sub>	22 <sup>-0.3</sup> <sub>-0.5</sub>
I-G08	80	71	21	∅38	50	M22x1.5	21	27	18 <sup>+0.070</sup> <sub>0</sub>	28 <sup>-0.3</sup> <sub>-0.5</sub>
I-G10	100	79	21	∅44	55	M26x1.5	24	31	22 <sup>+0.084</sup> <sub>0</sub>	32 <sup>-0.3</sup> <sub>-0.5</sub>

**CQ2 - Double Rod Clevis**

mm

Part Number	Applicable bore size	A	A <sub>1</sub>	E <sub>1</sub>	L <sub>1</sub>	MM	<sup>R</sup> R <sub>1</sub>	U <sub>1</sub>	ND <sub>H10</sub>	NX	NZ	L	PIN PART NO.
Y-G012	12	21.5	6	□10	16	M5x0.8	6.3	7	5 <sup>+0.048</sup> <sub>0</sub>	5 <sup>-0.2</sup> <sub>-0.4</sub>	10	14.6	IY-G012
Y-Z015A	16	28	11	□12	21	M6x1	8.1	10	5 <sup>+0.048</sup> <sub>0</sub>	6.5 <sup>-0.2</sup> <sub>0</sub>	12	16.6	IY-J015
Y-G02	20	34	8.5	□16	25	M8x1.25	10.3	11.5	8 <sup>+0.058</sup> <sub>0</sub>	8 <sup>-0.2</sup> <sub>-0.4</sub>	16	21	IY-G02
Y-G03	25	41	10.5	□20	30	M10x1.25	12.8	14	10 <sup>+0.058</sup> <sub>0</sub>	10 <sup>-0.2</sup> <sub>-0.4</sub>	20	25.6	IY-G03
Y-G04	32,40	42	16	∅22	30	M14x1.5	12	14	10 <sup>+0.058</sup> <sub>0</sub>	18 <sup>-0.3</sup> <sub>-0.5</sub>	36	41.6	IY-G04
Y-G05	50,63	56	20	∅28	40	M18x1.5	16	20	14 <sup>+0.070</sup> <sub>0</sub>	22 <sup>-0.3</sup> <sub>-0.5</sub>	44	50.6	IY-G05
Y-G08	80	71	23	∅38	50	M22x1.5	21	27	18 <sup>+0.070</sup> <sub>0</sub>	28 <sup>-0.3</sup> <sub>-0.5</sub>	56	64	IY-G08
Y-G10	100	79	24	∅44	55	M26x1.5	24	31	22 <sup>+0.084</sup> <sub>0</sub>	32 <sup>-0.3</sup> <sub>-0.5</sub>	64	72	IY-G10

Clevis, Pin and Snap Ring are in the package

**NCQ2 - Single Rod Clevis**

mm

Part Number	Applicable bore size	A	A <sub>1</sub>	E <sub>1</sub>	L <sub>1</sub>	MM	<sup>R</sup> R <sub>1</sub>	U <sub>1</sub>	ND <sub>H10</sub> Inch	NX
RCS-01	12	21.5	6	□10	16	#8-32UNC	6.3	7	3/16 <sup>+0.002</sup> <sub>0</sub>	5 <sup>-0.2</sup> <sub>-0.4</sub>
RCS-015	16	32	6	□12	25	#8-32UNC	12	14	3/16 <sup>+0.002</sup> <sub>0</sub>	6.4 <sup>-0.1</sup> <sub>-0.3</sub>
RCS-02	20	34	6	□16	25	#10-32UNF	10.3	11.5	5/16 <sup>+0.002</sup> <sub>0</sub>	8 <sup>-0.2</sup> <sub>-0.4</sub>
RCS-025	25	41	8	□20	30	1/4-28UNF	18	14	3/8 <sup>+0.002</sup> <sub>0</sub>	10 <sup>-0.2</sup> <sub>-0.4</sub>
RCS-03	32	42	16	∅22	30	5/16-24UNF	12	14	3/8 <sup>+0.002</sup> <sub>0</sub>	18 <sup>-0.3</sup> <sub>-0.5</sub>
RCS-04	40	42	11	∅22	30	3/8-24UNF	12	14	3/8 <sup>+0.002</sup> <sub>0</sub>	18 <sup>-0.3</sup> <sub>-0.5</sub>
RCS-05	50, 63	56	18	∅28	40	1/2-20UNF	16	20	1/2 <sup>+0.003</sup> <sub>0</sub>	22 <sup>-0.3</sup> <sub>-0.5</sub>
RCS-08	80	71	21	∅38	50	5/8-18UNF	21	27	3/4 <sup>+0.003</sup> <sub>0</sub>	28 <sup>-0.3</sup> <sub>-0.5</sub>
RCS-10	100	79	21	∅44	55	3/4-16UNF	24	31	7/8 <sup>+0.003</sup> <sub>0</sub>	32 <sup>-0.3</sup> <sub>-0.5</sub>

Clevis Pin and Retaining Rings not included, see RCSK "xx" on page 7

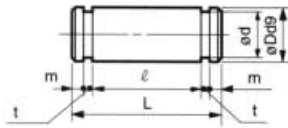
**NCQ2 - Double Rod Clevis**

mm

Part Number	Applicable bore size	A	A <sub>1</sub>	E <sub>1</sub>	L <sub>1</sub>	MM	<sup>R</sup> R <sub>1</sub>	U <sub>1</sub>	ND <sub>H10</sub> Inch	NX	NZ	L
RCD-01	12	21.5	6	□10	16	#8-32UNC	6.3	7	3/16 <sup>+0.002</sup> <sub>0</sub>	5 <sup>-0.2</sup> <sub>-0.4</sub>	10	14
RCD-015	16	28	6	□12	21	#8-32UNC	12	10	3/16 <sup>+0.002</sup> <sub>0</sub>	6.5 <sup>+0.2</sup> <sub>+0.1</sub>	12	16
RCD-02	20	34	6	□16	25	#10-32UNF	10.3	11.5	5/16 <sup>+0.002</sup> <sub>0</sub>	8 <sup>-0.2</sup> <sub>-0.4</sub>	16	21
RCD-025	25	41	8	□20	30	1/4-28UNF	18	14	3/8 <sup>+0.002</sup> <sub>0</sub>	10 <sup>-0.2</sup> <sub>-0.4</sub>	20	25
RCD-03	32	42	16	∅22	30	5/16-24UNF	12	14	3/8 <sup>+0.002</sup> <sub>0</sub>	18 <sup>+0.5</sup> <sub>+0.3</sub>	36	41
RCD-04	40	42	16	∅22	30	3/8-24UNF	12	14	3/8 <sup>+0.002</sup> <sub>0</sub>	18 <sup>+0.5</sup> <sub>+0.3</sub>	36	41
RCD-05	50,63	56	20	∅28	40	1/2-20UNF	16	20	1/2 <sup>+0.003</sup> <sub>0</sub>	22 <sup>+0.5</sup> <sub>+0.3</sub>	44	50
RCD-08	80	71	23	∅38	50	5/8-18UNF	21	27	3/4 <sup>+0.003</sup> <sub>0</sub>	28 <sup>+0.5</sup> <sub>+0.3</sub>	56	64
RCD-10	100	79	24	∅44	55	3/4-16UNF	24	31	7/8 <sup>+0.003</sup> <sub>0</sub>	32 <sup>+0.5</sup> <sub>+0.3</sub>	64	72

Clevis Pin and Retaining Rings not included, see RCSK "xx" on page 7





CQ2 - Double Rod Clevis Pin

mm

Part Number	Applicable bore size	Dd9	L	d	ℓ	m	t	Snap ring
IY-G012	12	5 <sup>-0.030</sup> / <sub>-0.060</sub>	14.6	4.8	10.2	1.5	0.7	Axial C style 5
IY-J015	16	5 <sup>-0.030</sup> / <sub>-0.060</sub>	16.6	4.8	12.2	1.5	0.7	Axial C style 5
IY-G02	20	8 <sup>-0.040</sup> / <sub>-0.076</sub>	21	7.6	16.2	1.5	0.9	Axial C style 8
IY-G03	25	10 <sup>-0.040</sup> / <sub>-0.076</sub>	25.6	9.6	20.2	1.55	1.15	Axial C style 10
IY-G04	32, 40	10 <sup>-0.040</sup> / <sub>-0.076</sub>	41.6	9.6	36.2	1.55	1.15	Axial C style 10
IY-G05	50, 63	14 <sup>-0.050</sup> / <sub>-0.093</sub>	50.6	13.4	44.2	2.05	1.15	Axial C style 14
IY-G08	80	18 <sup>-0.050</sup> / <sub>-0.093</sub>	64	17	56.2	2.55	1.35	Axial C style 18
IY-G10	100	22 <sup>-0.065</sup> / <sub>-0.117</sub>	72	21	64.2	2.55	1.35	Axial C style 22

NCQ2 - Double Rod Clevis Pin

mm

Part Number	Applicable bore size	D	L	d	ℓ	m	t
PS-01	12	4.77 <sup>-0.03</sup> / <sub>-0.06</sub>	14	4.45	10.2	1.44	0.46
PS-015	16	4.77 <sup>-0.03</sup> / <sub>-0.06</sub>	16	4.45	12.2	1.44	0.46
PS-02	20	7.94 <sup>-0.040</sup> / <sub>-0.076</sub>	21	7.37	16.2	1.66	0.74
PS-025	25	9.53 <sup>-0.046</sup> / <sub>-0.076</sub>	25	8.94	20.2	1.66	0.74
PS-03	32, 40	9.53 <sup>-0.040</sup> / <sub>-0.076</sub>	41	8.94	36.2	1.66	0.74
PS-05	50, 63	12.7 <sup>-0.05</sup> / <sub>-0.076</sub>	50	11.89	44.2	1.9	1.0
PS-08	80	19.05 <sup>-0.065</sup> / <sub>-0.117</sub>	64	17.89	56.2	2.73	1.17
PS-10	100	22.23 <sup>-0.065</sup> / <sub>-0.117</sub>	72	20.85	64.2	2.73	1.17

Kits

NCQ2 Double Rod Clevis

Kit Part Number	Applicable bore size	Includes		
		Clevis (1)	Pin (1)	Retaining Rings (2)
RCDK-01	12	RCD-01	PS-01	PC-01
RCDK-015	16	RCD-015	PS-015	PC-01
RCDK-02	20	RCD-02	PS-02	PC-02
RCDK-025	25	RCD-025	PS-025	PC-03
RCDK-03	32	RCD-03	PS-03	PC-03
RCDK-04	40	RCD-04	PS-04	PC-03
RCDK-05	50,63	RCD-05	PS-05	PC-05
RCDK-08	80	RCD-08	PS-08	PC-08
RCDK-10	100	RCD-10	PS-10	PC-10

NCQ2 Single Rod Clevis (Rod Eye)

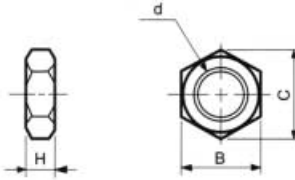
Kit Part Number	Applicable bore size	Includes		
		Clevis (1)	Pin (1)	Retaining Rings (2)
RCSK-01	12	RCS-01	PS-01	PC-01
RCSK-015	16	RCS-015	PS-015	PC-01
RCSK-02	20	RCS-02	PS-02	PC-02
RCDK-025	25	RCS-025	PS-025	PC-03
RCSK-03	32	RCS-03	PS-03	PC-03
RCSK-04	40	RCS-04	PS-03	PC-03
RCSK-05	50,63	RCS-05	PS-05	PC-05
RCSK-08	80	RCS-08	PS-08	PC-08
RCSK-10	100	RCS-10	PS-10	PC-10

NCQ2 Rod Clevis Pin

Kit Part Number	Applicable bore size	Includes	
		Pin (1)	Retaining Rings (2)
PRA-01	12	PS-01	PC-01
PRA-015	16	PS-015	PC-01
PRA-02	20	PS-02	PC-02
PRA-025	25	PS-025	PC-03
PRA-03	32,40	PS-03	PC-03
PRA-05	50, 63	PS-05	PC-05
PRA-08	80	PS-08	PC-08
PRA-10	100	PS-10	PC-10

CQ2 - Jam Nut

mm



Part Number	Applicable bore size	d	H	B	C
NTJ-015A	12	M5x0.8	4	8	9.2
NT-015A	16	M6x1	5	10	11.5
NT-02	20	M8x1.25	5	13	15.0
NT-03	25	M10x1.25	6	17	19.6
NT-04	32, 40	M14x1.5	8	22	25.4
NT-05	50, 63	M18x1.5	11	27	31.2
NT-08	80	M22x1.5	13	32	37.0
NT-10	100	M26x1.5	16	41	47.3
NT-12	125,140	M30x1.5	18	46	53.1
NT-16	160	M36x1.5	21	55	63.5

NCQ2 - Jam Nut

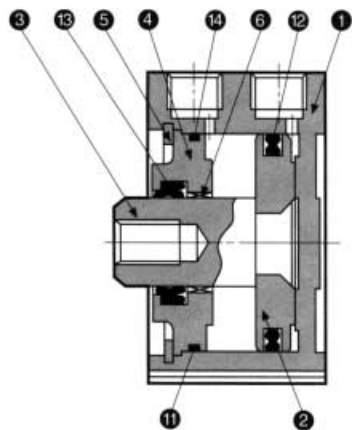
mm

Model	Applicable bore size	d	H	B	C
JM-01	12, 16	8-32 UNC	3.3	8.7	10
JM-02	20	10-32 UNF	3.3	9.5	11
JM-025	25	1/4-28 UNF	4.1	11.2	13
JM-03	32	5/16-24 UNF	4.8	12.7	14.7
JM-04	40	3/8-24 UNF	5.6	14.3	16.5
JM-05	50, 63	1/2-20 UNF	7.9	19.1	22
JM-08	80	5/8-18 UNF	9.7	23.8	27.4
JM-10	100	3/4-16 UNF	10.7	28.7	33

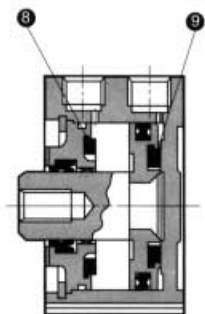
NOTE: Jam Nut Included when option "M" is ordered

# Compact Cylinder: Standard / Double Acting Single Rod

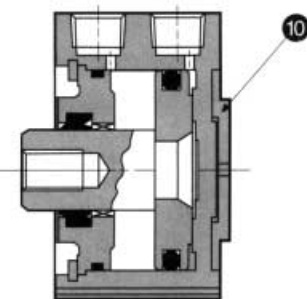
## Construction / Part List



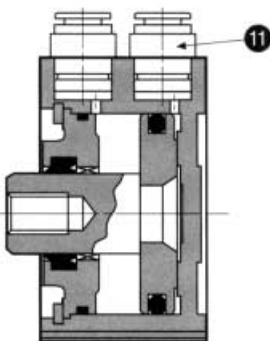
Double Acting / Single Rod



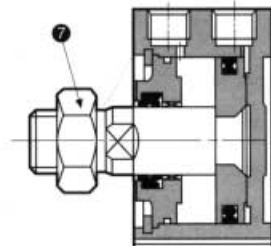
With Cushion



End Boss Head End



One Touch Fittings



Male Thread With Jam Nut

## Parts list

No.	Description	Material	Remarks
1	Cylinder tube	Aluminum alloy	Hard anodized
2	*Piston	Aluminum alloy	Chromate
3	*Piston rod	Stainless steel	ø12~25
		Carbon steel	ø32~100, hard chrome plated
4	Collar	Bearing grade aluminum	ø12~40, black anodized
		Aluminum alloy casting	ø50~100, black painted
5	Retaining ring	Carbon tool steel	Phosphate coating

No.	Description	Material	Remarks
6	Bushing	Leaded tin bronze casting	Used for only ø50 and above
7	Rod end nut	Carbon steel	Nickel plated
8	Bumper A	polyurethane rubber	
9	Bumper B	polyurethane rubber	
10	End boss	Aluminum alloy	Hard anodizing
11	One touch fittings	—	ø32~ø63

\* Piston and piston rod are connected (one-piece).  
For bore size 12~ø25 rubber cushion using stainless steel piston rod.

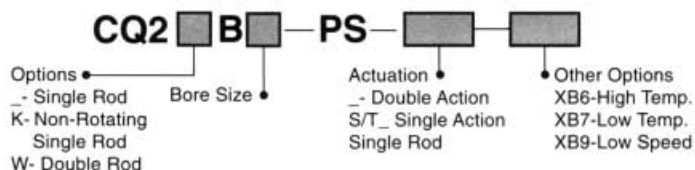
## Seal List

No.	Description	Material	Parts No.									
			ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
12	Piston seal	NBR	NLP-12-7L	NLP-16A	NLP-20A	NLP-25A	NLP-32A	NLP-40A	NLP-50A	NLP-63B	NLP-80B	NLP-100B
13	Rod seal	NBR	DYR-6K	DYR-8K	DYR-10SK	DYR-12	DYR-16	PDU-16Z	PDU-20Z	PDU-20Z	PDU-25Z	PDU-30Z
14	Gasket	NBR	SP-013-6	C14	C18	C22	C29	C36	C46	C60	C75	C95

## Air Hydro (CQ2 only)

No.	Description	Material	Parts No.							
			ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
12	Piston seal	NBR	RPS-20A	RPS-25A	RPS-32A	RPS-40A	RPS-50A	RPS-63A	RPS-80A	RPS-100A
13	Rod seal	NBR	PS-10	PS-12	PS-16	HDU-16	HDU-20	HDU-20	HDU-25	HDU-30
14	Gasket	NBR	C18	C22	C29	C36	C46	C60	C75	C95

## Seal Kit Part Numbers

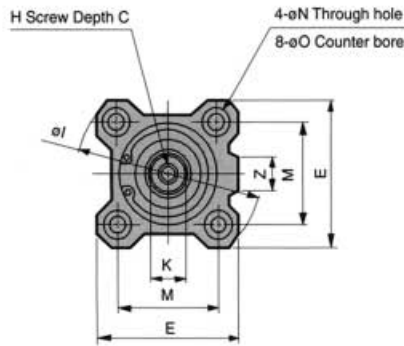




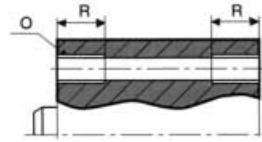
# (N)CQ2 Series

Bore Size  $\phi 12 \sim \phi 25$

## Through Hole / (N)CQ2B

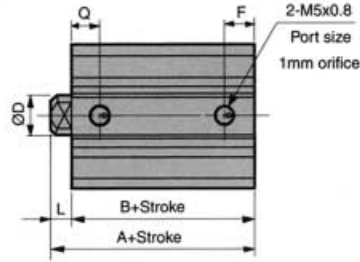


## Both ends tapped



## (N)CQ2A Both Ends Tapped

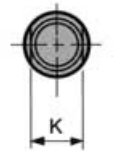
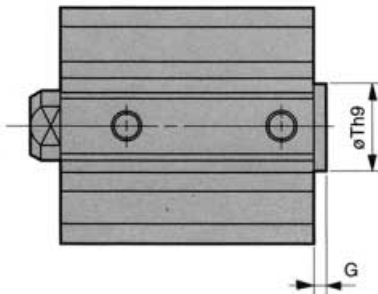
Bore size	CQ2 O	NCQ2 inch O	R
12	M4x0.7	8-32 UNC	7
16	M4x0.7	8-32 UNC	7
20	M6x1.0	1/4 - 20 UNC	10
25	M6x1.0	1/4 - 20 UNC	10



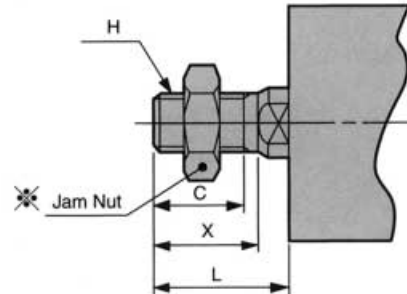
## Standard

Bore size	Stroke	A	B	CQ2 C	NCQ2 C	D	E	F	CQ2 H	NCQ2 inch H	I	K	L	M	N	O	Q	Z
12	5~30	20.5	17	6	5.4	6	25	5	M3x0.5	#8-32	32	5	3.5	15.5	3.5	6.5 depth 3.5	7.5	-
16	5~30	22	18.5	8	5.4	8	29	5.5	M4x0.7	#8-32	38	6	3.5	20	3.5	6.5 depth 3.5	8	10
20	5~50	24	19.5	7	7	10	36	5.5	M5x0.8	#10-32	47	8	4.5	25.5	5.5	9 depth 7	9	10
25	5~50	27.5	22.5	12	10	12	40	5.5	M6x1.0	1/4 - 28 UNF	52	10	5	28	5.5	9 depth 7	11	10

Note) The external dimensions of cylinder with rubber cushion are the same as that of the above standard.



Piston Rod



## End Boss (CQ2 only) mm

Bore size	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 $^{0}_{-0.043}$

## NCQ2 Male Rod End mm

Bore size	X	H inch	L	K
12	8	#8-32UNC	11.5	5
16	8	#8-32UNC	11.5	6
20	8	#10-32UNF	12.5	8
25	9.5	1/4-28UNF	14.5	10

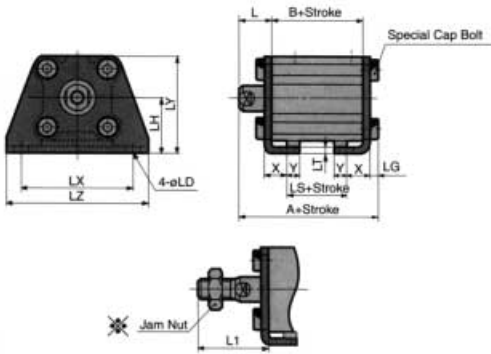
## CQ2 Male Rod End mm

Bore size	C	X	H	L	K
12	9	10.5	M5x0.8	14	5
16	10	12	M6x1.0	15.5	6
20	12	14	M8x1.25	18.5	8
25	15	17.5	M10x1.25	22.5	10

Note 1) Rod side End Boss is offered as an option.  
(Add - XC36 at the end of part no.)

✳ Rod end nut and accessories detail: see p. 6.  
"C" dim. not applicable.

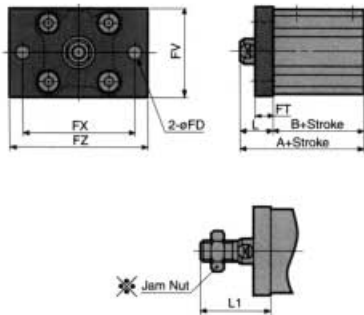
Compact Cylinder: Standard / Double Acting Single Rod



Foot / (N)CQ2L

mm

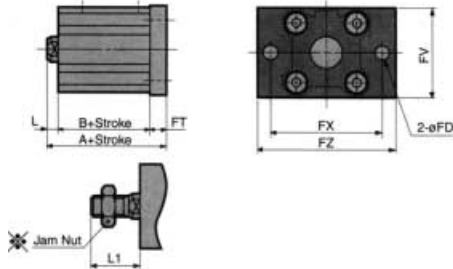
Bore size (mm)	Stroke range (mm)	A	B	L	CQ2 L1	NCQ2 L1	LD	LG	LH	LS	LT	LX	LY	LZ	X	Y
12	5~30	35.3	17	13.5	24	21.5	4.5	2.8	17	5	2	34	29.5	44	8	4.5
16	5~30	36.8	18.5	13.5	25.5	21.5	4.5	2.8	19	6.5	2	38	33.5	48	8	5
20	5~50	41.2	19.5	14.5	28.5	22.5	6.6	4	24	7.5	3.2	48	42	62	9.2	5.8
25	5~50	44.7	22.5	15	32.5	24.5	6.6	4	26	7.5	3.2	52	46	66	10.7	5.8



Rod Side Flange / (N)CQ2F

mm

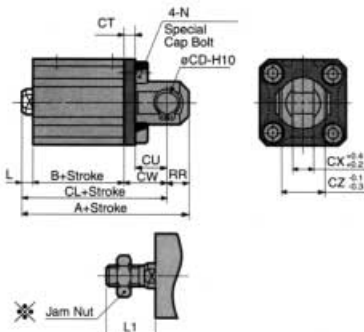
Bore size (mm)	Stroke range (mm)	A	B	FD	FT	FV	FX	FZ	L	CQ2 L1	NCQ2 L1
12	5~30	30.5	17	4.5	5.5	25	45	55	13.5	24	21.5
16	5~30	32	18.5	4.5	5.5	30	45	55	13.5	25.5	21.5
20	5~50	34	19.5	6.6	8	39	48	60	14.5	28.5	22.5
25	5~50	37.5	22.5	6.6	8	42	52	64	15	32.5	24.5



Head Side Flange / (N)CQ2G mm

Bore size (mm)	Stroke range (mm)	A	L	CQ2 L1	NCQ2 L1
12	5~30	26	3.5	14	11.5
16	5~30	27.5	3.5	15.5	11.5
20	5~50	32	4.5	18.5	12.5
25	5~50	35.5	5	22.5	14.5

\*Dimensions for the head flange cylinder are the same as rod flange except A, L, L1.



Double Clevis / (N)CQ2D

mm

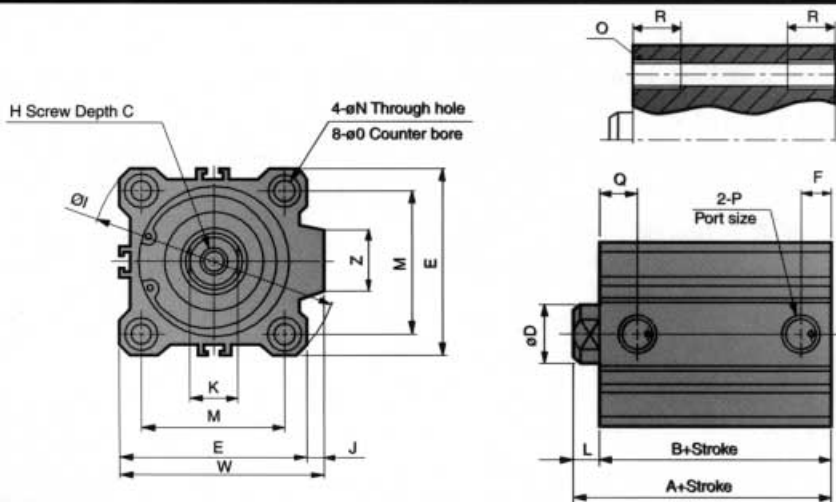
Bore size (mm)	Stroke range (mm)	A	B	CQ2 CD	NCQ2 inch CD	CL	CT	CU	CW	CX	CZ	L	CQ2 L1	NCQ2 L1	CQ2 N	NCQ2 inch N	RR
12	5~30	40.5	17	5	3/16	34.5	4	7	14	5	10	3.5	14	11.5	M4x0.7	8-32	6
16	5~30	43	18.5	5	3/16	37	4	10	15	6.5	12	3.5	15.5	11.5	M4x0.7	8-32	6
20	5~50	51	19.5	8	5/16	42	5	12	18	8	16	4.5	18.5	12.5	M6x1.0	1/4-20	9
25	5~50	57.5	22.5	10	3/8	47.5	5	14	20	10	20	5	22.5	14.5	M6x1.0	1/4-20	10

\* Rod end nut and accessories detail: see p. 6.

\* Clevis pin and snap rings are included in the package.



Bore Size  $\phi 32 \sim \phi 100$



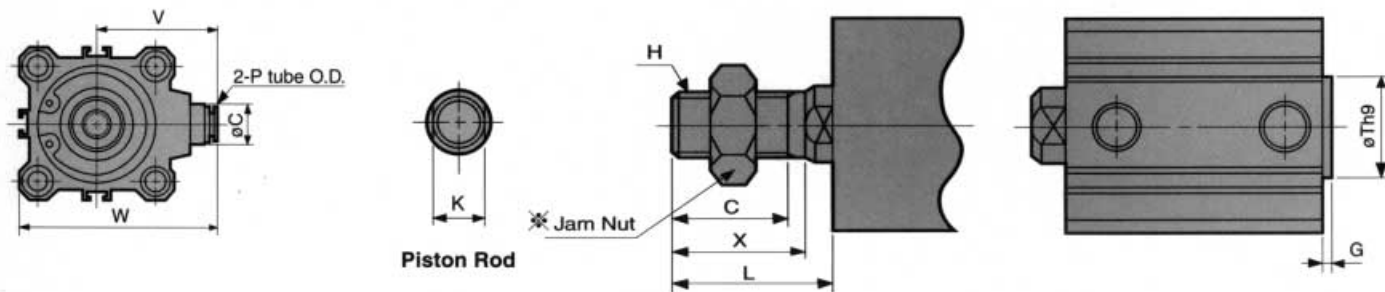
(N)CQ2A  
Both Ends Tapped

Bore size	CQ2 O	NCQ2 inch O	R
32	M6x1.0	1/4 20 UNC	10
40	M6x1.0	1/4 - 20 UNC	10
50	M8x1.25	5/16 - 18 UNC	14
63	M10x1.5	7/16 - 14 UNC	18
80	M12x1.75	1/2 - 13 UNC	22
100	M12x1.75	1/2 - 13 UNC	22

Standard

Bore size	Stroke (mm)	A	B	CQ2 C	NCQ2 C	D	E	F	CQ2 H	NCQ2 Inch H	I	J	K	L	M	N	O	P	Orifice	Q	W	Z
32	5	30	23	13	13.3	16	45	5.5	M8x1.25	5/16-24UNF	60	4.5	14	7	34	5.5	9 depth 7	M5x0.8	1.7	11.5	49.5	14
	75, 100	40	33					7.5										10.5				
40	5~50	36.5	29.5	13	18.3	16	52	8	M8x1.25	3/8-24UNF	69	5	14	7	40	5.5	9 depth 7	1/8	2	11	57	14
	75, 100	46.5	39.5																			
50	10~50	38.5	30.5	15	17.6	20	64	10.5	M10x1.5	1/2-20UNF	86	7	17	8	50	6.6	11 depth 8	1/4	2.2	10.5	71	19
	75, 100	48.5	40.5																			
63	10~50	44	36	15	17.6	20	77	10.5	M10x1.5	1/2-20UNF	103	7	17	8	60	9	14 depth 10.5	1/4	3	15	84	19
	75, 100	54	46																			
80	10~50	53.5	43.5	21	24.3	25	98	12.5	M16x2.0	5/8-18UNF	132	6	22	10	77	11	17.5 depth 13.5	3/8	4	16	104	26
	75, 100	63.5	53.5																			
100	10~50	65	53	27	27	30	117	13	M20x2.5	3/4-16UNF	156	6.5	27	12	94	11	17.5 depth 13.5	3/8	5	23	123.5	26
	75, 100	75	63																			

Note 1) The external dimensions of cylinder with rubber cushion are the same as that of the above standard.  
2) In case of built-in fitting type, bore size  $\phi 32$ , 5 stroke has the same external dimensions as 10 stroke.



One Touch Fittings

Bore size	C	P	V	W
32	13	6	38	60.5
40	13	6	42	68
50	16	8	50	82
63	16	8	56.5	95

NCQ2 Male Rod End

Bore size	X	H Inch	L	K
32	12.7	5/16-24UNF	19.7	14
40	16	3/8-24UNF	23	14
50	19.5	1/2-20UNF	27.5	17
63	19.5	1/2-20UNF	27.5	17
80	25.5	5/8-18UNF	35.5	22
100	28.5	3/4-16UNF	40.5	27

CQ2 Male Rod End

Bore size	C	X	H	L	K
32	20.5	23.5	M14x1.5	28.5	14
40	20.5	23.5	M14x1.5	28.5	14
50	26	28.5	M18x1.5	33.5	17
63	26	28.5	M18x1.5	33.5	17
80	32.5	35.5	M22x1.5	43.5	22
100	32.5	35.5	M26x1.5	43.5	27

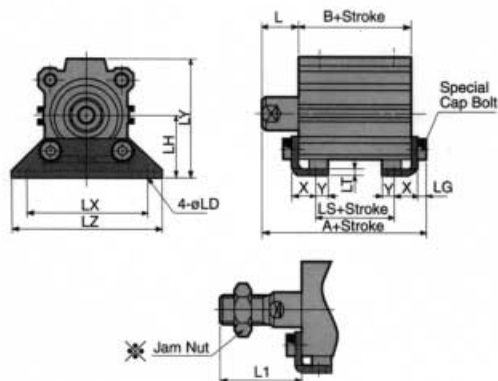
End Boss (CQ2 only)

Bore size	G	Th9
32	2	21 <sup>0</sup> <sub>-0.052</sub>
40	2	28 <sup>0</sup> <sub>-0.052</sub>
50	2	35 <sup>0</sup> <sub>-0.062</sub>
63	2	35 <sup>0</sup> <sub>-0.062</sub>
80	2	43 <sup>0</sup> <sub>-0.062</sub>
100	2	59 <sup>0</sup> <sub>-0.074</sub>

"C" dimension not applicable  
\*Rod end nut and accessories are detailed on p. 6.

(Note) With rod end inlets an option.  
(Add - XC36 at the end of part no.)

# Compact Cylinder: Standard / Double Acting Single Rod



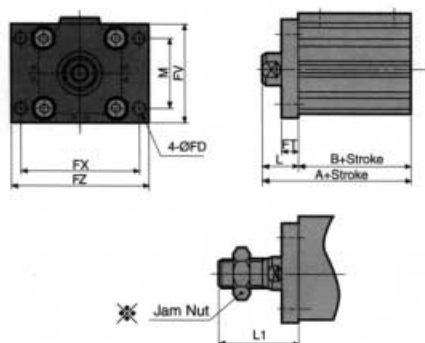
## Foot / (N)CQ2L

mm

Bore size	Stroke	A	B	L	CQ2 L1	NCQ2 L1	LD	LG	LH	LS	LT	LX	LY	LZ	X	Y
32	5-50	47.2	23	17	38.5	29.7	6.6	4	30	7	3.2	57	57	71	11.2	5.8
	75, 100	57.2	33							17						
40	5-50	53.7	29.5	17	38.5	33	6.6	4	33	13.5	3.2	64	64	78	11.2	7
	75, 100	63.7	39.5							23.5						
50	10-50	56.7	30.5	18	43.5	37.5	9	5	39	7.5	3.2	79	78	95	14.7	8
	75, 100	66.7	40.5							17.5						
63	10-50	62.2	36	18	43.5	37.5	11	5	46	10	3.2	95	91.5	113	16.2	9
	75, 100	72.2	46							20						
80	10-50	75	43.5	20	53.5	45.5	13	7	59	13.5	4.5	118	114	140	19.5	11
	75, 100	85	53.5							23.5						
100	10-50	88	53	22	53.5	50.5	13	7	71	19	6	137	136	162	23	12.5
	75, 100	98	63							29						

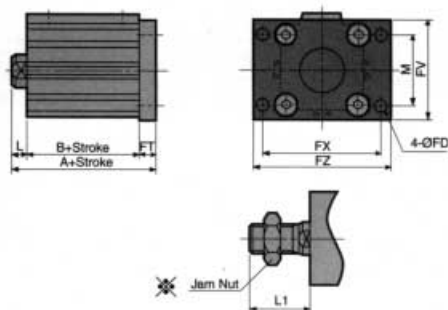
## Rod Flange / (N)CQ2F

mm



Bore size	Stroke	A	B	FD	FT	FV	FX	FZ	L	CQ2 L1	NCQ2 L1	M
32	5-50	40	23	5.5	8	48	56	65	17	38.5	29.7	34
	75, 100	50	33									
40	5-50	46.5	29.5	5.5	8	54	62	72	17	38.5	33	40
	75, 100	56.5	39.5									
50	10-50	48.5	30.5	6.6	9	67	76	89	18	43.5	37.5	50
	75, 100	58.5	40.5									
63	10-50	54	36	9	9	80	92	108	18	43.5	37.5	60
	75, 100	64	46									
80	10-50	63.5	43.5	11	11	99	116	134	20	53.5	45.5	77
	75, 100	73.5	53.5									
100	10-50	75	53	11	11	117	136	154	22	53.5	50.5	94
	75, 100	85	63									

## Head Flange / (N)CQ2G<sub>mm</sub>

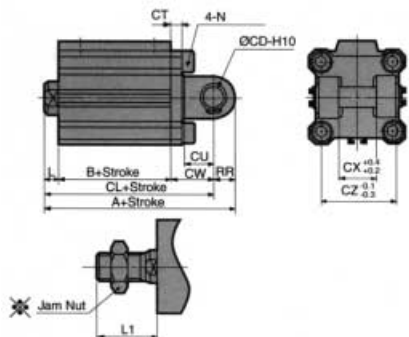


Bore size	Stroke	A	L	CQ2 L1	NCQ2 L1
32	5-50	38	7	28.5	19.7
	75, 100	48			
40	5-50	44.5	7	28.5	23
	75, 100	54.5			
50	10-50	47.5	8	33.5	27.5
	75, 100	57.5			
63	10-50	53	8	33.5	27.5
	75, 100	63			
80	10-50	64.5	10	43.5	35.5
	75, 100	74.5			
100	10-50	76	12	43.5	40.5
	75, 100	86			

\* Dimensions for the head flange cylinder are the same as rod flange except A, L, L1.

## Double Clevis / (N)CQ2D

mm



Bore size	Stroke	A	B	CQ2 CD	NCQ2 Inch CD	CL	CT	CU	CW	CX	CZ	L	CQ2 L1	NCQ2 L1	CQ2 N	NCQ2 Inch N	RR
32	5-50	60	23	10	3/8	50	5	14	20	18	36	7	28.5	19.7	M6x1.0	1/4-20	10
	75, 100	70	33			60											
40	5-50	68.5	29.5	10	3/8	58.5	6	14	22	18	36	7	28.5	23	M6x1.0	1/4-20	10
	75, 100	78.5	39.5			68.5											
50	10-50	80.5	30.5	14	1/2	66.5	7	20	28	22	44	8	33.5	27.5	M8x1.25	5/16-18	14
	75, 100	90.5	40.5			76.5											
63	10-50	88	36	14	1/2	74	8	20	30	22	44	8	33.5	27.5	M10x1.5	7/16-14	14
	75, 100	98	46			84											
80	10-50	109.5	43.5	18	5/8	91.5	10	27	38	28	56	10	43.5	35.5	M12x1.75	1/2-13	18
	75, 100	119.5	53.5			101.5											
100	10-50	132	53	22	7/8	110	13	31	45	32	64	12	43.5	40.5	M12x1.75	1/2-13	22
	75, 100	142	63			120											

\* Rod end nut and accessories detail: see p. 6.

\* Clevis pin and snap ring are included in the package.





Compact Cylinder  
With Autoswitch

# (N)CDQ2 Series

## Standard Specifications

Model	Air pressure type (Non-lube type)	Air-hydro type
Media	Air	Hydraulic oil
Ambient and fluid temp.	15~140°F(-10°C~+60°C)(At freezing temp. air must be dry)	

The rest of the specifications are the same as that of standard (See p. 3).

## Auto Switch Mounting Available / Minimum Stroke

# of Auto Switch Mounting	D-F7□V D-J79C	D-A7 D-A8 D-A73C D-A80C	D-F7□WV	D-A7□H D-A80H D-F7□ D-J79	D-A79W	D-F7□W D-J79W D-F7BAL D-F79F	D-F7LF
1pcs	5mm	5mm	10mm	15mm	15mm	20mm	25mm
2pcs	5mm	10mm	15mm	15mm	20mm	20mm	25mm



## Auto Switch Mounting / Parts No.

Bore size (mm)	Part No.	Note	Applicable auto switch
12•16•20•25	BQ-1	•Auto switch mounting screw (M3x0.5x8L) •Square nut	D-A7 • A8 D-A7OH • A80H D-AOC • A80C D-F79 D-F79W J-J79C
32•40•50• 63•89•100• 125•140•160	BQ-2	•Auto switch mounting screw (m3x0.5x8L) •Auto switch spacer •Auto switch mounting nut	

## How To Order

Auto Switch How To Order: See p. 2

## Auto Switch Specification

### Reed switch type

Auto switch model	D-A72 A72H	D-A73,A73H		D-A76H	D-A80,A80H			D-A73C	D-A80C	Two color indicator lamp D-A79W
Application	Relay, PLC			IC circuit	Relay, PLC, IC circuit			Relay, PLC	Relay, PLC, IC circuit	Relay, PLC
Load voltage	200VAC	100VAC	24VDC	4~8VDC	24VAC/ VDC or less	48VAC/ VDC	100VAC/ VDC	24VDC	24VAC/ VDC	24VDC
Max. load current or load current range	5~10mA	5~20mA	5~40mA	Max. 20mA	Max. 50mA	Max. 40mA	Max. 20mA	5~40mA	Max. 50mA	5~40mA
Internal voltage drop	2.4V or less			0.8V or less	0			2.4V or less	0	4V or less
Leak current	0									
Response time	1.2ms									
Indicator lamp	ON: Red light emitting diode			None			ON: Red light emitting diode	None	Response position: Red light emitting diode Best response position: Green light emitting diode	
Lead wire entry	Grommet (D-A7 0 H, 80H: Horizontal cable access)							Connector	Grommet	
Lead wire	Note) Oil proof vinyl ø 3.4, 0.2mm <sup>2</sup> ,0.5m									
Impact resistance	30G									
Insulation resistance	50MΩ or more under the test voltage 500 VDC (Between case and cable)									
Withstand voltage	1500 VAC 1 min (Between case and cable)									
Ambient temperature	-10° ~60°C									
Protection structure	IEC spec IP67, JISC0920 (Water proof). Oil proof									

Note) • D-A76H: 3 wires {Brown (red), Black (white), Blue (black)},  
Others: 2 wires {Brown (red), Black (white)} - Lead wire length: 0.5m(Standard), 3m(Option)

## Solid State Switch Type

Auto switch model	PNP 3 wire type D-F7P	2 wire type D-F7BV	2 wire type D-J79(C)	PNP 3 wire type two color indicator lamp D-F79W	2 wire type two color indicator lamp D-F7BWV
Application	Relay, PLC	Relay, PLC		Relay, PLC, IC circuit	Relay, PLC
Power source	5, 12, 24VDC (4.5~28VDC)	-		4.5~28VDC	-
Current consumption	OFF:1mA or less ON:15mA or less	-		OFF:1mA or less ON:12mA or less	-
Load voltage	—	24VDC (10~28VDC)		28VDC or less	24VDC (10~28VDC)
Max. load current or load current range	Max. 80mA	5~40mA		Max. 40mA	5~40mA
Internal voltage drop	0.8V or less	4V or less		1.5V or less (0.8V or less at 10mA of load current)	4V or less
Leak current	24VDC: 100 μA or less	24VDC: 0.8mA or less		100μA or less at 24VDC	24VDC: 0.8mA or less

Auto switch model	NPN 3 wire type D-F7NV	NPN 4 wire type two color indicator lamp D-F79F	NPN 4 wire type two color indicator lamp D-F7LF	NPN 3 wire type two color indicator lamp D-F79W	2 wire type two color indicator lamp D-J79W
Application	Relay, PLC, IC circuit	Relay, PLC, IC circuit		Relay, PLC, IC circuit	Relay, PLC
Power source	5, 12, 24VDC (4.5~28VDC)	4.5~28VDC	24VDC (20~26VDC)	12V, 24VDC	-
Current consumption	OFF:1mA or less ON:12mA or less	OFF:1mA or less ON:10mA or less	20mA or less	10mA	-
Load voltage	28VDC or less	28VDC or less	26VDC or less	28VDC or less	24VDC (10~28VDC)
Max. load current or load current range	Max. 40mA	Max. 40mA		Max. 40mA	5~40mA
Internal voltage drop	1.5V or less (0.8V or less at 10mA of load current)	1.5V or less (0.8V or less at 10mA of load current)	0.8V or less	1.5V or less (0.8V or less at 10mA of load current)	4V or less
Leak current	100μA or less at 24VDC	100μA or less at 24VDC		100μA or less at 24VDC	0.8mA or less at 24VDC

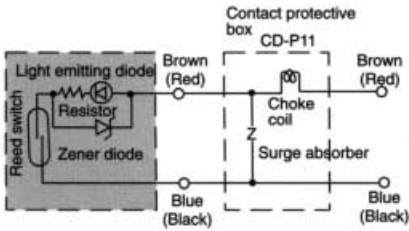
Auto switch model	NPN 3 wire type D-F79	PNP 3 wire type D-F7PV	NPN 3 wire type D-F7NTL	2 wire type D-F7BAL	NPN 3 wire type two color indicator lamp D-F7NWW
Application	Relay, PLC, IC circuit	Relay, PLC, IC circuit	Relay, PLC, IC circuit	Relay, PLC	Relay, PLC
Power source	5, 12, 24VDC (4.5~28VDC)	4.5~28VDC	4.5~28VDC	-	12~24VDC
Current consumption	OFF:1mA or less ON:12mA or less	15mA or less	OFF:1mA or less ON:10mA or less	-	10mA or less
Load voltage	28VDC or less	-	28VDC or less	24VDC (10~28VDC)	28VDC or less
Max. load current or load current range	Max. 40mA	Max. 80mA	Max. 80mA	5~40mA	Max. 40mA
Internal voltage drop	1.5V or less (0.8V or less at 10mA of load current)	0.8V or less	2V or less (0.8V or less at 10mA)	4V or less	1.5V or less (0.8V or less at 10mA of load current)
Leak current	100μA or less at 24VDC	100μA or less at 24VDC	100μA or less at 24VDC	0.8mA at 24VDC	100μA or less at 24VDC
Response time	1ms or less				
Indicator lamp	ON: Red light emitting diode			Response position:Red light emitting diode Best response position: Green light emitting diode	
Lead wire entry	Grommet ("C" Connector)				
Lead wire	Note: Oil proof vinyl ø 3.4, 0.2mm <sup>2</sup> ,05.m length (L, 3m option)				
Impact resistance	100G				
Insulation resistance	50MΩ or more under the test voltage 500VDC (Between case and cable)				
Withstand voltage	1000 VAC 1 min (Between case and cable)				
Ambient temperature	-10°~60°C				
Protection structure	IEC spec IP67, JIS C0920 (Water proof). Oil proof				



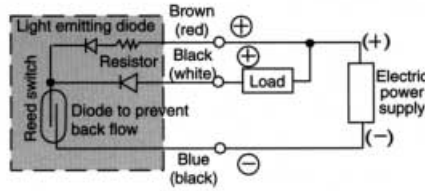
# Auto Switch Internal Circuit

## Reed Switch Type

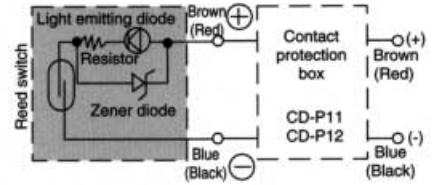
### D-A72, D-A72H



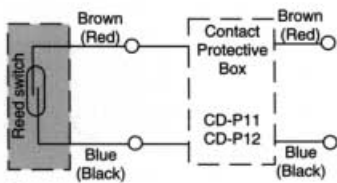
### D-A76H



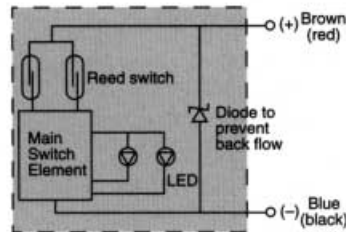
### D-A73, D-A73H, D-A73C



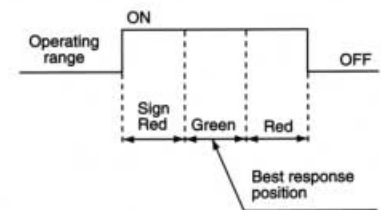
### D-A80, D-A80H, D-A80C



### Two color indicator lamp, D-A79W

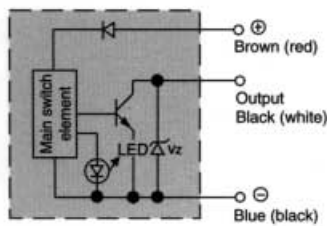


### Indicator lamp / How to sign

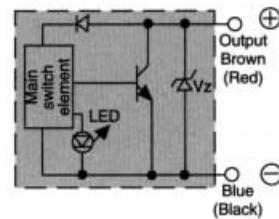


## Solid State Type

### D-F79, D-F7NTL, D-F7NV, 3 wire type



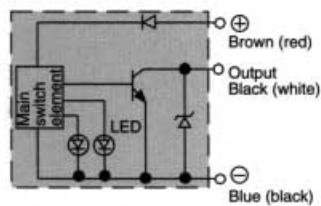
### D-J79, D-J79C, D-F7BV, 2 wire type



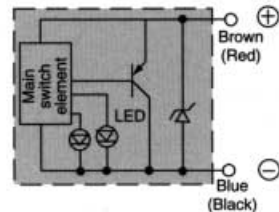
•Interchangeable with reed switch  
Solid state switches are interchangeable with reed switches.  
(Solid State Type) (Reed Switch Type)

D-F79 ↔ D-A7  
D-J79

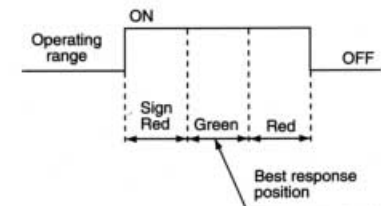
### Two color indicator lamp, D-F7NWV, D-F79W



### Two color indicator lamp, D-F7BAL, D-F7BWV



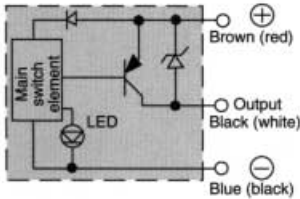
### Two Color Indicator lamp / How to sign



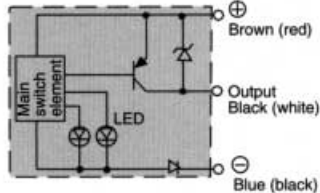
# Auto Switch Internal Circuit

## Solid State Type

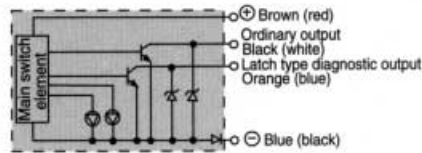
### D-F7P, D-F7PV



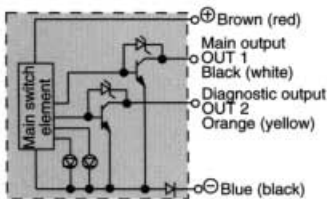
### D-F7PW, D-J79W



### D-F7LF

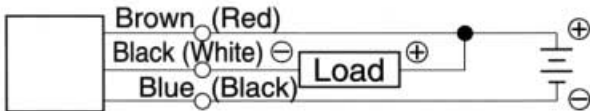


### D-F79F



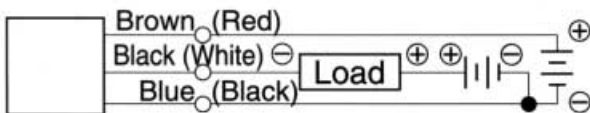
## Auto Switch Connection / Solid State Type

3 wire system (When power source for switch and load is common)

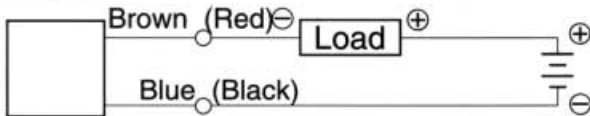


Brown (red) lead wire: Connect to power source ⊕ (Power source ⊕ terminal) to operate main circuit of switch. In case of 2 wire systems connect with ⊖ side of load.  
 Black (white) lead wire: Connect to load (to input of programmable controller and outlet relay).  
 Blue (black) lead wire: Connect to power source ⊖ (Power source GND terminal).

3 wire system (When power source for switch and load is not common)



2 wire system



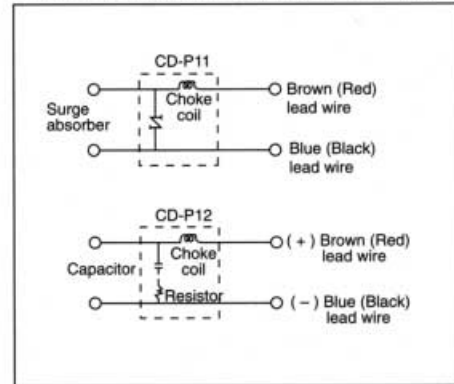
## Contact Protection

D-A7 type and D-A8 type have no built-in contact protection circuit. Use this box for induction loads, 5 meters or more of lead wires, or 100VAC applications.

Model	Operating voltage	Length of lead wire
CD-P11	100VAC	Switch connecting side 0.5m
CD-P12	24VDC	Load connecting side 0.5m

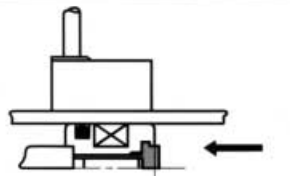
✳ D-A8 type switches are used for 100VAC or less; since there is no voltage limitation, you can select a suitable model for your needs.

### Contact Protection Box / Internal Circuit

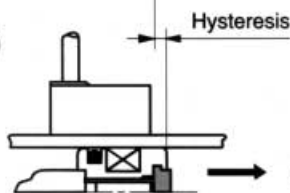


## Auto Switch Hysteresis

Switch Contact Point (ON)



Switch Contact Point (OFF)



( ): Previous color

✳ Hysteresis is less than 2mm



### Weight Chart

lbs

Bore size (mm)	Cylinder Stroke											
	5	10	15	20	25	30	35	40	45	50	75	100
12	0.110	0.126	0.141	0.157	0.172	0.187	-	-	-	-	-	-
16	0.157	0.181	0.207	0.232	0.256	0.280	-	-	-	-	-	-
20	0.229	0.271	0.315	0.359	0.406	0.450	0.494	0.540	0.584	0.631	-	-
25	0.284	0.331	0.395	0.423	0.472	0.518	0.564	0.613	0.657	0.706	-	-
32	0.571	0.598	0.624	0.650	0.701	0.750	0.800	0.851	0.902	0.961	1.22	1.47
40	0.752	0.805	0.858	0.908	0.953	0.997	1.05	1.09	1.14	1.20	1.44	1.68
50	-	1.10	1.17	1.25	1.34	1.43	1.50	1.58	1.66	1.78	2.18	2.50
63	-	1.60	1.69	1.78	1.87	1.97	2.06	2.15	2.23	2.38	2.84	3.29
80	-	3.53	3.74	3.95	4.16	4.36	4.57	4.78	4.99	5.28	6.31	7.33
100	-	5.55	5.68	5.81	6.05	6.29	6.52	6.75	6.97	7.31	8.45	9.59

### Weight Adder

lbs

Bore Size	ø12	ø16	ø20	ø25	ø32
Both ends tapped	0.002	0.002	0.007	0.007	0.013
Rod end	Thread	0.003	0.007	0.013	0.026
	Nut	0.002	0.004	0.009	0.018
Boss mtg		0.002	0.003	0.004	0.007
W/ Cushion		0.000	-0.002	-0.004	-0.007
W/ One touch		-	-	-	0.026
Foot		0.108	0.137	0.324	0.373
Rod flange		0.119	0.148	0.289	0.337
Head flange		0.115	0.139	0.273	0.318
Double clevis		0.064	0.077	0.172	0.251
Bore Size	ø40	ø50	ø63	ø80	ø100
Both ends tapped	0.013	0.013	0.042	0.099	0.099
Rod end	Thread	0.060	0.117	0.117	0.265
	Nut	0.037	0.071	0.071	0.108
Boss mtg		0.015	0.029	0.055	0.099
W/ Cushion		-0.015	-0.020	-0.040	-0.068
W/ One touch		0.026	0.046	0.046	-
Foot		0.342	0.536	0.714	1.535
Rod flange		0.472	0.822	1.233	2.328
Head flange		0.437	0.767	1.177	2.242
Double clevis		0.432	0.867	1.222	2.445

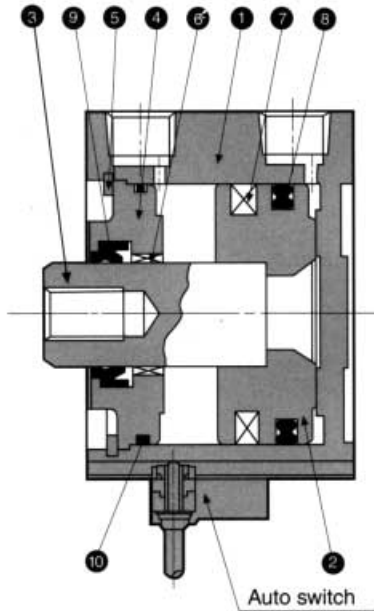
### How to calculate weight (lbs)

When mounting auto switch, add for additional mounting bracket weight

(N)CDQ2D32-20DCM
Std Wt.: (N)CDQ2B32-20D _____ .65
Wt. adder: Both ends tapped _____ .013
Jam nut _____ .037
W/ rubber cushion _____ -0.007
Clevis mounting _____ .333
Total 1.026

### Autoswitch Mounting Bracket Weight

Part no.	Applicable cylinder bore size	Weight lbs.
BQ-1	12- 25	.003
BQ-2	32- 100	.003



### Parts List

No.	Description	Material	Remarks
1	Cylinder tube	Aluminum alloy	Hard anodized
2	Piston	Aluminum alloy	Chromate
3	Piston rod	Stainless steel	Bore ø12-ø25
		Carbon steel	Bore ø32-ø100, hard chrome plated
4	Collar	Aluminum alloy	Bore ø12-ø40, Black anodized
		Aluminum alloy casting	Bore ø50-ø100, Black paint
5	Retaining ring	Carbon tool steel	Phosphate coating
6	Bushing	Leaded tin bronze casting	Bore ø50-ø100
7	Magnet	----	

### Seals List

No.	Description	Material	Parts No.									
			ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
8	Piston seal	NBR	NLP-12-7L	NLP-16A	NLP-20A	NLP-25A	NLP-32A	NLP-40A	NLP-50A	NLP-63B	NLP-80B	NLP-100B
9	Rod seal	NBR	DYR-6K	DYR-8K	DYR-10SK	DYR-12	DYR-16	PDU-16Z	PDU-20Z	PDU-20Z	PDU-25Z	PDU-30Z
10	Gasket	NBR	SO-013-6	C14	C18	C22	C29	C36	C46	C60	C75	C95

### Air Hydro

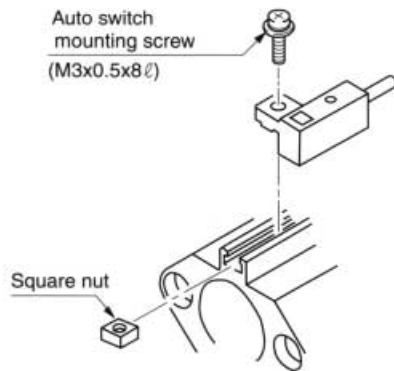
No.	Description	Material	Parts No.							
			ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
8	Piston seal	NBR	RPS-20A	RPS-25A	RPS-32A	RPS-40A	RPS-50A	RPS-63A	RPS-80A	RPS-100A
9	Rod seal	NBR	PS-10	PS-12	PS-16	HDU-16	HDU-20	HDU-20	HDU-25	HDU-30
10	Gasket	NBR	C18	C22	C29	C36	C46	C60	C75	C95

## How To Install Auto Switch

Install auto switch in the following manner

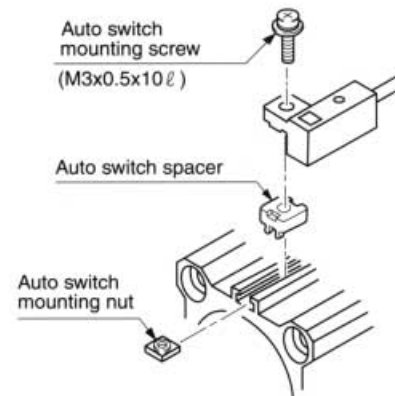
ø12~ø25 (1/2~1Nom.)

### Bracket Kit BQ-1



ø32~ø100 (1-1/4~4Nom.)

### Bracket Kit BQ-2



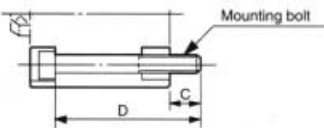
## Mounting Bolt For (N)CDQ2/With Auto Switch

Special long mounting bolt for through hole mounting is available as an option.

How to Order:

Specify the required bolts

Example) Bolt M3x35L 4pcs.

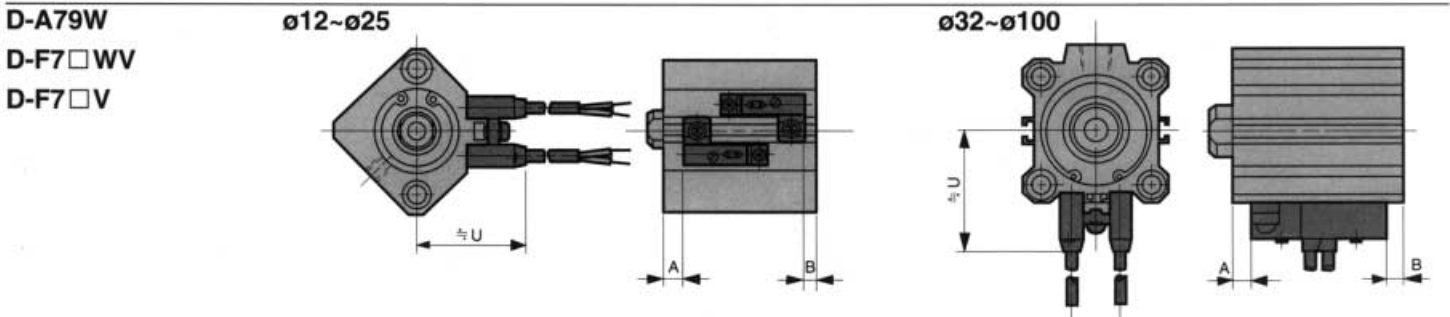
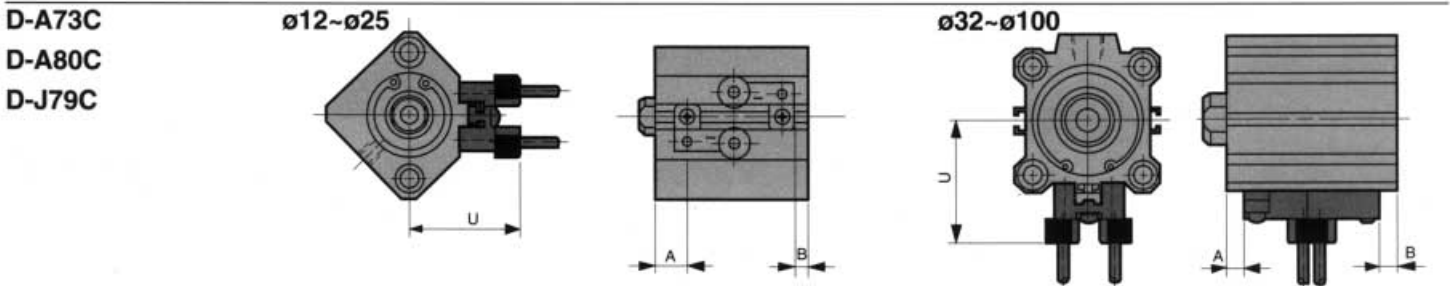
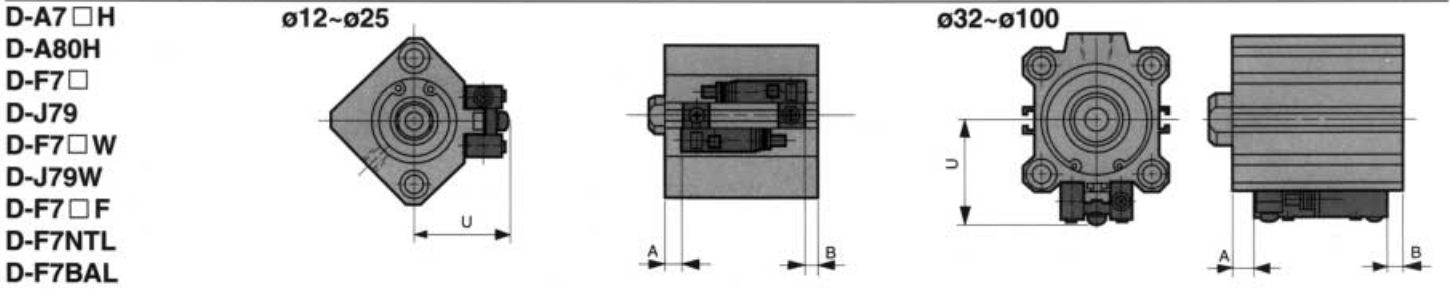
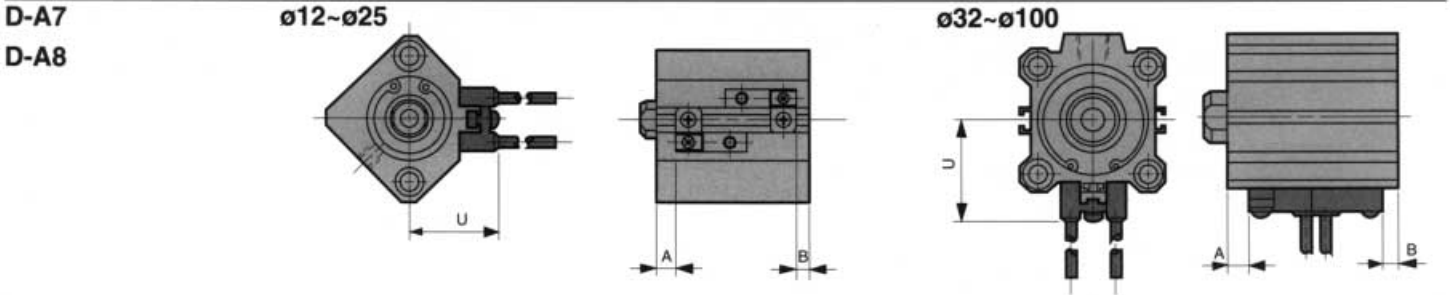


Thread	Pitch
M3	0.5
M5	0.8
M6	1.0
M8	1.25
M10	1.5

Model	C	D	Mounting bolt	
(N)CDQ2B12-5D	5.5	35	M3x35L	
-10D		40	x40L	
-15D		45	x45L	
-20D		50	x50L	
-25D		55	x55L	
-30D		60	x60L	
(N)CDQ2B16-5D	8	40	M3x40L	
-10D		45	x45L	
-15D		50	x50L	
-20D		55	x55L	
-25D		60	x60L	
-30D		65	x65L	
(N)CDQ2B20-5D	10.5	40	M5x40L	
-10D		45	x45L	
-15D		50	x50L	
-20D		55	x55L	
-25D		60	x60L	
-30D		65	x65L	
-35D		70	x70L	
-40D		75	x75L	
-45D		80	x80L	
-50D		85	x85L	
(N)CDQ2B25-5D	9.5	40	M5x40L	
-10D		45	x45L	
-15D		50	x50L	
-20D		55	x55L	
-25D		60	x60L	
-30D		65	x65L	
-35D		70	x70L	
-40D		75	x75L	
-45D		80	x80L	
-50D		85	x85L	
(N)CDQ2B32-5D	9	40	M5x40L	
-10D		45	x45L	
-15D		50	x50L	
-20D		55	x55L	
-25D		60	x60L	
-30D		65	x65L	
-35D		70	x70L	
-40D		75	x75L	
-45D		80	x80L	
-50D		85	x85L	
(N)CDQ2B40-5D	7.5	45	M5x45L	
-10D		50	x50L	
-15D		55	x55L	
-20D		60	x60L	
-25D		65	x65L	
-30D		70	x70L	
-35D		75	x75L	
-40D		80	x80L	
-45D		85	x85L	
-50D		90	x90L	
(N)CDQ2B50-10D	12.5	115	x115L	
-100D		140	x140L	
(N)CDQ2B50-10D		12.5	55	M6x55L
-15D			60	x60L
-20D			65	x65L
-25D			70	x70L
-30D			75	x75L
-35D			80	x80L
-40D			85	x85L
-45D			90	x90L
-50D	95		x95L	
-75D	120		x120L	
-100D	145	x145L		
(N)CDQ2B63-10D	14.5	60	M8x60	
-15D		65	x65	
-20D		70	x70	
-25D		75	x75	
-30D		80	x80	
-35D		85	x85	
-40D		90	x90	
-45D		95	x95	
-50D		100	x100	
-75D		125	x125	
(N)CDQ2B80-10D	15	65	M10x65	
-15D		70	x70	
-20D		75	x75	
-25D		80	x80	
-30D		85	x85	
-35D		90	x90	
-40D		95	x95	
-45D		100	x100	
-50D		105	x105	
-75D		130	x130	
(N)CQ2B100-10D	15.5	75	M10x75	
-15D		80	x80	
-20D		85	x85	
-25D		90	x90	
-30D		95	x95	
-35D		100	x100	
-40D		105	x105	
-45D		110	x110	
-50D		115	x115	
-75D		140	x140	
-100D	165	x165		



**Auto Switch Mounting Data**



**Auto Switch Mounting Position**

Bore Size (mm)	D-A7•A8		D-A7□H•A80H D-A73C•A80C D-F7□•J79 D-F7□V•J79C		D-A79W		D-F7BAL D-F7PW D-F7□F D-J79W		D-F79W D-F7□WV	
	A	B	A	B	A	B	A	B	A	B
12	4.5	5.5	5	6	2	3	9	10	5.5	6.5
16	7.5	5	8	5.5	5	2.5	12	9.5	8.5	6
20	7.5	6.5	8	7	5	4	12	11	8.5	7.5
25	7.5	7	8	7.5	5	4.5	12	11.5	8.5	8
32	9.0	6	9.5	6.5	6.5	3.5	13.5	10.5	10	7
40	13	8.5	13.5	9	10.5	6	17.5	13	14	9.5
50	11	11.5	11.5	12	8.5	9	15.5	16	12	12.5
63	13.5	14.5	14	15	11	12	18	19	14.5	15.5
80	17.5	18	18	18.5	15	15.5	22	22.5	18.5	19
100	21	24	21.5	24.5	18.5	21.5	25.5	28.5	22	25

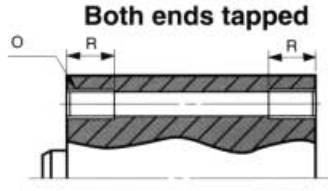
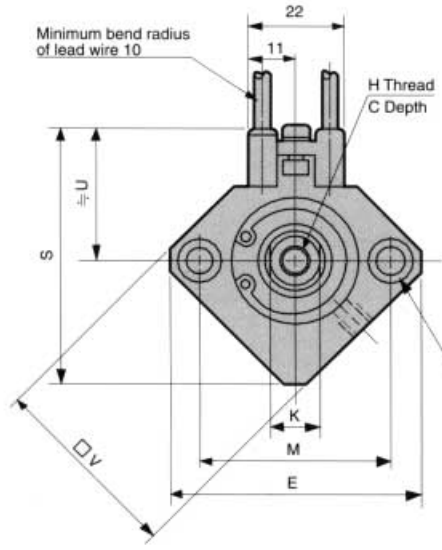
**Auto Switch Mounting Height**

Bore Size (mm)	D-A7 A8	D-A7□H D-A80H D-F7□ D-J79 D-F7□W	D-J79W D-F7BAL D-F7□F D-F7NTL	D-A73C D-A80C D-F7□WV	D-F7□V	D-J79C	D-A79W
	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	
40	35	36	42	38.5	41.5	37.5	
50	41	42	48	44.5	47.5	43.5	
63	47.5	48.5	54.5	51	54	50	
80	57.5	58.5	64.5	61	64	60	
100	67.5	68.5	74.5	71	74	70	

# (N)CDQ2 Series

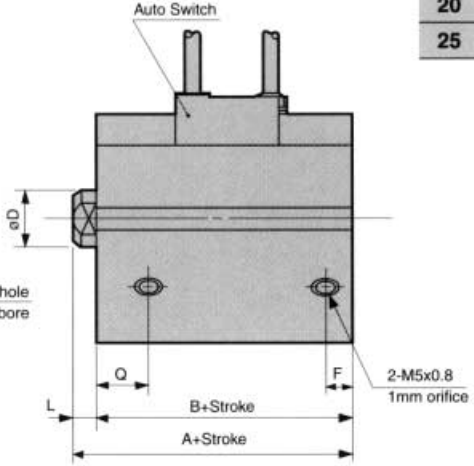
Bore Size  $\phi 12 \sim \phi 25$

## Through Hole / (N)CDQ2B



### Both Ends Tapped

Bore size	CQ2 O	NCQ2 inch O	R
12	M4x0.7	8-32 UNC	7
16	M4x0.7	8-32 UNC	7
20	M6x1.0	1/4 - 20 UNC	10
25	M6x1.0	1/4 - 20 UNC	10



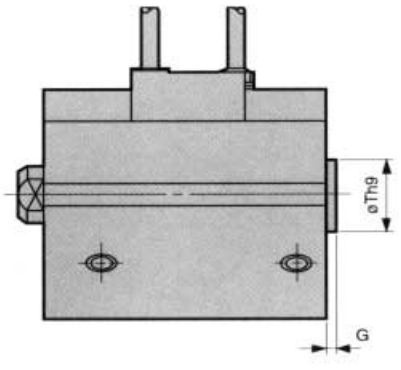
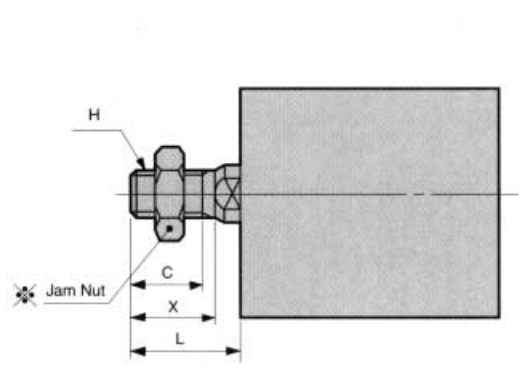
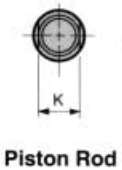
The above Auto Switch mounting is used for D-A73 and D-A80

Auto Switch set position and mounting height: See p. 19

## Standard

Bore size	Stroke	A	B	CQ2 C	NCQ2 C	D	E	F	CQ2 H	NCQ2 inch H	K	L	M	N	O	Q	S	U	V
12	5~30	31.5	28	6	5.4	6	32	6.5	M3x0.5	#8-32	5	3.5	22	3.5	6.5 depth 3.5	11	35.5	19.5	25
16	5~30	34	30.5	8	5.4	8	38	5.5	M4x0.7	#8-32	6	3.5	28	3.5	6.5 depth 3.5	10	41.5	22.5	29
20	5~50	36	31.5	7	7	10	47	5.5	M5x0.8	#10-32	8	4.5	36	5.5	9 depth 7	10.5	48	24.5	36
25	5~50	37.5	32.5	12	10	12	52	5.5	M6x1.0	1/4 - 28 UNF	10	5	40	5.5	9 depth 7	11	53.5	27.5	40

Note 2) The external dimensions of cylinder with rubber cushion are the same as that of the above standard.



### NCQ2 Male Rod End mm

Bore size	X	H	L	K
12	8	#8-32UNC	11.5	5
16	8	#8-32UNC	11.5	6
20	8	#10-32UNF	12.5	8
25	9.5	1/4-28UNF	14.5	10

### CQ2 Male Rod End mm

Bore size	C	X	H	L	K
12	9	10.5	M5x0.8	14	5
16	10	12	M6x1.0	15.5	6
20	12	14	M8x1.25	18.5	8
25	15	17.5	M10x1.25	22.5	10

### End Boss (CQ2 only) mm

Bore size	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 $^{0}_{-0.043}$

"C" dim. not applicable

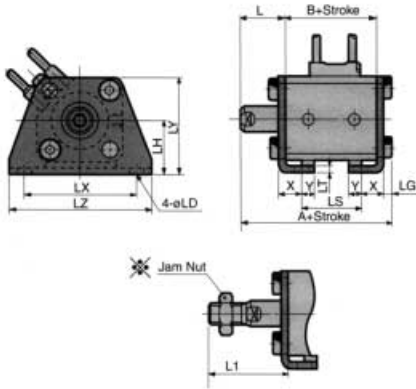
✳ For further info on Jam Nut and accessories detail: see p. 6.

Note 1) End Boss for Rod End is offered as an option.  
(Add -XC36 at the end of part no.)



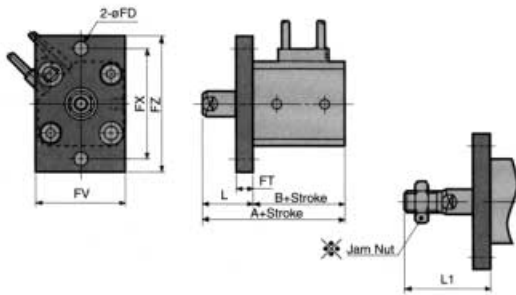
# Compact Cylinder: Standard / Double Acting Single Rod With Switches

## Foot / (N)CDQ2L



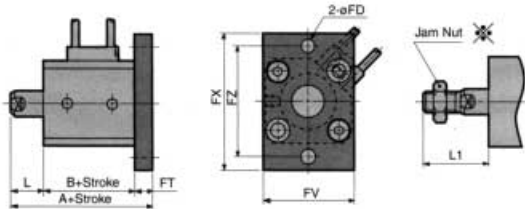
Bore size (mm)	Stroke range (mm)	mm															
		A	B	L	CQ2 L1	NCQ2 L1	LD	LG	LH	LS	LT	LX	LY	LZ	X	Y	
12	5-30	46.3	28	13.5	24	21.5	4.5	2.8	17	16	2	34	29.5	44	8	4.5	
16	5-30	48.8	30.5	13.5	25.5	21.5	4.5	2.8	19	18.5	2	38	33.5	48	8	5	
20	5-50	53.2	31.5	14.5	28.5	22.5	6.6	4	24	19.5	3.2	48	42	62	9.2	5.8	
25	5-50	54.7	32.5	15	32.5	24.5	6.6	4	26	17.5	3.2	52	46	66	10.7	5.8	

## Rod Side Flange / (N)CDQ2F



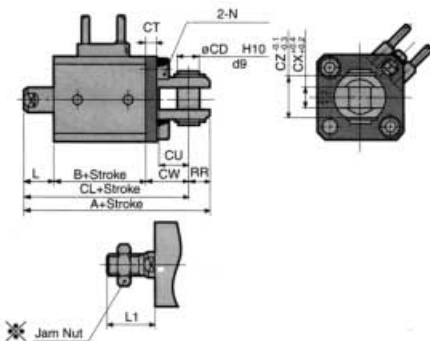
Bore size (mm)	Stroke range (mm)	mm										
		A	B	FD	FT	FV	FX	FZ	L	CQ2 L1	NCQ2 L1	
12	5-30	41.5	28	4.5	5.5	25	45	55	13.5	24	21.5	
16	5-30	44	30.5	4.5	5.5	30	45	55	13.5	25.5	21.5	
20	5-50	46	31.5	6.6	8	39	48	60	14.5	28.5	22.5	
25	5-50	47.5	32.5	6.6	8	42	52	64	15	32.5	24.5	

## Head Side Flange / (N)CDQ2G



Bore size (mm)	Stroke range (mm)	mm			
		A	L	CQ2 L1	NCQ2 L1
12	5-30	37	3.5	14	11.5
16	5-30	39.5	3.5	15.5	11.5
20	5-50	44	4.5	18.5	12.5
25	5-50	45.5	5	22.5	14.5

\*Dimensions for the head flange cylinder are the same as rod flange except A, L, L1.

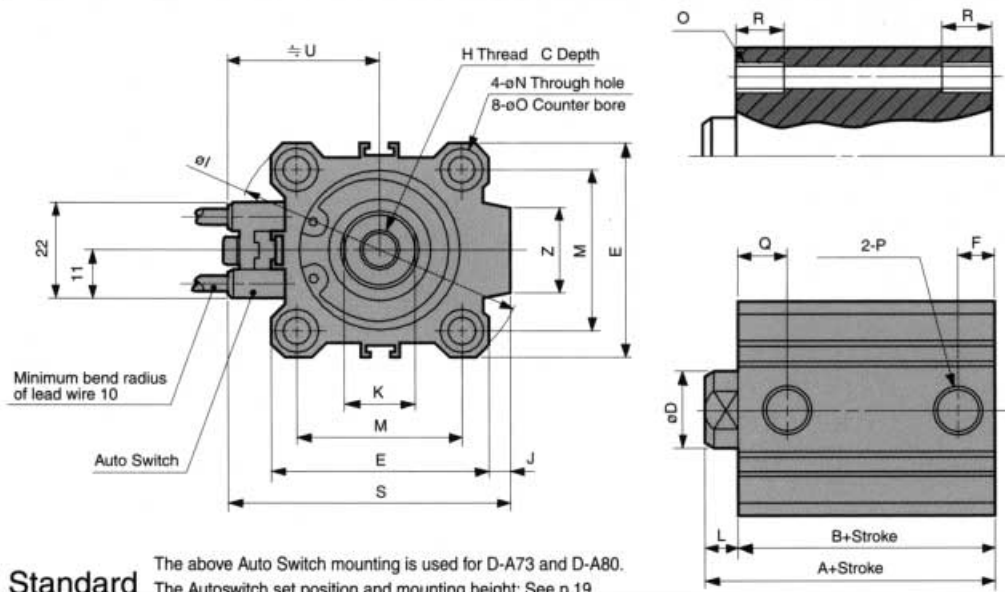


## Double Clevis / (N)CDQ2D

Bore size (mm)	Stroke range (mm)	mm															
		A	B	CQ2 CD	NCQ2 inch CD	CL	CT	CU	CW	CX	CZ	L	CQ2 L1	NCQ2 L1	CQ2 N	NCQ2 inch N	RR
12	5-30	51.5	28	5	3/16	45.5	4	7	14	5	10	3.5	14	11.5	M4x0.7	8-32	6
16	5-30	55	30.5	5	3/16	49	4	10	15	6.5	12	3.5	15.5	11.5	M4x0.7	8-32	6
20	5-50	63	31.5	8	5/16	54	5	12	18	8	16	4.5	18.5	12.5	M6x1.0	1/4-20	9
25	5-50	67.5	32.5	10	3/8	57.5	5	14	20	10	20	5	22.5	14.5	M6x1.0	1/4-20	10

\* Rod end nut and accessories detail: see p. 6.  
 \*\* Clevis pin and snap rings are included in the package.

Bore Size  $\phi 32 \sim \phi 100$



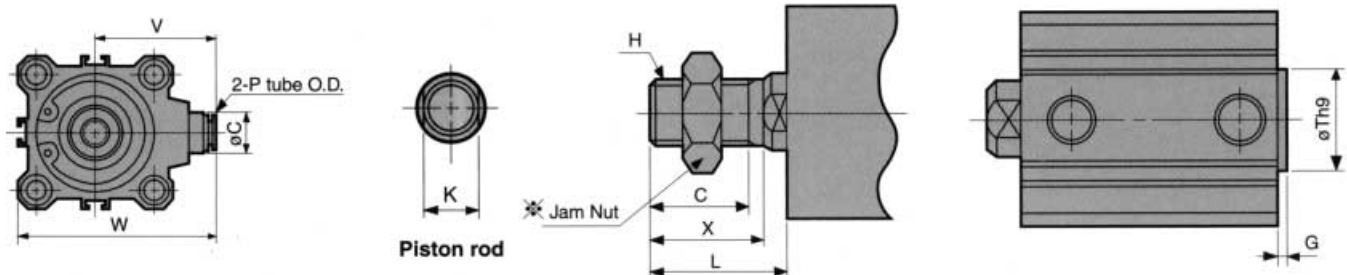
(N)CDQ2A  
Both Ends Tapped

Bore size	CQ2 O	NCQ2 inch O	R
32	M6x1.0	1/4 20 UNC	10
40	M6x1.0	1/4 - 20 UNC	10
50	M8x1.25	5/16 - 18 UNC	14
63	M10x1.5	7/16 - 14 UNC	18
80	M12x1.75	1/2 - 13 UNC	22
100	M12x1.75	1/2 - 13 UNC	22

**Standard** The above Auto Switch mounting is used for D-A73 and D-A80.  
The Autoswitch set position and mounting height: See p.19

Bore size	Stroke (mm)	A	B	CQ2 C	NCQ2 C	D	E	F	CQ2 H	NCQ2 Inch H	I	J	K	L	M	N	O	P	Orifice	Q	S	U	Z
32	5~50	40	33	13	13.3	16	45	7.5	M8x1.25	5/16-24UNF	60	4.5	14	7	34	5.5	9 depth 7	1/8	1.7	10.5	58.5	31.5	14
	75, 100																						
40	5~50	46.5	39.5	13	18.3	16	52	8	M8x1.25	3/8-24UNF	69	5	14	7	40	5.5	9 depth 7	1/8	2	11	66	35	14
	75, 100																						
50	10~50	48.5	40.5	15	17.6	20	64	10.5	M10x1.5	1/2-20UNF	86	7	17	8	50	6.6	11 depth 8	1/4	2.2	10.5	80	41	19
	75, 100																						
63	10~50	54	46	15	17.6	20	77	10.5	M10x1.5	1/2-20UNF	103	7	17	8	60	9	14 depth 10.5	1/4	3	15	93	47.5	19
	75, 100																						
80	10~50	63.5	53.5	21	24.3	25	98	12.5	M16x2.0	5/8-18UNF	132	6	22	10	77	11	17.5 depth 13.5	3/8	4	16	112.5	57.5	26
	75, 100																						
100	10~50	75	63	27	27	30	117	13	M20x2.5	3/4-16UNF	156	6.5	27	12	94	11	17.5 depth 13.5	3/8	5	23	132.5	67.5	26
	75, 100																						

Note 2) The external dimensions of cylinder with rubber cushion are the same as that of the above standard.  
\* Rod end nut and accessories are detailed on p. 6.



One Touch Fittings NCDQ2 Male Rod End

Bore size	C	P	V	W
32	13	6	38	60.5
40	13	6	42	68
50	16	8	50	82
63	16	8	56.5	95

Bore size	X	H	L	K
32	12.7	5/16-24UNF	19.7	14
40	16	3/8-24UNF	23	14
50	19.5	1/2-20UNF	27.5	17
63	19.5	1/2-20UNF	27.5	17
80	25.5	5/8-18UNF	35.5	22
100	28.5	3/4-16UNF	40.5	27

CDQ2 Male Rod End

Bore size	C	X	H	L	K
32	20.5	23.5	M14x1.5	28.5	14
40	20.5	23.5	M14x1.5	28.5	14
50	26	28.5	M18x1.5	33.5	17
63	26	28.5	M18x1.5	33.5	17
80	32.5	35.5	M22x1.5	43.5	22
100	32.5	35.5	M26x1.5	43.5	27

End Boss (CDQ2 only)

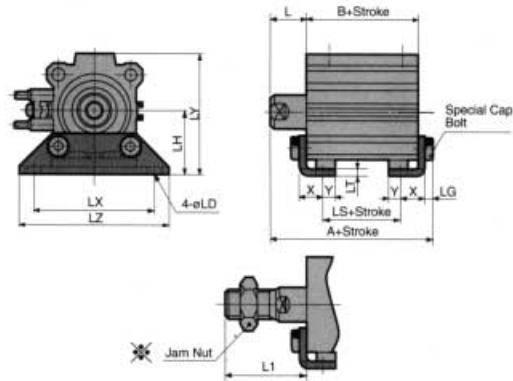
Bore size	G	Th9
32	2	21 <sup>0</sup> <sub>-0.052</sub>
40	2	28 <sup>0</sup> <sub>-0.052</sub>
50	2	35 <sup>0</sup> <sub>-0.062</sub>
63	2	35 <sup>0</sup> <sub>-0.062</sub>
80	2	43 <sup>0</sup> <sub>-0.062</sub>
100	2	59 <sup>0</sup> <sub>-0.074</sub>

\* Rod end nut and accessories are detailed on p. 6.  
"C" dim. not applicable

Note) With End Boss is offered as an option.  
(Add - XC36 at the end of part no.)



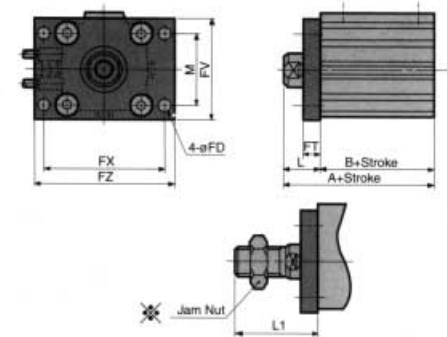
# Compact Cylinder: Standard / Double Acting Single Rod With Switches



## Foot / (N)CDQ2L

mm

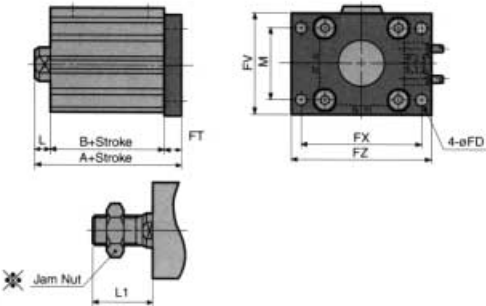
Bore size	Stroke	A	B	L	CQ2 L1	NCQ2 L1	LD	LG	LH	LS	LT	LX	LY	LZ	X	Y
32	5-50	57.2	33	17	38.5	29.7	6.6	4	30	17	3.2	57	57	71	11.2	5.8
	75, 100															
40	5-50	63.7	39.5	17	38.5	33	6.6	4	33	23.5	3.2	64	64	78	11.2	7
	75, 100															
50	10-50	66.7	40.5	18	43.5	37.5	9	5	39	17.5	3.2	79	78	95	14.7	8
	75, 100															
63	10-50	72.2	46	18	43.5	37.5	11	5	46	20	3.2	95	91.5	113	16.2	9
	75, 100															
80	10-50	85	53.5	20	53.5	45.5	13	7	59	23.5	4.5	118	114	140	19.5	11
	75, 100															
100	10-50	98	63	22	53.5	50.5	13	7	71	29	6	137	136	162	23	12.5
	75, 100															



## Rod Flange / (N)CDQ2F

mm

Bore size	Stroke	A	B	FD	FT	FV	FX	FZ	L	CQ2 L1	NCQ2 L1	M
32	5-50	50	33	5.5	8	48	56	65	17	38.5	29.7	34
	75, 100											
40	5-50	56.5	39.5	5.5	8	54	62	72	17	38.5	33	40
	75, 100											
50	10-50	58.5	40.5	6.6	9	67	76	89	18	43.5	37.5	50
	75, 100											
63	10-50	64	46	9	9	80	92	108	18	43.5	37.5	60
	75, 100											
80	10-50	73.5	53.5	11	11	99	116	134	20	53.5	45.5	77
	75, 100											
100	10-50	85	63	11	11	117	136	154	22	53.5	50.5	94
	75, 100											

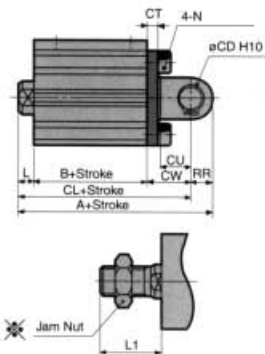


## Head Flange / (N)CDQ2G

mm

Bore size	Stroke	A	L	CQ2 L1	NCQ2 L1
32	5-50	48	7	28.5	19.7
	75, 100				
40	5-50	54.5	7	28.5	23
	75, 100				
50	10-50	57.5	8	33.5	27.5
	75, 100				
63	10-50	63	8	33.5	27.5
	75, 100				
80	10-50	74.5	10	43.5	35.5
	75, 100				
100	10-50	86	12	43.5	40.5
	75, 100				

\* Dimensions for the head flange cylinder are the same as rod flange except A, L, L1.



## Double Clevis / (N)CDQ2D

mm

Bore size	Stroke	A	B	CQ2 CD	NCQ2 Inch CD	CL	CT	CU	CW	CX	CZ	L	CQ2 L1	NCQ2 L1	CQ2 N	NCQ2 Inch N	RR
32	5-50	70	33	10	3/8	60	5	14	20	18	36	7	28.5	19.7	M6x1.0	1/4-20	10
	75, 100																
40	5-50	78.5	39.5	10	3/8	68.5	6	14	22	18	36	7	28.5	23	M6x1.0	1/4-20	20
	75, 100																
50	10-50	90.5	40.5	14	1/2	76.5	7	20	28	22	44	8	33.5	27.5	M8x1.25	5/16-18	14
	75, 100																
63	10-50	98	46	14	1/2	84	8	20	30	22	44	8	33.5	27.5	M10x1.5	7/16-14	14
	75, 100																
80	10-50	119.5	53.5	18	5/8	101.5	10	27	38	28	56	10	43.5	35.5	M12x1.75	1/2-13	18
	75, 100																
100	10-50	142	63	22	7/8	120	13	31	45	32	64	12	43.5	40.5	M12x1.75	1/2-13	22
	75, 100																

\* Rod end nut and accessories detail: see p. 6.

\* Clevis pin and snap ring are included in the package.

## Other Options: XB6, XB7, XB9, Air Hydro

## High Temperature Resisting Cylinder

(N)CQ2  Mounting style  Bore Size  Stroke  D  -XB6

The cylinder seals have been changed to be of heat-resistant material and special grease has been added to enable its use under high-temperature conditions of up to (150°C.) 300°F.

## Specifications

Bore Size	ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100
Action	Double acting
Fluid	Air
Lubrication	Non-lube
Material	Packing-fluorocarbon
Mounting style	Through hole (Standard) Both ends tapped

\* Major dimensions are the same as that of the double acting single rod or double rod and no auto switch can be attached.

## Low Temperature Resisting Cylinder

(N)CQ2  Mounting style  Bore Size  Stroke  D  -XB7

The cylinder seals have been changed to be of cold-resistant material and special grease has been added to enable its use under low-temperature conditions of down to (-40°C).

## Specifications

Bore Size	ø12, ø16, ø20, ø25, ø32, ø40
Action	Double acting
Fluid	Air
Lubrication	Non-lube
Material	Packing-Low-nitrile rubber
Mounting style	Through hole (Standard) Both ends tapped

\* Major dimensions are the same as that of the double acting single rod and no auto switch can be attached.

## Air Hydro Cylinder

CQ2  Mounting style  H  Bore Size  Stroke  D 

## Specifications

Bore Size	ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100
Action	Double acting
Fluid	Air
Proof pressure	213 psi (15kgf/cm <sup>2</sup> )
Max. operating pressure	140 psi (9.9kgf/cm <sup>2</sup> )
Min. operating pressure	26 psi (1.8kgf/cm <sup>2</sup> )

\* Major dimensions are the same as that of the double acting single rod or double rod, and auto switch can be attached.

CQ2 only - Special order

## Low Speed Cylinder

(N)CQ2  Mounting style  Bore Size  Stroke  D  -XB9

There is no stick-slip phenomenon at a low-speed drive of 0.4~2 in/sec (10~50mm/sec), and all strokes drive at a constant speed smoothly.

## Specifications

Bore Size	ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100
Action	Double acting
Fluid	Air
Max. operating pressure	140psi (9.9kgf/cm <sup>2</sup> )
Min. operating pressure	7psi (0.5kgf/cm <sup>2</sup> )
Piston velocity	.4~2 in/sec (10~50mm/sec)

\* Major dimensions are the same as that of the double acting single rod, and auto switch can be attached.

(N)CQ2  Mounting style  Bore Size  Stroke  D  -XB13

There is no stick-slip phenomenon at a low-speed drive of 0.2~2 in/sec (5~50mm/sec), and all strokes drive at a constant speed smoothly.

## Specifications

Bore Size	ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100
Action	Double acting
Fluid	Air
Max. operating pressure	140psi (9.9kgf/cm <sup>2</sup> )
Min. operating pressure	7psi (0.5kgf/cm <sup>2</sup> )
Piston velocity	.2~2 in/sec (5~50mm/sec)

\* Major dimensions are the same as that of the double acting single rod, and auto switch can be attached.



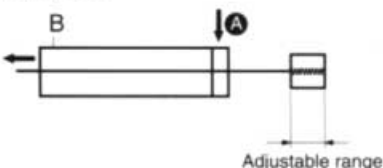
Series CQ2  
Stroke Adjustment Options: XC8, XC9

Adjustable Stroke Cylinder /  
Extend Type

(N)CQ2B Bore Size Stroke D -XC8

The extend stroke of the cylinder can be adjusted by the stop collar at the head side from full stroke 0~10mm.

Symbol

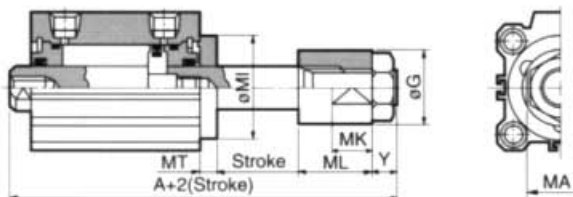


Specifications

Bore Size	ø12,ø16,ø20,ø25,ø32,ø40,ø50,ø63,ø80,ø100
Action	Double acting
Lubrication	Non-Lube
Fluid	Air
Stroke adjustment system	Adjusting bolt
Stroke adjustment range	10mm
Mounting style	Through hole

Note) Seal Kit is the same as that of the Double rod (W) option on page 27.

Construction / Major Dimensions



Bore Size (mm)	A	Y	MA	MI	MK	ML	øG	Standard stroke range
12	57.7 (64.9)	5	11	□25	7	19	14	30
16	58.5 (68.5)	5	11	□28	7	19	14	
20	67.5 (79.5)	6.5	17	□36	10	22.5	20	
25	71 (81)	6.5	17	□40	10	22.5	20	
32	78.5 (88.5)	9	24	Ø38	14	26	27	50
40	88 (98)	9	24	Ø46	14	26	27	
50	100.5 (110.5)	14	30	Ø57	16	30	35	
63	102 (112)	12	30	Ø68	16	30	35	
80	125 (135)	14	41	Ø90	20	38	48	
100	138.5 (148.5)	14	41	Ø110	20	38	48	

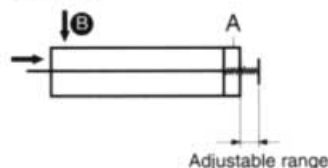
( ) Dimension for Auto Switch capable

Adjustable Stroke Cylinder /  
Retract Type

(N)CQ2 Mountingstyle Bore size Stroke D -XC9

The retract stroke of the cylinder can be adjusted from 0~10mm with the adjustment bolt.

Symbol

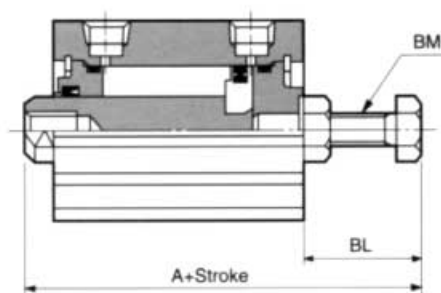


Specifications

Bore Size	ø12,ø16,ø20,ø25,ø32,ø40,ø50,ø63,ø80,ø100
Action	Double acting
Lubrication	Non-Lube
Fluid	Air
Stroke adjustment system	Adjusting bolt
Stroke adjustment range	10mm
Mounting style	Through hole (Standard), both ends tapped

Note) Seal Kit is the same as that of the Single rod kit on page 8.

Dimensions



Bore Size (mm)	A	BL	BM	Standard stroke range
12	52 (59.2)	23.3	M5x0.8	30
16	53 (63)	23.5	M6x1	
20	61 (73)	30.5	M8x1.25	
25	63.5 (73.5)	29.5	M8x1.25	
32	65.5 (75.5)	28	M8x1.25	50
40	84 (94)	37	M12x1.5	
50	84.5 (94.5)	36	M12x1.5	
63	88.5 (98.5)	38.5	M16x1.5	
80	109.5 (119.5)	48.5	M20x1.5	
100	125 (135)	52.5	M24x1.5	

( ) Dimension for Auto Switch capable

# Dual Stroke & 3 Position Tandem Options: XC10, XC11

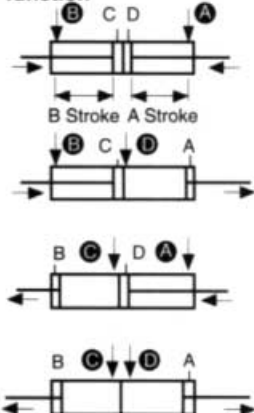
## Dual Stroke Cylinder / Double Rod Type

(N)CQ2B   +  D  -XC10

Two cylinders are constructed as one cylinder in a back-to-back configuration allowing the cylinder stroke to be controlled in three steps. Four positions are possible.

### Symbol

function



When air pressure is supplied to ports **A** and **B**, both **A** and **B** strokes retract.

When air pressure is supplied to ports **B** and **D**, both **A** stroke extends.

When air pressure is supplied to ports **A** and **C**, **B** stroke extends.

When air pressure is supplied to ports **C** and **D**, both strokes **A** and **B** extend.

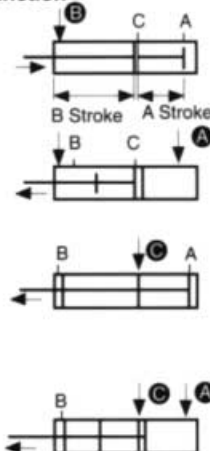
## Dual Stroke Cylinder / Single Rod Type

(N)CQ2B   +  D  -XC11

Two cylinders in tandem without connected piston rods allow 3 positions to be obtained when actuating in the proper sequence.

### Symbol

function



When air pressure is supplied to the **B** port, both **A** and **B** strokes retract.

When air pressure is supplied to the **A** port, the rod extends out equal to stroke **A**.

When air pressure is supplied to the **C** port, the rod extends an additional distance equal to the length of **B - A** stroke.

When air pressure is supplied to both ports **A** and **C**, double output force is obtainable in the range of the **A** stroke length.

## Specifications

Bore Size	ø12,ø16,ø20,ø25,ø32,ø40,ø50,ø63,ø80,ø100
Action	Double acting
Lubrication	Non-Lube
Fluid	Air
Mounting style	Tapped (one end only)
Rubber cushion	Available

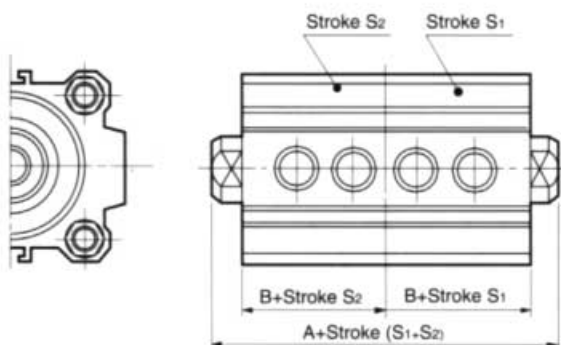
Note) Seal Kit is the same as Qty 2 Single Rod Kits on p8.

## Specifications

Bore Size	ø12,ø16,ø20,ø25,ø32,ø40,ø50,ø63,ø80,ø100
Action	Double acting
Lubrication	Non-Lube
Fluid	Air
Mounting style	Through hole
Rubber cushion	Available

Note) Seal Kit CQ2B □ -PS-XC11

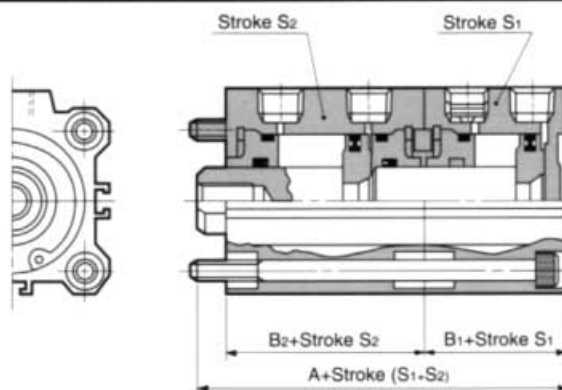
## Dimensions



Bore Size (mm)	Stroke range S1 & S2	A		B	
		50 stroke or less	75,100	50 stroke or less	75,100
12	5-30	41 (63)	-	17 (28)	-
16		44 (68)	-	18.5 (30.5)	-
20	5-50	48 (72)	-	19.5 (31.5)	-
25		55 (75)	-	22.5 (32.5)	-
32	5-100	60 (80)	80 (80)	23 (33)	33 (33)
40		73 (93)	93 (93)	29.5 (39.5)	39.5 (39.5)
50	10-100	77 (97)	97 (97)	30.5 (40.5)	40.5 (40.5)
63		88 (108)	108 (108)	36 (46)	46 (46)
80		107 (127)	127 (127)	43.5 (53.5)	53.5 (53.5)
100		130 (150)	150 (150)	53 (63)	63 (63)

( ) Dimension for Auto Switch capable

## Construction / Major Dimensions



Bore Size (mm)	Stroke range S1 & S2	A	B1	B2
		45.7 (63.9)	17 (28)	25.2 (32.4)
12	5-30	48 (70)	18.5 (30.5)	26 (36)
		50 (74)	19.5 (31.5)	26 (38)
20	5-50	56.5 (76.5)	22.5 (32.5)	29 (39)
		60.5 (80.5)	23 (33)	30.5 (40.5)
25	5-50	60.5 (80.5)	23 (33)	30.5 (40.5)
		76.5 (96.5)	29.5 (39.5)	40 (50)
40	10-50	79 (99)	30.5 (40.5)	40.5 (50.5)
		86 (106)	36 (46)	42 (52)
63	10-50	104.5 (124.5)	43.5 (53.5)	51 (61)
		125.5 (145.5)	53 (63)	60.5 (70.5)

( ) Dimension for Auto Switch capable



### Stainless Steel Piston Rod

(N)CQ2     -XC6

(N)CQ2W     -XC6

This is used for enhanced corrosion resistance in wet environments.

### Specifications

Bore Size	ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100
Action	Double acting
Fluid	Air
Lubrication	Non-lube
Material	303 or 304 Stainless
Mounting	Through hole (Standard) Both ends tapped

✳ Major dimensions are the same as that of the double acting single rod and double rod.

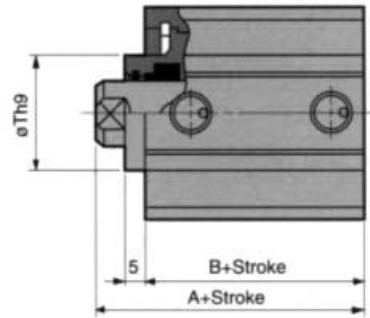
### Coil Scraper

(N)CQ2     -XC35

This special rod scraper is designed to remove weld flash and other undesirable contaminants.

### Specifications

See Standard Specifications p3	
Media	Air
Bore sizes	ø32, ø40, ø50, ø63, ø80, ø100



Bore size (mm)	A		B		Th9
	1-50 stroke	51-100 stroke	1-50 stroke	51-100 stroke	
32	35(45)	45(45)	23(33)	33(33)	23 <sup>0</sup> <sub>-0.052</sub>
40	41.5(51.5)	51.5(51.5)	29.5(39.5)	39.5(39.5)	28 <sup>0</sup> <sub>-0.052</sub>
50	43.5(53.5)	53.5(53.5)	30.5(40.5)	40.5(40.5)	35 <sup>0</sup> <sub>-0.062</sub>
63	49(59)	59(59)	36(46)	46(46)	35 <sup>0</sup> <sub>-0.062</sub>
80	58.5(68.5)	68.5(68.5)	43.5(53.5)	53.5(53.5)	43 <sup>0</sup> <sub>-0.062</sub>
100	70(80)	80(80)	53(63)	63(63)	59 <sup>0</sup> <sub>-0.074</sub>

( ) Dimension for Auto Switch capable

Note) Other dimensions are the same as those on pg. 11.