



# 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	—		3 Wire NPN	24V	5V, 12V	
	F7NVV	F79W					
	—	F7PW					
	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



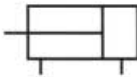
Bore Size		12	16	20	25	32	40	50	63	80	100	
Air-Pressure Type	Mounting	Through hole (std)	●	●	●	●	●	●	●	●	●	
		Both ends tapped	●	●	●	●	●	●	●	●	●	
	Built-In Magnet		●	●	●	●	●	●	●	●	●	
	Piping Method	Threaded PT or NPT	M5x 0.8	M5x 0.8	M5x 0.8	M5x 0.8	Note 1 M5x 0.8 1/8	1/8	1/4	1/4	3/8	3/8
		Built-In One 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

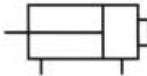
Note 2) In case of built-in fitting, the external tube dimension for ø 32, 5 stroke and 10 stroke are the same.

## 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

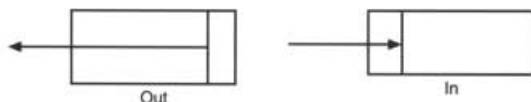
- When mounting, completely flush piping and be careful that dust and chips do not enter the cylinder.
- The Piston rod load should always be aligned with the cylinder axis.
  - Cylinder installation requires accurate alignment.
  - When used as a stopper, avoid side loading of the piston rod.
- Prevent 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	12.5
	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)

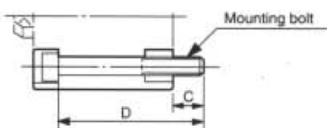
### How to obtain the total weight (lbs)

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	