



# 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**

**PT, metric**  
**N** NPT, inch

**W/ Auto Switch**  
(built-in magnet)

**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 |
|----------|--------|

**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                | —             | Yes             | —                  | —            |         |      |
| 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         |              | 5V, 12V |      |
|                    | F7NWW               | F79W          |                 | 3 Wire PNP         |              | 12V     |      |
|                    | —                   | F7PW          |                 | 2 Wire             |              | 5V, 12V |      |
|                    | F7BWW               | J79W          |                 | 3 Wire NPN         |              | 12V     |      |
|                    | —                   | F7BAL         |                 | 4 Wire NPN         |              | 5V, 12V |      |
|                    | —                   | F7NTL         |                 | —                  |              | —       |      |
|                    | —                   | F79F          |                 | —                  |              | —       |      |
|                    | —                   | F7LF          |                 | —                  |              | —       |      |

**Auto Switch Capability**

|   |                     |
|---|---------------------|
| - | Without Auto Switch |
|---|---------------------|

**Auto Switch**

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

**Preferred Option Program**

### 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<br>M5x 0.8<br>1/8 | 1/8 | 1/4 | 1/4 | 3/8 | 3/8 |
|                   |                     | Built-In One Touch Fitting | -       | -       | -       | -       | Note 2<br>6/4            | 6/4 | 8/6 | 8/6 | -   | -   |
|                   | Rod End Male Thread |                            | ●       | ●       | ●       | ●       | ●                        | ●   | ●   | ●   | ●   | ●   |
|                   | W/Rubber Cushion    |                            | ●       | ●       | ●       | ●       | ●                        | ●   | ●   | ●   | ●   | ●   |
| Air-Hydro Type    | W/Head End boss     |                            | ●       | ●       | ●       | ●       | ●                        | ●   | ●   | ●   | ●   | ●   |
|                   | Mounting            | Through hole (std)         | -       | -       | ●       | ●       | ●                        | ●   | ●   | ●   | ●   | ●   |
|                   |                     | Both ends tapped           | -       | -       | ●       | ●       | ●                        | ●   | ●   | ●   | ●   | ●   |
|                   | Built-In Magnet     |                            | -       | -       | ●       | ●       | ●                        | ●   | ●   | ●   | ●   | ●   |
|                   | Piping Method       | Threaded PT or NPT         | -       | -       | M5x 0.8 | M5x 0.8 | Note 1<br>M5x 0.8<br>1/8 | 1/8 | 1/4 | 1/4 | 3/8 | 3/8 |
|                   |                     | Rod End Male Thread        | -       | -       | ●       | ●       | ●                        | ●   | ●   | ●   | ●   | ●   |
|                   | W/ Head End boss    |                            | -       | -       | ●       | ●       | ●                        | ●   | ●   | ●   | ●   | ●   |

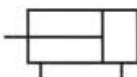
Note 1) In cases without autoswitch, only 5 stroke uses M5x0.8

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

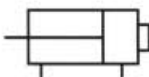
## Standard Specifications

| 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  | <sup>+1.0</sup> <sub>0</sub> mm                           |                          |
| Mounting                 | Through hole (std.)                                       |                          |
| Piston Speed             | 2~20in/s (50~500mm/s)                                     | .002~8 in/s(0.5~200mm/s) |

Double acting/  
Single rod



Head end boss



## 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.

## Min. Operating Pressure

psi

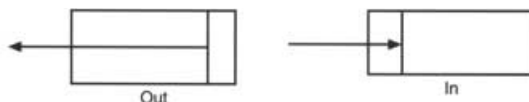
| Bore size                    | 12    | 16    | 20   | 25   | 32   | 40   | 50   | 63   | 80   | 100  |
|------------------------------|-------|-------|------|------|------|------|------|------|------|------|
| Air pressure type (non-lube) | 10.15 | 10.15 | 7.25 | 7.25 | 7.25 | 7.25 | 7.25 | 7.25 |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

## Standard stroke

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

| Air-Hydro |                                     | mm |
|-----------|-------------------------------------|----|
| Bore size | Standard stroke                     |    |
| 20,25     | 5,10,15,20,25,30,35,40,45,50        |    |
| 32,40     | 5,10,15,20,25,30,35,40,45,50,75,100 |    |
| 50,63     | 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.



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 |

## Weight/Double acting: Single rod type

lbs

| 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  | 0.256  |
| Head end boss        |        | 0.002 | 0.003 | 0.004  | 0.007  | 0.011  | 0.015  | 0.029  | 0.055  | 0.099  |
| W/ rubber cushion    |        | 0.000 | 0.000 | -0.004 | -0.007 | -0.007 | -0.015 | -0.020 | -0.040 | -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  |
| Rod side flange*     |        | 0.126 | 0.152 | 0.306  | 0.355  | 0.397  | 0.472  | 0.822  | 1.233  | 2.328  |
| Head side flange*    |        | 0.119 | 0.143 | 0.293  | 0.335  | 0.364  | 0.437  | 0.767  | 1.177  | 2.242  |
| Double clevis**      |        | 0.071 | 0.086 | 0.194  | 0.271  | 0.333  | 0.432  | 0.867  | 1.222  | 2.445  |

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

## How to obtain the total weight (lbs)

NCQ2D32-20DCM

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

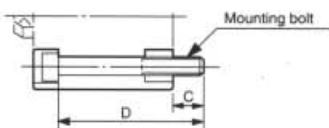
## Mounting Bolt For (N)CQ2

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   |

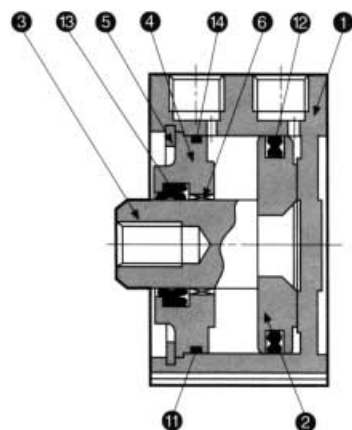
| Model        | C   | D  | Mounting bolt |
|--------------|-----|----|---------------|
| (N)CQ2B12-5D |     | 25 | M3x25L        |
| -10D         |     | 30 | x30L          |
| -15D         | 6.5 | 35 | x35L          |
| -20D         |     | 40 | x40L          |
| -25D         |     | 45 | x45L          |
| -30D         |     | 50 | x50L          |
| (N)CQ2B16-5D |     | 25 | M3x25L        |
| -10D         |     | 30 | x30L          |
| -15D         | 5   | 35 | x35L          |
| -20D         |     | 40 | x40L          |
| -25D         |     | 45 | x45L          |
| -30D         |     | 50 | x50L          |
| (N)CQ2B20-5D |     | 25 | M5x25L        |
| -10D         |     | 30 | x30L          |
| -15D         |     | 35 | x35L          |
| -20D         |     | 40 | x50L          |
| -25D         | 7.5 | 45 | x45L          |
| -30D         |     | 50 | x50L          |
| -35D         |     | 55 | x55L          |
| -40D         |     | 60 | x60L          |
| -45D         |     | 65 | x65L          |
| -50D         |     | 70 | x70L          |
| (N)CQ2B25-5D |     | 30 | M5x30L        |
| -10D         |     | 35 | x35L          |
| -15D         |     | 40 | x40L          |
| -20D         |     | 45 | x45L          |
| -25D         | 9.5 | 50 | x50L          |
| -30D         |     | 55 | x55L          |
| -35D         |     | 60 | x60L          |
| -40D         |     | 65 | x65L          |
| -45D         |     | 70 | x70L          |
| -50D         |     | 75 | x75L          |

| Model         | C    | D   | Mounting bolt |
|---------------|------|-----|---------------|
| (N)CQ2B32-5D  |      | 30  | M5x30L        |
| -10D          |      | 35  | x35L          |
| -15D          |      | 40  | x40L          |
| -20D          |      | 45  | x45L          |
| -25D          |      | 50  | x50L          |
| -30D          |      | 55  | x55L          |
| -35D          | 9    | 60  | x60L          |
| -40D          |      | 65  | x65L          |
| -45D          |      | 70  | x70L          |
| -50D          |      | 75  | x75L          |
| -75D          |      | 110 | x110L         |
| -100D         |      | 135 | x135L         |
| (N)CQ2B40-5D  |      | 35  | M5x35L        |
| -10D          |      | 40  | x40L          |
| -15D          |      | 45  | x45L          |
| -20D          |      | 50  | x50L          |
| -25D          |      | 55  | x55L          |
| -30D          |      | 60  | x60L          |
| -35D          | 7.5  | 65  | x65L          |
| -40D          |      | 70  | x70L          |
| -45D          |      | 75  | x75L          |
| -50D          |      | 80  | x80L          |
| -75D          |      | 115 | x115L         |
| -100D         |      | 140 | x140L         |
| (N)CQ2B50-10D |      | 45  | M6x45L        |
| -15D          |      | 50  | x50L          |
| -20D          |      | 55  | x55L          |
| -25D          |      | 60  | x60L          |
| -30D          |      | 65  | x65L          |
| -35D          | 12.5 | 70  | x70L          |
| -40D          |      | 75  | x75L          |
| -45D          |      | 80  | x80L          |
| -50D          |      | 85  | x85L          |
| -75D          |      | 120 | x120L         |
| -100D         |      | 145 | x145L         |

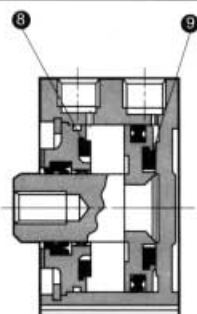
| Model          | C    | D   | Mounting bolt |
|----------------|------|-----|---------------|
| (N)CQ2B63-10D  |      | 50  | M8x50L        |
| -15D           |      | 55  | x55L          |
| -20D           |      | 60  | x60L          |
| -25D           |      | 65  | x65L          |
| -30D           |      | 70  | x70L          |
| -35D           | 14.5 | 75  | x75L          |
| -40D           |      | 80  | x80L          |
| -45D           |      | 85  | x85L          |
| -50D           |      | 90  | x90L          |
| -75D           |      | 125 | x125L         |
| -100D          |      | 150 | x150L         |
| (N)CQ2B80-10D  |      | 55  | M10x55L       |
| -15D           |      | 60  | x60L          |
| -20D           |      | 65  | x65L          |
| -25D           |      | 70  | x70L          |
| -30D           |      | 75  | x75L          |
| -35D           | 15   | 80  | x80L          |
| -40D           |      | 85  | x85L          |
| -45D           |      | 90  | x90L          |
| -50D           |      | 95  | x95L          |
| -75D           |      | 130 | x130L         |
| -100D          |      | 155 | x155L         |
| (N)CQ2B100-10D |      | 65  | M10x65L       |
| -15D           |      | 70  | x70L          |
| -20D           |      | 75  | x75L          |
| -25D           |      | 80  | x80L          |
| -30D           |      | 85  | x85L          |
| -35D           | 15.5 | 90  | x90L          |
| -40D           |      | 95  | x95L          |
| -45D           |      | 100 | x100L         |
| -50D           |      | 105 | x105L         |
| -75D           |      | 140 | x140L         |
| -100D          |      | 165 | x165L         |

# Compact Cylinder: Standard / Double Acting Single Rod

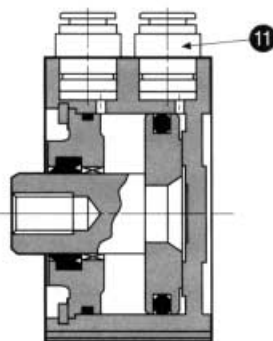
## Construction / Part List



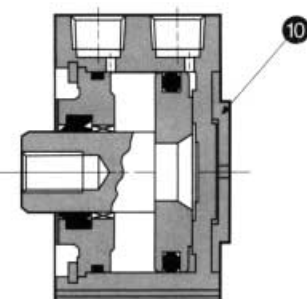
Double Acting / Single Rod



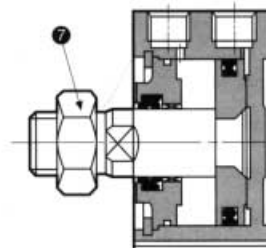
With Cushion



One Touch Fittings



End Boss Head End



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.

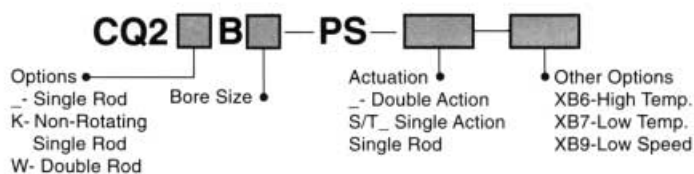
## Seal List

| 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      |

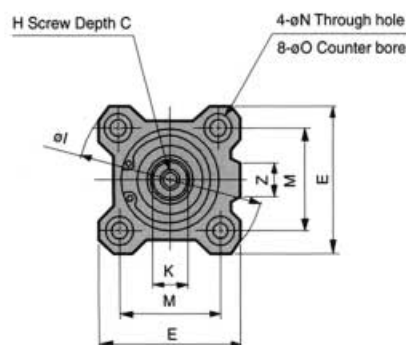
## Seal Kit Part Numbers



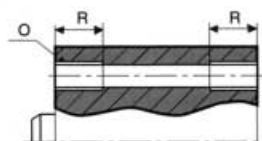
# (N)CQ2 Series

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

## Through Hole / (N)CQ2B



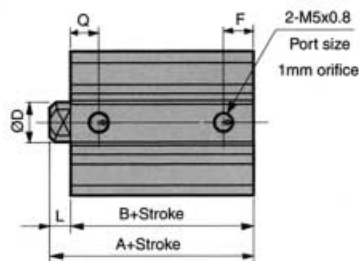
## Both ends tapped



## (N)CQ2A

### Both Ends Tapped

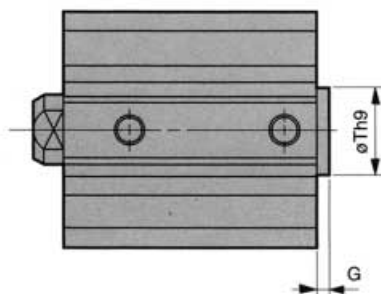
| Bore size | CQ2<br>O | NCQ2<br>inch<br>O | R  |
|-----------|----------|-------------------|----|
| 12        | M4x0.7   | 8-32 UNC          | 7  |
| 16        | M4x0.7   | 8-32 UNC          | 7  |
| 20        | M6x1.0   | 1/4 - 20 UNC      | 10 |
| 25        | M6x1.0   | 1/4 - 20 UNC      | 10 |



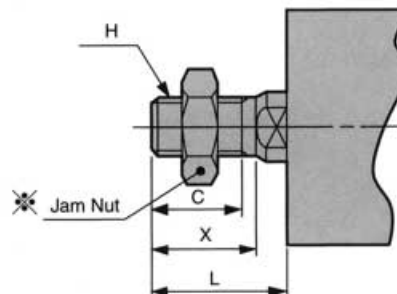
## Standard

| Bore size | Stroke | A    | B    | CQ2<br>C | NCQ2<br>C | D  | E  | F   | CQ2<br>H | NCQ2<br>inch<br>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

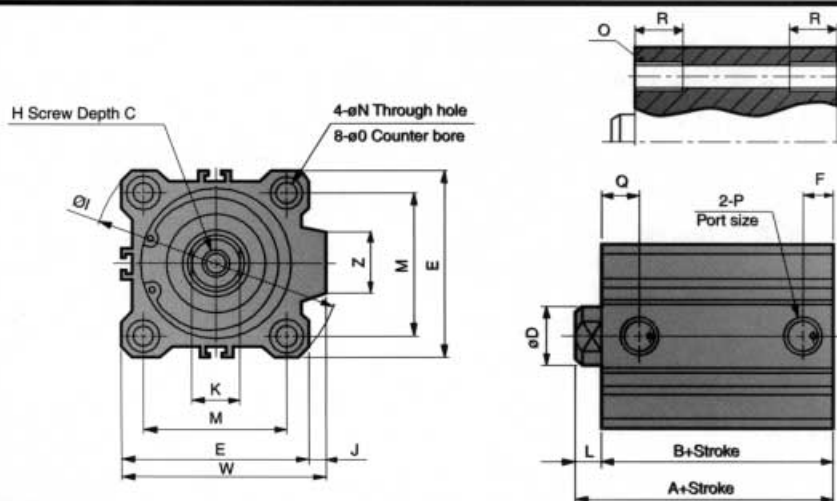
| Bore size | X   | H<br>inch | L    | K  |
|-----------|-----|-----------|------|----|
| 12        | 8   | #8-32UNC  | 11.5 | 5  |
| 16        | 8   | #8-32UNC  | 11.5 | 6  |
| 20        | 8   | #10-32UNF | 12.5 | 8  |
| 25        | 9.5 | 1/4-28UNF | 14.5 | 10 |

## 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.

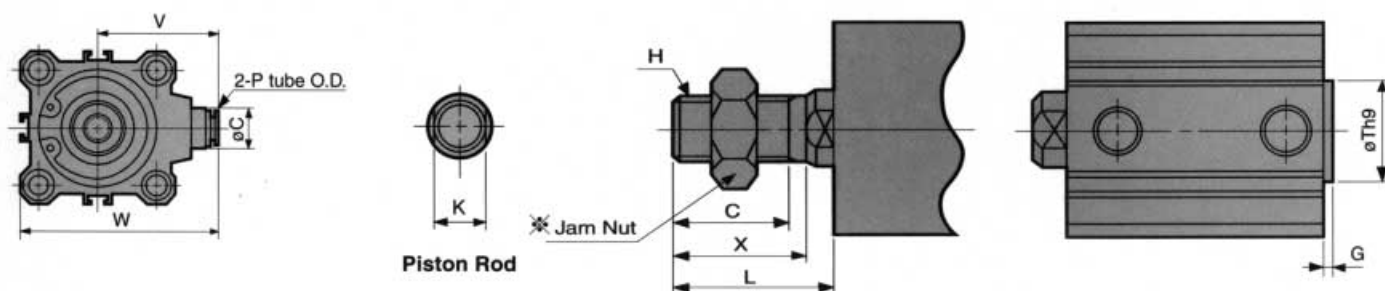
Bore Size  $\phi 32 \sim \phi 100$ (N)CQ2A  
Both Ends Tapped

| Bore size | CQ2<br>O | NCQ2<br>inch<br>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<br>C | NCQ2<br>C | D  | E   | F    | CQ2<br>H | NCQ2<br>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 |
|           | 10~50       | 40   | 33   |          |           |    |     | 7.5  |          |                |     |     |    |    |    |     |                 | 1/8    |         | 10.5 |       |    |
|           | 75, 100     | 40   | 33   |          |           |    |     | 7.5  |          |                |     |     |    |    |    |     |                 | 1/8    |         | 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 |          |           |    |     | 8    |          |                |     |     |    |    |    |     |                 | 1/8    |         | 11   |       |    |
|           | 10~50       | 38.5 | 30.5 |          |           |    |     | 10.5 |          |                |     |     |    |    |    |     |                 | 1/4    |         | 10.5 |       |    |
| 50        | 75, 100     | 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 | 71    | 19 |
|           | 10~50       | 44   | 36   |          |           |    |     | 10.5 |          |                |     |     |    |    |    |     |                 | 1/4    |         | 15   |       |    |
|           | 75, 100     | 54   | 46   |          |           |    |     | 10.5 |          |                |     |     |    |    |    |     |                 | 1/4    |         | 15   |       |    |
| 63        | 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 |          |           |    |     | 12.5 |          |                |     |     |    |    |    |     |                 | 3/8    |         | 16   |       |    |
|           | 10~50       | 65   | 53   |          |           |    |     | 13   |          |                |     |     |    |    |    |     |                 | 3/8    |         | 23   |       |    |
| 100       | 75, 100     | 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   | 123.5 | 26 |
|           | 10~50       | 65   | 53   |          |           |    |     | 13   |          |                |     |     |    |    |    |     |                 | 3/8    |         | 23   |       |    |

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<br>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 |

"C" dimension not applicable

\*Rod end nut and accessories are detailed on p. 6.

## 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> |

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



**Compact Cylinder  
With Autoswitch**

# (N)CDQ2 Series

## Standard Specifications

| Model                   | Air pressure type<br>(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<br>Auto<br>Switch<br>Mounting | D-F7□V<br>D-J79C | D-A7<br>D-A8<br>D-A73C<br>D-A80C | D-F7□WV | D-A7□H<br>D-A80H<br>D-F7□<br>D-J79 | D-A79W | D-F7□W<br>D-J79W<br>D-F7BAL<br>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<br>(mm)                      | Part<br>No. | Note                                                                                           | Applicable<br>auto switch                                            |
|----------------------------------------|-------------|------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| 12•16•20•25                            | BQ-1        | •Auto switch mounting screw<br>(M3x0.5x8L)<br>•Square nut                                      | D-A7 • A8<br>D-A7OH • A80H<br>D-AOC • A80C<br>D-F79 D-F79W<br>J-J79C |
| 32•40•50•<br>63•89•100•<br>125•140•160 | BQ-2        | •Auto switch mounting screw<br>(m3x0.5x8L)<br>•Auto switch spacer<br>•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<br>A72H                                                        | D-A73,A73H |        | D-A76H          | D-A80,A80H                   |               |                | D-A73C                                | D-A80C                       | Two color<br>indicator lamp<br>D-A79W                                                                      |
|-----------------------------------------|----------------------------------------------------------------------|------------|--------|-----------------|------------------------------|---------------|----------------|---------------------------------------|------------------------------|------------------------------------------------------------------------------------------------------------|
| Application                             | Relay, PLC                                                           |            |        | IC circuit      | Relay,<br>PLC,<br>IC circuit |               |                | Relay,<br>PLC                         | Relay,<br>PLC,<br>IC circuit | Relay,<br>PLC                                                                                              |
| Load voltage                            | 200VAC                                                               | 100VAC     | 24VDC  | 4~8VDC          | 24VAC/<br>VDC or less        | 48VAC/<br>VDC | 100VAC/<br>VDC | 24VDC                                 | 24VAC/<br>VDC                | 24VDC                                                                                                      |
| Max. load current or load current range | 5~10mA                                                               | 5~20mA     | 5~40mA | Max.<br>20mA    | Max.<br>50mA                 | Max.<br>40mA  | Max.<br>20mA   | 5~40mA                                | Max.<br>50mA                 | 5~40mA                                                                                                     |
| Internal voltage drop                   | 2.4V or<br>less                                                      |            |        | 0.8V or<br>less | 0                            |               |                | 2.4V or<br>less                       | 0                            | 4V or less                                                                                                 |
| Leak current                            | 0                                                                    |            |        |                 |                              |               |                |                                       |                              |                                                                                                            |
| Response time                           | 1.2ms                                                                |            |        |                 |                              |               |                |                                       |                              |                                                                                                            |
| Indicator lamp                          | ON: Red light emitting diode                                         |            |        |                 | None                         |               |                | ON: Red<br>light<br>emitting<br>diode | None                         | Response position:<br>Red light emitting diode<br>Best response position:<br>Green light<br>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<br>3 wire type<br>D-F7P        | 2 wire type<br>D-F7BV | 2 wire type<br>D-J79(C) | PNP<br>3 wire type two color<br>indicator lamp<br>D-F79W | 2 wire type two color<br>indicator lamp<br>D-F7BWV |
|-----------------------------------------|------------------------------------|-----------------------|-------------------------|----------------------------------------------------------|----------------------------------------------------|
| Application                             | Relay,<br>PLC                      | Relay,<br>PLC         |                         | Relay,<br>PLC,<br>IC circuit                             | Relay,<br>PLC                                      |
| Power source                            | 5, 12, 24VDC<br>(4.5~28VDC)        | -                     |                         | 4.5~28VDC                                                | -                                                  |
| Current consumption                     | OFF:1mA or less<br>ON:15mA or less | -                     |                         | OFF:1mA or less<br>ON:12mA or less                       | -                                                  |
| Load voltage                            | —                                  | 24VDC<br>(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<br>at 10mA of load current)   | 4V or less                                         |
| Leak current                            | 24VDC: 100 $\mu$ A or less         | 24VDC: 0.8mA or less  |                         | 100 $\mu$ A or less at 24VDC                             | 24VDC: 0.8mA or less                               |

| Auto switch model                       | NPN<br>3 wire type<br>D-F7NV                           | NPN<br>4 wire type two color<br>indicator lamp<br>D-F79F | NPN<br>4 wire type two color<br>indicator lamp<br>D-F7LF | NPN<br>3 wire type two color<br>indicator lamp<br>D-F79W | 2 wire type two color<br>indicator lamp<br>D-J79W |
|-----------------------------------------|--------------------------------------------------------|----------------------------------------------------------|----------------------------------------------------------|----------------------------------------------------------|---------------------------------------------------|
| Application                             | Relay,<br>PLC,<br>IC circuit                           | Relay,<br>PLC,<br>IC circuit                             |                                                          | Relay,<br>PLC,<br>IC circuit                             | Relay,<br>PLC                                     |
| Power source                            | 5, 12, 24VDC<br>(4.5~28VDC)                            | 4.5~28VDC                                                | 24VDC<br>(20~26VDC)                                      | 12V, 24VDC                                               | -                                                 |
| Current consumption                     | OFF:1mA or less<br>ON:12mA or less                     | OFF:1mA or less<br>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<br>at 10mA of load current) | 1.5V or less (0.8V or less<br>at 10mA of load current)   | 0.8V or less                                             | 1.5V or less (0.8V or less<br>at 10mA of load current)   | 4V or less                                        |
| Leak current                            | 100 $\mu$ A or less at 24VDC                           | 100 $\mu$ A or less at 24VDC                             |                                                          | 100 $\mu$ A or less at 24VDC                             | 0.8mA or less at 24VDC                            |

| Auto switch model                       | NPN<br>3 wire type<br>D-F79                                                 | PNP<br>3 wire type<br>D-F7PV | NPN<br>3 wire type<br>D-F7NTL        | 2 wire type<br>D-F7BAL                                                                              | NPN<br>3 wire type two color<br>indicator lamp<br>D-F7NWW |
|-----------------------------------------|-----------------------------------------------------------------------------|------------------------------|--------------------------------------|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------|
| Application                             | Relay,<br>PLC,<br>IC circuit                                                | Relay,<br>PLC,<br>IC circuit | Relay,<br>PLC,<br>IC circuit         | Relay,<br>PLC                                                                                       | Relay,<br>PLC                                             |
| Power source                            | 5, 12, 24VDC<br>(4.5~28VDC)                                                 | 4.5~28VDC                    | 4.5~28VDC                            | -                                                                                                   | 12~24VDC                                                  |
| Current consumption                     | OFF:1mA or less<br>ON:12mA or less                                          | 15mA or less                 | OFF:1mA or less<br>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<br>at 10mA of load current)                      | 0.8V or less                 | 2V or less<br>(0.8V or less at 10mA) | 4V or less                                                                                          | 1.5V or less (0.8V or less<br>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<br>Best response position:<br>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, JISC0920 (Water proof). Oil proof                            |                              |                                      |                                                                                                     |                                                           |

## Weight Chart

lbs

| Bore size<br>(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  | 0.011  |
| W/ Cushion       | 0.000  | -0.002 | -0.004 | -0.007 | -0.007 |
| W/ One touch     | -      | -      | -      | -      | 0.026  |
| Foot             | 0.108  | 0.137  | 0.324  | 0.373  | 0.315  |
| Rod flange       | 0.119  | 0.148  | 0.289  | 0.337  | 0.397  |
| Head flange      | 0.115  | 0.139  | 0.273  | 0.318  | 0.364  |
| Double clevis    | 0.064  | 0.077  | 0.172  | 0.251  | 0.333  |
| 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  | 0.212  |
| W/ Cushion       | -0.015 | -0.020 | -0.040 | -0.068 | -0.123 |
| W/ One touch     | 0.026  | 0.046  | 0.046  | -      | -      |
| Foot             | 0.342  | 0.536  | 0.714  | 1.535  | 2.342  |
| Rod flange       | 0.472  | 0.822  | 1.233  | 2.328  | 3.010  |
| Head flange      | 0.437  | 0.767  | 1.177  | 2.242  | 2.886  |
| Double clevis    | 0.432  | 0.867  | 1.222  | 2.445  | 4.161  |

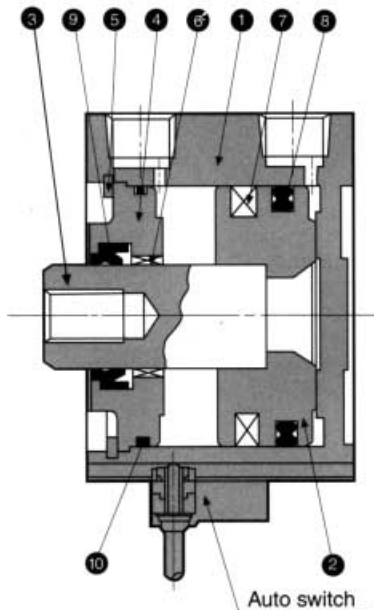
## How to calculate weight (lbs)

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           | -.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      |