

# Compact Cylinder ISO Standard (21287)

## C55 Series

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

RoHS



C85

C85W

C85-ST

C85K

C85K-ST

C85R

C75

C75W

C75-ST

C75K

C75K-ST

C75R

CP96

CP96K

C96

C96K

C96Y

C55

Auto Switch

Made to Order

Related Products

# ISO Standards

## Compact Cylinder Double Acting, Single Rod

# C55 Series

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

RoHS

### How to Order

**C55 B 20 - 10** - **□** - **□**

**With auto switch** **CD55 B 20 - 10** - **□** - **M9B S** - **□**

• **With auto switch (Built-in magnet)**

• **Mounting**

|          |                                                 |
|----------|-------------------------------------------------|
| <b>B</b> | Through-hole/Both ends tapped common (Standard) |
| <b>L</b> | Foot                                            |
| <b>F</b> | Rod flange                                      |
| <b>G</b> | Head flange                                     |
| <b>C</b> | Single clevis                                   |

• **Bore size**

|            |        |
|------------|--------|
| <b>20</b>  | 20 mm  |
| <b>25</b>  | 25 mm  |
| <b>32</b>  | 32 mm  |
| <b>40</b>  | 40 mm  |
| <b>50</b>  | 50 mm  |
| <b>63</b>  | 63 mm  |
| <b>80</b>  | 80 mm  |
| <b>100</b> | 100 mm |

• **Auto switch**

|            |                                                |
|------------|------------------------------------------------|
| <b>Nil</b> | Without auto switch (Built-in magnet cylinder) |
|------------|------------------------------------------------|

\* For applicable auto switches, refer to the table below.  
\* Auto switches are shipped together, but not assembled.

• **Number of auto switches**

|            |   |
|------------|---|
| <b>Nil</b> | 2 |
| <b>S</b>   | 1 |
| <b>n</b>   | n |

• **Made to Order**  
For details, refer to the next page.

• **Auto switch**

|            |                                                |
|------------|------------------------------------------------|
| <b>Nil</b> | Without auto switch (Built-in magnet cylinder) |
|------------|------------------------------------------------|

\* For applicable auto switches, refer to the table below.  
\* Auto switches are shipped together, but not assembled.

• **Rod end thread**

|            |                |
|------------|----------------|
| <b>Nil</b> | Female rod end |
| <b>M</b>   | Male rod end   |

\* A rubber bumper comes as standard.

• **Cylinder stroke [mm]**  
Refer to page 204 for standard and intermediate strokes.

### Applicable Auto Switches/Refer to the Web Catalog or Best Pneumatics for further information on auto switches.

| Applicable Auto Switches |                                           |                  |                 |                                              |              |               |                   |         |                      |        |       |       |          |     |                     |                 |            |
|--------------------------|-------------------------------------------|------------------|-----------------|----------------------------------------------|--------------|---------------|-------------------|---------|----------------------|--------|-------|-------|----------|-----|---------------------|-----------------|------------|
| Type                     | Special function                          | Electrical entry | Indicator light | Wiring (Output)                              | Load voltage |               | Auto switch model |         | Lead wire length [m] |        |       |       |          |     | Pre-wired connector | Applicable load |            |
|                          |                                           |                  |                 |                                              | DC           | AC            | Perpendicular     | In-line | 0.5 (Nil)            | 1 (M)  | 3 (L) | 5 (Z) | None (N) |     |                     |                 |            |
| Solid state auto switch  | —                                         | Grommet          | Yes             | 3-wire (NPN)                                 | 24 V         | 5 V, 12 V     | —                 | M9NV    | M9N                  | ●      | ●     | ●     | ○        | —   | ○                   | IC circuit      | Relay, PLC |
|                          |                                           |                  |                 | 3-wire (PNP)                                 |              |               |                   | M9PV    | M9P                  | ●      | ●     | ●     | ○        | —   | ○                   |                 |            |
|                          | 2-wire                                    |                  |                 | M9BV                                         |              |               |                   | M9B     | ●                    | ●      | ●     | ○     | —        | ○   | —                   |                 |            |
|                          | Diagnostic indication (2-color indicator) |                  |                 | 3-wire (NPN)                                 |              |               |                   | M9NWV   | M9NW                 | ●      | ●     | ●     | ○        | —   | ○                   | IC circuit      |            |
|                          |                                           |                  |                 | 3-wire (PNP)                                 |              |               |                   | M9PWV   | M9PW                 | ●      | ●     | ●     | ○        | —   | ○                   |                 |            |
|                          | Water-resistant (2-color indicator)       |                  |                 | 2-wire                                       |              |               |                   | M9BWV   | M9BW                 | ●      | ●     | ●     | ○        | —   | ○                   | —               |            |
|                          |                                           |                  |                 | 3-wire (NPN)                                 |              |               |                   | M9NAV*1 | M9NA*1               | ○      | ○     | ●     | ○        | —   | ○                   | IC circuit      |            |
|                          |                                           |                  |                 | 3-wire (PNP)                                 |              |               |                   | M9PAV*1 | M9PA*1               | ○      | ○     | ●     | ○        | —   | ○                   |                 |            |
|                          |                                           |                  |                 | Magnetic field resistant (2-color indicator) |              |               |                   | 2-wire  | M9BAV*1              | M9BA*1 | ○     | ○     | ●        | ○   | —                   | ○               |            |
|                          | 2-wire (Non-polar)                        |                  |                 |                                              |              |               |                   | —       | P3DW                 | ●      | —     | ●     | ●        | —   | ●                   |                 |            |
| Reed auto switch         | —                                         | Grommet          | Yes             | 3-wire (NPN equivalent)                      | —            | 5 V           | —                 | A96V    | A96                  | ●      | ●     | ●     | ●        | —   | ○                   | IC circuit      | Relay, PLC |
|                          |                                           |                  |                 | 2-wire                                       | 24 V         | 12 V          | 100 V             | A93V    | A93                  | ●      | ●     | ●     | ●        | —   | ○*2                 | —               |            |
|                          |                                           |                  | 5 V, 12 V       |                                              |              | 100 V or less | A90V              | A90     | ●                    | ●      | ●     | ●     | —        | ○*2 | IC circuit          |                 |            |

\*1 Water-resistant type auto switches can be mounted on the above models, but SMC cannot guarantee water resistance.

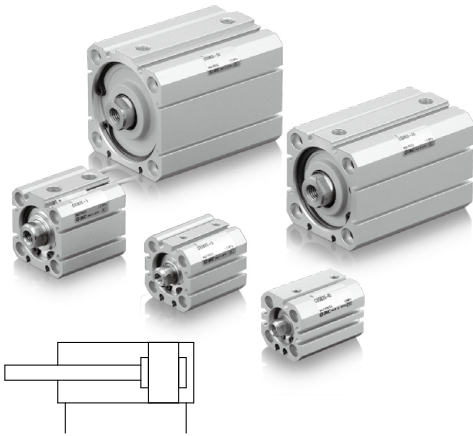
\*2 The load voltage used is 24 VDC.

Lead wire length symbols: 0.5 m..... Nil (Example) M9NW  
1 m..... M (Example) M9NWM  
3 m..... L (Example) M9NWL  
5 m..... Z (Example) M9NWZ

\* Auto switches marked with "○" are produced upon receipt of order.

\* Since there are other applicable auto switches than listed above, refer to the Web Catalog or Best Pneumatics for details.

\* Auto switches are shipped together, but not assembled.



## Caution

Be sure to read this before handling the products.

1. Refer to page 219 for safety instructions and "Handling Precautions for SMC Products" (M-E03-3) for actuator and auto switch precautions.
2. This product should not be used as a stopper.
3. Use the G thread fittings for this cylinder.



### Made to Order

(For details, refer to pages 216 and 217.)

| Symbol | Specifications                                                                           |
|--------|------------------------------------------------------------------------------------------|
| -XA□   | Change of rod end shape                                                                  |
| -XC6   | Made of stainless steel<br>(Rod, retaining ring and rod end nut made of stainless steel) |

## Mounting Bracket Part No.

| Bore size [mm] | Foot     | Flange   | Single clevis |
|----------------|----------|----------|---------------|
| 20             | C55-L020 | C55-F020 | C55-C020      |
| 25             | C55-L025 | C55-F025 | C55-C025      |
| 32             | C55-L032 | C55-F032 | C55-C032      |
| 40             | C55-L040 | C55-F040 | C55-C040      |
| 50             | C55-L050 | C55-F050 | C55-C050      |
| 63             | C55-L063 | C55-F063 | C55-C063      |
| 80             | C55-L080 | C55-F080 | C55-C080      |
| 100            | C55-L100 | C55-F100 | C55-C100      |

\* Foot bracket part number contains two foot brackets.

\* Mounting bolts are also included with bracket.

## Theoretical Output



| Bore size [mm] | Operating direction | Operating pressure [MPa] |      |      |
|----------------|---------------------|--------------------------|------|------|
|                |                     | 0.3                      | 0.5  | 0.7  |
| 20             | IN                  | 71                       | 118  | 165  |
|                | OUT                 | 94                       | 157  | 220  |
| 25             | IN                  | 113                      | 189  | 264  |
|                | OUT                 | 147                      | 245  | 344  |
| 32             | IN                  | 181                      | 302  | 422  |
|                | OUT                 | 241                      | 402  | 563  |
| 40             | IN                  | 317                      | 528  | 739  |
|                | OUT                 | 377                      | 628  | 880  |
| 50             | IN                  | 495                      | 825  | 1150 |
|                | OUT                 | 589                      | 982  | 1370 |
| 63             | IN                  | 841                      | 1400 | 1960 |
|                | OUT                 | 935                      | 1560 | 2180 |
| 80             | IN                  | 1360                     | 2270 | 3180 |
|                | OUT                 | 1510                     | 2520 | 3520 |
| 100            | IN                  | 2150                     | 3580 | 5010 |
|                | OUT                 | 2360                     | 3930 | 5500 |

## Specifications

|                               |                                                                                               |                |
|-------------------------------|-----------------------------------------------------------------------------------------------|----------------|
| Type                          | Pneumatic (Non-lube)                                                                          |                |
| Action                        | Double acting, Single rod                                                                     |                |
| Fluid                         | Air                                                                                           |                |
| Proof pressure                | 1.5 MPa                                                                                       |                |
| Maximum operating pressure    | 1.0 MPa                                                                                       |                |
| Minimum operating pressure    | 0.05 MPa (ø20 to ø63), 0.03 MPa (ø80, ø100)                                                   |                |
| Ambient and fluid temperature | Without auto switch: -10 to 70°C (No freezing)<br>With auto switch: -10 to 60°C (No freezing) |                |
| Cushion                       | Rubber bumper on both ends                                                                    |                |
| Stroke length tolerance*1     | +1.0<br>0 mm                                                                                  |                |
| Piston speed                  | ø20 to ø63                                                                                    | 50 to 500 mm/s |
|                               | ø80, ø100                                                                                     | 50 to 300 mm/s |

\*1 Stroke length tolerance does not include the amount of bumper change.

## Standard Strokes

| Bore size [mm] | Standard stroke [mm]                                         |
|----------------|--------------------------------------------------------------|
| 20 to 63       | 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 60, 80, 100, 125, 150 |
| 80, 100        | 10, 15, 20, 25, 30, 35, 40, 45, 50, 60, 80, 100, 125         |

## Manufacture of Intermediate Stroke

|              |                                                                                                 |
|--------------|-------------------------------------------------------------------------------------------------|
| Description  | Dealing with the stroke in 1 mm increments by using an exclusive body with the specified stroke |
| Part no.     | Refer to "How to Order" for the standard model no. (page 203)                                   |
| Stroke range | 6 to 149                                                                                        |
| Example      | Part no.: C55B32-47                                                                             |
|              | Makes 47 stroke tube                                                                            |

## Weights

### Without Auto Switch

| Bore size [mm] | Cylinder stroke [mm] |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Unit: g |
|----------------|----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---------|
|                | 5                    | 10   | 15   | 20   | 25   | 30   | 35   | 40   | 45   | 50   | 60   | 80   | 100  | 125  | 150  |         |
| 20             | 111                  | 124  | 137  | 150  | 163  | 176  | 189  | 202  | 215  | 228  | 254  | 306  | 357  | 422  | 487  |         |
| 25             | 152                  | 168  | 183  | 199  | 214  | 230  | 246  | 261  | 277  | 292  | 323  | 386  | 448  | 526  | 603  |         |
| 32             | 250                  | 273  | 295  | 317  | 339  | 362  | 384  | 406  | 428  | 451  | 495  | 584  | 673  | 785  | 896  |         |
| 40             | 315                  | 339  | 364  | 388  | 412  | 436  | 461  | 485  | 509  | 533  | 582  | 679  | 776  | 897  | 1018 |         |
| 50             | 497                  | 534  | 570  | 607  | 644  | 681  | 718  | 755  | 791  | 828  | 902  | 1049 | 1197 | 1381 | 1565 |         |
| 63             | 677                  | 717  | 757  | 797  | 837  | 877  | 917  | 957  | 997  | 1037 | 1117 | 1277 | 1437 | 1638 | 1838 |         |
| 80             | —                    | 1164 | 1223 | 1281 | 1339 | 1398 | 1456 | 1514 | 1573 | 1631 | 1748 | 1981 | 2214 | 2506 | —    |         |
| 100            | —                    | 2213 | 2295 | 2377 | 2459 | 2541 | 2623 | 2705 | 2787 | 2870 | 3034 | 3362 | 3690 | 4101 | —    |         |

### With Auto Switch (Built-in magnet)

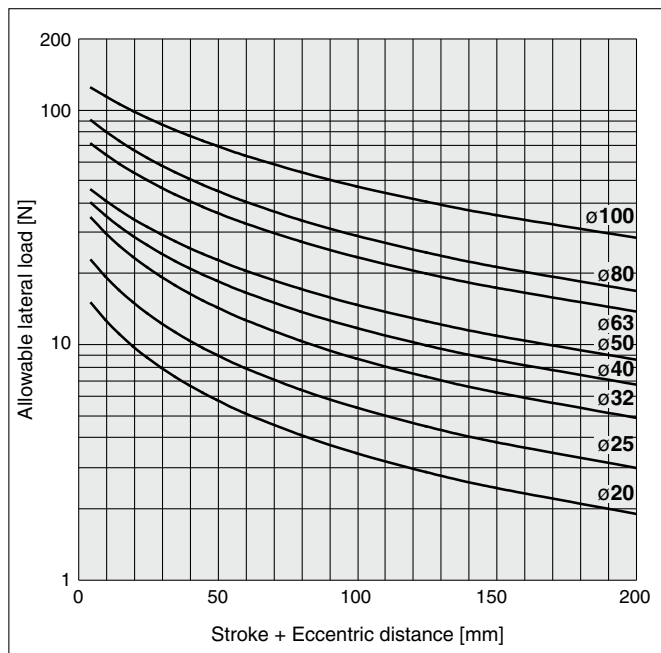
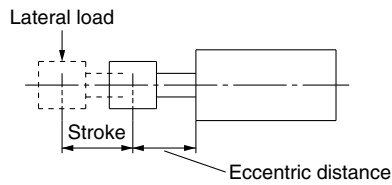
| Bore size [mm] | Cylinder stroke [mm] |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Unit: g |
|----------------|----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---------|
|                | 5                    | 10   | 15   | 20   | 25   | 30   | 35   | 40   | 45   | 50   | 60   | 80   | 100  | 125  | 150  |         |
| 20             | 113                  | 126  | 139  | 152  | 165  | 178  | 191  | 204  | 216  | 229  | 255  | 307  | 359  | 424  | 489  |         |
| 25             | 154                  | 170  | 185  | 201  | 217  | 232  | 248  | 263  | 279  | 294  | 325  | 388  | 450  | 528  | 606  |         |
| 32             | 254                  | 277  | 299  | 321  | 343  | 366  | 388  | 410  | 432  | 455  | 499  | 588  | 677  | 788  | 900  |         |
| 40             | 319                  | 344  | 368  | 392  | 416  | 441  | 465  | 489  | 513  | 537  | 586  | 683  | 780  | 901  | 1022 |         |
| 50             | 502                  | 539  | 575  | 612  | 649  | 686  | 723  | 760  | 796  | 833  | 907  | 1054 | 1202 | 1386 | 1570 |         |
| 63             | 685                  | 725  | 765  | 805  | 845  | 885  | 925  | 965  | 1005 | 1045 | 1125 | 1285 | 1445 | 1645 | 1845 |         |
| 80             | —                    | 1188 | 1246 | 1305 | 1363 | 1421 | 1480 | 1538 | 1596 | 1654 | 1771 | 2004 | 2238 | 2529 | —    |         |
| 100            | —                    | 2248 | 2330 | 2412 | 2494 | 2577 | 2659 | 2741 | 2823 | 2905 | 3069 | 3397 | 3726 | 4136 | —    |         |

Add each weight of auto switches and mounting brackets when auto switches are mounted. Refer to Best Pneumatics for auto switch weight.

## Allowable Lateral Load

**Make sure to operate strictly within the allowable lateral load range to the rod end.**

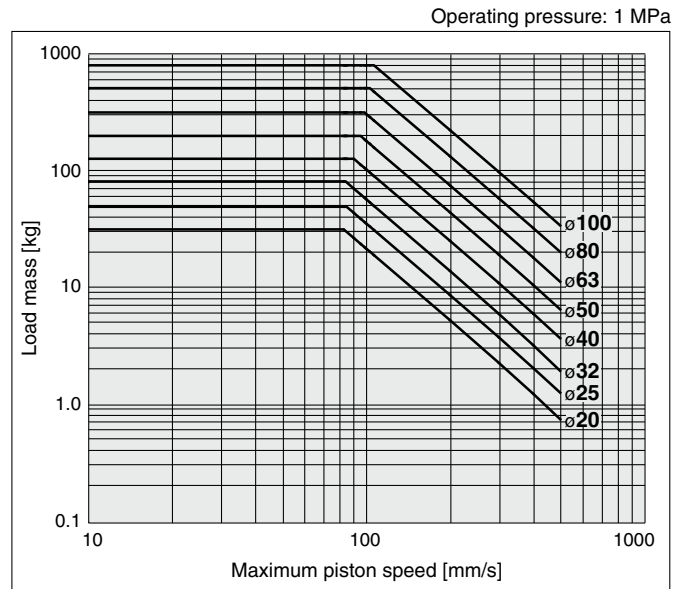
Operation outside of this range may result in shorter service life or damage to the device.



## Allowable Kinetic Energy

**Make sure to operate strictly within the allowable range of the load mass and maximum speed.**

Operation outside of this range may cause excessive impact, which may result in the damage to the device.



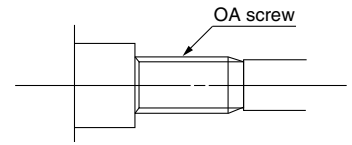
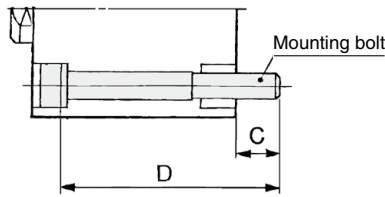
\* For details about model selection, refer to "Model Selection" in Best Pneumatics.

## Mounting Bolt

Through hole type mounting bolts are available.  
Refer to the following for ordering procedures.  
Order the actual number of bolts that will be used.

**Example) CQ-M4x45L 4 pcs.**

**Material: Chromium molybdenum steel**  
**Surface treatment: Zinc chromated**



\* When using the through-hole mounting bolts for bore sizes 20 to 63 mm, be sure to use the attached flat washers.

## Mounting Bolt for C55

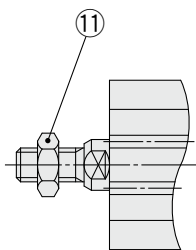
| Model            | C    | D                                                                      | Mounting bolt part no. |
|------------------|------|------------------------------------------------------------------------|------------------------|
| <b>C□55B20-5</b> | 7.2  | 45                                                                     | CQ-M4 x 45L            |
| <b>-10</b>       |      | 50                                                                     | x 50L                  |
| <b>-15</b>       |      | 55                                                                     | x 55L                  |
| <b>-20</b>       |      | 60                                                                     | x 60L                  |
| <b>-25</b>       |      | 65                                                                     | x 65L                  |
| <b>-30</b>       |      | 70                                                                     | x 70L                  |
| <b>-35</b>       |      | 75                                                                     | x 75L                  |
| <b>-40</b>       |      | 80                                                                     | x 80L                  |
| <b>-45</b>       |      | 85                                                                     | x 85L                  |
| <b>-50</b>       |      | 90                                                                     | x 90L                  |
| <b>-60</b>       |      | Use the OA screw provided on the cylinder tube to secure the cylinder. |                        |
| <b>-80</b>       |      |                                                                        |                        |
| <b>-100</b>      |      |                                                                        |                        |
| <b>-125</b>      | 10.2 | 50                                                                     | CQ-M4 x 50L            |
| <b>-150</b>      |      | 55                                                                     | x 55L                  |
| <b>-10</b>       |      | 60                                                                     | x 60L                  |
| <b>-15</b>       |      | 65                                                                     | x 65L                  |
| <b>-20</b>       |      | 70                                                                     | x 70L                  |
| <b>-25</b>       |      | 75                                                                     | x 75L                  |
| <b>-30</b>       |      | 80                                                                     | x 80L                  |
| <b>-35</b>       |      | 85                                                                     | x 85L                  |
| <b>-40</b>       |      | 90                                                                     | x 90L                  |
| <b>-45</b>       |      | 95                                                                     | x 95L                  |
| <b>-50</b>       |      | Use the OA screw provided on the cylinder tube to secure the cylinder. |                        |
| <b>-60</b>       |      |                                                                        |                        |
| <b>-80</b>       |      |                                                                        |                        |
| <b>-100</b>      | 10   | 55                                                                     | CQ-M5 x 55L            |
| <b>-125</b>      |      | 60                                                                     | x 60L                  |
| <b>-150</b>      |      | 65                                                                     | x 65L                  |
| <b>-10</b>       |      | 70                                                                     | x 70L                  |
| <b>-15</b>       |      | 75                                                                     | x 75L                  |
| <b>-20</b>       |      | 80                                                                     | x 80L                  |
| <b>-25</b>       |      | 85                                                                     | x 85L                  |
| <b>-30</b>       |      | 90                                                                     | x 90L                  |
| <b>-35</b>       |      | 95                                                                     | x 95L                  |
| <b>-40</b>       |      | 100                                                                    | x 100L                 |
| <b>-45</b>       |      | 110                                                                    | x 110L                 |
| <b>-50</b>       |      | 130                                                                    | x 130L                 |
| <b>-60</b>       |      | 150                                                                    | x 150L                 |
| <b>-80</b>       |      | Use the OA screw provided on the cylinder tube to secure the cylinder. |                        |
| <b>-100</b>      |      |                                                                        |                        |
| <b>-125</b>      |      |                                                                        |                        |

| Model            | C   | D                                                                      | Mounting bolt part no. |
|------------------|-----|------------------------------------------------------------------------|------------------------|
| <b>C□55B40-5</b> | 9   | 55                                                                     | CQ-M5 x 55L            |
| <b>-10</b>       |     | 60                                                                     | x 60L                  |
| <b>-15</b>       |     | 65                                                                     | x 65L                  |
| <b>-20</b>       |     | 70                                                                     | x 70L                  |
| <b>-25</b>       |     | 75                                                                     | x 75L                  |
| <b>-30</b>       |     | 80                                                                     | x 80L                  |
| <b>-35</b>       |     | 85                                                                     | x 85L                  |
| <b>-40</b>       |     | 90                                                                     | x 90L                  |
| <b>-45</b>       |     | 95                                                                     | x 95L                  |
| <b>-50</b>       |     | 100                                                                    | x 100L                 |
| <b>-60</b>       |     | 110                                                                    | x 110L                 |
| <b>-80</b>       |     | 130                                                                    | x 130L                 |
| <b>-100</b>      |     | 150                                                                    | x 150L                 |
| <b>-125</b>      | 8.4 | Use the OA screw provided on the cylinder tube to secure the cylinder. |                        |
| <b>-150</b>      |     |                                                                        |                        |
| <b>-10</b>       |     | 55                                                                     | CQ-M6 x 55L            |
| <b>-15</b>       |     | 60                                                                     | x 60L                  |
| <b>-20</b>       |     | 65                                                                     | x 65L                  |
| <b>-25</b>       |     | 70                                                                     | x 70L                  |
| <b>-30</b>       |     | 75                                                                     | x 75L                  |
| <b>-35</b>       |     | 80                                                                     | x 80L                  |
| <b>-40</b>       |     | 85                                                                     | x 85L                  |
| <b>-45</b>       |     | 90                                                                     | x 90L                  |
| <b>-50</b>       |     | 95                                                                     | x 95L                  |
| <b>-60</b>       |     | 100                                                                    | x 100L                 |
| <b>-80</b>       |     | 110                                                                    | x 110L                 |
| <b>-100</b>      |     | 130                                                                    | x 130L                 |
| <b>-125</b>      |     | 150                                                                    | x 150L                 |
| <b>-150</b>      | 9.4 | Use the OA screw provided on the cylinder tube to secure the cylinder. |                        |
| <b>-10</b>       |     |                                                                        |                        |
| <b>-15</b>       |     |                                                                        |                        |
| <b>-20</b>       |     | 60                                                                     | CQ-M6 x 60L            |
| <b>-25</b>       |     | 65                                                                     | x 65L                  |
| <b>-30</b>       |     | 70                                                                     | x 70L                  |
| <b>-35</b>       |     | 75                                                                     | x 75L                  |
| <b>-40</b>       |     | 80                                                                     | x 80L                  |
| <b>-45</b>       |     | 85                                                                     | x 85L                  |
| <b>-50</b>       |     | 90                                                                     | x 90L                  |
| <b>-60</b>       |     | 95                                                                     | x 95L                  |
| <b>-80</b>       |     | 100                                                                    | x 100L                 |
| <b>-100</b>      |     | 105                                                                    | x 105L                 |
| <b>-125</b>      |     | 115                                                                    | x 115L                 |
| <b>-150</b>      |     | 135                                                                    | x 135L                 |
| <b>-100</b>      |     | 155                                                                    | x 155L                 |
| <b>-125</b>      | 8.4 | Use the OA screw provided on the cylinder tube to secure the cylinder. |                        |
| <b>-150</b>      |     |                                                                        |                        |
| <b>-10</b>       |     | 60                                                                     | CQ-M6 x 60L            |
| <b>-15</b>       |     | 65                                                                     | x 65L                  |
| <b>-20</b>       |     | 70                                                                     | x 70L                  |
| <b>-25</b>       |     | 75                                                                     | x 75L                  |
| <b>-30</b>       |     | 80                                                                     | x 80L                  |
| <b>-35</b>       |     | 85                                                                     | x 85L                  |
| <b>-40</b>       |     | 90                                                                     | x 90L                  |
| <b>-45</b>       |     | 95                                                                     | x 95L                  |
| <b>-50</b>       |     | 100                                                                    | x 100L                 |
| <b>-60</b>       |     | 105                                                                    | x 105L                 |
| <b>-80</b>       |     | 115                                                                    | x 115L                 |
| <b>-100</b>      |     | 135                                                                    | x 135L                 |
| <b>-125</b>      |     | 155                                                                    | x 155L                 |
| <b>-150</b>      |     | Use the OA screw provided on the cylinder tube to secure the cylinder. |                        |
| <b>-100</b>      |     |                                                                        |                        |
| <b>-125</b>      |     |                                                                        |                        |

| Model             | C  | D                                                                      | Mounting bolt part no. |
|-------------------|----|------------------------------------------------------------------------|------------------------|
| <b>C□55B80-10</b> | 11 | 70                                                                     | CQ-M8 x 70L            |
| <b>-15</b>        |    | 75                                                                     | x 75L                  |
| <b>-20</b>        |    | 80                                                                     | x 80L                  |
| <b>-25</b>        |    | 85                                                                     | x 85L                  |
| <b>-30</b>        |    | 90                                                                     | x 90L                  |
| <b>-35</b>        |    | 95                                                                     | x 95L                  |
| <b>-40</b>        |    | 100                                                                    | x 100L                 |
| <b>-45</b>        |    | 105                                                                    | x 105L                 |
| <b>-50</b>        |    | 110                                                                    | x 110L                 |
| <b>-60</b>        |    | 120                                                                    | x 120L                 |
| <b>-80</b>        |    | 140                                                                    | x 140L                 |
| <b>-100</b>       |    | 160                                                                    | x 160L                 |
| <b>-125</b>       | 13 | Use the OA screw provided on the cylinder tube to secure the cylinder. |                        |
| <b>-150</b>       |    |                                                                        |                        |
| <b>-10</b>        |    | 85                                                                     | CQ-M8 x 85L            |
| <b>-15</b>        |    | 90                                                                     | x 90L                  |
| <b>-20</b>        |    | 95                                                                     | x 95L                  |
| <b>-25</b>        |    | 100                                                                    | x 100L                 |
| <b>-30</b>        |    | 105                                                                    | x 105L                 |
| <b>-35</b>        |    | 110                                                                    | x 110L                 |
| <b>-40</b>        |    | 115                                                                    | x 115L                 |
| <b>-45</b>        |    | 120                                                                    | x 120L                 |
| <b>-50</b>        |    | 125                                                                    | x 125L                 |
| <b>-60</b>        |    | 135                                                                    | x 135L                 |
| <b>-80</b>        |    | 155                                                                    | x 155L                 |
| <b>-100</b>       |    | 175                                                                    | x 175L                 |
| <b>-125</b>       |    | Use the OA screw provided on the cylinder tube to secure the cylinder. |                        |
| <b>-150</b>       |    |                                                                        |                        |
| <b>-100</b>       |    |                                                                        |                        |

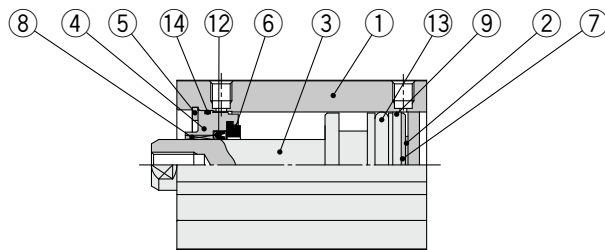


## Construction

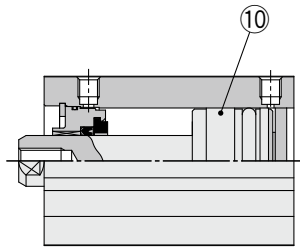


M: Male rod end

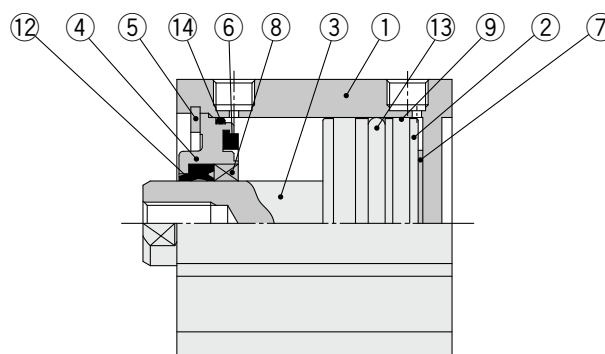
ø20, ø25



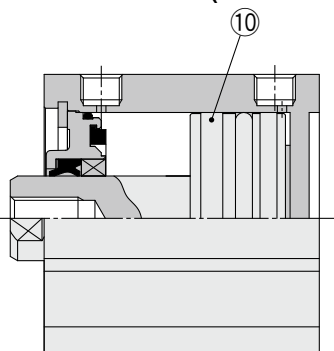
With auto switch (Built-in magnet)



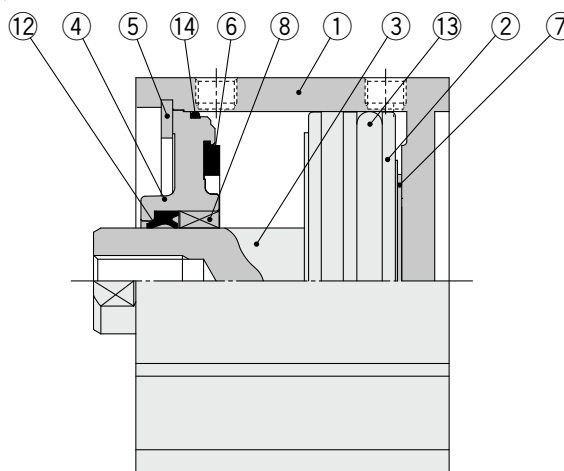
ø32 to ø63



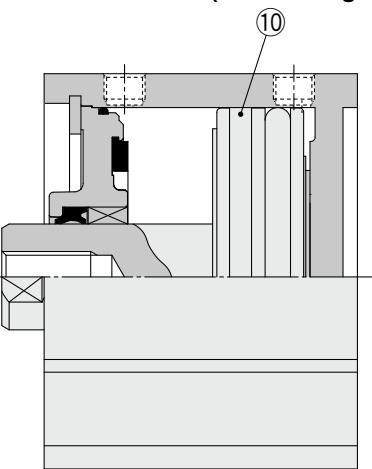
With auto switch (Built-in magnet)



ø80, ø100



With auto switch (Built-in magnet)



## Component Parts

| No. | Description    | Material              | Note                                |
|-----|----------------|-----------------------|-------------------------------------|
| 1   | Cylinder tube  | Aluminum alloy        | Hard anodized                       |
| 2   | Piston         | Aluminum alloy        | Chromated                           |
| 3   | Piston rod     | Stainless steel       | ø20, ø25                            |
|     |                | Carbon steel          | ø32 to ø100 Hard chrome plating     |
| 4   | Collar         | Aluminum alloy        | ø20 to ø40 Anodized                 |
|     |                | Aluminum alloy casted | ø50 to ø100 Painted after chromated |
| 5   | Retaining ring | Carbon tool steel     | Phosphate coated                    |
| 6   | Bumper A       | Urethane              |                                     |
| 7   | Bumper B       | Urethane              |                                     |
| 8   | Bushing        | Bearing alloy         |                                     |
| 9   | Wear ring      | Resin                 | ø20 to ø63                          |
| 10  | Magnet         | —                     |                                     |
| 11  | Rod end nut    | Carbon steel          | Trivalent zinc chromated            |
| 12  | Rod seal       | NBR                   |                                     |
| 13  | Piston seal    | NBR                   |                                     |
| 14  | Tube gasket    | NBR                   |                                     |

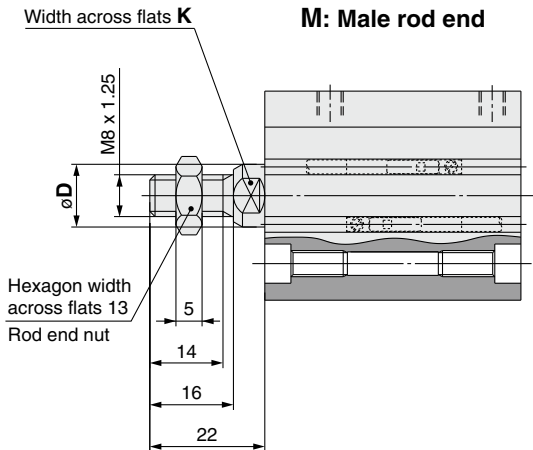
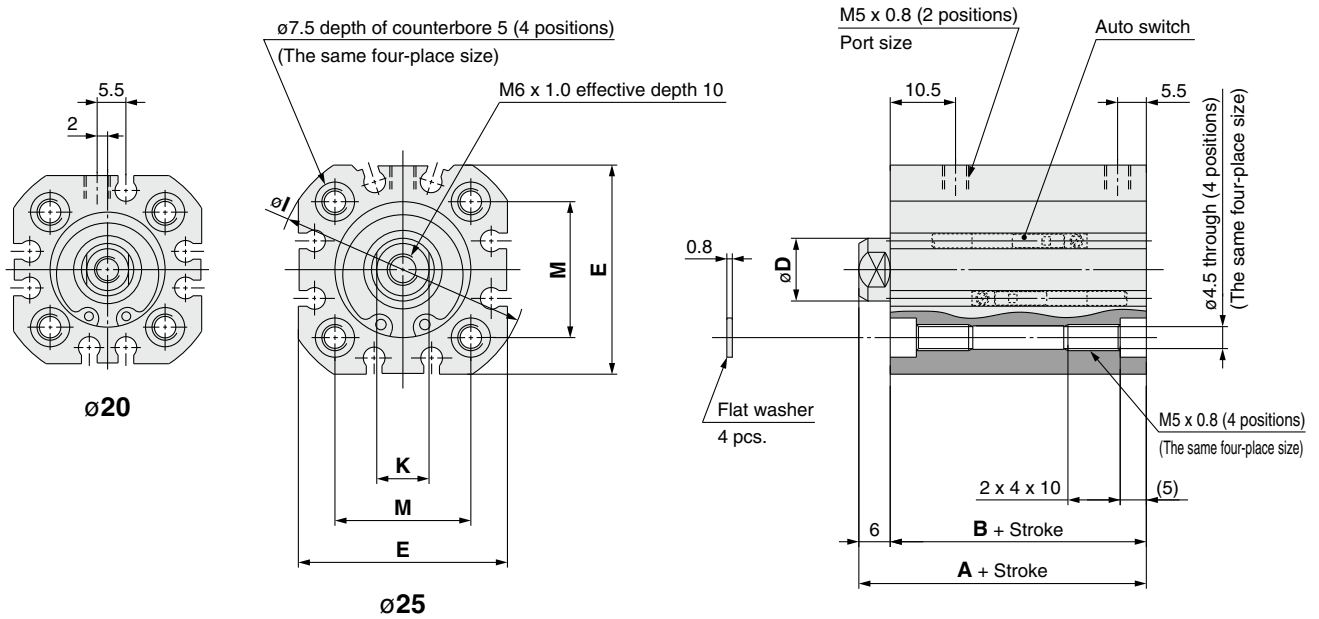
## Replacement Parts/Seal Kit

| Bore size [mm] | Kit no.    | Contents                                   |
|----------------|------------|--------------------------------------------|
| 20             | CQ2B20-PS  | Kits include items ⑫, ⑬, ⑭ from the table. |
| 25             | CQ2B25-PS  |                                            |
| 32             | CQ2B32-PS  |                                            |
| 40             | CQ2B40-PS  |                                            |
| 50             | CQ2B50-PS  |                                            |
| 63             | CQ2B63-PS  |                                            |
| 80             | CQ2B80-PS  |                                            |
| 100            | CQ2B100-PS |                                            |

\* Seal kits consist of items ⑫, ⑬ and ⑭, and can be ordered by using the seal kit number corresponding to each bore size.

## Dimensions (With and without auto switch are the same size)

ø20, ø25



**M: Male rod end**

### Standard Type [mm]

| Bore size [mm] | A  | B  | D  | E  | I  | K  | M  |
|----------------|----|----|----|----|----|----|----|
| 20             | 43 | 37 | 10 | 36 | 43 | 8  | 22 |
| 25             | 45 | 39 | 12 | 40 | 48 | 10 | 26 |

### Male Rod End [mm]

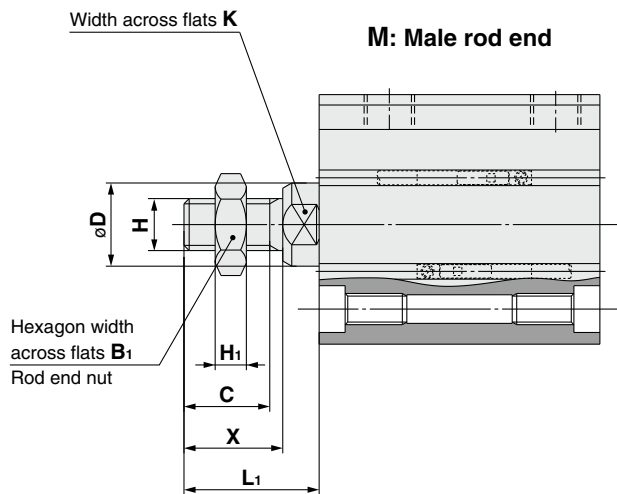
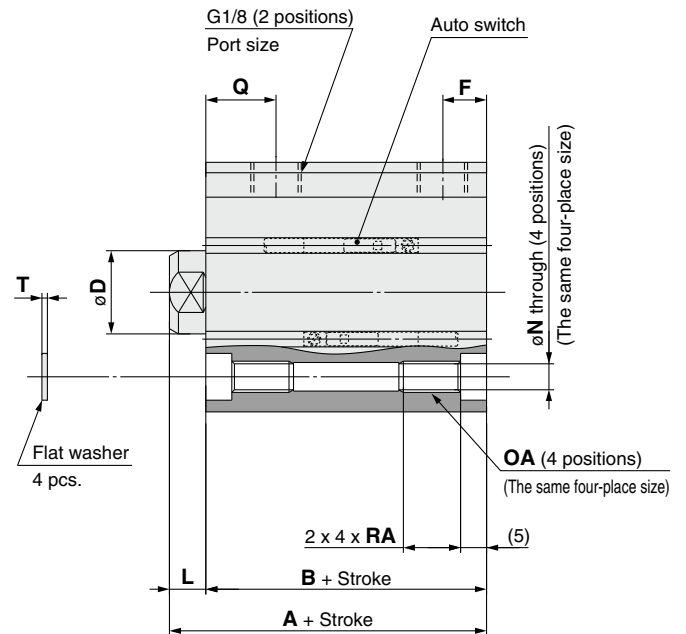
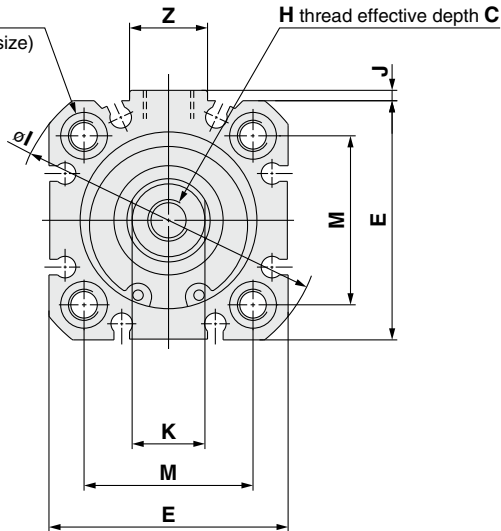
| Bore size [mm] | D  | K  |
|----------------|----|----|
| 20             | 10 | 8  |
| 25             | 12 | 10 |

# C55 Series

## Dimensions (With and without auto switch are the same size)

ø32 to ø63

øOB depth of counterbore 5  
(4 positions)  
(The same four-place size)



### Male Rod End

[mm]

| Bore size [mm] | B <sub>1</sub> | C    | D  | H          | H <sub>1</sub> | K  | L <sub>1</sub> | X  |
|----------------|----------------|------|----|------------|----------------|----|----------------|----|
| 32             | 17             | 16.5 | 16 | M10 x 1.25 | 6              | 14 | 26             | 19 |
| 40             | 17             | 16.5 | 16 | M10 x 1.25 | 6              | 14 | 26             | 19 |
| 50             | 19             | 19.5 | 20 | M12 x 1.25 | 7              | 17 | 30             | 22 |
| 63             | 19             | 19.5 | 20 | M12 x 1.25 | 7              | 17 | 30             | 22 |

### Standard Type

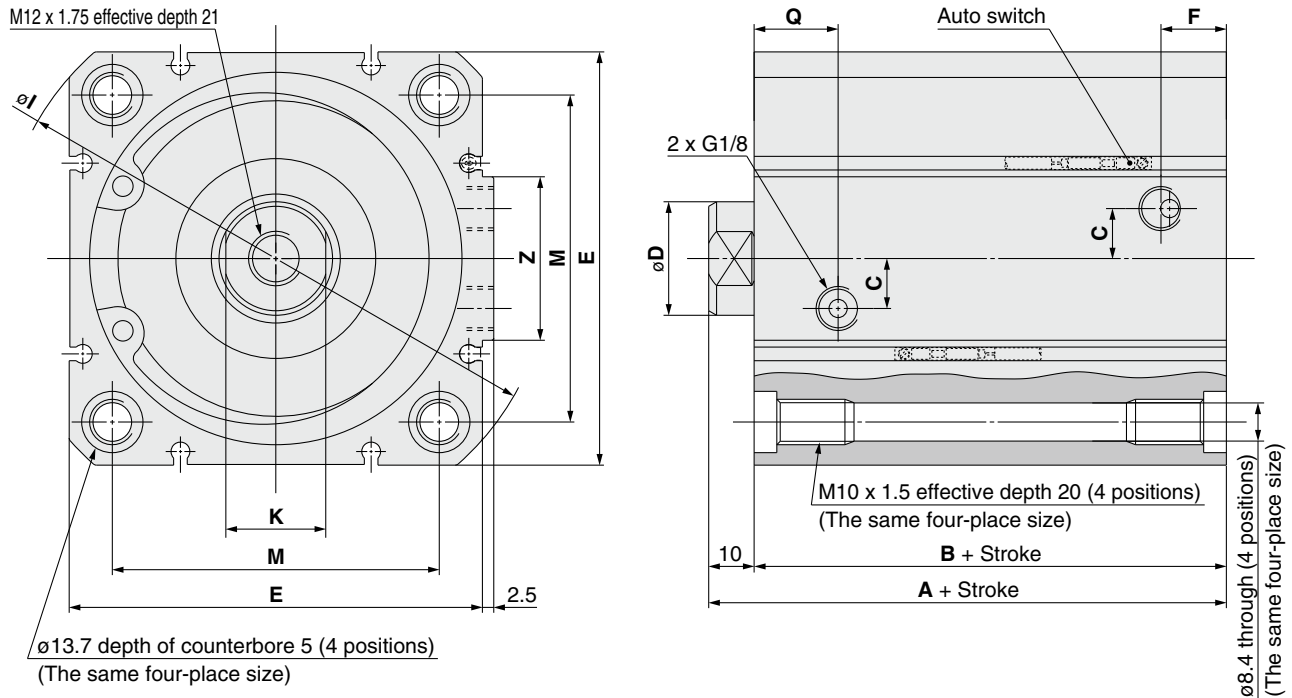
[mm]

| Bore size [mm] | A  | B  | C  | D  | E  | F    | H         | I  | J | K  | L | M    | N   | OA        | OB   | Q    | RA | T   | Z  |
|----------------|----|----|----|----|----|------|-----------|----|---|----|---|------|-----|-----------|------|------|----|-----|----|
| 32             | 51 | 44 | 12 | 16 | 46 | 8.5  | M8 x 1.25 | 59 | 2 | 14 | 7 | 32.5 | 5.5 | M6 x 1.0  | 9    | 11   | 11 | 1   | 15 |
| 40             | 52 | 45 | 12 | 16 | 52 | 9.5  | M8 x 1.25 | 67 | 3 | 14 | 7 | 38   | 5.5 | M6 x 1.0  | 9    | 14.5 | 11 | 1   | 17 |
| 50             | 53 | 45 | 16 | 20 | 64 | 10.5 | M10 x 1.5 | 82 | 2 | 17 | 8 | 46.5 | 6.6 | M8 x 1.25 | 10.5 | 13.5 | 15 | 1.6 | 17 |
| 63             | 57 | 49 | 16 | 20 | 74 | 14.5 | M10 x 1.5 | 96 | 3 | 17 | 8 | 56.5 | 6.6 | M8 x 1.25 | 10.5 | 15.5 | 15 | 1.6 | 17 |

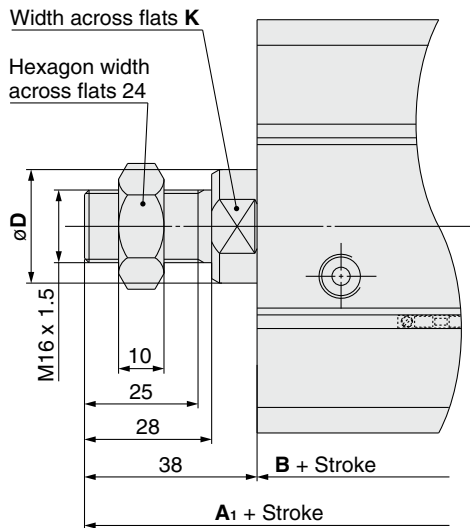


## Dimensions (With and without auto switch are the same size)

ø80, ø100



**M: Male rod end**



### Standard Type

| Bore size [mm] | A  | B  | C  | D  | E   | F  | I   | K  | M  | Q  | Z  |
|----------------|----|----|----|----|-----|----|-----|----|----|----|----|
| 80             | 64 | 54 | 11 | 25 | 91  | 15 | 121 | 22 | 72 | 19 | 36 |
| 100            | 77 | 67 | 14 | 30 | 111 | 18 | 145 | 27 | 89 | 26 | 42 |

[mm]

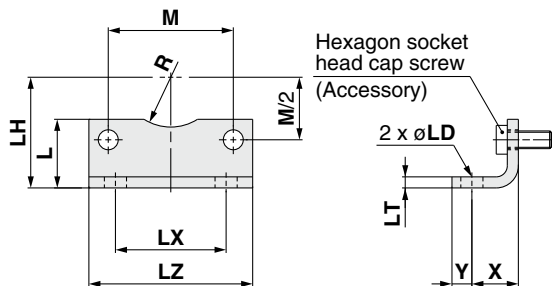
### Male Rod End [mm]

| Bore size [mm] | A <sub>1</sub> |
|----------------|----------------|
| 80             | 92             |
| 100            | 106.5          |

# C55 Series

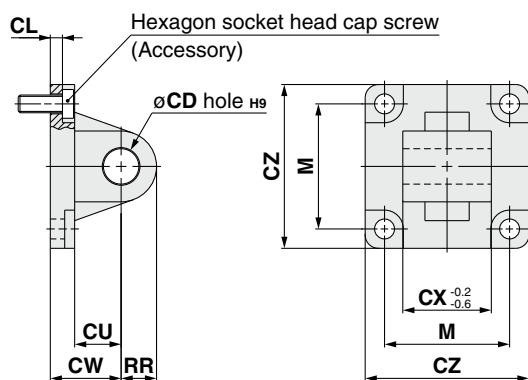
## Mounting Bracket

### Foot bracket



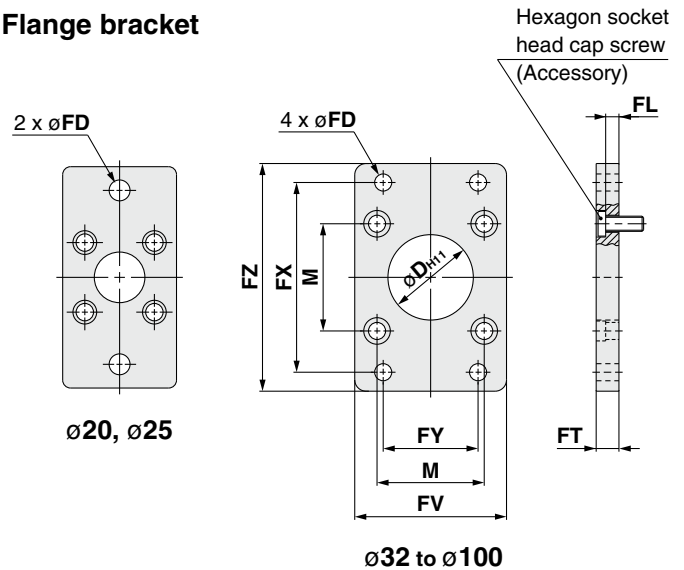
| Bore size [mm] | L    | LD   | LH   | LT | LX | LZ  | M    | R    | X  | Y  | Hexagon socket head cap screw |
|----------------|------|------|------|----|----|-----|------|------|----|----|-------------------------------|
| 20             | 22   | 7    | 27   | 4  | 22 | 36  | 22   | 8    | 16 | 7  | M5                            |
| 25             | 22   | 7    | 29   | 4  | 26 | 40  | 26   | 10   | 16 | 7  | M5                            |
| 32             | 24.5 | 7    | 33.5 | 4  | 32 | 46  | 32.5 | 15   | 16 | 7  | M6                            |
| 40             | 26   | 10   | 38   | 4  | 36 | 52  | 38   | 17.5 | 18 | 9  | M6                            |
| 50             | 31   | 10   | 45   | 5  | 45 | 64  | 46.5 | 20   | 21 | 9  | M8                            |
| 63             | 31   | 10   | 50   | 5  | 50 | 74  | 56.5 | 22.5 | 21 | 9  | M8                            |
| 80             | 38.5 | 12   | 63   | 6  | 63 | 96  | 72   | —    | 26 | 11 | M10                           |
| 100            | 45   | 14.5 | 74   | 6  | 75 | 116 | 89   | —    | 27 | 13 | M10                           |

### Single clevis bracket



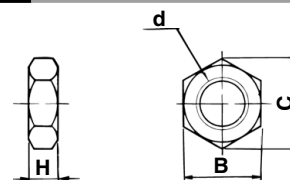
| Bore size [mm] | CD <sub>H9</sub> | CL  | CU | CW | CX | CZ  | M    | RR  | Hexagon socket head cap screw |
|----------------|------------------|-----|----|----|----|-----|------|-----|-------------------------------|
| 20             | 8                | 3   | 12 | 20 | 16 | 35  | 22   | 9   | M5                            |
| 25             | 8                | 3   | 12 | 20 | 16 | 40  | 26   | 9   | M5                            |
| 32             | 10               | 5.5 | 12 | 22 | 26 | 45  | 32.5 | 9.5 | M6                            |
| 40             | 12               | 5.5 | 15 | 25 | 28 | 51  | 38   | 12  | M6                            |
| 50             | 12               | 6.5 | 15 | 27 | 32 | 64  | 46.5 | 12  | M8                            |
| 63             | 16               | 6.5 | 20 | 32 | 40 | 74  | 56.5 | 16  | M8                            |
| 80             | 16               | 10  | 20 | 36 | 50 | 94  | 72   | 16  | M10                           |
| 100            | 20               | 10  | 25 | 41 | 60 | 113 | 89   | 20  | M10                           |

### Flange bracket



| Bore size [mm] | D  | M    | FD  | FL  | FT | FV  | FX  | FY | FZ  | Hexagon socket head cap screw |
|----------------|----|------|-----|-----|----|-----|-----|----|-----|-------------------------------|
| 20             | 16 | 22   | 6.6 | 2.8 | 8  | 38  | 55  | —  | 68  | M5                            |
| 25             | 16 | 26   | 6.6 | 2.8 | 8  | 38  | 60  | —  | 73  | M5                            |
| 32             | 30 | 32.5 | 7   | 5   | 10 | 50  | 64  | 32 | 79  | M6                            |
| 40             | 35 | 38   | 9   | 5   | 10 | 55  | 72  | 36 | 90  | M6                            |
| 50             | 40 | 46.5 | 9   | 6   | 12 | 70  | 90  | 45 | 110 | M8                            |
| 63             | 45 | 56.5 | 9   | 6   | 12 | 80  | 100 | 50 | 120 | M8                            |
| 80             | 45 | 72   | 12  | 8   | 16 | 100 | 126 | 63 | 153 | M10                           |
| 100            | 55 | 89   | 14  | 8   | 16 | 120 | 150 | 75 | 178 | M10                           |

### Rod End Nut



| Bore size [mm] | Part no. | d          | H  | B  | C    | Weight [g] |
|----------------|----------|------------|----|----|------|------------|
| 20, 25         | DA00040  | M8 x 1.25  | 5  | 13 | 15.0 | 4          |
| 32, 40         | DA00010  | M10 x 1.25 | 6  | 17 | 19.6 | 8          |
| 50, 63         | DA00014  | M12 x 1.25 | 7  | 19 | 21.9 | 11         |
| 80, 100        | DA00019  | M16 x 1.5  | 10 | 24 | 27.7 | 24         |

# C55 Series

## Auto Switch Mounting

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

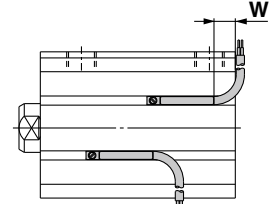
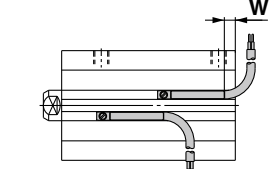
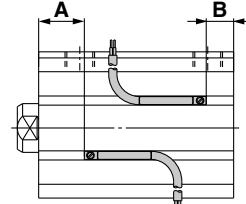
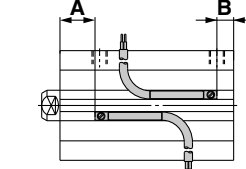
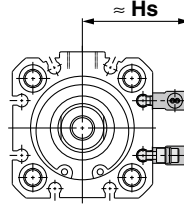
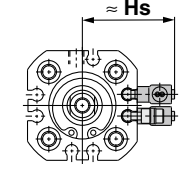
Solid state auto switch

D-M9□  
D-M9□W  
D-M9□A  
D-P3DW

Reed auto switch

D-A9□

ø20, ø25



ø32, ø40, ø50, ø63, ø80, ø100

\* Figures in the table below are used as a reference when mounting the auto switches for stroke end detection. Adjust the auto switch after confirming the operating condition in the actual setting.

| Auto switch model<br>Bore size | D-M9□<br>D-M9□W |      |      | D-M9□A |      |      | D-A9□ |      |     | D-P3DW |      |      |      |
|--------------------------------|-----------------|------|------|--------|------|------|-------|------|-----|--------|------|------|------|
|                                | A               | B    | W    | A      | B    | W    | A     | B    | W   | A      | B    | W    | Hs   |
| 20                             | 15.5            | 9.5  | -0.5 | 15.5   | 9.5  | -2.5 | 11.5  | 5.5  | 1   | 6.0    | 0.5  | -3.0 | 30   |
| 25                             | 16.5            | 11.5 | 1.5  | 16.5   | 11.5 | -0.5 | 12.5  | 7.5  | 3   | 7      | 2.5  | -1   | 32   |
| 32                             | 18.5            | 13.5 | 3.5  | 18.5   | 13.5 | 1.5  | 14.5  | 9.5  | 5   | 9.5    | 4    | 1    | 35   |
| 40                             | 17              | 16   | 6    | 17     | 16   | 4    | 13    | 12   | 7.5 | 8      | 7    | 3.5  | 38   |
| 50                             | 13.5            | 19.5 | 9.5  | 13.5   | 19.5 | 7.5  | 9.5   | 15.5 | 11  | 4.5    | 10.5 | 7    | 44   |
| 63                             | 14.5            | 22.5 | 12.5 | 14.5   | 22.5 | 10.5 | 10.5  | 18.5 | 14  | 5.5    | 13.5 | 10   | 49   |
| 80                             | 20.5            | 21.5 | 11.5 | 20.5   | 21.5 | 9.5  | 16.5  | 17.5 | 13  | 11.5   | 12.5 | 9    | 57.5 |
| 100                            | 28.5            | 26.5 | 16.5 | 28.5   | 26.5 | 14.5 | 24.5  | 22.5 | 18  | 19.5   | 17.5 | 14   | 67.5 |

Negative figures in the table W indicate an auto switch is mounted inward from the edge of the cylinder body.

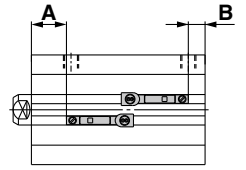
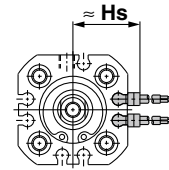
Solid state auto switch

D-M9□V  
D-M9□WV  
D-M9□AV

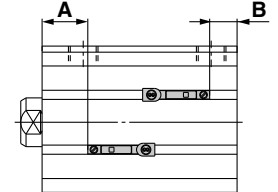
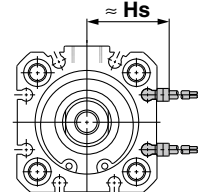
Reed auto switch

D-A9□V

ø20, ø25



ø32, ø40, ø50, ø63, ø80, ø100

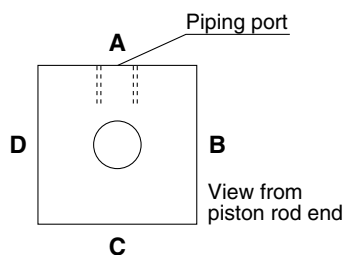


\* Figures in the table below are used as a reference when mounting the auto switches for stroke end detection. Adjust the auto switch after confirming the operating condition in the actual setting.

| Auto switch model<br>Bore size | D-M9□V<br>D-M9□WV<br>D-M9□AV |      |    | D-A9□V |      |      |
|--------------------------------|------------------------------|------|----|--------|------|------|
|                                | A                            | B    | Hs | A      | B    | Hs   |
| 20                             | 15.5                         | 9.5  | 24 | 11.5   | 5.5  | 22   |
| 25                             | 16.5                         | 11.5 | 26 | 12.5   | 7.5  | 24   |
| 32                             | 18.5                         | 13.5 | 29 | 14.5   | 9.5  | 27   |
| 40                             | 17                           | 16   | 32 | 13     | 12   | 30   |
| 50                             | 13.5                         | 19.5 | 38 | 9.5    | 15.5 | 36   |
| 63                             | 14.5                         | 22.5 | 43 | 10.5   | 18.5 | 41   |
| 80                             | 20.5                         | 21.5 | 52 | 16.5   | 17.5 | 49.5 |
| 100                            | 28.5                         | 26.5 | 62 | 24.5   | 22.5 | 60   |

## The Number of Surfaces and Grooves Where an Auto Switch Can Be Mounted (As direct mounting)

The number of the surfaces and grooves where the auto switch can be mounted, by switch type, are shown in the table below.



Mounting the D-P3DW on a  $\phi 20$  to  $\phi 25$  port surface interferes with the fitting, so it needs to be mounted on a place other than the port surface.

For  $\phi 32$  to  $\phi 100$ , if the corner of the fitting hexagon interferes with the D-P3DW series, adjust the tightening of the fitting to eliminate the interference.

Also, in the case of interference with an elbow type fitting, direct the port of the fitting away from the D-P3DW series.

If you have any other questions, please contact SMC.

| Auto switch model | D-M9□, A9□                 |                            |                            |                            | D-P3DW                     |                            |                            |                            |
|-------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| Bore size [mm]    | A<br>(Mounting groove no.) | B<br>(Mounting groove no.) | C<br>(Mounting groove no.) | D<br>(Mounting groove no.) | A<br>(Mounting groove no.) | B<br>(Mounting groove no.) | C<br>(Mounting groove no.) | D<br>(Mounting groove no.) |
| 20                | ○<br>(1)                   | ○<br>(2)                   | ○<br>(2)                   | ○<br>(2)                   | ×                          | ○<br>(2)                   | ○<br>(2)                   | ○<br>(2)                   |
| 25                | ○<br>(2)                   | ○<br>(2)                   | ○<br>(2)                   | ○<br>(2)                   | ×                          | ○<br>(2)                   | ○<br>(2)                   | ○<br>(2)                   |
| 32                | ○<br>(2)                   | ○<br>(2)                   | ○<br>(2)                   | ○<br>(2)                   | ×                          | ○<br>(2)                   | ○<br>(2)                   | ○<br>(2)                   |
| 40                | ○<br>(2)                   | ○<br>(2)                   | ○<br>(2)                   | ○<br>(2)                   | ×                          | ○<br>(2)                   | ○<br>(2)                   | ○<br>(2)                   |
| 50                | ○<br>(2)                   | ○<br>(2)                   | ○<br>(2)                   | ○<br>(2)                   | ×                          | ○<br>(2)                   | ○<br>(2)                   | ○<br>(2)                   |
| 63                | ○<br>(2)                   | ○<br>(2)                   | ○<br>(2)                   | ○<br>(2)                   | ×                          | ○<br>(2)                   | ○<br>(2)                   | ○<br>(2)                   |
| 80                | ○<br>(2)                   | ○<br>(2)                   | ○<br>(2)                   | ○<br>(2)                   | ○<br>(2)                   | ○<br>(2)                   | ○<br>(2)                   | ○<br>(2)                   |
| 100               | ○<br>(2)                   | ○<br>(2)                   | ○<br>(2)                   | ○<br>(2)                   | ○<br>(2)                   | ○<br>(2)                   | ○<br>(2)                   | ○<br>(2)                   |

## Operating Range

| Auto switch model                  | Bore size [mm] |     |     |     |     |      |    |      |
|------------------------------------|----------------|-----|-----|-----|-----|------|----|------|
|                                    | 20             | 25  | 32  | 40  | 50  | 63   | 80 | 100  |
| D-M9□(V)<br>D-M9□W(V)<br>D-M9□A(V) | 5              | 4.5 | 5   | 4   | 4.5 | 5    | 10 | 8    |
| D-A9□(V)                           | 9              | 9   | 9   | 9   | 9   | 10.5 | 14 | 10.5 |
| D-P3DW                             | 5              | 5.5 | 5.5 | 5.5 | 5.5 | 6.5  | 9  | 7    |

\* Values which include hysteresis are for guideline purposes only, they are not a guarantee (assuming approximately  $\pm 30\%$  dispersion) and may change substantially depending on the ambient environment.

## Minimum Stroke for Auto Switch Mounting

| Bore size [mm] | Auto switch model<br>Number of auto switches | D-M9□ | D-M9□W<br>D-M9□A | D-M9□V | D-M9□WV | D-M9□AV | D-A9□ | D-A9□V | D-P3DW |
|----------------|----------------------------------------------|-------|------------------|--------|---------|---------|-------|--------|--------|
| 20             | 2                                            | 15    | 15               | 5      | 10      | 10      | 10    | 10     | 15     |
|                | 1                                            | 15    | 15               | 5      | 5       | 10      | 10    | 5      | 15     |
| 25             | 2                                            | 10    | 15               | 5      | 10      | 10      | 10    | 10     | 15     |
|                | 1                                            | 10    | 15               | 5      | 5       | 10      | 10    | 5      | 15     |
| 32, 40, 50     | 2                                            | 10    | 15               | 5      | 10      | 10      | 10    | 10     | 10     |
|                | 1                                            | 10    | 15               | 5      | 5       | 10      | 10    | 5      | 10     |
| 63             | 2                                            | 10    | 15               | 5      | 10      | 10      | 10    | 10     | 10     |
|                | 1                                            | 5     | 15               | 5      | 5       | 10      | 5     | 5      | 10     |
| 80, 100        | 2                                            | 15    | 15               | 5      | 10      | 10      | 10    | 10     | 10     |
|                | 1                                            | 15    | 15               | 5      | 5       | 10      | 10    | 5      | 10     |

Other than the applicable auto switches listed in “How to Order”, the following auto switches are mountable.

\* Normally closed (NC = b contact) solid state auto switches (D-M9□E(V)) and solid state auto switch D-F8 type are also available. For details, refer to Best Pneumatics.

\* With pre-wired connector is also available for solid state auto switches. For details, refer to the **Web Catalog** or Best Pneumatics.

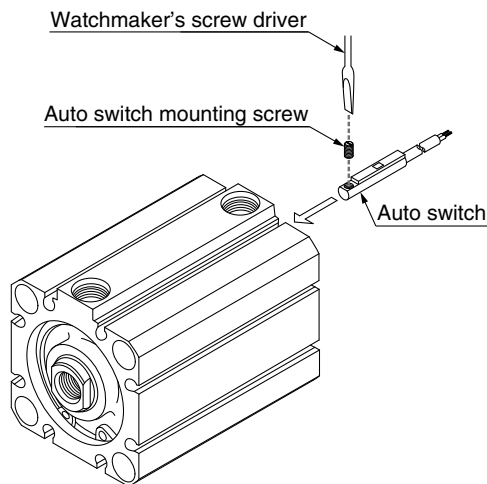
## Mounting of Auto Switch/Direct Mounting Type

To mount auto switches, follow the instruction illustrated below.

### <Applicable auto switch>

**Solid state**.....D-M9□(V)  
                               D-M9□W(V)  
                               D-M9□A(V)  
**Reed**.....D-A9□(V)

ø20 to ø100



Use a watchmaker's screwdriver with a handle diameter of 5 to 6 mm when tightening the auto switch mounting screw.

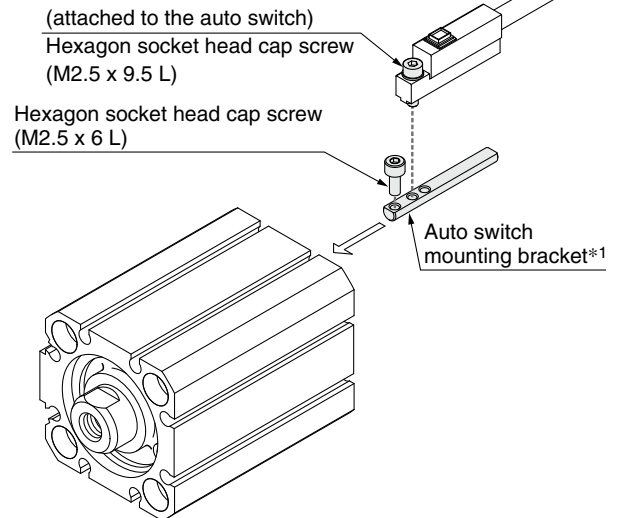
### Tightening Torque of Auto Switch

| Mounting Screws [N·m]             |                   |
|-----------------------------------|-------------------|
| Auto switch model                 | Tightening torque |
| D-M9□(V)<br>D-M9□W(V)<br>D-A9□(V) | 0.05 to 0.15      |
| D-M9□A(V)                         | 0.05 to 0.10      |

### <Applicable auto switch>

**Solid state**.....D-P3DW

ø20 to ø100



\*1 When the auto switch mounting bracket is ordered by its part number, it includes all the bracket and screws in the above chart.

| Applicable auto switch | Auto switch mounting bracket part no. |
|------------------------|---------------------------------------|
| <b>D-P3DW</b>          | BQ6-032S                              |

- Fix the auto switch and the auto switch mounting bracket temporarily by tightening the hexagon socket head cap screw (M2.5 x 9.5 L) 1 to 2 turns.
- Insert the temporarily tightened mounting bracket into the mating groove of the cylinder tube, and slide the auto switch onto the cylinder tube through the groove.  
 When inserting into the mating groove of the cylinder/actuator, please hold the rear end of the auto switch (lead wire side) and the rear end of the auto switch mounting bracket together whilst working.
- Check the detecting position of the auto switch and fix the auto switch firmly with the hexagon socket head cap screw (M2.5 x 6 L, M2.5 x 9.5 L).<sup>\*2</sup>
- If the detecting position is changed, go back to step ②.

<sup>\*2</sup> The hexagon socket head cap screw (M2.5 x 6 L) is used to fix the mounting bracket and cylinder tube.  
 This enables the replacement of the auto switch without adjusting the auto switch position.

\* Ensure that the auto switch is covered with the mating groove to protect the auto switch.

\* The torque for tightening the hexagon socket head cap screw (M2.5 x 6 L, M2.5 x 9.5 L) is 0.2 to 0.3 N·m.

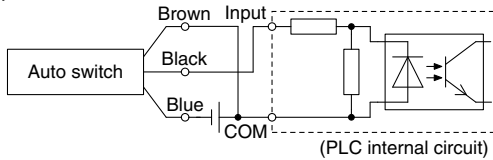
\* Tighten the hexagon socket head cap screws evenly.

# Prior to Use

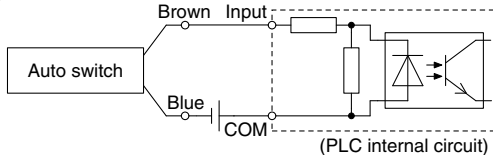
## Auto Switch Connections and Examples

### Sink Input Specifications

#### 3-wire, NPN

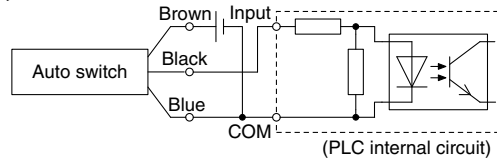


#### 2-wire

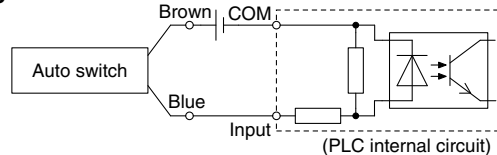


### Source Input Specifications

#### 3-wire, PNP



#### 2-wire



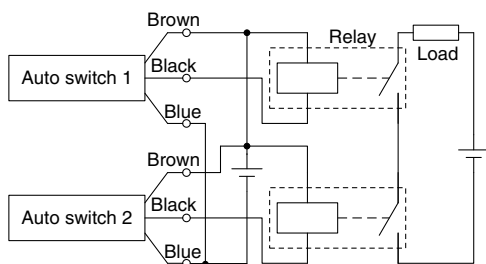
Connect according to the applicable PLC input specifications, as the connection method will vary depending on the PLC input specifications.

### Examples of AND (Series) and OR (Parallel) Connections

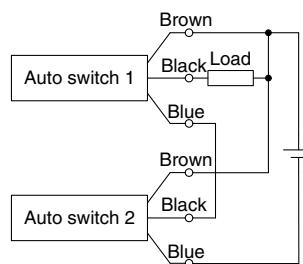
\* When using solid state auto switches, ensure the application is set up so the signals for the first 50 ms are invalid.

#### 3-wire AND connection for NPN output

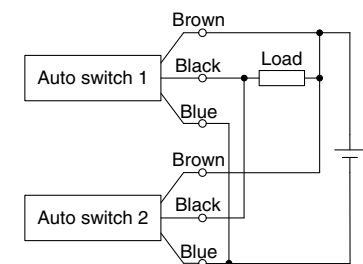
(Using relays)



(Performed with auto switches only)

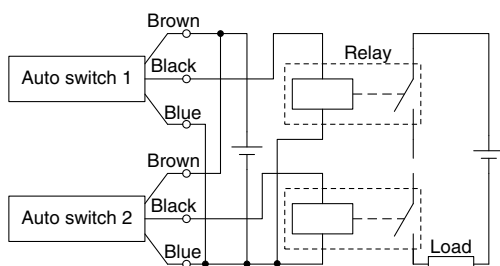


#### 3-wire OR connection for NPN output

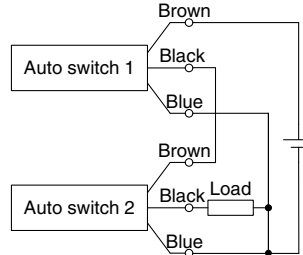


#### 3-wire AND connection for PNP output

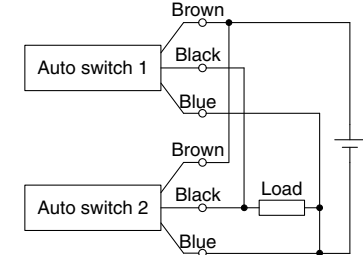
(Using relays)



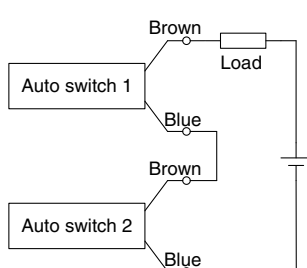
(Performed with auto switches only)



#### 3-wire OR connection for PNP output



#### 2-wire AND connection

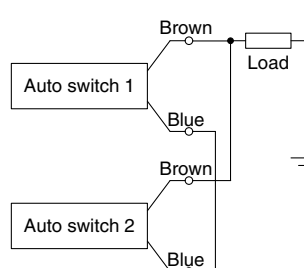


When two auto switches are connected in series, a load may malfunction because the load voltage will decline when in the ON state. The indicator lights will light up when both of the auto switches are in the ON state. Auto switches with a load voltage less than 20 V cannot be used.

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

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

#### 2-wire OR connection



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

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

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

Example: Load impedance is 3 k $\Omega$ .  
Leakage current from auto switch is 1 mA.



# C55 Series Simple Specials

The following changes are dealt with through the Simple Specials System.

For details, refer to the Simple Specials  
in the Web Catalog.  
<http://www.smcworld.com>

## 1 Change of Rod End Shape

Symbol

-XA1 to 23, -XA26 to 30

### Applicable Series

| Series | Description   | Action                    | Bore size | Symbol for change of rod end shape       |
|--------|---------------|---------------------------|-----------|------------------------------------------|
| C55    | Standard type | Double acting, Single rod | 20, 25    | XA1, XA2, XA6<br>XA7, XA11, XA17<br>XA18 |
|        |               |                           | 32 to 100 | XA1 to 23, XA26 to 30                    |

### ⚠ Precautions

- SMC will make appropriate arrangements if no dimension, tolerance, or finish instructions are given in the diagram.
- Standard dimensions marked with "\*" will be as follows to the rod diameter (D). Enter any special dimension you require.  
 $D \leq 6 \rightarrow D-1 \text{ mm}$   $6 < D \leq 25 \rightarrow D-2 \text{ mm}$   $D > 25 \rightarrow D-4 \text{ mm}$
- In the case of the double rod type and single acting retraction type, enter the dimensions when the rod is retracted.
- Only one side of a double rod can be manufactured.

|                        |                        |                        |                        |                        |
|------------------------|------------------------|------------------------|------------------------|------------------------|
| <b>Symbol: A1</b><br>  | <b>Symbol: A2</b><br>  | <b>Symbol: A3</b><br>  | <b>Symbol: A4</b><br>  | <b>Symbol: A5</b><br>  |
| <b>Symbol: A6</b><br>  | <b>Symbol: A7</b><br>  | <b>Symbol: A8</b><br>  | <b>Symbol: A9</b><br>  | <b>Symbol: A10</b><br> |
| <b>Symbol: A11</b><br> | <b>Symbol: A12</b><br> | <b>Symbol: A13</b><br> | <b>Symbol: A14</b><br> | <b>Symbol: A15</b><br> |
| <b>Symbol: A16</b><br> | <b>Symbol: A17</b><br> | <b>Symbol: A18</b><br> | <b>Symbol: A19</b><br> | <b>Symbol: A20</b><br> |
| <b>Symbol: A21</b><br> | <b>Symbol: A22</b><br> | <b>Symbol: A23</b><br> | <b>Symbol: A26</b><br> | <b>Symbol: A27</b><br> |
| <b>Symbol: A28</b><br> | <b>Symbol: A29</b><br> | <b>Symbol: A30</b><br> |                        |                        |

# C55 Series

## Made to Order

Please contact SMC for detailed dimensions, specifications, and lead times.



### 1 Made of Stainless Steel

Symbol

**-XC6**

Suitable for the cases it is likely to generate rust by being immersed in the water and corrosion.

#### How to Order

|                           |      |
|---------------------------|------|
| Standard model no.        | -XC6 |
| Made of stainless steel ● |      |

#### Specifications

|                                                         |                                                            |
|---------------------------------------------------------|------------------------------------------------------------|
| Parts changed to stainless steel                        | Piston rod, Retaining ring, Rod end nut (Male thread only) |
| Specifications other than above and external dimensions | Same as standard                                           |