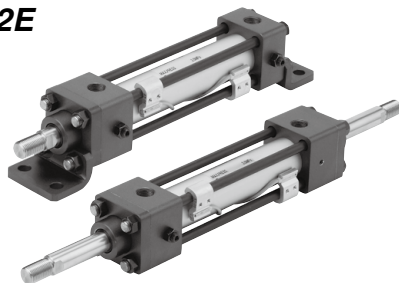


# JIS Standard Hydraulic Cylinder

## Series **CH2E/CH2F/CH2G/CH2H**

### Series **CH2E**



Nominal pressure: **3.5 MPa**

Bore size (mm): 32, 40, 50, 63, 80, 100

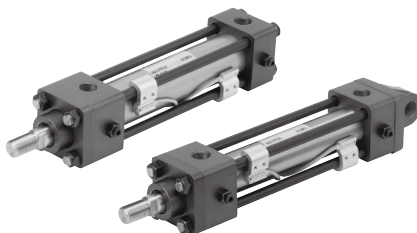
### Series **CH2F**



Nominal pressure: **7 MPa**

Bore size (mm): 32, 40, 50, 63, 80, 100

### Series **CH2G/CH2H**



Nominal pressure: **14 MPa**

Bore size (mm): 32, 40, 50, 63, 80, 100

**CHQ**

**CHK** ☐

**CHN**

**CHM**

**CHS** ☐

**CH2** ☐

**CHA**

Related  
Equipment

**D-** ☐

# JIS Standard Hydraulic Cylinder Double Acting/Single Rod

## Series CH2E/CH2F/CH2G/CH2H

ø32, ø40, ø50, ø63, ø80, ø100

3.5 MPa  
7 MPa  
14 MPa

### How to Order

**Series type**

| Symbol | Tubing material | Nominal pressure |
|--------|-----------------|------------------|
| E      | Aluminum alloy  | 3.5 MPa          |
| F      | Stainless steel | 7 MPa            |
| G      | Steel           | 14 MPa           |
| H      | Stainless steel | 14 MPa           |

**Rod size series**

| Symbol | Rod size          |
|--------|-------------------|
| B      | B-series rod size |
| C      | C-series rod size |

\* ø32 is for B-series rod size only.

**Cylinder stroke (mm)**  
Refer to the standard stroke table on page 1379.  
Refer to page 1398 for minimum stroke with auto switch.

**With Auto Switch** CHD2 H B 50 B - 100 - - - M9BW - - -

**With auto switch (built-in magnet)**

**Series type**

| Symbol | Tube material   | Nominal pressure |
|--------|-----------------|------------------|
| E      | Aluminum alloy  | 3.5 MPa          |
| F      | Stainless steel | 7 MPa            |
| H      | Stainless steel | 14 MPa           |

**Mounting style**

| Symbol | Mounting style                               |
|--------|----------------------------------------------|
| B      | Basic style                                  |
| LA     | Transaxial foot style                        |
| LB     | Axial foot style                             |
| FA     | Rod rectangular flange style For 3.5 & 7 MPa |
| FB     | Head rectangular flange style                |
| FY     | Rod rectangular flange style For 14 MPa      |
| FZ     | Head rectangular flange style                |
| FC     | Rod square flange style                      |
| FD     | Head square flange style                     |
| CA     | Single clevis style                          |
| CB     | Double clevis style                          |
| TC     | Center trunnion style                        |

**Bore size**

| Symbol | Bore size |
|--------|-----------|
| 32     | 32 mm     |
| 40     | 40 mm     |
| 50     | 50 mm     |
| 63     | 63 mm     |
| 80     | 80 mm     |
| 100    | 100 mm    |

**Port and cushion valve positions**  
\* Refer to page 1379.

**Cylinder options**

| Option      | Symbol | Description              |
|-------------|--------|--------------------------|
| Rod end nut | Nil    | Without rod end nut      |
|             | A      | With rod end nut         |
| Rod boot    | Nil    | Without rod boot         |
|             | J      | Nylon tarpaulin          |
|             | K      | Neoprene cloth           |
| Cushion     | Nil    | With double-side cushion |
|             | N      | Without cushion          |
|             | R      | With rod cushion         |
|             | H      | With head cushion        |

**Made to Order specifications**  
For details, refer to page 1379.

**Number of auto switches**

| Symbol | Number of auto switches |
|--------|-------------------------|
| Nil    | 2 pcs.                  |
| S      | 1 pc.                   |
| 3      | 3 pcs.                  |
| n      | "n" pcs.                |

**Auto switch type**

| Symbol | Auto switch type    |
|--------|---------------------|
| Nil    | Without auto switch |

\* Select applicable auto switches from the table below.

### Applicable Auto Switches

Refer to pages 1451 to 1510 for further details on each auto switch.

| 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   | Tie-rod mount ø32 | Band mount ø32 | 0.5 (Nil)            | 1 (M) | 3 (L) | 5 (Z) | None |                     |                 |
| Solid state auto switch |                                         | Grommet          |                 | 3-wire (NPN)        | 5 V, 12 V    | —    | —                 | M9N            | —                    | ●     | ●     | ●     | ○    | —                   | IC circuit      |
|                         |                                         |                  |                 | 3-wire (PNP)        |              |      | —                 | F59            | G59                  | ●     | ●     | ●     | ○    | —                   |                 |
|                         |                                         | Terminal conduit |                 | 2-wire              | 12 V         | —    | —                 | M9P            | —                    | ●     | ●     | ●     | ○    | —                   |                 |
|                         |                                         |                  |                 | 3-wire (NPN)        |              |      | —                 | F5P            | G5P                  | ●     | ●     | ●     | ○    | —                   |                 |
|                         | Diagnostic indication (2-color display) | Grommet          | Yes             | 2-wire              | 5 V, 12 V    | —    | —                 | M9B            | —                    | ●     | ●     | ●     | ○    | —                   | IC circuit      |
|                         |                                         |                  |                 | 3-wire (NPN)        |              |      | —                 | J59            | K59                  | ●     | ●     | ●     | ○    | —                   |                 |
|                         |                                         |                  |                 | 2-wire              |              |      | —                 | —              | G39                  | —     | —     | —     | ●    | —                   |                 |
|                         |                                         |                  |                 | 3-wire (PNP)        |              |      | —                 | —              | K39                  | —     | —     | —     | ●    | —                   |                 |
|                         |                                         | Grommet          | Yes             | 3-wire (NPN)        | 5 V, 12 V    | —    | —                 | M9NW           | —                    | ●     | ●     | ●     | ○    | —                   | IC circuit      |
|                         |                                         |                  |                 | 3-wire (PNP)        |              |      | —                 | F59W           | G59W                 | ●     | ●     | ●     | ○    | —                   |                 |
|                         |                                         |                  |                 | 2-wire              |              |      | —                 | M9PW           | —                    | ●     | ●     | ●     | ○    | —                   |                 |
|                         |                                         |                  |                 | 3-wire (PNP)        |              |      | —                 | F5PW           | G5PW                 | ●     | ●     | ●     | ○    | —                   |                 |
| Reed auto switch        |                                         | Grommet          |                 | 2-wire              | 12 V         | —    | —                 | M9BW           | —                    | ●     | ●     | ●     | ○    | —                   | IC circuit      |
|                         |                                         |                  |                 | 3-wire (NPN)        |              |      | —                 | J59W           | K59W                 | ●     | ●     | ●     | ○    | —                   |                 |
|                         |                                         | Terminal conduit |                 | 3-wire (NPN)        | 5 V, 12 V    | —    | —                 | M9NA*1         | —                    | ○     | ○     | ○     | ○    | —                   | IC circuit      |
|                         |                                         |                  |                 | 3-wire (PNP)        |              |      | —                 | M9PA*1         | —                    | ○     | ○     | ○     | ○    | —                   |                 |
|                         | Diagnostic output (2-color display)     | Grommet          | Yes             | 2-wire              | 12 V         | —    | —                 | M9BA*1         | —                    | ○     | ○     | ○     | ○    | —                   | IC circuit      |
|                         |                                         |                  |                 | 4-wire (NPN)        |              |      | —                 | F5BA*1         | G5BA*1               | ●     | ●     | ●     | ○    | —                   |                 |
|                         |                                         |                  |                 | 3-wire (NPN equiv.) |              |      | —                 | F59F           | G59F                 | ●     | ●     | ●     | ○    | —                   |                 |
|                         |                                         |                  |                 | 2-wire              |              |      | —                 | A96*2          | —                    | ●     | ●     | ●     | ○    | —                   |                 |
|                         |                                         | Grommet          | No              | 2-wire              | 24 V         | 12 V | —                 | A93*2          | —                    | ●     | ●     | ●     | ○    | —                   | IC circuit      |
|                         |                                         |                  |                 |                     |              |      | —                 | A90*2          | —                    | ●     | ●     | ●     | ○    | —                   |                 |
|                         |                                         |                  |                 |                     |              |      | —                 | A54            | B54                  | ●     | ●     | ●     | ○    | —                   |                 |
|                         |                                         |                  |                 |                     |              |      | —                 | A64            | B64                  | ●     | ●     | ●     | ○    | —                   |                 |
|                         |                                         | Terminal conduit |                 | 2-wire              | 24 V         | 12 V | —                 | —              | A33                  | —     | —     | —     | ●    | —                   | PLC             |
|                         |                                         |                  |                 |                     |              |      | —                 | —              | A34                  | —     | —     | —     | ●    | —                   |                 |
|                         |                                         | DIN terminal     |                 | 2-wire              | 24 V         | 12 V | —                 | —              | A44                  | —     | —     | —     | ●    | —                   | Relay PLC       |
|                         |                                         |                  |                 |                     |              |      | —                 | —              | —                    | —     | —     | —     | ●    | —                   |                 |
|                         | Diagnostic indication (2-color display) | Grommet          |                 | 2-wire              | 24 V         | 12 V | —                 | A59W           | B59W                 | ●     | ●     | ●     | ○    | —                   | Relay PLC       |
|                         |                                         |                  |                 |                     |              |      | —                 | —              | —                    | —     | —     | —     | ●    | —                   |                 |

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

The water resistant type CH2F series is recommended for use in an environment which requires water resistance. Consult with SMC regarding the water resistant type series CH2E, CH2G and CH2H.

\* Lead wire length symbols: 0.5 m ..... Nil (Example) M9NW

1 m ..... M (Example) M9NWM

3 m ..... L (Example) M9NLW

5 m ..... Z (Example) M9NZW

\* Since there are applicable auto switches other than listed, refer to page 1400 for details.

\* For details about auto switches with pre-wired connector, refer to pages 1494 and 1495.

\* D-A9□, M9□, M9□W, M9□A auto switches are shipped together. (not assembled). (Only the auto switch mounting bracket is pre-assembled.)

\* Solid state auto switches marked "○" are produced upon receipt of order.

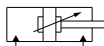
\*\* Auto switch models D-A9□ and D-A9□V cannot be mounted on CHD2E, CHD2H of all bore sizes and CHD2Fe32.

# JIS Standard Hydraulic Cylinder Double Acting/Single Rod *Series CH2E/CH2F/CH2G/CH2H*



**Made to order specifications**  
(For details, refer to page 1402)

| Symbol | Specifications          |
|--------|-------------------------|
| -XA□   | Change of rod end shape |



## Rod Sizes

|                   | (mm) |      |      |      |      |     |
|-------------------|------|------|------|------|------|-----|
| Bore size (mm)    | 32   | 40   | 50   | 63   | 80   | 100 |
| Rod size series * |      |      |      |      |      |     |
| B-series          | 18   | 22.4 | 28   | 35.5 | 45   | 56  |
| C-series          | —    | 18   | 22.4 | 28   | 35.5 | 45  |

\* Based on JIS B8367.

## Accessories (Option)

Single knuckle, Double knuckle, Lock nut, Knuckle pin, Rod boot (Nylon tarpulin, Neoprene cloth) <sup>Note)</sup>

<sup>Note)</sup> Maximum operating temperature:  
Nylon tarpulin (60°C),  
Neoprene cloth (110°C)

## Hydraulic Fluid Compatibility

| Hydraulic fluid                  | Compatibility  |
|----------------------------------|----------------|
| Standard mineral hydraulic fluid | Compatible     |
| W/O hydraulic fluid              | Compatible     |
| O/W hydraulic fluid              | Compatible     |
| Water/Glycol hydraulic fluid     | *              |
| Phosphate hydraulic fluid        | Not compatible |

\* Consult with SMC.

## Cushion Strokes

|                          | (mm) |    |    |    |    |     |
|--------------------------|------|----|----|----|----|-----|
| Bore size (mm)           | 32   | 40 | 50 | 63 | 80 | 100 |
| Effective cushion stroke | 16   | 16 | 17 | 16 | 20 | 23  |

(Front and rear sides)

## Models

| Model                         | CH2E                    | CH2F            | CH2G  | CH2H            |
|-------------------------------|-------------------------|-----------------|-------|-----------------|
| <b>Tube material</b>          | Aluminum alloy          | Stainless steel | Steel | Stainless steel |
| <b>Nominal pressure (MPa)</b> | 3.5                     | 7               | 14    | 14              |
| <b>Bore size (mm)</b>         | 32, 40, 50, 63, 80, 100 |                 |       |                 |
| <b>Auto switch mounting</b>   | Applicable              | Applicable      | —     | Applicable      |

## Specifications

| Model                            | CH2E                                                                                                                          | CH2F                                     | CH2G                                    | CH2H |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-----------------------------------------|------|
| Action                           | Double acting/Single rod                                                                                                      |                                          |                                         |      |
| Fluid                            | Hydraulic fluid                                                                                                               |                                          |                                         |      |
| Nominal pressure (MPa)           | 3.5                                                                                                                           | 7                                        | 14                                      |      |
| Maximum allowable pressure (MPa) | 3.5                                                                                                                           | Head: 9<br>Rod: B rod 13.5<br>: C rod 11 | Head: 18<br>Rod: B rod 18<br>: C rod 14 |      |
| Proof pressure (MPa)             | 5.0                                                                                                                           | 10.5                                     | 21                                      |      |
| Minimum operating pressure (MPa) | Head: 0.15<br>Rod: 0.2                                                                                                        |                                          |                                         |      |
| Ambient and fluid temperature    | Without auto switch: -10 to 80°C<br>With auto switch: -10 to 60°C                                                             |                                          |                                         |      |
| Piston speed                     | 8 to 300 mm/s                                                                                                                 |                                          |                                         |      |
| Cushion                          | Cushion seal type                                                                                                             |                                          |                                         |      |
| Stroke length tolerance          | to 100 st $+0.8_0$ , 101 to 250 st $+1.0_0$ , 251 to 630 st $+1.25_0$ ,<br>631 to 1000 st $+1.4_0$ , 1001 to 1800 st $+1.8_0$ |                                          |                                         |      |

<sup>Note)</sup> Refer to page 1234 for definitions of terms related to pressure.

## Standard Strokes

| Cylinder bore size (mm) | Standard strokes (mm) | Long stroke (mm)                                                     |
|-------------------------|-----------------------|----------------------------------------------------------------------|
| 32, 40, 50              | 25 to 800             | 1800 (1401 or more with tie-rod reinforcing ring) <sup>Note 2)</sup> |
| 63                      | 25 to 800             | 1800 (1501 or more with tie-rod reinforcing ring) <sup>Note 3)</sup> |
| 80, 100                 | 25 to 1000            | 1800                                                                 |

<sup>Note 1)</sup> Refer to pages 1250 and 1251, to determine stroke limitation depending on the type of mounting brackets that will be used. Then make your selection. Long stroke ranges also differ depending on the type of mounting brackets.

<sup>Note 2)</sup> The long stroke range for Series CH2E, CH2F, and CH2H with flange and clevis type mounting brackets as well as Series CH2G is up to 1400mm.

<sup>Note 3)</sup> The long stroke range for Series CH2E, CH2F, and CH2H with flange and clevis type mounting brackets as well as Series CH2G is up to 1500mm.

## Port and Cushion Valve Positions

| Symbol<br>Position                                                                                                                  | Nil                               | A                                    | C                                | D                                | E                                  | F                                 | G                                  | H                                  |
|-------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|--------------------------------------|----------------------------------|----------------------------------|------------------------------------|-----------------------------------|------------------------------------|------------------------------------|
| Mounting style                                                                                                                      | Port: Top<br>Cushion valve: Right | Port: Right<br>Cushion valve: Bottom | Port: Left<br>Cushion valve: Top | Port: Top<br>Cushion valve: Left | Port: Top<br>Cushion valve: Bottom | Port: Right<br>Cushion valve: Top | Port: Right<br>Cushion valve: Left | Port: Left<br>Cushion valve: Right |
| <b>B</b><br>(Basic style)                                                                                                           |                                   |                                      |                                  |                                  |                                    |                                   |                                    |                                    |
| <b>FA, FB, FC, FD, FY, FZ</b><br>(Flange style)<br><b>CA, CB</b><br>(Single clevis style)<br><b>TC</b><br>(Center transition style) |                                   |                                      |                                  |                                  |                                    |                                   |                                    |                                    |
| <b>LA, LB</b><br>(Foot style)                                                                                                       |                                   |                                      |                                  |                                  |                                    |                                   |                                    |                                    |

: Piping port : Cushion valve

\* The cylinder's exterior dimensions represented here are as seen from the rod end of the cylinder.

# Series CH2E/CH2F/CH2G/CH2H

## Weight

Unit: kg

| Standard weight (0 stroke) |                |       |                 |                    |               |               |               |                       |            |                            |        |                                      |
|----------------------------|----------------|-------|-----------------|--------------------|---------------|---------------|---------------|-----------------------|------------|----------------------------|--------|--------------------------------------|
| Bore size (mm)             | Mounting style |       | B               | LA                 | FY, FZ        | FC, FD        | CA            | CB                    | TC         | LB                         | FA, FB | Additional weight (per 10 mm stroke) |
|                            | Series         | Basic | Transaxial foot | Rectangular flange | Square flange | Single clevis | Double clevis | Center trunnion style | Axial foot | Rectangular flange (7 MPa) |        |                                      |
| B-series rod               | 32             | CH2E  | 2.50            | 3.49               | —             | 3.35          | 2.95          | 3.06                  | 2.99       | 3.00                       | 2.94   | 0.04                                 |
|                            |                | CH2F  | 2.49            | 3.48               | —             | 3.34          | 2.94          | 3.05                  | 2.98       | 2.99                       | 2.93   | 0.04                                 |
|                            |                | CH2G  | 2.59            | 3.58               | 3.12          | 3.44          | 3.04          | 3.15                  | 3.08       | —                          | —      | 0.06                                 |
|                            |                | CH2H  | 2.60            | 3.59               | 3.13          | 3.45          | 3.05          | 3.16                  | 3.09       | —                          | —      | 0.05                                 |
|                            | 40             | CH2E  | 3.27            | 4.57               | —             | 4.36          | 3.91          | 4.12                  | 3.86       | 3.85                       | 3.86   | 0.08                                 |
|                            |                | CH2F  | 3.33            | 4.63               | —             | 4.42          | 3.97          | 4.18                  | 3.92       | 3.91                       | 3.92   | 0.08                                 |
|                            |                | CH2G  | 3.66            | 4.96               | 4.36          | 4.75          | 4.30          | 4.51                  | 4.25       | —                          | —      | 0.10                                 |
|                            |                | CH2H  | 3.55            | 4.85               | 4.25          | 4.64          | 4.19          | 4.40                  | 4.14       | —                          | —      | 0.10                                 |
|                            | 50             | CH2E  | 4.90            | 7.50               | —             | 6.86          | 6.06          | 6.07                  | 5.74       | 5.70                       | 5.98   | 0.09                                 |
|                            |                | CH2F  | 4.98            | 7.58               | —             | 6.94          | 6.14          | 6.15                  | 5.82       | 5.78                       | 6.06   | 0.10                                 |
|                            |                | CH2G  | 5.49            | 8.09               | 6.98          | 7.45          | 6.65          | 6.66                  | 6.33       | —                          | —      | 0.14                                 |
|                            |                | CH2H  | 5.32            | 7.92               | 6.81          | 7.28          | 6.48          | 6.49                  | 6.16       | —                          | —      | 0.14                                 |
|                            | 63             | CH2E  | 7.93            | 11.81              | —             | 10.83         | 10.67         | 10.68                 | 9.47       | 9.55                       | 9.54   | 0.17                                 |
|                            |                | CH2F  | 7.69            | 11.57              | —             | 10.59         | 10.43         | 10.44                 | 9.23       | 9.31                       | 9.30   | 0.17                                 |
|                            |                | CH2G  | 8.49            | 12.37              | 10.64         | 11.39         | 11.23         | 11.24                 | 10.03      | —                          | —      | 0.20                                 |
|                            |                | CH2H  | 8.43            | 12.31              | 10.58         | 11.33         | 11.17         | 11.18                 | 9.97       | —                          | —      | 0.20                                 |
|                            | 80             | CH2E  | 13.00           | 18.35              | —             | 17.59         | 16.40         | 16.40                 | 15.02      | 15.36                      | 15.69  | 0.24                                 |
|                            |                | CH2F  | 12.89           | 18.24              | —             | 17.48         | 16.29         | 16.29                 | 14.91      | 15.25                      | 15.58  | 0.26                                 |
|                            |                | CH2G  | 14.77           | 20.12              | 18.34         | 19.36         | 18.17         | 18.17                 | 16.79      | —                          | —      | 0.34                                 |
|                            |                | CH2H  | 14.21           | 19.56              | 17.78         | 18.80         | 17.61         | 17.61                 | 16.23      | —                          | —      | 0.30                                 |
|                            | 100            | CH2E  | 18.97           | 29.78              | —             | 26.44         | 25.15         | 25.15                 | 22.62      | 22.39                      | 23.57  | 0.41                                 |
|                            |                | CH2F  | 19.37           | 30.17              | —             | 26.84         | 25.55         | 25.55                 | 23.02      | 22.79                      | 23.97  | 0.46                                 |
|                            |                | CH2G  | 22.17           | 32.98              | 28.62         | 29.64         | 28.35         | 28.35                 | 25.82      | —                          | —      | 0.49                                 |
|                            |                | CH2H  | 21.81           | 32.62              | 28.26         | 29.28         | 27.99         | 27.99                 | 25.46      | —                          | —      | 0.54                                 |

| Standard weight (0 stroke) |                |       |                 |                    |               |               |               |               |            |                            |        |                                      |
|----------------------------|----------------|-------|-----------------|--------------------|---------------|---------------|---------------|---------------|------------|----------------------------|--------|--------------------------------------|
| Bore size<br>(mm)          | Mounting style |       | B               | LA                 | FY, FZ        | FC, FD        | CA            | CB            | TC         | LB                         | FA, FB | Additional weight (per 10 mm stroke) |
|                            | Series         | Basic | Transaxial foot | Rectangular flange | Square flange | Single clevis | Double clevis | Center flange | Axial foot | Rectangular flange (7 MPa) |        |                                      |
| C-series rod               | 40             | CH2E  | 3.19            | 4.49               | —             | 4.28          | 3.83          | 4.04          | 3.78       | 3.77                       | 3.78   | 0.07                                 |
|                            |                | CH2F  | 3.25            | 4.55               | —             | 4.34          | 3.89          | 4.10          | 3.84       | 3.83                       | 3.84   | 0.07                                 |
|                            |                | CH2G  | 3.58            | 4.88               | 4.28          | 4.67          | 4.22          | 4.43          | 4.17       | —                          | —      | 0.09                                 |
|                            |                | CH2H  | 3.47            | 4.77               | 4.17          | 4.56          | 4.11          | 4.32          | 4.06       | —                          | —      | 0.09                                 |
|                            | 50             | CH2E  | 4.74            | 7.34               | —             | 6.70          | 5.90          | 5.91          | 5.58       | 5.54                       | 5.82   | 0.07                                 |
|                            |                | CH2F  | 4.82            | 7.42               | —             | 6.78          | 5.98          | 5.99          | 5.66       | 5.62                       | 5.90   | 0.08                                 |
|                            |                | CH2G  | 5.33            | 7.93               | 6.82          | 7.29          | 6.49          | 6.50          | 6.17       | —                          | —      | 0.12                                 |
|                            |                | CH2H  | 5.16            | 7.76               | 6.65          | 7.12          | 6.32          | 6.33          | 6.00       | —                          | —      | 0.12                                 |
|                            | 63             | CH2E  | 7.62            | 11.50              | —             | 10.52         | 10.36         | 10.37         | 9.16       | 9.24                       | 9.23   | 0.14                                 |
|                            |                | CH2F  | 7.39            | 11.27              | —             | 10.29         | 10.13         | 10.14         | 8.93       | 9.01                       | 9.00   | 0.14                                 |
|                            |                | CH2G  | 8.19            | 12.07              | 10.34         | 11.09         | 10.93         | 10.94         | 9.73       | —                          | —      | 0.17                                 |
|                            |                | CH2H  | 8.13            | 12.01              | 10.28         | 11.03         | 10.87         | 10.88         | 9.67       | —                          | —      | 0.17                                 |
|                            | 80             | CH2E  | 12.56           | 17.91              | —             | 17.15         | 15.96         | 15.96         | 14.58      | 14.92                      | 15.25  | 0.18                                 |
|                            |                | CH2F  | 12.45           | 17.80              | —             | 17.04         | 15.85         | 15.85         | 14.47      | 14.81                      | 15.14  | 0.21                                 |
|                            |                | CH2G  | 14.32           | 19.67              | 17.89         | 18.91         | 17.72         | 17.72         | 16.34      | —                          | —      | 0.28                                 |
|                            |                | CH2H  | 13.77           | 19.12              | 17.34         | 18.36         | 17.17         | 17.17         | 15.79      | —                          | —      | 0.25                                 |
|                            | 100            | CH2E  | 17.91           | 28.72              | —             | 25.38         | 24.09         | 24.09         | 21.56      | 21.33                      | 22.51  | 0.29                                 |
|                            |                | CH2F  | 18.31           | 29.12              | —             | 25.78         | 24.49         | 24.49         | 21.96      | 21.73                      | 22.91  | 0.30                                 |
|                            |                | CH2G  | 21.11           | 31.92              | 27.56         | 28.58         | 27.29         | 27.29         | 24.76      | —                          | —      | 0.42                                 |
|                            |                | CH2H  | 20.75           | 31.56              | 27.20         | 28.22         | 26.93         | 26.93         | 24.40      | —                          | —      | 0.38                                 |

# JIS Standard Hydraulic Cylinder Double Acting/Single Rod *Series CH2E/CH2F/CH2G/CH2H*

## Theoretical Output

Unit: N

|              | Bore size (mm) | Rod size (mm) | Operating direction | Piston area (mm <sup>2</sup> ) | Operating pressure (MPa) |       |       |       |       |        |
|--------------|----------------|---------------|---------------------|--------------------------------|--------------------------|-------|-------|-------|-------|--------|
|              |                |               |                     |                                | 1                        | 3.5   | 5     | 7     | 10    | 14     |
| B-series rod | 32             | 18            | OUT                 | 804                            | 804                      | 2813  | 4019  | 5627  | 8038  | 11254  |
|              |                |               | IN                  | 550                            | 550                      | 1923  | 2748  | 3847  | 5495  | 7693   |
|              | 40             | 22.4          | OUT                 | 1256                           | 1256                     | 4396  | 6280  | 8792  | 12560 | 17584  |
|              |                |               | IN                  | 862                            | 862                      | 3017  | 4311  | 6035  | 8621  | 12070  |
|              | 50             | 28            | OUT                 | 1963                           | 1963                     | 6869  | 9813  | 13738 | 19625 | 27475  |
|              |                |               | IN                  | 1347                           | 1347                     | 4715  | 6735  | 9429  | 13471 | 18859  |
|              | 63             | 35.5          | OUT                 | 3116                           | 3116                     | 10905 | 15578 | 21810 | 31157 | 43619  |
|              |                |               | IN                  | 2126                           | 2126                     | 7442  | 10632 | 14885 | 21264 | 29769  |
|              | 80             | 45            | OUT                 | 5024                           | 5024                     | 17584 | 25120 | 35168 | 50240 | 70336  |
|              |                |               | IN                  | 3434                           | 3434                     | 12020 | 17172 | 24041 | 34344 | 48081  |
|              | 100            | 56            | OUT                 | 7850                           | 7850                     | 27475 | 39250 | 54950 | 78500 | 109900 |
|              |                |               | IN                  | 5388                           | 5388                     | 18859 | 26941 | 37718 | 53882 | 75435  |
| C-series rod | 40             | 18            | OUT                 | 1256                           | 1256                     | 4396  | 6280  | 8792  | 12560 | 17584  |
|              |                |               | IN                  | 1002                           | 1002                     | 3506  | 5008  | 7012  | 10017 | 14023  |
|              | 50             | 22.4          | OUT                 | 1963                           | 1963                     | 6869  | 9813  | 13738 | 19625 | 27475  |
|              |                |               | IN                  | 1569                           | 1569                     | 5490  | 7843  | 10980 | 15686 | 21961  |
|              | 63             | 28            | OUT                 | 3116                           | 3116                     | 10905 | 15578 | 21810 | 31157 | 43619  |
|              |                |               | IN                  | 2500                           | 2500                     | 8751  | 12501 | 17502 | 25002 | 35003  |
|              | 80             | 35.5          | OUT                 | 5024                           | 5024                     | 17584 | 25120 | 35168 | 50240 | 70336  |
|              |                |               | IN                  | 4035                           | 4035                     | 14121 | 20174 | 28243 | 40347 | 56486  |
|              | 100            | 45            | OUT                 | 7850                           | 7850                     | 27475 | 39250 | 54950 | 78500 | 109900 |
|              |                |               | IN                  | 6260                           | 6260                     | 21911 | 31302 | 43823 | 62604 | 87645  |

CHQ

CHK ☐

CHN

CHM

CHS ☐

CH2 ☐

CHA

Related Equipment

D-☐

## Water Resistant Hydraulic Cylinder

CHD2F ☐ Mounting ☐ Bore size ☐ Rod series **R** - Stroke ☐ Cylinders options ☐ - ☐ - F5BAL

• With auto switch  
(Built-in magnet)

Water resistant cylinder •

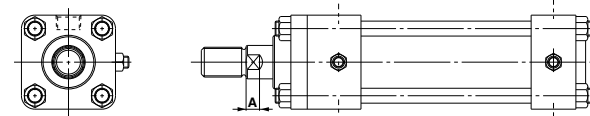
|          |                           |
|----------|---------------------------|
| <b>R</b> | NBR Seal (Nitrile rubber) |
| <b>V</b> | FKM Seal (Fluororubber)   |

\* Piston seals are NBR for both types R and V.

Port position •

Water resistant solid state  
auto switch with 2-color display •

\* Stainless steel for the piston rod is a special order.



## Specifications

|                                |                          |
|--------------------------------|--------------------------|
| <b>Action</b>                  | Double acting/Single rod |
| <b>Cylinder bore size (mm)</b> | 32, 40, 50, 63, 80, 100  |
| <b>Cushion</b>                 | Cushion seal             |
| <b>Auto switch mounting</b>    | Tie-rod mounting         |

\* Specifications other than those above are the same as double acting/single rod specifications.

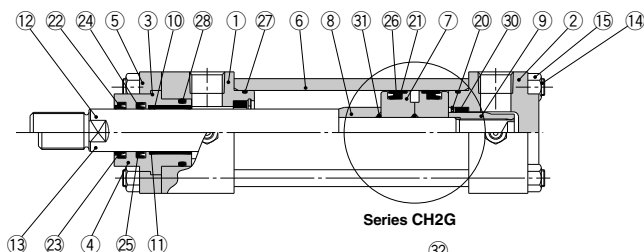
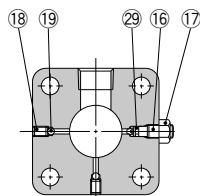
| Bore size (mm) | B-series rod |
|----------------|--------------|
|                | A            |
| 32             | —            |
| 40             | —            |
| 50             | —            |
| 63             | —            |
| 80             | 13.5         |
| 100            | 14.5         |

\* Some of the parts are different from the dimensions of the double acting, single rod type.

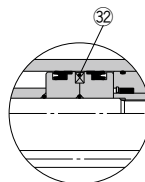
Refer to Best Pneumatics No. 2 for details.

# Series CH2E/CH2F/CH2G/CH2H

## Construction



Series CH2G



Series CH2E, CH2F, CH2H

### Parts List

| No. | Description                | Material             | Note                        |
|-----|----------------------------|----------------------|-----------------------------|
| 1   | Rod cover                  | Carbon steel         | Metallic painted            |
| 2   | Head cover                 | Carbon steel         | Metallic painted            |
| 3   | Seal holder (B-series rod) | Carbon steel         | Metallic painted            |
| 4   | Seal holder (C-series rod) | Carbon steel         | Metallic painted            |
| 5   | Retainer                   | Carbon steel         | Metallic painted            |
| 6   | Cylinder tube              | CH2E Aluminum alloy  | Hard anodized               |
|     |                            | CH2F Stainless steel |                             |
|     |                            | CH2G Carbon steel    | Metallic painted            |
|     |                            | CH2H Stainless steel |                             |
| 7   | Piston                     | CH2E Aluminum alloy  |                             |
|     |                            | CH2F Aluminum alloy  |                             |
|     |                            | CH2G Stainless steel |                             |
|     |                            | CH2H Stainless steel |                             |
| 8   | Cushion ring               | Rolled steel         |                             |
| 9   | Cushion ring nut           | Rolled steel         |                             |
| 10  | Bushing (B-series rod)     | Copper alloy         |                             |
| 11  | Bushing (C-series rod)     | Copper alloy         |                             |
| 12  | Piston rod (B-series rod)  | Carbon steel         | Hard chromium electroplated |
| 13  | Piston rod (C-series rod)  | Carbon steel         | Hard chromium electroplated |
| 14  | Tie-rod                    | Carbon steel         |                             |
| 15  | Tie-rod nut                | Carbon steel         |                             |
| 16  | Cushion valve              | Alloy steel          |                             |
| 17  | Lock nut                   | Carbon steel         |                             |
| 18  | Air release valve          | Alloy steel          |                             |
| 19  | Check ball                 | Bearing steel        |                             |
| 20  | Retaining ring             | Carbon tool steel    |                             |
| 21  | Back-up ring               | Resin                |                             |
| 22  | Scraper (B-series rod)     | NBR                  |                             |
| 23  | Scraper (C-series rod)     | NBR                  |                             |
| 24  | Rod seal (B-series rod)    | NBR                  |                             |
| 25  | Rod seal (C-series rod)    | NBR                  |                             |
| 26  | Piston seal                | NBR                  |                             |
| 27  | Cylinder tube gasket       | NBR                  |                             |
| 28  | Holder gasket              | NBR                  |                             |
| 29  | Cushion valve seal         | NBR                  |                             |
| 30  | Cushion seal               | —                    |                             |
| 31  | Piston gasket              | NBR                  |                             |
| 32  | Magnet                     | —                    |                             |

### Replacement Parts: Seal Kit

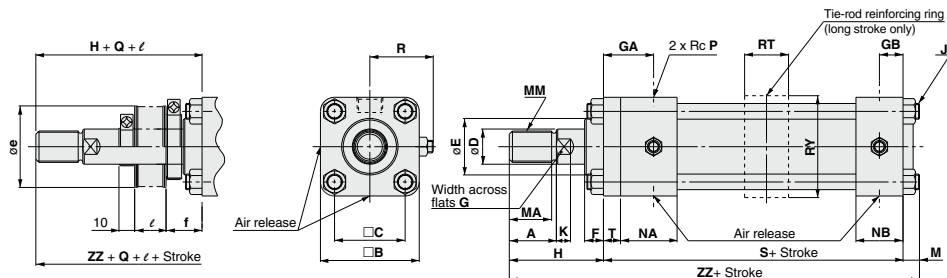
| Bore size<br>(mm) | Seal kit no. |              | Content                                      |
|-------------------|--------------|--------------|----------------------------------------------|
|                   | B-series rod | C-series rod |                                              |
| 32                | CH2E32B-PS   |              |                                              |
|                   | CH2F32B-PS   |              |                                              |
|                   | CH2G32B-PS   |              |                                              |
|                   | CH2H32B-PS   |              |                                              |
| 40                | CH2E40B-PS   | CH2E40C-PS   | Nos. ②① through ③②<br>from the chart at left |
|                   | CH2F40B-PS   | CH2F40C-PS   |                                              |
|                   | CH2G40B-PS   | CH2G40C-PS   |                                              |
|                   | CH2H40B-PS   | CH2H40C-PS   |                                              |
| 50                | CH2E50B-PS   | CH2E50C-PS   |                                              |
|                   | CH2F50B-PS   | CH2F50C-PS   |                                              |
|                   | CH2G50B-PS   | CH2G50C-PS   |                                              |
|                   | CH2H50B-PS   | CH2H50C-PS   |                                              |
| 63                | CH2E63B-PS   | CH2E63C-PS   |                                              |
|                   | CH2F63B-PS   | CH2F63C-PS   |                                              |
|                   | CH2G63B-PS   | CH2G63C-PS   |                                              |
|                   | CH2H63B-PS   | CH2H63C-PS   |                                              |
| 80                | CH2E80B-PS   | CH2E80C-PS   |                                              |
|                   | CH2F80B-PS   | CH2F80C-PS   |                                              |
|                   | CH2G80B-PS   | CH2G80C-PS   |                                              |
|                   | CH2H80B-PS   | CH2H80C-PS   |                                              |
| 100               | CH2E100B-PS  | CH2E100C-PS  |                                              |
|                   | CH2F100B-PS  | CH2F100C-PS  |                                              |
|                   | CH2G100B-PS  | CH2G100C-PS  |                                              |
|                   | CH2H100B-PS  | CH2H100C-PS  |                                              |

\* Seal kit consists of items ②① through ③② and can be ordered by using the seal kit number for each bore size.

# JIS Standard Hydraulic Cylinder Double Acting/Single Rod *Series CH2E/CH2F/CH2G/CH2H*

## Dimensions

Basic style: CH2EB, CH2FB, CH2GB, CH2HB



### Long stroke (with tie-rod reinforcing ring)

| Bore size (mm) | Stroke range * (mm) | RT | RY |
|----------------|---------------------|----|----|
| 32             | 1401 to 1800        | 28 | 58 |
| 40             | 1401 to 1800        | 28 | 65 |
| 50             | 1401 to 1800        | 33 | 75 |
| 63             | 1501 to 1800        | 43 | 90 |
| 80             | —                   | —  | —  |
| 100            | —                   | —  | —  |

\* Applicable to Series CH2E, CH2F and CH2H. Contact SMC regarding the Series CH2G with the above strokes.

| Bore size (mm) | Stroke range (mm) | B   | C   | F  | GA | GB | J          | M  | NA | NB | P   | R  | S   | T  | With rod boot |       |      |    |               |       |
|----------------|-------------------|-----|-----|----|----|----|------------|----|----|----|-----|----|-----|----|---------------|-------|------|----|---------------|-------|
|                |                   |     |     |    |    |    |            |    |    |    |     |    |     |    | e             |       | f    | Q  | L             |       |
|                |                   |     |     |    |    |    |            |    |    |    |     |    |     |    | B-rod         | C-rod |      |    | B-rod         | C-rod |
| 32             | 25 to 1400        | 58  | 38  | 16 | 32 | 15 | M10 x 1.25 | 11 | 37 | 31 | 3/8 | 39 | 141 | 11 | 52            | —     | 21.5 | 15 | —             | —     |
| 40             | 25 to 1400        | 65  | 45  | 12 | 32 | 15 | M10 x 1.25 | 11 | 36 | 30 | 3/8 | 42 | 141 | 11 | 52            | 52    | 12   | 15 | 1/3, 5 stroke | —     |
| 50             | 25 to 1400        | 76  | 52  | 15 | 40 | 19 | M10 x 1.25 | 11 | 43 | 35 | 1/2 | 46 | 155 | 13 | 55            | 52    | 15   | 15 | —             | —     |
| 63             | 25 to 1500        | 90  | 63  | 15 | 42 | 19 | M12 x 1.5  | 14 | 43 | 35 | 1/2 | 52 | 163 | 15 | 65            | 55    | 15   | 20 | —             | —     |
| 80             | 25 to 1800        | 110 | 80  | 17 | 40 | 22 | M16 x 1.5  | 16 | 44 | 44 | 3/4 | 65 | 184 | 18 | 80            | 65    | 17   | 20 | 1/4 stroke    | —     |
| 100            | 25 to 1800        | 135 | 102 | 19 | 42 | 22 | M18 x 1.5  | 18 | 44 | 44 | 3/4 | 75 | 192 | 20 | 100           | 80    | 19   | 15 | —             | —     |

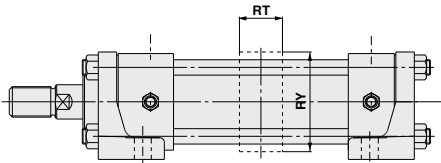
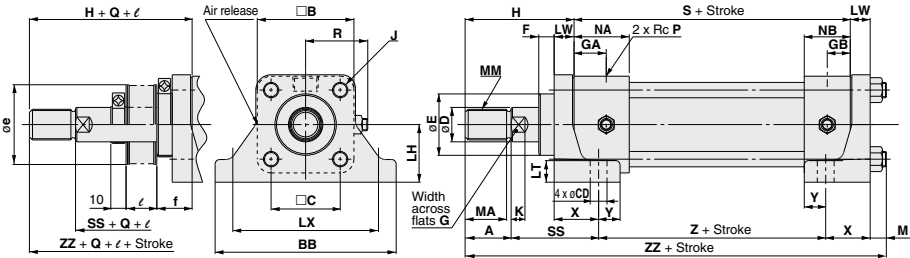
### Rod series

| Bore size<br>(mm) | B-series rod |    |    |      |    |                  |    |     |     |           | C-series rod |    |      |      |    |                  |    |     |     |     |
|-------------------|--------------|----|----|------|----|------------------|----|-----|-----|-----------|--------------|----|------|------|----|------------------|----|-----|-----|-----|
|                   | MM           | A  | MA | D    | E  | K                | G  | H   | ZZ  | MM        | A            | MA | D    | E    | K  | G                | H  | ZZ  |     |     |
| 32                | M16 x 1.5    | 25 | 22 | 18   | 34 | -0.025<br>-0.064 | 7  | 14  | 55  | 207       | —            | —  | —    | —    | —  | —                | —  | —   | —   |     |
| 40                | M20 x 1.5    | 30 | 27 | 22.4 | 40 |                  | 9  | 19  | 60  | 212       | M16 x 1.5    | 25 | 22   | 18   | 36 | -0.025<br>-0.064 | 7  | 14  | 55  | 207 |
| 50                | M24 x 1.5    | 35 | 32 | 28   | 46 | 11               | 24 | 65  | 231 | M20 x 1.5 | 30           | 27 | 22.4 | 40   | 9  |                  | 19 | 60  | 226 |     |
| 63                | M30 x 1.5    | 45 | 42 | 35.5 | 55 | -0.030<br>-0.076 | 13 | 30  | 80  | 257       | M24 x 1.5    | 35 | 32   | 28   | 46 | 11               | 24 | 70  | 247 |     |
| 80                | M39 x 1.5    | 60 | 57 | 45   | 65 |                  | 15 | 41  | 95  | 295       | M30 x 1.5    | 45 | 42   | 35.5 | 55 | -0.030<br>-0.076 | 13 | 30  | 80  | 280 |
| 100               | M48 x 1.5    | 75 | 72 | 56   | 80 | 16               | 50 | 115 | 325 | M39 x 1.5 | 60           | 57 | 45   | 65   | 15 |                  | 41 | 100 | 310 |     |

Series CH2E/CH2F/CH2G/CH2H

Dimensions

Transaxial foot style: CH2ELA, CH2FLA, CH2GLA, CH2HLA



Long stroke  
(with tie-rod reinforcing ring)

| Bore size<br>(mm) | Stroke range *<br>(mm) | RT | RY |
|-------------------|------------------------|----|----|
| 32                | 1401 to 1800           | 28 | 58 |
| 40                | 1401 to 1800           | 28 | 65 |
| 50                | 1401 to 1800           | 33 | 75 |
| 63                | 1501 to 1800           | 43 | 90 |
| 80                | —                      | —  | —  |
| 100               | —                      | —  | —  |

\* Applicable to Series CH2E, CH2F and CH2H. Contact SMC regarding Series CH2G with the above strokes.

| Bore size<br>(mm) | Stroke<br>range<br>(mm) | B   | BB  | C   | F  | GA | GB | J          | M  | NA | NB | P   | R  | S   | CD | LH   | LT | LW | LX  | X  | Y  | Z   | SS | (mm)          |            |      |    |                 |            |   |   |  |  |
|-------------------|-------------------------|-----|-----|-----|----|----|----|------------|----|----|----|-----|----|-----|----|------|----|----|-----|----|----|-----|----|---------------|------------|------|----|-----------------|------------|---|---|--|--|
|                   |                         |     |     |     |    |    |    |            |    |    |    |     |    |     |    |      |    |    |     |    |    |     |    | With rod boot |            |      |    |                 |            |   |   |  |  |
|                   |                         |     |     |     |    |    |    |            |    |    |    |     |    |     |    |      |    |    |     |    |    |     |    | e<br>B-rod    | e<br>C-rod | f    | Q  | l<br>B-rod      | l<br>C-rod | — | — |  |  |
| 32                | 25 to 1400              | 58  | 109 | 38  | 14 | 21 | 15 | M10 x 1.25 | 11 | 37 | 31 | 3/8 | 39 | 130 | 11 | 35   | 13 | 13 | 88  | 29 | 14 | 98  | 57 | 52            | —          | 34.5 | 15 | 1/3.5<br>stroke |            |   |   |  |  |
| 40                | 25 to 1400              | 65  | 118 | 45  | 10 | 21 | 15 | M10 x 1.25 | 11 | 36 | 30 | 3/8 | 42 | 130 | 11 | 37.5 | 14 | 13 | 95  | 29 | 14 | 98  | 57 | 52            | 52         | 23   | 15 |                 |            |   |   |  |  |
| 50                | 25 to 1400              | 76  | 145 | 52  | 10 | 27 | 19 | M10 x 1.25 | 11 | 43 | 35 | 1/2 | 46 | 142 | 14 | 45   | 17 | 18 | 115 | 35 | 18 | 108 | 60 | 55            | 52         | 28   | 15 |                 |            |   |   |  |  |
| 63                | 25 to 1500              | 90  | 165 | 63  | 10 | 27 | 19 | M12 x 1.5  | 14 | 43 | 35 | 1/2 | 52 | 148 | 18 | 50   | 19 | 20 | 132 | 41 | 19 | 106 | 71 | 65            | 55         | 30   | 20 |                 |            |   |   |  |  |
| 80                | 25 to 1800              | 110 | 190 | 80  | 11 | 22 | 22 | M16 x 1.5  | 16 | 44 | 44 | 3/4 | 65 | 166 | 18 | 60   | 24 | 24 | 155 | 45 | 20 | 124 | 74 | 80            | 65         | 35   | 20 | 1/4<br>stroke   |            |   |   |  |  |
| 100               | 25 to 1800              | 135 | 230 | 102 | 11 | 22 | 22 | M18 x 1.5  | 18 | 44 | 44 | 3/4 | 75 | 172 | 22 | 71   | 27 | 28 | 190 | 53 | 22 | 122 | 85 | 100           | 80         | 39   | 15 |                 |            |   |   |  |  |

Rod series

| Bore size<br>(mm) | B-series rod |    |    |      |    |                  |    |     |     |           | C-series rod |    |    |      |                  |                  |    |     |     |     |
|-------------------|--------------|----|----|------|----|------------------|----|-----|-----|-----------|--------------|----|----|------|------------------|------------------|----|-----|-----|-----|
|                   | MM           | A  | MA | D    | E  | K                | G  | H   | ZZ  | MM        | A            | MA | D  | E    | K                | G                | H  | ZZ  |     |     |
| 32                | M16 x 1.5    | 25 | 22 | 18   | 34 | -0.025<br>-0.064 | 7  | 14  | 66  | 220       | —            | —  | —  | —    | -0.025<br>-0.064 | —                | —  | —   | —   |     |
| 40                | M20 x 1.5    | 30 | 27 | 22.4 | 40 |                  | 9  | 19  | 71  | 225       | M16 x 1.5    | 25 | 22 | 18   |                  | 36               | 7  | 14  | 66  | 220 |
| 50                | M24 x 1.5    | 35 | 32 | 28   | 46 | -0.030<br>-0.076 | 11 | 24  | 78  | 249       | M20 x 1.5    | 30 | 27 | 22.4 | 40               | -0.030<br>-0.076 | 9  | 19  | 73  | 244 |
| 63                | M30 x 1.5    | 45 | 42 | 35.5 | 55 |                  | 13 | 30  | 95  | 277       | M24 x 1.5    | 35 | 32 | 28   | 46               |                  | 11 | 24  | 85  | 267 |
| 80                | M39 x 1.5    | 60 | 57 | 45   | 65 | -0.036<br>-0.090 | 15 | 41  | 113 | 319       | M30 x 1.5    | 45 | 42 | 35.5 | 55               | -0.036<br>-0.090 | 13 | 30  | 98  | 304 |
| 100               | M48 x 1.5    | 75 | 72 | 56   | 80 | 16               | 50 | 135 | 353 | M39 x 1.5 | 60           | 57 | 45 | 65   | 15               |                  | 41 | 120 | 338 |     |

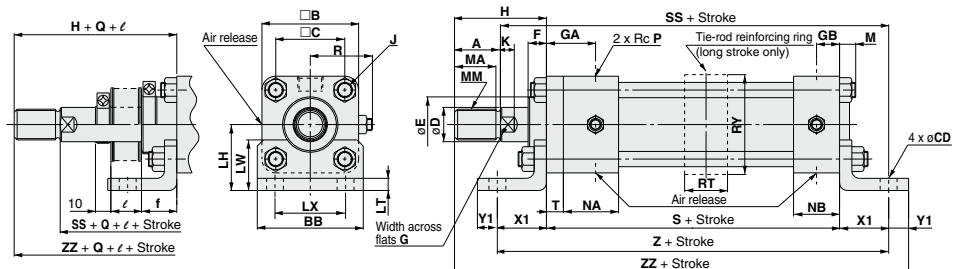
Tolerance

| Bore size<br>(mm) | LH    | LX    |
|-------------------|-------|-------|
| 32                | ±0.15 | ±0.18 |
| 40                |       |       |
| 50                |       |       |
| 63                | ±0.25 | ±0.20 |
| 80                |       |       |
| 100               |       |       |



# JIS Standard Hydraulic Cylinder Double Acting/Single Rod *Series CH2E/CH2F/CH2G/CH2H*

Axial foot style: CH2ELB, CH2FLB



## Long stroke (with tie-rod reinforcing ring)

| Bore size (mm) | Stroke range * (mm) | RT | RY |
|----------------|---------------------|----|----|
| 32             | 1401 to 1800        | 28 | 58 |
| 40             | 1401 to 1800        | 28 | 65 |
| 50             | 1401 to 1800        | 33 | 75 |
| 63             | 1501 to 1800        | 43 | 90 |
| 80             | —                   | —  | —  |
| 100            | —                   | —  | —  |

\* Applicable to Series CH2E, CH2F and CH2H. Contact SMC regarding Series CH2G with the above strokes.

| Bore size (mm) | Stroke range (mm) | B   | BB  | C   | F  | GA | GB | J          | M  | NA | NB | P   | R  | S   | T  | CD | LH | LT | LX  | LW | X1 | Y1 | SS  | Z   | Z   | With rod boot |      |    |              |
|----------------|-------------------|-----|-----|-----|----|----|----|------------|----|----|----|-----|----|-----|----|----|----|----|-----|----|----|----|-----|-----|-----|---------------|------|----|--------------|
|                |                   |     |     |     |    |    |    |            |    |    |    |     |    |     |    |    |    |    |     |    |    |    |     |     |     | e             | f    | Q  | ℓ            |
| 32             | 25 to 1400        | 58  | 62  | 38  | 16 | 32 | 15 | M10 x 1.25 | 11 | 37 | 31 | 3/8 | 39 | 141 | 11 | 11 | 40 | 8  | 40  | 30 | 32 | 13 | 203 | 205 | 52  | —             | 21.5 | 15 | —            |
| 40             | 25 to 1400        | 65  | 69  | 45  | 12 | 32 | 15 | M10 x 1.25 | 11 | 36 | 30 | 3/8 | 42 | 141 | 11 | 11 | 43 | 8  | 46  | 33 | 32 | 13 | 203 | 205 | 52  | 52            | 12   | 15 | 1/3.5 stroke |
| 50             | 25 to 1400        | 76  | 85  | 52  | 15 | 40 | 19 | M10 x 1.25 | 11 | 43 | 35 | 1/2 | 46 | 155 | 13 | 14 | 50 | 8  | 58  | 37 | 35 | 15 | 220 | 225 | 55  | 52            | 15   | 15 | 1/4 stroke   |
| 63             | 25 to 1500        | 90  | 98  | 63  | 15 | 42 | 19 | M12 x 1.5  | 14 | 43 | 35 | 1/2 | 52 | 163 | 15 | 18 | 60 | 10 | 65  | 45 | 42 | 18 | 240 | 247 | 65  | 55            | 15   | 20 | 1/4 stroke   |
| 80             | 25 to 1800        | 110 | 118 | 80  | 17 | 40 | 22 | M16 x 1.5  | 16 | 44 | 44 | 3/4 | 65 | 184 | 18 | 18 | 72 | 12 | 87  | 50 | 50 | 20 | 269 | 284 | 80  | 65            | 17   | 20 | 1/4 stroke   |
| 100            | 25 to 1800        | 135 | 150 | 102 | 19 | 42 | 22 | M18 x 1.5  | 18 | 44 | 44 | 3/4 | 75 | 192 | 20 | 22 | 85 | 12 | 109 | 55 | 55 | 23 | 287 | 302 | 100 | 80            | 19   | 15 | 1/4 stroke   |

## Rod series

| Bore size (mm) | B-series rod |    |    |      |    |                  |    |    |     |     | C-series rod |    |    |      |    |                  |    |    |     |     |
|----------------|--------------|----|----|------|----|------------------|----|----|-----|-----|--------------|----|----|------|----|------------------|----|----|-----|-----|
|                | MM           | A  | MA | D    | E  | K                | G  | H  | ZZ  |     | MM           | A  | MA | D    | E  | K                | G  | H  | ZZ  |     |
| 32             | M16 x 1.5    | 25 | 22 | 18   | 34 | —                | 7  | 14 | 55  | 241 | —            | —  | —  | —    | —  | —                | —  | —  | —   | —   |
| 40             | M20 x 1.5    | 30 | 27 | 22.4 | 40 | -0.025<br>-0.064 | 9  | 19 | 60  | 246 | M16 x 1.5    | 25 | 22 | 18   | 36 | —                | 7  | 14 | 55  | 241 |
| 50             | M24 x 1.5    | 35 | 32 | 28   | 46 | —                | 11 | 24 | 65  | 270 | M20 x 1.5    | 30 | 27 | 22.4 | 40 | -0.025<br>-0.064 | 9  | 19 | 60  | 265 |
| 63             | M30 x 1.5    | 45 | 42 | 35.5 | 55 | -0.030<br>-0.076 | 13 | 30 | 80  | 303 | M24 x 1.5    | 35 | 32 | 28   | 46 | —                | 11 | 24 | 70  | 293 |
| 80             | M39 x 1.5    | 60 | 57 | 45   | 65 | -0.036<br>-0.090 | 15 | 41 | 95  | 349 | M30 x 1.5    | 45 | 42 | 35.5 | 55 | -0.030<br>-0.076 | 13 | 30 | 80  | 334 |
| 100            | M48 x 1.5    | 75 | 72 | 56   | 80 | —                | 16 | 50 | 115 | 385 | M39 x 1.5    | 60 | 57 | 45   | 65 | —                | 15 | 41 | 100 | 370 |

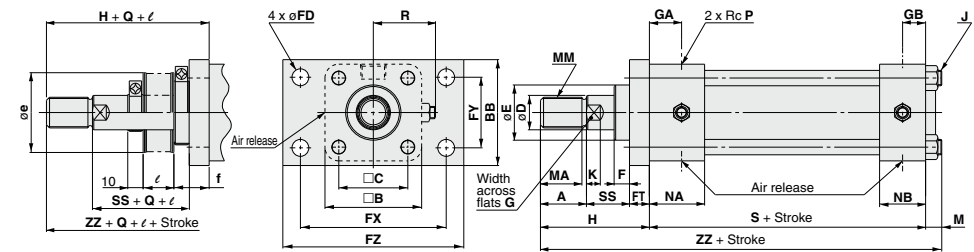
## Tolerance

| Bore size (mm) | LH    | LX    |
|----------------|-------|-------|
| 32             | ±0.15 | ±0.13 |
| 40             |       | ±0.15 |
| 50             |       | ±0.15 |
| 63             | ±0.25 | ±0.18 |
| 80             |       | ±0.18 |
| 100            |       | ±0.18 |

Series CH2E/CH2F/CH2G/CH2H

Dimensions

Rod rectangular flange style: CH2EFA, CH2FFA



|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|

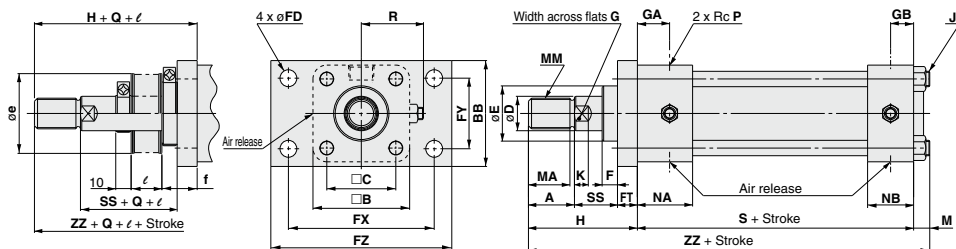
Rod series

| Bore size<br>(mm) | B-series rod |    |    |      |    |    |    |     |     |           | C-series rod |    |      |    |    |    |     |     |  |  |
|-------------------|--------------|----|----|------|----|----|----|-----|-----|-----------|--------------|----|------|----|----|----|-----|-----|--|--|
|                   | MM           | A  | MA | D    | E  | K  | G  | H   | ZZ  | MM        | A            | MA | D    | E  | K  | G  | H   | ZZ  |  |  |
| 32                | M16 x 1.5    | 25 | 22 | 18   | 34 | 7  | 14 | 66  | 207 | —         | —            | —  | —    | —  | —  | —  | —   | —   |  |  |
| 40                | M20 x 1.5    | 30 | 27 | 22.4 | 40 | 9  | 19 | 71  | 212 | M16 x 1.5 | 25           | 22 | 18   | 36 | 7  | 14 | 66  | 207 |  |  |
| 50                | M24 x 1.5    | 35 | 32 | 28   | 46 | 11 | 24 | 78  | 231 | M20 x 1.5 | 30           | 27 | 22.4 | 40 | 9  | 19 | 73  | 226 |  |  |
| 63                | M30 x 1.5    | 45 | 42 | 35.5 | 55 | 13 | 30 | 95  | 257 | M24 x 1.5 | 35           | 32 | 28   | 46 | 11 | 24 | 85  | 247 |  |  |
| 80                | M39 x 1.5    | 60 | 57 | 45   | 65 | 15 | 41 | 113 | 295 | M30 x 1.5 | 45           | 42 | 35.5 | 55 | 13 | 30 | 98  | 280 |  |  |
| 100               | M48 x 1.5    | 75 | 72 | 56   | 80 | 16 | 50 | 135 | 325 | M39 x 1.5 | 60           | 57 | 45   | 65 | 15 | 41 | 120 | 310 |  |  |

Tolerance

| Bore size<br>(mm) | FT   | FY    | FX    |
|-------------------|------|-------|-------|
| 32                |      |       |       |
| 40                | ±0.2 | ±0.13 | ±0.18 |
| 50                |      | ±0.15 |       |
| 63                |      |       | ±0.2  |
| 80                | ±0.3 | ±0.18 |       |
| 100               |      |       | ±0.23 |

**Rod rectangular flange style: CH2GFY, CH2HFY**

D-☐

|                   |                         | (mm) |     |     |    |    |    |            |    |    |    |     |    |     |    |    |     |     |     |    |               |       |    |    |                 |       |
|-------------------|-------------------------|------|-----|-----|----|----|----|------------|----|----|----|-----|----|-----|----|----|-----|-----|-----|----|---------------|-------|----|----|-----------------|-------|
| Bore size<br>(mm) | Stroke<br>range<br>(mm) | B    | BB  | C   | F  | GA | GB | J          | M  | NA | NB | P   | R  | S   | FD | FT | FX  | FY  | FZ  | SS | With rod boot |       |    |    |                 |       |
|                   |                         |      |     |     |    |    |    |            |    |    |    |     |    |     |    |    |     |     |     |    | e             |       | f  | Q  | ℓ               |       |
|                   |                         |      |     |     |    |    |    |            |    |    |    |     |    |     |    |    |     |     |     |    | B-rod         | C-rod |    |    | B-rod           | C-rod |
| 32                | 25 to 1400              | 58   | 62  | 38  | 14 | 21 | 15 | M10 x 1.25 | 11 | 37 | 31 | 3/8 | 39 | 130 | 11 | 13 | 88  | 40  | 109 | 30 | 52            | —     | 27 | 15 | 1/3.5<br>stroke |       |
| 40                | 25 to 1400              | 65   | 69  | 45  | 10 | 21 | 15 | M10 x 1.25 | 11 | 36 | 30 | 3/8 | 42 | 130 | 11 | 13 | 95  | 46  | 118 | 30 | 52            | 52    | 23 | 15 |                 |       |
| 50                | 25 to 1400              | 76   | 85  | 52  | 10 | 27 | 19 | M10 x 1.25 | 11 | 43 | 35 | 1/2 | 46 | 142 | 14 | 18 | 115 | 58  | 145 | 30 | 55            | 52    | 28 | 15 |                 |       |
| 63                | 25 to 1500              | 90   | 98  | 63  | 10 | 27 | 19 | M12 x 1.5  | 14 | 43 | 35 | 1/2 | 52 | 148 | 18 | 20 | 132 | 65  | 165 | 35 | 65            | 55    | 30 | 20 |                 |       |
| 80                | 25 to 1800              | 110  | 118 | 80  | 11 | 22 | 22 | M16 x 1.5  | 16 | 44 | 44 | 3/4 | 65 | 166 | 18 | 24 | 155 | 87  | 190 | 35 | 80            | 65    | 35 | 20 | 1/4<br>stroke   |       |
| 100               | 25 to 1800              | 135  | 150 | 102 | 11 | 22 | 22 | M18 x 1.5  | 18 | 44 | 44 | 3/4 | 75 | 172 | 22 | 28 | 190 | 109 | 230 | 40 | 100           | 80    | 39 | 15 |                 |       |

## Rod series

| Bore size<br>(mm) | B-series rod |    |    |      |    |                  |    |    |     |     | C-series rod |    |    |      |    |                  |    |    |     |     |
|-------------------|--------------|----|----|------|----|------------------|----|----|-----|-----|--------------|----|----|------|----|------------------|----|----|-----|-----|
|                   | MM           | A  | MA | D    | E  | K                | G  | H  | ZZ  | MM  | A            | MA | D  | E    | K  | G                | H  | ZZ |     |     |
| 32                | M16 x 1.5    | 25 | 22 | 18   | 34 | —                | 7  | 14 | 68  | 209 | —            | —  | —  | —    | —  | —                | —  | —  |     |     |
| 40                | M20 x 1.5    | 30 | 27 | 22.4 | 40 | -0.025<br>-0.064 | 9  | 19 | 73  | 214 | M16 x 1.5    | 25 | 22 | 18   | 36 | —                | 7  | 14 | 68  | 209 |
| 50                | M24 x 1.5    | 35 | 32 | 28   | 46 | —                | 11 | 24 | 83  | 236 | M20 x 1.5    | 30 | 27 | 22.4 | 40 | -0.025<br>-0.064 | 9  | 19 | 78  | 231 |
| 63                | M30 x 1.5    | 45 | 42 | 35.5 | 55 | -0.030<br>-0.076 | 13 | 30 | 100 | 262 | M24 x 1.5    | 35 | 32 | 28   | 46 | —                | 11 | 24 | 90  | 252 |
| 80                | M39 x 1.5    | 60 | 57 | 45   | 65 | —                | 15 | 41 | 119 | 301 | M30 x 1.5    | 45 | 42 | 35.5 | 55 | -0.030<br>-0.076 | 13 | 30 | 104 | 286 |
| 100               | M48 x 1.5    | 75 | 72 | 56   | 80 | -0.038<br>-0.080 | 16 | 50 | 143 | 333 | M39 x 1.5    | 60 | 57 | 45   | 65 | —                | 15 | 41 | 128 | 314 |

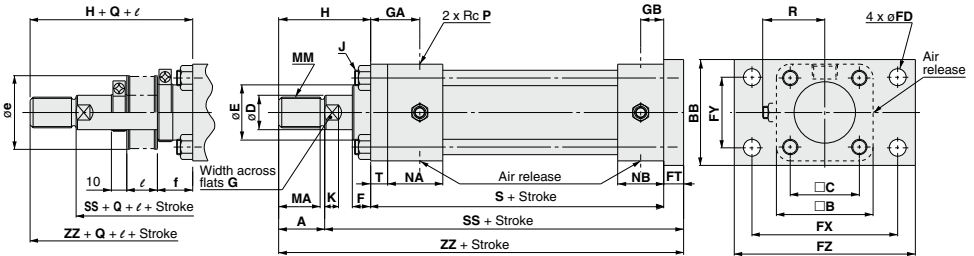
## Tolerance

| Bore size (mm) | FT   | FX    | FY    |
|----------------|------|-------|-------|
| 32             | ±0.2 | ±0.18 | ±0.13 |
| 40             |      |       | ±0.15 |
| 50             | ±0.3 | ±0.2  | ±0.18 |
| 63             |      |       |       |
| 80             |      |       |       |
| 100            |      | ±0.23 |       |

Series **CH2E/CH2F/CH2G/CH2H**

Dimensions

Head rectangular flange style: CH2EFB, CH2FFB



|                   |                         |     |     |     |    |    |    |            |    |    |     |    |     |    |    |    |     |     |     |     |               |       | (mm) |    |                 |       |
|-------------------|-------------------------|-----|-----|-----|----|----|----|------------|----|----|-----|----|-----|----|----|----|-----|-----|-----|-----|---------------|-------|------|----|-----------------|-------|
| Bore size<br>(mm) | Stroke<br>range<br>(mm) | B   | BB  | C   | F  | GA | GB | J          | NA | NB | P   | R  | S   | T  | FD | FT | FX  | FY  | FZ  | SS  | With rod boot |       |      |    |                 |       |
|                   |                         |     |     |     |    |    |    |            |    |    |     |    |     |    |    |    |     |     |     |     | e             |       | f    | Q  | ℓ               |       |
|                   |                         |     |     |     |    |    |    |            |    |    |     |    |     |    |    |    |     |     |     |     | B-rod         | C-rod |      |    | B-rod           | C-rod |
| 32                | 25 to 1400              | 58  | 62  | 38  | 16 | 32 | 15 | M10 x 1.25 | 37 | 31 | 3/8 | 39 | 141 | 11 | 11 | 11 | 88  | 40  | 109 | 182 | 52            | —     | 21.5 | 15 | 1/3.5<br>stroke |       |
| 40                | 25 to 1400              | 65  | 69  | 45  | 12 | 32 | 15 | M10 x 1.25 | 36 | 30 | 3/8 | 42 | 141 | 11 | 11 | 11 | 95  | 46  | 118 | 182 | 52            | 52    | 12   | 15 |                 |       |
| 50                | 25 to 1400              | 76  | 85  | 52  | 15 | 40 | 19 | M10 x 1.25 | 43 | 35 | 1/2 | 46 | 155 | 13 | 14 | 13 | 115 | 58  | 145 | 198 | 55            | 52    | 15   | 15 |                 |       |
| 63                | 25 to 1500              | 90  | 98  | 63  | 15 | 42 | 19 | M12 x 1.5  | 43 | 35 | 1/2 | 52 | 163 | 15 | 18 | 15 | 132 | 65  | 165 | 213 | 65            | 55    | 15   | 20 | 1/4<br>stroke   |       |
| 80                | 25 to 1800              | 110 | 118 | 80  | 17 | 40 | 22 | M16 x 1.5  | 44 | 44 | 3/4 | 65 | 184 | 18 | 18 | 18 | 155 | 87  | 190 | 237 | 80            | 65    | 17   | 20 |                 |       |
| 100               | 25 to 1800              | 135 | 150 | 102 | 19 | 42 | 22 | M18 x 1.5  | 44 | 44 | 3/4 | 75 | 192 | 20 | 22 | 20 | 190 | 109 | 230 | 252 | 100           | 80    | 19   | 15 |                 |       |

Rod series

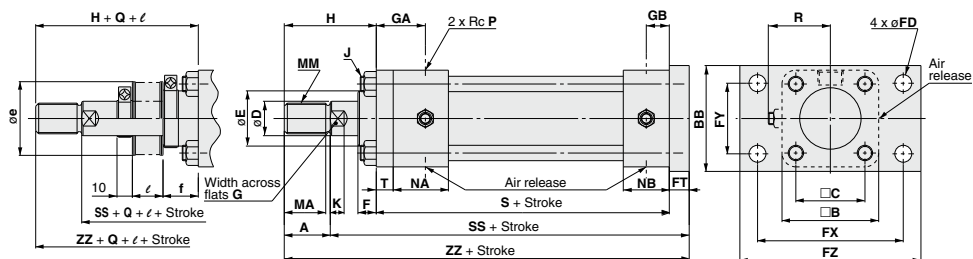
| Bore size<br>(mm) | B-series rod |    |    |      |    |                  |    |     |     |           | C-series rod |    |      |      |    |                  |     |     |     |     |
|-------------------|--------------|----|----|------|----|------------------|----|-----|-----|-----------|--------------|----|------|------|----|------------------|-----|-----|-----|-----|
|                   | MM           | A  | MA | D    | E  | K                | G  | H   | ZZ  | MM        | A            | MA | D    | E    | K  | G                | H   | ZZ  |     |     |
| 32                | M16 x 1.5    | 25 | 22 | 18   | 34 | -0.025<br>-0.064 | 7  | 14  | 55  | 207       | —            | —  | —    | —    | —  | —                | —   | —   |     |     |
| 40                | M20 x 1.5    | 30 | 27 | 22.4 | 40 |                  | 9  | 19  | 60  | 212       | M16 x 1.5    | 25 | 22   | 18   | 36 | -0.025<br>-0.064 | 7   | 14  | 55  | 207 |
| 50                | M24 x 1.5    | 35 | 32 | 28   | 46 | 11               | 24 | 65  | 233 | M20 x 1.5 | 30           | 27 | 22.4 | 40   | 9  |                  | 19  | 60  | 228 |     |
| 63                | M30 x 1.5    | 45 | 42 | 35.5 | 55 | -0.030<br>-0.076 | 13 | 30  | 80  | 258       | M24 x 1.5    | 35 | 32   | 28   | 46 | -0.030<br>-0.076 | 11  | 24  | 70  | 248 |
| 80                | M39 x 1.5    | 60 | 57 | 45   | 65 |                  | 15 | 41  | 95  | 297       | M30 x 1.5    | 45 | 42   | 35.5 | 55 |                  | 13  | 30  | 80  | 282 |
| 100               | M48 x 1.5    | 75 | 72 | 56   | 80 | 16               | 50 | 115 | 327 | M39 x 1.5 | 60           | 57 | 45   | 65   | 15 | 41               | 100 | 312 |     |     |

Tolerance

| Bore size<br>(mm) | FT   | FY    | FX    |
|-------------------|------|-------|-------|
| 32                |      |       |       |
| 40                | ±0.2 | ±0.13 | ±0.18 |
| 50                |      | ±0.15 |       |
| 63                |      |       | ±0.2  |
| 80                | ±0.3 | ±0.18 |       |
| 100               |      |       | ±0.23 |

# JIS Standard Hydraulic Cylinder Double Acting/Single Rod *Series CH2E/CH2F/CH2G/CH2H*

Head rectangular flange style: CH2GFZ, CH2HFZ



CHQ

CHK ☐

CHN

CHM

CHS ☐

CH2 ☐

CHA

Related Equipment

D- ☐

| Bore size<br>(mm) | Stroke<br>range<br>(mm) | B   | BB  | C   | F  | GA | GB | J          | NA | NB | P   | R  | S   | T  | FD | FT | FX  | FY  | FZ  | SS  | With rod boot |       |      |    |              |
|-------------------|-------------------------|-----|-----|-----|----|----|----|------------|----|----|-----|----|-----|----|----|----|-----|-----|-----|-----|---------------|-------|------|----|--------------|
|                   |                         |     |     |     |    |    |    |            |    |    |     |    |     |    |    |    |     |     |     |     | e             |       | f    | Q  | $\ell$       |
|                   |                         |     |     |     |    |    |    |            |    |    |     |    |     |    |    |    |     |     |     |     | B-rod         | C-rod |      |    |              |
| 32                | 25 to 1400              | 58  | 62  | 38  | 16 | 32 | 15 | M10 x 1.25 | 37 | 31 | 3/8 | 39 | 141 | 11 | 11 | 13 | 88  | 40  | 109 | 184 | 52            | —     | 21.5 | 15 | —            |
| 40                | 25 to 1400              | 65  | 69  | 45  | 12 | 32 | 15 | M10 x 1.25 | 36 | 30 | 3/8 | 42 | 141 | 11 | 11 | 13 | 95  | 46  | 118 | 184 | 52            | 52    | 12   | 15 | 1/3.5 stroke |
| 50                | 25 to 1400              | 76  | 85  | 52  | 15 | 40 | 19 | M10 x 1.25 | 43 | 35 | 1/2 | 46 | 155 | 13 | 14 | 18 | 115 | 58  | 145 | 203 | 55            | 52    | 15   | 15 | 1/4 stroke   |
| 63                | 25 to 1500              | 90  | 98  | 63  | 15 | 42 | 19 | M12 x 1.5  | 43 | 35 | 1/2 | 52 | 163 | 15 | 18 | 20 | 132 | 65  | 165 | 218 | 65            | 55    | 15   | 20 | 1/4 stroke   |
| 80                | 25 to 1800              | 110 | 118 | 80  | 17 | 40 | 22 | M16 x 1.5  | 44 | 44 | 3/4 | 65 | 184 | 18 | 18 | 24 | 155 | 87  | 190 | 243 | 80            | 65    | 17   | 20 | 1/4 stroke   |
| 100               | 25 to 1800              | 135 | 150 | 102 | 19 | 42 | 22 | M18 x 1.5  | 44 | 44 | 3/4 | 75 | 192 | 20 | 22 | 28 | 190 | 109 | 230 | 260 | 100           | 80    | 19   | 15 | 1/4 stroke   |

## Rod series

| Bore size<br>(mm) | B-series rod |    |    |      |    |    |    |     |     |           | C-series rod |    |      |    |    |    |     |     |    |   |
|-------------------|--------------|----|----|------|----|----|----|-----|-----|-----------|--------------|----|------|----|----|----|-----|-----|----|---|
|                   | MM           | A  | MA | D    | E  | K  | G  | H   | ZZ  |           | MM           | A  | MA   | D  | E  | K  | G   | H   | ZZ |   |
| 32                | M16 x 1.5    | 25 | 22 | 18   | 34 | 7  | 14 | 55  | 209 | —         | —            | —  | —    | —  | —  | —  | —   | —   | —  | — |
| 40                | M20 x 1.5    | 30 | 27 | 22.4 | 40 | 9  | 19 | 60  | 214 | M16 x 1.5 | 25           | 22 | 18   | 36 | 7  | 14 | 55  | 209 | —  | — |
| 50                | M24 x 1.5    | 35 | 32 | 28   | 46 | 11 | 24 | 65  | 238 | M20 x 1.5 | 30           | 27 | 22.4 | 40 | 9  | 19 | 60  | 233 | —  | — |
| 63                | M30 x 1.5    | 45 | 42 | 35.5 | 55 | 13 | 30 | 80  | 263 | M24 x 1.5 | 35           | 32 | 28   | 46 | 11 | 24 | 70  | 253 | —  | — |
| 80                | M39 x 1.5    | 60 | 57 | 45   | 65 | 15 | 41 | 95  | 303 | M30 x 1.5 | 45           | 42 | 35.5 | 55 | 13 | 30 | 80  | 288 | —  | — |
| 100               | M48 x 1.5    | 75 | 72 | 56   | 80 | 16 | 50 | 115 | 335 | M39 x 1.5 | 60           | 57 | 45   | 65 | 15 | 41 | 100 | 320 | —  | — |

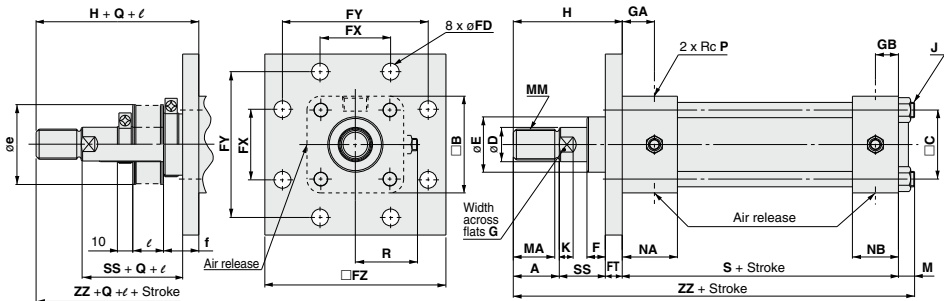
## Tolerance

| Bore size<br>(mm) | FT   | FX    | FY    |
|-------------------|------|-------|-------|
| 32                | ±0.2 |       | ±0.13 |
| 40                |      | ±0.18 |       |
| 50                |      |       | ±0.15 |
| 63                | ±0.3 | ±0.2  |       |
| 80                |      |       | ±0.18 |
| 100               |      | ±0.23 |       |

Series CH2E/CH2F/CH2G/CH2H

Dimensions

Rod square flange style: CH2EFC, CH2FFC, CH2GFC, CH2HFC



| Bore size<br>(mm) | Stroke<br>range<br>(mm) | B   | C   | F  | GA | GB | J          | M  | NA | NB | P   | R  | S   | FD | FT | FX  | FY  | FZ  | SS | With rod boot |       |       |       |       |        |
|-------------------|-------------------------|-----|-----|----|----|----|------------|----|----|----|-----|----|-----|----|----|-----|-----|-----|----|---------------|-------|-------|-------|-------|--------|
|                   |                         |     |     |    |    |    |            |    |    |    |     |    |     |    |    |     |     |     |    | e             |       | f     |       | Q     |        |
|                   |                         |     |     |    |    |    |            |    |    |    |     |    |     |    |    |     |     |     |    | B-rod         | C-rod | B-rod | C-rod | B-rod | C-rod  |
| 32                | 25 to 1400              | 58  | 38  | 16 | 21 | 15 | M10 x 1.25 | 11 | 37 | 31 | 3/8 | 39 | 130 | 11 | 11 | 40  | 88  | 109 | 30 | 52            | —     | 27    | 15    | —     | —      |
| 40                | 25 to 1400              | 65  | 45  | 12 | 21 | 15 | M10 x 1.25 | 11 | 36 | 30 | 3/8 | 42 | 130 | 11 | 11 | 46  | 95  | 118 | 30 | 52            | 52    | 23    | 15    | 1/3.5 | stroke |
| 50                | 25 to 1400              | 76  | 52  | 15 | 27 | 19 | M10 x 1.25 | 11 | 43 | 35 | 1/2 | 46 | 142 | 14 | 13 | 58  | 115 | 145 | 30 | 55            | 52    | 28    | 15    | —     | —      |
| 63                | 25 to 1500              | 90  | 63  | 15 | 27 | 19 | M12 x 1.5  | 14 | 43 | 35 | 1/2 | 52 | 148 | 18 | 15 | 65  | 132 | 165 | 35 | 65            | 55    | 30    | 20    | 1/4   | stroke |
| 80                | 25 to 1800              | 110 | 80  | 17 | 22 | 22 | M16 x 1.5  | 16 | 44 | 44 | 3/4 | 65 | 166 | 18 | 18 | 87  | 155 | 190 | 35 | 80            | 65    | 35    | 20    | —     | —      |
| 100               | 25 to 1800              | 135 | 102 | 19 | 22 | 22 | M18 x 1.5  | 18 | 44 | 44 | 3/4 | 75 | 172 | 22 | 20 | 109 | 190 | 230 | 40 | 100           | 80    | 39    | 15    | —     | —      |

Rod series

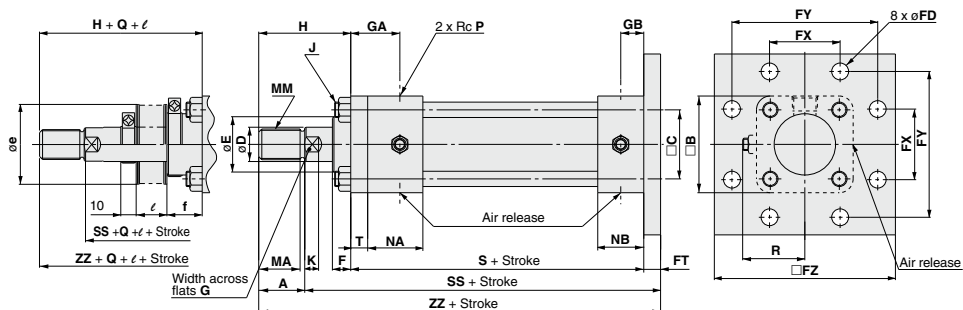
| Bore size<br>(mm) | B-series rod |    |    |      |    |    |    |     |     |           | C series-rod |    |      |    |    |    |     |     |  |  |
|-------------------|--------------|----|----|------|----|----|----|-----|-----|-----------|--------------|----|------|----|----|----|-----|-----|--|--|
|                   | MM           | A  | MA | D    | E  | K  | G  | H   | ZZ  | MM        | A            | MA | D    | E  | K  | G  | H   | ZZ  |  |  |
| 32                | M16 x 1.5    | 25 | 22 | 18   | 34 | 7  | 14 | 66  | 207 | —         | —            | —  | —    | —  | —  | —  | —   | —   |  |  |
| 40                | M20 x 1.5    | 30 | 27 | 22.4 | 40 | 9  | 19 | 71  | 212 | M16 x 1.5 | 25           | 22 | 18   | 36 | 7  | 14 | 66  | 207 |  |  |
| 50                | M24 x 1.5    | 35 | 32 | 28   | 46 | 11 | 24 | 78  | 231 | M20 x 1.5 | 30           | 27 | 22.4 | 40 | 9  | 19 | 73  | 226 |  |  |
| 63                | M30 x 1.5    | 45 | 42 | 35.5 | 55 | 13 | 30 | 95  | 257 | M24 x 1.5 | 35           | 32 | 28   | 46 | 11 | 24 | 85  | 247 |  |  |
| 80                | M39 x 1.5    | 60 | 57 | 45   | 65 | 15 | 41 | 113 | 295 | M30 x 1.5 | 45           | 42 | 35.5 | 55 | 13 | 30 | 98  | 280 |  |  |
| 100               | M48 x 1.5    | 75 | 72 | 56   | 80 | 16 | 50 | 135 | 325 | M39 x 1.5 | 60           | 57 | 45   | 65 | 15 | 41 | 120 | 310 |  |  |

Tolerance

| Bore size<br>(mm) | FT   | FX    | FY    |
|-------------------|------|-------|-------|
| 32                | —    | —     | —     |
| 40                | ±0.2 | ±0.13 | ±0.18 |
| 50                | —    | ±0.15 | —     |
| 63                | —    | —     | ±0.2  |
| 80                | ±0.3 | ±0.18 | —     |
| 100               | —    | —     | ±0.23 |

# JIS Standard Hydraulic Cylinder Double Acting/Single Rod *Series CH2E/CH2F/CH2G/CH2H*

Head square flange style: CH2EFD, CH2FFD, CH2GFD, CH2HFD



CHQ

CHK

CHN

CHM

CHS

CH2

CHA

Related Equipment

D-

|                   |                         |     |     |    |    |    |            |    |    |     |    |     |    |    |    |     |     |     |     |               |       |      | (mm) |                 |       |
|-------------------|-------------------------|-----|-----|----|----|----|------------|----|----|-----|----|-----|----|----|----|-----|-----|-----|-----|---------------|-------|------|------|-----------------|-------|
| Bore size<br>(mm) | Stroke<br>range<br>(mm) | B   | C   | F  | GA | GB | J          | NA | NB | P   | R  | S   | T  | FD | FT | FX  | FY  | FZ  | SS  | With rod boot |       |      |      |                 |       |
|                   |                         |     |     |    |    |    |            |    |    |     |    |     |    |    |    |     |     |     |     | e             |       | f    | Q    | ℓ               |       |
|                   |                         |     |     |    |    |    |            |    |    |     |    |     |    |    |    |     |     |     |     | B-rod         | C-rod |      |      | B-rod           | C-rod |
|                   |                         |     |     |    |    |    |            |    |    |     |    |     |    |    |    |     |     |     |     |               |       |      |      |                 |       |
| 32                | 25 to 1400              | 58  | 38  | 16 | 32 | 15 | M10 x 1.25 | 37 | 31 | 3/8 | 39 | 141 | 11 | 11 | 11 | 40  | 88  | 109 | 182 | 52            | —     | 21.5 | 15   | —               |       |
| 40                | 25 to 1400              | 65  | 45  | 12 | 32 | 15 | M10 x 1.25 | 36 | 30 | 3/8 | 42 | 141 | 11 | 11 | 11 | 46  | 95  | 118 | 182 | 52            | 52    | 12   | 15   | 1/3.5<br>stroke |       |
| 50                | 25 to 1400              | 76  | 52  | 15 | 40 | 19 | M10 x 1.25 | 43 | 35 | 1/2 | 46 | 155 | 13 | 14 | 13 | 58  | 115 | 145 | 198 | 55            | 52    | 15   | 15   |                 |       |
| 63                | 25 to 1500              | 90  | 63  | 15 | 42 | 19 | M12 x 1.5  | 43 | 35 | 1/2 | 52 | 163 | 15 | 18 | 15 | 65  | 132 | 165 | 213 | 65            | 55    | 15   | 20   | 1/4<br>stroke   |       |
| 80                | 25 to 1800              | 110 | 80  | 17 | 40 | 22 | M16 x 1.5  | 44 | 44 | 3/4 | 65 | 184 | 18 | 18 | 18 | 87  | 155 | 190 | 237 | 80            | 65    | 17   | 20   |                 |       |
| 100               | 25 to 1800              | 135 | 102 | 19 | 42 | 22 | M18 x 1.5  | 44 | 44 | 3/4 | 75 | 192 | 20 | 22 | 20 | 109 | 190 | 230 | 252 | 100           | 80    | 19   | 15   |                 |       |

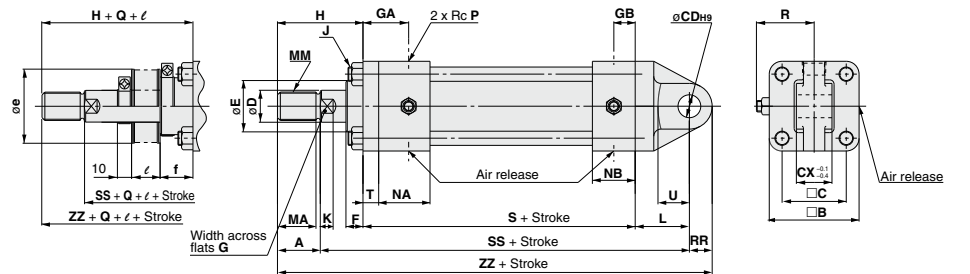
## Rod series

| Bore size (mm) |           |    |    |      |    |    |    |     |     |              |    |    |      |    |    |    |     |     |       | Bore size (mm) |  |  |  |  |  |  |  |  |  |  |  | Bore size (mm) | FT | FX | FY |
|----------------|-----------|----|----|------|----|----|----|-----|-----|--------------|----|----|------|----|----|----|-----|-----|-------|----------------|--|--|--|--|--|--|--|--|--|--|--|----------------|----|----|----|
| B-series rod   |           |    |    |      |    |    |    |     |     | C-series rod |    |    |      |    |    |    |     |     |       |                |  |  |  |  |  |  |  |  |  |  |  |                |    |    |    |
| Bore size (mm) | MM        | A  | MA | D    | E  | K  | G  | H   | ZZ  | MM           | A  | MA | D    | E  | K  | G  | H   | ZZ  |       |                |  |  |  |  |  |  |  |  |  |  |  |                |    |    |    |
| 32             | M16 x 1.5 | 25 | 22 | 18   | 34 | 7  | 14 | 55  | 207 | —            | —  | —  | —    | —  | —  | —  | —   | —   | 32    |                |  |  |  |  |  |  |  |  |  |  |  |                |    |    |    |
| 40             | M20 x 1.5 | 30 | 27 | 22.4 | 40 | 9  | 19 | 60  | 212 | M16 x 1.5    | 25 | 22 | 18   | 36 | 7  | 14 | 55  | 207 | ±0.13 |                |  |  |  |  |  |  |  |  |  |  |  |                |    |    |    |
| 50             | M24 x 1.5 | 35 | 32 | 28   | 46 | 11 | 24 | 65  | 233 | M20 x 1.5    | 30 | 27 | 22.4 | 40 | 9  | 19 | 60  | 228 | ±0.18 |                |  |  |  |  |  |  |  |  |  |  |  |                |    |    |    |
| 63             | M30 x 1.5 | 45 | 42 | 35.5 | 55 | 13 | 30 | 80  | 258 | M24 x 1.5    | 35 | 32 | 28   | 46 | 11 | 24 | 70  | 248 | ±0.15 |                |  |  |  |  |  |  |  |  |  |  |  |                |    |    |    |
| 80             | M39 x 1.5 | 60 | 57 | 45   | 65 | 15 | 41 | 95  | 297 | M30 x 1.5    | 45 | 42 | 35.5 | 55 | 13 | 30 | 80  | 282 | ±0.2  |                |  |  |  |  |  |  |  |  |  |  |  |                |    |    |    |
| 100            | M48 x 1.5 | 75 | 72 | 56   | 80 | 16 | 50 | 115 | 327 | M39 x 1.5    | 60 | 57 | 45   | 65 | 15 | 41 | 100 | 312 | ±0.23 |                |  |  |  |  |  |  |  |  |  |  |  |                |    |    |    |

Series CH2E/CH2F/CH2G/CH2H

Dimensions

Single clevis style: CH2ECA, CH2FCA, CH2GCA, CH2HCA



|                   |                         |     |     |    |    |    |            |    |    |     |    |     |    |      |      |      |     |    |    |               |       |      |    |                 | (mm)  |  |
|-------------------|-------------------------|-----|-----|----|----|----|------------|----|----|-----|----|-----|----|------|------|------|-----|----|----|---------------|-------|------|----|-----------------|-------|--|
| Bore size<br>(mm) | Stroke<br>range<br>(mm) | B   | C   | F  | GA | GB | J          | NA | NB | P   | R  | S   | T  | CX   | CD   | RR   | SS  | U  | L  | With rod boot |       |      |    |                 |       |  |
|                   |                         |     |     |    |    |    |            |    |    |     |    |     |    |      |      |      |     |    |    | e             |       | f    | Q  | ℓ               |       |  |
|                   |                         |     |     |    |    |    |            |    |    |     |    |     |    |      |      |      |     |    |    | B-rod         | C-rod |      |    | B-rod           | C-rod |  |
| 32                | 25 to 1400              | 58  | 38  | 16 | 32 | 15 | M10 x 1.25 | 37 | 31 | 3/8 | 39 | 141 | 11 | 25   | 16   | 16   | 209 | 22 | 38 | 52            | —     | 21.5 | 15 | 1/3.5<br>stroke |       |  |
| 40                | 25 to 1400              | 65  | 45  | 12 | 32 | 15 | M10 x 1.25 | 36 | 30 | 3/8 | 42 | 141 | 11 | 25   | 16   | 16   | 209 | 22 | 38 | 52            | 52    | 12   | 15 |                 |       |  |
| 50                | 25 to 1400              | 76  | 52  | 15 | 40 | 19 | M10 x 1.25 | 43 | 35 | 1/2 | 46 | 155 | 13 | 31.5 | 20   | 20   | 230 | 25 | 45 | 55            | 52    | 15   | 15 |                 |       |  |
| 63                | 25 to 1500              | 90  | 63  | 15 | 42 | 19 | M12 x 1.5  | 43 | 35 | 1/2 | 52 | 163 | 15 | 40   | 31.5 | 31.5 | 261 | 40 | 63 | 65            | 55    | 15   | 20 |                 |       |  |
| 80                | 25 to 1800              | 110 | 80  | 17 | 40 | 22 | M16 x 1.5  | 44 | 44 | 3/4 | 65 | 184 | 18 | 40   | 31.5 | 31.5 | 291 | 40 | 72 | 80            | 65    | 17   | 20 | 1/4<br>stroke   |       |  |
| 100               | 25 to 1800              | 135 | 102 | 19 | 42 | 22 | M18 x 1.5  | 44 | 44 | 3/4 | 75 | 192 | 20 | 50   | 40   | 40   | 316 | 50 | 84 | 100           | 80    | 19   | 15 |                 |       |  |

Rod series

| Bore size<br>(mm) | B-series rod |    |    |      |    |                  |    |    |     |       | C-series rod |    |    |      |    |                  |    |    |     |       |
|-------------------|--------------|----|----|------|----|------------------|----|----|-----|-------|--------------|----|----|------|----|------------------|----|----|-----|-------|
|                   | MM           | A  | MA | D    | E  | K                | G  | H  | ZZ  | MM    | A            | MA | D  | E    | K  | G                | H  | ZZ |     |       |
| 32                | M16 x 1.5    | 25 | 22 | 18   | 34 | —0.025<br>—0.064 | 7  | 14 | 55  | 250   | —            | —  | —  | —    | —  | —                | —  | —  |     |       |
| 40                | M20 x 1.5    | 30 | 27 | 22.4 | 40 | —                | 9  | 19 | 60  | 255   | M16 x 1.5    | 25 | 22 | 18   | 36 | 7                | 14 | 55 | 250 |       |
| 50                | M24 x 1.5    | 35 | 32 | 28   | 46 | —                | 11 | 24 | 65  | 285   | M20 x 1.5    | 30 | 27 | 22.4 | 40 | —0.025<br>—0.064 | 9  | 19 | 60  | 280   |
| 63                | M30 x 1.5    | 45 | 42 | 35.5 | 55 | —0.030<br>—0.076 | 13 | 30 | 80  | 337.5 | M24 x 1.5    | 35 | 32 | 28   | 46 | —                | 11 | 24 | 70  | 327.5 |
| 80                | M39 x 1.5    | 60 | 57 | 45   | 65 | —0.036<br>—0.078 | 15 | 41 | 95  | 382.5 | M30 x 1.5    | 45 | 42 | 35.5 | 55 | —0.030<br>—0.076 | 13 | 30 | 80  | 367.5 |
| 100               | M48 x 1.5    | 75 | 72 | 56   | 80 | —                | 16 | 50 | 115 | 431   | M39 x 1.5    | 60 | 57 | 45   | 65 | —                | 15 | 41 | 100 | 416   |

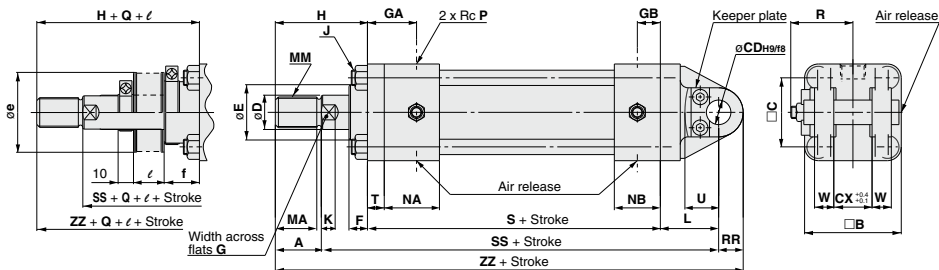
Tolerance

| Bore size<br>(mm) | CDH9   |
|-------------------|--------|
| 32                | +0.043 |
| 40                | 0      |
| 50                | +0.052 |
| 63                | 0      |
| 80                | +0.062 |
| 100               | 0      |



JIS Standard Hydraulic Cylinder  
Double Acting/Single Rod *Series CH2E/CH2F/CH2G/CH2H*

Double clevis style: CH2ECB, CH2FCB, CH2GCB, CH2HCB



CHQ

CHK

CHN

CHM

CHS

CH2

CHA

Related Equipment

D-

| Bore size<br>(mm) | Stroke<br>range<br>(mm) | B   | C   | F  | GA | GB | J          | NA | NB | P   | R  | S   | T  | CX   | CD   | RR   | SS  | L  | U  | W    | (mm)          |       |      |    |                 |
|-------------------|-------------------------|-----|-----|----|----|----|------------|----|----|-----|----|-----|----|------|------|------|-----|----|----|------|---------------|-------|------|----|-----------------|
|                   |                         |     |     |    |    |    |            |    |    |     |    |     |    |      |      |      |     |    |    |      | With rod boot |       |      |    |                 |
|                   |                         |     |     |    |    |    |            |    |    |     |    |     |    |      |      |      |     |    |    |      | e             |       | f    | Q  | ℓ               |
|                   |                         |     |     |    |    |    |            |    |    |     |    |     |    |      |      |      |     |    |    |      | B-rad         | C-rad |      |    |                 |
| 32                | 25 to 1400              | 58  | 38  | 16 | 32 | 15 | M10 x 1.25 | 37 | 31 | 3/8 | 39 | 141 | 11 | 25   | 16   | 16   | 209 | 38 | 22 | 12.5 | 52            | —     | 21.5 | 15 | 1/3.5<br>stroke |
| 40                | 25 to 1400              | 65  | 45  | 12 | 32 | 15 | M10 x 1.25 | 36 | 30 | 3/8 | 42 | 141 | 11 | 25   | 16   | 16   | 209 | 38 | 22 | 12.5 | 52            | 52    | 12   | 15 |                 |
| 50                | 25 to 1400              | 76  | 52  | 15 | 40 | 19 | M10 x 1.25 | 43 | 35 | 1/2 | 46 | 155 | 13 | 31.5 | 20   | 20   | 230 | 45 | 25 | 16   | 55            | 52    | 15   | 15 |                 |
| 63                | 25 to 1500              | 90  | 63  | 15 | 42 | 19 | M12 x 1.5  | 43 | 35 | 1/2 | 52 | 163 | 15 | 40   | 31.5 | 31.5 | 261 | 63 | 40 | 20   | 65            | 55    | 15   | 20 |                 |
| 80                | 25 to 1800              | 110 | 80  | 17 | 40 | 22 | M16 x 1.5  | 44 | 44 | 3/4 | 65 | 184 | 18 | 40   | 31.5 | 31.5 | 291 | 72 | 40 | 20   | 80            | 65    | 17   | 20 | 1/4<br>stroke   |
| 100               | 25 to 1800              | 135 | 102 | 19 | 42 | 22 | M18 x 1.5  | 44 | 44 | 3/4 | 75 | 192 | 20 | 50   | 40   | 40   | 316 | 84 | 50 | 25   | 100           | 80    | 19   | 15 |                 |

Rod series

| Bore size<br>(mm) | B-series rod |    |    |      |    |    |    |     |       |           | C-series rod |    |      |    |    |    |     |       |    |   |
|-------------------|--------------|----|----|------|----|----|----|-----|-------|-----------|--------------|----|------|----|----|----|-----|-------|----|---|
|                   | MM           | A  | MA | D    | E  | K  | G  | H   | ZZ    |           | MM           | A  | MA   | D  | E  | K  | G   | H     | ZZ |   |
| 32                | M16 x 1.5    | 25 | 22 | 18   | 34 | 7  | 14 | 55  | 250   | —         | —            | —  | —    | —  | —  | —  | —   | —     | —  | — |
| 40                | M20 x 1.5    | 30 | 27 | 22.4 | 40 | 9  | 19 | 60  | 255   | M16 x 1.5 | 25           | 22 | 18   | 36 | 7  | 14 | 55  | 250   | —  | — |
| 50                | M24 x 1.5    | 35 | 32 | 28   | 46 | 11 | 24 | 65  | 285   | M20 x 1.5 | 30           | 27 | 22.4 | 40 | 9  | 19 | 60  | 280   | —  | — |
| 63                | M30 x 1.5    | 45 | 42 | 35.5 | 55 | 13 | 30 | 80  | 327.5 | M24 x 1.5 | 35           | 32 | 28   | 46 | 11 | 24 | 70  | 327.5 | —  | — |
| 80                | M39 x 1.5    | 60 | 57 | 45   | 65 | 15 | 41 | 95  | 382.5 | M30 x 1.5 | 45           | 42 | 35.5 | 55 | 13 | 30 | 80  | 367.5 | —  | — |
| 100               | M48 x 1.5    | 75 | 72 | 56   | 80 | 16 | 50 | 115 | 431   | M39 x 1.5 | 60           | 57 | 45   | 65 | 15 | 41 | 100 | 416   | —  | — |

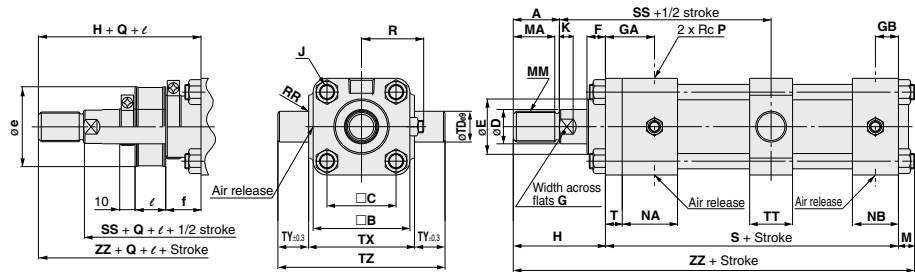
Tolerance

| Bore size<br>(mm) | CD     |        |  |
|-------------------|--------|--------|--|
|                   | H9     | f8     |  |
| 32                | +0.043 | -0.016 |  |
| 40                | 0      | -0.043 |  |
| 50                | +0.052 | -0.020 |  |
| 63                | 0      | -0.053 |  |
| 80                | +0.062 | -0.025 |  |
| 100               | 0      | -0.064 |  |

Series CH2E/CH2F/CH2G/CH2H

Dimensions

Center trunnion style: CH2ETC, CH2FTC, CH2GTC, CH2HTC



|                                    |                         |     |     |    |    |    |                                    |    |    |    |     |    |     |    |     |     |      |    |     |      |     |               |       | (mm) |    |                 |       |
|------------------------------------|-------------------------|-----|-----|----|----|----|------------------------------------|----|----|----|-----|----|-----|----|-----|-----|------|----|-----|------|-----|---------------|-------|------|----|-----------------|-------|
| Bore size<br>(mm)                  | Stroke<br>range<br>(mm) | B   | C   | F  | GA | GB | J                                  | M  | NA | NB | P   | R  | S   | T  | RR  | SS  | TD   | TT | TX  | TY   | TZ  | With rod boot |       |      |    |                 |       |
|                                    |                         |     |     |    |    |    |                                    |    |    |    |     |    |     |    |     |     |      |    |     |      |     | e             |       | f    | Q  | ℓ               |       |
|                                    |                         |     |     |    |    |    |                                    |    |    |    |     |    |     |    |     |     |      |    |     |      |     | B-rod         | C-rod |      |    | B-rod           | C-rod |
| 32 <sup>*1</sup>                   | 25 to 1800              | 58  | 38  | 16 | 32 | 15 | M10 x 1.25                         | 11 | 37 | 31 | 3/8 | 39 | 141 | 11 | 2   | 113 | 20   | 28 | 58  | 20   | 98  | 52            | —     | 21.5 | 15 | 1/3.5<br>stroke |       |
| 40 <sup>*1</sup>                   | 25 to 1800              | 65  | 45  | 12 | 32 | 15 | M10 x 1.25                         | 11 | 36 | 30 | 3/8 | 42 | 141 | 11 | 2   | 113 | 20   | 28 | 69  | 20   | 109 | 52            | 52    | 12   | 15 |                 |       |
| 50 <sup>*1</sup>                   | 25 to 1800              | 76  | 52  | 15 | 40 | 19 | M10 x 1.25                         | 11 | 43 | 35 | 1/2 | 46 | 155 | 13 | 2.5 | 121 | 25   | 33 | 85  | 25   | 135 | 55            | 52    | 15   | 15 |                 |       |
| 63 <sup>*2</sup>                   | 25 to 1800              | 90  | 63  | 15 | 42 | 19 | M12 x 1.5                          | 14 | 43 | 35 | 1/2 | 52 | 163 | 15 | 2.5 | 132 | 31.5 | 43 | 98  | 31.5 | 161 | 65            | 55    | 15   | 20 | 1/4<br>stroke   |       |
| 80                                 | 25 to 1800              | 110 | 80  | 17 | 40 | 22 | M16 x 1.5                          | 16 | 44 | 44 | 3/4 | 65 | 184 | 18 | 2.5 | 146 | 31.5 | 43 | 118 | 31.5 | 181 | 80            | 65    | 17   | 20 |                 |       |
| 100                                | 25 to 1800              | 135 | 102 | 19 | 42 | 22 | M18 x 1.5                          | 18 | 44 | 44 | 3/4 | 75 | 192 | 20 | 3   | 156 | 40   | 53 | 145 | 40   | 225 | 100           | 80    | 19   | 15 |                 |       |
| * 1: CH2GTC is limited to 1400 mm. |                         |     |     |    |    |    | * 2: CH2GTC is limited to 1500 mm. |    |    |    |     |    |     |    |     |     |      |    |     |      |     |               |       |      |    |                 |       |

\* 1: CH2GTC is limited to 1400 mm.      \* 2: CH2GTC is limited to 1500 mm.

Rod series

| Bore size<br>(mm) | B-series rod |    |    |      |    |    |    |     |     |           | C-series rod |    |      |    |    |    |     |     |  |  |
|-------------------|--------------|----|----|------|----|----|----|-----|-----|-----------|--------------|----|------|----|----|----|-----|-----|--|--|
|                   | MM           | A  | MA | D    | E  | K  | G  | H   | ZZ  | MM        | A            | MA | D    | E  | K  | G  | H   | ZZ  |  |  |
| 32                | M16 x 1.5    | 25 | 22 | 18   | 34 | 7  | 14 | 55  | 207 | —         | —            | —  | —    | —  | —  | —  | —   | —   |  |  |
| 40                | M20 x 1.5    | 30 | 27 | 22.4 | 40 | 9  | 19 | 60  | 212 | M16 x 1.5 | 25           | 22 | 18   | 36 | 7  | 14 | 55  | 207 |  |  |
| 50                | M24 x 1.5    | 35 | 32 | 28   | 46 | 11 | 24 | 65  | 231 | M20 x 1.5 | 30           | 27 | 22.4 | 40 | 9  | 19 | 60  | 226 |  |  |
| 63                | M30 x 1.5    | 45 | 42 | 35.5 | 55 | 13 | 30 | 80  | 257 | M24 x 1.5 | 35           | 32 | 28   | 46 | 11 | 24 | 70  | 247 |  |  |
| 80                | M39 x 1.5    | 60 | 57 | 45   | 65 | 15 | 41 | 95  | 295 | M30 x 1.5 | 45           | 42 | 35.5 | 55 | 13 | 30 | 80  | 280 |  |  |
| 100               | M48 x 1.5    | 75 | 72 | 56   | 80 | 16 | 50 | 115 | 325 | M39 x 1.5 | 60           | 57 | 45   | 65 | 15 | 41 | 100 | 310 |  |  |

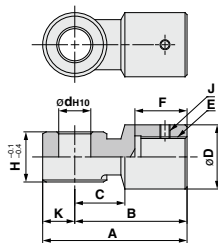
Tolerance

| Bore size<br>(mm) | TDe9             | TX        |
|-------------------|------------------|-----------|
| 32                | —                | 0         |
| 40                | -0.040<br>-0.092 | -0.3      |
| 50                | —                | 0         |
| 63                | -0.050           | -0.35     |
| 80                | -0.112           | —         |
| 100               | —                | 0<br>-0.4 |

# JIS Standard Hydraulic Cylinder Double Acting/Single Rod *Series CH2E/CH2F/CH2G/CH2H*

## Accessories (Optional)

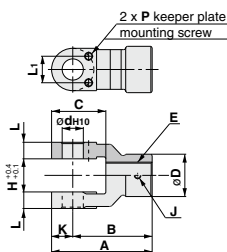
### Single knuckle joint



Material: Cast iron

| Rod series | Part no. | Bore size (mm) | A   | B   | C  | D  | d                                 | E         | F  | H    | J         | K  |
|------------|----------|----------------|-----|-----|----|----|-----------------------------------|-----------|----|------|-----------|----|
| B-series   | IH2-03B  | 32             | 76  | 60  | 25 | 32 | 16 <sup>+0.07</sup> <sub>0</sub>  | M16 x 1.5 | 26 | 25   | M5 x 0.8  | 16 |
|            | IH2-04B  | 40             | 76  | 60  | 25 | 32 | 16 <sup>+0.07</sup> <sub>0</sub>  | M20 x 1.5 | 31 | 25   | M5 x 0.8  | 16 |
|            | IH2-05B  | 50             | 90  | 70  | 30 | 40 | 20 <sup>+0.084</sup> <sub>0</sub> | M24 x 1.5 | 36 | 31.5 | M5 x 0.8  | 20 |
|            | IH2-06B  | 63             | 145 | 115 | 45 | 60 | 31.5 <sup>+0.1</sup> <sub>0</sub> | M30 x 1.5 | 50 | 40   | M6 x 1.0  | 30 |
|            | IH2-08B  | 80             | 145 | 115 | 45 | 60 | 31.5 <sup>+0.1</sup> <sub>0</sub> | M39 x 1.5 | 61 | 40   | M6 x 1.0  | 30 |
| C-series   | IH2-10B  | 100            | 185 | 145 | 57 | 79 | 40 <sup>+0.1</sup> <sub>0</sub>   | M48 x 1.5 | 76 | 50   | M8 x 1.25 | 40 |
|            | IH2-03B  | 40             | 76  | 60  | 25 | 32 | 16 <sup>+0.07</sup> <sub>0</sub>  | M16 x 1.5 | 26 | 25   | M5 x 0.8  | 16 |
|            | IH2-05C  | 50             | 90  | 70  | 30 | 40 | 20 <sup>+0.084</sup> <sub>0</sub> | M20 x 1.5 | 31 | 31.5 | M5 x 0.8  | 20 |
|            | IH2-06C  | 63             | 145 | 115 | 45 | 60 | 31.5 <sup>+0.1</sup> <sub>0</sub> | M24 x 1.5 | 40 | 40   | M6 x 1.0  | 30 |
|            | IH2-06B  | 80             | 145 | 115 | 45 | 60 | 31.5 <sup>+0.1</sup> <sub>0</sub> | M30 x 1.5 | 50 | 40   | M6 x 1.0  | 30 |
|            | IH2-10C  | 100            | 185 | 145 | 57 | 79 | 40 <sup>+0.1</sup> <sub>0</sub>   | M39 x 1.5 | 63 | 50   | M8 x 1.25 | 40 |

### Double knuckle joint

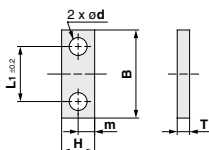


Material: Cast iron

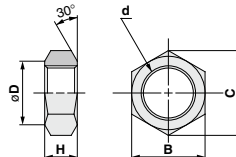
| Rod series | Part no. | Bore size (mm) | A   | B   | C  | D  | d                                 | E         | H    | J         | K  | L    | L1 | P         |
|------------|----------|----------------|-----|-----|----|----|-----------------------------------|-----------|------|-----------|----|------|----|-----------|
| B-series   | YH2-03B  | 32             | 76  | 60  | 41 | 32 | 16 <sup>+0.07</sup> <sub>0</sub>  | M16 x 1.5 | 25   | M5 x 0.8  | 16 | 12.5 | 20 | M6 x 1.0  |
|            | YH2-04B  | 40             | 76  | 60  | 41 | 32 | 16 <sup>+0.07</sup> <sub>0</sub>  | M20 x 1.5 | 25   | M5 x 0.8  | 16 | 12.5 | 20 | M6 x 1.0  |
|            | YH2-05B  | 50             | 90  | 70  | 50 | 40 | 20 <sup>+0.084</sup> <sub>0</sub> | M24 x 1.5 | 31.5 | M5 x 0.8  | 20 | 16   | 20 | M6 x 1.0  |
|            | YH2-06B  | 63             | 145 | 115 | 75 | 60 | 31.5 <sup>+0.1</sup> <sub>0</sub> | M30 x 1.5 | 40   | M6 x 1.0  | 30 | 20   | 24 | M8 x 1.25 |
|            | YH2-08B  | 80             | 145 | 115 | 75 | 60 | 31.5 <sup>+0.1</sup> <sub>0</sub> | M39 x 1.5 | 40   | M6 x 1.0  | 30 | 20   | 24 | M8 x 1.25 |
| C-series   | YH2-10B  | 100            | 185 | 145 | 95 | 80 | 40 <sup>+0.1</sup> <sub>0</sub>   | M48 x 1.5 | 50   | M8 x 1.25 | 40 | 25   | 26 | M10 x 1.5 |
|            | YH2-03B  | 40             | 76  | 60  | 41 | 32 | 16 <sup>+0.07</sup> <sub>0</sub>  | M16 x 1.5 | 25   | M5 x 0.8  | 16 | 12.5 | 20 | M6 x 1.0  |
|            | YH2-05C  | 50             | 90  | 70  | 50 | 40 | 20 <sup>+0.084</sup> <sub>0</sub> | M20 x 1.5 | 31.5 | M5 x 0.8  | 20 | 16   | 20 | M6 x 1.0  |
|            | YH2-06C  | 63             | 145 | 115 | 75 | 60 | 31.5 <sup>+0.1</sup> <sub>0</sub> | M24 x 1.5 | 40   | M6 x 1.0  | 30 | 20   | 24 | M8 x 1.25 |
|            | YH2-06B  | 80             | 145 | 115 | 75 | 60 | 31.5 <sup>+0.1</sup> <sub>0</sub> | M30 x 1.5 | 40   | M6 x 1.0  | 30 | 20   | 24 | M8 x 1.25 |
|            | YH2-10C  | 100            | 185 | 145 | 95 | 80 | 40 <sup>+0.1</sup> <sub>0</sub>   | M39 x 1.5 | 50   | M8 x 1.25 | 40 | 25   | 26 | M10 x 1.5 |

Note) The pin, keeper plate and cap bolt are included with a double knuckle joint.

### Keeper plate



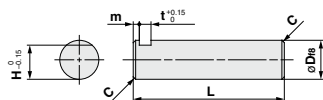
### Rod end nut



Material: Rolled steel

| Part no. | Bore size (mm) | B  | H  | L1      | m  | T   | d    | Cap bolt   |
|----------|----------------|----|----|---------|----|-----|------|------------|
| KP-05    | 32, 40, 50     | 32 | 12 | 20 ±0.2 | 6  | 4.5 | 6.5  | M6 x 10 L  |
| KP-08    | 63, 80         | 44 | 18 | 24 ±0.2 | 9  | 4.5 | 9    | M8 x 12 L  |
| KP-10    | 100            | 44 | 22 | 26 ±0.2 | 11 | 6   | 11.5 | M10 x 14 L |

### Double clevis/Double knuckle pin



Material: Rolled steel

| Part no. | Bore size (mm) | D <sub>ns</sub>                          | C   | L    | m   | t   | H    |
|----------|----------------|------------------------------------------|-----|------|-----|-----|------|
| CDH-04   | 32, 40         | 16 <sup>-0.016</sup> <sub>-0.043</sub>   | 1   | 62   | 2.5 | 4.8 | 14   |
| CDH-05   | 50             | 20 <sup>-0.016</sup> <sub>-0.043</sub>   | 1   | 76.5 | 3.5 | 4.8 | 18   |
| CDH-08   | 63, 80         | 31.5 <sup>-0.016</sup> <sub>-0.043</sub> | 1.5 | 93   | 3.5 | 4.8 | 28.5 |
| CDH-10   | 100            | 40 <sup>-0.016</sup> <sub>-0.043</sub>   | 2   | 117  | 6   | 6.3 | 35   |

Material: Carbon steel

| Rod series | Part no. | Bore size (mm) | B  | C    | D  | H  | d         |
|------------|----------|----------------|----|------|----|----|-----------|
| B-series   | NTH-040  | 32             | 22 | 25.4 | 21 | 10 | M16 x 1.5 |
|            | NTH-050  | 40             | 27 | 31.2 | 26 | 12 | M20 x 1.5 |
|            | NTH-060  | 50             | 32 | 37   | 31 | 14 | M24 x 1.5 |
|            | NTH-080  | 63             | 41 | 47.3 | 40 | 17 | M30 x 1.5 |
|            | NTH-100  | 80             | 55 | 63.5 | 54 | 20 | M39 x 1.5 |
| C-series   | NTH-125  | 100            | 70 | 80.8 | 69 | 26 | M48 x 1.5 |
|            | NTH-040  | 40             | 22 | 25.4 | 21 | 10 | M16 x 1.5 |
|            | NTH-050  | 50             | 27 | 31.2 | 26 | 12 | M20 x 1.5 |
|            | NTH-060  | 63             | 32 | 37   | 31 | 14 | M24 x 1.5 |
|            | NTH-080  | 80             | 41 | 47.3 | 40 | 17 | M30 x 1.5 |
|            | NTH-100  | 100            | 55 | 63.5 | 54 | 20 | M39 x 1.5 |

CHQ

CHK

CHN

CHM

CHS

CH2

CHA

Related Equipment

D-

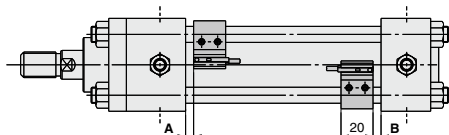
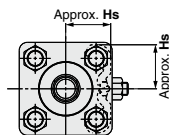
# Series CH2E/CH2F/CH2H Auto Switch Mounting

Refer to pages 1451 to 1510 for detailed specifications.

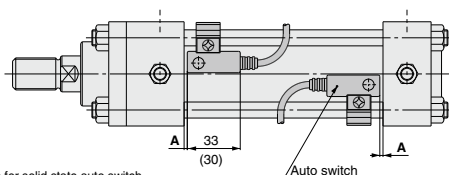
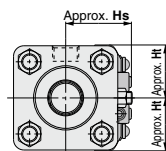
## Auto Switches: Proper Mounting Positions and Mounting Heights for Stroke End Detection

### <Tie-rod mount type>

D-M9□/M9□V  
D-M9□W/M9□WV  
D-M9□A/M9□AV  
D-A9□/A9□V



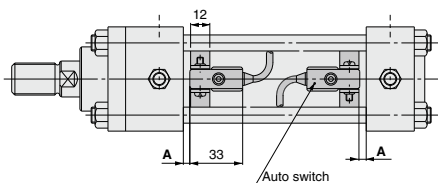
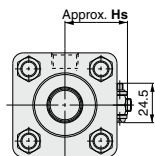
D-F5□/J59  
D-F5NT  
D-F5□W/J59W  
D-F5BA/F59F  
D-A5□/A6□  
D-A59W



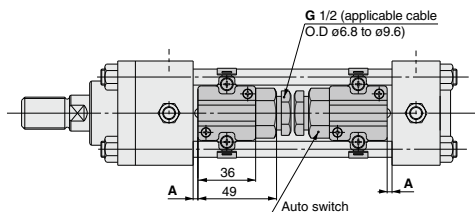
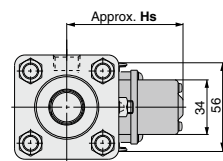
Dimensions inside ( ) are for solid state auto switch.

### <Band mount type>

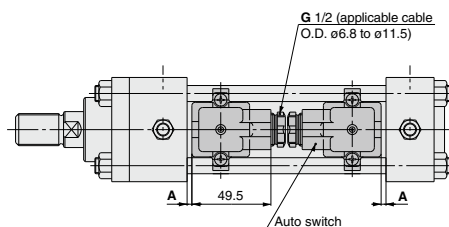
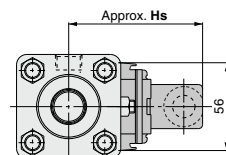
D-G5□/K59  
D-G5□W/K59W  
D-G5BA  
D-G59F/G5NT  
D-B5□/B64/B59W



D-G39/K39  
D-A3□



D-A44



## Auto Switch Proper Mounting Positions

| Bore size (mm) | D-M9□/M9□V<br>D-M9□W/M9□WV<br>D-M9□A/M9□AV | D-F5□/J59<br>D-F5□W/J59W<br>D-F59F/F5BA | D-F5NT | D-G5□/K59<br>D-G5□W/K59W<br>D-G59F/G5BA<br>D-G5NT | D-G39□/K39□ | D-A9□/A9□V <sup>Note2)</sup> | D-A5□/A6□ | D-A59W | D-B5□/B64 | D-B59W | D-A3□/A44 |
|----------------|--------------------------------------------|-----------------------------------------|--------|---------------------------------------------------|-------------|------------------------------|-----------|--------|-----------|--------|-----------|
|                | A                                          | A                                       | A      | A                                                 | A           | A                            | A         | A      | A         | A      | A         |
| 32             | 25                                         | 21.5                                    | 26.5   | 17                                                | —           | —                            | 15        | 19     | 15.5      | 18.5   | —         |
| 40             | 26                                         | 22.5                                    | 27.5   | 18                                                | 16          | 22                           | 16        | 20     | 16.5      | 19.5   | 16        |
| 50             | 26                                         | 22.5                                    | 27.5   | 18                                                | 16          | 22                           | 16        | 20     | 16.5      | 19.5   | 16        |
| 63             | 29                                         | 25.5                                    | 30.5   | 21                                                | 19          | 25                           | 19        | 23     | 19.5      | 22.5   | 19        |
| 80             | 33                                         | 29.5                                    | 34.5   | 25                                                | 23          | 29                           | 23        | 27     | 23.5      | 26.5   | 23        |
| 100            | 26                                         | 32.5                                    | 37.5   | 28                                                | 26          | 32                           | 26        | 30     | 26.5      | 29.5   | 26        |

Note 1) Auto switch models D-G39□, K39□, A3□, A44 cannot be mounted on CH2E, F, Hø32 bore size cylinders.

Note 2) Auto switch models D-A9□ and A9□V cannot be mounted on cylinders with bore sizes CHD2Eø32 to ø100, CHD2Hø32 to ø100, and CHD2Fø32.

Note 3) Adjust the auto switch after confirming the operating conditions in the actual setting.

## Auto Switch Mounting Heights

Unit: mm

| Bore size (mm) |      | D-M9□/V/M9□WV<br>D-A9□V <sup>Note1)</sup> | D-F5□/J59<br>D-F5□W/J59W<br>D-F59F/F5BA<br>D-F5NT |      | D-A5□/A6□<br>D-A59W |      | D-G5□/K59<br>D-G5□W/K59W<br>D-G59F/G5BA<br>D-G5NT<br>D-B5□/B64<br>D-B59W | D-G39□/K39□<br>D-A3□ <sup>Note2)</sup> | D-A44 <sup>Note2)</sup> |
|----------------|------|-------------------------------------------|---------------------------------------------------|------|---------------------|------|--------------------------------------------------------------------------|----------------------------------------|-------------------------|
|                |      | Hs                                        | Hs                                                | Ht   | Hs                  | Ht   | Hs                                                                       | Hs                                     | Hs                      |
| 32             | CH2E | 32                                        | 35                                                | 29.5 | 35                  | 29.5 | 33.5                                                                     | —                                      | —                       |
|                | CH2F | —                                         | 34.5                                              | 30   | 34.5                | 30   | 32                                                                       | —                                      | —                       |
|                | CH2H | 31.5                                      | 34.5                                              | 29.5 | 34.5                | 29.5 | 32.5                                                                     | —                                      | —                       |
| 40             | CH2E | 36                                        | 38.5                                              | 32.5 | 38.5                | 32.5 | 38                                                                       | 72.5                                   | 82.5                    |
|                | CH2F | —                                         | 38                                                | 33.5 | 38                  | 33.5 | 36.5                                                                     | 71                                     | 81                      |
|                | CH2H | 35                                        | 38                                                | 33   | 38                  | 33   | 37                                                                       | 71.5                                   | 81.5                    |
| 50             | CH2E | 41.5                                      | 42                                                | 36.5 | 43                  | 36.5 | 43.5                                                                     | 78                                     | 88                      |
|                | CH2F | —                                         | 41.5                                              | 36.5 | 41.5                | 36.5 | 41.5                                                                     | 76                                     | 86                      |
|                | CH2H | 40                                        | 42                                                | 36   | 42                  | 36   | 42.5                                                                     | 77                                     | 87                      |
| 63             | CH2E | 47.5                                      | 47                                                | 43   | 48.5                | 43   | 50.5                                                                     | 85                                     | 95                      |
|                | CH2F | —                                         | 46.5                                              | 43   | 46.5                | 43   | 48.5                                                                     | 83                                     | 93                      |
|                | CH2H | 47.5                                      | 47                                                | 43   | 48.5                | 43   | 50.5                                                                     | 85                                     | 95                      |
| 80             | CH2E | 55.5                                      | 57                                                | 55.5 | 58.5                | 55.5 | 59                                                                       | 93.5                                   | 103.5                   |
|                | CH2F | —                                         | 56.5                                              | 55.5 | 56.5                | 55.5 | 57.5                                                                     | 92                                     | 102                     |
|                | CH2H | 56                                        | 57.5                                              | 55.5 | 59                  | 55.5 | 59.5                                                                     | 94                                     | 104                     |
| 100            | CH2E | 65                                        | 66.5                                              | 67   | 66.5                | 67   | 69.5                                                                     | 104                                    | 114                     |
|                | CH2F | —                                         | 65.5                                              | 67   | 65.5                | 67   | 68                                                                       | 102.5                                  | 112.5                   |
|                | CH2H | 66.5                                      | 67.5                                              | 67   | 67.5                | 67   | 71                                                                       | 105.5                                  | 115.5                   |

Note 1) Auto switch models D-A9□, A9□V cannot be mounted on cylinders with bore sizes CHD2Eø32 to ø100, CHD2Hø32 to ø100, and CHD2Fø32.

Note 2) Auto switch models D-G39□, K39□, A3□, A44 cannot be mounted on cylinders with bore sizes CH2E, F, Hø32.

CHQ

CHK□

CHN

CHM

CHS□

CH2□

CHA

Related Equipment

D-□

# Series CH2E/CH2F/CH2H

## Minimum Auto Switch Mounting Stroke

| n: Numbers of auto switched                                              |                                                           |                                             |                                                              |                                                              |                                                              |                                                              |                                                              |                                                              |                                                              |      |
|--------------------------------------------------------------------------|-----------------------------------------------------------|---------------------------------------------|--------------------------------------------------------------|--------------------------------------------------------------|--------------------------------------------------------------|--------------------------------------------------------------|--------------------------------------------------------------|--------------------------------------------------------------|--------------------------------------------------------------|------|
| Auto switch model                                                        | Auto switch mounting number                               | Mounting bracket other than center trunnion | Center trunnion                                              |                                                              |                                                              |                                                              |                                                              |                                                              |                                                              |      |
|                                                                          |                                                           |                                             | ø32                                                          | ø40 to ø100                                                  | ø32                                                          | ø40                                                          | ø50                                                          | ø63                                                          | ø80                                                          | ø100 |
| D-M9□<br>D-M9□W Note 1)                                                  | 2 (Different surfaces and same surface), 1                | —                                           | 15                                                           | —                                                            | 85                                                           | 90                                                           | 100                                                          | 110                                                          | 110 + 40 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4) |      |
|                                                                          | 15 + 40 $\frac{(n-2)}{2}$<br>(n = 2, 4, 6, 8-...) Note 3) |                                             | 85 + 40 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4)  |                                                              | 90 + 40 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4)  | 100 + 40 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4) |                                                              |                                                              |                                                              |      |
| D-M9□V<br>D-M9□WV Note 1)                                                | 2 (Different surfaces and same surface), 1                | —                                           | 15                                                           | —                                                            | 60                                                           | 65                                                           | 75                                                           | 85                                                           | 85 + 30 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4)  |      |
|                                                                          | 15 + 30 $\frac{(n-2)}{2}$<br>(n = 2, 4, 6, 8-...) Note 3) |                                             | 60 + 30 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4)  |                                                              | 65 + 30 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4)  | 75 + 30 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4)  |                                                              |                                                              |                                                              |      |
| D-M9□A Note 1)                                                           | 2 (Different surfaces and same surface), 1                | —                                           | 15                                                           | —                                                            | 90                                                           | 95                                                           | 105                                                          | 115                                                          | 115 + 40 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4) |      |
|                                                                          | 15 + 40 $\frac{(n-2)}{2}$<br>(n = 2, 4, 6, 8-...) Note 3) |                                             | 90 + 40 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4)  |                                                              | 95 + 40 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4)  | 105 + 40 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4) |                                                              |                                                              |                                                              |      |
| D-M9□AV Note 1)                                                          | 2 (Different surfaces and same surface), 1                | —                                           | 15                                                           | —                                                            | 65                                                           | 70                                                           | 80                                                           | 90                                                           | 90 + 30 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4)  |      |
|                                                                          | 15 + 30 $\frac{(n-2)}{2}$<br>(n = 2, 4, 6, 8-...) Note 3) |                                             | 65 + 30 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4)  |                                                              | 70 + 30 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4)  | 80 + 30 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4)  |                                                              |                                                              |                                                              |      |
| D-A9□ Note 2)                                                            | 2 (Different surfaces and same surface), 1                | —                                           | 15                                                           | —                                                            | 85                                                           | 90                                                           | 100                                                          | 110                                                          | 110 + 40 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4) |      |
|                                                                          | 15 + 40 $\frac{(n-2)}{2}$<br>(n = 2, 4, 6, 8-...) Note 3) |                                             | 85 + 40 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4)  |                                                              | 90 + 40 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4)  | 100 + 40 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4) |                                                              |                                                              |                                                              |      |
| D-A9□V Note 2)                                                           | 2 (Different surfaces and same surface), 1                | —                                           | 15                                                           | —                                                            | 60                                                           | 65                                                           | 75                                                           | 85                                                           | 85 + 30 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4)  |      |
|                                                                          | 15 + 30 $\frac{(n-2)}{2}$<br>(n = 2, 4, 6, 8-...) Note 3) |                                             | 60 + 30 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4)  |                                                              | 65 + 30 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4)  | 75 + 30 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4)  |                                                              |                                                              |                                                              |      |
| D-F5□<br>D-J59                                                           | 2 (Different surfaces), 1                                 | n                                           | 15                                                           | 115                                                          | 120                                                          | 130                                                          | 140                                                          | 150                                                          | 150 + 55 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4) |      |
|                                                                          | 15 + 55 $\frac{(n-2)}{2}$<br>(n = 2, 4, 6, 8-...) Note 3) |                                             | 115 + 55 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4) | 120 + 55 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4) | 130 + 55 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4) | 140 + 55 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4) |                                                              |                                                              |                                                              |      |
| D-F5□W<br>D-J59W<br>D-F5BA<br>D-F59F                                     | 2 (Different surfaces), 1                                 | n                                           | 15                                                           | 120                                                          | 120                                                          | 135                                                          | 140                                                          | 150                                                          | 150 + 55 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4) |      |
|                                                                          | 15 + 55 $\frac{(n-2)}{2}$<br>(n = 2, 4, 6, 8-...) Note 3) |                                             | 120 + 55 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4) | 120 + 55 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4) | 135 + 55 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4) | 140 + 55 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4) |                                                              |                                                              |                                                              |      |
| D-F5NT                                                                   | 2 (Different surfaces), 1                                 | n                                           | 15                                                           | 125                                                          | 130                                                          | 140                                                          | 150                                                          | 160                                                          | 160 + 55 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4) |      |
|                                                                          | 15 + 55 $\frac{(n-2)}{2}$<br>(n = 2, 4, 6, 8-...) Note 3) |                                             | 125 + 55 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4) | 130 + 55 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4) | 140 + 55 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4) | 150 + 55 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4) |                                                              |                                                              |                                                              |      |
| D-A5□<br>D-A6□                                                           | 2 (Different surfaces), 1                                 | n                                           | 15                                                           | 110                                                          | 115                                                          | 125                                                          | 135                                                          | 145                                                          | 145 + 55 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4) |      |
|                                                                          | 15 + 55 $\frac{(n-2)}{2}$<br>(n = 2, 4, 6, 8-...) Note 3) |                                             | 110 + 55 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4) | 115 + 55 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4) | 125 + 55 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4) | 135 + 55 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4) |                                                              |                                                              |                                                              |      |
| D-A59W                                                                   | 2 (Different surfaces), 1                                 | n                                           | 20                                                           | 115                                                          | 125                                                          | 130                                                          | 140                                                          | 150                                                          | 150 + 55 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4) |      |
|                                                                          | 20 + 55 $\frac{(n-2)}{2}$<br>(n = 2, 4, 6, 8-...) Note 3) |                                             | 115 + 55 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4) | 125 + 55 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4) | 130 + 55 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4) | 140 + 55 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4) |                                                              |                                                              |                                                              |      |
| D-G5□/K59<br>D-G5□W<br>D-K59W<br>D-G59F<br>D-G5BA<br>D-G5NT<br>D-B5□/B64 | 2                                                         | Different surfaces                          | 15                                                           | 110                                                          | 115                                                          | 125                                                          | 135                                                          | 145                                                          | 145 + 50 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4) |      |
|                                                                          | n                                                         | Different surfaces                          | 15 + 50 $\frac{(n-2)}{2}$<br>(n = 2, 4, 6, 8-...) Note 3)    | 110 + 50 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4) | 115 + 50 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4) | 125 + 50 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4) | 135 + 50 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4) |                                                              |                                                              |      |
|                                                                          |                                                           | same surface                                | 75 + 50 $\frac{(n-2)}{2}$<br>(n = 2, 3, 4-...)               | 90 + 50 $\frac{(n-2)}{2}$<br>(n = 2, 4, 6, 8-...) Note 3)    | 115 + 50 $\frac{(n-2)}{2}$<br>(n = 2, 4, 6, 8-...) Note 3)   | 125 + 50 $\frac{(n-2)}{2}$<br>(n = 2, 4, 6, 8-...) Note 3)   | 135 + 50 $\frac{(n-2)}{2}$<br>(n = 2, 4, 6, 8-...) Note 3)   |                                                              |                                                              |      |
| D-B59W                                                                   | 2                                                         | Different surfaces                          | 20                                                           | 115                                                          | 130                                                          | 140                                                          | 150                                                          | 150 + 50 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4) |                                                              |      |
|                                                                          | n                                                         | Different surfaces                          | 20 + 50 $\frac{(n-2)}{2}$<br>(n = 2, 4, 6, 8-...) Note 3)    | 115 + 50 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4) | 130 + 50 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4) | 140 + 50 $\frac{(n-4)}{2}$<br>(n = 4, 8, 12, 16-...) Note 4) |                                                              |                                                              |                                                              |      |
|                                                                          |                                                           | same surface                                | 75 + 50 $\frac{(n-2)}{2}$<br>(n = 2, 3, 4-...)               | 115 + 50 $\frac{(n-2)}{2}$<br>(n = 2, 4, 6, 8-...) Note 3)   | 130 + 50 $\frac{(n-2)}{2}$<br>(n = 2, 4, 6, 8-...) Note 3)   | 140 + 50 $\frac{(n-2)}{2}$<br>(n = 2, 4, 6, 8-...) Note 3)   |                                                              |                                                              |                                                              |      |
| D-G39<br>D-K39<br>D-A3□ Note 1)                                          | 2                                                         | Different surfaces                          | 35                                                           | 80                                                           | 95                                                           | 105                                                          | 115                                                          | 115 + 30 $\frac{(n-2)}{2}$<br>(n = 2, 3, 4-...)              |                                                              |      |
|                                                                          | n                                                         | Different surfaces                          | 35 + 30 $\frac{(n-2)}{2}$<br>(n = 2, 3, 4-...)               | 80 + 30 $\frac{(n-2)}{2}$<br>(n = 2, 3, 4-...)               | 95 + 30 $\frac{(n-2)}{2}$<br>(n = 2, 3, 4-...)               | 105 + 30 $\frac{(n-2)}{2}$<br>(n = 2, 3, 4-...)              |                                                              |                                                              |                                                              |      |
|                                                                          |                                                           | same surface                                | 100 + 100 $\frac{(n-2)}{2}$<br>(n = 2, 3, 4-...)             | 100 + 100 $\frac{(n-2)}{2}$<br>(n = 2, 3, 4-...)             | 105 + 100 $\frac{(n-2)}{2}$<br>(n = 2, 3, 4-...)             | 115 + 100 $\frac{(n-2)}{2}$<br>(n = 2, 3, 4-...)             |                                                              |                                                              |                                                              |      |
| D-A44 Note 1)                                                            | 2                                                         | Different surfaces                          | 35                                                           | 85                                                           | 100                                                          | 110                                                          | 120                                                          | 120 + 30 $\frac{(n-2)}{2}$<br>(n = 2, 3, 4-...)              |                                                              |      |
|                                                                          | n                                                         | Different surfaces                          | 35 + 30 $\frac{(n-2)}{2}$<br>(n = 2, 3, 4-...)               | 85 + 30 $\frac{(n-2)}{2}$<br>(n = 2, 3, 4-...)               | 100 + 30 $\frac{(n-2)}{2}$<br>(n = 2, 3, 4-...)              | 110 + 30 $\frac{(n-2)}{2}$<br>(n = 2, 3, 4-...)              |                                                              |                                                              |                                                              |      |
|                                                                          |                                                           | same surface                                | 55 + 50 $\frac{(n-2)}{2}$<br>(n = 2, 3, 4-...)               | 85 + 50 $\frac{(n-2)}{2}$<br>(n = 2, 3, 4-...)               | 100 + 50 $\frac{(n-2)}{2}$<br>(n = 2, 3, 4-...)              | 110 + 50 $\frac{(n-2)}{2}$<br>(n = 2, 3, 4-...)              |                                                              |                                                              |                                                              |      |
|                                                                          | 1                                                         |                                             | 10                                                           | 85                                                           | 100                                                          | 110                                                          | 120                                                          |                                                              |                                                              |      |

Note 1) Auto switch models D-M9□, M9□W, M9□V, M9□WV, M9□A, M9□AV, G39□, K39□, A3□, A44 cannot be mounted on cylinders with bore sizes CH2E, F, Hø32.

Note 2) Auto switch models D-A9□, A9□V cannot be mounted on cylinders with bore sizes CHD2Eø32 to ø100, CHD2Hø32 to ø100, and CHD2Fø32.

Note 3) When "n" is an odd number, an even number that is one larger than this odd number is used for the calculation. Note 4) When "n" is an odd number, a multiple of 4 that is larger than this odd number is used for the calculation.

## Operating Range

### CH2E

| Auto switch model                            | Bore size (mm) |      |      |      |      |      |
|----------------------------------------------|----------------|------|------|------|------|------|
|                                              | 32             | 40   | 50   | 63   | 80   | 100  |
| D-M9□/M9□V<br>D-M9□W/M9□WV<br>D-M9□A/M9□AV   | —              | 5.5  | 6    | 7    | 5.5  | 6.5  |
| D-F5□/J59/F59F<br>D-F5□W/J59W<br>D-F5BA/F5NT | 4.5            | 4    | 4.5  | 4.5  | 4.5  | 4.5  |
| D-G5□/K59/G59F<br>D-G5□W/K59W<br>D-G5BA/G5NT | 4.5            | 5    | 5    | —    | 6.5  | 6.5  |
| D-G39/K39                                    | —              | 10   | 10   | 10.5 | 9.5  | 9.5  |
| D-A9□/A9□V                                   | —              | —    | —    | —    | —    | —    |
| D-A5□/A6□                                    | 8              | 8.5  | 9.5  | 9.5  | 10   | 11   |
| D-A59W                                       | 12             | 13   | 13.5 | 14.5 | 14.5 | 15.5 |
| D-B5□/B64                                    | 9.5            | 10.5 | 11   | 12.5 | 13   | 14.5 |
| D-B59W                                       | 11             | 12   | 13   | 14   | 14   | 15   |
| D-A3□/A44                                    | —              | 9.5  | 10   | 11   | 11   | 12   |

### CH2F

| Auto switch model                            | Bore size (mm) |      |      |      |      |      |
|----------------------------------------------|----------------|------|------|------|------|------|
|                                              | 32             | 40   | 50   | 63   | 80   | 100  |
| D-M9□/M9□V<br>D-M9□W/M9□WV<br>D-M9□A/M9□AV   | —              | 5    | 5    | 5.5  | 5    | 5    |
| D-F5□/J59/F59F<br>D-F5□W/J59W<br>D-F5BA/F5NT | 4.5            | 4    | 4.5  | 4.5  | 4.5  | 4.5  |
| D-G5□/K59/G59F<br>D-G5□W/K59W<br>D-G5BA/G5NT | 4.5            | 5    | 5    | —    | 6.5  | 6.5  |
| D-G39/K39                                    | —              | 10.5 | 11   | 11.5 | 11.5 | 12.5 |
| D-A9□/A9□V                                   | —              | 8.5  | 8.5  | 9.5  | 9.5  | 10.5 |
| D-A5□/A6□                                    | 8              | 8.5  | 9.5  | 9.5  | 10   | 11   |
| D-A59W                                       | 12             | 13   | 13.5 | 14.5 | 14.5 | 15.5 |
| D-B5□/B64                                    | 9.5            | 10.5 | 11   | 12.5 | 13   | 14.5 |
| D-B59W                                       | 11             | 12   | 13   | 14   | 14   | 15   |
| D-A3□/A44                                    | —              | 9.5  | 10   | 11   | 11   | 12   |

### CH2H

| Auto switch model                            | Bore size (mm) |      |      |      |      |      |
|----------------------------------------------|----------------|------|------|------|------|------|
|                                              | 32             | 40   | 50   | 63   | 80   | 100  |
| D-M9□/M9□V<br>D-M9□W/M9□WV<br>D-M9□A/M9□AV   | —              | 5.5  | 6    | 7    | 5.5  | 6.5  |
| D-F5□/J59/F59F<br>D-F5□W/J59W<br>D-F5BA/F5NT | 4.5            | 4    | 4.5  | 4.5  | 4.5  | 4.5  |
| D-G5□/K59/G59F<br>D-G5□W/K59W<br>D-G5BA/G5NT | 4.5            | 5    | 5    | —    | 6.5  | 6.5  |
| D-G39/K39                                    | —              | 10   | 10   | 10.5 | 9.5  | 9.5  |
| D-A9□/A9□V                                   | —              | —    | —    | —    | —    | —    |
| D-A5□/A6□                                    | 8              | 8.5  | 9.5  | 9.5  | 10   | 11   |
| D-A59W                                       | 12             | 13   | 13.5 | 14.5 | 14.5 | 15.5 |
| D-B5□/B64                                    | 9.5            | 10.5 | 11   | 12.5 | 13   | 14.5 |
| D-B59W                                       | 11             | 12   | 13   | 14   | 14   | 15   |
| D-A3□/A44                                    | —              | 9.5  | 10   | 11   | 11   | 12   |

Note 1) Auto switch models D-G39□, K39□, A3□, and A44 cannot be mounted on bore size ø32 cylinders.

Note 2) Auto switch models D-A9□, and A9□V cannot be mounted on cylinders with bore sizes CHD2Eø32 to ø100, CHD2Hø32 to ø100, and CHD2Fø32.

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

## Auto Switch Mounting Brackets: Part Nos.

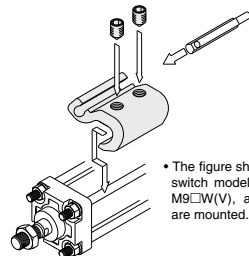
### <Tie rod mounting>

| Cylinder model | Auto switch model                                                 | Bore size (mm) |         |         |         |         |         |
|----------------|-------------------------------------------------------------------|----------------|---------|---------|---------|---------|---------|
|                |                                                                   | ø32            | ø40     | ø50     | ø63     | ø80     | ø100    |
| CH2E/H/F       | D-M9□/M9□V<br>D-M9□W/M9□WV<br>D-M9□A/M9□AV<br>D-A9□/A9□V (Note 2) | —              | BA7-063 | BA7-063 | BA7-080 | BS5-160 | BS5-180 |
|                | D-F5□/J59<br>D-F5□W/J59W<br>D-F5BA/F59F/F5NT<br>D-A5□/A6□/A59W    | BT-06          | BT-06   | BT-06   | BT-08   | BT-16   | BT-18   |

### <Band mounting>

| Cylinder model | Auto switch model                                              | Bore size (mm) |         |         |         |         |         |
|----------------|----------------------------------------------------------------|----------------|---------|---------|---------|---------|---------|
|                |                                                                | ø32            | ø40     | ø50     | ø63     | ø80     | ø100    |
| CH2E           | D-G39/K39<br>D-A3□/A44                                         | —              | BD1-04M | BD1-05M | BD1-06M | BD1-08M | BD1-10M |
|                | D-G5□/K59<br>D-G5□W/K59W<br>D-G5BA/G59F/G5NT<br>D-B5□/B64/B59W | BA-32          | BA-04   | BA-05   | BA-06   | BA-08   | BA-10   |
|                | D-G39/K39<br>D-A3□/A44                                         | —              | BD1-04M | BD1-05M | BD1-06M | BH1-080 | BH1-100 |
|                | D-G5□/K59<br>D-G5□W/K59W<br>D-G5BA/G59F/G5NT<br>D-B5□/B64/B59W | BGS1-032       | BH2-040 | BH2-050 | BA-06   | BH2-080 | BH2-100 |
| CH2H           | D-G39/K39<br>D-A3□/A44                                         | —              | BDS-04M | BDS-05M | BDS-06M | BDS-08M | BDS-10M |
|                | D-G5□/K59<br>D-G5□W/K59W<br>D-G5BA/G59F/G5NT<br>D-B5□/B64/B59W | BAF-32         | BAF-04  | BAF-05  | BAF-06  | BAF-08  | BAF-10  |

Note 1) Auto switch models D-G39□, K39□, A3□, and A44 cannot be mounted on CH2E, F, and Hø32 bore sized cylinders.  
Note 2) Auto switch models D-A9□ and A9□V cannot be mounted on CHD2Eø32 to ø100, CHD2Hø32 to ø100, and CHD2Fø32 bore sized cylinders.



\* The figure shows how auto switch models, D-M9□(V), M9□W(V), and M9□A(V) are mounted.

### [Stainless steel mounting screw kits]

The following stainless steel mounting screw kits are available for use depending on the operating environment. (Switch mounting bands are not included and should be ordered separately.)

BBA1 : D-F5, J5, A5, and A6  
BBA3 : D-G5, K5, B5, and B6

Note 1) For details on BBA1 and BBA3, refer to page 1400.

When D-F5BA, G5BA switches are shipped mounted on a cylinder, the above stainless steel screws are used. Also, when switches are shipped separately, BBA1, BBA3 is included.

Note 2) When using the auto switch model, D-M9□(V), do not use the cast iron set screw included with the auto switch mounting bracket (BA7-□□□, BS5-□□□). Instead, order a separate stainless steel mounting screw kit, and use it after selecting the M4 x 6L stainless steel set screw included in BBA1.

CHQ

CHK□

CHN

CHM

CHS□

CH2□

CHA

Related Equipment

D-□

## Stainless Steel Mounting Screw Kit Content Details

| Part no. | Content |                            |                |        | Applicable auto switch mounting bracket part nos.                                                                                                                                                                           | Applicable auto switches                                         |
|----------|---------|----------------------------|----------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|
|          | No.     | Description                | Size           | Amount |                                                                                                                                                                                                                             |                                                                  |
| BBA1     | 1       | Auto switch mounting screw | M4 x 0.7 x 8L  | 1      | BT-□□<br>BT-03, BT-04, BT-05<br>BT-06, BT-08, BT-12                                                                                                                                                                         | D-A5, A6<br>D-F5, J5                                             |
|          | 2       | Set screw                  | M4 x 0.7 x 6L  | 2      | BA4-040, BA4-063, BA4-080<br>BMB4-032, BMB4-050<br>BMB5-032<br>BA7-040, BA7-063, BA7-080                                                                                                                                    | D-Z7, Z8<br>D-Y5, Y6, Y7<br>D-A9<br>D-M9                         |
|          | 3       | Set screw                  | M4 x 0.7 x 8L  | 2      | BT-16, BT-18A, BT-20<br>BS4-125, BS4-160<br>BS4-180, BS4-200<br>BS5-125, BS5-160<br>BS5-180, BS5-200                                                                                                                        | D-A5, A6<br>D-F5, J5<br>D-Z7, Z8<br>D-Y5, Y6, Y7<br>D-A9<br>D-M9 |
| BBA3     | 4       | Auto switch mounting screw | M4 x 0.7 x 22L | 1      | BA-01, BA-02, BA-32, BA-04<br>BA-05, BA-06, BA-08, BA-10<br>BA2-020, BA2-025<br>BA2-032, BA2-040<br>BA5-050, BHN2-025, BSG1-032<br>BH2-040, BH2-050<br>BH2-080, BH2-100<br>BAF-32, BAF-04, BAF-05<br>BAF-06, BAF-08, BAF-10 | D-B5, B6<br>D-G5, K5                                             |

Besides the models listed in "How to Order," the following auto switches are applicable.  
Refer to pages 1451 to 1510 for detailed auto switch specifications.

| Auto switch type | Part no.              | Electrical entry        | Features                                |
|------------------|-----------------------|-------------------------|-----------------------------------------|
| Solid state      | D-M9NV, M9PV, M9BV    | Grommet (perpendicular) | —                                       |
|                  | D-M9NWV, M9PWV, M9BWV |                         | Diagnostic indication (2-color display) |
|                  | D-M9NAV, M9PAV, M9BAV |                         | Water resistant (2-color display)       |
|                  | D-F59, F5P, J59       | Grommet (in-line)       | —                                       |
|                  | D-F59W, F5PW, J59W    |                         | Diagnostic indication (2-color display) |
|                  | D-F5BA                |                         | Water resistant (2-color display)       |
| Reed             | D-F5NT, G5NT          | Grommet (perpendicular) | With timer                              |
|                  | D-A93V, A96V          |                         | —                                       |
|                  | D-A90V                |                         | Without indicator light                 |
|                  | D-A53, A56, B53       | Grommet (in-line)       | —                                       |
|                  | D-A67                 |                         | Without indicator light                 |

\* Solid state auto switches are also available with pre-wired connector. Refer to pages 1494 and 1495 for details.

## How to Mount and Move the Auto Switch

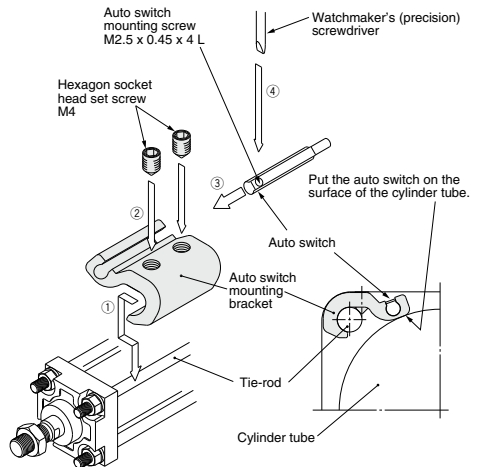
### <Applicable auto switch>

**Solid state** ..... D-M9N(V), D-M9P(V), D-M9B(V)  
D-M9NW(V), D-M9PW(V), D-M9BW(V)  
D-M9NA(V), D-M9PA(V), D-M9BA(V)

- Fix it to the detecting position with a set screw by installing an auto switch mounting bracket in cylinder tie-rod and letting the bottom surface of an auto switch mounting bracket contact the cylinder tube firmly.
- Fix it to the detecting position with a hexagon socket head set screw (M4). (Use a hexagon wrench.)
- Fit an auto switch into the auto switch mounting groove to set it roughly to the mounting position for an auto switch.
- After confirming the detecting position, tighten up the mounting screw (M2.5) attached to an auto switch, and secure the auto switch.
- When changing the detecting position, carry out in the state of 3.

Note 1) To protect auto switches, ensure that main body of an auto switch should be embedded into auto switch mounting groove with a depth of 15 mm or more.  
Note 2) Set the tightening torque of a hexagon socket head set screw (M4) to be 1 to 1.2 N·m.

Note 3) When tightening an auto switch mounting screw (M2.5), use a watchmaker's screwdriver with a grip diameter of 5 to 6 mm.  
Also, set the tightening torque to be 0.05 to 0.15 N·m. As a guide, turn 90° from the position where it comes to feel tight.

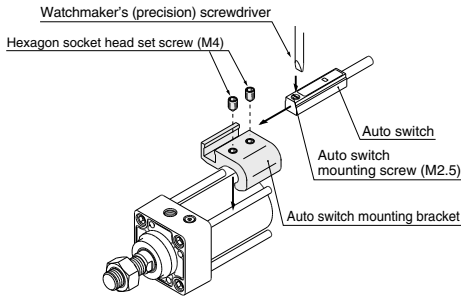




## How to Mount and Move the Auto Switch

### <Applicable auto switch>

Reed ..... D-Z73, D-Z76, D-Z80



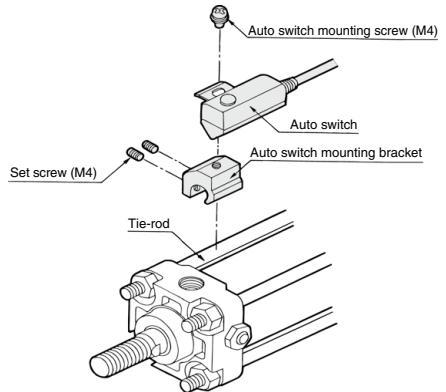
1. Fix it to the detecting position with a hexagon socket head set screw (M4) by installing an auto switch mounting bracket in cylinder tie-rod and letting the bottom surface of an auto switch mounting bracket contact the cylinder tube firmly.  
(Use hexagon wrench)
2. Fit an auto switch into the auto switch mounting groove to set it roughly to the auto switch mounting position for an auto switch.
3. After confirming the detecting position, tighten up the mounting screw (M2.5) attached to an auto switch, and secure the switch.
4. When changing the detecting position, carry out in the state of 2.

Note 1) To protect auto switches, ensure that main body of an auto switch should be embedded into auto switch mounting groove with a depth of 15 mm or more.  
Note 2) Set the tightening torque of a hexagon socket head set screw (M4) to be 1 to 1.2 N·m.

Note 3) When tightening an auto switch mounting screw (M2.5), use a watchmaker's screwdriver with a grip diameter of 5 to 6 mm.  
Also, set the tightening torque to be 0.05 to 0.15 N·m. As a guide, turn 90° from the position where it comes to feel tight.

### <Applicable auto switch>

Solid state ..... D-F59, D-F5P  
D-J59, D-F5BA  
D-F59W, D-F5PW, D-J59W  
D-F59F, D-F5NT  
Reed ..... D-A53, D-A54, D-A56, D-A64, D-A67  
D-A59W



1. Fix the auto switch on the auto switch mounting bracket with the auto switch mounting screw (M4) and install the set screw.
2. Fit the auto switch mounting bracket into the cylinder tie-rod and then fix the auto switch at the detecting position with the hexagonal wrench. (Be sure to put the auto switch on the surface of cylinder tube.)
3. When changing the detecting position, loosen the set screw to move the auto switch and then re-fix the auto switch on the cylinder tube. (Tightening torque of M4 screw should be 1 to 1.2 N·m.)

CHQ

CHK ☐

CHN

CHM

CHS ☐

CH2 ☐

CHA

Related Equipment

D-☐

# Series CH2E/CH2F/CH2G/CH2H

## Simple Specials:

These changes are dealt with Simple Specials System.



### 1 Change of Rod End Shape

CH2 Series Mounting type Bore size Rod size series - Stroke Cylinder options - X **A0**

Indicate the rod end shape pattern symbol

| <p><b>A0</b></p> <p>Note) Male thread effective length should be no more than 100 mm.</p>                     | <p><b>A1</b></p> <p>Note) Female thread effective depth should be no more than twice the thread diameter.</p> | <p><b>A2</b></p> <p>Note) Male thread effective length should be no more than 100 mm.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |         |                 |    |      |    |    |    |      |
|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-----------------|----|------|----|----|----|------|
| <p><b>A3</b></p> <p>Note) Female thread effective depth should be no more than twice the thread diameter.</p> | <p><b>A4</b></p> <p>Note) Female thread effective depth should be no more than twice the thread diameter.</p> | <p><b>A5</b></p> <p>Note) Male thread effective length should be no more than 100 mm.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |         |                 |    |      |    |    |    |      |
| <p><b>A6</b></p> <p>Note) Male thread effective length should be no more than 100 mm.</p>                     | <p><b>A7</b></p> <p>Note) Male thread effective length should be no more than 100 mm.</p>                     | <p>Note 1) Dimensions indicated with an asterisk (*) in the patterns A1, A3, A4 and A5 are provided in the table below.</p> <p>Note 2) The tolerance and finish values not indicated in the figures above are the same as for standard products, or may be at the discretion of SMC.</p> <table><tr><th>Pattern</th><th>Dimension for *</th></tr><tr><td>A1</td><td rowspan="3">ød-2</td></tr><tr><td>A3</td></tr><tr><td>A4</td></tr><tr><td>A5</td><td>øD-2</td></tr></table> <p>If dimensions other than the above are necessary, please indicate as such.</p> | Pattern | Dimension for * | A1 | ød-2 | A3 | A4 | A5 | øD-2 |
| Pattern                                                                                                       | Dimension for *                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |         |                 |    |      |    |    |    |      |
| A1                                                                                                            | ød-2                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |         |                 |    |      |    |    |    |      |
| A3                                                                                                            |                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |         |                 |    |      |    |    |    |      |
| A4                                                                                                            |                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |         |                 |    |      |    |    |    |      |
| A5                                                                                                            | øD-2                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |         |                 |    |      |    |    |    |      |

|                                     |
|-------------------------------------|
| <b>CHQ</b>                          |
| CHK <input type="checkbox"/>        |
| <b>CHN</b>                          |
| <b>CHM</b>                          |
| CHS <input type="checkbox"/>        |
| <b>CH2</b> <input type="checkbox"/> |
| <b>CHA</b>                          |
| Related<br>Equipment                |
| <b>D-</b> <input type="checkbox"/>  |

3.5 MPa  
7 MPa

# JIS Standard Hydraulic Cylinder Double Acting/Double Rod

## Series CH2EW/CH2FW

ø32, ø40, ø50, ø63, ø80, ø100

### How to Order

Type: Double acting/Double Rod

Rod size series  
B B series rod size  
C C series rod size

Cylinder stroke (mm)  
Refer to the standard stroke table on page 1405.  
Refer to page 1398 for minimum stroke with auto switch.

CH2 F W LA 50 B - 100 - - -

With Auto Switch CHD2 F W LA 50 B - 100 - - - M9BW - - -

With auto switch (built-in magnet)

Series type

| Symbol | Tube material   | Nominal pressure |
|--------|-----------------|------------------|
| E      | Aluminum alloy  | 3.5 MPa          |
| F      | Stainless steel | 7 MPa            |

Mounting style

| Symbol | Mounting style               |
|--------|------------------------------|
| B      | Basic style                  |
| LA     | Transaxial foot style        |
| LB     | Axial foot style             |
| FA     | Rod rectangular flange style |
| FC     | Square flange style          |
| TC     | Center trunnion style        |

Bore size

| Symbol | Bore size (mm) |
|--------|----------------|
| 32     | 32 mm          |
| 40     | 40 mm          |
| 50     | 50 mm          |
| 63     | 63 mm          |
| 80     | 80 mm          |
| 100    | 100 mm         |

Cylinder options

| Option | Description              |
|--------|--------------------------|
| Nil    | Without rod end nut      |
| A      | With rod end nut         |
| Nil    | With double-side cushion |
| N      | Without cushion          |
| R      | With front cushion       |
| H      | With rear cushion        |

Made to Order specifications  
For details, refer to page 1405.

Number of auto switches

| Symbol | Number of auto switches |
|--------|-------------------------|
| Nil    | 2 pcs.                  |
| S      | 1 pc.                   |
| 3      | 3 pcs.                  |
| n      | "n" pcs.                |

Auto switch type

| Symbol | Auto switch type    |
|--------|---------------------|
| Nil    | Without auto switch |

Select applicable auto switches from the table below.

### Built-in Magnet Cylinder Model

If a built-in magnet cylinder without auto switch is required, there is no need to enter the symbol for the auto switch.  
(Example) CHD2FWLA50-100

### Applicable Auto Switches

Refer to pages 1451 to 1510 for further details on each auto switch.

| 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        | Tie-rod mount<br>ø32 | ø40 to ø100        | Band mount<br>ø32    | ø40 to ø100 | 0.5 (Nil) | 1 (M) | 3 (L) |                     |                 | 5 (Z)      | None       |   |
| Solid state auto switch              | —                                          | Grommet          |                    | 3-wire (NPN)        | 24 V         | 5 V, 12 V | —                    | —                  | M9N                  | ●           | ●         | ●     | ○     | —                   | ○               | IC circuit |            |   |
|                                      |                                            |                  |                    | F59                 |              |           |                      | G59                | ●                    | ●           | ●         | ○     | —     | ○                   |                 |            |            |   |
|                                      |                                            | 3-wire (PNP)     | —                  | M9P                 |              |           |                      | ●                  | ●                    | ●           | ○         | —     | ○     | ○                   |                 |            |            |   |
|                                      |                                            | F5P              | G5P                | ●                   |              |           |                      | ●                  | ●                    | ○           | —         | ○     |       |                     |                 |            |            |   |
|                                      |                                            | 2-wire           | 12 V               | —                   |              |           |                      | M9B                | ●                    | ●           | ●         | ○     | —     | ○                   | —               |            |            |   |
|                                      |                                            | J59              | K59                | ●                   |              |           |                      | ●                  | ●                    | ○           | —         | ○     | —     |                     |                 |            |            |   |
|                                      | Terminal conduit                           | 3-wire (NPN)     | 5 V, 12 V          | —                   | —            | G39       | —                    | —                  | —                    | —           | —         | ●     | —     | ○                   | IC circuit      |            |            |   |
|                                      |                                            | 2-wire           | 12 V               | —                   | —            | K39       | —                    | —                  | —                    | —           | —         | ●     | —     | ○                   | —               |            |            |   |
|                                      | Diagnostic indication<br>(2-color display) | Grommet          | Yes                | 3-wire (NPN)        | 24 V         | 5 V, 12 V | —                    | —                  | M9NW                 | ●           | ●         | ●     | ○     | —                   | ○               | IC circuit |            |   |
|                                      |                                            |                  |                    | F59W                |              |           |                      | G59W               | ●                    | ●           | ●         | ○     | —     | ○                   |                 |            |            |   |
|                                      |                                            |                  |                    | 3-wire (PNP)        |              |           |                      | —                  | M9PW                 | ●           | ●         | ●     | ○     | —                   | ○               |            | ○          |   |
|                                      |                                            |                  |                    | F5PW                |              |           |                      | G5PW               | ●                    | ●           | ●         | ○     | —     | ○                   |                 |            |            |   |
| 2-wire                               |                                            |                  |                    | 12 V                |              |           |                      | —                  | M9BW                 | ●           | ●         | ●     | ○     | —                   | ○               |            | —          |   |
| J59W                                 |                                            |                  |                    | K59W                |              |           |                      | ●                  | ●                    | ●           | ○         | —     | ○     | —                   |                 |            |            |   |
| Water resistant<br>(2-color display) | Grommet                                    |                  | 3-wire (NPN)       | 24 V                | 5 V, 12 V    | —         | —                    | M9NA <sup>ø1</sup> | ○                    | ○           | ○         | ○     | ○     | ○                   | IC circuit      |            |            |   |
|                                      |                                            |                  | 3-wire (PNP)       |                     |              |           | —                    | M9PA <sup>ø1</sup> | ○                    | ○           | ○         | ○     | ○     | ○                   |                 |            |            |   |
|                                      |                                            |                  | 2-wire             |                     |              |           | 12 V                 | —                  | M9BA <sup>ø1</sup>   | ○           | ○         | ○     | ○     | ○                   |                 | ○          | ○          | — |
|                                      |                                            |                  | F5BA <sup>ø1</sup> |                     |              |           | G5BA <sup>ø1</sup>   | ●                  | ●                    | ●           | ○         | —     | ○     | ○                   |                 | ○          | IC circuit |   |
| Diagnostic output (2-color display)  |                                            |                  | 4-wire (NPN)       | 5 V, 12 V           | —            | —         | F59F                 | G59F               | ●                    | ●           | ●         | ○     | —     | ○                   | IC circuit      |            |            |   |
| Reed auto switch                     | —                                          | Grommet          | Yes                | 3-wire (NPN equiv.) | 24 V         | 12 V      | —                    | —                  | A96 <sup>**</sup>    | ●           | ●         | ●     | ○     | —                   | ○               | IC circuit |            |   |
|                                      |                                            |                  |                    | 100 V or less       |              |           |                      | A93 <sup>**</sup>  | ●                    | ●           | ●         | ○     | —     | ○                   | IC circuit      |            |            |   |
|                                      |                                            |                  |                    | 100 V, 200 V        |              |           |                      | A90 <sup>**</sup>  | ●                    | ●           | ●         | ○     | —     | ○                   |                 |            |            |   |
|                                      |                                            |                  |                    | 200 V or less       |              |           |                      | A54                | B54                  | ●           | ●         | ●     | ○     | —                   |                 |            | ○          |   |
|                                      |                                            |                  |                    | —                   |              |           |                      | A64                | B64                  | ●           | ●         | ●     | ○     | —                   | ○               |            |            |   |
|                                      |                                            |                  |                    | 100 V, 200 V        |              |           |                      | —                  | A33                  | —           | —         | —     | —     | ●                   | —               |            |            |   |
|                                      |                                            | Terminal conduit | Yes                | 2-wire              | 24 V         | 12 V      | —                    | —                  | A34                  | —           | —         | —     | ●     | —                   | ○               | PLC        |            |   |
|                                      |                                            |                  |                    | —                   |              |           |                      | A44                | —                    | —           | —         | ●     | —     | ○                   |                 |            |            |   |
|                                      |                                            | DIN terminal     | Grommet            |                     | 2-wire       | 24 V      | 12 V                 | —                  | —                    | A59W        | ●         | ●     | ●     | ○                   | —               | ○          | Relay PLC  |   |
|                                      |                                            |                  |                    |                     | —            |           |                      |                    | B59W                 | ●           | ●         | ●     | ○     | —                   | ○               |            |            |   |

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

Consult with SMC regarding water resistant types with the above model numbers.

\* 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

\* Since there are applicable auto switches other than listed, refer to page 1400 for details.

\* For details about auto switches with pre-wired connector, refer to pages 1494 and 1495.

\* D-A9C, M9C, M9CW, and M9CA auto switches are shipped together. (not assembled). (Only the auto switch mounting bracket is pre-assembled).

\* Solid state auto switches marked "O" are produced upon receipt of order.

\*\* Auto switch models D-A9C, D-A9CW cannot be mounted on CHD2E, CHD2H in all bore sizes, and CHD2Fø32.

# JIS Standard Hydraulic Cylinder Double Acting/Double Rod *Series CH2EW/CH2FW*



**Made to order specifications**  
(For details, refer to page 1402)

| Symbol | Specifications          |
|--------|-------------------------|
| -XA□   | Change of rod end shape |



The auto switch mounting specifications are the same for double acting and single rod. Refer to pages 1396 to 1401.

- The minimum stroke for mounting auto switch
- Auto switch proper mounting positions (detection at stroke end) and its mounting heights
- Operating range
- Auto switch mounting bracket/Part no.

## Models

| Model                         | CH2EW                   | CH2FW           |
|-------------------------------|-------------------------|-----------------|
| <b>Tube material</b>          | Aluminum alloy          | Stainless steel |
| <b>Nominal pressure (MPa)</b> | 3.5                     | 7               |
| <b>Bore size (mm)</b>         | 32, 40, 50, 63, 80, 100 |                 |

## Specifications

| Model                                   | CH2EW                                                                                                                      | CH2FW                  |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------|------------------------|
| <b>Action</b>                           | Double acting/Single rod                                                                                                   |                        |
| <b>Fluid</b>                            | Hydraulic fluid                                                                                                            |                        |
| <b>Nominal pressure (MPa)</b>           | 3.5                                                                                                                        | 7                      |
| <b>Maximum allowable pressure (MPa)</b> | 3.5                                                                                                                        | B rod 13.5<br>C rod 11 |
| <b>Proof pressure (MPa)</b>             | 5.0                                                                                                                        | 10.5                   |
| <b>Minimum operating pressure (MPa)</b> | 0.3                                                                                                                        |                        |
| <b>Ambient and fluid temperature</b>    | Without auto switch: -10° to 80°C                                                                                          |                        |
|                                         | With auto switch: -10° to 60°C                                                                                             |                        |
| <b>Piston speed</b>                     | 8 to 300 mm/s                                                                                                              |                        |
| <b>Cushion</b>                          | Cushion seal type                                                                                                          |                        |
| <b>Stroke length tolerance</b>          | to 100 st $^{+0.8}_{-0}$ , 101 to 250 st $^{+1.0}_{-0}$ ,<br>251 to 630 st $^{+1.25}_{-0}$ , 631 to 1000 st $^{+1.4}_{-0}$ |                        |

Note) Refer to page 1234 for definitions of terms related to pressure.

## Standard Strokes

| Cylinder bore size (mm) | Standard strokes (mm) |
|-------------------------|-----------------------|
| <b>32, 40, 50, 63</b>   | 25 to 800             |
| <b>80, 100</b>          | 25 to 1000            |

Note) Refer to pages 1250 and 1251 determine stroke limitation depending on the type of mounting brackets that will be used. Then make your selection.

## Port and Cushion Valve Positions

| Symbol<br>Position<br>Mounting style                     | Nil                               | A                                    | C                                | D                                | E                                  | F                                 | G                                  | H                                  |
|----------------------------------------------------------|-----------------------------------|--------------------------------------|----------------------------------|----------------------------------|------------------------------------|-----------------------------------|------------------------------------|------------------------------------|
|                                                          | Port: Top<br>Cushion valve: Right | Port: Right<br>Cushion valve: Bottom | Port: Left<br>Cushion valve: Top | Port: Top<br>Cushion valve: Left | Port: Top<br>Cushion valve: Bottom | Port: Right<br>Cushion valve: Top | Port: Right<br>Cushion valve: Left | Port: Left<br>Cushion valve: Right |
| <b>B</b><br>(Basic style)                                |                                   |                                      |                                  |                                  |                                    |                                   |                                    |                                    |
| <b>FA, FB, FC</b><br><b>FD, FY, FZ</b><br>(Flange style) |                                   |                                      |                                  |                                  |                                    |                                   |                                    |                                    |
| <b>CA, CB</b><br>(Single clevis style)                   |                                   |                                      |                                  |                                  |                                    |                                   |                                    |                                    |
| <b>TC</b><br>(Center trunnion style)                     |                                   |                                      |                                  |                                  |                                    |                                   |                                    |                                    |
| <b>LA, LB</b><br>(Foot style)                            |                                   |                                      |                                  |                                  |                                    |                                   |                                    |                                    |

⌋: Piping port    ⌋: Cushion valve

\* The cylinder's exterior dimensions represented here are as seen from the rod end of the cylinder.

CHK

CHK□

CHN

CHM

CHS□

CH2□

CHA

Related Equipment

D-□

# Series CH2EW/CH2FW

## Rod Sizes

(mm)

| Bore size<br>Rod size<br>series * | 32 | 40   | 50   | 63   | 80   | 100 |
|-----------------------------------|----|------|------|------|------|-----|
| B-series                          | 18 | 22.4 | 28   | 35.5 | 45   | 56  |
| C-series                          | —  | 18   | 22.4 | 28   | 35.5 | 45  |

\* Based on JIS B8367.

## Accessories (Option)

Refer to page 1395.

Single knuckle, Double Knuckle Lock  
nut, Knuckle pin

## Hydraulic Fluid Compatibility

| Hydraulic fluid                  | Compatibility  |
|----------------------------------|----------------|
| Standard mineral hydraulic fluid | Compatible     |
| W/O hydraulic fluid              | Compatible     |
| O/W hydraulic fluid              | Compatible     |
| Water/Glycol hydraulic fluid     | *              |
| Phosphate hydraulic fluid        | Not compatible |

\* Consult with SMC.

## Cushion Stroke

(mm)

| Bore size (mm)           | 32 | 40 | 50 | 63 | 80 | 100 |
|--------------------------|----|----|----|----|----|-----|
| Effective cushion stroke | 16 | 16 | 17 | 16 | 20 | 23  |

## Weight

Unit: kg

| Bore size (mm) | Mounting style<br>Series | B     | LA              | FC            | TC              | LB         | FA                         | Additional weight<br>(per 10 mm stroke) |
|----------------|--------------------------|-------|-----------------|---------------|-----------------|------------|----------------------------|-----------------------------------------|
|                |                          | Basic | Transaxial foot | Square flange | Center trunnion | Axial foot | Rectangular flange (7 MPa) |                                         |
| 32             | CH2E                     | 2.94  | 3.93            | 3.79          | 3.43            | 3.44       | 3.38                       | 0.04                                    |
|                | CH2F                     | 2.93  | 3.92            | 3.78          | 3.42            | 3.43       | 3.37                       | 0.04                                    |
|                | CH2E                     | 3.82  | 5.12            | 4.91          | 4.41            | 4.40       | 4.41                       | 0.08                                    |
|                | CH2F                     | 3.79  | 5.09            | 4.88          | 4.38            | 4.37       | 4.38                       | 0.08                                    |
|                | CH2E                     | 6.37  | 8.97            | 8.33          | 7.21            | 7.17       | 7.45                       | 0.09                                    |
|                | CH2F                     | 6.27  | 8.87            | 8.23          | 7.11            | 7.07       | 7.35                       | 0.10                                    |
| 40             | CH2E                     | 9.75  | 13.63           | 12.65         | 11.29           | 11.37      | 11.36                      | 0.17                                    |
|                | CH2F                     | 9.16  | 13.04           | 12.06         | 10.70           | 10.78      | 10.77                      | 0.17                                    |
|                | CH2E                     | 15.00 | 20.35           | 19.59         | 17.02           | 17.36      | 17.69                      | 0.24                                    |
|                | CH2F                     | 14.36 | 19.71           | 18.95         | 16.38           | 16.72      | 17.05                      | 0.26                                    |
|                | CH2E                     | 21.82 | 32.63           | 29.29         | 25.47           | 25.24      | 26.42                      | 0.41                                    |
|                | CH2F                     | 21.26 | 32.06           | 28.73         | 24.91           | 24.68      | 25.86                      | 0.46                                    |

| Bore size (mm) | Mounting style<br>Series | B     | LA              | FC            | TC              | LB         | FA                         | Additional weight<br>(per 10 mm stroke) |
|----------------|--------------------------|-------|-----------------|---------------|-----------------|------------|----------------------------|-----------------------------------------|
|                |                          | Basic | Transaxial foot | Square flange | Center trunnion | Axial foot | Rectangular flange (7 MPa) |                                         |
| 40             | CH2E                     | 3.74  | 5.04            | 4.83          | 4.33            | 4.32       | 4.33                       | 0.07                                    |
|                | CH2F                     | 3.71  | 5.01            | 4.80          | 4.30            | 4.29       | 4.30                       | 0.07                                    |
|                | CH2E                     | 6.21  | 8.81            | 8.17          | 7.05            | 7.01       | 7.29                       | 0.07                                    |
|                | CH2F                     | 6.11  | 8.71            | 8.07          | 6.95            | 6.91       | 7.19                       | 0.08                                    |
|                | CH2E                     | 9.44  | 13.32           | 12.34         | 10.98           | 11.06      | 11.05                      | 0.14                                    |
|                | CH2F                     | 8.86  | 12.74           | 11.76         | 10.40           | 10.48      | 10.47                      | 0.14                                    |
| 50             | CH2E                     | 14.56 | 19.91           | 19.15         | 16.58           | 16.92      | 17.25                      | 0.18                                    |
|                | CH2F                     | 13.92 | 19.27           | 18.51         | 15.94           | 16.28      | 16.61                      | 0.21                                    |
|                | CH2E                     | 20.76 | 31.57           | 28.23         | 24.41           | 24.18      | 25.36                      | 0.29                                    |
|                | CH2F                     | 20.20 | 31.01           | 27.67         | 23.85           | 23.62      | 24.80                      | 0.30                                    |

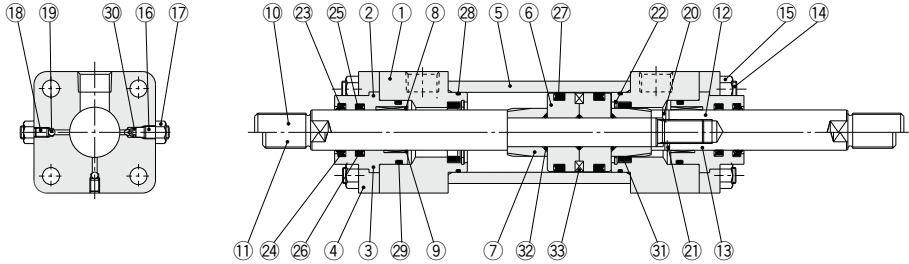
## Theoretical Output

Unit: N

|              | Bore size (mm) | Rod size (mm) | Piston area (mm <sup>2</sup> ) | Nominal pressure (MPa) |       |       |       |
|--------------|----------------|---------------|--------------------------------|------------------------|-------|-------|-------|
|              |                |               |                                | 1                      | 3.5   | 5     | 7     |
| B-series rod | 32             | 18            | 550                            | 550                    | 1923  | 2748  | 3847  |
|              | 40             | 22.4          | 862                            | 862                    | 3017  | 4311  | 6035  |
|              | 50             | 28            | 1347                           | 1347                   | 4715  | 6735  | 9429  |
|              | 63             | 35.5          | 2126                           | 2126                   | 7442  | 10632 | 14885 |
|              | 80             | 45            | 3434                           | 3434                   | 12020 | 17172 | 24041 |
|              | 100            | 56            | 5388                           | 5388                   | 18859 | 26941 | 37718 |
| C-series rod | 40             | 18            | 1002                           | 1002                   | 3506  | 5008  | 7012  |
|              | 50             | 22.4          | 1569                           | 1569                   | 5490  | 7843  | 10980 |
|              | 63             | 28            | 2500                           | 2500                   | 8751  | 12501 | 17502 |
|              | 80             | 35.5          | 4035                           | 4035                   | 14121 | 20174 | 28243 |
|              | 100            | 45            | 6260                           | 6260                   | 21911 | 31302 | 43823 |

# JIS Standard Hydraulic Cylinder Double Acting/Double Rod *Series CH2EW/CH2FW*

## Construction



### Parts List

| No. | Description                 | Material                                    | Note                        |
|-----|-----------------------------|---------------------------------------------|-----------------------------|
| 1   | Rod cover                   | Carbon steel                                |                             |
| 2   | Seal holder (B-series rod)  | Carbon steel                                |                             |
| 3   | Seal holder (C-series rod)  | Carbon steel                                |                             |
| 4   | Retainer                    | Carbon steel                                |                             |
| 5   | Cylinder tube               | CH2E Aluminum alloy<br>CH2F Stainless steel | Hard anodized               |
| 6   | Piston                      | Aluminum alloy                              |                             |
| 7   | Cushion ring                | Rolled steel                                |                             |
| 8   | Bushing (B-series rod)      | Copper alloy                                |                             |
| 9   | Bushing (C-series rod)      | Copper alloy                                |                             |
| 10  | Piston rod A (B-series rod) | Carbon steel                                | Hard chromium electroplated |
| 11  | Piston rod A (C-series rod) | Carbon steel                                | Hard chromium electroplated |
| 12  | Piston rod B (B-series rod) | Carbon steel                                | Hard chromium electroplated |
| 13  | Piston rod B (C-series rod) | Carbon steel                                | Hard chromium electroplated |
| 14  | Tie-rod                     | Carbon steel                                |                             |
| 15  | Tie-rod nut                 | Carbon steel                                |                             |
| 16  | Cushion valve               | Alloy steel                                 |                             |
| 17  | Lock nut                    | Carbon steel                                |                             |
| 18  | Air release valve           | Alloy steel                                 |                             |
| 19  | Check ball                  | Bearing steel                               |                             |
| 20  | Spring pin (B-series rod)   | Carbon tool steel                           |                             |
| 21  | Spring pin (C-series rod)   | Carbon tool steel                           |                             |
| 22  | Retaining ring              | Carbon tool steel                           |                             |
| 23  | Scraper (B-series rod)      | NBR                                         |                             |
| 24  | Scraper (C-series rod)      | NBR                                         |                             |
| 25  | Rod seal (B-series rod)     | NBR                                         |                             |
| 26  | Rod seal (C-series rod)     | NBR                                         |                             |
| 27  | Piston seal                 | NBR                                         |                             |
| 28  | Cylinder tube gasket        | NBR                                         |                             |
| 29  | Holder gasket               | NBR                                         |                             |
| 30  | Cushion valve seal          | NBR                                         |                             |
| 31  | Cushion seal                | —                                           |                             |
| 32  | Gasket                      | NBR                                         |                             |
| 33  | Magnet                      | —                                           |                             |

### Replacement Parts: Seal Kit

| Bore size<br>(mm) | Seal kit no.                 |                              | Content                                      |
|-------------------|------------------------------|------------------------------|----------------------------------------------|
|                   | B-series rod                 | C-series rod                 |                                              |
| 40                | CH2EW40B-PS<br>CH2FW40B-PS   | CH2EW40C-PS<br>CH2FW40C-PS   | Nos. ②③ through ③①<br>from the chart at left |
| 50                | CH2EW50B-PS<br>CH2FW50B-PS   | CH2EW50C-PS<br>CH2FW50C-PS   |                                              |
| 63                | CH2EW63B-PS<br>CH2FW63B-PS   | CH2EW63C-PS<br>CH2FW63C-PS   |                                              |
| 80                | CH2EW80B-PS<br>CH2FW80B-PS   | CH2EW80C-PS<br>CH2FW80C-PS   |                                              |
| 100               | CH2EW100B-PS<br>CH2FW100B-PS | CH2EW100C-PS<br>CH2FW100C-PS |                                              |

\* Seal kit consists of items ②③ through ③① and can be ordered using the seal kit number for each bore size.

CHQ

CHK ☐

CHN

CHM

CHS ☐

CH2 ☐

CHA

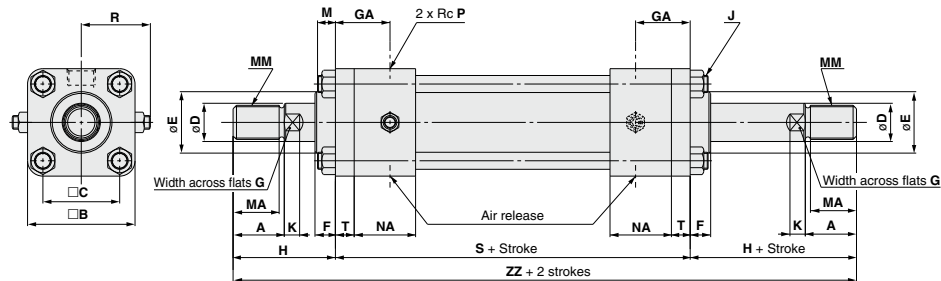
Related  
Equipment

D- ☐

# Series CH2EW/CH2FW

## Dimensions

Basic style: CH2EWB, CH2FWB



| (mm)           |                   |     |     |    |    |            |    |    |     |    |     |    |
|----------------|-------------------|-----|-----|----|----|------------|----|----|-----|----|-----|----|
| Bore size (mm) | Stroke range (mm) | □B  | □C  | F  | GA | J          | M  | NA | P   | R  | S   | T  |
| 32             | 25 to 800         | 58  | 38  | 16 | 32 | M10 x 1.25 | 11 | 37 | 3/8 | 39 | 158 | 11 |
| 40             | 25 to 800         | 65  | 45  | 12 | 32 | M10 x 1.25 | 11 | 36 | 3/8 | 42 | 158 | 11 |
| 50             | 25 to 800         | 76  | 52  | 15 | 40 | M10 x 1.25 | 11 | 43 | 1/2 | 46 | 176 | 13 |
| 63             | 25 to 800         | 90  | 63  | 15 | 42 | M12 x 1.5  | 14 | 43 | 1/2 | 52 | 186 | 15 |
| 80             | 25 to 1000        | 110 | 80  | 17 | 40 | M16 x 1.5  | 16 | 44 | 3/4 | 65 | 202 | 18 |
| 100            | 25 to 1000        | 135 | 102 | 19 | 42 | M18 x 1.5  | 18 | 44 | 3/4 | 75 | 212 | 20 |

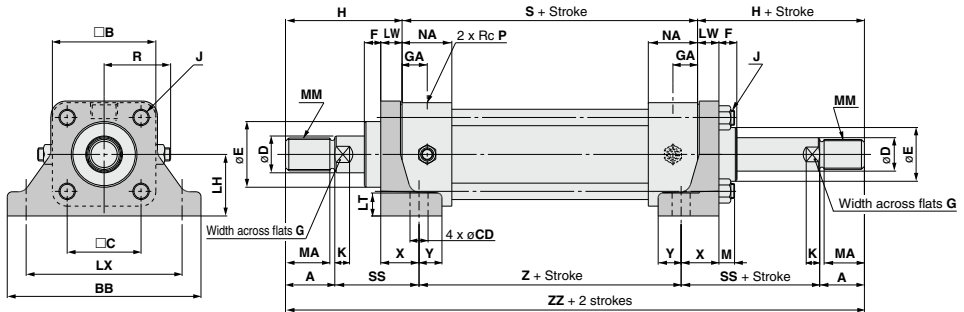
### Rod series

| (mm)           |              |    |    |      |    |    |    |     |     |           |              |    |
|----------------|--------------|----|----|------|----|----|----|-----|-----|-----------|--------------|----|
| Bore size (mm) | B-series rod |    |    |      |    |    |    |     |     |           | C-series rod |    |
|                | MM           | A  | MA | D    | E  | K  | G  | H   | ZZ  | MM        | A            | ZZ |
| 32             | M16 x 1.5    | 25 | 22 | 18   | 34 | 7  | 14 | 55  | 268 | —         | —            | —  |
| 40             | M20 x 1.5    | 30 | 27 | 22.4 | 40 | 9  | 19 | 60  | 278 | M16 x 1.5 | 25           | 22 |
| 50             | M24 x 1.5    | 35 | 32 | 28   | 46 | 11 | 24 | 65  | 306 | M20 x 1.5 | 30           | 27 |
| 63             | M30 x 1.5    | 45 | 42 | 35.5 | 55 | 13 | 30 | 80  | 346 | M24 x 1.5 | 35           | 32 |
| 80             | M39 x 1.5    | 60 | 57 | 45   | 65 | 15 | 41 | 95  | 392 | M30 x 1.5 | 45           | 42 |
| 100            | M48 x 1.5    | 75 | 72 | 56   | 80 | 16 | 50 | 115 | 442 | M39 x 1.5 | 60           | 57 |



# JIS Standard Hydraulic Cylinder Double Acting/Double Rod *Series CH2EW/CH2FW*

Transaxial foot style: CH2EWLA, CH2FWLA



CHQ

CHK ☐

CHN

CHM

CHS ☐

CHZ ☐

CHA

Related Equipment

D-☐

(mm)

| Bore size<br>(mm) | Stroke range<br>(mm) | BB  | B   | C   | CD | F  | GA | J          | LH   | LT    | LW | LX | M   | NA    | P  | R   | S   | SS  | X   | Y  | Z  |     |     |
|-------------------|----------------------|-----|-----|-----|----|----|----|------------|------|-------|----|----|-----|-------|----|-----|-----|-----|-----|----|----|-----|-----|
| 32                | 25 to 800            | 109 | 58  | 38  | 11 | 14 | 21 | M10 x 1.25 | 35   | ±0.15 | 14 | 13 | 88  | 11    | 37 | 3/8 | 39  | 136 | 57  | 29 | 14 | 104 |     |
| 40                | 25 to 800            | 118 | 65  | 45  | 11 | 10 | 21 | M10 x 1.25 | 37.5 |       | 14 | 13 | 95  | ±0.18 | 11 | 36  | 3/8 | 42  | 136 | 57 | 29 | 14  | 104 |
| 50                | 25 to 800            | 145 | 76  | 52  | 14 | 10 | 27 | M10 x 1.25 | 45   |       | 17 | 18 | 115 | 11    | 43 | 1/2 | 46  | 150 | 60  | 35 | 18 | 116 |     |
| 63                | 25 to 800            | 165 | 90  | 63  | 18 | 10 | 27 | M12 x 1.5  | 50   | ±0.20 | 19 | 20 | 132 | 14    | 43 | 1/2 | 52  | 156 | 71  | 41 | 19 | 114 |     |
| 80                | 25 to 1000           | 190 | 110 | 80  | 18 | 11 | 22 | M16 x 1.5  | 60   |       | 24 | 24 | 155 | 16    | 44 | 3/4 | 65  | 166 | 74  | 45 | 20 | 124 |     |
| 100               | 25 to 1000           | 230 | 135 | 102 | 22 | 11 | 22 | M18 x 1.5  | 71   |       | 27 | 28 | 190 | ±0.23 | 18 | 44  | 3/4 | 75  | 172 | 85 | 53 | 22  | 122 |

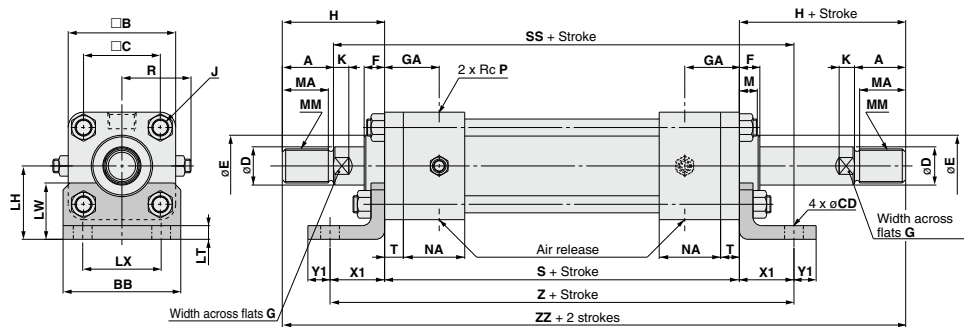
## Rod series

| Bore size<br>(mm) | B-series rod |    |    |      |    |                  |    |     |     |           | C-series rod |    |      |      |    |                  |    |     |     |     |
|-------------------|--------------|----|----|------|----|------------------|----|-----|-----|-----------|--------------|----|------|------|----|------------------|----|-----|-----|-----|
|                   | MM           | A  | MA | D    | E  | K                | G  | H   | ZZ  | MM        | A            | MA | D    | E    | K  | G                | H  | ZZ  |     |     |
| 32                | M16 x 1.5    | 25 | 22 | 18   | 34 | -0.025<br>-0.064 | 7  | 14  | 66  | 268       | —            | —  | —    | —    | —  | —                | —  | —   | —   |     |
| 40                | M20 x 1.5    | 30 | 27 | 22.4 | 40 |                  | 9  | 19  | 71  | 278       | M16 x 1.5    | 25 | 22   | 18   | 36 | -0.025<br>-0.064 | 7  | 14  | 66  | 268 |
| 50                | M24 x 1.5    | 35 | 32 | 28   | 46 | 11               | 24 | 78  | 306 | M20 x 1.5 | 30           | 27 | 22.4 | 40   | 9  |                  | 19 | 73  | 296 |     |
| 63                | M30 x 1.5    | 45 | 42 | 35.5 | 55 | -0.030<br>-0.076 | 13 | 30  | 95  | 346       | M24 x 1.5    | 35 | 32   | 28   | 46 | 11               | 24 | 85  | 326 |     |
| 80                | M39 x 1.5    | 60 | 57 | 45   | 65 |                  | 15 | 41  | 113 | 392       | M30 x 1.5    | 45 | 42   | 35.5 | 55 | -0.030<br>-0.076 | 13 | 30  | 98  | 362 |
| 100               | M48 x 1.5    | 75 | 72 | 56   | 80 | 16               | 50 | 135 | 442 | M39 x 1.5 | 60           | 57 | 45   | 65   | 15 |                  | 41 | 120 | 412 |     |

Series **CH2EW/CH2FW**

Dimensions

Axial foot style: CH2EWLB, CH2FWLB



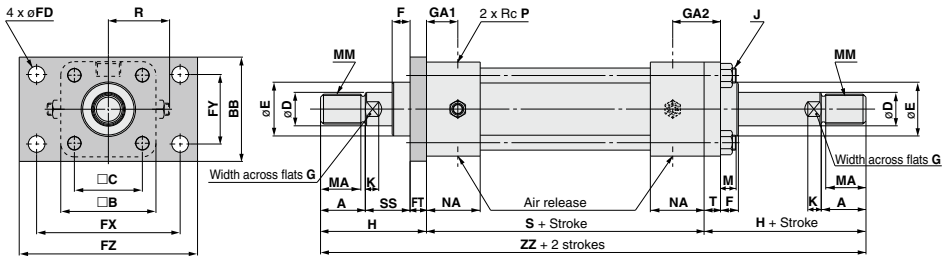
| (mm)              |                      |     |     |     |    |    |    |            |    |       |    |    |     |       |    |    |     |    |     |     |    |    |    |     |
|-------------------|----------------------|-----|-----|-----|----|----|----|------------|----|-------|----|----|-----|-------|----|----|-----|----|-----|-----|----|----|----|-----|
| Bore size<br>(mm) | Stroke range<br>(mm) | BB  | □B  | □C  | CD | F  | GA | J          | LH | ±0.15 | LT | LW | LX  | M     | NA | P  | R   | S  | SS  | T   | X1 | Y1 | Z  |     |
| 32                | 25 to 800            | 62  | 58  | 38  | 11 | 16 | 32 | M10 x 1.25 | 40 |       | 8  | 30 | 40  |       | 11 | 37 | 3/8 | 39 | 158 | 220 | 11 | 32 | 13 | 222 |
| 40                | 25 to 800            | 69  | 65  | 45  | 11 | 12 | 32 | M10 x 1.25 | 43 |       | 8  | 33 | 46  | ±0.13 | 11 | 36 | 3/8 | 42 | 158 | 220 | 11 | 32 | 13 | 222 |
| 50                | 25 to 800            | 85  | 76  | 52  | 14 | 15 | 40 | M10 x 1.25 | 50 |       | 8  | 37 | 58  |       | 11 | 43 | 1/2 | 46 | 176 | 241 | 13 | 35 | 15 | 246 |
| 63                | 25 to 800            | 98  | 90  | 63  | 18 | 15 | 42 | M12 x 1.5  | 60 |       | 10 | 45 | 65  | ±0.15 | 14 | 43 | 1/2 | 52 | 186 | 263 | 15 | 42 | 18 | 270 |
| 80                | 25 to 1000           | 118 | 110 | 80  | 18 | 17 | 40 | M16 x 1.5  | 72 | ±0.25 | 12 | 50 | 87  |       | 16 | 44 | 3/4 | 65 | 202 | 287 | 18 | 50 | 20 | 302 |
| 100               | 25 to 1000           | 150 | 135 | 102 | 22 | 19 | 42 | M18 x 1.5  | 85 |       | 12 | 55 | 109 | ±0.18 | 18 | 44 | 3/4 | 75 | 212 | 307 | 20 | 55 | 23 | 322 |

Rod series

| Bore size<br>(mm) | B-series rod |    |    |      |    |                  |    |    |     |           | C-series rod |    |      |      |    |                  |    |    |     |     |
|-------------------|--------------|----|----|------|----|------------------|----|----|-----|-----------|--------------|----|------|------|----|------------------|----|----|-----|-----|
|                   | MM           | A  | MA | D    | E  | K                | G  | H  | ZZ  | MM        | A            | MA | D    | E    | K  | G                | H  | ZZ |     |     |
| 32                | M16 x 1.5    | 25 | 22 | 18   | 34 | -0.025<br>-0.064 | 7  | 14 | 55  | 268       | —            | —  | —    | —    | —  | —                | —  | —  | —   |     |
| 40                | M20 x 1.5    | 30 | 27 | 22.4 | 40 |                  | 9  | 19 | 60  | 278       | M16 x 1.5    | 25 | 22   | 18   | 36 | -0.025<br>-0.064 | 7  | 14 | 55  | 268 |
| 50                | M24 x 1.5    | 35 | 32 | 28   | 46 | 11               | 24 | 65 | 306 | M20 x 1.5 | 30           | 27 | 22.4 | 40   | 11 |                  | 24 | 60 | 296 |     |
| 63                | M30 x 1.5    | 45 | 42 | 35.5 | 55 | -0.030<br>-0.076 | 13 | 30 | 80  | 346       | M24 x 1.5    | 35 | 32   | 28   | 46 | 11               | 24 | 70 | 326 |     |
| 80                | M39 x 1.5    | 60 | 57 | 45   | 65 |                  | 15 | 41 | 95  | 392       | M30 x 1.5    | 45 | 42   | 35.5 | 55 | -0.030<br>-0.076 | 13 | 30 | 80  | 362 |
| 100               | M48 x 1.5    | 75 | 72 | 56   | 80 | -0.036<br>-0.090 | 16 | 50 | 115 | 442       | M39 x 1.5    | 60 | 57   | 45   | 65 |                  | 15 | 41 | 100 | 412 |

JIS Standard Hydraulic Cylinder  
Double Acting/Double Rod **Series CH2EW/CH2FW**

Rod rectangular flange style: CH2EWFA, CH2FWFA



CHQ

CHK ☐

CHN

CHM

CHS ☐

CH2 ☐

CHA

Related Equipment

D- ☐

</

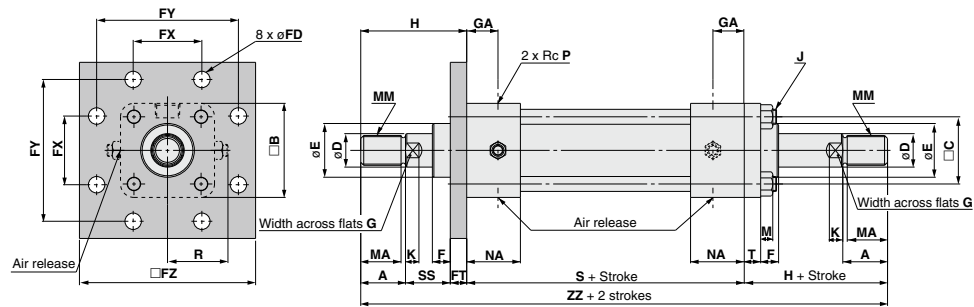
Rod series

| Bore size<br>(mm) | B-series rod |    |    |      |    |                  |    |    |     |     | C-series rod |    |    |      |    |                  |    |     |     |     |
|-------------------|--------------|----|----|------|----|------------------|----|----|-----|-----|--------------|----|----|------|----|------------------|----|-----|-----|-----|
|                   | MM           | A  | MA | D    | E  | K                | G  | H  | ZZ  | MM  | A            | MA | D  | E    | K  | G                | H  | ZZ  |     |     |
| 32                | M16 x 1.5    | 25 | 22 | 18   | 34 | -0.025<br>-0.064 | 7  | 14 | 66  | 268 | —            | —  | —  | —    | —  | 7                | 14 | 66  | 268 |     |
| 40                | M20 x 1.5    | 30 | 27 | 22.4 | 40 |                  | 9  | 19 | 71  | 278 | M16 x 1.5    | 25 | 22 | 18   | 36 | -0.025<br>-0.064 | 7  | 14  | 66  | 268 |
| 50                | M24 x 1.5    | 35 | 32 | 28   | 46 | -0.030           | 11 | 24 | 78  | 306 | M20 x 1.5    | 30 | 27 | 22.4 | 40 | 9                | 19 | 73  | 296 |     |
| 63                | M30 x 1.5    | 45 | 42 | 35.5 | 55 |                  | 13 | 30 | 95  | 346 | M24 x 1.5    | 35 | 32 | 28   | 46 | 11               | 24 | 85  | 326 |     |
| 80                | M39 x 1.5    | 60 | 57 | 45   | 65 | -0.076           | 15 | 41 | 113 | 392 | M30 x 1.5    | 45 | 42 | 35.5 | 55 | -0.030<br>-0.076 | 13 | 30  | 98  | 362 |
| 100               | M48 x 1.5    | 75 | 72 | 56   | 80 | -0.036<br>-0.090 | 16 | 50 | 135 | 442 | M39 x 1.5    | 60 | 57 | 45   | 65 | 15               | 41 | 120 | 412 |     |

Series **CH2EW/CH2FW**

Dimensions

Square flange style: CH2EWFC, CH2FWFC



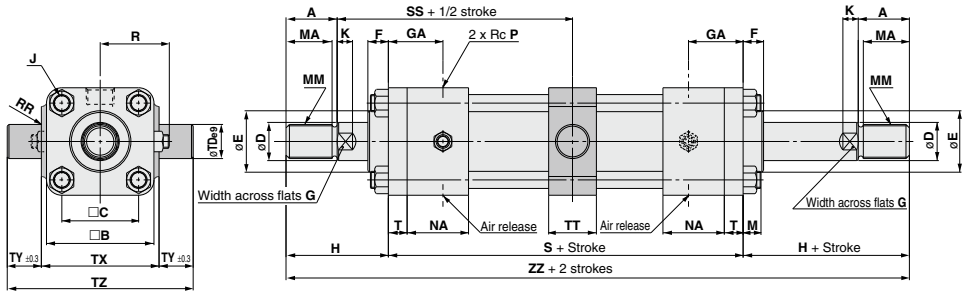
| (mm)              |                      |     |     |    |    |    |      |     |       |     |     |    |            |    |    |     |    |     |    |
|-------------------|----------------------|-----|-----|----|----|----|------|-----|-------|-----|-----|----|------------|----|----|-----|----|-----|----|
| Bore size<br>(mm) | Stroke range<br>(mm) | □B  | □C  | F  | FD | FT | FX   | FY  | FZ    | GA  | J   | M  | NA         | P  | R  | S   | SS | T   |    |
| 32                | 25 to 800            | 58  | 38  | 16 | 11 | 11 | ±0.2 | 40  | ±0.13 | 88  | 109 | 21 | M10 x 1.25 | 11 | 37 | 3/8 | 39 | 136 | 30 |
| 40                | 25 to 800            | 65  | 45  | 12 | 11 | 11 |      | 46  |       | 95  |     |    |            |    |    |     |    |     |    |
| 50                | 25 to 800            | 76  | 52  | 15 | 14 | 13 |      | 58  | ±0.15 | 115 | 145 | 27 | M10 x 1.25 | 11 | 43 | 1/2 | 46 | 150 | 30 |
| 63                | 25 to 800            | 90  | 63  | 15 | 18 | 15 |      | 65  |       | 132 |     |    |            |    |    |     |    |     |    |
| 80                | 25 to 1000           | 110 | 80  | 17 | 18 | 18 | ±0.3 | 87  | ±0.18 | 155 | 190 | 22 | M16 x 1.5  | 16 | 44 | 3/4 | 65 | 166 | 35 |
| 100               | 25 to 1000           | 135 | 102 | 19 | 22 | 20 |      | 109 |       | 190 |     |    |            |    |    |     |    |     |    |

Rod series

| (mm)              |              |    |    |      |    |                  |    |    |     |     |              |    |    |      |                  |    |    |     |     |
|-------------------|--------------|----|----|------|----|------------------|----|----|-----|-----|--------------|----|----|------|------------------|----|----|-----|-----|
| Bore size<br>(mm) | B-series rod |    |    |      |    |                  |    |    |     |     | C-series rod |    |    |      |                  |    |    |     |     |
|                   | MM           | A  | MA | D    | E  | K                | G  | H  | ZZ  | MM  | A            | MA | D  | E    | K                | G  | H  | ZZ  |     |
| 32                | M16 x 1.5    | 25 | 22 | 18   | 34 | -0.025<br>-0.064 | 7  | 14 | 66  | 268 | —            | —  | —  | —    | -0.025<br>-0.064 | 7  | 14 | 66  | 268 |
| 40                | M20 x 1.5    | 30 | 27 | 22.4 | 40 |                  | 9  | 19 | 71  | 278 | M16 x 1.5    | 25 | 22 | 18   | 36               | —  | —  | —   | —   |
| 50                | M24 x 1.5    | 35 | 32 | 28   | 46 | -0.030<br>-0.076 | 11 | 24 | 78  | 306 | M20 x 1.5    | 30 | 27 | 22.4 | 40               | 9  | 19 | 73  | 296 |
| 63                | M30 x 1.5    | 45 | 42 | 35.5 | 55 |                  | 13 | 30 | 95  | 346 | M24 x 1.5    | 35 | 32 | 28   | 46               | 11 | 24 | 85  | 326 |
| 80                | M39 x 1.5    | 60 | 57 | 45   | 65 | -0.036<br>-0.090 | 15 | 41 | 113 | 392 | M30 x 1.5    | 45 | 42 | 35.5 | 55               | 13 | 30 | 98  | 362 |
| 100               | M48 x 1.5    | 75 | 72 | 56   | 80 |                  | 16 | 50 | 135 | 442 | M39 x 1.5    | 60 | 57 | 45   | 65               | 15 | 41 | 120 | 412 |

JIS Standard Hydraulic Cylinder  
Double Acting/Double Rod **Series CH2EW/CH2FW**

Center trunnion style: CH2EWTC, CH2FWTC



CHQ

CHK ☐

CHN

CHM

CHS ☐

CH2 ☐

CHA

Related Equipment

D- ☐

| (mm)              |                      |     |     |    |    |            |    |    |     |    |     |     |     |    |                  |                  |    |     |           |      |     |
|-------------------|----------------------|-----|-----|----|----|------------|----|----|-----|----|-----|-----|-----|----|------------------|------------------|----|-----|-----------|------|-----|
| Bore size<br>(mm) | Stroke range<br>(mm) | □B  | □C  | F  | GA | J          | M  | NA | P   | R  | RR  | S   | SS  | T  | TD <sub>e9</sub> | TT               | TX | TY  | TZ        |      |     |
| 32                | 25 to 800            | 58  | 38  | 16 | 32 | M10 x 1.25 | 11 | 37 | 3/8 | 39 | 2   | 158 | 113 | 11 | 20               | -0.040<br>-0.092 | 28 | 58  | 0         | 20   | 98  |
| 40                | 25 to 800            | 65  | 45  | 12 | 32 | M10 x 1.25 | 11 | 36 | 3/8 | 42 | 2   | 158 | 113 | 11 | 20               |                  | 28 | 69  | -0.3      | 20   | 109 |
| 50                | 25 to 800            | 76  | 52  | 15 | 40 | M10 x 1.25 | 11 | 43 | 1/2 | 46 | 2.5 | 176 | 121 | 13 | 25               |                  | 33 | 85  |           | 25   | 135 |
| 63                | 25 to 800            | 90  | 63  | 15 | 42 | M12 x 1.5  | 14 | 43 | 1/2 | 52 | 2.5 | 186 | 132 | 15 | 31.5             | -0.050<br>-0.112 | 43 | 98  | 0         | 31.5 | 161 |
| 80                | 25 to 1000           | 110 | 80  | 17 | 40 | M16 x 1.5  | 16 | 44 | 3/4 | 65 | 2.5 | 202 | 146 | 18 | 31.5             |                  | 43 | 118 | -0.35     | 31.5 | 181 |
| 100               | 25 to 1000           | 135 | 102 | 19 | 42 | M18 x 1.5  | 18 | 44 | 3/4 | 75 | 3   | 212 | 156 | 20 | 40               |                  | 53 | 145 | 0<br>-0.4 | 40   | 225 |

Rod series

| Bore size<br>(mm) | B-series rod |    |    |      |    |                  |    |     |     |           | C-series rod |    |      |      |    |                  |    |     |     |     |
|-------------------|--------------|----|----|------|----|------------------|----|-----|-----|-----------|--------------|----|------|------|----|------------------|----|-----|-----|-----|
|                   | MM           | A  | MA | D    | E  | K                | G  | H   | ZZ  | MM        | A            | MA | D    | E    | K  | G                | H  | ZZ  |     |     |
| 32                | M16 x 1.5    | 25 | 22 | 18   | 34 | -0.025<br>-0.064 | 7  | 14  | 55  | 268       | —            | —  | —    | —    | —  | —                | —  | —   |     |     |
| 40                | M20 x 1.5    | 30 | 27 | 22.4 | 40 |                  | 9  | 19  | 60  | 278       | M16 x 1.5    | 25 | 22   | 18   | 36 | -0.025<br>-0.064 | 7  | 14  | 55  | 268 |
| 50                | M24 x 1.5    | 35 | 32 | 28   | 46 | 11               | 24 | 65  | 306 | M20 x 1.5 | 30           | 27 | 22.4 | 40   | 9  |                  | 19 | 60  | 296 |     |
| 63                | M30 x 1.5    | 45 | 42 | 35.5 | 55 | -0.030<br>-0.076 | 13 | 30  | 80  | 346       | M24 x 1.5    | 35 | 32   | 28   | 46 | 11               | 24 | 70  | 326 |     |
| 80                | M39 x 1.5    | 60 | 57 | 45   | 65 |                  | 15 | 41  | 95  | 392       | M30 x 1.5    | 45 | 42   | 35.5 | 55 | -0.030<br>-0.076 | 13 | 30  | 80  | 362 |
| 100               | M48 x 1.5    | 75 | 72 | 56   | 80 | 16               | 50 | 115 | 442 | M39 x 1.5 | 60           | 57 | 45   | 65   | 15 |                  | 41 | 100 | 412 |     |