

# Tom Disco® 302A(Wafer) / 303Q (Lugged)

## Double Offset Metal Seat High Performance Butterfly Valve to suit API standard

Valve nominal size: **80mm to 600mm**

Max. working pressure: **2.0MPa( 300psi )**

Working temperature range: **- 29 degrees C( - 20 F )to 600 degrees C( 1292 F )as standard and  
- 100 degrees C( - 148 F ) to 600 degrees C( 1292 F )with selection of suitable materials**

### General description

Inherent fire safe design with carbon steel or stainless steel body with ASME/ANSI B16.34 class 150# rating and API 609 pressure temperature rating. Ideal for use in general hydrocarbon, chemical process, low pressure steam, and gas applications.

### Double offset geometry

The axis of disc rotation is double offset to the seat ring. When the disc rotates, it unseats at a small turning angle by its cam effect. This prevents seat wear and provides reliable sealing performance over long periods.

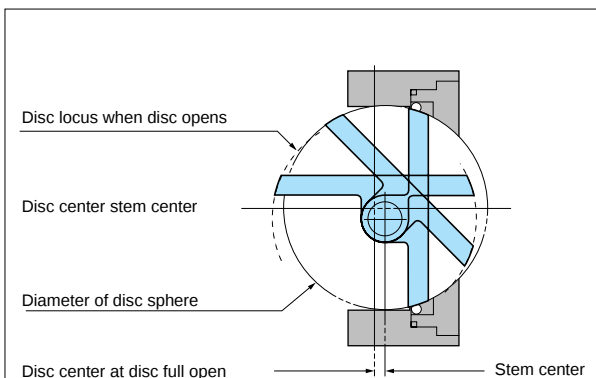
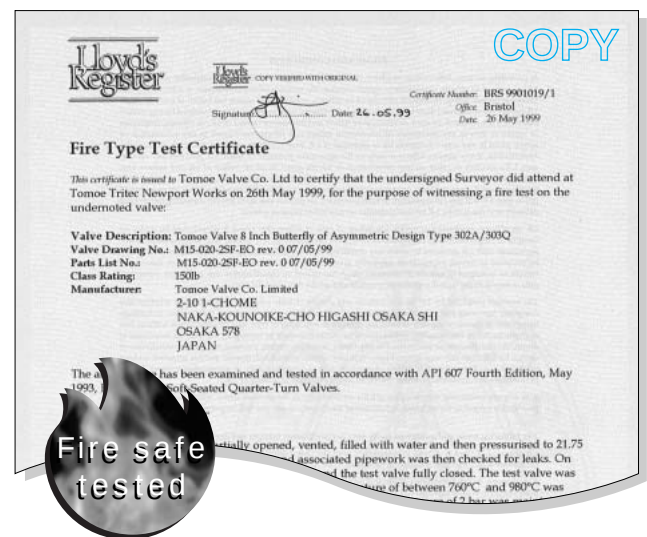
### Characteristics

#### Metal seat

The resilient metal seat ring with coil spring compensates for thermal expansion or contraction of the body or disc. The ball lock method is adopted to facilitate replacement of the seat ring.

### Improved reliability

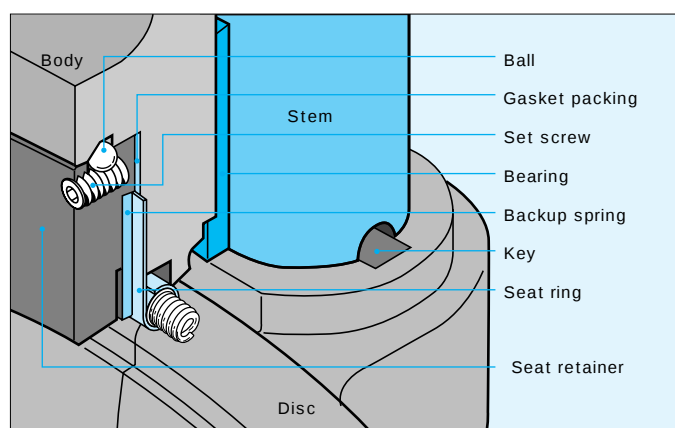
By minimizing the effect of friction and the special hard facing of seating, the reliability of this metal seat butterfly valve is dramatically improved. The key connection of the disc and stem will prevent the direct effect of heat transaction from the stem to the disc as well as provide an anti-blow out facility on the stem.

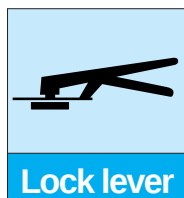


#### Double-Eccentric Disc

The axis of disc rotation is double eccentric to the seat rings. When the disc rotates, it unseats at a small turning angle by its cam effect. This prevents seat wear and provides a perfect seal for long periods.

### Construction ( patent pending )





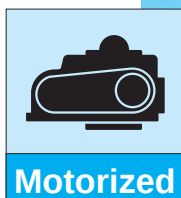
Lock lever



Worm gear



Pneumatic cylinder



Motorized

## Fire Safe Design

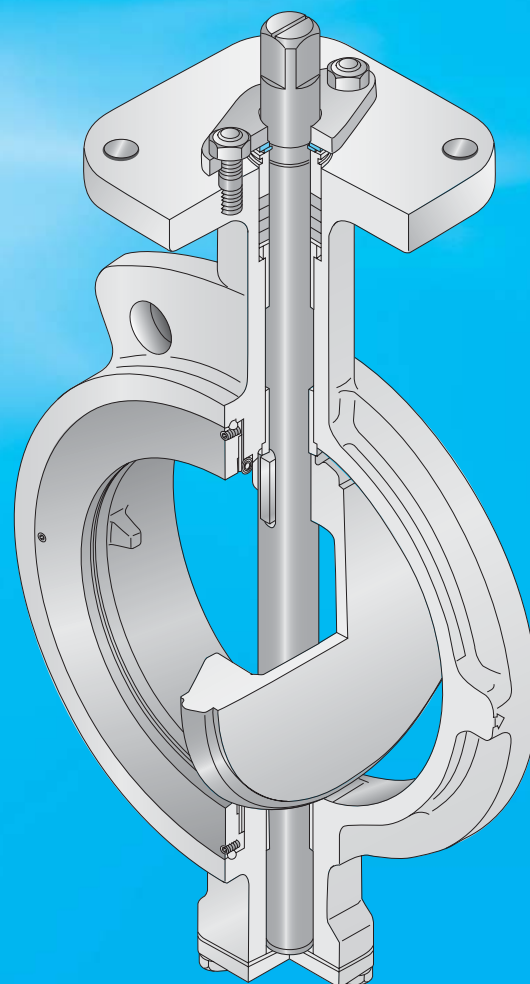
Designed as an inherently fire safe metal seated butterfly valve. Certified to Fire Safe Test as per API 607 4th Edition.

## Bi-directional flow

Workable in both directions. The valve can be used at the non-preferred direction subject to pressure rating and the leakage rate.

## Disc with reinforced rib

Discs up to 300mm have a thin cross section but feature a reinforcing rib. As for 350mm to 600mm the disc rib has a convex figuration. These designs successfully reduce thermal expansion and provide a constant sealing performance against any change in temperature or pressure of the fluid.



## Standard specifications

|                                         |                             |                                                                                                       |    |     |                |     |     |     |                                                                                          |     |     |     |     |     |
|-----------------------------------------|-----------------------------|-------------------------------------------------------------------------------------------------------|----|-----|----------------|-----|-----|-----|------------------------------------------------------------------------------------------|-----|-----|-----|-----|-----|
| Valve nominal size <sup>1</sup>         |                             | 80, 100, 125, 150, 200, 250, 300mm                                                                    |    |     |                |     |     |     | 350, 400, 450, 500, 600mm                                                                |     |     |     |     |     |
| Applicable flange standard              |                             | JIS 10K/16K/20K    ANSI 125/150Lb    API/JPI 150Lb<br>BS10 Table F    BS 4504 PN 10/16    DIN NP10/16 |    |     |                |     |     |     | JIS 5K/10K/16K/20K    ANSI 125/150Lb    API/JPI 150Lb<br>BS 4504 PN 10/16    DIN NP10/16 |     |     |     |     |     |
| Face-to-face dimensions                 |                             | API 609(class 150Lb, category B), JPI-7S-83(class 150Lb)                                              |    |     |                |     |     |     |                                                                                          |     |     |     |     |     |
|                                         |                             | Nominal size                                                                                          | 80 | 100 | 125            | 150 | 200 | 250 | 300                                                                                      | 350 | 400 | 450 | 500 | 600 |
|                                         |                             | Face to face dimension                                                                                | 48 | 54  | 56             | 57  | 64  | 71  | 81                                                                                       | 92  | 102 | 114 | 127 | 154 |
|                                         |                             | 125mm as per JIS B 2002 ( series 46 )ISO 5752 ( series 20 )                                           |    |     |                |     |     |     |                                                                                          |     |     |     |     |     |
| Seat leakage                            |                             | API 598-7th Edition                                                                                   |    |     |                |     |     |     |                                                                                          |     |     |     |     |     |
| Connection                              |                             | Wafer type                                                                                            |    |     |                |     |     |     |                                                                                          |     |     |     |     |     |
| Pressure-temperatue-rating <sup>2</sup> |                             | API 609 class 150Lb category B, ASME/ANSI B16.34 class 150Lb                                          |    |     |                |     |     |     |                                                                                          |     |     |     |     |     |
| Fire safe                               |                             | API 607 4th Edition                                                                                   |    |     |                |     |     |     |                                                                                          |     |     |     |     |     |
| Max. working pressure <sup>2</sup>      |                             | 2.0MPa                                                                                                |    |     |                |     |     |     |                                                                                          |     |     |     |     |     |
| Working temperature range <sup>3</sup>  |                             | -29 to 600 degrees C (Ext. bonnet is required at 400 degrees C and or over)                           |    |     |                |     |     |     |                                                                                          |     |     |     |     |     |
| Flow direction                          |                             | Bi-directional flow (Flow to disc side is recommended.)                                               |    |     |                |     |     |     |                                                                                          |     |     |     |     |     |
|                                         |                             | └ Flow to disc side (2.0 MPa)                                                                         |    |     |                |     |     |     |                                                                                          |     |     |     |     |     |
|                                         |                             | └ Flow to stem side (1.0 MPa)                                                                         |    |     |                |     |     |     |                                                                                          |     |     |     |     |     |
| Pressure test                           | Body shell                  | 3.1 MPa (API 598 7th Edition) by hydraulic                                                            |    |     |                |     |     |     |                                                                                          |     |     |     |     |     |
|                                         | Seat leak                   | 7 bar (API 598 7th Edition) by air                                                                    |    |     |                |     |     |     |                                                                                          |     |     |     |     |     |
| Actuators                               |                             | Lock lever (80mm to 150mm)                                                                            |    |     |                |     |     |     |                                                                                          |     |     |     |     |     |
|                                         |                             | Worm gear, Pneumatic cylinder, Motorized                                                              |    |     |                |     |     |     |                                                                                          |     |     |     |     |     |
| Standard materials <sup>3</sup>         | Body                        | SCPH2/WCB, SCS 14A/CF8M                                                                               |    |     |                |     |     |     | SCPH2/WCB, SCS 13A/CF8, SCS 14A/CF8M                                                     |     |     |     |     |     |
|                                         | Disc                        | 80mm to 150mm                                                                                         |    |     | 200mm to 300mm |     |     |     | 350mm to 600mm                                                                           |     |     |     |     |     |
|                                         |                             | SCS 16A/CF3M( hard chrome plating )                                                                   |    |     |                |     |     |     | SCS 14A/CF8M( hard chrome plating )                                                      |     |     |     |     |     |
|                                         | Stem                        | SUS 420J2, SUS 329J1, SUS 316, SUS 329J4L                                                             |    |     |                |     |     |     | SUS 13A/CF8( hard chrome plating ), SCS 14A/CF8M( hard chrome plating )                  |     |     |     |     |     |
| Seat ring                               | SUS 420J2, SUS 304, SUS 630 |                                                                                                       |    |     |                |     |     |     |                                                                                          |     |     |     |     |     |
| Painting                                |                             | SUS316L Hard facing treatment                                                                         |    |     |                |     |     |     |                                                                                          |     |     |     |     |     |
|                                         |                             | Silicon resin coating (Grey N7) for 200 degrees C and lower                                           |    |     |                |     |     |     |                                                                                          |     |     |     |     |     |
| Option                                  |                             | Heat resistant silver coating for over 200 degrees C. No painting for stainless steel.                |    |     |                |     |     |     |                                                                                          |     |     |     |     |     |
|                                         |                             | Anti-static device                                                                                    |    |     |                |     |     |     |                                                                                          |     |     |     |     |     |

1. Please use 302Y or 337Y if using a nominal valve diameter of 50mm and 65mm.

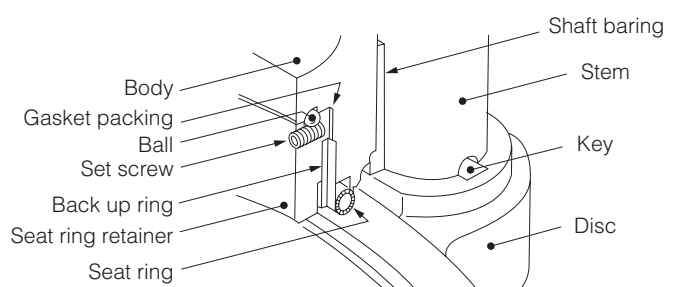
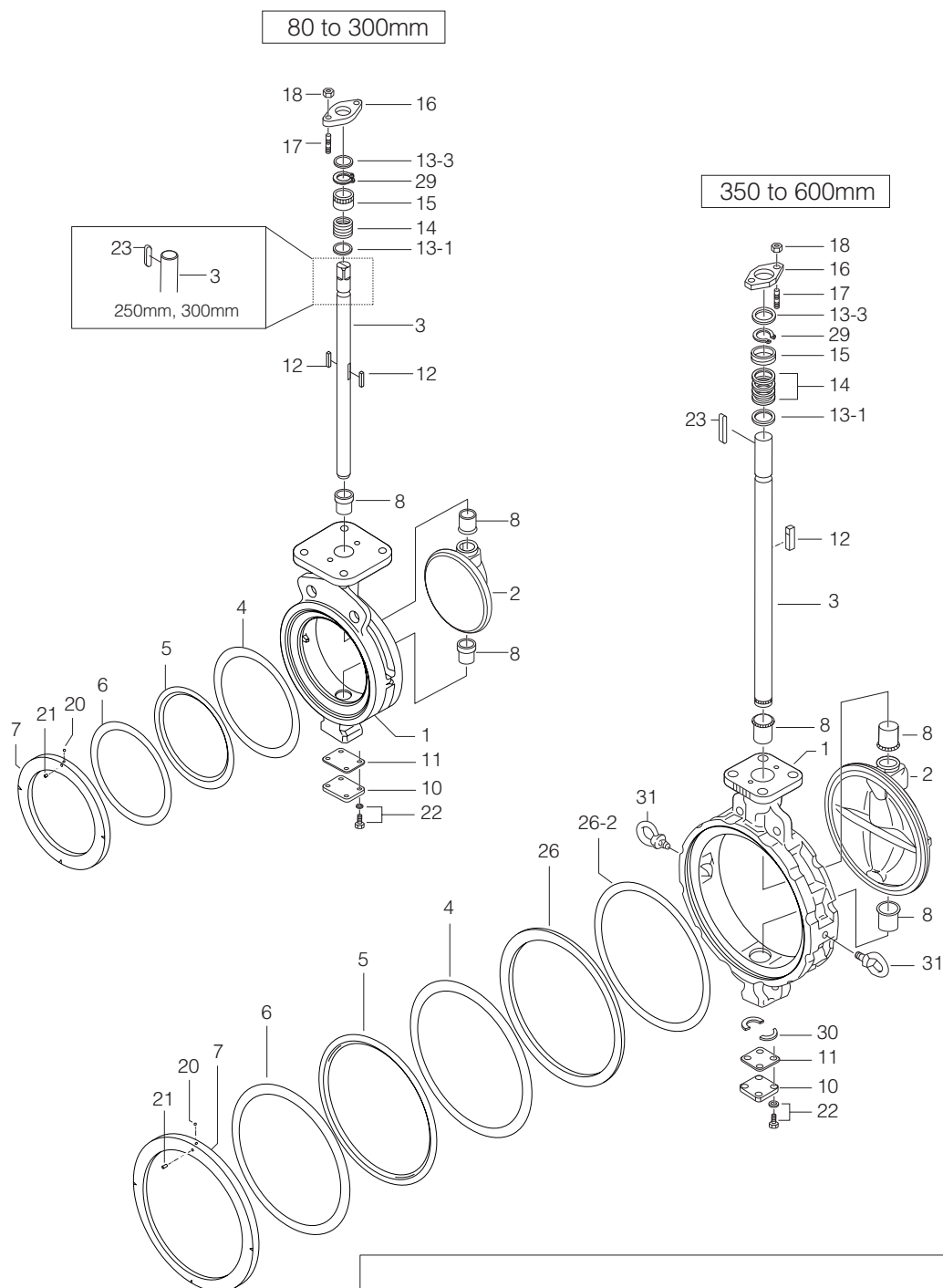
2. Refer to pressure – temperature rating chart on page 302A/303Q-05.

3. Contact us regarding special material.

Contact us at 400 degrees C and or over for oxidizing at mosphere.

# Tom Disco® 302A(Wafer)/303Q (Lugged)

## 302A Expanded view of components



### 302A Parts list

#### ■ 302A Parts list (80mm to 300mm: - 29 to 400 degrees C)

| No.  | Description                 | Q'ty   | Remarks           |
|------|-----------------------------|--------|-------------------|
| 1    | Body                        | 1      |                   |
| 2    | Disc                        | 1      |                   |
| 3    | Stem                        | 1      |                   |
| 4    | Seat ring gasket            | 1      |                   |
| 5    | Seat ring                   | 1      |                   |
| 6    | Back-up ring                | 1      |                   |
| 7    | Seat ring retainer          | 1      |                   |
| 8    | Shaft bearing               | 3      |                   |
| 10   | Bottom cover                | 1      |                   |
| 11   | Bottom gasket               | 1      |                   |
| 12   | Stem key                    | 2      |                   |
| 13-1 | Packing retainer            | 1      |                   |
| 13-3 | Ring                        | 1      |                   |
| 14   | Gland packing               | 1 set  |                   |
| 15   | Gland bush                  | 1      |                   |
| 16   | Gland flange                | 1      |                   |
| 17   | Gland bolt                  | 2      |                   |
| 18   | Gland nut                   | 2      |                   |
| 20   | Ball                        | 2      | 80mm to 125mm     |
|      |                             | 4      | 150mm to 300mm    |
| 21   | Set screw                   | 2      | 80mm to 125mm     |
|      |                             | 4      | 150mm to 300mm    |
| 22   | Hexagon bolt, Spring washer | 4 sets |                   |
| 23   | Key                         | 1      | Only 250mm, 300mm |
| 29   | C-ring                      | 1      |                   |

#### ■ 302A Parts list (350mm to 600mm: - 29 to 400 degrees C)

| No.  | Description                 | Q'ty   | Remarks             |
|------|-----------------------------|--------|---------------------|
| 1    | Body                        | 1      |                     |
| 2    | Disc                        | 1      |                     |
| 3    | Stem                        | 1      |                     |
| 4    | Seat ring gasket            | 1      |                     |
| 5    | Seat ring                   | 1      |                     |
| 6    | Back-up ring                | 1      |                     |
| 7    | Seat ring retainer          | 1      |                     |
| 8    | Shaft bearing               | 3 sets |                     |
| 10   | Bottom cover                | 1      |                     |
| 11   | Bottom gasket               | 1      |                     |
| 12   | Stem key                    | 1      |                     |
| 13-1 | Packing retainer            | 1      |                     |
| 13-3 | Ring                        | 1      |                     |
| 14   | Gland packing               | 1 sets |                     |
| 15   | Gland bush                  | 1      |                     |
| 16   | Gland flange                | 1      |                     |
| 17   | Gland bolt                  | 2      |                     |
| 18   | Gland nut                   | 2      |                     |
| 20   | Ball                        | 4      |                     |
| 21   | Set screw                   | 4      |                     |
| 22   | Hexagon bolt, Spring washer | 4 sets |                     |
| 23   | Key                         | 1      |                     |
| 26   | Sub-retainer                | 1      |                     |
| 26-2 | Seat spacer                 | 1      | Only 350mm          |
| 29   | C-ring                      | 1      |                     |
| 30   | Thrust ring                 | 2      |                     |
| 31   | Eye bolt                    | 2      | Only 450mm to 600mm |

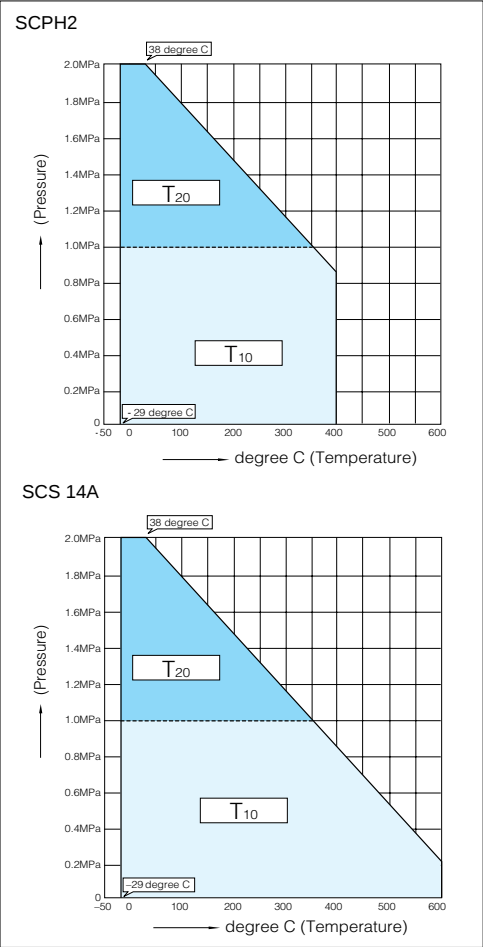
Remark: The indicates recommended spare parts. They are supplied as "Seat ring set" with a small hexagonal spanner to remove set screws (P.21).

302A Actuator selection chart

80mm to 300mm

| Model          | Category        | Size (mm / inch) |       |         |      |         |                     |     |  |  |  |
|----------------|-----------------|------------------|-------|---------|------|---------|---------------------|-----|--|--|--|
|                |                 | 80               | 100   | 125     | 150  | 200     | 250                 | 300 |  |  |  |
|                |                 | 3                | 4     | 5       | 6    | 8       | 10                  | 12  |  |  |  |
| 1T             | T <sub>10</sub> | 1T-2             |       |         | 1T-3 |         |                     |     |  |  |  |
|                | T <sub>20</sub> |                  |       |         |      |         |                     |     |  |  |  |
| 2U,2S          | T <sub>10</sub> | 2U-2             |       |         | 2U-4 | DGH-2   | DGH-3               |     |  |  |  |
|                | T <sub>20</sub> |                  |       |         |      |         |                     |     |  |  |  |
| 3E,3A          | T <sub>10</sub> | K70              | K170  |         | K370 | K700    | TGA-125             |     |  |  |  |
|                | T <sub>20</sub> |                  |       |         |      |         |                     |     |  |  |  |
| 3G,3F<br>3U,3K | T <sub>10</sub> | K170S            | K370S | K700S   |      | TG-12S  |                     |     |  |  |  |
|                | T <sub>20</sub> | K370S            |       |         |      | TG-10S  |                     |     |  |  |  |
| 4I             | T <sub>10</sub> | 4I-0             | 4I-1  | 4I-2    |      | 4I-2.5  | 4I-3                |     |  |  |  |
|                | T <sub>20</sub> | 4I-1             |       |         |      |         |                     |     |  |  |  |
| 4J,4L          | T <sub>10</sub> | SRJ-010          |       | SRJ-020 |      | SRJ-060 | LTKD-01 0.2kW/DGH-3 |     |  |  |  |
|                | T <sub>20</sub> |                  |       |         |      |         |                     |     |  |  |  |

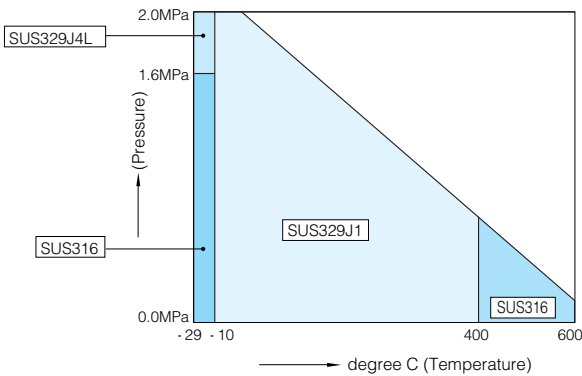
302A Pressure rating



302A Standard stem material

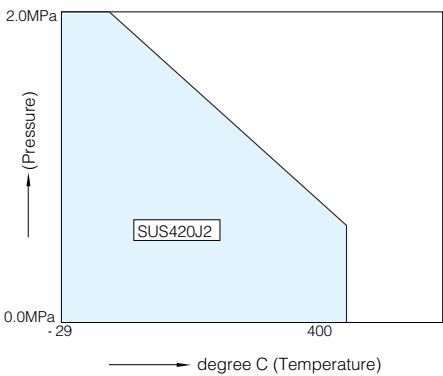
80mm to 300mm

SCS 14A/CF8M body



| Temp.         | - 29 to - 10 degrees C | - 10 to 400 degrees C | 400 to 600 degrees C |
|---------------|------------------------|-----------------------|----------------------|
| Pressure      | 0 to 1.6MPa            | SUS 316               | SUS 316              |
| 1.6 to 2.0MPa | SUS 329J4L             | SUS 329J1             |                      |

SCPH2/WCB body



| Temp.    | - 29 to 400 degrees C |
|----------|-----------------------|
| Pressure | 0 to 2.0MPa           |
|          | SUS 420J2             |

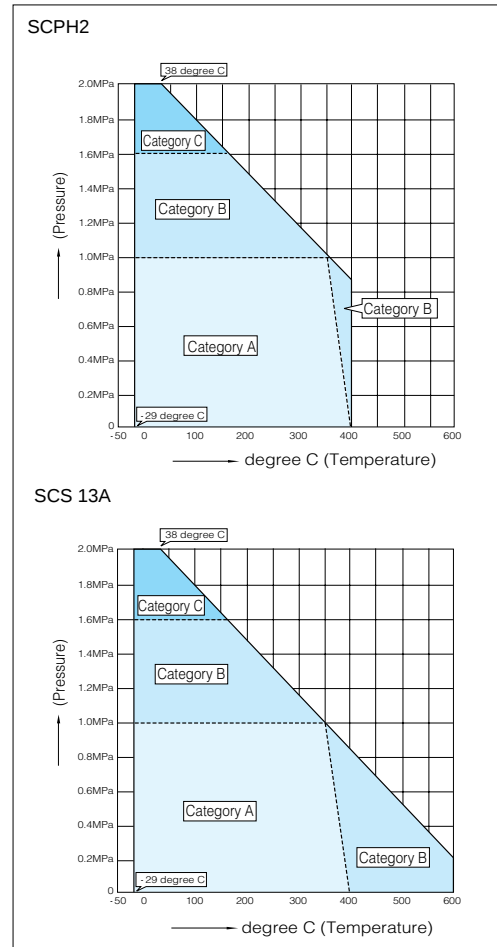
1 Framed description shows stem material.  
2 Refer to Pressure - Temperature chart.  
3 Consult us regarding other materials.

## 302A Actuator selection chart

### ■ 350mm to 600mm

| Model | Cate-<br>gory | Size ( $\frac{\text{mm}}{\text{inch}}$ )                                 |                                                 |                     |         |                                            |                     |
|-------|---------------|--------------------------------------------------------------------------|-------------------------------------------------|---------------------|---------|--------------------------------------------|---------------------|
|       |               | 350                                                                      | 400                                             | 450                 | 500     | 600                                        |                     |
|       |               | 14                                                                       | 16                                              | 18                  | 20      | 24                                         |                     |
| 2S    | A             | <div><div>DGH-3</div><div>DGH-4</div><div>DGH-4+R/G5</div></div>         |                                                 |                     |         | DGH-4+R/G                                  |                     |
|       | B             |                                                                          |                                                 |                     |         | DGH-4.5                                    |                     |
|       | C             |                                                                          |                                                 |                     |         | +R/G5                                      |                     |
| 3A    | A             | TGA-125                                                                  | <div><div>TGA-140</div><div>TGA-160</div></div> |                     | TGA-160 | TGA-180                                    |                     |
|       | B             | <div><div>TGA-160</div><div>TGA-180</div></div>                          |                                                 |                     | TGA-200 |                                            |                     |
|       | C             |                                                                          |                                                 |                     | TGA-220 |                                            |                     |
| 3U,3K | A             | <div><div>TG-14S</div><div>TG-20S</div></div>                            |                                                 |                     |         |                                            |                     |
|       | B             |                                                                          |                                                 |                     |         |                                            |                     |
|       | C             |                                                                          |                                                 |                     |         |                                            |                     |
| 4I    | A             | <div><div>4I-4</div></div>                                               |                                                 |                     |         |                                            |                     |
|       | B             |                                                                          |                                                 |                     |         |                                            |                     |
|       | C             |                                                                          |                                                 |                     |         |                                            |                     |
| 4L    | A             | LTKD-01 0.2kW/DGH-3                                                      |                                                 | LTKD-02 0.4kW/DGH-4 |         | <div><div>LTKD-05 1.5kW/ DGH-5</div></div> |                     |
|       | B             | <div><div>LTKD-02 0.4kW/DGH-4</div><div>LTKD-02 0.75kW/DGH-4</div></div> |                                                 |                     |         |                                            |                     |
|       | C             |                                                                          |                                                 |                     |         |                                            | LTKD-02 0.4kW/DGH-4 |

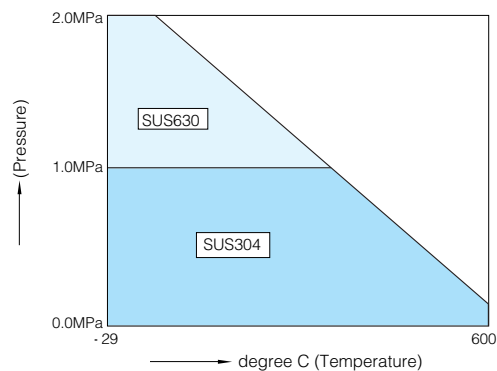
### ■ 302A Pressure rating



## 302A Standard stem material

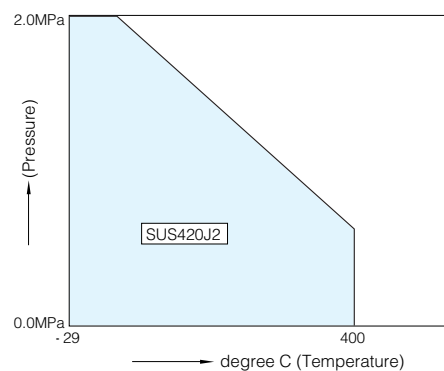
### ■ 350mm to 600mm

#### SCS 13A/CF8, 14A/CF8M body



| Pressure      | Temp.                 |
|---------------|-----------------------|
| 0 to 1.0MPa   | - 29 to 600 degrees C |
| 1.0 to 2.0MPa | SUS 630               |

#### SCPH2/WCB body

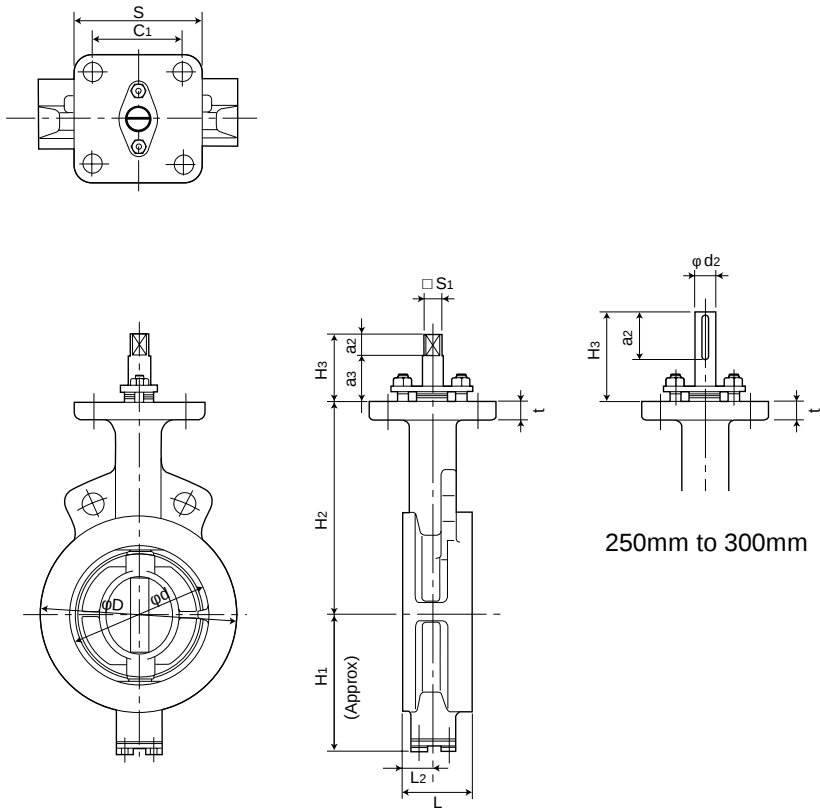


| Pressure    | Temp.                 |
|-------------|-----------------------|
| 0 to 2.0MPa | - 29 to 400 degrees C |
|             | SUS 420J2             |

1 Framed description shows stem material.  
2 Refer to Pressure - Temperature chart.  
3 Consult us regarding other materials.

Dimension list

302A-01 Bare shaft( Wafer type )

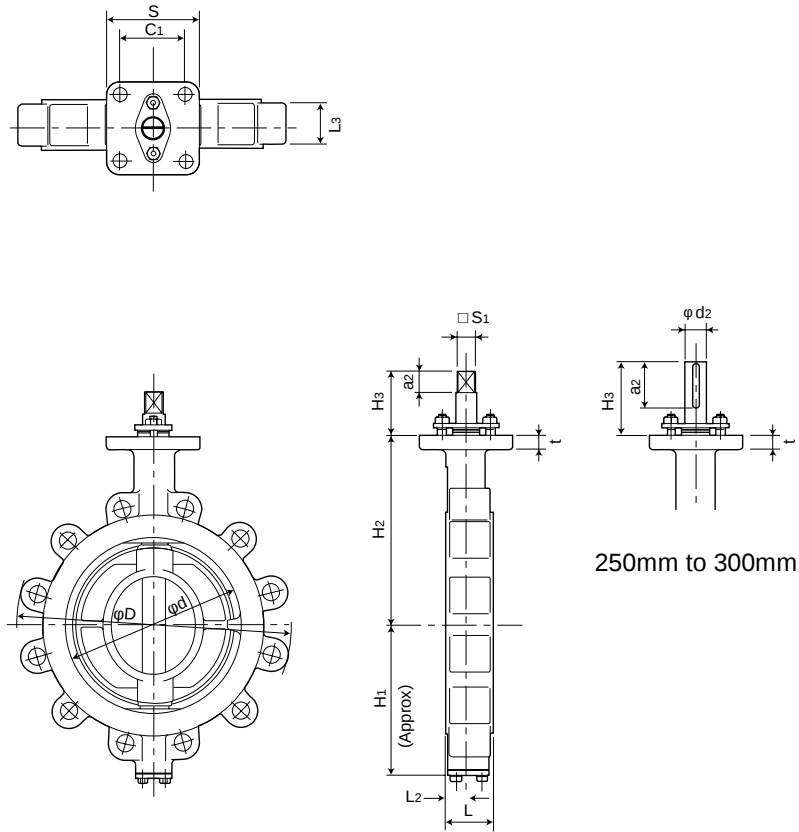


■ 302A Dimension list

| Nominal size |      | Dimension (mm) |          |     |       |       |       |       |            |               |       |       |    |     |       | Approx.<br>Mass<br>(kg) |
|--------------|------|----------------|----------|-----|-------|-------|-------|-------|------------|---------------|-------|-------|----|-----|-------|-------------------------|
| mm           | inch | $\phi d$       | $\phi D$ | L   | $L_2$ | $H_1$ | $H_2$ | $H_3$ | $\phi d_2$ | $\square S_1$ | $a_2$ | $a_3$ | t  | S   | $C_1$ |                         |
| 80           | 3    | 89             | 127      | 48  | 22    | 95    | 147   | 52.5  | 16         | 14            | 16.5  | 36    | 15 | 102 | 72    | 5                       |
| 100          | 4    | 112            | 156      | 54  | 24    | 110   | 170   | 52.5  | 16         | 16            | 16.5  | 36    | 15 | 102 | 72    | 6.2                     |
| 125          | 5    | 137            | 185      | 56  | 23    | 139   | 185   | 52.5  | 20         | 18            | 16.5  | 36    | 15 | 102 | 72    | 9.3                     |
| 150          | 6    | 163            | 216      | 57  | 23.5  | 164   | 205   | 52.5  | 22         | 24            | 20    | 35.5  | 15 | 125 | 88.4  | 12.5                    |
| 200          | 8    | 213            | 269      | 64  | 27    | 190   | 235   | 63    | 28         | -             | 30    | 33    | 15 | 125 | 88.4  | 19                      |
| 250          | 10   | 236            | 330      | 71  | 31    | 236   | 283   | 108   | 32         | -             | 65.3  | -     | 18 | 140 | 99    | 33                      |
| 300          | 12   | 315            | 381      | 81  | 35    | 246   | 310   | 35    | 35         | -             | 35    | -     | 18 | 140 | 99    | 42                      |
| 350          | 14   | 350            | 416      | 92  | 39.5  | 308   | 340   | 113   | 38         | -             | 70    | -     | 18 | 140 | 99    | 61                      |
| 400          | 16   | 400            | 475      | 102 | 39    | 348   | 372   | 113   | 42         | -             | 70    | -     | 18 | 140 | 99    | 88                      |
| 450          | 18   | 450            | 534      | 114 | 43    | 366   | 406   | 141.5 | 45         | -             | 60    | -     | 20 | 165 | 165   | 135                     |
| 500          | 20   | 500            | 589      | 127 | 50    | 405   | 442   | 141.5 | 49         | -             | 70    | -     | 20 | 165 | 165   | 173                     |
| 600          | 24   | 600            | 693      | 154 | 64    | 461   | 493   | 141.5 | 59         | -             | 70    | -     | 20 | 165 | 165   | 272                     |

# 302A Bare shaft (01: 80mm to 200mm, 02: 250mm to 600mm)

## 303Q-01 Bare shaft( Lugged type )



### 303Q Dimension list

| Nominal size |      | Dimension (mm) |     |     |                |                |                |                |                |                 |                 |                |    |     |                | Approx. Mass (kg) |
|--------------|------|----------------|-----|-----|----------------|----------------|----------------|----------------|----------------|-----------------|-----------------|----------------|----|-----|----------------|-------------------|
| mm           | inch | φd             | φD  | L   | L <sub>2</sub> | L <sub>3</sub> | H <sub>1</sub> | H <sub>2</sub> | H <sub>3</sub> | φd <sub>2</sub> | □S <sub>1</sub> | a <sub>2</sub> | t  | S   | C <sub>1</sub> |                   |
| 80           | 3    | 89             | 189 | 48  | 22             | 38             | 95             | 147            | 52.5           | 16              | 14              | 16.5           | 15 | 102 | 72             | 6                 |
| 100          | 4    | 112            | 227 | 54  | 24             | 46             | 120            | 170            | 52.5           | 16              | 14              | 16.5           | 15 | 102 | 72             | 9.5               |
| 125          | 5    | 137            | 256 | 56  | 23             | 48             | 139            | 185            | 52.5           | 20              | 16              | 16.5           | 15 | 102 | 72             | 14                |
| 150          | 6    | 163            | 282 | 57  | 23.5           | 49             | 164            | 205            | 55.5           | 22              | 18              | 20             | 15 | 125 | 88.4           | 16                |
| 200          | 8    | 213            | 343 | 64  | 27             | 54             | 190            | 235            | 63             | 28              | 24              | 30             | 15 | 125 | 88.4           | 24                |
| 250          | 10   | 236            | 412 | 71  | 31             | 61             | 236            | 283            | 108            | 32              | -               | 65             | 18 | 140 | 99             | 41                |
| 300          | 12   | 315            | 482 | 81  | 35             | 71             | 266            | 310            | 35             | 35              | -               | 70             | 18 | 140 | 99             | 56                |
| 350          | 14   | 350            | 537 | 92  | 39.5           | 70             | 308            | 340            | 113            | 38              | -               | 67             | 18 | 140 | 99             | 85                |
| 400          | 16   | 400            | 600 | 102 | 39             | 75             | 348            | 372            | 113            | 42              | -               | 68             | 18 | 141 | 99             | 125               |
| 450          | 18   | 450            | 636 | 114 | 43             | 83             | 366            | 406            | 141.5          | 45              | -               | 68             | 20 | 165 | 116.7          | 170               |
| 500          | 20   | 500            | 720 | 127 | 50             | 90             | 405            | 442            | 141.5          | 49              | -               | 79             | 20 | 165 | 116.7          | 225               |
| 600          | 24   | 600            | 814 | 154 | 64             | 131            | 461            | 493            | 141.5          | 59              | -               | 80             | 20 | 165 | 116.7          | 350               |

# Tom Disco® 302A<sup>(Wafer)</sup> / 303Q<sup>(Lugged)</sup>

Lock lever type 302A-1T (80mm to 150mm)

## ■ - 29 to 250 degrees C

| Nominal size |      | Dimension (mm) |     |    |                |                |                |                                   |                |     | Lever type | Approx. Mass (kg) |
|--------------|------|----------------|-----|----|----------------|----------------|----------------|-----------------------------------|----------------|-----|------------|-------------------|
| mm           | inch | φd             | φD  | L  | L <sub>2</sub> | H <sub>1</sub> | H <sub>2</sub> | Category                          | H <sub>3</sub> | W   |            |                   |
| 80           | 3    | 89             | 127 | 48 | 22             | 95             | 147            | T <sub>10</sub> , T <sub>20</sub> | 117            | 300 | 1T-2       | 7.1               |
| 100          | 4    | 112            | 156 | 54 | 24             | 110            | 170            | T <sub>10</sub> , T <sub>20</sub> | 117            | 300 | 1T-2       | 8.3               |
| 125          | 5    | 137            | 185 | 56 | 23             | 139            | 185            | T <sub>10</sub> , T <sub>20</sub> | 117            | 300 | 1T-2       | 11.4              |
| 150          | 6    | 163            | 216 | 57 | 23.5           | 164            | 205            | T <sub>10</sub> , T <sub>20</sub> | 125            | 350 | 1T-3       | 14.6              |

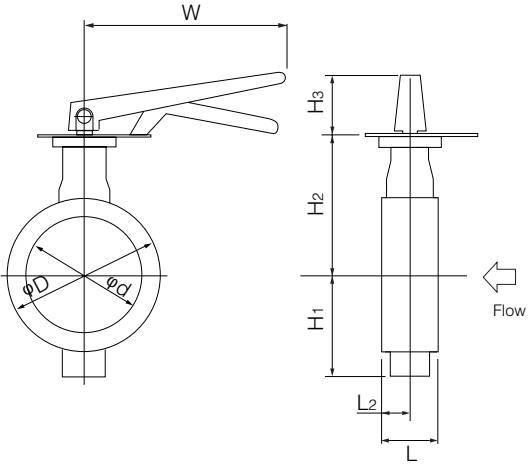
## ■ 250 to 400 degrees C

| Nominal size |      | Dimension (mm) |     |    |                |                |                |                                   |                |     | Lever type | Approx. Mass (kg) |
|--------------|------|----------------|-----|----|----------------|----------------|----------------|-----------------------------------|----------------|-----|------------|-------------------|
| mm           | inch | φd             | φD  | L  | L <sub>2</sub> | H <sub>1</sub> | H <sub>2</sub> | Category                          | H <sub>3</sub> | W   |            |                   |
| 80           | 3    | 89             | 127 | 48 | 22             | 95             | 147            | T <sub>10</sub> , T <sub>20</sub> | 217            | 300 | 1T-2       | 9.7               |
| 100          | 4    | 112            | 156 | 54 | 24             | 110            | 170            | T <sub>10</sub> , T <sub>20</sub> | 217            | 300 | 1T-2       | 10.9              |
| 125          | 5    | 137            | 185 | 56 | 23             | 139            | 185            | T <sub>10</sub> , T <sub>20</sub> | 217            | 300 | 1T-2       | 14.2              |
| 150          | 6    | 163            | 216 | 57 | 23.5           | 164            | 205            | T <sub>10</sub> , T <sub>20</sub> | 297            | 350 | 1T-3       | 21.3              |

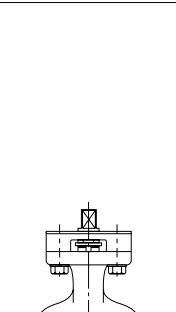
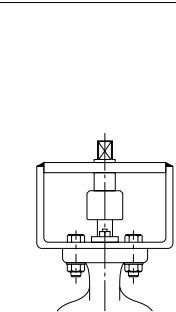
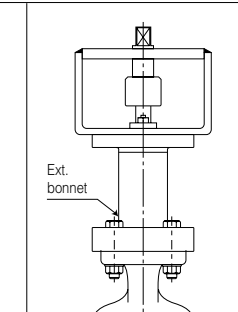
## ■ 400 to 600 degrees C

| Nominal size |      | Dimension (mm) |     |    |                |                |                |                 |                |     | Lever type | Approx. Mass (kg) |
|--------------|------|----------------|-----|----|----------------|----------------|----------------|-----------------|----------------|-----|------------|-------------------|
| mm           | inch | φd             | φD  | L  | L <sub>2</sub> | H <sub>1</sub> | H <sub>2</sub> | Category        | H <sub>3</sub> | W   |            |                   |
| 80           | 3    | 89             | 127 | 48 | 22             | 95             | 297            | T <sub>10</sub> | 217            | 300 | 1T-2       | 15                |
| 100          | 4    | 112            | 156 | 54 | 24             | 110            | 320            | T <sub>10</sub> | 217            | 300 | 1T-2       | 16.2              |
| 125          | 5    | 137            | 185 | 56 | 23             | 139            | 335            | T <sub>10</sub> | 217            | 300 | 1T-2       | 19.6              |
| 150          | 6    | 163            | 216 | 57 | 23.5           | 164            | 385            | T <sub>10</sub> | 297            | 350 | 1T-3       | 28.8              |

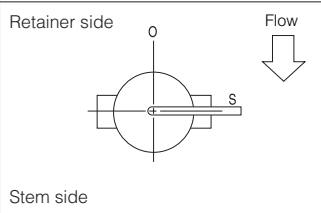
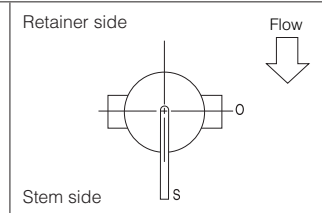
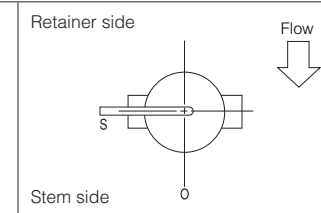
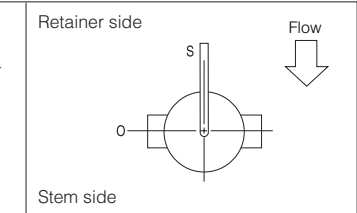
■ 302A-1T



■ 302A-1T Actuator mounting finish by temperature

|            |               |                                                                                   |                                                                                     |                                                                                     |
|------------|---------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|            |               |  |  |  |
| Temp.range |               | - 29 to 250 degrees C                                                             | 250 to 400 degrees C                                                                | 400 to 600 degrees C                                                                |
| Body       | 80mm to 150mm | SCS14A<br>SCPH2                                                                   |                                                                                     | SCS14A                                                                              |

■ 1T Installation direction

|                                                                                                                                       |                                                                                                                                       |                                                                                                                                        |                                                                                                                                         |
|---------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
|  <p>Retainer side</p> <p>Flow</p> <p>Stem side</p> |  <p>Retainer side</p> <p>Flow</p> <p>Stem side</p> |  <p>Retainer side</p> <p>Flow</p> <p>Stem side</p> |  <p>Retainer side</p> <p>Flow</p> <p>Stem side</p> |
| 1TA                                                                                                                                   | 1TB                                                                                                                                   | 1TC                                                                                                                                    | 1TD                                                                                                                                     |

# Tom Disco® 302A(Wafer)/303Q (Lugged)

Worm gear type 302A-2U (80mm to 150m) / 302A-2S (200mm to 600mm)

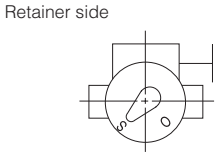
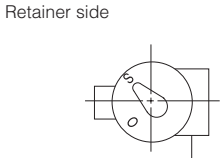
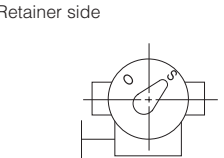
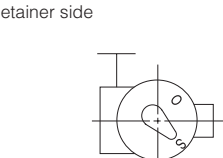
## ■ - 29 to 250 degrees C

| Nominal size |      | Dimension (mm) |     |     |                |                |                |                                  |                |      |     |       |     | Gear type    | Approx. Mass (kg) |
|--------------|------|----------------|-----|-----|----------------|----------------|----------------|----------------------------------|----------------|------|-----|-------|-----|--------------|-------------------|
| mm           | inch | φd             | φD  | L   | L <sub>2</sub> | H <sub>1</sub> | H <sub>2</sub> | Category                         | H <sub>3</sub> | E    | K   | F     | φW  |              |                   |
| 80           | 3    | 89             | 127 | 48  | 22             | 95             | 147            | T <sub>10</sub> ,T <sub>20</sub> | 61             | 44   | 53  | 173.5 | 160 | 2U-2         | 7.9               |
| 100          | 4    | 112            | 156 | 54  | 24             | 110            | 170            | T <sub>10</sub> ,T <sub>20</sub> | 61             | 44   | 53  | 173.5 | 160 | 2U-2         | 9.1               |
| 125          | 5    | 137            | 185 | 56  | 23             | 139            | 185            | T <sub>10</sub> ,T <sub>20</sub> | 61             | 44   | 53  | 173.5 | 160 | 2U-2         | 12.4              |
| 150          | 6    | 163            | 216 | 57  | 23.5           | 164            | 205            | T <sub>10</sub> ,T <sub>20</sub> | 77.5           | 87.5 | 90  | 222.5 | 200 | 2U-4         | 29                |
| 200          | 8    | 213            | 269 | 64  | 27             | 190            | 235            | T <sub>10</sub> ,T <sub>20</sub> | 72             | 85   | 126 | 246   | 280 | DGH-2        | 33                |
| 250          | 10   | 263            | 330 | 71  | 31             | 236            | 283            | T <sub>10</sub> ,T <sub>20</sub> | 97             | 117  | 164 | 335   | 355 | DGH-3        | 62                |
| 300          | 12   | 315            | 381 | 81  | 35             | 246            | 310            | T <sub>10</sub> ,T <sub>20</sub> | 97             | 117  | 164 | 335   | 355 | DGH-3        | 72                |
| 350          | 14   | 350            | 416 | 92  | 39.5           | 308            | 340            | A,B,C                            | 97             | 117  | 164 | 335   | 355 | DGH-3        | 99                |
| 400          | 16   | 400            | 475 | 102 | 39             | 348            | 372            | A                                | 97             | 117  | 164 | 335   | 355 | DGH-3        | 124               |
|              |      |                |     |     |                |                |                | B,C                              | 215            | 140  | 198 | 402   | 450 | DGH-4        | 162               |
| 450          | 18   | 450            | 534 | 114 | 43             | 366            | 406            | A,B                              | 127            | 140  | 198 | 402   | 450 | DGH-4        | 198               |
|              |      |                |     |     |                |                |                | C                                | 127            | 140  | 198 | 432   | 355 | DGH-4+R/G5   | 200               |
| 500          | 20   | 500            | 589 | 127 | 50             | 405            | 442            | A                                | 127            | 140  | 198 | 402   | 450 | DGH-4        | 236               |
|              |      |                |     |     |                |                |                | B,C                              | 127            | 140  | 198 | 432   | 355 | DGH-4+R/G5   | 238               |
| 600          | 24   | 600            | 693 | 154 | 64             | 461            | 493            | A                                | 127            | 140  | 198 | 432   | 355 | DGH-4+R/G5   | 338               |
|              |      |                |     |     |                |                |                | B,C                              | 245            | 185  | 264 | 497   | 355 | DGH-4.5+R/G5 | 413               |

## ■ 250 to 400 degrees C

| Nominal size |      | Dimension (mm) |     |     |                |                |                |                                  |                |      |     |       |     | Gear type    | Approx. Mass (kg) |
|--------------|------|----------------|-----|-----|----------------|----------------|----------------|----------------------------------|----------------|------|-----|-------|-----|--------------|-------------------|
| mm           | inch | φd             | φD  | L   | L <sub>2</sub> | H <sub>1</sub> | H <sub>2</sub> | Category                         | H <sub>3</sub> | E    | K   | F     | φW  |              |                   |
| 80           | 3    | 89             | 127 | 48  | 22             | 95             | 147            | T <sub>10</sub> ,T <sub>20</sub> | 134.5          | 44   | 53  | 173.5 | 160 | 2U-2         | 10.5              |
| 100          | 4    | 112            | 156 | 54  | 24             | 110            | 170            | T <sub>10</sub> ,T <sub>20</sub> | 134.5          | 44   | 53  | 173.5 | 160 | 2U-2         | 11.7              |
| 125          | 5    | 137            | 185 | 56  | 23             | 139            | 185            | T <sub>10</sub> ,T <sub>20</sub> | 134.5          | 44   | 53  | 173.5 | 160 | 2U-2         | 17.2              |
| 150          | 6    | 163            | 216 | 57  | 23.5           | 164            | 205            | T <sub>10</sub> ,T <sub>20</sub> | 223            | 87.5 | 90  | 222.5 | 200 | 2U-4         | 35                |
| 200          | 8    | 213            | 269 | 64  | 27             | 190            | 235            | T <sub>10</sub> ,T <sub>20</sub> | 217            | 85   | 126 | 246   | 280 | DGH-2        | 39                |
| 250          | 10   | 263            | 330 | 71  | 31             | 236            | 283            | T <sub>10</sub> ,T <sub>20</sub> | 205            | 117  | 164 | 335   | 355 | DGH-3        | 75                |
| 300          | 12   | 315            | 381 | 81  | 35             | 246            | 310            | T <sub>10</sub> ,T <sub>20</sub> | 205            | 117  | 164 | 335   | 355 | DGH-3        | 85                |
| 350          | 14   | 350            | 416 | 92  | 39.5           | 308            | 340            | A, B                             | 205            | 117  | 164 | 335   | 355 | DGH-3        | 108               |
| 400          | 16   | 400            | 475 | 102 | 39             | 348            | 372            | A                                | 205            | 117  | 164 | 335   | 355 | DGH-3        | 134               |
|              |      |                |     |     |                |                |                | B                                | 215            | 140  | 198 | 402   | 450 | DGH-4        | 162               |
| 450          | 18   | 450            | 534 | 114 | 43             | 366            | 406            | A, B                             | 245            | 140  | 198 | 402   | 450 | DGH-4        | 212               |
| 500          | 20   | 500            | 589 | 127 | 50             | 405            | 442            | A                                | 245            | 140  | 198 | 402   | 450 | DGH-4        | 250               |
|              |      |                |     |     |                |                |                | B                                | 245            | 140  | 198 | 432   | 355 | DGH-4+R/G5   | 252               |
| 600          | 24   | 600            | 693 | 154 | 64             | 461            | 493            | A                                | 245            | 140  | 198 | 432   | 355 | DGH-4+R/G5   | 351               |
|              |      |                |     |     |                |                |                | B                                | 245            | 185  | 264 | 497   | 355 | DGH-4.5+R/G5 | 413               |

## ■ 2U/2S Installation direction

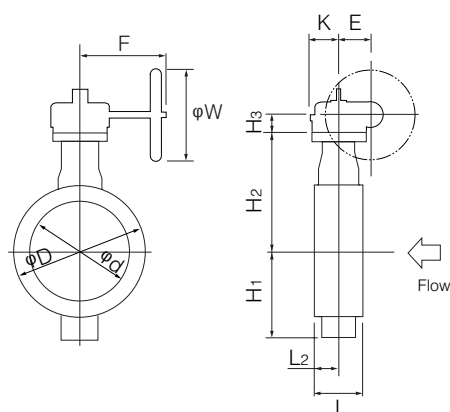
|                                                                                                                                       |                                                                                                                                       |                                                                                                                                        |                                                                                                                                         |
|---------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
|  <p>Retainer side</p> <p>Flow</p> <p>Stem side</p> |  <p>Retainer side</p> <p>Flow</p> <p>Stem side</p> |  <p>Retainer side</p> <p>Flow</p> <p>Stem side</p> |  <p>Retainer side</p> <p>Flow</p> <p>Stem side</p> |
| 2UA/2SA                                                                                                                               | 2UB/2SB                                                                                                                               | 2UC/2SC                                                                                                                                | 2UD/2SD                                                                                                                                 |

**Worm gear type 302A-2U (80mm to 150m) / 302A-2S (200mm to 600mm)**

■ **400 to 600 degrees C**

| Nominal size |      | Dimension (mm) |     |     |                |                |                |                 |                |      |     |       |     | Gear type    | Approx. Mass (kg) |
|--------------|------|----------------|-----|-----|----------------|----------------|----------------|-----------------|----------------|------|-----|-------|-----|--------------|-------------------|
| mm           | inch | φd             | φD  | L   | L <sub>2</sub> | H <sub>1</sub> | H <sub>2</sub> | Category        | H <sub>3</sub> | E    | K   | F     | φW  |              |                   |
| 80           | 3    | 89             | 127 | 48  | 22             | 95             | 297            | T <sub>10</sub> | 134.5          | 44   | 53  | 173.5 | 160 | 2U-2         | 16                |
| 100          | 4    | 112            | 156 | 54  | 24             | 110            | 320            | T <sub>10</sub> | 134.5          | 44   | 53  | 173.5 | 160 | 2U-2         | 17.2              |
| 125          | 5    | 137            | 185 | 56  | 23             | 139            | 335            | T <sub>10</sub> | 134.5          | 44   | 53  | 173.5 | 160 | 2U-2         | 22.7              |
| 150          | 6    | 163            | 216 | 57  | 23.5           | 164            | 385            | T <sub>10</sub> | 223            | 87.5 | 90  | 222.5 | 200 | 2U-4         | 42.5              |
| 200          | 8    | 213            | 269 | 64  | 27             | 190            | 415            | T <sub>10</sub> | 217            | 85   | 126 | 246   | 280 | DGH-2        | 47                |
| 250          | 10   | 263            | 330 | 71  | 31             | 236            | 503            | T <sub>10</sub> | 205            | 117  | 164 | 335   | 355 | DGH-3        | 88                |
| 300          | 12   | 315            | 381 | 81  | 35             | 246            | 530            | T <sub>10</sub> | 205            | 117  | 164 | 335   | 355 | DGH-3        | 98                |
| 350          | 14   | 350            | 416 | 92  | 39.5           | 308            | 560            | B               | 205            | 117  | 164 | 335   | 355 | DGH-3        | 124               |
| 400          | 16   | 400            | 475 | 102 | 39             | 348            | 592            | B               | 215            | 140  | 198 | 402   | 450 | DGH-4        | 178               |
| 450          | 18   | 450            | 534 | 114 | 43             | 366            | 626            | B               | 245            | 140  | 198 | 402   | 450 | DGH-4        | 228               |
| 500          | 20   | 500            | 589 | 127 | 50             | 405            | 662            | B               | 245            | 140  | 198 | 432   | 355 | DGH-4+R/G5   | 270               |
| 600          | 24   | 600            | 693 | 154 | 64             | 461            | 713            | B               | 245            | 185  | 264 | 497   | 355 | DGH-4.5+R/G5 | 432               |

■ **302A-2U/2S**



■ **302A-2U/2S Actuator mounting finish by temperature**

|            |                |                      |                      |                      |            |                        |                      |                      |
|------------|----------------|----------------------|----------------------|----------------------|------------|------------------------|----------------------|----------------------|
|            |                |                      |                      |                      |            |                        |                      |                      |
| Temp.range |                | -29 to 250 degrees C | 250 to 400 degrees C | 400 to 600 degrees C | Temp.range |                        | -29 to 400 degrees C | 400 to 600 degrees C |
| Body       | 80mm to 300mm  | SCS14A<br>SCPH2      |                      | SCS14A               | Body       | 400mm (DGH-4)          | SCS13A<br>SCPH2      |                      |
|            | 350mm to 600mm | SCS13A<br>SCPH2      |                      | SCS13A               |            | 600mm (DGH-4.5 + R/G5) | SCS13A               |                      |

## Double-acting pneumatic cylinder type 302A-3E (80mm to 300mm)

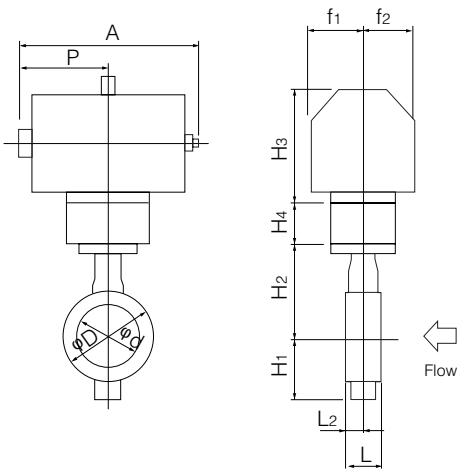
### 1.0 MPa or less

| Nominal size |      | Dimension (mm) |     |    |                |                |                |                |                |     |     |                |                | Cylinder type | Approx. Mass (kg) |
|--------------|------|----------------|-----|----|----------------|----------------|----------------|----------------|----------------|-----|-----|----------------|----------------|---------------|-------------------|
| mm           | inch | φd             | φD  | L  | L <sub>2</sub> | H <sub>1</sub> | H <sub>2</sub> | H <sub>3</sub> | H <sub>4</sub> | A   | P   | f <sub>1</sub> | f <sub>2</sub> |               |                   |
| 80           | 3    | 89             | 127 | 48 | 22             | 95             | 147            | 133            | 26.5           | 226 | 136 | 53             | 51             | K70           | 10                |
| 100          | 4    | 112            | 156 | 54 | 24             | 110            | 170            | 157            | 26.5           | 330 | 169 | 65             | 58             | K170          | 14                |
| 125          | 5    | 137            | 185 | 56 | 23             | 139            | 185            | 157            | 26.5           | 330 | 169 | 65             | 58             | K170          | 17                |
| 150          | 6    | 163            | 216 | 57 | 23.5           | 164            | 205            | 184            | 29.5           | 409 | 207 | 83             | 69             | K370          | 26                |
| 200          | 8    | 213            | 269 | 64 | 27             | 190            | 235            | 224            | 29.5           | 518 | 260 | 101            | 85             | K700          | 42                |
| 250          | 10   | 263            | 330 | 71 | 31             | 236            | 283            | 224            | 190            | 518 | 260 | 101            | 87.5           | K700          | 70                |
| 300          | 12   | 315            | 381 | 81 | 35             | 246            | 310            | 224            | 190            | 518 | 260 | 101            | 87.5           | K700          | 79                |

### Over 1.0 MPa to 2.0 MPa or less

| Nominal size |      | Dimension (mm) |     |    |                |                |                |                |                |     |     |                |                | Cylinder type | Approx. Mass (kg) |
|--------------|------|----------------|-----|----|----------------|----------------|----------------|----------------|----------------|-----|-----|----------------|----------------|---------------|-------------------|
| mm           | inch | φd             | φD  | L  | L <sub>2</sub> | H <sub>1</sub> | H <sub>2</sub> | H <sub>3</sub> | H <sub>4</sub> | A   | P   | f <sub>1</sub> | f <sub>2</sub> |               |                   |
| 80           | 3    | 89             | 127 | 48 | 22             | 95             | 147            | 157            | 26.5           | 330 | 169 | 65             | 58             | K170          | 10                |
| 100          | 4    | 112            | 156 | 54 | 24             | 110            | 170            | 157            | 26.5           | 330 | 169 | 65             | 58             | K170          | 14                |
| 125          | 5    | 137            | 185 | 56 | 23             | 139            | 185            | 184            | 26.5           | 409 | 207 | 83             | 69             | K370          | 17                |
| 150          | 6    | 163            | 216 | 57 | 23.5           | 164            | 205            | 184            | 29.5           | 409 | 207 | 83             | 69             | K370          | 26                |
| 200          | 8    | 213            | 269 | 64 | 27             | 190            | 235            | 224            | 29.5           | 518 | 260 | 101            | 85             | K700          | 42                |

■ 302A-3E



■ 302A-3E Actuator mounting finish by temperature

|            |                       |                      |                      |
|------------|-----------------------|----------------------|----------------------|
|            |                       |                      |                      |
| Temp.range | - 29 to 250 degrees C | 250 to 400 degrees C | 400 to 600 degrees C |
| Body       | 80mm to 200mm         | SCS14A<br>SCPH2      | SCS14A               |

|            |                       |                      |
|------------|-----------------------|----------------------|
|            |                       |                      |
| Temp.range | - 29 to 400 degrees C | 400 to 600 degrees C |
| Body       | 250mm<br>300mm        | SCS14A<br>SCPH2      |
| 350mm      | SCS13A<br>SCPH2       |                      |

■ 3E Installation direction

|       |       |       |       |
|-------|-------|-------|-------|
|       |       |       |       |
| 3 E A | 3 E B | 3 E C | 3 E D |

## Double-acting pneumatic cylinder type 302A-3A( 250mm to 600mm )

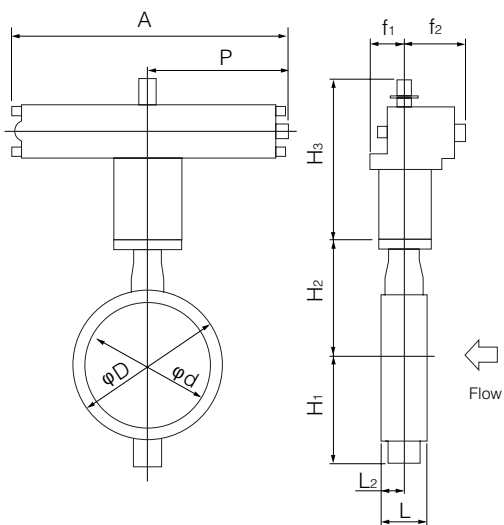
### ■ - 29 to 400 degrees C

| Nominal size |      | Dimension (mm) |     |     |                |                |                |                 |                |      |     |                |                | Cylinder type | Approx. Mass (kg) |
|--------------|------|----------------|-----|-----|----------------|----------------|----------------|-----------------|----------------|------|-----|----------------|----------------|---------------|-------------------|
| mm           | inch | φd             | φD  | L   | L <sub>2</sub> | H <sub>1</sub> | H <sub>2</sub> | Category        | H <sub>3</sub> | A    | P   | f <sub>1</sub> | f <sub>2</sub> |               |                   |
| 250          | 10   | 263            | 330 | 71  | 31             | 236            | 283            | T <sub>20</sub> | 424            | 743  | 381 | 100            | 164            | TGA-125       | 79                |
| 300          | 12   | 315            | 381 | 81  | 35             | 246            | 310            | T <sub>20</sub> | 424            | 743  | 381 | 100            | 164            | TGA-125       | 88                |
| 350          | 14   | 350            | 416 | 92  | 39.5           | 308            | 340            | A               | 424            | 743  | 381 | 100            | 164            | TGA-125       | 110               |
|              |      |                |     |     |                |                |                | B, C            | 472            | 810  | 417 | 100            | 180            | TGA-140       | 121               |
| 400          | 16   | 400            | 475 | 102 | 39             | 348            | 372            | A, B            | 472            | 810  | 417 | 100            | 180            | TGA-140       | 147               |
|              |      |                |     |     |                |                |                | C               | 510            | 939  | 483 | 130            | 202            | TGA-160       | 214               |
| 450          | 18   | 450            | 534 | 114 | 43             | 366            | 406            | A               | 502            | 810  | 417 | 100            | 180            | TGA-140       | 207               |
|              |      |                |     |     |                |                |                | B, C            | 530            | 939  | 483 | 130            | 202            | TGA-160       | 263               |
| 500          | 20   | 500            | 589 | 127 | 50             | 405            | 442            | A               | 530            | 939  | 483 | 130            | 202            | TGA-160       | 302               |
|              |      |                |     |     |                |                |                | B, C            | 543            | 1053 | 543 | 130            | 218            | TGA-180       | 330               |
| 600          | 24   | 600            | 693 | 154 | 64             | 461            | 493            | A               | 543            | 1053 | 543 | 130            | 218            | TGA-180       | 431               |
|              |      |                |     |     |                |                |                | B               | 610            | 1163 | 599 | 160            | 253            | TGA-200       | 475               |
|              |      |                |     |     |                |                |                | C               | 640            | 1248 | 642 | 160            | 270            | TGA-220       | 535               |

### ■ 400 to 600 degrees C

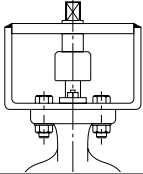
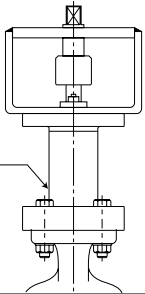
| Nominal size |      | Dimension (mm) |     |     |                |                |                |          |                |      |     |                |                | Cylinder type | Approx. Mass (kg) |
|--------------|------|----------------|-----|-----|----------------|----------------|----------------|----------|----------------|------|-----|----------------|----------------|---------------|-------------------|
| mm           | inch | φd             | φD  | L   | L <sub>2</sub> | H <sub>1</sub> | H <sub>2</sub> | Category | H <sub>3</sub> | A    | P   | f <sub>1</sub> | f <sub>2</sub> |               |                   |
| 350          | 14   | 350            | 416 | 92  | 39.5           | 308            | 560            | B        | 472            | 810  | 417 | 100            | 180            | TGA-140       | 136               |
| 400          | 16   | 400            | 475 | 102 | 39             | 348            | 592            | B        | 472            | 810  | 417 | 100            | 180            | TGA-140       | 163               |
| 450          | 18   | 450            | 534 | 114 | 43             | 366            | 626            | B        | 530            | 939  | 483 | 130            | 202            | TGA-160       | 280               |
| 500          | 20   | 500            | 589 | 127 | 50             | 405            | 662            | B        | 543            | 1053 | 543 | 130            | 218            | TGA-180       | 348               |
| 600          | 24   | 600            | 693 | 154 | 64             | 461            | 713            | B        | 610            | 1163 | 599 | 160            | 253            | TGA-200       | 494               |

■ 302A-3A

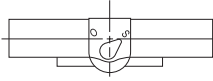
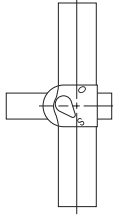
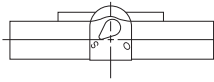
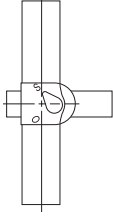


■ 302A-3A

Actuator mounting finish by temperature

|                                                                                     |                |                                                                                     |
|-------------------------------------------------------------------------------------|----------------|-------------------------------------------------------------------------------------|
|  |                |  |
| Temp.range                                                                          |                | 400 to 600 degrees C                                                                |
| Body                                                                                | 350mm to 600mm | SCS13A<br>SCPH2                                                                     |
|                                                                                     |                | SCS13A                                                                              |

■ 3A Installation direction

|                                                                                    |                                                                                    |                                                                                      |                                                                                      |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|  |  |  |  |
| 3AA                                                                                | 3AB                                                                                | 3AC                                                                                  | 3AD                                                                                  |

# Tom Disco® 302A(Wafer)/303Q (Lugged)

Single-acting pneumatic cylinder type 302A-3F( Air to open: 80mm to 150mm ) / 302A-3G( Air to close: 80mm to 150mm )

## 1.0 MPa or less

| Nominal size |      | Dimension (mm) |     |    |                |                |                |                |                |     |       |                |                | Cylinder type | Approx. Mass (kg) |
|--------------|------|----------------|-----|----|----------------|----------------|----------------|----------------|----------------|-----|-------|----------------|----------------|---------------|-------------------|
| mm           | inch | φd             | φD  | L  | L <sub>2</sub> | H <sub>1</sub> | H <sub>2</sub> | H <sub>3</sub> | H <sub>4</sub> | A   | P     | f <sub>1</sub> | f <sub>2</sub> |               |                   |
| 80           | 3    | 89             | 127 | 48 | 22             | 95             | 147            | 157            | 26.5           | 444 | 218.5 | 65             | 58             | K170S         | 15                |
| 100          | 4    | 112            | 156 | 54 | 24             | 110            | 170            | 184            | 26.5           | 545 | 269   | 83             | 69             | K370S         | 23                |
| 125          | 5    | 137            | 185 | 56 | 23             | 139            | 185            | 224            | 26.5           | 707 | 350   | 101            | 85             | K700S         | 40.5              |
| 150          | 6    | 163            | 216 | 57 | 23.5           | 164            | 205            | 224            | 29.5           | 707 | 350   | 101            | 85             | K700S         | 44.5              |

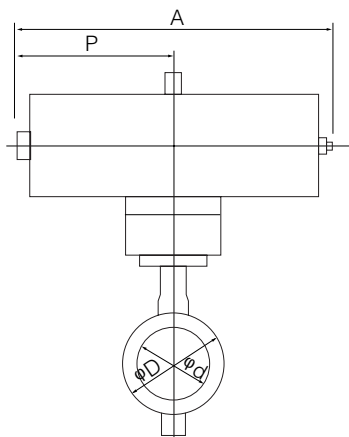
## Over 1.0 MPa to 2.0 MPa or less

| Nominal size |      | Dimension (mm) |     |    |                |                |                |                |                |     |     |                |                | Cylinder type | Approx. Mass (kg) |
|--------------|------|----------------|-----|----|----------------|----------------|----------------|----------------|----------------|-----|-----|----------------|----------------|---------------|-------------------|
| mm           | inch | φd             | φD  | L  | L <sub>2</sub> | H <sub>1</sub> | H <sub>2</sub> | H <sub>3</sub> | H <sub>4</sub> | A   | P   | f <sub>1</sub> | f <sub>2</sub> |               |                   |
| 80           | 3    | 89             | 127 | 48 | 22             | 95             | 147            | 184            | 26.5           | 545 | 269 | 83             | 69             | K370S         | 22                |
| 100          | 4    | 112            | 156 | 54 | 24             | 110            | 170            | 224            | 26.5           | 707 | 350 | 101            | 85             | K700S         | 37.5              |
| 125          | 5    | 137            | 185 | 56 | 23             | 139            | 185            | 224            | 26.5           | 707 | 350 | 101            | 85             | K700S         | 40.5              |

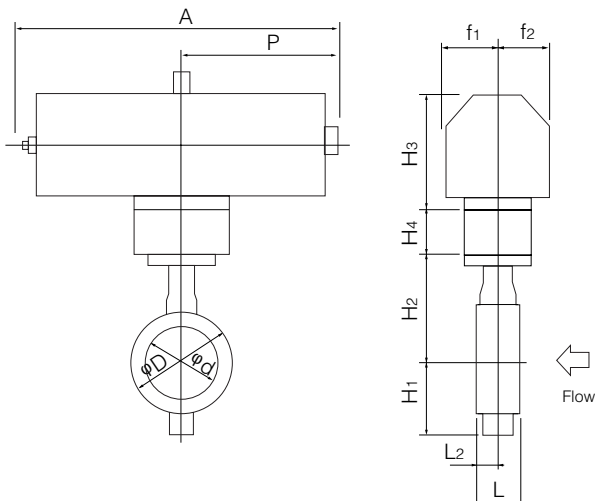
## ■ 3F Installation direction

|                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| <p>Retainer side</p> <p>Flow</p> <p>Air port side</p> <p>Stem side</p> <p>3FA</p> | <p>Retainer side</p> <p>Air port side</p> <p>Flow</p> <p>Stem side</p> <p>3FB</p> | <p>Retainer side</p> <p>Flow</p> <p>Stem side</p> <p>Air port side</p> <p>3FC</p> | <p>Retainer side</p> <p>Flow</p> <p>Stem side</p> <p>Air port side</p> <p>3FD</p> |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|

### ■ 302A-3F



### ■ 302A-3G



### ■ 302A-3F/3G Actuator mounting finish by temperature

|            |                      |                      |                      |
|------------|----------------------|----------------------|----------------------|
|            |                      |                      |                      |
| Temp.range | -29 to 250 degrees C | 250 to 400 degrees C | 400 to 600 degrees C |
| Body       | 80mm to 150mm        | SCS14A<br>SCPH2      | SCS14A               |

### ■ 3G Installation direction

|              |              |              |              |
|--------------|--------------|--------------|--------------|
| <p>3 G A</p> | <p>3 G B</p> | <p>3 G C</p> | <p>3 G D</p> |
|--------------|--------------|--------------|--------------|

# Tom Disco® 302A(Wafer)/303Q (Lugged)

Single-acting pneumatic cylinder type 302A-3U( Air to open: 150mm to 600mm ) / 302A-3K( Air to close: 150mm to 600mm )

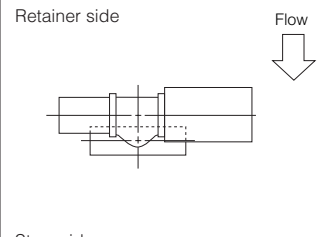
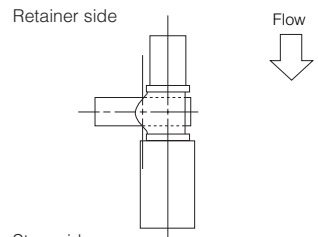
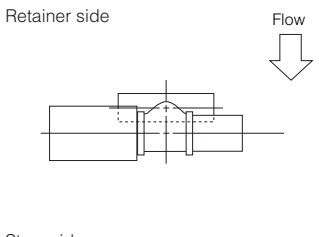
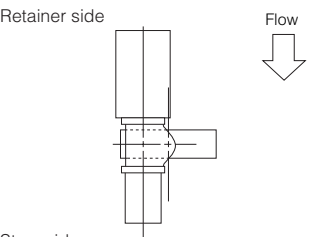
## ■ - 29 to 400 degrees C

| Nominal size |      | Dimension (mm) |     |     |                |                |                |                                   |                |      |      |                |                | Cylinder type | Approx. Mass (kg) |
|--------------|------|----------------|-----|-----|----------------|----------------|----------------|-----------------------------------|----------------|------|------|----------------|----------------|---------------|-------------------|
| mm           | inch | φd             | φD  | L   | L <sub>2</sub> | H <sub>1</sub> | H <sub>2</sub> | Category                          | H <sub>3</sub> | A    | P    | f <sub>1</sub> | f <sub>2</sub> |               |                   |
| 150          | 6    | 163            | 216 | 57  | 23.5           | 164            | 205            | T <sub>20</sub>                   | 377            | 945  | 585  | 70             | 165            | TG-10S        | 69                |
| 200          | 8    | 213            | 269 | 64  | 27             | 190            | 235            | T <sub>10</sub> , T <sub>20</sub> | 377            | 1080 | 720  | 94             | 206            | TG-12S        | 122               |
| 250          | 10   | 263            | 330 | 71  | 31             | 236            | 283            | T <sub>10</sub>                   | 417            | 1080 | 720  | 94             | 206            | TG-12S        | 141               |
|              |      |                |     |     |                |                |                | T <sub>20</sub>                   | 450            | 1255 | 865  | 131            | 257            | TG-14S        | 237               |
| 300          | 12   | 315            | 381 | 81  | 35             | 246            | 310            | T <sub>10</sub>                   | 417            | 1080 | 720  | 94             | 206            | TG-12S        | 150               |
|              |      |                |     |     |                |                |                | T <sub>20</sub>                   | 450            | 1255 | 865  | 131            | 257            | TG-14S        | 246               |
| 350          | 14   | 350            | 416 | 92  | 39.5           | 308            | 340            | A                                 | 450            | 1255 | 865  | 131            | 257            | TG-14S        | 264               |
|              |      |                |     |     |                |                |                | B,C                               | 602            | 1655 | 1095 | 164            | 348            | TG-20S        | 485               |
| 400          | 16   | 400            | 475 | 102 | 39             | 348            | 372            | A                                 | 450            | 1255 | 865  | 131            | 257            | TG-14S        | 292               |
|              |      |                |     |     |                |                |                | B,C                               | 602            | 1655 | 1095 | 164            | 348            | TG-20S        | 512               |
| 450          | 18   | 450            | 534 | 114 | 43             | 366            | 406            | A,B,C                             | 624            | 1655 | 1095 | 164            | 348            | TG-20S        | 564               |
| 500          | 20   | 500            | 589 | 127 | 50             | 405            | 442            | A,B                               | 624            | 1655 | 1095 | 164            | 348            | TG-20S        | 602               |
| 600          | 24   | 600            | 693 | 154 | 64             | 461            | 493            | A                                 | 624            | 1655 | 1095 | 164            | 348            | TG-20S        | 701               |

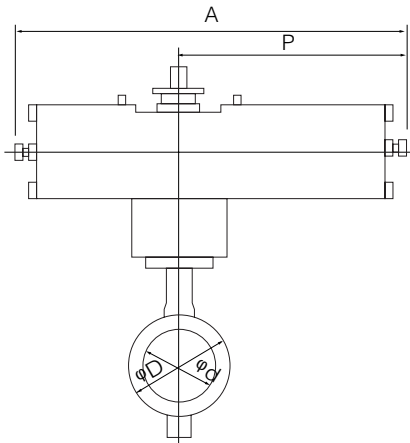
## ■ 400 to 600 degrees C

| Nominal size |      | Dimension (mm) |     |     |                |                |                |                 |                |      |      |                |                | Cylinder type | Approx. Mass (kg) |
|--------------|------|----------------|-----|-----|----------------|----------------|----------------|-----------------|----------------|------|------|----------------|----------------|---------------|-------------------|
| mm           | inch | φd             | φD  | L   | L <sub>2</sub> | H <sub>1</sub> | H <sub>2</sub> | Category        | H <sub>3</sub> | A    | P    | f <sub>1</sub> | f <sub>2</sub> |               |                   |
| 200          | 8    | 213            | 269 | 64  | 27             | 190            | 415            | T <sub>10</sub> | 377            | 1080 | 720  | 94             | 206            | TG-12S        | 130               |
| 250          | 10   | 263            | 330 | 71  | 31             | 236            | 503            | T <sub>10</sub> | 417            | 1080 | 720  | 94             | 206            | TG-12S        | 154               |
| 300          | 12   | 315            | 381 | 81  | 35             | 246            | 530            | T <sub>10</sub> | 417            | 1080 | 720  | 94             | 206            | TG-12S        | 164               |
| 350          | 14   | 350            | 416 | 92  | 39.5           | 308            | 560            | B               | 602            | 1655 | 1095 | 164            | 348            | TG-20S        | 500               |
| 400          | 16   | 400            | 475 | 102 | 39             | 348            | 592            | B               | 602            | 1655 | 1095 | 164            | 348            | TG-20S        | 528               |
| 450          | 18   | 450            | 534 | 114 | 43             | 366            | 626            | B               | 624            | 1655 | 1095 | 164            | 348            | TG-20S        | 582               |
| 500          | 20   | 500            | 589 | 127 | 50             | 405            | 662            | B               | 624            | 1655 | 1095 | 164            | 348            | TG-20S        | 620               |

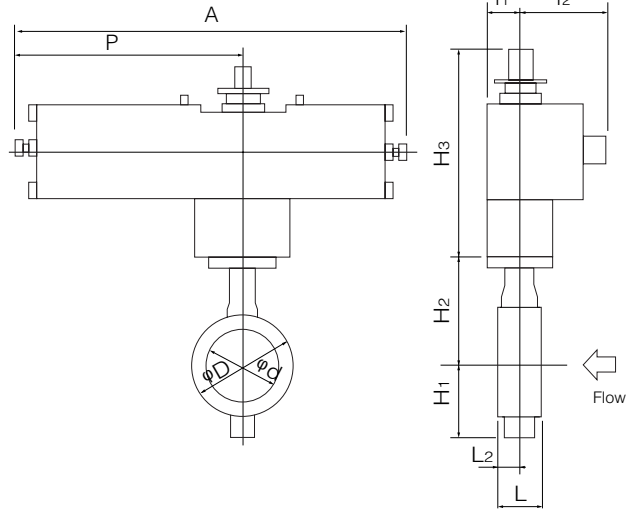
## ■ 3K Installation direction

|                                                                                                                                                    |                                                                                                                                                    |                                                                                                                                                     |                                                                                                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <p>Retainer side</p> <p>Flow</p> <p>Stem side</p> <p>3 K A</p> |  <p>Retainer side</p> <p>Flow</p> <p>Stem side</p> <p>3 K B</p> |  <p>Retainer side</p> <p>Flow</p> <p>Stem side</p> <p>3 K C</p> |  <p>Retainer side</p> <p>Flow</p> <p>Stem side</p> <p>3 K D</p> |
|----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|

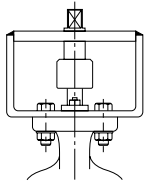
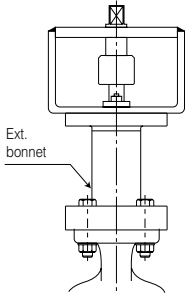
### ■ 302A-3K



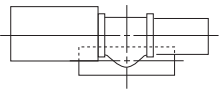
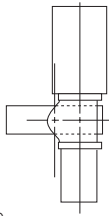
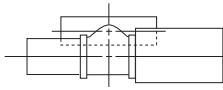
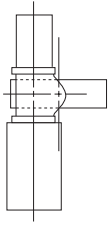
### ■ 302A-3U



### ■ 302A 3U/3K Actuator mounting finish by temperature

|            |                                                                                     |                                                                                    |
|------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
|            |  |  |
| Temp.range | -29 to 400 degrees C                                                                | 400 to 600 degrees C                                                               |
| Body       | 150mm to 300mm                                                                      | SCS14A<br>SCPH2                                                                    |
|            | 350mm to 600mm                                                                      | SCS13A<br>SCPH2                                                                    |
|            |                                                                                     | SCS14A                                                                             |
|            |                                                                                     | SCS13A                                                                             |

### ■ 3U Installation direction

|                                                                                                                                                  |                                                                                                                                                  |                                                                                                                                                   |                                                                                                                                                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Retainer side</p>  <p>Flow</p> <p>Stem side</p> <p>3UA</p> | <p>Retainer side</p>  <p>Flow</p> <p>Stem side</p> <p>3UB</p> | <p>Retainer side</p>  <p>Flow</p> <p>Stem side</p> <p>3UC</p> | <p>Retainer side</p>  <p>Flow</p> <p>Stem side</p> <p>3UD</p> |
|--------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|

# Tom Disco® 302A (Wafer) / 303Q (Lugged)

Single phase electric motor type 302A-4 I ( 80mm to 400mm )

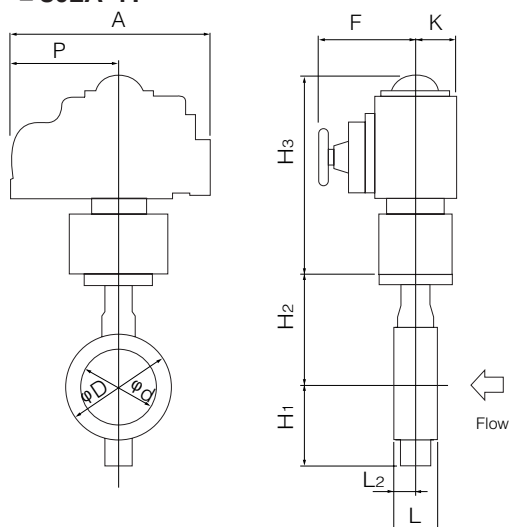
## ■ - 29 to 400 degrees C

| Nominal size |      | Dimension (mm) |     |     |                |                |                |                                   |                |     |     |     |     | Motor type | Approx. Mass (kg) |
|--------------|------|----------------|-----|-----|----------------|----------------|----------------|-----------------------------------|----------------|-----|-----|-----|-----|------------|-------------------|
| mm           | inch | φd             | φD  | L   | L <sub>2</sub> | H <sub>1</sub> | H <sub>2</sub> | Category                          | H <sub>3</sub> | A   | P   | F   | K   |            |                   |
| 80           | 3    | 89             | 127 | 48  | 22             | 95             | 147            | T <sub>10</sub>                   | 250            | 202 | 100 | 85  | 54  | 4 I-0      | 12.1              |
|              |      |                |     |     |                |                |                | T <sub>20</sub>                   | 265            | 252 | 138 | 126 | 65  | 4 I-1      | 14.3              |
| 100          | 4    | 112            | 156 | 54  | 24             | 110            | 170            | T <sub>10</sub>                   | 265            | 252 | 138 | 126 | 65  | 4 I-1      | 15.5              |
|              |      |                |     |     |                |                |                | T <sub>20</sub>                   | 298            | 310 | 167 | 154 | 85  | 4 I-2      | 21.5              |
| 125          | 5    | 137            | 185 | 56  | 23             | 139            | 185            | T <sub>10</sub> , T <sub>20</sub> | 298            | 310 | 167 | 154 | 85  | 4 I-2      | 24.5              |
| 150          | 6    | 163            | 216 | 57  | 23.5           | 164            | 205            | T <sub>10</sub>                   | 373            | 310 | 167 | 154 | 85  | 4 I-2      | 29.5              |
|              |      |                |     |     |                |                |                | T <sub>20</sub>                   | 373            | 310 | 167 | 154 | 85  | 4 I-2.5    | 31                |
| 200          | 8    | 213            | 269 | 64  | 27             | 190            | 235            | T <sub>10</sub>                   | 373            | 310 | 167 | 154 | 85  | 4 I-2.5    | 39                |
|              |      |                |     |     |                |                |                | T <sub>20</sub>                   | 405            | 388 | 223 | 246 | 136 | 4 I-3      | 49                |
| 250          | 10   | 263            | 330 | 71  | 31             | 236            | 283            | T <sub>10</sub> , T <sub>20</sub> | 420            | 388 | 223 | 246 | 136 | 4 I-3      | 66                |
| 300          | 12   | 315            | 381 | 81  | 35             | 246            | 310            | T <sub>10</sub> , T <sub>20</sub> | 420            | 388 | 223 | 246 | 136 | 4 I-3      | 75                |
| 350          | 14   | 350            | 416 | 92  | 39.5           | 308            | 340            | A, B                              | 423            | 388 | 223 | 246 | 136 | 4 I-4      | 96                |
| 400          | 16   | 400            | 475 | 102 | 39             | 348            | 372            | A                                 | 423            | 388 | 223 | 246 | 136 | 4 I-4      | 123               |

## ■ 400 to 600 degrees C

| Nominal size |      | Dimension (mm) |     |    |                |                |                |                 |                |     |     |     |     | Motor type | Approx. Mass (kg) |
|--------------|------|----------------|-----|----|----------------|----------------|----------------|-----------------|----------------|-----|-----|-----|-----|------------|-------------------|
| mm           | inch | φd             | φD  | L  | L <sub>2</sub> | H <sub>1</sub> | H <sub>2</sub> | Category        | H <sub>3</sub> | A   | P   | F   | K   |            |                   |
| 80           | 3    | 89             | 127 | 48 | 22             | 95             | 297            | T <sub>10</sub> | 250            | 202 | 100 | 85  | 54  | 4 I-0      | 17.6              |
| 100          | 4    | 112            | 156 | 54 | 24             | 110            | 320            | T <sub>10</sub> | 265            | 252 | 138 | 126 | 65  | 4 I-1      | 21                |
| 125          | 5    | 137            | 185 | 56 | 23             | 139            | 335            | T <sub>10</sub> | 298            | 310 | 167 | 154 | 85  | 4 I-2      | 30                |
| 150          | 6    | 163            | 216 | 57 | 23.5           | 164            | 385            | T <sub>10</sub> | 373            | 310 | 167 | 154 | 85  | 4 I-2      | 37.5              |
| 200          | 8    | 213            | 269 | 64 | 27             | 190            | 415            | T <sub>10</sub> | 373            | 310 | 167 | 154 | 85  | 4 I-2.5    | 47                |
| 250          | 10   | 263            | 330 | 71 | 31             | 236            | 503            | T <sub>10</sub> | 420            | 388 | 223 | 246 | 136 | 4 I-3      | 79                |
| 300          | 12   | 315            | 381 | 81 | 35             | 246            | 530            | T <sub>10</sub> | 420            | 388 | 223 | 246 | 136 | 4 I-3      | 88                |
| 350          | 14   | 350            | 416 | 92 | 39.5           | 308            | 560            | B               | 423            | 388 | 223 | 246 | 136 | 4 I-4      | 138               |

### ■ 302A-4 I



### ■ 302A-4 I

#### Actuator mounting finish by temperature

| Temp.range |                | -29 to 400 degrees C | 400 to 600 degrees C |
|------------|----------------|----------------------|----------------------|
| Body       | 80mm to 300mm  | SCS14A<br>SCPH2      | SCS14A               |
|            | 350mm<br>400mm | SCS13A<br>SCPH2      | SCS13A               |

### ■ 4I Installation direction

|                                                                |                                                                |                                                                |                                                                |
|----------------------------------------------------------------|----------------------------------------------------------------|----------------------------------------------------------------|----------------------------------------------------------------|
| <p>Retainer side</p> <p>Flow</p> <p>Stem side</p> <p>4 I A</p> | <p>Retainer side</p> <p>Flow</p> <p>Stem side</p> <p>4 I B</p> | <p>Retainer side</p> <p>Flow</p> <p>Stem side</p> <p>4 I C</p> | <p>Retainer side</p> <p>Flow</p> <p>Stem side</p> <p>4 I D</p> |
|----------------------------------------------------------------|----------------------------------------------------------------|----------------------------------------------------------------|----------------------------------------------------------------|

# Tom Disco<sup>®</sup>302A(Wafer)/303Q (Lugged)

## Three phase motor actuator type 302A-4L( 250mm to 600mm )

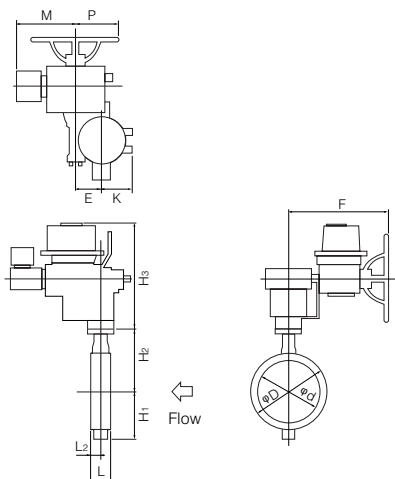
### ■ -29 to 400 degrees C

| Nominal size |      | Dimension (mm) |     |     |                |                |                |                                   |                |     |     |     |     |     | Motor type           | Approx. Mass (kg) |
|--------------|------|----------------|-----|-----|----------------|----------------|----------------|-----------------------------------|----------------|-----|-----|-----|-----|-----|----------------------|-------------------|
| mm           | inch | φd             | φD  | L   | L <sub>2</sub> | H <sub>1</sub> | H <sub>2</sub> | Category                          | H <sub>3</sub> | E   | K   | F   | M   | P   |                      |                   |
| 250          | 10   | 263            | 330 | 71  | 31             | 236            | 283            | T <sub>10</sub>                   | 547            | 117 | 164 | 533 | 357 | 230 | LTKD-01 0.2kW/DGH-3  | 125               |
| 300          | 12   | 315            | 381 | 81  | 35             | 246            | 310            | T <sub>10</sub> , T <sub>20</sub> | 547            | 117 | 164 | 533 | 357 | 230 | LTKD-01 0.2kW/DGH-3  | 133               |
| 350          | 14   | 350            | 416 | 92  | 39.5           | 308            | 340            | A,B                               | 547            | 117 | 164 | 533 | 357 | 230 | LTKD-01 0.2kW/DGH-3  | 171               |
|              |      |                |     |     |                |                |                | C                                 | 592            | 140 | 198 | 593 | 373 | 230 | LTKD-02 0.4kW/DGH-4  | 221               |
| 400          | 16   | 400            | 475 | 102 | 39             | 348            | 372            | A                                 | 547            | 117 | 164 | 533 | 357 | 230 | LTKD-01 0.2kW/DGH-3  | 197               |
|              |      |                |     |     |                |                |                | B                                 | 592            | 140 | 198 | 593 | 373 | 230 | LTKD-02 0.4kW/DGH-4  | 247               |
|              |      |                |     |     |                |                |                | C                                 | 592            | 140 | 198 | 593 | 400 | 230 | LTKD-02 0.75kW/DGH-4 | 258               |
| 450          | 18   | 450            | 534 | 114 | 43             | 366            | 406            | A                                 | 642            | 140 | 198 | 593 | 373 | 230 | LTKD-02 0.4kW/DGH-4  | 308               |
|              |      |                |     |     |                |                |                | B,C                               | 642            | 140 | 198 | 593 | 400 | 230 | LTKD-02 0.75kW/DGH-4 | 319               |
| 500          | 20   | 500            | 589 | 127 | 50             | 405            | 442            | A,B,C                             | 642            | 140 | 198 | 593 | 400 | 230 | LTKD-02 0.75kW/DGH-4 | 357               |
| 600          | 24   | 600            | 693 | 154 | 64             | 461            | 493            | A                                 | 642            | 140 | 198 | 593 | 400 | 230 | LTKD-02 0.75kW/DGH-4 | 460               |
|              |      |                |     |     |                |                |                | B,C                               | 749            | 210 | 300 | 748 | 477 | 360 | LTKD-05 1.5kW/DGH-5  | 605               |

### ■ 400 to 600 degrees C

| Nominal size |      | Dimension (mm) |     |     |                |                |                |                 |                |     |     |     |     |     | Motor type           | Approx. Mass (kg) |
|--------------|------|----------------|-----|-----|----------------|----------------|----------------|-----------------|----------------|-----|-----|-----|-----|-----|----------------------|-------------------|
| mm           | inch | φd             | φD  | L   | L <sub>2</sub> | H <sub>1</sub> | H <sub>2</sub> | Category        | H <sub>3</sub> | E   | K   | F   | M   | P   |                      |                   |
| 300          | 12   | 315            | 381 | 81  | 35             | 246            | 530            | T <sub>10</sub> | 547            | 117 | 164 | 533 | 357 | 230 | LTKD-01 0.2kW/DGH-3  | 146               |
| 350          | 14   | 350            | 416 | 92  | 39.5           | 308            | 560            | B               | 547            | 117 | 164 | 533 | 357 | 230 | LTKD-01 0.2kW/DGH-3  | 186               |
| 400          | 16   | 400            | 475 | 102 | 39             | 348            | 592            | B               | 592            | 140 | 198 | 593 | 373 | 230 | LTKD-02 0.4kW/DGH-4  | 263               |
| 450          | 18   | 450            | 534 | 114 | 43             | 366            | 626            | B               | 642            | 140 | 198 | 593 | 400 | 230 | LTKD-02 0.75kW/DGH-4 | 336               |
| 500          | 20   | 500            | 589 | 127 | 50             | 405            | 662            | B               | 642            | 140 | 198 | 593 | 400 | 230 | LTKD-02 0.75kW/DGH-4 | 375               |
| 600          | 24   | 600            | 693 | 154 | 64             | 461            | 713            | B               | 749            | 210 | 300 | 748 | 477 | 360 | LTKD-05 1.5kW/DGH-5  | 625               |

### ■ 302A-4L



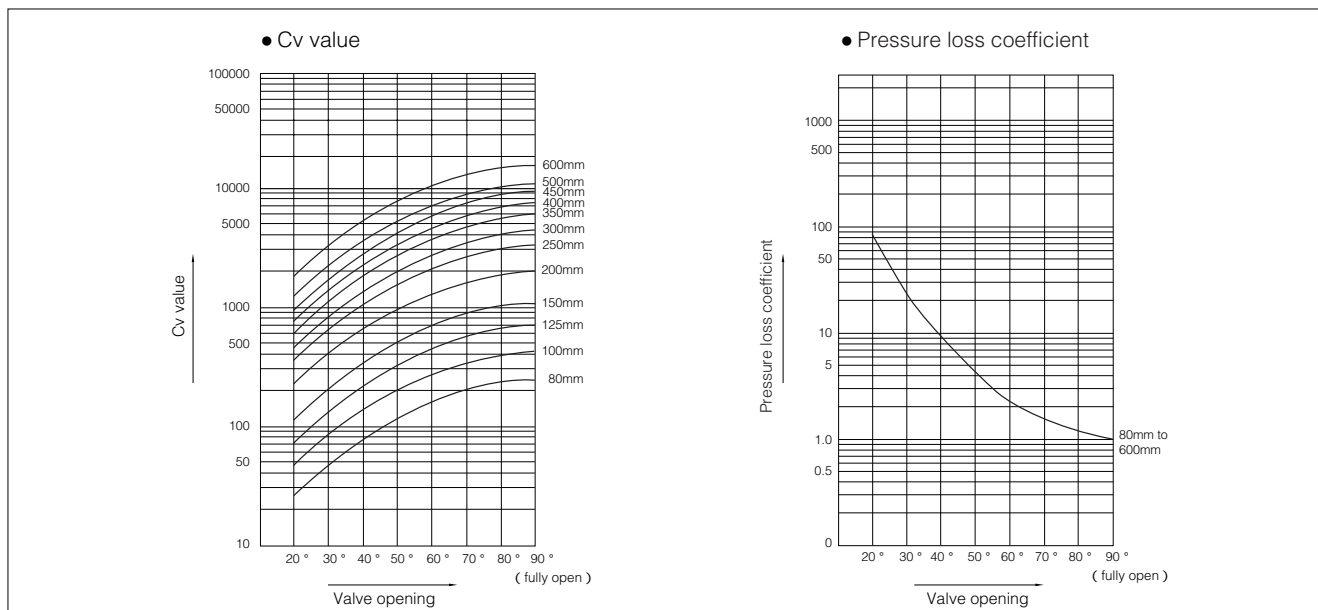
### ■ 302A-4L Actuator mounting finish by temperature

| Temp.range     |       | -29 to 400 degrees C | 400 to 600 degrees C |
|----------------|-------|----------------------|----------------------|
| Body           | 250mm | SCS14A               | SCS14A               |
|                | 300mm | SCPH2                | SCS14A               |
| 350mm to 600mm | 350mm | SCS13A               | SCS13A               |
|                | 600mm | SCPH2                | SCS13A               |

### ■ 4L Installation direction

|                                                    |                                                    |                                                    |                                                    |
|----------------------------------------------------|----------------------------------------------------|----------------------------------------------------|----------------------------------------------------|
| <p>Retainer side</p> <p>Stem side</p> <p>4 L A</p> | <p>Retainer side</p> <p>Stem side</p> <p>4 L B</p> | <p>Retainer side</p> <p>Stem side</p> <p>4 L C</p> | <p>Retainer side</p> <p>Stem side</p> <p>4 L D</p> |
|----------------------------------------------------|----------------------------------------------------|----------------------------------------------------|----------------------------------------------------|

### 302A Cv value/pressure loss coefficient



### 302A Cv value

| Nominal size |      | Valve opening |      |      |      |       |       |       |       |
|--------------|------|---------------|------|------|------|-------|-------|-------|-------|
| mm           | inch | 20°           | 30°  | 40°  | 50°  | 60°   | 70°   | 80°   | 90°   |
| 80           | 3    | 29            | 52   | 85   | 122  | 162   | 207   | 243   | 252   |
| 100          | 4    | 49            | 88   | 144  | 207  | 279   | 351   | 414   | 432   |
| 125          | 5    | 77            | 140  | 230  | 333  | 441   | 549   | 648   | 684   |
| 150          | 6    | 126           | 225  | 369  | 531  | 720   | 900   | 1080  | 1116  |
| 200          | 8    | 234           | 423  | 693  | 990  | 1350  | 1710  | 1980  | 2070  |
| 250          | 10   | 390           | 703  | 1148 | 1648 | 2240  | 2857  | 3300  | 3443  |
| 300          | 12   | 492           | 888  | 1454 | 2081 | 2838  | 3612  | 4172  | 4354  |
| 350          | 14   | 648           | 1170 | 1915 | 2741 | 3739  | 4758  | 5496  | 5736  |
| 400          | 16   | 829           | 1496 | 2449 | 3505 | 4780  | 6084  | 7027  | 7334  |
| 450          | 18   | 1041          | 1879 | 3076 | 4403 | 6004  | 7642  | 8827  | 9212  |
| 500          | 20   | 1323          | 2387 | 3909 | 5595 | 7630  | 9710  | 11216 | 11705 |
| 600          | 24   | 1929          | 3481 | 5700 | 8159 | 11126 | 14161 | 16356 | 17070 |

### 302A Pressure loss coefficient

| Nominal size |      | Valve opening |     |     |     |     |     |     |     |
|--------------|------|---------------|-----|-----|-----|-----|-----|-----|-----|
| mm           | inch | 20°           | 30° | 40° | 50° | 60° | 70° | 80° | 90° |
| 80           | 3    | 95            | 29  | 11  | 5   | 3   | 2   | 1   | 1   |
| 100          | 4    | 98            | 30  | 11  | 5   | 3   | 2   | 1   | 1   |
| 125          | 5    | 93            | 28  | 10  | 5   | 3   | 2   | 1   | 1   |
| 150          | 6    | 70            | 22  | 8   | 4   | 2   | 1   | 1   | 1   |
| 200          | 8    | 62            | 19  | 7   | 3   | 2   | 1   | 1   | 1   |
| 250          | 10   | 54            | 17  | 6   | 3   | 2   | 1   | 1   | 1   |
| 300          | 12   | 70            | 21  | 8   | 4   | 2   | 1   | 1   | 1   |
| 350          | 14   | 68            | 21  | 8   | 4   | 2   | 1   | 1   | 1   |
| 400          | 16   | 73            | 22  | 8   | 4   | 2   | 1   | 1   | 1   |
| 450          | 18   | 75            | 23  | 9   | 4   | 2   | 1   | 1   | 1   |
| 500          | 20   | 72            | 22  | 8   | 4   | 2   | 1   | 1   | 1   |
| 600          | 24   | 70            | 22  | 8   | 4   | 2   | 1   | 1   | 1   |

## 302A Applicable flange standard

| Nominal size |      | JIS |     |     |     | ANSI/API/JPI | BS4504 |      | DIN  |      | BS10    |
|--------------|------|-----|-----|-----|-----|--------------|--------|------|------|------|---------|
| mm           | inch | 5K  | 10K | 16K | 20K | 150Lb        | PN10   | PN16 | NP10 | NP16 | Table E |
| 80           | 3    | ×   | D   | D   | D   | ○            | D      | D    | D    | D    | ×       |
| 100          | 4    | ×   | D   | D   | D   | D            | D      | D    | D    | D    | ×       |
| 125          | 5    | ×   | D   | D   | D   | D            | D      | D    | D    | D    | ×       |
| 150          | 6    | ×   | D   | D   | D   | D            | D      | D    | D    | D    | ×       |
| 200          | 8    | ×   | D   | D   | D   | D            | D      | D    | D    | D    | ×       |
| 250          | 10   | ×   | D   | D   | D   | D            | D      | D    | D    | D    | ×       |
| 300          | 12   | ×   | D   | D   | D   | D            | D      | D    | D    | D    | ×       |
| 350          | 14   | D   | D   | D   | D   | D            | D      | D    | D    | D    | D       |
| 400          | 16   | D   | D   | D   | D   | D            | D      | D    | D    | D    | D       |
| 450          | 18   | D   | T   | T   | T   | D            | T      | T    | T    | T    | D       |
| 500          | 20   | T   | T   | T   | T   | T            | T      | T    | T    | T    | T       |
| 600          | 24   | T   | T   | T   | T   | T            | T      | T    | T    | T    | T       |

○ : Can be used without flange drilling.  
D : With flange drilling  
T : With flange tapping  
× : Not applicable

### 302A Applicable pipe list in case of **A**

| Nominal size |      | SGP                  |                         | Sch20                |                         | Sch40                |                         | Sch60                |                         | Sch80                |                         | Sch10S               |                         | Sch20S               |                         | Minimum internal diameters of piping (mm) |
|--------------|------|----------------------|-------------------------|----------------------|-------------------------|----------------------|-------------------------|----------------------|-------------------------|----------------------|-------------------------|----------------------|-------------------------|----------------------|-------------------------|-------------------------------------------|
|              |      | Retainer (up stream) | Stem Side (down stream) | Retainer (up stream) | Stem Side (down stream) | Retainer (up stream) | Stem Side (down stream) | Retainer (up stream) | Stem Side (down stream) | Retainer (up stream) | Stem Side (down stream) | Retainer (up stream) | Stem Side (down stream) | Retainer (up stream) | Stem Side (down stream) |                                           |
| mm           | inch |                      |                         |                      |                         |                      |                         |                      |                         |                      |                         |                      |                         |                      |                         |                                           |
| 80           | 3    | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | 72.5                                      |
| 100          | 4    | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | 93.8                                      |
| 125          | 5    | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | 119.4                                     |
| 150          | 6    | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ×                       | ○                    | ×                       | ○                    | ○                       | ○                    | ○                       | 147.5                                     |
| 200          | 8    | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ×                       | ○                    | ×                       | ○                    | ○                       | ○                    | ○                       | 197.5                                     |
| 250          | 10   | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ×                       | ○                    | ×                       | ○                    | ○                       | ○                    | ○                       | 248.1                                     |
| 300          | 12   | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ×                       | ×                    | ×                       | ○                    | ○                       | ○                    | ○                       | 297.6                                     |
| 350          | 14   | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ×                       | ×                    | ×                       | -                    | -                       | -                    | -                       | 330                                       |
| 400          | 16   | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ×                       | ○                    | ×                       | -                    | -                       | -                    | -                       | 377                                       |
| 450          | 18   | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ×                       | ○                    | ×                       | -                    | -                       | -                    | -                       | 424                                       |
| 500          | 20   | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ×                       | ○                    | ×                       | -                    | -                       | -                    | -                       | 470                                       |
| 600          | 24   | -                    | -                       | ○                    | ○                       | ○                    | ○                       | ○                    | ×                       | ×                    | ×                       | -                    | -                       | -                    | -                       | 564                                       |

### 302A Applicable pipe list in case of **B**

| Nominal size |      | SGP                  |                         | Sch20                |                         | Sch40                |                         | Sch60                |                         | Sch80                |                         | Sch10S               |                         | Sch20S               |                         |
|--------------|------|----------------------|-------------------------|----------------------|-------------------------|----------------------|-------------------------|----------------------|-------------------------|----------------------|-------------------------|----------------------|-------------------------|----------------------|-------------------------|
|              |      | Retainer (up stream) | Stem Side (down stream) | Retainer (up stream) | Stem Side (down stream) | Retainer (up stream) | Stem Side (down stream) | Retainer (up stream) | Stem Side (down stream) | Retainer (up stream) | Stem Side (down stream) | Retainer (up stream) | Stem Side (down stream) | Retainer (up stream) | Stem Side (down stream) |
| mm           | inch |                      |                         |                      |                         |                      |                         |                      |                         |                      |                         |                      |                         |                      |                         |
| 80           | 3    | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       |
| 100          | 4    | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       |
| 125          | 5    | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       |
| 150          | 6    | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       |
| 200          | 8    | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ×                       | ○                    | ×                       | ○                    | ○                       | ○                    | ○                       |
| 250          | 10   | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ×                       | ○                    | ×                       | ○                    | ○                       | ○                    | ○                       |
| 300          | 12   | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ×                       | ○                    | ×                       | ○                    | ○                       | ○                    | ○                       |
| 350          | 14   | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ×                       | ○                    | ×                       | -                    | -                       | -                    | -                       |
| 400          | 16   | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ×                       | ○                    | ×                       | -                    | -                       | -                    | -                       |
| 450          | 18   | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ×                       | ○                    | ×                       | -                    | -                       | -                    | -                       |
| 500          | 20   | ○                    | ○                       | ○                    | ○                       | ○                    | ○                       | ○                    | ×                       | ○                    | ×                       | -                    | -                       | -                    | -                       |
| 600          | 24   | -                    | -                       | ○                    | ○                       | ○                    | ○                       | ○                    | ×                       | ○                    | ×                       | -                    | -                       | -                    | -                       |

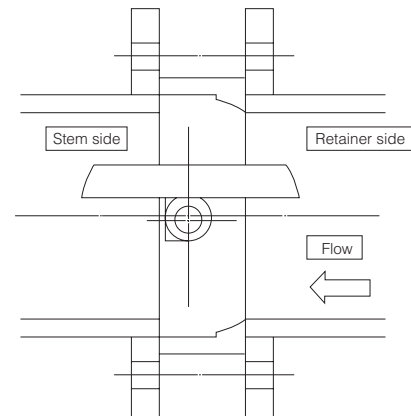
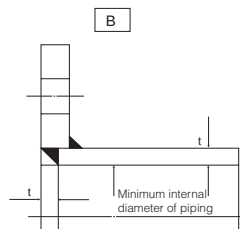
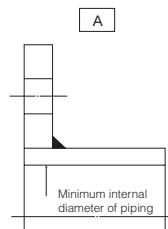
Remark 1: ○ = Applicable × = Not applicable

Remark 2: The clearance between the disc and the pipe is based on API 609 and MSS SP-67.

80mm to 150mm: 1.5mm; 200mm to 500mm: 3.0mm, and 600mm: 6.4mm

Remark 3: Butterfly valves are inserted into a pipe that was fitted with the disc when fully open.

In cases where there is an "X" in the chart above or you are using a pipe or flange that is less than the minimum inner pipe diameter, use is still possible if means are taken such as inserting a spacer between the valve and flange. For details, please consult us.



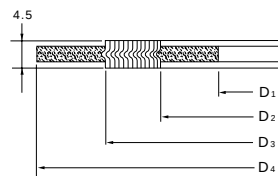
## 302A Piping gasket

- In case of sheet gasket ..... Any standard can be used.
- In case of spiral gasket
  - For API, JPI, ANSI flange ..... Any standard gaskets with inner/outer ring can be used.
  - For JIS flange ..... Use special spiral gasket shown below.

### ■ Special spiral gasket for JIS flange size

| Nominal size |      | JIS flange        |                |                |                |                |                |
|--------------|------|-------------------|----------------|----------------|----------------|----------------|----------------|
|              |      | 5K, 10K, 16K, 20K |                |                | 5K             | 10K            | 16K, 20K       |
| mm           | inch | D <sub>1</sub>    | D <sub>2</sub> | D <sub>3</sub> | D <sub>4</sub> | D <sub>4</sub> | D <sub>4</sub> |
| 80           | 3    | 89                | 97             | 120            | ×              | 134            | 140            |
| 100          | 4    | 115               | 124            | 145            | ×              | 159            | 165            |
| 125          | 5    | 140               | 151            | 177            | ×              | 190            | 202            |
| 150          | 6    | 166               | 178            | 205            | ×              | 220            | 237            |
| 200          | 8    | 217               | 227            | 256            | ×              | 270            | 282            |
| 250          | 10   | 268               | 278            | 315            | ×              | 332            | 354            |
| 300          | 12   | 319               | 331            | 362            | ×              | 377            | 404            |
| 350          | 14   | 356               | 369            | 399            | 412            | 422            | 450            |
| 400          | 16   | 406               | 420            | 457            | 472            | 484            | 508            |
| 450          | 18   | 458               | 472            | 517            | 532            | 539            | 573            |
| 500          | 20   | 508               | 532            | 567            | 582            | 594            | 628            |
| 600          | 24   | 610               | 626            | 672            | 689            | 700            | 734            |

Remark; ×: Not applicable



### ■ Applicable standard for spiral gasket

| Nominal size |    | Tomoe special |                    |                   | Standard gasket |                    |                   |
|--------------|----|---------------|--------------------|-------------------|-----------------|--------------------|-------------------|
|              |    | JIS 10K       | JIS 16K<br>JIS 20K | ANSI<br>125/150Lb | JIS 10K         | JIS 16K<br>JIS 20K | ANSI<br>125/150Lb |
| 80           | 3  | ○             | ○                  | ○                 | ×               | ×                  | ○                 |
| 100          | 4  | ○             | ○                  | ○                 | ×               | ×                  | ○                 |
| 125          | 5  | ○             | ○                  | ○                 | ×               | ×                  | ○                 |
| 150          | 6  | ○             | ○                  | ○                 | ×               | ×                  | ○                 |
| 200          | 8  | ○             | ○                  | ○                 | ×               | ×                  | ○                 |
| 250          | 10 | ○             | ○                  | ○                 | ×               | ×                  | ○                 |
| 300          | 12 | ○             | ○                  | ○                 | ×               | ×                  | ○                 |
| 350          | 14 | ○             | ○                  | ○                 | ×               | ×                  | ○                 |
| 400          | 16 | ○             | ○                  | ○                 | ×               | ×                  | ○                 |
| 450          | 18 | ○             | ○                  | ○                 | ×               | ×                  | ○                 |
| 500          | 20 | ○             | ○                  | ○                 | ×               | ×                  | ○                 |
| 600          | 24 | ○             | ○                  | ○                 | ×               | ×                  | ○                 |

Remark 1: ○: Applicable, ×: Not applicable

Remark 2: In case a minute leakage of gas (less than 100PPm) becomes a problem, please inquire of our business charge.

## 302A Applicable standard for standard piping gasket

| Nominal size |      | Max. allowable inside diameter (D) | Joint sheet or RPTFE solid gasket (t 2mm) |         |                    |                   |              | PTFE mold type gasket |         |                    |                   |              |
|--------------|------|------------------------------------|-------------------------------------------|---------|--------------------|-------------------|--------------|-----------------------|---------|--------------------|-------------------|--------------|
|              |      |                                    |                                           |         |                    |                   |              | VALQUA or NICHIASU    |         |                    |                   |              |
| mm           | inch |                                    | JIS 5K                                    | JIS 10K | JIS 16K<br>JIS 20K | ANSI<br>125/150Lb | JPI<br>150Lb | JIS 5K                | JIS 10K | JIS 16K<br>JIS 20K | ANSI<br>125/150Lb | JPI<br>150Lb |
| 80           | 3    | 97                                 | ×                                         | ○       | ○                  | ○                 | ○            | ×                     | ○       | ○                  | ○                 | ○            |
| 100          | 4    | 124                                | ×                                         | ○       | ○                  | ○                 | ○            | ×                     | ○       | ○                  | ○                 | ○            |
| 125          | 5    | 151                                | ×                                         | ○       | ○                  | ○                 | ○            | ×                     | ○       | ○                  | ○                 | ○            |
| 150          | 6    | 178                                | ×                                         | ○       | ○                  | ○                 | ○            | ×                     | ○       | ○                  | ○                 | ○            |
| 200          | 8    | 227                                | ×                                         | ○       | ○                  | ○                 | ○            | ×                     | ○       | ○                  | ○                 | ○            |
| 250          | 10   | 282                                | ×                                         | ○       | ○                  | ○                 | ○            | ×                     | ○       | ○                  | ○                 | ○            |
| 300          | 12   | 331                                | ×                                         | ○       | ○                  | ○                 | ○            | ×                     | ○       | ○                  | ○                 | ○            |
| 350          | 14   | 362                                | ○                                         | ○       | ○                  | ○                 | ○            | ○                     | ○       | ○                  | ○                 | ○            |
| 400          | 16   | 414                                | ○                                         | ○       | ○                  | ○                 | ○            | ○                     | ○       | ○                  | ○                 | ○            |
| 450          | 18   | 468                                | ○                                         | ○       | ○                  | ○                 | ○            | ○                     | ○       | ○                  | ○                 | ○            |
| 500          | 20   | 518                                | ○                                         | ○       | ○                  | ○                 | ○            | ○                     | ○       | ○                  | ○                 | ○            |
| 600          | 24   | 619                                | ○                                         | ○       | ○                  | ○                 | ○            | ○                     | ○       | ○                  | ○                 | ○            |

Remark; ○: Applicable, ×: Not applicable

### 302A Piping bolts and nuts sizes

| Nominal size |      | JIS5K               |               | JIS10K              |                 | JIS16K              |                  |
|--------------|------|---------------------|---------------|---------------------|-----------------|---------------------|------------------|
| mm           | inch | Long bolts and nuts | Setting bolts | Long bolts and nuts | Setting bolts   | Long bolts and nuts | Setting bolts    |
| 80           | 3    | —                   | —             | 8-M16×145           | —               | 8-M20×170           | —                |
| 100          | 4    | —                   | —             | 8-M16×145           | —               | 8-M20×170           | —                |
| 125          | 5    | —                   | —             | 8-M20×170           | —               | 8-M22×190           | —                |
| 150          | 6    | —                   | —             | 8-M20×170           | —               | 12-M22×190          | —                |
| 200          | 8    | —                   | —             | 12-M20×170          | —               | 12-M22×190          | —                |
| 250          | 10   | —                   | —             | 12-M22×190          | —               | 12-M24×210          | —                |
| 300          | 12   | —                   | —             | 16-M22×190          | —               | 16-M24×225          | —                |
| 350          | 14   | 12-M22×210          | —             | 16-M22×210          | —               | 16-M30(P3)×245      | —                |
| 400          | 16   | 16-M22×220          | —             | 16-M24×235          | —               | 16-M30(P3)×265      | —                |
| 450          | 18   | 16-M22×230          | —             | 16-M24×250          | 4-M24×84×60     | 16-M30(P3)×280      | 4-M30(P3)× 95×65 |
|              |      |                     |               |                     | 4-M24×58×50     |                     | 4-M30(P3)× 73×50 |
| 500          | 20   | 16-M22×245          | 4-M22×80×50   | 16-M24×260          | 4-M24×90×60     | 16-M30(P3)×300      | 4-M30(P3)×105×65 |
|              |      |                     | 4-M22×60×50   |                     | 4-M24×70×60     |                     | 4-M30(P3)× 81×50 |
| 600          | 24   | 16-M24×280          | 4-M24×84×60   | 20-M30(P3)×300      | 4-M30(P3)×81×50 | 20-M36(P3)×345      | 4-M36(P3)×100×60 |
|              |      |                     | 4-M24×65×50   |                     | 4-M30(P3)×65×50 |                     | 4-M36(P3)× 82×50 |

| Nominal size |      | JIS20K              |                  | ANSI150Lb, API/JPI150Lb |                      |
|--------------|------|---------------------|------------------|-------------------------|----------------------|
| mm           | inch | Long bolts and nuts | Setting bolts    | Long bolts and nuts     | Setting bolts        |
| 80           | 3    | 8-M20×170           | —                | 4-U5/8-11UNC×155        | —                    |
| 100          | 4    | 8-M20×170           | —                | 8-U5/8-11UNC×155        | —                    |
| 125          | 5    | 8-M22×190           | —                | 8-U3/4-10UNC×175        | —                    |
| 150          | 6    | 12-M22×190          | —                | 8-U3/4-10UNC×175        | —                    |
| 200          | 8    | 12-M22×190          | —                | 8-U3/4-10UNC×205        | —                    |
| 250          | 10   | 12-M24×210          | —                | 12-U7/8- 9UNC×215       | —                    |
| 300          | 12   | 16-M24×225          | —                | 12-U7/8- 9UNC×215       | —                    |
| 350          | 14   | 16-M30(P3)×260      | —                | 12-U1 - 8UNC×240        | —                    |
| 400          | 16   | 16-M30(P3)×280      | —                | 16-U1 - 8UNC×255        | —                    |
| 450          | 18   | 16-M30(P3)×300      | 4-M30(P3)×105×65 | 16-U1 1/8- 8UN×280      | —                    |
|              |      |                     | 4-M30(P3)× 81×50 |                         |                      |
| 500          | 20   | 16-M30(P3)×315      | 4-M30(P3)×110×60 | 16-U1 1/8- 8UN×295      | 4-U1 1/8- 8UN×105×50 |
|              |      |                     | 4-M30(P3)× 90×65 |                         | 4-U1 1/8- 8UN× 80×50 |
| 600          | 24   | 20-M36(P3)×360      | 4-M36(P3)×108×60 | 16-U1 1/4- 8UN×340      | 4-U1 1/4- 8UN×100×50 |
|              |      |                     | 4-M36(P3)× 90×50 |                         | 4-U1 1/4- 8UN× 90×50 |

Remark: Use SNB 7/S45C (A193 B7/A, 194 2H) SUS304/SUS304

For long bolt, use full thread bolt.

For hexagon nut, use heavy nut.

A metric screw should have 3 pitches if its nominal diameter exceeds M30.

A unified screw should have 8 threads per inch if its nominal diameter exceeds 1 inch.

Hexagon bolts (set bolts) are indicated with the retainer side on the up side and the stem side on down side.

#### Examples

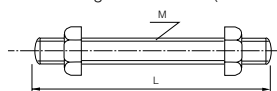
Long bolts: 12 - M22 × 185

N M L

Setting bolts: 4 - M30 × 95 × 65  
(Hexagon bolts)

N M L S

Long bolts and nuts (full thread)



Setting bolts (Hexagon bolts)

