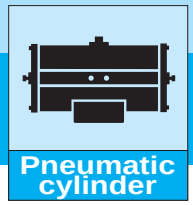
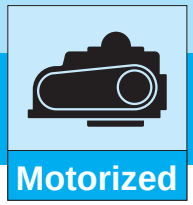
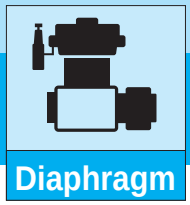
# 507V/508V


Worm gear


Pneumatic cylinder


Motorized

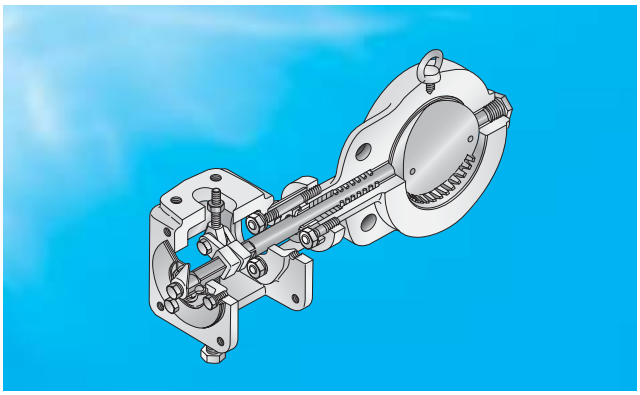

Diaphragm



**For various applications such as air conditioning systems, pulp & paper mills, steel mills, chemical plants, food processing, and many other process industries, the rotary control valve 507V/508V will support your fluid control applications at all times.**

## Model 507V

### Rotary control valve for high temperature fluids up to 400 degrees C

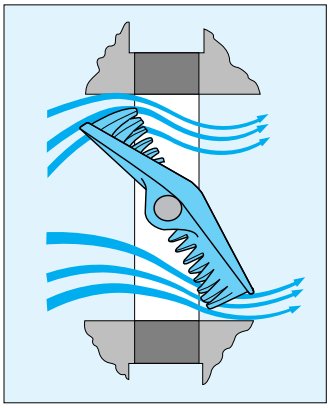


#### General

Model 507V is the high temperature version of our rotary control valve. In designing it for exclusive use in the regulation of fluids, we have pursued every angle of the control requirements and developed a state-of-the-art product: one with high rangeability, reduced dynamic torque, low noise level, anti-cavitation, and other excellent features. This model covers a wide temperature range in the fluid control of air conditioning systems, pulp and paper mills, chemical plants, steel mills, and food processing equipment.

#### Structure

The high performance characteristics of this model in fluid control originates from its unique design with a teeth and gull-wing shaped disc that touches the seat at a certain angle.
The teeth are arranged on the circumference of the disc towards either direction of flow. The "touch-at-an-angle" disc assists the reduction of seating and unseating torque and facilitates smooth control of the valve.



#### Features

**(1) Flexible control over a wide range**

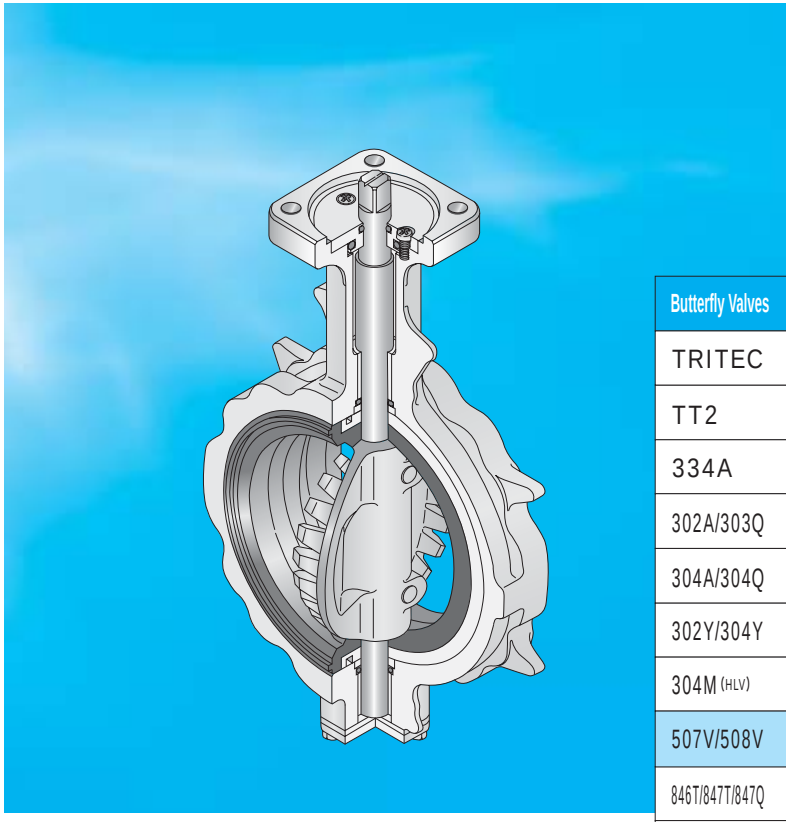
The 507V allows complete control over the full range from the open to the closed position. The valve can also handle high temperatures of up to 400 degrees C such as in steam lines. These features enable the rotary valve to response quickly and flexibly to any changes within the operating parameters of the process lines. The 507V, therefore, is the optimum valve for any control systems processing multiple products where the operating conditions change from time to time in accordance with process requirements.

**(2) Cost-effective rotary control valve**

In spite of its compact size and light weight, the 507V has a large valve capacity that minimizes the energy loss of fluid at the fully open position.
This compact design reduces the required size of the actuator, installation space and piping supports, and minimizes vibration of control systems, and increases the operating life.
These features provide the benefit of reducing the total operating cost of your plant.

# Model 508V

## Rotary control valve with tight shutoff and high grade rubber seat ring





### General

With a specially designed rubber seat ring, Model 508V ensures tight shut-off, and eliminates the need for any additional stop valve required by conventional control valves. The face-to-face dimension meets both JIS and ISO standards and is applicable for various industrial fields including air conditioning systems.

### Structure

#### Tight shutoff with a rubber seat ring

Except for the rubber seat ring, the 508V has the same design principle as the 507V. Excellent controllability is achieved by having the innovative teethed disc seating at a certain angle. The 508V has a reinforced core rubber seat ring allowing it to be used for high pressure service up to 1.6MPa with complete tight shutoff.

### Features

#### (1) Rubber seat ring with a "control cosine curve" profile

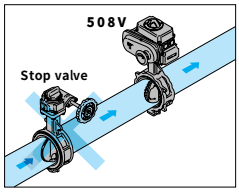
Taking into consideration the cosine curve profile rubber seat ring, incorporated in our models 700G and 702Z, etc. we developed a new type of seat ring for exclusive use in the 508V.

The 508V has a reinforced core rubber seat ring incorporated with a "control cosine curve" profile for sizes between 50 mm and 200mm. This seat ring design ensures a tight shut-off up to a working pressure of 1.6MPa.

The 508V available in sizes between 250 mm and 350 mm, has a similar seat ring design and profile. The seat ring is backed up by a metal core precisely formed and encapsulated inside the rubber. This design enables the control valve to function under severe conditions of high velocity, a large differential pressure, or a high vacuum. (The maximum allowable shutoff pressure is 1.0MPa.)

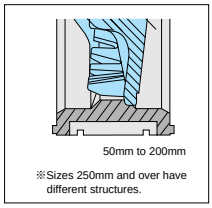
#### (2) No additional stop valve, less installation space, and less cost

Because of its reliable sealing effect against a high differential pressure, the 508V does not require an additional stop valve. You save on installation space and benefit from the excellent cost effective features of our rotary control valve.




#### (3) Satisfles both JIS and ISO standards for extended applications

The 508V is available in different flange specifications. Also, its face-to-face dimension meets both JIS and ISO requirements. Thus, this model is applicable for various industrial applications worldwide.




## Control valve, 507V / 508V series

### General

With guide-vane-like teeth around the disc edge, and the disc touching the seat at a certain angle, this product is a compact, lightweight and highly cost-effective, high-performance rotary control valve that exhibits outstanding control characteristics.

The valve provides steady control over a wide range with higher rangeability, better cavitation resistance, lower dynamic torque, lower noise level, and a better leakage rate than any other rotary control valve.

Two models, the 507V and 508V, are available for a range of severe applications. The 507V is the optimum type for fluid control of high pressure, high temperature systems. The 508V is characterized by its rubber seat ring.

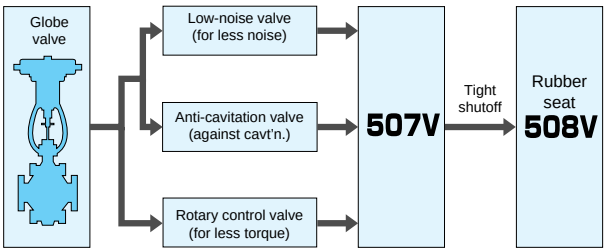
### Fundamental structure

This product has two basic design features that are responsible for the outstanding performance. One is the teeth around the disc and the other is the gull-wing-like design of the disc.

The teeth on the circumference of the disc break up the fluid energy acting on it with a resultant reduction of pressure recovery.

Unlike conventional flat discs, the gull-wing-like disc of the product touches the seat at a certain angle for reduced seating/unseating torque. This results in steady control of the valve.

### Recent trend toward rotary type control valves



# Model 507V



## Standard specifications

| | | | | |
|---|---|---|---|---|
| Valve size | | | 50 to 400mm | |
| Pressure rating | | | 50 to 200mm: ANSI CLASS 300Lbs.<br>250 to 400mm: ANSI CLASS 150Lbs. | |
| Actuator mounting | | | Non-flange joint | |
| Flange accomodation | | | JIS 10K, JIS 16K, JIS 20K<br>ANSI CLASS150Lb., ANSI CLASS 300Lb.,<br>DIN NP 10, 16, 25<br>Please contact us when 250mm/16K and over. | |
| Service temperature * | Cast steel | | −10 to +400 degrees C<br>Following materials are used for 200 degrees C or higher temperatures<br>Carbon for bearings<br>Grafoil® for packing | |
| | Stainless steel | | −50 to +400 degrees CFollowing materials are used for 200 degrees C or higher temperatures<br>Carbon for bearings<br>Grafoil® for packing<br>100:1 | |
| Rangeability | | | Max 70 ° | |
| Valve opening | | | Equal percent | |
| Flow characteristics | | | ANSI / FCI 70-2 CLASS Ⅱ | |
| Leakage rate** | | | Studs and nuts tightening | |
| Stuffing box | | | | |
| Standard materials | | | 1 | 2 |
| | Body | 50 to 200mm | Cast steel SCPH2 | Stainless steel SCS14 |
| | | 250 to 400mm | Cast steel SCPH2 | Stainless steel SCS14 |
| | Disc*** | 50 to 150mm | Cast steel SCPH2 | Stainless steel SCS14 |
| | | 200 to 400mm | Ductile iron FCD450 | Stainless steel SCS14 |
| | Stem | | Stainless steel SUS630(SUS316)**** | |
| | Bearings | | Reinforced Teflon® | Reinforced Teflon® |
| | Packings | | Teflon® asbestos | Teflon® asbestos |
| | Gland flange | | Stainless steel | Stainless steel |

*Please consult us if the application is in the range of 400 degrees C to 600 degrees C.
Grafoil® is a product of Union Carbide Inc.
**The disc is gull wing shaped and touches the metal seat at an angle. This design minimizes leakage to a level less than 0.5% of the rated Cv, which is equal to or lower than the leakage permitted on a double-seat globe control valve.
***The disc is electroless planted with nickel.
****Please consult us if an SUS316 stem is required.
Note: Teflon® is a registered brand name of a fluoroplastic produced by Mitsui Du Pont Fluorochemicals and Du Pont Corporation.

# Model 508V [Tight Shutoff With Rubber Seatring]

## Standard specifications

| | | | | |
|---|---|---|---|---|
| Valve size | | 50, 80, 100, 150, 200mm | 250, 300, 350mm | 400, 450, 500, 600mm |
| Face-to-face dimension ※1 | | JIS B 2002 series 46 / ISO 5752 basic series 20 wafer butterfly valve (Short) | | |
| Flange accomodation | | JIS:5K, 10K, 16K, 20K<br>ANSI:150Lb<br>DIN NP10, NP16<br>BS4504 PN10, PN16 BS10: "E", "F"<br>JIS G 5524, 5527 | JIS:10K, 16K<br>ANSI:150Lb<br>DIN NP10, NP16<br>BS4504 PN10, PN16 BS10:"E", "F"<br>JIS G 5524, 5527 | JIS:10K<br>ANSI:150Lb<br>DIN NP10, NP16<br>BS4504 PN10, PN16<br>JIS G 5527 7.5 |
| Woking temperature range ※2 | | −20 to 120 degrees C〈−10 to 80 degrees C〉 | | −10 to 80 degrees C【−20 to 120 degrees C】 |
| Woking temperature in continuous use ※3 | | 0 to 100 degrees C, 〈0 to 60 degrees C〉 | | 0 to 60 degrees C【0 to 100 degrees C】 |
| Max. working pressure | | △P Shut-off pressure 1.6MPa〈1.0MPa〉 | △P Shut-off pressure 1.0MPa | |
| Body. test pressure | | 2.4MPa〈1.5MPa〉 | 1.5MPa | |
| Seat leak test pressure | | 1.8MPa〈1.1MPa〉 | 1.1MPa | |
| Flow characteristics | | Nearly equal percent | | |
| Rangeability | | 100: 1 | | |
| Standard materials * | Body | FCD450 (No fluid exposure) | | |
| | Disc | SCS14 | SCS13 | |
| | Stem | SUS420J2 (No fluid exposure) | | |
| | Seat ring | ∗ EPDM core-reinforced〈option: NBR core-reinforced〉 | | NBR core-reinforced, 〈option:∗ EPDM core-reinforced〉 |

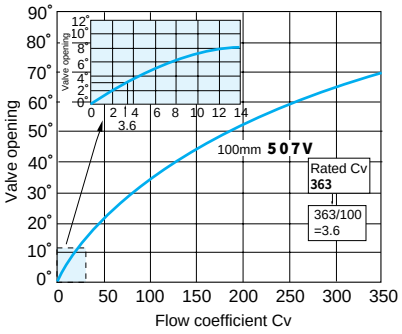
※1. 350mm only: JIS B 2002 Series 47/ ISO Basic Series 25 (medium)
※2. 〈 〉represents NBR,【 】represents EPDM∗
※3. "Woking temperature in continuous use" stands for the temperature continuouslykept exceeding one hour.
∗ Never use an EPDM rubber seat is ring if the valve being used for oil or for a fluid containing even a slight amount of oil.

# Multiple merits for multiple applications

## Controllability

### High rangeability

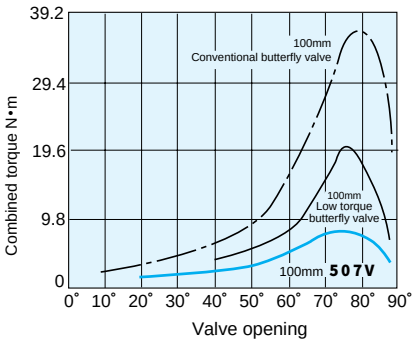
✶The wide range of controllability permits flexible adjustment to any changes in the process conditions of production lines. This merit is especially beneficial to multifold productions.
✶The conventional "split range control" with twin valves is no longer required. One product is enough to cover the whole range.




With its nearly "equal percent" flow characteristics and its very low leakage rate, the product offers an extremely high rangeability of 100:1.

### Low dynamic torque

✶The steady performance ensures more precise control.
✶The compact actuator saves space and energy.

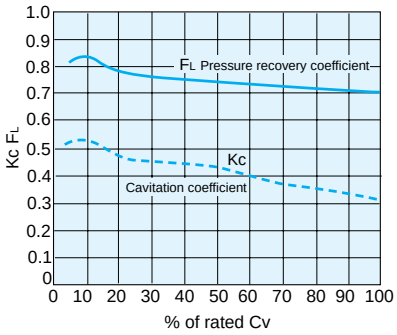



The above graph shows a comparison of the product with other typical valves.
The patented disc has remarkably reduces the dynamic torque.

## Reliability

### Excellent cavitation resistance

✶The outstanding cavitation resistance increases the operational life of the valve and pipeline, and improves the reliability of the system.
✶This model is works in more severe requirements than ever.

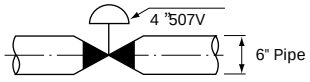



A high coefficient of initial cavitation (KC), and a high pressure recovery coefficient (FL), inhibit the occurence of cavitation.

### Cv value

| Size | | | Opening angle | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| mm | inch | | 10 ° | 20 ° | 30 ° | 40 ° | 50 ° | 60 ° | 70 ° |
| 50 | 2 | Cv | 3 | 11 | 22 | 38 | 53 | 69 | 85 |
| | | CvFp | 3 | 11 | 22 | 37 | 50 | 63 | 74 |
| 80 | 3 | Cv | 14 | 33 | 58 | 88 | 120 | 140 | 176 |
| | | CvFp | 14 | 33 | 58 | 86 | 115 | 133 | 162 |
| 100 | 4 | Cv | 17 | 43 | 80 | 127 | 190 | 275 | 363 |
| | | CvFp | 17 | 43 | 80 | 125 | 183 | 255 | 320 |
| 150 | 6 | Cv | 55 | 120 | 210 | 320 | 450 | 630 | 825 |
| | | CvFp | 55 | 120 | 208 | 313 | 432 | 583 | 727 |
| 200 | 8 | Cv | 70 | 175 | 330 | 550 | 860 | 1265 | 1595 |
| | | CvFp | 70 | 174 | 328 | 539 | 820 | 1147 | 1376 |
| 250 | 10 | Cv | 96 | 280 | 455 | 760 | 1230 | 1800 | 2515 |
| | | CvFp | 96 | 279 | 452 | 748 | 1181 | 1657 | 2164 |
| 300 | 12 | Cv | 150 | 410 | 740 | 1240 | 1900 | 2700 | 3610 |
| | | CvFp | 150 | 409 | 735 | 1215 | 1815 | 2470 | 3109 |
| 350 | 14 | Cv | 180 | 480 | 900 | 1500 | 2200 | 3300 | 4440 |
| | | CvFp | 180 | 479 | 895 | 1476 | 2127 | 3068 | 3918 |
| 400 | 16 | Cv | 200 | 550 | 1100 | 1900 | 3000 | 4400 | 5650 |
| | | CvFp | 200 | 549 | 1094 | 1872 | 2892 | 4079 | 5014 |

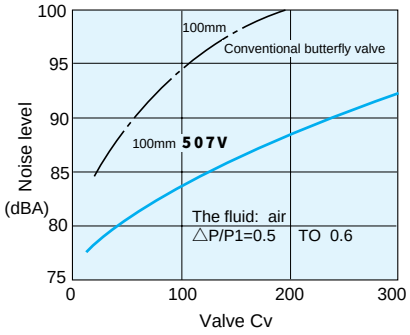
Remarks:
CvFp : Pipe size=1.5×Valve size
EX:



# Environmental considerations

## Low noise level

∗Provides better work environment.
∗Especially in air and gas applications, this product has a lower noise level by 5 to 10dBA and meets and exceeds noise regulations




The teeth on the disc cut the flow into fine jet streams.
This is the most effective device for lowering the noise level when the valve is half open.

# Cost merit

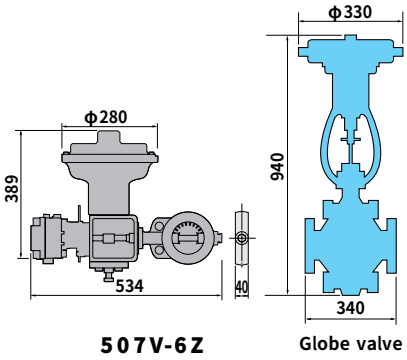
## Larger valve capacity

∗Reduces loss of energy at the fully open position.
∗Allows one to two sizes of valve reduction in comparison with a conventional valve.

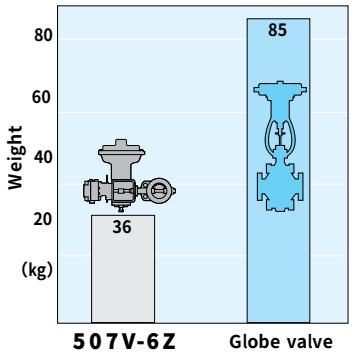
## Compact and lightweight design

∗Permits compact piping arrangement.
∗Allows the use of a portable remote controller unit.
∗Eliminates vibration problems of the piping system, and improves operational life.

Comparison of dimensions
(Nominal size: 80mm)




Comparison of weight
(Nominal size: 80mm)




## Simple design

∗Permits easy control of spare parts.
∗Facilitates easy maintenance.
∗Has a reduced number of parts and improved reliability.

## Pressure recovery factor (FL), coefficient of incipient cavitation (Kc)

| Opening angle | 10 ° | 20 ° | 30 ° | 40 ° | 50 ° | 60 ° | 70 ° |
|---|---|---|---|---|---|---|---|
| Pressure recovery factor (FL) | 0.85 | 0.80 | 0.78 | 0.76 | 0.73 | 0.71 | 0.70 |
| Coefficient of incipient cavitation (Kc) | 0.55 | 0.50 | 0.47 | 0.45 | 0.40 | 0.37 | 0.32 |

## 507V Actuator selection chart

### ■507V

| 型 番 | Size (mm / inch) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 50 | 80 | 100 | 150 | 200 | 250 | 300 | 350 | 400 |
| | 2 | 3 | 4 | 6 | 8 | 10 | 12 | 14 | 16 |
| 2S | DGH-1 | | | | | DGH-2 | | | |
| 3E,3A | K70 | | | | | | | TGA-100 | |
| | K170 | | | | | | | | |
| | K370 | | | | | | | | |
| | K700 | | | | | | | | |
| 3G,3F | K170S | | | | | | | | |
| | K370S | | | | | | | | |
| | K700S | | | | | | | | |
| 4 I | 4 I-1 | | | 4 I-2 | | 4 I-2.5 | 4 I-3 | | |
| 6Z | 280H | | | | | 400H | | | |

## 507V Allowable differencial pressure for 3E

### ■Double-action Cylinder

(KPa)

| Nominal size | | | Cv % (Cv/Rated Cv) | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | 0 | 20 | 40 | 60 | 80 | 100 |
| | | | Valve opening % | | | | | |
| mm | inch | Cylinder | 0 | 41 | 57 | 69 | 86 | 100 |
| 50 | 2 | K70 | 4900 | 1538 | 826 | 664 | 709 | 2940 |
| | | K170 | 4900 | 4900 | 2672 | 2356 | 2854 | 1860 |
| 80 | 3 | K70 | 3994 | 1012 | 577 | 439 | 476 | 1860 |
| | | K170 | 4900 | 3130 | 1868 | 1557 | 1860 | 1860 |
| 100 | 4 | K70 | 2396 | 459 | 248 | 184 | 197 | 780 |
| | | K170 | 3430 | 1370 | 802 | 654 | 780 | 780 |
| 150 | 6 | K70 | 998 | 154 | 80 | 59 | 63 | 290 |
| | | K170 | 1370 | 477 | 260 | 210 | 253 | 290 |
| | | K370 | 1370 | 480 | 340 | 290 | 290 | 290 |
| 200 | 8 | K170 | 1210 | 208 | 111 | 89 | 107 | 140 |
| | | K370 | 1210 | 300 | 200 | 140 | 140 | 140 |
| 250 | 10 | K370 | 1356 | 164 | 103 | 91 | 115 | 210 |
| | | K700 | 1500 | 420 | 253 | 204 | 210 | 210 |
| 300 | 12 | K700 | 1030 | 250 | 150 | 120 | 120 | 120 |
| 350 | 14 | K700 | 640 | 160 | 99 | 78 | 90 | 90 |
| 400 | 16 | K700 | 590 | 110 | 73 | 57 | 67 | 68 |

## 507V Allowable differencial pressure for 3G, 3F

### ■Single-action Cylinder

(KPa)

| Nominal size | | | Cv % (Cv/Rated Cv) | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | 0 | 20 | 40 | 60 | 80 | 100 |
| | | | Valve opening % | | | | | |
| mm | inch | Cylinder | 0 | 41 | 57 | 69 | 86 | 100 |
| 50 | 2 | K170S | 4900 | 1284 | 816 | 854 | 1248 | 2940 |
| 80 | 3 | K170S | 2929 | 845 | 571 | 565 | 838 | 1860 |
| 100 | 4 | K170S | 1758 | 383 | 245 | 237 | 347 | 780 |
| | | K370S | 3430 | 1064 | 785 | 748 | 780 | 780 |
| 150 | 6 | K170S | 732 | 128 | 79 | 76 | 110 | 290 |
| | | K370S | 1370 | 356 | 255 | 240 | 290 | 290 |
| | | K700S | 1370 | 480 | 340 | 290 | 290 | 290 |
| 200 | 8 | K370S | 953 | 152 | 108 | 102 | 140 | 140 |
| | | K700S | 1210 | 300 | 200 | 140 | 140 | 140 |
| 250 | 10 | K700S | 749 | 136 | 84 | 79 | 113 | 210 |

## 507V Allowable differencial pressure for 6Z

(MPa)

| Nominal size | | Model | Supply pressure (MPa) | Spring range (kPa) | Cv % (Cv/Rated Cv) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Close | 20 | 40 | 60 | 80 | 100 |
| | | | | | Valve opening % | | | | | |
| mm | inch | | | | 0 | 41 | 57 | 69 | 86 | 100 |
| 50 | 2 | 280H | 0.27 | ※60 to 220 | 4.90 | 4.90 | 3.33 | 2.94 | 2.94 | 2.94 |
| 80 | 3 | 280H | 0.27 | ※60 to 220 | 4.90 | 3.13 | 2.25 | 1.86 | 1.86 | 1.86 |
| 100 | 4 | 280H | 0.27 | ※60 to 220 | 3.43 | 1.37 | 0.97 | 0.78 | 0.78 | 0.78 |
| 150 | 6 | 280H | 0.27 | ※60 to 220 | 1.37 | 0.48 | 0.34 | 0.29 | 0.29 | 0.29 |
| 200 | 8 | 280H | 0.27 | ※60 to 220 | 1.21 | 0.30 | 0.20 | 0.14 | 0.14 | 0.14 |
| 250 | 10 | 400H | 0.27 | 60 to 190 | 1.50 | 0.36 | 0.25 | 0.21 | 0.20 | 0.20 |
| 300 | 12 | 400H | 0.27 | 60 to 190 | 1.03 | 0.22 | 0.14 | 0.12 | 0.12 | 0.12 |
| 350 | 14 | 400H | 0.27 | 60 to 190 | 0.64 | 0.15 | 0.10 | 0.09 | 0.08 | 0.08 |
| 400 | 16 | 400H | 0.27 | 60 to 190 | 0.59 | 0.10 | 0.07 | 0.06 | 0.05 | 0.05 |

※ Actual operation: 60 to 203kPa

# 507V

## 507V Allowable differencial pressure on stem

### ■SUS630

(MPa)

| Nominal size | | Cv % (Cv/Rated Cv) | | | | | |
|---|---|---|---|---|---|---|---|
| | | 0 | 20 | 40 | 60 | 80 | 100 |
| | | Valve opening % | | | | | |
| mm | inch | 0 | 41 | 57 | 69 | 86 | 100 |
| 50 | 2 | 4.90 | 4.90 | 3.33 | 2.94 | 2.94 | 2.94 |
| 80 | 3 | 4.90 | 3.13 | 2.25 | 1.86 | 1.86 | 1.86 |
| 100 | 4 | 3.43 | 1.37 | 0.97 | 0.78 | 0.78 | 0.78 |
| 150 | 6 | 1.37 | 0.48 | 0.34 | 0.29 | 0.29 | 0.29 |
| 200 | 8 | 1.17 | 0.30 | 0.20 | 0.14 | 0.14 | 0.14 |
| 250 | 10 | 1.47 | 0.42 | 0.28 | 0.20 | 0.20 | 0.20 |
| 300 | 12 | 0.98 | 0.25 | 0.16 | 0.12 | 0.12 | 0.12 |
| 350 | 14 | 0.64 | 0.16 | 0.10 | 0.08 | 0.08 | 0.08 |
| 400 | 16 | 0.59 | 0.11 | 0.07 | 0.06 | 0.06 | 0.06 |

### ■SUS316

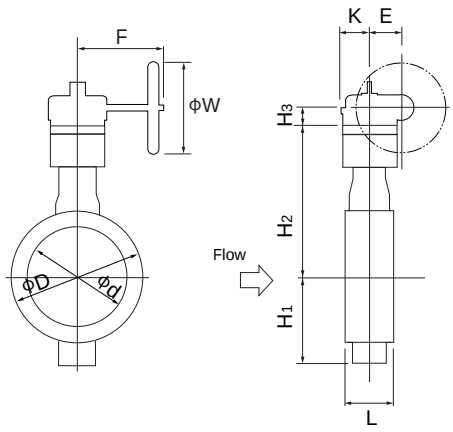
(MPa)

| Nominal size | | Cv % (Cv/Rated Cv) | | | | | |
|---|---|---|---|---|---|---|---|
| | | 0 | 20 | 40 | 60 | 80 | 100 |
| | | Valve opening % | | | | | |
| mm | inch | 0 | 41 | 57 | 69 | 86 | 100 |
| 50 | 2 | 4.90 | 2.45 | 1.76 | 1.57 | 1.57 | 1.57 |
| 80 | 3 | 3.13 | 1.57 | 1.17 | 0.98 | 0.98 | 0.98 |
| 100 | 4 | 1.66 | 0.70 | 0.53 | 0.39 | 0.39 | 0.39 |
| 150 | 6 | 0.78 | 0.24 | 0.16 | 0.13 | 0.13 | 0.13 |
| 200 | 8 | 0.54 | 0.15 | 0.10 | 0.08 | 0.08 | 0.08 |
| 250 | 10 | 0.73 | 0.21 | 0.14 | 0.12 | 0.12 | 0.12 |
| 300 | 12 | 0.51 | 0.12 | 0.08 | 0.06 | 0.06 | 0.06 |
| 350 | 14 | 0.38 | 0.08 | 0.06 | 0.05 | 0.05 | 0.05 |
| 400 | 16 | 0.32 | 0.06 | 0.04 | 0.03 | 0.03 | 0.03 |

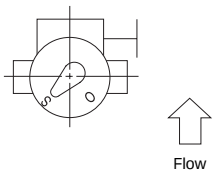
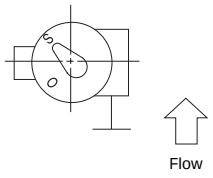
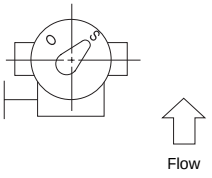
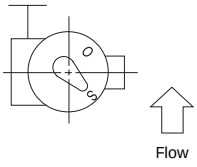
## Worm gear type 507V-2S (50mm to 400mm)

| Nominal size | | Dimension (mm) | | | | | | | | | | Gear type | Approx. weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | inch | ϕd | ϕD | L | $H_1$ | $H_2$ | $H_3$ | E | K | F | ϕW | | |
| 50 | 2 | 49 | 92 | 40 | 63 | 183 | 32 | 58 | 93 | 156 | 160 | DGH-1 | 13 |
| 80 | 3 | 73 | 127 | 40 | 86 | 201 | 32 | 58 | 93 | 156 | 160 | DGH-1 | 15 |
| 100 | 4 | 97 | 155 | 40 | 98 | 224 | 32 | 58 | 93 | 156 | 160 | DGH-1 | 16 |
| 150 | 6 | 146 | 216 | 52 | 129 | 262 | 32 | 58 | 93 | 156 | 160 | DGH-1 | 23 |
| 200 | 8 | 194 | 265 | 62 | 184 | 283 | 32 | 58 | 93 | 161 | 200 | DGH-1 | 32 |
| 250 | 10 | 241 | 324 | 89 | 196 | 393 | 42 | 85 | 126 | 246 | 280 | DGH-2 | 60 |
| 300 | 12 | 289 | 370 | 89 | 230 | 417 | 42 | 85 | 126 | 246 | 280 | DGH-2 | 70 |
| 350 | 14 | 318 | 415 | 89 | 256 | 431 | 42 | 85 | 126 | 246 | 280 | DGH-2 | 86 |
| 400 | 16 | 364 | 470 | 108 | 296 | 453 | 42 | 85 | 126 | 246 | 280 | DGH-2 | 100 |

### ■507V-2S




### ■2S Installation direction

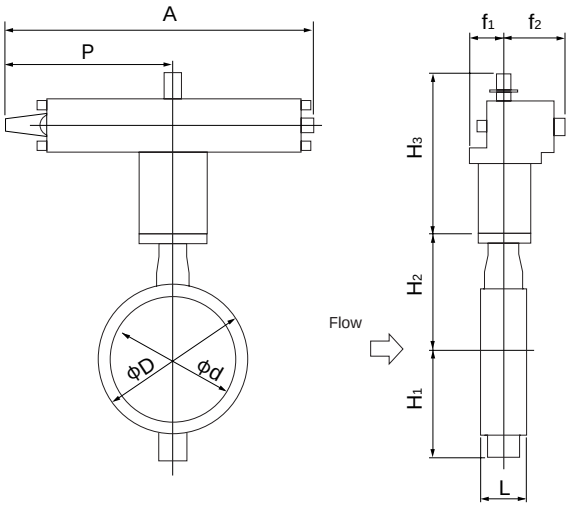
| | | | |
|---|---|---|---|
|  |  |  |  |
| 2SA | 2SB | 2SC | 2SD |

## Double-acting pneumatic cylinder type 507V-3A (350mm, 400mm)

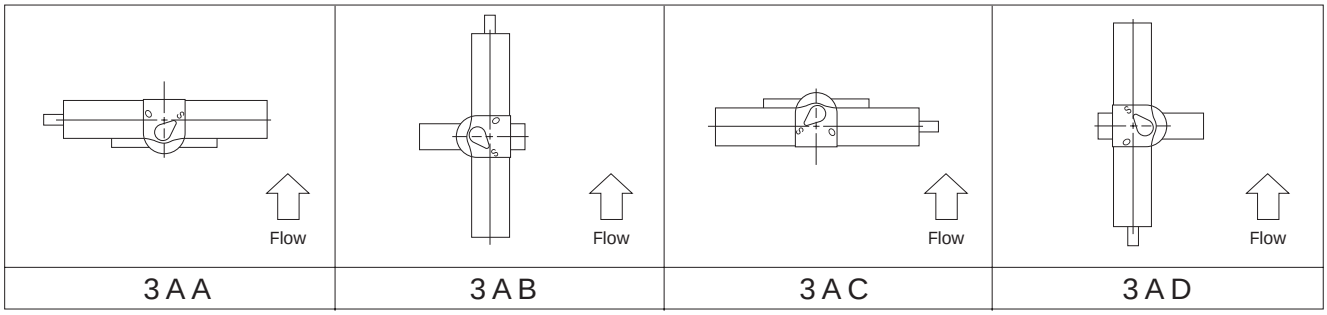
| Nominal size | | Dimension (mm) | | | | | | | | | | Cylinder type | Approx. weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | inch | Φd | ΦD | L | $H_1$ | $H_2$ | $H_3$ | A | P | $f_1$ | $f_2$ | | |
| 350 | 14 | 318 | 415 | 89 | 256 | 431 | 289 | 773 | 433 | 83 | 133 | TGA-100 | 95 |
| 400 | 16 | 364 | 470 | 108 | 296 | 453 | 289 | 773 | 433 | 83 | 133 | TGA-100 | 110 |

•A free angle adjuster comes with the pneumatic cylinder.

### ■507V-3A



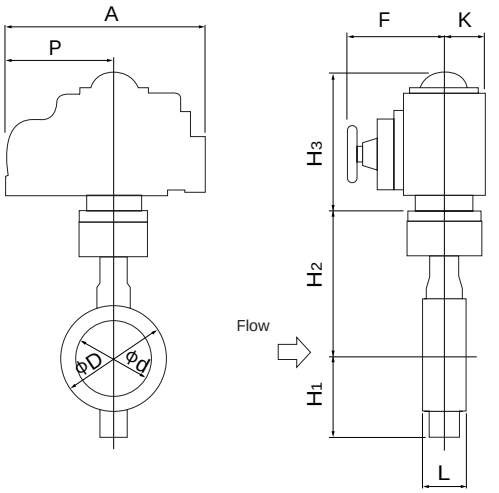

### ■3A Installation direction



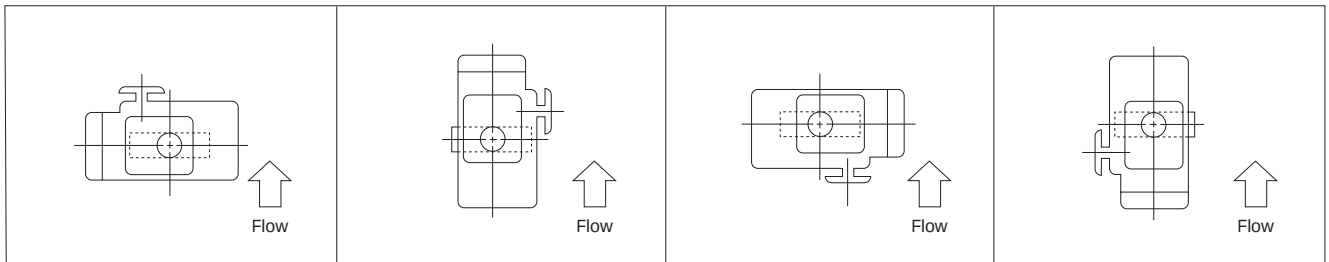
## Single phase electric motor type　507V-4 I（50mm to 400mm）

| Nominal size | | Dimension (mm) | | | | | | | | | | Motor type | Approx. weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | inch | Φd | ΦD | L | $H_1$ | $H_2$ | $H_3$ | A | P | F | K | | |
| 50 | 2 | 49 | 92 | 40 | 63 | 183 | 206 | 252 | 138 | 126 | 65 | 4 I-1 | 18.3 |
| 80 | 3 | 73 | 127 | 40 | 86 | 201 | 206 | 252 | 138 | 126 | 65 | 4 I-1 | 19.3 |
| 100 | 4 | 97 | 155 | 40 | 98 | 224 | 206 | 252 | 138 | 126 | 65 | 4 I-1 | 20.3 |
| 150 | 6 | 146 | 216 | 52 | 129 | 262 | 224 | 310 | 167 | 154 | 85 | 4 I-2 | 24 |
| 200 | 8 | 194 | 265 | 62 | 184 | 283 | 198 | 310 | 167 | 154 | 85 | 4 I-2 | 34 |
| 250 | 10 | 241 | 324 | 89 | 196 | 393 | 247 | 310 | 167 | 154 | 85 | 4 I-2.5 | 51 |
| 300 | 12 | 289 | 370 | 89 | 230 | 417 | 255 | 388 | 223 | 246 | 136 | 4 I-3 | 70 |
| 350 | 14 | 318 | 415 | 89 | 256 | 431 | 255 | 388 | 223 | 246 | 136 | 4 I-3 | 86 |
| 400 | 16 | 364 | 470 | 108 | 296 | 453 | 255 | 388 | 223 | 246 | 136 | 4 I-3 | 100 |

### ■507V-4 I




### ■4I Installation direction



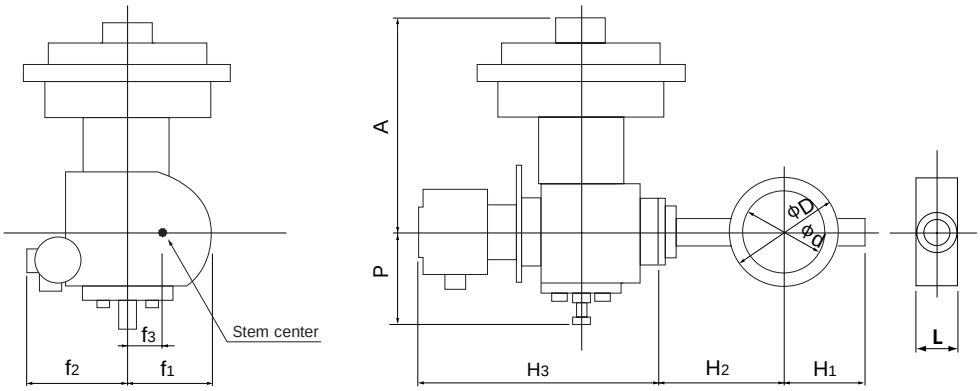

| 4 I A | 4 I B | 4 I C | 4 I D |
|---|---|---|---|

## 507V-6Z (50mm to 400mm) with diaphragm actuator

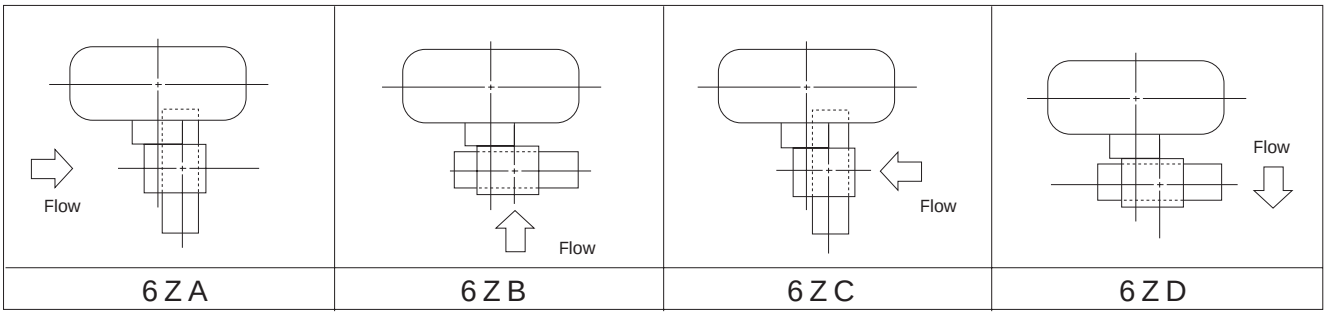
| Nominal size | | Dimension (mm) | | | | | | | | | | | Diaphragm type | Approx. weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | inch | Φd | ΦD | L | $H_1$ | $H_2$ | $H_3$ | A | P | $f_1$ | $f_2$ | $f_3$ | | |
| 50 | 2 | 49 | 92 | 40 | 63 | 253 | 154 | 310 | 126 | 140 | 164 | 36 | 280H | 35 |
| 80 | 3 | 73 | 127 | 40 | 86 | 271 | 154 | 310 | 126 | 140 | 164 | 36 | 280H | 37 |
| 100 | 4 | 97 | 155 | 40 | 98 | 294 | 154 | 310 | 126 | 140 | 164 | 36 | 280H | 38 |
| 150 | 6 | 146 | 216 | 52 | 129 | 332 | 154 | 310 | 126 | 140 | 164 | 36 | 280H | 45 |
| 200 | 8 | 194 | 265 | 62 | 184 | 353 | 154 | 310 | 126 | 140 | 164 | 36 | 280H | 54 |
| 250 | 10 | 241 | 324 | 89 | 196 | 480 | 177 | 416 | 185 | 200 | 200 | 50 | 400H | 90 |
| 300 | 12 | 289 | 370 | 89 | 230 | 533 | 177 | 416 | 185 | 200 | 200 | 50 | 400H | 100 |
| 350 | 14 | 318 | 415 | 89 | 256 | 518 | 177 | 416 | 185 | 200 | 200 | 50 | 400H | 115 |
| 400 | 16 | 364 | 470 | 108 | 296 | 540 | 177 | 416 | 185 | 200 | 200 | 50 | 400H | 130 |

Remarks: $H_3$ shows the dimension when the positioner (TCE2000) is installed.
The $H_3$ dimension will change depending on the positioner type.

### ■507V-6Z

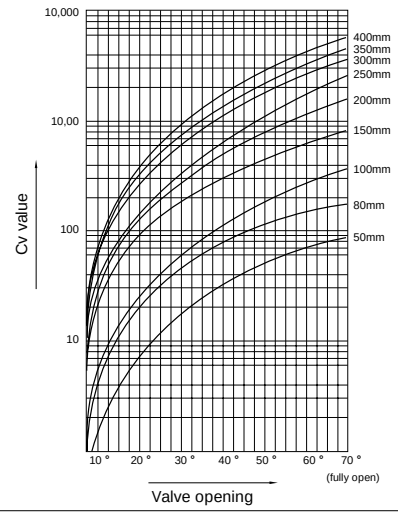



### ■6Z Installation direction

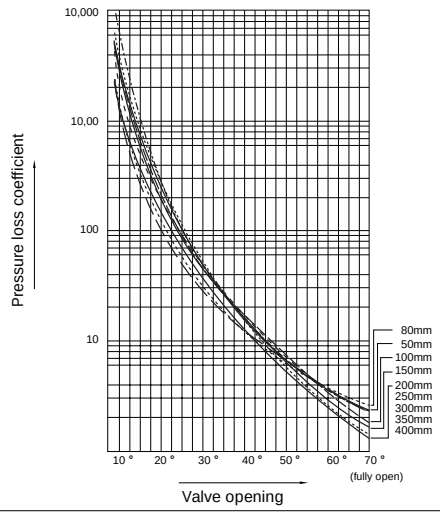


## 507V Cv value/pressure loss coefficient

●Cv value




●Pressure loss coefficient




## 507V Cv value

| Nominal size | | Valve opening | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | inch | 5° | 10° | 15° | 20° | 25° | 30° | 35° | 40° | 45° | 50° | 55° | 60° | 65° | 70° |
| 50 | 2 | 1 | 3 | 7 | 11 | 16 | 22 | 30 | 38 | 46 | 53 | 62 | 69 | 80 | 85 |
| 80 | 3 | 6 | 14 | 23 | 33 | 45 | 58 | 72 | 88 | 102 | 120 | 130 | 140 | 160 | 176 |
| 100 | 4 | 7 | 17 | 28 | 43 | 60 | 80 | 102 | 127 | 156 | 190 | 230 | 275 | 306 | 363 |
| 150 | 6 | 22 | 55 | 89 | 120 | 162 | 210 | 260 | 320 | 380 | 450 | 530 | 630 | 720 | 825 |
| 200 | 8 | 28 | 70 | 116 | 175 | 245 | 330 | 430 | 550 | 690 | 860 | 1020 | 1270 | 1400 | 1600 |
| 250 | 10 | 37 | 96 | 164 | 245 | 336 | 455 | 570 | 760 | 980 | 1230 | 1480 | 1800 | 2200 | 2520 |
| 300 | 12 | 56 | 150 | 265 | 410 | 550 | 740 | 950 | 1240 | 1500 | 1900 | 2300 | 2700 | 3100 | 3610 |
| 350 | 14 | 72 | 180 | 320 | 480 | 670 | 900 | 1150 | 1500 | 1800 | 2300 | 2700 | 3300 | 3800 | 4440 |
| 400 | 16 | 85 | 200 | 335 | 550 | 770 | 1100 | 1420 | 1900 | 2330 | 3000 | 3600 | 4400 | 5200 | 5650 |

## 507V Pressure loss coefficient

| Nominal size | | Valve opening | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | inch | 5° | 10° | 15° | 20° | 25° | 30° | 35° | 40° | 45° | 50° | 55° | 60° | 65° | 70° |
| 50 | 2 | 9758 | 1832 | 379 | 136 | 64.4 | 34.1 | 18.3 | 11.4 | 7.8 | 5.9 | 4.3 | 3.5 | 2.6 | 2.3 |
| 80 | 3 | 2448 | 406 | 150 | 73 | 39.3 | 23.6 | 15.3 | 10.3 | 7.7 | 5.5 | 4.7 | 4.1 | 3.1 | 2.6 |
| 100 | 4 | 4779 | 810 | 299 | 127 | 65.0 | 36.6 | 22.5 | 14.5 | 9.6 | 6.5 | 4.4 | 3.1 | 2.5 | 1.8 |
| 150 | 6 | 2297 | 367 | 140 | 77 | 42.4 | 25.2 | 16.4 | 10.9 | 7.7 | 5.5 | 4.0 | 2.8 | 2.1 | 1.6 |
| 200 | 8 | 4355 | 697 | 254 | 111 | 56.9 | 31.3 | 18.5 | 11.3 | 7.2 | 4.6 | 3.3 | 2.1 | 1.7 | 1.3 |
| 250 | 10 | 5984 | 889 | 305 | 136 | 72.6 | 39.6 | 25.2 | 14.2 | 8.5 | 5.4 | 3.7 | 2.5 | 1.7 | 1.3 |
| 300 | 12 | 5369 | 748 | 240 | 100 | 55.7 | 30.7 | 18.7 | 11.0 | 7.5 | 4.7 | 3.2 | 2.3 | 1.8 | 1.3 |
| 350 | 14 | 5096 | 815 | 258 | 115 | 58.8 | 32.6 | 20.0 | 11.7 | 8.2 | 5.0 | 3.6 | 2.4 | 1.8 | 1.3 |
| 400 | 16 | 6235 | 1126 | 401 | 149 | 76.0 | 37.2 | 22.3 | 12.5 | 8.3 | 5.0 | 3.5 | 2.3 | 1.7 | 1.4 |

## 507V Pressure recovery coefficient (FL) and Cavitation coefficient (Kc)

| Valve opening | 10° | 20° | 30° | 40° | 50° | 60° | 70° |
|---|---|---|---|---|---|---|---|
| Pressure recovery coefficient (FL) | 0.85 | 0.80 | 0.78 | 0.76 | 0.73 | 0.71 | 0.70 |
| Cavitation coefficient (Kc) | 0.55 | 0.50 | 0.47 | 0.45 | 0.40 | 0.37 | 0.32 |

# 507V

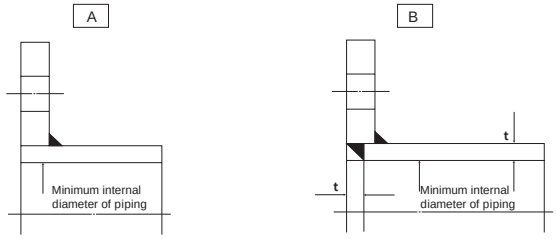
## 507V Applicable pipe list in case of A

| Nominal size | | SGP | STPY | Sch20 | Sch40 | Sch10S | Sch20S | Minimum internal diameters of piping (mm) |
|---|---|---|---|---|---|---|---|---|
| mm | inch | | | | | | | |
| 50 | 2 | ○ | — | ○ | ○ | ○ | ○ | 36 |
| 80 | 3 | ○ | — | ○ | ○ | ○ | ○ | 71 |
| 100 | 4 | ○ | — | ○ | ○ | ○ | ○ | 98 |
| 150 | 6 | ○ | — | ○ | ○ | ○ | ○ | 148 |
| 200 | 8 | ○ | — | ○ | ○ | ○ | ○ | 199 |
| 250 | 10 | ○ | — | ○ | ○ | ○ | ○ | 241 |
| 300 | 12 | ○ | — | ○ | ○ | ○ | ○ | 293 |
| 350 | 14 | ○ | ○ | ○ | ○ | — | — | 321 |
| 400 | 16 | ○ | ○ | ○ | × | — | — | 367 |

## 507V Applicable pipe list in case of B

| Nominal size | | SGP | STPY | Sch20 | Sch40 | Sch10S | Sch20S |
|---|---|---|---|---|---|---|---|
| mm | inch | | | | | | |
| 50 | 2 | ○ | — | ○ | ○ | ○ | ○ |
| 80 | 3 | ○ | — | ○ | ○ | ○ | ○ |
| 100 | 4 | ○ | — | ○ | ○ | ○ | ○ |
| 150 | 6 | ○ | — | ○ | ○ | ○ | ○ |
| 200 | 8 | ○ | — | ○ | ○ | ○ | ○ |
| 250 | 10 | ○ | — | ○ | ○ | ○ | ○ |
| 300 | 12 | ○ | — | ○ | ○ | ○ | ○ |
| 350 | 14 | ○ | ○ | ○ | ○ | — | — |
| 400 | 16 | ○ | ○ | ○ | ○ | — | — |

Remark1: ○=Applicable ×=Not applicable
Remark2: Butterfly valves are inserted into a pipe that was fitted with the disc when fully open.
In cases where 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.



## 507V Applicable flange standard

| Nominal size | | JIS | | | ANSI | | BS4504 | DIN |
|---|---|---|---|---|---|---|---|---|
| mm | inch | 10K | 16K | 20K | 150Lb | 300Lb | PN10 | NP10 |
| 50 | 2 | ○ | D | D | ○ | D | ○ | ○ |
| 80 | 3 | D | D | D | ○ | D | ○ | ○ |
| 100 | 4 | D | D | D | D | D | D | D |
| 150 | 6 | D | D | D | D | D | D | D |
| 200 | 8 | D | D | D | D | D | D | D |
| 250 | 10 | D | × | × | D | × | D | D |
| 300 | 12 | D | × | × | D | × | D | D |
| 350 | 14 | D | × | × | D | × | D | D |
| 400 | 16 | D | × | × | D | × | D | D |

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

## 507V Piping bolt and nut sizes

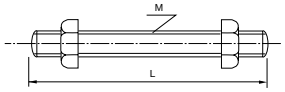
| Nominal size | | JIS 10K | JIS 20K | ANSI 150Lb | ANSI 300Lb |
|---|---|---|---|---|---|
| mm | inch | Long bolts and nuts | | Long bolts and nuts | |
| 50 | 2 | 4-M16×130 | 8-M16×130 | 4-U 5/8×140 | 8-U 5/8×140 |
| 80 | 3 | 8-M16×130 | 8-M20×170 | 4-U 5/8×150 | 8-U 3/4×175 |
| 100 | 4 | 8-M16×130 | 8-M20×170 | 8-U 5/8×150 | 8-U 3/4×175 |
| 150 | 6 | 8-M20×170 | 12-M22×190 | 8-U 3/4×175 | 12-U 3/4×190 |
| 200 | 8 | 12-M20×170 | 12-M22×210 | 8-U 3/4×190 | 12-U 7/8×230 |
| 250 | 10 | 12-M22×210 | — | 12-U 7/8×230 | — |
| 300 | 12 | 16-M22×210 | — | 12-U 7/8×230 | — |
| 350 | 14 | 16-M22×210 | — | 12-U 1 ×260 | — |
| 400 | 16 | 16-M24×240 | — | 16-U 1 ×260 | — |

Material Long bolt: SNB7
Nut: S45C

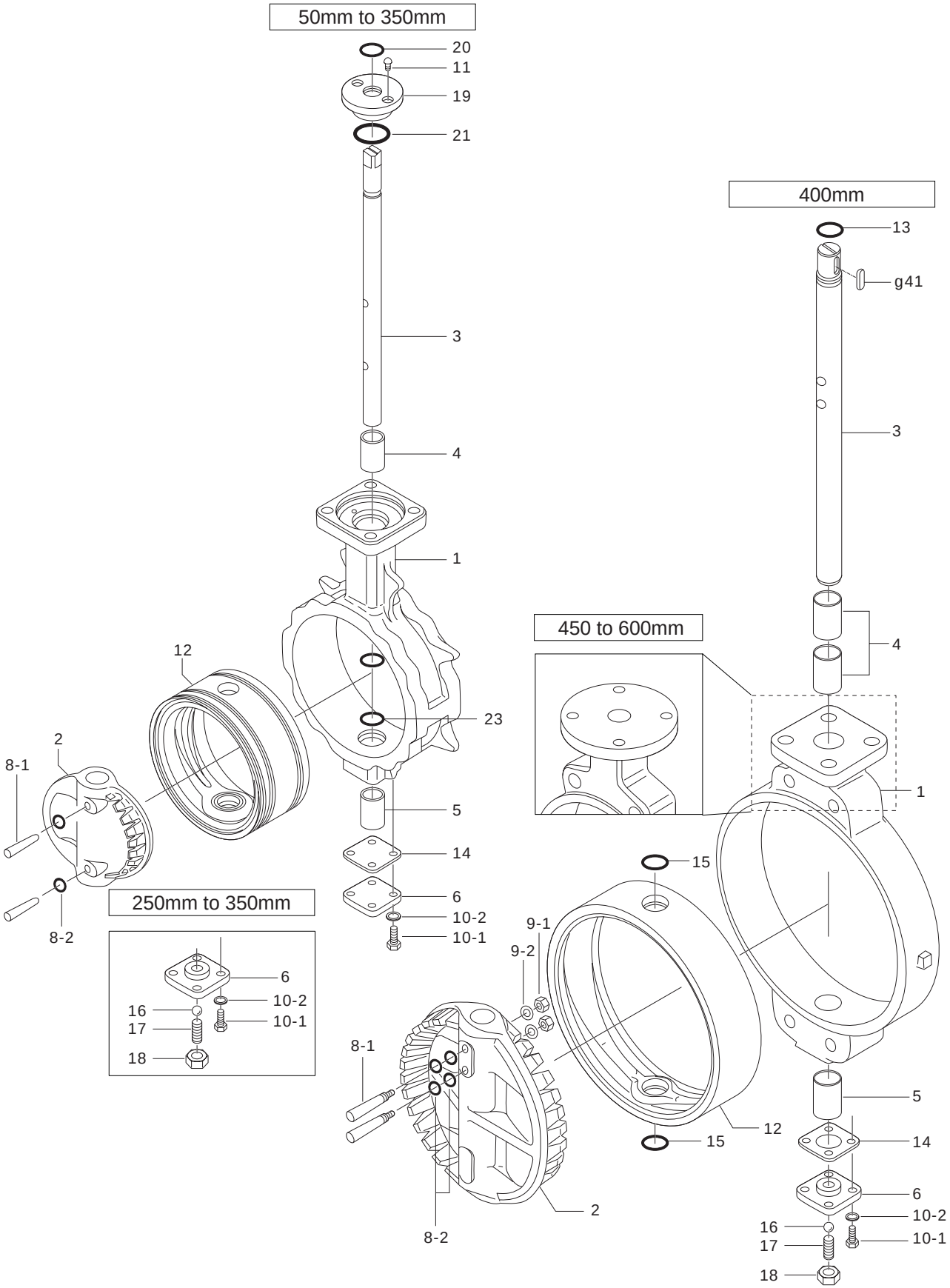
Example

Long bolts: 12 - M22 × 185
N M L

Long bolts and nuts (full thread)



## 508V Expanded view of components



## ■508V Parts list (50mm to 350mm)

| No. | Description | Q'ty | Remarks |
|---|---|---|---|
| 1 | Body | 1 | |
| 2 | Disc | 1 | |
| 3 | Stem | 1 | |
| 4 | Bearing | 1 | 50mm to 250mm |
| | | 2 | 300mm, 350mm |
| 5 | Bearing | 1 | |
| 6 | Bottom cover | 1 | |
| ★ 8-1 | Taper pin | 2 | |
| ★ 8-2 | O-ring | 4 | Only 250mm, 350mm |
| 10-1 | Hexagon bolt | 4 | |
| 10-2 | Spring washer | 4 | |
| 11 | Machine screw | 2 | 50mm to 200mm |
| | | 4 | 250mm to 350mm |
| ★ 12 | Seat ring | 1 | |
| ★ 14 | Gasket | 1 | |
| 16 | Ball | 1 | Only 250mm to 300mm |
| 17 | Hollow bolt | 1 | Only 250mm to 300mm |
| 18 | Lock nut | 1 | Only 250mm to 300mm |
| 19 | Dust seal | 1 | |
| ★ 20 | O-ring | 1 | |
| ★ 21 | O-ring | 1 | |
| ★ 23 | O-ring | 2 | |

## ■508V Parts list (400mm to 600mm)

| No. | Description | Q'ty | Remarks |
|---|---|---|---|
| 1 | Body | 1 | |
| 2 | Disc | 1 | |
| 3 | Stem | 1 | |
| 4 | Bearing | 2 | 400mm, 500mm |
| | | 3 | 450mm, 600mm |
| 5 | Bearing | 1 | 400mm |
| | | 2 | 450mm to 600mm |
| 6 | Bottom cover | 1 | |
| ★ 8-1 | Taper pin | 2 | |
| ★ 8-2 | O-ring | 4 | |
| ★ 9-1 | Hexagon bolt | 2 | |
| ★ 9-2 | Spring washer | 2 | |
| 10-1 | Hexagon bolt | 4 | |
| 10-2 | Spring washer | 4 | |
| ★ 12 | Seat ring | 1 | |
| ★ 13 | O-ring | 1 | |
| ★ 14 | Gasket | 1 | |
| ★ 15 | O-ring | 2 | |
| 16 | Ball | 1 | |
| 17 | Hollow bolt | 1 | |
| 18 | Lock nut | 1 | |
| g41 | Key | 1 | |

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

## 508V Actuator selection chart

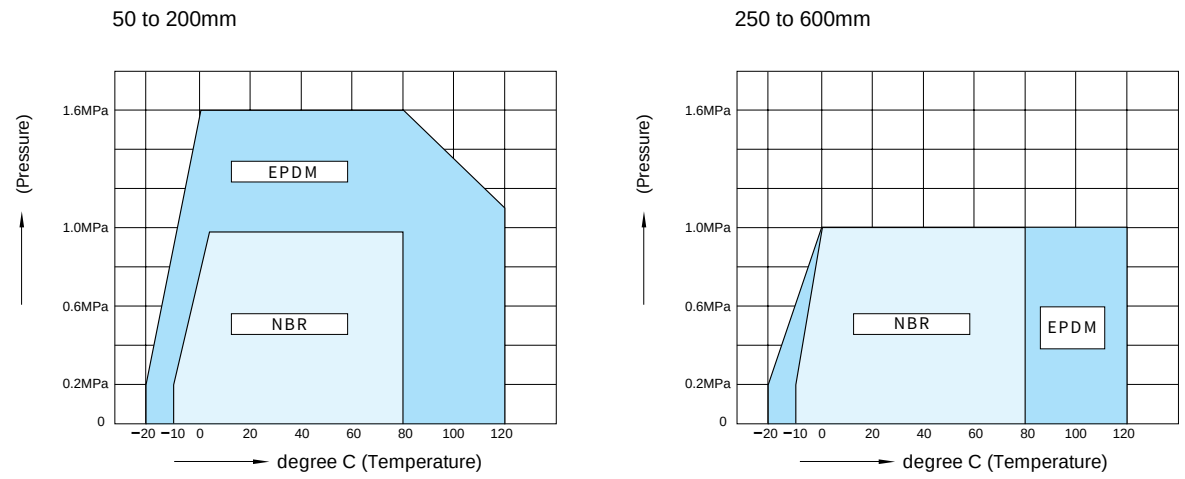
### ■508V

| Model | Category | Size (mm / inch) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 50 | 80 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 600 |
| | | 2 | 3 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 24 |
| 2U | Standard | 2U-0 | 2U-1 | | 2U-2 | 2U-3 | | 2U-4 | | 2U-5 | MGH-3 | | MGH-4 |
| 3E,3A | Standard | K30 | K70 | | K170 | K370 | K700 | | TGA-125 | | TGA-140 | TGA-160 | TGA-200 |
| 3G,3F 3U,3K | Standard | K70S | K170S | K370S | K700S | TG-10S | TG-12S | | TG-14S | | TG-20S | | |
| 4 I | ON-OFF Control | 4 I-0 | | 4 I-1 | 4 I-2.5 | | 4 I-3 | | 4 I-4 | | | | |
| 4J,4L | Standard | SRJ-010 | | | SRJ-020 | SRJ-060 | | LTKD-01 0.2kW/ DGH-2 | | LTKD-01 0.4kW/ MGH-3 | LTKD-02 0.75kW/ MGH-4 | | LTKD-05 0.75kW/ MGH-5 |
| 6X,6W | Standard | 280H | | | 400H | | | | | | | | |

Remark: In case of 350mm type with accessories below for control type 4I-4 should be selected.

- ●Micom unit
- ●Servo unit
- ●Speed control unit
- ●Potentiometer

## 508V Pressure rating



## 508V Allowable differencial pressure for 6X and 6W

(kPa)

| Nominal size | | Valve opening | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| mm | inch | 0° | 10° | 20° | 30° | 40° | 50° | 60° | 70° |
| 50 | 2 | 1600 | 685 | 334 | 148 | 86 | 59 | 45 | 40 |
| 80 | 3 | 1400 | 694 | 475 | 308 | 176 | 116 | 69 | 47 |
| 100 | 4 | 800 | 765 | 575 | 315 | 204 | 133 | 69 | 37 |
| 150 | 6 | 1600 | 783 | 546 | 360 | 219 | 152 | 90 | 44 |
| 200 | 8 | 1600 | 676 | 453 | 287 | 178 | 124 | 79 | 44 |

## 508V Allowable differencial pressure on stem

(kPa)

| Nominal size | | Valve opening | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| mm | inch | 0° | 10° | 20° | 30° | 40° | 50° | 60° | 70° |
| 50 | 2 | 1600 | 685 | 334 | 148 | 86 | 59 | 45 | 40 |
| 80 | 3 | 1600 | 694 | 475 | 308 | 176 | 116 | 69 | 47 |
| 100 | 4 | 1600 | 765 | 575 | 315 | 204 | 133 | 69 | 37 |
| 150 | 6 | 1600 | 783 | 546 | 360 | 219 | 152 | 90 | 44 |
| 200 | 8 | 1600 | 676 | 453 | 287 | 178 | 124 | 79 | 44 |
| 250 | 10 | 1000 | 562 | 233 | 149 | 84 | 58 | 37 | 21 |
| 300 | 12 | 1000 | 220 | 232 | 149 | 84 | 58 | 37 | 21 |
| 350 | 14 | 1000 | 367 | 222 | 116 | 65 | 45 | 29 | 16 |
| 400 | 16 | 1000 | 209 | 118 | 58 | 52 | 46 | 33 | 25 |
| 450 | 18 | 1000 | 223 | 197 | 115 | 56 | 48 | 33 | 26 |
| 500 | 20 | 1000 | 162 | 143 | 97 | 55 | 44 | 30 | 23 |
| 600 | 24 | 1000 | 246 | 171 | 110 | 54 | 49 | 41 | 27 |

The above is based on the result at our test plant. The test was conducted with fresh water at ambient temperature. Therefore, please use the data for reference only.
Consult us if you have a question or doubt.

## 508V Maximum velocity

| | | |
|---|---|---|
| Fresh water | Short period | 10m/s |
| | Continuous | 7m/s |
| Sea water | Short period | 10m/s |
| | Continuous | 5m/s |
| Air（ambient temp.） | Short period | 80m/s |
| | Continuous | 30m/s |

The maximum velocity shown is estimated as an average in the fully open state.

Remark: “Short period“ means a few minutes creating high velocity until the disc angle reaches the designated position.

## 508V Bare shaft （01: 50mm to 350mm, 02: 400mm to 600mm）

### ■508V-01 (50mm to 350mm) / 508V-02 (400mm)

| Nominal size | | Dimension (mm) | | | | | | | | | | | | | Approx. weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | inch | Φd | ΦD | L | $H_1$ | $H_2$ | $a_1$ | $a_2$ | □$S_1$ | Φ$d_2$ | b | $t_2$ | t | Flanges | |
| 50 | 2 | 48 | 101 | 43 | 76 | 142 | 22 | 10.5 | 8 | 10 | — | — | 14 | F07 | 2.5 |
| 80 | 3 | 75 | 131 | 46 | 95 | 158 | 23 | 11.5 | 12 | 14 | — | — | 14 | F07 | 4.0 |
| 100 | 4 | 96 | 156 | 52 | 110 | 169 | 23 | 11.5 | 12 | 14 | — | — | 14 | F07 | 5.3 |
| 150 | 6 | 143 | 217 | 56 | 160 | 202 | 28 | 16.5 | 14 | 18 | — | — | 14 | F10 | 10.8 |
| 200 | 8 | 188 | 268 | 60 | 182 | 227 | 30 | 20 | 18 | 22 | — | — | 14 | F10 | 15 |
| 250 | 10 | 248 | 322 | 68 | 255 | 280 | 35 | 30 | 24 | 28 | — | — | 14 | F10 | 29 |
| 300 | 12 | 296 | 375 | 78 | 284 | 312 | 35 | 30 | 24 | 32 | — | — | 16 | F12 | 42 |
| 350 | 14 | 332 | 420 | 92 | 320 | 360 | 35 | 30 | 24 | 32 | — | — | 16 | F12 | 62 |
| 400 | 16 | 390 | 477 | 102 | 343 | 380 | 65 | 59 | — | 46 | 14 | 3.5 | 20 | F14 | 115 |

### ■Flange dimensions

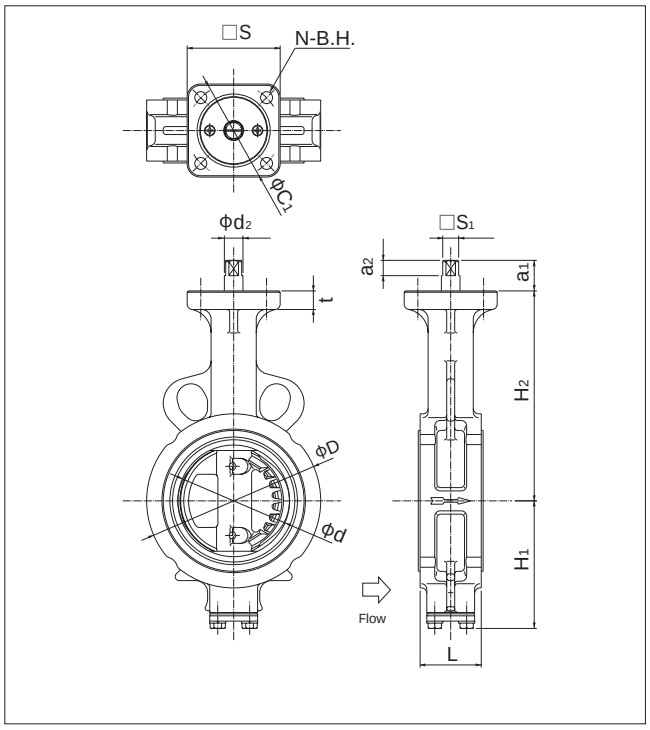
| Flanges | □S | Φ$C_1$ | N | B.H. |
|---|---|---|---|---|
| F07 | 70 | 70 | 4 | 9 |
| F10 | 102 | 102 | 4 | 11 |
| F12 | 125 | 125 | 4 | 13 |
| F14 | 140 | 140 | 4 | 19 |
| F16 | 165 | 165 | 4 | 23 |

| Stem design | |
|---|---|
| | 01: Square |
| | 02: Round with key |

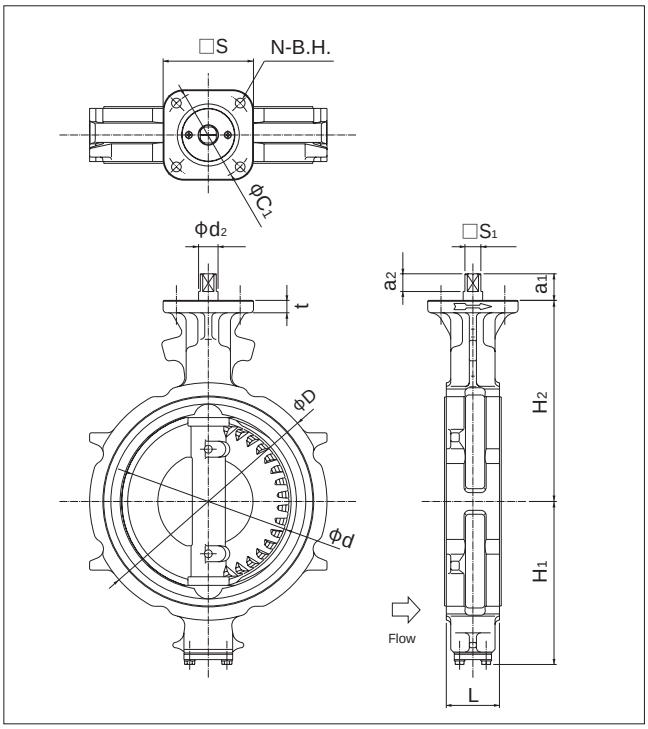
### ■508V-02 (450mm to 600mm)

| Nominal size | | | Dimension (mm) | | | | | | | | | | | | | | | | Approx. weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | inch | Φd | ΦD | | L | $H_1$ | $H_2$ | $a_1$ | $a_2$ | Φ$d_2$ | b | $t_2$ | t | $D_1$ | $C_1$ | N | B.H. | |
| | | | JIS10K | JIS16K | | | | | | | | | | | | | | |
| 450 | 18 | 439 | 532 | 532 | 114 | 379 | 420 | 60 | 53 | 47 | 12 | 3.5 | 20 | 200 | 170 | 4 | 19 | 144 |
| 500 | 20 | 490 | 610 | 610 | 127 | 422 | 450 | 60 | 53 | 47 | 12 | 3.5 | 20 | 200 | 170 | 4 | 19 | 196 |
| 600 | 24 | 583 | 826 | 720 | 154 | 494 | 530 | 75 | 65 | 65 | 18 | 6 | 25 | 260 | 220 | 4 | 23 | 333 (303) |

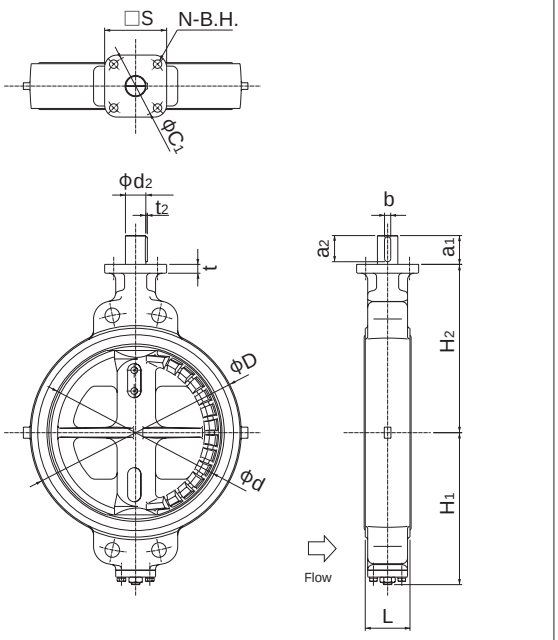
### ■508V 50mm, 80mm



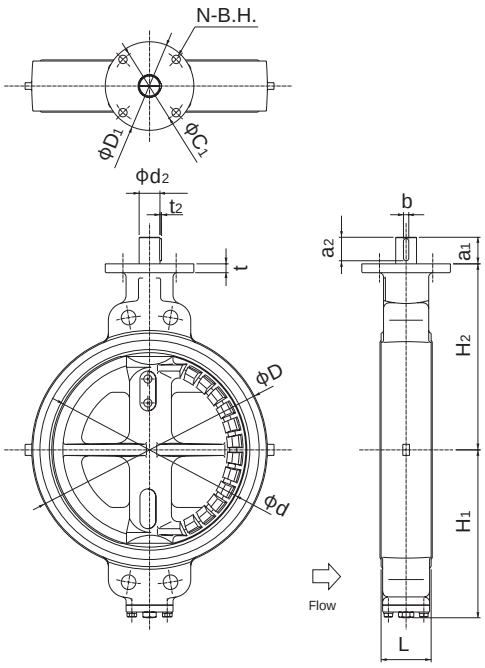

### ■508V 100mm to 350mm



## ■508V 400mm

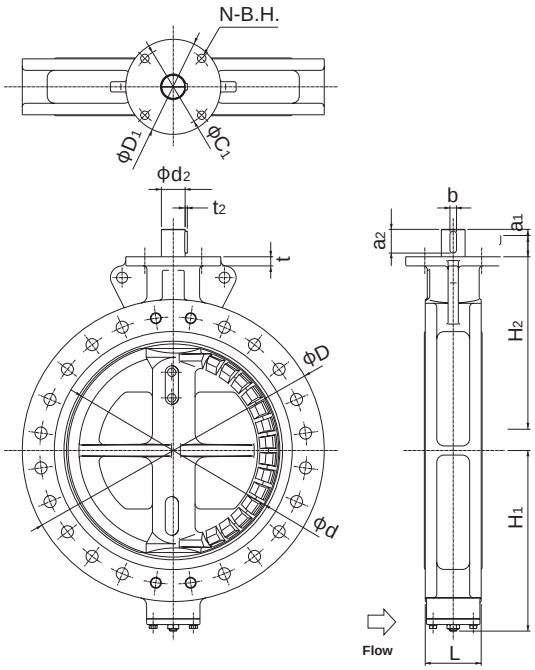



## ■508V 450mm, 500mm



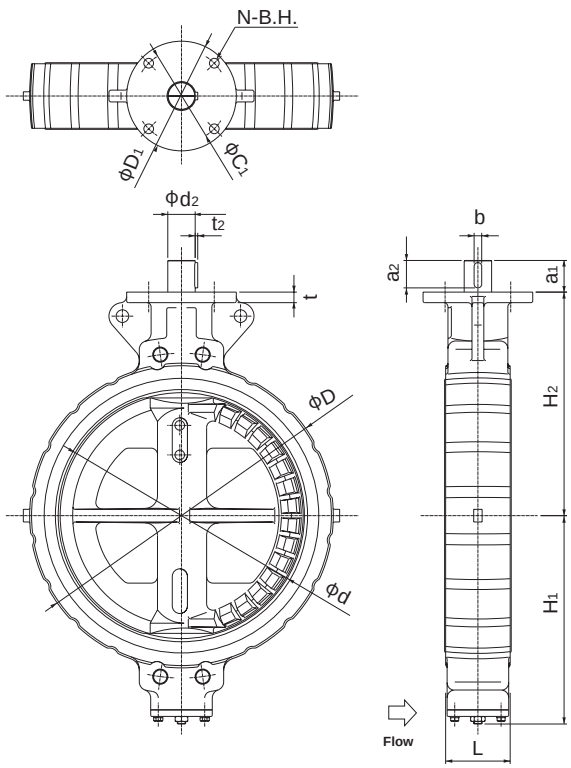

## ■508V 600mm

For JIS10K, BS4504 PN10 and DIN NP10 BS10 Table E




## ■508V 600mm

For JIS16K, ANSI 150Lb, BS4504 PN16 and DIN NP16



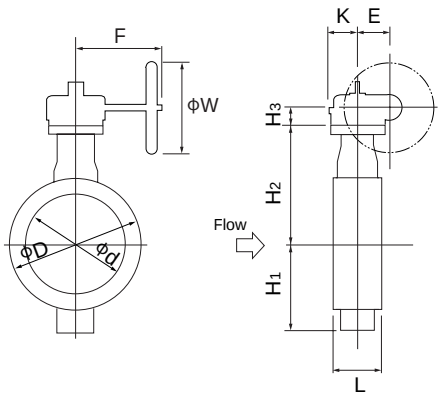
# 508V

**Worm gear type　508V-2U（50mm to 400mm）/ 508V-2S（450mm to 600mm）**

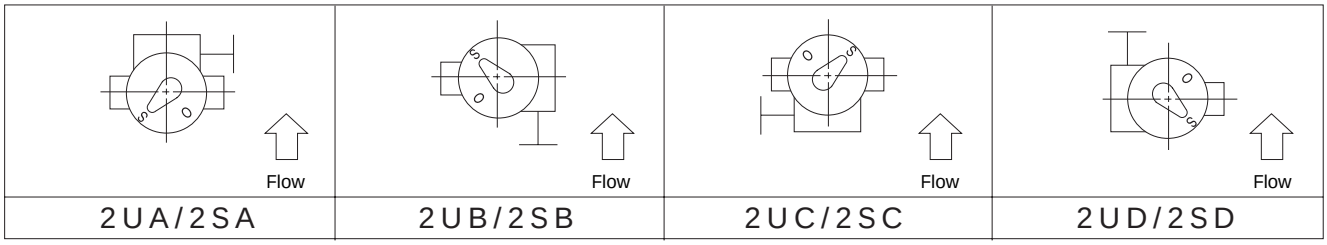
| Nominal size | | Dimension (mm) | | | | | | | | | | Gear type | Approx. weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | inch | Φd | ΦD | L | $H_1$ | $H_2$ | $H_3$ | E | K | F | ΦW | | |
| 50 | 2 | 48 | 101 | 43 | 76 | 142 | 29.5 | 36 | 46 | 160 | 100 | 2U-0 | 4.9 |
| 80 | 3 | 75 | 131 | 46 | 95 | 158 | 29.5 | 36 | 46 | 160 | 100 | 2U-1 | 6.4 |
| 100 | 4 | 96 | 156 | 52 | 110 | 169 | 29.5 | 36 | 46 | 160 | 100 | 2U-1 | 7.7 |
| 150 | 6 | 143 | 217 | 56 | 160 | 202 | 34.5 | 44 | 53 | 173.5 | 160 | 2U-2 | 15.1 |
| 200 | 8 | 188 | 268 | 60 | 182 | 227 | 41.5 | 67 | 75 | 198 | 200 | 2U-3 | 22.8 |
| 250 | 10 | 248 | 322 | 68 | 255 | 280 | 41.5 | 67 | 75 | 198 | 200 | 2U-3 | 37 |
| 300 | 12 | 296 | 375 | 78 | 284 | 312 | 48 | 87.5 | 90 | 222.5 | 200 | 2U-4 | 57 |
| 350 | 14 | 332 | 420 | 92 | 320 | 360 | 48 | 87.5 | 90 | 222.5 | 200 | 2U-4 | 77 |
| 400 | 16 | 390 | 477 | 102 | 343 | 380 | 50 | 90 | 105 | 266 | 280 | 2U-5 | 131 |
| 450 | 18 | 439 | 532 | 114 | 379 | 420 | 55 | 117 | 164 | 335 | 355 | MGH-3 | 178 |
| 500 | 20 | 490 | 610 | 127 | 422 | 450 | 55 | 117 | 164 | 335 | 355 | MGH-3 | 230 |
| 600 | 24 | 583 | 826 (720) | 154 | 494 | 530 | 65 | 140 | 198 | 400 | 450 | MGH-4 | 393 (363) |

※A handle lock is attached for manual gear.
※（　　）shows the data for JIS 16K 600mm.

## ■508V-2U/2S




## ■2U/2S Installation direction

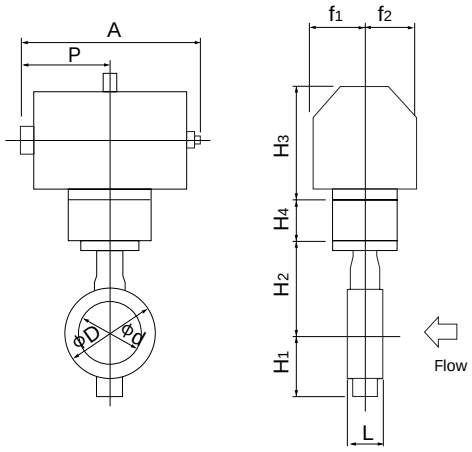



| 2UA/2SA | 2UB/2SB | 2UC/2SC | 2UD/2SD |
|---|---|---|---|

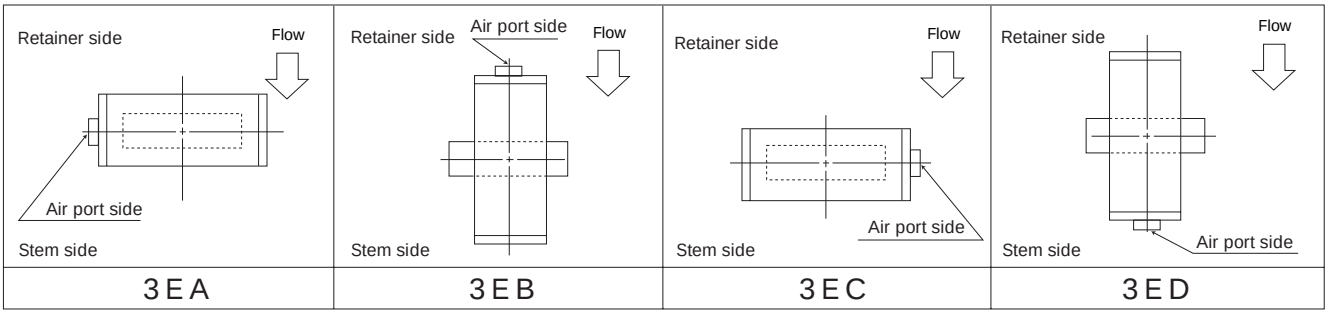
## Double-acting pneumatic cylinder type　508V-3E（50mm to 300mm）

| Nominal size | | Dimension (mm) | | | | | | | | | | | Cylinder type | Approx. weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | inch | ϕd | ϕD | L | $H_1$ | $H_2$ | $H_3$ | $H_4$ | A | P | $f_1$ | $f_2$ | | |
| 50 | 2 | 48 | 101 | 43 | 76 | 142 | 113 | — | 256 | 151 | 35 | 50 | K30 | 4.4 |
| 80 | 3 | 75 | 131 | 46 | 95 | 158 | 133 | — | 308 | 136 | 53 | 51 | K70 | 7.9 |
| 100 | 4 | 96 | 156 | 52 | 110 | 169 | 133 | — | 308 | 136 | 53 | 51 | K70 | 9.2 |
| 150 | 6 | 143 | 217 | 56 | 160 | 202 | 157 | — | 390 | 169 | 65 | 58 | K170 | 17.4 |
| 200 | 8 | 188 | 268 | 60 | 182 | 227 | 184 | — | 494 | 207 | 83 | 69 | K370 | 26.6 |
| 250 | 10 | 248 | 322 | 68 | 255 | 280 | 224 | 518 | 609 | 351 | 101 | 85 | K700 | 58.5 |
| 300 | 12 | 296 | 375 | 78 | 284 | 312 | 224 | 518 | 609 | 351 | 101 | 85 | K700 | 71.5 |

### ■508V-3E




### ■3E Installation direction

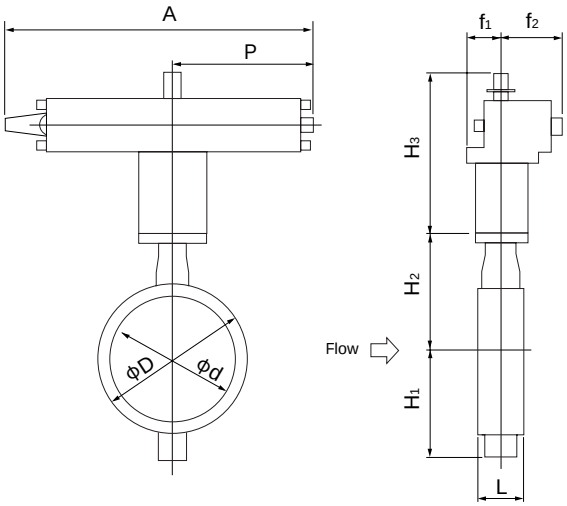


## Double-acting pneumatic cylinder type 508V-3A (350mm to 600mm)

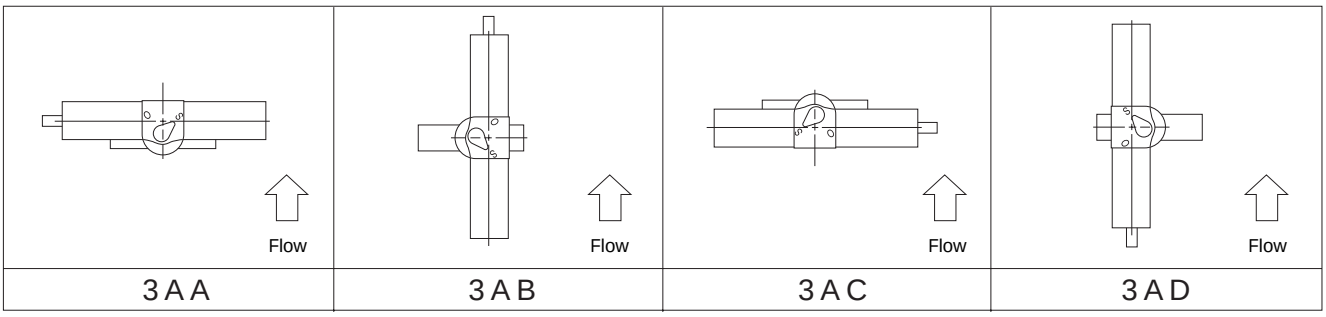
| Nominal size | | Dimension (mm) | | | | | | | | | | Cylinder type | Approx. weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | inch | φd | φD | L | $H_1$ | $H_2$ | $H_3$ | A | P | $f_1$ | $f_2$ | | |
| 350 | 14 | 332 | 420 | 92 | 320 | 360 | 359 | 868 | 487 | 100 | 164 | TGA-125 | 112 |
| 400 | 16 | 390 | 477 | 102 | 343 | 380 | 359 | 868 | 487 | 100 | 164 | TGA-125 | 156 |
| 450 | 18 | 439 | 532 | 114 | 379 | 420 | 407 | 951 | 534 | 100 | 180 | TGA-140 | 201 |
| 500 | 20 | 490 | 610 | 127 | 422 | 450 | 435 | 1092 | 609 | 130 | 202 | TGA-160 | 302 |
| 600 | 24 | 583 | 826(720) | 154 | 494 | 530 | 570 | 1339 | 740 | 160 | 253 | TGA-200 | 552(522) |

Remark: Value in brackets indicates 3Q (air to close).
•A free angle adjuster comes with the pneumatic cylinder.

### ■508V-3A




### ■3A Installation direction



**Single-acting pneumatic cylinder type 508V-3G (Air to open: 50mm TO 150mm) / 302A-3F (Air to close: 50mm to 150mm)**

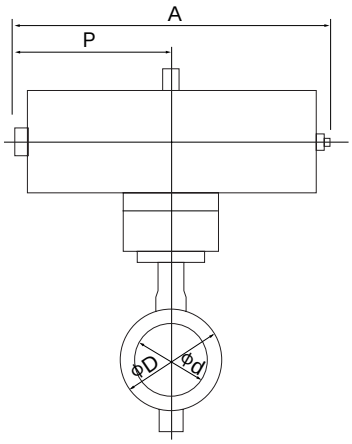
## ■508V-3G

| Nominal size | | Dimension (mm) | | | | | | | | | | Cylinder type | Approx. weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | inch | Φd | ΦD | L | $H_1$ | $H_2$ | $H_3$ | A | P | $f_1$ | $f_2$ | | |
| 50 | 2 | 48 | 101 | 43 | 76 | 142 | 133 | 389 | 212 | 53 | 51 | K70S | 7.6 |
| 80 | 3 | 75 | 131 | 46 | 95 | 158 | 157 | 490 | 271 | 65 | 58 | K170S | 12.9 |
| 100 | 4 | 96 | 156 | 52 | 110 | 169 | 184 | 618 | 349 | 83 | 69 | K370S | 21.1 |
| 150 | 6 | 143 | 217 | 56 | 160 | 202 | 224 | 792 | 442 | 101 | 85 | K700S | 40.8 |

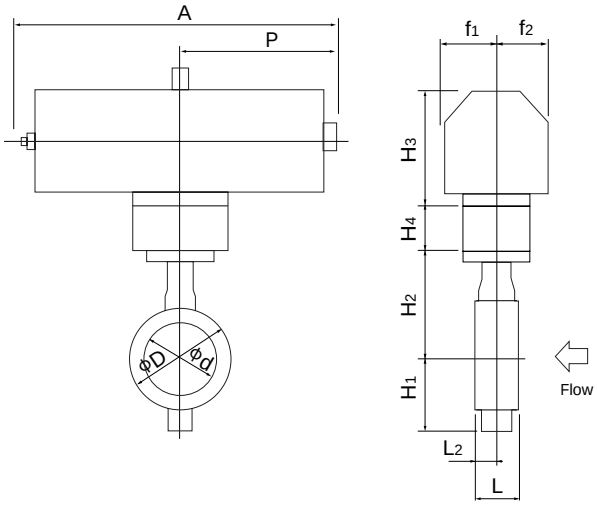
## ■508V-3F

| Nominal size | | Dimension (mm) | | | | | | | | | | | Cylinder type | Approx. weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | inch | Φd | ΦD | L | $H_1$ | $H_2$ | $H_3$ | $H_3$ | A | P | $f_1$ | $f_2$ | | |
| 50 | 2 | 48 | 101 | 43 | 76 | 142 | 133 | 66 | 360 | 176.5 | 61.5 | 61.5 | K70S | 11.6 |
| 80 | 3 | 75 | 131 | 46 | 95 | 158 | 157 | 84 | 444 | 218.5 | 80 | 80 | K170S | 19.5 |
| 100 | 4 | 96 | 156 | 52 | 110 | 169 | 184 | 92 | 545 | 269 | 92 | 92 | K370S | 36 |
| 150 | 6 | 143 | 217 | 56 | 160 | 202 | 224 | 104 | 707 | 350 | 120 | 120 | K700S | 66.7 |

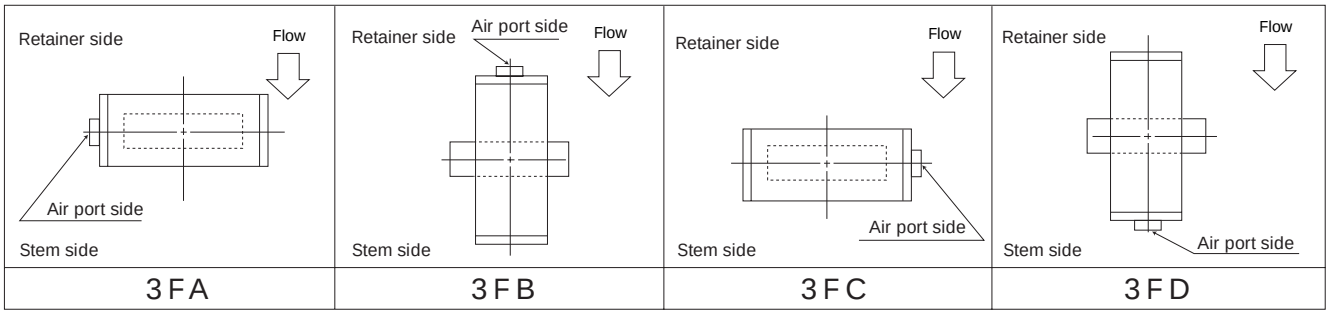
## ■508V-3F




## ■508V-3G




## ■3F Installation direction



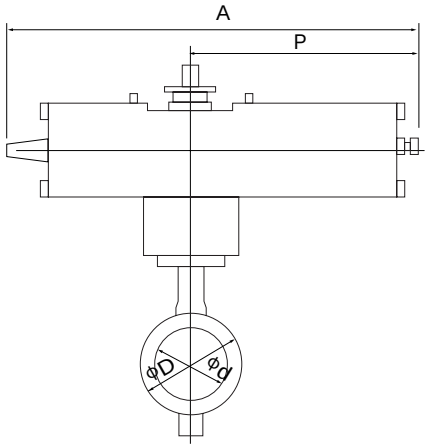
# 508V

**Single-acting pneumatic cylinder type 508V-3U (Air to open: 200mm to 600mm) / 508V-3K (Air to close: 200mm to 600mm)**

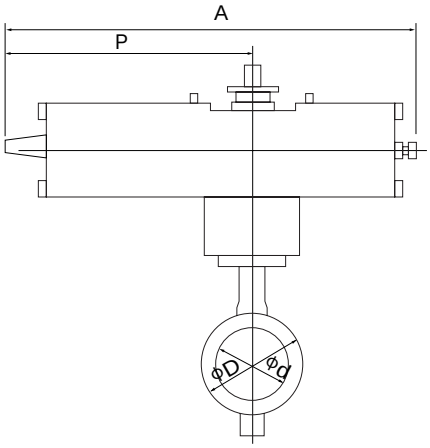
| Nominal size | | Dimension (mm) | | | | | | | | | | Cylinder type | Approx. weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | inch | Φd | ΦD | L | $H_1$ | $H_2$ | $H_3$ | A | P | $f_1$ | $f_2$ | | |
| 200 | 8 | 188 | 268 | 60 | 182 | 227 | 307 | 1030 | 670 (585) | 70 | 165 | TG-10S | 71 |
| 250 | 10 | 248 | 322 | 68 | 255 | 280 | 307 | 1180 | 820 (720) | 94 | 206 | TG-12S | 130 |
| 300 | 12 | 296 | 375 | 78 | 284 | 312 | 307 | 1180 | 820 (720) | 94 | 206 | TG-12S | 143 |
| 350 | 14 | 332 | 420 | 92 | 320 | 360 | 340 | 1355 | 965 (865) | 131 | 257 | TG-14S | 259 |
| 400 | 16 | 390 | 477 | 102 | 343 | 380 | 340 | 1355 | 965 (865) | 131 | 257 | TG-14S | 313 |
| 450 | 18 | 439 | 532 | 114 | 379 | 420 | 474 | 1790 | 1230 (1095) | 164 | 348 | TG-20S | 562 |
| 500 | 20 | 490 | 610 | 127 | 422 | 450 | 474 | 1790 | 1230 (1095) | 164 | 348 | TG-20S | 614 |
| 600 | 24 | 583 | 826[720] | 154 | 494 | 530 | 474 | 1790 | 1230 (1095) | 164 | 348 | TG-20S | 751[721] |

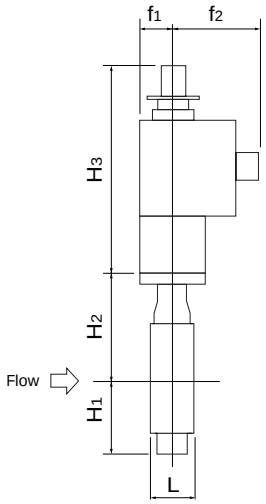
Remark: Value in brackets indicates 3Q (air to close).
※Brackets indicates the data for JIS 16K 600mm.
•A free angle adjuster comes with the pneumatic cylinder.

## ■508V-3K

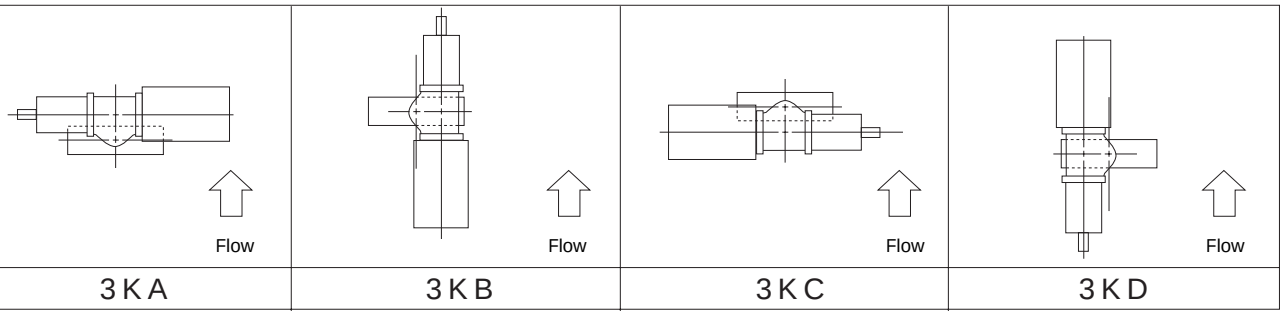



## ■508V-3U



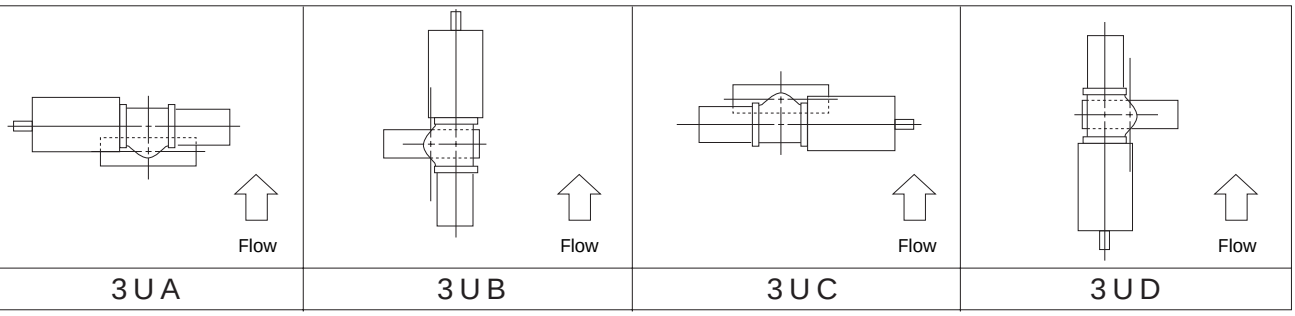




## ■3K Installation direction




| 3KA | 3KB | 3KC | 3KD |
|---|---|---|---|

## ■3U Installation direction



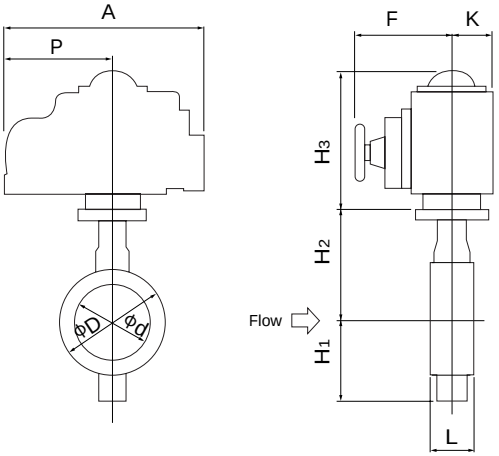

| 3UA | 3UB | 3UC | 3UD |
|---|---|---|---|

## Single phase electric motor type 508V-4 I (50mm to 400mm)

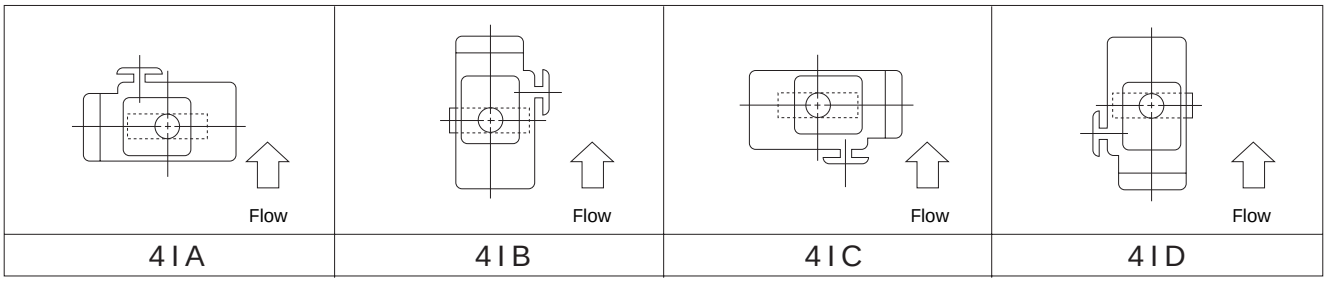
| Nominal size | | Dimension (mm) | | | | | | | | | | Motor type | Approx. weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | inch | Φd | ΦD | L | $H_1$ | $H_2$ | $H_3$ | A | P | F | K | | |
| 50 | 2 | 48 | 101 | 43 | 76 | 142 | 150 | 202 | 100 | 85 | 54 | 4 I-0 | 6.7 |
| 80 | 3 | 75 | 131 | 46 | 95 | 158 | 150 | 202 | 100 | 85 | 54 | 4 I-0 | 8.2 |
| 100 | 4 | 96 | 156 | 52 | 110 | 169 | 165 | 252 | 138 | 126 | 65 | 4 I-1 | 11.7 |
| 150 | 6 | 143 | 217 | 56 | 160 | 202 | 198 | 310 | 167 | 154 | 85 | 4 I-2.5 | 23.6 |
| 200 | 8 | 188 | 268 | 60 | 182 | 227 | 198 | 310 | 167 | 154 | 85 | 4 I-2.5 | 27.8 |
| 250 | 10 | 248 | 322 | 68 | 255 | 280 | 230 | 388 | 223 | 246 | 136 | 4 I-3 | 53 |
| 300 | 12 | 296 | 375 | 78 | 284 | 312 | 230 | 388 | 223 | 246 | 136 | 4 I-3 | 66 |
| 350 | 14 | 332 | 420 | 92 | 320 | 360 | 230 | 388 | 223 | 246 | 136 | 4 I-3 | 86 |
| | | | | | | | 255 | 388 | 223 | 246 | 136 | 4 I-4 | 91 |
| 400 | 16 | 390 | 477 | 102 | 343 | 380 | 230 | 388 | 223 | 246 | 136 | 4 I-4 | 144 |

Remark: For 350mm type with accessories below for control type 4I-4 should be selected.
- ●Micom unit
- ●Servo unit
- ●Speed control cnit
- ●Potentiometer

### ■508V-4 I




### ■4I Installation direction

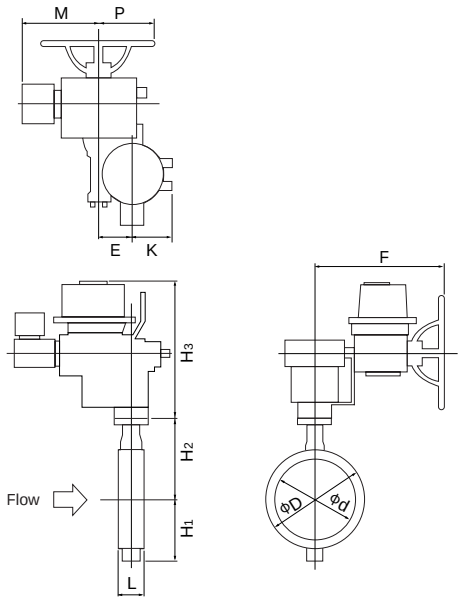


## Three phase motor actuator type 508V-4L (300mm to 600mm)

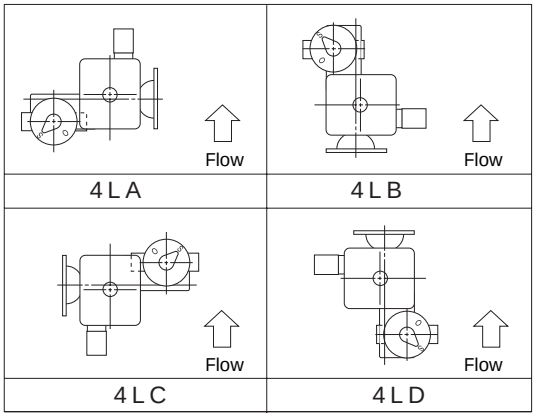
| Nominal size | | Dimension (mm) | | | | | | | | | | | Motor type | Approx. weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | inch | ϕd | ϕD | L | $H_1$ | $H_2$ | $H_3$ | E | K | F | M | P | | |
| 300 | 12 | 296 | 375 | 78 | 284 | 312 | 435 | 117 | 164 | 533 | 363 | 230 | LTKD-01 0.2kW/ DGH-3 | 126 |
| 350 | 14 | 332 | 420 | 92 | 320 | 360 | 435 | 117 | 164 | 533 | 363 | 230 | LTKD-01 0.2kW/ DGH-3 | 146 |
| 400 | 16 | 390 | 477 | 102 | 343 | 380 | 487 | 117 | 164 | 533 | 370 | 230 | LTKD-01 0.4kW/ MGH-3 | 223 |
| 450 | 18 | 439 | 532 | 114 | 379 | 420 | 538 | 140 | 198 | 594 | 400 | 230 | LTKD-02 0.75kW/ MGH-4 | 304 |
| 500 | 20 | 490 | 610 | 127 | 422 | 450 | 538 | 140 | 198 | 594 | 400 | 230 | LTKD-02 0.75kW/ MGH-4 | 356 |
| 600 | 24 | 583 | 826(720) | 154 | 494 | 530 | 604 | 210 | 293 | 748 | 440 | 360 | LTKD-05 0.75kW/ MGH-5 | 660(630) |

※Brackets indicate the data for JIS 16K 600mm.

### ■508V-4L




### ■4L Installation direction

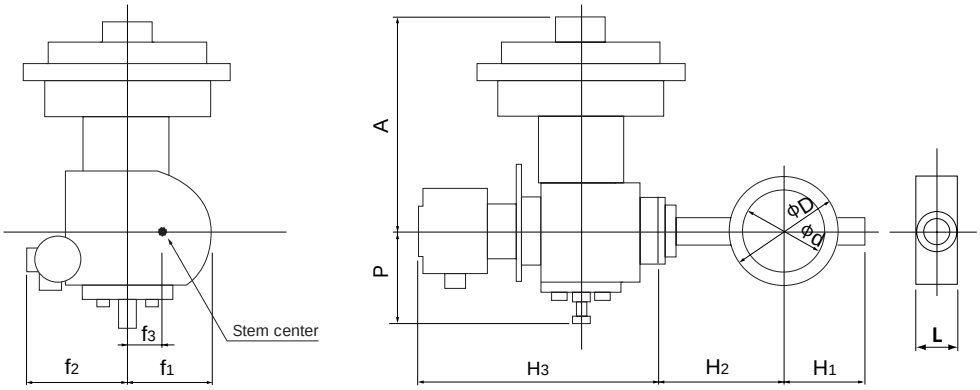


## 508V-6X（Air to open: 50mm to 200mm）/ 508V-6W（Air to close: 50mm to 200mm）with diaphragm actuator

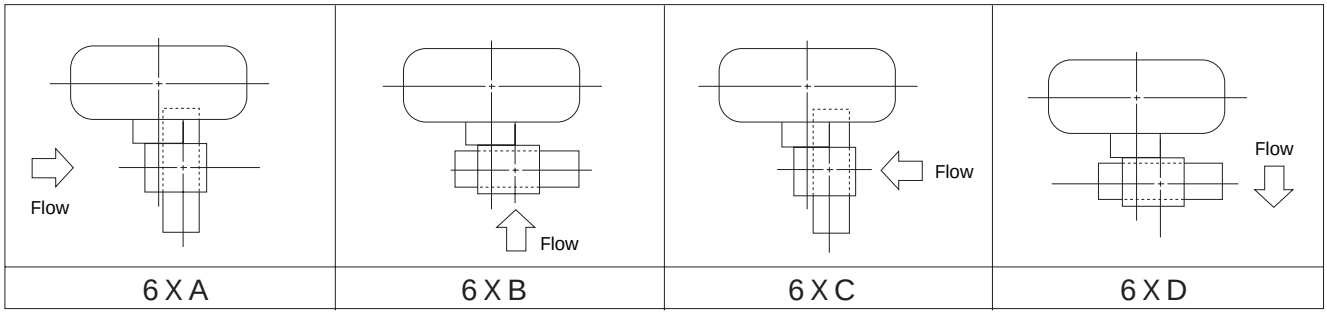
| Nominal size | | Dimension (mm) | | | | | | | | | | | Diaphragm type | Approx. weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | inch | Φd | ΦD | L | $H_1$ | $H_2$ | $H_3$ | A | P | $f_1$ | $f_2$ | $f_3$ | | |
| 50 | 2 | 48 | 101 | 43 | 76 | 142 | 333 | 310 | 126 | 140 | 164 | 36 | 280H | 37 |
| 80 | 3 | 75 | 131 | 46 | 95 | 158 | 333 | 310 | 126 | 140 | 164 | 36 | 280H | 38 |
| 100 | 4 | 96 | 156 | 52 | 110 | 169 | 333 | 310 | 126 | 140 | 164 | 36 | 280H | 39 |
| 150 | 6 | 143 | 217 | 56 | 160 | 202 | 381 | 416 | 185 | 200 | 200 | 50 | 400H | 75 |
| 200 | 8 | 188 | 268 | 60 | 182 | 227 | 381 | 416 | 185 | 200 | 200 | 50 | 400H | 79 |

Remarks: $H_3$ shows the dimension when the positioner (TCE2000) is installed.
The $H_3$ dimension will change depending on the positioner type.

### ■508V-6X/6W

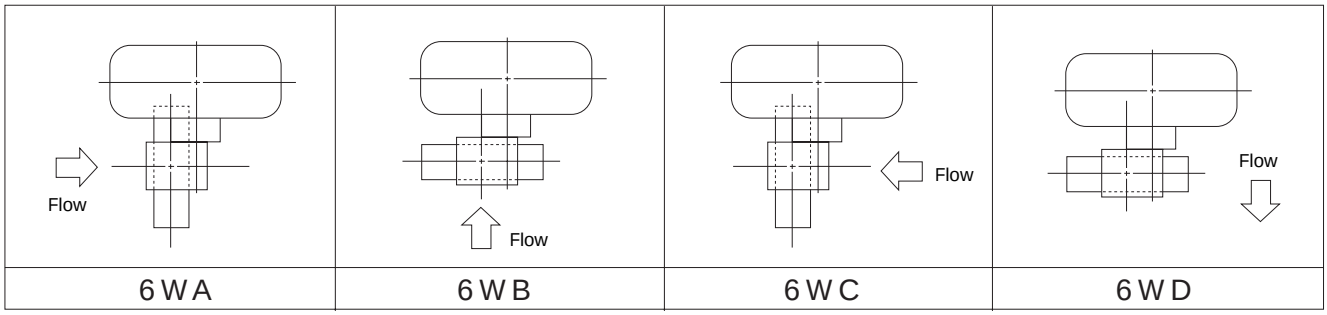



### ■6X Installation direction




| 6XA | 6XB | 6XC | 6XD |
|---|---|---|---|

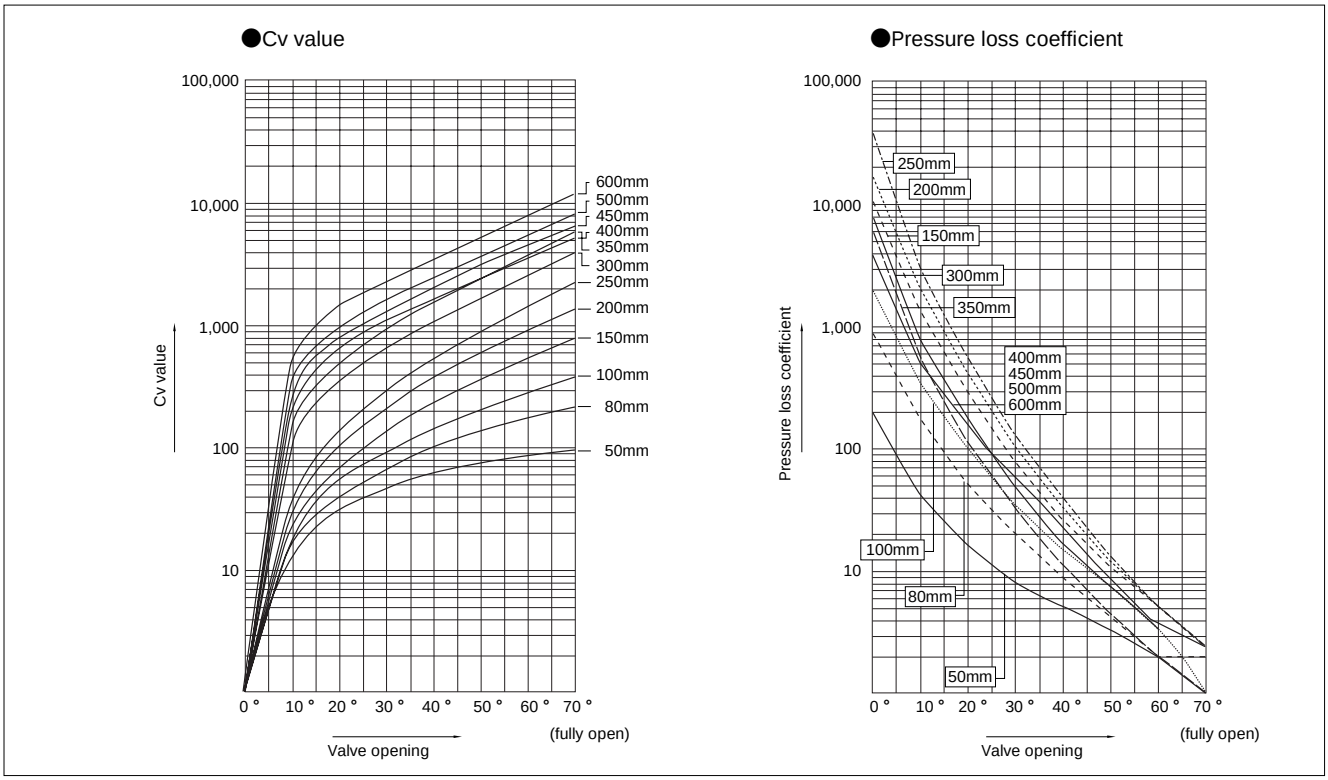
### ■6W Installation direction




| 6WA | 6WB | 6WC | 6WD |
|---|---|---|---|

# 508V

## 508V Cv value/pressure loss coefficient




## 508V Cv value

| Nominal size | | Valve opening | | | | | | |
|---|---|---|---|---|---|---|---|---|
| mm | inch | 10° | 20° | 30° | 40° | 50° | 60° | 70° |
| 50 | 2 | 16 | 32 | 48 | 63 | 76 | 87 | 94 |
| 80 | 3 | 19 | 41 | 68 | 101 | 139 | 180 | 218 |
| 100 | 4 | 24 | 55 | 94 | 143 | 203 | 281 | 383 |
| 150 | 6 | 26 | 72 | 140 | 239 | 375 | 555 | 790 |
| 200 | 8 | 38 | 105 | 215 | 380 | 600 | 920 | 1380 |
| 250 | 10 | 42 | 145 | 300 | 550 | 910 | 1480 | 2260 |
| 300 | 12 | 118 | 350 | 670 | 1120 | 1700 | 2580 | 4000 |
| 350 | 14 | 160 | 500 | 980 | 1600 | 2450 | 3800 | 5800 |
| 400 | 16 | 448 | 860 | 1350 | 2050 | 3050 | 4340 | 6250 |
| 450 | 18 | 604 | 1090 | 1710 | 2600 | 3860 | 5500 | 7910 |
| 500 | 20 | 746 | 1340 | 2110 | 3210 | 4760 | 6790 | 9770 |
| 600 | 24 | 1075 | 1940 | 3040 | 4620 | 6850 | 9780 | 14100 |

## 508V Pressure loss coefficient

| Nominal size | | Valve opening | | | | | | |
|---|---|---|---|---|---|---|---|---|
| mm | inch | 10° | 20° | 30° | 40° | 50° | 60° | 70° |
| 50 | 2 | 65 | 16 | 47 | 4 | 3 | 2 | 2 |
| 80 | 3 | 223 | 48 | 17 | 8 | 4 | 2 | 2 |
| 100 | 4 | 420 | 78 | 27 | 11 | 6 | 3 | 2 |
| 150 | 6 | 1640 | 219 | 57 | 19 | 8 | 4 | 2 |
| 200 | 8 | 2360 | 310 | 74 | 24 | 9 | 4 | 2 |
| 250 | 10 | 4640 | 390 | 91 | 27 | 10 | 4 | 2 |
| 300 | 12 | 1210 | 137 | 38 | 13 | 6 | 3 | 1 |
| 350 | 14 | 1030 | 106 | 28 | 10 | 4 | 2 | 1 |
| 400 | 16 | 727 | 100 | 39 | 17 | 7 | 3 | 1 |
| 450 | 18 | 723 | 100 | 38 | 17 | 7 | 3 | 1 |
| 500 | 20 | 733 | 101 | 39 | 17 | 7 | 3 | 1 |
| 600 | 24 | 741 | 104 | 39 | 17 | 7 | 3 | 1 |

## 508V Pressure recovery coefficient ($F_L$) and Cavitation coefficient (Kc)

| Valve opening | 10° | 20° | 30° | 40° | 50° | 60° | 70° |
|---|---|---|---|---|---|---|---|
| Pressure recovery coefficient ($F_L$) | 0.85 | 0.80 | 0.78 | 0.76 | 0.73 | 0.71 | 0.70 |
| Cavitation coefficient (Kc) | 0.55 | 0.50 | 0.47 | 0.45 | 0.40 | 0.37 | 0.32 |

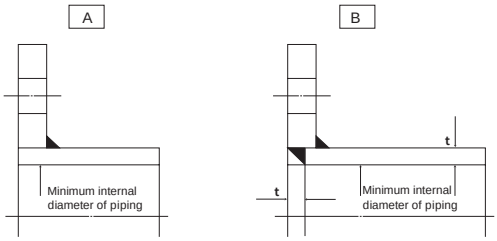
## 508V Applicable pipe list in case of A

| Nominal size | | SGP | STPY | Sch20 | Sch40 | Sch10S | Sch20S | Minimum internal diameters of piping (mm) |
|---|---|---|---|---|---|---|---|---|
| mm | inch | | | | | | | |
| 50 | 2 | ○ | – | ○ | ○ | ○ | ○ | 34 |
| 80 | 3 | ○ | – | ○ | ○ | ○ | ○ | 70 |
| 100 | 4 | ○ | – | ○ | ○ | ○ | ○ | 91 |
| 150 | 6 | ○ | – | ○ | ○ | ○ | ○ | 144 |
| 200 | 8 | ○ | – | ○ | ○ | ○ | ○ | 194 |
| 250 | 10 | ○ | – | ○ | ○ | ○ | ○ | 246 |
| 300 | 12 | ○ | – | ○ | ○ | ○ | ○ | 294 |
| 350 | 14 | ○ | ○ | ○ | ○ | – | – | 327 |
| 400 | 16 | ○ | ○ | ○ | × | – | – | 387 |
| 450 | 18 | ○ | ○ | ○ | × | – | – | 434 |
| 500 | 20 | ○ | ○ | ○ | × | – | – | 484 |
| 600 | 24 | – | ○ | ○ | × | – | – | 581 |

## 508V Applicable pipe list in case of B

| Nominal size | | SGP | STPY | Sch20 | Sch40 | Sch10S | Sch20S |
|---|---|---|---|---|---|---|---|
| mm | inch | | | | | | |
| 50 | 2 | ○ | – | ○ | ○ | ○ | ○ |
| 80 | 3 | ○ | – | ○ | ○ | ○ | ○ |
| 100 | 4 | ○ | – | ○ | ○ | ○ | ○ |
| 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: Butterfly valves are inserted into a pipe that was fitted with the disc when fully open.
In cases where 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.



## 508V Applicable flange standard

| Nominal size | | JIS | | | | ANSI | BS4504 | | DIN | | BS10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | inch | 5K | 10K | 16K | 20K | 150Lb | PN10 | PN16 | NP10 | NP16 | Table E |
| 50 | 2 | D | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 80 | 3 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 100 | 4 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 150 | 6 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 200 | 8 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 250 | 10 | × | ○ | ○ | × | ○ | ○ | ○ | ○ | ○ | ○ |
| 300 | 12 | × | ○ | ○ | × | ○ | ○ | ○ | ○ | ○ | ○ |
| 350 | 14 | × | ○ | ○ | × | ○ | ○ | ○ | ○ | ○ | ○ |
| 400 | 16 | × | D | D | × | D | D | D | D | D | D |
| 450 | 18 | × | D | D | × | D | D | D | D | D | D |
| 500 | 20 | × | D | D | × | D | D | D | D | D | D |
| 600 | 24 | × | T | T | × | T | T | T | T | T | T |

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

## 508V Piping bolt and nut sizes

| Nominal size | | JIS5K | | JIS10K | | JIS16K | | ANSI 150Lb | |
|---|---|---|---|---|---|---|---|---|---|
| mm | inch | Long bolts and nuts | Setting bolts | Long bolts and nuts | Setting bolts | Long bolts and nuts | Setting bolts | Long bolts and nuts | Setting bolts |
| 50 | 2 | 4-M12×105 | — | 4-M16×120 | — | 8-M16×125 | — | 4-U5/8-11UNCX130 | — |
| 80 | 3 | 4-M16×120 | — | 8-M16×125 | — | 8-M20×135 | — | 4-U5/8-11UNCX145 | — |
| 100 | 4 | 8-M16×130 | — | 8-M16×130 | — | 8-M20×150 | — | 8-U5/8-11UNCX150 | — |
| 150 | 6 | 8-M16×130 | — | 8-M20×155 | — | 12-M22×165 | — | 8-U3/4-10UNCX165 | — |
| 200 | 8 | 8-M20×150 | — | 12-M20×155 | — | 12-M22×170 | — | 8-U3/4-10UNCX180 | — |
| 250 | 10 | — | — | 12-M22×175 | — | 12-M24×190 | — | 12-U7/8- 9UNCX195 | — |
| 300 | 12 | — | — | 16-M22×185 | — | 16-M24×210 | — | 12-U7/8- 9UNCX210 | — |
| 350 | 14 | — | — | 16-M22×195 | — | 16-M30(P3)×225 | — | 12-U1 - 8UNCX240 | — |
| 400 | 16 | — | — | 16-M24×220 | — | — | — | 16-U1 - 8UNCX255 | — |
| 450 | 18 | — | — | 20-M24×230 | — | — | — | 16-U1 1/8- 8UNX280 | — |
| 500 | 20 | — | — | 20-M24×245 | — | — | — | 20-U1 1/8- 8UNX295 | — |
| 600 | 24 | — | — | 20-M30×290 | 8-M30×65 | — | — | 16-U1 1/4- 8UNX340 | 8-U1 1/4- 8UNX85 |

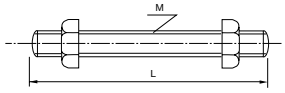
Remark: Bold and nut material: SS400/SS400 and SUS 304/SUS04.
Long bold uses full threaded bolt.
Use thin hexagon nut. (Use heavy hexagon nut for ANSI150Lb.)
A unified screw should have 8 threads per inch if its nominal diameter exceeds 1 inch.

Example

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 )