Vpro

# PRODUCTS CATALOG

MOTORIZED VALVE

PNEUMATIC ACTUATED VALVE

MANUAL VALVE

NIPPON VALVE CONTROLS, INC.

# INDEX

# Selection guide

Representative products of our company are posted in this catalog. From each series you can choose the best and economical product for your piping system.

We also produce automatic valves with special specifications not listed in this catalog, so please contact us separately.

Specifications and notes on products listed in this catalog are representative contents. For detailed content please request materials for each product. Please use the inquiry form (P139) for optimum automatic valve selection.

## Catalog composition

### Specification

Adaptive fluid is indicated by symbol mark for each valve. Please use it as a guide for selection. Please note that it may not be used depending on the properties and state of the fluid.


Water Oils Gas Steam

Chemicals Sea water Slurry

### Product code

All products have a product code with alphabets and numbers. Please contact us with this product code for inquiries and orders.

### Production range

Products include standard products and semi-standard products.

| | |
|---|---|
| Standard | Standard delivery time. |
| Semi-standard | Delivery confirmation is required. |

Please note that the thin columns of each model table color will be semi-standard items.

Depending on various circumstances, standard products may not be available at standard delivery date. Please be sure to check the delivery date.

### Rank for sizing of actuators

The operating torque of the valve is greatly affected by fluid properties, differential pressure, temperature and sheat material. In consideration of various conditions, selection of actuators is necessary.

| | | | |
|---|---|---|---|
| Code of rank | 1 | Light load | Lubricant fluid. It can be selected with fluid properties in limited pressure and temperature range. |
| | 0 | Standard | Clean fluid (100 cP or less) or for standard fluids of that series. |
| | 2 | Heavy load | Non-lubricating fluid, solvents, viscous fluid (100 ~ 500cP) |

When using it for fluid containing foreign matter, powder, highly viscous fluid (500 cP or more), sticky fluid it is necessary to make a consultation. Consultation is necessary when there is a risk that components of fluid will precipitate and adhere inside the valve.

### Material

The ball material of the ball valve may differ in manufacturing method depending on the nominal diameter etc.

Although the material symbol changes depending on the part manufacturing method, it is indicated by a representative symbol in this catalog.

### Cv value, Inherent flow characteristic

Cv value is the coefficient of fluid flowing ability. Each valve has a unique Cv value for each nominal diameter.

Cv value is defined as follows.

Numerical value expressed in US gallons / minute when flowing pure water at 15.6 degrees keeping the differential pressure across the valve at 1 psi.

Cv value represents the ability to flow a fluid.

Since it is possible to calculate the required Cv value from the required flow rate and the expected differential pressure (Pressure loss), it can be used for selecting the model and nominal diameter.

For calculation of Cv value, refer to technical data (P136).

On the page of the valve suitable for proportional control, a graph of intrinsic flow rate characteristics is shown. This graph shows the change in Cv value relative to the travel of the valve.

When the differential pressure across the valve varies with the opening of the valve, it is not proportional to the actual flow rate.

For selecting the proportional control model, refer to the selection method of proportional control valve (P133).

In the case of a full port two-way valve, Cv value is not defined because the fluid passage of the valve is almost the same as the inside diameter of the inlet and outlet pipes.

### Operating pressure and temperature range

The operating temperature range of the valve is affected by fluid pressure.

Refer to the graph of operating pressure and temperature range for selection of valve.

Due to fluid properties, it may not be usable even within the operating pressure and temperature range. Please inform us of fluid properties / specifications when selecting.

When selecting a valve, it is necessary to inform us about the properties of the fluid.

When using it for fluid which becomes gas-liquid mixture state such as water of temperature exceeding 100 degrees, please use steam compatible type valve.

### Product life of automatic valve

Actuators has durability of 200,000 times or more. Valve life span varies greatly depending on fluid properties and usage.

If you use a ball valve for proportional control, the seat leaks in a short period of time. Because the ball is in the middle position for a long time, the sealing surface of the ball-seat is deformed or uneven wear is caused. If seat leakage is a problem, please use ON-OFF type valve together.

The butterfly valve can be used in the middle position without problems.

When installed in an environment exposed to direct sunlight and rain breeze, automatic valves life will shrink extremely. It can be used for a long time and safely by providing a sunshade and rain cover.

## ● Needle valve

| Model | | Maximum allowable pressure (MPa) | Nominal size (A) | Operating temperature range of fluid (℃) | End connection | Main materials Seat | Main materials Body | Electric Compact | Electric Page | Pneumatic Plastic | Pneumatic Page | Control |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **NS** | Standard model | 4 | 010~015 | -15~150 | Threaded end Rc | F-PTFE | Stainless steel | ● | 8 | ● | 70 | ◎ |
| **NH** | For high pressure | 14 | 010~015 | -50~50(250) | Threaded end Rc | Stainless steel | Stainless steel | ● | 8 | ● | 70 | ◎ |
| **NP** | Plastic model | 1 | 015 | -15~80(140) | Wafer type | — | PEEK | ● | 9 | ● | 71 | ◎ |

## ● Ball valve -Threaded end Rc

| Model | | Port type | Maximum allowable pressure (MPa) | Nominal size (A) | Operating temperature range of fluid (℃) | Main materials Seat | Main materials Body | Electric Mini | Electric Compact | Electric High torque | Electric Page | Pneumatic Plastic | Pneumatic Aluminum | Pneumatic Page | Manual Handle Lever | Manual Page | Control |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **A** | Low price | Ⓡ | 1 | 015~025 | -15~80(100) | F-PTFE | Brass | ● | – | – | 10 | ● | – | 72 | ● | – | 106 ○ |
| **T** | 3-way Vertical body L-port ball | Ⓡ | 1 | 015~025 | -15~80(100) | F-PTFE | Brass | ● | – | – | 10 | ● | – | 72 | ● | – | 106 ○ |
| **AE** | Long neck | Ⓡ | 1 | 015~025 | -15(0)~100(140) | Reinforced PTFE | Stainless steel | ● | ● | – | 11 | ● | ● | 73 | ● | – | 107 ○ |
| **TE** | 3-way Vertical body L-port ball | Ⓡ | 1 | 015~025 | -15(0)~100(140) | Reinforced PTFE | Stainless steel | ● | ● | – | 11 | ● | ● | 73 | ● | – | 107 ○ |
| **E** | General model | Ⓢ | 1 | 015~050 | -15~80(100) | F-PTFE | Brass | ● | ● | – | 12 | ● | ● | 74 | ● | – | 108 ○ |
| | | | 2 | 008~010 | -15~80(120) | PTFE | Stainless steel | | | | | | | | | | |
| | | | 1 | 015~050 | | | | | | | | | | | | | |
| **EG** | For steam and high temperature | Ⓢ | 1 | 015~050 | 0~150(170) | Reinforced PTFE | Stainless steel | ● | ● | – | 13 | ● | ● | 75 | ● | – | 109 ○ |
| **EL** | 3-way Horizontal body L-port ball | Ⓢ | 1 | 008~050 | -15~80(120) | PTFE | Stainless steel | ● | ● | – | 14 | ● | ● | 76 | ● | – | 110 – |
| **TV** | 3-way Vertical body L-port ball | Ⓢ | 1 | 015~040 | -15~80(100) | Reinforced PTFE | Stainless steel | ● | ● | ● | 15 | ● | ● | 77 | ● | – | 111 ○ |
| **SR** | For clean fluid Grease not used | Ⓕ | 2 | 015~020 | -20~80(150) | PTFE | Stainless steel | ● | ● | ● | 16 | ● | ● | 78 | – | ● | 112 – |
| | | | 1.4 | 025~040 | | | | | | | | | | | | | |
| **SH** | For steam and high temperature | Ⓕ | 2 | 015~032 | 0~140(200) | F-PTFE | Stainless steel | – | ● | ● | 17 | ● | ● | 79 | – | ● | 113 – |
| **SL** | 3-way Horizontal body L-port ball | Ⓢ | 1 | 015~032 | -20~120(150) | F-PTFE | Stainless steel | – | ● | ● | 18 | ● | ● | 80 | – | ● | 114 – |
| **ST** | 3-way Horizontal body T-port ball | Ⓢ | 1 | 015~032 | -20~120(150) | F-PTFE | Stainless steel | – | ● | ● | 18 | ● | ● | 80 | – | ● | 114 – |
| **MS** | 3-piece body | Ⓕ | 3.5 | 010~025 | -15~80(150) | Reinforced PTFE | Stainless steel | – | ● | ● | 19 | ● | ● | 81 | – | ● | 115 △ |
| | | | 2.4 | 032~050 | -15~110(150) | | | | | | | | | | | | |
| **MV** | 3-piece body | Ⓥ | 2 | R010~050 | -15~120(150) | Reinforced PTFE | Stainless steel | – | ● | ● | 20 | ● | ● | 82 | – | ● | 116 ◎ |
| **MH** | For high pressure | Ⓕ | 14 | 010~020 | -10~80(100) | POM | Stainless steel | – | – | ● | 21 | ● | ● | 83 | – | ● | 117 – |
| | | | 10 | 025~040 | | | | | | | | | | | | | |
| | | | 7 | 010~020 | -10~100(150) | Reinforced F - PTFE | | | | | | | | | | | |
| | | | 5 | 025~040 | | | | | | | | | | | | | |
| **H** | For high pressure | Ⓕ | 31.5 | 008~R032 | 0~80 | POM | Carbon steel | – | – | ● | 22 | ● | ● | 84 | – | – | – – |
| | | R32A Ⓕ | 31.5 | 008~015 | -10~60(80) | POM | Stainless steel | | | | | | | | | | |
| | | Ⓢ | 30 | 020 | -10~60(80) | | | | | | | | | | | | |
| | | | 25 | 025~040 | -10~80 | | | | | | | | | | | | |
| **HH** | For super high pressure | Ⓕ | 70 | 010~015 | 0~60(80) | POM | Carbon steel | – | – | ● | 22 | – | ● | 84 | – | – | – – |
| | | | 50 | 020~025 | | | | | | | | | | | | | |
| **E5** | For filters 5-way | – | 0.5 | 025 | -10~60(80) | PTFE | Stainless steel | – | – | ● | 34 | – | – | – | – | ● | 125 – |

Port type : Ⓡ Reduced port Ⓢ Standard port Ⓕ Full port Ⓥ V-port

## ● Ball valve - Flanged end

| Model | | Port type | Flange size | Nominal size (A) | Operating temperature range of fluid (℃) | Main materials Seat | Main materials Body | Electric Compact | Electric High torque | Electric Page | Pneumatic Plastic | Pneumatic Aluminum | Pneumatic Page | Manual Lever | Manual Worm gear | Manual Page | Control |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BS** | Lightweight and compact | Ⓕ Ⓢ | J10K | 015~080<br>R100~R150 | -15(0)~150(200) | F-PTFE<br>Reinforced PTFE<br>Reinforced F-PTFE | Stainless steel | – | ● | 23 | ● | ● | 85 | ● | ● | 118 | – |
| **BR** | General model | Ⓕ | J10K | 015~150 | -15(0)~150(200) | F-PTFE<br>Reinforced PTFE<br>Reinforced F-PTFE | Stainless steel | – | ● | 24 | ● | ● | 86 | ● | ● | 119 | – |
| | | | J20K | 015~020 | -15(0)~150(200) | | | | | | | | | | | | |
| | | | | 025~050 | -15(0)~140(200) | | | | | | | | | | | | |
| **VR** | For proportional control | Ⓥ | J10K | R015~080 | -15(0)~150(200) | Reinforced PTFE<br>Reinforced F-PTFE | Stainless steel | – | ● | 25 | ● | ● | 87 | ● | ● | 120 | ◎ |
| **BF** | Firesafe desigen | Ⓕ | J10K | 015~150 | -20~165(200) | N-PTFE<br>Reinforced PTFE | Cast iron<br>Stainless steel | – | ● | 26 | – | – | – | – | – | – | – |
| | | | | | -20~200 | Reinforced PTFE<br>+<br>Metal ring | | | | | | | | | | | |
| | | | J20K | 015~150 | -20~130(200) | N-PTFE<br>Reinforced PTFE | Stainless steel | | | | | | | | | | |
| | | | | | -20~160(200) | Reinforced PTFE<br>+<br>Metal ring | | | | | | | | | | | |
| **V** | Hight performance Trunnion desigen V-cut ball | Ⓕ | J10K | 025~200 | -20~150(200) | Reinforced PTFE | Cast iron<br>Stainless steel | – | ● | 27 | – | – | – | – | – | – | ○ |
| | | | | | -20~180(200) | Thin stainless steel | | | | | | | | | | | |
| | | | | | -20~250 | Stainless steel | | | | | | | | | | | |
| **GS** | Hight performance Trunnion desigen Wafer type | Ⓕ Ⓥ Ⓢ | J10/20K | 015~080<br>V015~V032<br>R040~R150 | -20~150(260) | Reinforced PTFE<br>PEEK | Stainless steel | – | ● | 28 | ● | ● | 88 | ● | ● | 121 | ○ |
| | | | | | -20~220(260) | API<br>Reinforced PEEK | | | | | | | | | | | |
| | | | | | -20~260 | Stainless steel | | | | | | | | | | | |
| **LR** | 3-way Horizontal body L-port ball | Ⓕ | J10K | 020~050 | -15(0)~150(200) | Reinforced PTFE | Stainless steel | – | ● | 29 | ● | ● | 89 | ● | ● | 122 | ○ |
| | | | | 065~100 | -15(0)~140(200) | | | | | | | | | | | | |
| **TR** | 3-way Vertical body L-port ball | Ⓕ | J10K | 020~050 | -15(0)~150(200) | Reinforced PTFE | Stainless steel | – | ● | 29 | ● | ● | 89 | ● | ● | 122 | ○ |
| | | | | 065~100 | -15(0)~140(200) | | | | | | | | | | | | |
| **L3** | 3-way Horizontal body L-port ball | Ⓕ | J10K | 025~150 | -20~160(200) | Reinforced PTFE | Stainless steel | – | ● | 30 | ● | ● | 90 | ● | ● | 123 | –<br>◎ |
| | | | | | -20~140(200) | | | | | | | | | | | | |
| **T3** | 3-way Horizontal body T-port ball | Ⓕ | J10K | 025~150 | -20~160(200) | Reinforced PTFE | Stainless steel | – | ● | 31 | ● | ● | 91 | ● | ● | 124 | – |
| **L2** | 3-way Horizontal body L-port ball | Ⓕ | J10K | 020~100 | -20~160(200) | N-PTFE | Cast iron<br>Stainless steel | – | ● | 32 | – | – | – | – | – | – | – |
| | | | | | -20~120(200) | Reinforced PTFE | | | | | | | | | | | ○ |
| **L4** | 3-way Horizontal body L-port ball | Ⓕ | J10K | 025~125 | -20~150 | N-PTFE | Cast iron<br>Stainless steel | – | ● | 33 | – | – | – | – | – | – | – |
| | | | | | -20~160(200) | Reinforced PTFE | | | | | | | | | | | |
| **T4** | 3-way Horizontal body T-port ball | Ⓕ | J10K | 025~125 | -20~150 | N-PTFE | Cast iron<br>Stainless steel | – | ● | 33 | – | – | – | – | – | – | – |
| | | | | | -20~160(200) | Reinforced PTFE | | | | | | | | | | | |
| **L5** | For filters 5-way | – | J5K<br>J10K | 032~125 | -10~60(80) | PTFE | Stainless steel | – | ● | 34 | – | – | – | ● | – | 125 | – |
| **BL** | PFA lined model | Ⓕ | J10K | 015~150 | -20~130(180) | PTFE | Steel castings+PFA<br>Stainless steel+PFA | – | ● | 35 | – | ● | 92 | ● | – | 126 | – |

Port type : Ⓢ Standard port Ⓕ Full port Ⓥ V-port

## ● Ball valve -Plastic type

| Model | | Port type | Maximum allowable pressure (MPa) | Nominal size (A) | End connection: Threaded | Socket end | JIS10K Flanged | Operating temperature range of fluid (℃) | Main materials: Body | Seat | Electric: Mini | Compact | High torque | Page | Pneumatic: Plastic | Aluminum | Page | Control |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PA** | Corrosion resistant ※ PVDF / PP is semi-standard | Ⓕ | 1 | 015~100 | ○ | ○ | ○ | 0~50 | PVC | PTFE | | | ● | 36 | ● | ● | 93 | – |
| | | | | | ○ | ○ | ○ | 0~50(90) | C-PVC | | | | | | | | | |
| | | | | | ○ | – | ○ | -20~60(100) | PVDF | | | | | | | | | |
| | | | | | ○ | ○ | ○ | -20~30(80) | PP | | | | | | | | | |
| **PL** | Corrosion resistant 3-way Vertical body L-port ball ※ PVDF / PP is semi-standard | Ⓕ | 1 | 015~100 | ○ | ○ | ○ | 0~50 | PVC | PTFE | | | ● | 37 | ● | ● | 94 | – |
| | | | | | ○ | ○ | ○ | 0~50(90) | C-PVC | | | | | | | | | |
| | | | | | ○ | – | ○ | -20~60(100) | PVDF | | | | | | | | | |
| | | | | | ○ | ○ | ○ | -20~30(80) | PP | | | | | | | | | |
| **LP** | 3-way Horizontal body L-port ball | Ⓢ | 1 | 015~050 | ○ | ○ | ○ | 0~30(50) | PVC | PTFE | – | ● | ● | 38 | ● | ● | 95 | – |
| **TP** | 3-way Horizontal body T-port ball | Ⓢ | 1 | 015~050 | ○ | ○ | ○ | 0~30(50) | PVC | PTFE | – | ● | ● | 38 | ● | ● | 95 | – |

Port type : Ⓢ Standard port Ⓕ Full port

## ● Butterfly valve - For small diameter pipe

| Model | | Maximum allowable pressure (MPa) | Nominal size (A) | End connection: Threaded | Socket end | Operating temperature range of fluid (℃) | Main materials: Cap | Seat | Electric: Mini | Compact | High torque | Page | Pneumatic: Plastic | Aluminum | Page | Manual: Handle | Page | Control |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Z** | The three-piece structure has good maintainability. | 1 | 015~050 | ○ | – | (-20)0~80 | Stainless steel | EPDM | | | ● | 40 | ● | ● | 96 | ● | 127 | ○ |
| | | | | – | ○ | 0~50 | PVC | | | | | | | | | | | |
| | | | | – | ○ | 0~80 | C-PVC | | | | | | | | | | | |
| | | | | ○ | – | (-10)0~60 | Stainless steel | NBR | | | | | | | | | | |
| | | | | – | ○ | 0~50 | PVC | | | | | | | | | | | |
| | | | | – | ○ | 0~60 | C-PVC | | | | | | | | | | | |
| | | | | ○ | – | (0)10~90 | Stainless steel | FKM | | | | | | | | | | |
| | | | | – | ○ | (0)10~50 | PVC | | | | | | | | | | | |
| | | | | – | ○ | (0)10~80 | C-PVC | | | | | | | | | | | |

## ● Butterfly valve - Wafer type

| Model | | Flange size | Nominal size (A) | Operating temperature range of fluid (℃) | Seat | Main materials: Disk | Body | Electric: High torque | Page | Pneumatic: Plastic | Aluminum | Page | Manual: Lever | Worm gear | Page | Control |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **FE** | Compatible with many actuators | J10K | 040~300 | 0~90(120) | EPDM | Stainless steel | Aluminum alloy | ● | 41 | ● | ● | 97 | – | – | – | ○ |
| | | | | 0~70 | NBR | | | | | | | | | | | |
| **FP** | Corrosion resistant | J10K | 040~300 | 0~40(80) | EPDM | PP | PP | ● | 42 | ● | ● | 98 | – | – | – | △ |
| **FN** | General model | J5/10K | 050~200 | -20~80 | EPDM | Cast iron | Cast iron | ● | 43 | ● | ● | 99 | – | – | – | ○ |
| | | | | -10~60 | NBR | | | | | | | | | | | |
| **F** | | J10K | 250~300 | -20~80 | EPDM | Stainless steel | | ● | 43 | – | ● | 99 | – | – | – | ○ |
| | | | | -10~60 | NBR | Copper alloy | | | | | | | | | | |
| | | | | -5~80 | FKM | | | | | | | | | | | |
| **DN** | Double eccentric type | J5/10K | 080~300 | (-29)-20~175(232) | F-PTFE | Stainless steel | Stainless steel | ● | 44 | – | ● | 100 | – | ● | 128 | ○ |
| **FZ** | Lightweight | J5/10K | 040~300 | 0~90(120) | EPDM | Stainless steel | Aluminum alloy | ● | 45 | – | – | – | – | – | – | ○ |
| | | | | 0~70 | NBR | | | | | | | | | | | |
| **WT** | High precision damper | J5K | 040~400 | -40~550(600) | Non SUS316 | Stainless steel | Stainless steel | ● | 46 | – | ● | 101 | ● | ● | 129 | ○ |

## Mini electric actuator Small size and light weight With cabtyre cable

| Model | | Operation | Power source | Page |
|---|---|---|---|---|
| **CA1** | Mini size, Low price | Transfer input type (Transfer contact) | 100 V AC 200 V AC | 49 |
| **PM1** | Contactless type | a - contact input type (Make contact) | 100/110 V AC 200/220 V AC | 49 |
| **CD2** | DC power model | a - contact input type (Make contact) | 24 V DC 12 V DC | 50 |
| **CM1** | General model | Transfer input type (Transfer contact) | 100/110 V AC 200/220 V AC | 50 |
| **CM2** | General model | a - contact input type (Make contact) | 100/110 V AC 200/220 V AC | |
| **CMX** | For proportional control | 4-20mA | 100/110 V AC 200/220 V AC 24 V DC | 51 |

## Compact electric actuator For small valves With terminal block

| Model | | Operation | Power source | Page |
|---|---|---|---|---|
| **AM1** | General model | Transfer input type (Transfer contact) | 100/110 V AC 200/220 V AC | 52 |
| **AM2** | General model | a - contact input type (Make contact) | 100/110 V AC 200/220 V AC | |
| **AH1** | High-speed operation | Transfer input type (Transfer contact) | 100/110 V AC 200/220 V AC | 52 |
| **DM2** | DC power model | a - contact input type (Make contact) | 24 V DC | 53 |
| **DM0** | DC power model | Switching polarity type | 24 V DC | |
| **PAX** | For proportional control | 4-20mA 1~5 V | 100/110 V AC 200/220 V AC | 53 |
| **LAX** | For needle valve, proportional control | 4-20mA | 100/110 V AC 200/220 V AC | 54 |

## High torque electric actuator Multipurpose Many options

| Model | | Operation | Power source | Page |
|---|---|---|---|---|
| **AE1** | General model | Transfer input type (Transfer contact) | 100/110 V AC 200/220 V AC | 55 |
| **AE2** | General model | a - contact input type (Make contact) | 100/110 V AC 200/220 V AC 24 V DC | |
| **AE3** | For 5-way valve | Transfer input type (Transfer contact) | 100/110 V AC 200/220 V AC | 62 |
| **AEX** | For proportional control | 4-20mA 1~5V<br>0~5V 0~10V 2~10V<br>0-135~0-1KΩ | 100/110 V AC 200/220 V AC | 56 |
| **PEX** | For proportional control<br>High-speed brushless motor | 4-20mA 1~5V | 100~240 V AC 24 V DC | 57 |
| **AD1** | General model | Transfer input type (Transfer contact) | 100/110 V AC 200/220 V AC | 58 |
| **AD2** | General model | a - contact input type (Make contact) | 100/110 V AC 200/220 V AC 24 V DC | |
| **AD0** | DC power model | Switching polarity type | 24 V DC | 59 |
| **AD3** | For 5-way valve | Transfer input type (Transfer contact) | 100/110 V AC 200/220 V AC | 62 |
| **HD1** | High-speed operation | Transfer input type (Transfer contact) | 100/110 V AC 200/220 V AC | 58 |
| **HD2** | High-speed operation | a - contact input type (Make contact) | 100/110 V AC 200/220 V AC 24 V DC | |
| **HD0** | High-speed operation DC power model | Switching polarity type | 24 V DC | 59 |
| **HD3** | For 5-way valve | Transfer input type (Transfer contact) | 100/110 V AC 200/220 V AC | 62 |
| **PHR** | For frequent operation Brushless DC motor | Transfer input type (Transfer contact)<br>a - contact input type (Make contact) | 100/110 V AC 200/220 V AC 24 V DC 24 V AC | 59 |
| **PDX** | For proportional control | 4-20mA 1~5V<br>0~5V 0~10V 2~10V<br>0-135~0-1KΩ | 100/110 V AC 200/220 V AC 24 V DC 24 V AC | 60 |
| **PHX** | For frequent proportional control | 4-20mA 1~5V | 100/110 V AC 200/220 V AC 24 V DC 24 V AC | 61 |

## Emergency electric actuator

| Model | | Operation | | Power source | Page |
|---|---|---|---|---|---|
| **ACR** | Built-in high performance capacitor Compact model | In case of a power failure, it operates with capacitor power. | | 100~220 V AC | 63 |
| **ECR** | Built-in high performance capacitor | a - contact input | In case of a power failure, it operates with capacitor power. | 100/110 V AC 200/220 V AC | 63 |
| **ABR** | Built-in high performance battery | a - contact input | In case of a power failure, it operates with battery power. | 100/110 V AC 200/220 V AC 24 V DC | 64 |
| **HBR** | Built-in high performance battery High-speed operation | | | | |
| **PBX** | Built-in high performance battery<br>For proportional control | 4-20mA 1~5V | In case of a power failure, it operates with battery power. | 100/110 V AC 200/220 V AC 24 V DC 24 V AC | 65 |

## Pneumatic actuator Simple and economical PPS resin model and aluminum alloy model corresponding to various options.

| | Model | | Operation | | Air supply pressure | Page |
|---|---|---|---|---|---|---|
| Linear motion | **PLO** | Single-acting | Port pressure supply : Open | Port exhaust : Shut ( Spring return ) | 0.4~0.7MPa | 102 |
| | **PLC** | Single-acting | Port pressure supply : Shut | Port exhaust : Open ( Spring return ) | | |
| PPS resin body | **PND** | Double-acting | Port A pressure supply : Shut ( Position ① ) | Port B pressure supply : Open (Position ② ) | 0.4~0.7MPa | 102 |
| | **PSO** | Single-acting | Port pressure supply : Open ( Position ② ) | Port exhaust : Shut ( Position ① ) Spring return | | |
| | **PSC** | Single-acting | Port pressure supply : Shut ( Position ① ) | Port exhaust : Open ( Position ② ) Spring return | | |
| Aluminum alloy body | **TAD** | Double-acting | Port A pressure supply : Shut ( Position ① ) | Port B pressure supply : Open (Position ② ) | 0.4~0.7MPa | 103 |
| | **TAO** | Single-acting | Port pressure supply : Open ( Position ② ) | Port exhaust : Shut ( Position ① ) Spring return | | |
| | **TAC** | Single-acting | Port pressure supply : Shut ( Position ① ) | Port exhaust : Open ( Position ② ) Spring return | | |

# Motorized valves

It is an automatic valve that opens and closes or proportionally controls the valve with an electric motor.

There are needle valves, ball valves (Threaded end Rc, Flanged end, Plastic type), butterfly valves, etc., and various types of materials are available.

With a lineup of various types of electric actuator, such as power supplies and control methods, it can be used for various applications.

Models with built-in batteries and capacitors that can operate in the event of a power failure are also available.

As it can be combined with various valves, please contact our sales department for details.



MOTORIZED VALVES

# NS / NH series For minute flow control

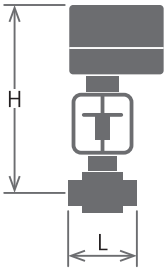
NS : Standard model. / NH : High temperature, high pressure.

NS NH

Compact and light weight electric needle valve.
The valve is used for minute flow control.

Product code : LAX NS 1 0 5 U U F M 0 15

ⓐ Actuator model
ⓑ Valve model
ⓒ Voltage
ⓓ Sizing code
ⓔ Piping connection
ⓕ Body material
ⓖ Trim material
ⓗ Stem seal material
ⓘ Cv value type
ⓙ Characteristic
ⓚ Size




Needle valve NS / NH series has flow direction.

| | | |
|---|---|---|
| ⓑ Valve model | NS | NH |
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 | |
| ⓕ Body material | U SCS14A | U SUS316 |
| ⓖ Trim material | U SUS316 | U SUS316 + HCr PLTD |
| ⓗ Stem seal material | F F-PTFE + O-ring (FKM) | T PTFE |
| ⓘ Cv value type | S 0.05 ／ M 0.13 ／ L 0.34 ／ H 0.8 ／ X 2 | S 0.05 ／ M 0.13 ／ L 0.34 ／ H 0.8 |
| ⓙ Flow characteristic | 0 Linear ／ E Equal percentage(EQ%) | 0 Linear |
| Seat material | F-PTFE | SUS316 |
| Seat leakage volume | Bubble-tight Class VI (ANSI B16. 104) | 0.01% or less of the maximum Cv value (ANSI Class IV or less) |

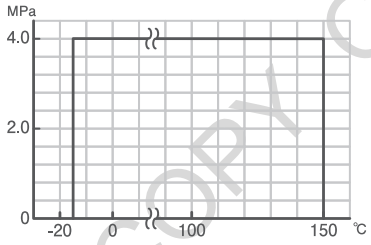
## Actuator type and product dimensions

| ⓑ Valve model | ⓚ Size (A) | ⓓ Sizing code | ⓐ Actuator model: Compact, Proportional control: LAX | ⓘ Cv value | ⓙ Flow characteristic | Operation time (s) 50/60Hz | Height H (mm) | Face to face L (mm) |
|---|---|---|---|---|---|---|---|---|
| NS | 10 | 0 | 030 | S 0.05 / M 0.13 / L 0.34 | 0 Linear | 19.5 / 16 | 218 | 56 |
| | | 0 | 070 | H 0.8 | 0 Linear | 16.5 / 14 | 256 | |
| | 15 | 0 | 030 | S 0.05 / M 0.13 / L 0.34 | 0 Linear | 19.5 / 16 | 218 | 56 |
| | | 0 | 070 | H 0.8 | 0 Linear | 16.5 / 14 | 256 | |
| | | 0 | 070 | X 2 | 0 Linear / E EQ% | 23 / 19.5 | 267 | |
| NH | 10 | 0 | 070 | S 0.05 / M 0.13 / L 0.34 / H 0.8 | 0 Linear | 16.5 / 14 | 261 | 80 |
| | 15 | 0 | 070 | S 0.05 / M 0.13 / L 0.34 / H 0.8 | 0 Linear | 16.5 / 14 | 261 | 80 |

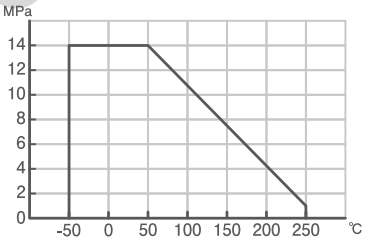
| ⓒ Voltage | LAX |
|---|---|
| 1 100-110V AC | ◎ |
| 2 200-220V AC | ◎ |

Note) Duty factor are different for 100V and 110V and for 200V and 220V.
Please check the page of electric actuator for the content.

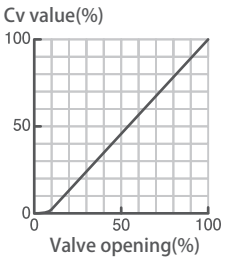
Pressure & Temperature rating (NS)




Pressure & Temperature rating (NH)

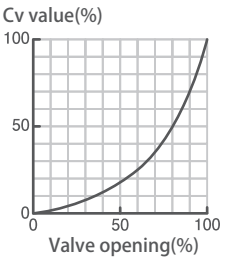



Flow characteristic(Linear)




Range ability 30 : 1

Flow characteristic (EQ%)




Range ability 30 : 1

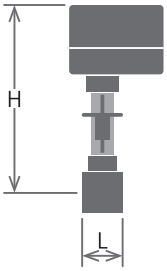
# NP series For minute flow control Resistant to corrosion by PEEK resin.

Needle valve suitable for minute flow control. Made of PEEK resin that is extremely resistant to chemicals and corrosion. Wafer type body with excellent maintainability.

OIL GAS

Product code : LAX NP 1 0 1 K K T M 0 15

- ⓐ Actuator model
- ⓑ Valve model
- ⓒ Voltage
- ⓓ Sizing code
- ⓔ Piping connection
- ⓕ Body material
- ⓖ Trim material
- ⓗ Stem seal material
- ⓘ Cv value type
- ⓙ Characteristic
- ⓚ Size




Needle valve NP series has flow direction.

| | |
|---|---|
| ⓑ Valve model | NP |
| ⓔ Piping connection | 1 Wafer type for JIS10K Flange |
| ⓕ Body material | K PEEK |
| ⓖ Trim material | K PEEK |
| ⓗ Stem seal material | T PTFE*1 |
| ⓘ Cv value type | S 0.05 ／ M 0.13 ／ L 0.34 ／ X 0.8 ／ H 1.4 |
| ⓙ Flow characteristic | 0 Linear |
| Seat | None |
| Seat leakage volume | 0.01% or less of the maximum Cv value (ANSI Class IV or less) |

## Actuator type and product dimensions

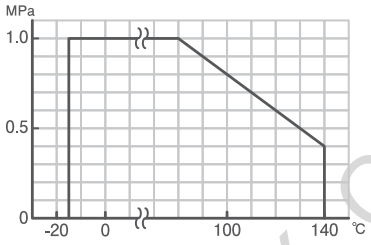
| ⓑ Valve model | ⓚ Size (A) | ⓓ Sizing code | ⓐ Actuator model: Compact, Proportional control, LAX | ⓘ Cv value | ⓙ Flow characteristic | Operation time (s) 50/60Hz | Height H (mm) | Face to face L (mm) |
|---|---|---|---|---|---|---|---|---|
| NP | 15 | 0 | 030 | S 0.05 / M 0.13 / L 0.34 | 0 Linear | 19.5 / 16 | 266 | 50 |
| | | 0 | 070 | X 0.8 / H 1.4 | 0 Linear | 23 / 19.5 | 276 | |

*1) An FKM O-ring is attached to the top of the stem seal as an auxiliary seal.

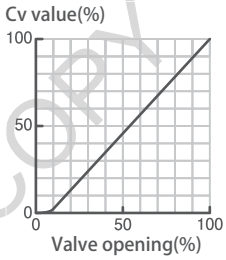
| ⓒ Voltage | LAX |
|---|---|
| 1 100-110V AC | ◎ |
| 2 200-220V AC | ◎ |

Note) Duty factor are different for 100V and 110V and for 200V and 220V.
Please check the page of electric actuator for the content.

Pressure & Temperature rating




Flow characteristic




Range ability 30 : 1

# A / T series

A : Reduced port model / T : Reduced L-shaped port, Vertical three-way model.

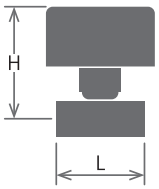
A T

Brass ball valve with excellent cost performance. Ideal for mounting on equipment in combination with a small and lightweight mini actuator.

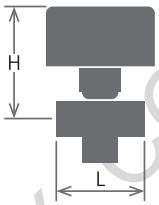
Product code : CA1 A- 1 0 5 Y Y F -015 -Option code

- ⓐ Actuator model: CA1
- ⓑ Valve model: A-
- ⓒ Voltage: 1
- ⓓ Sizing code: 0
- ⓔ Piping connection: 5
- ⓕ Body material: Y
- ⓖ Ball material: Y
- ⓗ Seat material: F
- ⓘ Size: -015

A series




T series




Floating ball type. Threaded end Rc. Reduced port type.

| | |
|---|---|
| ⓔ Piping connection | 5 Threaded end Rc *1 JIS B 0203 |
| ⓕ Body material | Y Brass + PLTD |
| ⓖ Ball material | Y Brass + PLTD |
| ⓗ Seat material | F F-PTFE |
| Stem seal material | FKM O-ring*2 |

## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model: Mini, ON・OFF: CA1 | PM1 | CD2 | CM1 CM2 | Proportional CMX: DC Power | AC Power | Height H (mm): CA1 | PM1 | CD2 | CM□ | CMX | Face to face L (mm) | Cv value (Resultant Cv value) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A- | -015 | 0 | 015 | 030 | 030 | 030 | 015 | 030 | 94 | 96 | 87 | 87 | 87 | 58 | 6 |
| | -020 | 0 | 015 | 030 | 030 | 030 | 015 | 030 | 96 | 98 | 89 | 89 | 89 | 63 | 11 |
| | -025 | 0 | | 030 | 030 | 030 | | 030 | | 102 | 93 | 93 | 93 | 71 | 15 |
| T- | -015 | 0 | 015 | 030 | 030 | 030 | 015 | 030 | 94 | 96 | 87 | 87 | 87 | 58 | 3 (1.4) |
| | -020 | 0 | 015 | 030 | 030 | 030 | 015 | 030 | 96 | 98 | 89 | 89 | 89 | 63 | 6 (2.8) |
| | -025 | 0 | | 030 | 030 | 030 | | 030 | | 102 | 93 | 93 | 93 | 71 | 8 (3.7) |

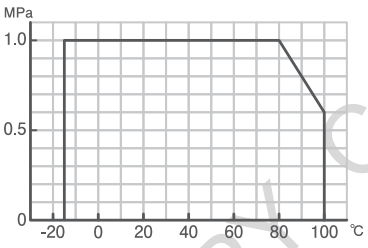
*1) T type C port is threaded-end R.

*2) An NBR O-ring is installed on the outside of the stem seal as a dust seal.

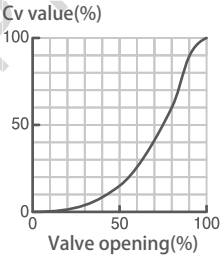
| ⓒ Voltage | CA1 | PM1 | CD2 | CM1 CM2 | CMX |
|---|---|---|---|---|---|
| 1 100V AC 100/110V AC | ◎ | ◎ | | ◎ | ◎ |
| 2 200V AC 200/220V AC | ◎ | ◎ | | ◎ | ◎ |
| 0 24V DC | | | ◎ | | ○ |
| 4 12V DC | | | ◎ | | |

◎ Standard ○ Corresponding only some models.

Pressure & Temperature rating

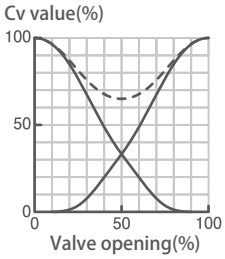



A series flow characteristic



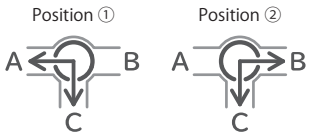

Range ability 30 : 1

T series flow characteristic




Range ability 20 : 1

T series Flow paths




Note)
It should be noted that, if the line pressure of the closed bore is higher than that of the open bores, a small rate of fluid leakage may occur from the closed bore.

# AE / TE series

AE : Reduced port model / TE : Reduced L-shaped port, Vertical three-way model.


AE

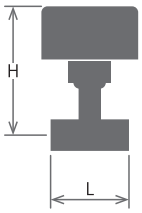

TE

Stainless steel ball valve with excellent cost performance. The long neck body is ideal for thermal insulation.

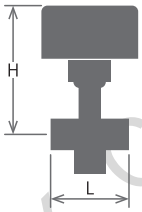

Product code : CMX AE 1 0 5 T T P -020 - Option code

- ⓐ Actuator model
- ⓑ Valve model
- ⓒ Voltage
- ⓓ Sizing code
- ⓔ Piping connection
- ⓕ Body material
- ⓖ Ball material
- ⓗ Seat material
- ⓘ Size

AE series




TE series




Floating ball type. Threaded end Rc. Reduced port type. AE series has flow direction.

| | |
|---|---|
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 |
| ⓕ Body material | T SCS13A |
| ⓖ Ball material | T SUS304 |
| ⓗ Seat material | P Reinforced PTFE |
| Stem seal material | PTFE + FKM O-ring *1 |

## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Mini | | | | | | Compact | | |
| | | | ON・OFF | | | | Proportional | | ON・OFF | | Proportional |
| | | | CA1 | PM1 | CD2 | CM1 CM2 | CMX DC Power | CMX AC Power | AH1 DM2 DM0 | AM1 AM2 | PAX |
| AE | -015 | 0 | 015 | 030 | 030 | 030 | 015 | 030 | 030 | 030 | 050 |
| | -020 | 0 | 015 | 030 | 030 | 030 | 015 | 030 | 030 | 030 | 050 |
| | | 2 | | – | – | – | 070 | – | – | – | – |
| | -025 | 0 | | 030 | 030 | 030 | – | 030 | 030 | 030 | 050 |
| | | 2 | | | | | 070 | 070 | | | |
| TE | -015 | 0 | 015 | 030 | 030 | 030 | 015 | 030 | 030 | 030 | 050 |
| | -020 | 0 | 015 | 030 | 030 | 030 | 015 | 030 | 030 | 030 | 050 |
| | | 2 | | – | – | – | 070 | – | – | – | – |
| | -025 | 0 | | 030 | 030 | 030 | – | 030 | 030 | 030 | 050 |
| | | 2 | | | | | 070 | 070 | | | |

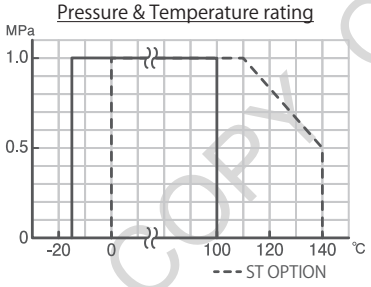
| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | Height H (mm) | | | | | | | | | Face to face L (mm) | Cv value (Resultant Cv value) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | CA1 | PM1 | CD2 | CM□ | CMX | DM2 | AH1 DM0 | AM□ | PAX | | |
| AE | -015 | 0 | 117 | 123 | 114 | 114 | 114 | 146 | 173 | 146 | 173 | 56 | 5 |
| | -020 | 0 | 120 | 125 | 116 | 116 | 116 | 149 | 176 | 149 | 176 | 58 | 10 |
| | | 2 | | – | – | – | 137 | – | – | – | – | | |
| | -025 | 0 | | 128 | 119 | 119 | 119 | 151 | 178 | 151 | 178 | 71 | 15 |
| | | 2 | | | | | 139 | | | | | | |
| TE | -015 | 0 | 118 | 123 | 114 | 114 | 114 | 147 | 174 | 147 | 174 | 58.2 | 3 (1.8) |
| | -020 | 0 | 120 | 125 | 116 | 116 | 116 | 149 | 176 | 149 | 176 | 60 | 6 (3.6) |
| | | 2 | | – | – | – | 137 | – | – | – | – | | |
| | -025 | 0 | | 129 | 120 | 120 | 120 | 152 | 179 | 152 | 179 | 73.5 | 9 (5.4) |
| | | 2 | | | | | 140 | | | | | | |

| ⓒ Voltage | CA1 | PM1 CM□ | CD2 | CMX | DM□ | AM□ AH1 PAX |
|---|---|---|---|---|---|---|
| 1 100V AC 100/110V AC | ◎ | ◎ | | ◎ | | ◎ |
| 2 200V AC 200/220V AC | ◎ | ◎ | | ◎ | | ◎ |
| 0 24V DC | | | ◎ | ○ | ◎ | |
| 4 12V DC | | | ◎ | | | |

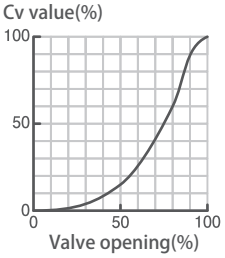
◎ Standard ○ Corresponding only some models.

*1) Specify the [ST] option when the fluid is steam. In this case the O-ring material is FKM for steam.

Pressure & Temperature rating

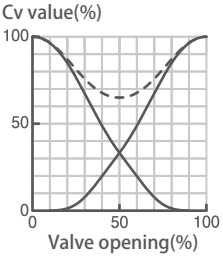



AE series flow characteristic



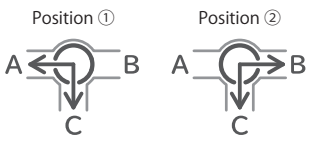

Range ability 30 : 1

TE series flow characteristic




Range ability 20 : 1

TE series Flow paths



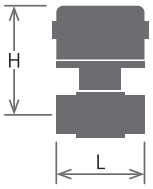

Note)
It should be noted that, if the line pressure of the closed bore is higher than that of the open bores, a small rate of fluid leakage may occur from the closed bore.

# E series Standard port model.

Ball valve that can be used for general purposes. The lineup includes brass products with excellent cost performance and stainless steel products with excellent corrosion resistance.


Product code : CM1 E- 1 0 5 U U T -025 - Option code

- ⓐ Actuator model: CM1
- ⓑ Valve model: E-
- ⓒ Voltage: 1
- ⓓ Sizing code: 0
- ⓔ Piping connection: 5
- ⓕ Body material: U
- ⓖ Ball material: U
- ⓗ Seat material: T
- ⓘ Size: -025




Floating ball type. Threaded end Rc. Standard port type.

| | | |
|---|---|---|
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 | |
| ⓕ Body material | Y Brass + PLTD | U SCS14A |
| ⓖ Ball material | Y Brass + PLTD | U SCS14A / SUS316 |
| ⓗ Seat material | F F-PTFE | T PTFE |
| Stem seal material | FKM O-ring*1 | |

## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model: Mini ON・OFF CA1 | Mini ON・OFF PM1 | Mini ON・OFF CD2 | Mini ON・OFF CM1 CM2 | Mini Proportional CMX DC Power | Mini Proportional CMX AC Power | Compact ON・OFF AH1 DM2 DM0 | Compact ON・OFF AM1 AM2 | Compact Proportional PAX |
|---|---|---|---|---|---|---|---|---|---|---|---|
| E- Brass body | -015 | 0 | 015 | 030 | 030 | 030 | 015 | 030 | 030 | 030 | 050 |
| | -020 | 0 | | 030 | 030 | 030 | – | 030 | 030 | 030 | 050 |
| | | 2 | | – | – | – | 070 | – | – | – | – |
| | -025 | 0 | | 030 | 030 | 030 | – | 030 | 030 | 030 | 050 |
| | | 2 | | | 070 | 070 | 070 | 070 | – | – | – |
| | -032 | 0 | | | 070 | 070 | 070 | 070 | 070 | 070 | 120 |
| | -040 | 0 | | | 070 | 070 | 070 | 070 | 070 | 070 | 120 |
| | | 2 | | | | | | | 180 | 180 | – |
| | -050 | 0 | | | | | | | 180 | 180 | 120 |
| E- Stainless body | -008 | 0 | 015 | 030 | 030 | 030 | 015 | 030 | 030 | 030 | 050 |
| | -010 | 0 | 015 | 030 | 030 | 030 | 015 | 030 | 030 | 030 | 050 |
| | -015 | 0 | 015 | 030 | 030 | 030 | 015 | 030 | 030 | 030 | 050 |
| | -020 | 0 | | 030 | 030 | 030 | – | 030 | 030 | 030 | 050 |
| | | 2 | | – | – | – | 070 | – | – | – | – |
| | -025 | 0 | | 030 | 030 | 030 | – | 030 | 030 | 030 | 050 |
| | | 2 | | | 070 | 070 | 070 | 070 | – | – | – |
| | -032 | 0 | | | 070 | 070 | 070 | 070 | 070 | 070 | 120 |
| | -040 | 0 | | | 070 | 070 | 070 | 070 | 070 | 070 | 120 |
| | | 2 | | | | | | | 180 | 180 | – |
| | -050 | 0 | | | | | | | 180 | 180 | 120 |

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | Height H*2 (mm) CA1 | PM1 | CD2 | CM□ | CMX | DM2 | AH1 DM0 | AM□ | PAX | Face to face L (mm) | Cv value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E- Brass body | -015 | 0 | 94 | 100 | 91 | 91 | 91 | 123 | 150 | 123 | 150 | 59 | 12 |
| | -020 | 0 | | 102 | 93 | 93 | 93 | 126 | 153 | 126 | 153 | 66 | 16 |
| | | 2 | | – | – | – | 114 | – | – | – | – | | |
| | -025 | 0 | | 107 | 98 | 98 | 98 | 130 | 157 | 130 | 157 | 78 | 28 |
| | | 2 | | | 141 | 118 | 118 | – | – | – | – | | |
| | -032 | 0 | | | 151 | 128 | 128 | 167 | 167 | 140 | 181 | 87 | 47 |
| | -040 | 0 | | | 157 | 134 | 134 | 173 | 173 | 146 | 187 | 96 | 83 |
| | | 2 | | | | | | 187 | 187 | 187 | – | | |
| | -050 | 0 | | | | | | 193 | 193 | 193 | 193 | 109 | 115 |
| E- Stainless body | -008 | 0 | 89 | 95 | 86 | 86 | 86 | 118 | 145 | 118 | 145 | 46 | 5 |
| | -010 | 0 | 89 | 95 | 86 | 86 | 86 | 118 | 145 | 118 | 145 | 46 | 5 |
| | -015 | 0 | 92 | 97 | 88 | 88 | 88 | 121 | 148 | 121 | 148 | 59 | 12 |
| | -020 | 0 | | 100 | 91 | 91 | 91 | 123 | 150 | 123 | 150 | 66 | 16 |
| | | 2 | | – | – | – | 111 | – | – | – | – | | |
| | -025 | 0 | | 106 | 97 | 97 | 97 | 129 | 156 | 129 | 156 | 78 | 28 |
| | | 2 | | | 141 | 118 | 118 | – | – | – | – | | |
| | -032 | 0 | | | 151 | 128 | 128 | 167 | 167 | 140 | 181 | 87 | 47 |
| | -040 | 0 | | | 157 | 134 | 134 | 173 | 173 | 146 | 187 | 95 | 83 |
| | | 2 | | | | | | 187 | 187 | 187 | – | | |
| | -050 | 0 | | | | | | 193 | 193 | 193 | 193 | 109 | 123 |

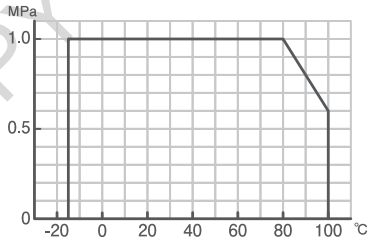
| ⓒ Voltage | CA1 | PM1 CM□ | CD2 | CMX | DM□ | AM□ AH1 PAX |
|---|---|---|---|---|---|---|
| 1 100V AC 100/110V AC | ◎ | ◎ | | ◎ | | ◎ |
| 2 200V AC 200/220V AC | ◎ | ◎ | | ◎ | | ◎ |
| 0 24V DC | | | ◎ | ○ | ◎ | |
| 4 12V DC | | | ○ | | | |

◎ Standard ○ Corresponding only some models.

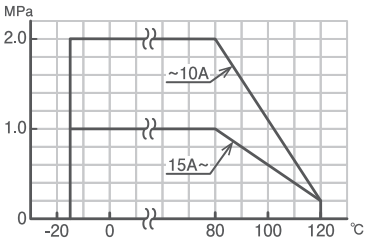
*1) An NBR O-ring is installed on the outside of the stem seal as a dust seal.

*2) If the temperature of the actuator may over the operating range due to heat transfer from the fluid, an insulation option is required. Please note that the product height will change if the insulation option is selected.

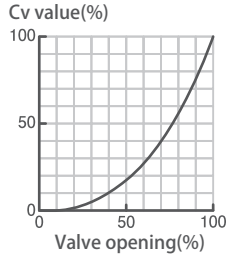
Brass body type Pressure & Temperature rating




Stainless body type Pressure & Temperature rating




Flow characteristic




Range ability 30 : 1

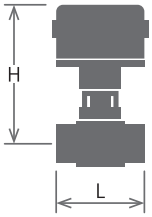
# EG series Standard port, Abnormal pressure rise prevention model.

Standard port type ball valve for high temperature fluids such as steam. Standard extension bracket for heat insulation.

OIL GAS STEAM

Product code : CM1 EG 1 0 5 U U P -025 - Option code

- ⓐ Actuator model: CM1
- ⓑ Valve model: EG
- ⓒ Voltage: 1
- ⓓ Sizing code: 0
- ⓔ Piping connection: 5
- ⓕ Body material: U
- ⓖ Ball material: U
- ⓗ Seat material: P
- ⓘ Size: -025




Floating ball type. Threaded end Rc. Standard port type. EG series has flow direction.

| | |
|---|---|
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 |
| ⓕ Body material | U SCS14A |
| ⓖ Ball material | U SCS14A |
| ⓗ Seat material | P Reinforced PTFE |
| Stem seal material | FKM O-ring for steam |

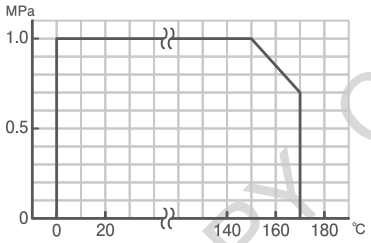
## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model | | | | | | | | Height H (mm) | | | | | | | | Face to face L (mm) | Cv value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Mini | | | | | Compact | | | | | | | | | | | | |
| | | | ON・OFF | | | Proportional | | ON・OFF | | Proportional | | | | | | | | | | |
| | | | PM1 | CD2 | CM1 CM2 | CMX DC Power | CMX AC Power | AH1 DM2 DM0 | AM1 AM2 | PAX | PM1 | CD2 | CM□ | CMX | DM2 | AH1 DM0 | AM□ | PAX | | |
| EG | -015 | 0 | 030 | 030 | 030 | – | 030 | 030 | 030 | 050 | 128 | 119 | 119 | 119 | 151 | 178 | 151 | 178 | 59 | 9 |
| | | 2 | | – | – | 070 | – | – | – | – | | – | – | 139 | – | – | – | – | | |
| | -020 | 0 | | 030 | 030 | – | 030 | 030 | 030 | 050 | | 121 | 121 | 121 | 153 | 180 | 153 | 180 | 66 | 13 |
| | | 2 | | – | – | 070 | – | – | – | – | | – | – | 142 | – | – | – | – | | |
| | -025 | 0 | | 070 | 070 | 070 | 070 | 070 | 070 | 120 | | 171 | 148 | 148 | 187 | 187 | 160 | 201 | 78 | 24 |
| | -032 | 0 | | 070 | 070 | 070 | 070 | 070 | 070 | 120 | | 182 | 159 | 159 | 197 | 197 | 170 | 211 | 87 | 44 |
| | -040 | 0 | | | | | | 180 | 180 | 120 | | | | | 217 | 217 | 217 | 217 | 95 | 80 |
| | -050 | 0 | | | | | | 180 | 180 | | | | | | 223 | 223 | 223 | | 109 | 120 |

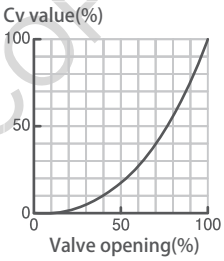
| ⓒ Voltage | PM1 CM□ | CD2 | CMX | DM□ | AM□ AH1 PAX |
|---|---|---|---|---|---|
| 1 100/110V AC | ◎ | | ◎ | | ◎ |
| 2 200/220V AC | ◎ | | ◎ | | ◎ |
| 0 24V DC | | ◎ | ○ | ◎ | |
| 4 12V DC | | ○ | | | |

◎ Standard ○ Corresponding only some models.

Pressure & Temperature rating




Flow characteristic




Range ability 30 : 1

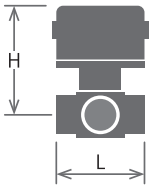
# EL series Standard L-shaped port, Horizontal three-way model.



Three-way ball valve that can be used for general purposes. Stainless steel products with excellent corrosion resistance.


Product code : CM1 EL 1 0 5 U U T -020 - Option code

- ⓐ Actuator model
- ⓑ Valve model
- ⓒ Voltage
- ⓓ Sizing code
- ⓔ Piping connection
- ⓕ Body material
- ⓖ Ball material
- ⓗ Seat material
- ⓘ Size




Floating ball type. Threaded end Rc. Standard port type.

| | |
|---|---|
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 |
| ⓕ Body material | U SCS14A |
| ⓖ Ball material | U SUS316 |
| ⓗ Seat material | T PTFE |
| Stem seal material | FKM O-ring*1 |

## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Mini ON・OFF | | | | Compact ON・OFF | |
| | | | CA1 | PM1 | CD2 | CM1 CM2 | AH1 DM2 DM0 | AM1 AM2 |
| EL | -008 | 0 | 015 | 030 | 030 | 030 | 030 | 030 |
| | -010 | 0 | 015 | 030 | 030 | 030 | 030 | 030 |
| | -015 | 0 | 015 | 030 | 030 | 030 | 030 | 030 |
| | -020 | 0 | | 030 | 030 | 030 | 030 | 030 |
| | -025 | 0 | | 030 | 030 | 030 | 030 | 030 |
| | -032 | 0 | | | 070 | 070 | 070 | 070 |
| | -040 | 0 | | | 070 | 070 | 070 | 070 |
| | | 2 | | | | | 180 | 180 |
| | -050 | 0 | | | | | 180 | 180 |

| ⓑ Valve model | ⓘ Size (A) | Height H*2 (mm) | | | | | | | Face to face L (mm) | Cv value |
|---|---|---|---|---|---|---|---|---|---|---|
| | | CA1 | PM1 | CD2 | CM□ | DM2 | AH1 DM0 | AM□ | | |
| EL | -008 | 90 | 95 | 86 | 86 | 119 | 146 | 119 | 47 | 1.8 |
| | -010 | 90 | 95 | 86 | 86 | 119 | 146 | 119 | 47 | 2.2 |
| | -015 | 93 | 98 | 89 | 89 | 122 | 149 | 122 | 67 | 5 |
| | -020 | | 102 | 93 | 93 | 125 | 152 | 125 | 70 | 8 |
| | -025 | | 107 | 98 | 98 | 131 | 158 | 131 | 79 | 13 |
| | -032 | | | 151 | 128 | 167 | 167 | 140 | 89 | 22 |
| | -040 | | | 157 | 134 | 173 | 173 | 146 | 100 | 36 |
| | | | | | | 187 | 187 | 187 | | |
| | -050 | | | | | 193 | 193 | 193 | 119 | 50 |

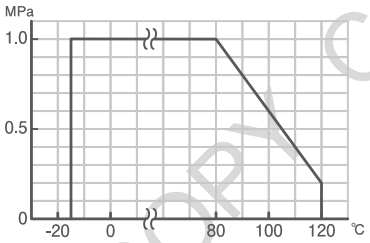
| ⓒ Voltage | CA1 | PM1 CM□ | CD2 | DM□ | AM□ AH1 |
|---|---|---|---|---|---|
| 1 100V AC 100/110V AC | ◎ | ◎ | | | ◎ |
| 2 200V AC 200/220V AC | ◎ | ◎ | | | ◎ |
| 0 24V DC | | | ◎ | ◎ | |
| 4 12V DC | | | ○ | | |

◎ Standard ○ Corresponding only some models.

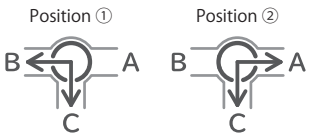
*1) An NBR O-ring is installed on the outside of the stem seal as a dust seal.

*2) If the temperature of the actuator may over the operating range due to heat transfer from the fluid, an insulation option is required. Please note that the product height will change if the insulation option is selected.

### Pressure & Temperature rating




### Flow paths



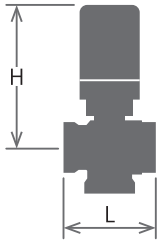

Note)
It should be noted that, if the line pressure of the closed bore is higher than that of the open bores, a small rate of fluid leakage may occur from the closed bore.

# TV series Standard L-shaped port, Vertical three-way model.

Compact and lightweight stainless steel three-way ball valve suitable for proportional control.


Product code : PAX TV 1 0 5 T T P -025 - Option code

- ⓐ Actuator model
- ⓑ Valve model
- ⓒ Voltage
- ⓓ Sizing code
- ⓔ Piping connection
- ⓕ Body material
- ⓖ Ball material
- ⓗ Seat material
- ⓘ Size




Floating ball type. Threaded end Rc. Standard port type.

| | |
|---|---|
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 |
| ⓕ Body material | T SCS13A |
| ⓖ Ball material | T SUS304 / SCS13A |
| ⓗ Seat material | P Reinforced PTFE |
| Stem seal material | FKM O-ring*1 |

## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Mini | | | | Compact | | | High torque | | |
| | | | ON・OFF | | Proportional | | ON・OFF | | Proportional | ON・OFF | Proportional | |
| | | | CD2 | CM1 CM2 | CMX DC Power | CMX AC Power | AH1 DM2 DM0 | AM1 AM2 | PAX | AE1 AE2 | AEX | PEX |
| TV | -015 | 0 | 030 | 030 | – | 030 | 030 | 030 | 050 | 120 | 120 | 120 |
| | | 2 | – | – | 070 | 070 | – | – | – | – | – | – |
| | -020 | 1 | 030 | 030 | – | 030 | – | – | – | – | – | – |
| | | 0 | 070 | 070 | 070 | 070 | 070 | 070 | 050 | 120 | 120 | 120 |
| | -025 | 0 | 070 | 070 | 070 | 070 | 070 | 070 | 050 | 120 | 120 | 120 |
| | -032 | 0 | | | | | 180 | 180 | 120 | 120 | 120 | 120 |
| | -040 | 0 | | | | | 180 | 180 | 120 | 120 | 120 | 300 |

| Height H*2(mm) | | | | | | | | | Face to face L (mm) | Cv value (Resultant Cv value) |
|---|---|---|---|---|---|---|---|---|---|---|
| CD2 | CM□ | CMX | DM2 | AH1 DM0 | AM□ | PAX | AE□ AEX | PEX | | |
| 91 | 91 | 91 | 124 | 151 | 124 | 151 | 187 | 187 | 67 | 5 (3) |
| – | – | 112 | – | – | – | – | – | – | | |
| 104 | 104 | 104 | – | – | – | – | – | – | 70 | 8 (5) |
| 148 | 125 | 125 | 164 | 164 | 137 | 164 | 200 | 200 | | |
| 149 | 126 | 126 | 165 | 165 | 138 | 165 | 201 | 201 | 81 | 13 (9) |
| | | | 181 | 181 | 181 | 181 | 203 | 203 | 93 | 22 (15) |
| | | | 187 | 187 | 187 | 187 | 209 | 209 | 106 | 36 (25) |

| ⓒ Voltage | CD2 | CM□ | CMX | DM□ | AM□ AH1 PAX | AE1 | AE2 | AEX | PEX |
|---|---|---|---|---|---|---|---|---|---|
| 1 100/110V AC | | ◎ | ◎ | | ◎ | ◎ | ◎ | ◎ | |
| 2 200/220V AC | | ◎ | ◎ | | ◎ | ◎ | ◎ | ◎ | |
| 6 100 to 240V AC | | | | | | | | | ◎ |
| 0 24V DC | ◎ | | ○ | ◎ | | | ◎ | | ◎ |
| 4 12V DC | ○ | | | | | | | | |

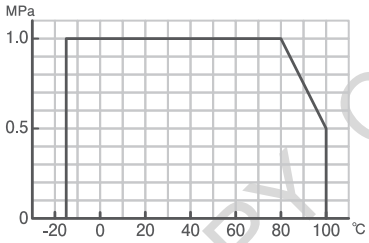
◎ Standard ○ Corresponding only some models.

Note) When selecting sizing code 1, it is necessary to pay attention to fluid characteristic and pressure. Please contact us for fluid specifications.

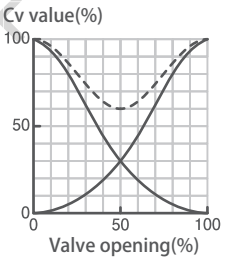
*1) An NBR O-ring is installed on the outside of the stem seal as a dust seal.

*2) If the temperature of the actuator may over the operating range due to heat transfer from the fluid, an insulation option is required. Please note that the product height will change if the insulation option is selected.

### Pressure & Temperature rating

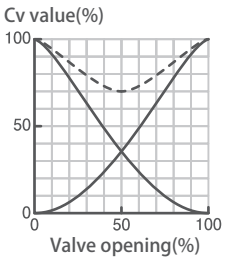



### 15A, 25A flow characteristic



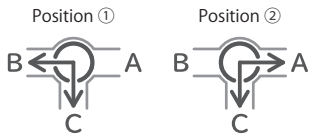

Range ability 20 : 1

### 25 to 40A flow characteristic




Range ability 20 : 1

### Flow paths




Note)
It should be noted that, if the line pressure of the closed bore is higher than that of the open bores, a small rate of fluid leakage may occur from the closed bore.

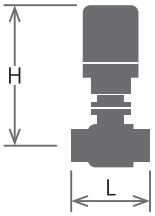
# SR series Full port, Oil-free product model.



Only fluorine resin is used for seal parts. It can be used for fluids that cannot use rubber. Oil-free product that does not use oils and fats during valve assembly *1.


Product code : AM1 SR 1 0 5 U U T -025 - Option code

- ⓐ Actuator model: AM1
- ⓑ Valve model: SR
- ⓒ Voltage: 1
- ⓓ Sizing code: 0
- ⓔ Piping connection: 5
- ⓕ Body material: U
- ⓖ Ball material: U
- ⓗ Seat material: T
- ⓘ Size: -025




Floating ball type. Threaded end Rc. Full port type.

| | |
|---|---|
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 |
| ⓕ Body material | U SCS14A |
| ⓖ Ball material | U SCS14A |
| ⓗ Seat material | T PTFE |
| Stem seal material | F-PTFE |

## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model | | | | |
|---|---|---|---|---|---|---|---|
| | | | Mini ON・OFF | | Compact ON・OFF | | High torque ON・OFF |
| | | | CD2 | CM1 CM2 | AH1 DM2 DM0 | AM1 AM2 | AE1 AE2 |
| SR | -015 | 0 | 030 | 030 | 030 | 030 | 120 |
| | -020 | 0 | 070 | 070 | 070 | 070 | 120 |
| | -025 | 0 | 070 | 070 | 070 | 070 | 120 |
| | -032 | 0 | | | 180 | 180 | 120 |
| | -040 | 0 | | | 180 | 180 | 360 |

| ⓒ Voltage | CD2 | CM□ | DM□ | AM□ AH1 | AE1 | AE2 |
|---|---|---|---|---|---|---|
| 1 100/110V AC | | ◎ | | ◎ | ◎ | ◎ |
| 2 200/220V AC | | ◎ | | ◎ | ◎ | ◎ |
| 0 24V DC | ◎ | | ◎ | | | ◎ |
| 4 12V DC | ○ | | | | | |

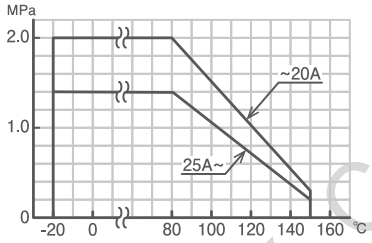
◎ Standard ○ Corresponding only some models.

| Height H*2 (mm) | | | | | | Face to face L (mm) |
|---|---|---|---|---|---|---|
| CD2 | CM□ | DM2 | AH1 DM0 | AM□ | AE□ | |
| 117 | 117 | 150 | 177 | 150 | 204 | 75 |
| 164 | 141 | 180 | 180 | 153 | 208 | 80 |
| 175 | 152 | 191 | 191 | 164 | 213 | 88 |
| | | 211 | 211 | 211 | 218 | 110 |
| | | 235 | 235 | 235 | 227 | 120 |

*1) Oils and fats are not used when assembling valves, but process management such as inspection, storage, assembly of work machines, and packaging are handled in the same way as normal products. There is no denying the possibility that a little of oil or fat will unintentionally adhere to valves. If degreased products are required, specify options individually.

*2) If the temperature of the actuator may over the operating range due to heat transfer from the fluid, an insulation option is required. Please note that the product height will change if the insulation option is selected.

Pressure & Temperature rating



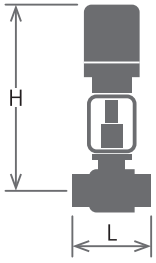
# SH series Full port, Abnormal pressure rise prevention model.

Full port type ball valve for high temperature fluids such as steam. Standard extension bracket for heat insulation.

OIL GAS STEAM *1

Product code : AM1 SH 1 0 5 U U F -025 - Option code

ⓐ Actuator model
ⓑ Valve model
ⓒ Voltage
ⓓ Sizing code
ⓔ Piping connection
ⓕ Body material
ⓖ Ball material
ⓗ Seat material
ⓘ Size




Floating ball type. Threaded end Rc. Full port type. SH series has flow direction.

| | |
|---|---|
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 |
| ⓕ Body material | U SCS14A |
| ⓖ Ball material | U SCS14A |
| ⓗ Seat material | F F-PTFE |
| Stem seal material | Reinforced PTFE + FKM O-ring for steam |

## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model: Compact ON・OFF: AH1 DM2 DM0 | ⓐ Actuator model: Compact ON・OFF: AM1 AM2 | ⓐ Actuator model: High torque ON・OFF: AE1 AE2 |
|---|---|---|---|---|---|
| SH | -015 | 0 | 070 | 070 | 120 |
| | -020 | 0 | 070 | 070 | 120 |
| | -025 | 0 | 180 | 180 | 120 |
| | -032 | 0 | 180 | 180 | 360 |

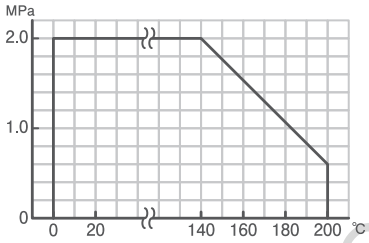
| Height H (mm) | | | | Face to face L (mm) |
|---|---|---|---|---|
| DM2 | AH1 DM0 | AM□ | AE□ | |
| 213 | 213 | 186 | 240 | 75 |
| 216 | 216 | 189 | 244 | 80 |
| 235 | 235 | 235 | 249 | 88 |
| 241 | 241 | 241 | 254 | 110 |

*1) When flowing steam, use it at 180 ° C or below.

| ⓒ Voltage | DM□ | AM□ AH1 | AE1 | AE2 |
|---|---|---|---|---|
| 1 100/110V AC | | ◎ | ◎ | ◎ |
| 2 200/220V AC | | ◎ | ◎ | ◎ |
| 0 24V DC | ◎ | | | ◎ |

◎Standard ○Corresponding only some models.

Pressure & Temperature rating*1



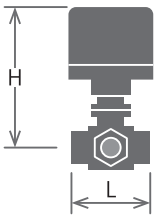
# SL / ST series

Horizontal three-way model. SL : Standard L-shaped port. / ST : Standard T-shaped port.


Product code : AM1 SL 1 0 5 U U F -015 - Option code

Product code : AE1 ST 2 0 5 U U F -025 - a - Option code

ⓐ Actuator model
ⓑ Valve model
Ⓒ Voltage
ⓓ Sizing code
ⓔ Piping connection
ⓕ Body material
ⓖ Ball material
ⓗ Seat material
ⓘ Size
ⓙ Flow paths




Four-sided seat structure type. Threaded end Rc. Standard port type.

| | |
|---|---|
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 |
| ⓕ Body material | U SCS14A |
| ⓖ Ball material | U SCS14A |
| ⓗ Seat material | F F-PTFE |
| Stem seal material | F-PTFE |

## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model: Compact ON・OFF: AH1 DM2 DM0 | ⓐ Actuator model: Compact ON・OFF: AM1 AM2 | ⓐ Actuator model: High torque ON・OFF: AE1 AE2 |
|---|---|---|---|---|---|
| SL ST | -015 | 0 | 070 | 070 | 120 |
| SL ST | -020 | 0 | 070 | 070 | 120 |
| SL ST | -025 | 0 | 180 | 180 | 120 |
| SL ST | -032 | 0 | 180 | 180 | 360 |

| Ⓒ Voltage | DM□ | AM□ AH1 | AE1 | AE2 |
|---|---|---|---|---|
| 1 100/110V AC | | ◎ | ◎ | ◎ |
| 2 200/220V AC | | ◎ | ◎ | ◎ |
| 0 24V DC | ◎ | | | ◎ |

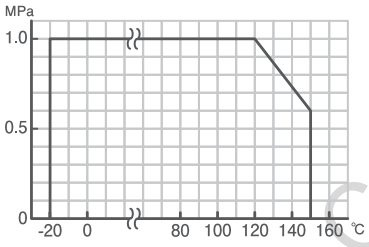
◎Standard ○Corresponding only some models.

| Height H*2 (mm): DM2 | AH1 DM0 | AM□ | AE□ | Face to face L (mm) | Cv value: SL | ST: L direction | ST: Straight direction |
|---|---|---|---|---|---|---|---|
| 177 | 177 | 150 | 205 | 75 | 5 | 4 | 7 |
| 181 | 181 | 154 | 208 | 85 | 10 | 8 | 13 |
| 205 | 205 | 205 | 213 | 100 | 16 | 14 | 22 |
| 211 | 211 | 211 | 218 | 115 | 25 | 22 | 33 |

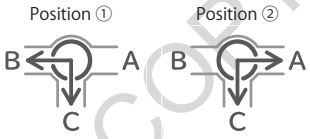
*1) Oils and fats are not used when assembling valves, but process management such as inspection, storage, assembly of work machines, and packaging are handled in the same way as normal products. There is no denying the possibility that a little of oil or fat will unintentionally adhere to valves. If degreased products are required, specify options individually.

*2) If the temperature of the actuator may over the operating range due to heat transfer from the fluid, an insulation option is required. Please note that the product height will change if the insulation option is selected.

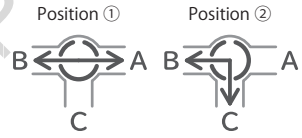
Pressure & Temperature rating



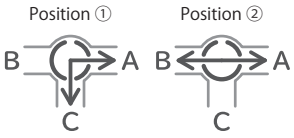

SL series Flow paths



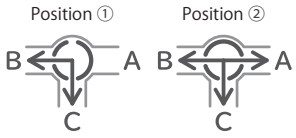

ⓙ ST series Flow paths Code a



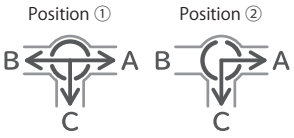

ⓙ ST series Flow paths Code b




ⓙ ST series Flow paths Code c




ⓙ ST series Flow paths Code d

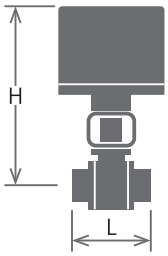



Note)
For ST series, enter of the Flow paths code after the Size of the product code.
It should be noted that, if the line pressure of the closed bore is higher than that of the open bores, a small rate of fluid leakage may occur from the closed bore.

Three piece body structure with excellent maintainability. Maintenance can be performed by removing the main unit while leaving the cap screwed into the piping.

Product code : AE1 MS 1 0 5 U U P -025 - Option code

ⓐ Actuator model
ⓑ Valve model
ⓒ Voltage
ⓓ Sizing code
ⓔ Piping connection
ⓕ Body material
ⓖ Ball material
ⓗ Seat material
ⓘ Size




Floating ball type. Threaded end Rc. Full port type.

| | |
|---|---|
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 |
| ⓕ Body material | U SCS14A |
| ⓖ Ball material | U SCS14A |
| ⓗ Seat material | P Reinforced PTFE |
| Stem seal material | Reinforced PTFE + FKM O-ring |

## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model | | | | |
|---|---|---|---|---|---|---|---|
| | | | Compact | | | High torque | |
| | | | ON・OFF | | Proportional | ON・OFF | Proportional |
| | | | AH1 DM2 DM0 | AM1 AM2 | PAX | AE1 AE2 | AEX |
| MS | -010 | 0 | 070 | 070 | 050 | 120 | 120 |
| | -015 | 0 | 070 | 070 | 120 | 120 | 120 |
| | -020 | 0 | 070 | 070 | 120 | 120 | 120 |
| | -025 | 0 | 180 | 180 | 120 | 120 | 120 |
| | | 2 | | | | 360 | 360 |
| | -032 | 0 | | | | 360 | 360 |
| | -040 | 0 | | | | 360 | 360 |
| | -050 | 0 | | | | 360 | 360 |
| | | 2 | | | | 700 | 700 |

| Height H*1 (mm) | | | | | Face to face L (mm) |
|---|---|---|---|---|---|
| DM2 | AH1 DM0 | AM□ | PAX | AE□ AEX | |
| 177 | 177 | 150 | 177 | 204 | 60 |
| 177 | 177 | 150 | 191 | 204 | 75 |
| 180 | 180 | 153 | 194 | 208 | 80 |
| 205 | 205 | 205 | 205 | 213 | 90 |
| | | | | 213 | |
| | | | | 218 | 110 |
| | | | | 227 | 120 |
| | | | | 236 | 140 |
| | | | | 252 | |

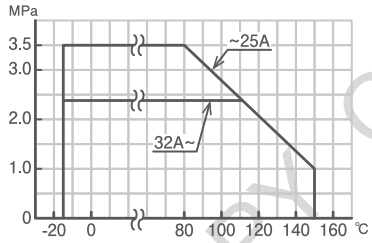
| ⓒ Voltage | DM□ | AM□ AH1 PAX | AE1 | AE2 | AEX |
|---|---|---|---|---|---|
| 1 100/110V AC | | ◎ | ◎ | ◎ | ◎ |
| 2 200/220V AC | | ◎ | ◎ | ◎ | ◎ |
| 0 24V DC | ◎ | | | ○ | |

◎ Standard ○ Corresponding only some models.

Note) When the fluid pressure exceeds 1.0 MPa, or when used for viscous fluids or solvents, sizing selection of the actuator is required. Please contact us for fluid specifications.

*1) If the temperature of the actuator may over the operating range due to heat transfer from the fluid, an insulation option is required. Please note that the product height will change if the insulation option is selected.

Pressure & Temperature rating



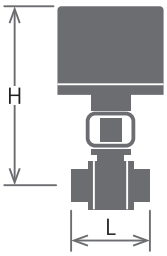
# MV series V-port, Three piece body.

Three piece body structure with excellent maintainability. Maintenance can be performed by removing the main unit while leaving the cap screwed into the piping.
V-port ball provides precise flow control

OIL GAS

Product code : AEX MV 1 0 5 U U P R015-Option code

- ⓐ Actuator model
- ⓑ Valve model
- ⓒ Voltage
- ⓓ Sizing code
- ⓔ Piping connection
- ⓕ Body material
- ⓖ Ball material
- ⓗ Seat material
- ⓘ Size




Floating ball type. Threaded end Rc. V-port type. MV series has flow direction.

| | |
|---|---|
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 |
| ⓕ Body material | U SCS14A |
| ⓖ Ball material | U SCS14A / SUS316 |
| ⓗ Seat material | P Reinforced PTFE |
| Stem seal material | Reinforced PTFE + FKM O-ring |

## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model: Compact Proportional PAX | High torque Proportional AEX | High torque Proportional PEX | High torque Proportional PDX PHX | Height H*1 (mm) PAX | Height H*1 (mm) AEX | Height H*1 (mm) PEX | Height H*1 (mm) PDX PHX | Face to face L (mm) | Cv value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MV | R010 | 1 | 050 | – | – | – | 177 | – | – | – | 60 | 1.3 |
| | | 0 | 120 | 120 | 120 | 300 | 191 | 204 | 204 | 271 | | |
| | R015 | 1 | 050 | – | – | – | 177 | – | – | – | 75 | 1.3 |
| | | 0 | 120 | 120 | 120 | 300 | 191 | 204 | 204 | 271 | | |
| | -015 | 1 | 050 | – | – | – | 177 | – | – | – | 75 | 4 |
| | | 0 | 120 | 120 | 120 | 300 | 191 | 204 | 204 | 271 | | |
| | -020 | 0 | 120 | 120 | 120 | 300 | 194 | 208 | 208 | 275 | 80 | 7.5 |
| | -025 | 0 | 120 | 120 | 300 | 300 | 205 | 213 | 213 | 280 | 90 | 12 |
| | | 2 | | 360 | – | – | | 213 | – | – | | |
| | -032 | 0 | | 360 | 300 | 300 | | 128 | 218 | 285 | 110 | 20 |
| | -040 | 0 | | 360 | 300 | 300 | | 227 | 227 | 294 | 120 | 31 |
| | -050 | 0 | | 360 | 700 | 700 | | 236 | 252 | 303 | 140 | 48 |
| | | 2 | | 700 | | | | 252 | | | | |

| ⓒ Voltage | PAX | AEX | PEX | PDX PHX |
|---|---|---|---|---|
| 1 100/110V AC | ◎ | ◎ | | ◎ |
| 2 200/220V AC | ◎ | ◎ | | ◎ |
| 6 100 to 240V AC | | | ◎ | |
| 0 24V DC | | | ◎ | ◎ |
| 3 24V AC | | | | ◎ |

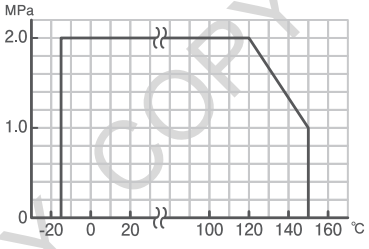
◎ Standard

Note) When selecting sizing code 1, it is necessary to pay attention to fluid characteristic and pressure. Please contact us for fluid specifications.

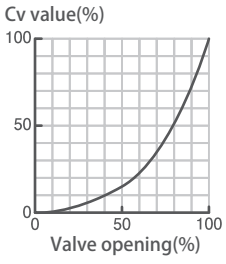
Note) When the fluid pressure exceeds 1.0 MPa, or when used for viscous fluids or solvents, sizing selection of the actuator is required. Please contact us for fluid specifications.

*1) If the temperature of the actuator may over the operating range due to heat transfer from the fluid, an insulation option is required. Please note that the product height will change if the insulation option is selected.

Pressure & Temperature rating




Flow characteristic

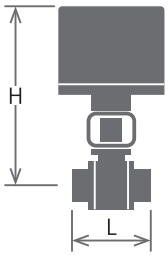



Range ability
R010, R015A = 100 : 1
015A or more = 50 : 1

# MH series Full port, Three piece body.

Full port type ball valve that can be used under relatively high pressure conditions.
Standard specification ensures stable sealing with a highly rigid POM seat. Can be used in high temperature range by selecting reinforced F-PTFE seat.

Product code : AE1 MH 1 0 5 U U D -025 - Option code
- ⓐ Actuator model
- ⓑ Valve model
- ⓒ Voltage
- ⓓ Sizing code
- ⓔ Piping connection
- ⓕ Body material
- ⓖ Ball material
- ⓗ Seat material
- ⓘ Size




Floating ball type. Threaded end Rc. Full port type.

| | |
|---|---|
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 |
| ⓕ Body material | U SCS14A |
| ⓖ Ball material | U SCS14A + HCr PLTD |
| ⓗ Seat material | D POM*1 ／ R Reinforced F-PTFE |
| Stem seal material | FKM O-ring |

## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model: High torque ON・OFF AE1 AE2 | AD1 AD2 AD0 | HD1 HD2 HD0 | Height H (mm) AE□ | AD□ | HD□ | Face to face L (mm) |
|---|---|---|---|---|---|---|---|---|---|
| MH | -010 | 0 | 120 | 300 | 300 | 193 | 260 | 260 | 72 |
| | -015 | 1 | 120 | – | – | 199 | – | – | 83 |
| | | 0 | 360 | 300 | 300 | 199 | 266 | 266 | |
| | -020 | 0 | 360 | 300 | 300 | 204 | 271 | 271 | 95 |
| | -025 | 1 | 360 | – | – | 212 | – | – | 113 |
| | | 0 | 700 | 700 | 700 | 228 | 279 | 279 | |
| | -032 | 0 | 700 | 700 | 700 | 234 | 285 | 285 | 124 |
| | -040 | 0 | 02K | | 02K | 307 | | 314 | 130 |

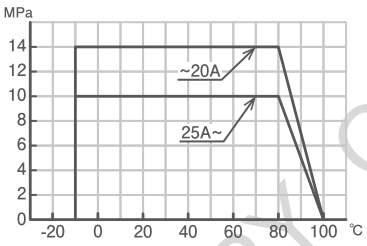
| ⓒ Voltage | AE1 | AE2 | AD1 HD1 | AD2 HD2 | AD0 HD0 |
|---|---|---|---|---|---|
| 1 100/110V AC | ◎ | ◎ | ◎ | ◎ | |
| 2 200/220V AC | ◎ | ◎ | ◎ | ◎ | |
| 0 24V DC | | ○ | | ◎ | ◎ |

◎ Standard ○ Corresponding only some models.

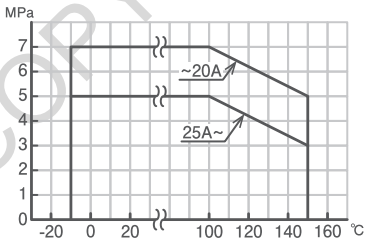
Note) When selecting sizing code 1, it is necessary to pay attention to fluid characteristic and pressure. Please contact us for fluid specifications.

*1) POM seats cannot be used for aqueous solutions above 85 ° C.

D-type seat Pressure & Temperature rating



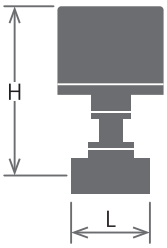

R-type seat Pressure & Temperature rating



# H / HH series Full port*1, For high pressure.

Full port type ball valve that can be used under high pressure conditions. Stable sealing performance is ensured by the machined steel body and the highly rigid POM seat.

Product code : AE1 H- 1 0 5 S U D -025 -Option code
- ⓐ Actuator model
- ⓑ Valve model
- ⓒ Voltage
- ⓓ Sizing code
- ⓔ Piping connection
- ⓕ Body material
- ⓖ Ball material
- ⓗ Seat material
- ⓘ Size




Floating ball type. Threaded end Rc. Full port type.*1

| | | | |
|---|---|---|---|
| ⓑ Valve model | H- | | HH |
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 | | 5 Threaded end Rc JIS B 0203 |
| ⓕ Body material | S Carbon steel + PLTD | U SUS316Ti | S Carbon steel + PLTD |
| ⓖ Ball material | U SUS316Ti + HCr PLTD | | U SUS316Ti + HCr PLTD |
| ⓗ Seat material | D POM | | D POM |
| Stem seal material | FKM O-ring | | FKM O-ring |

## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model: High torque ON・OFF AE1 AE2 | AD1 AD2 AD0 | HD1 HD2 HD0 | Height H*2 (mm) AE SUD | AE UUD | AD SUD | AD UUD | HD SUD | HD UUD | Face to face L*2 (mm) SUD | Face to face L*2 (mm) UUD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H- | -008 | 0 | 120 | 300 | 300 | 185 | 186 | 252 | 253 | 252 | 253 | 69 | 72 |
| | | 2 | 360 | 700 | 700 | 185 | 186 | – | 253 | – | 253 | | |
| | -010 | 1 | 120 | – | – | 186 | 186 | – | – | – | – | | |
| | | 0 | 360 | 300 | 300 | 186 | 186 | 253 | 253 | 253 | 253 | 72 | 72 |
| | | 2 | – | 700 | 700 | – | – | – | 253 | – | 253 | | |
| | -015 | 0 | 360 | 300 | 300 | 186 | 186 | 253 | 253 | 253 | 253 | 83 | 83 |
| | | 2 | 700 | 700 | 700 | 202 | 202 | 253 | 253 | 253 | 253 | | |
| | -020 | 1 | 360 | – | – | 198 | 198 | – | – | – | – | | |
| | | 0 | 700 | 700 | 700 | 214 | 214 | 265 | 265 | 265 | 265 | 95 | 95 |
| | | 2 | 02K | – | 02K | 292 | 292 | – | – | 287 | 287 | | |
| | -025 | 0 | 700 | 700 | 700 | 225 | 225 | 268 | 268 | 268 | 268 | 113 | 113 |
| | | 2 | 02K | – | 02K | 295 | 295 | – | – | 290 | 290 | | |
| | R032 | 0 | 700 | 700 | 700 | 225 | 225 | 268 | 268 | 268 | 268 | 120 | 120 |
| | | 2 | 02K | | 02K | 295 | 295 | | | 290 | 290 | | |
| | -040 | 0 | 02K | | 02K | | 312 | | | | 307 | – | 130 |
| HH | -010 | 1 | | 300 | 300 | | | 257 | | 257 | | 130 | – |
| | | 0 | | 700 | 700 | | | 257 | | 257 | | | |
| | -015 | 0 | | 700 | 700 | | | 257 | | 257 | | 130 | – |
| | -020 | 0 | | | 02K | | | | | 296 | | 105 | – |
| | -025 | 0 | | | 02K | | | | | 299 | | 140 | – |

| ⓒ Voltage | AE1 | AE2 | AD1 HD1 | AD2 HD2 | AD0 HD0 |
|---|---|---|---|---|---|
| 1 100/110V AC | ◎ | ◎ | ◎ | ◎ | |
| 2 200/220V AC | ◎ | ◎ | ◎ | ◎ | |
| 0 24V DC | | ○ | | ◎ | ◎ |

◎ Standard ○ Corresponding only some models.

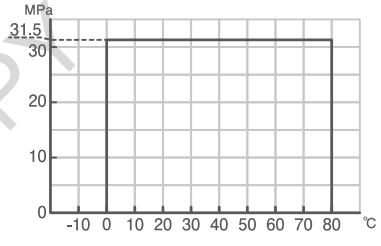
Note) When selecting sizing code 1, it is necessary to pay attention to fluid characteristic and pressure. Please contact us for fluid specifications.

Note) HH series is a semi-standard product. Please check the delivery date.

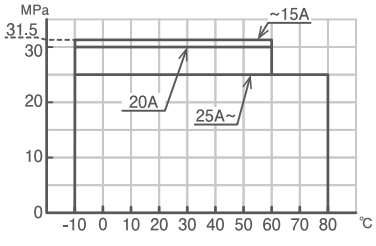
*1) R032A is a standard port.

*2) H type has different height and face to face dimensions depending on the material of the body.

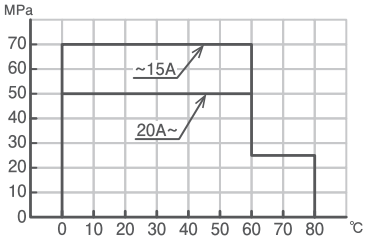
H series carbon steel body model Pressure & Temperature rating




H series SUS316Ti body model Pressure & Temperature rating

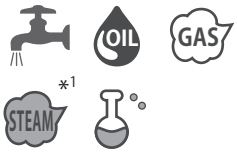



HH series Pressure & Temperature rating



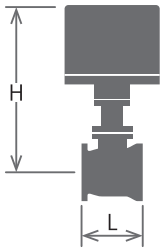
# BS series Full port, Wafer type.

Lightweight and compact, wafer type ball valve. The same body can be connected to not only JIS 10K flange but also ANSI, DIN or GB standard flanges.




Product code : AE1 BS 1 0 1 T T F -050 - Option code

- ⓐ Actuator model
- ⓑ Valve model
- ⓒ Voltage
- ⓓ Sizing code
- ⓔ Piping connection
- ⓕ Body material
- ⓖ Ball material
- ⓗ Seat material
- ⓘ Size




Floating ball type. Wafer type. Full port type. *2

| | | |
|---|---|---|
| ⓔ Piping connection | 1 For JIS 10K flange Wafer type (Can be connected to ANSI CLASS 150, GB PN1.6, DIN PN10/16 flange. Dose not comply with pressure standards.) | |
| ⓕ Body material | T SCS13A | U SCS14A (Contact us for more than R100A.) |
| ⓖ Ball material | T SCS13A | U SCS14A (Contact us for more than R100A.) |
| ⓗ Seat material | F F-PTFE ／ G Reinforced PTFE ／ R Reinforced F-PTFE | |
| Stem seal material | Reinforced PTFE + FKM O-ring *1 | |

## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model: Compact ON・OFF: AH1 DM2 DM0 | Compact ON・OFF: AM1 AM2 | High torque ON・OFF: AE1 AE2 | High torque ON・OFF: AD1 AD2 AD0 | High torque ON・OFF: HD1 HD2 HD0 | Height H*3 (mm): DM2 | AH1 DM0 | AM□ | AE□ | AD□ | HD□ | Face to face L (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BS | -015 | 0 | 070 | 070 | 120 | – | – | 179 | 179 | 152 | 207 | – | – | 40 |
| | -020 | 0 | 070 | 070 | 120 | – | – | 182 | 182 | 155 | 210 | – | – | 50 |
| | -025 | 0 | 180 | 180 | 120 | 300 | 300 | 209 | 209 | 209 | 217 | 284 | 284 | 60 |
| | -032 | 1 | 180 | 180 | – | – | – | 215 | 215 | 215 | – | – | – | 70 |
| | | 0 | | | 360 | 300 | 300 | | | | 223 | 290 | 290 | |
| | -040 | 0 | | | 360 | 300 | 300 | | | | 232 | 299 | 299 | 80 |
| | | 2 | | | – | 700 | 700 | | | | – | 299 | 299 | |
| | -050 | 0 | | | 360 | 700 | 700 | | | | 241 | 308 | 308 | 95 |
| | | 2 | | | 700 | – | – | | | | 257 | – | – | |
| | -065 | 0 | | | 700 | 700 | 700 | | | | 287 | 330 | 330 | 110 |
| | -080 | 0 | | | 700 | 700 | 700 | | | | 294 | 337 | 337 | 125 |
| | | 2 | | | 02K | – | 02K | | | | 352 | – | 359 | |
| | R100 | 0 | | | 700 | 700 | 700 | | | | 306 | 349 | 349 | 145 |
| | | 2 | | | 02K | | 02K | | | | 364 | | 371 | |
| | R125 | 0 | | | 02K | | 02K | | | | 383 | | 390 | 176 |
| | | 2 | | | 06K | | 06K | | | | 443 | | 431 | |
| | R150 | 1 | | | 02K | | 02K | | | | 401 | | 408 | 215 |
| | | 0 | | | 06K | | 06K | | | | 461 | | 449 | |

| ⓒ Voltage | DM□ | AM□ AH1 | AE1 | AE2 | AD1 HD1 | AD2 HD2 | AD0 HD0 |
|---|---|---|---|---|---|---|---|
| 1 100/110V AC | | ◎ | ◎ | ◎ | ◎ | ◎ | |
| 2 200/220V AC | | ◎ | ◎ | ◎ | ◎ | ◎ | |
| 0 24V DC | ◎ | | | ○ | | ◎ | ◎ |

◎Standard ○Corresponding only some models.

Note) When selecting sizing code 1, it is necessary to pay attention to fluid characteristic and pressure. Please contact us for fluid specifications.

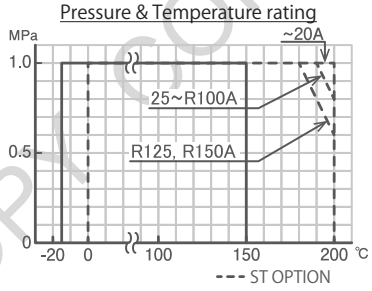
Note) When selecting G or R seat / viscous fluid / solvent, it is necessary to select the sizing of the actuator. Please contact us for fluid specifications.

*1) Specify the [ST] option when the fluid is steam. In this case, the flow direction is one-way flow and the O-ring material is FKM for steam.

*2) R100 to R150A is a standard port.

*3) If the temperature of the actuator may over the operating range due to heat transfer from the fluid, an insulation option is required. Please note that the product height will change if the insulation option is selected.

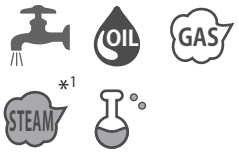
Pressure & Temperature rating



# BR series Full port, General-purpose model.

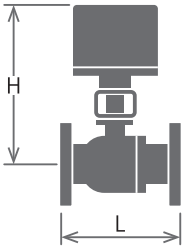


General-purpose flange type full port type ball valve. Lineup includes JIS 20K in addition to JIS 10K. A spring is built in the seal part of the stem, and the volume change due to packing wear and pressure / temperature changes is automatically compensated.




Product code : AE1 BR 1 0 1 T T F -050 - Option code

- ⓐ Actuator model: AE1
- ⓑ Valve model: BR
- ⓒ Voltage: 1
- ⓓ Sizing code: 0
- ⓔ Piping connection: 1
- ⓕ Body material: T
- ⓖ Ball material: T
- ⓗ Seat material: F
- ⓘ Size: -050




Floating ball type. Flanged end. Full port type.

| | | | |
|---|---|---|---|
| ⓔ Piping connection | 1 JIS 10K RF Flanged end | | 3 JIS 20K RF Flanged end (Up to 50A except 32A) |
| Face to face | JIS B 2002 Series No.6 (125/150A is series No.39) | | JIS B 2002 Series No.10 |
| ⓕ Body material | T SCS13A | U SCS14A (Up to 100A) | T SCS13A |
| ⓖ Ball material | T SCS13A | U SCS14A (Up to 100A) | T SCS13A |
| ⓗ Seat material | F F-PTFE ／ G Reinforced PTFE ／ R Reinforced F-PTFE | | |
| Stem seal material | Reinforced PTFE + FKM O-ring *1 | | |

## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model: Compact ON・OFF: AH1 DM2 DM0 | AM1 AM2 | High torque ON・OFF: AE1 AE2 | AD1 AD2 AD0 | HD1 HD2 HD0 | PHR |
|---|---|---|---|---|---|---|---|---|
| BR | -015 | 0 | 070 | 070 | 120 | 300 | 300 | 300 |
| | -020 | 0 | 070 | 070 | 120 | 300 | 300 | 300 |
| | -025 | 0 | 180 | 180 | 120 | 300 | 300 | 300 |
| | -032 | 1 | 180 | 180 | – | – | – | – |
| | | 0 | | | 360 | 300 | 300 | 300 |
| | -040 | 0 | | | 360 | 300 | 300 | 300 |
| | | 2 | | | – | 700 | 700 | – |
| | -050 | 0 | | | 360 | 700 | 700 | 700 |
| | | 2 | | | 700 | – | – | – |
| | -065 | 0 | | | 700 | 700 | 700 | 700 |
| | -080 | 0 | | | 700 | 700 | 700 | 700 |
| | | 2 | | | 02K | | 02K | 02K |
| | -100 | 0 | | | 02K | | 02K | 02K |
| | -125 | 1 | | | 02K | | 02K | 02K |
| | | 0 | | | 06K | | 06K | 06K |
| | -150 | 0 | | | 06K | | 06K | 06K |

| ⓒ Voltage | DM□ | AM□ AH1 | AE1 | AE2 | AD1 HD1 | AD2 HD2 | AD0 HD0 | PHR |
|---|---|---|---|---|---|---|---|---|
| 1 100/110V AC | | ◎ | ◎ | ◎ | ◎ | ◎ | | ◎ |
| 2 200/220V AC | | ◎ | ◎ | ◎ | ◎ | ◎ | | ◎ |
| 0 24V DC | ◎ | | | ○ | | ◎ | ◎ | ◎ |
| 3 24V AC | | | | | | | | ◎ |

◎Standard ○Corresponding only some models.

| Valve model | Size (A) | Height H*2 (mm) AH1 DM□ J10K | AH1 DM□ J20K | AM□ J10K | AM□ J20K | AE□ J10K | AE□ J20K | AD□/HD□ PHR J10K | AD□/HD□ PHR J20K | Face to face L (mm) J10K | Face to face L (mm) J20K |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BR | -015 | 179 | 179 | 152 | 152 | 207 | 207 | 274 | 274 | 108 | 140 |
| | -020 | 182 | 182 | 155 | 155 | 210 | 210 | 277 | 277 | 117 | 152 |
| | -025 | 209 | 219 | 209 | 209 | 217 | 217 | 284 | 284 | 127 | 165 |
| | -032 | 215 | | 215 | | – | – | – | – | 140 | – |
| | | | | | | 223 | – | 290 | – | | |
| | -040 | | | | | 232 | 232 | 299 | 299 | 165 | 190 |
| | | | | | | – | – | 299 | 299 | | |
| | -050 | | | | | 241 | 241 | 308 | 308 | 178 | 216 |
| | | | | | | 257 | 257 | – | – | | |
| | -065 | | | | | 287 | | 330 | | 190 | |
| | -080 | | | | | 299 | | 342 | | 203 | |
| | | | | | | 357 | | 364 | | | |
| | -100 | | | | | 383 | | 390 | | 229 | |
| | -125 | | | | | 401 | | 408 | | 356 | |
| | | | | | | 461 | | 449 | | | |
| | -150 | | | | | 487 | | 475 | | 394 | |

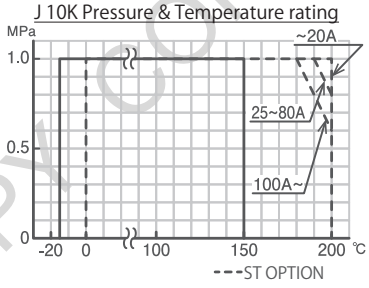
Note) When selecting sizing code 1, it is necessary to pay attention to fluid characteristic and pressure. Please contact us for fluid specifications.

Note) When selecting G or R seat / viscous fluid / solvent, it is necessary to select the sizing of the actuator. Please contact us for fluid specifications.

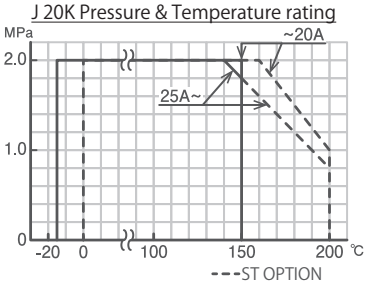
*1) Specify the [ST] option when the fluid is steam. In this case, the flow direction is one-way flow and the O-ring material is FKM for steam.

*2) If the temperature of the actuator may over the operating range due to heat transfer from the fluid, an insulation option is required. Please note that the product height will change if the insulation option is selected.

J 10K Pressure & Temperature rating

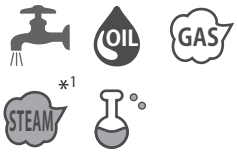



J 20K Pressure & Temperature rating



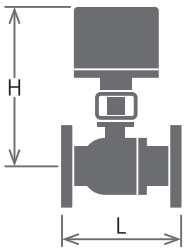
# VR series V-port, Specializing in proportional control.

V-port type ball valve dedicated for proportional control. A spring is built in the seal part of the stem, and the volume change due to packing wear and pressure / temperature changes is automatically compensated.




Product code : AEX VR 1 0 1 U U G -050 - Option code

- ⓐ Actuator model: AEX
- ⓑ Valve model: VR
- ⓒ Voltage: 1
- ⓓ Sizing code: 0
- ⓔ Piping connection: 1
- ⓕ Body material: U
- ⓖ Ball material: U
- ⓗ Seat material: G
- ⓘ Size: -050




Floating ball type. Flanged end. V-port type. VR series has flow direction.

| | |
|---|---|
| ⓔ Piping connection | 1 JIS 10K RF Flanged end |
| Face to face | JIS B 2002 Series No.6 |
| ⓕ Body material | U SCS14A |
| ⓖ Ball material | U SUS316 / SCS14A |
| ⓗ Seat material | G Reinforced PTFE ／ R Reinforced F-PTFE |
| Stem seal material | Reinforced PTFE + FKM O-ring *1 |

## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model: Compact Proportional PAX | High torque Proportional AEX | High torque Proportional PEX | High torque Proportional PDX PHX | Height H*2 (mm) PAX | AEX | PEX | PDX PHX | Face to face L (mm) | Cv value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VR | R015 | 0 | 050 | 120 | 120 | 300 | 179 | 207 | 207 | 274 | 108 | 1.3 |
| | | 2 | 120 | – | – | – | 193 | – | – | – | | |
| | -015 | 0 | 050 | 120 | 120 | 300 | 179 | 207 | 207 | 274 | 108 | 4 |
| | | 2 | 120 | – | – | – | 193 | – | – | – | | |
| | -020 | 0 | 120 | 120 | 120 | 300 | 196 | 210 | 210 | 277 | 117 | 7.5 |
| | -025 | 0 | 120 | 120 | 300 | 300 | 209 | 217 | 217 | 284 | 127 | 12 |
| | | 2 | | 360 | – | – | | 217 | – | – | | |
| | -032 | 0 | | 360 | 300 | 300 | | 223 | 223 | 290 | 140 | 20 |
| | -040 | 0 | | 360 | 300 | 300 | | 232 | 232 | 299 | 165 | 31 |
| | | 2 | | 700 | 700 | 700 | | 248 | 248 | 299 | | |
| | -050 | 0 | | 360 | 700 | 700 | | 241 | 257 | 308 | 178 | 48 |
| | | 2 | | 700 | – | – | | 257 | – | – | | |
| | -065 | 0 | | 700 | 700 | 700 | | 287 | 287 | 330 | 190 | 85 |
| | -080 | 0 | | 700 | | 700 | | 299 | | 342 | 203 | 123 |
| | | 2 | | 02K | | 02K | | 357 | | 364 | | |

| ⓒ Voltage | PAX | AEX | PEX | PDX PHX |
|---|---|---|---|---|
| 1 100/110V AC | ◎ | ◎ | | ◎ |
| 2 200/220V AC | ◎ | ◎ | | ◎ |
| 6 100 to 240V AC | | | ◎ | |
| 0 24V DC | | | ◎ | ◎ |
| 3 24V AC | | | | ◎ |

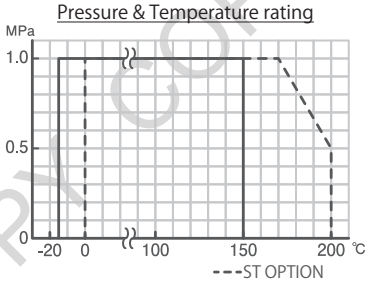
◎Standard ○Corresponding only some models.

Note) When selecting R seat / viscous fluid / solvent, it is necessary to select the sizing of the actuator. Please contact us for fluid specifications.

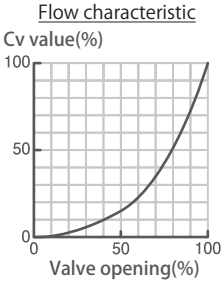
*1) Specify the [ST] option when the fluid is steam. In this case, O-ring material is FKM for steam.

*2) If the temperature of the actuator may over the operating range due to heat transfer from the fluid, an insulation option is required. Please note that the product height will change if the insulation option is selected.

Pressure & Temperature rating




Flow characteristic



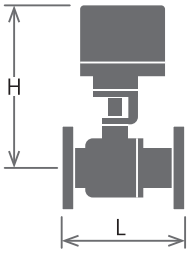

Range ability
R015A = 100 : 1
015A or more = 50 : 1

# BF series Full port, Fire safe model.

Fire safe type mechanism is to minimize fluid leakage by producing metal shut-off when seal parts such as seats and packings are burned out by fire.


Product code : HD1 BF 1 0 1 D T T -080 - Option code

- ⓐ Actuator model: HD1
- ⓑ Valve model: BF
- ⓒ Voltage: 1
- ⓓ Sizing code: 0
- ⓔ Piping connection: 1
- ⓕ Body material: D
- ⓖ Ball material: T
- ⓗ Seat material: T
- ⓘ Size: -080




Floating ball type. Flanged end. Full port type.

| | | | | | |
|---|---|---|---|---|---|
| ⓔ Piping connection | 1 JIS 10K RF Flanged end | | | | 3 JIS 20K RF Flanged end |
| Face to face | JIS B 2002 Series No.6 (125/150A is series No.39) | | | | JIS B 2002 Series No.10 |
| ⓕ Body material | D FCD400 | T SCS13A | U SCS14A | W SCS16A | T SCS13A |
| ⓖ Ball material | T SCS13A / SUS304 | | U SCS14A / SUS316 | W SCS16A / SUS316L | T SCS13A / SUS304 |
| ⓗ Seat material | T N-PTFE ／ G Reinforced PTFE ／ R Reinforced PTFE + Metal ring | | | | |
| Stem seal material | N-PTFE | | | | |

## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model: High torque, ON・OFF: AE1 AE2 | AD1 AD2 AD0 | HD1 HD2 HD0 | Height H*1 (mm): AE□ | AD□ | HD□ | Face to face L (mm): J10K | J20K |
|---|---|---|---|---|---|---|---|---|---|---|
| BF | -015 | 0 | 120 | 300 | 300 | 215 | 281 | 281 | 108 | 140 |
| | -020 | 0 | 120 | 300 | 300 | 219 | 285 | 285 | 117 | 152 |
| | -025 | 0 | 120 | 300 | 300 | 229 | 296 | 296 | 127 | 165 |
| | | 2 | 360 | – | – | 229 | – | – | | |
| | -040 | 0 | 360 | 300 | 300 | 248 | 321 | 321 | 165 | 190 |
| | | 2 | – | 700 | 700 | – | 321 | 321 | | |
| | -050 | 0 | 360 | 700 | 700 | 256 | 329 | 329 | 178 | 216 |
| | | 2 | 700 | – | – | 272 | – | – | | |
| | -065 | 0 | 700 | 700 | 700 | 300 | 368 | 368 | 190 | 241 |
| | | 2 | 02K | – | 02K | 395 | – | 390 | | |
| | -080 | 1 | 700 | 700 | 700 | 310 | 378 | 378 | 203 | 283 |
| | | 0 | 02K | | 02K | 405 | | 400 | | |
| | -100 | 0 | 02K | | 02K | 441 | | 436 | 229 | 305 |
| | -125 | 0 | 06K | | 06K | 485 | | 473 | 356 | 381 |
| | -150 | 0 | 06K | | 06K | 505 | | 493 | 394 | 403 |

| ⓒ Voltage | AE1 | AE2 | AD1 HD1 | AD2 HD2 | AD0 HD0 |
|---|---|---|---|---|---|
| 1 100/110V AC | ◎ | ◎ | ◎ | ◎ | |
| 2 200/220V AC | ◎ | ◎ | ◎ | ◎ | |
| 0 24V DC | | ○ | | ◎ | ◎ |

◎ Standard ○ Corresponding only some models.

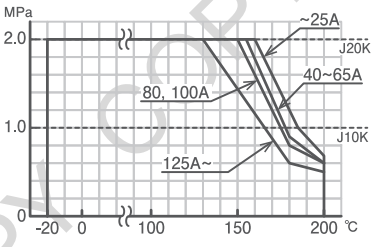
Note) When selecting sizing code 1, it is necessary to pay attention to fluid characteristic and pressure. Please contact us for fluid specifications.

Note) When selecting G or R seat / viscous fluid / solvent, it is necessary to select the sizing of the actuator. Please contact us for fluid specifications.

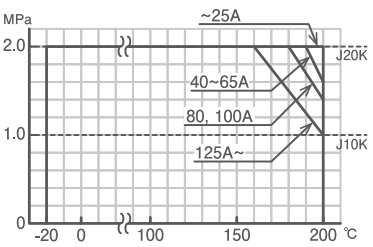
Note) BF series is a semi-standard product. Please check the delivery date.

*1) If the temperature of the actuator may over the operating range due to heat transfer from the fluid, an insulation option is required. Please note that the product height will change if the insulation option is selected.

T / G-type seat Pressure & Temperature rating



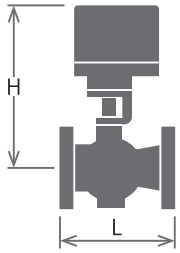

R-type seat Pressure & Temperature rating



# V series Full port, V-cut ball, High performance model.

V series is the most suitable for resin pellet (nylon etc.), Powder (fly ash etc.), Paper mill (pulp fluid), slurry (muddy water, milk of lime etc.) And any other high viscous fluid.
The v-cut ball cuts through fibrous and solid materials.


Product code : PHX V- 1 0 1 T U G -080 - Option code
ⓐ Actuator model
ⓑ Valve model
ⓒ Voltage
ⓓ Sizing code
ⓔ Piping connection
ⓕ Body material
ⓖ Ball material
ⓗ Seat material
ⓘ Size




Trunnion ball type. Flanged end. Full port type. V series has flow direction.

| | | | |
|---|---|---|---|
| ⓔ Piping connection | 1 JIS 10K RF Flanged end | | |
| Face to face | JIS B 2002 Series No.6 (125 to 200A is series No.39) | | |
| ⓕ Body material | D FCD-S | T SCS13A (Over 125A is SCS13) | U SCS14A (Over 125A is SCS14) |
| ⓖ Ball material | U SCS11 + HCr PLTD (In case of M-seat, it is stellite®.) | | |
| ⓗ Seat material | G Reinforced PTFE ／ S Thin seat SUS316 / SUS316H (Over 125A is SUS329J4L) ／ M Solid seat SUS316 + Stellite® | | |
| Stem seal material | PTFE | | |
| Allowable Seat Leakage | G seat | Bubble-tight | |
| | S seat | 0.0005% of rated Cv (ANSI B16.104 Class IV 1/20 and IEC534-4 Class IV-S1) | |
| | M seat | 0.5% of rated Cv (ANSI B16.104 Class IV and IEC534-4 Class II) | |

## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model: High torque ON・OFF AE1 AE2 | AD1 AD2 AD0 | HD1 HD2 HD0 | PHR | High torque Proportional AEX | PDX PHX |
|---|---|---|---|---|---|---|---|---|
| V- | -025 | 0 | 360 | 300 | 300 | 300 | 360 | 300 |
| | -040 | 0 | 360 | 700 | 700 | 700 | 360 | 700 |
| | -050 | 0 | 700 | 700 | 700 | 700 | 700 | 700 |
| | | 2 | 02K | | 02K | 02K | 02K | 02K |
| | -065 | 0 | 02K | | 02K | 02K | 02K | 02K |
| | -080 | 0 | 02K | | 02K | 02K | 02K | 02K |
| | -100 | 0 | 02K | | 02K | 06K | 02K | 06K |
| | | 2 | 06K | | 06K | – | 06K | – |
| | -125 | 1 | 02K | | 02K | – | 02K | – |
| | | 0 | 06K | | 06K | 06K | 06K | 06K |
| | -150 | 1 | – | | – | 06K | – | 06K |
| | | 0 | 06K | | 06K | | 06K | |
| | -200 | 1 | 06K | | 06K | | 06K | |

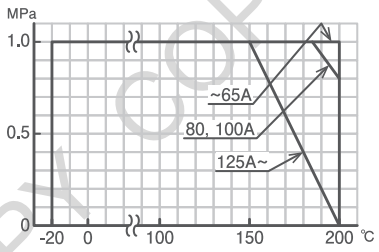
| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | Height H*1(mm) AE□ AEX DU□ | AE□ AEX TU□ UU□ | AD□ DU□ | AD□ TU□ UU□ | HD□ DU□ | HD□ TU□ UU□ | PDX PHX PHR DU□ | PDX PHX PHR TU□ UU□ | Face to face L (mm) | Cv value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| V- | -025 | 0 | 241 | 243 | 308 | 310 | 308 | 310 | 308 | 310 | 127 | 28 |
| | -040 | 0 | 272 | 273 | 345 | 346 | 345 | 346 | 345 | 346 | 165 | 75 |
| | -050 | 0 | 293 | 295 | 350 | 352 | 350 | 352 | 350 | 352 | 178 | 153 |
| | | 2 | 377 | 379 | | | 372 | 374 | 372 | 374 | | |
| | -065 | 0 | 421 | 425 | | | 416 | 420 | 416 | 420 | 190 | 250 |
| | -080 | 0 | 426 | 430 | | | 421 | 425 | 421 | 425 | 203 | 350 |
| | -100 | 0 | 466 | 472 | | | 461 | 467 | 459 | 465 | 229 | 540 |
| | | 2 | 471 | 477 | | | 459 | 465 | – | – | | |
| | -125 | 1 | 509 | 509 | | | 504 | 504 | – | – | 356 | 930 |
| | | 0 | 521 | 521 | | | 509 | 509 | 509 | 509 | | |
| | -150 | 1 | – | – | | | – | – | 519 | 519 | 394 | 1320 |
| | | 0 | 531 | 531 | | | 519 | 519 | | | | |
| | -200 | 1 | 579 | 579 | | | 564 | 564 | | | 457 | 2000 |

| ⓒ Voltage | AE1 AEX | AE2 | AD1 HD1 | AD2 HD2 | AD0 HD0 | PDX PHX PHR |
|---|---|---|---|---|---|---|
| 1 100/110V AC | ◎ | ◎ | ◎ | ◎ | | ◎ |
| 2 200/220V AC | ◎ | ◎ | ◎ | ◎ | | ◎ |
| 0 24V DC | | ○ | | ◎ | ◎ | ◎ |
| 3 24V DC | | | | | | ◎ |

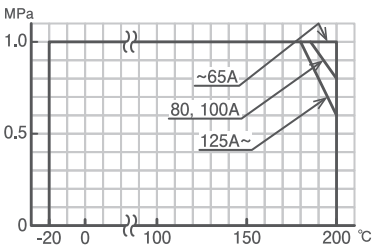
◎ Standard ○ Corresponding only some models.

Note) When selecting sizing code 1, it is necessary to pay attention to fluid characteristic and pressure. Please contact us for fluid specifications.
Note) When selecting S or M seat / viscous fluid / solvent, it is necessary to select the sizing of the actuator. Please contact us for fluid specifications.
Note) V series is a semi-standard product. Please check the delivery date.
*1) If the temperature of the actuator may over the operating range due to heat transfer from the fluid, an insulation option is required. Please note that the product height will change if the insulation option is selected.

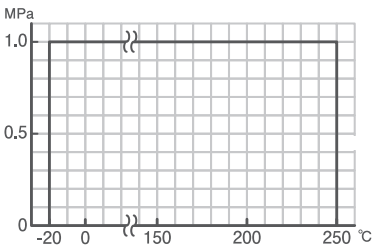
G-type seat Pressure & Temperature rating



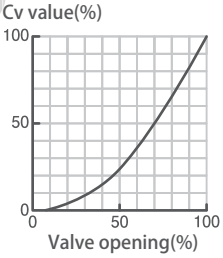

S-type seat Pressure & Temperature rating




M-type seat Pressure & Temperature rating




Flow characteristic

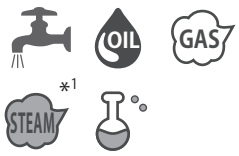



Range ability 100 : 1

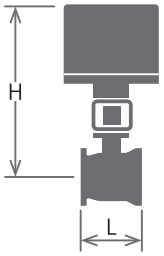
# GS series
Full port / V-port / Standard port, High performance model.



Lightweight and compact, wafer type ball valve. The same body can be connected to not only JIS 10K flange but also JIS 20K flange. Since seat is located at inlet side only, congestion of fluid not occur. By this seal configuration, abnormal pressure rise will not occur too.




Product code : PEX GS 6 0 3 U U G V025 - Option code
ⓐ Actuator model
ⓑ Valve model
ⓒ Voltage
ⓓ Sizing code
ⓔ Piping connection
ⓕ Body material
ⓖ Ball material
ⓗ Seat material
ⓘ Size




Trunnion ball type. Wafer type. Full port / V-port / Standard port type. GS series has flow direction.

| | | |
|---|---|---|
| ⓔ Piping connection | 3 For JIS 10K and 20K flange Wafer type | |
| ⓕ Body material | U SCS14A | |
| ⓖ Ball material | U SCS14A + HCr PLTD | |
| ⓗ Seat material | G Reinforced PTFE ／ K PEEK ／ I API*1 ／ C Reinforced PEEK ／ M SUS316 + Stellite® | |
| Stem seal material | Reinforced PTFE | |
| Allowable Seat Leakage | G K I seat | Bubble-tight |
| | C seat | 0.00001% or less of rated Cv (ANSI B16.104 Class IV 1/1000 or less.) V-port leaks 5 to 8 times. |
| | M seat | 0.01% or less of rated Cv (ANSI B16.104 Class IV or less.) V-port leaks 5 to 8 times. |

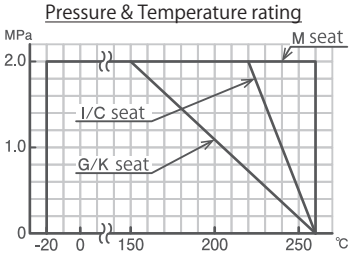
## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | | ⓓ Sizing code | ⓐ Actuator model | | | | | | | | | | Height H*2 (mm) | | | | | | | | Face to face L (mm) | Cv value (V port Cv value) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Compact | | | High torque | | | | | | | | | | | | | | | | | |
| | | | | ON・OFF | | Proportional | ON・OFF | | | | Proportional | | | | | | | | | | | | | |
| | | | | AH1 DM2 DM0 | AM1 AM2 | PAX | AE1 AE2 | AD1 AD2 AD0 | HD1 HD2 HD0 | PHR | AEX | PEX | PDX PHX | | AH1 DM□ | AM□ | PAX | AE□ AEX | PEX | AD□ | HD□ | PDX PHX PHR | | |
| GS | -015 | V015 | 0 | 070 | 070 | 050 | 120 | 300 | 300 | 300 | 120 | 120 | 300 | | 212 | 185 | 212 | 230 | 230 | 300 | 300 | 300 | 40 | 20 (4) |
| | | | 2 | – | – | 120 | – | – | – | – | – | – | – | | – | – | 226 | – | – | – | – | – | | |
| | -020 | V020 | 0 | 070 | 070 | 120 | 120 | 300 | 300 | 300 | 120 | 120 | 300 | | 214 | 187 | 228 | 232 | 232 | 302 | 302 | 302 | 50 | 36 (8) |
| | | | 2 | 180 | 180 | – | 360 | – | – | – | 360 | 300 | – | | 228 | 228 | – | 232 | 232 | – | – | – | | |
| | -025 | V025 | 0 | 180 | 180 | 120 | 120 | 300 | 300 | 300 | 120 | 120 | 300 | | 240 | 240 | 240 | 241 | 241 | 311 | 311 | 311 | 60 | 50 (9) |
| | | | 2 | – | – | | 360 | – | – | – | 360 | 300 | – | | – | – | | 241 | 241 | – | – | – | | |
| | -032 | V032 | 0 | 180 | 180 | | 120 | 300 | 300 | 300 | 120 | 300 | 300 | | 243 | 243 | | 245 | 245 | 315 | 315 | 315 | 70 | 90 (22) |
| | | | 2 | – | – | | 360 | – | – | – | 360 | – | – | | – | – | | 245 | – | – | – | – | | |
| | R040 | | 0 | 180 | 180 | | 120 | 300 | 300 | 300 | 120 | 300 | 300 | | 243 | 243 | | 245 | 245 | 315 | 315 | 315 | 80 | 95 |
| | | | 2 | | | | 360 | – | – | – | 360 | – | – | | | | | 245 | – | – | – | – | | |
| | -040 | | 0 | | | | 360 | 300 | 300 | 300 | 360 | 300 | 300 | | | | | 268 | 268 | 338 | 338 | 338 | 80 | 120 |
| | | | 2 | | | | 700 | 700 | 700 | 700 | 700 | 700 | 700 | | | | | 284 | 284 | 338 | 338 | 338 | | |
| | R050 | | 0 | | | | 360 | 300 | 300 | 300 | 360 | 300 | 300 | | | | | 276 | 276 | 346 | 346 | 346 | 95 | 135 |
| | | | 2 | | | | 700 | 700 | 700 | 700 | 700 | 700 | 700 | | | | | 292 | 292 | 346 | 346 | 346 | | |
| | -050 | | 0 | | | | 360 | 700 | 700 | 700 | 360 | 700 | 700 | | | | | 276 | 292 | 346 | 346 | 346 | 95 | 220 |
| | | | 2 | | | | 700 | – | – | – | 700 | – | – | | | | | 292 | – | – | – | – | | |
| | R065 | | 0 | | | | 360 | 700 | 700 | 700 | 360 | 700 | 700 | | | | | 284 | 300 | 354 | 354 | 354 | 110 | 195 |
| | | | 2 | | | | 700 | – | – | – | 700 | – | – | | | | | 300 | – | – | – | – | | |
| | -065 | | 0 | | | | 700 | 700 | 700 | 700 | 700 | 700 | 700 | | | | | 326 | 326 | 370 | 370 | 370 | 110 | 380 |
| | | | 2 | | | | 02K | – | 02K | 02K | 02K | – | 02K | | | | | 397 | – | – | 392 | 392 | | |
| | R080 | | 0 | | | | 700 | 700 | 700 | 700 | 700 | 700 | 700 | | | | | 326 | 326 | 370 | 370 | 370 | 125 | 410 |
| | | | 2 | | | | 02K | – | 02K | 02K | 02K | – | 02K | | | | | 397 | – | – | 392 | 392 | | |
| | -080 | | 1 | | | | – | – | – | – | – | 700 | – | | | | | – | 333 | – | – | – | 125 | 750 |
| | | | 0 | | | | 700 | 700 | 700 | 700 | 700 | – | 700 | | | | | 333 | – | 377 | 377 | 377 | | |
| | | | 2 | | | | 02K | – | 02K | 02K | 02K | – | 02K | | | | | 404 | – | – | 399 | 399 | | |
| | R100 | | 1 | | | | – | – | – | – | – | 700 | – | | | | | – | 351 | – | – | – | 145 | 430 |
| | | | 0 | | | | 700 | 700 | 700 | 700 | 700 | | 700 | | | | | 351 | | 395 | 395 | 395 | | |
| | | | 2 | | | | 02K | | 02K | 02K | 02K | | 02K | | | | | 422 | | | 417 | 417 | | |
| | R125 | | 0 | | | | 02K | | 02K | 02K | 02K | | 02K | | | | | 451 | | | 446 | 446 | 176 | 900 |
| | | | 2 | | | | 06K | | 06K | 06K | 06K | | 06K | | | | | 499 | | | 487 | 487 | | |
| | R150 | | 1 | | | | 02K | | 02K | 02K | 02K | | 02K | | | | | 469 | | | 464 | 464 | 215 | 1360 |
| | | | 0 | | | | 06K | | 06K | 06K | 06K | | 06K | | | | | 517 | | | 505 | 505 | | |

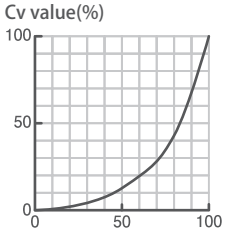
| ⓒ Voltage | DM□ | AM□ AH1 PAX | AE1 AEX | AE2 | PEX | AD1 HD1 | AD2 HD2 | AD0 HD0 | PDX PHX PHR |
|---|---|---|---|---|---|---|---|---|---|
| 1 100/110V AC | | ◎ | ◎ | ◎ | | ◎ | ◎ | | ◎ |
| 2 200/220V AC | | ◎ | ◎ | ◎ | | ◎ | ◎ | | ◎ |
| 6 100 to 240V AC | | | | | ◎ | | | | |
| 0 24V DC | ◎ | | | ○ | ◎ | | ◎ | ◎ | ◎ |
| 3 24V AC | | | | | | | | | ◎ |

◎ Standard ○ Corresponding only some models.

Pressure & Temperature rating




Flow characteristic




Range ability
Full port is 200 : 1
V-port is 50 : 1
Standard port is 100 : 1

Note) When selecting sizing code 1, it is necessary to pay attention to fluid characteristic and pressure. Please contact us for fluid specifications.
Note) When selecting K, I, C or M seat / viscous fluid / solvent, it is necessary to select the sizing of the actuator. Please contact us for fluid specifications.
*1) API seat cannot be used for steam.
*2) If the temperature of the actuator may over the operating range due to heat transfer from the fluid, an insulation option is required. Please note that the product height will change if the insulation option is selected.

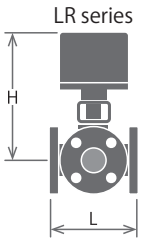
# LR / TR series

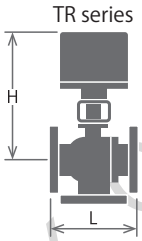
L-shaped full port. LR : Horizontal three-way model. / TR : Vertical three-way model.


For switching the flow direction and for dividing or mixing. Select from horizontal LR series and vertical TR series according to the piping layout.


Product code : AEX LR 1 0 1 T T P -050 - Option code

- ⓐ Actuator model
- ⓑ Valve model
- ⓒ Voltage
- ⓓ Sizing code
- ⓔ Piping connection
- ⓕ Body material
- ⓖ Ball material
- ⓗ Seat material
- ⓘ Size




Floating ball type. Flanged end. Full port type.

| | |
|---|---|
| ⓔ Piping connection | 1 JIS 10K RF Flanged end |
| ⓕ Body material | T SCS13A |
| ⓖ Ball material | T SUS304 / SCS13A |
| ⓗ Seat material | P Reinforced PTFE |
| Stem seal material | Reinforced PTFE + FKM O-ring *1 |

## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model: High torque ON・OFF AE1 AE2 | AD1 AD2 AD0 | HD1 HD2 HD0 | PHR | Proportional AEX | PEX | PDX PHX |
|---|---|---|---|---|---|---|---|---|---|
| LR TR | -020 | 0 | 120 | 300 | 300 | 300 | 120 | 120 | 300 |
| | -025 | 1 | – | – | – | – | – | 120 | – |
| | | 0 | 120 | 300 | 300 | 300 | 120 | 300 | 300 |
| | -040 | 0 | 360 | 300 | 300 | 300 | 360 | 300 | 300 |
| | -050 | 0 | 360 | 700 | 700 | 700 | 360 | 700 | 700 |
| | | 2 | 700 | – | – | – | 700 | – | – |
| | -065 | 0 | 700 | 700 | 700 | 700 | 700 | 700 | 700 |
| | -080 | 0 | 700 | 700 | 700 | – | 700 | | – |
| | | 2 | 02K | | 02K | 02K | 02K | | 02K |
| | -100 | 0 | 02K | | 02K | 02K | 02K | | 02K |

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | Height H*2 (mm) AE□ AEX | PEX | AD□ | HD□ | PDX PHX PHR | Face to face L (mm) | Cv value (Resultant Cv value) |
|---|---|---|---|---|---|---|---|---|---|
| LR TR | -020 | 0 | 210 | 210 | 277 | 277 | 277 | 150 | 24 (10) |
| | -025 | 1 | – | 217 | – | – | – | 170 | 40 (20) |
| | | 0 | 217 | 217 | 284 | 284 | 284 | | |
| | -040 | 0 | 232 | 232 | 299 | 299 | 299 | 200 | 100 (60) |
| | -050 | 0 | 240 | 256 | 307 | 307 | 307 | 230 | 170 (110) |
| | | 2 | 256 | – | – | – | – | | |
| | -065 | 0 | 287 | 287 | 330 | 330 | 330 | 260 | 240 (150) |
| | -080 | 0 | 299 | | 342 | 342 | – | 280 | 380 (240) |
| | | 2 | 357 | | | 364 | 364 | | |
| | -100 | 0 | 383 | | | 390 | 390 | 340 | 680 (440) |

| ⓒ Voltage | AE1 AEX | AE2 | PEX | AD1 HD1 | AD2 HD2 | AD0 HD0 | PDX PHX PHR |
|---|---|---|---|---|---|---|---|
| 1 100/110V AC | ◎ | ◎ | | ◎ | ◎ | | ◎ |
| 2 200/220V AC | ◎ | ◎ | | ◎ | ◎ | | ◎ |
| 6 100 to 240V AC | | | ◎ | | | | |
| 0 24V DC | | ○ | ◎ | | ◎ | ◎ | ◎ |
| 3 24V AC | | | | | | | ◎ |

◎ Standard ○ Corresponding only some models.

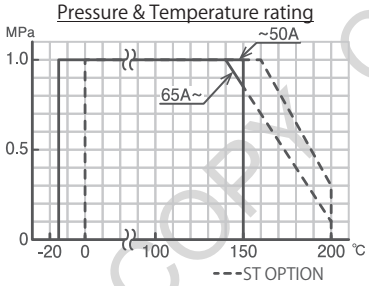
Note) When selecting sizing code 1, it is necessary to pay attention to fluid characteristic and pressure. Please contact us for fluid specifications.

Note) When used for viscous fluid / solvent, it is necessary to select the sizing of the actuator. Please contact us for fluid specifications.

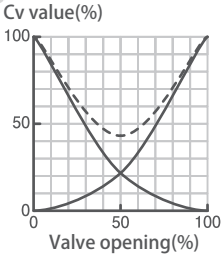
*1) Specify the [ST] option when the fluid is steam. In this case the O-ring material is FKM for steam.

*2) If the temperature of the actuator may over the operating range due to heat transfer from the fluid, an insulation option is required. Please note that the product height will change if the insulation option is selected.

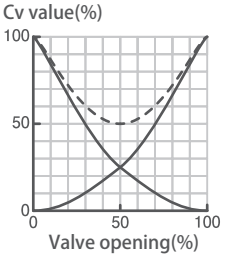
Pressure & Temperature rating



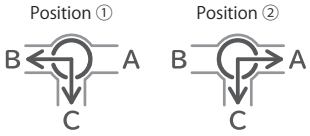

20A flow characteristic




25A flow characteristic

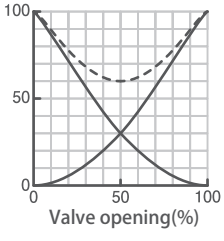



Flow paths

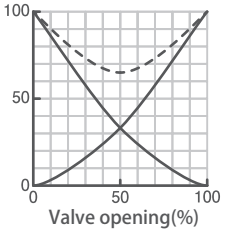



Note)
It should be noted that, if the line pressure of the closed bore is higher than that of the open bores, a small rate of fluid leakage may occur from the closed bore.

40A flow characteristic




50 to 100A flow characteristic

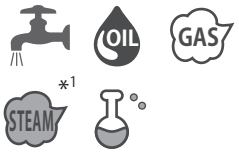



Range ability 20 : 1

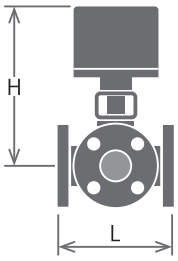
# L3 series L-shaped full port, Horizontal three-way model.



For switching the flow direction and for dividing or mixing. The trunnion structure that supports the ball with a shaft reduces the effect of fluid pressure on the sealing performance. Maintains sealing performance even under low pressure conditions on the flow path side.




Product code : PHX L3 1 0 1 T T G -050 -Option code
ⓐ Actuator model
ⓑ Valve model
ⓒ Voltage
ⓓ Sizing code
ⓔ Piping connection
ⓕ Body material
ⓖ Ball material
ⓗ Seat material
ⓘ Size




Trunnion ball type. Flanged end. Full port type.

| | |
|---|---|
| ⓔ Piping connection | 1 JIS 10K RF Flanged end |
| ⓕ Body material | T SCS13A |
| ⓖ Ball material | T SCS13A |
| ⓗ Seat material | G Reinforced PTFE |
| Stem seal material | PTFE |

## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model: High torque, ON·OFF: AE1 AE2 | AD1 AD2 AD0 | HD1 HD2 HD0 | PHR | Proportional: AEX | PEX | PDX PHX PHR | Height H*2 (mm): AE□ AEX | PEX | AD□ | HD□ | PDX PHX PHR | Face to face L (mm) | Cv value (Resultant Cv value) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L3 | -025 | 1 | – | – | – | – | – | 120 | – | – | 230 | – | – | – | 160 | 40 (20) |
| | | 0 | 120 | 300 | 300 | 300 | 120 | 300 | 300 | 230 | 230 | 297 | 297 | 297 | | |
| | -040 | 0 | 360 | 300 | 300 | 300 | 360 | 300 | 300 | 253 | 253 | 320 | 320 | 320 | 180 | 100 (60) |
| | -050 | 0 | 360 | 700 | 700 | 700 | 360 | 700 | 700 | 260 | 276 | 327 | 327 | 327 | 200 | 170 (110) |
| | | 2 | 700 | – | – | – | 700 | – | – | 276 | – | – | – | – | | |
| | -065 | 0 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 297 | 297 | 340 | 340 | 340 | 240 | 240 (150) |
| | -080 | 0 | 700 | 700 | 700 | 700 | 700 | | 700 | 305 | 348 | 348 | 348 | 348 | 260 | 380 (240) |
| | | 2 | 02K | | 02K | 02K | 02K | | 02K | 363 | | | 370 | 370 | | |
| | -100 | 0 | 02K | | 02K | 02K | 02K | | 02K | 387 | | | 394 | 394 | 330 | 680 (440) |
| | -125 | 1 | 02K | | 02K | – | 02K | | – | 405 | | | 412 | – | 370 | 1080 (680) |
| | | 0 | 06K | | 06K | 06K | 06K | | 06K | 465 | | | 453 | 453 | | |
| | -150 | 0 | 06K | | 06K | 06K | 06K | | 06K | 490 | | | 478 | 478 | 430 | 1620 (1030) |

| ⓒ Voltage | AE1 AEX | AE2 | PEX | AD1 HD1 | AD2 HD2 | AD0 HD0 | PDX PHX PHR |
|---|---|---|---|---|---|---|---|
| 1 100/110V AC | ◎ | ◎ | | ◎ | ◎ | | ◎ |
| 2 200/220V AC | ◎ | ◎ | | ◎ | ◎ | | ◎ |
| 6 100 to 240V AC | | | ◎ | | | | |
| 0 24V DC | | ○ | ◎ | | ◎ | ◎ | ◎ |
| 3 24V AC | | | | | | | ◎ |

◎ Standard ○ Corresponding only some models.

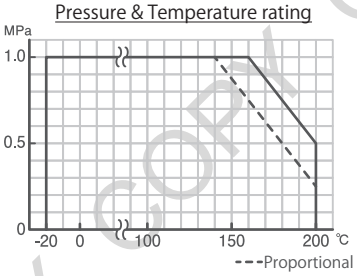
Note) When selecting sizing code 1, it is necessary to pay attention to fluid characteristic and pressure. Please contact us for fluid specifications.

Note) When used for viscous fluid / solvent, it is necessary to select the sizing of the actuator. Please let us know the conditions of use.

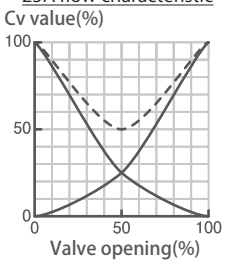
*1) When the fluid is steam, a separate option is required depending on the conditions. Please inform us of the conditions of use.

*2) If the temperature of the actuator may over the operating range due to heat transfer from the fluid, an insulation option is required. Please note that the product height will change if the insulation option is selected.

Pressure & Temperature rating

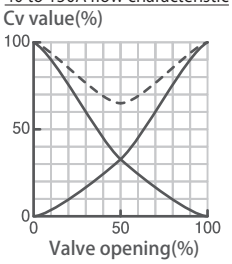



25A flow characteristic



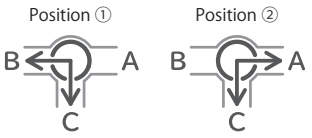

Range ability 30 : 1

40 to 150A flow characteristic



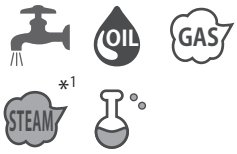

Range ability 30 : 1

Flow paths



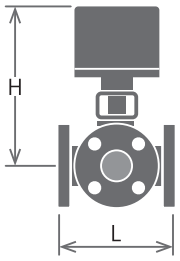
# T3 series T-shaped full port, Horizontal three-way model.

For switching between straight and L direction. The trunnion structure that supports the ball with a shaft reduces the effect of fluid pressure on the sealing performance. Maintains sealing performance even under low pressure conditions on the flow path side.




Product code : AE1 T3 1 0 1 T T G -050 - a - Option code

- ⓐ Actuator model
- ⓑ Valve model
- ⓒ Voltage
- ⓓ Sizing code
- ⓔ Piping connection
- ⓕ Body material
- ⓖ Ball material
- ⓗ Seat material
- ⓘ Size
- ⓙ Flow paths




Trunnion ball type. Flanged end. Full port type.

| | |
|---|---|
| ⓔ Piping connection | 1 JIS 10K RF Flanged end |
| ⓕ Body material | T SCS13A |
| ⓖ Ball material | T SCS13A |
| ⓗ Seat material | G Reinforced PTFE |
| Stem seal material | PTFE |

## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model: High torque ON・OFF: AE1 AE2 | AD1 AD2 AD0 | HD1 HD2 HD0 | PHR | Height H*2 (mm): AE□ | AD□ | HD□ | PHR | Face to face L (mm) | Cv value: L direction | Straight direction |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T3 | -025 | 0 | 120 | 300 | 300 | 300 | 230 | 297 | 297 | 297 | 160 | 26 | 45 |
| | | 2 | 360 | – | – | – | 230 | – | – | – | | | |
| | -040 | 0 | 360 | 300 | 300 | 300 | 253 | 320 | 320 | 320 | 180 | 65 | 129 |
| | | 2 | 700 | 700 | 700 | 700 | 269 | 320 | 320 | 320 | | | |
| | -050 | 0 | 700 | 700 | 700 | 700 | 287 | 330 | 330 | 330 | 200 | 110 | 219 |
| | -065 | 0 | 700 | 700 | 700 | 700 | 297 | 340 | 340 | 340 | 240 | 160 | 300 |
| | -080 | 0 | 02K | | 02K | 02K | 373 | | 380 | 380 | 260 | 260 | 469 |
| | -100 | 0 | 02K | | 02K | 02K | 386 | | 393 | 393 | 330 | 480 | 820 |
| | -125 | 0 | 06K | | 06K | 06K | 477 | | 465 | 465 | 370 | 770 | 1400 |
| | -150 | 0 | 06K | | 06K | 06K | 496 | | 484 | 484 | 430 | 1150 | 2000 |

| ⓒ Voltage | AE1 | AE2 | AD1 HD1 | AD2 HD2 | AD0 HD0 | PHR |
|---|---|---|---|---|---|---|
| 1 100/110V AC | ◎ | ◎ | ◎ | ◎ | | ◎ |
| 2 200/220V AC | ◎ | ◎ | ◎ | ◎ | | ◎ |
| 0 24V DC | | ○ | | ◎ | ◎ | ◎ |
| 3 24V AC | | | | | | ◎ |

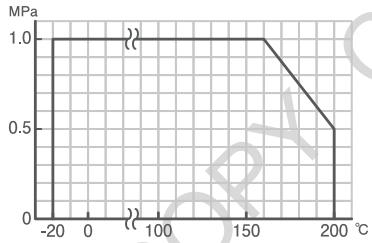
◎Standard ○Corresponding only some models.

Note) When used for viscous fluid / solvent, it is necessary to select the sizing of the actuator. Please let us know the conditions of use.

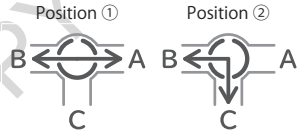
*1) When the fluid is steam, a separate option is required depending on the conditions. Please inform us of the conditions of use.

*2) If the temperature of the actuator may over the operating range due to heat transfer from the fluid, an insulation option is required. Please note that the product height will change if the insulation option is selected.

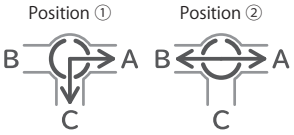
Pressure & Temperature rating



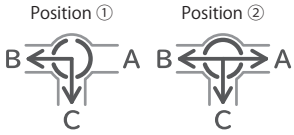

ⓙ Flow paths Code a



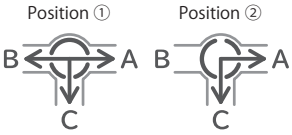

ⓙ Flow paths Code b




ⓙ Flow paths Code c




ⓙ Flow paths Code d




Note)
Enter of the Flow paths code after the Size of the product code.

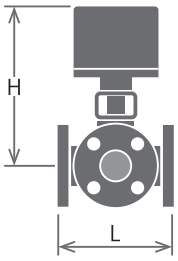
# L2 series L-shaped full port, Horizontal three-way model.



For switching the flow direction and for dividing or mixing. Three types of body materials can be selected according to the fluid and piping material used.


Product code : HD1 L2 1 0 1 T T G -050 -Option code

- ⓐ Actuator model: HD1
- ⓑ Valve model: L2
- ⓒ Voltage: 1
- ⓓ Sizing code: 0
- ⓔ Piping connection: 1
- ⓕ Body material: T
- ⓖ Ball material: T
- ⓗ Seat material: G
- ⓘ Size: -050




Floating ball type. Flanged end. Full port type.

| | | | |
|---|---|---|---|
| ⓔ Piping connection | 1 JIS 10K RF Flanged end | | |
| ⓕ Body material | D FCD400 | T SCS13A | U SCS14A |
| ⓖ Ball material | T SUS304 / SCS13A | | U SUS316 / SCS14A |
| ⓗ Seat material | T N-PTFE ／ G Reinforced PTFE*1 | | |
| Stem seal material | N-PTFE | | |

## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model: High torque ON・OFF: AE1 AE2 | AD1 AD2 AD0 | HD1 HD2 HD0 | PHR | Proportional*1: AEX | PDX PHX | Height H*2 (mm): AE□ AEX | AD□ | HD□ | PDX PHX PHR | Face to face L (mm) | Cv value (Resultant Cv value) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L2 | -020 | 0 | 120 | 300 | 300 | 300 | 120 | 300 | 219 | 285 | 285 | 285 | 150 | 24 (10) |
| | -025 | 0 | 120 | 300 | 300 | 300 | 120 | 300 | 229 | 296 | 296 | 296 | 170 | 40 (20) |
| | | 2 | 360 | – | – | 700 | 360 | 700 | 229 | – | – | 296 | | |
| | -040 | 0 | 360 | 300 | 300 | 300 | 360 | 300 | 248 | 321 | 321 | 321 | 200 | 100 (60) |
| | | 2 | – | 700 | 700 | 700 | – | 700 | – | 321 | 321 | 321 | | |
| | -050 | 0 | 360 | 700 | 700 | 700 | – | 700 | 256 | 329 | 329 | 329 | 230 | 170 (110) |
| | | 2 | 700 | – | – | – | 700 | – | 272 | – | – | – | | |
| | -065 | 0 | 700 | 700 | 700 | 700 | 700 | 700 | 300 | 368 | 368 | 368 | 260 | 240 (150) |
| | | 2 | 02K | | 02K | 02K | 02K | 02K | 395 | | 390 | 390 | | |
| | -080 | 0 | 02K | | 02K | 02K | 02K | 02K | 405 | | 400 | 400 | 280 | 380 (240) |
| | -100 | 0 | 02K | | 02K | 02K | 02K | 02K | 441 | | 436 | 436 | 340 | 680 (440) |

| ⓒ Voltage | AE1 AEX | AE2 | AD1 HD1 | AD2 HD2 | AD0 HD0 | PDX PHX PHR |
|---|---|---|---|---|---|---|
| 1 100/110V AC | ◎ | ◎ | ◎ | ◎ | | ◎ |
| 2 200/220V AC | ◎ | ◎ | ◎ | ◎ | | ◎ |
| 0 24V DC | | ○ | | ◎ | ◎ | ◎ |
| 3 24V AC | | | | | | ◎ |

◎ Standard ○ Corresponding only some models.

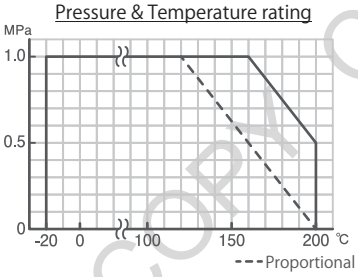
Note) When selecting G seat / viscous fluid / solvent, it is necessary to select the sizing of the actuator. Please contact us for fluid specifications.

Note) L2 series is a semi-standard product. Please check the delivery date.

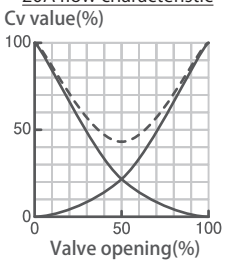
*1) When installing a proportional control actuator, select the G seat.

*2) If the temperature of the actuator may over the operating range due to heat transfer from the fluid, an insulation option is required. Please note that the product height will change if the insulation option is selected.

Pressure & Temperature rating

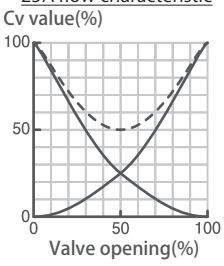



20A flow characteristic



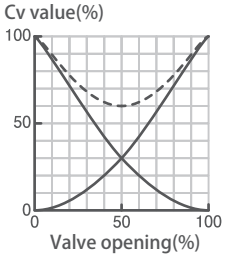

Range ability 20 : 1

25A flow characteristic



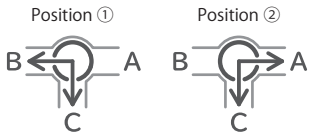

Range ability 20 : 1

40 to 100A flow characteristic




Range ability 20 : 1

Flow paths




Note)
It should be noted that, if the line pressure of the closed bore is higher than that of the open bores, a small rate of fluid leakage may occur from the closed bore.

# L4 / T4 series

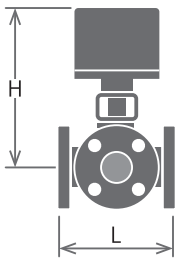
Horizontal three-way model. L4 : L-shaped full port. / T4 : T-shaped full port.

A three-way valve with a four-sided seat structure. L4 type is L-type port, T4 type is T-type port. Only fluorine resin is used for seal parts. It can be used for fluids that cannot use rubber.*2


Product code : AE1 L4 1 0 1 D T T -065 - Option code

Product code : HD1 T4 2 2 1 U U G -100 - a - Option code

ⓐ Actuator model
ⓑ Valve model
ⓒ Voltage
ⓓ Sizing code
ⓔ Piping connection
ⓕ Body material
ⓖ Ball material
ⓗ Seat material
ⓘ Size
ⓙ Flow paths




Four-sided seat structure type.*1 Flanged end. Full port type.

| | | | |
|---|---|---|---|
| ⓔ Piping connection | 1 JIS 10K RF Flanged end | | |
| ⓕ Body material | D FCD400 / FCD-S | T SCS13A / SCS13 | U SCS14A / SCS14 |
| ⓖ Ball material | T SCS13A / SCS13 | | U SCS14A / SCS14 |
| ⓗ Seat material*2 | T N-PTFE ／ G Reinforced PTFE | | |
| Stem seal material | N-PTFE / PTFE | | |

## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model: High torque ON・OFF AE1 AE2 | AD1 AD2 AD0 | HD1 HD2 HD0 | Height H*3 (mm) AE□ | AD□ | HD□ | Face to face L (mm) | Cv value L4 | T4 L direction | T4 Straight direction |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L4 T4 | -025 | 0 | 360 | 300 | 300 | 241 | 314 | 314 | 160 | 26 | 26 | 45 |
| | -040 | 0 | 360 | 700 | 700 | 255 | 328 | 328 | 180 | 65 | 65 | 129 |
| | -050 | 0 | 700 | 700 | 700 | 295 | 364 | 364 | 200 | 110 | 110 | 219 |
| | | 2 | 02K | | 02K | 391 | | 386 | | | | |
| | -065 | 0 | 02K | | 02K | 402 | | 397 | 240 | 160 | 160 | 300 |
| | -080 | 0 | 02K | | 02K | 430 | | 425 | 260 | 260 | 260 | 469 |
| | -100 | 0 | 02K | | 02K | 445 | | 440 | 330 | 480 | 480 | 820 |
| | | 2 | 06K | | 06K | 450 | | 438 | | | | |
| | -125 | 0 | 06K | | 06K | 483 | | 471 | 430 | 770 | 770 | 1400 |

| ⓒ Voltage | AE1 | AE2 | AD1 HD1 | AD2 HD2 | AD0 HD0 |
|---|---|---|---|---|---|
| 1 100/110V AC | ◎ | ◎ | ◎ | ◎ | |
| 2 200/220V AC | ◎ | ◎ | ◎ | ◎ | |
| 0 24V DC | | ○ | | ◎ | ◎ |

◎Standard ○Corresponding only some models.

Note) When selecting G seat / viscous fluid / solvent, it is necessary to select the sizing of the actuator. Please contact us for fluid specifications.

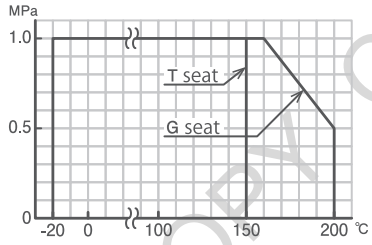
Note) L4 / T4 series is a semi-standard product. Please check the delivery date.

*1) 125A is three-sided seat structure and trunnion ball type.

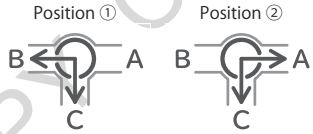
*2) 125A has an O-ring attached to the back of the seat. The O-ring material is NBR for FCD-S body and FKM for SCS13 / SCS14 body.

*3) If the temperature of the actuator may over the operating range due to heat transfer from the fluid, an insulation option is required. Please note that the product height will change if the insulation option is selected.

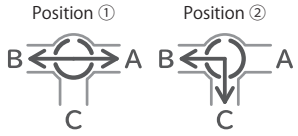
Pressure & Temperature rating



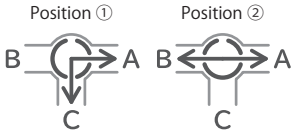

L4 series Flow paths



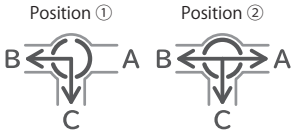

ⓙ T4 series Flow paths Code a



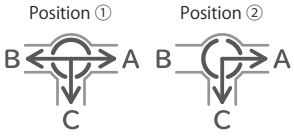

ⓙ T4 series Flow paths Code b




ⓙ T4 series Flow paths Code c




ⓙ T4 series Flow paths Code d




Note)
For T4 series, enter of the Flow paths code after the Size of the product code.
It should be noted that, if the line pressure of the closed bore is higher than that of the open bores, a small rate of fluid leakage may occur from the closed bore.

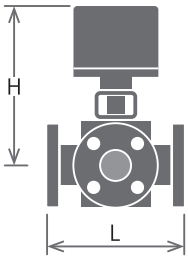
# E5 / L5 series Five-way model. E5 : Threaded end Rc type. / L5 : Flanged end type.

Five-way motorized valve ideal for filtration systems such as hot springs and swimming pools. Three processes, filtration, backwashing and washing, can be switched with just one valve.

Product code : AE3 E5 1 0 5 T T T -025 - L - Option code

Product code : HD3 L5 2 0 2 T T T -080 - R - Option code

ⓐ Actuator model
ⓑ Valve model
Ⓒ Voltage
ⓓ Sizing code
ⓔ Piping connection
ⓕ Body material
ⓖ Ball material
ⓗ Seat material
ⓘ Size
ⓙ Flow paths




Five-way ball valbe

| | | | |
|---|---|---|---|
| ⓑ Valve model | E5 | L5 | |
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 | 2 JIS 5K FF Flanged end | 1 JIS 10K RF Flanged end |
| ⓕ Body material | T SCS13A | | |
| ⓖ Ball material | T SCS13A | | |
| ⓗ Seat material | T PTFE | | |
| Stem seal material | EPDM O-ring*1 | | |

## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model High torque ON・OFF AE3 | AD3 | HD3 | Height H (mm) AE3 | AD3 | HD3 | Face to face L (mm) | Cv value |
|---|---|---|---|---|---|---|---|---|---|---|
| E5 | -025 | 0 | 120 | – | – | 198 | – | – | 132 | 7.7 |
| L5 | -032 | 0 | 360 | 300 | – | 229 | 288 | – | 185 | 15 |
| | -040 | 0 | 360 | 300 | – | 229 | 288 | – | 185 | 15 |
| | -050 | 0 | 700 | 700 | – | 248 | 291 | – | 211 | 36 |
| | -065 | 0 | 700 | 700 | – | 258 | 301 | – | 240 | 58 |
| | -080 | 0 | | | 02K | | | 332 | 296 | 86 |
| | -100 | 0 | | | 02K | | | 337 | 360 | 133 |
| | -125 | 0 | | | 06K | | | 395 | 430 | 221 |

| Ⓒ Voltage | AE3 | AD3 | HD3 |
|---|---|---|---|
| 1 100/110V AC | ◎ | ◎ | ◎ |
| 2 200/220V AC | ◎ | ◎ | ◎ |

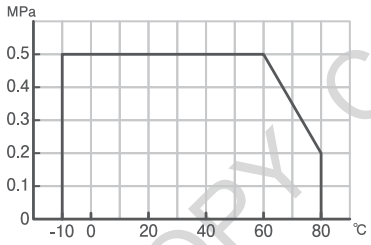
◎ Standard

Note) When using with hot spring water, the electro-less nickel plating option [TN] may be required. Depending on the composition and concentration of the hot spring, corrosion may occur even with the plating option.

Note) If you would like to use the forced drainage process (03 option) or the process to bypass the filter (04 option), please contact us separately.

*1) An NBR O-ring is installed on the outside of the stem seal as a dust seal.

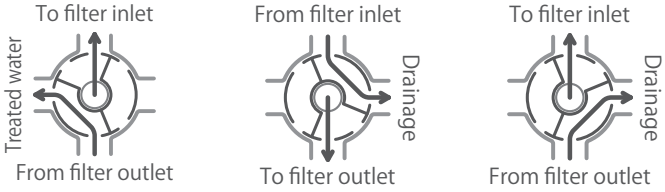
Pressure & Temperature rating



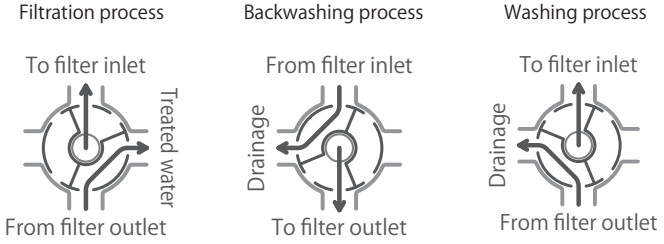

Control unit FCU-103B

Filtration can be easily automated with control unit FCU-103B which has a built-in weekly programmer.

ⓙ Flow paths L




ⓙ Flow paths R



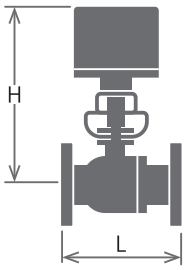

Note)
For E5 / L5 series, enter of the Flow paths code (L or R) after the Size of the product code.

# BL series Full port, PFA lining model.

The inside of the valve is lined with PFA resin. A lining ball valve with excellent corrosion resistance. Can be used for highly corrosive fluids that cannot be withstood by metal valves.


Product code : AE1 BL 1 0 1 T F T -050 - Option code

- ⓐ Actuator model
- ⓑ Valve model
- ⓒ Voltage
- ⓓ Sizing code
- ⓔ Piping connection
- ⓕ Body material
- ⓖ Ball material
- ⓗ Seat material
- ⓘ Size




Floating ball type. Flanged end. Full port type.

| | | |
|---|---|---|
| ⓔ Piping connection | 1 JIS 10K RF Flanged end | |
| ⓕ Body material | T SCS13A + PFA | S SCPH2+ PFA |
| ⓖ Ball material | F SCS13A+ PFA | |
| ⓗ Seat material | T PTFE | |
| Stem seal material | PTFE | |

## Actuator type and product dimensions

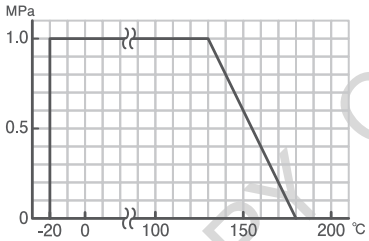
| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model: High torque ON・OFF: AE1 AE2 | AD1 AD2 AD0 | HD1 HD2 HD0 | Height H (mm): AE□ | AD□ | HD□ | Face to face L (mm) | ○ : Semi-standard △ : Mede to order × : Not selectable: SCS13A Body | SCPH2 Body |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BL | -015 | 0 | 120 | 300 | 300 | 254 | 321 | 321 | 140 | ○ | ○ |
| | -020 | 0 | 120 | 300 | 300 | 259 | 326 | 326 | 152 | ○ | ○ |
| | -025 | 0 | 360 | 300 | 300 | 274 | 341 | 341 | 165 | ○ | △ |
| | -040 | 0 | 360 | 700 | 700 | 290 | 357 | 357 | 191 | ○ | △ |
| | -050 | 0 | 700 | 700 | 700 | 336 | 379 | 379 | 216 | ○ | △ |
| | -065 | 0 | 700 | 700 | 700 | 373 | 416 | 416 | 240 | ○ | ○ |
| | -080 | 0 | 02K | | 02K | 439 | | 446 | 250 | ○ | △ |
| | -100 | 0 | 02K | | 02K | 461 | | 468 | 280 | ○ | ○ |
| | -150 | 0 | 06K | | 06K | 589 | | 577 | 267 | ○ | △ |

Note) BL series is a semi-standard product. Please check the delivery date.

| ⓒ Voltage | AE1 | AE2 | AD1 HD1 | AD2 HD2 | AD0 HD0 |
|---|---|---|---|---|---|
| 1 100/110V AC | ◎ | ◎ | ◎ | ◎ | |
| 2 200/220V AC | ◎ | ◎ | ◎ | ◎ | |
| 0 24V DC | | | | ◎ | ◎ |

◎ Standard ○ Corresponding only some models.

Pressure & Temperature rating

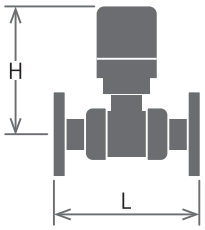


# PA series Full port, All plastic model.



All Plastic ball valve with excellent chemical resistance. Selectable from four types of materials and three types of piping connection methods according to the piping to be used.

Product code : AE1 PA 1 0 1 P P E -025 - Option code
- ⓐ Actuator model: AE1
- ⓑ Valve model: PA
- ⓒ Voltage: 1
- ⓓ Sizing code: 0
- ⓔ Piping connection: 1
- ⓕ Body material: P
- ⓖ Ball material: P
- ⓗ Stem seal material: E
- ⓘ Size: -025




Floating ball type. PA series with 50A or less has a flow direction.

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ⓔ Piping connection | 1 JIS 10K FF Flanged end | | | | 5 Threaded end Rc JIS B 0203 | | | | 7 Socket end | | | | | | |
| ⓕ Body material | P PVC | H C-PVC | R PVDF | Q PP | P PVC | H C-PVC | R PVDF | Q PP | P PVC | H C-PVC | Q PP | | | | |
| ⓖ Ball material | P PVC | H C-PVC | R PVDF | Q PP | P PVC | H C-PVC | R PVDF | Q PP | P PVC | H C-PVC | Q PP | | | | |
| ⓗ Stem seal material | E EPDM O-ring ／ V FKM O-ring | | | | | | | | | | | | | | |
| Seat material | PTFE | | | | | | | | | | | | | | |

## Actuator type and product dimensions

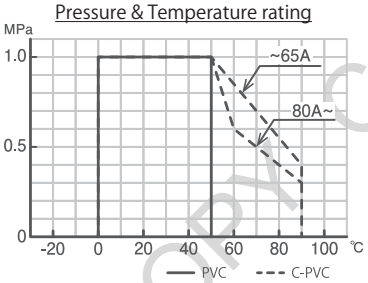
| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model Mini ON・OFF CM1 CM2 | Compact ON・OFF AH1 AM1 AM2 | High torque ON・OFF AE1 AE2 | Height H (mm) CM□ | AH1 | AM□ | AE□ | Face to face L (mm) Flanged end PVC C-PVC | Flanged end PVDF | Flanged end PP | Threaded end PVC C-PVC | Threaded end PVDF | Threaded end PP | Socket end PVC C-PVC | Socket end PP | Cv value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PA | -015 | 0 | 030 | 030 | 120 | 110 | 170 | 143 | 195 | 143 | 143 | 143 | 102 | 100 | 100 | 109 | 108 | 14 |
| | -020 | 0 | 070 | 070 | 120 | 137 | 176 | 149 | 202 | 172 | 172 | 172 | 120 | 119 | 119 | 128 | 126 | 29 |
| | -025 | 0 | 070 | 070 | 120 | 144 | 183 | 156 | 209 | 187 | 187 | 187 | 131 | 130 | 130 | 145 | 141 | 47 |
| | -032 | 0 | 070 | 070 | 120 | 161 | 200 | 173 | 218 | 190 | 190 | 190 | 150 | 146 | 146 | 162 | – | 72 |
| | -040 | 0 | | 180 | 120 | | 234 | 234 | 226 | 212 | 212 | 212 | 163 | 160 | 160 | 189 | 171 | 155 |
| | -050 | 0 | | | 300 | | | | 238 | 234 | 234 | 234 | 197 | 194 | 194 | 220 | 192 | 190 |
| | -065 | 0 | | | 300 | | | | 258 | 261 | 256 | 257 | 215 | 212 | 213 | 273 | 219 | 365 |
| | | 2 | | | 600 | | | | 274 | | | | | | | | | |
| | -080 | 0 | | | 600 | | | | 283 | 306 | 302 | 305 | 265 | 261 | 264 | 316 | 257 | 410 |
| | -100 | 0 | | | 600 | | | | 324 | 374 | 369 | 374 | 362 | 357 | 362 | 419 | 341 | 680 |
| | | 2 | | | 02K | | | | 373 | | | | | | | | | |

| ⓒ Voltage | CM□ | AM□ AH1 | AE1 | AE2 |
|---|---|---|---|---|
| 1 100/110V AC | ◎ | ◎ | ◎ | ◎ |
| 2 200/220V AC | ◎ | ◎ | ◎ | ◎ |

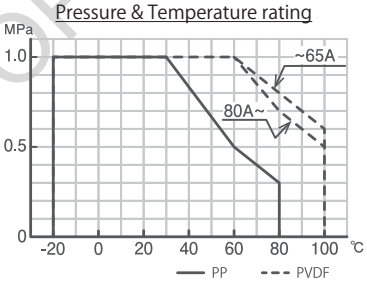
◎ Standard

Note) PVDF / PP body model is a semi-standard product. Please check the delivery date.

Pressure & Temperature rating




Pressure & Temperature rating

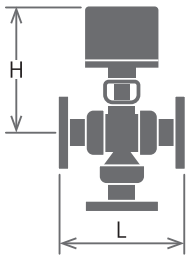


# PL series L-shaped full port. Vertical three-way model.

All Plastic Three-way ball valve with excellent chemical resistance. Selectable from four types of materials and three types of piping connection methods according to the piping to be used.

Product code : AE1 PL 1 0 1 P P E -025 - Option code

- ⓐ Actuator model
- ⓑ Valve model
- ⓒ Voltage
- ⓓ Sizing code
- ⓔ Piping connection
- ⓕ Body material
- ⓖ Ball material
- ⓗ Stem seal material
- ⓘ Size




Floating ball type.

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ⓔ Piping connection | 1 JIS 10K FF Flanged end | | | | 5 Threaded end Rc JIS B 0203 | | | | 7 Socket end | | | | | | |
| ⓕ Body material | P PVC | H C-PVC | R PVDF | Q PP | P PVC | H C-PVC | R PVDF | Q PP | P PVC | H C-PVC | Q PP | | | | |
| ⓖ Ball material | P PVC | H C-PVC | R PVDF | Q PP | P PVC | H C-PVC | R PVDF | Q PP | P PVC | H C-PVC | Q PP | | | | |
| ⓗ Stem seal material | E EPDM O-ring ／ V FKM O-ring | | | | | | | | | | | | | | |
| Seat material | PTFE | | | | | | | | | | | | | | |

## Actuator type and product dimensions

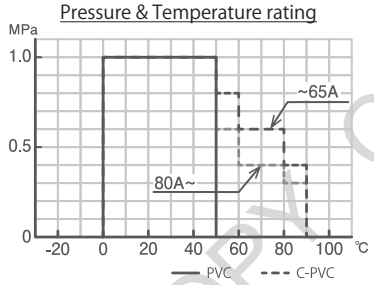
| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model Mini ON・OFF CM1 CM2 | Compact ON・OFF AH1 AM1 AM2 | High torque ON・OFF AE1 AE2 | Height H (mm) CM□ | AH1 | AM□ | AE□ | Face to face L (mm) Flanged end PVC C-PVC | PVDF | PP | Threaded end PVC C-PVC | PVDF | PP | Socket end PVC C-PVC | PP | Cv value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PL | -015 | 0 | 070 | 070 | 120 | 131 | 170 | 143 | 195 | 143 | 143 | 143 | 102 | 102 | 102 | 108 | 108 | 6.3 |
| | -020 | 0 | 070 | 070 | 120 | 137 | 176 | 149 | 202 | 172 | 172 | 172 | 120 | 120 | 120 | 128 | 126 | 8.5 |
| | -025 | 0 | 070 | 070 | 120 | 144 | 183 | 156 | 209 | 187 | 187 | 187 | 131 | 131 | 131 | 145 | 141 | 20 |
| | -032 | 0 | | 180 | 120 | | 234 | 234 | 226 | 212 | 212 | 212 | 163 | 163 | 163 | 174 | – | 27 |
| | -040 | 0 | | 180 | 120 | | 234 | 234 | 226 | 212 | 212 | 212 | 163 | 163 | 163 | 189 | 171 | 36 |
| | -050 | 0 | | | 300 | | | | 238 | 234 | 234 | 234 | 197 | 197 | 197 | 220 | 192 | 45 |
| | -065 | 0 | | | 600 | | | | 283 | 304 | 304 | 304 | 264 | 264 | 264 | 316 | 264 | 84 |
| | -080 | 0 | | | 600 | | | | 283 | 304 | 304 | 304 | 264 | 264 | 264 | 316 | 258 | 99 |
| | -100 | 0 | | | 600 | | | | 324 | 372 | 372 | 372 | 360 | 360 | 360 | 418 | 340 | 200 |
| | | 2 | | | 02K | | | | 373 | | | | | | | | | |

| ⓒ Voltage | CM□ | AM□ AH1 | AE1 | AE2 |
|---|---|---|---|---|
| 1 100/110V AC | ◎ | ◎ | ◎ | ◎ |
| 2 200/220V AC | ◎ | ◎ | ◎ | ◎ |

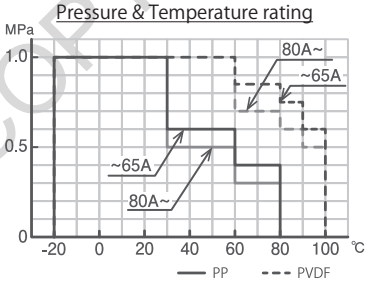
◎ Standard

Note) PVDF / PP body model is a semi-standard product. Please check the delivery date.

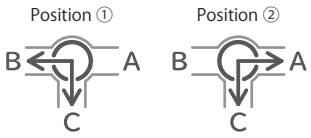
Pressure & Temperature rating




Pressure & Temperature rating




Flow paths




Note)
It should be noted that, if the line pressure of the closed bore is higher than that of the open bores, a small rate of fluid leakage may occur from the closed bore.

# LP / TP series

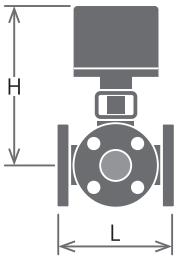
Horizontal three-way model. LP : Standard L-shaped port. / TP : Standard T-shaped port.

A three-way valve with a four-sided seat structure. All Plastic ball valve with excellent chemical resistance. LP type is L-type port, TP type is T-type port.

Product code : AM1 LP 1 0 1 P P E -020 - Option code

Product code : AE1 TP 2 0 1 P P V -040 - a - Option code

ⓐ Actuator model
ⓑ Valve model
Ⓒ Voltage
ⓓ Sizing code
ⓔ Piping connection
ⓕ Body material
ⓖ Ball material
ⓗ Stem seal material
ⓘ Size
ⓙ Flow paths




Four-sided seat structure type. Standard port type.

| | | | |
|---|---|---|---|
| ⓔ Piping connection | 1 JIS 10K FF Flanged end | 5 Threaded end Rc JIS B 0203 | 7 Socket end |
| ⓕ Body material | P PVC | | |
| ⓖ Ball material | P PVC | | |
| ⓗ Stem seal material | E EPDM O-ring ／ V FKM O-ring | | |
| Seat material | PTFE | | |

## Actuator type and product dimensions

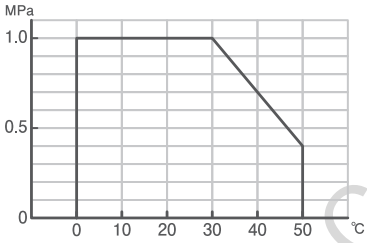
| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model: Compact ON・OFF AH1 | Compact ON・OFF AM1 AM2 | High torque ON・OFF AE1 AE2 |
|---|---|---|---|---|---|
| LP TP | -015 | 0 | 070 | 070 | 120 |
| | -020 | 0 | 070 | 070 | 120 |
| | -025 | 0 | 180 | 180 | 120 |
| | -040 | 0 | | | 300 |
| | -050 | 0 | | | 300 |

| Height H (mm) AH1 | AM□ | AE□ | Face to face L (mm) Flanged end | Threaded end | Socket end | Cv value LP | TP L direction | TP Straight direction |
|---|---|---|---|---|---|---|---|---|
| 168 | 141 | 204 | 163 | 118 | 129 | 5 | 4 | 7 |
| 172 | 145 | 208 | 200 | 134 | 151 | 10 | 8 | 14 |
| 202 | 202 | 224 | 221 | 156 | 175 | 16 | 14 | 24 |
| | | 235 | 272 | 203 | 232 | 38 | 30 | 50 |
| | | 243 | 306 | 225 | 260 | 56 | 45 | 80 |

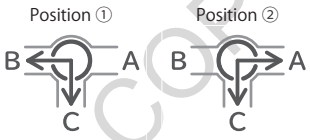
| Ⓒ Voltage | AM□ AH1 | AE1 | AE2 |
|---|---|---|---|
| 1 100/110V AC | ◎ | ◎ | ◎ |
| 2 200/220V AC | ◎ | ◎ | ◎ |

◎ Standard

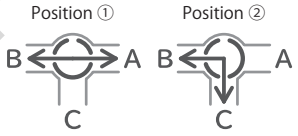
Pressure & Temperature rating



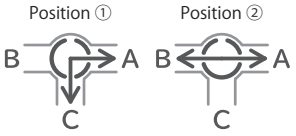

LP series Flow paths



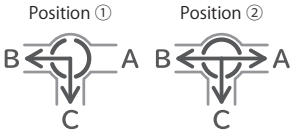

ⓙ TP series Flow paths Code a



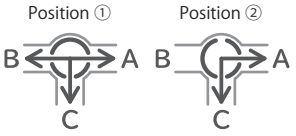

ⓙ TP series Flow paths Code b




ⓙ TP series Flow paths Code c




ⓙ TP series Flow paths Code d




Note)
For TP series, enter of the Flow paths code after the Size of the product code.
It should be noted that, if the line pressure of the closed bore is higher than that of the open bores, a small rate of fluid leakage may occur from the closed bore.

## MEMO

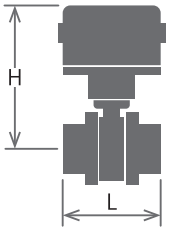
# Z series

Rubber seat small size three piece body butterfly valve.

For various purposes mini butterfly valve. PPS resin discs with excellent corrosion resistance. With a three piece main body structure with excellent maintainability, the main body can be removed and maintained with the cap left on the pipe.


Product code : CMX Z- 1 0 5 T U E -025 - Option code

- ⓐ Actuator model: CMX
- ⓑ Valve model: Z-
- ⓒ Voltage: 1
- ⓓ Sizing code: 0
- ⓔ Piping connection: 5
- ⓕ Body material: T
- ⓖ Cap material: U
- ⓗ Seat material: E
- ⓘ Size: -025




Concentric type butterfly valve

| | | | |
|---|---|---|---|
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 | 7 Socket end | |
| ⓕ Body material | T SCS13A | | |
| ⓖ Cap material | U SCS14A | P PVC*2 | H C-PVC |
| ⓗ Seat material | E EPDM*1*2 ／ B NBR ／ V FKM | | |
| Disk material | PPS | | |
| Stem seal material | O-ring of the same material as the seat | | |

## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Mini | | | | | | Compact | | | High torque | |
| | | | ON・OFF | | | | Proportional | | ON・OFF | | Proportional | ON・OFF | Proportional |
| | | | CA1 | PM1 | CD2 | CM1 CM2 | CMX DC power | CMX AC power | AH1 DM2 DM0 | AM1 AM2 | PAX | AE1 AE2 | AEX PEX |
| Z- | -015 | 0 | 015 | 030 | 030 | 030 | 015 | 030 | 030 | 030 | 050 | 120 | 120 |
| | | 2 | – | – | – | – | – | – | 070 | – | – | – | – |
| | -020 | 0 | 015 | 030 | 030 | 030 | 015 | 030 | 030 | 030 | 050 | 120 | 120 |
| | | 2 | | – | – | – | – | – | 070 | – | – | – | – |
| | -025 | 0 | | 030 | 030 | 030 | – | 030 | 030 | 030 | 050 | 120 | 120 |
| | | 2 | | – | – | – | 070 | – | 070 | – | – | – | – |
| | -032 | 0 | | 030 | 030 | 030 | – | 030 | 030 | 030 | 050 | 120 | 120 |
| | | 2 | | | – | – | 070 | – | 070 | – | – | – | – |
| | -040 | 0 | | | 070 | 070 | 070 | 070 | 070 | 070 | 120 | 120 | 120 |
| | -050 | 0 | | | 070 | 070 | 070 | 070 | 070 | 070 | 120 | 120 | 120 |

| Height H (mm) | | | | | | | | | | | Face to face L(mm) | | Cv value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CA1 | PM1 | CD2 | CM□ | CMX | DM2 | AH1 DM0 | AM□ | PAX | AE□ AEX PEX | | Threaded | Socket | |
| 100 | 106 | 97 | 97 | 97 | 129 | 156 | 129 | 156 | 192 | | 59 | 65 | 7 |
| – | – | – | – | – | 156 | 156 | – | – | – | | | | |
| 103 | 109 | 100 | 100 | 100 | 132 | 159 | 132 | 159 | 195 | | 66 | 75 | 19 |
| | – | – | – | – | 159 | 159 | – | – | – | | | | |
| | 113 | 104 | 104 | 104 | 137 | 164 | 137 | 164 | 200 | | 78 | 91 | 28 |
| | – | – | – | 125 | 164 | 164 | – | – | – | | | | |
| | 113 | 104 | 104 | 104 | 137 | 164 | 137 | 164 | 200 | | 87 | 96 | 28 |
| | | – | – | 125 | 164 | 164 | – | – | – | | | | |
| | | 160 | 137 | 137 | 176 | 176 | 149 | 190 | 212 | | 95 | 126 | 86 |
| | | 160 | 137 | 137 | 176 | 176 | 149 | 190 | 212 | | 109 | 138 | 86 |

| ⓒ Voltage | CA1 | PM1 CM□ | CD2 | CMX | DM□ | AM□ AH1 PAX | AE1 AEX | AE2 | PEX |
|---|---|---|---|---|---|---|---|---|---|
| 1 100V AC 100/110V AC | ◎ | ◎ | | ◎ | | ◎ | ◎ | ◎ | |
| 2 200V AC 200/220V AC | ◎ | ◎ | | ◎ | | ◎ | ◎ | ◎ | |
| 6 100 to 240V AC | | | | | | | | | ◎ |
| 0 24V DC | | | ◎ | ○ | ◎ | | | ◎ | ◎ |
| 4 12V DC | | | ○ | | | | | | |

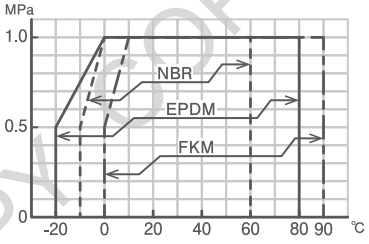
◎ Standard ○ Corresponding only some models.

Note) When used in hot water supply lines or in fluids containing chlorine, EPDM and NBR may deteriorate prematurely depending on conditions.

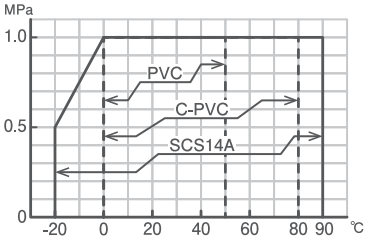
*1) EPDM cannot be used for mineral oil and plant oil.

*2) When using in seawater, please order a combination of PVC cap and EPDM seat.

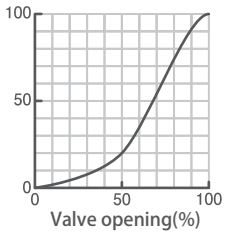
Seat material Pressure & Temperature rating




Cap material Pressure & Temperature rating




Flow characteristic




Range ability 30 : 1

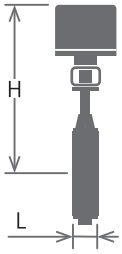
# FE series

Rubber seat butterfly valve.

As a three-dimensional 360° spherical disk, it is stably worked on friction face of seat when operating and its life was also largely improved. It is a thin disc and flat seat, minimized fluid resistance.


Product code : AE1 FE 1 0 1 L T E -100 - Option code

- ⓐ Actuator model
- ⓑ Valve model
- ⓒ Voltage
- ⓓ Sizing code
- ⓔ Piping connection
- ⓕ Body material
- ⓖ Disk material
- ⓗ Seat material
- ⓘ Size




Concentric type butterfly valve

| | |
|---|---|
| ⓔ Piping connection | 1 For JIS 10K flange Wafer type |
| Face to face | JIS B 2002 Series No.46 |
| ⓕ Body material | L ADC12 |
| ⓖ Disk material | T SCS13A |
| ⓗ Seat material | E EPDM*1 ／ B NBR |
| Stem seal material | The stem is sealed with a sheet. The O-ring (NBR) is installed as a dust seal. |

## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model: High torque ON・OFF AE1 AE2 | AD1 AD2 AD0 | HD1 HD2 HD0 | High torque Proportional AEX | PDX PHX |
|---|---|---|---|---|---|---|---|
| FE | -040 | 0 | 300 | 300 | 300 | 360 | 300 |
| | -050 | 0 | 300 | 300 | 300 | 360 | 300 |
| | -065 | 0 | 300 | 300 | 300 | 360 | 300 |
| | -080 | 0 | 600 | 700 | 700 | 700 | 700 |
| | -100 | 0 | 600 | 700 | 700 | 700 | 700 |
| | -125 | 1 | – | 700 | 700 | – | 700 |
| | | 0 | 02K | | 02K | 02K | 02K |
| | -150 | 0 | 02K | | 02K | 02K | 02K |
| | -200 | 0 | 02K | | 02K | 02K | 02K |
| | | 2 | 06K | | 06K | 06K | 06K |
| | -250 | 0 | 06K | | 06K | 06K | 06K |
| | -300 | 0 | 06K | | 06K | 06K | 06K |

| ⓑ Valve model | ⓘ Size (A) | Height H*2 (mm) AE□ AEX | AD□ | HD□ | PDX PHX | Face to face L (mm) | Cv value |
|---|---|---|---|---|---|---|---|
| FE | -040 | 280 | 347 | 347 | 347 | 33 | 101 |
| | -050 | 295 | 362 | 362 | 362 | 43 | 236 |
| | -065 | 305 | 372 | 372 | 372 | 46 | 313 |
| | -080 | 331 | 382 | 382 | 382 | 46 | 469 |
| | -100 | 346 | 397 | 397 | 397 | 52 | 777 |
| | -125 | – | 417 | 417 | 417 | 56 | 1251 |
| | | 432 | | 439 | 439 | | |
| | -150 | 447 | | 454 | 454 | 56 | 2372 |
| | -200 | 477 | | 484 | 484 | 60 | 4480 |
| | | 537 | | 525 | 525 | | |
| | -250 | 575 | | 563 | 563 | 68 | 6830 |
| | -300 | 611 | | 599 | 599 | 78 | 9280 |

| ⓒ Voltage | AE1 AEX | AE2 | AD1 HD1 | AD2 HD2 | AD0 HD0 | PDX PHX |
|---|---|---|---|---|---|---|
| 1 100/110V AC | ◎ | ◎ | ◎ | ◎ | | ◎ |
| 2 200/220V AC | ◎ | ◎ | ◎ | ◎ | | ◎ |
| 0 24V DC | | | | ◎ | ◎ | ◎ |
| 3 24V AC | | | | | | ◎ |

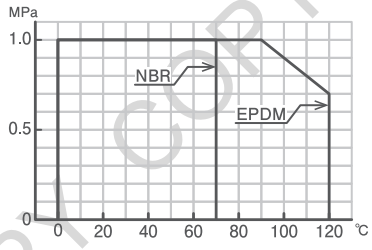
◎ Standard

Note) When selecting sizing code 1, it is necessary to pay attention to fluid characteristic and pressure. Please contact us for fluid specifications.

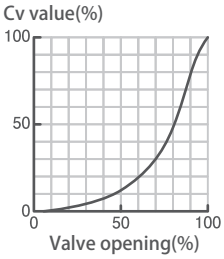
Note) When used in hot water supply lines or in fluids containing chlorine, EPDM and NBR may deteriorate prematurely depending on conditions.

*1) EPDM cannot be used for mineral oil and plant oil.

Pressure & Temperature rating




Flow characteristic




Range ability 30 : 1

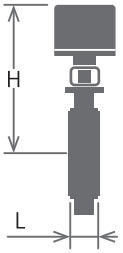
# FP series

Plastic body and disk. Rubber seat butterfly valve.

Plastic butterfly valve with excellent corrosion resistance. Polypropylene with a low specific gravity is used for the main body and valve body, making it extremely lightweight.

Product code : AE2 FP 1 0 1 Q Q E -050 - Option code

- ⓐ Actuator model
- ⓑ Valve model
- ⓒ Voltage
- ⓓ Sizing code
- ⓔ Piping connection
- ⓕ Body material
- ⓖ Disk material
- ⓗ Seat material
- ⓘ Size




Concentric type butterfly valve

| | |
|---|---|
| ⓔ Piping connection | 1 For JIS 10K flange Wafer type |
| ⓕ Body material | Q PP |
| ⓖ Disk material | Q PP |
| ⓗ Seat material | E EPDM*1 |
| Stem seal material | EPDM*1 O-ring |

## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model | | | | | | Height H (mm) | | | | Face to face L (mm) | Cv value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | High torque | | | | | | | | | | | |
| | | | ON・OFF | | | | Proportional | | | | | | | |
| | | | AE1 AE2 | AD1 AD2 AD0 | HD1 HD2 HD0 | PHR | AEX | PDX PHX | AE□ AEX | AD□ | HD□ | PDX PHX PHR | | |
| FP | -040 | 0 | 120 | 300 | 300 | 300 | 120 | 300 | 259 | 326 | 326 | 326 | 35.5 | 75 |
| | | 2 | 300 | – | – | – | 360 | – | 259 | – | – | – | | |
| | -050 | 0 | 300 | 300 | 300 | 300 | 360 | 300 | 266 | 333 | 333 | 333 | 38.5 | 123 |
| | -065 | 0 | 300 | 300 | 300 | 300 | 360 | 300 | 277 | 344 | 344 | 344 | 44 | 267 |
| | -080 | 0 | 600 | 700 | 700 | 700 | 700 | 700 | 295 | 346 | 346 | 346 | 43.5 | 368 |
| | -100 | 0 | 600 | 700 | 700 | 700 | 700 | 700 | 325 | 368 | 368 | 368 | 54 | 487 |
| | -125 | 0 | 02K | | 02K | 02K | 02K | 02K | 409 | | 416 | 416 | 62 | 845 |
| | -150 | 0 | 02K | | 02K | 02K | 02K | 02K | 425 | | 432 | 432 | 65 | 1120 |
| | -200 | 0 | 02K | | 02K | 02K | 02K | 02K | 452 | | 459 | 459 | 79 | 2340 |
| | | 2 | 06K | | 06K | 06K | 06K | 06K | 512 | | 500 | 500 | | |
| | -250 | 0 | 06K | | 06K | 06K | 06K | 06K | 548 | | 536 | 536 | 104 | 3580 |
| | -300 | 1 | – | | – | 06K | – | 06K | – | | – | 594 | 127 | 5100 |
| | | 0 | 06K | | 06K | | 06K | | 606 | | 594 | | | |

| ⓒ Voltage | AE1 AEX | AE2 | AD1 HD1 | AD2 HD2 | AD0 HD0 | PDX PHX PHR |
|---|---|---|---|---|---|---|
| 1 100/110V AC | ◎ | ◎ | ◎ | ◎ | | ◎ |
| 2 200/220V AC | ◎ | ◎ | ◎ | ◎ | | ◎ |
| 0 24V DC | | | | ◎ | ◎ | ◎ |
| 3 24V AC | | | | | | ◎ |

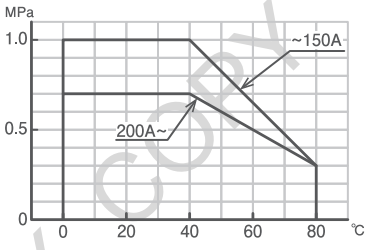
◎ Standard

Note) When selecting sizing code 1, it is necessary to pay attention to fluid characteristic and pressure. Please contact us for fluid specifications.

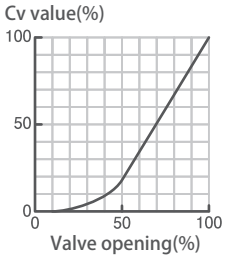
Note) When used in hot water supply lines or in fluids containing chlorine, EPDM may deteriorate prematurely depending on conditions.

*1) EPDM cannot be used for mineral oil and plant oil.

Pressure & Temperature rating




Flow characteristic




Range ability 30 : 1

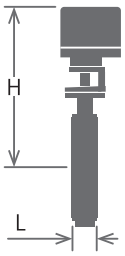
# FN / F series

Rubber seat butterfly valve. General-purpose model.

Due to the two-part stem, there is little protrusion of the disk to the flow path, the flow is smooth, and the Cv value is also good. The seat surface is flat and there is little resistance to flow, so the flow rate can be adjusted reliably.


Product code : AEX FN 1 0 1 D U E -125 - Option code

- ⓐ Actuator model
- ⓑ Valve model
- ⓒ Voltage
- ⓓ Sizing code
- ⓔ Piping connection
- ⓕ Body material
- ⓖ Disk material
- ⓗ Seat material
- ⓘ Size




Concentric type butterfly valve

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ⓑ Valve model | FN | | | F- | | | | |
| ⓔ Piping connection | 1 For JIS 5 and 10K flange Wafer type | | | 1 For JIS 10K flange Wafer type | | | | |
| ⓕ Body material | D FCD450 | | | D FCD450 | | | | |
| ⓖ Disk material | D FCD450+CNi PLTD | U SUSF316 / SCS14 | A CAC703*2 | D FCD450+CNi PLTD | U SUSF316 / SCS14 | A CAC703*2 | | |
| ⓗ Seat material | E EPDM*1*2 ／ B NBR | | | E EPDM*1*2 ／ B NBR ／ V FKM | | | | |
| Stem seal material | The structure seals the stem with a seat. As a secondary seal, an NBR O-ring is attached to the EPDM / NBR seat specification, and an FKM O-ring is attached to the FKM seat specification. | | | | | | | |

## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model: High torque ON・OFF: AE1 AE2 | AD1 AD2 AD0 | HD1 HD2 HD0 | PHR | Proportional: AEX | PDX PHX | Height H (mm): AE□ AEX | AD□ | HD□ | PDX PHX PHR | Face to face L (mm) | Cv value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FN | -050 | 0 | 300 | 300 | 300 | 300 | 360 | 300 | 273 | 332 | 332 | 332 | 41 | 159 |
| | -065 | 0 | 300 | 300 | 300 | 300 | 360 | 300 | 290 | 349 | 349 | 349 | 44 | 266 |
| | -080 | 1 | – | 300 | 300 | – | – | – | – | 356 | 356 | – | 44 | 457 |
| | | 0 | 600 | 700 | 700 | 700 | 700 | 700 | 313 | 356 | 356 | 356 | | |
| | -100 | 0 | 600 | 700 | 700 | 700 | 700 | 700 | 347 | 384 | 384 | 384 | 51 | 860 |
| | -125 | 1 | – | 700 | 700 | – | – | – | – | 384 | 384 | – | 54 | 1320 |
| | | 0 | 02K | | 02K | 02K | 02K | 02K | 399 | | 406 | 406 | | |
| | -150 | 0 | 02K | | 02K | 02K | 02K | 02K | 412 | | 419 | 419 | 54 | 2020 |
| | -200 | 1 | 02K | | 02K | 02K | 02K | 02K | 453 | | 460 | 460 | 60 | 3540 |
| | | 0 | 06K | | 06K | 06K | 06K | 06K | 513 | | 501 | 501 | | |
| F- | -250 | 0 | 06K | | 06K | 06K | 06K | 06K | 545 | | 533 | 533 | 64 | 5580 |
| | -300 | 1 | 06K | | 06K | 06K | 06K | 06K | 583 | | 571 | 571 | 76 | 8080 |

| ⓒ Voltage | AE1 AEX | AE2 | AD1 HD1 | AD2 HD2 | AD0 HD0 | PDX PHX PHR |
|---|---|---|---|---|---|---|
| 1 100/110V AC | ◎ | ◎ | ◎ | ◎ | | ◎ |
| 2 200/220V AC | ◎ | ◎ | ◎ | ◎ | | ◎ |
| 0 24V DC | | | | ◎ | ◎ | ◎ |
| 3 24V AC | | | | | | ◎ |

◎ Standard

Note) When selecting sizing code 1, it is necessary to pay attention to fluid characteristic and pressure. Please let us know the conditions of use.

Note) When used for viscous fluid, it is necessary to select the sizing of the actuator. Please let us know the conditions of use.

Note) When used in hot water supply lines or in fluids containing chlorine, EPDM and NBR may deteriorate prematurely depending on conditions.

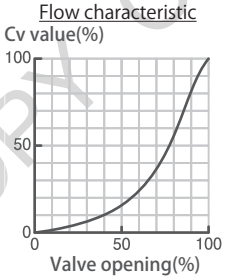
*1) EPDM cannot be used for mineral oil and plant oil.

*2) When using in seawater, please order a combination of CAC703 disk and EPDM seat.

Allowable pressure and temperature range.

| Seat material | Operating temperature range of fluid | Adaptive fluid | Maximum working pressure |
|---|---|---|---|
| EPDM | -20 ~ 80℃ | Water, Sea water, etc. | 1.0MPa (300A is 0.5MPa) |
| NBR | -10 ~ 60℃ | Oils, Gas, etc. | |
| FKM | -5 ~ 80℃ | Chemicals, etc. | |

Flow characteristic



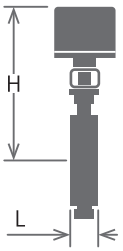

Range ability 30 : 1

# DN series Double eccentric type butterfly valve.

Due to the double eccentric structure, the valve body and seat do not contact until fully closed, so stable sealing performance is demonstrated for a long time. High sealing performance is realized by the seat shape that utilizes fluid pressure.


Product code : AEX DN 1 0 1 T T F -150 -Option code

- ⓐ Actuator model
- ⓑ Valve model
- ⓒ Voltage
- ⓓ Sizing code
- ⓔ Piping connection
- ⓕ Body material
- ⓖ Disk material
- ⓗ Seat material
- ⓘ Size




Double eccentric type butterfly valve. DN series has flow direction.

| | |
|---|---|
| ⓔ Piping connection | 1 For JIS 5 and 10K flange (Can be connected to ANSI CLASS 150Lb flange. ) Wafer type |
| Face to face | JIS B 2002 Series No.46 |
| ⓕ Body material | T SCS13A |
| ⓖ Disk material | T SCS13A |
| ⓗ Seat material | F F-PTFE |
| Stem seal material | PTFE |

## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model: High torque ON・OFF AE1 AE2 | AD1 AD2 AD0 | HD1 HD2 HD0 | PHR | Proportional AEX | PDX PHX |
|---|---|---|---|---|---|---|---|---|
| DN | -080 | 0 | 300 | 300 | 300 | 300 | 360 | 300 |
| | | 2 | 600 | 700 | 700 | 700 | 700 | 700 |
| | -100 | 0 | 600 | 700 | 700 | 700 | 700 | 700 |
| | -125 | 0 | 600 | 700 | 700 | 700 | 700 | 700 |
| | | 2 | 02K | | 02K | 02K | 02K | 02K |
| | -150 | 0 | 02K | | 02K | 02K | 02K | 02K |
| | -200 | 0 | 02K | | 02K | 02K | 02K | 02K |
| | -250 | 0 | 06K | | 06K | 06K | 06K | 06K |
| | -300 | 0 | 06K | | 06K | 06K | 06K | 06K |

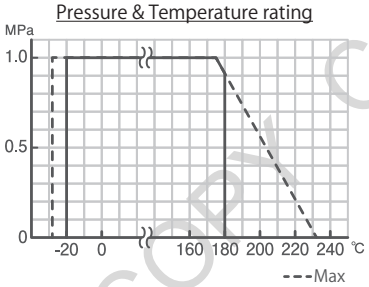
| ⓑ Valve model | ⓘ Size (A) | Height H*1 (mm) AE□ AEX | AD□ | HD□ | PDX PHX PHR | Face to face L (mm) | Cv value |
|---|---|---|---|---|---|---|---|
| DN | -080 | 290 | 357 | 357 | 357 | 46 | 220 |
| | | 306 | 357 | 357 | 357 | | |
| | -100 | 336 | 387 | 387 | 387 | 52 | 410 |
| | -125 | 359 | 402 | 402 | 402 | 56 | 800 |
| | | 417 | | 424 | 424 | | |
| | -150 | 442 | | 449 | 449 | 56 | 1250 |
| | -200 | 472 | | 479 | 479 | 60 | 2450 |
| | -250 | 567 | | 555 | 555 | 68 | 4250 |
| | -300 | 607 | | 595 | 595 | 78 | 6750 |

*1) If the temperature of the actuator may over the operating range due to heat transfer from the fluid, an insulation option is required. Please note that the product height will change if the insulation option is selected.

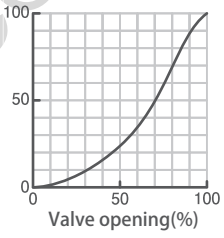
| ⓒ Voltage | AE1 AEX | AE2 | AD1 HD1 | AD2 HD2 | AD0 HD0 | PDX PHX PHR |
|---|---|---|---|---|---|---|
| 1 100/110V AC | ◎ | ◎ | ◎ | ◎ | | ◎ |
| 2 200/220V AC | ◎ | ◎ | ◎ | ◎ | | ◎ |
| 0 24V DC | | | | ◎ | ◎ | ◎ |
| 3 24V AC | | | | | | ◎ |

◎ Standard

Pressure & Temperature rating




Flow characteristic




Range ability 50 : 1

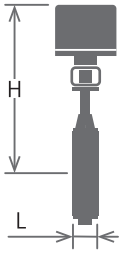
# FZ series

Rubber seat butterfly valve.

Lightweight with aluminum body. A stainless steel long neck that resists condensation, making it ideal for heat insulation.


Product code : AE1 FZ 1 0 1 L U E -200 - Option code

- ⓐ Actuator model
- ⓑ Valve model
- ⓒ Voltage
- ⓓ Sizing code
- ⓔ Piping connection
- ⓕ Body material
- ⓖ Disk material
- ⓗ Seat material
- ⓘ Size




Concentric type butterfly valve

| | |
|---|---|
| ⓔ Piping connection | 1 For JIS 5 and 10K flange Wafer type |
| Face to face | JIS B 2002 Series No.46 |
| ⓕ Body material | L ADC12 |
| ⓖ Disk material | U SCS14 |
| ⓗ Seat material | E EPDM*1 ／ B NBR |
| Stem seal material | The stem is sealed with a sheet. The O-ring (NBR) is installed as a dust seal. |

## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model: High torque, ON・OFF: AE1 AE2 | ⓐ Actuator model: High torque, Proportional: AEX | Height H (mm): AE□ | Height H (mm): AEX | Face to face L (mm) | Cv value |
|---|---|---|---|---|---|---|---|---|
| FZ | -040 | 0 | 300 | 360 | 305 | 305 | 33 | 102 |
| | -050 | 0 | 300 | 360 | 313 | 313 | 43 | 165 |
| | -065 | 0 | 300 | 360 | 323 | 323 | 46 | 250 |
| | | 2 | 600 | 700 | 339 | 339 | | |
| | -080 | 0 | 600 | 700 | 344 | 344 | 46 | 380 |
| | -100 | 0 | 600 | 700 | 357 | 357 | 52 | 650 |
| | | 2 | 02K | 02K | 426 | 426 | | |
| | -125 | 0 | 02K | 02K | 434 | 434 | 56 | 1100 |
| | -150 | 0 | 02K | 02K | 449 | 449 | 56 | 1790 |
| | -200 | 0 | 02K | 02K | 489 | 489 | 60 | 3300 |
| | | 2 | 06K | 06K | 549 | 549 | | |
| | -250 | 0 | 06K | 06K | 587 | 587 | 68 | 4400 |
| | -300 | 0 | 06K | 06K | 629 | 629 | 78 | 6200 |

| ⓒ Voltage | AE1 | AE2 | AEX |
|---|---|---|---|
| 1 100/110V AC | ◎ | ◎ | ◎ |
| 2 200/220V AC | ◎ | ◎ | ◎ |

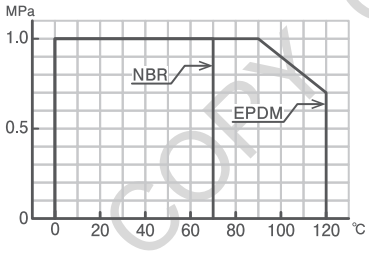
◎ Standard

Note) DN 250A and 300A is a semi-standard product. Please check the delivery date.

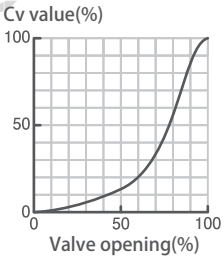
Note) When used in hot water supply lines or in fluids containing chlorine, EPDM and NBR may deteriorate prematurely depending on conditions.

*1) EPDM cannot be used for mineral oil and plant oil.

Pressure & Temperature rating




Flow characteristic




Range ability 30 : 1

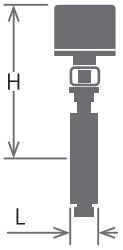
# WT series High precision damper for low leakage.

The main body and disk machined with high accuracy realize a low leakage of 1% or less*1 relative to the rated Cv value. By selecting a disk with a seal ring, it can handle even lower leakage.

GAS

Product code : AEX WT 1 0 2 T G S -250 -Option code

- ⓐ Actuator model
- ⓑ Damper model
- ⓒ Voltage
- ⓓ Sizing code
- ⓔ Piping connection
- ⓕ Body material
- ⓖ Stem seal material
- ⓗ Seal ring
- ⓘ Size




Eccentric type butterfly damper. WT series has flow direction.

| | | |
|---|---|---|
| ⓔ Piping connection | 2 For JIS 5K flange Wafer type | |
| ⓕ Body material | T SCS13A | |
| ⓖ Stem seal material | G Expansion graphite | |
| ⓗ Seal ring | 0 Non | S SUS316*1 |
| Disk material | SUS420J2 / SUS420J1 | SUS410S / SUS420J2 |
| Allowable Seat Leakage | 1% or less of rated Cv*2 | 0.1% or less of rated Cv*3 |

## Actuator type and product dimensions

| ⓑ Damper model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model: High torque ON・OFF AE1 AE2 | AD1 AD2 AD0 | HD1 HD2 HD0 | PHR | High torque Proportional AEX | PEX | PDX PHX |
|---|---|---|---|---|---|---|---|---|---|
| WT | -040 | 0 | 120 | 300 | 300 | 300 | 120 | 120 | 300 |
| | -050 | 0 | 120 | 300 | 300 | 300 | 120 | 120 | 300 |
| | -065 | 0 | 120 | 300 | 300 | 300 | 120 | 120 | 300 |
| | -080 | 0 | 120 | 300 | 300 | 300 | 120 | 120 | 300 |
| | -100 | 0 | 120 | 300 | 300 | 300 | 120 | 120 | 300 |
| | -125 | 0 | 120 | 300 | 300 | 300 | 120 | 120 | 300 |
| | -150 | 0 | 120 | 300 | 300 | 300 | 120 | | 300 |
| | | 2 | 300 | – | – | – | 360 | | – |
| | -200 | 0 | 120 | 300 | 300 | 300 | 120 | | 300 |
| | | 2 | 300 | – | – | – | 360 | | – |
| | -250 | 0 | 300 | 300 | 300 | 300 | 360 | | 300 |
| | | 2 | 600 | 700 | 700 | 700 | 700 | | 700 |
| | -300 | 0 | 300 | 300 | 300 | 300 | 360 | | 300 |
| | | 2 | 600 | 700 | 700 | 700 | 700 | | 700 |
| | -350 | 0 | 600 | 700 | 700 | 700 | 700 | | 700 |
| | | 2 | 02K | – | 02K | 02K | 02K | | 02K |
| | -400 | 0 | 600 | 700 | 700 | 700 | 700 | | 700 |
| | | 2 | 02K | | 02K | 02K | 02K | | 02K |

| Height H*4 (mm) AE□ AEX | PEX | AD□ | HD□ | PDX PHX PHR | Face to face L (mm) | Cv value |
|---|---|---|---|---|---|---|
| 261 | 261 | 331 | 331 | 331 | 40 | 85 |
| 266 | 266 | 336 | 336 | 336 | 40 | 145 |
| 278 | 278 | 348 | 348 | 348 | 40 | 290 |
| 310 | 310 | 380 | 380 | 380 | 50 | 450 |
| 321 | 321 | 391 | 391 | 391 | 50 | 780 |
| 339 | 339 | 408 | 408 | 408 | 50 | 1200 |
| 353 | | 423 | 423 | 423 | 50 | 1800 |
| 353 | | – | – | – | | |
| 376 | | 446 | 446 | 446 | 50 | 3200 |
| 376 | | – | – | – | | |
| 398 | | 468 | 468 | 468 | 50 | 5100 |
| 414 | | 468 | 468 | 468 | | |
| 424 | | 494 | 494 | 494 | 55 | 7200 |
| 440 | | 494 | 494 | 494 | | |
| 501 | | 545 | 545 | 545 | 70 | 8900 |
| 572 | | – | 567 | 567 | | |
| 525 | | 569 | 569 | 569 | 70 | 11000 |
| 596 | | | 591 | 591 | | |

| ⓒ Voltage | AE1 AEX | AE2 | PEX | AD1 HD1 | AD2 HD2 | AD0 HD0 | PDX PHX PHR |
|---|---|---|---|---|---|---|---|
| 1 100/110V AC | ◎ | ◎ | | ◎ | ◎ | | ◎ |
| 2 200/220V AC | ◎ | ◎ | | ◎ | ◎ | | ◎ |
| 6 100 to 240V AC | | | ◎ | | | | |
| 0 24V DC | | | ◎ | | ◎ | ◎ | ◎ |
| 3 24V DC | | | | | | | ◎ |

◎ Standard

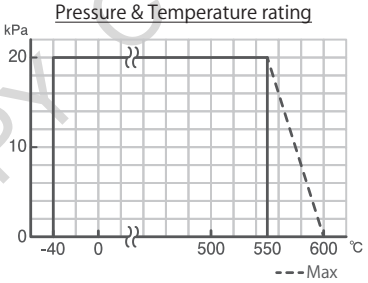
*1) When selecting seal ring, it is necessary to select the sizing of the actuator. Please let us know the conditions of use.

*2) The leak rate of the 40A and 50A models without seat is 2% or less.

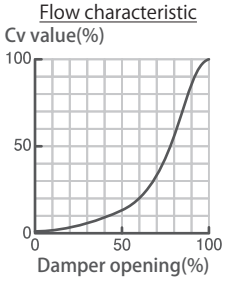
*3) Seal ring type, 40A leakage is 1% or less, 50A is 0.5% or less, and 65A is 0.2% or less.

*4) If the temperature of the actuator may over the operating range due to heat transfer from the fluid, an insulation option is required. Please note that the product height will change if the insulation option is selected.

Pressure & Temperature rating




Flow characteristic




Range ability 50 : 1

## MEMO

## Power source

A model listed with "100/110 V AC" can be used with both voltages. A model listed with "100 to 240 V AC" can be used with the voltage within the range.

## Rated torque

The rated torque indicates the maximum load torque that can safely be used for a long period of time within the operating conditions indicated by us. It is not the maximum output torque actually generated by the electric actuator.

## Operation time

The operation time varies depending on the frequency of the power supply of the electric actuator using the synchronous motor or the reversible motor. Operating time of the electric actuator using the DC motor varies depending on load of the valve and voltage fluctuation.

In this catalog, the time when the actuator output shaft rotates by 90 degree is indicated. Actually it will change due to looseness of connecting parts and adjustment of valve opening / closing position.

## Power consumption

Electric actuators consume almost no power while they are stopped. The power consumption described is a numerical value during motor operation.

Power consumption is expressed in (VA). The current value (A) required for operation can be calculated by dividing the power consumption (VA) by the voltage (V).

The power consumption of actuators with DC motors varies depending on the valve load. In this catalog, the power consumption at rated load is indicated.

## Input signal current

It is the current value flowing in the open / close switch (relay) of a-contact input type.

## Output signal rating

Contact rating of the built-in micro switch and relay used for signal output.

## Overload protection

- Thermistor type

  When the load abnormally increases, the internal resistance is increased by the self-heating of the thermistor, the current to the motor is restricted, and excessive temperature rise is prevented. After cut off the power to the actuator, it recovers when the temperature of the thermistor decreases.

- Thermal protector type

  When the load abnormally increases, the internal bimetal works due to self-heating of the motor and cuts off power to the motor. After cut off the power to the actuator, it recovers when the temperature of the motor decreases.

- Impedance protect type

  A motor with a structure that does not increase the current value and temperature more than a certain amount even if the load abnormally increases due to the winding with a large resistance value is used.

- Current limiter type

  If the load abnormally increases and the current flowing to the motor becomes equal to or greater than the set value, the control circuit detects and shuts off the current to the motor. It recover with cutting of power to the actuator or operation in the reverse direction.

- Timer type

  When the motor continues to drive beyond the set time, the timer circuit detects and cut off power to the motor. It recover with cutting of power to the actuator or operation in the reverse direction.

  If motor protection works, check the valve condition, as there is a high possibility that an abnormality has occurred in the valve.

## Method of type

- Power transfer input type

  Switch power supply to S or O terminal (Cabtyre cord model is white or red wire) to energize, open and close the valve.

  In this type, the current for the motor is applied to the operation switch. Please use the switch of capacity necessary for motor operation. Open / close signal is output with input voltage.

- a-contact input type

  Operate the actuator with signal relay for 1a contact. It is suitable for P.L.C. which uses a current signal of a minute load. The open / close signal circuit is a dry contact, and it can be used with other voltage than the input voltage. (CD2 / CM2 / DM2 type is output with the input voltage.)

- Switching polarity type

  Activating the actuator when changing the polarity of the DC power supply.

- Proportional control

  The electronic positioner is built-in and the signal of the controller is directly input to the actuator. It controls the valve to an opening proportional to the input signal. Please note that the type of input signal that can be used depends on the series. The indication signal is output at 0 - 1 mA. (CMX excluded)

## Override switch (For proportional control)

It operates with priority over the input signal. Even with an actuator with a speed control function, it will be the fastest operation.

## Operation

As seen from the top of the actuator, the rotary actuator is closed (In three-way valve position ① ) with the output shaft rotating in the clockwise direction. Open (In three-way valve position ② ) with counterclockwise rotation.

The linear motion actuator closes when the output shaft extends (lower end). Shrinking (upper end) will be opened.

## Duty cycle

Maximum time it can operate within a certain time. In the case of "20% 15 min", its 20% (= 3 minutes) operation is possible in 15 minutes. The frequency with which it can be operated can be calculated from the actuation time of the actuator.

## Ambient temperature

Atmosphere temperature near the actuator. Even within this range, please be careful because it may not be usable due to direct sunlight, radiant heat from piping and peripheral equipment, heat transferred from valve etc.

## Enclosure

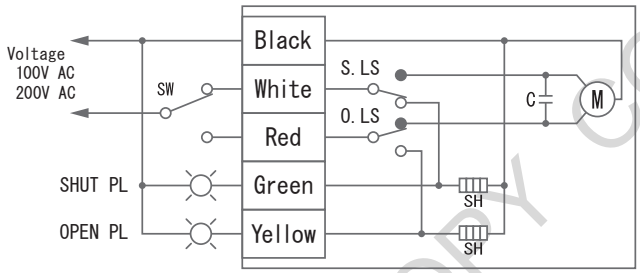
All electric actuators have waterproof performance equivalent to protection class JIS C 0920 IP 65, IEC / EN60529.Space heaters are built-in as standard to prevent dew condensation inside the actuator. Space heater will not function if energization to actuators is cut off. Always turn on the power.

For the waterproof performance to function sufficiently, it is necessary to completely seal the wiring to the gap between the wires and the core wire. When using a conduit, please completely seal the electric wire so that there is no moisture intrusion.

Do not use a sealant that will adversely affect the electrical contacts (silicone type). We recommend "SL220B" a silyl group-terminated polymer adhesive manufactured by Konishi.

# CA1 series Mini series, rotary actuator. For ON·OFF use.

Lightweight and economical rotary electric actuator for AC power.

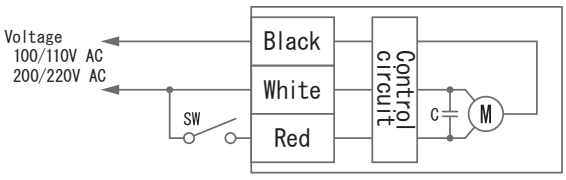
| Model | CA1-015-□ |
|---|---|
| Voltage | ① 100 V AC ±10% 50/60 Hz ② 200 V AC ±10% 50/60 Hz |
| Rated torque [N·m] | 1.5 |
| Operation time [s] | 4.6 / 3.8 (50/60 Hz) |
| Power consumption [VA] | 4 |
| Motor | Synchronous motor |
| Overload protection | Impedance protect |
| Method of operation | Transfer input type |
| Operation | Power to White → SHUT (SHUT PL is lit.)<br>Power to Red → OPEN (OPEN PL is lit.) |
| Output signal rating | Resistance load 1 A 250 V AC |
| Duty cycle | 100 % |
| Ambient temperature | -10 to 50 ℃ |
| Manual operation | Direct operation |
| Enclosure | Equivalent to IP 65 (IEC 60529) Housing: Polycarbonate resin (Brack) Built-in space heater (0.3 W) |
| Conduct port | Flexible cable 5 leads 0.5 mm² L = 500 mm |
| Wiring |  |



3 way valve: SHUT / Position ① , OPEN / Position ② . The wiring diagram shows the valve closed (P1).

# PM1 series Mini series, rotary actuator. For ON·OFF use.

Light weight and economical rotary electric actuator. Contactless type control with a timer.

| Model | PM1-030-□ |
|---|---|
| Voltage | ① 100 / 110 V AC ±10% 50/60 Hz ② 200 / 220 V AC ±10% 50/60 Hz |
| Rated torque [N·m] | 3 |
| Operation time [s] | 7.5 / 6.3 (50/60 Hz) |
| Power consumption [VA] | 8 |
| Motor | Synchronous motor |
| Overload protection | Timer |
| Method of operation | a-contact input type |
| Operation | SW is OFF → SHUT<br>SW is ON → OPEN |
| Input signal current | ON: 1.5 mA OFF: Less than 0.1 mA |
| Duty cycle | 20% 15 min. |
| Ambient temperature | -20 to 50 ℃ |
| Manual operation | Direct operation |
| Enclosure | Equivalent to IP 65 (IEC 60529) Housing: Polycarbonate resin (Brack) Built-in space heater (0.5 W) |
| Conduct port | Flexible cable 3 leads 0.5 mm² L = 500 mm |
| Wiring |  |

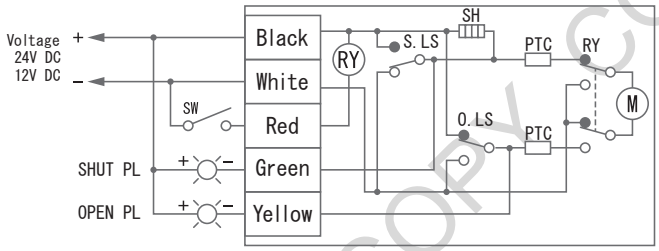


3 way valve: SHUT / Position ① , OPEN / Position ② . The wiring diagram shows the valve closed (P1).

# CD2 series

Mini series, rotary actuator. For ON･OFF use.

Light weight and economical rotary electric actuator for DC power supply.

| Model | CD2-030-□ | | CD2-070-0 |
|---|---|---|---|
| Voltage*1 | 0 24 V DC ±20% | 4 12 V DC ±20% | 0 24 V DC ±20% |
| Rated torque [N･m] | 3 | | 7 |
| Operation time [s] | 1.5 to 3 | | 2 to 3 |
| Power consumption [VA] | In motion 10 max.<br>Not in motion: SHUT 0.25 / OPEN 0.50 | | In motion 24 max.<br>Not in motion: SHUT 0.25 / OPEN 0.55 |
| Motor | DC motor | | |
| Overload protection | Thermistor | | |
| Method of operation | a-contact input type, with built-in relay | | |
| Operation | SW is OFF → SHUT (SHUT PL is lit.)<br>SW is ON → OPEN (OPEN PL is lit.) | | |
| Input signal current | 19 mA | 35 mA | 22 mA |
| Output signal rating | Resistance load 1 A Micro load 2 mA | | |
| Duty cycle | 20 % 15 min. | | |
| Ambient temperature | -20 to 50 ℃ | | |
| Manual operation | Direct operation | | Direct operation (with clutch button) |
| Enclosure | Equivalent to IP 65 (IEC 60529) Housing: Polycarbonate resin (Brack) Built-in space heater (0.5 W) | | |
| Conduct port | Flexible cable 5 leads 0.5 $mm^2$ L = 500 mm | | |
| Wiring |  | | |

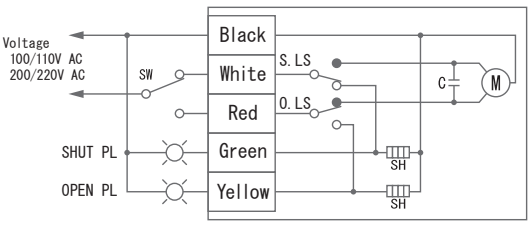
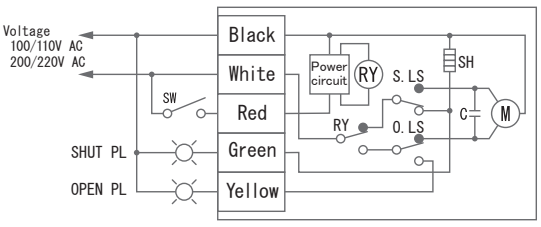


*1) Cannot use a half or full-wave power supply.
3 way valve: SHUT / Position ① , OPEN / Position ② . The wiring diagram shows the valve closed (P1).

# CM1 / CM2 series

Mini series, rotary actuator. For ON･OFF use.

Light weight and economical rotary electric actuator for AC power supply.

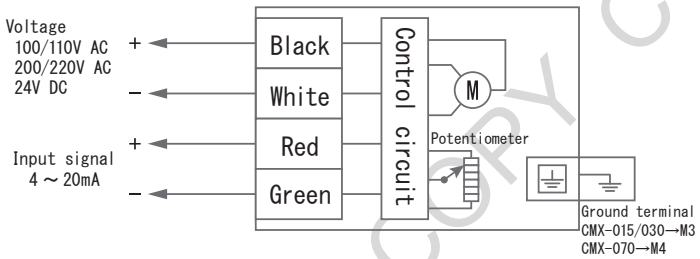
| Classification | CM1 | | CM2 | |
|---|---|---|---|---|
| Model | CM1-030-□ | CM1-070-□ | CM2-030-□ | CM2-070-□ |
| Voltage | 1 100 / 110 V AC ±10% 50/60 Hz 2 200 / 220 V AC ±10% 50/60 Hz | | | |
| Rated torque [N･m] | 3 | 7 | 3 | 7 |
| Operation time [s] | 14.5 / 12 (50/60 Hz) | 17 / 14 (50/60 Hz) | 14.5 / 12 (50/60 Hz) | 17 / 14 (50/60 Hz) |
| Power consumption [VA] | 5 | 13 | 7 | 13 |
| Motor | Synchronous motor | | | |
| Overload protection | Impedance protect | | | |
| Method of operation | Transfer input type | | a-contact input type, with built-in relay | |
| Operation | Power to White → SHUT (SHUT PL is lit.)<br>Power to Red → OPEN (OPEN PL is lit.) | | SW is OFF → SHUT (SHUT PL is lit.)<br>SW is ON → OPEN (OPEN PL is lit.) | |
| Input signal current | — | | 16 mA | |
| Output signal rating | Resistance load : 1 A 250 V AC | | Resistance load 0.5 A 120 V AC / 0.2 A 250 V AC | |
| | | | Micro load 2 mA | Micro load 8 mA |
| Duty cycle | 50 % 30 min. | | | |
| Ambient temperature | -20 to 50 ℃ | | | |
| Manual operation | Direct operation | Direct operation (with clutch button) | Direct operation | Direct operation (with clutch button) |
| Enclosure | Equivalent to IP 65 (IEC 60529) Housing: Polycarbonate resin (Brack) Built-in space heater (0.3 W) | | | |
| Conduct port | Flexible cable 5 leads 0.5 $mm^2$ L = 500 mm | | | |
| Wiring |  | |  | |



3 way valve: SHUT / Position ① , OPEN / Position ② . The wiring diagram shows the valve closed (P1).

# CMX series Mini series, rotary actuator. For proportional control use.

Light weight and economical rotary electric actuator for proportional control.

| Classification | AC power | | DC power | |
|---|---|---|---|---|
| Model | CMX-030-□ | CMX-070-□ | CMX-015-0 | CMX-070-0 |
| Voltage | 1 100 / 110 V AC ±10% 50/60 Hz | 2 200 / 220 V AC ±10% 50/60 Hz | 0 24 V DC*1 ±20% | |
| Rated torque [N·m] | 3 | 7 | 1.5 | 7 |
| Operation time [s] | 14.5 / 12 (50/60 Hz) | 17 / 14 (50/60 Hz) | 14.5 | 17 |
| Power consumption [VA] | 5.5 | 13 | 3 | 6 |
| Motor | Synchronous motor | | Stepping motor | |
| Overload protection | Impedance protect | | Impedance protect | |
| Input signal | 4 to 20 mA (Voltage descent : less than 7 V) | | 4 to 20 mA (Input resistance: 187.5Ω) | |
| Operation*2 | [Mode A] SHUT by 4 mA ⇔ OPEN by 20 mA (Standard)<br>[Mode B] SHUT by 20 mA ⇔ OPEN by 4 mA (Option : J) | | | |
| Resolution | Less than 0.4% | | | |
| Dead band | About 1% | | | |
| Duty cycle | 50 % 30 min. | | | |
| Ambient temperature | -10 to 50 ℃ | | | |
| Manual operation | Direct operation (CMX-070: with clutch button) | | | |
| Enclosure | Equivalent to IP 65 (IEC 60529) Housing: Polycarbonate resin (Brack) Built-in space heater (0.2 W)*3 | | | |
| Conduct port | Flexible cable 4 leads 0.5 $mm^2$ L = 500 mm | | | |
| Ground terminal | Actuator mounting screw: M3 (CMX-070: M4) | | | |
| Wiring |  | | | |

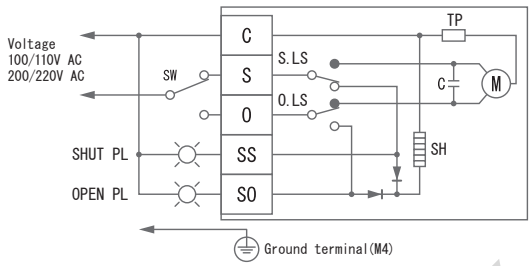
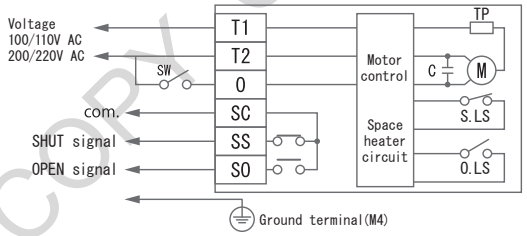


*1) Cannot use a half or full-wave power supply.
*2) Mode A is the standard setting. Mode A and B cannot be changed after shipment.
*3) CMX-070-2 (200V): 0.4 W.
3 way valve: SHUT / Position ① , OPEN / Position ② .

# AM1 / AM2 series

Compact series, rotary actuator. For ON·OFF use.

Light weight and economical rotary electric actuator for AC power supply.

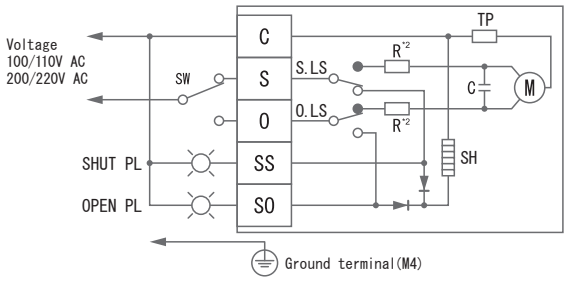
| Classification | AM1 | | | AM2 | | |
|---|---|---|---|---|---|---|
| Model | AM1-030-□ | AM1-070-□ | AM1-180-□ | AM2-030-□ | AM2-070-□ | AM2-180-□ |
| Voltage | ① 100 / 110 V AC ±10% 50/60 Hz ② 200 / 220 V AC ±10% 50/60 Hz | | | | | |
| Rated torque [N·m] | 3 | 7 | 18 | 3 | 7 | 18 |
| Operation time [s] | 5.4 / 4.5 (50/60 Hz) | 15.5 / 13 (50/60 Hz) | 16 / 13.5 (50/60 Hz) | 5.4 / 4.5 (50/60 Hz) | 15.5 / 13 (50/60 Hz) | 16 / 13.5 (50/60 Hz) |
| Power consumption [VA] | 16 | | 19 | 18 | | 19 |
| Motor | Synchronous motor | | | | | |
| Overload protection | Thermal protector | | | | | |
| Method of operation | Transfer input type | | | a-contact input type, with built-in relay | | |
| Operation | Power to S → SHUT (SHUT PL is lit.)<br>Power to O → OPEN (OPEN PL is lit.) | | | SW is OFF → SHUT (SHUT signal is output.)<br>SW is ON → OPEN (OPEN signal is output.) | | |
| Input signal current | — | | | 9 mA (O-terminal) leakage current in SW: less than 1 mA | | |
| Output signal rating | Resistance load 3 A 250 V AC (Minimum 0.1 A) | | | Resistance load 0.5 A 125 V AC / 2 A 30 V DC<br>Micro load 1 mA 5 V DC | | |
| Duty cycle | 20 % 15 min. | | | | | |
| Ambient temperature | -20 to 55 ℃ | | | | | |
| Manual operation | Direct operation of actuator by loosening lock screw | | | | | |
| Enclosure | Equivalent to IP 65 (IEC 60529) Housing: Aluminum alloy diecast body + Polycarbonate resin cover. Built-in space heater (1 W) | | | | | |
| Terminal block | For bare wire 0.14 to 1.5 $mm^2$ (AWG 26 to 14) Ground terminal: M4 | | | | | |
| Conduct port | G3/8 Cable gland (for Φ5 to 10.5 mm cable) | | | | | |
| Wiring |  | | |  | | |

3 way valve: SHUT / Position ① , OPEN / Position ② . The wiring diagram shows the valve closed (P1).

# AH1 series

Compact series, rotary actuator. For ON·OFF use. Hight speed model.

Light weight and high-speed operation rotary electric actuator for AC power supply.

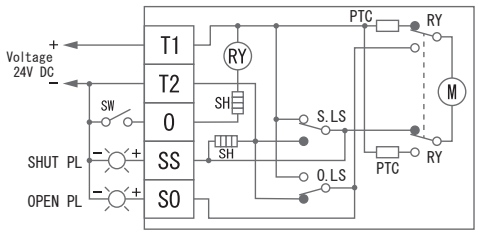
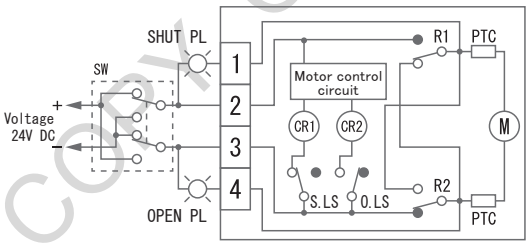
| Model | AH1-030-□ | AH1-070-□ | AH1-180-□ |
|---|---|---|---|
| Voltage | ① 100 / 110 V AC ±10% 50/60 Hz ② 200 / 220 V AC ±10% 50/60 Hz | | |
| Rated torque [N·m] | 3 | 7 | 18 |
| Operation time [s] | 3 / 2.5 (50/60 Hz) | | 6 / 5 (50/60 Hz) |
| Power consumption [VA] | 19 | 50 | |
| Motor | Synchronous motor | Reversible motor | |
| Overload protection | Thermal protector | | |
| Method of operation | Transfer input type | | |
| Operation | Power to S → SHUT (SHUT PL is lit.)<br>Power to O → OPEN (OPEN PL is lit.) | | |
| Output signal rating | Resistance load 3 A 250 V AC (Minimum 0.1 A) | | |
| Duty cycle | 20 % 15 min. | | |
| Ambient temperature | -20 to 55 ℃ | | |
| Manual operation | Direct operation of output shaft. | | |
| Enclosure | Equivalent to IP 65 (IEC 60529) Housing: Aluminum alloy diecast body + Polycarbonate resin cover. Built-in space heater (1 W*1) | | |
| Terminal block | For bare wire 0.14 to 1.5 $mm^2$ (AWG 26 to 14) Ground terminal: M4 | | |
| Conduct port | G3/8 Cable gland (for Φ5 to 10.5 mm cable) | | |
| Wiring |  | | |

*1) AH1-030: 0.5W. *2) AH1-070 / 180 only

3 way valve: SHUT / Position ① , OPEN / Position ② . The wiring diagram shows the valve closed (P1).

# DM2 / DM0 series Compact series, rotary actuator. For ON･OFF use.

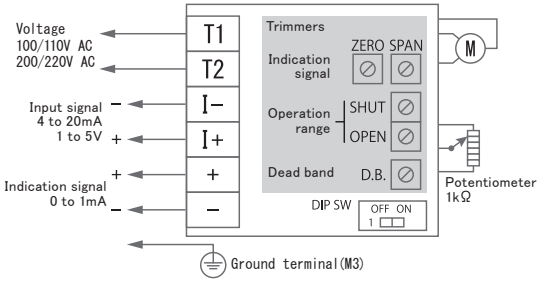
Light weight and economical rotary electric actuator for DC power supply.

| Classification | DM2 | | | DM0 | | |
|---|---|---|---|---|---|---|
| Model | DM2-030-0 | DM2-070-0 | DM2-180-0 | DM0-030-0 | DM0-070-0 | DM0-180-0 |
| Voltage | 0 24 V DC | | | | | |
| Rated torque [N･m] | 3 | 7 | 18 | 3 | 7 | 18 |
| Operation time [s] | 2 to 3.5 | 2 to 3 | 4 to 6 | 0.8 to 1.5 | 2 to 3 | 4 to 6 |
| Power consumption [VA] | 10 max. | 24 max. | | 24 max. | | |
| Motor | DC motor | | | | | |
| Overload protection | Thermistor | | | | | |
| Method of operation | a-contact input type, with built-in relay | | | Switching polarity type | | |
| Operation | SW is OFF → SHUT (SHUT PL is lit.)<br>SW is ON → OPEN (OPEN PL is lit.) | | | 2+ 3- → SHUT (SHUT PL is lit.)<br>3+ 2- → OPEN (OPEN PL is lit.) | | |
| Input signal current | 16.2 mA (O terminal) | | | — | | |
| Output signal rating | Resistance load : Less than 1A 24 V DC | | | Resistance load 2 A 30 V DC<br>Micro load 1 mA 5 V DC | | |
| Duty cycle | 20 % 15 min. | | | | | |
| Ambient temperature | -20 to 55 ℃ | | | | | |
| Manual operation | Direct operation of output shaft. | | | | | |
| Enclosure | Equivalent to IP 65 (IEC 60529) Housing: Aluminum alloy diecast body + Polycarbonate resin cover. Built-in space heater (1 W) | | | | | |
| Terminal block | For bare wire 0.14 to 1.5 mm$^2$ (AWG 26 to 16) | | | | | |
| Conduct port | G3/8 Cable gland (for Φ5 to 10.5 mm cable) | | | | | |
| Wiring |  | | |  | | |

3 way valve: SHUT / Position ① , OPEN / Position ② . The wiring diagram shows the valve closed (P1).

# PAX series Compact series, rotary actuator. For proportional control use.

Light weight and compact rotary electric actuator for AC power supply.

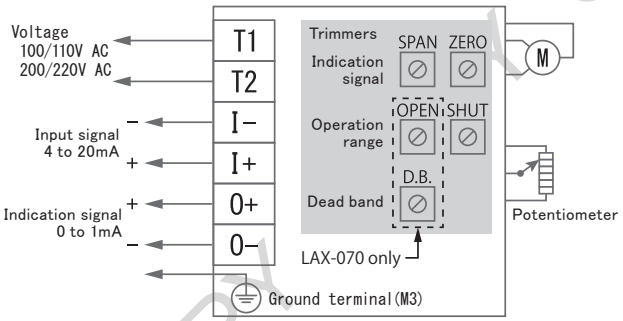
| Model | PAX-050-□ | PAX-120-□ |
|---|---|---|
| Voltage | 1 100 / 110 V AC ±10% 50/60 Hz 2 200 / 220 V AC ±10% 50/60 Hz | |
| Rated torque [N･m] | 5 | 12 |
| Operation time [s] | 14 / 12 (50/60 Hz) | 30 / 25 (50/60 Hz) |
| Power consumption [VA] | 9.5 | |
| Motor | Synchronous motor (Triac control) | |
| Overload protection | Impedance protect | |
| Input signal | 4 to 20 mA / 1 to 5 V (Input resistance: 250 Ω ) | |
| Operation*1 | [Mode A] SHUT by decreased signal ⇔ OPEN by increased signal (Standard)<br>[Mode B] SHUT by increased signal ⇔ OPEN by decreased signal (Option: J) | |
| Indication signal | 0 mA: SHUT ⇔ 1mA: OPEN (External load resistance: less than 3k Ω ) Common in mode A / B | |
| Resolution | Less than 0.2% | |
| Duty cycle | 100 % | |
| Ambient temperature | -20 to 55 ℃ | |
| Manual operation | Direct operation of actuator by loosening lock screw | |
| Enclosure | Equivalent to IP 65 (IEC 60529) Housing: Aluminum alloy diecast body + Polycarbonate resin cover. Built-in space heater (1 W) | |
| Terminal block | For bare wire 0.2 to 1.5 mm$^2$ (AWG 26 to 16) Ground terminal: M3 | |
| Conduct port | G3/8 Cable gland (for Φ5 to 10.5 mm cable) | |
| Wiring |  | | |

*1) Change by DIP switch. (Standard → Mode B) Note) Do not adjust operating angle of a valve (OPEN / SHUT trimmer).
3 way valve: SHUT / Position ① , OPEN / Position ② .

# LAX series

Compact series, linear motion actuator. For proportional control use.

Linear motion type electric actuator. For needle valve.

| Model | LAX-030-☐ | LAX-070-☐ |
|---|---|---|
| Voltage | ① 100 / 110 V AC ±10% 50/60 Hz ② 200 / 220 V AC ±10% 50/60 Hz | |
| Rated thrust [N] | 300 | 700 |
| Speed [mm / s] | 0.39 / 0.47 (50/60 Hz) | 0.46 / 0.55 (50/60 Hz) |
| Stroke [mm] | 7.5 | 7 to 11.5 |
| Adjustment range | Fixed | Adjust by OPEN / SHUT trimmers |
| Power consumption [VA] | 4.5 | 11 |
| Motor | Synchronous motor (Triac control) | |
| Overload protection | Timer | |
| Input signal | 4 to 20 mA (Input resistance: 220 Ω ) | 4 to 20 mA (Input resistance: 250 Ω ) |
| Operation | [Mode A] SHUT by decreased signal ⇔ OPEN by increased signal (Standard)<br>[Mode B] SHUT by increased signal ⇔ OPEN by decreased signal (Option: J) | |
| | Inpossible to change the mode. Please appoint it at the time of the order. | |
| Indication signal | 0 mA: SHUT ⇔ 1mA: OPEN (External load resistance: less than 3k Ω ) Common in mode A / B | |
| Resolution | Less than 0.2% | |
| Duty cycle | 100 / 200 V AC: 100% 110 / 220 V AC: 50 % 30 min. | |
| Ambient temperature | -10 to 50 ℃ | |
| Manual operation | Manual shaft | |
| Enclosure | Equivalent to IP 65 (IEC 60529) Housing: Aluminum alloy diecast (acrylic resin baking finish) Built-in space heater. | |
| Terminal block | For bare wire 0.2 to 1.5 $mm^2$ (AWG 26 to 16) Ground terminal: M3 | |
| Conduct port | G3/8 Cable gland (for Φ5 to 10.5 mm cable) | |
| Wiring |  | |



Note) Do not adjust operating angle of a valve (OPEN / SHUT trimmer).

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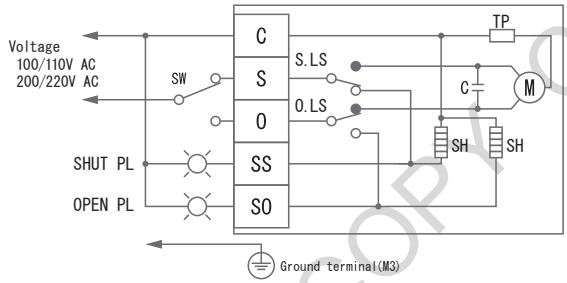
# AE1 series

High torque, rotary actuator. For ON-OFF use.

General rotary electric actuator for AC power supply.

| Classification | For Ball valve, Butterfly valves, Damper | | | | | For Ball valves | |
|---|---|---|---|---|---|---|---|
| Model | AE1-120-□ | AE1-300-□ | AE1-600-□ | AE1-02K-□ | AE1-06K-□ | AE1-360-□ | AE1-700-□ |
| Voltage | ① 100 / 110 V AC ±10% 50/60 Hz ② 200 / 220 V AC ±10% 50/60 Hz | | | | | | |
| Rated torque [N·m] | 12 | 30 | 60 | 200 | 600 | 36 | 70 |
| Operation time [s] | 10 / 8.5 (50/60 Hz) | 7.2 / 6 (50/60 Hz) | 15 / 12 (50/60 Hz) | 30 / 25 (50/60 Hz) | | 7.2 / 6 (50/60 Hz) | 15 / 12 (50/60 Hz) |
| Power consumption [VA] | 19 | 60 | | 110 | 350 | 60 | |
| Motor | Synchronous | Reversible motor self-contained mechanical brake | | | | Reversible motor | |
| Overload protection | Thermal protector | | | | | | |
| Method of operation | Transfer input type | | | | | | |
| Operation | Power to S → SHUT (SHUT PL is lit.)<br>Power to O → OPEN (OPEN PL is lit.) | | | | | | |
| Output signal rating | Resistance load 3 A 250 V AC (Minimum 0.1 A) | | | | | | |
| Duty cycle | 20 % 15 min. | | | | | | |
| Ambient temperature | -20 to 55 ℃ | | | | | | |
| Manual operation | Manual shaft | | | | | | |
| Enclosure | Equivalent to IP 65 (IEC 60529) Housing: Aluminum alloy diecast (acrylic resin baking finish) Built-in space heater (3 W) | | | | | | |
| Wire connection | Terminal Block: M3, Ground terminal: M3 | | | | | | |
| Conduct port | 2-G1/2 Attachments: Cable gland (for Φ6 to 12 mm cable), plug. | | | | | | |
| Wiring |  | | | | | | |

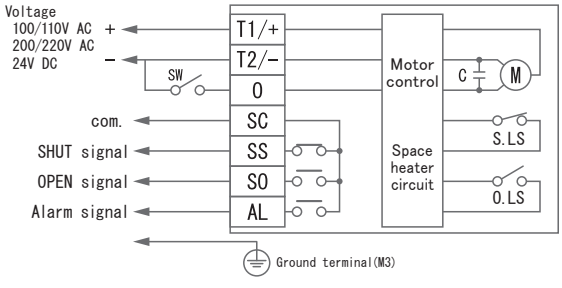


3 way valve: SHUT / Position ① , OPEN / Position ② . The wiring diagram shows the valve closed (P1).

# AE2 series

High torque, rotary actuator. For ON-OFF use.

a-contact input type, with built-in relay for operation and output signal.

| Classification | For Ball valve, Butterfly valves, Damper | | | | | For Ball valves | | | |
|---|---|---|---|---|---|---|---|---|---|
| Model | AE2-120-□ | AE2-300-□ | AE2-600-□ | AE2-02K-□ | AE-06K-□ | AE2-360-□ | AE2-700-□ | AE2-120-0 | AE2-360-0 |
| Voltage | ① 100 / 110 V AC ±10% 50/60 Hz ② 200 / 220 V AC ±10% 50/60 Hz | | | | | | | ⓪ 24 V DC | |
| Rated torque (N·m) | 12 | 30 | 60 | 200 | 600 | 36 | 70 | 12 | 36 |
| Operation time (s) | 11 / 9.5 (50/60 Hz) | 8.2 / 7 (50/60 Hz) | 16 / 13 (50/60 Hz) | 31 / 26 (50/60 Hz) | 31 / 26 (50/60 Hz) | 8.2 / 7 (50/60 Hz) | 16 / 13 (50/60 Hz) | 3 to 4.5 | 9 ~ 14 |
| Power consumption [VA] | 26 | 60 | | 110 | 350 | 60 | | 24 max. | |
| Motor | Synchronous | Reversible motor self-contained mechanical brake | | | | Reversible motor | | DC motor | |
| Overload protection | Timer | | | | | | | Current limiter | |
| Method of operation | a-contact input type, with built-in relay | | | | | | | | |
| Operation | SW is OFF → SHUT (SHUT signal is output.)<br>SW is ON → OPEN (OPEN signal is output.)<br>Overtorque → Alarm signal is output | | | | | | | | |
| Input signal current | 9 mA (O-terminal) Leakage current in SW: less than 1 mA | | | | | | | | |
| Alarm sugnal | Output when the motor protection circuit operates by the overload. (it returns by power supply OFF or reverse operating signal) | | | | | | | | |
| Output signal rating | Resistance load 0.5 A 125 V AC / 1 A 24 V DC Micro load 1 mA 5 V DC | | | | | | | | |
| Duty cycle | 20 % 15 min. | | | | | | | | |
| Ambient temperature | -20 to 55 ℃ | | | | | | | | |
| Manual operation | Manual shaft | | | | | | | | |
| Enclosure | Equivalent to IP 65 (IEC 60529) Housing: Aluminum alloy diecast (acrylic resin baking finish) Built-in space heater (3 W) | | | | | | | | |
| Wire connection | Terminal Block: M3, Ground terminal: M3 | | | | | | | | |
| Conduct port | 2-G1/2 Attachments: Cable gland (for Φ6 to 12 mm cable), plug. | | | | | | | | |
| Wiring |  | | | | | | | | |



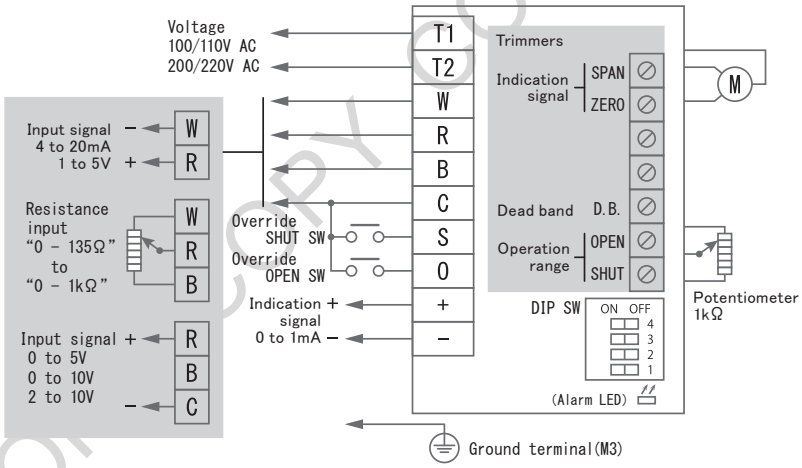
3 way valve: SHUT / Position ① , OPEN / Position ② . The wiring diagram shows the valve closed (P1).

# AEX series

High torque series, rotary actuator. For proportional control use.

The powerful and compact electric actuator built in high reliability and proportional motor.



| Model | AEX-120-□ | AEX-360-□ | AEX-700-□ | AEX-02K-□ | AEX-06K-□ |
|---|---|---|---|---|---|
| Voltage | ① 100 / 110 V AC ±10% 50/60 Hz ② 200 / 220 V AC ±10% 50/60 Hz | | | | |
| Rated torque [N·m] | 12 | 36 | 70 | 200 | 600 |
| Operation time [s] | 30 / 25 (50/60 Hz) | 36 / 30 (50/60 Hz) | 72 / 60 (50/60 Hz) | 77 / 64 (50/60 Hz) | 77 / 64 (50/60 Hz) |
| Power consumption [VA] | 9.5 | 13 | | 45 | 220 |
| Motor | Synchronous motor (Triac control) | | | Reversible motor (Triac control) | |
| Overload protection | Timer | | | | |
| Input signal*1 | 4 to 20 mA 1 to 5 V<br>0 to 5 V 0 to 10 V 2 to 10 V<br>0 - 135 Ω to 0 - 1k Ω Potentiometer input | | | (Input resistance: 250 Ω) (Standard)<br>(Input resistance: more than 1M Ω)<br>(Applied voltage : 5 V DC) | |
| Operation*2 | [Mode A] SHUT by decreased signal ⇔ OPEN by increased signal (Standard)<br>[Mode B] SHUT by increased signal ⇔ OPEN by decreased signal (Option : J)<br>[Forced open / shut] It takes priority over the input signal.<br>C-S is ON → SHUT C-O is ON → OPEN Common in mode A / B | | | | |
| Indication signal | 0 mA: SHUT ⇔ 1mA: OPEN (External load resistance: less than 3k Ω)<br>Common in mode A / B | | | | |
| Override switch | It takes priority over the input signal. Common in mode A / B<br>Dry contact / Transistor, Open collector. (Input signal current: 6 mA 15 V DC) | | | | |
| Resolution | Less than 0.2% | | | | |
| Manual operation | Manual shaft | | | | |
| Duty cycle | 100 % | | | | |
| Ambient temperature | -20 to 55 ℃ | | | | |
| Enclosure | Equivalent to IP 65 (IEC 60529) Housing: Aluminum alloy diecast (acrylic resin baking finish) Built-in space heater (2 W) | | | | |
| Wire connection | Terminal Block: M3, Ground terminal: M3 | | | | |
| Conduct port | 2-G1/2 Attachments: Cable gland (for Φ6 to 12 mm cable), plug. | | | | |
| Wiring |  | | | | |

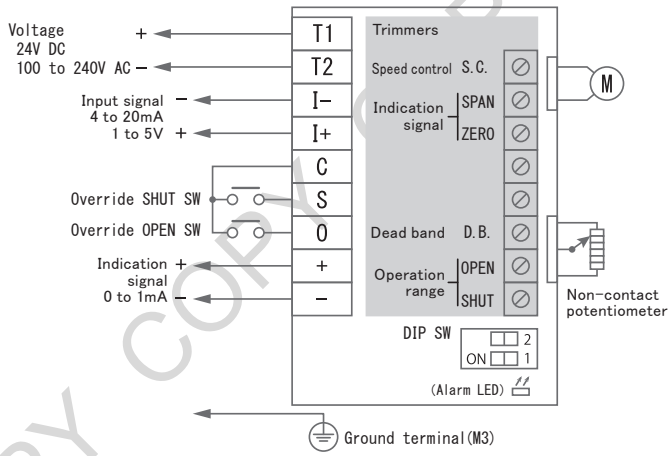


*1) Change by DIP switch. (Standard → Potentiometer input or 0 to 5 V 0 to 10 V 2 to 10 V) *2) Change by DIP switch. (Standard → Mode B)
3 way valve: SHUT / Position ① , OPEN / Position ② .

# PEX series

High torque series, rotary actuator. For proportional control use.

The powerful and compact electric actuator built in high speed brushless DC motor and non-contact potentiometer with high reliability.

| Model | PEX-120-□ | PEX-300-□ | PEX-700-□ |
|---|---|---|---|
| Voltage | 6 100 to 240 V AC ±10% 50/60 Hz 0 24 V DC*1 +20 to -10% | | |
| Rated torque [N·m] | 10 | 21 | 50 |
| Operation time [s]*2 | 2.5 to 4 (12 max.) | 6 to 9 (34 max.) | 12 to 18 (68 max.) |
| Power consumption [VA] | AC Power 80 DC Power 50 | | |
| Motor | Brushless DC motor (PWM control) | | |
| Overload protection | Current limiter | | |
| Input signal | 4 to 20 mA / 1 to 5 V (Input resistance: 250 Ω) | | |
| Operation*3 | [Mode A] SHUT by decreased signal ⇔ OPEN by increased signal (Standard)<br>[Mode B] SHUT by increased signal ⇔ OPEN by decreased signal (Option : J)<br>[Forced open / shut] It takes priority over the input signal.<br>C-S is ON → SHUT C-O is ON → OPEN Common in mode A / B | | |
| Indication signal | 0 mA: SHUT ⇔ 1mA: OPEN (External load resistance: less than 3k Ω)<br>Common in mode A / B | | |
| Override switch | It takes priority over the input signal. Common in mode A / B<br>Dry contact / Transistor, Open collector. (Input signal current: 6 mA 15 V DC) | | |
| Resolution | Less than 0.2% | | |
| Duty cycle | 100 % | | |
| Ambient temperature | -20 to 55 ℃ | | |
| Manual operation | Manual shaft | | |
| Enclosure | Equivalent to IP 65 (IEC 60529) Housing: Aluminum alloy diecast (acrylic resin baking finish) Built-in space heater (3 W) | | |
| Wire connection | Terminal Block: M3, Ground terminal: M3 | | |
| Conduct port | 2-G1/2 Attachments: Cable gland (for Φ6 to 12 mm cable), plug. | | |
| Wiring |  | | |

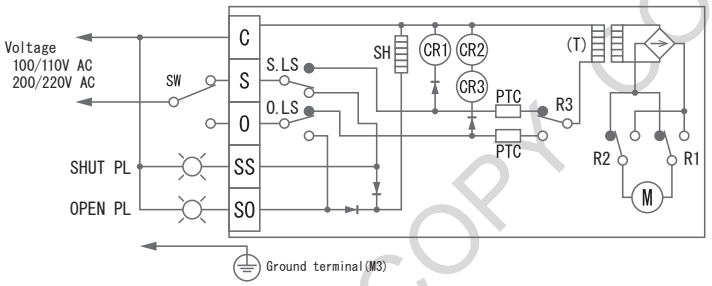


*1) Cannot be use a half or full-wave DC power supply.
*2) The operation time is the time when it is operated by the override switch. Operation time with the override switch can not be adjusted with S.C. trimmer. At factory shipment, the S.C. trimmer is set to the fastest position.
*3) Change by DIP switch. (Standard → Mode B)
3 way valve: SHUT / Position ① , OPEN / Position ② .

# AD1 / HD1 series

High torque, rotary actuator. For ON-OFF use.

The use of self-locking worm gear is standard and ensures positive valve position.

| Classification | AD1 | | HD1 | | | |
|---|---|---|---|---|---|---|
| Model | AD1-300-□ | AD1-700-□ | HD1-300-□ | HD1-700-□ | HD1-02K-□ | HD1-06K-□ |
| Voltage | ① 100 / 110 V AC ±10% 50/60 Hz ② 200 / 220 V AC ±10% 50/60 Hz | | | | | |
| Rated torque [N·m] | 30 | 70 | 30 | 70 | 200 | 600 |
| Operation time [s] | 3 to 4 | 6 to 10 | 1 to 2 | 3 to 5 | 8 to 15 | 24 to 45 |
| Power consumption [VA] | 100 max. | | 150 max. | | | |
| Motor | DC motor | | | | | |
| Overload protection | Thermistor | | | | | |
| Method of operation | Transfer input type | | | | | |
| Operation | Power to S → SHUT (SHUT PL is lit.)<br>Power to O → OPEN (OPEN PL is lit.) | | | | | |
| Output signal rating | Resistance load 10 A 250 V AC (Minimum 27 mA) | | | | | |
| Duty cycle | 20 % 15 min. (When ambient temperature is over 50℃ , 10% 15 min.) | | | | | |
| Ambient temperature | -20 to 55 ℃ | | | | | |
| Manual operation | Manual over-ride with clutch. (Direct operation / 06K: Operation by manual shaft.) | | | | | |
| Enclosure | Equivalent to IP 65 (IEC 60529) Housing: Aluminum alloy diecast (acrylic resin baking finish) Built-in space heater (0.8 W) | | | | | |
| Wire connection | Terminal Block: M3, Ground terminal: M3 | | | | | |
| Conduct port | 2-G1/2 Attachments: Cable gland (for Φ6 to 12 mm cable), plug. | | | | | |
| Wiring |  | | | | | |

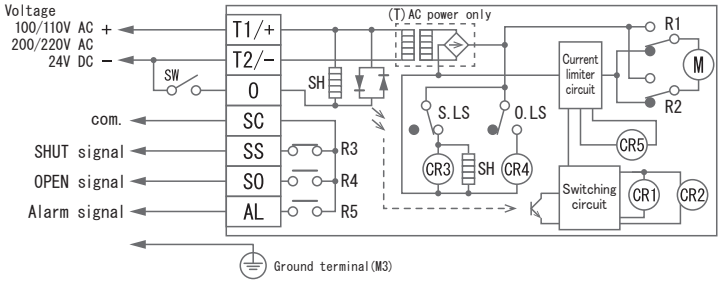


3 way valve: SHUT / Position ① , OPEN / Position ② . The wiring diagram shows the valve closed (P1).

# AD2 / HD2 series

High torque, rotary actuator. For ON-OFF use.

The use of self-locking worm gear is standard and ensures positive valve position.

| Classification | AD2 | | HD2 | | | |
|---|---|---|---|---|---|---|
| Model | AD2-300-□ | AD2-700-□ | HD2-300-□ | HD2-700-□ | HD2-02K-□ | HD2-06K-□ |
| Voltage | ① 100 / 110 V AC ±10% 50/60 Hz ② 200 / 220 V AC ±10% 50/60 Hz ⓪ 24 V DC | | | | | |
| Rated torque [N·m] | 30 | 70 | 30 | 70 | 200 | 600 |
| Operation time [s] | 3 to 4 | 6 to 10 | 1 to 2 | 3 to 5 | AC : 8 to 15<br>DC : 12 to 17 | AC : 24 to 45<br>DC : 36 to 50 |
| Power consumption [VA] | AC : 100 max. DC : 80 max. | | AC : 150 max. DC : 120 max. | | | |
| Motor | DC motor | | | | | |
| Overload protection | Current limiter | | | | | |
| Method of operation | a-contact input type with built-in relay | | | | | |
| Operation | SW is OFF → SHUT (R3 SW is ON)<br>SW is ON → OPEN (R4 SW is ON) Overtorque → R5 SW is ON | | | | | |
| Input signal current | 10 mA 100 V AC / 6.5 mA 200 V AC / 38 mA 24 V DC<br>(Leakage current in SW : less than 1 mA) O terminal input : Photo coupler. | | | | | |
| Output signal rating | Resistance load 0.5 A 125 V AC / 1 A 24 V DC Micro load : 1 mA 5 V DC | | | | | |
| Alarm sugnal | Output when the motor protection circuit operates by the overload. (it returns by power supply OFF or reverse operating signal.) | | | | | |
| Duty cycle | 20 % 15 min. (When ambient temperature is over 50℃ , 10% 15 min.) | | | | | |
| Ambient temperature | -20 to 55 ℃ | | | | | |
| Manual operation | Manual over-ride with clutch. (Direct operation / 06K: Operation by manual shaft.) | | | | | |
| Enclosure | Equivalent to IP 65 (IEC 60529) Housing: Aluminum alloy diecast (acrylic resin baking finish) Built-in space heater (0.8 W) | | | | | |
| Wire connection | Terminal Block: M3, Ground terminal: M3 | | | | | |
| Conduct port | 2-G1/2 Attachments: Cable gland (for Φ6 to 12 mm cable), plug. | | | | | |
| Wiring |  | | | | | |

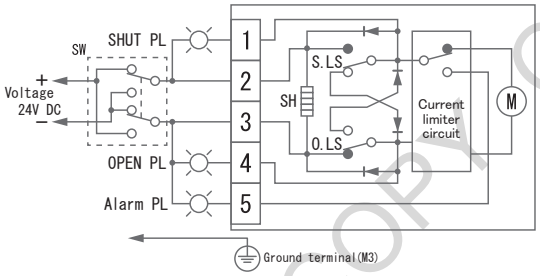


3 way valve: SHUT / Position ① , OPEN / Position ② . The wiring diagram shows the valve closed (P1).

# AD0 / HD0 series

High torque, rotary actuator. For ON-OFF use.

The use of self-locking worm gear is standard and ensures positive valve position.

| Classification | AD0 | | HD0 | | | |
|---|---|---|---|---|---|---|
| Model | AD0-300-0 | AD0-700-0 | HD0-300-0 | HD0-700-0 | HD0-02K-0 | HD0-06K- |
| Voltage | 0 24 V DC | | | | | |
| Rated torque [N·m] | 30 | 70 | 30 | 70 | 200 | 600 |
| Operation time [s] | 3 to 4 | 6 to 10 | 1 to 2 | 3 to 5 | 12 to 17 | 36 to 50 |
| Power consumption [VA] | 80 max. | | 120 max. | | | |
| Motor | DC motor | | | | | |
| Overload protection | Current limiter | | | | | |
| Method of operation | Switching polarity type | | | | | |
| Operation | 2+ 3- → SHUT (SHUT PL is lit.)<br>3+ 2- → OPEN (OPEN PL is lit.) Over torque → Alarm PL is lit. | | | | | |
| Output signal rating | Resistance load 1 A to 35 mA 24 V DC | | | | | |
| Duty cycle | 20 % 15 min. (When ambient temperature is over 50℃ , 10% 15 min.) | | | | | |
| Ambient temperature | -20 to 55 ℃ | | | | | |
| Manual operation | Manual over-ride with clutch. (Direct operation / 06K: Operation by manual shaft.) | | | | | |
| Enclosure | Equivalent to IP 65 (IEC 60529) Housing: Aluminum alloy diecast (acrylic resin baking finish) Built-in space heater*1 | | | | | |
| Wire connection | Terminal Block: M3, Ground terminal: M3 | | | | | |
| Conduct port | 2-G1/2 Attachments: Cable gland (for Φ6 to 12 mm cable), plug. | | | | | |
| Wiring |  | | | | | |

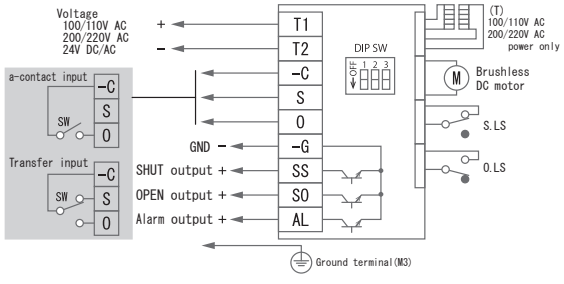


*1) AD: 1.6 W HD0: 3 W 3 way valve: SHUT / Position ① , OPEN / Position ② . The wiring diagram shows the valve closed (P1).

# PHR series

High torque series. For high frequency ON-OFF operating use.

High frequency ON-OFF operating actuator with high speed brushless DC motor.

| Model | | PHR-300-□ | PHR-700-□ | PHR-02K-□ | PHR-06K-□ |
|---|---|---|---|---|---|
| Voltage | | 1 100 / 110 V AC ±10% 50/60 Hz 2 200 / 220 V AC ±10% 50/60 Hz 3 24 V AC ±10% 50/60 Hz 0 24 V DC | | | |
| Rated torque [N·m] | | 21 | 50 | 140 | 400 |
| Operation time [s] | | 1.5 to 2.5 | AC : 4 to 7<br>DC : 5 to 7 | AC : 13 to 18<br>DC : 16 to 18 | AC : 38 to 50<br>DC : 45 to 58 |
| Power consumption [VA] | | 120 max. | | | |
| Motor | | Brushless DC motor (PWM control) | | | |
| Overload protection | | Current limiter | | | |
| Method of operation | | a-contact input type with built-in relay [Mode A] {Mode B] / Transfer input type [Mode C] | | | |
| Operation*1 | Mode A | SW is OFF → SHUT. SW is ON → OPEN. (Standard) | | | |
| | Mode B | SW is ON → SHUT. SW is OFF → OPEN. (Option: Q) | | | |
| | Mode C | C-S is ON → SHUT. C-O is ON → OPEN. If both OFF / both ON → HOLD. (Option: V) | | | |
| Input signal current | | 6 mA 15 V DC (O-terminal) *Can use a transistor. Leakage current in SW: less than 1 mA | | | |
| Output signal rating | | 30 mA 50 V DC max. Transistor output (Open collector) | | | |
| Alarm sugnal | | Output when the motor protection circuit operates by the overload. It returns by power supply OFF or reverse operating signal. | | | |
| Duty cycle | | 100 % | | | |
| Ambient temperature | | -20 to 55 ℃ | | | |
| Manual operation | | Manual over-ride with clutch. (Direct operation / 06K: Operation by manual shaft.) | | | |
| Enclosure | | Equivalent to IP 65 (IEC 60529) Housing: Aluminum alloy diecast (acrylic resin baking finish)<br>Built-in space heater (100 / 110, 200 / 220 V AC: 4 W 24 V AC: 2 W 24 V DC: 1.5 W) | | | |
| Wire connection | | Terminal Block: M3, Ground terminal: M3 | | | |
| Conduct port | | 2-G1/2 Attachments: Cable gland (for Φ6 to 12 mm cable), plug. | | | |
| Wiring | |  | | | |

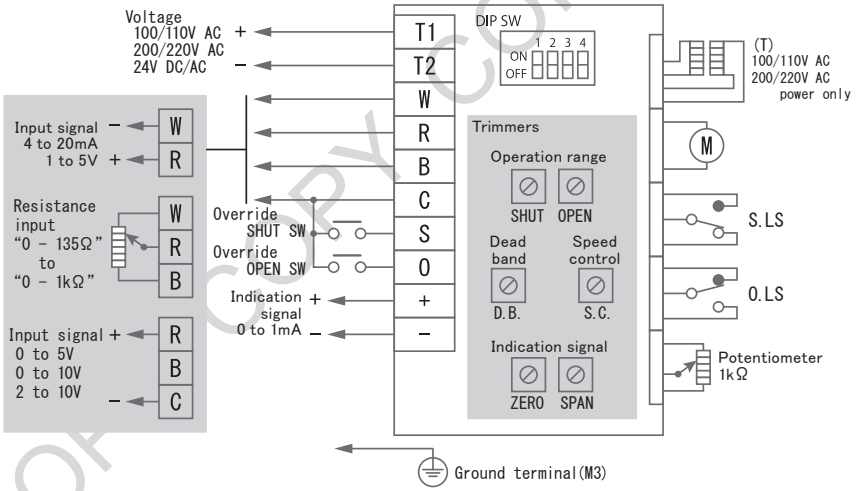


*1) Change by DIP switch. (Standard → Mode B / Mode C)
3 way valve: SHUT / Position ① , OPEN / Position ② . The wiring diagram shows the valve closed (P1).

# PDX series High torque, rotary actuator. For proportional control use.

The use of self-locking worm gear is standard and ensures positive valve position.



| Model | PDX-300-□ | PDX-700-□ | PDX-02K-□ | PDX-06K-□ |
|---|---|---|---|---|
| Voltage | ① 100 / 110 V AC ±10% 50/60 Hz ② 200 / 220 V AC ±10% 50/60 Hz ③ 24 V AC ±10% 50/60 Hz ⓪ 24 V DC | | | |
| Rated torque [N·m] | 21 | 50 | 140 | 400 |
| Operation time [s] | 6 to 20 Variable | 15 to 50 Variable | 30 to 100 Variable | 90 to 300 Variable |
| Power consumption [VA] | AC：100 max. DC：80 max. | | AC：150 max. DC：120 max. | |
| Motor | DC motor (VIC : voltage, current control) | | | |
| Overload protection | Current limiter | | | |
| Input signal*1 | 4 to 20 mA 1 to 5 V (Input resistance: 250 Ω) (Standard)<br>0 to 5 V 0 to 10 V 2 to 10 V (Input resistance: more than 1M Ω)<br>0 - 135 Ω to 0 - 1k Ω Potentiometer input (Applied voltage : 5 V DC) | | | |
| Operation*2 | [Mode A] SHUT by decreased signal ⇔ OPEN by increased signal (Standard)<br>[Mode B] SHUT by increased signal ⇔ OPEN by decreased signal (Option : J)<br>[Forced open / shut] It takes priority over the input signal.<br>C-S is ON → SHUT C-O is ON → OPEN Common in mode A / B | | | |
| Indication signal | 0 mA: SHUT ⇔ 1mA: OPEN (External load resistance: less than 3k Ω)<br>Common in mode A / B | | | |
| Override switch | It takes priority over the input signal. Common in mode A / B<br>Dry contact / Transistor, Open collector. (Input signal current: 6 mA 15 V DC) | | | |
| Resolution | Less than 0.5 % | Less than 0.2 % | | |
| Duty cycle | 50 % 30 min. | | | |
| Ambient temperature | -20 to 55 ℃ | | | |
| Manual operation | Manual over-ride with clutch. (Direct operation / 06K: Operation by manual shaft.) | | | |
| Enclosure | Equivalent to IP 65 (IEC 60529) Housing: Aluminum alloy diecast (acrylic resin baking finish) Built-in space heater (3 W) | | | |
| Wire connection | Terminal Block: M3, Ground terminal: M3 | | | |
| Conduct port | 2-G1/2 Attachments: Cable gland (for Φ6 to 12 mm cable), plug. | | | |
| Wiring |  | | | |

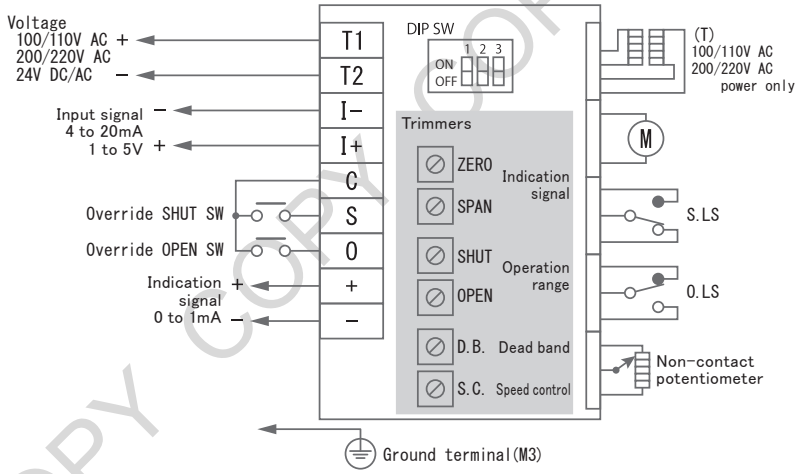


*1) Change by DIP switch. (Standard → Potentiometer input or 0 to 5 V 0 to 10 V 2 to 10 V) *2) Change by DIP switch. (Standard → Mode B)
3 way valve: SHUT / Position ① , OPEN / Position ② . The wiring diagram shows the valve closed (P1).

# PHX series

High torque , rotary actuator. For high frequency proportional control use.

High frequency operating actuator with high speed brushless DC motor and non-contact potentiometer.

| Model | PHX-300-□ | PHX-700-□ | PHX-02K-□ | PHX-06K-□ |
|---|---|---|---|---|
| Voltage | 1 100 / 110 V AC ±10% 50/60 Hz 2 200 / 220 V AC ±10% 50/60 Hz 3 24 V AC ±10% 50/60 Hz 0 24 V DC | | | |
| Rated torque [N·m] | 21 | 50 | 140 | 400 |
| Operation time [s]*1 | AC : 1.2 to 2.5 (8 max.)<br>DC : 2 to 2.5 (8 max.) | AC : 3.5 to 7 (22 max.)<br>DC : 4.5 to 7 (22 max.) | AC : 11 to 23 (78 max.)<br>DC : 15 to 23 (78 max.) | AC : 35 to 70 (230 max.)<br>DC : 45 to 70 (230 max.) |
| Power consumption [VA] | 120 max. | | | |
| Motor | Brushless DC motor (PWM control) | | | |
| Overload protection | Current limiter | | | |
| Input signal | 4 to 20 mA / 1 to 5 V (Input resistance 250 Ω) | | | |
| Operation*2 | [Mode A] SHUT by decreased signal ⇔ OPEN by increased signal (Standard)<br>[Mode B] SHUT by increased signal ⇔ OPEN by decreased signal (Option : J)<br>[Forced open / shut] It takes priority over the input signal.<br>C-S is ON → SHUT C-O is ON → OPEN Common in mode A / B | | | |
| Indication signal | 0 mA: SHUT ⇔ 1mA: OPEN (External load resistance: less than 3k Ω)<br>Common in mode A / B | | | |
| Override switch | It takes priority over the input signal. Common in mode A / B<br>Dry contact / Transistor, Open collector. (Input signal current: 6 mA 15 V DC) | | | |
| Resolution | Less than 0.2% | | | |
| Duty cycle | 100% | | | |
| Ambient temperature | -20 to 55 ℃ | | | |
| Manual operation | Manual over-ride with clutch. (Direct operation / 06K: Operation by manual shaft.) | | | |
| Enclosure | Equivalent to IP 65 (IEC 60529) Housing: Aluminum alloy diecast (acrylic resin baking finish) Built-in space heater (3 W) | | | |
| Wire connection | Terminal Block: M3, Ground terminal: M3 | | | |
| Conduct port | 2-G1/2 Attachments: Cable gland (for Φ6 to 12 mm cable), plug. | | | |
| Wiring |  | | | |



*1) The operation time is the time when it is operated by the override switch. Operation time with the override switch can not be adjusted with S.C. trimmer. At factory shipment, the S.C. trimmer is set to the fastest position.
*2) Change by DIP switch. (Standard → Mode B)
3 way valve: SHUT / Position ① , OPEN / Position ② . The wiring diagram shows the valve closed (P1).

# AE3 / AD3 / HD3 series

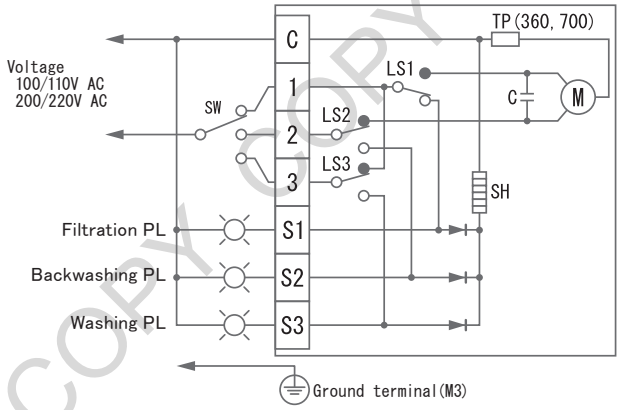
For 5 way ball valve.

The high performance electric actuator developed for 5 way ball valve. It drives into the position of each process by the change incoming signal of three processes of filtration, reverse flow and cleaning.

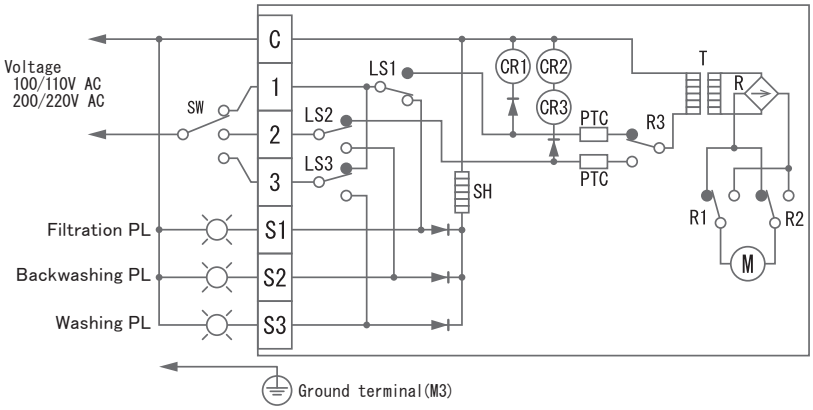
| Classification | | AE3 | | | AD3 | | HD3 | |
|---|---|---|---|---|---|---|---|---|
| Model | | AE3-120-□ | AE3-360-□ | AE3-700-□ | AD3-300-□ | AD3-700-□ | HD3-02K-□ | HD3-06K-□ |
| Voltage | | ① 100 / 110 V AC ±10% 50/60 Hz ② 200 / 220 V AC ±10% 50/60 Hz | | | | | | |
| Rated torque [N·m] | | 12 | 36 | 70 | 30 | 70 | 200 | 600 |
| Operation time [s] | Filtration to Backwashing | 19 / 16 (50/60Hz) | 15 / 12 (50/60Hz) | 30 / 24 (50/60Hz) | 5 to 8 | 10 to 18 | 16 to 30 | 50 to 90 |
| | Backwashing to Washing | 14 / 12 (50/60Hz) | 11 / 9 (50/60Hz) | 22 / 18 (50/60Hz) | 4 to 6 | 8 to 14 | 12 to 23 | 38 to 67 |
| | Washing to Filtration | 5 / 4 (50/60Hz) | 4 / 3 (50/60Hz) | 8 / 6 (50/60Hz) | 2 to 3 | 3 to 6 | 4 to 7 | 12 to 23 |
| Power consumption [VA] | | 19 | 60 | | 100 max. | | 150 max. | |
| Motor | | Synchronous | Reversible motor | | DC motor | | | |
| Overload protection | | Thermal protector | | | Thermistor | | | |
| Method of operation | | Transfer input type | | | | | | |
| Operation | | When SW1 is ON, it's Filtration. (Filtration PL is lit.)<br>When SW2 is ON, it's Backwashing. (Backwashing PL is lit.)<br>When SW3 is ON, it's Washing. (Washing PL is lit.) | | | | | | |
| Output signal rating | | Resistance load 3 A 250 V AC (Minimum 0.1 A) | | | 300 to 02K : Resistance load 10 A 250 V AC (Minimum 27 mA)<br>06K : Resistance load 3 A 250 V AC (Minimum 0.1 A) | | | |
| Duty cycle | | 20 % 15 min. | | | 20 % 15 min.<br>(When ambient temperature is over 50℃ , 10% 15 min.) | | | |
| Ambient temperature | | -20 to 55 ℃ | | | | | | |
| Manual operation | | Manual shaft | | | Manual over-ride with clutch.<br>(Direct operation / 06K: Operation by manual shaft.) | | | |
| Enclosure | | Equivalent to IP 65 (IEC 60529) Housing: Aluminum alloy diecast (acrylic resin baking finish) Built-in space heater | | | | | | |
| Wire connection | | Terminal Block: M3, Ground terminal: M3 | | | | | | |
| Conduct port | | 2-G1/2 Attachments: Cable gland (for Φ6 to 12 mm cable), plug. | | | | | | |

Wiring

AE3



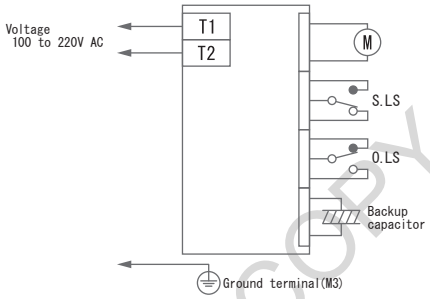

AD3 / HD3




The wiring diagram shows the filtration.

# ACR series Compact series. Emergency shut-off actuator.

In case of power failure, electric discharge from built-in capacitor lets valve operate.

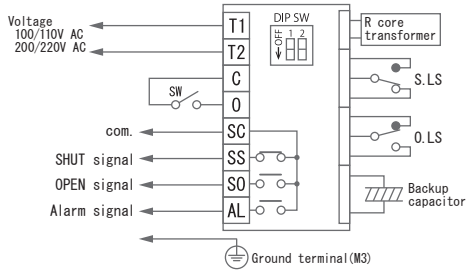
| Model | ACR-030-2 |
|---|---|
| Voltage | ② 100 to 220 V AC ±10% 50/60 Hz |
| Rated torque [N·m] | 3 |
| Operation time [s] | When power supply on → less than 12<br>When power supply shut off → less than 6 |
| Power consumption [VA] | 30 max. |
| Motor | DC motor |
| Overload protection | Thermistor |
| Method of operation | Operation by power ON / OFF |
| Operation | Power OFF : SHUT ⇔ Power ON : OPEN (Standard)<br>Power ON : SHUT ⇔ Power OFF : OPEN (Option: 45) |
| Built-in power supply | Electric double layer capacitor |
| Duty cycle | 20 % 15 min. |
| Manual operation | -20 to 50 ℃ |
| Ambient temperature | Direct operation on the output shaft. |
| Enclosure | Equivalent to IP 65 (IEC 60529) Housing: Aluminum alloy diecast body + Polycarbonate resin cover. |
| erminal block | For bare wire 0.14 to 1.5 mm² (AWG 26 to 16) Ground terminal: M3 |
| Conduct port | G3/8 Cable gland (for Φ5 to 10.5 mm cable) |
| Wiring |  |



3 way valve: SHUT / Position ① , OPEN / Position ② . The wiring diagram shows the valve closed (P1).

# ECR series High torque series. Emergency shut-off actuator. For ON·OFF use.

In case of power failure, electric discharge from built-in capacitor lets valve operate.

| Model | ECR-120-□ | ECR-360-□ |
|---|---|---|
| Voltage | ① 100 / 110 V AC ±5% 50/60 Hz ② 200 / 220 V AC ±5% 50/60 Hz | |
| Rated torque [N·m] | 12 | 36 |
| Operation time*1[s] | 3 to 6 | 7 to 14 |
| Charging time*2[s] | 30 | 90 |
| Power consumption [VA] | In motion : 30 max. Charging : 50 max. Not in motion : 2.5 | |
| Motor | DC motor | |
| Overload protection | Timer | |
| Method of operation | a-contact input type, with built-in relay | |
| Operation*3 | [Mode A] SW is OFF → SHUT SW is ON → OPEN Power failure → SHUT (Standard)<br>[Mode B] SW is ON → SHUT, SW is OFF → OPEN Power failure → OPEN (Option Q) | |
| Built-in power supply | Electric double layer capacitor | |
| Input signal current | 6 mA (O-terminal) Leakage current in SW: less than 1 mA. | |
| Output signal rating | Resistance load: 0.5 A 125 V AC / 1A 24 V DC. | |
| Alarm sugnal | Output when the motor protection circuit operates by the overload. (it returns by power supply OFF or reverse operating signal) | |
| Duty cycle | 20 % 15 min. | |
| Ambient temperature | -20 to 50 ℃ | |
| Manual operation | Manual shaft | |
| Enclosure | Equivalent to IP 65 (IEC 60529) Housing: Aluminum alloy diecast (acrylic resin baking finish) Built-in space heater | |
| Wire connection | For bare wire 0.2 to 1.5 mm² (AWG 26 to 16), Ground terminal : M3 | |
| Conduct port | 2-G1/2 Attachments: Cable gland (for Φ6 to 12 mm cable), plug. | |
| Wiring |  | |

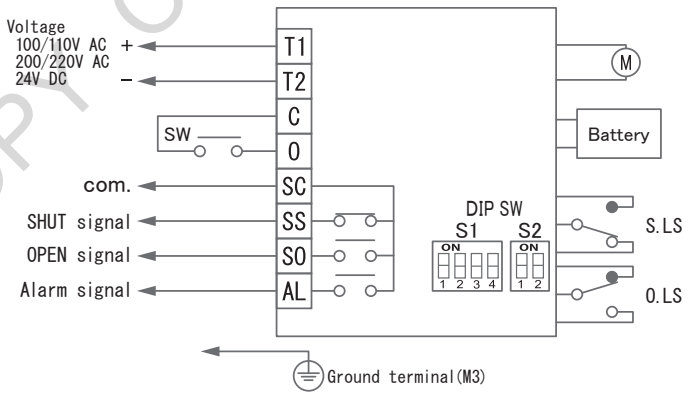


*1) When power is turned on, operation starts about 30 seconds after capacitor is charged. *2) When the power is just turned on.
*3) Change by DIP switch. (Standard → Mode B)
3 way valve: SHUT / Position ① , OPEN / Position ② . The wiring diagram shows the valve closed (P1).

# ABR / HBR series

High torque series. Emergency shut-off actuator. For ON･OFF use.

The actuator operates at the time of power loss by the built-in high-performance shielded battery.

| Classification | ABR (a-contact input type with built-in relay) | | HBR (a-contact input type with built-in relay) | | | |
|---|---|---|---|---|---|---|
| Model | ABR-300-☐ | ABR-700-☐ | HBR-300-☐ | HBR-700-☐ | HBR-02K-☐ | HBR-06K-☐ |
| Voltage | ① 100 / 110 V AC ±10% 50/60 Hz ② 200 / 220 V AC ±10% 50/60 Hz ⓪ 24 V DC*1 | | | | | |
| Rated torque [N･m] | 30 | 70 | 30 | 70 | 200 | 600 |
| Operation time [s] | 3 to 4 | 6 to 10 | 1 to 2 | 3 to 5 | AC: 8 to 15<br>DC: 12 to 17 | AC: 24 to 45<br>DC: 36 to 50 |
| Power consumption [VA] | AC : 100 max. DC : 80 max. | | AC : 150 max. DC : 120 max. | | | |
| Motor | DC motor | | | | | |
| Overload protection | Current limiter | | | | | |
| Control switch | a-contact input type, with built-in relay | | | | | |
| Operation*2 | [Mode A] SW is OFF → SHUT. SW is ON → OPEN. (Standard)<br>[Mode B] SW is ON → SHUT. SW is OFF → OPEN. (Option Q) | | | | | |
| Power failure*3 | [Response mode] (Standard) Mode A : SHUT.<br>Mode B : OPEN.<br>[Standby mode]<br>After power failure, waiting for an external signal input to the switch in a fixed period.<br>Waiting time of power failure: more than 50 hours<br>(It becomes short due to the influence of use environment.)<br>Shift the valve to OPEN / SHUT (or HOLD) by battery out.<br>Stop waiting for the external input signal.<br>[FINISH] Battery out → [Mode A] SHUT<br>[Mode B] OPEN<br>[HOLD] Battery out → Hold the current valve position. | | | | | |
| Battery | Compact seal lead acid battery : 12 V, 2.5Ah *It is recommend to exchange a battery for every 5years (at 25℃ ) | | | | | |
| Charge system | Constant voltage charge current | | | | | |
| Input signal current | 2.5 mA 12 V DC (O-terminal) Leakage current in SW: less than 0.5 mA | | | | | |
| Output signal rating | Resistance load : 0.5 A 120 V AC / 0.6 A 24 V DC Micro load : 1 mA 5 V DC | | | | | |
| Alarm signal | Overtorque : It returns by power supply OFF or reverse operating signal.<br>Battery out : The contacts turn on as battery consumption progresses. | | | | | |
| Duty cycle | 20 % 15 min. | | | | | |
| Ambient temperature | -20 to 50 ℃ | | | | | |
| Manual operation | Manual over-ride with clutch. (Direct operation / 06K: Operation by manual shaft.) | | | | | |
| Enclosure | Equivalent to IP 65 (IEC 60529) Housing: AC4C Aluminum alloy castings (acrylic resin baking finish) Built-in space heater | | | | | |
| Terminal block | For bare wire 0.2 to 2.5 $mm^2$ (AWG 24 to 12), Ground terminal: M3 | | | | | |
| Conduct port | 2-G1/2 Attachments: Cable gland (for Φ6 to 12 mm cable), plug. | | | | | |
| Wiring |  | | | | | |

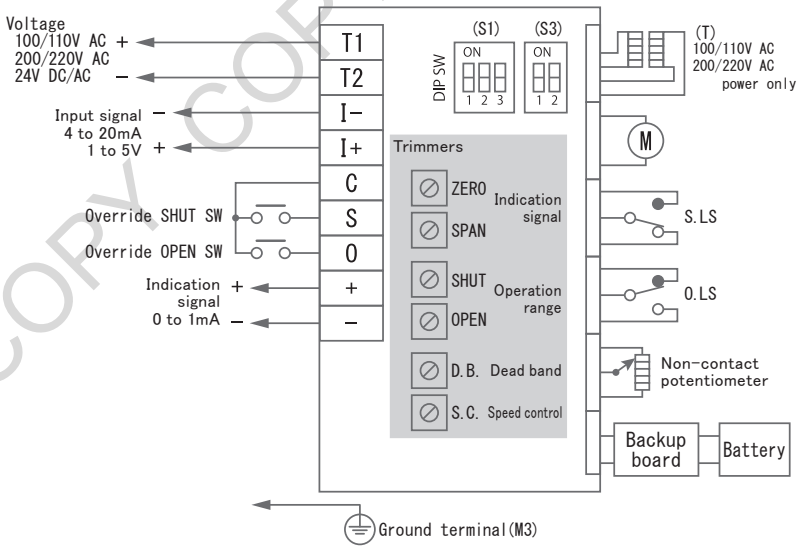


*1) Cannot be use a half or full-wave DC power.
*2) Change by DIP switch. (Standard → Mode B)
*3) Change by DIP switch. (Standard → Standby mode)
3 way valve: SHUT / Position ① , OPEN / Position ② . The wiring diagram shows the valve closed (P1).

# PBX series

High torque series. Emergency shut-off actuator. For proportional control use.

The actuator operates at the time of power loss by the built-in high-performance shielded battery.
High frequency operating actuator with high speed brushless DC motor and non-contact potentiometer.

| Model | PBX-300-□ | PBX-700-□ | PBX-02K-□ | PBX-06K-□ |
|---|---|---|---|---|
| Voltage | ① 100 / 110 V AC ±10% 50/60 Hz ② 200 / 220 V AC ±10% 50/60 Hz ③ 24 V AC ±10% 50/60 Hz ⓪ 24 V DC*1 | | | |
| Rated torque [N·m] | 21 | 50 | 140 | 400 |
| Operation time [s]*2 | AC : 1.2 to 2.5 (8 max.)<br>DC : 2 to 2.5 (8 max.) | AC : 3.5 to 7 (22 max.)<br>DC : 4.5 to 7 (22 max.) | AC : 11 to 23 (78 max.)<br>DC : 15 to 23 (78 max.) | AC : 35 to 70 (230 max.)<br>DC : 45 to 70 (230 max.) |
| Power consumption [VA] | 120 max. | | | |
| Motor | Brushless DC motor (PWM control) | | | |
| Overload protection | Current limiter | | | |
| Input signal | 4 to 20 mA / 1 to 5 V (Input resistance: 250 Ω) | | | |
| Operation*3 | [Mode A] SHUT by decreased signal ⇔ OPEN by increased signal (Standard)<br>[Mode B] SHUT by increased signal ⇔ OPEN by decreased signal (Option : J)<br>[Forced open / shut] It takes priority over the input signal.<br>C-S is ON → SHUT C-O is ON → OPEN Common in mode A / B | | | |
| Power failure*4 | SHUT at power failure (Standard)<br>OPEN at power failure (Option : P) | | | |
| Backup time | About 4 minutes | | | |
| Battery | Compact seal lead acid battery : 12 V, 2.5Ah *It is recommend to exchange a battery for every 5years (at 25℃ ) | | | |
| Charge system | Constant voltage charge current | | | |
| Indication signal | 0 mA: SHUT ⇔ 1mA: OPEN (External load resistance: less than 3k Ω) Common in mode A / B | | | |
| Override switch | It takes priority over the input signal. Common in mode A / B<br>Dry contact / Transistor, Open collector. (Input signal current: 6 mA 15 V DC) | | | |
| Resolution | Less than 0.2% | | | |
| Duty cycle | 100% | | | |
| Ambient temperature | -20 to 50 ℃ | | | |
| Manual operation | Manual over-ride with clutch. (Direct operation / 06K: Operation by manual shaft.) | | | |
| Enclosure | Equivalent to IP 65 (IEC 60529) Housing: AC4C Aluminum alloy castings (acrylic resin baking finish) Built-in space heater | | | |
| Wire connection | Terminal Block: M3, Ground terminal: M3 | | | |
| Conduct port | 2-G1/2 Attachments: Cable gland (for Φ6 to 12 mm cable), plug. | | | |
| Wiring |  | | | |



*1) Cannot be use a half or full-wave DC power supply.
*2) The operation time is the time when it is operated by the override switch. Operation time with the override switch can not be adjusted with S.C. trimmer. At factory shipment, the S.C. trimmer is set to the fastest position.
*3) Change by DIP switch. (Standard → Mode B)
*4) Change by DIP switch. (Standard → OPEN at power failure)
3 way valve: SHUT / Position ① , OPEN / Position ② . The wiring diagram shows the valve closed (P1).

# Control Device

## VSC - SP Split-range transmitter

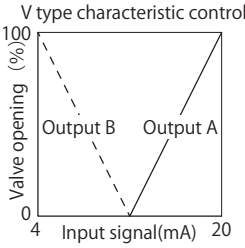
Split range control uses two sets of different control valves. A set up of the translating to change to V typr, is easy.

Input signal : 4 to 20 mA
(Input resistance250 Ω )

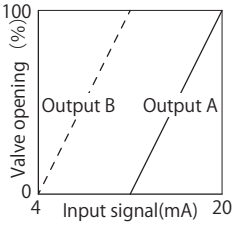
Output signal : 4 to 20 mA
(Input resistance on the controlled side is 600 Ω or less.)

Voltage : 24 V DC Power required 2W MAX.

V type characteristic control




Parallel characteristic control




## VSC - 2L Linearizer

A set up of the equal percentage characteristic to change to linear , is easy.

The part type and mixed control by two sets of control valves.

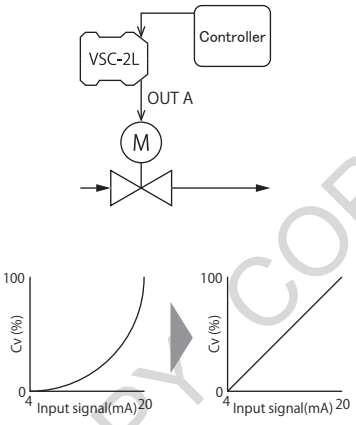
Revision of the difference in the operating time of two sets of valves control is possible.

Input signal : 4 to 20 mA
(Input resistance250 Ω )

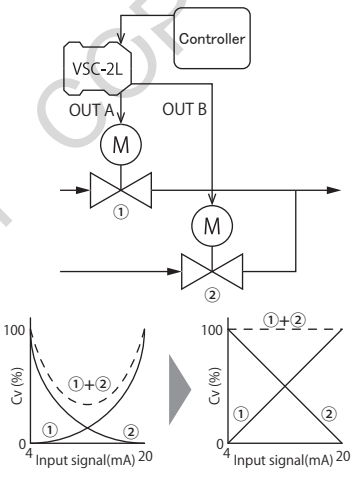
Output signal : 4 to 20 mA
(Proportional control side input resistance600 Ω or less.)

Voltage : 24 V DC Power required 2W MAX.

Correction of flow characteristic




Correction of flow characteristic
(When mixing using two valves.)




## VSC - AL Alarm

The alarm of set point is output to an incoming signal.

Rotary switch set point adjustments .

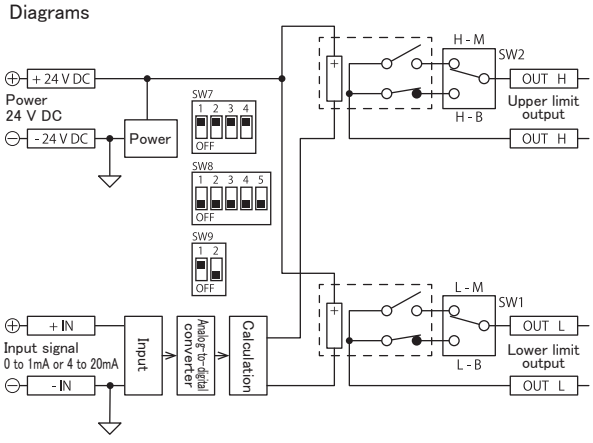
Alarm output is possible for no-voltage contact.

Selection with an internal switch is possible for input and output specification. (0 to 1mA, 4 to 20mA/make contact , break contact )

Output signal rating
Dry contact 250 V AC 1.5 A / 30 V DC 1.5A

Voltage : 24 V DC Power required 2W MAX.

Diagrams




## MINI - PS Signal conditioners

COMBICON Terminal board.

Module 22.5mm High-density mounting.

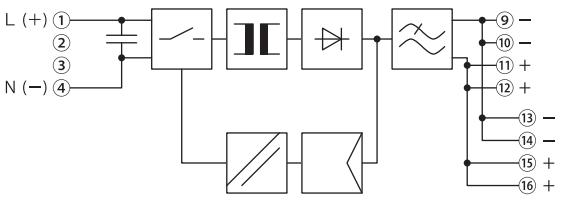
CE marking.

Input voltage range : 85 to 264 V AC (47 to 63 Hz)
90 to 350 V DC

Out put voltage : 24 V DC

Rated current: 0.65 A

Diagrams



# Option for actuators

## BPU series Battery power unit

A 24V DC motorized valve can be activated in the event of power loss. It can also be set to a mode that outputs by external signal input (seismologic etc.) For up to 7 days after power loss.

Emergency operation mode
Immediately after power loss, battery power is output for about 2 minutes.

Standby mode
After power is lost, it waits for an external signal. When the input signal is input for 1 second or longer, the battery power is output for 2 minutes.

Built-in start-up current auxiliary circuit realizes longer battery life. Batteries with a dry structure, do not require maintenance such as refilling and have an expected life of 8 to 9 years.

| Model | BPU - 12 | | BPU - 25 | |
|---|---|---|---|---|
| Battery capacity | 12 V / 2.5 Ah × 1 | | 12V / 2.5Ah × 2 = 24 V / 2.5 Ah | |
| Rated output | 120 VA 2min. | | 288 VA 2min. | |
| Start up current | 7 A MAX. 10 milliseconds at startup.<br>6 A MAX. 10 seconds at operation. | | 18 A MAX. 10 milliseconds at startup.<br>15 A MAX. 10 seconds at operation. | |
| Power | ・24 V DC (+20 to -10% ) ・Full-wave 24 V DC power supply | | | |
| Builit-in battery | Compact seal lead acid battery | | | |
| Standby time | Up to 7 days when fully charged. *It depends on the usage environment. | | | |
| Charging method | Constant voltage and current charging method with temperature compensation. 200mA MAX. | | | |
| Charging time | Approximately 24 hours (when the ambient temperature is 25℃ ) *It depends on the usage environment. | | | |
| Ambient temperature | -20 to 50℃ (When charging) -40 to 50℃ (When discharging) | | | |
| Number of units that can be operated simultaneously by 24 V DC power. | CMX-015 | 40 units MAX. | CMX-015 | 96 units MAX. |
| | CMX-070 | 20 units MAX. | CMX-070 | 48 units MAX. |
| | CD2-030 | 12 units MAX. | CD2-030 | 28 units MAX. |
| | CD2-070 | 5 units MAX. | CD2-070 | 12 units MAX. |
| | PEX-120 / 300 / 700 | 2 units MAX. | PEX-120 / 300 / 700 | 5 units MAX. |
| Number of units that can be operated simultaneously by 24 V DC power and Full-wave 24 V DC power. | DM2-030 | 12 units MAX. | DM2-030 | 28 units MAX. |
| | DM2-070 / 180 AE2-120 / 360 | 5 units MAX. | DM2-070 / 180 AE2-120 / 360 | 12 units MAX. |
| | AD2-300 / 700 PDX-300 / 700 | 1 units MAX. | AD2-300 / 700 PDX-300 / 700 | 3 units MAX. |
| | HD2 PHX PHR PDX-02K / 06K | 1 units MAX. | HD2 PHX PHR PDX-02K / 06K | 2 units MAX. |

## PCU - 01 Intermediate opening setting unit


With AEX and PDX type electric actuators, one intermediate position can be set arbitrarily.

- Manual remote operation.
- 3 points control of with override SHUT and OPEN switch.

## PCU - 31 Multi-point opening setting unit


With AEX and PDX type electric actuators, three intermediate valve positions can be set arbitrarily.

- 5 points can be controlled in combination with 2 override SHUT and OPEN switches and 3 middle points by PCU-31.
- Up to 4 units can be connected.

# Option for electric actuators

The following are only representative options. There are many other options, please contact us.

| Name | Code | Feature | Classification |
|---|---|---|---|
| Auxiliary limit switch | L0 | Standard AC 250V 3.0A DC 6V 5mA DC 24V 1mA | AD□, HD□, PDX, PHX, PHR<br>AE□, AEX, PEX |
| Auxiliary limit switch | L2 | light load AC 250V 0.1A DC 30V 0.1A DC 5V 1mA | AD□, HD□, PDX, PHX, PHR<br>AE□, AEX, PEX |
| Speed contorol board | I0 | The operating speed can be controlled individually for opening and closing. | AD2-300, AD2-700<br>HD2-02K, HD2-06K<br>Note) For AC power only. |
| 4 to 20mA isolated signal board | EI | Out putindication signal is from 4-20mA. It is isolated from the input signal. | PBX, PHX, PDX, AEX, PEX |
| Alarm signal board | EA | The signal can be taken out, when a valve doesn't operate regularly, then a protection circuit works. | PBX, PHX, PDX, AEX, PEX |

# Notes on operation



When selecting an electric actuator, thoroughly consider the control method such as operation frequency, operation time, installation conditions such as installation environment, control circuit, control equipment, signal processing etc.

Due to the operating frequency, the heat transfer from the valve, radiant heat, etc. The life of the product may be shortened even within the allowable ambient temperature range. Please consult us separately when using it under conditions close to the upper or lower limit of the allowable ambient temperature.

In order to use it safely for a long time, please use the operation frequency as little as possible. If it is necessary to control with high frequency, select PHR type and PHX type with high frequency specification.

| | |
|---|---|
| Transfer input type | • Each control switch should be prepared one by one. Do not operate two or more from one switch at the same time.<br>• When using output signals for control in a PLC, etc., select an a-contact signal input model. |
| a-contact input type | • When using control switch with current leakage (more than 1 mA) such as TRIAC or relay with CR, it can cause malfunction.<br>• Use shielded wire in for dry contact weak voltag signal wiring where high level noise is generated or when the wiring distance is long. |
| DC power type | • Battery or full wave rectification can be used. (CD2 / CMX / PEX / ABR / HBR / PBX are excluded.)<br>• Consider an inrush current of motor. (It is 1.5 to 3 times of consumed current.)<br>• When using a DC voltage, be selected the wire thickness by the wiring distance.<br>• Do not use power supply that require more than 1 second with rise and fall time. |
| Proportional control | • The input signal is not isolated. Do not share it with other negative common (DC power supply, etc.).<br>• For wiring of input signal, indication signal, and override switch, use shielded wires separated from power lines in noisy places or for long distance signal lines.<br>• When controlling with a voltage input of 1 to 5 V, use a voltage source capable of carrying a current of 20 mA or more, since a 250 Ω resistor is connected to the input of the actuator.<br>In addition, do not use a voltage source with a resistor connected in series to the output, as the signal wiring is likely to be noisy, and the voltage divided by the 250 Ω of the actuator may cause insufficient opening.<br>• Do not use a relay to turn on or off the 4 to 20 mA signal. Make sure that no abnormal currentflows through the input signal. An abnormal signal at the time of input may adversely affect the operation. |
| Emergency electric actuator | • The lifespan of the internal batteries and capacitors depends on the energization time and temperature, not on the number of operations. The higher the ambient temperature, the shorter the lifespan, so insulation is important.<br>• Batteries and capacitors can be replaced by the customer. Set a maintenance period in advance and replace them before they reach the end of their service life. Replacement batteries and capacitors are specially designed, so please contact your local sales office or contact us for a replacement. |

# Pneumatic actuated valves

It is an automatic valve that opens and closes or proportionally controls the valve with an air cylinder.

There are needle valves, ball valves (Threaded end Rc, Flanged end, Plastic type), butterfly valves, etc., and various types of materials are available.

A lineup of small and lightweight plastic and standard aluminum actuator can be used for various applications.

There are many options available, such as solenoid valves, limit switches, and electro-pneumatic positioner that can be used for proportional control.





PNEUMATIC ACTUATED VALVES

# NS / NH series For minute flow control

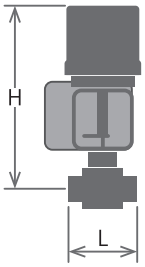
NS : Standard model. / NH : High temperature, high pressure.

Compact and light weight pneumatic needle valve.
The valve is used for minute flow control.

NS NH


Product code : PLO NS 9 0 5 U U F M 0 15-EX (Option code)

- ⓐ Actuator model
- ⓑ Valve model
- ⓒ Air code
- ⓓ Sizing code
- ⓔ Piping connection
- ⓕ Body material
- ⓖ Trim material
- ⓗ Stem seal material
- ⓘ Cv value type
- ⓙ Characteristic
- ⓚ Size




Needle valve NS / NH series has flow direction.

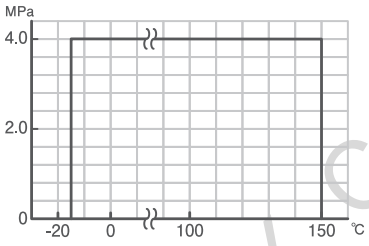
| | | |
|---|---|---|
| ⓑ Valve model | NS | NH |
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 | |
| ⓕ Body material | U SCS14A | U SUS316 |
| ⓖ Trim material | U SUS316 | U SUS316 + HCr PLTD |
| ⓗ Stem seal material | F F-PTFE + O-ring (FKM) | T PTFE |
| ⓘ Cv value type | S 0.05 / M 0.13 / L 0.34 / H 0.8 / X 2 | S 0.05 / M 0.13 / L 0.34 / H 0.8 |
| ⓙ Flow characteristic | 0 Linear / E Equal percentage(EQ%) | 0 Linear |
| Seat material | F-PTFE | SUS316 |
| Seat leakage volume | Bubble-tight Class VI (ANSI B16. 104) | 0.01% or less of the maximum Cv value (ANSI Class IV or less) |

## Actuator type and product dimensions

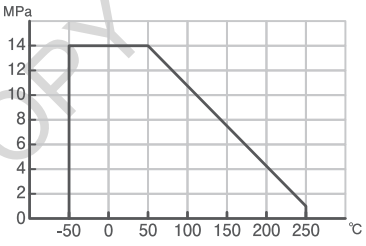
| ⓑ Valve model | ⓚ Size (A) | ⓓ Sizing code | ⓐ Actuator model: Single-acting, Airless SHUT PLO | ⓐ Actuator model: Single-acting, Airless OPEN PLC | ⓘ Cv value | ⓙ Flow characteristic | Height H (mm) | Face to face L (mm) |
|---|---|---|---|---|---|---|---|---|
| NS | 10 | 0 | 030 | 070 | S 0.05 / M 0.13 / L 0.34 | 0 Linear | 198 | 56 |
| | | 0 | 070 | 070 | H 0.8 | 0 Linear | | |
| | 15 | 0 | 030 | 070 | S 0.05 / M 0.13 / L 0.34 | 0 Linear | 198 | 56 |
| | | 0 | 070 | 070 | H 0.8 | 0 Linear | | |
| | | 0 | 070 | 070 | X 2 | 0 Linear / E EQ% | 209 | 56 |
| NH | 10 | 0 | 070 | 070 | S 0.05 / M 0.13 / L 0.34 / H 0.8 | 0 Linear | 203 | 80 |
| | 15 | 0 | 070 | 070 | S 0.05 / M 0.13 / L 0.34 / H 0.8 | 0 Linear | 203 | 80 |

Note) This product assumes that a smart positioner is installed.
Add option code "EX" to the end of the product model.

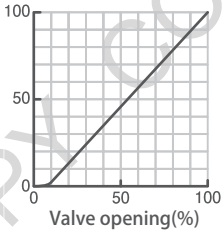
Pressure & Temperature rating (NS)




Pressure & Temperature rating (NH)

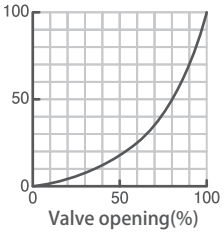



Flow characteristic (Linear)




Range ability 30 : 1

Flow characteristic (EQ%)




Range ability 30 : 1

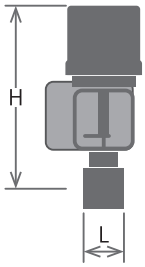
# NP series For minute flow control Resistant to corrosion by PEEK resin.

Needle valve suitable for minute flow control. Made of PEEK resin that is extremely resistant to chemicals and corrosion. Wafer type body with excellent maintainability.

OIL GAS

Product code : PLO NP 9 0 1 K K T M 0 15-EX (Option code)

- ⓐ Actuator model
- ⓑ Valve model
- ⓒ Air code
- ⓓ Sizing code
- ⓔ Piping connection
- ⓕ Body material
- ⓖ Trim material
- ⓗ Stem seal material
- ⓘ Cv value type
- ⓙ Characteristic
- ⓚ Size




Needle valve NP series has flow direction.

| | |
|---|---|
| ⓑ Valve model | NP |
| ⓔ Piping connection | 1 Wafer type for JIS10K Flange |
| ⓕ Body material | K PEEK |
| ⓖ Trim material | K PEEK |
| ⓗ Stem seal material | T PTFE*1 |
| ⓘ Cv value type | S 0.05 ／ M 0.13 ／ L 0.34 ／ X 0.8 ／ H 1.4 |
| ⓙ Flow characteristic | 0 Linear |
| Seat material | None |
| Seat leakage volume | 0.01% or less of the maximum Cv value (ANSI Class IV or less) |

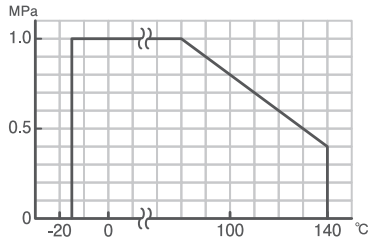
## Actuator type and product dimensions

| ⓑ Valve model | ⓚ Size (A) | ⓓ Sizing code | ⓐ Actuator model: Single-acting Airless SHUT PLO | ⓐ Actuator model: Single-acting Airless OPEN PLC | ⓘ Cv value | ⓙ Flow characteristic | Height H (mm) | Face to face L (mm) |
|---|---|---|---|---|---|---|---|---|
| NP | 15 | 0 | 030 | 070 | S 0.05 / M 0.13 / L 0.34 | 0 Linear | 216 | 50 |
| | | 0 | 070 | 070 | X 0.8 / H 1.4 | 0 Linear | | |

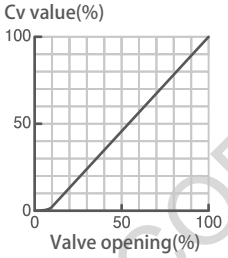
*1) An FKM O-ring is attached to the top of the stem seal as an auxiliary seal.

Note) This product assumes that a smart positioner is installed. Add option code "EX" to the end of the product model.

Pressure & Temperature rating




Flow characteristic




Range ability 30 : 1

# A / T series

A : Reduced port model / T : Reduced L-shaped port, Vertical three-way model.

A T

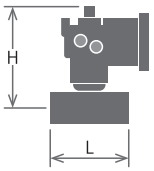
Brass ball valve with excellent cost performance. Ideal for mounting on equipment in combination with a small and lightweight pneumatic actuator.

OIL GAS

Product code : PND A- 9 0 5 Y Y F -015 -Option code

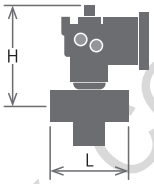
ⓐ Actuator model
ⓑ Valve model
ⓒ Air code
ⓓ Sizing code
ⓔ Piping connection
ⓕ Body material
ⓖ Ball material
ⓗ Seat material
ⓘ Size

A series




Floating ball type. Threaded end Rc. Reduced port type.

| | |
|---|---|
| ⓔ Piping connection | 5 Threaded end Rc *1 JIS B 0203 |
| ⓕ Body material | Y Brass + PLTD |
| ⓖ Ball material | Y Brass + PLTD |
| ⓗ Seat material | F F-PTFE |
| Stem seal material | FKM O-ring*2 |



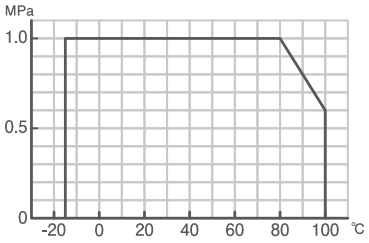

## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model PPS body Double-acting PND | Single-acting Airless SHUT (P ① ) PSO | Single-acting Airless OPEN (P ② ) PSC | Height H (mm) PND | Height H (mm) PSO PSC | Face to face L (mm) | Cv value |
|---|---|---|---|---|---|---|---|---|---|
| A- | -015 | 0 | 03S | 03S | 03S | 88 | 88 | 58 | 6 |
| | -020 | 0 | 03S | 03D | 03D | 90 | 98 | 63 | 11 |
| | -025 | 0 | 03S | 03D | 03D | 94 | 102 | 71 | 15 |
| T- | -015 | 0 | 03S | 03S | 03S | 88 | 88 | 58 | 3 |
| | -020 | 0 | 03S | 03D | 03D | 90 | 98 | 63 | 6 |
| | -025 | 0 | 03S | 03D | 03D | 94 | 102 | 71 | 8 |

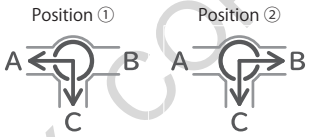
*1) T type C port is threaded-end R.

*2) An NBR O-ring is installed on the outside of the stem seal as a dust seal.

Pressure & Temperature rating




T series Flow paths




Note)
It should be noted that, if the line pressure of the closed bore is higher than that of the open bores, a small rate of fluid leakage may occur from the closed bore.

# AE / TE series

AE : Reduced port model / TE : Reduced L-shaped port, Vertical three-way model.

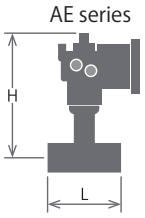
AE TE

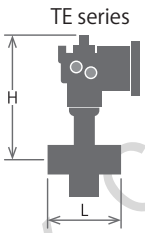
Stainless steel ball valve with excellent cost performance. The long neck body is ideal for thermal insulation.

OIL GAS STEAM

Product code : PND AE 9 0 5 T T P -015 - Option code

ⓐ Actuator model
ⓑ Valve model
ⓒ Air code
ⓓ Sizing code
ⓔ Piping connection
ⓕ Body material
ⓖ Ball material
ⓗ Seat material
ⓘ Size




Floating ball type. Threaded end Rc. Reduced port type. AE series has flow direction.

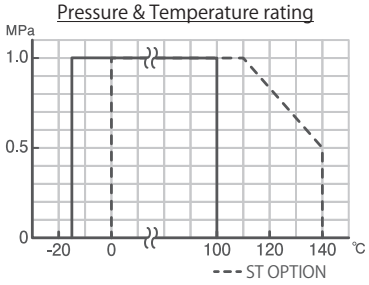
| | |
|---|---|
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 |
| ⓕ Body material | T SCS13A |
| ⓖ Ball material | T SUS304 |
| ⓗ Seat material | P Reinforced PTFE |
| Stem seal material | PTFE + FKM O-ring *1 |

## Actuator type and product dimensions

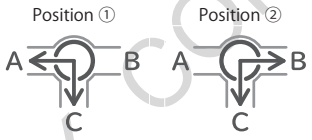
| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model | | | | | | Height H (mm) | | | Face to face L (mm) | Cv value (Resultant Cv value) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PPS body | | | Aluminum body | | | | | | | |
| | | | Double acting | Single-acting | | Double acting | Single-acting | | | | | | |
| | | | | Airless SHUT (P ① ) | Airless OPEN (P ② ) | | Airless SHUT (P ① ) | Airless OPEN (P ② ) | | | | | |
| | | | PND | PSO | PSC | TAD | TAO | TAC | PND | PSO PSC | TAD TAO TAC | | |
| AE | -015 | 0 | 03S | 03S | 03S | 040 | 040 | 040 | 112 | 112 | 157 | 56 | 5 |
| | -020 | 0 | 03S | 03D | 03D | 040 | 040 | 040 | 114 | 123 | 159 | 58 | 10 |
| | -025 | 0 | 03S | 03D | 03D | 040 | 040 | 040 | 117 | 125 | 162 | 71 | 15 |
| TE | -015 | 0 | 03S | 03S | 03S | 040 | 040 | 040 | 112 | 112 | 157 | 58.2 | 3 (1.8) |
| | -020 | 0 | 03S | 03D | 03D | 040 | 040 | 040 | 114 | 123 | 159 | 60 | 6 (3.6) |
| | -025 | 0 | 03S | 03D | 03D | 040 | 040 | 040 | 118 | 126 | 163 | 73.5 | 9 (5.4) |

*1) Specify the [ST] option when the fluid is steam. In this case the O-ring material is FKM for steam.

Pressure & Temperature rating

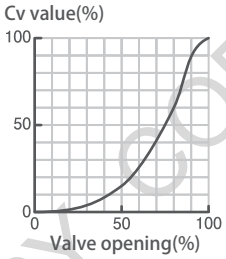



TE series Flow paths



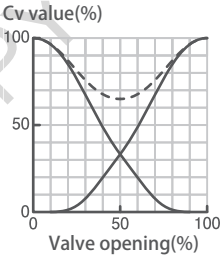

Note)
It should be noted that, if the line pressure of the closed bore is higher than that of the open bores, a small rate of fluid leakage may occur from the closed bore.

AE series flow characteristic




Range ability 30 : 1

TE series flow characteristic



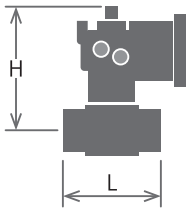

Range ability 20 : 1

# E series Standard port model.



Ball valve that can be used for general purposes. The lineup includes brass products with excellent cost performance and stainless steel products with excellent corrosion resistance.

Product code : PND E- 9 0 5 U U T -025 -Option code
ⓐ Actuator model
ⓑ Valve model
ⓒ Air code
ⓓ Sizing code
ⓔ Piping connection
ⓕ Body material
ⓖ Ball material
ⓗ Seat material
ⓘ Size




Floating ball type. Threaded end Rc. Standard port type.

| | | |
|---|---|---|
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 | |
| ⓕ Body material | Y Brass + PLTD | U SCS14A |
| ⓖ Ball material | Y Brass + PLTD | U SCS14A / SUS316 |
| ⓗ Seat material | F F-PTFE | T PTFE |
| Stem seal material | FKM O-ring*1 | |

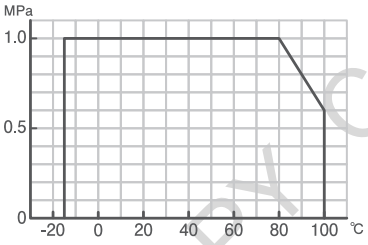
## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model | | | | | | Height H*2 (mm) | | | Face to face L (mm) | Cv value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PPS body | | | Aluminum body | | | | | | | |
| | | | Double acting | Single-acting | | Double acting | Single-acting | | | | | | |
| | | | | Airless SHUT | Airless OPEN | | Airless SHUT | Airless OPEN | | | | | |
| | | | PND | PSO | PSC | TAD | TAO | TAC | PND | PSO PSC | TAD TAO TAC | | |
| E- Brass body | -015 | 0 | 03S | 03D | 03D | 040 | 040 | 040 | 89 | 97 | 134 | 59 | 12 |
| | -020 | 0 | 03S | 03D | 03D | 040 | 040 | 040 | 91 | 100 | 136 | 66 | 16 |
| | -025 | 0 | 03D | 03D | 03D | 040 | 040 | 040 | 104 | 104 | 141 | 78 | 28 |
| | -032 | 0 | 03D | 04D | 04D | 040 | 040 | 040 | 114 | 131 | 151 | 87 | 47 |
| | -040 | 0 | 04D | 04D | 04D | 050 | 050 | 050 | 136 | 136 | 203 | 96 | 83 |
| | -050 | 0 | 04D | 05D | 05D | 050 | 050 | 050 | 142 | 183 | 209 | 109 | 115 |
| E- Stainless body | -008 | 0 | 03S | 03S | 03S | 040 | 040 | 040 | 84 | 84 | 129 | 46 | 5 |
| | -010 | 0 | 03S | 03S | 03S | 040 | 040 | 040 | 84 | 84 | 129 | 46 | 5 |
| | -015 | 0 | 03S | 03D | 03D | 040 | 040 | 040 | 86 | 95 | 131 | 59 | 12 |
| | -020 | 0 | 03S | 03D | 03D | 040 | 040 | 040 | 89 | 97 | 134 | 66 | 16 |
| | -025 | 0 | 03D | 03D | 03D | 040 | 040 | 040 | 103 | 103 | 140 | 78 | 28 |
| | -032 | 0 | 03D | 04D | 04D | 040 | 040 | 040 | 114 | 131 | 151 | 87 | 47 |
| | -040 | 0 | 04D | 04D | 04D | 050 | 050 | 050 | 136 | 136 | 203 | 95 | 83 |
| | -050 | 0 | 04D | 05D | 05D | 050 | 050 | 050 | 142 | 183 | 209 | 109 | 123 |

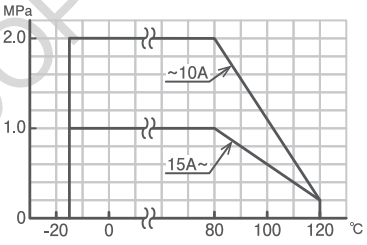
*1) An NBR O-ring is installed on the outside of the stem seal as a dust seal.

*2) If the temperature of the actuator may over the operating range due to heat transfer from the fluid, an insulation option is required. Please note that the product height will change if the insulation option is selected.

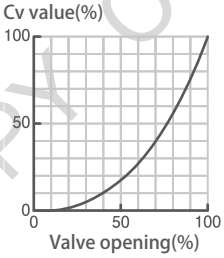
Brass body type Pressure & Temperature rating




Stainless body type Pressure & Temperature rating




Flow characteristic



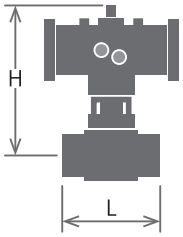

Range ability 30 : 1

# EG series
Standard port, Abnormal pressure rise prevention model.

Standard port type ball valve for high temperature fluids such as steam. Standard extension bracket for heat insulation.

OIL GAS STEAM

Product code : PND EG 9 0 5 U U P -025 - Option code
- ⓐ Actuator model
- ⓑ Valve model
- ⓒ Air code
- ⓓ Sizing code
- ⓔ Piping connection
- ⓕ Body material
- ⓖ Ball material
- ⓗ Seat material
- ⓘ Size



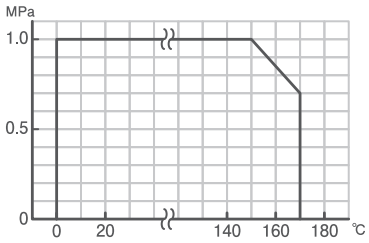

Floating ball type. Threaded end Rc. Standard port type. EG series has flow direction.

| | |
|---|---|
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 |
| ⓕ Body material | U SCS14A |
| ⓖ Ball material | U SCS14A |
| ⓗ Seat material | P Reinforced PTFE |
| Stem seal material | FKM O-ring for steam |

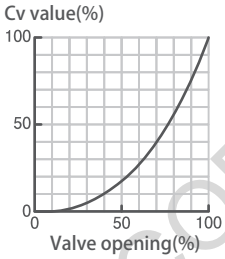
## 製品ラインアップ

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model | | | | | | Height H (mm) | | | Face to face L (mm) | Cv value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PPS body | | | Aluminum body | | | | | | | |
| | | | Double acting | Single-acting | | Double acting | Single-acting | | | | | | |
| | | | | Airless SHUT | Airless OPEN | | Airless SHUT | Airless OPEN | | | | | |
| | | | PND | PSO | PSC | TAD | TAO | TAC | PND | PSO PSC | TAD TAO TAC | | |
| EG | -015 | 0 | 03D | 03D | 03D | 040 | 040 | 040 | 125 | 125 | 162 | 59 | 9 |
| | -020 | 0 | 03D | 03D | 03D | 040 | 040 | 040 | 127 | 127 | 164 | 66 | 13 |
| | -025 | 0 | 03D | 04D | 04D | 040 | 040 | 040 | 134 | 150 | 170 | 78 | 24 |
| | -032 | 0 | 04D | 04D | 04D | 050 | 050 | 050 | 161 | 161 | 227 | 87 | 44 |
| | -040 | 0 | 04D | 05D | 05D | 050 | 050 | 050 | 166 | 207 | 233 | 95 | 80 |
| | -050 | 0 | 04D | 05D | 05D | 050 | 050 | 050 | 172 | 213 | 239 | 109 | 120 |

Pressure & Temperature rating




Flow characteristic




Range ability 30 : 1

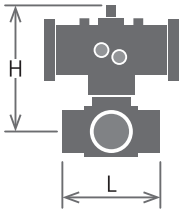
# EL series Standard L-shaped port, Horizontal three-way model.



Three-way ball valve that can be used for general purposes. Stainless steel products with excellent corrosion resistance.

OIL GAS

Product code : PND EL 9 0 5 U U T -020 - Option code
ⓐ Actuator model
ⓑ Valve model
ⓒ Air code
ⓓ Sizing code
ⓔ Piping connection
ⓕ Body material
ⓖ Ball material
ⓗ Seat material
ⓘ Size




Floating ball type. Threaded end Rc. Standard port type.

| | |
|---|---|
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 |
| ⓕ Body material | U SCS14A |
| ⓖ Ball material | U SUS316 |
| ⓗ Seat material | T PTFE |
| Stem seal material | FKM O-ring*1 |

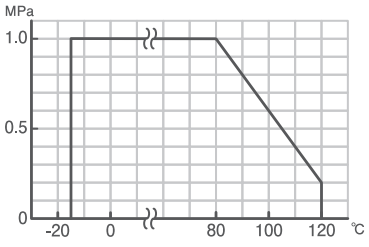
## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model | | | | | | Height H*2 (mm) | | | Face to face L (mm) | Cv value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PPS body | | | Aluminum body | | | | | | | |
| | | | Double acting | Single-acting | | Double acting | Single-acting | | | | | | |
| | | | | Airless P ① | Airless P ② | | Airless P ① | Airless P ② | | | | | |
| | | | PND | PSO | PSC | TAD | TAO | TAC | PND | PSO PSC | TAD TAO TAC | | |
| EL | -008 | 0 | 03S | 03S | 03S | 040 | 040 | 040 | 84 | 84 | 129 | 47 | 1.8 |
| | -010 | 0 | 03S | 03S | 03S | 040 | 040 | 040 | 84 | 84 | 129 | 47 | 2.2 |
| | -015 | 0 | 03S | 03D | 03D | 040 | 040 | 040 | 87 | 96 | 132 | 67 | 5 |
| | -020 | 0 | 03S | 03D | 03D | 040 | 040 | 040 | 91 | 99 | 136 | 70 | 8 |
| | -025 | 0 | 03D | 03D | 03D | 040 | 040 | 040 | 105 | 105 | 141 | 79 | 13 |
| | -032 | 0 | 03D | 04D | 04D | 040 | 040 | 040 | 114 | 131 | 151 | 89 | 22 |
| | -040 | 0 | 04D | 04D | 04D | 050 | 050 | 050 | 136 | 136 | 203 | 100 | 36 |
| | -050 | 0 | 04D | 05D | 05D | 050 | 050 | 050 | 142 | 183 | 209 | 119 | 50 |

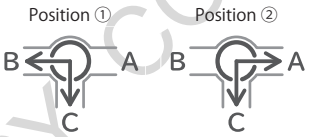
*1) An NBR O-ring is installed on the outside of the stem seal as a dust seal.

*2) If the temperature of the actuator may over the operating range due to heat transfer from the fluid, an insulation option is required. Please note that the product height will change if the insulation option is selected.

### Pressure & Temperature rating




### Flow paths




Note)
It should be noted that, if the line pressure of the closed bore is higher than that of the open bores, a small rate of fluid leakage may occur from the closed bore.

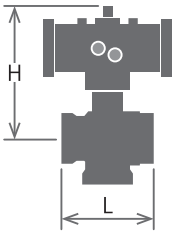
# TV series Standard L-shaped port, Vertical three-way model.

Compact and lightweight stainless steel three-way ball valve suitable for integration into equipment.

OIL GAS

Product code : PND TV 9 0 5 T T P -025 - Option code

- ⓐ Actuator model
- ⓑ Valve model
- ⓒ Air code
- ⓓ Sizing code
- ⓔ Piping connection
- ⓕ Body material
- ⓖ Ball material
- ⓗ Seat material
- ⓘ Size




Floating ball type. Threaded end Rc. Standard port type.

| | |
|---|---|
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 |
| ⓕ Body material | T SCS13A |
| ⓖ Ball material | T SUS304 / SCS13A |
| ⓗ Seat material | P Reinforced PTFE |
| Stem seal material | FKM O-ring*1 |

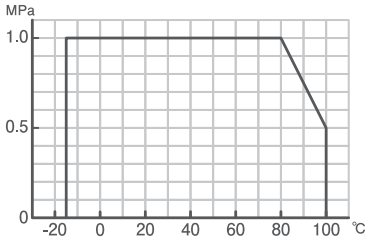
## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model | | | | | | Height H*2 (mm) | | | Face to face L (mm) | Cv value (Resultant Cv value) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PPS body | | | Aluminum body | | | | | | | |
| | | | Double acting | Single-acting | | Double acting | Single-acting | | | | | | |
| | | | | Airless P ① | Airless P ② | | Airless P ① | Airless P ② | | | | | |
| | | | PND | PSO | PSC | TAD | TAO | TAC | PND | PSO PSC | TAD TAO TAC | | |
| TV | -015 | 0 | 03D | 03D | 03D | 040 | 040 | 040 | 98 | 98 | 134 | 67 | 5 (3) |
| | -020 | 0 | 03D | 04D | 04D | 040 | 040 | 040 | 111 | 127 | 147 | 70 | 8 (5) |
| | -025 | 0 | 03D | 04D | 04D | 050 | 050 | 050 | 112 | 128 | 195 | 81 | 13 (9) |
| | -032 | 0 | 04D | 05D | 05D | 050 | 050 | 050 | 130 | 171 | 197 | 93 | 22 (15) |
| | -040 | 0 | 04D | 05D | 05D | 050 | 050 | 050 | 136 | 177 | 203 | 106 | 36 (25) |

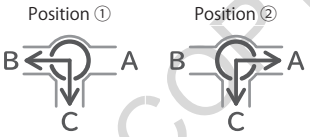
*1) An NBR O-ring is installed on the outside of the stem seal as a dust seal.

*2) If the temperature of the actuator may over the operating range due to heat transfer from the fluid, an insulation option is required. Please note that the product height will change if the insulation option is selected.

Pressure & Temperature rating

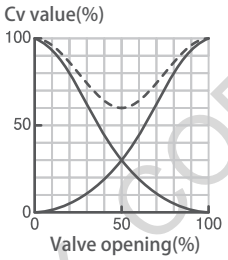



Flow paths



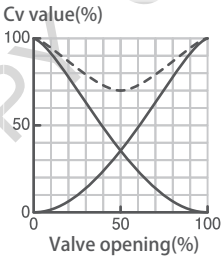

Note)
It should be noted that, if the line pressure of the closed bore is higher than that of the open bores, a small rate of fluid leakage may occur from the closed bore.

15A, 25A flow characteristic




Range ability 20 : 1

25 to 40A flow characteristic




Range ability 20 : 1

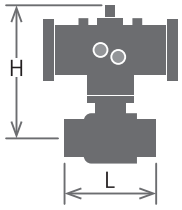
# SR series Full port, Oil-free product model.



Only fluorine resin is used for seal parts. It can be used for fluids that cannot use rubber. Oil-free product that does not use oils and fats during valve assembly *1.


Product code : PND SR 9 0 5 U U T -025 - Option code

- ⓐ Actuator model
- ⓑ Valve model
- ⓒ Air code
- ⓓ Sizing code
- ⓔ Piping connection
- ⓕ Body material
- ⓖ Ball material
- ⓗ Seat material
- ⓘ Size




Floating ball type. Threaded end Rc. Full port type.

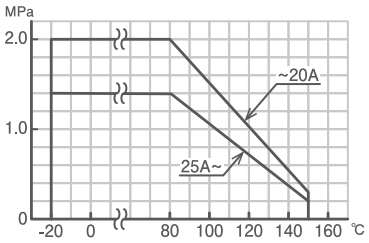
| | |
|---|---|
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 |
| ⓕ Body material | U SCS14A |
| ⓖ Ball material | U SCS14A |
| ⓗ Seat material | T PTFE |
| Stem seal material | F-PTFE |

## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | PPS body | | | Aluminum body | | |
| | | | Double acting | Single-acting | | Double acting | Single-acting | |
| | | | | Airless SHUT | Airless OPEN | | Airless SHUT | Airless OPEN |
| | | | PND | PSO | PSC | TAD | TAO | TAC |
| SR | -015 | 0 | 03D | 04D | 04D | 040 | 040 | 040 |
| | -020 | 0 | 03D | 04D | 04D | 040 | 040 | 040 |
| | -025 | 0 | 04D | 04D | 04D | 050 | 050 | 050 |
| | -032 | 0 | 04D | 05D | 05D | 050 | 050 | 050 |
| | -040 | 1 | 04D | 05D | 05D | – | – | – |
| | | 0 | 05D | 05W | 05W | 063 | 063 | 063 |

| Height H (mm) | | | Face to face L (mm) |
|---|---|---|---|
| PND | PSO PSC | TAD TAO TAC | |
| 112 | 129 | 160 | 75 |
| 116 | 132 | 164 | 80 |
| 137 | 137 | 173 | 88 |
| 143 | 151 | 178 | 110 |
| 184 | 159 | – | 120 |
| 159 | 159 | 202 | |

Pressure & Temperature rating




Note) When selecting sizing code 1, it is necessary to pay attention to fluid characteristic and pressure. Please contact us for fluid specifications.

*1) Oils and fats are not used when assembling valves, but process management such as inspection, storage, assembly of work machines, and packaging are handled in the same way as normal products. There is no denying the possibility that a little of oil or fat will unintentionally adhere to valves. If degreased products are required, specify options individually.

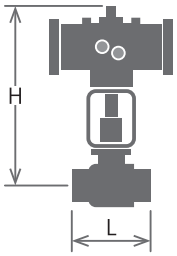
# SH series Full port, Abnormal pressure rise prevention model.

Full port type ball valve for high temperature fluids such as steam. Standard extension bracket for heat insulation.

OIL GAS STEAM *1

Product code : PND SH 9 0 5 U U F -025 - Option code

ⓐ Actuator model
ⓑ Valve model
ⓒ Air code
ⓓ Sizing code
ⓔ Piping connection
ⓕ Body material
ⓖ Ball material
ⓗ Seat material
ⓘ Size




Floating ball type. Threaded end Rc. Full port type. SH series has flow direction.

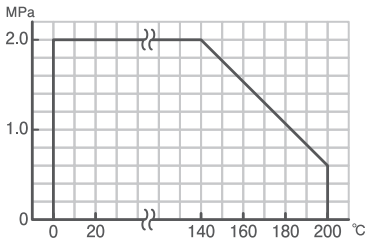
| | |
|---|---|
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 |
| ⓕ Body material | U SCS14A |
| ⓖ Ball material | U SCS14A |
| ⓗ Seat material | F F-PTFE |
| Stem seal material | Reinforced PTFE + FKM O-ring for steam |

## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model | | | | | | Height H (mm) | | | Face to face L (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PPS body | | | Aluminum body | | | | | | |
| | | | Double acting | Single-acting | | Double acting | Single-acting | | | | | |
| | | | | Airless SHUT | Airless OPEN | | Airless SHUT | Airless OPEN | | | | |
| | | | PND | PSO | PSC | TAD | TAO | TAC | PND | PSO PSC | TAD TAO TAC | |
| SH | -015 | 0 | 03D | 04D | 04D | 040 | 040 | 040 | 160 | 176 | 191 | 75 |
| | -020 | 0 | 03D | 04D | 04D | 040 | 040 | 040 | 163 | 180 | 194 | 80 |
| | -025 | 0 | 04D | 04D | 04D | 050 | 050 | 050 | 185 | 185 | 207 | 88 |
| | -032 | 0 | 04D | 05D | 05D | 050 | 050 | 050 | 190 | 187 | 212 | 110 |

*1) When flowing steam, use it at 180 ° C or below.

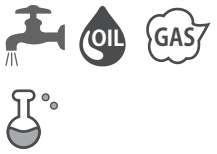
Pressure & Temperature rating*1



# SL / ST series

Horizontal three-way model. SL : Standard L-shaped port. / ST : Standard T-shaped port.

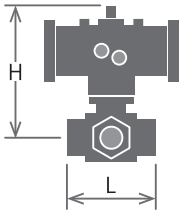
A three-way valve with a four-sided seat structure. SL type is L-type port, ST type is T-type port. Only fluorine resin is used for seal parts. It can be used for fluids that cannot use rubber. Oil-free product that does not use oils and fats during valve assembly *1.




Product code : PND SL 9 0 5 U U F -015 - Option code

Product code : PSO ST 9 0 5 U U F -025 - a - Option code

ⓐ Actuator model
ⓑ Valve model
ⓒ Air code
ⓓ Sizing code
ⓔ Piping connection
ⓕ Body material
ⓖ Ball material
ⓗ Seat material
ⓘ Size
ⓙ Flow paths




Four-sided seat structure type. Threaded end Rc. Standard port type.

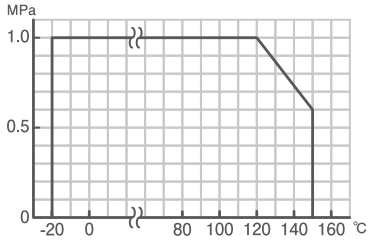
| | |
|---|---|
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 |
| ⓕ Body material | U SCS14A |
| ⓖ Ball material | U SCS14A |
| ⓗ Seat material | F F-PTFE |
| Stem seal material | F-PTFE |

## Actuator type and product dimensions

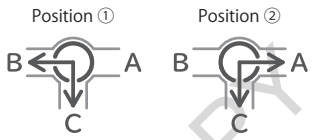
| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model | | | | | | Height H (mm) | | | Face to face L (mm) | Cv value | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PPS body | | | Aluminum body | | | | | | | SL | ST | |
| | | | Double acting | Single-acting Airless P ① | Single-acting Airless P ② | Double acting | Single-acting Airless P ① | Single-acting Airless P ② | PND | PSO PSC | TAD TAO TAC | | | L direction | Straight direction |
| | | | PND | PSO | PSC | TAD | TAO | TAC | | | | | | | |
| SL ST | -015 | 0 | 03D | 04D | 04D | 040 | 040 | 040 | 113 | 129 | 161 | 75 | 5 | 4 | 7 |
| | -020 | 0 | 03D | 04D | 04D | 040 | 040 | 040 | 116 | 133 | 164 | 85 | 10 | 8 | 13 |
| | | 2 | 04D | – | – | 050 | 050 | 050 | 133 | – | 202 | | | | |
| | -025 | 0 | 04D | 05D | 05D | 050 | 050 | 050 | 137 | 145 | 173 | 100 | 16 | 14 | 22 |
| | -032 | 0 | 04D | 05D | 05D | 050 | 050 | 050 | 143 | 151 | 178 | 115 | 25 | 22 | 33 |
| | | 2 | 05D | 05W | 05W | 063 | 063 | 063 | 151 | 151 | 227 | | | | |

*1) Oils and fats are not used when assembling valves, but process management such as inspection, storage, assembly of work machines, and packaging are handled in the same way as normal products. There is no denying the possibility that a little of oil or fat will unintentionally adhere to valves. If degreased products are required, specify options individually.

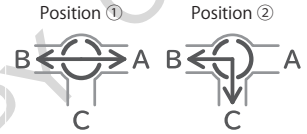
Pressure & Temperature rating



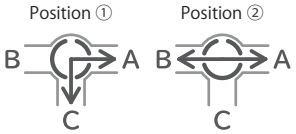

SL series Flow paths



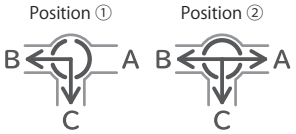

ⓙ ST series Flow paths Code a



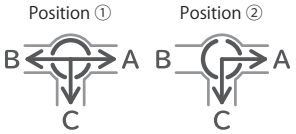

ⓙ ST series Flow paths Code b




ⓙ ST series Flow paths Code c




ⓙ ST series Flow paths Code d

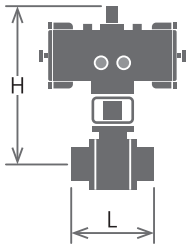



Note)
For ST series, enter of the Flow paths code after the Size of the product code.
It should be noted that, if the line pressure of the closed bore is higher than that of the open bores, a small rate of fluid leakage may occur from the closed bore.

Three piece body structure with excellent maintainability. Maintenance can be performed by removing the main unit while leaving the cap screwed into the piping.


Product code : PND MS 9 0 5 U U P -025 - Option code

- ⓐ Actuator model
- ⓑ Valve model
- ⓒ Air code
- ⓓ Sizing code
- ⓔ Piping connection
- ⓕ Body material
- ⓖ Ball material
- ⓗ Seat material
- ⓘ Size



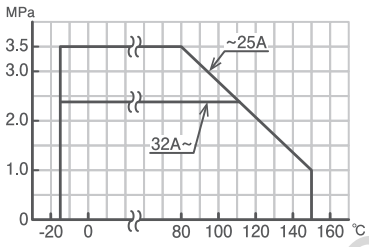

Floating ball type. Threaded end Rc. Full port type.

| | |
|---|---|
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 |
| ⓕ Body material | U SCS14A |
| ⓖ Ball material | U SCS14A |
| ⓗ Seat material | P Reinforced PTFE |
| Stem seal material | Reinforced PTFE + FKM O-ring |

## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model | | | | | | Height H*1 (mm) | | | Face to face L (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PPS body | | | Aluminum body | | | | | | |
| | | | Double acting | Single-acting | | Double acting | Single-acting | | | | | |
| | | | | Airless SHUT | Airless OPEN | | Airless SHUT | Airless OPEN | | | | |
| | | | PND | PSO | PSC | TAD | TAO | TAC | PND | PSO PSC | TAD TAO TAC | |
| MS | -010 | 0 | 03D | 04D | 04D | 040 | 040 | 040 | 112 | 129 | 160 | 60 |
| | -015 | 0 | 03D | 04D | 04D | 040 | 040 | 040 | 112 | 129 | 160 | 75 |
| | -020 | 0 | 03D | 04D | 04D | 040 | 040 | 040 | 116 | 132 | 164 | 80 |
| | | 2 | 04D | – | – | – | – | – | 132 | – | – | |
| | -025 | 0 | 04D | 04D | 04D | 050 | 050 | 050 | 137 | 137 | 173 | 90 |
| | -032 | 0 | 04D | 05D | 05D | 050 | 050 | 050 | 143 | 151 | 178 | 110 |
| | -040 | 0 | 05D | 05W | 05W | 063 | 063 | 063 | 159 | 159 | 202 | 120 |
| | -050 | 0 | 05D | 05W | 05W | 063 | 063 | 063 | 168 | 168 | 211 | 140 |
| | | 2 | | | | 080 | 080 | 080 | | | 286 | |

Pressure & Temperature rating



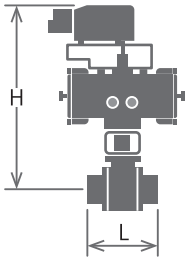

Note) When the fluid pressure exceeds 1.0 MPa, or when used for viscous fluids or solvents, sizing selection of the actuator is required. Please contact us for fluid specifications.

*1) If the temperature of the actuator may over the operating range due to heat transfer from the fluid, an insulation option is required. Please note that the product height will change if the insulation option is selected.

# MV series V-port, Three piece body.

Three piece body structure with excellent maintainability. Maintenance can be performed by removing the main unit while leaving the cap screwed into the piping.
V-port ball provides precise flow control with electro-pneumatic positioner.

Product code : PSO MV 9 0 5 U U P R015-EX (Option code)
- ⓐ Actuator model
- ⓑ Valve model
- ⓒ Air code
- ⓓ Sizing code
- ⓔ Piping connection
- ⓕ Body material
- ⓖ Ball material
- ⓗ Seat material
- ⓘ Size




Floating ball type. Threaded end Rc. V-port type. MV series has flow direction.

| | |
|---|---|
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 |
| ⓕ Body material | U SCS14A |
| ⓖ Ball material | U SCS14A / SUS316 |
| ⓗ Seat material | P Reinforced PTFE |
| Stem seal material | Reinforced PTFE + FKM O-ring |

## Actuator type and product dimensions

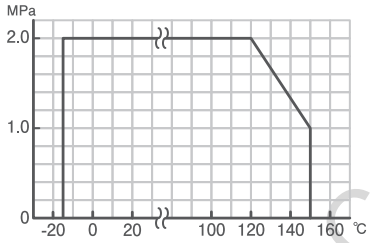
| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model | | | | | Height H*1*2 (mm) | | Face to face L (mm) | Cv value |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PPS body | | Aluminum body | | | | | | |
| | | | Single-acting | | Double acting | Single-acting | | | | | |
| | | | Airless SHUT | Airless OPEN | | Airless SHUT | Airless OPEN | | | | |
| | | | PSO | PSC | TAD | TAO | TAC | PSO + EX Option<br>PSC + EX Option | TAD + EP Option<br>TAO + EP Option<br>TAC + EP Option | | |
| MV | R010 | 0 | 04D | 04D | – | – | – | 210 | – | 60 | 1.3 |
| | R015 | 0 | 04D | 04D | – | – | – | 210 | – | 75 | 1.3 |
| | -015 | 0 | 04D | 04D | – | – | – | 210 | – | 75 | 4 |
| | -020 | 0 | 04D | 04D | – | – | – | 214 | – | 80 | 7.5 |
| | -025 | 0 | 04D | 04D | 050 | 050 | 050 | 219 | 307 | 90 | 12 |
| | -032 | 0 | 05D | 05D | 050 | 050 | 050 | 232 | 312 | 110 | 20 |
| | -040 | 0 | 05W | 05W | 063 | 063 | 063 | 241 | 336 | 120 | 31 |
| | | 2 | – | – | 080 | 080 | 080 | – | 411 | | |
| | -050 | 0 | 05W | 05W | 063 | 063 | 063 | 250 | 345 | 140 | 48 |
| | | 2 | | | 080 | 080 | 080 | | 420 | | |

Note) When the fluid pressure exceeds 1.0 MPa, or when used for viscous fluids or solvents, sizing selection of the actuator is required. Please contact us for fluid specifications.

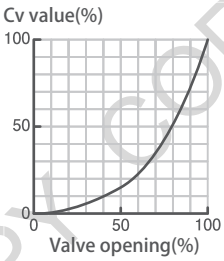
*1) Height dimensions with the electro-pneumatic positioner installed. Add the option code "EX" smart positioner to the PSO / PSC type pneumatic actuator. Add the option code "EP" electro-pneumatic positioner to the TA series pneumatic actuator.

*2) If the temperature of the actuator may over the operating range due to heat transfer from the fluid, an insulation option is required. Please note that the product height will change if the insulation option is selected.

Pressure & Temperature rating




Flow characteristic



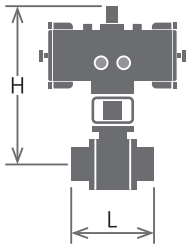

Range ability
R010, R015A = 100 : 1
015A or more = 50 : 1

# MH series Full port, Three piece body.

Full port type ball valve that can be used under relatively high pressure conditions.
Standard specification ensures stable sealing with a highly rigid POM seat. Can be used in high temperature range by selecting reinforced F-PTFE seat.


Product code : TAD MH 9 0 5 U U D -025 - Option code

- ⓐ Actuator model
- ⓑ Valve model
- ⓒ Air code
- ⓓ Sizing code
- ⓔ Piping connection
- ⓕ Body material
- ⓖ Ball material
- ⓗ Seat material
- ⓘ Size



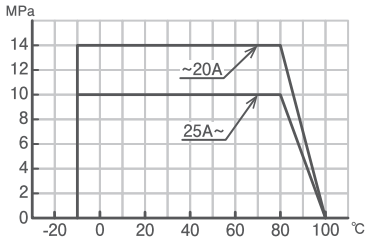

Floating ball type. Threaded end Rc. Full port type.

| | |
|---|---|
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 |
| ⓕ Body material | U SCS14A |
| ⓖ Ball material | U SCS14A + HCr PLTD |
| ⓗ Seat material | D POM*1 ／ R Reinforced F-PTFE |
| Stem seal material | FKM O-ring |

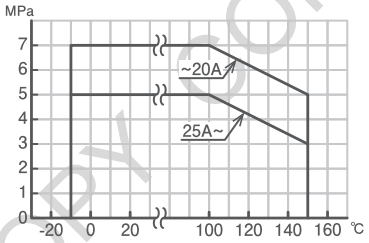
## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model | | | | | | Height H*1 (mm) | | | Face to face L (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PPS body | | | Aluminum body | | | | | | |
| | | | Double acting | Single-acting | | Double acting | Single-acting | | | | | |
| | | | | Airless SHUT | Airless OPEN | | Airless SHUT | Airless OPEN | | | | |
| | | | PND | PSO | PSC | TAD | TAO | TAC | PND | PSO PSC | TAD TAO TAC | |
| MH | -010 | 0 | 04D | 05D | 05D | 050 | 050 | 050 | 156 | 162 | 187 | 72 |
| | -015 | 1 | 04D | 05D | 05D | 050 | 050 | 050 | 161 | 167 | 193 | 83 |
| | | 0 | 05D | 05W | 05W | 063 | 063 | 063 | 167 | 167 | 208 | |
| | -020 | 0 | 05D | 05W | 05W | 063 | 063 | 063 | 172 | 172 | 213 | 95 |
| | -025 | 1 | 05D | 05W | 05W | 063 | 063 | 063 | 180 | 180 | 229 | 113 |
| | | 0 | | | | 080 | 080 | 080 | | | 262 | |
| | -032 | 0 | | | | 080 | 080 | 080 | | | 268 | 124 |
| | -040 | 0 | | | | 100 | 100 | 100 | | | 315 | 130 |

D-type seat Pressure & Temperature rating



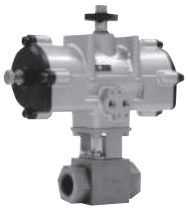

R-type seat Pressure & Temperature rating




Note) When selecting sizing code 1, it is necessary to pay attention to fluid characteristic and pressure. Please contact us for fluid specifications.

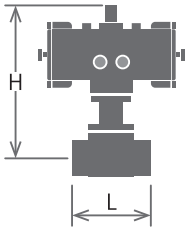
*1) POM seats cannot be used for aqueous solutions above 85 ° C.

# H / HH series Full port, For high pressure.



Full port type ball valve that can be used under high pressure conditions. Stable sealing performance is ensured by the machined steel body and the highly rigid POM seat.

Product code : TAD H- 9 0 5 S U D -025 -Option code
- ⓐ Actuator model
- ⓑ Valve model
- ⓒ Air code
- ⓓ Sizing code
- ⓔ Piping connection
- ⓕ Body material
- ⓖ Ball material
- ⓗ Seat material
- ⓘ Size



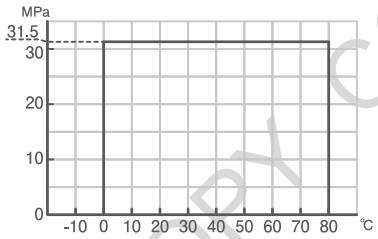

Floating ball type. Threaded end Rc. Full port type.

| | | | |
|---|---|---|---|
| ⓑ Valve model | H- | | HH |
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 | | 5 Threaded end Rc JIS B 0203 |
| ⓕ Body material | S Carbon steel + PLTD | U SUS316Ti | S Carbon steel + PLTD |
| ⓖ Ball material | U SUS316Ti + HCr PLTD | | U US316Ti + HCr PLTD |
| ⓗ Seat material | D POM | | D POM |
| Stem seal material | FKM O-ring | | FKM O-ring |

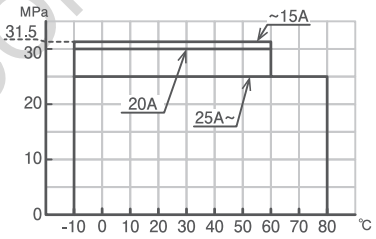
## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model | | | | | | Height H (mm) | | | Face to face L (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PPS body | | | Aluminum body | | | | | | |
| | | | Double acting | Single-acting Airless SHUT | Single-acting Airless OPEN | Double acting | Single-acting Airless SHUT | Single-acting Airless OPEN | | | | |
| | | | PND | PSO | PSC | TAD | TAO | TAC | PND | PSO PSC | TAD TAO TAC | |
| H- | -008 | 0 | 05D | 05D | 05D | 050 | 050 | 050 | 153*1 | 153*1 | 179*1 | 69*2 |
| | -010 | 1 | – | – | – | 050 | 050 | 050 | – | – | 180 | 72 |
| | | 0 | 05D | 05W | 05W | 063 | 063 | 063 | 154 | 154 | 195 | |
| | -015 | 0 | 05D | 05W | 05W | 063 | 063 | 063 | 155 | 155 | 195 | 83 |
| | -020 | 1 | 05D | 05W | 05W | 063 | 063 | 063 | 166 | 166 | 207 | 95 |
| | | 0 | | | | 080 | 080 | 080 | | | 248 | |
| | -025 | 0 | | | | 080 | 080 | 080 | | | 252 | 113 |
| | | 2 | | | | 100 | 100 | 100 | | | 283 | |
| HH | -010 | 1 | | | | 063 | 063 | 063 | | | 207 | 130 |
| | | 0 | | | | 080 | 080 | 080 | | | 240 | |
| | -015 | 0 | | | | 080 | 080 | 080 | | | 240 | 130 |
| | -020 | 0 | | | | 100 | 100 | 100 | | | 309 | 105 |
| | -025 | 0 | | | | 100 | 100 | 100 | | | 312 | 140 |
| | | 2 | | | | 125 | 125 | 125 | | | 337 | |

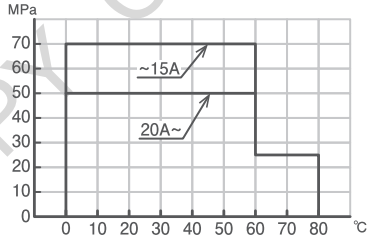
H series carbon steel body model Pressure & Temperature rating




H series SUS316Ti body model Pressure & Temperature rating




HH series Pressure & Temperature rating




Note) When selecting sizing code 1, it is necessary to pay attention to fluid characteristic and pressure. Please contact us for fluid specifications.

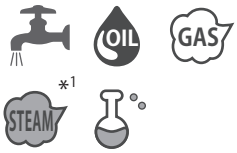
Note) The actuator size must be selected according to the pressure and fluid properties. Please be sure to inform us of the fluid specifications.

Note) HH series is a semi-standard product. Please check the delivery date.

*1) Stainless steel body (UUD) is + 1mm

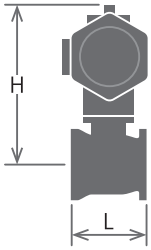
*2) Stainless steel body (UUD) is + 3mm

Lightweight and compact, wafer type ball valve. The same body can be connected to not only JIS 10K flange but also ANSI, DIN or GB standard flanges.




Product code : PND BS 9 0 1 T T F -050 - Option code

- ⓐ Actuator model
- ⓑ Valve model
- ⓒ Air code
- ⓓ Sizing code
- ⓔ Piping connection
- ⓕ Body material
- ⓖ Ball material
- ⓗ Seat material
- ⓘ Size



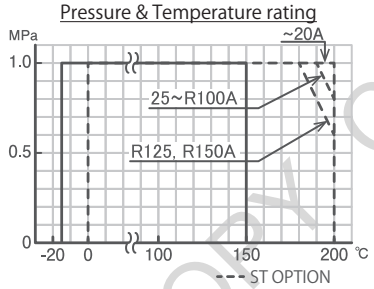

Floating ball type. Wafer type. Full port type.*2

| | | |
|---|---|---|
| ⓔ Piping connection | 1 For JIS 10K flange Wafer type (Can be connected to ANSI CLASS 150, GB PN1.6, DIN PN10/16 flange. Dose not comply with pressure standards.) | |
| ⓕ Body material | T SCS13A | U SCS14A (Contact us for more than R100A.) |
| ⓖ Ball material | T SCS13A | U SCS14A (Contact us for more than R100A.) |
| ⓗ Seat material | F F-PTFE ／ G Reinforced PTFE ／ R Reinforced F-PTFE | |
| Stem seal material | Reinforced PTFE + FKM O-ring *1 | |

## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model | | | | | | Height H*3 (mm) | | | Face to face L (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PPS body | | | Aluminum body | | | | | | |
| | | | Double acting | Single-acting | | Double acting | Single-acting | | | | | |
| | | | | Airless SHUT | Airless OPEN | | Airless SHUT | Airless OPEN | | | | |
| | | | PND | PSO | PSC | TAD | TAO | TAC | PND | PSO PSO | TAD TAO TAC | |
| BS | -015 | 0 | 03D | 04D | 04D | 040 | 040 | 040 | 126 | 143 | 163 | 40 |
| | -020 | 0 | 03D | 04D | 04D | 040 | 040 | 040 | 129 | 146 | 166 | 50 |
| | -025 | 0 | 04D | 04D | 04D | 050 | 050 | 050 | 143 | 143 | 211 | 60 |
| | -032 | 0 | 04D | 05D | 05D | 050 | 050 | 050 | 149 | 191 | 217 | 70 |
| | -040 | 0 | 05D | 05W | 05W | 063 | 063 | 063 | 164 | 164 | 241 | 80 |
| | -050 | 0 | 05D | 05W | 05W | 063 | 063 | 063 | 173 | 173 | 250 | 95 |
| | | 2 | | | | 080 | 080 | 080 | | | 291 | |
| | -065 | 0 | | | | 080 | 080 | 080 | | | 271 | 110 |
| | -080 | 0 | | | | 080 | 080 | 080 | | | 278 | 125 |
| | | 2 | | | | 100 | 100 | 100 | | | 309 | |
| | R100 | 0 | | | | 080 | 080 | 080 | | | 290 | 145 |
| | | 2 | | | | 100 | 100 | 100 | | | 321 | |
| | R125 | 0 | | | | 100 | 100 | 100 | | | 340 | 176 |
| | | 2 | | | | 125 | 125 | 125 | | | 365 | |
| | R150 | 0 | | | | 125 | 125 | 125 | | | 383 | 215 |

Pressure & Temperature rating




Note) When selecting G or R seat / viscous fluid / solvent, it is necessary to select the sizing of the actuator. Please contact us for fluid specifications.

*1) Specify the [ST] option when the fluid is steam. In this case, the flow direction is one-way flow and the O-ring material is FKM for steam.

*2) R100 to R150A is a standard port.

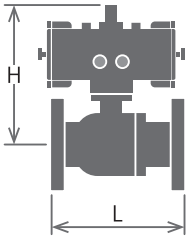
*3) If the temperature of the actuator may over the operating range due to heat transfer from the fluid, an insulation option is required. Please note that the product height will change if the insulation option is selected.

# BR series Full port, General-purpose model.

General-purpose flange type full port type ball valve. Lineup includes JIS 20K in addition to JIS 10K. A spring is built in the seal part of the stem, and the volume change due to packing wear and pressure / temperature changes is automatically compensated.


Product code : TAD BR 9 0 1 T T F -050 - Option code

- ⓐ Actuator model: TAD
- ⓑ Valve model: BR
- ⓒ Air code: 9
- ⓓ Sizing code: 0
- ⓔ Piping connection: 1
- ⓕ Body material: T
- ⓖ Ball material: T
- ⓗ Seat material: F
- ⓘ Size: -050



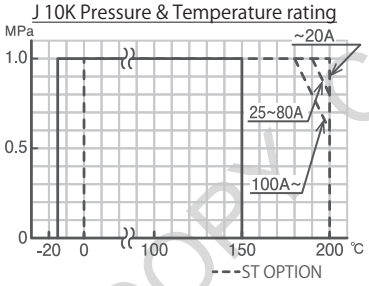

Floating ball type. Flanged end. Full port type.

| | | | |
|---|---|---|---|
| ⓔ Piping connection | 1 JIS 10K RF Flanged end | | 3 JIS 20K RF Flanged end (Up to 50A except 32A) |
| Face to face | JIS B 2002 Series No.6 (125/150A is series No.39) | | JIS B 2002 Series No.10 |
| ⓕ Body material | T SCS13A | U SCS14A (Up to 100A) | T SCS13A |
| ⓖ Ball material | T SCS13A | U SCS14A (Up to 100A) | T SCS13A |
| ⓗ Seat material | F F-PTFE ／ G Reinforced PTFE ／ R Reinforced F-PTFE | | |
| Stem seal material | Reinforced PTFE + FKM O-ring *1 | | |

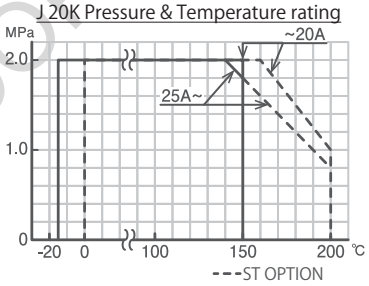
## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model | | | | | | Height H*2 (mm) | | | | | | Face to face L (mm) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PPS body | | | Aluminum body | | | PND | | PSO / PSC | | TAD TAO / TAC | | | |
| | | | Double acting | Single-acting Airless SHUT | Single-acting Airless OPEN | Double acting | Single-acting Airless SHUT | Single-acting Airless OPEN | | | | | | | | |
| | | | PND | PSO | PSC | TAD | TAO | TAC | J10K | J20K | J10K | J20K | J10K | J20K | J10K | J20K |
| BR | -015 | 0 | 03D | 04D | 04D | 040 | 040 | 040 | 126 | 126 | 143 | 143 | 163 | 163 | 108 | 140 |
| | -020 | 0 | 03D | 04D | 04D | 040 | 040 | 040 | 129 | 129 | 146 | 146 | 166 | 166 | 117 | 152 |
| | | 2 | 04D | – | – | 050 | 050 | 050 | 146 | 146 | – | – | 204 | 204 | | |
| | -025 | 0 | 04D | 04D | 04D | 050 | 050 | 050 | 143 | 143 | 143 | 143 | 211 | 211 | 127 | 165 |
| | -032 | 0 | 04D | 05D | 05D | 050 | 050 | 050 | 149 | – | 191 | | 217 | – | 140 | – |
| | -040 | 0 | 05D | 05W | 05W | 063 | 063 | 063 | 164 | 164 | 166 | | 207*3 | 207*3 | 165 | 190 |
| | -050 | 0 | 05D | 05W | 05W | 063 | 063 | 063 | 173 | | 175 | | 216*3 | – | 178 | 216 |
| | | 2 | | | | 080 | 080 | 080 | | | | | 291 | 291 | | |
| | -065 | 0 | | | | 080 | 080 | 080 | | | | | 271 | | 190 | |
| | -080 | 0 | | | | 080 | 080 | 080 | | | | | 283 | | 203 | |
| | | 2 | | | | 100 | 100 | 100 | | | | | 314 | | | |
| | -100 | 0 | | | | 100 | 100 | 100 | | | | | 340 | | 229 | |
| | | 2 | | | | 125 | 125 | 125 | | | | | 365 | | | |
| | -125 | 0 | | | | 125 | 125 | 125 | | | | | 383 | | 356 | |
| | -150 | 0 | | | | 160 | 160 | 160 | | | | | 455 | | 394 | |

J 10K Pressure & Temperature rating




J 20K Pressure & Temperature rating



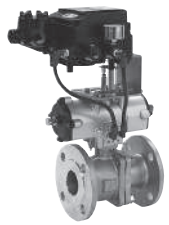

Note) When selecting G or R seat / viscous fluid / solvent, it is necessary to select the sizing of the actuator. Please contact us for fluid specifications.

*1) Specify the [ST] option when the fluid is steam. In this case, the flow direction is one-way flow and the O-ring material is FKM for steam.

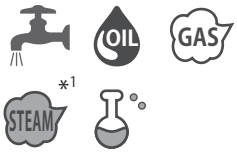
*2) If the temperature of the actuator may over the operating range due to heat transfer from the fluid, an insulation option is required. Please note that the product height will change if the insulation option is selected.

*3) TAO is + 2mm, TAC is + 4mm.

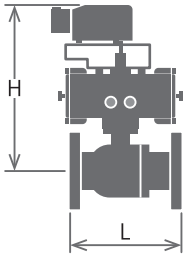
# VR series V-port, Specializing in proportional control.



V-port type ball valve dedicated for proportional control with electro-pneumatic positioner.
A spring is built in the seal part of the stem, and the volume change due to packing wear and pressure / temperature changes is automatically compensated.




Product code : TAD VR 9 0 1 U U G 050 - EP (Option code)
ⓐ Actuator model
ⓑ Valve model
ⓒ Air code
ⓓ Sizing code
ⓔ Piping connection
ⓕ Body material
ⓖ Ball material
ⓗ Seat material
ⓘ Size



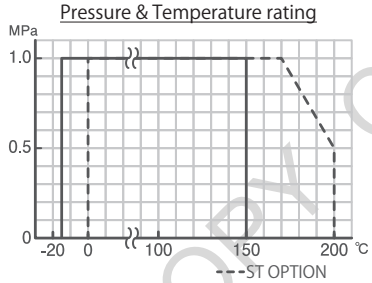

Floating ball type. Flanged end. V-port type. VR series has flow direction.

| | |
|---|---|
| ⓔ Piping connection | 1 JIS 10K RF Flanged end |
| Face to face | JIS B 2002 Series No.6 |
| ⓕ Body material | U SCS14A |
| ⓖ Ball material | U SUS316 / SCS14A |
| ⓗ Seat material | G Reinforced PTFE ／ R Reinforced F-PTFE |
| Stem seal material | Reinforced PTFE + FKM O-ring *1 |

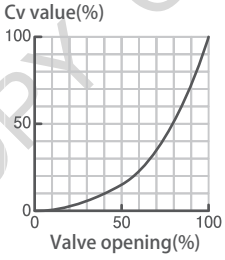
## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model | | | | | Height H*2*3 (mm) | | Face to face L (mm) | Cv value |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PPS body | | Aluminum body | | | | | | |
| | | | Single-acting | | Double acting | Single-acting | | | | | |
| | | | Airless SHUT | Airless OPEN | | Airless SHUT | Airless OPEN | PSO + EX Option<br>PSC + EX Option | TAD + EP Option<br>TAO + EP Option<br>TAC + EP Option | | |
| | | | PSO | PSC | TAD | TAO | TAC | | | | |
| VR | R015 | 0 | 04D | 04D | – | – | – | 224 | – | 108 | 1.3 |
| | | 2 | – | – | 050 | 050 | 050 | – | 335 | | |
| | -015 | 0 | 04D | 04D | – | – | – | 224 | – | 108 | 4 |
| | | 2 | – | – | 050 | 050 | 050 | – | 335 | | |
| | -020 | 0 | 04D | 04D | – | – | – | 227 | – | 117 | 7.5 |
| | | 2 | 05D | 05D | 050 | 050 | 050 | 260 | 338 | | |
| | -025 | 0 | 04D | 04D | 050 | 050 | 050 | 225 | 345 | 127 | 12 |
| | -032 | 0 | 05D | 05D | 050 | 050 | 050 | 273 | 351 | 140 | 20 |
| | -040 | 0 | 05W | 05W | 063 | 063 | 063 | 248 | 341*4 | 165 | 31 |
| | -050 | 0 | 05W | 05W | 063 | 063 | 063 | 257 | 350*4 | 178 | 48 |
| | | 2 | | | 080 | 080 | 080 | | 425 | | |
| | -065 | 0 | | | 080 | 080 | 080 | | 405 | 190 | 85 |
| | -080 | 0 | | | 080 | 080 | 080 | | 417 | 203 | 123 |
| | | 2 | | | 100 | 100 | 100 | | 448 | | |

Pressure & Temperature rating




Flow characteristic




Range ability
R015A = 100 : 1
015A or more = 50 : 1

Note) When selecting R seat / viscous fluid / solvent, it is necessary to select the sizing of the actuator. Please contact us for fluid specifications.

*1) Specify the [ST] option when the fluid is steam. In this case, O-ring material is FKM for steam.

*2) Height dimensions with the electro-pneumatic positioner installed. Add the option code "EX" smart positioner to the PSO / PSC type pneumatic actuator. Add the option code "EP" electro-pneumatic positioner to the TA series pneumatic actuator.

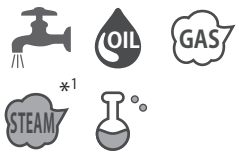
*3) If the temperature of the actuator may over the operating range due to heat transfer from the fluid, an insulation option is required. Please note that the product height will change if the insulation option is selected.

*4) TAO is + 2mm, TAC is + 4mm.

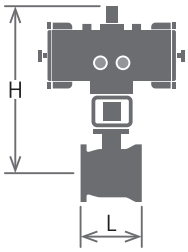
# GS series
Full port / V-port / Standard port, High performance model.



Lightweight and compact, wafer type ball valve. The same body can be connected to not only JIS 10K flange but also JIS 20K flange. Since seat is located at inlet side only, congestion of fluid not occur. By this seal configuration, abnormal pressure rise will not occur too.




Product code : TAD GS 9 0 3 U U G V025 - EP (Option code)
- ⓐ Actuator model
- ⓑ Valve model
- ⓒ Air code
- ⓓ Sizing code
- ⓔ Piping connection
- ⓕ Body material
- ⓖ Ball material
- ⓗ Seat material
- ⓘ Size



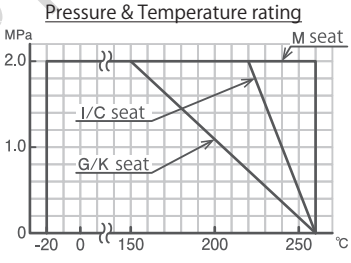

Trunnion ball type. Wafer type. Full port / V-port / Standard port type. GS series has flow direction.

| | |
|---|---|
| ⓔ Piping connection | 3 For JIS 10K and 20K flange Wafer type |
| ⓕ Body material | U SCS14A |
| ⓖ Ball material | U SCS14A + HCr PLTD |
| ⓗ Seat material | G Reinforced PTFE ／ K PEEK ／ I API*1 ／ C Reinforced PEEK ／ M SUS316 + Stellite® |
| Stem seal material | Reinforced PTFE |
| Allowable Seat Leakage | G K I seat: Bubble-tight<br>C seat: 0.00001% or less of rated Cv (ANSI B16.104 Class IV 1/1000 or less.) V-port leaks 5 to 8 times.<br>M seat: 0.01% or less of rated Cv (ANSI B16.104 Class IV or less.) V-port leaks 5 to 8 times. |

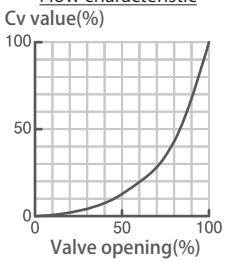
## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | | ⓓ Sizing code | ⓐ Actuator model: PPS body, Double acting | PPS body, Single-acting, Airless SHUT | PPS body, Single-acting, Airless OPEN | Aluminum body, Double acting | Aluminum body, Single-acting, Airless SHUT | Aluminum body, Single-acting, Airless OPEN | Height H*2*3 (mm): PND | PSO PSO | TAD TAO TAC | Face to face L (mm) | Cv value (V port) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | PND | PSO | PSC | TAD | TAO | TAC | PND | PSO PSO | TAD TAO TAC | | |
| GS | -015 | – | 0 | 03D | 04D | 04D | 040 | 040 | 040 | 153 | 169 | 196 | 40 | 20 (4) |
| | | V015 | 2 | 04D | 05D | 05D | 050 | 050 | 050 | 169 | 199 | 224 | | |
| | -020 | – | 0 | 03D | 04D | 04D | 040 | 040 | 040 | 155 | 171 | 198 | 50 | 36 (8) |
| | | V020 | 2 | 04D | 05D | 05D | 050 | 050 | 050 | 171 | 201 | 226 | | |
| | -025 | V025 | 0 | 04D | 05D | 05D | 050 | 050 | 050 | 180 | 210 | 235 | 60 | 50 (9) |
| | | | 2 | 05D | 05W | 05W | 063 | 063 | 063 | 210 | 210 | 250 | | |
| | -032 | V032 | 0 | 04D | 05D | 05D | 050 | 050 | 050 | 184 | 213 | 239 | 70 | 90 (22) |
| | | | 2 | 05D | 05W | 05W | 063 | 063 | 063 | 213 | 213 | 254 | | |
| | R040 | | 0 | 04D | 05D | 05D | 050 | 050 | 050 | 184 | 213 | 239 | 80 | 95 |
| | | | 2 | 05D | 05W | 05W | 063 | 063 | 063 | 213 | 213 | 254 | | |
| | -040 | | 0 | 05D | 05W | 05W | 063 | 063 | 063 | 237 | 237 | 277 | 80 | 120 |
| | | | 2 | – | – | – | 080 | 080 | 080 | – | – | 342 | | |
| | R050 | | 0 | 05D | 05W | 05W | 063 | 063 | 063 | 245 | 245 | 285 | 95 | 135 |
| | | | 2 | – | – | – | 080 | 080 | 080 | – | – | 350 | | |
| | -050 | | 0 | 05D | 05W | 05W | 063 | 063 | 063 | 245 | 245 | 285 | 95 | 220 |
| | | | 2 | – | – | – | 080 | 080 | 080 | – | – | 350 | | |
| | R065 | | 0 | 05D | 05W | 05W | 063 | 063 | 063 | 253 | 253 | 293 | 110 | 195 |
| | | | 2 | | | | 080 | 080 | 080 | | | 358 | | |
| | -065 | | 0 | | | | 080 | 080 | 080 | | | 352 | 110 | 380 |
| | | | 2 | | | | 100 | 100 | 100 | | | 405 | | |
| | R080 | | 0 | | | | 080 | 080 | 080 | | | 352 | 125 | 410 |
| | | | 2 | | | | 100 | 100 | 100 | | | 405 | | |
| | -080 | | 0 | | | | 080 | 080 | 080 | | | 359 | 125 | 750 |
| | | | 2 | | | | 100 | 100 | 100 | | | 412 | | |
| | R100 | | 0 | | | | 080 | 080 | 080 | | | 377 | 145 | 430 |
| | | | 2 | | | | 100 | 100 | 100 | | | 430 | | |
| | R125 | | 0 | | | | 100 | 100 | 100 | | | 459 | 176 | 900 |
| | | | 2 | | | | 125 | 125 | 125 | | | 494 | | |
| | R150 | | 0 | | | | 125 | 125 | 125 | | | 512 | 215 | 1360 |
| | | | 2 | | | | 160 | 160 | 160 | | | 558 | | |

Pressure & Temperature rating




Flow characteristic




Range ability
Full port is 200 : 1
V-port is 50 : 1
Standard port is 100 : 1

Note) When selecting K, I, C or M seat / viscous fluid / solvent, it is necessary to select the sizing of the actuator. Please contact us for fluid specifications.

*1) API seats cannot be used for steam.

*2) If the temperature of the actuator may over the operating range due to heat transfer from the fluid, an insulation option is required. Please note that the product height will change if the insulation option is selected.

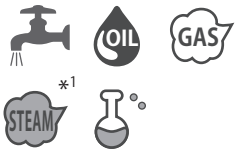
*3) When using proportional control, select the electro-pneumatic positioner option. Add the option code "EX" smart positioner to the PSO / PSC type pneumatic actuator. Add the option code "EP" electro-pneumatic positioner to the TA series pneumatic actuator. Please note that the product height will change if the positioner option is selected.

# LR / TR series

L-shaped full port. LR : Horizontal three-way model. / TR : Vertical three-way model.

LR TR

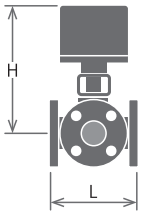
For switching the flow direction and for dividing or mixing. Select from horizontal LR series and vertical TR series according to the piping layout.



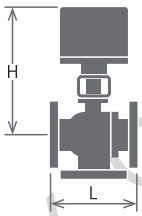

Product code : TAD LR 9 0 1 T T P -050 - Option code

- ⓐ Actuator model
- ⓑ Valve model
- ⓒ Air code
- ⓓ Sizing code
- ⓔ Piping connection
- ⓕ Body material
- ⓖ Ball material
- ⓗ Seat material
- ⓘ Size

LR series




TR series




Floating ball type. Flanged end. Full port type.

| | |
|---|---|
| ⓔ Piping connection | 1 JIS 10K RF Flanged end |
| ⓕ Body material | T SCS13A |
| ⓖ Ball material | T SUS304 / SCS13A |
| ⓗ Seat material | P Reinforced PTFE |
| Stem seal material | Reinforced PTFE + FKM O-ring *1 |

## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model | | | | | | Height H*2 (mm) | | | Face to face L (mm) | Cv value (Resultant Cv value) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PPS body | | | Aluminum body | | | | | | | |
| | | | Double acting | Single-acting | | Double acting | Single-acting | | | | | | |
| | | | | Airless P ① | Airless P ② | | Airless P ① | Airless P ② | | | | | |
| | | | PND | PSO | PSC | TAD | TAO | TAC | PND | PSO PSC | TAD TAO TAC | | |
| LR TR | -020 | 0 | 04D | 04D | 04D | 050 | 050 | 050 | 146 | 146 | 204 | 150 | 24 (10) |
| | -025 | 0 | 04D | 05D | 05D | 050 | 050 | 050 | 143 | 185 | 211 | 170 | 40 (20) |
| | -040 | 0 | 05D | 05W | 05W | 063 | 063 | 063 | 164 | 168 | 207*3 | 200 | 100 (60) |
| | -050 | 0 | 05D | 05W | 05W | 063 | 063 | 063 | 173 | 175 | 215*3 | 230 | 170 (110) |
| | | 2 | | | | 080 | 080 | 080 | | | 290 | | |
| | -065 | 0 | | | | 080 | 080 | 080 | | | 271 | 260 | 240 (150) |
| | -080 | 0 | | | | 080 | 080 | 080 | | | 283 | 280 | 380 (240) |
| | | 2 | | | | 100 | 100 | 100 | | | 314 | | |
| | -100 | 0 | | | | 100 | 100 | 100 | | | 340 | 340 | 680 (440) |
| | | 2 | | | | 125 | 125 | 125 | | | 365 | | |

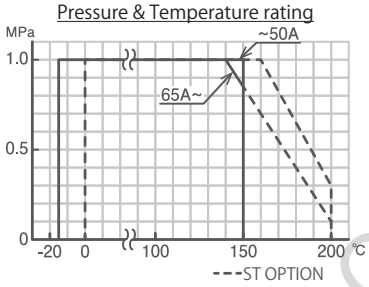
Note) When used for viscous fluid / solvent, it is necessary to select the sizing of the actuator. Please contact us for fluid specifications.

*1) Specify the [ST] option when the fluid is steam. In this case the O-ring material is FKM for steam.

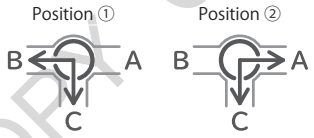
*2) If the temperature of the actuator may over the operating range due to heat transfer from the fluid, an insulation option is required. Please note that the product height will change if the insulation option is selected.

*3) LR type TAO / TAC is + 4mm.
TR type TAO is + 2mm and TAC is + 4mm.

Pressure & Temperature rating

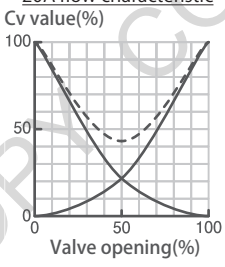



Flow paths



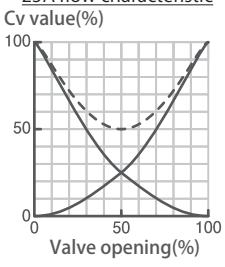

Note)
It should be noted that, if the line pressure of the closed bore is higher than that of the open bores, a small rate of fluid leakage may occur from the closed bore.

20A flow characteristic



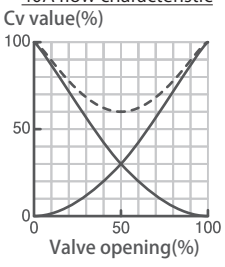

Range ability 20 : 1

25A flow characteristic



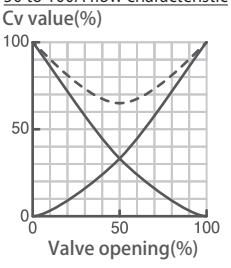

Range ability 20 : 1

40A flow characteristic




Range ability 20 : 1

50 to 100A flow characteristic

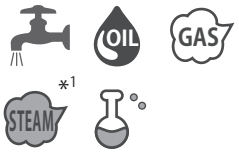



Range ability 20 : 1

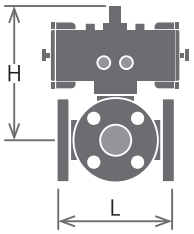
# L3 series L-shaped full port, Horizontal three-way model.



For switching the flow direction and for dividing or mixing. The trunnion structure that supports the ball with a shaft reduces the effect of fluid pressure on the sealing performance. Maintains sealing performance even under low pressure conditions on the flow path side.




Product code : TAD L3 9 0 1 T T G -050 -Option code
ⓐ Actuator model
ⓑ Valve model
ⓒ Air code
ⓓ Sizing code
ⓔ Piping connection
ⓕ Body material
ⓖ Ball material
ⓗ Seat material
ⓘ Size



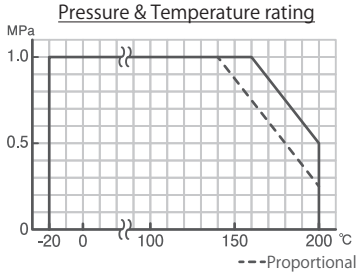

Trunnion ball type. Flanged end. Full port type.

| | |
|---|---|
| ⓔ Piping connection | 1 JIS 10K RF Flanged end |
| ⓕ Body material | T SCS13A |
| ⓖ Ball material | T SCS13A |
| ⓗ Seat material | G Reinforced PTFE |
| Stem seal material | PTFE |

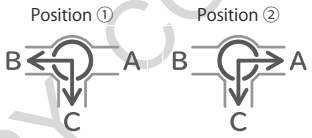
## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model | | | | | | Height H*2 (mm) | | | Face to face L (mm) | Cv value (Resultant Cv value) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PPS body | | | Aluminum body | | | | | | | |
| | | | Double acting | Single-acting | | Double acting | Single-acting | | | | | | |
| | | | | Airless P ① | Airless P ② | | Airless P ① | Airless P ② | | | | | |
| | | | PND | PSO | PSC | TAD | TAO | TAC | PND | PSO PSC | TAD TAO TAC | | |
| L3 | -025 | 0 | 04D | 05D | 05D | 050 | 050 | 050 | 156 | 198 | 224 | 160 | 40 (20) |
| | -040 | 0 | 05D | 05W | 05W | 063 | 063 | 063 | 186 | 186 | 228 | 180 | 100 (60) |
| | -050 | 0 | 05D | 05W | 05W | 063 | 063 | 063 | 193 | 193 | 235 | 200 | 170 (110) |
| | -065 | 0 | | | | 080 | 080 | 080 | | | 281 | 240 | 240 (150) |
| | -080 | 0 | | | | 080 | 080 | 080 | | | 289 | 260 | 380 (240) |
| | -100 | 0 | | | | 100 | 100 | 100 | | | 344 | 330 | 680 (440) |
| | -125 | 0 | | | | 125 | 125 | 125 | | | 387 | 370 | 1080 (680) |
| | -150 | 0 | | | | 160 | 160 | 160 | | | 458 | 430 | 1620 (1030) |

Pressure & Temperature rating




Flow paths

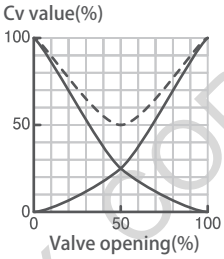



Note) When used for viscous fluid / solvent, it is necessary to select the sizing of the actuator. Please let us know the conditions of use.

*1) When the fluid is steam, a separate option is required depending on the conditions. Please inform us of the conditions of use.

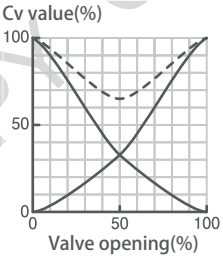
*2) If the temperature of the actuator may over the operating range due to heat transfer from the fluid, an insulation option is required. Please note that the product height will change if the insulation option is selected.

25A flow characteristic




Range ability 30 : 1

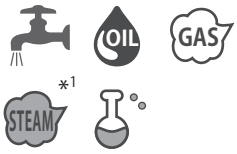
40 to 150A flow characteristic




Range ability 30 : 1

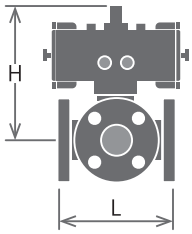
# T3 series T-shaped full port, Horizontal three-way model.

For switching between straight and L direction. The trunnion structure that supports the ball with a shaft reduces the effect of fluid pressure on the sealing performance. Maintains sealing performance even under low pressure conditions on the flow path side.




Product code : TAD T3 9 0 1 T T G -050 - a - Option code

- ⓐ Actuator model
- ⓑ Valve model
- ⓒ Air code
- ⓓ Sizing code
- ⓔ Piping connection
- ⓕ Body material
- ⓖ Ball material
- ⓗ Seat material
- ⓘ Size
- ⓙ Flow paths



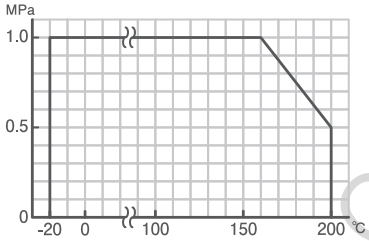

Trunnion ball type. Flanged end. Full port type.

| | |
|---|---|
| ⓔ Piping connection | 1 JIS 10K RF Flanged end |
| ⓕ Body material | T SCS13A |
| ⓖ Ball material | T SCS13A |
| ⓗ Seat material | G Reinforced PTFE |
| Stem seal material | PTFE |

## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model | | | | | | Height H*2 (mm) | | | Face to face L (mm) | Cv value | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PPS body | | | Aluminum body | | | | | | | L direction | Straight direction |
| | | | Double acting | Single-acting | | Double acting | Single-acting | | PND | PSO PSC | TAD TAO TAC | | | |
| | | | | Airless P ① | Airless P ② | | Airless P ① | Airless P ② | | | | | | |
| | | | PND | PSO | PSC | TAD | TAO | TAC | | | | | | |
| T3 | -025 | 0 | 04D | 05D | 05D | 050 | 050 | 050 | 156 | 198 | 224 | 160 | 26 | 45 |
| | | 2 | 05D | 05W | 05W | 063 | 063 | 063 | 198 | 198 | 239 | | | |
| | -040 | 0 | 05D | 05W | 05W | 063 | 063 | 063 | 186 | 186 | 228 | 180 | 65 | 129 |
| | -050 | 0 | | | | 080 | 080 | 080 | | | 271 | 200 | 110 | 219 |
| | -065 | 0 | | | | 080 | 080 | 080 | | | 281 | 240 | 160 | 300 |
| | | 2 | | | | 100 | 100 | 100 | | | 312 | | | |
| | -080 | 0 | | | | 100 | 100 | 100 | | | 330 | 260 | 260 | 469 |
| | -100 | 0 | | | | 100 | 100 | 100 | | | 343 | 330 | 480 | 820 |
| | | 2 | | | | 125 | 125 | 125 | | | 368 | | | |
| | -125 | 0 | | | | 160 | 160 | 160 | | | 445 | 370 | 770 | 1400 |
| | -150 | 0 | | | | 160 | 160 | 160 | | | 464 | 430 | 1150 | 2000 |

Pressure & Temperature rating

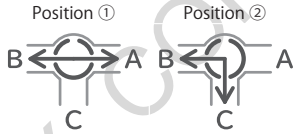



Note) When used for viscous fluid / solvent, it is necessary to select the sizing of the actuator. Please let us know the conditions of use.

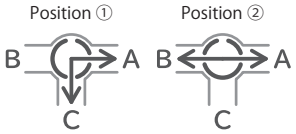
*1) When the fluid is steam, a separate option is required depending on the conditions. Please inform us of the conditions of use.

*2) If the temperature of the actuator may over the operating range due to heat transfer from the fluid, an insulation option is required. Please note that the product height will change if the insulation option is selected.

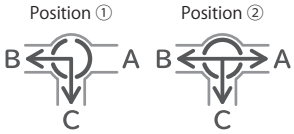
ⓙ Flow paths Code a



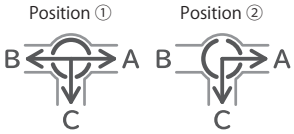

ⓙ Flow paths Code b




ⓙ Flow paths Code c




ⓙ Flow paths Code d




Note)
Enter of the Flow paths code after the Size of the product code.

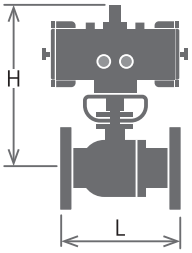
# BL series Full port, PFA lining model.



The inside of the valve is lined with PFA resin. A lining ball valve with excellent corrosion resistance. Can be used for highly corrosive fluids that cannot be withstood by metal valves.


Product code : TAD BL 9 0 1 T F T -050 -Option code

- ⓐ Actuator model: TAD
- ⓑ Valve model: BL
- ⓒ Air code: 9
- ⓓ Sizing code: 0
- ⓔ Piping connection: 1
- ⓕ Body material: T
- ⓖ Ball material: F
- ⓗ Seat material: T
- ⓘ Size: -050




Floating ball type. Flanged end. Full port type.

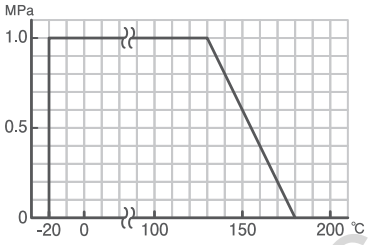
| | | |
|---|---|---|
| ⓔ Piping connection | 1 JIS 10K RF Flanged end | |
| ⓕ Body material | T SCS13A + PFA | S SCPH2+ PFA |
| ⓖ Ball material | F SCS13A+ PFA | |
| ⓗ Seat material | T PTFE | |
| Stem seal material | PTFE | |

## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model: Aluminum body, Double acting | Single-acting: Airless SHUT | Single-acting: Airless OPEN | Height H (mm) | Face to face L (mm) | ○ : Semi-standard △ : Mede to order × : Not selectable | |
|---|---|---|---|---|---|---|---|---|---|
| | | | TAD | TAO | TAC | TAD TAO TAC | | SCS13A Body | SCPH2 Body |
| BL | -015 | 0 | 050 | 050 | 050 | 212 | 140 | ○ | ○ |
| | -020 | 0 | 050 | 050 | 050 | 217 | 152 | ○ | ○ |
| | -025 | 0 | 050 | 050 | 050 | 232 | 165 | ○ | △ |
| | -040 | 0 | 063 | 063 | 063 | 263 | 191 | ○ | △ |
| | -050 | 0 | 080 | 080 | 080 | 318 | 216 | ○ | △ |
| | -065 | 0 | 080 | 080 | 080 | 355 | 240 | ○ | ○ |
| | -080 | 0 | 100 | 100 | 100 | 394 | 250 | ○ | △ |
| | -100 | 0 | 125 | 125 | 125 | 441 | 280 | ○ | ○ |
| | -150 | 0 | 160 | 160 | 160 | 555 | 267 | ○ | △ |

Note) BL series is a semi-standard product. Please check the delivery date.

Pressure & Temperature rating

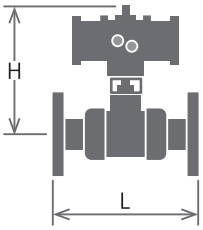


# PA series Full port, All plastic model.

All Plastic ball valve with excellent chemical resistance. Selectable from four types of materials and three types of piping connection methods according to the piping to be used.

Product code : TAD PA 9 0 1 P P E -025 - Option code

- ⓐ Actuator model
- ⓑ Valve model
- ⓒ Air code
- ⓓ Sizing code
- ⓔ Piping connection
- ⓕ Body material
- ⓖ Ball material
- ⓗ Stem seal material
- ⓘ Size



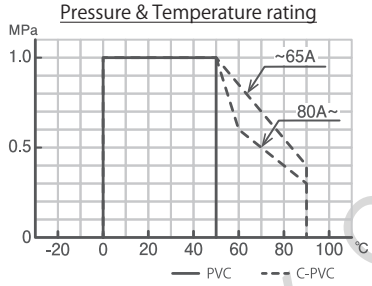

Floating ball type. PA series with 50A or less has a flow direction.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ⓔ Piping connection | 1 JIS 10K FF Flanged end | | | | 5 Threaded end Rc JIS B 0203 | | | | 7 Socket end | | | |
| ⓕ Body material | P PVC | H C-PVC | R PVDF | Q PP | P PVC | H C-PVC | R PVDF | Q PP | P PVC | H C-PVC | Q PP | |
| ⓖ Ball material | P PVC | H C-PVC | R PVDF | Q PP | P PVC | H C-PVC | R PVDF | Q PP | P PVC | H C-PVC | Q PP | |
| ⓗ Stem seal material | E EPDM O-ring ／ V FKM O-ring | | | | | | | | | | | |
| Seat material | PTFE | | | | | | | | | | | |

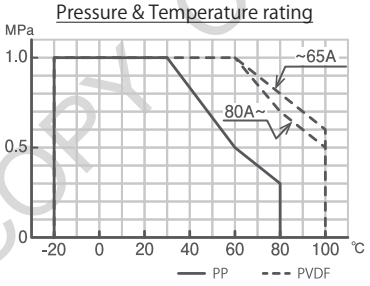
## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model | | | | | | Height H (mm) | | | Face to face L (mm) | | | | | | | | Cv value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PPS body | | | Aluminum body | | | | | | Flanged end | | | Threaded end | | | Socket end | | |
| | | | Double acting | Single-acting Airless SHUT | Single-acting Airless OPEN | Double acting | Single-acting Airless SHUT | Single-acting Airless OPEN | PND | PSO PSC | TAD TAO TAC | PVC C-PVC | PVDF | PP | PVC C-PVC | PVDF | PP | PVC C-PVC | PP | |
| | | | PND | PSO | PSC | TAD | TAO | TAC | | | | | | | | | | | | |
| PA | -015 | 0 | 03S | 03D | 03D | 040 | 040 | 040 | 108 | 117 | 153 | 143 | 143 | 143 | 102 | 100 | 100 | 109 | 108 | 14 |
| | -020 | 0 | 03D | 03D | 03D | 040 | 040 | 040 | 123 | 123 | 160 | 172 | 172 | 172 | 120 | 119 | 119 | 128 | 126 | 29 |
| | -025 | 0 | 03D | 04D | 04D | 040 | 040 | 040 | 130 | 147 | 167 | 187 | 187 | 187 | 131 | 130 | 130 | 145 | 141 | 47 |
| | -032 | 0 | 03D | 04D | 04D | 040 | 040 | 040 | 147 | 164 | 184 | 190 | 190 | 190 | 150 | 146 | 146 | 162 | – | 72 |
| | -040 | 0 | 04D | 05D | 05D | 050 | 050 | 050 | 187 | 195 | 220 | 212 | 212 | 212 | 163 | 160 | 160 | 189 | 171 | 155 |
| | -050 | 0 | 04D | 05D | 05D | 050 | 050 | 050 | 198 | 206 | 232 | 234 | 234 | 234 | 197 | 194 | 194 | 220 | 192 | 190 |
| | | 2 | 05D | 05W | 05W | 063 | 063 | 063 | 206 | 206 | 247 | | | | | | | | | |
| | -065 | 0 | 05D | 05W | 05W | 063 | 063 | 063 | 227 | 227 | 267 | 261 | 256 | 257 | 215 | 212 | 213 | 273 | 219 | 365 |
| | -080 | 0 | 05D | 05W | 05W | 063 | 063 | 063 | 236 | 236 | 276 | 306 | 302 | 305 | 265 | 261 | 264 | 316 | 257 | 410 |
| | | 2 | | | | 080 | 080 | 080 | | | 318 | | | | | | | | | |
| | -100 | 0 | | | | 080 | 080 | 080 | | | 350 | 374 | 369 | 374 | 362 | 357 | 362 | 419 | 341 | 680 |

Pressure & Temperature rating




Pressure & Temperature rating



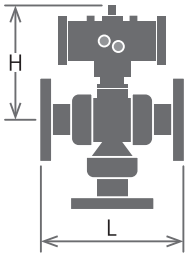

Note) PVDF / PP body model is a semi-standard product. Please check the delivery date.

# PL series L-shaped full port. Vertical three-way model.

All Plastic Three-way ball valve with excellent chemical resistance. Selectable from four types of materials and three types of piping connection methods according to the piping to be used.

Product code : TAD PL 9 0 1 P P E -025 - Option code

- ⓐ Actuator model: TAD
- ⓑ Valve model: PL
- ⓒ Air code: 9
- ⓓ Sizing code: 0
- ⓔ Piping connection: 1
- ⓕ Body material: P
- ⓖ Ball material: P
- ⓗ Stem seal material: E
- ⓘ Size: -025




Floating ball type. Full port type.

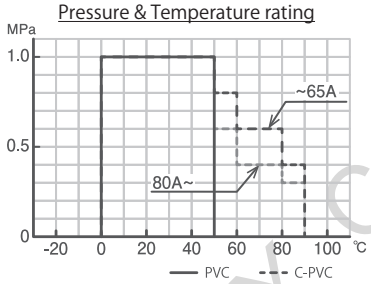
| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ⓔ Piping connection | 1 JIS 10K FF Flanged end | | | | 5 Threaded end Rc JIS B 0203 | | | | 7 Socket end | | | | | |
| ⓕ Body material | P PVC | H C-PVC | R PVDF | Q PP | P PVC | H C-PVC | R PVDF | Q PP | P PVC | H C-PVC | Q PP | | | |
| ⓖ Ball material | P PVC | H C-PVC | R PVDF | Q PP | P PVC | H C-PVC | R PVDF | Q PP | P PVC | H C-PVC | Q PP | | | |
| ⓗ Stem seal material | E EPDM O-ring ／ V FKM O-ring | | | | | | | | | | | | | |
| Seat material | PTFE | | | | | | | | | | | | | |

## Actuator type and product dimensions

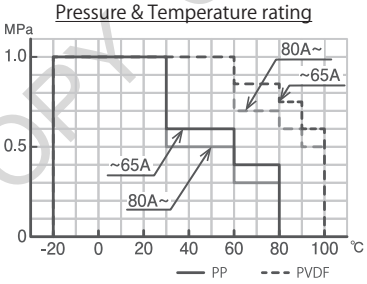
| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model | | | | | | Height H (mm) | | | Face to face L (mm) | | | | | | | | | Cv value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PPS body | | | Aluminum body | | | | | | Flanged end | | | Threaded end | | | Socket end | | | |
| | | | Double acting | Single-acting Airless P ① | Single-acting Airless P ② | Double acting | Single-acting Airless P ① | Single-acting Airless P ② | PND | PSO PSC | TAD TAO TAC | PVC C-PVC | PVDF | PP | PVC C-PVC | PVDF | PP | PVC C-PVC | PP | |
| | | | PND | PSO | PSC | TAD | TAO | TAC | | | | | | | | | | | | | |
| PL | -015 | 0 | 03D | 04D | 04D | 040 | 040 | 040 | 117 | 133 | 153 | 143 | 143 | 143 | 102 | 102 | 102 | 108 | 108 | 6.3 |
| | -020 | 0 | 03D | 04D | 04D | 040 | 040 | 040 | 123 | 140 | 160 | 172 | 172 | 172 | 120 | 120 | 120 | 128 | 126 | 8.5 |
| | -025 | 0 | 03D | 04D | 04D | 040 | 040 | 040 | 130 | 147 | 167 | 187 | 187 | 187 | 131 | 131 | 131 | 145 | 141 | 20 |
| | -032 | 0 | 04D | 05D | 05D | 050 | 050 | 050 | 187 | 195 | 220 | 212 | 212 | 212 | 163 | 163 | 163 | 174 | – | 27 |
| | -040 | 0 | 04D | 05D | 05D | 050 | 050 | 050 | 187 | 195 | 220 | 212 | 212 | 212 | 163 | 163 | 163 | 189 | 171 | 36 |
| | -050 | 0 | 04D | 05D | 05D | 050 | 050 | 050 | 198 | 206 | 232 | 234 | 234 | 234 | 197 | 197 | 197 | 220 | 192 | 45 |
| | | 2 | 05D | 05W | 05W | 063 | 063 | 063 | 206 | 206 | 247 | | | | | | | | | |
| | -065 | 0 | 05D | 05W | 05W | 063 | 063 | 063 | 236 | 236 | 276 | 304 | 304 | 304 | 264 | 264 | 264 | 316 | 264 | 84 |
| | | 2 | – | – | – | 080 | 080 | 080 | – | – | 318 | | | | | | | | | |
| | -080 | 0 | 05D | 05W | 05W | 063 | 063 | 063 | 236 | 236 | 276 | 304 | 304 | 304 | 264 | 264 | 264 | 316 | 258 | 99 |
| | | 2 | | | | 080 | 080 | 080 | | | 318 | | | | | | | | | |
| | -100 | 0 | | | | 080 | 080 | 080 | | | 350 | 372 | 372 | 372 | 360 | 360 | 360 | 418 | 340 | 200 |

Note) PVDF / PP body model is a semi-standard product. Please check the delivery date.

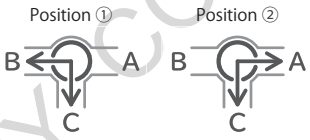
Pressure & Temperature rating




Pressure & Temperature rating

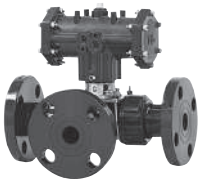



Flow paths




Note)
It should be noted that, if the line pressure of the closed bore is higher than that of the open bores, a small rate of fluid leakage may occur from the closed bore.

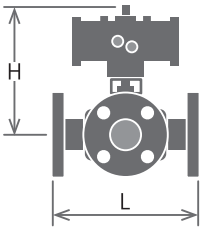
A three-way valve with a four-sided seat structure. All Plastic ball valve with excellent chemical resistance. LP type is L-type port, TP type is T-type port.



Product code : PND LP 9 0 1 P P E -020 - Option code

Product code : TAD TP 9 0 1 P P V -040 - a - Option code

ⓐ Actuator model
ⓑ Valve model
Ⓒ Air code
ⓓ Sizing code
ⓔ Piping connection
ⓕ Body material
ⓖ Ball material
ⓗ Stem seal material
ⓘ Size
ⓙ Flow paths




Four-sided seat structure type. Standard port type.

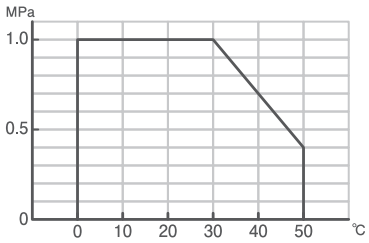
| | | | |
|---|---|---|---|
| ⓔ Piping connection | 1 JIS 10K FF Flanged end | 5 Threaded end Rc JIS B 0203 | 7 Socket end |
| ⓕ Body material | P PVC | | |
| ⓖ Ball material | P PVC | | |
| ⓗ Stem seal material | E EPDM O-ring ／ V FKM O-ring | | |
| Seat material | PTFE | | |

## Actuator type and product dimensions

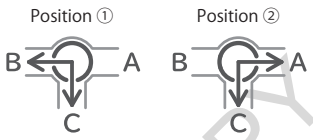
| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model | | | | | | Height H (mm) | | | Face to face L (mm) | | | Cv value | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PPS body | | | Aluminum body | | | | | | | | | LP | TP | |
| | | | Double acting | Single-acting | | Double acting | Single-acting | | | | | | | | | L direction | Straight direction |
| | | | | Airless P ① | Airless P ② | | Airless P ① | Airless P ② | | | | | | | | | |
| | | | PND | PSO | PSC | TAD | TAO | TAC | PND | PSO PSC | TAD TAO TAC | フランジ | ねじ込み | ソケット | | | |
| LP TP | -015 | 0 | 03D | 04D | 04D | 040 | 040 | 040 | 114 | 130 | 150*1 | 163 | 118 | 129 | 5 | 4 | 7 |
| | -020 | 0 | 04D | 04D | 04D | 050 | 050 | 050 | 134 | 134 | 201 | 200 | 134 | 151 | 10 | 8 | 14 |
| | -025 | 0 | 04D | 05D | 05D | 050 | 050 | 050 | 149 | 190 | 216 | 221 | 156 | 175 | 16 | 14 | 24 |
| | -040 | 0 | 05D | 05W | 05W | 063 | 063 | 063 | 204 | 204 | 244 | 272 | 203 | 232 | 38 | 30 | 50 |
| | -050 | 0 | 05D | 05W | 05W | 063 | 063 | 063 | 212 | 212 | 252 | 306 | 225 | 260 | 56 | 45 | 80 |

*1) TAO・TAC is +31mm.

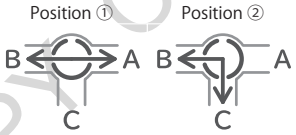
Pressure & Temperature rating



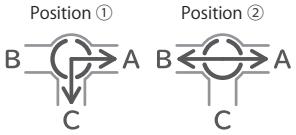

LP series Flow paths



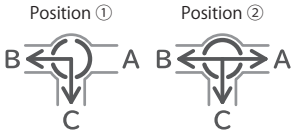

ⓙ TP series Flow paths Code a



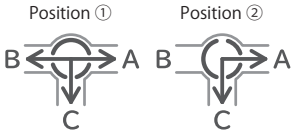

ⓙ TP series Flow paths Code b




ⓙ TP series Flow paths Code c




ⓙ TP series Flow paths Code d




Note)
For TP series, enter of the Flow paths code after the Size of the product code.
It should be noted that, if the line pressure of the closed bore is higher than that of the open bores, a small rate of fluid leakage may occur from the closed bore.

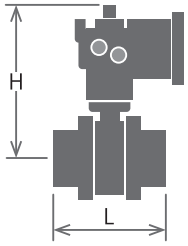
# Z series

Rubber seat small size three piece body butterfly valve.

For various purposes mini butterfly valve. PPS resin discs with excellent corrosion resistance. With a three piece main body structure with excellent maintainability, the main body can be removed and maintained with the cap left on the pipe.


Product code : PND Z- 9 0 5 T U E -025 -Option code

- ⓐ Actuator model
- ⓑ Valve model
- ⓒ Air code
- ⓓ Sizing code
- ⓔ Piping connection
- ⓕ Body material
- ⓖ Cap material
- ⓗ Seat material
- ⓘ Size




Concentric type butterfly valve

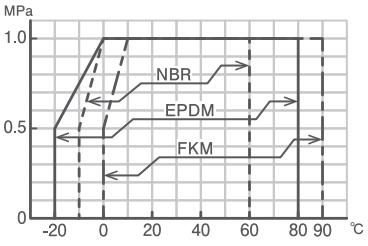
| | | | |
|---|---|---|---|
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 | 7 Socket end | |
| ⓕ Body material | T SCS13A | | |
| ⓖ Cap material | U SCS14A | P PVC*2 | H C-PVC |
| ⓗ Seat material | E EPDM*1*2 ／ B NBR ／ V FKM | | |
| Disk material | PPS | | |
| Stem seal material | O-ring of the same material as the seat | | |

## Actuator type and product dimensions

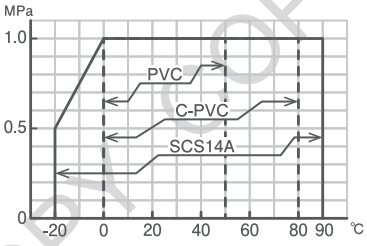
| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | PPS body | | | Aluminum body | | |
| | | | Double acting | Single-acting | | Double acting | Single-acting | |
| | | | | Airless SHUT | Airless OPEN | | Airless SHUT | Airless OPEN |
| | | | PND | PSO | PSC | TAD | TAO | TAC |
| Z- | -015 | 0 | 03S | 03S | 03S | 040 | 040 | 040 |
| | -020 | 0 | 03S | 03S | 03S | 040 | 040 | 040 |
| | -025 | 0 | 03S | 03D | 03D | 040 | 040 | 040 |
| | -032 | 0 | 03S | 03D | 03D | 040 | 040 | 040 |
| | -040 | 0 | 03D | 04D | 04D | 040 | 040 | 040 |
| | -050 | 0 | 03D | 04D | 04D | 040 | 040 | 040 |

| Height H (mm) | | | Face to face L(mm) | | Cv value |
|---|---|---|---|---|---|
| PND | PSO PSC | TAD TAO TAC | Threaded | Socket | |
| 95 | 95 | 140 | 59 | 65 | 7 |
| 98 | 98 | 143 | 66 | 75 | 19 |
| 102 | 111 | 147 | 78 | 91 | 28 |
| 102 | 111 | 147 | 87 | 96 | 28 |
| 123 | 140 | 160 | 95 | 126 | 86 |
| 123 | 140 | 160 | 109 | 138 | 86 |

Seat material Pressure & Temperature rating



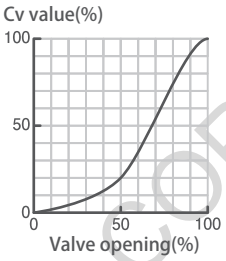

Cap material Pressure & Temperature rating




Note) When used in hot water supply lines or in fluids containing chlorine, EPDM and NBR may deteriorate prematurely depending on conditions.

*1) EPDM cannot be used for mineral oil and plant oil.
*2) When using in seawater, please order a combination of PVC cap and EPDM seat.

Flow characteristic




Range ability 30 : 1

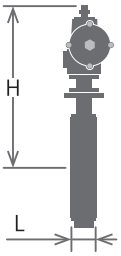
# FE series

Rubber seat butterfly valve..

As a three-dimensional 360° spherical disk, it is stably worked on friction face of seat when operating and its life was also largely improved. It is a thin disc and flat seat, minimized fluid resistance.


Product code : PND FE 9 0 1 L T E -080 - Option code

- ⓐ Actuator model
- ⓑ Valve model
- ⓒ Air code
- ⓓ Sizing code
- ⓔ Piping connection
- ⓕ Body material
- ⓖ Disk material
- ⓗ Seat material
- ⓘ Size



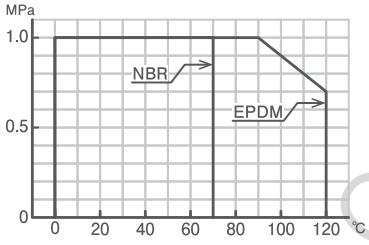

Concentric type butterfly valve

| | |
|---|---|
| ⓔ Piping connection | 1 For JIS 10K flange Wafer type |
| Face to face | JIS B 2002 Series No.46 |
| ⓕ Body material | L ADC12 |
| ⓖ Disk material | T SCS13A |
| ⓗ Seat material | E EPDM*1 ／ B NBR |
| Stem seal material | The structure seals the stem with a seat. The O-ring (NBR) is installed as a dust seal. |

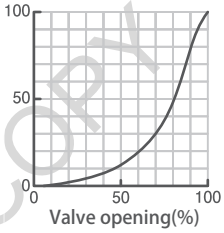
## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model | | | | | | Height H (mm) | | | Face to face L (mm) | Cv value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PPS body | | | Aluminum body | | | | | | | |
| | | | Double acting | Single-acting | | Double acting | Single-acting | | | | | | |
| | | | | Airless SHUT | Airless OPEN | | Airless SHUT | Airless OPEN | | | | | |
| | | | PND | PSO | PSC | TAD | TAO | TAC | PND | PSO PSC | TAD TAO TAC | | |
| FE | -040 | 0 | 05D | 05D | 05D | 050 | 050 | 050 | 214 | 214 | 240 | 33 | 101 |
| | -050 | 0 | 05D | 05D | 05D | 050 | 050 | 050 | 230 | 230 | 255 | 43 | 236 |
| | -065 | 0 | 05D | 05W | 05W | 063 | 063 | 063 | 240 | 240 | 280 | 46 | 313 |
| | -080 | 0 | 05D | 05W | 05W | 063 | 063 | 063 | 250 | 250 | 290 | 46 | 469 |
| | -100 | 0 | | | | 080 | 080 | 080 | | | 338 | 52 | 777 |
| | -125 | 0 | | | | 080 | 080 | 080 | | | 358 | 56 | 1251 |
| | -150 | 0 | | | | 100 | 100 | 100 | | | 404 | 56 | 2372 |
| | -200 | 0 | | | | 125 | 125 | 125 | | | 459 | 60 | 4480 |
| | -250 | 0 | | | | 160 | 160 | 160 | | | 616 | 68 | 6830 |
| | -300 | 0 | | | | 160 | 160 | 160 | | | 652 | 78 | 9280 |

Pressure & Temperature rating




Flow characteristic




Range ability 30 : 1

Note) When used in hot water supply lines or in fluids containing chlorine, EPDM and NBR may deteriorate prematurely depending on conditions.

*1) EPDM cannot be used for mineral oil and plant oil.

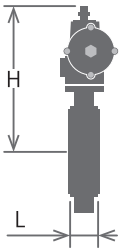
# FP series

Plastic body and disk. Rubber seat butterfly valve.

Plastic butterfly valve with excellent corrosion resistance. Polypropylene with a low specific gravity is used for the main body and valve body, making it extremely lightweight.


Product code : PND FP 9 0 1 Q Q E -050 - Option code

- ⓐ Actuator model
- ⓑ Valve model
- ⓒ Air code
- ⓓ Sizing code
- ⓔ Piping connection
- ⓕ Body material
- ⓖ Disk material
- ⓗ Seat material
- ⓘ Size




Concentric type butterfly valve

| | |
|---|---|
| ⓔ Piping connection | 1 For JIS 10K flange Wafer type |
| ⓕ Body material | Q PP |
| ⓖ Disk material | Q PP |
| ⓗ Seat material | E EPDM*1 |
| Stem seal material | EPDM*1 O-ring |

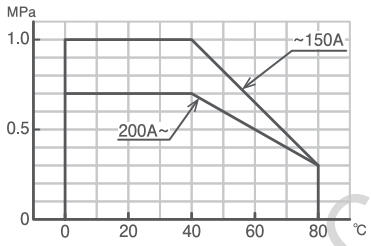
## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model | | | | | | Height H (mm) | | | Face to face L (mm) | Cv value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PPS body | | | Aluminum body | | | | | | | |
| | | | Double acting | Single-acting | | Double acting | Single-acting | | | | | | |
| | | | | Airless SHUT | Airless OPEN | | Airless SHUT | Airless OPEN | | | | | |
| | | | PND | PSO | PSC | TAD | TAO | TAC | PND | PSQ PSC | TAD TAO TAC | | |
| FP | -040 | 0 | 05D | 05D | 05D | 050 | 050 | 050 | 192 | 192 | 217 | 35.5 | 75 |
| | -050 | 0 | 05D | 05D | 05D | 050 | 050 | 050 | 199 | 199 | 224 | 38.5 | 123 |
| | -065 | 0 | 05D | 05W | 05W | 063 | 063 | 063 | 209 | 209 | 250 | 44 | 267 |
| | -080 | 0 | 05D | 05W | 05W | 063 | 063 | 063 | 212 | 212 | 252 | 43.5 | 368 |
| | -100 | 0 | | | | 080 | 080 | 080 | | | 307 | 54 | 487 |
| | -125 | 0 | | | | 080 | 080 | 080 | | | 333 | 62 | 845 |
| | -150 | 0 | | | | 100 | 100 | 100 | | | 380 | 65 | 1120 |
| | -200 | 0 | | | | 125 | 125 | 125 | | | 432 | 79 | 2340 |
| | -250 | 0 | | | | 160 | 160 | 160 | | | 514 | 104 | 3580 |
| | -300 | 0 | | | | 160 | 160 | 160 | | | 572 | 127 | 5100 |

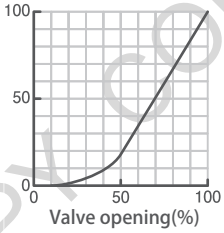
Note) When used in hot water supply lines or in fluids containing chlorine, EPDM may deteriorate prematurely depending on conditions.

*1) EPDM cannot be used for mineral oil and plant oil.

Pressure & Temperature rating




Flow characteristic




Range ability 30 : 1

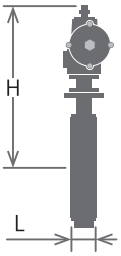
# FN / F series

Rubber seat butterfly valve. General-purpose model.

Due to the two-part stem, there is little protrusion of the disk to the flow path, the flow is smooth, and the Cv value is also good. The seat surface is flat and there is little resistance to flow, so the flow rate can be adjusted reliably.


Product code : PND FN 9 0 1 D U E -080 - Option code

- ⓐ Actuator model
- ⓑ Valve model
- ⓒ Air code
- ⓓ Sizing code
- ⓔ Piping connection
- ⓕ Body material
- ⓖ Disk material
- ⓗ Seat material
- ⓘ Size



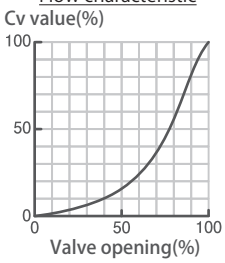

Concentric type butterfly valve

| | | | | | | |
|---|---|---|---|---|---|---|
| ⓑ Valve model | FN | | | F- | | |
| ⓔ Piping connection | 1 For JIS 5 and 10K flange Wafer type | | | 1 For JIS 10K flange Wafer type | | |
| ⓕ Body material | D FCD450 | | | D FCD450 | | |
| ⓖ Disk material | D FCD450+CNi PLTD | U SUSF316 / SCS14 | A CAC703*2 | D FCD450+CNi PLTD | U SUSF316 / SCS14 | A CAC703*2 |
| ⓗ Seat material | E EPDM*1*2 ／ B NBR | | | E EPDM*1*2 ／ B NBR ／ V FKM | | |
| Stem seal material | The structure seals the stem with a seat. As a secondary seal, an NBR O-ring is attached to the EPDM / NBR seat specification, and an FKM O-ring is attached to the FKM seat specification. | | | | | |

## Actuator type and product dimensions

| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model | | | | | | Height H (mm) | | | Face to face L (mm) | Cv value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PPS body | | | Aluminum body | | | | | | | |
| | | | Double acting | Single-acting | | Double acting | Single-acting | | | | | | |
| | | | | Airless SHUT | Airless OPEN | | Airless SHUT | Airless OPEN | | | | | |
| | | | PND | PSO | PSC | TAD | TAO | TAC | PND | PSO PSC | TAD TAO TAC | | |
| FN | -050 | 0 | 05D | 05D | 05D | 050 | 050 | 050 | 242 | 242 | 267 | 41 | 159 |
| | -065 | 0 | 05D | 05W | 05W | 063 | 063 | 063 | 259 | 259 | 299 | 44 | 266 |
| | -080 | 0 | 05D | 05W | 05W | 063 | 063 | 063 | 266 | 266 | 306 | 44 | 457 |
| | -100 | 0 | | | | 080 | 080 | 080 | | | 376 | 51 | 860 |
| | -125 | 0 | | | | 080 | 080 | 080 | | | 376 | 54 | 1320 |
| | -150 | 0 | | | | 100 | 100 | 100 | | | 420 | 54 | 2020 |
| | -200 | 0 | | | | 125 | 125 | 125 | | | 486 | 60 | 3540 |
| F- | -250 | 0 | | | | 160 | 160 | 160 | | | 586 | 64 | 5580 |
| | -300 | 1 | | | | 160 | 160 | 160 | | | 624 | 76 | 8080 |

Flow characteristic




Range ability 30 : 1

Note) When selecting sizing code 1, it is necessary to pay attention to fluid characteristic and pressure. Please let us know the conditions of use.

Note) When used for viscous fluid, it is necessary to select the sizing of the actuator. Please let us know the conditions of use.

Note) When used in hot water supply lines or in fluids containing chlorine, EPDM and NBR may deteriorate prematurely depending on conditions.

*1) EPDM cannot be used for mineral oil and plant oil.

*2) When using in seawater, please order a combination of CAC703 disk and EPDM seat.

Allowable pressure and temperature range.

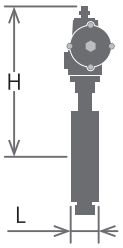
| Seat material | Operating temperature range of fluid | Adaptive fluid | Maximum working pressure |
|---|---|---|---|
| EPDM | -20 ~ 80℃ | Water, Sea water, etc., | 1.0MPa (300A is 0.5MPa) |
| NBR | -10 ~ 60℃ | Oils, Gas, etc | |
| FKM | -5 ~ 80℃ | Chemicals, etc | |

# DN series Double eccentric type butterfly valve.

Due to the double eccentric structure, the valve body and seat do not contact until fully closed, so stable sealing performance is demonstrated for a long time. High sealing performance is realized by the seat shape that utilizes fluid pressure.


Product code : TAD DN 9 0 1 T T F -150 -Option code

- ⓐ Actuator model: TAD
- ⓑ Valve model: DN
- ⓒ Air code: 9
- ⓓ Sizing code: 0
- ⓔ Piping connection: 1
- ⓕ Body material: T
- ⓖ Disk material: T
- ⓗ Seat material: F
- ⓘ Size: -150




Double eccentric type butterfly valve. DN series has flow direction.

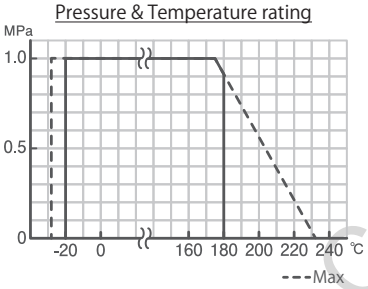
| | |
|---|---|
| ⓔ Piping connection | 1 For JIS 5 and 10K flange (Can be connected to ANSI CLASS 150Lb flange. ) Wafer type |
| Face to face | JIS B 2002 Series No.46 |
| ⓕ Body material | T SCS13A |
| ⓖ Disk material | T SCS13A |
| ⓗ Seat material | F F-PTFE |
| Stem seal material | PTFE |

## Actuator type and product dimensions

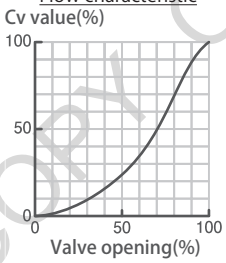
| ⓑ Valve model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model: Aluminum body, Double acting | Single-acting: Airless SHUT | Single-acting: Airless OPEN | Height H*1 | Face to face L (mm) | Cv value |
|---|---|---|---|---|---|---|---|---|
| | | | TAD | TAO | TAC | TAD TAO TAC | | |
| DN | -080 | 0 | 063 | 063 | 063 | 265 | 46 | 220 |
| | -100 | 0 | 080 | 080 | 080 | 328 | 52 | 410 |
| | -125 | 0 | 080 | 080 | 080 | 343 | 56 | 800 |
| | | 2 | 100 | 100 | 100 | 374 | | |
| | -150 | 0 | 100 | 100 | 100 | 399 | 56 | 1250 |
| | -200 | 0 | 125 | 125 | 125 | 454 | 60 | 2450 |
| | -250 | 0 | 125 | 125 | 125 | 489 | 68 | 4250 |
| | | 2 | 160 | 160 | 160 | 535 | | |
| | -300 | 0 | 160 | 160 | 160 | 575 | 78 | 6750 |

*1) If the temperature of the actuator may over the operating range due to heat transfer from the fluid, an insulation option is required. Please note that the product height will change if the insulation option is selected.

Pressure & Temperature rating




Flow characteristic




Range ability 50 : 1

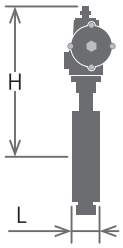
# WT series High precision damper for low leakage.

The main body and disk machined with high accuracy realize a low leakage of 1% or less*1 relative to the rated Cv value. By selecting a disk with a seal ring, it can handle even lower leakage.

GAS

Product code : TAD WT 9 0 2 T G S -200 - Option code

ⓐ Actuator model
ⓑ Damper model
ⓒ Air code
ⓓ Sizing code
ⓔ Piping connection
ⓕ Body material
ⓖ Stem seal material
ⓗ Seal ring
ⓘ Size




Eccentric type butterfly damper. WT series has flow direction.

| | | |
|---|---|---|
| ⓔ Piping connection | 2 For JIS 5K flange Wafer type | |
| ⓕ Body material | T SCS13A | |
| ⓖ Stem seal material | G Expansion graphite | |
| ⓗ Seal ring | 0 Non | S SUS316*1 |
| Disk material | SUS420J2 / SUS420J1 | SUS410S / SUS420J2 |
| Allowable Seat Leakage | 1% or less of rated Cv*2 | 0.1% or less of rated Cv*3 |

## Actuator type and product dimensions

| ⓑ Damper model | ⓘ Size (A) | ⓓ Sizing code | ⓐ Actuator model: Aluminum body, Double acting | Single-acting: Airless SHUT | Single-acting: Airless OPEN | Height H*4 (mm) | Face to face L (mm) | Cv value |
|---|---|---|---|---|---|---|---|---|
| | | | TAD | TAO | TAC | TAD TAO TAC | | |
| WT | -040 | 0 | 050 | 050 | 050 | 255 | 40 | 85 |
| | -050 | 0 | 050 | 050 | 050 | 260 | 40 | 145 |
| | -065 | 0 | 050 | 050 | 050 | 272 | 40 | 290 |
| | -080 | 0 | 050 | 050 | 050 | 304 | 50 | 450 |
| | -100 | 0 | 050 | 050 | 050 | 315 | 50 | 780 |
| | -125 | 0 | 050 | 050 | 050 | 333 | 50 | 1200 |
| | -150 | 0 | 050 | 050 | 050 | 347 | 50 | 1800 |
| | | 2 | 063 | 063 | 063 | 362 | | |
| | -200 | 0 | 050 | 050 | 050 | 370 | 50 | 3200 |
| | | 2 | 063 | 063 | 063 | 385 | | |
| | -250 | 0 | 063 | 063 | 063 | 407 | 50 | 5100 |
| | | 2 | 080 | 080 | 080 | 472 | | |
| | -300 | 0 | 063 | 063 | 063 | 433 | 55 | 7200 |
| | | 2 | 080 | 080 | 080 | 498 | | |
| | -350 | 0 | 080 | 080 | 080 | 527 | 70 | 8900 |
| | | 2 | 100 | 100 | 100 | 580 | | |
| | -400 | 0 | 080 | 080 | 080 | 551 | 70 | 11000 |
| | | 2 | 100 | 100 | 100 | 604 | | |

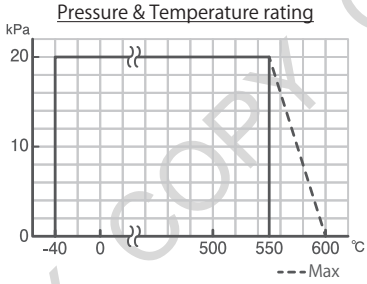
*1) When selecting seal ring, it is necessary to select the sizing of the actuator. Please let us know the conditions of use.

*2) The leak rate of the 40A and 50A models without seat is 2% or less.

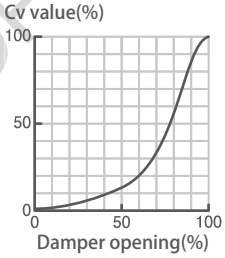
*3) Seal ring type, 40A leakage is 1% or less, 50A is 0.5% or less, and 65A is 0.2% or less.

*4) If the temperature of the actuator may over the operating range due to heat transfer from the fluid, an insulation option is required. Please note that the product height will change if the insulation option is selected.

Pressure & Temperature rating




Flow characteristic




Range ability 50 : 1

## PLO / PLC series Resin-made linear motion air operated actuator single acting type.

Lightweight and compact with resin body.
It can also be used for proportional control in combination with an electro-pneumatic positioner (EX option).

| | | | |
|---|---|---|---|
| Operation type | Single-acting type (Spring return) | | Single-acting type (Spring return) |
| Model | PLO - 030 | PLO - 070 | PLC - 070 |
| Operating | Port pressure supply : Open<br>Port exhaust : Shut ( Spring return ) | | Port pressure supply : Shut<br>Port exhaust : Open ( Spring return ) |
| Actuator displacement | 0.11 ℓ | | 0.17 ℓ |
| Operating pressure | 0.4 ~ 0.7MPa (Range varies depending on the valve. ) | | |
| Supply port size | M5 × 0.8 | | |
| Main material | PPS, SCS13A | | |
| Operating temperature | -10 ~ 50 ℃ ( In case of 5℃ or less, ensure to be removed any water contained for prevention of freezing.) | | |
| Manual operation | Not supported | | |

## PND series Resin-made rotary motion air operated actuator double acting type.

Lightweight and compact with resin body. The Scotch yoke mechanism has the optimum output torque characteristics for the valve.

| | | | | | |
|---|---|---|---|---|---|
| Operation type | | Double-acting type | | | |
| Model | | PND - 03S | PND - 03D | PND - 04D | PND - 05D |
| Actuator displacement | | 0.05 ℓ | 0.08 ℓ | 0.19 ℓ | 0.35 ℓ |
| Operating | PND | Port A pressure supply : Shut ( Position ① )<br>Port B pressure supply : Open (Position ② ) | | | |
| Operating pressure | | 0.4 ~ 0.7MPa | | | |
| Supply port size | | Rc 1 / 8 | | | |
| Main material | | PPS | | | |
| Drive system | | Scotch yoke | | | |
| Operating temperature | | -10 ~ 50 ℃ ( In case of 5℃ or less, ensure to be removed any water contained for prevention of freezing.) | | | |
| Manual operation | | Manual operation is possible with the operation shaft at the top of the actuator. | | | |

## PSO / PSC series Resin-made rotary motion air operated actuator single acting type.

Lightweight and compact with resin body. Even if the air supply is lost, the spring will work reliably.
It can also be used for proportional control in combination with an electro-pneumatic positioner (EX option). ※ PS□-03S is not available.

| | | | | | | |
|---|---|---|---|---|---|---|
| Operation type | | Single-acting type (Spring return) | | | | |
| Model | | PSO - 03S<br>PSC - 03S | PSO - 03D<br>PSC - 03D | PSO - 04D<br>PSC - 04D | PSO - 05D<br>PSC - 05D | PSO - 05W<br>PSC - 05W |
| Actuator displacement | | 0.03 ℓ | 0.04 ℓ | 0.1 ℓ | 0.2 ℓ | 0.53 ℓ |
| Operating | PSO | Port pressure supply : Open ( Position ② )<br>Port exhaust : Shut ( Position ① ) Spring return | | | | |
| | PSC | Port pressure supply : Shut ( Position ① )<br>Port exhaust : Open ( Position ② ) Spring return | | | | |
| Operating pressure | | 0.4 ~ 0.7MPa | | | | |
| Supply port size | | Rc 1 / 8 | | | | |
| Main material | | PPS | | | | |
| Drive system | | Scotch yoke | | | | |
| Operating temperature | | -10 ~ 50 ℃ ( In case of 5℃ or less, ensure to be removed any water contained for prevention of freezing.) | | | | |
| Manual operation | | Not supported | | | | |

# TAD series Aluminum alloy rotary motion air operated actuator double acting type.

We have prepared a lot of options. It can be used in a wide parpas of applications.
It can also be used for proportional control in combination with an electro-pneumatic positioner (EP option). ※ TAD-040 is not available.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Operation type | | Double-acting type | | | | | |
| Model | | TAD - 040 | TAD - 050 | TAD - 063 | TAD - 080 | TAD - 100 | TAD - 125 | TAD - 160 |
| Actuator displacement | | 0.11 ℓ | 0.18 ℓ | 0.34 ℓ | 0.66 ℓ | 1.36 ℓ | 2.72 ℓ | 5.56 ℓ |
| Operating | TAD | Port A pressure supply : Shut ( Position ① )<br>Port B pressure supply : Open (Position ② ) | | | | | | |
| Operating pressure | | 0.4 ～ 0.7MPa | | | | | | |
| Supply port size | | Rc 1 / 8 | Rc 1 / 4 | | | | | |
| Main material | | Aluminum alloy | | | | | | |
| Drive system | | Rack and pinion | Scotch yoke | | | | | |
| Operating temperature | | -10 ~ 50 ℃ ( In case of 5℃ or less, ensure to be removed any water contained for prevention of freezing.) | | | | | | |
| Manual operation | | Manual operation is possible with the operation shaft at the top of the actuator. | | | | | | |

# TAO / TAC series Aluminum alloy rotary motion air operated actuator single acting type.

We have prepared a lot of options. Even if the air supply is lost, the spring will work reliably.
It can also be used for proportional control in combination with an electro-pneumatic positioner (EP option). ※ TA□-040 is not available.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Operation type | | Single-acting type (Spring return) | | | | | |
| Model | | TAO - 040<br>TAC - 040 | TAO - 050<br>TAC - 050 | TAO - 063<br>TAC - 063 | TAO - 080<br>TAC - 080 | TAO - 100<br>TAC - 100 | TAO - 125<br>TAC - 125 | TAO - 160<br>TAC - 160 |
| Actuator displacement | | 0.23 ℓ | 0.34 ℓ | 0.67 ℓ | 1.26 ℓ | 2.62 ℓ | 4.44 ℓ | 8.77 ℓ |
| Operating | TAO | Port pressure supply : Open ( Position ② )<br>Port exhaust : Shut ( Position ① ) Spring return | | | | | | |
| | TAC | Port pressure supply : Shut ( Position ① )<br>Port exhaust : Open ( Position ② ) Spring return | | | | | | |
| Operating pressure | | 0.4 ～ 0.7MPa | | | | | | |
| Supply port size | | Rc 1 / 4 | | | | | | |
| Main material | | Aluminum alloy | | | | | | |
| Drive system | | Rack and pinion | Scotch yoke | | | | | |
| Operating temperature | | -10 ~ 50 ℃ (In case of 5℃ or less, ensure to be removed any water contained for prevention of freezing.) | | | | | | |
| Manual operation | | It becomes possible by attach Handle Unit Option "MT". ※ TAO/TAC-040 is not available. | | | | | | |

## Option information

Only typical options are listed. Please contact us as we have many other options.

| Name | Option code | Contents | Applicable models |
|---|---|---|---|
| FR Unit | FR | Regulator with filter TA2 - FR (KONAN ELECTRIC CO.,LTD.) | All |
| Limit switch box | LB | The position signal is output independently at the dry contact. 3 A 250 V AC 4 A 30V DC | PND / PS□<br>TA□ |
| Explosion-proof switche | LR | 2-Point Detection Explosion-Proof Switches Compliant with IEC Standards. (Azbil Corporation) | TA□ |
| Speed controller with one-touch fitting | SE | Speed controller integrated with tube fitting. Selectable from meter-in or meter-out. (SMC) | All |
| Electro-pneumatic positioner | EP | Standard explosion-proof positioner with excellent cost performance (Rotork YTC)<br>※ TA□-040 is not available. | TA□ |
| Smart positioner | ES, ER<br>ET, EU | Smart valve positioner accurately controls valve, according to input signal of 4-20mA being delivered from controller.(Rotork YTC)<br>※ TA□-040 is not available.<br>ES : For double-acting<br>ER : For single-acting<br>ET : For double-acting (With Feedback signal)<br>EU : For single-acting(With Feedback signal) | TA□ |
| Mini smart positioner | EX | Lightweight, compact high-grade smart positioner made of resin. (SAMSON)<br>※ PS□-03S is not available. | PL□<br>PS□ |
| 5-port solenoid valve | □S | 1S : 100 V AC 2S : 200 V AC 3S : 110 V AC 4S : 220 V AC 5S : 24 V DC | PND / PS□ |
| 5-port solenoid valve | N43S□□ | As wide variety, including DIN connector and waterproof connector, are available. | TA□ |
| Speed controller and bypass valve | BS | Resin-made bypass valve with build-in speed controller. ※ TAD-040 is not available. | TAD |
| Manually operated handle | MT | Manually operated handle for single-acting type.<br>※ Made to order. ※ TAO/TAC-040 is not available. | TAO / TAC |

## MEMO

# Manual Valves

There are ball valves (Threaded end Rc, Flanged end), butterfly valves, There are many types of materials.

The lineup includes a small handle type that is most suitable for mounting in the device, a lever type that can be installed in a removable and adjustable manner according to the surrounding space, and a worm gear operating actuator that can easily operate a large valve.



MANUAL VALVES

# A / T series

A : Reduced port model / T : Reduced L-shaped port, Vertical three-way model.

Brass ball valve with excellent cost performance.

A

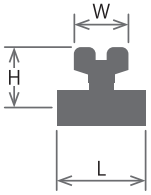
T

OIL GAS

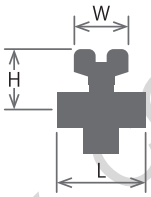
Product code : MAC A- U - 5 Y Y F -015 -Option code

- ⓐ Series name: MAC
- ⓑ Valve model: A-
- ⓒ Operation: U
- ⓓ Hyphen: -
- ⓔ Piping connection: 5
- ⓕ Body material: Y
- ⓖ Ball material: Y
- ⓗ Seat material: F
- ⓘ Size: -015

A series




T series




Floating ball type. Threaded end Rc. Reduced port type.

| | |
|---|---|
| ⓔ Piping connection | 5 Threaded end Rc *1 JIS B 0203 |
| ⓕ Body material | Y Brass + PLTD |
| ⓖ Ball material | Y Brass + PLTD |
| ⓗ Seat material | F F-PTFE |
| Stem seal material | FKM O-ring*2 |

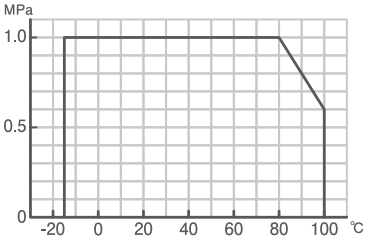
## Product lines and dimensions

| ⓐ Series name | ⓑ Valve model | ⓘ Size (A) | ⓒ Operation | Dimension (mm) | | Face to face L (mm) | Cv value |
|---|---|---|---|---|---|---|---|
| | | | Manual handle | Height H | Handle length W | | |
| MAC | A- | -015 | U | 46 | 38 | 58 | 6 |
| | | -020 | U | 47 | 38 | 63 | 11 |
| | | -025 | U | 51 | 38 | 71 | 15 |
| MAC | T- | -015 | U | 46 | 38 | 58 | 3 |
| | | -020 | U | 47 | 38 | 63 | 6 |
| | | -025 | U | 51 | 38 | 71 | 8 |

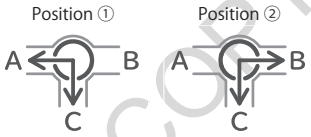
*1) T type C port is threaded-end R.

*2) An NBR O-ring is installed on the outside of the stem seal as a dust seal.

Pressure & Temperature rating




T series Flow paths




Note)
It should be noted that, if the line pressure of the closed bore is higher than that of the open bores, a small rate of fluid leakage may occur from the closed bore.

# AE / TE series

AE : Reduced port model / TE : Reduced L-shaped port, Vertical three-way model.

Stainless steel ball valve with excellent cost performance. The long neck body is ideal for thermal insulation.

AE

TE

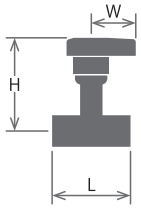

Product code : MAC AE T - 5 T T P -015 - Option code

- ⓐ Series name: MAC
- ⓑ Valve model: AE
- ⓒ Operation: T
- ⓓ Hyphen: -
- ⓔ Piping connection: 5
- ⓕ Body material: T
- ⓖ Ball material: T
- ⓗ Seat material: P
- ⓘ Size: -015

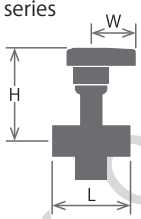
Floating ball type. Threaded end Rc. Reduced port type. AE series has flow direction.

| | |
|---|---|
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 |
| ⓕ Body material | T SCS13A |
| ⓖ Ball material | T SUS304 |
| ⓗ Seat material | P Reinforced PTFE |
| Stem seal material | PTFE + FKM O-ring *1 |

AE series




TE series

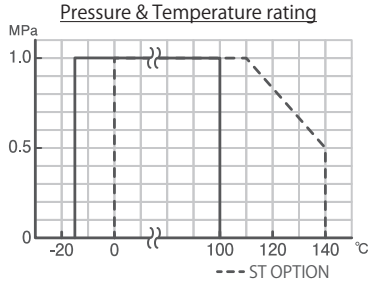



## Product lines and dimensions

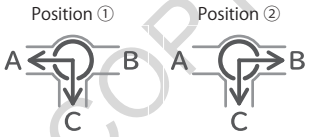
| ⓐ Series name | ⓑ Valve model | ⓘ Size (A) | ⓒ Operation | Dimension (mm) | | Face to face L (mm) | Cv value (Resultant Cv value) |
|---|---|---|---|---|---|---|---|
| | | | Manual handle | Height H | Handle length W | | |
| MAC | AE | -015 | T | 87 | 40 | 56 | 5 |
| | | -020 | T | 90 | 40 | 58 | 10 |
| | | -025 | T | 92 | 40 | 71 | 15 |
| MAC | TE | -015 | T | 88 | 40 | 58.2 | 3 (1.8) |
| | | -020 | T | 90 | 40 | 60 | 6 (3.6) |
| | | -025 | T | 93 | 40 | 73.5 | 9 (5.4) |

*1) Specify the [ST] option when the fluid is steam. In this case the O-ring material is FKM for steam.

Pressure & Temperature rating

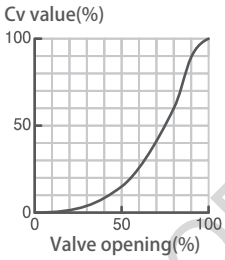



TE series Flow paths



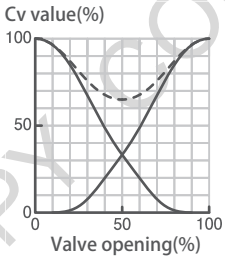

Note)
It should be noted that, if the line pressure of the closed bore is higher than that of the open bores, a small rate of fluid leakage may occur from the closed bore.

AE series flow characteristic




Range ability 30 : 1

TE series flow characteristic




Range ability 20 : 1

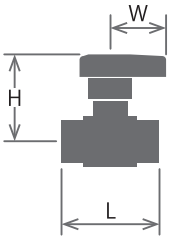
# E series Standard port model.

Ball valve that can be used for general purposes. The lineup includes brass products with excellent cost performance and stainless steel products with excellent corrosion resistance.

OIL GAS

Product code : MAC E- T - 5 U U T -025 - Option code

ⓐ Series name: MAC
ⓑ Valve model: E-
ⓒ Operation: T
ⓓ Hyphen: -
ⓔ Piping connection: 5
ⓕ Body material: U
ⓖ Ball material: U
ⓗ Seat material: T
ⓘ Size: -025




Floating ball type. Threaded end Rc. Standard port type.

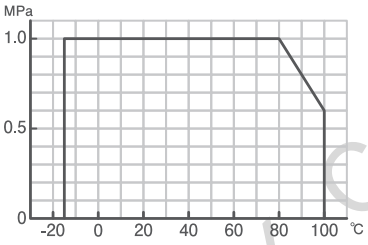
| | | |
|---|---|---|
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 | |
| ⓕ Body material | Y Brass + PLTD | U SCS14A |
| ⓖ Ball material | Y Brass + PLTD | U SCS14A / SUS316 |
| ⓗ Seat material | F F-PTFE | T PTFE |
| Stem seal material | FKM O-ring*1 | |

## Product lines and dimensions

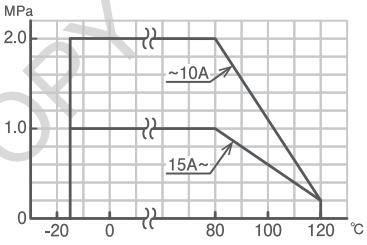
| ⓐ Series name | ⓑ Valve model | ⓘ Size (A) | ⓒ Operation | Dimension (mm) | | Face to face L (mm) | Cv value |
|---|---|---|---|---|---|---|---|
| | | | Manual handle | Height H | Handle length W | | |
| MAC | E- Brass body | -015 | T | 64 | 40 | 59 | 12 |
| | | -020 | T | 67 | 40 | 66 | 16 |
| | | -025 | T | 71 | 40 | 78 | 28 |
| | | -032 | T | 87 | 60 | 87 | 47 |
| | | -040 | T | 92 | 60 | 96 | 83 |
| | | -050 | T | 98 | 60 | 109 | 115 |
| MAC | E- Stainless body | -008 | T | 59 | 40 | 46 | 5 |
| | | -010 | T | 59 | 40 | 46 | 5 |
| | | -015 | T | 62 | 40 | 59 | 12 |
| | | -020 | T | 64 | 40 | 66 | 16 |
| | | -025 | T | 71 | 40 | 78 | 28 |
| | | -032 | T | 87 | 60 | 87 | 47 |
| | | -040 | T | 92 | 60 | 95 | 83 |
| | | -050 | T | 98 | 60 | 109 | 123 |

*1) An NBR O-ring is installed on the outside of the stem seal as a dust seal.

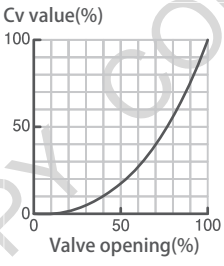
Brass body type Pressure & Temperature rating




Stainless body type Pressure & Temperature rating




Flow characteristic




Range ability 30 : 1

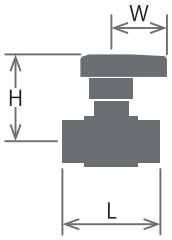
# EG series Standard port, Abnormal pressure rise prevention model.

Standard port type ball valve for high temperature fluids such as steam.

OIL GAS STEAM

Product code : MAC EG T - 5 U U P -025 - Option code

ⓐ Series name
ⓑ Valve model
ⓒ Operation
ⓓ Hyphen
ⓔ Piping connection
ⓕ Body material
ⓖ Ball material
ⓗ Seat material
ⓘ Size



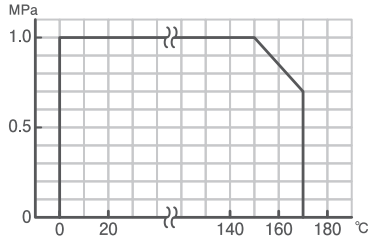

Floating ball type. Threaded end Rc. Standard port type. EG series has flow direction.

| | |
|---|---|
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 |
| ⓕ Body material | U SCS14A |
| ⓖ Ball material | U SCS14A |
| ⓗ Seat material | P Reinforced PTFE |
| Stem seal material | FKM O-ring for steam |

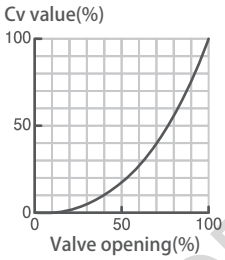
## Product lines and dimensions

| ⓐ Series name | ⓑ Valve model | ⓘ Size (A) | ⓒ Operation | Dimension (mm) | | Face to face L (mm) | Cv value |
|---|---|---|---|---|---|---|---|
| | | | Manual handle | Height H | Handle length W | | |
| MAC | EG | -015 | T | 62 | 40 | 59 | 9 |
| | | -020 | T | 64 | 40 | 66 | 13 |
| | | -025 | T | 71 | 40 | 78 | 24 |
| | | -032 | T | 87 | 60 | 87 | 44 |
| | | -040 | T | 92 | 60 | 95 | 80 |
| | | -050 | T | 98 | 60 | 109 | 120 |

Pressure & Temperature rating




Flow characteristic



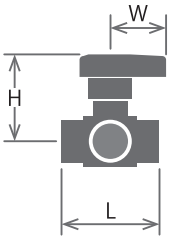

Range ability 30 : 1

# EL series Standard L-shaped port, Horizontal three-way model.

Three-way ball valve that can be used for general purposes. Stainless steel products with excellent corrosion resistance.


Product code : MAC EL T - 5 U U T -025 - Option code

- ⓐ Series name: MAC
- ⓑ Valve model: EL
- ⓒ Operation: T
- ⓓ Hyphen: -
- ⓔ Piping connection: 5
- ⓕ Body material: U
- ⓖ Ball material: U
- ⓗ Seat material: T
- ⓘ Size: -025




Floating ball type. Threaded end Rc. Standard port type.

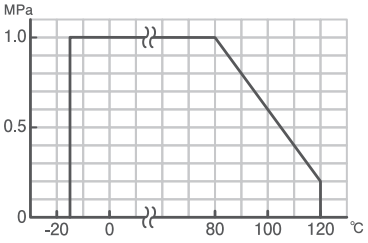
| | |
|---|---|
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 |
| ⓕ Body material | U SCS14A |
| ⓖ Ball material | U SUS316 |
| ⓗ Seat material | T PTFE |
| Stem seal material | FKM O-ring*1 |

## Product lines and dimensions

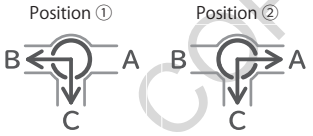
| ⓐ Series name | ⓑ Valve model | ⓘ Size (A) | ⓒ Operation | Dimension (mm) | | Face to face L (mm) | Cv value |
|---|---|---|---|---|---|---|---|
| | | | Manual handle | Height H | Handle length W | | |
| MAC | EL | -008 | T | 60 | 40 | 47 | 1.8 |
| | | -010 | T | 60 | 40 | 47 | 2.2 |
| | | -015 | T | 63 | 40 | 67 | 5 |
| | | -020 | T | 66 | 40 | 70 | 8 |
| | | -025 | T | 72 | 40 | 79 | 13 |
| | | -032 | T | 87 | 60 | 89 | 22 |
| | | -040 | T | 92 | 60 | 100 | 36 |
| | | -050 | T | 98 | 60 | 119 | 50 |

*1) An NBR O-ring is installed on the outside of the stem seal as a dust seal.

Pressure & Temperature rating




Flow paths



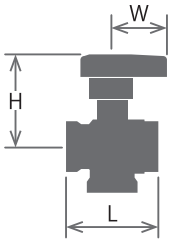

Note)
It should be noted that, if the line pressure of the closed bore is higher than that of the open bores, a small rate of fluid leakage may occur from the closed bore.

# TV series
Standard L-shaped port, Vertical three-way model.

Compact and lightweight stainless steel three-way ball valve that can be used at half position.

OIL GAS

Product code : MAC TV T - 5 T T P -025 - Option code
- ⓐ Series name: MAC
- ⓑ Valve model: TV
- ⓒ Operation: T
- ⓓ Hyphen: -
- ⓔ Piping connection: 5
- ⓕ Body material: T
- ⓖ Ball material: T
- ⓗ Seat material: P
- ⓘ Size: -025




Floating ball type. Threaded end Rc. Standard port type.

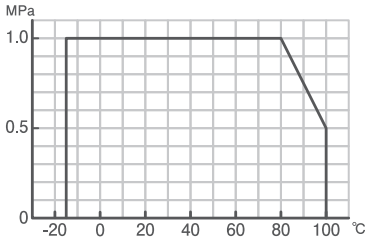
| | |
|---|---|
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 |
| ⓕ Body material | T SCS13A |
| ⓖ Ball material | T SUS304 / SCS13A |
| ⓗ Seat material | P Reinforced PTFE |
| Stem seal material | FKM O-ring*1 |

## Product lines and dimensions

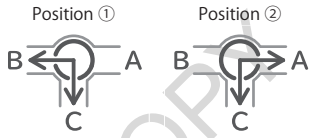
| ⓐ Series name | ⓑ Valve model | ⓘ Size (A) | ⓒ Operation | Dimension (mm) | | Face to face L (mm) | Cv value (Resultant Cv value) |
|---|---|---|---|---|---|---|---|
| | | | Manual handle | Height H | Handle length W | | |
| MAC | TV | -015 | T | 65 | 40 | 67 | 5 (3) |
| | | -020 | T | 78 | 40 | 70 | 8 (5) |
| | | -025 | T | 84 | 60 | 81 | 13 (9) |
| | | -032 | T | 87 | 60 | 93 | 22 (15) |
| | | -040 | T | 92 | 60 | 106 | 36 (25) |

*1) An NBR O-ring is installed on the outside of the stem seal as a dust seal.

Pressure & Temperature rating

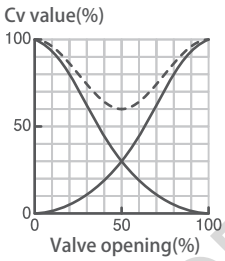



Flow paths



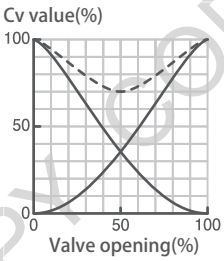

Note)
It should be noted that, if the line pressure of the closed bore is higher than that of the open bores, a small rate of fluid leakage may occur from the closed bore.

15A, 25A flow characteristic




Range ability 20 : 1

25 to 40A flow characteristic




Range ability 20 : 1

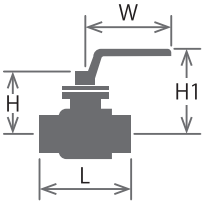
# SR series Full port, Oil-free product model.



Only fluorine resin is used for seal parts. It can be used for fluids that cannot use rubber. Oil-free product that does not use oils and fats during valve assembly *1.


Product code : MAX SR L - 5 U U T -025 - Option code

ⓐ Series name
ⓑ Valve model
ⓒ Operation
ⓓ Hyphen
ⓔ Piping connection
ⓕ Body material
ⓖ Ball material
ⓗ Seat material
ⓘ Size



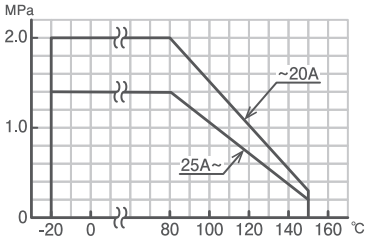

Floating ball type. Threaded end Rc. Full port type.

| | |
|---|---|
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 |
| ⓕ Body material | U SCS14A |
| ⓖ Ball material | U SCS14A |
| ⓗ Seat material | T PTFE |
| Stem seal material | F-PTFE |

## Product lines and dimensions

| ⓐ Series name | ⓑ Valve model | ⓘ Size (A) | ⓒ Operation | | Dimension (mm) | | | Face to face L (mm) |
|---|---|---|---|---|---|---|---|---|
| | | | Valve only | With manual lever | Valve only | With manual lever | | |
| | | | | | Height H | Height H1 | Lever length W | |
| MAX | SR | -015 | 0 | L | 47 | 78 | 115 | 75 |
| | | -020 | 0 | L | 51 | 82 | 115 | 80 |
| | | -025 | 0 | L | 59 | 97 | 145 | 88 |
| | | -032 | 0 | L | 64 | 102 | 145 | 110 |
| | | -040 | 0 | L | 76 | 118 | 220 | 120 |

Pressure & Temperature rating




*1) Oils and fats are not used when assembling valves, but process management such as inspection, storage, assembly of work machines, and packaging are handled in the same way as normal products. There is no denying the possibility that a little of oil or fat will unintentionally adhere to valves. If degreased products are required, specify options individually.

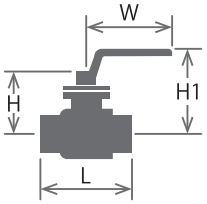
# SH series Full port, Abnormal pressure rise prevention model.

Full port type ball valve for high temperature fluids such as steam.

OIL GAS STEAM

Product code : MAX SH L - 5 U U F -025 - Option code

ⓐ Series name
ⓑ Valve model
ⓒ Operation
ⓓ Hyphen
ⓔ Piping connection
ⓕ Body material
ⓖ Ball material
ⓗ Seat material
ⓘ Size



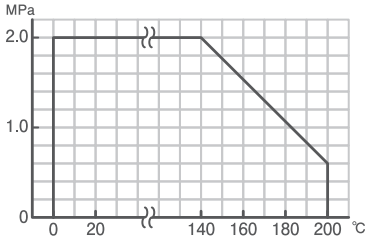

Floating ball type. Threaded end Rc. Full port type. SH series has flow direction.

| | |
|---|---|
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 |
| ⓕ Body material | U SCS14A |
| ⓖ Ball material | U SCS14A |
| ⓗ Seat material | F F-PTFE |
| Stem seal material | Reinforced PTFE + FKM O-ring for steam |

## Product lines and dimensions

| ⓐ Series name | ⓑ Valve model | ⓘ Size (A) | ⓒ Operation | | Dimension (mm) | | | Face to face L (mm) |
|---|---|---|---|---|---|---|---|---|
| | | | Valve only | With manual lever | Valve only | With manual lever | | |
| | | | | | Height H | Height H1 | Lever length W | |
| MAX | SH | -015 | O | L | 47 | 78 | 115 | 75 |
| | | -020 | O | L | 51 | 82 | 115 | 80 |
| | | -025 | O | L | 59 | 97 | 145 | 88 |
| | | -032 | O | L | 64 | 102 | 145 | 110 |

Pressure & Temperature rating*1

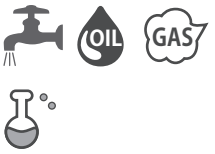



*1) When flowing steam, use it at 180 ° C or below.

# SL / ST series

Horizontal three-way model. SL : Standard L-shaped port. / ST : Standard T-shaped port.

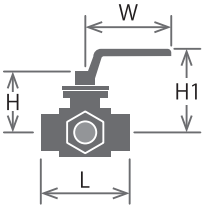
A three-way valve with a four-sided seat structure. SL type is L-type port, ST type is T-type port. Only fluorine resin is used for seal parts. It can be used for fluids that cannot use rubber. Oil-free product that does not use oils and fats during valve assembly *1.




Product code : MAX SL 0 - 5 U U F -015 - Option code

Product code : MAX ST L - 5 U U F -025 - a - Option code

ⓐ Series name
ⓑ Valve model
ⓒ Operation
ⓓ Hyphen
ⓔ Piping connection
ⓕ Body material
ⓖ Ball material
ⓗ Seat material
ⓘ Size
ⓙ Flow paths




Four-sided seat structure type. Threaded end Rc. Standard port type.

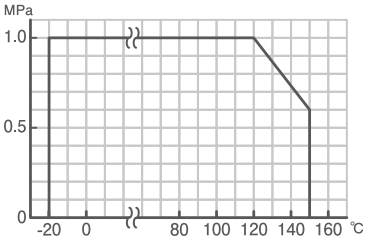
| | |
|---|---|
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 |
| ⓕ Body material | U SCS14A |
| ⓖ Ball material | U SCS14A |
| ⓗ Seat material | F F-PTFE |
| Stem seal material | F-PTFE |

## Product lines and dimensions

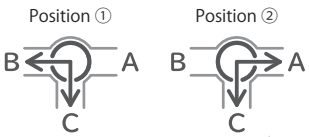
| ⓐ Series name | ⓑ Valve model | ⓘ Size (A) | ⓒ Operation | | Dimension (mm) | | | Face to face L (mm) | Cv value | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Valve only | With manual lever | Valve only Height H | With manual lever Height H1 | With manual lever Lever length W | | SL | ST L direction | ST Straight direction |
| MAX | SL ST | -015 | 0 | L | 48 | 79 | 115 | 75 | 5 | 4 | 7 |
| | | -020 | 0 | L | 51 | 82 | 115 | 85 | 10 | 8 | 13 |
| | | -025 | 0 | L | 59 | 97 | 145 | 100 | 16 | 14 | 22 |
| | | -032 | 0 | L | 64 | 102 | 145 | 115 | 25 | 22 | 33 |

*1) Oils and fats are not used when assembling valves, but process management such as inspection, storage, assembly of work machines, and packaging are handled in the same way as normal products. There is no denying the possibility that a little of oil or fat will unintentionally adhere to valves. If degreased products are required, specify options individually.

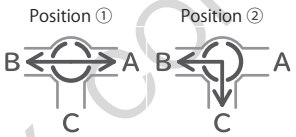
Pressure & Temperature rating



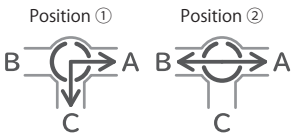

SL series Flow paths



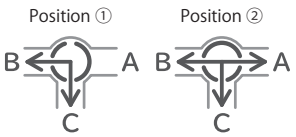

ⓙ ST series Flow paths Code a



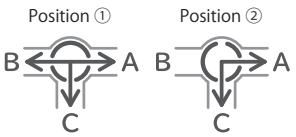

ⓙ ST series Flow paths Code b




ⓙ ST series Flow paths Code c




ⓙ ST series Flow paths Code d



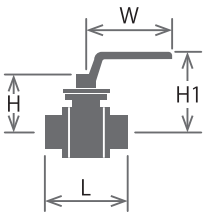

Note)
For ST series, enter of the Flow paths code after the Size of the product code.
It should be noted that, if the line pressure of the closed bore is higher than that of the open bores, a small rate of fluid leakage may occur from the closed bore.

# MS series Full port, Three piece body.

Three piece body structure with excellent maintainability. Maintenance can be performed by removing the main unit while leaving the cap screwed into the piping.


Product code : MAX MS L - 5 U U P -025 - Option code

- ⓐ Series name: MAX
- ⓑ Valve model: MS
- ⓒ Operation: L
- ⓓ Hyphen: -
- ⓔ Piping connection: 5
- ⓕ Body material: U
- ⓖ Ball material: U
- ⓗ Seat material: P
- ⓘ Size: -025



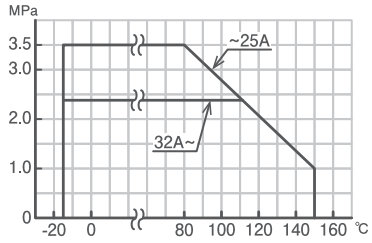

Floating ball type. Threaded end Rc. Full port type.

| | |
|---|---|
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 |
| ⓕ Body material | U SCS14A |
| ⓖ Ball material | U SCS14A |
| ⓗ Seat material | P Reinforced PTFE |
| Stem seal material | Reinforced PTFE + FKM O-ring |

## Product lines and dimensions

| ⓐ Series name | ⓑ Valve model | ⓘ Size (A) | ⓒ Operation | | Dimension (mm) | | | Face to face L (mm) |
|---|---|---|---|---|---|---|---|---|
| | | | Valve only | With manual lever | Valve only | With manual lever | | |
| | | | | | Height H | Height H1 | Lever length W | |
| MAX | MS | -010 | O | L | 47 | 78 | 115 | 60 |
| | | -015 | O | L | 47 | 78 | 115 | 75 |
| | | -020 | O | L | 51 | 82 | 115 | 80 |
| | | -025 | O | L | 59 | 97 | 145 | 90 |
| | | -032 | O | L | 64 | 102 | 145 | 110 |
| | | -040 | O | L | 76 | 118 | 220 | 120 |
| | | -050 | O | L | 85 | 127 | 220 | 140 |

Pressure & Temperature rating



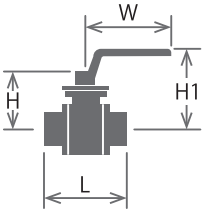
# MV series V-port, Three piece body.



Three piece body structure with excellent maintainability. Maintenance can be performed by removing the main unit while leaving the cap screwed into the piping.
V-port ball provides precise flow control

OIL GAS

Product code : MAX MV L - 5 U U P -025 - Option code
ⓐ Series name
ⓑ Valve model
ⓒ Operation
ⓓ Hyphen
ⓔ Piping connection
ⓕ Body material
ⓖ Ball material
ⓗ Seat material
ⓘ Size



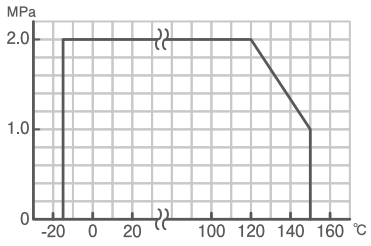

Floating ball type. Threaded end Rc. V-port type. MV series has flow direction.

| | |
|---|---|
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 |
| ⓕ Body material | U SCS14A |
| ⓖ Ball material | U SCS14A / SUS316 |
| ⓗ Seat material | P Reinforced PTFE |
| Stem seal material | Reinforced PTFE + FKM O-ring |

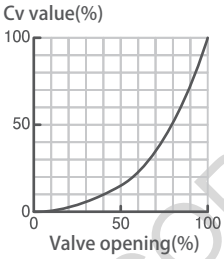
## Product lines and dimensions

| ⓐ Series name | ⓑ Valve model | ⓘ Size (A) | ⓒ Operation | | Dimension (mm) | | | Face to face L (mm) | Cv value |
|---|---|---|---|---|---|---|---|---|---|
| | | | Valve only | With manual lever | Valve only | With manual lever | | | |
| | | | | | Height H | Height H1 | Lever length W | | |
| MAX | MV | R010 | O | L | 47 | 78 | 115 | 60 | 1.3 |
| | | R015 | O | L | 47 | 78 | 115 | 75 | 1.3 |
| | | -015 | O | L | 47 | 78 | 115 | 75 | 4 |
| | | -020 | O | L | 51 | 82 | 115 | 80 | 7.5 |
| | | -025 | O | L | 59 | 97 | 145 | 90 | 12 |
| | | -032 | O | L | 64 | 102 | 145 | 110 | 20 |
| | | -040 | O | L | 76 | 118 | 220 | 120 | 31 |
| | | -050 | O | L | 85 | 127 | 220 | 140 | 48 |

Pressure & Temperature rating




Flow characteristic

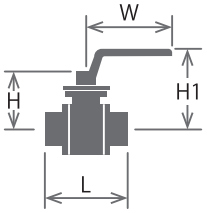



Range ability
R010, R015A = 100 : 1
015A or more = 50 : 1

# MH series Full port, Three piece body.

Full port type ball valve that can be used under relatively high pressure conditions.
Standard specification ensures stable sealing with a highly rigid POM seat. Can be used in high temperature range by selecting reinforced F-PTFE seat.

Product code : MAX MH L - 5 U U D -025 - Option code
ⓐ Series name
ⓑ Valve model
ⓒ Operation
ⓓ Hyphen
ⓔ Piping connection
ⓕ Body material
ⓖ Ball material
ⓗ Seat material
ⓘ Size




Floating ball type. Threaded end Rc. Full port type.

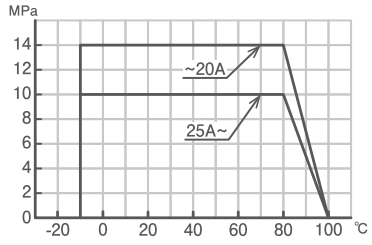
| | |
|---|---|
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 |
| ⓕ Body material | U SCS14A |
| ⓖ Ball material | U SCS14A + HCr PLTD |
| ⓗ Seat material | D POM*1 ／ R Reinforced F-PTFE |
| Stem seal material | FKM O-ring |

## Product lines and dimensions

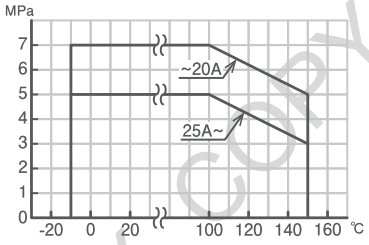
| ⓐ Series name | ⓑ Valve model | ⓘ Size (A) | ⓒ Operation | | Dimension (mm) | | | Face to face L (mm) |
|---|---|---|---|---|---|---|---|---|
| | | | Valve only | With manual lever | Valve only | With manual lever | | |
| | | | | | Height H | Height H1 | Lever length W | |
| MAX | MH | -010 | O | L | 38 | 68 | 115 | 72 |
| | | -015 | O | L | 45 | 84 | 145 | 83 |
| | | -020 | O | L | 51 | 89 | 145 | 95 |
| | | -025 | O | L | 63 | 104 | 220 | 113 |
| | | -032 | O | L | 69 | 110 | 220 | 124 |
| | | -040 | O | L | 80 | 121 | 320 | 130 |

*1) POM seats cannot be used for aqueous solutions above 85 ° C.

D-type seat Pressure & Temperature rating




R-type seat Pressure & Temperature rating



# BS series Full port, Wafer type.



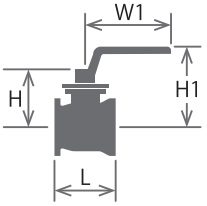
Lightweight and compact, wafer type ball valve. The same body can be connected to not only JIS 10K flange but also ANSI, DIN or GB standard flanges.

OIL GAS STEAM *1

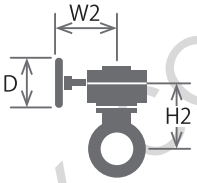
Product code : MAX BS L - 1 T T F -050 - Option code

ⓐ Series name
ⓑ Valve model
ⓒ Operation
ⓓ Hyphen
ⓔ Piping connection
ⓕ Body material
ⓖ Ball material
ⓗ Seat material
ⓘ Size

Lever




Gear



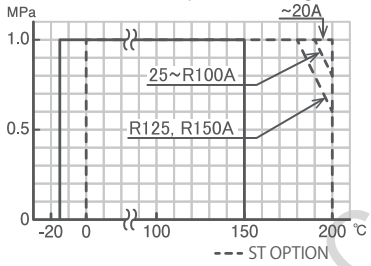

Floating ball type. Wafer type. Full port type.*2

| | | |
|---|---|---|
| ⓔ Piping connection | 1 For JIS 10K flange Wafer type (Can be connected to ANSI CLASS 150, GB PN1.6, DIN PN10/16 flange. Dose not comply with pressure standards.) | |
| ⓕ Body material | T SCS13A | U SCS14A (Contact us for more than R100A.) |
| ⓖ Ball material | T SCS13A | U SCS14A (Contact us for more than R100A.) |
| ⓗ Seat material | F F-PTFE ／ G Reinforced PTFE ／ R Reinforced F-PTFE | |
| Stem seal material | Reinforced PTFE + FKM O-ring *1 | |

## Product lines and dimensions

| ⓐ Series name | ⓑ Valve model | ⓘ Size (A) | ⓒ Operation | | | Dimension (mm) | | | | | | Face to face L (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Valve only | With manual lever | Worm gear | Valve only | With manual lever | | Worm gear | | | |
| | | | | | | Height H | Height H1 | Lever length W1 | Height H2 | length W2 | Handle Φ D | |
| MAX | BS | -015 | O | L | – | 52 | 82 | 115 | – | – | – | 40 |
| | | -020 | O | L | – | 55 | 85 | 115 | – | – | – | 50 |
| | | -025 | O | L | – | 64 | 102 | 145 | – | – | – | 60 |
| | | -032 | O | L | – | 70 | 108 | 145 | – | – | – | 70 |
| | | -040 | O | L | – | 83 | 124 | 220 | – | – | – | 80 |
| | | -050 | O | L | – | 92 | 133 | 220 | – | – | – | 95 |
| | | -065 | O | L | G | 118 | 159 | 320 | 140 | 157 | 150 | 110 |
| | | -080 | O | L | G | 125 | 166 | 320 | 147 | 157 | 150 | 125 |
| | | R100 | O | L | G | 137 | 178 | 320 | 159 | 157 | 150 | 145 |
| | | R125 | O | L | G | 162 | 204 | 430 | 180 | 240 | 300 | 176 |
| | | R150 | O | L | G | 180 | 222 | 430 | 198 | 240 | 300 | 215 |

Pressure & Temperature rating

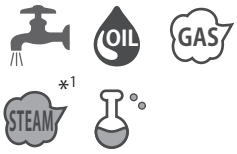



*1) Specify the [ST] option when the fluid is steam. In this case, the flow direction is one-way flow and the O-ring material is FKM for steam.

*2) R100 to R150A is a standard port.

# BR series Full port, General-purpose model.

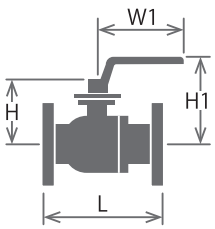
General-purpose flange type full port type ball valve. Lineup includes JIS 20K in addition to JIS 10K. A spring is built in the seal part of the stem, and the volume change due to packing wear and pressure / temperature changes is automatically compensated.



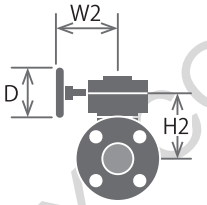

Product code : MAX BR L - 1 T T F -050 - Option code

- ⓐ Series name: MAX
- ⓑ Valve model: BR
- ⓒ Operation: L
- ⓓ Hyphen: -
- ⓔ Piping connection: 1
- ⓕ Body material: T
- ⓖ Ball material: T
- ⓗ Seat material: F
- ⓘ Size: -050

Lever




Gear



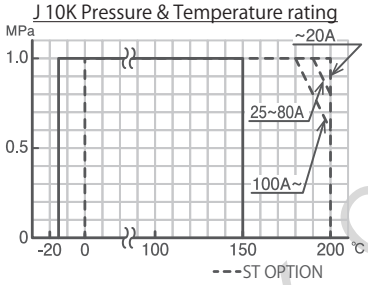

Floating ball type. Flanged end. Full port type.

| | | | |
|---|---|---|---|
| ⓔ Piping connection | 1 JIS 10K RF Flanged end | | 3 JIS 20K RF Flanged end (Up to 50A except 32A) |
| Face to face | JIS B 2002 Series No.6 (125/150A is series No.39) | | JIS B 2002 Series No.10 |
| ⓕ Body material | T SCS13A | U SCS14A (Up to 100A) | T SCS13A |
| ⓖ Ball material | T SCS13A | U SCS14A (Up to 100A) | T SCS13A |
| ⓗ Seat material | F F-PTFE ／ G Reinforced PTFE ／ R Reinforced F-PTFE | | |
| Stem seal material | Reinforced PTFE + FKM O-ring *1 | | |

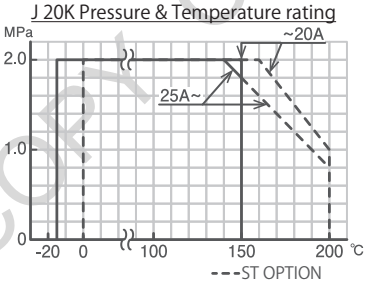
## Product lines and dimensions

| ⓐ Series name | ⓑ Valve model | ⓘ Size (A) | ⓒ Operation | | | Dimension (mm) | | | | | | Face to face L (mm) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Valve only | With manual lever | Worm gear | Valve only | With manual lever | | Worm gear | | | | |
| | | | | | | Height H | Height H1 | Lever length W1 | Height H2 | length W2 | Handle Φ D | J10K | J20K |
| MAX | BR | -015 | O | L | – | 52 | 82 | 115 | – | – | – | 108 | 140 |
| | | -020 | O | L | – | 55 | 85 | 115 | – | – | – | 117 | 152 |
| | | -025 | O | L | – | 64 | 102 | 145 | – | – | – | 127 | 165 |
| | | -032 | O | L | – | 70 | 108 | 145 | – | – | – | 140 | – |
| | | -040 | O | L | – | 83 | 124 | 220 | – | – | – | 165 | 190 |
| | | -050 | O | L | – | 92 | 133 | 220 | – | – | – | 178 | 216 |
| | | -065 | O | L | G | 118 | 159 | 320 | 140 | 157 | 150 | 190 | |
| | | -080 | O | L | G | 130 | 171 | 320 | 152 | 157 | 150 | 203 | |
| | | -100 | O | L | G | 162 | 204 | 430 | 180 | 240 | 300 | 229 | |
| | | -125 | O | L | G | 180 | 222 | 430 | 198 | 240 | 300 | 356 | |
| | | -150 | O | L | G | 212 | 290 | 400~750 | 221 | 226 | 300 | 394 | |

J 10K Pressure & Temperature rating




J 20K Pressure & Temperature rating



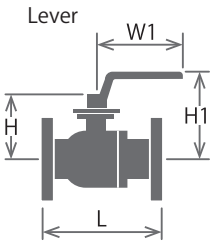

*1) Specify the [ST] option when the fluid is steam. In this case, the flow direction is one-way flow and the O-ring material is FKM for steam.

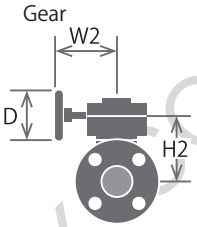
# VR series V-port, Specializing in proportional control.

V-port type ball valve dedicated for proportional control. A spring is built in the seal part of the stem, and the volume change due to packing wear and pressure / temperature changes is automatically compensated.


Product code : MAX VR L - 1 U U G -050 - Option code

- ⓐ Series name: MAX
- ⓑ Valve model: VR
- ⓒ Operation: L
- ⓓ Hyphen: -
- ⓔ Piping connection: 1
- ⓕ Body material: U
- ⓖ Ball material: U
- ⓗ Seat material: G
- ⓘ Size: -050




Floating ball type. Flanged end. V-port type. VR series has flow direction.

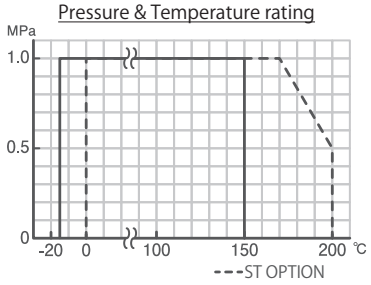
| | |
|---|---|
| ⓔ Piping connection | 1 JIS 10K RF Flanged end |
| Face to face | JIS B 2002 Series No.6 |
| ⓕ Body material | U SCS14A |
| ⓖ Ball material | U SUS316 / SCS14A |
| ⓗ Seat material | G Reinforced PTFE ／ R Reinforced F-PTFE |
| Stem seal material | Reinforced PTFE + FKM O-ring *1 |

## Product lines and dimensions

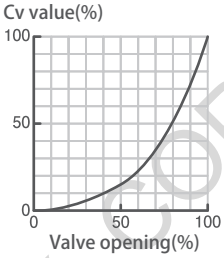
| ⓐ Series name | ⓑ Valve model | ⓘ Size (A) | ⓒ Operation | | | Dimension (mm) | | | | | | Face to face L (mm) | Cv value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Valve only | With manual lever | Worm gear | Valve only | With manual lever | | Worm gear | | | | |
| | | | | | | Height H | Height H1 | Lever length W1 | Height H2 | length W2 | Handle Φ D | | |
| MAX | VR | R015 | O | L | – | 52 | 82 | 115 | – | – | – | 108 | 1.3 |
| | | -015 | O | L | – | 52 | 82 | 115 | – | – | – | 108 | 4 |
| | | -020 | O | L | – | 55 | 85 | 115 | – | – | – | 117 | 7.5 |
| | | -025 | O | L | – | 64 | 102 | 145 | – | – | – | 127 | 12 |
| | | -032 | O | L | – | 70 | 108 | 145 | – | – | – | 140 | 20 |
| | | -040 | O | L | – | 83 | 124 | 220 | – | – | – | 165 | 31 |
| | | -050 | O | L | – | 92 | 133 | 220 | – | – | – | 178 | 48 |
| | | -065 | O | L | G | 118 | 159 | 320 | 140 | 157 | 150 | 190 | 85 |
| | | -080 | O | L | G | 130 | 171 | 320 | 152 | 157 | 150 | 203 | 123 |

*1) Specify the [ST] option when the fluid is steam. In this case, O-ring material is FKM for steam.

Pressure & Temperature rating



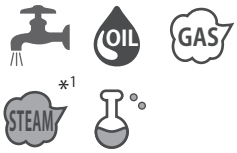

Flow characteristic



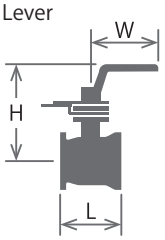

Range ability
R015A = 100 : 1
015A or more = 50 : 1

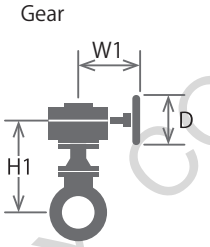
# GS series
Full port / V-port / Standard port, High performance model.

Lightweight and compact, wafer type ball valve. The same body can be connected to not only JIS 10K flange but also JIS 20K flange. Since seat is located at inlet side only, congestion of fluid not occur. By this seal configuration, abnormal pressure rise will not occur too.




Product code : MA- GS L - 3 U U G -050 - Option code
- ⓐ Series name: GS
- ⓑ Valve model: L
- ⓒ Operation: 3
- ⓓ Hyphen: U
- ⓔ Piping connection: U
- ⓕ Body material: G
- ⓖ Ball material: -050
- ⓗ Seat material
- ⓘ Size




Trunnion ball type. Wafer type. Full port / V-port / Standard port type. GS series has flow direction.

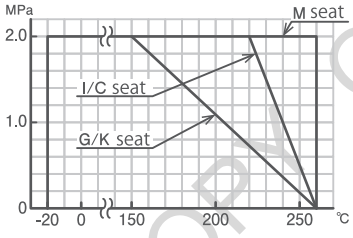
| | |
|---|---|
| ⓔ Piping connection | 3 For JIS 10K and 20K flange Wafer type |
| ⓕ Body material | U SCS14A |
| ⓖ Ball material | U SCS14A + HCr PLTD |
| ⓗ Seat material | G Reinforced PTFE / K PEEK / I API*1 / C Reinforced PEEK / M SUS316 + Stellite® |
| Stem seal material | Reinforced PTFE |
| Allowable Seat Leakage | G K I seat Bubble-tight<br>C seat 0.00001% or less of rated Cv (ANSI B16.104 Class IV 1/1000 or less.) V-port leaks 5-8 times.<br>M seat 0.01% or less of rated Cv (ANSI B16.104 Class IV or less.) V-port leaks 5-8 times. |

## Product lines and dimensions

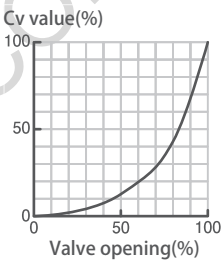
| ⓐ Series name | ⓑ Valve model | ⓘ Size (A) | ⓒ Operation: With manual lever | ⓒ Operation: Worm gear | Dimension (mm): With manual lever Height H | Dimension (mm): With manual lever Lever length W | Dimension (mm): Worm gear Height H1 | Dimension (mm): Worm gear length W1 | Dimension (mm): Worm gear Handle Φ D | Face to face L (mm) | Cv value (V port Cv value) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MA- | GS | -015 V015 | L | – | 115 | 115 | – | – | – | 40 | 20 (4) |
| | | -020 V020 | L | – | 117 | 115 | – | – | – | 50 | 36 (8) |
| | | -025 V025 | L | – | 136 | 145 | – | – | – | 60 | 50 (9) |
| | | -032 V032 | L | – | 139 | 145 | – | – | – | 70 | 90 (22) |
| | | R040 | L | – | 139 | 145 | – | – | – | 80 | 95 |
| | | -040 | L | – | 160 | 220 | – | – | – | 80 | 120 |
| | | R050 | L | – | 168 | 220 | – | – | – | 95 | 135 |
| | | -050 | L | – | 168 | 220 | – | – | – | 95 | 220 |
| | | R065 | L | – | 176 | 220 | – | – | – | 110 | 195 |
| | | -065 | L | G | 198 | 320 | 223 | 157 | 150 | 110 | 380 |
| | | R080 | L | G | 198 | 320 | 223 | 157 | 150 | 125 | 410 |
| | | -080 | L | G | 205 | 320 | 230 | 157 | 150 | 125 | 750 |
| | | R100 | L | G | 223 | 320 | 248 | 157 | 150 | 145 | 430 |
| | | R125 | L | G | 257 | 430 | 309 | 240 | 300 | 176 | 900 |
| | | R150 | L | G | 275 | 430 | 327 | 240 | 300 | 215 | 1360 |

*1) API seats cannot be used for steam.

Pressure & Temperature rating




Flow characteristic




Range ability
Full port is 200 : 1
V-port is 50 : 1
Standard port is 100 : 1

# LR / TR series

L-shaped full port. LR : Horizontal three-way model. / TR : Vertical three-way model.

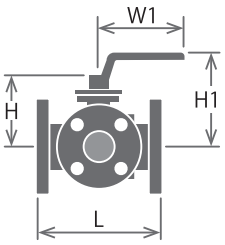
For switching the flow direction and for dividing or mixing. Select from horizontal LR series and vertical TR series according to the piping layout.

LR TR


Product code : MAX LR L - 1 T T P -050 - Option code

ⓐ Series name
ⓑ Valve model
ⓒ Operation
ⓓ Hyphen
ⓔ Piping connection
ⓕ Body material
ⓖ Ball material
ⓗ Seat material
ⓘ Size

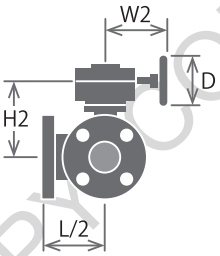
LR Lever




Floating ball type. Flanged end. Full port type.

| | |
|---|---|
| ⓔ Piping connection | 1 JIS 10K RF Flanged end |
| ⓕ Body material | T SCS13A |
| ⓖ Ball material | T SUS304 / SCS13A |
| ⓗ Seat material | P Reinforced PTFE |
| Stem seal material | Reinforced PTFE + FKM O-ring *1 |

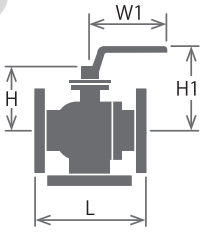
LR Gear



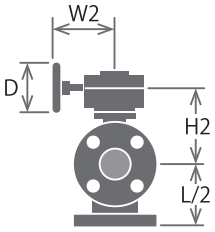

## Product lines and dimensions

| ⓐ Series name | ⓑ Valve model | ⓘ Size (A) | ⓒ Operation: Valve only | ⓒ Operation: With manual lever | ⓒ Operation: Worm gear | Dimension (mm): Valve only Height H | With manual lever: Height H1 | With manual lever: Lever length W1 | Worm gear: Height H2 | Worm gear: length W2 | Worm gear: Handle Φ D | Face to face L (mm) | Cv value (Resultant Cv value) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MAX | LR TR | -020 | 0 | L | – | 55 | 85 | 115 | – | – | – | 150 | 24 (10) |
| | | -025 | 0 | L | – | 64 | 102 | 145 | – | – | – | 170 | 40 (20) |
| | | -040 | 0 | L | – | 83 | 124 | 220 | – | – | – | 200 | 100 (60) |
| | | -050 | 0 | L | – | 91 | 133 | 220 | – | – | – | 230 | 170 (110) |
| | | -065 | 0 | L | G | 118 | 159 | 320 | 140 | 157 | 150 | 260 | 240 (150) |
| | | -080 | 0 | L | G | 130 | 171 | 320 | 152 | 157 | 150 | 280 | 380 (240) |
| | | -100 | 0 | L | G | 162 | 204 | 430 | 180 | 240 | 300 | 340 | 680 (440) |

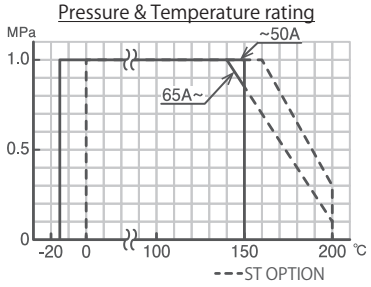
TR Lever



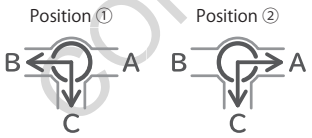

TR Gear




Pressure & Temperature rating



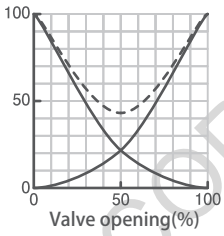

Flow paths



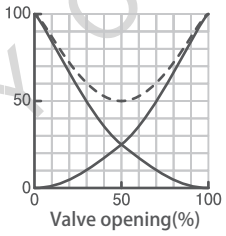

Note)
It should be noted that, if the line pressure of the closed bore is higher than that of the open bores, a small rate of fluid leakage may occur from the closed bore.

*1) Specify the [ST] option when the fluid is steam. In this case the O-ring material is FKM for steam.

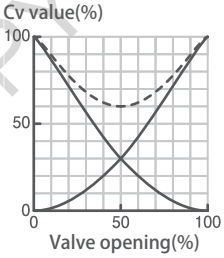
20A flow characteristic



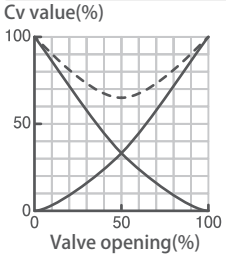

25A flow characteristic




40A flow characteristic



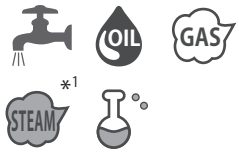

50 to 100A flow characteristic




Range ability 20 : 1

# L3 series L-shaped full port, Horizontal three-way model.

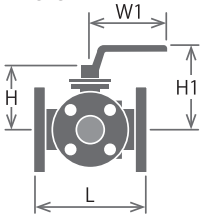
For switching the flow direction and for dividing or mixing. The trunnion structure that supports the ball with a shaft reduces the effect of fluid pressure on the sealing performance. Maintains sealing performance even under low pressure conditions on the flow path side.



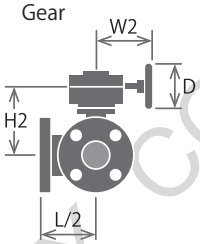

Product code : MAX L3 L - 1 T T G -050 - Option code

- ⓐ Series name: MAX
- ⓑ Valve model: L3
- ⓒ Operation: L
- ⓓ Hyphen: -
- ⓔ Piping connection: 1
- ⓕ Body material: T
- ⓖ Ball material: T
- ⓗ Seat material: G
- ⓘ Size: -050

Lever




Gear




Trunnion ball type. Flanged end. Full port type.

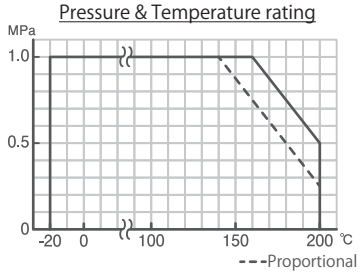
| | |
|---|---|
| ⓔ Piping connection | 1 JIS 10K RF Flanged end |
| ⓕ Body material | T SCS13A |
| ⓖ Ball material | T SCS13A |
| ⓗ Seat material | G Reinforced PTFE |
| Stem seal material | PTFE |

## Product lines and dimensions

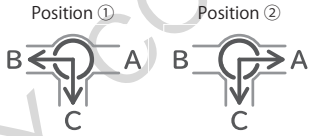
| ⓐ Series name | ⓑ Valve model | ⓘ Size (A) | ⓒ Operation | | | Dimension (mm) | | | | | | Face to face L (mm) | Cv value (Resultant Cv value) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Valve only | With manual lever | Worm gear | Valve only | With manual lever | | Worm gear | | | | |
| | | | | | | Height H | Height H1 | Lever length W1 | Height H2 | length W2 | Handle Φ D | | |
| MAX | L3 | -025 | 0 | L | – | 77.5 | 115 | 145 | – | – | – | 160 | 40 (20) |
| | | -040 | 0 | L | – | 103.5 | 146 | 220 | – | – | – | 180 | 100 (60) |
| | | -050 | 0 | L | – | 110.5 | 153 | 220 | – | – | – | 200 | 170 (110) |
| | | -065 | 0 | L | G | 127.5 | 169 | 320 | 150 | 157 | 150 | 240 | 240 (150) |
| | | -080 | 0 | L | G | 135 | 176 | 320 | 158 | 157 | 150 | 260 | 380 (240) |
| | | -100 | 0 | L | G | 165 | 207 | 430 | 184 | 240 | 300 | 330 | 680 (440) |
| | | -125 | 0 | L | G | 183 | 225 | 430 | 202 | 240 | 300 | 370 | 1080 (680) |
| | | -150 | 0 | L | G | 215 | 293 | 400~750 | 224 | 226 | 300 | 430 | 1620 (1030) |

*1) When the fluid is steam, a separate option is required depending on the conditions. Please inform us of the conditions of use.

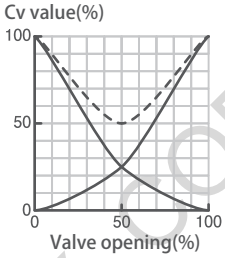
Pressure & Temperature rating




Flow paths

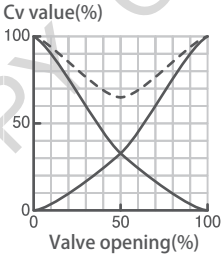



25A flow characteristic




Range ability 30 : 1

40 to 150A flow characteristic




Range ability 30 : 1

# T3 series

T-shaped full port, Horizontal three-way model.

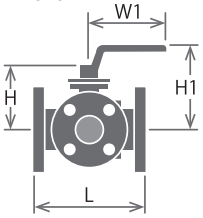


For switching between straight and L direction. The trunnion structure that supports the ball with a shaft reduces the effect of fluid pressure on the sealing performance. Maintains sealing performance even under low pressure conditions on the flow path side.

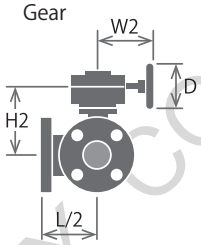

Product code : MAX T3 L - 1 T T G -050 - a - Option code

- ⓐ Series name: MAX
- ⓑ Valve model: T3
- ⓒ Operation: L
- ⓓ Hyphen: -
- ⓔ Piping connection: 1
- ⓕ Body material: T
- ⓖ Ball material: T
- ⓗ Seat material: G
- ⓘ Size: -050
- ⓙ Flow paths: a

Lever




Gear




Trunnion ball type. Flanged end. Full port type.

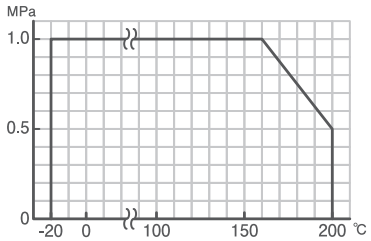
| | |
|---|---|
| ⓔ Piping connection | 1 JIS 10K RF Flanged end |
| ⓕ Body material | T SCS13A |
| ⓖ Ball material | T SCS13A |
| ⓗ Seat material | G Reinforced PTFE |
| Stem seal material | PTFE |

## Product lines and dimensions

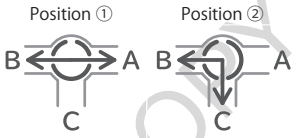
| ⓐ Series name | ⓑ Valve model | ⓘ Size (A) | ⓒ Operation | | | Dimension (mm) | | | | | | Face to face L (mm) | Cv value | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Valve only | With manual lever | Worm gear | Valve only | With manual lever | | Worm gear | | | | | |
| | | | | | | Height H | Height H1 | Lever length W1 | Height H2 | length W2 | Handle Φ D | | L direction | Straight direction |
| MAX | T3 | -025 | 0 | L | – | 77.5 | 115 | 145 | – | – | – | 160 | 26 | 45 |
| | | -040 | 0 | L | – | 103.5 | 146 | 220 | – | – | – | 180 | 65 | 129 |
| | | -050 | 0 | L | G | 117.5 | 159 | 320 | 140 | 157 | 150 | 200 | 110 | 219 |
| | | -065 | 0 | L | G | 127.5 | 169 | 320 | 150 | 157 | 150 | 240 | 160 | 300 |
| | | -080 | 0 | L | G | 151 | 193 | 430 | 170 | 240 | 300 | 260 | 260 | 469 |
| | | -100 | 0 | L | G | 164 | 206 | 430 | 183 | 240 | 300 | 330 | 480 | 820 |
| | | -125 | 0 | L | G | 202 | 280 | 400~750 | 211 | 226 | 300 | 370 | 770 | 1400 |
| | | -150 | 0 | L | G | 221 | 299 | 400~750 | 230 | 226 | 300 | 430 | 1150 | 2000 |

*1) When the fluid is steam, a separate option is required depending on the conditions. Please inform us of the conditions of use.

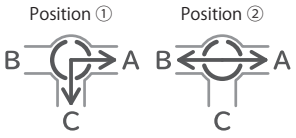
Pressure & Temperature rating



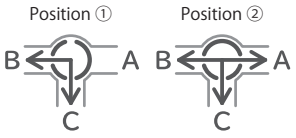

ⓙ Flow paths Code a



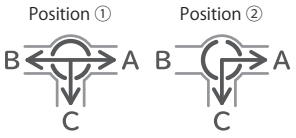

ⓙ Flow paths Code b




ⓙ Flow paths Code c




ⓙ Flow paths Code d




Note)
Enter of the Flow paths code after the Size of the product code.

# E5 / L5 series Five-way model. E5 : Threaded end Rc type. / L5 : Flanged end type.

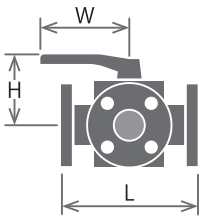


Five-way motorized valve ideal for filtration systems such as hot springs and swimming pools. Three processes, filtration, backwashing and washing, can be switched with just one valve.

Product code : ____ E5 - __ 5 T T T -025 - L - Option code

Product code : ____ L5 - __ 2 T T T -100 - R - Option code

- ⓐ Blank
- ⓑ Valve model
- ⓒ Hyphen
- ⓓ Blank
- ⓔ Piping connection
- ⓕ Body material
- ⓖ Ball material
- ⓗ Seat material
- ⓘ Size
- ⓙ Flow paths



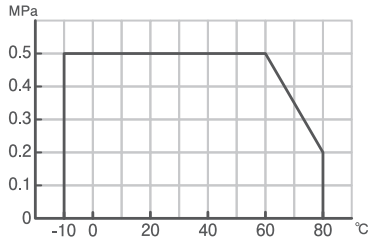

Five-way ball valbe

| | | | |
|---|---|---|---|
| ⓑ Valve model | E5 | L5 | |
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 | 2 JIS 5K FF Flanged end | 1 JIS 10K RF Flanged end |
| ⓕ Body material | T SCS13A | | |
| ⓖ Ball material | T SCS13A | | |
| ⓗ Seat material | T PTFE | | |
| Stem seal material | EPDM O-ring*1 | | |

## Product lines and dimensions

| ⓑ Valve model | ⓘ Size (A) | Dimension (mm) Height H | Dimension (mm) Lever length W | Face to face L (mm) | Cv value |
|---|---|---|---|---|---|
| E5 | -025 | 80 | 145 | 132 | 7.7 |
| L5 | -032 | 112 | 200 | 185 | 15 |
| | -040 | 112 | 200 | 185 | 15 |
| | -050 | 115 | 350 | 211 | 36 |
| | -065 | 125 | 350 | 240 | 58 |
| | -080 | 168 | 323 ~ 600 | 296 | 86 |
| | -100 | 173 | 323 ~ 600 | 360 | 133 |
| | -125 | 203 | 400 ~ 770 | 430 | 221 |

Pressure & Temperature rating

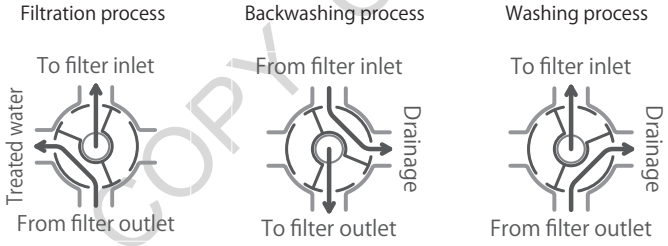



Note) When using with hot spring water, the electro-less nickel plating option [TN] may be required. Depending on the composition and concentration of the hot spring, corrosion may occur even with the plating option.

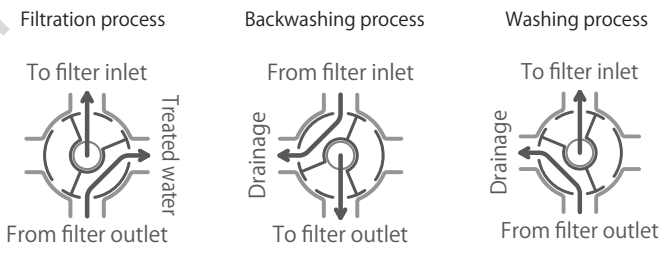
Note) If you would like to use the forced drainage process (03 option) or the process to bypass the filter (04 option), please contact us separately.

*1) An NBR O-ring is installed on the outside of the stem seal as a dust seal.

ⓙ Flow paths L




ⓙ Flow paths R



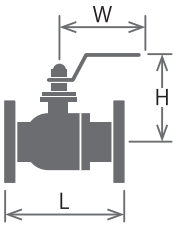

Note)
For E5 / L5 series, enter of the Flow paths code after the Size of the product code.

# BL series Full port, PFA lining model.

The inside of the valve is lined with PFA resin. A lining ball valve with excellent corrosion resistance. Can be used for highly corrosive fluids that cannot be withstood by metal valves.


Product code : MA- BL L - 1 T F T -050 -Option code

- ⓐ Series name: MA-
- ⓑ Valve model: BL
- ⓒ Operation: L
- ⓓ Hyphen: -
- ⓔ Piping connection: 1
- ⓕ Body material: T
- ⓖ Ball material: F
- ⓗ Seat material: T
- ⓘ Size: -050




Floating ball type. Flanged end. Full port type.

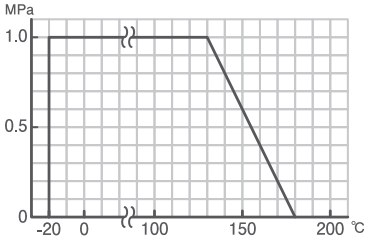
| | | |
|---|---|---|
| ⓔ Piping connection | 1 JIS 10K RF Flanged end | |
| ⓕ Body material | T SCS13A + PFA | S SCPH2+ PFA |
| ⓖ Ball material | F SCS13A+ PFA | |
| ⓗ Seat material | T PTFE | |
| Stem seal material | PTFE | |

## Product lines and dimensions

| ⓐ Series name | ⓑ Valve model | ⓘ Size (A) | ⓒ Operation: With manual lever | Dimension (mm): With manual lever Height H | Dimension (mm): With manual lever Lever length W | Face to face L (mm) | ○ : Semi-standard △ : Mede to order × : Not selectable: SCS13A Body | ○ : Semi-standard △ : Mede to order × : Not selectable: SCPH2 Body |
|---|---|---|---|---|---|---|---|---|
| MA- | BL | -015 | L | 86 | 135 | 140 | ○ | ○ |
| | | -020 | L | 92 | 135 | 152 | ○ | ○ |
| | | -025 | L | 103 | 175 | 165 | ○ | △ |
| | | -040 | L | 123 | 190 | 191 | ○ | △ |
| | | -050 | L | 153 | 230 | 216 | ○ | △ |
| | | -065 | L | 183 | 280 | 240 | ○ | ○ |
| | | -080 | L | 195 | 330 | 250 | ○ | △ |
| | | -100 | L | 210 | 500 | 280 | ○ | ○ |

Note) BL series is a semi-standard product. Please check the delivery date.

Pressure & Temperature rating



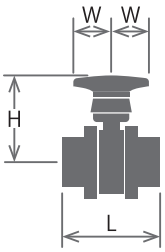
# Z series

Rubber seat small size three piece body butterfly valve.

For various purposes mini butterfly valve. PPS resin discs with excellent corrosion resistance. With a three piece main body structure with excellent maintainability, the main body can be removed and maintained with the cap left on the pipe.


Product code : MAC Z- Y - 5 T U E -025 - Option code

- ⓐ Series name: MAC
- ⓑ Valve model: Z-
- ⓒ Operation: Y
- ⓓ Hyphen: -
- ⓔ Piping connection: 5
- ⓕ Body material: T
- ⓖ Cap material: U
- ⓗ Seat material: E
- ⓘ Size: -025



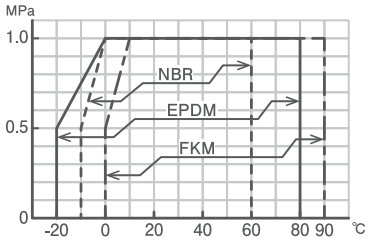

Concentric type butterfly valve

| | | | |
|---|---|---|---|
| ⓔ Piping connection | 5 Threaded end Rc JIS B 0203 | 7 Socket end | |
| ⓕ Body material | T SCS13A | | |
| ⓖ Cap material | U SCS14A | P PVC*2 | H C-PVC |
| ⓗ Seat material | E EPDM*1*2 ／ B NBR ／ V FKM | | |
| Disk material | PPS | | |
| Stem seal material | O-ring of the same material as the seat | | |

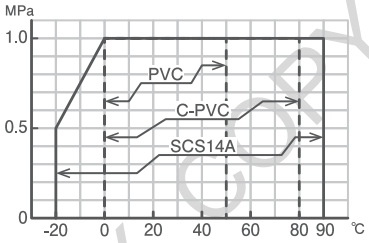
## Product lines and dimensions

| ⓐ Series name | ⓑ Valve model | ⓘ Size (A) | ⓒ Operation | Dimension (mm) | | Face to face L (mm) | | Cv value |
|---|---|---|---|---|---|---|---|---|
| | | | Manual handle | Height H | Handle length W | Threaded | Socket | |
| MAC | Z- | -015 | Y | 71 | 28 | 59 | 65 | 7 |
| | | -020 | Y | 74 | 28 | 66 | 75 | 19 |
| | | -025 | Y | 78 | 40 | 78 | 91 | 28 |
| | | -032 | Y | 78 | 40 | 87 | 96 | 28 |
| | | -040 | Y | 91 | 40 | 95 | 126 | 86 |
| | | -050 | Y | 91 | 40 | 109 | 138 | 86 |

Seat material Pressure & Temperature rating




Cap material Pressure & Temperature rating

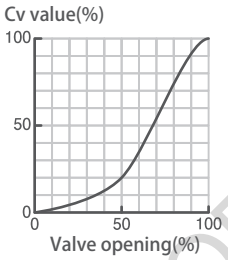



Note) When used in hot water supply lines or in fluids containing chlorine, EPDM and NBR may deteriorate prematurely depending on conditions.

*1) EPDM cannot be used for mineral oil and plant oil.

*2) When using in seawater, please order a combination of PVC cap and EPDM seat.

Flow characteristic




Range ability 30 : 1

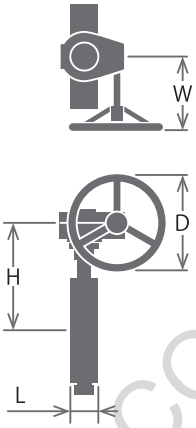
# DN series Double eccentric type butterfly valve.

Due to the double eccentric structure, the valve body and seat do not contact until fully closed, so stable sealing performance is demonstrated for a long time. High sealing performance is realized by the seat shape that utilizes fluid pressure.

OIL GAS STEAM

Product code : MA- DN G - 1 T T F -150 -Option code

- ⓐ Series name: MA-
- ⓑ Valve model: DN
- ⓒ Operation: G
- ⓓ Hyphen: -
- ⓔ Piping connection: 1
- ⓕ Body material: T
- ⓖ Disk material: T
- ⓗ Seat material: F
- ⓘ Size: -150



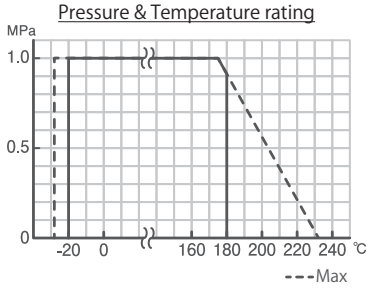

Double eccentric type butterfly valve. DN series has flow direction.

| | |
|---|---|
| ⓔ Piping connection | 1 For JIS 5 and 10K flange (Can be connected to ANSI CLASS 150Lb flange. ) Wafer type |
| Face to face | JIS B 2002 Series No.46 |
| ⓕ Body material | T SCS13A |
| ⓖ Disk material | T SCS13A |
| ⓗ Seat material | F F-PTFE |
| Stem seal material | PTFE |

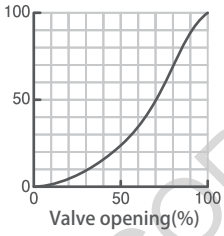
## Product lines and dimensions

| ⓐ Series name | ⓑ Valve model | ⓘ Size (A) | ⓒ Operation | Dimension (mm) | | | Face to face L (mm) | Cv value |
|---|---|---|---|---|---|---|---|---|
| | | | Worm gear | Height H | length W | Handle Φ D | | |
| MA- | DN | -080 | G | 165 | 157 | 150 | 46 | 220 |
| | | -100 | G | 195 | 157 | 150 | 52 | 410 |
| | | -125 | G | 210 | 157 | 150 | 56 | 800 |
| | | -150 | G | 235 | 157 | 150 | 56 | 1250 |
| | | -200 | G | 267 | 240 | 300 | 60 | 2450 |
| | | -250 | G | 299 | 226 | 300 | 68 | 4250 |
| | | -300 | G | 339 | 226 | 300 | 78 | 6750 |

Pressure & Temperature rating




Flow characteristic




Range ability 50 : 1

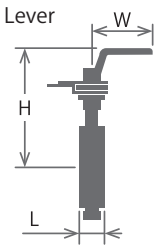
# WT series High precision damper for low leakage.

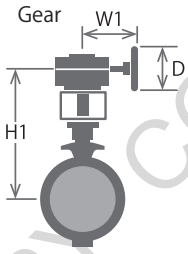
The main body and disk machined with high accuracy realize a low leakage of 1% or less*1 relative to the rated Cv value. By selecting a disk with a seal ring, it can handle even lower leakage.

GAS

Product code : MA- WT L - 2 T G S -200 - Option code

ⓐ Series name
ⓑ Damper model
ⓒ Operation
ⓓ Hyphen
ⓔ Piping connection
ⓕ Body material
ⓖ Stem seal material
ⓗ Seal ring
ⓘ Size




Eccentric type butterfly damper. WT series has flow direction.

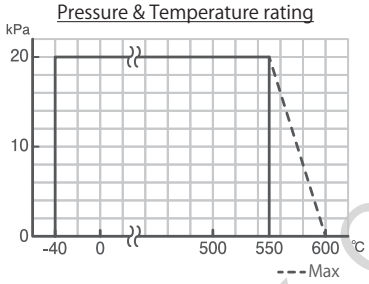
| | | |
|---|---|---|
| ⓔ Piping connection | 2 For JIS 5K flange Wafer type | |
| ⓕ Body material | T SCS13A | |
| ⓖ Stem seal material | G Expansion graphite | |
| ⓗ Seal ring | 0 Non | S SUS316 |
| Disk material | SUS420J2 / SUS420J1 | SUS410S / SUS420J2 |
| Allowable Seat Leakage | 1% or less of rated Cv*1 | 0.1% or less of rated Cv*2 |

## Product lines and dimensions

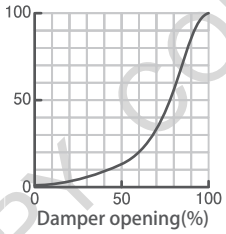
| ⓐ Series name | ⓑ Damper model | ⓘ Size (A) | ⓒ Operation | | Dimension (mm) | | | | | Face to face L (mm) | Cv value |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | With manual lever | | Worm gear | | | | |
| | | | With manual lever | Worm gear | Height H | Lever length W | Height H1 | length W1 | Handle Φ D | | |
| MA- | WT | -040 | L | G | 145 | 115 | 206 | 157 | 150 | 40 | 85 |
| | | -050 | L | G | 150 | 115 | 211 | 157 | 150 | 40 | 145 |
| | | -065 | L | G | 162 | 115 | 223 | 157 | 150 | 40 | 290 |
| | | -080 | L | G | 185 | 115 | 255 | 157 | 150 | 50 | 450 |
| | | -100 | L | G | 196 | 115 | 266 | 157 | 150 | 50 | 780 |
| | | -125 | L | G | 213 | 115 | 283 | 157 | 150 | 50 | 1200 |
| | | -150 | L | G | 237 | 145 | 298 | 157 | 150 | 50 | 1800 |
| | | -200 | L | G | 260 | 145 | 321 | 157 | 150 | 50 | 3200 |
| | | -250 | L | G | 282 | 145 | 343 | 157 | 150 | 50 | 5100 |
| | | -300 | L | G | 315 | 220 | 369 | 157 | 150 | 55 | 7200 |
| | | -350 | L | G | 372 | 320 | 398 | 157 | 150 | 70 | 8900 |
| | | -400 | L | G | 396 | 320 | 422 | 157 | 150 | 70 | 11000 |

*1) The leak rate of the 40A and 50A models without seat is 2% or less.
*2) Seal ring type, 40A leakage is 1% or less, 50A is 0.5% or less, and 65A is 0.2% or less.

Pressure & Temperature rating




Flow characteristic




Range ability 50 : 1

## MEMO

# Technical data

The technical data listed in this catalog are only representative content.
Please feel free to contact us if you have any questions.
We are waiting for your information for select the best automatic valve.





TECHNICAL DATA

# Notes on valve selection

## Abnormal pressure

Because of the structure of ball valve, abnormal pressure rise at pocket occurs if the fluid is liquid and the temperature fluctuates. If abnormal pressure rise occurs due to temperature rise in the pocket when the valve is fully closed or fully open, such as in steam applications, it is necessary to select a model that prevents abnormal pressure rise. (Some models can be supported by options.)

In the case of plastic valves, certain liquids such as $H_2O_2$ and NaClO are prone to vaporization (outgassing), causing irregular pressure rises and potentially damaging the valve.

## Flow velocity

The flow velocity when the valve is full opening should be 3 m/s in case of liquid and 30 m/s or less in the case of gas. If this flow velocity is exceeded, please contact us.

## Cavitation

When the liquid passes through the narrowed part inside the valve, the flow velocity may increase, and the liquid whose pressure has decreased may vaporize. After the air bubbles pass through the throttled part, the flow velocity and pressure return and are crushed. This phenomenon occurs suddenly in a very short time, so it accompanies a strong shock wave, vibration and noise. Cavitation is the phenomenon that this bubble is generated and crushed.

Cavitation damages (erosion) valves and piping interior.

Calculate the average flow velocity inside the pipe and select the nominal diameter so that it is below the maximum flow velocity inside the pipe.

## Water hammer

Pneumatic actuated valves has a high operating speed, a water hammer phenomenon sometimes occurs.

If there is a possibility that a water hammer may occur due to fluid and piping conditions, adjust the operating speed of the actuator using the speed controller.

For valves with a nominal diameter of 40 A or less we recommend more than 1 second and for 50 A or more we recommend more than 2 seconds.

## Leakage 3-way ball valve

The ball of the 3-way valve has L port and T port type, and it is a flow paths of the picture below. When choosing T port type, please write flow paths code in product model code.

L Port type T, TE series

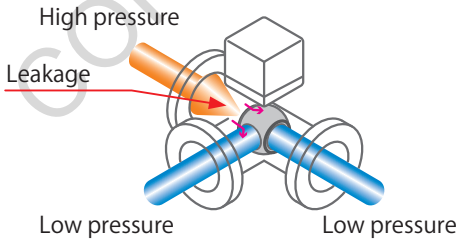
| Position ① | Position ② |
|---|---|
|  |  |

L Port type

| Position ① | Position ② |
|---|---|
|  |  |

T Port type

| | Position ① | Position ② |
|---|---|---|
| Code "a" |  |  |
| Code "b" |  |  |
| Code "c" |  |  |
| Code "d" |  |  |




Floating three-way valves leak on the flow side when the pressure at the closing port is high.

A three-way valve with a four-sided seat structure will have a slight leak on the flow side if the pressure at the closing port is high.

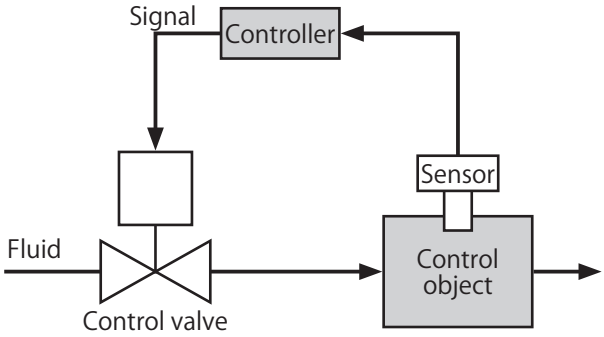
Three-way valves with a trunnion structure (L3, T3 series) sealing performance even when the pressure of the closing side port is high.

# How to select a proportional control valve

## Proportional control valve

In order to bring the controlled object's temperature, flow rate, concentration etc., to the desired state, use the proportional control valve with the image as below.

The controller receives the signal from the sensor and changes the opening degree of the proportional control valve so that it becomes the target value.

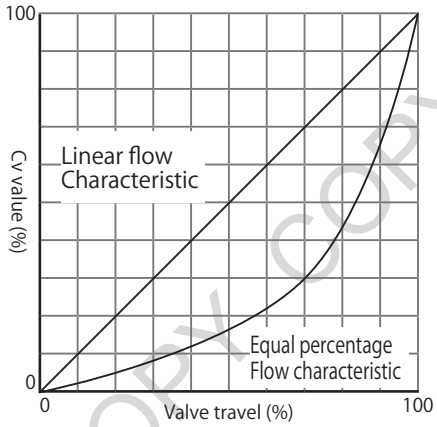



The valve travel is proportional to the output signal value of the controller. Valve travel and flow rate are not proportional. The flow rate is determined by the Cv value in the valve travel and the differential pressure across the valve at that time. The valve has its own Cv value, flow rate characteristic, range ability, each affecting control.

## Inherent flow characteristic

The vertical axis of the inherent flow rate characteristics table shows the percentage of Cv value rather than flow rate.

The valve travel and flow rate are proportional only when the differential pressure across the valve is always constant regardless of the valve travel. Valve of linear characteristic be suitable for this case.




For general use conditions, as the valve travel increases, the differential pressure decreases, so using a valve with an equal percent characteristic will make the actual flow rate and the valve travel close to each other, resulting in better controllability.

## Range ability

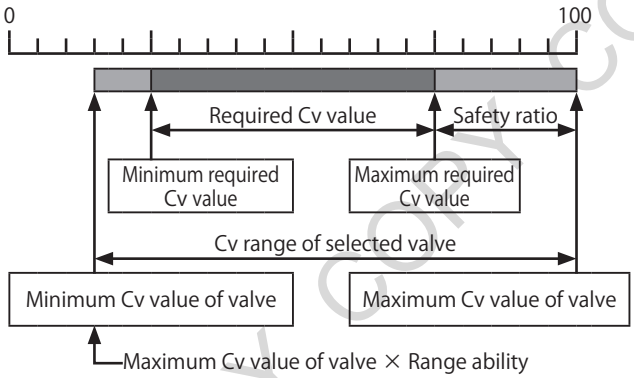
Range ability is set for each model in the proportional control valve. Range ability is the range that can be controlled. It can be thought of as the ratio between the maximum controllable Cv value and the minimum Cv value. In the case of a valve whose full-open Cv value is 75 and range ability is 100 : 1, the minimum valve travel that can be controlled is the valve travel at which the Cv value is 0.75.

## Calculation of required maximum and minimum Cv values

Calculate the Cv value when flowing the required maximum flow at the expected minimum differential pressure across the valve. Please select a valve with a fully open Cv value that allows for a certain safety factor for the calculated value.

Calculate the Cv value when flowing the required minimum flow at the maximum expected valve differential pressure. This value can be used above the "Full open Cv value of valve × Range abilities".

Cv value range required for control and Cv value range of selected valve.




## Notes on nominal size selection

Even if the nominal size of the control valve is too small or too large, control will be adversely affected.

If the nominal size is too small, it becomes impossible to secure the necessary flow rate. If the nominal size is larger than necessary, phenomena such as hunting are caused, the operation becomes unstable, product life may be extremely shortened. In order to prevent these, it is necessary to select the proper nominal size considering the entire process.

A certain safety factor (25 to 60%) must be provided to ensure a stable maximum flow rate. If the safety factor is too high, the stability of control will deteriorate and the range ability will be small. It is important to consider a moderate safety factor taking into consideration the pressure loss of the controlled object, variation of the set point, etc. Even for valves with high range ability, it should be within 4 times the required maximum Cv value.

## Notes on piping conditions

The mounting position of the control valve greatly affects the controllability. Vibration, noise, hunting may occur due to turbulent flow generated by the elbow or reducer. To prevent these phenomena, please keep straight pipe section of more than six times the pipe inner diameter upstream and downstream of the valve.

Increasing the flow rate with the reducer improves the controllability because the differential pressure across the valve can be secured. When using the reducer, please pay attention to the required maximum Cv value. To reduce the occurrence of drift and turbulent flow, please use a smooth shape reducer.

## Handling & Storage

Proper care in handling the valve should be taken to prevent damage. Do not drop or throw it.

Check model No. and voltage before installation and inspect screws to make sure they are not loosened.

If possible, valve should be kept in the original packaging.

Store the valve in the protected area from dust, moisture and direct sunlight.

## Installation environment

When installed in an environment exposed to direct sunlight and rain breeze, products life will shrink extremely. It can be used for a long time and safely by providing a sunshade and rain cover.

Do not install the actuator in the water, the place where corrosive gas is present or where vibration is heavy.

Keep away from heat source. Use proper shelter to protect from radiant heat when actuator cover is heated above 50℃ .

Take measures to prevent use fluid, output shaft from being frozen.

For aluminum parts, corrosion may occur in a short period of time due to influences of salinity, chemicals, organic solvents and their gases. Avoid using in these atmospheres.

Be careful as polycarbonate parts are sensitive to alkalinity, organic solvents and their gases. When installed in a sealed space or a poorly ventilated environment, gas generated when the sealant or adhesive used around it is cured may adversely affect the product.

Plastic valves avoid contact with coal tar creosote, insecticide, vermicides or paint. These chemicals may cause damage to the valve.

When single acting type(TAO / TAC) is used outdoors or at such a place where it is exposed to water splash, provide an elbow and the like to the breathing port to prevent entry of water or rainwater. When single acting type(TAO / TAC) is used at such a place where much powder dust exist provide a filter (silencer) to the breathing port to prevent entry of powder dust.

## Piping

Maintenance space more upward from the actuator is required.

| Maintenance space at the top of the actuator | |
|---|---|
| CA1, PM1, CD2, CM□ | 15mm or more |
| AM□-030/070, DM2-030 | 65mm or more |
| AM□-180, AH1, DM0, DM2-070/180, PAX, ACR | 90mm or more |
| AE□-120 to 700, PEX, ECR | 105mm or more |
| AE□-02K/06K | 120mm or more |
| AD□, HD□, PDX, PH□ | 120mm or more |
| ABR, HBR, PBX | 70mm or more |
| LAX | 90mm or more |

Place a shutoff valve at the upstream and downstream of the automatic valve and provide a bypass piping. Ensure a space that can be maintained and exchanged around the product.

When installing on the ceiling back, please set up an inspection hatch close to the valve and install a drain pan at the bottom of the valve.

The mounting position of the automatic valve should be from erect to horizontal.

There is a valve whose flow direction is limited. Please check the arrow marked on the product.

The single acting type air operated actuator is provided with intake and exhaust ports at the bottom of the spring unit. When using it outdoors or places where there is a possibility of water, please piping upright to prevent moisture intrusion.

In case of unavoidable piping in the sideways, select the TAO / TAC type, install the elbow in the intake / exhaust port, and make sure the mouth faces downward.

Before piping the valve, please clean so that foreign matter (welding spatter, rust, scale, sand etc.) does not remain in the piping.

**Threaded end type**

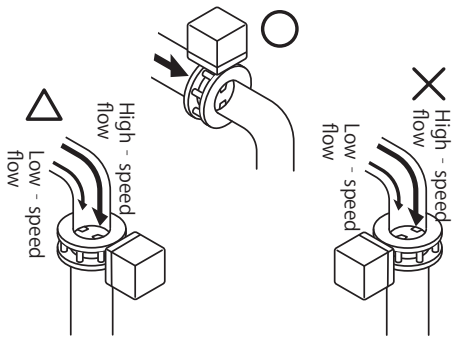
- To connect the pipe or fitting to the valve, please screw the tool to the octagonal or hexagonal part of the inserting side. If a tool is placed on the side opposite to the side to be inserted, the valve may be deformed and damaged.
- Be careful not to let the seal tape and sealant intrude inside the valve. It may cause malfunction or seat leakage.

**Flanged end type**

- Please use the companion flange with the same standard, shape and nominal diameter.
- Please use gaskets suitable for valve and flange shape, material, pressure, temperature, fluid properties.
- Please confirm the tightening torque of the flange bolt with the material of the gasket maker to be used.

**Butterfly valve**

- When installing on piping, please put the disc in the closed position.
- Please do not use gasket for rubber seat type.
- When installing near the bent pipe of piping, please install it upstream of the bent pipe. If it is inevitable to install it on the downstream side of the bent pipe, piping so that the valve stem is vertical to the bias of the flow, or provide a straight pipe part at least 5 times the nominal diameter.
- When using multiple valves in close proximity, please piping so that valve axis of each valve is vertical.




**Plastic valve**

- Do not use liquid sealant or liquid gasket for threaded end type valves. Stress crack (environmental stress cracking) may occur.
- Do not tighten the valve union nut more than necessary. It may cause seat leakage. Also, please do not tighten the ball in the intermediate position. It may cause seat leakage.
- Do not pull on the valve after piping and do not apply stress such as twisting or bending.
- Please provide adequate support according to piping direction and actuator weight.

## Wiring to the electric actuator

Please use appropriate wires for wiring, and seal the connection completely.

Please fill the sealant in the gap of the sheath also for the connection part of the carburetor cord and seal it perfectly.

Consider maintenance, please secure the length of the electric wire with sufficient margin.

When using electricity conduit and plica tube, please seal completely so that there is no invasion of rainwater or dew condensation water.

Check the power supply voltage and connect properly as shown in the wiring diagram.

When signal output is not used, do not connect anything to the output terminal. For the Cabtyre cord pulling type, please insulate and seal the tip of the lead wire.

### Operation (Motorized valve)

Always perform trial operation before actual operation.

Please check that the power supply voltage and wiring are correct before trial operation.

At trial operation please check valve operation against input signal and output signal is correct.

Connectors, etc., there are parts where the moving part is exposed. Please do not touch the product under operation.

Do not switch the operation switch during operation. It may shorten product life.

### Operation (Pneumatic actuated valve)

Always perform trial operation before actual operation.

Please check operation several times manually before trial operation. In the single acting type, gradually increase the supply air pressure and check the operation slowly.

Confirm that the supplied air pressure near the actuator is within the operating pressure range.

Manual operation shaft, etc., there are parts where the moving part is exposed. Please do not touch the product under operation.

### Maintenance and inspection

Please conduct periodic inspection for safety of products and equipment, and perform maintenance as necessary.

· Valve operating condition.

· Abnormalities such as abnormal noise and vibration during operation, overheating of the actuator.

· Water intrusion into the actuator, presence of condensation.

· Whether there is leakage from piping connecting part or valve.

· Looseness of each screw.

Please operate the valve about once every three months when it does not work for a long time.

If abnormality is found during inspection, please take appropriate measures according to the cause.

### Failure and measures

If the product does not operate properly, please check the following items. If the cause is unknown, or if repair or replacement of parts is necessary, please contact us.

<Actuator does not operate>

· Power supply / wiring / control circuit correct?

· Manual switching clutch fully returned to the automatic side?

· Motor protection not working?

· Any abnormality (damage, discoloration, condensation, rust) in the parts inside the actuator?

· Air pressure supplied to the pneumatic actuator proper?

· Is there any foreign matter inside the valve?

<Operation is unstable>

· Is the control circuit correct?

· Is the connection position of the signal line correct?

· Is there any influence of induced voltage or noise on the signal line?

· Do not exceed duty factor?

· Is the air pressure supplied to the air actuator correct?

· Is manual operation smooth?

· Are there any problems with the conditions of use?(Ambient temperature, Fluid temperature, Pressure, Fluid property)

### Manual operation

· Be sure to cut off the power when manually operating the motorized valve.

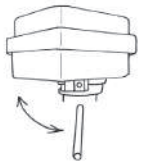
· In the case of an air operated valve, cut off the supplied air pressure, fully open the bypass valve or completely release the residual pressure in the cylinder.

· After manual operation, be sure to remove the used tool.

· If manual operation is required for a single-action air operated valve, select TAO / TAC series and order a manual handle option.

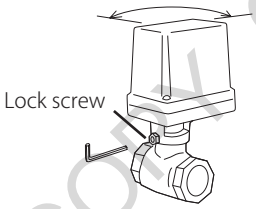
<How to manual operation>

PM1 / CD2 / CA1 / CM□



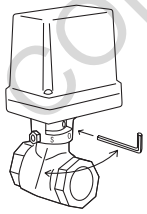
Insert a 4 mm (070 is 6 mm) round bar into the hole of the opening display connector, and manual operation is possible. (070 is used with a clutch button)

AM□ / PAX




Manual operation is possible by loosening the lock screw and rotating the actuator.
After manual operation, return to the original position and fix the lock screw in the fixing hole securely.

AH1 / DM□ / ACR

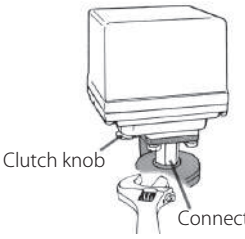


Insert a 5.7 mm round bar or 5 mm hexagonal wrench key into the actuator output shaft hole, and manual operation is possible.

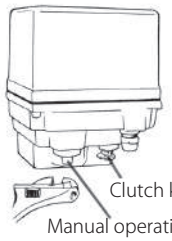
AE□ / PEX / ECR


Operation is possible with the manual operation shaft at the bottom of the actuator.Check the indication label and operate it with a adjustable wrench etc., slowly.

AD□ / HD□ / PDX / PH□
ABR / HBR / PBX

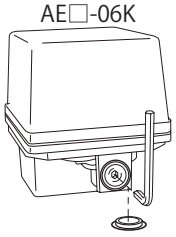



HD□ / PDX / PH□-06K
HBR / PBX-06K



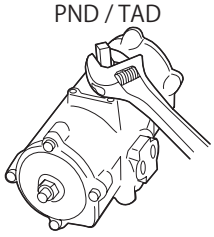

When the clutch knob is pulled down and rotated, the motor and output shaft are disconnected and it is in the manual state. Apply a adjustable wrench etc., to the connector and operate manually.
06K operates the manual operation shaft under the actuator
After manual operation is complete, turn the clutch knob back to its original position.

AE□-06K



When the rubber cap on the side of the actuator is removed, there is a manual operation shaft.
Check the valve position label, and operate it slowly with an 8 mm hexagonal wrench key.

PND / TAD



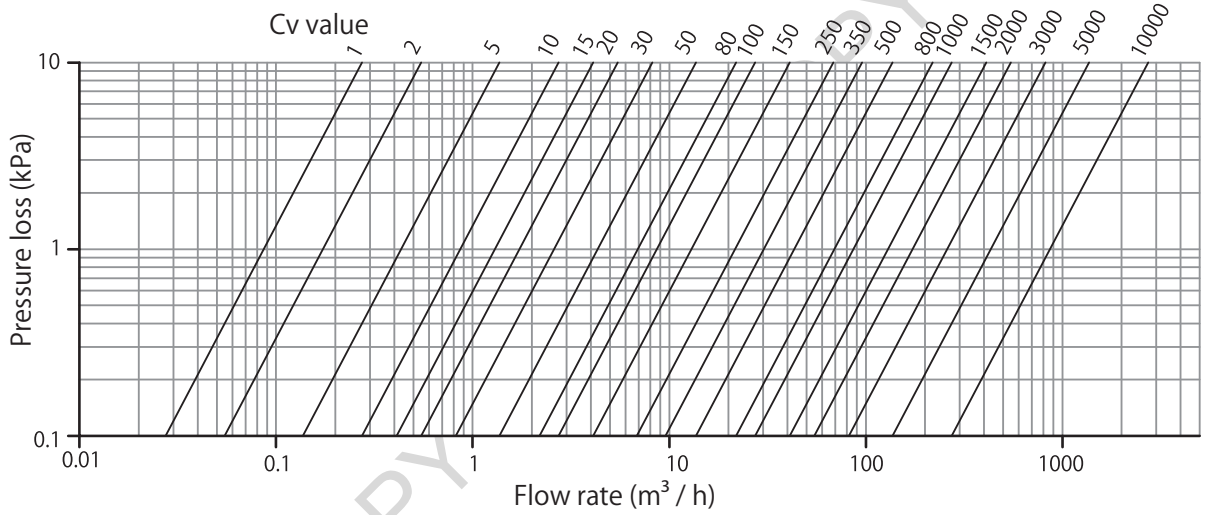
Slowly operate the manual operation shaft on the top of the actuator with a adjustable wrench etc.

## Formula for calculating Cv value

The valve flow coefficient according to the JIS standard, represents the flow capacity in US gallons/minute of 60° F pure water when it is flowing through the valve with a pressure difference of 1 psi at the specified travel (operation range).

| Fluid type | Differential pressure conditions | Cv value formula | | Explanation of symbols |
|---|---|---|---|---|
| Liquid | — | $Cv=11.6Q\sqrt{\frac{G}{\Delta P}}$ | $Cv=1.17Q\sqrt{\frac{G}{\Delta P}}$ | $P_1$ : Primary absolute pressure kPaA (kg/cm²A)<br>$P_2$ : Secondary absolute pressure kPaA (kg/cm²A)<br>$\Delta P$ : Differential pressure [ $P_1$-$P_2$ ] kPa (kg/cm²)<br>G : Specific gravity of liquid (Water = 1)<br>Specific gravity of gas (Air = 1)<br>Q : Volume flow rate Liquid m³/h<br>Volume flow rate Gas Nm³/h<br>Mass flow rate Steam kg/h<br>T : Fluid temperature K (℃ + 273)<br>$T_{SH}$ : Degree of superheat K (℃ + 273)<br>※ The A in the pressure unit indicates absolute pressure. (Gauge pressure +101.325kPa)<br>※ The N in the flow rate unit means normal state. (at 0° C, 101.3kPaA) |
| Gas | $\Delta P < 0.5P_1$ | $Cv=\frac{Q}{2.79}\sqrt{\frac{GT}{\Delta P(P_1+P_2)}}$ | $Cv=\frac{Q}{274}\sqrt{\frac{GT}{\Delta P(P_1+P_2)}}$ | |
| | $\Delta P \geqq 0.5P_1$ | $Cv=\frac{Q\sqrt{GT}}{2.41P_1}$ | $Cv=\frac{Q\sqrt{GT}}{237P_1}$ | |
| Steam | $\Delta P < 0.5P_1$ | $Cv=\frac{Q(1+0.0013T_{SH})}{0.138\sqrt{\Delta P(P_1+P_2)}}$ | $Cv=\frac{Q(1+0.0013T_{SH})}{13.5\sqrt{\Delta P(P_1+P_2)}}$ | |
| | $\Delta P \geqq 0.5P_1$ | $Cv=\frac{Q(1+0.0013T_{SH})}{0.12P_1}$ | $Cv=\frac{Q(1+0.0013T_{SH})}{11.7P_1}$ | |

## Pressure loss table (Pure water)




## Correction of viscous fluid

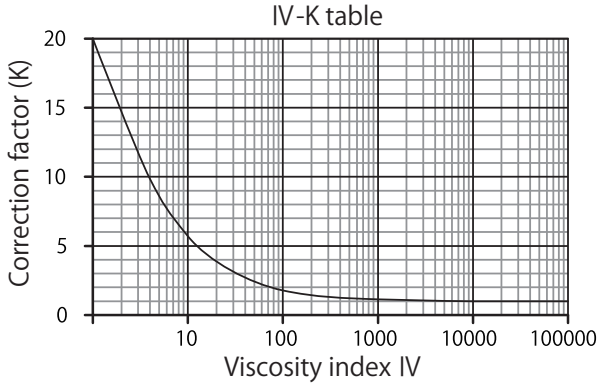
Calculation of viscosity correction is necessary when the fluid is liquid and the kinematic viscosity is greater than 100cP.

Viscosity corrected Cv value = Cv value × K (correction factor)

The correction factor K is obtained from the viscosity index IV according to the following equation, from the IV-K table on the right.

$$IV=76000\frac{Q}{\nu\sqrt{Cv}}$$

Q = Flow rate [ m³/h ]
$\nu$ = Kinematic viscosity [ mm²/s (cSt) ]
Cv = Cv value before viscosity correction



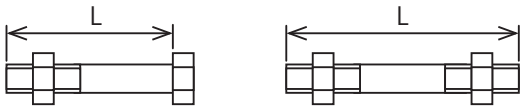

## Conversion formula of viscosity

SI unit
Kinematic viscosity [ mm²/s ]
= 1000 × [ Viscosity (mPa·s) ÷ Density (kgf/m³) ]

Conventional unit
Kinematic viscosity [ cSt ]
= 1000 × [ Viscosity (cP) ÷ Density (kgf/m³) ]

| Viscosity | | Kinematic viscosity | |
|---|---|---|---|
| Pa·s<br>N·s/m²<br>kg/(m·s) | cP<br>mPa·s | m²/s | St<br>cm²/s |
| 1<br>0.1<br>0.001 | 1000<br>100<br>1 | 1<br>$10^{-4}$ | $10^4$<br>1 |

# Technical data




## Piping bolt dimensions of wafer type valve

| DN (A) | JIS 5 K | | | | | | | | JIS 10 K | | | | | | | | | JIS 20 K | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Nominal designation of thread | qty | Hexagon head bolt L (mm) | | | Double-end stud L (mm) | | | Nominal designation of thread | qty | Hexagon head bolt L (mm) | | | | Double-end stud L (mm) | | | | Nominal designation of thread | qty | Hexagon head bolt L(mm) | Double end stud L(mm) |
| | | | FZ DN | FN | WT | FZ DN | FN | WT | | | FE FZ DN | F FN | FP | BS GS | FE FZ DN | F FN | FP | BS GS | | | GS | GS |
| 015 | — | — | — | — | — | — | — | — | M12 | 4 | — | — | — | 90 | — | — | — | 100 | M12 | 4 | 90 | 100 |
| 020 | — | — | — | — | — | — | — | — | M12 | 4 | — | — | — | 100 | — | — | — | 110 | M12 | 4 | 110 | 120 |
| 025 | — | — | — | — | — | — | — | — | M16 | 4 | — | — | — | 120 | — | — | — | 135 | M16 | 4 | 120 | 140 |
| 032 | — | — | — | — | — | — | — | — | M16 | 4 | — | — | — | 130 | — | — | — | 150 | M16 | 4 | 140 | 160 |
| 040 | M12 | 4 | 80 | — | 90 | 90 | — | 100 | M16 | 4 | 90 | — | 100 | 140 | 105 | — | 120 | 160 | M16 | 4 | 150 | 170 |
| 050 | M12 | 4 | 90 | 95 | 90 | 105 | 110 | 100 | M16 | 4 | 100 | 100 | 110 | 160 | 115 | 115 | 130 | 180 | M16 | 8 | 160 | 180 |
| 065 | M12 | 4 | 95 | 100 | 90 | 105 | 115 | 100 | M16 | 4 | 105 | 105 | 120 | 180 | 120 | 120 | 140 | 200 | M16 | 8 | 185 | 200 |
| 080 | M16 | 4 | 100 | 110 | 110 | 115 | 120 | 125 | M16 | 8 | 110 | 110 | 120 | 200 | 120 | 120 | 140 | 210 | M20 | 8 | 210 | 230 |
| 100 | M16 | 8 | 110 | 110 | 110 | 125 | 130 | 130 | M16 | 8 | 110 | 110 | 140 | 220 | 130 | 130 | 150 | 230 | M20 | 8 | 230 | 250 |
| 125 | M16 | 8 | 110 | 120 | 110 | 130 | 140 | 130 | M20 | 8 | 120 | 120 | 150 | 250 | 145 | 145 | 170 | 270 | M22 | 8 | 270 | 290 |
| 150 | M16 | 8 | 120 | 125 | 120 | 130 | 140 | 140 | M20 | 8 | 130 | 130 | 160 | 300 | 150 | 150 | 180 | 320 | M22 | 12 | 310 | 330 |
| 200 | M20 | 8 | 130 | 140 | 125 | 150 | 160 | 145 | M20 | 12 | 130 | 140 | 180 | — | 155 | 155 | 200 | — | — | — | — | — |
| 250 | M20 | 12 | 140 | — | 130 | 160 | — | 150 | M22 | 12 | 150 | 145 | 210 | — | 170 | 170 | 230 | — | — | — | — | — |
| 300 | M20 | 12 | 150 | — | 135 | 170 | — | 160 | M22 | 16 | 160 | 160 | 230 | — | 180 | 180 | 250 | — | — | — | — | — |
| 350 | M22 | 12 | — | — | 155 | — | — | 180 | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 400 | M22 | 16 | — | — | 155 | — | — | 180 | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

- The above dimensions are for steel flanges.
- When using a plastic flange with FP type, use a spring washer and a flat washer together.
- Do not use piping gaskets for the FE / FZ / F / FN / FP type.
- The bolt length for DN / WT / BS / GS type is the dimension when using a 3 mm thick gasket.
- It is recommended to use a spring washer when used in a heat cycle environment. In that case, increase the bolt length by the thickness of the spring washer.

## Flow unit conversion formula

Conversion formula to [$m^3/h$] or [$Nm^3/h$]

| | $m^3/h$ | Gas $Nm^3/h$ (at0℃ 101.3kPaA) |
|---|---|---|
| $m^3/h$ | — | ×Ⓐ |
| Gas $m^3/h$ (at15℃ 101.3kPaA) | ×Ⓑ | ×273÷288 |
| kg/h | ÷SG×0.001 | ×22.4÷MW |
| kℓ/h | | ×Ⓐ |
| t/h | ÷SG | ×1000×22.4÷MW |
| ℓ/h | ×0.001 | ×0.001×Ⓐ |
| ℓ/min | ×0.001×60 | ×0.001×60×Ⓐ |
| t/min | ÷SG×60 | ×60×1000×22.4÷MW |
| $Nm^3/h$ (at0℃ 101.3kPaA) | $\times T_1 \times 1.033 \div (P_1 \times 273)$ | — |

Ⓐ = $P_1 \times 273 \div (1.033 \times T_1)$
Ⓑ = $1.033 \times T_1 \div (P_1 \times 288)$
$P_1$ = Primary absolute pressure (MPaA × 9.806)
$T_1$ = Primary fluid temperature(K)
SG = Specific gravity
MW = Molecular weight

## Pressure units conversion formula

Conversion formula to [kPa]

| | kPa |
|---|---|
| Pa | ×0.001 |
| MPa | ×1000 |
| $kgf/cm^2$ | ×10×9.80665 |
| $mH_2O$ | ×9.80665 |
| $cmH_2O$ | ×0.01×9.80665 |
| $mmH_2O$ | ×0.001×9.80665 |
| (psi) $lbf/in^2$ | ×6.894757 |

## Temperature unit conversion formula

$℃ = {}^5/_9 (°F - 32)$ $K = ℃ + 273.16$

## Specific gravity unit conversion formula

| Pa | Environmental conditions | Specific gravity |
|---|---|---|
| $kg/Nm^3$ | 0℃ 101.3 kPaA | ÷1.293 |
| $kg/m^3$ | 15℃ 101.3 kPaA | ÷1.225 |

## MEMO

# Inquiry form

We are waiting for your information for select the best automatic valve.
Make a copy of this form, fill out the necessary items, and FAX it to the sales department.
Select the most suitable automatic valve and contact from the person in charge.

NIPPON VALVE CONTROLS, INC. Sales division FAX . 81-52-582-6439

| | | | |
|---|---|---|---|
| Company's name | | | |
| Address | Zip : | | |
| TEL・FAX | TEL : | FAX : | |
| Name・Department | Name | Department | |
| Examination product | | Piping connection standard | DN (A) |
| Purpose of use | ON-OFF<br>Proportional control | | |
| Fluid specification | Fluid name | Fluid property, Specific gravity | |
| | Fluid temperature<br>min._____℃ normal_____℃ max._____℃ | Fluid pressure<br>normal_____MPa max._____MPa | |
| | Proportional control<br>Maximum required Cv value_____ Minimum required Cv value_____ | | |
| | Data for calculating Cv value<br>Maximum flow rate_____ Primary pressure_____MPa Secondary pressure_____MPa<br>Minimum flow rate _____ Primary pressure_____MPa Secondary pressure_____MPa | | |
| Service conditions | Environment temperature<br>min._____℃ normal_____℃ max._____℃ | Installation environment<br>Outdoor<br>Indoor | |
| Actuator specification | Power supply<br>_____V AC DC | Operation time<br>_____sec. | Control method |
| Required quantity | Quantity to use this time<br>_____qty | Quantity to use in year<br>_____qty / year | |
| Preferred transaction method | | | |
| Other requests | | | |

# MEMO

## ■Inquiries

Detailed product specifications and instruction manuals are available for each series. Please contact us as necessary.

Please contact your local representative or our sales department for model selection, delivery confirmation, and quotation.

## ■Warranty

The warranty period is one year from the start of use, and if the start of use is unknown, it will be two years after delivery.

Our products are inspected and shipped under our strict quality control.

If the product breaks down due to material or manufacturing problems even though it has been used correctly in accordance with the specifications, instruction manual, and precautions, the product / part will be repaired or replaced free or charge.

However, peripheral equipment damage and replacement work costs due to product failure are not covered by the warranty.

Repairs and repairs of faults and damages caused by the following items will be charged. Replacement of consumables is charged.

○Damage due to dropping or excessive external force.

○Failure due to incorrect use or use exceeding the product specifications.

○Damage or failure due to fire, earthquake, storm, flood, lightning or other natural disasters.

○Salt damage, gas damage, use in corrosive environment, malfunction due to abnormal voltage.

○Problems that occur due to aging (rusting, fading, chemical changes).

## ■About product specifications

The specifications and contents of the products listed in this catalog are subject to change without notice.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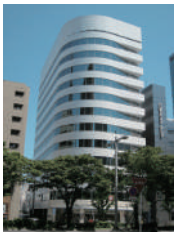

Head office

Mizunami factory