

Product Warranty

Within eighteen months of completion inspection or within twelve months of the start of usage, whichever is shortest, Hitachi Valve will repair or replace products or the faulty components of products free of charge in the event of failure under normal usage attributable to inadequate design or manufacturing on the part of Hitachi Valve.

However, repairs or replacements will be charged in any of the following cases. Also note that if a separate agreement is in effect, that agreement shall take precedence.

- (1)When the product has been used in an incorrect manner which deviates from the catalog or instruction manual;
- (2)When the product failure is due to careless handling such as jamming with foreign substances or the sticking of excessive water stains;
- (3)When the product has been disassembled, repaired or altered by a third party other than Hitachi Valve;
- (4)When the product has been subject to causes beyond the control of Hitachi Valve including natural disasters such as wind or flood damage, earthquakes and electrical storms, fire, pollution (special environments), salt damage, war or acts of terror;
- (5)When a failure is due to any other factor not deemed to be the responsibility of Hitachi Valve.



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GOURD BRAND Malleable/Ductile Iron Valves

FCMB-S35 Malleable iron casting
FCD-S Ductile iron casting

 **Hitachi Metals, Ltd.**

Malleable/Ductile Iron Valve Features

The history of Malleable Iron valves dates back more than half a century.

The history of Malleable Iron valves began in 1942. The first Malleable Iron valve was the so-called "land fuel model" developed in response to a request from the army arsenal at the time to develop valves using Malleable Iron that was proved to be successful with screwed-in malleable cast iron pipe fittings.

Manufacturing of this valve came to a stop with the end of the war, but we first started to produce and sell bronze valves, partly to learn valve technology. Based on our experience of using the land fuel valve, we applied hard facing to sheets, improved valve functions, and started to develop VA proposals for cast iron valves in the 1.96 MPa medium pressure range in 1956. By the time we launched the products in 1958, we had already built an acclaimed track record for 1.96 MPa steam or heat lines and other cast iron valves. Since then, we have responded to the demands of users and expanded our product line to 10K valves and general purpose valves.

A strong valve that uses Malleable Iron for the main body, and stainless steel for the main parts

The main body, i.e. the valve body, and the bonnet are mainly made with tensile iron castings such as Malleable Iron castings and ductile iron castings. Main parts such as the valve disc and the stem are mostly made with 13Cr stainless steel with excellent resistance to abrasion and corrosion.

A valve with a wide-ranging track record for steam, LP gas etc.

With regard to general-purpose items, Malleable Iron valves are reliable, compliant with the JV standard, and widely used from JIS compatible general-purpose products to 20K valves. (Please refer to pages 4 and 5.)



The Gourd mark casted stands for the ideal cast metal that is "more tensile, smoother, and more beautifully curved." Highly acclaimed and widely known as "Gourd Brand," the Gourd mark is a familiar brand overseas and in Japan, in fields ranging from industry to daily life.

Malleable Iron

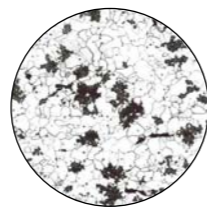
Malleable Iron is a registered trademark relating to tensile iron castings such as blackheart malleable cast iron (JIS G 5702), malleable iron castings for pressure vessels, and ductile iron castings (JIS B8270-1993 Annex 5).

Malleable Iron materials

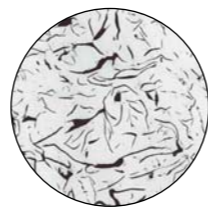
Malleable Iron is ferrite (pure iron), but since the carbon agglomerates into clumps or spheroids as indicated in the photograph, it is strong and does not have the notch effect of gray cast iron. Rather, it has a strength that is close to cast steel. The photo at top left shows the microstructure for malleable iron, the one on bottom left for ductile iron. The black clumps are annealed carbon and the white area indicates the ferrite structure.

Free carbon is present in the structure of gray cast iron shown at top right, and the shape of the carbon is thin and broad. Since the tips are also pointed, they cause a notch effect and lower the mechanical properties.

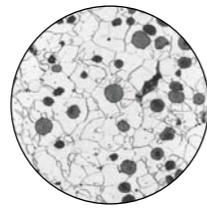
Even though the quality of material for malleable iron is the same cast iron, it is clear that it has excellent properties.



Malleable iron microstructure



Gray cast iron microstructure



Ductile iron microstructure

Malleable Iron features suited to valves

The ratio of yield point to tensile strength is high, and the material is not easily deformed.

As indicated by Fig. 1 and Fig. 2 below, the ratio of yield point to tensile strength for Malleable Iron is extremely high. The yield point indicates the point where the material is permanently deformed, so for valve materials it is more important feature than tensile strength. One reason for the excellence of Malleable Iron as a material for valves is that the ratio of yield point to tensile strength is higher than other materials. Even if it doesn't break, if a valve is permanently deformed causing, for example, seat leakage, it no longer serves its purpose.

Stable mechanical properties in regard to temperature change

Valves are installed in places where temperatures fluctuate widely and require materials with mechanical properties that remain stable when the temperatures change. On this point as well, Malleable Iron is an appropriate material for valves.

As indicated in Fig. 1 to 4 below, even with temperatures ranging widely from -30°C to 350°C, Malleable Iron is strong enough to vary little from normal temperature.

Bronze, on the other hand, stretches and loses its tensile strength and shock resistance when temperatures rise above the 200°C limit, while sudden low-temperature brittleness is apparent in cast copper from around room temperatures. The disadvantages of gray cast iron are low tensile strength, extreme susceptibility to impacts, and it becomes brittle at high temperatures due to volume expansion, or the so-called growth of cast iron.

Creep properties are important for materials used at high temperatures. The creep range for Malleable Iron is 380°C and up.

Outstanding castability and machinability

The castability and machinability of Malleable Iron are far better than those of cast steel. Since valves have complicated shapes, these properties are important for mass production, which is why the shape of Gourd marked Malleable Iron valves is more refined and precise.

Fig. 1 Temperature characteristics for tensile strength

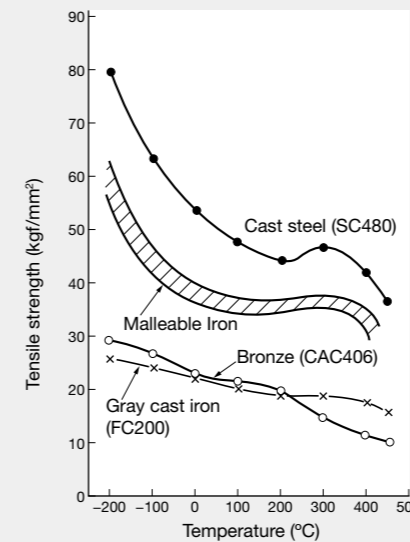


Fig. 2 Temperature characteristics for yield points

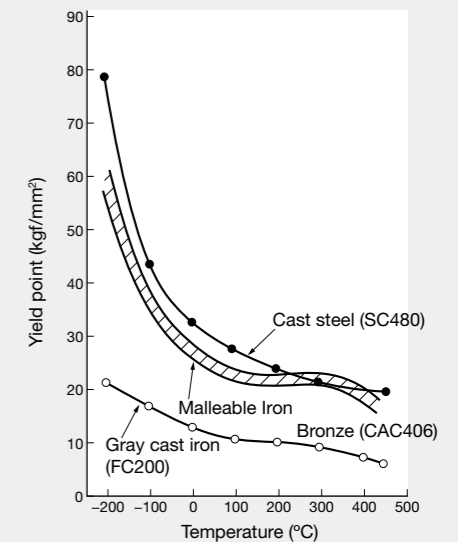


Fig. 3 Temperature characteristics for elongation

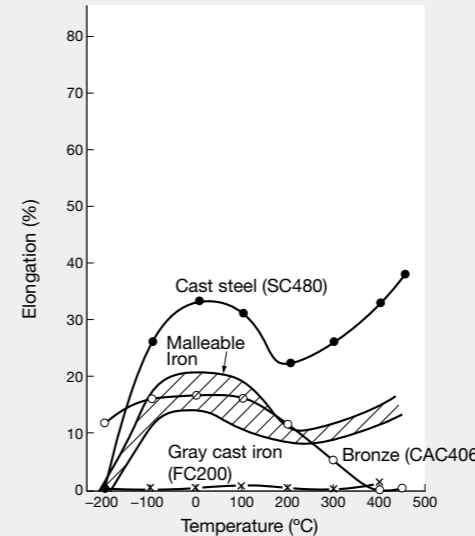
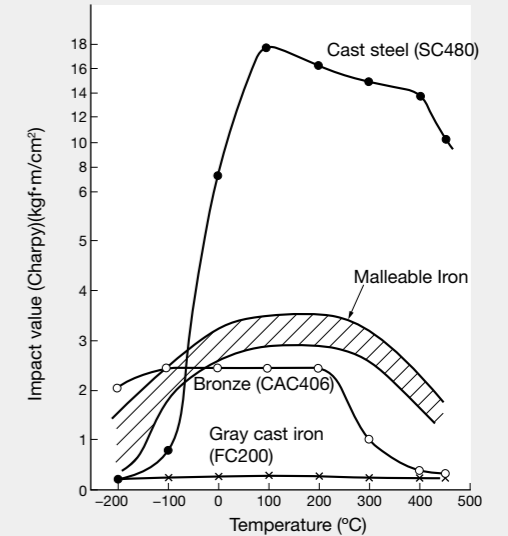


Fig. 4 Temperature characteristics for impact



Applications

| Fluid Type | Primary Fluid/Steam |
|--------------|---|
| Steam | Steam |
| Oil | Heavy Oil, Cutting oil, Lubricant. |
| Gas | Compressed air, City gas, LPG, Inert gas. |
| Water supply | Sewage Water, Drainage, Hot water, Industrial water, Potable water, Drinking water. |
| Other | Coagulant, Condensate, Other |

△Please consult us when it is used for various fluids other than the above.



Mixed solvent unit



Cooling water supply unit



Gas recovery unit



Solvent recovery unit



Plant cold water unit



Drain transfer unit

Malleable Iron material quality and valve standards

| | | |
|---|--|-------------------------------|
| | JIS B 2051 Malleable iron 10K screwed valves | FCMB340 |
| 1 | JVMA Standards (*1) JV4-2 (MD small valve) JV4-3 (MD valve) | FCMB340 or FCD400 As above |
| 2 | JVMA Standards JV4-4 (MDS small valve) JV4-5 (MDS valve) High Pressure Gas Safety Act applies | FCMB-S35 or FCD-S |

| | | JIS code | ASTM code |
|----------------------------|------------------------------------|----------------|---------------------|
| 1) Bronze castings | | CAC406 (BC6) | C83600 (B62) |
| 2) Gray cast iron castings | | FC200 | A126-B |
| 3) Tensile iron castings | Blackheart malleable iron castings | FCMB340 | A47-32510 |
| | Malleable iron castings | FCMB-S35 | A338 (Same as A47) |
| | Spheroidal graphite iron castings | FCD400 | A536-60-40-18 |
| | Ductile iron castings | FCD-S | A395 |
| 4) Cast steel products | Carbon steel | SCPH2, SCPL1 | A216-WCB, A352-LCB |
| | Stainless steel | SCS13A, SCS14A | A351-CF8, A351-CF8M |
| 5) Steel forgings | Carbon steel | SFVC2A | A105 |
| | Stainless steel | SUSF304 | A182-F304 |
| 6) Resin products | Polyethylene | | |
| | Vinyl chloride | | |

Note: *1 JVMA mean it as Japan Valve Manufacturers' Association.

Chemical components and mechanical properties of malleable iron castings (FCMB-S35) and ductile iron castings (FCD-S)

Chemical analysis

| | Carbon | Silicon | Phosphorus | Remarks |
|------------------------------------|---------------|---------------|---------------|--|
| Ductile iron castings (FCD-S) | 3.00% or more | 2.50% or less | 0.08% or less | However, with silicon in the 2.75% range, it is possible to increase silicon by 0.08% for every 0.01% reduction in phosphorus. |
| Malleable iron castings (FCMB-S35) | — | — | — | No specification |

Mechanical properties

| | Tensile strength | 0.2% proof stress | Elongation rate | Brinell hardness | Charpy absorbed energy value ⁽¹⁾ |
|------------------------------------|------------------------------|------------------------------|-----------------|------------------------------|--|
| Ductile iron castings (FCD-S) | 412N/mm ² or more | 275N/mm ² or more | 18% or more | More than 143, less than 187 | Average value for the three is 15J or more Minimum value is 13J or less |
| Malleable iron castings (FCMB-S35) | 340N/mm ² or more | 205N/mm ² or more | 10% or more | No specification | Same as above |

1) The Charpy test specimen is 10 mm × 10 mm with a 2 mm notch. The test temperature is 23°C ±5°C. However, in case of use at cold temperatures below -10°C, the test temperature is below the minimum temperature.

2) The legal usage limits are the same as for malleable iron castings (FCMB-S35) and ductile iron castings (FCD-S) indicated in the Hitachi Malleable valve catalog.

Graphite packing and gaskets

Valves are used for all types of plant piping and they normally serve to stop the flow of liquids. They are used within a set range of pressures and temperatures, and how they perform in terms of internal and external leakage is important. For external leaks, in particular, management standards are becoming stricter, and gland packing and gaskets are required to be maintenance-free with no leakage for reasons of safety, resource conservation and energy conservation.

For these reasons, and due to the recent requirement not to use asbestos, Hitachi Valve has adopted packing and gaskets made with Graphite.

The stable sealing performance of Graphite gaskets punched and manufactured to specific dimensions and shapes, and molded packing compressed and formed in molds means that the material is increasingly used as an alternative for asbestos.

We are convinced that you will be satisfied with Hitachi malleable valves made with Graphite packing and gaskets.

A flexible material with excellent resistance to heat, cold and chemicals, Graphite is made by causing the expansion of natural graphite particles instantaneously at high temperatures (it is also referred to as expanded graphite) and forming the particles into compressed sheets to the specified density and dimension.

The material can be used at temperatures ranging from -200°C to 400°C and even at a pressure of 20 MPa. The material is made from graphite and can be used with most chemicals, but since the oxygen contained in the air causes it to oxidize at high temperatures, the operating temperature in air is set to below 400°C. As indicated below, heat loss and stress relaxation performance is excellent.

Compression rate ASTM F36/A 40-55%

Decompression rate ASTM F36/A 10-15%



GENERAL TYPE VALVE

ECONOMICAL TYPE

| NOMINAL PRESSURE | | CODE |
|------------------|------------------|------|
| GENERAL TYPE | | 10K |
| 10K | CHECK VALVE | 10 |
| | SWING IN-LINE | - |
| END CONNECTION | | CODE |
| SCREWED | | S |
| FLANGED | | F |
| VALVE TYPE | SEATING MATERIAL | CODE |
| GLOBE VALVE | 13Cr.S.S. | G |
| | Reinforced PTFE | D |
| | PTFE | DG |
| GATE VALVE | 13Cr.S.S. | S |
| | 13Cr.S.S. | C |
| CHECK VALVE | LIFT | CD |
| | Reinforced PTFE | CR |
| | NBR | CR |
| | SWING | CS |
| IN-LINE | FPM | CI |
| | STRAINER | T |

STANDARD TYPE

| NOMINAL PRESSURE | | CODE |
|------------------|-------------------------------|------------------|
| JIS 10K | | 10K |
| JIS 20K | | 20K |
| ASME 150lb | | 150 |
| ASME 300lb | | 300 |
| END CONNECTION | | CODE |
| SCREWED | | S |
| FLANGED | | F |
| VALVE TYPE | SEATING MATERIAL | CODE |
| GLOBE VALVE | METAL SEAT | G |
| | Reinforced PTFE | D |
| | PTFE (FOR LPG) | DL |
| | NEEDLE | N |
| | Y-GLOBE VALVE | GY |
| | ANGLE VALVE | A |
| GATE VALVE | 13Cr.S.S. | S |
| | HEATING MEDIUM TYPE | SH |
| CHECK VALVE | LIFT | C |
| | METAL SEAT | CD |
| | PTFE | CD |
| | NBR | CR |
| SWING | METAL SEAT | CS |
| | PTFE | CSD |
| | STRAIGHT | GC |
| SCREW DOWN | ANGLE | AC |
| | FOR GENERAL APPLICATION | T |
| STRAINER | EXCLUSIVE APPLICATION FOR LPG | TLM |
| | | |
| TYPE OF BONNET | | CODE |
| GLOBE VALVE | INSIDE SCREW | UNION BONNET |
| | | BOLTED BONNET |
| | OUTSIDE SCREW | UNION |
| | | BOLTED BONNET |
| GATE VALVE | | BELLOWS BUILT-IN |
| | | |
| GATE VALVE | INSIDE | - |
| | OUTSIDE | O |

HM 10K S G 3/4B
PRODUCTION SIZE

M 10K F G O 50A
PRODUCTION SIZE

BALL VALVE

ECONOMICAL TYPE (MINI-BALL)

| VALVE SPECIFICATION/CONNECTION | | CODE |
|--------------------------------|--------------|------|
| ECONOMICAL | | B |
| FOR LPG | SCREW | L |
| | SINGLE UNION | U |
| CITY GAS | | G |
| HANDLE TYPE | | CODE |
| STANDARD LEVER | | - |
| T-LEVER | | T |
| COCK HANDLE | | C |
| WITH MULTI-LOCK FUNCTION | | R |
| BORE DIAMETER | | CODE |
| FULL BORE | | 0 |
| REDUCED | ONE SIZE | 1 |
| | TWO SIZE | 2 |
| SPECIAL SPECIFICATION | | CODE |
| STANDARD | | - |
| WITH FLOW CONTROL FUNCTION | | S |
| STAINLESS STEEL BALL/STEM | | U |

STANDARD TYPE

| NOMINAL PRESSURE | | CODE |
|-------------------------------------|---|------|
| 10K | MALLEABLE | 10K |
| | STANDARD | 20K |
| 20K | *HIGH PRESSURE GAS FACILITY TEST PRODUCTS | 20 |
| | SHORT END-TO-END DIMENSION | |
| | MALLEABLE | 150 |
| 150lb | MALLEABLE | 150 |
| END CONNECTION | | CODE |
| SCREWED | | S |
| FLANGED | | F |
| BORE DIAMETER | | CODE |
| FULL-BORE | | 0 |
| FULL-BORE (WITH FIRE SAFE FUNCTION) | | 1 |
| REDUCED BORE | | 2 |
| STRAINER BUILT-IN | | - |
| VALVE SPECIFICATION | | CODE |
| FOR GENERAL APPLICATION | | B |
| FOR GAS | GENERAL PIPING | L |
| | SHORT END-TO-END DIMENSION | LS |
| | BURIED PIPING | G |
| STRAINER BUILT-IN | | T |

MB 2 3/4B
PRODUCTION SIZE

BM 10K F O B 50A
PRODUCTION SIZE

1) Body & Bonnet

| Abbreviation | Description | JIS | ASTM (Reference only) |
|---------------------------|---|---------------------------------|-----------------------|
| FCMB-S35 | Black heart malleable iron castings (Impact test applied) | B8270 (1993) FCMB-S35 | A338 |
| FCMB340 | Black heart malleable iron castings | G5702 FCMB340 | A47-32510 |
| FCMB270 (Cap of Strainer) | Black heart malleable iron castings | G5702 FCMB270 (Cap of Strainer) | |
| FCD-S | Spheroidal graphite (Ductile) iron castings (Impact test applied) | B8270 (1993) FCD-S | A395 |
| SUS403 | 13Cr-low Si stainless steel plate, sheet and strip | G4304 SUS403 | A240-S30400 |
| SS400 | Rolled steels for general structure | G3101 SS400 | A36 |
| S25C | Carbon steels for machine structural use | G4051 S25C | - |
| S45C | Carbon steels for machine structural use | G4051 S25C | - |

2) Stem

| Abbreviation | Description | JIS | ASTM (Reference only) |
|--------------|---------------------------------------|--------------|-----------------------|
| SUS403 | 13Cr-low Si stainless steel bars | G4303 SUS403 | A276-S403000 |
| C3604 | Copper and copper alloy rods and bars | H3250 C3604 | B16-C36000 |

3) Disc

| Abbreviation | Description | JIS | ASTM (Reference only) |
|--------------------|---|-------------------------------------|--|
| SUS403 | 13Cr-low Si stainless steel | G4304, G4305 SUS403 G4303 SUS403 | A240-S30400(Plate, sheet and strip) A276-S40300(Bar) |
| SUS403+Hard Facing | 13Cr-low Si stainless steel, hard facing | | |
| SUS304+Hard Facing | 18Cr-8Ni stainless steel, hard facing | | |
| SCS1 | 13Cr. stainless steel castings | G5121 SCS1 | A743-CA15 |
| S28C+13Cr. | Carbon steels for machine structural use, 13%Cr.stainless steel depositing | S28C+13Cr | - |
| S28C+Hard Facing | Carbon steels for machine structural use, hard facing | S28C+Hard Facing | - |
| S25C+Hard Facing | Carbon steels for machine structural use, hard facing | S25C+Hard Facing | - |
| SCPH2+13Cr | Steel casting for high temperature and high pressure service use, 13%Cr. stainless steel depositing | | A216-WCB |
| SCPH2+Hard Facing | Carbon steels for machine structural use, hard facing | G5151 SCPH2+Z3221 D410 | |
| CAC406 | Copper and copper alloy castings (BC6) | SCPH2+Hard Facing H5120 CAC406 | B271-C83600(centrifugal casting) B584-C83600(sand mold casting) |

4) Ball

| Abbreviation | Description | JIS | ASTM (Reference only) |
|--------------|--|-------------------|-----------------------|
| SUS316 | 18Cr-12Ni-2.5Mo stainless steel bars | G4303 SUS316 | A276-S31600 |
| SUS304 | 18Cr-8Ni stainless steel bars | G4303 SUS304 | A276-S30400 |
| SCS13A | 18Cr-8Ni below 1.5Mn stainless steel castings | G5121 SCS13A | A351-CF8 |
| SCS13 | 18Cr-8Ni below 2.0Mn stainless steel castings | G5121 SCS13 | - |
| | 18Cr-8Ni stainless steel castings | | |
| C3604+Ni-Cr | Copper and copper alloy rods and bars, Ni-Cr plating | H3250 C3604+Ni-Cr | B16-C36000 |

5) Disc Sert / Seat Ring

| Abbreviation | Description | JIS | ASTM (Reference only) |
|-----------------------------|--|-----------------------------|-----------------------|
| PTFE reinforced with filler | Polytetrafluoroethylene, reinforced with filler | PTFE reinforced with filler | |
| PTFE | Polytetrafluoroethylene | PTFE | |
| FPM | Fluorine-contained rubber | FPM | |
| NBR | Acrylonitrile-Butadiene rubber | NBR | |
| FT-seat | Perfluoroalkoxy Alkane (PFA) +Polytetrafluoroethylene (PTFE) | FT-seat | |

6) Body Seat Ring

| Abbreviation | Description | JIS | ASTM (Reference only) |
|--------------------|---|-------------------------|-----------------------|
| SUS403 | 13Cr-Low Si stainless steel bars | G4303 SUS403 | A276-S40300 |
| SUS403+Hard Facing | 13Cr-Low Si stainless steel, +hard facing | G4303 SUS403 | |
| S28C+Hard Facing | Carbon steel + hard facing | G4051S28C + Hard Facing | - |

Materials of Main Parts

7) Handwheel / Handle Boss / Lever Handle

| Abbreviation | Description | JIS | ASTM (Reference only) |
|--------------------|---|------------------------------|-----------------------|
| FCMB340 | Black heart malleable iron castings | G5702 FCMB340 | A47-32510 |
| FCMB340+STPG | Black heart malleable iron castings + carbon steel pipes for pressure service | G5702 FCMB340 + G3454 STPG | A47-32510+A53 |
| FCD450 | Spheroidal graphite (Ductile) iron castings | G5502 FCD450 | - |
| SUS403 | 13Cr-Low Si stainless steel bars | G4304 SUS403 G4305 SUS403 | A240-S30400 |
| SUS430+PVC Coating | 18Cr. stainless steel sheet + PVC coating | G4305 SUS430 | |
| SS400 | Rolled steels for general structure | G3101 SS400 | A36 |
| ADC12 | Aluminium alloy die castings | H5302 ADC12 | - |
| ZDC2 | Zinc alloy die castings | H5301 ZDC2 | B86-AG40A |

8) Gasket

| Abbreviation | Description | JIS | ASTM (Reference only) |
|-----------------------------|--|-----------------------------|-----------------------|
| H1215 | Expanded graphite sheets are adhered to both sides of type 304 stainless steel sheet (0.2mm thick) | H1215 | |
| C1100P | Copper and copper alloy sheet, plates and strips | H3100 C1100P | B152-C11000 |
| PTFE reinforced with filler | PTFE reinforced with filler | PTFE reinforced with filler | |
| PTFE | Polytetrafluoroethylene | PTFE | |
| H1804GR | Spiral wound SUS304 hoops, expanded graphite tape filler, | H1804GR | |
| SUS304 | 18Cr-8Ni stainless steel bars | G4303 | A276-S30400 |
| H1215 | Grafoil Sheet on both side of plain SUS304 sheet | | |
| H1804GR | Spiral wound gasket filled pure graphite with SUS304 inner ring. | | |
| H1806GR | Spiral wound gasket filled pure graphite with SUS316 inner ring. | | |

9) Packing

| Abbreviation | Description |
|--------------|--|
| H2200 | Packing made from expanded graphite cut into strips and shaped into rings in a mold. |
| H350 | Expanded graphite strips reinforced with SUS304 stainless steel wire are braided. Round expanded graphite core, surface-treated with PTFE and pressed in a mold. |
| H2661-V | V Packing of NBR (NBR : Acrylonitrile-butadiene rubber) |
| H9077 | Non-asbestos packing made from carbon fiber impregnated with PTFE |
| PTFE | Polytetrafluoroethylene |

10) Bellows

| Abbreviation | Description | JIS | ASTM (Reference only) |
|--------------|---------------------------------------|---------|-----------------------|
| SUS316L | 18Cr-12Ni-2.5Mo-Low C stainless steel | SUS316L | |

11) Screen

| Abbreviation | Description | JIS | ASTM (Reference only) |
|-------------------------|--|-------------------------------------|-----------------------|
| SUS304/20,40,50,150mesh | 18Cr-8Ni stainless steel wires, 20, 40, 50, 150 mesh | G4309 SUS304 / 20, 40, 50, 150 Mesh | A313-S30400 |
| SUS304/Punched metal | 18Cr-8Ni stainless steel sheet | SUS304 / Punched metal | |

12) Overlaying surface of body seat and disc seat

| Abbreviation | Description | JIS | ASTM (Reference only) |
|--------------|--|--------------|-----------------------|
| HF | Hard facing (Co.Cr-W Alloy depositing) | Z3251 DCoCrA | A5.13 DCoCr-A |
| 13Cr | 13Cr stainless steel depositing | Z3221 D410 | A5.9 ER410 |

General-purpose

Features

1. This is the economical Malleable/Ductile iron valve. A ready substitute for bronze valves installed with steam piping. A tensile valve.
2. The main parts are mostly stainless steel, which is far more resistant to abrasion than bronze valves.
3. Perfect for iron pipes and resistant to corrosion because of the contact potential difference.

Product Types

Globe, Gate, Check, Strainer and Mini ball valves

△Caution: Oil specification

1. Can be used with: Heavy oil (A, B, C), lubricant oil, turbine oil (#90 and up), coal tar, pitch
2. Not recommended for use with: Crude oil, naphthalene, gasoline, heating oil (kerosene), light oil, turbine oil (#80 and down), heat transfer oil

Fluid • Temperature • Pressure

Unit: MPa

| Maximum working pressure by product type MPa | Service temperature limit by fluid used (°C) | Steady water flow | | | Steam, air, gas, oil, pulsating water | | | | | LPG | | City gas |
|--|--|-------------------|------|------|---------------------------------------|------------|-----|--------------|------|------|------|----------|
| | | 50 | 80 | 120 | 80 | 120 | 160 | 183 | 220 | 80 | 120 | 120 |
| Globe | Standard | | | 1.37 | | | | | 0.98 | | | |
| | Reinforced PTFE disc | | | 1.37 | | | | 0.98 | | | | |
| | For LPG | | | | | | | | 0.98 | | 0.19 | |
| Check | Gate/Strainer | | | 1.37 | | | | | 0.98 | | | |
| | Reinforced PTFE disc | | | 1.37 | | | | | 0.98 | | | |
| | NBR disc | | 1.37 | | 0.98 | | | | | | | |
| Mini ball | Inline | | | 1.37 | | | | | 0.98 | | | |
| | 600 model | 4.11 | | | 0.98 (air) | 1.96 (oil) | | 0.98 (steam) | | | | |
| | 400 model | 2.74 | | | 0.98 (air) | 1.96 (oil) | | 0.98 (steam) | | | | |
| | For LPG | | | | | | | | | 0.19 | | |
| | For city gas | | | | | | | | | | | 0.098 |

Test Pressure

Unit: MPa

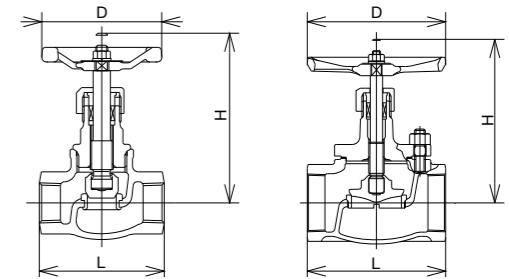
| Model | Test description | Valve body pressure resistance | | Valve seat leakage | |
|---------------------------|-------------------|--------------------------------|--------------|--------------------|--------------|
| | | Water pressure | Air pressure | Water pressure | Air pressure |
| Globe, Gate, check valves | | 2.06 | | 1.51 | |
| Globe valve for LPG | | 0.78 | | | 0.29 |
| Strainer | | 2.06 | | | |
| Mini ball | MB2-MBT2-UB2-UBT2 | 6.18 | | | 0.59 |
| | MB1-MBT1 | 4.12 | | | 0.59 |
| | ML1-MLC1 | | 0.29 | | 0.29 |
| | MG1-MGC1-MGR0 | | 0.15 | | 0.15 |

Product Code HM10KSG

General-purpose 10K

Globe Screwed

| Product Name | Material | Remarks |
|---------------|----------|-------------------------------------|
| Body | FCMB-S35 | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc | SUS403 | |
| Seat ring | SUS403 | |
| Handwheel | FCMB340 | Color: Red / Nominal diameter: ¼-2B |
| | Gasket | Color: Red/Nominal diameter: 2½, 3B |
| Gasket | H1215 | Nominal diameter: 2½, 3B |
| Gland Packing | H2200 | |



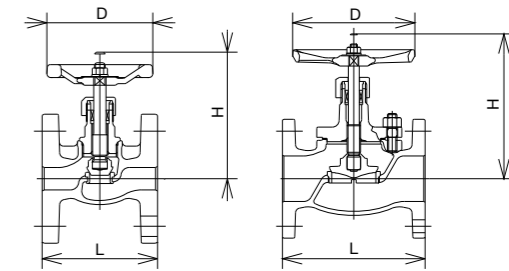
| Nominal diameter (B) | 1/4 | 3/8 | 1/2 | 3/4 | 1 | 1¼ | 1½ | 2 | 2½ | 3 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| L | 50 | 55 | 65 | 80 | 90 | 105 | 120 | 140 | 180 | 200 |
| H | 90 | 90 | 92 | 106 | 128 | 145 | 156 | 183 | 225 | 260 |
| D | 70 | 70 | 70 | 80 | 90 | 100 | 120 | 140 | 180 | 180 |

Product Code HM10KFG

General-purpose 10K

Globe Flanged

| Product Name | Material | Remarks |
|---------------|----------|---------------------------------------|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc | SUS403 | |
| Seat ring | SUS403 | |
| Handwheel | FCMB340 | Color: Red / Nominal diameter: 10-50A |
| | FCD450 | Color: Red / Nominal diameter: 65-80A |
| Gasket | H1215 | Nominal diameter: 65-80A |
| Gland Packing | H2200 | |



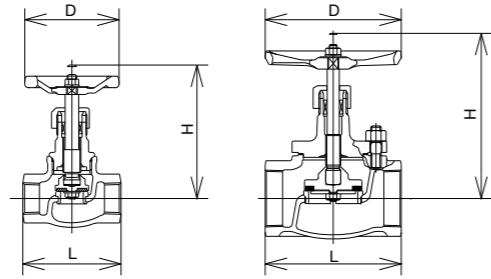
| Nominal diameter (A) | 10 | 15 | 20 | 25 | 32 | 40 | 50 | 65 | 80 |
|----------------------|----|----|----|-----|-----|-----|-----|-----|-----|
| L | 85 | 85 | 95 | 110 | 130 | 150 | 180 | 210 | 240 |
| H | 88 | 88 | 99 | 125 | 142 | 156 | 179 | 225 | 260 |
| D | 70 | 70 | 80 | 90 | 100 | 120 | 140 | 180 | 180 |

General-purpose

General-purpose
Globe

Product Code **HM10KSD** **General-purpose 10K** **Globe** **Screwed** **Reinforced PTFE disc**

| Product Name | Material | Remarks |
|---------------|-----------------|---|
| Body | FCMB-S35 | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc seat | Reinforced PTFE | |
| Disc | SUS403 | |
| Seat ring | SUS403 | |
| Handwheel | FCMB340 | Color: Orange / Nominal diameter: 1/4-2B |
| | FCD450 | Color: Orange / Nominal diameter: 2 1/2, 3B |
| Gasket | C1100P | Nominal diameter: 2 1/2, 2B |
| | H1215 | Nominal diameter: 2 1/2, 3B |
| Gland Packing | H2200 | |

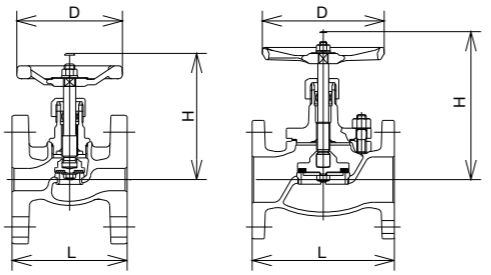


| Nominal diameter (B) | 1/4 | 3/8 | 1/2 | 3/4 | 1 | 1 1/4 | 1 1/2 | 2 | 2 1/2 | 3 |
|----------------------|-----|-----|-----|-----|-----|-------|-------|-----|-------|-----|
| L | 50 | 55 | 65 | 80 | 90 | 105 | 120 | 140 | 180 | 200 |
| H | 85 | 85 | 87 | 99 | 115 | 135 | 150 | 172 | 222 | 255 |
| D | 70 | 70 | 70 | 70 | 80 | 90 | 100 | 120 | 180 | 180 |

△Name plate: PTFE display

Product Code **HM10KFD** **General-purpose 10K** **Globe** **Flanged** **Reinforced PTFE disc**

| Product Name | Material | Remarks |
|---------------|-----------------|--|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc seat | Reinforced PTFE | |
| Disc | SUS403 | |
| Seat ring | SUS403 | |
| Handwheel | FCMB340 | Color: Orange / Nominal diameter: 10-50A |
| | FCD450 | Color: Orange / Nominal diameter: 65-80A |
| Gasket | C1100P | Nominal diameter: 40-50A |
| | H1215 | Nominal diameter: 65-80 |
| Gland Packing | H2200 | |

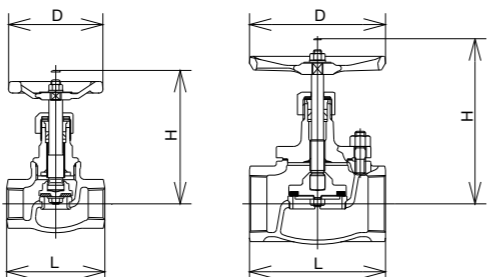


| Nominal diameter (A) | 10 | 15 | 20 | 25 | 32 | 40 | 50 | 65 | 80 |
|----------------------|----|----|----|-----|-----|-----|-----|-----|-----|
| L | 85 | 85 | 95 | 110 | 130 | 150 | 180 | 210 | 240 |
| H | 87 | 87 | 99 | 115 | 136 | 150 | 173 | 222 | 255 |
| D | 70 | 70 | 70 | 80 | 90 | 100 | 120 | 180 | 180 |

△Name plate: PTFE display

Product Code **HM10KSDG** **General-purpose 10K** **Globe** **PTFE disc for LPG**

| Product Name | Material | Remarks |
|---------------|----------|--|
| Body | FCMB-S35 | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc seat | PTFE | |
| Disc | SUS403 | |
| Seat ring | SUS403 | |
| Handwheel | FCMB340 | Color: Green / Nominal diameter: 1/4-2B |
| | FCD450 | Color: Green / Nominal diameter: 2 1/2, 3B |
| Gasket | C1100P | Nominal diameter: 1 1/2, 2B |
| | H1215 | Nominal diameter: 2 1/2, 3B |
| Gland Packing | PTFE | |

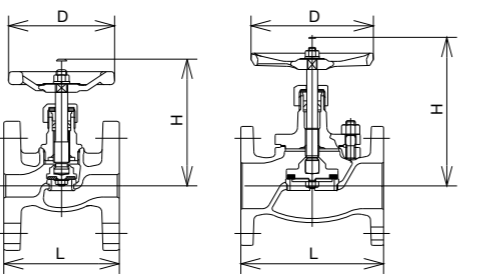


| Nominal diameter (B) | 1/4 | 3/8 | 1/2 | 3/4 | 1 | 1 1/4 | 1 1/2 | 2 | 2 1/2 | 3 |
|----------------------|-----|-----|-----|-----|-----|-------|-------|-----|-------|-----|
| L | 50 | 55 | 65 | 80 | 90 | 105 | 120 | 140 | 180 | 200 |
| H | 85 | 85 | 87 | 99 | 115 | 135 | 150 | 172 | 222 | 255 |
| D | 70 | 70 | 70 | 70 | 80 | 90 | 100 | 120 | 180 | 180 |

△Name plate: PTFE display

Product Code **HM10KFDG** **General-purpose 10K** **Globe** **PTFE disc for LPG**

| Product Name | Material | Remarks |
|---------------|----------|---|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc seat | PTFE | |
| Disc | SUS403 | |
| Seat ring | SUS403 | |
| Handwheel | FCMB340 | Color: Green / Nominal diameter: 10-50A |
| | FCD450 | Color: Green / Nominal diameter: 65-80A |
| Gasket | C1100P | Nominal diameter: 10-50A |
| | H1215 | Nominal diameter: 65-80A |
| Gland Packing | PTFE | |



| Nominal diameter (A) | 10 | 15 | 20 | 25 | 32 | 40 | 50 | 65 | 80 |
|----------------------|----|----|----|-----|-----|-----|-----|-----|-----|
| L | 85 | 85 | 95 | 110 | 130 | 150 | 180 | 210 | 240 |
| H | 87 | 87 | 99 | 115 | 136 | 150 | 173 | 222 | 255 |
| D | 70 | 70 | 70 | 80 | 90 | 100 | 120 | 180 | 180 |

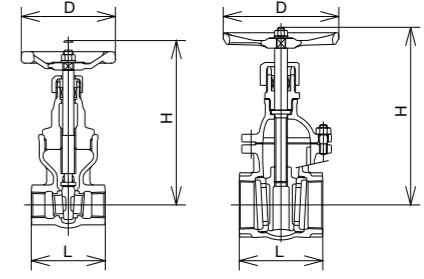
△Name plate: PTFE display

General-purpose

General-purpose
Gate/Strainer

Product Code **HM10KSS** **General-purpose 10K** **Gate** **Screwed**

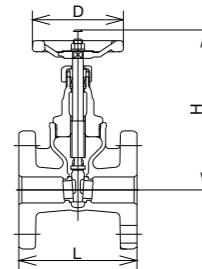
| Product Name | Material | Remarks |
|---------------|----------|--|
| Body | FCMB-S35 | |
| Cover | FCD-S | Nominal diameter: 2 1/2, 3B |
| Stem | SUS403 | |
| Wedge | SCS1 | Nominal diameter: 2B or less |
| | CAC406 | Nominal diameter: 2 1/2, 3B |
| Seat ring | SUS403 | |
| Handwheel | FCMB340 | Color: Red / Nominal diameter: 1/2-2B |
| | FCD450 | Color: Red / Nominal diameter: 2 1/2, 3B |
| Gasket | H1215 | Nominal diameter: 2 1/2, 3B |
| Gland Packing | H2200 | |



| Nominal diameter (B) | 1/2 | 3/4 | 1 | 1 1/4 | 1 1/2 | 2 | 2 1/2 | 3 |
|----------------------|-----|-----|-----|-------|-------|-----|-------|-----|
| L | 60 | 70 | 75 | 85 | 95 | 105 | 130 | 145 |
| H | 145 | 165 | 197 | 245 | 275 | 320 | 280 | 310 |
| D | 70 | 70 | 90 | 120 | 120 | 140 | 180 | 180 |

Product Code **HM10KFS** **General-purpose 10K** **Gate** **Flanged** **SUS Seat**

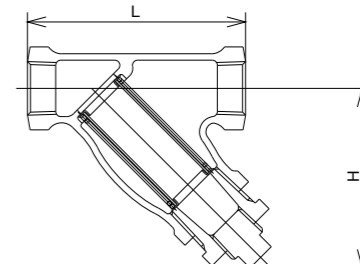
| Product Name | Material | Remarks |
|---------------|----------|------------|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Wedge | SCS1 | |
| Seat ring | SUS403 | |
| Handwheel | FCMB340 | Color: Red |
| Gland Packing | H2200 | |



| Nominal diameter (A) | 15 | 20 | 25 | 32 | 40 | 50 |
|----------------------|-----|-----|-----|-----|-----|-----|
| L | 90 | 100 | 110 | 120 | 130 | 140 |
| H | 145 | 145 | 165 | 197 | 245 | 275 |
| D | 80 | 80 | 80 | 90 | 120 | 120 |

Product Code **HM10KST** **General-purpose 10K** **Strainer** **Screwed**

| Product Name | Material | Remarks |
|--------------|----------|----------------------------|
| Body | FCMB-S35 | |
| Cover | FCMB270 | |
| Screen | SUS304 | 20 mesh |
| L-ring | SUS304 | |
| Spring | SWC | |
| Plug | S20C | Nominal diameter: 1/4-3/4B |
| | FCMB270 | Nominal diameter: 1-2B |



| Nominal diameter (B) | 1/4 | 3/8 | 1/2 | 3/4 | 1 | 1 1/4 | 1 1/2 | 2 |
|----------------------|-----|-----|-----|-----|-----|-------|-------|-----|
| L | 65 | 70 | 85 | 85 | 100 | 120 | 135 | 160 |
| H | 54 | 55 | 70 | 75 | 82 | 94 | 106 | 125 |

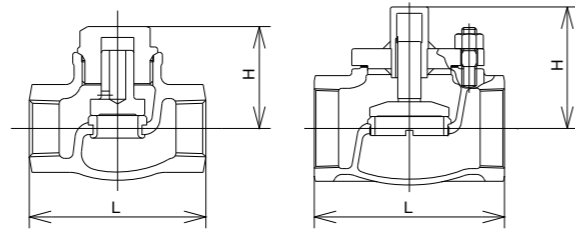
General-purpose

General-purpose
Check

Product Code **HM10KSC** General-purpose 10K Check valve (Lift) Screwed

| Product Name | Material | Remarks |
|--------------|----------|----------------------------|
| Body | FCMB-S35 | |
| Cover | SUS403 | Nominal diameter: 1/2-2B |
| | SCS1 | Nominal diameter: 2 1/2-3B |
| Disc | SUS403 | |
| Seat ring | SUS403 | |
| Gasket | H1215 | Nominal diameter: 2 1/2-3B |

△Cover top: No marks
(Marked with "S" if a spring is contained)

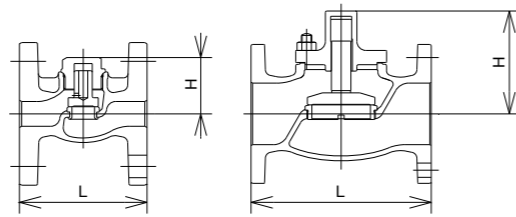


| Nominal diameter (B) | 1/2 | 3/4 | 1 | 1 1/4 | 1 1/2 | 2 | 2 1/2 | 3 |
|----------------------|------|------|------|-------|-------|------|-------|-----|
| L | 65 | 80 | 90 | 105 | 120 | 140 | 180 | 200 |
| H | 37.5 | 43.5 | 47.5 | 54 | 62 | 70.5 | 114 | 137 |

Product Code **HM10KFC** General-purpose 10K Check valve (Lift) Flanged

| Product Name | Material | Remarks |
|--------------|----------|--------------------------|
| Body | FCD-S | |
| Cover | SUS403 | Nominal diameter: 10-50A |
| | SCS1 | Nominal diameter: 65-80A |
| Disc | SUS403 | |
| Seat ring | SUS403 | |
| Gasket | H1215 | Nominal diameter: 65-80A |

△Cover top: No marks
(Marked with "S" if a spring is contained)

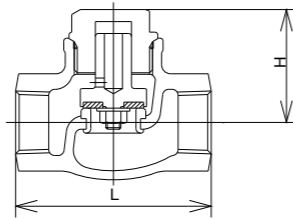


| Nominal diameter (A) | 10 | 15 | 20 | 25 | 32 | 40 | 50 | 65 | 80 |
|----------------------|------|------|------|------|-----|-----|------|-----|-----|
| L | 85 | 85 | 95 | 110 | 130 | 150 | 180 | 210 | 240 |
| H | 37.5 | 37.5 | 43.5 | 47.5 | 54 | 62 | 70.5 | 114 | 137 |

Product Code **HM10KSCD** General-purpose 10K Check valve (Lift) Screwed Reinforced PTFE disc

| Product Name | Material | Remarks |
|--------------|-----------------|---------|
| Body | FCMB-S35 | |
| Cover | SUS403 | |
| Disc | SUS403 | |
| Seat ring | SUS403 | |
| Disc seat | Reinforced PTFE | |

△Cover top: Marked with "D"
(“DS” if a spring is contained)

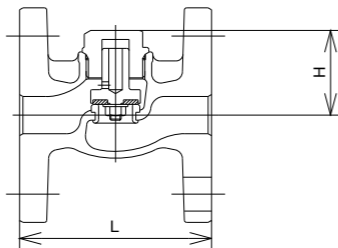


| Nominal diameter (B) | 1/2 | 3/4 | 1 | 1 1/4 | 1 1/2 | 2 |
|----------------------|------|------|------|-------|-------|------|
| L | 65 | 80 | 90 | 105 | 120 | 140 |
| H | 37.5 | 43.5 | 47.5 | 54 | 62 | 70.5 |

Product Code **HM10KFCD** General-purpose 10K Check valve (Lift) Flanged Reinforced PTFE disc

| Product Name | Material | Remarks |
|--------------|-----------------|---------|
| Body | FCD-S | |
| Cover | SUS403 | |
| Disc | SUS403 | |
| Seat ring | SUS403 | |
| Disc seat | Reinforced PTFE | |

△Cover top: Marked with "D"
(“DS” if a spring is contained)



| Nominal diameter (A) | 10 | 15 | 20 | 25 | 32 | 40 | 50 |
|----------------------|------|------|------|------|-----|-----|------|
| L | 85 | 85 | 95 | 110 | 130 | 150 | 180 |
| H | 37.5 | 37.5 | 43.5 | 47.5 | 54 | 62 | 70.5 |

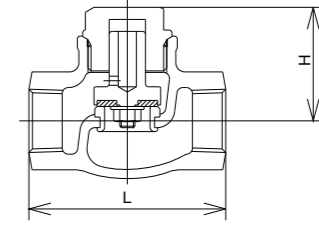
General-purpose

General-purpose
Check

Product Code **HM10KSCR** General-purpose 10K Check valve (Lift) Screwed NBR disc

| Product Name | Material | Remarks |
|--------------|----------|---------|
| Body | FCMB-S35 | |
| Cover | SUS403 | |
| Disc | SUS403 | |
| Seat ring | SUS403 | |
| Disc seat | NBR | |

△Cover top: Marked with "R"
(“RS” if a spring is contained)

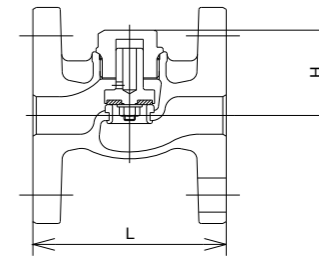


| Nominal diameter (B) | 1/2 | 3/4 | 1 | 1 1/4 | 1 1/2 | 2 |
|----------------------|------|------|------|-------|-------|------|
| L | 65 | 80 | 90 | 105 | 120 | 140 |
| H | 37.5 | 43.5 | 47.5 | 54 | 62 | 70.5 |

Product Code **HM10KFCR** General-purpose 10K Check valve (Lift) Flanged NBR disc

| Product Name | Material | Remarks |
|--------------|----------|---------|
| Body | FCD-S | |
| Cover | SUS403 | |
| Disc | SUS403 | |
| Seat ring | SUS403 | |
| Disc seat | NBR | |

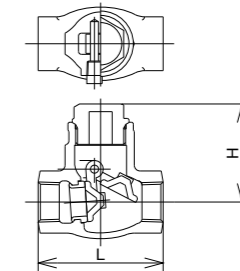
△Cover top: Marked with "R"
(“RS” if a spring is contained)



| Nominal diameter (A) | 10 | 15 | 20 | 25 | 32 | 40 | 50 |
|----------------------|------|------|------|------|-----|-----|------|
| L | 85 | 85 | 95 | 110 | 130 | 150 | 180 |
| H | 37.5 | 37.5 | 43.5 | 47.5 | 54 | 62 | 70.5 |

Product Code **HM10SCS** General-purpose 10K Check valve (Swing) Screwed

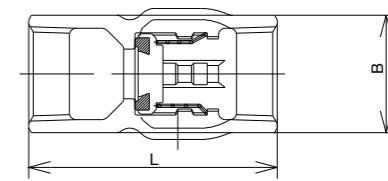
| Product Name | Material | Remarks |
|--------------|----------|---------|
| Body | FCMB-S35 | |
| Cover | SUS403 | |
| Disc | SCS1 | |
| Seat ring | SUS403 | |
| Hinge pin | SUS416 | |
| Plug | SWCH10K | |



| Nominal diameter (B) | 1/2 | 3/4 | 1 | 1 1/4 | 1 1/2 | 2 |
|----------------------|-----|-----|----|-------|-------|-----|
| L | 65 | 80 | 90 | 105 | 120 | 140 |
| H | 51 | 57 | 61 | 73 | 81 | 92 |

Product Code **BSCI** General-purpose 10K Check valve (Inline) Screwed

| Product Name | Material | Remarks |
|--------------|------------|---------|
| Body | CAC406 | |
| Disc | SUS303 | |
| Rubber sheet | FPM | |
| Spring | SUS304-WPB | |



| Nominal diameter (B) | 1/2 | 3/4 | 1 |
|----------------------|-----|-----|----|
| L | 55 | 60 | 70 |
| B | 26 | 32 | 40 |

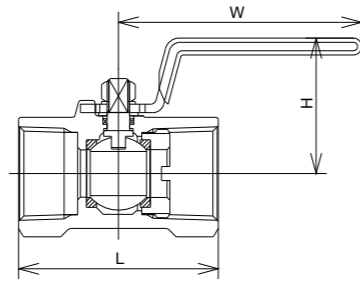
General-purpose

General-purpose

Mini Ball Valve for General Use

Product Code MB2 General-purpose 10K Mini Ball Valve for General Use Lever Handle, 2-stage Reduced Bore

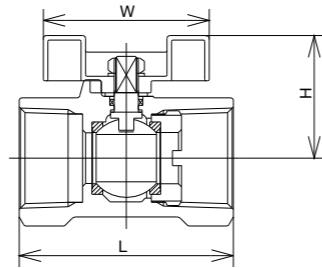
| Product Name | Material | Remarks |
|---------------|-----------------|---|
| Body | FCMB340 | Hot dip galvanizing Electrogalvanizing |
| Ball | C3604 | Ni-Cr plating |
| Stem | C3604 | Ni-Cr plating |
| Seat ring | Reinforced PTFE | |
| Gland Packing | Reinforced PTFE | |
| Handle | SUS430 | PVC coating Color: Orange |



| Nominal diameter (B) | 1/4 | 3/8 | 1/2 | 3/4 | 1 | 1¼ | 1½ | 2 |
|----------------------|-----|------|-----|-----|----|-----|------|-----|
| L | 43 | 46.5 | 54 | 61 | 71 | 82 | 88.5 | 105 |
| H | 32 | 40 | 42 | 47 | 50 | 58 | 62 | 69 |
| W | 62 | 72 | 72 | 87 | 87 | 127 | 127 | 127 |

Product Code MBT2 General-purpose 10K Mini Ball Valve for General Use T-handle, 2-stage Reduced Bore

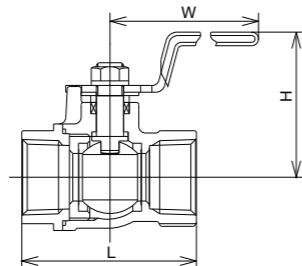
| Product Name | Material | Remarks |
|---------------|-----------------|---|
| Body | FCMB340 | Hot dip galvanizing Electrogalvanizing |
| Ball | C3604 | Ni-Cr plating |
| Stem | C3604 | Ni-Cr plating |
| Seat ring | Reinforced PTFE | |
| Gland Packing | Reinforced PTFE | |
| Handle | ADC12 | Color: Black |



| Nominal diameter (B) | 1/4 | 3/8 | 1/2 | 3/4 | 1 |
|----------------------|-----|------|-----|-----|----|
| L | 43 | 46.5 | 54 | 61 | 71 |
| H | 27 | 30 | 33 | 40 | 42 |
| W | 45 | 45 | 45 | 55 | 55 |

Product Code MB1 General-purpose 10K Mini Ball Valve for General Use Lever Handle, 1-stage Reduced Bore

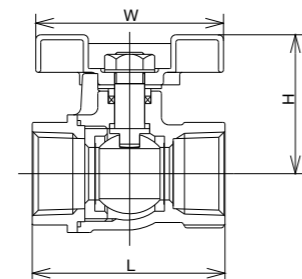
| Product Name | Material | Remarks |
|---------------|-----------------|---|
| Body | FCMB340 | Hot dip galvanizing Electrogalvanizing |
| Ball | C3604 | Ni-Cr plating |
| Stem | C3604 | Ni-Cr plating |
| Seat ring | Reinforced PTFE | |
| Gland Packing | Reinforced PTFE | |
| Handle | SUS430 | PVC coating Color: Orange |
| Gasket | Reinforced PTFE | |



| Nominal diameter (B) | 1/4 | 3/8 | 1/2 | 3/4 | 1 | 1¼ | 1½ | 2 |
|----------------------|-----|-----|------|-----|-----|-----|-----|-----|
| L | 46 | 49 | 57.5 | 65 | 77 | 88 | 97 | 116 |
| H | 49 | 49 | 53 | 55 | 63 | 66 | 72 | 79 |
| W | 72 | 72 | 87 | 87 | 127 | 127 | 127 | 152 |

Product Code MBT1 General-purpose 10K Mini Ball Valve for General Use T-handle, 1-stage Reduced Bore

| Product Name | Material | Remarks |
|---------------|-----------------|---|
| Body | FCMB340 | Hot dip galvanizing Electrogalvanizing |
| Ball | C3604 | Ni-Cr plating |
| Stem | C3604 | Ni-Cr plating |
| Seat ring | Reinforced PTFE | |
| Gland Packing | Reinforced PTFE | |
| Handle | ADC12 | Color: Black |
| Gasket | Reinforced PTFE | |



| Nominal diameter (B) | 1/4 | 3/8 | 1/2 | 3/4 | 1 |
|----------------------|-----|-----|------|-----|----|
| L | 46 | 49 | 57.5 | 65 | 77 |
| H | 38 | 38 | 46 | 48 | 58 |
| W | 45 | 45 | 55 | 55 | 75 |

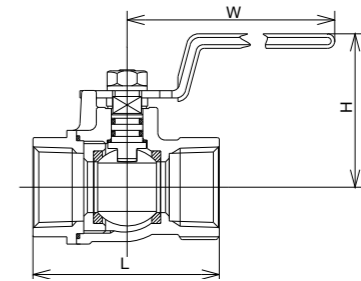
General-purpose

General-purpose

Mini Ball Valve for LPG

Product Code ML1 General-purpose 10K Mini Ball Valve for LPG Lever Handle, 1-stage Reduced Bore

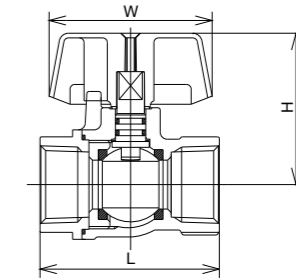
| Product Name | Material | Remarks |
|--------------|----------|---|
| Body | FCMB340 | Hot dip galvanizing Electrogalvanizing |
| Ball | C3604 | Ni-Cr plating |
| Stem | C3604 | Ni-Cr plating |
| Seat ring | PTFE | |
| Handle | SUS430 | PVC coating Color: Yellow |
| Gasket | PTFE | |



| Nominal diameter (B) | 1/2 | 3/4 | 1 | 1¼ | 1½ | 2 |
|----------------------|------|-----|-----|-----|-----|-----|
| L | 57.5 | 65 | 77 | 88 | 97 | 116 |
| H | 53 | 55 | 63 | 66 | 72 | 79 |
| W | 87 | 87 | 127 | 127 | 127 | 152 |

Product Code MLC1 General-purpose 10K Mini Ball Valve for LPG T-handle, 1-stage Reduced Bore

| Product Name | Material | Remarks |
|--------------|----------|---|
| Body | FCMB340 | Hot dip galvanizing Electrogalvanizing |
| Ball | C3604 | Ni-Cr plating |
| Stem | C3604 | |
| Seat ring | PTFE | |
| Handle | ADC12 | Color: Black |
| Gasket | PTFE | |

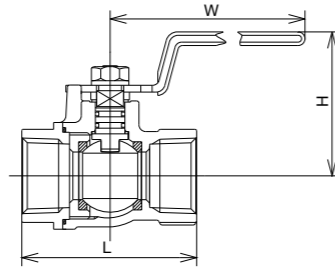


| Nominal diameter (B) | 1/2 | 3/4 | 1 |
|----------------------|------|------|----|
| L | 57.5 | 65 | 77 |
| H | 54.5 | 56.5 | 65 |
| W | 52 | 52 | 70 |

General-purpose

Product Code MG1 General-purpose 10K Mini Ball Valve for City Gas Lever Handle, 1-stage Reduced Bore

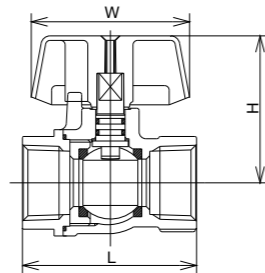
| Product Name | Material | Remarks |
|--------------|----------|--|
| Body | FCMB340 | Hot dip galvanizing Electrogalvanizing |
| Ball | C3604 | Ni-Cr plating |
| Stem | C3604 | Ni-Cr plating |
| Seat ring | PTFE | |
| Handle | SUS430 | PVC coating Color: Green |
| Gasket | PTFE | |



| Nominal diameter (B) | 1/4 | 3/8 | 1/2 | 3/4 | 1 | 1 1/4 | 1 1/2 | 2 |
|----------------------|-----|-----|------|-----|-----|-------|-------|-----|
| L | 46 | 49 | 57.5 | 65 | 77 | 88 | 97 | 116 |
| H | 49 | 49 | 53 | 55 | 63 | 66 | 72 | 79 |
| W | 72 | 72 | 87 | 87 | 127 | 127 | 127 | 152 |

Product Code MGC1 General-purpose 10K Mini Ball Valve for City Gas T-handle, 1-stage Reduced Bore

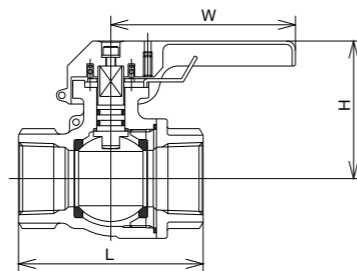
| Product Name | Material | Remarks |
|--------------|----------|--|
| Body | FCMB340 | Hot dip galvanizing Electrogalvanizing |
| Ball | C3604 | Ni-Cr plating |
| Stem | C3604 | |
| Seat ring | PTFE | |
| Handle | ADC12 | Color: Black |
| Gasket | PTFE | |



| Nominal diameter (B) | 1/2 | 3/4 | 1 |
|----------------------|------|------|----|
| L | 57.5 | 65 | 77 |
| H | 54.5 | 56.5 | 65 |
| W | 52 | 52 | 70 |

Product Code MGRO General-purpose 10K Mini Ball Valve for City Gas Cock handle, Full bore

| Product Name | Material | Remarks |
|--------------|----------|--|
| Body | FCD-S | Hot dip galvanizing Electrogalvanizing |
| Ball | C3604 | Ni-Cr plating |
| Stem | C3604 | |
| Seat ring | PTFE | |
| Handle | ZDC2 | Color: Black |
| Gasket | PTFE | |



| Nominal diameter (B) | 3/4 | 1 | 1 1/4 | 1 1/2 | 2 |
|----------------------|-----|----|-------|-------|-----|
| L | 75 | 85 | 100 | 110 | 130 |
| H | 63 | 66 | 72 | 80 | 87 |
| W | 85 | 85 | 85 | 130 | 130 |

10K

Features

1. A general valve based on the 20K type. Can be used for a range of specifications.
2. Support for special fluids by exchanging the packing, gasket and main parts. Please consult with us separately. – We also undertake maintenance using genuine parts.
3. The main parts are made with 13cr stainless steel and can be used up to 300°C.

Product Types

Globe, Gate, Check, Needle, Bellows seal, Ball valves and Strainers

△Caution:

- A cobalt-base alloy (Co-Cr-W alloy) for the valve seat surface is recommended in case of use in the following conditions.
 1. In case of steam piping with a nominal diameter of 150A (6B) or higher.
 2. In case of steam piping when the pressure is 0.98 MPa or higher, and the frequency of opening and closing is high.
 3. In case of use with fluids in a dry state.
 4. In case of piping for chemicals where corrosion resistance is required, and the main parts of the valve are 18Cr-8Ni stainless steel

Fluid • Temperature • Pressure

Unit: MPa

| Maximum working pressure by product type MPa | Service temperature limit by fluid (°C) | | Steady water flow | | | | | | | Oil, air, steam, pulsating water | | | LPG | City gas | | |
|--|---|-----|-------------------|------|------|-----|-----|------|-----|----------------------------------|-----|--|-----|----------|------|------|
| | 80 | 120 | 80 | 120 | 183 | 220 | 250 | 300 | 120 | 80 | 120 | | | | | |
| Globe | Standard, needle valve | | | | | | | | | | | | | | | |
| | Bellows | | | 1.37 | | | | 1.18 | | 0.98 | | | | | | |
| | Reinforced PTFE disc | | | 1.37 | | | | 1.18 | | | | | | | | |
| V-port valve | | | | | 0.98 | | | | | | | | | | 0.98 | |
| | Gate | | | 1.37 | | | | 1.18 | | 0.98 | | | | | | |
| Check | Standard | | | 1.37 | | | | 1.18 | | 0.98 | | | | | | |
| | Reinforced PTFE disc | | | 1.37 | | | | 0.98 | | | | | | | | |
| | NBR disc | | 1.37 | | 1.37 | | | | | | | | | | | |
| Ball | For general use | | | 1.37 | | | | 1.28 | | 0 | | | | | | |
| | For gas | | | | | | | | | | | | | 1.18 | | 0.98 |

*1 Heat-resistant coating is recommended in case the service temperature exceeds 180°C

Test Pressure

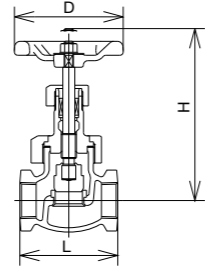
Unit: MPa

| Product Type | Test description | Body pressure resistance | | Valve seat leakage | |
|---|------------------|--------------------------|--------------|--------------------|--------------|
| | | Water pressure | Air pressure | Water pressure | Air pressure |
| Globe, needle, V-port, gate, check, ball valves | | 2.10 | | 1.54 | |
| Bellows seal valve | | | 1.00 | | 1.00 |
| Ball valve for gas | | | 1.80 | | 1.32 |



Product Code **M10KSG** 10K **Globe Screwed**

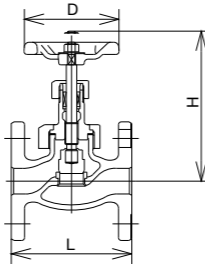
| Product Name | Material | Remarks |
|---------------|------------|-------------|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc | SUS403 | |
| Seat ring | SUS403 | |
| Handwheel | FCMB340 | Color: Blue |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |



| Nominal diameter (B) | 3/8 | 1/2 | 3/4 | 1 | 1 1/4 | 1 1/2 | 2 |
|----------------------|-----|-----|-----|-----|-------|-------|-----|
| L | 64 | 70 | 80 | 90 | 110 | 120 | 140 |
| H | 115 | 130 | 135 | 155 | 175 | 190 | 215 |
| D | 80 | 80 | 80 | 100 | 120 | 120 | 140 |

Product Code **M10KFG** 10K **Globe Flanged**

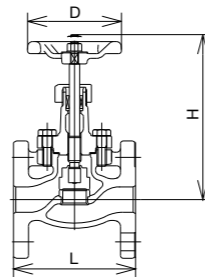
| Product Name | Material | Remarks |
|---------------|------------|-------------|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc | SUS403 | |
| Seat ring | SUS403 | |
| Handwheel | FCMB340 | Color: Blue |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |



| Nominal diameter (A) | 10 | 15 | 20 | 25 | 32 | 40 | 50 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|
| L | 108 | 108 | 117 | 127 | 140 | 165 | 203 |
| H | 130 | 130 | 135 | 155 | 175 | 190 | 215 |
| D | 80 | 80 | 80 | 100 | 120 | 120 | 140 |

Product Code **M10KFGI** 10K **Globe Flanged BB type**

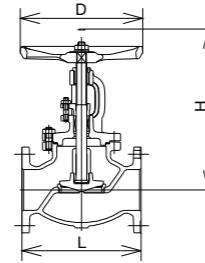
| Product Name | Material | Remarks |
|---------------|------------|--|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc | SUS403 | Hard facing |
| Seat ring | SUS403 | Hard facing |
| Handwheel | FCMB340 | Color: Blue / Nominal diameter: 15-40A |
| | FCD450 | Color: Blue / Nominal diameter: 50A |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |



| Nominal diameter (A) | 15 | 20 | 25 | 32 | 40 | 50 |
|----------------------|-----|-----|-----|-----|-----|-----|
| L | 108 | 117 | 127 | 140 | 165 | 203 |
| H | 154 | 156 | 178 | 203 | 231 | 261 |
| D | 80 | 80 | 100 | 120 | 140 | 180 |

Product Code **M10KFGO** 10K **Globe Flanged OS and BB type**

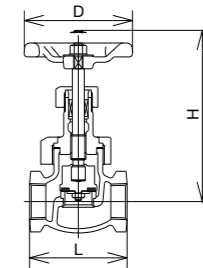
| Product Name | Material | Remarks |
|---------------|------------|--|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc | SUS403 | Nominal diameter: 50-150A |
| | S28C+13Cr | Nominal diameter: 200-300A |
| Seat ring | SUS403 | Nominal diameter: 50-150A |
| | S28C | Nominal diameter: 200-300A Hard facing |
| Handwheel | FCD450 | Color: Blue |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |



| Nominal diameter (A) | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| L | 203 | 216 | 241 | 292 | 356 | 406 | 495 | 622 | 698 |
| H | 295 | 325 | 355 | 390 | 435 | 505 | 595 | 690 | 779 |
| D | 224 | 224 | 250 | 300 | 315 | 355 | 400 | 450 | 560 |

Product Code **M10KSD** 10K **Globe Screwed Reinforced PTFE disc**

| Product Name | Material | Remarks |
|---------------|-----------------|---------------|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc seat | Reinforced PTFE | |
| Disc | SUS403 | |
| Seat ring | SUS403 | |
| Handwheel | FCMB340 | Color: Orange |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |

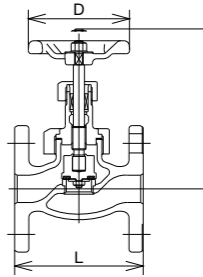


| Nominal diameter (B) | 3/8 | 1/2 | 3/4 | 1 | 1 1/4 | 1 1/2 | 2 |
|----------------------|-----|-----|-----|-----|-------|-------|-----|
| L | 64 | 70 | 80 | 90 | 110 | 120 | 140 |
| H | 116 | 131 | 133 | 153 | 176 | 192 | 216 |
| D | 80 | 80 | 80 | 100 | 120 | 120 | 140 |

△Name plate: PTFE display

Product Code **M10KFD** 10K **Globe Flanged Reinforced PTFE disc**

| Product Name | Material | Remarks |
|---------------|-----------------|---------------|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc seat | Reinforced PTFE | |
| Disc | SUS403 | |
| Seat ring | SUS403 | |
| Handwheel | FCMB 340 | Color: Orange |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |

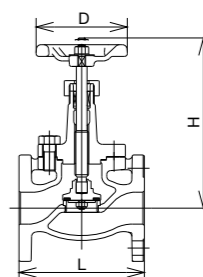


| Nominal diameter (A) | 10 | 15 | 20 | 25 | 32 | 40 | 50 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|
| L | 108 | 108 | 117 | 127 | 140 | 165 | 203 |
| H | 131 | 131 | 133 | 153 | 176 | 192 | 216 |
| D | 80 | 80 | 80 | 100 | 120 | 120 | 140 |

△Name plate: PTFE display

Product Code **M10KFDI** 10K **Globe Flanged Reinforced PTFE disc BB type**

| Product Name | Material | Remarks |
|---------------|-----------------|--|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc seat | Reinforced PTFE | |
| Disc | SUS403 | |
| Seat ring | SUS403 | |
| Handwheel | FCMB 340 | Color: Orange / Nominal diameter: 15-40A |
| | FCD450 | Color: Orange / Nominal diameter: 50A |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |

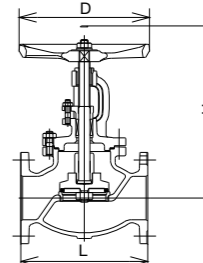


| Nominal diameter (A) | 15 | 20 | 25 | 32 | 40 | 50 |
|----------------------|-----|-----|-----|-----|-----|-----|
| L | 108 | 117 | 127 | 140 | 165 | 203 |
| H | 152 | 154 | 178 | 203 | 231 | 262 |
| D | 80 | 80 | 100 | 120 | 140 | 180 |

△Name plate: PTFE display

Product Code **M10KFDO** 10K **Globe Flanged Reinforced PTFE disc OS and BB type**

| Product Name | Material | Remarks |
|---------------|-----------------|---------------|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc seat | Reinforced PTFE | |
| Disc | SUS403 | |
| Seat ring | SUS403 | |
| Handwheel | FCD450 | Color: Orange |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |



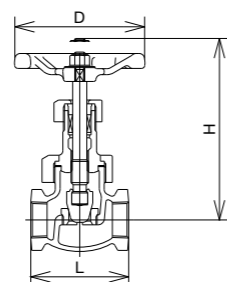
| Nominal diameter (A) | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| L | 203 | 216 | 241 | 292 | 356 | 406 | 495 | 622 |
| H | 295 | 335 | 365 | 405 | 455 | 530 | 630 | 732 |
| D | 224 | 224 | 250 | 300 | 315 | 355 | 400 | 450 |

△Name plate: PTFE display

Product Code **M10KSN** 10K Needle Valve Screwed

| Product Name | Material | Remarks |
|---------------|------------|--|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc | SUS403 | Hard facing |
| Seat ring | SUS403 | Hard facing |
| Handwheel | FCMB 340 | Color: Blue / Nominal diameter: 3/8-1 1/2B |
| | FCD450 | Color: Blue / Nominal diameter: 2B |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |

△Valve stem tips:
Marked "N"/The cover is clearly marked
"Needle valve"

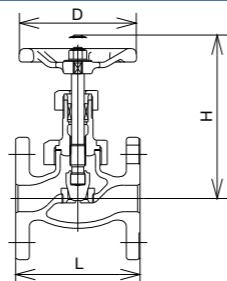


| Nominal diameter (B) | 3/8 | 1/2 | 3/4 | 1 | 1 1/4 | 1 1/2 | 2 |
|----------------------|-----|-----|-----|-----|-------|-------|-----|
| L | 64 | 70 | 80 | 90 | 110 | 120 | 140 |
| H | 125 | 135 | 145 | 170 | 180 | 200 | 230 |
| D | 80 | 80 | 100 | 120 | 120 | 140 | 180 |

Product Code **M10KFN** 10K Needle Valve Flanged

| Product Name | Material | Remarks |
|---------------|------------|--|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc | SUS403 | Hard facing |
| Seat ring | SUS403 | Hard facing |
| Handwheel | FCMB 340 | Color: Blue / Nominal diameter: 10-40A |
| | FCD450 | Color: Blue / Nominal diameter: 50A |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |

△Valve stem tips:
Marked "N"/The cover is clearly marked
"Needle valve"

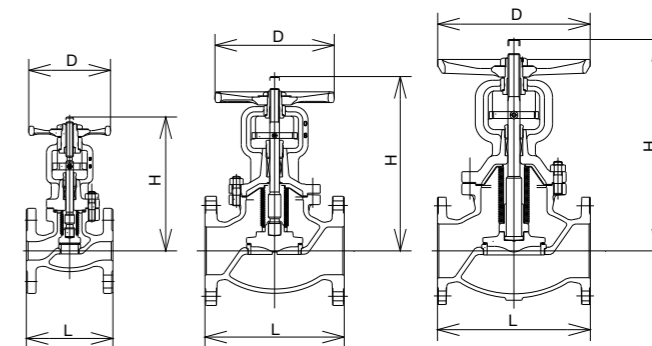


| Nominal diameter (A) | 10 | 15 | 20 | 25 | 32 | 40 | 50 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|
| L | 108 | 108 | 117 | 127 | 140 | 165 | 203 |
| H | 125 | 135 | 145 | 170 | 180 | 200 | 230 |
| D | 80 | 80 | 100 | 120 | 120 | 140 | 180 |

Product Code **M10KFGB** 10K Bellows Seal Valve Flanged OS and BB type

| Product Name | Material | Remarks |
|---------------|------------|--|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS410 | |
| Seat ring | SUS410 | Hard facing |
| Disc | SUS304 | Hard facing (Nominal diameter: 50A or less) |
| | A182-F304 | Hard facing (Nominal diameter: 65-100A) |
| | SCS1 T1 | Hard facing (Nominal diameter: 125A or more) |
| Bellows | SUS316L | |
| Handwheel | FCMB340 | Color: Black |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |

△The glands of the bellows seal valve are maintenance-free, but since the cover bolts may loosen due to vibrations and heat stress, they will need regular maintenance.

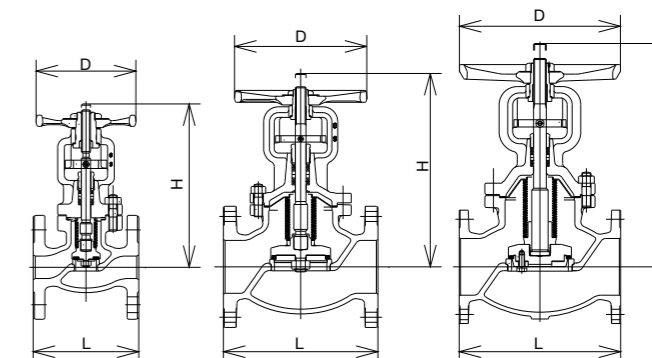


| Nominal diameter (A) | 15 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| L | 108 | 117 | 127 | 140 | 165 | 203 | 216 | 241 | 292 | 356 | 406 | 495 | 622 |
| H | 181 | 191 | 196 | 208 | 243 | 253 | 278 | 328 | 365 | 421 | 487 | 609 | 754 |
| D | 100 | 100 | 120 | 120 | 160 | 180 | 224 | 224 | 250 | 300 | 355 | 400 | 450 |

Product Code **M10KFDB** 10K Bellows Seal Valve Flanged Reinforced PTFE disc OS and BB type

| Product Name | Material | Remarks |
|---------------|-----------------|--|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS410 | |
| Seat ring | SUS410 | |
| Disc seat | Reinforced PTFE | |
| Disc | A182-F304 | Nominal diameter: 50A or less-125A or more |
| | SUS410 | Nominal diameter: 65-100A |
| Bellows | SUS316L | |
| Handwheel | FCMB340 | Color: Black |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |

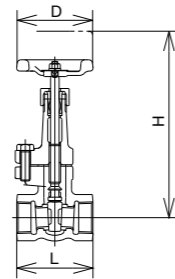
△The glands of the bellows seal valve are maintenance-free, but since the cover bolts may loosen due to vibrations and heat stress, they will need regular maintenance.



| Nominal diameter (A) | 15 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| L | 108 | 117 | 127 | 140 | 165 | 203 | 216 | 241 | 292 | 356 | 406 | 495 | 622 |
| H | 181 | 191 | 196 | 208 | 243 | 253 | 278 | 328 | 365 | 421 | 487 | 609 | 754 |
| D | 100 | 100 | 120 | 120 | 160 | 180 | 224 | 224 | 250 | 300 | 355 | 400 | 450 |

Product Code **M10KSS** 10K Gate Valve Screwed BB type

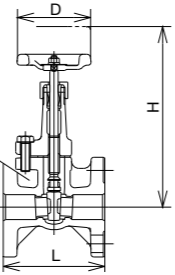
| Product Name | Material | Remarks |
|---------------|------------|-------------|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Wedge | SCS1 | |
| Seat ring | SUS403 | |
| Handwheel | SCMB340 | Color: Blue |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |



| Nominal diameter (B) | 1/2 | 3/4 | 1 | 1¼ | 1½ | 2 |
|----------------------|-----|-----|-----|-----|-----|-----|
| L | 65 | 75 | 80 | 90 | 100 | 110 |
| H | 165 | 165 | 190 | 224 | 258 | 290 |
| D | 80 | 80 | 80 | 100 | 120 | 120 |

Product Code **M10KFS** 10K Gate Valve Flanged BB type

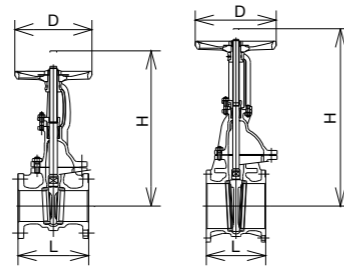
| Product Name | Material | Remarks |
|---------------|------------|-------------|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Wedge | SCS1 | |
| Seat ring | SUS403 | |
| Handwheel | FCMB340 | Color: Blue |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |



| Nominal diameter (A) | 10 | 15 | 20 | 25 | 32 | 40 | 50 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|
| L | 90 | 90 | 100 | 110 | 120 | 130 | 140 |
| H | 165 | 165 | 170 | 190 | 224 | 258 | 290 |
| D | 80 | 80 | 80 | 80 | 100 | 120 | 120 |

Product Code **M10KFSO** 10K Gate Valve Flanged OS and BB type

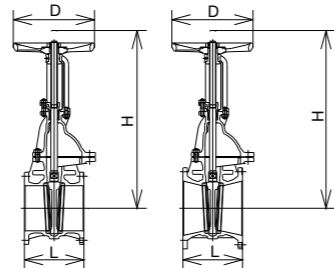
| Product Name | Material | Remarks |
|---------------|------------|--|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Wedge | SCS1 | Nominal diameter: 40-65A |
| | SUS403 | Nominal diameter: 80-200A |
| | S28C | 13Cr stainless deposit Nominal diameter: 250-300A |
| Seat ring | SUS403 | |
| Handwheel | FCD450 | Color: Blue |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |



| Nominal diameter (A) | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| L | 165 | 178 | 190 | 203 | 229 | 254 | 267 | 292 | 330 | 356 |
| H | 315 | 360 | 425 | 480 | 580 | 675 | 780 | 985 | 1195 | 1410 |
| D | 160 | 180 | 180 | 224 | 250 | 300 | 300 | 315 | 450 | 560 |

Product Code **D10KFSO** 10K Gate Valve Flanged OS and BB type

| Product Name | Material | Remarks |
|---------------|------------|------------------------|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Wedge | SCPH2 | 13Cr stainless deposit |
| Seat ring | S28C | Hard facing |
| Handwheel | FCD450 | Color: Blue |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |

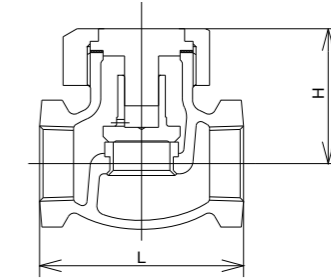


| Nominal diameter (A) | 350 | 400 | 450 | 500 |
|----------------------|------|------|------|------|
| L | 381 | 406 | 432 | 457 |
| H | 1610 | 1855 | 1610 | 1855 |
| D | 630 | 710 | 630 | 710 |

Product Code **M10KSC** 10K Check Valve (Lift) Screwed

| Product Name | Material | Remarks |
|--------------|----------|---------|
| Body | FCD-S | |
| Cover | SCS1 | |
| Disc | SUS403 | |
| Seat ring | SUS403 | |
| Gasket | H1215 | |

△Cover top: No marks
(Marked with "S" if a spring is contained)

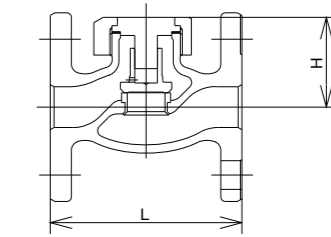


| Nominal diameter (B) | 1/2 | 3/4 | 1 | 1¼ | 1½ | 2 |
|----------------------|-----|-----|----|-----|-----|-----|
| L | 70 | 80 | 90 | 110 | 120 | 140 |
| H | 51 | 54 | 61 | 69 | 77 | 89 |

Product Code **M10KFC** 10K Check Valve (Lift) Flanged

| Product Name | Material | Remarks |
|--------------|----------|---------|
| Body | FCD-S | |
| Cover | SCS1 | |
| Disc | SUS403 | |
| Seat ring | SUS403 | |
| Gasket | H1215 | |

△Cover top: No marks
(Marked with "S" if a spring is contained)

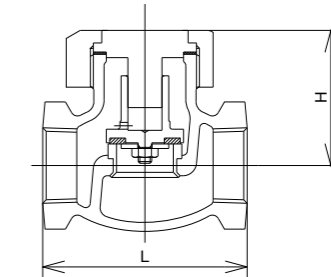


| Nominal diameter (A) | 10 | 15 | 20 | 25 | 32 | 40 | 50 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|
| L | 108 | 108 | 117 | 127 | 140 | 165 | 203 |
| H | 51 | 51 | 54 | 61 | 69 | 77 | 89 |

Product Code **M10KSCD** 10K Check Valve (Lift) Screwed Reinforced PTFE disc

| Product Name | Material | Remarks |
|--------------|-----------------|---------|
| Body | FCD-S | |
| Cover | SCS1 | |
| Disc | SUS403 | |
| Seat ring | SUS403 | |
| Disc seat | Reinforced PTFE | |
| Gasket | H1215 | |

△Cover top: Marked with "D"
(“DS” if a spring is contained)

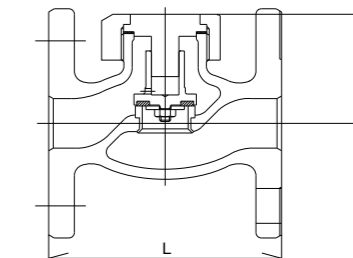


| Nominal diameter (B) | 1/2 | 3/4 | 1 | 1¼ | 1½ | 2 |
|----------------------|-----|-----|----|-----|-----|-----|
| L | 70 | 80 | 90 | 110 | 120 | 140 |
| H | 51 | 54 | 61 | 69 | 77 | 89 |

Product Code **M10KFCD** 10K Check Valve (Lift) Flanged Reinforced PTFE disc

| Product Name | Material | Remarks |
|--------------|-----------------|---------|
| Body | FCD-S | |
| Cover | SCS1 | |
| Disc | SUS403 | |
| Seat ring | SUS403 | |
| Disc seat | Reinforced PTFE | |
| Gasket | H1215 | |

△Cover top: Marked with "D"
(“DS” if a spring is contained)

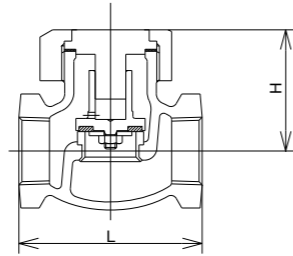


| Nominal diameter (A) | 10 | 15 | 20 | 25 | 32 | 40 | 50 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|
| L | 108 | 108 | 117 | 127 | 140 | 165 | 203 |
| H | 51 | 51 | 54 | 61 | 69 | 77 | 89 |

Product Code **M10KSCR** 10K Check Valve (Lift) Screwed NBR disc

| Product Name | Material | Remarks |
|--------------|----------|---------|
| Body | FCD-S | |
| Cover | SCS1 | |
| Disc | SUS403 | |
| Seat ring | SUS403 | |
| Disc seat | NBR | |
| Gasket | H1215 | |

△Cover top: Marked with "R"
("RS" if a spring is contained)
* NBR disc installed on request.

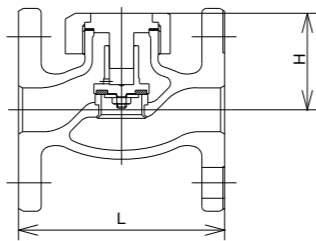


| Nominal diameter (B) | 1/2 | 3/4 | 1 | 1¼ | 1½ | 2 |
|----------------------|-----|-----|----|-----|-----|-----|
| L | 70 | 80 | 90 | 110 | 120 | 140 |
| H | 51 | 54 | 61 | 69 | 77 | 89 |

Product Code **M10KFCR** 10K Check Valve (Lift) Flanged NBR disc

| Product Name | Material | Remarks |
|--------------|----------|---------|
| Body | FCD-S | |
| Cover | SCS1 | |
| Disc | SUS403 | |
| Seat ring | SUS403 | |
| Disc seat | NBR | |
| Gasket | H1215 | |

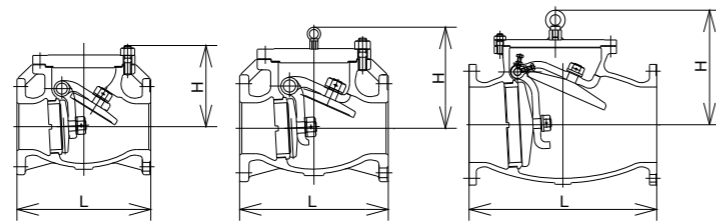
△Cover top: Marked with "R"
("RS" if a spring is contained)
* NBR disc installed on request.



| Nominal diameter (A) | 10 | 15 | 20 | 25 | 32 | 40 | 50 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|
| L | 108 | 108 | 117 | 127 | 140 | 165 | 203 |
| H | 51 | 51 | 54 | 61 | 69 | 77 | 89 |

Product Code **M10KFCS** 10K Check Valve (Swing) Flanged

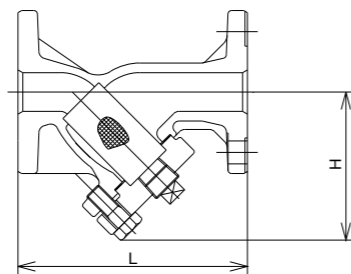
| Product Name | Material | Remarks |
|--------------|----------|---|
| Body | FCD-S | |
| Cover | SS400 | |
| Disc | SUS403 | Nominal diameter: 40-100A |
| | S25C | 13Cr stainless deposit / Nominal diameter: 125-300A |
| Seat ring | SUS403 | |
| Hinge pin | SUS403 | |
| Gasket | H1215 | |
| Plug | S25C | Nominal diameter: 40-200A |
| | SUS403 | Nominal diameter: 250-300A |



| Nominal diameter (A) | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| L | 165 | 203 | 216 | 241 | 292 | 330 | 356 | 495 | 622 | 698 |
| H | 118 | 126 | 146 | 161 | 176 | 250 | 270 | 330 | 390 | 450 |

Product Code **M10KFT** 10K Strainer Flanged

| Product Name | Material | Remarks |
|--------------|--------------|---|
| Body | FCD-S | |
| Cover | FCD-S | |
| Screen | SUS304 | 50 mesh / Nominal diameter: 15-50A 40 mesh / Nominal diameter: 65-300A |
| Gasket | H1215 | |
| Plug | FCD-S | Nominal diameter: 25-50A |
| | S25C | Nominal diameter: 15-20A |
| | S15C or SWCH | Nominal diameter: 65-300A |

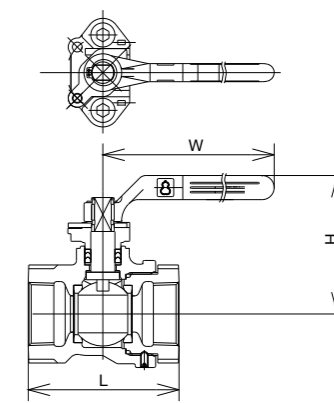


| Nominal diameter (A) | 15 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| L | 130 | 140 | 160 | 190 | 210 | 250 | 290 | 310 | 350 | 400 | 480 | 600 | 730 | 850 |
| H | 68 | 77 | 91 | 137 | 154 | 170 | 190 | 231 | 279 | 310 | 370 | 441 | 510 | 565 |

Product Code **BM10KS2B** 10K Ball Valve for General Use Screwed 1-stage Reduced Bore

| Product Name | Material | Remarks |
|---------------|----------|-------------|
| Body | FCD-S | |
| Ball | SCS13A | |
| Stem | SUS403 | |
| Seat ring | FT seat | |
| Handle | FCMB340 | Color: Blue |
| Gasket | SUS304 | |
| Gland Packing | PTFE | |

△Indicator: Blue
External stopper/ Valve stem: widths across flats

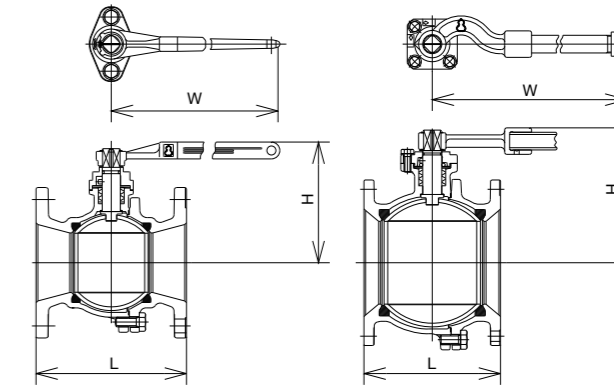


| Nominal diameter (B) | 1/2 | 3/4 | 1 | 1¼ | 1½ | 2 |
|----------------------|-----|-----|-----|-----|-----|-----|
| L | 66 | 75 | 87 | 100 | 115 | 130 |
| H | 69 | 73 | 76 | 92 | 96 | 104 |
| W | 120 | 120 | 120 | 150 | 150 | 220 |

Product Code **BM10KF2B** 10K Ball Valve for General Use Flanged 1-stage Reduced Bore

| Product Name | Material | Remarks |
|--------------------|-----------------|--|
| Body | FCD-S | |
| Ball | SCS13A | |
| Stem | SUS403 | |
| Seat ring | FT seat | |
| Handle | FCMB340 | Color: Blue / Nominal diameter: 65-125A |
| Handle boss + pipe | FCMB340+ STPG | Color: Blue / Nominal diameter: 150-250A |
| Gasket | H1215 | |
| Gland Packing | Reinforced PTFE | |

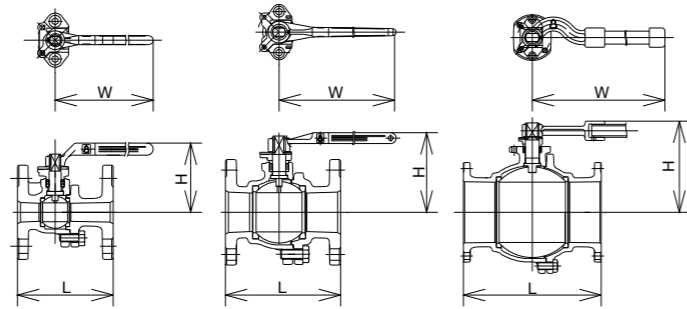
△Indicator: Blue
Valve stem angle: widths across flats



| Nominal diameter (A) | 65 | 80 | 100 | 125 | 150 | 200 | 250 |
|----------------------|-----|-----|-----|-----|-----|------|------|
| L | 190 | 203 | 229 | 254 | 267 | 292 | 330 |
| H | 139 | 151 | 186 | 202 | 243 | 262 | 321 |
| W | 220 | 220 | 320 | 400 | 800 | 1000 | 1200 |

Product Code **BM10KF0B** 10K Ball Valve for General Use Flanged Full bore

| Product Name | Material | Remarks |
|--------------------|-----------------|--|
| Body | FCD-S | |
| Ball | SCS13A | |
| Stem | SUS403 | |
| Seat ring | FT seat | |
| Handle | FCMB340 | Color: Blue / Nominal diameter: 15-100A |
| Handle boss + pipe | FCMB340+ STPG | Color: Blue / Nominal diameter: 125-200A |
| Gasket | Reinforced PTFE | |
| Gland Packing | PTFE | |

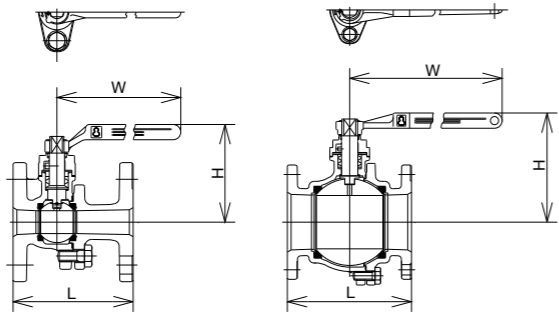


△ Indicator: Blue
External stopper/
Valve stem: widths across flats

| Nominal diameter (A) | 15 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| L | 108 | 117 | 127 | 140 | 165 | 178 | 190 | 203 | 229 | 292 | 394 | 457 |
| H | 73 | 76 | 92 | 98 | 110 | 117 | 132 | 170 | 186 | 225 | 245 | 301 |
| W | 120 | 120 | 150 | 150 | 220 | 220 | 220 | 320 | 400 | 800 | 1000 | 1200 |

Product Code **BM10KF1B** 10K Ball Valve for General Use Flanged Full bore Fire-safe mechanism

| Product Name | Material | Remarks |
|-----------------------|-----------------|-------------|
| Body | FCD-S | |
| Ball | SCS13A | |
| Stem | SUS403 | |
| Seat ring | FT seat | |
| Stainless steel sheet | SUS304 | |
| Handle | FCMB340 | Color: Blue |
| Gasket | H1215 | |
| Gland Packing | Reinforced PTFE | |

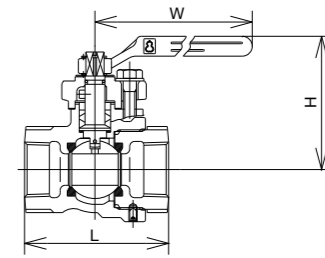


△ Indicator: Black
Valve stem: widths across flats, marked "1"

| Nominal diameter (A) | 15 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| L | 108 | 117 | 127 | 140 | 165 | 178 | 190 | 203 | 229 |
| H | 81 | 85 | 103 | 108 | 129 | 139 | 151 | 186 | 202 |
| W | 120 | 120 | 150 | 150 | 220 | 220 | 220 | 320 | 400 |

Product Code **BM10KS2L** 10K Ball Valve for Gas Screwed 1-stage Reduced Bore

| Product Name | Material | Remarks |
|---------------|----------|--------------------------|
| Body | FCD-S | |
| Ball | SCS13A | |
| Stem | SUS403 | |
| Seat ring | PTFE | |
| Handle | FCMB340 | Color: Blue |
| Gasket | SUS304 | Nominal diameter: 1/2-2B |
| Gland Packing | H1215 | Nominal diameter: 3B |

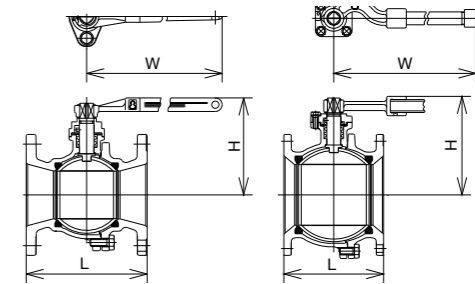


△ Indicator: Green/Valve stem angle: square

| Nominal diameter (B) | 1/2 | 3/4 | 1 | 1 1/4 | 1 1/2 | 2 | 3 |
|----------------------|-----|-----|-----|-------|-------|-----|-----|
| L | 66 | 75 | 87 | 100 | 115 | 130 | 180 |
| H | 70 | 77 | 81 | 102 | 107 | 129 | 151 |
| W | 120 | 120 | 120 | 150 | 150 | 220 | 220 |

Product Code **BM10KF2L** 10K Ball Valve for Gas Flanged 1-stage Reduced Bore

| Product Name | Material | Remarks |
|--------------------|---------------|--|
| Body | FCD-S | |
| Ball | SCS13A | Nominal diameter: 65A |
| Ball | SUS304 | Nominal diameter: 80-250A |
| Stem | SUS403 | |
| Seat ring | PTFE | |
| Handle | FCMB340 | Color: Blue / Nominal diameter: 60-125A |
| Handle boss + pipe | FCMB340+ STPG | Color: Blue / Nominal diameter: 150-250A |
| Gasket | H1215 | |
| Gland Packing | PTFE | |

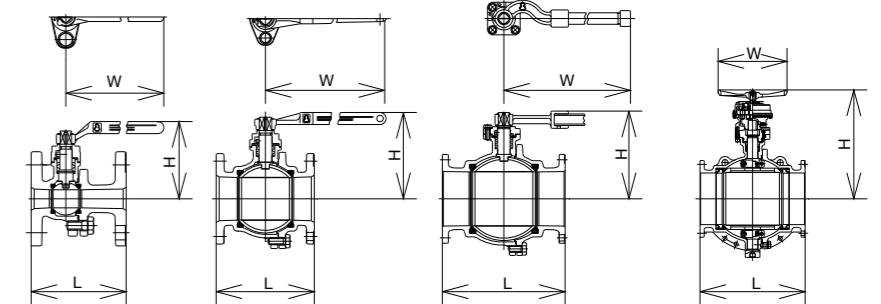


△ Indicator: Green/Valve stem angle: square

| Nominal diameter (A) | 65 | 80 | 100 | 125 | 150 | 200 | 250 |
|----------------------|-----|-----|-----|-----|-----|------|------|
| L | 190 | 203 | 229 | 254 | 267 | 292 | 330 |
| H | 139 | 151 | 186 | 202 | 243 | 262 | 321 |
| W | 220 | 220 | 320 | 400 | 800 | 1000 | 1200 |

Product Code **BM10KF0L** 10K Ball Valve for Gas Flanged Full bore

| Product Name | Material | Remarks |
|--------------------|---------------|--|
| Body | FCD-S | |
| Ball | SCS13A | Nominal diameter: 15-50A |
| Ball | SUS304 | Nominal diameter: 65-200A |
| Ball | SCS13+ SUS304 | Nominal diameter: 250-300A |
| Stem | SUS403 | |
| Seat ring | PTFE | |
| Seat retainer | SUS403 | Nominal diameter: 250-300A |
| Handle | FCMB340 | Color: Blue / Nominal diameter: 15-100A |
| Handle boss + pipe | FCMB340+ STPG | Color: Blue / Nominal diameter: 125-200A |
| Handwheel | FCD450 | Color: Blue / Nominal diameter: 250-300A |
| Gasket | H1215 | Nominal diameter: 15-200A |
| O ring | NBR | Nominal diameter: 250-300A |
| Gland Packing | PTFE | |



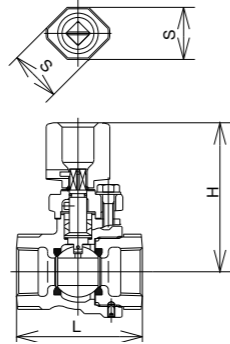
△ Indicator: Green/Valve stem angle: square

| Nominal diameter (A) | 15 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|-----|-----|
| L | 108 | 117 | 127 | 140 | 165 | 178 | 190 | 203 | 229 | 292 | 394 | 457 | 533 | 610 |
| H | 81 | 85 | 103 | 108 | 129 | 139 | 151 | 186 | 202 | 243 | 262 | 321 | 565 | 619 |
| W | 120 | 120 | 150 | 150 | 220 | 220 | 220 | 320 | 400 | 800 | 1000 | 1200 | 400 | 400 |

*1: Usable for LPG to -5°C.
*2: Full bore 250A-300A (BM10KF0L 250-300A) maximum operating temperature for ball valves is 80°C.

Product Code **BM10KS2G** 10K Ball Valve for Gas (buried pipe) Screwed 1-stage Reduced Bore

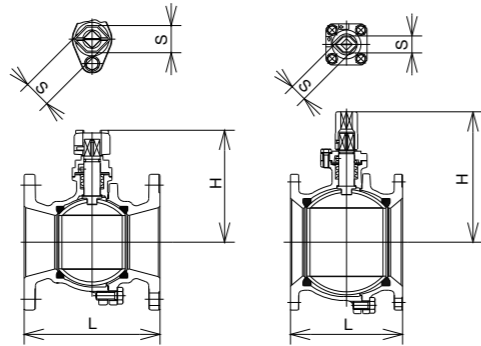
| Product Name | Material | Remarks |
|---------------|----------|--------------------------|
| Body | FCD-S | |
| Ball | SCS13A | |
| Stem | SUS403 | |
| Seat ring | PTFE | |
| Handle boss | FCD450 | |
| Gasket | SUS304 | Nominal diameter: 1/2-2B |
| | H1215 | Nominal diameter: 3B |
| Gland Packing | PTFE | |



| Nominal diameter (B) | 1/2 | 3/4 | 1 | 1 1/4 | 1 1/2 | 2 | 3 |
|----------------------|-----|-----|-----|-------|-------|-----|-----|
| L | 66 | 75 | 87 | 100 | 115 | 130 | 180 |
| H | 90 | 97 | 101 | 114 | 119 | 142 | 164 |
| S | 36 | 36 | 36 | 36 | 36 | 36 | 50 |

Product Code **BM10KF2G** 10K Ball Valve for Gas (buried pipe) Flanged 1-stage Reduced Bore

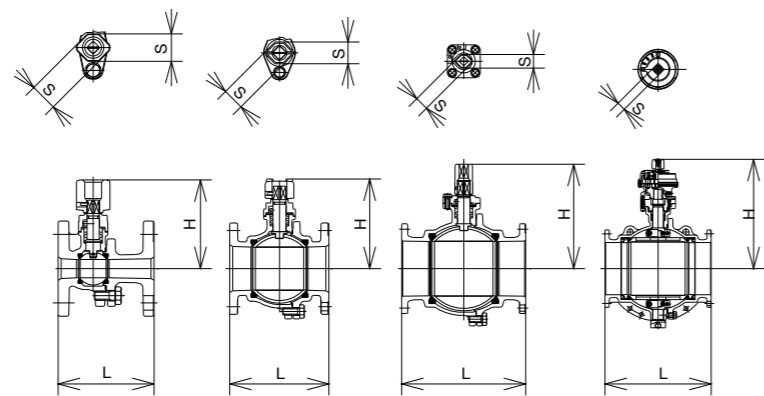
| Product Name | Material | Remarks |
|---------------|----------|---------------------------|
| Body | FCD-S | |
| Ball | SCS13A | Nominal diameter: 65A |
| | SUS304 | Nominal diameter: 80-250A |
| Stem | SUS403 | |
| Seat ring | PTFE | |
| Handle boss | FCD450 | Nominal diameter: 65-200A |
| | FCMB340 | Nominal diameter: 250A |
| Gasket | H1215 | |
| Gland Packing | PTFE | |



| Nominal diameter (A) | 65 | 80 | 100 | 125 | 150 | 200 | 250 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|
| L | 190 | 203 | 229 | 254 | 267 | 292 | 330 |
| H | 152 | 164 | 186 | 202 | 244 | 263 | 384 |
| S | 50 | 50 | 50 | 50 | 50 | 50 | 50 |

Product Code **BM10KF0G** 10K Ball Valve for Gas (buried pipe) Flanged Full bore

| Product Name | Material | Remarks |
|---------------|---------------|----------------------------|
| Body | FCD-S | |
| Ball | SCS13A | Nominal diameter: 15-50A |
| | SUS304 | Nominal diameter: 65-200A |
| | SCS13+ SUS304 | Nominal diameter: 250-300A |
| Stem | SUS403 | |
| Seat ring | PTFE | |
| Seat retainer | SUS403 | Nominal diameter: 250-300A |
| Handle boss | FCD450 | Nominal diameter: 15-150A |
| | FCMB340 | Nominal diameter: 200A |
| | SS400 | Nominal diameter: 250-300A |
| Gasket | H1215 | Nominal diameter: 15-200A |
| O ring | NBR | Nominal diameter: 250-300A |
| Gland Packing | PTFE | |



| Nominal diameter (A) | 15 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| L | 108 | 117 | 127 | 140 | 165 | 178 | 190 | 203 | 229 | 292 | 394 | 457 | 533 | 610 |
| H | 99 | 103 | 114 | 119 | 142 | 152 | 164 | 186 | 202 | 244 | 263 | 384 | 576 | 630 |
| S | 36 | 36 | 36 | 36 | 36 | 36 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |

*1: Usable for LPG to -5°C.
*2: Full bore 250A-300A (BM10KF0L 250-300A) maximum operating temperature for ball valves is 80°C.

Features

- The main parts are mostly made with 13Cr stainless steel. Usable for hot fluids up to 350°C.
- Support for special fluids by exchanging the packing, gasket and main parts. We also undertake maintenance using genuine parts at any time.

Product Types

Globe, Gate, Check, Needle, Y Globe, Bellows seal, Angle, Strainer, Ball, Strainer ball valves

Fluid • Temperature • Pressure

Unit: MPa

| Maximum working pressure by product type MPa | Steady water flow | | | Oil, air, steam, pulsating water | | | | | | LPG | | |
|--|--|-----|-----|----------------------------------|-----|-----|-----|-----|-----|-----|----|-----|
| | 60 | 104 | 120 | 104 | 200 | 220 | 230 | 250 | 300 | 350 | 80 | 120 |
| Globe | Service temperature limit by fluid (°C) | | | | | | | | | | | |
| | Standard, needle, Y, angle | | | | | | | | | | | |
| | PTFE disc | | | | | | | | | | | |
| Gate | Standard, high temperature specification | | | | | | | | | | | |
| | Standard, screw-down stop check | | | | | | | | | | | |
| Check | Standard | | | | | | | | | | | |
| | For LPG | | | | | | | | | | | |
| Strainer | Standard | | | | | | | | | | | |
| | For LPG | | | | | | | | | | | |
| Ball | Strainer ball | | | | | | | | | | | |
| | For general use | | | | | | | | | | | |

*1 Heat-resistant coating is recommended in case the service temperature exceeds 120°C.

Test Pressure

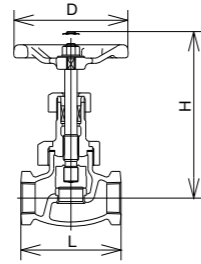
Unit: MPa

| Product Type | Body pressure resistance | | Valve seat leakage | | Back seat leakage |
|--|--------------------------|--------------|--------------------|--------------|-------------------|
| | Water pressure | Air pressure | Water pressure | Air pressure | Air pressure |
| Globe, gate, check, angle, Y Globe valves | 4.20 | | 3.08 | | |
| Bellows seal valve | | 2.50 | | 2.50 | |
| Globe valve for LPG | 3.60 | 2.64 | | 2.64 | 2.64 |
| Check valve for LPG/Ball/Strainer ball valve | 3.60 | 2.64 | | 2.64 | |
| Strainer | 4.20 | | | | |
| Ball valve for general use | 4.20 | | 3.08 | | |



Product Code **M20KSG** 20K **Globe Screwed**

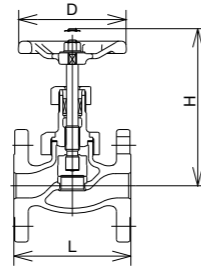
| Product Name | Material | Remarks |
|---------------|------------|---|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc | SUS403 | Hard facing |
| Seat ring | SUS403 | Hard facing |
| Handwheel | FCMB340 | Color: Brown / Nominal diameter: 3/8-1 1/2B |
| | FCD450 | Color: Brown / Nominal diameter: 2B |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |



| Nominal diameter (B) | 3/8 | 1/2 | 3/4 | 1 | 1 1/4 | 1 1/2 | 2 |
|----------------------|-----|-----|-----|-----|-------|-------|-----|
| L | 70 | 75 | 90 | 105 | 120 | 135 | 160 |
| H | 125 | 135 | 145 | 170 | 180 | 195 | 225 |
| D | 80 | 80 | 100 | 120 | 120 | 140 | 180 |

Product Code **M20KFG** 20K **Globe Flanged**

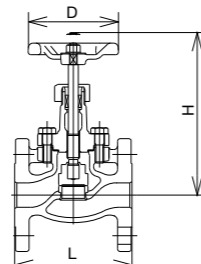
| Product Name | Material | Remarks |
|---------------|------------|---|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc | SUS403 | Hard facing |
| Seat ring | SUS403 | Hard facing |
| Handwheel | FCMB340 | Color: Brown / Nominal diameter: 10-40A |
| | FCD450 | Color: Brown / Nominal diameter: 50A |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |



| Nominal diameter (A) | 10 | 15 | 20 | 25 | 32 | 40 | 50 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|
| L | 100 | 110 | 120 | 130 | 160 | 180 | 230 |
| H | 125 | 135 | 145 | 170 | 180 | 195 | 225 |
| D | 80 | 80 | 100 | 120 | 120 | 140 | 180 |

Product Code **M20KFGI** 20K **Globe Flanged BB type**

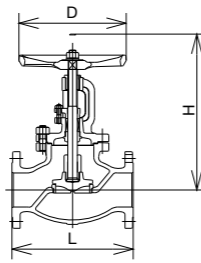
| Product Name | Material | Remarks |
|---------------|------------|---|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc | SUS403 | Hard facing |
| Seat ring | SUS403 | Hard facing |
| Handwheel | FCMB340 | Color: Brown / Nominal diameter: 15-40A |
| | FCD450 | Color: Brown / Nominal diameter: 50A |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |



| Nominal diameter (A) | 15 | 20 | 25 | 32 | 40 | 50 |
|----------------------|-----|-----|-----|-----|-----|-----|
| L | 110 | 120 | 130 | 160 | 180 | 230 |
| H | 152 | 154 | 180 | 202 | 231 | 261 |
| D | 80 | 80 | 100 | 120 | 140 | 180 |

Product Code **M20KFGO** 20K **Globe Flanged OS and BB type**

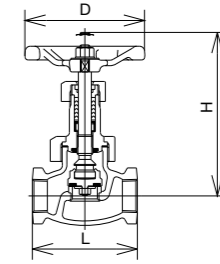
| Product Name | Material | Remarks |
|---------------|------------|---|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc | S28C | Hard facing / Nominal diameter: 50-200A |
| | S25C | Hard facing / Nominal diameter: 250A |
| Seat ring | S28C | Hard facing |
| Handwheel | FCMB340 | Nominal diameter: 50-65A |
| | FCD450 | Nominal diameter: 80A or larger |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |



| Nominal diameter (A) | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| L | 267 | 292 | 318 | 356 | 400 | 444 | 559 | 622 |
| H | 329 | 355 | 390 | 445 | 515 | 595 | 685 | 820 |
| D | 224 | 250 | 300 | 315 | 355 | 400 | 450 | 560 |

Product Code **M20KSDL** 20K **Globe Screwed Reinforced PTFE disc**

| Product Name | Material | Remarks |
|---------------|----------|---|
| Body | FCD-S | |
| Cover | FCD-S | Nominal diameter: 1/2B:FCD-S |
| Stem | SUS403 | |
| Disc seat | PTFE | |
| Disc | SUS403 | |
| Seat ring | SUS403 | |
| Handwheel | FCMB340 | Color: Green / Nominal diameter: 3/8-1 1/2B |
| | FCD450 | Color: Green / Nominal diameter: 2B |
| Gasket | H1215 | |
| Gland Packing | H2661-V | |

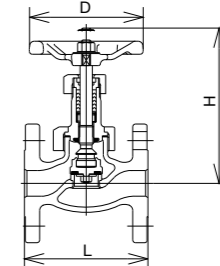


| Nominal diameter (B) | 3/8 | 1/2 | 3/4 | 1 | 1 1/4 | 1 1/2 | 2 |
|----------------------|-----|-----|-----|-----|-------|-------|-----|
| L | 70 | 75 | 90 | 105 | 120 | 135 | 160 |
| H | 125 | 135 | 145 | 170 | 180 | 200 | 230 |
| D | 80 | 80 | 100 | 120 | 120 | 140 | 180 |

△Name plate: PTFE display

Product Code **M20KFDL** 20K **Globe Flanged Reinforced PTFE disc**

| Product Name | Material | Remarks |
|---------------|----------|---|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc seat | PTFE | |
| Disc | SUS403 | |
| Seat ring | SUS403 | |
| Handwheel | FCMB340 | Color: Green / Nominal diameter: 10-40A |
| | FCD450 | Color: Green / Nominal diameter: 50A |
| Gasket | H1215 | |
| Gland Packing | H2661-V | |

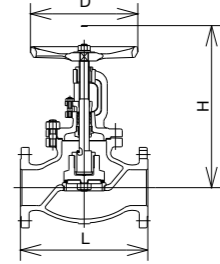


| Nominal diameter (A) | 10 | 15 | 20 | 25 | 32 | 40 | 50 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|
| L | 100 | 110 | 120 | 130 | 160 | 180 | 230 |
| H | 125 | 135 | 145 | 170 | 180 | 200 | 230 |
| D | 80 | 80 | 100 | 120 | 120 | 140 | 180 |

△Name plate: PTFE display

Product Code **M20KFDLO** 20K **Globe Flanged Reinforced PTFE disc OS and BB type**

| Product Name | Material | Remarks |
|---------------|----------|---------------------------------|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc seat | PTFE | |
| Disc | SUS403 | |
| Seat ring | SUS403 | |
| Handwheel | FCMB340 | Nominal diameter: 50-65A |
| | FCD450 | Nominal diameter: 80A or larger |
| Gasket | H1215 | |
| Gland Packing | H2661-V | |

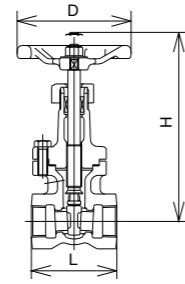


| Nominal diameter (A) | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| L | 267 | 292 | 318 | 356 | 400 | 444 | 559 | 622 |
| H | 325 | 365 | 395 | 440 | 515 | 580 | 685 | 815 |
| D | 224 | 224 | 250 | 300 | 315 | 400 | 450 | 560 |

△Name plate: PTFE display

Product Code **M20KSS** 20K Gate Valve Screwed BB type

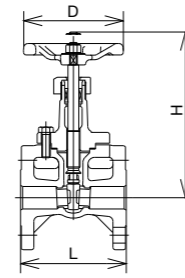
| Product Name | Material | Remarks |
|---------------|------------|--------------|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Wedge | SCS1 | |
| Seat ring | SUS403 | |
| Handwheel | FCMB340 | Color: Brown |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |



| Nominal diameter (B) | 1/2 | 3/4 | 1 | 1¼ | 1½ | 2 |
|----------------------|-----|-----|-----|-----|-----|-----|
| L | 70 | 80 | 90 | 100 | 110 | 120 |
| H | 172 | 184 | 213 | 232 | 264 | 298 |
| D | 80 | 100 | 120 | 120 | 140 | 140 |

Product Code **M20KFS** 20K Gate Valve Flanged BB type

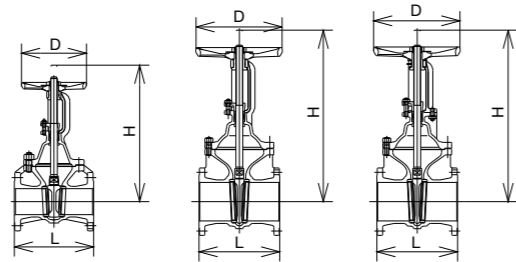
| Product Name | Material | Remarks |
|---------------|------------|--------------|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Wedge | SCS1 | |
| Seat ring | SUS403 | |
| Handwheel | FCMB340 | Color: Brown |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |



| Nominal diameter (A) | 15 | 20 | 25 | 32 | 40 | 50 |
|----------------------|-----|-----|-----|-----|-----|-----|
| L | 108 | 117 | 127 | 140 | 165 | 178 |
| H | 172 | 184 | 213 | 232 | 264 | 298 |
| D | 80 | 100 | 120 | 120 | 140 | 140 |

Product Code **M20KFSO** 20K Gate Valve Flanged OS and BB type

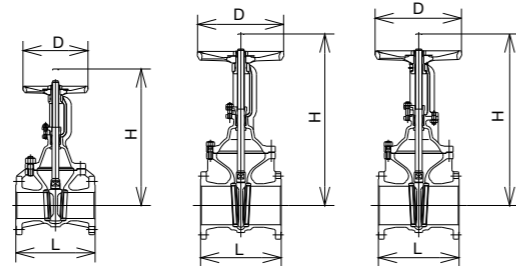
| Product Name | Material | Remarks |
|---------------|------------|-------------------------------------|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Wedge | SCS1 | Nominal diameter: 25·40·65·125·200A |
| | SUS403 | Nominal diameter: 32·80·100A |
| | SCPH2 | 13Cr stainless deposit 125-300A |
| Seat ring | SUS403 | |
| Handwheel | FCD450 | Color: Brown |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |



| Nominal diameter (A) | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| L | 160 | 170 | 190 | 216 | 241 | 283 | 305 | 381 | 403 | 419 | 457 | 502 |
| H | 281 | 300 | 328 | 383 | 442 | 502 | 591 | 698 | 819 | 1026 | 1238 | 1440 |
| D | 160 | 160 | 160 | 180 | 180 | 224 | 250 | 300 | 315 | 450 | 560 | 630 |

Product Code **M20KFSHO** 20K Gate Valve Flanged OS and BB type Heating Medium type

| Product Name | Material | Remarks |
|---------------|------------|---|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Wedge | SCS1 | Hard facing / Nominal diameter: 25·40·65·125·200A |
| | SUS403 | Hard facing / Nominal diameter: 32·80·100A |
| | SCPH2 | Hard facing / Nominal diameter: 250·300A |
| Seat ring | SUS403 | Hard facing / Nominal diameter: 25-100A |
| | S28C | Hard facing / Nominal diameter: 125-300A |
| Handwheel | FCD450 | Color: Brown |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |

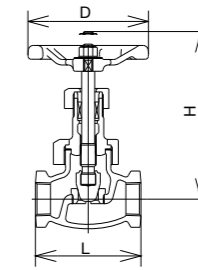


| Nominal diameter (A) | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| L | 160 | 170 | 190 | 216 | 241 | 283 | 305 | 381 | 403 | 419 | 457 | 502 |
| H | 281 | 300 | 328 | 383 | 442 | 502 | 591 | 698 | 819 | 1026 | 1238 | 1440 |
| D | 160 | 160 | 160 | 180 | 180 | 224 | 250 | 300 | 315 | 450 | 560 | 630 |

△Name plate: FSHO display

Product Code **M20KSN** 20K Needle Valve Screwed

| Product Name | Material | Remarks |
|---------------|------------|--|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc | SUS403 | Hard facing |
| Seat ring | SUS403 | Hard facing |
| Handwheel | FCMB340 | Color: Brown / Nominal diameter: ¾-1½B |
| | FCD450 | Color: Brown / Nominal diameter: 2B |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |

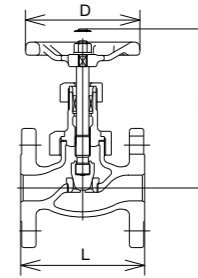


| Nominal diameter (B) | 3/8 | 1/2 | 3/4 | 1 | 1¼ | 1½ | 2 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|
| L | 70 | 75 | 90 | 105 | 120 | 135 | 160 |
| H | 125 | 135 | 145 | 170 | 180 | 200 | 230 |
| D | 80 | 80 | 100 | 120 | 120 | 140 | 180 |

△Valve stem tips:
Marked "N"/Fitted with metal tag clearly marked
"Needle valve"

Product Code **M20KFN** 20K Needle Valve Flanged

| Product Name | Material | Remarks |
|---------------|------------|---|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc | SUS403 | Hard facing |
| Seat ring | SUS403 | Hard facing |
| Handwheel | FCMB340 | Color: Brown / Nominal diameter: 10-40A |
| | FCD450 | Color: Brown / Nominal diameter: 50A |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |

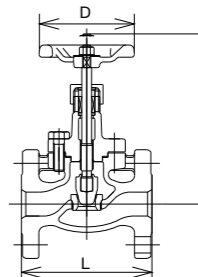


| Nominal diameter (A) | 10 | 15 | 20 | 25 | 32 | 40 | 50 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|
| L | 100 | 110 | 120 | 130 | 160 | 180 | 230 |
| H | 125 | 135 | 145 | 170 | 180 | 200 | 230 |
| D | 80 | 80 | 100 | 120 | 120 | 140 | 180 |

△Valve stem tips:
Marked "N"/Fitted with metal tag clearly marked
"Needle valve"

Product Code **M20KFNI** 20K Needle Valve Flanged BB type

| Product Name | Material | Remarks |
|---------------|------------|---|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc | SUS403 | Hard facing |
| Seat ring | SUS403 | Hard facing |
| Handwheel | FCMB340 | Color: Brown / Nominal diameter: 10-40A |
| | FCD450 | Color: Brown / Nominal diameter: 50A |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |

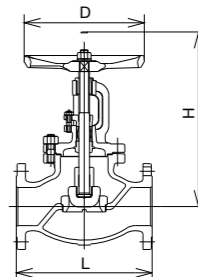


| Nominal diameter (A) | 15 | 20 | 25 | 32 | 40 | 50 |
|----------------------|-----|-------|-----|-----|-------|-------|
| L | 110 | 120 | 130 | 160 | 180 | 230 |
| H | 154 | 159.5 | 183 | 208 | 236.5 | 264.5 |
| D | 80 | 80 | 100 | 120 | 140 | 180 |

△Valve stem tips:
Marked "N"/Fitted with metal tag clearly marked
"Needle valve"

Product Code **M20KFNO** 20K Needle Valve Flanged OS and BB type

| Product Name | Material | Remarks |
|---------------|------------|------------------------------------|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc | SUS403 | Hard facing |
| Seat ring | SUS403 | Hard facing |
| Handwheel | FCMB340 | Nominal diameter: 50-65A |
| | FCD450 | Nominal diameter: 80A or larger |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |

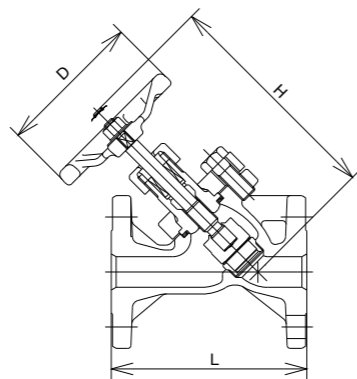


| Nominal diameter (A) | 50 | 65 | 80 | 100 | 125 | 150 |
|----------------------|-----|-----|-----|-----|-----|-----|
| L | 267 | 292 | 318 | 356 | 400 | 444 |
| H | 335 | 365 | 405 | 445 | 515 | 595 |
| D | 224 | 224 | 250 | 300 | 315 | 355 |

△Valve stem tips:
Marked "N"/Fitted with metal tag clearly marked
"Needle valve"

Product Code **M20KFGY** 20K Y Globe Valve Flanged

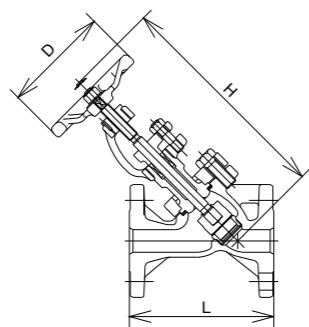
| Product Name | Material | Remarks |
|---------------|------------|---|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc | SUS403 | Hard facing |
| Seat ring | SUS403 | Hard facing |
| Handwheel | FCMB340 | Color: Brown / Nominal diameter: 25-40A |
| | FCD450 | Color: Brown / Nominal diameter: 50A |
| Gasket | H1804GR | |
| Gland Packing | H350+H2200 | |



| Nominal diameter (A) | 25 | 40 | 50 |
|----------------------|-----|-----|-----|
| L | 160 | 210 | 250 |
| H | 208 | 246 | 293 |
| D | 120 | 140 | 180 |

Product Code **M20KFGYO** 20K Y Globe Valve Flanged OS and BB type

| Product Name | Material | Remarks |
|---------------|------------|---|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc | SUS403 | Hard facing |
| Seat ring | SUS403 | Hard facing |
| Handwheel | FCMB340 | Color: Brown / Nominal diameter: 25-40A |
| | FCD450 | Color: Brown / Nominal diameter: 50A |
| Gasket | H1804GR | |
| Gland Packing | H350+H2200 | |

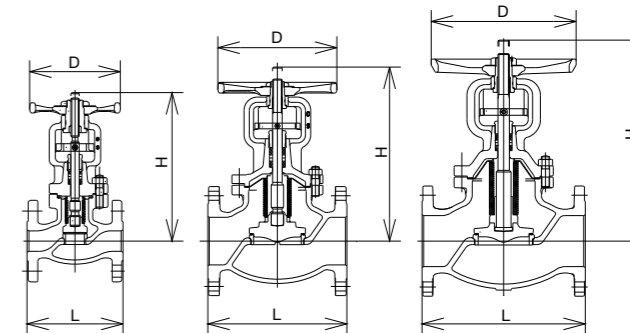


| Nominal diameter (A) | 25 | 40 | 50 |
|----------------------|-----|-----|-----|
| L | 160 | 210 | 250 |
| H | 250 | 286 | 331 |
| D | 120 | 140 | 180 |

△When M20KFGY (O) is used as a blow-down valve (blow-off valve) on the bottom of the tin can boiler, the maximum allowable working pressure should be limited to 1.86 MPa (19 kgf/cm²) or less.

Product Code **M20KFGB** 20K Bellows Seal Valve Flanged OS and BB type

| Product Name | Material | Remarks |
|---------------|------------|--|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS410 | |
| Seat ring | SUS410 | Hard facing |
| Disc | SUS304 | Hard facing (Nominal diameter: 50A or less) |
| | A182-F304 | Hard facing (Nominal diameter: 65-100A) |
| | SCS1 | Hard facing (Nominal diameter: 125A or more) |
| Bellows | SUS316L | |
| Handwheel | FCMB340 | Color: Black |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |

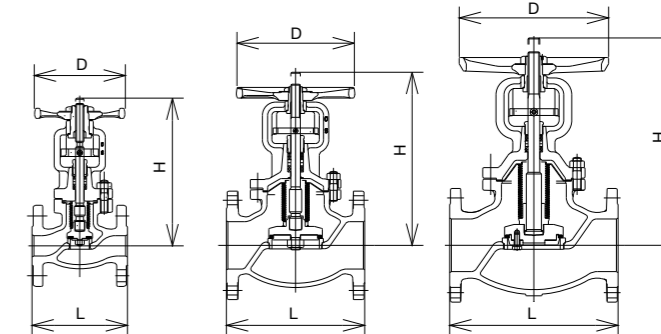


△The glands of the bellows seal valve are maintenance-free, but since the cover bolts may loosen due to vibrations and heat stress, they will need regular maintenance.

| Nominal diameter (A) | 15 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| L | 110 | 120 | 130 | 160 | 180 | 230 | 292 | 318 | 356 | 400 | 444 | 559 | 622 |
| H | 181 | 191 | 196 | 208 | 243 | 253 | 309 | 377 | 402 | 491 | 562 | 713 | 869 |
| D | 100 | 100 | 120 | 120 | 160 | 180 | 224 | 250 | 300 | 355 | 400 | 450 | 560 |

Product Code **M20KFDB** 20K Bellows Seal Valve Flanged Reinforced PTFE disc OS and BB type

| Product Name | Material | Remarks |
|---------------|-----------------|--|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS410 | |
| Seat ring | SUS410 | |
| Disc seat | Reinforced PTFE | |
| Disc | SUS304 | Nominal diameter: 50A or less-125A or more |
| | A182-F304 | Nominal diameter: 65-100A |
| Bellows | SUS316L | |
| Handwheel | FCMB340 | Color: Black |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |

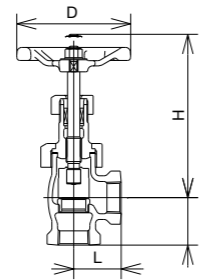


△The glands of the bellows seal valve are maintenance-free, but since the cover bolts may loosen due to vibrations and heat stress, they will need regular maintenance.

| Nominal diameter (A) | 15 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| L | 110 | 120 | 130 | 160 | 180 | 230 | 292 | 318 | 356 | 400 | 444 | 559 | 622 |
| H | 181 | 191 | 196 | 208 | 243 | 253 | 309 | 377 | 402 | 491 | 562 | 713 | 869 |
| D | 100 | 100 | 120 | 120 | 160 | 180 | 224 | 250 | 300 | 355 | 400 | 450 | 560 |

Product Code **M20KSA** 20K Angle Valve Screwed

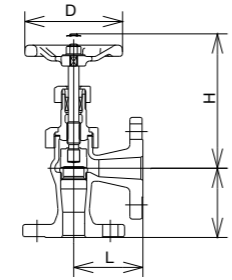
| Product Name | Material | Remarks |
|---------------|------------|---|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc | SUS403 | Hard facing |
| Seat ring | SUS403 | Hard facing |
| Handwheel | FCMB340 | Color: Brown / Nominal diameter: 3/8-1 1/2B |
| | FCD450 | Color: Brown / Nominal diameter: 2B |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |



| Nominal diameter (B) | 3/8 | 1/2 | 3/4 | 1 | 1 1/4 | 1 1/2 | 2 |
|----------------------|-----|-----|-----|-----|-------|-------|-----|
| L | 32 | 37 | 42 | 50 | 55 | 60 | 75 |
| H | 115 | 125 | 145 | 160 | 170 | 190 | 210 |
| D | 80 | 80 | 100 | 120 | 120 | 140 | 180 |

Product Code **M20KFA** 20K Angle Valve Flanged

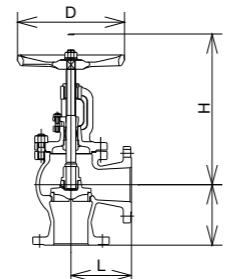
| Product Name | Material | Remarks |
|---------------|------------|---|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc | SUS403 | Hard facing |
| Seat ring | SUS403 | Hard facing |
| Handwheel | FCMB340 | Color: Brown / Nominal diameter: 10-40A |
| | FCD450 | Color: Brown / Nominal diameter: 50A |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |



| Nominal diameter (A) | 10 | 15 | 20 | 25 | 32 | 40 | 50 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|
| L | 70 | 70 | 75 | 85 | 95 | 100 | 120 |
| H | 115 | 125 | 140 | 160 | 165 | 185 | 205 |
| D | 80 | 80 | 100 | 120 | 120 | 140 | 180 |

Product Code **M20KFAO** 20K Angle Valve Flanged OS and BB type

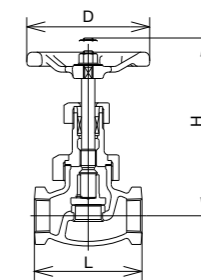
| Product Name | Material | Remarks |
|---------------|------------|---------------------------------|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc | S28C | Hard facing |
| Seat ring | S28C | Hard facing |
| Handwheel | FCMB340 | Nominal diameter: 50-65A |
| | FCD450 | Nominal diameter: 80A or larger |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |



| Nominal diameter (A) | 65 | 80 | 100 |
|----------------------|-----|-----|-----|
| L | 146 | 159 | 178 |
| H | 325 | 360 | 405 |
| D | 250 | 300 | 315 |

Product Code **M20KSGC** 20K (Screw-down) Stop Check Valve Screwed

| Product Name | Material | Remarks |
|---------------|------------|---|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc | SUS403 | Hard facing |
| Seat ring | SUS403 | Hard facing |
| Handwheel | FCMB340 | Color: Brown / Nominal diameter: 3/8-1 1/2B |
| | FCD450 | Color: Brown / Nominal diameter: 2B |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |

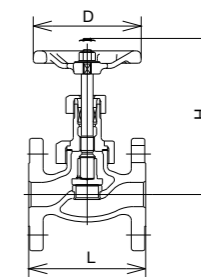


| Nominal diameter (B) | 3/8 | 1/2 | 3/4 | 1 | 1 1/4 | 1 1/2 | 2 |
|----------------------|-----|-----|-----|-----|-------|-------|-----|
| L | 70 | 75 | 90 | 105 | 120 | 135 | 160 |
| H | 125 | 135 | 145 | 170 | 180 | 195 | 225 |
| D | 80 | 80 | 100 | 120 | 120 | 140 | 180 |

△Valve stem tips:
Marked "C"/The cover is clearly marked
"Screw-down Stop Check Valve"

Product Code **M20KFGC** 20K (Screw-down) Stop Check Valve Flanged

| Product Name | Material | Remarks |
|---------------|------------|---|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc | SUS403 | Hard facing |
| Seat ring | SUS403 | Hard facing |
| Handwheel | FCMB340 | Color: Brown / Nominal diameter: 10-40A |
| | FCD450 | Color: Brown / Nominal diameter: 50A |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |

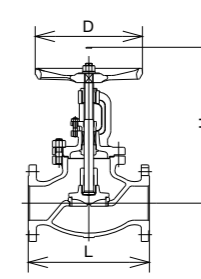


| Nominal diameter (A) | 10 | 15 | 20 | 25 | 32 | 40 | 50 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|
| L | 100 | 110 | 120 | 130 | 160 | 180 | 230 |
| H | 125 | 135 | 145 | 170 | 180 | 195 | 225 |
| D | 80 | 80 | 100 | 120 | 120 | 140 | 180 |

△Valve stem tips:
Marked "C"/The cover is clearly marked
"Screw-down Stop Check Valve"

Product Code **M20KFGCO** 20K (Screw-down) Stop Check Valve Flanged OS and BB type

| Product Name | Material | Remarks |
|---------------|------------|---------------------------------|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc | S28C | Hard facing |
| Seat ring | S28C | Hard facing |
| Handwheel | FCMB340 | Nominal diameter: 50-65A |
| | FCD450 | Nominal diameter: 80A or larger |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |

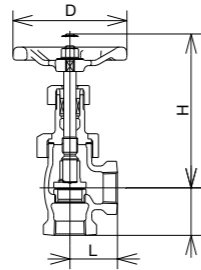


| Nominal diameter (A) | 50 | 65 | 80 | 100 | 125 |
|----------------------|-----|-----|-----|-----|-----|
| L | 267 | 292 | 318 | 356 | 400 |
| H | 333 | 365 | 400 | 455 | 520 |
| D | 224 | 250 | 300 | 315 | 355 |

△Valve stem tips:
Marked "C"/The cover is clearly marked
"Screw-down Stop Check Valve"

Product Code **M20KSAC** 20K Angle (Screw-down) Stop Check Valve Screwed

| Product Name | Material | Remarks |
|---------------|------------|---|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc | SUS403 | Hard facing |
| Seat ring | SUS403 | Hard facing |
| Handwheel | FCMB340 | Color: Brown / Nominal diameter: 1/2-1 1/2B |
| | FCD450 | Color: Brown / Nominal diameter: 2B |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |

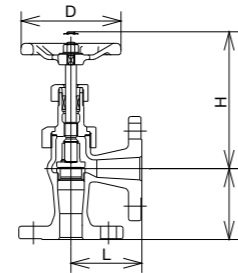


| Nominal diameter (B) | 1/2 | 3/4 | 1 | 1 1/4 | 1 1/2 | 2 |
|----------------------|-----|-----|-----|-------|-------|-----|
| L | 37 | 42 | 50 | 55 | 60 | 75 |
| H | 130 | 145 | 160 | 175 | 190 | 215 |
| D | 80 | 100 | 120 | 120 | 140 | 180 |

△Valve stem tips:
Marked "C"/The cover is clearly marked
"Screw-down Stop Check Valve"

Product Code **M20KFAC** 20K Angle (Screw-down) Stop Check Valve Flanged

| Product Name | Material | Remarks |
|---------------|------------|---|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc | SUS403 | Hard facing |
| Seat ring | SUS403 | Hard facing |
| Handwheel | FCMB340 | Color: Brown / Nominal diameter: 15-40A |
| | FCD450 | Color: Brown / Nominal diameter: 50A |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |

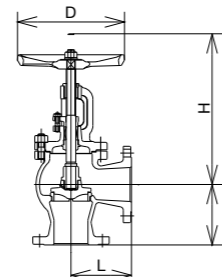


| Nominal diameter (A) | 15 | 20 | 25 | 32 | 40 | 50 |
|----------------------|-----|-----|-----|-----|-----|-----|
| L | 70 | 75 | 85 | 95 | 100 | 120 |
| H | 125 | 140 | 160 | 165 | 185 | 205 |
| D | 80 | 100 | 120 | 120 | 140 | 180 |

△Valve stem tips:
Marked "C"/The cover is clearly marked
"Screw-down Stop Check Valve"

Product Code **M20KFAO** 20K Angle (Screw-down) Stop Check Valve Flanged OS and BB type

| Product Name | Material | Remarks |
|---------------|------------|---------------------------------|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc | S28C | Hard facing |
| Seat ring | S28C | Hard facing |
| Handwheel | FCMB340 | Nominal diameter: 50-65A |
| | FCD450 | Nominal diameter: 80A or larger |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |

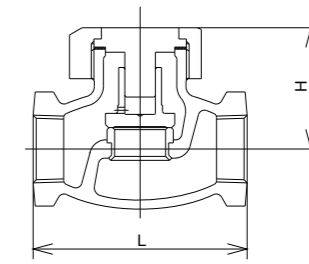


| Nominal diameter (A) | 65 | 80 | 100 |
|----------------------|-----|-----|-----|
| L | 146 | 159 | 178 |
| H | 325 | 355 | 405 |
| D | 250 | 300 | 315 |

△Valve stem tips:
Marked "C"/The cover is clearly marked
"Screw-down Stop Check Valve"

Product Code **M20KSC** 20K Check Valve (Lift) Screwed

| Product Name | Material | Remarks |
|--------------|-----------|------------------------|
| Body | FCD-S | |
| Cover | SCS1 | |
| Disc | SUS403 | Hard facing |
| Seat ring | SUS403 | Hard facing |
| Gasket | H1215 | |
| Spring | SUS304WPB | Nominal diameter: 3/8B |

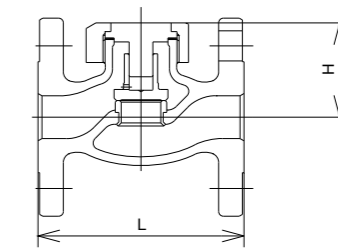


| Nominal diameter (B) | 3/8 | 1/2 | 3/4 | 1 | 1 1/4 | 1 1/2 | 2 |
|----------------------|-----|-----|-----|-----|-------|-------|-----|
| L | 70 | 75 | 90 | 105 | 120 | 135 | 160 |
| H | 44 | 49 | 51 | 58 | 66 | 75 | 86 |

△Cover top: No marks
(Marked with "S" if a spring is contained)

Product Code **M20KFC** 20K Check Valve (Lift) Flanged

| Product Name | Material | Remarks |
|--------------|-----------|-----------------------|
| Body | FCD-S | |
| Cover | SCS1 | |
| Disc | SUS403 | Hard facing |
| Seat ring | SUS403 | Hard facing |
| Gasket | H1215 | |
| Spring | SUS304WPB | Nominal diameter: 10A |

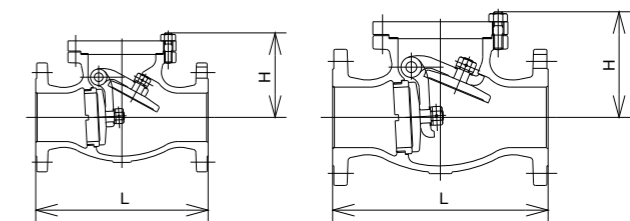


| Nominal diameter (A) | 10 | 15 | 20 | 25 | 32 | 40 | 50 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|
| L | 100 | 110 | 120 | 130 | 160 | 180 | 230 |
| H | 44 | 49 | 51 | 58 | 66 | 75 | 86 |

△Cover top: No marks
(Marked with "S" if a spring is contained)

Product Code **M20KFCS** 20K Check Valve (Swing) Flanged

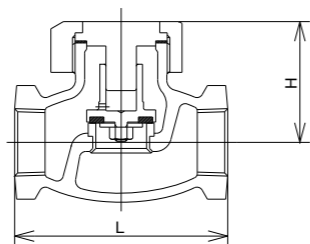
| Product Name | Material | Remarks |
|--------------|----------|-------------|
| Body | FCD-S | |
| Cover | SS400 | |
| Disc | S28C | Hard facing |
| Seat ring | S28C | Hard facing |
| Hinge pin | SUS403 | |
| Gasket | H1215 | |
| Plug | S25C | |



| Nominal diameter (A) | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| L | 241 | 267 | 292 | 318 | 356 | 400 | 444 | 533 |
| H | 120 | 140 | 150 | 160 | 175 | 215 | 235 | 275 |

Product Code **M20KSCD** 20K Check Valve (Lift) Screwed Reinforced PTFE disc

| Product Name | Material | Remarks |
|--------------|-----------|------------------------|
| Body | FCD-S | |
| Cover | SUS403 | |
| Disc seat | PTFE | |
| Disc | SUS403 | |
| Seat ring | SUS403 | |
| Gasket | H1215 | |
| Spring | SUS304WPB | Nominal diameter: 3/8B |

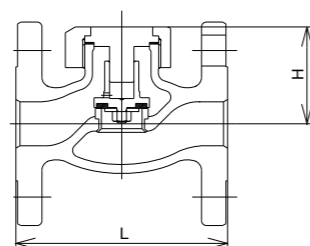


△Cover top: Marked with "D"
("DS" if a spring is contained)

| Nominal diameter (B) | 3/8 | 1/2 | 3/4 | 1 | 1¼ | 1½ | 2 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|
| L | 70 | 75 | 90 | 105 | 120 | 135 | 160 |
| H | 44 | 49 | 51 | 58 | 66 | 75 | 86 |

Product Code **M20KFCD** 20K Check Valve (Lift) Flanged Reinforced PTFE disc

| Product Name | Material | Remarks |
|--------------|-----------|-----------------------|
| Body | FCD-S | |
| Cover | SUS403 | |
| Disc seat | PTFE | |
| Disc | SUS403 | |
| Seat ring | SUS403 | |
| Gasket | H1215 | |
| Spring | SUS304WPB | Nominal diameter: 10A |

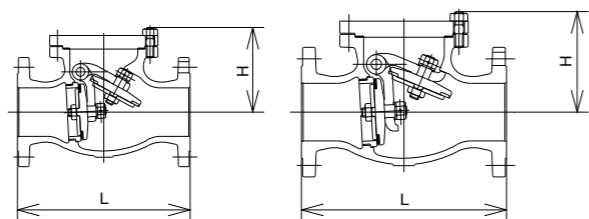


△Cover top: Marked with "D"
("DS" if a spring is contained)

| Nominal diameter (A) | 10 | 15 | 20 | 25 | 32 | 40 | 50 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|
| L | 100 | 110 | 120 | 130 | 160 | 180 | 230 |
| H | 44 | 49 | 51 | 58 | 66 | 75 | 86 |

Product Code **M20KFCSD** 20K Check Valve (Swing) Flanged Reinforced PTFE disc

| Product Name | Material | Remarks |
|--------------|----------|---------|
| Body | FCD-S | |
| Cover | S25C | |
| Disc seat | PTFE | |
| Disc | SUS403 | |
| Seat ring | SUS403 | |
| Hinge pin | SUS403 | |
| Gasket | H1215 | |
| Plug | S25C | |

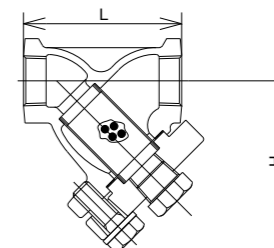


△Cover top: Marked with "D"

| Nominal diameter (A) | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| L | 241 | 267 | 292 | 318 | 356 | 400 | 444 | 533 |
| H | 120 | 140 | 150 | 160 | 175 | 215 | 235 | 275 |

Product Code **M20KST** 20K Strainer Screwed

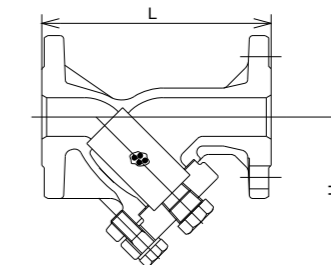
| Product Name | Material | Remarks |
|--------------|----------|---------|
| Body | FCD-S | |
| Cover | FCD-S | |
| Screen | SUS304 | 50 mesh |
| Gasket | H1215 | |
| Plug | S20C | |



| Nominal diameter (B) | 3/8 | 1/2 | 3/4 | 1 | 1¼ | 1½ | 2 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|
| L | 70 | 75 | 90 | 105 | 120 | 135 | 160 |
| H | 60 | 70 | 85 | 100 | 145 | 160 | 175 |

Product Code **M20KFT** 20K Strainer Flanged

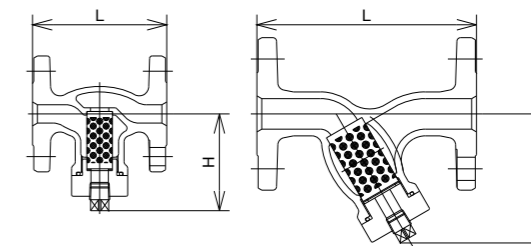
| Product Name | Material | Remarks |
|--------------|----------|---------|
| Body | FCD-S | |
| Cover | FCD-S | |
| Screen | SUS304 | 50 mesh |
| Gasket | H1215 | |
| Plug | S25C | |



| Nominal diameter (A) | 10 | 15 | 20 | 25 | 32 | 40 | 50 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|
| L | 120 | 130 | 140 | 160 | 190 | 210 | 250 |
| H | 57 | 68 | 77 | 91 | 137 | 154 | 170 |

Product Code **M20KFTLM** 20K Strainer for LPG Flanged

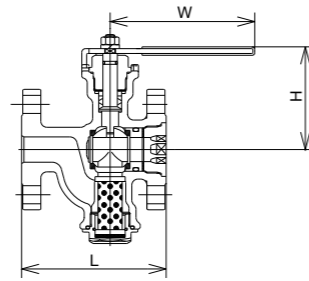
| Product Name | Material | Remarks |
|--------------|----------|----------|
| Body | FCD-S | |
| Cover | S45C | |
| Screen | SUS304 | 150 mesh |
| Plug | S25C | |



| Nominal diameter (A) | 15 | 20 | 25 |
|----------------------|-----|-----|-----|
| L | 110 | 160 | 180 |
| H | 78 | 100 | 109 |

Product Code **BM20KFT** 20K Strainer Ball Valve for LPG Flanged

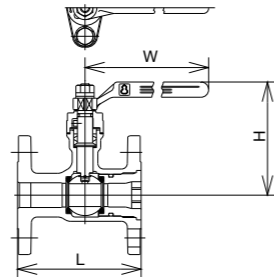
| Product Name | Material | Remarks |
|---------------|-----------------|------------------------------|
| Body | FCD-S | |
| Ball | SUS304 | |
| Stem | SUS403 | |
| Seat ring | PTFE | |
| Screen | SUS304 | 150 mesh |
| Handle | SUS430 | PVC coating Color: Yellow |
| Gasket | Reinforced PTFE | |
| Gland Packing | PTFE | |



| Nominal diameter (A) | 15 | 20 | 25 |
|----------------------|-----|------|-----|
| L | 110 | 120 | 130 |
| H | 90 | 94.5 | 108 |
| W | 120 | 120 | 120 |

Product Code **BM20KFOLS** 20K Ball Valve for LPG Flanged Short end-to-end dimension Full bore

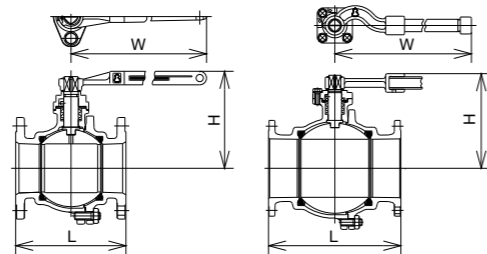
| Product Name | Material | Remarks |
|---------------|----------|--------------|
| Body | FCD-S | |
| Ball | SCS13A | |
| Stem | SUS403 | |
| Seat ring | PTFE | |
| Seat retainer | SUS304 | |
| Handle | FCMB340 | Color: Green |
| O ring | NBR | |
| Gland Packing | PTFE | |



| Nominal diameter (A) | 15 | 20 | 25 |
|----------------------|-----|-----|-----|
| L | 110 | 120 | 130 |
| H | 97 | 101 | 119 |
| W | 120 | 120 | 150 |

Product Code **BM20KFOL** 20K Ball Valve for LPG Flanged Full bore

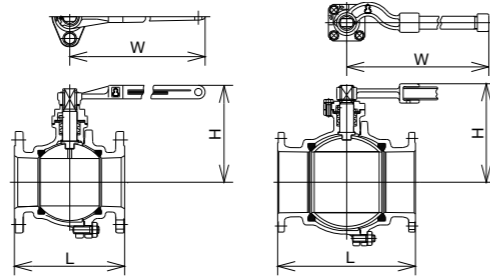
| Product Name | Material | Remarks |
|-----------------------|------------------|---|
| Body | FCD-S | |
| Ball | SCS13A | |
| Stem | SUS403 | |
| Seat ring | PTFE | |
| Seat retainer | SUS304 | |
| Handle | FCMB340 | Color: Green / Nominal diameter: 15-80A |
| Handle boss + pipe | FCMB340+ STPG | Color: Green / Nominal diameter: 100A |
| Gasket | H1215 | |
| Gland Packing | PTFE | |



| Nominal diameter (A) | 15 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| L | 140 | 152 | 165 | 178 | 190 | 216 | 241 | 283 | 305 |
| H | 76 | 80 | 103 | 108 | 125 | 133 | 145 | 185 | 226 |
| W | 120 | 120 | 150 | 150 | 220 | 220 | 220 | 400 | 800 |

Product Code **BM20KF0B** 20K Ball Valve Flanged Full bore

| Product Name | Material | Remarks |
|-----------------------|------------------|---|
| Body | FCD-S | |
| Ball | SCS13A | |
| Stem | SUS403 | |
| Seat ring | FT Seat | |
| Handle | FCMB340 | Color: Blue / Nominal diameter: 15-80A |
| Handle boss + pipe | FCMB340+ STPG | Color: Blue / Nominal diameter: 100A |
| Gasket | H1215 | |
| Gland Packing | Reinforced PTFE | |



| Nominal diameter (A) | 15 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| L | 140 | 152 | 165 | 178 | 190 | 216 | 241 | 283 | 305 |
| H | 76 | 80 | 103 | 108 | 125 | 133 | 145 | 185 | 226 |
| W | 120 | 120 | 150 | 150 | 220 | 220 | 220 | 400 | 800 |

△ Indicator: Blue/ Valve stem angle: widths across flats

Features

1. Can be used for a range of specifications since it is a general valve based on the 20K type.
2. Support for special fluids by exchanging the packing, gasket and main parts. Please consult with us separately. - We also undertake maintenance using genuine parts.
3. The main parts are made with 13cr stainless steel and can be used up to max. 650°F (343°C).
4. The 150lb type also supports threaded ends. Please refer to the ANSI B 1.20.1 (1983) American pipe thread specifications for dimensions of joints.

Product Types

Globe, Gate, Check, Bellows seal, Ball valves

Fluid • Temperature • Pressure

Unit: MPa

| Service temperature limit by fluid Top row: °C Bottom row: °F | Steady water flow | Oil, air, steam, pulsating water | | | | | | | | | | | | LPG | City gas | | |
|---|----------------------|----------------------------------|------------|------------|------------|------------|------------|------------|------------|-----------|------------|------------|------------|-----|----------|------------|------------|
| | | 38 (100) | 38 (100) | 80 (176) | 149 (300) | 161 (321) | 170 (338) | 183 (361) | 204 (400) | 220 (428) | 230 (446) | 260 (500) | 343 (650) | | | | |
| Globe | Standard, needle | 1.73 (250) | | | 1.48 (215) | | | | | | | | | | | | |
| | Reinforced PTFE disc | 1.73 (250) | | | 1.48 (215) | | 1.42 (206) | | | | | | | | | | |
| | Bellows | 1.37 (198) | | | 1.37 (198) | | | 1.37 (198) | | | | 1.18 (170) | 0.86 (125) | | | | |
| Gate | Standard | 1.73 (250) | | | 1.48 (215) | | | | 1.38 (200) | | | 1.18 (170) | 0.86 (125) | | | | |
| | Reinforced PTFE disc | 1.73 (250) | | | 1.48 (215) | | | | 1.38 (200) | | 1.32 (192) | | | | | | |
| | NBR disc | 1.73 (250) | | 1.38 (200) | | | | | | | | | | | | | |
| Ball | For general use | 1.73 (250) | 1.73 (250) | | | 1.45 (210) | 1.26 (183) | 0.98 (142) | | | | 0.4 (58) | | | | | |
| | For gas | | | | | | | | | | | | | | | 1.18 (171) | 0.98 (142) |

△Caution:

- A cobalt-base alloy (Co-Cr-W alloy) for the valve seat surface is recommended in case of use in the following conditions.
 1. For steam piping with a nominal diameter of 150A (6B) or higher.
 2. For steam piping when the pressure is 0.98 MPa (10kgf/cm²) or higher, and the frequency of opening and closing is high.
 3. For use with fluids in a dry state.
 4. For piping for chemicals where corrosion resistance is required, and the main parts of the valve are 18Cr-8Ni stainless steel
- * Heat-resistant coating is recommended if the service temperature exceeds 180°C.
- * Please consult with us separately for use below 14°F (-10°C).

Test Pressure

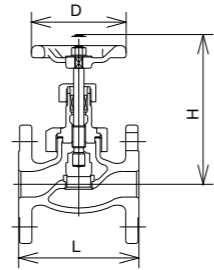
Unit: MPa

| Test description | Body pressure resistance | | Valve seat leakage | | Back seat leakage |
|---|--------------------------|--------------|--------------------|--------------|-------------------|
| | Water pressure | Air pressure | Water pressure | Air pressure | Water pressure |
| Globe, needle, gate (inside thread) (14B or higher), check, ball valves | 3.10 (450) | | 2.16 (314) | | |
| Gate, globe valve (outside thread/ 12B or lower) | 3.10 (450) | | 2.16 (314) | | 2.16 (314) |
| Bellows seal valve | | 0.98 (142) | | 0.98 (142) | |
| Ball valve for gas | 3.10 (450) | | | | 2.16 (314) |



Product Code **M150FG** 150lb **Globe Flanged**

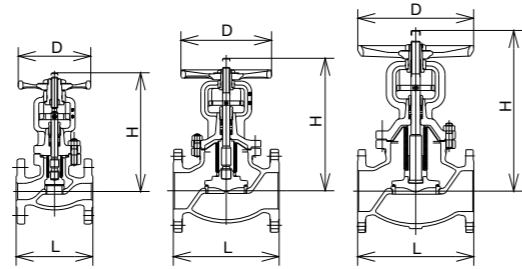
| Product Name | Material | Remarks |
|---------------|------------|-------------|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc | SUS403 | |
| Seat ring | SUS403 | |
| Handwheel | FCMB340 | Color: Blue |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |



| Nominal diameter (B) | 1/2 | 3/4 | 1 | 1¼ | 1½ | 2 |
|----------------------|-----|-----|-----|-----|-----|-----|
| L | 108 | 117 | 127 | 140 | 165 | 203 |
| H | 130 | 135 | 155 | 175 | 190 | 215 |
| D | 80 | 80 | 100 | 120 | 120 | 140 |

Product Code **M150FGO** 150lb **Globe Flanged OS and BB type**

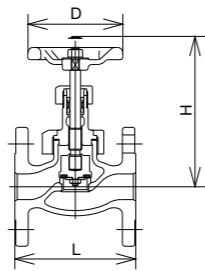
| Product Name | Material | Remarks |
|---------------|------------|---|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc | SUS403 | Nominal diameter: 2B-6B |
| | S28C | 13Cr stainless deposit / Nominal diameter: 8B-10B |
| Seat ring | SUS403 | Nominal diameter: 2B-6B |
| | S28C | Hard facing / Nominal diameter: 8-10B |
| Handwheel | FCD450 | Color: Blue |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |



| Nominal diameter (B) | 2 | 2½ | 3 | 4 | 5 | 6 | 8 | 10 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| L | 203 | 216 | 241 | 292 | 356 | 406 | 495 | 622 |
| H | 295 | 325 | 355 | 390 | 435 | 505 | 595 | 690 |
| D | 224 | 224 | 250 | 300 | 315 | 355 | 400 | 450 |

Product Code **M150FD** 150lb **Globe Flanged Reinforced PTFE disc**

| Product Name | Material | Remarks |
|---------------|-----------------|---------------|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc | SUS403 | |
| Disc seat | Reinforced PTFE | |
| Seat ring | SUS403 | |
| Handwheel | FCMB340 | Color: Orange |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |

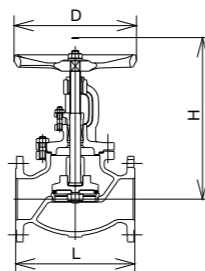


| Nominal diameter (B) | 1/2 | 3/4 | 1 | 1¼ | 1½ | 2 |
|----------------------|-----|-----|-----|-----|-----|-----|
| L | 108 | 117 | 127 | 140 | 165 | 203 |
| H | 131 | 133 | 153 | 176 | 192 | 216 |
| D | 80 | 80 | 100 | 120 | 120 | 140 |

△Name plate: PTFE display

Product Code **M150FDO** 150lb **Globe Flanged Reinforced PTFE disc OS and BB type**

| Product Name | Material | Remarks |
|---------------|-----------------|---------------|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc | SUS403 | |
| Disc seat | Reinforced PTFE | |
| Seat ring | SUS403 | |
| Handwheel | FCD340 | Color: Orange |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |

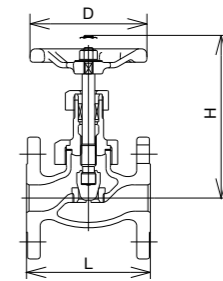


| Nominal diameter (B) | 2 | 2½ | 3 | 4 | 5 | 6 | 8 | 10 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| L | 203 | 216 | 241 | 292 | 356 | 406 | 495 | 622 |
| H | 295 | 335 | 365 | 405 | 455 | 530 | 630 | 732 |
| D | 224 | 224 | 250 | 300 | 315 | 355 | 400 | 450 |

△Name plate: PTFE display

Product Code **M150FN** 150lb **Needle Valve Flanged**

| Product Name | Material | Remarks |
|---------------|------------|---------------------------------------|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc | SUS403 | Hard facing |
| Seat ring | SUS403 | Hard facing |
| Handwheel | FCMB 340 | Color: Blue / Nominal diameter: ½-1½B |
| | FCD450 | Color: Blue / Nominal diameter: 2B |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |

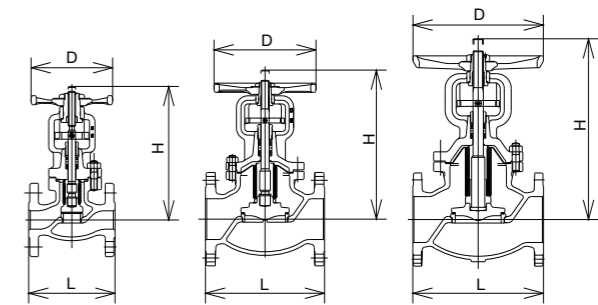


| Nominal diameter (B) | 1/2 | 3/4 | 1 | 1¼ | 1½ | 2 |
|----------------------|-----|-----|-----|-----|-----|-----|
| L | 108 | 117 | 127 | 140 | 165 | 203 |
| H | 135 | 145 | 170 | 180 | 200 | 230 |
| D | 80 | 100 | 120 | 120 | 140 | 180 |

△Valve stem tips: Marked "N"/
The cover is clearly marked "Needle valve"

M150FGB 150lb **Bellows Seal Valve Flanged OS and BB type**

| Product Name | Material | Remarks |
|---------------|------------|--|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS410 | |
| Seat ring | SUS410 | Hard facing |
| Disc | SUS304 | Hard facing (Nominal diameter: 2B or less) |
| | A182-F304 | Hard facing (Nominal diameter: 2½-4B) |
| | SCS1 | Hard facing (Nominal diameter: 5B or more) |
| Bellows | SUS316L | |
| Handwheel | FCMB 340 | Color: Black |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |

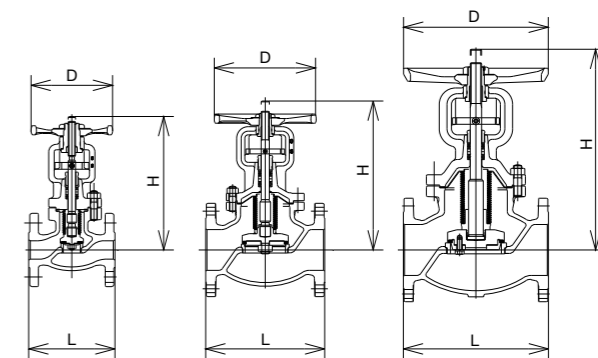


△The glands of the bellows seal valve are maintenance-free, but since the cover bolts may loosen due to vibrations and heat stress, they will need regular maintenance.

| Nominal diameter (B) | 1/2 | 3/4 | 1 | 1¼ | 1½ | 2 | 2½ | 3 | 4 | 5 | 6 | 8 | 10 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| L | 108 | 117 | 127 | 140 | 165 | 203 | 216 | 241 | 292 | 356 | 406 | 495 | 622 |
| H | 181 | 191 | 196 | 208 | 243 | 253 | 278 | 328 | 365 | 421 | 487 | 609 | 754 |
| D | 100 | 100 | 120 | 120 | 160 | 180 | 224 | 224 | 250 | 300 | 355 | 400 | 450 |

Product Code **M150FDB** 150lb **Bellows Seal Valve Flanged Reinforced PTFE disc OS and BB type**

| Product Name | Material | Remarks |
|---------------|-----------------|---|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS410 | |
| Seat ring | SUS410 | |
| Disc seat | Reinforced PTFE | |
| Disc | SUS304 | Nominal diameter: 2B or less-5B or more |
| | A182-F304 | Nominal diameter: 2½-4B |
| Bellows | SUS316L | |
| Handwheel | FCMB340 | Color: Black |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |

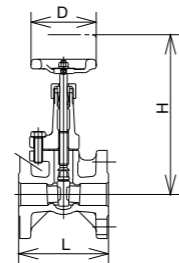


△The glands of the bellows seal valve are maintenance-free, but since the cover bolts may loosen due to vibrations and heat stress, they will need regular maintenance.

| Nominal diameter (B) | 1/2 | 3/4 | 1 | 1¼ | 1½ | 2 | 2½ | 3 | 4 | 5 | 6 | 8 | 10 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| L | 108 | 117 | 127 | 140 | 165 | 203 | 216 | 241 | 292 | 356 | 406 | 495 | 622 |
| H | 181 | 191 | 196 | 208 | 243 | 253 | 278 | 328 | 365 | 421 | 487 | 609 | 754 |
| D | 100 | 100 | 120 | 120 | 160 | 180 | 224 | 224 | 250 | 300 | 355 | 400 | 450 |

Product Code **M150FS** 150lb Gate Valve Flanged BB type

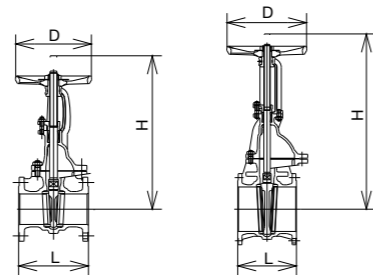
| Product Name | Material | Remarks |
|---------------|------------|-------------|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Wedge | SCS1 | |
| Seat ring | SUS403 | |
| Handwheel | FCMB340 | Color: Blue |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |



| Nominal diameter (B) | 1/2 | 3/4 | 1 | 1½ |
|----------------------|-----|-----|-----|-----|
| L | 90 | 100 | 110 | 130 |
| H | 165 | 170 | 190 | 258 |
| D | 80 | 80 | 80 | 120 |

Product Code **M150FSO** 150lb Gate Valve Flanged OS and BB type

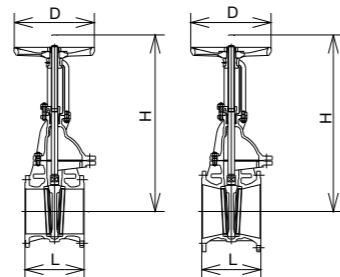
| Product Name | Material | Remarks |
|---------------|------------|---|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Wedge | SCS1 | Nominal diameter: 1½-2½B |
| | SUS403 | Nominal diameter: 3-8B |
| | S28C | 13Cr stainless deposit / Nominal diameter: 10-12B |
| Seat ring | SUS403 | |
| Handwheel | FCD450 | Color: Blue |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |



| Nominal diameter (B) | 1½ | 2 | 2½ | 3 | 4 | 5 | 6 | 8 | 10 | 12 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| L | 165 | 178 | 190 | 203 | 229 | 254 | 267 | 292 | 330 | 356 |
| H | 315 | 360 | 425 | 480 | 580 | 675 | 780 | 985 | 1195 | 1410 |
| D | 160 | 180 | 180 | 224 | 250 | 300 | 300 | 315 | 450 | 560 |

Product Code **D150FSO** 150lb Gate Valve Flanged OS and BB type

| Product Name | Material | Remarks |
|---------------|------------|------------------------|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Wedge | SCPH2 | 13Cr stainless deposit |
| Seat ring | S28C | Hard facing |
| Handwheel | FCD450 | Color: Blue |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |

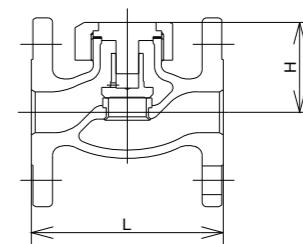


| Nominal diameter (B) | 14 | 16 | 18 | 20 |
|----------------------|------|------|------|------|
| L | 381 | 406 | 432 | 457 |
| H | 1610 | 1855 | 1610 | 1855 |
| D | 630 | 710 | 630 | 710 |

Product Code **M150FC** 150lb Check Valve (Lift) Flanged

| Product Name | Material | Remarks |
|--------------|----------|---------|
| Body | FCD-S | |
| Cover | SCS1 | |
| Disc | SUS403 | |
| Seat ring | SUS403 | |
| Gasket | H1215 | |

△Cover top: No marks
(Marked with "S" if a spring is contained)

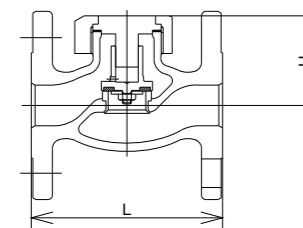


| Nominal diameter (B) | 1/2 | 3/4 | 1 | 1¼ | 1½ | 2 |
|----------------------|-----|-----|-----|-----|-----|-----|
| L | 108 | 117 | 127 | 140 | 165 | 203 |
| H | 51 | 54 | 61 | 69 | 77 | 89 |

Product Code **M150FCD** 150lb Check Valve (Lift) Flanged Reinforced PTFE disc

| Product Name | Material | Remarks |
|--------------|-----------------|---------|
| Body | FCD-S | |
| Cover | SCS1 | |
| Disc | SUS403 | |
| Seat ring | SUS403 | |
| Disc seat | Reinforced PTFE | |
| Gasket | H1215 | |

△Cover top: Marked with "D"
(“DS” if a spring is contained)

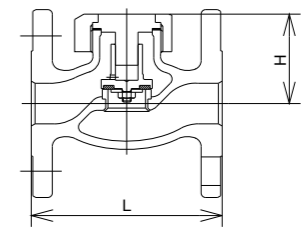


| Nominal diameter (B) | 1/2 | 3/4 | 1 | 1¼ | 1½ | 2 |
|----------------------|-----|-----|-----|-----|-----|-----|
| L | 108 | 117 | 127 | 140 | 165 | 203 |
| H | 51 | 54 | 61 | 69 | 77 | 89 |

Product Code **M150FCR** 150lb Check Valve (Lift) Flanged NBR disc seat

| Product Name | Material | Remarks |
|--------------|----------|---------|
| Body | FCD-S | |
| Cover | SCS1 | |
| Disc | SUS403 | |
| Seat ring | SUS403 | |
| Disc seat | NBR | |
| Gasket | H1215 | |

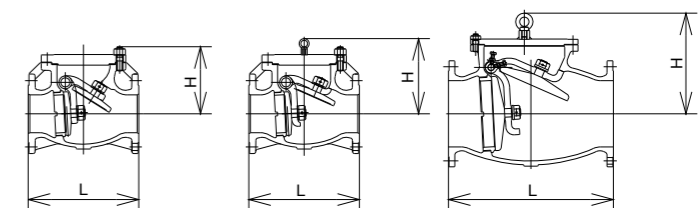
△Cover top: Marked with "R"
(“RS” if a spring is contained)



| Nominal diameter (B) | 1/2 | 3/4 | 1 | 1¼ | 1½ | 2 |
|----------------------|-----|-----|-----|-----|-----|-----|
| L | 108 | 117 | 127 | 140 | 165 | 203 |
| H | 51 | 54 | 61 | 69 | 77 | 89 |

Product Code **M150FCS** 150lb Check Valve (Swing) Flanged

| Product Name | Material | Remarks |
|--------------|----------|--|
| Body | FCD-S | |
| Cover | SS400 | |
| Disc | SUS403 | Nominal diameter: 1½-4B |
| | S25C | 13Cr stainless deposit / Nominal diameter: 5-12B |
| Seat ring | SUS403 | |
| Hinge pin | SUS403 | |
| Gasket | H1215 | |
| Plug | S20C | Nominal diameter: 1½-8B |
| | SUS403 | Nominal diameter: 10-12B |

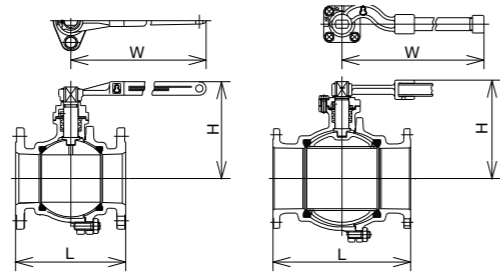


| 口径 (B) | 1½ | 2 | 2½ | 3 | 4 | 5 | 6 | 8 | 10 | 12 |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| L | 165 | 203 | 216 | 241 | 292 | 330 | 356 | 495 | 622 | 698 |
| H | 118 | 126 | 146 | 161 | 176 | 250 | 270 | 330 | 390 | 450 |

150lb

Product Code **BM150F0B** 150lb Ball Valve for General Use Flanged Full bore

| Product Name | Material | Remarks |
|--------------------|-----------------|---------------------------------------|
| Body | FCD-S | |
| Ball | SCS13A | |
| Stem | SUS403 | |
| Seat ring | FT seat | |
| Handle | FCMB340 | Color: Blue / Nominal diameter: 2½-4B |
| Handle boss + pipe | FCMB340+ STPG | Color: Blue / Nominal diameter: 5-8B |
| Gasket | H1215 | |
| Gland Packing | Reinforced PTFE | |

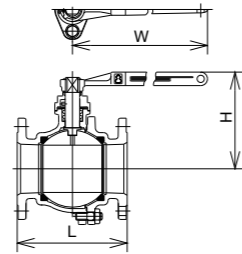


| Nominal diameter (B) | 2½ | 3 | 4 | 5 | 6 | 8 |
|----------------------|-----|-----|-----|-----|------|------|
| L | 190 | 203 | 229 | 292 | 394 | 457 |
| H | 151 | 186 | 202 | 243 | 262 | 321 |
| W | 220 | 320 | 400 | 800 | 1000 | 1200 |

△Indicator: Blue/ Valve stem: widths across flats

Product Code **BM150F1B** 150lb Ball Valve for General Use Flanged Full bore Fire-safe Mechanism

| Product Name | Material | Remarks |
|-----------------------|-----------------|-------------|
| Body | FCD-S | |
| Ball | SCS13A | |
| Stem | SUS403 | |
| Seat ring | FT seat | |
| Stainless steel sheet | SUS304 | |
| Handle | FCMB 340 | Color: Blue |
| Gasket | H1215 | |
| Gland Packing | Reinforced PTFE | |

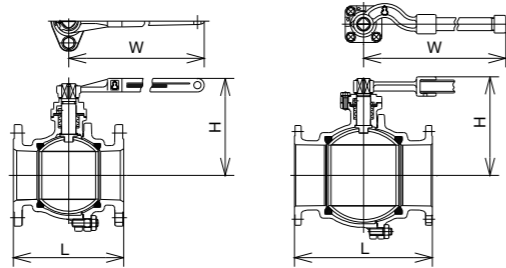


| Nominal diameter (B) | 2½ | 3 | 4 |
|----------------------|-----|-----|-----|
| L | 190 | 203 | 229 |
| H | 151 | 186 | 202 |
| W | 220 | 320 | 400 |

△Indicator: Black/ Valve stem: widths across flats, Marked with "1"

Product Code **BM150F0L** 150lb Ball Valve for Gas Flanged Full bore

| Product Name | Material | Remarks |
|--------------------|---------------|---|
| Body | FCD-S | |
| Ball | SUS304 | |
| Stem | SUS403 | |
| Seat ring | PTFE | |
| Handle | FCMB340 | Color: Blue Nominal diameter: 2½-4B |
| Handle boss + pipe | FCMB340+ STPG | Color: Blue / Nominal diameter: 5-8B |
| Gasket | H1215 | |
| Gland Packing | PTFE | |



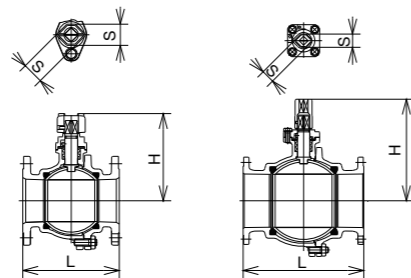
| Nominal diameter (B) | 2½ | 3 | 4 | 5 | 6 | 8 |
|----------------------|-----|-----|-----|-----|------|------|
| L | 190 | 203 | 229 | 292 | 394 | 457 |
| H | 151 | 186 | 202 | 243 | 262 | 321 |
| W | 220 | 320 | 400 | 800 | 1000 | 1200 |

△Indicator: Green/ Valve stem angle: square

* Usable for LPG to -5°C.

Product Code **BM150F0G** 150lb Ball Valve for Gas (buried pipe) Flanged Full bore

| Product Name | Material | Remarks |
|---------------|----------|-------------------------|
| Body | FCD-S | |
| Ball | SUS304 | |
| Stem | SUS403 | |
| Seat ring | PTFE | |
| Handle boss | FCD450 | Nominal diameter: 2½-6B |
| | FCMB340 | Nominal diameter: 8B |
| Gasket | H1215 | |
| Gland Packing | PTFE | |



| 呼径 (B) | 2½ | 3 | 4 | 5 | 6 | 8 |
|--------|-----|-----|-----|-----|-----|-----|
| L | 190 | 203 | 229 | 292 | 394 | 457 |
| H | 164 | 186 | 202 | 244 | 263 | 384 |
| S | 50 | 50 | 50 | 50 | 50 | 50 |

* Usable for LPG to -5°C.

300lb

Features

- The main parts are made with 13cr stainless steel and can be used for hot fluids up to max. 650°F (344°C).
- Support for special fluids by exchanging the packing, gasket and main parts. We also undertake maintenance using genuine parts at any time.

Product Types

Globe, Gate, Check, Needle, Bellows seal valves

Fluid·Temperature·Pressure

Unit: MPa (psi)

| Top row: MPa Bottom row: psi Maximum working pressure by product type | Service temperature limit by fluid Top row: °C Bottom row: °F | Steady water flow | Oil, air, steam, pulsating water | | | | | LPG | |
|---|---|-------------------|----------------------------------|---------------|---------------|---------------|---------------|---------------|-------------|
| | | | 38 (100) | 121 (250) | 232 (450) | 288 (550) | 343 (650) | 38 (100) | 80 (176) |
| Globe | Standard, needle | 2.90 (420) | 2.76 (400) | 2.62 (380) | 2.38 (345) | 2.07 (300) | | | |
| | PTFE disc | | | | | | 2.90 (420) | 2.83 (410) | |
| | Bellows | 2.50 (363) | | 2.50 (363) | 2.40 (345) | 2.10 (300) | | | |
| Gate | Standard, for high temperatures | 2.90 (420) | 2.76 (400) | 2.62 (380) | 2.38 (345) | 2.07 (300) | | | |
| | Standard, Screw-down stop check | 2.90 (420) | 2.76 (400) | 2.62 (380) | 2.38 (345) | 2.07 (300) | | | |
| Check | PTFE disc | | | | | | 2.90 (420) | 2.83 (410) | |

*Please consult with us separately in case of use below 14°F (-10°C).

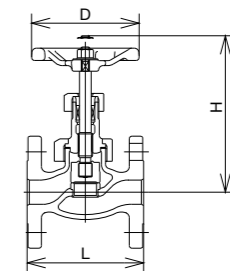
Test Pressure

Unit: MPa (psi)

| Product Type | Body pressure resistance | | Valve seat leakage | | Back seat leakage |
|----------------------------------|--------------------------|---------------|--------------------|---------------|-------------------|
| | Water pressure | Air pressure | Water pressure | Air pressure | Air pressure |
| Globe, needle, gate, check valve | 4.31 (626) | | 3.14 (456) | | |
| Bellows sael valve | | 2.50 (363) | | 2.50 (363) | |
| Globe valve for LPG | | 2.75 (400) | | 2.75 (400) | 2.75 (400) |
| Check valve for LPG | | 2.75 (400) | | 2.75 (400) | |

Product Code **M300FG** 300lb Globe Valve Flanged

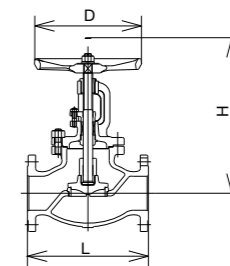
| Product Name | Material | Remarks |
|---------------|------------|--|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc | SUS403 | Hard facing |
| Seat ring | SUS403 | Hard facing |
| Handwheel | FCMB340 | Color: Brown / Nominal diameter: ½-1½B |
| | FCD450 | Color: Brown / Nominal diameter: 2B |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |



| Nominal diameter (B) | 1/2 | 3/4 | 1 | 1¼ | 1½ | 2 |
|----------------------|-----|-----|-----|-----|-----|-----|
| L | 110 | 120 | 130 | 160 | 180 | 230 |
| H | 135 | 145 | 170 | 180 | 195 | 225 |
| D | 80 | 100 | 120 | 120 | 140 | 180 |

Product Code **M300FGO** 300lb Globe Valve Flanged OS and BB type

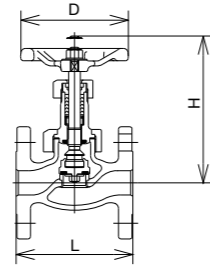
| Product Name | Material | Remarks |
|---------------|------------|---|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc | S28C | Hard facing / Nominal diameter: 2½-8B |
| | S25C | Hard facing / Nominal diameter: 10B |
| Seat ring | S28C | Hard facing |
| Handwheel | FCMB340 | Nominal diameter: 2½B |
| | FCD450 | Nominal diameter: 3B or larger |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |



| Nominal diameter (B) | 2½ | 3 | 4 | 5 | 6 | 8 |
|----------------------|-----|-----|-----|-----|-----|-----|
| L | 292 | 318 | 356 | 400 | 444 | 559 |
| H | 355 | 390 | 445 | 515 | 595 | 685 |
| D | 250 | 300 | 315 | 355 | 400 | 450 |

Product Code **M300FDL** 300lb **Globe Valve for LPG** Flanged Reinforced PTFE disc

| Product Name | Material | Remarks |
|---------------|----------|---|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc | SUS403 | |
| Disc seat | PTFE | |
| Seat ring | SUS403 | |
| Handwheel | FCMB340 | Color: Green / Nominal diameter: 1/2-1 1/2B |
| | FCD450 | Color: Green / Nominal diameter: 2B |
| Gasket | H1215 | |
| Gland Packing | H2661-V | |

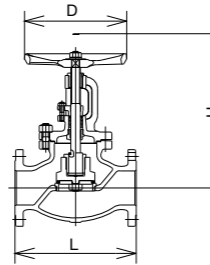


| Nominal diameter (B) | 1/2 | 3/4 | 1 | 1 1/4 | 1 1/2 | 2 |
|----------------------|-----|-----|-----|-------|-------|-----|
| L | 110 | 120 | 130 | 160 | 180 | 230 |
| H | 135 | 145 | 170 | 180 | 200 | 230 |
| D | 80 | 100 | 120 | 120 | 140 | 180 |

△Name plate: PTFE display

Product Code **M300FDLO** 300lb **Globe Valve for LPG** Flanged Reinforced PTFE disc OS and BB type

| Product Name | Material | Remarks |
|---------------|----------|--------------------------------|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc | SUS403 | |
| Disc seat | PTFE | |
| Seat ring | SUS403 | |
| Handwheel | FCMB340 | Nominal diameter: 2 1/2B |
| | FCD450 | Nominal diameter: 3B or larger |
| Gasket | H1215 | |
| Gland Packing | H2661-V | |

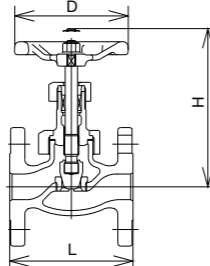


| Nominal diameter (B) | 2 1/2 | 3 | 4 | 5 | 6 | 8 |
|----------------------|-------|-----|-----|-----|-----|-----|
| L | 292 | 318 | 356 | 400 | 444 | 559 |
| H | 365 | 395 | 440 | 515 | 580 | 685 |
| D | 224 | 250 | 300 | 315 | 400 | 450 |

△Name plate: PTFE display

Product Code **M300FN** 300lb **Needle Valve** Flanged

| Product Name | Material | Remarks |
|---------------|------------|---|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc | SUS403 | Hard facing |
| Seat ring | SUS403 | Hard facing |
| Handwheel | FCMB340 | Color: Brown / Nominal diameter: 1/2-1 1/2B |
| | FCD450 | Color: Brown / Nominal diameter: 2B |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |

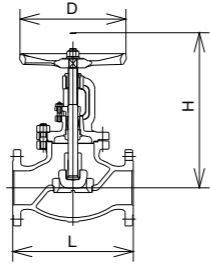


| Nominal diameter (B) | 1/2 | 3/4 | 1 | 1 1/4 | 1 1/2 | 2 |
|----------------------|-----|-----|-----|-------|-------|-----|
| L | 110 | 120 | 130 | 160 | 180 | 230 |
| H | 135 | 145 | 170 | 180 | 200 | 230 |
| D | 80 | 100 | 120 | 120 | 140 | 180 |

△Valve stem tips: Marked "N" / Fitted with metal tag clearly marked "Needle valve"

Product Code **M300FNO** 300lb **Needle Valve** Flanged OS and BB type

| Product Name | Material | Remarks |
|---------------|------------|--------------------------------|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc | SUS403 | Hard facing |
| Seat ring | SUS403 | Hard facing |
| Handwheel | FCMB340 | Nominal diameter: 2 1/2B |
| | FCD450 | Nominal diameter: 3B or larger |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |

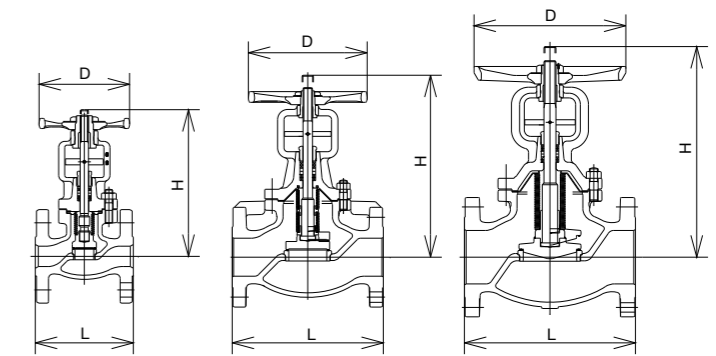


| Nominal diameter (B) | 2 1/2 | 3 | 4 | 5 | 6 |
|----------------------|-------|-----|-----|-----|-----|
| L | 292 | 318 | 356 | 400 | 444 |
| H | 365 | 405 | 445 | 515 | 595 |
| D | 224 | 250 | 300 | 315 | 355 |

△Valve stem tips: Marked "N" / The cover is clearly marked "Needle valve"

Product Code **M300FGB** 300lb **Bellows Seal Valve** Flanged OS and BB type

| Product Name | Material | Remarks |
|---------------|------------|--|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS410 | |
| Seat ring | SUS410 | Hard facing |
| Disc | SUS304 | Hard facing (Nominal diameter: 2B or less) |
| | A182-F304 | Hard facing (Nominal diameter: 2 1/2-4B) |
| | SCS1 | Hard facing (Nominal diameter: 5B) |
| Bellows | SUS316L | |
| Handwheel | FCMB340 | Color: Black |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |

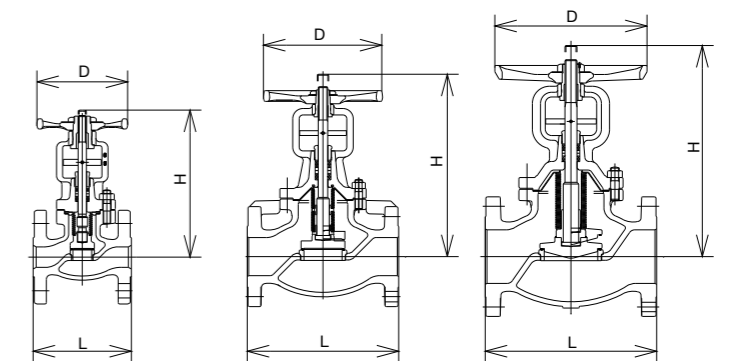


△The glands of the bellows seal valve are maintenance-free, but since the cover bolts may loosen due to vibrations and heat stress, they will need regular maintenance.

| Nominal diameter (B) | 1/2 | 3/4 | 1 | 1 1/4 | 1 1/2 | 2 | 2 1/2 | 3 | 4 | 5 | 6 | 8 | 10 |
|----------------------|-----|-----|-----|-------|-------|-----|-------|-----|-----|-----|-----|-----|-----|
| L | 110 | 120 | 130 | 160 | 180 | 230 | 292 | 318 | 356 | 400 | 444 | 559 | 622 |
| H | 181 | 191 | 196 | 208 | 243 | 253 | 309 | 377 | 402 | 491 | 562 | 713 | 869 |
| D | 100 | 100 | 120 | 120 | 160 | 180 | 224 | 250 | 300 | 355 | 400 | 450 | 560 |

Product Code **M300FDB** 300lb **Bellows Seal Valve** Flanged Reinforced PTFE disc OS and BB type

| Product Name | Material | Remarks |
|---------------|-----------------|---|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS410 | |
| Seat ring | SUS410 | |
| Disc seat | Reinforced PTFE | |
| Disc | SUS304 | Nominal diameter: 2B or less-5B or more |
| | A182-F304 | Nominal diameter: 2 1/2-4B |
| Bellows | SUS316L | |
| Handwheel | FCMB340 | Color: Black |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |

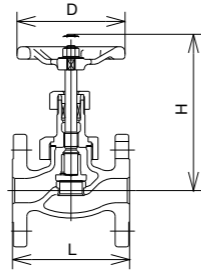


△The glands of the bellows seal valve are maintenance-free, but since the cover bolts may loosen due to vibrations and heat stress, they will need regular maintenance.

| Nominal diameter (B) | 1/2 | 3/4 | 1 | 1 1/4 | 1 1/2 | 2 | 2 1/2 | 3 | 4 | 5 | 6 | 8 | 10 |
|----------------------|-----|-----|-----|-------|-------|-----|-------|-----|-----|-----|-----|-----|-----|
| L | 110 | 120 | 130 | 160 | 180 | 230 | 292 | 318 | 356 | 400 | 444 | 559 | 622 |
| H | 181 | 191 | 196 | 208 | 243 | 253 | 309 | 377 | 402 | 491 | 562 | 713 | 869 |
| D | 100 | 100 | 120 | 120 | 160 | 180 | 224 | 250 | 300 | 355 | 400 | 450 | 560 |

Product Code **M300FGC** 300lb (Screw-down) Stop Check Valve Flanged

| Product Name | Material | Remarks |
|---------------|------------|---|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc | SUS403 | Hard facing |
| Seat ring | SUS403 | Hard facing |
| Handwheel | FCMB340 | Color: Brown / Nominal diameter: 1/2-1 1/2B |
| | FCD450 | Color: Brown / Nominal diameter: 2B |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |

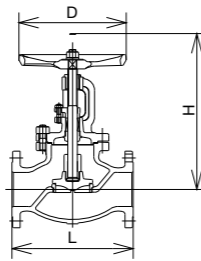


| Nominal diameter (B) | 1/2 | 3/4 | 1 | 1 1/4 | 1 1/2 | 2 |
|----------------------|-----|-----|-----|-------|-------|-----|
| L | 110 | 120 | 130 | 160 | 180 | 230 |
| H | 135 | 145 | 170 | 180 | 195 | 225 |
| D | 80 | 100 | 120 | 120 | 140 | 180 |

△Valve stem tips:
Marked "C"/Fitted with metal tag clearly marked "Screw-down stop check valve"

Product Code **M300FGCO** 300lb (Screw-down) Stop Check Valve Flanged OS and BB type

| Product Name | Material | Remarks |
|---------------|------------|--------------------------------|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Disc | S28C | Hard facing |
| Seat ring | S28C | Hard facing |
| Handwheel | FCMB340 | Nominal diameter: 2B-2 1/2B |
| | FCD450 | Nominal diameter: 3B or larger |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |

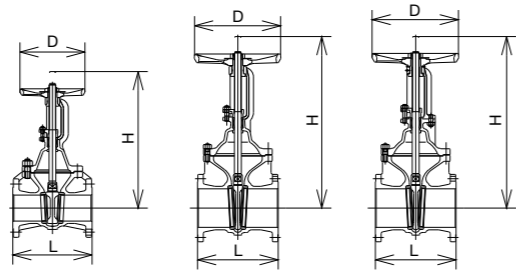


| Nominal diameter (B) | 2 1/2 | 3 | 4 | 5 |
|----------------------|-------|-----|-----|-----|
| L | 292 | 318 | 356 | 400 |
| H | 365 | 400 | 455 | 520 |
| D | 250 | 300 | 315 | 355 |

△Valve stem tips:
Marked "C"/Fitted with metal tag clearly marked "Screw-down stop check valve"

Product Code **M300FSO** 300lb Gate Valve Flanged OS and BB type

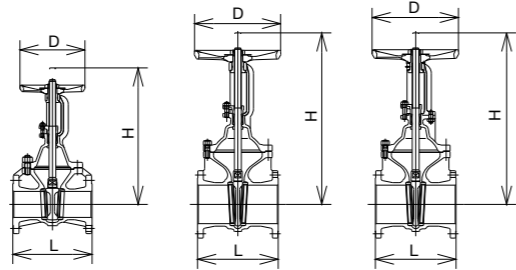
| Product Name | Material | Remarks |
|---------------|------------|---|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Wedge | SCS1 | Nominal diameter: 1-1 1/2-2 1/2-5-8B |
| | SUS403 | Nominal diameter: 1 1/4-3-4B |
| | SCPH2 | 13Cr stainless deposit / Nominal diameter: 10-12B |
| Seat ring | SUS403 | |
| Handwheel | FCD450 | Color: Brown |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |



| Nominal diameter (B) | 1 | 1 1/4 | 1 1/2 | 2 | 2 1/2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 |
|----------------------|-----|-------|-------|-----|-------|-----|-----|-----|-----|------|------|------|
| L | 165 | 178 | 190 | 216 | 241 | 283 | 305 | 381 | 403 | 419 | 457 | 502 |
| H | 281 | 300 | 328 | 383 | 442 | 502 | 591 | 698 | 819 | 1026 | 1238 | 1440 |
| D | 160 | 160 | 160 | 180 | 180 | 224 | 250 | 300 | 315 | 450 | 560 | 630 |

Product Code **M300FSHO** 300lb Gate Valve Flanged OS and BB type Heating Medium type

| Product Name | Material | Remarks |
|---------------|------------|--|
| Body | FCD-S | |
| Cover | FCD-S | |
| Stem | SUS403 | |
| Wedge | SCS1 | Hard facing / Nominal diameter: 1-1 1/2-2 1/2-5-8B |
| | SUS403 | Hard facing / Nominal diameter: 1 1/4-3-4B |
| | SCPH2 | Hard facing / Nominal diameter: 10-12B |
| Seat ring | SUS403 | Hard facing / Nominal diameter: 1-4B |
| | S28C | Hard facing / Nominal diameter: 5-12B |
| Handwheel | FCD450 | Color: Brown |
| Gasket | H1215 | |
| Gland Packing | H350+H2200 | |



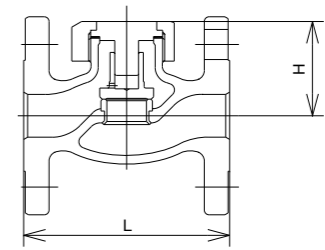
| Nominal diameter (B) | 1 | 1 1/4 | 1 1/2 | 2 | 2 1/2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 |
|----------------------|-----|-------|-------|-----|-------|-----|-----|-----|-----|------|------|------|
| L | 165 | 178 | 190 | 216 | 241 | 283 | 305 | 381 | 403 | 419 | 457 | 502 |
| H | 281 | 300 | 328 | 383 | 442 | 502 | 591 | 698 | 819 | 1026 | 1238 | 1440 |
| D | 160 | 160 | 160 | 180 | 180 | 224 | 250 | 300 | 315 | 450 | 560 | 630 |

△Instructions: FSHO display

Product Code **M300FC** 300lb Check Valve (Lift) Flanged

| Product Name | Material | Remarks |
|--------------|----------|-------------|
| Body | FCD-S | |
| Cover | SCS1 | |
| Disc | SUS403 | Hard facing |
| Seat ring | SUS403 | Hard facing |
| Gasket | H1215 | |

△Cover top: No marks
(Marked with "S" if a spring is contained)

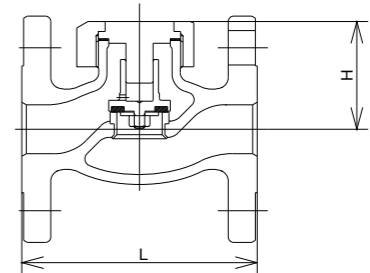


| Nominal diameter (B) | 1/2 | 3/4 | 1 | 1 1/4 | 1 1/2 | 2 |
|----------------------|-----|-----|-----|-------|-------|-----|
| L | 110 | 120 | 130 | 160 | 180 | 230 |
| H | 49 | 51 | 58 | 66 | 75 | 86 |

Product Code **M300FCD** 300lb Check Valve (Lift) Flanged Reinforced PTFE disc

| Product Name | Material | Remarks |
|--------------|----------|---------|
| Body | FCD-S | |
| Cover | SCS1 | |
| Disc seat | PTFE | |
| Disc | SUS403 | |
| Seat ring | SUS403 | |
| Gasket | H1215 | |

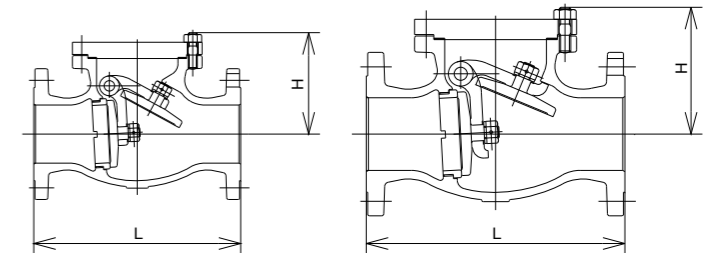
△Cover top: Marked with "D"
(*"DS" if a spring is contained)



| Nominal diameter (B) | 1/2 | 3/4 | 1 | 1 1/4 | 1 1/2 | 2 |
|----------------------|-----|-----|-----|-------|-------|-----|
| L | 110 | 120 | 130 | 160 | 180 | 230 |
| H | 49 | 51 | 58 | 66 | 75 | 86 |

Product Code **M300FCS** 300lb Check Valve (Swing) Flanged

| Product Name | Material | Remarks |
|--------------|----------|------------------------|
| Body | FCD-S | |
| Cover | SS400 | |
| Disc | S28C | Hard facing |
| Seat ring | S28C | Hard facing |
| Hinge pin | SUS403 | |
| Gasket | H1215 | |
| Plug | S25C | Nominal diameter: 2-4B |
| | SUS403 | Nominal diameter: 5-8B |

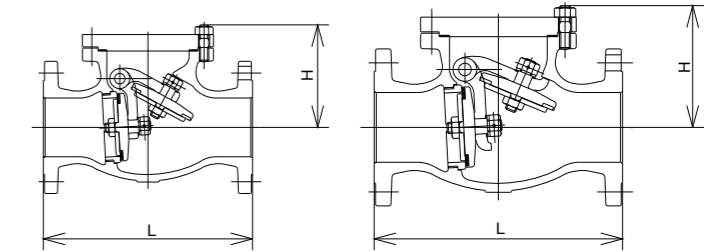


| Nominal diameter (B) | 2 | 2 1/2 | 3 | 4 | 5 | 6 | 8 |
|----------------------|-----|-------|-----|-----|-----|-----|-----|
| L | 267 | 292 | 318 | 356 | 400 | 444 | 533 |
| H | 145 | 155 | 175 | 200 | 235 | 265 | 295 |

Product Code **M300FCSD** 300lb Check Valve (Swing) Flanged Reinforced PTFE disc

| Product Name | Material | Remarks |
|--------------|----------|------------------------|
| Body | FCD-S | |
| Cover | S25C | |
| Disc seat | PTFE | |
| Disc | SUS403 | |
| Seat ring | SUS403 | |
| Hinge pin | SUS403 | |
| Gasket | H1215 | |
| Plug | S25C | Nominal diameter: 2-4B |
| | SUS403 | Nominal diameter: 6-8B |

△Cover top: Marked with "D"



| Nominal diameter (B) | 2 | 2 1/2 | 3 | 4 | 5 | 6 | 8 |
|----------------------|-----|-------|-----|-----|-----|-----|-----|
| L | 267 | 292 | 318 | 356 | 400 | 444 | 533 |
| H | 145 | 155 | 175 | 200 | 235 | 265 | 295 |

300lb

(Screw-down) Stop Check Valve/Gate Valve

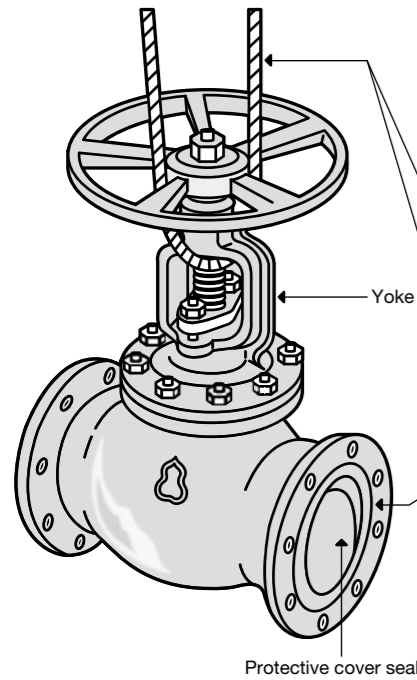
300lb

Check Valve (Lift)/Check Valve (Swing)

For correct usage

| Classification | Definition of indication | Contents |
|----------------|--------------------------|---|
| Caution | Caution | Please follow the instructions, as failure to do so could result in physical injury or property damage. |
| Prohibition | Prohibition | Please follow the instructions. |
| Instruction | Compulsion | Please follow the instructions. |

1 Before usage



To start with, confirm that the product is the correct one for the place of use. If there has been an exchange of specifications for delivery, confirm that the product complies with the specifications.

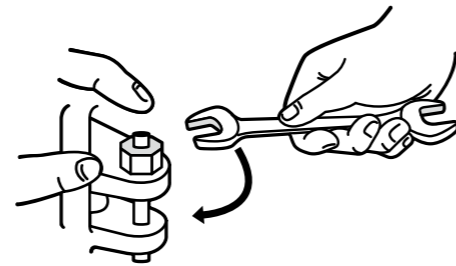
When moving a valve with a large diameter, loop a rope around the valve body or the yoke to lift it.

Do not attach the rope to the handwheel. Make sure the valve does not topple and bash the handwheel. The valve stem may bend making it impossible to open and close the valve.

Please keep the valve in its original packaging until use. To prevent foreign matter from entering the valve, the protective plugs or seals at either end of the valve must not be removed until immediately before installation. The valve must not be stored in the open air even for short periods of time, but indoors in a place with low humidity and little dust.

* The interior of the valve on swing check valves is filled with packing material to fix the valve disc in place. Please remove the packing before installation.

When unpacking the valve, only retighten the packing and gaskets before use. Do not take the valve apart or exchange any parts.

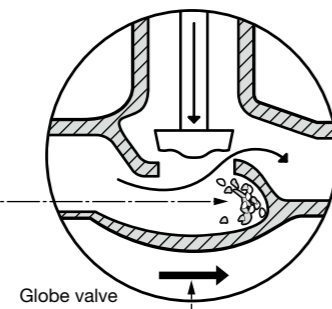
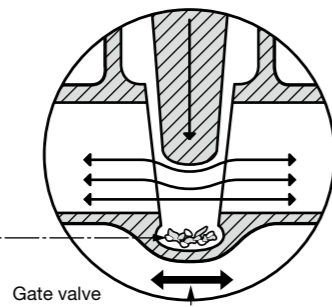
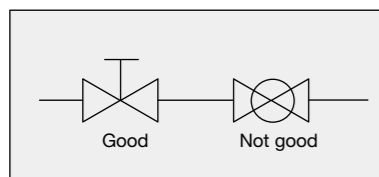


2 Installation

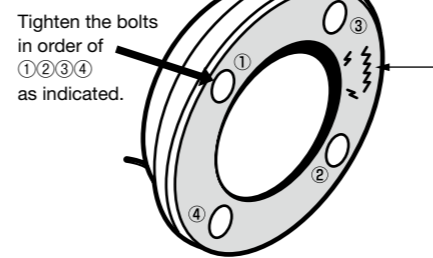
Please clean the piping thoroughly to remove welding spatter, pipe chips, scale, sand or other foreign matter since they may cause the valve seat to leak.

Globe valves, check valves or other valves with an arrow on the valve body indicating flow direction must comply with the flow direction of the fluid when installed. As a rule, there are no restrictions on flow direction for gate valves and ball valves.

In case of horizontal piping, gate valves should be installed in a vertical position as indicated in the diagram below.



In case of screwed valves also, avoid applying excess sealant to the threads. Be sure to always screw the valve into place by applying a wrench to the hexagonal ends of the valve body. Do not apply the wrench to the body of the valve body, or hold the handwheel when screwing the valve into place as this may cause leaks or other faults.

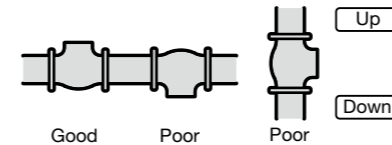


In case of flanged valves, confirm that there are no harmful defects on the gasket contact surface of the valve body pipe flange. In case of coating the gasket with sealant, please be aware that excess coating may cause the valve seat to leak. When installing the valve, tighten the flange evenly while making sure the gasket does not protrude into the aperture.

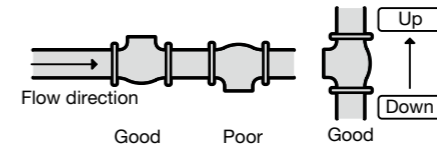
For correct usage

Since the installation position is normally specified for check valves, screw-down stop check valves, strainers etc., please install these valves as specified.

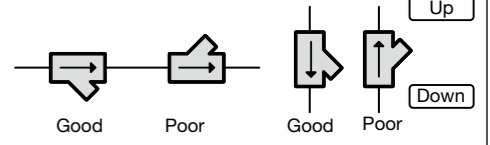
Lift check valve, screw-down stop check valve
Install the valve in a vertical position on horizontal piping.



Swing check valve
Can be used for both vertical and horizontal piping.

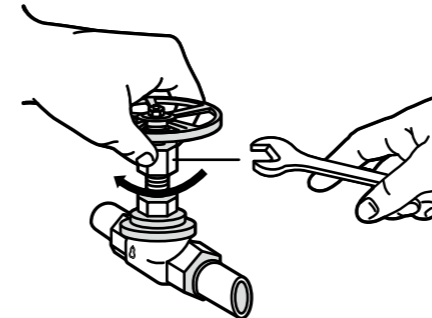


Strainer



3 When starting use

With the exception of the 20K globe valve for LPG, please retighten the gland packing of all valves before allowing fluids to pass. The valves are inspected at the factory before shipping and appropriate compression is applied to the gland packing, but the compression decreases due to stress relaxation in the time before actual use. As a result, retightening is necessary as the valves are more susceptible to leakage compared to factory default.

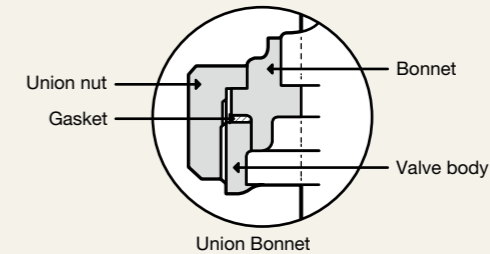


Simply tightening the packing gland nut makes the handwheel heavier to turn, but does not tighten the packing. For a good result, tighten the nuts several times and in stages, while rotating the handwheel and maintaining a snug fit with the valve stem.

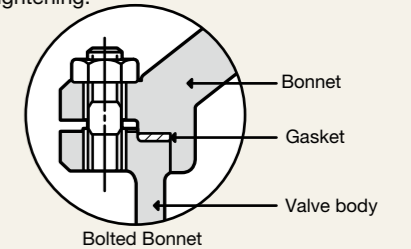
In case the fittings between the valve body and the bonnet (the gasket) leak when fluid passes through, be sure to retighten this part.

If neglected, leak paths will form and retightening will no longer stop the leaks.

In case of a union bonnet, there is risk of damage to the gasket if the union nut and the bonnet rotate together, so any tightening should be done as smoothly as possible and no more than 1/8 of a rotation at a time.



In case of a bolted bonnet, be sure to evenly tighten each nut to avoid uneven tightening.

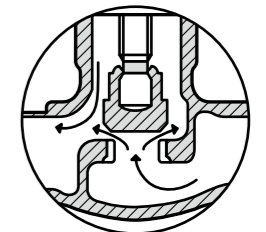


Tightening torque table for bonnet nuts in the M20K inside screw globe valve

| Nominal diameter (A) | 10 | 15N·m |
|----------------------|-----|-------|
| 15 | 200 | |
| 20 | 250 | |
| 25 | 300 | |
| 32 | 400 | |
| 40 | 600 | |
| 50 | 750 | |

Retighten with the valve in an intermediate position, or fully open. (Retightening when the valve is fully closed, may damage the valve seat or other parts.)

Do not tighten the handwheel abruptly and hard when fully closing the valve, but close the valve gently at first, then open it slightly to allow the moving fluid to flush away any foreign matter around the seat before tightening the handwheel. This will have the effect of preventing leaks caused by foreign matter.



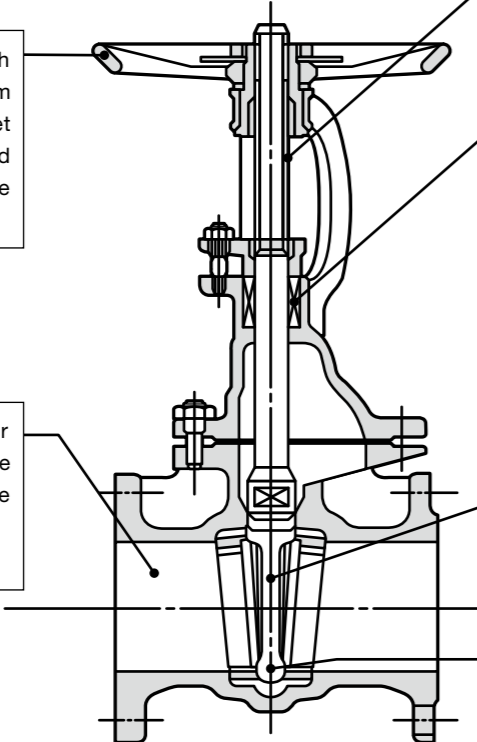
When shipping globe valves, gate valves or bellows Seal valves, the disc is fixed in place by gently closing the valve to keep the disc from rattling.

In case of pressure inspection after plumbing, or in case of actual use, be sure to turn the handwheel a little to open the valve before closing it again.

If pressure is applied to the valve as shipped, there may be seat leakage as the valve is not tightly closed. Using the valve as is will cause leak paths to form at the seat, and closing the valve tightly will no longer stop the leaks.

! : Compulsion ⚡ : Caution ⚡ : Caution

4 Caution when operating the valve



⚡ Do not apply excessive force with auxiliary handles etc. The valve stem may bend, or the valve disc may get stuck, making it difficult to open and close the valve. Please request the limit torque chart separately.

⚡ In case leaks do not stop after tightening at the specified torque, the likely cause is foreign matter in the valve, or galling. Please check the interior of the valve.

⚡ If the frequency of use is high, the trapezoidal screw threads may start to slip. Please lubricate regularly.

⚡ Since the packing may loosen during use, be sure to regularly retighten, refill, replace or otherwise maintain the valves. Please consult Hitachi Valve for maintenance methods.

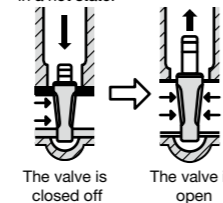
⚡ In case of leaks in the fittings between the valve body and the bonnet (the gasket), be sure to retighten this part.

! Gate valves should be fully open or fully closed during use. If the valve is partially open during use, the valve disc may vibrate and the seat may be damaged.

⚡ If an inside screw gate valve of 50A or less is used with a steam line, the "valve disc sticking" illustrated in the figure below may occur. Please use globe valves in these cases.

⚡ If globe valves and angle valves are extremely throttled, the high velocity fluid will hit the seat or the valve body, and may cause mechanical corrosion (erosion). If throttling is required, we recommend using needle valves.

Close off the valve by pushing in the valve disc while in a hot state.



The valve is closed off The valve is open

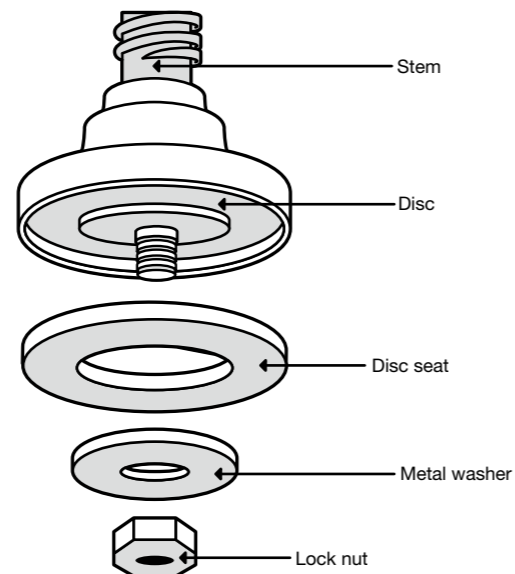
The valve does not open

After the valve has cooled, it is difficult to open because the body retains a firm hold on the valve disc.

5 How to replace discs

⚡ Replacement discs are available from Hitachi Valve. Please follow these guidelines when replacing discs.

- Open the valve and completely release the internal fluid pressure before dismantling the valve by using a wrench to undo the hexagonal nuts on the bonnet.
- The valve disc assembly is shown in the figure on the right, so replacing the disc is simple. It is important not to scratch the disc at this time.
- Clean the valve seat in the body before assembling the valve.
- When assembling the valve, be sure to apply liquid packing to the connecting thread on the bonnet.



6 Changing the packing on a 20K globe valve for LPG

Replacing the packing

- Clean the stem where packing slides.
- Release any residual pressure in the valve.
- Dismantle the valve from the bonnet.
- Clean the packing box and valve stem.
- Install the packing in the packing box.
- Assemble the valve.

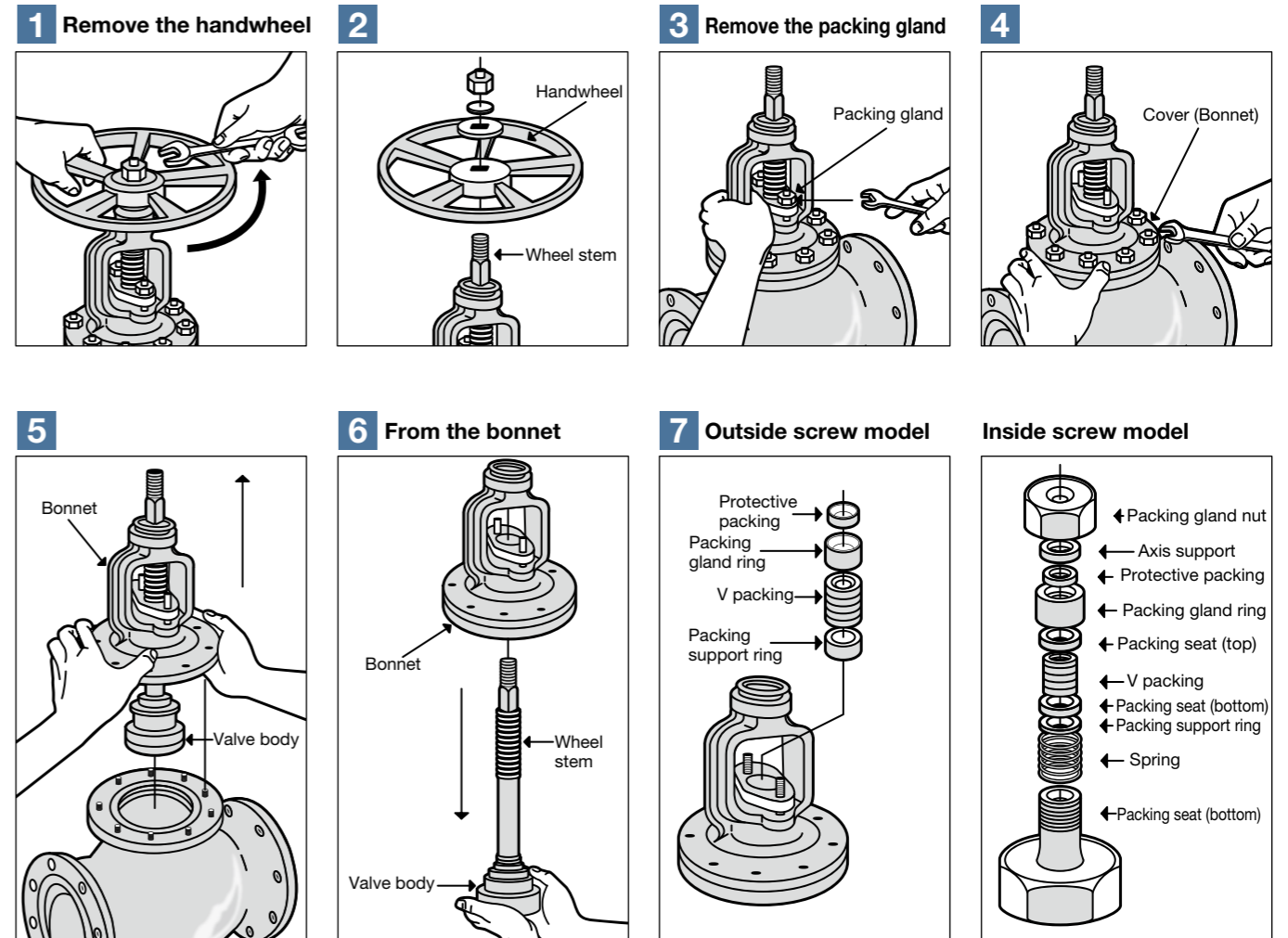
Assembly guidelines

- Install the packing in the packing box.
- Insert the valve stem with the valve disc in the bonnet, and close fully. Take care not to scratch the V packing.
- Install the bonnet with the valve stem in the body.
- Tighten the bonnet gland nuts with the specified torque.
- Attach the handwheel to finish.

⚡ Be absolutely sure not to scratch the valve stem or the inside of the valve disc packing box during disassembly.

- Coat the packing seat and the V packing with silicon oil or grease.
- Refer to the diagram in Fig. 7 and use your fingers to carefully and evenly assemble the packing box. (To avoid scratching the V packing at insertion.)
- Apply even more pressure with the packing gland ring and after everything has settled in place, evenly tighten the nut. Refer to the retightening guidelines for outside thread models. With inside thread models, the packing gland ring touches the bonnet and the nut is tightened as far as it goes.

⚡ Take care not to scratch the V packing when inserting the valve stem from below



- 1 Remove the handwheel**
- 2** (Labels: Handwheel, Wheel stem)
- 3 Remove the packing gland**
- 4** (Labels: Cover (Bonnet))
- 5** (Labels: Bonnet, Valve body)
- 6 From the bonnet**
- 7 Outside screw model** (Labels: Protective packing, Packing gland ring, V packing, Packing support ring)
- Inside screw model** (Labels: Packing gland nut, Axis support, Protective packing, Packing gland ring, Packing seat (top), V packing, Packing seat (bottom), Packing support ring, Spring, Packing seat (bottom))