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.

- The product specifications, performance values and prices listed in this catalog are based on general conditions of use and are intended as guidelines for selecting models. Please confirm product specifications and conditions including fluids, temperatures and pressures before selecting a product.
- The products listed in this catalog are not designed or manufactured for applications that require a special quality level, such as medical equipment, nuclear generation facilities or airplanes.
- Please note that to improve this catalog, the contents may be changed or revised without prior notice. Please be aware that product catalogs published prior to such revisions are not valid.
-
- When using a product listed in this catalog, please follow the precautions listed in its instruction manual and use it properly.
- The products listed in this catalog are designed to be used within Japan. When exporting the products, the exporter will need to obtain an export license from the Ministry of Economy, Trade and Industry based on the provisions of the Export Control Order under the Foreign Exchange and Foreign Trade Act.

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Edition dated August 2013

EB2013①1

Materials Mag!c
Hitachi Metals Group

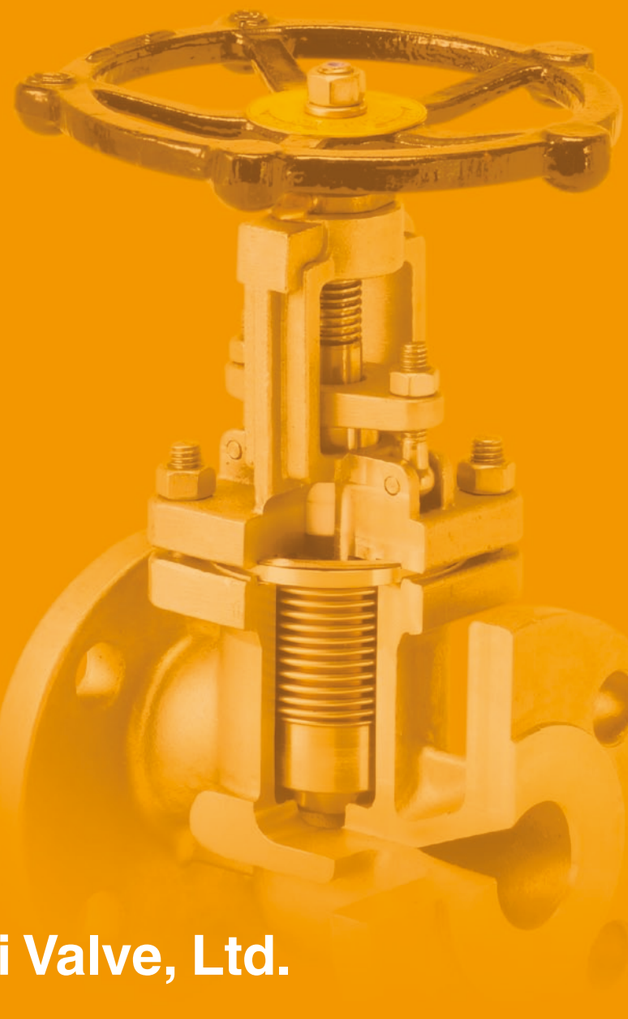
HITACHI

Catalog

GOURD BRAND

Bellows Seal Valves

Ductile Iron / Stainless Steel / Forged Steel / Cast Steel



Hitachi Valve, Ltd.

Reduces External Leakage and Contributes to Energy Savings!

The use of a bellows seal valve significantly reduces external leakage.

- By covering the circumference of the valve stem with bellows, leakage from the gland components is reduced.
  *MSS SP-117 compliant. Bellows allowable leakage amount (He Leak Test): 10^{-3} mm^3 / sec or less.
- Controls energy loss due to leakage and helps save energy
- Maintenance is simple as there is no need to retorque the gland packing
  *Please conduct regular maintenance as bonnet bolts may loosen due to vibrations or heat stress.

Uses for Bellows Seal Valves

Petrochemical Industry

Applicable Plants	Applicable Liquids
Various fiber plants (terephthalic acid)	Steam Ammonia
Synthetic rubber plants, Petroleum refining plants	Chlorine gas Hydrogen Heat medium

Electronics Industry

Applicable Plants	Applicable Liquids
Semiconductor fabrication plants	Steam　Carrier air Carrier nitrogen Waste gases
Silicon fabrication plants	Phosgene Hydrogen cyanide Argon

General Industry

Applicable Plants	Applicable Liquids
Steel plants Paper manufacturing plants Pharmaceutical plant utilities	Steam Heat medium
Waste incineration plants District heating and cooling plants Hospital utilities	

Vacuum Industry

Applicable Plants	Applicable Liquids
Various vacuum equipment	Inert gases

Bellows Seal Valves

Bellows Seal Valve Features

General Features

Reduced gland leakage
The use of bellows reduces leakage from the gland components.

Effective for energy savings
Energy loss due to leakage is controlled, helping to prevent global warming and protecting the environment.

Effective for preventing minor leakage
Based on He leak tests, the bellows guarantee leakage of no more than 6.5 x 10^{-6} mm^3 / sec, making them effective in preventing minor leakage from gland components.
*MSS SP-117 compliant. Bellows allowable leakage amount (He Leak Test)：10^{-3} mm^3 / sec or less.

Additional odor and safety measures
The valves are suited to safety measures for flammable liquids, toxic liquids and liquids with odors.

Easy maintenance
The valves are effective for reducing maintenance costs as the gland packing does not need to be regularly retorqued.

Maintains liquid quality
The valve stem and gland components are sealed with bellows to prevent contact with liquids in pipes.

Hitachi Valve Bellows Seal Valve Features

Use of Hitachi Valve's own bellows
All Hitachi Valve bellows valves use hydroformed multi-layered bellows designed and fabricated in-house. Our bellows meet the bellows lifespan requirements of MSS SP-117.

Precision finished seat and surface
We provide both HF (hard facing) seats with excellent abrasion resistance and jamming decrease as standard specifications (optional for SUS valves).
Seat surface roughness is finished to 0.5S or less to prevent internal leakage.

Suitable for vacuum usage
Compared with conventional gland packing methods, our offering can easily achieve a vacuum of 10^{-2}Pa (10^{-4} Torr).

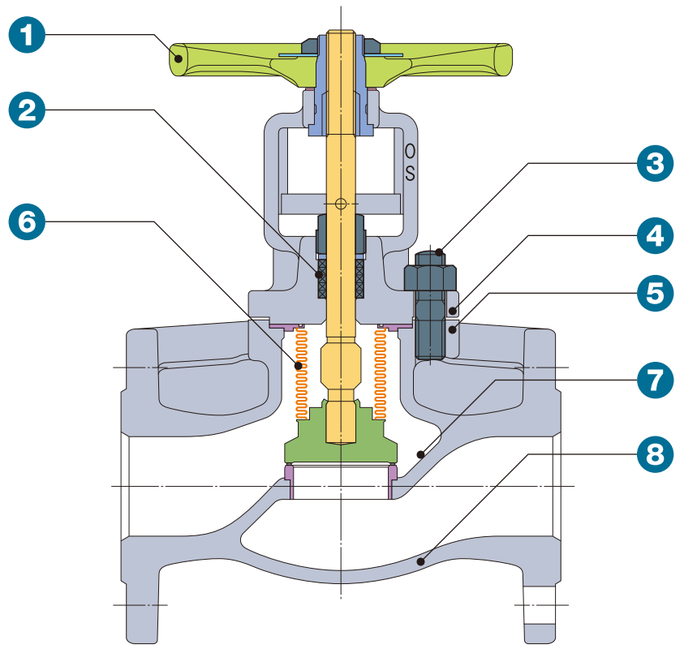
Easy replacement
Valve face-to-face dimensions are JIS B2002 or ASME B16.10-compliant and can be easily replaced with regular valves.
(Malleable valve 300lb1/2^B-2^B is compliant with JV4-4.)

Extensive range of products
Based on a track record with Malleable bellows valves that spans decades, we have commercialized forged steel, cast steel and stainless steel bellows seal valves.

Economy
Considering the significant energy loss due to leakage and factors such as maintenance costs, bellows valves offer excellent economy compared with regular valves.

Basic Structure

Globe Valve



1 OS&Y Structure (excluding SUS 50A and lower)
The structure features with a non-rotational stem and non-lifting handle so that the bellows are not twisted.

2 Gland Packing
This blocks external leakage in the event of bellows breakage.
MV, forged steel, cast steel, SUS 20K: Expanded graphite packing
SUS 10K, 150lb: Reinforced PTFE + PTFE packing

3 Bolted Bonnet Structure
The bolted bonnet structure provides simple maintenance and management.
The bolt tightened structure ensures reliable fastening.

4 Upper gasket
An expanded graphite seat is used for the upper gasket.
This blocks external leakage in the event of bellows breakage.

5 Lower gasket
External leakage is blocked with the use of a high-quality gasket.
MV, forged steel, cast steel, SUS 20K: Expanded graphic gasket
SUS 10K, 150lb: Reinforced PTFE gasket

6 Bellows
Hydroulic multi-layer bellows.
SUS316L, which features excellent pressure and corrosion resistance, is used.

7 Seat surfaces
Both seat surfaces with excellent jamming and abrasion resistance.
(Optional for SUS valves)

8 Valve body
Supports ductile cast iron (FCD-S), stainless steel (SCS13A), (SCS14A), cast steel (ASTM A216-WCB) and forged steel (ASTM A105).

Quality

Testing and inspection items for bellows seal valves differ depending on the model and conditions of use.
The following general inspection is performed on all items on a voluntary basis.
Special inspections and other inspections are performed based on discussions and instruction at the time of order placement.

Bellows Valve Shipping Inspection Items

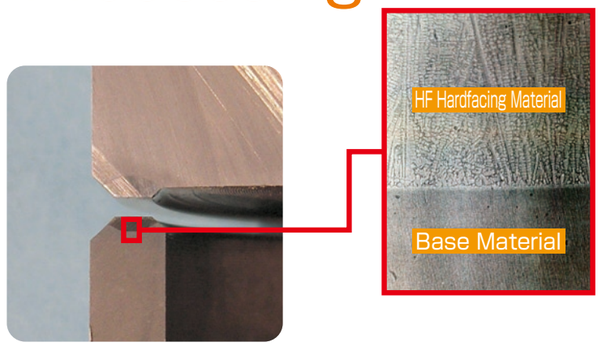
●General Inspection

Testing and Inspection Items	Applications	Applicable Codes and Standards
Materials Inspection	- Checking quality of materials - Mill sheet verification and submission	Material standards such as JIS and ASTM
Visual Inspection	- Checking internal and external surfaces, indication, etc.	JIS B2003
Dimensional Inspection	- Checking of surface interval, joints, fits	
Pressure-resistance Inspection	- Checking with pressure 1.5 times maximum working pressure	JIS B2003
Air-tightness Inspection	- Checking with pressure 1.1 times maximum working pressure	
Valve Seat Leakage Inspection	- Checking with pressure 1.1 times maximum working pressure	
Functional Inspection	- Checking state of assembly, operating performance, etc.	Internal standards
Bellows Stand-alone Leakage Inspection	- He leak test	Internal standards

●Special Inspections

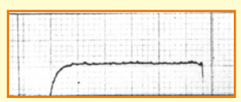
Testing and Inspection Items	Applications	Applicable Codes and Standards
Radiation Transparency Test	- Cast steel body, weld spots, groove areas, etc.	JIS G0581, Z3104, 6, Ministry of International Trade and Industry ordinances, etc.
Liquid Penetrant Test	- Weld spots, groove areas, etc.	JIS G0581, Z2343, Ministry of International Trade and Industry ordinances, etc.
He Leak Test	- Performed for high vacuums	Internal Standards

Seat Surface Processing



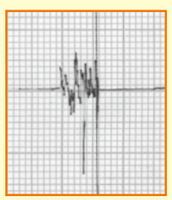
Hitachi Valve Mirror Finished Surface Seat Surface


100x magnification


10,000x magnification
Surface roughness:
0.5S or less

Turning Finished Seat Surface


100x magnification


2000x magnification
Surface roughness: 2 - 5S

Production Process

The following shows the bellows seal valve production process used at Hitachi Valve.

1 Bellows materials

2 Bellows forming machine

3 End machining

4 Bellows welder

5 Bellows heat-treating furnace

Testing and Inspection Equipment

Bellows Lifespan Testing Machine

Bellows Leakage Helium Inspection Machine

Bellows Seal Valves Production List

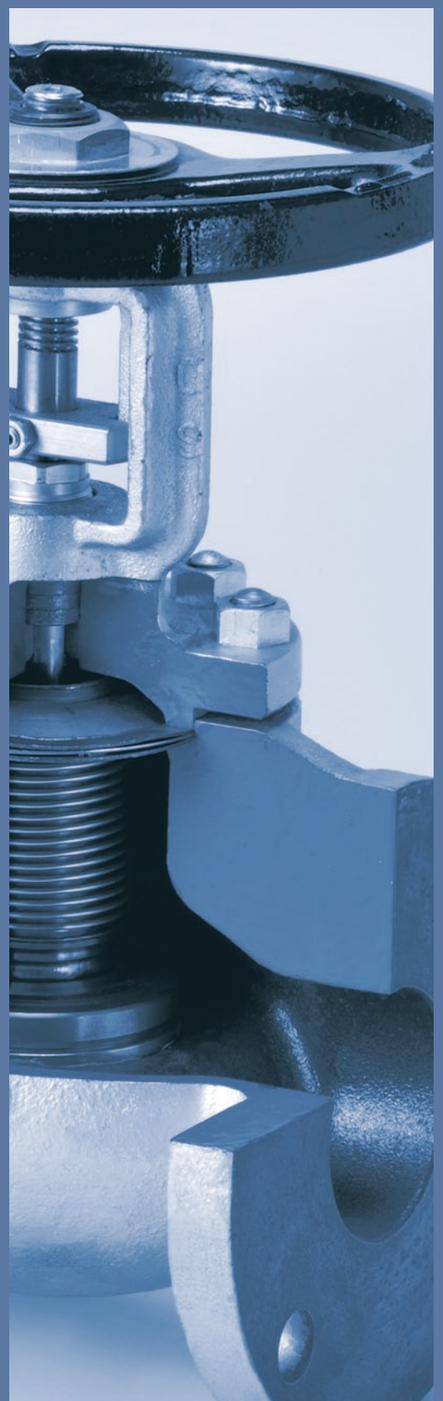
Valve Casing Material	Nominal Pressure	Connection	Valve Type	Seat Material	Product Code	10A 3/8B	15A 1/2B	20A 3/4B	25A 1B	32A 1 1/4B	40A 1 1/2B	50A 2B	65A 2 1/2B	80A 3B	100A 4B	125A 5B	150A 6B	200A 8B	250A 10B	300A 12B	Page
Ductile Iron (FCD-S)	10K	Flanged	Globe	HF	**M10KFGB**	○	○	○	○	○	○	○	○	○	○	○	○	○	○	-	11
	20K	Flanged	Globe	HF	**M20KFGB**	○	○	○	○	○	○	○	○	○	○	○	○	○	○	-	11
	150lb	Flanged	Globe	HF	**M150FGB**	-	○	○	○	○	○	○	○	○	○	○	○	○	○	-	11
	300lb	Flanged	Globe	HF	**M300FGB**	-	○	○	○	○	○	○	○	○	○	○	○	○	○	-	11
	10K	Flanged	Globe	PTFE	**M10KFDB**	○	○	○	○	○	○	○	○	○	○	○	○	○	○	-	12
	20K	Flanged	Globe	PTFE	**M20KFDB**	○	○	○	○	○	○	○	○	○	○	○	○	○	○	-	12
	150lb	Flanged	Globe	PTFE	**M150FDB**	-	○	○	○	○	○	○	○	○	○	○	○	○	○	-	12
	300lb	Flanged	Globe	PTFE	**M300FDB**	-	○	○	○	○	○	○	○	○	○	○	○	○	○	-	12
Stainless Steel (SCS13A)	10K	Flanged	Globe	18Cr-8Nii	**U10FGB**	○	○	○	○	○	○	○	○	○	○	○	○	○	△	△	15
	20K	Flanged	Globe	18Cr-8Ni	**U20FGB**	-	○	○	○	○	○	○	○	○	○	△	△	△	△	△	15
	150lb	Flanged	Globe	18Cr-8Nii	**U150FGB**	-	○	○	○	○	○	○	○	○	○	○	○	○	△	△	15
	10K	Flanged	Globe	PTFE	**U10FDB**	○	○	○	○	○	○	○	○	○	○	○	○	○	-	-	16
	150lb	Flanged	Globe	PTFE	**U150FDB**	-	○	○	○	○	○	○	○	○	○	○	○	○	-	-	16
	10K	Flanged	Gate	18Cr-8Nii	**U10FSB**	-	○	○	○	○	○	○	○	○	○	○	○	○	△	△	17
	150lb	Flanged	Gate	18Cr-8Nii	**U150FSB**	-	○	○	○	○	○	○	○	○	○	○	○	○	△	△	17
Stainless Steel (SCS14A)	10K	Flanged	Globe	16Cr-12Ni-2Mo	**U10FGBM**	○	○	○	○	○	○	○	○	○	○	○	○	○	△	△	15
	20K	Flanged	Globe	16Cr-12Ni-2Mo	**U20FGBM**	-	○	○	○	○	○	○	○	○	○	△	△	△	△	△	15
	150lb	Flanged	Globe	16Cr-12Ni-2Mo	**U150FGBM**	-	○	○	○	○	○	○	○	○	○	○	○	○	△	△	15
	10K	Flanged	Globe	PTFE	**U10FDBM**	○	○	○	○	○	○	○	○	○	○	○	○	○	-	-	16
	150lb	Flanged	Globe	PTFE	**U150FDBM**	-	○	○	○	○	○	○	○	○	○	○	○	○	-	-	16
	10K	Flanged	Gate	16Cr-12Ni-2Mo	**U10FSBM**	-	○	○	○	○	○	○	○	○	○	○	○	○	△	△	17
	150lb	Flanged	Gate	16Cr-12Ni-2Mo	**U150FSBM**	-	○	○	○	○	○	○	○	○	○	○	○	○	△	△	17
Cast Steel (WCB)	10K	Flanged	Globe	HF	**S10KFGB**	-	-	-	-	-	-	○	○	○	○	○	○	○	○	○	21
	20K	Flanged	Globe	HF	**S20KFGB**	-	-	-	-	-	-	○	○	○	○	○	○	○	○	○	21
	30K	Flanged	Globe	HF	**S30KFGB**	-	-	-	-	-	-	○	○	○	○	○	○	○	○	○	21
	150lb	Flanged	Globe	HF	**S150FGB**	-	-	-	-	-	-	○	○	○	○	○	○	○	○	○	22
	300lb	Flanged	Globe	HF	**S300FGB**	-	-	-	-	-	-	○	○	○	○	○	○	○	○	○	22
	10K	Flanged	Gate	HF	**S10KFSB**	-	-	-	-	-	-	○	○	○	○	○	○	○	○	○	23
	20K	Flanged	Gate	HF	**S20KFSB**	-	-	-	-	-	-	○	○	○	○	○	○	○	○	○	23
	30K	Flanged	Gate	HF	**S30KFSB**	-	-	-	-	-	-	○	○	○	○	○	○	○	○	○	23
	150lb	Flanged	Gate	HF	**S150FSB**	-	-	-	-	-	-	○	○	○	○	○	○	○	○	○	24
	300lb	Flanged	Gate	HF	**S300FSB**	-	-	-	-	-	-	○	○	○	○	○	○	○	○	○	24
Forged Steel (A105)	10K	Flanged	Globe	HF	**T10KFGB1**	-	○	○	○	○	○	○	-	-	-	-	-	-	-	-	27
	20K	Flanged	Globe	HF	**T20KFGB1**	-	○	○	○	○	○	○	-	-	-	-	-	-	-	-	27
	30K	Flanged	Globe	HF	**T30KFGB1**	-	○	○	○	○	○	○	-	-	-	-	-	-	-	-	27
	40K	Flanged	Globe	HF	**T40KFGB1**	-	○	○	○	○	○	○	-	-	-	-	-	-	-	-	27
	150lb	Flanged	Globe	HF	**T150FGB1**	-	○	○	○	○	○	○	-	-	-	-	-	-	-	-	28
	300lb	Flanged	Globe	HF	**T300FGB1**	-	○	○	○	○	○	○	-	-	-	-	-	-	-	-	28
	600lb	Flanged	Globe	HF	**T600FGB1**	-	○	○	○	○	○	○	-	-	-	-	-	-	-	-	28
	800lb	Socket Welded	Globe	HF	**T800WGB1**	-	○	○	○	△	○	○	-	-	-	-	-	-	-	-	28

⚠ : Please contact us.

Short-neck Bellows Seal Valves

Valve Casing Material	Nominal Pressure	Connection	Valve Type	Seat Material	Product Code	15A 1/2B	20A 3/4B	25A 1B	32A 1 1/4B	40A 1 1/2B	50A 2B	Page
Forged Steel (A105)	10K	Flanged	Globe	HF	**T10KFGB1-S**	○	○	○	○	○	○	31
	20K	Flanged	Globe	HF	**T20KFGB1-S**	○	○	○	○	○	○	31
	30K	Flanged	Globe	HF	**T30KFGB1-S**	○	○	○	○	○	○	31
	40K	Flanged	Globe	HF	**T40KFGB1-S**	○	○	○	○	○	○	31
	150lb	Flanged	Globe	HF	**T150FGB1-S**	○	○	○	○	○	○	32
	300lb	Flanged	Globe	HF	**T300FGB1-S**	○	○	○	○	○	○	32
	600lb	Flanged	Globe	HF	**T600FGB1-S**	○	○	○	○	○	○	32
	800lb	Socket Welded	Globe	HF	**T800WGB1-S**	○	○	○	△	○	○	32

Ductile Iron
Bellows Seal Valve Series



Metal Seat (HF Seat)

- 10K Ductile Iron Flanged Type Bellows Seal Globe Valves **M10KFGB**
- 20K Ductile Iron Flanged Type Bellows Seal Globe Valves **M20KFGB**
- 150lb Ductile Iron Flanged Type Bellows Seal Globe Valves **M150FGB**
- 300lb Ductile Iron Flanged Type Bellows Seal Globe Valves **M300FGB**

Soft Seat (PTFE Seat)

- 10K Ductile Iron Flanged Type Bellows Seal Globe Valves **M10KFDB**
- 20K Ductile Iron Flanged Type Bellows Seal Globe Valves **M20KFDB**
- 150lb Ductile Iron Flanged Type Bellows Seal Globe Valves **M150FDB**
- 300lb Ductile Iron Flanged Type Bellows Seal Globe Valves **M300FDB**

Temperature and Pressure Rating (JIS Flanged Valve)

Fluid State	10K Type		20K Type	
	M10KFGB	M10KFDB	M20KFGB	M20KFDB
	MPa	MPa	MPa	MPa
Steady flowing water 120℃ or cooler	1.37	1.37	2.50	2.50
Steam, air, gas, oil or pulsating flow of water 183℃ or cooler	|	1.18	|	2.45
Steam, air, gas, oil or pulsating flow of water 220℃ or cooler	1.18	–	2.45	–
Steam, air, gas, oil or pulsating flow of water 300℃ or cooler	0.98	–	2.26	–
Steam, air, gas, oil or pulsating flow of water 350℃ or cooler	–	–	1.96	–

Temperature and Pressure Rating (ASME Flanged Valve)

Fluid State	150lb Type		300lb Type	
	M150FGB	M150KDB	M300FGB	M300FDB
	psi(MPa)	psi(MPa)	psi(MPa)	psi(MPa)
Steady flowing water 100°F(38℃) or cooler	198(1.37)	198(1.37)	363(2.50)	363(2.50)
Steam, air, gas, oil or pulsating flow of water 300°F(149℃) or cooler	198(1.37)	198(1.37)	|	|
Steam, air, gas, oil or pulsating flow of water 361°F (183℃) or cooler	|	198(1.37)	|	363(2.50)
Steam, air, gas, oil or pulsating flow of water 400°F (204℃) or cooler	198(1.37)	–	|	–
Steam, air, gas, oil or pulsating flow of water 450°F (232℃) or cooler	|	–	363(2.50)	–
Steam, air, gas, oil or pulsating flow of water 500°F (260℃) or cooler	170(1.18)	–	|	–
Steam, air, gas, oil or pulsating flow of water 550°F (288℃) or cooler	|	–	345(2.40)	–
Steam, air, gas, oil or pulsating flow of water 650°F (343℃) or cooler	125(0.86)	–	300(2.10)	–

Product Codes

Product Code - M: Ductile Iron Valve Series

Nominal Pressure - 10K: JIS 10K
20K: JIS 20K
150: ASME Class 150
300: ASME Class 300

Connection Type - F: Flanged

Valve Type - GB: Bellows Seal Globe Valve (HF seat)
DB: Bellows Seal Globe Valve (PTFE seat)

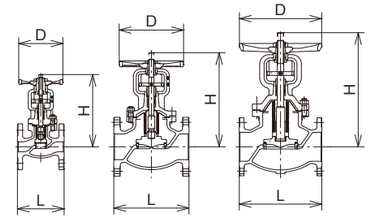
Nominal Size

M10KFGB-A15

Ductile Iron Bellows Seal Globe Valves (HF Seat)

Product Code M10KFGB | 10K Type | Ductile Iron Bellows Seal Valves Flanged, HF Seat

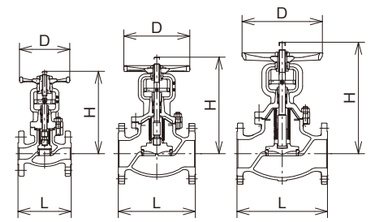
Component Name	Material	Remarks
Body	FCD-S	
Cover	FCD-S	
Stem	SUS410	
Seat Ring	SUS410	HF
Disc	SUS304	HF(up to 50A)
	SUS410	HF(65~100A)
	SCS1	HF(125A or larger)
Bellows	SUS316L	
Handwheel	FCMB340	Paint Color: Black
Gasket	Expanded Graphite	
Gland Packing	Expanded Graphite	



Nominal Diameter (A)	10	15	20	25	32	40	50	65	80	100	125	150	200	250
L	108	108	117	127	140	165	203	216	241	292	356	406	495	622
H	181	181	191	196	208	243	253	278	328	365	421	487	609	754
D	100	100	100	120	120	160	180	224	224	250	300	355	400	450

Product Code M20KFGB | 20K Type | Ductile Iron Bellows Seal Valves Flanged, HF Seat

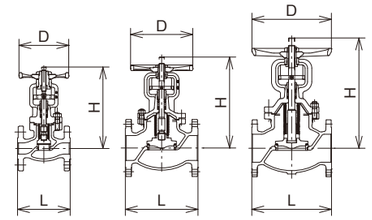
Component Name	Material	Remarks
Body	FCD-S	
Cover	FCD-S	
Stem	SUS410	
Seat Ring	SUS410	HF
Disc	SUS304	HF(up to 50A)
	SUS410	HF(65~100A)
	SCS1	HF(125A or larger)
Bellows	SUS316L	
Handwheel	FCMB340	Paint Color: Black
Gasket	Expanded Graphite	
Gland Packing	Expanded Graphite	



Nominal Diameter (A)	10	15	20	25	32	40	50	65	80	100	125	150	200	250
L	110	110	120	130	160	180	230	292	318	356	400	444	559	622
H	181	181	191	196	208	243	253	309	377	402	491	562	713	869
D	100	100	100	120	120	160	180	224	250	300	355	400	450	560

Product Code M150FGB | 150lb Type | Ductile Iron Bellows Seal Valves Flanged, HF Seat

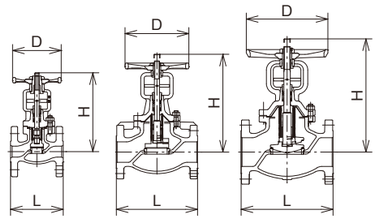
Component Name	Material	Remarks
Body	FCD-S	
Cover	FCD-S	
Stem	SUS410	
Seat Ring	SUS410	HF
Disc	SUS304	HF(up to 2B)
	SUS410	HF(2½~4B)
	SCS1	HF(5B or larger)
Bellows	SUS316L	
Handwheel	FCMB340	Paint Color: Black
Gasket	Expanded Graphite	
Gland Packing	Expanded Graphite	



Nominal Diameter (B)	½	¾	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 M300FGB | 300lb Type | Ductile Iron Bellows Seal Valves Flanged, HF Seat

Component Name	Material	Remarks
Body	FCD-S	
Cover	FCD-S	
Stem	SUS410	
Seat Ring	SUS410	HF
Disc	SUS304	HF(up to 2B)
	SUS410	HF(2½~4B)
	SCS1	HF(5B or larger)
Bellows	SUS316L	
Handwheel	FCMB340	Paint Color: Black
Gasket	Expanded Graphite	
Gland Packing	Expanded Graphite	

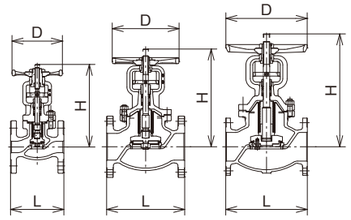


Nominal Diameter (B)	½	¾	1	1¼	1½	2	2½	3	4	5	6	8	10
L	110	120	130	160	180	230	292	318	356	400	444	559	622
H	181	191	196	208	243	253	309	377	402	491	562	713	869
D	100	100	120	120	160	180	224	250	300	355	400	450	560

Ductile Iron Bellows Seal Globe Valves (Soft Seat)

Product Code M10KFDB 10K Type Ductile Iron Bellows Seal Valves Flanged, PTFE Seat

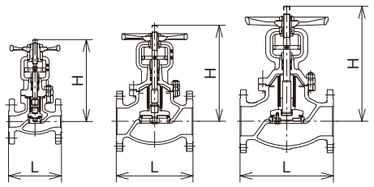
Component Name	Material	Remarks
Body	FCD-S	
Cover	FCD-S	
Stem	SUS410	
Seat Ring	SUS410	
Disc seat	Reinforced PTFE	
Disc	SUS410	(65~100A)
	SUS304	(up to 50A) (125A or larger)
Bellows	SUS316L	
Handwheel	FCMB340	Paint Color: Black
Gasket	Expanded Graphite	
Gland Packing	Expanded Graphite	



Nominal Diameter (A)	10	15	20	25	32	40	50	65	80	100	125	150	200	250
L	108	108	117	127	140	165	203	216	241	292	356	406	495	622
H	181	181	191	196	208	243	253	278	328	365	421	487	609	754
D	100	100	100	120	120	160	180	224	224	250	300	355	400	450

Product Code M20KFDB 20K Type Ductile Iron Bellows Seal Valves Flanged, PTFE Seat

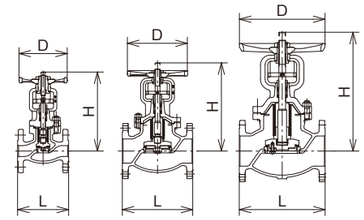
Component Name	Material	Remarks
Body	FCD-S	
Cover	FCD-S	
Stem	SUS410	
Seat Ring	SUS410	
Disc seat	Reinforced PTFE	
Disc	SUS410	(65~100A)
	SUS304	(up to 50A) (125A or larger)
Bellows	SUS316L	
Handwheel	FCMB340	Paint Color: Black
Gasket	Expanded Graphite	
Gland Packing	Expanded Graphite	



Nominal Diameter (A)	10	15	20	25	32	40	50	65	80	100	125	150	200	250
L	110	110	120	130	160	180	230	292	318	356	400	444	559	622
H	181	181	191	196	208	243	253	309	377	402	491	562	713	869
D	100	100	100	120	120	160	180	224	250	300	355	400	450	560

Product Code M150FDB 150lb Type Ductile Iron Bellows Seal Valves Flanged, PTFE Seat

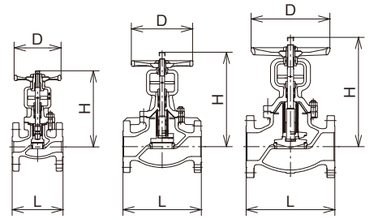
Component Name	Material	Remarks
Body	FCD-S	
Cover	FCD-S	
Stem	SUS410	
Seat Ring	SUS410	
Disc seat	Reinforced PTFE	
Disc	SUS410	(2½~4B)
	SUS304	(up to 2B) (5B or larger)
Bellows	SUS316L	
Handwheel	FCMB340	Paint Color: Black
Gasket	Expanded Graphite	
Gland Packing	Expanded Graphite	



Nominal Diameter (B)	½	¾	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 M300FDB 300lb Type Ductile Iron Bellows Seal Valves Flanged, PTFE Seat

Component Name	Material	Remarks
Body	FCD-S	
Cover	FCD-S	
Stem	SUS410	
Seat Ring	SUS410	
Disc seat	Reinforced PTFE	
Disc	SUS410	(2½~4B)
	SUS304	(up to 2B) (5B or larger)
Bellows	SUS316L	
Handwheel	FCMB340	Paint Color: Black
Gasket	Expanded Graphite	
Gland Packing	Expanded Graphite	



Nominal Diameter (B)	½	¾	1	1¼	1½	2	2½	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

Stainless Steel
Bellows Seal Valve Series

Metal Seat

- 10K Stainless Steel (13A) Flanged Type Bellows Globe Valves U10FGB
- 20K Stainless Steel (13A) Flanged Type Bellows Globe Valves U20FGB
- 150lb Stainless Steel (13A) Flanged Type Bellows Globe Valves U150FGB
- 10K Stainless Steel (13A) Flanged Type Bellows Gate Valves U10FSB
- 150lb Stainless Steel (13A) Flanged Type Bellows Gate Valves U150FSB
- 10K Stainless Steel (14A) Flanged Type Bellows Globe Valves U10FGBM
- 20K Stainless Steel (14A) Flanged Type Bellows Globe Valves U20FGBM
- 150lb Stainless Steel (14A) Flanged Type Bellows Globe Valves U150FGBM
- 10K Stainless Steel (14A) Flanged Type Bellows Gate Valves U10FSBM
- 150lb Stainless Steel (14A) Flanged Type Bellows Gate Valves U150FSBM

Soft Seat (PTFE Seat)

- 10K Stainless Steel (13A) Flanged Type Bellows Globe Valves U10FDB
- 150lb Stainless Steel (13A) Flanged Type Bellows Globe Valves U150FDB
- 10K Stainless Steel (14A) Flanged Type Bellows Globe Valves U10FDBM
- 150lb Stainless Steel (14A) Flanged Type Bellows Globe Valves U150FDBM

Temperature and Pressure Rating (JIS Flanged Valve)

Temperature	10K		20K
	Metal Seat	PTFE Seat	Metal Seat
℃	MPa	MPa	MPa
-29~120	1.4	1.4	3.4
180	〃	1.28	〃
220	1.2	—	3.1
300	1.0	—	2.9
350	—	—	2.6
400	—	—	2.3
425	—	—	2.0

Temperature and Pressure Rating (ASME Flanged Valve)

Temperature		150lb							
		SCS13A(CF8)				SCS14A(CF8M)			
		Metal Seat		PTFE Seat		Metal Seat		PTFE Seat	
℉	℃	psi	MPa	psi	MPa	psi	MPa	psi	MPa
-20~100	-29~38	275	1.90	275	1.90	275	1.90	275	1.90
200	93	230	1.59	230	1.59	235	1.62	235	1.62
300	149	205	1.41	205	1.41	215	1.48	215	1.48
356	180	〃	〃	195	1.35	〃	〃	203	1.40
400	204	190	1.31	—	—	195	1.34	—	—
500	260	170	1.17	—	—	170	1.17	—	—
600	316	140	0.97	—	—	140	0.97	—	—
650	343	125	0.86	—	—	125	0.86	—	—
700	371	110	0.76	—	—	110	0.76	—	—
750	399	95	0.66	—	—	95	0.66	—	—
797	425	81	0.56	—	—	81	0.56	—	—

Product Codes

Product Code - U: Stainless Steel Valve S Series

Nominal Pressure - 10K: JIS 10K
20K: JIS 20K
150: ASME Class 150

Connection Type - F: Flanged

Valve Type - GB: Bellows Seal Globe Valve (metal seat)
DB: Bellows Seal Globe Valve (PTFE seat)
SB: Bellows Seal Gate Valve

Valve Casing Material - None: SCS13A
M : SCS14A

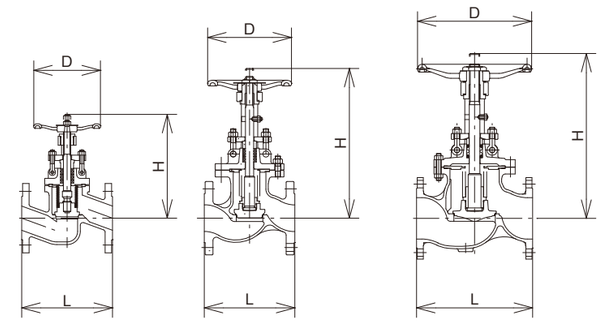
Nominal Size

U10FGBM-15

Stainless Steel Bellows Seal Globe Valves (Metal Seat)

Product Code U10FGB(M) 10K Type Stainless Steel Bellows Seal Globe Valves Flanged, Metal Seat

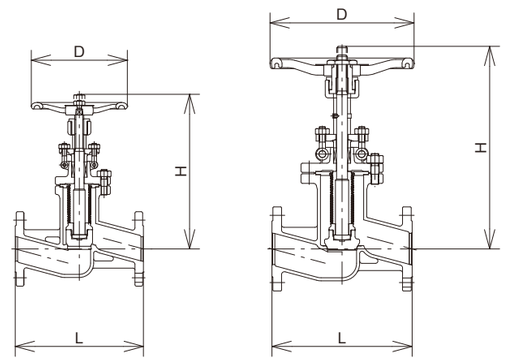
Component Name	Material		Remarks
	U10FGB	U10FGBM	
Body	SCS13A	SCS14A	
Cover	SCS13A	SCS14A	
Stem	A276-304	A276-316	
Disc	A276-304	A276-316	up to 80A
	SCS13A	SCS14A	100A or larger
Bellows	SUS316L		
Handwheel	A536		Paint Color: Black
Upper Gasket	Expanded Graphite		
Lower Gasket	Reinforced PTFE		up to 180℃
	Expanded Graphite		Over 180℃ (optional)
Gland Packing	Reinforced PTFE		up to 180℃
	Expanded Graphite		Over 180℃ (optional)



Nominal Diameter (A)	10	15	20	25	32	40	50	65	80	100	125	150	200
L	108	108	117	127	140	165	203	216	241	292	356	406	495
H	162	162	165	171	215	220	232	353	388	417	506	520	634
D	100	100	100	100	150	150	150	200	300	300	350	350	450

Product Code U20FGB(M) 20K Type Stainless Steel Bellows Seal Globe Valves Flanged, Metal Seat

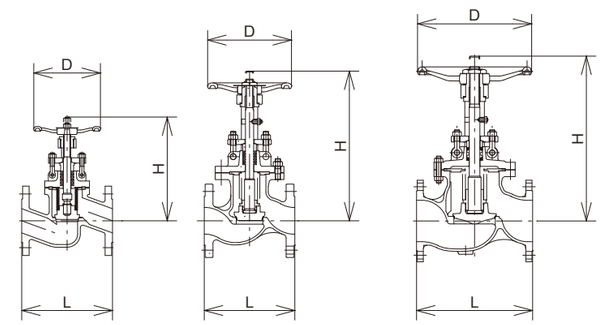
Component Name	Material		Remarks
	U20FGB	U20FGBM	
Body	SCS13A	SCS14A	
Cover	SCS13A	SCS14A	
Stem	A276-304	A276-316	
Disc	A276-304	A276-316	up to 100A
Bellows	SUS316L		
Handwheel	A536		Paint Color: Black
Upper Gasket	Expanded Graphite		
Lower Gasket	Expanded Graphite		
Gland Packing	Expanded Graphite		



Nominal Diameter (A)	15	20	25	32	40	50	65	80	100
L	152	178	203	216	229	267	292	318	356
H	188	191	229	235	276	322	422	464	545
D	100	100	150	150	200	200	300	300	350

Product Code U150FGB(M) 150lb Type Stainless Steel Bellows Seal Globe Valves Flanged, Metal Seat

Component Name	Material		Remarks
	U150FGB	U150FGBM	
Body	SCS13A	SCS14A	
Cover	SCS13A	SCS14A	
Stem	A276-304	A276-316	
Disc	A276-304	A276-316	up to 3B
	SCS13A	SCS14A	4B or larger
Bellows	SUS316L		
Handwheel	A536		Paint Color: Black
Upper Gasket	Expanded Graphite		
Lower Gasket	Reinforced PTFE		up to 180℃
	Expanded Graphite		Over 180℃ (optional)
Gland Packing	Reinforced PTFE		up to 180℃
	Expanded Graphite		Over 180℃ (optional)

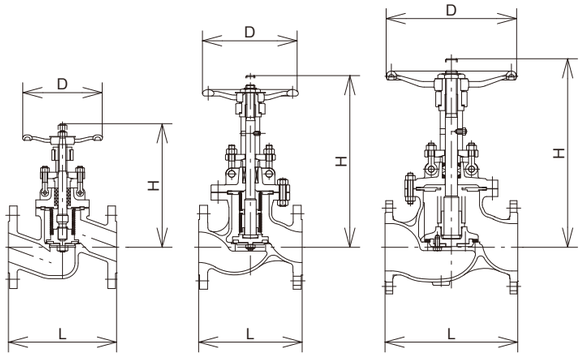


Nominal Diameter (B)	½	¾	1	1¼	1½	2	2½	3	4	5	6	8
L	108	117	127	140	165	203	216	241	292	356	406	495
H	162	165	171	215	220	232	353	388	417	506	520	634
D	100	100	100	150	150	150	200	300	300	350	350	450

Stainless Steel Bellows Seal Globe Valves (PTFE Seat)

Product Code U10FDB(M) 10K Type Stainless Steel Bellows Seal Globe Valves Flanged, PTFE Seat

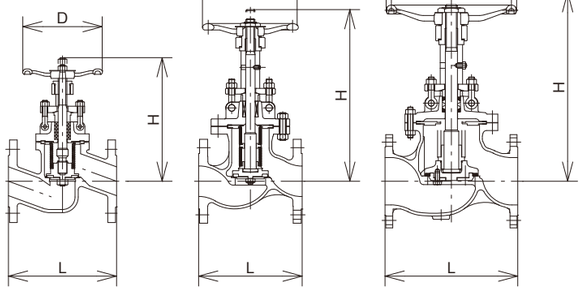
Component Name	Material		Remarks
	U10FDB	U10FDBM	
Body	SCS13A	SCS14A	
Cover	SCS13A	SCS14A	
Stem	A276-304	A276-316	
Disc seat	Reinforced PTFE		
Disc	A276-304	A276-316	up to 100A
	A351-CF8	A351-CF8M	125A or larger
Bellows	SUS316L		
Handwheel	A536		Paint Color: Black
Upper Gasket	Expanded Graphite		
Lower Gasket	Reinforced PTFE		
Gland Packing	Reinforced PTFE		



Nominal Diameter (A)	10	15	20	25	32	40	50	65	80	100	125	150	200
L	108	108	117	127	140	165	203	216	241	292	356	406	495
H	162	162	165	171	215	220	232	353	388	417	506	520	634
D	100	100	100	100	150	150	150	200	300	300	350	350	450

Product Code U150FDB(M) 150lb Type Stainless Steel Bellows Seal Globe Valves Flanged, PTFE Seat

Component Name	Material		Remarks
	U150FDB	U150FDBM	
Body	SCS13A	SCS14A	
Cover	SCS13A	SCS14A	
Stem	A276-304	A276-316	
Disc seat	Reinforced PTFE		
Disc	A276-304	A276-316	up to 4B
	A351-CF8	A351-CF8M	5B or larger
Bellows	SUS316L		
Handwheel	A536		Paint Color: Black
Upper Gasket	Expanded Graphite		
Lower Gasket	Reinforced PTFE		
Gland Packing	Reinforced PTFE		

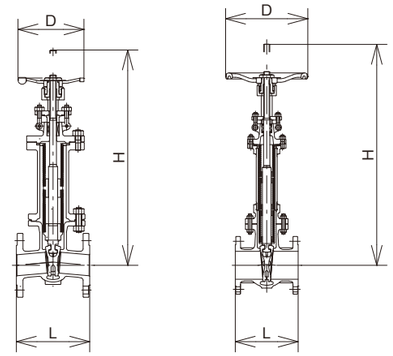


Nominal Diameter (B)	½	¾	1	1¼	1½	2	2½	3	4	5	6	8
L	108	117	127	140	165	203	216	241	292	356	406	495
H	162	165	171	215	220	232	353	388	417	506	520	634
D	100	100	100	150	150	150	200	300	300	350	350	450

Stainless Steel Bellows Seal Gate Valves

Product Code U10FSB(M) 10K Type Stainless Steel Bellows Seal Gate Valves Flanged, Metal Seat

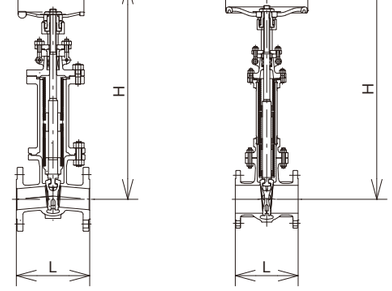
Component Name	Material		Remarks
	U10FSB	U10FSBM	
Body	SCS13A	SCS14A	
Cover	SCS13A	SCS14A	
Stem	A276-304	A276-316	
Wedge	A351-CF8	A351-CF8M	
Bellows	SUS316L		
Handwheel	A536		Paint Color: Black
Upper Gasket	Expanded Graphite		
Lower Gasket	Reinforced PTFE		up to 180℃
	Expanded Graphite		Over 180℃ (optional)
Gland Packing	Reinforced PTFE		up to 180℃
	Expanded Graphite		Over 180℃ (optional)



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	254	267	292
H	321	345	384	421	447	523	616	700	820	1000	1110	1418
D	100	100	150	150	150	150	200	200	300	300	300	350

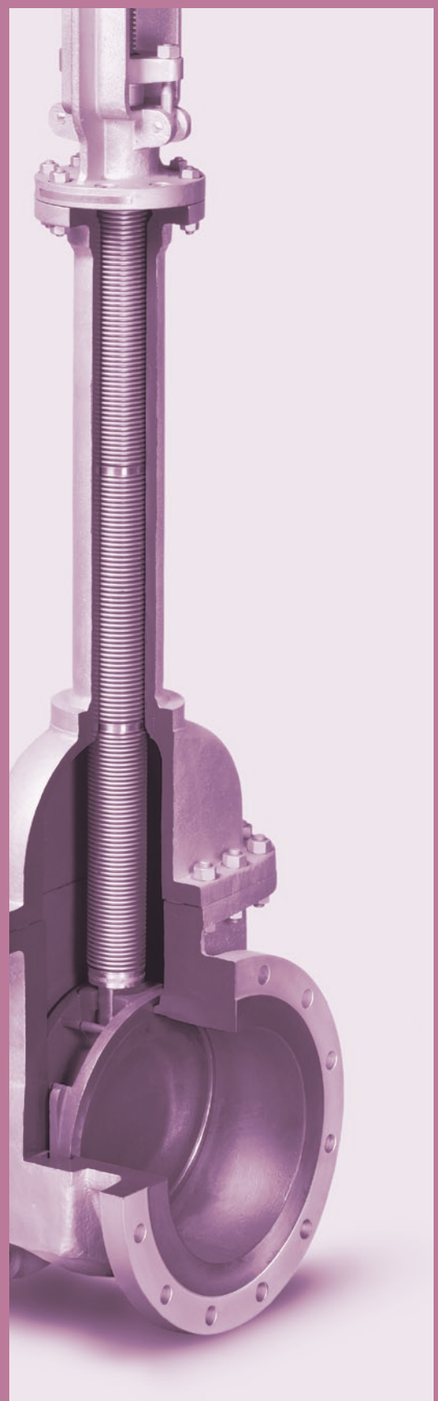
Product Code U150FSB(M) 150lb Type Stainless Steel Bellows Seal Gate Valves Flanged, Metal Seat

Component Name	Material		Remarks
	U150FSB	U150FSBM	
Body	SCS13A	SCS14A	
Cover	SCS13A	SCS14A	
Stem	A276-304	A276-316	
Wedge	A351-CF8	A351-CF8M	
Bellows	SUS316L		
Handwheel	A536		Paint Color: Black
Upper Gasket	Expanded Graphite		
Lower Gasket	Reinforced PTFE		up to 180℃
	Expanded Graphite		Over 180℃ (optional)
Gland Packing	Reinforced PTFE		up to 180℃
	Expanded Graphite		Over 180℃ (optional)



Nominal Diameter (B)	½	¼	1	1¼	1½	2	2½	3	4	5	6	8
L	108	117	127	140	165	178	190	203	229	254	267	292
H	321	345	384	421	447	523	616	700	820	1000	1110	1418
D	100	100	150	150	150	150	200	200	300	300	300	350

Cast Steel
Bellows Seal Valve Series



HF Seat

- 10K Cast Steel Flanged Type Bellows Seal Globe Valves S10KFGB
- 20K Cast Steel Flanged Type Bellows Seal Globe Valves S20KFGB
- 30K Cast Steel Flanged Type Bellows Seal Globe Valves S30KFGB
- 150lb Cast Steel Flanged Type Bellows Seal Globe Valves S150FGB
- 300lb Cast Steel Flanged Type Bellows Seal Globe Valves S300FGB

- 10K Cast Steel Flanged Type Bellows Seal Gate Valves S10KFSB
- 20K Cast Steel Flanged Type Bellows Seal Gate Valves S20KFSB
- 30K Cast Steel Flanged Type Bellows Seal Gate Valves S30KFSB
- 150lb Cast Steel Flanged Type Bellows Seal Gate Valves S150FSB
- 300lb Cast Steel Flanged Type Bellows Seal Gate Valves S300FSB

Temperature and Pressure Rating (JIS Flanged Valve)

Temperature	10K	20K	30K
℃	MPa	MPa	MPa
-29～120	1.4	3.4	5.1
220	1.2	3.1	4.6
300	1.0	2.9	4.3
350	—	2.6	3.9
400	—	2.3	3.4
425	—	2.0	3.0

Temperature and Pressure Rating (ASME Flanged Valve)

Temperature		150lb		300lb	
℉	℃	psi	MPa	psi	MPa
-20～100	-29～38	285	1.96	740	5.10
200	93	260	1.79	675	4.66
300	149	230	1.59	655	4.52
400	204	200	1.38	635	4.37
500	260	170	1.18	600	4.14
600	316	140	0.96	550	3.80
650	343	125	0.86	535	3.69
700	371	110	0.76	535	3.69
750	399	95	0.66	505	3.48
797	425	81	0.56	416	2.87

Product Codes

Product Code - S: Cast Steel Valve Series

Nominal Pressure - 10K: JIS 10K
20K: JIS 20K
150: ASME Class 150
300: ASME Class 300

Connection Type - F: Flanged

Valve Type - GB: Bellows Seal Globe Valve
SB: Bellows Seal Gate Valve

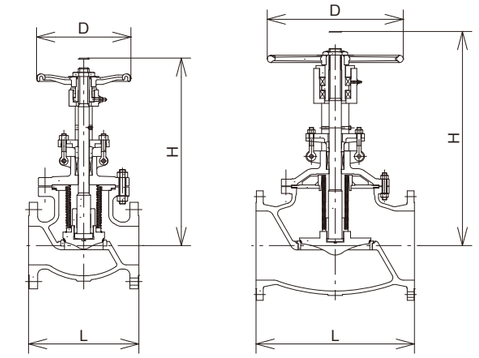
Nominal Size

S150FGB-4

Cast Steel Bellows Seal Globe Valves

Product Code S10KFGB — 10K Type — Cast Steel Bellows Seal Globe Valves Flanged, HF Seat

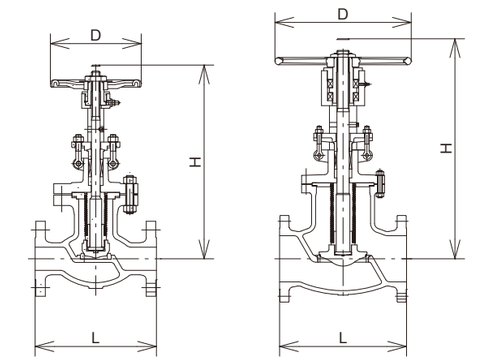
Component Name	Material	Remarks
Body	A216-WCB	
Cover	A216-WCB	
Stem	A276-410	
Seat Ring	A105	HF
Disc	A217-CA15	up to HF 4B
	A105	HF 5B or larger
Bellows	SUS316L	
Handwheel	STEEL	Paint Color: Black
Upper Gasket	P/#6633	
Lower Gasket	P/#2601-GG0	
Gland Packing	P/#6710CH+P/#6610CH	



Nominal Diameter (B)	2	2½	3	4	5	6	8	10	12
L	203	216	241	292	356	406	495	622	698
H	368	417	448	496	516	550	679	835	945
D	200	250	250	250	300	350	500	600	600

Product Code S20KFGB — 20K Type — Cast Steel Bellows Seal Globe Valves Flanged, HF Seat

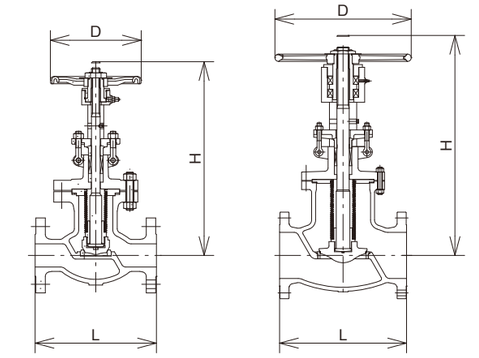
Component Name	Material	Remarks
Body	A216-WCB	
Cover	A216-WCB	
Stem	A276-410	
Seat Ring	A105	HF
Disc	A217-CA15	up to HF 4B
	A105	HF 5B or larger
Bellows	SUS316L	
Handwheel	STEEL	Paint Color: Black
Upper Gasket	P/#6633	
Lower Gasket	P/#2601-GG0	
Gland Packing	P/#6710CH+P/#6610CH	



Nominal Diameter (B)	2	2½	3	4	5	6	8	10	12
L	267	292	318	356	400	444	559	622	711
H	427	485	509	579	599	804	968	1119	1246
D	200	200	250	345	350	450	600	600	700

Product Code S30KFGB — 30K Type — Cast Steel Bellows Seal Globe Valves Flanged, HF Seat

Component Name	Material	Remarks
Body	A216-WCB	
Cover	A216-WCB	
Stem	A276-410	
Seat Ring	A105	HF
Disc	A217-CA15	up to HF 4B
	A105	HF 5B or larger
Bellows	SUS316L	
Handwheel	STEEL	Paint Color: Black
Upper Gasket	P/#6633	
Lower Gasket	P/#2601-GG0	
Gland Packing	P/#6710CH+P/#6610CH	

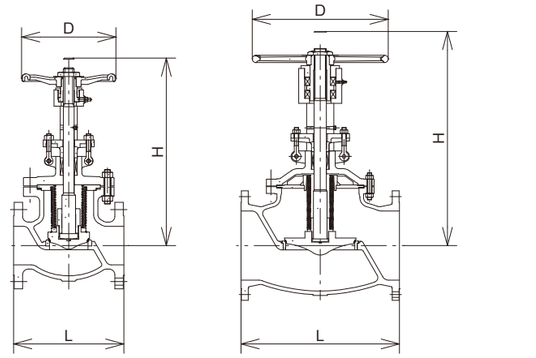


Nominal Diameter (B)	2	2½	3	4	5	6	8	10	12
L	267	292	318	356	400	444	559	622	711
H	427	485	509	579	599	804	968	1119	1246
D	200	200	250	345	350	450	600	600	700

Cast Steel Bellows Seal Globe Valves

Product Code S150FGB — 150lb Type — Cast Steel Bellows Seal Globe Valves — Flanged, HF Seat

Component Name	Material	Remarks
Body	A216-WCB	
Cover	A216-WCB	
Stem	A276-410	
Seat Ring	A105	HF
Disc	A217-CA15	up to HF 4B
	A105	HF 5B or larger
Bellows	SUS316L	
Handwheel	STEEL	Paint Color: Black
Upper Gasket	P/#6633	
Lower Gasket	P/#2601-GG0	
Gland Packing	P/#6710CH+P/#6610CH	



Nominal Diameter (B)	2	2½	3	4	5	6	8	10	12
L	203	216	241	292	356	406	495	622	698
H	368	417	448	496	516	550	679	835	945
D	200	250	250	250	300	350	500	600	600

Product Code S300FGB — 300lb Type — Cast Steel Bellows Seal Globe Valves — Flanged, HF Seat

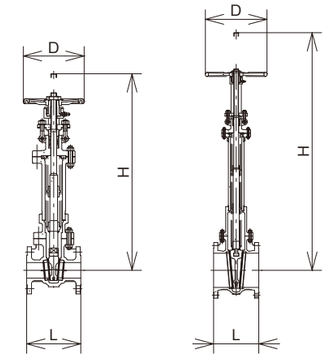
Component Name	Material	Remarks
Body	A216-WCB	
Cover	A216-WCB	
Stem	A276-410	
Seat Ring	A105	HF
Disc	A217-CA15	up to HF 4B
	A105	HF 5B or larger
Bellows	SUS316L	
Handwheel	STEEL	Paint Color: Black
Upper Gasket	P/#6633	
Lower Gasket	P/#2601-GG0	
Gland Packing	P/#6710CH+P/#6610CH	

Nominal Diameter (B)	2	2½	3	4	5	6	8	10	12
L	267	292	318	356	400	444	559	622	711
H	427	485	509	579	599	804	968	1119	1246
D	200	200	250	345	350	450	600	600	700

Cast Steel Bellows Seal Gate Valves

Product Code S10KFSB — 10K Type — Cast Steel Bellows Seal Gate Valves — Flanged, HF Seat

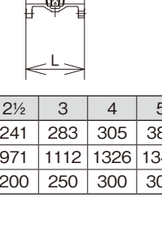
Component Name	Material	Remarks
Body	A216-WCB	
Cover	A216-WCB	
Stem	A276-410	
Seat Ring	A105	HF
Wedge	A216-WCB	HF
Bellows	SUS316L	
Handwheel	STEEL	Paint Color: Black
Bonnnet Gasket	P/#6633	
Upper Gasket	P/#6633	
Lower Gasket	P/#2601-GG0	
Gland Packing	P/#6710CH+P/#6610CH	



Nominal Diameter (B)	2	2½	3	4	5	6	8	10	12
L	178	190	203	229	254	268	292	330	356
H	646	795	833	959	998	1127	1420	1735	2041
D	200	200	250	250	300	300	350	450	500

Product Code S20KFSB — 20K Type — Cast Steel Bellows Seal Gate Valves — Flanged, HF Seat

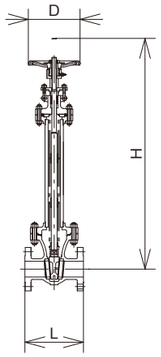
Component Name	Material	Remarks
Body	A216-WCB	
Cover	A216-WCB	
Stem	A276-410	
Seat Ring	A105	HF
Wedge	A216-WCB	HF
Bellows	SUS316L	
Handwheel	STEEL	Paint Color: Black
Bonnnet Gasket	P/#6633	
Upper Gasket	P/#6633	
Lower Gasket	P/#2601-GG0	
Gland Packing	P/#6710CH+P/#6610CH	



Nominal Diameter (B)	2	2½	3	4	5	6	8	10	12
L	216	241	283	305	381	403	419	457	502
H	836	971	1112	1326	1345	1424	1816	2142	2808
D	200	200	250	300	300	350	400	500	600

Product Code S30KFSB — 30K Type — Cast Steel Bellows Seal Gate Valves — Flanged, HF Seat

Component Name	Material	Remarks
Body	A216-WCB	
Cover	A216-WCB	
Stem	A276-410	
Seat Ring	A105	HF
Wedge	A216-WCB	HF
Bellows	SUS316L	
Handwheel	STEEL	Paint Color: Black
Bonnnet Gasket	P/#6633	
Upper Gasket	P/#6633	
Lower Gasket	P/#2601-GG0	
Gland Packing	P/#6710CH+P/#6610CH	

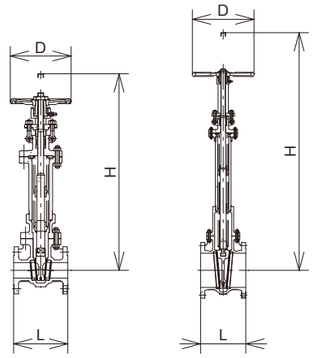


Nominal Diameter (B)	2	2½	3	4	5	6	8	10	12
L	216	241	283	305	381	403	419	457	502
H	836	971	1112	1326	1345	1424	1816	2142	2808
D	200	200	250	300	300	350	400	500	600

Cast Steel Bellows Seal Gate Valves

Product Code S150FSB 150lb Type Cast Steel Bellows Seal Gate Valves Flanged, HF Seat

Component Name	Material	Remarks
Body	A216-WCB	
Cover	A216-WCB	
Stem	A276-410	
Seat Ring	A105	HF
Wedge	A216-WCB	HF
Bellows	SUS316L	
Handwheel	STEEL	Paint Color: Black
Bonnet Gasket	P/#6633	
Upper Gasket	P/#6633	
Lower Gasket	P/#2601-GG0	
Gland Packing	P/#6710CH+P/#6610CH	



Nominal Diameter (B)	2	2½	3	4	5	6	8	10	12
L	178	190	203	229	254	268	292	330	356
H	646	795	833	959	998	1127	1420	1735	2041
D	200	200	250	250	300	300	350	450	500

Product Code S300FSB 300lb Type Cast Steel Bellows Seal Gate Valves Flanged, HF Seat

Component Name	Material	Remarks
Body	A216-WCB	
Cover	A216-WCB	
Stem	A216-410	
Seat Ring	A105	HF
Wedge	A216-WCB	HF
Bellows	SUS316L	
Handwheel	STEEL	Paint Color: Black
Bonnet Gasket	P/#6633	
Upper Gasket	P/#6633	
Lower Gasket	P/#2601-GG0	
Gland Packing	P/#6710CH+P/#6610CH	

Nominal Diameter (B)	2	2½	3	4	5	6	8	10	12
L	216	241	283	305	381	403	419	457	502
H	836	971	1112	1326	1345	1424	1816	2142	2808
D	200	200	250	300	300	350	400	500	600

Forged Steel
Bellows Seal Valve Series

HF Seat

- 10K Forged Steel Flanged Type Bellows Seal Globe Valves T10KFGB1
- 20K Forged Steel Flanged Type Bellows Seal Globe Valves T20KFGB1
- 30K Forged Steel Flanged Type Bellows Seal Globe Valves T30KFGB1
- 40K Forged Steel Flanged Type Bellows Seal Globe Valves T40KFGB1
- 150lb Forged Steel Flanged Type Bellows Seal Globe Valves T150FGB1
- 300lb Forged Steel Flanged Type Bellows Seal Globe Valves T300FGB1
- 600lb Forged Steel Flanged Type Bellows Seal Globe Valves T600FGB1
- 800lb Forged Steel Socket Welded Bellows Seal Globe Valves T800WGB1

Temperature and Pressure Rating (JIS Flanged Valve)

Temperature	10K	20K	30K	40K
℃	MPa	MPa	MPa	MPa
-29～120	1.4	3.4	5.1	6.8
220	1.2	3.1	4.6	6.2
300	1.0	2.9	4.3	5.7
350	—	2.6	3.9	5.2
400	—	2.3	3.4	4.6
425	—	2.0	3.0	4.0

Temperature and Pressure Rating (ASME Flanged Valve)

Temperature		150lb		300lb		600lb		800lb	
℉	℃	psi	MPa	psi	MPa	psi	MPa	psi	MPa
-20～100	-29～38	285	1.96	740	5.10	1098	7.57	1098	7.57
200	93	260	1.79	685	4.66	1098	7.57	1098	7.57
300	149	230	1.59	655	4.52	1098	7.57	1098	7.57
400	204	200	1.38	635	4.37	1098	7.57	1098	7.57
500	260	170	1.18	600	4.14	1098	7.57	1098	7.57
600	316	140	0.96	550	3.80	1098	7.57	1098	7.57
650	343	125	0.86	535	3.69	1075	7.41	1098	7.57
700	371	110	0.76	535	3.69	1065	7.35	1098	7.57
750	399	95	0.66	505	3.48	1010	6.96	1098	7.57
797	425	81	0.56	416	2.87	838	5.78	1098	7.57

Product Codes

Product Code - T: Forged Steel Valve Series

Nominal Pressure - 10K: JIS 10K
20K: JIS 20K
30K: JIS 30K
150: ASME Class 150
300: ASME Class 300
600: ASME Class 600
800: ASME Class 800

Connection Type - F: Flanged
W: Socket Welded

Valve Type - GB: Bellows Seal Globe Valve
SB: Bellows Seal Gate Valve

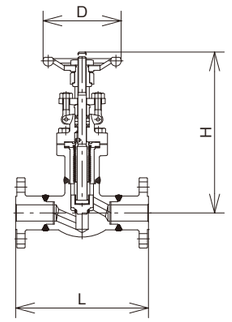
Nominal Size

T800WGB1-2

Forged Steel Bellows Seal Globe Valves

Product Code T10KFGB1 | 10K Type | Forged Steel Bellows Seal Globe Valves Flanged, HF Seat

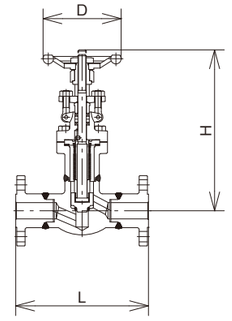
Component Name	Material	Remarks
Body	A105	HF
Cover	A105	
Stem	A276-410	
Disc	A276-304	HF
Bellows	SUS316L	
Handwheel	FCMB270	
Upper Gasket	P/#6633 equivalent	
Lower Gasket	P/#2601-GG0 equivalent	
Gland Packing	P/#6710+P/#6610CH	



Nominal Diameter (B)	½	¾	1	1¼	1½	2
L	152	178	203	216	229	267
H	238	239	270	293	293	343
D	100	100	120	160	160	180

Product Code T20KFGB1 | 20K Type | Forged Steel Bellows Seal Globe Valves Flanged, HF Seat

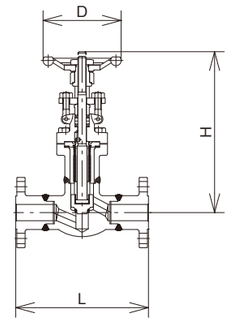
Component Name	Material	Remarks
Body	A105	HF
Cover	A105	
Stem	A276-410	
Disc	A276-304	HF
Bellows	SUS316L	
Handwheel	FCMB270	
Upper Gasket	P/#6633 equivalent	
Lower Gasket	P/#2601-GG0 equivalent	
Gland Packing	P/#6710+P/#6610CH	



Nominal Diameter (B)	½	¾	1	1¼	1½	2
L	152	178	203	216	229	267
H	238	239	270	293	293	343
D	100	100	120	160	160	180

Product Code T30KFGB1 | 30K Type | Forged Steel Bellows Seal Globe Valves Flanged, HF Seat

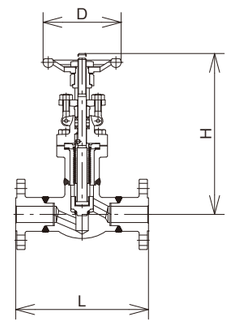
Component Name	Material	Remarks
Body	A105	HF
Cover	A105	
Stem	A276-410	
Disc	A276-304	HF
Bellows	SUS316L	
Handwheel	FCMB270	
Upper Gasket	P/#6633 equivalent	
Lower Gasket	P/#2601-GG0 equivalent	
Gland Packing	P/#6710+P/#6610CH	



Nominal Diameter (B)	½	¾	1	1¼	1½	2
L	152	178	203	216	229	267
H	238	239	270	293	293	343
D	100	100	120	160	160	180

Product Code T40KFGB1 | 40K Type | Forged Steel Bellows Seal Globe Valves Flanged, HF Seat

Component Name	Material	Remarks
Body	A105	HF
Cover	A105	
Stem	A276-410	
Disc	A276-304	HF
Bellows	SUS316L	
Handwheel	FCMB270	
Upper Gasket	P/#6633 equivalent	
Lower Gasket	P/#2601-GG0 equivalent	
Gland Packing	P/#6710+P/#6610CH	

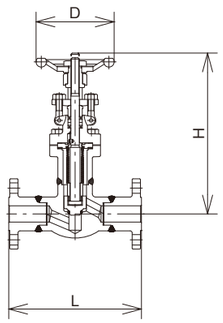


Nominal Diameter (B)	½	¾	1	1¼	1½	2
L	165	190	216	229	241	292
H	238	239	270	293	293	343
D	100	100	120	160	160	180

Forged Steel Bellows Seal Globe Valves

Product Code T150FGB1 — 150lb Type — Forged Steel Bellows Seal Globe Valves — Flanged, HF Seat

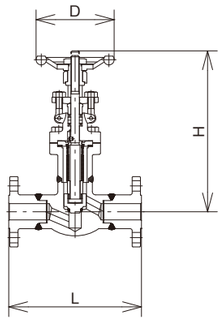
Component Name	Material	Remarks
Body	A105	HF
Cover	A105	
Stem	A276-410	
Disc	A276-304	HF
Bellows	SUS316L	
Handwheel	FCMB270	
Upper Gasket	P/#6633 equivalent	
Lower Gasket	P/#2601-GG0 equivalent	
Gland Packing	P/#6710+P/#6610CH	



Nominal Diameter (B)	½	¾	1	1¼	1½	2
L	152	178	203	216	229	267
H	238	239	270	293	293	343
D	100	100	120	160	160	180

Product Code T300FGB1 — 300lb Type — Forged Steel Bellows Seal Globe Valves — Flanged, HF Seat

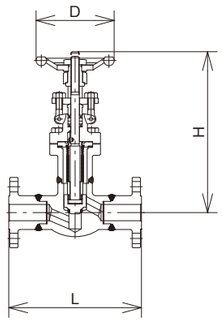
Component Name	Material	Remarks
Body	A105	HF
Cover	A105	
Stem	A276-410	
Disc	A276-304	HF
Bellows	SUS316L	
Handwheel	FCMB270	
Upper Gasket	P/#6633 equivalent	
Lower Gasket	P/#2601-GG0 equivalent	
Gland Packing	P/#6710+P/#6610CH	



Nominal Diameter (B)	½	¾	1	1¼	1½	2
L	152	178	203	216	229	267
H	238	239	270	293	293	343
D	100	100	120	160	160	180

Product Code T600FGB1 — 600lb Type — Forged Steel Bellows Seal Globe Valves — Flanged, HF Seat

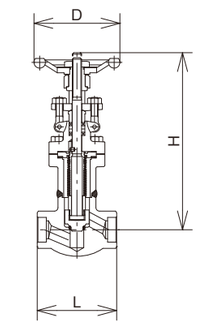
Component Name	Material	Remarks
Body	A105	HF
Cover	A105	
Stem	A276-410	
Disc	A276-304	HF
Bellows	SUS316L	
Handwheel	FCMB270	
Upper Gasket	P/#6633 equivalent	
Lower Gasket	P/#2601-GG0 equivalent	
Gland Packing	P/#6710+P/#6610CH	



Nominal Diameter (B)	½	¾	1	1¼	1½	2
L	165	190	216	229	241	292
H	238	239	270	293	293	343
D	100	100	120	160	160	180

Product Code T800WGB1 — 800lb Type — Forged Steel Bellows Seal Globe Valves — Socket Welded, HF Seat

Component Name	Material	Remarks
Body	A105	HF
Cover	A105	
Stem	A276-410	
Disc	A276-304	HF
Bellows	SUS316L	
Handwheel	FCMB270	
Upper Gasket	P/#6633 equivalent	
Lower Gasket	P/#2601-GG0 equivalent	
Gland Packing	P/#6710+P/#6610CH	



Nominal Diameter (B)	½	¾	1	1¼	1½	2
L	79	92	111	152	152	172
H	238	239	270	293	293	343
D	100	100	120	160	160	180

Forged Steel Short-neck Type
Bellows Seal Valve Series

HF Seat

- 10K Forged Steel Flanged Type Short-neck Type Bellows Seal Globe Valves — T10KFGB1-S
- 20K Forged Steel Flanged Type Short-neck Type Bellows Seal Globe Valves — T20KFGB1-S
- 30K Forged Steel Flanged Type Short-neck Type Bellows Seal Globe Valves — T30KFGB1-S
- 40K Forged Steel Flanged Type Short-neck Type Bellows Seal Globe Valves — T40KFGB1-S
- 150lb Forged Steel Flanged Type Short-neck Type Bellows Seal Globe Valves — T150FGB1-S
- 300lb Forged Steel Flanged Type Short-neck Type Bellows Seal Globe Valves — T300FGB1-S
- 600lb Forged Steel Flanged Type Short-neck Type Bellows Seal Globe Valves — T600FGB1-S
- 800lb Forged Steel Socket Welded Short-neck Type Bellows Seal Globe Valves — T800WGB1-S

Temperature and Pressure Rating (JIS Flanged Valve)

Temperature	10K	20K	30K	40K
℃	MPa	MPa	MPa	MPa
-29～120	1.4	3.4	5.1	5.1
220	1.2	3.1	4.6	5.1
300	1.0	2.9	4.3	5.1
350	—	2.6	3.9	5.1
400	—	2.3	3.4	4.6
425	—	2.0	3.0	4.0

Temperature and Pressure Rating (ASME Flanged Valve)

Temperature		150lb		300lb		600lb		800lb	
℉	℃	psi	MPa	psi	MPa	psi	MPa	psi	MPa
-20～100	-29～38	285	1.96	740	5.10	740	5.10	740	5.10
200	93	260	1.79	675	4.66	740	5.10	740	5.10
300	149	230	1.59	655	4.52	740	5.10	740	5.10
400	204	200	1.38	635	4.37	740	5.10	740	5.10
500	260	170	1.18	600	4.14	740	5.10	740	5.10
600	316	140	0.96	550	3.80	740	5.10	740	5.10
650	343	125	0.86	535	3.69	740	5.10	740	5.10
700	371	110	0.76	535	3.69	740	5.10	740	5.10
750	399	95	0.66	505	3.48	740	5.10	740	5.10
797	425	81	0.56	416	2.87	740	5.10	740	5.10

Product Codes

Product Code - T: Forged Steel Valve Series

Nominal Pressure - 10K: JIS 10K
20K: JIS 20K
30K: JIS 30K
40K: JIS 40K
150: ASME Class 150
300: ASME Class 300
600: ASME Class 600
800: ASME Class 800

Connection Type - F: Flanged
W: Socket Welded

Valve Type - GB: Bellows Seal Globe Valve

Short-neck Type

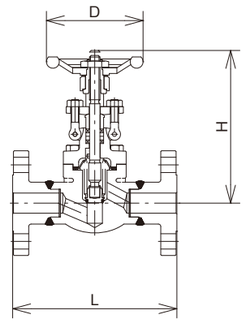
Nominal Size

T800WGB1-S2

Forged Steel Short-neck Type Bellows Seal Globe Valves

Product Code T10KFGB1-S | 10K Type | Forged Steel Short-neck Type Bellows Seal Globe Valves Flanged, HF Seat

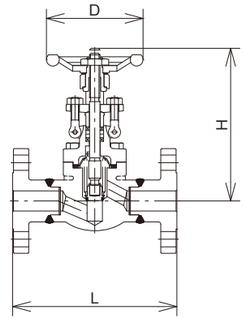
Component Name	Material	Remarks
Body	A105	HF
Cover	A105	
Stem	A276-410	
Disc	A276-304	HF
Bellows	SUS316L	
Handwheel	FCMB270	
Upper Gasket	P/#6633 equivalent	
Lower Gasket	P/#2601-GG0 equivalent	
Gland Packing	P/#6710+P/#6610CH	



Nominal Diameter (B)	½	¾	1	1¼	1½	2
L	152	178	203	216	229	267
H	160	165	190	236	236	269
D	100	100	120	160	160	180

Product Code T20KFGB1-S | 20K Type | Forged Steel Short-neck Type Bellows Seal Globe Valves Flanged, HF Seat

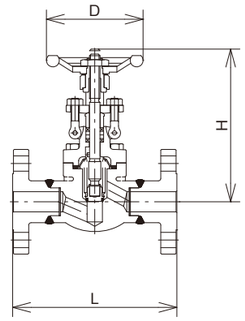
Component Name	Material	Remarks
Body	A105	HF
Cover	A105	
Stem	A276-410	
Disc	A276-304	HF
Bellows	SUS316L	
Handwheel	FCMB270	
Upper Gasket	P/#6633 equivalent	
Lower Gasket	P/#2601-GG0 equivalent	
Gland Packing	P/#6710+P/#6610CH	



Nominal Diameter (B)	½	¾	1	1¼	1½	2
L	152	178	203	216	229	267
H	160	165	190	236	236	269
D	100	100	120	160	160	180

Product Code T30KFGB1-S | 30K Type | Forged Steel Short-neck Type Bellows Seal Globe Valves Flanged, HF Seat

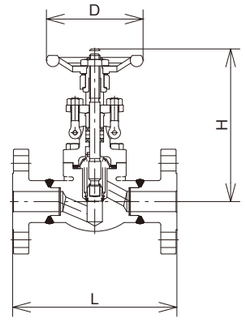
Component Name	Material	Remarks
Body	A105	HF
Cover	A105	
Stem	A276-410	
Disc	A276-304	HF
Bellows	SUS316L	
Handwheel	FCMB270	
Upper Gasket	P/#6633 equivalent	
Lower Gasket	P/#2601-GG0 equivalent	
Gland Packing	P/#6710+P/#6610CH	



Nominal Diameter (B)	½	¾	1	1¼	1½	2
L	152	178	203	216	229	267
H	160	165	190	236	236	269
D	100	100	120	160	160	180

Product Code T40KFGB1-S | 40K Type | Forged Steel Short-neck Type Bellows Seal Globe Valves Flanged, HF Seat

Component Name	Material	Remarks
Body	A105	HF
Cover	A105	
Stem	A276-410	
Disc	A276-304	HF
Bellows	SUS316L	
Handwheel	FCMB270	
Upper Gasket	P/#6633 equivalent	
Lower Gasket	P/#2601-GG0 equivalent	
Gland Packing	P/#6710+P/#6610CH	

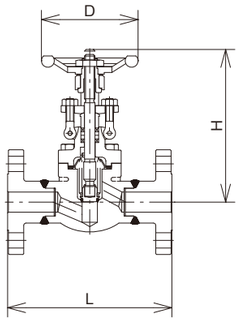


Nominal Diameter (B)	½	¾	1	1¼	1½	2
L	165	190	216	229	241	292
H	160	165	190	236	236	269
D	100	100	120	160	160	180

Forged Steel Short-neck Type Bellows Seal Globe Valves

Product Code T150FGB1-S 150lb Type Forged Steel Short-neck Type Bellows Seal Globe Valves Flanged, HF Seat

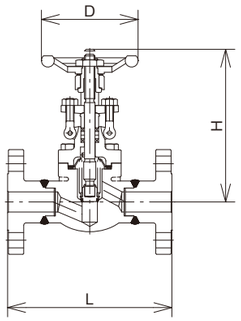
Component Name	Material	Remarks
Body	A105	HF
Cover	A105	
Stem	A276-410	
Disc	A276-304	HF
Bellows	SUS316L	
Handwheel	FCMB270	
Upper Gasket	P/#6633 equivalent	
Lower Gasket	P/#2601-GG0 equivalent	
Gland Packing	P/#6710+P/#6610CH	



Nominal Diameter (B)	½	¾	1	1¼	1½	2
L	152	178	203	216	229	267
H	160	165	190	236	236	269
D	100	100	120	160	160	180

Product Code T300FGB1-S 300lb Type Forged Steel Short-neck Type Bellows Seal Globe Valves Flanged, HF Seat

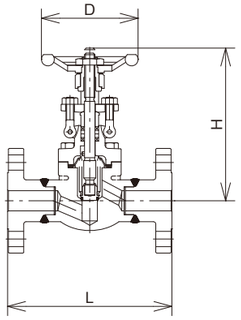
Component Name	Material	Remarks
Body	A105	HF
Cover	A105	
Stem	A276-410	
Disc	A276-304	HF
Bellows	SUS316L	
Handwheel	FCMB270	
Upper Gasket	P/#6633 equivalent	
Lower Gasket	P/#2601-GG0 equivalent	
Gland Packing	P/#6710+P/#6610CH	



Nominal Diameter (B)	½	¾	1	1¼	1½	2
L	152	178	203	216	229	267
H	160	165	190	236	236	269
D	100	100	120	160	160	180

Product Code T600FGB1-S 600lb Type Forged Steel Short-neck Type Bellows Seal Globe Valves Flanged, HF Seat

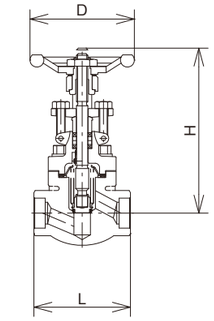
Component Name	Material	Remarks
Body	A105	HF
Cover	A105	
Stem	A276-410	
Disc	A276-304	HF
Bellows	SUS316L	
Handwheel	FCMB270	
Upper Gasket	P/#6633 equivalent	
Lower Gasket	P/#2601-GG0 equivalent	
Gland Packing	P/#6710+P/#6610CH	



Nominal Diameter (B)	½	¾	1	1¼	1½	2
L	165	190	216	229	241	292
H	160	165	190	236	236	269
D	100	100	120	160	160	180

Product Code T800WGB1-S 800lb Type Forged Steel Short-neck Type Bellows Seal Globe Valves Socket Welded, HF Seat

Component Name	Material	Remarks
Body	A105	HF
Cover	A105	
Stem	A276-410	
Disc	A276-304	HF
Bellows	SUS316L	
Handwheel	FCMB270	
Upper Gasket	P/#6633 equivalent	
Lower Gasket	P/#2601-GG0 equivalent	
Gland Packing	P/#6710+P/#6610CH	



Nominal Diameter (B)	½	¾	1	1¼	1½	2
L	79	92	111	152	152	172
H	160	165	190	236	236	269
D	100	100	120	160	160	180

Chemical Resistance of Bellows and Valve Materials

Name of Liquid	Body material					Bellows	Remarks
	FCD-S*1	SCS13A (CF8)	SCS14A (CF8M)	WCB (SCPH2)	A105 (SFVC2A)	SUS316L	
Hydrogen	○	○	○	○	○	○	Degreasing of valve interior
Argon	○	○	○	○	○	○	
Hydrogen cyanide	×	○	○	○	○	○	
Ethylene oxide	○	○	○	○	○	○	Some prohibited materials apply*2
Chlorine (dry gas)	○ (≦30℃)	○ (≦30℃)	○ (≦30℃)	○ (≦30℃)	○ (≦30℃)	○ (≦30℃)	
Ammonia	○	○	○	○	○	○	Some prohibited materials apply*2
Hydrogen sulfide (dry gas)	○	○	○	○	○	○	HF Seat
Hydrogen sulfide (wet gas)	×	○	○	○	○	○	HF Seat
Chloromethyl	○ (Room temperature, dry)	○ (Room temperature, dry)	○ (Room temperature, dry)	○ (Room temperature, dry)	○ (Room temperature, dry)	○ (Room temperature, dry)	
Trimethylamine	○	○	○	○	○	○	
Ethanol	○	○	○	○	○	○	
Amine	○	○	○	○	○	○	Some prohibited materials apply*2
Heat transfer oil	○	○	○	○	○	○	
Oxygen	○	○	○	○	○	○	Degreasing of valve interior P/G : PTFE
Liquefied petroleum gas	○	○	○	○	○	○	
Natural gas	○	○	○	○	○	○	
Citygas	○	○	○	○	○	○	
Nitric acid	×	○ (≦50%、≦70℃)	○ (≦50%、≦70℃)	○ (≦50%、≦70℃)	○ (≦50%、≦70℃)	○ (≦50%、≦70℃)	P/G : PTFE
Sulfuric acid	○ (98%≦、≧80℃)	○ (98%≦、≧150℃)	○ (98%≦、≧150℃)	○ (98%≦、≧150℃)	○ (98%≦、≦150℃)	○	P/G : PTFE
Carbon dioxide (dry gas)	○	○	○	○	○	○	
Sodium hydroxide	○ (≦50%、≦80℃)	○ (≦70%、≦250℃)	○ (≦70%、≦250℃)	○ (≦70%、≦80℃)	○ (≦70%、≦80℃)	○ (≦70%、≦250℃)	
Acetylene	○	○	○	○	○	○	Some prohibited materials apply*2
Phosgene	×	○	○	○	○	○	P/G : PTFE

*1: For liquids applicable under the Security Regulation for General High-Pressure Gas, usage is restricted to 2.4MPa or less and -5℃ - 350℃
*2: See materials whose use is prohibited depending on the type of gas based on the listed standards such as Security Regulation for General High-Pressure Gas.
P/G: Abbreviation of Packing / Gasket

● Materials whose use is prohibited depending on the type of gas based on the listed standards such as Security Regulation for General High-Pressure Gas

Name of Gas	Banned materials
Acetylene	Copper, copper alloys with more than 62% copper content, mercury
Ammonia	Copper, copper alloys, zinc, mercury
Dimethylamine	Copper, copper alloys, zinc, mercury
Allylamine	Copper, copper alloys, zinc, mercury
Butadiene	Copper, silver, magnesium, mercury, metals that produce acetylide
Ethylene oxide	Copper, copper alloys, silver, silver alloys, magnesium, magnesium alloys, aluminum alloys, metals that produce acetylide, cast iron, Type 416 and 442 stainless steel, natural rubber, asbestos, mercury
Vinyl chloride	Copper, silver, mercury, magnesium, aluminum, aluminum alloys, metals that produce acetylide
Methyl bromide	Aluminum, aluminum alloys
Methyl chloride	Aluminum, aluminum alloys

Use of Bellows Seal Valve Vacuum Line

● Range of vacuum use for our valves

Table 6 indicates the range of use with vacuum devices for Hitachi Valve's regular valves and bellows seal valves.

Table 6: Range of Use for Hitachi Valve Vacuum Valves

Valve Type	Range of Use	Allowable Leakage Amount	
		Body	Seat
Standard Regular Valve	~10^{2} Pa(abs) (1 Torr)	10^{-2} Pa m^3/sec	Metal Seat : 10^{-1} Pa m^3/sec PTFE Seat : 10^{-2} Pa m^3/sec
Regular Valve with Vacuum Specifications	~10^{-1} Pa(abs) (10^{-3} Torr)	10^{-4} Pa m^3/sec	Metal Seat : 10^{-3} Pa m^3/sec PTFE Seat : 10^{-4} Pa m^3/sec
Bellows Seal Valve	~10^{-2} Pa(abs) (10^{-4} Torr)	10^{-7} Pa m^3/sec	Metal Seat : 10^{-6} Pa m^3/sec PTFE Seat : 10^{-7} Pa m^3/sec

A vacuum refers to pressure lower than normal atmospheric pressure (1.013 x 10^{5} Pa (abs)). In the vacuum industry, for the sake of convenience pressure levels are divided into the categories shown in Table 2.
For your reference, allowable leakage amount for major main vacuum devices is shown in table 3.

Table 2: Vacuum Categories

Classification	Pressure
Low vacuum (Low vacuum)	Vacuum of 10^{2} Pa (abs) or greater
Medium vacuum (Medium vacuum)	Vacuum of 10^{2} – 10^{-1} Pa (abs)
High vacuum (High vacuum) (HV)	Vacuum of 10^{-1} – 10^{-5} Pa (abs)
Ultrahigh vacuum (Ultra-high vacuum) (UHV)	Vacuum of 10^{-5} Pa (abs) or less
Absolute vacuum (absolute vacuum, perfect vacuum)	Vacuum of 0 Pa (abs) (unfeasible)

Table 3: Allowable Leakage Amounts for Main Vacuum Devices

Vacuum Device	Allowable Leakage Amount
Reduced-pressure drying unit	~1 Pa m^3/sec
Vacuum distillation unit	~10^{-2} Pa m^3/sec
Freeze dehydration unit	~10^{-3} Pa m^3/sec
Medium vacuum-level deposition unit	~10^{-6} Pa m^3/sec
High vacuum unit	~10^{-9} Pa m^3/sec
Ultrahigh vacuum unit	~10^{-11} Pa m^3/sec
Braun tube / vacuum tube	~10^{-12} Pa m^3/sec

● Vacuum Valve Inspection Methods

There are two main methods to check for leakage in a vacuum valve, the pressurization method and vacuum method. Examples of each are given in Table 5.

Table 5: Inspection Methods and Detection Limits

	Testing Method	Detection Limit Leakage Amount
Pressurization Method	Pressure Change Measurement Method	0.1~1 Pa m^3/sec
	Underwater Foaming Method	10^{-5} Pa m^3/sec
	Soap Water Foaming Method	5×10^{-6} Pa m^3/sec
	Ammonia Gas Method	10^{-8} Pa m^3/sec
	Helium Gas Method	10^{-8} Pa m^3/sec
Vacuum Method	Pressure Change Measurement Method	10^{-2} Pa m^3/sec
	Geissler Method	10^{-4} Pa m^3/sec
	Ionization Vacuum Gauge-based Method	10^{-8} Pa m^3/sec
	Helium Method	10^{-10} Pa m^3/sec

List of main materials for Bellows Seal Valves

Part name	Ductile iron valves	Stainless steel valve		Cast Steel valve		Forged steel valve	
		Globe valve	Gate valve	Globe valve	Gate valve	Globe valve	Gate valve
Body	FCD-S	SCS13A SCS14A	SCS13A SCS14A	A216-WCB	A216-WCB	A105	A105
Bonnet	FCD-S	SCS13A SCS14A	SCS13A SCS14A	A216-WCB	A216-WCB	A105	A105
Stem	SUS403	A276-304	A276-304	A276-410	A276-410	A276-410	A276-410
Disc	SUS304	A276-304 A276-316	A351-CF8 A351-CF8M	A276-410(≧4B) A217-CA15(5B≦)	A216-WCB	A276-304	A217-CA15
Body seat ring	SUS403	—	—	A105	A105	A105	A276-410
Bellows	SUS316L	SUS316L	SUS316L	SUS316L	SUS316L	SUS316L	SUS316L

Materials used and applied standards

Part name	Material code	Material name	Specification No.		
			JIS	ASTM	DIN
Body/Bonnet (Body seat ring)	FCD-S	Ductile iron casting	B8270(Appendix-5) FCD-S	A536 Gr60-40-18	—
	SCS13A	Stainless-steel casting	G 5121 SCS13A	A351 CF-8	17445 G-XCrNi18 9
	SCS14A	Stainless-steel casting	G 5121 SCS14A	A351 CF8M	17445 G-X6CrNiMo18 10
	A216-WCB	Steel casting for high temperature & high pressure	G 5151 SCPH2	A216 WCB	—
	A105	Carbon steel forging for pressure vessel	G 3202 SFVC2A	A105	—
Stem Body seat ring	SUS403	Stainless-steel bar	G 4303 SUS 403	A276 S 40300	—
	A276-304	Stainless-steel bar	G 4303 SUS 304	A276 S 30400	—
	S276-410	Stainless-steel bar	G 4303 SUS 410	A276 S 41000	1654-5 X10Cr13
Disc	SUS304	Stainless-steel bar	G 4303 SUS 304	A276 S 30400	—
	A276-306	Stainless-steel bar	G 4303 SUS 316	A276 S31600	1654-5 X5CrCrNiMo17 12 2
	A351-CF8	Stainless-steel casting	G 5121 SCS13A	A351 CF-8	17445 G-XCrNi18 9
	A351-CF8M	Stainless-steel casting	G 5121 SCS14A	A351 CF8M	17445 G-X6CrNiMo18 10
	A276-CA15	Stainless-steel casting	G 5121 SCS1	A217-CA15	17445 G-X20Cr14
Bellows	SUS316L	Stainless-steel plate	G 4304 SUS316L	A167 S31603	17445 X2CrNiMo17 13 2

1. Transport

①When lifting a large-size valve, lift it with a rope tied to the valve casing or the yoke.

②Never tie the rope to the handle. Also, make sure not to let the valve fall over and cause the handle to hit hard.

③Do not carry the valve at its handle. Otherwise, the handle may turn and cause you a hazard.

2. Storage

①Leave the delivered valve in the style of packing sent out from the factory until it is installed locally.

②Even for a short period of time, store the valve indoors with little moisture or dust instead of storing it at an open-air location.

③Do not remove the protection seal or the polyethylene cap at the end of the valve casing until just before the installation. Otherwise, a foreign substance may enter, resulting in leakage from the valve sheet or damage to the bellows.

3. Range of use

①Check the actual product and actual use conditions before use. Use the product within the range of “applicable fluids, pressures, and temperatures” on this catalog. For use beyond this range, please consult with us.

②Use the “high-pressure gas approved valve” within the conditions listed on the Remarks of the certification.

4. Installation

①Carefully clean inside the pipe to remove foreign substances such as welding spatters, pipe chips, scales and gravels to avoid leakage from the valve sheet or damage to the bellows.

②Install a valve that has a flow direction arrow on the valve casing to be such that the direction matches with the fluid flow direction.

③For flanged type valves, check if there is any hazardous scratch on the gasket contact surface of the flange between the valve casings.

④Do not apply excessive sealing agent to the gasket. Otherwise, it may result in leakage from the valve sheet or damage to the bellows.

⑤When installing the valve, tighten the flange equally while paying attention not to let the piping gasket protrude into the bore. Gradually tighten the bolt diagonally.

⑥For welding-type valve, remove the protection cap at the groove or the socket just before piping or welding.

⑦Weld the valve and the piping with the valve closed. Otherwise, the heat may deform the valve sheet surface. Before welding, tighten the valve not so hard but until the valve disc touches the seat slightly, and turn the handle a 1/4 turn in the open direction to allow the valve shaft to have play.

⑧A rough guide for the range of preheating and postheating treatment is approximately 3 times of weld surfacing width at the end face of the valve connection. Keep the range to the minimum and be carful not to heat the valve seat abnormally. Also, try to prevent the temperature of other parts from rising as much as possible. Pay particular attention to the cooling rate.

5. Handling of valves

5.1 Points to be checked before operation

①If the pipe has not been flushed fully, the valve may not be closed fully due to interference of foreign substances remaining inside the pipe. In this case, do not forcedly close the valve but open the valve slightly once and blow off the foreign substance before re-closing the valve.

②The valve needs to be closed with sufficient strength applied to the handle in order to keep the tightness of the valve seat. However, do not forcedly turn the handle with a wrench or jig since manual operation is sufficient. Similarly, when using a supplementary handle etc, do not forcedly turn it.

③The PTFE disc has high sealing characteristics, and is suitable for liquids containing gaseous body or scales. However, pay particular attention not to forcedly close the disc as it is made of soft resin and can easily be damaged.

④Check that the bolts/nuts are not loose.

5.2 Precaution for use

①Do not apply higher pressure than the maximum allowable working pressure.

②Avoid impact pressure such as by the water hammer.

③Do not let liquid inside the pipe freeze.

④Do not use corrosive liquids.

Examples of corrosive liquids:
Hydrochloride, nitric acid, dilute sulfuric acid, bromine, hypochlorous acid, acetic acid, formic acid, ammonium persulfate, aluminum chloride, etc.

⑤When using high viscosity liquid, avoid it from sticking to the bellows.

⑥Do not use the valve for pipes with strong vibration.

⑦Do not suddenly open or close the valve with a cylinder etc.

Caution During Use

Please check the following prohibited actions and cautions when using bellows valves. Using bellows valves with specifications or conditions that deviate from this information may lead to serious damage including bellows breakage.
Please check with Hitachi Valve if you have any questions.

Prohibited Actions

- Do not use the valve under conditions which exceed the range of use.
- Avoid freezing liquids inside the piping.
- Do not suddenly open or close the valve with a air cylinder, etc.
- Avoid subjecting the valve to impact pressures such as a water hammer.
- Do not use in pipes with strong vibrations.
- Do not use the valve for high-frequency opening and closing by electric or air pressure operation.
- When transporting a large-size valve, lift it with a rope tied to the valve body or the yoke. Never tie the rope to the handle, and make sure the valve does not fall over or suffer a strong impact. Otherwise the valve stem may bend, leaving the valve unable to open and close.
- When operating the handle, do not apply excessive torque by the supplementary handle or elsewhere, otherwise the damage such as bending stem may happen.
- Please consult with Hitachi Valve when using toxic, flammable or corrosive liquids.

Cautions

- When using highly viscous liquids or liquids which harden at low temperatures, prevent the liquid from sticking to the bellows by keeping it warm or taking other measures.
- To prevent foreign substances from entering the valve, do not remove the seal on the flange face until the valve has been installed.
- Store the valve indoors in a place with minimal humidity and dust. Do not store the valve in open air.
- Do not disassemble or replace parts on the valve (disassembly and assembly work on a bellows valve should only be performed by an experienced person who has received training.)
- When using the valve, match the flow direction with the arrows on the valve body.
- When the valve is fully closed, abruptly closing the handle with force may cause a foreign substance to get caught on the seat surface or cause seat leakage. In such cases, after fully closing the valve lightly, open the valve slightly and blow off the foreign substance around the seat before closing the handle again.
- If the valve is used when an extremely small opening, high-velocity liquids may strike the seat or valve body and cause erosion (mechanical corrosion).
- If the valve is used with high frequency, slippage of the valve stem trapezoidal thread will occur. Please lubricate regularly.