

The following valves are available.



Stainless Steel Valves



Cast / Forged Steel Valves



PE Ball Valves



Pneumatic and Electric operated Valves



- The specifications, performance values of products in this catalog are based on general usage conditions, and are presented as guidelines for model selection. Check the specifications of each product and the fluids, temperatures and pressures etc. that you use before making selections.
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Agent

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[Obtained ISO9001 & ISO 14001 certifications]

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GOURD  BRAND

MALLEABLE IRON / DUCTILE IRON VALVES

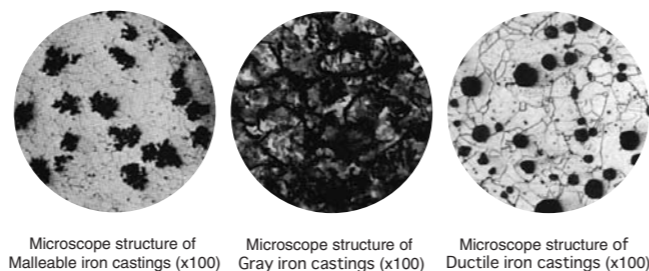


ABOUT THIS CATALOG

1. Major models of manual operated Hitachi "Gourd" Brand Malleable/Ductile Iron Valves are listed in this catalog.
2. The valves are listed in the order of Class and Type(sereis). The types are arranged in the order of globe valve/ gate valve/ check valve / strainer and ball valve. The materials of valve main parts and the specification for valve selection are shown for each model.
3. All valves listed are standard types. Please consult us for the options of gear, by-pass, open-close indicator etc and special specifications. Also electric motor operated gate, globe and ball valves and pneumatic operated ball valves are available on request.
4. For more detailed technical data, consult with us or our local distributors.
5. Prices are not shown in the catalog.

Malleable/ Ductile Iron Valves

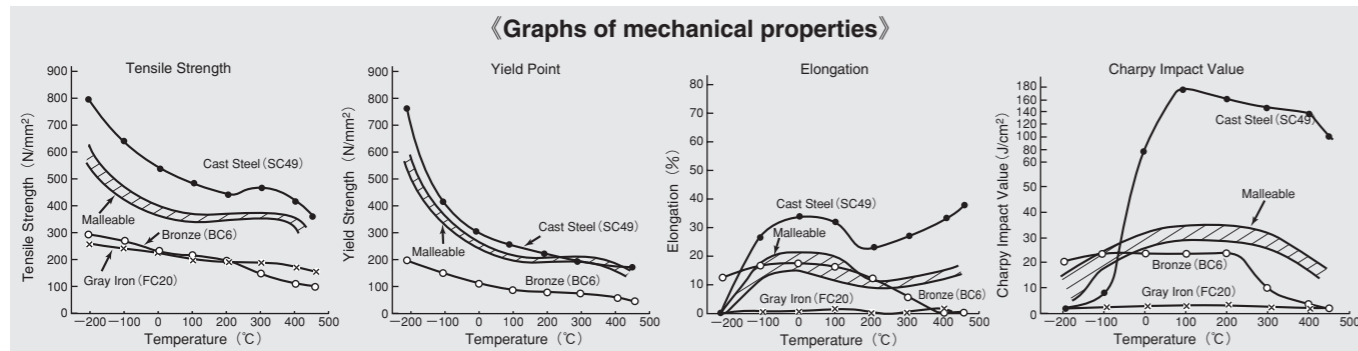
Malleable/ Ductile iron valves are designed and developed by Hitachi Metals, Ltd (Mother company of Hitachi valve, Ltd.) more than half a century ago. The valves have been well accepted as the alternative of cast and forged steel valves in the market of Japan as well as Asian countries since the valves are enough strong for the piping where the steel valves are used to apply for and are less expensive than the latter valves. The characteristics and mechanical properties are explained in the graphs. The applications of the valves are shown in the next page.



Microscope structure of Malleable iron castings (x100)

Microscope structure of Gray iron castings (x100)

Microscope structure of Ductile iron castings (x100)



"GOURD" Brand

The "Gourd" as the trade mark is the registered in Japan as well as many foreign countries. It is the symbol of the ideal castings, tougher, smoother and curved beautifully.



Warranty Program

1. Warranty Period: One year after use or one and half year after shipment from our factory, whichever is shorter
2. Warranty: Hitachi Valve, Ltd. guarantees these products to the extent that we will replace those having manufacturing defects, under normal use and service. No charge for labor or expense required to repair defective goods, or occasioned by them, will be allowed. If the goods are defective, the measure of the damage is the price of the defective goods only.

Applications

- 1 Coolant piping for lathe
- 2 Steam piping in spinning mill (spinnery)
- 3 Steam piping of dyeing machine (dye works) spinning mill (spinnery)
- 4 Attached valve for package boiler
- 5 Fuel oil piping for tunnel kiln (furnace) in pottery manufacturing works
- 6 Water piping for fire extinguishing.
- 7 Piping for LPG tank.
- 8 Fuel oil piping for tunnel kiln
- 9 Middle pressure potable water line
- 10 City gas piping
- 11 Coagulant piping in water treatment plant
- 12 Valve for tank trailer(truck)
- 13 Valve for regulator (governor)
- 14 Valve for compressor
- 15 Fuel oil piping for combustion furnace.
- 16 Valve for cleaning
- 17 Sprinkler unit
- 18 Cold water piping for air conditioning system
- 19 Steam line piping in general industry.

Fluid Type	Primary Fluid	Applications
Steam	Steam	2 3 4 19
Oil	Heavy Oil, Cutting oil, Lubricant.	5 8
Gas	Compressed air, City gas, LPG, Inert gas.	6 9 13 16 17 18
Water supply	Sewage Water, Drainage, Hot water, Industrial water, Potable water, Drinking water.	1 7 10 12 15
Other	Coagulant, Condensate, Other	12 11

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



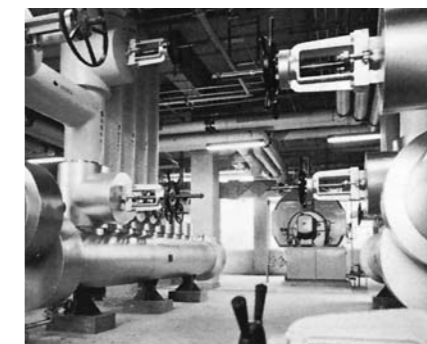
City Gas piping around governor



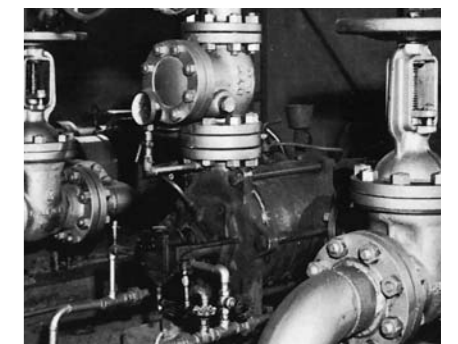
City Gas piping around governor



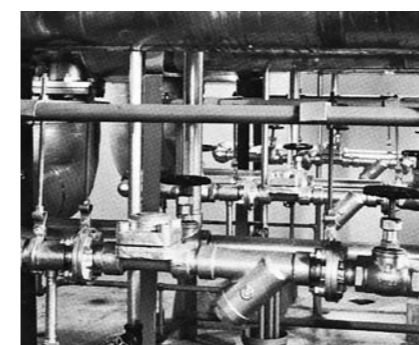
Hot water line



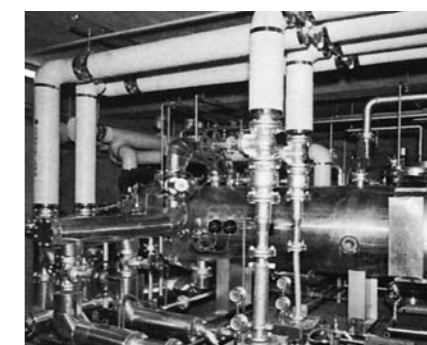
Boiler



Steam line



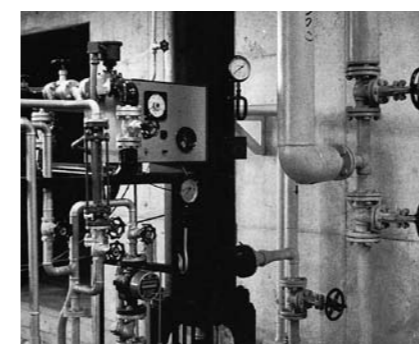
Heat exchanger



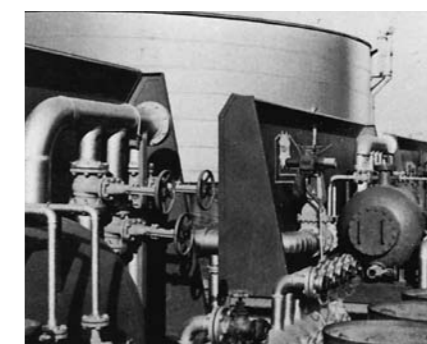
Heat exchanger



Hot water line



Valves attached to boiler



Crude oil piping



Piping around freezer

Class	Type	Connection	Feature	Model	Page	inch(B) mm(A)	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20								
Economical 10K	Globe	Screw	SB:1/4-2B 10-50A	Soft Seating	HM10KSG	10																												
		Flange			HM10KFG	10																												
		Screw			HM10KSD	10																												
		Flange			Soft Seating For LPG	HM10KFD	11																											
		Screw		HM10KSDG		11																												
		Flange		HM10KFDG		11																												
	Gate	Screw	65-80A		HM10KSS	11																												
		Flange			HM10KFS	11																												
	Strainer	Screw			HM10KST	11																												
	Lift Check	Screw	SC:1/4-2B 10-50A	Soft Seating	HM10KSC	12																												
		Flange			HM10KFC	12																												
		Screw			HM10KSCD	12																												
		Flange			HM10KFCD	12																												
	Swing Check	Screw	65-80A	Soft Seating	HM10KSCS	12																												
	In-line Check	Screw			BSCI	12																												
	Mini-Ball	Screw		Lever Handle	2 size	MB2	13																											
				T-Handle	Reduced Bore	MB2U	13																											
				Lever Handle	1 size	MB1	13																											
				T-Handle	Reduced Bore	MBT1	13																											
				Lever Handle	For LPG	ML1	13																											
Cock-Handle					MLC1	14																												
Lever Handle					MG1	14																												
Cock-Handle				For City Gas	MGC1	14																												
Lever Handle					MGR0	14																												
10K				Globe	Screw	UB	Soft Seating	M10KSG	16																									
	Flange	M10KFG	16																															
	Flange	M10KFGI	16																															
	Screw	M10KSGO	16																															
	Screw	UB	Soft Seating		M10KSD		16																											
	Flange	BB,IS			M10KFD		16																											
	Flange	BB,OS&Y		M10KFDI	16																													
	Needle	Screw	UB,IS	Soft Seating	M10KSDO	16																												
		Flange			M10KSN	17																												
	Bellows	Flange	BB,OS	Soft Seating	M10KFN	17																												
					M10KFGB	17																												
	Gate	Screw	BB,IS	Soft Seating	M10KFC	17																												
		Flange			M10KFSO	17																												
	Lift Check	Screw	UC	Soft Seating	M10KSC	18																												
		Flange			M10KFC	18																												
		Screw			M10KSCD	18																												
		Flange			M10KFCD	18																												
	Swing Check	Flange	BC	Soft Seating	M10KFC	18																												
Strainer	Flange	M10KFC			18																													
Ball	Screw	1 size Reduced Bore	For City Gas	BM10KS2B	20																													
				Flange	Full Bore	BM10KF2B	20																											
				Flange	Full Bore	BM10KF0B	20																											
				Flange	Full Bore	BM10KF1B	20																											
	Screw	1 size Reduced Bore	For City Gas	BM10KS2L	20																													
				Flange	Full Bore	BM10KF2L	20																											
	Screw	1 size Reduced Bore	For Underground city gas line	BM10KF0L	20																													
				Flange	Full Bore	BM10KF2G	21																											
	Flange	Full Bore	For Underground city gas line	BM10KS2G	21																													
				Flange	Full Bore	BM10KF2G	21																											
20K	Globe	Screw	UB,IS	Soft Seating	M20KSG	23																												
		Flange			M20KFG	23																												
		Flange			M20KFGI	23																												
		Screw		M20KSGO	23																													
		Flange		UB,IS	Soft Seating For LPG	M20KSD	23																											
		Flange		BB,OS		M20KFDL	23																											
	Gate	Screw	BB,IS	Soft Seating	M20KFDLO	23																												
		Flange			M20KSD	24																												
		Flange			M20KFS	24																												
		Flange			M20KFSO	24																												
	Flange	BB,OS	Soft Seating	M20KFSD	24																													
				M20KFSO	24																													

4 * IS=Inside Screw, OS=Outside Screw, SB=Screwed-in Bonnet,UB=Union Bonnet, BB=Bolted Bonnet, SC=Screwed-in Cover, UC=Union Cover, BC=Bolted Cover.

Class	Type	Connection	Feature	Model	Page	inch(B) mm(A)	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20						
20K	Needle	Screw	UB,IS	M20KSN	24																											
		Flange	BB,IS	M20KFN	24																											
			BB,OS	M20KFN	24																											
			BB,OS	M20KFN	24																											
	Y-Globe	Flange	BB,IS	M20KFGY	25																											
			BB,OS	M20KFGYO	25																											
	Bellows	Flange	BB,OS	M20KFGB	25																											
			Soft Seating	M20KFDB	25																											
	Angle	Screw	UB,IS	Soft Seating	M20KSA	25																										
		Flange			M20KFA	25																										
	Flange	BB,OS	Soft Seating	M20KFAO	25																											
				M20KFAO	25																											
Screw Down Stop Check	Flange	UB,IS	Soft Seating	M20KSGC	26																											
				M20KFGC	26																											
Angle Screw Down Stop Check	Flange	UB,IS	Soft Seating	M20KFC	26																											

Guide To Model

GUIDE TO MODEL OF GENERAL TYPE VALVE

●ECONOMICAL TYPE

PRODUCTION SIZE: 3/4B

Model: HM10KSG

VALVE TYPE	SEATING MATERIAL	CODE
GLOBE VALVE	13Cr.S.S.	G
	Reinforced PTFE	D
GATE VALVE	PTFE	DG
	13Cr.S.S.	S
CHECK VALVE	LIFT 13Cr.S.S.	C
	LIFT Reinforced PTFE	CD
	SWING 13Cr.S.S.	CS
	IN-LINE FPM	CI
STRAINER		T

CONNECTION	CODE
SCREWED	S
FLANGED	F

NOMINAL PRESSURE	CODE
10K GENERAL TYPE	10K
CHECK VALVE SWING	10
IN-LINE	B

●STANDARD TYPE

PRODUCTION SIZE: 50A

Model: M10KFGO

TYPE OF BONNET	CODE
GLOBE VALVE INSIDE SCREW	UNION BONNET —
	BOLTED BONNET I
GLOBE VALVE OUTSIDE SCREW	UNION —
	BOLTED BONNET O
GATE VALVE	BELLOWS BUILT-IN B
	INSIDE SCREW —
OUTSIDE SCREW	O

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 METAL SEAT	C
	LIFT PTFE	CD
	SWING NBR	CR
	SWING METAL SEAT	CS
SCREW DOWN	PTFE	CSD
	STRAIGHT	GC
	ANGLE	AC
STRAINER	FOR GENERAL APPLICATION	T
	EXCLUSIVE APPLICATION FOR LPG	TLM

CONNECTION	CODE
SCREWED	S
FLANGED	F

NOMINAL PRESSURE	コード
10K JIS10kgf/cm ² GENERAL TYPE	10K
20K JIS20kgf/cm ² GENERAL TYPE	20K
150lb	150
300lb	300

GUIDE TO MODEL OF BALL VALVE

●ECONOMICAL TYPE (MINI-BALL)

PRODUCTION SIZE: 3/4B

Model: MB2

SPECIAL SPECIFICATION	CODE
STANDARD	—
STAINLESS STEEL BALL / STEM	U

BORE DIAMETER	CODE	
FULL BORE	0	
REDUCED BORE	ONE SIZE	1
	TWO SIZE	2

HANDLE TYPE	CODE
STANDARD LEVER	—
T-LEVER	T
COCK HANDLE	C
WITH MULTI-LOCK FUNCTION	R

VALVE SPECIFICATION/CONNECTION	CODE
ECONOMICAL	B
FOR LPG SCREWED	L
CITY GAS	G

●STANDARD TYPE

PRODUCTION SIZE: 50A

Model: BM10KF0B

VALVE SPECIFICATION	CODE	
FOR GENERAL APPLICATION	B	
FOR GAS	GENERAL PIPING	L
	SHORT END-TO-END PIPING	LS
	BURIED PIPING	G
STRAINER BUILT-IN	T	

BORE DIAMETER	CODE
FULL BORE	0
FULL BORE (WITH FIRE SAFE FUNCTION)	1
REDUCED BORE	2
STRAINER BUILT-IN	—

CONNECTION	CODE
SCREWED	S
FLANGED	F

NOMINAL PRESSURE	CODE
JIS 10K	10K
—	20K
JIS 20K	20
SHORT END-TO-END DIMENSION	150
150lb	150

Applicable Standard

Valve	JIS B 2051	Malleable iron 10K screwed valves 1994.
	Standard of Japan Valve Manufacturers Association	
	JV 4-2	Cast iron valves-Blackheart malleable iron and spheroidal graphite (ductile) iron small sized valves. 1991
	JV 4-3	Cast iron valves-Blackheart malleable iron and spheroidal graphite (ductile) iron valves. 1991
	JV 4-4	Cast iron valves-Special grade blackheart malleable iron and spheroidal graphite (ductile) iron small sized valves. 1991
Thread	JIS B 0203	Taper pipe thread. 1999
	ANSI B,1,20	Pipe thread. 1983
Flange	JIS B 2239	Cast iron pipe flange 2004
	ASME B16.5	Pipe flange and flange fitting 1996
Material	JIS G 5705	Malleable iron castings 2000
	JIS G 5502	Spheroidal graphite (Ductile) iron castings 2001
	Pressure Vessel (General Standard) Malleable cast iron 1993	
	Appendix 5A Ductile iron castings FCD-S Tensile Strength 42kgf/mm ² Basic permissible stress 6.7kgf/mm ²	
	JIS B 8270	Appendix 5B Malleable iron castings FCMB-S35 Tensile Strength 35kgf/mm ² 5.6kgf/mm ³
	JIS G 3101	Rolled steels for general use 2004
	JIS G 4051	Carbon steels for machine structural use 2005
	JIS G 4303	Stainless steel bars 2005
	JIS G 4304	Hot-rolled stainless steel plate, sheet, and strip 2005
	JIS G 4305	Cold-rolled stainless steel plate, sheet, and strip 2005
JIS G 5121	Corrosion-resistant cast steels for general applications 2003	
Inspection	JIS B 2003	General rules for inspection of valves 1994

MEMO

Materials of Main Parts

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 S45C	-

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-S40300 (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 Seat / 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	-

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 around 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, 20,40,50,150mesh	G4309 SUS304/20,40,50,150Mesh	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

CLASS ECONOMICAL 10K

GLOBE, GATE, CHECK VALVES AND STRAINERS

◆ Features

- Economical 10K valves, composed of Malleable/Ductile iron body and 13Cr stainless steel trim, are tougher than bronze valves and suitable especially to steam line.
- Economical 10K valves have better resistance to corrosion caused by contact-electric potential difference in steel piping.

◆ Type

- Globe and Gate Valves:** Malleable or ductile iron body and bonnet, screwed -in or bolted bonnet, inside screw, rising stem, 13Cr stainless steel trim.
- Check Valves:** Malleable or ductile iron body, 13Cr stainless steel, carbon steel or malleable iron cover, screwed-in or bolted cover, 13Cr stainless steel disc and seat ring.
- Strainers:** Malleable iron body, screwed in malleable iron cover, and 13Cr stainless steel 20 mesh screen
- Mini-Ball Valves:** Malleable iron body, copper alloy ball plated with Ni-Cr, PTFE seats one size reduced bore type 1 and 2 size reduced bore type 2.

◆ Applicable fluids, temperatures and pressures

Max. working pressure for each type MPa (kg/cm ²)	Max. working temperature for each fluid (°C)	Unit: MPa										
		Steady flow water			Steam/Air/Gas/Oil/Pulsating water					LPG		City gas
		50	80	120	80	120	160	183	220	80	120	120
Globe Valve	Standard			1.37					0.98			
	Reinforced PTFE Disc			1.37					0.98	-		
	For LPG									0.98	-	0.19
Check Valve	Standard			1.37					0.98			
	Reinforced PTFE Disc			1.37					0.98			
	NBR Disc		1.37		0.98							
Mini-Ball Valve	In-line Type			1.37					0.98			
	600lb Type	4.11	-	-	Air 0.98 Operation oil / Heavy oil 1.96				Steam 0.98			
	400lb Type	2.74	-	-	Air 0.98 Operation oil / Heavy oil 1.96				Steam 0.98			
	For LPG										0.19	
	For City gas											0.098

◆ Inspection pressure

Inspection Item	Shell test		Seat leakage test	
	Hydrostatic test	Air test	Hydrostatic test	Air test
Type				
Globe valve/Gate valve/Check valve	2.06		1.51	
Globe valve for LPG	0.78			0.29
Strainer	2.06			
Mini-Ball Valve				
	MB2, MBT2	6.18		0.59
	MB1, MBT1	4.12		0.59
	ML1, MLC1		0.29	0.29
MG1, MGC1, MGR0		0.15		0.15



Economical 10K Globe Valve

MODEL	HM10KFD*1	HM10KSDG*1	HM10KFDG*1	MODEL
TYPE	Globe Valve			TYPE
FEATURE	Soft seating / For LPG			FEATURE
FIGURE				FIGURE
BODY	FCD-S	FCMB-S35	FCD-S	BODY
BONNET	FCD-S	FCMB-S35:Nominal size 1/2-2B FCD-S:Nominal size 1/4, 3/8, 2 1/2, 3B	FCD-S	BONNET
STEM	SUS403			STEM
DISC	SUS403			DISC
DISC SEAT	PTFE reinforced with filler			DISC SEAT
BODY SEAT RING	SUS403			BODY SEAT RING
HANDWHEEL	Color:Orange FCMB340:Nominal size 10-50A FCD450:Nominal size 65, 80A	Color:Green FCMB340:Nominal size 1/4-2B FCD450:Nominal size 2 1/2, 3B C1100P:Nominal size 1 1/2, 2B H1215:Nominal size 2 1/2, 3B	Color:Green FCMB340:Nominal size 10-50A FCD450:Nominal size 65, 80A	HANDWHEEL
GASKET	C1100P:Nominal size 1 1/2, 2B H1215:Nominal size 65, 80A			GASKET
PACKING	H2200			PACKING
MODEL	HM10KFD	HM10KSDG	HM10KFDG	MODEL
NOMINAL SIZE	L H D	L H D	L H D	NOMINAL SIZE
1/4B 8A	50 85 70	50 85 70	50 85 70	1/4B 8A
3/8 10	85 87 70	55 85 70	85 87 70	3/8 10
1/2 15	85 87 70	65 87 70	85 87 70	1/2 15
3/4 20	95 99 70	80 99 70	95 99 70	3/4 20
1 25	110 115 80	90 115 80	110 115 80	1 25
1 1/4 32	130 136 90	105 135 90	130 136 90	1 1/4 32
1 1/2 40	150 150 100	120 150 100	150 150 100	1 1/2 40
2 50	180 173 120	140 172 120	180 173 120	2 50
2 1/2 65	210 222 180	180 222 180	210 222 180	2 1/2 65
3 80	240 255 180	200 255 180	240 255 180	3 80
4 100				4 100

Economical 10K Globe Valve

MODEL	HM10KSG	HM10KFG	HM10KSD*1	MODEL
TYPE	Globe Valve			TYPE
FEATURE	Soft seating			FEATURE
FIGURE				FIGURE
BODY	FCMB-S35	FCD-S	FCMB-S35	BODY
BONNET	FCMB-S35:Nominal size 1/2-2B FCD-S:Nominal size 1/4, 3/8, 2 1/2, 3B	FCD-S	FCMB-S35:Nominal size 1/2-2B FCD-S:Nominal size 1/4, 3/8, 2 1/2, 3B	BONNET
STEM	SUS403			STEM
DISC	SUS403			DISC
DISC SEAT	PTFE reinforced with filler			DISC SEAT
BODY SEAT RING	SUS403			BODY SEAT RING
HANDWHEEL	Color:Red FCMB-S35:Nominal size 1/4-2B FCD450:Nominal size 2 1/2, 3B	Color:Red FCMB-S35:Nominal size 10-50A FCD450:Nominal size 65, 80	Color:Orange FCMB-S35:Nominal size 1/4-2B FCD450:Nominal size 2 1/2, 3B C1100P:Nominal size 1 1/2, 2B H1215:Nominal size 2 1/2, 3B	HANDWHEEL
GASKET	H1215:Nominal size 2 1/2, 3B			GASKET
PACKING	H2200			PACKING
MODEL	HM10KSG	HM10KFG	HM10KSD	MODEL
NOMINAL SIZE	L H D	L H D	L H D	NOMINAL SIZE
1/4B 8A	50 84 70	85 88 70	50 85 70	1/4B 8A
3/8 10	55 84 70	85 88 70	55 85 70	3/8 10
1/2 15	65 87 70	85 88 70	65 87 70	1/2 15
3/4 20	80 100 80	95 99 80	80 99 70	3/4 20
1 25	90 123 90	110 125 90	90 115 80	1 25
1 1/4 32	105 140 100	130 142 100	105 135 90	1 1/4 32
1 1/2 40	120 154 120	150 156 120	120 150 100	1 1/2 40
2 50	140 180 140	180 179 140	140 172 120	2 50
2 1/2 65	180 225 180	210 225 180	180 222 180	2 1/2 65
3 80	200 260 180	240 260 180	200 255 180	3 80
4 100				4 100

Economical 10K Gate Valve, Strainer

MODEL	HM10KSS	HM10KFS	MODEL	HM10KST
TYPE	Gate Valve		TYPE	Strainer
FEATURE			FEATURE	
FIGURE			FIGURE	
BODY	FCMB-S35	FCD-S	BODY	FCMB-S35
BONNET	FCD-S:Nominal size 2 1/2, 3B	FCD-S	COVER	FCMB270
BONNET	FCMB-S35	FCD-S	L-RING	SUS304
STEM	FCD-S:Nominal size 2 1/2, 3B	FCD-S	SCREEN	SUS304 / 20Mesh
DISC	SCS1:Nominal size 1/2-2B CAC406:Nominal size 2 1/2, 3B	SCS1	PLUG	S20C:Nominal size 1/4-3/4B FCD450:Nominal size 1-2B
BODY SEAT RING	SUS403		SPRING	SWC
HANDWHEEL	Color:Red FCMB340:Nominal size 1/2-2B FCD450:Nominal size 2 1/2, 3B	Color:Red FCMB-S35	MODEL	HM10KST
GASKET	H1215:Nominal size 2 1/2, 3B		NOMINAL SIZE	L H
PACKING	H2200		1/4B 8A	65 54
MODEL	HM10KSS	HM10KFS	3/8 10	70 55
NOMINAL SIZE	L H D	L H D	1/2 15	70 55
1/4B 8A			3/4 20	85 75
3/8 10			1 25	100 82
1/2 15	60 145 70	90 145 80	1 1/4 32	120 94
3/4 20	70 165 70	100 145 80	1 1/2 40	135 106
1 25	75 197 90	110 165 80	2 50	160 125
1 1/4 32	85 245 120	120 197 90	2 1/2 65	
1 1/2 40	95 275 120	130 245 120	3 80	
2 50	105 320 140	140 275 120	4 100	
2 1/2 65	130 280 180			
3 80	145 310 180			
4 100				

*Oil in the rating table means operating oil, lubricant oil, turbine oil (#90 and over), coal tar, pitch, does not mean crude oil, naphtha, gasoline, kerosene, turbine oil (#80 and under), heating medium (hot oil). Any question, please contact us.
*1 "PTFE" is marked on the name plate

*Oil in the rating table means operating oil, lubricant oil, turbine oil (#90 and over), coal tar, pitch, does not mean crude oil, naphtha, gasoline, kerosene, turbine oil (#80 and under), heating medium (hot oil). Any question, please contact us.
*1 "PTFE" is marked on the name plate

Economical 10K Lift Check Valve

MODEL	HM10KSC		HM10KFC		HM10KSCD		MODEL
TYPE	Lift Check Valve						TYPE
FEATURE	Soft seating						FEATURE
FIGURE							FIGURE
BODY	FCMB-S35		FCD-S		FCMB-S35		BODY
COVER	SUS403:Nominal size 1/2-2B SS400:Nominal size 2 1/2, 3B		SUS403:Nominal size 10-50A SS400:Nominal size 65, 80A		SUS403		COVER
DISC	SUS403						DISC
DISC SEAT	PTFE reinforced with filler						DISC SEAT
BODY SEAT	SUS403						BODY SEAT
RING	H1215:Nominal size 2 1/2, 3B		H1215:Nominal size 65, 80A		-		RING
MODEL	HM10KSC		HM10KFC		HM10KSCD		MODEL
NOMINAL SIZE	L	H	L	H	L	H	NOMINAL SIZE
1/4B 8A			85	37.5			1/4B 8A
3/8 10			85	37.5	65	37.5	3/8 10
1/2 15	65	37.5	85	37.5	80	43.5	1/2 15
3/4 20	80	43.5	95	43.5	90	47.5	3/4 20
1 25	90	47.5	110	47.5	105	54.0	1 25
1 1/4 32	105	54.0	130	54.0	120	62.0	1 1/4 32
1 1/2 40	120	62.0	150	62.0	140	70.5	1 1/2 40
2 50	140	70.5	180	70.5			2 50
2 1/2 65	180	115.0	210	115.0			2 1/2 65
3 80	200	138.0	240	138.0			3 80
4 100							4 100
MPa		MPa		MPa			

Mini-Ball Valve (For General Application)

MODEL	MB2			MBT2			MB1			MODEL	
TYPE	For General Application									TYPE	
FEATURE	-									FEATURE	
FIGURE										FIGURE	
BODY	FCMB340, Zn+Cr plated									BODY	
BALL	C3604, Ni-Cr plated									BALL	
STEM	C3604, Ni-Cr plated									STEM	
SEAT RING	PTFE reinforced with filler									SEAT RING	
PACKING	PTFE reinforced with filler									PACKING	
LEVER/TEE HANDLE	Color:Orange SUS430, PVC coated			Color:Black ADC12			Color:Orange SUS430, PVC coated			LEVER/TEE HANDLE	
GASKET	PTFE reinforced with filler									GASKET	
BORE	2 size reduced bore						1 size reduced bore			BORE	
MODEL	MB2			MBT2			MB1			MODEL	
NOMINAL SIZE	L	H	W	L	H	W	L	H	W	NOMINAL SIZE	
1/4B 8A	43	32	62	43	32	45	46	49	72	1/4B 8A	
3/8 10	46	40	72	46	40	45	49	49	72	3/8 10	
1/2 15	54	42	72	54	42	45	57.5	53	87	1/2 15	
3/4 20	61	47	87	61	47	55	65	55	87	3/4 20	
1 25	71	50	87	71	50	55	77	63	127	1 25	
1 1/4 32	82	58	127				88	66	127	1 1/4 32	
1 1/2 40	88.5	61	127				97	72	127	1 1/2 40	
2 50	105	69	127				116	79	152	2 50	
2 1/2 65										2 1/2 65	
3 80										3 80	
4 100										4 100	
MPa		MPa		MPa		MPa		MPa			

Economical 10K Lift Check Valve, Swing Check Valve, In-line Check Valve

MODEL	HM10KFCD		HM10SCS		BSCI		MODEL
TYPE	Lift Check Valve		Swing Check Valve		In-line Check Valve		TYPE
FEATURE	Soft seating						FEATURE
FIGURE							FIGURE
BODY	FCD-S		FCMB-S35		CAC406		BODY
COVER	SUS403		SUS403:Nominal size 1/2-1B FCMB-S35:Nominal size 1 1/4-2B		-		COVER
DISC	SUS403		SCS1		SUS403		DISC
DISC SEAT	PTFE reinforced with filler						DISC SEAT
BODY SEAT	SUS403						BODY SEAT
RING	-		SUS416		-		RING
HINGE PIN	-		SWCH10K		-		HINGE PIN
PLUG	-		-		FPM		PLUG
RUBBER SEAT	-		-		SUS304-WPB		RUBBER SEAT
MODEL	HM10KFCD		HM10SCS		BSCI		MODEL
NOMINAL SIZE	L	H	L	H	L	H	NOMINAL SIZE
1/4B 8A							1/4B 8A
3/8 10	85	37.5					3/8 10
1/2 15	85	37.5	65	51	55	26	1/2 15
3/4 20	95	43.5	80	57	60	32	3/4 20
1 25	110	47.5	90	61	70	40	1 25
1 1/4 32	130	54.0	105	73			1 1/4 32
1 1/2 40	150	62.0	120	81			1 1/2 40
2 50	180	70.5	140	92			2 50
2 1/2 65							2 1/2 65
3 80							3 80
4 100							4 100
MPa		MPa		MPa			

Mini-Ball Valve (For General Application)

MODEL	MBT1			MB2U			MODEL
TYPE	For General Application						TYPE
FEATURE	-						FEATURE
FIGURE							FIGURE
BODY	FCMB340, Zn+Cr plated						BODY
BALL	C3604, Ni-Cr plated			SUS316			BALL
STEM	C3604, Ni-Cr plated			SUS316			STEM
SEAT RING	PTFE reinforced with filler						SEAT RING
PACKING	PTFE reinforced with filler						PACKING
LEVER/TEE HANDLE	Color:Black ADC12			Color:Orange SUS430, PVC coated			LEVER/TEE HANDLE
GASKET	PTFE reinforced with filler						GASKET
BORE	1 size reduced bore			2 size reduced bore			BORE
MODEL	MBT1			MB2U			MODEL
NOMINAL SIZE	L	H	W	L	H	W	NOMINAL SIZE
1/4B 8A	46	49	55	43	32	62	1/4B 8A
3/8 10	49	49	55	46	40	72	3/8 10
1/2 15	57.5	54	55	54	42	72	1/2 15
3/4 20	65	56	55	61	47	87	3/4 20
1 25	77	64	75	71	50	87	1 25
1 1/4 32				82	58	127	1 1/4 32
1 1/2 40				88.5	61	127	1 1/2 40
2 50				105	69	127	2 50
2 1/2 65							2 1/2 65
3 80							3 80
4 100							4 100
MPa		MPa		MPa			

*Oil in the rating table means operating oil, lubricant oil, turbine oil (#90 and over), coal tar, pitch, does not mean crude oil, naphtha, gasoline, kerosine, turbine oil (#80 and under), heating medium (hot oil). Any question, please contact us.

*Oil in the rating table means operating oil, lubricant oil, turbine oil (#90 and over), coal tar, pitch, does not mean crude oil, naphtha, gasoline, kerosine, turbine oil (#80 and under), heating medium (hot oil). Any question, please contact us.

Mini-Ball Valve (For LPG)									
MODEL		ML1			MLC1			MODEL	
TYPE								TYPE	
FEATURE		For LPG						FEATURE	
FIGURE								FIGURE	
BODY		FCMB340, Zn+Cr plated						BODY	
BALL		C3604, Ni-Cr plate						BALL	
STEM		C3604, Ni-Cr plate			C3604			STEM	
SEAT RING		PTFE						SEAT RING	
LEVER / COCK HANDLE		Color:Yellow SUS430, PVC coated			Color:Black ADC12			LEVER / COCK HANDLE	
GASKET		PTFE						GASKET	
MODEL		ML1			MLC1			MODEL	
NOMINAL SIZE		L	H	W	L	H	W	NOMINAL SIZE	
1/2B	15A	57.5	53	87	57.5	54.5	52	1/2B	15A
3/4	20	65	55	87	65	56.5	52	3/4	20
1	25	77	63	127	77	65	70	1	25
1 1/4	32	88	66	127				1 1/4	32
1 1/2	40	97	72	127				1 1/2	40
2	50	116	79	152				2	50
MPa								MPa	

Mini-Ball Valve (For City Gas)												
MODEL		MG1			MGC1			MGRO			MODEL	
TYPE								TYPE				
FEATURE		For City Gas						FEATURE				
FIGURE											FIGURE	
BODY		FCMB340, Zn+Cr plated						BODY				
BALL		C3604, Ni-Cr plated						BALL				
STEM		C3604, Ni-Cr plated			C3604			STEM				
SEAT RING		PTFE						SEAT RING				
LEVER / COCK HANDLE		Color:Green SUS430, PVC coated			Color:Black ADC12			Color:Black ZDC2			LEVER / COCK HANDLE	
GASKET		PTFE						GASKET				
MODEL		MG1			MGC1			MGRO			MODEL	
NOMINAL SIZE		L	H	W	L	H	W	L	H	W	NOMINAL SIZE	
1/4B	8A	46	49	72				1/4B	8A		8A	
3/8	10	49	49	72				3/8	10		10	
1/2	15	57.5	53	87	57.5	54.5	52	1/2	15		15	
3/4	20	65	55	87	65	56.5	52	75	63	85	3/4	20
1	25	77	63	127	77	65	70	85	66	85	1	25
1 1/4	32	88	66	127				100	72	85	1 1/4	32
1 1/2	40	97	72	127				110	80	130	1 1/2	40
2	50	116	79	152				130	87	130	2	50
MPa											MPa	

◆ Features

- 10K valves have 13Cr Stainless steel trim and are designed to use up to 300°C.
- 10K valves are applicable to some sort of special fluids, changing packings, gasket and trim materials.

◆ Type

- Globe, Gate and Needle valves:** Ductile iron body and bonnet, union or bolted bonnet, insided screw for small sizes 50mm and under, outside screw and yoke for larger sizes, 13Cr stainless steel trim.
- Bellows valves:** Ductile iron body and bonnet, bolted bonnet, outside screw & yoke, 18Cr-8Ni-1/2Mo-low Co stainless steel bellows, hard-faced disc and body seat ring.
- Check valves:** Ductile iron body, 13Cr stainless steel or carbon steel cover, 13Cr-low Si stainless steel disc, 13Cr stainless steel or 13Cr stainless steel deposited seat ring.
- Strainers:** Ductile iron body, ductile or malleable iron bolted cover, 50 mesh 13Cr stainless steel screen for strainer size of 50mm and under and 40 mesh for 65mm.
- Ball Valves:** Ductile iron bodies, 18Cr-8Ni stainless steel ball, PTFE or FT (PTFE + PFA) seats, 13Cr stainless steel stem.

◆ Applicable fluids, temperatures and pressures

Unit: MPa

Max. working temperature for each fluid (°C)	Max. working pressure for each type (MPa)	Steady flow water		Oil/Air/Steam/Pulsating water					LPG	City gas		
		80	120	80	120	183	220	250	300	120	80	120
Globe valve	Standard Needle valve		1.37			-	1.18		0.98			
	Bellows valve		1.37		-	1.18	-	-	-			
Gate Valve	Reinforced PTFE Disc		1.37									
	Standard		1.37				1.18		0.98			
	Reinforced PTFE Disc		1.37				0.98		-			
Check Valve	NBR Disc	1.37		1.37	-	-	-	-	-			
	For general application		1.37		-	1.28	-	0	-			
	For gas									1.18		0.98

◆ Inspection pressure

Unit: MPa

Type	Inspection Item	Shell test		Seat leakage test	
		Hydrostatic test	Air test	Hydrostatic test	Air test
Globe valve/Needle valve/Gate valve./Check valve/		2.06		1.51	
Ball valve for general- and high temperature-application					
Bellows valve			1.37		1.37
Ball valve for gas			1.77		1.30

▲ Note:

- HF (Co Cr-W Alloy depositing) seating is recommended to use in the following conditions:
 - For steam piping of nominal size 150A(6B) or larger.
 - For high pressure steam of 0.98 Mpa (10 kgf/cm²) or higher, and when open /close frequency is high.
 - When valve is used for dry fluid.
 - For piping using chemical and so on requiring corrosion resistance, and when 18 Cr-8Ni stainless steel is used for the material of valve trim.
- When using valves at the temperature 180°C and over, heat-resisting painting as option is recommended.
- Please consult with us when valve is used at the temperature of -10°C and below.



10K Globe Valve

MODEL	M10KSG			M10KFG			M10KFGI			M10KFGO			MODEL
TYPE	Globe Valve												TYPE
FEATURE	Globe Valve												FEATURE
FIGURE													FIGURE
BODY	FCD-S												BODY
BONNET	FCD-S												BONNET
STEM	SUS403												STEM
DISC	SUS403			SUS403+HF*			SUS403:Nominal size 50-100A S28C+13Cr :Nominal size 125-250A			SUS403			DISC
BODY SEAT RING	SUS403			SUS403+HF*			SUS403:Nominal size 50-150A S28C+HF*:Nominal size 200, 250A			SUS403			BODY SEAT RING
HANDWHEEL	Color:Blue FCMB340						Color:Blue FCD450						HANDWHEEL
GASKET	H1215												GASKET
PACKING	H350+H2200												PACKING

MODEL	M10KSG			M10KFG			M10KFGI			M10KFGO			MODEL	
NOMINAL SIZE	L	H	D	L	H	D	L	H	D	L	H	D	NOMINAL SIZE	
3/8B	10A	64	115	80	108	130	80	108	152	80			3/8B	10A
1/2	15	70	130	80	108	130	80	108	154	80			1/2	15
3/4	20	80	135	80	117	135	80	117	180	100			3/4	20
1	25	90	155	100	127	155	100	127	201	120			1	25
1 1/4	32	110	175	120	140	175	120	140	231	140			1 1/4	32
1 1/2	40	120	190	120	165	190	120	165	261	180			1 1/2	40
2	50	140	215	140	203	215	140	203	295	224			2	50
2 1/2	65								216	325	224		2 1/2	65
3	80								241	355	250		3	80
4	100								292	390	300		4	100
5	125								356	435	315		5	125
6	150								406	505	355		6	150
8	200								495	595	400		8	200
10	250								622	690	450		10	250
12	300								698	779	560		12	300

MPa 1.37
1.18
0.98
0

Steady flow

Oil/Air/ Steam/ Pulsating water

-10 120 220 300°C

MPa 1.37
1.18
0.98
0

Steady flow

Oil/Air/ Steam/ Pulsating water

-10 120 220 300°C

MPa 1.37
1.18
0.98
0

Steady flow

Oil/Air/ Steam/ Pulsating water

-10 120 220 300°C

MPa 1.37
1.18
0.98
0

Steady flow

Oil/Air/ Steam/ Pulsating water

-10 120 220 300°C

10K Globe Valve

MODEL	M10KSD*1			M10KFD*1			M10KFDI*1			M10KFD0*1			MODEL
TYPE	Globe Valve												TYPE
FEATURE	Soft seating												FEATURE
FIGURE													FIGURE
BODY	FCD-S												BODY
BONNET	FCD-S												BONNET
STEM	SUS403												STEM
DISC	SUS403												DISC
DISC SEAT	PTFE reinforced with filler												DISC SEAT
BODY SEAT RING	SUS403												BODY SEAT RING
HANDWHEEL	Color:Orange FCMB340						Color:Orange FCMB340:Nominal size 15-40A FCD450:Nominal size 50A						HANDWHEEL
GASKET	H1215												GASKET
PACKING	H350+H9077												PACKING

MODEL	M10KSD			M10KFD			M10KFDI			M10KFD0			MODEL	
NOMINAL SIZE	L	H	D	L	H	D	L	H	D	L	H	D	NOMINAL SIZE	
3/8B	10A	64	116	80	108	131	80	108	152	80			3/8B	10A
1/2	15	70	131	80	108	131	80	108	154	80			1/2	15
3/4	20	80	133	80	117	133	80	117	178	100			3/4	20
1	25	90	153	100	127	153	100	127	203	120			1	25
1 1/4	32	110	176	120	140	176	120	140	231	140			1 1/4	32
1 1/2	40	120	192	120	165	192	120	165	261	180			1 1/2	40
2	50	140	216	140	203	216	140	203	295	224			2	50
2 1/2	65								216	335	224		2 1/2	65
3	80								241	365	250		3	80
4	100								292	405	300		4	100
5	125								356	455	315		5	125
6	150								406	530	355		6	150
8	200								495	630	400		8	200
10	250								622	735	450		10	250

MPa 1.37
1.18
0.98
0

Steady flow

Oil/Air/ Steam/ Pulsating water/ Steady flow

-10 120 183°C

MPa 1.37
1.18
0.98
0

Steady flow

Oil/Air/ Steam/ Pulsating water/ Steady flow

-10 120 183°C

MPa 1.37
1.18
0.98
0

Steady flow

Oil/Air/ Steam/ Pulsating water/ Steady flow

-10 120 183°C

MPa 1.37
1.18
0.98
0

Steady flow

Oil/Air/ Steam/ Pulsating water/ Steady flow

-10 120 183°C

10K Needle Valve, Bellows Seal Valve

MODEL	M10KSN*1			M10KFN*1			M10KFGB			M10KFDB*2			MODEL
TYPE	Needle Valve						Bellows Seal Valve						TYPE
FEATURE	Needle Valve						Bellows Seal Valve						FEATURE
FIGURE													FIGURE
BODY	FCD-S												BODY
BONNET	FCD-S												BONNET
STEM	SUS403												STEM
DISC	SUS403+HF*						SUS304+HF*:Nominal size 50A&below SUS410+HF*:Nominal size 65-100A SCS1T1+HF*:Nominal size 125A&above			SUS410:Nominal size 65-100A SUS304:Nominal size 50A&below, 125A&above			DISC
DISC SEAT	HF*						HF*			PTFE reinforced with filler			DISC SEAT
BODY SEAT RING	SUS403+HF*						SUS410+HF*			SUS410			BODY SEAT RING
BELLOWS	-						-			SUS316L			BELLOWS
HANDWHEEL	Color:Blue / FCMB340:Nominal size 3/8-1/2B / FCD450:Nominal size 2B						Color:Black / FCMB340						HANDWHEEL
GASKET	H1215												GASKET
PACKING	H350+H2200												PACKING

MODEL	M10KSN			M10KFN			M10KFGB			M10KFDB			MODEL			
NOMINAL SIZE	L	H	D	L	H	D	L	H	D	L	H	D	NOMINAL SIZE			
3/8B	10A	64	125	80	108	125	80	108	181	100	108	181	100	3/8B	10A	
1/2	15	70	135	80	108	135	80	108	181	100	108	181	100	1/2	15	
3/4	20	80	145	100	117	145	100	117	190	100	117	190	100	3/4	20	
1	25	90	170	120	127	170	120	127	195	120	127	195	120	1	25	
1 1/4	32	110	180	120	140	180	120	140	208	120	140	208	120	1 1/4	32	
1 1/2	40	120	200	140	165	200	140	165	241	160	165	241	160	1 1/2	40	
2	50	140	230	180	203	230	180	203	251	180	203	251	180	2	50	
2 1/2	65								216	312	224	216	312	224	2 1/2	65
3	80								241	381	250	241	381	250	3	80
4	100								292	398	300	292	398	300	4	100
5	125								356	493	355	356	493	355	5	125
6	150								406	560	400	406	560	400	6	150
8	200								495	714	450	495	714	450	8	200
10	250								622	872	560	622	872	560	10	250

MPa 1.37
1.18
0.98
0

Steady flow

Oil/Air/ Steam/ Pulsating water

-10 120 220 300°C

MPa 1.37
1.18
0.98
0

Steady flow

Oil/Air/ Steam/ Pulsating water

-10 120 220 300°C

MPa 1.37
1.18
0.98
0

Steady flow

Oil/Air/ Steam/ Pulsating water

-10 120 220 300°C

MPa 1.37
1.18
0.98
0

Steady flow

Oil/Air/ Steam/ Pulsating water

-10 120 183°C

10K Gate Valve

MODEL	M10KSS			M10KFS			M10KFSD			D10KFSD			MODEL
TYPE	Gate Valve												TYPE
FEATURE	Gate Valve												FEATURE
FIGURE													FIGURE
BODY	FCD-S												BODY
BONNET	FCMB-S35						FCD-S						BONNET
STEM	SUS403												STEM
DISC	SCS1						SCS1:Nominal size 40-65A SUS403:Nominal size 80-200A S28C Deposited with 13Cr stainless steel:Nominal size 250, 300A			SCPH2 Deposited with 13Cr stainless steel			DISC
BODY SEAT RING	SUS403						S28C+HF*						BODY SEAT RING
HANDWHEEL	Color:Blue FCMB340						Color:Blue FCD450						HANDWHEEL
GASKET	H1215												GASKET
PACKING	H350+H2200												PACKING

MODEL	M10KSS			M10KFS			M10KFSD			D10KFSD			MODEL		
NOMINAL SIZE	L	H	D	L	H	D	L	H	D	L	H	D	NOMINAL SIZE		
3/8B	10A	65	165	80	90	165	80						3/8B	10A	
1/2	15	70	165	80	90	165	80						1/2	15	
3/4	20	80	165	80	100	170	80						3/4	20	
1	25	90	190	80	110	190	80						1	25	
1 1/4	32	110	224	100	120	224	100						1 1/4	32	
1 1/2	40	120	258	120	130	258	120	165	315	160			1 1/2	40	
2	50	140	290	120	140	290	120	178	360	180			2	50	
2 1/2	65							190	425	180			2 1/2	65	
3	80							203	480	224			3	80	
4	100							229	580	250			4	100	
5	125							254	675	300			5	125	
6	150							267	780	300			6	150	
8	200							292	985	315			8	200	
10	250							330	1195	450			10	250	
12	300							356	1410	560			12	300	
14	350												14	350	
16	400										381	1610	630	16	400
18	450										406	1855	710	18	450
20	500										432	1610	630	20	500
											457	1855	710		

MPa 1.37
1.18
0.98
0

Steady flow

Oil/Air/ Steam/ Pulsating water

-10 120 220 300°C

MPa 1.37
1.18
0.98
0

Steady flow

Oil/Air/ Steam/ Pulsating water

-10 120 220 300°C

MPa 1.37
1.18
0.98
0

Steady flow

Oil/Air/ Steam/ Pulsating water

-10 120 220 300°C

MPa 1.37
1.18
0.98
0

Steady flow

Oil/Air/ Steam/ Pulsating water

-10 120 220 300°C

16 *: HF=Hard facing
*1 "PTFE" is marked on the name plate.

17 *: HF=Hard facing
*1 "N" is stamed on the top of the stem end. *2 "PTFE" is marked on the name plate. *3 D10KFSD Nominal size 450A, 500A are reduced bore type.

DISTINCTIVE FEATURES OF GOURD BRAND BALL VALVES

10K Lift Check Valve

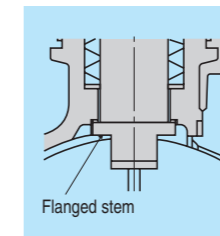
MODEL	M10KSC	M10KFC	M10KSCD	M10KFCD	MODEL			
TYPE	Lift Check Valve				TYPE			
FEATURE	Soft seating				FEATURE			
FIGURE					FIGURE			
BODY	FCD-S				BODY			
COVER	SUS403				COVER			
DISC	SUS403				DISC			
DISC SEAT	PTFE reinforced with filler				DISC SEAT			
SEAT RING	SUS403				SEAT RING			
MODEL	M10KSC	M10KFC	M10KSCD	M10KFCD	MODEL			
NOMINAL SIZE	L	H	L	H	NOMINAL SIZE			
3/8B 10A			108	51	3/8B 10A			
1/2 15	70	51	108	51	1/2 15			
3/4 20	80	54	117	54	3/4 20			
1 25	90	61	127	61	1 25			
1 1/4 32	110	69	140	69	1 1/4 32			
1 1/2 40	120	77	165	77	1 1/2 40			
2 50	140	89	203	89	2 50			
MPa								

10K Swing Check Valve, Strainer

MODEL	M10KFCS		MODEL	M10KFT	
TYPE	Swing Check Valve		TYPE	Strainer	
FEATURE			FEATURE		
FIGURE			FIGURE		
BODY	FCD-S		BODY	FCD-S	
COVER	SS400		COVER	FCMB-S35:Nminal size 15-50A FCD-S:Nminal size 65-300A	
DISC	SUS403:Nminal size 40-100A S28C+13Cr. stainless faced:Nminal size 125-300A		SCREEN	SUS304 50mesh:Nminal size 15-50A 40mesh:Nminal size 65-300A	
BODY SEATRING	SUS403		GASKET	H1215	
GASKET	H1215		MODEL	M10KFCS	
MODEL	M10KFCS		MODEL	M10KFT	
NOMINAL SIZE	L	H	NOMINAL SIZE	L	H
1/2B 15A			1/2B 15A	130	68
3/4 20			3/4 20	140	77
1 25			1 25	160	91
1 1/4 32			1 1/4 32	190	137
1 1/2 40	165	118	1 1/2 40	210	154
2 50	203	126	2 50	250	170
2 1/2 65	216	146	2 1/2 65	290	190
3 80	241	161	3 80	310	231
4 100	292	176	4 100	350	279
5 125	330	250	5 125	400	310
6 150	356	270	6 150	480	370
8 200	495	330	8 200	600	441
10 250	622	390	10 250	730	510
12 300	698	450	12 300	850	565
MPa					

1. Stem Ejection Prevention Mechanism

If the pressure inside of ball valve has not been purged completely before the maintenance of the packing, the stem may be ejected due to the residual pressure. To prevent this sort of incident the stem of our ball valve has the brim as the sketch shows.

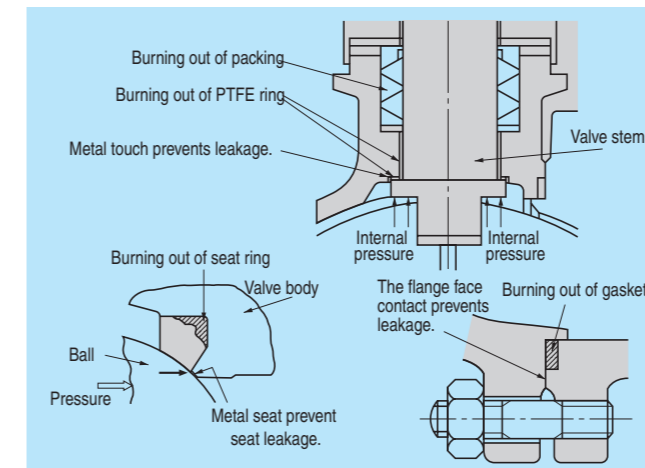


2. FT seat

Newly developed FT seat made from "PTFE+ PFA" is adopted as the material of seat ring and the valve can be used up to 230°C.

3. Fire Safe Structure

The fire safe structure prevent the fluid to leak outside the valve even when seat ring, packing and gasket might be burnt out during a fire (Different specifications from JPI/API standard.) This structure is supplied as option for ductile iron ball valve.

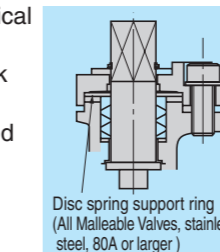


Additional feature of ball valve for city gas piping

1. Long life service, free from gland leak

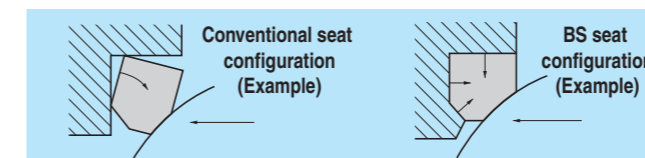
The packing is designed to be conical with sufficient width and height to prevent deformation and gland leak due to the load from stem during open/ close operation of handle and temperature change.

Also disc spring is placed on the packings to press them constantly.



2. Durable and high shut-off performance seat

BS(Back supported) seat: Lug is made on the valve body inside where seat is placed in to hold seat as sketched without deformation by the pressure from the ball.



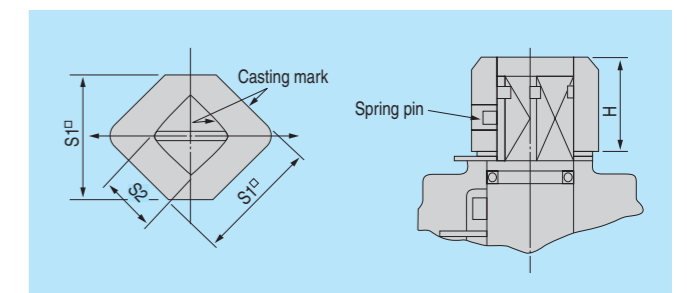
3. Double sealing in gland

The gland is a doubled sealing structure using O-ring as well as gland packings to prevent intrusion of soil and rain.

◆ Dimensions of square boss of ball valve for buried piping

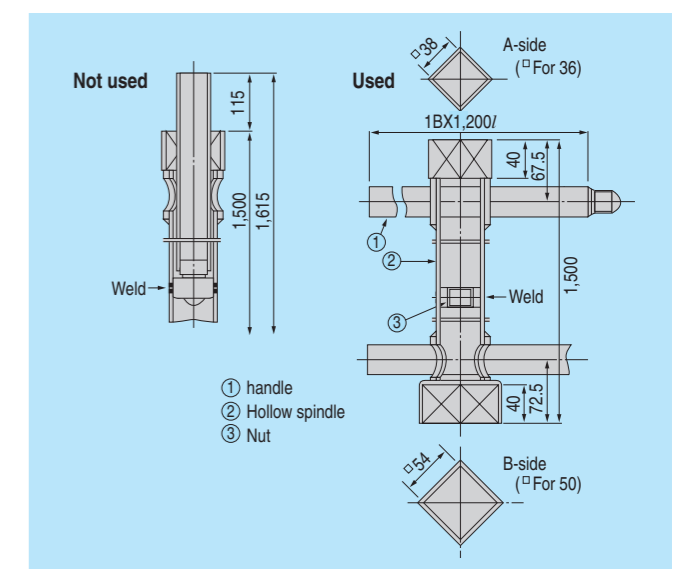
Nominal size (A)	Full bore				Reduced bore			
	S1	S2	H (Reference)	Mark	S1	S2	H (Reference)	Mark
15	36	9	40	2G	36	9	40	2G
20	36	9	40	2G	36	9	40	2G
25	36	12	40	3G	36	9	40	2G
32	36	12	40	3G	36	12	40	3G
40	36	19	40	5G	36	12	40	3G
50	36	19	40	5G	36	19	40	5G
65	50	19	40	5A	50	19	40	5A
80	50	24	40	6G	50	24	40	6G
100	50	24	40	6G	50	24	40	6G
125	50	28	40	7G	50	24	40	6G
150	50	28	40	7G	50	28	40	7G
200	50	34	40	8G	50	28	40	7G
250					50	34	40	8G
300								

Note (1)Consult the dimension of square boss not listed in the table with Hitachi Valve
(2)Use a boss of Hitachi Valve.



◆ T-handle of ball valve for buried piping

- (1)The T-handle is applicable to both 36□ and 50□ of handle square boss of ball valve for buried piping.
- (2)When use, take out handle ① from hollow spindle, and then insert to a hole as shown in the figure below.
- (3)Be careful not to apply too much torque when using A side whose valve size is 50A or less.
- (4)Be sure to confirm the open /close position of a valve as a whole by the open/close indication attached on the valve.



10K Ball Valve

MODEL	BM10KS2B ^{*1}			BM10KF2B ^{*1}			BM10KF0B ^{*1}			BM10KF1B ^{*2}			MODEL
TYPE	Ball Valve												TYPE
FEATURE													FEATURE
FIGURE													FIGURE
BODY	FCD-S												BODY
BALL	SUS304			SUS304:Nominal size 65-125A SUS304:Nominal size 15-100A			SCS13A:Nominal size 150-250A SCS13A:Nominal size 125-200A			SUS304			BALL
STEM	SUS403												STEM
SEAT RING	FT SEAT												SEAT RING
AUXILIARY SEAT													AUXILIARY SEAT
LEVER HANDLE	Color:Blue FCMB340			Color:Blue FCMB340:Nominal size 65-125A			Color:Blue FCMB340:Nominal size 15-100A			Color:Blue FCMB340			LEVER HANDLE
HANDLE BOSS +PIPE	-			Color:Blue FCMB340+STPG Nominal size 150-250A			Color:Blue FCMB340+STPG Nominal size 125-200A			-			HANDLE BOSS +PIPE
GASKET	SUS304			H1215			PTFE reinforced with filler			H1215			GASKET
PACKING	PTFE			PTFE reinforced with filler			PTFE			PTFE reinforced with filler			PACKING
BORE	One size reduced bore						Full bore						BORE
MODEL	BM10KS2B			BM10KF2B			BM10KF0B			BM10KF1B			MODEL
NOMINAL SIZE	L	H	W	L	H	W	L	H	W	L	H	W	NOMINAL SIZE
1/2B 15A	66	69	120				108	73	120	108	81	120	1/2B 15A
3/4 20	75	73	120				117	76	120	117	85	120	3/4 20
1 25	87	76	120				127	92	150	127	103	150	1 25
1 1/4 32	100	92	150				140	98	150	140	108	150	1 1/4 32
1 1/2 40	115	96	150				165	110	220	165	129	220	1 1/2 40
2 50	130	104	220				178	117	220	178	139	220	2 50
2 1/2 65				190	139	220	190	132	220	190	151	220	2 1/2 65
3 80				203	151	220	203	170	320	203	186	320	3 80
4 100				229	186	320	229	186	400	229	202	400	4 100
5 125				254	202	400	292	225	800				5 125
6 150				267	243	800	394	245	1000				6 150
8 200				292	262	1000	457	301	1200				8 200
10 250				330	321	1200							10 250
12 300													12 300

10K Ball Valve

MODEL	BM10KS2G			BM10KF2G			BM10KF0G			MODEL
TYPE	Ball Valve									TYPE
FEATURE	For Buried Gas Piping									FEATURE
FIGURE										FIGURE
BODY	FCD-S									BODY
BALL	SUS304						SUS304:Nominal size 15-200A SCS13:Nominal size 250, 300A			BALL
STEM	SUS403									STEM
SEAT RING	PTFE									SEAT RING
HANDLE BOSS	FCD450:Nominal size 1/2-2B FCMB340:Nominal size 3B			FCD450:Nominal size 65-200A FCMB340:Nominal size 250A			FCD450:Nominal size 15-150A FCMB340:Nominal size 200A SS400:Nominal size 250, 300A			HANDLE BOSS
GASKET	SUS304:Nominal size 1/2-2B H1215:Nominal size 3B			H1215						GASKET
PACKING	PTFE									PACKING
BORE	One size reduced bore						Full bore			BORE
MODEL	BM10KS2G			BM10KF2G			BM10KF0G			MODEL
NOMINAL SIZE	L	H	S	L	H	S	L	H	S	NOMINAL SIZE
1/2B 15A	66	90	36				108	99	36	1/2B 15A
3/4 20	75	97	36				117	103	36	3/4 20
1 25	87	101	36				127	114	36	1 25
1 1/4 32	100	114	36				140	119	36	1 1/4 32
1 1/2 40	115	119	36				165	142	36	1 1/2 40
2 50	130	142	36				178	152	36	2 50
2 1/2 65				190	152	50	190	164	50	2 1/2 65
3 80	180	164	50	203	164	50	203	186	50	3 80
4 100				229	186	50	229	202	50	4 100
5 125				254	202	50	292	244	50	5 125
6 150				267	244	50	394	263	50	6 150
8 200				292	263	50	457	384	50	8 200
10 250				330	384	50	533	576*	50	10 250
12 300							610	630*	50	12 300

* : with vertical type gear operator

10K Ball Valve

MODEL	BM10KS2L ^{*3}			BM10KF2L ^{*3}			BM10KF0L ^{*3}			MODEL
TYPE	Ball Valve									TYPE
FEATURE	For Gas									FEATURE
FIGURE										FIGURE
BODY	FCD-S									BODY
BALL	SUS304						SUS304:Nominal size 15-200A SCS13:Nominal size 250, 300A			BALL
STEM	SUS403									STEM
SEAT RING	PTFE									SEAT RING
LEVER HANDLE	Color:Blue FCMB340			Color:Blue FCMB340:Nominal size 65-125A			Color:Blue FCMB340:Nominal size 15-100A			LEVER HANDLE
HANDLE BOSS +PIPE	-			Color:Blue FCMB340+STPG Nominal size 150-250A			Color:Blue FCMB340+STPG Nominal size 125-200A SS400:Nominal size 250, 300A			HANDLE BOSS +PIPE
GASKET	SUS304:Nominal size 1/2-2B H1215:Nominal size 3B			H1215						GASKET
PACKING	PTFE									PACKING
BORE	One size reduced bore						Full bore			BORE
MODEL	BM10KS2L			BM10KF2L			BM10KF0L			MODEL
NOMINAL SIZE	L	H	W	L	H	W	L	H	W	NOMINAL SIZE
1/2B 15A	66	70	120				108	81	120	1/2B 15A
3/4 20	75	77	120				117	85	120	3/4 20
1 25	87	81	120				127	103	150	1 25
1 1/4 32	100	102	150				140	108	150	1 1/4 32
1 1/2 40	115	107	150				165	129	220	1 1/2 40
2 50	130	129	220				178	139	220	2 50
2 1/2 65				190	139	220	190	151	220	2 1/2 65
3 80	180	151	220	203	151	220	203	186	320	3 80
4 100				229	186	320	229	202	400	4 100
5 125				254	202	400	292	243	800	5 125
6 150				267	243	800	394	262	1000	6 150
8 200				292	262	1000	457	321	1200	8 200
10 250				330	321	1200	533	565*	400*	10 250
12 300							610	619*	400*	12 300

* : with vertical type gear operator

*1 Color of indicator is blue. *2 Color of indicator is black. *3 Color of indicator is green.

CLASS 20K

GLOBE, GATE, CHECK AND BALL VALVES, AND STRAINERS

◆ Features

- 20K valves have 13Cr stainless steel trim and are designed to use up to 350°C
- 20K valves are applicable to some sort of special fluids, changing packings, gasket and trim materials.

◆ Type

- Globe, Gate and Needle valves:** Ductile or malleable iron body and bonnet, union or bolted bonnet, insided screw for small sizes 50mm and under, outside screw and yoke for larger sizes, 13Cr stainless steel trim.
- Y-Globe valves:** Ductile or malleable iron body and bonnet, 13Cr stainless steel trim, hard-faced disc and seat ring.
- Bellows valves:** Ductile iron body and bonnet, bolted bonnet, outside screw & yoke, 18Cr-8Ni-1/2Mo-low Co stainless steel bellows, hard-faced disc and body seat ring.
- Angle valves:** Ductile or malleable iron body and bonnet, 13Cr stainless steel trim, hard-faced disc and seat ring.
- Screw down stop check valves:** Ductile or malleable iron body and bonnet, 13Cr stainless steel trim, hard-faced disc and seat ring.
- Lift Check valves:** Ductile or malleable iron body, 13Cr stainless steel cover, disc and seat ring, hard-faced disc and seat ring.
- Swing check valves:** Ductile iron body, carbon steel bolted cover, hard faced disc and seat.
- Strainers:** Ductile or malleable iron body, malleable iron or carbon steel cover, 13Cr stainless steel screen.
- Ball valves:** Ductile iron body, 18Cr-8Ni ball, PTFE or FT(PTFE+PFA) seats.

◆ Applicable fluids, temperatures and pressures

Unit: MPa

Max. working pressure for each type (MPa)	Max. working temperature for each fluid(°C)	Steady flow										LPG	
		60	102	120	104	200	220	230	250	300	350	80	120
Globe valve	Standard / Needle valve / Y-globe valve / angle valve			2.75			2.45			2.26	1.96		
	Reinforced PTFE Disc											2.35	
	Bellows valve			2.50			2.45			2.26	1.96		
Gate Valve	Standard / For high temperature application			2.75			2.45			2.26	1.96		
Check Valve	Standard, Screw - down Stop Check Valve			2.75			2.45			2.26	1.96		
	Reinforced PTFE Disc											2.35	
Strainer	Standard			2.75			2.45			2.26	1.96		
	For LPG											2.35	
Ball Valve	Strainer ball valve											2.35	
	For general application			2.75		2.75	0.98	0.40	0				2.35

◆ Inspection pressure

Unit: MPa

Type	Inspection Item	Shell test		Seat leakage test		Back seat leakage test
		Hydrostatic test	Air test	Hydrostatic test	Air test	Air test
Globe valve/Gate valve/Check valve/Angle valve/Y-globe valve						
		4.13	-	3.03	-	-
Bellows valve						
		-	2.50	-	2.50	-
Globe valve for LPG						
		3.54	2.75	-	2.60	2.60
Check valve for LPG/Ball valve/Strainer ball valve						
		3.54	2.75	-	2.60	-
Strainer						
		4.13	-	-	-	-
Ball valve for general application						
		4.13	-	1.96	-	-



20K Globe Valve

MODEL	M20KSG	M20KFG	M20KFGI	M20KFGO	MODEL
TYPE	Globe Valve				TYPE
FEATURE					FEATURE
FIGURE					FIGURE
BODY	FCMB-S35:Nominal size 3/8-1B FCD-S:Nominal size 1 1/4-2B	FCMB-S35		FCD-S	BODY
BONNET	FCMB-S35			FCD-S	BONNET
STEM	SUS403				STEM
DISC	SUS403+HF*			S28C+HF*:Nominal size 50-200A S25C+HF*:Nominal size 250A	DISC
BODY SEAT RING	SUS403+HF*			S28C+HF*	BODY SEAT RING
HANDWHEEL	Color:Brown FCMB340:Nominal size 3/8-1 1/2B FCD450:Nominal size 2B	Color:Brown FCMB340:Nominal size 10-40A FCD450:Nominal size 50A	Color:Brown FCMB340:Nominal size 15-40A FCD450:Nominal size 50A	Color:Brown FCD450	HANDWHEEL
GASKET	H1215				GASKET
PACKING	H350+H2200				PACKING
MODEL	M20KSG	M20KFG	M20KFGI	M20KFGO	MODEL
NOMINAL SIZE	L H D	L H D	L H D	L H D	NOMINAL SIZE
3/8B 10A	70 125 80	100 125 80	110 152 80		3/8B 10A
1/2 15	75 135 80	110 135 80	120 154 80		1/2 15
3/4 20	90 145 100	120 145 100	130 180 100		3/4 20
1 25	105 170 120	130 170 120	160 202 120		1 25
1 1/4 32	120 180 120	160 180 120	180 231 140		1 1/4 32
1 1/2 40	135 195 140	180 195 140	230 261 180		1 1/2 40
2 50	160 225 180	230 225 180		267 329 224	2 50
2 1/2 65				292 355 250	2 1/2 65
3 80				318 390 300	3 80
4 100				356 445 315	4 100
5 125				400 515 355	5 125
6 150				444 595 400	6 150
8 200				559 685 450	8 200
10 250				622 820 560	10 250

* : HF=Hard facing

20K Globe Valve

MODEL	M20KSDL*	M20KFDL*	M20KFDLO*	MODEL	
TYPE	Globe Valve			TYPE	
FEATURE	For LPG			FEATURE	
FIGURE				FIGURE	
BODY	FCMB-S35 FCD-S:Nominal size 1 1/4-2B	FCMB-S35		BODY	
BONNET	FCMB-S35			BONNET	
STEM	SUS403			STEM	
DISC	SUS403			DISC	
DISC SEAT	PTFE			DISC SEAT	
BODY SEAT RING	SUS403			BODY SEAT RING	
HANDWHEEL	Color:Green FCMB340:Nominal size 3/8-1 1/2B FCD450:Nominal size 2B	Color:Green FCMB340:Nominal size 10-40A FCD450:Nominal size 50A	Color:Green FCD450	HANDWHEEL	
GASKET	H1215			GASKET	
PACKING	H2661-V			PACKING	
MODEL	M20KSDL	M20KFDL	M20KFDLO	MODEL	
NOMINAL SIZE	L H D	L H D	L H D	NOMINAL SIZE	
3/8B 10A	70 125 80	100 125 80		3/8B 10A	
1/2 15	75 135 80	110 135 80		1/2 15	
3/4 20	90 145 100	120 145 100		3/4 20	
1 25	105 170 120	130 170 120		1 25	
1 1/4 32	120 180 120	160 180 120		1 1/4 32	
1 1/2 40	135 200 140	180 200 140		1 1/2 40	
2 50	160 230 180	230 230 180		2 50	
2 1/2 65			267 325 224	2 1/2 65	
3 80			292 365 250	3 80	
4 100			318 395 300	4 100	
5 125			356 440 315	5 125	
6 150			400 515 355	6 150	
8 200			444 580 400	8 200	
10 250			559 685 450	10 250	

* "PTFE" is marked on the name plate.

20K Gate Valve

MODEL	M20KSS	M20KFS	M20KFSSO	M20KFSHO	MODEL								
TYPE	Gate Valve				TYPE								
FEATURE	-	-	-	For heating medium	FEATURE								
FIGURE					FIGURE								
BODY	FCD-S				BODY								
BONNET	FCMB-S35				BONNET								
STEM	SUS403				STEM								
DISC	SCS1	SCS1 Nominal size 25, 40-65, 125-200A SUS403:Nominal size 32, 80, 100A SCPH2 Deposited with 13Cr stainless steel Nominal size:250, 300A	SCS1+HF* Nominal size 25, 40-65, 125-200A SUS403+HF* :Nominal size 32, 80, 100A SCPH2+HF* Nominal size:250, 300A	SCS1+HF* Nominal size 25, 40-65, 125-200A SUS403+HF* :Nominal size 32, 80, 100A SCPH2+HF* Nominal size:250, 300A	DISC								
BODY SEAT RING	SUS403				BODY SEAT RING								
HANDWHEEL	Color:Brown, FCMB340		Color:Brown, FCD450		HANDWHEEL								
GASKET	H1215				GASKET								
PACKING	H350+H2200				PACKING								
MODEL	M20KSS			M20KFS			M20KFSSO			M20KFSHO			MODEL
NOMINAL SIZE	L	H	D	L	H	D	L	H	D	L	H	D	NOMINAL SIZE
1/2B 15A	70	172	80	108	172	80				160	281	160	1/2B 15A
3/4 20	80	184	100	117	184	100				170	300	170	3/4 20
1 25	90	213	120	127	213	120	160	281	160	160	281	160	1 25
1 1/4 32	100	232	120	140	232	120	170	300	160	170	300	160	1 1/4 32
1 1/2 40	110	264	140	165	264	140	190	328	160	190	328	160	1 1/2 40
2 50	120	298	140	178	298	140	216	383	180	216	383	180	2 50
2 1/2 65							241	442	180	241	442	180	2 1/2 65
3 80							283	502	224	283	502	224	3 80
4 100							305	591	250	305	591	250	4 100
5 125							381	698	300	381	698	300	5 125
6 150							403	819	315	403	819	315	6 150
8 200							419	1026	450	419	1026	450	8 200
10 250							457	1238	560	457	1238	560	10 250
12 300							502	1440	630	502	1440	630	12 300

*: HF=Hard facing

20K Needle Valve

MODEL	M20KSN*1	M20KFN*1	M20KFNI*1	M20KFNO*1	MODEL								
TYPE	Needle Valve				TYPE								
FEATURE	-	-	-	-	FEATURE								
FIGURE					FIGURE								
BODY	FCMB-S35:Nominal size 3/8 -1B FCD-S:Nominal size 11/4 -2B	FCD-S		FCD-S	BODY								
BONNET	FCMB-S35				BONNET								
STEM	SUS403				STEM								
DISC	SUS403+HF*				DISC								
BODY SEAT RING	SUS403+HF*				BODY SEAT RING								
HANDWHEEL	Color:Brown FCMB340:Nominal size 3/8 -1 1/2B FCD450:Nominal size 2B	Color:Brown FCMB340:Nominal size 10-40A FCD450:Nominal size 50A		Color:Brown FCD450	HANDWHEEL								
GASKET	H1215				GASKET								
PACKING	H350+H2200				PACKING								
MODEL	M20KSN			M20KFN			M20KFNI			M20KFNO			MODEL
NOMINAL SIZE	L	H	D	L	H	D	L	H	D	L	H	D	NOMINAL SIZE
3/8B 10A	70	125	80	100	125	80							3/8B 10A
1/2 15	75	135	80	110	135	80	110	152	80				1/2 15
3/4 20	90	145	100	120	145	100	120	154	80				3/4 20
1 25	105	170	120	130	170	120	130	180	100				1 25
1 1/4 32	120	180	120	160	180	120	160	202	120				1 1/4 32
1 1/2 40	135	200	140	180	200	140	180	231	140				1 1/2 40
2 50	160	230	180	230	230	180	230	261	180	267	335	224	2 50
2 1/2 65										292	365	224	2 1/2 65
3 80										318	405	250	3 80
4 100										356	445	300	4 100
5 125										400	515	315	5 125
6 150										444	595	355	6 150

*: HF=Hard facing *1 "N" is stamped on the top of the stem end and metal tag showing "Needle Valve" is attached.

20K Y-Globe Valve, Bellows Seal Valve

MODEL	M20KFGY	M20KFGYO	M20KFGB	M20KFDB*1	MODEL								
TYPE	Y-Globe Valve		Bellows Seal Valve										
FEATURE	-	-	-	Soft seating	FEATURE								
FIGURE					FIGURE								
BODY	FCD-S				BODY								
BONNET	FCMB-S35		FCD-S										
STEM	SUS403		SUS410										
DISC	SUS403		SUS304+HF* :Nominal size 50A & below SUS410+HF* :Nominal size 65-100A SCST1+HF* :Nominal size 125A & above	SUS304+HF* :Nominal size 50A & below, 125A & above SUS410+HF* :Nominal size 65-100A									
DISC SEAT	HF*			PTFE reinforced with filler									
BODY SEAT RING	SUS403+HF*			SUS410+HF*									
BELLOWS	-		SUS316L										
HANDWHEEL	Color:Brown FCMB340:Nominal size 25, 40A FCD450:Nominal size 50A		Color:Black FCMB370										
GASKET	H1215				GASKET								
PACKING	H350+H2200				PACKING								
MODEL	M20KFGY			M20KFGYO			M20KFGB			M20KFDB			MODEL
NOMINAL SIZE	L	H	D	L	H	D	L	H	D	L	H	D	NOMINAL SIZE
1/2B 15A							110	181	100	110	181	100	1/2B 15A
3/4 20							120	191	100	120	191	100	3/4 20
1 25	160	208	120	160	250	120	130	196	120	130	196	120	1 25
1 1/4 32							160	209	120	160	208	120	1 1/4 32
1 1/2 40	210	246	140	210	286	140	180	242	160	180	243	160	1 1/2 40
2 50	250	293	180	250	331	180	230	251	180	230	253	180	2 50
2 1/2 65							292	312	224	292	309	224	2 1/2 65
3 80							318	381	250	318	377	250	3 80
4 100							356	398	300	356	402	300	4 100
5 125							400	493	355	400	491	355	5 125
6 150							444	560	400	444	562	400	6 150
8 200							559	714	450	559	713	450	8 200
10 250							622	872	560	622	869	560	10 250

*: HF=Hard facing

20K Angle Valve

MODEL	M20KSA	M20KFA	M20KFAO	MODEL						
TYPE	Angle Valve			TYPE						
FEATURE	-	-	-	FEATURE						
FIGURE				FIGURE						
BODY	FCD-S			BODY						
BONNET	FCMB-S35			BONNET						
STEM	SUS403			STEM						
DISC	SUS403+HF*		S28C+HF*	DISC						
BODY SEAT RING	SUS403+HF*		S28C+HF*	BODY SEAT RING						
HANDWHEEL	Color:Brown FCMB340:Nominal size 3/8 -1 1/2B FCD450:Nominal size 2B	Color:Brown FCMB340:Nominal size 10-40A FCD450:Nominal size 50A	Color:Brown FCD450	HANDWHEEL						
GASKET	H1215			GASKET						
PACKING	H350+H2200			PACKING						
MODEL	M20KSA			M20KFA			M20KFAO			MODEL
NOMINAL SIZE	L	H	D	L	H	D	L	H	D	NOMINAL SIZE
3/8B 10A	32	115	80	70	115	80				3/8B 10A
1/2 15	37	125	80	70	125	80				1/2 15
3/4 20	42	145	100	75	140	100				3/4 20
1 25	50	160	120	85	160	120				1 25
1 1/4 32	55	170	120	95	165	120				1 1/4 32
1 1/2 40	60	190	140	100	185	140				1 1/2 40
2 50	75	210	180	120	205	180				2 50
2 1/2 65							146	325	250	2 1/2 65
3 80							159	360	300	3 80
4 100							178	405	315	4 100

*: HF=Hard facing

*1 "PTFE" is marked on the name plate.

20K Screw-Down Stop Check Valve

MODEL	M20KSGC*1			M20KFGC*1			M20KFGCO*1			MODEL
TYPE	Screw-Down Stop Check Valve									TYPE
FEATURE										FEATURE
FIGURE										FIGURE
BODY	FCMB-S35:Nominal size 3/8-1B FCD-S:Nominal size 1 1/4-2B			FCD-S			FCD-S			BODY
BONNET	FCMB-S35			SUS403			FCD-S			BONNET
STEM	SUS403+HF*			SUS403			S28C+HF*			STEM
DISC	SUS403+HF*			SUS403+HF*			S28C+HF*			DISC
BODY SEAT RING	SUS403+HF*			SUS403+HF*			S28C+HF*			BODY SEAT RING
HANDWHEEL	Color:Brown FCMB340:Nominal size 1/2 - 1 1/2B FCD450:Nominal size 2B			Color:Brown FCMB340:Nominal size 10-40A FCD450:Nominal size 50A			Color:Brown FCD450			HANDWHEEL
GASKET	H1215			H1215			H1215			GASKET
PACKING	H350+H2200			H350+H2200			H350+H2200			PACKING
MODEL	M20KSGC			M20KFGC			M20KFGCO			MODEL
NOMINAL SIZE	L	H	D	L	H	D	L	H	D	NOMINAL SIZE
3/8B 10A	70	125	80	100	125	80				3/8B 10A
1/2 15	75	135	80	110	135	80				1/2 15
3/4 20	90	145	100	120	145	100				3/4 20
1 25	105	170	120	130	170	120				1 25
1 1/4 32	120	180	120	160	180	120				1 1/4 32
1 1/2 40	135	195	140	180	195	140				1 1/2 40
2 50	160	225	180	230	225	180	267	333	224	2 50
2 1/2 65							292	365	250	2 1/2 65
3 80							318	400	300	3 80
4 100							356	455	315	4 100
5 125							400	520	355	5 125

* : HF=Hard facing

*1 "C" is stamped on the top of stem end and "Screw-down stop check" is marked on the bonnet.

20K Angle Screw-Down Stop Check Valve

MODEL	M20KSAC*1			M20KFAC*1			M20KFACO*1			MODEL
TYPE	Angle Screw-Down Stop Check Valve									TYPE
FEATURE										FEATURE
FIGURE										FIGURE
BODY	FCMB-S35			FCD-S			FCD-S			BODY
BONNET	FCMB-S35			SUS403			FCD-S			BONNET
STEM	SUS403+HF*			SUS403			S28C+HF*			STEM
DISC	SUS403+HF*			SUS403+HF*			S28C+HF*			DISC
BODY SEAT RING	SUS403+HF*			SUS403+HF*			S28C+HF*			BODY SEAT RING
HANDWHEEL	Color:Brown FCMB340:Nominal size 1/2 - 1 1/2B FCD450:Nominal size 2B			Color:Brown FCMB340:Nominal size 15-40A FCD450:Nominal size 50A			Color:Brown FCD450			HANDWHEEL
GASKET	H1215			H1215			H1215			GASKET
PACKING	H350+H2200			H350+H2200			H350+H2200			PACKING
MODEL	M20KSAC			M20KFAC			M20KFACO			MODEL
NOMINAL SIZE	L	H	D	L	H	D	L	H	D	NOMINAL SIZE
1/2B 15A	37	130	80	70	125	80				1/2B 15A
3/4 20	42	145	100	75	140	100				3/4 20
1 25	50	160	120	85	160	120				1 25
1 1/4 32	55	175	120	95	165	120				1 1/4 32
1 1/2 40	60	190	140	100	185	140				1 1/2 40
2 50	75	215	180	120	205	180				2 50
2 1/2 65							146	325	250	2 1/2 65
3 80							159	355	300	3 80
4 100							178	405	315	4 100

* : HF=Hard facing

*1 "C" is stamped on the top of stem end and "Screw-down stop check" is marked on the bonnet.

20K Lift Check Valve, Swing Check Valve

MODEL	M20KSC*1		M20KFC*1		M20KFCS		M20KSCD ^{1,2}		M20KFCD ^{1,2}		MODEL
TYPE	Lift Check Valve				Swing Check Valve		Lift Check Valve				TYPE
FEATURE							For LPG				FEATURE
FIGURE											FIGURE
BODY	FCMB-S35 :Nominal size 3/8-1B FCD-S :Nominal size 1 1/4-2B		FCD-S		FCMB-S35 :Nominal size 3/8-1B FCD-S :Nominal size 1 1/4-2B		FCD-S		FCD-S		BODY
COVER	SUS403		SUS403		SS400		SUS403		SUS403		COVER
DISC	SUS403		SUS403		S28C		SUS403		SUS403		DISC
DISC SEAT	HF*		HF*		HF*		PTFE		PTFE		DISC SEAT
BODY SEAT RING	SUS403+HF*		SUS403+HF*		S28C+HF*		SUS403		SUS403		BODY SEAT RING
HINGE PIN	-		-		SUS403		-		-		HINGE PIN
GASKET	-		-		H1215		-		-		GASKET
SPRING*1	SUS304WPB:Nominal size 3/8B		SUS304WPB:Nominal size 10A		-		SUS304WPB:Nominal size 3/8B		SUS304WPB:Nominal size 10A		SPRING*1
PLUG	-		-		S25C		-		-		PLUG
MODEL	M20KSC		M20KFC		M20KFCS		M20KSCD		M20KFCD		MODEL
NOMINAL SIZE	L	H	L	H	L	H	L	H	L	H	NOMINAL SIZE
3/8B 10A	70	44	100	44			70	44	100	44	3/8B 10A
1/2 15	75	49	110	49			75	49	110	49	1/2 15
3/4 20	90	51	120	51			90	51	120	51	3/4 20
1 25	105	58	130	58			105	58	130	58	1 25
1 1/4 32	120	66	160	66			120	66	160	66	1 1/4 32
1 1/2 40	135	75	180	75	241	120	135	75	180	75	1 1/2 40
2 50	160	86	230	86	267	140	160	86	230	86	2 50
2 1/2 65					292	150					2 1/2 65
3 80					318	160					3 80
4 100					356	175					4 100
5 125					400	215					5 125
6 150					444	235					6 150
8 200					533	275					8 200

* : HF=Hard facing

*1 "Spring" is placed for 3/8 (10A) as standard and for other sizes "Spring" is as option. "S" is stamped on the cover when spring is placed.

*2 "D" is stamped on the cover.

20K Swing Check Valve, Strainer

MODEL	M20KFCS		M20KST		M20KFT		M20KFTLM	
TYPE	Swing Check Valve		Strainer		Strainer		For LPG	
FEATURE	For LPG							
FIGURE								
BODY	FCD-S		FCMB-S35 :Nominal size 3/8-1B FCD-S :Nominal size 1 1/4-2B		FCD-S		FCD-S	
COVER	S25C		FCMB-S35		S45C		S45C	
DISC	SUS403		SUS304:50Mesh		SUS304:150Mesh		SUS304:150Mesh	
DISC SEAT	PTFE		H1215		-		-	
BODY SEAT RING	SUS403		S20C:Nominal size 3/8-1/4B FCD-S:Nominal size 1-2B		S20C:Nominal size 10-20A FCD-S:Nominal size 25-50A		S25C	
HINGE PIN	SUS403							
PLUG	S25C							
MODEL	M20KFCS		M20KST		M20KFT		M20KFTLM	
NOMINAL SIZE	L	H	L	H	L	H	L	H
3/8B 10A								
1/2 15								
3/4 20								
1 25								
1 1/4 32								
1 1/2 40	241	120						
2 50	267	140						
2 1/2 65	292	150						
3 80	318	160						
4 100	356	175						
5 125	400	215						
6 150	444	235						
8 200	533	275						

20K Ball Valve, Strainer Ball Valve

MODEL	BM20F0LS			BM20KF0L			BM20KF0B			BM20KFT			MODEL		
TYPE	Ball Valve									Strainer Ball Valve			TYPE		
FEATURE	For LPG									For LPG			FEATURE		
FIGURE													FIGURE		
BODY	FCD-S												BODY		
BALL	SUS304			SUS304:Nominal size 15-80A SCS13A:Nominal size 100A			SUS304						BALL		
STEM	SUS403												STEM		
SEAT RING	PTFE									FT seat			SEAT RING		
SCREEN										SUS304/150Mesh			SCREEN		
LEVER HANDLE	Color:Green FCMB340			Color:Green FCMB340:Nominal size 15-80A			Color:Blue FCMB340:Nominal size 15-80A			Color:Green SUS430			LEVER HANDLE		
HANDLE BOSS +PIPE				Color:Green FCMB340+STPG:Nominal size 100A			Color:Blue FCMB340+STPG:Nominal size 100A						HANDLE BOSS +PIPE		
GASKET	H1215									PTFE reinforced with filler			GASKET		
O-RING	NBR												O-RING		
PACKING	PTFE									PTFE reinforced with filler			PACKING		
BORE	Full bore												BORE		
MODEL	BM20F0LS			BM20KF0L			BM20KF0B			BM20KFT			MODEL		
NOMINAL SIZE	L	H	D	L	H	D	L	H	D	L	H	D	NOMINAL SIZE		
1/2B 15A	110	97	120	140	76	120	140	76	120	110	90	120	1/2B 15A		
3/4	20	120	101	120	152	80	120	152	80	120	94.5	120	3/4 20		
1	25	130	119	150	165	103	150	165	103	150	130	108	1 25		
1 1/4	32				178	108	150	178	108	150			1 1/4 32		
1 1/2	40				190	125	220	190	125	220			1 1/2 40		
2	50				216	133	220	216	133	220			2 50		
2 1/2	65				241	145	220	241	145	220			2 1/2 65		
3	80				283	185	400	283	185	400			3 80		
4	100				305	226	800	305	226	800			4 100		
MPa		LPG		MPa		LPG		MPa		LPG		MPa		LPG	
2.35		120°C		2.35		120°C		2.75		-10 104 200 230 250°C		2.35		-5 80°C	

CLASS 150 POUND

GLOBE, GATE, CHECK VALVES

◆ Features

- 150lbs valves have 13Cr stainless steel trim and can be used up to 650°F
- 150lbs valves are applicable to the some sorts of special fluids, changing packings, gasket and trim materials and so on.
- NPT(ANSI B 1.20.1(1983) threaded end valves are also available on order.

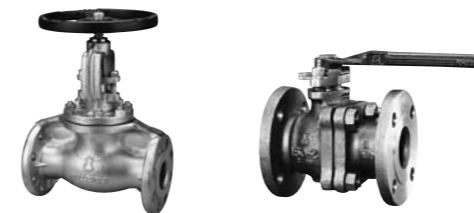
◆ Type

- Globe, Gate and Needle valves:** Ductile iron body and bonnet, union or bolted bonnet, insided screw for small sizes 50mm and under, outside screw and yoke for larger sizes, 13Cr stainless steel trim.
- Bellows valves:** Ductile iron body and bonnet, bolted bonnet, outside screw & yoke, 18Cr-8Ni-1/2Mo-low Co stainless steel bellows, hard-faced disc and body seat ring.
- Check valves:** Ductile iron body, 13Cr stainless steel or carbon steel cover, 13Cr-low Si stainless steel disc, 13Cr stainless steel or 13Cr stainless steel deposited seat ring.
- Ball Valves:** Ductile iron bodies, 18Cr-8Ni stainless steel ball, PTFE or FT (PTFE + PFA) seats, 13Cr stainless steel stem.

◆ Inspection pressure

Unit: MPa

Type	Inspection Item		Shell test		Seat leakage test		Back seat leakage test
	Hydrostatic test	Air test	Hydrostatic test	Air test	Hydrostatic test	Air test	Hydrostatic test
Globe valve/Needle valve/ Gate valve, (Inside Screw) (14B or larger)/ Check valve/ Ball valve for general- and high temperature- application	3.10		2.17				
Gate valve/Globe valve (Outside Screw/12B or under)	3.10		2.17				2.17
Bellows valve		1.37		1.37			
Ball valve for gas		2.00		1.17			



◆ Applicable fluids, temperatures and pressures

	Max. working temperature for each fluid Upper : °C Lower : °F	Steady flow	Operation oil / Heavy oil / Air / Steam / Pulsating Water												LPG	City gas
			38 (125)	38 (100)	80 (176)	149 (300)	161 (321)	170 (338)	183 (361)	204 (400)	220 (428)	230 (446)	260 (500)	343 (650)		
Globe valve	Standard Needle valve	1.73 (250)			1.48 (215)				1.38 (200)			1.18 (170)	0.86 (125)			
	Reinforced PTFE Disc	1.73 (250)			1.48 (215)			1.42 (206)								
	Bellows valve	1.37 (198)			1.37 (198)				1.37 (198)			1.18 (170)	0.86 (125)			
Gate Valve	1.73 (250)			1.48 (215)				1.38 (200)			1.18 (170)	0.86 (125)				
Check Valve	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 Valve	For general application	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)	



1) HF (Co Cr-W Alloy depositing) seating is recommended to use in the following conditions:

- For steam piping of nominal size 150A(6B) or larger.
 - For high pressure steam of 0.98 Mpa (10 kg/cm²) or higher, and when open/close frequency is high.
 - When valve is used for dry fluid.
 - For piping using chemical and so on requiring corrosion resistance, and when 18 Cr-8Ni stainless steel is used for the material of valve trim.
- 2) When using valves at the temperature 180°C and over, heat-resisting painting as option is recommended.
- 3) Please consult with us when valve is used at the temperature of -10°C and below.

150 lb Globe Valve

MODEL	M150FG			M150FGO			M150FD ^{*2}			M150FDO ^{*2}			MODEL		
TYPE	Globe Valve												TYPE		
FEATURE							Soft seating						FEATURE		
FIGURE													FIGURE		
BODY	FCD-S												BODY		
BONNET	FCD-S												BONNET		
STEM	SUS403												STEM		
DISC	SUS403	SUS403:Nominal size 2-4B S28C deposited with 13Cr stainless steel Nominal size 5-10 B						SUS403						DISC	
DISC SEAT	PTFE reinforced with filler												DISC SEAT		
BODY SEAT RING	SUS403	SUS403:Nominal size 2-6B S28C+HF*1:Nominal size 8, 10B						SUS403						BODY SEAT RING	
HANDWHEEL	Color:Blue FCMB340			Color:Blue FCD450			Color:Orange FCMB340			Color:Orange FCD450			HANDWHEEL		
GASKET	H350+H2200						H1215						GASKET		
PACKING	H350+H9077												PACKING		
MODEL	M150FG			M150FGO			M150FD			M150FDO			MODEL		
NOMINAL SIZE	L	H	D	L	H	D	L	H	D	L	H	D	NOMINAL SIZE		
1/2B	15A	108	130	80			108	131	80				1/2B	15A	
3/4	20	117	135	80			117	133	80				3/4	20	
1	25	127	155	100			127	153	100				1	25	
1 1/4	32	140	175	120			140	176	120				1 1/4	32	
1 1/2	40	165	190	120			165	192	120				1 1/2	40	
2	50	203	215	140	203	295	224	203	216	140	203	295	224	2	50
2 1/2	65				216	325	224	216	335	224	216	335	224	2 1/2	65
3	80				241	355	250	241	365	250	241	365	250	3	80
4	100				292	390	300	292	405	300	292	405	300	4	100
5	125				356	435	315	356	455	315	356	455	315	5	125
6	150				406	505	355	406	530	355	406	530	355	6	150
8	200				495	595	400	495	630	400	495	630	400	8	200
10	250				622	690	450	622	732	450	622	732	450	10	250

*1: HF=Hard facing *2: "PTFE" is marked on name plate

150 lb Needle Valve, Bellows Seal Valve

MODEL	M150FN ^{*1}			M150FGB			M150FDB ^{*2}			MODEL			
TYPE	Needle Valve									TYPE			
FEATURE							Bellows Seal Valve						FEATURE
FIGURE										FIGURE			
BODY	FCD-S												BODY
BONNET	FCD-S												BONNET
STEM	SUS403			SUS410						SUS410			STEM
DISC	SUS403			SUS304+HF* :Nominal size 50A & below SUS410+HF* :Nominal size 65-100A SCS1T1+HF* :Nominal size 125A & above						SUS304+HF* :Nominal size 50A & below, 125A & above SUS410+HF* :Nominal size 65-100A			DISC
DISC SEAT	HF*						PTFE reinforced with filler						DISC SEAT
BODY SEAT RING	SUS403+HF*			SUS410+HF*						SUS410			BODY SEAT RING
BELLOWS	SUS316L												BELLOWS
HANDWHEEL	Color:Orange FCMB340:Nominal size 1/2-1 1/2B FCD450:Nominal size 2B			Color:Black FCMB370									HANDWHEEL
GASKET	H1215												GASKET
PACKING	H350+H2200												PACKING
MODEL	M150FN			M150FGB			M150FDB			MODEL			
NOMINAL SIZE	L	H	D	L	H	D	L	H	D	NOMINAL SIZE			
1/2B	15A	108	135	80	108	181	100	108	181	100	1/2B	15A	
3/4	20	117	145	100	117	191	100	117	191	100	3/4	20	
1	25	127	170	120	127	196	120	127	196	120	1	25	
1 1/4	32	140	180	120	140	208	120	140	208	120	1 1/4	32	
1 1/2	40	165	200	140	165	243	160	165	243	160	1 1/2	40	
2	50	203	230	180	203	253	180	203	253	180	2	50	
2 1/2	65				216	278	224	216	278	224	2 1/2	65	
3	80				241	328	224	241	328	224	3	80	
4	100				292	365	250	292	365	250	4	100	
5	125				356	421	300	356	421	300	5	125	
6	150				406	487	355	406	487	355	6	150	
8	200				495	609	400	495	609	400	8	200	
10	250				622	754	450	622	754	450	10	250	

*1: HF=Hard facing *1 "N" is stamped on the top of the stem end and "Needle Valve" is marked on the unit. *2 "PTFE" is marked on the name plate.

150 lb Gate Valve

MODEL	M150FS			M150FSO			D150FSO [*]			MODEL			
TYPE	Gate Valve												TYPE
FEATURE							Soft seating						FEATURE
FIGURE										FIGURE			
BODY	FCMB-S35												BODY
BONNET	FCD-S												BONNET
STEM	FCD-S												STEM
DISC	SCS1			SUS403 SCS1:Nominal size 1 1/2 - 2 1/2B SUS403:Nominal size 3-8B S28C deposited with 13Cr stainless steel Nominal size 10,12B						SCPH2 deposited with 13Cr stainless steel			DISC
BODY SEAT RING	SUS403						S28C+HF*						BODY SEAT RING
HANDWHEEL	Color:Blue FCMB340			Color:Blue FCD450						Color:Blue FCD450			HANDWHEEL
GASKET	H1215												GASKET
PACKING	H350+H2200												PACKING
MODEL	M150FS			M150FSO			D150FSO			MODEL			
NOMINAL SIZE	L	H	D	L	H	D	L	H	D	NOMINAL SIZE			
1/2B	15A	90	165	80						1/2B	15A		
3/4	20	100	170	80						3/4	20		
1	25	110	190	80						1	25		
1 1/4	32									1 1/4	32		
1 1/2	40	130	258	120	165	315	160	178	360	180	1 1/2	40	
2	50				190	425	180	203	480	224	2	50	
2 1/2	65				229	580	250	254	675	300	2 1/2	65	
3	80				267	780	300	292	985	315	3	80	
4	100				330	1195	450	356	1410	560	4	100	
5	125										5	125	
6	150										6	150	
8	200										8	200	
10	250										10	250	
12	300										12	300	
14	350										14	350	
16	400										16	400	
18	450										18	450	
20	500										20	500	

* D150KFSO Nominal size 18B, 20B are reduced bore type.

150 lb Lift Check Valve, Swing Check Valve

MODEL	M150FC		M150FCD		M150FCS		MODEL		
TYPE	Lift Check Valve						TYPE		
FEATURE					Soft seating		FEATURE		
FIGURE							FIGURE		
BODY	FCD-S						BODY		
COVER	SUS403						COVER		
DISC	SUS403						DISC		
DISC SEAT	PTFE reinforced with filler						DISC SEAT		
BODY SEAT RING	SUS403						BODY SEAT RING		
HINGE PIN	-						HINGE PIN		
GASKET	H1215						GASKET		
PLUG	-						PLUG		
	S20C:Nominal size 1 1/2-8B SUS403:Nominal size 10, 12B								
MODEL	M150FC		M150FCD		M150FCS		MODEL		
NOMINAL SIZE	L	H	L	H	L	H	NOMINAL SIZE		
1/2B	15A	108	51	108	51		1/2B	15A	
3/4	20	117	54	117	54		3/4	20	
1	25	127	61	127	61		1	25	
1 1/4	32	140	69	140	69		1 1/4	32	
1 1/2	40	165	77	165	77	165	118	1 1/2	40
2	50	203	89	203	89	203	126	2	50
2 1/2	65					216	146	2 1/2	65
3	80					241	161	3	80
4	100					292	176	4	100
5	125					330	250	5	125
6	150					356	270	6	150
8	200					495	330	8	200
10	250					622	390	10	250
12	300					698	450	12	300

150 lb Ball Valve

MODEL	BM150F0B	BM150F1B	BM150F0L	BM150F0G	MODEL
TYPE	For General Application			For Gas	For Buried Gas piping
FEATURE					
FIGURE					
BODY	FCD-S				BODY
BALL	SUS304:Nominal size 2 1/2-4B SCS13A:Nominal size 5-8B	SUS304			BALL
STEM	SUS403				STEM
SEAT RING	FT seat		PTFE		SEAT RING
AUXILIARY SEAT					AUXILIARY SEAT
LEVER HANDLE	Color:Blue FCMB340:Nominal size 2 1/2-4B	Color:Blue FCMB340	Color:Blue FCMB340:Nominal size 2 1/2-4B		LEVER HANDLE
HANDLE BOSS	Color:Blue FCMB340:Nominal size 5-8B		Color:Blue FCMB340:Nominal size 5-8B	FCD450:Nominal size 2 1/2-6B FCMB340:Nominal size 8B	HANDLE BOSS
GASKET	H1215				GASKET
PACKING	PTFE reinforced with filler		PTFE		PACKING
BORE	Full bore				BORE
MODEL	BM150F0B	BM150F1B	BM150F0L	BM150F0G	MODEL
NOMINAL SIZE	L H W	L H W	L H W	L H S	NOMINAL SIZE
50A 50A			178 139 220	2B 50A	
65 65	190 151 220	190 151 220	190 151 220	2 1/2 65	
80 80	203 186 320	203 186 320	203 186 320	3 80	
100 100	229 202 400	229 202 400	229 202 400	4 100	
125 125	292 243 800		292 243 800	5 125	
150 150	394 262 1000		394 262 1000	6 150	
200 200	457 321 1200		457 321 1200	8 200	

CLASS 300 POUND

GLOBE, GATE AND CHECK VALVES

◆ Features

- 300lbs valves have 13Cr stainless steel trim and can be used up to 650°F
- 300lbs valves are applicable to the some sorts of special fluids, changing packings, gasket and trim materials and so on.

◆ Type

- Globe, Gate and Needle valves:** Ductile or malleable iron body and bonnet, union or bolted bonnet, insided screw for small sizes 50mm and under, outside screw and yoke for larger sizes, 13Cr stainless steel trim.
- Bellows valves:** Ductile iron body and bonnet, bolted bonnet, outside screw & yoke, 18Cr-8Ni-1/2Mo-low Co stainless steel bellows, hard-faced disc and body seat ring.
- Screw down stop check valves:** Ductile or malleable iron body and bonnet, 13Cr stainless steel trim, hard-faced disc and seat ring.
- Lift Check valves:** Ductile or malleable iron body, 13Cr stainless steel cover, disc and seat ring, hard-faced disc and seat ring.
- Swing check valves:** Ductile iron body, carbon steel bolted cover, hard faced carbon steel disc and seat.

◆ Applicable fluids, temperatures and pressures

Max. working pressure for each type(MPa)	Max. working temperature for each fluid(°C)	Steady flow					oil / Heavy oil / Air / Steam / Operation		LPG	
		38	121	232	288	343	38	80		
Globe valve	Standard/Needle valve	2.90	2.76	2.62	2.38	2.07			2.90	2.83
	Reinforced PTFE Disc									
	Bellows valve	2.50		2.50	2.40	2.10				
Gate Valve	Standard / For high temperature application	2.90	2.76	2.62	2.38	2.07				
	PTFE Disc	2.90	2.76	2.62	2.38	2.07			2.90	2.83
Check Valve	Standard, Screw-down stop check valve	2.90	2.76	2.62	2.38	2.07				
	PTFE Disc								2.90	2.83

◆ Inspection pressure

Unit : (MPa)

Type	Inspection Item	Shell test		Seat leakage test		Back seat leakage test
		Hydrostatic test	Air test	Hydrostatic test	Air test	Air test
Globe valve	Globe valve/Needle valve/Gate valve/Check valve/Angle valve/Y-globe valve	4.34		3.10		
	Bellows valve		2.50		2.50	
	Globe valve for LPG		4.34		2.75	2.75
	Check valve for LPG		4.34		2.75	

300 lb Globe Valve

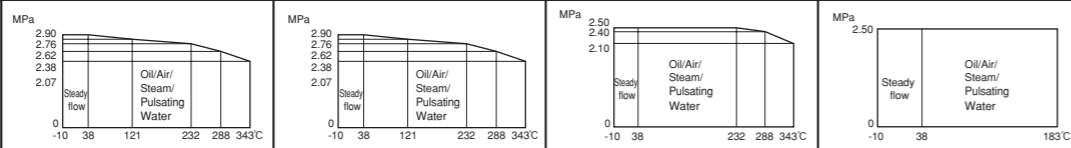
MODEL	M300FG	M300FGO	M300FDL*1	M300FDLO*1	MODEL
TYPE	Globe Valve				TYPE
FEATURE				For LPG	FEATURE
FIGURE					FIGURE
BODY	FCD-S				BODY
BONNET	FCMB-S35	FCD-S	FCMB-S35	FCD-S	BONNET
STEM	SUS403				STEM
DISC	SUS403	S28C	SUS403		DISC
DISC SEAT	HF*		PTFE		DISC SEAT
BODY SEAT RING	SUS403+HF*		SUS403		BODY SEAT RING
HANDWHEEL	Color:Brown FCMB340:Nominal size 1/2 - 1 1/2B FCD450:Nominal size 2B	Color:Brown FCD450	Color:Green FCMB340:Nominal size 1/2 - 1 1/2B FCD450:Nominal size 2B	Color:Green FCD450	HANDWHEEL
GASKET	H1215				GASKET
PACKING	H350+H2200		H2661-V		PACKING
MODEL	M300FG	M300FGO	M300FDL	M300FDLO	MODEL
NOMINAL SIZE	L H D	L H D	L H D	L H D	NOMINAL SIZE
1/2B 15A	110 135 80		110 135 80		1/2B 15A
3/4 20	120 145 100		120 145 100		3/4 20
1 25	130 170 120		130 170 120		1 25
1 1/4 32	160 180 120		160 180 120		1 1/4 32
1 1/2 40	180 195 140		180 200 140		1 1/2 40
2 50	230 225 180		230 230 180		2 50
2 1/2 65		292 355 250		292 365 224	2 1/2 65
3 80		318 390 300		318 395 250	3 80
4 100		356 445 315		356 440 300	4 100
5 125		400 515 355		400 515 315	5 125
6 150		444 595 400		444 580 400	6 150
8 200		559 685 450		559 685 450	8 200

* : HF=Hard facing *1 "PTFE" is marked on the name plate.

300 lb Needle Valve / Bellows Seal Valve

MODEL	M300FN*1	M300FNO*1	M300FGB	M300FDB*2	MODEL
TYPE	Needle Valve		Bellows Seal Valve		
FEATURE	-		-		
FIGURE					FIGURE
BODY	FCD-S				BODY
BONNET	FCMB-S35	FCD-S			BONNET
STEM	SUS403		SUS410		
DISC	SUS403		SUS304+HF* :Nominal size 50A & below SUS410+HF* :Nominal size 65-100A SCS1T1+HF* :Nominal size 125A & above	SUS304:Nominal size 50A & below, 125A & above SUS410 :Nominal size 65-100A	DISC
DISC SEAT	HF*				DISC SEAT
BODY SEAT RING	SUS403+HF*		SUS410+HF*		
HANDWHEEL	Color:Brown FCMB340:Nominal size 1/2 - 1 1/2B FCD450:Nominal size 2B	Color:Brown FCD450	Color:Black FCMB340		
GASKET	H1215				GASKET
PACKING	H350+H2200				PACKING

MODEL	M300FN	M300FNO	M300FGB	M300FDB	MODEL
NOMINAL SIZE	L H D	L H D	L H D	L H D	NOMINAL SIZE
1/2B 15A	110 135 80		110 181 100	110 181 100	1/2B 15A
3/4 20	120 145 100		120 191 100	120 191 100	3/4 20
1 25	130 170 120		130 196 120	130 196 120	1 25
1 1/4 32	160 180 120		160 208 120	160 208 120	1 1/4 32
1 1/2 40	180 200 140		180 243 160	180 243 160	1 1/2 40
2 50	230 230 180		230 253 180	230 253 180	2 50
2 1/2 65		292 365 224	292 309 224	292 309 224	2 1/2 65
3 80		318 405 250	318 377 250	318 377 250	3 80
4 100		356 445 300	356 402 300	356 402 300	4 100
5 125		400 515 315	400 491 355	400 491 355	5 125
6 150		444 595 355	444 562 400	444 562 400	6 150
8 200			559 713 450	559 713 450	8 200
			622 869 560	622 869 560	

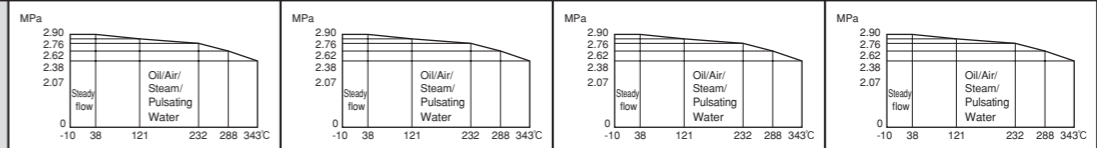


* : HF=Hard facing
*1 "N" is stamped on the top of the stem end and metal tag showing "Needle Valve" is attached.
*2 "PTFE" is marked on the name plate.

300 lb Screw-Down Stop Check Valve / Gate Valve

MODEL	M300FGC*1	M300FGCO*1	M300FSO	M300FSHO	MODEL
TYPE	Screw-Down Stop Check Valve		Gate Valve		
FEATURE	-		-		
FIGURE					FIGURE
BODY	FCD-S				BODY
BONNET	FCMB-S35	FCD-S			BONNET
STEM	SUS403				STEM
DISC	SUS403+HF*	S28C+HF*	SCS1:Nominal size1, 1 1/2 - 2 1/2, 5 - 8B SUS403:Nominal size 1 1/4,3,4B SCPH deposited with 13Cr stainless steel SCPH2:Nominal size 10,12B	SCS1+HF* :Nominal size1, 1 1/2 - 2 1/2, 5 - 8B SUS403+HF*:Nominal size 1 1/4,3,4B SCPH2+HF*:Nominal size 10,12B	DISC
BODY SEAT RING	SUS403+HF*	S28C+HF*	SUS403	SUS403+HF* S28C+HF*:Nominal size 5 - 12B	BODY SEAT RING
HANDWHEEL	Color:Brown FCMB340:Nominal size 1/2 - 1 1/2B FCD450:Nominal size 2B	Color:Brown FCD450			HANDWHEEL
GASKET	H1215				GASKET
PACKING	H350+H2200				PACKING

MODEL	M300FGC	M300FGCO	M300FSO	M300FSHO	MODEL
NOMINAL SIZE	L H D	L H D	L H D	L H D	NOMINAL SIZE
1/2B 15A	110 135 80				1/2B 15A
3/4 20	120 145 100				3/4 20
1 25	130 170 120		165 281 160	165 281 160	1 25
1 1/4 32	160 180 120		178 300 160	178 300 160	1 1/4 32
1 1/2 40	180 195 140		190 328 160	190 328 160	1 1/2 40
2 50	230 225 180		216 383 180	216 383 180	2 50
2 1/2 65		292 365 250	241 442 180	241 442 180	2 1/2 65
3 80		318 400 300	283 502 224	283 502 224	3 80
4 100		356 455 315	305 591 250	305 591 250	4 100
5 125		400 520 355	381 698 300	381 698 300	5 125
6 150			403 819 315	403 819 315	6 150
8 200			419 1026 450	419 1026 450	8 200
10 250			457 1238 560	457 1238 560	10 250
12 300			502 1440 630	502 1440 630	12 300



* : HF=Hard facing *1 "C" is stamped on the top of the stem end and metal tag showing "Screw-Down Stop Check Valve" is attached.

300 lb Lift Check Valve / Swing Check Valve

MODEL	M300FC	M300FCD*1	M300FCS	M300FCS*1	MODEL
TYPE	Lift Check Valve		Swing Check Valve		
FEATURE	-	For LPG	-	For LPG	FEATURE
FIGURE					FIGURE
BODY	FCD-S				BODY
COVER	SUS403		SS400	S25C	COVER
DISC	SUS403		S28C	SUS403	DISC
DISC SEAT	HF*	PTFE	HF*	PTFE	DISC SEAT
BODY SEAT RING	SUS403+HF*		S28C+HF*	SUS403	BODY SEAT RING
HINGE PIN	SUS403				HINGE PIN
PLUG	-		S25C:Nominal size2-4B, SUS403:Nominal size5-8B		
GASKET	H1215				GASKET

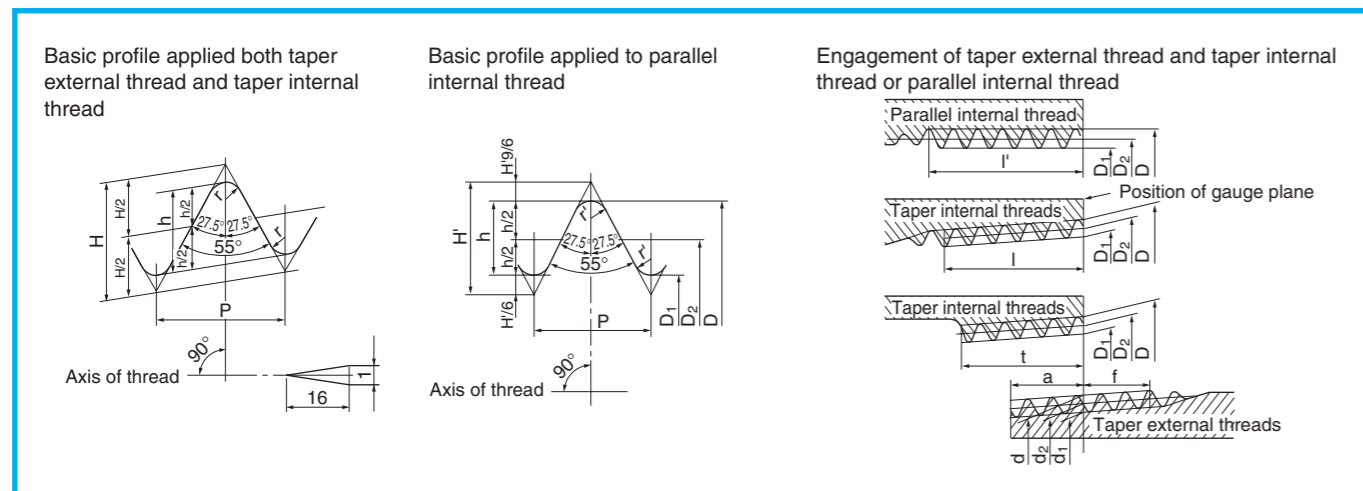
MODEL	M300FC	M300FCD	M300FCS	M300FCS	MODEL
NOMINAL SIZE	L H	L H	L H	L H	NOMINAL SIZE
1/2B 15A	110 49	110 49			1/2B 15A
3/4 20	120 51	120 51			3/4 20
1 25	130 58	130 58			1 25
1 1/4 32	160 66	160 66			1 1/4 32
1 1/2 40	180 75	180 75			1 1/2 40
2 50	230 86	230 86	267 145	267 145	2 50
2 1/2 65			292 155	292 155	2 1/2 65
3 80			318 175	318 175	3 80
4 100			356 200	356 200	4 100
5 125			400 235	400 235	5 125
6 150			444 265	444 265	6 150
8 200			533 295	533 295	8 200



* : HF=Hard facing *1 "PTFE" is stamped on the cover

DIMENSION OF SCREW THREAD

Table 1 JIS Taper Pipe Thread JIS B 0203(1999)(BS21)

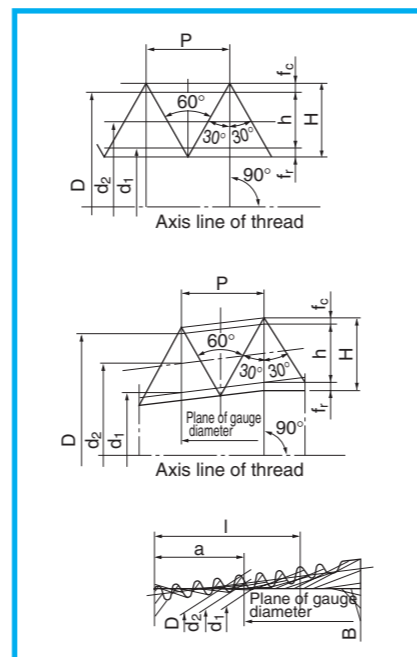


(B) Designation of thread size *	Thread				Gauge diameter			Position of gauge plane			Tolerance on D, D2 and D1 of internal thread	Length of useful thread (min.)				Size of carbon steel pipe for ordinary piping (Reference)				
	Number of threads (per 25.4 mm) n	Pitch (Reference) P	Height of thread h	Radius r or r'	External thread			External thread		Internal thread		From position of gauge plane to larger diameter end f	When there is incomplete thread part		When there is no incomplete thread part			Outside diameter	Thickness	
					Major diameter d	Pitch diameter d2	Minor diameter d1	From pipe end	At pipe end	Taper internal thread			Parallel internal thread	Taper internal thread, parallel internal thread						
					Minor diameter D	Pitch diameter D2	Minor diameter of internal thread D1	Gauge length a	±b	±c			From position of gauge plane to smaller diameter end l	From end of pipe or pipe fitting l'						l
RC1/4	19	1.3368	0.856	0.18	13.157	12.301	11.445	6.01	1.34	1.67	0.104	3.7	9.4	11.0	6.7	13.8	2.3			
RC3/8	19	1.3368	0.856	0.18	16.662	15.806	14.905	6.35	1.34	1.67	0.104	3.7	9.7	11.4	7.0	17.3	2.3			
RC1/2	14	1.8143	1.162	0.25	20.955	19.793	18.631	8.16	1.81	2.27	0.142	5.0	12.7	15.0	9.1	21.7	2.8			
RC3/4	14	1.8143	1.162	0.25	26.441	25.279	24.117	9.53	1.81	2.27	0.142	5.0	14.1	16.3	10.2	27.2	2.8			
RC1	11	2.3091	1.479	0.32	33.249	31.770	30.291	10.39	2.31	2.89	0.181	6.4	16.2	19.1	11.6	34.0	3.2			
RC1 1/4	11	2.3091	1.479	0.32	41.916	40.431	38.952	12.70	2.31	2.89	0.181	6.4	18.5	21.4	13.4	42.7	3.5			
RC1 1/2	11	2.3091	1.479	0.32	47.803	46.324	44.845	12.70	2.31	2.89	0.181	6.4	18.5	21.4	13.4	48.6	3.5			
RC2	11	2.3091	1.479	0.32	59.614	58.135	56.656	15.88	2.31	2.89	0.181	7.5	22.8	25.7	16.9	60.5	3.8			
RC2 1/2	11	2.3091	1.479	0.32	75.184	73.705	72.226	17.46	3.46	3.46	0.216	9.2	26.7	30.1	18.6	76.3	4.2			
RC3	11	2.3091	1.479	0.32	87.864	86.405	84.926	20.64	3.46	3.46	0.216	9.2	29.8	33.3	21.1	89.1	4.2			

*1: For taper internal thread from position of gauge plane to smaller diameter end, and for parallel internal thread from end of pipe or pipe fitting.

Table 2 Standard of Thread for Tube in USA: ANSI B 1.20.1(1983)

(B) Nominal designation of threads	Thread				Thread			Position of gauge diameter		l	B
	Number of threads per 1 inch n	Pitch inch p	Thread height h	Truncation fr, fc	Gauge diameter D	External thread d2	Major diameter d1	External thread	Axis line of thread a		
1/4	18	1.4112	1.129	0.046	13.616	12.487	11.358	5.79	10.2	13.72	
3/8	18	1.4112	1.129	0.046	17.055	15.926	14.797	6.10	10.4	17.15	
1/2	14	1.8143	1.451	0.061	21.223	19.772	18.321	8.13	13.6	21.34	
3/4	14	1.8143	1.451	0.061	26.568	25.117	23.666	8.61	13.9	26.67	
1	11.5	2.2008	1.767	0.074	33.228	31.461	29.694	10.16	17.3	33.40	
1 1/4	11.5	2.2008	1.767	0.074	41.985	40.218	38.451	10.67	18.0	42.16	
1 1/2	11.5	2.2088	1.767	0.074	48.054	46.287	44.520	10.67	18.4	48.26	
2	8	3.1750	2.540	0.104	60.092	58.325	56.558	11.07	19.2	60.33	
2 1/2	8	3.1750	2.540	0.104	72.699	70.159	67.619	17.32	28.9	73.03	
3	8	3.1750	2.540	0.104	88.608	86.068	83.528	19.46	30.5	88.90	



DIMENSION OF FLANGE

Dimensions for JIS 10K/150 lb Type Flange

Table 1 Dimensions for JIS 10K Type Flange

(This table 1 is made from JIS B 2239(2004), Cast iron pipe flanges, Attached table 2 Dimensions of flanges for nominal pressure 10K for Hitachi Malleable/Ductile iron flanged valves.)

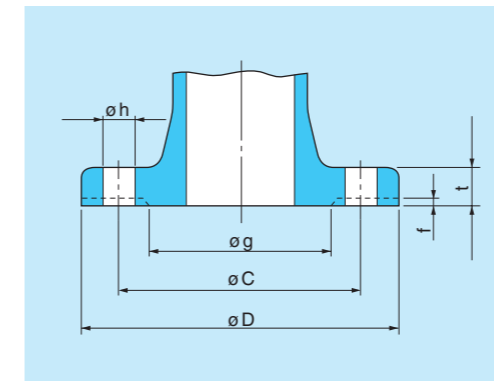


Table 2 Dimensions for 150 lb Type Flange

(ASME B 16.5 <1996> Dimension of Ferrous Material Pipe Flange)

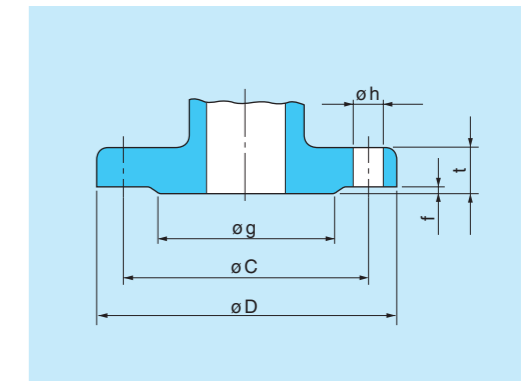


Table 1

(Unit: mm)

(A) Nominal diameter	Diameter of applied tube	D	t	<f>	g	Bolt holes			Designation of bolt thread
						C	Number	h	
10	17.3	90	12	1	46	65	4	15	M12
15	21.7	95	12	1	51	70	4	15	M12
20	27.2	100	14	1	56	75	4	15	M12
25	34.0	125	14	1	67	90	4	19	M16
32	42.7	135	16	2	76	100	4	19	M16
40	48.6	140	16	2	81	105	4	19	M16
50	60.5	155	16	2	96	120	4	19	M16
65	76.3	175	18	2	116	140	4	19	M16
80	89.1	185	18	2	126	150	8	19	M16
100	114.3	210	18	2	151	175	8	19	M16
125	139.8	250	20	2	182	210	8	23	M20
150	165.2	280	22	2	212	240	8	23	M20
200	216.3	330	22	2	262	290	12	23	M20
250	267.4	400	24	2	324	355	12	25	M22
300	318.5	445	24	3	368	400	16	25	M22
350	355.6	490	26	3	413	445	16	25	M22
400	406.4	560	28	3	475	510	16	27	M24
450	457.2	620	30	3	530	565	20	27	M24
500	508.0	675	30	3	585	620	20	27	M24

Table 2

(Unit: mm)

(A) Nominal diameter	D	t	g	f	Bolt holes			Designation of bolt thread
					C	Number	h	
1/2	89	11.2	35	1.6	60.5	4	16	1/2
3/4	98	12.7	43	1.6	70.0	4	16	1/2
1	108	11.2	51	1.6	79.5	4	16	1/2
1 1/4	117	12.7	64	1.6	89.0	4	16	1/2
1 1/2	127	14.3	73	1.6	98.5	4	16	1/2
2	152	15.9	92	1.6	120.5	4	19	5/8
2 1/2	178	17.5	105	1.6	139.5	4	19	5/8
3	190	19.1	127	1.6	152.5	4	19	5/8
4	229	23.9	157	1.6	190.5	8	19	5/8
5	254	23.9	186	1.6	216.0	8	22	3/4
6	279	25.4	216	1.6	241.5	8	22	3/4
8	343	28.6	270	1.6	298.5	8	22	3/4
10	406	30.2	324	1.6	362.0	12	25	7/8
12	483	31.8	381	1.6	432.0	12	25	7/8

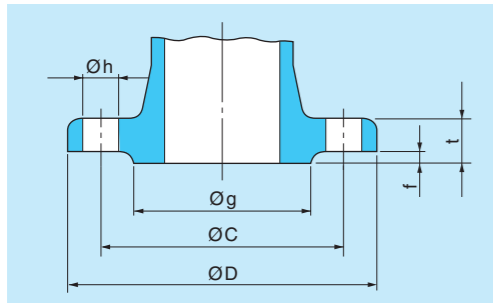
(Nominal diameter 1-3B corresponds to the dimensions for thin type flanges)

For proper Usage of Valves

⊙ Dimensions for JIS 20K/300 lb Type Flange

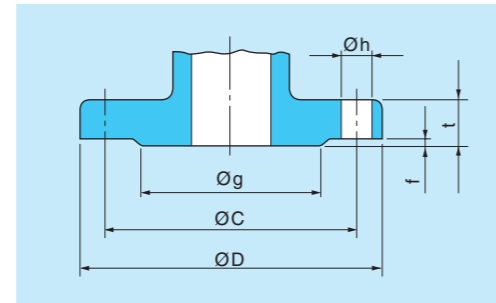
■ Table 1 Dimensions for JIS 20K Type Flange

(This table 1 is made from JIS B 2239(2004), Cast iron pipe flanges, Attached table 5 Dimensions of flanges for nominal pressure 20K for Hitachi Malleable/Ductile iron flanged valves.)



■ Table 2 Dimensions for 300 lb Type Flange

(ASME B 16.5 <1996> Dimension of Flange for Steel Tube)



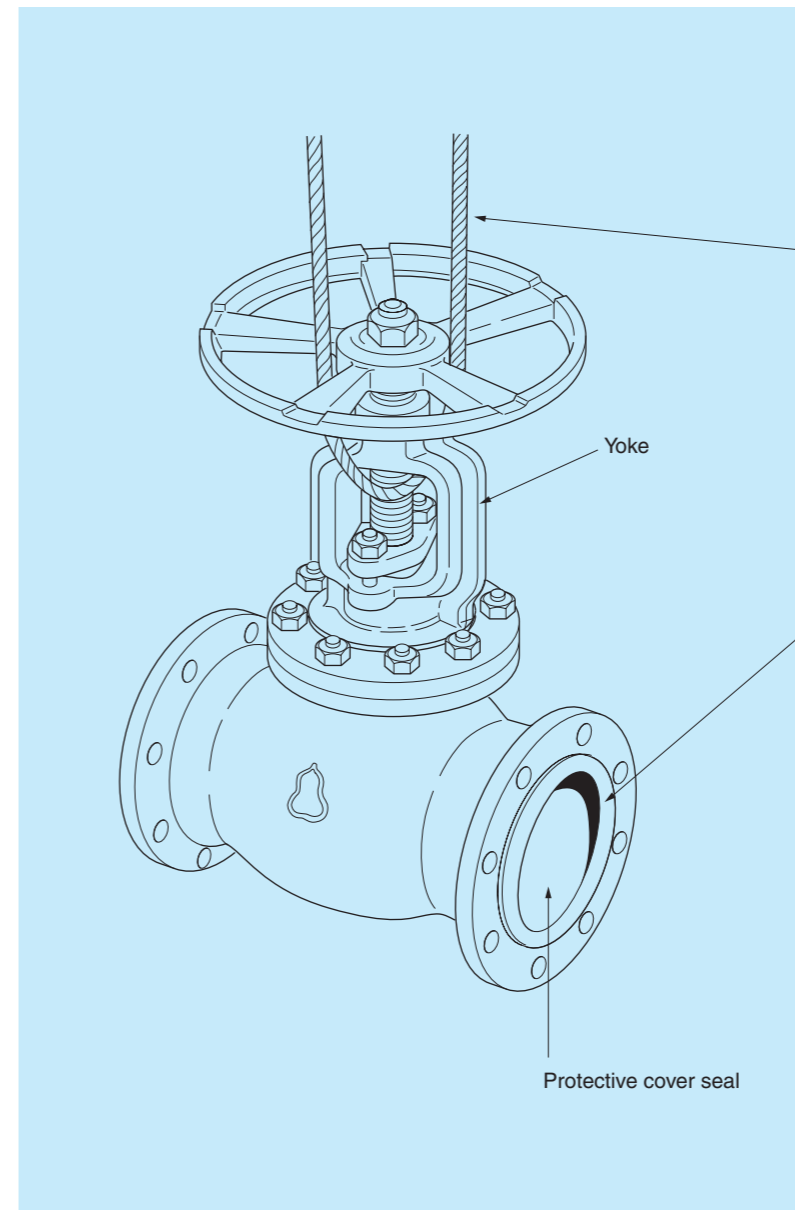
• Table 1 (Unit: mm)

(A) Nominal diameter	Diameter of applied tube	D	t	g	f	Bolt holes			Designation of bolt thread
						C	Number	h	
10	17.3	90	14	46	1	65	4	15	M12
15	21.7	95	14	51	1	70	4	15	M12
20	27.2	100	16	56	1	75	4	15	M12
25	34.0	125	16	67	1	90	4	19	M16
32	42.7	135	18	76	2	100	4	19	M16
40	48.6	140	18	81	2	105	4	19	M16
50	60.5	155	18	96	2	120	8	19	M16
65	76.3	175	20	116	2	140	8	19	M16
80	89.1	200	22	132	2	160	8	23	M20
100	114.3	225	24	160	2	185	8	23	M20
125	139.8	270	26	195	2	225	8	25	M22
150	165.2	305	28	230	2	260	12	25	M22
200	216.3	350	30	275	2	305	12	25	M22
250	267.4	430	34	345	2	380	12	27	M24
300	318.5	480	36	395	3	430	16	27	M24

• Table 2 (Unit: mm)

(A) Nominal diameter	D	t	g	f	Bolt holes			Designation of bolt thread
					C	Number	h	
1/2	95	14.3	35	1.6	66.5	4	16	1/2
3/4	117	15.9	43	1.6	82.5	4	19	5/8
1	124	17.5	51	1.6	89.0	4	19	5/8
1 1/4	133	19.1	64	1.6	98.5	4	19	5/8
1 1/2	156	20.7	73	1.6	114.5	4	22	3/4
2	165	22.3	92	1.6	127.0	8	19	5/8
2 1/2	190	25.4	105	1.6	149.0	8	22	3/4
3	210	28.6	127	1.6	168.0	8	22	3/4
4	254	31.8	157	1.6	200.0	8	22	3/4
5	279	35.0	186	1.6	235.0	8	22	3/4
6	318	36.6	216	1.6	270.0	12	22	3/4
8	381	41.3	270	1.6	330.0	12	25	7/8
10	444	47.7	324	1.6	387.5	16	29	1
12	521	50.8	381	1.6	451.0	16	32	1 1/8

1.Preparations

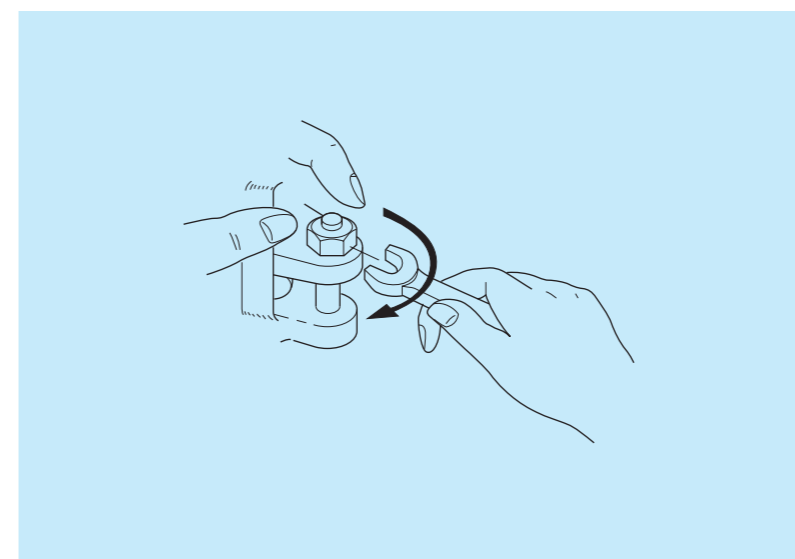


⚠ First, confirm that each valve fits the location where it is to be used. If an delivery specification has been exchanged with the vender, confirm that the specification and the valve match each other.

⊘ When handling a large-diameter valve, be sure to lift it by roping its body or yoke. do not rope the handwheel. Take care not to let the valve fall down and hit the handwheel by falling down, which will cause distortion of stem and result in difficulty of open /close operation.

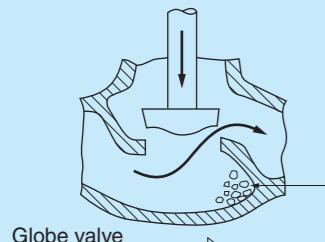
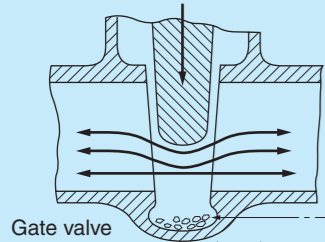
⚠ During storage keep the valve packed until it is unpacked for use. Take care that protective plugs or seals at both ends of the valve are removed only just before the valve is installed in place. Even for a short period, the valve should not be left outdoors; it must be stored indoors, free of moisture and dust.

*Remove stuffing fixing valve disc in a swing check valve before use.

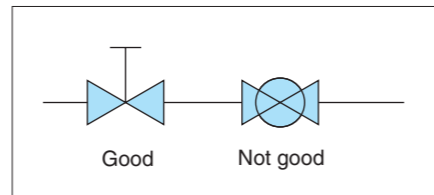


⚠ When the valve is unpacked, the only thing necessary to do before use is to refasten its packing and gasket. Do not disassemble the valve or change its parts.

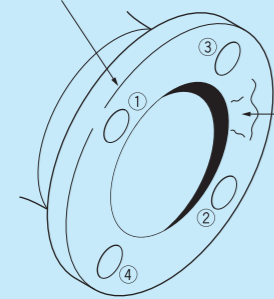
2. Installation



- ⚠ Make sure that all the welding spatter, pipe chips, scale, sand and other foreign matters are thoroughly removed from inside the piping, because they cause the valve seat to leak.
- ⚠ Any valve having an arrow mark on the body indicating the flow direction must be installed so that it matches with direction of flow. There is no specified direction in principle for gate valves and ball valves
- ⊘ In the case of screwed valve, take care not to apply too much sealant to the threads. The valve should always be screwed in by using a wrench on the two hexagonal ends of the valves body. do not screw the valve by using a wrench on the valve body or holding the handle. This will result in leaks or other faults.
- ⚠ When a gate valve is fitted to a horizontal piping, it must be installed vertically as shown below.



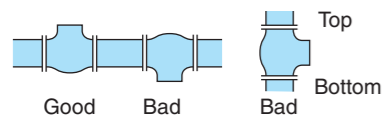
diagonary ①②③④ in turn.



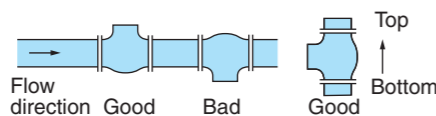
- ⚠ In the case of flanged valve, confirm that there are no harmful flaws on the gasket surfaces of valve and pipe flanges. If the gasket is to be coated with sealant, be careful not to apply too much, because an excessive coating may cause the valve seat to leak. While the valve is being installed, take care that flange are evenly fastened so that the gasket does not protrude into the port.

- ⊘ Installation postures are normally specified for check valves, strainers, etc. These valves should be installed as specified.

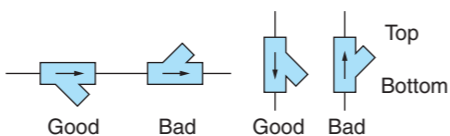
(A) Lift check valve,
Screw-down stop check valve
These valves should be installed vertically to a horizontal piping.



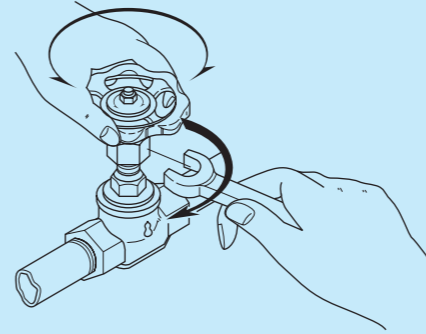
(B) Swing check valve
This valve can be used for either vertical or horizontal piping.



(C) Strainers
Typical piping installation



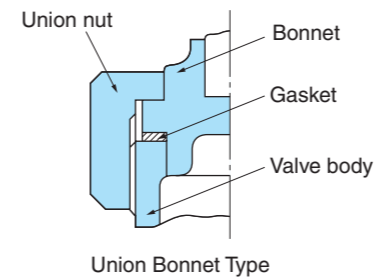
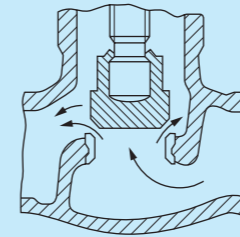
3. Prior to Operation



- ⚠ Gland packing in all valves except for 20K, 300lb globe valves for LPG must be retighten before fluids is passed through. Gland packings are tightened to an appropriate compression before valves are shipped from the factory, but it is unavoidable that the compression decreases slightly during period before use. This is why retightening is needed prior to operation. Merely tightening the stuffing box nuts does not necessarily tighten the packing. For effective tightening, tighten the nuts and rotate the handle to check fitness with the stem, and tighten the nuts once more while maintaining appropriate fitness with the stem. Repeat this until the packings are properly compressed.

- ⚠ Should leaks be found in the connection of the valve body and bonnet when fluid is passed, be sure to retighten the gasket. If left untightened, a path for the leaking fluid may be made and the leak cannot be stopped.

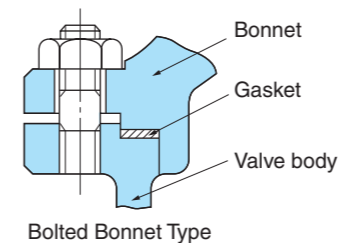
- ⚠ When fully closing the valve, take care not to tighten the handle at once forcefully. Fully close the valve lightly first, slightly open it and let foreign matters around seat be flushed away by the fluid, then tighten the handle. This will help to prevent leaks caused by the inclusion of foreign matters.



- ⚠ In the case of a union bonnet type, make sure that the union nut and the cover do not rotate together during retighten; this may cause the break of gasket. Tighten as smoothly as possible, and be careful not to tighten more than 1/8 rotation at a time.

- ⊘ Retighten while the valve is intermediate or full open. (Retightening while valve is full closed may result in damage of valve seat or other parts.)

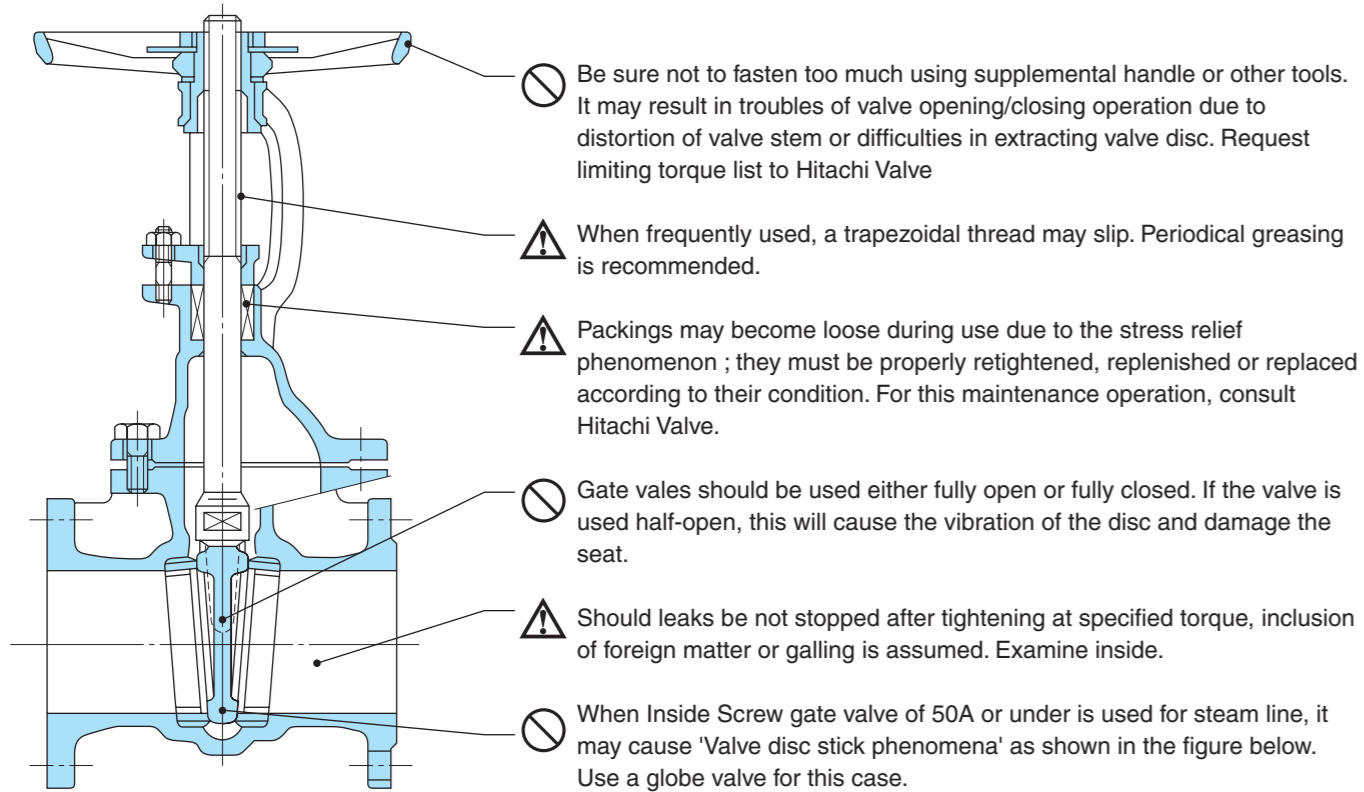
- ⚠ In the case of bolted bonnet type, be sure to tighten nuts evenly.



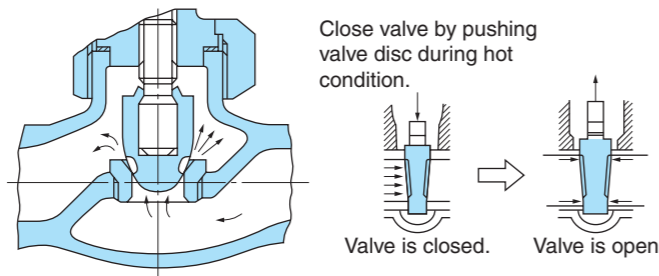
M20K Inside Screw Globe Valve Bonnet Nut Tightening Torque

Nominal diameter(A)	Torque
10	1,500kg•cm
15	2,000
20	2,500
25	3,000
32	4,000
40	6,000
50	7,500

4. Note for Operation

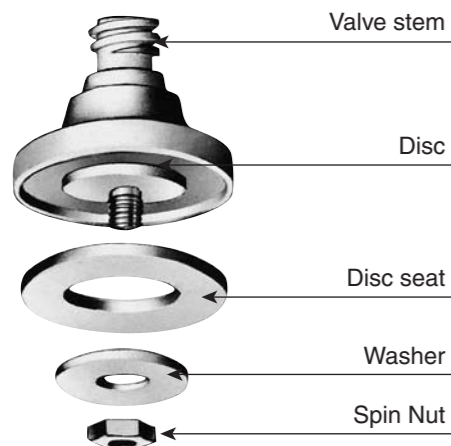


⚠ If globe and angle valves are used extremely throttled, high-speed fluid may hit the seat or body, resulting in mechanical erosion. If the application requires throttling, needle valves are recommended.



5. How to Replace Discs

Valve stem, Disc Holder, Disc, Washer, Spin Nut,



- ⚠ New disc seat are available at Hitachi Valve. Follow the undermentioned steps to replace disc seat:
1. Open the valve to eliminate internal fluid pressure inside the valve body completely and then disassemble it by applying a spanner at the hexagonal part of bonnet.
 2. Simple valve disc construction permits easy disc seat replacement. However, be sure not to damage the disc seat.
 3. Clean the body seat ring before assembling.
 4. Use liquid packing on the connecting thread of the bonnet.

6. Disassembling and Assembling of Ball Valve

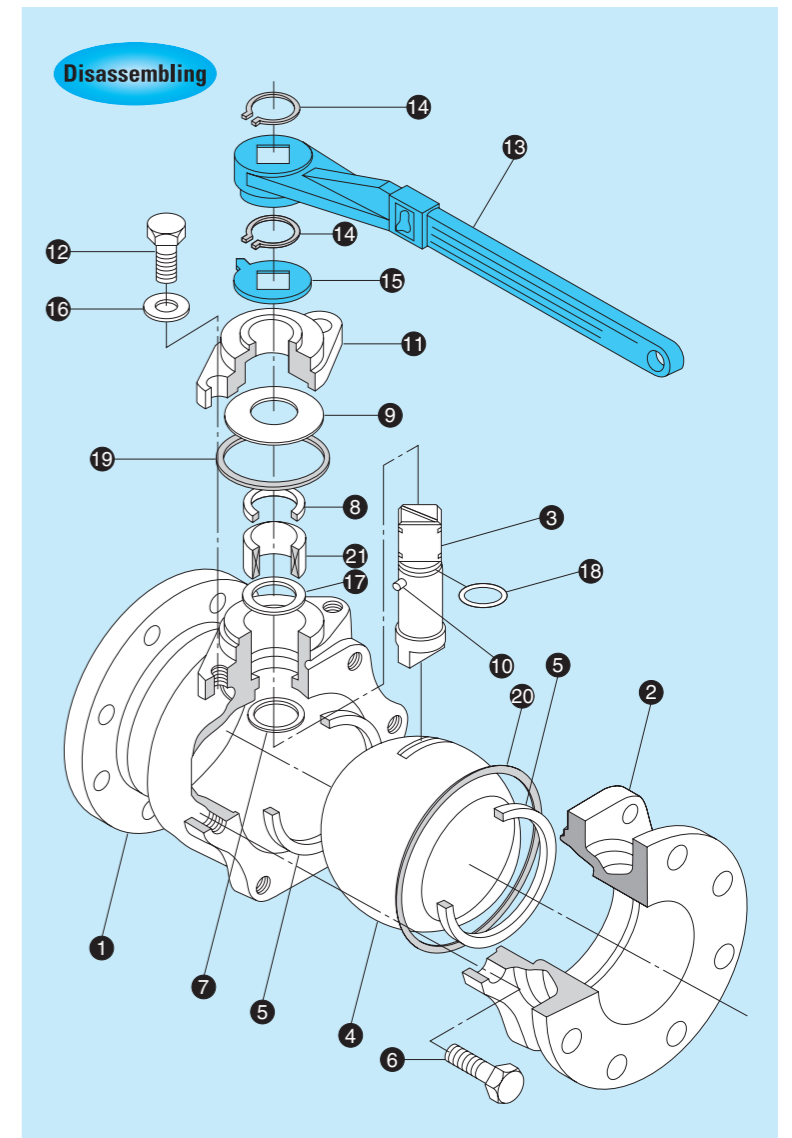
Disassembling

Be sure to confirm that there is no residual pressure in the valve before removing valve from the piping.

1. Fully open the valve.
2. Remove snap ring(14), handle(13), snap ring (14) and open/close indicator(15).
3. Remove bolt(6) and (12) and then disassemble valve body(1) and (2).
4. Take out ball(4) and remove packing clamp(11).
5. Remove pin(10), disc spring(9), gasket(19), upper packing ring(8).
6. Push stem(3) from the top and remove it.
7. Remove packing(21), lower packing ring(17) and ring(7).
8. Remove gasket(20) and seat ring(5).

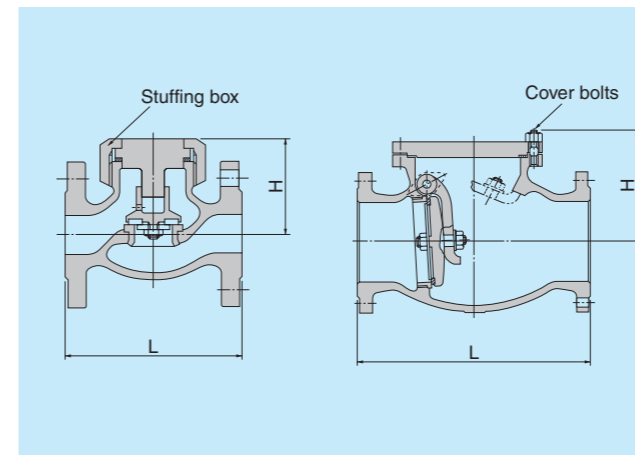
Assembling

1. Install seat ring on valve body.
2. Insert ring and O-ring(18) into stem, which is inserted upward inside the valve body.
3. Put the ball in the valve body, place gasket between valve bodies and fasten bolts temporarily.
4. Assemble lower packing ring, upper packing ring, disc spring, and then attach gasket(19) on the valve body.
5. Knock a pin into the stem and assemble packing into valve body using washer(16) and bolt(12).
6. Bolt the valve body tightly and then assemble open/close indicator snap ring, handle and snap ring.
7. Fully open the valve. Assembling is completed.



7. Check valve

Disassemble by loosening the stuffing box nut or cover bolts. After disassembling, check for mating part of guide, wear of hinge pin, deviation and galling of hinge pin by visual inspection.



8. Strainer

Take out screen by loosening cover bolts or cover directly. Check for clogging, break or deformation of screen. Replace it when any defect is found with a new one. Check mesh number of the screen to replace it.

