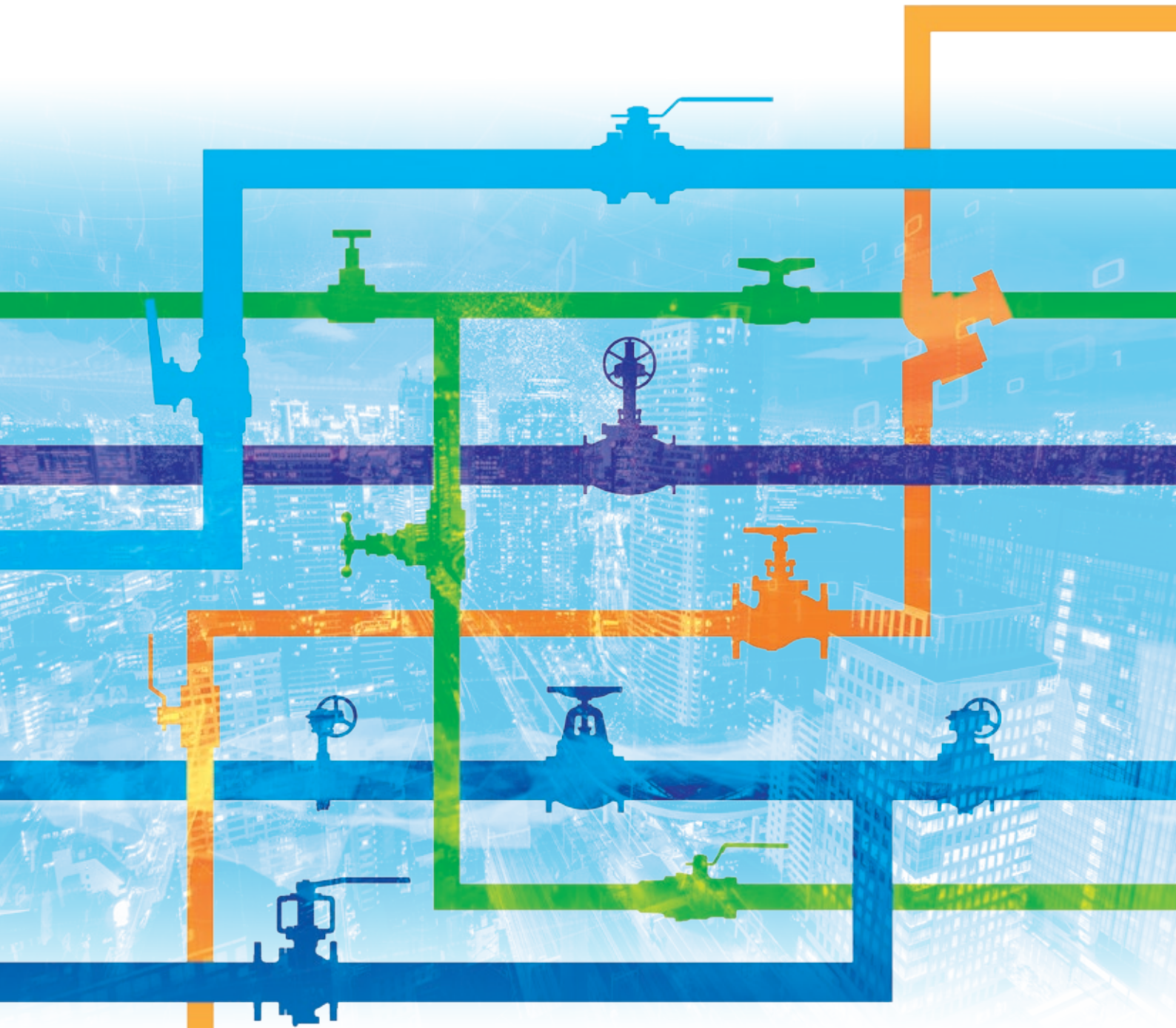
KITZ

GENERAL CATALOG



KITZ CORPORATION

GENERAL CATALOG

KITZ®

Contents

	Symbol	Products
Bronze & Brass	BR	General Valves, JIS, MSS, Ball Valves, Lead-free Valves, Fancoil Valves, Balancing Valves, Utility Valves
Compact SS/CS Valves & Miniature	CPT	SS General Valves (B/K Series), Steel Ball Floating Ball Valves, Miniature Valves
Cast Iron	CI	General Valves, JIS, MSS, Nylon Lining, Ball Valves
Ductile Iron	DI	General Valves, Ball Valves
Butterfly Valves	BFV	Aluminum, Ductile Iron, Stainless Steel (Concentric/Double/Triple Offset)
Steel Ball Valves	BAL	Stainless Steel, Carbon Steel (Floating, Trunnion)
Stainless Steel	SS	Stainless and High Alloy Steel Valves
Carbon Steel	CS	Carbon and Low Alloy Steel Valves
Technical Information	TECH	Allowable Port Information, Specification of Standard Strainer Screen, Unit Conversion Table, Temperature Pressure Table for Saturated Vapor etc

Abbreviation

- TE — Threaded
- FE/FF — Flat Face (Flanged End)
- RF — Raised Face (Flanged End)
- SE — Soldered
- BW — Butt Welding
- M&F — Male & Female
- G — Parallel Thread
- Rc — Taper Thread
- FB — Full Bore
- SB — Standard Bore
- RB — Reduced Bore
- NRS — Non Rising Stem
- RS — Rising Stem
- BB — Bolted Bonnet
- BC — Bolted Cap
- SB — Screwed Bonnet
- SOB — Screwed Over Bonnet
- SC — Screwed Cap
- UB — Union Bonnet
- IS — Inside Screw
- OS&Y — Outside Screw & Yoke
- SS — Stainless Steel
- CS — Carbon Steel
- F-to-F — Face to Face

- WRAS* — Water Regulations Advisory Scheme
- WSD* — Water Supplies Department (Hong Kong)
- NSF* — National Sanitation Foundation
- RoHS* — Restriction of Hazardous Substances Directive
- AS — Australian Standard
- JIS — Japanese Industrial Standards
- JWWA — Japan Water Works Association
- MSS* — Manufacturers Standardization Society of the Valve and Fittings
- CSA* — Canadian Standards Association
- UL* — Underwriters Laboratories
- FM* — Factory Mutation
- EAC* — EurAsian Conformity (TR CU" Technical Regulation Customs Union) (Armenia, Belarus, Kazakhstan, Kyrgyz, Russia)
- UKCA* — UK Conformity Assessment
- PER* — Pressure Equipment (Safety) Regulations
- UKCA (Ex)* — Potentially Explosive Atmospheres
- CE* — Communauté Européenne/Conformité Européenne
- PED* — Pressure Equipment Directive
- ATEX* — AtmospheresExplosibles/Potentially Explosive Atmospheres

Note: * Option

Guidance of Product Search WEB Page

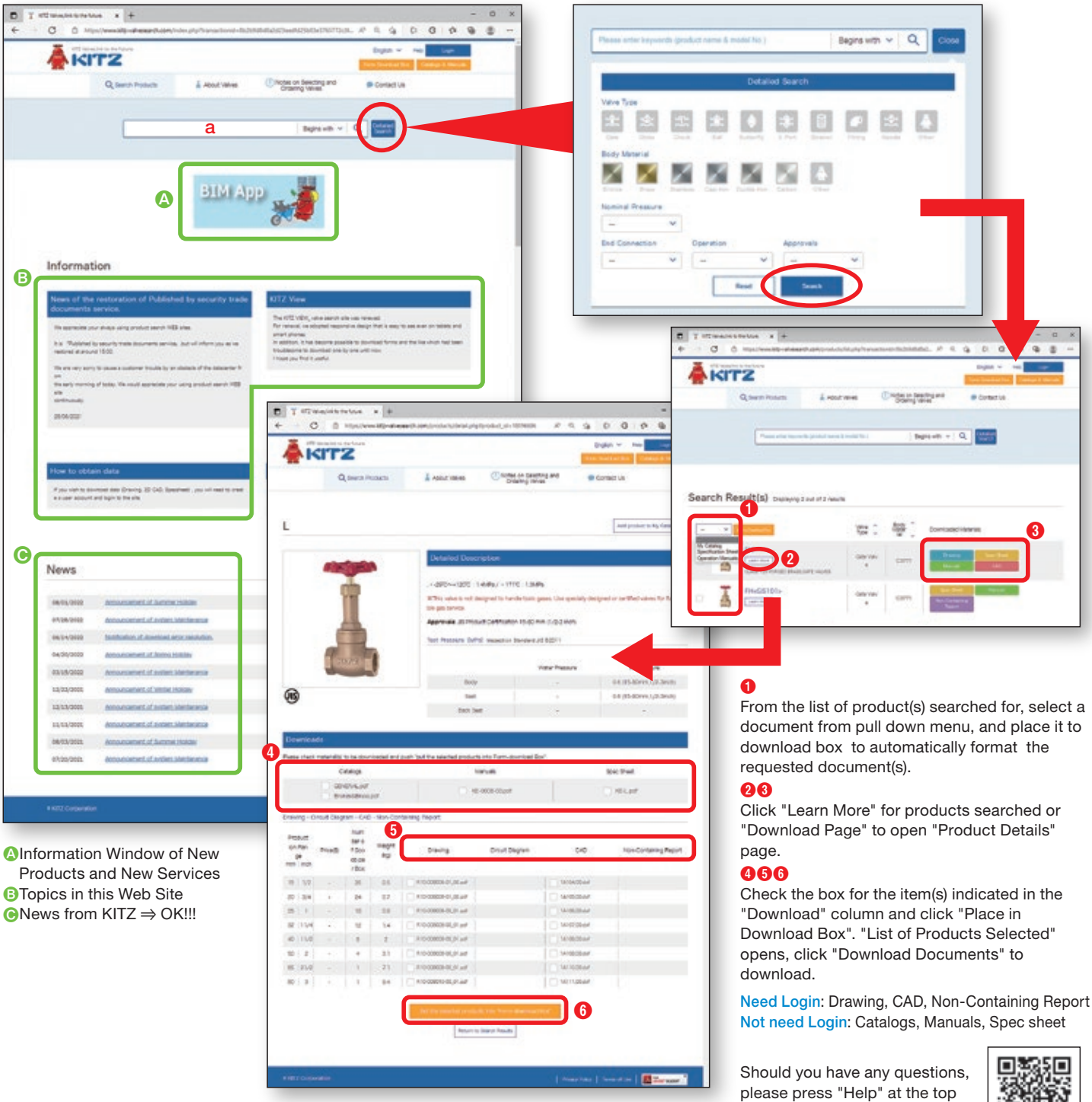
https://www.kitz-valvesearch.com/

Product Search

1) When searching from a Product Code, please enter a Product Code (in Half Size British Number) into a and click **Detailed Search** button.
2) When searching from Valve Type, please please select necessary information, such as Valve Type, Body Material etc and click **Search** button.

- Text Search is also available in fuzzy search. Possible to search by single criteria.
- Also, searching by Text Search and Item Selection is available.

Note: User registration is necessary to collect Drawing, CAD (DXF) and Non-Containing Report.



A Information Window of New Products and New Services
B Topics in this Web Site
C News from KITZ ⇒ OK!!!

❶ From the list of product(s) searched for, select a document from pull down menu, and place it to download box to automatically format the requested document(s).

❷❸ Click "Learn More" for products searched or "Download Page" to open "Product Details" page.

❹❺❻ Check the box for the item(s) indicated in the "Download" column and click "Place in Download Box". "List of Products Selected" opens, click "Download Documents" to download.

Need Login: Drawing, CAD, Non-Containing Report
Not need Login: Catalogs, Manuals, Spec sheet

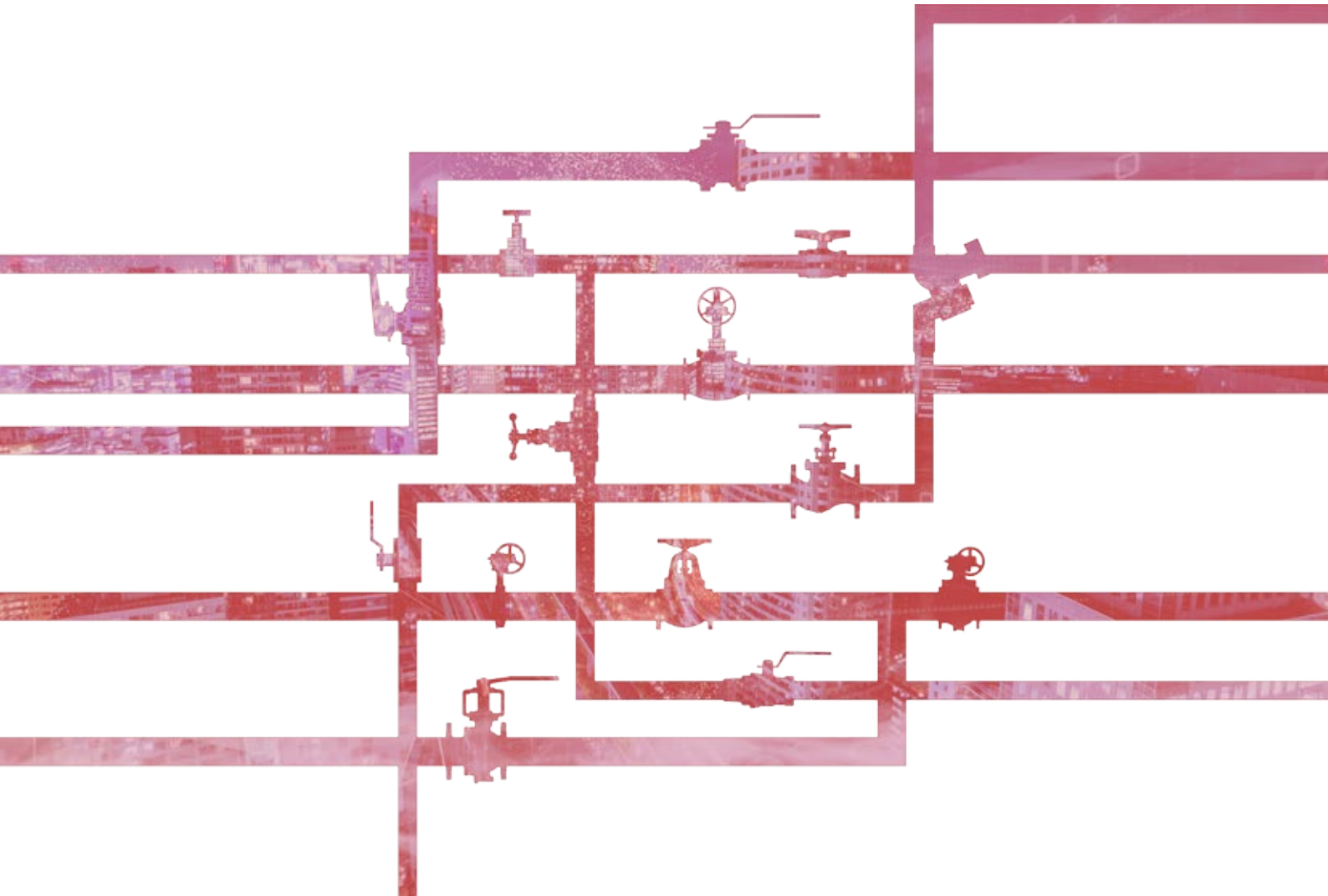
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MEMO

KITZ

GENERAL CATALOG

Bronze & Brass



INDEX

Title	Body Material	Type	Class	End Connection	Features	Fig			Page
KITZ Standard Gate, Globe, Check, Angle, & Butterfly Valves, Y-Stariners	Bronze	Globe	100	TE		A	AKA		BR5 8
			EN PN16			PN16A			
			EN PN25			PN25A			
			100		Soft Seated (Rubber or PTFE)	Q	QA		
			150			C	AKC		
					Angle Type	CA	AKCA		BR6 9
				FE/FF		B	BH		
			125	TE	Soft Seated (G/F PTFE)	G	AKG		
			150			D			
				FE/FF		DB			
						DBH			
	Brass	Gate	125	TE,SE	NRS	FR	AKFS	CFS	BR7 10
						FH	AKFH	CFH	
			EN PN16	TE		PN16FH			
	Special Brass		PN16 (AS1628)			AS-FH			BR8 11
	Bronze		125	TE,SE		H	AKH	CH	
				TE		S			
			EN PN16			PN16S			
			EN PN25			PN25S			
			150			E			
				FE/FF		AKE			
						EB	EBH		BR9 12
		Check	150	TE	Lift	F	AKF		
			125	TE,SE	Swing	R	AKR		
			EN PN16	TE		PN16R			
			EN PN25			PN25R			BR10 13
			125	TE,SE	Y-type Swing	YR			
			150		Lift, Soft Seated (NBR or FKM), With Spring	RF	AKAF	CAF	
			5K	TE	Lift	VF			
			-		Lift (Foot)	FT&FTS			
			10K	Wafer	Dual Plate, Water Hammer Prevention, Bypass Valve Mounted	10BWZ			BR11 14
		Strainer	150	TE,SE		Y	AKY	CY	
			EN PN16			PN16YE			
			EN PN25			PN25YE			
	Brass	Butterfly	175	TE	NBR Lined Disc, Balancing Stop Handle Lever	FV			
JIS Standard Gate, Globe & Check Valves	Bronze	Globe	5K	TE		K			BR12 15
			10K			J			
				FE/FF		JB			
		Gate	5K	TE	RS	M			
			10K			L			
				FE/FF		LB			
		Check	10K	TE	Swing	O			
				FE/FF		OB			
MSS SP-80 Gate, Globe & Check Valves	Bronze	Gate	125	TE	RS	AK125M			BR13 16
					NRS	AK125E			
			150			AK150E			
				TE,SE	RS	AK150L	C150L		
				TE		AK150LU			
			300			AK300LU			
		Globe	125	TE,SE		AK125C			
			150	TE	Soft Seated (G/F PTFE)	AK150D	C150D		BR14 17
			300			AK300J			
					Soft Seated (G/F PTFE)	AK300D			
		Check	125	TE,SE	Y-type Swing	AKYR	CYR		
			150	TE		AK150YR			
			300			AK300YR			
Ball Valves	Brass	Ball	600	M & F	FB	ZO			BR15 18
			400	TE	SB, For Steam Service	ZS			
			600		FB, Compact Series	ZET			
					FB	SZA			
			EN PN40			(WR)PN40SZA			
			600	SE		AKSZA			
				TE		CSZA			
				SE		AKSZAW			
						CSZAW			BR16 19
			400	TE	SB	T	AKT	TT	
					SB, For Gas Service	TG			
				M & F	SB	TO			BR17 20
				TE	SB, 2pc Split Type	TM			
			600		RB	TK	AKTK		
						TKT			
					RB, Wing Handle	TKW			
			150		FB, Locking Device	TFJ			
						TL			
	Bronze		400	TE,SE	SB, Long Neck Type for Thermal Insulation	TLT			BR18 21
			10K	FE/FF	FB, 2pc Split Type	TB			
	Brass		600	TE,SE	FB, Swing Away 3pc Body, Mounting Pad	AK3TM			
		3 Way Ball	400	TE	SB, 3-Way, 2-Seat	TN			
						AKTN			
					SB, Mounting Pad, 3-Way, 2-Seat	AKTNP			
	Bronze				SB, 3-Way, 4-Seat	T4T	T4L		
					SB, Vertical Type, 3-Way, 2-Seat	TV2T	TV2L		
	Brass	Ball	600	TE	FB, Gland Packing	AKTAFLL			BR19 22
				SE		CTAF			
				TE	FB, Double O-ring	AKTFLL			
				SE		CTFLL			
				TE	FB, Gland Packing, 316 Stem & Ball	AKTAFM			
				SE		CTAFM			
				TE	FB, Double O-ring, 316 Stem & Ball	AKTFMLL			
				SE		CTFMLL			
				TE	FB, Gland Packing, Mounting Pad	AKTAFP			BR20 23
					FB, Gland Packing, 316 Stem & Ball	AKTAFPM			
				M & F	FB, Gland Packing	AKTAFO			
				TE	FB, Gland Packing, Single Union	AKTAFU			
			200		FB, Gland Packing, Safety Exhaust	AKTAFS			

Title	Body Material	Type	Class	End Connection	Features	Fig	Page
Lead Free Valves	Bronze (Lead Free)	Globe	125	TE	G/F PTFE	GN	BR21 24
		Gate	125		NRS	HN	
			10K		NRS, Buried Type	WN	
		Check	125	TE,SE	Swing	RN CRN	
			10K	TE	Lift (Soft,Spring)	RFN	
				Wafer	Wafer	10BWZN	
		Globe	10K	TE		JN	
		Gate	5K	TE,SE	RS	MN CMN	BR22 25
			10K			LN CLN	
		Check	10K	TE	Swing	ON	
		Strainer	10K	TE,SE		YNK CYNK	
		Ball	400		SB, Long Neck Type for Thermal Insulation	TLN TLNT CTLN	BR23 26
				TE	FB, Long Neck Type for Thermal Insulation	TLNF TLNFT	
	Brass (Lead Free)	Gate	125	TE,SE	NRS	AKFSN	BR24 27
	Bronze (Lead Free)					AKHN CHN	
		Check	125		Swing	AKRN CRN	
					Y-type Swing	AKYRN CYRN	
						AKYRNT	
						CYRNT	BR25 28
			150		Lift (Soft,Spring)	AKAFN CAFN	
		Globe	125			AK125CN C125CN	
	Brass (Lead Free)	Ball	600		FB	AKTAFN CTAFN	BR26 29
						AKTAFMN CTAFMN	
						AKTFMNLL CTFMNLL	
						AK3TMN C3TMN	
						AK3TMMN C3TMMN	BR27 30
						AKSZAN CSZAN	
						AKSZANW CSZANW PCTAFMN	
			400		3-Way	AKTNN	
						CTNN	
Fancoil Valves	Bronze	Ball	10K	TE	RB, Detachable Long Handle	RTRM	BR28 31
				M (G) & F		RTRO	
				M & F		RTRR	
				TE	RB, Detachable Long Handle, Single Union	RTRU	
					FB, Detachable Long Handle	RTFM	BR29 32
				M (G) & F		RTFO	
				TE	FB, Detachable Long Handle, Single Union	RTFU	
					FB, Long Neck Type for Thermal Insulation	TLF	
					FB, Long Neck Type for Thermal Insulation	TLFT	
		Globe	200	M & F		NSH	
					With Indicator	INAH	
						INSH	
Balancing Valves	Bronze	Balancing	10K	TE (F x Union nipple)	Constant Flow Control, with Built-in Screen	BS15- BS20-	BR30 33
					Constant Flow Control, Low Noise Type	BSS15- BSS20- BSS25-	
		Ball	10K		Constant Flow Control, Detachable Handle	RTUC	
Utility Ball Valves	Brass	Ball	10K	M (Rc x G)	Back flow prevention by automatic closing of spring-loaded built-in check valve (Water Hammer Proof), Detachable 2-way Handle (Short ' Long), Straight Type	S23N-	
	Brass (Ni-Cr Plated Body)					S24N-	
						S24N-3/4X	
				TE		S25N-	
				TE (F x Union nut)		S26N-	BR31 34
						S27N-	
				M (G) x F (Rc)		S28N-	
						S28N-3/4X	
					Ditto, but Angle Type	S38A-	
	Brass			M (Rc x G)	Straight Type	S1-	
	Brass (Ni-Cr Plated Body)					S2-	
					Angle Type	S5-	
	Brass			M x F	Straight Type	S6-	BR32 35
	Brass (Ni-Cr Pl)			M (Rc x G)		S8-	

* (Abbreviation) TE: Threaded Ends, FE: Flanged Ends, RF: Raised Face Ends,
SB: Screwed Bonnet, NRS: Non Rising Stem, RS: Rising Stem, FB: Full Bore, RB: Reduced Bore

⚠ CAUTION	The valves introduced in this catalog are not designed to handle toixic gases. Use specially designed or certified valves for flammable gas service.

PRODUCT CODING

BC/BS Valves Except Fancoil/Balancing/Utility

(Note: Some products do not follow this coding system)

AK ❶ **125** ❷ **C** ❸ **N** ❹

❶ End Connection

- **None** ····· Threaded Ends (BS21/JIS B0203)
  Flanged Ends
- **AK** ····· Threaded Ends (ASME B1.20.1)
- **C** ····· Solder Ends

❷ Pressure Class

- **None** ····· KITZ Std., JIS, Ball Valve
- **10** ····· 10K (Wafer Check Only)
- **125** ····· MSS SP-70 Class 125
- **150** ····· MSS SP-70 Class 150
- **300** ····· MSS SP-70 Class 300
- **PN16** ····· PN Rating
- **PN25** ····· PN Rating

❸ Valve Type

- **A,Q/QA,C,CA,B/BH,G,D,DB/DBH,K,J,JB** ····· Globe
- **FR/FS/FH,H,S,E,EB/EBH,LU,M,L,LB** ····· Gate
- **F** ····· Check (Lift)
- **R,O,OB** ····· Check (Swing)
- **YR** ····· Check (Y Swing)
- **RF,AF,VF** ····· Check (In-line Lift)
- **BWZ** ····· Check (Wafer)
- **Zxx,ZExx,SZxx,Txx,3Txx** ····· Ball
- **Y,YU,YE** ····· Strainer

❹ Lead Free Valves

- **N** ····· Lead Free

Fancoil (Ball)

RT ❶ **R** ❷ **M** ❸

❶ Design

- **RT** ····· Detachable T Type Long Handle
- **TL** ····· Long Neck

❷ Bore Type

- **R** ····· Reduced Bore
- **F** ····· Full Bore

❸ Connection or Handle* Type

- **M** ····· F x F (Taper)
- **O** ····· F (Taper) x M (Parallel)
- **U** ····· F (Taper) x Union Nipple (M (Parallel))
- **T*** ····· Reinforced Nylon Handle

*None 403SS Lever

Fancoil (Globe)

I ❶ **NAH** ❷

❶ Indicator

- **None** ····· Without
- **I** ····· With

❷ Type

- **NAH** ····· Angle Type
- **NSH** ····· Straight Type

Balancing Valves

BS 15 - 5
① ② ③

① Type

BS ····· With Built-in Screen
BSS ····· Low Noise Type
RTUC ····· Constant Flow Control

② Nominal

15, 20, 25 (mm)

③ Predetermined Flow Rate

3 ～ 40 (L/min)

Predetermined Flow Rates and Product Coding for Balancing Valves and Balancers "SADAMARU"

Predetermined Flow Rate

Product Code: BS [Controllable Flow Rate ±10%] (L/min)

Normal Size (mm)	3	4	5	6	7.5	8	10	12	12.5	15	16	17.5	20	25	30	35	40
15	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
25	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		

Product Code: BSS [Controllable Flow Rate ±10%] (L/min)

Normal Size (mm)	3	4	5	6	7.5	8	10	12	12.5	15	16	17.5	20	25	30	35	40
15	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
20	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
25	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Product Code: RTUC [Controllable Flow Rate ±15%, ±20% (5 L/min only)] (L/min)

Normal Size (mm)	3	4	5	6	7.5	8	10	12	12.5	15	16	17.5	20	25	30	35	40
15			●	●	●		●		●	●		●	●				
20			●	●	●		●		●	●		●	●	●	●		
25														●	●		

Note: Flow rates marked with ● are available.

Utility Ball Valves

S 24 N - 3/4X
① ② ③ ④

① Series

S ····· S Ball & Orange Ball

② Design & Connection

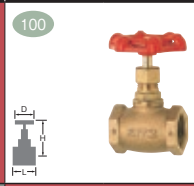
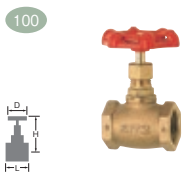
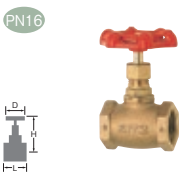
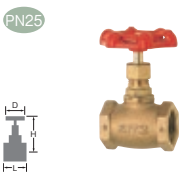
1 ····· Straight, Brass Body, M (T) x M (P)
2 ····· Straight, Cr. Plating Body, M (T) x M (P)
5 ····· Angle, Cr. Plating Body, M (T) x M (P)
6 ····· Straight, Brass Body, M (T) x F (T)
8 ····· Straight, Cr. Plating Body, M (T) x M (P)
23 ····· Straight, Brass Body, M (T) x M (P)
24 ····· Straight, Cr. Plating Body, M (T) x M (P)
25 ····· Straight, Cr. Plating Body, F (T) x F (F)
26 ····· Straight, Cr. Plating Body, M (T) x Union Nut F (P)
27 ····· Straight, Cr. Plating Body, F (T) x Union Nut F (P)
28 ····· Straight, Cr. Plating Body, F (T) x M (P)
38 ····· Angle, Cr. Plating Body, F (T) x M (P)

③ Type

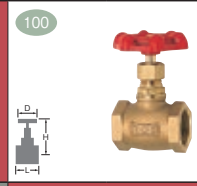
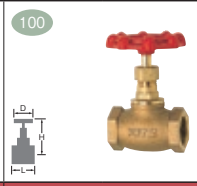
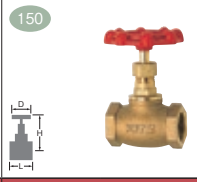
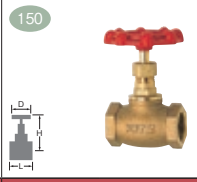
N ····· Straight
A ····· Angle

④ Type

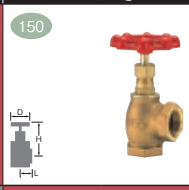
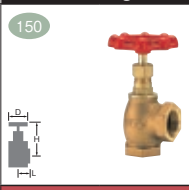
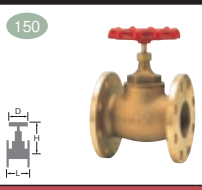
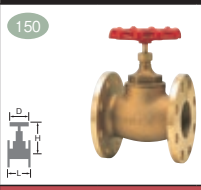
3/4X ····· 3/4x1/2

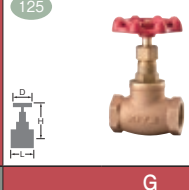
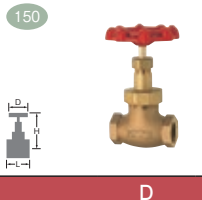
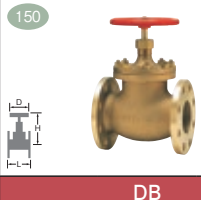
Type		Globe			Globe			Globe			Globe		
Bronze & Brass KITZ Standard													
Fig		A			AKA			PN16A			PN25A		
End Connection		*BS21 (JIS B0203)			*ASME B1.20.1			*BS21 (JIS B0203)			*BS21 (JIS B0203)		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/4	8	40	66	50	40	66	50						
3/8	10	42	67	50	42	67	50						
1/2	15	48	69	55	48	69	55	48	69	55	48	69	55
3/4	20	53	80	60	53	80	60	53	80	60	53	80	60
1	25	63	94	70	63	94	70	63	94	70	63	94	70
11/4	32	73	104	80	73	104	80	73	104	80	73	104	80
11/2	40	81	127	90	81	127	90	81	127	90	81	127	90
2	50	94	147	100	94	147	100	94	147	100	94	147	100
21/2	65	115	179	115	115	179	115						
3	80	131	200	135	131	200	135						
4	100	171	250	180	171	250	180						
Body		Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze		
Bonnet		Forged Brass/Cast Bronze			Forged Brass/Cast Bronze			Forged Brass/Cast Bronze			Forged Brass/Cast Bronze		
Stem		Dezincification Resistant Brass			Dezincification Resistant Brass			Dezincification Resistant Brass			Dezincification Resistant Brass		
Disc		Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze		
Gland Packing		Aramid Fibers Graphite			Aramid Fibers Graphite			Aramid Fibers Graphite			Aramid Fibers Graphite		
Hand Wheel		Alminum Die-Cast/CI			Alminum Die-Cast/CI			Alminum Die-Cast/CI			Alminum Die-Cast/CI		
Standard/Approval								WSD: PN16A<ZH1W2>					
Service Conditions		W.O.G. Non-shock 1.03MPa(150psi), Saturated Steam Pressure 0.7MPa(100psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 1.03MPa(150psi), Saturated Steam Pressure 0.7MPa(100psi) (Do not use for flammable gas or toxic gas.)			16 bar at 100℃, 7 bar at 170℃ (Do not use for flammable gas or toxic gas.)			25 bar at 100℃, 10.5 bar at 186℃ (Do not use for flammable gas or toxic gas.)		
Reference Page								P-T Rating : Page BR39			P-T Rating : Page BR39		
Remarks		EAC: Option			EAC: Option			WSD: Option					

*The length of useful threads & the positions of gauge planes are built on KITZ standard.

Type		Globe			Globe			Globe			Globe		
Bronze & Brass KITZ Standard													
Fig		Q			QA			C			AKC		
End Connection		*BS21 (JIS B0203)			*BS21 (JIS B0203)			BS21 (JIS B0203)			ASME B1.20.1		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/4	8							44	66	50	44	66	50
3/8	10							44	68	50	44	68	50
1/2	15	44	70	50	44	70	50	53	79	60	53	79	60
3/4	20	50	73	55	50	73	55	65	93	70	65	93	70
1	25	63	86	60	63	86	60	77	104	80	77	104	80
11/4	32				73	108	80	85	127	90	85	127	90
11/2	40				81	132	90	100	145	100	100	145	100
2	50				94	150	100	119	174	115	119	174	115
21/2	65							139	199	135	139	199	135
3	80							158	215	155	158	215	155
Body		Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze		
Bonnet		Forged Brass/Cast Bronze			Forged Brass/Cast Bronze			Forged Brass/Cast Bronze			Forged Brass/Cast Bronze		
Stem		Dezincification Resistant Brass			Dezincification Resistant Brass			Dezincification Resistant Brass			Dezincification Resistant Brass		
Disc		Uretan Rubber			PTFE			Cast Bronze			Cast Bronze		
Gland Packing		Aramid Fibers Graphite			Aramid Fibers Graphite			Aramid Fibers Graphite			Aramid Fibers Graphite		
Hand Wheel		Alminum Die-Cast/ZDC			Alminum Die-Cast/ZDC			Alminum Die-Cast			Alminum Die-Cast		
Standard/Approval								RoHS: C<GS101> up to 1[B]					
Service Conditions		W.O.G. Non-shock 0.78MPa(125psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 0.78MPa(125psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 2.07MPa(300psi), Saturated Steam Pressure 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 2.07MPa(300psi), Saturated Steam Pressure 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)		
Remarks		For Water/Hot Water EAC: Option			For Oil Tank EAC: Option			RoHS: Option EAC: Option			EAC: Option		

*The length of useful threads & the positions of gauge planes are built on KITZ standard.

Type		Angle Globe			Angle Globe			Globe			Globe		
Bronze & Brass KITZ Standard		150 SB IS  EAC			150 SB IS  EAC			150 SB IS  EAC			150 SB IS  EAC		
Fig		CA			AKCA			B			BH		
End Connection		BS21 (JIS B0203)			ASME B1.20.1			JIS B2240			JIS B2240		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/4	8	21	66	50	21	66	50						
3/8	10	24	68	50	24	68	50						
1/2	15	28	79	60	28	79	60	83	79	60	83	79	60
3/4	20	34	93	70	34	93	70	88	94	70	88	94	70
1	25	40	104	80	40	104	80	100	105	80	100	105	80
11/4	32	47	127	90	47	127	90	113	127	90	113	127	90
11/2	40	52	145	100	52	145	100	120	145	100	120	145	100
2	50	61	174	115	61	174	115	145	174	115	145	174	115
21/2	65	74	199	135	74	199	135	165	198	135	165	198	135
3	80	85	215	155	85	215	155	177	215	155	177	215	155
4	100							220	250	180	220	250	180
Body		Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze		
Bonnet		Forged Brass/Cast Bronze			Forged Brass/Cast Bronze			Forged Brass/Cast Bronze			Forged Brass/Cast Bronze		
Stem		Dezincification Resistant Brass			Dezincification Resistant Brass			Dezincification Resistant Brass			Dezincification Resistant Brass		
Disc		Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze		
Gland Packing		Aramid Fibers Graphite			Aramid Fibers Graphite			Aramid Fibers Graphite			Aramid Fibers Graphite		
Hand Wheel		Alminum Die-Cast/ZDC			Alminum Die-Cast/ZDC			Alminum Die-Cast/ZDC/DI			Alminum Die-Cast/ZDC/DI		
Service Conditions		W.O.G. Non-shock 2.07MPa(300psi), Saturated Steam Pressure 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 2.07MPa(300psi), Saturated Steam Pressure 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 2.07MPa(300psi), Saturated Steam Pressure 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 2.07MPa(300psi), Saturated Steam Pressure 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)		
Remarks		EAC: Option			EAC: Option			Flanged Ends Undrilled EAC: Option			Flanged end dirilled according to JIS 10K. EAC: Option		

Type		Globe			Globe			Globe			Globe		
Bronze & Brass KITZ Standard		125 UB IS  EAC			125 UB IS  EAC			150 UB IS  EAC			150 UB/BB IS  EAC		
Fig		G			AKG			D			DB		
End Connection		BS21 (JIS B0203)			ASME B1.20.1			BS21 (JIS B0203)			JIS B2240		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/4	8	47	68	50	47	68	50						
3/8	10	53	87	55	53	87	55						
1/2	15	57	87	60	57	87	60	64	113	60	82	113	60
3/4	20	66	102	70	66	102	70	78	138	90	95	138	90
1	25	76	113	80	76	113	80	90	156	100	108	156	100
11/4	32	88	138	90	88	138	90	105	184	115	120	184	115
11/2	40	100	154	100	100	154	100	120	187	115	140	187	115
2	50	120	183	115	120	183	115	145	212	135	165	212	135
21/2	65	147	210	135	147	210	135				190	244	155
3	80	162	229	155	162	229	155				220	281	180
4	100										270	321	225
Body		Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze		
Bonnet		Forged Brass/Cast Bronze			Forged Brass/Cast Bronze			Forged Brass/Cast Bronze			Forged Brass/Cast Bronze		
Stem		Dezincification Resistant Brass			Dezincification Resistant Brass			Dezincification Resistant Brass			Dezincification Resistant Brass		
Disc		G/F PTFE			G/F PTFE			G/F PTFE			G/F PTFE		
Gland Packing		Aramid Fibers Graphite			Aramid Fibers Graphite			Aramid Fibers Graphite			Aramid Fibers Graphite/PTFE		
Hand Wheel		Alminum Die-Cast			Alminum Die-Cast			Alminum Die-Cast			Alminum Die-Cast/ZDC/DI		
Service Conditions		W.O.G. Non-shock 1.38MPa(200psi), Saturated Steam Pressure 0.86MPa(125psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 1.38MPa(200psi), Saturated Steam Pressure 0.86MPa(125psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 2.07MPa(300psi), Saturated Steam Pressure 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 1.55MPa(225psi), Saturated Steam Pressure 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)		
Remarks		EAC: Option			EAC: Option			EAC: Option			Flanged Ends Undrilled EAC: Option		

Type		Globe			Gate			Gate			Gate		
Bronze & Brass KITZ Standard		150 UB/BB IS EAC			125 SB IS NRS EAC			125 SB IS NRS			125 SB IS NRS		
Fig		DBH			FR			AKFS			CFS		
End Connection		JIS B2240			*BS21 (JIS B0203)			*ASME B1.20.1			**ASME B16.18		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
3/8	10				38	73	50	38	73	50			
1/2	15	82	113	60	42	73	50	42	73	50	45	75	50
3/4	20	95	138	90	47	87	55	47	87	55	60	86	55
1	25	108	156	100	50	97	60	50	97	60	70	97	60
11/4	32	120	184	115	60	118	70	60	118	70	77	117	70
11/2	40	140	187	115	63	126	80	63	126	80	86	126	80
2	50	165	212	135	72	154	90	72	154	90	104	154	90
21/2	65	190	244	155				80	167	100			
3	80	220	281	180				90	200	115			
4	100	270	321	225									
Body		Cast Bronze			Forged Brass			Forged Brass			Forged Brass		
Bonnet		Forged Brass/Cast Bronze			Forged Brass			Forged Brass			Forged Brass		
Stem		Dezincification Resistant Brass			Dezincification Resistant Brass			Dezincification Resistant Brass			Dezincification Resistant Brass		
Disc		G/F PTFE			Forged Brass			Forged Brass			Forged Brass		
Gland Packing		Aramid Fibers Graphite/PTFE			Aramid Fibers Graphite			Aramid Fibers Graphite			Aramid Fibers Graphite		
Hand Wheel		Alminum Die-Cast/ZDC/DI			Alminum Die-Cast			Alminum Die-Cast			Alminum Die-Cast		
Service Conditions		W.O.G. Non-shock 1.55MPa(225psi), Saturated Steam Pressure 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 1.38MPa(200psi), Saturated Steam Pressure 0.86MPa(125psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 1.38MPa(200psi), Saturated Steam Pressure 0.86MPa(125psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 1.38MPa(200psi), Saturated Steam Pressure 0.86MPa(125psi) (Do not use for flammable gas or toxic gas.)		
Reference Page											P-T Rating : Page BR34		
Remarks		Flanged end dirilled according to JIS 10K. EAC: Option			EAC: Option								

*The length of useful threads & the positions of gauge planes are built on KITZ standard.
**Solder jointed end valves should not be used in service where the temperature of line fluid is higher than the softening point of the solder.

Type		Gate			Gate			Gate			Gate		
Bronze & Brass KITZ Standard		125 SB IS NRS EAC RoHS			125 SB IS NRS EAC			125 SB IS NRS			PN16 SB IS NRS		
Fig		FH			AKFH			CFH			PN16FH		
End Connection		*BS21 (JIS B0203)			*ASME B1.20.1			**ASME B16.18			*BS21 (JIS B0203)		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/4	8	35	70	50	35	70	50				35	70	50
3/8	10	38	73	50	38	73	50	37	77	50	38	73	50
1/2	15	42	73	50	42	73	50	45	77	50	42	73	50
3/4	20	47	87	55	47	87	55	60	87	55	47	87	55
1	25	50	97	60	50	97	60	70	97	60	50	97	60
11/4	32	60	118	70	60	118	70	77	118	70	60	118	70
11/2	40	63	126	80	63	126	80	86	126	80	63	126	80
2	50	72	154	90	72	154	90	104	154	90	72	154	90
21/2	65	82	187	100	82	187	100	115	187	100			
3	80	92	205	115	92	205	115	127	205	115			
Body		Forged Brass			Forged Brass			Forged Brass			Forged Brass		
Bonnet		Forged Brass/Cast Bronze			Forged Brass/Cast Bronze			Forged Brass/Cast Bronze			Forged Brass/Cast Bronze		
Stem		Dezincification Resistant Brass			Dezincification Resistant Brass			Dezincification Resistant Brass			Dezincification Resistant Brass		
Disc		Forged Brass			Forged Brass			Forged Brass			Forged Brass		
Gland Packing		Aramid Fibers Graphite			Aramid Fibers Graphite			Aramid Fibers Graphite			Aramid Fibers Graphite		
Hand Wheel		Alminum Die-Cast			Alminum Die-Cast			Alminum Die-Cast			Alminum Die-Cast		
Standard/Approval		RoHS: FH<GS101> up to 1[B]											
Service Conditions		W.O.G. Non-shock 1.38MPa(200psi), Saturated Steam Pressure 0.86MPa(125psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 1.38MPa(200psi), Saturated Steam Pressure 0.86MPa(125psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 1.38MPa(200psi), Saturated Steam Pressure 0.86MPa(125psi) (Do not use for flammable gas or toxic gas.)			16 bar at 100℃, 7 bar at 170℃ (Do not use for flammable gas or toxic gas.)		
Reference Page								P-T Rating : Page BR34			P-T Rating : Page BR39		
Remarks		RoHS: Option EAC: Option			EAC: Option								

*The length of useful threads & the positions of gauge planes are built on KITZ standard.
**Solder jointed end valves should not be used in service where the temperature of line fluid is higher than the softening point of the solder.

Type		Gate			Gate			Gate			Gate		
Bronze & Brass KITZ Standard		PN16 SB IS NRS AS			125 SB/SOB IS NRS EAC			125 SB/SOB IS NRS EAC			125 SB/SOB IS NRS		
Fig		AS-FH			H			AKH			CH		
End Connection		AS 1722.1			*BS21 (JIS B0203)			*ASME B1.20.1			**ASME B16.18		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
3/8	10				38	73	50	38	73	50	37	73	50
1/2	15	55	74	55	42	73	50	42	73	50	45	73	50
3/4	20	60	86	55	47	85	55	47	85	55	60	85	55
1	25	68	94	60	50	96	60	50	96	60	72	96	60
11/4	32	78	116	70	60	115	70	60	115	70	78	115	70
11/2	40	81	128	80	63	125	80	63	125	80	87	125	80
2	50	94	158	90	72	155	90	72	155	90	102	155	90
21/2	65				90	202	115	90	202	115	115	202	115
3	80				100	223	135	100	223	135	130	223	135
4	100				121	280	155	121	280	155	173	280	155
Body		Special Brass (AS 2345)			Cast Bronze			Cast Bronze			Cast Bronze		
Bonnet		Special Brass (AS 2345)			Cast Bronze			Cast Bronze			Cast Bronze		
Stem		Special Brass (AS 2345)			Dezincification Resistant Brass			Dezincification Resistant Brass			Dezincification Resistant Brass		
Disc		Special Brass (AS 2345)			Forged Brass/Cast Bronze			Forged Brass/Cast Bronze			Forged Brass/Cast Bronze		
Gland Packing		Aramid Fibers Graphite			Aramid Fibers Graphite			Aramid Fibers Graphite			Aramid Fibers Graphite		
Hand Wheel		Ductile Iron			Alminum Die-Cast			Alminum Die-Cast			Alminum Die-Cast		
Standard/Approval													
Service Conditions		Working Temperature and Pressure, Non-shock 99℃/1.6MPa			W.O.G. Non-shock 1.38MPa(200psi), Saturated Steam Pressure 0.86MPa(125psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 1.38MPa(200psi), Saturated Steam Pressure 0.86MPa(125psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 1.38MPa(200psi), Saturated Steam Pressure 0.86MPa(125psi) (Do not use for flammable gas or toxic gas.)		
Reference Page											P-T Rating : Page BR34		
Remarks		AS: Austrarian standard			EAC: Option			EAC: Option					

*The length of useful threads & the positions of gauge planes are built on KITZ standard.
**Solder jointed end valves should not be used in service where the temperature of line fluid is higher than the softening point of the solder.

Type		Gate			Gate			Gate			Gate		
Bronze & Brass KITZ Standard		125 SB IS NRS EAC			PN16 SB IS NRS WSD WRAS			PN25 SB IS NRS WRAS			150 SB IS NRS EAC		
Fig		S			PN16S			PN25S			E		
End Connection		*BS21 (JIS B0203)			*BS21 (JIS B0203)			*BS21 (JIS B0203)			BS21 (JIS B0203)		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
3/8	10	38	75	50							43	86	50
1/2	15	42	75	50	42	75	50	42	75	50	48	96	55
3/4	20	47	86	55	47	86	55	47	86	55	53	111	60
1	25	50	97	60	50	97	60	50	97	60	62	122	70
11/4	32	60	117	70	60	117	70	60	117	70	69	141	80
11/2	40	63	126	80	63	126	80	63	126	80	75	164	90
2	50	72	154	90	72	154	90	72	154	90	86	197	100
21/2	65	80	167	100							105	225	115
3	80	90	200	115							116	261	135
Body		Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze		
Bonnet		Forged Brass			Forged Brass			Forged Brass			Forged Brass/Cast Bronze		
Stem		Dezincification Resistant Brass			Dezincification Resistant Brass			Dezincification Resistant Brass			Dezincification Resistant Brass		
Disc		Forged Brass			Forged Brass			Forged Brass			Cast Bronze		
Gland Packing		Aramid Fibers Graphite			Aramid Fibers Graphite			Aramid Fibers Graphite			Aramid Fibers Graphite		
Hand Wheel		Alminum Die-Cast			Alminum Die-Cast			Alminum Die-Cast			Alminum Die-Cast		
Standard/Approval					WRAS: (WR)PN16S, WSD: PN16S<ZH1W1>			WRAS: (WR)PN25S					
Service Conditions					16 bar at 100℃, 7 bar at 170℃ (Do not use for flammable gas or toxic gas.)			25 bar at 100℃, 10.5 bar at 186℃ (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 2.07MPa(300psi), Saturated Steam Pressure 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)		
Reference Page					P-T Rating : Page BR39			P-T Rating : Page BR39					
Remarks		EAC: Option			WRAS, WSD: Option			WRAS: Option			EAC: Option		

*The length of useful threads & the positions of gauge planes are built on KITZ standard.

Type		Gate			Gate			Gate			Lift Check		
Bronze & Brass KITZ Standard		150 SB IS NRS EAC			150 SB/BB IS NRS EAC			150 SB/BB IS NRS EAC			150 SC EAC		
Fig		AKE			EB			EBH			F		
End Connection		ASME B1.20.1			JIS B2240			JIS B2240			BS21 (JIS B0203)		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
3/8	10	43	86	50							44	26	
1/2	15	48	96	55	75	96	55	75	96	55	53	28	
3/4	20	53	111	60	80	111	60	80	111	60	65	34	
1	25	62	122	70	95	122	70	95	122	70	77	42	
11/4	32	69	141	80	110	142	80	110	142	80	85	50	
11/2	40	75	164	90	120	165	90	120	165	90	100	56	
2	50	86	197	100	140	197	100	140	197	100	119	67	
21/2	65	105	225	115	165	225	115	165	225	115	139	79	
3	80	116	261	135	190	264	155	190	264	155	158	91	
4	100				230	309	225	230	309	225			
5	125				190	381	225	190	381	225			
6	150				210	427	250	210	427	250			
Body		Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze		
Bonnet		Forged Brass/Cast Bronze			Forged Brass/Cast Bronze			Forged Brass/Cast Bronze			Forged Brass/Cast Bronze		
Stem		Dezincification Resistant Brass			Dezincification Resistant Brass			Dezincification Resistant Brass					
Disc		Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze		
Gland Packing		Aramid Fibers Graphite			Aramid Fibers Graphite/PTFE			Aramid Fibers Graphite/PTFE					
Hand Wheel		Alminum Die-Cast			Alminum Die-Cast/ZDC/DI			Alminum Die-Cast/ZDC/DI					
Service Conditions		W.O.G. Non-shock 2.07MPa(300psi), Saturated Steam Pressure 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 2.07MPa(300psi), Saturated Steam Pressure 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 2.07MPa(300psi), Saturated Steam Pressure 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 2.07MPa(300psi), Saturated Steam Pressure 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)		
Remarks		EAC: Option			Flanged Ends Undrilled EAC: Option			Flanged end dirilled according to JIS 10K. EAC: Option			EAC: Option		

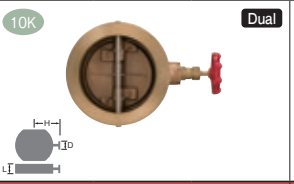
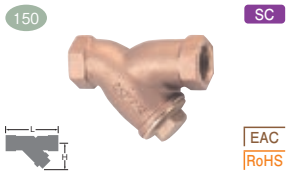
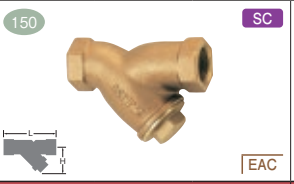
Type		Lift Check			Swing Check			Swing Check			Swing Check		
Bronze & Brass KITZ Standard		150 SC EAC			125 SC EAC RoHS			125 SC EAC			PN16 SC		
Fig		AKF			R			AKR			PN16R		
End Connection		ASME B1.20.1			BS21 (JIS B0203)			ASME B1.20.1			BS21 (JIS B0203)		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
3/8	10	44	26		53	39		53	39				
1/2	15	53	28		60	39		60	39		53	39	
3/4	20	65	34		70	45		70	45		61	45	
1	25	77	42		80	52		80	52		70	50	
11/4	32	85	50		92	62		92	62		81	58	
11/2	40	100	56		102	67		102	67		91	65	
2	50	119	67		122	79		122	79		109	75	
21/2	65	139	79		150	91		150	91				
3	80	158	91		165	102		165	102				
4	100				195	119		195	119				
Body		Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze		
Bonnet		Forged Brass/Cast Bronze			Forged Brass/Cast Bronze			Forged Brass/Cast Bronze			Forged Brass		
Stem/Hinge Pin					Brass			Brass			Brass		
Disc		Cast Bronze			Forged Brass/Cast Bronze			Forged Brass/Cast Bronze			Forged Brass		
Standard/Approval					RoHS: R<GS101> up to 1[B]								
Service Conditions		W.O.G. Non-shock 2.07MPa(300psi), Saturated Steam Pressure 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 1.38MPa(200psi), Saturated Steam Pressure 0.86MPa(125psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 1.38MPa(200psi), Saturated Steam Pressure 0.86MPa(125psi) (Do not use for flammable gas or toxic gas.)			16 bar at 100℃, 7 bar at 170℃ (Do not use for flammable gas or toxic gas.)		
Reference Page											P-T Rating : Page BR39		
Remarks		EAC: Option			EAC: Option RoHS: Option			EAC: Option					

Type		Swing Check			Y-Pattern Swing Check			Vertical Lift Check			Vertical Lift Check		
Bronze & Brass KITZ Standard		PN25 SC 			125 SC EAC WSD 			150 			150 		
Fig		PN25R			YR			RF			AKAF		
End Connection		BS21 (JIS B0203)			*BS21 (JIS B0203)			BS21 (JIS B0203)			ASME B1.20.1		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
3/8	10				54	40							
1/2	15	53	39		56	40		53			53		
3/4	20	61	45		70	49		59			59		
1	25	70	50		80	58		67			67		
11/4	32	81	58		95	71		78			78		
11/2	40	91	65		110	80		84			84		
2	50	109	75		128	95		98			98		
Body		Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze		
Bonnet		Forged Brass			Forged Brass			Cast Bronze			Cast Bronze		
Stem/Hinge Pin		Brass			Copper			Spring: P Bronze			Spring: P Bronze		
Disc		Forged Brass			Cast Bronze			NBR			FKM		
Standard/Approval					WSD: YR<ZH1W3>								
Service Conditions		25 bar at 100℃, 10.5 bar at 186℃ (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 1.38MPa(200psi), Saturated Steam Pressure 0.86MPa(125psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 1.72MPa(250psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 1.72MPa(250psi) (Do not use for flammable gas or toxic gas.)		
Reference Page		P-T Rating : Page BR39											
Remarks					EAC: Option, WSD: Option								

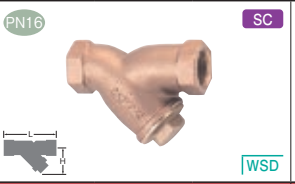
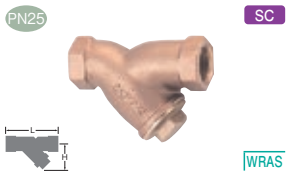
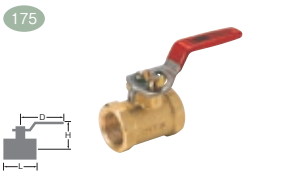
*The length of useful threads & the positions of gauge planes are built on KITZ standard.

Type		Vertical Lift Check			Vertical Lift Check			Vertical Lift Check			Screen for FT		
Bronze & Brass KITZ Standard		150 			5K 								
Fig		CAF			VF			FT			FTS		
End Connection		**ASME B16.18			BS21 (JIS B0203)			BS21 (JIS B0203xB0202)			BS21 (JIS B0202)		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/2	15	61			37								
3/4	20	76			44			48			25		
1	25	89			51			58			29		
11/4	32	97			62			62			32		
11/2	40	110			69			70			35		
2	50	132			82			80			43		
21/2	65							90			50		
3	80							100			51		
Body		Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze		
Bonnet		Cast Bronze											
Stem		Spring: P Bronze											
Disc		FKM			Special Brass/Cast Bronze			NBR			Cast Bronze		
Service Conditions		W.O.G. Non-shock 1.72MPa(250psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 120℃(0.5MPa) (Do not use for flammable gas or toxic gas.)			W.O.G. 80℃(0.5MPa) (Do not use for flammable gas or toxic gas.)			W.O.G. 80℃(0.5MPa) (Do not use for flammable gas or toxic gas.)		
Remarks								Threading: Taper for Male, Parallel for Female			Threading: Parallel		

**Solder jointed end valves should not be used in service where the temperature of line fluid is higher than the softening point of the solder.

Type		Wafer Check			Y-Pattern Strainer			Y-Pattern Strainer			Y-Pattern Strainer		
Bronze & Brass KITZ Standard		10K Dual 			150 SC  EAC RoHS			150 SC  EAC			150 SC 		
Fig		10BWZ			Y			AKY			CY		
End Connection		Wafer (JIS 10K)			BS21 (JIS B0203)			ASME B1.20.1			**JIS B2011/ASME B16.18		
inch	mm	L	H	D	L	H	***H1	L	H	***H1	L	H	***H1
3/8	10				70	43	61	70	43	61			
1/2	15				80	48	68	80	48	68	80	48	68
3/4	20				100	57	83	100	57	83	105	57	83
1	25				115	70	105	115	70	105	125	70	105
11/4	32				135	82	124	135	82	124	145	82	124
11/2	40	54	132	55	160	98	149	160	98	149	170	98	149
2	50	56	139	70	195	121	188	195	121	188	210	121	188
21/2	65	56	146	70	230	149	216	230	149	216	250	149	216
3	80	59	152	70	240	182	267	240	182	267	280	182	267
4	100	66	165	70									
5	125	72	183	70									
6	150	78	208	80									
8	200	96	237	80									
10	250	109	289	90									
12	300	145	316	90									
Body		Cast Bronze + NBR			Cast Bronze			Cast Bronze			Cast Bronze		
Bonnet/Cap/Cover					Forged Brass			Forged Brass			Forged Brass		
Hinge Pin/Spring		304SS											
Disc/Screen		Brass/Cast Bronze			304SS			304SS			304SS		
Gland Packing/Gasket		Aramid Fiber Graphite			Gasket: Non Asbestos (V6500) up to 2B, FKM for 21/2B & 3B			Gasket: Non Asbestos (V6500) up to 2B, FKM for 21/2B & 3B			Gasket: Non Asbestos (V6500) up to 2B, FKM for 21/2B & 3B		
Hand Wheel		Alminum Die Cast/ZDC											
Standard/Approval					RoHS: Y<GS101> up to 1B								
Service Conditions		W.O.G. 80℃(1.4MPa) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 2.07MPa(300psi), Saturated Steam Pressure 1.03MPa(150psi) up to 2B (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 2.07MPa(300psi), Saturated Steam Pressure 1.03MPa(150psi) up to 2B (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 2.07MPa(300psi), Saturated Steam Pressure 1.03MPa(150psi) up to 2B (Do not use for flammable gas or toxic gas.)		
Reference Page		Features: Page BR36									P-T Rating : Page BR34		
Remarks		Built-in Bypass Valve, Dual Plate Type			EAC: Option, RoHS: Option			EAC: Option			JIS B2011 up to 2B		

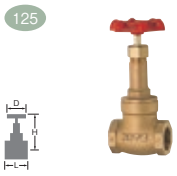
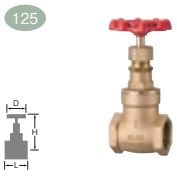
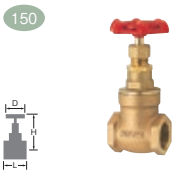
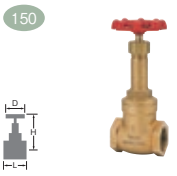
**Solder jointed end valves should not be used in service where the temperature of line fluid is higher than the softening point of the solder.
***Height for removing the screen

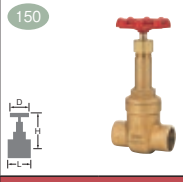
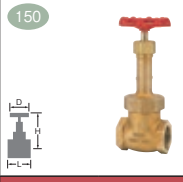
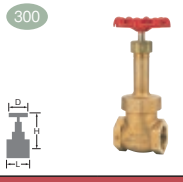
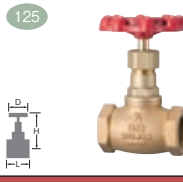
Type		Y-Pattern Strainer			Y-Pattern Strainer			Butterfly		
Bronze & Brass KITZ Standard		PN16 SC  WSD			PN25 SC  WRAS			175 		
Fig		PN16YE			PN25YE			FV		
End Connection		BS21 (JIS B0203)			BS21 (JIS B0203)			BS21 (JIS B0203)		
inch	mm	L	H	***H1	L	H	***H1	L	H	D
1/2	15	65	42	56	65	42	56	47	44	85
3/4	20	80	52	72	80	52	72	51	47	85
1	25	92	60	89	92	60	89	58	50	85
11/4	32	110	72	107	110	72	107	67	60	110
11/2	40	122	81	121	122	81	121	73	63	110
2	50	150	101	150	150	101	150	82	70	110
Body		Cast Bronze			Cast Bronze			Forged Brass		
Bonnet/Cap/Cover		Forged Brass			Forged Brass					
Hinge Pin/Spring								304SS		
Disc/Screen		304SS			304SS			304SS + W-NBR		
Gland Packing/Gasket		Gasket: Non Asbestos (V6500)			Gasket: Non Asbestos (V6500)			NBR		
Hand Wheel								430SS		
Standard/Approval		WSD: PN16YE<ZH1W4>			WRAS					
Service Conditions		16 bar at 100℃, 7 bar at 170℃ (Do not use for flammable gas or toxic gas.)			25 bar at 100℃, 10.5 bar at 186℃ (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 1.21MPa(175psi) (Do not use for flammable gas or toxic gas.)		
Reference Page		P-T Rating : Page BR39			P-T Rating : Page BR39					
Remarks		WSD: Option			WRAS: Option			Balancing Stop Handle Lever		

***Height for removing the screen

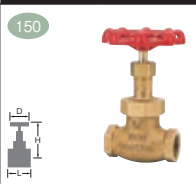
Type		Globe			Globe			Globe			Gate		
Bronze JIS Standard		5K SB RS JIS			10K SB/BB RS JIS			10K SB/BB RS			5K SB RS JIS		
Fig		K			J			JB			M		
End Connection		JIS B0203			JIS B0203			JIS B2011			JIS B0203		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/4	8				50	83	50						
3/8	10	50	87	55	55	85	55						
1/2	15	60	90	60	65	91	60	85	93	60	50	126	60
3/4	20	70	102	70	80	120	80	95	122	80	60	145	60
1	25	80	112	80	90	135	90	110	135	90	65	169	70
11/4	32	100	137	90	105	156	100	130	157	100	75	209	90
11/2	40	110	142	100	120	169	115	150	171	115	85	239	100
2	50	135	173	115	140	194	135	180	196	135	95	285	115
21/2	65	160	203	135	180	231	155	210	232	155	115	366	135
3	80	190	233	155	200	267	180	240	268	180	130	428	155
4	100							280	323	225			
Body		CAC406			CAC406			CAC406			CAC406		
Bonnet		C3771/CAC406			C3771/CAC406			C3771/CAC406			CAC406		
Stem		C3531			C3531			C3531			C3531		
Disc		CAC406C/CAC406			CAC406C/CAC406			CAC406C/CAC406			CAC406		
Gland Packing		Aramid Fibers Graphite			Aramid Fibers Graphite			Aramid Fibers Graphite/PTFE for JB 4[B]			Aramid Fibers Graphite		
Hand Wheel		Alminum Die-Cast			Alminum Die-Cast/DI			Alminum Die-Cast/ZDC/DI			Alminum Die-Cast/ZDC		
Standard/Approval		JIS B2011 except 3/8[B]			JIS B2011						JIS B2011		
Service Conditions		0.7MPa at -29℃ to +120℃, 0.5MPa at 159℃ (Do not use for flammable gas or toxic gas.)			1.4MPa at -29℃ to +120℃, 1MPa at 185℃ (Do not use for flammable gas or toxic gas.)			1.4MPa at -29℃ to +120℃, 1MPa at 185℃ (Do not use for flammable gas or toxic gas.)			0.7MPa at -29℃ to +120℃, 0.5MPa at 134℃ (Do not use for flammable gas or toxic gas.)		
Reference Page		P-T Rating : Page BR38			P-T Rating : Page BR38			P-T Rating : Page BR38			P-T Rating : Page BR38		
Remarks								Wall Thickness: KITZ Standard					

Type		Gate			Gate			Swing Check			Swing Check		
Bronze JIS Standard		10K SB RS JIS			10K SB/BB RS			10K SC JIS			10K SC		
Fig		L			LB			O			OB		
End Connection		JIS B0203			JIS B2011			JIS B0203			JIS B2040		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
3/8	10							55	38.5				
1/2	15	55	126	60				65	43		85	43	
3/4	20	65	151	70	90	151	70	80	51.5		95	52	
1	25	70	176	80	100	176	80	90	58.5		110	59	
11/4	32	80	219	90	110	219	90	105	67		130	67	
11/2	40	90	250	100	125	250	100	120	73.5		150	74	
2	50	100	292	115	140	292	115	140	86		180	86	
21/2	65	120	376	155	170	376	155	180	97		210	97	
3	80	140	436	180	190	436	180	200	108		240	108	
4	100				220	327	225				280	127	
Body		CAC406			CAC406			CAC406			CAC406		
Bonnet		CAC406			CAC406			C3771/CAC406			C3771/CAC406		
Stem		C3531			C3531			CAC406/C3604			CAC406/C3604		
Disc		CAC406			CAC406			CAC406			CAC406		
Gland Packing		Aramid Fibers Graphite			Aramid Fibers Graphite								
Hand Wheel		Alminum Die-Cast/ZDC/DI			Alminum Die-Cast/ZDC/DI								
Standard/Approval		JIS B2011						JIS B2011					
Service Conditions		1.4MPa at -29℃ to +120℃, 1MPa at 171℃ (Do not use for flammable gas or toxic gas.)			1.4MPa at -29℃ to +120℃, 1MPa at 171℃ (Do not use for flammable gas or toxic gas.)			1.4MPa at -29℃ to +120℃, 1MPa at 185℃ (Do not use for flammable gas or toxic gas.)			1.4MPa at -29℃ to +120℃, 1MPa at 185℃ (Do not use for flammable gas or toxic gas.)		
Reference Page		P-T Rating : Page BR38			P-T Rating : Page BR38			P-T Rating : Page BR38			P-T Rating : Page BR38		
Remarks					Wall Thickness: KITZ Standard						Wall Thickness: KITZ Standard		

Type		Gate			Gate			Gate			Gate		
Bronze MSS SP-80		125  SB RS EAC MSS			125  SB NRS EAC MSS			150  SB NRS EAC MSS			150  SB RS EAC MSS		
Fig		AK125M			AK125E			AK150E			AK150L		
End Connection		ASME B1.20.1			ASME B1.20.1			ASME B1.20.1			ASME B1.20.1		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
3/8	10				43	86	50	43	86	50			
1/2	15	51	129	55	49	93	55	49	98	55	51	137	55
3/4	20	56	155	60	53	110	60	53	114	70	56	157	70
1	25	66	180	70	61	126	70	61	126	70	66	180	70
11/4	32	68	216	80	64	145	80	68	145	80	68	216	80
11/2	40	74	257	90	68	170	90	74	176	90	74	257	90
2	50	84	296	100	74	189	100	84	201	100	84	296	100
21/2	65	115	371	135							120	385	155
3	80	130	432	155							140	432	155
Body		B62			B62			B62			B62		
Bonnet		B62			B62			B62			B62		
Stem		B62			B62			B62			B62		
Disc		B62			B62			B62			B62		
Gland Packing		Aramid Fibers Graphite			Aramid Fibers Graphite			Aramid Fibers Graphite			Aramid Fibers Graphite		
Hand Wheel		Alminum Die-Cast			Alminum Die-Cast			Alminum Die-Cast			Alminum Die-Cast		
Standard/Approval		MSS SP-80			MSS SP-80			MSS SP-80			MSS SP-80		
Service Conditions		W.O.G. Non-shock 1.38MPa(200psi), Saturated Steam Pressure 0.86MPa(125psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 1.38MPa(200psi), Saturated Steam Pressure 0.86MPa(125psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 2.07MPa(300psi), Saturated Steam Pressure 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 2.07MPa(300psi), Saturated Steam Pressure 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)		
Reference Page		P-T Rating : Page BR39			P-T Rating : Page BR39			P-T Rating : Page BR39			P-T Rating : Page BR39		
Remarks		EAC: Option			EAC: Option			EAC: Option			EAC: Option		

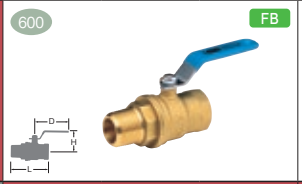
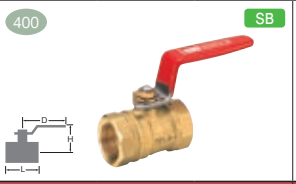
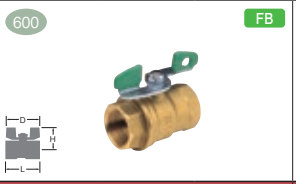
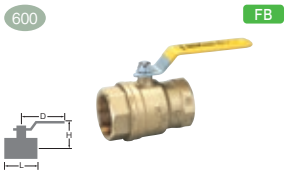
Type		Gate			Gate			Gate			Globe		
Bronze MSS SP-80		150  SB RS EAC MSS			150  UB RS EAC MSS			300  UB RS MSS			125  SB RS EAC MSS		
Fig		C150L			AK150LU			AK300LU			AK125C		
End Connection		**ASME B16.18			ASME B1.20.1			ASME B1.20.1			ASME B1.20.1		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/4	8				45	108	50						
3/8	10				46	108	50	46	125	60			
1/2	15	49	137	55	51	137	55	51	149	70	53	76	60
3/4	20	64	157	70	56	157	70	56	173	80	65	98	70
1	25	76	180	70	66	180	70	66	194	80	77	108	80
11/4	32	82	216	80	68	216	80	74	228	100	85	137	90
11/2	40	86	257	90	74	257	90	84	274	115	100	160	100
2	50	109	296	100	84	297	100	98	313	135	119	180	115
21/2	65										150	202	135
3	80										178	246	155
Body		B62			B62			B61			B62		
Bonnet		B62			B62			B61			B62/C3771		
Stem		B62			B62			B62			B62		
Disc		B62			B62			B61			B62		
Gland Packing		Aramid Fibers Graphite			Flex. Graphate & Aluminum			Flex. Graphate & Aluminum			Aramid Fibers Graphite		
Hand Wheel		Alminum Die-Cast			Alminum Die-Cast			Alminum Die-Cast			Alminum Die-Cast		
Standard/Approval		MSS SP-80			MSS SP-80			MSS SP-80			MSS SP-80		
Service Conditions		W.O.G. Non-shock 2.07MPa(300psi), Saturated Steam Pressure 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 2.07MPa(300psi), Saturated Steam Pressure 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 6.89MPa(1000psi), Saturated Steam Pressure 2.07MPa(300psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 1.38MPa(200psi), Saturated Steam Pressure 0.86MPa(125psi) (Do not use for flammable gas or toxic gas.)		
Reference Page		P-T Rating : Page BR34 and BR39			P-T Rating : Page BR39			P-T Rating : Page BR39			P-T Rating : Page BR39		
Remarks		EAC: Option			EAC: Option						EAC: Option		

**Solder jointed end valves should not be used in service where the temperature of line fluid is higher than the softening point of the solder.

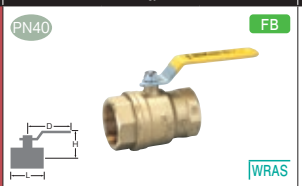
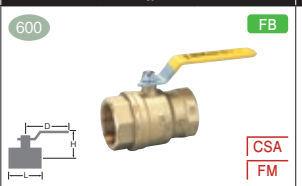
Type		Globe			Globe			Globe			Globe		
Bronze MSS SP-80		150 UB/BB RS  EAC MSS			150 UB/BB RS  EAC MSS			300 UB RS  EAC MSS			300 UB RS  EAC MSS		
Fig		AK150D			C150D			AK300J			AK300D		
End Connection		ASME B1.20.1			**ASME B16.18			ASME B1.20.1			ASME B1.20.1		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/4	8	53	109	60	58	109	60	53	113	60	53	113	60
3/8	10	55	109	60	61	109	60	55	113	60	55	113	60
1/2	15	64	116	70	72	116	70	64	126	80	64	126	80
3/4	20	78	136	90	95	136	90	78	139	90	78	139	90
1	25	90	149	100	112	149	100	90	159	100	90	157	100
11/4	32	105	173	115	126	173	115	105	187	115	105	187	115
11/2	40	120	182	115	145	182	115	120	195	135	120	192	135
2	50	145	209	135	180	209	135	145	224	155	145	221	155
21/2	65	170	247	155	205	247	155						
3	80	200	275	180	244	275	180						
4	100	245	298	225	312	298	225						
Body		B62			B62			B61			B61		
Bonnet		B62			B62			B61			B61		
Stem		B62			B62			B61			B61		
Disc		G/F PTFE			G/F PTFE			B61			G/F PTFE		
Gland Packing		Aramid Fibers Graphite/PTFE			Aramid Fibers Graphite/PTFE			Flex. Graphate & Aluminum			Flex. Graphate & Aluminum		
Hand Wheel		Alminum Die-Cast/DI			Alminum Die-Cast/DI			Alminum Die-Cast			Alminum Die-Cast		
Standard/Approval		MSS SP-80			MSS SP-80			MSS SP-80			MSS SP-80		
Service Conditions		W.O.G. Non-shock 2.07MPa(300psi), Saturated Steam Pressure 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 2.07MPa(300psi), Saturated Steam Pressure 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 4.14MPa(600psi), Saturated Steam Pressure 2.07MPa(300psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 4.14MPa(600psi), Saturated Steam Pressure 2.07MPa(300psi) (Do not use for flammable gas or toxic gas.)		
Reference Page		P-T Rating : Page BR39			P-T Rating : Page BR34 and BR39			P-T Rating : Page BR39			P-T Rating : Page BR39		
Remarks		EAC: Option			EAC: Option			EAC: Option			EAC: Option		

**Solder jointed end valves should not be used in service where the temperature of line fluid is higher than the softening point of the solder.

Type		Y-Pattern Swing Check			Y-Pattern Swing Check			Y-Pattern Swing Check			Y-Pattern Swing Check		
Bronze MSS SP-80		125 SC  EAC MSS			125 SC  EAC MSS			150 SC  EAC MSS			300 SC  MSS		
Fig		AKYR			CYR			AK150YR			AK300YR		
End Connection		ASME B1.20.1			**ASME B16.18			ASME B1.20.1			ASME B1.20.1		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
3/8	10							54	39				
1/2	15	56	40		67	38		60	39		60	42	
3/4	20	70	49		86	47		72	49		72	51	
1	25	80	58		105	56		84	58		84	61	
11/4	32	95	71		121	69		99	70		99	74	
11/2	40	110	80		137	77		113	79		113	83	
2	50	128	95		170	92		131	95		131	98	
21/2	65	156	114		194	111		162	114				
3	80	184	131		222	127		186	132				
Body		B62			B62			B62			B61		
Bonnet		C3771			C3771			C3771			B61		
Stem/Hinge Pin		Copper			Copper			Copper			Copper		
Disc		B62			B62			B62			B61		
Standard/Approval		MSS SP-80			MSS SP-80			MSS SP-80			MSS SP-80		
Service Conditions		W.O.G. Non-shock 1.38MPa(200psi), Saturated Steam Pressure 0.86MPa(125psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 1.38MPa(200psi), Saturated Steam Pressure 0.86MPa(125psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 2.07MPa(300psi), Saturated Steam Pressure 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 4.14MPa(600psi), Saturated Steam Pressure 2.07MPa(300psi) (Do not use for flammable gas or toxic gas.)		
Reference Page		P-T Rating : Page BR39			P-T Rating : Page BR34 and BR39			P-T Rating : Page BR39			P-T Rating : Page BR39		
Remarks		EAC: Option			EAC: Option			EAC: Option					

Type		Ball			Ball			Ball			Ball		
Brass Z Ball Series		600 FB 			400 SB 			600 FB 			600 FB 		
Fig		ZO			ZS			ZET			SZA		
End Connection		BS21 (JIS B0203)			*BS21 (JIS B0203)			BS21 (JIS B0203)			BS21 (JIS B0203)		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/4	8	59	37	70	42	42	72	42	34	55	42	37	70
3/8	10	60	37	70	43	42	72	42	34	55	42	37	70
1/2	15	74	40	80	51	44	87	53	40	70	53	40	80
3/4	20	80	44	80	59	48	87	60	44	70	60	44	80
1	25	94	50	110	71	61	116	72	54	100	72	50	110
11/4	32				78	65	116	84	59	100	84	55	110
11/2	40				88	71	117	92	75	130	92	65	150
2	50				99	76	117	110	82	130	110	72	150
21/2	65										138	101	200
3	80										167	113	300
4	100										193	131	300
Body & Cap		Forged Brass			Forged Brass			Forged Brass			Forged Brass/Cast Bronze		
Stem		Brass + Ni Plated			Brass + Cr Plated			Brass + Ni Plated			Brass + Ni Plated		
Ball		Forged Brass + Ni Plated			Forged Brass+Cr Plated/304SS			Forged Brass+Cr Plated/304SS			Forged Brass+N-Cri Plated/304SS		
Ball Seat		PTFE			PTFE			PTFE			PTFE		
Gland Packing/O ring		FKM			G/F PTFE			FKM			FKM		
Handle		430SS			430SS			CS + Zn Plated			CS + Zn Plated/DI		
Bore		Full Bore			Standard Bore			Full Bore			Full Bore		
Service Conditions		W.O.G. Non-shock 4.14MPa(600psi), W.O.G 150℃ 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 2.76MPa(400psi), W.O.G. 150℃ 0.69MPa(100psi), Saturated Steam Pressure 0.98MPa(142psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 4.14MPa(600psi), W.O.G 150℃ 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 4.14MPa(600psi)/4[B]: 2.76MPa(400psi) , W.O.G 150℃ 1.03MPa(150psi)/4[B]: 0.69MPa(100psi) (Do not use for flammable gas or toxic gas.)		
Remarks		BS21: Male & Female Full Bore, Double O-ring			Standard Bore			Full Bore, Double O-ring Butterfly (Wing) Handle			Full Bore, Double O-ring		

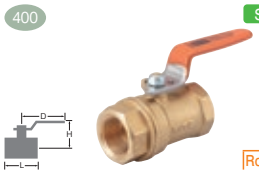
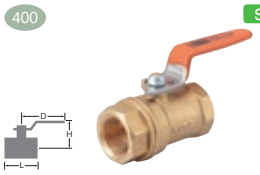
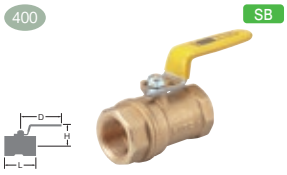
*The length of useful threads & the positions of gauge planes are built on KITZ standard.

Type		Ball			Ball			Ball			Ball		
Brass Z Ball Series		PN40 FB  WRAS			600 FB  CSA FM			600 FB  FM			600 FB NO IMAGE CSA		
Fig		PN40SZA			AKSZA			CSZA			AKSZAW		
End Connection		BS21 (JIS B0203)			ASME B1.20.1			**ASME B16.18			ASME B1.20.1		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/4	8				42	37	70				42	34	55
3/8	10				42	37	70	46	37	70	42	34	55
1/2	15	53	40	80	53	40	80	54	40	80	53	40	70
3/4	20	60	43	80	60	44	80	73	44	80	60	44	70
1	25	72	50	110	72	50	110	88	50	110	72	53	100
11/4	32	84	55	110	84	55	110	100	55	110	84	58	100
11/2	40	92	65	150	92	65	150	115	65	150	92	74	130
2	50	110	72	150	110	72	150	140	72	150	110	81	130
21/2	65				138	101	200	164	101	200			
3	80				167	113	300	187	113	300			
4	100				193	131	300						
Body & Cap		Forged Brass			Forged Brass/Cast Bronze			Forged Brass			Forged Brass		
Stem		Brass + Ni Plated			Brass + Ni Plated			Brass + Ni Plated			Brass + Ni Plated		
Ball		Forged Brass + Cr Plated			Forged Brass+Sn-Ni Plated/304SS			Forged Brass+Sn-Ni Plated/304SS			Forged Brass+Sn-Ni Plated/304SS		
Ball Seat		PTFE			PTFE			PTFE			PTFE		
Gland Packing/O ring		FKM			FKM			FKM			FKM		
Handle		CS + Zn Plated			CS + Zn Plated/DI			CS + Zn Plated/DI			CS + Zn Plated/DI		
Bore		Full Bore			Full Bore			Full Bore			Full Bore		
Standard/Approval		WRAS:(WR)PN40SZA			CSA, FM			UL, FM			CSA, UL		
Service Conditions		40 bar for W.O.G. Non-shock, 10 bar at 150℃ (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 4.14MPa(600psi)/4[B]: 2.76MPa(400psi) , W.O.G 150℃ 1.03MPa(150psi)/4[B]: 0.69MPa(100psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 4.14MPa(600psi)/4[B]: 2.76MPa(400psi) , W.O.G 150℃ 1.03MPa(150psi)/4[B]: 0.69MPa(100psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 4.14MPa(600psi)/4[B]: 2.76MPa(400psi) , W.O.G 150℃ 1.03MPa(150psi)/4[B]: 0.69MPa(100psi) (Do not use for flammable gas or toxic gas.)		
Reference Page								P-T Rating : Page BR34					
Remarks		Full Bore, Double O-ring WRAS: Option			Full Bore, Double O-ring			Full Bore, Double O-ring			Full Bore, Double O-ring Butterfly (Wing) Handle		

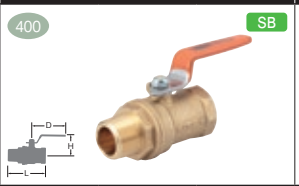
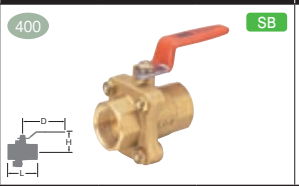
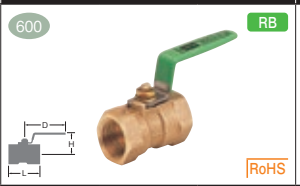
**Solder jointed end valves should not be used in service where the temperature of line fluid is higher than the softening point of the solder.

Type		Ball		
Brass Z Ball Series		600 FB 		
Fig		CSZAW		
End Connection		**ASME B16.18		
inch	mm	L	H	D
3/8	10	46	34	55
1/2	15	54	40	70
3/4	20	73	44	70
1	25	88	53	100
11/4	32	100	58	100
11/2	40	115	74	130
2	50	140	81	130
Body & Cap		Forged Brass		
Stem		Brass + Ni Plated		
Ball		Forged Brass+Sn-Ni Plated/304SS		
Ball Seat		PTFE		
Gland Packing/O ring		FKM		
Handle		CS + Zn Plated/DI		
Bore		Full Bore		
Standard/Approval		UL		
Service Conditions		W.O.G. Non-shock 4.14MPa(600psi)/4B: 2.76MPa(400psi) , W.O.G 150℃ 1.03MPa(150psi)/4B: 0.69MPa(100psi) (Do not use for flammable gas or toxic gas.)		
Reference Page		P-T Rating : Page BR34		
Remarks		Full Bore, Double O-ring Butterfly (Wing) Handle		

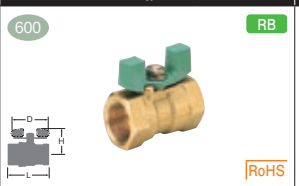
**Solder jointed end valves should not be used in service where the temperature of line fluid is higher than the softening point of the solder.

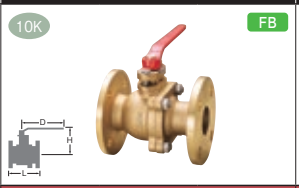
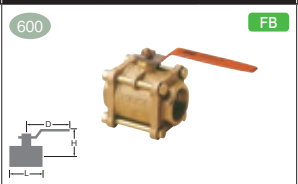
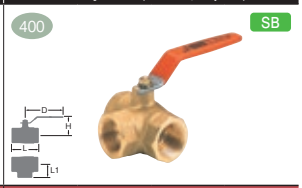
Type		Ball			Ball			Ball			Ball		
Bronze & Brass T Ball Series		400 SB  RoHS			400 SB 			400 SB 			400 SB 		
Fig		T			AKT			TT			TG		
End Connection		*BS21 (JIS B0203)			ASME B1.20.1			*BS21 (JIS B0203)			*BS21 (JIS B0203)		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/4	8	50	39	60	50	39	60	50	34	65	50	39	60
3/8	10	50	39	60	50	39	60	50	34	65	50	39	60
1/2	15	65	39	80	65	39	80	65	37	80	65	39	80
3/4	20	68	42	80	68	42	80	68	40	80	68	42	80
1	25	79	46	110	79	46	110	79	46	90	79	46	110
11/4	32	86	51	110	86	51	110	86	52	105	86	51	110
11/2	40	96	56	110	96	56	110	96	57	105	96	56	110
2	50	109	65	140	109	65	140	109	71	120	109	65	140
21/2	65	127	85	200	127	85	200				127	85	200
3	80	153	105	300	153	105	300				153	105	300
4	100	179	126	400	179	126	400						
Body & Cap		Forged Brass/Cast Bronze			Forged Brass/Cast Bronze			Forged Brass			Forged Brass/Cast Bronze		
Stem		Dezincification Resistant Brass			Dezincification Resistant Brass			Dezincification Resistant Brass			Dezincification Resistant Brass		
Ball		Forged Brass+Ni-Cr Plated/304SS			Forged Brass+Ni-Cr Plated/304SS			Forged Brass+Ni-Cr Plated/304SS			Forged Brass+Ni-Cr Plated/304SS		
Ball Seat		PTFE			PTFE			PTFE			PTFE		
Gland Packing/O ring		FKM			FKM			FKM			NBR		
Handle		430SS/DI			ZDC			430SS/DI			430SS/DI		
Bore		Standard Bore			Standard Bore			Standard Bore			Standard Bore		
Standard/Approval		RoHS: T<GS101> up to 1B											
Service Conditions		W.O.G. Non-shock 2.76MPa(400psi), W.O.G. 150℃ 0.69MPa(100psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 2.76MPa(400psi), W.O.G. 150℃ 0.69MPa(100psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 2.76MPa(400psi), W.O.G. 150℃ 0.69MPa(100psi) (Do not use for flammable gas or toxic gas.)			Room temperature gas up to 40℃		
Remarks		RoHS:Option Standard Bore, Double O-ring			Standard Bore, Double O-ring			T Handle Standard Bore, Double O-ring			For Gas Service Standard Bore, Double O-ring		

*The length of useful threads & the positions of gauge planes are built on KITZ standard. (11/4B & above)

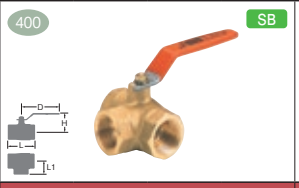
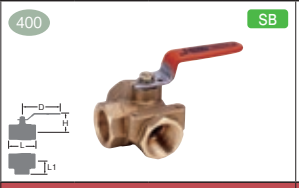
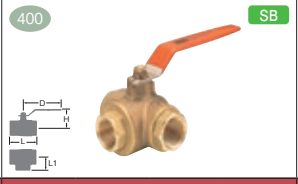
Type		Ball			Ball			Ball			Ball		
Bronze & Brass T Ball Series		400 SB 			400 SB 			600 RB RoHS 			600 RB 		
Fig		TO			TM			TK			AKTK		
End Connection		BS21 (JIS B0203)			*BS21 (JIS B0203)			BS21 (JIS B0203)			ASME B1.20.1		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/8								32	30	60			
1/4	8	59	39	60				39	30	60	39	30	60
3/8	10	60	39	60	56	45	60	44	35	70	44	35	70
1/2	15	74	39	80	60	45	80	56.5	38	85	56.5	38	85
3/4	20	80	42	80	68	49	80	59	42	85	59	42	85
1	25	94	46	110	80	55	110	71	47	100	71	47	100
11/4	32				86	60	110	78	52	100	78	52	100
11/2	40				101	65	110	83	63	125	83	63	125
2	50				117	75	140	100	70	125	100	70	125
21/2	65				136	91	200						
3	80				160	105	300						
Body & Cap		Forged Brass			Forged Brass			Forged Brass			Forged Brass		
Stem		Dezincification Resistant Brass			Dezincification Resistant Brass			Dezincification Resistant Brass			Dezincification Resistant Brass		
Ball		Forged Brass+Ni-Cr Plated/304SS			Forged Brass+Ni-Cr Plated/304SS			Forged Brass+Cr Plated			Forged Brass+Cr Plated		
Ball Seat		PTFE			PTFE			G/F PTFE			G/F PTFE		
Gland Packing/O ring		FKM			FKM			G/F PTFE			G/F PTFE		
Handle		430SS/DI			430SS/DI			430SS			430SS		
Bore		Standard Bore			Standard Bore			Reduced Bore			Reduced Bore		
Standard/Approval								RoHS: TK<GS101> up to 1[B]					
Service Conditions		W.O.G. Non-shock 2.76MPa(400psi), W.O.G. 150℃ 0.69MPa(100psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 2.76MPa(400psi), W.O.G. 150℃ 0.69MPa(100psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 4.14MPa(600psi), W.O.G 150℃ 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 4.14MPa(600psi), W.O.G 150℃ 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)		
Remarks		BS21: Male & Female			Split Type			RoHS:Option Reduced Bore, One-piece Body			Reduced Bore, One-piece Body		

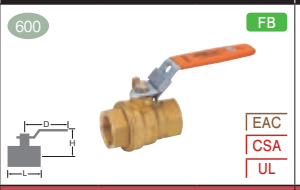
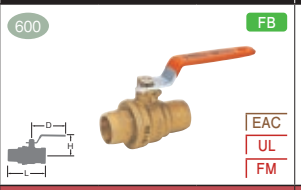
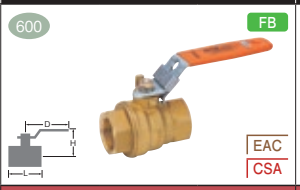
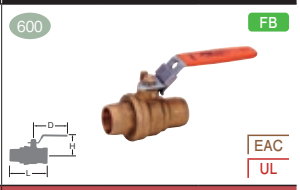
*The length of useful threads & the positions of gauge planes are built on KITZ standard. (11/4[B] & above)

Type		Ball			Ball			Ball			Ball		
Bronze & Brass T Ball Series		600 RB JWWA RoHS 			600 RB RoHS 			150 FB 			400 SB 		
Fig		TKT			TKW			TFJ			TL		
End Connection		BS21 (JIS B0203)			BS21 (JIS B0203)			BS21 (JIS B0203)			BS21 (JIS B0203)		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/8		32	22	35	32	24	35						
1/4	8	39	22	35	39	24	35						
3/8	10	44	26	40	44	29	40						
1/2	15	56.5	29	60	56.5	34	55						
3/4	20	59	33	60	59	37	55	62	53	65	56	75	80
1	25	71	46	76	71	41	69	73	58	65	65	79	80
11/4	32	78	45	76				85	67	90	78	83	110
11/2	40	83	51	100				98	72	90	86	98	110
2	50	100	58	100				108	90	110	96	102	110
21/2								124	98.5	110	109	109	140
Body & Cap		Forged Brass			Forged Brass			Forged Brass/Cast Bronze			Cast Bronze		
Stem		Dezincification Resistant Brass			Dezincification Resistant Brass			Dezincification Resistant Brass			Dezincification Resistant Brass		
Ball		Forged Brass+Cr Plated			Forged Brass+Cr Plated			Forged Brass+Ni-Cr Plated			CF8 (SCS13A)		
Ball Seat		G/F PTFE			G/F PTFE			PTFE			PTFE		
Gland Packing/O ring		G/F PTFE			G/F PTFE			FKM			FKM		
Handle		ZDC			ZDC			ZDC			430SS		
Bore		Reduced Bore			Reduced Bore			Full Bore			Standard Bore		
Standard/Approval		RoHS: TKT<GS101> up to 1[B] JWWA E-2 up to 11/2[B]			RoHS: TKW<GS101> up to 1[B]								
Service Conditions		W.O.G. Non-shock 4.14MPa(600psi), W.O.G 150℃ 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 4.14MPa(600psi), W.O.G 150℃ 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 1.03MPa(150psi) , W.O.G 150℃ 0.69MPa(100psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 2.76MPa(400psi), W.O.G. 150℃ 0.69MPa(100psi) (Do not use for flammable gas or toxic gas.)		
Remarks		RoHS:Option, T Handle Reduced Bore, One-piece Body			RoHS:Option, Wing Handle Reduced Bore, One-piece Body			Full Bore, Double O-ring Locking Device			Standard Bore, Double O-ring For Thermal Insulation		

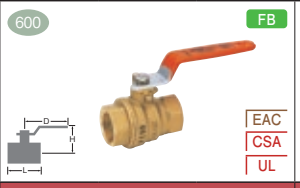
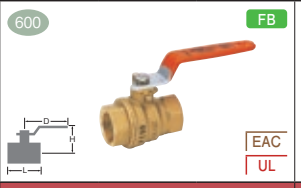
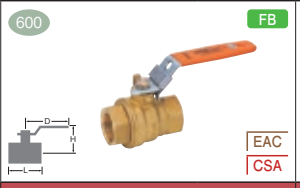
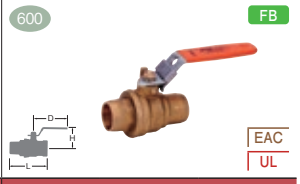
Type		Ball			Ball			Ball			3-Way Ball (2-seat, L-port)			
Bronze & Brass T Ball Series		400 SB 			10K FB 			600 FB 			400 SB 			
Fig		TLT			TB			AK3TM			TN			
End Connection		BS21 (JIS B0203)			JIS B2240			BS21 (JIS B0203)			*BS21 (JIS B0203)			
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D	L1
1/4	8							49	39	82	40	30	60	20
3/8	10							49	39	82	46	35	70	23
1/2	15	56	79	82	110	85	130	61	42	82	67	44	80	33.5
3/4	20	65	83	82	120	88	130	70	51	100	68	49	80	34
1	25	78	90	94	130	95	160	83	59	130	79	55	110	39.5
11/4	32	86	105	94	140	98	160	99	64	130	89	59	110	44.5
11/2	40	96	109	94	165	115	230	117	73	150	100	64	110	50
2	50	109	124	120	180	121	230	139	80	150	115	74	140	57.5
21/2	65				190	152	400				138	91	200	69
3	80				200	161	400				166	105	300	83
4	100				230	190	460							
Body & Cap		Cast Bronze			Cast Bronze			Forged Brass			Forged Brass/Cast Bronze			
Stem		Dezincification Resistant Brass			Dezincification Resistant Brass			Dezincification Resistant Brass			Dezincification Resistant Brass			
Ball		304SS			Forged Brass+Ni-Cr Plated/304SS			Forged Brass+Sn-Ni Plated			Forged Brass+Cr Plated			
Ball Seat		PTFE			PTFE			PTFE			PTFE			
Gland Packing/O ring		FKM			FKM			PTFE			G/F PTFE up to 3/8B & FKM			
Handle		Reinforced nylon			DI			CS			430SS/DI			
Bore		Standard Bore			Full Bore			Full Bore			Standard Bore			
Standard/Approval											RoHS: TN<GS101> up to 1B JWWA E-2 up to 11/2B			
Service Conditions		W.O.G. Non-shock 2.76MPa(400psi), W.O.G. 80℃ 1.96MPa(296psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 1.4MPa(14KGF/CM2), W.O.G. 150℃ 0.69MPa(7KGF/CM2) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 4.14MPa(600psi), W.O.G. 150℃ 0.69MPa(100psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 2.76MPa(400psi), W.O.G. 150℃ 0.69MPa(100psi) (Do not use for flammable gas or toxic gas.)			
Reference Page											Port Orintation : Page TECH1			
Remarks		Standard Bore, Double O-ring, T Handle, For Thermal Insulation			For Gas Service, Full Bore, Double O-ring			Full Bore, 3-piece Body w/Mounting Pad			Standard Bore, Double O-ring, L-port, RoHS&JWWA:Option			

*The length of useful threads & the positions of gauge planes are built on KITZ standard. (11/4B & above)

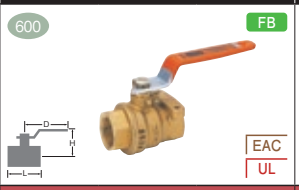
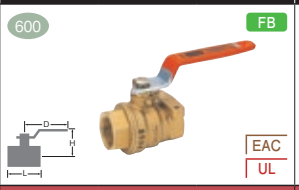
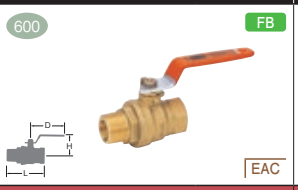
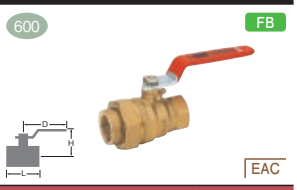
Type		3-Way Ball (2-seat, L-port)				3-Way Ball (2-seat, L-port)				3-Way Ball (4-seat, L/T-port)				3-Way Ball (2-seat, L/T-port)			
Bronze & Brass T Ball Series		400 SB 				400 SB 				400 SB 				400 SB 			
Fig		AKTN				AKTNP				T4T/T4L				TV2T/TV2L			
End Connection		ASME B1.20.1				ASME B1.20.1				BS21 (JIS B0203)				BS21 (JIS B0203)			
inch	mm	L	H	D	L1	L	H	D	L1	L	H	D	L1	L	H	D	L1
1/4	8	40	30	60	20									40	31	60	20
3/8	10	46	35	70	23									46	35	80	23
1/2	15	67	44	80	33.5	67	44	80	33.5	70	52	130	35	67	45	100	33.5
3/4	20	68	49	80	34	68	49	80	34	85	56	130	42.5	68	50	100	34
1	25	79	55	110	39.5	79	55	110	39.5	100	63	150	50	79	56	130	39.5
11/4	32	89	59	110	44.5	89	59	110	44.5	115	68	150	57.5	89	60	130	44.5
11/2	40	100	64	110	50	100	64	110	50	130	94.5	230	65	100	66	130	50
2	50	115	74	140	57.5	115	74	140	57.5	150	102	230	75	115	75	150	57.5
21/2	65	138	91	200	69												
3	80	166	105	300	83												
Body & Cap		Forged Brass/Cast Bronze				Forged Brass/Cast Bronze				Body: Cast Bronze/Cap: Forged Brass				Body: Cast Bronze/Cap: Forged Brass			
Stem		Dezincification Resistant Brass				Dezincification Resistant Brass				Dezincification Resistant Brass				Dezincification Resistant Brass			
Ball		Forged Brass+Cr Plated				Forged Brass+Cr Plated				Forged Brass+Cr Plated				Forged Brass+Cr Plated			
Ball Seat		PTFE				PTFE				PTFE				PTFE			
Gland Packing/O ring		G/F PTFE up to 3/8B & FKM				G/F PTFE up to 3/8B & FKM				FKM				G/F PTFE up to 3/8B & FKM			
Handle		430SS/DI				430SS/DI				430SS/DI				430SS			
Bore		Standard Bore				Standard Bore				Standard Bore				Standard Bore			
Standard/Approval		RoHS: TN<GS101> up to 1B				RoHS: TN<GS101> up to 1B											
Service Conditions		W.O.G. Non-shock 2.76MPa(400psi), W.O.G. 150℃ 0.69MPa(100psi) (Do not use for flammable gas or toxic gas.)				W.O.G. Non-shock 2.76MPa(400psi), W.O.G. 150℃ 0.69MPa(100psi) (Do not use for flammable gas or toxic gas.)				W.O.G. Non-shock 2.76MPa(400psi), W.O.G. 150℃ 0.69MPa(100psi) (Do not use for flammable gas or toxic gas.)				W.O.G. Non-shock 2.76MPa(400psi), W.O.G. 150℃ 0.69MPa(100psi) (Do not use for flammable gas or toxic gas.)			
Reference Page		Port Orientation : Page TECH1				Port Orientation : Page TECH1				Port Orientation : Page TECH1				Port Orientation : Page TECH2			
Remarks		Standard Bore, Double O-ring, L-port,				Standard Bore, Double O-ring, L-port, with Mounting Pad				Standard Bore, Double O-ring L-port or T-port				Standard Bore, Double O-ring L-port or T-port, Vertical Type			

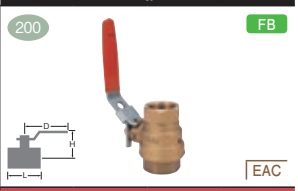
Type		Ball			Ball			Ball			Ball		
Bronze & Brass T Ball Series													
Fig		AKTAFLL			CTAF			AKTFLL			CTFLL		
End Connection		ASME B1.20.1			**ASME B16.18			ASME B1.20.1			**ASME B16.18		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/4	8	41	39	81				41	35	81			
3/8	10	42	39	81	46	39	82	42	35	81			
1/2	15	53	42	81	54	42	82	53	38	81	54	38	81
3/4	20	60	51	100	73	51	100	60	47	100	73	47	100
1	25	72	58	130	88	59	130	72	54	130	88	54	130
11/4	32	82	64	130	100	64	130	82	59	130	100	59	130
11/2	40	92	73	150	115	73	150	92	67	150	115	67	150
2	50	105	80	150	140	80	150	105	75	150	140	75	150
21/2	65				163	108	200						
3	80				187	122	300						
Body & Cap		Forged Brass			Forged Brass/Cast Bronze			Forged Brass			Forged Brass		
Stem		Dezincification Resistant Brass			Dezincification Resistant Brass			Dezincification Resistant Brass			Dezincification Resistant Brass		
Ball		Forged Brass + Cr Plated			Forged Brass/304SS			Forged Brass + Cr Plated			Forged Brass + Cr Plated		
Ball Seat		PTFE			PTFE			PTFE			PTFE		
Gland Packing/O ring		PTFE			PTFE			FKM+NBR			FKM+NBR		
Handle		CS + Zn Plated			CS + Zn Plated			CS + Zn Plated			CS + Zn Plated		
Bore		Full Bore			Full Bore			Full Bore			Full Bore		
Standard/Approval		CSA, UL			UL, FM			CSA			UL		
Service Conditions		W.O.G. Non-shock 4.14MPa(600psi), W.O.G 150℃ 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 4.14MPa(600psi), W.O.G 150℃ 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 4.14MPa(600psi), W.O.G 150℃ 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 4.14MPa(600psi), W.O.G 150℃ 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)		
Reference Page					P-T Rating : Page BR34						P-T Rating : Page BR34		
Remarks		Latch Lock Handle EAC: Option			EAC: Option			Latch Lock Handle EAC: Option			Latch Lock Handle EAC: Option		

**Solder jointed end valves should not be used in service where the temperature of line fluid is higher than the softening point of the solder.

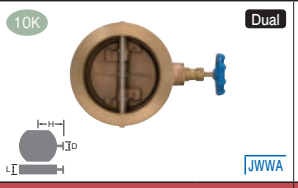
Type		Ball			Ball			Ball			Ball		
Bronze & Brass T Ball Series													
Fig		AKTAFM			CTAFM			AKTFMLL			CTFMLL		
End Connection		ASME B1.20.1			**ASME B16.18			ASME B1.20.1			**ASME B16.18		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/4	8	41	39	82				41	35	81			
3/8	10	42	39	82	46	39	82	42	35	81			
1/2	15	53	42	82	54	42	82	53	38	81	54	38	81
3/4	20	60	51	100	73	51	100	60	47	100	73	47	100
1	25	72	58	130	88	59	130	72	54	130	88	54	130
11/4	32	82	64	130	100	64	130	82	59	130	100	59	130
11/2	40	92	73	150	115	73	150	92	67	150	115	67	150
2	50	105	80	150	140	80	150	105	75	150	140	75	150
Body/Cap		Forged Brass			Forged Brass			Forged Brass			Forged Brass		
Stem		316SS			316SS			316SS			316SS		
Ball		316SS			316SS			316SS			316SS		
Ball Seat		PTFE			PTFE			PTFE			PTFE		
Gland Packing/O ring		PTFE			PTFE			FKM+NBR			FKM+NBR		
Handle		CS + Zn Plated			CS + Zn Plated			CS + Zn Plated			CS + Zn Plated		
Bore		Full Bore			Full Bore			Full Bore			Full Bore		
Standard/Approval		CSA, UL			UL			CSA			UL		
Service Conditions		W.O.G. Non-shock 4.14MPa(600psi), W.O.G 150℃ 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 4.14MPa(600psi), W.O.G 150℃ 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 4.14MPa(600psi), W.O.G 150℃ 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 4.14MPa(600psi), W.O.G 150℃ 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)		
Reference Page					P-T Rating : Page BR34						P-T Rating : Page BR34		
Remarks		316SS Trim EAC: Option			316SS Trim EAC: Option			Latch Lock Handle 316SS Trim, EAC: Option			Latch Lock Handle EAC: Option		

**Solder jointed end valves should not be used in service where the temperature of line fluid is higher than the softening point of the solder.

Type		Ball			Ball			Ball			Ball		
Bronze & Brass T Ball Series													
Fig		AKTAFP			AKTAFPM			AKTAFO			AKTAFU		
End Connection		ASME B1.20.1			ASME B1.20.1			ASME B1.20.1			ASME B1.20.1		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/4	8	41	39	82	41	39	81	52	39	82	52	39	82
3/8	10	42	39	82	42	39	81	53	39	82	52	39	82
1/2	15	53	42	82	53	42	81	66	42	82	63	42	82
3/4	20	60	51	100	60	51	100	73	51	100	75	51	100
1	25	72	59	130	72	59	130	88	59	130	88	59	130
11/4	32	82	64	130	82	64	130				98	64	130
11/2	40	92	74	150	92	73	150				113	73	150
2	50	105	81	150	105	80	150				126	80	150
21/2	65	135	109	200	135	108	200						
3	80	156	123	300	156	122	300						
4	100	192	141	300	192	140	300						
Body & Cap		Forged Brass/Cast Bronze			Forged Brass/Cast Bronze			Forged Brass			Forged Brass		
Stem		Dezincification Resistant Brass			316SS			Dezincification Resistant Brass			Dezincification Resistant Brass		
Ball		Forged Brass/304SS			316SS			Fprged Brass + Cr Plated			Fprged Brass + Cr Plated		
Ball Seat		PTFE			Reinforced PTFE			PTFE			PTFE		
Gland Packing/O ring		PTFE			PTFE			PTFE			PTFE		
Handle		CS + Zn Plated			CS + Zn Plated			CS + Zn Plated			CS + Zn Plated		
Bore		Full Bore			Full Bore			Full Bore			Full Bore		
Standard/Approval		UL			UL								
Service Conditions		W.O.G. Non-shock 4.14MPa(600psi), W.O.G 150℃ 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 4.14MPa(600psi), W.O.G 150℃ 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 4.14MPa(600psi), W.O.G 150℃ 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 4.14MPa(600psi), W.O.G 150℃ 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)		
Remarks		With Mounting Pad EAC: Option			Latch Lock Handle, With mounting pad, 316SS Trim, EAC: Option			Male & Female EAC: Option			Single Union Gasket : FKM, EAC: Option		

Type		Ball				
Bronze & Brass T Ball Series						
Fig		AKTAFS				
End Connection		ASME B1.20.1				
inch	mm	L	H	E	D	
1/4	8	41	39	4	81	
3/8	10	42	39	4	81	
1/2	15	53	42	4	81	
3/4	20	60	51	4	100	
1	25	72	59	4	130	
11/4	32	82	64	4	130	
11/2	40	92	73	4	150	
2	50	105	80	4	150	
Body & Cap		Forged Brass				
Stem		Dezincification Resistant Brass				
Ball		Fprged Brass + Cr Plated				
Ball Seat		PTFE				
Gland Packing/O ring		PTFE				
Handle		CS + Zn Plated				
Bore		Full Bore				
Service Conditions		W.O.G. Non-shock 1.38MPa(200psi), -18℃ to +93℃(not freezing) (Do not use for flammable gas or toxic gas.)				
Remarks		Exhaust Hole, Latch Lock Handle Gasket for 2B : NBR, EAC: Option				

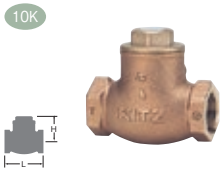
Type		Globe			Gate			Gate			Swing Check		
Lead Free Bronze & Brass KEEPALLOY®		125 UB IS JWWA 			125 SB/SOB IS NRS JWWA 			10K SB IS NRS JWWA 			125 SC JWWA 		
Fig		GN			HN			WN			RN		
End Connection		BS21 (JIS B0203)			BS21 (JIS B0203)			BS21 (JIS B0203)			BS21 (JIS B0203)		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
3/8	10										53	39	
1/2	15	57	87	60	45	80	50	55	104	60	60	39	
3/4	20	66	102	70	50	90	55	65	112	70	70	45	
1	25	76	113	80	57	105	60	70	135	80	80	52	
11/4	32	88	138	90	61	118	70	80	157	90	92	62	
11/2	40	100	154	100	67	135	80	90	175	100	102	67	
2	50	120	183	115	74	159	90	100	201	120	122	79	
21/2	65				90	202	115				150	91	
3	80				100	223	135						
4	100				121	280	155						
Body		CAC911			CAC911			CAC911			CAC911		
Bonnet/Cap/Cover		C6803			CAC911			CAC911			C6803/Forged Brass		
Stem/Hinge Pin		C6803			C6803			C6803			C1100		
Disc		G/F PTFE			C6803/CAC911			CAC911			C6803/Forged Brass		
Gland Packing/O ring		Aramid Fibers Graphite			Aramid Fibers Graphite			NBR					
Hand Wheel		Alminum Die-Cast			Alminum Die-Cast/ZDC			C3771BE					
Standard/Approval		JWWA E-1			JWWA E-1			JWWA E-1			JWWA E-464		
Service Conditions		Stream Water up to 100℃ 1.18MPa			Stream Water up to 100℃ 1.18MPa			Stream Water up to 80℃ 1.4MPa、Pulsating Water up to 80℃ 1.0MPa			Stream Water up to 100℃ 1.18MPa		
Remarks								Buried Type, Brass Hand Wheel					

Type		Swing Check			Vertical Lift Check			Wafer Check			Globe		
Lead Free Bronze & Brass KEEPALLOY®		125 SC JWWA 			150 JWWA 			10K Dual JWWA 			10K SB/BB RS JIS 		
Fig		CRN			RFN			10BWZN			JN		
End Connection		**JIS B2011			BS21 (JIS B0203)			Wafer (JIS 10K)			JIS B0203		
inch	mm	L	H	D	L	S		L	H	D	L	H	D
1/4	8										50	83	50
3/8	10	56	39								55	85	55
1/2	15	67	39		53	28					65	91	60
3/4	20	89	45		59	34					80	120	80
1	25	104	52		67	41					90	135	90
11/4	32	120	62		78	50					105	156	100
11/2	40	134	67		84	57		54	132	55	120	169	115
2	50	164	79		98	70		56	139	70	140	194	135
21/2	65							56	146	70			
3	80							59	152	70			
4	100							66	165	70			
5	125							72	183	70			
6	150							78	208	80			
8	200							96	237	80			
Body		CAC911			CAC911			CAC911+NBR			CAC911		
Bonnet/Cap/Cover		C6803/Forged Brass			CAC911						CAC911		
Hinge Pin/Spring		C1100			Spring: P Bronze(C519W-H)			304SS			C6803		
Disc/Screen		C6803/Forged Brass			FKM			CAC911			C6803/CAC911		
Gland Packing/Gasket								Aramid Fiber Graphite			Aramid Fiber Graphite		
Hand Wheel								Alminum Die-Cast/DI			Alminum Die-Cast/DI		
Standard/Approval		JWWA E-464			JWWA F-68			JWWA E-628			JIS B2011		
Service Conditions		Stream Water up to 100℃ 1.18MPa			Stream Water up to 85℃ 1.4MPa、Pulsating Water up to 85℃ 1.0MPa			Stream Water up to 80℃ 1.4MPa、Pulsating Water up to 80℃ 1.0MPa			Stream Water up to 100℃ 1.4MPa、Pulsating Water up to 100℃ 1.0MPa		
Reference Page		P-T Rating : Page BR34						Features: Page BR36					
Remarks								Built-in Bypass Valve, Dual Plate Type					

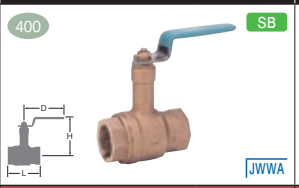
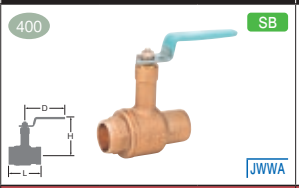
**Solder jointed end valves should not be used in service where the temperature of line fluid is higher than the softening point of the solder.

Type		Gate			Gate			Gate			Gate		
Lead Free Bronze & Brass KEEPALLOY®		5K SB RS  JIS			5K SB RS  JIS			10K SB RS  JIS			10K SB RS  JIS		
Fig		MN			CMN			LN			CLN		
End Connection		JIS B0203			**JIS B2011			JIS B0203			**JIS B2011		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/2	15	50	126	60	50	126	60	55	126	60	50	124	60
3/4	20	60	145	60	65	145	60	65	151	70	65	149	70
1	25	65	169	70	75	169	70	70	176	80	75	173	80
11/4	32	75	209	90	80	209	90	80	219	90	82	217	90
11/2	40	85	239	100	88	239	100	90	250	100	92	248	100
2	50	95	285	115	108	285	115	100	292	115	110	292	115
21/2	65	115	366	135				120	376	155			
3	80	130	428	155				140	436	180			
Body		CAC911			CAC911			CAC911			CAC911		
Bonnet		CAC911			CAC911			CAC911			CAC911		
Stem		C6803			C6803			C6803			C6803		
Disc		CAC911/C6803			CAC911/C6803			CAC911			CAC911		
Gland Packing		Aramid Fibers Graphite/PTFE			Aramid Fibers Graphite/PTFE			Aramid Fibers Graphite			Aramid Fibers Graphite		
Hand Wheel		Alminum Die-Cast/ZDC			Alminum Die-Cast/ZDC			Alminum Die-Cast/ZDC/DI			Alminum Die-Cast/ZDC/DI		
Standard/Approval		JIS B2011			JIS B2011			JIS B2011			JIS B2011		
Service Conditions		Stream Water up to 100℃ 0.7MPa、Pulsating Water up to 100℃ 0.5MPa			Stream Water up to 100℃ 0.7MPa、Pulsating Water up to 100℃ 0.5MPa			Stream Water up to 100℃ 1.4MPa、Pulsating Water up to 100℃ 1.0MPa			Stream Water up to 100℃ 1.4MPa for up to 1^{B}, 1.2MPa for 11/4^{B} & over, Pulsating Water up to 100℃ 1.0MPa for up to 1^{B}, 0.8MPa for 11/4^{B} & over		
Reference Page					P-T Rating : Page BR34						P-T Rating : Page BR34		

**Solder jointed end valves should not be used in service where the temperature of line fluid is higher than the softening point of the solder.

Type		Swing Check			Y-Pattern Swing Check			Y-Pattern Swing Check		
Lead Free Bronze & Brass KEEPALLOY®		10K SC  JIS			150 SC  JWWA			150 SC  JWWA		
Fig		ON			YNK			CYNK		
End Connection		JIS B0203			JIS B0203			**JIS B2011		
inch	mm	L	H	D	L	H	***H1	L	H	***H1
3/8	10	55	38.5							
1/2	15	65	43		80	50	68	80	51	68
3/4	20	80	51.5		100	59	83	105	59	83
1	25	90	58.5		115	71	105	125	72	105
11/4	32	105	67		135	84	124	145	84	124
11/2	40	120	73.5		160	100	149	170	100	149
2	50	140	86		195	123	188	210	123	188
Body		CAC911			CAC911			CAC911		
Bonnet/Cap/Cover		C6803			C6803			C6803		
Stem/Hinge Pin		Copper								
Disc/Screen		CAC911			304SS			304SS		
O ring					FKM			FKM		
Standard/Approval					JWWA Z-49			JWWA Z-49		
Service Conditions		Stream Water up to 100℃ 1.4MPa、Pulsating Water up to 100℃ 1.0MPa			Stream Water up to 85℃ 1.4MPa、Pulsating Water up to 85℃ 1.0MPa			Stream Water up to 85℃ 1.4MPa、Pulsating Water up to 85℃ 1.0MPa		
Reference Page								P-T Rating : Page BR34		
Remarks					40 mesh			40 mesh		

**Solder jointed end valves should not be used in service where the temperature of line fluid is higher than the softening point of the solder.
***Height for removing the screen

Type		Ball			Ball			Ball			Ball		
Lead Free Bronze & Brass KEEPALLOY®													
Fig		TLN			TLNT			CTLN			TLNF		
End Connection		BS21 (JIS B0203)			BS21 (JIS B0203)			**JIS B2011			BS21 (JIS B0203)		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/2	15	56	75	80	56	79	82	58	75	80	56	75	80
3/4	20	65	79	80	65	83	82	73	79	80	65	79	80
1	25	78	83	110	78	90	94	88	83	110	77	85	110
11/4	32	86	98	110	86	105	94	99	98	110	90	102	110
11/2	40	96	102	110	96	109	94	114	102	110	98	110	140
2	50	109	109	140	109	124	120	135	109	140	119	118	140
Body & Cap		CAC911			CAC911			CAC911			CAC911		
Stem		C6803			C6803			C6803			304SS		
Ball		304SS			304SS			304SS			304SS		
Ball Seat		PTFE			PTFE			PTFE			PTFE		
Gland Packing/O ring		FKM			FKM			FKM			FKM		
Handle		430SS			Reinforced Nylon			430SS			430SS		
Bore		Standard Bore			Standard Bore			Standard Bore			Full Bore		
Standard/Approval		JWWA E-1			JWWA E-1			JWWA E-1			JWWA E-1		
Service Conditions		Stream Water up to 85℃ 1.4MPa、Pulsating Water up to 85℃ 1.0MPa			Stream Water up to 85℃ 1.4MPa、Pulsating Water up to 85℃ 1.0MPa			Stream Water up to 85℃ 1.4MPa、Pulsating Water up to 85℃ 1.0MPa			Stream Water up to 85℃ 1.4MPa、Pulsating Water up to 85℃ 1.0MPa		
Reference Page								P-T Rating : Page BR34					
Remarks		Standard Bore, Double O-ring For Thermal Insulation			Standard Bore, Double O-ring T Handle, For Thermal Insulation			Standard Bore, Double O-ring For Thermal Insulation			Full Bore, Double O-ring For Thermal Insulation		

**Solder jointed end valve should not be used in service where the temperature of line fluid is higher than the softening point of the solder.

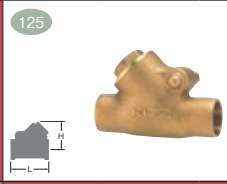
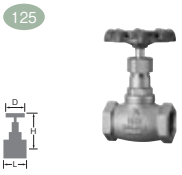
Type		Ball
Lead Free Bronze & Brass KEEPALLOY®		
Fig		TLNFT
End Connection		BS21 (JIS B0203)
inch	mm	L / H / D
1/2	15	56 / 80 / 82
3/4	20	65 / 84 / 82
1	25	77 / 93 / 94
11/4	32	90 / 110 / 94
11/2	40	98 / 125 / 120
2	50	119 / 134 / 120
Body & Cap		CAC911
Stem		304SS
Ball		304SS
Ball Seat		PTFE
Gland Packing/O ring		FKM
Handle		Reinforced Nylon
Bore		Full Bore
Standard/Approval		JWWA E-1
Service Conditions		Stream Water up to 85℃ 1.4MPa、Pulsating Water up to 85℃ 1.0MPa
Remarks		Full Bore, Double O-ring T Handle, For Thermal Insulation

Type		Gate			Gate			Gate			Swing Check		
Lead Free Bronze & Brass NSF61-G		125 SB IS NRS NSF			125 SB/SOB IS NRS NSF			125 SB/SOB IS NRS NSF			125 SC NSF		
Fig		AKFSN			AKHN			CHN			AKRN		
End Connection		ASME B1.20.1			ASME B1.20.1			**ASME B16.18			ASME B1.20.1		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/2	15	42	75	50	45	80	50	46	80	50	60	39	
3/4	20	47	86	55	50	90	55	61	90	55	70	45	
1	25	50	97	60	57	105	60	72	105	60	80	52	
11/4	32	60	117	70	61	118	70	78	118	70	92	62	
11/2	40	63	126	80	67	135	80	87	135	80	102	67	
2	50	72	154	90	74	159	90	102	159	90	122	79	
Body		Forged Brass			CAC911			CAC911			CAC911		
Bonnet/Cap		Forged Brass			CAC911			CAC911			Forged Brass		
Stem/Hinge Pin		Forged Brass			Forged Brass			Forged Brass			Copper		
Disc		Forged Brass			Forged Brass/CAC911						Forged Brass		
Gland Packing		Aramid Fibers Graphite			Aramid Fibers Graphite			Aramid Fibers Graphite					
Hand Wheel		Alminum Die-Cast			Alminum Die-Cast			Alminum Die-Cast					
Standard/Approval		NSF			NSF			NSF			NSF		
Service Conditions		W.O.G. Non-shock 1.38MPa(200psi), Saturated Steam Pressure 0.86MPa(125psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 1.38MPa(200psi), Saturated Steam Pressure 0.86MPa(125psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 1.38MPa(200psi), Saturated Steam Pressure 0.86MPa(125psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 1.38MPa(200psi), Saturated Steam Pressure 0.86MPa(125psi) (Do not use for flammable gas or toxic gas.)		
Reference Page								P-T Rating : Page BR34					

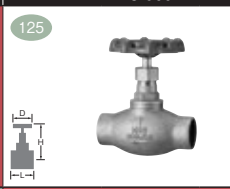
**Solder jointed end valves should not be used in service where the temperature of line fluid is higher than the softening point of the solder.

Type		Swing Check			Y-Pattern Swing Check			Y-Pattern Swing Check			Y-Pattern Swing Check		
Lead Free Bronze & Brass NSF61-G		125 SC NSF			125 SC MSS NSF			125 SC MSS NSF			125 SC MSS NSF		
Fig		CRN			AKYRN			CYRN			AKYRNT		
End Connection		**ASME B16.18			ASME B1.20.1			**ASME B16.18			ASME B1.20.1		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/2	15	67	39		56	40		67	38		56	40	
3/4	20	89	45		70	49		86	47		70	49	
1	25	104	52		80	58		105	56		80	58	
11/4	32	120	62		95	71		121	69		95	71	
11/2	40	134	67		110	80		137	77		110	80	
2	50	164	79		128	95		170	92		128	95	
Body		CAC911			B584 C89530			B584 C89530			B584 C89530		
Bonnet/Cap		Forged Brass			B283 C46750			B283 C46750			B283 C46750		
Stem/Hinge Pin		Copper			Copper (CDA No. C11000)			Copper (CDA No. C11000)			Copper (CDA No. C11000)		
Disc		Forged Brass			B584 C89530			B584 C89530			PTFE		
Standard/Approval		NSF			MSS SP-80, NSF			MSS SP-80, NSF			MSS SP-80, NSF		
Service Conditions		W.O.G. Non-shock 1.38MPa(200psi), Saturated Steam Pressure 0.86MPa(125psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 1.38MPa(200psi), Saturated Steam Pressure 0.86MPa(125psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 1.38MPa(200psi), Saturated Steam Pressure 0.86MPa(125psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 1.38MPa(200psi), Saturated Steam Pressure 0.86MPa(125psi) (Do not use for flammable gas or toxic gas.)		
Reference Page		P-T Rating : Page BR34						P-T Rating : Page BR34					

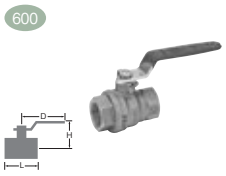
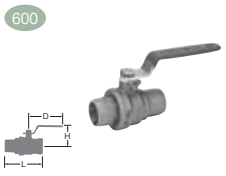
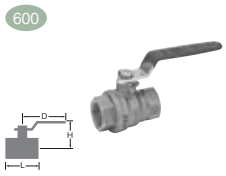
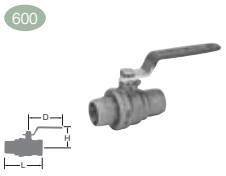
**Solder jointed end valves should not be used in service where the temperature of line fluid is higher than the softening point of the solder.

Type		Y Swing Check			Vertical Lift Check			Vertical Lift Check			Globe		
Lead Free Bronze & Brass NSF61-G		125  SC MSS NSF			150  NSF			150  NSF			125  SB RS NSF		
Fig		CYRNT			AKAFN			CAFN			AK125CN		
End Connection		ASME B16.18			ASME B1.20.1			**ASME B16.18			ASME B1.20.1		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/2	15	67	38		53			61			53	76	60
3/4	20	86	47		59			76			65	98	70
1	25	105	56		67			89			77	108	80
11/4	32	121	69		78			97			85	137	90
11/2	40	137	77		84			110			100	160	100
2	50	170	92		98			132			119	180	115
Body		B584 C89530			CAC911			CAC911			CAC911		
Bonnet/Cap		B283 C46750			CAC911			CAC911			Forged Brass		
Stem/Hinge Pin		Copper (CDA No. C11000)			Spring: P Bronze			Spring: P Bronze			Forged Brass		
Disc		PTFE			FKM			FKM			Forged Brass		
Gland Packing											Aramid Fibers Graphite		
Hand Wheel											Alminum Die-Cast		
Standard/Approval		MSS SP-80, NSF			NSF			NSF			NSF		
Service Conditions		W.O.G. Non-shock 1.38MPa(200psi), Saturated Steam Pressure 0.86MPa(125psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 1.72MPa(250psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 1.72MPa(250psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 1.38MPa(200psi), Saturated Steam Pressure 0.86MPa(125psi) (Do not use for flammable gas or toxic gas.)		
Reference Page		P-T Rating : Page BR34			Feautures : Page BR34			P-T Rating, Feautures : Page BR34					

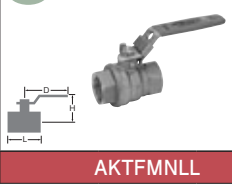
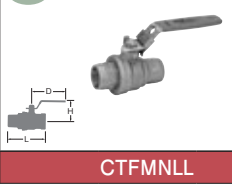
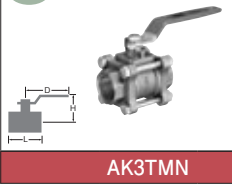
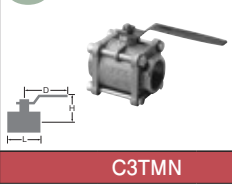
**Solder jointed end valves should not be used in service where the temperature of line fluid is higher than the softening point of the solder.

Type		Globe		
Lead Free Bronze & Brass NSF61-G		125  SB RS NSF		
Fig		C125CN		
End Connection		**ASME B16.18		
inch	mm	L	H	D
1/2	15	64	76	60
3/4	20	84	98	70
1	25	100	108	80
11/4	32	115	137	90
11/2	40	130	160	100
2	50	155	180	115
Body		CAC911		
Bonnet		Forged Brass		
Stem		Forged Brass		
Disc		Forged Brass		
Gland Packing		Aramid Fibers Graphite		
Hand Wheel		Alminum Die-Cast		
Standard/Approval		NSF		
Service Conditions		W.O.G. Non-shock 1.38MPa(200psi), Saturated Steam Pressure 0.86MPa(125psi) (Do not use for flammable gas or toxic gas.)		
Reference Page		P-T Rating : Page BR34		

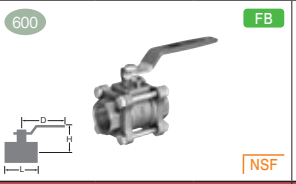
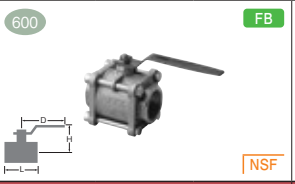
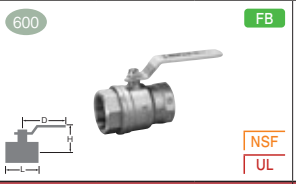
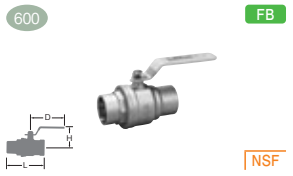
**Solder jointed end valves should not be used in service where the temperature of line fluid is higher than the softening point of the solder.

Type		Ball			Ball			Ball			Ball		
Lead Free Bronze & Brass NSF61-G		600 FB  NSF			600 FB  NSF			600 FB  NSF			600 FB  NSF		
Fig		AKTAFN			CTAFN			AKTAFMN			CTAFMN		
End Connection		ASME B1.20.1			**ASME B16.18			ASME B1.20.1			**ASME B16.18		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/4	8	41	39	82				41	39	82			
3/8	10	42	39	82	46	39	82	42	39	82	46	39	82
1/2	15	53	42	82	54	42	82	53	42	82	54	42	82
3/4	20	60	51	100	73	51	100	60	51	100	73	51	100
1	25	72	59	130	88	59	130	72	59	130	88	59	130
11/4	32	82	64	130	100	64	130	82	64	130	100	64	130
11/2	40	92	73	150	115	73	150	92	73	150	115	73	150
2	50	105	80	150	140	80	150	105	80	150	140	80	150
Body & Cap		Forged Brass			Forged Brass			Forged Brass			Forged Brass		
Stem		Forged Brass			Forged Brass			316SS			316SS		
Ball		Forged Brass/304SS			Forged Brass/304SS			316SS			316SS		
Ball Seat		PTFE			PTFE			PTFE			PTFE		
Gland Packing		PTFE			PTFE			PTFE			PTFE		
Handle		CS + Zn Plated			CS + Zn Plated			CS + Zn Plated			CS + Zn Plated		
Bore		Full Bore			Full Bore			Full Bore			Full Bore		
Standard/Approval		NSF			NSF			NSF			NSF		
Service Conditions		W.O.G. Non-shock 4.14MPa(600psi), W.O.G 150℃ 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 4.14MPa(600psi), W.O.G 150℃ 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 4.14MPa(600psi), W.O.G 150℃ 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 4.14MPa(600psi), W.O.G 150℃ 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)		
Reference Page					P-T Rating : Page BR34						P-T Rating : Page BR34		
Remarks								316SS Trim			316SS Trim		

**Solder jointed end valves should not be used in service where the temperature of line fluid is higher than the softening point of the solder.

Type		Ball			Ball			Ball			Ball		
Lead Free Bronze & Brass NSF61-G		600 FB  NSF			600 FB  NSF			600 FB  NSF			600 FB  NSF		
Fig		AKTFMNLL			CTFMNLL			AK3TMN			C3TMN		
End Connection		ASME B1.20.1			**ASME B16.18			ASME B1.20.1			**ASME B16.18		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/2	15	53	39	81	54	39	81	61	42	82	61	42	82
3/4	20	60	47	100	73	47	100	70	51	100	73	51	100
1	25	72	55	130	88	55	130	83	59	130	88	59	130
11/4	32	82	59	130	100	59	130	99	64	130	99	64	130
11/2	40	92	67	150	115	67	150	117	73	150	117	73	150
2	50	105	75	150	140	75	150	139	80	150	139	80	150
Body & Cap		Forged Brass			Forged Brass			Forged Brass			Forged Brass		
Stem		316SS			316SS			Forged Brass			Forged Brass		
Ball		316SS			316SS			Forged Brass/304SS			Forged Brass/304SS		
Ball Seat		PTFE			PTFE			PTFE			PTFE		
Gland Packing/O ring		FKM+NBR			FKM+NBR			PTFE, Gasket: FKM			PTFE, Gasket: FKM		
Handle		CS + Zn Plated			CS + Zn Plated			CS + Zn Plated			CS + Zn Plated		
Bore		Full Bore			Full Bore			Full Bore			Full Bore		
Standard/Approval		NSF			NSF			NSF			NSF		
Service Conditions		W.O.G. Non-shock 4.14MPa(600psi), W.O.G 150℃ 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 4.14MPa(600psi), W.O.G 150℃ 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 4.14MPa(600psi), W.O.G 150℃ 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 4.14MPa(600psi), W.O.G 150℃ 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)		
Reference Page					P-T Rating : Page BR34						P-T Rating : Page BR34		
Remarks		Latch Lock Handle 316SS Trim			Latch Lock Handle 316SS Trim			Full Bore			Full Bore		

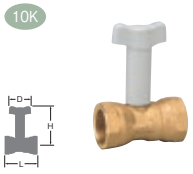
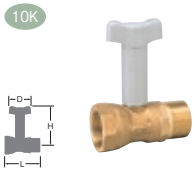
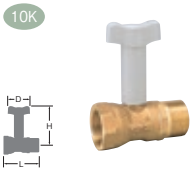
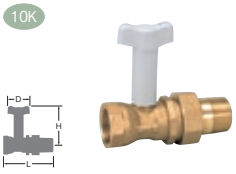
**Solder jointed end valves should not be used in service where the temperature of line fluid is higher than the softening point of the solder.

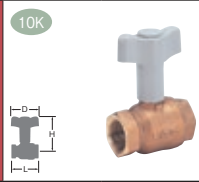
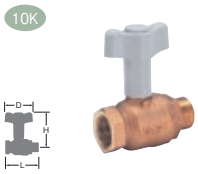
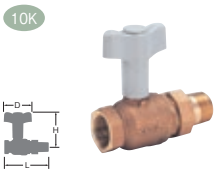
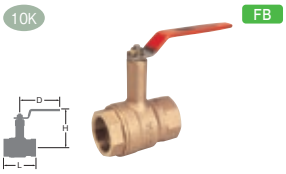
Type		Ball			Ball			Ball			Ball		
Lead Free Bronze & Brass NSF61-G		600 FB  NSF			600 FB  NSF			600 FB  NSF UL			600 FB  NSF		
Fig		AK3TMMN			C3TMMN			AKSZAN			CSZAN		
End Connection		ASME B1.20.1			**ASME B16.18			ASME B1.20.1			**ASME B16.18		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/4	8							42	37	70			
3/8	10							42	37	70	46	37	70
1/2	15	61	42	82	61	42	82	53	40	80	54	40	80
3/4	20	70	51	100	73	51	100	60	44	80	73	44	80
1	25	83	59	130	88	59	130	72	50	110	88	50	110
11/4	32	99	64	130	99	64	130	84	55	110	100	55	110
11/2	40	117	73	150	117	73	150	92	65	150	115	65	150
2	50	139	80	150	139	80	150	110	72	150	140	72	150
21/2	65							138	101	200	164	101	200
3	80							167	112	300	187	112	300
4	100							193	131	300			
Body & Cap		Forged Brass			Forged Brass			Forged Brass			Forged Brass		
Stem		316SS			316SS			Forged Brass			Forged Brass		
Ball		316SS			316SS			Forged Brass/304SS			Forged Brass/304SS		
Ball Seat		PTFE			PTFE			PTFE			PTFE		
Gland Packing/O ring		PTFE, Gasket: FKM			PTFE, Gasket: FKM			FKM			FKM		
Handle		CS + Zn Plated			CS + Zn Plated			CS + Zn Plated			CS + Zn Plated		
Bore		Full Bore			Full Bore			Full Bore			Full Bore		
Standard/Approval		NSF			NSF			NSF, UL			NSF		
Service Conditions		W.O.G. Non-shock 4.14MPa(600psi), W.O.G 150℃ 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 4.14MPa(600psi), W.O.G 150℃ 1.03MPa(150psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 4.14MPa(600psi)/4B: 2.76MPa(400psi) , W.O.G 150℃ 1.03MPa(150psi)/4B: 0.69MPa(100psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 4.14MPa(600psi)/4B: 2.76MPa(400psi) , W.O.G 150℃ 1.03MPa(150psi)/4B: 0.69MPa(100psi) (Do not use for flammable gas or toxic gas.)		
Reference Page					P-T Rating : Page BR34						P-T Rating : Page BR34		
Remarks		Full Bore			Full Bore			Full Bore, Double O-ring			Full Bore, Double O-ring		

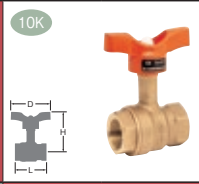
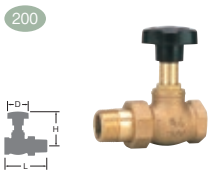
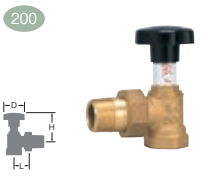
**Solder jointed end valves should not be used in service where the temperature of line fluid is higher than the softening point of the solder.

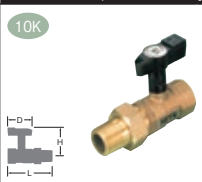
Type		Ball			Ball			Ball			3-Way Ball (2-seat, L-port)			
Lead Free Bronze & Brass NSF61-G		600 FB NO IMAGE NSF			600 FB NO IMAGE NSF			600 FB NO IMAGE NSF			400 SB  NSF			
Fig		AKSZANW			CSZANW			PCTAFMN			AKTNN			
End Connection		ASME B1.20.1			**ASME B16.18			ASME B16.51			ASME B1.20.1			
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D	L1
1/4	8	42	34	55										
3/8	10	42	34	55	46	34	55							
1/2	15	53	39	70	54	39	70	106	42	15	67	45	80	33.5
3/4	20	60	43	70	73	43	70	130	51	20	68	48	80	34
1	25	72	52	100	88	52	100	147	59	25	79	55	110	39.5
11/4	32	84	58	100	100	58	100	165	64	32	89	60	110	44.5
11/2	40	92	73	130	115	73	130	199	73	40	100	65	110	50
2	50	110	81	130	140	81	130	237	81	50	115	75	140	57.5
Body & Cap		Forged Brass			Forged Brass			KSB-4XA			Forged Brass			
Stem		Forged Brass			Forged Brass			316SS			Forged Brass			
Ball		Forged Brass/304SS			Forged Brass/304SS			A351 Gr.CF8M/SCS14A			Forged Brass+Sn-Ni Plated			
Ball Seat		PTFE			PTFE			PTFE			PTFE			
Gland Packing/O ring		FKM			FKM			PTFE			FKM			
Handle		CS + Zn Plated			CS + Zn Plated			Carbon Steel			430SS			
Bore		Full Bore			Full Bore			Full Bore			Standard Bore			
Standard/Approval		NSF			NSF			NSF61/372			NSF			
Service Conditions		W.O.G. Non-shock 4.14MPa(600psi)/4B: 2.76MPa(400psi) , W.O.G 150℃ 1.03MPa(150psi)/4B: 0.69MPa(100psi) (Do not use for flammable gas or toxic gas.)			W.O.G. Non-shock 4.14MPa(600psi)/4B: 2.76MPa(400psi) , W.O.G 150℃ 1.03MPa(150psi)/4B: 0.69MPa(100psi) (Do not use for flammable gas or toxic gas.)			-17 to 121℃ 2.06MPa			W.O.G. Non-shock 2.76MPa(400psi), W.O.G. 150℃ 0.69MPa(100psi) (Do not use for flammable gas or toxic gas.)			
Reference Page					P-T Rating : Page BR34						Port Orientation : Page TECH1			
Remarks		Full Bore, Double O-ring Butterfly (Wing) Handle			Full Bore, Double O-ring Butterfly (Wing) Handle			Solder tube connection, Stainless trim, Press connection			Standard Bore, Double O-ring, L-port			

Type		3-Way Ball (2-seat, L-port)			
Lead Free Bronze & Brass NSF61-G		400 SB  NSF			
Fig		CTNN			
End Connection		**ASME B16.18			
inch	mm	L	H	D	L1
1/2	15	56	45	80	28
3/4	20	74	48	80	37
1	25	88	55	110	44
11/4	32	99	60	110	50.5
11/2	40	114	65	110	59
2	50	136	75	140	71.5
Body & Cap		Forged Brass			
Stem		Forged Brass			
Ball		Forged Brass+Sn-Ni Plated			
Ball Seat		PTFE			
O ring		FKM			
Handle		430SS			
Bore		Standard Bore			
Standard/Approval		NSF			
Service Conditions		W.O.G. Non-shock 2.76MPa(400psi), W.O.G. 150℃ 0.69MPa(100psi) (Do not use for flammable gas or toxic gas.)			
Reference Page		P-T Rating : Page BR34, Port Orientation : Page TECH1			
Remarks		Standard Bore, Double O-ring, L-port			

Type		Ball for Fancoil Unit			Ball for Fancoil Unit			Ball for Fancoil Unit			Ball for Fancoil Unit		
Bronze & Brass Fancol Valves		10K RB 			10K RB 			10K RB 			10K RB 		
Fig		RTRM			RTRO			RTRR			RTRU		
End Connection		BS21 (JIS B0203)			BS21(JIS B0203xB0202)			BS21 (JIS B0203)			BS21 (JIS B0203)		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/2	15	56	72	40	62	72	40	62	72	40	88	72	40
3/4	20	61	72	40	66	72	40	66	72	40	92.5	72	40
1	25	70.5	75.5	40	75.5	75.5	40	75.5	75.5	40	104	75.5	40
Body &Cap		CAC406			CAC406			CAC406			CAC406		
Stem		C3531			C3531			C3531			C3531		
Ball		C3771 + Ni-Cr Plating			C3771 + Ni-Cr Plating			C3771 + Ni-Cr Plating			C3771 + Ni-Cr Plating		
Ball Seat		PTFE			PTFE			PTFE			PTFE		
O ring		EPDM			EPDM			EPDM			EPDM		
Handle		Polyacetal			Polyacetal			Polyacetal			Polyacetal		
Bore		Reduced Bore			Reduced Bore			Reduced Bore			Reduced Bore		
Service Conditions		Stream Water 0℃ to 90℃ 1.0MPa (not freezing)			Stream Water 0℃ to 90℃ 1.0MPa (not freezing)			Stream Water 0℃ to 90℃ 1.0MPa (not freezing)			Stream Water 0℃ to 90℃ 1.0MPa (not freezing)		
Remarks		Taper Thread Detachable & T Type Long Handle			Taper Thread (Female) x Parallel Thread (Male) Detachable & T Type Long Handle			Taper Thread (Female) x Taper Thread (Male) Detachable & T Type Long Handle			Female x Male (Union Nipple) Detachable & T Type Long Handle		

Type		Ball for Fancoil Unit			Ball for Fancoil Unit			Ball for Fancoil Unit			Ball for Fancoil Unit		
Bronze & Brass Fancol Valves		10K FB 			10K FB 			10K FB 			10K FB 		
Fig		RTFM			RTFO			RTFU			TLF		
End Connection		BS21 (JIS B0203)			BS21(JIS B0203xB0202)			BS21 (JIS B0203)			BS21 (JIS B0203)		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/2	15	59	76	61	73	76	61	96	76	61	56	75	80
3/4	20	67.5	79	61	82	79	61	106	79	61	65	79	80
1	25	78.5	97	100	96	97	100	120	97	100	77	85	110
11/4	32										90	102	110
11/2	40										98	110	140
2	50										119	118	140
Body &Cap		CAC406			CAC406			CAC406			CAC406		
Stem		C3531			C3531			C3531			304SS		
Ball		316SS			316SS			316SS			304SS		
Ball Seat		G/F PTFE			G/F PTFE			G/F PTFE			PTFE		
O ring		EPDM			EPDM			EPDM			FKM		
Handle		Polyacetal			Polyacetal			Polyacetal			430SS		
Bore		Full Bore			Full Bore			Full Bore			Full Bore		
Service Conditions		Stream Water 0℃ to 100℃ 1.4MPa, Pulsating Water 0℃ to 100℃ 1.0MPa (not freezing)			Stream Water 0℃ to 100℃ 1.4MPa, Pulsating Water 0℃ to 100℃ 1.0MPa (not freezing)			Stream Water 0℃ to 100℃ 1.4MPa, Pulsating Water 0℃ to 100℃ 1.0MPa (not freezing)			Stream Water up to 80℃ 1.4MPa, (Pulsating Water).O.G. up to 80℃ 1.0MPa (Do not use for flammable gas or toxic gas.)		
Remarks		Taper Thread Detachable & T Type Long Handle			Taper Thread (Female) x Parallel Thread (Male) Detachable & T Type Long Handle			Female x Male (Union Nipple) Detachable & T Type Long Handle			Full Bore, Double O-ring For Thermal Insulation		

Type		Ball for Fancoil Unit			Flow Control, Globe			Flow Control, Angle			Flow Control, Globe		
Bronze & Brass Fancol Valves		10K FB 			200 SB RS 			200 SB RS 			200 SB RS 		
Fig		TLFT			NSH			INAH			INSH		
End Connection		BS21 (JIS B0203)			BS21 (JIS B0203)			BS21 (JIS B0203)			BS21 (JIS B0203)		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/2	15	56	80	82	50.5	77	47.5	25.5	68	47.5	50.5	77	47.5
3/4	20	65	84	82	54.5	79	47.5	28.5	68	47.5	54.5	79	47.5
1	25	77	93	94	61.5	90	47.5	35.5	77	47.5	61.5	90	47.5
11/4	32	90	110	94				39.5	88	47.5	68.5	96	47.5
11/2	40	98	125	120									
2	50	119	134	120									
Body & Cap/Bonnet		CAC406			CAC406/C3771			CAC406/C3771			CAC406/C3771		
Stem		304SS			C3531			C3531			C3531		
Disk & Ball		304SS			PTFE			PTFE			PTFE		
Ball Seat		PTFE											
O ring		FKM			FKM			FKM			FKM		
Gasket					Non Asbestos Sheet (T#1995)			Non Asbestos Sheet (T#1995)			Non Asbestos Sheet (T#1995)		
Handle		Reinforced Nylon			Polycarbonate			Polycarbonate			Polycarbonate		
Bore		Full Bore											
Service Conditions		Stream Water up to 80℃ 1.4MPa、W(Pulsating Water).O.G. up to 80℃ 1.0MPa (Do not use for flammable gas or toxic gas.)			W.O. 60℃ 1.57MPa, W.O. 120℃ 1.37MPa, (Not freezing.)			W.O. 60℃ 1.57MPa, W.O. 120℃ 1.37MPa, (Not freezing.)			W.O. 60℃ 1.57MPa, W.O. 120℃ 1.37MPa, (Not freezing.)		
Reference Page					Flow Characteristic: Page BR37			Flow Characteristic: Page BR37			Flow Characteristic: Page BR37		
Remarks		Full Bore, Double O-ring T Handle, For Thermal Insulation Ambient Temperature: -20℃～+60℃			Female x Male (Union Nipple) Controllable Range 1/2^{B}: 0～20l/min 3/4^{B}: 0～30l/min 1^{B}: 0～40l/min Pressure Loss: up to 60kPA			Female x Male (Union Nipple) Controllable Range 1/2^{B}: 0～20l/min 3/4^{B}: 0～30l/min 1^{B}&11/4^{B}: 0～40l/min Pressure Loss: up to 60kPA			Female x Male (Union Nipple) Controllable Range 1/2^{B}: 0～20l/min 3/4^{B}: 0～30l/min 1^{B}&11/4^{B}: 0～40l/min Pressure Loss: up to 60kPA		

Type		Globe w/ Built-in Screen			Ball (Low Noise Type)			Ball (Constant Flow)		
Bronze & Brass Balancing Valves		10K IS RS 			10K FB 			10K FB 		
Fig		BS15-/BS20-			BSS15-/BSS20-/BSS25-			RTUC		
End Connection		BS21 (JIS B0203)			BS21 (JIS B0203)			BS21 (JIS B0203)		
inch	mm	L	H	D	L	H	D	L	H	D
1/2	15				94.5	63.5	55	88	72	40
3/4x1/2	20x15	118.5	89	40						
3/4	20	121.5	89	40	100.5	63.5	55	92.5	72	40
1	25				115.5	66.5	55	104	75.5	40
Body & Bonnet		CAC406/C3771			CAC406			CAC406		
Stem		C3531			C3531			C3531		
Disk & Ball		G/F PTFE			C3604 + Cr Plating			C3771 + Ni-Cr Plating		
Ball Seat					PTFE			PTFE		
O ring		H-NBR			H-NBR/NBR for 35&40l/min			POM + Silicon Rubber		
Gasket		Non Asbestos/NBR/Silicon			FKM			EPDM		
Handle		Phenolic Resin			Polyacetal			Polyacetal		
Bore					Full Bore			Full Bore		
Service Conditions		Max Working Pressure 1.0MPa, Working Temperature Water 0℃ to 80℃			Max Working Pressure 1.0MPa, Working Temperature Water 0℃ to 80℃			Max Working Pressure 1.0MPa, Working Temperature Water 0℃ to 60℃		
Reference Page		Predetermined Flow Rate: Page BR4			Predetermined Flow Rate: Page BR4			Predetermined Flow Rate: Page BR4		
Remarks		Female x Male (Union Nipple) Control Range 0.05 MPa to 0.49 MPa, Flow Rate 3 to 30 L/min, Contorollable Flow Rate ±10%			Female x Male (Union Nipple) Control Range 0.05 MPa to 0.49 MPa, Flow Rate 3 to 40 L/min, Contorollable Flow Rate ±20%			Female x Male (Union Nipple) Control Range 0.15 MPa to 0.49 MPa, Flow Rate 5 to 30 L/min, Contorollable Flow Rate ±10%,± 20% for 5L/min		

Type		S Ball (Straight)			S Ball (Straight)			S Ball (Straight)			S Ball (Straight)		
Bronze & Brass S Ball Series for Water Heater		10K  JWWA			10K  JWWA			10K  JWWA			10K  JWWA		
Fig		S23N-			S24N-			S24N-3/4X			S25N-		
End Connection		BS21(JIS B0203xB0202)			BS21(JIS B0203xB0202)			BS21(JIS B0203xB0202)			BS21 (JIS B0203)		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/2	15	72	51/63*	40	72	51/63*	40	73	51/63*	40	73	51/63*	40
3/4	20	74	51/63*	40	74	51/63*	40				75	51/63*	40
Body & Bonnet		C3771			C3771 + Ni-Cr Plating			C3771 + Ni-Cr Plating			C3771 + Ni-Cr Plating		
Stem		C3531			C3531			C3531			C3531		
Ball		C3771 + Sn-Ni Plating			C3771 + Sn-Ni Plating			C3771 + Sn-Ni Plating			C3771 + Sn-Ni Plating		
Ball Seat		PTFE			PTFE			PTFE			PTFE		
Check Valve		Polyacetal			Polyacetal			Polyacetal			Polyacetal		
O ring / Spring		EPDM, NBR / 304SS			EPDM, NBR / 304SS			EPDM, NBR / 304SS			EPDM, NBR / 304SS		
Handle/Attachment		Polyacetal			Polyacetal			Polyacetal			Polyacetal		
Standard/Approval		JWWA E-3			JWWA E-3			JWWA E-3			JWWA E-3		
Service Conditions		1.0 MPa Water, 0℃+40℃ (Not Freezing) Direct Flow 40℃ max, Reserve Flow 80℃ max			1.0 MPa Water, 0℃+40℃ (Not Freezing) Direct Flow 40℃ max, Reserve Flow 80℃ max			1.0 MPa Water, 0℃+40℃ (Not Freezing) Direct Flow 40℃ max, Reserve Flow 80℃ max			1.0 MPa Water, 0℃+40℃ (Not Freezing) Direct Flow 40℃ max, Reserve Flow 80℃ max		
Reference Page		Features: Page BR37			Features: Page BR37			Features: Page BR37			Features: Page BR37		
Remarks		Male (Parallel) x Male (Taper) With Spring-loaded Built-in Check Valve (Water Hammer Proof). Detachable T Handle with attachment for extension of handle. * For adding attachement			Male (Parallel) x Male (Taper) With Spring-loaded Built-in Check Valve (Water Hammer Proof). Detachable T Handle with attachment for extension of handle. * For adding attachement			Male (Parallel) x Male (Taper) With Spring-loaded Built-in Check Valve (Water Hammer Proof). Detachable T Handle with attachment for extension of handle. * For adding attachement			Female (Taper) x Female (Taper) With Spring-loaded Built-in Check Valve (Water Hammer Proof). Detachable T Handle with attachment for extension of handle. * For adding attachement		

Type		S Ball (Straight)			S Ball (Straight)			S Ball (Straight)			S Ball (Straight)		
Bronze & Brass S Ball Series for Water Heater													
Fig		S26N-			S27N-			S28N-			S28N-3/4X		
End Connection		BS21(JIS B0203xB0202)			BS21(JIS B0203xB0202)			BS21(JIS B0203xB0202)			BS21(JIS B0203xB0202)		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/2	15	86.5	51/63*	40	85	51/63*	40	70.5	51/63*	40	71.5	51/63*	40
3/4	20	91	51/63*	40	89.5	51/63*	40	72.5	51/63*	40			
Body & Bonnet		C3771 + Ni-Cr Plating			C3771 + Ni-Cr Plating			C3771 + Ni-Cr Plating			C3771 + Ni-Cr Plating		
Stem		C3531			C3531			C3531			C3531		
Ball		C3771 + Sn-Ni Plating			C3771 + Sn-Ni Plating			C3771 + Sn-Ni Plating			C3771 + Sn-Ni Plating		
Ball Seat		PTFE			PTFE			PTFE			PTFE		
Check Valve		Polyacetal			Polyacetal			Polyacetal			Polyacetal		
O ring / Spring		EPDM, NBR / 304SS			EPDM, NBR / 304SS			EPDM, NBR / 304SS			EPDM, NBR / 304SS		
Handle/Attachment		Polyacetal			Polyacetal			Polyacetal			Polyacetal		
Standard/Approval		JWWA E-3			JWWA E-3			JWWA E-3			JWWA E-3		
Service Conditions		1.0 MPa Water, 0℃+40℃ (Not Freezing) Direct Flow 40℃ max, Reserve Flow 80℃ max			1.0 MPa Water, 0℃+40℃ (Not Freezing) Direct Flow 40℃ max, Reserve Flow 80℃ max			1.0 MPa Water, 0℃+40℃ (Not Freezing) Direct Flow 40℃ max, Reserve Flow 80℃ max			1.0 MPa Water, 0℃+40℃ (Not Freezing) Direct Flow 40℃ max, Reserve Flow 80℃ max		
Reference Page		Features: Page BR37			Features: Page BR37			Features: Page BR37			Features: Page BR37		
Remarks		Male (Taper) x Union Nut (Female (Parallel)) With Spring-loaded Built-in Check Valve (Water Hammer Proof). Detachable T Handle with attachment for extension of handle. * For adding attachement			Feale (Taper) x Union Nut (Female (Parallel)) With Spring-loaded Built-in Check Valve (Water Hammer Proof). Detachable T Handle with attachment for extension of handle. * For adding attachement			Female (Taper) x Male (Parallel) With Spring-loaded Built-in Check Valve (Water Hammer Proof). Detachable T Handle with attachment for extension of handle. * For adding attachement			Female (Taper) x Male (Parallel) With Spring-loaded Built-in Check Valve (Water Hammer Proof). Detachable T Handle with attachment for extension of handle. * For adding attachement		

Type		S Ball (Angle)			Orange Ball (Straight)			Orange Ball (Straight)			Orange Ball (Angle)		
Bronze & Brass S Ball Series for Water Heater Orange Ball Series													
Fig		S38A-			S1-			S2-			S5-		
End Connection		BS21(JIS B0203xB0202)			BS21(JIS B0203xB0202)			BS21(JIS B0203xB0202)			BS21(JIS B0203xB0202)		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/2	15	47.3	52/64*	40	52.5	39/52*	40	52.5	39/52*	40	13	39	40
3/4	20	48.3	52/64*	40	58	42/55*	40	58	42/55*	40	14	42	40
Body & Bonnet		C3771 + Ni-Cr Plating			C3771/C3604			C3771/C3604+Ni-Cr Plating			C3771/C3604+Ni-Cr Plating		
Stem		C3531			C3531			C3531			C3531		
Ball		C3771 + Sn-Ni Plating			C3771 + Sn-Ni Plating			C3771 + Sn-Ni Plating			C3771 + Sn-Ni Plating		
Ball Seat		PTFE			G/F PTFE			G/F PTFE			G/F PTFE		
Check Valve		Polyacetal+NBR											
O ring / Spring		EPDM, NBR / 304SS			EPDM			EPDM			EPDM		
Handle/Attachment		Polyacetal			Polyacetal			Polyacetal			Polyacetal		
Bore					Standard Bore			Standard Bore			Standard Bore		
Standard/Approval		JWWA E-3			JWWA E-2			JWWA E-2			JWWA E-2		
Service Conditions		1.0 MPa Water, 0℃+40℃ (Not Freezing) Direct Flow 40℃ max, Reserve Flow 80℃ max			1.0 MPa Water, -20℃ to +100℃ (Not Freezing)			1.0 MPa Water, -20℃ to +100℃ (Not Freezing)			1.0 MPa Water, -20℃ to +100℃ (Not Freezing)		
Reference Page		Features: Page BR37											
Remarks		Female (Taper) x Male (Parallel) With Spring-loaded Built-in Check Valve (Water Hammer Proof). Detachable T Handle with attachment for extension of handle. * For adding attachement			Male (Parallel) x Male (Taper) T Handle. * For adding attachement			Male (Parallel) x Male (Taper) T Handle. * For adding attachement			Male (Parallel) x Male (Taper) T Handle. * For adding attachement		

Type		Orange Ball (Straight)			Orange Ball (Straight)		
Bronze & Brass S Ball Series for Water Heater Orange Ball Series							
Fig		S6-			S8-		
End Connection		BS21 (JIS B0203)			BS21(JIS B0203xB0202)		
inch	mm	L	H	D	L	H	D
1/2	15	54	39/52*	40	52.5	44	40
3/4	20	59	42/55*	40	58	46.5	40
Body & Bonnet		C3771			C3771/C3604+Ni-Cr Plating		
Stem		C3531			C3531		
Ball		C3771 + Sn-Ni Plating			C3771 + Sn-Ni Plating		
Ball Seat		G/F PTFE			G/F PTFE		
O ring / Spring		EPDM			EPDM		
Handle/Attachment		Polyacetal			ZDC2		
Bore		Standard Bore			Standard Bore		
Standard/Approval		JWWA E-2			JWWA E-2		
Service Conditions		1.0 MPa Water, -20℃ to +100℃ (Not Freezing)			1.0 MPa Water, -20℃ to +100℃ (Not Freezing)		
Remarks		Male (Taper) x FemMale (Taper) T Handle. * For adding attachement			Male (Parallel) x Male (Taper) T Handle		

As a world leader in manufacturing general service valves, KITZ Corporation is glad to offer a broad range of bronze/brass valves for commercial and industrial applications.

KITZ bronze/brass valves are exclusively produced in modern factories used for valve manufacturing. Each phase of manufacturing process, from selection of raw materials to casting, forging, machining, assembly and testing, have improved with automated production facilities and unparalleled production technology.
Standardization and automation yield KITZ bronze/brass valves of superior quality and higher uniformity at competitive prices supported by incomparably prompt delivery.

KITZ bronze/brass valves are designed by state-of-the-art computers, built by automation, and inspected by people who care about quality.



Design Features of KITZ Bronze/Brass Valves

Human Engineering in Hand Wheel Design

Computer designed hand wheels of all KITZ bronze/brass valves, the product of KITZ human engineering, feature the ideal combination of operational efficiency and high mechanical strength for reliability.

Asbestos-free Gland Packing

All KITZ bronze/brass gate and globe valves employ Aramid Fiber PTFE as the material in the asbestos-free gland packing, which meets the latest industrial requirement to minimize concerns about pollution. With the leak-free sealing performance and reduced valve operating torque, Aramid Fiber PTFE is considered a reliable substitute for conventional asbestos sheets for the service of water, oil, gas, and saturated steam pressure at a maximum 300psi at temperatures up to 300˚C.

Pressure Rating

The pressure rating designation of KITZ valves follows accepted practice of today's valve and pipe fitting industry. Each product is rated for W.O.G. (Non-shock cold water, oil, and gas*) and saturated steam pressure service.

Inspection and Testing

KITZ valves are manufactured under strict quality control requirements throughout all stages of production, beginning with the inspection of chemical composition and mechanical properties of the materials. Extra care is given to inspection and testing at all machine shops and assembly plants by using up-to-date precision equipment. All KITZ valves meet strict pressure testing specifications for the body and seat seals to assure a long service life and quality performance.

*The valves presented in this catalog are not designed to handle toxic gases.
Use specially designed or certified valves for flammable gas service.

KITZ Corporation, Chino Plant, Japan (ISO 9001)



KITZ (Thailand) Ltd, Bangplee Plant, Thailand (ISO 9001)



This catalog uses MPa, an SI unit, to indicate pressure. For reader convenience, however, psi is also used for ASME and JIS related products, respectively.
The products in this catalog are all covered by ISO 9001 certification.

HSE (Health, Safety & Environment) Conscious Products

Lead-free Bronze & Brass (KEEPALLOY®): N in suffix of Fig. “Ex, JN, AKSZAN”
(1) MHLW (Ministry of Health, Labour and Welfare) Ordinance No. 138, April 1, 2003.
Restriction of leaching lead less than 0.01 mg/little. JIS H5120 CAC911, JIS H3250 C6803
(2) NSF/ANSI 61-8 Annex G & NSF/ANSI 372
January 4, 2014 “Reduction of lead in drinking water act” : Less than 0.25% of lead by weight

RoHS, Reach, WRAS and WSD

KITZ “K-METAL®” : Unique Dezincification-Resistant Brass (UNS No. C35350)

Water pollution and employment of new piping material have amplified valve dezincification problems.

What is dezincification?

Copper alloy used in bronze valves contains zinc, tin, and lead, with copper as the base. When bronze valves are subjected to unfavorable service conditions, the zinc component of copper alloy separates from the copper base, and the metal corrodes. This is called dezincification.
In case of bronze valve, body, bonnet, and other cast bronze parts rarely corrode, because of the small percentage of zinc contained in the alloy. However, brass valve parts such as stem, which contains 40 % zinc, often corrode because of extreme dezincification.

What causes dezincification?

The following factors cause dezincification. These factors are generally believed to occurtogether, rather than independently.
1 Excessive acidity in aqueous solution.
2 Warm water containing excessive free carbonic acid with high electric conductivity.
3 High electric conductivity with presence of excessive chlorides and sulfides.
4 Copper or vinyl chloride pipes.
5 Excessive dissolved oxygen.

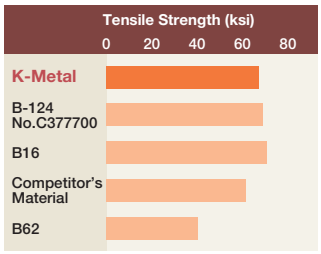


Fig. 1 Comparison of tensile strength

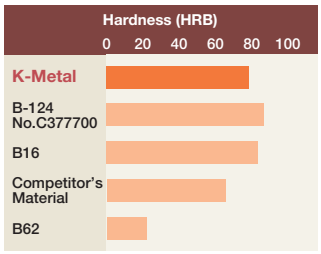


Fig. 2 Comparison of hardness

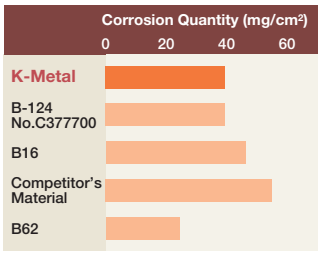


Fig. 3 Comparison of corrosion
(1 mg/cm²=0.014 mlb/in²)

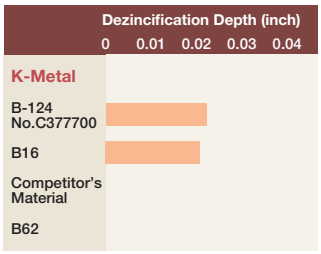


Fig. 4 Comparison of dezincification
(to AS C316)

Bronze/Brass Valve Solder Joints

Copper tubing is widely used with bronze/brass valves in steam and water-line applications in schools, hospitals, hotels, and private houses because of its excellent physical characteristics. It resists corrosion, meets sanitation requirements, and is easy to install.
Copper Tubes: Three types of copper tubing have been developed for complying with ASTM B88, as listed below. Each type is provided with a different wall thickness to meet application requirements.

Type K	For use in steam, oil, and gas lines for underground installation and/or severe conditions.
Type L	For general cooling and heating systems and related water piping and ventilation systems.
Type M	For home air-conditioning and heating applications.

Soldering of Leak Free Joints

Use solder of 95-5 tin-antimony or 96-4 tin-silver, and an open-flame torch. Keep the torch temperature relatively low to ensure firm soldered joint. Because the melting point of solder is around 500˚F (260˚C), solder-jointed valves cannot be used for high-temperature service.

Solder P-T Rating

Solder	Max. temp. (˚C)	Max. Working Pressure					
		size 1/4B–1B		size 1 1/4B–2B		size 2 1/4B–4B	
		MPa	psi	MPa	psi	MPa	psi
95-5 tin-antimony [H95 Sb-5A]	38	3.45	500	2.76	400	2.07	300
	66	2.76	400	2.41	350	1.90	275
96-4 tin-silver [H96 Ag-3.5A]	93	2.07	300	1.72	250	1.38	200
	121	1.38	200	1.21	175	1.03	150

⚠ CAUTION	Solder-jointed end valves should not be used in service where the temperature of the line fluid is higher than the softening point of the solder.

KITZ Bronze and Brass Materials to JIS Standards

JIS H5120 (Copper & Copper Alloy Castings)

	Designation	Chemical Composition (%)										Mechanical Properties	
		Cu	Sn	Zn	Pb	Ni	Fe	P	Sb	Al	Si	Tensile Strength 195 Min. (N/mm^2)	Elongation (%) 15 Min.
Cast Bronze Class 6	CAC406 (BC6)	83.0-87.0	4.0-6.0	4.0-6.0	4.0-6.0	1.0 Max.	0.3 Max.	0.05 Max.	0.2 Max.	0.01 Max.	0.01 Max.		

JIS H3250 (Copper & Copper Alloy Rods and Bars)

	Designation		Chemical Composition (%)				Mechanical Properties	
	Extruded	Drawn	Cu	Pb	Fe + Sn	Zn	Tensile Strength 315 Min. (N/mm^2)	Elongation (%) 15 Min.
Forged Brass Alloy No. 3771	C3771BE	C3771BD	57.0-61.0	1.0-2.5	1.0 Max.	Remainder		

JIS H3250 (Copper & Copper Alloy Rods and Bars)

	Designation		Chemical Composition (%)					Mechanical Properties	
	Extruded	Drawn	Cu	Pb	Fe	Fe + Sn	Zn	Tensile Strength 335 Min. (N/mm^2)	Elongation (%) —
Free-cutting Brass Alloy No. 3604	C3604BE	C3604BD	57.0-61.0	1.8-3.7	0.5 Max.	1.0 Max.	Remainder		

KITZ Bronze and Brass Materials to ASTM Standards

ASTM B61

Chemical Composition (%)											Mechanical Properties		
Copper	Tin	Lead	Zinc	Nickel & cobalt	Iron	Sulfur	Phosphorus	Antimony	Aluminum	Silicon	Minimum		
											Tensile Strength	Yield Strength	Elongation in 2 in.
86.0-90.0	5.5-6.5	1.0-2.0	3.0-5.0	1.0 Max.	0.25 Max.	0.05 Max.	0.05 Max.	0.25 Max.	0.005 Max.	0.005 Max.	34 ksi	16 ksi	24%

ASTM B62

Chemical Composition (%)											Mechanical Properties		
Copper	Tin	Lead	Zinc	Nickel & cobalt	Iron	Sulfur	Phosphorus	Antimony	Aluminum	Silicon	Minimum		
											Tensile Strength	Yield Strength	Elongation in 2 in.
84.0-86.0	4.0-6.0	4.0-6.0	4.0-6.0	1.0 Max.	0.30 Max.	0.08 Max.	0.05 Max.	0.25 Max.	0.005 Max.	0.005 Max.	30 ksi	14 ksi	20%

ASTM B283 C37700

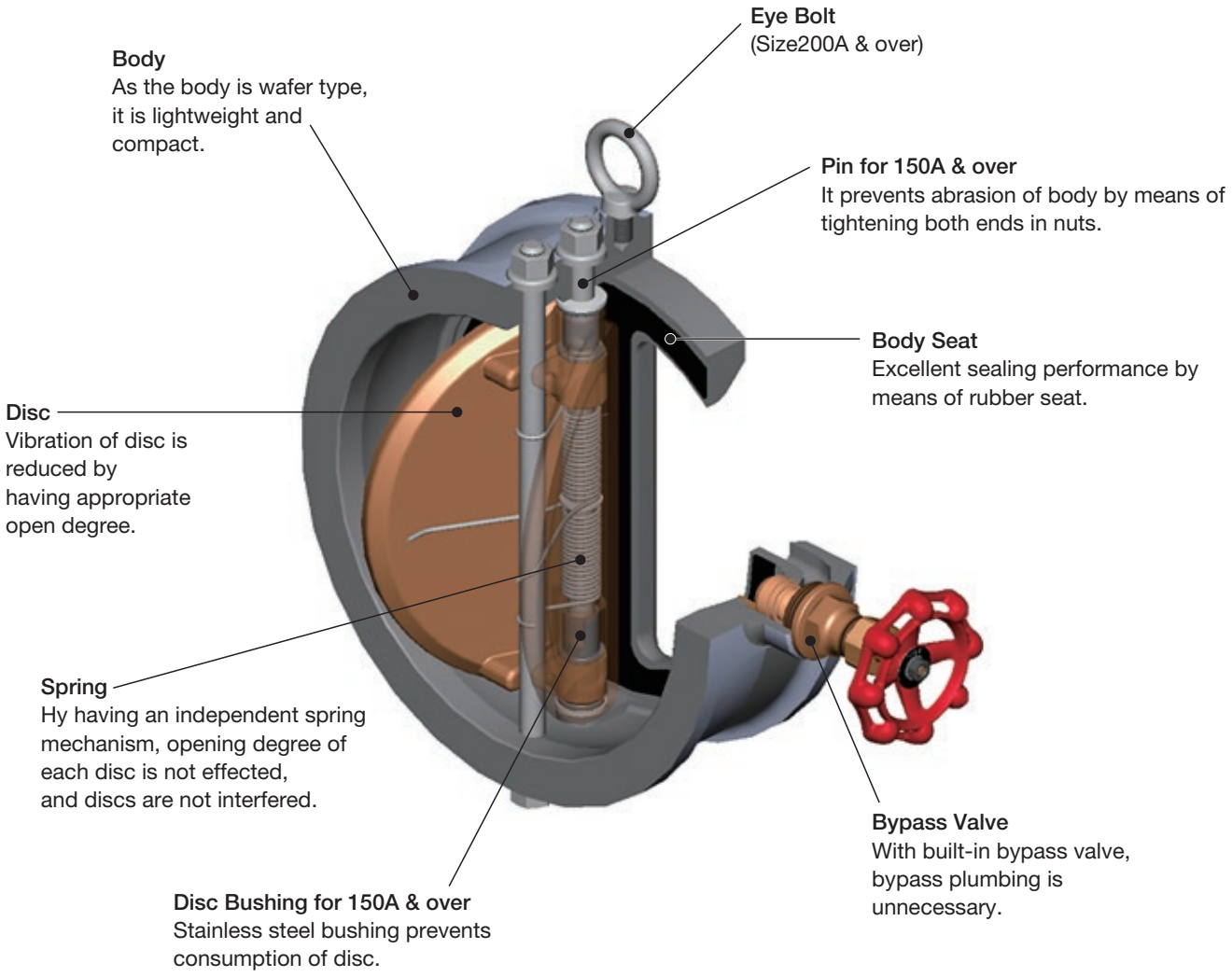
Chemical Composition (%)				Mechanical Properties		
Copper	Lead	Iron	Zinc	Minimum		
				Tensile Strength	Yield Strength	Elongation in 4x Thickness
58.0-61.0	1.5-2.5	0.30 Max.	Remainder	50 ksi	18 ksi	25%

In-line Lift Check Valve with Spring (RF, AKAF)

Reduction of water hammer
Excellent sealing performance by means of rubber seats & spring

KITZ Wafer Check Valve (10BWZ(N), 10FWZ, 10/20SWZU, 20SWZ, 10UW, 10/20UWS)

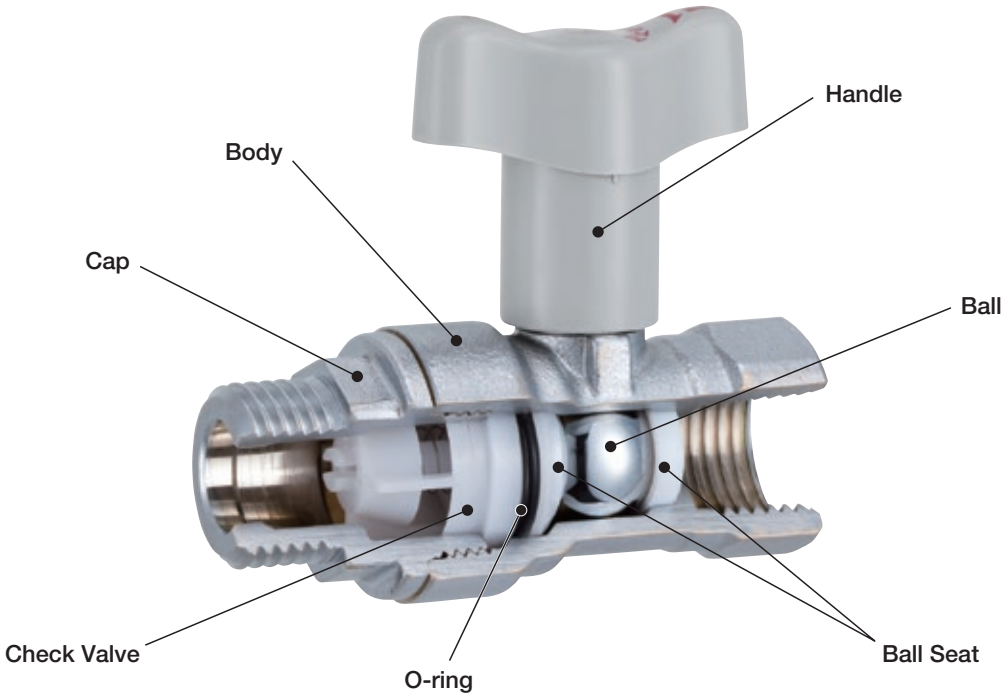
Construction:
Single Plate (stainless steel wafer check) and Dual Plate (others except SS)
Features
(1) Reduction of water hammer by closing the disc with independent helical spring mechanism
(2) Built-in Bypass Valve
(3) Excellent sealing performance by means of rubber seats & spring mechanism
(4) Direct mounting of pump. (*stainless steel wafer check valves are not available due to single plate construction. Provide straight runs of pipe at least two times of the valve bore (three times in case when pipe expansion is used to pump discharge) to the both sides of the valve.
(5) Compact and Light Mass
Spring Serviceable Range:
(1) Standard Torque Spring (2)High Torque Spring (3)Low Torque Spring



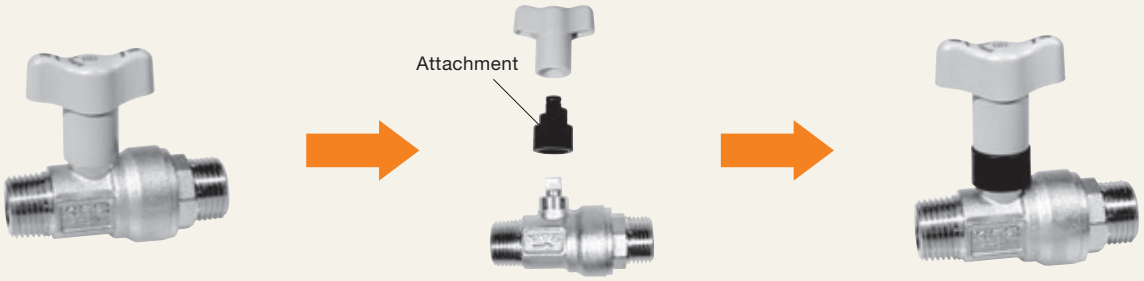
Design Features of KITZ S Ball Valve: Ball Valve with Built-in Check Valve in its Body

Compact design with a built-in check valve in the body of ball valve.
Prevents back flow by automatic closing of spring-loaded built-in check valve (water hammer proof).

Cross-sectional illustration of ball valves with built-in check valves



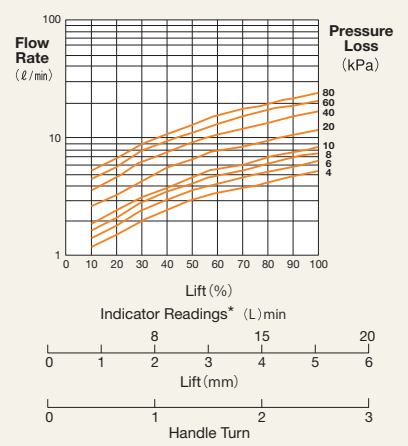
2-Way Handle



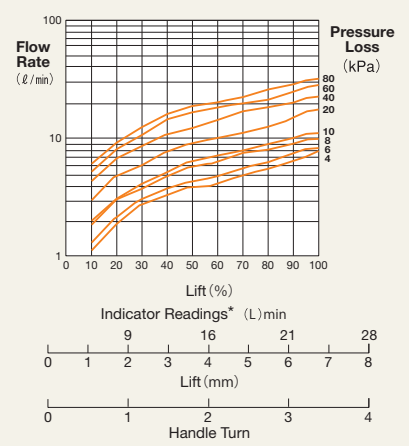
Flow Characteristics of KITZ Fancoil Valve, Flow Control, Globe Type

B

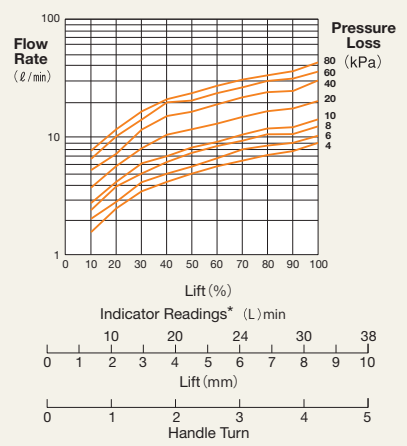
■Nominal Size: ½B Cv=1.8



■Nominal Size: ¾B Cv=2.6



■Nominal Size: 1B, 1¼B Cv=3.3



* Indicator readings refer to the flow rates when the pressure loss is 60 kPa.

Technical Data of Pressure and Temperature Ratings in JIS Standard Bronze Valves

1 Fluid
Water, oil, gas, air and steam.
However, flammable gas and toxic gas are excluded.

2 Relationship between the temperature of the fluid and the maximum permissible pressure (hereinafter referred to as the "pressure-temperature criteria") shall be in accordance with Table 1. However, the fluid shall not be frozen.

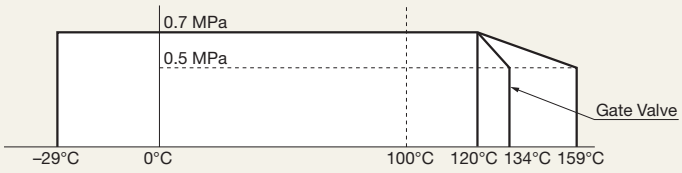
3 In case where use of valves is prohibited or restricted by the High Pressure Gas Safety Act and other regulations, the user shall use them within the framework of laws and ordinances.

Table 1 Pressure-Temperature Criteria

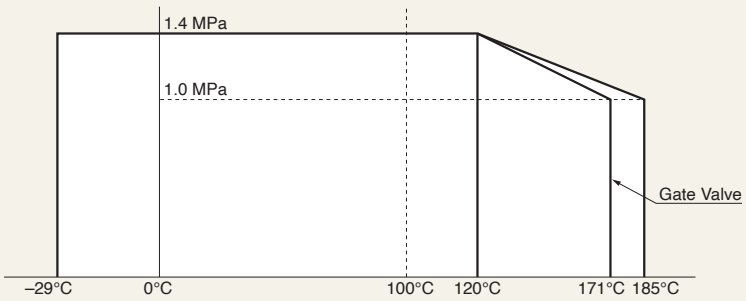
Nominal Pressure	Temperature of Fluid °C	Maximum Permissible Working Pressure[c] MPa
5K	−29 to 120	0.7
	159[a]	0.5
10K	−29 to 120	1.4
	185[b]	1.0

Notes: [a] Maximum service temperature. In case of gate valves, it will be 144°C.
[b] Maximum service temperature. In case of gate valves, it will be 171°C.
[c] Maximum permissible pressure at intermediate temperature between temperature above 120°C and the maximum service temperature shall be obtained by proportional interpolation.

Nominal Pressure 5K



Nominal Pressure 10K



Pressure and Temperature Ratings of PN Bronze Valves

Temperature of Fluid °C	Maximum Permissible Working Pressure MPa	
	PN16	PN25
-10 to 100	1.60	2.50
120	1.35	2.18
150	0.95	1.65
170	0.70	1.28
180	-	1.13
186	-	1.05

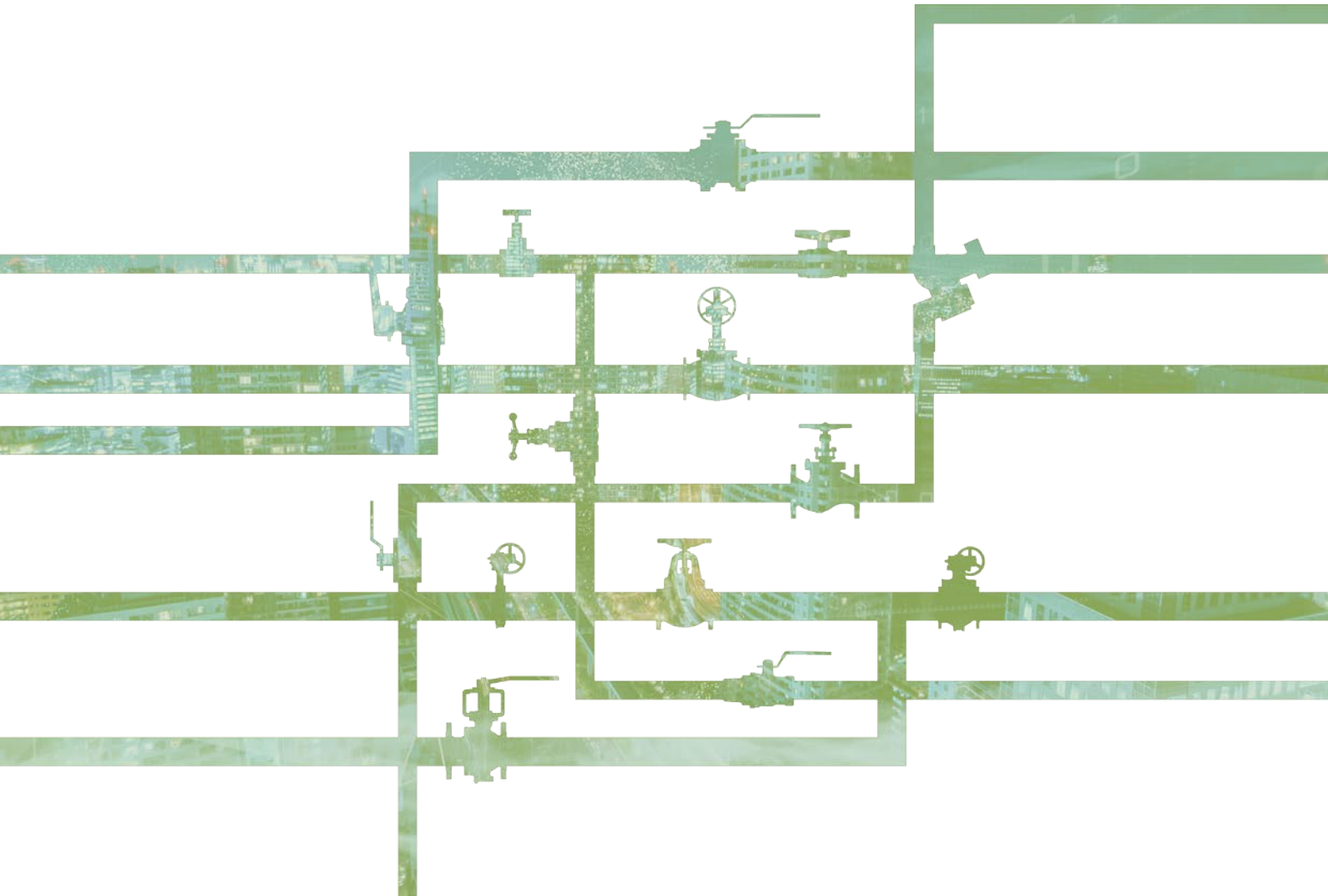
Pressure and Temperature Ratings of Class 125, 150, 300 Bronze Valves (Extracted from MSS SP-80)

Temperature of Fluid		Maximum Permissible Working Pressure MPa (psi)			
°C	°F	CL125	CL150	CL300	
Fig.		AK125M AK125E AK125C AKYR CYR	AK150E AK150L C150L AK150LU AK150D C150D AK150YR	AK300J AK300D AK300YR	AK300LU
-29 to 66	-20 to 150	1.38 (200)	2.07 (300)	4.14 (600)	6.89 (1000)
93	200	1.28 (185)	1.86 (270)	3.86 (560)	6.34 (920)
121	250	1.17 (170)	1.65 (240)	3.62 (525)	5.72 (830)
149	300	1.07 (155)	1.45 (210)	3.38 (490)	5.10 (740)
177	350	0.97 (140)	1.24 (180)	3.10 (450)	4.48 (650)
204	400	-	-	2.83 (410)	3.86 (560)
208	406	0.86 (125)	1.03 (150)	-	-
232	450	-	-	2.59 (375)	3.31 (480)
260	500	-	-	2.34 (340)	2.69 (390)
288	550	-	-	2.07 (300)	2.07 (300)
Saturated Steam		0.86 (125)	1.03 (150)	2.07 (300)	2.07 (300)

KITZ

GENERAL CATALOG

Compact SS/CS Valves & Miniature



INDEX

Title	Body Material	Type	Class	End Connection*	Features*	Fig			Page
KITZ Standard Stainless Steel Gate/Globe/ Check Valves & Stariners (B Series)	SS	Gate	10K/200	TE	SB, NRS	UEL	UELM	AKUELM	CPT3 46
			10K	FE/FF		UE	UEM	AKUEM	
						UEB	UEBM		
		Globe	5K	FE/FF	SB, RS	UAB			CPT4 47
			10K			UCB			
			10K/200	TE		UCL	UCLM	AKUCLM	
						UJ	UJM	AKUJM	
			10K	FE/FF		UJB	UJBM		CPT5 48
				TE	Screwed Bonnet, Rising Stem, Soft Seated (PTFE)	UD	UDM		
				FE/FF		UDB	UDBM		
		Check	10K	TE	Lift	UN			
			10K/200		Swing	UO			
						UOM	AKUOM		CPT6 49
			10K	FE/FF		UOB	UOBM		
		Strainer	20K	TE	Y-Pattern, 40 Mesh	UY	UYM		
			10K	FE/FF		UYB	UYBM		
		Wafer Check	10K	Wafer	Single Plate, Built-in Bypass Valve	10UW			CPT7 50
						10UWS			
			20K			20UWS			
Stainless Steel Ball Check Valves (K Series)		Ball Check	10K	TE	Ball Check	UFTE			
		Air Vent	-		Air Vent Valve	UFTA			
		Ball Check	10K	TE/RF	Ball Check	10UFT			
						10UFTE			
Stainless & Carbon Steel Compact Floating Ball Valve		Ball	10K	TE	FB, Split Body	10UT	10UTM		CPT8 51
			Type 600		Reduced Bore, Uni-Body	UTK	UTKM	AKUTKM	
						UTKW	UTKMW		
					Full Body, Split Body	UTFKW			CPT9 52
						UTFKMW			
			Type 800			UTFZ			
			Type 1000		Reduced Body, Split Body	UTHM	AKUTHM		
					Full Body, Split Body	UTFM	AKUTFM		
					Reduced Body, Split Body, Long Neck Type for Thermal Insulation	UTHL			
					Reduced Bore, 3pc Body	U3TZM			
						AKU3TZM			CPT10 53
				SW	Reduced Bore, 3pc Body	SWU3TZM	AWU3TZM		
				TE	Reduced Bore, 3pc Body	U3TZFM	AKU3TZFM		
				SW	Reduced Bore, 3pc Body	SWU3TZFM	AWU3TZFM		
			3000	TE	Reduced Bore, Welded Body, Antistatic, Blowout Proof, Fire Safe	3000UTKM			
			Type 800		Reduced Bore, 3-Way, 4-Seat, L or T Port	UTH4LM	UTH4TM		CPT11 54
	CS		600	TE	Reduced Bore, Uni-Body	SCTK	AKSCTK		
			800		Reduced Bore, Welded Body for Threaded Ends, Split Body for Socket Welding Ends, Antistatic, Blowout Proof, Fire Safe	800SCTK	AK800SCTK		
				SW		AW800SCTK			CPT12 55
			3000	TE		3000SCTK	AK3000SCTK		
				SW		AW3000SCTK			
Stainless Steel & Brass Miniature Valves	SUS316/ SUSU630	Needle	30K	TE	Straight (Metric)	UN3-AP-			CPT13 56
					Angle (Metric)	UN3-BP-			
				COUPLE LOK	Straight (Metric) (Inch)	UN3-CP-			
					Angle (Metric) (Inch)	UN3-DP			
				TExCOUPLE LOK	Straight (Metric) (Inch)	UN3-EP-			
					Angle (Metric) (Inch)	UN3-FP-			
			260K	TE	Straight (Metric)	UN26-AP-			CPT14 57
				COUPLE LOK	Straight (Metric)	UN26-CP-			
				SW	Straight (Metric)	UN26-SP-			
				COUPLE LOK	Straight (Inch)	UN26-CP-			
	Brass		10K	TE	Straight	N1-A-			
			20K		Straight	N2-A-			
					Straight with Lock	N2-AL-			
					Angle	N2-B-			

* (Abbreviation) TE: Threaded Ends, FE: Flanged Ends, RF: Raised Face, SW: Socket Welding Ends
SB: Screwed Bonnet, NRS: Non Rising Stem, RS: Rising Stem, FB: Full Bore, RB: Reduced Bore

PRODUCT CODING

Compact SS/CS Valves except Miniature

(Note: Some products do not follow this coding system)

AK 800 U TK M
1 2 3 4 5

1 End Connection
- None ····· Threaded Ends (BS/JIS)
- AK ····· Threaded Ends (NPT)
- AW ····· Socket Welding Ends

2 Pressure Class
- None ····· KITZ Standard
- 10 ····· 10K
- 20 ····· 20K
- 800 ····· Class 800
- 3000 ····· Type 3000

3 Symbol of Shell Material
- U ····· Stainless Steel
- SC ····· Carbon Steel

4 Valve Type
- E, EL, EB ····· Gate
- AB, CB, CL, J, JB ····· Globe
- D, DB ····· Soft Seated Globe
- N ····· Lift Check
- O, OB ····· Swing Check
- W ····· Wafer Check (NBR Seat)
- WS ····· Wafer Check (Metal Seat)
- Y, YB ····· Strainer
- UFT, UFTE ····· Ball Check
- T, TK, TF, TFK, TH, THL, TH4L/T, 3TZ, 3TZF ····· Ball

5 Trim
- None ····· 304SS
- M ····· 316SS

Miniature Valves

U N 26 - A P - xx
1 2 3 4 5 6

1 Body Material
- U ····· 316 Stainless Steel
- None ····· Forged Brass

2 Service Application
- N ····· Needle Valves for General Flow Control

3 Pressure Class
- 1 ····· 10K
- 2 ····· 20K
- 3 ····· 30K
- 26 ····· 260K

4 Design & End Connection
- A ····· Straight/Threaded
- B ····· Angle/Threaded
- C ····· Straight/COUPLE LOK Type
- D ····· Angle/COUPLE LOK Type
- E ····· Straight/COUPLE LOK Type & Threaded
- F ····· Angle/COUPLE LOK Type & Threaded
- S ····· Straight/Socket Weld

5 Auxiliary Items
- P ····· Complete with Nut for Panel Tap
- L ····· With Locking Lever

6 Nominal Size

Threaded End		Metric Tubing End	
1	1/8B	3	3mm
2	1/4B	4	4mm
3	3/8B	6	6mm
4	1/2B	8	8mm
6	3/4B	10	10mm
8	1B	12	12mm

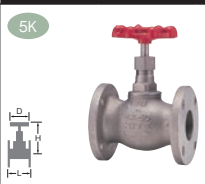
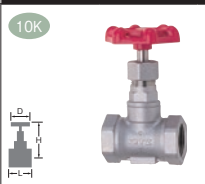
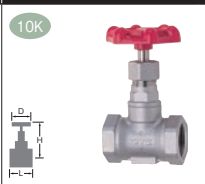
Inch Tubing End (Outside Diameter)
- 01 ····· 1/8 (3.17mm)
- 02 ····· 1/4 (6.35mm)
- 03 ····· 3/8 (9.52mm)
- 04 ····· 1/2 (12.70mm)

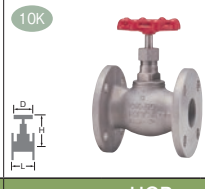
(Example)
UN3-EP-6-2 (A)-(B)
(A) 6mm Tubing End
(B) 1/4B Threaded End

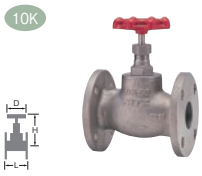
⚠ CAUTION	Valves introduced in this catalog are not designed to be used in toxic gases.

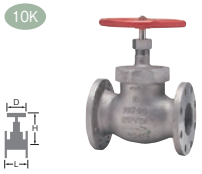
Type		Gate			Gate			Gate			Gate		
Stainless Steel B Series KITZ Standard		10K  SB IS NRS EAC RoHS			10K  SB IS NRS EAC RoHS			10K  SB IS NRS EAC RoHS			200  SB IS NRS EAC RoHS		
Fig		UEL			UE			UELM			AKUELM		
KCA Code		–			–			–			31		
End Connection		BS21 (JIS B0203)			BS21 (JIS B0203)			BS21 (JIS B0203)			ASME B1.20.1		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/2	15	54	96	70				54	96	70			
3/4	20	58	101	70				58	101	70			
1	25	65	112	80				65	112	80			
11/4	32	74	123	80				74	123	80			
11/2	40	76	150	100				76	150	100			
2	50	87	167	100				87	167	100			
21/2	65				115	248	135				115	248	135
3	80				130	275	155				130	275	155
4	100				155	315	200				155	315	200
Body		CF8			CF8M			CF8M			CF8M		
Bonnet		CF8			CF8M			CF8M			CF8M		
Stem		304SS + Hard Cr Plating			316SS			316SS + Hard Cr Plating			316SS + Hard Cr Plating		
Disc		CF8			CF8M			CF8M			CF8M		
Gland Packing		Flexible Graphite+PTFE Braided			Flexible Graphite+PTFE Braided			Flexible Graphite+PTFE Braided			Flexible Graphite+PTFE Braided		
Hand Wheel		ZDC/Aluminum Die-Cast			Aluminum Die-Cast/DI			ZDC/Aluminum Die-Cast			ZDC/Aluminum Die-Cast		
Standard/Approval		RoHS			RoHS up to 3[B]			RoHS			RoHS up to 3[B]		
Service Condition		Pressure-Temperature: 1.0 MPa: 180℃			Pressure-Temperature: 1.0 MPa: 180℃			Pressure-Temperature: 1.0 MPa: 180℃			Pressure-Temperature: 1.0 MPa: 180℃		
Reference Page		Design, Packing/Gasket, P-T Rating: Page SS18&19			Design, Packing/Gasket, P-T Rating: Page SS18&19			Design, Packing/Gasket, P-T Rating: Page SS18&19			Design, Packing/Gasket, P-T Rating: Page SS18&19		
Remarks		RoHS: Option EAC: Option			RoHS: Option EAC: Option			RoHS: Option EAC: Option			RoHS: Option EAC: Option		

Type		Gate			Gate			Gate			Gate		
Stainless Steel B Series KITZ Standard		10K  SB IS NRS EAC RoHS			200  SB IS NRS EAC RoHS			10K  SB IS NRS EAC RoHS			10K  SB IS NRS EAC RoHS		
Fig		UEM			AKUEM			UEB			UEBM		
KCA Code		–			31			–			–		
End Connection		BS21 (JIS B0203)			ASME B1.20.1			JIS B2220* 10K FF			JIS B2220* 10K FF		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/2	15							85	99	70			
3/4	20							95	105	70			
1	25							100	116	80	100	116	80
11/4	32							110	128	80	110	128	80
11/2	40							125	170	100	125	170	100
2	50							140	188	100	140	188	100
21/2	65	115	248	135	115	248	135	170	248	135	170	248	135
3	80	130	275	155	130	275	155	190	275	135	190	275	135
4	100	155	315	200	155	315	200						
Body		CF8M			CF8M			CF8			CF8M		
Bonnet		CF8M			CF8M			304SS/CF8			316SS/CF8M		
Stem		316SS			316SS			304SS			316SS		
Disc		CF8M			CF8M			CF8			CF8M		
Gland Packing		Flexible Graphite+PTFE Braided			Flexible Graphite+PTFE Braided			Flexible Graphite+PTFE Braided			Flexible Graphite+PTFE Braided		
Hand Wheel		Aluminum Die-Cast/DI			Aluminum Die-Cast/DI			ZDC/Aluminum Die-Cast			Aluminum Die-Cast/DI		
Standard/Approval		RoHS up to 3[B]			RoHS up to 3[B]			RoHS			RoHS		
Service Condition		Pressure-Temperature: 1.0 MPa: 180℃			Pressure-Temperature: 1.0 MPa: 180℃			Pressure-Temperature: 1.0 MPa: 180℃			Pressure-Temperature: 1.0 MPa: 180℃		
Reference Page		Design, Packing/Gasket, P-T Rating: Page SS18&19			Design, Packing/Gasket, P-T Rating: Page SS18&19			Design, Packing/Gasket, P-T Rating: Page SS18&19			Design, Packing/Gasket, P-T Rating: Page SS18&19		
Remarks		RoHS: Option EAC: Option			RoHS: Option EAC: Option			* Except Flange Thickness RoHS: Option, EAC: Option			* Except Flange Thickness RoHS: Option, EAC: Option		

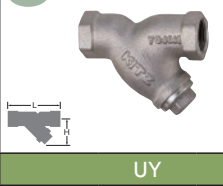
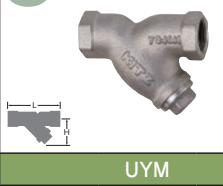
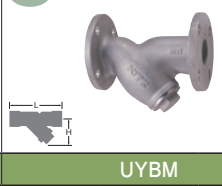
Type		Globe			Globe			Globe			Globe		
Stainless Steel B Series KITZ Standard		5K  SB IS RS EAC RoHS			10K  SB IS RS EAC RoHS			10K  SB IS RS EAC RoHS			200  SB IS RS EAC RoHS		
Fig		UAB			UCL			UCLM			AKUCLM		
KCA Code		–			–			–			–		
End Connection		JIS B2220* 5K FF			BS21 (JIS B0203)			BS21 (JIS B0203)			ASME B1.20.1		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/4	8				44	68	55	44	68	55	44	68	55
3/8	10	73	106	70	48	68	55	48	68	55	48	68	55
1/2	15	85	106	70	52	68	55	52	68	55	52	68	55
3/4	20	95	108	70	60	93	60	60	93	60	60	93	60
1	25	108	119	80	72	100	70	72	100	70	72	100	70
11/4	32	120	142	90	80	122	80	80	122	80	80	122	80
11/2	40	135	155	90	90	138	90	90	138	90	90	138	90
2	50	155	186	115	100	153	100	100	153	100	100	153	100
Body		CF8			CF8			CF8M			CF8M		
Bonnet		CF8			CF8			CF8M			CF8M		
Stem		304SS + Hard Cr Plating			304SS + Hard Cr Plating			316SS + Hard Cr Plating			316SS + Hard Cr Plating		
Disc		304SS			304SS			316SS			316SS		
Gland Packing		Flexible Graphite+PTFE Braided			Flexible Graphite+PTFE Braided *			Flexible Graphite+PTFE Braided *			Flexible Graphite+PTFE Braided *		
Hand Wheel		ZDC/Aluminum Die-Cast			ZDC/Aluminum Die-Cast			ZDC/Aluminum Die-Cast			ZDC/Aluminum Die-Cast		
Standard/Approval		RoHS			RoHS			RoHS			RoHS		
Service Condition		Pressure-Temperature: 0.5 MPa: 180℃			Pressure-Temperature: 1.0 MPa: 180℃			Pressure-Temperature: 1.0 MPa: 180℃			Pressure-Temperature: 1.0 MPa: 180℃		
Reference Page		Design, Packing/Gasket, P-T Rating: Page SS18&19			Design, Packing/Gasket, P-T Rating: Page SS18&19			Design, Packing/Gasket, P-T Rating: Page SS18&19			Design, Packing/Gasket, P-T Rating: Page SS18&19		
Remarks		* Except Flange Thickness RoHS: Option, EAC: Option			* PTFE up to 1/2[B] RoHS: Option, EAC: Option			* PTFE up to 1/2[B] RoHS: Option, EAC: Option			* PTFE up to 1/2[B] RoHS: Option, EAC: Option		

Type		Globe			Globe			Globe			Globe		
Stainless Steel B Series KITZ Standard		10K  SB IS RS EAC RoHS			10K  SB IS RS EAC RoHS			200  SB IS RS EAC RoHS			10K  SB IS RS EAC RoHS		
Fig		UJ			UJM			AKUJM			UCB		
KCA Code		–			–			33			–		
End Connection		BS21 (JIS B0203)			BS21 (JIS B0203)			ASME B1.20.1			JIS B2220* 10K FF		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
3/8	10	55	109	60	55	109	60	55	109	60	73	106	70
1/2	15	65	111	60	65	111	60	65	111	60	85	106	70
3/4	20	80	112	70	80	112	70	80	112	70	95	108	70
1	25	90	142	90	90	142	90	90	142	90	108	119	80
11/4	32	105	150	90	105	150	90	105	150	90	120	142	90
11/2	40	120	171	100	120	171	100	120	171	100	135	155	90
2	50	140	189	115	140	189	115	140	189	115	155	186	115
21/2	65	180	253	180	180	253	180	180	253	180			
3	80	200	280	225	200	280	225	200	280	225			
Body		CF8			CF8M			CF8M			CF8		
Bonnet		CF8			CF8M			CF8M			304SS/CF8		
Stem		304SS + Hard Cr Plating			316SS + Hard Cr Plating			316SS + Hard Cr Plating			304SS + Hard Cr Plating		
Disc		304SS/CF8			316SS/CF8M			316SS/CF8M			304SS		
Gland Packing		Flexible Graphite+PTFE Braided			Flexible Graphite+PTFE Braided			Flexible Graphite+PTFE Braided			Flexible Graphite+PTFE Braided		
Hand Wheel		ZDC/Aluminum Die-Cast/DI			ZDC/Aluminum Die-Cast/DI			ZDC/Aluminum Die-Cast/DI			ZDC/Aluminum Die-Cast		
Standard/Approval		RoHS up to 2[B]			RoHS up to 2[B]			RoHS up to 2[B]			RoHS		
Service Condition		Pressure-Temperature: 1.0 MPa: 180℃			Pressure-Temperature: 1.0 MPa: 180℃			Pressure-Temperature: 1.0 MPa: 180℃			Pressure-Temperature: 1.0 MPa: 180℃		
Reference Page		Design, Packing/Gasket, P-T Rating: Page SS18&19			Design, Packing/Gasket, P-T Rating: Page SS18&19			Design, Packing/Gasket, P-T Rating: Page SS18&19			Design, Packing/Gasket, P-T Rating: Page SS18&19		
Remarks		RoHS: Option EAC: Option			RoHS: Option, EAC: Option			RoHS: Option, EAC: Option			* Except Flange Thickness RoHS: Option, EAC: Option		

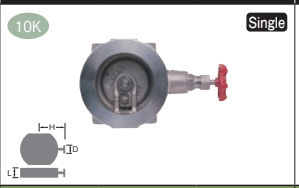
Type		Globe			Globe			Globe			Globe		
Stainless Steel B Series KITZ Standard		10K  SB IS RS EAC RoHS			10K  SB IS RS EAC RoHS			10K  SB IS RS EAC RoHS			10K  SB IS RS EAC RoHS		
Fig		UJB			UJBM			UD			UDM		
KCA Code		–			–			–			–		
End Connection		JIS B2220* 10K FF			JIS B2220* 10K FF			BS21 (JIS B0203)			BS21 (JIS B0203)		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
3/8	10	85	109	60	85	109	60	55	109	60	55	109	60
1/2	15	85	111	60	85	111	60	65	112	60	65	112	60
3/4	20	95	112	70	95	112	70	80	113	70	80	113	70
1	25	110	142	90	110	142	90	90	143	90	90	143	90
11/4	32	130	150	90	130	150	90	105	150	90	105	150	90
11/2	40	150	171	100	150	171	100	120	171	100	120	171	100
2	50	180	189	115	180	189	115	140	189	115	140	189	115
21/2	65	210	253	180	210	253	180						
3	80	240	280	225	240	280	225						
Body		CF8			CF8M			CF8			CF8M		
Bonnet		CF8			CF8M			CF8			CF8M		
Stem		304SS + Hard Cr Plating			316SS + Hard Cr Plating			304SS + Hard Cr Plating			316SS + Hard Cr Plating		
Disc		304SS/CF8			316SS/CF8M			PTFE			PTFE		
Gland Packing		Flexible Graphite+PTFE Braided			Flexible Graphite+PTFE Braided			Flexible Graphite+PTFE Braided			Flexible Graphite+PTFE Braided		
Hand Wheel		ZDC/Aluminum Die-Cast/DI			ZDC/Aluminum Die-Cast/DI			ZDC/Aluminum Die-Cast			ZDC/Aluminum Die-Cast		
Standard/Approval		RoHS up to 2[B]			RoHS up to 2[B]			RoHS			RoHS		
Service Condition		Pressure-Temperature: 1.0 MPa: 180℃			Pressure-Temperature: 1.0 MPa: 180℃			Pressure-Temperature: 1.0 MPa: 180℃			Pressure-Temperature: 1.0 MPa: 180℃		
Reference Page		Design, Packing/Gasket, P-T Rating: Page SS18&19			Design, Packing/Gasket, P-T Rating: Page SS18&19			Design, Packing/Gasket, P-T Rating: Page SS18&19			Design, Packing/Gasket, P-T Rating: Page SS18&19		
Remarks		* Except Flange Thickness RoHS: Option, EAC: Option			* Except Flange Thickness RoHS: Option, EAC: Option			RoHS: Option, EAC: Option			RoHS: Option, EAC: Option		

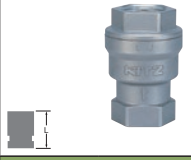
Type		Globe			Globe			Lift Check			Swing Check		
Stainless Steel B Series KITZ Standard		10K  SB IS RS EAC RoHS			10K  SB IS RS EAC RoHS			10K  SC EAC RoHS			10K  SC EAC RoHS		
Fig		UDB			UDBM			UN			UO		
KCA Code		–			–			–			–		
End Connection		JIS B2220* 10K FF			JIS B2220* 10K FF			BS21 (JIS B0203)			BS21 (JIS B0203)		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
3/8	10							55	50				
1/2	15	85	112	60	85	112	60	65	53		65	45	
3/4	20	95	113	70	95	113	70	80	54		80	55	
1	25	110	143	90	110	143	90	90	62		90	61	
11/4	32	130	150	90	130	150	90	105	66		105	71	
11/2	40	150	171	100	150	171	100	120	76		120	72	
2	50	180	189	115	180	189	115	140	85		140	81	
21/2	65	210	252	180	210	252	180				180	93	
3	80	240	277	225	240	277	225				200	104	
Body		CF8			CF8M			CF8			CF8		
Bonnet/Cap		CF8			CF8M			304SS/CF8			304SS/CF8		
Stem/Hinge Pin		316SS + Hard Cr Plating			316SS + Hard Cr Plating						304SS		
Disc		PTFE			PTFE			CF8			CF8		
Gland Packing		Flexible Graphite+PTFE Braided			Flexible Graphite+PTFE Braided								
Hand Wheel		ZDC/Aluminum Die-Cast/DI			ZDC/Aluminum Die-Cast/DI								
Standard/Approval		RoHS up to 2[B]			RoHS up to 2[B]			RoHS			RoHS		
Service Condition		Pressure-Temperature: 1.0 MPa: 180℃			Pressure-Temperature: 1.0 MPa: 180℃			Pressure-Temperature: 1.0 MPa: 180℃			Pressure-Temperature: 1.0 MPa: 180℃		
Reference Page		Design, Packing/Gasket, P-T Rating: Page SS18&19			Design, Packing/Gasket, P-T Rating: Page SS18&19			Design, Packing/Gasket, P-T Rating: Page SS18&19			Design, Packing/Gasket, P-T Rating: Page SS18&19		
Remarks		* Except Flange Thickness RoHS: Option, EAC: Option			* Except Flange Thickness RoHS: Option, EAC: Option			RoHS: Option, EAC: Option			RoHS: Option, EAC: Option		

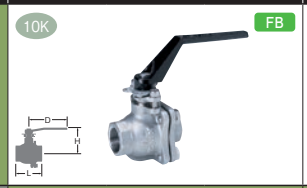
Type		Swing Check			Swing Check			Swing Check			Swing Check		
Stainless Steel B Series KITZ Standard		10K SC  EAC RoHS			200 SC  EAC RoHS			10K SC  EAC RoHS			10K SC  EAC RoHS		
Fig		UOM			AKUOM			UOB			UOBM		
KCA Code		–			34			–			–		
End Connection		BS21 (JIS B0203)			ASME B1.20.1			JIS B2220* 10K FF			JIS B2220* 10K FF		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/2	15	65	45		65	45		85	45		85	45	
3/4	20	80	55		80	55		95	55		95	55	
1	25	90	61		90	61		110	61		110	61	
11/4	32	105	71		105	71		130	71		130	71	
11/2	40	120	72		120	72		150	72		150	72	
2	50	140	81		140	81		180	81		180	81	
21/2	65	180	93		180	93		210	93		210	93	
3	80	200	104		200	104		240	104		240	104	
Body		CF8M			CF8M			CF8			CF8M		
Bonnet/Cap		316SS/CF8M			316SS/CF8M			304SS/CF8			316SS/CF8M		
Stem/Hinge Pin		316SS			316SS			304SS			316SS		
Disc/Screen		CF8M			CF8M			CF8			CF8M		
Standard/Approval		RoHS			RoHS			RoHS			RoHS		
Service Condition		Pressure-Temperature: 1.0 MPa: 180℃			Pressure-Temperature: 1.0 MPa: 180℃			Pressure-Temperature: 1.0 MPa: 180℃			Pressure-Temperature: 1.0 MPa: 180℃		
Reference Page		Design, Packing/Gasket, P-T Rating: Page SS18&19			Design, Packing/Gasket, P-T Rating: Page SS18&19			Design, Packing/Gasket, P-T Rating: Page SS18&19			Design, Packing/Gasket, P-T Rating: Page SS18&19		
Remarks		RoHS: Option, EAC: Option			RoHS: Option, EAC: Option			* Except Flange Thickness RoHS: Option, EAC: Option			* Except Flange Thickness RoHS: Option, EAC: Option		

Type		Strainer			Strainer			Strainer			Strainer		
Stainless Steel B Series KITZ Standard		20K SC/BC  RoHS			20K SC/BC  RoHS			10K SC  RoHS			10K SC  RoHS		
Fig		UY			UYM			UYB			UYBM		
KCA Code		–			–			–			–		
End Connection		BS21 (JIS B0203)			BS21 (JIS B0203)			JIS B2220* 10K FF			JIS B2220* 10K FF		
inch	mm	L	H	*H1	L	H	*H1	L	H	*H1	L	H	*H1
1/4	8	65	50	66	65	50	66	110	50	67	110	50	67
3/8	10	70	50	67	70	50	67	120	58	79	120	58	79
1/2	15	85	58	79	85	58	79	130	66	91	130	66	91
3/4	20	100	64	89	100	64	89	150	78	109	150	78	109
1	25	115	76	107	115	76	107	170	93	131	170	93	131
11/4	32	135	89	127	135	89	127	190	103	144	190	103	144
11/2	40	150	98	139	150	98	139	220	121	173	220	121	173
2	50	180	115	167	180	115	167						
21/2	65	220	156	214	220	156	214						
3	80	250	192	266	250	192	266						
Body		CF8			CF8M			CF8			CF8M		
Bonnet/Cap/Cover		CF8			CF8M			CF8			CF8M		
Disc/Screen		304SS			316SS			304SS			316SS		
Gasket		Reinforced PTFE			Reinforced PTFE			Reinforced PTFE			Reinforced PTFE		
Standard/Approval		RoHS			RoHS			RoHS			RoHS		
Service Condition		Pressure-Temperature: 1.0 MPa: 180℃			Pressure-Temperature: 1.0 MPa: 180℃			Pressure-Temperature: 1.0 MPa: 180℃			Pressure-Temperature: 1.0 MPa: 180℃		
Reference Page		Design, Packing/Gasket, P-T Rating: Page SS18&19			Design, Packing/Gasket, P-T Rating: Page SS18&19			Design, Packing/Gasket, P-T Rating: Page SS18&19			Design, Packing/Gasket, P-T Rating: Page SS18&19		
Remarks		40-mesh, RoHS: Option			40-mesh, RoHS: Option			* Except Flange Thickness 40-mesh, RoHS: Option			* Except Flange Thickness 40-mesh, RoHS: Option		

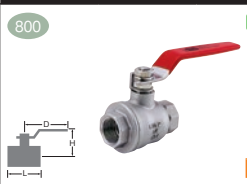
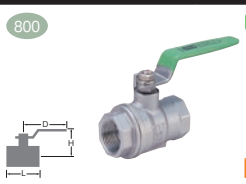
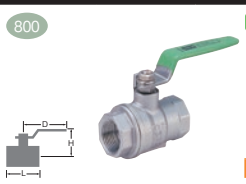
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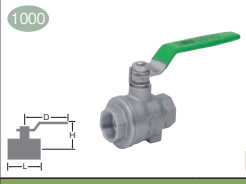
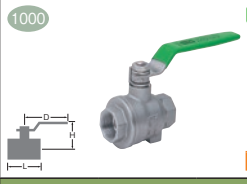
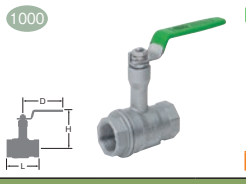
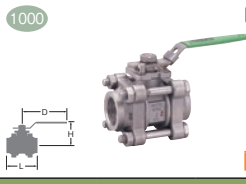
Type		Wafer Check			Wafer Check			Wafer Check		
Stainless Steel B Series KITZ Standard		10K Single 			10K Single 			20K Single 		
Fig		10UW			10UWS			20UWS		
KCA Code		–			–			–		
End Connection		Wafer (JIS 10K)			Wafer (JIS 10K)			Wafer (JIS 20K)		
inch	mm	L	H	D	L	H	D	L	H	D
2	50	60	147	60	60	148	60	60	142	60
21/2	65	67	155	60	67	156	60	67	158	60
3	80	73	163	60	73	164	60	73	163	60
4	100	73	175	60	73	176	60	73	176	60
5	125	89	189	70	89	189	70	89	189	70
6	150	98	202	70	98	203	70	98	203	70
8	200	127	229	70	127	229	70	127	229	70
10	250	146	280	90	146	284	90	146	284	90
12	300	181	307	90	181	310	90	181	310	90
Body		CF8 + NBR			CF8 + Metal Seat			CF8 + Metal Seat		
Bonnet/Cap		CF8			CF8			CF8		
Stem/Hinge pin		304SS			304SS			304SS		
Disc/Screen		CF8			CF8			CF8		
Gasket		Flexible Graphite + PTFE Braded			Flexible Graphite + PTFE Braded			Flexible Graphite + PTFE Braded		
Service Condition		W.O.G. 80℃ (1.4MPa) (DO NOT USE for Flammable Gas or Toxic Gas.)			W.O.G. 120℃ (1.4MPa) (DO NOT USE for Flammable Gas or Toxic Gas.)			W.O.G. 120℃ (3.4MPa) (DO NOT USE for Flammable Gas or Toxic Gas.)		
Reference Page		Features: Page BR35			Features: Page BR35			Features: Page BR35		
Remarks		Built-in Bypass Valve Single Plate Type			Built-in Bypass Valve Single Plate Type			Built-in Bypass Valve Single Plate Type		

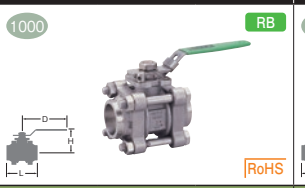
Type		Ball Check			Air Vent			Ball Check			Ball Check		
Stainless Steel K Series KITZ Standard		10K 						10K 			10K 		
Fig		UFTE			UFTA			10UFT			10UFTE		
KCA Code		–			–			–			–		
End Connection		BS21 (JIS B0203)			BS21 (JIS B0203)			JIS B2220 10K RF			JIS B2220 10K RF		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/4	8				80								
3/8	10				80								
1/2	15	105	59.5										
3/4	20							190	87				
1	25							200	100.5		200	97	
11/4	32							220	123.5		220	120.5	
11/2	40							240	150		240	146	
2	50							290	187		290	187	
3	80							410	275		410	275	
4	100										500	366	
Body		CF8			CF8			CF8			CF8		
Bonnet/Cap/Cover		CF8			CF8			CF8			CF8		
Disc		NBR			EPDM			NBR			NBR		
O ring/Gasket		NBR						NBR			NBR		
Plug		304SS									304SS		
Service Condition		Non-Shock Water : 0.05~1.4MPa, 0~60℃			Air : 0.7MPa at 0℃~+60℃			Non-Shock Water : 0.05~1.4MPa, 0~60℃			Non-Shock Water : 0.05~1.4MPa, 0~60℃		
Reference Page		Features & Pressure Loss: Page CPT19&20						Features & Pressure Loss: Page CPT19&20			Features & Pressure Loss: Page CPT19&20		
Remarks		Vertical Installation Only			Vertical Installation Only			Vertical Installation Only			Vertical & Horizontal		

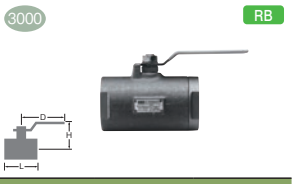
Type		SS Ball			SS Ball			SS Ball			SS Ball		
SS/CS Threaded or Welded Ball Valves													
Fig		10UT			10UTM			UTK			UTKM		
KCA Code		–			–			–			–		
End Connection		BS21 (JIS B0203)			BS21 (JIS B0203)			BS21 (JIS B0203)			BS21 (JIS B0203)		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/4	8							39	31	60	39	31	60
3/8	10	62	72	130	62	72	130	44	35	70	44	35	70
1/2	15	65	102	130	65	102	130	56.5	38	85	56.5	38	85
3/4	20	80	105	130	80	105	130	59	42	85	59	42	85
1	25	90	124	160	90	124	160	71	47	100	71	47	100
11/4	32	110	130	160	110	130	160	78	52	100	78	52	100
11/2	40	120	113	230	120	113	230	83	63	125	83	63	125
2	50	140	120	230	140	120	230	100	69	125	100	69	125
21/2	65	160	154	400	160	154	400						
3	80	182	163	400	182	163	400						
Body & Cap		CF8			CF8M			CF8			CF8M		
Stem		304SS			316SS			304SS/316SS			316SS		
Ball		304SS/CF8			316SS/CF8M			304SS/316SS/CF8/CF8M			316SS/CF8M		
Ball Seat		PTFE			PTFE			G/F PTFE			G/F PTFE		
Gland Packing		PTFE			PTFE			G/F PTFE			G/F PTFE		
Gasket		PTFE			PTFE								
Handle		DI			DI			SS			SS		
Bore		Full Bore			Full Bore			Reduced Bore			Reduced Bore		
Standard/Approval								RoHS			RoHS		
Reference Page		P-T Rating : Page CPT16			P-T Rating : Page CPT16			P-T Rating : Page CPT15			P-T Rating : Page CPT15		
Remarks		Split Body			Split Body			Uni-Body RoHS: Option			Uni-Body RoHS: Option		

Type		SS Ball			SS Ball			SS Ball			SS Ball		
SS/CS Threaded or Welded Ball Valves													
Fig		AKUTKM			UTKW			UTKMW			UTFKW		
KCA Code		52			–			–			–		
End Connection		ASME B1.20.1			BS21 (JIS B0203)			BS21 (JIS B0203)			BS21 (JIS B0203)		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/4	8	39	31	60	39	24	35	39	24	35			
3/8	10	44	35	70	44	29	40	44	29	40			
1/2	15	56.5	38	85	56.5	34	55	56.5	34	55	62	46	60
3/4	20	59	42	85	59	37	55	59	37	55	73	49	60
1	25	71	47	100	71	41	69	71	41	69	85	59	82
11/4	32	78	52	100									
11/2	40	83	63	125									
2	50	100	69	125									
Body & Cap		CF8M			CF8			CF8M			CF8		
Stem		316SS			304SS/316SS			316SS			304SS		
Ball		316SS/CF8M			304SS/316SS/CF8/CF8M			316SS/CF8M			304SS		
Ball Seat		G/F PTFE			G/F PTFE			G/F PTFE			HYPATITE® PTFE		
Gland Packing		G/F PTFE			G/F PTFE			G/F PTFE			FKM		
Gasket											PTFE		
Handle		SS			ZDC			ZDC			SS		
Bore		Reduced Bore			Reduced Bore			Reduced Bore			Full Bore		
Standard/Approval		RoHS			RoHS			RoHS					
Reference Page		P-T Rating : Page CPT15			P-T Rating : Page CPT15			P-T Rating : Page CPT15			P-T Rating : Page CPT16		
Remarks		Uni-Body RoHS: Option			Uni-Body, Butterfly (Wing) Handle RoHS: Option			Uni-Body, Butterfly (Wing) Handle RoHS: Option			Split Body, Butterfly (Wing) Handle		

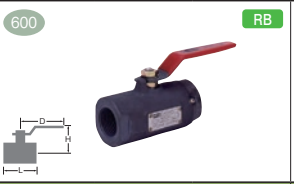
Type		SS Ball			SS Ball			SS Ball			SS Ball		
SS/CS Threaded or Welded Ball Valves		600 FB 			800 FB  RoHS			800 RB  RoHS			800 RB  RoHS		
Fig		UTFKMW			UTFZ			UTHM			AKUTHM		
KCA Code		–			–			–			53		
End Connection		BS21 (JIS B0203)			BS21 (JIS B0203)			BS21 (JIS B0203)			ASME B1.20.1		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
3/8	10				58	47	100						
1/2	15	62	46	60	62	53	100	60	47	100	60	48	100
3/4	20	73	49	60	73	63	130	70	53	100	70	54	100
1	25	85	59	82	85	67	130	80	63	130	80	64	130
11/4	32				98	76	150	95	67	130	95	68	130
11/2	40				108	82	150	108	79	150	108	79	150
2	50				124	101	200	124	85	150	124	85	150
Body & Cap		CF8M			CF8			CF8M			CF8M		
Stem		316SS			304SS			316SS			316SS		
Ball		316SS/CF8M			304SS/CF8			316SS/CF8M			316SS/CF8M		
Ball Seat		HYPATITE® PTFE			HYPATITE® PTFE			PTFE			PTFE		
Gland Packing		FKM			PTFE			PTFE			PTFE		
Gasket		PTFE			PTFE			PTFE			PTFE		
Handle		SS			SS			SS			SS		
Bore		Full Bore			Full Bore			Reduced Bore			Reduced Bore		
Standard/Approval					RoHS			RoHS			RoHS		
Reference Page		P-T Rating : Page CPT16			P-T Rating : Page CPT16			P-T Rating : Page CPT15			P-T Rating : Page CPT15		
Remarks		Split Body, Butterfly (Wing) Handle			Split Body RoHS: Option			Split Body RoHS: Option			Split Body RoHS: Option		

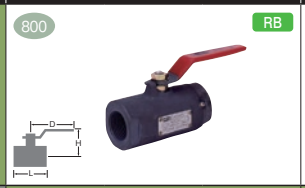
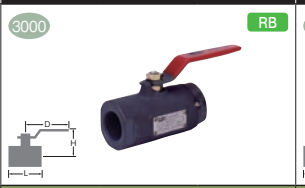
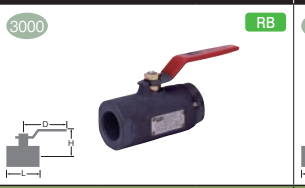
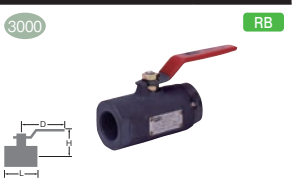
Type		SS Ball			SS Ball			SS Ball			SS Ball		
SS/CS Threaded or Welded Ball Valves		1000 FB  RoHS			1000 FB  RoHS			1000 RB  RoHS			1000 RB  RoHS		
Fig		UTFM			AKUTFM			UTHL			U3TZM		
KCA Code		–			53F			–			–		
End Connection		BS21 (JIS B0203)			ASME B1.20.1			BS21 (JIS B0203)			BS21 (JIS B0203)		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/2	15	62	53	100	62	53	100	60	76	100	63	48	120
3/4	20	73	63	130	73	63	130	70	80	100	71	60	130
1	25	85	67	130	85	67	130	80	85	130	90	69	130
11/4	32	98	75	150	98	75	150	95	99	130	103	83	150
11/2	40	108	81	150	108	81	150	108	105	150	110	88	150
2	50	124	102	200	124	102	200	124	113	150	127	104	180
Body & Cap		CF8M			CF8M			CF8			CF8M		
Stem		316SS			316SS			304SS			316SS		
Ball		316SS/CF8M			316SS/CF8M			304SS/CF8			316SS/CF8M		
Ball Seat		HYPATITE® PTFE			HYPATITE® PTFE			HYPATITE® PTFE			HYPATITE® PTFE		
Gland Packing		PTFE			PTFE			PTFE			PTFE		
Gasket		PTFE			PTFE			PTFE			PTFE		
Handle		SS			SS			SS			SS		
Bore		Full Bore			Full Bore			Reduced Bore			Reduced Bore		
Standard/Approval		RoHS			RoHS			RoHS			RoHS		
Reference Page		P-T Rating : Page CPT15			P-T Rating : Page CPT15			P-T Rating : Page CPT15			P-T Rating : Page CPT15		
Remarks		RoHS: Option			RoHS: Option			For Thermal Insulation RoHS: Option			3pc Body RoHS: Option		

Type		SS Ball			SS Ball			SS Ball			SS Ball		
SS/CS Threaded or Welded Ball Valves		1000 RB  RoHS			1000 RB  RoHS			1000 RB  RoHS			1000 FB  RoHS		
Fig		AKU3TZM			SWU3TZM			AWU3TZM			U3TZFM		
KCA Code		–			–			–			–		
End Connection		ASME B1.20.1			BS5351			ASME B16.11			BS21 (JIS B0203)		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/4	8										63	48	120
3/8	10										63	48	120
1/2	15	63	48	120	63	48	120	63	48	120	71	60	130
3/4	20	71	60	130	71	60	130	71	60	130	90	69	130
1	25	90	69	130	90	69	130	90	69	130	103	82	150
11/4	32	103	83	150	103	83	150	103	83	150	110	88	150
11/2	40	110	88	150	110	88	150	110	88	150	127	104	180
2	50	127	104	180	127	104	180	127	104	180			
Body & Cap		CF8M			CF8M			CF8M			CF8M		
Stem		316SS			316SS			316SS			316SS		
Ball		316SS/CF8M			316SS/CF8M			316SS/CF8M			316SS/CF8M		
Ball Seat		HYPATITE® PTFE			HYPATITE® PTFE			HYPATITE® PTFE			HYPATITE® PTFE		
Gland Packing		PTFE			PTFE			PTFE			PTFE		
Gasket		PTFE			PTFE			PTFE			PTFE		
Handle		SS			SS			SS			SS		
Bore		Reduced Bore			Reduced Bore			Reduced Bore			Full Bore		
Standard/Approval		RoHS			RoHS			RoHS			RoHS		
Reference Page		P-T Rating : Page CPT15			P-T Rating : Page CPT15			P-T Rating : Page CPT15			P-T Rating : Page CPT15		
Remarks		3pc Body RoHS: Option			3pc Body RoHS: Option			3pc Body RoHS: Option			3pc Body RoHS: Option		

Type		SS Ball			SS Ball			SS Ball			SS Ball		
SS/CS Threaded or Welded Ball Valves		1000 FB  RoHS			1000 FB  RoHS			1000 FB  RoHS			3000 RB 		
Fig		AKU3TZFM			SWU3TZFM			AWU3TZFM			3000UTKM		
KCA Code		327F			–			327FS			–		
End Connection		ASME B1.20.1			BS5351			ASME B16.11			BS21 (JIS B0203)		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/4	8	63	48	120	63	48	120	63	48	120	88	45	100
3/8	10	63	48	120	63	48	120	63	48	120	88	45	100
1/2	15	71	60	130	71	60	130	71	60	130	88	45	100
3/4	20	90	69	130	90	69	130	90	69	130	90	58	115
1	25	103	82	150	103	82	150	103	82	150	105	57	115
11/4	32	110	88	150	110	88	150	110	88	150			
11/2	40	127	104	180	127	104	180	127	104	180	130	72	160
2	50										150	82	230
Body & Cap		CF8M			CF8M			CF8M			316SS		
Stem		316SS			316SS			316SS			329J1		
Ball		316SS/CF8M			316SS/CF8M			316SS/CF8M			316SS		
Ball Seat		HYPATITE® PTFE			HYPATITE® PTFE			HYPATITE® PTFE			PCTFE		
Gland Packing		PTFE			PTFE			PTFE			PTFE		
Gasket		PTFE			PTFE			PTFE			HYPATITE® PTFE		
Handle		SS			SS			SS			SS		
Bore		Full Bore			Full Bore			Full Bore			Reduced Bore		
Standard/Approval		RoHS			RoHS			RoHS					
Reference Page		P-T Rating : Page CPT15			P-T Rating : Page CPT15			P-T Rating : Page CPT15			P-T Rating : Page CPT15		
Remarks		3pc Body RoHS: Option			3pc Body RoHS: Option			3pc Body RoHS: Option			Welded Body		

Type		SS 3-Way 4-Seats Ball L-Port				SS 3-Way 4-Seats Ball T-Port			
SS/CS Threaded or Welded Ball Valves									
Fig		UTH4LM				UTH4TM			
KCA Code		–				–			
End Connection		BS21 (JIS B0203)				BS21 (JIS B0203)			
inch	mm	L	L1	H	D	L	L1	H	D
1/2	15	69	34.5	63	130	69	34.5	63	130
3/4	20	84	42	65	130	84	42	65	130
1	25	96	48	76	150	96	48	76	150
11/4	32	114	57	80	150	114	57	80	150
11/2	40	132	66	96	230	132	66	96	230
2	50	150	75	101	230	150	75	101	230
Body & Cap		CF8M				CF8M			
Stem		316SS				316SS			
Ball		316SS/CF8M				316SS/CF8M			
Ball Seat		HYPATITE® PTFE				HYPATITE® PTFE			
Gland Packing		PTFE				PTFE			
Gasket		PTFE				PTFE			
Handle		SS				SS			
Bore		Reduced Bore				Reduced Bore			
Standard/Approval		RoHS: UTH4LM<GS101>				RoHS: UTH4TM<GS101>			
Reference Page		P-T Rating : Page CPT15 Port Orintation : Page TECH1				P-T Rating : Page CPT15 Port Orintation : Page TECH1			
Remarks		Split Body RoHS: Option				Split Body RoHS: Option			

Type		CS Ball			CS Ball			CS Ball			CS Ball		
SS/CS Threaded or Welded Ball Valves													
Fig		SCTK			AKSCTK			800SCTK			AK800SCTK		
KCA Code		–			–			–			–		
End Connection		BS21 (JIS B0203)			ASME B1.20.1			BS21 (JIS B0203)			ASME B1.20.1		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/4	8	39	30	60	39	30	60	88	45	100	88	45	100
3/8	10	44	35	70	44	35	70	88	45	100	88	45	100
1/2	15	56.5	38	85	56.5	38	85	88	45	100	88	45	100
3/4	20	59	42	85	59	42	85	90	54	115	90	54	115
1	25	71	47	100	71	47	100	105	58	115	105	58	115
11/4	32	78	52	100	78	52	100	117	65	135	117	65	135
11/2	40	83	63	125	83	63	125	130	70	135	130	70	135
2	50	100	69	125	100	69	125	150	80	150	150	80	150
Body & Cap		WCB			WCB			A105			A105		
Stem		304SS/316SS			304SS/316SS			316SS			316SS		
Ball		304SS/316SS			304SS/316SS			316SS			316SS		
Ball Seat		G/F PTFE			G/F PTFE			PTFE			PTFE		
Gland Packing		G/F PTFE			G/F PTFE			PTFE			PTFE		
Gasket								HYPATITE® PTFE			HYPATITE® PTFE		
Handle		SS			SS			CS			CS		
Bore		Reduced Bore			Reduced Bore			Reduced Bore			Reduced Bore		
Reference Page		P-T Rating : Page CPT15			P-T Rating : Page CPT15			P-T Rating : Page CPT15			P-T Rating : Page CPT15		
Remarks		Split Body			Split Body			Welded Body			Welded Body		

Type		CS Ball			CS Ball			CS Ball			CS Ball		
SS/CS Threaded or Welded Ball Valves		800 RB 			3000 RB 			3000 RB 			3000 RB 		
Fig		AW800SCTK			3000SCTK			AK3000SCTK			AW3000SCTK		
KCA Code		–			–			–			–		
End Connection		ASME B16.11			BS21 (JIS B0203)			ASME B1.20.1			ASME B16.11		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/4	8	170	44	100	88	45	100	88	45	100	170	44	100
3/8	10	170	44	100	88	45	100	88	45	100	170	44	100
1/2	15	170	44	100	88	45	100	88	45	100	170	44	100
3/4	20	176	54	115	90	54	115	90	54	115	176	54	115
1	25	196	57	115	105	58	115	105	58	115	196	57	115
11/4	32	210	65	135	117	67	160	117	67	160	210	65	160
11/2	40	226	70	135	130	72	160	130	72	160	226	70	160
2	50	262	81	150	150	82	230	150	82	230	262	81	230
Body & Cap		A105			A105			A105			A105		
Stem		316SS			329J1SS			329J1SS			329J1SS		
Ball		316SS			316SS			316SS			316SS		
Ball Seat		PTFE			PCTFE			PCTFE			PCTFE		
Gland Packing		PTFE			PTFE			PTFE			PTFE		
Gasket		HYPATITE® PTFE			HYPATITE® PTFE			HYPATITE® PTFE			HYPATITE® PTFE		
Handle		CS			CS			CS			CS		
Bore		Reduced Bore			Reduced Bore			Reduced Bore			Reduced Bore		
Reference Page		P-T Rating : Page CPT15			P-T Rating : Page CPT15			P-T Rating : Page CPT15			P-T Rating : Page CPT15		
Remarks		Split Body			Welded Body			Welded Body			Split Body		

Type		Needle (Straight)		Needle (Angle)		Needle (Straight)		Needle (Straight)	
Miniature Valves		30K Metric  RoHS		30K Metric  RoHS		30K Metric  RoHS		30K Inch  RoHS	
Fig		UN3-AP-		UN3-BP-		UN3-CP-		UN3-CP-	
KCA Code		–		–		–		–	
End Connection		JIS B0203		JIS B0203		COUPLE LOK		COUPLE LOK	
inch	mm	Fig	Threaded	Fig	Threaded	Fig	Tube O.D.	Fig	Tube O.D.
1/8	6	UN3-AP-1	Rc1/8	UN3-BP-1	Rc1/8	UN3-CP-6	6		
1/4	8	UN3-AP-2	Rc1/4	UN3-BP-2	Rc1/4	UN3-CP-8	8	UN3-CP-02	1/4
3/8	10	UN3-AP-3	Rc3/8	UN3-BP-3	Rc3/8	UN3-CP-10	10	UN3-CP-03	3/8
	12					UN3-CP-12	12		
1/2	15	UN3-AP-4	Rc1/2					UN3-CP-04	1/2
Body		316SS		316SS		316SS		316SS	
Stem		630SS		630SS		630SS		630SS	
Gland Packing/O ring		PTFE		PTFE		PTFE		PTFE	
Handle		ZDC		ZDC		ZDC		ZDC	
Panel Gasket/Gasket		Asbestos-Free		Asbestos-Free		Asbestos-Free		Asbestos-Free	
Ferrule/Ring						316SS		316SS	
Standard/Approval		RoHS: UN3-AP-<GS101>		RoHS: UN3-BP-<GS101>		RoHS: UN3-CP-<GS101>		RoHS: UN3-CP-<GS101>	
Service Conditions		2.65MPa for 150℃ & lower, 2.94MPa for 100℃ & lower, 3.43MPa for 38℃ down to -20℃		2.65MPa for 150℃ & lower, 2.94MPa for 100℃ & lower, 3.43MPa for 38℃ down to -20℃		2.65MPa for 150℃ & lower, 2.94MPa for 100℃ & lower, 3.43MPa for 38℃ down to -20℃		2.65MPa for 150℃ & lower, 2.94MPa for 100℃ & lower, 3.43MPa for 38℃ down to -20℃	
Reference Page		P-T Rating & Flow Characteristics: Page CPT17&18		P-T Rating & Flow Characteristics: Page CPT17&18		P-T Rating & Flow Characteristics: Page CPT17&18		P-T Rating & Flow Characteristics: Page CPT17&18	
Remarks		Metric Tube Series RoHS: Option		Metric Tube Series RoHS: Option		Metric Tube Series RoHS: Option		Inch Tube Series RoHS: Option	

Type		Needle (Angle)		Needle (Angle)		Needle (Straight)		Needle (Straight)	
Miniature Valves		30K Metric  RoHS		30K Inch  RoHS		30K Metric  RoHS		30K Inch  RoHS	
Fig		UN3-DP-		UN3-DP-		UN3-EP-		UN3-EP-	
KCA Code		–		–		–		–	
End Connection		COUPLE LOK		COUPLE LOK		Male (JIS B0203) x COUPLE LOK		Male (JIS B0203) x COUPLE LOK	
inch	mm	Fig	Tube O.D.	Fig	Tube O.D.	Fig	Tube O.D.	Fig	Tube O.D.
1/8	6	UN3-DP-6	6			UN3-EP-6-2	6		
1/4	8	UN3-DP-8	8	UN3-DP-02	1/4	UN3-EP-8-2	8	UN3-EP-02-2	1/4
1/4	10					UN3-EP-10-2	10		
3/8	10					UN3-EP-10-3	10	UN3-EP-03-2	3/8
1/4	12					UN3-EP-12-2	12		
3/8	12					UN3-EP-12-3	12		
3/8								UN3-EP-03-3	3/8
Body		316SS		316SS		316SS		316SS	
Stem		630SS		630SS		630SS		630SS	
Gland Packing/O ring		PTFE		PTFE		PTFE		PTFE	
Handle		ZDC		ZDC		ZDC		ZDC	
Panel Gasket/Gasket		Asbestos-Free		Asbestos-Free		Asbestos-Free		Asbestos-Free	
Ferrule/Ring		316SS		316SS		316SS		316SS	
Standard/Approval		RoHS: UN3-DP-<GS101>		RoHS: UN3-DP-<GS101>		RoHS: UN3-EP-<GS101>		RoHS: UN3-EP-<GS101>	
Service Conditions		2.65MPa for 150℃ & lower, 2.94MPa for 100℃ & lower, 3.43MPa for 38℃ down to -20℃		2.65MPa for 150℃ & lower, 2.94MPa for 100℃ & lower, 3.43MPa for 38℃ down to -20℃		2.65MPa for 150℃ & lower, 2.94MPa for 100℃ & lower, 3.43MPa for 38℃ down to -20℃		2.65MPa for 150℃ & lower, 2.94MPa for 100℃ & lower, 3.43MPa for 38℃ down to -20℃	
Reference Page		P-T Rating & Flow Characteristics: Page CPT17&18		P-T Rating & Flow Characteristics: Page CPT17&18		P-T Rating & Flow Characteristics: Page CPT17&18		P-T Rating & Flow Characteristics: Page CPT17&18	
Remarks		Metric Tube Series RoHS: Option		Inch Tube Series RoHS: Option		Metric Tube Series RoHS: Option		Inch Tube Series RoHS: Option	

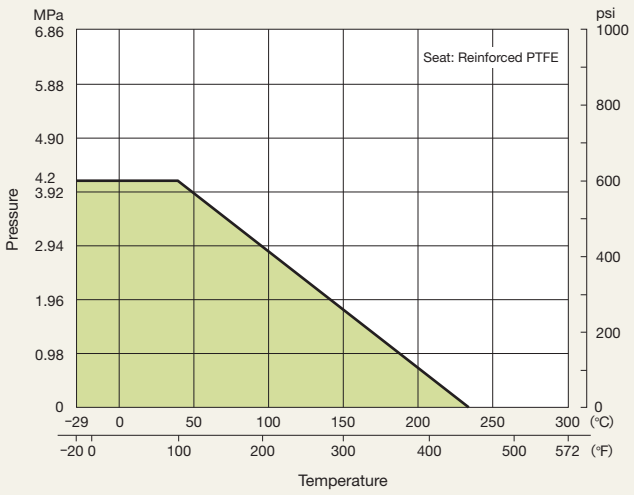
Type		Needle (Angle)		Needle (Angle)		Needle (Straight)		Needle (Straight)	
Miniature Valves		30K Metric  RoHS		30K Inch  RoHS		260K Metric  RoHS		260K Metric  RoHS	
Fig		UN3-FP-		UN3-FP-		UN26-AP-		UN26-CP-	
KCA Code		–		–		–		–	
End Connection		Male (JIS B0203) x COUPLE LOK		Male (JIS B0203) x COUPLE LOK		JIS B0203		COUPLE LOK	
inch	mm	L	D	L	D	L	D	L	D
1/8	6	UN3-FP-6-2	6			UN26-AP-1	Rc1/8	UN26-CP-6	6
1/4	8	UN3-FP-8-2	8	UN3-FP-02-2	1/4	UN26-AP-2	Rc1/4	UN26-CP-8	8
1/4	10	UN3-FP-10-2	10					UN26-CP-10	10
3/8	10	UN3-FP-10-3	10	UN3-FP-03-2	3/8	UN26-AP-3	Rc3/8		
1/4	12	UN3-FP-12-2	12						
3/8	12	UN3-FP-12-3	12					UN26-CP-12	12
3/8				UN3-FP-03-3	3/8				
1/2	15					UN26-AP-4	Rc1/2		
3/4	20					UN26-AP-6	Rc3/4		
1	25					UN26-AP-8	Rc1		
Body		316SS		316SS		316SS		316SS	
Stem		630SS		630SS		630SS		630SS	
Gland Packing/O ring		PTFE		PTFE		PTFE		PTFE	
Handle		ZDC		ZDC		ZDC		ZDC	
Panel Gasket/Gasket		Asbestos-Free		Asbestos-Free		Asbestos-Free		Asbestos-Free	
Ferrule/Ring		316SS		316SS				316SS	
Standard/Approval		RoHS: UN3-FP-<GS101>		RoHS: UN3-FP-<GS101>		RoHS: UN26-AP-<GS101>		RoHS: UN3-CP-<GS101>	
Service Conditions		2.65MPa for 150℃ & lower, 2.94MPa for 100℃ & lower, 3.43MPa for 38℃ down to -20℃		2.65MPa for 150℃ & lower, 2.94MPa for 100℃ & lower, 3.43MPa for 38℃ down to -20℃		19.81MPa for 150℃ & lower, 21.774MPa for 100℃ & lower, 25.50MPa for 38℃ down to -20℃		19.81MPa for 150℃ & lower, 21.774MPa for 100℃ & lower, 25.50MPa for 38℃ down to -20℃	
Reference Page		P-T Rating & Flow Characteristics: Page CPT17&18		P-T Rating & Flow Characteristics: Page CPT17&18		P-T Rating & Flow Characteristics: Page CPT17&18		P-T Rating & Flow Characteristics: Page CPT17&18	
Remarks		Metric Tube Series RoHS: Option		Inch Tube Series RoHS: Option		Metric Tube Series RoHS: Option		Inch Tube Series RoHS: Option	

Type		Needle (Straight)		Needle (Straight)	
Miniature Valves		260K Metric  RoHS		260K Inch  RoHS	
Fig		UN26-SP-		UN26-CP-	
KCA Code		–		–	
End Connection		JIS B2316(Socket weld)		COUPLE LOK	
inch	mm	Fig	Threaded	Fig	Tube O.D.
1/8	6	UN26-SP-1	1/8		
1/4	8	UN26-SP-2	1/4	UN26-CP-02	1/4
3/8	10	UN26-SP-3	3/8	UN26-CP-03	3/8
1/2	15	UN26-SP-4	1/2	UN26-CP-04	1/2
3/4	20	UN26-SP-6	3/4		
1	25	UN26-SP-8	1		
Body		316SS		316SS	
Stem		630SS		630SS	
Gland Packing/O ring		PTFE		PTFE	
Handle		ZDC		ZDC	
Panel Gasket/Gasket		Asbestos-Free		Asbestos-Free	
Ferrule/Ring				316SS	
Standard/Approval		RoHS: UN3-SP-<GS101>		RoHS: UN3-CP-<GS101>	
Service Conditions		19.81MPa for 150℃ & lower, 21.774MPa for 100℃ & lower, 25.50MPa for 38℃ down to -20℃		19.81MPa for 150℃ & lower, 21.774MPa for 100℃ & lower, 25.50MPa for 38℃ down to -20℃	
Reference Page		P-T Rating & Flow Characteristics: Page CPT17&18		P-T Rating & Flow Characteristics: Page CPT17&18	
Remarks		Metric Tube Series RoHS: Option		Inch Tube Series RoHS: Option	

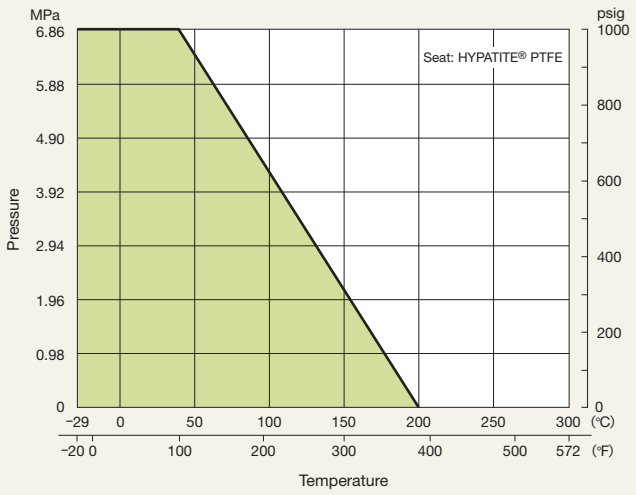
Type		Needle (Straight)		Needle (Straight)		Needle (Straight with lock lever)		Needle (Angle)	
Miniature Valves		10K 		20K 		20K  Drwg		20K  Drwg	
Fig		N1-A-		N2-A-		N2-AL-		N2-B-	
KCA Code		–		–		–		–	
End Connection		JIS B0203		JIS B0203		JIS B0203		JIS B0203	
inch	mm	Fig	Threaded	Fig	Threaded	Fig	Threaded	Fig	Threaded
1/8	6	N1-A-1	Rc1/8	N2-A-1	Rc1/8	N2-AL-1	Rc1/8	N2-B-1	Rc1/8
1/4	8	N1-A-2	Rc1/4	N2-A-2	Rc1/4	N2-AL-2	Rc1/4	N2-B-2	Rc1/4
3/8	10	N1-A-3	Rc3/8	N2-A-3	Rc3/8	N2-AL-3	Rc3/8	N2-B-3	Rc3/8
1/2	15			N2-A-4	Rc1/2	N2-AL-4	Rc1/2	N2-B-4	Rc1/2
Body		C3771		C3771		C3771		C3771	
Stem		C3531		C3531		C3531		C3531	
Gland Packing/O ring		NBR		NBR		NBR		NBR	
Handle		ZDC		ZDC		ZDC		ZDC	
Gasket				Nylon				Nylon	
Service Conditions		1.37MPa for 80℃ & lower		2.75MPa for 80℃ & lower		2.75MPa for 80℃ & lower		2.75MPa for 80℃ & lower	
Reference Page		P-T Rating & Flow Characteristics: Page CPT17&18		P-T Rating & Flow Characteristics: Page CPT17&18		P-T Rating & Flow Characteristics: Page CPT17&18		P-T Rating & Flow Characteristics: Page CPT17&18	
Remarks		*Dezincification Resistant Brass		*Dezincification Resistant Brass		*Dezincification Resistant Brass		*Dezincification Resistant Brass	

Pressure-Temperature Ratings

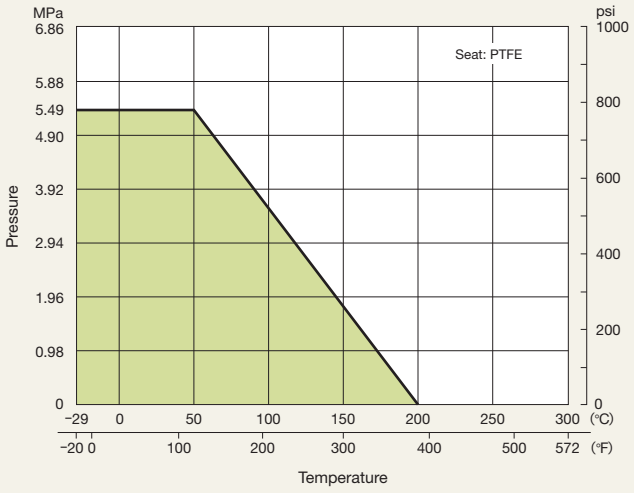
Type 600: SCTK/UTK(M)/AKUTKM/UTK(M)W



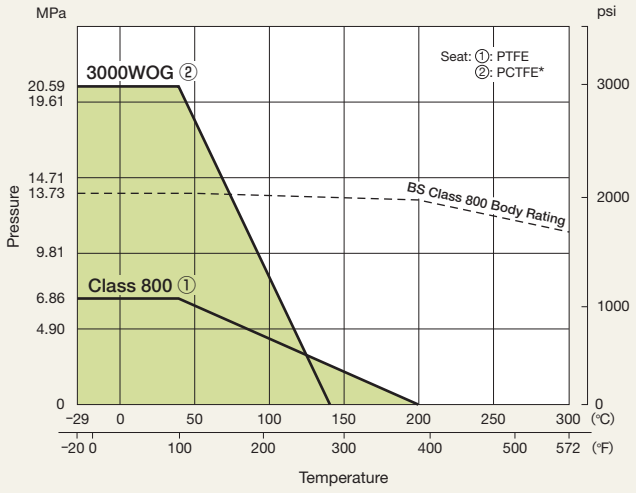
Type 1000: UTFM/AKUTFM/UTHL



Type 800: UTH(M)/AKUTHM

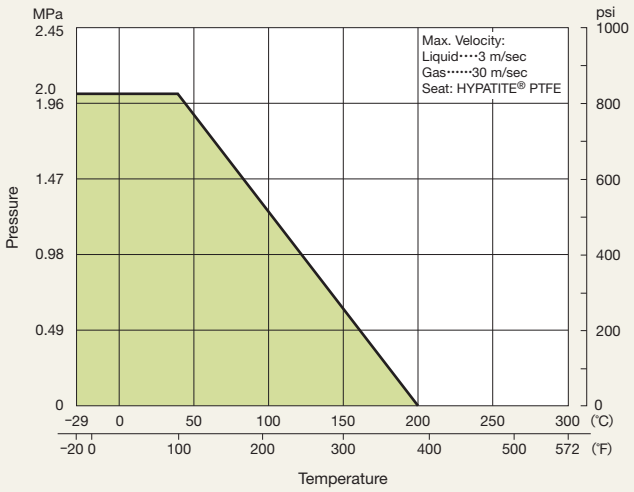


Class 800 and Type 3000: SCTK

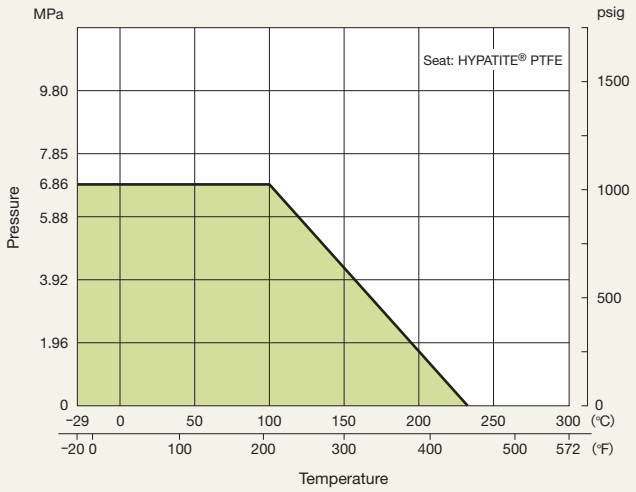


* Polychloro-Trifluoro-Ethylene

Type 800: UTH4LM/4TM



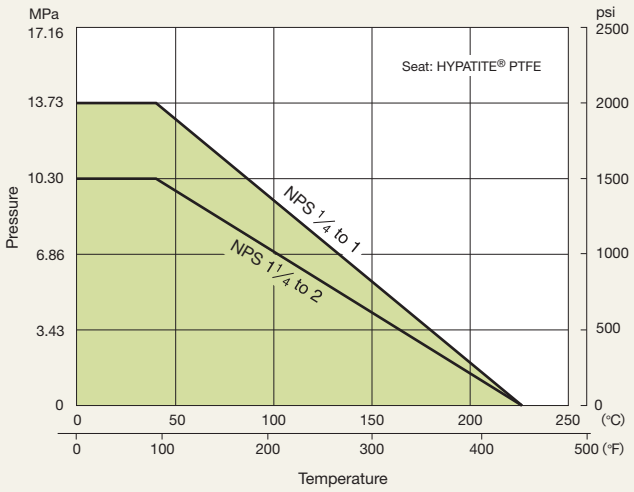
Type 1000: SC3TZ/U3TZ Series



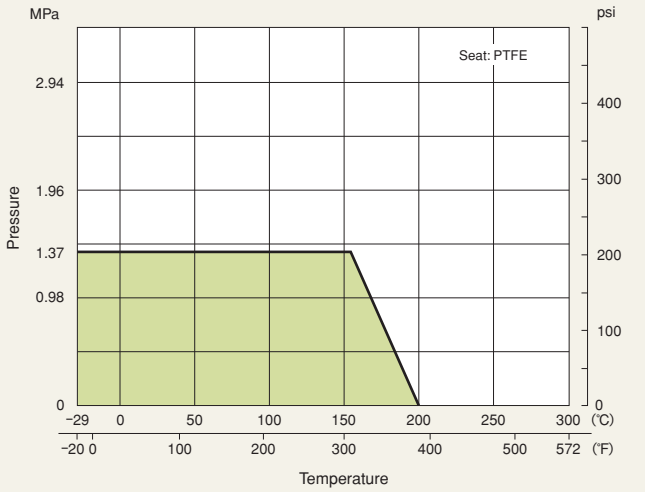
Note: Type 1500 is optionally available

Pressure-Temperature Ratings

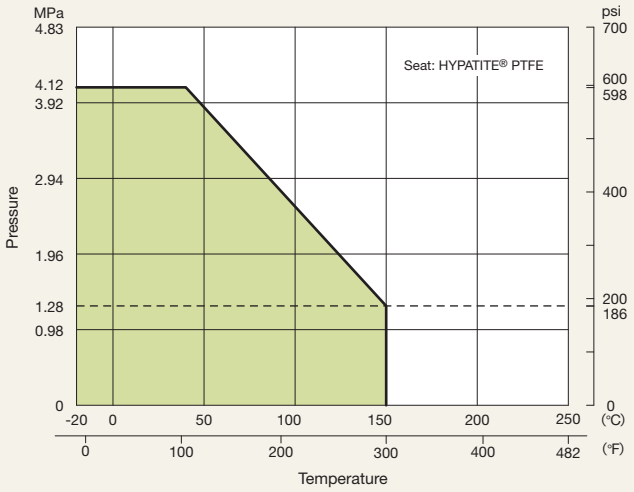
Type 1500/2000: AKSCTHZM/AKSCTHWZM/AKUTHZM/AKUTHWZM



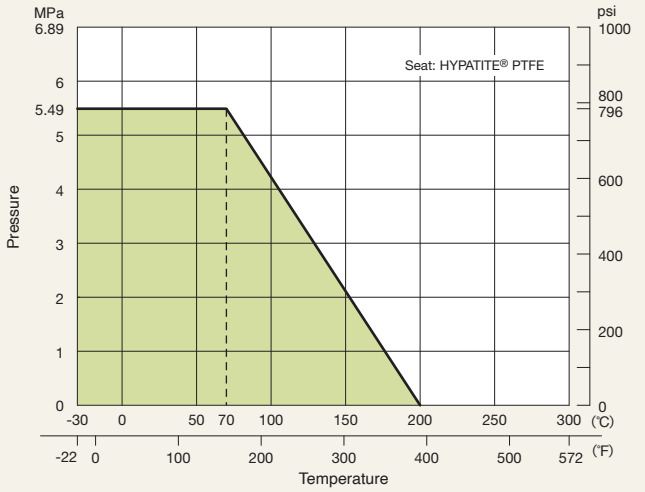
Class 150: AK150UT(M)/10UT(M)



Type 600: UTFK(M)W



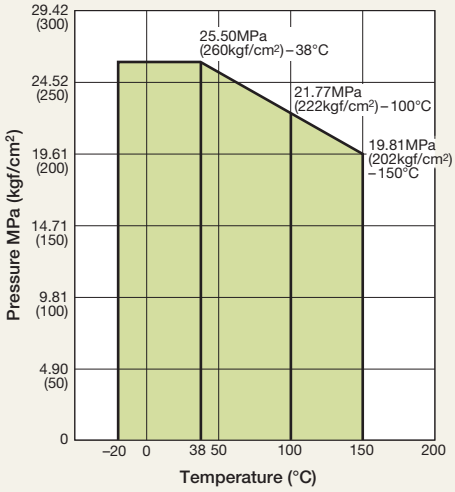
Type 800: UTFZ



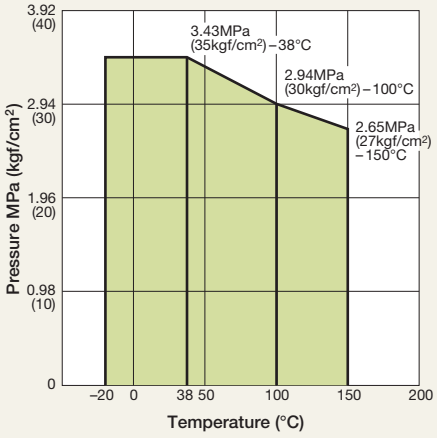
Pressure-Temperature Rating/Flow Characteristics

Pressure-Temperature Rating

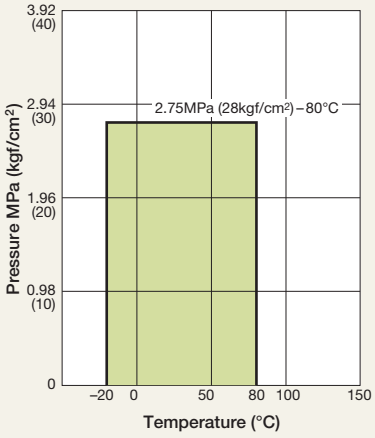
• UN26-AP/UN26-CP



• UN3-AP, BP, CP, DP, EP, FP

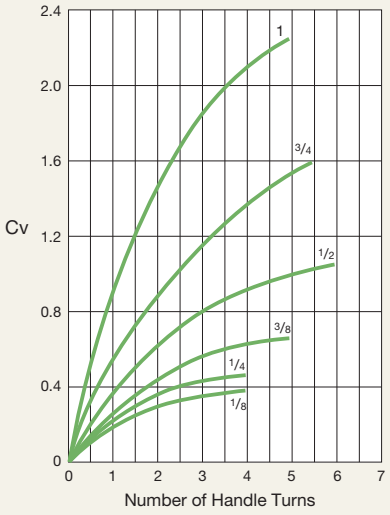


• N-2A, AL, B, C, D, E, F

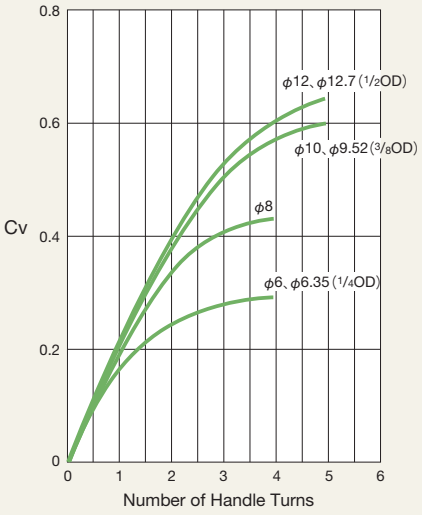


Flow Characteristics

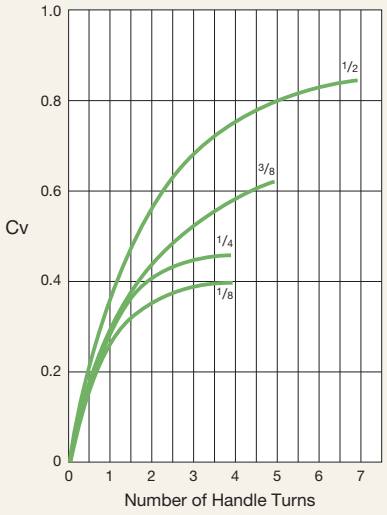
• UN26-AP, SP



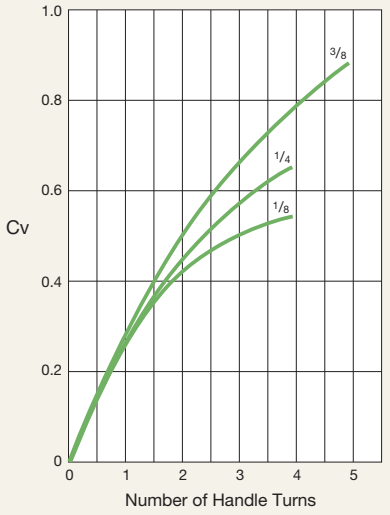
• UN26-CP



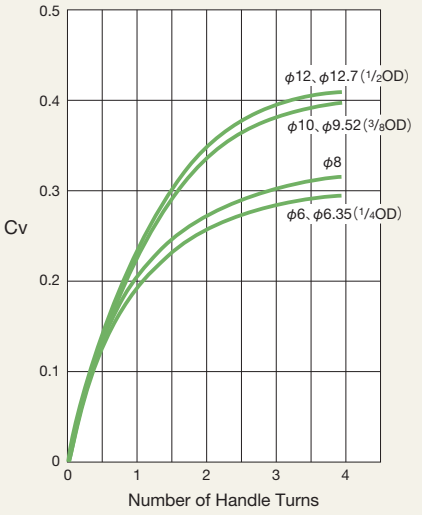
• UN3-AP



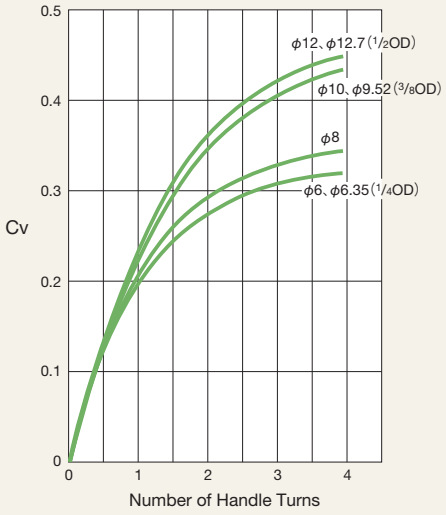
• UN3-BP



• UN3-CP, EP



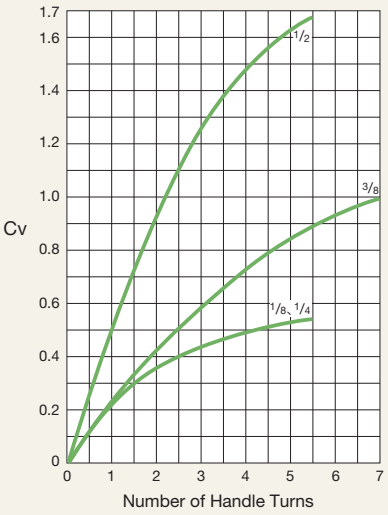
• UN3-DP, FP



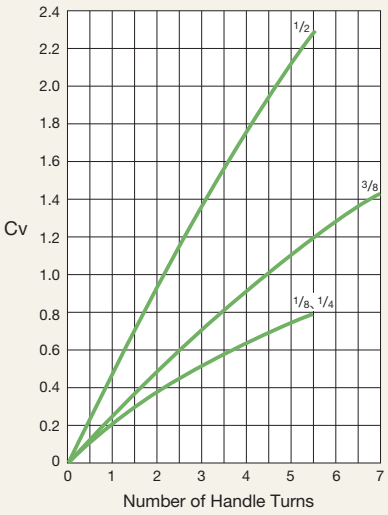
Pressure-Temperature Rating/Flow Characteristics

Flow Characteristics

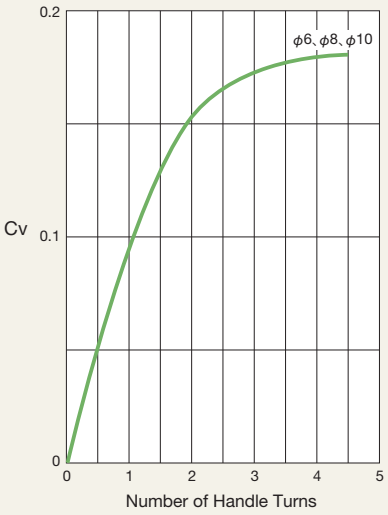
• N2-A, AL



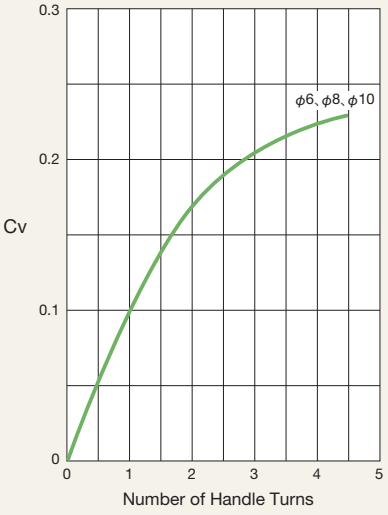
• N2-B



• N2-C, E

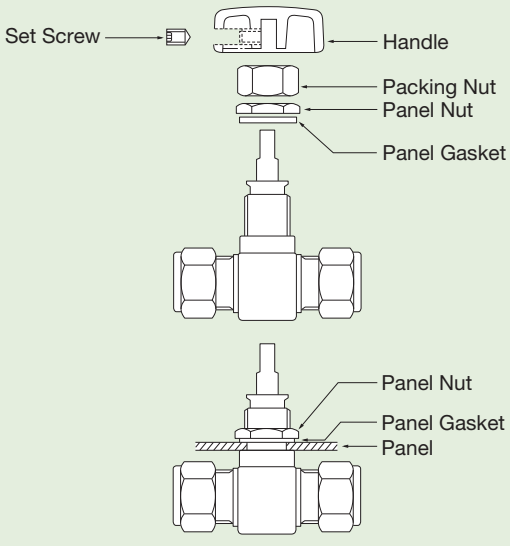


• N2-D, F



Panel Mounting Procedures for KITZ Stainless Steel Miniature Valves

1. Loosen set screw which locks the handle and remove the handle with an Allen Wrench if Nominal Size 2.5 (Nominal Screw Size 2.5)
2. Remove packing nut, panel nut, then panel gasket.
3. Place the valve through hole on the panel. Required hole size is dimension D3 of valve size plus 0.5mm.
4. Fit the panel gasket and tighten panel nut to securely mount the valve.
5. Tighten packing nut, place the handle and lock the handle with set screw to complete assembly.



Design Features

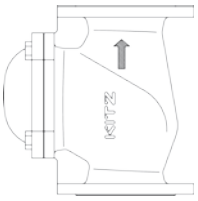
KITZ check valves are backflow prevention valve having superior sealing performance for fluids such as clean water, waste water, sewage water and drainage water that may affect efficiency of existing swing type valves in some cases due to foreign objects trapped in the valve internal parts.

Valves covered in this manual are ball type check valves that have no obstructive parts in the valve interior and can handle fluids containing foreign objects.

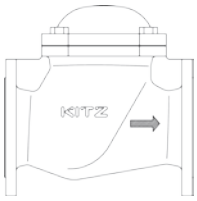
Furthermore, flanged end ball check valves with vent hole(s) can be installed horizontally or vertically.

⚠ CAUTION

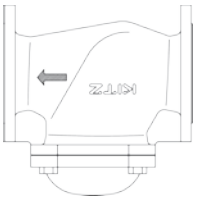
(1) Make sure to install the valve under specified installation conditions to ensure its sealing performance.
See the valve mounting orientation of each product type shown below.



Vertical installation with downstream side upwards
Product Code:
10UFTE
10UFT
UFTE
10FCFTN



Horizontal installation hydraulic head pressure of 0.05 MPa or above in downstream side which has same bore size as the valve.



Not applicable.

1.1 Non-obstructive structure of ball-shaped disc prevents entanglement of foreign objects from the service fluid.
1.2 Ball-shaped rubber disc slides into the seating position by back-pressure of the fluid and provides excellent sealing performance.
1.3 Pressure loss is low due to the valve body shape design based on fluid engineering.

Product Names and Product Coding

Product Name	Product Coding
Cast Iron Nylon 11-lined Flanged End Ball Check Valve	10FCFTN
Stainless Steel Flanged End Ball Check Valve	10UFT
Stainless Steel Flanged End Ball Check Valve with Vent Hole	10UFTE
Stainless Steel Threaded End Ball Check Valve with Vent Hole	UFTE

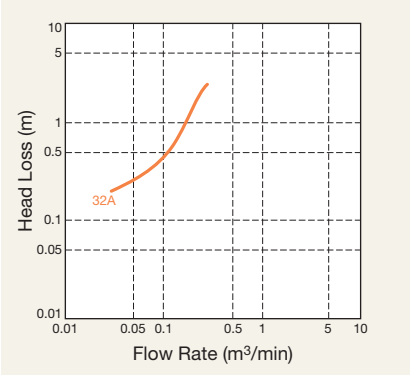
Specifications

Product Code		10UFTE	10UTF	UFTE	10FCFTN
Service Temperature Range		0°C to 60°C			
Service Pressure Range		0.05 to 1.37 MPa (0.5 to 14.0 kgf/cm^2)			
Test Pressure (hydraulic)	Shell Test	2.06 MPa (21 kgf /cm^2)			
	Seat Test Leakage	0.05 to 1.51 MPa (0.5 to 15.4 kgf/cm^2)			
Pipe Connection		JIB B 2238 10K Standard (RF)		JIS B 0203 Threaded End	JIS B 2239 10K Standard (FF)
Face-to-Face Dimensions		JIS B 2002		JIS B 2011	JIS B 2002
Wall Thickness		ASME B 16.34 Class 150*1		JIS B 2011	JIS B 2031*2
Valve Mounting Orientation		Horizontal and Vertical Piping	Vertical Piping		

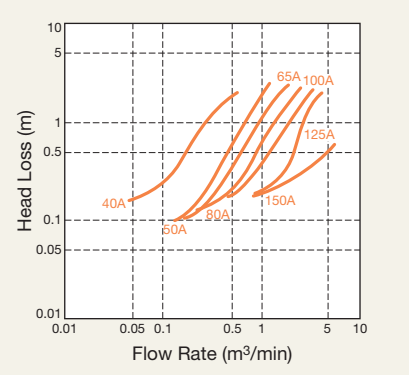
*1: Nominal size 80A and below of 10UFTE are KITZ standard.
*2: Nominal size 40A does not comply with JIS B 2031.
Note) Minimum differential pressure to move the ball is 0.05 MPa (0.5 kgf/cm^2). For pump selection, check opening pressure and pressure loss.

Pressure Loss (Clean Water)

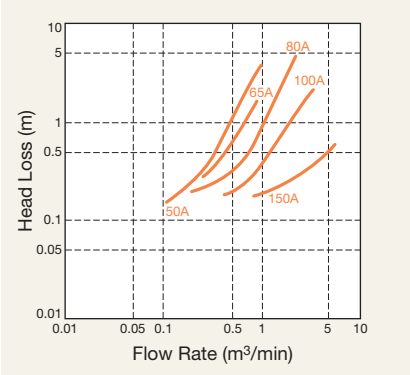
UFTE



10UFT, 10FCFTN



10UFTE

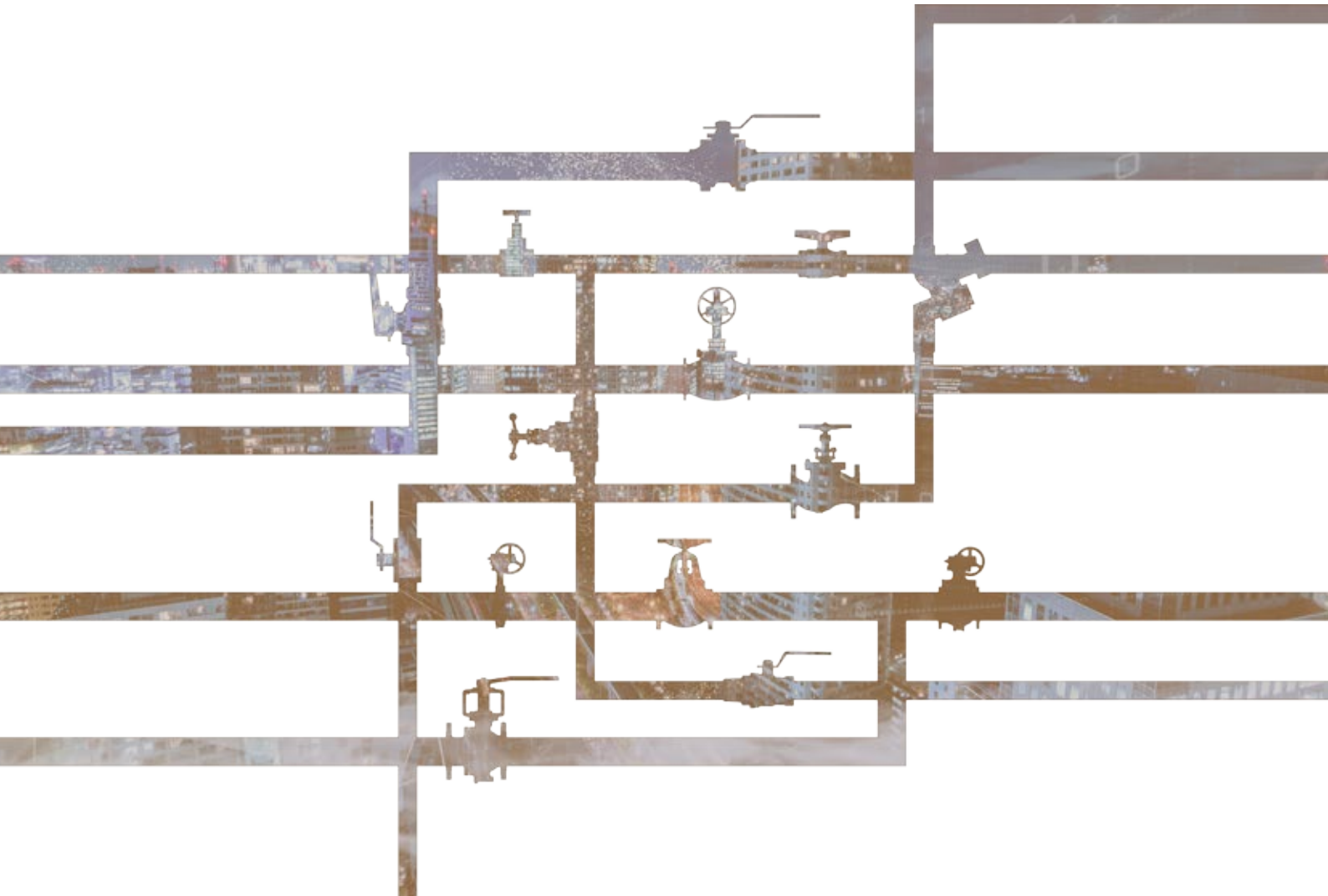


MEMO

KITZ

GENERAL CATALOG

Cast Iron



INDEX

Title	Body Material	Type	Class	End Connection	Features	Fig			Page
Cast Iron Valves	CI	Gate	5K	FE/FF	BB, OS&Y	5FCM			CI2 67
			10K			10FCL	10FCLS	10FCLU	
			125			125FCL	125FCLS		
			EN PN16			EN16FCL	EN16FCLM		
			EN PN25	FE/RF		(PHOX)EN25FCLE			CI3 68
			10K	FE/FF	BB, IS, NRS, with Indicator	10FCWI			
			125			125FCWI			
			EN PN16		BB, IS, NRS	EN16FCW	EN16FCWI		
			10K		BB, IS, NRS, with Indicator	10FCHI			
			125			125FCHI			
		Globe	10K		BB, OS&Y	10FCJ			
						10FCJS	10FCJU		CI4 69
			125			125FCJ	125FCJS		
			EN PN16			EN16FCJ	EN16FCJM		
		Check	10K		Swing, BC	10FCO	10FCOS		
						10FCOU			CI5 70
					Swing, BC, with Rubber Seat	10FCOR	10FCOUR		
					Swing, BC, with Counter Weight	10FCOU-C			
			125		Swing, BC	125FCO	125FCOS		
			EN PN16			EN16FCO	EN16FCOM		
			EN PN25	FE/RF		(PHOX)EN25FCOE			CI6 71
			125	FE/FF	Silent	125FCSR			
			10K	Wafer	Wafer Type with Bypass Valve, Dual Plate	10FWZ			
			125		Wafer Type, Dual Plate	125FWNB	125FWNBE		
			EN PN16			PN16FWNBM	PN16FWNBME		
		Strainer	10K	FE/FF	Y-Pattern, BC	10FCY			CI7 72
			125			125FCY			
						125FCETY<Z0P02>			
			EN PN16			EN16FCY	EN16FCYM		
	DI		EN PN25	FE/RF	Ductile Iron, Y-Pattern, BC	(PHOX)EN25FDYBE			
	Nylon Lining	Gate	5K		BB, OS&Y	5FCMN			CI8 73
			10K			10FCLN			
		Globe				10FCJN			
		Check			Swing, BC	10FCON			
					Swing, BC, with Counter Weight	10FCON-C			
					Ball Check, BC	10FCFTN			
		Strainer			Y-Pattern, BC	10FCYN			
	CI	Ball	10K	TE	FB	10FCT			CI9 74
						(G-)10FCTB			
				FE/FF	RB	10FCTR			
			125		FB	125FCTB			
					RB	125FCTR			
			10K		FB, 3-way	10FCTB2L			
					RB, 3-way	10FCTR2L			

* (Abbreviation) FE: Flanged Ends, FF: Flat Face Ends, RF: Raised Face Ends, TE: Threaded Ends
BB: Bolted Bonnet, OS&Y: Outside Screw & Yoke, BC: Bolted Cover, IS: Inside Screw, NRS: Non Rising Stem, RS: Rising Stem, FB: Full Bore, RB: Reduced Bore

PRODUCT CODING

Cast Iron Valves

(Note: Some products do not follow this coding system)

G – 10 FC O U R

❶ ❷ ❸ ❹ ❺ ❻

❶ Valve Operation

- **None** ····· Handwheel or Lever
- **G** ····· Gear

❷ Pressure Class

- **5** ····· 5K
- **10** ····· 10K
- **PN16 or EN16** ··· PN16
- **EN25---E** ····· PN25
- **125** ····· Class 125

❸ Symbol of Shell Material

- **FC** ····· Cast Iron
- **F** ····· Cast Iron
- **FD** ····· Ductile Iron

❹ Valve Type

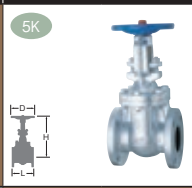
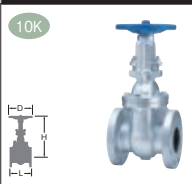
- **L** ····· Gate (OS&Y)
- **W or H** ····· Gate (NRS, IS)
- **WI or HI** ··· Gate with Indicator
- **J** ····· Globe
- **O** ····· Swing Check
- **WZ** ····· Wafer Check with By-Pass
- **WNBM** ····· Wafer Check
- **Y** ····· Strainer
- **ETY** ····· Strainer
- **T or TB** ····· FB ball
- **TR** ····· RB ball

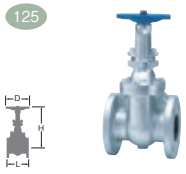
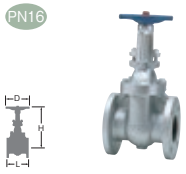
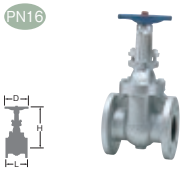
❺ Trim

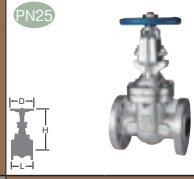
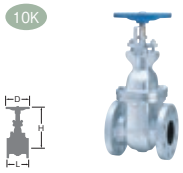
- **None** ····· Bronze
- **U** ····· 304SS
- **S** ····· 403SS
- **M** ····· 316SS

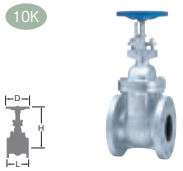
❻ Others

- **R** ····· Rubber Seat
- **N** ····· Nylone Lining
- **-C** ····· With Counter Weight

Type		Gate			Gate			Gate			Gate		
Cast Iron													
Fig		5FCM			10FCL			10FCLS			10FCLU		
End Connection		JIS B2239 5K FF			JIS B2239 10K FF			JIS B2239 10K FF			JIS B2239 10K FF		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
11/2	40				165	305	160	165	305	160	165	305	160
2	50	160	329	160	180	343	170	180	343	170	180	343	170
21/2	65	170	383	170	190	390	170	190	390	170	190	390	170
3	80	180	437	170	200	464	200	200	464	200	200	464	200
4	100	200	534	225	230	548	250	230	548	250	230	548	250
5	125	220	629	225	250	649	280	250	649	280	250	649	280
6	150	240	727	250	270	760	300	270	760	300	270	760	300
8	200	260	920	280	290	957	350	290	957	350	290	957	350
10	250	300	1135	350	330	1169	400	330	1169	400	330	1169	400
12	300				350	1364	450	350	1364	450	350	1364	450
14	350				381	1561	500	381	1561	500	381	1561	500
16	400				406	1795	600	406	1795	600	406	1795	600
18	450							432	1999	600	432	1999	600
20	500							457	2232	680	457	2232	680
24	600							508	2644	760	508	2644	760
Body		FC200			FC200			FC200			FC200		
Bonnet		FC200			FC200			FC200			FC200		
Stem		C3771			C3771			403SS			304SS		
Disc		FC200			FC200			FC200			FC200		
Body/Disc Seat Rings		CAC406			CAC406			403SS			304SS		
Gland Packing		Asbestos-free (P/A4531K)			Asbestos-free (P/A4531K)			Asbestos-free (P/A4531K)			Asbestos-free (P/A4531K)		
Gasket		Asbestos-free (T/1995)			Asbestos-free (T/1995)			Asbestos-free (T/1995)			Asbestos-free (T/1995)		
Bolt/Nut		CS			CS			CS			CS		
Standard/Approval		JIS B2031			JIS B2031 for 2^B-12^B			JIS B2031 for 2^B-12^B			JIS B2031 for 2^B-12^B		
Reference Page		P-T Rating : Page CI10			P-T Rating : Page CI10			P-T Rating : Page CI10			P-T Rating : Page CI10		

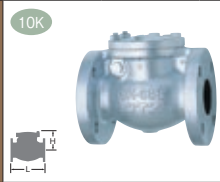
Type		Gate			Gate			Gate			Gate		
Cast Iron													
Fig		125FCL			125FCLS			EN16FCL			EN16FCLM		
End Connection		ASME B16.1 Cl.125FF			ASME B16.1 Cl.125FF			EN 1092-2 PN16 RF			EN 1092-2 PN16 RF		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
11/2	40	178	329	160	178	329	160	178	343	170	178	343	170
2	50	190	383	170	190	382	170	190	389	170	190	389	170
21/2	65	203	437	170	203	437	170	203	462	200	203	462	200
3	80	229	534	225	229	534	225	229	547	250	229	547	250
4	100	254	629	225	254	628	225	254	648	280	254	648	280
5	125	267	727	250	267	726	250	267	759	300	267	759	300
6	150	292	920	280	292	920	280	292	956	350	292	956	350
8	200	330	1135	350	330	1135	350	330	1168	400	330	1168	400
10	250	356	1364	450	356	1364	450	356	1363	450	356	1363	450
12	300	381	1561	500	381	1561	500						
Body		FC200			FC200			EN-JL1030			EN-JL1030		
Bonnet		FC200			FC200			FC200			FC200		
Stem		C3771			403SS			C3771			316SS		
Disc		FC200			FC200			FC200			FC200		
Body/Disc Seat Rings		CAC406			403SS			CAC406			316SS		
Gland Packing		Asbestos-free (P/A4531K)			Asbestos-free (P/A4531K)			Asbestos-free (P/A4531K)			Asbestos-free (P/A4531K)		
Gasket		Asbestos-free (T/1995)			Asbestos-free (T/1995)			Graphite (P/6633)			Graphite (P/6633)		
Bolt/Nut		CS			CS			CS			CS		
Standard/Approval		MSS SP-70: Option			MSS SP-70: Option								
Reference Page		P-T Rating : Page CI10			P-T Rating : Page CI10			P-T Rating : Page CI10			P-T Rating : Page CI10		

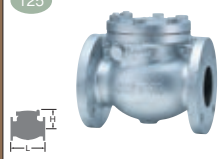
Type		Gate			Gate			Gate			Gate		
Cast Iron		PN25  BB OS&Y RS			10K  BB IS * NRS JIS			125  BB IS * NRS			PN16  BB IS * NRS		
Fig		(PHOX)EN25FCLE			10FCWI			125FCWI			EN16FCW		
End Connection		EN 1092-2 PN25 RF			JIS B2239 10K FF			ASME B16.1 Cl.125FF			EN 1092-2 PN16 RF		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
11/2	40				165	285	160						
2	50	215.9	385	175	180	313	180	178	249	140	178	271	180
21/2	65	241.3	437	200	190	344	180	190	287	160	190	297	180
3	80	282.5	493	254	200	401	200	203	247	160	203	352	200
4	100	304.8	611	300	230	444	250	229	397	180	229	394	250
5	125	381	716	300	250	517	280	254	459	225	254	451	280
6	150	403.2	813	348	270	577	300	267	510	225	267	518	300
8	200	419.1	1023.5	400	290	693	350	292	635	300	292	618	350
10	250	457	1211	457	330	814	400	330	762	350	330	760	400
12	300	502	1386	457	350	925	450	356	873	350	356	867	450
Body		EN-JL1030			FC200			FC200			EN-JL1030		
Bonnet		FC200			FC200			FC300			EN-JL1030		
Stem		C3771			C3771BD			C3771			C3771		
Disc		FC200			FC200			FC300			EN-JL1030		
Body/Disc Seat Rings		CAC406			CAC406			CAC406			CAC406		
Gland Packing		Asbestos-free (P/A4531K)			Asbestos-free (P/A4531K)			Asbestos-free (P/A4531K)			P6619W		
Gasket		Graphite (P/6633)			Asbestos-free (T/1995)			Asbestos-free (T/1995)			DP1102		
Bolt/Nut		CS			CS			CS			CS		
Standard/Approval					JIS B2031 for 2B-12B			MSS SP-70: Option					
Reference Page		P-T Rating : Page CI10			P-T Rating : Page CI10			P-T Rating : Page CI10			P-T Rating : Page CI10		
Remarks					* with Indicator			* with Indicator					

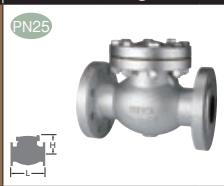
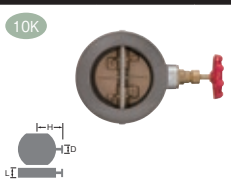
Type		Gate			Gate			Gate			Globe		
Cast Iron		PN16  BB IS * NRS			10K  BB IS * NRS			125  BB IS * NRS			10K  BB OS&Y RS JIS		
Fig		EN16FCWI			10FCHI			125FCHI			10FCJ		
End Connection		EN 1092-2 PN16 RF			JIS B2239 10K FF			ASME B16.1 Cl.125FF			JIS B2239 10K FF		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
11/2	40	178	271	180	140	210	140	140	213	140	190	261	160
2	50	190	297	180	146	250	140	146	249	140	200	274	180
21/2	65	203	352	200	159	285	160	159	287	160	220	301	180
3	80	229	394	250	165	350	160	165	347	160	240	353	225
4	100	254	451	280	171	400	180	171	397	180	290	403	280
5	125	267	518	300	190	460	225	190	459	225	360	465	300
6	150	292	618	350	210	515	225	210	510	225	410	531	350
8	200	330	760	400	241	635	300	241	635	300	500	618	450
10	250	356	867	450	273	760	350						
12	300				305	870	350						
Body		EN-JL1030			FC300			FC300			FC200		
Bonnet		EN-JL1030			FC300			FC300			FC200		
Stem		C3771			C3771BE			C3771			C3771		
Disc		EN-JL1030			FC300/CAC406 for 11/2B			CAC406 or FC300			CAC406 or FC200		
Body/Disc Seat Rings		CAC406			CAC406			CAC406			CAC406		
Gland Packing		P6619W			Asbestos-free (P/A4531K)			Asbestos-free (P/A4531K)			Asbestos-free (P/A4531K)		
Gasket		DP1102			Asbestos-free (T/1995)			Asbestos-free (T/1995)			Graphite (P/6633)		
Bolt/Nut		CS			CS			CS			CS		
Standard/Approval											JIS B2031		
Reference Page		P-T Rating : Page CI10			P-T Rating : Page CI10			P-T Rating : Page CI10			P-T Rating : Page CI10		
Remarks		* with Indicator			* with Indicator			* with Indicator					

Type		Globe			Globe			Globe			Globe		
Cast Iron		10K BB OS&Y RS JIS			10K BB OS&Y RS JIS			125 BB OS&Y RS			125 BB OS&Y RS		
Fig		10FCJS			10FCJU			125FCJ			125FCJS		
End Connection		JIS B2239 10K FF			JIS B2239 10K FF			ASME B16.1 Cl.125FF			ASME B16.1 Cl.125FF		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
11/2	40	190	261	160	190	261	160						
2	50	200	274	180	200	274	180	203	274	180	203	274	180
21/2	65	220	301	180	220	301	180	216	301	180	216	300	180
3	80	240	353	225	240	353	225	241	353	225	241	353	225
4	100	290	403	280	290	403	280	292	403	280	292	403	280
5	125	360	465	300	360	465	300	330	465	300	330	465	300
6	150	410	533	350	410	533	350	356	531	350	356	533	350
8	200	500	618	450	500	618	450	495	618	450	495	618	450
10	250	620	669	450	620	669	450						
12	300	700	756	500	700	756	500						
Body		FC200			FC200			FC200			FC200		
Bonnet		FC200			FC200			FC200			FC200		
Stem		403SS			304SS			C3771			403SS		
Disc		403SS or FC200			304SS or FC200			CAC406 or FC200			403SS or FC200		
Body/Disc Seat Rings		403SS			304SS			CAC406			403SS		
Gland Packing		Asbestos-free (P/A4531K)			Asbestos-free (P/A4531K)			Asbestos-free (P/A4531K)			Asbestos-free (P/A4531K)		
Gasket		Graphite (P/6633)			Asbestos-free (T/1995)			Asbestos-free (T/1995)			Asbestos-free (T/1995)		
Bolt/Nut		CS			CS			CS			CS		
Standard/Approval		JIS B2031			JIS B2031			MSS SP-70: Option			MSS SP-70: Option		
Reference Page		P-T Rating : Page CI10			P-T Rating : Page CI10			P-T Rating : Page CI10			P-T Rating : Page CI10		

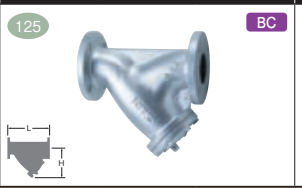
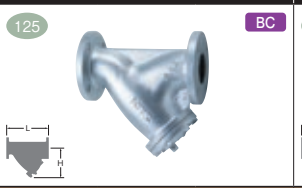
Type		Globe			Globe			Swing Check			Swing Check		
Cast Iron		PN16 BB OS&Y RS			PN16 BB OS&Y RS			10K BC JIS			10K BC JIS		
Fig		EN16FCJ			EN16FCJM			10FCO			10FCOS		
End Connection		EN 1092-2 PN16 RF			EN 1092-2 PN16 RF			JIS B2239 10K FF			JIS B2239 10K FF		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
11/2	40							190	108		190	108	
2	50	203	277	180	203	277	180	200	113		200	113	
21/2	65	216	307	180	216	307	180	220	123		220	123	
3	80	241	353	225	241	353	225	240	149		240	145	
4	100	292	404	280	292	404	280	290	165		290	165	
5	125	330	467	300	330	467	300	360	207		360	207	
6	150	356	533	350	356	533	350	410	225		410	225	
8	200	495	620	450	495	620	450	500	271		500	268	
10	250	622	665	450	622	665	450	620	319		620	319	
12	300							700	356		700	356	
14	350										787	381	
Body		EN-JL1030			EN-JL1030			FC200			FC200		
Bonnet		FC200			FC200			FC200			FC200		
Stem		C3771			316SS			C3771BD			403SS		
Disc		CAC406 or FC200			316SS or FC200			CAC406 or FC200			403SS or FC200		
Body/Disc Seat Rings		CAC406			316SS			CAC406			403SS/304SS		
Gland Packing		P/6619W			P/A4532K								
Gasket		Graphite (P/6633 or 6630)			Graphite (P/6633 or 6630)			Asbestos-free (T/1995)			P/6630 or 6633		
Bolt/Nut		CS			CS			CS			CS		
Standard/Approval								JIS B2031 for 2^{B}-8^{B}			JIS B2031 for 2^{B}-8^{B}		
Reference Page		P-T Rating : Page CI10			P-T Rating : Page CI10			P-T Rating : Page CI10			P-T Rating : Page CI10		

Type		Swing Check			Swing Check			Swing Check			Swing Check		
Cast Iron		10K BC  JIS			10K BC 			10K BC 			10K BC 		
Fig		10FCOU			10FCOR			10FCOUR			10FCOU-C		
End Connection		JIS B2239 10K FF			JIS B2239 10K FF			JIS B2239 10K FF			JIS B2239 10K FF		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
11/2	40	190	108		190	106		190	106				
2	50	200	113		200	111		200	111		200	111	
21/2	65	220	123		220	121		220	121		220	121	
3	80	240	145		240	145		240	145		240	145	
4	100	290	165		290	165		290	165		290	165	
5	125	360	207		360	207		360	207		360	207	
6	150	410	225		410	225		410	225		410	225	
8	200	500	268		500	268		500	268		500	268	
10	250	620	319		620	315		620	315				
12	300	700	356		700	356		700	356				
14	350	787	381										
Body		FC200			FC200			FC200			FC200		
Bonnet		FC200			FC200			FC200			FC200		
Stem		304SS			C3771BD			C3771BD			304SS		
Disc		304SS or FC200			304SS+NBR or FC200+NBR			304SS+NBR or FC200+NBR			304SS or FC200		
Body/Disc Seat Rings		403SS/304SS			CAC406			304SS			304SS		
Gasket		P/6630 or 6633			P/6630 or 6633			P/6630 or 6633			P/6630 or 6633		
Bolt/Nut		CS			CS			CS			CS		
Standard/Approval		JIS B2031 for 2^{B}-8^{B}											
Reference Page		P-T Rating : Page CI10			P-T Rating : Page CI10			P-T Rating : Page CI10			P-T Rating : Page CI10		
Remarks					NBR Disc Seat			NBR Disc Seat			Counter Weight		

Type		Swing Check			Swing Check			Swing Check			Swing Check		
Cast Iron		125 BC 			125 BC 			PN16 BC 			PN16 BC 		
Fig		125FCO			125FCOS			EN16FCO			EN16FCOM		
End Connection		ASME B16.1 Cl.125FF			ASME B16.1 Cl.125FF			EN 1092-2 PN16 RF			EN 1092-2 PN16 RF		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
2	50	203	113		203	113		203	111		203	111	
21/2	65	216	123		216	123		216	121		216	121	
3	80	241	143		241	143		241	145		241	145	
4	100	292	175		292	175		292	165		292	165	
5	125	330	207		330	207		330	207		330	207	
6	150	356	225		356	225		356	225		356	225	
8	200	495	268		495	268		495	268		495	268	
10	250	622	319		622	319		622	315		622	315	
12	300	698	356		698	356		698	356		698	356	
14	350				787	381							
Body		FC200			FC200			EN-JL1030			EN-JL1030		
Bonnet		FC200			FC200			FC200			FC200		
Stem		CAC406 or FC200			403SS			C3771			316SS		
Disc		CAC406			403SS			CAC406 or FC200			316SS or FC200		
Body/Disc Seat Rings		CAC406			403SS			CAC406			316SS		
Gasket		Asbestos-free (T/1995)			Asbestos-free (T/1995)			P/6633			P/6633		
Bolt/Nut		CS			CS			CS			CS		
Standard/Approval		MSS SP-71: Option			MSS SP-71: Option								
Reference Page		P-T Rating : Page CI10			P-T Rating : Page CI10			P-T Rating : Page CI10			P-T Rating : Page CI10		

Type		Swing Check			Silent Check			Wafer Check			Wafer Check		
Cast Iron		PN25 BC 			125 			10K Dual 			125 Dual 		
Fig		(PHOX)EN25FCOE			125FCSR			10FWZ			125FWNB		
End Connection		EN 1092-2 PN25 RF			ASME B16.1 Cl.125FF			Wafer (JIS 10K)			Wafer (Class 125)		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
11/2	40							54	126	55			
2	50	267	135					56	140	70	54		105
21/2	65	292	150		140	66		56	148	70	54		124
3	80	318	166		152	75		59	153	70	57		137
4	100	356	190		184	98		66	166	70	64		175
5	125	400	206		216	115		72	180	70	70		197
6	150	444	244		248	133		78	214	80	76		222
8	200	533	291		318	174		96	241	80	95		279
10	250	622	337					109	289	90	108		340
12	300	711	383					145	315	90	143		410
14	350							184	328	90			
16	400							191	355	90			
18	450							204	386	90			
Body		EN-GJL-250			A126 CL.B			FC250+NBR			A126 CL.B+NBR		
Bonnet		EN-GJL-250						C3771/CAC406			B584 C83600		
Stem		BS970 304S15						304SS			304SS/Spring 316SS		
Disc		EN-GJL-250			A351 Gr. FC8/SCS13A			CAC406			B584 C83600		
Body/Disc Seat Rings		BS1400 LG2			A351 Gr. FC8/SCS13A								
Gasket		PTFE											
Bolt/Nut		CS											
Service Conditions					93℃ at 1.38MPa			80℃ W.O.G. : 1.4MPa			16bar at 80℃ Non-shock Water (NBR Seat), 16bar at 100℃ Non-shock Water (EPDM Seat)		
Reference Page		P-T Rating : Page CI10						Features: Page BR35					
Remarks								Built-in Bypass Valve Dual Plate Type			Dual Plate Type		

Type		Wafer Check			Wafer Check			Wafer Check		
Cast Iron		125 Dual 			PN16 Dual 			PN16 Dual 		
Fig		125FWNBE			PN16FWNBM			PN16FWNBME		
End Connection		Wafer (Class 125)			Wafer (PN16)			Wafer (PN16)		
inch	mm	L	H	D	L	H	D	L	H	D
2	50	54		105	54		109	54		109
21/2	65	54		124	54		129	54		129
3	80	57		137	57		144	57		144
4	100	64		175	64		164	64		164
5	125	70		197	70		194	70		194
6	150	76		222	76		220	76		220
8	200	95		279	95		275	95		275
10	250	108		340	108		331	108		331
12	300	143		410	143		386	143		386
14	350				184		446	184		446
16	400				191		498	191		498
18	450				203		558	203		558
20	500				213		620	213		620
24	600				222		737	222		737
Body		A126 CL.B+EPDM			A126 CL.B+NBR			A126 CL.B+EPDM		
Bonnet		B584 C83600								
Stem/Hinge Pin		304SS			304SS			304SS		
Spring		316SS			316SS			316SS		
Disc		B584 C83600			CF8M			CF8M		
Service Conditions		16bar at 80℃ Non-shock Water (NBR Seat), 16bar at 100℃ Non-shock Water (EPDM Seat)			16bar at 80℃ Non-shock Water (NBR Seat), 16bar at 100℃ Non-shock Water (EPDM Seat)			16bar at 80℃ Non-shock Water (NBR Seat), 16bar at 100℃ Non-shock Water (EPDM Seat)		
Remarks		Dual Plate Type			Dual Plate Type			Dual Plate Type		

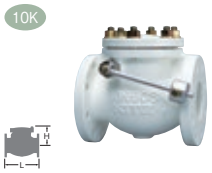
Type		Y-Strainer			Y-Strainer			Y-Strainer			Y-Strainer		
Cast Iron		10K SC*/BC 			125 BC 			125 BC 			PN16 BC 		
Fig		10FCY			125FCY			125FCETY<Z0P02>			EN16FCY		
End Connection		JIS B2239 10K FF			ASME B16.1 Cl.125FF			ASME B16.1 Cl.125FF			EN 1092-2 PN16 RF		
inch	mm	L	H	H1**	L	H	H1**	L	H	H1**	L	H	H1**
3/8	10	115	46	63									
1/2	15	125	57	81									
3/4	20	140	62	90									
1	25	150	77	114									
11/4	32	170	90	134									
11/2	40	190	100	145									
2	50	230	138	173	250	157	207				250	168	208
21/2	65	305	207	288	285	207	288				285	212	289
3	80	360	237	334	315	237	334				315	242	335
4	100	415	278	387	370	278	387				370	284	388
5	125	465	321	445	420	321	445				420	325	446
6	150	515	367	497	490	367	497				490	370	497
8	200	580	457	622	570	457	622				570	440	589
10	250	680	536	743	680	536	743				680	515	694
12	300	800	625	869	800	625	869				800	600	818
14	350	950	741	1031	950	741	1031						
16	400							1100	750	1129			
18	450							1200	784	1172			
20	500							1250	857	1293			
Body		FC200			FC200			FC200			EN-JGL-200		
Cap/Cover		C3771BE /FC200 for 2B & over			FC200			FC200			EN-JGL-200		
Screen		304SS(Punched Plate)			304SS(Punched Plate)			304SS(Punched Plate)			304SS		
Gasket		T/1995			T/1995			Graphite			Non asbestos Sheet		
Bolt/Nut		CS			CS			CS			CS		
Plug		304SS			304SS			304SS			304SS		
Service Conditions		120℃ Non-shock Water: 1.4MPa, 120℃ Water,Oil,Air.: 1.0MPa, 120℃ Gas: 0.2MPa, Saturated Steam: 0.7MPa											
Reference Page					P-T Rating : Page CI10			P-T Rating : Page CI10			P-T Rating : Page CI10		
Remarks		Screwed Cap up to 11/2B											

**Height for removing the screen

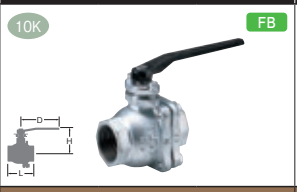
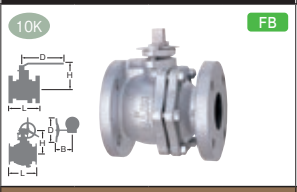
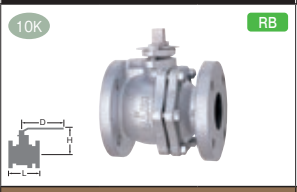
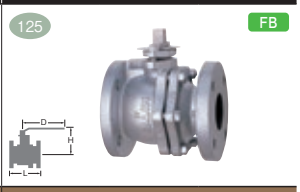
Type		Y-Strainer			Y-Strainer		
Cast Iron		PN16 BC 			PN25 BC 		
Fig		EN16FCYM			(PHOX)EN25FDYBE		
End Connection		EN 1092-2 PN16 RF			EN 1092-2 PN25 RF		
inch	mm	L	H	H1**	L	H	H1**
2	50	250	168	208	216	140	180
21/2	65	285	212	289	241	162	219
3	80	315	242	335	283	184	258
4	100	370	284	388	305	225	339
5	125	420	325	446	381	280	388
6	150	490	370	497	403	318	441
8	200	570	440	589	521	405	606
10	250	680	515	694	635	485	722
12	300	800	600	818	749	580	890
Body		EN-JGL-200			EN1563 EN-GJS-450		
Cap		EN-JGL-200			EN1563 EN-GJS-450		
Screen		316SS			304SS(Punched Plate)		
Gasket		Non asbestos Sheet			Non-asbestos		
Bolt/Nut		CS					
Plug		SS			304SS		
Reference Page		P-T Rating : Page CI10			P-T Rating : Page CI10		

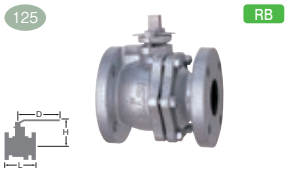
**Height for removing the screen

Type		Gate			Gate			Globe			Swing Check		
Cast Iron Nylon Lining		5K  BB OS&Y RS JIS JWWA			10K  BB OS&Y RS JIS JWWA			10K  BB OS&Y RS JIS JWWA			10K  BC JIS JWWA		
Fig		5FCMN			10FCLN			10FCJN			10FCON		
End Connection		JIS B2239 5K FF			JIS B2239 10K FF			JIS B2239 10K FF			JIS B2239 10K FF		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
2	50				180	343	170	200	274	180	200	116	
21/2	65	170	383	170	190	390	170	220	301	180	220	126	
3	80	180	437	170	200	464	200	240	353	225	240	153	
4	100	200	534	225	230	548	250	290	403	280	290	170	
5	125	220	629	225	250	649	280	360	466	300	360	217	
6	150	240	727	250	270	760	300	410	534	350	410	235	
8	200	260	920	280	290	957	350	500	620	450	500	273	
10	250	300	1135	350	330	1169	400						
12	300				350	1364	450						
Body		FC200+Nylon Lining			FC200+Nylon Lining			FC200+Nylon Lining			FC200+Nylon Lining		
Bonnet/Cap/Cover		FC200+Nylon Lining			FC200+Nylon Lining			FC200+Nylon Lining			FC200+Nylon Lining		
Stem/Hinge Pin		C3771BD			C3771BD			C3771BD			C3771BD		
Disc		CAC406 up to 6^{B}/FC200			CAC406 up to 6^{B}/FC200			CAC406 up to 4^{B}/FC200			CAC406		
Body/Disc Seat Rings		CAC406			CAC406			CAC406			CAC406		
Gland Packing		P/A4531K or P/A4532K			P/A4531K or P/A4532K			P/A4531K or P/A4532K					
Gasket		T/1995			T/1995			T/1995			T/1938		
Standard/Approval		JIS B2031,JWWA E-236			JIS B2031,JWWA E-236			JIS B2031,JWWA E-236			JIS B2031,JWWA E-236		
Service Conditions		0℃～+60℃, Fresh Water 0.7MPa, Water/Oil 0.5MPa			0℃～+60℃, Fresh Water 1.4MPa, Water/Oil 1.0MPa			0℃～+60℃, Fresh Water 1.4MPa, Water/Oil 1.0MPa			0℃～+60℃, Fresh Water 1.4MPa, Water/Oil 1.0MPa		

Type		Swing Check			Ball Check			Y-Strainer		
Cast Iron Nylon Lining		10K  BB			10K 			10K  BC JWWA		
Fig		10FCON-C			10FCFTN			10FCYN		
End Connection		JIS B2239 10K FF			JIS B2239 10K FF			JIS B2239 10K FF		
inch	mm	L	H	D	L	H	D	L	H	H1**
11/2	40				190	101				
2	50	200	116		200	105		230	139	173
21/2	65	220	126		220	127		305	210	288
3	80	240	153		240	150		360	238	334
4	100	290	170		290	188		415	282	387
5	125	360	217		360	235		465	325	445
6	150	410	235		410	280		515	373	497
8	200	500	273					580	457	622
10	250							680	536	743
Body		FC200+Nylon Lining			FC200+Nylon Lining			FC200+Nylon Lining		
Bonnet/Cap/Cover		FC200+Nylon Lining			FC200+Nylon Lining			FC200+Nylon Lining		
Stem/Hinge Pin		304SS								
Disc/Ball/Screen		CAC406			NBR*			304SS		
Body/Disc Seat Rings		CAC406								
Gland Packing/O ring					NBR*					
Gasket/O ring		T/1938			NBR*			T/1995		
Standard/Approval								JWWA Z-52		
Service Conditions		0℃～+60℃, Fresh Water 1.4MPa, Water/Oil 1.0MPa			0℃～+60℃, Fresh Water 0.05～1.4MPa			0℃～+60℃, Fresh Water 1.4MPa, Water/Oil 1.0MPa		
Reference Page					Features & Pressure Loss: Page CPT21&22					
Remarks		Counter Weight			*EPDM Option					

**Height for removing the screen

Type		Ball			Ball				Ball			Ball		
Cast Iron		10K FB 			10K FB 				10K RB 			125 FB 		
Fig		10FCT			10FCTB/G-10FCTB				10FCTR			125FCTB		
End Connection		BS21 (JIS B0203)			JIS B2239 10K FF				JIS B2239 10K FF			ASME B16.1 Cl.125FF		
inch	mm	L	H	D	L	H	D	B	L	H	D	L	H	D
3/8	10	72	71	130										
1/2	15	80	102	130	110	102	130							
3/4	20	85	105	130	120	105	130							
1	25	95	124	160	130	124	160							
11/4	32	120	128	160	140	128	160							
11/2	40	120	114	230	165	114	230							
2	50	140	121	230	180	121	230					178	121	230
21/2	65	160	154	400	190	154	400					190	154	400
3	80	182	163	400	200	163	400					203	163	400
4	100				230	199	460					229	199	460
5	125				300	219	460		250	200	460			
6	150				340	292	1000		270	220	460	394	292	1000
8	200				450	352	1500		290	295	1000	457	352	1500
10	250				533	477	500	363	330	355	1500			
Body & Cap		FC200			FC200				FC200			A126 CL. B		
Stem		403SS			403SS				403SS			403SS		
Ball		304SS/CF8			304SS/CF8				304SS/CF8			304SS/CF8		
Ball Seat		PTFE			PTFE				PTFE			PTFE		
Gland Packing		PTFE			PTFE				PTFE			PTFE		
Gasket		PTFE			PTFE				PTFE			PTFE		
Handle		DI/CS			DI/CS				DI/CS			DI/CS		
Bore		Full Bore			Full Bore				Reduced Bore			Full Bore		
Service Conditions		120℃ Non-shock Water 1.4MPa, 120℃ W.O.G. 1.0MPa, Saturated Steam 0.7MPa												
Reference Page					P-T Rating : Page CI13				P-T Rating : Page CI13			P-T Rating : Page CI13		
Remarks					Gear ope for 10[B]									

Type		Ball			3-way, 2-seats, L port Ball				3-way, 2-seats, L port Ball			
Cast Iron Nylon Lining		125 RB 			10K FB 				10K RB 			
Fig		125FCTR			10FCTB2L				10FCTR2L			
End Connection		ASME B16.1 Cl.125FF			JIS B2239 10K FF				JIS B2239 10K FF			
inch	mm	L	H	D	L	H	D	L1	L	H	D	L1
11/2	40				210	114	230	105				
2	50				220	123	230	110				
21/2	65				250	156	400	125				
3	80				260	163	400	130				
4	100				330	203	460	165				
5	125								370	205	460	185
6	150	267	220	460					430	225	460	215
8	200	292	295	1000					540	295	1000	270
10	250	330	355	1500								
Body & Cap		A126 CL. B			FC200				FC200			
Stem		403SS			403SS				403SS			
Ball		304SS/CF8			304SS/CF8				304SS/CF8			
Ball Seat		PTFE			PTFE				PTFE			
Gland Packing		PTFE			PTFE				PTFE			
Gasket		PTFE			PTFE				PTFE			
Handle		DI/CS			DI/CS				DI/CS			
Bore		Reduced Bore			Full Bore				Reduced Bore			
Reference Page		P-T Rating : Page CI13			P-T Rating : Page CI13 Port Orientation : Page TECH1				P-T Rating : Page CI13 Port Orientation : Page TECH1			

Cast Iron Valves

Conditions of Fluids and Maximum Permissible Pressures

Unit: MPa

Standards		5K	10K				10K	
Nominal Pressure		JIS B2031	JIS B2031				KITZ Standard	
Valve Type		Outside Screw Gate Valve	Outside Screw Gate Valve	Glove Valve, Swing Check Valve		Inside Screw Gate Valve	Valve 350 A or more	FC300 Valve
Disc Seat Structure		Press-fit Seat	Screw Seat	Screw Seat		Press-fit Seat	Screw Seat	Press-fit Seat
Main Section		CAC406	CAC 406 13 Chrome 18-8 Stainless Steel	CAC 406	13 Chrome 18-8 Stainless Steel	CAC 406	CAC 406 13 Chrome 18-8 Stainless Steel	CAC 406 13 Chrome
Maximum Permissible Working Pressure	Steady Flow Below 120°C	0.7	1.4	1.4	–	1.4	1.0	1.0
	Oil, Pulsating Flow and Water Below 120°C	0.5	1.0	1.0	–	1.0	0.9	0.9
	Saturated Steam	0.2	0.7	0.7	–	0.2	0.7	0.7
	Gas Below 120°C	0.2	0.2	0.2	–	0.2	0.2	0.2
	120°C	–	–	–	1.4	–	–	–
	220°C	–	–	–	1.0	–	–	–

- Use may be prohibited or restricted by the High Pressure Gas Safety Law and other regulations.Use the valve within legal limits.
- Maximum allowable pressure at intermediate temperatures between 120°C and 220°C is based on the proportional interpolation method.

Basic Design Specifications

Nominal Pressure	JIS5K/10K	Class 125	10K
Face-to-Face Dimension	JIS B 2031	ASME B 16.10	KITZ Std.
End Flange Dimension	JIS B 2239	ASME B 16.1	JIS B 2239
Wall Thickness	JIS B 2031	KITZ Std.	

Material Specifications for Grey Iron Casting

Mechanical Properties \ JIS Materials		FC200	FC250	FC300
Tensile Strength (N/mm^2)	min.	200	250	300
Brinell Hardness (HB) Max.		235	248	269

ASTM A126 Class B	Tensile Strength (min)	31ksi
Transverse Test Requirement	Face at Center, Min.	3,300 lb
	Deflection at Center, Min.	0.12in

Class 125 Valves Pressure-Temperature Ratings

Maximum Allowable Non-Shock Pressure

Temperature	Class 125	
	Size 1 – 12	Size 14 – 24
°C	bar	
-29 to 65	13.8	10.3
80	13.3	9.8
100	12.7	9.2
120	12.1	8.6
140	11.5	8.0
160	10.8	7.4
178*	-	6.9

*178°C to reflect temperature of saturated steam at 8.6 bar.

Simplified Material Indication (as referred to on each page)

Bronze Trim : Iron Body with Bronze Trim
13 Cr. Trim : Iron Body with 13 Cr. Trim
18-8 Trim : Iron Body with 18 Cr.-8 Ni Trim

Certification by JIS Mark

Industrial Standardization Law of Japan provides an effective measure to promote the introduction of high-level quality assurance system of manufacture and processing. Wherever KITZ valves are identified with JIS Mark, it is officially certified that such valves are produced under strict quality assurance procedures and practices to satisfy the designated quality level stably and constantly.

Valve Position Indicators

Valve position indicator is provided on gate valves with inside screw design as illustrated. Opening or closing a valve does not move the vertical position of the stem. Instead, position indicator visually indicates three valve operating positions-fully opened, fully closed, or half opened.



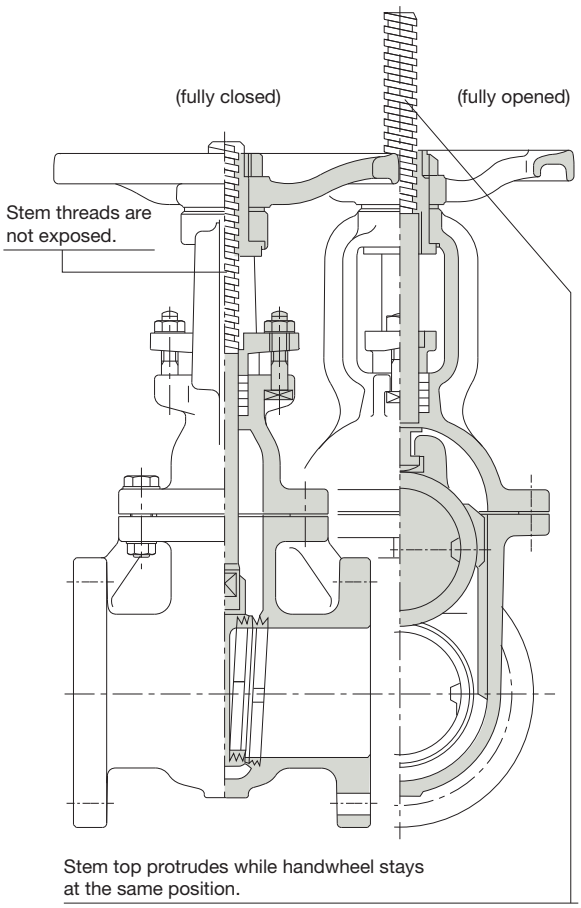
Trim Materials

KITZ cast iron valves are provided with one of three trim materials given in the table below for versatility of service applications.
Color codes are given on a name plate of gate or globe valves and on the cover of swing check valves.

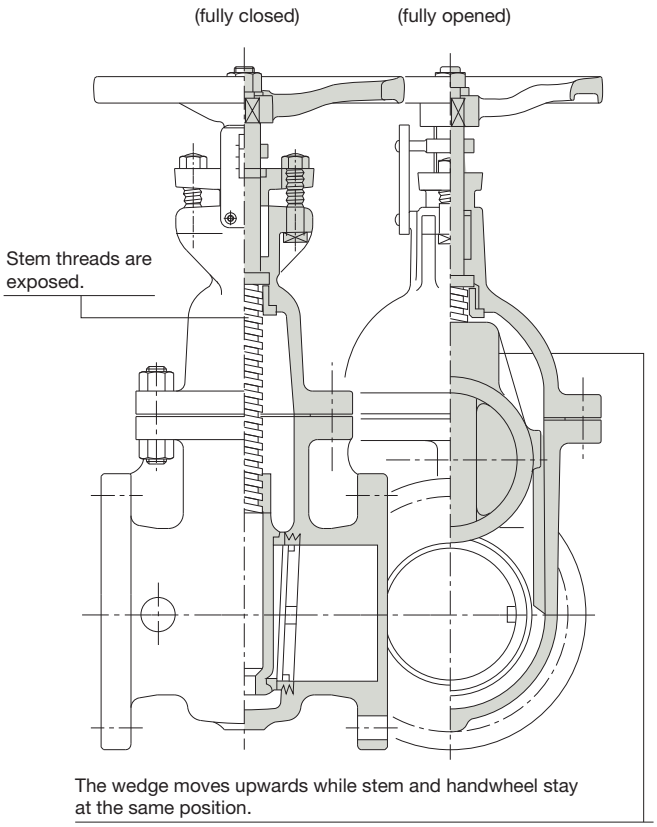
Trim Material	Color Coding	Suffix of Fig.
Bronze Seats / Brass Stem	None	-
13 Cr. Seats / Stem	Orange	S
18-8 Seats / Stem	Green	U

Outside Screw (O.S.) Valves and Inside Screw (I.S.) Valves

Outside Screw Gate Valve



Inside Screw Gate Valve



Outside Screw Gate Valves

Stem threads are not exposed to the fluid, and valve opening operation moves the stem upwards while the handwheel stays at the same position. Valve operating position can be visually determined by observing the stem travel KITZ Fig. FCM, FCL, FCLS, and FCLU are designed this way.

Outside Screw Globe Valves

Stem and handwheel move upwards or downwards at the same time, following valve opening or closing operation. All KITZ globe valves are provided with this design.

Inside Screw Gate Valves

Stem threads are exposed to the fluid. Opening the valve does not make the stem or handwheel move. Thus, the valve operating position is not visible. Position indicator is provided for this reason.

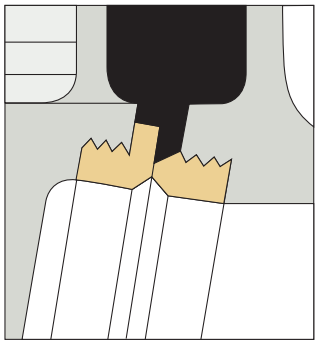
Inside screw gate valves are generally designed shorter than outside screw gate valves and the stem and handwheel always at the same position. For this feature, inside screw gate valves are widely employed for underground installation or service in narrow areas with limited room. KITZ Fig. FCWI and FCHI are designed this way.

Asbestos-free Packings and Gaskets

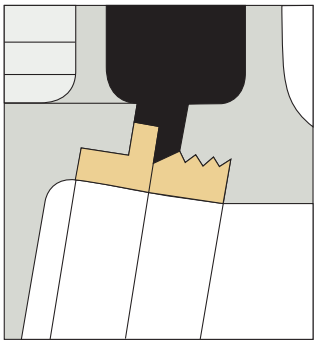
KITZ has led the industry in employing asbestos-free sealers for all cast iron valves, meeting the requirement of pollution-free valve materials. PTFE-impregnated glass fiber gland packings and compressed glass and aramid fiber gaskets are the standard sealers for KITZ cast iron valves.

Mounting of Seat Rings

In case of KITZ cast iron gate valves, seat rings are mounted on the valve disc by means of either threading or press-fitting. For example,10K outside screw gate valves are provided with threaded seat rings that are ideal for saturated steam service. Or, 10K inside screw gate valves are provided with mechanically press-fit seat rings by means of a patented special process to suit them also for saturated steam service. All KITZ cast iron globe and check valves are provided with threaded seat rings.



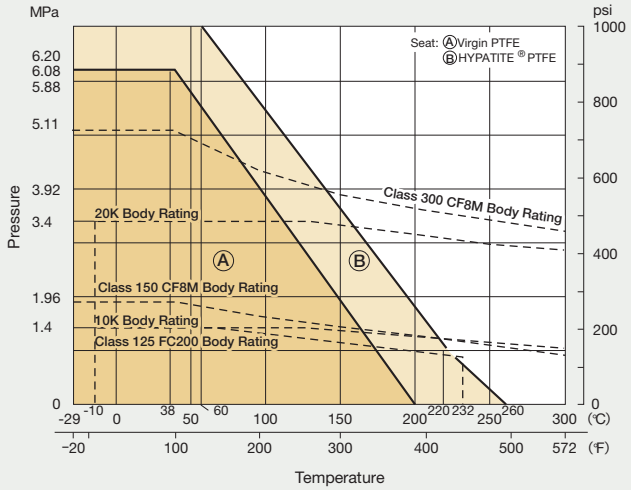
Threaded Seat Ring



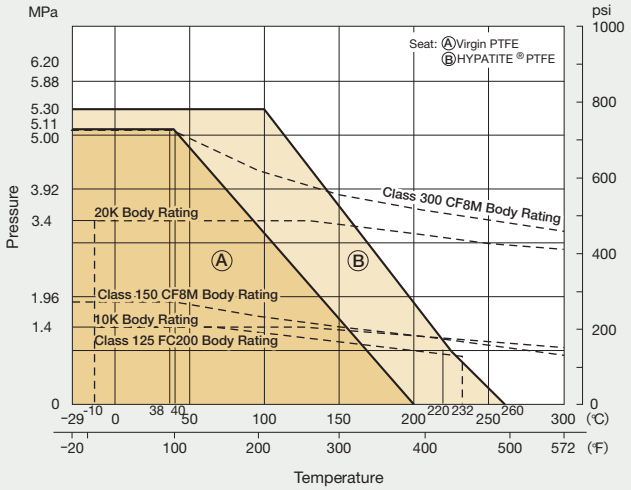
Press-fit Seat Ring

Pressure-Temperature Ratings

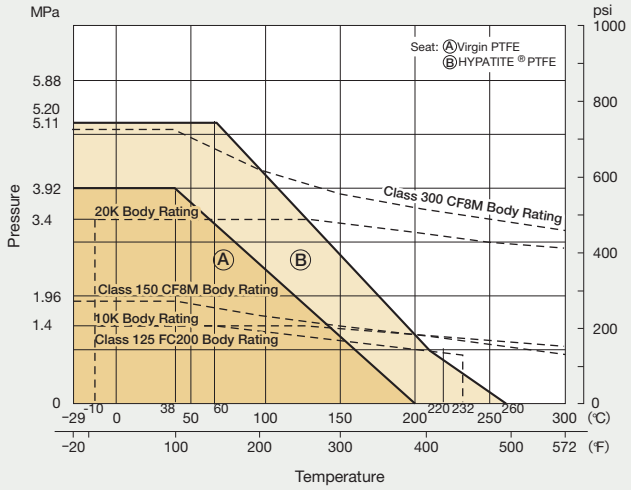
■150UTB(M)/150UTBT/10/125FCTB(2L) : NPS 1/2B, 3/4B
10/125FCTR(2L) : NPS 1/2B to 1B



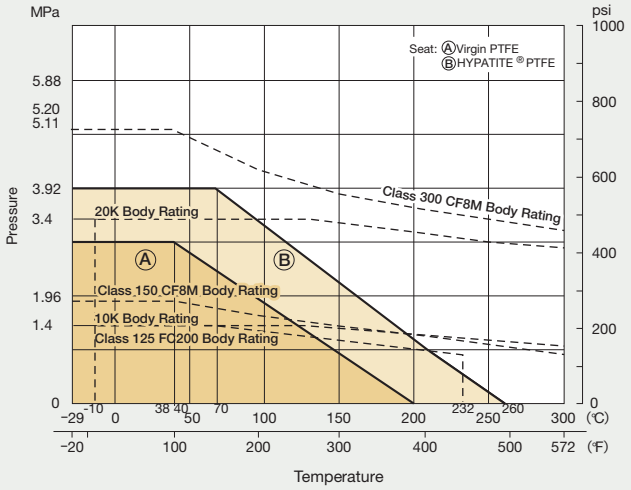
■150UTB(M)/150UTBT/10/125FCTB(2L) : NPS 1B to 2 1/2B
10/125FCTR(2L) : NPS 1/2B to 3B



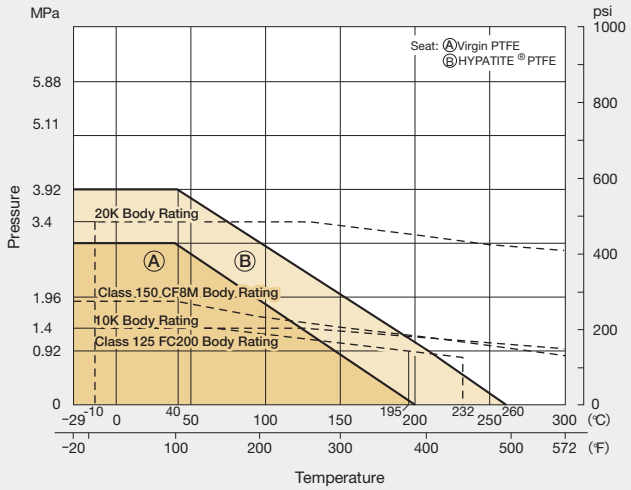
■150UTB(M)/150UTBT/10/125FCTB(2L) : NPS 3B, 4B
10/125FCTR(2L) : NPS 4B, 5B



■150UTB(M)/150UTBT/10/125FCTB(2L) : NPS 5B, 6B
10/125FCTR(2L) : NPS 6B, 8B



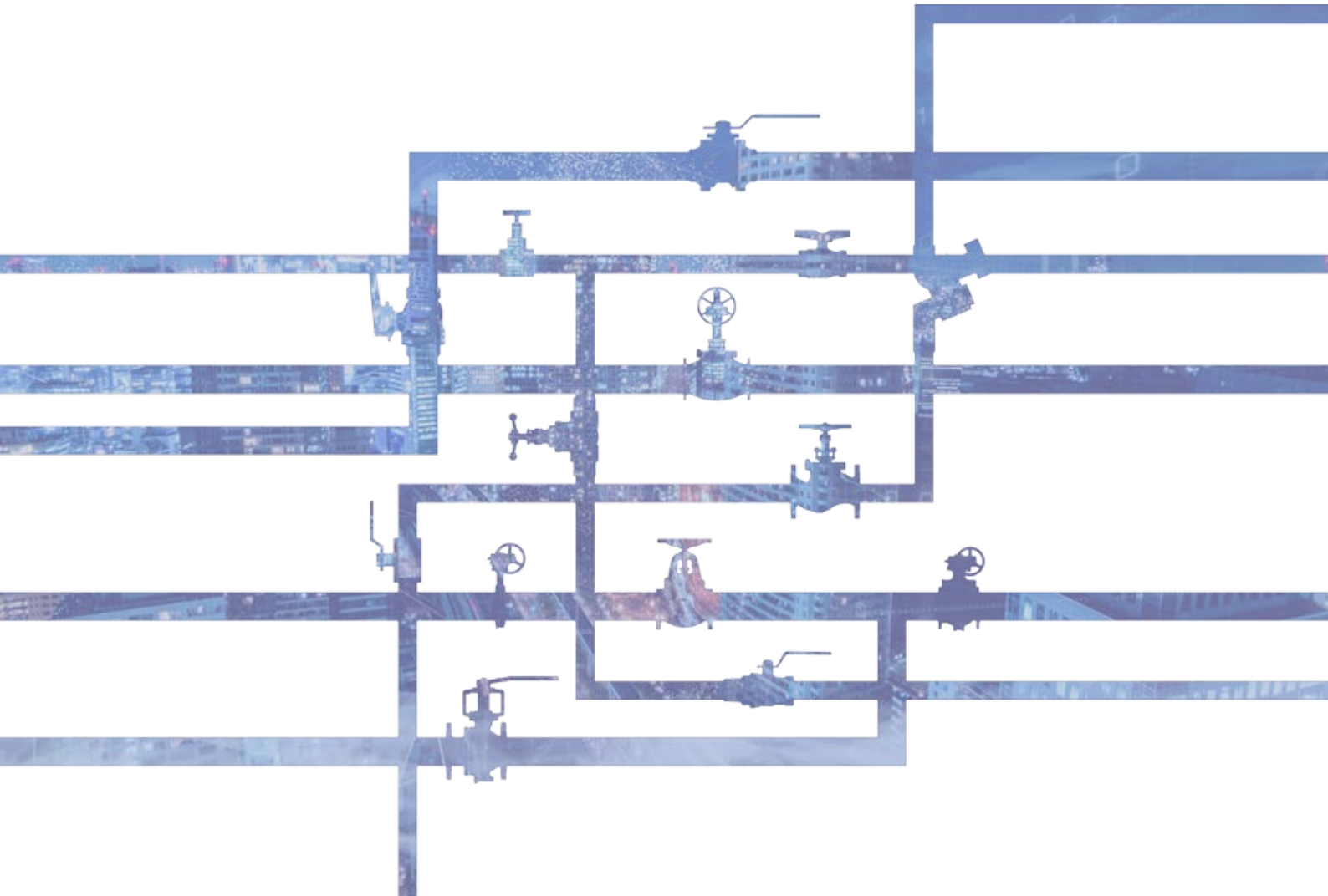
■150UTB(M)/150UTBT/10/125FCTB(2L) : NPS 8B, 10B
10/125FCTR(2L) : NPS 10B, 12B



KITZ

GENERAL CATALOG

Ductile Iron



INDEX

Title	Body Material	Type	Class	End Connection*	Features*	Fig	Remarks	Page
Ductile Iron Valves	DI	Globe	10K Commercial	TE	SB up to 2" or UB, IS, RS	10SJ		DI3 82
				FE/FF		10SJBF		
			10K	TE	UB, IS, RS	10SP		
				FE/FF		10SPBF		
						10SPBAF		
						10SPBAWF	Bellows Seal	
					BB, OS&Y, RS	(G-)10SPBOF		
						10SPBOWF	Bellows Seal	
					US, IS, RS	10SPNBF	Needle	DI4 83
			16K	TE		16SP		
				FE/RF		16SPB		
					BB, OS&Y, RS	(G-)16SPBO		
			20K	TE	UB, IS, RS	20SY		
				FE/RF		20SYB		
					BB, OS&Y, RS	20SYBO		
						20SYBOW	Bellows Seal	
			150		UB, IS, RS	150SPB		DI5 84
			300		BB, OS&Y, RS	150SPBO		
						300SYB		
						300SYBO		
			10K Commercial	TE	SB up to 2" or UB, IS, RS	10SD	Soft Seated (PTFE)	
				FE/FF		10SDBF		
			20K	FE/RF	BB, OS&Y, RS	20SDBOW	Bellows Seal, Soft Seated (PTFE)	
			10K Commercial	TE	SB, IS, RS	10SDL	Soft Seated (PTFE), LPG Service	DI6 85
				FE/FF		10SDLBF		
			20K	TE	UB, IS, RS	20SDL		
				FE/RF		20SDLB		
					BB, OS&Y, RS	20SDLBO		
			10K	TE	UB, IS, RS	10SPD	Soft Seated (PTFE)	
				FE/FF		10SPDBF		
					BB, OS&Y, RS	10SPDBOF		
						10SPDBOWF	Bellows Seal, Soft Seated (PTFE)	
			150	FE/RF	UB, IS, RS	150SPDB	Soft Seated (PTFE)	DI7 86
			10K	FE/FF		10SYYBF	Y Pattarn Globe	
					BB, OS&Y, RS	10SYYBOF		
			20K	FE/RF	UB, IS, RS	20SYYB		
					BB, OS&Y, RS	20SYYBO		
		Gate	10K Commercial	TE	SB, IS, RS	10SMS		
			10K		BB, IS, RS	10SMAS		
				FE/FF		10SMBF		
					BB, OS&Y, RS	10SMBOF		DI8 87
			16K	TE	UB, IS, RS	16SMS		
				FE/RF		16SMB		
					BB, OS&Y, RS	16SMBO		
			20K	TE	BB, IS, RS	20SLS		
				FE/RF		20SLB		
					BB, OS&Y, RS	20SLBO		
			150			150SMBO		
			300			300SLBO		
		Check	10K Commercial	TE	SC, Lift	10SF		DI9 88
				FE/FF		10SFBF		
			16K	TE	UC, Lift	16SF		
				FE/RF		16SFB		
			10K Commercial	TE		10SN		
				FE/FF		10SNBF		
			20K	TE		20SN		
				FE/RF		20SNB		
			10K Commercial	TE	Split Body, Swing	10SOZ	Internal Hinge, In line	DI10 89
			10K	FE/FF	BC, Swing	10SRBF		
			16K	FE/RF		16SRB		
			20K			20SOB		
			150			150SRB		
			300			300SOB		
			10K	Wafer	Dual Plate, Built-in by-pass valve, Wafer	10SWZU	Available to install low & high torque spring depending on fluid conditions.	DI11 90
			20K			20SWZ		
						20SWZU		
			10K	FE/FF	UB, IS, RS, Stop Check	10SYFBF		
					BB, OS&Y, RS, Stop Check	10SPFBOF		
			20K	FE/RF	UB, IS, RS, Stop Check	20SYFB		
					BB, OS&Y, RS, Stop Check	20SYFBO		
					UC, Lift	20SNDB	Soft Seated (PTFE), LPG Service	
					BC, Swing	20SODB		
		Strainer	10K Commercial	TE	SC up to 2" or BC	10FDY	Y Pattern, Screen: Punched Stainless Steel Plate	DI12 91
			10K	FE/FF	SC up to 11/2" or BC	10FDYBF		
			16K	TE	SC	16FDY		
				FE/RF	SC up to 11/2" or BC	16FDYB		
			20K	TE	BC	20FDY	Y Pattern, Screen: 40 mesh wire cloth	
				FE/RF		20FDYB		
		Ball	Type 400	TE	RB, Split Body	STZ		
			20K		RB, Split Body, Side Entry	20ST		
						20STL	Gas Service	DI13 92
			10K	FE/FF	FB, Split Body, Side Entry	10STBF		
						10STLBF	Gas Service	
			20K	FE/RF		(G-)20STB		
						20STLB	Gas Service	
			10K	FE/FF	FB, 3-Way 4-Seat	10STB4LAF/TAF		
					RB, 3-Way 4-Seat	10STR4LAF/TAF		

* (Abbreviation) TE: Threaded Ends, FE: Flanged Ends, RF: Raised Face Ends
SB: Screwed Bonnet, UB: Union bonnet, IS: Inside screw, RS: Rising Stem, FB: Full Bore, RB: Reduced Bore

PRODUCT CODING

Ductile Iron Valves

(Note: Some products do not follow this coding system.)

G – 10 S P B O F

1 2 3 4 5 6 7

❶ Valve Operation

None	Handwheel or Lever
G	Gear

❷ Pressure Class

10	10K
16	16K
20	20K
150	Class 150*
300	Class 300*

❸ Symbol of Shell Material

S	Ductile Iron
FD	Ductile Iron (Strainer)

❹ Valve Type

M or L	Gate
MS or LS	Gate (Disc: 13Cr)
J, P or Y	Globe
PD or D	Soft Seated Globe
DL	Soft Seated Globe (LP Service)
PN	Needle
YY	Y Pattern Globe
F or N	Lift Check
ND	Soft Seated Lift Check
R or O	Swing Check
OD	Soft Seated Swing Check
OZ	In Line Swing Check
WZ	Wafer Check (Copper Disc)
WZU	Wafer Check (304SS Disc)
YF	Stop Check
Y	Strainer (Note: FD of ③)
T	Ball Valve (Threaded)
TB	Ball Valve (Flanged)

❺ End Connection

None	Threaded Ends
S	Threaded Ends
B	Flanged Ends

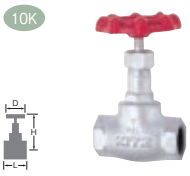
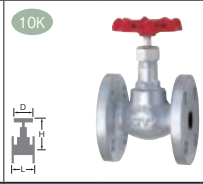
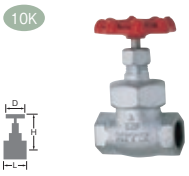
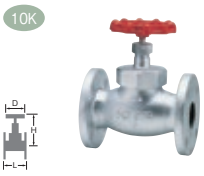
❻ Valve Construction

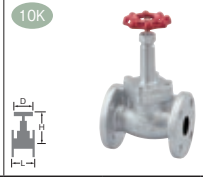
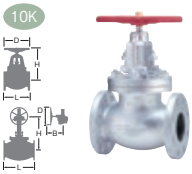
None	Inside Screw
A	BB, IS
O	BB, OS&Y
W	Bellows Seal

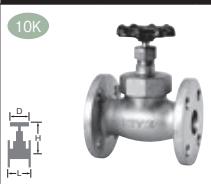
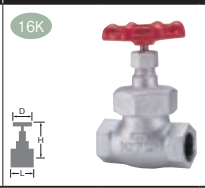
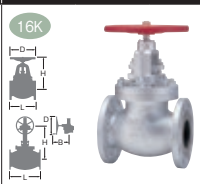
❼ Surface of End Flange

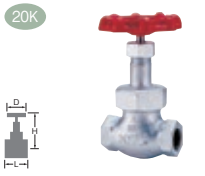
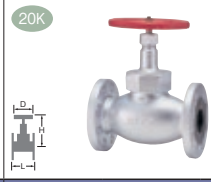
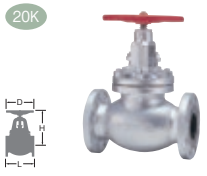
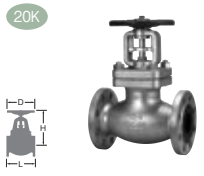
None	Raised Face*
F	Flat Face

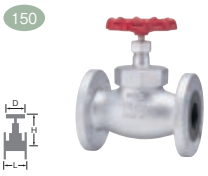
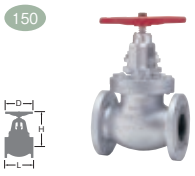
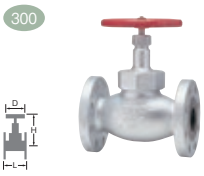
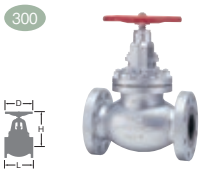
* Pipe connection dimensions shall be indicated in millimeters converted from dimensions in inches according to ASME B16.5.

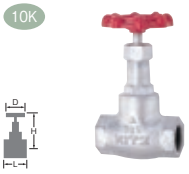
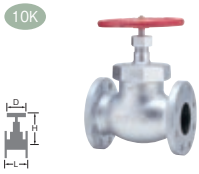
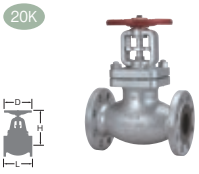
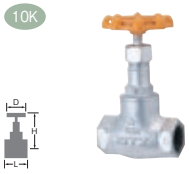
Type		Globe			Globe			Globe			Globe		
Ductile Iron		10K  SB/UB IS RS			10K  SB/UB IS RS			10K  UB IS RS			10K  UB IS RS		
Fig		10SJ			10SJBF			10SP			10SPBF		
End Connection		BS21 (JIS B0203)			JIS B2239 10K FF			BS21 (JIS B0203)			JIS B2239 10K FF		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/4	8	50	108	60									
3/8	10	55	108	60	85	108	60	64	107	60	108	107	60
1/2	15	65	122	70	85	123	70	70	125	80	108	124	80
3/4	20	80	124	80	95	125	80	80	125	80	117	125	80
1	25	90	146	90	110	147	90	90	145	100	127	147	100
11/4	32	105	161	100	130	161	100	110	162	115	140	162	115
11/2	40	120	181	115	150	181	115	120	180	115	165	180	115
2	50	140	198	135	180	198	135	140	198	135	203	198	135
21/2	65	180	256	180	210	256	180						
3	80	200	286	225	240	276	225						
Body/Bonnet		FCD-S			FCD-S			FCD-S			FCD-S		
Stem		420J2			420J2			420J2			420J2		
Disc		403SS			403SS			403SS			403SS		
Gland Packing		T/#2200K			T/#2200K			P/#6118			P/#6118		
Gasket		None or P/#6633			None or P/#6633			C1100P-0 (incl. Cu)			C1100P-0 (incl. Cu)		
Seat Rings (S/D)		403SS/-			403SS/-			403SS/-			403SS/-		
Service Conditions		120℃ Static Water 1.4MPa, 220℃ Steam, Air, Gas, Oil 1.0MPa			120℃ Static Water 1.4MPa, 220℃ Steam, Air, Gas, Oil 1.0MPa			120℃ Static Water 1.4MPa, 300℃ Steam, Air, Gas, Oil 1.0MPa			120℃ Static Water 1.4MPa, 300℃ Steam, Air, Gas, Oil 1.0MPa		
Remarks		SB up to 2B, UB 21/2B & over			SB up to 2B, UB 21/2B & over								

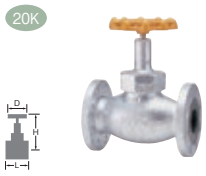
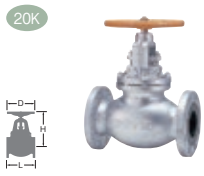
Type		Globe			Bellows Seal Globe			Globe				Bellows Seal Globe		
Ductile Iron		10K  BB IS RS			10K  BB IS RS			10K  BB OS&Y RS				10K  BB OS&Y RS		
Fig		10SPBAF			10SPBAWF			10SPBOF/G-10SPBOF*				10SPBOWF		
End Connection		JIS B2239 10K FF			JIS B2239 10K FF			JIS B2239 10K FF				JIS B2239 10K FF		
inch	mm	L	H	D	L	H	D	L	H	D	B	L	H	D
1/2	15	108	123.5	80	108	166	80							
3/4	20	117	124	80	117	167	80							
1	25	127	146	100	127	188	80							
11/4	32	140	161.5	115	140	243	100							
11/2	40	165	179	115	165	243	100							
2	50	203	197.5	135				203	308	200		203	298	200
21/2	65							216	311	225		216	302	225
3	80							241	352	250		241	343	250
4	100							292	371	250		292	354	250
5	125							356	459	300		356	443	300
6	150							406	526	350		406	502	350
8	200							495	589	400		495	749	450
10	250							622	879	360	245			
12	300							698	943	360	245			
Body/Bonnet		FCD-S			FCD-S			FCD-S				FCD-S		
Stem		420J2			420J2			403SS				403SS		
Disc/Bellows		403SS			403SS/316LSS			FCD-S or 403SS				304SS+HF/316LSS		
Gland Packing		P/#6118			P/#6118			P/#6118				P/#6527		
Gasket		P/#6633			P/#6633			P/#6633				P/#6633		
Seat Rings (S/D)		403SS/-			403SS/-			403SS/403SS				304SS+HF or 403SS+HF		
Service Conditions		120℃ Static Water 1.4MPa, 300℃ Steam, Air, Gas, Oil 1.0MPa			120℃ Static Water 1.4MPa, 300℃ Steam, Air, Gas, Oil 1.0MPa			120℃ Static Water 1.4MPa, 300℃ Steam, Air, Gas, Oil 1.0MPa				120℃ Static Water 1.4MPa, 300℃ Steam, Air, Gas, Oil 1.0MPa		
Reference Page					Features: Page DI17							Features: Page DI17		
Remarks								*Gear: 10B & over				HF: Hard Face with Co-Cr-W Alloy		

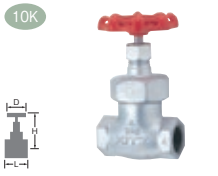
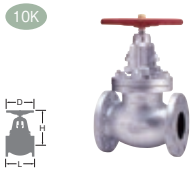
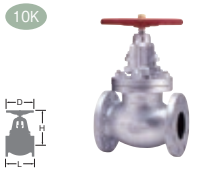
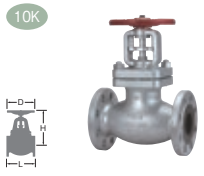
Type		Needle			Globe			Globe			Globe			
Ductile Iron		10K  UB IS RS			16K  UB IS RS			16K  UB IS RS			16K  BB OS&Y RS			
Fig		10SPNBF			16SP			16SPB			16SPBO/G-16SPBO*			
End Connection		JIS B2239 10K FF			BS21 (JIS B0203)			JIS B2239 16K RF			JIS B2239 16K RF			
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D	B
3/8	10	108	109	60	64	108	60	108	111	60				
1/2	15	108	125	80	70	124	80	108	122	80				
3/4	20	117	125	80	85	125	80	117	128	80				
1	25	127	148	100	95	147	100	127	146	100				
11/4	32	0	0	0	110	162	115	140	165	115				
11/2	40	165	181	115	125	180	115	165	182	115				
2	50	203	199	135	145	198	135	203	198	135	203	308	200	
21/2	65										216	311	225	
3	80										241	352	250	
4	100										292	371	250	
5	125										356	459	300	
6	150										406	526	350	
8	200										495	589	400	
10	250										622	880	360	244
12	300										698	943	360	244
Body/Bonnet		FCD-S			FCD-S			FCD-S			FCD-S			
Stem		420J2			420J2			420J2			403SS			
Disc/Bellows		403SS			403SS			403SS			FCD-S or 403SS			
Gland Packing		P/#6118			T/#2230K			T/#2230K			P/#6118			
Gasket		P/#6633			C1100P-0 (incl. Cu)			C1100P-0 (incl. Cu)			P/#6633			
Seat Rings (S/D)		403SS/-			403SS/-			403SS/-			403SS/403SS			
Service Conditions		120℃ Static Water 1.4MPa, 300℃ Steam, Air, Gas, Oil 1.0MPa			120℃ Static Water 2.2MPa, 220℃ Steam, Air, Gas, Oil 2.0MPa			120℃ Static Water 2.2MPa, 220℃ Steam, Air, Gas, Oil 2.0MPa			120℃ Static Water 2.2MPa, 220℃ Steam, Air, Gas, Oil 2.0MPa			
Reference Page		Features: Page DI17												
Remarks											*Gear: 10^{B} & over			

Type		Globe			Globe			Globe			Bellows Seal Globe		
Ductile Iron		20K  UB IS RS			20K  UB IS RS			20K  BB OS&Y RS			20K  BB OS&Y RS		
Fig		20SY			20SYB			20SYBO			20SYBOW		
End Connection		BS21 (JIS B0203)			JIS B2239 20K RF			JIS B2239 20K RF			JIS B2239 20K RF		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
3/8	10	75	136	70	110	136	70						
1/2	15	78	138	80	110	138	80				110	184	90
3/4	20	91	157	100	120	157	100				120	184	90
1	25	105	180	115	130	178	115				130	190	100
11/4	32	122	205	135	160	202	135				160	238	140
11/2	40	135	210	135	180	210	135				180	238	140
2	50	160	240	180	230	239	180	267	296	225	230	271	160
21/2	65							292	343	250	292	285	180
3	80							318	374	250	318	395	250
4	100							356	452	300	356	432	300
5	125							400	536	350	400	529	350
6	150							444	601	400	444	586	400
8	200							559	701	560	559	749	450
Body/Bonnet		FCD-S			FCD-S			FCD-S			FCD-S		
Stem		420J2			420J2			403SS			403SS		
Disc/Bellows		403SS+HF			403SS+HF			A105+HF			304SS+HF/316LSS		
Gland Packing		P/#6118			P/#6118			P/#6118			P/#6527		
Gasket		C1100P-0 (incl. Cu)			C1100P-0 (incl. Cu)			P/#6633			P/#6633		
Seat Rings (S/D)		304SS+HF/-			304SS+HF/-			A105+HF or 403SS+HF/-			304SS+HF or 403SS+HF/-		
Service Conditions		120℃ Static Water 2.8MPa, 220℃ Steam, Air, Gas, Oil 2.5MPa			120℃ Static Water 2.8MPa, 220℃ Steam, Air, Gas, Oil 2.5MPa			120℃ Static Water 2.8MPa, 220℃ Steam, Air, Gas, Oil 2.5MPa			120℃ Static Water 2.8MPa, 350℃ Steam, Air, Gas, Oil 2.0MPa		
Reference Page											Features: Page DI17		
Remarks		HF: Hard Face with Co-Cr-W Alloy			HF: Hard Face with Co-Cr-W Alloy			HF: Hard Face with Co-Cr-W Alloy			HF: Hard Face with Co-Cr-W Alloy		

Type		Globe			Globe			Globe			Globe		
Ductile Iron		150  UB IS RS			150  BB OS&Y RS			300  UB IS RS			300  BB OS&Y RS		
Fig		150SPB			150SPBO			300SYB			300SYBO		
End Connection		ASME B16.5 CL150 RF			ASME B16.5 CL150 RF			ASME B16.5 CL300 RF			ASME B16.5 CL300 RF		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/2	15	108	122	80				110	138	80			
3/4	20	117	128	80				120	157	100			
1	25	127	146	100				130	178	115			
11/4	32	140	165	115				160	202	135			
11/2	40	165	179	115				180	210	135			
2	50	203	198	135	203	308	200	230	239	180	267	296	225
21/2	65				216	311	225				292	341	250
3	80				241	352	250				318	372	250
4	100				292	371	250				356	450	300
5	125				356	459	300				400	535	350
6	150				406	526	350				444	601	400
8	200				495	588	400				559	701	560
Body/Bonnet		FCD-S			FCD-S			FCD-S			FCD-S		
Stem		420J2			403SS			420J2			403SS		
Disc/Bellows		403SS			FCD-S or 403SS			403SS+HF			A105+HF		
Gland Packing		P/#6118			P/#6118			P/#6118			P/#6118		
Gasket		C1100P-0 (incl. Cu)			P/#6633			C1100P-0 (incl. Cu)			P/#6633		
Seat Rings (S/D)		403SS/-			403SS/403SS			304SS+HF/-			A105+HF or 403SS+HF/-		
Service Conditions		-5~38℃ W.O.G. 1.73MPa, 149℃ W.O.G. 1.48MPa, 260℃ W.O.G. 1.18MPa, 343℃ W.O.G. 0.86MPa			-5~38℃ W.O.G. 1.73MPa, 149℃ W.O.G. 1.48MPa, 260℃ W.O.G. 1.18MPa, 343℃ W.O.G. 0.86MPa			-5~38℃ W.O.G. 2.94MPa, 149℃ W.O.G. 2.60MPa, 260℃ W.O.G. 2.28MPa, 350℃ W.O.G. 2.04MPa			-5~38℃ W.O.G. 2.94MPa, 149℃ W.O.G. 2.60MPa, 260℃ W.O.G. 2.28MPa, 350℃ W.O.G. 2.04MPa		
Remarks		F-to-F: ASME B16.10			F-to-F: ASME B16.10			F-to-F: ASME B16.10 HF: Hard Face with Co-Cr-W Alloy			F-to-F: ASME B16.10 HF: Hard Face with Co-Cr-W Alloy		

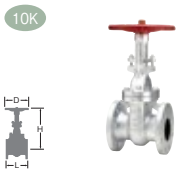
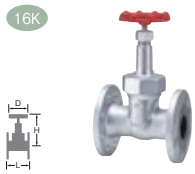
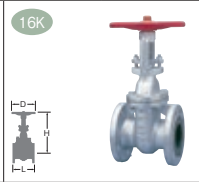
Type		Globe			Globe			Bellows Seal Globe			Globe		
Ductile Iron		10K  SB/UB IS RS			10K  SB/UB IS RS			20K  BB OS&Y RS			10K  SB IS RS		
Fig		10SD			10SDBF			20SDBOW			10SDL		
End Connection		BS21 (JIS B0203)			JIS B2239 10K FF			JIS B2239 20K RF			BS21 (JIS B0203)		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/4	8	50	108	60									
3/8	10	55	108	60	85	108	60				55	112	55
1/2	15	65	123	70	85	122	70	110	184	90	65	122	60
3/4	20	80	123	80	95	124	80	120	184	90	80	130	70
1	25	90	144	90	110	146	90	130	190	100	90	149	80
11/4	32	105	159	100	130	161	100	160	238	140	105	169	90
11/2	40	120	178	115	150	181	115	180	238	140	120	187	100
2	50	140	197	135	180	198	135	230	271	160	140	205	115
21/2	65	180	262	180	210	268	180	292	285	180			
3	80	200	295	225	240	290	225	318	395	250			
4	100							356	432	300			
5	125							400	529	350			
6	150							444	586	400			
8	200							559	749	450			
Body/Bonnet		FCD-S			FCD-S			FCD-S			FCD-S		
Stem		420J2			420J2			403SS			420J2		
Disc		G/F PTFE			G/F PTFE			G/F PTFE			G/F PTFE		
Gland Packing		T/#2200K			T/#2200K			P/#6527			NBR (V/#2631)		
Gasket		C1100P-0 (incl. Cu)/P/#6633			C1100P-0 (incl. Cu)/P/#6633			P/#6633			C1100P-0 (incl. Cu)		
Seat Rings (S/D)		403SS/-			403SS/-			304SS or 403SS/-			403SS/-		
Service Conditions		120℃ Static Water 1.4MPa, 180℃ Steam, Air, Gas, Oil 1.0MPa			120℃ Static Water 1.4MPa, 180℃ Steam, Air, Gas, Oil 1.0MPa			120℃ Static Water 2.5MPa, 180℃ Steam, Air, Gas, Oil 2.0MPa			LPG at Room Temperature 0.20MPa		
Reference Page								Features: Page DI17					
Remarks		SB up to 2^B, UB $21/2^B$ & over						HF: Hard Face with Co-Cr-W Alloy			LPG Service		

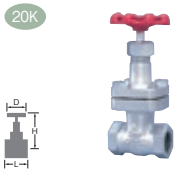
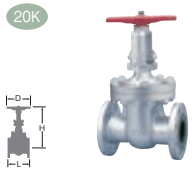
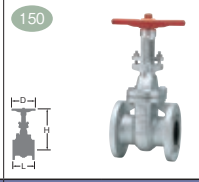
Type		Globe			Globe			Globe			Globe		
Ductile Iron		10K  SB IS RS			20K  UB IS RS			20K  UB IS RS			20K  BB OS&Y RS		
Fig		10SDLBF			20SDL			20SDLB			20SDLBO		
End Connection		JIS B2239 10K FF			BS21 (JIS B0203)			JIS B2239 20K RF			JIS B2239 20K RF		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
3/8	10	85	108	55	75	129	70						
1/2	15	85	122	60	78	129	70	110	128	70			
3/4	20	95	122	70	91	147	90	120	147	90			
1	25	110	145	80	105	168	100	130	168	100			
11/4	32	130	160	90	122	193	115	160	192	115			
11/2	40	150	179	100	135	200	135	180	201	135			
2	50	180	198	115	160	235	155	230	237	155			
21/2	65										292	337	250
3	80										318	351	250
4	100										356	439	300
6	150										444	600	400
8	200										559	688	560
Body/Bonnet		FCD-S			FCD-S			FCD-S			FCD-S		
Stem		420J2			420J2			420J2			403SS		
Disc		G/F PTFE			PTFE			PTFE			PTFE		
Gland Packing		NBR (V/#2631)			NBR			NBR			NBR		
Gasket		C1100P-0 (incl. Cu)			P/#6633			P/#6633			P/#6633		
Seat Rings (S/D)		403SS/-			304SS/-			304SS/-			403SS/-		
Service Conditions		LPG at Room Temperature 0.20MPa			80℃ gas 2.4MPa			80℃ gas 2.4MPa			80℃ gas 2.4MPa		
Remarks		LPG Service			LPG Service			LPG Service			LPG Service		

Type		Globe			Globe			Globe			Bellows Seal Globe		
Ductile Iron		10K  UB IS RS			10K  UB IS RS			10K  BB OS&Y RS			10K  BB OS&Y RS		
Fig		10SPD			10SPDBF			10SPDBOF			10SPDBOWF		
End Connection		BS21 (JIS B0203)			JIS B2239 10K FF			JIS B2239 10K FF			JIS B2239 10K FF		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/2	15	70	125	80	108	125	80				108	184	90
3/4	20	80	125	80	117	125	80				117	184	90
1	25	90	146	100	127	145	100				127	190	100
11/4	32	110	162	115	140	162	115				140	238	140
11/2	40	120	180	115	165	180	115				165	238	140
2	50	140	198	135	203	198	135	203	308	200	203	271	160
21/2	65							216	311	225	216	305	180
3	80							241	352	250	241	395	250
4	100							292	371	250	292	432	300
5	125							356	459	300	356	529	350
6	150							406	518	350	406	586	400
8	200							495	581	400	495	749	450
Body/Bonnet		FCD-S			FCD-S			FCD-S			FCD-S		
Stem		420J2			420J2			403SS			403SS		
Disc/Bellows		G/F PTFE			G/F PTFE			G/F PTFE			G/F PTFE/316LSS		
Gland Packing		P/#6118			P/#6118			P/#6118			P/#6527		
Gasket		C1100P-0 (incl. Cu)			C1100P-0 (incl. Cu)			P/#6633			P/#6633		
Seat Rings (S/D)		403SS/-			403SS/-			403SS/-			304SS or 403SS/-		
Service Conditions		120℃ Static Water 1.4MPa, 180℃ Steam, Air, Gas, Oil 1.0MPa			120℃ Static Water 1.4MPa, 180℃ Steam, Air, Gas, Oil 1.0MPa			120℃ Static Water 1.4MPa, 180℃ Steam, Air, Gas, Oil 1.0MPa			120℃ Static Water 1.4MPa, 180℃ Steam, Air, Gas, Oil 1.0MPa		
Reference Page											Features: Page DI17		

Type		Globe			Y Globe			Y Globe			Y Globe		
Ductile Iron		150 UB IS RS			10K UB IS RS			10K BB OS&Y RS			20K UB IS RS		
Fig		150SPDB			10SYYBF			10SYYBOF			20SYYB		
End Connection		ASME B16.5 CL150 RF			JIS B2239 10K FF			JIS B2239 10K FF			JIS B2239 20K RF		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/2	15	108	127	70									
3/4	20	117	135	70									
1	25	127	155	90	180	191.5	115				180	191.5	115
11/4	32	140	172	100									
11/2	40	165	193	115	240	311	135				240	311	135
2	50	203	208	135				280	311	225			
21/2	65							315	357.5	250			
3	80							350	392	250			
Body/Bonnet		FCD-S			FCD-S			FCD-S			FCD-S		
Stem		420J2			420J2			403SS			420J2		
Disc/Bellows		G/F PTFE			403SS+HF			A105+HF			403SS+HF		
Gland Packing		P/#6118			P/#6118			P/#6118			P/#6118		
Gasket		C1100P-0 (incl. Cu)			P/#6633			P/#6633			P/#6633		
Seat Rings (S/D)		403SS/-			304SS+HF/-			403SS+HF/-			304SS+HF/-		
Service Conditions		-5~38℃ W.O.G. 1.73MPa, 149℃ W.O.G. 1.48MPa, 180℃ W.O.G. 1.18MPa			120℃ Static Water 1.4MPa, 300℃ Steam, Air, Gas, Oil 1.0MPa			120℃ Static Water 1.4MPa, 300℃ Steam, Air, Gas, Oil 1.0MPa			120℃ Static Water 1.4MPa, 300℃ Steam, Air, Gas, Oil 1.0MPa		
Remarks					HF: Hard Face with Co-Cr-W Alloy			HF: Hard Face with Co-Cr-W Alloy			HF: Hard Face with Co-Cr-W Alloy		

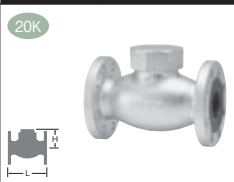
Type		Y Globe			Gate			Gate			Gate		
Ductile Iron		20K BB OS&Y RS			10K SB IS RS			10K BB IS RS			10K BB IS RS		
Fig		20SYYBO			10SMS			10SMAS			10SMBF		
End Connection		JIS B2239 20K RF			BS21 (JIS B0203)			BS21 (JIS B0203)			JIS B2239 10K FF		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/2	15				60	150	60	65	161	70	90	161	70
3/4	20				70	170	70	75	162	70	100	162	70
1	25				75	197	80	80	184.5	80	110	185	80
11/4	32				85	232	90	90	215	90	120	216	90
11/2	40				95	274	100	100	250	110	130	251	100
2	50	280	311	225	105	316	115	110	285	115	140	285	115
21/2	65	315	357.5	250									
3	80	350	392	250									
Body/Bonnet		FCD-S			FCD-S			FCD-S			FCD-S		
Stem		403SS			420J2			420J2			420J2		
Disc/Bellows		A105+HF			SCS1			SCS1			SCS1		
Gland Packing		P/#6118			T/#2200K			P/#6118			P/#6118		
Gasket		P/#6633						P/#6633			P/#6633		
Seat Rings (S/D)		403SS+HF/-			403SS/-			403SS/-			403SS/-		
Service Conditions		120℃ Static Water 1.4MPa, 300℃ Steam, Air, Gas, Oil 1.0MPa			120℃ Static Water 1.4MPa, 220℃ Steam, Air, Gas, Oil 1.0MPa			120℃ Static Water 1.4MPa, 300℃ Steam, Air, Gas, Oil 1.0MPa			120℃ Static Water 1.4MPa, 300℃ Steam, Air, Gas, Oil 1.0MPa		
Remarks		HF: Hard Face with Co-Cr-W Alloy											

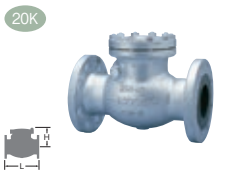
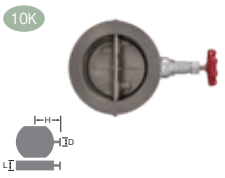
Type		Gate			Gate			Gate			Gate		
Ductile Iron		10K  BB OS&Y RS			16K  UB IS RS			16K  UB IS RS			16K  BB OS&Y RS		
Fig		10SMBOF			16SMS			16SMB			16SMBO		
End Connection		JIS B2239 10K FF			BS21 (JIS B0203)			JIS B2239 16K RF			JIS B2239 16K RF		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/2	15				65	163	70	108	163	70			
3/4	20				75	182	80	117	164	70			
1	25				80	212	90	127	187	80			
11/4	32				90	245	100	140	219	90			
11/2	40	165	301	160	100	285	115	165	253	100	165	301	160
2	50	178	352	200	110	330	135	178	285	115	178	352	200
21/2	65	190	410	200							190	410	200
3	80	203	479	250							203	479	250
4	100	229	566	250							229	566	250
5	125	254	668	300							254	668	300
6	150	267	780	300							267	780	300
8	200	292	970	350							292	970	350
10	250	330	1181	400							330	1181	400
12	300	356	1404	450							356	1404	450
14	350	381	1538	500									
16	400	406	1702	600									
18	450	432	1538	500									
20	500	457	1702	600									
Body/Bonnet		FCD-S			FCD-S			FCD-S			FCD-S		
Stem		403SS or F6a Cl.2			420J2			420J2			403SS		
Disc		SCS1 or 403SS or CS+13Cr			SCS1			SCS1			SCS1 or 403SS or CS+13Cr		
Gland Packing		P/#6118			T/#2230K			T/#2230K			P/#6118		
Gasket		P/#6633			C1100P-0 (incl. Cu)			C1100P-0 (incl. Cu)			P/#6633		
Seat Rings (S/D)		403SS			403SS			403SS			403SS		
Service Conditions		120℃ Static Water 1.4MPa, 300℃ Steam, Air, Gas, Oil 1.0MPa			120℃ Static Water 2.2MPa, 220℃ Steam, Air, Gas, Oil 2.0MPa			120℃ Static Water 2.2MPa, 220℃ Steam, Air, Gas, Oil 2.0MPa			120℃ Static Water 2.2MPa, 220℃ Steam, Air, Gas, Oil 2.0MPa		

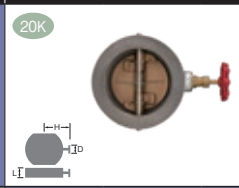
Type		Gate			Gate			Gate			Gate		
Ductile Iron		20K  BB IS RS			20K  BB IS RS			20K  BB OS&Y RS			150  BB OS&Y RS		
Fig		20SLS			20SLB			20SLBO			150SMBO		
End Connection		BS21 (JIS B0203)			JIS B2239 20K RF			JIS B2239 20K RF			ASME B16.5 CL150 RF		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/2	15	70	175	90	108	176	90						
3/4	20	75	177	90	117	177	90						
1	25	85	214	100	127	214	100						
11/4	32	95	241	115	140	242	115						
11/2	40	105	277	135	165	277	135	190	326	160	165	301	160
2	50	115	301	135				216	402	200	178	352	200
21/2	65							241	456	200	190	410	200
3	80							283	518	250	203	479	250
4	100							305	599	250	229	566	250
5	125							381	725	300	254	668	300
6	150							403	847	350	267	780	300
8	200							419	1076	400	292	970	350
10	250							457	1239	450	330	1181	400
12	300							502	1448	500	356	1404	450
Body/Bonnet		FCD-S			FCD-S			FCD-S			FCD-S		
Stem		420J2			420J2			403SS/-			403SS		
Disc/Bellows		SCS1			SCS1			SCS1 or 403SS or CS+13Cr			SCS1 or 403SS or CS+13Cr		
Gland Packing		P/#6118			P/#6118			P/#6118			P/#6118		
Gasket		P/#6633			P/#6633			P/#6633			P/#6633		
Seat Rings (S/D)		403SS/-			403SS/-			403SS/-			403SS/-		
Service Conditions		120℃ Static Water 2.8MPa, 220℃ Steam, Air, Gas, Oil 2.5MPa			120℃ Static Water 2.8MPa, 220℃ Steam, Air, Gas, Oil 2.5MPa			120℃ Static Water 2.8MPa, 220℃ Steam, Air, Gas, Oil 2.5MPa			-5~38℃ W.O.G. 1.73MPa, 149℃ W.O.G. 1.48MPa, 260℃ W.O.G. 1.18MPa, 343℃ W.O.G. 0.86MPa		

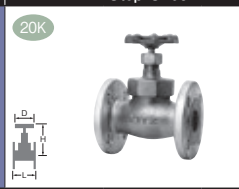
Type		Gate			Lift Check			Lift Check			Lift Check		
Ductile Iron		300 BB OS&Y RS			10K SC			10K SC			16K UC		
Fig		300SLBO			10SF			10SFBF			16SF		
End Connection		ASME B16.5 CL300 RF			BS21 (JIS B0203)			JIS B2239 10K FF			BS21 (JIS B0203)		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/2	15				65	39		85	39		70	50	
3/4	20				80	42		95	42		85	53	
1	25				90	48		110	49		95	61	
11/4	32				105	56		130	56		110	69	
11/2	40				120	65		150	65		125	75	
2	50	216	407	200	140	73		180	74		145	87	
21/2	65	241	462	200									
3	80	283	522	250									
4	100	305	599	250									
5	125	381	725	300									
6	150	403	847	350									
8	200	419	1076	400									
10	250	457	1240	450									
12	300	502	1448	500									
Body/Bonnet		FCD-S			FCD-S/SCS1			FCD-S/SCS1			FCD-S/304SS		
Stem		403SS/-											
Disc/Bellows		403SS or CS+13Cr			SCS1			SCS1			SCS1		
Gland Packing		P/#6118											
Gasket		P/#6633									C1100P-0 (incl. Cu)		
Seat Rings (S/D)		403SS/-			403SS/-			403SS/-			403SS/-		
Service Conditions		-5~38℃ W.O.G. 2.94MPa, 149℃ W.O.G. 2.60MPa, 260℃ W.O.G. 2.28MPa, 350℃ W.O.G. 2.04MPa			120℃ Static Water 1.4MPa, 220℃ Steam, Air, Gas, Oil 1.0MPa			120℃ Static Water 1.4MPa, 220℃ Steam, Air, Gas, Oil 1.0MPa			120℃ Static Water 2.2MPa, 220℃ Steam, Air, Gas, Oil 2.0MPa		

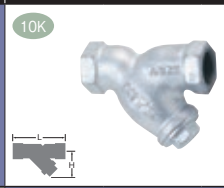
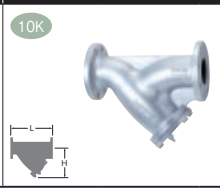
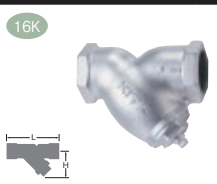
Type		Lift Check			Lift Check			Lift Check			Lift Check		
Ductile Iron		16K UC			10K UC			10K UC			20K UC		
Fig		16SFB			10SN			10SNBF			20SN		
End Connection		JIS B2239 16K RF			BS21 (JIS B0203)			JIS B2239 10K FF			BS21 (JIS B0203)		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/2	15	108	50		70	48		108	49		78	56	
3/4	20	117	53		80	51		117	52		91	60	
1	25	127	61		90	60		127	60		105	68	
11/4	32	140	69		110	67		140	68		122	80	
11/2	40	165	75		120	73		165	74		135	85	
2	50	203	87		140	85		203	86		160	99	
Body/Bonnet		FCD-S/304SS			FCD-S/304SS			FCD-S/304SS			FCD-S/SCS1		
Disc/Bellows		SCS1			SCS1			SCS1			SCS13A+HF		
Gasket		C1100P-0 (incl. Cu)			C1100P-0 (incl. Cu)			C1100P-0 (incl. Cu)			P/#6633		
Seat Rings (S/D)		403SS/-			403SS/-			403SS/-			SCS13A+HF/-		
Service Conditions		120℃ Static Water 2.2MPa, 220℃ Steam, Air, Gas, Oil 2.0MPa			120℃ Static Water 1.4MPa, 220℃ Steam, Air, Gas, Oil 1.2MPa			120℃ Static Water 1.4MPa, 220℃ Steam, Air, Gas, Oil 1.2MPa			120℃ Static Water 2.8MPa, 220℃ Steam, Air, Gas, Oil 2.5MPa		
Remarks											HF: Hard Face with Co-Cr-W Alloy		

Type		Lift Check			Swing Check			Swing Check			Swing Check		
Ductile Iron		20K UC 			10K 			10K BC 			16K BC 		
Fig		20SNB			10SOZ			10SRBF			16SRB		
End Connection		JIS B2239 20K RF			BS21 (JIS B0203)			JIS B2239 10K FF			JIS B2239 16K RF		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/2	15	110	56		65	21.5							
3/4	20	120	60		80	24.5							
1	25	130	68		90	29							
11/4	32	160	80		105	35							
11/2	40	180	85		120	41.5		165	118				
2	50	230	99		140	48.5		203	123		203	125	
21/2	65							216	133		216	136	
3	80							241	154		241	153	
4	100							292	168		292	171	
5	125							330	196		330	201	
6	150							356	214		356	219	
8	200							495	256		495	264	
10	250							622	311		622	320	
12	300							698	351		698	359	
Body/Bonnet		FCD-S/SCS1			FCD-S/SCS13A			FCD-S			FCD-S		
Stem					304SS(SCS13A)			403SS/-			403SS/-		
Disc/Bellows		SCS13A+HF			304SS or SCS13A			403SS or SCPH2+13Cr			403SS or SCPH2+13Cr		
Gasket		P/#6633						P/#6633			P/#6633		
Seat Rings (S/D)		SCS13A+HF/-						403SS/-			403SS/-		
Service Conditions		120℃ Static Water 2.8MPa, 220℃ Steam, Air, Gas, Oil 2.5MPa			120℃ Static Water 1.4MPa, 220℃ Steam, Air, Gas, Oil 1.0MPa			120℃ Static Water 1.4MPa, 300℃ Steam, Air, Gas, Oil 1.0MPa			120℃ Static Water 2.2MPa, 220℃ Steam, Air, Gas, Oil 2.0MPa		
Reference Page					Features: Page DI16								
Remarks		HF: Hard Face with Co-Cr-W Alloy			Internal Hinge Pin								

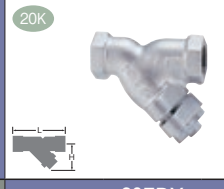
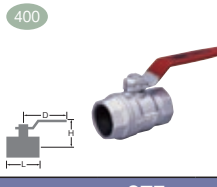
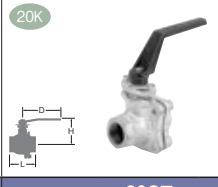
Type		Swing Check			Swing Check			Swing Check			Wafer Check		
Ductile Iron		20K BC 			150 BC 			300 BC 			10K Dual 		
Fig		20SOB			150SRB			300SOB			10SWZU		
End Connection		JIS B2239 20K RF			ASME B16.5 CL150 RF			ASME B16.5 CL300 RF			Wafer (JIS 10K)		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
11/2	40				165	115							
2	50	267	133		203	125		267	133		56	162	70
21/2	65	292	143		216	136		292	143		56	168	70
3	80	318	158		241	153		318	158		59	175	70
4	100	356	186		292	171		356	186		66	187	70
5	125	400	218		330	206		400	218		72	201	70
6	150	444	238		356	224		444	238		78	221	80
8	200	533	278		495	264		533	278		96	248	80
10	250	622	335		622	325		622	335		109	299	90
12	300	711	370		698	364		711	370		145	328	90
14	350										184	337	90
16	400										191	367	90
18	450										204	395	90
Body/Cover/Cap		FCD-S			FCD-S			FCD-S			FCD-S+NBR		
Hinge Pin/Spring		403SS/-			403SS/-			403SS/-			304SS		
Disc		403SS or SCPH2+13Cr			403SS or SCPH2+13Cr			403SS or SCPH2+13Cr			CF8 or 403SS		
Gland Packing					T/#2200K								
Gasket		P/#6633			P/#6633			P/#6633					
Seat Rings (S/D)		403SS/-			403SS/-			403SS/-					
Service Conditions		120℃ Static Water 2.8MPa, 220℃ Steam, Air, Gas, Oil 2.5MPa			-5~38℃ W.O.G. 1.73MPa, 149℃ W.O.G. 1.48MPa, 260℃ W.O.G. 1.18MPa, 343℃ W.O.G. 0.86MPa			-5~38℃ W.O.G. 2.94MPa, 149℃ W.O.G. 2.60MPa, 260℃ W.O.G. 2.28MPa, 350℃ W.O.G. 2.04MPa			0℃~+80℃ 1.4MPa		
Reference Page											Features: Page BR35		
Remarks											Built-in Bypass Valve, Dual Plate Type		

Type		Wafer Check			Wafer Check			Stop Check			Stop Check		
Ductile Iron		20K Dual 			20K Dual 			10K UB IS RS 			10K BB OS&Y RS 		
Fig		20SWZ			20SWZU			10SYFBF			10SPFBOF		
End Connection		Wafer (JIS 20K)			Wafer (JIS 20K)			JIS B2239 10K FF			JIS B2239 10K FF		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/2	15							110	137	80			
3/4	20							120	154	100			
1	25							130	178	115			
11/2	40	54	128	55				180	207	135			
2	50	56	133	60	56	146	60	230	226	180			
21/2	65	60	150	70	60	168	70				216	338	225
3	80	67	156	70	67	174	70				241	370	250
4	100	68	169	70	68	187	70						
5	125	83	183	70	83	201	70						
6	150	95	216	80	95	219	80						
8	200	127	243	80	127	247	80						
10	250	140	290	90	140	297	90						
12	300	181	315	90	181	324	90						
14	350	184	330	90	184	337	90						
16	400	191	355	90	191	365	90						
18	450	204	388	90	204	394	90						
Body/Cover/Cap		FCD-S+NBR			FCD-S+NBR			FCD-S			FCD-S		
Hinge Pin/Spring		304SS			SUS420J2/304SS/304SS			420J2			403SS		
Disc		CAC406 or C3531			CF8 or 403SS			403SS+HF			304SS+HF		
Gland Packing		T/#2996NATK			T/#2200K			P/#6118			P/#6118		
Gasket								P/#6633			P/#6633		
Seat Rings (S/D)								304SS+HF/-			A105+HF/-		
Service Conditions		0℃～+80℃ 2.8MPa			80℃ Static Water 2.8MPa, 80℃ W.O.G. 2.0MPa			120℃ Static Water 1.4MPa, 300℃ Steam, Air, Gas, Oil 1.0MPa			120℃ Static Water 1.4MPa, 300℃ Steam, Air, Gas, Oil 1.0MPa		
Reference Page		Features: Page BR35			Features: Page BR35			Features: Page DI16			Features: Page DI16		
Remarks		Built-in Bypass Valve, Dual Plate Type			Built-in Bypass Valve Dual Plate Type			HF: Hard Face with Co-Cr-W Alloy			HF: Hard Face with Co-Cr-W Alloy		

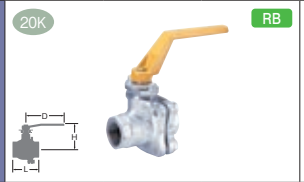
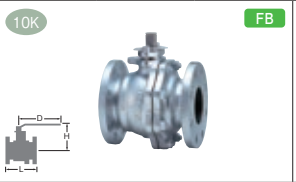
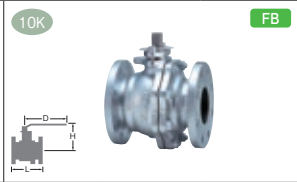
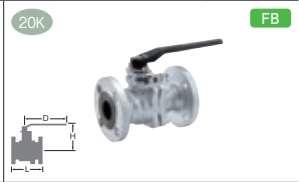
Type		Stop Check			Stop Check			Lift Check			Swing Check		
Ductile Iron		20K UB IS RS 			20K BB OS&Y RS 			20K UC 			20K BC 		
Fig		20SYFB			20SYFBO			20SNDB			20SODB		
End Connection		JIS B2239 20K RF			JIS B2239 20K RF			JIS B2239 20K RF			JIS B2239 20K RF		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/2	15	110	137	80				110	56				
3/4	20	120	154	100				120	60				
1	25	130	178	115				130	68				
11/4	32							160	80				
11/2	40	180	207	135				180	85				
2	50	230	226	180				230	99		267	135	
21/2	65				292	338	250				292	145	
3	80				318	370	250				318	160	
4	100										356	185	
6	150										444	240	
8	200										533	280	
Body/Cover/Cap		FCD-S			FCD-S			FCD-S/SCS1			FCD-S/S25C or FCD-S		
Hinge Pin/Spring		420J2			403SS								
Disc		403SS+HF			403SS+HF			PTFE			PTFE		
Gland Packing		P/#6118			P/#6118								
Gasket		P/#6633			P/#6633			P/#6633			P/#6633		
Seat Rings (S/D)		304SS+HF/-			A105+HF/-			304SS/-			403SS/		
Service Conditions		120℃ Static Water 2.8MPa, 220℃ Steam, Air, Gas, Oil 2.5MPa			120℃ Static Water 2.8MPa, 220℃ Steam, Air, Gas, Oil 2.5MPa			120℃ LPG 2.4MPa			120℃ LPG 2.4MPa		
Reference Page		Features: Page DI16			Features: Page DI16								
Remarks		HF: Hard Face with Co-Cr-W Alloy			HF: Hard Face with Co-Cr-W Alloy			Gas Service			Gas Service		

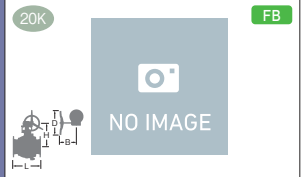
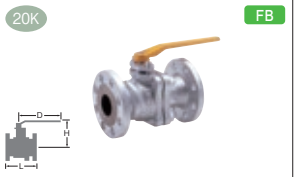
Type		Strainer			Strainer			Strainer			Strainer		
Ductile Iron		10K SC/BC 			10K SC/BC 			16K SC 			16K SC/BC 		
Fig		10FDY			10FDYBF			16FDY			16FDYB		
End Connection		BS21 (JIS B0203)			JIS B2239 10K FF			BS21 (JIS B0203)			JIS B2239 16K RF		
inch	mm	L	H	H1*	L	H	H1*	L	H	H1*	L	H	H1*
1/4	8	65	45	63									
3/8	10	70	45	63									
1/2	15	85	57	81	125	57	81	85	57	81	125	57	81
3/4	20	100	62	90	140	62	90	100	63	90	140	63	90
1	25	115	74	111	150	77	114	115	74	111	150	77	114
11/4	32	135	86	130	170	90	134	135	86	131	170	90	134
11/2	40	150	96	141	190	100	145	150	96	141	190	100	145
2	50	180	112	168	230	137	173	180	111	168	250	158	207
21/2	65	220	190	271	305	207	289				305	208	289
3	80	250	214	310	360	237	334				360	238	334
4	100				415	279	387				415	284	387
5	125				465	321	446				465	324	446
6	150				515	367	497				515	369	497
8	200				580	461	631				580	461	631
10	250				680	534	745				680	534	745
12	300				800	623	874				800	623	879
Body/Bonnet/Cap		FCD-S/C3771 or FCD-S			FCD-S/C3771 or FCD-S			FCD-S/C3771 or FCD-S			FCD-S/C3771 or FCD-S		
Disc/Screen		304SS(Punched Plate)			304SS(Punched Plate)			304SS(Punched Plate)			304SS(Punched Plate)		
Gasket		T/#1120 or P/#6633			T/#1120 or P/#6633			T/#1120			T/#1120 or P/#6633		
Service Conditions		120℃ Static Water 1.4MPa, 220℃ Steam, Air, Gas, Oil 1.0MPa 200℃ up to 2B			120℃ Static Water 1.4MPa, 200℃ Steam, Oil 1.2MPa (11/2B & below), 200℃ Air, Gas 1.0MPa (11/2B & below), 220℃ Steam, Air, Gas, Oil 1.2MPa (2B & above), 300℃ Steam, Air, Gas, Oil 1.0MPa (2B & above)			120℃ Static Water 2.2MPa, 200℃ Steam, Oil 2.0MPa, 200℃ Air, Gas 1.0MPa			120℃ Static Water 2.2MPa, 200℃ Steam, Oil 2.0MPa (11/2B & below), 200℃ Air, Gas 1.0MPa (11/2B & below), 220℃ Steam, Air, Gas, Oil 2.0MPa (2B & above), 300℃ Steam, Air, Gas, Oil 1.8MPa (2B & above), 350℃ Steam, Air, Gas, Oil 1.6MPa (2B & above)		
Remarks		BC: 21/2B & above			BC: 2B & above						BC: 2B & above		

*Height for removing the screen

Type		Strainer			Strainer			Ball			Ball		
Ductile Iron		20K BC 			20K BC 			400 RB 			20K RB 		
Fig		20FDY			20FDYB			STZ			20ST		
End Connection		BS21 (JIS B0203)			JIS B2239 20K RF			BS21 (JIS B0203)			BS21 (JIS B0203)		
inch	mm	L	H	H1*	L	H	H1*	L	H	D	L	H	D
1/4	8							46	37	80			
3/8	10	80	63	76	120	63	76	51	37	80			
1/2	15	85	63	76	125	63	76	57	41	100	75	106	130
3/4	20	100	70	86	140	71	86	65	46	130	80	106	130
1	25	115	82	103	160	85	105	76	49	130	90	107	130
11/4	32	135	117	122	185	120	126	86	56	130	105	129	160
11/2	40	150	128	135	200	132	138	95	61	130	115	133	160
2	50	180	153	161	250	164	172	115	68	150	130	114	230
21/2	65				305	221	298						
3	80				360	252	344						
4	100				415	292	397						
5	125				465	333	456						
6	150				515	380	506						
8	200				620	441	610						
10	250				760	548	763						
12	300				870	655	916						
Body/Bonnet/Cap		FCD-S/FCD-S			FCD-S/FCD-S			FCD-S			FCD-S		
Stem								C3531 + Ni-Cr plating			403SS		
Ball/Screen		304SS			304SS			C3771 + Ni-Cr plating			CF8/304SS		
Ball Seat								G/F PTFE			HYPATITE® PTFE		
Gland Packing								PTFE			PTFE		
Gasket		P/#6633			P/#6633			PTFE			PTFE		
Handle								SS430			DI		
Bore								Reduced Bore			Reduced Bore		
Service Conditions		120℃ Static Water 2.8MPa, 220℃ Steam, Air, Gas, Oil 2.5MPa, 300℃ Steam, Air, Gas, Oil 2.3MPa, 350℃ Steam, Air, Gas, Oil 2.0MPa			120℃ Static Water 2.8MPa, 220℃ Steam, Air, Gas, Oil 2.5MPa, 300℃ Steam, Air, Gas, Oil 2.3MPa, 350℃ Steam, Air, Gas, Oil 2.0MPa			W.O.G. at Room Temperature 2.75MPa, Saturated Steam 0.98MPa			110℃ W.O.G. 2.8MPa, 140℃ W.O.G. 2.0MPa		
Remarks		40-mesh			40-mesh								

*Height for removing the screen

Type		Ball			Ball			Ball			Ball		
Ductile Iron		20K RB 			10K FB 			10K FB 			20K FB 		
Fig		20STL			10STBF			10STLBF			20STB		
End Connection		BS21 (JIS B0203)			JIS B2239 10K FF			JIS B2239 10K FF			JIS B2239 20K RF		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/2	15	75	106	130	108	106	130	108	106	130	140	106	130
3/4	20	80	106	130	117	109	130	117	109	130	152	109	130
1	25	90	107	130	127	129	160	127	129	160	165	130	160
11/4	32	105	129	160	140	132	160	140	132	160	178	135	160
11/2	40	115	133	160	165	114	230	165	114	230	190	115	230
2	50	130	114	230	178	121	230	178	121	230	216	120	230
21/2	65				190	154	400	190	154	400	241	153	400
3	80	180	154	400	203	163	400	203	163	400	283	162	400
4	100				229	199	460	229	199	460	305	241	750
5	125				356	219	460	356	219	460			
6	150				394	292	1000	394	293	1000	403	293	1000
8	200				457	352	1500	457	352	1500	502	352	1500
Body & Cap		FCD-S			FCD-S			FCD-S			FCD-S		
Stem		403SS			403SS			403SS			403SS		
Ball		CF8/304SS			CF8/304SS			CF8/304SS			CF8/304SS		
Ball Seat		HYPATITE® PTFE			HYPATITE® PTFE			HYPATITE® PTFE			HYPATITE® PTFE		
Gland Packing/O ring		PTFE + NBR			PTFE			PTFE + NBR			PTFE		
Gasket		PTFE			PTFE			PTFE			PTFE		
Handle		DI			DI/CS			DI/CS			DI/CS		
Bore		Reduced Bore			Full Bore			Full Bore			Full Bore		
Service Conditions		80℃ Gas. 2.4MPa			120℃ W.O.G. 1.4MPa, 160℃ W.O.G. 1.0MPa for up to 4[B], 140℃ W.O.G. 1.0MPa for 5[B] & over			80℃ Gas. 1.18MPa			250℃ W.O.G. 2.8MPa		
Remarks		Gas Service						Gas Service					

Type		Ball				Ball			3-Way, 4-Seats, L/T Port Ball				3-Way, 4-Seats, L/T Port Ball			
Ductile Iron		20K FB 				20K FB 			10K FB 				10K RB 			
Fig		G-20STB				20STLB			10STB4LAF/10STB4TAF				10STR4LAF/10STR4TAF			
End Connection		JIS B2239 20K RF				JIS B2239 20K RF			JIS B2239 10K FF				JIS B2239 10K FF			
inch	mm	L	H	D	B	L	H	D	L	H	D	L1	L	H	D	L1
1/2	15					140	106	130								
3/4	20					152	109	130								
1	25					165	130	160								
11/4	32					178	135	160								
11/2	40					190	115	230	180	143	400	90				
2	50					216	120	230	200	152	400	100				
21/2	65					241	153	400	240	183	460	120				
3	80					283	162	400	260	190	460	130				
4	100					305	241	750	330	259	1000	165				
5	125												340	267	1000	170
6	150	403	337	310	165	403	293	1000					400	289	1000	200
8	200	502	414	360	210	502	352	1500					450	334	1500	225
Body & Cap		FCD-S				FCD-S			FCD-S				FCD-S			
Stem		403SS				403SS			304SS				304SS			
Ball		CF8/304SS				CF8/304SS			CF8				CF8			
Ball Seat		HYPATITE® PTFE				HYPATITE® PTFE			HYPATITE® PTFE				HYPATITE® PTFE			
Gland Packing/O ring		PTFE				PTFE + NBR			PTFE				PTFE			
Gasket		PTFE				PTFE			PTFE				PTFE			
Handle						DI/CS			DI/CS				DI/CS			
Bore		Full Bore				Full Bore			Full Bore				Reduced Bore			
Service Conditions		250℃ W.O.G. 2.8MPa				80℃ Gas. 2.4MPa			120℃ W.O.G 1.0MPa, 150℃ W.O.G 0.4MPa				120℃ W.O.G 1.0MPa, 150℃ W.O.G 0.4MPa			
Reference Page									Port Orientation: Page TECH1				Port Orientation: Page TECH1			
Remarks		Gear Operated				Gas Service			3-Way, 4-Seated, L- or T-Port				3-Way, 4-Seated, L- or T-Port			

What is Ductile Iron ?

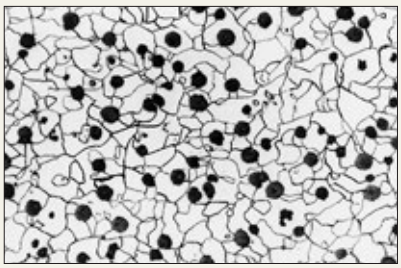
Gray iron, ductile iron, and malleable iron are the three kinds of iron used for valve construction. Unlike gray iron, which has thin, flake-like molecular formations, the metallic structures of both ductile and malleable iron contain nodular graphite. (Refer to the microscopic views shown here.) Ductile and malleable iron have superior mechanical properties compared to gray iron. They have properties almost equivalent to cast steel, which is an expensive material for industrial valves. Furthermore, their superior casting characteristics and ease of machining help to increase their suitability as a valve material.

Ductile iron outperforms malleable iron owing to its better mechanical characteristics for building the valve body, which is a kind of pressure-containing device. For example, ductile iron has a 20% higher tensile strength and 70% to 80% better elongation than malleable iron. This difference is attributed to the different formation processes of nodulated graphite molecules.

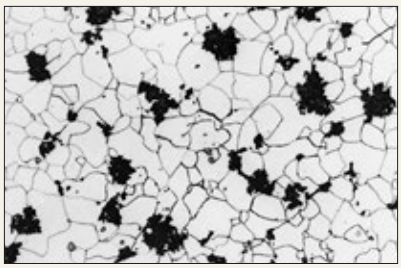
KITZ ductile iron valves are made of JIS FCD-S or ASTM A395 ductile iron. The history of the introduction of ductile iron valves on the market is rather short; however, their demand is steadily increasing owing to their economic advantage as well as the fact that their wide range of service applications is comparable to that of cast steel valves.

This catalog serves to provide the design specifications, construction materials, and external dimensions of the following ductile iron valves and strainers manufactured by KITZ Corporation :

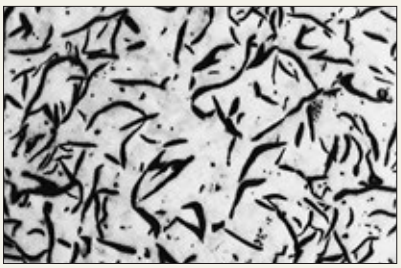
- JIS 10K,16K, and 20K Gate, Globe, and Check Valves
- JIS 10K and 20K Ball Valves
- JIS 10K, 16K, and 20K Strainers
- ASME 150 and 300 Gate, Globe, and Check Valves



Ductile Iron



Malleable Iron



Gray Iron

Service Recommendation

For achieving higher mechanical shock resistance under high or low temperature and for achieving better tensile strength and elongation characteristics than those of ordinary gray iron valves, the use of ductile iron valves is highly recommended for the following services, sometimes, in place of cast:

- Piping for steam supply
- Air-conditioning and heating systems
- High-pressure gaseous service in general
- Piping for poisonous gas service

The range of high-pressure gaseous service for iron valves is specified by the Ministry of Economy, Trade and Industry of Japan as follows :

Valve Material	Poisonous Gas*	Inflammable Gas	Other Gas
Ductile Iron (JIS FCD-S)	2.4 MPa maximum −5°C to + 350°C		
Ductile Iron (JIS FCD400)	not recommended	1.6 MPa maximum 0°C to + 250°C	
Gray Iron (JIS FC200)	not recommended		0.2 MPa maximum 0°C to + 250°C

*Phosgene and hydrogen cyanide are excluded.

Material Specifications of JIS FCD-S

1. Chemical Composites:

Carbon : 3.00% minimum
Phosphor : 0.08% maximum
Silicon : 2.50% maximum; however, 0.08% may be added for every decrease of 0.01% phosphor within the total maximum of 2.75%

2. Mechanical Properties:

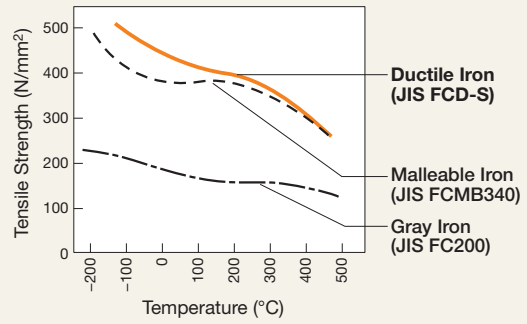
Tensile Strength : 412 N/mm^2 (42 kgf/mm^2) minimum
Yield Strength : 275 N/mm^2 (28 kgf/mm^2) minimum
Elongation : 18% minimum
Brinell Hardness : 143 to 187
Charpy Impact Value :

a) for Ambient Temperature Service;
17 N·m/cm^2 (1.7 kgf·m/cm^2) minimum in an average of three test pieces.
15 N·m/cm^2 (1.5 kgf·m/cm^2) minimum for the lowest impact value.

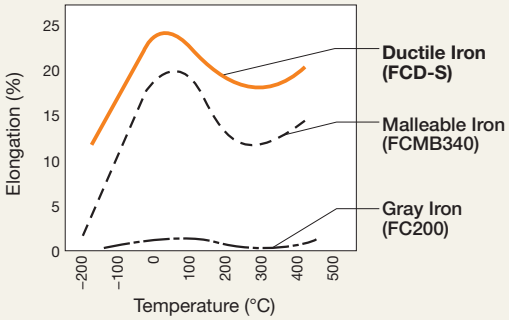
b) for –10°C or lower temperature service;
15.3 N·m/cm^2 (1.53 kgf·m/cm^2) minimum in an average of three test pieces.
13.3 N·m/cm^2 (1.33 kgf·m/cm^2) minimum for the lowest impact value.

Compared Mechanical Properties of JIS Materials

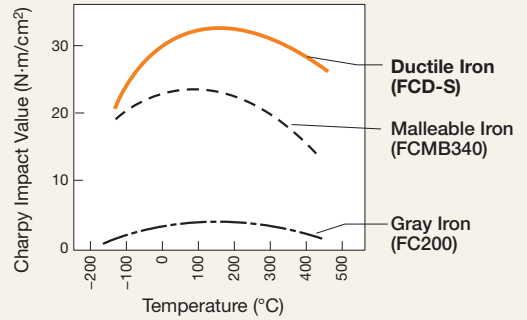
Tensile Strength



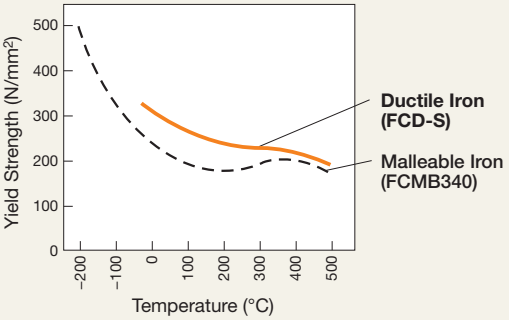
Elongation



Charpy Impact Value



Yield Strength

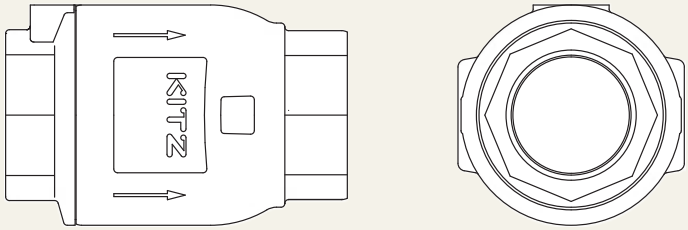


Design Specifications (Please refer to our website (www.kitz.co.jp) or contact KITZ for details.)

Class	JIS 10K/16K/20K	ASME 150/300
Face to Face Dimension	JIS B 2011, B 2002, or KITZ Std.	ASME B16. 10
End to End Dimension	JIS B 2051 or KITZ Std.	—
End Flange Dimension	JIS B 2239	ASME B16. 5
End Thread Dimension	JIS B 0203	—
Shell Wall Thickness	KITZ Standard, unless otherwise indicated on the following pages	

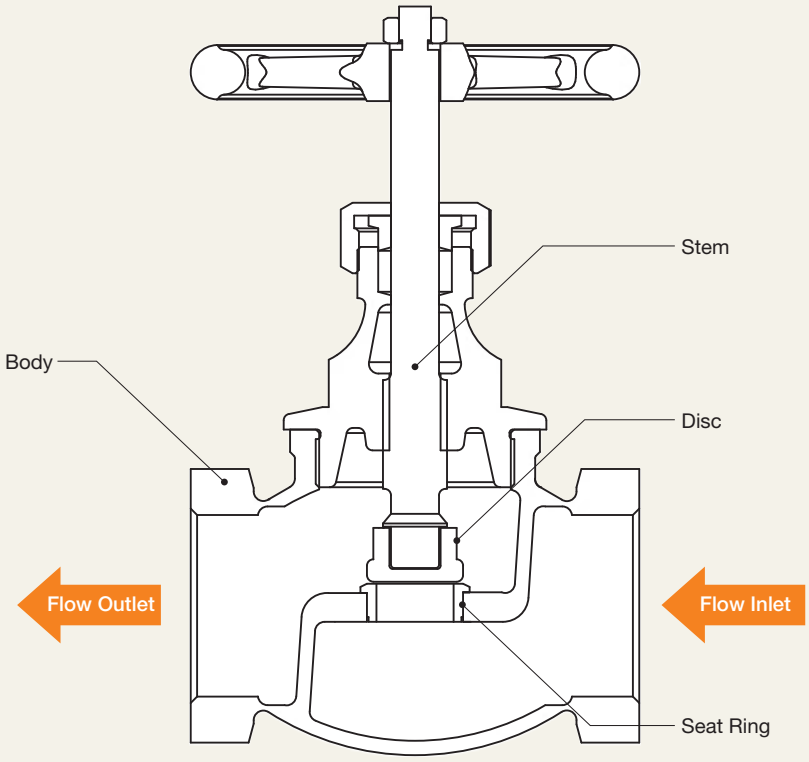
Uniquely Designed Swing Check Valve: Fig. 10SOZ

Features:
Valve Mounting Orientation : Horizontal and Vertical
Plumbing workability is good
Very compact compared to conventional products
Thermal insulation construction is easy
By having internal hinge pin construction, risks in external leakage is only in body/cap connection.



Stop Check Valves: Fig 10SYFBF, 10SPFBOF, 20SYFB, 20SYFBO

Stop check valve is combination of lift check valve and globe valve.
It has a stem in which, when closed prevents disc from coming of the seat and provides tight shutoff (similar to a globe valve).
When stem operates to open position, valve operates as a check valve.
Stem is not connected to the disc and functions to close the valve tightly or to limit travel of the disc in open direction.



Needle Valve: Fig 10SPNBF

Difference between a needle valve (Fig-1 or Fig-2) and a globe valve (Fig-3) varies in shape of disc as below.

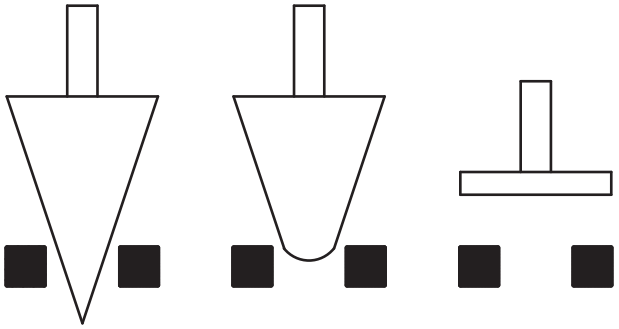
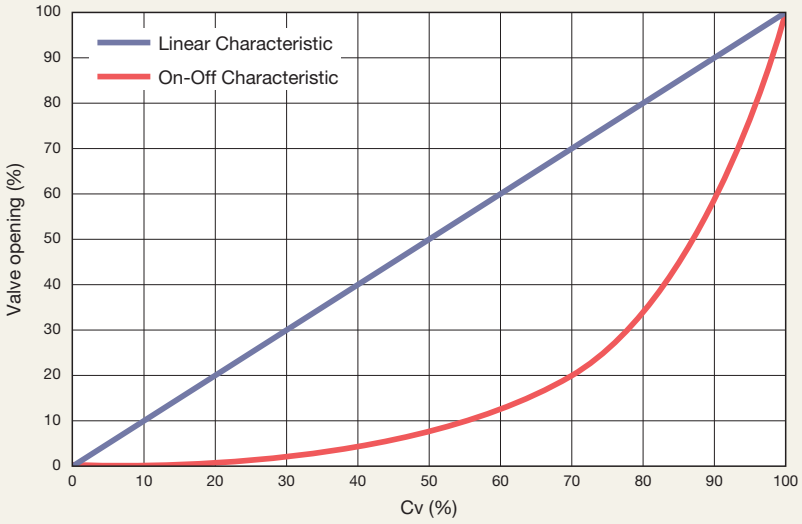


Fig 1 Fig 2 Fig 3

The big difference in needle valve and general globe valve is in flow characterristic.
Needle valve is linear characteristic and general globe valve is on-off characteristic.
Flow control is better but pressure loss is larger when fully open.



Bellows Seal Globe Valves: 10SPBAWF, 10SPBOWF, 20SYBOW, 20SDBOW, 10SPDBOWF*

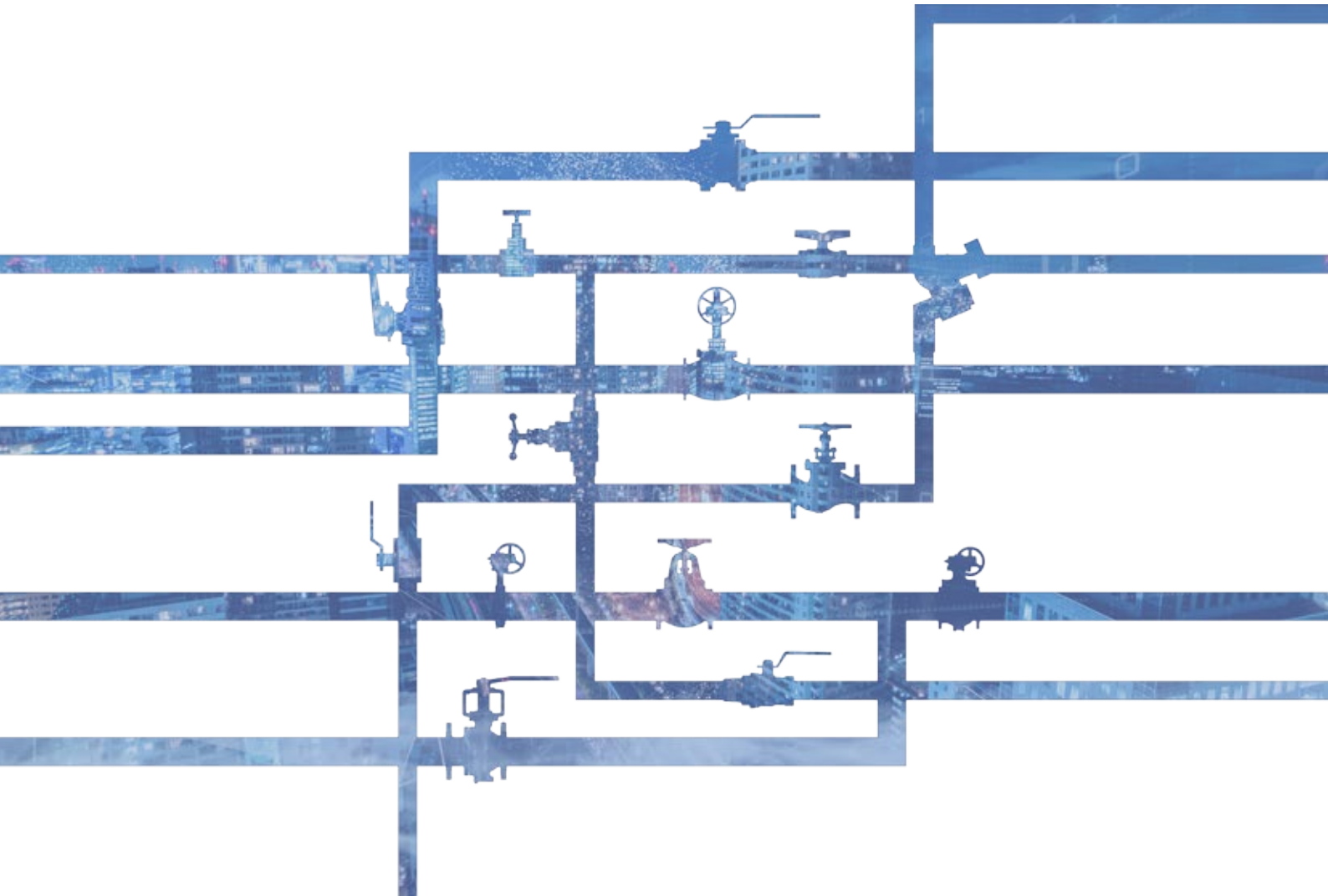
Bellow seal vale is a valve with bellows as stem seal and parts. It is often used for high vacuum or nuclear power industry, where strict stem seal is required. Bellows removes influences which changes back pressure that allows valve to protect spring and other internal structure from corrosion and leak flow medium. Substituting stuffing box, bellows is welded with a cover and/or other parts by roll welding or argon arc welding.

* 10/20/150/300UPAW(M), 10/150YPDAW(M)

KITZ

GENERAL CATALOG

Butterfly Valves



INDEX

Title	Body Material	Type	Class	End Connection	Features	Size Range	Fig			Page
Butterfly XJ Series	AI	Concentric	10K	Wafer	Long Neck (Dew Condensation Prevention)	1 1/2B - 8B	10XJME	10XJMF		BFV9 106
						1 1/2B - 12B	G-10XJME	G-10XJMF		
					Short Neck	1 1/2B - 6B	10XJSME			
						1 1/2B - 12B	G-10XJSME			
					Long Neck (Dew Condensation Prevention)	1 1/2B - 6B	10XJPE			
						1 1/2B - 8B	G-10XJPE			
					Short Neck	1 1/2B - 6B	10XJSPE			BFV10 107
						1 1/2B - 8B	G-10XJSPE			
			10K/150		Long Neck (Dew Condensation Prevention)	1 1/2B - 8B	10XJMEA			
						1 1/2B - 12B	G-10XJMEA			
			EN PN16			2B - 8B	PN16XJME			
						2B - 8B	G-PN16XJME			
DJ/DJL Series	DI (CI for 10DJ 14B to 24B)		10K	Wafer		2B - 6B	10DJ(E)			
						2B - 24B	G-10DJ(E)			
						1 1/2B - 6B	10DJU(E)	10DJM(E)		BFV11 108
						1 1/2B - 32B	G-10DJU(E)	G-10DJM(E)		
					Long Neck (Dew Condensation Prevention)	2B - 24B	G-10DJKUE			
						2B - 24B	VG-10DJ(E)			
						1 1/2B - 24B	VG-10DJU(E)	VG-10DJM(E)		
			16K			2B - 6B	16DJ(E)			BFV12 109
						2B - 24B	G-16DJ(E)			
						1 1/2B - 6B	16DJU(E)	16DJM(E)		
						1 1/2B - 24B	G-16DJU(E)	G-16DJM(E)		
					Long Neck (Dew Condensation Prevention)	2B - 24B	G-16DJKUE			
						2B - 24B	VG-16DJ(E)			
						1 1/2B - 24B	VG-16DJU(E)	VG-16DJM(E)		BFV13 110
			20K			2B - 6B	20DJUE	20DJME		
						2B - 24B	G-20DJUE	G-20DJME		
					Long Neck (Dew Condensation Prevention)	2B - 12B	G-20DJKUE			
SA Series			10K	Wafer & FE/FF		26B - 48B	G-10SAUE			BFV14 111
			16K			26B - 40B	G-16SAUE			
EJ Series			EN PN10	Wafer		2B - 8B	PN10EJMW	PN10EJMQ	PN10EJMF	
						10B - 12B	G-PN10EJMW	G-PN10EJMQ	G-PN10EJMF	
DJ/DJL Series			EN PN16			2B - 8B	PN16DJ(E)	PN16DJU(E)		
						2B - 24B	G-PN16DJ(E)	G-PN16DJU(E)		
						2B - 8B	PN16DJM(E)			BFV15 112
						2B - 24B	G-PN16DJM(E)			
				Semi Lugged		2B - 8B	PN16DJSM(E)			
						2B - 8B	G-PN16DJSM(E)			
				Lugged		2B - 8B	PN16DJLM(E)			
						2B - 24B	G-PN16DJLM(E)			
			EN PN25	Wafer		2B - 6B	PN25DJE			
						2B - 12B	G-PN25DJE			
						2B - 6B	PN25DJUE			BFV16 113
						2B - 12B	G-PN25DJUE			
				Lugged		2B - 6B	PN25DJLE	PN25DJLUE		
						2B - 12B	G-PN25DJLE	G-PN25DJLUE		
BV13F (FSK)			EN PN16	Double Flanged		28B - 48B	G-PN16SFKBV13FUE			
DJ/DJL Series			150	Wafer		2B - 8B	150DJH(E)			BFV17 114
						2B - 24B	G-150DJH(E)			
				Lugged		2B - 8B	150DJLH(E)			
						2B - 24B	G-150DJLH(E)			
			250	Wafer		2B - 8B	250DJM(E)			
						2B - 12B	G-250DJM(E)			
			150			14B - 24B	G-150DJM(E)			
			250	Lugged		2B - 8B	250DJLM(E)			BFV18 115
						2B - 12B	G-250DJLM(E)			
			150			14B - 24B	G-150DJLM(E)			
			200	Wafer		2B - 8B	200DJA(E)			
						2B - 12B	G-200DJA(E)			
			150			14B - 24B	G-150DJA(E)			
			200	Lugged		2B - 8B	200DJLA(E)			
						2B - 12B	G-200DJLA(E)			
			150			14B - 24B	G-150DJLA(E)			
			250	Wafer		2B - 8B	250DJA(E)			BFV19 116
						2B - 12B	G-250DJA(E)			
				Lugged		2B - 8B	250DJLA(E)			
						2B - 12B	G-250DJLA(E)			
DJF Series			10K	FE/FF		4B - 24B	G-10DJFU(E)			
			16K				G-16DJFU(E)			
FJ Series			10K	Wafer	FKM Seat	2B - 6B	10FJUF			
						2B - 24B	G-10FJUF			

Title	Body Material	Type	Class	End Connection	Features	Size Range	Fig		Page
NFJ Series	DI (CI for 10DJ 14B to 24B)	Concentric	10K	Wafer	Nylon 11 Lined	2B - 6B	10NFJUE(W)	10NFJNE(W)	BFV20 117
						2B - 12B	G-10NFJUE(W)	G-10NFJNE(W)	
						2B - 12B	VG-10NFJUE(W)	VG-10NFJNE(W)	
LJ Series					PFA Lined	2B - 6B	10LJF		
						2B - 24B	G-10LJF		
HDRJ Series (THROTTROL)					High Rangeability, THROTTROL	2B - 12B	G-10HRDJUE		
			20K				G-20HRDJUE		
UB Series	SS	Double Eccentric	10K		PTFE Seat, Uni Direction	1 1/2B - 6B	10UB	10UBM	BFV21 118
						1 1/2B - 24B	GL-10UB	GL-10UBM	
			16K			1 1/2B - 6B	16UB		
						14B - 24B	GL-16UB		
						1 1/2B - 6B	16UBM		BFV22 119
						14B - 24B	GL-16UBM		
			20K			1 1/2B - 12B	GL-20UB		
						2B - 12B	GL-20UBM		
			150			1 1/2B - 6B	150UB	150UBM	
						1 1/2B - 24B	GL-150UB	GL-150UBM	
HB Series	SS	Double Eccentric	10K		RPTFE (C/F PTFE) Seat, Bi Direction	1 1/2B - 6B	10UHB		BFV23 120
						1 1/2B - 12B	G-10UHB		
			20K			1 1/2B - 12B	G-20UHB		
			150			1 1/2B - 6B	150UHB		
						1 1/2B - 12B	G-150UHB		
	DI		10K			2B - 6B	10SHB		
						2B - 14B	G-10SHB		
			16K			2B - 6B	16SHB		
						2B - 14B	G-16SHB		
			150			2B - 6B	150SHB		BFV24 121
						2B - 14B	G-150SHB		
CPD Series CPC Series CPT Series	SS or CS	Double Eccentric Triple Ecc	150 - 900	Wafer or Lugged or FE	API 609, PTFE or Rubber or Metal or Laminated	2B - 24B	(■-)□0□CPD□□□		
							(■-)□0□CPL□□□		
							(■-)□0□CPT□□□		
HBS	CS	Double Ecc	150	Lugged	RPTFE (C/F PTFE), Bi Direction, Dead End Service	2 1/2B - 5B	150SCHBSL		
						6B - 12B	G-150SCHBSL		
			300		API 609, PTFE, Bi Direction, Dead End Service	2-1/2B - 5B	300SCHBSL		BFV25 122
						6B - 8B	G-300SCHBSL		
GE	DI	Concentric		Grooved	Nylon Lined, Chlorine-Resistant Seat	2B - 6B	300SGECE		
						2B - 12B	G-300SGECE		
DRAIN Series	DI	Concentric	7.5K	FE	Eccentric Valve for Swage	3B - 12B	G-7.5SVB		
			10K				G-10SVB		
			7.5K		Butterfly Valve for Swage	8B - 60B	G-7.5SGBFS		
			10K				G-10SGBFS		
DAMPER	CI		10K	Wafer	Metal Seat	2B - 12B	10D		BFV26 123
							GL-10D		
							10A		
							GL-10A		
Mini Butterfly	BC		7.5K	TE	W-NBR Seat	1/2B - 2B	FV		
	SS						UV		

* (Abbreviation) FE: Flanged Ends, FF: Flat face Ends, TE: Threaded Ends

PRODUCT CODING

Butterfly Valves

(Note: Some products do not follow this coding system.)

G – 10 DJ L M E
(1) (2) (3) (4) (5) (6)

① Valve Operation
- None ····· Handwheel or Lever
- G, G Ior VG ····· Gear

② Pressure Class
- 7.5 ····· 7.5K
- 10 ····· 10K
- 16 ····· 16K
- 20 ····· 20K
- PN10 ····· EN PN10
- PN16 ····· EN PN16
- PN25 ····· EN PN25
- 150 ····· Class 150
- 200 ····· Class 200
- 250 ····· Class 250
- 300 ····· Class 300

③ Series
- XJ
- DJ/DJK/DJL/DJF/SA
- EJ
- FJ
- NFJ
- LJ
- HRDJ
- SHB
- UB
- UHB
- SVB/SGBFS
- D/A
- FV/UV

④ End Connection
- None ····· Wafer
- S ····· Semi-Lugged
- L ····· Lugged
- F ····· Double Flanged

⑤ Disc Material
- None ····· Ductile Iron (Ni Plated)
  304SS+Cr Plating for UB/UHB/SHB
- U ····· 304SS
- M ····· 316SS
- H ····· 316SS Including Stem
- P ····· 304SS+PPS
- A ····· Aluminum Bronze

⑥ Seat Material
- None ····· NBR
- E ····· EPDM
- W ····· White EPDM
- F ····· FKM
- Q ····· VMQ (Silicon Rubber)

Butterfly Valves (CPD/CPT/CPC Series)

Please contact KITZ represeantive for details.

G – 10 U CPD L H M
(1) (2) (3) (4) (5) (6) (7)

① Valve Operation
- None ····· Lever
- G ····· Gear
- E ····· Electric Actuator
- Y, YS ····· Pneumatic Actuator

② Class
- 150, 300, 10-30K, PN10-40 ····· For CPD
- 30K ····· For CPC
- 150-2500, 10-40K, PN10-40 ····· For CPT

③ Symbol of Shell Material
- SC ····· Carbon Steel
- U ····· Stainless Steel

④ Series
- CPD ····· CPD Series/ Double Eccentric
- CPC ····· CPC Series/ Double Eccentric
- CPT ····· CPT Series/ Tripple Eccentric

⑤ End Connection
- None (or 924) ··· Wafer
- L (or 925) ····· Lugged
- F (or 926) ····· Double Flanged

⑥ Seat Material
"For CPD/CPC Series of ④"
- None (or ST) ····· PTFE
- H (ot FM) ····· Metal
- FS (or TF) ····· PTFE + Metal
- RN (or RS) ····· NBR
- RE (or RS) ····· EPDM
- RF (or RS) ····· FKM

"For CPT Series of ④"
- None (or TE) ····· Laminate (Metal + Graphite or PTFE)
- H (or TE) ····· Metal

⑦ Shell Material
For U of ③
- None ····· CF8
- M ····· CF8M

For SC of ③
- None ····· WCB
- BL ····· LCB
- CL ····· LCC

<Other Information>

Production Size ····· Up to 160[B] (4000[A])
Standard ····· API/JIS/ASME/DIN/AWWA/ISO/BS
Approval ····· PED/CE

API 607 Fire Safe	Shell MESC 77/300 "TAT"
API 609 Category A/B	SIL Ⅲ
OHSAS 18001	UL

Design Specification

Butterfly Valves

Series	Fig	Seat	Service Temp Range (EPDM: Not Frozen)	Continuous Service Temp (Not Frozen)	Valve Design	Face to Face Dimension	Coupling Flange	Remarks
XJ	10XJME 10XJMEA PN16XJME	EPDM	-20℃ to +120℃	-20℃ to +100℃		API609 Category A, EN558 Basic Series 20, ISO5752-20, JIS B2002(2032) 46 Series	JIS B2220/2239 10K ASME Class 150,JIS B2220/2239 10K *1 EN1092 PN16 *2	ISO 5211/*1 With Centering Sleeves
DJ/DJL	DJ/DJL DJE/DJLE	NBR EPDM	0℃ to +70℃ -20℃ to +120℃	-10℃ to +100℃	API609,MSS SP-67, EN593,JIS B2032	API609 Category A,MSS SP-67 W-1(2^B-14^B)W-2(16^B-24^B), EN558 Basic Series 20, ISO5752-20,JIS B2002(2032) 46 Series	ASME class 150/200/250, JIS B2220/2239 10K/16K/20K, EN1092 PN10/16/25, BS 10(AS 2129) Table D&E	ISO 5211 / 2^B to 12^B:Molded-in (Bonded) Seat, Other Sizes:Replaceable Seat
SA	SAUE	EPDM	-20℃ to +120℃	0℃ to +100℃		JIS B2002(2032) 46 Series , 1100A: KITZ Standard	JIS B2239 10K/16K	Flanged Ends
DJF	DJFU DJFUE	NBR EPDM*2	0℃ to +70℃ -20℃ to +120℃	-10℃ to +100℃	JIS B2032	JIS B2002(2032) 123 Series except 4^B of 10K/16K & 8^B/12^B/14^B/16^B of 16K	JIS B2220 10K/16K	*2 Dead End Service: 0℃ to +90℃
FJ	FJUF	FKM	5℃ to +90℃			JIS B2002(2032) 46 Series	JIS B2220 10K	ISO 5211
NFJ	NFJUE/W NFJNE/W	EPDM or W-NBR	0℃ to +60℃ 0℃ to +40℃			JIS B2002(2032) 46 Series	JIS B2220 5K/10K	ISO 5211
EJ	EJMW EJMQ EJMF	W-NBR VMQ FKM	0℃ to +80℃ -10℃ to +180℃ 0℃ to +130℃		EN593	API609, EN558 Basic Series 20, ISO5752-20, JIS B2002(2032) 46 Series	ASME Class 125/150, EN1092 PN10/16, BS 10(AS 2129) Table E	ISO 5211
LJ	LJF	PFA	-10℃ to +150℃			API609 cat. A, EN558 Basic Series 20, ISO5752-20, JIS B2002(2032) 46 Series	JIS B2220/2239 10K (ASME Class 150: Option)	ISO 5211
UB	UB UB	PTFE C/F PTFE	-29℃ to +160℃ -29℃ to +200℃		Wall Thickness ASME B16.34	Up to 6^B:ISO 5752 Short/ JIS B2002 46 Series, 8^B & Above:ISO 5752 Midium/JIS B2002 47 Series	ASME Class 150,JIS B2220 10K/16K	Uni Direction, Double Offset
HB	SHB	C/F PTFE	-10℃ to +200℃			JIS B2002(2032) 46 Series	ASME Class 150, JIS B2220 10K/16K/20K	Bi-Directional, Double Offset, ISO5211
	UHB	C/F PTFE	-29℃ to +200℃				ASME Class 150, JIS B2220 5K/10K/16K/20K	
HRDJ	HJDJUE	EPDM	-20℃ to +120℃	0℃ to +100℃		JIS B2002(2032) 46 Series	JIS B2220 5K/10K/16K/20K	160:1 of Rangeability, Equal % Flow, Tight Shut Off, Preventing Erosion by Jet Flow
D/A	D/A	Metal	0℃ to +230℃			KITZ Standard	JIS B2220 5K/10K	
FV/UV	FV/UV	304+W NBR	0℃ to +70℃			KITZ Standard	-	
CPD		Metal or RTFE or NBR/EPDM			API609 Double Offset	API 609 Category B, ISO5752-13		Wafer,Lugged,Double Flanged
CPC (JIS 30K)		NBR or EPDM			API609 Double Offset	AWWA etc		CF8/CF8M,WCB/LCB/LCC
CPT		Laminate or Metal			API609 Triple Offset			
Drain	G-7.5/10SVB					JIS B2062		End Flange: JIS G5527
	G-7.5/10SGBFS					JWWA B138		End Flange: JWWA B138

Corrosion Resistant Levels for Disc and Seat Materials Against Fluid

Table below indicates applicable fluids represented against each disc/rubber seat material. Please refer to 'Cautions' in ''Product Selection' of 'Cautions for Handling' at the end of this material for other cautions. Also, contact KITZ representative for any other queries. Temperature and operational conditions may cause differences.

Fluid \ Material	Wetted Part Materials (Disc or Body Material for UB/HB/FV/UV)				Seat Material			
	FCD450	SCS13A	SCS14A	C37771BE	NBR W-NBR	EPDM*	PTFE	PFA
Sulfurous Acid	×	○	○	×	△	△	◎	◎
Ammonia (Anhydrous Liquid)	○	◎	◎	×	△	○	◎	◎
Ammonia (Solution)	○	◎	◎	×	○	○	◎	◎
Ethane	○	○	○	–	◎	×	◎	◎
Ethyl Alcohol	○	◎	◎	○	○	◎	◎	◎
Hydrochloric Acid	×	×	×	×	△	○	◎	◎
Sea Water	×	○	○	△	◎	◎	◎	◎
Gasoline (Refined/Unieaded)	○	◎	◎	◎	△	×	◎	◎
Air	◎	◎	◎	◎	◎	◎	◎	◎
Mineral Oil	○	◎	◎	○	◎	×	◎	◎
Heavy Oil (A,B,C)	△	◎	◎	–	×	×	◎	◎
Acetic Acid (10%)	△	◎	◎	×	×	○	◎	◎
Oxgen (Cold)	○	◎	◎	◎	○	○	◎	◎
Lubricating Oil (Petroleum Base)	◎	◎	◎	○	◎	×	◎	◎
Vegitable Oil	△	◎	◎	–	◎	△	◎	◎
Steam (100°C)	◎	◎	◎	◎	×	○	◎	◎
Hydrogen Gas (Cold)	○	◎	◎	–	○	○	◎	◎
Petroleum Oil (Refined)	–	◎	◎	–	○	×	◎	◎
Soybean Oil	△	◎	◎	○	◎	△	◎	◎
Carbonic Acid	×	○	○	–	○	○	◎	◎
Calcium Carbonate	×	○	○	△	◎	◎	◎	◎
Natural Gas	◎	◎	◎	–	○	×	◎	◎
Animal Fat	◎	◎	◎	–	◎	×	◎	◎
Propane Gas	○	○	◎	–	◎	×	◎	◎
Water (Fresh ≦ 40°C)	△	◎	◎	◎	○	◎	◎	◎
Water (Hot ≦ 40-100°C)	△	◎	◎	◎	×	○	◎	◎
Methyl Alcohol	○	◎	◎	○	○	◎	◎	◎
Sulfuric Acid (7%)	×	△	○	–	○	○	◎	◎
Sulfuric Acid (20%)	×	×	×	△	×	○	◎	◎
Sulfuric Acid (≧ 50%)	×	×	×	×	×	○	◎	◎
Ammonium Sulfate	△	○	○	–	◎	◎	◎	◎
Products	DJ·DJL	DJ·DJL· UB·HRDJ	XJ·DJ· DJL·UV	FV	DJ·DJL FV·UV	XJ·DJ·DJL HRDJ	UB·SHB· UHB	LJ

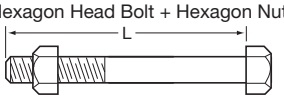
◎=Exellent ○=Good △=Less Recommended ×=Not Recommended -=Contact KITZ representative for details
* EPDM is not applicable for oil.

Differential Pressure Control Allowance and Differential Pressure Control Ratio

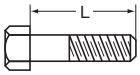
Structure	Norminal Diameter		Differential Pressure Control Allowance (kPa)		Differential Pressure Control Ratio
	NPS	DN	Fluid	Gas	
Rubber Sheet	2 ~ 8	50 ~ 200	200	100	0.30
	10 ~ 12	250 ~ 300	150	100	0.25
	14 ~ 24	350 ~ 600	100	50	0.20
PTFE Sheet (for UB Series)	2 ~ 24	50 ~ 600	300	200	0.30
Damper	2 ~ 24	50 ~ 300	–	30	0.10

[Note]
- In the event of using the product at service conditions exceeding values of table above, kindly contact KITZ representative.
- Differential Pressure is pressure differences between primary side pressure and secondary side pressure. (ΔP = p1-p2)
- Pressure difference is represented by the values of differences in pressure divided by pressure of primary side. (absolute pressure)

Hexagon Head Bolt + Hexagon Nut



*Size 24～32"require Additional Hexagon Head Bolts.

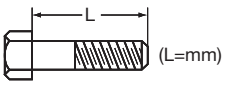


Hexagon Head Bolt + Hexagon Nut for XJ Series/DJ Series/HRDJ Series

(mm)

Flange		ASME Class 150/200/250				PN6			EN PN10			EN PN16			EN PN25			BS 10 Table E			JIS 10K			JIS 16K/20K			
NPS	DN	Size	L (inch/mm)		Number	Size	L	Number	Size	L	Number	Size	L	Number	Size	L	Number	Size	L	Number	Size	L	Number	Size	L (16K)	L (20K)	Number
1½	40	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	M16	85	4	–	–	–	–
2	50	5/8	4.25	108	4	M12	90	4	M16	105	4	M16	105	4	M16	110	4	5/8	95	4	M16	95	4	M16	95	100	8
2½	65	5/8	4.75	121	4	M12	90	4	M16	105	4	M16	105	4	M16	115	8	5/8	100	4	M16	105	4	M16	105	105	8
3	80	5/8	4.75	121	4	M16	100	4	M16	105	8	M16	105	8	M16	120	8	5/8	100	4	M16	105	8	M20	110	115	8
4	100	5/8	5.00	127	8	M16	110	4	M16	115	8	M16	115	8	M20	130	8	5/8	110	8	M16	110	8	M20	120	125	8
5	125	3/4	5.25	133	8	M16	115	8	M16	115	8	M16	115	8	M24	140	8	5/8	115	8	M20	120	8	M22	125	140	8
6	150	3/4	5.50	140	8	M16	115	8	M20	120	8	M20	120	8	M24	145	8	3/4	115	8	M20	125	8	M22	130	140	12
8	200	3/4	5.75	146	8	M16	125	8	M20	130	8	M20	130	12	M24	150	12	3/4	125	8	M20	130	12	M22	140	150	12
10	250	7/8	6.50	165	12	M16	135	12	M20	140	12	M24	150	12	M27	170	12	3/4	140	12	M22	150	12	M24	150	170	12
12	300	7/8	7.00	178	12	M20	150	12	M20	155	12	M24	160	12	M27	180	16	7/8	160	12	M22	160	16	M24	170	180	16
14	350	1	7.50	191	12	–	–	–	M20	155	16	M24	170	16	–	–	–	–	–	–	M22	160	16	–	180	190	16
16	400	1	8.50	216	16	–	–	–	–	–	–	M27	200	16	–	–	–	–	–	–	M24	190	16	–	210	230	16
18	450	1⅛	9.25	235	16	–	–	–	–	–	–	M27	210	20	–	–	–	–	–	–	M24	210	20	–	230	245	20
20	500	1⅛	10.25	260	20	–	–	–	–	–	–	M30	230	20	–	–	–	–	–	–	M24	220	20	–	250	260	20
22	550	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	M30	260	20	–	290	300	20
24	600	1¼	11.75	298	20	–	–	–	–	–	–	M33	270	20	–	–	–	–	–	–	M30	260	20	–	290	300	20
																						70*	8*		90*	100*	8*
26	650	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	M30	270	16	–	–	–	–
																						65*	16*				
28	700	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	M30	270	16	–	–	–	–
																						70*	16*				
30	750	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	M30	300	16	–	–	–	–
																						70*	16*				
32	800	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	M30	300	20	–	–	–	–
																						70*	16*				

Hexagon Head Bolts.



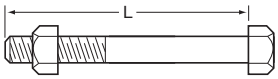
Lugged Type

Hexagon Head Bolt for DJL

(mm)

Flange		ASME Class 150/200/250				EN PN10			EN PN16			EN PN25			
NPS	DN	Size	L (inch/mm)		Number	Size	L	Number	Size	L	Number	Size	Steel	Ductile	Number
													L		
2	50	5/8	1.375	35	8	M16	38	8	M16	38	8	M16	40		8
2½	65	5/8	1.500	38	8	M16	40	8	M16	40	8	M16	40		16
3	80	5/8	1.625	41	8	M16	40	16	M16	40	16	M16	45	40	16
4	100	5/8	1.875	48	16	M16	40	16	M16	40	16	M20	45	40	16
5	125	3/4	1.875	48	16	M16	40	16	M16	40	16	M24	50	45	16
6	150	3/4	2.000	51	16	M20	45	16	M20	45	16	M24	50	45	16
8	200	3/4	2.125	54	16	–	–	–	M20	45	24	M24	55	50	24
10	250	7/8	2.375	60	24	–	–	–	M24	53	24	M27	60	55	24
12	300	7/8	2.625	67	24	–	–	–	M24	60	24	M27	65	60	32
14	350	1	2.750	70	24	–	–	–	M24	60	32	–	–	–	–
16	400	1	3.000	76	32	–	–	–	M27	70	32	–	–	–	–
18	450	1⅛	3.375	86	32	–	–	–	M27	75	40	–	–	–	–
20	500	1⅛	3.500	89	40	–	–	–	M30	80	40	–	–	–	–
24	600	1¼	4.000	102	40	–	–	–	M33	90	40	–	–	–	–

Hexagon Head Bolt + Hexagon Nut



Hexagon Head Bolt + Hexagon Nut for LJ Series

(mm)

Flange		JIS 10K			
DN	NPS	Size	L	B	Number
50	2	M16	90	38	4
65	2 1/2	M16	105	38	4
80	3	M16	105	38	4
100	4	M16	105	38	8
125	5	M20	120	46	8
150	6	M20	130	52	8
200	8	M20	150	52	8
250	10	M22	160	56	12
300	12	M22	170	56	12

Hexagon Head Bolt + Hexagon Nut for UB Series

(mm)

Flange		JIS 5K				JIS 10K				JIS16K/20K				ASME Class 150				
DN	NPS	Size	L	B	Number	Size	L	B	Number	Size	L	B	Number	Size	Thread per inch	L	B	Number
40	1 1/2	M12	80	30	4	M16	90	38	4	M16	95	38	4	1/2	11	90	38	4
50	2	M12	95	30	4	M16	100	38	4	M16	105	38	4	5/8	11	105	38	4
65	2 1/2	M12	95	30	4	M16	110	38	4	M16	115	38	4	5/8	11	110	38	4
80	3	M16	100	38	4	M16	110	38	8	M20	130	46	8	5/8	11	115	38	4
100	4	M16	110	38	8	M16	115	38	8	M20	140	52	8	5/8	11	130	44	8
125	5	M16	120	38	8	M20	130	52	8	M22	140	56	8	3/4	10	140	52	8
150	6	M16	120	38	8	M20	130	52	8	M22	150	56	8	3/4	10	140	52	8
200	8	M20	140	52	8	M20	150	52	12	M22	170	56	12	3/4	10	160	52	8
250	10	M20	150	52	12	M22	160	56	12	M24	190	60	12	7/8	9	180	56	12
300	12	M20	160	52	12	M22	170	56	16	M24	200	60	16	7/8	9	190	56	12
350	14	M22	170	56	12	M22	180	56	16	M30×3	200	72	16	1	8	200	60	12
400	16	M22	180	56	16	M24	200	60	16	M30×3	220	85	16	1	8	220	79	16
450	18	M22	200	56	12	M24	210	73	16	M30×3	240	85	16	1 1/8	8	240	85	16
			60*	52.5*	8*		68*	54*	8*		80*	66*	8*					
500	20	M22	210	69	16	M24	220	73	16	M30×3	250	85	16	1 1/8	8	260	85	16
			50*	42.5*	8*		60*	54*	8*		70*	66*	8*			75*	66*	8*
550	22	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
600	24	M24	240	73	16	M30	260	85	20	M36×3	290	97	20	1 1/4	8	300	91	16
			63*	54*	8*		78*	66*	8*		90*	78*	8*			95*	72*	8*

* Sizes apply to both hexagon bolt with nut and hexagon head bolt. (set bolt)

Hexagon Head Bolt + Hexagon Nut for D/A Type Damper

(mm)

Flange		JIS 5K				JIS 10K			
DN	NPS	Size	L	B	Number	Size	L	B	Number
50	2	M12	90	30	4	M16	100	38	4
65	2 1/2	M12	100	30	4	M16	110	38	4
80	3	M16	110	38	8	M16	120	38	8
100	4	M16	120	38	8	M16	130	38	8
125	5	M16	130	38	8	M20	140	52	8
150	6	M16	140	38	8	M20	150	52	8
200	8	M20	150	52	12	M20	160	52	12
250	10	M20	170	52	12	M22	180	56	12
300	12	M20	180	52	16	M22	190	56	16

* Above bolt sizes are for UB Series and D/A Type Damper with gasket of 3mm.

Pipe

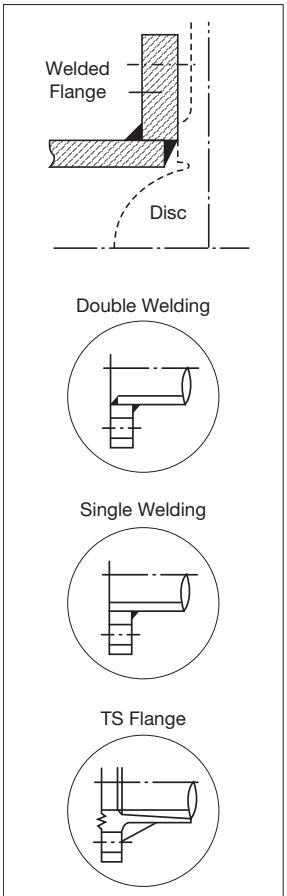
When butterfly valve is being opened, movement of disc may be interrupted by pipe internals, where butterfly valve is connected to welded pipe flange in illustration on the right. Use of pipes indicated in the table on the right is recommended. Valve-to-Flange centering must be done accurately when installing valve to pipeline.

Double Welding

Valve Series		XJ Series			DJ Series			UB Series			HB Series			D/A Damper			LJ Series		
DN	NPS	SGP	Schedule		SGP	Schedule		10S	Schedule		SGP	Schedule		SGP	Schedule		SGP	Schedule	
			20	40		20	40		20	40		20	40		20	40		40	40S
40	1 1/2	●	●	●	●	–	●	●	●	●	●	●	●	–	–	–	–	–	–
50	2	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
65	2 1/2	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
80	3	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
100	4	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
125	5	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
150	6	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
200	8	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
250	10	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
300	12	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
350	14	–	–	–	●	●	●	–	–	–	–	–	–	–	–	–	–	–	–
400	16	–	–	–	●	●	●	–	–	–	–	–	–	–	–	–	–	–	–
450	18	–	–	–	●	●	●	–	–	–	–	–	–	–	–	–	–	–	–
500	20	–	–	–	●	●	●	–	–	–	–	–	–	–	–	–	–	–	–
550	22	–	–	–	–	●	●	–	–	–	–	–	–	–	–	–	–	–	–
600	24	–	–	–	–	●	–	–	–	–	–	–	–	–	–	–	–	–	–

Single Welding/TS Flange

Valve Series		XJ Series				DJ Series				UB Series				HB Series				D/A Damper	
DN	NPS	SGP	Schedule		TS	SGP	Schedule		TS	10S	Schedule		TS	SGP	Schedule		TS	SGP	Schedule
			20	40			20	40			20	40			20	40			20	40
40	1 1/2	●	●	●	●	●	–	●	●	●	●	●	●	●	●	●	●	–	–	–
50	2	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
65	2 1/2	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
80	3	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
100	4	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
125	5	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
150	6	●	●	●	×	●	●	●	×	●	●	●	×	●	●	●	●	●	●	●
200	8	●	●	●	×	●	●	●	×	●	●	●	×	●	●	●	×	●	●	●
250	10	●	●	●	●	●	●	●	●	●	●	●	×	●	●	●	●	●	●	×
300	12	●	●	●	●	●	●	●	●	●	●	●	×	●	●	●	●	●	●	×
350	14	–	–	–	–	●	●	●	●	–	–	–	–	–	–	–	–	–	–	●
400	16	–	–	–	–	●	●	●	–	–	–	–	–	–	–	–	–	–	–	●
450	18	–	–	–	–	●	●	●	–	–	–	–	–	–	–	–	–	–	–	●
500	20	–	–	–	–	●	●	●	–	–	–	–	–	–	–	–	–	–	–	●
550	22	–	–	–	–	–	●	●	–	–	–	–	–	–	–	–	–	–	–	–
600	24	–	–	–	–	–	●	–	–	–	–	–	–	–	–	–	–	–	–	●



Sizes of Lined Steel Pipes

In case of connecting to vinyl chloride line steel pipes, size of flange must be larger than the minimum inside diameter in table below. When connecting to pulverulent polyethelene line pipes, no special care is required.

Unit: mm

Size / Valve Series	DN	40	50	65	80	100	125	150	200	250	300	350	400	450	500	550	600
	NPS	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	22	24
XJ Series		28	41	57	71	93	117	142	193	244	292	–	–	–	–	–	–
DJ Series		28	32	52	75	92	118	145	195	244	292	332	379	427	473	513	566
UB Series		–	33	57	71	88	118	140	190	239	281	327	373	424	471	–	567
HB Series		30	44	56	77	97	123	146	200	245	295	–	–	–	–	–	–
D/A Damper		–	36	53	69	86	119	139	190	240	288	–	–	–	–	–	–

Note: When connecting a pipe with diameter smaller than the values in table above may cause interference of the pipe and disc.

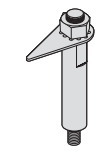
Indicator

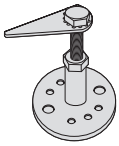
• When insulating a valve with a gear unit, in order to display open degree outside of insulation material, optional component to extend the indicator is required.

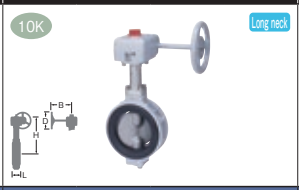
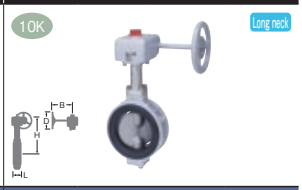
Size / Valve Series		G-10XJ	G-10DJ	G-16DJ	G-20DJ	GL-10/16/150 UB	G-10/16/150 HB	G-10HRDJ	G-10LJF
DN	NPS								
40	1 1/2	B OS SET1	B OS SET1	–	B OS SET1	OS SET1	OS SET1	OS SET1	–
50	2			B OS SET1					OS SET1
65	2 1/2								
80	3								
100	4								
125	5								
150	6								
200	8					OS SET2			
250	10		B OS SET1*1	B OS SET1*2	B OS SET1	OS SET3	OS SET2	OS SET2	OS SET2
300	12								
350	14	–	OS SET2	OS SET3	OS SET2	OS SET4	–	–	–
400	16	–					–	–	–
450	18	–			OS SET3		–	–	–
500	20	–	OS SET3	OS SET4			–	–	–
550	22	–	–	–	OS SET4	–	–	–	–
600	24	–	OS SET3	OS SET4		OS SET5	–	–	–

*1 Contact KITZ representative for products with material/paint/connection option for indicator mounting on G-10DJ Series. OS SET2CJ may be selected.
*2 Contact KITZ representative for products with material/paint/connection option for indicator mounting on G-10DJ Series. OS SET2 may be selected.

Appearance


B•OS SET

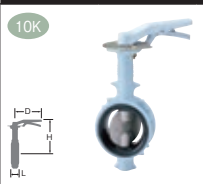
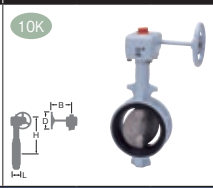
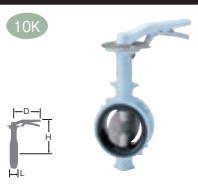
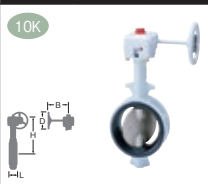

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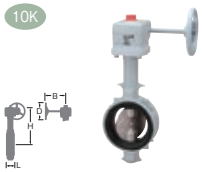
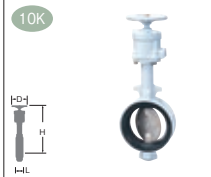
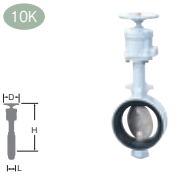
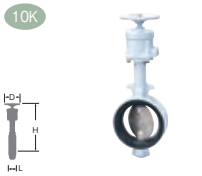
Type		XJ Series			XJ Series				XJ Series			XJ Series			
Butterfly Valve															
Fig		10XJME			G-10XJME				10XJMF			G-10XJMF			
End Connection		Wafer (JIS 5K/10K)			Wafer (JIS 5K/10K)				Wafer (JIS 5K/10K)			Wafer (JIS 5K/10K)			
inch	mm	L	H	D	L	H	D	B	L	H	D	L	H	D	B
11/2	40	33	172	180	33	175	80	122							
2	50	43	176	180	43	179	80	122	43	176	180	43	179	80	122
21/2	65	46	185	180	46	188	80	122	46	185	180	46	188	80	122
3	80	46	193	180	46	196	80	122	46	193	180	46	196	80	122
4	100	52	204	180	52	223	110	135	52	204	180	52	223	110	135
5	125	56	249	230	56	258	110	150	56	249	230	56	258	110	150
6	150	56	261	230	56	270	110	150	56	261	230	56	270	110	150
8	200	60	281	350	60	311	170	180	60	281	350	60	311	170	180
10	250				68	405	170	180							
12	300				78	430	170	180							
Body		ADC12(ASTM B85-84-383.0)			ADC12(ASTM B85-84-383.0)				ADC12(ASTM B85-84-383.0)			ADC12(ASTM B85-84-383.0)			
Neck		304SS			304SS				304SS			304SS			
Stem/Bottom Stem		410SS			410SS				410SS			410SS			
Disc		CF8M			CF8M				CF8M			CF8M			
O ring		EPDM			EPDM				EPDM			EPDM			
Rubber Seat		EPDM			EPDM				FKM			FKM			
Features		Dew Condensation Prevention			Dew Condensation Prevention				Dew Condensation Prevention			Dew Condensation Prevention			
Service Temperature Range		-20℃~+120℃ 1.0MPa (Not Frozen)/Continuous Service Temp. -20℃~+100℃			-20℃~+120℃ 1.0MPa (Not Frozen)/Continuous Service Temp. -20℃~+100℃				0℃~+90℃ 1.0MPa			0℃~+90℃ 1.0MPa			
Reference Page		P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV28			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV28				P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV28			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV28			

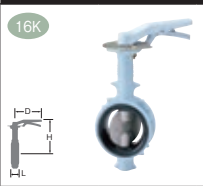
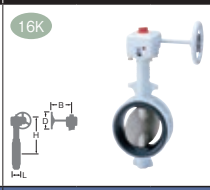
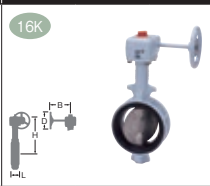
Type		XJ Series			XJ Series				XJ Series			XJ Series			
Butterfly Valve															
Fig		10XJSME			G-10XJSME				10XJPE			G-10XJPE			
End Connection		Wafer (JIS 5K/10K)			Wafer (JIS 5K/10K)				Wafer (JIS 5K/10K)			Wafer (JIS 5K/10K)			
inch	mm	L	H	D	L	H	D	B	L	H	D	L	H	D	B
11/2	40	33	137	180	33	140	80	122	33	172	180	33	175	80	122
2	50	43	139	180	43	142	80	122	43	176	180	43	179	80	122
21/2	65	46	147	180	46	150	80	122	46	185	180	46	188	80	122
3	80	46	156	180	46	159	80	122	46	193	180	46	196	80	122
4	100	52	167	180	52	186	110	135	52	204	180	52	223	110	135
5	125	56	205	230	56	214	110	150	56	249	230	56	258	110	150
6	150	56	217	230	56	226	110	150	56	261	230	56	270	110	150
8	200				60	267	170	180				60	311	170	180
10	250				68	317	170	180							
12	300				78	342	170	180							
Body		ADC12(ASTM B85-84-383.0)			ADC12(ASTM B85-84-383.0)				ADC12(ASTM B85-84-383.0)			ADC12(ASTM B85-84-383.0)			
Neck		304SS			304SS				304SS			304SS			
Stem/Bottom Stem		410SS			410SS				410SS			410SS			
Disc		CF8M			CF8M				CF8+PPS			CF8+PPS			
O ring		EPDM			EPDM				EPDM			EPDM			
Rubber Seat		EPDM			EPDM				EPDM			EPDM			
Features									Dew Condensation Prevention			Dew Condensation Prevention			
Service Temperature Range		-20℃~+120℃ 1.0MPa (Not Frozen)/Continuous Service Temp. -20℃~+100℃			-20℃~+120℃ 1.0MPa (Not Frozen)/Continuous Service Temp. -20℃~+100℃				-20℃~+120℃ 1.0MPa (Not Frozen)/Continuous Service Temp. -20℃~+100℃			-20℃~+120℃ 1.0MPa (Not Frozen)/Continuous Service Temp. -20℃~+100℃			
Reference Page		P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV28			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV28				P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV28			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV28			

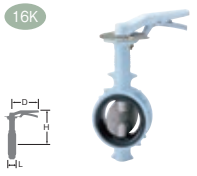
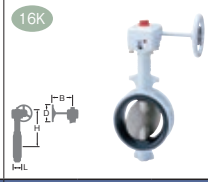
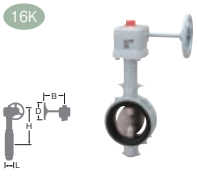
Type		XJ Series			XJ Series				XJ Series			XJ Series			
Butterfly Valve		10K Short neck 			10K Short neck 				10K 150 Long neck 			10K 150 Long neck 			
Fig		10XJSPE			G-10XJSPE				10XJMEA			G-10XJMEA			
End Connection		Wafer (JIS 5K/10K)			Wafer (JIS 5K/10K)				Wafer (5/10K,125/150)			Wafer (5/10K,125/150)			
inch	mm	L	H	D	L	H	D	B	L	H	D	L	H	D	B
11/2	40	33	137	180	33	140	80	122	33	172	180	33	175	80	122
2	50	43	139	180	43	142	80	122	43	176	180	43	179	80	122
21/2	65	46	147	180	46	150	80	122	46	185	180	46	188	80	122
3	80	46	156	180	46	159	80	122	46	193	180	46	196	80	122
4	100	52	167	180	52	186	110	135	52	204	180	52	223	110	135
5	125	56	205	230	56	214	110	150	56	249	230	56	258	110	150
6	150	56	217	230	56	226	110	150	56	261	230	56	270	110	150
8	200				60	267	170	180	60	281	350	60	311	170	180
10	250											68	405	170	180
Body		ADC12(ASTM B85-84-383.0)			ADC12(ASTM B85-84-383.0)				ADC12(ASTM B85-84-383.0)			ADC12(ASTM B85-84-383.0)			
Neck		304SS			304SS				304SS			304SS			
Stem/Bottom Stem		410SS			410SS				410SS			410SS			
Disc		CF8+PPS			CF8+PPS				CF8M			CF8M			
O ring		EPDM			EPDM				EPDM			EPDM			
Rubber Seat		EPDM			EPDM				EPDM			EPDM			
Features									Dew Condensation Prevention			Dew Condensation Prevention			
Service Temperature Range		-20℃~+120℃ 1.0MPa (Not Frozen)/Continuous Service Temp. -20℃~+100℃			-20℃~+120℃ 1.0MPa (Not Frozen)/Continuous Service Temp. -20℃~+100℃				-20℃~+120℃ 1.0MPa (Not Frozen)/Continuous Service Temp. -20℃~+100℃			-20℃~+120℃ 1.0MPa (Not Frozen)/Continuous Service Temp. -20℃~+100℃			
Reference Page		P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV28			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV28				P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV28			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV28			

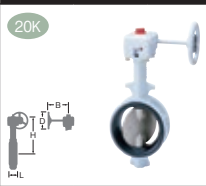
Type		XJ Series			XJ Series				DJ Series			DJ Series			
Butterfly Valve		PN16 Long neck 			PN16 Long neck 				10K 			10K 			
Fig		PN16XJME			G-PN16XJME				10DJ(E)			G-10DJ(E)			
End Connection		Wafer (EN 1092 PN16)			Wafer (EN 1092 PN16)				Wafer (JIS 10K)			Wafer (JIS 10K)			
inch	mm	L	H	D	L	H	D	B	L	H	D	L	H	D	B
2	50	43	176	180	43	179	80	122	43	189	180	43	194	80	122
21/2	65	46	185	180	46	188	80	122	46	199	180	46	202	80	122
3	80	46	193	180	46	212	80	122	46	217	180	46	236	110	135
4	100	52	204	180	52	223	110	135	52	227	180	52	246	110	135
5	125	56	249	230	56	258	110	150	56	265	230	56	274	110	150
6	150	56	261	230	56	270	110	150	56	277	230	56	286	110	150
8	200	60	281	350	60	311	170	180				60	325	170	180
10	250											68	381	250	250
12	300											78	406	250	250
14	350											78	445	310	220
16	400											102	500	310	220
18	450											114	524	310	220
20	500											127	589	360	350
24	600											154	637	360	350
Body		ADC12(ASTM B85-84-383.0)			ADC12(ASTM B85-84-383.0)				FCD450-10(ASTM A536)*			FCD450-10(ASTM A536)*			
Neck		304SS			304SS										
Stem/Bottom Stem		410SS			410SS				410SS			410SS			
Disc		CF8M			CF8M				DI+ENP			DI+ENP			
O ring		EPDM			EPDM				NBR (E: EPDM)			NBR (E: EPDM)			
Rubber Seat		EPDM			EPDM				NBR (E: EPDM)			NBR (E: EPDM)			
Features		Dew Condensation Prevention			Dew Condensation Prevention										
Service Temperature Range		-20℃~+120℃ 1.0MPa (Not Frozen)/Continuous Service Temp. -20℃~+100℃			-20℃~+120℃ 1.0MPa (Not Frozen)/Continuous Service Temp. -20℃~+100℃				NBR: 0℃~+70℃, EPDM: -20℃ ~+120℃(Not Frozen)/Continuous Service Temp. -20℃~+100℃			NBR: 0℃~+70℃, EPDM: -20℃ ~+120℃(Not Frozen)/Continuous Service Temp. -20℃~+100℃			
Reference Page		P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV28			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV28				P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			
Remarks												*Cl: 14[B] & above			

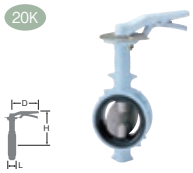
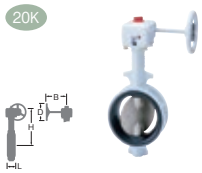
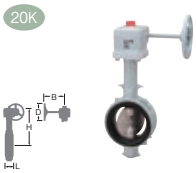
Type		DJ Series			DJ Series				DJ Series			DJ Series			
Butterfly Valve		10K 			10K 				10K 			10K 			
Fig		10DJU(E)			G-10DJU(E)				10DJM(E)			G-10DJM(E)			
End Connection		Wafer (JIS 10K)			Wafer (JIS 10K)				Wafer (JIS 10K)			Wafer (JIS 10K)			
inch	mm	L	H	D	L	H	D	B	L	H	D	L	H	D	B
11/2	40	33	172	180	33	172	80	122	33	172	180	33	172	80	122
2	50	43	189	180	43	194	80	122	43	189	180	43	194	80	122
21/2	65	46	199	180	46	202	80	122	46	199	180	46	202	80	122
3	80	46	217	180	46	236	110	135	46	217	180	46	236	110	135
4	100	52	227	180	52	246	110	135	52	227	180	52	246	110	135
5	125	56	265	230	56	274	110	150	56	265	230	56	274	110	150
6	150	56	277	230	56	286	110	150	56	277	230	56	286	110	150
8	200				60	325	170	180				60	325	170	180
10	250				68	381	250	250				68	381	250	250
12	300				78	406	250	250				78	406	250	250
14	350				78	445	310	220				78	445	310	220
16	400				102	500	310	220				102	500	310	220
18	450				114	524	310	220				114	524	310	220
20	500				127	589	360	350				127	589	360	350
22	550				154	612	360	350				154	612	360	350
24	600				154	637	360	350				154	637	360	350
26	650				165	710	600	413				165	710	600	413
28	700				165	735	600	413				165	735	600	413
30	750				190	836	500	365				190	836	500	365
32	800				190	862	500	365				190	862	500	365
Body		FCD450-10(ASTM A536)			FCD450-10(ASTM A536)*				FCD450-10(ASTM A536)			FCD450-10(ASTM A536)*			
Stem/Bottom Stem		410SS			410SS/420J2 for 14B & over				410SS			410SS/420J2 for 14B & over			
Disc		CF8			CF8				CF8M			CF8M			
O ring		NBR (E: EPDM)			NBR (E: EPDM)				NBR (E: EPDM)			NBR (E: EPDM)			
Rubber Seat		NBR (E: EPDM)			NBR (E: EPDM)				NBR (E: EPDM)			NBR (E: EPDM)			
Service Temperature Range		NBR: 0℃~+70℃, EPDM: -20℃ ~+120℃(Not Frozen)/Continuous Service Temp. -20℃~+100℃			NBR: 0℃~+70℃, EPDM: -20℃ ~+120℃(Not Frozen)/Continuous Service Temp. -20℃~+100℃				NBR: 0℃~+70℃, EPDM: -20℃ ~+120℃(Not Frozen)/Continuous Service Temp. -20℃~+100℃			NBR: 0℃~+70℃, EPDM: -20℃ ~+120℃(Not Frozen)/Continuous Service Temp. -20℃~+100℃			
Reference Page		P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31				P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			
Remarks					*Cl: 14B & above							*Cl: 14B & above			

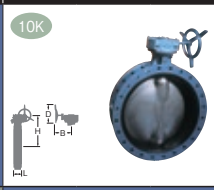
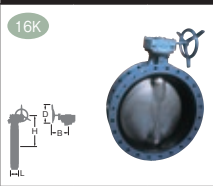
Type		DJK Series				DJ Series			DJ Series			DJ Series		
Butterfly Valve		10K 				10K 			10K 			10K 		
Fig		G-10DJKUE				VG-10DJ(E)			VG-10DJU(E)			VG-10DJM(E)		
End Connection		Wafer (JIS 10K)				Wafer (JIS 10K)			Wafer (JIS 10K)			Wafer (JIS 10K)		
inch	mm	L	H	D	B	L	H	D	L	H	D	L	H	D
11/2	40								33	251	110	33	251	110
2	50	43	220	110	135	43	270	110	43	270	110	43	270	110
21/2	65	46	228	110	135	46	278	110	46	278	110	46	278	110
3	80	46	248	110	135	46	285	110	46	285	110	46	285	110
4	100	52	258	110	135	52	295	110	52	295	110	52	295	110
5	125	56	286	110	150	56	325	170	56	325	170	56	325	170
6	150	56	298	110	150	56	337	170	56	337	170	56	337	170
8	200	60	409	170	180	60	404	200	60	404	200	60	404	200
10	250	68	477	250	250	68	461	310	68	461	310	68	461	310
12	300	78	502	250	250	78	486	310	78	486	310	78	486	310
14	350	78	571	310	220	78	569	360	78	569	360	78	569	360
16	400	102	626	310	220	102	624	360	102	624	360	102	624	360
18	450	114	650	310	220	114	648	360	114	648	360	114	648	360
20	500	127	745	360	350	127	741	500	127	741	500	127	741	500
24	600	154	793	360	350	154	789	500	154	789	500	154	789	500
Body		FCD450-10(ASTM A536)*				FCD450-10(ASTM A536)*			FCD450-10(ASTM A536)*			FCD450-10(ASTM A536)*		
Bracket/Stand		PP up to 6B/CF8 for 8B & above												
Stem/Bottom Stem		410SS/420J2 for 14B & over				410SS/420J2 for 14B & over			410SS/420J2 for 14B & over			410SS/420J2 for 14B & over		
Disc		CF8				DI+ENP			CF8			CF8M		
O ring		EPDM				NBR (E: EPDM)			NBR (E: EPDM)			NBR (E: EPDM)		
Rubber Seat		EPDM				NBR (E: EPDM)			NBR (E: EPDM)			NBR (E: EPDM)		
Service Temperature Range		NBR: 0℃~+70℃, EPDM: -20℃ ~+120℃(Not Frozen)/Continuous Service Temp. -20℃~+100℃				NBR: 0℃~+70℃, EPDM: -20℃ ~+120℃(Not Frozen)/Continuous Service Temp. -20℃~+100℃			NBR: 0℃~+70℃, EPDM: -20℃ ~+120℃(Not Frozen)/Continuous Service Temp. -20℃~+100℃			NBR: 0℃~+70℃, EPDM: -20℃ ~+120℃(Not Frozen)/Continuous Service Temp. -20℃~+100℃		
Reference Page		P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31				P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31		
Remarks		*Cl: 14B & above PP: Polypropylene				*Cl: 14B & above			*Cl: 14B & above			*Cl: 14B & above		

Type		DJ Series			DJ Series				DJ Series			DJ Series			
Butterfly Valve															
Fig		16DJ(E)			G-16DJ(E)				16DJU(E)			G-16DJU(E)			
End Connection		Wafer (JIS 16K)			Wafer (JIS 16K)				Wafer (JIS 16K)			Wafer (JIS 16K)			
inch	mm	L	H	D	L	H	D	B	L	H	D	L	H	D	B
2	50	43	191	180	43	194	80	122	43	191	180	43	194	80	122
21/2	65	46	199	180	46	202	80	122	46	199	180	46	202	80	122
3	80	46	217	180	46	236	110	135	46	217	180	46	236	110	135
4	100	52	227	180	52	246	110	135	52	227	180	52	246	110	135
5	125	56	265	230	56	274	110	150	56	265	230	56	274	110	150
6	150	56	277	230	56	286	110	150	56	277	230	56	286	110	150
8	200				60	325	170	180				60	325	170	180
10	250				68	381	250	250				68	381	250	250
12	300				78	406	250	250				78	406	250	250
14	350				78	445	310	220				78	461	360	350
16	400				102	500	310	220				102	516	360	350
18	450				114	524	310	220				114	540	360	350
20	500				127	589	360	350				127	623	500	400
22	550											154	646	500	400
24	600				154	637	360	350				154	671	500	400
Body		FCD450-10(ASTM A536)			FCD450-10(ASTM A536)				FCD450-10(ASTM A536)			FCD450-10(ASTM A536)			
Stem/Bottom Stem		410SS			410SS/420J2				410SS			410SS/420J2			
Disc		DI+ENP			DI+ENP				CF8			CF8			
O ring		NBR (E: EPDM)			NBR (E: EPDM)				NBR (E: EPDM)			NBR (E: EPDM)			
Rubber Seat		NBR (E: EPDM)			NBR (E: EPDM)				NBR (E: EPDM)			NBR (E: EPDM)			
Service Temperature Range		NBR: 0℃~+70℃, EPDM: -20℃ ~+120℃(Not Frozen)/Continuous Service Temp. -20℃~+100℃			NBR: 0℃~+70℃, EPDM: -20℃ ~+120℃(Not Frozen)/Continuous Service Temp. -20℃~+100℃				NBR: 0℃~+70℃, EPDM: -20℃ ~+120℃(Not Frozen)/Continuous Service Temp. -20℃~+100℃			NBR: 0℃~+70℃, EPDM: -20℃ ~+120℃(Not Frozen)/Continuous Service Temp. -20℃~+100℃			
Reference Page		P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31				P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			

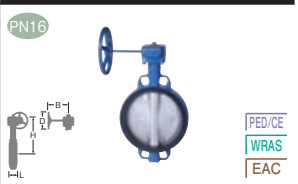
Type		DJ Series			DJ Series				DJK Series				DJ Series		
Butterfly Valve															
Fig		16DJM(E)			G-16DJM(E)				G-16DJKUE				VG-16DJ(E)		
End Connection		Wafer (JIS 16K)			Wafer (JIS 16K)				Wafer (JIS 16K)				Wafer (JIS 16K)		
inch	mm	L	H	D	L	H	D	B	L	H	D	B	L	H	D
2	50	43	191	180	43	194	80	122	43	220	110	135	43	270	110
21/2	65	46	199	180	46	202	80	122	46	228	110	135	46	278	110
3	80	46	217	180	46	236	110	135	46	248	110	135	46	285	110
4	100	52	227	180	52	246	110	135	52	258	110	135	52	295	110
5	125	56	265	230	56	274	110	150	56	286	110	150	56	325	170
6	150	56	277	230	56	286	110	150	56	298	110	150	56	337	170
8	200				60	325	170	180	60	409	170	180	60	404	200
10	250				68	381	250	250	68	477	250	250	68	461	310
12	300				78	406	250	250	78	502	250	250	78	486	310
14	350				78	461	360	350	78	587	310	220	78	569	360
16	400				102	516	360	350	102	642	310	220	102	649	360
18	450				114	540	360	350	114	666	310	220	114	673	360
20	500				127	623	500	400	127	779	360	350	127	766	500
22	550				154	646	500	400							
24	600				154	671	500	400	154	827	360	350	154	814	500
Body		FCD450-10(ASTM A536)			FCD450-10(ASTM A536)				FCD450-10(ASTM A536)				FCD450-10(ASTM A536)		
Bracket/Stand									PP up to 6^B/CF8 for 8^B & above						
Stem/Bottom Stem		410SS			410SS/420J2				410SS/420J2				410SS/420J2		
Disc		CF8M			CF8M				CF8				DI+ENP		
O ring		NBR (E: EPDM)			NBR (E: EPDM)				EPDM				NBR (E: EPDM)		
Rubber Seat		NBR (E: EPDM)			NBR (E: EPDM)				EPDM				NBR (E: EPDM)		
Features									Dew Condensation Prevention						
Service Temperature Range		NBR: 0℃~+70℃, EPDM: -20℃ ~+120℃(Not Frozen)/Continuous Service Temp. -20℃~+100℃			NBR: 0℃~+70℃, EPDM: -20℃ ~+120℃(Not Frozen)/Continuous Service Temp. -20℃~+100℃				NBR: 0℃~+70℃, EPDM: -20℃ ~+120℃(Not Frozen)/Continuous Service Temp. -20℃~+100℃				NBR: 0℃~+70℃, EPDM: -20℃ ~+120℃(Not Frozen)/Continuous Service Temp. -20℃~+100℃		
Reference Page		P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31				P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31				P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31		
Remarks									PP: Polypropylene						

Type		DJ Series			DJ Series			DJ Series			DJ Series			
Butterfly Valve		16K 			16K 			20K 			20K 			
Fig		VG-16DJU(E)			VG-16DJM(E)			20DJUE			G-20DJUE			
End Connection		Wafer (JIS 16K)			Wafer (JIS 16K)			Wafer (JIS 20K)			Wafer (JIS 20K)			
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D	B
2	50	43	270	110	43	270	110	43	191	180	43	194	80	122
21/2	65	46	278	110	46	278	110	46	199	180	46	202	80	122
3	80	46	285	110	46	285	110	46	217	180	46	236	110	135
4	100	52	295	110	52	295	110	52	227	180	52	246	110	135
5	125	56	325	170	56	325	170	56	265	230	56	274	110	150
6	150	56	337	170	56	337	170	56	277	230	56	286	110	150
8	200	60	404	200	60	404	200				60	325	170	180
10	250	68	461	310	68	461	310				68	381	250	250
12	300	78	486	310	78	486	310				78	406	250	250
14	350	78	569	360	78	569	360				78	445	310	220
16	400	102	649	360	102	649	360				102	500	310	220
18	450	114	673	360	114	673	360				114	540	360	350
20	500	127	766	500	127	766	500				127	589	500	350
22	550										154	646	500	400
24	600	154	814	500	154	814	500				154	671	500	400
Body		FCD450-10(ASTM A536)			FCD450-10(ASTM A536)			FCD450-10(ASTM A536)			FCD450-10(ASTM A536)			
Stem/Bottom Stem		410SS/420J2			410SS/420J2			410SS/420J2			410SS/420J2			
Disc		CF8			CF8M			CF8			CF8			
O ring		NBR (E: EPDM)			NBR (E: EPDM)			EPDM			EPDM			
Rubber Seat		NBR (E: EPDM)			NBR (E: EPDM)			EPDM			EPDM			
Service Temperature Range		NBR: 0℃~+70℃, EPDM: -20℃ ~+120℃(Not Frozen)/Continuous Service Temp. -20℃~+100℃			NBR: 0℃~+70℃, EPDM: -20℃ ~+120℃(Not Frozen)/Continuous Service Temp. -20℃~+100℃			NBR: 0℃~+70℃, EPDM: -20℃ ~+120℃(Not Frozen)/Continuous Service Temp. -20℃~+100℃			NBR: 0℃~+70℃, EPDM: -20℃ ~+120℃(Not Frozen)/Continuous Service Temp. -20℃~+100℃			
Reference Page		P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			

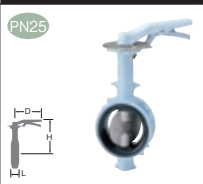
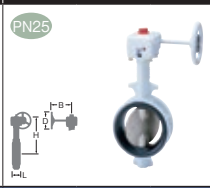
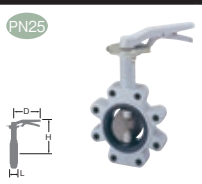
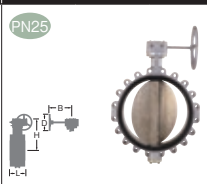
Type		DJ Series			DJ Series				DJK Series			
Butterfly Valve		20K 			20K 				20K 			
Fig		20DJME			G-20DJME				G-20DJKUE			
End Connection		Wafer (JIS 20K)			Wafer (JIS 20K)				Wafer (JIS 20K)			
inch	mm	L	H	D	L	H	D	B	L	H	D	B
2	50	43	191	180	43	194	80	122	43	220	110	135
21/2	65	46	199	180	46	202	80	122	46	228	110	135
3	80	46	217	180	46	236	110	135	46	248	110	135
4	100	52	227	180	52	246	110	135	52	258	110	135
5	125	56	265	230	56	274	110	150	56	286	110	150
6	150	56	277	230	56	286	110	150	56	298	110	150
8	200				60	325	170	180	60	409	170	180
10	250				68	381	250	250	68	477	250	250
12	300				78	406	250	250	78	502	250	250
14	350				78	445	310	220				
16	400				102	500	310	220				
18	450				114	540	360	350				
20	500				127	589	500	350				
22	550				154	646	500	400				
24	600				154	671	500	400				
Body		FCD450-10(ASTM A536)			FCD450-10(ASTM A536)				FCD450-10(ASTM A536)			
Bracket/Stand									PP up to 6B/CF8 for 8B & above			
Stem/Bottom Stem		410SS/420J2			410SS/420J2				410SS/420J2			
Disc		CF8M			CF8M				CF8			
O ring		EPDM			EPDM				EPDM			
Rubber Seat		EPDM			EPDM				EPDM			
Features									Dew Condensation Prevention			
Service Temperature Range		NBR: 0℃~+70℃, EPDM: -20℃ ~+120℃(Not Frozen)/Continuous Service Temp. -20℃~+100℃			NBR: 0℃~+70℃, EPDM: -20℃ ~+120℃(Not Frozen)/Continuous Service Temp. -20℃~+100℃				NBR: 0℃~+70℃, EPDM: -20℃ ~+120℃(Not Frozen)/Continuous Service Temp. -20℃~+100℃			
Reference Page		P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31				P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			
Remarks									PP: Polypropylene			

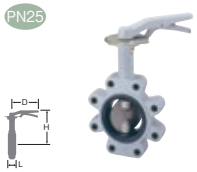
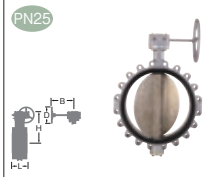
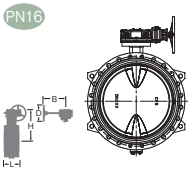
Type		SA Series				SA Series				EJ Series			EJ Series			
Butterfly Valve																
Fig		G-10SAUE				G-16SAUE				PN10EJMW(Q)(F)			G-PN10EJMW(Q)(F)			
End Connection		Wafer (JIS 10K) & *				Wafer (JIS 16K) & *				Wafer (EN1092 PN6/10/16 *)			Wafer (EN1092 PN6/10/16 *)			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	L	H	D	B
2	50									43	191	180				
21/2	65									46	199	180				
3	80									46	217	180				
4	100									52	227	180				
5	125									56	265	230				
6	150									56	277	230				
8	200									60	295	350				
10	250												68	381	250	250
12	300												78	406	250	250
26	650	165	670	500	410	165	670	500	410							
28	700	165	695	500	410	165	695	500	410							
30	750	190	757	500	410	190	757	500	410							
32	800	190	782	500	410	190	782	500	410							
36	900	203	832	500	410	203	832	500	410							
40	1000	216	902	500	410	216	902	500	410							
44	1100	216	940	500	410											
48	1200	254	1007	500	410											
54	1350	280	1133	500	410											
Body		FCD450-10(ASTM A536)				FCD450-10(ASTM A536)				DI (EN-GJS-450-10)			DI (EN-GJS-450-10)			
Stem/Bottom Stem		420J2				420J2				410SS			410SS			
Disc		CF8				CF8				CF8M			CF8M			
O ring		EPDM				EPDM				FKM			FKM			
Rubber Seat		NBR				NBR				W: W-NBR, Q: VMQ (Silicon rubber), F: FKM (Fluoro rubber)			W: W-NBR, Q: VMQ (Silicon rubber), F: FKM (Fluoro rubber)			
Standard/Approval										CE(SEP for 2^{B} & below)			CE			
Service Temperature Range		NBR: 0℃~+70℃, EPDM: -20℃ ~+120℃(Not Frozen)/Continuous Service Temp. -20℃~+100℃				NBR: 0℃~+70℃, EPDM: -20℃ ~+120℃(Not Frozen)/Continuous Service Temp. -20℃~+100℃				Continuous Service: W-NBR: 0℃~+80℃, VMQ: -10℃~+180℃, FKM: 0℃~+130℃(Not Frozen)			Continuous Service: W-NBR: 0℃~+80℃, VMQ: -10℃~+180℃, FKM: 0℃~+130℃(Not Frozen)			
Reference Page										P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			
Remarks		* JIS B2239 10K FF & with U-section				* JIS B2239(1996) 16K FF & with U-section				*BS10/AS2129 Table E, ASME CL.125/150			*BS10/AS2129 Table E, ASME CL.125/150			

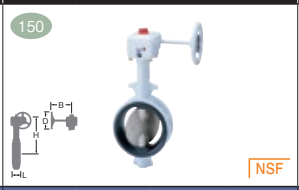
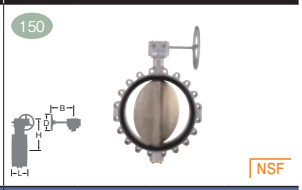
Type		DJ Series			DJ Series				DJ Series			DJ Series			
Butterfly Valve															
Fig		PN16DJ(E)			G-PN16DJ(E)				PN16DJU(E)			G-PN16DJU(E)			
End Connection		Wafer (EN1092 PN16 *)			Wafer (EN1092 PN16 *)				Wafer (EN1092 PN16 *)			Wafer (EN1092 PN16 *)			
inch	mm	L	H	D	L	H	D	B	L	H	D	L	H	D	B
2	50	43	191	180	43	194	80	122	43	191	180	43	194	80	122
21/2	65	46	199	180	46	202	80	122	46	199	180	46	202	80	122
3	80	46	217	180	46	236	110	135	46	217	180	46	236	110	135
4	100	52	227	180	52	246	110	135	52	227	180	52	246	110	135
5	125	56	265	230	56	274	110	150	56	265	230	56	274	110	150
6	150	56	277	230	56	286	110	150	56	277	230	56	286	110	150
8	200	60	295	350	60	325	170	180	60	295	350	60	325	170	180
10	250				68	381	250	250				68	381	250	250
12	300				78	406	250	250				78	406	250	250
14	350				78	461	360	350				78	461	360	350
16	400				102	516	360	350				102	516	360	350
18	450				114	540	360	350				114	540	360	350
20	500				127	623	500	400				127	623	500	400
24	600				154	671	500	400				154	671	500	400
Body		FCD450-10(ASTM A536)			FCD450-10(ASTM A536)				FCD450-10(ASTM A536)			FCD450-10(ASTM A536)			
Stem/Bottom Stem		410SS			410SS/420J2				410SS			410SS/420J2			
Disc		DI+ENP			DI+ENP				CF8			CF8			
O ring		NBR (E: EPDM)			NBR (E: EPDM)				NBR (E: EPDM)			NBR (E: EPDM)			
Rubber Seat		NBR (E: EPDM)			NBR (E: EPDM)				NBR (E: EPDM)			NBR (E: EPDM)			
Standard/Approval		CE, WRAS			CE, WRAS				CE, WRAS, EAC			CE, WRAS, EAC			
Service Condition		Max. Service Pressure 1.6MPa. (Max. Operating Temp. for WRAS Certified Valves: up to 100℃)			Max. Service Pressure 1.6MPa. (Max. Operating Temp. for WRAS Certified Valves: up to 100℃)				Max. Service Pressure 1.6MPa. (Max. Operating Temp. for WRAS Certified Valves: up to 100℃)			Max. Service Pressure 1.6MPa. (Max. Operating Temp. for WRAS Certified Valves: up to 100℃)			
Reference Page		P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31				P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			
Remarks		CE(SEP for 2^{B} & below)			CE(SEP for 2^{B} & below)				CE(SEP for 2^{B} & below), WRAS Certified Valves: up to 12^{B}			CE(SEP for 2^{B} & below), WRAS Certified Valves: up to 12^{B}			

Type		DJ Series			DJ Series				DJL Series			DJL Series			
Butterfly Valve		PN16  PED/CE WRAS EAC			PN16  PED/CE WRAS EAC				PN16  PED/CE WRAS EAC			PN16  PED/CE WRAS EAC			
Fig		PN16DJM(E)			G-PN16DJM(E)				PN16DJSM(E)			G-PN16DJSM(E)			
End Connection		Wafer (EN1092 PN16)			Wafer (EN1092 PN16)				Semi Lugged (EN1092 PN16)			Semi Lugged (EN1092 PN16)			
inch	mm	L	H	D	L	H	D	B	L	H	D	L	H	D	B
2	50	43	191	180	43	194	80	122	43	191	180	43	194	80	122
21/2	65	46	199	180	46	202	80	122	46	199	180	46	202	80	122
3	80	46	217	180	46	236	110	135	46	217	180	46	236	110	135
4	100	52	227	180	52	246	110	135	52	227	180	52	246	110	135
5	125	56	265	230	56	274	110	150	56	265	230	56	274	110	150
6	150	56	277	230	56	286	110	150	56	277	230	56	286	110	150
8	200	60	295	350	60	325	170	180	60	295	350	60	325	170	180
10	250				68	381	250	250							
12	300				78	406	250	250							
14	350				78	461	360	350							
16	400				102	516	360	350							
18	450				114	540	360	350							
20	500				127	623	500	400							
24	600				154	671	500	400							
Body		FCD450-10(ASTM A536)			FCD450-10(ASTM A536)				FCD450-10(ASTM A536)			FCD450-10(ASTM A536)			
Stem/Bottom Stem		410SS			410SS/420J2				410SS			410SS			
Disc		CF8M			CF8M				CF8M			CF8M			
O ring		NBR (E: EPDM)			NBR (E: EPDM)				NBR (E: EPDM)			NBR (E: EPDM)			
Rubber Seat		NBR (E: EPDM)			NBR (E: EPDM)				NBR (E: EPDM)			NBR (E: EPDM)			
Standard/Approval		CE, WRAS, EAC			CE, WRAS, EAC				CE, WRAS, EAC			CE, WRAS, EAC			
Service Condition		Max. Service Pressure 1.6MPa. (Max. Operating Temp. for WRAS Certified Valves: up to 100℃)			Max. Service Pressure 1.6MPa. (Max. Operating Temp. for WRAS Certified Valves: up to 100℃)				Max. Service Pressure 1.6MPa. (Max. Operating Temp. for WRAS Certified Valves: up to 100℃)			Max. Service Pressure 1.6MPa. (Max. Operating Temp. for WRAS Certified Valves: up to 100℃)			
Reference Page		P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31				P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			
Remarks		CE(SEP for 2^{B} & below), WRAS Certified Valves: up to 12^{B}			CE(SEP for 2^{B} & below), WRAS Certified Valves: up to 12^{B}				CE(SEP for 2^{B} & below), WRAS Certified Valves: up to 12^{B}			CE(SEP for 2^{B} & below), WRAS Certified Valves: up to 12^{B}			

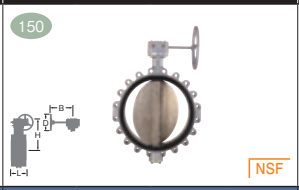
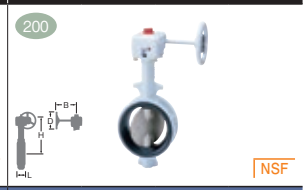
Type		DJL Series			DJL Series				DJ Series			DJ Series			
Butterfly Valve		PN16  PED/CE WRAS EAC			PN16  PED/CE WRAS EAC				PN25 			PN25 			
Fig		PN16DJLM(E)			G-PN16DJLM(E)				PN25DJE			G-PN25DJE			
End Connection		Lugged (EN1092 PN16)			Lugged (EN1092 PN16)				Wafer (EN1092 PN25)			Wafer (EN1092 PN25)			
inch	mm	L	H	D	L	H	D	B	L	H	D	L	H	D	B
2	50	43	191	180	43	194	80	122	43	191	180	43	194	80	122
21/2	65	46	199	180	46	202	80	122	46	199	180	46	202	80	122
3	80	46	217	180	46	236	110	135	46	217	180	46	236	110	135
4	100	52	227	180	52	246	110	135	52	227	180	52	246	110	135
5	125	56	265	230	56	274	110	150	56	265	230	56	274	110	150
6	150	56	277	230	56	286	110	150	56	277	230	56	286	110	150
8	200	60	295	350	60	325	170	180				60	325	250	250
10	250				68	381	250	250				68	381	250	250
12	300				78	406	250	250				78	406	250	250
14	350				78	461	360	350							
16	400				102	516	360	350							
18	450				114	540	360	350							
20	500				127	623	500	400							
24	600				154	671	500	400							
Body		FCD450-10(ASTM A536)			FCD450-10(ASTM A536)				FCD450-10(ASTM A536)			FCD450-10(ASTM A536)			
Stem/Bottom Stem		410SS			410SS/420J2				403SS/410SS/420J2			403SS/410SS/420J2			
Disc		CF8M			CF8M				DI+ENP			DI+ENP			
O ring		NBR (E: EPDM)			NBR (E: EPDM)				EPDM			EPDM			
Rubber Seat		NBR (E: EPDM)			NBR (E: EPDM)				EPDM			EPDM			
Standard/Approval		CE, WRAS, EAC			CE, WRAS, EAC										
Service Condition		Max. Service Pressure 1.6MPa. (Max. Operating Temp. for WRAS Certified Valves: up to 100℃)			Max. Service Pressure 1.6MPa. (Max. Operating Temp. for WRAS Certified Valves: up to 100℃)				Max. Service Pressure 2.5MPa			Max. Service Pressure 2.5MPa			
Reference Page		P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31				P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			
Remarks		CE(SEP for 2^{B} & below), WRAS Certified Valves: up to 12^{B}			CE(SEP for 2^{B} & below), WRAS Certified Valves: up to 12^{B}										

Type		DJ Series			DJ Series				DJL Series			DJL Series			
Butterfly Valve		PN25 			PN25 				PN25 			PN25 			
Fig		PN25DJUE			G-PN25DJUE				PN25DJLE			G-PN25DJLE			
End Connection		Wafer (EN1092 PN25)			Wafer (EN1092 PN25)				Lugged (EN1092 PN25)			Lugged (EN1092 PN25)			
inch	mm	L	H	D	L	H	D	B	L	H	D	L	H	D	B
2	50	43	191	180	43	194	80	122	43	191	180	43	194	80	122
21/2	65	46	199	180	46	202	80	122	46	199	180	46	202	80	122
3	80	46	217	180	46	236	110	135	46	217	180	46	236	110	135
4	100	52	227	180	52	246	110	135	52	227	180	52	246	110	135
5	125	56	265	230	56	274	110	150	56	265	230	56	274	110	150
6	150	56	277	230	56	286	110	150	56	277	230	56	286	110	150
8	200				60	325	250	250				60	325	250	250
10	250				68	381	250	250				68	381	250	250
12	300				78	406	250	250				78	406	250	250
Body		FCD450-10(ASTM A536)			FCD450-10(ASTM A536)				FCD450-10(ASTM A536)			FCD450-10(ASTM A536)			
Stem/Bottom Stem		403SS/410SS/420J2			403SS/410SS/420J2				403SS/410SS/420J2			403SS/410SS/420J2			
Disc		CF8			CF8				DI+ENP			DI+ENP			
O ring		EPDM			EPDM				EPDM			EPDM			
Rubber Seat		EPDM			EPDM				EPDM			EPDM			
Service Condition		Max. Service Pressure 2.5MPa			Max. Service Pressure 2.5MPa				Max. Service Pressure 2.5MPa			Max. Service Pressure 2.5MPa			
Reference Page		P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31				P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			

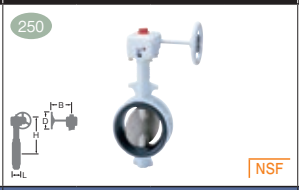
Type		DJL Series			DJL Series				DJ Series (BV13F(FSK))			
Butterfly Valve		PN25 			PN25 				PN16 			
Fig		PN25DJLUE			G-PN25DJLUE				G-PN16SFKBV13FUE			
End Connection		Lugged (EN1092 PN25)			Lugged (EN1092 PN25)				Double flanged (EN1092-2 PN16)			
inch	mm	L	H	D	L	H	D	B	L	H	D	B
2	50	43	191	180	43	194	80	122				
21/2	65	46	199	180	46	202	80	122				
3	80	46	217	180	46	236	110	135				
4	100	52	227	180	52	246	110	135				
5	125	56	265	230	56	274	110	150				
6	150	56	277	230	56	286	110	150				
8	200				60	325	250	250				
10	250				68	381	250	250				
12	300				78	406	250	250				
26	650								292	TBA	400	402
28	700								292	TBA	400	402
30	750								318	TBA	400	402
32	800								318	TBA	400	402
36	900								330	TBA	400	448.5
40	1000								410	TBA	400	448.5
48	1200								470	TBA	450	496
Body		FCD450-10(ASTM A536)			FCD450-10(ASTM A536)				FCD450-10(ASTM A536)			
Stem/Bottom Stem		403SS/410SS/420J2			403SS/410SS/420J2				420SS			
Disc		CF8			CF8				304SS			
O ring		EPDM			EPDM				NBR			
Rubber Seat		EPDM			EPDM				EPDM			
Service Condition		Max. Service Pressure 2.5MPa			Max. Service Pressure 2.5MPa				Max. Service Pressure 1.6MPa, -15℃~120℃			
Reference Page		P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31							

Type		DJ Series			DJ Series				DJL Series			DJL Series			
Butterfly Valve															
Fig		150DJH(E)			G-150DJH(E)				150DJLH(E)			G-150DJLH(E)			
End Connection		Wafer (ASME CL. 150)			Wafer (ASME CL. 150)				Lugged (ASME CL. 150)			Lugged (ASME CL. 150)			
inch	mm	L	H	D	L	H	D	B	L	H	D	L	H	D	B
2	50	42.9	191	180	42.9	194	80	121.5	42.9	191	180	42.9	194	80	121.5
21/2	65	46	199	180	46	202	80	121.5	46	199	180	46	202	80	121.5
3	80	46	217	180	46	236	110	135	46	217	180	46	236	110	135
4	100	52.3	227	180	52.3	246	110	135	52.3	227	180	52.3	246	110	135
5	125	55.6	265	230	55.6	274	110	150	55.6	265	230	55.6	274	110	150
6	150	55.6	277	230	55.6	286	110	150	55.6	277	230	55.6	286	110	150
8	200	60.5	295	350	60.5	325	170	180	60.5	295	350	60.5	325	170	180
10	250				68.3	381	170	180				68.3	381	170	180
12	300				77.7	406	170	180				77.7	406	170	180
14	350				77.7	445	310	220				77.7	445	310	220
16	400				101.6	500	310	220				101.6	500	310	220
18	450				114.3	524	310	220				114.3	524	310	220
20	500				127	589	500	360				127	589	500	360
24	600				153.9	637	500	360				153.9	637	500	360
Body		ASTM A536			ASTM A536				ASTM A536			ASTM A536			
Stem/Bottom Stem		316SS			316SS				316SS			316SS			
Disc		CF8M			CF8M				CF8M			CF8M			
O ring		NBR (E: EPDM)			NBR (E: EPDM)				NBR (E: EPDM)			NBR (E: EPDM)			
Rubber Seat		NBR (E: EPDM)			NBR (E: EPDM)				NBR (E: EPDM)			NBR (E: EPDM)			
Standard/Approval		NSF372			NSF372				NSF372			NSF372			
Service Condition		NBR: 0℃~+70℃ 1.03MPa, EPDM: -20℃~+120℃ 1.03MPa/Continuous Service Temp. 0℃~+100℃			NBR: 0℃~+70℃ 1.03MPa, EPDM: -20℃~+120℃ 1.03MPa/Continuous Service Temp. 0℃~+100℃				NBR: 0℃~+70℃ 1.03MPa, EPDM: -20℃~+120℃ 1.03MPa/Continuous Service Temp. 0℃~+100℃			NBR: 0℃~+70℃ 1.03MPa, EPDM: -20℃~+120℃ 1.03MPa/Continuous Service Temp. 0℃~+100℃			
Reference Page		P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31				P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			

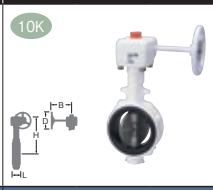
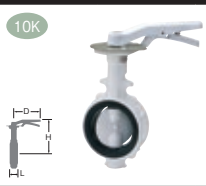
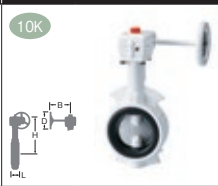
Type		DJ Series			DJ Series				DJ Series				DJL Series		
Butterfly Valve															
Fig		250DJM(E)			G-250DJM(E)				G-150DJM(E)				250DJLM(E)		
End Connection		Wafer (ASME CL. 250)			Wafer (ASME CL. 250)				Wafer (ASME CL. 150)				Lugged (ASME CL. 250)		
inch	mm	L	H	D	L	H	D	B	L	H	D	B	L	H	D
2	50	42.9	191	180	42.9	194	80	122	42.9	194	80	122	42.9	191	180
21/2	65	46	199	180	46	202	80	122	46	202	80	122	46	199	180
3	80	46	217	180	46	236	110	135	46	236	110	135	46	217	180
4	100	52.3	227	180	52.3	246	110	135	52.3	246	110	135	52.3	227	180
5	125	55.6	265	230	55.6	274	110	150	55.6	274	110	150	55.6	265	230
6	150	55.6	277	230	55.6	286	110	150	55.6	286	110	150	55.6	277	230
8	200	60.5	295	350	60.5	325	170	180	60.5	325	170	180	60.5	295	350
10	250				68.3	381	250	250	68.3	381	170	180			
12	300				77.7	406	250	250	77.7	406	170	180			
14	350								77.7	447	310	220			
16	400								101.6	502	310	220			
18	450								114.3	526	310	220			
20	500								127	587	500	360			
24	600								153.9	635	500	360			
Body		ASTM A536			ASTM A536				ASTM A536				ASTM A536		
Stem/Bottom Stem		329SS			329SS				329SS				329SS		
Disc		CF8M			CF8M				CF8M				CF8M		
O ring		NBR (E: EPDM)			NBR (E: EPDM)				NBR (E: EPDM)				NBR (E: EPDM)		
Rubber Seat		NBR (E: EPDM)			NBR (E: EPDM)				NBR (E: EPDM)				NBR (E: EPDM)		
Standard/Approval		NSF372			NSF372				NSF372				NSF372		
Service Condition		NBR: 0℃~+70℃ 1.72 MPa, EPDM: -20℃~+120℃ 1.72 MPa/Continuous Service Temp. 0℃~+100℃			NBR: 0℃~+70℃ 1.72 MPa, EPDM: -20℃~+120℃ 1.72 MPa/Continuous Service Temp. 0℃~+100℃				NBR: 0℃~+70℃ 1.03MPa, EPDM: -20℃~+120℃ 1.03MPa/Continuous Service Temp. 0℃~+100℃				NBR: 0℃~+70℃ 1.72 MPa, EPDM: -20℃~+120℃ 1.72 MPa/Continuous Service Temp. 0℃~+100℃		
Reference Page		P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31				P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31				P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31		

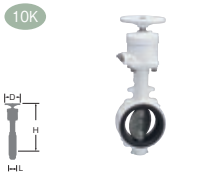
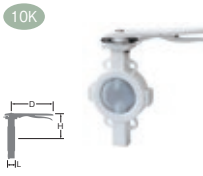
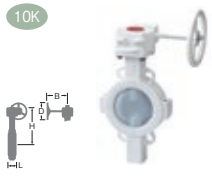
Type		DJL Series				DJL Series				DJ Series			DJ Series			
Butterfly Valve																
Fig		G-250DJLM(E)				G-150DJLM(E)				200DJA(E)			G-200DJA(E)			
End Connection		Lugged (ASME CL. 250)				Lugged (ASME CL. 150)				Wafer (ASME CL. 200)			Wafer (ASME CL. 200)			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	L	H	D	B
2	50	42.9	194	80	122	42.9	194	80	122	42.9	191	180	42.9	194	80	121.5
21/2	65	46	202	80	122	46	202	80	122	46	199	180	46	202	80	121.5
3	80	46	236	110	135	46	236	110	135	46	217	180	46	236	110	135
4	100	52.3	246	110	135	52.3	246	110	135	52.3	227	180	52.3	246	110	135
5	125	55.6	274	110	150	55.6	274	110	150	55.6	265	230	55.6	274	110	150
6	150	55.6	286	110	150	55.6	286	110	150	55.6	277	230	55.6	286	110	150
8	200	60.5	325	170	180	60.5	325	170	180	60.5	295	350	60.5	325	170	180
10	250	68.3	381	250	250	68.3	381	170	180				68.3	381	170	180
12	300	77.7	406	250	250	77.7	406	170	180				77.7	406	170	180
14	350					77.7	447	310	220							
16	400					101.6	502	310	220							
18	450					114.3	526	310	220							
20	500					127	587	500	360							
24	600					153.9	635	500	360							
Body		ASTM A536				ASTM A536				ASTM A536			ASTM A536			
Stem/Bottom Stem		329SS				329SS				410SS			410SS			
Disc		CF8M				CF8M				Al-BC			Al-BC			
O ring		NBR (E: EPDM)				NBR (E: EPDM)				NBR (E: EPDM)			NBR (E: EPDM)			
Rubber Seat		NBR (E: EPDM)				NBR (E: EPDM)				NBR (E: EPDM)			NBR (E: EPDM)			
Standard/Approval		NSF372				NSF372				NSF372			NSF372			
Service Condition		NBR: 0℃~+70℃ 1.72 MPa, EPDM: -20℃~+120℃ 1.72 MPa/Continuous Service Temp. 0℃~+100℃				NBR: 0℃~+70℃ 1.03MPa, EPDM: -20℃~+120℃ 1.03MPa/Continuous Service Temp. 0℃~+100℃				NBR: 0℃~+70℃ 1.38 MPa, EPDM: -20℃~+120℃ 1.38 MPa/Continuous Service Temp. 0℃~+100℃			NBR: 0℃~+70℃ 1.38 MPa, EPDM: -20℃~+120℃ 1.38 MPa/Continuous Service Temp. 0℃~+100℃			
Reference Page		P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31				P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31				P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			

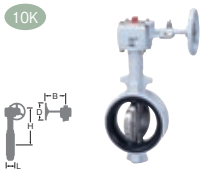
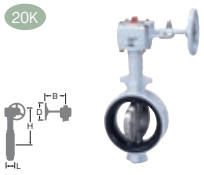
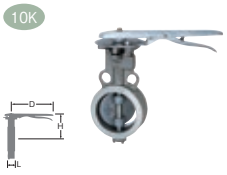
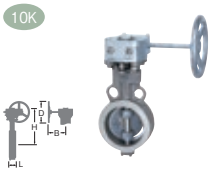
Type		DJ Series				DJL Series			DJL Series				DJL Series			
Butterfly Valve																
Fig		G-150DJA(E)				200DJLA(E)			G-200DJLA(E)				G-150DJLA(E)			
End Connection		Wafer (ASME CL. 150)				Lugged (ASME CL. 200)			Lugged (ASME CL. 200)				Lugged (ASME CL. 150)			
inch	mm	L	H	D	B	L	H	D	L	H	D	B	L	H	D	B
2	50					42.9	191	180	42.9	194	80	121.5				
21/2	65					46	199	180	46	202	80	121.5				
3	80					46	217	180	46	236	110	135				
4	100					52.3	227	180	52.3	246	110	135				
5	125					55.6	265	230	55.6	274	110	150				
6	150					55.6	277	230	55.6	286	110	150				
8	200					60.5	295	350	60.5	325	170	180				
10	250								68.3	381	170	180				
12	300								77.7	406	170	180				
14	350	77.7	447	310	220								77.7	447	310	220
16	400	101.6	502	310	220								101.6	502	310	220
18	450	114.3	526	310	220								114.3	526	310	220
20	500	127	587	500	360								127	587	500	360
24	600	153.9	635	500	360								153.9	635	500	360
Body		ASTM A536				ASTM A536			ASTM A536				ASTM A536			
Stem/Bottom Stem		410SS/420SS				410SS			410SS				410SS/420SS			
Disc		Al-BC				Al-BC			Al-BC				Al-BC			
O ring		NBR (E: EPDM)				NBR (E: EPDM)			NBR (E: EPDM)				NBR (E: EPDM)			
Rubber Seat		NBR (E: EPDM)				NBR (E: EPDM)			NBR (E: EPDM)				NBR (E: EPDM)			
Standard/Approval		NSF372				NSF372			NSF372				NSF372			
Service Condition		NBR: 0℃~+70℃ 1.03MPa, EPDM: -20℃~+120℃ 1.03MPa/Continuous Service Temp. 0℃~+100℃				NBR: 0℃~+70℃ 1.38 MPa, EPDM: -20℃~+120℃ 1.38 MPa/Continuous Service Temp. 0℃~+100℃			NBR: 0℃~+70℃ 1.38 MPa, EPDM: -20℃~+120℃ 1.38 MPa/Continuous Service Temp. 0℃~+100℃				NBR: 0℃~+70℃ 1.03MPa, EPDM: -20℃~+120℃ 1.03MPa/Continuous Service Temp. 0℃~+100℃			
Reference Page		P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31				P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31				P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			

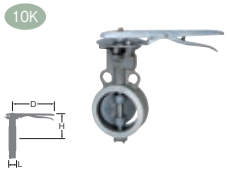
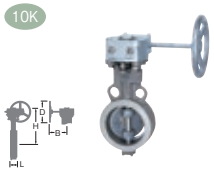
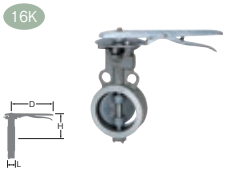
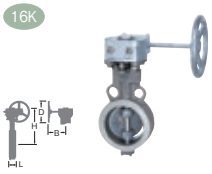
Type		DJ Series			DJ Series				DJL Series			DJL Series			
Butterfly Valve															
Fig		250DJA(E)			G-250DJA(E)				250DJLA(E)			G-250DJLA(E)			
End Connection		Wafer (ASME CL. 250)			Wafer (ASME CL. 250)				Lugged (ASME CL. 250)			Lugged (ASME CL. 250)			
inch	mm	L	H	D	L	H	D	B	L	H	D	L	H	D	B
2	50	42.9	191	180	42.9	194	80	121.5	42.9	191	180	42.9	194	80	121.5
21/2	65	46	199	180	46	202	80	121.5	46	199	180	46	202	80	121.5
3	80	46	217	180	46	236	110	135	46	217	180	46	236	110	135
4	100	52.3	227	180	52.3	246	110	135	52.3	227	180	52.3	246	110	135
5	125	55.6	265	230	55.6	274	110	150	55.6	265	230	55.6	274	110	150
6	150	55.6	277	230	55.6	286	110	150	55.6	277	230	55.6	286	110	150
8	200	60.5	295	350	60.5	325	170	180	60.5	295	350	60.5	325	170	180
10	250				68.3	381	250	250				68.3	381	250	250
12	300				77.7	406	250	250				77.7	406	250	250
Body		ASTM A536			ASTM A536				ASTM A536			ASTM A536			
Stem/Bottom Stem		410SS			410SS				410SS			410SS			
Disc		Al-BC			Al-BC				Al-BC			Al-BC			
O ring		NBR (E: EPDM)			NBR (E: EPDM)				NBR (E: EPDM)			NBR (E: EPDM)			
Rubber Seat		NBR (E: EPDM)			NBR (E: EPDM)				NBR (E: EPDM)			NBR (E: EPDM)			
Stem Bearing		Metal Backed PTFE & G/F PTFE			Metal Backed PTFE & G/F PTFE				Metal Backed PTFE & G/F PTFE			Metal Backed PTFE & G/F PTFE			
Standard/Approval		NSF372			NSF372				NSF372			NSF372			
Service Condition		NBR: 0℃~+70℃ 1.72 MPa for CL 250, EPDM: -20℃~+120℃ 1.72 MPa for CL 250 /Continuous Service Temp. 0℃~+100℃			NBR: 0℃~+70℃ 1.72 MPa for CL 250, EPDM: -20℃~+120℃ 1.72 MPa for CL 250 /Continuous Service Temp. 0℃~+100℃				NBR: 0℃~+70℃ 1.72 MPa for CL 250, EPDM: -20℃~+120℃ 1.72 MPa for CL 250 /Continuous Service Temp. 0℃~+100℃			NBR: 0℃~+70℃ 1.72 MPa for CL 250, EPDM: -20℃~+120℃ 1.72 MPa for CL 250 /Continuous Service Temp. 0℃~+100℃			
Reference Page		P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31				P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31			

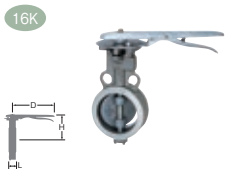
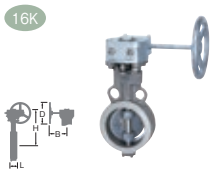
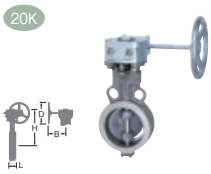
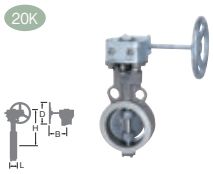
Type		DJF Series				DJF Series				FJ Series			FJ Series			
Butterfly Valve																
Fig		G-10DJFU(E)				G-16DJFU(E)				10FJUF			G-10FJUF			
End Connection		JIS B2239 10K FF				JIS B2239 16K FF				Wafer (JIS 10K)			Wafer (JIS 10K)			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	L	H	D	B
2	50									43	176	180	43	179	80	122
21/2	65									46	184	180	46	187	80	122
3	80									46	194	180	46	213	110	135
4	100	100	214	110	150	100	214	110	150	52	204	180	52	223	110	135
5	125	100	239	110	150	100	244	170	180	56	249	230	56	258	110	150
6	150	100	252	110	150	100	257	170	180	56	261	230	56	270	110	150
8	200	100	288	170	180	152	389	170	180				60	311	170	180
10	250	110	369	170	180	110	389	310	280				68	381	250	250
12	300	110	394	170	180	178	414	310	280				78	406	250	250
14	350	120	445	310	220	190	461	360	310				78	437	250	250
16	400	130	500	310	220	216	516	360	310				102	500	310	220
18	450	150	524	310	220	150	539	360	310				114	524	310	220
20	500	160	589	360	350	160	623	500	410				127	589	360	350
22	550	170	613	360	350	170	647	500	410							
24	600	170	637	360	350	170	671	500	410				154	637	360	350
Body		FCD450-10(ASTM A536)				FCD450-10(ASTM A536)				FCD450-10(ASTM A536)			FCD450-10(ASTM A536)			
Stem/Bottom Stem		410SS/420J2				410SS/420J2				410SS/403SS			410SS/403SS			
Disc		CF8				CF8				CF8			CF8			
O ring		NBR (E: EPDM)				NBR (E: EPDM)				FKM			FKM			
Rubber Seat		NBR (E: EPDM)				NBR (E: EPDM)				FKM			FKM			
Service Condition		NBR: 0℃~+70℃ 1.0MPa for 10K/1.6MPa for 16K, EPDM: -20℃~+120℃ 1.0MPa for 10K/1.6MPa for 16K				NBR: 0℃~+70℃ 1.0MPa for 10K/1.6MPa for 16K, EPDM: -20℃~+120℃ 1.0MPa for 10K/1.6MPa for 16K				5℃~+90℃ 1.0MPa up to 12"/0.5MPa for 14^{B} & above			5℃~+90℃ 1.0MPa up to 12"/0.5MPa for 14^{B} & above			
Reference Page		P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31				P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV31										

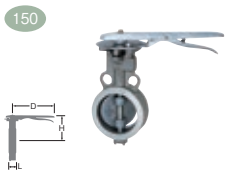
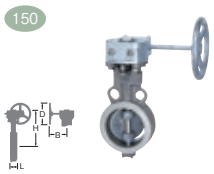
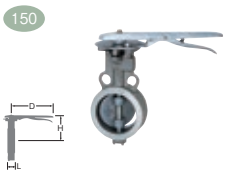
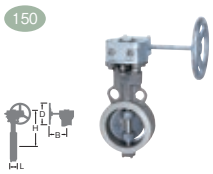
Type		NFJ Series			NFJ Series				NFJ Series			NFJ Series			
Butterfly Valve															
Fig		10NFJUE(W)			G-10NFJUE(W)				10NFJNE(W)			G-10NFJNE(W)			
End Connection		Wafer (JIS 10K)			Wafer (JIS 10K)				Wafer (JIS 10K)			Wafer (JIS 10K)			
inch	mm	L	H	D	L	H	D	B	L	H	D	L	H	D	B
2	50	43	176	180	43	179	80	122	43	176	180	43	179	80	122
21/2	65	46	184	180	46	187	80	122	46	184	180	46	187	80	122
3	80	46	194	180	46	213	110	135	46	194	180	46	213	110	135
4	100	52	204	180	52	223	110	135	52	204	180	52	223	110	135
5	125	56	249	230	56	258	110	150	56	249	230	56	258	110	150
6	150	56	261	230	56	270	110	150	56	261	230	56	270	110	150
8	200				60	311	170	180				60	311	170	180
10	250				68	381	250	250				68	381	250	250
12	300				78	406	250	250				78	406	250	250
Body		FCD450-10 + Nylon Lining			FCD450-10 + Nylon Lining				FCD450-10 + Nylon Lining			FCD450-10 + Nylon Lining			
Stem/Bottom Stem		410SS			410SS				410SS			410SS			
Disc		CF8			CF8				DI + Nylon Lining			DI + Nylon Lining			
O ring		EPDM (W: NBR)			EPDM (W: NBR)				EPDM (W: NBR)			EPDM (W: NBR)			
Rubber Seat		EPDM (W: W-NBR)			EPDM (W: W-NBR)				EPDM (W: W-NBR)			EPDM (W: W-NBR)			
Service Condition		CF8 Disc: 0℃~+60℃ 1.0 MPa, FCD450-10+Nylon Lining: 0℃~+40℃ 1.0 MPa			CF8 Disc: 0℃~+60℃ 1.0 MPa, FCD450-10+Nylon Lining: 0℃~+40℃ 1.0 MPa				CF8 Disc: 0℃~+60℃ 1.0 MPa, FCD450-10+Nylon Lining: 0℃~+40℃ 1.0 MPa			CF8 Disc: 0℃~+60℃ 1.0 MPa, FCD450-10+Nylon Lining: 0℃~+40℃ 1.0 MPa			

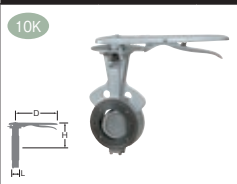
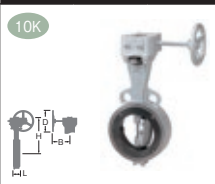
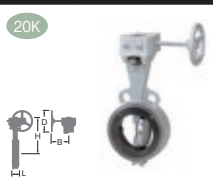
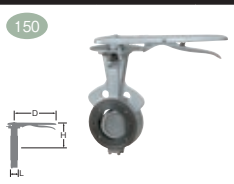
Type		NFJ Series			NFJ Series			LJ Series			LJ Series			
Butterfly Valve														
Fig		VG-10NFJUE(W)			VG-10NFJNE(W)			10LJF			G-10LJF			
End Connection		Wafer (JIS 10K)			Wafer (JIS 10K)			Wafer (JIS 10K)			Wafer (JIS 10K)			
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D	B
2	50	43	255	110	43	255	110	43	155	230	43	175	110	150
21/2	65	46	263	110	46	263	110	46	171	280	46	188	110	150
3	80	46	262	110	46	262	110	46	178	280	46	195	110	150
4	100	52	272	110	52	272	110	52	182	280	52	200	110	150
5	125	56	309	170	56	309	170	56	217	350	56	238	170	180
6	150	56	321	170	56	321	170	56	230	350	56	253	170	180
8	200	60	390	200	60	390	200				60	287	200	205
10	250	68	461	310	68	461	310				68	357	310	280
12	300	78	480	310	78	480	310				78	382	310	280
14	350										78	444	360	350
16	400										102	519	500	360
18	450										114	542	500	360
20	500										127	589	500	400
24	600										154	639	500	400
Body		FCD450-10 + Nylon Lining			FCD450-10 + Nylon Lining			FCD450-10(ASTM A536)			FCD450-10(ASTM A536)			
Stem/Bottom Stem		410SS			410SS			420J2			420J2			
Disc		CF8			DI + Nylon Lining			CF8 + PFA			CF8 + PFA			
O ring		EPDM (W: NBR)			EPDM (W: NBR)			FKM			FKM			
Rubber Seat		EPDM (W: W-NBR)			EPDM (W: W-NBR)			PFA			PFA			
Service Condition		CF8 Disc: 0℃~+60℃ 1.0 MPa, FCD450-10+Nylon Lining: 0℃~+40℃ 1.0 MPa			CF8 Disc: 0℃~+60℃ 1.0 MPa, FCD450-10+Nylon Lining: 0℃~+40℃ 1.0 MPa			-10℃~+150℃ 1.0 MPa			-10℃~+150℃ 1.0 MPa			
Reference Page								P-T Rating : Page BFV34			P-T Rating : Page BFV34			

Type		HDRJ Series (Throttroll)				HDRJ Series (Throttroll)				UB Series			UB Series			
Butterfly Valve		10K 				20K 				10K 			10K 			
Fig		G-10HRDJUE				G-20HRDJUE				10UB			GL-10UB			
End Connection		Wafer (JIS 10K)				Wafer (JIS 20K)				Wafer (JIS 10K)			Wafer (JIS 10K)			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	L	H	D	B
11/2	40									33	183	230	33	202	110	150
2	50	43	210	110	135	43	210	110	135	43	176	230	43	192	140	150
21/2	65	46	218	110	135	46	218	110	135	46	185	230	46	202	140	150
3	80	46	236	110	135	46	236	110	135	46	207	280	46	226	170	195
4	100	52	246	110	135	52	246	110	135	52	221	280	52	240	170	195
5	125	56	274	110	150	56	274	110	150	56	240	350	56	261	200	204
6	150	56	286	110	150	56	286	110	150	56	263	350	56	283	200	204
8	200	60	325	170	180	60	325	170	180				71	348	310	280
10	250	68	393	310	280	68	393	310	280				76	416	360	310
12	300	78	418	310	280	78	418	310	280				83	443	360	310
14	350												92	474	500	358
16	400												102	573	500	360
18	450												114	607	500	360
20	500												127	623	500	360
24	600												154	757	500	377
Body		FCD450-10(ASTM A536)				FCD450-10(ASTM A536)				CF8			CF8			
Stem/Bottom Stem		630SS				630SS				304SS			304SS			
Disc		CF8				CF8				CF8+Cr Plating			CF8+Cr Plating			
Packing/O ring		EPDM				EPDM				PTFE			PTFE			
Rubber Seat/Seat Ring		EPDM				EPDM				PTFE			PTFE			
Service Condition		Refer to Page BFV40				Refer to Page BFV40				-29℃~+160℃ 1.0 MPa			-29℃~+160℃ 1.0 MPa			
Reference Page		P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV39 & 40				P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV39 & 40				P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV36			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV36			
Remarks		Gear Operation with Locking Device				Gear Operation with Locking Device				Double Eccentric, Unidirectional			Double Eccentric, Unidirectional			

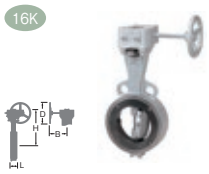
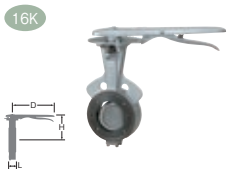
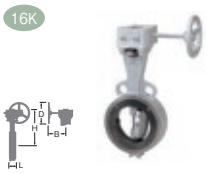
Type		UB Series			UB Series				UB Series			UB Series			
Butterfly Valve		10K 			10K 				16K 			16K 			
Fig		10UBM			GL-10UBM				16UB			GL-16UB			
End Connection		Wafer (JIS 10K)			Wafer (JIS 10K)				Wafer (JIS 16K)			Wafer (JIS 16K)			
inch	mm	L	H	D	L	H	D	B	L	H	D	L	H	D	B
11/2	40	33	183	230	33	202	110	150	33	183	230				
2	50	43	176	230	43	192	140	150	43	176	230				
21/2	65	46	185	230	46	202	140	150	46	186	230				
3	80	46	207	280	46	226	170	195	46	207	280				
4	100	52	221	280	52	240	170	195	52	221	280				
5	125	56	240	350	56	261	200	204	56	241	350				
6	150	56	263	350	56	283	200	204	56	263	350				
8	200				71	348	310	280							
10	250				76	416	360	310							
12	300				83	443	360	310							
14	350				92	474	500	358				92	474	500	358
16	400				102	573	500	360				102	572	500	360
18	450				114	607	500	360				114	607	500	360
20	500				127	623	500	360				127	623	500	360
24	600				154	757	500	377				154	757	500	377
Body		CF8M			CF8M				CF8			CF8			
Stem/Bottom Stem		316SS			316SS				304SS			304SS			
Disc		CF8M+Cr Plating			CF8M+Cr Plating				CF8+Cr Plating			CF8+Cr Plating			
Packing		PTFE			PTFE				PTFE			PTFE			
Seat Ring		PTFE			PTFE				PTFE			PTFE			
Service Condition		-29℃~+160℃ 1.0 MPa			-29℃~+160℃ 1.0 MPa				-29℃~+160℃ 2.0 MPa			-29℃~+160℃ 1.4MPa			
Reference Page		P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV36			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV36				P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV36			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV36			
Remarks		Double Eccentric, Unidirectional			Double Eccentric, Unidirectional				Double Eccentric, Unidirectional			Double Eccentric, Unidirectional			

Type		UB Series			UB Series				UB Series				UB Series			
Butterfly Valve		16K 			16K 				20K 				20K 			
Fig		16UBM			GL-16UBM				GL-20UB				GL-20UBM			
End Connection		Wafer (JIS 16K)			Wafer (JIS 16K)				Wafer (JIS 20K)				Wafer (JIS 20K)			
inch	mm	L	H	D	L	H	D	B	L	H	D	B	L	H	D	B
11/2	40	33	183	230					33	202	110	150				
2	50	43	176	230					43	192	140	150	43	192	140	150
21/2	65	46	186	230					46	202	140	150	46	202	140	150
3	80	46	207	280					46	226	170	195	46	226	170	195
4	100	52	221	280					52	240	170	195	52	240	170	195
5	125	56	241	350					56	261	200	204	56	261	200	204
6	150	56	263	350					56	283	200	204	56	283	200	204
8	200								71	348	310	280	71	348	310	280
10	250								76	416	360	310	76	416	360	310
12	300								83	443	360	310	83	443	360	310
14	350				92	474	500	358								
16	400				102	572	500	360								
18	450				114	607	500	360								
20	500				127	623	500	360								
24	600				154	757	500	377								
Body		CF8M			CF8M				CF8				CF8M			
Stem/Bottom Stem		329J1			329J1				304SS				329J1			
Disc		CF8M+Cr Plating			CF8M+Cr Plating				CF8+Cr Plating				CF8M+Cr Plating			
Packing		PTFE			PTFE				PTFE				PTFE			
Seat Ring		PTFE			PTFE				PTFE				PTFE			
Service Condition		-29℃~+160℃ 2.0 MPa			-29℃~+160℃ 1.4MPa				-29℃~+160℃ 2.0 MPa				-29℃~+160℃ 2.0 MPa			
Reference Page		P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV36			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV36				P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV36				P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV36			
Remarks		Double Eccentric, Unidirectional			Double Eccentric, Unidirectional				Double Eccentric, Unidirectional				Double Eccentric, Unidirectional			

Type		UB Series			UB Series				UB Series			UB Series			
Butterfly Valve		150 			150 				150 			150 			
Fig		150UB			GL-150UB				150UBM			GL-150UBM			
End Connection		Wafer (ASME CL. 150)			Wafer (ASME CL. 150)				Wafer (ASME CL. 150)			Wafer (ASME CL. 150)			
inch	mm	L	H	D	L	H	D	B	L	H	D	L	H	D	B
11/2	40	33	183	230	33	202	110	150	33	183	230	33	202	110	150
2	50	43	176	230	43	192	140	150	43	176	230	43	192	140	150
21/2	65	46	186	230	46	202	140	150	46	186	230	46	202	140	150
3	80	46	207	280	46	226	170	195	46	207	280	46	226	170	195
4	100	52	221	280	52	240	170	195	52	221	280	52	240	170	195
5	125	56	241	350	56	261	200	204	56	241	350	56	261	200	204
6	150	56	263	350	56	283	200	204	56	263	350	56	283	200	204
8	200				71	348	310	280				71	348	310	280
10	250				76	416	360	310				76	416	360	310
12	300				83	443	360	310				83	443	360	310
14	350				92	476	500	358				92	476	500	358
16	400				102	572	500	360				102	572	500	360
18	450				114	607	500	360				114	607	500	360
20	500				127	623	500	360				127	623	500	360
24	600				154	757	500	377				154	757	500	377
Body		CF8			CF8				CF8M			CF8M			
Stem/Bottom Stem		304SS			304SS				329J1			329J1			
Disc		CF8+Cr Plating			CF8+Cr Plating				CF8M+Cr Plating			CF8M+Cr Plating			
Packing		PTFE			PTFE				PTFE			PTFE			
Seat Ring		PTFE			PTFE				PTFE			PTFE			
Service Condition		-29℃~+160℃ 1.9 MPa			-29℃~+160℃ 1.9 MPa up to 12[B]/1.4MPa for 14[B] & above				-29℃~+160℃ 1.9 MPa			-29℃~+160℃ 1.9 MPa up to 12[B]/1.4MPa for 14[B] & above			
Reference Page		P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV36			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV36				P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV36			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV36			
Remarks		Double Eccentric, Unidirectional			Double Eccentric, Unidirectional				Double Eccentric, Unidirectional			Double Eccentric, Unidirectional			

Type		HB Series			HB Series				HB Series				HB Series		
Butterfly Valve		10K 			10K 				20K 				150 		
Fig		10UHB			G-10UHB				G-20UHB				150UHB		
End Connection		Wafer (JIS 10K)			Wafer (JIS 10K)				Wafer (JIS 16K/20K)				Wafer (ASME CL. 150)		
inch	mm	L	H	D	L	H	D	B	L	H	D	B	L	H	D
11/2	40	33	183	230	33	202	110	150	33	202	110	150	33	183	230
2	50	43	190	230	43	209	110	150	43	209	110	150	43	190	230
21/2	65	46	203	230	46	222	110	150	46	222	110	150	46	203	230
3	80	46	223	280	46	240	110	150	46	240	110	150	46	223	280
4	100	52	237	280	52	254	110	150	52	254	110	150	52	237	280
5	125	56	258	350	56	280	170	180	56	280	170	180	56	258	350
6	150	56	275	350	56	297	170	180	56	297	170	180	56	275	350
8	200				60	324	200	205	60	324	200	205			
10	250				68	401	310	220	68	401	310	220			
12	300				78	429	310	220	78	429	310	220			
Body		CF8			CF8				CF8				CF8		
Stem/Bottom Stem		304SS			304SS				304SS				304SS		
Disc		CF8+Cr Plating			CF8+Cr Plating				CF8+Cr Plating				CF8+Cr Plating		
Packing		PTFE			PTFE				PTFE				PTFE		
Seat Ring		C/F PTFE			C/F PTFE				C/F PTFE				C/F PTFE		
Service Condition		-29℃~+200℃ 1.4 MPa			-29℃~+200℃ 1.4 MPa				-29℃~+200℃ 2.0 MPa				-29℃~+200℃ 1.9 MPa		
Reference Page		P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV38			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV38				P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV38				P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV38		
Remarks		Double Eccentric, Bidirectional			Double Eccentric, Bidirectional				Double Eccentric, Bidirectional				Double Eccentric, Bidirectional		

Type		HB Series				HB Series			HB Series				HB Series		
Butterfly Valve		150 				10K 			10K 				16K 		
Fig		G-150UHB				10SHB			G-10SHB				16SHB		
End Connection		Wafer (ASME CL. 150)				Wafer (JIS 10K)			Wafer (JIS 10K)				Wafer (JIS 16K/20K)		
inch	mm	L	H	D	B	L	H	D	L	H	D	B	L	H	D
11/2	40	33	202	110	150										
2	50	43	209	110	150	43	190	230	43	209	110	150	43	190	230
21/2	65	46	222	110	150	46	203	230	46	222	110	150	46	203	230
3	80	46	240	110	150	46	223	280	46	240	110	150	46	223	280
4	100	52	254	110	150	52	237	280	52	254	110	150	52	237	280
5	125	56	280	170	180	56	258	350	56	280	170	180	56	258	350
6	150	56	297	170	180	56	275	350	56	297	170	180	56	275	350
8	200	60	324	200	205				60	324	200	205			
10	250	68	401	310	220				68	401	310	220			
12	300	78	429	310	220				78	429	310	220			
Body		CF8				FCD450-10(ASTM A536)			FCD450-10(ASTM A536)				FCD450-10(ASTM A536)		
Stem/Bottom Stem		304SS				420J2			420J2				420J2		
Disc		CF8+Cr Plating				CF8+Cr Plating			CF8+Cr Plating				CF8+Cr Plating		
Packing		PTFE				PTFE			PTFE				PTFE		
Seat Ring		C/F PTFE				C/F PTFE			C/F PTFE				C/F PTFE		
Service Condition		-29℃~+200℃ 1.9 MPa				-10℃~+200℃ 1.4 MPa			-10℃~+200℃ 1.4 MPa				-10℃~+200℃ 2.0 MPa		
Reference Page		P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV38				P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV38			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV38				P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV38		
Remarks		Double Eccentric, Bidirectional				Double Eccentric, Bidirectional			Double Eccentric, Bidirectional				Double Eccentric, Bidirectional		

Type		HB Series				HB Series			HB Series			
Butterfly Valve		16K 				16K 			16K 			
Fig		G-16SHB				150SHB			G-150SHB			
End Connection		Wafer (JIS 16K/20K)				Wafer (ASME CL. 150)			Wafer (ASME CL. 150)			
inch	mm	L	H	D	B	L	H	D	L	H	D	B
2	50	43	209	110	150	43	190	230	43	209	110	150
21/2	65	46	222	110	150	46	203	230	46	222	110	150
3	80	46	240	110	150	46	223	280	46	240	110	150
4	100	52	254	110	150	52	237	280	52	254	110	150
5	125	56	280	170	180	56	258	350	56	280	170	180
6	150	56	297	170	180	56	275	350	56	297	170	180
8	200	60	324	200	205				60	324	200	205
10	250	68	401	310	220				68	401	310	220
12	300	78	429	310	220				78	429	310	220
Body		FCD450-10(ASTM A536)				FCD450-10(ASTM A536)			FCD450-10(ASTM A536)			
Stem/Bottom Stem		420J2				420J2			420J2			
Disc		CF8+Cr Plating				CF8+Cr Plating			CF8+Cr Plating			
Packing		PTFE				PTFE			PTFE			
Seat Ring		C/F PTFE				C/F PTFE			C/F PTFE			
Service Condition		-10℃~+200℃ 2.0 MPa				-10℃~+200℃ 1.9 MPa			-10℃~+200℃ 1.9 MPa			
Reference Page		P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV38				P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV38			P-T Rating/Flow Characteristics/ Pressure Loss : Page BFV38			
Remarks		Double Eccentric, Bidirectional				Double Eccentric, Bidirectional			Double Eccentric, Bidirectional			

CP Series (Double/Triple Eccentric)

(Double/Triple Eccentric)
Product Coding

G- 10 U CPD L H M
① ② ③ ④ ⑤ ⑥ ⑦

①Valve Operation
None: Lever
G: Gear
E: Electric Actuator
YS: Pneumatic Actuator (Spring Return)
Y: Pneumatic Actuator

②Class
150, 300, 10-30K, PN10-40 for CPD Series
150-2500, 10-40K, PN10-40 for CPT Series

③Symbol of Shell Material
SC: Carbon Steel
U: Stainless Steel

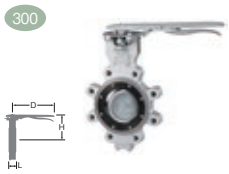
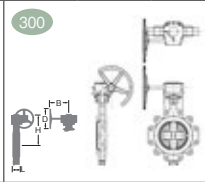
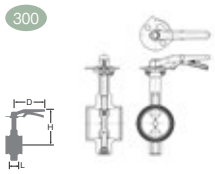
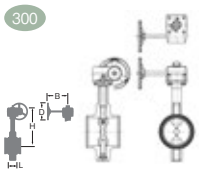
④Series
CPD Series: Double Eccentric
CPC Series: Double Eccentric (JIS 30K Rubber Seat)
CPT Series: Tripple Eccentric

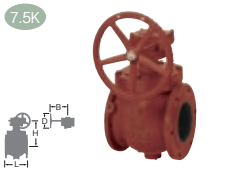
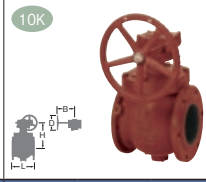
⑤End Connection
None: Wafer
L: Lugged
F: Flanged

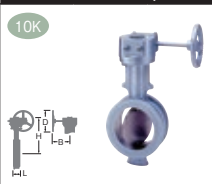
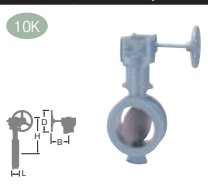
⑥Seat Material
"For CPD/CPC Series of ④"
None (or ST) PTFE
H (ot FM) Metal
FS (or TF) PTFE + Metal
RN (or RS) NBR
RE (or RS) EPDM
RF (or RS) FKM
"For CPT Series of ④"
None (or TE) Laminated (Metal + Graphite or PTFE)

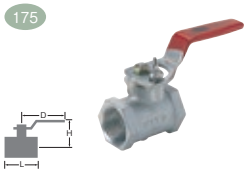
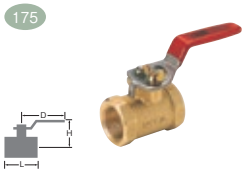
⑦Shell Material
For U: None:CF8, M:CF8M
For SC: None:WCB, CL:LCC, BL:LCB

Type		HBS Series (Dead End)			HBS Series (Dead End)		
Butterfly Valve		150 NO IMAGE			150 NO IMAGE		
Fig		150SCHBSL			G-150SCHBSL		
End Connection		Lugged (ASME CL. 150)			Lugged (ASME CL. 150)		
inch	mm	L	H	D	L	H	D
2	50						
21/2	65	46	216	120			
3	80	48	229	131			
4	100	54	248	156			
5	125	57	265	187			
6	150				57	300	215
8	200				64	366	267
10	250				71	405	329
12	300						
Body		WCB			WCB		
Stem/Bottom Stem		420J2			420J2		
Disc		CF8M+HCr			CF8M+HCr		
Packing		PTFE			PTFE		
Seat Ring		C/F PTFE			C/F PTFE		
Service Condition		-29~204℃ 1.96 MPa			-29~204℃ 1.96 MPa		
Reference Page							
Remarks		Double Eccentric, Bidirectional, Dead End Service			Double Eccentric, Bidirectional, Dead End Service		

Type		HBS Series (Dead End)			HBS Series (Dead End)				GE Series (Dead End)			GE Series (Dead End)			
Butterfly Valve															
Fig		300SCHBSL			G-300SCHBSL				300SGECE			G-300SGECE			
End Connection		Lugged (ASME CL. 300)			Lugged (ASME CL. 300)				Grooved (AWWA C606-15)			Grooved (AWWA C606-15)			
inch	mm	L	H	D	L	H	D	B	L	H	D	L	H	D	B
2	50								81	188	180	81	192	80	122
21/2	65	46	221	230					96.8	197	180	96.8	200	80	122
3	80	48	235	280					96.8	214	180	96.8	233	110	135
4	100	54	255	280					115.8	225	180	115.8	244	110	135
5	125	59	273	350					147.6	263	230	147.6	272	110	150
6	150				59	315	170	180	147.6	276	230	147.6	284	110	150
8	200				73	379	310	220				133.4	324	170	180
10	250				83	422	310	220				158.8	377	250	251
12	300				92	477	360	350				165.1	405	250	251
Body		WCB			WCB				FCD450-10 + Nylon Lining			FCD450-10 + Nylon Lining			
Stem/Bottom Stem		420J2			420J2				410SS/420J2			410SS/420J2			
Disc		CF8M+HCr			CF8M+HCr				CF8+Cr Plating			CF8+Cr Plating			
Packing/O ring		PTFE			PTFE				FCD450-10 + EPDM*			FCD450-10 + EPDM*			
Seat Ring		G/F PTFE			G/F PTFE				EPDM			EPDM			
Standard/Approval									NSF61			NSF61			
Service Condition		-29℃~+100℃ for Air Conditioning 5.1 MPa			-29℃~+100℃ for Air Conditioning 5.1 MPa				-20℃~+110℃ 2.1 MPa/Continuous Service Temp. 0℃~+100℃			-20℃~+110℃ 2.1 MPa/Continuous Service Temp. 0℃~+100℃			
Reference Page		P-T Rating : API 609			P-T Rating : API 609										
Remarks		Double Eccentric, Bidirectional, Dead End Service			Double Eccentric, Bidirectional, Dead End Service				Dead End Service			Dead End Service			
									* Chlorine Resistance			* Chlorine Resistance			

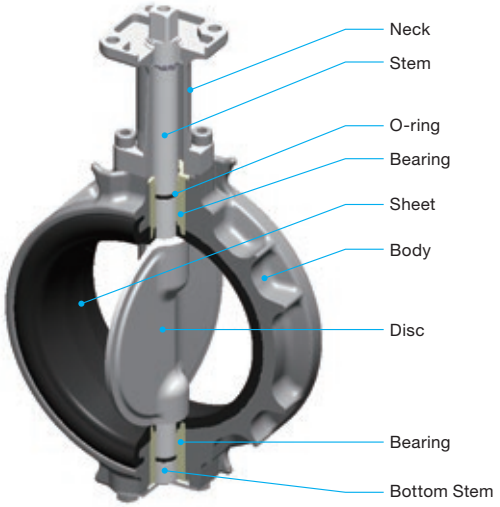
Type		DRAIN Series				DRAIN Series				DRAIN Series				DRAIN Series			
Butterfly Valve																	
Fig		G-7.5SVB				G-10SVB				G-7.5SGBFS				G-10SGBFS			
End Connection		Flanged (JIS G5527 7.5K)				Flanged (JIS G5527 10K*)				Flanged (JWWA B138 7.5K)				Flanged (JWWA B138 10K)			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	B	L	H	D	B
3	75/80	240	233	110	127	240	233	110	127								
4	100	250	255	170	183	250	255	170	183								
5	125	260	339	310	284	260	339	310	284								
6	150	280	351	310	284	280	351	310	284								
8	200	300	381	310	285	300	381	310	285	300	395	430	273	300	395	430	273
10	250	380	421	360	315	380	421	360	315	380	415	430	273	380	415	430	273
12	300	400	441	360	316	400	441	360	316	400	445	430	273	400	445	430	273
14	350									430	470	430	273	430	470	430	273
16	400									470	520	430	378	470	520	430	378
18	450									500	555	430	378	500	585	430	378
20	500									530	590	430	378	530	620	430	378
24	600									560	695	630	418	560	695	630	418
28	700									610	755	630	418	610	770	630	502
32	800									690	855	630	502	690	870	730	597
36	900									740	940	730	597	740	940	730	597
40	1000									770	1000	730	597	770	1000	730	597
44	1100									800	1065	730	597	800	1105	730	749
48	1200									820	1170	730	749	820	1170	730	749
54	1350									850	1265	730	749	850	1280	630	661
60	1500									900	1375	630	661	900	1375	630	661
Body		FCD450-10				FCD450-10				FCD450-10				FCD450-10			
Stem/Bottom Stem		304SS				304SS				403SS				304SS			
Disc		CF8				CF8				DI+Cr Free Anti-rust Paint				CF8			
O-ring		CR (JIS K6353)				CR (JIS K6353)				CR (JIS K6353)				CR (JIS K6353)			
Seat Ring		304SS+CR Rubber (JIS K6353)				304SS+CR Rubber (JIS K6353)				304SS+CR Rubber (JIS K6353)				304SS+CR Rubber (JIS K6353)			
Rotation Direction		Counterclockwise to Open**				Counterclockwise to Open**				Counterclockwise to Open**				Counterclockwise to Open**			
Service Condition		Static Water Ambient Temp. 0.74MPa				Static Water Ambient Temp. 0.98MPa				Static Water Ambient Temp. 0.75MPa				Static Water Ambient Temp. 1.0MPa			
Remarks		Internal: Epoxy Resin Paint** External: Anti-rust Paint** Face to Face: JIS B2064 End Flange of 125A: JIS B2062				Internal: Epoxy Resin Paint** External: Anti-rust Paint** Face to Face: JIS B2064 End Flange of 125A: JIS B2062				Internal: Epoxy Resin Paint** External: Epoxy Resin Primer**				Internal: Epoxy Resin Paint** External: Epoxy Resin Primer**			
		**Other Options: Available				*Flange Outside Dia.: KITZ STD				**Other Options: Available				**Other Options: Available			

Type		Damper			Damper				Damper			Damper			
Butterfly Valve		10K 			10K 				10K 			10K 			
Fig		10D			GL-10D				10A			GL-10A			
End Connection		Wafer (JIS 10K)			Wafer (JIS 10K)				Wafer (JIS 10K)			Wafer (JIS 10K)			
inch	mm	L	H	D	L	H	D	B	L	H	D	L	H	D	B
2	50	40	183	200	40	198	110	150	40	183	200	40	198	110	150
21/2	65	45	191	200	45	206	110	150	45	191	200	45	206	110	150
3	80	50	198	200	50	213	110	150	50	198	200	50	213	110	150
4	100	60	208	200	60	223	110	150	60	208	200	60	223	110	150
5	125	65	237	280	65	249	170	190	65	237	280	65	249	170	190
6	150	70	247	280	70	259	170	190	70	247	280	70	259	170	190
8	200	80	272	280	80	284	170	190	80	272	280	80	284	170	190
10	250	90	340	350	90	355	170	195	90	340	350	90	355	170	195
12	300	100	365	350	100	380	170	195	100	365	350	100	380	170	195
Body		FC250+HCr			FC250+HCr				FC250+HCr			FC250+HCr			
Stem/Bottom Stem		403SS			403SS				403SS			403SS			
Disc		430SS			430SS				430SS			430SS			
Packing		Flexible Graphite			Flexible Graphite				Flexible Graphite			Flexible Graphite			
Service Condition		0℃~+230℃ 0.5 MPa			0℃~+230℃ 0.5 MPa				0℃~+230℃ 0.5 MPa			0℃~+230℃ 0.5 MPa			
Reference Page		Flow Coefficient (Cv)/Flow Characteristics : Page BFV41			Flow Coefficient (Cv)/Flow Characteristics : Page BFV41				Flow Coefficient (Cv)/Flow Characteristics : Page BFV41			Flow Coefficient (Cv)/Flow Characteristics : Page BFV41			
Remarks		Max. Allowable Leakage: 3% of Normal Cv Value			Max. Allowable Leakage: 3% of Normal Cv Value				Max. Allowable Leakage: 2% of Normal Cv Value			Max. Allowable Leakage: 2% of Normal Cv Value			

Type		Special BUTTERFLY Series			Special BUTTERFLY Series		
Butterfly Valve		175 			175 		
Fig		UV			FV		
End Connection		BS21 (JIS B0203)			BS21 (JIS B0203)		
inch	mm	L	H	D	L	H	D
1/2	15	43	45	85	47	45	85
3/4	20	47	47	85	51	47	85
1	25	56	50	85	58	50	85
11/4	32	63	60	110	67	60	110
11/2	40	69	64	110	73	64	110
2	50	77	70	110	82	70	110
Body		CF8			B283 C37700		
Stem/Bottom Stem		304SS			304SS		
Disc		304SS + W-NBR			304SS + W-NBR		
Packing/O ring		NBR			NBR		
Handle		430SS			430SS		
Service Condition		W.O.G. Non-shock 1.21MPa(175psi) (DO NOT USE against Flammable Gas or Toxic Gas.)			W.O.G. Non-shock 1.21MPa(175psi) (DO NOT USE against Flammable Gas or Toxic Gas.)		
Reference Page		Flow Rate/Pressure Loss/Cv : Page BFV42			Flow Rate/Pressure Loss/Cv : Page BFV42		
Remarks		Balancing Stop Handle Lever			Balancing Stop Handle Lever		

XJ Series | Aluminum Butterfly Valves

KITZ XJ Series Aluminum Butterfly Valves: Featuring unique style for neck designs (U.S.P. No. 6676109) to accommodate various piping designs, piping positions and installation environments.



Specification

Class	JIS 10K	Class 150	PN16
Maximum Service Pressure	1 MPa	1 MPa	1.6 MPa (16 bar)
Service Temperature Range*1	–20°C to +120°C		
Continuous Service Temperature Range*2	–20°C to +100°C		
Face to Face Dimension	API609, BS EN558 Basic Series20 ISO 5752-20, JIS B 2002 46 Series		
Coupling Flanges	JIS B 2220/ 2239 10K	ASME Class 150 JIS B 2220/ 2239 10K *3	EN1092 PN16*3

*1 Condition: Unfrozen Fluid.
*2 Refer to P-T Rating.
*3 With Centering Sleeves.
Refer to Product Range Chart in Page BFV29 and Precautions in Page BFV43 for details.

Cv Value

Size		CV
DN	NPS	
40	1 1/2	77
50	2	99
65	2 1/2	205
80	3	372
100	4	723

Size		CV
DN	NPS	
125	5	1100
150	6	1820
200	8	2780
250	10	4350
300	12	6860

Standard Material

Parts	Materials
Body	Aluminum Die-Cast/ASTM B85-84-383.0 equivalent
Neck	304 SS
Stem	SUS410/ASTM A276 Type 410 equivalent
Disc	A351 Gr. CF8M
O-ring	EPDM
Rubber seat	EPDM
Bottom stem	SUS410/ASTM A276 Type 410 equivalent
Bearing	Metal Backed PTFE (Size 10^B and 12^B) Polyphenylenesulfide (10XJMEA : Size $1\frac{1}{2}^B$ to 8^B) Bronze : CAC401 (PN16XJME : Size 2^B to 8^B)

* Please refer to the drawing of deliverables for detail.

Features

Choice of Two Neck Designs

Long neck type and short neck type are available for variety of applications.

Easy Valve-to-Flange Centering

Light weight in aluminum die-cast body (which is only one third of the weight of KITZ' conventional cast iron butterfly valves) eases valve-to-flange centering in installing valves to pipeline.

Wide Range of Service Applications

Austenitic stainless steel disc and EPDM* rubber seat is able to handle various types of line fluid without risk of corrosion.

* EPDM: Ethylene Propylene Diene Terpolymer

Stabilized Operating Torque

Pair of stem bearings assembled around top and bottom stems prevents stem galling and stabilizes valve operating torque for smooth and trouble-free disc rotation.

On-the-Spot Actuator Assembly

Actuator mounting pad of all neck types are designed to conform ISO 5211 requirements for direct on-site mounting of actuators.

Dew Condensation Prevention (Long Neck Type)

Long stainless steel neck blocks fluid heat transfer to the operating device of valves, therefore, insulation is not required on the operating devices. Dew condensation is also minimized for gear-operated valves used in cold water services.

Rust Prevention

Main parts, such as stem, disc, neck and neck connector end plate and small parts, such as stopper plates, washers and bolts are all made of stainless steel for high-grade rust prevention.

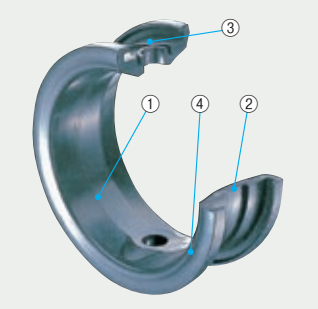
S-shaped Spherical Disc for High Sealing Performance (Patented)

KITZ' original cross-section S-shaped disc with spherical surface makes evenly tight contact with rubber liners for excellent sealing performance with reduced operating torque. Complete 360° shut-off mechanism helps to extend service life of rubber liners. (Size≧ 2inches)

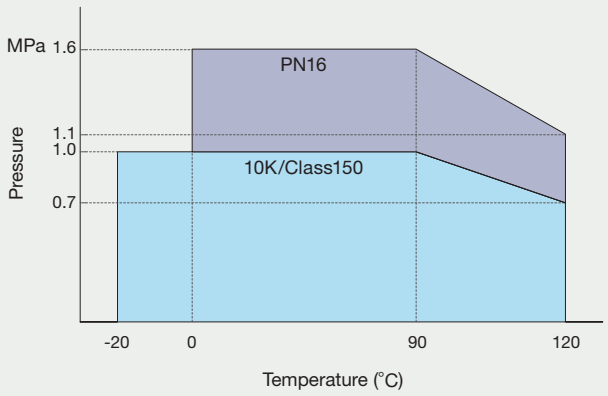
Carefully designed KITZ' EPDM seats have unique features which ensures functional stability, sealing performance and long life;

- Self-reinforced ribbing
- Wide disc seating contact
- Dual stem seal bearings

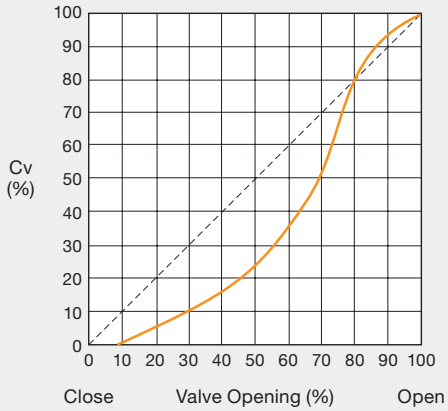
①Wide disc seating contact for high sealing performance.
②Reinforced ribbing minimizes valve operating problems such as distortion, skidding, and exfoliation of rubber liners caused by line pressure load and friction with metal discs.
③Stem seal bearings are assembled on the top and bottom stems for stable sealing.
④Gasketless flange sealing contact for easy valve mounting.



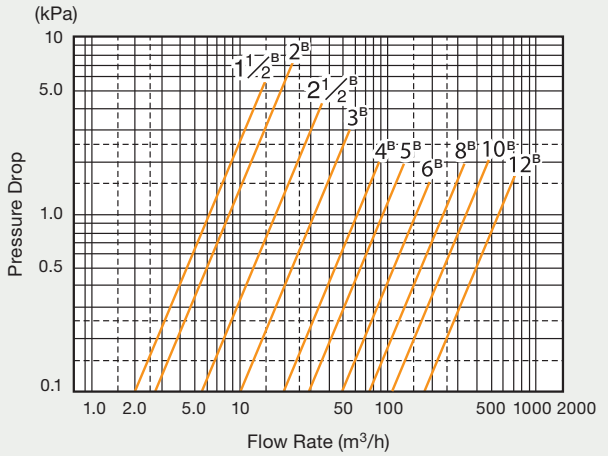
P-T Rating



Flow Characteristics



Pressure Loss



Long Neck Type

Dew Condensation Prevented

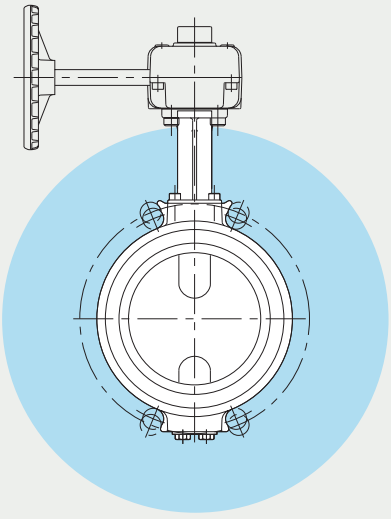


Features
- Long stainless steel neck reduces conductivity of fluid heat and prevents dew condensation.
- Available in variety of valve body and neck design for insulation.
- Choice of actuators for automated valve operation.

Applications
- Building utilities.
- Piping networks for cold water, hot water, and other water supply.

Valve Insulation
Recommended area for insulation is shown below in blue.

Long Neck Type
(G-10XJME)



Note: Not available in short neck type.

Short Neck Type

Compact Design

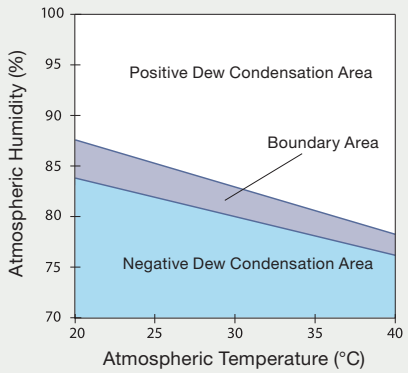


Features
- Suitable for installation in limited space.
- Choice of actuators in automated valve operation.

Applications
- Building utilities.
- Plant facilities.
- Water treatment facilities.
- Industrial machinery operation.

Dew Condensation Test
Samples of KITZ XJ Series butterfly valves equipped with long neck (KITZ Product Code: G-10XJMEA) were tested at KITZ laboratory under conditions in below 'Test Conditions'. Temperature in lower surface of gear box, ambient temperature and ambient humidity was measured as variable function. Dew condensation boundary is estimated to illustration in below chart.

G-10XJMEA Estimated Dew Condensation Boundary



Test Conditions
- Line Fluid : +5°C Cold Water
- Atmospheric Temperature Range : +20℃ to +40℃
- Valve Insulation: 50mm glass wool (JIS A 9501) surrounding tested valve with gear box exposed to open air.

Note: Estimation shown above is a result of tests in summary carried out within test basin at constant temperature and humidity, and does not necessarily represent absolute values. Kindly note dew condensation prevention properties of tested valves may be affected by the changes in testing conditions, such as variation in degree of air transfer, line fluid temperature, atmospheric humidity or condition of insulation. Acceptance allowance of ±5% beyond boundary is recommended.

DJ Series | Ductile Iron Butterfly Valves

Through pursuit of functions required for butterfly valves, a variety of product range is available to comply with user's requirements.

Specification

Maximum Service Pressure			
ASME 150	1.03 MPa	10K	1.0 MPa
ASME 200	1.38 MPa	16K	1.6 MPa
ASME 250	1.72 MPa	20K	2.0 MPa
PN16	1.6 MPa		
PM25	2.5 MPa		

Service Temperature Range	
NBR (Buna-N) Seat	0°C to + 70°C
EPDM Seat	-20°C to + 120°C
Continuous Service Temperature Range	0°C to + 100°C

Applicable Standards	
Valve Design	API 609, MSS-SP 67, EN 593, JIS B 2032
Face to Face Dimensions	API 609 Category A, MSS-SP 67 W-1: Size 2^B to 14^B W-2: Size 16^B to 24^B
	EN 558 Basic Series 20, ISO 5752 20Series, JIS B 2002 46 Series

Coupling Flanges	
Wafer Type	ASME Class 150/200/250
	EN 1092 PN10: DN 50 to DN 350, PN16: All sizes PN25: DN 50 to DN 300
	BS 10 Table D/Table E
	JIS 10K/16K/20K
Lugged Type	ASME Class 150/200/250
	EN 1092 PN10: DN 50 to DN 150, PN16: All sizes PN25: DN 50 to DN 300

Features

Non-Peeling Seat-to-Body Construction

Molded-in (bonded) seat structure is employed for size 2^B to 12^B (DN50 to DN300). Larger size valves are provided with replaceable seat. This non-peeling, seat-to-body construction assures maintenance free application for high velocity fluid service*1, vacuum service*2 and handling surging fluid velocity. It also guarantees peel-free valve installation in pipeline.

*1 Maximum 4 meters/second for valves up to size 12^B (DN300) and 3 meters/second for sizes 14^B (DN350) and above.

*2 Vacuum service is optional for sizes 14^B and above. (Up to 30 Torr.)

Spherical Design for Discs and Seats

Rubber seats are spherically designed to contact with top and bottom stems. Widely designed rubber seats are protected from peeling or deformation for prolonged service life of the valve. Thinly streamlined metal disc is the result of elaborate laboratory studies ultimately minimize pressure loss.

Choice of Materials and Operating Devices

Choice among 4 disc and 2 seat materials, manual, pneumatic or electric valve operating devices makes service application highly versatile.

Integral ISO 5211 Actuator Mounting Flange

Any pneumatic or electric valve actuators provided with ISO 5211 valve mounting flanges can easily be mounted for actuation.

Low Operating Torque

Designed to low operating torque for extension of valve's service life and economic consideration in selection of valve's operating device.

Lightly-Designed for Operation Efficiency

For operation efficiency in piping, XJ Series is designed much lighter in weight than our conventional series.

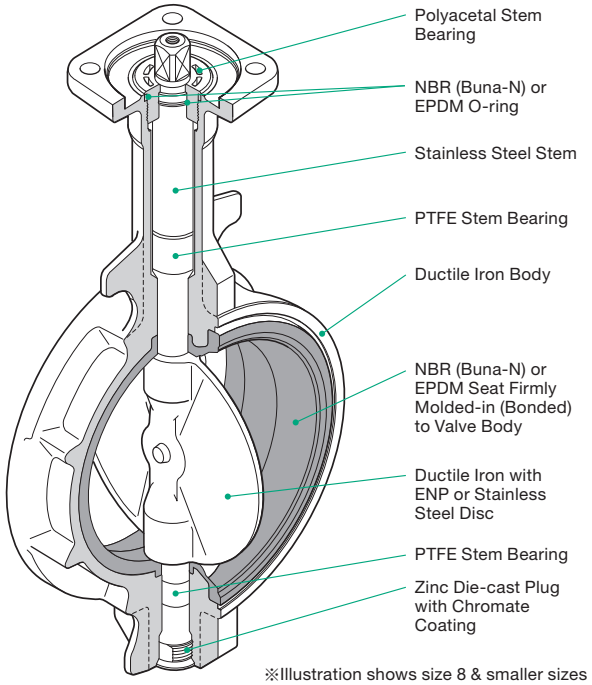
Emission-Free Stem Sealing Mechanism

Prevention of external fluid leakage is maximized with a rubber O-ring around top stem, tight contact between spherically designed rubber seat and spherically designed disc at top & bottom ends.

Dew Condensation Prevention

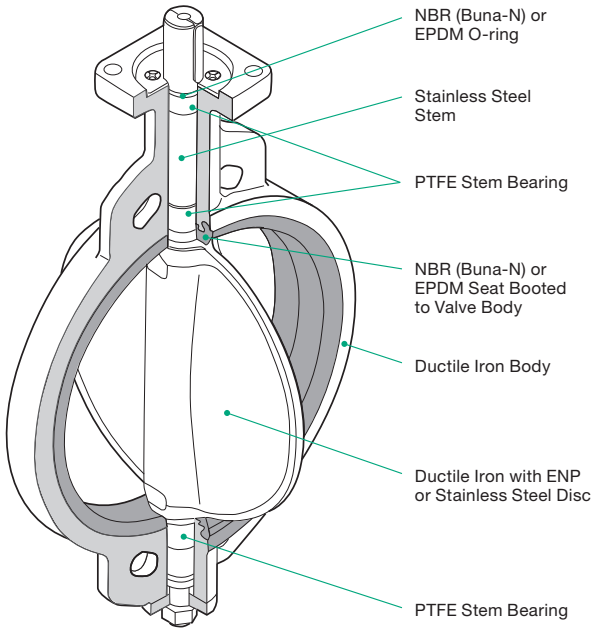
Dew condensation prevention type is available optionally with heat insulating plate (Sizes 2^B to 6^B/DN50 to DN150) or stainless steel stand (Sizes 8^B to 24^B/DN200 to DN600).

Molded-in (Bonded) Seat Structure (Size 2^B to 12^B)*1



※Illustration shows size 8 & smaller sizes

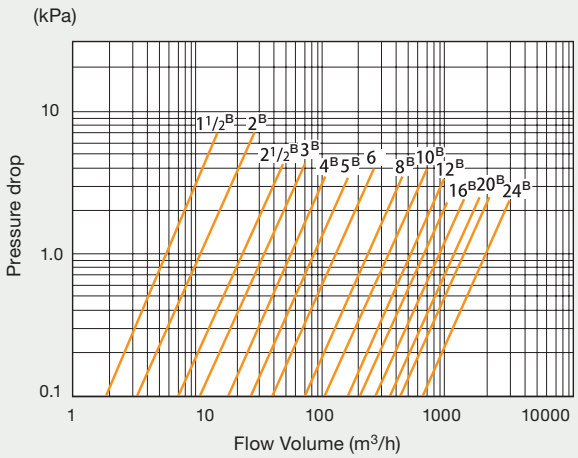
Replaceable Seat Structure (Size 14^B to 24^B)*2



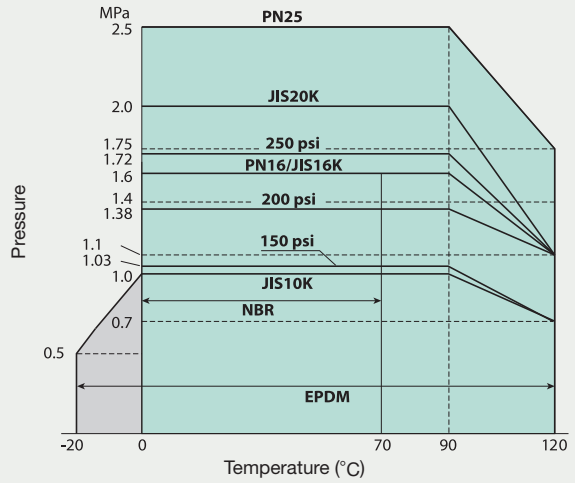
Flow Coeffient (Cv)

Size		Cv Value
DN	NPS	
40	1 1/2	77
50	2	124
65	2 1/2	270
80	3	397
100	4	671
125	5	1013
150	6	1532
200	8	2792
250	10	4025
300	12	6010
350	14	7525
400	16	10080
450	18	13120
500	20	15990
600	24	23690

Pressure Loss (for handling static clean water with valve fully open)

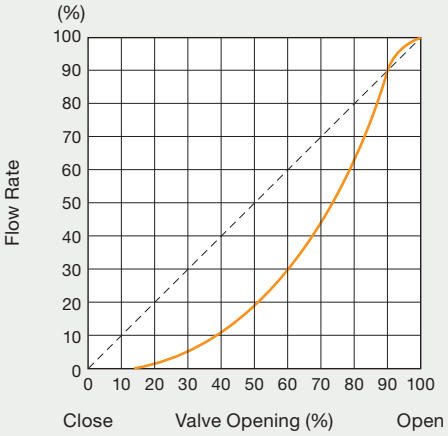


P-T Rating



Note: P-T rating for sub-zero application is optionally available.
Contact KITZ for technical advice when service conditions may exceed P-T rating limited in above.

Flow Characteristics

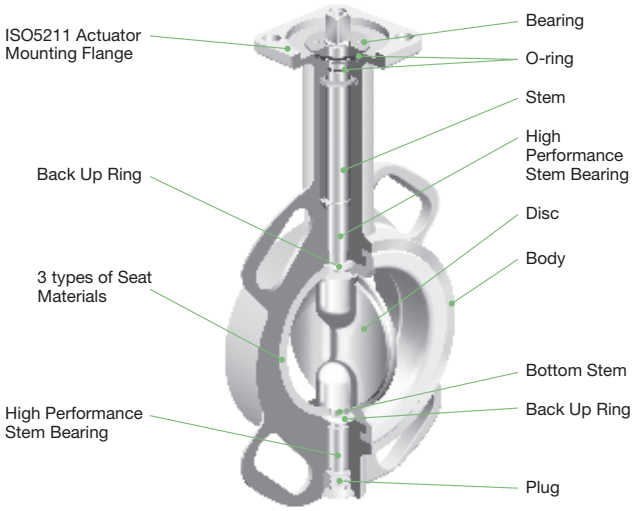


Standard Materials

Parts		Material
Body		Ductile Iron
		Cast Iron (JIS 10K design Size 14B to 24B)
Stem Bottom Stem		410 SS/420 SS
Disc		Ductile Iron (Ni-plated)/304SS/316SS /Aluminum Bronze (See Explanation of Product Code)
Seat O-ring		NBR (Buna-N)/EPDM (See Explanation of Product Code)
Bearing		Polyacetal/Glass Filled PTFE/Metal Backed PTFE
Plug (Size 2B to 8B)		Zinc Die-cast (Chromate Coating)
Operator	Lever	Aluminum Die-cast
	Gear	Aluminum Die-cast (Size 2B to 12B) Cast-Iron (Size 14B to 24B)
	Vertical Gear	Cast-Iron

EJ Series | Ductile Iron Butterfly Valves

Line-up of Three Special Seat Materials available for variety of fluids.



Specification

Maximum Service Pressure	
PN10	10ber (1.0MPa)

Body Material	
Ductile Iron	EN-GJS-450-10, Equivalent to ASTM A536 Gr. 65-45-12, BS 2789 Gr. 40/10*1

*1 Obsolete Standard.

Applicable Standards	
Valve Design	EN 593:2004

Coupling Flanges	
Wafer Type	EN1092 PN6, PN10, PN16 BS10 Table E ASME Class125, Class150

Cv Value

Size		Open Degree							
DN	NPS	20°	30°	40°	50°	60°	70°	80°	90°
50	2	8	17	29	42	56	75	86	88
65	2½	16	36	60	88	122	172	219	246
80	3	21	45	75	113	165	248	345	415
100	4	3	65	109	172	274	446	689	886
125	5	47	95	160	255	406	655	997	1250
150	6	68	138	234	375	598	958	1430	1760
200	8	116	241	419	681	1080	1700	2470	2900
250	10	160	325	575	950	1510	2420	3460	4020
300	12	258	493	859	1410	2260	3610	5160	6010

Standard Materials

Parts	Materials
Body	Ductile Iron〔EN-GJS-450-10〕
Stem	Stainless Steel〔AISI 410〕
Disc	Stainless Steel〔A351 Gr.CF8M〕
Seat	W-NBR（White NBR） VMQ（Silicone Rubber） FKM（Fluoro Rubber）
O-ring	FKM
Bearing	Multi-layered Bearing*
Stem Bearing	Multi-layered Bearing*
Plug	Zinc Die-cast
Bottom Stem	Stainless Steel〔AISI 410〕

* Tetrafluoroethylene resin filled over layer, sintered bronze interlayer with steel backing.

Features

Three Types of Seat Material

Three (3) types of seat materials are as follows; VMQ (Silicone Rubber) can be used for wide range of temperature applications; W-NBR (White NBR) is suitable for use in food processing industry; and FKM (Fluoro Rubber) has properties such as strength and durability for use in variety of fluid application. W-NBR and VMQ meets the requirements of FDA*.

* All of the above listed materials are approved by FDA, and the seats are manufactured within maximum allowable limitations and restrictions.

Suitable for Various Flanges

Flanges in EN1092 PN16, PN10, PN16, BS10 Table E, ASME Class 125 and Class 150 are suitable in all sizes.

Integral ISO 5211 Actuator Mounting Flange

All actuators, pneumatic or electric, provided with ISO 5211 valve mounting flange can easily be mounted for valve actuation.

High Performance Stem Bearing having additional strength to withstand high temperature and high pressure

Stem Bearing in EJ Series is multi layered back material to provide high performance bearing surface capable of withstanding high pressure and temperature.

Backup Ring to maintain Stem Sealing

Backup ring around the stem maintains performance of stem sealing by the movement of stem/disc in sealing/seat of the valve.

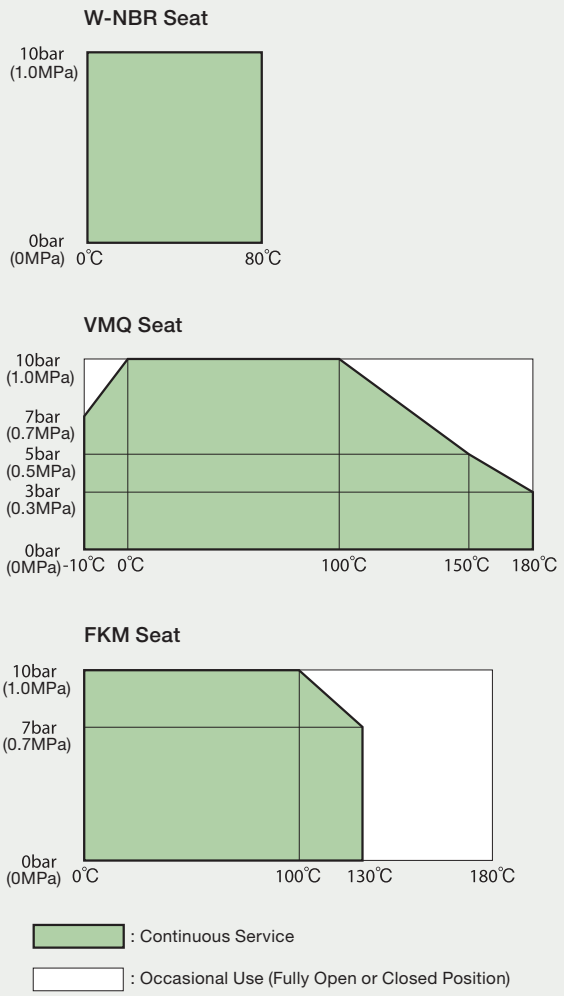
Stainless Steel Bearing Features

Embedded within stainless steel upper body bearing is multi-layered to provide smooth stem operation. Also, housed within stem is snap ring to provide protection and prevent blow out of the stem caused by internal pressure.

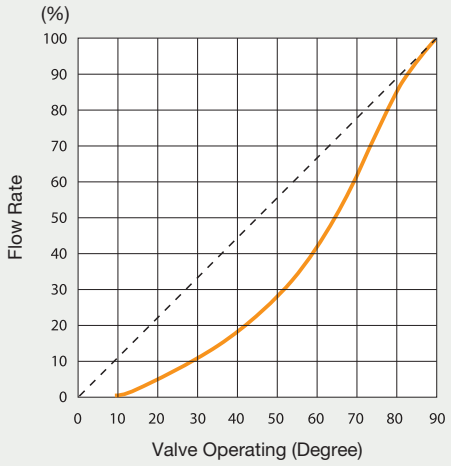
Polished Disc

Polished disc is standard for VMQ and is optional for W-NBR seats for use in food and pharmaceutical industries.

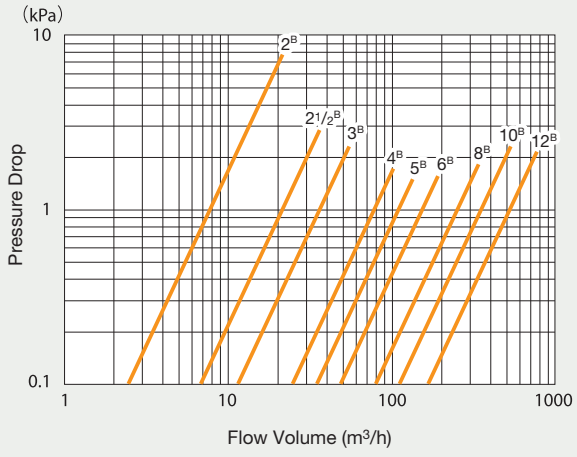
P-T Rating



Flow Characteristics



Pressure Loss



LJ Series | Ductile Iron PFA Lined Butterfly Valves

PFA Lined Butterfly Valves applicable to high corrosive fluids.

Specification

Size
50 to 300mm (2^B to 12^B)

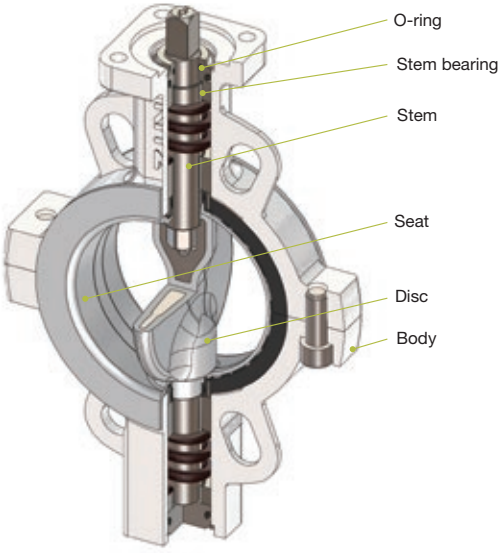
Product Code
10LJF

Maximum Service Pressure
1.0MPa

Service Temperature Range
-10 to +150°C Note: Refer to Pressure-Temperature Ratings.

Coupling Flanges
JIS2220 / 2239 10K Note: JIS5K and ASME Class 150 are optional.

Automatic Operation
Please contact us



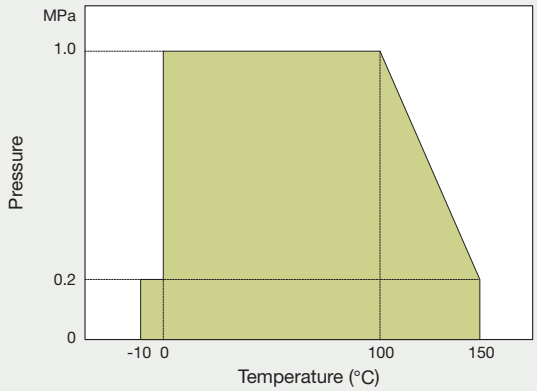
Standard Materials

Parts	Materials
Body	FCD450-10
Disc	SCS13A+PFA
Seat Liner	PFA
Back Up Rubber	FKM

Features

- Various fluids are applicable for PFA-lined internal wetted parts.
- High-grade PFA prevents troubles from corrosive fluid permeation.
- Sealing mechanism with coil spring realizes high sealing performance.
- Original stem sealing design prevents external fluid leakage.
- Easy maintenance with easily disassembled stem and disc.
- Top flange in accordance with ISO 5211.
- Blowout-proof stem.

P-T Rating



Note: Service pressure in vacuum state must be up to 20 torr and service temperature must be 100℃ or below.

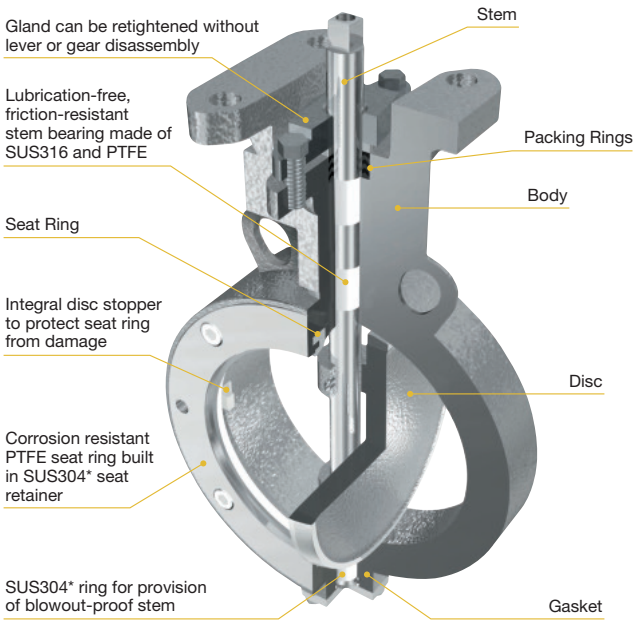
LJ Series is designated as Strategic Materials in the Foreign Trade Law. In order to export, export license issued by the exporting country is required. Kindly contact KITZ representative for details.

⚠ CAUTION

Note 1: Be careful not to damage PFA seat when handling this product.
Note 2: Do not store this product in place exposed to direct sunlight.
Note 3: Installation of gaskets between valve and flanges is not required with accurate centering of each pair of upstream/downstream pipes. Flange and pipe bores must be cleaned thoroughly to remove wetted spatters and foreign objects that may have been left inside.
Note 4: When necessary, install solid PFA gaskets having minimum of 3mm in thickness. (Rubber materials are not allowed.)

UB Series | Stainless Steel Butterfly Valves

With Double Eccentric Kinematics and all Stainless Steel Body and Trim guarantees high performance corrosion resistant services for application of KITZ UB Series Butterfly Valves to Chemical Industries.



*SCS14A or SUS316 is available as an option

Specification

Maximum Service Pressure			
10UB	1.4 MPa	20UB (size $1^1/_2{}^B$ to 12^B)	2.0 MPa
16UB (size 14^B to 24^B)	1.4 MPa	150UB	1.9 MPa

Service Temperature Range	
PTFE Seat	-29°C to + 160°C
Carbon Filled PTFE Seat	-29°C to + 200°C

Wall Thickness
ASME B 16.34 Class 150

Face to Face Dimensions	
6^B and smaller	ISO 5752 Short
8^B and larger	ISO 5752 Medium

Coupling Flanges	
10UB	JIS 10K
16UB	JIS 16K
20UB	JIS 20K
150UB	ASME Class 150

Standard Materials

Parts	ASTM Materials	JIS Materials
Body	A351 Gr.CF8*1	SCS13A*1
Stem	304SS	
Disc	A351 Gr.CF8*1	SCS13A*1
Gland	A351 Gr.CF8*1	SCS13A*1
Seat Ring	PTFE*2	
Seat Retainer	304SS	
Gland Packing	PTFE	
Gasket	PTFE	

Parts	ASTM Materials	JIS Materials
Set Bolt	Stainless Steel	
Taper Pin	316SS	
Stem Bearing	METAL BACKED PTFE	
Gland Bolts	Stainless Steel	
Thrust Washer	PTFE	
End Plate	A351 Gr.CF8	SCS13A
End Plate Bolts	304SS	

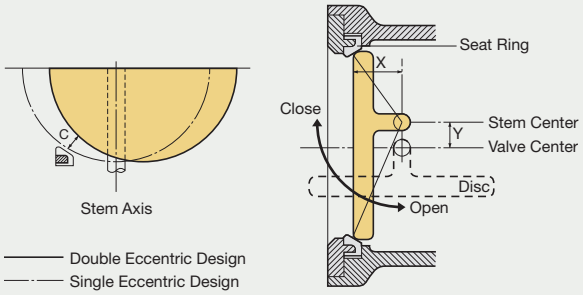
*1 CF8M(316)/ SCS14A(SUS316) is available as an option.
*2 Carbon Filled PTFE seat rings are optionally available.

Features

Double Eccentric Kinematics

Valve stem is designed in eccentric to both center of seat ring (by X) and to center of the valve body (by Y), which makes clearance 'C' between seat ring and disc seat surface to its fully open position (Fig. 1). Disc seating surface is spherically machined and contacts with PTFE seat tightly through 360° for leakage-free service. These functions minimize friction wear of seat ring and reduce valve operating torque considerably.

Fig.1



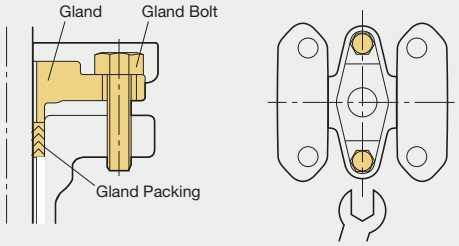
Durable Seat Rings

Seat rings are made of PTFE with stainless steel supporter. Furthermore, double eccentric kinematics relieve seat ring from damage or wear which is rather usual problem in conventional butterfly valves. This allows service life twice as long as rubber seated butterfly valves.

Retightening of Gland Packing

Room between gland and lever or gear allows retightening of gland bolt without trouble to disassemble lever or gear during plant operation is another feature of KITZ UB Series Butterfly Valves (Fig. 2).

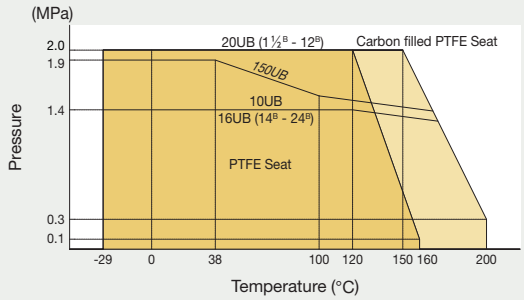
Fig.2



Flow Coefficient (Cv)

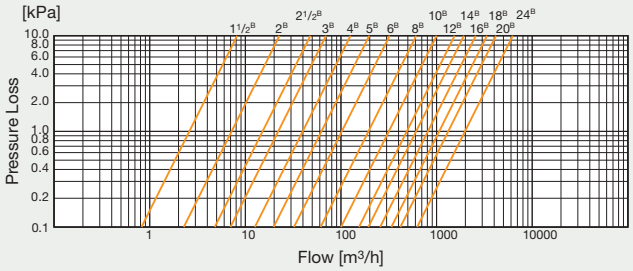
Size		Cv Value
DN	NPS	
40	1 1/2	30
50	2	83
65	2 1/2	175
80	3	255
100	4	460
125	5	722
150	6	1180
200	8	2240
250	10	3660
300	12	5640
350	14	7060
400	16	9390
450	18	12300
500	20	15300
600	24	22900

P-T Rating

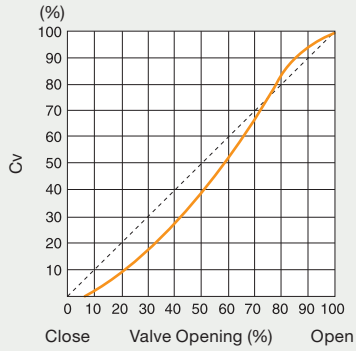


Contact KITZ for technical advice when service condition may exceed above P-T rating limitations.

Pressure Loss (for Handling Static Clean Water)



Flow Characteristics



CAUTION

When installing valves between pipes, be sure to use gaskets* specified below:

*Non-asbestos joint sheet or PTFE sheet

unit: mm

Size		I/D		O/D	Thickness
DN	NPS	Min.	Max.	Min.	Min.
40	1 1/2	48	57	73	3
50	2	60	61	90	3
65	2 1/2	73	77	115	3
80	3	88	90	126	3
100	4	108	116	146	3
125	5	136	143	181	3
150	6	162	170	211	3
200	8	213	220	257	3
250	10	266	275	322	3
300	12	312	326	367	3
350	14	342	359	410	3
400	16	389	410	470	3
450	18	444	460	530	3
500	20	493	513	580	3
600	24	594	615	688	3

CAUTION

- Following gaskets should be used for installation of UB Series Butterfly Valves to pipelines.
  [Type of Gasket]
  - Non-Asbestos Joint Gasket Sheet
  - Reinforced PTFE Gasket (Joint Gasket, Spiral Wound Gasket or Metal Gasket cannot be used.)

  [Shape of Gasket]
  - Full Face Gasket
  - Ring Gasket (for Full Face Flanges and Flat Face Flanges)

  [Dimensions of Gasket]
  Dimensions of gasket should comply with JIS B2404 and ASME B16.21 (minimum gasket thickness is 3mm).
- UB Series Butterfly Valves cannot be used with lapped loose flanges (lap joints + stub ends, stainless steel pipe joints with flanged pipe ends).
- UB Series Butterfly Valves may not be used with some large flat face flanges.
  JIS 5K RF Flanges: Not Applicable
  JIS 10K RF Flanges: Applicable, but be sure to align center of flanges and the valve
  JIS 16K RF Flanges: Applicable
  Class 150 RF Flanges: Applicable, but be sure to align center of flanges and the valve.
- UB Series Butterfly Valves cannot be used with rubber lining pipes.
- UB is unidirectional valves. Valve must be installed according to an arrow provided on the side of operator mounting flange.
  This arrow must point from higher pressure side to lower pressure side when valve is in closed position.
- When retightening the packing, do not cover the gland with insulation material.
- Retighten gland bolts before operating the valves.; Check handle torque while retightening the bolts in order to avoid over tightening and difficult to operate. Gland bolts should tightened alternately with even force. Make sure to retighten gland bolts, if leakage is observed from the gland section due to stress relaxation.

HB Series | Double Eccentric Butterfly Valves

Original Seat Configuration and Materials for Stable Sealing Performance

Double Eccentric Structure and RPTFE Seat

Specification

Valve Nominal Size	
SHB	50A ~ 300A
UHB	40A ~ 300A

Applicable Flange	
5UHB	JIS 5K
10SHB · 10UHB	JIS 10K
16SHB	JIS 16K (JIS 20K)
150SHB · 150UHB	ASME Class150

Maximum Allowable Pressure	
5UHB	0.7MPa
10SHB · 10UHB	1.4MPa
16SHB	2.0MPa
150SHB · 150UHB	1.72MPa

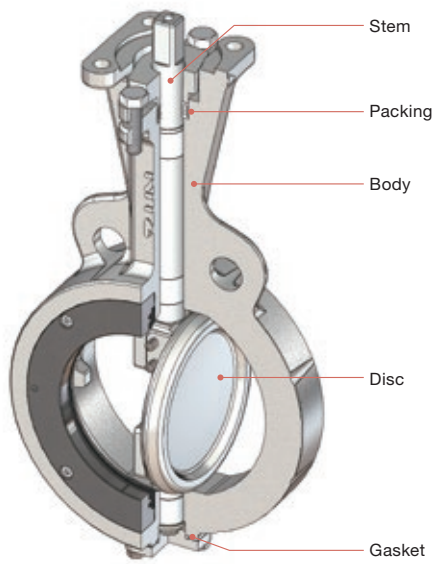
Service Temperature Range	
SHB	-10 ~ +200℃
UHB	-29 ~ +200℃

Face to Face Dimensions
JJIS B 2002 46 series

Flow Direction
Bidirectional flow * Recommended flow direction: Flow pressure from retainer side

Applicable Gaskets (commercially available gaskets)
Joint seats (Minimum thickness 1.5 mm) Spiral wound gaskets / Envelope gaskets

Automatic Valves
Contact KITZ Corporation for details.



* Illustration above shows the structure of Size 4B

Standard Materials

Parts	Material	
	SHB	UHB
Body	FCD450-10	SUS13A/A351 Gr.CF8
Stem	SUS420J2	SUS304N2
Disc	SCS13A+Cr Plated	
Gland	SCS13A	
Seat Ring	RPTFE (Carbon Fiber-filled PTFE)	
Seat Retainer	S45C	SUS304
Stem Bearing	PTFE (Metal Backed)	
Gland Packing	PTFE	
Gasket	PTFE	

Features

RPTFE Seat Rings for Various Types of Fluids

Chemical resistant RPTFE is adopted as seat material which allows to be used with fluids that cannot be handled with rubber seats. (Refer to table 'Corrosion Resistant Level of Materials in Disc and Seat against Fluid' in Page BFV5.)

Double Eccentric Structure for Stable Sealing Performance

Double eccentric structure minimizes contact between disc and seat during operation and provide stable sealing performance with less wear of the seats over long period of time. (Fig. 1)

Easy Retightening of Packing

Retightening of packing is possible without removing operating device. (Fig. 2)

Original Seat Configuration for High Durability (Patented)

Bidirectional Flow

Applicable to both direct and reverse flow control, however, flow pressure from retainer side is recommended.

Applicable to Commercially Available Pipe Gaskets

Joint seats (minimum thickness 1.5mm), spiral wound gaskets and PTFE envelope gaskets conforming applicable standards can be used.

Top Flange Dimension According to ISO 5211

Fig.1
Structural Drawing of Double Eccentric Butterfly Valve

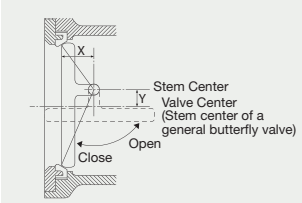
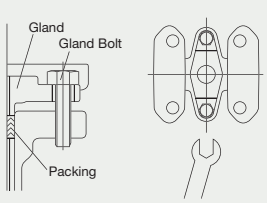


Fig.2
Retightening of Gland Bolts



Cv

Nominal Size		Rated CV Value
A	B	
50	2	64
65	2 1/2	112
80	3	199
100	4	371
125	5	569
150	6	838
200	8	1669
250	10	3088
300	12	4502

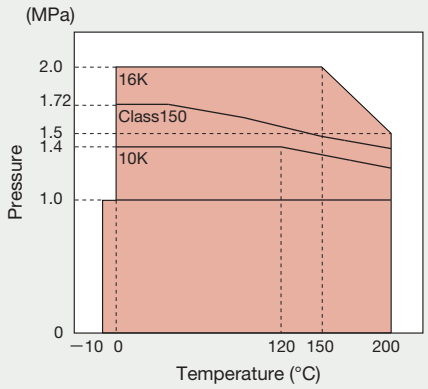
⚠ CAUTION

- HB Series Butterfly Valves must be installed in accordance with arrow direction indicated on the body.

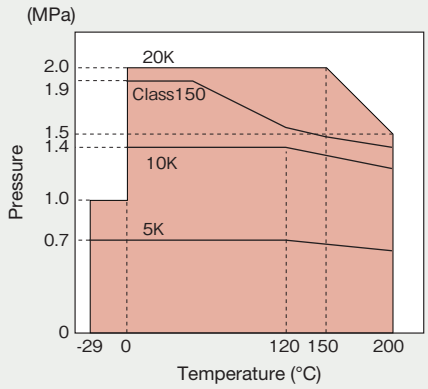
High Pressure (Upstream) Side when Valve at Fully Closed Position → Low Pressure (Downstream) Side when Valve at Fully Closed Position

- When HB Series Butterfly Valves are used for bidirectional service, align flow direction with an arrow indicating flow direction from higher pressure side to lower pressure side.
- HB Series Butterfly Valves can be used with joint seals (minimum thickness 1.5mm) , spiral wound gaskets and PTFE envelope gaskets conforming applicable standards.
- HB Series Butterfly Valves cannot be used with stub ends (lap joints, stainless steel pipe joints with flanged pipe end).
- HB Series Butterfly Valves adopt gland structure. Retighten gland bolts before operating the valve. Check handle torque while retightening bolts in order to avoid over-tightening and difficult to operate. Tightening gland bolts alternately with even force. Retighten gland bolts if leakage from the gland section due to stress relaxation is observed.
- Do not cover the gland with insulation material. Keep gland uncovered to retighten.

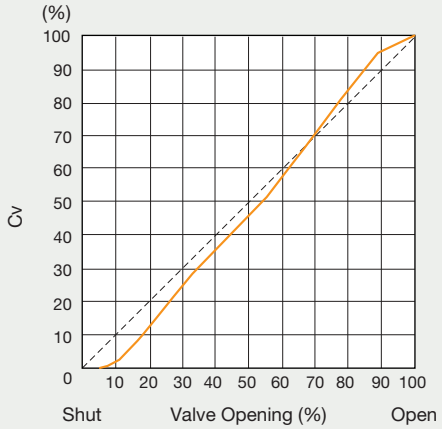
P-T Rating (SHB Series)



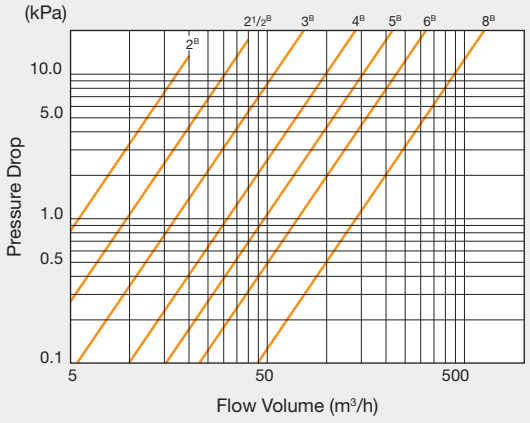
P-T Rating (UHB Series)



Flow Characteristics

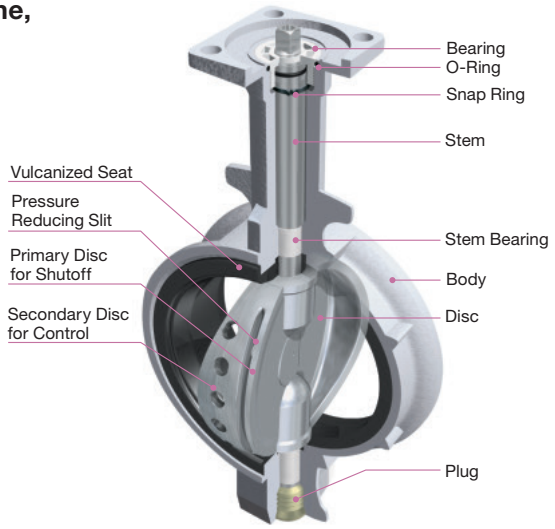


Pressure Loss



HRDJ Series | High Rangeability Butterfly Valves

THROTTROL is designed to handle extremely low fluid volume, while it completely shuts off the line flow.



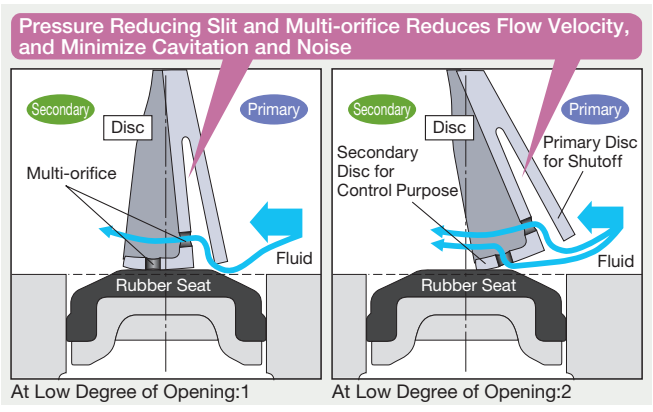
Specification

Maximum Service Pressure
1.0 MPa
Service Temperature Range EPDM
-20°C to +120°C
Continuous Service Temperature Range
0 ～ +100°C Note: Refer to Pressure-Temperature Ratings in next page.
Rangeability
160: 1
Flow Characteristics
Equal Percentage Flow Characteristics
Sealing Features
Tight Shutoff
Face to Face Dimensions
JIS B 2032 Series Number 46
Coupling Flange
JIS 5K/10K/16K/20K

Features

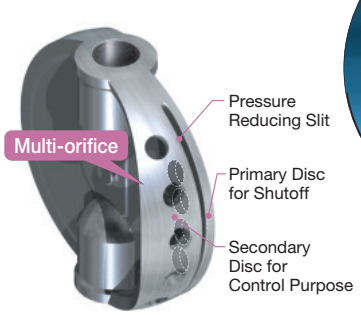
Excellent Flow Volume Control Performance with 160:1 Rangeability

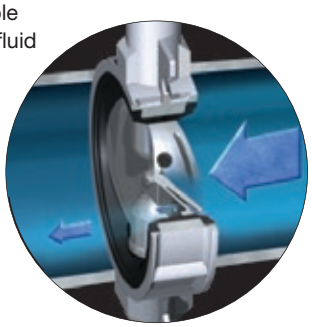
- Tight shut/high rangeability is realized with combining disc section for full-shutoff and disc section for low-operating control of the disc. Also, cavitation is suppressed by installing pressure chamber to improve anti-noise multi orifice.
- Installing multi hall at disc section for low operating control and fin section realizes flow volume characteristics to close ideal equal percent characteristics for flow volume control.



Prevention of Erosion by Jet Flow

- Vulcanized bonded seat is suitable for controlling high flow velocity fluid to reduce erosion due to jet flow.





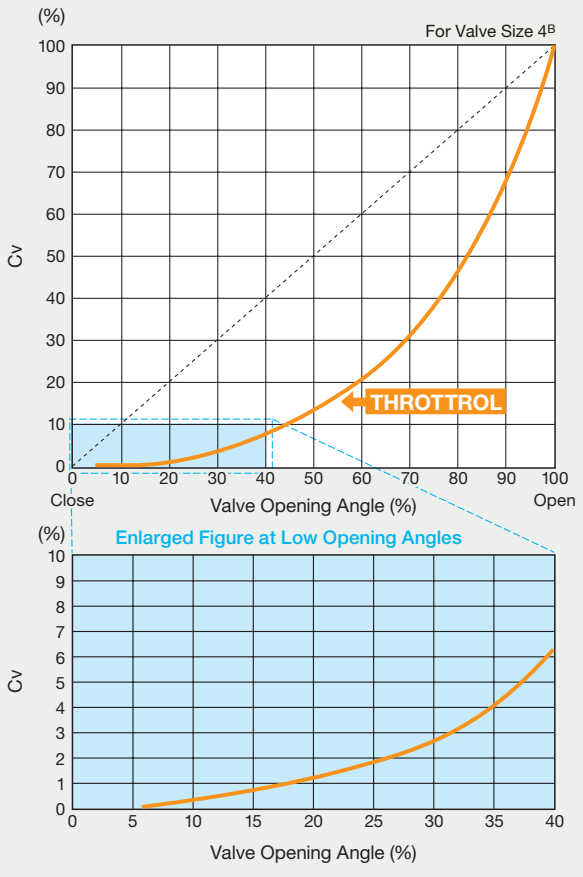
Fluid flows only through orifices at low degree of opening.

Standard Materials

Parts	Materials
Body	FCD450-10
Stem	SUS630
Disc	A351 Gr. CF8 / SCS13A
Seat	EPDM
O-ring	EPDM
Bearing	POM (2^B to 8^B)
Plug	Chromated ZDC
Bottom Stem	SUS403 (2^B to 4^B) SUS420J2 (10^B to 12^B)

* Please refer to the drawing of deliverables for details.

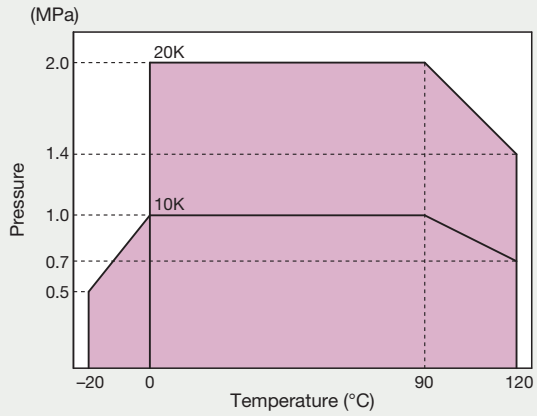
Flow Characteristic Curve



Cv

Nominal Size		Valve Opening Angle (%)										
A	B	5	10	20	30	40	50	60	70	80	90	100
50	2	0.2	0.7	1.8	4.0	7.5	14.3	23.9	35.9	49.3	62.6	74.2
65	2½	0.3	1.0	2.0	4.6	10.0	24.6	44.0	68.9	99.2	132.8	167.0
80	3	0.3	1.6	4.5	10.0	25.3	47.0	71.9	106.4	149.5	201.9	258.5
100	4	0.4	1.9	6.0	13.3	29.4	55.3	94.2	149.6	225.4	325.6	454.2
125	5	0.5	4.3	9.8	29.0	75.0	128.2	208.2	308.9	429.2	566.4	713.9
150	6	2.5	12.0	29.0	77.0	141.2	209.8	289.5	290.2	528.3	726.8	1015.7
200	8	5.3	18.8	45.9	138.2	244.5	382.5	553.7	827.7	1175.3	1618.6	1986.6
250	10	7.8	32.1	131.4	306.5	496.2	744.3	1080.0	1488.7	1955.7	2452.0	2919.0
300	12	12.4	51.1	208.4	487.4	789.1	1183.7	1717.5	2367.4	3110.1	3899.3	4642.0

P-T Rating of Seats



Note 1 : Contact KITZ for technical advice when service conditions may exceed above PT-Rating range. Take appropriate measures to prevent valves from freezing.
Note 2 : Valve can continuously be used at temperature range of 0°C to 100°C.
Note 3 : EPDM Seats are not suitable for oil service.
Note 4 : Contact KITZ when valves are used in how water supply system.

⚠ CAUTION

- THROTTROL is a unidirectional valve. THROTTROL must be installed with the direction of flow in accordance with to an arrow marked on the body during installation.
- THROTTROL cannot be used with rubber lining pipes. THROTTROL is constructed to seal flanges by pressing rubber seat with compressive force exerted by the flange, where compressive force becomes too large or too small if rubber lining is applied to flange joint surface, thereby causing an increase in operating torque of the valve, deterioration of sealing member or external leakage.

Damper | Cast Iron Dampers

Suitable for High Temperature Service

Specification

Maximum Service Pressure
0.5 MPa

Service Temperature Range
0°C to +230°C

Maximum Allowable Leakage
3% of Normal Cv Values (D Type) 2% of Normal Cv Values (A Type)

Coupling Flange
JIS 5K/10K



Features

Type D

For High Temperature

Type D Damper enables flow volume control of high temperature fluid up to 230°C by metal disc and metals seat (hard chrome coating).

Type A

For High Temperature Fluid

Angle bar of Type A Damper is shaped in oval to have the disc contact with inner surface of the body with certain angle when the valve is closed. Therefore, valve can be used for the same application of Type D Damper with even less leakage volume than Type D.

Flow Coefficient (Cv)

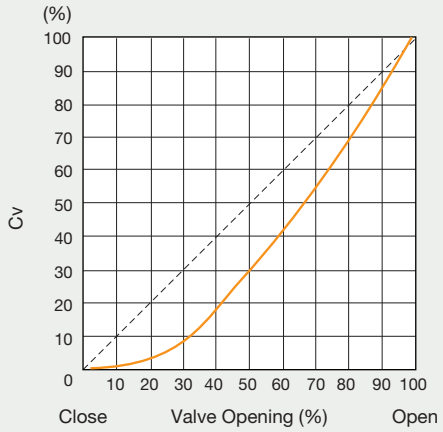
Size		Cv
A	B	
50	2	104
65	2 1/2	174
80	3	348
100	4	557
125	5	905
150	6	1183
200	8	2575
250	10	4037
300	12	6264

Standard Materials

Parts	Materials
Body	FC250+HCr
Stem	403SS
Disc	SUS430
Gland	C3604
Gland Packing	Flexible Graphite
Dics Nut	304SS
Disc Bolt	304SS
Index Plate	Carbon Steel
Set Bolt	Carbon Steel
Bottom Stem	403SS

* Please refer to the drawing of deliverables for details.
Gasket is required to pipe this product.

Flow Characteristics



KITZ BUTTER Series

KITZ Threaded Compact Butterfly Valves

Compact Butterfly Valves for Threaded Piping Connection





Specification

Size
1/2B ~ 2B
Product Code
FV・UV
Connection Type
Threaded Type (JIS B 0203)
Maximum Pressure
1.21 MPa
Service Temperature Range
0℃ to + 70℃
Face to Face Dimensions
KITZ Standard

Features

Clean Design with Pocketless to prevent standing fluid
Full-port structure prevents fluid in pocket in ball valves and rubber seat is adopted to clear Food Sanitation Act.

Threaded Type is the first in Butterfly Valve
Screw-in type for simple pipe connection enables adoption to various small sizes of piping used in vast range of application.

Compact/Light Weight Design
Compact design with weight approximately 1/4, dimension between faces to approx. 2/3 and height of valve to approx. 3/4 compared to same size ball valves. (Compared to KITZ products)

W-NBR Seat with High Sealing Characteristics
By adopting W-NBR with high elasticity for seat to improve sealing characteristics is ideal for fluid line such as air/gas where high sealing is required.

Self Cleaning Feature for Sealing Section
Equipped with self cleaning feature to remove dirt at sealing section during open/close with elastic effect.

Flow Volume Control Capability
Butter Series is equipped with balancing stop mechanism fixed at intermediate opening degree and is capable of stable flow volume control with help of opening scale.

Accurate Lost-Wax Casting
Stainless steel body products employ accurate lost-wax casting to configure clean and dust-free piping line with smooth surface.

Standard Materials

Parts	Materials	
	FV	UV
Body	C3771BE	SCS13A
Stem	SUS304	
Disc	SUS304+W-NBR	
Gland	C3771BD	SUS304
O-ring	NBR	

* Please refer to the drawing of deliverables for details

W-NBR No.NF81W Test Results

Test Item		Test Result	Criteria
Material Test	Lead	Applicable (7.00ppm)	100ppm or less
	Cadmium	Applicable (not detected [0.2ppm or less])	100ppm or less
Dissolution Test	Potassium Permanganate Consumption	Applicable (2.4ppm)	10 ppm or less
	Heavy Metal	Applicable	Must be thinner than color presented by standard fluid for comparison
Vaporization Residue	Water	Applicable (0 ppm)	30 ppm or less
	4% Acetic Acid	Applicable (1.5 ppm)	30 ppm or less
	n-heptane	Applicable (16.5 ppm)	30 ppm or less
	20% Ethanol	Applicable (1.5 ppm)	30 ppm or less

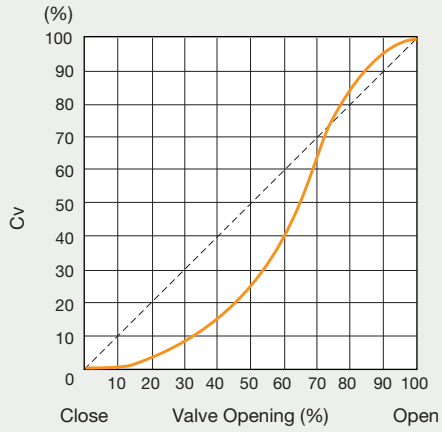
Cv

Size		Cv
A	B	
15	1/2	8.7
20	3/4	21
25	1	39
32	1 1/4	66
40	1 1/2	94
50	2	176

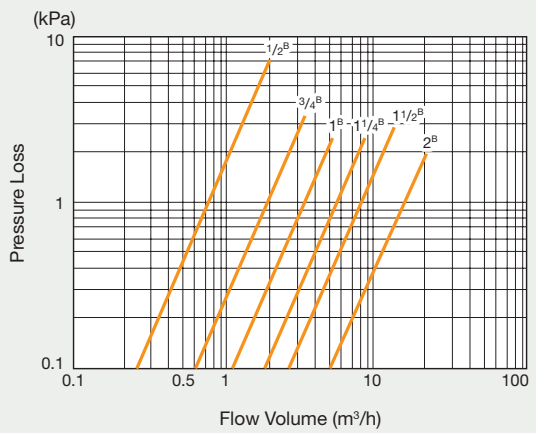
⚠ CAUTION

This product is not applicable for combustible gas or toxic gas.

Flow Rate



Pressure Loss



Precautions for Trouble-free Operation of KITZ Butterfly Valves

Valve Selection

- Make sure to select a valve with design specification which are appropriate in fluid type, pressure and temperature conditions expected.
- Lubricants are applied to discs and rubber seats to protect its surfaces.
  Oil-free treated types are also available. Contact KITZ or its local distributors for details.
- Consult KITZ or its local distributors for services with fine particles.

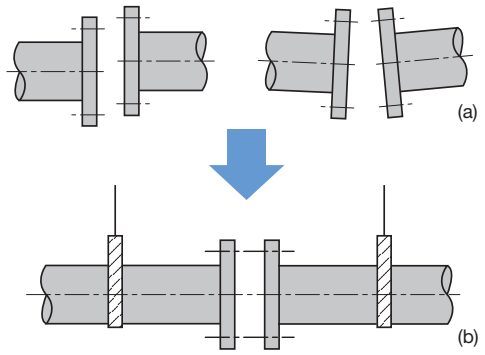
Storage and Handling

- Valves must be stored in clean, dry, corrosion-free environment with no direct exposure to the sunlight. Valves should be left open 10° to prevent permanent distortion of resilient seats. Refrain from overloading valves and actuators by storing in piles or placing other objects.

Mounting to Pipelines

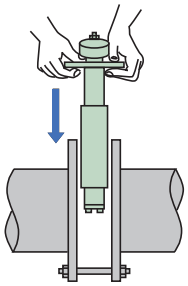
- Valves must be mounted to flanges only after flanges have been welded to pipes and cooled down to ambient temperature. Otherwise, welding heat may affect quality of resilient seats.
- Edges of welded flanges must be machined to achieve smooth surface finish not to damage resilient seats during valve installation. Flange faces must be free of damage or deformation and must be cleaned to remove rust and any foreign objects to prevent leakage through the valve and flange connections. Gaskets are not required to install KITZ XJ Series Butterfly Valves.
- Flanges and pipe bores must be cleaned thoroughly to remove welding spatters, scales and foreign objects which may have been left inside.
- Accurate centering of each pair of upstream and downstream pipe is essential for trouble-free operation of the valve mounted in between. Incorrect centering shown in Fig. 1 must be avoided.

Fig.1



- When mounting a butterfly valve, set jack bolts under the pipe to provide support at consistent height and adjust flange-to-flange distance to allow 6 to 10 mm of space on each side of the body. Remember to have a valve 10°open from fully closed position (Fig. 2).
- Set two (2) bolts into lower mounting guides of a valve and mount carefully in order to avoid flange faces to damage resilient seats.
- Next, set another two bolts into upper mounting guides of the valve, ensuring correct centering between pipes and the valve.
- Try opening the valve to check if there is no obstructing contact between the valve disc and flanges.
- Remove jack bolts, set all bolts around the body tighten the bolts alternately and diagonally until the flanges come into contact with the valve body (Fig. 3). Refer to table shown below for recommended torque values.

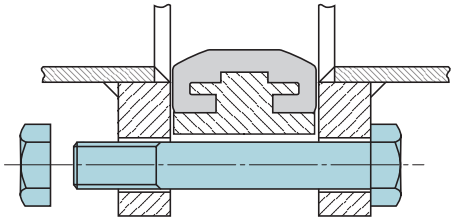
Fig.2



Recommended Torque Values

DN	N·m (kgf·m)
40	49 (5)
50	
65	
80	
100	
125	88 (9)
150	
200	
250	118 (12)
300	

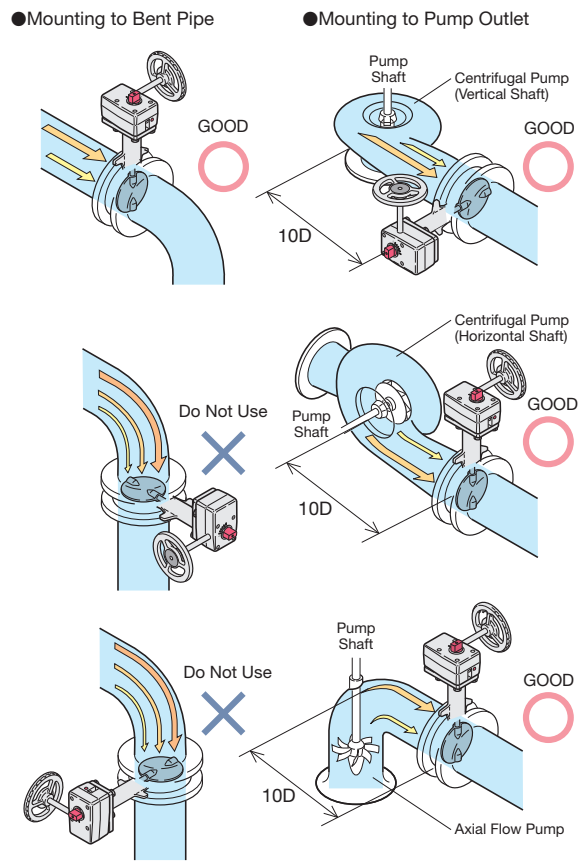
Fig.3



- For mounting actuated valves, provide valve supports to prevent bending valve necks and reduce valve and pipe vibration.
- Do not step on the valve neck or valve lever/handwheel.
- Do not mount butterfly valves directly to check valves or pumps; this may create damages caused by disc contacts.
- Do not mount valves to the downstream side of elbows, reducers or regulating valves where fluid velocity changes. It is recommended for valves to be installed with distance of approximately 10 times the nominal size.

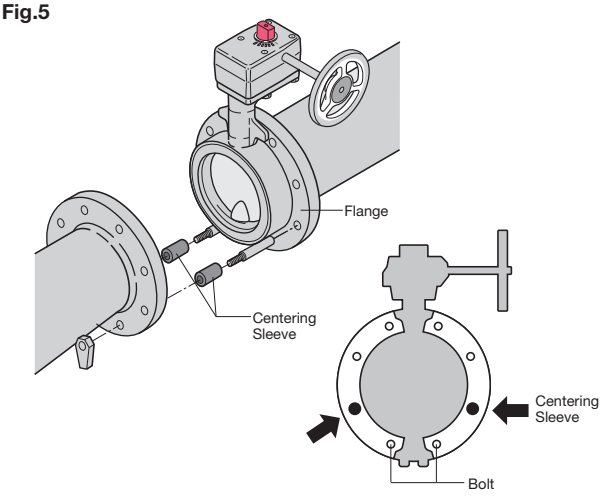
- Consider the effects to discs in fluid velocity or pressure changes to the piping when mounting valves. Please refer to illustrations in Fig. 4.
- Contact KITZ or one of its local distributors for details.

Fig.4



Note:
For accurate centering, use of centering sleeve is required for valves equipped with sleeves as shown in Fig. 5. Kindly refer Page 3 for applicable sizes.

Fig.5



Valve Operation

- Valves equipped with manual operators, such as levers, handles and gears, must be MANUALLY OPERATED ONLY. Application of excessive external force to operate valves may result malfunctioning of the valve and its operators.
- Make sure to full open the valve before conducting loop test of piping system at a line pressure higher than the nominal pressure of tested valves. Never use closed valves in place of blind flanges.
- When valve needs to be removed from pipe for maintenance or any other reasons, make sure to thoroughly relieve line pressure beforehand. Loosening piping bolts under line pressure is dangerous. Any residual fluid left inside pipeline must be drained completely.
- Users should contact KITZ representative or its local distributors for technical advice when valves need to continuously pressured while left open at 30° or less.
- Do not use position indicators to operate valves or overload position indicators. These action may damage the indicators.
- Make sure to use blind flanges when butterfly valves are mounted at the end of pipeline.
- Standard actuators are referenced in this catalogue for actuated valve operation. Contact KITZ representative or its local distributors for information on mounting optional actuators.
- Contact KITZ for service or pump outlets.
- Avoid touching gear operators and actuator stopper bolts accidentally.
- Following Periodic Inspection is recommended
  - Check valve opening
  - Check for loosened bolts and leakage at each connection
  - Check for vibration and noise
- Refer to operation manual for other precautions. Also refer to actuator catalog and operation manual for actuated valves.

⚠ WARNING

To prevent stem blow-out, do not disassemble neck while a valve is pressurized. Do not dismantle valve operating device, since it may cause valve disc to rotate which may result in valve malfunction.

Disclaimer

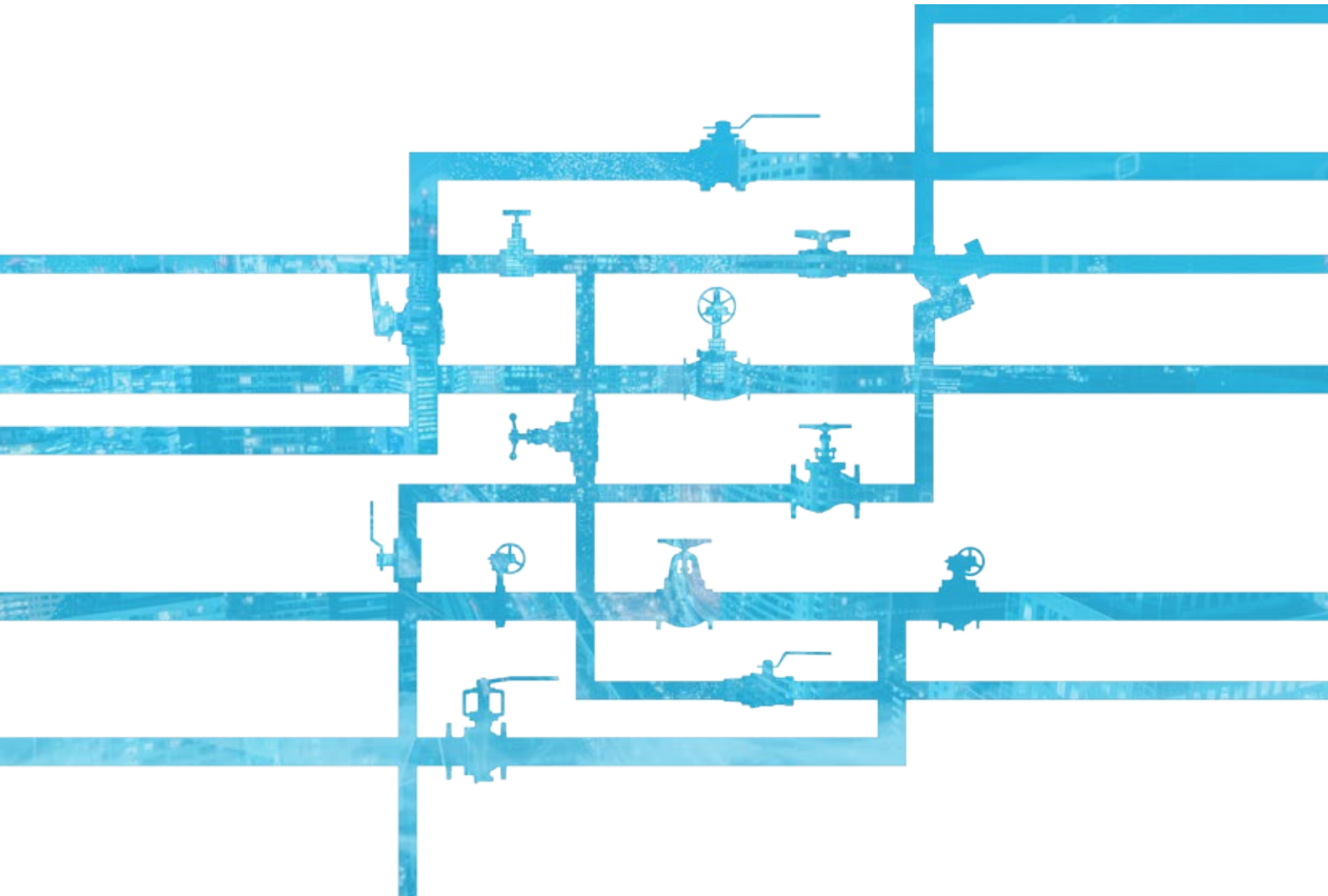
- KITZ will not take any responsibilities for damages caused by result of natural disasters, accidents or fire which KITZ is not liable for, conduct of a third party, intentional act, misuse or used under abnormal conditions by a customer.
- KITZ will not take any responsibilities for damages arise from negligence or prohibitions, cautions, installation and usage beyond specification range mentioned in the catalogs and operation manuals.
- KITZ will not take any responsibility for damages caused by product modification not entrusted by KITZ or usage under load applied from other devices.

MEMO

KITZ

GENERAL CATALOG

Steel Ball Valves



INDEX

Series	Body Material	Class	End Connection	Bore	Face to Face Dimension	Actuator Mounting Pad	Body Design	Size Range	Fig	Page
TB	SS	10K	RF	FB	KITZ Standard	KITZ Standard	Split	1/2B - 10B	10UTB/G-10UTB	BAL6 149
									10UTBM/G-10UTBM	
					ASME B16.10				10UTBD/G-10UTBD	
									10UTBDM/G-10UTBDM	
		150							150UTB/G-150UTB	
									150UTBM/G-150UTBM	
TB (Pocketless)							Split (Pocketless)	1/2B - 8B	150UTBP	
									150UTBPM	
TR		10K		RB	KITZ Standard		Split	2B - 12B	10UTR/G-10UTR	BAL7 150
									10UTRM/G-10UTRM	
		150			ASME B16.10				150UTR/G-150UTR	
									150UTRM/G-150UTRM	
	CS	10K						5B - 12B	10SCTR/G-10SCTR	
		150							150SCTR/G-150SCTR	
	SS	20K						2B - 10B	20UTR	
									20UTRM	
		300							300UTR	BAL8 151
									300UTRM	
	CS	20K						6B - 10B	20SCTR	
		300							300SCTR	
TB	SS	600		FB				1/2B - 1 1/2B	600UTBM	
									600UTBSM	
	CS								600SCTB	
									600SCTBS	
	SS	1500							1500UTBM	BAL9 152
									1500UTBSM	
	CS								1500SCTB	
									1500SCTBS	
	SS	10K			KITZ Standard		Split/Tank Ball	1B - 10B	10UTBT/G-10UTBT	
									10UTBTM/G-10UTBTM	
		150						1B - 6B	150UTBT	
									150UTBTM	
		10K					Split/3-way・2-seats	1B - 4B	10UTB2L	BAL10 153
									10UTB2LM	
		150							150UTB2L	
									150UTB2LM	
TR		10K		RB				6B	10UTR2L	
									10UTR2LM	
		150							150UTR2L	
									150UTR2LM	
TB		10K		FB			Split/3-way・4-seats	1/2B - 8B	10UTB4L(T)A/G-10UTB4L(T)A	BAL11 154
									10UTB4L(T)AM/G-10UTB4L(T)AM	
		150							150UTB4L(T)A/G-150UTB4L(T)A	
									150UTB4L(T)AM/G-150UTB4L(T)AM	
TR		10K		RB				5B - 8B	10UTR4L(T)A/G-10UTR4L(T)A	
									10UTR4L(T)AM/G-10UTR4L(T)AM	
		150						6B - 8B	150UTR4L(T)A/G-150UTR4L(T)A	
									150UTR4L(T)AM/G-150UTR4L(T)AM	
TB		10K		FB			Jacketed	1/2B - 4B	10UTBJ	BAL12 155
									10UTBJM	
		150						1/2B - 2 1/2B	150UTBJ	
									150UTBJM	
TR		10K		RB				3B - 6B	10UTRJ	
									10UTRJM	
		150							150UTRJ	
									150UTRJM	
TB		20K		FB				1/2B - 6B	20UTBJ	BAL13 156
									20UTBJM	
		300							300UTBJ	
									300UTBJM	
		150						1/2B - 2B	150UTDZJ	
									150UTDZJM	
		10K					Split/PFA Lined	1/2B - 4B	10UTBLN	
									150UTBLN	
TAZ		150		RB	ASME B16.10	ISO 5211	Uni	1/2B - 10B	150UTAZM	BAL14 157
	CS								150SCTAZ	
		300							300UTAZM	
									300SCTAZ	
TAZX (-46℃)		150					Uni/Ext. Bonnet		150SCTAZXCL/G-150SCTAZXCL	
		300							300SCTAZXCL/G-300SCTAZXCL	
TAZXL (-104℃)	SS	150							150UTAZXLM/G-150UTAZXLM	
		300							300UTAZXLM/G-300UTAZXLM	
TAZL (-196℃)		150							150UTAZLM/G-150UTAZLM	BAL15 158
		300							300UTAZLM/G-300UTAZLM	
TDZ		10K		FB			Split		10UTDZ/G-10UTDZ	
									10UTDZM/G-10UTDZM	
		150							150UTDZ/G-150UTDZ	
									150UTDZM/G-150UTDZM	
TDRZ		10K		RB				6B - 8B	10UTDRZ	
									10UTDRZM	

Series	Body Material	Class	End Connection	Bore	Face to Face Dimension	Actuator Mounting Pad	Body Design	Size Range	Fig	Page
TDRZ	SS	150	RF	RB	ASME B16.10	ISO 5211	Split	6B - 10B	150UTDRZ	BAL16 159
								6B - 10B	150UTDRZM	
TDZ	CS	10K		FB				1/2B - 10B	10SCTDZ/G-10SCTDZ	
		150							150SCTDZ/G-150SCTDZ	
TDRZ				RB				6B - 8B	150SCTDRZ	
TDZ	SS	20K		FB				1/2B - 8B	20UTDZ	
									20UTDZM	
		300							300UTDZ	
									300UTDZM	BAL17 160
TDRZ		20K		RB				6B - 10B	20UTDRZ	
									20UTDRZM	
		300						6B - 8B	300UTDRZ	
									300UTDRZM	
TDZ	CS	20K		FB				1/2B - 8B	20SCTDZ	
		300							300SCTDZ	
TDRZ				RB				6B - 8B	300SCTDRZ	
TDZX (-46℃)		150		FB			Split/Ext. Bonnet	1/2B - 10B	150SCTDZXBL/G-150SCTDZXBL	BAL18 161
									150SCTDZXCL/G-150SCTDZXCL	
		300						1/2B - 8B	300SCTDZXBL/G-300SCTDZXBL	
									300SCTDZXCL/G-300SCTDZXCL	
TDZXL (-104℃)	SS	10K						1/2B - 10B	10UTDZXL/G-10UTDZXL	
									10UTDZXLM/G-10UTDZXLM	
		20K						1/2B - 8B	20UTDZXL/G-20UTDZXL	
									20UTDZXLM/G-20UTDZXLM	
		150						1/2B - 10B	150UTDZXL/G-150UTDZXL	BAL19 162
									150UTDZXLM/G-150UTDZXLM	
		300						1/2B - 8B	300UTDZXL/G-300UTDZXL	
									300UTDZXLM/G-300UTDZXLM	
TDZL (-196℃)		10K						1/2B - 10B	10UTDZL/G-10UTDZL	
									10UTDZLM/G-10UTDZLM	
		20K						1/2B - 8B	20UTDZL/G-20UTDZL	
									20UTDZLM/G-20UTDZLM	
		150						1/2B - 10B	150UTDZL/G-150UTDZL	BAL20 163
									150UTDZLM/G-150UTDZLM	
		300						1/2B - 8B	300UTDZL/G-300UTDZL	
									300UTDZLM/G-300UTDZLM	
TBDXK (-50℃)		10K				KITZ Standard		1/2B - 6B	10UTBDXK/G-10UTBDXK	
									10UTBDXKM/G-10UTBDXKM	
		150							150UTBDXK/G-150UTBDXK	
									150UTBDXKM/G-150UTBDXKM	
TDZ (Filtite)		10K				ISO 5211	Split/300℃	1/2B - 10B	10UTDZ1H/G-10UTDZ1H	BAL21 164
		150							150UTDZ1HM/G-150UTDZ1HM	
	CS	10K							10SCTDZ1H/G-10SCTDZ1H	
		150							150SCTDZ1H/G-150SCTDZ1H	
	SS	20K						1/2B - 8B	20UTDZ1H/G-20UTDZ1H	
		300							300UTDZ1HM/G-300UTDZ1HM	
	CS	20K							20SCTDZ1H/G-20SCTDZ1H	
		300							300SCTDZ1H/G300SCTDZ1H	
TDZ (Carbotite)	SS	10K		FB					10UTDZ3H/G-10UTDZ3H	BAL22 165
		150					Split/500℃		150UTDZ3HM/G-150UTDZ3HM	
	CS	10K					Split/300℃		10SCTDZ3H/G-10SCTDZ3H	
		150					Split/425℃		150SCTDZ3H/G-150SCTDZ3H	
	SS	20K							20UTDZ3H/G-20UTDZ3H	
		300					Split/500℃		300UTDZ3HM/G-300UTDZ3HM	
	CS	20K					Split/425℃		20SCTDZ3H/G-20SCTDZ3H	
		300							300SCTDZ3H/G300SCTDZ3H	
TDZ (Metal)	SS	10K					Split/300℃		10UTDZ5H/G-10UTDZ5H	BAL23 166
		150							150UTDZ5HM/G-150UTDZ5HM	
	CS	10K							10SCTDZ5H/G-10SCTDZ5H	
		150							150SCTDZ5H/G-150SCTDZ5H	
	SS	20K							20UTDZ5H/G-20UTDZ5H	
		300							300UTDZ5HM/G-300UTDZ5HM	
	CS	20K							20SCTDZ5H/G-20SCTDZ5H	
		300							300SCTDZ5H/G300SCTDZ5H	
	SS	10K							10UTDZ6H/G-10UTDZ6H	BAL24 167
		150					Split/500℃		150UTDZ6HM/G-150UTDZ6HM	
	CS	10K					Split/300℃		10SCTDZ6H/G-10SCTDZ6H	
		150					Split/425℃		150SCTDZ6H/G-150SCTDZ6H	
	SS	20K							20UTDZ6H/G-20UTDZ6H	
		300					Split/500℃		300UTDZ6HM/G-300UTDZ6HM	
	CS	20K					Split/425℃		20SCTDZ6H/G-20SCTDZ6H	
		300							300SCTDZ6H/G300SCTDZ6H	
Λ Port (Flek)	SS	10K					Split/For Control	1B - 8B	L-10UVC	BAL25 168
		150							L-150UVCM	
		10K						6B - 14B	G-10UVC	
		150							G-150UVCM	
		20K						1B - 8B	L-20UVC	
		300							L-300UVCM	
		20K						6B - 10B	G-20UVC	
		300							G-300UVCM	

Series	Body Material	Class	End Connection	Bore	Face to Face Dimension	Actuator Mounting Pad	Body Design	Size Range	Fig	Page
Λ Port (Knife)	SS	10K	RF	FB	ASME B16.10	ISO 5211	Split/For Control	1B - 8B	L-10UVCT	BAL26 169
		150							L-150UVCTM	
		10K						6B - 12B	G-10UVCT	
		150							G-150UVCTM	
		20K						1B - 8B	L-20UVCT	
		300							L-300UVCTM	
		20K						6B - 10B	G-20UVCT	
		300							G-300UVCTM	
3TC (T60S)		10K					3 pc/Fire Safe	2B - 24B	10UF3TCSM/G-10UF3TCSM	BAL27 170
		150							150UF3TCSM/G-150UF3TCSM	
3TCR (T60S)		10K		RB				3B - 24B	10UF3TCRSM/G-10UF3TCRSM	
		150							150UF3TCRSM/G-150UF3TCRSM	
3TC (T60S)	CS	10K		FB				2B - 24B	10SF3TCS/G-10SF3TCS	
		150							150SF3TCS/G-150SF3TCS	
3TCR (T60S)		10K		RB				3B - 24B	10SF3TCRS/G-10SF3TCRS	
		150							150SF3TCRS/G-150SF3TCRS	
3TC (T60S)		10K		FB				2B - 24B	10SF3TCSBL/G-10SF3TCSBL	BAL28 171
		150							150SF3TCSBL/G-150SF3TCSBL	
3TCR (T60S)		10K		RB				3B - 24B	10SF3TCRSBL/G-10SF3TCRSBL	
		150							150SF3TCRSBL/G-150SF3TCRSBL	
3TC (T60S)	SS	20K		FB				2B - 24B	20UF3TCSM/G-20UF3TCSM	
		300							300UF3TCSM/G-300UF3TCSM	
3TCR (T60S)		20K		RB				3B - 24B	20UF3TCRSM/G-20UF3TCRSM	
		300							300UF3TCRSM/G-300UF3TCRSM	
3TC (T60S)	CS	20K		FB				2B - 24B	20SF3TCS/G-20SF3TCS	BAL29 172
		300							300SF3TCS/G-300SF3TCS	
3TCR (T60S)		20K		RB				3B - 24B	20SF3TCRS/G-20SF3TCRS	
		300							300SF3TCRS/G-300SF3TCRS	
3TC (T60S)		20K		FB				2B - 24B	20SF3TCSBL/G-20SF3TCSBL	
		300							300SF3TCSBL/G-300SF3TCSBL	
3TCR (T60S)		20K		RB				3B - 24B	20SF3TCRSBL/G20SF3TCRSBL	
		300							300SF3TCRSBL/G-300SF3TCRSBL	
3TC (T60S)	SS	600		FB				2B - 24B	600UF3TCSM/G-600UF3TCSM	BAL30 173
3TCR (T60S)				RB				3B - 24B	600UF3TCRSM/G-600UF3TCRSM	
3TC (T60S)	CS			FB				2B - 24B	600SF3TCS/G-600SF3TCS	
3TCR (T60S)				RB				3B - 24B	600SF3TCRS/G-600SF3TCRS	
3TC (T60S)				FB				2B - 24B	600SF3TCSBL/G-600SF3TCSBL	
3TCR (T60S)				RB				3B - 24B	600SF3TCRSBL/G-600SF3TCRSBL	
3TC (T60S)	SS	900		FB				2B - 24B	900UF3TCSM/G-900UF3TCSM	BAL31 174
	CS								900SF3TCS/G-900SF3TCS	
									900SF3TCSBL/G-900SF3TCSBL	
	SS	1500						3B - 24B	1500UF3TCSM/G-1500UF3TCSM	
	CS							2B - 24B	1500SF3TCS/G-1500SF3TCS	
									1500SF3TCSBL/G-1500SF3TCSBL	
3TC (T60M)	SS	150					3 pc/525℃		150UF3TC6HM/G-150UF3TC6HM	
3TCR (T60M)								3B - 24B	150UF3TCR6HM/G-150UF3TCR6HM	
3TC (T60M)	CS							2B - 24B	150SF3TC6HM/G-150SF3TC6HM	
3TCR (T60M)				RB				3B - 24B	150SF3TCR6HM/G-150SF3TCR6HM	
3TC (T60M)	SS	300		FB				2B - 24B	300UF3TC6HM/G-300UF3TC6HM	BAL32 175
3TCR (T60M)				RB					300UF3TCR6HM/G-300UF3TCR6HM	
3TC (T60M)	CS			FB					300SF3TC6HM/G-300SF3TC6HM	
3TCR (T60M)				RB				3B - 24B	300SF3TCR6HM/G-300SF3TCR6HM	
3TC (T60M)	SS	600		FB				2B - 24B	G-600UF3TC6HM	
3TCR (T60M)				RB					G-600UF3TCR6HM	
3TC (T60M)				FB					G-600SF3TC6HM	
3TCR (T60M)				RB					G-600SF3TCR6HM	
14-K (-196℃)	SS	150		FB			Split/Ext. Bonnet	1 1/2B - 16B	(G-)150UPG14K	BAL33 176
		300							(G-)300UPG14K	
		600							(G-)600UPG14K	
67-K (-196℃)		150	BW				Top Entry/Ext. Bonnet	1B - 8B	(G-)W150UPG67K	
		300							(G-)W300UPG67K	
		600						1B - 2B	(G-)W600UPG67K	
		900							(G-)W900UPG67K	
66-K (-196℃)		150						1/2B - 3/4B	(G-)W150UPG66K	BAL34 177
		300							(G-)W300UPG66K	
		600							(G-)W600UPG66K	
		900							(G-)W900UPG66K	
		1500						1/2B - 2B	(G-)W1500UPG66K	
64-K (-196℃)		150						10B - 16B	(G-)W150UPG64K	
		300							(G-)W300UPG64K	
		600						21/2B - 16B	(G-)W600UPG64K	
		900							(G-)W900UPG64K	
		1500							(G-)W1500UPG64K	BAL35 178

* (Abbreviation) RF: Raised Face Ends, BW: Butt welding Ends
FB: Full Bore, RB: Reduced Bore

PRODUCT CODING

Steel Floating Ball Valves

(Note: Some products do not follow this coding system)

G - 150 SC TDZ 1H M -FS
1 2 3 4 5 6 7

① Operation

None	Lever
G	Gear

② Pressure Class

10	10K
20	20K
150	Class 150
300	Class 300
600	Class 600
1500	Class 1500

③ Symbols for Shell Material

U	Stainless / High Alloy Steel
SC	Carbon / Low Alloy Steel

④ Design & Type

TB・TR	TB (FB) / TR (RB) Series
TBD	TB (F-to-F:API 6D/ASME B16.10)
TBP	TB (Pocketless)
TBT	TB (Tank Ball)
TB2L/T・TR2L/T	TB/TR (3-way, 2-seat, L or T-Port)
TB4L/LA・TR4L/LA	TB/TR (3-way, 4-seat, L or T-Port)
TBJ・TRJ	TB/TR (Jacketed)
TBLN	TB (PFA Lined)
TAZ	TA (RB) Series
TAZX	TA (-46℃ Series) for SC in ③
TAZXL	TA (-104℃ Service) for U in ②
TAZL	TA (-196℃ Service) for U in ③
TDZ・TDRZ	TDZ (FB) / TDRZ (RB) Series
TDZX	TDZ (-46℃ Service) for SC in ③
TDZXL	TDZ (-104℃ Service) for U in ③
TDZL	TDZ (-196℃ Service) for U in ③

⑤ Seat Material

None	HYPATITE® PTFE (RTFE or Nylon w/ MoS2*2)
1H*1	Filltite (300°C)
3H*1	Hard Graphite (500°C (WCB 425°C))
5H*1	Metal (300°C)
6H*1	Metal (500°C (WCB 425°C))

*1 TDZ Series only *2 for Class 600/1500

⑥ Shell / Trim Material

For U in ③

None	CF8 (304)
M	CF8M (316)
O	CF3M (316L)
V	CF3 (304L)
CB	CF8C (321)
CG	CG8M (317)
CK	CK20 (310)
SD	Super Duplex
CN	CN7M (Alloy 20)
HB	N-12MV (Hastelloy B)
HC	CW-12MW (Hastelloy C)

For SC of ③

None	WCB (A105)/CF8 (304)
M	WCB (A105)/CF8M (316)
BLM	LCB (LF2)/CF8M (316)
CLM	LCC (LF2)/CF8M (316)

⑦ Packing / Gasket Material

None	PTFE (Except 1H/3H/5H/6H)
S	Flexible Graphite (For Class 600/1500)
-FS	Flexible Graphite (For TA/TDZ Series)

Λ (Lambda) - Port Control Valves

(Note: Some products do not follow this coding system)

L - 150 UVC T M
1 2 3 4 5

① Operation

L	Lever for Λ Port
G	Gear

② Pressure Class

10	10K
20	20K
150	Class 150
300	Class 300

④ Seat Type

None	Flekseat for General Service
T	Knifeseat for Heavy Duty Service

⑤ Shell / Trim Material

For U of ③

None	CF8 (304)
M	CF8M (316)

Steel Trunnion Mounted Ball Valves

(Note: Some products do not follow this coding system)

G - 150 UF 3TC S M

1 2 3 4 5 6

1 Operation

None ..... Lever
G ..... Gear

2 Pressure Class

10 ..... 10K
20 ..... 20K
150 ..... Class 150
300 ..... Class 300
600 ..... Class 600
1500 ..... Class 1500

3 Symbols for Shell Material

UF ..... Stainless / High Alloy Steel
SF ..... Carbon / Low Alloy Steel

4 Design & Type

3TC ..... 3 pc FB Trunnion Mounted
3TCR ..... 3 pc RB Trunnion Mounted

5 Seat Type

S ..... Soft Seated (Fire Safe)
6H* ..... Metal Seated (Fire Safe)

* In case of use at higher than 400ºC, please contact KITZ.

6 Shell Material

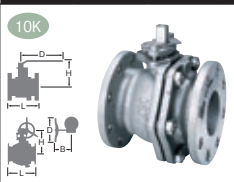
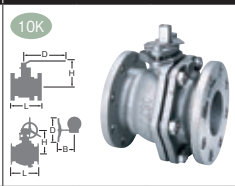
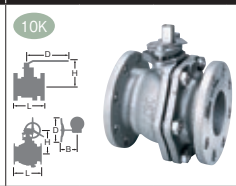
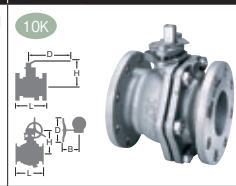
For UF in ③
None ..... F304 (or CF8)
M ..... F316 (or CF8M)
For SF in ③
None ..... A105 or (A105)
BL ..... LF2 (or LCB or LCC)

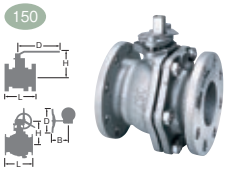
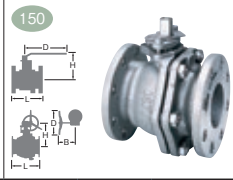
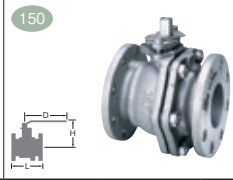
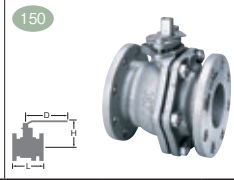
Design Specification

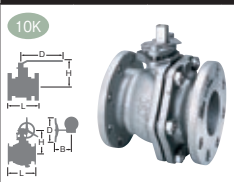
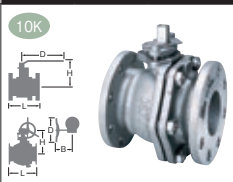
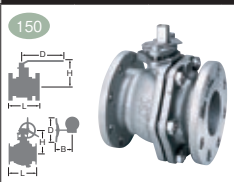
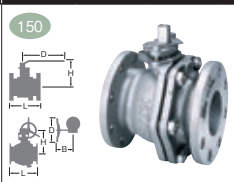
Ball Valves

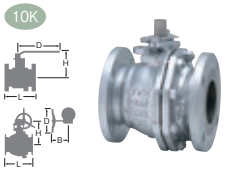
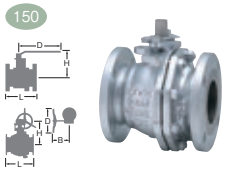
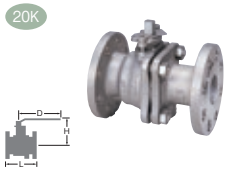
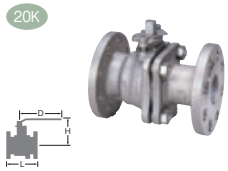
Series		TB/TR/TBD	TAZ/TDZ/TDRZ	3TC/3TCR	Λ Port
P-T Rating	Shell	ASME B16.34			
	Resilient Seating Parts	KITZ Standard			
Bore Size		KITZ Standard	API 608/ISO 17292	API 6D/ISO 14313	KITZ Standard
Shell Wall Thickness & General Valve Design		ASME B16.34	ASME B16.34/ISO 17292	ASME B16.34	
Face to Face Dimension		ASME B16.10*1	ASME B16.10	ASME B16.10/API 6D	ASME B16.10
End Flange Dimension & Flange Gasket Facing		ASME B16.5*2		ASME B16.5/MSS SP-44 (20^{B})/ASME B16.47 Series A (26^{B} & above)	ASME B16.5 *2
Butt Welding End Dimension		ASME B16.25			–
Pressure Test		API 598	API 598/ISO 5208	API 598/ISO 5208/API 6D	KITZ Standard
Fire Test		–	API 607/ISO 10497	API 607/ISO 10497/API 6FA	–
Fugitive Emission Test (Up to Class 600)		–	API 641/ISO 15848-1		–
Cryogenic / Low Temperature Test*3		–	ISO 28921-1		–

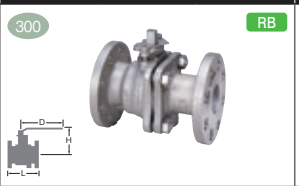
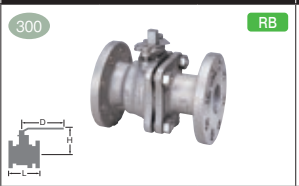
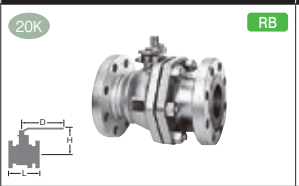
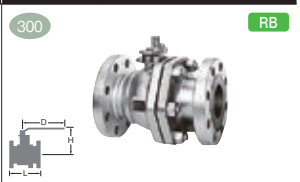
*1 For 10UTBD, 150UTBP, 150/300UTR/SCTR, 150/600UTB only. Others are KITZ Standard.
*2 (1) 10K Type is JIS B2220
(2) Dimensions in Pipe Connection except 3TC/3TCR Series shall indicate dimensions in millimeters converted from dimensions in inches according to ASME B16.5.
*3 For X, XL, L (Low Temperature & Cryogenic Service Valves)

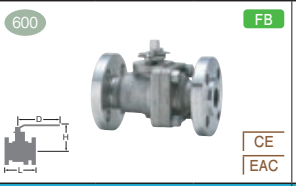
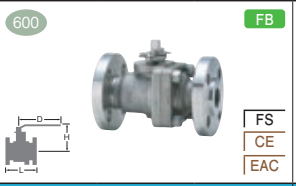
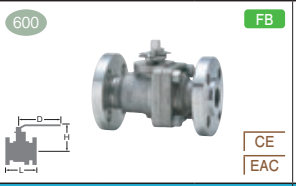
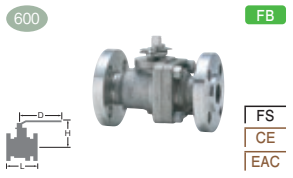
Type		TB Series				TB Series				TB Series				TB Series			
Ball Valve																	
Fig		10UTB/G-10UTB				10UTBM/G-10UTBM				10UTBD/G-10UTBD				10UTBDM/G-10UTBDM			
End Connection		JIS B2220 10K RF				JIS B2220 10K RF				JIS B2220 10K RF				JIS B2220 10K RF			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	B	L	H	D	B
1/2	15	110	102	130		110	102	130		108	102	130		108	102	130	
3/4	20	120	105	130		120	105	130		117	105	130		117	105	130	
1	25	130	124	160		130	124	160		127	124	160		127	124	160	
11/4	32	140	128	160		140	128	160		140	128	160		140	128	160	
11/2	40	165	113	230		165	113	230		165	113	230		165	113	230	
2	50	180	120	230		180	120	230		178	120	230		178	120	230	
21/2	65	190	154	400		190	154	400		190	154	400		190	154	400	
3	80	200	163	400		200	163	400		203	163	400		203	163	400	
4	100	230	197	460		230	197	460		229	197	460		229	197	460	
5	125	300	217	460		300	217	460		356	217	460		356	217	460	
6	150	340	291	1000		340	291	1000		394	291	1000		394	291	1000	
8	200	450	350	1500		450	350	1500		457	350	1500		457	350	1500	
10	250	533	477	500	363	533	477	500	363	533	477	500	363	533	477	500	363
Body/Cap		CF8				CF8M				CF8				CF8M			
Stem		304SS				316SS				304SS				316SS			
Ball		304SS/CF8				316SS/CF8M				304SS/CF8				316SS/CF8M			
Gland Packing		PTFE				PTFE				PTFE				PTFE			
Gasket		PTFE				PTFE				PTFE				PTFE			
Ball Seat		HYPATITE® PTFE				HYPATITE® PTFE				HYPATITE® PTFE				HYPATITE® PTFE			
Bore		Full Bore				Full Bore				Full Bore				Full Bore			
Cap B/N		B8/8				B8/8				B8/8				B8/8			
F-to-F Dimension		KITZ Standard				KITZ Standard				ASME B16.10				ASME B16.10			
Actuator Mounting Pad		KITZ Standard				KITZ Standard				KITZ Standard				KITZ Standard			
Handle		DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit			
Reference Page		P-T Rating : Page BAL58				P-T Rating : Page BAL58				P-T Rating : Page BAL58				P-T Rating : Page BAL58			
Remarks		Anti-Static Design Anti-Blowout Stem Fire Safe Design Gear for 10B Gear for 21/2B & over: Available				Anti-Static Design Anti-Blowout Stem Fire Safe Design Gear for 10B Gear for 21/2B & over: Available				Anti-Static Design Anti-Blowout Stem Fire Safe Design Gear for 10B Gear for 21/2B & over: Available				Anti-Static Design Anti-Blowout Stem Fire Safe Design Gear for 10B Gear for 21/2B & over: Available			

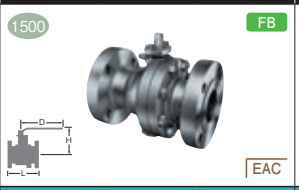
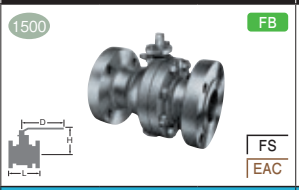
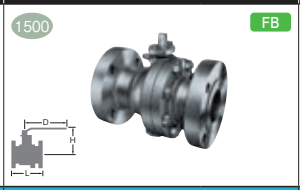
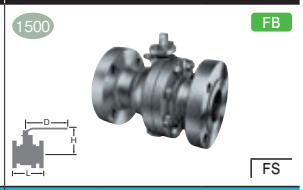
Type		TB Series				TB Series				TB Series (Pocketless)			TB Series (Pocketless)		
Ball Valve															
Fig		150UTB/G-150UTB				150UTBM/G-150UTBM				150UTBP			150UTBPM		
End Connection		ASME B16.5 Class 150 RF				ASME B16.5 Class 150 RF				ASME B16.5 Class 150 RF			ASME B16.5 Class 150 RF		
inch	mm	L	H	D	B	L	H	D	B	L	H	D	L	H	D
1/2	15	108	102	130		108	102	130		108	102	130	108	102	130
3/4	20	117	105	130		117	105	130		117	105	130	117	105	130
1	25	127	124	160		127	124	160		127	124	160	127	124	160
11/4	32	140	128	160		140	128	160							
11/2	40	165	113	230		165	113	230		165	113	230	165	113	230
2	50	178	120	230		178	120	230		178	121	230	178	121	230
21/2	65	190	154	400		190	154	400		190	154	400	190	154	400
3	80	203	163	400		203	163	400		203	163	400	203	163	400
4	100	229	197	460		229	197	460		229	197	460	229	197	460
5	125	356	217	460		356	217	460		356	217	460	356	217	460
6	150	394	292	1000		394	292	1000		394	292	1000	394	292	1000
8	200	457	350	1500		457	350	1500		457	350	1500	457	350	1500
10	250	533	477	500	363	533	477	500	363						
Body/Cap		CF8				CF8M				CF8			CF8M		
Stem		304SS				316SS				304SS			316SS		
Ball		304SS/CF8				316SS/CF8M				304SS/CF8			316SS/CF8M		
Gland Packing		PTFE				PTFE				PTFE			PTFE		
Gasket		PTFE				PTFE				PTFE			PTFE		
Ball Seat		HYPATITE® PTFE				HYPATITE® PTFE				HYPATITE® PTFE			HYPATITE® PTFE		
Bore		Full Bore				Full Bore				Full Bore			Full Bore		
Cap B/N		B8/8				B8/8				B8/8			B8/8		
F-to-F Dimension		ASME B16.10				ASME B16.10				ASME B16.10			ASME B16.10		
Actuator Mounting Pad		KITZ Standard				KITZ Standard				KITZ Standard			KITZ Standard		
Handle		DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS			DI/CS		
Standard/Approval		TR-CU/EAC				TR-CU/EAC									
Reference Page		P-T Rating : Page BAL58				P-T Rating : Page BAL58				P-T Rating : Page BAL58			P-T Rating : Page BAL58		
Remarks		Anti-Static Design Anti-Blowout Stem Fire Safe Design Gear for 10B Gear for 21/2B & over: Available				Anti-Static Design Anti-Blowout Stem Fire Safe Design Gear for 10B Gear for 21/2B & over: Available				Anti-Static Design Anti-Blowout Stem Fire Safe Design			Anti-Static Design Anti-Blowout Stem Fire Safe Design		

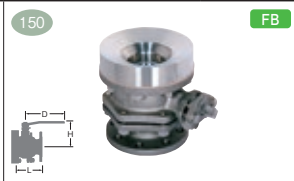
Type		TR Series				TR Series				TR Series				TR Series			
Ball Valve																	
Fig		10UTR/G-10UTR				10UTRM/G-10UTRM				150UTR/G-150UTR				150UTRM/G-150UTRM			
End Connection		JIS B2220 10K RF				JIS B2220 10K RF				ASME B16.5 Class 150 RF				ASME B16.5 Class 150 RF			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	B	L	H	D	B
2	50	178	113	230		178	113	230		178	113	230		178	113	230	
21/2	65	190	120	230		190	120	230		190	120	230		190	120	230	
3	80	203	154	400		203	154	400		203	154	400		203	154	400	
4	100	229	163	400		229	163	400		229	163	400		229	163	400	
5	125	250	197	460		250	197	460		254	200	460		254	200	460	
6	150	270	217	460		270	217	460		267	217	460		267	217	460	
8	200	290	292	1000		290	291	1000		292	292	1000		292	292	1000	
10	250	330	350	1500		330	350	1500		330	350	1500		330	350	1500	
12	300	356	477	500	363	356	477	500	363	356	477	500	363	356	477	500	363
Body/Cap		CF8				CF8M				CF8				CF8M			
Stem		304SS				316SS				304SS				316SS			
Ball		304SS/CF8				316SS/CF8M				304SS/CF8				316SS/CF8M			
Gland Packing		PTFE				PTFE				PTFE				PTFE			
Gasket		PTFE				PTFE				PTFE				PTFE			
Ball Seat		HYPATITE® PTFE				HYPATITE® PTFE				HYPATITE® PTFE				HYPATITE® PTFE			
Bore		Reduced Bore				Reduced Bore				Reduced Bore				Reduced Bore			
Cap B/N		B8/8				B8/8				B8/8				B8/8			
F-to-F Dimension		KITZ Standard				KITZ Standard				ASME B16.10				ASME B16.10			
Actuator Mounting Pad		KITZ Standard				KITZ Standard				KITZ Standard				KITZ Standard			
Handle		DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit			
Reference Page		P-T Rating : Page BAL58				P-T Rating : Page BAL58				P-T Rating : Page BAL58				P-T Rating : Page BAL58			
Remarks		Anti-Static Design Anti-Blowout Stem Fire Safe Design Gear for 12B Gear for 3B & over: Available				Anti-Static Design Anti-Blowout Stem Fire Safe Design Gear for 12B Gear for 3B & over: Available				Anti-Static Design Anti-Blowout Stem Fire Safe Design Gear for 12B Gear for 3B & over: Available				Anti-Static Design Anti-Blowout Stem Fire Safe Design Gear for 12B Gear for 3B & over: Available			

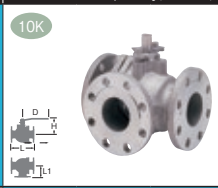
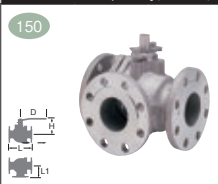
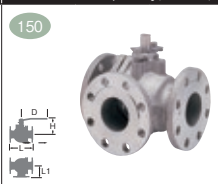
Type		TR Series				TR Series				TR Series			TR Series		
Ball Valve															
Fig		10SCTR/G-10SCTR				150SCTR/G-150SCTR				20UTR			20UTRM		
End Connection		JIS B2220 10K RF				ASME B16.5 Class 150 RF				JIS B2220 20K RF			JIS B2220 20K RF		
inch	mm	L	H	D	B	L	H	D	B	L	H	D	L	H	D
2	50									216	113	230	216	113	230
3	80									283	154	400	283	154	400
4	100									305	163	400	305	163	400
5	125	254	197	460		254	197	460							
6	150	267	217	460		267	217	460		403	263	750	403	263	750
8	200	292	292	1000		292	292	1000		419	292	1000	419	292	1000
10	250	330	350	1500		330	350	1500		457	350	1500	457	350	1500
12	300	356	477	500	363	356	477	500	363						
Body/Cap		WCB				WCB				CF8			CF8M		
Stem		304SS				304SS				304SS			316SS		
Ball		304SS/CF8				304SS/CF8				304SS/CF8			316SS/CF8M		
Gland Packing		PTFE				PTFE				PTFE			PTFE		
Gasket		Non Asbestos Sheet				Non Asbestos Sheet				PTFE			PTFE		
Ball Seat		HYPATITE® PTFE				HYPATITE® PTFE				HYPATITE® PTFE			HYPATITE® PTFE		
Bore		Reduced Bore				Reduced Bore				Reduced Bore			Reduced Bore		
Cap B/N		B7/2H				B7/2H				B8/8			B8/8		
F-to-F Dimension		ASME B16.10				ASME B16.10				ASME B16.10			ASME B16.10		
Actuator Mounting Pad		KITZ Standard				KITZ Standard				KITZ Standard			KITZ Standard		
Handle		DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS			DI/CS		
Reference Page		P-T Rating : Page BAL58				P-T Rating : Page BAL58				P-T Rating : Page BAL58			P-T Rating : Page BAL58		
Remarks		Anti-Static Design Anti-Blowout Stem Fire Safe Design Gear for 12B Gear for 5B & over: Available				Anti-Static Design Anti-Blowout Stem Fire Safe Design Gear for 12B Gear for 5B & over: Available				Anti-Static Design Anti-Blowout Stem Fire Safe Design			Anti-Static Design Anti-Blowout Stem Fire Safe Design		

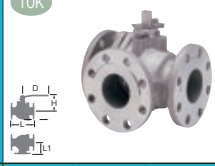
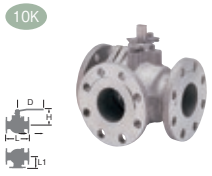
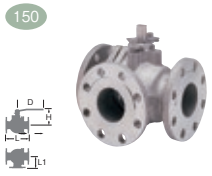
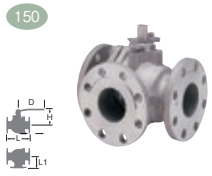
Type		TR Series			TR Series			TR Series			TR Series		
Ball Valve		300 RB 			300 RB 			20K RB 			300 RB 		
Fig		300UTR			300UTRM			20SCTR			300SCTR		
End Connection		ASME B16.5 Class 300 RF			ASME B16.5 Class 300 RF			JIS B2220 20K RF			ASME B16.5 Class 300 RF		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
2	50	216	113	230	216	113	230						
3	80	283	154	400	283	154	400						
4	100	305	163	400	305	163	400						
6	150	403	263	750	403	263	750	403	260	750	403	263	750
8	200	419	292	1000	419	292	1000	419	295	1000	419	292	1000
10	250	457	350	1500	457	350	1500	457	355	1500	457	350	1500
Body/Cap		CF8			CF8M			WCB			WCB		
Stem		304SS			316SS			304SS			304SS		
Ball		304SS/CF8			316SS/CF8M			304SS/CF8			304SS/CF8		
Gland Packing		PTFE			PTFE			PTFE			PTFE		
Gasket		PTFE			PTFE			Non Asbestos Sheet			Non Asbestos Sheet		
Ball Seat		HYPATITE® PTFE			HYPATITE® PTFE			HYPATITE® PTFE			HYPATITE® PTFE		
Bore		Reduced Bore			Reduced Bore			Reduced Bore			Reduced Bore		
Cap B/N		B8/8			B8/8			B7/2H			B7/2H		
F-to-F Dimension		ASME B16.10			ASME B16.10			ASME B16.10			ASME B16.10		
Actuator Mounting Pad		KITZ Standard			KITZ Standard			KITZ Standard			KITZ Standard		
Handle		DI/CS			DI/CS			DI/CS			DI/CS		
Reference Page		P-T Rating : Page BAL58			P-T Rating : Page BAL58			P-T Rating : Page BAL58			P-T Rating : Page BAL58		
Remarks		Anti-Static Design Anti-Blowout Stem Fire Safe Design			Anti-Static Design Anti-Blowout Stem Fire Safe Design			Anti-Static Design Anti-Blowout Stem Fire Safe Design Gear for 12B Gear for 5B & over: Available			Anti-Static Design Anti-Blowout Stem Fire Safe Design Gear for 12B Gear for 5B & over: Available		

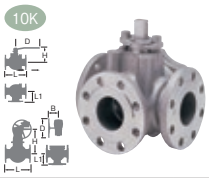
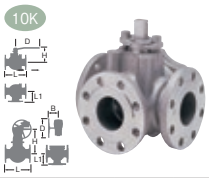
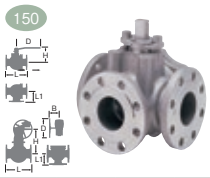
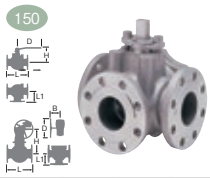
Type		TB Series			TB Series			TB Series			TB Series		
Ball Valve		600 FB  CE EAC			600 FB  FS CE EAC			600 FB  CE EAC			600 FB  FS CE EAC		
Fig		600UTBM			600UTBSM			600SCTB			600SCTBS		
End Connection		ASME B16.5 Class 600 RF			ASME B16.5 Class 600 RF			ASME B16.5 Class 600 RF			ASME B16.5 Class 600 RF		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/2	15	165	105	130	165	105	130	165	105	130	165	105	130
3/4	20	190	108	130	190	108	130	190	108	130	190	108	130
1	25	216	130	160	216	130	160	216	130	160	216	130	160
11/2	40	241	118	230	241	118	230	241	118	230	241	118	230
Body/Cap		CF8M			CF8M			A105			A105		
Stem		316SS			316SS			304SS			304SS		
Ball		316SS/CF8M			316SS/CF8M			304SS			304SS		
Gland Packing		PTFE			Flexible Graphite			PTFE			Flexible Graphite		
Gasket					Flexible Graphite Spiral Wound						Flexible Graphite Spiral Wound		
Ball Seat		G/F PTFE with MoS2			G/F PTFE with MoS2			G/F PTFE with MoS2			G/F PTFE with MoS2		
Boffre		Full Bore			Full Bore			Full Bore			Full Bore		
Cap B/N		B8/8			B8/8			B7/2H			B7/2H		
F-to-F Dimension		ASME B16.10			ASME B16.10			ASME B16.10			ASME B16.10		
Actuator Mounting Pad		KITZ Standard			KITZ Standard			KITZ Standard			KITZ Standard		
Handle		DI			DI			DI			DI		
O ring/Seat Spring		FKM/Inconel X-750			FKM/Inconel X-750			NBR/304SS			NBR/304SS		
Standard/Approval		PED/CE, TR-CU/EAC			FS: API607, PED/CE, TR-CU/EAC			PED/CE, TR-CU/EAC			FS: API607, PED/CE, TR-CU/EAC		
Reference Page		P-T Rating : Page BAL59			P-T Rating : Page BAL59			P-T Rating : Page BAL59			P-T Rating : Page BAL59		
Remarks		Anti-Static Design Anti-Blowout Stem Fire Safe Design			Anti-Static Design Anti-Blowout Stem Fire Safe Design			Anti-Static Design Anti-Blowout Stem Fire Safe Design			Anti-Static Design Anti-Blowout Stem Fire Safe Design		

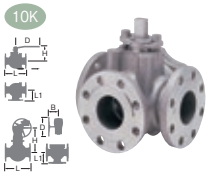
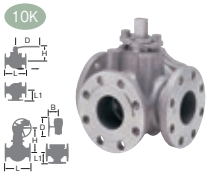
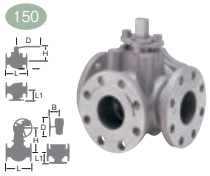
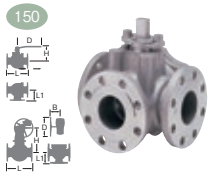
Type		TB Series			TB Series			TB Series			TB Series		
Ball Valve													
Fig		1500UTBM			1500UTBSM			1500SCTB			1500SCTBS		
End Connection		ASME B16.5 Class 1500 RF			ASME B16.5 Class 1500 RF			ASME B16.5 Class 1500 RF			ASME B16.5 Class 1500 RF		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/2	15	216	134	160	216	134	160	216	134	160	216	134	160
3/4	20	229	117	230	229	117	230	229	117	230	229	117	230
1	25	254	123	230	254	123	230	254	123	230	254	123	230
11/2	40	305	149	400	305	149	400	305	149	400	305	149	400
Body/Cap		CF8M			CF8M			WCB			WCB		
Stem		316SS			316SS			304SS			304SS		
Ball		316SS/CF8M			316SS/CF8M			304SS			304SS		
Gland Packing		PTFE			Flexible Graphite			PTFE			Flexible Graphite		
Gasket					Flexible Graphite Spiral Wound						Flexible Graphite Spiral Wound		
Ball Seat		Nylon with MoS2			Nylon with MoS2			Nylon with MoS2			Nylon with MoS2		
Bore		Full Bore			Full Bore			Full Bore			Full Bore		
Cap B/N		B8/8			B8/8			B7/2H			B7/2H		
O ring/Seat Spring		FKM/Inconel X-750			FKM/Inconel X-750			NBR/304SS			NBR/304SS		
F-to-F Dimension		ASME B16.10			ASME B16.10			ASME B16.10			ASME B16.10		
Actuator Mounting Pad		KITZ Standard			KITZ Standard			KITZ Standard			KITZ Standard		
Handle		DI			DI			DI			DI		
Standard/Approval		TR-CU/EAC			FS: API607, TR-CU/EAC						FS: API607		
Reference Page		P-T Rating : Page BAL59			P-T Rating : Page BAL59			P-T Rating : Page BAL59			P-T Rating : Page BAL59		
Remarks		Anti-Static Design Anti-Blowout Stem Fire Safe Design			Anti-Static Design Anti-Blowout Stem Fire Safe Design			Anti-Static Design Anti-Blowout Stem Fire Safe Design			Anti-Static Design Anti-Blowout Stem Fire Safe Design		

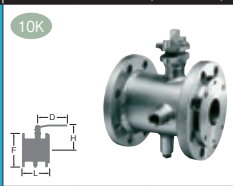
Type		TB Series(Tank Ball)				TB Series(Tank Ball)				TB Series(Tank Ball)			TB Series(Tank Ball)		
Ball Valve															
Fig		10UTBT/G-10UTBT				10UTBTM/G-10UTBTM				150UTBT			150UTBTM		
End Connection		JIS B2220 10K RF				JIS B2220 10K RF				ASME B16.5 Class 150 RF			ASME B16.5 Class 150 RF		
inch	mm	L	H	D	B	L	H	D	B	L	H	D	L	H	D
1	25	105	150	160		105	150	160		102	150	160	102	150	160
11/2	40	125	133	230		125	133	230		125	133	230	125	133	230
2	50	143	142	230		143	142	230		142	142	230	142	142	230
21/2	65	160	176	400		160	176	400		160	176	400	160	176	400
3	80	167	185	400		167	185	400		171	185	400	171	185	400
4	100	176.5	221	460		176.5	221	460		176	221	460	176	221	460
5	125	227	241	460		227	241	460		255	241	460	255	241	460
6	150	265	311	1000		265	311	1000		292	312	1000	292	312	1000
8	200	358	434	360	210	358	434	360	210						
10	250	454	497	500	363	454	497	500	363						
Body/Cap		CF8				CF8M				CF8			CF8M		
Stem		304SS				316SS				304SS			316SS		
Ball		304SS/CF8				316SS/CF8M				304SS/CF8			316SS/CF8M		
Gland Packing		PTFE				PTFE				PTFE			PTFE		
Gasket		PTFE (Ceramic PTFE for Tank Pad)				PTFE (Ceramic PTFE for Tank Pad)				PTFE (Ceramic PTFE for Tank Pad)			PTFE (Ceramic PTFE for Tank Pad)		
Ball Seat		HYPATITE® PTFE				HYPATITE® PTFE				HYPATITE® PTFE			HYPATITE® PTFE		
Bore		Full Bore				Full Bore				Full Bore			Full Bore		
Cap B/N		B8/8				B8/8				B8/8			B8/8		
Tank pad		316SS				316SS				316SS			316SS		
F-to-F Dimension		KITZ Standard				KITZ Standard				KITZ Standard			KITZ Standard		
Actuator Mounting Pad		KITZ Standard				KITZ Standard				KITZ Standard			KITZ Standard		
Handle		DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS			DI/CS		
Reference Page		P-T Rating : Page BAL58 Max Allowable Temp is 200℃ (382℉)				P-T Rating : Page BAL58 Max Allowable Temp is 200℃ (382℉)				P-T Rating : Page BAL58 Max Allowable Temp is 200℃ (382℉)			P-T Rating : Page BAL58 Max Allowable Temp is 200℃ (382℉)		
Remarks		Anti-Static Design Anti-Blowout Stem				Anti-Static Design Anti-Blowout Stem				Anti-Static Design Anti-Blowout Stem			Anti-Static Design Anti-Blowout Stem		

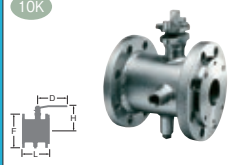
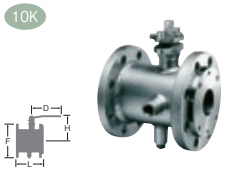
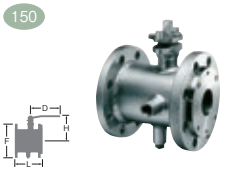
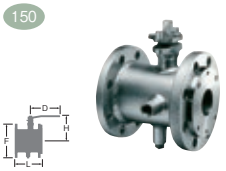
Type		TB Series(3-way,2-seat,L-Port)				TB Series(3-way,2-seat,L-Port)				TB Series(3-way,2-seat,L-Port)				TB Series(3-way,2-seat,L-Port)			
Ball Valve		10K FB 				10K FB 				150 FB 				150 FB 			
Fig		10UTB2L				10UTB2LM				150UTB2L				150UTB2LM			
End Connection		JIS B2220 10K RF				JIS B2220 10K RF				ASME B16.5 Class 150 RF				ASME B16.5 Class 150 RF			
inch	mm	L	H	D	L1	L	H	D	L1	L	H	D	L1	L	H	D	L1
1	25	165	124	160	82.5	165	124	160	82.5	165	124	160	82.5	165	124	160	82.5
11/2	40	210	113	230	105	210	113	230	105	210	113	230	105	210	113	230	105
2	50	220	122	230	110	220	122	230	110	220	122	230	110	220	122	230	110
21/2	65	250	156	400	125	250	156	400	125	250	156	400	125	250	156	400	125
3	80	260	163	400	130	260	163	400	130	262	163	400	131	262	163	400	131
4	100	330	201	460	165	330	201	460	165	342	201	460	171	342	201	460	171
Body/Cap		CF8				CF8M				CF8				CF8M			
Stem		304SS				316SS				304SS				316SS			
Ball		304SS/CF8				316SS/CF8M				304SS/CF8				316SS/CF8M			
Gland Packing		PTFE				PTFE				PTFE				PTFE			
Gasket		PTFE				PTFE				PTFE				PTFE			
Ball Seat		HYPATITE® PTFE				HYPATITE® PTFE				HYPATITE® PTFE				HYPATITE® PTFE			
Bore		Full Bore				Full Bore				Full Bore				Full Bore			
Cap B/N		B8/8				B8/8				B8/8				B8/8			
F-to-F Dimension		KITZ Standard				KITZ Standard				KITZ Standard				KITZ Standard			
Actuator Mounting Pad		KITZ Standard				KITZ Standard				KITZ Standard				KITZ Standard			
Handle		DI				DI				DI				DI			
Reference Page		P-T Rating : Page BAL58 Port Orientation : Page BAL63				P-T Rating : Page BAL58 Port Orientation : Page BAL63				P-T Rating : Page BAL58 Port Orientation : Page BAL63				P-T Rating : Page BAL58 Port Orientation : Page BAL63			
Remarks		Anti-Static Design Anti-Blowout Stem				Anti-Static Design Anti-Blowout Stem				Anti-Static Design Anti-Blowout Stem				Anti-Static Design Anti-Blowout Stem			

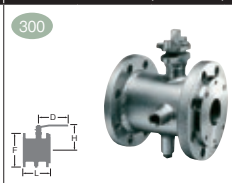
Type		TR Series(3-way,2-seat,L-Port)				TR Series(3-way,2-seat,L-Port)				TR Series(3-way,2-seat,L-Port)				TR Series(3-way,2-seat,L-Port)			
Ball Valve		10K RB 				10K RB 				150 RB 				150 RB 			
Fig		10UTR2L				10UTR2LM				150UTR2L				150UTR2LM			
End Connection		JIS B2220 10K RF				JIS B2220 10K RF				ASME B16.5 Class 150 RF				ASME B16.5 Class 150 RF			
inch	mm	L	H	D	L1	L	H	D	L1	L	H	D	L1	L	H	D	L1
6	150	430	220	460	218.5	430	220	460	218.5	437	220	460	218.5	437	220	460	218.5
Body/Cap		CF8				CF8M				CF8				CF8M			
Stem		304SS				316SS				304SS				316SS			
Ball		304SS/CF8				316SS/CF8M				304SS/CF8				316SS/CF8M			
Gland Packing		PTFE				PTFE				PTFE				PTFE			
Gasket		PTFE				PTFE				PTFE				PTFE			
Ball Seat		HYPATITE® PTFE				HYPATITE® PTFE				HYPATITE® PTFE				HYPATITE® PTFE			
Bore		Reduced Bore				Reduced Bore				Reduced Bore				Reduced Bore			
Cap B/N		B8/8				B8/8				B8/8				B8/8			
F-to-F Dimension		KITZ Standard				KITZ Standard				KITZ Standard				KITZ Standard			
Actuator Mounting Pad		KITZ Standard				KITZ Standard				KITZ Standard				KITZ Standard			
Handle		DI				DI				DI				DI			
Reference Page		P-T Rating : Page BAL58 Port Orientation : Page BAL63				P-T Rating : Page BAL58 Port Orientation : Page BAL63				P-T Rating : Page BAL58 Port Orientation : Page BAL63				P-T Rating : Page BAL58 Port Orientation : Page BAL63			
Remarks		Anti-Static Design Anti-Blowout Stem				Anti-Static Design Anti-Blowout Stem				Anti-Static Design Anti-Blowout Stem				Anti-Static Design Anti-Blowout Stem			

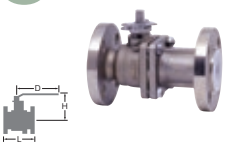
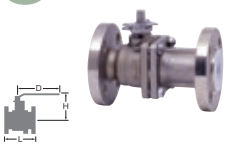
Type		TB Series(3-way,4-seat,L or T-Port)					TB Series(3-way,4-seat,L or T-Port)					TB Series(3-way,4-seat,L or T-Port)					TB Series(3-way,4-seat,L or T-Port)				
Ball Valve		10K FB 					10K FB 					150 FB 					150 FB 				
Fig		10UTB4L(T)A/G-10UTB4L(T)A					10UTB4L(T)AM/G-10UTB4L(T)AM					150UTB4L(T)A/G-150UTB4L(T)A					150UTB4L(T)AM/G-150UTB4L(T)AM				
End Connection																					
inch	mm	L	H	D	L1	B	L	H	D	L1	B	L	H	D	L1	B	L	H	D	L1	B
1/2	15	120	127	160	65		120	127	160	65		120	127	160	65		120	127	160	65	
3/4	20	140	130	160	70		140	130	160	70		135	130	160	67.5		135	130	160	67.5	
1	25	160	134	160	80		160	134	160	80		154	134	160	77		154	134	160	77	
11/2	40	180	144	400	90		180	144	400	90		177	144	400	88.5		177	144	400	88.5	
2	50	200	153	400	100		200	153	400	100		200	153	400	100		200	153	400	100	
21/2	65	240	183	460	120		240	183	460	120		240	183	460	120		240	183	460	120	
3	80	260	195	460	130		260	195	460	130		262	195	460	131		262	195	460	131	
4	100	330	267	1000	165		330	267	1000	165		342	267	1000	171		342	267	1000	171	
5	125	400	289	1000	200		400	289	1000	200											
6	150	450	335	1500	225		450	335	1500	225		457	399	360	228.5	210	457	399	360	228.5	210
8	200	550	467	500	275	363	550	467	500	275	363	563	467	500	281.5	363	563	467	500	281.5	363
Body/Cap		CF8					CF8M					CF8					CF8M				
Stem		304SS					316SS					304SS					316SS				
Ball		304SS/CF8					316SS/CF8M					304SS/CF8					316SS/CF8M				
Gland Packing		PTFE					PTFE					PTFE					PTFE				
Gasket		PTFE					PTFE					PTFE					PTFE				
Ball Seat		HYPATITE® PTFE					HYPATITE® PTFE					HYPATITE® PTFE					HYPATITE® PTFE				
Bore		Full Bore					Full Bore					Full Bore					Full Bore				
Cap B/N		B8/8					B8/8					B8/8					B8/8				
F-to-F Dimension		KITZ Standard					KITZ Standard					KITZ Standard					KITZ Standard				
Actuator Mounting Pad		KITZ Standard					KITZ Standard					KITZ Standard					KITZ Standard				
Handle		DI/CS/Gear Unit					DI/CS/Gear Unit					DI/CS/Gear Unit					DI/CS/Gear Unit				
Reference Page		P-T Rating : Page BAL59 Port Orientation : Page BAL63					P-T Rating : Page BAL59 Port Orientation : Page BAL63					P-T Rating : Page BAL59 Port Orientation : Page BAL63					P-T Rating : Page BAL59 Port Orientation : Page BAL63				
Remarks		Anti-Static Design Anti-Blowout Stem Gear for 8^B, Gear for 6^B: Available					Anti-Static Design Anti-Blowout Stem Gear for 8^B, Gear for 6^B: Available					Anti-Static Design Anti-Blowout Stem Gear for 6^B & 8^B					Anti-Static Design Anti-Blowout Stem Gear for 6^B & 8^B				

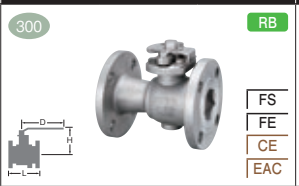
Type		TR Series(3-way,4-seat,L or T-Port)					TR Series(3-way,4-seat,L or T-Port)					TR Series(3-way,4-seat,L or T-Port)					TR Series(3-way,4-seat,L or T-Port)				
Ball Valve		10K RB 					10K RB 					150 RB 					150 RB 				
Fig		10UTR4L(T)A/G-10UTR4L(T)A					10UTR4L(T)AM/G-10UTR4L(T)AM					150UTR4L(T)A/G-150UTR4L(T)A					150UTR4L(T)AM/G-150UTR4L(T)AM				
End Connection																					
inch	mm	L	H	D	L1	B	L	H	D	L1	B	L	H	D	L1	B	L	H	D	L1	B
5	125	340	267	1000	170		340	267	1000	170											
6	150	400	289	1000	200		400	289	1000	200		407	289	1000	203.5		407	289	1000	203.5	
8	200	450	399	360	225	210	450	399	360	225	210	463	399	360	231.5	210	463	399	360	231.5	210
Body/Cap		CF8					CF8M					CF8					CF8M				
Stem		304SS					316SS					304SS					316SS				
Ball		304SS/CF8					316SS/CF8M					304SS/CF8					316SS/CF8M				
Gland Packing		PTFE					PTFE					PTFE					PTFE				
Gasket		PTFE					PTFE					PTFE					PTFE				
Ball Seat		HYPATITE® PTFE					HYPATITE® PTFE					HYPATITE® PTFE					HYPATITE® PTFE				
Bore		Reduced Bore					Reduced Bore					Reduced Bore					Reduced Bore				
Cap B/N		B8/8					B8/8					B8/8					B8/8				
F-to-F Dimension		KITZ Standard					KITZ Standard					KITZ Standard					KITZ Standard				
Actuator Mounting Pad		KITZ Standard					KITZ Standard					KITZ Standard					KITZ Standard				
Handle		CS/Gear					CS/Gear					CS/Gear					CS/Gear				
Reference Page		P-T Rating : Page BAL59 Port Orientation : Page BAL63					P-T Rating : Page BAL59 Port Orientation : Page BAL63					P-T Rating : Page BAL59 Port Orientation : Page BAL63					P-T Rating : Page BAL59 Port Orientation : Page BAL63				
Remarks		Anti-Static Design Anti-Blowout Stem Gear for 8^B, Gear for 6^B: Available					Anti-Static Design Anti-Blowout Stem Gear for 8^B, Gear for 6^B: Available					Anti-Static Design Anti-Blowout Stem Gear for 8^B, Gear for 6^B: Available					Anti-Static Design Anti-Blowout Stem Gear for 8^B, Gear for 6^B: Available				

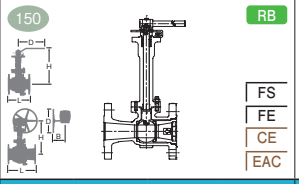
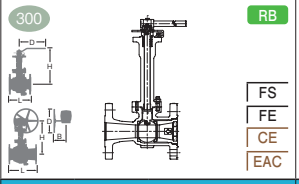
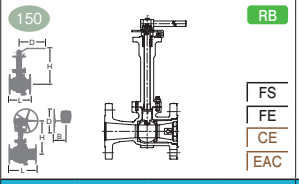
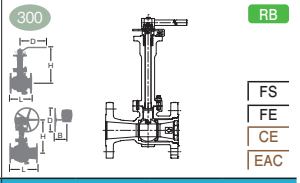
Type		TB Series(Jacketed)				TB Series(Jacketed)				TB Series(Jacketed)				TB Series(Jacketed)			
Ball Valve		10K FB 				10K FB 				150 FB 				150 FB 			
Fig		10UTBJ				10UTBJM				150UTBJ				150UTBJM			
End Connection		JIS B2220 10K RF				JIS B2220 10K RF				ASME B16.5 Class 150 RF				ASME B16.5 Class 150 RF			
inch	mm	L	H	D	F*	L	H	D	F*	L	H	D	F*	L	H	D	F*
1/2	15	110	128	130	11/2	110	128	130	11/2	110	128	130	11/2	110	128	130	11/2
3/4	20	120	132	130	11/2	120	132	130	11/2	120	132	130	11/2	120	132	130	11/2
1	25	130	150	160	2	130	150	160	2	130	150	160	2	130	150	160	2
11/2	40	165	149	230	21/2	165	149	230	21/2	165	149	230	21/2	165	149	230	21/2
2	50	180	156	230	3	180	156	230	3	180	156	230	3	180	156	230	3
21/2	65	190	186	400	4	190	186	400	4	190	186	400	4	190	186	400	4
4	100	254	237	460	6	254	237	460	6								
Body/Cap		CF8				CF8M				CF8				CF8M			
Stem		304SS				316SS				304SS				316SS			
Ball		304SS/CF8				316SS/CF8M				304SS/CF8				316SS/CF8M			
Gland Packing		PTFE				PTFE				PTFE				PTFE			
Gasket		PTFE				PTFE				PTFE				PTFE			
Ball Seat		HYPATITE® PTFE				HYPATITE® PTFE				HYPATITE® PTFE				HYPATITE® PTFE			
Bore		Full Bore				Full Bore				Full Bore				Full Bore			
Cap B/N		SS				SS				SS				SS			
O-ring		FKM				FKM				FKM				FKM			
Jacket		Carbon Steel				Carbon Steel				Carbon Steel				Carbon Steel			
F-to-F Dimension		KITZ Standard				KITZ Standard				KITZ Standard				KITZ Standard			
Actuator Mounting Pad		KITZ Standard				KITZ Standard				KITZ Standard				KITZ Standard			
Handle		DI				DI				DI				DI			
Reference Page		P-T Rating : Page BAL58				P-T Rating : Page BAL58				P-T Rating : Page BAL58				P-T Rating : Page BAL58			
Remarks		Rating for Jacket: 260℃/1.37MPa Anti-Static Design F*: Flange Size (inch)				Rating for Jacket: 260℃/1.37MPa Anti-Static Design F*: Flange Size (inch)				Rating for Jacket: 260℃/1.37MPa Anti-Static Design F*: Flange Size (inch)				Rating for Jacket: 260℃/1.37MPa Anti-Static Design F*: Flange Size (inch)			

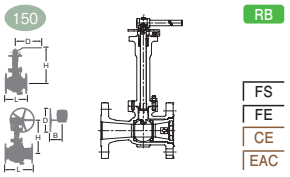
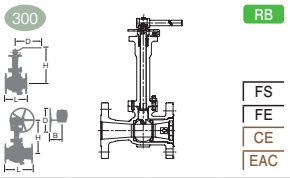
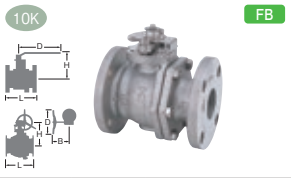
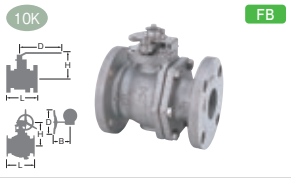
Type		TR Series(Jacketed)				TR Series(Jacketed)				TR Series(Jacketed)				TR Series(Jacketed)			
Ball Valve		10K FB 				10K FB 				150 FB 				150 FB 			
Fig		10UTRJ				10UTRJM				150UTRJ				150UTRJM			
End Connection		JIS B2220 10K RF				JIS B2220 10K RF				ASME B16.5 Class 150 RF				ASME B16.5 Class 150 RF			
inch	mm	L	H	D	F*	L	H	D	F*	L	H	D	F*	L	H	D	F*
3	80	200	186	400	4	200	186	400	4	200	186	400	4	200	186	400	4
4	100	230	211	400	6	230	211	400	6	230	211	400	6	230	211	400	6
6	150	270	257	460	8	270	257	460	8	270	257	460	8	270	257	460	8
Body/Cap		CF8				CF8M				CF8				CF8M			
Stem		304SS				316SS				304SS				316SS			
Ball		304SS/CF8				316SS/CF8M				304SS/CF8				316SS/CF8M			
Gland Packing		PTFE				PTFE				PTFE				PTFE			
Gasket		PTFE				PTFE				PTFE				PTFE			
Ball Seat		HYPATITE® PTFE				HYPATITE® PTFE				HYPATITE® PTFE				HYPATITE® PTFE			
Bore		Full Bore				Full Bore				Full Bore				Full Bore			
Cap B/N		SS				SS				SS				SS			
O-ring		FKM				FKM				FKM				FKM			
Jacket		Carbon Steel				Carbon Steel				Carbon Steel				Carbon Steel			
F-to-F Dimension		KITZ Standard				KITZ Standard				KITZ Standard				KITZ Standard			
Actuator Mounting Pad		KITZ Standard				KITZ Standard				KITZ Standard				KITZ Standard			
Handle		DI				DI				DI				DI			
Reference Page		P-T Rating : Page BAL58				P-T Rating : Page BAL58				P-T Rating : Page BAL58				P-T Rating : Page BAL58			
Remarks		Rating for Jacket: 260℃/1.37MPa Anti-Static Design F*: Flange Size (inch)				Rating for Jacket: 260℃/1.37MPa Anti-Static Design F*: Flange Size (inch)				Rating for Jacket: 260℃/1.37MPa Anti-Static Design F*: Flange Size (inch)				Rating for Jacket: 260℃/1.37MPa Anti-Static Design F*: Flange Size (inch)			

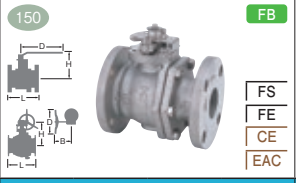
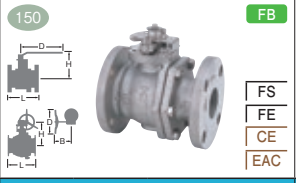
Type		TB Series(Jacketed)				TB Series(Jacketed)				TB Series(Jacketed)				TB Series(Jacketed)			
Ball Valve		20K FB 				20K FB 				300 FB 				300 FB 			
Fig		20UTBJ				20UTBJM				300UTBJ				300UTBJM			
End Connection		JIS B2220 20K RF				JIS B2220 20K RF				ASME B16.5 Class 300 RF				ASME B16.5 Class 300 RF			
inch	mm	L	H	D	F*	L	H	D	F*	L	H	D	F*	L	H	D	F*
1/2	15	140	128	130	11/2	140	128	130	11/2	140	128	130	11/2	140	128	130	11/2
3/4	20	152	132	130	11/2	152	132	130	11/2	152	132	130	11/2	152	132	130	11/2
1	25	165	150	160	2	165	150	160	2	165	150	160	2	165	150	160	2
11/2	40	190	149	230	21/2	190	149	230	21/2	190	150	230	21/2	190	150	230	21/2
2	50	216	156	230	3	216	156	230	3	216	157	230	3	216	157	230	3
21/2	65	241	186	400	4	241	186	400	4	241	186	400	4	241	186	400	4
3	80	283	211	400	5	283	211	400	5	283	211	400	5	283	211	400	5
4	100	305	280	750	6	305	280	750	6	305	280	750	6	305	280	750	6
6	150	403	257	1000	10	403	257	1000	10	403	257	1000	10	403	257	1000	10
Body/Cap		CF8				CF8M				CF8				CF8M			
Stem		304SS				316SS				304SS				316SS			
Ball		304SS/CF8				316SS/CF8M				304SS/CF8				316SS/CF8M			
Gland Packing		PTFE				PTFE				PTFE				PTFE			
Gasket		PTFE				PTFE				PTFE				PTFE			
Ball Seat		HYPATITE® PTFE				HYPATITE® PTFE				HYPATITE® PTFE				HYPATITE® PTFE			
Bore		Full Bore				Full Bore				Full Bore				Full Bore			
Cap B/N		SS				SS				SS				SS			
O ring		FKM				FKM				FKM				FKM			
Jacket&Plug		Carbon Steel				Carbon Steel				Carbon Steel				Carbon Steel			
F-to-F Dimension		KITZ Standard				KITZ Standard				KITZ Standard				KITZ Standard			
Actuator Mounting Pad		KITZ Standard				KITZ Standard				KITZ Standard				KITZ Standard			
Handle		DI/CS				DI/CS				DI/CS				DI/CS			
Reference Page		P-T Rating : Page BAL58				P-T Rating : Page BAL58				P-T Rating : Page BAL58				P-T Rating : Page BAL58			
Remarks		Rating for Jacket: 260℃/1.37MPa Anti-Static Design F-to-F: KITZ Standard F*: Flange Size (inch)				Rating for Jacket: 260℃/1.37MPa Anti-Static Design F-to-F: KITZ Standard F*: Flange Size (inch)				Rating for Jacket: 260℃/1.37MPa Anti-Static Design F-to-F: KITZ Standard F*: Flange Size (inch)				Rating for Jacket: 260℃/1.37MPa Anti-Static Design F-to-F: KITZ Standard F*: Flange Size (inch)			

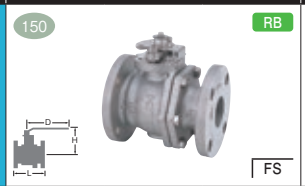
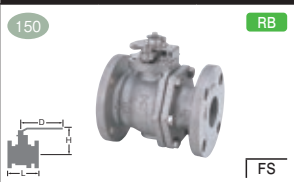
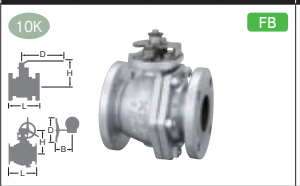
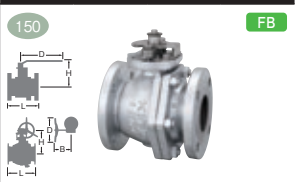
Type		TDZ Series(Jacketed)				TDZ Series(Jacketed)				TB Series(PFA lining)			TB Series(PFA lining)		
Ball Valve		150 FB NO IMAGE				150 FB NO IMAGE				150 FB 			150 FB 		
Fig		150UTDZJ				150UTDZJM				10UTBLN			150UTBLN		
End Connection		ASME B16.5 Class 150 RF				ASME B16.5 Class 150 RF				JIS B2220 10K RF			ASME B16.5 Class 150 RF		
inch	mm	L	H	D	F*	L	H	D	F*	L	H	D	L	H	D
1/2	15	110	129	130	11/2	110	129	130	11/2	140	104	130	140	104	130
3/4	20	120	132	130	11/2	120	132	130	11/2	152	106	130	152	106	130
1	25	130	143	160	2	130	143	160	2	165	129	160	165	129	160
11/2	40	165	157	230	21/2	165	157	230	21/2	191	118	230	191	118	230
2	50	180	166	230	3	180	166	230	3	216	124	230	216	124	230
21/2	65									240	156	400	240	156	400
3	80									250	165	400	250	165	400
4	100									280	203	460	280	203	460
Body/Cap		CF8				CF8M				CF8 + PFA			CF8 + PFA		
Stem		304SS				316SS				304SS + PFA			304SS + PFA		
Ball		304SS/CF8				316SS/CF8M				304SS/CF8 + PFA			304SS/CF8 + PFA		
Gland Packing		PTFE				PTFE				PTFE			PTFE		
Gasket		PTFE				PTFE									
Ball Seat		HYPATITE® PTFE				HYPATITE® PTFE				HYPATITE® PTFE			HYPATITE® PTFE		
Bore		Full Bore				Full Bore				Full Bore			Full Bore		
Cap B/N		SS				SS				B8/8					
O ring		FKM				FKM									
Jacket&Plug		Carbon Steel				Carbon Steel									
F-to-F Dimension		KITZ Standard				KITZ Standard				KITZ Standard			KITZ Standard		
Actuator Mounting Pad		ISO 5211				ISO 5211				KITZ Standard			KITZ Standard		
Handle		DI				DI				DI			DI		
Reference Page		P-T Rating : Page BAL55				P-T Rating : Page BAL55				P-T Rating : Page BAL59			P-T Rating : Page BAL59		
Remarks		Rating for Jacket: 260℃/1.37MPa Anti-Static Design F*: Flange Size (inch)				Rating for Jacket: 260℃/1.37MPa Anti-Static Design F*: Flange Size (inch)				Ambient Temp.: -30~+150℃ Anti-Blowout Stem			Ambient Temp.: -30~+150℃ Anti-Blowout Stem		

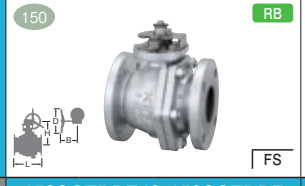
Type		TAZ Series			TAZ Series			TAZ Series			TAZ Series		
Ball Valve		150 RB FS FE CE EAC 			150 RB FS CE EAC 			300 RB FS FE CE EAC 			300 RB FS FE CE EAC 		
Fig		150UTAZM			150SCTAZ			300UTAZM			300SCTAZ		
End Connection		ASME B16.5 Class 150 RF			ASME B16.5 Class 150 RF			ASME B16.5 Class 300 RF			ASME B16.5 Class 300 RF		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/2	15	108	92	130	108	92	130	140	92	130	140	92	130
3/4	20	117	95	130	117	95	130	152	95	130	152	95	130
1	25	127	110	130	127	110	130	165	110	130	165	110	130
11/2	40	165	127	160	165	127	160	190	127	160	190	127	160
2	50	178	134	230	178	134	230	216	134	230	216	134	230
3	80	203	173	400	203	173	400	283	173	400	283	173	400
4	100	229	189	400	229	189	400	305	189	400	305	189	400
6	150	267	224	460	267	224	460	403	251	750	403	251	750
8	200	292	315	1000	292	315	1000	419	315	1000	419	315	1000
10	250	330	392	1500	330	392	1500	457	392	1500	457	392	1500
Body/Cap		CF8M			WCB			CF8M			WCB		
Stem		316SS			316SS			316SS			316SS		
Ball		316SS/CF8M			316SS/CF8M			316SS/CF8M			316SS/CF8M		
Gland Packing		PTFE (FS:Flexible Graphite)			PTFE (FS:Flexible Graphite)			PTFE (FS:Flexible Graphite)			PTFE (FS:Flexible Graphite)		
Gasket		PTFE (FS:PTFE+Flexible Graphite)			PTFE (FS:PTFE+Flexible Graphite)			PTFE (FS:PTFE+Flexible Graphite)			PTFE (FS:PTFE+Flexible Graphite)		
Ball Seat		HYPATITE® PTFE			HYPATITE® PTFE			HYPATITE® PTFE			HYPATITE® PTFE		
Bore		Reduced Bore			Reduced Bore			Reduced Bore			Reduced Bore		
F-to-F Dimension		ASME B16.10			ASME B16.10			ASME B16.10			ASME B16.10		
Actuator Mounting Pad		ISO 5211			ISO 5211			ISO 5211			ISO 5211		
Handle		DI/CS			DI/CS			DI/CS			DI/CS		
Standard/Approval		ISO 17292, API 608, ISO 15848-1 FS: API607orAPI6FA, FE: API641, SIL3, Shell: TAMAP Star Level 2, PED/CE, TR-CU/EAC			ISO 17292, API 608, ISO 15848-1 FS: API607orAPI6FA, FE: API641, SIL3, Shell: TAMAP Star Level 2, PED/CE, TR-CU/EAC			ISO 17292, API 608, ISO 15848-1 FS: API607orAPI6FA, FE: API641, SIL3, Shell: TAMAP Star Level 2, PED/CE, TR-CU/EAC			ISO 17292, API 608, ISO 15848-1 FS: API607orAPI6FA, FE: API641, SIL3, Shell: TAMAP Star Level 2, PED/CE, TR-CU/EAC		
Reference Page		P-T Rating : Page BAL55			P-T Rating : Page BAL55			P-T Rating : Page BAL55			P-T Rating : Page BAL55		
Remarks		Anti-Static Design Anti-Blowout Stem Fire Safe Design			Anti-Static Design Anti-Blowout Stem Fire Safe Design			Anti-Static Design Anti-Blowout Stem Fire Safe Design			Anti-Static Design Anti-Blowout Stem Fire Safe Design		

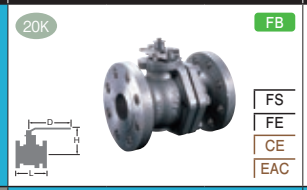
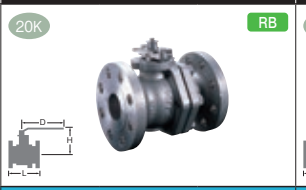
Type		TAZ Series(-46℃)				TAZ Series(-46℃)				TAZ Series(-104℃)				TAZ Series(-104℃)			
Ball Valve		150 RB FS FE CE EAC 				300 RB FS FE CE EAC 				150 RB FS FE CE EAC 				300 RB FS FE CE EAC 			
Fig		150SCTAZXCL/G-150SCTAZXCL				300SCTAZXCL/G-300SCTAZXCL				150UTAZXLM/G-150UTAZXLM				300UTAZXLM/G-300UTAZXLM			
End Connection		ASME B16.5 Class 150 RF				ASME B16.5 Class 300 RF				ASME B16.5 Class 150 RF				ASME B16.5 Class 300 RF			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	B	L	H	D	B
1/2	15	108	213	130		140	213	130		108	213	130		140	213	130	
3/4	20	117	215	130		152	215	130		117	215	130		152	215	130	
1	25	127	230	130		165	230	130		127	239	130		165	230	130	
11/2	40	165	270	160		190	270	160		165	280	160		190	280	160	
2	50	178	300	230		216	298	230		178	300	230		216	300	230	
3	80	203	367	400		283	396	700		203	366	400		283	396	700	
4	100	229	383	400		305	413	700		229	413	700		305	413	750	
6	150	267	474	300	283	403	474	300	283	267	500	300	283	403	500	300	283
8	200	292	594	400	286	419	600	500	347	292	594	500	306	419	594	600	347
10	250	330	668	500	347	457	668	500	349	330	712	400	329	457	712	600	349
Body/Cap		LCC/LF2				LCC/LF2				CF8M				CF8M			
Stem		316SS				316SS				316SS				316SS			
Ball		316SS/CF8M				316SS/CF8M				316/XM-19HS				316/XM-19HS			
Gland Packing		PTFE (FS:Flexible Graphite)				PTFE (FS:Flexible Graphite)				PTFE (FS:Flexible Graphite)				PTFE (FS:Flexible Graphite)			
Gasket		PTFE (FS:PTFE+Flexible Graphite)				PTFE (FS:PTFE+Flexible Graphite)				PTFE (FS:PTFE+Flexible Graphite)				PTFE (FS:PTFE+Flexible Graphite)			
Ball Seat		HYPATITE® PTFE				HYPATITE® PTFE				HYPATITE® PTFE				HYPATITE® PTFE			
Bore		Reduced Bore				Reduced Bore				Reduced Bore				Reduced Bore			
Bonnet B/N		L7M/7M				L7M/7M				B8M/8M				B8M/8M			
F-to-F Dimension		ASME B16.10				ASME B16.10				ASME B16.10				ASME B16.10			
Actuator Mounting Pad		ISO 5211				ISO 5211				ISO 5211				ISO 5211			
Handle		DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit			
Standard/Approval		ISO 17292, API 608, ISO 15848-1 FS: API607orAPI6FA, PED/CE, TR-CU/EAC				ISO 17292, API 608, ISO 15848-1 FS: API607orAPI6FA, PED/CE, TR-CU/EAC				ISO 17292, API 608, ISO 15848-1 FS: API607orAPI6FA, PED/CE, TR-CU/EAC				ISO 17292, API 608, ISO 15848-1 FS: API607orAPI6FA, PED/CE, TR-CU/EAC			
Reference Page		P-T Rating : Page BAL61				P-T Rating : Page BAL61				P-T Rating : Page BAL61				P-T Rating : Page BAL61			
Remarks		Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design			

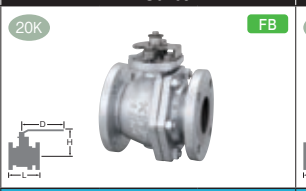
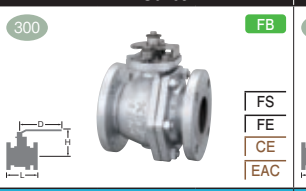
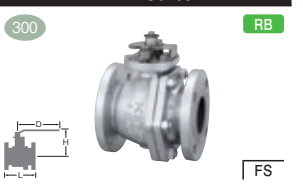
Type		TAZ Series(-196℃)				TAZ Series(-196℃)				TDZ Series				TDZ Series			
Ball Valve																	
Fig		150UTAZLM/G-150UTAZLM				300UTAZLM/G-300UTAZLM				10UTDZ/G-10UTDZ				10UTDZM/G-10UTDZM			
End Connection		ASME B16.5 Class 150 RF				ASME B16.5 Class 300 RF				JIS B2220 10K RF				JIS B2220 10K RF			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	B	L	H	D	B
1/2	15	108	307	130		140	307	130		108	108	130		108	108	130	
3/4	20	117	309	130		152	309	130		117	111	130		117	111	130	
1	25	127	331.7	130		165	331.7	130		127	124	160		127	124	160	
11/4	32									140	128	160		140	128	160	
11/2	40	165	405	160		190	405	160		165	134	230		165	134	230	
2	50	178	421	230		216	421	400		178	143	230		178	143	230	
21/2	65									190	179	400		190	179	400	
3	80	203	549.6	700		283	549.6	700		203	188	400		203	188	400	
4	100	229	565.6	700		305	566	300	283	229	224	460		229	224	460	
5	125									356	240	460		356	240	460	
6	150	267	675	300	283	403	675	400	283	394	314	1000		394	314	1000	
8	200	292	779	500	306	419	779	500	347	457	406	1500		457	406	1500	
10	250	330	912	400	329	457	912	600	349	533	448	500	363	533	448	500	363
Body/Cap		CF8M				CF8M				CF8				CF8M			
Stem		660SS				660SS				304SS				316SS			
Seat Spring		304CSP for 3" & above				304CSP for 3" & above											
Ball		316/CF8M				316/CF8M				304SS/CF8				316SS/CF8M			
Gland Packing		Flexible Graphite				Flexible Graphite				PTFE (FS:Flexible Graphite)				PTFE (FS:Flexible Graphite)			
Gasket		PTFE+Flexible Graphite				PTFE+Flexible Graphite				PTFE (FS:Flexible Graphite)				PTFE (FS:Flexible Graphite)			
Ball Seat		A:HYPATITE® PTFE, B: PCTFE up to 2"or HYPATITE®				A:HYPATITE® PTFE, B: PCTFE up to 2"or HYPATITE®				HYPATITE® PTFE				HYPATITE® PTFE			
Bore		Reduced Bore				Reduced Bore				Full Bore				Full Bore			
Cap B/N		B8M/8M				B8M/8M				B8/8				B8/8			
F-to-F Dimension		ASME B16.10				ASME B16.10				ASME B16.10				ASME B16.10			
Actuator Mounting Pad		ISO 5211				ISO 5211				ISO 5211				ISO 5211			
Handle		DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit			
Standard/Approval		ISO 17292, API 608, ISO 15848-1 FS: API607orAPI6FA, PED/CE, TR-CU/EAC				ISO 17292, API 608, ISO 15848-1 FS: API607orAPI6FA, PED/CE, TR-CU/EAC											
Reference Page		P-T Rating : Page BAL61				P-T Rating : Page BAL61				P-T Rating : Page BAL55				P-T Rating : Page BAL55			
Remarks		Anti-Static Design Anti-Blowout Stem Fire Safe Design Uni Directional				Anti-Static Design Anti-Blowout Stem Fire Safe Design Uni Directional				Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design			

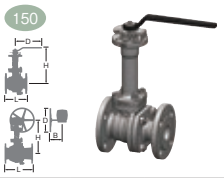
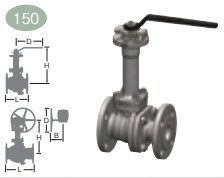
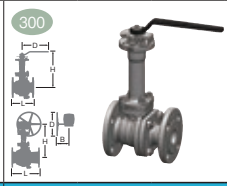
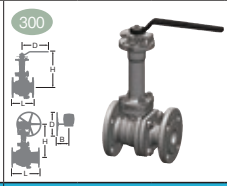
Type		TDZ Series				TDZ Series				TDRZ Series			TDRZ Series		
Ball Valve															
Fig		150UTDZ/G-150UTDZ				150UTDZM/G-150UTDZM				10UTDRZ			10UTDRZM		
End Connection		ASME B16.5 Class 150 RF				ASME B16.5 Class 150 RF				JIS B2220 10K RF			JIS B2220 10K RF		
inch	mm	L	H	D	B	L	H	D	B	L	H	D	L	H	D
1/2	15	108	108	130		108	108	130							
3/4	20	117	111	130		117	111	130							
1	25	127	124	160		127	124	160							
11/4	32	140	128	160		140	128	160							
11/2	40	165	134	230		165	134	230							
2	50	178	143	230		178	143	230							
21/2	65	190	179	400		190	179	400							
3	80	203	188	400		203	188	400							
4	100	229	224	460		229	224	460							
5	125	356	240	460		356	240	460							
6	150	394	314	1000		394	314	1000		267	240	460	267	240	460
8	200	457	406	1500		457	406	1500		292	315	1000	292	315	1000
10	250	533	448	500	363	533	448	500	363						
Body/Cap		CF8				CF8M				CF8			CF8M		
Stem		304SS				316SS				304SS			316SS		
Ball		304SS/CF8				316SS/CF8M				304SS/CF8			316SS/CF8M		
Gland Packing		PTFE (FS:Flexible Graphite)				PTFE (FS:Flexible Graphite)				PTFE			PTFE		
Gasket		PTFE (FS:Flexible Graphite)				PTFE (FS:Flexible Graphite)				PTFE			PTFE		
Ball Seat		HYPATITE® PTFE				HYPATITE® PTFE				HYPATITE® PTFE			HYPATITE® PTFE		
Bore		Full Bore				Full Bore				Reduced Bore			Reduced Bore		
Cap B/N		B8/8				B8/8				B8/8			B8/8		
F-to-F Dimension		ASME B16.10				ASME B16.10				ASME B16.10			ASME B16.10		
Actuator Mounting Pad		ISO 5211				ISO 5211				ISO 5211			ISO 5211		
Handle		DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS			DI/CS		
Standard/Approval		ISO 17292, API 608, ISO 15848-1 FS: API607orAPI6FA, FE: API641, SIL3, Shell: TAMAP Star level 2, PED/CE, TR-CU/EAC				ISO 17292, API 608, ISO 15848-1 FS: API607orAPI6FA, FE: API641, SIL3, Shell: TAMAP Star level 2, PED/CE, TR-CU/EAC									
Reference Page		P-T Rating : Page BAL55				P-T Rating : Page BAL55				P-T Rating : Page BAL55			P-T Rating : Page BAL55		
Remarks		Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design			Anti-Static Design Anti-Blowout Stem Fire Safe Design		

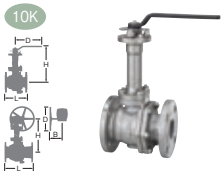
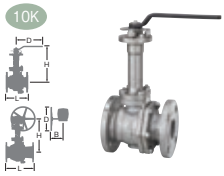
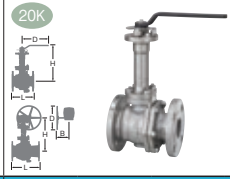
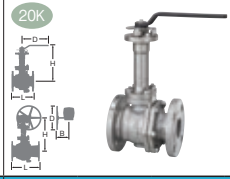
Type		TDRZ Series			TDRZ Series			TDZ Series				TDZ Series			
Ball Valve		150 RB  FS			150 RB  FS			10K FB 				150 FB 			
Fig		150UTDRZ			150UTDRZM			10SCTDZ/G-10SCTDZ				150SCTDZ/G-150SCTDZ			
End Connection		ASME B16.5 Class 150 RF			ASME B16.5 Class 150 RF			JIS B2220 10K RF				ASME B16.5 Class 150 RF			
inch	mm	L	H	D	L	H	D	L	H	D	B	L	H	D	B
1/2	15							108	108	130		108	108	130	
3/4	20							117	111	130		117	111	130	
1	25							127	124	160		127	124	160	
11/2	40							165	134	230		165	134	230	
2	50							178	143	230		178	143	230	
21/2	65							190	179	400		190	179	400	
3	80							203	188	400		203	188	400	
4	100							229	224	460		229	224	460	
5	125							356	240	460		356	240	460	
6	150	267	240	460	267	240	460	394	313	1000		394	313	1000	
8	200	292	315	1000	292	315	1000	457	406	1500		457	412	1500	
10	250							533	448	500	363	533	448	500	363
Body/Cap		CF8			CF8M			WCB				WCB			
Stem		304SS			316SS			304SS				304SS			
Ball		304SS/CF8			316SS/CF8M			304SS/CF8				304SS/CF8			
Gland Packing		PTFE (FS:Flexible Graphite)			PTFE (FS:Flexible Graphite)			PTFE				PTFE			
Gasket		PTFE (FS:Flexible Graphite)			PTFE (FS:Flexible Graphite)			PTFE				PTFE			
Ball Seat		HYPATITE® PTFE			HYPATITE® PTFE			HYPATITE® PTFE				HYPATITE® PTFE			
Bore		Reduced Bore			Reduced Bore			Full Bore				Full Bore			
Cap B/N		B8/8			B8/8			B7/2H				B7/2H			
F-to-F Dimension		ASME B16.10			ASME B16.10			ASME B16.10				ASME B16.10			
Actuator Mounting Pad		ISO 5211			ISO 5211			ISO 5211				ISO 5211			
Handle		DI/CS			DI/CS			DI/CS/Gear Unit				DI/CS/Gear Unit			
Standard/Approval		ISO 17292, API 608 FS: API607orAPI6FA			ISO 17292, API 608 FS: API607orAPI6FA										
Reference Page		P-T Rating : Page BAL55			P-T Rating : Page BAL55			P-T Rating : Page BAL55				P-T Rating : Page BAL55			
Remarks		Anti-Static Design Anti-Blowout Stem Fire Safe Design			Anti-Static Design Anti-Blowout Stem Fire Safe Design			Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design			

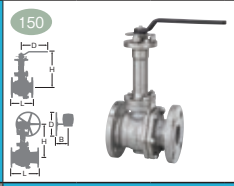
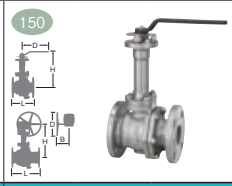
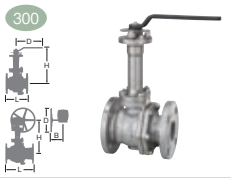
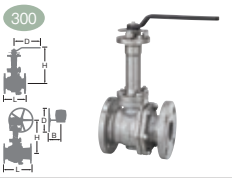
Type		TDRZ Series				TDZ Series			TDZ Series			TDZ Series		
Ball Valve		150 RB  FS				20K FB 			20K FB 			300 FB  FS FE CE EAC		
Fig		150SCTDRZ/G-150SCTDRZ				20UTDZ			20UTDZM			300UTDZ		
End Connection		ASME B16.5 Class 150 RF				JIS B2220 20K RF			JIS B2220 20K RF			ASME B16.5 Class 300 RF		
inch	mm	L	H	D	B	L	H	D	L	H	D	L	H	D
1/2	15					140	108	130	140	108	130	140	108	130
3/4	20					152	111	130	152	111	130	152	111	130
1	25					165	124	160	165	124	160	165	124	160
11/4	32					178	128	160	178	128	160	178	128	160
11/2	40					190	134	230	190	134	230	190	134	230
2	50					216	143	230	216	143	230	216	143	230
21/2	65					241	179	400	241	179	400	241	179	400
3	80					283	188	400	283	188	400	283	188	400
4	100					305	251	750	305	251	750	305	251	750
5	125					381	267	750	381	267	750	381	267	750
6	150	267	274	310	165	403	314	1000	403	314	1000	403	314	1000
8	200	292	322	310	165	502	406	1500	502	406	1500	502	406	1500
10	250	330	412	360	210									
Body/Cap		WCB				CF8			CF8M			CF8		
Stem		304SS				304SS			316SS			304SS		
Ball		304SS/CF8				304SS/CF8			316SS/CF8M			304SS/CF8		
Gland Packing		PTFE (FS:Flexible Graphite)				PTFE			PTFE			PTFE (FS:Flexible Graphite)		
Gasket		PTFE (FS:Flexible Graphite)				PTFE			PTFE			PTFE (FS:Flexible Graphite)		
Ball Seat		HYPATITE® PTFE				HYPATITE® PTFE			HYPATITE® PTFE			HYPATITE® PTFE		
Bore		Reduced Bore				Full Bore			Full Bore			Full Bore		
Cap B/N		B7/2H				B8/8			B8/8			B8/8		
F-to-F Dimension		ASME B16.10				ASME B16.10			ASME B16.10			ASME B16.10		
Actuator Mounting Pad		ISO 5211				ISO 5211			ISO 5211			ISO 5211		
Handle		DI/CS				DI/CS			DI/CS			DI/CS		
Standard/Approval		ISO 17292, API 608 FS: API607orAPI6FA										ISO 17292, API 608, ISO 15848-1 FS: API607orAPI6FA, FE: API641, SIL3, Shell: TAMAP Star level 2, PED/CE, TR-CU/EAC		
Reference Page		P-T Rating : Page BAL54				P-T Rating : Page BAL54			P-T Rating : Page BAL54			P-T Rating : Page BAL54		
Remarks		Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design			Anti-Static Design Anti-Blowout Stem Fire Safe Design			Anti-Static Design Anti-Blowout Stem Fire Safe Design		

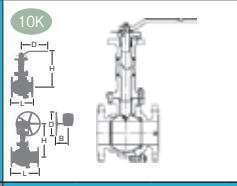
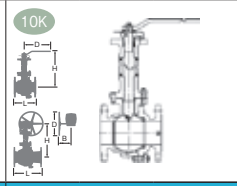
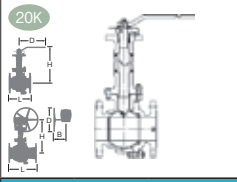
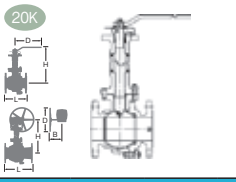
Type		TDZ Series			TDRZ Series			TDRZ Series			TDRZ Series		
Ball Valve													
Fig		300UTDZM			20UTDRZ			20UTDRZM			300UTDRZ		
End Connection		ASME B16.5 Class 300 RF			JIS B2220 20K RF			JIS B2220 20K RF			ASME B16.5 Class 300 RF		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/2	15	140	108	130									
3/4	20	152	111	130									
1	25	165	124	160									
11/4	32	178	128	160									
11/2	40	190	134	230									
2	50	216	143	230									
21/2	65	241	179	400									
3	80	283	188	400									
4	100	305	251	750									
5	125	381	267	750									
6	150	403	314	1000	403	240	460	403	240	460	403	240	460
8	200	502	406	1500	419	315	1000	419	315	1000	419	315	1000
10	250				457	406	1500	457	406	1500			
Body/Cap		CF8M			CF8			CF8M			CF8		
Stem		316SS			304SS			316SS			304SS		
Ball		316SS/CF8M			304SS/CF8			316SS/CF8M			304SS/CF8		
Gland Packing		PTFE (FS:Flexible Graphite)			PTFE			PTFE			PTFE (FS:Flexible Graphite)		
Gasket		PTFE (FS:Flexible Graphite)			PTFE			PTFE			PTFE (FS:Flexible Graphite)		
Ball Seat		HYPATITE® PTFE			HYPATITE® PTFE			HYPATITE® PTFE			HYPATITE® PTFE		
Bore		Full Bore			Reduced Bore			Reduced Bore			Reduced Bore		
Cap B/N		B8/8			B8/8			B8/8			B8/8		
F-to-F Dimension		ASME B16.10			ASME B16.10			ASME B16.10			ASME B16.10		
Actuator Mounting Pad		ISO 5211			ISO 5211			ISO 5211			ISO 5211		
Handle		DI/CS			DI/CS			DI/CS			DI/CS		
Standard/Approval		ISO 17292, API 608, ISO 15848-1 FS: API607orAPI6FA, FE: API641, SIL3, Shell: TAMAP Star level 2, PED/CE, TR-CU/EAC									ISO 17292, API 608 FS: API607orAPI6FA		
Reference Page		P-T Rating : Page BAL55			P-T Rating : Page BAL55			P-T Rating : Page BAL55			P-T Rating : Page BAL55		
Remarks		Anti-Static Design Anti-Blowout Stem Fire Safe Design			Anti-Static Design Anti-Blowout Stem Fire Safe Design			Anti-Static Design Anti-Blowout Stem Fire Safe Design			Anti-Static Design Anti-Blowout Stem Fire Safe Design		

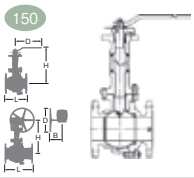
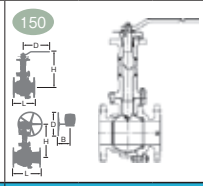
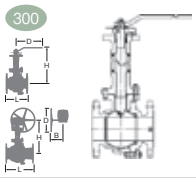
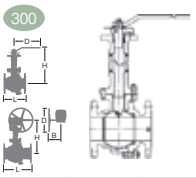
Type		TDRZ Series			TDZ Series			TDZ Series			TDRZ Series		
Ball Valve													
Fig		300UTDRZM			20SCTDZ			300SCTDZ			300SCTDRZ		
End Connection		ASME B16.5 Class 300 RF			JIS B2220 20K RF			ASME B16.5 Class 300 RF			ASME B16.5 Class 300 RF		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
1/2	15				140	108	130	140	108	130			
3/4	20				152	111	130	152	111	130			
1	25				165	124	160	165	124	160			
11/2	40				190	134	230	190	134	230			
2	50				216	143	230	216	143	230			
21/2	65				241	179	400	241	179	400			
3	80				283	188	400	283	188	400			
4	100				305	251	750	305	251	750			
5	125				381	267	750	381	267	750			
6	150	403	240	460	403	315	1000	403	313	1000			
8	200	419	315	1000	502	406	1500	502	406	1500	419	315	1000
Body/Cap		CF8M			WCB			WCB			WCB		
Stem		316SS			304SS			304SS			304SS		
Ball		316SS/CF8M			304SS/CF8			304SS/CF8			304SS/CF8		
Gland Packing		PTFE (FS:Flexible Graphite)			PTFE			PTFE (FS:Flexible Graphite)			PTFE (FS:Flexible Graphite)		
Gasket		PTFE (FS:Flexible Graphite)			PTFE			PTFE (FS:Flexible Graphite)			PTFE (FS:Flexible Graphite)		
Ball Seat		HYPATITE® PTFE			HYPATITE® PTFE			HYPATITE® PTFE			HYPATITE® PTFE		
Bore		Reduced Bore			Full Bore			Full Bore			Reduced Bore		
Cap B/N		B8/8			B7/2H			B7/2H			B7/2H		
F-to-F Dimension		ASME B16.10			ASME B16.10			ASME B16.10			ASME B16.10		
Actuator Mounting Pad		ISO 5211			ISO 5211			ISO 5211			ISO 5211		
Handle		DI/CS			DI/CS			DI/CS			DI/CS		
Standard/Approval		ISO 17292, API 608 FS: API607orAPI6FA						ISO 17292, API 608, ISO 15848-1 FS: API607orAPI6FA, FE: API641, SIL3, Shell: TAMAP Star Level 2, PED/CE, TR-CU/EAC			ISO 17292, API 608 FS: API607orAPI6FA		
Reference Page		P-T Rating : Page BAL55			P-T Rating : Page BAL55			P-T Rating : Page BAL55			P-T Rating : Page BAL55		
Remarks		Anti-Static Design Anti-Blowout Stem Fire Safe Design			Anti-Static Design Anti-Blowout Stem Fire Safe Design			Anti-Static Design Anti-Blowout Stem Fire Safe Design			Anti-Static Design Anti-Blowout Stem Fire Safe Design		

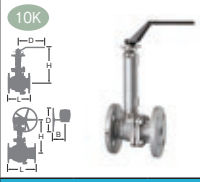
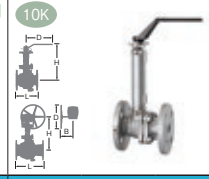
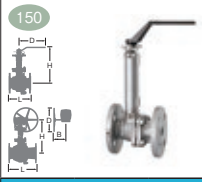
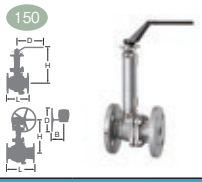
Type		TDZ Series(-46℃)				TDZ Series(-46℃)				TDZ Series(-46℃)				TDZ Series(-46℃)			
Ball Valve		150 FB FS FE CE EAC 				150 FB FS FE CE EAC 				300 FB FS FE CE EAC 				300 FB FS FE CE EAC 			
Fig		150SCTDZXBL/G-150SCTDZXBL				150SCTDZXCL/G-150SCTDZXCL				300SCTDZXBL/G-300SCTDZXBL				300SCTDZXCL/G-300SCTDZXCL			
End Connection		ASME B16.5 Class 150 RF				ASME B16.5 Class 150 RF				ASME B16.5 Class 300 RF				ASME B16.5 Class 300 RF			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	B	L	H	D	B
1/2	15	108	228	130		108	228	130		140	228	130		140	228	130	
3/4	20	117	231	130		117	231	130		152	231	130		152	231	130	
1	25	127	268	160		127	268	160		165	268	160		165	268	160	
11/2	40	165	300	230		165	300	230		190	300	230		190	300	230	
2	50	178	309	230		178	309	230		216	313	400		216	313	400	
3	80	203	383	400		203	383	400		283	413	700		283	413	700	
4	100	229	474	300	283	229	474	300	283	305	474	300	283	305	474	300	283
6	150	394	594	400	337	394	594	400	337	403	600	500	347	403	600	500	347
8	200	457	682	500	347	457	682	500	347	502	726	500	349	502	726	500	349
10	250	533	764	600	349	533	764	600	349								
Body/Cap		LCB/LF2				LCC/LF2				LCB/LF2				LCC/LF2			
Stem		316/XM-19HS				316/XM-19HS				316/XM-19HS				316/XM-19HS			
Ball		316SS/CF8M				316SS/CF8M				316SS/CF8M				316SS/CF8M			
Gland Packing		Flexible Graphite				Flexible Graphite				Flexible Graphite				Flexible Graphite			
Gasket		Flexible Graphite SPW, Flexible Graphite				Flexible Graphite SPW, Flexible Graphite				Flexible Graphite SPW, Flexible Graphite				Flexible Graphite SPW, Flexible Graphite			
Ball Seat		HYPATITE® PTFE				HYPATITE® PTFE				HYPATITE® PTFE				HYPATITE® PTFE			
Bore		Full Bore				Full Bore				Full Bore				Full Bore			
Bonnet/Cap B/N		L7M/7M				L7M/7M				L7M/7M				L7M/7M			
F-to-F Dimension		ASME B16.10				ASME B16.10				ASME B16.10				ASME B16.10			
Actuator Mounting Pad		ISO 5211				ISO 5211				ISO 5211				ISO 5211			
Handle		DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit			
Standard/Approval		ISO 17292, API 608				ISO 17292, API 608				ISO 17292, API 608				ISO 17292, API 608			
Reference Page		P-T Rating : Page BAL61				P-T Rating : Page BAL61				P-T Rating : Page BAL61				P-T Rating : Page BAL61			
Remarks		Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design			

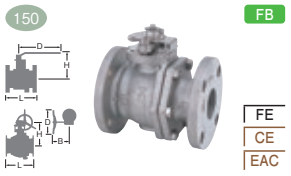
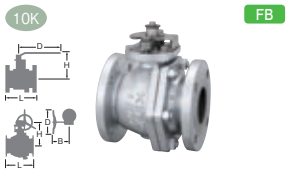
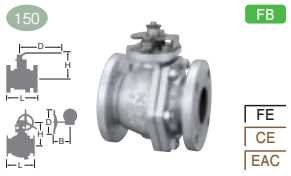
Type		TDZ Series(-104℃)				TDZ Series(-104℃)				TDZ Series(-104℃)				TDZ Series(-104℃)			
Ball Valve		10K FB 				10K FB 				20K FB 				20K FB 			
Fig		10UTDZXL/G-10UTDZXL				10UTDZXLM/G-10UTDZXLM				20UTDZXL/G-20UTDZXL				20UTDZXLM/G-20UTDZXLM			
End Connection		JIS B2220 10K RF				JIS B2220 10K RF				JIS B2220 20K RF				JIS B2220 20K RF			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	B	L	H	D	B
1/2	15	108	229	130		108	229	130		140	229	130		140	229	130	
3/4	20	117	232	130		117	232	130		152	232	130		152	232	130	
1	25	127	268	160		127	268	160		165	268	160		165	268	160	
11/4	32	140	272	160		140	272	160		178	272	160		178	272	160	
11/2	40	165	300	230		165	300	230		190	300	230		190	300	230	
2	50	178	309	230		178	309	230		216	309	230		216	309	230	
21/2	65	190	373	400		190	373	400		241	373	400		241	373	400	
3	80	203	383	400		203	383	400		283	383	400		283	383	400	
4	100	229	458	750		229	458	750		305	466	310	165	305	466	310	165
5	125	356	482	310	165	356	482	310	165	381	510	360	210	381	510	360	210
6	150	394	572	360	210	394	572	360	210	403	569	500	363	403	569	500	363
8	200	457	677	500	363	457	677	500	363	502	685	500	377	502	685	500	377
10	250	533	724	500	377	533	724	500	377								
Body/Cap		CF8				CF8M				CF8				CF8M			
Stem		304SS				316SS				304SS				316SS			
Ball		304SS/CF8				316SS/CF8M				304SS/CF8				316SS/CF8M			
Gland Packing		PTFE				PTFE (FS:Flexible Graphite)				PTFE				PTFE (FS:Flexible Graphite)			
Gasket		Ceramic PTFE, Flexible Graphite SPW				PTFE (FS:Flexible Graphite)				Ceramic PTFE, Flexible Graphite SPW				PTFE (FS:Flexible Graphite)			
Ball Seat		HYPATITE® PTFE				HYPATITE® PTFE				HYPATITE® PTFE				HYPATITE® PTFE			
Bore		Full Bore				Full Bore				Full Bore				Full Bore			
Bonnet/Cap B/N		B8/8				B8/8				B8/8				B8/8			
F-to-F Dimension		ASME B16.10				ASME B16.10				ASME B16.10				ASME B16.10			
Actuator Mounting Pad		ISO 5211				ISO 5211				ISO 5211				ISO 5211			
Handle		DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit			
Standard/Approval		ISO 17292, API 608				ISO 17292, API 608				ISO 17292, API 608				ISO 17292, API 608			
Reference Page		P-T Rating : Page BAL61				P-T Rating : Page BAL61				P-T Rating : Page BAL61				P-T Rating : Page BAL61			
Remarks		Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design			

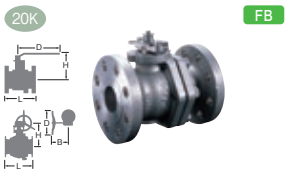
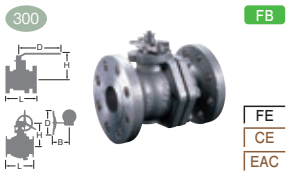
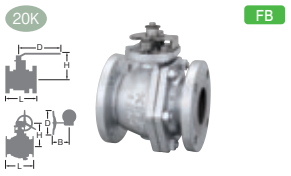
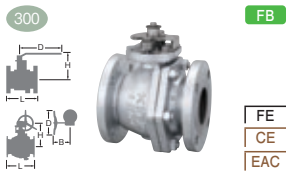
Type		TDZ Series(-104℃)				TDZ Series(-104℃)				TDZ Series(-104℃)				TDZ Series(-104℃)			
Ball Valve		150 FB 				150 FB 				300 FB 				300 FB 			
Fig		150UTDZXL/G-150UTDZXL				150UTDZXLM/G-150UTDZXLM				300UTDZXL/G-300UTDZXL				300UTDZXLM/G-300UTDZXLM			
End Connection		ASME B16.5 Class 150 RF				ASME B16.5 Class 150 RF				ASME B16.5 Class 300 RF				ASME B16.5 Class 300 RF			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	B	L	H	D	B
1/2	15	108	229	130		108	229	130		140	229	130		140	229	130	
3/4	20	117	232	130		117	232	130		152	232	130		152	232	130	
1	25	127	268	160		127	268	160		165	268	160		165	268	160	
11/4	32	140	272	160		140	272	160									
11/2	40	165	301	230		165	301	230		190	300	230		190	300	230	
2	50	178	309	230		178	309	230		216	309	230		216	309	230	
21/2	65	190	373	400		190	373	400		241	373	400		241	373	400	
3	80	203	383	400		203	383	400		283	383	400		283	383	400	
4	100	229	458	750		229	458	750		305	466	310	165	305	466	310	165
5	125	356	482	310	165	356	482	310	165								
6	150	394	572	360	210	394	572	360	210	403	569	500	363	403	569	500	363
8	200	457	685	500	363	457	685	500	363	502	685	500	377	502	685	500	377
10	250	533	724	500	377	533	724	500	377								
Body/Cap		CF8				CF8M				CF8				CF8M			
Stem		304SS				316SS				304SS				316SS			
Ball		304SS/CF8				316SS/CF8M				304SS/CF8				316SS/CF8M			
Gland Packing		PTFE				PTFE (FS:Flexible Graphite)				PTFE				PTFE (FS:Flexible Graphite)			
Gasket		Ceramic PTFE, Flexible Graphite SPW				PTFE (FS:Flexible Graphite)				Ceramic PTFE, Flexible Graphite SPW				PTFE (FS:Flexible Graphite)			
Ball Seat		HYPATITE® PTFE				HYPATITE® PTFE				HYPATITE® PTFE				HYPATITE® PTFE			
Bore		Full Bore				Full Bore				Full Bore				Full Bore			
Bonnet/Cap B/N		B8/8				B8/8				B8/8				B8/8			
F-to-F Dimension		ASME B16.10				ASME B16.10				ASME B16.10				ASME B16.10			
Actuator Mounting Pad		ISO 5211				ISO 5211				ISO 5211				ISO 5211			
Handle		DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit			
Standard/Approval		ISO 17292, API 608				ISO 17292, API 608				ISO 17292, API 608				ISO 17292, API 608			
Reference Page		P-T Rating : Page BAL61				P-T Rating : Page BAL61				P-T Rating : Page BAL61				P-T Rating : Page BAL61			
Remarks		Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design			

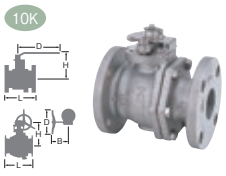
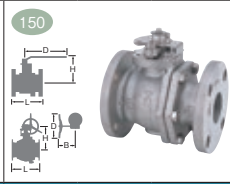
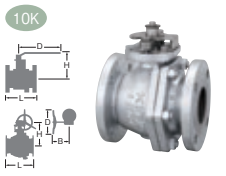
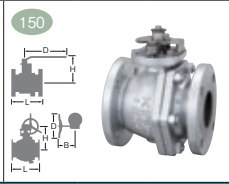
Type		TDZ Series(-196℃)				TDZ Series(-196℃)				TDZ Series(-196℃)				TDZ Series(-196℃)			
Ball Valve		10K FB 				10K FB 				20K FB 				20K FB 			
Fig		10UTDZL/G-10UTDZL				10UTDZLM/G-10UTDZLM				20UTDZL/G-20UTDZL				20UTDZLM/G-20UTDZLM			
End Connection		JIS B2220 10K RF				JIS B2220 10K RF				JIS B2220 20K RF				JIS B2220 20K RF			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	B	L	H	D	B
1/2	15	108	330	130		108	330	130		140	330	130		140	330	130	
3/4	20	117	333	130		117	333	130		152	333	130		152	333	130	
1	25	127	354	160		127	354	160		165	354	160		165	354	160	
11/4	32	140	358	160		140	358	160		178	358	160		178	358	160	
11/2	40	165	421	230		165	421	230		190	421	230		190	421	230	
2	50	178	430	230		178	430	230		216	435	300		216	435	300	
21/2	65	190	526	400		190	526	400		241	557	600		241	557	600	
3	80	203	536	400		203	536	400		283	557	310	165	283	557	310	165
4	100	229	619	310	165	229	619	310	165	305	619	310	165	305	619	310	165
5	125	356	635	310	165	356	635	310	165	381	663	360	210	381	663	360	210
6	150	394	758	360	210	394	758	360	210	403	755	500	363	403	755	500	363
8	200	457	841/849	500	377	457	841/849	500	377	502	849	500	377	502	849	500	377
10	250	533	937	500	377	533	937	500	377								
Body/Cap		CF8				CF8M				CF8				CF8M			
Stem		304SS				316SS				304SS				316SS			
Seat Spring		SUS304CSP for 2B & above				SUS304CSP for 2B & above				SUS304CSP for 2B & above				SUS304CSP for 2B & above			
Ball		304SS/CF8				316SS/CF8M				304SS/CF8				316SS/CF8M			
Gland Packing		Flexible Graphite				Flexible Graphite				Flexible Graphite				Flexible Graphite			
Gasket		Flexible Graphite SPW, Flexible Graphite				Flexible Graphite SPW, Flexible Graphite				Flexible Graphite SPW, Flexible Graphite				Flexible Graphite SPW, Flexible Graphite			
Ball Seat		A:HYPATITE® PTFE, B: PCTFE up to 11/2Bor HYPATITE®				A:HYPATITE® PTFE, B: PCTFE up to 11/2Bor HYPATITE®				A:HYPATITE® PTFE, B: PCTFE up to 11/2Bor HYPATITE®				A:HYPATITE® PTFE, B: PCTFE up to 11/2Bor HYPATITE®			
Bore		Full Bore				Full Bore				Full Bore				Full Bore			
Bonnet/Cap B/N		B8/8				B8/8				B8/8				B8/8			
F-to-F Dimension		ASME B16.10				ASME B16.10				ASME B16.10				ASME B16.10			
Actuator Mounting Pad		ISO 5211				ISO 5211				ISO 5211				ISO 5211			
Handle		DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit			
Standard/Approval		ISO 17292, API 608				ISO 17292, API 608				ISO 17292, API 608				ISO 17292, API 608			
Reference Page		P-T Rating : Page BAL61				P-T Rating : Page BAL61				P-T Rating : Page BAL61				P-T Rating : Page BAL61			
Remarks		Anti-Static Design Anti-Blowout Stem Fire Safe Design, Uni Direcional				Anti-Static Design Anti-Blowout Stem Fire Safe Design, Uni Direcional				Anti-Static Design Anti-Blowout Stem Fire Safe Design, Uni Direcional				Anti-Static Design Anti-Blowout Stem Fire Safe Design, Uni Direcional			

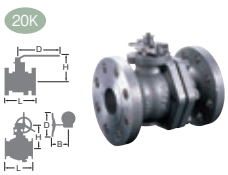
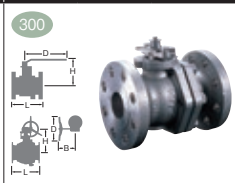
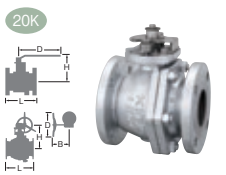
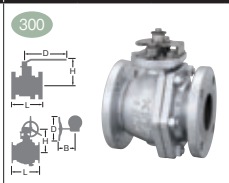
Type		TDZ Series(-196℃)				TDZ Series(-196℃)				TDZ Series(-196℃)				TDZ Series(-196℃)			
Ball Valve		150 FB 				150 FB 				300 FB 				300 FB 			
Fig		150UTDZL/G-150UTDZL				150UTDZLM/G-150UTDZLM				300UTDZL/G-300UTDZL				300UTDZLM/G-300UTDZLM			
End Connection		ASME B16.5 Class 150 RF				ASME B16.5 Class 150 RF				ASME B16.5 Class 300 RF				ASME B16.5 Class 300 RF			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	B	L	H	D	B
1/2	15	108	330	130		108	330	130		140	330	130		140	330	130	
3/4	20	117	333	130		117	333	130		152	333	130		152	333	130	
1	25	127	354	160		127	354	160		165	354	160		165	354	160	
11/4	32	140	358	160		140	358	160									
11/2	40	165	421	230		165	421	230		190	421	230		190	421	230	
2	50	178	430	230		178	430	230		216	435	300		216	435	300	
21/2	65	190	526	400		190	526	400		241	557	600		241	557	600	
3	80	203	536	400		203	536	400		283	557	310	165	283	557	310	165
4	100	229	619	310	165	229	619	310	165	305	619	310	165	305	619	310	165
5	125	356	635	310	165	356	635	310	165								
6	150	394	758	360	210	394	758	360	210	403	755	500	363	403	755	500	363
8	200	457	841/849	500	377	457	841/849	500	377	502	849	500	377	502	849	500	377
10	250	533	937	500	377	533	937	500	377								
Body/Cap		CF8				CF8M				CF8				CF8M			
Stem		304SS				316SS				304SS				316SS			
Seat Spring		SUS304CSP for 2B & above				SUS304CSP for 2B & above				SUS304CSP for 2B & above				SUS304CSP for 2B & above			
Ball		304SS/CF8				316SS/CF8M				304SS/CF8				316SS/CF8M			
Gland Packing		Flexible Graphite				Flexible Graphite				Flexible Graphite				Flexible Graphite			
Gasket		Flexible Graphite SPW, Flexible Graphite				Flexible Graphite SPW, Flexible Graphite				Flexible Graphite SPW, Flexible Graphite				Flexible Graphite SPW, Flexible Graphite			
Ball Seat		A:HYPATITE® PTFE, B: PCTFE up to 11/2Bor HYPATITE®				A:HYPATITE® PTFE, B: PCTFE up to 11/2Bor HYPATITE®				A:HYPATITE® PTFE, B: PCTFE up to 11/2Bor HYPATITE®				A:HYPATITE® PTFE, B: PCTFE up to 11/2Bor HYPATITE®			
Bore		Full Bore				Full Bore				Full Bore				Full Bore			
Bonnet/Cap B/N		B8/8				B8/8				B8/8				B8/8			
F-to-F Dimension		ASME B16.10				ASME B16.10				ASME B16.10				ASME B16.10			
Actuator Mounting Pad		ISO 5211				ISO 5211				ISO 5211				ISO 5211			
Handle		DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit			
Standard/Approval		ISO 17292, API 608				ISO 17292, API 608				ISO 17292, API 608				ISO 17292, API 608			
Reference Page		P-T Rating : Page BAL61				P-T Rating : Page BAL61				P-T Rating : Page BAL61				P-T Rating : Page BAL61			
Remarks		Anti-Static Design Anti-Blowout Stem Fire Safe Design, Uni Direcional				Anti-Static Design Anti-Blowout Stem Fire Safe Design, Uni Direcional				Anti-Static Design Anti-Blowout Stem Fire Safe Design, Uni Direcional				Anti-Static Design Anti-Blowout Stem Fire Safe Design, Uni Direcional			

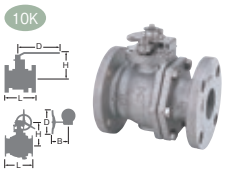
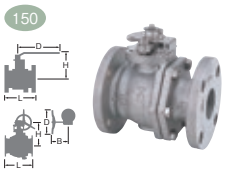
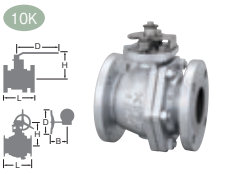
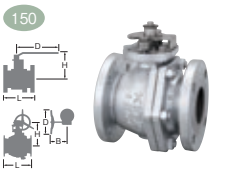
Type		TBDXK Series(-50℃)				TBDXK Series(-50℃)				TBDXK Series(-50℃)				TBDXK Series(-50℃)			
Ball Valve		10K FB 				10K FB 				150 FB 				150 FB 			
Fig		10UTBDXK/G-10UTBDXK				10UTBDXKM/G-10UTBDXKM				150UTBDXK/G-150UTBDXK				150UTBDXKM/G-150UTBDXKM			
End Connection		JIS B2220 10K RF				JIS B2220 10K RF				ASME B16.5 Class 150 RF				ASME B16.5 Class 150 RF			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	B	L	H	D	B
1/2	15	108	254	130		108	254	130		108	254	130		108	254	130	
3/4	20	117	257	130		117	257	130		117	257	130		117	257	130	
1	25	127	276	130		127	276	130		127	276	130		127	276	130	
11/2	40	165	265	160		165	265	160		165	265	160		165	265	160	
2	50	178	272	230		178	272	230		178	272	230		178	272	230	
21/2	65	190	305.5	230		190	305.5	230		190	305.5	230		190	305.5	230	
3	80	203	315	400		203	315	400		203	315	400		203	315	400	
4	100	229	349	400		229	349	400		229	349	400		229	349	400	
5	125	356	464	460	165	356	464	460	165	356	464	460	165	356	464	460	165
6	150	394	489	310	165	394	489	310	165	394	489	310	165	394	489	310	165
Body/Cap		CF8				CF8M				CF8				CF8M			
Stem		304SS				316SS				304SS				316SS			
Ball		304SS				316SS				304SS				316SS			
Gland Packing		PTFE				PTFE				PTFE				PTFE			
Gasket		PTFE				PTFE				PTFE				PTFE			
Ball Seat		HYPATITE® PTFE				HYPATITE® PTFE				HYPATITE® PTFE				HYPATITE® PTFE			
Bore		Full Bore				Full Bore				Full Bore				Full Bore			
Bonnet/Cap B/N		B8/8				B8/8				B8/8				B8/8			
F-to-F Dimension		ASME B16.10				ASME B16.10				ASME B16.10				ASME B16.10			
Actuator Mounting Pad		KITZ Standard				KITZ Standard				KITZ Standard				KITZ Standard			
Handle		DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit			
Standard/Approval										TR-CU/EAC				TR-CU/EAC			
Reference Page		P-T Rating : Page BAL58				P-T Rating : Page BAL58				P-T Rating : Page BAL58				P-T Rating : Page BAL58			
Remarks		Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design			

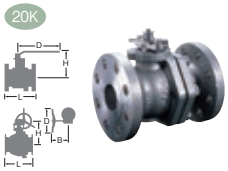
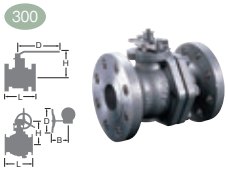
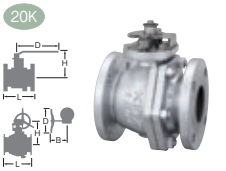
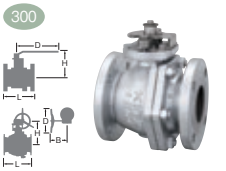
Type		TDZ Series(Filtite(1H))				TDZ Series(Filtite(1H))				TDZ Series(Filtite(1H))				TDZ Series(Filtite(1H))			
Ball Valve																	
Fig		10UTDZ1H/G-10UTDZ1H				150UTDZ1HM/G-150UTDZ1HM				10SCTDZ1H/G-10SCTDZ1H				150SCTDZ1H/G-150SCTDZ1H			
End Connection		JIS B2220 10K RF				ASME B16.5 Class 150 RF				JIS B2220 10K RF				ASME B16.5 Class 150 RF			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	B	L	H	D	B
1/2	15	108	108	130		108	108	130		108	108	130		108	108	130	
3/4	20	117	111	130		117	111	130		117	111	130		117	111	130	
1	25	127	124	160		127	124	160		127	124	160		127	124	160	
11/4	32	140	128	160		140	128	160									
11/2	40	165	134	230		165	134	230		165	134	230		165	134	230	
2	50	178	143	300		178	143	230		178	143	230		178	143	230	
21/2	65	190	179	600		190	179	400		190	179	400		190	179	400	
3	80	203	189	600		203	189	400		203	188	400		203	188	400	
4	100	229	251	1000		229	251	750		229	251	750		229	251	750	
5	125	356	274	310	165	356	274	310	165	356	274	310	165	356	274	310	165
6	150	394	335	360	210	394	335	360	210	394	335	360	210	394	335	360	210
8	200	457	409	500	377	457	409	500	363	457	409	500	377	457	417	500	363
10	250	533	456	500	377	533	456	500	377	533	456	500	377	533	456	500	377
Body/Cap		CF8				CF8M				WCB				WCB			
Stem		304SS				316SS				304SS				304SS			
Ball		304SS/CF8				316SS/CF8M				304SS/CF8				304SS/CF8			
Gland Packing		Flexible Graphite				Flexible Graphite				Flexible Graphite				Flexible Graphite			
Gasket		Flexible Graphite				Flexible Graphite				Flexible Graphite				Flexible Graphite			
Ball Seat		FILLTITE PTFE				FILLTITE PTFE				FILLTITE PTFE				FILLTITE PTFE			
Bore		Full Bore				Full Bore				Full Bore				Full Bore			
Cap B/N		B8/8				B8/8				B7/2H				B7/2H			
F-to-F Dimension		ASME B16.10				ASME B16.10				ASME B16.10				ASME B16.10			
Actuator Mounting Pad		ISO 5211				ISO 5211				ISO 5211				ISO 5211			
Handle		DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit			
Standard/Approval						ISO 17292, API 608 FE: API641, SIL3, PED/CE, TR-CU/EAC								ISO 17292, API 608 FE: API641, SIL3, PED/CE, TR-CU/EAC			
Reference Page		P-T Rating : Page BAL56				P-T Rating : Page BAL56				P-T Rating : Page BAL56				P-T Rating : Page BAL56			
Remarks		Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design			

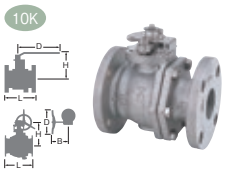
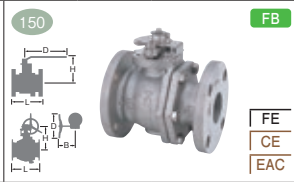
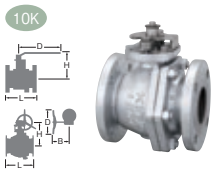
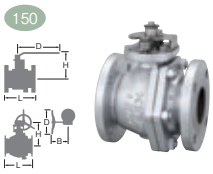
Type		TDZ Series(Filtite(1H))				TDZ Series(Filtite(1H))				TDZ Series(Filtite(1H))				TDZ Series(Filtite(1H))			
Ball Valve																	
Fig		20UTDZ1H/G-20UTDZ1H				300UTDZ1HM/G-300UTDZ1HM				20SCTDZ1H/G-20SCTDZ1H				300SCTDZ1H/G300SCTDZ1H			
End Connection		JIS B2220 20K RF				ASME B16.5 Class 300 RF				JIS B2220 20K RF				ASME B16.5 Class 300 RF			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	B	L	H	D	B
1/2	15	140	108	130		140	108	130		140	108	130		140	108	130	
3/4	20	152	111	130		152	111	130		152	111	130		152	111	130	
1	25	165	124	160		165	124	160		165	124	160		165	124	160	
11/4	32	178	128	160													
11/2	40	190	135	230		190	134	230		190	134	230		190	134	230	
2	50	216	143	230		216	143	230		216	143	230		216	143	230	
21/2	65	241	179	400		241	179	400		241	179	400		241	179	400	
3	80	283	188	400		283	188	400		283	188	400		283	188	400	
4	100	305	258	310	165	305	258	310	165	305	258	310	165	305	258	310	165
5	125	381	301	360	210					381	302	360	210				
6	150	403	332	500	363	403	332	500	363	403	332	500	363	403	332	500	363
8	200	502	416	500	377	502	417	500	377	502	417	500	377	502	417	500	377
Body/Cap		CF8				CF8M				WCB				WCB			
Stem		304SS				316SS				304SS				304SS			
Ball		304SS/CF8				316SS/CF8M				304SS/CF8				304SS/CF8			
Gland Packing		Flexible Graphite				Flexible Graphite				Flexible Graphite				Flexible Graphite			
Gasket		Flexible Graphite				Flexible Graphite				Flexible Graphite				Flexible Graphite			
Ball Seat		FILLTITE PTFE				FILLTITE PTFE				FILLTITE PTFE				FILLTITE PTFE			
Bore		Full Bore				Full Bore				Full Bore				Full Bore			
Cap B/N		B8/8				B8/8				B7/2H				B7/2H			
F-to-F Dimension		ASME B16.10				ASME B16.10				ASME B16.10				ASME B16.10			
Actuator Mounting Pad		ISO 5211				ISO 5211				ISO 5211				ISO 5211			
Handle		DI/Gear Unit				DI/Gear Unit				DI/Gear Unit				DI/Gear Unit			
Standard/Approval						ISO 17292, API 608 FE: API641, SIL3, PED/CE, TR-CU/EAC								ISO 17292, API 608 FE: API641, SIL3, PED/CE, TR-CU/EAC			
Reference Page		P-T Rating : Page BAL56				P-T Rating : Page BAL56				P-T Rating : Page BAL56				P-T Rating : Page BAL56			
Remarks		Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design			

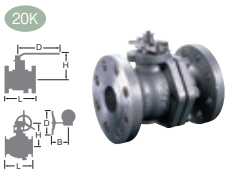
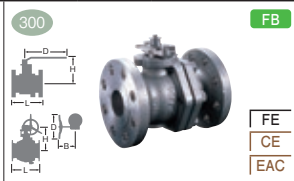
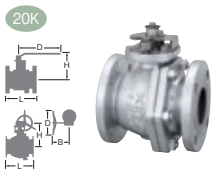
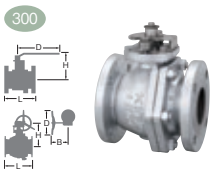
Type		TDZ Series(Carbotite(3H))				TDZ Series(Carbotite(3H))				TDZ Series(Carbotite(3H))				TDZ Series(Carbotite(3H))			
Ball Valve																	
Fig		10UTDZ3H/G-10UTDZ3H				150UTDZ3HM/G-150UTDZ3HM				10SCTDZ3H/G-10SCTDZ3H				150SCTDZ3H/G-150SCTDZ3H			
End Connection		JIS B2220 10K RF				ASME B16.5 Class 150 RF				JIS B2220 10K RF				ASME B16.5 Class 150 RF			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	B	L	H	D	B
1/2	15	108	108	130		108	108	130		108	108	130		108	108	130	
3/4	20	117	111	130		117	111	130		117	111	130		117	111	130	
1	25	127	124	160		127	124	160		127	124	160		127	124	160	
11/4	32	140	128	160		140	128	160									
11/2	40	165	134	230		165	134	230		165	134	230		165	134	230	
2	50	178	148	300		178	148	300		178	148	300		178	148	300	
21/2	65	190	209	600		190	209	600		190	209	600		190	209	600	
3	80	203	219	600		203	219	600		203	219	600		203	219	600	
4	100	229	251	1000		229	251	1000		229	251	1000		229	251	1000	
5	125	356	274	310	165	356	274	310	165	356	274	310	165	356	274	310	165
6	150	394	335	360	210	394	335	360	210	394	335	360	210	394	335	360	210
8	200	457	417	500	377	457	417	500	363	457	417	500	377	457	417	500	363
Body/Cap		CF8				CF8M				WCB				WCB			
Stem		304SS				316SS				304SS				304SS			
Ball		304SS/CF8				316SS/CF8M				304SS/CF8				304SS/CF8			
Gland Packing		Flexible Graphite				Flexible Graphite				Flexible Graphite				Flexible Graphite			
Gasket		Flexible Graphite				Flexible Graphite				Flexible Graphite				Flexible Graphite			
Ball Seat		Carbon+329J1				Carbon+329J1				Carbon+329J1				Carbon+329J1			
Bore		Full Bore				Full Bore				Full Bore				Full Bore			
Cap B/N		B8/8				B8/8				B7/2H				B7/2H			
F-to-F Dimension		ASME B16.10				ASME B16.10				ASME B16.10				ASME B16.10			
Actuator Mounting Pad		ISO 5211				ISO 5211				ISO 5211				ISO 5211			
Handle		DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit			
Standard/Approval						ISO 17292, API 608 FE: API641, SIL3, PED/CE, TR-CU/EAC								ISO 17292, API 608 FE: API641, SIL3, PED/CE, TR-CU/EAC			
Reference Page		P-T Rating : Page BAL56				P-T Rating : Page BAL56				P-T Rating : Page BAL56				P-T Rating : Page BAL56			
Remarks		Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design			

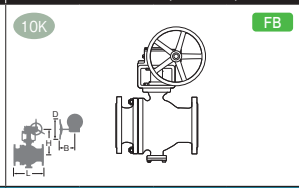
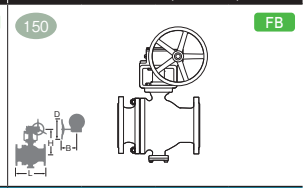
Type		TDZ Series(Carbotite(3H))				TDZ Series(Carbotite(3H))				TDZ Series(Carbotite(3H))				TDZ Series(Carbotite(3H))			
Ball Valve																	
Fig		20UTDZ3H/G-20UTDZ3H				300UTDZ3HM/G-300UTDZ3HM				20SCTDZ3H/G-20SCTDZ3H				300SCTDZ3H/G300SCTDZ3H			
End Connection		JIS B2220 20K RF				ASME B16.5 Class 300 RF				JIS B2220 20K RF				ASME B16.5 Class 300 RF			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	B	L	H	D	B
1/2	15	140	108	130		140	108	130		140	108	130		140	108	130	
3/4	20	152	111	130		152	111	130		152	111	130		152	111	130	
1	25	165	124	160		165	124	160		165	124	160		165	124	160	
11/4	32	178	128	160													
11/2	40	190	139	600		190	139	600		190	139	600		190	139	600	
2	50	216	148	600		216	148	600		216	148	600		216	148	600	
21/2	65	241	209	1000		241	209	1000		241	209	1000		241	209	1000	
3	80	283	219	1000		283	219	1000		283	219	1000		283	219	1000	
4	100	305	286	360	210	305	286	360	210	305	286	360	210	305	286	360	210
5	125	381	302	360	210					381	302	360	210				
6	150	403	360	500	377	403	360	500	377	403	360	500	377	403	360	500	377
8	200	502	488	500	377	502	489	500	377	502	489	500	377	502	489	500	377
Body/Cap		CF8				CF8M				WCB				WCB			
Stem		304SS				316SS/630 for 4[B] & over				304SS				304SS			
Ball		304SS/CF8				316SS/CF8M				304SS/CF8				304SS/CF8			
Gland Packing		Flexible Graphite				Flexible Graphite				Flexible Graphite				Flexible Graphite			
Gasket		Flexible Graphite				Flexible Graphite				Flexible Graphite				Flexible Graphite			
Ball Seat		Carbon+329J1				Carbon+329J1				Carbon+329J1				Carbon+329J1			
Bore		Full Bore				Full Bore				Full Bore				Full Bore			
Cap B/N		B8/8				B8/8				B7/2H				B7/2H			
F-to-F Dimension		ASME B16.10				ASME B16.10				ASME B16.10				ASME B16.10			
Actuator Mounting Pad		ISO 5211				ISO 5211				ISO 5211				ISO 5211			
Handle		DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit			
Standard/Approval						ISO 17292, API 608 FE: API641, SIL3, PED/CE, TR-CU/EAC								ISO 17292, API 608 FE: API641, SIL3, PED/CE, TR-CU/EAC			
Reference Page		P-T Rating : Page BAL56				P-T Rating : Page BAL56				P-T Rating : Page BAL56				P-T Rating : Page BAL56			
Remarks		Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design			

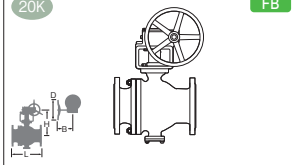
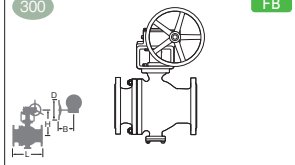
Type		TDZ Series(Metal Seat(5H))				TDZ Series(Metal Seat(5H))				TDZ Series(Metal Seat(5H))				TDZ Series(Metal Seat(5H))			
Ball Valve		10K FB 				150 FB  FE CE EAC				10K FB 				150 FB  FE CE EAC			
Fig		10UTDZ5H/G-10UTDZ5H				150UTDZ5HM/G-150UTDZ5HM				10SCTDZ5H/G-10SCTDZ5H				150SCTDZ5H/G-150SCTDZ5H			
End Connection		JIS B2220 10K RF				ASME B16.5 Class 150 RF				JIS B2220 10K RF				ASME B16.5 Class 150 RF			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	B	L	H	D	B
1/2	15	108	108	130		108	108	130		108	108	130		108	108	130	
3/4	20	117	111	130		117	111	130		117	111	130		117	111	130	
1	25	127	124	160		127	124	160		127	124	160		127	124	160	
11/4	32	140	128	160		140	128	160									
11/2	40	165	134	230		165	134	230		165	134	230		165	134	230	
2	50	178	148	300		178	148	300		178	148	300		178	148	300	
21/2	65	190	209	600		190	209	600		190	209	600		190	209	600	
3	80	203	219	600		203	219	600		203	219	600		203	219	600	
4	100	229	251	1000		229	251	1000		229	251	1000		229	251	1000	
5	125	356	302	360	210	356	302	360	210	356	302	360	210	356	302	360	210
6	150	394	335	360	210	394	335	360	210	394	335	360	210	394	335	360	210
8	200	457	417	500	377	457	417	500	377	457	417	500	377	457	417	500	377
Body/Cap		CF8				CF8M				WCB				WCB			
Stem		Type 630				Type 630				Type 630				Type 630			
Ball		316SS with Cr. Plating				316SS with Cr. Plating				316SS with Cr. Plating				316SS with Cr. Plating			
Gland Packing		Flexible Graphite				Flexible Graphite				Flexible Graphite				Flexible Graphite			
Gasket		Flexible Graphite				Flexible Graphite				Flexible Graphite				Flexible Graphite			
Ball Seat		316SS + Ni-Cr Alloy HF				316SS + Ni-Cr Alloy HF				316SS + Ni-Cr Alloy HF				316SS + Ni-Cr Alloy HF			
Bore		Full Bore				Full Bore				Full Bore				Full Bore			
Cap B/N		B8/8				B8/8				B7/2H				B7/2H			
F-to-F Dimension		ASME B16.10				ASME B16.10				ASME B16.10				ASME B16.10			
Actuator Mounting Pad		ISO 5211				ISO 5211				ISO 5211				ISO 5211			
Handle		DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit			
Standard/Approval						ISO 17292, API 608 FE: API641, SIL3, PED/CE, TR-CU/EAC								ISO 17292, API 608 FE: API641, SIL3, PED/CE, TR-CU/EAC			
Reference Page		P-T Rating : Page BAL57				P-T Rating : Page BAL57				P-T Rating : Page BAL57				P-T Rating : Page BAL57			
Remarks		Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design			

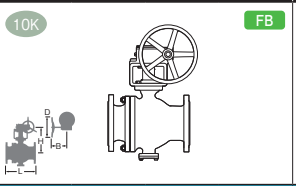
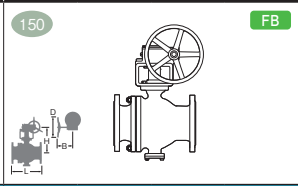
Type		TDZ Series(Metal Seat(5H))				TDZ Series(Metal Seat(5H))				TDZ Series(Metal Seat(5H))				TDZ Series(Metal Seat(5H))			
Ball Valve		20K FB 				300 FB  FE CE EAC				20K FB 				300 FB  FE CE EAC			
Fig		20UTDZ5H/G-20UTDZ5H				300UTDZ5HM/G-300UTDZ5HM				20SCTDZ5H/G-20SCTDZ5H				300SCTDZ5H/G300SCTDZ5H			
End Connection		JIS B2220 20K RF				ASME B16.5 Class 300 RF				JIS B2220 20K RF				ASME B16.5 Class 300 RF			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	B	L	H	D	B
1/2	15	140	108	130		140	108	130		140	108	130		140	108	130	
3/4	20	152	111	130		152	111	130		152	111	130		152	111	130	
1	25	165	124	160		165	124	160		165	124	160		165	124	160	
11/4	32	178	128	160		178	128	160									
11/2	40	190	139	600		190	139	600		190	139	600		190	139	600	
2	50	216	148	600		216	148	600		216	148	600		216	148	600	
21/2	65	241	209	1000		241	209	1000		241	209	1000		241	209	1000	
3	80	283	219	1000		283	219	1000		283	219	1000		283	219	1000	
4	100	305	286	360	210	305	286	360	210	305	286	360	210	305	286	360	210
5	125	381	299	500	210	381	299	500	210	381	299	500	363				
6	150	403	360	500	377	403	360	500	377	403	360	500	377	403	360	500	377
8	200	502	489	500	377	502	489	500	377	502	489	500	377	502	489	500	377
Body/Cap		CF8				CF8M				WCB				WCB			
Stem		Type 630				Type 630				Type 630				Type 630			
Ball		316SS with Cr. Plating				316SS with Cr. Plating				316SS with Cr. Plating				316SS with Cr. Plating			
Gland Packing		Flexible Graphite				Flexible Graphite				Flexible Graphite				Flexible Graphite			
Gasket		Flexible Graphite				Flexible Graphite				Flexible Graphite				Flexible Graphite			
Ball Seat		316SS + Ni-Cr Alloy HF				316SS + Ni-Cr Alloy HF				316SS + Ni-Cr Alloy HF				316SS + Ni-Cr Alloy HF			
Bore		Full Bore				Full Bore				Full Bore				Full Bore			
Cap B/N		B8/8				B8/8				B7/2H				B7/2H			
F-to-F Dimension		ASME B16.10				ASME B16.10				ASME B16.10				ASME B16.10			
Actuator Mounting Pad		ISO 5211				ISO 5211				ISO 5211				ISO 5211			
Handle		DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit			
Standard/Approval						ISO 17292, API 608 FE: API641, SIL3, PED/CE, TR-CU/EAC								ISO 17292, API 608 FE: API641, SIL3, PED/CE, TR-CU/EAC			
Reference Page		P-T Rating : Page BAL57				P-T Rating : Page BAL57				P-T Rating : Page BAL57				P-T Rating : Page BAL57			
Remarks		Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design			

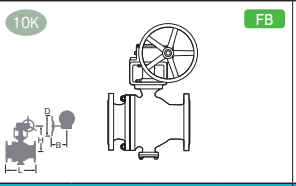
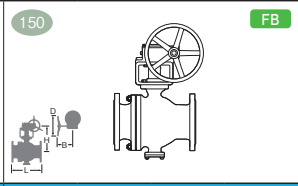
Type		TDZ Series(Metal Seat(6H))				TDZ Series(Metal Seat(6H))				TDZ Series(Metal Seat(6H))				TDZ Series(Metal Seat(6H))			
Ball Valve																	
Fig		10UTDZ6H/G-10UTDZ6H				150UTDZ6HM/G-150UTDZ6HM				10SCTDZ6H/G-10SCTDZ6H				150SCTDZ6H/G-150SCTDZ6H			
End Connection		JIS B2220 10K RF				ASME B16.5 Class 150 RF				JIS B2220 10K RF				ASME B16.5 Class 150 RF			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	B	L	H	D	B
1/2	15	108	108	130		108	108	130		108	108	130		108	108	130	
3/4	20	117	111	130		117	111	130		117	111	130		117	111	130	
1	25	127	124	160		127	124	160		127	124	160		127	124	160	
11/4	32	140	128	160		140	128	160									
11/2	40	165	134	230		165	134	230		165	134	230		165	134	230	
2	50	178	148	300		178	148	300		178	148	300		178	148	300	
21/2	65	190	209	600		190	209	600		190	209	600		190	209	600	
3	80	203	219	600		203	219	600		203	219	600		203	219	600	
4	100	229	251	1000		229	251	1000		229	251	1000		229	251	1000	
5	125	356	302	360	210	356	301	360	210	356	302	360	210	356	302	360	210
6	150	394	335	360	210	394	335	360	210	394	335	360	210	394	335	360	210
8	200	457	417	500	377	457	417	500	377	457	417	500	377	457	417	500	377
Body/Cap		CF8				CF8M				WCB				WCB			
Stem		Type 630				Type 630				Type 630				Type 630			
Ball		316SS with Ni-Cr Alloy HF				316SS with Ni-Cr Alloy HF				316SS with Ni-Cr Alloy HF				316SS with Ni-Cr Alloy HF			
Gland Packing		Flexible Graphite				Flexible Graphite				Flexible Graphite				Flexible Graphite			
Gasket		Flexible Graphite				Flexible Graphite				Flexible Graphite				Flexible Graphite			
Ball Seat		316SS + Ni-Cr Alloy HF				316SS + Ni-Cr Alloy HF				316SS + Ni-Cr Alloy HF				316SS + Ni-Cr Alloy HF			
Bore		Full Bore				Full Bore				Full Bore				Full Bore			
Cap B/N		B8/8				B8/8				B7/2H				B7/2H			
F-to-F Dimension		ASME B16.10				ASME B16.10				ASME B16.10				ASME B16.10			
Actuator Mounting Pad		ISO 5211				ISO 5211				ISO 5211				ISO 5211			
Handle		DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit			
Standard/Approval						ISO 17292, API 608 FE: API641, SIL3, PED/CE, TR-CU/EAC								ISO 17292, API 608 FE: API641, SIL3, PED/CE, TR-CU/EAC			
Reference Page		P-T Rating : Page BAL57				P-T Rating : Page BAL57				P-T Rating : Page BAL57				P-T Rating : Page BAL57			
Remarks		Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design			

Type		TDZ Series(Metal Seat(6H))				TDZ Series(Metal Seat(6H))				TDZ Series(Metal Seat(6H))				TDZ Series(Metal Seat(6H))			
Ball Valve																	
Fig		20UTDZ6H/G-20UTDZ6H				300UTDZ6HM/G-300UTDZ6HM				20SCTDZ6H/G-20SCTDZ6H				300SCTDZ6H/G300SCTDZ6H			
End Connection		JIS B2220 20K RF				ASME B16.5 Class 300 RF				JIS B2220 20K RF				ASME B16.5 Class 300 RF			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	B	L	H	D	B
1/2	15	140	108	130		140	108	130		140	108	130		140	108	130	
3/4	20	152	111	130		152	111	130		152	111	130		152	111	130	
1	25	165	124	160		165	124	160		165	124	160		165	124	160	
11/4	32	178	128	160													
11/2	40	190	139	600		190	139	600		190	139	600		190	139	600	
2	50	216	148	600		216	148	600		216	148	600		216	148	600	
21/2	65	241	209	1000		241	209	1000		241	209	1000		241	209	1000	
3	80	283	219	1000		283	219	1000		283	219	1000		283	219	1000	
4	100	305	286	360	210	305	286	360	210	305	286	360	210	305	286	360	210
5	125	381	299	500	363					381	299	500	363				
6	150	403	360	500	377	403	360	500	377	403	360	500	377	403	360	500	377
8	200	502	489	500	377	502	489	500	377	502	489	500	377	502	489	500	377
Body/Cap		CF8				CF8M				WCB				WCB			
Stem		Type 630				Type 630				Type 630				Type 630			
Ball		316SS with Ni-Cr Alloy HF				316SS with Ni-Cr Alloy HF				316SS with Ni-Cr Alloy HF				316SS with Ni-Cr Alloy HF			
Gland Packing		Flexible Graphite				Flexible Graphite				Flexible Graphite				Flexible Graphite			
Gasket		Flexible Graphite				Flexible Graphite				Flexible Graphite				Flexible Graphite			
Ball Seat		316SS + Ni-Cr Alloy HF				316SS + Ni-Cr Alloy HF				316SS + Ni-Cr Alloy HF				316SS + Ni-Cr Alloy HF			
Bore		Full Bore				Full Bore				Full Bore				Full Bore			
Cap B/N		B8/8				B8/8				B7/2H				B7/2H			
F-to-F Dimension		ASME B16.10				ASME B16.10				ASME B16.10				ASME B16.10			
Actuator Mounting Pad		ISO 5211				ISO 5211				ISO 5211				ISO 5211			
Handle		DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit			
Standard/Approval						ISO 17292, API 608 FE: API641, SIL3, PED/CE, TR-CU/EAC								ISO 17292, API 608 FE: API641, SIL3, PED/CE, TR-CU/EAC			
Reference Page		P-T Rating : Page BAL57				P-T Rating : Page BAL57				P-T Rating : Page BAL57				P-T Rating : Page BAL57			
Remarks		Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design				Anti-Static Design Anti-Blowout Stem Fire Safe Design			

Type		Lambda Port (Flekseat)			Lambda Port (Flekseat)			Lambda Port (Flekseat)				Lambda Port (Flekseat)			
Ball Valve		10K FB 			150 FB 			10K FB 				150 FB 			
Fig		L-10UVC			L-150UVCM			G-10UVC				G-150UVCM			
End Connection		JIS B2220 10K RF			ASME B16.5 Class 150 RF			JIS B2220 10K RF				ASME B16.5 Class 150 RF			
inch	mm	L	H	D	L	H	D	L	H	D	B	L	H	D	B
1	25	127	181	160	127	181	160								
11/2	40	165	199	230	165	198	230								
2	50	178	205	230	178	204	230								
21/2	65	190	252	400	190	245	400								
3	80	203	259	400	203	252	400								
4	100	229	292	460	229	283	460								
5	125	356	314.5	460	356	305.5	460								
6	150	394	411	1000	394	392	1000	394	330	310	165	394	330	310	165
8	200	457	483	1500	457	460	1500	457	410	360	210	457	410	360	210
10	250							533	446	500	363	533	446	500	363
12	300							610	524	500	377	610	524	500	377
14	350							686	555	500	377	686	555	500	377
Body/Cap		CF8			CF8M			CF8				CF8M			
Stem/Bottom Stem		316SS			316SS			316SS				316SS			
Ball		CF8M + Cr Plating: Λ Port			CF8M + Cr Plating: Λ Port			CF8M + Cr Plating: Λ Port				CF8M + Cr Plating: Λ Port			
Gland Packing		PTFE			PTFE			PTFE				PTFE			
Gasket		Ceramic PTFE			Ceramic PTFE			Ceramic PTFE				Ceramic PTFE			
Ball Seat		316SS			316SS			316SS				316SS			
Bore		Full Bore			Full Bore			Full Bore				Full Bore			
Cap B/N		B8/8			B8/8			B8/8				B8/8			
F-to-F Dimension		ASME B16.10			ASME B16.10			ASME B16.10				ASME B16.10			
Actuator Mounting Pad		ISO 5211			ISO 5211			ISO 5211				ISO 5211			
Handle		DI/CS			DI/CS										
Reference Page		P-T Rating : Page BAL60			P-T Rating : Page BAL60			P-T Rating : Page BAL60				P-T Rating : Page BAL60			

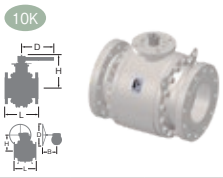
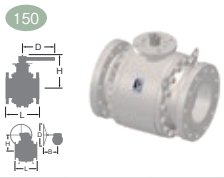
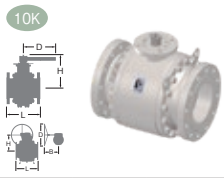
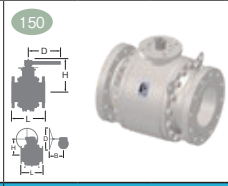
Type		Lambda Port (Flekseat)			Lambda Port (Flekseat)			Lambda Port (Flekseat)				Lambda Port (Flekseat)			
Ball Valve		20K FB 			300 FB 			20K FB 				300 FB 			
Fig		L-20UVC			L-300UVCM			G-20UVC				G-300UVCM			
End Connection		JIS B2220 20K RF			ASME B16.5 Class 300 RF			JIS B2220 20K RF				ASME B16.5 Class 300 RF			
inch	mm	L	H	D	L	H	D	L	H	D	B	L	H	D	B
1	25	165	181	160	165	181	160								
11/2	40	190	198	230	190	198	230								
2	50	216	204	230	216	204	230								
21/2	65	241	245	400	241	245	400								
3	80	283	252	400	283	252	400								
4	100	305	283	460	305	283	460								
5	125	381	305.5	460	381	305.5	460								
6	150	403	392	1000	403	392	1000	403	330	310	165	403	330	310	165
8	200	502	460	1500	502	460	1500	502	410	360	210	502	410	360	210
10	250							568	446	500	363	568	446	500	363
Body/Cap		CF8			CF8M			CF8				CF8M			
Stem/Bottom Stem		316SS			316SS			316SS				316SS			
Ball		CF8M + Cr Plating: Λ Port			CF8M + Cr Plating: Λ Port			CF8M + Cr Plating: Λ Port				CF8M + Cr Plating: Λ Port			
Gland Packing		PTFE			PTFE			PTFE				PTFE			
Gasket		Ceramic PTFE			Ceramic PTFE			Ceramic PTFE				Ceramic PTFE			
Ball Seat		316SS			316SS			316SS				316SS			
Bore		Full Bore			Full Bore			Full Bore				Full Bore			
Cap B/N		B8/8			B8/8			B8/8				B8/8			
F-to-F Dimension		ASME B16.10			ASME B16.10			ASME B16.10				ASME B16.10			
Actuator Mounting Pad		ISO 5211			ISO 5211			ISO 5211				ISO 5211			
Handle		DI/CS			DI/CS										
Reference Page		P-T Rating : Page BAL60			P-T Rating : Page BAL60			P-T Rating : Page BAL60				P-T Rating : Page BAL60			

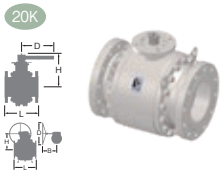
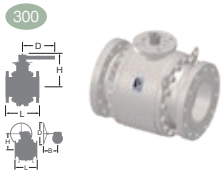
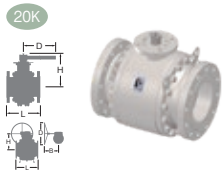
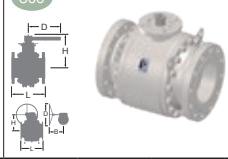
Type		Lambda Port (Knifeseat)			Lambda Port (Knifeseat)			Lambda Port (Knifeseat)				Lambda Port (Knifeseat)			
Ball Valve		10K FB 			150 FB 			10K FB 				150 FB 			
Fig		L-10UVCT			L-150UVCTM			G-10UVCT				G-150UVCTM			
End Connection		JIS B2220 10K RF			ASME B16.5 Class 150 RF			JIS B2220 10K RF				ASME B16.5 Class 150 RF			
inch	mm	L	H	D	L	H	D	L	H	D	B	L	H	D	B
1	25	127	181	160	127	181	160								
11/2	40	165	199	230	165	198	230								
2	50	178	205	230	178	204	230								
21/2	65	190	252	400	190	245	400								
3	80	203	259	400	203	252	400								
4	100	229	292	460	229	283	460								
5	125	356	314.5	460	356	305.5	460								
6	150	394	411	1000	394	392	1000	394	330	310	165	394	330	310	165
8	200	457	483	1500	457	460	1500	457	410	360	210	457	410	360	210
10	250							533	446	500	363	533	446	500	363
12	300							610	524	500	377	610	524	500	377
Body/Cap		CF8			CF8M			CF8				CF8M			
Stem/Bottom Stem		316SS			316SS			316SS				316SS			
Ball		CF8M + Cr Plating: Λ Port			CF8M + Cr Plating: Λ Port			CF8M + Cr Plating: Λ Port				CF8M + Cr Plating: Λ Port			
Gland Packing		PTFE			PTFE			PTFE				PTFE			
Gasket		Ceramic PTFE			Ceramic PTFE			Ceramic PTFE				Ceramic PTFE			
Ball Seat		316SS			316SS			316SS				316SS			
Bore		Full Bore			Full Bore			Full Bore				Full Bore			
Cap B/N		B8/8			B8/8			B8/8				B8/8			
F-to-F Dimension		ASME B16.10			ASME B16.10			ASME B16.10				ASME B16.10			
Actuator Mounting Pad		ISO 5211			ISO 5211			ISO 5211				ISO 5211			
Handle		DI/CS			DI/CS										
Reference Page		P-T Rating : Page BAL60			P-T Rating : Page BAL60			P-T Rating : Page BAL60				P-T Rating : Page BAL60			

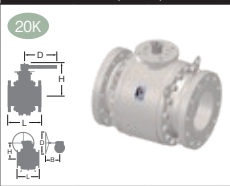
Type		Lambda Port (Knifeseat)			Lambda Port (Knifeseat)			Lambda Port (Knifeseat)				Lambda Port (Knifeseat)			
Ball Valve		10K FB 			150 FB 			10K FB 				150 FB 			
Fig		L-20UVCT			L-300UVCTM			G-20UVCT				G-300UVCTM			
End Connection		JIS B2220 20K RF			ASME B16.5 Class 300 RF			JIS B2220 20K RF				ASME B16.5 Class 300 RF			
inch	mm	L	H	D	L	H	D	L	H	D	B	L	H	D	B
1	25	165	181	160	165	181	160								
11/2	40	190	198	230	190	198	230								
2	50	216	204	230	216	204	230								
21/2	65	241	245	400	241	245	400								
3	80	283	252	400	283	252	400								
4	100	305	283	460	305	283	460								
5	125	381	305.5	460	381	305.5	460								
6	150	403	392	1000	403	392	1000	403	330	310	165	403	330	310	165
8	200	502	460	1500	502	460	1500	502	410	360	210	502	410	360	210
10	250							568	446	500	363	568	446	500	363
Body/Cap		CF8			CF8M			CF8				CF8M			
Stem/Bottom Stem		316SS			316SS			316SS				316SS			
Ball		CF8M + Cr Plating: Λ Port			CF8M + Cr Plating: Λ Port			CF8M + Cr Plating: Λ Port				CF8M + Cr Plating: Λ Port			
Gland Packing		PTFE			PTFE			PTFE				PTFE			
Gasket		Ceramic PTFE			Ceramic PTFE			Ceramic PTFE				Ceramic PTFE			
Ball Seat		316SS			316SS			316SS				316SS			
Bore		Full Bore			Full Bore			Full Bore				Full Bore			
Cap B/N		B8/8			B8/8			B8/8				B8/8			
F-to-F Dimension		ASME B16.10			ASME B16.10			ASME B16.10				ASME B16.10			
Actuator Mounting Pad		ISO 5211			ISO 5211			ISO 5211				ISO 5211			
Handle		DI/CS			DI/CS										
Reference Page		P-T Rating : Page BAL60			P-T Rating : Page BAL60			P-T Rating : Page BAL60				P-T Rating : Page BAL60			

Type		3TC (T60S) Series				3TC (T60S) Series				3TCR (T60S) Series				3TCR (T60S) Series			
Ball Valve		10K FB 				150 FB FE CE EAC 				10K RB 				150 RB FE CE EAC 			
Fig		10UF3TCSM/G-10UF3TCSM				150UF3TCSM/G-150UF3TCSM				10UF3TCRSM/G-10UF3TCRSM				150UF3TCRSM/G-150UF3TCRSM			
End Connection		JIS B2220 10K RF				ASME B16.5 Class 150 RF				JIS B2220 10K RF				ASME B16.5 Class 150 RF			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	B	L	H	D	B
2	50	178	159	300		178	159	300									
3	80	203	201	400		203	201	400		203	159	300		203	159	300	
4	100	229	260	450		229	260	450		229	201	400		229	201	400	
6	150	394	326	750		394	326	750		394	260	450		394	260	450	
8	200	457	316	500	305	457	316	500	305	457	326	750		457	326	750	
10	250	533	372	600	396	533	372	600	396	533	316	500	305	533	316	500	305
12	300	610	407	600	396	610	407	600	396	610	372	600	396	610	372	600	396
14	350	686	441	600	396	686	441	600	396	686	407	600	396	686	407	600	396
16	400	762	511	800	567	762	511	800	567	762	441	600	396	762	441	600	396
18	450	864	551	800	567	864	551	800	567	864	511	800	567	864	511	800	567
20	500	914	613	800	567	914	613	800	567	914	551	800	568	914	551	800	568
24	600	1067	687	800	567	1067	687	800	567	1067	613	800	569	1067	613	800	569
Body/Cap		A182 Gr.F316				A182 Gr.F316				A182 Gr.F316				A182 Gr.F316			
Stem/Bottom Stem		A479 Type 316 or A479 S31803				A479 Type 316 or A479 S31803				A479 Type 316 or A479 S31803				A479 Type 316 or A479 S31803			
Ball		A182 Gr.F316				A182 Gr.F316				A182 Gr.F316				A182 Gr.F316			
Gland Packing/O-ring		Flexible Graphite/FKM				Flexible Graphite/FKM				Flexible Graphite/FKM				Flexible Graphite/FKM			
Gasket/O-ring		Flexible Graphite/FKM				Flexible Graphite/FKM				Flexible Graphite/FKM				Flexible Graphite/FKM			
Ball Seat		G/F MoS2 PTFE				G/F MoS2 PTFE				G/F MoS2 PTFE				G/F MoS2 PTFE			
Bore		Full Bore				Full Bore				Reduced Bore				Reduced Bore			
Cap B/N		B8M/8M				B8M/8M				B8M/8M				B8M/8M			
Seat Spring		B637 N07750 (INCONEL® X750)				B637 N07750 (INCONEL® X750)				B637 N07750 (INCONEL® X750)				B637 N07750 (INCONEL® X750)			
Plug/Vent Valve		316L/316L+WC (Tungsten Carbide)				316L/316L+WC (Tungsten Carbide)				316L/316L+WC (Tungsten Carbide)				316L/316L+WC (Tungsten Carbide)			
F-to-F Dimension		ASME B16.10				ASME B16.10				ASME B16.10				ASME B16.10			
Actuator Mounting Pad		ISO 5211				ISO 5211				ISO 5211				ISO 5211			
Handle		DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit			
Standard/Approval						API 6D, ISO 14313 FS: API607/API6FA/ ISO 10497, FE: ISO15848-1, SIL2, PED/ATEX/CE TR-CU/EAC								API 6D, ISO 14313 FS: API607/API6FA/ ISO 10497, FE: ISO15848-1, SIL2, PED/ATEX/CE TR-CU/EAC			
Reference Page		P-T Rating : Page BAL54				P-T Rating : Page BAL54				P-T Rating : Page BAL54				P-T Rating : Page BAL54			
Remarks		Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175				Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175				Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175				Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175			

Type		3TC (T60S) Series				3TC (T60S) Series				3TCR (T60S) Series				3TCR (T60S) Series			
Ball Valve		10K FB 				150 FB FS FE CE EAC 				10K RB 				150 RB FS FE CE EAC 			
Fig		10SF3TCS/G-10SF3TCS				150SF3TCS/G-150SF3TCS				10SF3TCRS/G-10SF3TCRS				150SF3TCRS/G-150SF3TCRS			
End Connection		JIS B2220 10K RF				ASME B16.5 Class 150 RF				JIS B2220 10K RF				ASME B16.5 Class 150 RF			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	B	L	H	D	B
2	50	178	159	300		178	159	300									
3	80	203	201	400		203	201	400		203	159	300		203	159	300	
4	100	229	260	450		229	260	450		229	201	400		229	201	400	
6	150	394	326	750		394	326	750		394	260	450		394	260	450	
8	200	457	316	500	305	457	316	500	305	457	326	750		457	326	750	
10	250	533	372	600	396	533	372	600	396	533	316	500	305	533	316	500	305
12	300	610	407	600	396	610	407	600	396	610	372	600	396	610	372	600	396
14	350	686	441	600	396	686	441	600	396	686	407	600	396	686	407	600	396
16	400	762	511	800	567	762	511	800	567	762	441	600	396	762	441	600	396
18	450	864	551	800	567	864	551	800	567	864	511	800	567	864	511	800	567
20	500	914	613	800	567	914	613	800	567	914	551	800	568	914	551	800	567
24	600	1067	687	800	567	1067	687	800	567	1067	613	800	569	1067	613	800	567
Body/Cap		A105				A105				A105				A105			
Stem/Bottom Stem		A479 Type 316 or A479 S31803				A479 Type 316 or A479 S31803				A479 Type 316 or A479 S31803				A479 Type 316 or A479 S31803			
Ball		A105+ENP				A105+ENP				A105+ENP				A105+ENP			
Gland Packing/O-ring		Flexible Graphite/H-NBR				Flexible Graphite/H-NBR				Flexible Graphite/H-NBR				Flexible Graphite/H-NBR			
Gasket/O-ring		Flexible Graphite/H-NBR				Flexible Graphite/H-NBR				Flexible Graphite/H-NBR				Flexible Graphite/H-NBR			
Ball Seat		G/F MoS2 PTFE				G/F MoS2 PTFE				G/F MoS2 PTFE				G/F MoS2 PTFE			
Bore		Full Bore				Full Bore				Reduced Bore				Reduced Bore			
Cap B/N		B7M/2HM				B7M/2HM				B7M/2HM				B7M/2HM			
Seat Spring		B637 N07750 (INCONEL® X750)				B637 N07750 (INCONEL® X750)				B637 N07750 (INCONEL® X750)				B637 N07750 (INCONEL® X750)			
Plug/Vent Valve		LF2/LF2+316L+WC (Tungsten Carbide)				LF2/LF2+316L+WC (Tungsten Carbide)				LF2/LF2+316L+WC (Tungsten Carbide)				LF2/LF2+316L+WC (Tungsten Carbide)			
F-to-F Dimension		ASME B16.10				ASME B16.10				ASME B16.10				ASME B16.10			
Actuator Mounting Pad		ISO 5211				ISO 5211				ISO 5211				ISO 5211			
Handle		DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit			
Standard/Approval						API 6D, ISO 14313 FS: API607/API6FA/ ISO 10497, FE: ISO15848-1, SIL2, PED/ATEX/CE TR-CU/EAC								API 6D, ISO 14313 FS: API607/API6FA/ ISO 10497, FE: ISO15848-1, SIL2, PED/ATEX/CE TR-CU/EAC			
Reference Page		P-T Rating : Page BAL54				P-T Rating : Page BAL54				P-T Rating : Page BAL54				P-T Rating : Page BAL54			
Remarks		Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175				Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175				Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175				Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175			

Type		3TC (T60S) Series				3TC (T60S) Series				3TCR (T60S) Series				3TCR (T60S) Series			
Ball Valve		10K FB 				150 FB  FS FE CE EAC				10K RB 				150 RB  FS FE CE EAC			
Fig		10SF3TCSBL/G-10SF3TCSBL				150SF3TCSBL/G-150SF3TCSBL				10SF3TCRSBL/G-10SF3TCRSBL				150SF3TCRSBL/G-150SF3TCRSBL			
End Connection		JIS B2220 10K RF				ASME B16.5 Class 150 RF				JIS B2220 10K RF				ASME B16.5 Class 150 RF			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	B	L	H	D	B
2	50	178	159	300		178	159	300									
3	80	203	201	400		203	201	400		203	159	300		203	159	300	
4	100	229	260	450		229	260	450		229	201	400		229	201	400	
6	150	394	326	750		394	326	750		394	260	450		394	260	450	
8	200	457	316	500	305	457	316	500	305	457	326	750		457	326	750	
10	250	533	372	600	396	533	372	600	396	533	316	500	305	533	316	500	305
12	300	610	407	600	396	610	407	600	396	610	372	600	396	610	372	600	396
14	350	686	441	600	396	686	441	600	396	686	407	600	396	686	407	600	396
16	400	762	511	800	567	762	511	800	567	762	441	600	396	762	441	600	396
18	450	864	551	800	567	864	551	800	567	864	511	800	567	864	511	800	567
20	500	914	613	800	567	914	613	800	567	914	551	800	568	914	551	800	567
24	600	1067	687	800	567	1067	687	800	567	1067	613	800	569	1067	613	800	567
Body/Cap		LF2				LF2				LF2				LF2			
Stem/Bottom Stem		A479 Type 316 or A479 S31803				A479 Type 316 or A479 S31803				A479 Type 316 or A479 S31803				A479 Type 316 or A479 S31803			
Ball		LF2+ENP				LF2+ENP				LF2+ENP				LF2+ENP			
Gland Packing/O-ring		Flexible Graphite/L-NBR				Flexible Graphite/L-NBR				Flexible Graphite/L-NBR				Flexible Graphite/L-NBR			
Gasket/O-ring		Flexible Graphite/L-NBR				Flexible Graphite/L-NBR				Flexible Graphite/L-NBR				Flexible Graphite/L-NBR			
Ball Seat		G/F MoS2 PTFE				G/F MoS2 PTFE				G/F MoS2 PTFE				G/F MoS2 PTFE			
Bore		Full Bore				Full Bore				Reduced Bore				Reduced Bore			
Cap B/N		L7M/7M				L7M/7M				L7M/7M				L7M/7M			
Seat Spring		B637 N07750 (INCONEL® X750)				B637 N07750 (INCONEL® X750)				B637 N07750 (INCONEL® X750)				B637 N07750 (INCONEL® X750)			
Plug/Vent Valve		LF2/LF2+316L+WC (Tungsten Carbide)				LF2/LF2+316L+WC (Tungsten Carbide)				LF2/LF2+316L+WC (Tungsten Carbide)				LF2/LF2+316L+WC (Tungsten Carbide)			
F-to-F Dimension		ASME B16.10				ASME B16.10				ASME B16.10				ASME B16.10			
Actuator Mounting Pad		ISO 5211				ISO 5211				ISO 5211				ISO 5211			
Handle		DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit			
Standard/Approval						API 6D, ISO 14313 FS: API607/API6FA/ ISO 10497, FE: ISO15848-1, SIL2, PED/ATEX/CE TR-CU/EAC								API 6D, ISO 14313 FS: API607/API6FA/ ISO 10497, FE: ISO15848-1, SIL2, PED/ATEX/CE TR-CU/EAC			
Reference Page		P-T Rating : Page BAL54				P-T Rating : Page BAL54				P-T Rating : Page BAL54				P-T Rating : Page BAL54			
Remarks		Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175				Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175				Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175				Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175			

Type		3TC (T60S) Series				3TC (T60S) Series				3TCR (T60S) Series				3TCR (T60S) Series			
Ball Valve		20K FB 				300 FB  FS FE CE EAC				20K RB 				300 RB  FS FE CE EAC			
Fig		20UF3TCSM/G-20UF3TCSM				300UF3TCSM/G-300UF3TCSM				20UF3TCRSM/G-20UF3TCRSM				300UF3TCRSM/G-300UF3TCRSM			
End Connection		JIS B2220 20K RF				ASME B16.5 Class 300 RF				JIS B2220 20K RF				ASME B16.5 Class 300 RF			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	B	L	H	D	B
2	50	216	159	300		216	159	300									
3	80	283	201	400		283	198	400		283	159	300		283	159	300	
4	100	305	260	450		305	254	450		305	201	400		305	198	400	
6	150	403	326	750		403	326	750		403	260	450		403	254	450	
8	200	502	316	500	305	502	316	500	305	502	326	750		502	326	750	
10	250	568	372	600	396	568	372	600	396	568	316	500	305	568	316	500	305
12	300	648	415	600	396	648	415	600	396	648	372	600	396	648	372	600	396
14	350	762	441	600	396	762	441	600	396	762	415	600	396	762	415	600	396
16	400	838	511	800	567	838	511	800	567	838	441	600	396	838	441	600	396
18	450	914	551	800	567	914	551	800	567	914	511	800	567	914	511	528	567
20	500	991	613	800	567	991	613	800	567	991	551	800	567	991	613	800	567
24	600	1143	695	800	581	1143	695	800	581	1143	613	800	567	1143			567
Body/Cap		A182 Gr.F316				A182 Gr.F316				A182 Gr.F316				A182 Gr.F316			
Stem/Bottom Stem		A479 Type 316 or A479 S31803				A479 Type 316 or A479 S31803				A479 Type 316 or A479 S31803				A479 Type 316 or A479 S31803			
Ball		A182 Gr.F316				A182 Gr.F316				A182 Gr.F316				A182 Gr.F316			
Gland Packing/O-ring		Flexible Graphite/FKM				Flexible Graphite/FKM				Flexible Graphite/FKM				Flexible Graphite/FKM			
Gasket/O-ring		Flexible Graphite/FKM				Flexible Graphite/FKM				Flexible Graphite/FKM				Flexible Graphite/FKM			
Ball Seat		G/F MoS2 PTFE				G/F MoS2 PTFE				G/F MoS2 PTFE				G/F MoS2 PTFE			
Bore		Full Bore				Full Bore				Reduced Bore				Reduced Bore			
Cap B/N		B8M/8M				B8M/8M				B8M/8M				B8M/8M			
Seat Spring		B637 N07750 (INCONEL® X750)				B637 N07750 (INCONEL® X750)				B637 N07750 (INCONEL® X750)				B637 N07750 (INCONEL® X750)			
Plug/Vent Valve		316L/316L+WC (Tungsten Carbide)				316L/316L+WC (Tungsten Carbide)				316L/316L+WC (Tungsten Carbide)				316L/316L+WC (Tungsten Carbide)			
F-to-F Dimension		ASME B16.10				ASME B16.10				ASME B16.10				ASME B16.10			
Actuator Mounting Pad		ISO 5211				ISO 5211				ISO 5211				ISO 5211			
Handle		DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit			
Standard/Approval						API 6D, ISO 14313 FS: API607/API6FA/ ISO 10497, FE: ISO15848-1, SIL2, PED/ATEX/CE TR-CU/EAC								API 6D, ISO 14313 FS: API607/API6FA/ ISO 10497, FE: ISO15848-1, SIL2, PED/ATEX/CE TR-CU/EAC			
Reference Page		P-T Rating : Page BAL54				P-T Rating : Page BAL54				P-T Rating : Page BAL54				P-T Rating : Page BAL54			
Remarks		Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175				Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175				Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175				Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175			

Type		3TC (T60S) Series				3TC (T60S) Series				3TCR (T60S) Series				3TCR (T60S) Series			
Ball Valve																	
Fig		20SF3TCS/G-20SF3TCS				300SF3TCS/G-300SF3TCS				20SF3TCRS/G-20SF3TCRS				300SF3TCRS/G-300SF3TCRS			
End Connection		JIS B2220 20K RF				ASME B16.5 Class 300 RF				JIS B2220 20K RF				ASME B16.5 Class 300 RF			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	B	L	H	D	B
2	50	216	159	300		216	159	300									
3	80	283	201	400		283	198	400		283	159	300		283	159	300	
4	100	305	260	450		305	254	450		305	201	400		305	201	400	
6	150	403	326	750		403	326	750		403	260	450		403	260	450	
8	200	502	316	500	305	502	316	500	305	502	326	750		502	326	750	
10	250	568	372	600	396	568	372	600	396	568	316	500	305	568	316	500	305
12	300	648	415	600	396	648	415	600	396	648	372	600	396	648	372	600	396
14	350	762	441	600	396	762	441	600	396	762	415	600	396	762	415	600	396
16	400	838	511	800	567	838	511	800	567	838	441	600	396	838	441	600	396
18	450	914	551	800	567	914	551	800	567	914	511	800	567	914	511	800	567
20	500	991	613	800	567	991	613	800	567	991	551	800	567	991	551	800	567
24	600	1143	695	800	580	1143	695	800	580	1143	613	800	567	1143	613	800	567
Body/Cap		A105				A105				A105				A105			
Stem/Bottom Stem		A479 Type 316 or A479 S31803				A479 Type 316 or A479 S31803				A479 Type 316 or A479 S31803				A479 Type 316 or A479 S31803			
Ball		A105+ENP				A105+ENP				A105+ENP				A105+ENP			
Gland Packing/O-ring		Flexible Graphite/H-NBR				Flexible Graphite/H-NBR				Flexible Graphite/H-NBR				Flexible Graphite/H-NBR			
Gasket/O-ring		Flexible Graphite/H-NBR				Flexible Graphite/H-NBR				Flexible Graphite/H-NBR				Flexible Graphite/H-NBR			
Ball Seat		G/F MoS2 PTFE				G/F MoS2 PTFE				G/F MoS2 PTFE				G/F MoS2 PTFE			
Bore		Full Bore				Full Bore				Reduced Bore				Reduced Bore			
Cap B/N		B7M/2HM				B7M/2HM				B7M/2HM				B7M/2HM			
Seat Spring		B637 N07750 (INCONEL® X750)				B637 N07750 (INCONEL® X750)				B637 N07750 (INCONEL® X750)				B637 N07750 (INCONEL® X750)			
Plug/Vent Valve		LF2/LF2+316L+WC (Tungsten Carbide)				LF2/LF2+316L+WC (Tungsten Carbide)				LF2/LF2+316L+WC (Tungsten Carbide)				LF2/LF2+316L+WC (Tungsten Carbide)			
F-to-F Dimension		ASME B16.10				ASME B16.10				ASME B16.10				ASME B16.10			
Actuator Mounting Pad		ISO 5211				ISO 5211				ISO 5211				ISO 5211			
Handle		DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit			
Standard/Approval						API 6D, ISO 14313 FS: API607/API6FA/ ISO 10497, FE: ISO15848-1, SIL2, PED/ATEX/CE TR-CU/EAC								API 6D, ISO 14313 FS: API607/API6FA/ ISO 10497, FE: ISO15848-1, SIL2, PED/ATEX/CE TR-CU/EAC			
Reference Page		P-T Rating : Page BAL54				P-T Rating : Page BAL54				P-T Rating : Page BAL54				P-T Rating : Page BAL54			
Remarks		Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175				Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175				Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175				Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175			

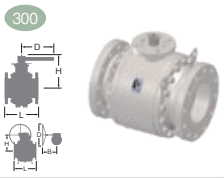
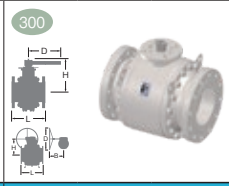
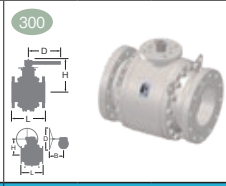
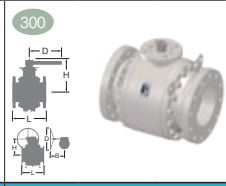
Type		3TC (T60S) Series				3TC (T60S) Series				3TCR (T60S) Series				3TCR (T60S) Series			
Ball Valve																	
Fig		20SF3TCSBL/G-20SF3TCSBL				300SF3TCSBL/G-300SF3TCSBL				20SF3TCRSBL/G20SF3TCRSBL				300SF3TCRSBL/G-300SF3TCRSBL			
End Connection		JIS B2220 20K RF				ASME B16.5 Class 300 RF				JIS B2220 20K RF				ASME B16.5 Class 300 RF			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	B	L	H	D	B
2	50	216	159	300		216	159	300									
3	80	283	201	400		283	201	400		283	159	300		283	159	300	
4	100	305	260	450		305	260	450		305	201	400		305	201	400	
6	150	403	326	750		403	326	750		403	260	450		403	260	450	
8	200	502	316	500	305	502	316	500	305	502	326	750		502	326	750	
10	250	568	372	600	396	568	372	600	396	568	316	500	305	568	316	500	305
12	300	648	415	600	396	648	415	600	396	648	372	600	396	648	372	600	396
14	350	762	441	600	396	762	441	600	396	762	415	600	396	762	415	600	396
16	400	838	511	800	567	838	511	800	567	838	441	600	396	838	441	600	396
18	450	914	551	800	567	914	551	800	567	914	511	800	567	914	511	800	567
20	500	991	613	800	567	991	613	800	567	991	551	800	567	991	551	800	567
24	600	1143	695	800	580	1143	695	800	580	1143	613	800	567	1143	613	800	567
Body/Cap		LF2				LF2				LF2				LF2			
Stem/Bottom Stem		A479 Type 316 or A479 S31803				A479 Type 316 or A479 S31803				A479 Type 316 or A479 S31803				A479 Type 316 or A479 S31803			
Ball		LF2+ENP				LF2+ENP				LF2+ENP				LF2+ENP			
Gland Packing/O-ring		Flexible Graphite/L-NBR				Flexible Graphite/L-NBR				Flexible Graphite/L-NBR				Flexible Graphite/L-NBR			
Gasket/O-ring		Flexible Graphite/L-NBR				Flexible Graphite/L-NBR				Flexible Graphite/L-NBR				Flexible Graphite/L-NBR			
Ball Seat		G/F MoS2 PTFE				G/F MoS2 PTFE				G/F MoS2 PTFE				G/F MoS2 PTFE			
Bore		Full Bore				Full Bore				Reduced Bore				Reduced Bore			
Cap B/N		L7M/7M				L7M/7M				L7M/7M				L7M/7M			
Seat Spring		B637 N07750 (INCONEL® X750)				B637 N07750 (INCONEL® X750)				B637 N07750 (INCONEL® X750)				B637 N07750 (INCONEL® X750)			
Plug/Vent Valve		LF2/LF2+316L+WC (Tungsten Carbide)				LF2/LF2+316L+WC (Tungsten Carbide)				LF2/LF2+316L+WC (Tungsten Carbide)				LF2/LF2+316L+WC (Tungsten Carbide)			
F-to-F Dimension		ASME B16.10				ASME B16.10				ASME B16.10				ASME B16.10			
Actuator Mounting Pad		ISO 5211				ISO 5211				ISO 5211				ISO 5211			
Handle		DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit			
Standard/Approval						API 6D, ISO 14313 FS: API607/API6FA/ ISO 10497, FE: ISO15848-1, SIL2, PED/ATEX/CE TR-CU/EAC								API 6D, ISO 14313 FS: API607/API6FA/ ISO 10497, FE: ISO15848-1, SIL2, PED/ATEX/CE TR-CU/EAC			
Reference Page		P-T Rating : Page BAL54				P-T Rating : Page BAL54				P-T Rating : Page BAL54				P-T Rating : Page BAL54			
Remarks		Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175				Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175				Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175				Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175			

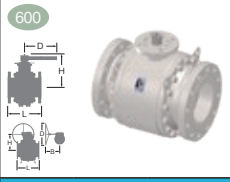
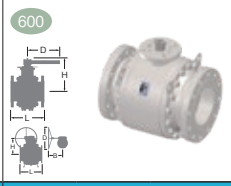
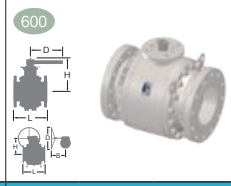
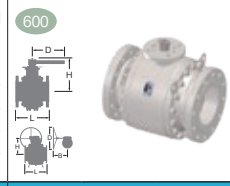
Type		3TC (T60S) Series				3TCR (T60S) Series				3TC (T60S) Series				3TCR (T60S) Series			
Ball Valve																	
Fig		600UF3TCSM/G-600UF3TCSM				600UF3TCRSM/G-600UF3TCRSM				600SF3TCS/G-600SF3TCS				600SF3TCRS/G-600SF3TCRS			
End Connection		ASME B16.5 Class 600 RF				ASME B16.5 Class 600 RF				ASME B16.5 Class 600 RF				ASME B16.5 Class 600 RF			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	B	L	H	D	B
2	50	292	182	400						292	182	400					
3	80	356	236	450		356	182	400		356	236	450		356	182	400	
4	100	432	263	800		432	236	450		432	263	800		432	236	450	
6	150	559	282	500	305	559	263	800		559	282	500	305	559	263	800	
8	200	660	335	600	396	660	282	500	305	660	335	600	396	660	282	500	305
10	250	787	382	600	396	787	335	600	396	787	382	600	396	787	335	600	396
12	300	838	448	800	567	838	382	600	396	838	448	800	567	838	382	600	396
14	350	889	478	800	567	889	448	800	567	889	478	800	567	889	448	800	567
16	400	991	540	800	567	991	478	800	567	991	540	800	567	991	478	800	567
18	450	1092	588	800	581	1092	540	800	567	1092	588	800	581	1092	540	800	567
20	500	1194	652	800	581	1194	588	800	581	1194	652	800	581	1194	588	800	581
24	600	1397	749	800	570	1397	652	800	581	1397	749	800	570	1397	652	800	581
Body/Cap		A182 Gr.F316				A182 Gr.F316				A105				A105			
Stem/Bottom Stem		A479 Type 316 or A479 S31803				A479 Type 316 or A479 S31803				A479 Type 316 or A479 S31803				A479 Type 316 or A479 S31803			
Ball		A182 Gr.F316				A182 Gr.F316				A105+ENP				A105+ENP			
Gland Packing/O-ring		Flexible Graphite/FKM				Flexible Graphite/FKM				Flexible Graphite/H-NBR				Flexible Graphite/H-NBR			
Gasket/O-ring		Flexible Graphite/FKM				Flexible Graphite/FKM				Flexible Graphite/H-NBR				Flexible Graphite/H-NBR			
Ball Seat		G/F MoS2 PTFE				G/F MoS2 PTFE				G/F MoS2 PTFE				G/F MoS2 PTFE			
Bore		Full Bore				Reduced Bore				Full Bore				Reduced Bore			
Cap B/N		B8M/8M				B8M/8M				B7M/2HM				B7M/2HM			
Seat Spring		B637 N07750 (INCONEL® X750)				B637 N07750 (INCONEL® X750)				B637 N07750 (INCONEL® X750)				B637 N07750 (INCONEL® X750)			
Plug/Vent Valve		316L/316L+WC (Tungsten Carbide)				316L/316L+WC (Tungsten Carbide)				LF2/LF2+316L+WC (Tungsten Carbide)				LF2/LF2+316L+WC (Tungsten Carbide)			
F-to-F Dimension		ASME B16.10				ASME B16.10				ASME B16.10				ASME B16.10			
Actuator Mounting Pad		ISO 5211				ISO 5211				ISO 5211				ISO 5211			
Handle		DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit			
Standard/Approval		API 6D, ISO 14313 FS: API607/API6FA/ ISO 10497, FE: ISO15848-1, SIL2, PED/ATEX/CE TR-CU/EAC				API 6D, ISO 14313 FS: API607/API6FA/ ISO 10497, FE: ISO15848-1, SIL2, PED/ATEX/CE TR-CU/EAC				API 6D, ISO 14313 FS: API607/API6FA/ ISO 10497, FE: ISO15848-1, SIL2, PED/ATEX/CE TR-CU/EAC				API 6D, ISO 14313 FS: API607/API6FA/ ISO 10497, FE: ISO15848-1, SIL2, PED/ATEX/CE TR-CU/EAC			
Reference Page		P-T Rating : Page BAL54				P-T Rating : Page BAL54				P-T Rating : Page BAL54				P-T Rating : Page BAL54			
Remarks		Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175				Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175				Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175				Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175			

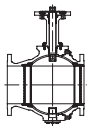
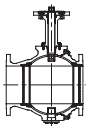
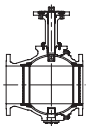
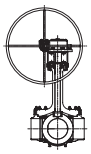
Type		3TC (T60S) Series				3TCR (T60S) Series				3TC (T60S) Series				3TC (T60S) Series			
Ball Valve																	
Fig		600SF3TCSBL/G-600SF3TCSBL				600SF3TCRSBL/G-600SF3TCRSBL				900UF3TCSM/G-900UF3TCSM				900SF3TCS/G-900SF3TCS			
End Connection		ASME B16.5 Class 600 RF				ASME B16.5 Class 600 RF				ASME B16.5 Class 900 RF				ASME B16.5 Class 900 RF			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	B	L	H	D	B
2	50	292	182	400						368	211	700		368	211	700	
3	80	356	236	450		356	182	400		381	243	700		381	243	700	
4	100	432	263	800		432	236	450		457	276	900		457	276	900	
6	150	559	282	500	305	559	263	800		610	295	600	305	610	295	600	305
8	200	660	335	600	396	660	282	500	305	737	355	600	396	737	355	600	396
10	250	787	382	600	396	787	335	600	396	838	406	600	417	838	406	600	417
12	300	838	448	800	567	838	382	600	396	965	480	800	567	965	480	800	567
14	350	889	478	800	567	889	448	800	567	1029	547	800	581	1029	547	800	581
16	400	991	540	800	567	991	478	800	567	1130	588	800	581	1130	588	800	581
18	450	1092	588	800	581	1092	540	800	567	1219	673	800	570	1219	673	800	570
20	500	1194	652	800	581	1194	588	800	581	1321	780	800	701	1321	780	800	701
24	600	1397	749	800	570	1397	652	800	581	1549	930	800	701	1549	930	800	701
Body/Cap		LF2				LF2				A182 Gr.F316				A105			
Stem/Bottom Stem		A479 Type 316 or A479 S31803				A479 Type 316 or A479 S31803				A479 Type 316 or A479 S31803				A479 Type 316 or A479 S31803			
Ball		LF2+ENP				LF2+ENP				F316/CF8M or F5/S31803/CD3MN				F60+ENP			
Gland Packing/O-ring		Flexible Graphite/L-NBR				Flexible Graphite/L-NBR				Flexible Graphite/FKM				Flexible Graphite/H-NBR			
Gasket/O-ring		Flexible Graphite/L-NBR				Flexible Graphite/L-NBR				Flexible Graphite/FKM				Flexible Graphite/H-NBR			
Ball Seat		G/F MoS2 PTFE				G/F MoS2 PTFE				RNYLON				RNYLON			
Bore		Full Bore				Reduced Bore				Full Bore				Full Bore			
Cap B/N		L7M/7M				L7M/7M				B8M/8M				B7M/2HM			
Seat Spring		B637 N07750 (INCONEL® X750)				B637 N07750 (INCONEL® X750)				B637 N07750 (INCONEL® X750)				B637 N07750 (INCONEL® X750)			
Plug/Vent Valve		LF2/LF2+316L+WC (Tungsten Carbide)				LF2/LF2+316L+WC (Tungsten Carbide)				316L/316L+WC (Tungsten Carbide)				LF2/LF2+316L+WC (Tungsten Carbide)			
F-to-F Dimension		ASME B16.10				ASME B16.10				ASME B16.10				ASME B16.10			
Actuator Mounting Pad		ISO 5211				ISO 5211				ISO 5211				ISO 5211			
Handle		DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit			
Standard/Approval		API 6D, ISO 14313 FS: API607/API6FA/ ISO 10497, FE: ISO15848-1, SIL2, PED/ATEX/CE TR-CU/EAC				API 6D, ISO 14313 FS: API607/API6FA/ ISO 10497, FE: ISO15848-1, SIL2, PED/ATEX/CE TR-CU/EAC				API 6D, ISO 14313 FS: API607/API6FA/ ISO 10497, FE: ISO15848-1, SIL2, PED/ATEX/CE TR-CU/EAC				API 6D, ISO 14313 FS: API607/API6FA/ ISO 10497, FE: ISO15848-1, SIL2, PED/ATEX/CE TR-CU/EAC			
Reference Page		P-T Rating : Page BAL54				P-T Rating : Page BAL54				P-T Rating : Page BAL54				P-T Rating : Page BAL54			
Remarks		Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175				Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175				Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175				Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175			

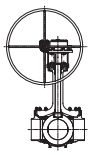
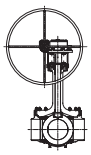
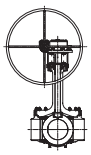
Type		3TC (T60S) Series				3TC (T60S) Series				3TC (T60S) Series				3TC (T60S) Series			
Ball Valve		900 FB FS FE CE EAC				1500 FB FS FE CE EAC				1500 FB FS FE CE EAC				900 FB FS FE CE EAC			
Fig		900SF3TCSBL/G-900SF3TCSBL				1500UF3TCSM/G-1500UF3TCSM				1500SF3TCS/G-1500SF3TCS				1500SF3TCSBL/G-1500SF3TCSBL			
End Connection		ASME B16.5 Class 900 RF				ASME B16.5 Class 1500 RF				ASME B16.5 Class1500 RF				ASME B16.5 Class 1500 RF			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	B	L	H	D	B
2	50	368	211	700		368	211	700		368	211	700		368	211	700	
3	80	381	243	700		470	243	900		470	243	900		470	243	900	
4	100	457	276	900		546	262	500	305	546	262	500	305	546	262	500	305
6	150	610	295	600	305	705	353	600	396	705	353	600	396	705	353	600	396
8	200	737	355	600	396	832	435	600	567	832	435	600	567	832	435	600	567
10	250	838	406	600	417	991	482	800	567	991	482	800	567	991	482	800	567
12	300	965	480	800	567	1130	605	800	570	1130	605	800	570	1130	605	800	570
14	350	1029	547	800	581	1257	625	800	570	1257	625	800	570	1257	625	800	570
16	400	1130	588	800	581	1384	729	800	701	1384	729	800	701	1384	729	800	701
18	450	1219	673	800	570	1537	806	800	701	1537	806	800	701	1537	806	800	701
20	500	1321	780	800	701	1664	912	800	701	1664	912	800	701	1664	912	800	701
24	600	1549	930	800	701	1972	1000	800	701	1972	1000	800	701	1972	1000	800	701
Body/Cap		LF2				A182 Gr.F316				A105				LF2			
Stem/Bottom Stem		A479 Type 316 or A479 S31803				A479 Type 316 or A479 S31803				A479 Type 316 or A479 S31803				A479 Type 316 or A479 S31803			
Ball		F60+ENP				F316/CF8M or F5/S31803/CD3MN				F60+ENP				F60+ENP			
Gland Packing/O-ring		Flexible Graphite/H-NBR				Flexible Graphite/FKM				Flexible Graphite/H-NBR				Flexible Graphite/H-NBR			
Gasket/O-ring		Flexible Graphite/H-NBR				Flexible Graphite/FKM				Flexible Graphite/H-NBR				Flexible Graphite/H-NBR			
Ball Seat		RNYLON				RNYLON				RNYLON				RNYLON			
Bore		Full Bore				Full Bore				Full Bore				Full Bore			
Cap B/N		B7M/2HM				B8M/8M				B7M/2HM				B7M/2HM			
Seat Spring		B637 N07750 (INCONEL® X750)				B637 N07750 (INCONEL® X750)				B637 N07750 (INCONEL® X750)				B637 N07750 (INCONEL® X750)			
Plug/Vent Valve		LF2/LF2+316L+WC (Tungsten Carbide)				316L/316L+WC (Tungsten Carbide)				LF2/LF2+316L+WC (Tungsten Carbide)				LF2/LF2+316L+WC (Tungsten Carbide)			
F-to-F Dimension		ASME B16.10				ASME B16.10				ASME B16.10				ASME B16.10			
Actuator Mounting Pad		ISO 5211				ISO 5211				ISO 5211				ISO 5211			
Handle		DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit			
Standard/Approval		API 6D, ISO 14313 FS: API607/API6FA/ ISO 10497, FE: ISO15848-1, SIL2, PED/ATEX/CE TR-CU/EAC				API 6D, ISO 14313 FS: API607/API6FA/ ISO 10497, FE: ISO15848-1, SIL2, PED/ATEX/CE TR-CU/EAC				API 6D, ISO 14313 FS: API607/API6FA/ ISO 10497, FE: ISO15848-1, SIL2, PED/ATEX/CE TR-CU/EAC				API 6D, ISO 14313 FS: API607/API6FA/ ISO 10497, FE: ISO15848-1, SIL2, PED/ATEX/CE TR-CU/EAC			
Reference Page		P-T Rating : Page BAL54				P-T Rating : Page BAL54				P-T Rating : Page BAL54				P-T Rating : Page BAL54			
Remarks		Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175				Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175				Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175				Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175			

Type		3TC (T60M) Series(Metal Seat(6H))				3TCR (T60M) Series(Metal Seat(6H))				3TC (T60M) Series(Metal Seat(6H))				3TCR (T60M) Series(Metal Seat(6H))			
Ball Valve		150 FB FS FE CE EAC				150 RB FS FE CE EAC				150 FB FS FE CE EAC				150 RB FS FE CE EAC			
Fig		150UF3TC6HM/G-150UF3TC6HM				150UF3TCR6HM/G-150UF3TCR6HM				150SF3TC6HM/G-150SF3TC6HM				150SF3TCR6HM/G-150SF3TCR6HM			
End Connection		ASME B16.5 Class 150 RF				ASME B16.5 Class 150 RF				ASME B16.5 Class 150 RF				ASME B16.5 Class 150 RF			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	B	L	H	D	B
2	50	178	182	300						178	182	300					
3	80	203	188	200	215	203	187	300		203	188	200	215	203	187	300	
4	100	229	234	300	282	229	185	200	217	229	234	300	282	229	185	200	217
6	150	394	283	500	305	394	233	300	282	394	283	500	305	394	233	300	282
8	200	457	349	500	396	457	283	500	305	457	349	500	396	457	283	500	305
10	250	533	398	600	567	533	345	500	396	533	398	600	567	533	345	500	396
12	300	610	463	600	567	610	399	500	566	610	463	600	567	610	399	500	566
14	350	686	483	600	567	686	464	600	566	686	483	600	567	686	464	600	566
16	400	762	582	800	570	762	478	600	566	762	582	800	570	762	478	600	566
18	450	864	612	800	570	864	583	800	571	864	612	800	570	864	583	800	571
20	500	914	724	800	613	914	611	800	571	914	724	800	613	914	611	800	571
24	600	1067	807	800	613	1067	712	800	531	1067	807	800	613	1067	712	800	531
Body/Cap		A182 Gr.F316				A182 Gr.F316				A105				A105			
Stem/Bottom Stem		A564 Type 630 H1150D				A564 Type 630 H1150D				A564 Type 630 H1150D				A564 Type 630 H1150D			
Ball		316+SFNi (Ni-Cr Alloy Thermal Spraying)				316+SFNi (Ni-Cr Alloy Thermal Spraying)				316+SFNi (Ni-Cr Alloy Thermal Spraying)				316+SFNi (Ni-Cr Alloy Thermal Spraying)			
Gland Packing		Flexible Graphite				Flexible Graphite				Flexible Graphite				Flexible Graphite			
Gasket		Flexible Graphite				Flexible Graphite				Flexible Graphite				Flexible Graphite			
Ball Seat		316+SFNi (Ni-Cr Alloy Thermal Spraying)				316+SFNi (Ni-Cr Alloy Thermal Spraying)				316+SFNi (Ni-Cr Alloy Thermal Spraying)				316+SFNi (Ni-Cr Alloy Thermal Spraying)			
Bore		Full Bore				Reduced Bore				Full Bore				Reduced Bore			
Cap B/N		B8M/8M				B8M/8M				B7M/2HM				B7M/2HM			
Seat Spring		B637 N07750 (INCONEL® X750)				B637 N07750 (INCONEL® X750)				B637 N07750 (INCONEL® X750)				B637 N07750 (INCONEL® X750)			
Plug/Vent Valve		316L/316L+WC (Tungsten Carbide)				316L/316L+WC (Tungsten Carbide)				LF2/LF2+316L+WC (Tungsten Carbide)				LF2/LF2+316L+WC (Tungsten Carbide)			
F-to-F Dimension		ASME B16.10				ASME B16.10				ASME B16.10				ASME B16.10			
Actuator Mounting Pad		ISO 5211				ISO 5211				ISO 5211				ISO 5211			
Handle		DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit			
Standard/Approval		API 6D, ISO 14313 FS: API607/API6FA/ ISO 10497, FE: ISO15848-1, SIL2, PED/ATEX/CE TR-CU/EAC				API 6D, ISO 14313 FS: API607/API6FA/ ISO 10497, FE: ISO15848-1, SIL2, PED/ATEX/CE TR-CU/EAC				API 6D, ISO 14313 FS: API607/API6FA/ ISO 10497, FE: ISO15848-1, SIL2, PED/ATEX/CE TR-CU/EAC				API 6D, ISO 14313 FS: API607/API6FA/ ISO 10497, FE: ISO15848-1, SIL2, PED/ATEX/CE TR-CU/EAC			
Reference Page		P-T Rating : Page BAL54				P-T Rating : Page BAL54				P-T Rating : Page BAL54				P-T Rating : Page BAL54			
Remarks		Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175				Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175				Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175				Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175			

Type		3TC (T60M) Series(Metal Seat(6H))				3TCR (T60M) Series(Metal Seat(6H))				3TC (T60M) Series(Metal Seat(6H))				3TCR (T60M) Series(Metal Seat(6H))			
Ball Valve																	
Fig		300UF3TC6HM/G-300UF3TC6HM				300UF3TCR6HM/G-300UF3TCR6HM				300SF3TC6HM/G-300SF3TC6HM				300SF3TCR6HM/G-300SF3TCR6HM			
End Connection		ASME B16.5 Class 300 RF				ASME B16.5 Class 300 RF				ASME B16.5 Class 300 RF				ASME B16.5 Class 300 RF			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	B	L	H	D	B
2	50	216	182	400						216	182	400					
3	80	283	188	200	215	283	187	400		283	188	200	215	283	187	400	
4	100	305	242	300	311	305	185	200	217	305	242	300	311	305	185	200	217
6	150	403	297	500	348	403	241	300	311	403	297	500	348	403	241	300	311
8	200	502	348	500	417	502	297	500	348	502	348	500	417	502	297	500	348
10	250	568	398	600	567	568	344	500	566	568	398	600	567	568	344	500	566
12	300	648	472	600	581	648	399	600	566	648	472	600	581	648	399	600	566
14	350	762	492	800	581	762	472	600	581	762	492	800	581	762	472	600	581
16	400	838	582	800	570	838	487	800	581	838	582	800	570	838	487	800	581
18	450	914	617	800	491	914	583	800	571	914	617	800	491	914	583	800	571
20	500	991	724	800	600	991	616	800	491	991	724	800	600	991	616	800	491
24	600	1143	808	800	713	1143	726	800	562	1143	808	800	713	1143	726	800	562
Body/Cap		A182 Gr.F316				A182 Gr.F316				A105				A105			
Stem/Bottom Stem		A564 Type 630 H1150D				A564 Type 630 H1150D				A564 Type 630 H1150D				A564 Type 630 H1150D			
Ball		316+SFNi (Ni-Cr Alloy Thermal Spraying)				316+SFNi (Ni-Cr Alloy Thermal Spraying)				316+SFNi (Ni-Cr Alloy Thermal Spraying)				316+SFNi (Ni-Cr Alloy Thermal Spraying)			
Gland Packing/O-ring		Flexible Graphite				Flexible Graphite				Flexible Graphite				Flexible Graphite			
Gasket/O-ring		Flexible Graphite				Flexible Graphite				Flexible Graphite				Flexible Graphite			
Ball Seat		316+SFNi (Ni-Cr Alloy Thermal Spraying)				316+SFNi (Ni-Cr Alloy Thermal Spraying)				316+SFNi (Ni-Cr Alloy Thermal Spraying)				316+SFNi (Ni-Cr Alloy Thermal Spraying)			
Bore		Full Bore				Reduced Bore				Full Bore				Reduced Bore			
Cap B/N		B8M/8M				B8M/8M				B7M/2HM				B7M/2HM			
Seat Spring		B637 N07750 (INCONEL® X750)				B637 N07750 (INCONEL® X750)				B637 N07750 (INCONEL® X750)				B637 N07750 (INCONEL® X750)			
Plug/Vent Valve		316L/316L+WC (Tungsten Carbide)				316L/316L+WC (Tungsten Carbide)				LF2/LF2+316L+WC (Tungsten Carbide)				LF2/LF2+316L+WC (Tungsten Carbide)			
F-to-F Dimension		ASME B16.10				ASME B16.10				ASME B16.10				ASME B16.10			
Actuator Mounting Pad		ISO 5211				ISO 5211				ISO 5211				ISO 5211			
Handle		DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit				DI/CS/Gear Unit			
Standard/Approval		API 6D, ISO 14313 FS: API607/API6FA/ ISO 10497, FE: ISO15848-1, SIL2, PED/ATEX/CE TR-CU/EAC				API 6D, ISO 14313 FS: API607/API6FA/ ISO 10497, FE: ISO15848-1, SIL2, PED/ATEX/CE TR-CU/EAC				API 6D, ISO 14313 FS: API607/API6FA/ ISO 10497, FE: ISO15848-1, SIL2, PED/ATEX/CE TR-CU/EAC				API 6D, ISO 14313 FS: API607/API6FA/ ISO 10497, FE: ISO15848-1, SIL2, PED/ATEX/CE TR-CU/EAC			
Reference Page		P-T Rating : Page BAL54				P-T Rating : Page BAL54				P-T Rating : Page BAL54				P-T Rating : Page BAL54			
Remarks		Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175				Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175				Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175				Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175			

Type		3TC (T60M) Series(Metal Seat(6H))				3TCR (T60M) Series(Metal Seat(6H))				3TC (T60M) Series(Metal Seat(6H))				3TCR (T60M) Series(Metal Seat(6H))			
Ball Valve																	
Fig		G-600UF3TC6HM				G-600UF3TCR6HM				G-600SF3TC6HM				G-600SF3TCR6HM			
End Connection		ASME B16.5 Class 600 RF				ASME B16.5 Class 600 RF				ASME B16.5 Class 600 RF				ASME B16.5 Class 600 RF			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	B	L	H	D	B
2	50	292	168	200	215					292	168	200	215				
3	80	356	221	300	311	356	165	200	217	356	221	300	311	356	165	200	217
4	100	432	263	300	313	432	220	300	311	432	263	300	313	432	220	300	311
6	150	559	296	500	398	559	262	300	313	559	296	500	398	559	262	300	313
8	200	660	364	600	531	660	296	500	566	660	364	600	531	660	296	500	566
10	250	787	402	600	571	787	364	600	531	787	402	600	571	787	364	600	531
12	300	838	467	800	571	838	403	600	571	838	467	800	571	838	403	600	571
14	350	889	546	800	491	889	468	800	571	889	546	800	491	889	468	800	571
16	400	991	601	800	613	991	547	800	491	991	601	800	613	991	547	800	491
18	450	1092	685	800	701	1092	602	800	562	1092	685	800	701	1092	602	800	562
20	500	1194	725	800	701	1194	685	800	722	1194	725	800	701	1194	685	800	722
24	600	1397	818	800	727	1397	727	800	722	1397	818	800	727	1397	727	800	722
Body/Cap		A182 Gr.F316				A182 Gr.F316				A105				A105			
Stem/Bottom Stem		A564 Type 630 H1150D				A564 Type 630 H1150D				A564 Type 630 H1150D				A564 Type 630 H1150D			
Ball		316+SFNi (Ni-Cr Alloy Thermal Spraying)				316+SFNi (Ni-Cr Alloy Thermal Spraying)				316+SFNi (Ni-Cr Alloy Thermal Spraying)				316+SFNi (Ni-Cr Alloy Thermal Spraying)			
Gland Packing		Flexible Graphite				Flexible Graphite				Flexible Graphite				Flexible Graphite			
Gasket		Flexible Graphite				Flexible Graphite				Flexible Graphite				Flexible Graphite			
Ball Seat		316+SFNi (Ni-Cr Alloy Thermal Spraying)				316+SFNi (Ni-Cr Alloy Thermal Spraying)				316+SFNi (Ni-Cr Alloy Thermal Spraying)				316+SFNi (Ni-Cr Alloy Thermal Spraying)			
Bore		Full Bore				Reduced Bore				Full Bore				Reduced Bore			
Cap B/N		B8M/8M				B8M/8M				B7M/2HM				B7M/2HM			
Seat Spring		B637 N07750 (INCONEL® X750)				B637 N07750 (INCONEL® X750)				B637 N07750 (INCONEL® X750)				B637 N07750 (INCONEL® X750)			
Plug/Vent Valve		316L/316L+WC (Tungsten Carbide)				316L/316L+WC (Tungsten Carbide)				LF2/LF2+316L+WC (Tungsten Carbide)				LF2/LF2+316L+WC (Tungsten Carbide)			
F-to-F Dimension		ASME B16.10				ASME B16.10				ASME B16.10				ASME B16.10			
Actuator Mounting Pad		ISO 5211				ISO 5211				ISO 5211				ISO 5211			
Standard/Approval		API 6D, ISO 14313 FS: API607/API6FA/ ISO 10497, FE: ISO15848-1, SIL2, PED/ATEX/CE TR-CU/EAC				API 6D, ISO 14313 FS: API607/API6FA/ ISO 10497, FE: ISO15848-1, SIL2, PED/ATEX/CE TR-CU/EAC				API 6D, ISO 14313 FS: API607/API6FA/ ISO 10497, FE: ISO15848-1, SIL2, PED/ATEX/CE TR-CU/EAC				API 6D/ISO 14313 (Except 24[B]) FS: API607/API6FA/ ISO 10497, FE: ISO15848-1, SIL2, PED/ATEX/CE TR-CU/EAC			
Reference Page		P-T Rating : Page BAL54				P-T Rating : Page BAL54				P-T Rating : Page BAL54				P-T Rating : Page BAL54			
Remarks		Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175				Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175				Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175				Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175			

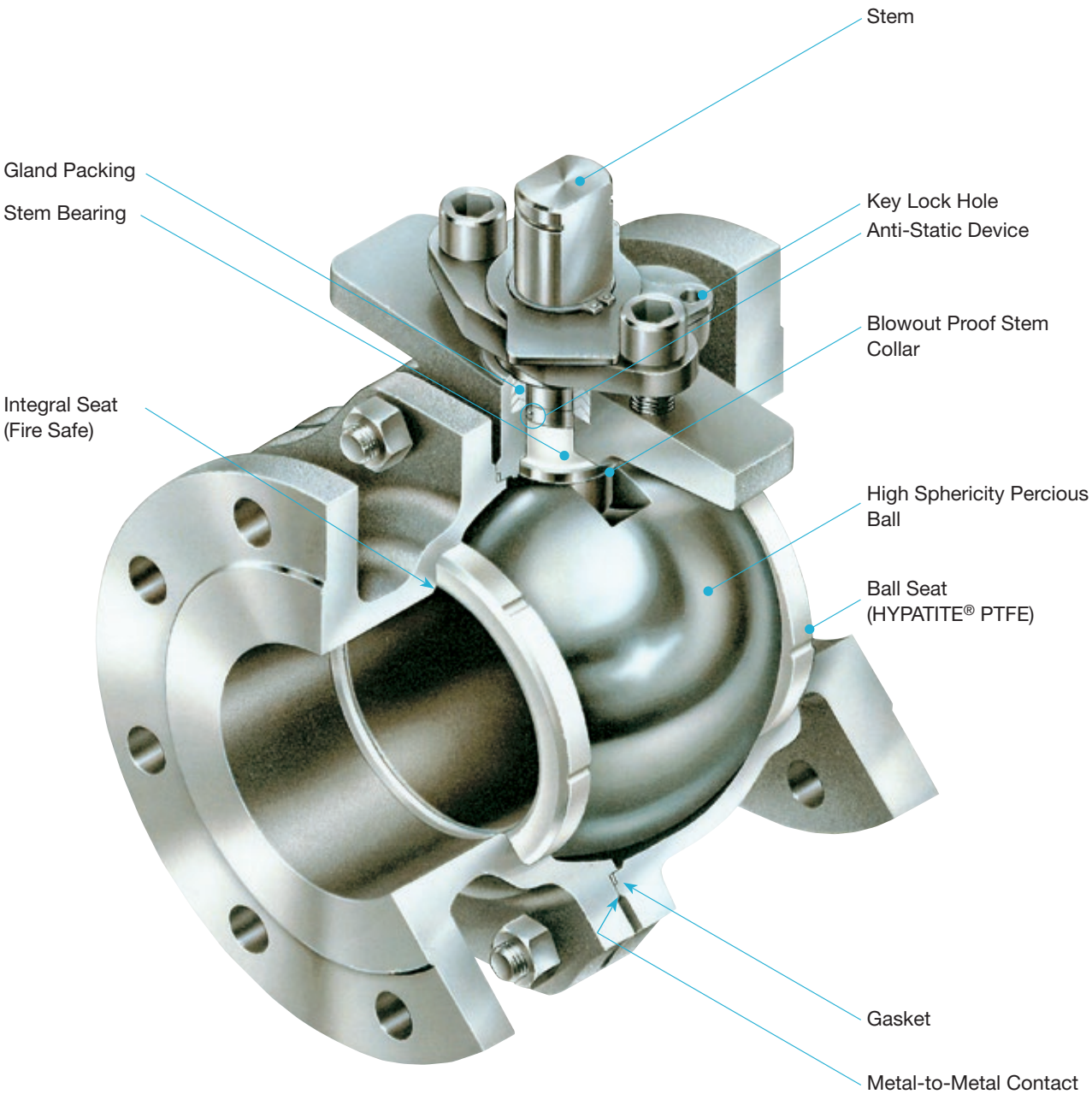
Type		14-K Series(-196℃)				14-K Series(-196℃)				14-K Series(-196℃)				67-K Series(-196℃)			
Ball Valve		150 FB 				300 FB 				600 FB 				150 FB 			
Fig		(G-)150UPG14K				(G-)300UPG14K				(G-)600UPG14K				(G-)W150UPG67K			
End Connection		ASME B16.5 Cl 150 RF				ASME B16.5 Cl 300 RF				ASME B16.5 Cl 600 RF				ASME B16.25 (BW)			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	B	L	H	D	B
1	25													TBA	TBA	TBA	TBA
11/2	40	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA
2	50	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA
21/2	65	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA
3	80	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA
4	100	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA
6	150	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA
8	200	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA
10	250	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA				
12	300	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA				
14	350	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA				
16	400	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA				
Body/Cap/Bonnet		316SS/CF8M				316SS/CF8M				316SS/CF8M				CF8M/CF3M			
Stem/Bottom Stem		316SS				316SS				316SS				UNS S66286			
Ball		316SS/CF8M				316SS/CF8M				316SS/CF8M				CF8M/CF3M			
Gland Packing		PTFE				PTFE				PTFE				Graphite			
Gasket		PTFE				PTFE				PTFE				Graphite			
Ball Seat		UHMW-PE				UHMW-PE				UHMW-PE				PCTFE			
Bore		Full Bore				Full Bore				Full Bore				Full Bore			
F-to-F Dimension		ASME B16.10				ASME B16.10				ASME B16.10				ASME B16.10			
Actuator Mounting Pad		ISO 5211				ISO 5211				ISO 5211				ISO 5211			
Standard/Approval		ASME B16.34, ISO 28921-1				ASME B16.34, ISO 28921-1				ASME B16.34, ISO 28921-1				ASME B16.34, ISO 28921-1			
Remarks		UHMW-PE: Ultra High Molecular Weight Polyethylene 2-piece Trunnion Mounted, Side Entry Double Brand (KITZ®/Perrin®)				UHMW-PE: Ultra High Molecular Weight Polyethylene 2-piece Trunnion Mounted, Side Entry Double Brand (KITZ®/Perrin®)				UHMW-PE: Ultra High Molecular Weight Polyethylene 2-piece Trunnion Mounted, Side Entry Double Brand (KITZ®/Perrin®)				Uni-Body, Floating, Top Entry Double Brand (KITZ®/Perrin®)			

Type		67-K Series(-196℃)				67-K Series(-196℃)				67-K Series(-196℃)				66-K Series(-196℃)			
Ball Valve		300 FB 				600 FB 				900 FB 				150 FB 			
Fig		(G-)W300UPG67K				(G-)W600UPG67K				(G-)W900UPG67K				(G-)W150UPG66K			
End Connection		ASME B16.25 (BW)				ASME B16.25 (BW)				ASME B16.25 (BW)				ASME B16.25 (BW)			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	B	L	H	D	B
1/2	15													TBA	TBA	TBA	TBA
3/4	20													TBA	TBA	TBA	TBA
1	25	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA				
11/2	40	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA				
2	50	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA				
21/2	65	TBA	TBA	TBA	TBA												
3	80	TBA	TBA	TBA	TBA												
4	100	TBA	TBA	TBA	TBA												
6	150	TBA	TBA	TBA	TBA												
8	200	TBA	TBA	TBA	TBA												
Body/Cap/Bonnet		CF8M/CF3M				CF8M/CF3M				CF8M/CF3M				CF8M/CF3M			
Stem/Bottom Stem		UNS S66286				UNS S66286				UNS S66286				UNS S66286			
Ball		CF8M/CF3M				CF8M/CF3M				CF8M/CF3M				CF8M/CF3M			
Gland Packing		Graphite				Graphite				Graphite				Graphite			
Gasket		Graphite				Graphite				Graphite				Graphite			
Ball Seat		PCTFE				PCTFE				PCTFE				PCTFE			
Bore		Full Bore				Full Bore				Full Bore				Full Bore			
Cap B/N																	
F-to-F Dimension		ASME B16.10				ASME B16.10				ASME B16.10				ASME B16.10			
Actuator Mounting Pad		ISO 5211				ISO 5211				ISO 5211				ISO 5211			
Standard/Approval		ASME B16.34, ISO 28921-1				ASME B16.34, ISO 28921-1				ASME B16.34, ISO 28921-1				ASME B16.34, ISO 28921-1			
Remarks		Uni-Body, Floating, Top Entry Double Brand (KITZ®/Perrin®)				Uni-Body, Floating, Top Entry Double Brand (KITZ®/Perrin®)				Uni-Body, Floating, Top Entry Double Brand (KITZ®/Perrin®)				Uni-Body, Top Entry Trunnion Mounted Ball Valves with Ball & Stem Integrated Design Double Brand (KITZ®/Perrin®)			

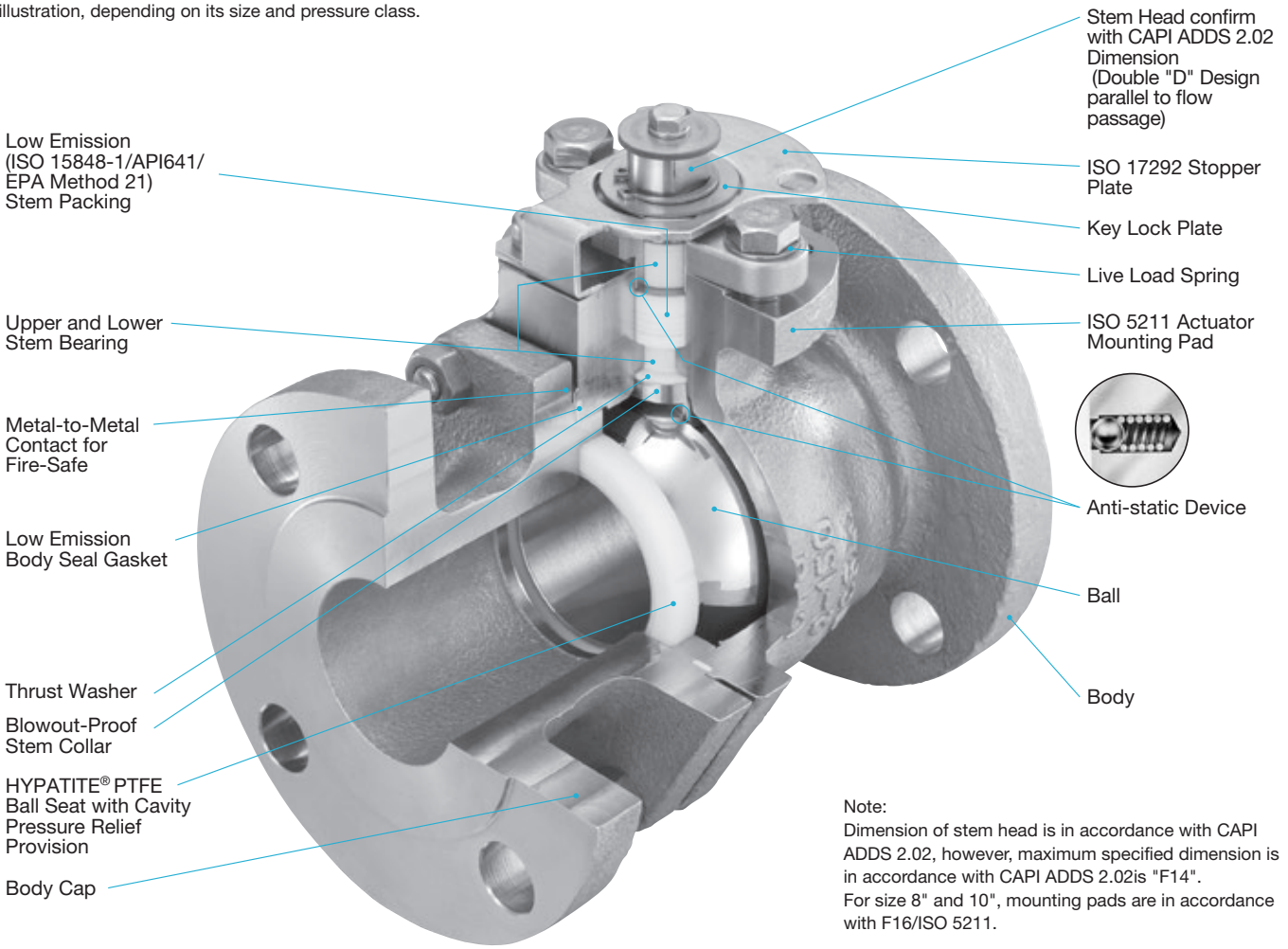
Type		66-K Series(-196℃)				66-K Series(-196℃)				66-K Series(-196℃)				66-K Series(-196℃)			
Ball Valve		150 FB 				300 FB 				600 FB 				150 FB 			
Fig		(G-)W300UPG66K				(G-)W600UPG66K				(G-)W900UPG66K				(G-)W1500UPG66K			
End Connection		ASME B16.25 (BW)				ASME B16.25 (BW)				ASME B16.25 (BW)				ASME B16.25 (BW)			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	B	L	H	D	B
1/2	15	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA
3/4	20	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA
1	25													TBA	TBA	TBA	TBA
11/2	40													TBA	TBA	TBA	TBA
2	50													TBA	TBA	TBA	TBA
Body/Cap/Bonnet		CF8M/CF3M				CF8M/CF3M				CF8M/CF3M				CF8M/CF3M			
Stem/Bottom Stem		UNS S66286				UNS S66286				UNS S66286				UNS S66286			
Ball		CF8M/CF3M				CF8M/CF3M				CF8M/CF3M				CF8M/CF3M			
Gland Packing		Graphite				Graphite				Graphite				Graphite			
Gasket		Graphite				Graphite				Graphite				Graphite			
Ball Seat		PCTFE				PCTFE				PCTFE				PCTFE			
Bore		Full Bore				Full Bore				Full Bore				Full Bore			
F-to-F Dimension		ASME B16.10				ASME B16.10				ASME B16.10				ASME B16.10			
Actuator Mounting Pad		ISO 5211				ISO 5211				ISO 5211				ISO 5211			
Standard/Approval		ASME B16.34, ISO 28921-1				ASME B16.34, ISO 28921-1				ASME B16.34, ISO 28921-1				ASME B16.34, ISO 28921-1			
Remarks		Uni-Body, Top Entry Trunnion Mounted Ball Valves with Ball & Stem Integrated Design Double Brand (KITZ®／Perrin®)				Uni-Body, Top Entry Trunnion Mounted Ball Valves with Ball & Stem Integrated Design Double Brand (KITZ®／Perrin®)				Uni-Body, Top Entry Trunnion Mounted Ball Valves with Ball & Stem Integrated Design Double Brand (KITZ®／Perrin®)				Uni-Body, Top Entry Trunnion Mounted Ball Valves with Ball & Stem Integrated Design Double Brand (KITZ®／Perrin®)			

Type		64-K Series(-196℃)				64-K Series(-196℃)				64-K Series(-196℃)				64-K Series(-196℃)			
Ball Valve		150 FB 				300 FB 				600 FB 				900 FB 			
Fig		(G-)W150UPG64K				(G-)W300UPG64K				(G-)W600UPG64K				(G-)W900UPG64K			
End Connection		ASME B16.25 (BW)				ASME B16.25 (BW)				ASME B16.25 (BW)				ASME B16.25 (BW)			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	B	L	H	D	B
21/2	65									TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA
3	80									TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA
4	100									TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA
6	150									TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA
8	200									TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA
10	250	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA
12	300	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA
14	350	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA
16	400	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA
Body/Cap/Bonnet		CF8M/CF3M				CF8M/CF3M				CF8M/CF3M				CF8M/CF3M			
Stem/Bottom Stem		UNS S66286				UNS S66286				UNS S66286				UNS S66286			
Ball		CF8M/CF3M				CF8M/CF3M				CF8M/CF3M				CF8M/CF3M			
Gland Packing		Graphite				Graphite				Graphite				Graphite			
Gasket		Graphite				Graphite				Graphite				Graphite			
Ball Seat		PCTFE				PCTFE				PCTFE				PCTFE			
Bore		Full Bore				Full Bore				Full Bore				Full Bore			
F-to-F Dimension		ASME B16.10				ASME B16.10				ASME B16.10				ASME B16.10			
Actuator Mounting Pad		ISO 5211				ISO 5211				ISO 5211				ISO 5211			
Standard/Approval		ASME B16.34, ISO 28921-1				ASME B16.34, ISO 28921-1				ASME B16.34, ISO 28921-1				ASME B16.34, ISO 28921-1			
Remarks		Uni-Body, Trunnion Mounted, Top Entry Double Brand (KITZ®／Perrin®)				Uni-Body, Trunnion Mounted, Top Entry Double Brand (KITZ®／Perrin®)				Uni-Body, Trunnion Mounted, Top Entry Double Brand (KITZ®／Perrin®)				Uni-Body, Trunnion Mounted, Top Entry Double Brand (KITZ®／Perrin®)			

Type		64-K Series(-196℃)			
Ball Valve		1500  FB			
Fig		(G-)W1500UPG64K			
End Connection		ASME B16.25 (BW)			
inch	mm	L	H	D	B
21/2	65	TBA	TBA	TBA	TBA
3	80	TBA	TBA	TBA	TBA
4	100	TBA	TBA	TBA	TBA
6	150	TBA	TBA	TBA	TBA
8	200	TBA	TBA	TBA	TBA
10	250	TBA	TBA	TBA	TBA
12	300	TBA	TBA	TBA	TBA
14	350	TBA	TBA	TBA	TBA
16	400	TBA	TBA	TBA	TBA
Body/Cap/Bonnet		CF8M/CF3M			
Stem/Bottom Stem		UNS S66286			
Ball		CF8M/CF3M			
Gland Packing		Graphite			
Gasket		Graphite			
Ball Seat		PCTFE			
Bore		Full Bore			
F-to-F Dimension		ASME B16.10			
Actuator Mounting Pad		ISO 5211			
Standard/Approval		ASME B16.34, ISO 28921-1			
Remarks		Uni-Body, Trunnion Mounted, Top Entry Double Brand (KITZ®／Perrin®)			


Stem
Gland Packing
Stem Bearing
Key Lock Hole
Anti-Static Device
Blowout Proof Stem
Collar
Integral Seat
(Fire Safe)
High Sphericity Percious
Ball
Ball Seat
(HYPATITE® PTFE)
Gasket
Metal-to-Metal Contact

This is an illustrated cross-section of typical KITZ split-body floating type full bore ball valve to exhibit basic design concept. Actual design of a valve may be slightly different from this illustration, depending on its size and pressure class.



Note:
Dimension of stem head is in accordance with CAPI ADDS 2.02, however, maximum specified dimension is in accordance with CAPI ADDS 2.02is "F14".
For size 8" and 10", mounting pads are in accordance with F16/ISO 5211.

150UTDZ Size 2

Bubble-tight Sealing Performance with HYPATITE® PTFE Ball Seats

HYPATITE® PTFE Ball Seats, standard stem seals of KITZ Ball Valves, are made of denatured PTFE, molecularly reinforced PTFE copolymer. Specifically engineered for high bidirectional sealing performance and prolonged service life of valves. Its resistance to high or low temperature, creep or compression, abrasion and corrosion is all outstanding. As an option, KITZ **SWELLESS®** Seats, principally made of PFA is recommended specifically for monomer service. This epoch-making seat maximizes resistance to permeation of monomer into its molecular structure (generally known as "swelling" problem), which causes seat deformation and seriously affects shut-off function of valves in styrene and butadiene monomer service.

Simplified Actuator Mounting

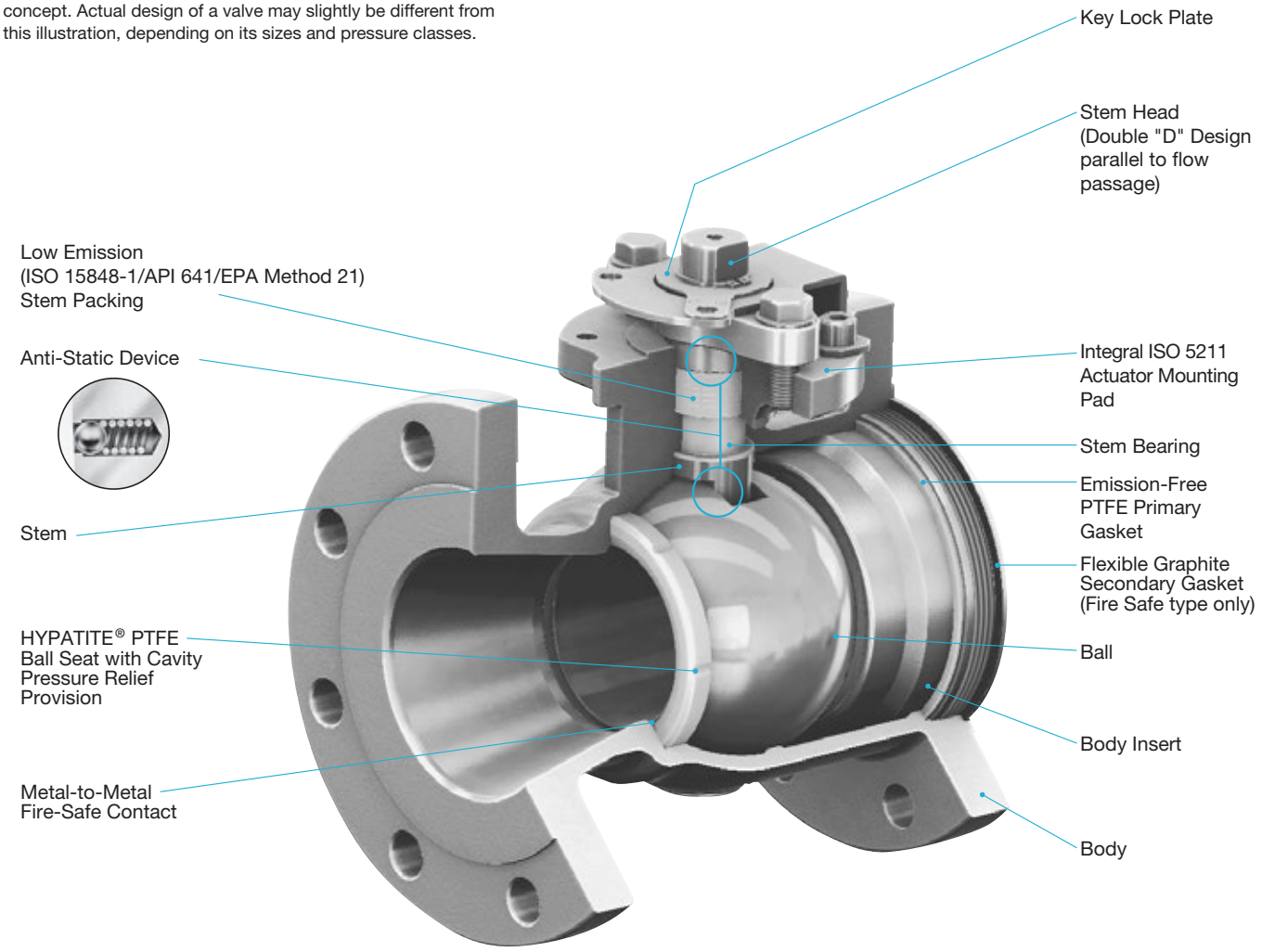
For 150/300SCTDZ/UTDZM and SCTAZ/UTAZM Series Ball Valves, **ISO 5211** actuator mounting pad is integrally provided for uniformly simplified mounting of any actuators provided with valve mounting flanges designed to ISO 5211. 150UTBM Series Ball Valves are provided with KITZ Standard integral actuator mounting pad.

Easy Maintenance

Split Body Design for KITZ SCTDZ/UTDZM Series provides conveniences of easy maintenance critically required for process plants. In order to provide maintenance to KITZ 150/300SCTAZ/UTAZM, uni-body, side entry floating ball valves, its insert can be removed from the body by unscrewing.

KITZ 150/300SCTAZ/UTAZM Series
Reduced Bore, Uni-Body, End Entry Ball Valves

This is an illustrated cross-section of typical KITZ uni-body floating type reduced ball valve to exhibit basic design concept. Actual design of a valve may slightly be different from this illustration, depending on its sizes and pressure classes.



150SCTAZ Size 1 1/2

Extensive Safety Considerations

KITZ Ball Valves are designed with extensive safety considerations for users. Blow-out proof stem, provision of locking device and prevention of misalignment of lever handle provides safe operation in the field and trouble free operation in the plant. Anti-static device, fire-safe design and cavity pressure relief features all assure economic benefits of smooth and steady plant operation. KITZ advancements in low emission design features contribute to global battle against fugitive emission while greatly reducing costs caused by product loss.

For Sour Service

Hardness of Body, Body Cap/Insert, Ball and Stem materials of KITZ Class 150/300 Steel Ball Valves are controlled by appropriate heat treatment and conformed to the hardness requirements of NACE MR 0175, as standard. In addition following requirements are optionally available.

-Bolting for Valves exposed to sour environment

-NACE requirements for Steel Ball Valves in Class 600 and higher.

Kindly contact KITZ for these requirements.

Seven Safety Considerations for KITZ 150/300SCTDZ/UTDZ(M) 150UTB(M) and 150/300SCTAZ/UTAZ(M) Series Ball Valves

1. Double "D" Stem Head Design provides mounting of lever handle always in parallel to the flow passage. This feature prevents lever handle from being installed in wrong orientation. (Fig. 1)

2. Lower end of the stem is designed with integral collar for blowout-proof. (Fig. 2)

3. Anti-Static Feature is provided to ensure electrical continuity between ball, stem and body. (Fig. 2)

4. Facility to mount locking device for preventing accidental valve operation is provided.

5. Plant fires are serious concern for soft-seated ball valves due to possible fluid leakage by deterioration of resilient sealing materials.

   KITZ Ball Valves are engineered for fire-safety and successfully fire tested to minimize both external and internal fluid leakage after plant fires. Our Ball Valves have post-fire metal-to-metal contact of all sealing areas, such as:

   - Contact between ball and valve shell (Fig. 3 and 4)
   - Contact between stem and valve shell (Fig. 5 and 6)
   - Valve shell coupling flanges of split body design (Fig. 7 and 8)
   - Contact between valve body and insert of uni-body design (Fig. 9)

   Problem with external fluid leakage is more serious than internal leakage through the valve bore due to fear of fueling fire. To prevent this, KITZ Ball Valves may be ordered with flexible gland packing and gasket, which are extremely heat resistant, and will not be affected by the fire.

6. Surfaces of stem and stuffing box, and interface clearance of stem-to-gland, stem-to-body and gland-to-stuffing box are precisely controlled by machining and assembly for low emission service. Belleville Spring Washer is employed for live loading gland bolts, to minimize needs of re-tightening bolts for low emission service.

7. Some amount of line fluid is usually left, trapped inside of ball-body cavity. This left-over fluid can expand under the influence of high ambient or line temperature. An excessive cavity pressure rise may sometimes damage the valve seats or ball, unless the valve has an adequate pressure relief mechanism. Trunnion Mounted Ball Valves generally provides perfect protection against this problem. Please contact KITZ for details.

   With Floating Ball Valves, however, because of its rather simple seating principle, it require special protection from excessive cavity pressure rise, in highly volatile liquid service with frequent and large temperature variation, as the valve is not frequently operated. KITZ 150/300 SCTDZ/UTDZ(M) and 150/300 SCTAZ/UTAZ(M) Series Ball Valves offer self-relieving of excessive cavity pressure as standard feature engineered in HYPATITE® PTFE Ball Seats.

   Other general solution for floating ball valves include employment of automatic pressure relief valve or drilling pressure equalization hole on the ball. If requirement of automatic cavity pressure relief is critical as in chlorine service, be sure to contact KITZ or its distributors for technical advice.

   The capability is influenced by many variables, including: fluid characteristics, variations in pressure, temperature and thermal cycles.

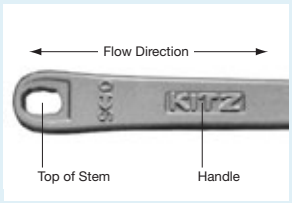


Fig. 1

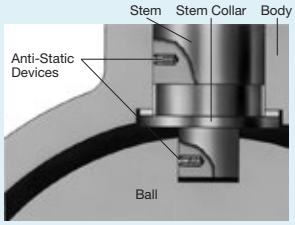


Fig. 2

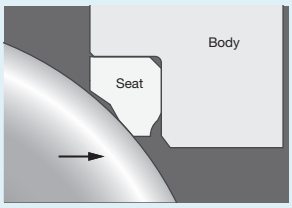


Fig. 3 (Before Fire)

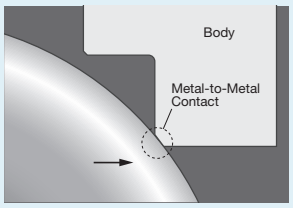


Fig. 4 (After Fire)

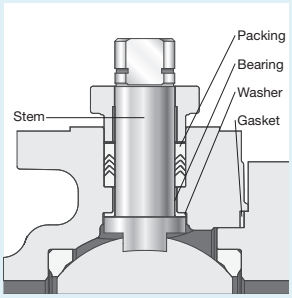


Fig. 5 (Before Fire)

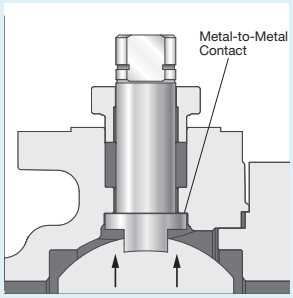


Fig. 6 (After Fire)

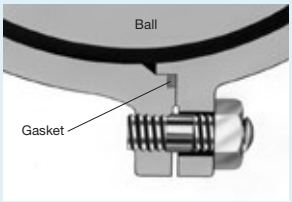


Fig. 7 (Before Fire)

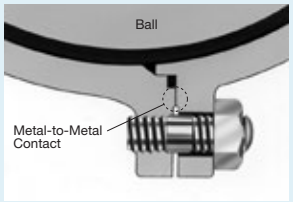


Fig. 8 (After Fire)

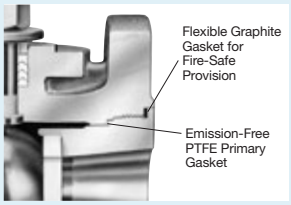


Fig. 9 (Uni-Body Insert)

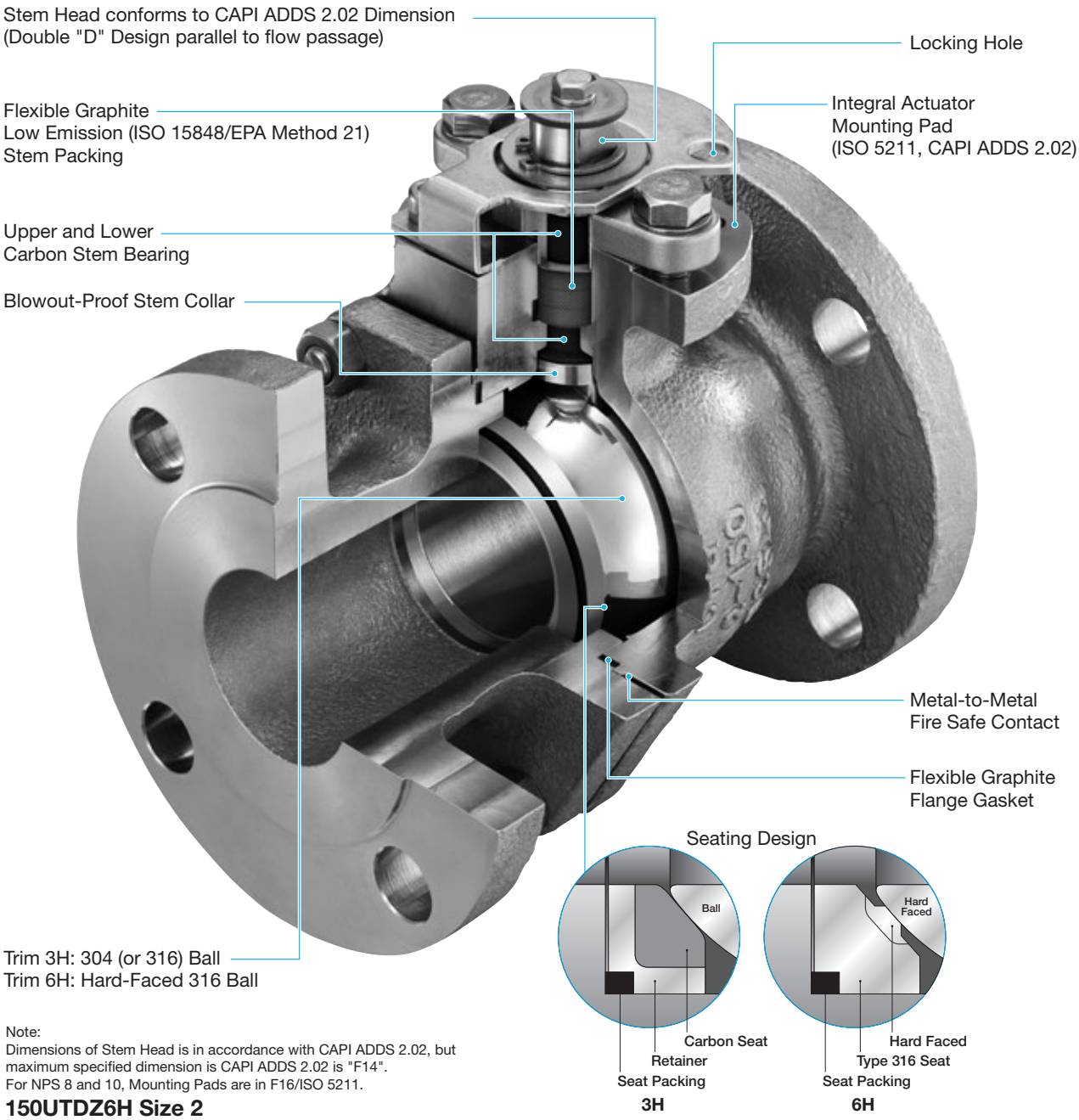
Emission Free PTFE Gasket is provided as standard for primary body seal. Flexible Graphite Gasket may be additionally employed as the secondary body seal for Fire-Safe Provision.

KITZ Steel Ball Valves for High Temperature

Design Features for Trim 3H, 5H, 6H

Split-Body, Side-Entry, Full-Bore Design

This is an illustrated cross-section of a typical KITZ High Performance Ball Valve for demonstrating the basic design concept. Actual design of a valve may slightly be different from this illustration, depending on its size and pressure class.

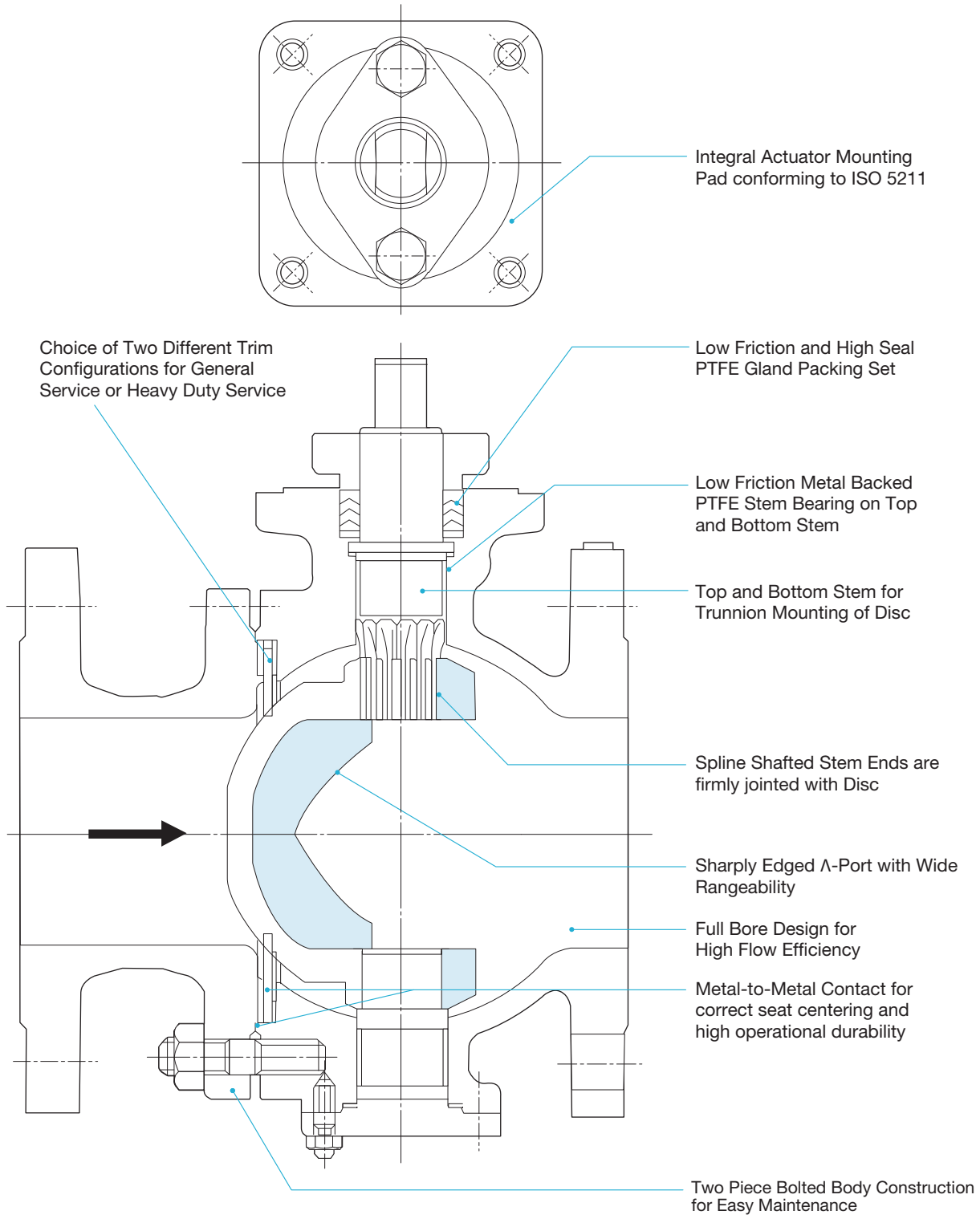


Note:
Dimensions of Stem Head is in accordance with CAPI ADDS 2.02, but maximum specified dimension is CAPI ADDS 2.02 is "F14".
For NPS 8 and 10, Mounting Pads are in F16/ISO 5211.

150UTDZ6H Size 2

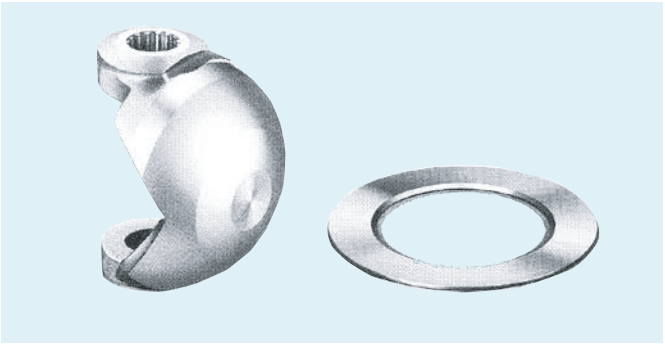
Λ (Lambda)-Port Control Valves

Design Features



1. Sharp Solid Cutting

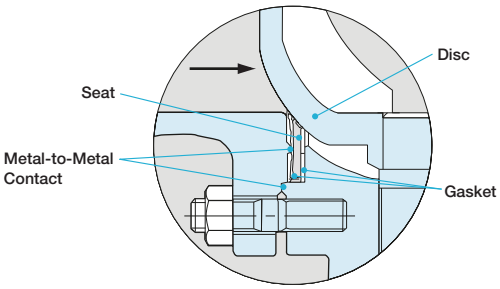
Trunnion mounted disc is sharply edged for cutting solids and fibrous objects mixed in line fluids, preventing disturbance to valve closing operation and minimizing fluid residue within the valve bore.



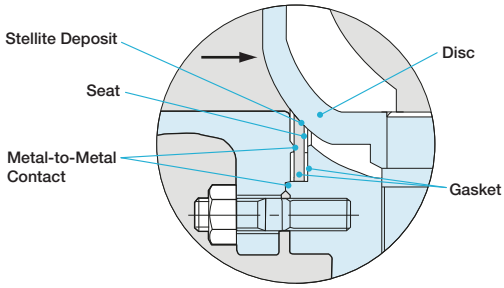
2. Choice of Trims

Depending on the service conditions, choice of two different trim configurations are available.

FLEKSEAT, made of Spring in Stainless Steel Type 316, provides elasticity in its contact with hard-chromium plated CF8M Disc for higher sealing performance. This seat is recommended for pulp and paper mill process control and services where higher sealing performance is critically required for valve shut-off. This seat is suited for throttling service. (KITZ Fig. UVC)



KNIFESEAT, made of Stellite Deposited Steel Type 316, contacts Hard-Chromium Plated CF8M Disc for heavy duty services. This seat is recommended for slurry service, and all other abrasion services. Also good for high viscosity services including pulp and paper mill processes. It is also recommended for throttling service. (KITZ Fig. UVCT)



3. Structural Reliability

Metal-to-Metal Contact is accommodated between body and cap, and between seat and cap, for correct seat centering and adequate depressing force. Spline shafted stem ends are firmly jointed to the disc for correct disc centering and higher operational durability. In addition, trunnion mounting of disc to the body helps increase total structural reliability of the valve against extraordinary piping stress.

4. Stabilized Operating Torque

Metal Backed PTFE Stem Bearings are employed on Top and Bottom Stem for minimized and stabilized torque in valve operation. Fine finish of the disc surface and other sliding surfaces of components also helps smooth operation of the valve.

5. Maintenance Ease

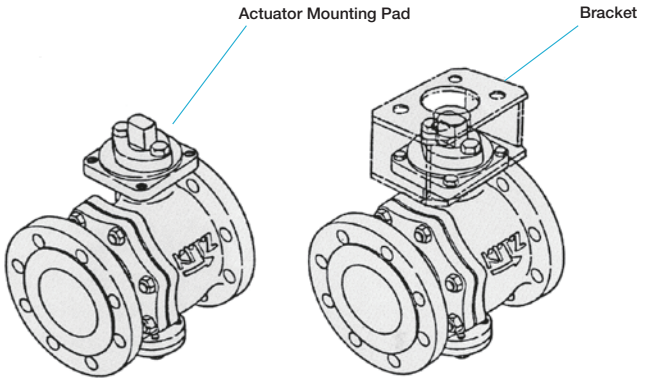
Two-Piece Split Body Construction provides convenience of easy maintenance which is always critically required for handling viscous or fibrous line fluids.

6. High Flow Efficiency

Full Bore Design guarantees maximized and linear flow characteristics with minimized pressure loss, helping viscous or fibrous line fluids to pass through valve bore smoothly.

7. Valve Automation

Quarter-Turn Valve drive mechanism enables technically easier valve mounting measures such as electric and pneumatic actuators. Integral Mounting Pads are provided for easy, safe and assures on-the-spot actuator mounting without disassembly of valve glands, as required by ISO Standard.
Note: Customers are requested to prepare mounting brackets and connectors for their valve actuation as illustrated below.



Caution: Caution: KITZ Λ-Port Control Valves are designed for uni-directional flow control. Be sure to install the valve correctly, so that the direction of line flow matches the direction of arrow mark casted out on the valve body.

Design Data

Design Specifications

Valve Structure	Split Body, Side Entry, RF-Flanged, Full Bore, Trunnion Mounted Disc
Wall Thickness	ASME B16.34 Class 150/Class 300
Face to Face Dimension	JIS B2002 or ASME B16.10 Class 150/Class 300 for Ball Valves
End Connection	RF-Flanged to JIS B22020 10K/20K or ASME B16.5 Class 150/Class 300
Actuator Mounting Pad	ISO 5211
P-T Rating	JIS B2220 10K/20K or ASME B16.34 Class 150/Class 300
Operation	Quarter Turn

Test Pressure

Seat Test Hydrostatic or Pneumatic at 0.39 MPa (4 kgf/cm² or 60 psi)	FLEKSEAT for General Service	Allowable Leakage 0.0005% of Nominal Cv to IEC 534-4 Class IV-SI or ANSI FCI 70-2 Class IV×0.05
	KNIFESEAT for Heavy Duty Service	Allowable Leakage 0.5% of Nominal Cv to IEC 534-4 Class II or ANSI FCI 70-2 Class II

Maximum Allowable Seat Leakage (Per Minute under 0.4 MPa Test Pressure)

Nominal Size		FLEKSEAT (UVC)			KNIFESEAT (UVCT)	
NPS	DN	Cv at Full Opening	Hydrostatic (cc/min)	Pneumatic (NL/min)	Cv at Full Opening	Hydrostatic (L/min)
1	25	25	3.6	1.08	31	4.45
1½	40	85	12.2	3.66	100	14.4
2	50	145	20.8	6.24	160	23.0
2½	65	240	34.5	10.35	265	38.1
3	80	380	54.6	16.38	400	57.5
4	100	550	79.0	23.70	585	84.1
5	125	960	138	41.40	1010	145
6	150	1500	216	46.80	1550	223
8	200	2700	388	116.40	2750	395
10	250	4300	618	185.40	4400	632
12	300	6200	891	267.30	6300	905
14	350	8200	1178	353.40	8300	1193

Conditions: Absolute Air Pressure of 0.1 MPa at 20°C

T60S Series
Soft Seated 3-Piece Body Trunnion Mounted Ball Valves



Design Standards
- Basic Design: API 6D/ISO 14313
- Face to Face Dimension: API 6D/ASME B16.10
- End Connection: ASME B16.5
- Bore Diameter: API 6D/ISO 14313
- Wall Thickness: ASME PBVC Section VIII

Product Range
- Nominal Pressure: ASME Class 150 to 1500
- Nominal Size: NPS 2 to NPS 24 (DN 50 to DN 600)
- Shell Materials:
  Carbon Steel, Alloy Steel,
  Austenitic Stainless Steel, Duplex Stainless Steel,
  High Alloy Steel, Nickel Based Alloy
- Ball Seat Materials:
  RPTFE (Reinforced PTFE), Modified PTFE,
  RNylon (Reinforced Nylon), DEVLON V®,
  PEEK

Certification
- Fugitive Emission: ISO 15848-1 BH CO1
- Fire Test: API 607/API 6FA/ISO 10497
- PED: 2014/68/EU
- ATEX: 2014/34/EU
- SIL: IEC 61508 (SIL 2)

Design Features
- Structure: 3-piece Bolted Body and Cap
- Standard Materials: NACE MR0175, ASTM and others
- Tight Shut-off Sealing Mechanism
- Low Operating Torque
- Triple Stem Sealing System with 2-Orings & Packing
- Double Block and Bleed Function
- Self Relief of Excessive Cavity Pressure
- Fire Safe Tested
- Blowout-Proof Ball Seat & Stem Construction
- Anti-Static Provision Design
- Locking Device for Lever Operation
- ISO 5211 Actuator Mounting Pad
- Available for DPE (Double Piston Effect)/SPE (Single Piston Effect)

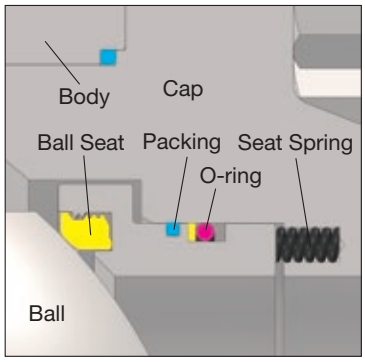
1. Fire Safe Design

(1) Internal Leakage Prevention

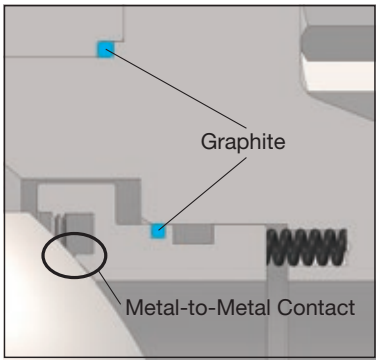
When resilient sealing materials are damaged or destroyed by plant fire, edges of upstream and downstream metal seat retainers preloaded by seat springs to come in contact with the ball to shut-off line fluid to minimize internal leakage through valve bore. And by flexible graphite seat retainer packing rings of KITZ original design prevents fluid leakage between valve cap and seat retainer during and after the plant fire.

(2) External Leakage Prevention

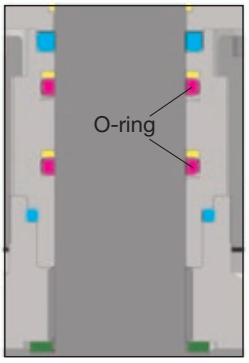
External leakage from valve stem area is prevented by double sealing mechanism with O-rings and flexible graphite gland packing rings. Leakage through valve body joint is protected by flexible graphite gaskets. Even after fire deteriorates O-rings, flexible graphite gland packing rings and gaskets remain intact to prevent external fluid leakage.



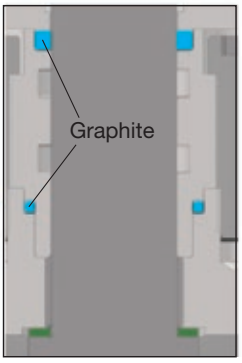
Before



After



Before



After

2. Tight Shut-off Sealing Mechanism

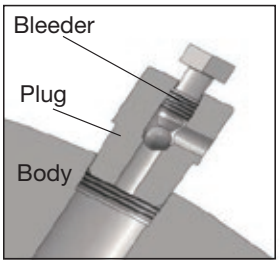
Resilient seat design maintains each upstream and downstream ball seats in contact with the ball adequately, by means of repulsing force of seat springs inserted behind seat retainers. Line fluid pressure also helps this contact method. This sealing mechanism features unfailing thru-the-bore sealing performance of upstream and downstream side ball seats at the same time.

3. Double Block and Bleed Function

Ball seats independently shuts off line fluid on upstream and downstream side of the ball. Valve bore and body cavity are isolated from each other when valve is fully open or closed. Under this condition, cavity pressure can be discharged with a vent valve and a drain plug. Vent valve is equipped with blowout-proof bleeder for safe discharge.

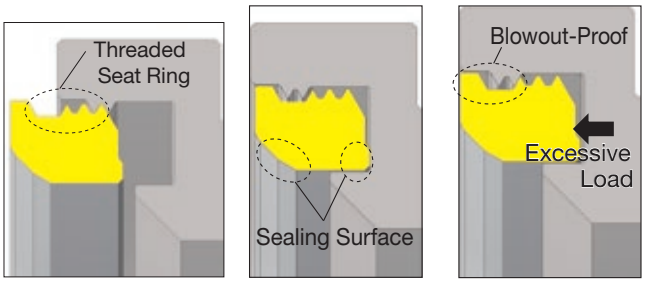
Relieving cavity pressure with a vent valve is recommended for safe draining.





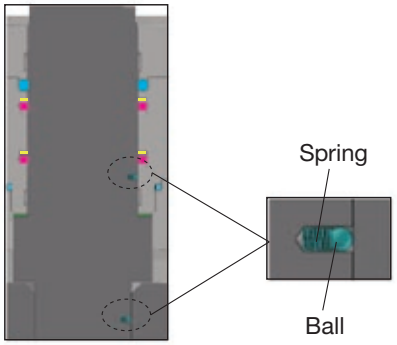
4. Blowout–proof Ball Seat Assembly

As illustrated below, ball seats are threaded into unthreaded back of seat retainers to reach inner walls and lower shoulders of seat retainers for tight sealing surface-to-surface contact. This unique design provides easy maintenance and blowout-proof seat assembly when ball seats are excessively loaded by back pressure, due to incidental cavity pressure rise.



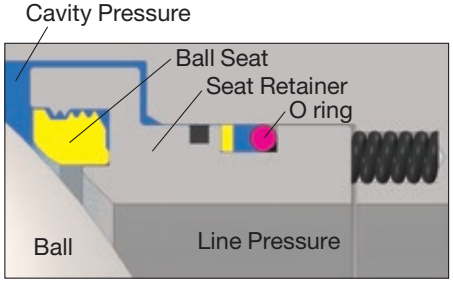
5. Antistatic Design

Spring loaded balls assembled between the stem and bonnet and the stem and ball permits electric conductivity through all metallic valve components.



6. Cavity Pressure Relief

In case service or ambient temperature rises incidentally, liquefied gas or highly volatile liquid trapped within body cavity may vaporize and cause excessive rise in cavity pressure. For safety consideration, when cavity pressure exceeds line pressure, either one of ball seats will move slightly away from the ball surface together with seat retainers to relieve excessive cavity pressure into the valve bore.



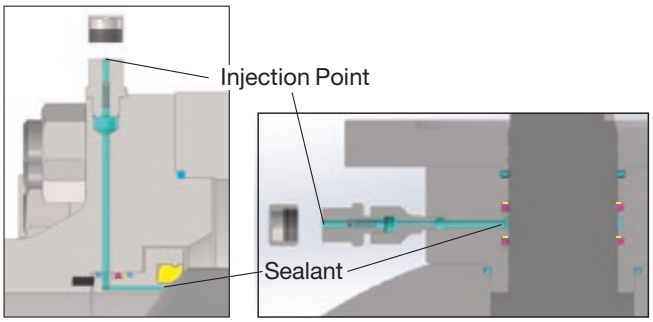
7. Low Emission Guaranteed Design

Fugitive Emission suppressing design for both resilient and metal seated valves are ISO 15848 Tightness Class "B" certified (Lower than 10^{-4} mg·s^{-1}·m^{-1} for stem leakage and lower than 50 ppmv for body leakage). This verifies outstanding low emission performance of the whole sealing mechanism in the valve.

8. Options[*1]

(1) Emergency Seal Restoration[*2]

For accidental leakage from ball seats or stem sealing area, sealant supply mechanism may be provided as an option. Should sealing parts be damaged or decomposed by a fire or other accidental causes, leakage can be temporarily prevented or reduced by sealant injection into this mechanism.



(2) Special Shell and Trim Materials
(3) Special Sealing Component Materials
(4) Butt-weld Piping Connection
(5) Pipe Pups Welded to Valve Ends
(6) DIB: Double Isolation and Bleed (Double Seal)[*3]
(7) Stem Extension
(8) Overlay for Bore and Cavity
(9) Actuation (Pneumatic and Electric)

*1 For all optional provisions, please contact KITZ representative or local distributors.
*2 Standard design for North American market.
*3 Any combination of DPE (Double Piston Effect)/SPE (Single Piston Effect) is available.

T60M Series
Metal Seated 3-Piece Body Trunnion Mounted Ball Valves



Design Standards
- Basic Design: API 6D/ISO 14313 (Except CL 600-24)
- Face to Face Dimension: API 6D/ASME B16.10
- End Connection: ASME B16.5
- Bore Diameter: API 6D/ISO 14313
- Wall Thickness: ASME PBVC Section VIII

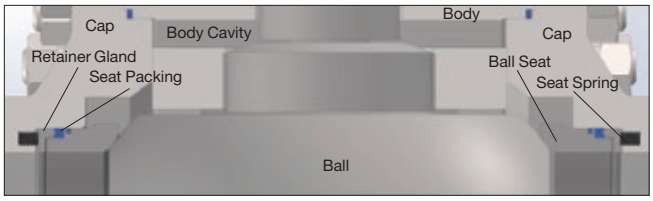
Product Range
- Nominal Pressure: Class 150 to 600
- Nominal Size: NPS 2 to 24 (DN 50 to 600)
- Shell Materials:
  Carbon Steel, Alloy Steel,
  Austenitic Stainless Steel, Duplex Stainless Steel,
  High Alloy Steel, Nickel Based Alloy
- Seat Materials:
  316SS + Ni-Cr Alloy Thermal Spraying

Certification
- Fugitive Emission: ISO 15848-1 BH CO1
- Fire Test: API 6FA
- PED: 2014/68/EU
- ATEX: 2014/34/EU
- SIL: IEC 61508 (SIL 2)

Design Features
- Structure: 3-piece Bolted Body and Cap
- Standard Material: NACE MR0175, ASTM and others
- High Performance Sealing Mechanism
- Low Operating Torque
- Packing with Live Loaded Sealing Mechanism
- Double Block and Bleed Function
- Self-Relief of Excessive Cavity Pressure
- Fire Safe Design
- Blowout-Proof Ball Seat & Stem Construction
- Anti-Static Provision
- Locking Device for Lever Operation
- ISO 5211 Actuator Mounting Pad

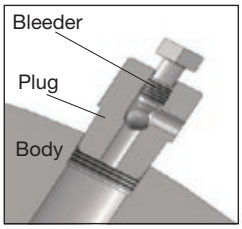
1. High Performance Sealing Mechanism

Metal seat design, as with resilient seat design, adequately maintain each upstream and downstream ball seats in contact with the ball by means of repulsing force of seat springs inserted behind seat retainers. Line fluid pressure also helps this contact method. This sealing mechanism features unfailing thru-the-bore sealing performance of upstream and downstream side ball seats at the same time. In addition, by having surfaces of the ball and ball seats in contact thermally sprayed with high alloy material, this provides higher wear resistance and durability for high temperature and abrasive services.



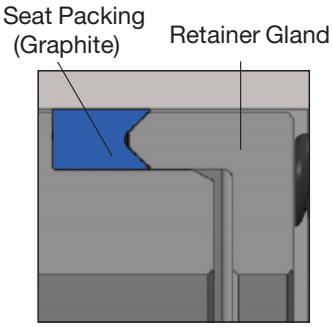
2. Double Block and Bleed Function

Ball seats independently shuts off the line fluid on upstream and downstream side of the ball. Valve bore and body cavity are isolated from each other when the valve is fully open or closed. Under this condition, the cavity pressure can be discharged with a vent valve and a drain plug. Vent valve is equipped with a blowout-proof bleeder for safe discharge. Relieving cavity pressure with a vent valve is recommended for safe draining.



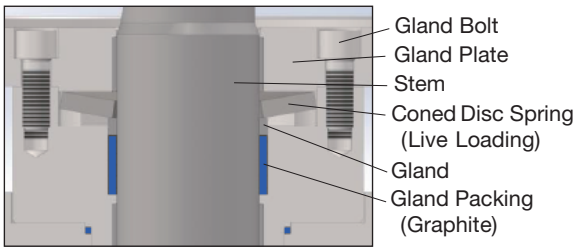
3. High Performance Seat Packing

Unique graphite seat packing rings with retainer glands provide reliable shut-off sealing performance during the entire service life.



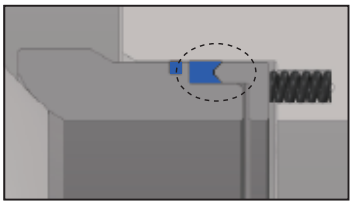
4. Live Loaded Packing Structure

Gland packing ring is compressed with coned disc spring to prevent stress relaxation. This live loaded packing system provides highly durable sealing performance with no need of packing re-tightening.



5. Cavity Pressure Relief

In case incidental rise of service or ambient temperature, liquefied gas or highly volatile liquid trapped within the body cavity may vaporize and cause excessive rise in cavity pressure. For safety consideration, when cavity pressure exceeds the line pressure, either one of ball seals will move slightly away from the ball surface together with seat retainers to relieve excessive cavity pressure into the valve bore.



6. Low Emission Guaranteed Design

Fugitive emission suppressing design for both resilient and metal seated valves are certified to ISO 15848 tightness class "B" (lower than 10^{-4} mg.s^{-1} m^{-1} for stem leakage and lower than 50ppmv for body leakage). This verifies outstanding low emission performance of whole sealing mechanism of the valve.

7. Options*

(1) Special Shell and Trim Materials
(2) Special Sealing Component Materials
(3) Butt-weld Piping Connection
(4) Pipe Pups Welded on Valve Ends
(5) Stem Extension
(6) Overlay for Bore and Cavity
(7) Actuation (Pneumatic and Electric)

*For all optional provisions, please contact KITZ representative or local distributors.

KITZ Ball Seat Materials

Following seat materials are available.

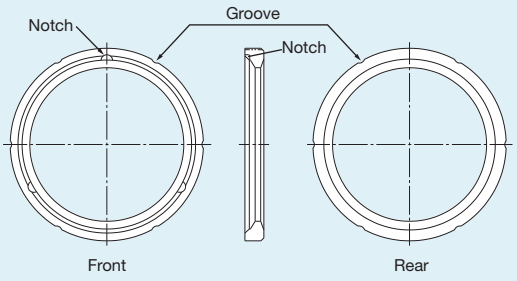
Material	Features	Maximum Service Temperature
Virgin PTFE	High chemical resistance and operation efficiency	200℃
HYPATITE® PTFE	Monomer permeability is lower and resistance against compression and creeping is higher than other PTFE materials	260℃/270℃ *1
Carbon filled PTFE	Excellent heat and abrasion resistance	260℃/270℃ *1
FILLTITE*	Highest heat resistance among PTFE based materials	300℃ *2
Graphite	Excellent for high temperature service	500℃
Metal	Excellent for high temperature and abrasive service	500℃/525℃ *3
PEEK	Higher heat resistance and mechanical strength	270℃
Glass fiber filled PTFE with MoS_2	Higher abrasion resistance and operation efficiency	230℃
Nylon with MoS_2	Higher mechanical strength	140℃

*: FILTITE is specially reinforced ball seat, made by using more carbon based fillers into PTFE compared to conventional carbon filled PTFE, which generally improves heat and abrasion resistance. This material provides excellent operability, durability, chemical resistance and sealing performance at a high temperature of 300℃. In addition, ball seats are interchangeable with most of our conventional ball seats, and also have the cost advantage.
*1 270℃: SCTDZ/UTDZM Series only.
*2 Uni-body design: 260℃
*3 525℃: T60M/SF3TC 6H UF3TC6HM Series only.

HYPATITE® PTFE Ball Seats (Carbon and Stainless Steel Valves)

As manufacturer's standard, KITZ ball valves are furnished with **HYPATITE® PTFE** ball seats made of denatured PTFE, molecularly reinforced PTFE copolymer and specially engineered for high performance which includes:

- Wide service temperature range of -29°C (-20°F) through 270°C (518°F) for SCTDZ/UTDZ(M) Series and 260°C (500°F) for UTB and SCTAZ/UTAZ(M) Series.
  This is standard valve design and materials used for medium to high temperature services. Lower temperature range can be extended down to -196°C (-321°F) by means of extended bonnet design and special low temperature serviced materials.
- High chemical resistance comparable to virgin PTFE.
- Monomer permeability lower than other PTFE materials.
- High mechanical strength against compression, creeping (cold flow) and superior to other PTFE materials for long life cycle.
- Smooth operation, as it possesses specific gravity and friction coefficient equal to those of virgin PTFE.
- Prevents contamination in process line with its stability, the performance comparable to virgin PTFE.
- High sealing performance brought by its resiliency, the typical feature of PTFE.



Typical HYPATITE® PTFE Seat used for NPS 4 KITZ 150SCTDZ Ball Valves.

FILLTITE Ball Seats

Highest heat resistance among PTFE based materials.

- Service temperature range: -29℃ to 300℃
- Trim symbol: 1H

1. Choice of Trim for Heated Abrasive Services

Metal seated ball valves are guaranteed for maximum service temperature of 300ºC (572ºF) for trim symbol 5H and 500ºC (932ºF) for trim symbol 6H*1*2. With hard graphite seated ball valves, maximum service temperature of 500ºC (932ºF) is also guaranteed for trim symbol 3H*2. For heat resistant sealing and trim materials, quality of these valves for heated and abrasive service, which cannot be properly handled with conventional soft seated ball valves, due to the limited heat resistant characteristics and mechanical properties of the soft seats.

"FILLTITE" is specially reinforced ball seat, using more carbon based fillers into PTFE compared with conventional carbon filled PTFE, which improves heat and abrasion resistance greatly. This material performs excellent operability, durability, chemical resistance and sealing performance at high temperature of 300ºC (572ºF). In addition, ball seats are interchangeable with most of our conventional ball seats and also have the cost advantage.

*1 Temperature is limited to 450°C (842°F) for trunnion mounted ball valves with trim 6H
*2 WCB Shell Material: Upon prolonged exposure to temperatures above 425°C (797°F), carbide phase of steel may be converted to graphite.
Permissible, but not recommended for prolonged usage above 425°C (797°F).

2. Unconditional Fire-Safe Provision

While metal and hard graphite seats are extremely heat resistant, other sealing components, such as gland packing and flange gaskets are made of flexible graphite, which is another heat resistant material, so no part of the valve be affected by extraordinarily heated environments. Also, provision of anti-static device is not required due to inter-component electric conductivity.

3. Maintenance Ease

Split body construction of the valve body provides convenience of easy maintenance, critical requirement for handling slurries and other viscous fluid.

4. Valve Automation

Quarter-turn valve drive mechanism makes mounting of valve automation measures such as electric and pneumatic actuators technically easier. KITZ floating ball valves employ integral actuator mounting pads, complying with ISO 5211 and CAPI, for easy, safe and assured on-the-spot actuator mounting without disassembly of valve glands.

5. High Flow Efficiency

Full port design provides maximized and linear flow characteristic with minimal pressure loss as the line flow travels through the valve bore. This is necessary design requirement particularly for trouble-free service of slurries and other viscous fluids.

6. FILLTITE Seated Ball Valves (Trim1H)

● Highest heat resistance among PTFE based materials.

Valve Design		Floating Ball Valve	Trunnion Mounted Ball Valve
Trim Symbol		1H	
Temperature		300°C	
		572°F	
Parts	Ball	ASTM A276 Type 304*1 or A351 Gr.CF8*1	
	Ball Seat	FILLTITE® PTFE	
	Stem	ASTM A276 Type 304*2 ASTM A276 Type 316*2	



*1 CF8M Shell Material: Ball Type 316 or CF8M
*2 CF8M Shell Material: Stem Type 316

7. Hard Graphite Seated Ball Valves (Trim 3H)

● Bi-directional flow.
● Recommended for low abrasion service.

Valve Design		Floating Ball Valve
Trim Symbol		3H*5
Temperature		500°C
		932°F
Seat Leakage*1		ANSI FCI 70-2 Class Ⅵ
Parts	Ball	ASTM A276
		Type 304*1 or A351 Gr.CF8*2
	Ball Seat	Carbon + JIS SUS329J1*3
	Stem	ASTM A276 Type 304*4



*1 Maximum allowable seat leakage *2 CF8M Shell Material: Ball Type 316 or CF8M
*3 Equivalent to AISI Type 329 *4 CF8M Shell Material: Stem Type 316
*5 WCB Shell Material: Upon prolonged exposure to temperature above 425°C (797°F) carbide phase of steel may be converted to graphite.
Permissible, but not recommended for prolonged usage above 425°C (797°F).

Caution:
● Not recommended for throttling service.
● Not recommended for high abrasion service.
● Maximum working temperature for oxidizing service, such as high temperature air, is 450°C (842°F).

8. Metal Seated Ball Valves (Trim 5H/6H)

Rigid construction with full metallic contact between the ball and seats, and high durability of trim materials make KITZ metal seated ball valves ideally suited to highly abrasive services handling slurries and other viscous fluids.

● **Trim Materials**

Valve Design		Floating Ball Valve		Trunnion Mounted Ball Valve	
				Split body	3-piece body
Trim Symbol		5H	6H *3	6H	
Temperature		300°C	500°C	450°C	525°C
		572°F	932°F	842°F	977°F
Seat Leakage*1		ANSI FCI 70-2 Class Ⅵ			ISO 5208 RateC/ ANSI FCI 70-2 Class Ⅵ*4
Parts	Ball	ASTM A276 Type 316 or ASTM A351 CF8M + Cr plated	ASTM A276 Type 316 or A351 Gr.CF8M + SFNi*2	ASTM A276 Type 304 + SFNi*2	316 Stainless Steel + SFNi*2
	Ball Seat	ASTM A276 Type 316 + SFNi*2	ASTM A276 Type 316 + SFNi*2	ASTM A276 Type304 + SFNi*2	316 Stainless Steel + SFNi*2
	Stem	ASTM A 564 Type 630	ASTM A 564 Type 630	ASTM A276 Type304 + SFNi*2	～343°C/649°F : ASTM A564 Type630 ～525°C/977°F : EN 1.4980



*1 Maximum allowable seat leakage *2 Ni-Cr alloy thermal spraying
*3 WCB Shell Material: Upon prolonged exposure to temperature above 425ºC (797ºF), carbide phase of steel may be converted to graphite.
Permissible, but not recommended for prolonged usage above 425°C (797°F).
*4 Please contact KITZ representative or distributors for details.

● Durable metal seat design and materials also provides fully guaranteed throttling service performance, which makes KITZ metal seated ball valves function as reliable control valve.
● Bi-directional flow.

Caution:
● Use gear operator or valve actuator to fix valve position when used for throttling service.

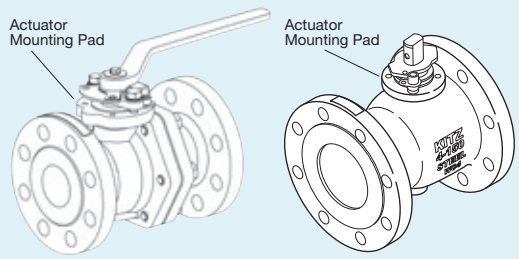
Dimension of Actuator Mounting Pads

Integral Actuator Mounting Pads

KITZ 150/300 SCTDZ/UTDZ(M) Series and 150/300 SCTAZM/UTAZ(M) Series ball valves are furnished with integral actuator mounting pad designed and factory-drilled according to ISO 5211 Standard specification. This feature facilitates the installation of actuators with ISO 5211 mounting flange to the valves. Mounting pad and stem head dimension also conforms to CAPI ADDS 2.02.

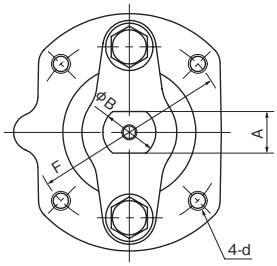
Note: Customers are requested to prepare mounting brackets and connectors for the actuators chosen for their valve automation. Actuators can be mounted on KITZ ball valves without disassembly of valve glands.

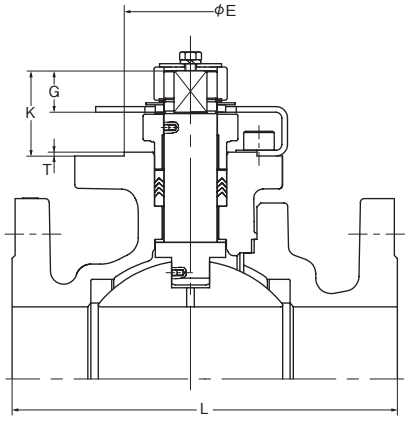
Actuator Mounting Pad



Split Body Design　　Uni-Body Design

Dimensions of ISO 5211 Actuator Mounting Pad for Class 150 / 300 Full Port, Split Body, Side Entry Design Ball Valves





Dimensions　　Unit: mm

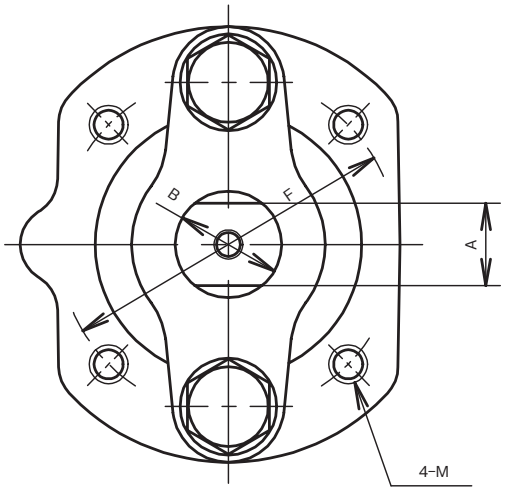
Nominal Pressure	Nominal Size (NPS)	-0.05 -0.10 A	-0.1 -0.2 φB	-0.1 -0.2 φE	±0.2 φF	G	K	L	d M Thread	T	ISO 5211 Flange Type
Class 150	1/2	9	12	25	36	9	22	108	M5	1	F03
	3/4	9	12	25	36	9	22	117	M5	1	F03
	1	14	18	35	50	14	30	127	M6	1.5	F05
	1 1/4	14	18	35	50	14	30	140	M6	1.5	F05
	1 1/2	17	22	55	70	17	34	165	M8	1.5	F07
	2	17	22	55	70	17	34	178	M8	1.5	F07
	2 1/2	22	28	70	102	22	45	190	M10	2	F10
	3	22	28	70	102	22	45	203	M10	2	F10
	4	27	36	85	125	27	52	229	M12	2	F12
	5	27	36	85	125	27	52	356	M12	2	F12
	6	36	48	100	140	36	63	394	M16	2	F14
	8	46	60	130	165	46	79	457	M20	2	F16
	10	46	60	130	165	46	79	533	M20	2	F16
Class 300	1/2	9	12	25	36	9	22	140	M5	1	F03
	3/4	9	12	25	36	9	22	152	M5	1	F03
	1	14	18	35	50	14	30	165	M6	1.5	F05
	1 1/2	17	22	55	70	17	34	190	M8	1.5	F07
	2	17	22	55	70	17	34	216	M8	1.5	F07
	2 1/2	22	28	70	102	22	45	241	M10	2	F10
	3	22	28	70	102	22	45	283	M10	2	F10
	4	27	36	85	125	27	52	305	M12	2	F12
	6	36	48	100	140	36	63	403	M16	2	F14
	8	46	60	130	165	46	79	502	M20	2	F16

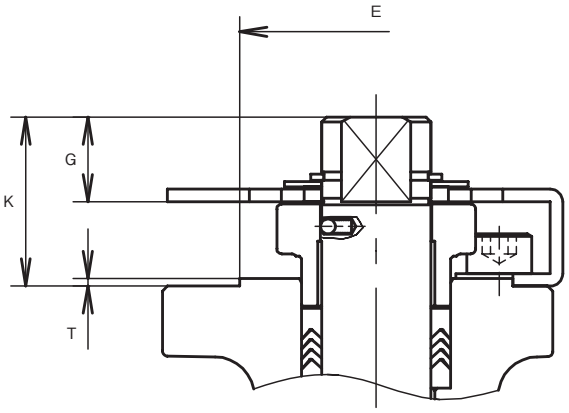
*KITZ Product Codes:
(1) 150UTDZ(M)　(4) 300SCTDZ
(2) 150SCTDZ　(5) 150UTDZXL(M)
(3) 300UTDZ(M)　(6) 300UTDZXL(M)

Note: Dimension of stem head are in accordance with CAPI ADDS 2.02, but the maximum specified dimension in CAPI ADDS 2.02 is "F14". For NPS 8 and 10, mounting pads are F16/ISO 5211.

Dimension of Actuator Mounting Pads

Dimensions of ISO 5211 Actuator Mounting Pad for Class 150 / 300 Reduced Bore, Uni-Body, End Entry Design Ball Valves





Dimensions

Unit: mm

Nominal Pressure	Nominal Size (NPS)	Mounting Dimensions for Actuator								ISO 5211 Flange Type
		A	B	E	F	G	K	T	M	
Class 150	1/2	7	10	25	36	8.5	18	1	M5	F03(2)
	3/4	7	10	25	36	8.5	18	1	M5	F03(2)
	1	9	12	25	36	9	22	1	M5	F03
	11/2	14	18	35	50	14	30	1.5	M6	F05
	2	17	22	55	70	17	34	1.5	M8	F07
	3	22	28	70	102	22	45	2	M10	F10
	4	22	28	70	102	22	45	2	M10	F10
	6	27	36	85	125	27	52	2	M12	F12
	8	36	48	100	140	36	63	2	M16	F14
	10	46	60	130	165	46	79	2	M20	F16
Class 300	1/2	7	10	25	36	8.5	18	1	M5	F03(2)
	3/4	7	10	25	36	8.5	18	1	M5	F03(2)
	1	9	12	25	36	9	22	1	M5	F03
	11/2	14	18	35	50	14	30	1.5	M6	F05
	2	17	22	55	70	17	34	1.5	M8	F07
	3	22	28	70	102	22	45	2	M10	F10
	4	22	28	70	102	22	45	2	M10	F10
	6	27	36	85	125	27	52	2	M12	F12
	8	36	48	100	140	36	63	2	M16	F14
	10	46	60	130	165	46	79	2	M20	F16

*These dimensions are specified as F03S by CAPI.

★UNC threads optionally available.

KITZ Product Codes:

(1) 150SCTAZ (3) 300SCTAZ

(2) 150UTAZ(M) (4) 300UTAZ(M)

Pressure-Temperature Ratings

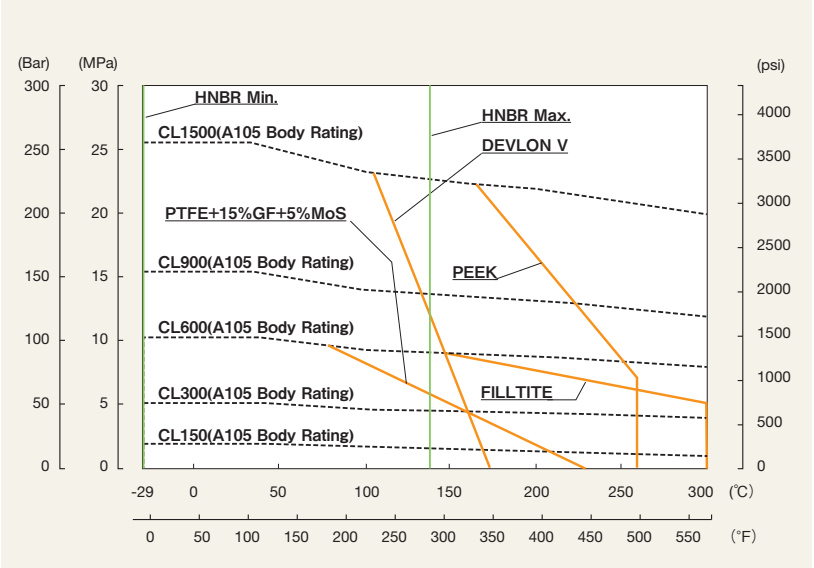
Pressure-Temperature rating of ball valves are determined, not only by valve shell materials, but more essentially by sealing materials used for ball seats, gland packing and gaskets. Sealing materials may be high molecule or rubber, but the choice is limited by the characteristics of service fluid, working temperatures, working pressure, velocity of fluid and operation frequency of the valves.
As it is very difficult to predetermine the exact pressure-temperature rating for all kinds of fluid under all imaginable conditions, based on our past experiences, both in the field and in our laboratory, we have prepared general rating charts for non-shock fluid service as below. In case of extraordinary service conditions as the following, kindly contact KITZ representative or its distributors for technical advice:

1. Valves shall be left fully closed for a long period of time under high temperature or high differential pressure.
2. Valves shall be frequently operated under high temperature or high differential pressure.
3. Frequent change of line pressure or temperature.

HYPATITE® PTFE is the standard seat material for KITZ ball valves. Specify virgin PTFE or carbon-filled PTFE when required. The body ratings shown here are for ASTM A216 Gr. WCB and A351 Gr. CF8M. For the pressure ratings of other valve shell materials, refer to the latest edition of ASME B16.34.

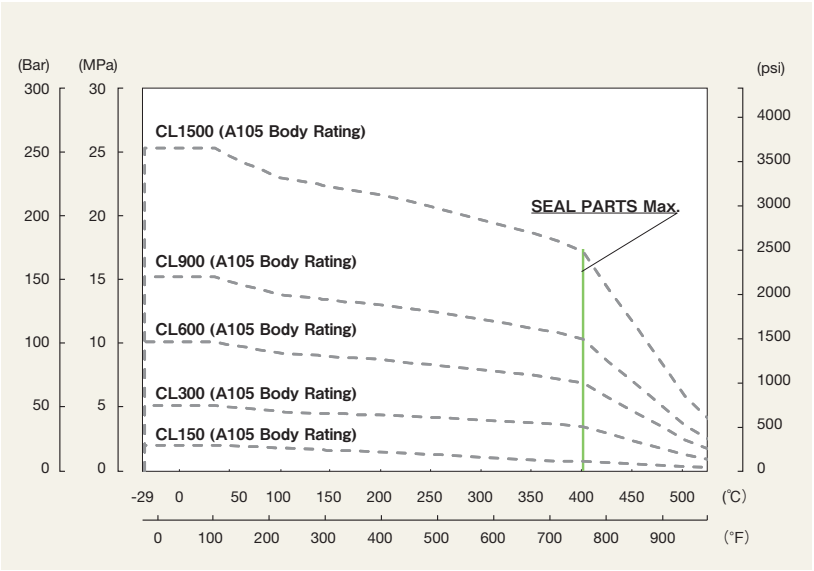
FILLTITE is specially reinforced ball seat using carbon based fillers into PTFE at higher rate than conventional carbon filled PTFE, which greatly improves heat and abrasion resistance. This material has excellent operability, durability, chemical resistance and sealing performance at high temperature of 300°C. In addition, the ball seat is interchangeable with most of our conventional ball seats and also has the cost advantage.

■Soft Seated 3-Piece Trunnion Mounted Ball Valves



O-ring Material	Min.Temp. (℃/°F)	Max.Temp. (℃/°F)
NBR	-30/-22	80/176
HNBR	-30/-22	140/284
L-NBR	-50/-58	80/176
L-HNBR	-46/-50	140/284
FKM	-20/-4	200/392

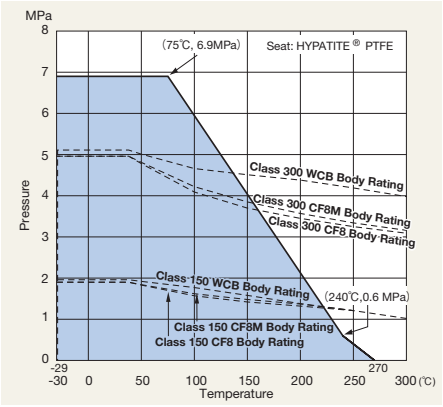
■Metal Seated 3-Piece Trunnion Mounted Ball Valves: Trim 6H



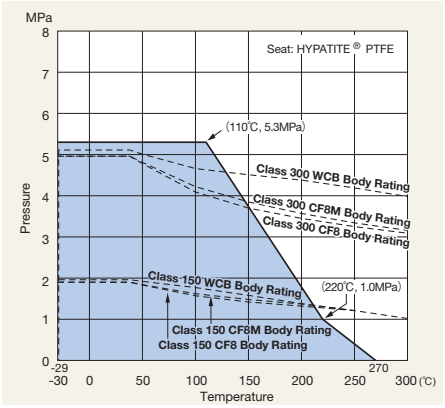
NOTE : In case of using at higher than 400℃ please contact KITZ Corporation.

Pressure-Temperature Ratings

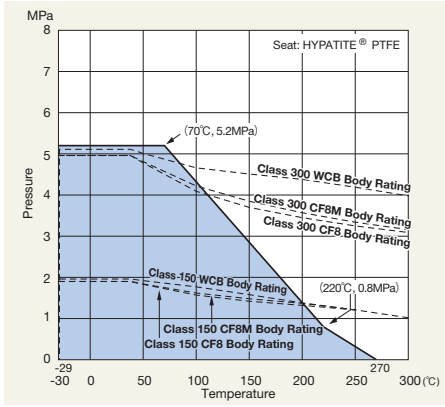
10/20/150/300UTDZ(M)/SCTDZ: NPS ½, ¾



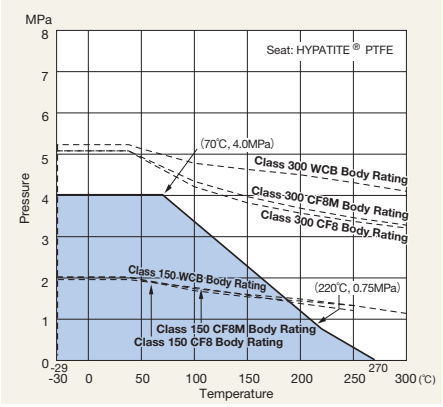
10/20/150/300UTDZ(M)/SCTDZ: NPS 1 to 2 ½



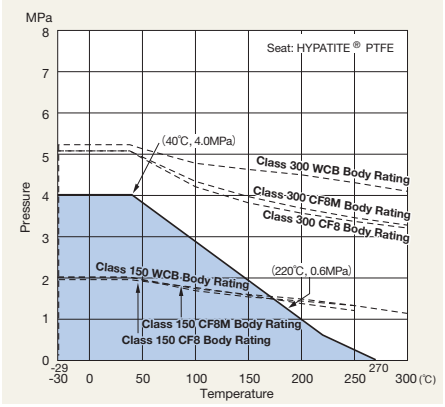
10/20/150/300UTDZ(M)/SCTDZ: NPS 3, 4



10/20/150/300UTDZ(M)/SCTDZ: NPS 5, 6
TDR series: NPS 6, 8

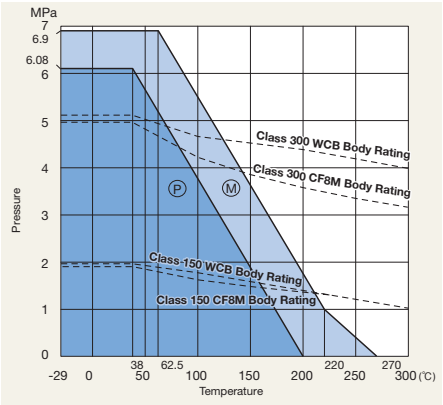


10/20/150/300UTDZ(M)/SCTDZ: NPS 8, 10
TDR series: NPS 10

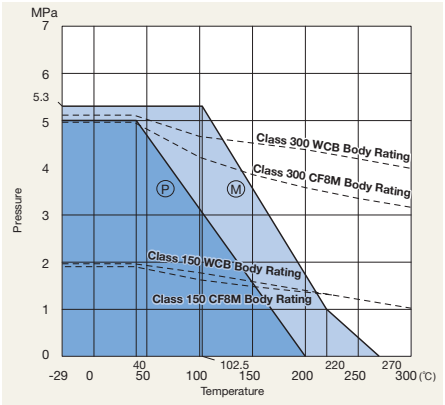


Note: Lowest working temperature for WCB is −29°C.

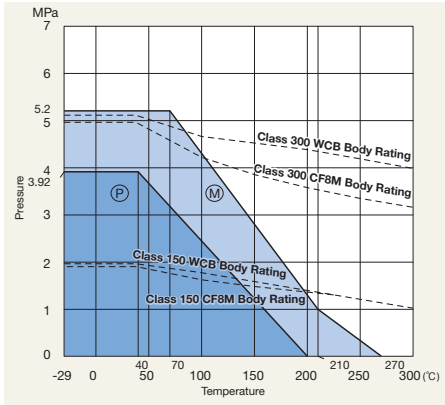
150/300UTAZ(M)/SCTAZ: NPS ½ to 1



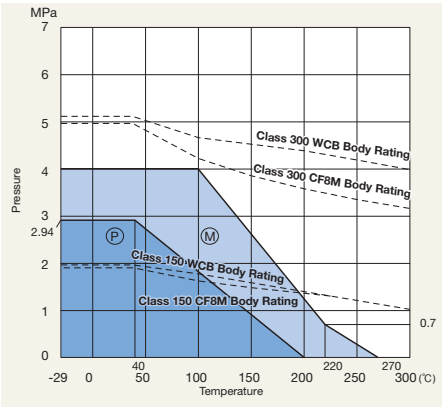
150/300UTAZ(M)/SCTAZ: NPS 1½ to 3



150/300UTAZ(M)/SCTAZ: NPS 4, 6

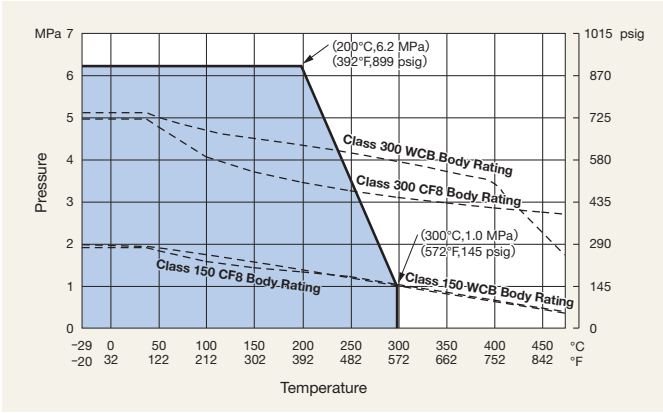


150/300UTAZ(M)/SCTAZ: NPS 8, 10

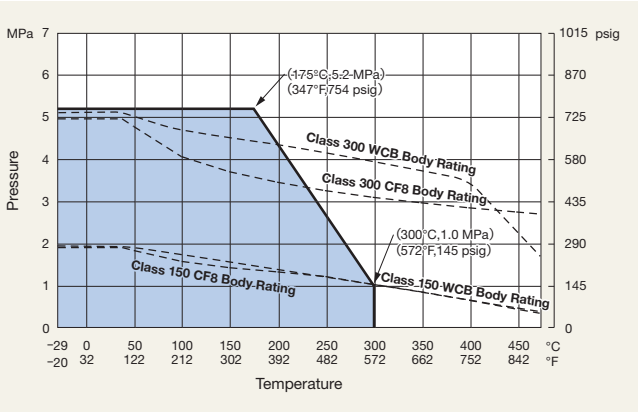


Seat: Ⓟ Virgin PTFE
Ⓜ HYPATITE® PTFE / Carbon-filled PTFE

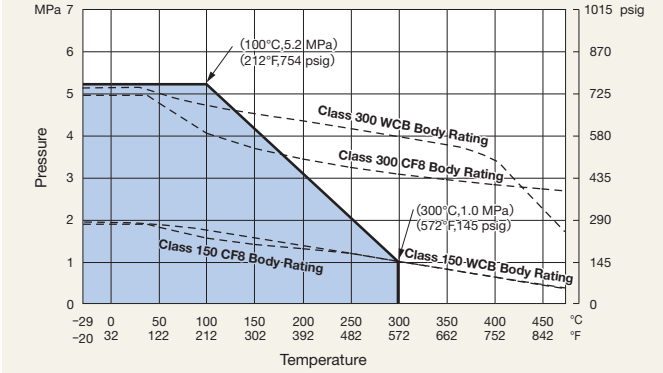
■FILLTITE Seated Floating Ball Valves: Trim 1H: NPS ½ to 2½



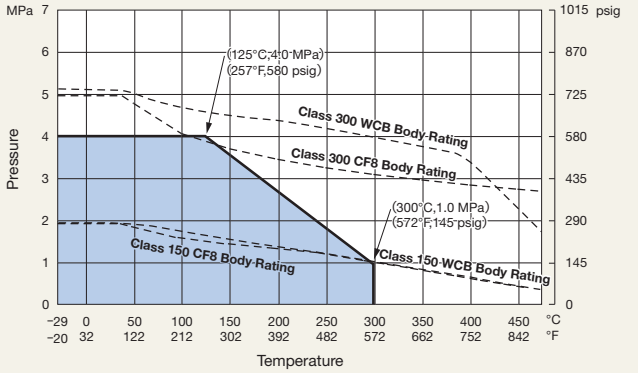
■FILLTITE Seated Floating Ball Valves: Trim 1H: NPS 3, 4



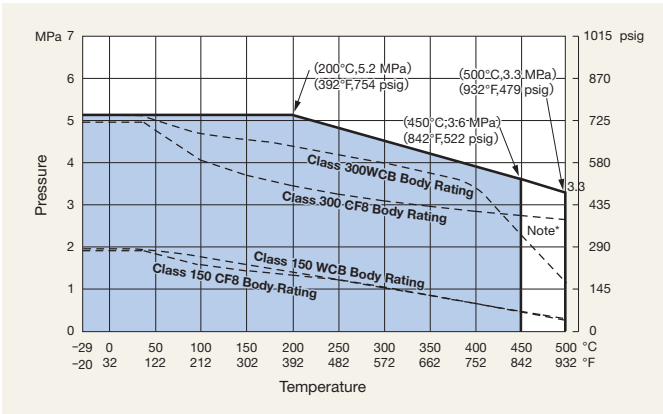
■FILLTITE Seated Floating Ball Valves: Trim 1H: NPS 5, 6



■FILLTITE Seated Floating Ball Valves: Trim 1H: NPS 8, 10

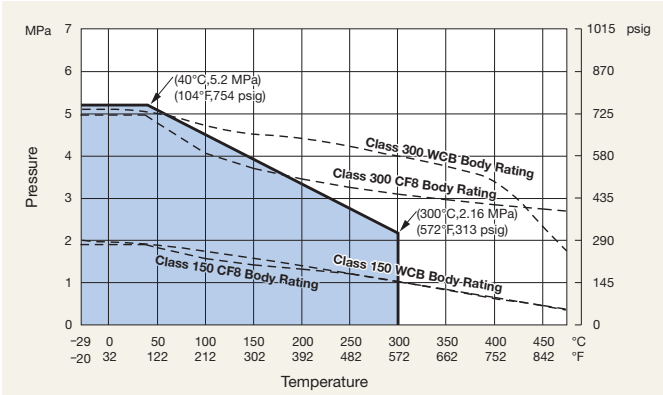


■Hard Graphite Seated Floating Ball Valves: Trim 3H

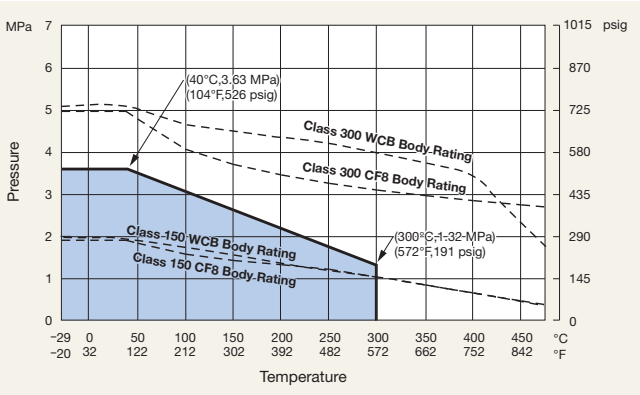


Note: **3H** Maximum working temperature for oxidizing service, such as high temperature air, is 450°C (842°F).
Note: **3H/6H** Serviceable temperature terminates at 300℃ (572°F) for JIS 10K and at 425℃ (797F°) for JIS 20K.
Note: **3H/6H** WCB Shell material: Upon prolonged exposure to temperatures above 425°C (797°F), the carbide phase of steel may be converted to graphite. Permissible, but not recommended for prolonged usage above 425°C (797°F).
Note: **3H/6H** WCB Shell Material: Upon prolonged exposure to temperatures above 425℃ (797°F), carbide phase of steel may be converted to graphite.

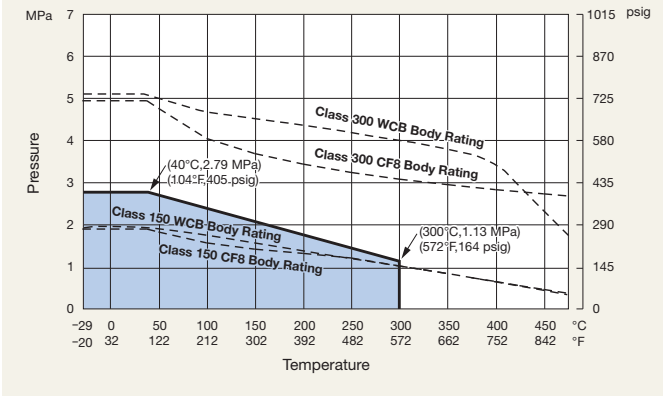
Metal Seated Floating Ball Valves: Trim 5H: NPS ½ to 1¼



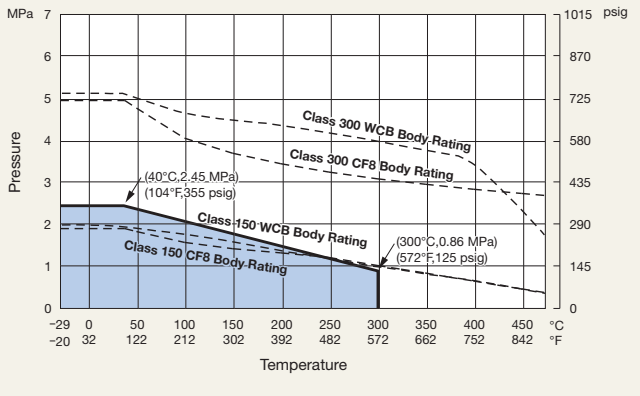
Metal Seated Floating Ball Valves: Trim 5H: NPS 1½, 2



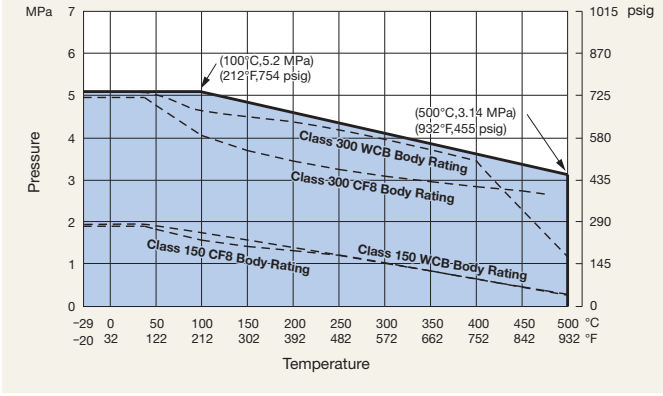
Metal Seated Floating Ball Valves: Trim 5H: NPS 2½, 4



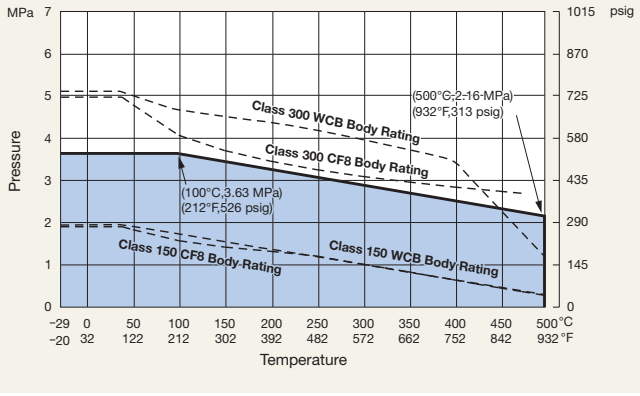
Metal Seated Floating Ball Valves: Trim 5H: NPS 5 to 8



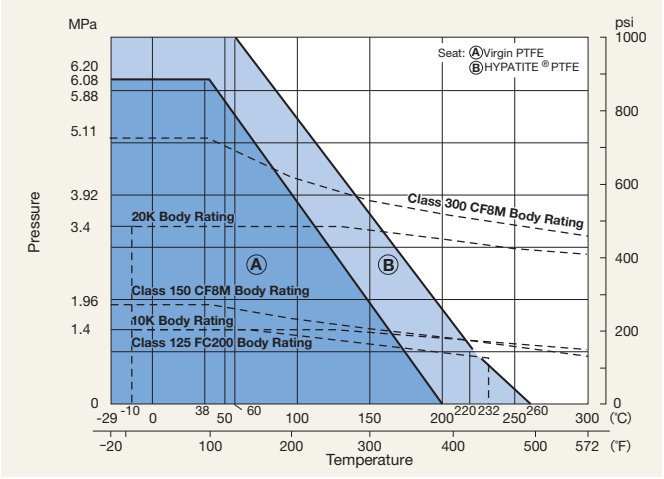
Metal Seated Floating Ball Valves: Trim 6H: NPS ½ to 5



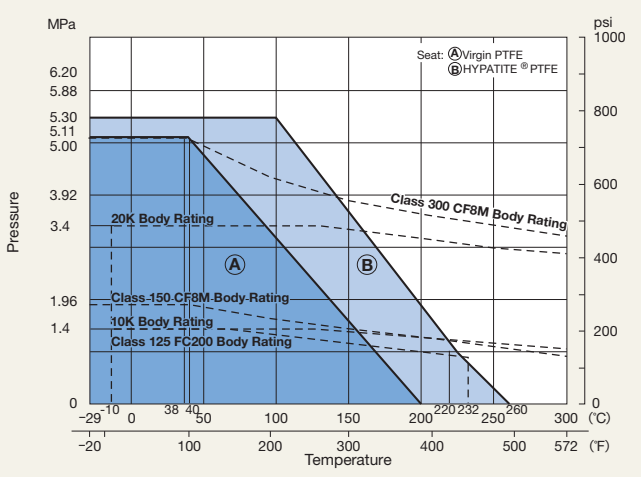
Metal Seated Floating Ball Valves: Trim 6H: NPS 6, 8



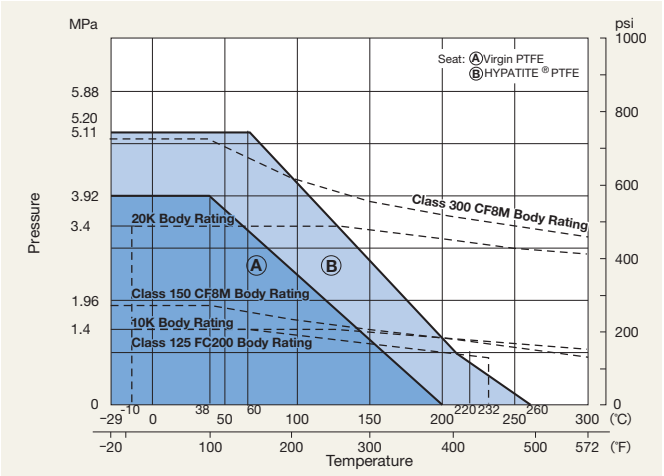
TB Series(*): NPS ½, ¾
TR Series(*): NPS ½ to 1



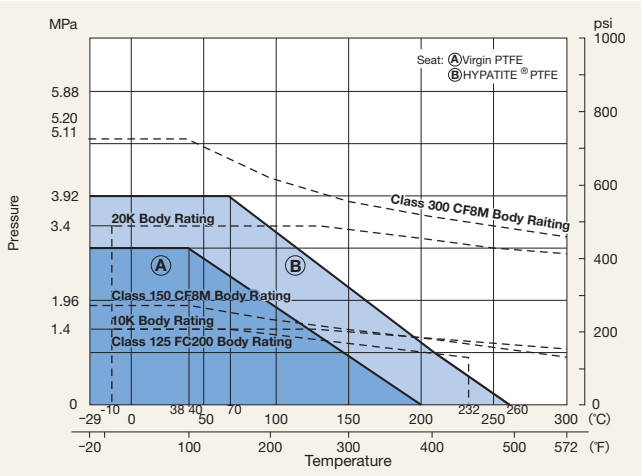
TB Series(*): NPS 1 to 2½
TR Series(*): NPS 1½ to 3



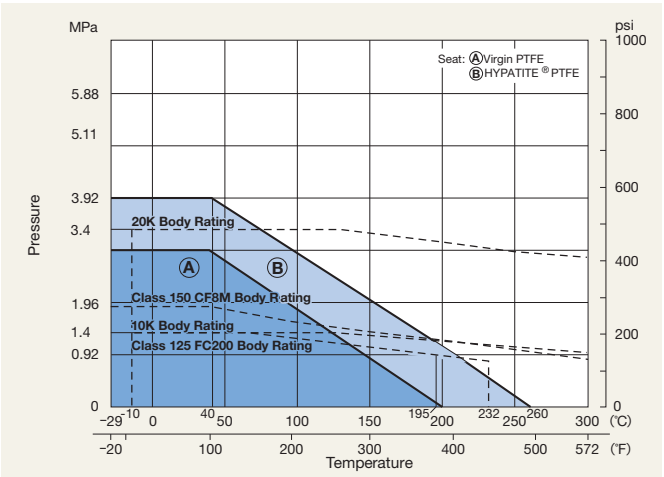
TB Series(*): NPS 3, 4
TR Series(*): NPS 4, 5



TB Series(*): NPS 5, 6
TR Series(*): NPS 6, 8

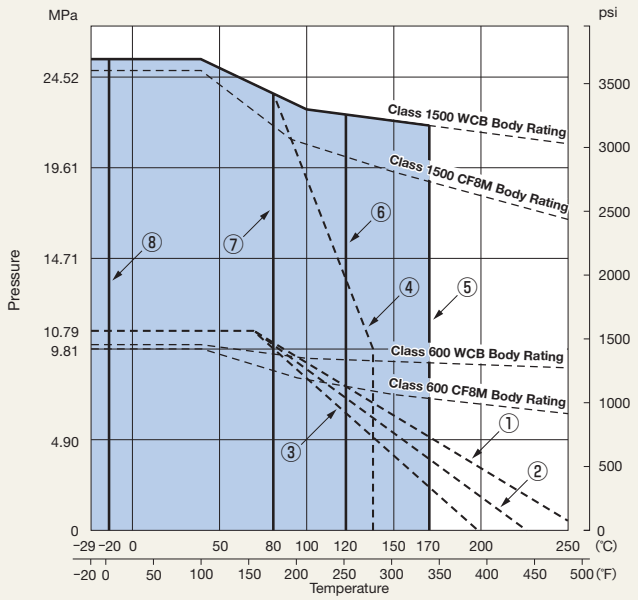


TB Series(*): NPS 8, 10
TR Series(*): NPS 10, 12



(*) except 600/1500, 3-way (4 seats) and PFA lined

■600/1500SCTB(S)/UTB(M)(S)



Ball Seat Materials

①: KITZ HYPATITE ® or Carbon-filled PTFE
②: Glass-filled PTFE with MoS_2
③: Virgin PTFE
④: Nylon with MoS_2

O-ring Upper Limit

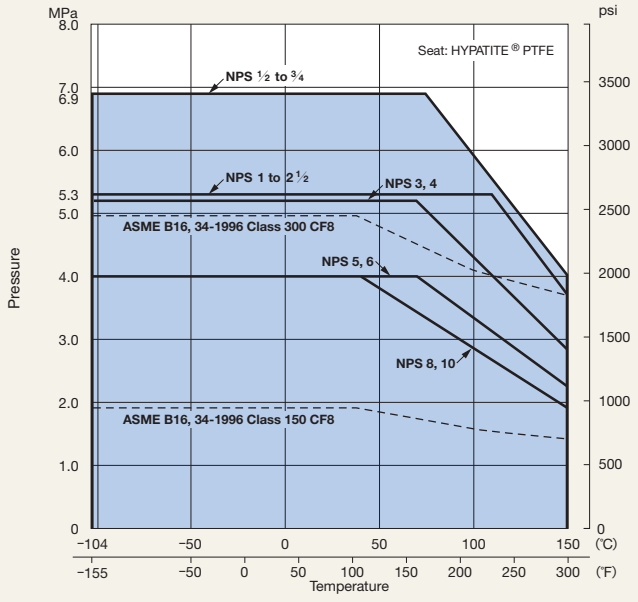
⑤: (1) FKM
(2) Low Temperature FKM
⑥: (1) EPDM
(2) ECO (Epichlorohydrin Copolymer)
⑦: (1) NBR
(2) Low Temperature NBR

O-ring Lower Limit

⑧: FKM

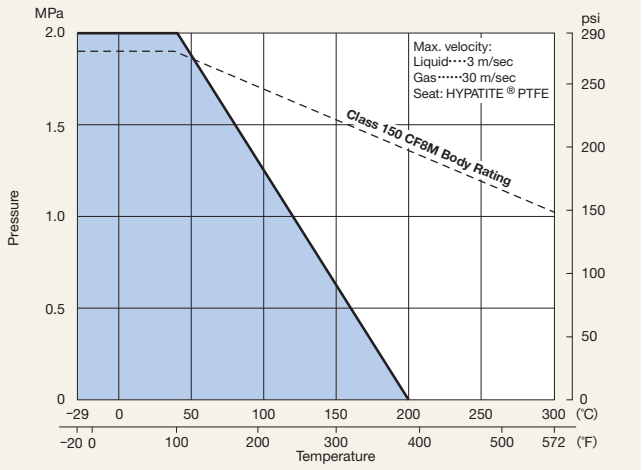
* O-rings made of others than FKM can with stand −29˚C (−20˚F)

■150/300UTDZXL(M)

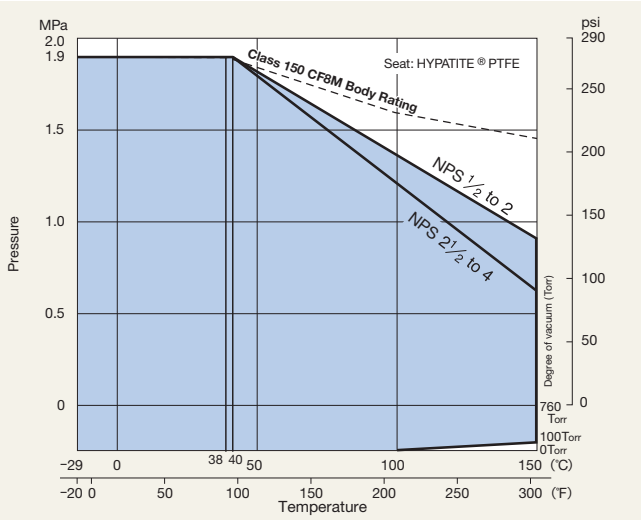


■3-way: 150UTB/TR4LA(M)/4TA(M)

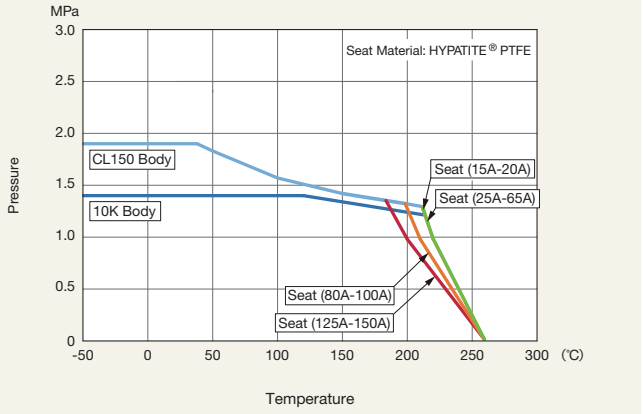
*Refer to 150UTBM Ratings for 150UTB2LM/2TM



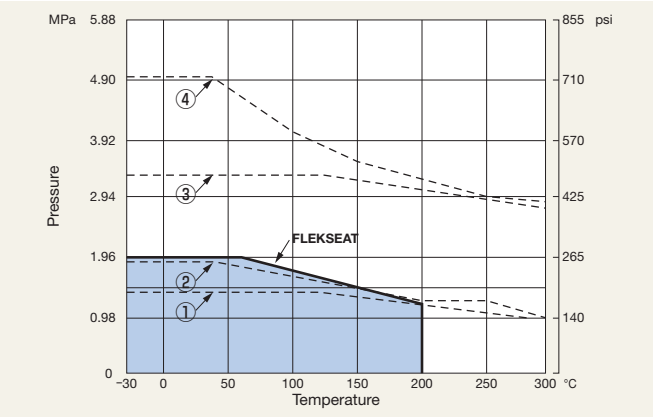
■PFA Lined: 150UTBLN



■10/15010UTBDXK(M)

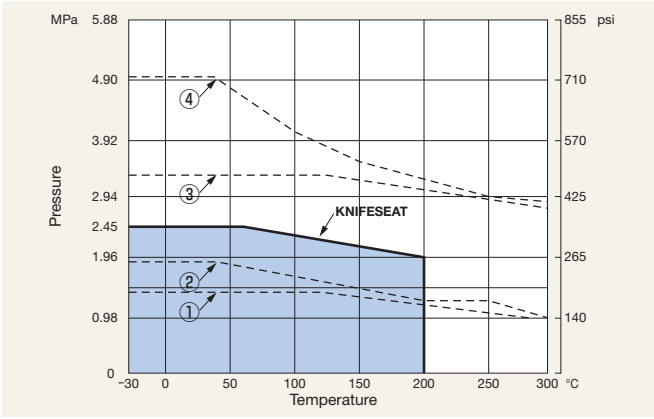


■150/300UVC(M)
60/20UVC(M)



①: Valve Body Rating to JIS B2220 10K Steel
②: Valve Body Rating to ASME B16.34 Class 150 CF8
③: Valve Body Rating to JIS B2220 20K Steel
④: Valve Body Rating to ASME B16.34 Class 300 CF8

■150/300UVCT(M)
10/20UVCT(M)



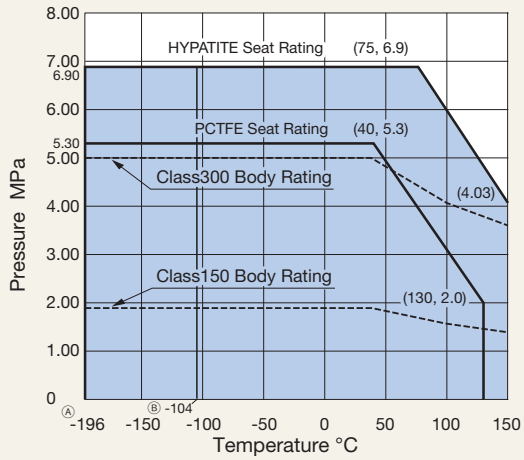
①: Valve Body Rating to JIS B2220 10K Steel
②: Valve Body Rating to ASME B16.34 Class 150 CF8
③: Valve Body Rating to JIS B2220 20K Steel
④: Valve Body Rating to ASME B16.34 Class 300 CF8

The products introduced in this catalog are all covered by the ISO 9001 Certification awarded KITZ Corporation in 1989, the earliest in the valve industry in Japan.

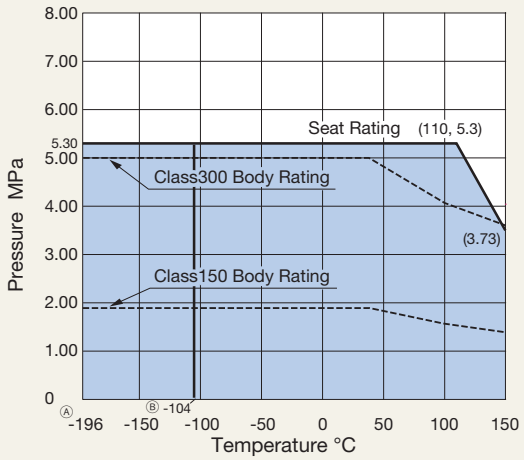
Pressure-Temperature Rating (Seat Rating)

Stainless Steel

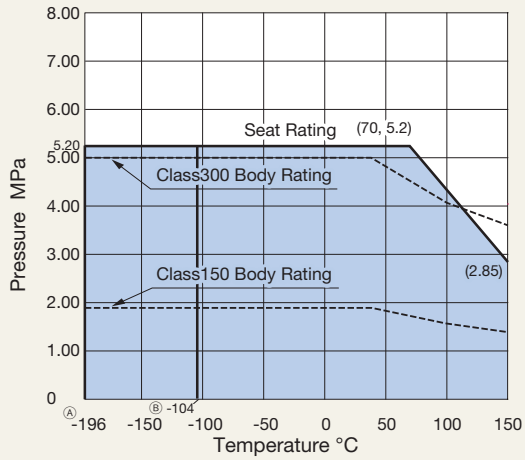
Ⓐ **UTAZLM : ½ᴮ to 2ᴮ**
Ⓐ **UTDZL : ½ᴮ to 1½ᴮ**
Ⓑ **UTAZXLM : ½ᴮ to 1ᴮ**
Ⓑ **UTDZXL : ½ᴮ • ¾ᴮ**



Ⓐ **UTAZLM : 3ᴮ**
Ⓐ **UTDZL : 2ᴮ • 2½ᴮ**
Ⓑ **UTAZXLM : 1½ᴮ to 3ᴮ**
Ⓑ **UTDZXL : 1ᴮ to 2½ᴮ**



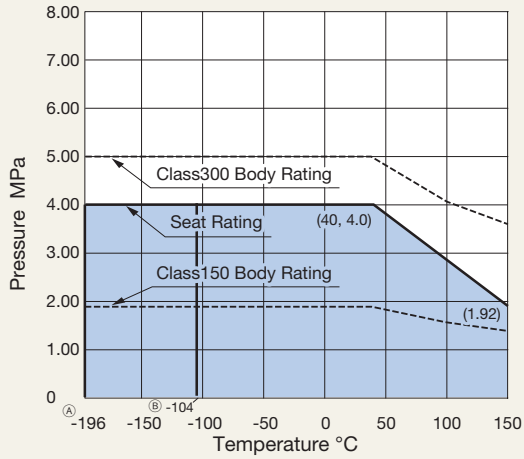
Ⓐ **UTAZLM / Ⓑ UTAZXLM : 4ᴮ • 6ᴮ**
Ⓐ **UTDZL / Ⓑ UTDZXL : 3ᴮ • 4ᴮ**



Ⓐ **UTAZLM / Ⓑ UTAZXLM : 8ᴮ • 10ᴮ**
Ⓐ **UTDZL / Ⓑ UTDZXL : 5ᴮ • 6ᴮ**

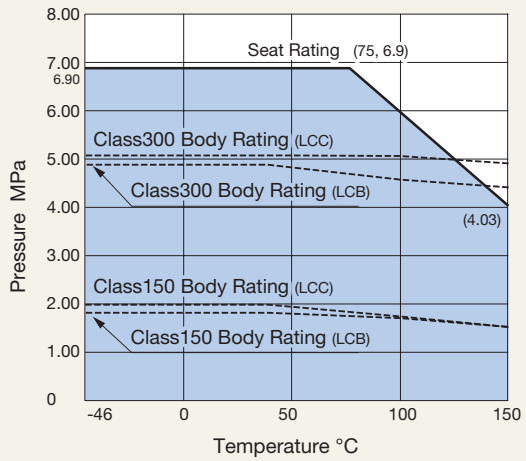


Ⓐ **UTDZL / Ⓑ UTDZXL : 8ᴮ • 10ᴮ**

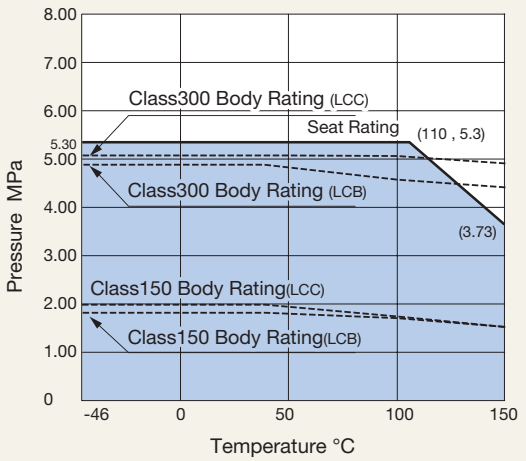


Cast Carbon Steel

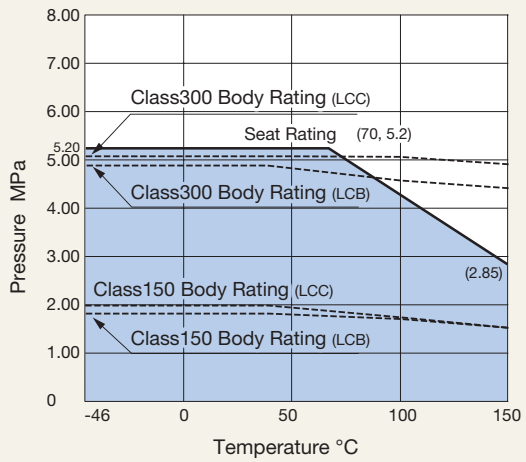
SCTAZXCL(BODY/LCC) : ½B to 1B
SCTDZXCL(BODY/LCC) : ½B • ¾B
SCTDZXBL(BODY/LCB) : ½B • ¾B



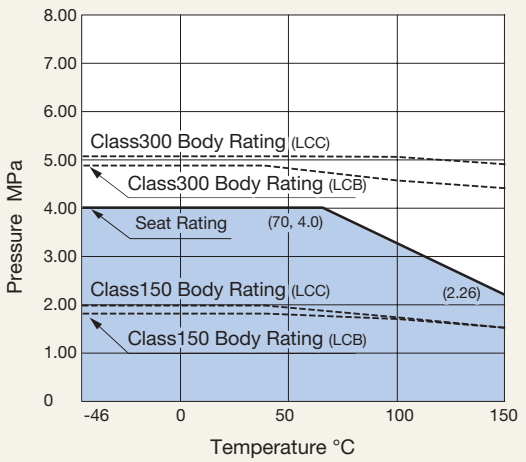
SCTAZXCL(BODY/LCC) : 1½B to 3B
SCTDZXCL(BODY/LCC) : 1B to 2½B
SCTDZXBL(BODY/LCB) : 1B to 2½B



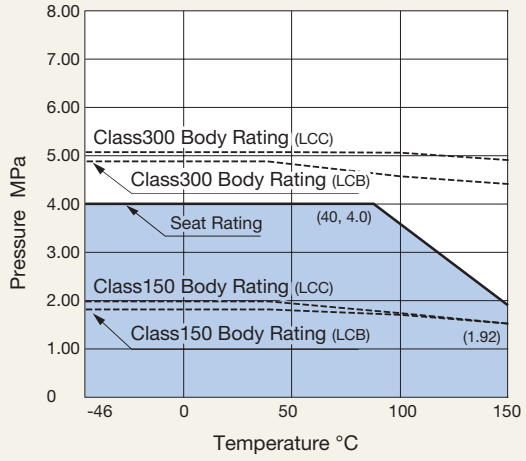
SCTAZXCL(BODY/LCC) : 4B • 6B
SCTDZXCL(BODY/LCC) : 3B • 4B
SCTDZXBL(BODY/LCB) : 3B • 4B



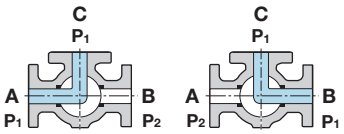
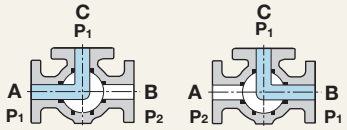
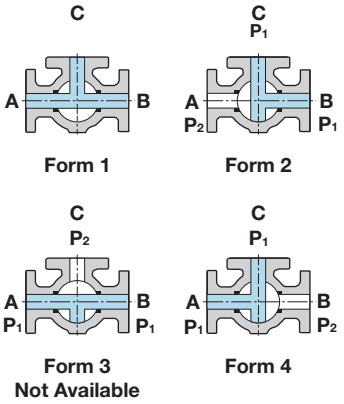
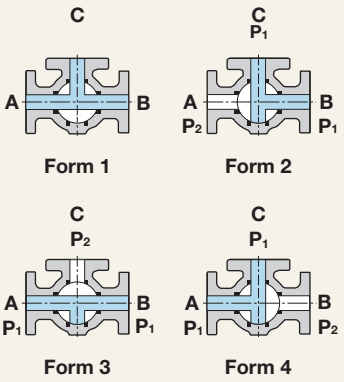
SCTAZXCL(BODY/LCC) : 8B • 10B
SCTDZXCL(BODY/LCC) : 5B • 6B
SCTDZXBL(BODY/LCB) : 5B • 6B



SCTDZXCL(BODY/LCC) : 8B • 10B
SCTDZXBL(BODY/LCB) : 8B • 10B



Allowable Port Orientation

Valve Design	Form	Fluid Passage
3-Way 2-Seat L-Port Ball Valve	Top View  Form 1 Form 2	1 Flow in Form 1 is between Ports “A” and “C”. Flow in Form 2 is between Ports “B” and “C”. Flow paths in Form 1 and Form 2 can be exchanged. 2 When fluid pressure P2 in closed path is higher than P1 in open path, slight fluid leakage may occur in P1 through the ball seat of closed path.
3-Way 4-Seat L-Port Ball Valve	Top View  Form 1 Form 2	1 Flow in Form 1 is between Ports “A” and “C”. Flow in Form 2 is between Ports “B” and “C”. Flow paths in Form 1 and Form 2 can be exchanged. 2 When fluid press P2 in closed path is higher than P1 in open path, slight fluid leakage may occur to P1 through the ball seats of closed path.
3-Way 2-Seat T-Port Ball Valve	Top View  Form 1 Form 2 Form 3 Not Available Form 4	1 In Form 1, all ports are open. Flow in Form 2 is between Ports “B” and “C”. Flow in Form 4 is between Ports “A” and “C”. Flow can be switched from Form 1 to Form 2, (standard operation pattern) or from Form 1 to Form 4 in either direction. Stopper is assembled for standard operation pattern. 2 When fluid pressure P2 in closed path is higher than P1 in the open path, slight fluid leakage may occur to P1 through the ball seat in closed path. ■ Available Operation Patterns • Pattern 1: From Form 4 to Form 1 • Pattern 2: From Form 1 to Form 2 (Standard) Please select one of the above operation patterns at the time of order.
3-Way 4-Seat T-Port Ball Valve	Top View  Form 1 Form 2 Form 3 Form 4	1 In Form 1, all ports are open. Flow in Form 2 is between Ports “B” and “C”. Flow in Form 3 is between Ports “A” and “B”. Flow in Form 4 is between Ports ”A” and ”C”. All forms are available for switching, diverging, or mixing of flows. Stopper is assembled for standard operational pattern to switch flow Form 1 to Form 2. 2 When fluid pressure P2 in closed path is higher than P1 in the open path, slight leakage may occur to P1 through the ball seat of closed path. ■ Available Operation Patterns • Pattern 1: From Form 4 to Form 1 • Pattern 2: From Form 1 to Form 2 (Standard) • Pattern 3: From Form 3 to Form 4 • Pattern 4: From Form 2 to Form 3 Please select one of the above operation patterns at the time of order.

General Precautions for Trouble-free Operation of Soft-seated Ball Valves

1. Excessive Cavity Pressure

Refer to Page 8. Very important

2. High-Temperature and High-Pressure Service

Pressure-Temperature rating published by manufacturers are usually considered as an appropriate guide to maximum temperature and pressure ball valves may withstand. KITZ recommends references to valve distributor or manufacturer for an assurance or suitability when ball valves are to be in the following conditions:

a: ***Floating ball valves*** are left closed for a long period of time under high temperature or high differential pressure.

b: ***Floating ball valves*** are operated frequently for long period of time under high temperature or high differential pressure.

c: ***Floating ball valves*** are subjected to frequent change of the line pressure or service temperature.

3. Liquids with High Velocity

When ball valves must be operated frequently on liquids with very high velocity, a check should be made with the valve by distributor or manufacturer for appropriate advice to minimize possibility or seat deformation, especially when valves are high pressurized on high-temperature lines.

4. Valve Selection

Be sure to select a valve with design specifications which meets the required pressure and temperature conditions. Take special care to select a valve to be used for fluid containing abrasives, since high molecular materials employed in the seats could suffer degradation.

5. Valve Mounting

Before mounting the valve, the pipe bore should be checked to confirm that no weld spatter, scale or rust particles remain inside. For mounting flanged valves, diagonally located flange bolts should be tightened evenly.

6. Degree of Valve Opening

Ball valves should basically be considered as ON/OFF valves only. And care should be taken to ensure valves are fully closed or open. Opening ball valves partially will result in seat erosion and cause seat leakage. Pipelines that require use of ball valves for throttling service should be designed in consideration for amount of seat leakage which may occur in its fully closed position. Note that ball valves should be stored in fully open position.

7. Valve Actuation

Two types of pneumatic valve actuators (KITZ B-Series and F-Series) are available for factory mounting. KITZ "KELMO" electric actuators are also available. Electric actuators or pneumatic actuators of any other specified brands are also available for factory mounting.

In case user to mount their own actuators on KITZ ball valves, all users are recommended to contact KITZ representative or its authorized distributors for adequate technical advice, since any improper sizing of actuator may cause serious problems on the field. It must be carefully noted that the actual value of operating torque of any given valve may vary depending on service conditions listed below:

(1) Fluid
  a. Type of Fluid
  b. Line Pressure
  c. Line Temperature
  d. Fluid Volume
(2) Ambient Temperature
(3) Opening/Closing Degree
(4) Type of Actuator
(5) Frequency and pattern of change of line pressure
(6) Frequency and pattern of change of line and ambient temperatures

8. Valve Disassembly

Line fluid should be completely removed from valve internal before dismantled from the pipeline for maintenance.

Even after the line fluid has been discharged through the pipeline, some fluid is alsways trapped inside the body and body cavity (space surrounded by body, ball and two seats). Make sure to discharge pressure trapped in the body cavity completely before valve assembly.

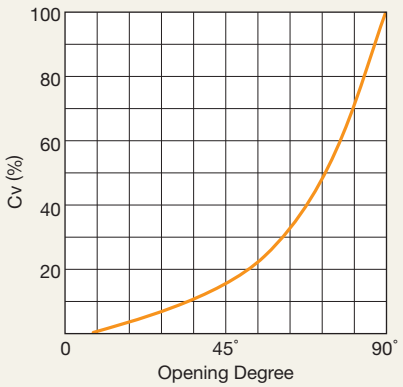
Inspection and Warranty

Each KITZ ball valve is subjected to 100% in-house inspection designated by API 598 or BS 6755 Part 1. This includes hydrostatic shell tests and pneumatic low-pressure seat test. Manufacturer's material certificates and test reports are available upon request. Each KITZ ball valve is guaranteed for 12 months after placement in service, but not exceeding 18 months after shipment from KITZ factories.

Flow Characteristics

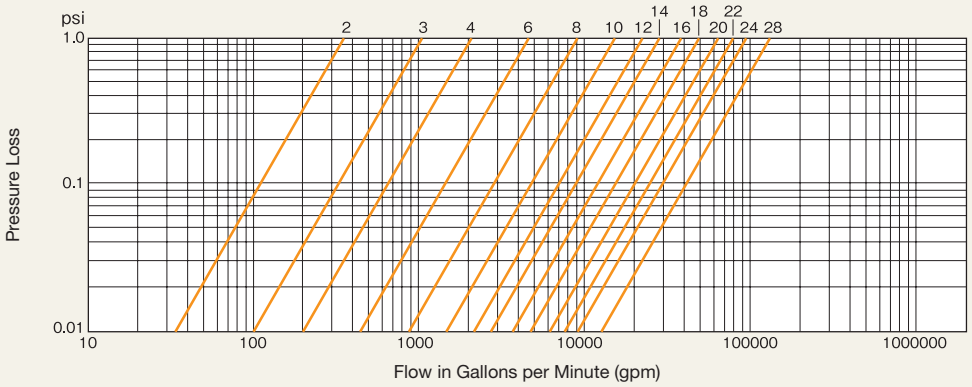
One of the best advantages of ball valves is that every flow per any given bore size is larger than other types of valves. Fluid is much less disturbed by eddy currents or pulsation. To obtain the figure of flow per valve opening, simply multiply the flow rate (%) by the corresponding value given in the table of Pressure Loss vs. Flow Rate.

Valve Opening vs. Cv

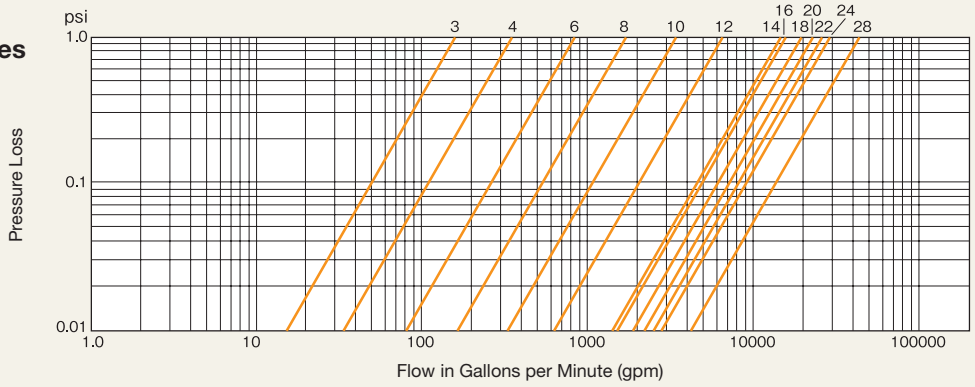


Pressure Loss vs. Flow Rate

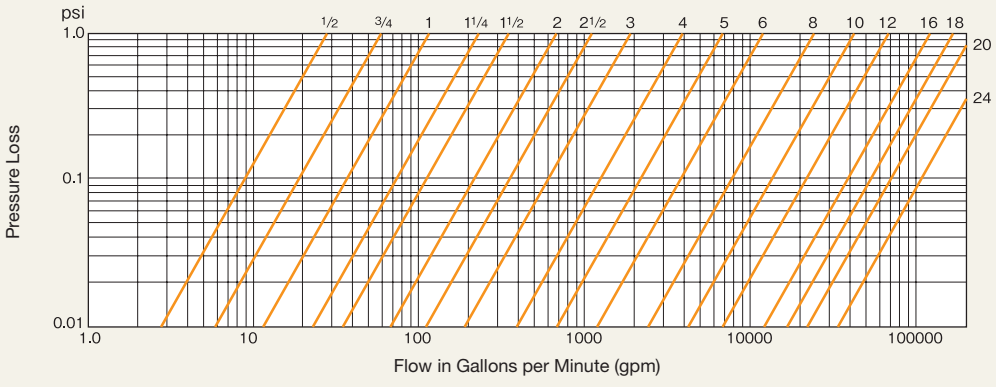
Full Port Valves



Reduced Port Valves



Schedule 40 Steel Pipe (10m)

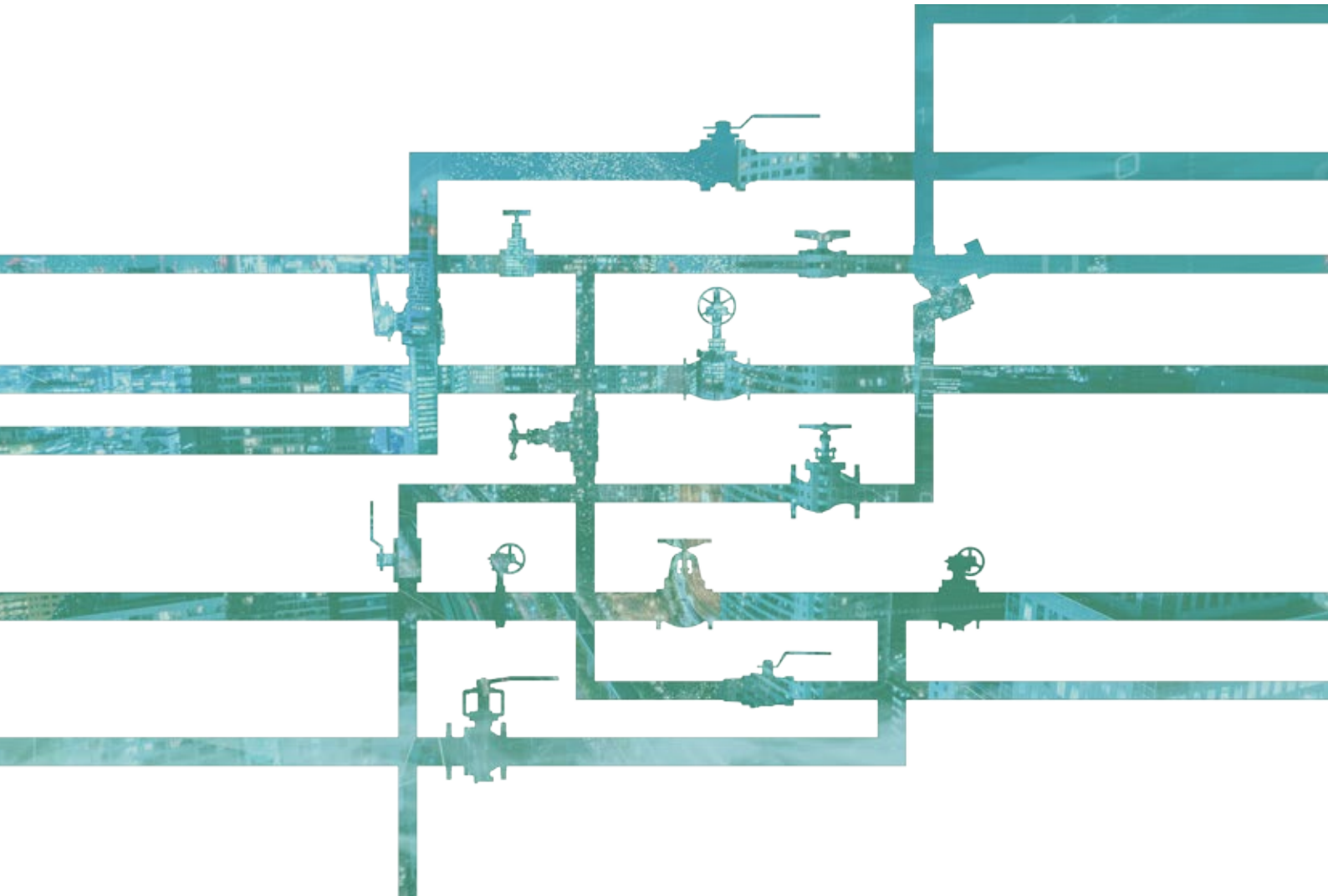


MEMO

KITZ

GENERAL CATALOG

Stainless Steel



INDEX

Series	Body Material	Type	Class	End Connection	Features/Design		Size Range	Fig		Page
A	SS	Gate/Globe	150	RF	–	ASME B16.34	½ᴮ–24ᴮ/½ᴮ–12ᴮ	150UMAM/150UMAMT	150UPAM/150UPAMT/ G-150UPAM	SS3 212
		Check			Lift/Swing		½ᴮ–1½ᴮ/1½ᴮ–24ᴮ	150UNAM	150UOAM	
		Gate/Globe	300		–		½ᴮ–24ᴮ/½ᴮ–10ᴮ	300UMAM	300UPAM/G-300UPAM	
		Check			Lift/Swing		½ᴮ–1½ᴮ/1½ᴮ–18ᴮ	300UNAM	300UOAM	
		Gate/Globe	600		–		½ᴮ–12ᴮ/½ᴮ–8ᴮ	600UMAM	600UPAM/G-600UPAM	SS4 213
		Check			Swing		½ᴮ–12ᴮ	600UOAM		
HA		Gate	150/300		–	API 603	½ᴮ–24ᴮ	150UMHAM	300UMHAM	
A		Gate/Globe	10K		–	ASME B16.34	½ᴮ–24ᴮ/½ᴮ–12ᴮ	10UMA/10UMAT	10UPA/10UPAT/G-10UPA	SS5 214
		Check			Lift/Swing		½ᴮ–1½ᴮ/1½ᴮ–24ᴮ	10UNA	10UOA	
		Strainer			–		2½ᴮ–24ᴮ	10UYA		
		Gate/Globe	20K		–		½ᴮ–24ᴮ/½ᴮ–10ᴮ	20UMA/20UMAT	20UPA/20UPAT/G-20UPA	SS6 215
		Check			Lift/Swing		½ᴮ–1½ᴮ/1½ᴮ–18ᴮ	20UNA	20UOA	
		Strainer			–		½ᴮ–12ᴮ	20UYA		
		Globe	150		Bellows Seal		½ᴮ–6ᴮ	150UPAWM	150UPDAWM (Soft Seated/PTFE)	SS7 216
			300					300UPAWM		
			10K				½ᴮ–6ᴮ/½ᴮ–10ᴮ	10UPAW	10UPDA/G-10UPDA (Soft Seated/PTFE)	
			10K/20K				½ᴮ–6ᴮ	10UPDAW (Soft Seated/PTFE)	20UPAW	
AJ		Gate/Globe	150		–		½ᴮ–6ᴮ/½ᴮ–4ᴮ	150UMAJM	150UPAJM	SS8 217
		Check			Lift / Swing		½ᴮ–1½ᴮ/2ᴮ–6ᴮ	150UNAJM	150UOAJM	
		Gate/Globe	300		–		½ᴮ–6ᴮ/½ᴮ–4ᴮ	300UMAJM	300UPAJM	
		Check			Lift / Swing		½ᴮ–1½ᴮ/2ᴮ–6ᴮ	300UNAJM	300UOAJM	
		Gate/Globe	10K		–		½ᴮ–6ᴮ/½ᴮ–4ᴮ	10UMAJ	10UPAJ	SS9 218
		Check			Lift / Swing		½ᴮ–1½ᴮ/2ᴮ–6ᴮ	10UNAJ	10UOAJ	
		Gate/Globe	20K		–		½ᴮ–6ᴮ/½ᴮ–4ᴮ	20UMAJ	20UPAJ	
		Check			Lift / Swing		½ᴮ–1½ᴮ/2ᴮ–6ᴮ	20UNAJ	20UOAJ	
C		Gate/Globe	150		–	API 600/ISO 10434/ BS 1873	½ᴮ–24ᴮ/½ᴮ–8ᴮ	150UMCM	150UPCM	SS10 219
		Check			Swing	BS1868	½ᴮ–24ᴮ	150UOCM		
		Gate/Globe	300		–	API 600/ISO 10434/ BS 1873	½ᴮ–24ᴮ/½ᴮ–8ᴮ	300UMCM	300UPCM	
		Check			Swing	BS1868	½ᴮ–24ᴮ	300UOCM		
		Gate/Globe	600		–	API 600/ISO 10434/ BS 1873	½ᴮ–12ᴮ/½ᴮ–8ᴮ	600UMCM	600UPCM/G-600UPCM	SS11 220
		Check			Swing	BS1868	½ᴮ–12ᴮ	600UOCM		
		Gate/Globe	900		–	API 600/ISO 10434/ BS 1873	2ᴮ–12ᴮ/3ᴮ–8ᴮ	900UMCM	900UPCM/G-900UPCM	
		Check			Swing	BS1868	3ᴮ–8ᴮ	900UOCM		
		Gate/Globe	1500		–	API 600/ISO 10434/ BS 1873	2ᴮ–8ᴮ/1ᴮ–8ᴮ	1500UMCM	1500UPCM/G-1500UPCM	SS12 221
		Check			–	BS1868	2ᴮ–6ᴮ	1500UOCM		
			150/300		Swing, Internal Hinge Pin	API 594/BS 1868	2ᴮ–12ᴮ	150UOCHM	300UOCHM	
			600					600UOCHM		
A		Gate/Globe	150		Category II, (-104℃ /-155℉)	ASME B16.34	½ᴮ–16ᴮ/½ᴮ–8ᴮ	150UMAXY/G-150UMAXY	150UPAXY/G-150UPAXY	SS13 222
		Check					1½ᴮ–16ᴮ	150UOAXY		
		Gate/Globe	300				½ᴮ–14ᴮ/½ᴮ–8ᴮ	300UMAXY/G-300UMAXY	300UPAXY/G-300UPAXY	
		Check					1½ᴮ–12ᴮ	300UOAXY		
C		Gate	150/300		Category III, (-196℃ /-51℉)		2ᴮ–24ᴮ	150UMALMY/G-150UMALMY	300UMALMY/G-300UMALMY	SS14 223
			600				2ᴮ–12ᴮ	600UMALMY/G-600UMALMY		
		Gate/Globe	150				½ᴮ–24ᴮ/½ᴮ–8ᴮ	150UMCLMY/G-150UMCLMY	150UPCLMY/G-150UPCLMY	
		Check					½ᴮ–24ᴮ	150UOCLMY		
		Gate/Globe	300				½ᴮ–24ᴮ/½ᴮ–8ᴮ	300UMCLMY/G-300UMCLMY	300UPCLMY/G-300UPCLMY	SS15 224
		Check					½ᴮ–24ᴮ	300UOCLMY		
		Gate/Globe	600				½ᴮ–24ᴮ/½ᴮ–8ᴮ	600UMCLMY/G-600UMCLMY	600UPCLMY/G-600UPCLMY	
		Check					1ᴮ–12ᴮ	600UOCLMY		
		Globe	150/300			API 623 (ASME B16.34, MSS SP-134, ISO 28921-1)	2ᴮ–8ᴮ	150UPCRLMD/G-150UPCRLMD	300UPCRLMD/G-300UPCRLMD	SS16 225
			600					600UPCRLMD/G-600UPCRLMD		
D		Gate/Globe	150	TE	–	ASME B16.34	½ᴮ–2ᴮ	AK150UMM	AK150UPM	SS17 226
		Check			–			AK150UOM		
		Gate/Globe		SW	–			AW150UMM	AW150UPM	
		Check			–			AW150UOM		
		Gate/Globe	300	TE	–			AK300UMM	AK300UPM	SS18 227
		Check			–			AK300UOM		
		Gate/Globe		SW	–			AW300UMM	AW300UPM	
		Check			–			AW300UOM		
		Gate	600	TE/SW	–			AK600UMM	AW600UMM	SS19 228

*(Abbreviation) TE: Threaded Ends, FE: Flanged Ends, RF: Raised Face Ends, SW: Socket Welding Ends

PRODUCT CODING

Stainless & High Alloy Steel Valves

(Note: Some products do not follow this coding system)

G	–	W	150	U	M	C	L	M	Y
❶		❷	❸	❹	❺	❻	❼	❽	❾

❶ Operation

None	Manual Handwheel
G	Gear

❷ End Connection

None	RF Flanged Ends
W	Butt Welding Ends
AK	Threaded Ends (NPT)
AW	Socket Welding Ends

❸ Pressure Class

10	10K
20	20K
150	Class 150
300	Class 300
600	Class 600
900	Class 900
1500	Class 1500

❹ Shell Material Code

U	Stainless/High Alloy

❺ Valve Type

M	Gate
P	Globe
PD	Soft Seated Globe
O	Swing Check
N	Lift Check
Y	Strainer

❻ Valve Design Code Series

None	Series D
A	Series A
HA	Series HA
C	Series C

❼ Special Design

None	Standard
W	Bellows Seal Globe
H	Internal Hinge Pin Swing Check
X	-104°C Service
L	-196°C Service
J	Jacketed

❽ Shell Material

None	CF8 (304)
M	CF8M (316)
O	CF3M (316L)
V	CF3 (304L)
CB	CF8C (321)
CG	CG8M (317)
CK	CK20 (310)
SD	Super Duplex
CN	CN7M (Alloy20)
HB	N-12MV (Hastelloy B)
HC	CW-12MW (Hastelloy C)

❾ Body/Disc Seat Surface Material

None	Same as Shell Material
D	Disc Seat Surface HF
B	Body Seat Surface HF
Y	Both Seat Surface HF

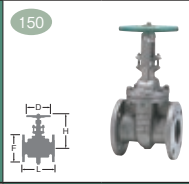
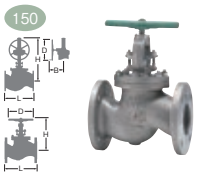
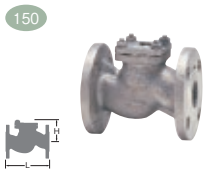
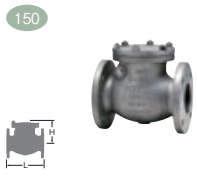
Note: Prodct codes suffixed "T" stands for valves provided with ceramic filled PTFE gaskets & PTFE packings. (Ex. 10UMAMT,10UPAMT etc)

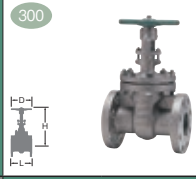
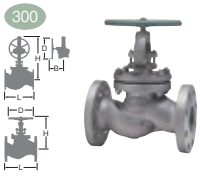
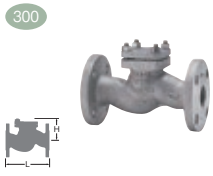
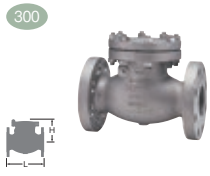
Design Specification

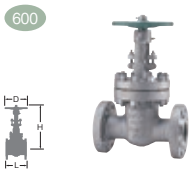
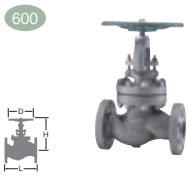
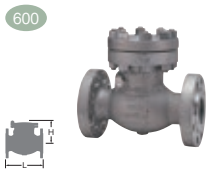
Stainless & High Alloy Steel Valves

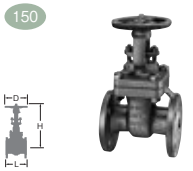
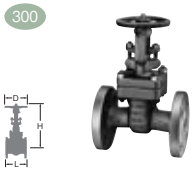
Series	A	HA	C	D
Shell Wall Thickness & Valve Design	ASME B16.34	API 603	API 600/ISO 10434 (Gate) BS1873/API623*1 (Globe) BS 1868/API594*2 (Swing check)	ASME B16.34
P-T Rating	ASME B16.34 (JIS B2220 for 10K & 20K)			ASME B16.34
Face to Face Dimension	ASME B16.10 (JIS B2002 for 10K & 20K, KITZ Std for Jacketed valves)			KITZ Standard
Flanged Ends Dimension	ASME B16.5*3 (JIS B2220 for 10K & 20K)			–
Butt or Socket Welding Ends Dimension	–		ASME B16.25, ISO10434(Gate), BS1873(Globe)/1868(Check)	ASME B16.11
Threaded Ends Dimension	–			ASME B1.20.1
Pressure Test	API 598/ISO 5208			
Fugitive Emission Test (Up to Class 600)	ISO 15848-1	API 624/ISO 15848-1		–
Cryogenic/Low Temperature Test*4	ISO 28921-1	–	ISO 28921-1	–

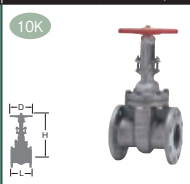
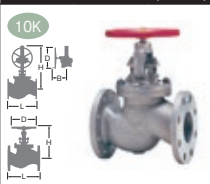
*1 API623 is for 150/300/600UPCRLM only
*2 API594 is for Internal Hinge Pin Swing Check only
*3 Pipe Connection Dimensions shall be indicated in millimeters converted from dimensions in inches according to ASME B16.5
*4 For X, L (Cryogenic Service Valves)

Type		A Series (Gate)			A Series (Globe)				A Series (Lift Check)			A Series (Swing Check)		
Stainless Steel & High Alloy Steel Valves (GGC & Strainer)		150  FE CE EAC			150  FE CE EAC				150  CE EAC			150  CE EAC		
Fig		150UMAM/150UMAMT			150UPAM/150UPAMT/G-150UPAM				150UNAM			150UOAM		
End Connection		ASME B16.5 Class 150 RF			ASME B16.5 Class 150 RF				ASME B16.5 Class 150 RF			ASME B16.5 Class 150 RF		
inch	mm	L	H	D	L	H	D	B	L	H	D	L	H	D
1/2	15	108	201	90	108	166	90		108	74				
3/4	20	117	210	90	117	168	90		117	76				
1	25	127	224	100	127	173	100		127	76				
11/2	40	165	284	140	165	204	140		165	86		165	109	
2	50	178	336	160	203	235	160					203	119	
21/2	65	190	374	180	216	248	180					216	134	
3	80	203	444	200	241	292	200					241	148	
4	100	229	523	225	292	324	225					292	164	
5	125	254	606	250	356	382	250					330	192	
6	150	267	711	250	406	453	350					356	214	
8	200	292	924	300	495	556	400					495	264	
10	250	330	1126	350	622	923	500	280				622	286	
12	300	356	1336	400	698	1013	500	280				698	315	
14	350	381	1491	450								787	363	
16	400	406	1692	600								864	407	
18	450	432	1891	600								978	475	
20	500	457	2102	680								978	505	
24	600	508	2463	760								1295	595	
Body/Bonnet		CF8M			CF8M				CF8M			CF8M		
Stem		316SS			316SS									
Disc		CF8M			CF8M				CF8M			CF8M		
Gland Packing		Refer to Page SS22			Refer to Page SS22									
Gasket		Refer to Page SS22			Refer to Page SS22				Refer to Page SS22			Refer to Page SS22		
Bonnet B/N		B8/8			B8/8				B8/8			B8/8		
P-T Rating F-to-F Dimension Wall Thickness		ASME B16.34 ASME B16.10 ASME B16.34			ASME B16.34 ASME B16.10 ASME B16.34				ASME B16.34 ASME B16.10 ASME B16.34			JIS B2220 ASME B16.10 ASME B16.34		
Approval		ISO15848-1, PED/CE TR-CU/EAC			ISO15848-1, PED/CE TR-CU/EAC				PED/CE TR-CU/EAC			PED/CE TR-CU/EAC		
Remarks		Flexible Wedge												

Type		A Series (Gate)			A Series (Globe)				A Series (Lift Check)			A Series (Swing Check)		
Stainless Steel & High Alloy Steel Valves (GGC & Strainer)		300  FE CE EAC			300  FE CE EAC				300  CE EAC			300  CE EAC		
Fig		300UMAM			300UPAM/G-300UPAM				300UNAM			300UOAM		
End Connection		ASME B16.5 Class 300 RF			ASME B16.5 Class 300 RF				ASME B16.5 Class 300 RF			ASME B16.5 Class 300 RF		
inch	mm	L	H	D	L	H	D	B	L	H	D	L	H	D
1/2	15	140	209	100	152	184	100		152	80				
3/4	20	152	220	100	178	182	100		178	78				
1	25	165	239	100	203	185	100		203	80				
11/2	40	190	293	140	229	234	160		229	100		241	123	
2	50	216	355	180	267	286	180					267	142	
21/2	65	241	404	180	292	296	200					292	165	
3	80	283	472	225	318	341	250					318	180	
4	100	305	560	250	356	396	300					356	203	
5	125	381	625	300	400	493	350					400	234	
6	150	403	753	350	444	563	400					444	259	
8	200	419	968	400	559	874	500	280				533	298	
10	250	457	1177	450	622	1048	600	350				622	356	
12	300	502	1378	500								711	373	
14	350	762	1590	600								838	442	
16	400	838	1810	600								864	480	
18	450	914	1980	680								978	585	
20	500	991	2190	760										
24	600	1143	2580	910										
Body/Bonnet		CF8M			CF8M				CF8M			CF8M		
Stem		316SS			316SS				316SS					
Disc		CF8M			CF8M				CF8M			CF8M		
Gland Packing		Refer to Page SS22			Refer to Page SS22				Refer to Page SS22					
Gasket		Refer to Page SS22			Refer to Page SS22				Refer to Page SS22			Refer to Page SS22		
Bonnet B/N		B8/8			B8/8				B8/8			B8/8		
P-T Rating F-to-F Dimension Wall Thickness		ASME B16.34 ASME B16.10 ASME B16.34			ASME B16.34 ASME B16.10 ASME B16.34				ASME B16.34 ASME B16.10 ASME B16.34			ASME B16.34 ASME B16.10 ASME B16.34		
Approval		ISO15848-1, PED/CE TR-CU/EAC			ISO15848-1, PED/CE TR-CU/EAC				PED/CE TR-CU/EAC			PED/CE TR-CU/EAC		
Remarks		Flexible Wedge												

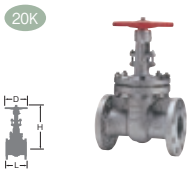
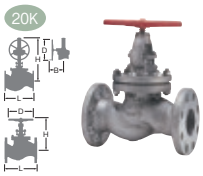
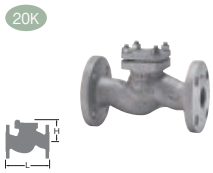
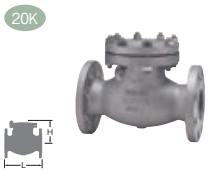
Type		A Series (Gate)			A Series (Globe)				A Series (Swing Check)		
Stainless Steel & High Alloy Steel Valves (GGC & Strainer)		600  FE CE EAC			600  FE CE EAC				600  CE EAC		
Fig		600UMAM			600UPAM/G-600UPAM				600UOAM		
End Connection		ASME B16.5 Class 600 RF			ASME B16.5 Class 300 RF				ASME B16.5 Class 600 RF		
inch	mm	L	H	D	L	H	D	B	L	H	D
1/2	15	165	211	100	165	213	120		165	93.5	
3/4	20	190	224	100	190	210	120		190	97.4	
1	25	216	251	140	216	246	160		216	112	
11/2	40	241	334	180	241	283	200		241	127	
2	50	292	452	200	292	374	225		292	203	
21/2	65	330	483	225	330	413	250		330	213	
3	80	356	546	250	356	492	350		356	239	
4	100	432	677	350	432	586	400		432	279	
6	150	559	905	450	559	750	600	280	559	339	
8	200	660	1129	500	660	864	600	350	660	414	
10	250	787	1330	600					787	430	
12	300	838	1522	680					838	470	
Body/Bonnet		CF8M			CF8M				CF8M		
Stem		316SS			316SS						
Disc		CF8M			CF8M				CF8M		
Gland Packing		Refer to Page SS22			Refer to Page SS22						
Gasket		Refer to Page SS22			Refer to Page SS22				Refer to Page SS22		
Bonnet B/N		B8/8			B8/8				B8/8		
P-T Rating F-to-F Dimension Wall Thickness		ASME B16.34 ASME B16.10 ASME B16.34			ASME B16.34 ASME B16.10 ASME B16.34				ASME B16.34 ASME B16.10 ASME B16.34		
Approval		ISO15848-1, PED/CE TR-CU/EAC			ISO15848-1, PED/CE TR-CU/EAC				PED/CE TR-CU/EAC		
Remarks		Flexible Wedge									

Type		HA Series (Gate)			HA Series (Gate)		
Stainless Steel & High Alloy Steel Valves (GGC & Strainer)		150  API603 FE CE EAC			300  API603 FE CE EAC		
Fig		150UMHAM			300UMHAM		
End Connection		ASME B16.5 Class 150 RF			ASME B16.5 Class 300 RF		
inch	mm	L	H	D	L	H	D
1/2	15	108	216	100	140	207	100
3/4	20	117	220	100	152	217	100
1	25	127	231	100	165	270	160
11/2	40	165	277	140	190	325	180
2	50	178	335	160	216	356	180
21/2	65	190	373	180	241	405	180
3	80	203	443	200	283	472	225
4	100	229	522	225	305	560	250
6	150	267	710	250	403	753	350
8	200	292	924	300	419	968	400
10	250	330	1125	350	457	1177	450
12	300	356	1328	400	502	1378	500
14	350	381	1491	450	762	1590	600
16	400	406	1692	600	838	1750	600
18	450	432	1889	600	914	1930	680
20	500	457	2102	680	991	2140	760
24	600	508	2484	760	1143	2530	910
Body/Bonnet		CF8M			CF8M		
Stem		316SS			316SS		
Disc		CF8M			CF8M		
Gland Packing		Refer to Page SS22			Refer to Page SS22		
Gasket		Refer to Page SS22			Refer to Page SS22		
Bonnet B/N		B8/8			B8/8		
P-T Rating F-to-F Dimension Wall Thickness		ASME B16.34 ASME B16.10 API 603			ASME B16.34 ASME B16.10 API 603		
Approval		ISO15848-1, PED/CE TR-CU/EAC			ISO15848-1, PED/CE TR-CU/EAC		
Remarks		Flexible Wedge			Flexible Wedge		

Type		A Series (Gate)			A Series (Globe)				A Series (Lift Check)			A Series (Swing Check)		
Stainless Steel & High Alloy Steel Valves (GGC & Strainer)														
Fig		10UMA/10UMAT			10UPA/10UPAT/G-10UPA				10UNA			10UOA		
End Connection		JIS B2220 10K RF			JIS B2220 10K RF				JIS B2220 10K RF			JIS B2220 10K RF		
inch	mm	L	H	D	L	H	D	B	L	H	D	L	H	D
1/2	15	108	201	90	108	166	90		108	74				
3/4	20	117	210	90	117	168	90		117	76				
1	25	127	224	100	127	173	100		127	76				
11/4	32	140	240	100										
11/2	40	165	284	140	165	204	140		165	86		165	109	
2	50	178	336	160	203	235	160					203	119	
21/2	65	190	374	180	216	248	180					216	134	
3	80	203	444	200	241	292	200					241	148	
4	100	229	523	225	292	324	225					292	164	
5	125	254	606	250	356	382	250					330	192	
6	150	267	711	250	406	453	350					356	214	
8	200	292	924	300	495	556	400					495	264	
10	250	330	1126	350	622	923	500	280				622	286	
12	300	356	1336	400	698	1013	500	280				698	315	
14	350	381	1491	450								787	363	
16	400	406	1692	600								864	407	
18	450	432	1891	600								978	475	
20	500	457	2102	680								978	505	
24	600	508	2463	760								1295	595	
Body/Bonnet		CF8			CF8				CF8			CF8		
Stem		304SS			304SS									
Disc		CF8			CF8				CF8			CF8		
Gland Packing		Refer to Page SS22			Refer to Page SS22									
Gasket		Refer to Page SS22			Refer to Page SS22				Refer to Page SS22			Refer to Page SS22		
Bonnet B/N		B8/8			B8/8				B8/8			B8/8		
P-T Rating F-to-F Dimension Wall Thickness		JIS B2220 ASME B16.10 ASME B16.34			JIS B2220 ASME B16.10 ASME B16.34				JIS B2220 ASME B16.10 ASME B16.34			JIS B2220 ASME B16.10 ASME B16.34		
Remarks		Flexible Wedge												

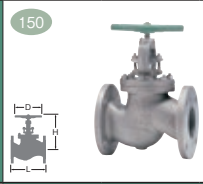
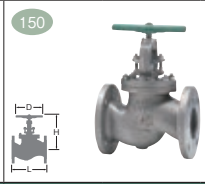
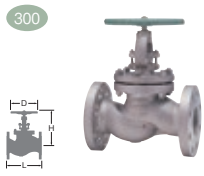
Type		A Series (Y-Strainer)		
Stainless Steel & High Alloy Steel Valves (GGC & Strainer)				
Fig		10UYA		
End Connection		JIS B2220 10K RF		
inch	mm	L	H	H1*
21/2	65	270	154	214
3	80	290	189	263
4	100	350	227	320
5	125	390	268	383
6	150	440	316	451
8	200	540	384	554
10	250	760	536	753
12	300	870	636	891
Body/Bonnet		CF8		
Disc/Screen		304SS		
Gasket		Refer to Page SS22		
Bonnet B/N		B8/8		
P-T Rating		JIS B2220		
F-to-F Dimension		KITZ Standard		
Wall Thickness		KITZ Standard		
Remarks		40-mesh stainless wire net reinforced with punched stainless steel plate		

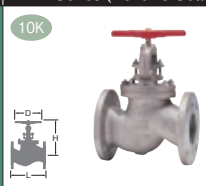
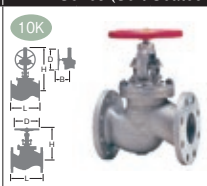
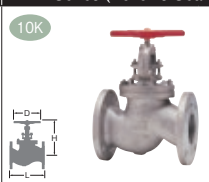
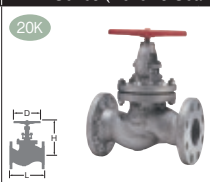
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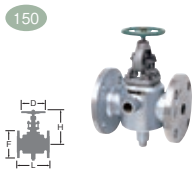
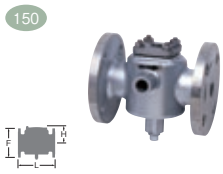
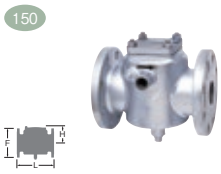
Type		A Series (Gate)			A Series (Globe)				A Series (Lift Check)			A Series (Swing Check)		
Stainless Steel & High Alloy Steel Valves (GGC & Strainer)		20K 			20K 				20K 			20K 		
Fig		20UMA/20UMAT			20UPA/20UPAT/G-20UPA				20UNA			20UOA		
End Connection		JIS B2220 20K RF			JIS B2220 20K RF				JIS B2220 20K RF			JIS B2220 20K RF		
inch	mm	L	H	D	L	H	D	B	L	H	D	L	H	D
1/2	15	140	209	100	152	184	100		152	80				
3/4	20	152	220	100	178	182	100		178	78				
1	25	165	239	100	203	185	100		203	80				
11/2	40	190	293	140	229	234	160		229	100		241	123	
2	50	216	355	180	267	286	180					267	142	
21/2	65	241	404	180	292	296	200					292	165	
3	80	283	472	225	318	341	250					318	180	
4	100	305	560	250	356	396	300					356	203	
5	125	381	625	300	400	493	350					400	234	
6	150	403	753	350	444	563	400					444	259	
8	200	419	968	400	559	874	500	280				533	298	
10	250	457	1177	450	622	1048	600	350				622	356	
12	300	502	1378	500								711	373	
14	350	762	1590	600								838	442	
16	400	838	1810	600								864	480	
18	450	914	1980	680								978	585	
20	500	991	2190	760										
24	600	1143	2580	910										
Body/Bonnet		CF8			CF8				CF8			CF8		
Stem		304SS			304SS									
Disc		CF8			CF8				CF8			CF8		
Gland Packing		Refer to Page SS22			Refer to Page SS22									
Gasket		Refer to Page SS22			Refer to Page SS22				Refer to Page SS22			Refer to Page SS22		
Bonnet B/N		B8/8			B8/8				B8/8			B8/8		
P-T Rating F-to-F Dimension Wall Thickness		JIS B2220 ASME B16.10 ASME B16.34			JIS B2220 ASME B16.10 ASME B16.34				JIS B2220 ASME B16.10 ASME B16.34			JIS B2220 ASME B16.10 ASME B16.34		
Remarks		Flexible Wedge												

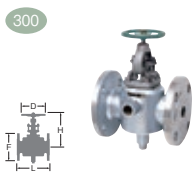
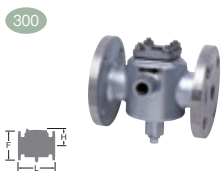
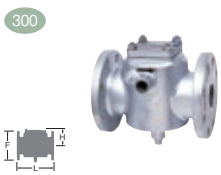
Type		A Series (Y-Strainer)		
Stainless Steel & High Alloy Steel Valves (GGC & Strainer)		20K 		
Fig		20UYA		
End Connection		JIS B2220 20K RF		
inch	mm	L	H	H1*
1/2	15	160	68	79
3/4	20	160	77	90
1	25	190	89	109
11/2	40	240	123	145
2	50	250	147	172
21/2	65	300	182	223
3	80	320	209	271
4	100	380	245	325
6	150	550	341	460
8	200	600	430	607
10	250	760	536	753
12	300	870	636	894
Body/Bonnet		CF8		
Disc/Screen		304SS		
Gasket		Refer to Page SS22		
Bonnet B/N		B8/8		
P-T Rating		JIS B2220		
F-to-F Dimension		KITZ Standard		
Wall Thickness		KITZ Standard		
Remarks		40-mesh stainless wire net reinforced with punched stainless steel plate		

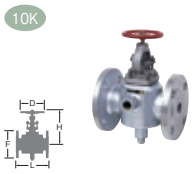
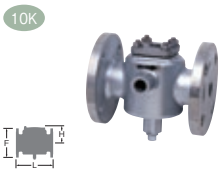
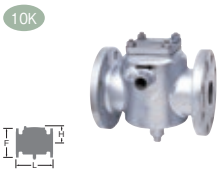
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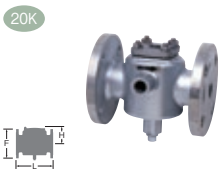
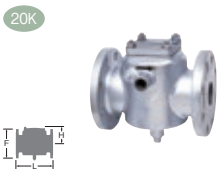
Type		A Series (Bellows Seal Globe)			A Series (Bellows Seal Globe)			A Series (Bellows Seal Globe)		
Stainless Steel & High Alloy Steel Valves (GGC & Strainer)		150 			150 			300 		
Fig		150UPAWM			150UPDAWM			300UPAWM		
End Connection		ASME B16.5 Class 150 RF			ASME B16.5 Class 150 RF			ASME B16.5 Class 300 RF		
inch	mm	L	H	D	L	H	D	L	H	D
1/2	15	108	164	90	108	164	90	152	185	100
3/4	20	117	166	90	117	166	90	178	183	100
1	25	127	170	100	127	170	100	203	185	100
11/2	40	165	202	140	165	202	140	229	234	160
2	50	203	230	160	203	230	160	267	287	180
21/2	65	216	245	180	216	245	180	292	293	200
3	80	241	284	200	241	284	200	318	402	250
4	100	292	360	225	292	360	225	356	454	300
5	125	356	425	250	356	425	250	400	539	350
6	150	406	493	350	406	483	350	444	607	400
Body/Bonnet		CF8M			CF8M			CF8M		
Stem		304SS			304SS			304SS		
Disc		316 or CF8M			PTFE			316 or CF8M		
Gland Packing		Carbon Fiber Coil Packing			Carbon Fiber Coil Packing			Carbon Fiber Coil Packing		
Gasket		Flexible Graphite			Flexible Graphite			Flexible Graphite		
Bellows		316L			316L			316L		
Bonnet B/N		B8/8			B8/8			B8/8		
P-T Rating F-to-F Dimension Wall Thickness		ASME B16.34 ASME B16.10 ASME B16.34			ASME B16.34 ASME B16.10 ASME B16.34			ASME B16.34 ASME B16.10 ASME B16.34		

Type		A Series (Bellows Seal Globe)			A Series (Soft Seated Globe)				A Series (Bellows Seal Globe)			A Series (Bellows Seal Globe)		
Stainless Steel & High Alloy Steel Valves (GGC & Strainer)		10K 			10K 				10K 			20K 		
Fig		10UPAW			10UPDA/G-10UPDA				10UPDAW			20UPAW		
End Connection		JIS B2220 10K RF			JIS B2220 10K RF				JIS B2220 10K RF			JIS B2220 20K RF		
inch	mm	L	H	D	L	H	D	B	L	H	D	L	H	D
1/2	15	108	164	90	108	166	90		108	164	90	152	185	100
3/4	20	117	166	90	117	168	90		117	166	90	178	183	100
1	25	127	170	100	127	173	100		127	170	100	203	185	100
11/4	32				140	192	120							
11/2	40	165	202	140	165	204	140		165	202	140	229	234	160
2	50	203	230	160	203	235	160		203	230	160	267	287	180
21/2	65	216	245	180	216	248	180		216	245	180	292	293	200
3	80	241	284	200	241	292	200		241	284	200	318	402	250
4	100	292	360	225	292	324	225		292	360	225	356	454	300
5	125	356	425	250	356	382	250		356	425	250	400	539	350
6	150	406	493	350	406	453	350		406	483	350	444	607	400
8	200				495	556	400							
10	250				622	923	500	280						
Body/Bonnet		CF8			CF8				CF8			CF8		
Stem		304SS			304SS				304SS			304SS		
Disc		316 or CF8M			PTFE				PTFE			316 or CF8M		
Gland Packing		Carbon Fiber Coil Packing			Refer to Page SS22				Carbon Fiber Coil Packing			Carbon Fiber Coil Packing		
Gasket		Flexible Graphite			Refer to Page SS22				Flexible Graphite			Flexible Graphite		
Bellows		316L							316L			316L		
Bonnet B/N		B8/8			B8/8				B8/8			B8/8		
P-T Rating F-to-F Dimension Wall Thickness		JIS B2220 ASME B16.10 ASME B16.34			JIS B2220 ASME B16.10 ASME B16.34				JIS B2220 ASME B16.10 ASME B16.34			JIS B2220 ASME B16.10 ASME B16.34		

Type		AJ Series (Jacketed Gate)				AJ Series (Jacketed Globe)				AJ Series (Jacketed Lift Check)				AJ Series (Jacketed Swing Check)			
Stainless Steel & High Alloy Steel Valves (GGC & Strainer)		150 				150 				150 				150 			
Fig		150UMAJM				150UPAJM				150UNAJM				150UOAJM			
End Connection		ASME B16.5 Class 150 RF				ASME B16.5 Class 150 RF				ASME B16.5 Class 150 RF				ASME B16.5 Class 150 RF			
inch	mm	L	H	D	F*	L	H	D	F*	L	H	D	F*	L	H	D	F*
1/2	15	165	210	100	11/2	152	184	100	11/2	152	78		11/2				
3/4	20	165	221	100	11/2	152	182	100	11/2	152	76		11/2				
1	25	177	240	100	2	190	185	100	2	190	77		2				
11/2	40	187	293	140	21/2	213	234	160	21/2	213	102		21/2				
2	50	203	344	160	3	241	237	160	3					241	125		3
3	80	229	444	200	4	292	294	200	4					292	152		4
4	100	267	523	225	6	356	325	225	6					356	169		6
6	150	292	711	250	8									406	219		8
Body/Bonnet		CF8M				CF8M				CF8M				CF8M			
Stem		3164SS				3164SS											
Disc		CF8M				CF8M				316SS				316SS			
Gland Packing		Flexible Graphite				Flexible Graphite											
Hinge Pin/Plug														316SS			
Gasket		Flexible Graphite				Flexible Graphite				Flexible Graphite				Flexible Graphite			
Jacket		Carbon Steel				Carbon Steel				Carbon Steel				Carbon Steel			
Bonnet B/N		B8/8				B8/8				B8/8				B8/8			
P-T Rating F-to-F Dimension Wall Thickness		ASME B16.34 KITZ Standard ASME B16.34				ASME B16.34 KITZ Standard ASME B16.34				ASME B16.34 KITZ Standard ASME B16.34				ASME B16.34 KITZ Standard ASME B16.34			
Remarks		Rating for Jacket: 260℃/1.0MPa Flexible Wedge F*: Flange Size				Rating for Jacket: 260℃/1.0MPa F*: Flange Size				Rating for Jacket: 260℃/1.0MPa F*: Flange Size				Rating for Jacket: 260℃/1.0MPa F*: Flange Size			

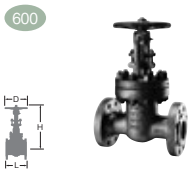
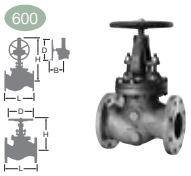
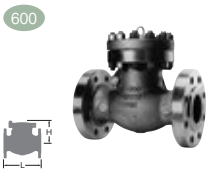
Type		AJ Series (Jacketed Gate)				AJ Series (Jacketed Globe)				AJ Series (Jacketed Lift Check)				AJ Series (Jacketed Swing Check)			
Stainless Steel & High Alloy Steel Valves (GGC & Strainer)		300 				300 				300 				300 			
Fig		300UMAJM				300UPAJM				300UNAJM				300UOAJM			
End Connection		ASME B16.5 Class 300 RF				ASME B16.5 Class 300 RF				ASME B16.5 Class 300 RF				ASME B16.5 Class 300 RF			
inch	mm	L	H	D	F*	L	H	D	F*	L	H	D	F*	L	H	D	F*
1/2	15	178	211	211	11/2	165	184	184	11/2	165	78		11/2				
3/4	20	178	221	221	11/2	165	182	182	11/2	165	76		11/2				
1	25	190	240	240	2	203	185	185	2	203	77		2				
11/2	40	203	294	294	21/2	229	234	234	21/2	229	102		21/2				
2	50	283	355	355	3	267	286	286	3					267	150		3
3	80	305	472	472	4	318	341	341	4					330	179		4
4	100	403	560	560	6	356	396	396	6					400	203		6
6	150	457	753	753	8									444	260		8
Body/Bonnet		CF8M				CF8M				CF8M				CF8M			
Stem		3164SS				3164SS											
Disc		CF8M				CF8M				316SS				316SS			
Gland Packing		Flexible Graphite				Flexible Graphite											
Hinge Pin/Plug														316SS			
Gasket		Flexible Graphite				Flexible Graphite				Flexible Graphite				Flexible Graphite			
Jacket		Carbon Steel				Carbon Steel				Carbon Steel				Carbon Steel			
Bonnet B/N		B8/8				B8/8				B8/8				B8/8			
P-T Rating F-to-F Dimension Wall Thickness		ASME B16.34 KITZ Standard ASME B16.34				ASME B16.34 KITZ Standard ASME B16.34				ASME B16.34 KITZ Standard ASME B16.34				ASME B16.34 KITZ Standard ASME B16.34			
Remarks		Rating for Jacket: 260℃/1.0MPa Flexible Wedge F*: Flange Size				Rating for Jacket: 260℃/1.0MPa F*: Flange Size				Rating for Jacket: 260℃/1.0MPa F*: Flange Size				Rating for Jacket: 260℃/1.0MPa F*: Flange Size			

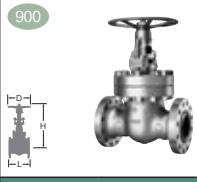
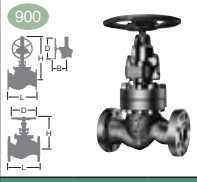
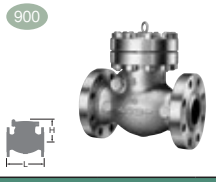
Type		AJ Series (Jacketed Gate)				AJ Series (Jacketed Globe)				AJ Series (Jacketed Lift Check)				AJ Series (Jacketed Swing Check)			
Stainless Steel & High Alloy Steel Valves (GGC & Strainer)		10K 				10K 				10K 				10K 			
Fig		10UMAJ				10UPAJ				10UNAJ				10UOAJ			
End Connection		JIS B2220 10K RF				JIS B2220 10K RF				JIS B2220 10K RF				JIS B2220 10K RF			
inch	mm	L	H	D	F*	L	H	D	F*	L	H	D	F*	L	H	D	F*
1/2	15	169	210	100	11/2	156	184	100	11/2	156	83		11/2				
3/4	20	169	221	100	11/2	156	182	100	11/2	156	76		11/2				
1	25	177	240	100	2	190	185	100	2	190	76		2				
11/2	40	188	293	140	21/2	214	234	160	21/2	214	101		21/2				
2	50	201	343	160	3	239	237	160	3					239	125		3
3	80	217	444	200	4	280	294	200	4					280	152		4
4	100	260	523	225	6	349	325	225	6					349	169		6
6	150	279	711	250	8									393	219		8
Body/Bonnet		CF8				CF8				CF8				CF8			
Stem		304SS				304SS											
Disc		CF8				CF8				304SS				304SS			
Gland Packing		Flexible Graphite				Flexible Graphite											
Hinge Pin/Plug														304SS			
Gasket		Flexible Graphite				Flexible Graphite				Flexible Graphite				Flexible Graphite			
Jacket		Carbon Steel				Carbon Steel				Carbon Steel				Carbon Steel			
Bonnet B/N		B8/8				B8/8				B8/8				B8/8			
P-T Rating F-to-F Dimension Wall Thickness		JIS B2220 KITZ Standard ASME B16.34				JIS B2220 KITZ Standard ASME B16.34				JIS B2220 KITZ Standard ASME B16.34				JIS B2220 KITZ Standard ASME B16.34			
Remarks		Rating for Jacket: 260℃/1.0MPa Flexible Wedge F*: Flange Size				Rating for Jacket: 260℃/1.0MPa F*: Flange Size				Rating for Jacket: 260℃/1.0MPa F*: Flange Size				Rating for Jacket: 260℃/1.0MPa F*: Flange Size			

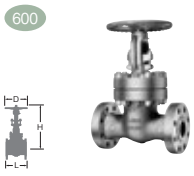
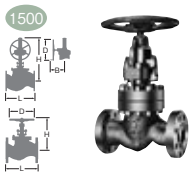
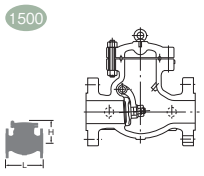
Type		AJ Series (Jacketed Gate)				AJ Series (Jacketed Globe)				AJ Series (Jacketed Lift Check)				AJ Series (Jacketed Swing Check)			
Stainless Steel & High Alloy Steel Valves (GGC & Strainer)		20K 				20K 				20K 				20K 			
Fig		20UMAJ				20UPAJ				20UNAJ				20UOAJ			
End Connection		JIS B2220 20K RF				JIS B2220 20K RF				JIS B2220 10K RF				JIS B2220 20K RF			
inch	mm	L	H	D	F*	L	H	D	F*	L	H	D	F*	L	H	D	F*
1/2	15	173	210	100	11/2	160	184	100	11/2	160	78		11/2				
3/4	20	173	221	100	11/2	160	182	100	11/2	160	76		11/2				
1	25	181	240	100	2	194	185	100	2	194	77		2				
11/2	40	192	294	140	21/2	218	234	160	21/2	218	102		21/2				
2	50	270	355	180	3	254	286	180	3					254	150		3
3	80	289	472	225	4	302	341	250	4					314	179		4
4	100	386	560	250	6	339	396	300	6					383	203		6
6	150	434	753	350	8									421	262		8
Body/Bonnet		CF8				CF8				CF8				CF8			
Stem		304SS				304SS											
Disc		CF8				CF8				304SS				304SS			
Gland Packing		Flexible Graphite				Flexible Graphite											
Hinge Pin/Plug														304SS			
Gasket		Flexible Graphite				Flexible Graphite				Flexible Graphite				Flexible Graphite			
Jacket		Carbon Steel				Carbon Steel				Carbon Steel				Carbon Steel			
Bonnet B/N		B8/8				B8/8				B8/8				B8/8			
P-T Rating F-to-F Dimension Wall Thickness		JIS B2220 KITZ Standard ASME B16.34				JIS B2220 KITZ Standard ASME B16.34				JIS B2220 KITZ Standard ASME B16.34				JIS B2220 KITZ Standard ASME B16.34			
Remarks		Rating for Jacket: 260℃/1.0MPa Flexible Wedge F*: Flange Size				Rating for Jacket: 260℃/1.0MPa F*: Flange Size				Rating for Jacket: 260℃/1.0MPa F*: Flange Size				Rating for Jacket: 260℃/1.0MPa F*: Flange Size			

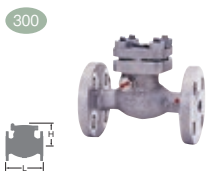
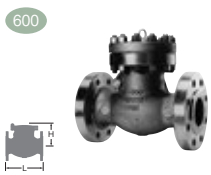
Type		C Series (Gate)			C Series (Globe)			C Series (Swing Check)		
Stainless Steel & High Alloy Steel Valves (GGC & Strainer)		150 API600  FE CE EAC			150  FE CE EAC			150  CE EAC		
Fig		150UMCM			150UPCM			150UOCM		
End Connection		ASME B16.5 Class 150 RF			ASME B16.5 Class 150 RF			ASME B16.5 Class 150 RF		
inch	mm	L	H	D	L	H	D	L	H	D
1/2	15	108	218	90	108	196	90	108	78	
3/4	20	117	231	100	117	202	100	117	83	
1	25	127	278	120	127	233	120	127	98	
11/2	40	165	341	160	165	273	160	165	113	
2	50	178	382	200	203	328	200	203	159	
21/2	65	190	429	200	216	356	225	216	165	
3	80	203	507	250	241	390	250	241	189	
4	100	229	589	250	292	456	250	292	205	
6	150	267	764	300	406	506	350	356	253	
8	200	292	961	350	495	613	400	495	281	
10	250	330	1172	400				622	345	
12	300	356	1371	450				698	385	
14	350	381	1524	500				787	396	
16	400	406	1692	600				864	438	
18	450	432	1888	600				978	465	
20	500	457	2123	680				978	590	
24	600	508	2490	760				1295	670	
Body/Bonnet		CF8M			CF8M			CF8M		
Stem		316SS			316SS					
Disc		CF8M			CF8M			CF8M		
Gland Packing		Refer to Page SS22			Refer to Page SS22					
Gasket		Refer to Page SS22			Refer to Page SS22			Refer to Page SS22		
Bonnet B/N		B8/8			B8/8			B8/8		
P-T Rating F-to-F Dimension Wall Thickness		ASME B16.34 ASME B16.10 API 600			ASME B16.34 ASME B16.10 API 600			ASME B16.34 ASME B16.10 API 600		
Approval		ISO15848-1, PED/CE TR-CU/EAC			ISO15848-1, PED/CE TR-CU/EAC			PED/CE TR-CU/EAC		
Remarks		Solid Wedge ≦4[B], Flexible Wedge ≧ 6[B]								

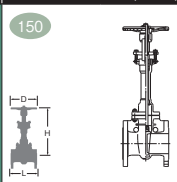
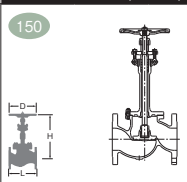
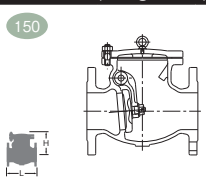
Type		C Series (Gate)			C Series (Globe)			C Series (Swing Check)		
Stainless Steel & High Alloy Steel Valves (GGC & Strainer)		300 API600  FE CE EAC			300  FE CE EAC			300  CE EAC		
Fig		300UMCM			300UPCM			300UOCM		
End Connection		ASME B16.5 Class 300 RF			ASME B16.5 Class 300 RF			ASME B16.5 Class 300 RF		
inch	mm	L	H	D	L	H	D	L	H	D
1/2	15	140	227	100	152	220	100	140	81	
3/4	20	152	250	100	178	222	100	152	84	
1	25	165	310	120	203	259	140	216	101	
11/2	40	190	378	200	229	302	180	241	118	
2	50	216	416	200	267	352	200	267	165	
21/2	65	241	455	200	292	400	250	292	190	
3	80	283	528	250	318	440	250	318	205	
4	100	305	615	250	356	509	350	356	225	
6	150	403	798	350	444	677	450			
8	200	419	1020	400				444	272	
10	250	457	1222	450				533	330	
12	300	502	1442	500				622	360	
14	350	762	1575	600				711	406	
16	400	838	1745	600				838	480	
18	450	914	1945	680				864	527	
20	500	991	2155	760				978	555	
24	600	1143	2555	910				1346	732	
Body/Bonnet		CF8M			CF8M			CF8		
Stem		316SS			316SS					
Disc		CF8M			CF8M			CF8		
Gland Packing		Refer to Page SS22			Refer to Page SS22					
Gasket		Refer to Page SS22			Refer to Page SS22			Refer to Page SS22		
Bonnet B/N		B8/8			B8/8			B8/8		
P-T Rating F-to-F Dimension Wall Thickness		ASME B16.34 ASME B16.10 API 600			ASME B16.34 ASME B16.10 API 600			ASME B16.34 ASME B16.10 API 600		
Approval		ISO15848-1, PED/CE TR-CU/EAC			ISO15848-1, PED/CE TR-CU/EAC			PED/CE TR-CU/EAC		
Remarks		Solid Wedge ≦4[B], Flexible Wedge ≧ 6[B]								

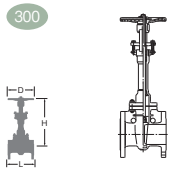
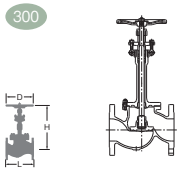
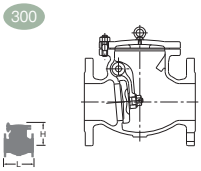
Type		C Series (Gate)			C Series (Globe)				C Series (Swing Check)		
Stainless Steel & High Alloy Steel Valves (GGC & Strainer)		600  API600 FE CE EAC			600  FE CE EAC				600  CE EAC		
Fig		600UMCM			600UPCM/G-600UPCM				600UOCM		
End Connection		ASME B16.5 Class 600 RF			ASME B16.5 Class 600 RF				ASME B16.5 Class 600 RF		
inch	mm	L	H	D	L	H	D	B	L	H	D
1/2	15	165	267	100	165	280	140		165	130	
3/4	20	190	276	140	190	275	140		190	135	
1	25	216	331	160	216	290	160		216	142	
11/2	40	241	395	200	241	340	200		241	172	
2	50	292	463	200	292	413	250		292	193	
3	80	356	569	250	356	529	350		356	220	
4	100	432	696	300	432	947	500	254	432	256	
6	150	559	905	450	559	1031	500	280	559	316	
8	200	660	1086	500	660	1232	600	350	660	358	
10	250	787	1275	600					787	415	
12	300	838	1498	680					838	462	
Body/Bonnet		CF8M			CF8M				CF8M		
Stem		316SS			316SS						
Disc		CF8M			CF8M				CF8M		
Gland Packing		Refer to Page SS22			Refer to Page SS22						
Gasket		Refer to Page SS22			Refer to Page SS22				Refer to Page SS22		
Bonnet B/N		B8/8			B8/8				B8/8		
P-T Rating F-to-F Dimension Wall Thickness		ASME B16.34 ASME B16.10 API 600			ASME B16.34 ASME B16.10 API 600				ASME B16.34 ASME B16.10 API 600		
Approval		ISO15848-1, PED/CE TR-CU/EAC			ISO15848-1, PED/CE TR-CU/EAC				PED/CE TR-CU/EAC		
Remarks		Solid Wedge ≦11/2B, Flexible Wedge ≧ 2B									

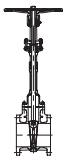
Type		C Series (Gate)			C Series (Globe)				C Series (Swing Check)		
Stainless Steel & High Alloy Steel Valves (GGC & Strainer)		900  API600 CE EAC			900  CE EAC				900  CE EAC		
Fig		900UMCM			900UPCM/G-900UPCM				900UOCM		
End Connection		ASME B16.5 Class 900 RF			ASME B16.5 Class 900 RF				ASME B16.5 Class 900 RF		
inch	mm	L	H	D	L	H	D	B	L	H	D
2	50	368	521	250							
3	80	381	620	350	TBA	TBA	TBA	TBA	381	294	
4	100	457	705	350	TBA	TBA	TBA	TBA	457	348	
6	150	610	901	500	TBA	TBA	TBA	TBA	610	441	
8	200	737	1087	600	TBA	TBA	TBA	TBA	737	527	
10	250	838	1285	680							
12	300	965	1499	760							
Body/Bonnet		CF8M			CF8M				CF8M		
Stem		316SS			316SS						
Disc		CF8M			CF8M				CF8M		
Gland Packing		Refer to Page SS22			Refer to Page SS22						
Gasket		Refer to Page SS22			Refer to Page SS22				Refer to Page SS22		
Bonnet B/N		B8/8			B8/8				B8/8		
P-T Rating F-to-F Dimension Wall Thickness		ASME B16.34 ASME B16.10 API 600			ASME B16.34 ASME B16.10 API 600				ASME B16.34 ASME B16.10 API 600		
Approval		PED/CE TR-CU/EAC			PED/CE TR-CU/EAC				PED/CE TR-CU/EAC		
Remarks		Flexible Wedge									

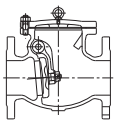
Type		C Series (Gate)			C Series (Globe)				C Series (Swing Check)		
Stainless Steel & High Alloy Steel Valves (GGC & Strainer)		600 API600  CE EAC			1500  CE EAC				1500  CE EAC		
Fig		1500UMCM			1500UPCM/G-1500UPCM				1500UOCM		
End Connection		ASME B16.5 Class 1500 RF			ASME B16.5 Class 1500 RF				ASME B16.5 Class 1500 RF		
inch	mm	L	H	D	L	H	D	B	L	H	D
2	50	368	562	250	368	546	350		368	290	
21/2	65	419	639	300					419	316	
3	80	470	684	350	TBA	TBA	TBA	TBA	470	347	
4	100	546	770	400	TBA	TBA	TBA	TBA	546	391	
6	150	705	1040	600	TBA	TBA	TBA	TBA	705	515	
8	200	832	1250	680					832	650	
Body/Bonnet		CF8M			CF8M				CF8M		
Stem		316SS			316SS						
Disc		CF8M			CF8M				CF8M		
Gland Packing		Refer to Page SS22			Refer to Page SS22						
Gasket		Refer to Page SS22			Refer to Page SS22				Refer to Page SS22		
Bonnet B/N		B8/8			B8/8				B8/8		
P-T Rating F-to-F Dimension Wall Thickness		ASME B16.34 ASME B16.10 API 600			ASME B16.34 ASME B16.10 API 600				ASME B16.34 ASME B16.10 API 600		
Approval		PED/CE TR-CU/EAC			PED/CE TR-CU/EAC				PED/CE TR-CU/EAC		
Remarks		Flexible Wedge									

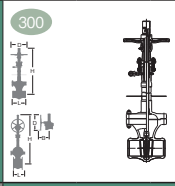
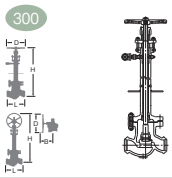
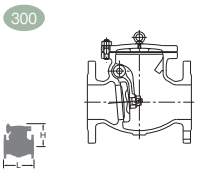
Type		C Series (Swing Check)			C Series (Swing Check)			C Series (Swing Check)		
Stainless Steel & High Alloy Steel Valves (GGC & Strainer)		150 API594  CE EAC			300 API594  CE EAC			600 API594  CE EAC		
Fig		150UOCHM			300UOCHM			600UOCHM		
End Connection		ASME B16.5 Class 150 RF			ASME B16.5 Class 300 RF			ASME B16.5 Class 600 RF		
inch	mm	L	H	D	L	H	D	L	H	D
2	50	203	158		267	162		292	190	
21/2	65	216	165							
3	80	241	188		318	203		356	222	
4	100	292	204		356	233		432	257	
6	150	356	252		444	280		559	318	
8	200	495	281		533	330		660	359	
10	250	622	344		622	367		787	415	
12	300	698	385		711	423		838	462	
Body/Bonnet		CF8M			CF8M			CF8M		
Disc		CF8M			CF8M			CF8M		
Gasket		Refer to Page SS22			Refer to Page SS22			Refer to Page SS22		
Bonnet B/N		B8/8			B8/8			B8/8		
P-T Rating F-to-F Dimension Wall Thickness		ASME B16.34 ASME B16.10 API 594			ASME B16.34 ASME B16.10 API 594			ASME B16.34 ASME B16.10 API 594		
Approval		PED/CE TR-CU/EAC			PED/CE TR-CU/EAC			PED/CE TR-CU/EAC		
Remarks		Internal Hinge Pin as per API594 Type B			Internal Hinge Pin as per API594 Type B			Internal Hinge Pin as per API594 Type B		

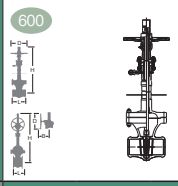
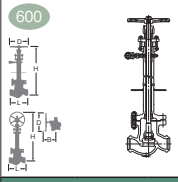
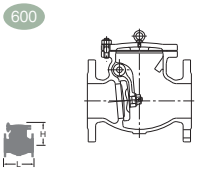
Type		A Series (Gate(-104℃))			A Series (Globe(-104℃))				A Series (Swing Check(-104℃))		
Stainless Steel & High Alloy Steel Valves (GGC & Strainer)		150 			150 				150 		
Fig		150UMAXY/G-150UMAXY			150UPAXY/G-150UPAXY				150UOAXY		
End Connection		ASME B16.5 Class 150 RF			ASME B16.5 Class 150 RF				ASME B16.5 Class 150 RF		
inch	mm	L	H	D	L	H	D	B	L	H	D
1/2	15	108	343	90	108	302	90				
3/4	20	117	352	90	117	315	90				
1	25	127	375	100	127	331	100				
11/2	40	165	436	140	165	366	140		165	111	
2	50	178	497	160	203	416	160		203	121	
21/2	65	190	536	180	216	422	180		216	134	
3	80	203	630	200	241	481	200		241	148	
4	100	229	722	225	292	535	225		292	162	
5	125	254	828	250	356	610	250		330	192	
6	150	267	935	250	406	675	350		356	217	
8	200	292	1136	300	495	776	400		495	264	
10	250	330	1367	350					622	287	
12	300	356	1571	400					698	315	
14	350	381	1747	450					787	363	
16	400	406	1921	600					864	407	
Body		CF8+HF (Co-Cr-W Alloy)			CF8+HF (Co-Cr-W Alloy)				CF8+HF (Co-Cr-W Alloy)		
Bonnet		CF8			CF8				CF8		
Cover									CF8		
Stem		304SS			304SS						
Disc		CF8+HF (Co-Cr-W Alloy)			CF8+HF (Co-Cr-W Alloy)				CF8+HF (Co-Cr-W Alloy)		
Gland Packing		Flexible Graphite+PTFE Braided			Flexible Graphite+PTFE Braided						
Gasket		PTFE Spiral Wound			PTFE Spiral Wound				PTFE Spiral Wound		
Bonnet B/N		B8 CL2/8			B8 CL2/8				B8 CL2/8		
P-T Rating F-to-F Dimension Wall Thickness		ASME B16.34 ASME B16.10 ASME B16.34			ASME B16.34 ASME B16.10 ASME B16.34				ASME B16.34 ASME B16.10 ASME B16.34		
Remarks		Gear for 8[B] & above			Gear for 6[B] & above						

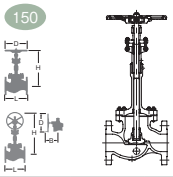
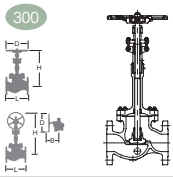
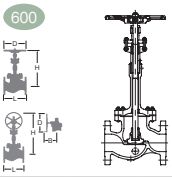
Type		A Series (Gate(-104℃))				A Series (Globe(-104℃))				A Series (Swing Check(-104℃))		
Stainless Steel & High Alloy Steel Valves (GGC & Strainer)		300 				300 				300 		
Fig		300UMAXY/G-300UMAXY				300UPAXY/G-300UPAXY				300UOAXY		
End Connection		ASME B16.5 Class 300 RF				ASME B16.5 Class 300 RF				ASME B16.5 Class 300 RF		
inch	mm	L	H	D	B	L	H	D	B	L	H	D
1/2	15	140	338	100		152	316	100				
3/4	20	152	348	100		178	325	100				
1	25	165	377	100		203	338	100				
11/2	40	190	440	140		229	387	160		241	121	
2	50	216	515	180		267	450	180		267	143	
21/2	65					292	464	200		292	163	
3	80	283	655	225		318	533	250		318	178	
4	100	305	751	250		356	603	300		356	201	
5	125	381	840	300		400	714	350		400	231	
6	150	403	961	350		444	785	400		444	259	
8	200	419	1180	400		559	907	560		533	292	
10	250	457	1414	450						622	356	
12	300	502	1617	500						711	373	
14	350	762	TBA	TBA								
Body		CF8+HF (Co-Cr-W Alloy)				CF8+HF (Co-Cr-W Alloy)				CF8+HF (Co-Cr-W Alloy)		
Bonnet		CF8				CF8				CF8		
Cover										CF8		
Stem		304SS				304SS						
Disc		CF8+HF (Co-Cr-W Alloy)				CF8+HF (Co-Cr-W Alloy)				CF8+HF (Co-Cr-W Alloy)		
Gland Packing		Flexible Graphite+PTFE Braided				Flexible Graphite+PTFE Braided						
Gasket		Ceramics PTFE				Ceramics PTFE				PTFE Spiral Wound		
Bonnet B/N		B8 CL2/8				B8 CL2/8				B8 CL2/8		
P-T Rating F-to-F Dimension Wall Thickness		ASME B16.34 ASME B16.10 ASME B16.34				ASME B16.34 ASME B16.10 ASME B16.34				ASME B16.34 ASME B16.10 ASME B16.34		
Remarks		Gear for 8[B] & above				Gear for 8[B] & above						

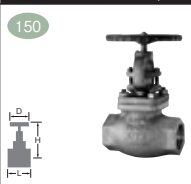
Type		A Series (Gate(-196℃))				A Series (Gate(-196℃))				A Series (Gate(-196℃))			
Stainless Steel & High Alloy Steel Valves (GGC & Strainer)		150  				300  				600  			
Fig		150UMALMY/G-150UMALMY				300UMALMY/G-300UMALMY				600UMALMY/G-600UMALMY			
End Connection		ASME B16.5 Class 150 RF				ASME B16.5 Class 300 RF				ASME B16.5 Class 600 RF			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	B
2	50	178	634	200		216	634	200		292	764	300	
3	80	203	761	200		283	836	300		356	926	300	
4	100	229	876	200		305	955	300		432	1121	600	
6	150	267	1138	350		403	1210	600		559	1348	500	253
8	200	292	1317	500		419	1500	500	253	660	1547	500	253
10	250	330	1678	500	253	457	1669	500	253	787	2016	500	282
12	300	356	1802	500	253	502	1921	500	253	838	2112	600	350
14	350	381	2049	500	253	762	2109	500	281				
16	400	406	2271	500	253	838	2296	500	281				
18	450	432	2474	500	281	914	2532	500	281				
20	500	457	2696	500	281	991	2857	600	350				
24	600	508	3314	600	350	1143	3374	600	456				
Body		CF8M+HF (Co-Cr-W Alloy)				CF8M+HF (Co-Cr-W Alloy)				CF8M+HF (Co-Cr-W Alloy)			
Bonnet/Cover		CF8M+HF (Co-Cr-W Alloy)				CF8M+HF (Co-Cr-W Alloy)				CF8M+HF (Co-Cr-W Alloy)			
Stem		316SS				316SS				316SS			
Disc		CF8M+HF (Co-Cr-W Alloy)				CF8M+HF (Co-Cr-W Alloy)				CF8M+HF (Co-Cr-W Alloy)			
Gland Packing		RTFE+Graphite				RTFE+Graphite				RTFE+Graphite			
Gasket		Flexible Graphite Spiral Wound				Flexible Graphite Spiral Wound				Flexible Graphite Spiral Wound			
Bonnet B/N		B8 CL2/8				B8 CL2/8				B8 CL2/8			
P-T Rating F-to-F Dimension Wall Thickness		ASME B16.34 ASME B16.10 ASME B16.34				ASME B16.34 ASME B16.10 ASME B16.34				ASME B16.34 ASME B16.10 ASME B16.34			
Remarks		Gear for 10B & above				Gear for 8B & above				Gear for 6B & above			

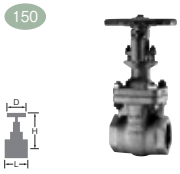
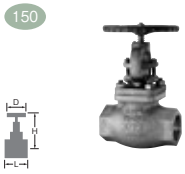
Type		C Series (Gate(-196℃))				C Series (Globe(-196℃))				C Series (Swing Check(-196℃))		
Stainless Steel & High Alloy Steel Valves (GGC & Strainer)		150  				150  				150  		
Fig		150UMCLMY/G-150UMCLMY				150UPCLMY/G-150UPCLMY				150UOCLMY		
End Connection		ASME B16.5 Class 150 RF				ASME B16.5 Class 150 RF				ASME B16.5 Class 150 RF		
inch	mm	L	H	D	B	L	H	D	B	L	H	D
1/2	15	108	446	100		108	425	100				
3/4	20	117	460	100		117	434	120				
1	25	127	503	120		127	461	160				
11/2	40	165	612	200		165	TBA	TBA				
2	50	178	675	250		203	595	200		203	156	
21/2	65	190	718	250		216	703	250		216	164	
3	80	203	825	250		241	713	250		241	TBA	
4	100	229	924	300		292	807	350		292	TBA	
5	125	254	TBA	TBA								
6	150	267	1259	400		406	TBA	TBA		356	TBA	
8	200	292	1444	500		495	1283	500	254	495	TBA	
10	250	330	1785	500	254					622	TBA	
12	300	356	2041	500	254					698	TBA	
14	350	381	2112	500	254					787	TBA	
16	400	406	2311	500	280							
18	450	432	2495	500	280							
20	500	457	2782	600	350							
24	600	508	3170	600	350							
Body		CF8M+HF up to 11/2B, CF8M				CF8M+HF up to 11/2B, CF8M				CF8M+HF		
Bonnet/Cover		CF8M+HF up to 1B, CF8M				CF8M+HF up to 1B, CF8M				CF8M		
Stem		316SS+HF				316SS+HF						
Disc		CF8M+HF				CF8M+HF				CF8M+HF		
Gland Packing		Flexible Graphite				Flexible Graphite						
Gasket		PTFE Spiral Wound				Flexible Graphite Spiral Wound				Flexible Graphite Spiral Wound		
Body Seat Ring		316SS+HF				316SS+HF						
Bonnet B/N		B8 CL2/8				B8 CL2/8				B8 CL2/8		
P-T Rating F-to-F Dimension Wall Thickness		ASME B16.34 ASME B16.10 API 600				ASME B16.34 ASME B16.10 API 600				ASME B16.34 ASME B16.10 API 600		
Remarks		Gear for 10B & above				Gear for 8B & above						

Type		C Series (Gate(-196℃))				C Series (Globe(-196℃))				C Series (Swing Check(-196℃))		
Stainless Steel & High Alloy Steel Valves (GGC & Strainer)		300 				300 				300 		
Fig		300UMCLMY/G-300UMCLMY				300UPCLMY/G-300UPCLMY				300UOCLMY		
End Connection		ASME B16.5 Class 300 RF				ASME B16.5 Class 300 RF				ASME B16.5 Class 300 RF		
inch	mm	L	H	D	B	L	H	D	B	L	H	D
1/2	15	455	455	100		152	426	100		140	TBA	
3/4	20	456	456	100		178	434	120		152	TBA	
1	25	531	531	120		203	461	160		216	TBA	
11/2	40	639	639	250		229	TBA	TBA		241	TBA	
2	50	675	675	300		267	592	225		267	161	
21/2	65	TBA	TBA	TBA		292	TBA	TBA		292	TBA	
3	80	825	825	300		318	736	350		318	204	
4	100	957	957	350		356	833	500		356	292	
5	125	1259	1259	400								
6	150	1259	1259	400		444	1329	500	280	444	TBA	
8	200	1637	1637	500	254	559	TBA	TBA	TBA	533	TBA	
10	250	1785	1785	500	254					622	TBA	
12	300	2041	2041	500	280					711	423	
14	350	2435	2435	600	456					838	TBA	
16	400	2595	2595	600	456					864	TBA	
18	450	2755	2755	600	456					978	TBA	
20	500	2862	2862	600	456					1016	TBA	
24	600	3320	3320	610	456					1346	TBA	
Body		CF8M+HF up to 11/2[B], CF8M				CF8M+HF up to 11/2[B], CF8M				CF8M+HF		
Bonnet/Cover		CF8M+HF up to 1[B], CF8M				CF8M+HF up to 1[B], CF8M				CF8M		
Stem		316SS+HF				316SS+HF						
Disc		CF8M+HF				CF8M+HF				CF8M+HF		
Gland Packing		Flexible Graphite				Flexible Graphite						
Gasket		PTFE Spiral Wound				Flexible Graphite Spiral Wound				Flexible Graphite Spiral Wound		
Body seat ring		316SS+HF				316SS+HF						
Bonnet B/N		B8 CL2/8				B8 CL2/8				B8 CL2/8		
P-T Rating F-to-F Dimension Wall Thickness		ASME B16.34 ASME B16.10 API 600				ASME B16.34 ASME B16.10 API 600				ASME B16.34 ASME B16.10 API 600		
Remarks		Gear for 8[B] & above				Gear for 6[B] & above						

Type		C Series (Gate(-196℃))				C Series (Globe(-196℃))				C Series (Swing Check(-196℃))		
Stainless Steel & High Alloy Steel Valves (GGC & Strainer)		600 				600 				600 		
Fig		600UMCLMY/G-600UMCLMY				600UPCLMY/G-600UPCLMY				600UOCLMY		
End Connection		ASME B16.5 Class 600 RF				ASME B16.5 Class 600 RF				ASME B16.5 Class 600 RF		
inch	mm	L	H	D	B	L	H	D	B	L	H	D
1/2	15	165	TBA	TBA		165	472	140				
3/4	20	190	TBA	TBA		190	TBA	TBA				
1	25	216	TBA	TBA		216	TBA	TBA		216	TBA	
11/2	40	241	TBA	TBA		241	TBA	TBA		241	TBA	
2	50	292	750	300		292	676	350		292	TBA	
21/2	65	330	TBA	TBA		330	TBA	TBA				
3	80	356	886	350		356	1091	500	254	356	210	
4	100	432	1111	500		432	1181	500	254	432	248	
6	150	559	1600	500	254	559	TBA	TBA	TBA	559	TBA	
8	200	660	1546	500	254	660	1470	600	350	660	TBA	
10	250	787	2030	600	456					787	TBA	
12	300	838	2245	600	282					838	484	
14	350	889	2375	600	337							
16	400	991	2560	600	417							
18	450	1092	2623	600	456							
20	500	1194	2960	610	456							
24	600	1397	3158	610	456							
Body		CF8M+HF up to 11/2[B], CF8M				CF8M+HF up to 11/2[B], CF8M				CF8M+HF		
Bonnet/Cover		CF8M+HF up to 1[B], CF8M				CF8M+HF up to 1[B], CF8M				CF8M		
Stem		316SS+HF				316SS+HF						
Disc		CF8M+HF				CF8M+HF				CF8M+HF		
Gland Packing		Flexible Graphite				Flexible Graphite						
Gasket		PTFE Spiral Wound				Flexible Graphite Spiral Wound				Flexible Graphite Spiral Wound		
Body Seat Ring		316SS+HF				316SS+HF						
Bonnet B/N		B8 CL2/8				B8 CL2/8				B8 CL2/8		
P-T Rating F-to-F Dimension Wall Thickness		ASME B16.34 ASME B16.10 API 600				ASME B16.34 ASME B16.10 API 600				ASME B16.34 ASME B16.10 API 600		
Remarks		Gear for 6[B] & above				Gear for 3[B] & above						

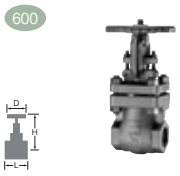
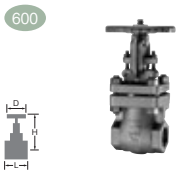
Type		CR Series (Globe(-196℃))				CR Series (Globe(-196℃))				CR Series (Globe(-196℃))			
Stainless Steel & High Alloy Steel Valves (GGC & Strainer)		150 				300 				600 			
Fig		150UPCRLMD/G-150UPCRLMD				300UPCRLMD/G-300UPCRLMD				600UPCRLMD/G-600UPCRLMD			
End Connection		ASME B16.5 Class 150 RF				ASME B16.5 Class 300 RF				ASME B16.5 Class 600 RF			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	B
2	50	203	580	152		267	576	165		292	624	165	
21/2	65	216	TBA	TBA		292	TBA	TBA		330	TBA	TBA	
3	80	241	698	190		318	727	210		356	791	210	
4	100	292	743	229		356	791	254		432	1152	273	253
6	150	406	900	279		444	1252	318	281	559	1243	356	281
8	200	495	1272	343	253	559	1302	381	281	660	1430	419	350
Body		CF8M				CF8M				CF8M			
Bonnet/Cover		CF8M				CF8M				CF8M			
Stem		316SS				316SS				316SS			
Disc		CF8+HF (Co-Cr-W Alloy)				CF8+HF (Co-Cr-W Alloy)				CF8+HF (Co-Cr-W Alloy)			
Gland Packing		RTFE+Graphite				RTFE+Graphite				RTFE+Graphite			
Gasket		Flexible Graphite Spiral Wound				Flexible Graphite Spiral Wound				Flexible Graphite Spiral Wound			
Bonnet B/N		B8 CL2/8				B8 CL2/8				B8 CL2/8			
P-T Rating F-to-F Dimension Wall Thickness		ASME B16.34 ASME B16.10 API 623				ASME B16.34 ASME B16.10 API 623				ASME B16.34 ASME B16.10 API 623			
Remarks		Gear for 8^{B} & above				Gear for 6^{B} & above				Gear for 4^{B} & above			

Type		D Series (Gate)			D Series (Globe)			D Series (Swing Check)		
Stainless Steel & High Alloy Steel Valves (GGC & Strainer)		150  EAC			150  EAC			150  EAC		
Fig		AK150UMM			AK150UPM			AK150UOM		
End Connection		ASME B1.20.1 (NPT)			ASME B1.20.1 (NPT)			ASME B1.20.1 (NPT)		
inch	mm	L	H	D	L	H	D	L	H	D
1/2	15	70	197	90	86	164	90	95	75	
3/4	20	76	204	90	95	166	90	95	80	
1	25	89	220	100	108	169	100	127	85	
11/2	40	114	276	140	140	198	140	152	107	
2	50	121	336	160	165	228	160	165	115	
Body		CF3M			CF3M			CF3M		
Bonnet/Cover		CF8M			CF8M			CF8M		
Stem/Hinge Pin		316SS			316SS					
Disc		CF8M			CF8M			CF8M		
Gland Packing		Refer to Page SS22			Refer to Page SS22					
Gasket		Refer to Page SS22			Refer to Page SS22			Refer to Page SS22		
Bonnet B/N		B8/8			B8/8			B8/8		
P-T Rating F-to-F Dimension Wall Thickness		ASME B16.34 KITZ Standard ASME B16.34			ASME B16.34 KITZ Standard ASME B16.34			ASME B16.34 KITZ Standard ASME B16.34		
Remarks		TR-CU/EAC Flexible Wedge			TR-CU/EAC Flexible Wedge			TR-CU/EAC		

Type		D Series (Gate)			D Series (Globe)			D Series (Swing Check)		
Stainless Steel & High Alloy Steel Valves (GGC & Strainer)		150  EAC			150  EAC			150  EAC		
Fig		AW150UMM			AW150UPM			AW150UOM		
End Connection		ASME B16.11			ASME B16.11			ASME B16.11		
inch	mm	L	H	D	L	H	D	L	H	D
1/2	15	67	197	90	83	164	90	92	75	
3/4	20	73	204	90	92	166	90	92	80	
1	25	86	220	100	105	169	100	124	85	
11/2	40	111	276	140	137	198	140	149	107	
2	50	118	336	160	162	228	160	162	115	
Body		CF3M			CF3M			CF3M		
Bonnet/Cover		CF8M			CF8M			CF8M		
Stem		316SS			316SS					
Disc		CF8M			CF8M			CF8M		
Gland Packing		Refer to Page SS22			Refer to Page SS22					
Gasket		Refer to Page SS22			Refer to Page SS22			Refer to Page SS22		
Bonnet B/N		B8/8			B8/8			B8/8		
P-T Rating F-to-F Dimension Wall Thickness		ASME B16.34 KITZ Standard ASME B16.34			ASME B16.34 KITZ Standard ASME B16.34			ASME B16.34 KITZ Standard ASME B16.34		
Remarks		TR-CU/EAC Flexible Wedge			TR-CU/EAC			TR-CU/EAC		

Type		D Series (Gate)			D Series (Globe)			D Series (Swing Check)		
Stainless Steel & High Alloy Steel Valves (GGC & Strainer)										
Fig		AK300UMM			AK300UPM			AK300UOM		
End Connection		ASME B1.20.1 (NPT)			ASME B1.20.1 (NPT)			ASME B1.20.1 (NPT)		
inch	mm	L	H	D	L	H	D	L	H	D
1/2	15	76	202	100	95	184	100	114	81	
3/4	20	83	212	100	108	182	100	127	87	
1	25	95	230	100	127	185	100	140	91	
11/2	40	127	285	140	165	233	160	152	117	
2	50	146	355	180	190	289	180	165	139	
Body		CF3M			CF3M			CF3M		
Bonnet/Cover		CF8M			CF8M			CF8M		
Stem/Hinge Pin		316SS			316SS			316SS		
Disc		CF8M			CF8M			CF8M		
Gland Packing		Refer to Page SS22			Refer to Page SS22					
Gasket		Refer to Page SS22			Refer to Page SS22			Refer to Page SS22		
Bonnet B/N		B8/8			B8/8			B8/8		
P-T Rating F-to-F Dimension Wall Thickness		ASME B16.34 KITZ Standard ASME B16.34			ASME B16.34 KITZ Standard ASME B16.34			ASME B16.34 KITZ Standard ASME B16.34		
Remarks		TR-CU/EAC Flexible Wedge			TR-CU/EAC			TR-CU/EAC		

Type		D Series (Gate)			D Series (Globe)			D Series (Swing Check)		
Stainless Steel & High Alloy Steel Valves (GGC & Strainer)										
Fig		AW300UMM			AW300UPM			AW300UOM		
End Connection		ASME B16.11			ASME B16.11			ASME B16.11		
inch	mm	L	H	D	L	H	D	L	H	D
1/2	15	73	202	100	92	184	100	111	81	
3/4	20	80	212	100	105	182	100	124	87	
1	25	92	230	100	124	185	100	137	91	
11/2	40	124	285	140	162	230	160	149	117	
2	50	143	355	180	187	284	180	162	139	
Body		CF3M			CF3M			CF3M		
Bonnet/Cover		CF8M			CF8M			CF8M		
Stem/Hinge Pin		316SS			316SS			316SS		
Disc		CF8M			CF8M			CF8M		
Gland Packing		Refer to Page SS22			Refer to Page SS22					
Gasket		Refer to Page SS22			Refer to Page SS22			Refer to Page SS22		
Bonnet B/N		B8/8			B8/8			B8/8		
P-T Rating F-to-F Dimension Wall Thickness		ASME B16.34 KITZ Standard ASME B16.34			ASME B16.34 KITZ Standard ASME B16.34			ASME B16.34 KITZ Standard ASME B16.34		
Remarks		TR-CU/EAC Flexible Wedge			TR-CU/EAC			TR-CU/EAC		

Type		D Series (Gate)			D Series (Gate)		
Stainless Steel & High Alloy Steel Valves (GGC & Strainer)		600  EAC			600  EAC		
Fig		AK600UMM			AW600UMM		
End Connection		ASME B1.20.1 (NPT)			ASME B16.11		
inch	mm	L	H	D	L	H	D
1/2	15	76	201	100	73	201	100
3/4	20	83	215	100	80	215	100
1	25	95	240	140	92	240	140
11/2	40	127	325	180	124	325	180
2	50	146	385	200	143	385	200
Body		CF3M			CF3M		
Bonnet		CF8M			CF8M		
Stem		316SS			316SS		
Disc		CF8M			CF8M		
Gland Packing		Refer to Page SS22			Refer to Page SS22		
Gasket		Refer to Page SS22			Refer to Page SS22		
Bonnet B/N		B8/8			B8/8		
P-T Rating F-to-F Dimension Wall Thickness		ASME B16.34 KITZ Standard ASME B16.34			ASME B16.34 KITZ Standard ASME B16.34		
Remarks		TR-CU/EAC Flexible Wedge			TR-CU/EAC Flexible Wedge		

Corrosion Resistance of KITZ Stainless and High Alloy Steel Valves

KITZ stainless and high alloy steel valves are widely utilized in chemical, petrochemical, food and beverage, pulp and paper, pharmaceutical and other industrial processing plants throughout the world, constitute one of the major product lines of KITZ Corporation, Japan's largest manufacturer of industrial valves.

KITZ stainless and high alloy steel valves are designed, manufactured, and inspected to strictly conform with the requirements of ASTM, ASME, API, BS, JIS and other internationally recognized standards, with all quality elements meeting the critical service conditions needed for corrosive industrial applications.

KITZ stainless and high alloy steel valves are characterized by unsurpassed corrosion resistance and reliability, providing users with the lowest cost of ownership and the longest total life cycle performance in the industry. As an ISO 9001 certified valve manufacturer, KITZ Corporation has achieved a high degree of product standardization by the ideal combination of its updated technical know-how and uniquely integrated system of production adopted at its Nagasaka Plant, Yamanashi, Japan, the home of KITZ stainless and high alloy steel valves.

Electronically controlled steel foundries, multi-station transfer machining systems and state-of-the-art test and inspection facilities, are all put together at KITZ Nagasaka Plant, to ensure the quality and reliability of all products that it releases to the global market.



KITZ Nagasaka Plant, Japan



KITZ Corporation of Taiwan



KITZ Corporation of Kunshan

Features of Austenitic Stainless Steel as Valve Material

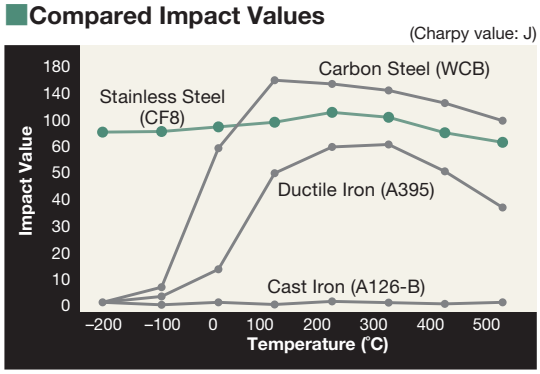
Stainless steel is divided into three main categories depending on its chemical composition. They are martensitic stainless steel containing 13% chromium, ferritic stainless steel containing 18% chromium, and austenitic stainless steel containing 18% chromium and 8% nickel. Among them, austenitic stainless steel is widely used for both valve shells and trims, which require high pressure resistant characteristic. Martensitic stainless steel is used mainly for trims of carbon steel valves. The features and characteristics of these stainless steels are compared below:

Features of Stainless Steel by Types

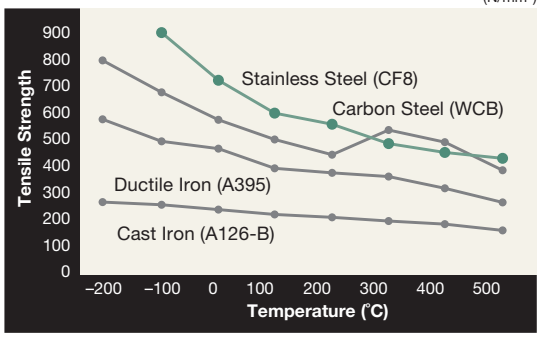
Types	Martensitic	Ferritic	Austenitic
Typical Material	AISI 410	AISI 430	ASTM CF8M/F316
Magnetization	Yes		No
Hardening by Heat Treatment	Yes	No	
Hardening by Machining	Same as soft steel		Less
Corrosion and Acid Resistance	Good		Excellent
Impact Resistance and Elongation	Good		Excellent
Weldability	Poor	Fair	Good
Lowest Service Temperature	–29°C	–10°C	–269°C

As shown below, austenitic stainless steel has an excellent impact value in subzero temperature range and been almost exclusively used for cryogenic service applications. It also features higher heat resistance than carbon steel. Its tensile strength is also superior to other valve materials and its high resistance against destructive tensile load in a wide range of service temperatures is unrivaled by other valve materials. Corrosive fluid cannot generally affect these excellent mechanical properties of austenitic stainless steel.

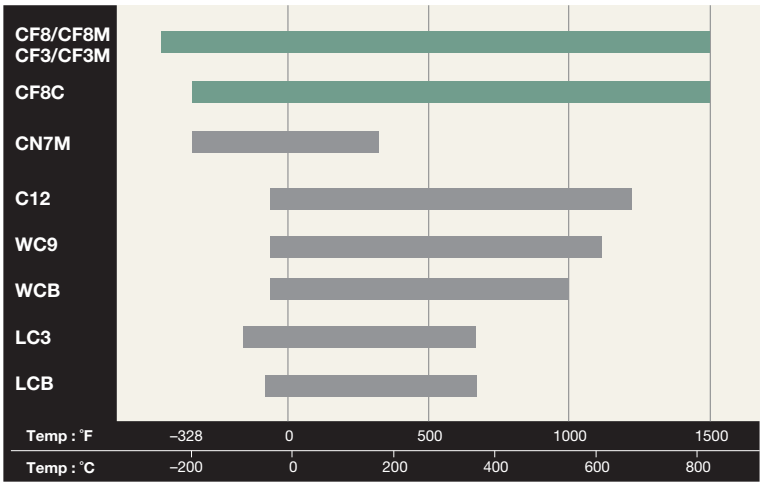
Compared Impact Values



Compared Tensile Strength



Steel Castings: Maximum Working Temperature Range



This data reflects ASTM specifications for general steel castings, and does not necessarily apply to valves made of these materials, which are subject to highly demanding service conditions as pressure containing vessels.

On the other hand, austenitic stainless steel is known as a very mild metal having no effect on the quality of the materials it comes into contact with. Line fluid is not contaminated while traveling through austenitic stainless steel pipelines. This advantages makes austenitic stainless steel valves the important fluid handling media for food, beverage and pharmaceutical processing plants. In addition, austenitic stainless steel CF8M or F316 has higher resistance to sea water erosion and is widely used for the valves installed in seawater desalination plants, offshore exploration facilities and ocean structures.

General Design Specifications

Series	Norminal Pressure	Pressure-Temperature Ratings*	Face to Face Dimensions	End Connection Dimensions	Wall Thickness
A	10K	JIS B2220	JIS B2002	JIS B2220 10K Flanged	ASME B16.34 Class 150
	20K			JIS B2220 20K Flanged	ASME B16.34 Class 300
	Class 150/300/600	ASME B16.34	ASME B16.10	ASME B16.5 Flanged	ASME B16.34
HA	Class 150/300	ASME B16.34	ASME B16.10	ASME B16.5 Flanged	API 603
C	Class 150/300/600/900/1500	ASME B16.34	ASME B16.10	ASME B16.5 Flanged	API 600/API594
B	5K	0.5 MPa 150˚C	JIS B2011 KITZ Std.	JIS B0203 Threaded JIS B2220 5K 10K Flanged	JIS B2011 KITZ Std.
	10K	1.0 MPa 180˚C			
	20K	2.0 MPa 180˚C			
	Type 200	KITZ Std.		ASME B1.20.1 Threaded	
D	Class 150/300/600	ASME B16.34	KITZ Std.	ASME B1.20.1 Threaded ASME B16.11 Socket Welded	ASME B16.34
AJ	10K	JIS B2220		JIS B2220 10K Flanged	ASME B16.34 Class 150
	20K		KITZ Std.	JIS B2220 20K Flanged	ASME B16.34 Class 300
	Class 150/300	ASME B16.34		ASME B16.5 Flanged	ASME B16.34

*Actual pressure-temperature rating in service depends on the materials of gland packing and gasket chosen for valves.

Bonnet Gasket Materials

Depending on class ratings and service conditions, following gasket materials are available* for body/bonnet flange gaskets of KITZ stainless and high alloy steel valves. Specify your gasket material in your purchase order.

Series	Class	Material	Maximum Service Temperature
A, D	10K, 20K, 150, 300	Ceramics PTFE	200˚C
		Stainless Foil Inserted Flexible Graphite	400˚C
	600	PTFE Spiral Wound	300˚C
		Flexible Graphite Spiral Wound	450˚C
HA	150	Ceramics PTFE	200˚C
		Stainless Foil Inserted Flexible Graphite	400˚C
	300	PTFE Spiral Wound	260˚C
		Flexible Graphite Spiral Wound	450˚C
C	150	Ceramics PTFE	200˚C
		Stainless Foil Inserted Flexible Graphite	400˚C
	300, 600	PTFE Spiral Wound	300˚C
		Non-Asbestos Spiral Wound	450˚C
		Flexible Graphite Spiral Wound	450˚C
	600, 900, 1500	Stainless Steel (Ring Joint)	500˚C
B	5K, 10K	Reinforced PTFE	180˚C
AJ	10K, 150 20K, 300	Flexible Graphite	400˚C

Note: Refer to Page SS23 for bonnet gaskets used for KITZ low emission service valves.

Gland Packing Materials

Following packing materials can be chosen for KITZ stainless and high alloy steel valves, depending on service conditions, or market requirements. Specify your packing material in your purchase order.

Series	Class	Material	Maximum Service Temperature
A, D	10K, 20K 150, 300, 600	Flexible Graphite + PTFE Braided Packing	300˚C
		PTFE Cup & Cone	150˚C
		Flexible Graphite	500˚C
		Carbon Core + PTFE Braided Packing	260˚C
HA	150, 300	Flexible Graphite	500˚C
		Carbon Core + PTFE Braided Packing	260˚C
C	150, 300	Flexible Graphite + PTFE Braided Packing	300˚C
		Flexible Graphite	500˚C
	600, 900, 1500	Flexible Graphite	500˚C
B	5K, 10K, Type200	Plastic Graphite Packing	180˚C
AJ	10K, 150 20K, 300	Flexible Graphite + PTFE Braided Packing	300˚C

Note: Refer to Page SS23 for gland packing sets used for KITZ low emission service valves. *455˚C (850˚F) for oxidizing atmosphere.

Contact KITZ Corporation or your KITZ distributors for optional requirement of gasket or gland packing materials other than listed above.

Disc Construction

Series	Nominal Pressure	Solid Wedge	Flexible Wedge
A	10K/20K, Class 150/300/600	—	All sizes
HA	Class 150/300	—	All sizes
C	Class 150/300	4 and smaller	6 and larger
	Class 600	1½ and smaller	2 and larger
	Class 900/1500	—	All sizes
B	5K/10K/20K, Type 200	All sizes	—
D	Class 150/300/600	—	All sizes
AJ	10K/20K, Class 150/300	—	All sizes

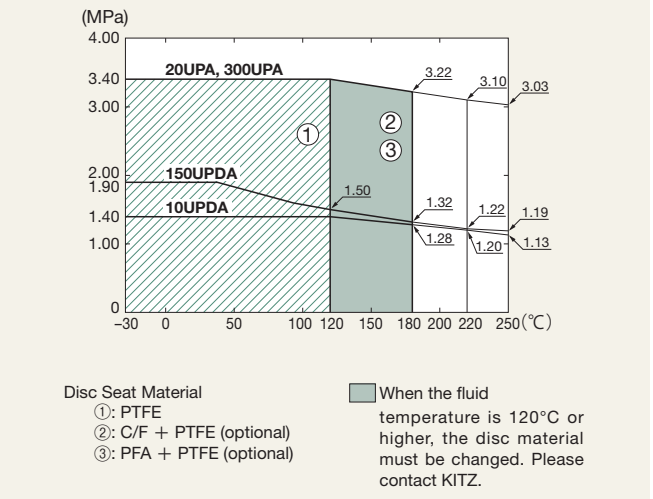
Pressure-Temperature Ratings for Series B (KITZ Standard)

MPa

Temperature	W	G_1	G_2
	120°C below	150°C below	180°C below
5K	0.7	0.5	—
10K	1.4	1.1	1.0
20K	2.0	1.2	1.0

W: Static water without pressure variation
G1, G2: Steam, air, non-inflammable gas and oil (lubricant and machining oil)
Note: Actual pressure-temperature rating in service depends on the materials of gland packing and gasket chosen for valves.
When using B-Series Globe Valves with PTFE Disc at a temperature exceeding 120°C, please contact KITZ for further assistance.

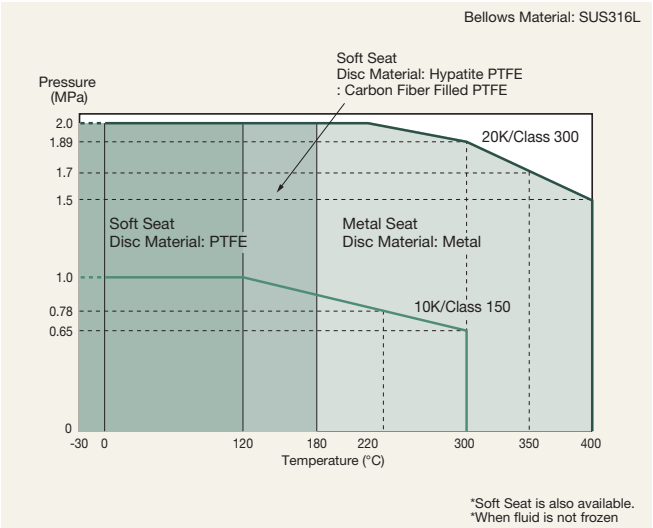
Pressure-Temperature Ratings for Globe Valves with A Series Disc



Usage Range of Bellows Seal Globe Valves

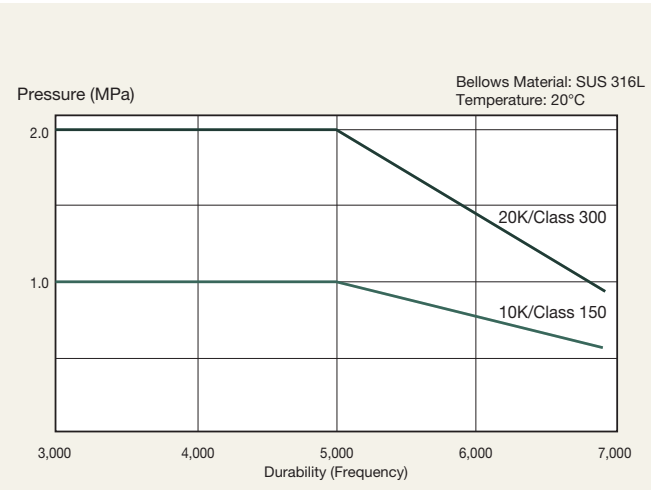
• Pressure-Temperature Ratings

Although valve bodies are designed to comply with the pressure and temperature standard of JIS B 2220/ASME B16.34, pressure and durability of bellows should be considered. If you are using products beyond this usage range, please contact KITZ. The standard may not be applicable depending on the fluid state.



• Relation between Pressure and Service Duration

The value shown below which was obtained by the bellows valve durability test indicates the repeated opening and closing durability. If you need a longer product usage, please consult us. (Conforming to MSS SP 117)



Pressure-temperature Ratings ASME B16.34-2009 Series A, Series HA, Series C, Series E, Series S

Class		150																			
Service Temperature		CF8 [SCS13A]			CF8M [SCS14A]			CF3M·CF3 [SCS16A·SCS19A]			CF8C [SCS21]			CK20 [SCS18]			CN7M [SCS23]			SDPV®*3 SASV*4		
°C	°F	bar	psi*1	MPa*1	bar	psi*1	MPa*1	bar	psi*1	MPa*1	bar	psi*1	MPa*1	bar	psi*1	MPa*1	bar	psi*1	MPa*1	bar	psi*1	MPa*1
−29 to 38	−20.2 to 100.4	19.0	275.6	1.90	19.0	275.6	1.90	15.9	230.6	1.59	19.0	275.6	1.90	17.8	258.2	1.78	15.9	230.6	1.59	20.0	290.1	2.00
50	122	18.3	265.4	1.83	18.4	266.9	1.84	15.3	221.9	1.53	18.7	271.2	1.87	17.0	246.6	1.70	15.4	223.4	1.54	19.5	282.8	1.95
100	212	15.7	227.7	1.57	16.2	235.0	1.62	13.3	192.9	1.33	17.4	252.4	1.74	14.4	208.9	1.44	13.5	195.8	1.35	17.7	256.7	1.77
150	302	14.2	206.0	1.42	14.8	214.7	1.48	12.0	174.0	1.20	15.8	229.2	1.58	13.4	194.4	1.34	12.3	178.4	1.23	15.8	229.2	1.58
200	392	13.2	191.4	1.32	13.7	198.7	1.37	11.2	162.4	1.12	13.8	200.2	1.38	12.9	187.1	1.29	11.3	163.9	1.13	13.8	200.2	1.38
250	482	12.1	175.5	1.21	12.1	175.5	1.21	10.5	152.3	1.05	12.1	175.5	1.21	12.1	175.5	1.21	10.4	150.8	1.04	12.1	175.5	1.21
300	572	10.2	147.9	1.02	10.2	147.9	1.02	10.0	145.0	1.00	10.2	147.9	1.02	10.2	147.9	1.02	9.7	140.7	0.97	10.2	147.9	1.02
325	617	9.3	134.9	0.93	9.3	134.9	0.93	9.3	134.9	0.93	9.3	134.9	0.93	9.3	134.9	0.93	9.3	134.9	0.93	9.3	134.9	0.93
350	662	8.4	121.8	0.84	8.4	121.8	0.84	8.4	121.8	0.84	8.4	121.8	0.84	8.4	121.8	0.84				8.4	121.8	0.84
375	707	7.4	107.3	0.74	7.4	107.3	0.74	7.4	107.3	0.74	7.4	107.3	0.74	7.4	107.3	0.74				7.4	107.3	0.74
400	752	6.5	94.3	0.65	6.5	94.3	0.65	6.5	94.3	0.65	6.5	94.3	0.65	6.5	94.3	0.65				6.5	94.3	0.65
425	797	5.5	79.8	0.55	5.5	79.8	0.55	5.5	79.8	0.55	5.5	79.8	0.55	5.5	79.8	0.55						
450	842	4.6	66.7	0.46	4.6	66.7	0.46	4.6	66.7	0.46	4.6	66.7	0.46	4.6	66.7	0.46						
475	887	3.7	53.7	0.37	3.7	53.7	0.37				3.7	53.7	0.37	3.7	53.7	0.37						
500	932	2.8	40.6	0.28	2.8	40.6	0.28				2.8	40.6	0.28	2.8	40.6	0.28						
538	1000.4	1.4	20.3	0.14	1.4	20.3	0.14				1.4	20.3	0.14	1.4	20.3	0.14						
550	1022	1.4*2	20.3	0.14	1.4*2	20.3	0.14				1.4*2	20.3	0.14	1.4*2	20.3	0.14						
575	1067	1.4*2	20.3	0.14	1.4*2	20.3	0.14				1.4*2	20.3	0.14	1.4*2	20.3	0.14						
600	1112	1.4*2	20.3	0.14	1.4*2	20.3	0.14				1.4*2	20.3	0.14	1.4*2	20.3	0.14						
625	1157	1.4*2	20.3	0.14	1.4*2	20.3	0.14				1.4*2	20.3	0.14	1.4*2	20.3	0.14						
650	1202	1.4*2	20.3	0.14	1.4*2	20.3	0.14				1.4*2	20.3	0.14	1.4*2	20.3	0.14						
675	1247	1.4*2	20.3	0.14	1.4*2	20.3	0.14				1.4*2	20.3	0.14	1.4*2	20.3	0.14						
700	1292	1.4*2	20.3	0.14	1.4*2	20.3	0.14				1.4*2	20.3	0.14	1.4*2	20.3	0.14						
725	1337	1.4*2	20.3	0.14	1.4*2	20.3	0.14				1.4*2	20.3	0.14	1.4*2	20.3	0.14						
750	1382	1.4*2	20.3	0.14	1.4*2	20.3	0.14				1.4*2	20.3	0.14	1.4*2	20.3	0.14						
775	1427	1.4*2	20.3	0.14	1.4*2	20.3	0.14				1.4*2	20.3	0.14	1.2*2	17.4	0.12						
800	1472	1.2*2	17.4	0.12	1.2*2	17.4	0.12				1.2*2	17.4	0.12	0.9*2	13.1	0.09						
816	1500.8	1.0*2	14.5	0.10	1.0*2	14.5	0.10				1.0*2	14.5	0.10	0.7*2	10.2	0.07						

*1: Figures shown in psi/MPa columns are calculated values.
*2: Applied to welding end valves only. Flanged end valve ratings terminate at 538°C (1000.4°F).
*3: SDPV® is the trademark registered for KITZ Super Duplex Stainless Steel, which is comparable to 25Cr-7Ni-4Mo-N castings. Ratings terminate at 300°C (572°F).
*4: SASV is the trademark registered for KITZ Super Austenite Stainless Steel, which is comparable to 21Cr-25Ni-6.5Mo-N castings.

Class		300																			
Service Temperature		CF8 [SCS13A]			CF8M [SCS14A]			CF3M·CF3 [SCS16A·SCS19A]			CF8C [SCS21]			CK20 [SCS18]			CN7M [SCS23]			SDPV®*3 SASV*4		
°C	°F	bar	psi*1	MPa*1	bar	psi*1	MPa*1	bar	psi*1	MPa*1	bar	psi*1	MPa*1	bar	psi*1	MPa*1	bar	psi*1	MPa*1	bar	psi*1	MPa*1
−29 to 38	−20.2 to 100.4	49.6	719.4	4.96	49.6	719.4	4.96	41.4	600.5	4.14	49.6	719.4	4.96	46.3	671.5	4.63	41.4	600.5	4.14	51.7	749.8	5.17
50	122	47.8	693.3	4.78	48.1	697.6	4.81	40.0	580.2	4.00	48.8	707.8	4.88	44.5	645.4	4.45	40.1	581.6	4.01	51.7	749.8	5.17
100	212	40.9	593.2	4.09	42.2	612.1	4.22	34.8	504.7	3.48	45.3	657.0	4.53	37.5	543.9	3.75	35.3	512.0	3.53	50.7	590.3	4.07
150	302	37.0	536.6	3.70	38.5	558.4	3.85	31.4	455.4	3.14	42.5	616.4	4.25	34.9	506.2	3.49	32.0	464.1	3.20	45.9	665.7	4.59
200	392	34.5	500.4	3.45	35.7	517.8	3.57	29.2	423.5	2.92	39.9	578.7	3.99	33.5	485.9	3.35	29.4	426.4	2.94	42.7	619.3	4.27
250	482	32.5	471.4	3.25	33.4	484.4	3.34	27.5	398.9	2.75	37.8	548.2	3.78	32.6	472.8	3.26	27.2	394.5	2.72	40.5	587.4	4.05
300	572	30.9	448.2	3.09	31.6	458.3	3.16	26.1	378.5	2.61	36.1	523.6	3.61	31.7	459.8	3.17	25.4	368.4	2.54	38.9	564.2	3.89
325	617	30.2	438.0	3.02	30.9	448.2	3.09	25.5	369.8	2.55	35.4	513.4	3.54	31.2	452.5	3.12	24.4	353.9	2.44	38.2	554.0	3.82
350	662	29.6	429.3	2.96	30.3	439.5	3.03	25.1	364.0	2.51	34.8	504.7	3.48	30.6	443.8	3.06				37.6	545.3	3.76
375	707	29.0	420.6	2.90	29.9	433.7	2.99	24.8	359.7	2.48	34.2	496.0	3.42	29.8	432.2	2.98				37.4	542.4	3.74
400	752	28.4	411.9	2.84	29.4	426.4	2.94	24.3	352.4	2.43	33.9	491.7	3.39	29.1	422.1	2.91				36.5	529.4	3.65
425	797	28.0	406.1	2.80	29.1	422.1	2.91	23.9	346.6	2.39	33.6	487.3	3.36	28.3	410.5	2.83						
450*2	842*2	27.4	397.4	2.74	28.8	417.7	2.88	23.4	339.4	2.34	33.5	485.9	3.35	27.6	400.3	2.76						
475	887	26.9	390.2	2.69	28.7	416.3	2.87				31.7	459.8	3.17	26.7	387.3	2.67						
500	932	26.5	384.4	2.65	28.2	409.0	2.82				28.2	409.0	2.82	25.8	374.2	2.58						
538	1000.4	24.4	353.9	2.44	25.2	365.5	2.52				25.2	365.5	2.52	23.3	337.9	2.33						
550	1022	23.6	342.3	2.36	25.0	362.6	2.50				25.0	362.6	2.50	22.9	332.1	2.29						
575	1067	20.8	301.7	2.08	24.0	348.1	2.40				24.0	348.1	2.40	21.7	314.7	2.17						
600	1112	16.9	245.1	1.69	19.9	288.6	1.99				21.6	313.3	2.16	19.4	281.4	1.94						
625	1157	13.8	200.2	1.38	15.8	229.2	1.58				18.3	265.4	1.83	16.8	243.7	1.68						
650	1202	11.3	163.9	1.13	12.7	184.2	1.27				14.1	204.5	1.41	14.1	204.5	1.41						
675	1247	9.3	134.9	0.93	10.3	149.4	1.03				12.4	179.8	1.24	11.5	166.8	1.15						
700	1292	8.0	116.0	0.80	8.4	121.8	0.84				10.1	146.5	1.01	8.8	127.6	0.88						
725	1337	6.8	98.6	0.68	7.0	101.5	0.70				7.9	114.6	0.79	6.3	91.4	0.63						
750	1382	5.8	84.1	0.58	5.9	85.6	0.59				5.9	85.6	0.59	4.5	65.3	0.45						
775	1427	4.6	66.7	0.46	4.6	66.7	0.46				4.6	66.7	0.46	3.1	45.0	0.31						
800	1472	3.5	50.8	0.35	3.5	50.8	0.35				3.5	50.8	0.35	2.3	33.4	0.23						
816	1500.8	2.8	40.6	0.28	2.8	40.6	0.28				2.8	40.6	0.28	1.9	27.6	0.19						

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*3: SDPV® is the trademark registered for KITZ Super Duplex Stainless Steel, which is comparable to 25Cr-7Ni-4Mo-N castings. Ratings terminate at 300°C (572°F).
*4: SASV is the trademark registered for KITZ Super Austenite Stainless Steel, which is comparable to 21Cr-25Ni-6.5Mo-N castings.

Class		600																				
Service Temperature		CF8 [SCS13A]			CF8M [SCS14A]			CF3M·CF3 [SCS16A·SCS19A]			CF8C [SCS21]			CK20 [SCS18]			CN7M [SCS23]			SDPV®*3 SASV*4		
°C	°F	bar	psi*1	MPa*1	bar	psi*1	MPa*1	bar	psi*1	MPa*1	bar	psi*1	MPa*1	bar	psi*1	MPa*1	bar	psi*1	MPa*1	bar	psi*1	MPa*1
−29 to 38	−20.2 to 100.4	99.3	1440.2	9.93	99.3	1440.2	9.93	82.7	1199.5	8.27	99.3	1440.2	9.93	92.7	1344.5	9.27	82.7	1199.5	8.27	103.4	1499.7	10.34
50	122	95.6	1386.6	9.56	96.2	1395.3	9.62	80.0	1160.3	8.00	97.5	1414.1	9.75	89.0	1290.8	8.90	80.3	1164.7	8.03	103.4	1499.7	10.34
100	212	81.7	1185.0	8.17	84.4	1224.1	8.44	69.6	1009.5	6.96	90.6	1314.0	9.06	75.1	1089.2	7.51	70.6	1024.0	7.06	101.3	1469.2	10.13
150	302	74.0	1073.3	7.40	77.0	1116.8	7.70	62.8	910.8	6.28	84.9	1231.4	8.49	69.8	1012.4	6.98	64.1	929.7	6.41	91.9	1332.9	9.19
200	392	69.0	1000.8	6.90	71.3	1034.1	7.13	58.3	845.6	5.83	79.9	1158.9	7.99	67.1	973.2	6.71	58.7	851.4	5.87	85.3	1237.2	8.53
250	482	65.0	942.7	6.50	66.8	968.9	6.68	54.9	796.3	5.49	75.6	1096.5	7.56	65.2	945.6	6.52	54.4	789.0	5.44	80.9	1173.4	8.09
300	572	61.8	896.3	6.18	63.2	916.6	6.32	52.1	755.6	5.21	72.2	1047.2	7.22	63.4	919.5	6.34	50.8	736.8	5.08	77.7	1126.9	7.77
325	617	60.4	876.0	6.04	61.8	896.3	6.18	51.0	739.7	5.10	70.7	1025.4	7.07	62.4	905.0	6.24	48.8	707.8	4.88	76.3	1106.6	7.63
350	662	59.3	860.1	5.93	60.7	880.4	6.07	50.1	726.6	5.01	69.5	1008.0	6.95	61.2	887.6	6.12				75.3	1092.1	7.53
375	707	58.1	842.7	5.81	59.8	867.3	5.98	49.5	717.9	4.95	68.4	992.1	6.84	59.7	865.9	5.97				74.7	1083.4	7.47
400	752	56.9	825.3	5.69	58.9	854.3	5.89	48.6	704.9	4.86	67.8	983.4	6.78	58.2	844.1	5.82				73.3	1063.1	7.33
425	797	56.0	812.2	5.60	58.3	845.6	5.83	47.7	691.8	4.77	67.2	974.7	6.72	56.7	822.4	5.67						
450*2	842*2	54.8	794.8	5.48	57.7	836.9	5.77	46.8	678.8	4.68	66.9	970.3	6.69	55.2	800.6	5.52						
475	887	53.9	781.8	5.39	57.3	831.1	5.73				63.4	919.5	6.34	53.5	776.0	5.35						
500	932	53.0	768.7	5.30	56.5	819.5	5.65				56.5	819.5	5.65	51.7	749.8	5.17						
538	1000.4	48.9	709.2	4.89	50.0	725.2	5.00				50.0	725.2	5.00	46.6	675.9	4.66						
550	1022	47.1	683.1	4.71	49.8	722.3	4.98				49.8	722.3	4.98	45.9	665.7	4.59						
575	1067	41.7	604.8	4.17	47.9	694.7	4.79				47.9	694.7	4.79	43.3	628.0	4.33						
600	1112	33.8	490.2	3.38	39.8	577.3	3.98				42.9	622.2	4.29	38.8	562.7	3.88						
625	1157	27.6	400.3	2.76	31.6	458.3	3.16				36.6	530.8	3.66	33.7	488.8	3.37						
650	1202	22.5	326.3	2.25	25.3	366.9	2.53				28.1	407.6	2.81	28.1	407.6	2.81						
675	1247	18.7	271.2	1.87	20.6	298.8	2.06				25.2	365.5	2.52	23.0	333.6	2.30						
700	1292	16.1	233.5	1.61	16.8	243.7	1.68				20.0	290.1	2.00	17.5	253.8	1.75						
725	1337	13.5	195.8	1.35	14.0	203.1	1.40				15.4	223.4	1.54	12.7	184.2	1.27						
750	1382	11.6	168.2	1.16	11.7	169.7	1.17				11.7	169.7	1.17	8.9	129.1	0.89						
775	1427	9.0	130.5	0.90	9.0	130.5	0.90				9.0	130.5	0.90	6.3	91.4	0.63						
800	1472	7.0	101.5	0.70	7.0	101.5	0.70				7.0	101.5	0.70	4.6	66.7	0.46						
816	1500.8	5.9	85.6	0.59	5.9	85.6	0.59				5.9	85.6	0.59	3.8	55.1	0.38						

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*4: SASV is the trademark registered for KITZ Super Austenite Stainless Steel, which is comparable to 21Cr-25Ni-6.5Mo-N castings.

Class		900																				
Service Temperature		CF8 [SCS13A]			CF8M [SCS14A]			CF3M·CF3 [SCS16A·SCS19A]			CF8C [SCS21]			CK20 [SCS18]			CN7M [SCS23]			SDPV®*3 SASV*4		
°C	°F	bar	psi*1	MPa*1	bar	psi*1	MPa*1	bar	psi*1	MPa*1	bar	psi*1	MPa*1	bar	psi*1	MPa*1	bar	psi*1	MPa*1	bar	psi*1	MPa*1
−29 to 38	−20.2 to 100.4	148.9	2159.6	14.89	148.9	2159.6	14.89	124.1	1799.9	12.41	148.9	2159.6	14.89	139.0	2016.0	13.90	124.1	1799.9	12.41	155.1	2249.5	15.51
50	122	143.5	2081.3	14.35	144.3	2092.9	14.43	120.1	1741.9	12.01	146.3	2121.9	14.63	133.4	1934.8	13.34	120.4	1746.3	12.04	155.1	2249.5	15.51
100	212	122.6	1778.2	12.26	126.6	1836.2	12.66	104.4	1514.2	10.44	135.9	1971.1	13.59	112.6	1633.1	11.26	105.9	1535.9	10.59	152.0	2204.6	15.20
150	302	111.0	1609.9	11.10	115.5	1675.2	11.55	94.2	1366.3	9.42	127.4	1847.8	12.74	104.7	1518.5	10.47	96.1	1393.8	9.61	137.8	1998.6	13.78
200	392	103.4	1499.7	10.34	107.0	1551.9	10.70	87.5	1269.1	8.75	119.8	1737.6	11.98	100.6	1459.1	10.06	88.1	1277.8	8.81	128.0	1856.5	12.80
250	482	97.5	1414.1	9.75	100.1	1451.8	10.01	82.4	1195.1	8.24	113.4	1644.7	11.34	97.8	1418.5	9.78	81.7	1185.0	8.17	121.4	1760.8	12.14
300	572	92.7	1344.5	9.27	94.9	1376.4	9.49	78.2	1134.2	7.82	108.3	1570.8	10.83	95.2	1380.8	9.52	76.1	1103.7	7.61	116.6	1691.1	11.66
325	617	90.7	1315.5	9.07	92.7	1344.5	9.27	76.4	1108.1	7.64	106.1	1538.9	10.61	93.6	1357.6	9.36	73.3	1063.1	7.33	114.5	1660.7	11.45
350	662	88.9	1289.4	8.89	91.0	1319.8	9.10	75.2	1090.7	7.52	104.3	1512.7	10.43	91.7	1330.0	9.17				112.9	1637.5	11.29
375	707	87.1	1263.3	8.71	89.6	1299.5	8.96	74.3	1077.6	7.43	102.6	1488.1	10.26	89.5	1298.1	8.95				112.1	1625.9	11.21
400	752	85.3	1237.2	8.53	88.3	1280.7	8.83	72.9	1057.3	7.29	101.7	1475.0	10.17	87.3	1266.2	8.73				109.8	1592.5	10.98
425	797	84.0	1218.3	8.40	87.4	1267.6	8.74	71.6	1038.5	7.16	100.8	1462.0	10.08	85.0	1232.8	8.50						
450*2	842*2	82.2	1192.2	8.22	86.5	1254.6	8.65	70.2	1018.2	7.02	100.4	1456.2	10.04	82.8	1200.9	8.28						
475	887	80.8	1171.9	8.08	86.0	1247.3	8.60				95.1	1379.3	9.51	80.2	1163.2	8.02						
500	932	79.5	1153.1	7.95	84.7	1228.5	8.47				84.7	1228.5	8.47	77.5	1124.0	7.75						
538	1000.4	73.3	1063.1	7.33	75.2	1090.7	7.52				75.2	1090.7	7.52	70.0	1015.3	7.00						
550	1022	70.7	1025.4	7.07	74.8	1084.9	7.48				74.8	1084.9	7.48	68.8	997.9	6.88						
575	1067	62.5	906.5	6.25	71.8	1041.4	7.18				71.8	1041.4	7.18	65.0	942.7	6.50						
600	1112	50.6	733.9	5.06	59.7	865.9	5.97				64.2	931.1	6.42	58.2	844.1	5.82						
625	1157	41.4	600.5	4.14	47.4	687.5	4.74				54.9	796.3	5.49	50.5	732.4	5.05						
650	1202	33.8	490.2	3.38	38.0	551.1	3.80				42.5	616.4	4.25	42.2	612.1	4.22						
675	1247	28.0	406.1	2.80	31.0	449.6	3.10				37.6	545.3	3.76	34.6	501.8	3.46						
700	1292	24.1	349.5	2.41	25.1	364.0	2.51				29.8	432.2	2.98	26.3	381.4	2.63						
725	1337	20.3	294.4	2.03	21.0	304.6	2.10				23.2	336.5	2.32	19.0	275.6	1.90						
750	1382	17.3	250.9	1.73	17.6	255.3	1.76				17.6	255.3	1.76	13.4	194.4	1.34						
775	1427	13.7	198.7	1.37	13.7	198.7	1.37				13.7	198.7	1.37	9.4	136.3	0.94						
800	1472	10.5	152.3	1.05	10.5	152.3	1.05				10.5	152.3	1.05	6.9	100.1	0.69						
816	1500.8	8.6	124.7	0.86	8.6	124.7	0.86				8.6	124.7	0.86	5.7	82.7	0.57						

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*4: SASV is the trademark registered for KITZ Super Austenite Stainless Steel, which is comparable to 21Cr-25Ni-6.5Mo-N castings.

Class		1500																				
Service Temperature		CF8*2 [SCS13A]			CF8M*2 [SCS14A]			CF3M·CF3*3 [SCS16A·SCS19A]			CF8C*2 [SCS21]			CK20*2 [SCS18]			CN7M [SCS23]			SDPV®*4 SASV*5		
°C	°F	bar	psi*1	MPa*1	bar	psi*1	MPa*1	bar	psi*1	MPa*1	bar	psi*1	MPa*1	bar	psi*1	MPa*1	bar	psi*1	MPa*1	bar	psi*1	MPa*1
−29 to 38	−20.2 to 100.4	248.2	3599.8	24.82	248.2	3599.8	24.82	206.8	2999.4	20.68	248.2	3599.8	24.82	231.7	3360.5	23.17	206.8	2999.4	20.68	258.6	3750.7	25.86
50	122	239.1	3467.9	23.91	240.6	3489.6	24.06	200.1	2902.2	20.01	243.8	3536.0	24.38	222.4	3225.6	22.24	200.7	2910.9	20.07	258.6	3750.7	25.86
100	212	204.3	2963.1	20.43	211.0	3060.3	21.1	173.9	2522.2	17.39	226.5	3285.1	22.65	187.7	2722.4	18.77	176.5	2559.9	17.65	253.3	3673.8	25.33
150	302	185.0	2683.2	18.50	192.5	2792.0	19.25	157.0	2277.1	15.7	212.4	3080.6	21.24	174.4	2529.5	17.44	160.2	2323.5	16.02	229.6	3330.1	22.96
200	392	172.4	2500.5	17.24	178.3	2586.0	17.83	145.8	2114.7	14.58	199.7	2896.4	19.97	167.7	2432.3	16.77	146.8	2129.2	14.68	213.3	3093.7	21.33
250	482	162.4	2355.4	16.24	166.9	2420.7	16.69	137.3	1991.4	13.73	189.1	2742.7	18.91	163.1	2365.6	16.31	136.1	1974.0	13.61	202.3	2934.1	20.23
300	572	154.6	2242.3	15.46	158.1	2293.1	15.81	130.3	1889.8	13.03	180.4	2616.5	18.04	158.6	2300.3	15.86	126.9	1840.5	12.69	194.3	2818.1	19.43
325	617	151.1	2191.5	15.11	154.4	2239.4	15.44	127.4	1847.8	12.74	176.8	2564.3	17.68	156.1	2264.0	15.61	122.1	1770.9	12.21	190.8	2767.3	19.08
350	662	148.1	2148.0	14.81	151.6	2198.8	15.16	125.4	1818.8	12.54	173.8	2520.8	17.38	152.9	2217.6	15.29				188.2	2729.6	18.82
375	707	145.2	2106.0	14.52	149.4	2166.9	14.94	123.8	1795.6	12.38	171.0	2480.1	17.1	149.2	2164.0	14.92				186.8	2709.3	18.68
400	752	142.2	2062.4	14.22	147.2	2135.0	14.72	121.5	1762.2	12.15	169.5	2458.4	16.95	145.5	2110.3	14.55				183.1	2655.6	18.31
425	797	140.0	2030.5	14.00	145.7	2113.2	14.57	119.3	1730.3	11.93	168.1	2438.1	16.81	141.7	2055.2	14.17						
450	842	137.0	1987.0	13.70	144.2	2091.4	14.42	117.1	1698.4	11.71	167.3	2426.5	16.73	138.0	2001.5	13.8						
475	887	134.7	1953.7	13.47	143.4	2079.8	14.34				158.2	2294.5	15.82	133.7	1939.2	13.37						
500	932	132.4	1920.3	13.24	140.9	2043.6	14.09				140.9	2043.6	14.09	129.2	1873.9	12.92						
538	1000.4	122.1	1770.9	12.21	125.5	1820.2	12.55				125.5	1820.2	12.55	116.6	1691.1	11.66						
550	1022	117.8	1708.5	11.78	124.9	1811.5	12.49				124.9	1811.5	12.49	114.7	1663.6	11.47						
575	1067	104.2	1511.3	10.42	119.7	1736.1	11.97				119.7	1736.1	11.97	108.3	1570.8	10.83						
600	1112	84.4	1224.1	8.44	99.5	1443.1	9.95				107.0	1551.9	10.7	97.1	1408.3	9.71						
625	1157	68.9	999.3	6.89	79.1	1147.3	7.91				91.2	1322.7	9.12	84.1	1219.8	8.41						
650	1202	56.3	816.6	5.63	63.3	918.1	6.33				70.7	1025.4	7.07	70.4	1021.1	7.04						
675	1247	46.7	677.3	4.67	51.6	748.4	5.16				62.7	909.4	6.27	57.6	835.4	5.76						
700	1292	40.1	581.6	4.01	41.9	607.7	4.19				49.7	720.8	4.97	43.8	635.3	4.38						
725	1337	33.8	490.2	3.38	34.9	506.2	3.49				38.6	559.8	3.86	31.7	459.8	3.17						
750	1382	28.9	419.2	2.89	29.3	425.0	2.93				29.6	429.3	2.96	22.3	323.4	2.23						
775	1427	22.8	330.7	2.28	22.8	330.7	2.28				22.8	330.7	2.28	15.7	227.7	1.57						
800	1472	17.4	252.4	1.74	17.4	252.4	1.74				17.4	252.4	1.74	11.4	165.3	1.14						
816	1500.8	14.1	204.5	1.41	14.1	204.5	1.41				14.1	204.5	1.41	9.5	137.8	0.95						

*1: Figures in psi/MPa columns are calculated values.
*2: Flanged end valve ratings terminate at 538°C (1000°F).
*3: Use beyond 425°C is not allowed.
*4: SDPV® is the trademark registered for KITZ Super Duplex Stainless Steel, which is comparable to 25Cr-7Ni-4Mo-N castings. Ratings terminate at 300°C (572°F).
*5: SASV is the trademark registered for KITZ Super Austenite Stainless Steel, which is comparable to 21Cr-25Ni-6.5Mo-N castings.

Valve Closure Test Pressures

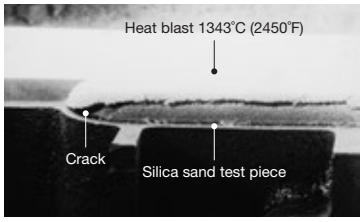
(MPa)

Series	B (KITZ Std.)		
Temperature	Hydrostatic		Air
	Shell	Seat	Seat
5K	1.05	0.7	0.6
10K	2.10	1.4	
20K	3.00	2.0	—

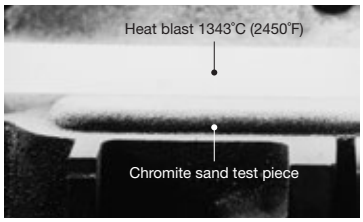
Note: Test pressure for check valves to JIS B2003

Sand Molds for Stainless Steel Valve Castings

Silica Sand



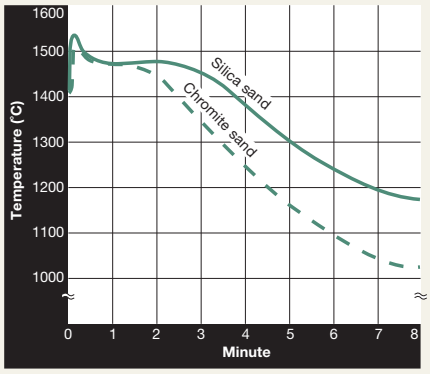
Chromite Sand





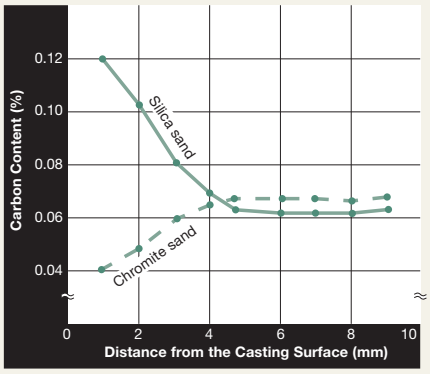
Unlike its competitors, KITZ Corporation employs casting molds made of mixture of chromite sand and silica sand at its Nagasaka stainless and high alloy steel foundries, instead of 100% silica sand which is rather common in the industry. The specific gravity of chromite sand is twice as much as that of silica sand and loading 1.5 MPa (210 psi) surface pressure during molding enables uncomparably solid, hard and uniform structure of casting molds with high precision.

Mold Sands: Cooling Effect



Much higher cooling effect of chromite sand solidifies the molten metal faster to result in very sound castings without concern of blowholes and other casting defects.

Mold Sands: Decarbonization



Chromite sand decarbonizes the surface area of stainless steel castings is much better. So, the fine casting surface and high corrosion resistance are guaranteed.

KITZ Low Emission Service Valves

In the United States, the Federal Clean Air Act was dramatically amended in 1990, to realize the new environmental protection policy of 95% reduction in fugitive emission or leak levels of toxic gases and chemicals from plant equipment. Promulgated in April, 1994, the new law requires all plants handling the toxic gas specified by the Environmental Protection Agency, to periodically monitor their plant equipment for detection of leaks exceeding 500 ppm, and repair or replace all defective parts immediately. California has exceeded the Federal law with state regulation requiring 100 ppm maximum leak level for astonishing 99% reduction of such an environmental pollution for the Northern California Region after 1997.

Our low emission valves, the proud fruits of several years of trial and error at our laboratory, are designed, engineered, manufactured and tested to now meet the 100 ppm maximum emission level. This is the standard specification in North America for KITZ Class 150, 300 and 600 Series A and C stainless and high alloy steel valves. In other markets, all these low emission valves are optionally available. Major design considerations for having upgraded our standard valves to the low emission performers are introduced below.

Gland packing

Series A: Choice of PTFE or flexible graphite packing.

(1) Braided PTFE fiber packing with spinned carbon core

(2) KITZ original "SEALEVER®" packing set consisting of 4 dieformed flexible graphite rings* and 2 braided flexible graphite wiper rings with a pure carbon spacer bush for Class 300 and 600.

Series HA:

(1) Braided PTFE fiber packing with spinned carbon core

(2) KITZ original "SEALEVER®" packing set consisting of 4 dieformed flexible graphite rings* and 2 braided flexible graphite wiper rings with a pure carbon spacer bush for Class 300.

Series C: KITZ original "SEALEVER®" graphite packing set with a pure carbon spacer bush for Class 300 and 600.

*US Patent No.5522603 & 5573253. Other patents registered or pending worldwide.

Bonnet gaskets and check valve cover gaskets

Series A: Choice of PTFE or flexible graphite gasket.

(1) Class 150: Reinforced PTFE, Class 300: PTFE filled spiral wound with inner ring. Class 600: PTFE filled spiral wound

(2) Class 150: S/S inserted flexible graphite seat designed with permeation protective barrier
Class 300: Spiral wound flexible graphite with inner ring. Class 600: Spiral wound flexible graphite

Series HA: Choice of PTFE or flexible graphite gasket.

(1) Class 150: Reinforced PTFE, Class 300: PTFE filled spiral wound with inner ring.

(2) Class 150: S/S inserted flexible graphite seat designed with permeation protective barrier, corrugated metal flexible graphite (6B OVER).
Class 300: Spiral wound flexible graphite with inner ring.

Series C:

Class 150: Flexible graphite seat with stainless steel insert and permeation protective barrier for low emission service.
Class 300: Spiral wound (flexible graphite filler and stainless steel hoop) with a stainless steel inner ring
Class 600: Ring joint metal gasket

Diametrical Interface Clearance

20 to 32 mils (0.5 to 0.8 mm): Stem to Gland
20 to 32 mils (0.5 to 0.8 mm): Stem to Bonnet Bushing (Series C)
16 to 28 mils (0.4 to 0.7 mm): Stem to Backseat (Series A, HA)
4 to 12 mils (0.1 to 0.3 mm): Gland to Stuffing Box

Stem

16 to 32 RMS surface finish. Straightness and roundness are precisely controlled according to KITZ design and manufacturing standards.

Stuffing Box

Maximum 125 RMS surface finish. Cylindricity and verticality are precisely controlled according to KITZ design and manufacturing standards.

Product Identification

Stainless steel ID plate with the letters “LOW EMISSION” is welded on the bonnet flange.



Inspection and Warranty Policy of KITZ Corporation

Every piece of KITZ stainless and high alloy steel valves are subjected to 100% pressure tests, according to API 598 or BS 6755 Part 1 requirements. Manufacturer's material test reports and inspection certificates are available on request, while each valve is guaranteed for 12 months after placement in service, but not exceeding 18 months after shipment from the factories of KITZ Corporation.

Various tests and inspection of valves made by KITZ Corporation include the following. Unless otherwise specified, all KITZ stainless and high alloy steel valves shall be subjected to these test or inspection methods and evaluation criteria.

Test/Inspection Item	Method	Evaluation
Chemical Composition Analysis		Relevant ASTM Stds.
Mechanical Property Test	ASTM A370	Relevant ASTM Stds.
Pressure Tests	API 598 or BS 6755 Part 1	API 598
Radiographic Inspection	ASTM E186/280/446	ASME B16.34
Wet Magnetic Particle Inspection	ASTM E709	
Liquid Penetrant Inspection	ASTM E165	
Low Temperature Impact Test	ASTM E23	ASTM A352
Dimensional Inspection		Relevant Valve Stds.
Visual Inspection		MSS SP-55
Emission Test*	EPA Method 21 and KITZ Std.	KITZ Std.

*Applicable to low emission service valves

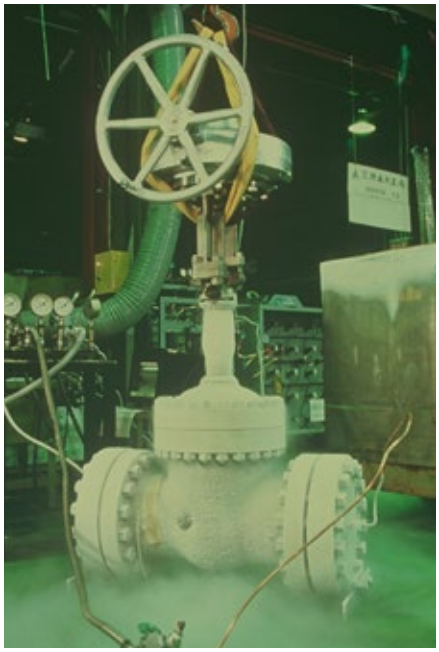
KITZ Low Temperature and Cryogenic Service Valves

KITZ Corporation offers Series A and C stainless steel gate, globe and check valves for processing, storage, shipment and distribution of ethylene, LPG, LNG and other low temperature or cryogenic services down to –196˚C (–321˚F). Here, extended bonnets are provided as an insulation vapor column to protect gland packing rings from freezing or shrinking for their trouble-free sealing function. Detailed design information and cryogenic test reports are available on request.

Please refer to our "Low Temperature and Cryogenic Valves" catalog. (No. E-426)



KITZ cryogenic service gate valve



Cryogenic pressure test

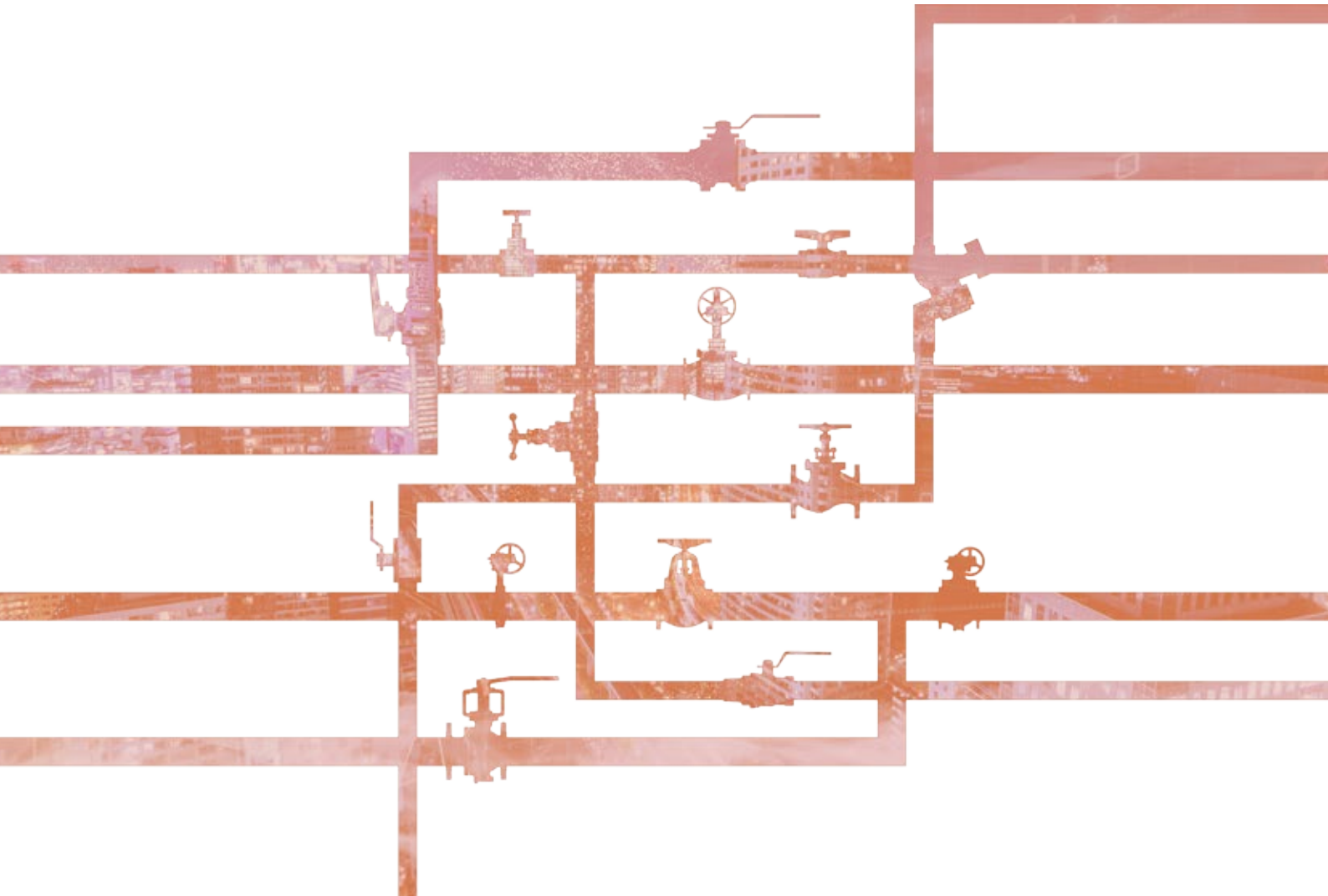


KITZ cryogenic service globe valve

KITZ

GENERAL CATALOG

Carbon Steel



INDEX

Title	Body Material	Type	Class	End Connection	Features/Design		Size Range	Fig	Page
Carbon Steel Valves (Bolted Bonnet/ Bolted Cover, Outside Screw & Yoke)	CS	Gate	150	FE/RF		API 600/ISO 10434	$1^{1}/_{2}^{B}$ - 36^{B}	150SCLS/G-150SCLS	CS3 242
			300					300SCLS/G-300SCLS	
			600				2^{B} - 24^{B}	600SCLS/G-600SCLS	
			900					900SCLS/G-900SCLS	
			1500				2^{B} - 16^{B}	1500SCLS/G-1500SCLS	
		Globe	150			BS 1873	$1^{1}/_{2}^{B}$ - 18^{B}	150SCJS/G-150SCJS	
			300				$1^{1}/_{2}^{B}$ - 16^{B}	300SCJS/G-300SCJS	
			600				2^{B} - 12^{B}	600SCJS/G-600SCJS	
			900				3^{B} - 8^{B}	900SCJS/G-900SCJS	CS4 243
			1500				2^{B} - 8^{B}	1500SCJS/G-1500SCJS	
		Check	150		Swing	BS 1868	$1^{1}/_{2}^{B}$ - 30^{B}	150SCOS	
					Swing, Internal Hinge Pin	API 594	$1^{1}/_{2}^{B}$ - 18^{B}	150SCOHS	
			300		Swing	BS 1868	$1^{1}/_{2}^{B}$ - 30^{B}	300SCOS	
					Swing, Internal Hinge Pin	API 594	$1^{1}/_{2}^{B}$ - 16^{B}	300SCOHS	
			600		Swing	BS 1868	2^{B} - 24^{B}	600SCOS	
					Swing, Internal Hinge Pin	API 594	2^{B} - 12^{B}	600SCOHS	
			900		Swing	BS 1868	3^{B} - 20^{B}	900SCOS	CS5 244
			1500				2^{B} - 16^{B}	1500SCOS	

* (Abbreviation) FE: Flanged Ends, RF: Raised Face Ends, BW: Butt welding Ends

PRODUCT CODING

Carbon & Low Alloy Steel Valves

(Note: Some products do not follow this coding system)

G - W 150 SC L S X BL Y

1 2 3 4 5 6 7 8 9

1 Operation

None	Manual Handwheel
G	Gear

2 End Connection

None	Raised Face Flanged Ends
W	Buttweld Ends

3 Pressure Class

10	10K
20	20K
150	Class 150
300	Class 300
600	Class 600
900	Class 900
1500	Class 1500

4 Shell Material Code

SC	Carbon/Low Alloy

5 Valve Type

L	Gate
J	Globe
O	Swing Check
OH	Internal Hinge Pin Swing Check

6 Body Seat Ring

S	Mounted on Body by Seal Welding. Class 900/1500 Globe Valves are Integral Seat Type

7 Special Design

None	Standard
X	-46°C service

8 Shell Material

None	A216 WCB/WCC
6C	A217 WC6
9C	A217 WC9
5C	A217 C5
12C	A217 C12
BL	A352 LCB
CL	A352 LCC

9 Body/Disc Seat Surface Material

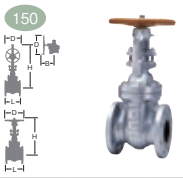
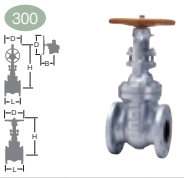
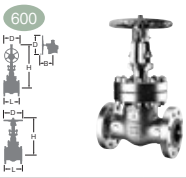
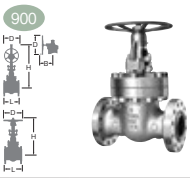
None	Body Seat Surface Hard Face
Y	Body/Body Seat Surfaces both Hard Faced

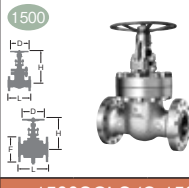
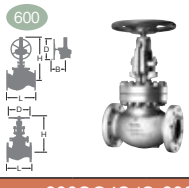
Design Specification

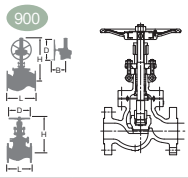
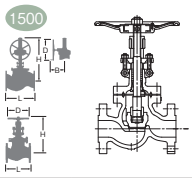
Carbon & Low Alloy Steel Valves

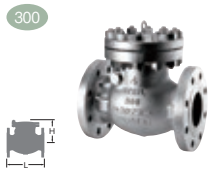
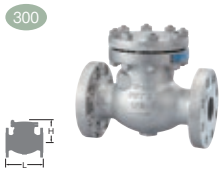
Shell Wall Thickness & General Valve Design	API 600/ISO 10434 (Gate) BS1873 (Globe) BS 1868/API594*1 (Swing Check)
P-T Rating	ASME B16.34 (JIS B2220 for 10K & 20K)
Face to Face Dimension	ASME B16.10 (JIS B2002 for 10K & 20K)
Flanged Ends Dimension	ASME B16.5*2/MSS SP-44 (22^{B})/ASME B16.47 Series B (26^{B} & above) (JIS B2220 for 10K & 20K)
Buttweld Ends Dimension	ASME B16.25, ISO10434 (Gate), BS1873 (Globe)/1868 (Check)
Pressure Test	API 598/ISO 5208
Fugitive Emission Test (Up to Class 600)	API 624/ISO 15848-1
Cryogenic/Low Temperature Test*3	ISO 28921-1

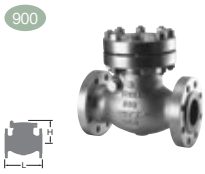
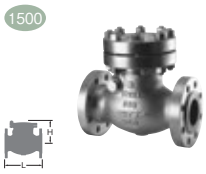
*1 API 594 is for Internal Hinge Pin Check Valves (except 1 1/2^{B})
*2 Pipe Connection Dimensions shall be indicated in millimeters converted from dimensions in inches according to ASME B16.5
*3 For X (Low Temperature Service Valves)

Type		Gate				Gate				Gate				Gate			
Carbon & Low Alloy Steel Valves (GGC)		150  API600 FE CE EAC				300  API600 FE CE EAC				600  API600 FE CE EAC				900  API600 FE CE EAC			
Fig		150SCLS/G-150SCLS				300SCLS/G-300SCLS				600SCLS/G-600SCLS				900SCLS/G-900SCLS			
End Connection		ASME B16.5 Class 150 RF*				ASME B16.5 Class 300 RF*				ASME B16.5 Class 600 RF*				ASME B16.5 Class 900 RF			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	B	L	H	D	B
11/2	40	165	385	200		190	414	200									
2	50	178	385	200		216	414	200		292	446	200		368	520	250	
21/2	65	190	432	200		241	457	200		330	497	250					
3	80	203	509	250		283	531	250		356	545	250		381	621	300	
4	100	229	592	250		305	618	250		432	667	300		457	706	350	
5	125	254	658	300		381	694	300		508	770	400					
6	150	267	758	300		403	794	350		559	893	450		610	900	500	
8	200	292	958	350		419	1015	400		660	1094	500		737	1087	600	
10	250	330	1162	400		457	1216	450		787	1257	600		838	1285	680	
12	300	356	1362	450		502	1458	600		838	1464	680		965	1498	760	
14	350	381	1572	600		762	1564	600		889	1593	760		1029	1714	600	456
16	400	406	1692	600		838	1767	680		991	1779	760		1130	1830	600	TBA
18	450	432	1888	600		914	1933	680		1092	2070	910		1219	2180	600	TBA
20	500	457	2123	680		991	2137	760		1194	2256	600	456	1321	2435	610	TBA
22	550	483	2326	680		1092	2364	760		1295	2500	600	456				
24	600	508	2498	760		1143	2544	910		1397	2730	610	417	1549	2680	610	TBA
26	650	559	2835	500	280	1245	2848	600	350								
28	700	610	3022	600	350	1346	3151	600	456								
30	750	610	3154	600	350	1397	3341	600	456								
32	800	660	3267	600	350	1524	3650	600	456								
34	850	711	3507	600	350	1626	3826	600	456								
36	900	711	3785	600	456	1727	3926	600	456								
Body/Bonnet		WCB				WCB				WCB				WCB			
Stem		F6a				F6a				F6a				F6a			
Disc		13Cr or Carbon Steel+13Cr				13Cr or Carbon Steel+13Cr				13Cr or Carbon Steel+13Cr				13Cr or Carbon Steel+13Cr			
Body Seat Ring		Carbon Steel+HF				Carbon Steel+HF				Carbon Steel+HF				Carbon Steel+HF			
Gland Packing		Flexible Graphite				Flexible Graphite				Flexible Graphite				Flexible Graphite			
Gasket		Refer to Page CS8				Refer to Page CS8				Refer to Page CS8				Refer to Page CS8			
Bonnet Bolt/Nut		B7/2H				B7/2H				B7/2H				B7/2H			
P-T Rating F-to-F Dimension Wall Thickness		ASME B16.34 ASME B16.10 API 600				ASME B16.34 ASME B16.10 API 600				ASME B16.34 ASME B16.10 API 600				ASME B16.34 ASME B16.10 API 600			
Approval		ISO15848-1 API 624, PED/CE TR-CU/EAC				ISO15848-1 API 624, PED/CE TR-CU/EAC				ISO15848-1 API 624, PED/CE TR-CU/EAC				ISO15848-1 API 624, PED/CE TR-CU/EAC			
Remarks		Flexible Wedge, *MSS SP-44 (22[B])/ ASME B16.47 Series B (26[B] & above)				Flexible Wedge, *MSS SP-44 (22[B])/ ASME B16.47 Series B (26[B] & above)				Flexible Wedge,*MSS SP-44 (22[B])				Solid Wedge ≦4[B], Flexible Wedge ≧ 6[B]			

Type		Gate				Globe				Globe				Globe			
Carbon & Low Alloy Steel Valves (GGC)		1500  API600 FE CE EAC				150  FE CE EAC				300  FE CE EAC				600  FE CE EAC			
Fig		1500SCLS/G-1500SCLS				150SCJS/G-150SCJS				300SCJS/G-300SCJS				600SCJS/G-600SCJS			
End Connection		ASME B16.5 Class 1500 RF				ASME B16.5 Cassl 150 RF				ASME B16.5 Class 300 RF				ASME B16.5 Class 600 RF			
inch	mm	L	H	D	B	L	H	D	B	L	H	D	B	L	H	D	B
11/2	40					165	331	200		229	362	200					
2	50	368	559	250		203	331	200		267	362	200		292	406	250	
21/2	65	419	635	300		216	380	250		292	428	250		330	474	300	
3	80	470	685	350		241	390	250		318	436	250		356	508	350	
4	100	546	772	400		292	459	250		356	510	350		432	897	500	254
5	125					356	485	300		400	608	400		508	930	500	280
6	150	705	1031	600		406	513	350		444	989	500	254	559	993	500	280
8	200	832	1248	680		495	929	500	280	559	1064	500	280	660	1121	600	350
10	250	991	1475	910		622	975	500	280	622	1142	600	350	787	1420	610	417
12	300	1130	1656	910		698	1049	500	280	711	1187	600	350	838	1575	610	417
14	350	1257	1750	600	TBA	787	1106	500	280	838	1766	680	350				
16	400	1384	2060	610	TBA	914	1224	600	350	864	1932	680	350				
18	450					978	1275	600	TBA								
Body/Bonnet		WCB				WCB				WCB				WCB			
Stem		F6a				403SS				403SS				403SS			
Disc		13Cr or Carbon Steel+13Cr				13Cr or Carbon Steel+13Cr				13Cr or Carbon Steel+13Cr				13Cr or Carbon Steel+13Cr			
Body Seat Ring		Carbon Steel+HF				Carbon Steel+HF				Carbon Steel+HF				Carbon Steel+HF			
Gland Packing		Flexible Graphite				Flexible Graphite				Flexible Graphite				Flexible Graphite			
Gasket		Refer to Page CS8				Refer to Page CS8				Refer to Page CS8				Refer to Page CS8			
Bonnet Bolt/Nut		B7/2H				B7/2H				B7/2H				B7/2H			
P-T Rating F-to-F Dimension Wall Thickness		ASME B16.34 ASME B16.10 API 600				ASME B16.34 ASME B16.10 API 623				ASME B16.34 ASME B16.10 API 623				ASME B16.34 ASME B16.10 API 623			
Approval		ISO15848-1 API 624, PED/CE TR-CU/EAC				ISO15848-1 API 624, PED/CE TR-CU/EAC				ISO15848-1 API 624, PED/CE TR-CU/EAC				ISO15848-1 API 624, PED/CE TR-CU/EAC			
Remarks		Solid Wedge ≦4[B], Flexible Wedge ≧ 6[B]															

Type		Globe				Globe				Swing Check			Swing Check		
Carbon & Low Alloy Steel Valves (GGC)		900  FE CE EAC				1500  FE CE EAC				150  CE EAC			150 API 594  CE EAC		
Fig		900SCJS/G-900SCJS				1500SCJS/G-1500SCJS				150SCOS			150SCOHS		
End Connection		ASME B16.5 Class 600 RF				ASME B16.5 Class 1500 RF				ASME B16.5 Cassl 150 RF*			ASME B16.5 Cassl 150 RF		
inch	mm	L	H	D	B	L	H	D	B	L	H	D	L	H	D
11/2	40									165	132		165	132	
2	50					368	557	350		203	156		203	156	
21/2	65					419	920	500	TBA	216	168		216	168	
3	80	381	900	500	254	470	969	500	332	241	185		241	185	
4	100	457	957	500	280	546	1092	600	417	292	210		292	210	
5	125									330	239				
6	150	610	1173	600	350	705	1336	600	456	356	250		356	250	
8	200	737	1381	600	456	832	1400	610	TBA	495	293		495	293	
10	250									622	340		622	340	
12	300									698	377		698	375	
14	350									787	415		787	415	
16	400									864	455		864	455	
18	450									978	508		978	508	
20	500									978	585				
24	600									1295	670				
26	650									1295	740				
28	700									1448	810				
30	750									1524	871				
Body/Bonnet/Cover		WCB				WCB				WCB			WCB		
Stem/Hinge Pin		403SS				403SS				403SS			403SS		
Disc		13Cr or Carbon Steel+13Cr				13Cr or Carbon Steel+13Cr				13Cr or Carbon Steel+13Cr			13Cr or Carbon Steel+13Cr		
Body Seat Ring		Carbon Steel+HF				Carbon Steel+HF				Carbon Steel+HF			Carbon Steel+HF		
Gland Packing		Flexible Graphite				Flexible Graphite									
Gasket		Refer to Page CS8				Refer to Page CS8				Refer to Page CS8			Refer to Page CS8		
Bonnet Bolt/Nut		B7/2H				B7/2H				B7/2H			B7/2H		
P-T Rating F-to-F Dimension Wall Thickness		ASME B16.34 ASME B16.10 API 623				ASME B16.34 ASME B16.10 API 623				ASME B16.34 ASME B16.10 API 600			ASME B16.34 ASME B16.10 API 594		
Approval		ISO15848-1 API 624, PED/CE TR-CU/EAC				ISO15848-1 API 624, PED/CE TR-CU/EAC				PED/CE TR-CU/EAC			PED/CE TR-CU/EAC		
Remarks										*ASME B16.47 Series B (26" & above)			Internal Hinge Pin		

Type		Swing Check			Swing Check			Swing Check			Swing Check		
Carbon & Low Alloy Steel Valves (GGC)		300  CE EAC			300 API 594  CE EAC			600  CE EAC			600 API 594  CE EAC		
Fig		300SCOS			300SCOHS			600SCOS			600SCOHS		
End Connection		ASME B16.5 Class 300 RF*			ASME B16.5 Class 300 RF			ASME B16.5 Class 600 RF			ASME B16.5 Class 600 RF		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
11/2	40	241	155		241	155							
2	50	267	164		267	164		292	194		292	195	
21/2	65	292	190		292	190		330	216		330	216	
3	80	318	205		318	205		356	235		356	240	
4	100	356	230		356	230		432	260		432	255	
5	125	400	250					508	293				
6	150	444	280		444	280		559	332		559	338	
8	200	533	330		533	330		660	381		660	383	
10	250	622	370		622	370		787	447		787	447	
12	300	711	415		711	415		838	518		838	508	
14	350	838	491		838	491		889	599				
16	400	864	543		864	543		991	674				
18	450	978	582					1092	694				
20	500	1016	645					1194	760				
24	600	1346	866					1397	929				
28	700	1499	930										
30	750	1594	975										
Body/Bonnet/Cover		WCB			WCB			WCB			WCB		
Stem/Hinge Pin		403SS			403SS			403SS			403SS		
Disc		13Cr or Carbon Steel+13Cr			13Cr or Carbon Steel+13Cr			13Cr or Carbon Steel+13Cr			13Cr or Carbon Steel+13Cr		
Body Seat Ring		Carbon Steel+HF			Carbon Steel+HF			Carbon Steel+HF			Carbon Steel+HF		
Gasket		Refer to Page CS8			Refer to Page CS8			Refer to Page CS8			Refer to Page CS8		
Bonnet Bolt/Nut		B7/2H			B7/2H			B7/2H			B7/2H		
P-T Rating F-to-F Dimension Wall Thickness		ASME B16.34 ASME B16.10 API 600			ASME B16.34 ASME B16.10 API 594			ASME B16.34 ASME B16.10 API 600			ASME B16.34 ASME B16.10 API 594		
Approval		PED/CE TR-CU/EAC			PED/CE TR-CU/EAC			PED/CE TR-CU/EAC			PED/CE TR-CU/EAC		
Remarks		*ASME B16.47 Series B (26[B] & above)			Internal Hinge Pin						Internal Hinge Pin		

Type		Swing Check			Swing Check		
Carbon & Low Alloy Steel Valves (GGC)		900  CE EAC			1500  CE EAC		
Fig		900SCOS			1500SCOS		
End Connection		ASME B16.5 Class 900 RF			ASME B16.5 Class 1500 RF		
inch	mm	L	H	D	L	H	D
2	50				368	293	
21/2	65				419	318	
3	80	381	296		470	339	
4	100	457	349		546	388	
6	150	610	443		705	514	
8	200	737	524		832	648	
10	250	838	619		991	736	
12	300	965	716		1130	875	
14	350	1029	794		1257	955	
16	400	1130	871		1384	1082	
18	450	1219	952				
20	500	1321	1042				
24	600						
Body/Bonnet		WCB			WCB		
Cover							
Disc		13Cr or Carbon Steel+13Cr			13Cr or Carbon Steel+13Cr		
Body Seat Ring		Carbon Steel+HF			Carbon Steel+HF		
Hinge Pin		403SS			403SS		
Gasket		Refer to Page CS8			Refer to Page CS8		
Bonnet Bolt/Nut		B7/2H			B7/2H		
P-T Rating F-to-F Dimension Wall Thickness		ASME B16.34 ASME B16.10 API 600			ASME B16.34 ASME B16.10 API 600		
Approval		PED/CE TR-CU/EAC			PED/CE TR-CU/EAC		
Remarks							

General Design Specifications

Items	American Standard		British Standard
	Bolted Bonnet	Pressure Seal	
Shell Wall Thickness and General Valve Design	API 600 API 623 API 594	ASME B 16.34	BS/ISO 10434 (Gate Valve) BS 1873 (Globe Valve) BS 1868 (Check Valve)
Pressure-Temperature Rating	ASME B16.34		BS EN 1759-1
Face to Face Dimensions End to End Dimensions	ASME B16.10		BS EN 558-1
End Flange Dimensions Gasket Contact Facing	ASME B16.5*		BS EN 1759-1
Weld End Dimensions	ASME B16.25		BS/ISO 10434 (Gate Valve) BS 1873 (Globe Valve) BS 1868 (Check Valve)

* End Flange Dimensions of Nominal Size 22 is MSS SP-44 and ASME B16.47 Series B for Nominal Size 26 and larger.

Valve Shell Materials

Besides the standard material of ASTM A216 WCB, KITZ cast steel valves are optionally available in materials listed below.

ASTM Specification	Material Designation	Working Temperature*1 *2 °F (°C)	KITZ Code
A216 WCB / A216 WCC	Carbon Steel	1000 (538) Maximum	–
A217 WC1	C–1/2 Mo		1C
A217 WC6	11/4 Cr–1/2 Mo	1100 (593) Maximum	6C
A217 WC9	21/4 Cr–1Mo		9C
A217 C5	5Cr–1/2 Mo	1200 (649) Maximum	5C
A217 C12	9Cr–1Mo		12C
A352 LCB	Carbon Steel	–50 (–46) Minimum	BL
A352 LCC	Carbon Steel		CL
A352 LC1	C–1/2 Mo	–75 (–59) Minimum	1L
A352 LC2	21/2 Ni –100	–100 (–73) Minimum	2L
A352 LC3	31/2 Ni –150	–150 (–101) Minimum	3L

For ASTM A351 Austenitic Stainless Steel, refer to Stainless Steel Section (SS).

*1 Refer to ASME B16.34 for details of ASTM A216, A217 and A352 Pressure-temperature ratings. (See page CS15 for A216 and A217)
Minimum Working Temperature of ASTM A352 is in accordance with ASME B31.3.

*2 Maximum and minimum temperature of the valve will vary, depending on the pressure class and temperature range of the seal material.

KITZ Low Temperature Service Valves

KITZ Corporation offers Class 150, 300 and 600 API 600 design low alloy steel valves for low temperature service down to -150°F (-101°C) . Detailed design information is available on request.

Valve Trim Materials

API 600/623/594 specifies the following valve components as valve trim:

Description	Gate Valve	Globe Valve	Check Valve
Disc seat Surface	●	●	●
Body seat Surface	●	●	●
Bonnet Bush (Backseat)	●	●	–
Stem	●	●	–
Others	Internal Small Parts	Lock Nut	Hinge Pin
Specified by	API 600	API 623	API 594

Disc Seat and Body Seat

Following trims specified in API 600 Table 8 are available with KITZ, either as standard or an option. Composition of combination in trims, which employs different seating surface materials for disc seat and body seat, shall be arranged at manufacturer's discretion, unless specified in advance.

Combination Number	Material Description	Brinell Hardness
5.	HF / HF	350HB min.
8.	13Cr / HF	250HB min. / 350HB min.
11.*	Ni-Cu alloy (Monel) / HF	Not specified / 350HB min.
12.*	18Cr-8Ni-Mo (316) / HF	Not specified / 350HB min.
14.*	19Cr-29Ni (Alloy 20) / HF	Not specified / 350HB min.

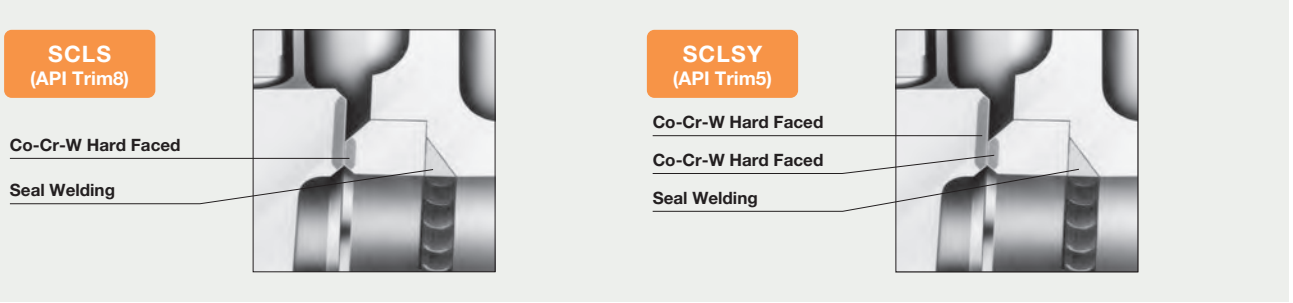
*Optionally available.
HF: Co-Cr-W Alloy (Stellite No.6) deposited.

Stems and Bonnet Bushing (Backseat Bushing)

ASTM A182 (F6a) is our standard material for stems and bonnet bushing. Other materials including ASTM A182 (F304), A182 (F316), Monel and Alloy 20 are available on your specific request.

Body Seat Rings

Body seat rings of KITZ cast steel valves are mounted on the valve body by seal welding as illustrated in below typical examples of gate valves. Unless specifically requested in advance, mounting of body seat rings shall be made at manufacturer's discretion. Please specify method of mounting, by mentioning adequate KITZ product code in your purchase orders.



For standard shell material in KITZ cast steel valves made of ASTM A216 WCB, disc seats and body seat rings are provided to below. (Refer to Page CS2 for Product Coding)

KITZ Product Code	Standard Disc Seat	Standard Body Seat	Mounting of Body Seat Rings
SCLS (Gate) SCJS (Globe) SCOS (Check) SCOHS (Check)	F6a or WCB + 13Cr or A105 + 13Cr or CA15	A105 + HF* or A106 Gr. B + HF* or AISI 1022 + HF* or Direct HF**	Seal Welded or Direct HF**
SCLSY (Gate) SCJSY (Globe) SCOSY (Check) SCOHSY (Check)	A105 + HF* or WCB + HF* or CA15 + HF*	A105 + HF* or A106 Gr. B + HF* or AISI 1022 + HF* or Direct HF**	Seal Welded or Direct HF**

* Co-Cr-W Alloy deposited for hard facing.
** Co-Cr-W Alloy is directly deposited on valve body for hard facing.
KITZ Product Code 900SCJS, 900SCJSY, 1500SCJS and 1500SCJSY globe valves employ this hard facing.

Bonnet Gasket Materials

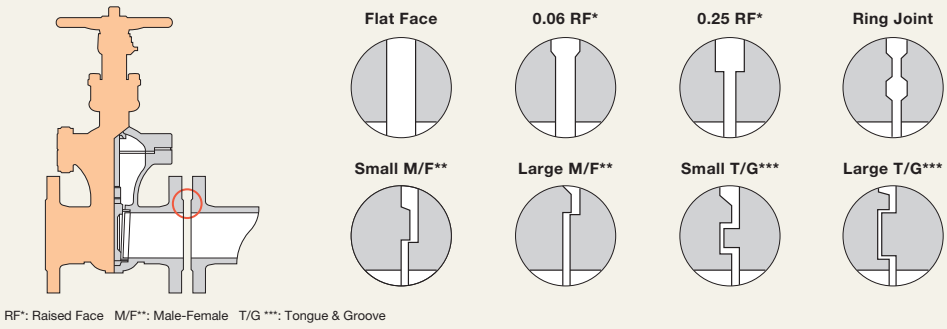
Depending on class ratings and servicing conditions, following gasket materials are available for body/bonnet flange gaskets of KITZ cast steel valves. Please specify gasket material required in purchase order.

Gasket Material	Class				
	150	300	600	900	1500
Corrugated Metal with Flexible Graphite	●				
Ring Joint Material			●	●	●
Spiral Wound Metal, Flexible Graphite Filled		●	●*		
Stainless Steel Inserted Flexible Graphite	●				

Note: Refer to Page CS11 for bonnet gaskets used for KITZ low emission service valves.
*600 SCOHS: Spiral wound metal, graphite filled only.

Contact Face of Flanges

ASME B16.5 specifies several different types of contact face of flanges as illustrated below. Among them, KITZ cast steel valves employ 0.06 Raised Face (RF) for Class 150 and 300, and 0.25 Raised Face (RF) for higher pressure classes with an optional employment of ring-joint contact.



RF*: Raised Face M/F**: Male-Female T/G ***: Tongue & Groove

Gasket contact surface finish of end flanges as well as body-bonnet flanges depends on the materials selected for flange gaskets.

NACE Valves

For sour gas services and other hydrogen sulfide bearing hydrocarbon fluids, KITZ offers NACE valves made of component materials specially heat-treated and hardness-controlled to conform with NACE MR0103, KITZ Standard, or optionally NACE MR0175 Standard.
Typical NACE material configuration is shown below for KITZ cast steel gate valves.
KITZ NACE steel valves are available only as a specified option.
Note: NACE hardness requirements conflicts with the valve trim.

Valve Parts	ASTM Specification	NACE Hardness
Body/bonnet	A216 WCB	≦ HRC 22 (237 HB)
Disc	A216 WCB or AISI Type 410 or A217 CA15	
Disc seat	*13Cr deposit or AISI Type 410	
Gland	*AISI Type 410	
Stem		
Bonnet bushing		
Body seat surface	HF**	≧ 350 HB
Bonnet bolts	A193 B7	–
	A193 B7M***	≦ HRC 22
Bonnet nuts	A194 2H	–
	A194 2HM***	≦ HRC 22

*Double tempered. (Three step process)
**Co-Cr-W Alloy deposited for hard facing.
*** General requirements to conform with NACE MR0175 Standard.
Users shall be aware its necessity to lower equipment pressure rating when using SSC-Resistant bolts and nuts.
Please contact KITZ for more information.

Inspection and Warranty Policy of KITZ Corporation

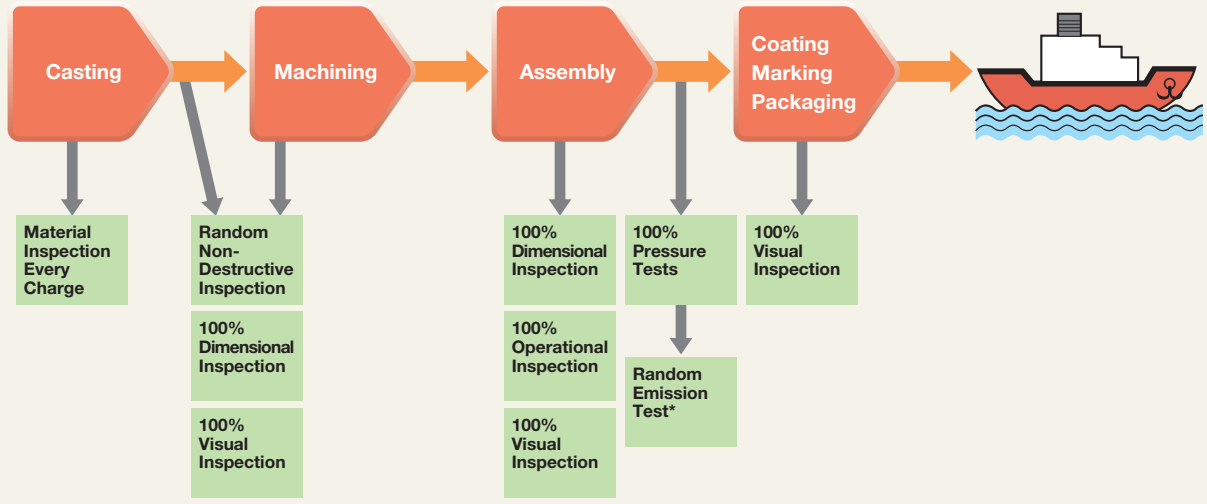
Every piece of KITZ cast carbon and low alloy steel valves is subjected to 100% pressure test, according to API 598 requirements. Manufacturer's material test reports and inspection certificates are available on request, while each valve is guaranteed for 12 months after installation in service, but not exceeding 18 months after shipment from the factories of KITZ Corporation.

Various tests and inspections of valves made by KITZ Corporation includes below. Unless otherwise specified, all KITZ cast steel valves shall be subjected to these tests or inspection methods and evaluation criteria.

Test/Inspection Item	Method	Evaluation
Chemical Composition Analysis		Relevant ASTM Stds.
Mechanical Property Test	ASTM A370 / E8	Relevant ASTM Stds.
Pressure Tests	API 598	API 598
Radiographic Inspection	ASTM E94	ASME B16.34
Wet Magnetic Particle Inspection	ASTM E709	
Liquid Penetrant Inspection	ASTM E165	
Low Temperature Impact Test	ASTM A370 / E23	ASTM A352
Dimensional Inspection		Relevant Valve Stds.
Valve Inspection		MSS SP-55
Emission Test*	EPA Method 21 and KITZ Std.	KITZ Std.

*Applicable to low emission service valves.

Typical KITZ Inspection Flow



*Applicable to low emission service valves.

KITZ Low Emission Service Valves

In the United States, the Federal Clean Air Act was dramatically amended in 1990, to realize the new environmental protection policy of 95% reduction in fugitive emission or leak levels of toxic gases and chemicals from plant equipment. Promulgated in April, 1994, the new law requires all plants handling toxic gas specified by the Environmental Protection Agency, to periodically monitor their plant equipment for detection of leaks exceeding 500 ppm, and repair or replace all defective parts immediately. California has exceeded the Federal Law with State Regulation requiring 100 ppm maximum leak level for astonishing 99% reduction of such environmental pollution for the Northern California Region after 1997.

Our low emission valves, the proud fruits of several years of trial and error at our laboratory, are designed, engineered, manufactured and tested to now meet the 100 ppm maximum emission level. This is the standard specification in North America for KITZ flanged and butt-welding end carbon or low alloy steel valves rated Class 150, 300 and 600. In other markets, all these low emission valves are optionally available. Major design considerations for having upgraded our standard valves to the low emission performers are introduced below.

Gland Packing

KITZ's original "SEALEVER®" flexible graphite packing set, consisting of 4 dieformed flexible graphite rings* and 2 braided flexible graphite rings, combined with a spacer bush for Class 300 and above rated valves.

*US Patent No. 5522603 & 5573253. Other patents registered or pending worldwide.

Bonnet Gaskets (Including Check Valve Cover Gaskets)

Class 150 : Corrugated metal with flexible graphite and permeation protective barrier for low emission service

Class 300 : Spiral wound (flexible graphite filler and stainless steel hoop) with a stainless steel inner ring

Class 600 & above : Ring joint metal gasket

*Class 600 SCOHS: Spiral wound. (flexible graphite filler and stainless steel hoop)

Diametrical Interface Clearance

20 to 32 mils (0.5 to 0.8 mm) : Stem to gland

20 to 32 mils (0.5 to 0.8 mm) : Stem to bonnet bushing

4 to 12 mils (0.1 to 0.3 mm) : Gland to stuffing boxs

Stem

16 to 32 RMS surface finish. Straightness and roundness are precisely controlled according to KITZ design and manufacturing standards.

Stuffing Box

Maximum 125 RMS surface finish. Cylindricity and verticality are precisely controlled according to KITZ design and manufacturing standards.

Plug Gaskets for Check Valves

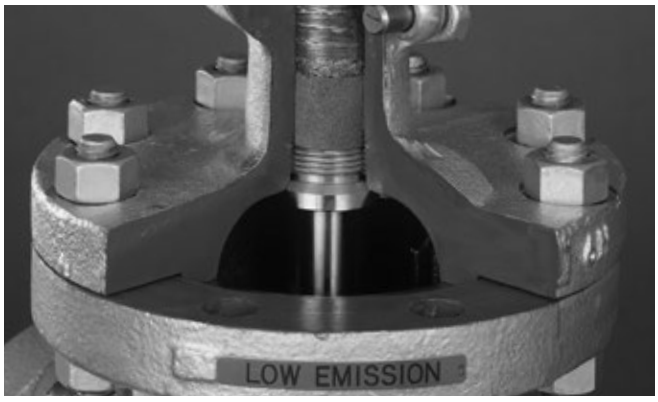
Class 150/300 : Flexible graphite sheet with stainless steel insert and permeation protective barrier.

Class 600 & above : Spiral wound metal with flexible graphite filled

*Except for the 150~600 SCOHS.

Product Identification

Stainless steel ID plate with the letters "LOW EMISSION" in orange is welded on the bonnet flanges.



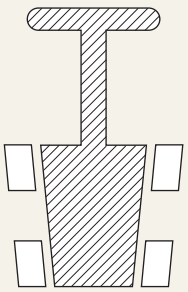
YRT Emission Test Results

In addition to our in-house lab tests and certifications by Lloyd's Register of Shipping, a third-party perfomance test was carried out on a KITZ nominal size 6 Class 300 gate valve at Yarmouth Research and Technology, Maine, USA, according to one user's testing specifications. The test conditions included an unprecedented 3500 cycle operation of a 99% methane pressurized valve through thermal cycles at 350°F (177°C), with the valve stem positioned horizontally to the ground, and the leak level was monitored at every 100 cycles, from an aluminum foil housing sealed the valve gland area. In spite of these severe test conditions, the results were in close agreement with findings from the tests made at our laboratory over the last several years.

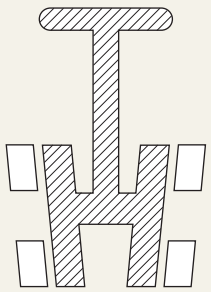
Design Features of KITZ Gate Valve Wedges (Discs)

Among four different shapes of wedge gates recognized by API 600 Paragraph 5.6.1.1 and 5.6.1.2, KITZ has adopted solid wedges for smaller valves such as nominal size 2 to 4 of Class 900/1500 gate valves, and flexible wedges for all other sizes of all pressure classes.

H-shaped flexible wedges are featured with mechanical flexibility to adjust its own shape following the shape of body seats for tightly secured mutual contact. This is particularly important when larger gate valves are served in extremely high pressure and temperature, where temporary deformation of the valve body always occurs. Operational torque is smaller, seat wear is less and valve closure is tighter when H-shaped flexible wedges are adopted.



Solid Wedge



Flexible Wedge

Solidly designed KITZ wedge gates are forged or cast solid, single piece of steel without any welding work. Specially heat-treated wedges are firmly coupled with integral T-head of the valve stems, which are also ruggedly designed and specially heat-treated for the highest possible durability of stem to wedge connection. API 600 Paragraph 5.8.7 particularly emphasizes the importance of the mechanical strength of this connection.

As another unique feature, KITZ wedge gates are designed for always accurately maintained concentricity and carefully lapped for leakfree contact.



Side View



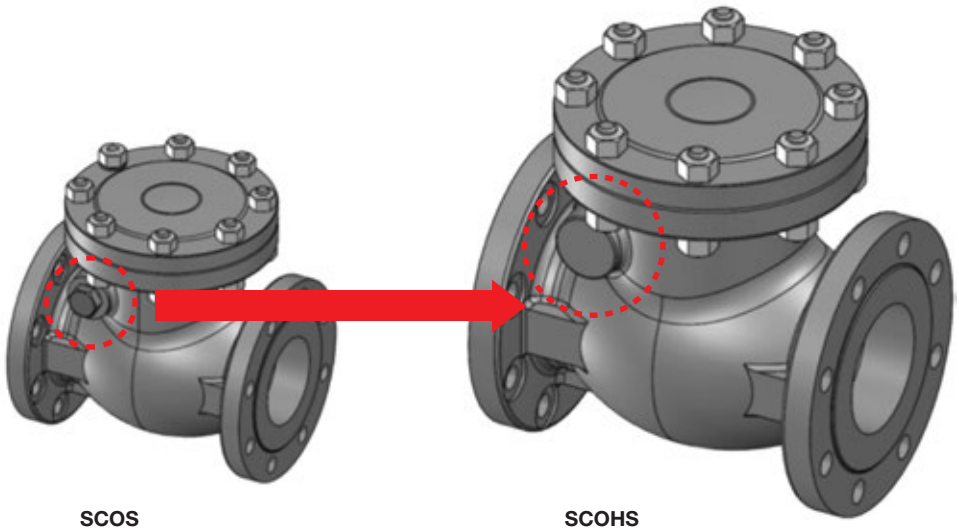
Front View



Stem-to-Wedge Connection

KITZ Internal Hinge Pin Check Valves

Design



SCOS SCOHS



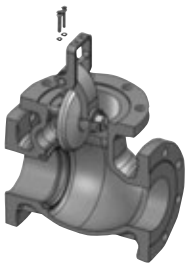
8B and larger

Features

- Designed according to API594 (2017) (except 11/2B)
- No risk of leakage from hinge pin plug
- Anti-Rotation disc design
- Same F to F dimension with current KITZ check valves
- Same flow rate as SCOS

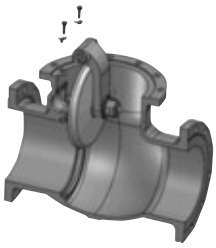
Body Disc Connection

Disc Hanger Type



6B and smaller

Body Fix Type



8B and larger

Pressure - Temperature Ratings <For Reference Only>
Valves - Flanged and Welding End : Standard Class

ASTM Material Standard-to ASME B16.34 2013

Temperature		Working Pressures by Class, psig														
		Class 150					Class 300					Class 600				
˚F	˚C	WCB (a)	WC6 (b)	C5 (c)	C12 (c)	LCC (d)	WCB (a)	WC6 (b)	C5 (c)	C12 (c)	LCC (d)	WCB (a)	WC6 (b)	C5 (c)	C12 (c)	LCC (d)
-20 to 100	-29 to 38	285	290	290	290	290	740	750	750	750	750	1,480	1,500	1,500	1,500	1,500
200	93	260	260	260	260	260	680	750	750	750	750	1,360	1,500	1,500	1,500	1,500
300	149	230	230	230	230	230	655	720	730	730	730	1,310	1,445	1,455	1,455	1,455
400	204	200	200	200	200	200	635	695	705	705	705	1,265	1,385	1,410	1,410	1,405
500	260	170	170	170	170	170	605	665	665	665	665	1,205	1,330	1,330	1,330	1,330
600	316	140	140	140	140	140	570	605	605	605	605	1,135	1,210	1,210	1,210	1,210
650	343	125	125	125	125	125	550	590	590	590	590	1,100	1,175	1,175	1,175	1,175
700	371	110	110	110	110	110	530	570	570	570	555	1,060	1,135	1.135	1.135	1,110
750	399	95	95	95	95	95	505	530	530	530	505	1,015	1,065	1,065	1,065	1,015
800	427	80	80	80	80	80	410	510	510	510	410	825	1,015	1,015	1,015	825
850	454	65	65	65	65	65	320	485	485	485	320	640	975	975	975	640
900	482	50	50	50	50	50	230	450	375	450	225	460	900	745	900	445
950	510	35	35	35	35	35	135	320	275	375	135	275	640	550	755	275
1000	538	20	20	20	20	20	85	215	200	255	85	170	430	400	505	170
1050	566		20	20	20			145	145	170			290	290	345	
1100	593		20	20	20			95	100	115			190	200	225	
1150	621		20	20	20			65	60	75			130	125	150	
1200	649		15	15	20			40	35	50			80	70	105	

Temperature		Working Pressures by Class, psig									
		Class 900					Class 1500				
˚F	˚C	WCB (a)	WC6 (b)	C5 (c)	C12 (c)	LCC (d)	WCB (a)	WC6 (b)	C5 (c)	C12 (c)	LCC (d)
-20 to 100	-29 to 38	2,220	2,250	2,250	2,250	2,250	3,705	3,750	3,750	3,750	3,750
200	93	2,035	2,250	2,250	2,250	2,250	3,395	3,750	3,750	3,750	3,750
300	149	1,965	2,165	2,185	2,185	2,185	3,270	3,610	3,640	3,640	3,640
400	204	1,900	2,080	2,115	2,115	2,110	3,170	3,465	3,530	3,530	3,520
500	260	1,810	1,995	1,995	1,995	1,995	3,015	3,325	3,325	3,325	3,325
600	316	1,705	1,815	1,815	1,815	1,815	2,840	3,025	3,025	3,025	3,025
650	343	1,650	1,765	1,765	1,765	1,765	2,745	2,940	2,940	2,940	2,940
700	371	1,590	1,705	1,705	1,705	1,665	2,665	2,840	2,840	2,840	2,775
750	399	1,520	1,595	1,595	1,595	1,520	2,535	2,660	2,660	2,660	2,535
800	427	1,235	1,525	1,525	1,525	1,235	2,055	2,540	2,540	2,540	2,055
850	454	955	1,460	1,460	1,460	955	1,595	2,435	2,435	2,435	1,595
900	482	690	1,350	1,120	1,350	670	1,150	2,245	1,870	2,245	1,115
950	510	410	955	825	1,130	410	685	1,595	1,370	1,885	685
1000	538	255	650	595	760	255	430	1,080	995	1,270	430
1050	566		430	430	515			720	720	855	
1100	593		290	300	340			480	495	565	
1150	621		195	185	225			325	310	375	
1200	649		125	105	155			205	170	255	

(a) Upon prolonged exposure to temperatures above 800˚F, the carbide phase of steel may be converted to graphite. Permissible, but not recommended for prolonged use above 800˚F

(b) Use normalized and tempered material only. Permissible, but not recommended for prolonged use above 1100˚F

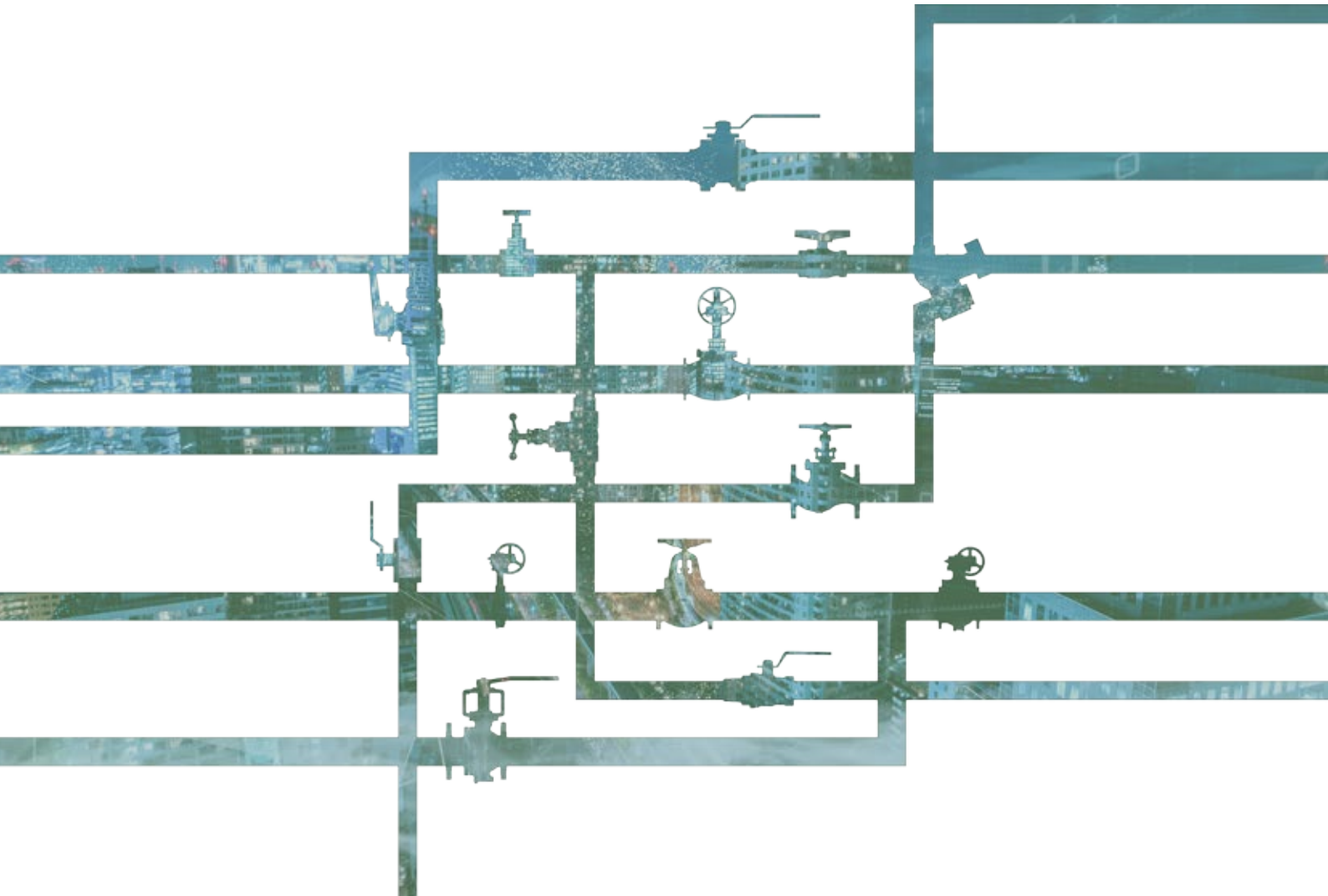
(c) Use normalized and tempered material only.

(d) Not to be used over 650˚F.

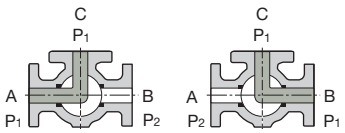
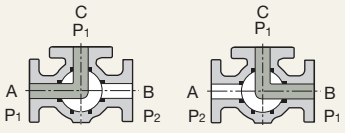
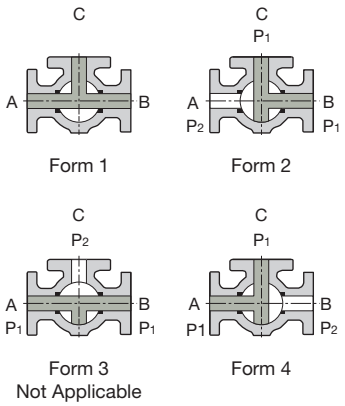
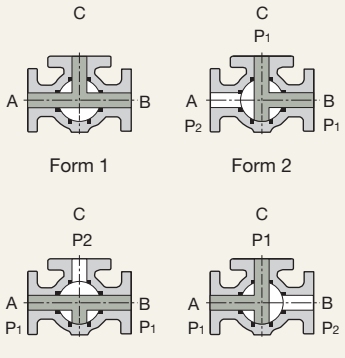
KITZ

GENERAL CATALOG

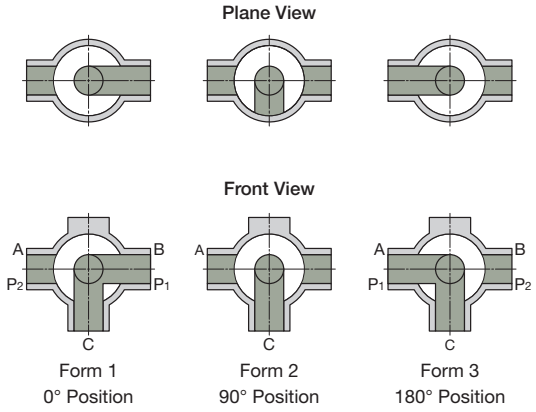
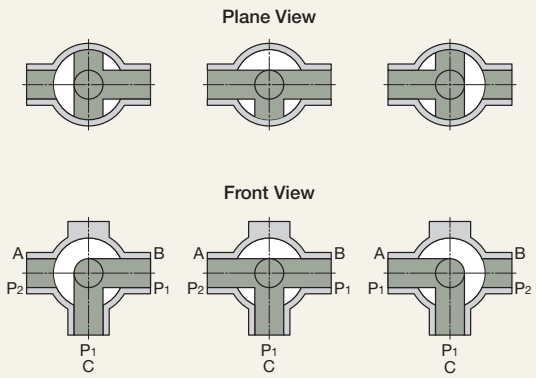
Technical Information



3-way Ball Valve Switching Form and Fluid Flow

Valve Design	Form	Fluid Passage
3-Way 2-Seat L-Port Ball Valve	Top View  Form 1 Form 2	1 Flow in Form 1 is between Ports “A” and “C”. Flow in Form 2 is between Ports “B” and “C”. The flow paths in Form 1 and Form 2 can be exchanged. 2 When the fluid pressure P2 in the closed path is higher than P1 in the open path, slight fluid leakage may occur to P1 through the ball seat of the closed path.
3-Way 4-Seat L-Port Ball Valve	Top View  Form 1 Form 2	1 Flow in Form 1 is between Ports “A” and “C”. Flow in Form 2 is between Ports “B” and “C”. The flow paths in Form 1 and Form 2 can be exchanged. 2 When the fluid pressure P2 in the closed path is higher than P1 in the open path, slight fluid leakage may occur to P1 through the ball seat of the closed path.
3-Way 2-Seat T-Port Ball Valve	Top View  Form 1 Form 2 Form 3 Not Applicable Form 4	1 In Form 1, all ports are open. Flow in Form 2 is between Ports “B” and “C”. Flow in Form 4 is between Ports “A” and “C”. Flow can be switched from Form 1 to Form 2, (standard operation pattern) or from Form 1 to Form 4 in either direction. The stopper is assembled for the standard operation pattern. 2 When the fluid pressure P2 in the closed path is higher than P1 in the open path, slight fluid leakage may occur to P1 through the ball seat of the closed path. ■ Available operation patterns • Pattern 1: From Form 4 to Form 1 • Pattern 2: From Form 1 to Form 2 (Standard) Please select one of the above operation patterns when ordering.
3-Way 4-Seat T-Port Ball Valve	Top View  Form 1 Form 2 Form 3 Form 4	1 In Form 1, all ports are open. Flow in Form 2 is between Ports “B” and “C”. Flow in Form 3 is between Ports “A” and “B”. Flow in Form 4 is between Ports ”A” and ”C”. All forms are available for switching, diverging, or mixing of flows. The stopper is assembled for a standard operation pattern to switch flow from Form 1 to Form 2. 2 When the fluid pressure P2 in the closed path is higher than P1 in the open path, slight fluid leakage may occur to P1 through the ball seat of the closed path. ■ Available operation patterns • Pattern 1: From Form 4 to Form 1 • Pattern 2: From Form 1 to Form 2 (Standard) • Pattern 3: From Form 3 to Form 4 • Pattern 4: From Form 2 to Form 3 Please select one of the above operation patterns when ordering.

3-way Ball Valve Switching Form and Fluid Flow

Valve Design	Form	Fluid Passage
Vertical 3-Way 2-Seated L-Port	 Form 1 0° Position Form 2 90° Position Form 3 180° Position	1 Switch from Form 1 to Form 3 in turning the ball 180 deg., B ⇔ C become A ⇔ C. 2 Switch from Form 1 to Form 2 in turning the ball 90 deg., C port become close. Seat leakage will occur when C port pressure is higher than other port. 3 Seat leakage will occur when P_2 pressure is higher than P_1 pressure on Form. 1 and Form 3.
Vertical 3-Way 2-Seated T-Port	 Form 1 0° Position Form 2 90° Position Form 3 180° Position	1 Switch from Form 1 to Form 3 in turning the ball 180 deg., B ⇔ C become A ⇔ C. 2 Switch from Form 1 to Form 2 in turning the ball 90 deg., Port A, B and C will be able to flow any direction. 3 Seat leakage will occur when P_2 pressure is higher than P_1 pressure on Form. 1 and Form 3.

Specification of Standard Strainer Screen

Strainer Type	Standard Specification	Option
Bronze Strainer	60°Perforated Stainless Steel Sheet	40・60・80・100・120・150・200 Mesh (Stainless Steel Wired Mesh reinforced by perforated sheet.)
Casi Iron, Ductile Iron (Excluding Class 20K) Y Strainer	60°Perforated Stainless Steel Sheet	20・30・40・60・80・100 Mesh (Stainless Steel Wired Mesh reinforced by perforated sheet.)
Ductile Iron (Class 20K), Stainless Steel, Carbon Steel Y Strainer	40 Mesh (Stainless Steel Wired Mesh reinforced by perforated sheet.)	20・30・60・80・100 Mesh (Stainless Steel Wired Mesh reinforced by perforated sheet.)
Casi Iron U Strainer	60°Perforated Stainless Steel Sheet	20・40・60・80・100・120 Mesh

* Please inquire separately for other mesh support than those listed below.

Please refer to following perforation diameter, pitch and screen opening for 60° Perforated SS Sheet & SS Wired Mesh reinforced by Perforated Sheet

	Nominal Size		60° Perforated SS Sheet			SS Wired Mesh reinforced by perforated sheet		
	mm	inch	A (ϕ)	P (mm)	Screen Opening (%)	A (ϕ)	P(mm)	Screen Opening (%)
Y Type	8 ～ 20	1/4 ～ 3/4	1.4	2.4	28.5	2.0	3.0	40.3
	25 ～ 50	1 ～ 2				3.0	4.0	51.0
	65 ～ 125	21/2 ～ 5	1.5	2.5	32.7	6.0	8.0	51.0
	150・200	6・8	3.0	5.0	32.7	8.0	10.0	58.0
	250 ～ 350	10 ～ 14	5.0	7.0	46.4	10.0	13.0	53.7
U Type	50 ～ 100	2 ～ 4	1.5	2.5	32.7	–	–	–

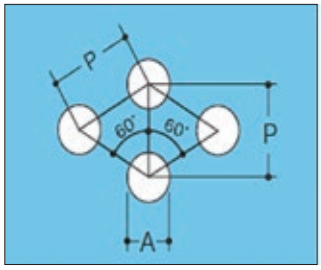
* Please refer to the drawing for A (Φ) & P (mm) of the multi-perforation.

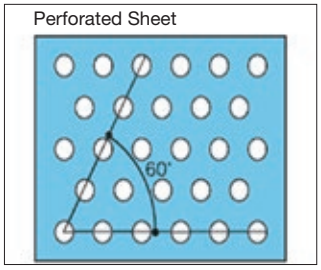
Selecting Y-Strainer・Screen

Strainer is designed to remove foreign objects with a screen equipped inside the strainer. However, it is necessary to select mesh of screen depending on service conditions for each fluid. Screens in Y-Strainers are perforated SS sheet and SS wired mesh reinforced by perforated sheet.

■60° Perforated SS Sheet

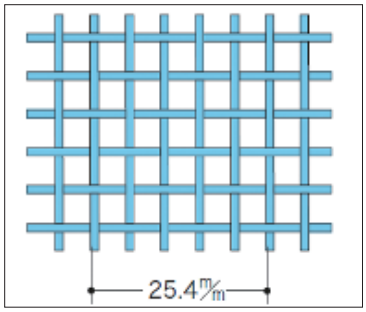
Fineness is not referred to mesh number.
Perforated SS Sheet expressed in A x P.





■SS Wired Mesh reinforced by Perforated Sheet

Mesh number indicates the number of wires per linear inch of wire filter cloth.



■Mesh wire diameter and screen opening (Sizes of KITZ use)

Mesh	Wire Number (SWG)	Wire Diameter (mm ϕ)	Sieve Size Opening (mm)	Open Area* (%)
10	22	0.40	2.14	71.0
20	32	0.26	1.01	63.2
30	35	0.22	0.62	59.4
40	36.5	0.16	0.47	55.7
60	38	0.15	0.27	41.3
80	40	0.12	0.20	39.1
100	42	0.10	0.15	36.0

* Open area is the proportion of total screen area that is open space. It is given as a percentage.

■Standard Velocity of Fluids

	Fluid		Velocity (m/s)	Pressure Loss (kPa)
Liquid	Water		1.5～2.5	0.5～15
	Industrial Water		1.0～3.0	2.0～20
	Sea Water		1.5～2.0	0.5～10
	Piston Pump		0.5～1.0	0.5～3
	Centrifugal Pump		2.0～2.5	10～15
Gas	Compressed Air	0.2～0.4MPa (G)	15	2～3
		0.2～0.4MPa (G)	30	10～15
		1.0～2.0MPa (G)	15	10～20
		1.0～2.0MPa (G)	30	30～60
Vapor	Saturation Vapor	0.2～1.0MPa (G)	15	1～3
		0.2～1.0MPa (G)	30	5～15

*1 For reference
*2 Compressed air is normal temperature (20°C).

Pressure Conversion Table

MPa → kgf/cm^2

(1MPa=10.19716kgf/cm^2)

0.1～50		5.1～10.0		10.5～35.0		35.5～60.0		60.5～85.0	
MPa	kgf/cm^2	MPa	kgf/cm^2	MPa	kgf/cm^2	MPa	kgf/cm^2	MPa	kgf/cm^2
0.1	1.0197	5.1	52.006	10.5	107.07	35.5	362.00	60.5	616.93
0.2	2.0394	5.2	53.025	11.0	112.17	36.0	367.10	61.0	622.03
0.3	3.0591	5.3	54.045	11.5	117.27	36.5	372.20	61.5	627.13
0.4	4.0789	5.4	55.065	12.0	122.37	37.0	377.29	62.0	632.22
0.5	5.0986	5.5	56.084	12.5	127.46	37.5	382.39	62.5	637.32
0.6	6.1183	5.6	57.104	13.0	132.56	38.0	387.49	63.0	642.42
0.7	7.1380	5.7	58.124	13.5	137.66	38.5	392.59	63.5	647.52
0.8	8.1557	5.8	59.144	14.0	142.76	39.0	397.69	64.0	652.62
0.9	9.1774	5.9	60.163	14.5	147.86	39.5	402.79	64.5	657.72
1.0	10.197	6.0	61.163	15.0	152.96	40.0	407.89	65.0	662.82
1.1	11.217	6.1	62.203	15.5	158.06	40.5	412.98	65.5	667.91
1.2	12.237	6.2	63.222	16.0	163.15	41.0	418.08	66.0	673.01
1.3	13.256	6.3	64.242	16.5	168.25	41.5	423.18	66.5	678.11
1.4	14.276	6.4	65.262	17.0	173.35	42.0	428.28	67.0	683.21
1.5	15.296	6.5	66.282	17.5	178.45	42.5	433.38	67.5	688.31
1.6	16.315	6.6	67.301	18.0	183.55	43.0	438.48	68.0	693.41
1.7	17.335	6.7	68.321	18.5	188.65	43.5	443.58	68.5	698.51
1.8	18.355	6.8	69.341	19.0	193.75	44.0	448.68	69.0	703.60
1.9	19.375	6.9	70.360	19.5	198.84	44.5	453.77	69.5	708.70
2.0	20.394	7.0	71.380	20.0	203.94	45.0	458.87	70.0	713.80
2.1	21.414	7.1	72.400	20.5	209.04	45.5	463.97	70.5	718.90
2.2	22.434	7.2	73.420	21.0	214.14	46.0	469.07	71.0	724.00
2.3	23.453	7.3	74.439	21.5	219.24	46.5	474.17	71.5	729.10
2.4	24.473	7.4	75.459	22.0	224.34	47.0	479.27	72.0	734.20
2.5	25.493	7.5	76.479	22.5	229.44	47.5	484.37	72.5	739.29
2.6	26.513	7.6	77.498	23.0	234.53	48.0	489.46	73.0	744.39
2.7	27.532	7.7	78.518	23.5	239.63	48.5	494.56	73.5	749.49
2.8	28.552	7.8	79.538	24.0	244.73	49.0	499.66	74.0	754.59
2.9	29.572	7.9	80.558	24.5	249.83	49.5	504.45	74.5	759.69
3.0	30.591	8.0	81.577	25.0	254.93	50.0	504.76	75.0	764.79
3.1	31.611	8.1	82.597	25.5	260.03	50.5	509.86	75.5	769.89
3.2	32.631	8.2	83.617	26.0	265.13	51.0	514.96	76.0	774.98
3.3	33.651	8.3	84.636	26.5	270.22	51.5	520.06	76.5	780.08
3.4	34.670	8.4	85.656	27.0	275.32	52.0	525.15	77.0	785.18
3.5	35.690	8.5	86.676	27.5	280.42	52.5	530.25	77.5	790.28
3.6	36.710	8.6	87.696	28.0	285.52	53.0	535.35	78.0	795.38
3.7	37.729	8.7	88.715	28.5	290.62	53.5	545.55	78.5	800.48
3.8	38.749	8.8	89.735	29.0	295.72	54.0	550.65	79.0	805.58
3.9	39.769	8.9	90.755	29.5	300.82	54.5	555.75	79.5	810.67
4.0	40.789	9.0	91.774	30.0	305.91	55.0	560.84	80.0	815.77
4.1	41.808	9.1	92.794	30.5	311.01	55.5	565.94	80.5	820.87
4.2	42.828	9.2	93.814	31.0	316.11	56.0	571.04	81.0	825.97
4.3	43.848	9.3	94.834	31.5	321.21	56.5	576.14	81.5	831.07
4.4	44.868	9.4	95.853	32.0	326.31	57.0	581.24	82.0	836.17
4.5	45.887	9.5	96.873	32.5	331.41	57.5	586.34	82.5	841.27
4.6	46.907	9.6	97.892	33.0	336.51	58.0	591.44	83.0	846.36
4.7	47.927	9.7	98.912	33.5	341.60	58.5	596.53	83.5	851.46
4.8	48.946	9.8	99.932	34.0	346.70	59.0	601.63	84.0	856.56
4.9	49.966	9.9	100.95	34.5	351.80	59.5	606.73	84.5	861.66
5.0	50.986	10.0	101.97	35.0	356.90	60.0	611.83	85.0	866.76

Pressure Conversion Table

$lb/in^2 \rightarrow kgf/cm^2$

($1lb/in^2=0.070307kgf/cm^2$)

1～50		51～100		105～400		410～900		910～1700	
lb/in^2	kgf/cm^2	lb/in^2	kgf/cm^2	lb/in^2	kgf/cm^2	lb/in^2	kgf/cm^2	lb/in^2	kgf/cm^2
1	0.07	51	3.59	105	7.38	410	28.83	910	63.98
2	0.14	52	3.66	110	7.73	420	29.53	920	64.68
3	0.21	53	3.73	115	8.09	430	30.23	930	65.39
4	0.28	54	3.80	120	8.44	440	30.93	940	66.09
5	0.35	55	3.87	125	8.79	450	31.64	950	66.79
6	0.42	56	3.94	130	9.14	460	32.34	960	67.49
7	0.49	57	4.01	135	9.49	470	33.04	970	68.20
8	0.56	58	4.08	140	9.84	480	33.75	980	68.90
9	0.63	59	4.15	145	10.19	490	34.45	990	69.60
10	0.70	60	4.22	150	10.55	500	35.15	1000	70.31
11	0.77	61	4.29	155	10.90	510	35.86	1010	71.01
12	0.84	62	4.36	160	11.25	520	36.56	1020	71.71
13	0.91	63	4.43	165	11.60	530	37.26	1030	72.42
14	0.98	64	4.50	170	11.95	540	37.97	1040	73.12
15	1.05	65	4.57	175	12.30	550	38.67	1050	73.82
16	1.12	66	4.64	180	12.66	560	39.37	1060	74.52
17	1.20	67	4.71	185	13.01	570	40.07	1070	75.23
18	1.27	68	4.78	190	13.36	580	40.78	1080	75.93
19	1.34	69	4.85	195	13.71	590	41.48	1090	76.63
20	1.41	70	4.92	200	14.06	600	42.18	1100	77.34
21	1.48	71	4.99	205	14.41	610	42.89	1120	78.74
22	1.55	72	5.06	210	14.76	620	43.59	1140	80.15
23	1.62	73	5.13	215	15.12	630	44.29	1160	81.56
24	1.69	74	5.20	220	15.47	640	45.00	1180	82.96
25	1.76	75	5.27	225	15.82	650	45.70	1200	84.37
26	1.83	76	5.34	230	16.17	660	46.40	1220	85.77
27	1.90	77	5.41	235	16.52	670	47.11	1240	87.18
28	1.97	78	5.48	240	16.87	680	47.81	1260	88.59
29	2.04	79	5.55	245	17.23	690	48.51	1280	89.99
30	2.11	80	5.62	250	17.58	700	49.21	1300	91.40
31	2.18	81	5.69	255	17.93	710	49.92	1320	92.80
32	2.25	82	5.77	260	18.28	720	50.62	1340	94.21
33	2.32	83	5.84	265	18.63	730	51.32	1360	95.62
34	2.39	84	5.91	270	18.98	740	52.03	1380	97.02
35	2.46	85	5.98	275	19.33	750	52.73	1400	98.43
36	2.53	86	6.05	280	19.69	760	53.43	1420	99.84
37	2.60	87	6.12	285	20.04	770	54.14	1440	101.24
38	2.67	88	6.19	290	20.39	780	54.84	1460	102.65
39	2.74	89	6.26	295	20.74	790	55.54	1480	104.05
40	2.81	90	6.33	300	21.09	800	56.25	1500	105.46
41	2.88	91	6.40	310	21.80	810	56.95	1520	106.87
42	2.95	92	6.47	320	22.50	820	57.65	1540	108.27
43	3.02	93	6.54	330	23.20	830	58.35	1560	109.68
44	3.09	94	6.61	340	23.90	840	59.06	1580	111.09
45	3.16	95	6.68	350	24.61	850	59.76	1600	112.49
46	3.23	96	6.75	360	25.31	860	60.46	1620	113.90
47	3.30	97	6.82	370	26.01	870	61.17	1640	115.30
48	3.37	98	6.89	380	26.72	880	61.87	1660	116.71
49	3.45	99	6.96	390	27.42	890	62.57	1680	118.12
50	3.52	100	7.03	400	28.12	900	63.28	1700	119.52

Pressure Conversion Table

Bar → kgf/cm^2

(1Bar=1.019716kgf/cm^2)

1～50		51～100		105～350		355～600		605～850	
Bar	kgf/cm^2	Bar	kgf/cm^2	Bar	kgf/cm^2	Bar	kgf/cm^2	Bar	kgf/cm^2
1	1.0197	51	52.006	105	107.07	355	362.00	605	616.93
2	2.0394	52	53.025	110	112.17	360	367.10	610	622.03
3	3.0591	53	54.045	115	117.27	365	372.20	615	627.13
4	4.0789	54	55.065	120	122.37	370	377.29	620	632.22
5	5.0986	55	56.084	125	127.46	375	382.39	625	637.32
6	6.1183	56	57.104	130	132.56	380	387.49	630	642.42
7	7.1380	57	58.124	135	137.66	385	392.59	635	647.52
8	8.1557	58	59.144	140	142.76	390	397.69	640	652.62
9	9.1774	59	60.163	145	147.86	395	402.79	645	657.72
10	10.197	60	61.183	150	152.96	400	407.89	650	662.82
11	11.217	61	62.203	155	158.06	405	412.98	655	667.91
12	12.237	62	63.222	160	163.15	410	418.08	660	673.01
13	13.256	63	64.242	165	168.25	415	423.18	665	678.11
14	14.276	64	65.262	170	173.35	420	428.28	670	683.21
15	15.296	65	66.282	175	178.45	425	433.38	675	688.31
16	16.315	66	67.301	180	183.55	430	438.48	680	693.41
17	17.335	67	68.321	185	188.65	435	443.58	685	698.51
18	18.355	68	69.341	190	193.75	440	448.68	690	703.60
19	19.375	69	70.360	195	198.84	445	453.77	695	708.70
20	20.394	70	71.380	200	203.94	450	458.87	700	713.80
21	21.414	71	72.400	205	209.04	455	463.97	705	718.90
22	22.434	72	73.420	210	214.14	460	469.07	710	724.00
23	23.453	73	74.439	215	219.24	465	474.17	715	729.10
24	24.473	74	75.459	220	224.34	470	479.27	720	734.20
25	25.493	75	76.479	225	229.44	475	484.37	725	739.29
26	26.513	76	77.498	230	234.53	480	489.46	730	744.39
27	27.532	77	78.518	235	239.63	485	494.56	735	749.49
28	28.552	78	79.538	240	244.73	490	499.66	740	754.59
29	29.572	79	80.558	245	249.83	495	504.45	745	759.69
30	30.591	80	81.577	250	254.93	500	504.76	750	764.79
31	31.611	81	82.597	255	260.03	505	509.86	755	769.89
32	32.631	82	83.617	260	265.13	510	514.96	760	774.98
33	33.651	83	84.636	265	270.22	515	520.06	765	780.08
34	34.670	84	85.656	270	275.32	520	525.15	770	785.18
35	35.690	85	86.676	275	280.42	525	530.25	775	790.28
36	36.710	86	87.696	280	285.52	530	535.35	780	795.38
37	37.729	87	88.715	285	290.62	535	545.55	785	800.48
38	38.749	88	89.735	290	295.72	540	550.65	790	805.58
39	39.769	89	90.755	295	300.82	545	555.75	795	810.67
40	40.789	90	91.774	300	305.91	550	560.84	800	815.77
41	41.808	91	92.794	305	311.01	555	565.94	805	820.87
42	42.828	92	93.814	310	316.11	560	571.04	810	825.97
43	43.848	93	94.834	315	321.21	565	576.14	815	831.07
44	44.868	94	95.853	320	326.31	570	581.24	820	836.17
45	45.887	95	96.873	325	331.41	575	586.34	825	841.27
46	46.907	96	97.892	330	336.51	580	591.44	830	846.36
47	47.927	97	98.912	335	341.60	585	596.53	835	851.46
48	48.946	98	99.932	340	346.70	590	601.63	840	856.56
49	49.966	99	100.95	345	351.80	595	606.73	845	861.66
50	50.986	100	101.97	350	356.90	600	611.83	850	866.76

Temperature Conversion Table

-459° ～0°			-1° ～60°			61° ～290°			300° ～890°			900° ～3000°		
°C	°C / °F	°F	°C	°C / °F	°F	°C	°C / °F	°F	°C	°C / °F	°F	°C	°C / °F	°F
-273	-459		-17.2	1	33.8	16.1	61	141.8	149	300	572	482	900	1652
-268	-450		-16.7	2	35.6	16.7	62	143.6	154	310	590	488	910	1670
-262	-440		-16.1	3	37.4	17.2	63	145.4	160	320	608	493	920	1688
-257	-430		-15.6	4	39.2	17.8	64	147.2	166	330	626	499	930	1706
-251	-420		-15.0	5	41.0	18.3	65	149.0	171	340	644	504	940	1724
-246	-410		-14.4	6	42.8	18.9	66	150.8	177	350	662	510	950	1742
-240	-400		-13.9	7	44.6	19.4	67	152.6	182	360	680	516	960	1760
-234	-390		-13.3	8	46.4	20.0	68	154.4	188	370	698	521	970	1778
-229	-380		-12.8	9	48.2	20.6	69	156.2	193	380	716	527	980	1796
-223	-370		-12.2	10	50.0	21.1	70	158.0	196	390	734	532	990	1814
-218	-360		-11.7	11	51.8	21.7	71	159.8	204	400	752	538	1000	1832
-212	-350		-11.1	12	53.6	22.2	72	161.6	210	410	770	549	1020	1868
-207	-340		-10.6	13	55.4	22.8	73	163.4	216	420	788	560	1040	1904
-201	-330		-10.0	14	57.2	23.3	74	165.2	221	430	806	571	1060	1940
-196	-320		-9.4	15	59.0	23.9	75	167.0	227	440	824	582	1080	1976
-190	-310		-8.9	16	60.8	24.4	76	168.8	232	450	842	593	1100	2012
-184	-300		-8.3	17	62.6	25.0	77	170.6	238	460	860	604	1120	2048
-179	-290		-7.8	18	64.4	25.6	78	172.4	243	470	878	616	1140	2084
-173	-280		-7.2	19	66.2	26.1	79	174.2	249	480	896	627	1160	2120
-169	-273	-459.4	-6.7	20	68.0	26.7	80	176.0	254	490	914	638	1180	2156
-168	-270	-454	-6.1	21	69.8	27.2	81	177.8	260	500	932	649	1200	2192
-162	-260	-436	-5.6	22	71.6	27.8	82	179.6	266	510	950	660	1220	2228
-157	-250	-418	-5.0	23	73.4	28.3	83	181.4	271	520	968	671	1240	2264
-151	-240	-400	-4.4	24	75.2	28.9	84	183.2	277	530	986	682	1260	2300
-146	-230	-382	-3.9	25	77.0	29.4	85	185.0	282	540	1004	693	1280	2336
-140	-220	-364	-3.3	26	78.8	30.0	86	186.8	288	550	1022	704	1300	2372
-134	-210	-346	-2.8	27	80.6	30.6	87	188.6	293	560	1040	732	1350	2462
-129	-200	-328	-2.2	28	82.4	31.1	88	190.4	299	570	1058	760	1400	2552
-123	-190	-310	-1.7	29	84.2	31.7	89	192.2	304	580	1076	788	1450	2642
-118	-180	-292	-1.1	30	86.0	32.2	90	194.0	310	590	1094	816	1500	2732
-112	-170	-274	-0.6	31	87.8	32.8	91	195.8	316	600	1112	843	1550	2822
-107	-160	-256	-0.6	32	89.6	33.3	92	197.6	321	610	1130	871	1600	2912
-101	-150	-238	0.0	33	91.4	33.9	93	199.4	327	620	1148	899	1650	3002
-96	-140	-220	1.1	34	93.2	34.4	94	201.2	332	630	1166	927	1700	3092
-90	-130	-202	1.7	35	95.0	35.0	95	203.0	338	640	1184	954	1750	3182
-84	-120	-184	2.2	36	96.8	35.6	96	204.8	343	650	1202	982	1800	3272
-79	-110	-166	2.8	37	98.6	36.1	97	206.6	349	660	1220	1010	1850	3362
-73	-100	-148	3.3	38	100.4	36.7	98	208.4	354	670	1238	1038	1900	3452
-68	-90	-130	3.9	39	102.2	37.2	99	210.2	360	680	1256	1066	1950	3542
-62	-80	-112	4.4	40	104.0	37.8	100	212	366	690	1274	1093	2000	3632
-57	-70	-94	5.0	41	105.8	43	110	230	371	700	1292	1121	2050	3722
-51	-60	-76	5.6	42	107.6	49	120	248	377	710	1310	1149	2100	3812
-46	-50	-58	6.1	43	109.4	54	130	266	382	720	1328	1177	2150	3902
-40	-40	-40	6.7	44	111.2	60	140	284	388	730	1346	1204	2200	3992
-34	-30	-22	7.2	45	113.0	66	150	302	393	740	1364	1232	2250	4082
-29	-20	-4	7.8	46	114.8	71	160	320	399	750	1382	1260	2300	4172
-23	-10	14	8.3	47	116.6	77	170	338	404	760	1400	1288	2350	4262
-17.8	0	32	8.9	48	118.4	82	180	356	410	770	1418	1316	2400	4352
			9.4	49	120.2	88	190	374	416	780	1436	1343	2450	4442
			10.0	50	122.0	93	200	392	421	790	1454	1371	2500	4532
			10.6	51	123.8	99	210	410	427	800	1472	1399	2550	4622
			11.1	52	125.6	100	212	413.6	432	810	1490	1427	2600	4712
			11.7	53	127.4	104	220	428	438	820	1508	1454	2650	4802
			12.2	54	129.2	110	230	446	443	830	1526	1482	2700	4892
			12.8	55	131.0	116	240	464	449	840	1544	1510	2750	4982
			13.3	56	132.8	121	250	482	454	850	1562	1538	2800	5072
			13.9	57	134.6	127	260	500	460	860	1580	1566	2850	5162
			14.4	58	136.4	132	270	518	466	870	1598	1593	2900	5252
			15.0	59	138.2	138	280	536	471	880	1616	1621	2950	5342
			15.6	60	140.0	143	290	554	477	890	1634	1649	3000	5432

Temperature Pressure Table for Saturated Vapor

Temperature			Pressure (abs.)			Pressure (G)		
Temperature °C	Pressure (abs.) MPa	Pressure (G) MPa	Pressure (abs.) MPa	Pressure (G) MPa	Saturation Temperature °C	Pressure (G) MPa	Pressure (abs.) MPa	Saturation Temperature °C
70	0.03	-0.07	0.09	-0.01	99.1	0	0.10	100.0
80	0.05	-0.05	0.19	0.09	119.6	0.09	0.19	120.1
90	0.07	-0.03	0.29	0.19	132.9	0.19	0.29	133.2
100	0.10	0	0.39	0.29	142.9	0.29	0.39	143.2
110	0.14	0.04	0.49	0.39	151.1	0.39	0.49	151.3
120	0.19	0.09	0.58	0.48	158.1	0.49	0.59	158.3
130	0.26	0.16	0.68	0.58	164.2	0.58	0.68	164.3
140	0.36	0.26	0.78	0.68	169.6	0.68	0.78	169.8
150	0.47	0.37	0.88	0.78	174.5	0.78	0.88	174.7
160	0.61	0.51	0.98	0.88	179.0	0.88	0.98	179.3
170	0.79	0.69	1.17	1.07	187.1	0.98	1.08	183.2
180	1.00	0.90	1.37	1.27	194.1	1.17	1.27	190.0
190	1.25	1.15	1.56	1.46	200.4	1.37	1.47	197.4
200	1.55	1.45	1.76	1.66	206.2	1.56	1.66	203.4
210	1.90	1.80	1.96	1.86	211.4	1.78	1.88	208.9
220	2.32	2.21	2.45	2.35	222.9	1.96	2.06	213.8
230	2.79	2.69	2.94	2.84	232.8	2.45	2.55	223.8
240	3.34	3.24	3.43	3.33	241.4	2.94	3.04	234.5
250	3.97	3.87	3.92	3.82	249.2	3.92	4.02	250.6
260	4.66	4.56	4.90	4.80	262.7	4.90	5.00	263.9
270	5.50	5.40	5.88	5.78	274.3	5.88	5.98	275.3
280	6.41	6.31	6.86	6.76	284.5	6.86	6.96	285.4
290	7.44	7.34	7.84	7.74	293.6	7.84	7.94	294.5
300	8.59	8.49	8.82	8.72	301.9	8.82	8.92	302.7
310	9.87	9.77	9.80	9.70	309.5	9.80	9.90	310.9
320	11.28	11.18	11.76	11.66	323.1	11.76	11.86	323.8
330	12.86	12.76	13.72	13.62	335.1	13.72	13.82	335.6
340	14.61	14.51	15.69	15.59	345.7	15.69	15.79	346.2
350	16.47	16.37	17.65	17.55	355.4	17.65	17.75	355.8
360	18.77	18.67	19.61	19.51	364.1	19.61	19.71	364.5
370	21.15	21.05	21.57	21.47	372.0	21.57	21.67	372.5

Fugitive Emission Standards

■**Federal Clean Air Act in US** (EPA Method 21-1994)
Allowable Leakage ≦ 500PPM

■**California State Regulation** (1997)
Allowable Leakage ≦ 100PPM

■**API 622** (2011) Type Testing for Process Valve Packing for Fugitive Emissions

■**API 624** (2014) Type Testing of Rising Stem Valves Equipped with Flexible Graphite Packing for Fugitive Emissions
Acceptance criteria (100ppmv) for figitive emission type testing of rising and rising-rotating stem valves equipped with packing previously tested in accordance with API 622.

■**API 641** (2016) Type Testing for Quarter-turn Valves for Fugitive Emissions
Valves larger than 24[B] and pressure class greater than 1500 are out of this scope.
Valves with pressure rating at ambient temperature lower than 100 psig are out of this scope.
Acceptance criteria : Not exceeding 100 ppmv
* Valve groups are belows for reference

• Valve Groups: Valve Temperature Rating ≧ 260℃ (500°F)

Velve Pressure Rating at 260℃ (500℉) is ≧ 41.1 barg (600psig)	Valve Pressure Rating at 260℃ (500℉) is < 41.1 barg (600psig) and ≧ 6.89 barg (100 psig)	Valve with Temperature Rating ≧ 260℃ (500℉) and does not comply with the requirements of Group A or Group B
Group A	Group B	Group C

Note: Valves with pressure rating less than 6.89 barg (100 psig) at ambient temperature are out of this standard.

• Valve Groups:Valve Tenperature Rating < 260℃ (500℉)

Velve Pressure Rating at its Maximum-rated Temperature is ≧ 41.1 barg (600psig)	Velve Pressure Rating at its Maximum-rated Temperature is < 41.1 barg (600psig) and ≧ 6.89 barg (100 psig)	Valve with Temperature Rating < 260℃ (500℉) and does not comply with the requirements of Group D or Group E
Group D	Group E	Group F

Note: Valves with pressure rating less than 6.89 barg (100 psig) at ambient temperature are out of this standard.

■**ISO 15848-1** (2015) Industrial valves - Measurement, test and qualification procedures for fugitive emissions
Part 1: Classification system and qualification procedures for type testing of valves
* Tightness classes are belows for reference

• Tightness Classes for Stem (or Shaft) Seals with Helium

Class	Measured Leak Rate (Mass Flow) $mg \cdot s^{-1} \cdot m^{-1}$ Stem Perimeter (for information)	Measured Leak Rate (Mass Flow) $mg \cdot s^{-1} \cdot mm^{-1}$ Stem Diameter Through Stem Seal System	Measured Leak Rate (Volumic Flow) $mbar \cdot l \cdot s^{-1}$ · per mm Stem Diameter Through Stem Seal System	Remarks
Ah	$\leqq 10^{-5}$	$\leqq 3.14 \cdot 10^{-8}$	$\leqq 1.78 \cdot 10^{-7}$	Typically achieved with bellow seals or equivalent stem (shaft) sealing system for quarter turn valves
BH	$\leqq 10^{-4}$	$\leqq 3.14 \cdot 10^{-7}$	$\leqq 1.78 \cdot 10^{-6}$	Typically achieved with PTFE based packings or elastomeric seals
CH	$\leqq 10^{-2}$	$\leqq 3.14 \cdot 10^{-5}$	$\leqq 1.78 \cdot 10^{-4}$	Typically achieved with flexible graphite based packings

■**ISO 15848-2** (2015) Industrial valves - Measurement, test and qualification procedures and fugitive emissions
Part 2: Production acceptance test of valves

■**TA Luft** (2002): "Technical Instructions on Air Quality Control" (Technische Anleitung zur Reinhaltung der Luft)
TA Luft specifies sealing system of stem passage. A simple manufacturer declaration is sufficient for verification TA Luft qualifies "high quality sealing system" only. TA Luft is considers its compliance if metal bellows with safety packing or similar sealing systems are used; whereby equivalence in the verification system must be in accordance with VDI 2440.

■**End user specification from Shell Oil Company** (MESC SPE 77/312).
MESC SPE 77/312 (February 2019) Fugitive Emission Production Testing
Amendments and Supplements to ISO 15848-2

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MEMO

⚠ CAUTION

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Read the instruction manual carefully before use.

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A chrysanthemum-handle is a symbol of KITZ,
the brand of valve reliability

ISO 9001 certified since 1989

KITZ

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