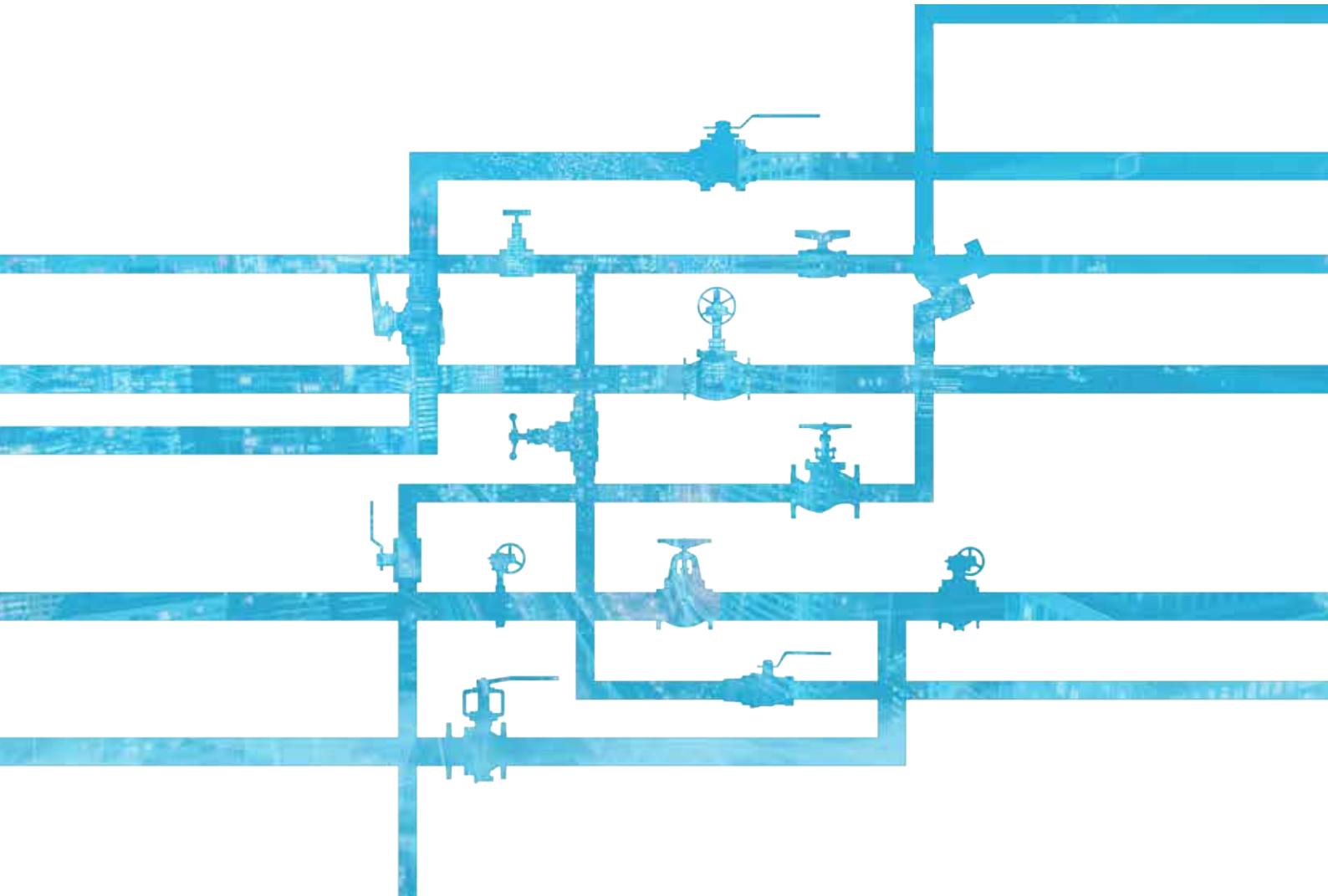
KITZ

GENERAL CATALOG

Steel Ball Valves



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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	

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TDRZ	SS	150	RF	RB	ASME B16.10	ISO 5211	Split	6B - 8B	150UTDRZ	BAL16 159
								6B - 8B	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							300UTDRZ	
									300UTDRZM	
TDZ	CS	20K		FB				1/2B - 8B	20SCTDZ	
		300							300SCTDZ	
TDRZ				RB				6B - 10B	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							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	
	CS								900SF3TCS/G-900SF3TCS	
									900SF3TCSBL/G-900SF3TCSBL	BAL31 174
	SS	1500						3B - 24B	1500UF3TCSM/G-1500UF3TCSM	
	CS							2B - 24B	1500SF3TCS/G-1500SF3TCS	
									1500SF3TCSBL/G-1500SF3TCSBL	
3TC (T60M)	SS	150							150UF3TC6HM/G-150UF3TC6HM	
3TCR (T60M)							3 pc/525℃	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						2 1/2B - 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 = G, 2 = 150, 3 = SC, 4 = TDZ, 5 = 1H, 6 = M, 7 = -FS)

❶ Operation

None	Lever
G	Gear

❷ Pressure Class

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

❸ Symbols for Shell Material

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

❹ 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°C Service) for U in ③
TDZL	TDZ (-196℃ Service) for U in ③

❺ 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

❻ 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	LCC (LF2)/CF8M (316)
CLM	LCB (LF2)/CF8M (316)

❼ 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 = L, 2 = 150, 3 = UVC, 4 = T, 5 = M)

❶ Operation

L	Lever for Λ Port
G	Gear

❷ Pressure Class

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

❹ Seat Type

None	Flekseat for General Service
T	Knifeseat for Heavy Duty Service

❺ 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)

❶ Operation

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

❷ Pressure Class

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

❸ Symbols for Shell Material

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

❹ Design & Type

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

❺ Seat Type

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

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

❻ Shell Material

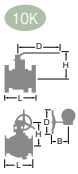
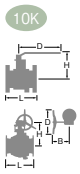
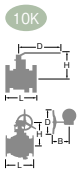
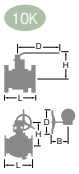
For UF in ③
None ..... F304 (or CF8)
M ..... F316 (or CF8M)
For SF in ③
None ..... A105 or (A105)
BL ..... LF2 (or LCB or LCC)

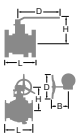
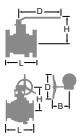
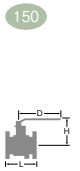
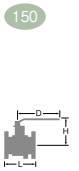
Design Specification

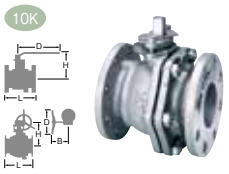
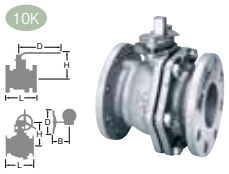
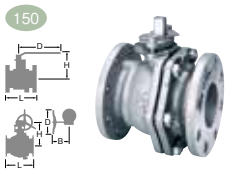
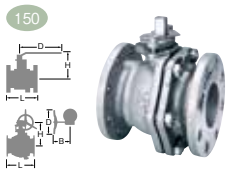
Ball Valves

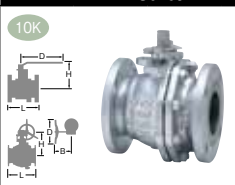
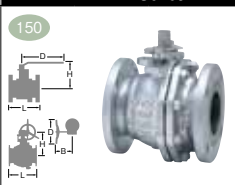
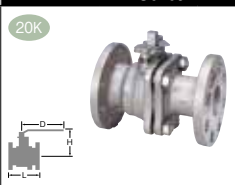
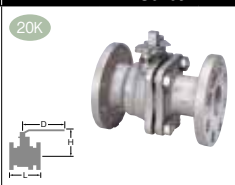
Series		TB/TR/TBD	TAZ/TDZ/TDRZ	3TC/3TCR	Λ Port
P-T Rating	Shell	ASME B16.34			
	Resilient Seating Parts	KITZ Standard			
Bore Size		KITZ Standard	API 608/ISO 17292	API 6D/ISO 14313	KITZ Standard
Shell Wall Thickness & General Valve Design		ASME B16.34	ASME B16.34/ISO 17292	ASME B16.34	
Face to Face Dimension		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 (20B)/ASME B16.47 Series A (26B & 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		–

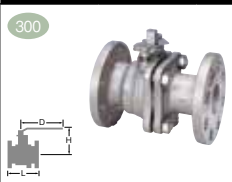
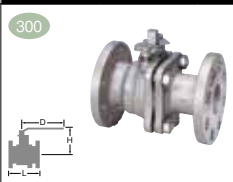
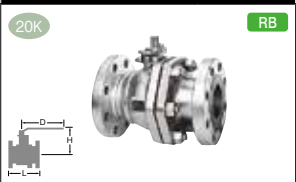
*1 For 10UTBD, 150UTBP, 150/300UTR/SCTR, 150/600UTB only. Others are KITZ Standard.
*2 (1) 10K Type is JIS B2220
(2) Dimensions in Pipe Connection except 3TC/3TCR Series shall indicate dimensions in millimeters converted from dimensions in inches according to ASME B16.5.
*3 For X, XL, L (Low Temperature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

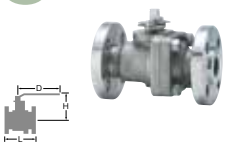
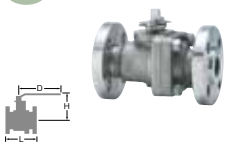
Type		TB Series				TB Series				TB Series				TB Series			
Ball Valve		10K FB  				10K FB  				10K FB  				10K FB  			
Fig		10UTB/G-10UTB				10UTBM/G-10UTBM				10UTBD/G-10UTBD				10UTBDM/G-10UTBDM			
End Connection		JIS B2220 10K RF				JIS B2220 10K RF				JIS B2220 10K RF				JIS B2220 10K RF			
inch	mm	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			

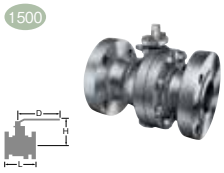
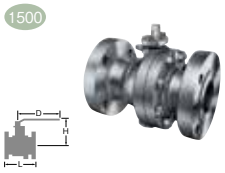
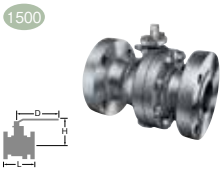
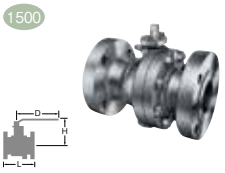
Type		TB Series				TB Series				TB Series (Pocketless)			TB Series (Pocketless)		
Ball Valve		150 FB   EAC				150 FB   EAC				150 FB  			150 FB  		
Fig		150UTB/G-150UTB				150UTBM/G-150UTBM				150UTBP			150UTBPM		
End Connection		ASME B16.5 Class 150 RF				ASME B16.5 Class 150 RF				ASME B16.5 Class 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		

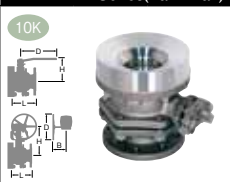
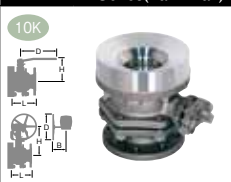
Type		TR Series				TR Series				TR Series				TR Series			
Ball Valve		10K RB 				10K RB 				150 RB 				150 RB 			
Fig		10UTR/G-10UTR				10UTRM/G-10UTRM				150UTR/G-150UTR				150UTRM/G-150UTRM			
End Connection		JIS B2220 10K RF				JIS B2220 10K RF				ASME B16.5 Class 150 RF				ASME B16.5 Class 150 RF			
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			

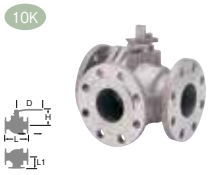
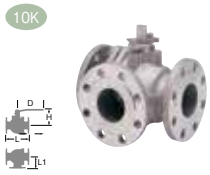
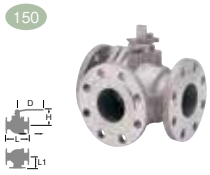
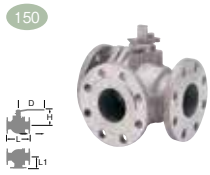
Type		TR Series				TR Series				TR Series			TR Series		
Ball Valve		10K RB 				150 RB 				20K RB 			20K RB 		
Fig		10SCTR/G-10SCTR				150SCTR/G-150SCTR				20UTR			20UTRM		
End Connection		JIS B2220 10K RF				ASME B16.5 Class 150 RF				JIS B2220 20K RF			JIS B2220 20K RF		
inch	mm	L	H	D	B	L	H	D	B	L	H	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		

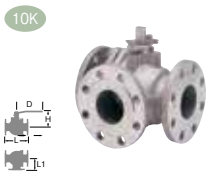
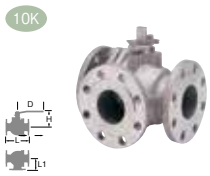
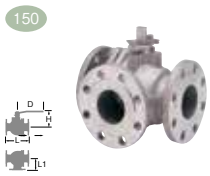
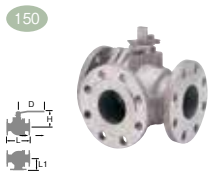
Type		TR Series			TR Series			TR Series			TR Series		
Ball Valve		300 RB 			300 RB 			20K RB 			300 RB 		
Fig		300UTR			300UTRM			20SCTR			300SCTR		
End Connection		ASME B16.5 Class 300 RF			ASME B16.5 Class 300 RF			JIS B2220 20K RF			ASME B16.5 Class 300 RF		
inch	mm	L	H	D	L	H	D	L	H	D	L	H	D
2	50	216	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		

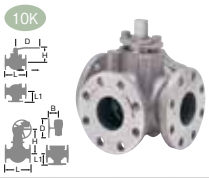
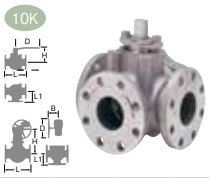
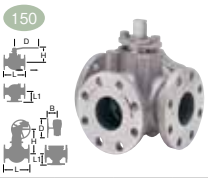
Type		TB Series			TB Series			TB Series			TB Series		
Ball Valve		600 FB  CE EAC			600 FB  FS CE EAC			600 FB  CE EAC			600 FB  FS CE EAC		
Fig		600UTBM			600UTBSM			600SCTB			600SCTBS		
End Connection		ASME B16.5 Class 600 RF			ASME B16.5 Class 600 RF			ASME B16.5 Class 600 RF			ASME B16.5 Class 600 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		1500 FB  EAC			1500 FB  FS EAC			1500 FB 			1500 FB  FS		
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		

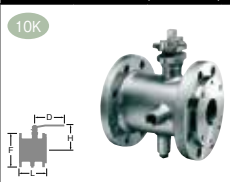
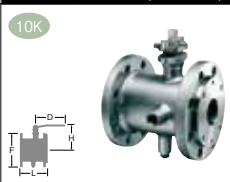
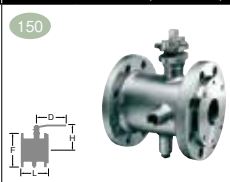
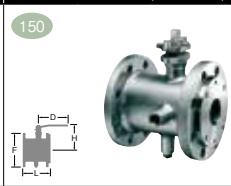
Type		TB Series(Tank Ball)				TB Series(Tank Ball)				TB Series(Tank Ball)			TB Series(Tank Ball)		
Ball Valve		10K FB 				10K FB 				150 FB 			150 FB 		
Fig		10UTBT/G-10UTBT				10UTBTM/G-10UTBTM				150UTBT			150UTBTM		
End Connection		JIS B2220 10K RF				JIS B2220 10K RF				ASME B16.5 Class 150 RF			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		

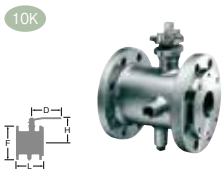
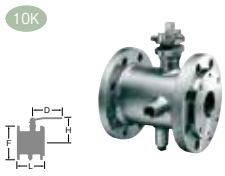
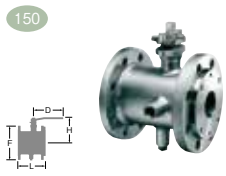
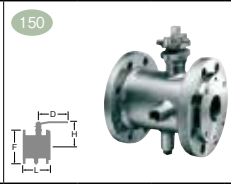
Type		TB Series(3-way,2-seat,L-Port)				TB Series(3-way,2-seat,L-Port)				TB Series(3-way,2-seat,L-Port)				TB Series(3-way,2-seat,L-Port)			
Ball Valve		10K FB 				10K FB 				150 FB 				150 FB 			
Fig		10UTB2L				10UTB2LM				150UTB2L				150UTB2LM			
End Connection		JIS B2220 10K RF				JIS B2220 10K 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			

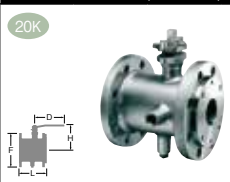
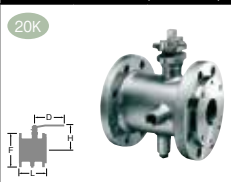
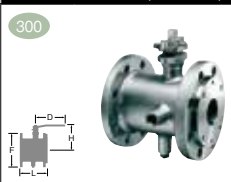
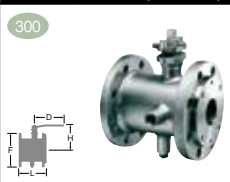
Type		TR Series(3-way,2-seat,L-Port)				TR Series(3-way,2-seat,L-Port)				TR Series(3-way,2-seat,L-Port)				TR Series(3-way,2-seat,L-Port)			
Ball Valve		10K RB 				10K RB 				150 RB 				150 RB 			
Fig		10UTR2L				10UTR2LM				150UTR2L				150UTR2LM			
End Connection		JIS B2220 10K RF				JIS B2220 10K 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			

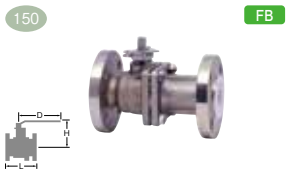
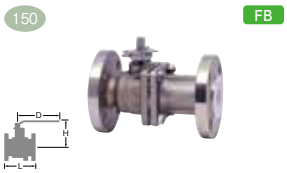
Type		TB Series(3-way,4-seat,L or T-Port)					TB Series(3-way,4-seat,L or T-Port)					TB Series(3-way,4-seat,L or T-Port)					TB Series(3-way,4-seat,L or T-Port)				
Ball Valve		10K FB 					10K FB 					150 FB 					150 FB 				
Fig		10UTB4L(T)A/G-10UTB4L(T)A					10UTB4L(T)AM/G-10UTB4L(T)AM					150UTB4L(T)A/G-150UTB4L(T)A					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		456	399	360	228.5	210	456	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 8B, Gear for 6B: Available					Anti-Static Design Anti-Blowout Stem Gear for 8B, Gear for 6B: Available					Anti-Static Design Anti-Blowout Stem Gear for 6B & 8B					Anti-Static Design Anti-Blowout Stem Gear for 6B & 8B				

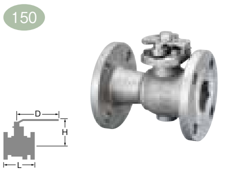
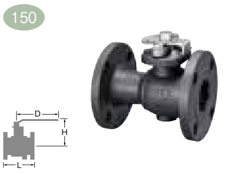
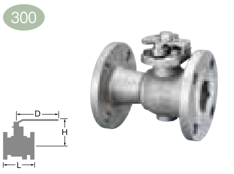
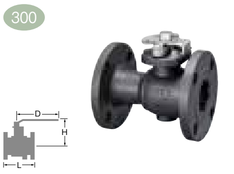
Type		TR Series(3-way,4-seat,L or T-Port)					TR Series(3-way,4-seat,L or T-Port)					TR Series(3-way,4-seat,L or T-Port)					TR Series(3-way,4-seat,L or T-Port)				
Ball Valve		10K RB 					10K RB 					150 RB 					150 RB 				
Fig		10UTR4L(T)A/G-10UTR4L(T)A					10UTR4L(T)AM/G-10UTR4L(T)AM					150UTR4L(T)A/G-150UTR4L(T)A					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 8B, Gear for 6B: Available					Anti-Static Design Anti-Blowout Stem Gear for 8B, Gear for 6B: Available					Anti-Static Design Anti-Blowout Stem Gear for 8B, Gear for 6B: Available					Anti-Static Design Anti-Blowout Stem Gear for 8B, Gear for 6B: Available				

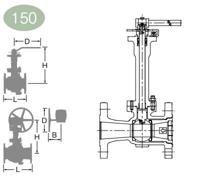
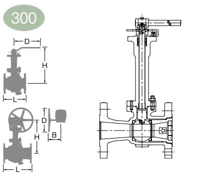
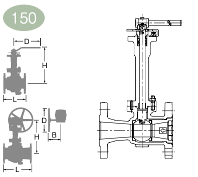
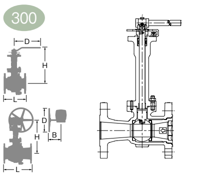
Type		TB Series(Jacketed)				TB Series(Jacketed)				TB Series(Jacketed)				TB Series(Jacketed)			
Ball Valve		10K FB 				10K FB 				150 FB 				150 FB 			
Fig		10UTBJ				10UTBJM				150UTBJ				150UTBJM			
End Connection		JIS B2220 10K RF				JIS B2220 10K RF				ASME B16.5 Class 150 RF				ASME B16.5 Class 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)			

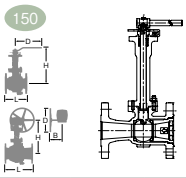
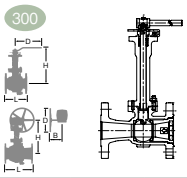
Type		TR Series(Jacketed)				TR Series(Jacketed)				TR Series(Jacketed)				TR Series(Jacketed)			
Ball Valve		10K FB 				10K FB 				150 FB 				150 FB 			
Fig		10UTRJ				10UTRJM				150UTRJ				150UTRJM			
End Connection		JIS B2220 10K RF				JIS B2220 10K RF				ASME B16.5 Class 150 RF				ASME B16.5 Class 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)			

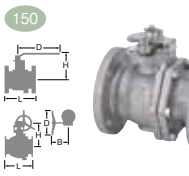
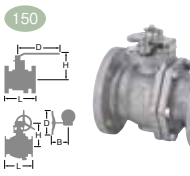
Type		TB Series(Jacketed)				TB Series(Jacketed)				TB Series(Jacketed)				TB Series(Jacketed)			
Ball Valve		20K FB 				20K FB 				300 FB 				300 FB 			
Fig		20UTBJ				20UTBJM				300UTBJ				300UTBJM			
End Connection		JIS B2220 20K RF				JIS B2220 20K RF				ASME B16.5 Class 300 RF				ASME B16.5 Class 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)			

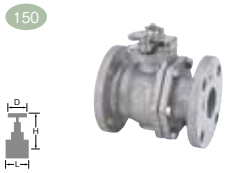
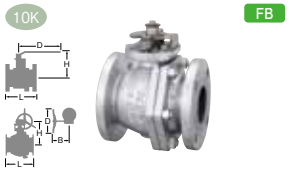
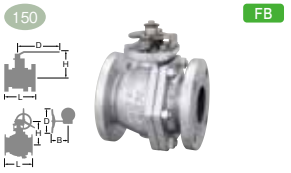
Type		TDZ Series(Jacketed)				TDZ Series(Jacketed)				TB Series(PFA lining)			TB Series(PFA lining)		
Ball Valve		150 FB NO IMAGE				150 FB NO IMAGE				150 FB 			150 FB 		
Fig		150UTDZJ				150UTDZJM				10UTBLN			150UTBLN		
End Connection		ASME B16.5 Class 150 RF				ASME B16.5 Class 150 RF				JIS B2220 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		

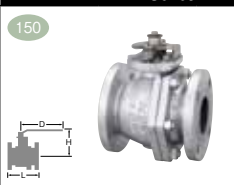
Type		TAZ Series			TAZ Series			TAZ Series			TAZ Series		
Ball Valve		150 RB  FS FE CE EAC			150 RB  FS CE EAC			300 RB  FS FE CE EAC			300 RB  FS FE CE EAC		
Fig		150UTAZM			150SCTAZ			300UTAZM			300SCTAZ		
End Connection		ASME B16.5 Class 150 RF			ASME B16.5 Class 150 RF			ASME B16.5 Class 300 RF			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		

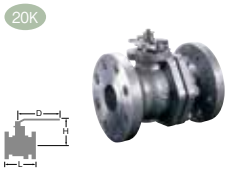
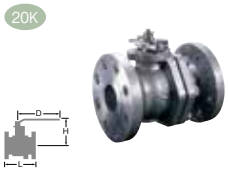
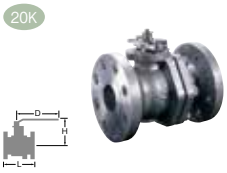
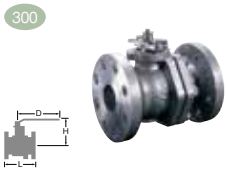
Type		TAZ Series(-46℃)				TAZ Series(-46℃)				TAZ Series(-104℃)				TAZ Series(-104℃)			
Ball Valve		150 RB  FS FE CE EAC				300 RB  FS FE CE EAC				150 RB  FS FE CE EAC				300 RB  FS FE CE EAC			
Fig		150SCTAZXCL/G-150SCTAZXCL				300SCTAZXCL/G-300SCTAZXCL				150UTAZXLM/G-150UTAZXLM				300UTAZXLM/G-300UTAZXLM			
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			

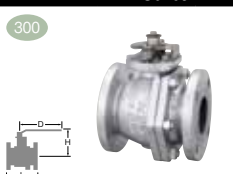
Type		TAZ Series(-196℃)				TAZ Series(-196℃)				TDZ Series				TDZ Series			
Ball Valve		150 RB FS FE CE EAC 				300 RB FS FE CE EAC 				10K FB 				10K FB 			
Fig		150UTAZLM/G-150UTAZLM				300UTAZLM/G-300UTAZLM				10UTDZ/G-10UTDZ				10UTDZM/G-10UTDZM			
End Connection		ASME B16.5 Class 150 RF				ASME 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 2ᴮor HYPATITE®				A:HYPATITE® PTFE, B: PCTFE up to 2ᴮor 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		150 FB FS FE CE EAC 				150 FB FS FE CE EAC 				10K RB 			10K RB 		
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			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	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	240	460	403	314	1000	403	314	1000	403	314	1000
8	200	292	315	1000	502	406	1500	502	406	1500	502	406	1500
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		

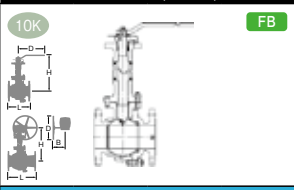
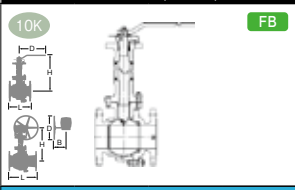
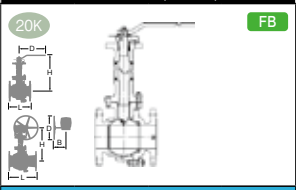
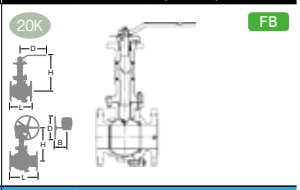
Type		TDZ Series			TDRZ Series			TDRZ Series			TDRZ Series		
Ball Valve		20K FB  FS FE CE EAC			20K RB 			20K RB 			300 RB  FS		
Fig		300UTDZM			20UTDRZ			20UTDRZM			300UTDRZ		
End Connection		ASME B16.5 Class 300 RF			JIS B2220 20K RF			JIS B2220 20K RF			ASME B16.5 Class 300 RF		
inch	mm	L	H	D	L	H	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	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		

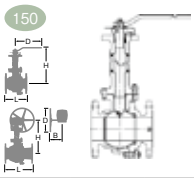
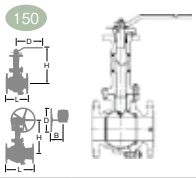
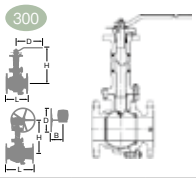
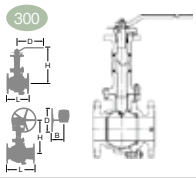
Type		TDRZ Series			TDZ Series			TDZ Series			TDRZ Series		
Ball Valve		300 RB  FS			20K FB 			300 FB  FS FE CE EAC			300 RB  FS		
Fig		300UTDRZM			20SCTDZ			300SCTDZ			300SCTDRZ		
End Connection		ASME B16.5 Class 300 RF			JIS B2220 20K RF			ASME B16.5 Class 300 RF			ASME B16.5 Class 300 RF		
inch	mm	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	403	267	750
8	200	419	315	1000	502	406	1500	502	406	1500	419	315	1000
10	250	457	406	1500							457	406	1500
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		

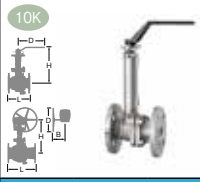
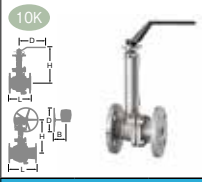
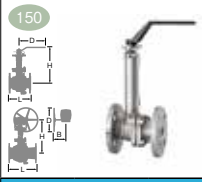
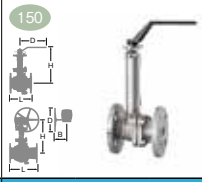
Type		TDZ Series(-46℃)				TDZ Series(-46℃)				TDZ Series(-46℃)				TDZ Series(-46℃)			
Ball Valve		150 FB FS FE CE EAC				150 FB FS FE CE EAC				300 FB FS FE CE EAC				300 FB FS FE CE EAC			
Fig		150SCTDZXBL/G-150SCTDZXBL				150SCTDZXCL/G-150SCTDZXCL				300SCTDZXBL/G-300SCTDZXBL				300SCTDZXCL/G-300SCTDZXCL			
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			

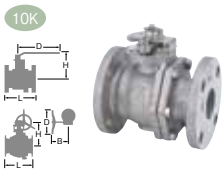
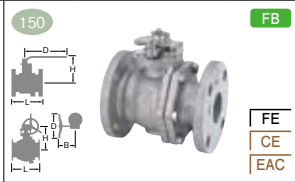
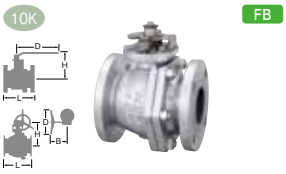
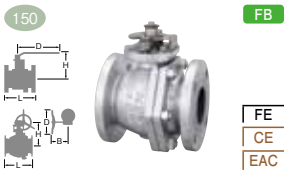
Type		TDZ Series(-104℃)				TDZ Series(-104℃)				TDZ Series(-104℃)				TDZ Series(-104℃)			
Ball Valve		10K FB				10K FB				20K FB				20K FB			
Fig		10UTDZXL/G-10UTDZXL				10UTDZXLM/G-10UTDZXLM				20UTDZXL/G-20UTDZXL				20UTDZXLM/G-20UTDZXLM			
End Connection		JIS B2220 10K RF				JIS B2220 10K RF				JIS 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			

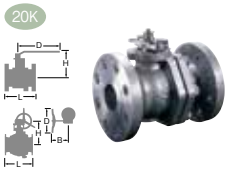
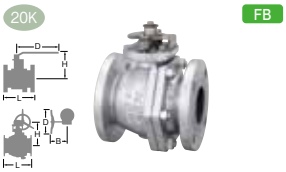
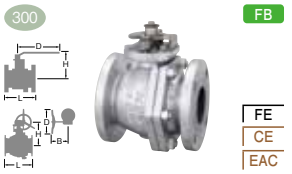
Type		TDZ Series(-104℃)				TDZ Series(-104℃)				TDZ Series(-104℃)				TDZ Series(-104℃)			
Ball Valve		150 FB 				150 FB 				300 FB 				300 FB 			
Fig		150UTDZXL/G-150UTDZXL				150UTDZXLM/G-150UTDZXLM				300UTDZXL/G-300UTDZXL				300UTDZXLM/G-300UTDZXLM			
End Connection		ASME B16.5 Class 150 RF				ASME 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			

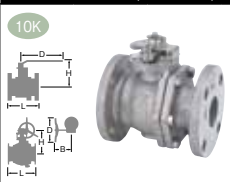
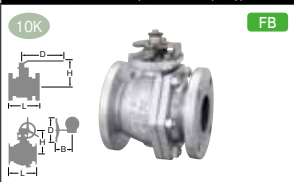
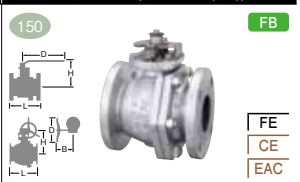
Type		TDZ Series(-196℃)				TDZ Series(-196℃)				TDZ Series(-196℃)				TDZ Series(-196℃)			
Ball Valve		10K FB 				10K FB 				20K FB 				20K FB 			
Fig		10UTDZL/G-10UTDZL				10UTDZLM/G-10UTDZLM				20UTDZL/G-20UTDZL				20UTDZLM/G-20UTDZLM			
End Connection		JIS B2220 10K RF				JIS B2220 10K RF				JIS B2220 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			

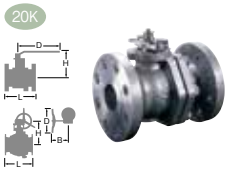
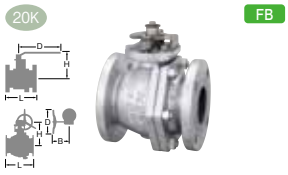
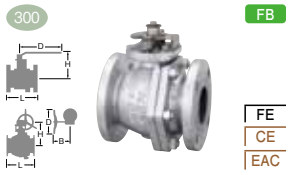
Type		TDZ Series(-196℃)				TDZ Series(-196℃)				TDZ Series(-196℃)				TDZ Series(-196℃)			
Ball Valve		150 FB 				150 FB 				300 FB 				300 FB 			
Fig		150UTDZL/G-150UTDZL				150UTDZLM/G-150UTDZLM				300UTDZL/G-300UTDZL				300UTDZLM/G-300UTDZLM			
End Connection		ASME B16.5 Class 150 RF				ASME B16.5 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			

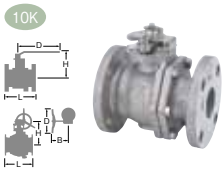
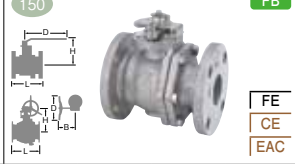
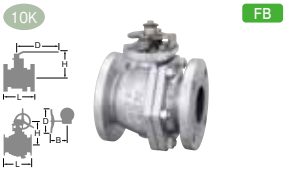
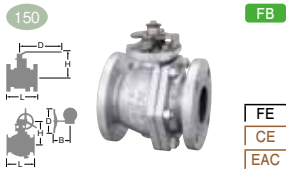
Type		TBDXK Series(-50℃)				TBDXK Series(-50℃)				TBDXK Series(-50℃)				TBDXK Series(-50℃)			
Ball Valve		10K FB 				10K FB 				150 FB 				150 FB 			
Fig		10UTBDXK/G-10UTBDXK				10UTBDXKM/G-10UTBDXKM				150UTBDXK/G-150UTBDXK				150UTBDXKM/G-150UTBDXKM			
End Connection		JIS B2220 10K RF				JIS B2220 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			

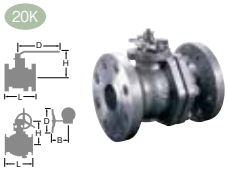
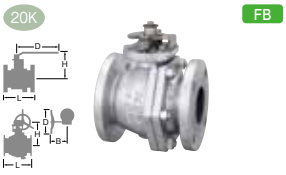
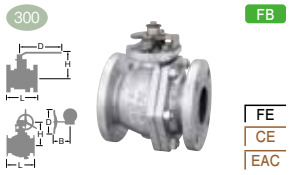
Type		TDZ Series(Filtite(1H))				TDZ Series(Filtite(1H))				TDZ Series(Filtite(1H))				TDZ Series(Filtite(1H))			
Ball Valve		10K FB 				150 FB  FE CE EAC				10K FB 				150 FB  FE CE EAC			
Fig		10UTDZ1H/G-10UTDZ1H				150UTDZ1HM/G-150UTDZ1HM				10SCTDZ1H/G-10SCTDZ1H				150SCTDZ1H/G-150SCTDZ1H			
End 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			

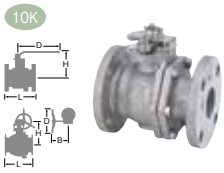
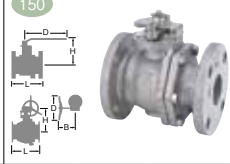
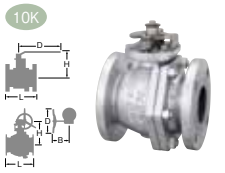
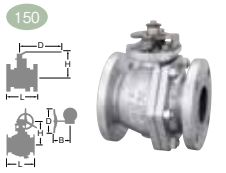
Type		TDZ Series(Filtite(1H))				TDZ Series(Filtite(1H))				TDZ Series(Filtite(1H))				TDZ Series(Filtite(1H))			
Ball Valve		20K FB 				300 FB  FE CE EAC				20K FB 				300 FB  FE CE EAC			
Fig		20UTDZ1H/G-20UTDZ1H				300UTDZ1HM/G-300UTDZ1HM				20SCTDZ1H/G-20SCTDZ1H				300SCTDZ1H/G300SCTDZ1H			
End Connection		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			

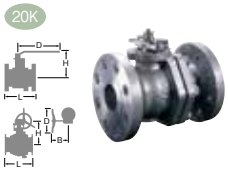
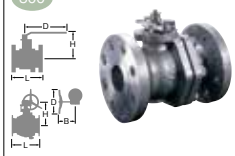
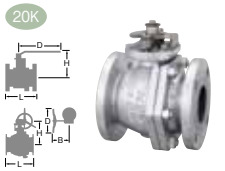
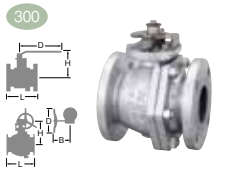
Type		TDZ Series(Carbotite(3H))				TDZ Series(Carbotite(3H))				TDZ Series(Carbotite(3H))				TDZ Series(Carbotite(3H))			
Ball Valve		10K FB 				150 FB  FE CE EAC				10K FB 				150 FB  FE CE EAC			
Fig		10UTDZ3H/G-10UTDZ3H				150UTDZ3HM/G-150UTDZ3HM				10SCTDZ3H/G-10SCTDZ3H				150SCTDZ3H/G-150SCTDZ3H			
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			

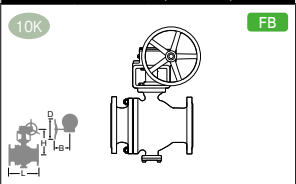
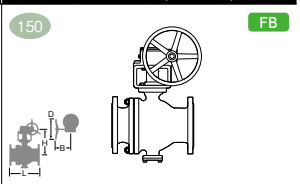
Type		TDZ Series(Carbotite(3H))				TDZ Series(Carbotite(3H))				TDZ Series(Carbotite(3H))				TDZ Series(Carbotite(3H))			
Ball Valve		20K FB 				300 FB  FE CE EAC				20K FB 				300 FB  FE CE EAC			
Fig		20UTDZ3H/G-20UTDZ3H				300UTDZ3HM/G-300UTDZ3HM				20SCTDZ3H/G-20SCTDZ3H				300SCTDZ3H/G300SCTDZ3H			
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 4B & 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			

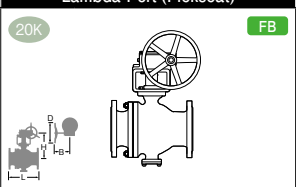
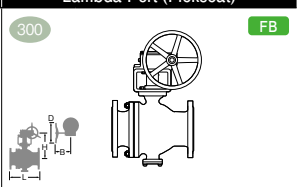
Type		TDZ Series(Metal Seat(5H))				TDZ Series(Metal Seat(5H))				TDZ Series(Metal Seat(5H))				TDZ Series(Metal Seat(5H))			
Ball Valve		10K FB 				150 FB  FE CE EAC				10K FB 				150 FB  FE CE EAC			
Fig		10UTDZ5H/G-10UTDZ5H				150UTDZ5HM/G-150UTDZ5HM				10SCTDZ5H/G-10SCTDZ5H				150SCTDZ5H/G-150SCTDZ5H			
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			

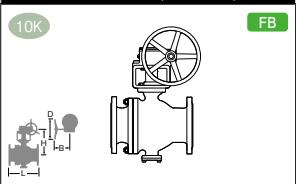
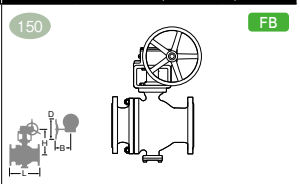
Type		TDZ Series(Metal Seat(5H))				TDZ Series(Metal Seat(5H))				TDZ Series(Metal Seat(5H))				TDZ Series(Metal Seat(5H))			
Ball Valve		20K FB 				300 FB  FE CE EAC				20K FB 				300 FB  FE CE EAC			
Fig		20UTDZ5H/G-20UTDZ5H				300UTDZ5HM/G-300UTDZ5HM				20SCTDZ5H/G-20SCTDZ5H				300SCTDZ5H/G300SCTDZ5H			
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			

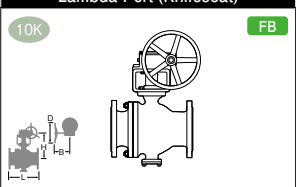
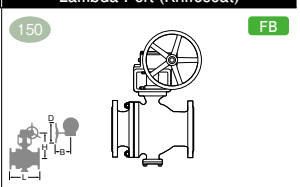
Type		TDZ Series(Metal Seat(6H))				TDZ Series(Metal Seat(6H))				TDZ Series(Metal Seat(6H))				TDZ Series(Metal Seat(6H))			
Ball Valve		10K FB 				150 FB  FE CE EAC				10K FB 				150 FB  FE CE EAC			
Fig		10UTDZ6H/G-10UTDZ6H				150UTDZ6HM/G-150UTDZ6HM				10SCTDZ6H/G-10SCTDZ6H				150SCTDZ6H/G-150SCTDZ6H			
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		20K FB 				300 FB  FE CE EAC				20K FB 				300 FB  FE CE EAC			
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			

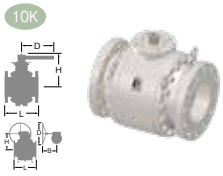
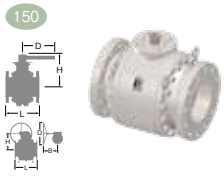
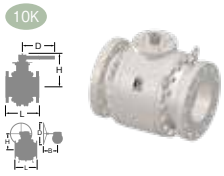
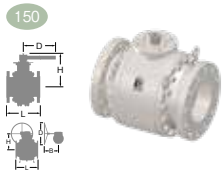
Type		Lambda Port (Flekseat)			Lambda Port (Flekseat)			Lambda Port (Flekseat)				Lambda Port (Flekseat)			
Ball Valve		10K FB 			150 FB 			10K FB 				150 FB 			
Fig		L-10UVC			L-150UVCM			G-10UVC				G-150UVCM			
End Connection		JIS B2220 10K RF			ASME B16.5 Class 150 RF			JIS B2220 10K RF				ASME B16.5 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			

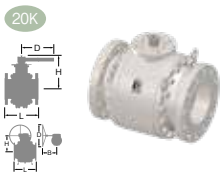
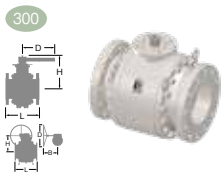
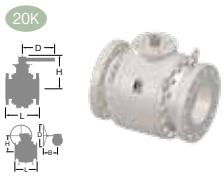
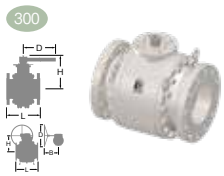
Type		Lambda Port (Knifeseat)			Lambda Port (Knifeseat)			Lambda Port (Knifeseat)				Lambda Port (Knifeseat)			
Ball Valve		10K FB 			150 FB 			10K FB 				150 FB 			
Fig		L-10UVCT			L-150UVCTM			G-10UVCT				G-150UVCTM			
End Connection		JIS B2220 10K RF			ASME B16.5 Class 150 RF			JIS B2220 10K RF				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			

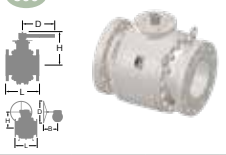
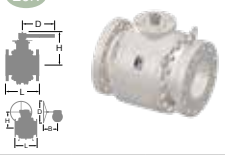
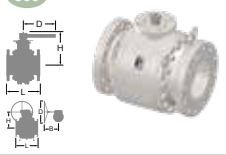
Type		Lambda Port (Knifeseat)			Lambda Port (Knifeseat)			Lambda Port (Knifeseat)				Lambda Port (Knifeseat)			
Ball Valve		10K FB 			150 FB 			10K FB 				150 FB 			
Fig		L-20UVCT			L-300UVCTM			G-20UVCT				G-300UVCTM			
End Connection		JIS B2220 20K RF			ASME B16.5 Class 300 RF			JIS B2220 20K RF				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			

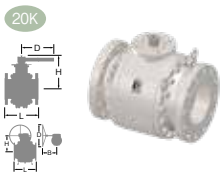
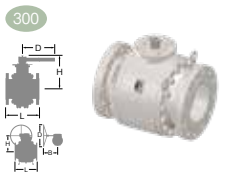
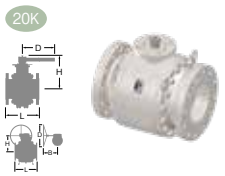
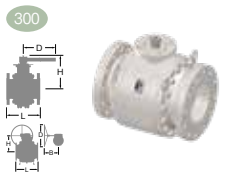
Type		3TC (T60S) Series				3TC (T60S) Series				3TCR (T60S) Series				3TCR (T60S) Series			
Ball Valve		10K FB 				150 FB  FE CE EAC				10K RB 				150 RB  FE CE EAC			
Fig		10UF3TCSM/G-10UF3TCSM				150UF3TCSM/G-150UF3TCSM				10UF3TCRSM/G-10UF3TCRSM				150UF3TCRSM/G-150UF3TCRSM			
End Connection		JIS 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			

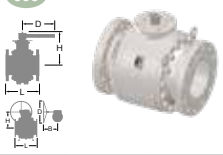
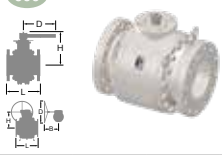
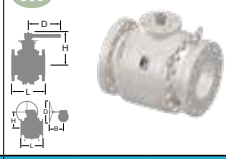
Type		3TC (T60S) Series				3TC (T60S) Series				3TCR (T60S) Series				3TCR (T60S) Series			
Ball Valve		10K FB 				150 FB  FS FE CE EAC				10K RB 				150 RB  FS FE CE EAC			
Fig		10SF3TCS/G-10SF3TCS				150SF3TCS/G-150SF3TCS				10SF3TCRS/G-10SF3TCRS				150SF3TCRS/G-150SF3TCRS			
End Connection		JIS B2220 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			

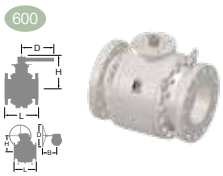
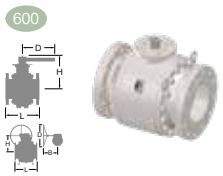
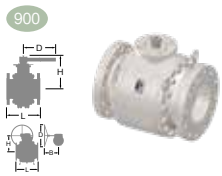
Type		3TC (T60S) Series				3TC (T60S) Series				3TCR (T60S) Series				3TCR (T60S) Series			
Ball Valve		10K FB 				150 FB  FS FE CE EAC				10K RB 				150 RB  FS FE CE EAC			
Fig		10SF3TCSBL/G-10SF3TCSBL				150SF3TCSBL/G-150SF3TCSBL				10SF3TCRSBL/G-10SF3TCRSBL				150SF3TCRSBL/G-150SF3TCRSBL			
End Connection		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			

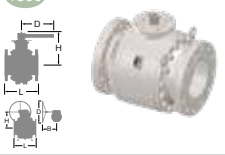
Type		3TC (T60S) Series				3TC (T60S) Series				3TCR (T60S) Series				3TCR (T60S) Series			
Ball Valve		20K FB 				300 FB  FS FE CE EAC				20K RB 				300 RB  FS FE CE EAC			
Fig		20UF3TCSM/G-20UF3TCSM				300UF3TCSM/G-300UF3TCSM				20UF3TCRSM/G-20UF3TCRSM				300UF3TCRSM/G-300UF3TCRSM			
End Connection		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			

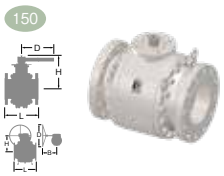
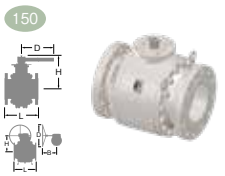
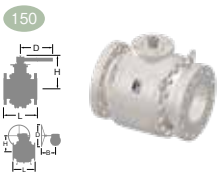
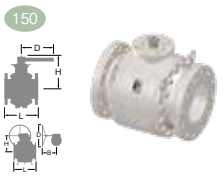
Type		3TC (T60S) Series				3TC (T60S) Series				3TCR (T60S) Series				3TCR (T60S) Series			
Ball Valve		20K FB 				300 FB  FS FE CE EAC				20K RB 				300 RB  FS FE CE EAC			
Fig		20SF3TCS/G-20SF3TCS				300SF3TCS/G-300SF3TCS				20SF3TCRS/G-20SF3TCRS				300SF3TCRS/G-300SF3TCRS			
End Connection		JIS B2220 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			

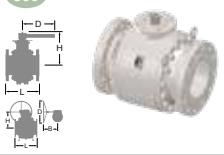
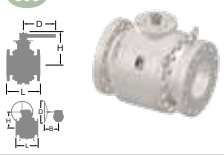
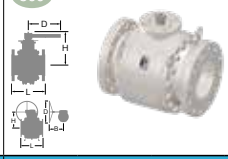
Type		3TC (T60S) Series				3TC (T60S) Series				3TCR (T60S) Series				3TCR (T60S) Series			
Ball Valve		20K FB 				300 FB  FS FE CE EAC				20K RB 				300 RB  FS FE CE EAC			
Fig		20SF3TCSBL/G-20SF3TCSBL				300SF3TCSBL/G-300SF3TCSBL				20SF3TCRSBL/G20SF3TCRSBL				300SF3TCRSBL/G-300SF3TCRSBL			
End Connection		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			

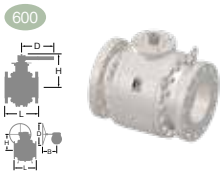
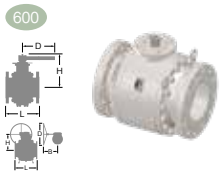
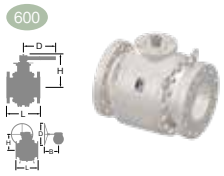
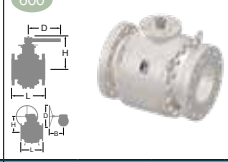
Type		3TC (T60S) Series				3TCR (T60S) Series				3TC (T60S) Series				3TCR (T60S) Series			
Ball Valve		600 FB  FS FE CE EAC				600 RB  FS FE CE EAC				600 FB  FS FE CE EAC				600 RB  FS FE CE EAC			
Fig		600UF3TCSM/G-600UF3TCSM				600UF3TCRSM/G-600UF3TCRSM				600SF3TCS/G-600SF3TCS				600SF3TCRS/G-600SF3TCRS			
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			

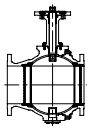
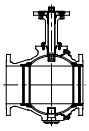
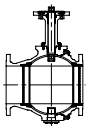
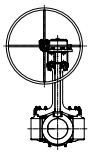
Type		3TC (T60S) Series				3TCR (T60S) Series				3TC (T60S) Series				3TC (T60S) Series			
Ball Valve		600 FB  FS FE CE EAC				600 RB  FS FE CE EAC				900 FB  FS FE CE EAC				900 FB  FS FE CE EAC			
Fig		600SF3TCSBL/G-600SF3TCSBL				600SF3TCRSBL/G-600SF3TCRSBL				900UF3TCSM/G-900UF3TCSM				900SF3TCS/G-900SF3TCS			
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			

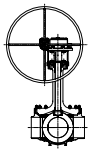
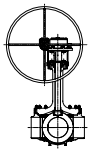
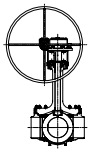
Type		3TC (T60S) Series				3TC (T60S) Series				3TC (T60S) Series				3TC (T60S) Series			
Ball Valve		900 FB  FS FE CE EAC				1500 FB  FS FE CE EAC				1500 FB  FS FE CE EAC				900 FB  FS FE CE EAC			
Fig		900SF3TCSBL/G-900SF3TCSBL				1500UF3TCSM/G-1500UF3TCSM				1500SF3TCS/G-1500SF3TCS				1500SF3TCSBL/G-1500SF3TCSBL			
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		300 FB  FS FE CE EAC				300 RB  FS FE CE EAC				300 FB  FS FE CE EAC				300 RB  FS FE CE EAC			
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		600 FB  FS FE CE EAC				600 RB  FS FE CE EAC				600 FB  FS FE CE EAC				600 RB  FS FE CE EAC			
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 24B) 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®)			

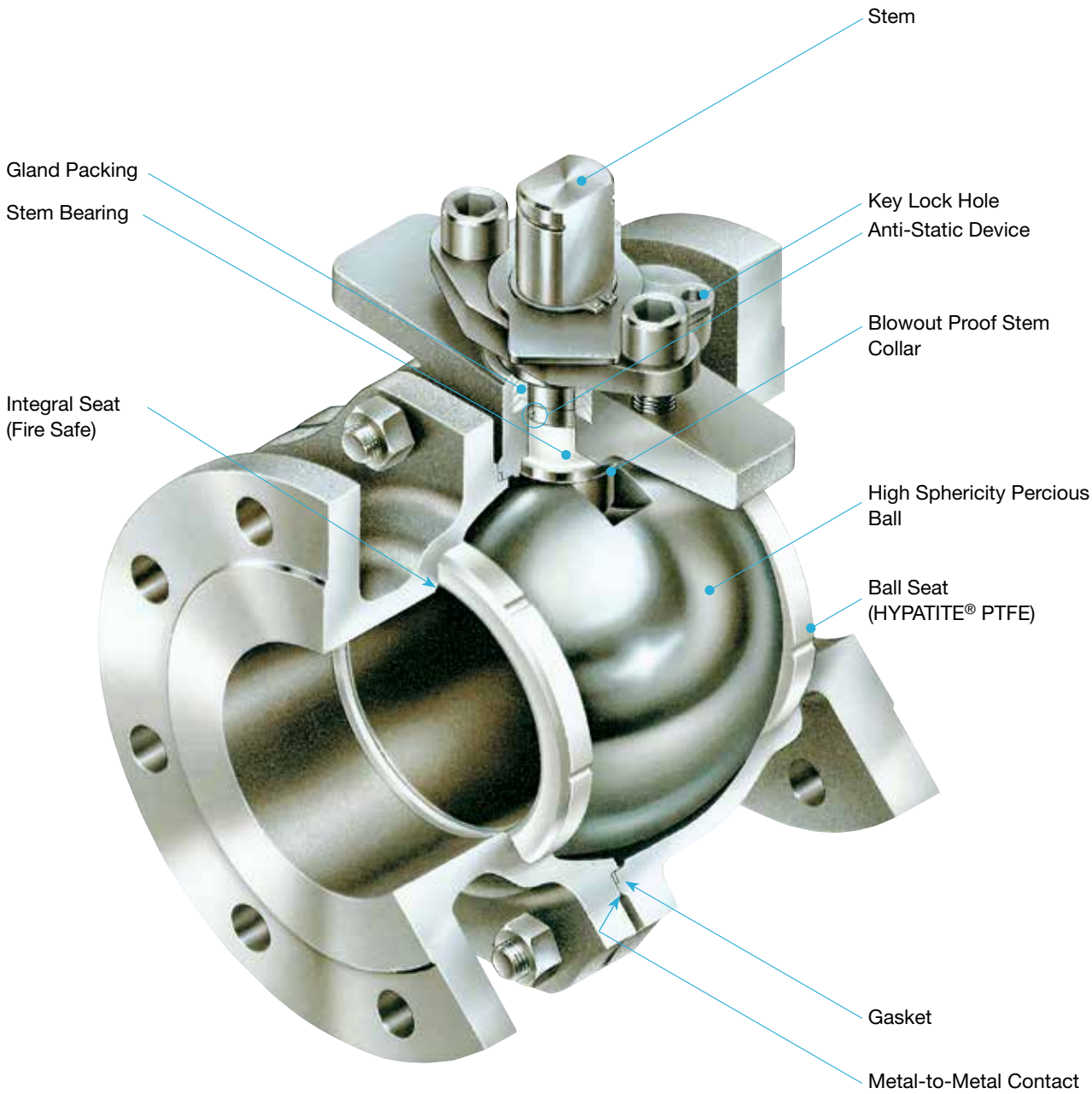
Type		67-K Series(-196℃)				67-K Series(-196℃)				67-K Series(-196℃)				66-K Series(-196℃)			
Ball Valve		300 FB 				600 FB 				900 FB 				150 FB NO IMAGE			
Fig		(G-)W300UPG67K				(G-)W600UPG67K				(G-)W900UPG67K				(G-)W150UPG66K			
End Connection		ASME B16.25 (BW)				ASME B16.25 (BW)				ASME B16.25 (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 NO IMAGE				300 FB NO IMAGE				600 FB NO IMAGE				150 FB NO IMAGE			
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 NO IMAGE				300 FB NO IMAGE				600 FB NO IMAGE				900 FB NO IMAGE			
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®)			

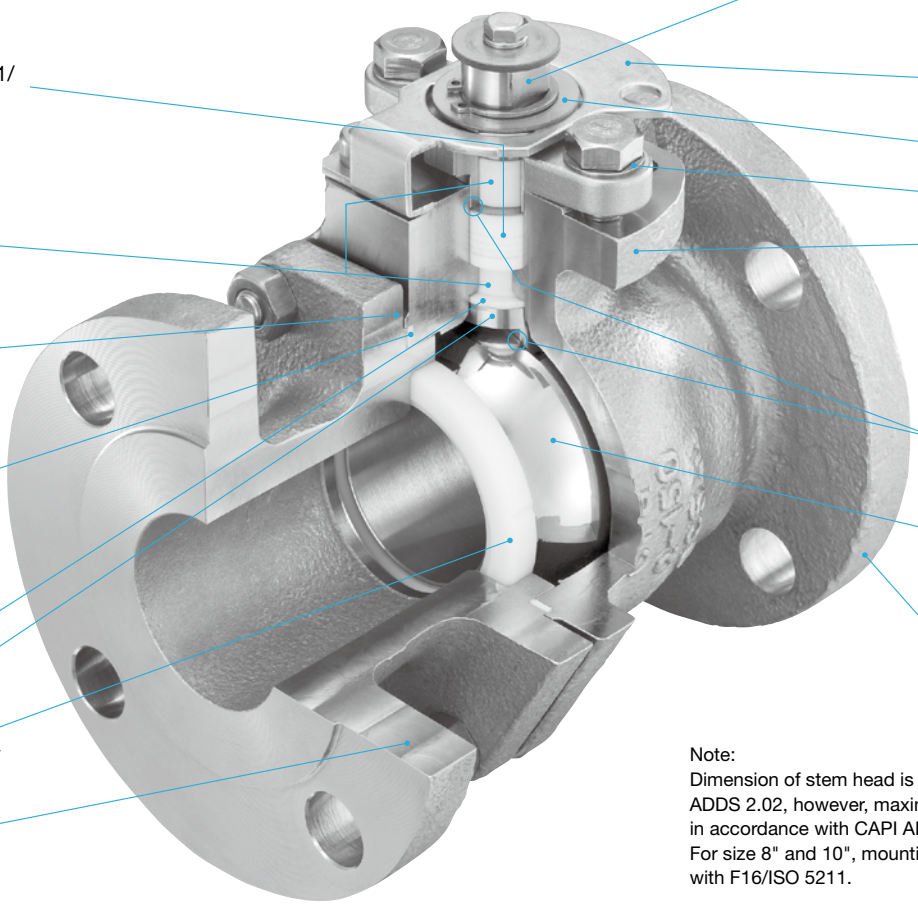
Type		64-K Series(-196℃)			
Ball Valve		1500 NO IMAGE FB			
Fig		(G-)W1500UPG64K			
End Connection		ASME B16.25 (BW)			
inch	mm	L	H	D	B
21/2	65	TBA	TBA	TBA	TBA
3	80	TBA	TBA	TBA	TBA
4	100	TBA	TBA	TBA	TBA
6	150	TBA	TBA	TBA	TBA
8	200	TBA	TBA	TBA	TBA
10	250	TBA	TBA	TBA	TBA
12	300	TBA	TBA	TBA	TBA
14	350	TBA	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®)			

KITZ TB Series Split Body, End Entry, Floating Ball Valves



KITZ 150/300SCTDZ/UTDZM Series
Full Bore, Split Body, Side Entry Ball Valves

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

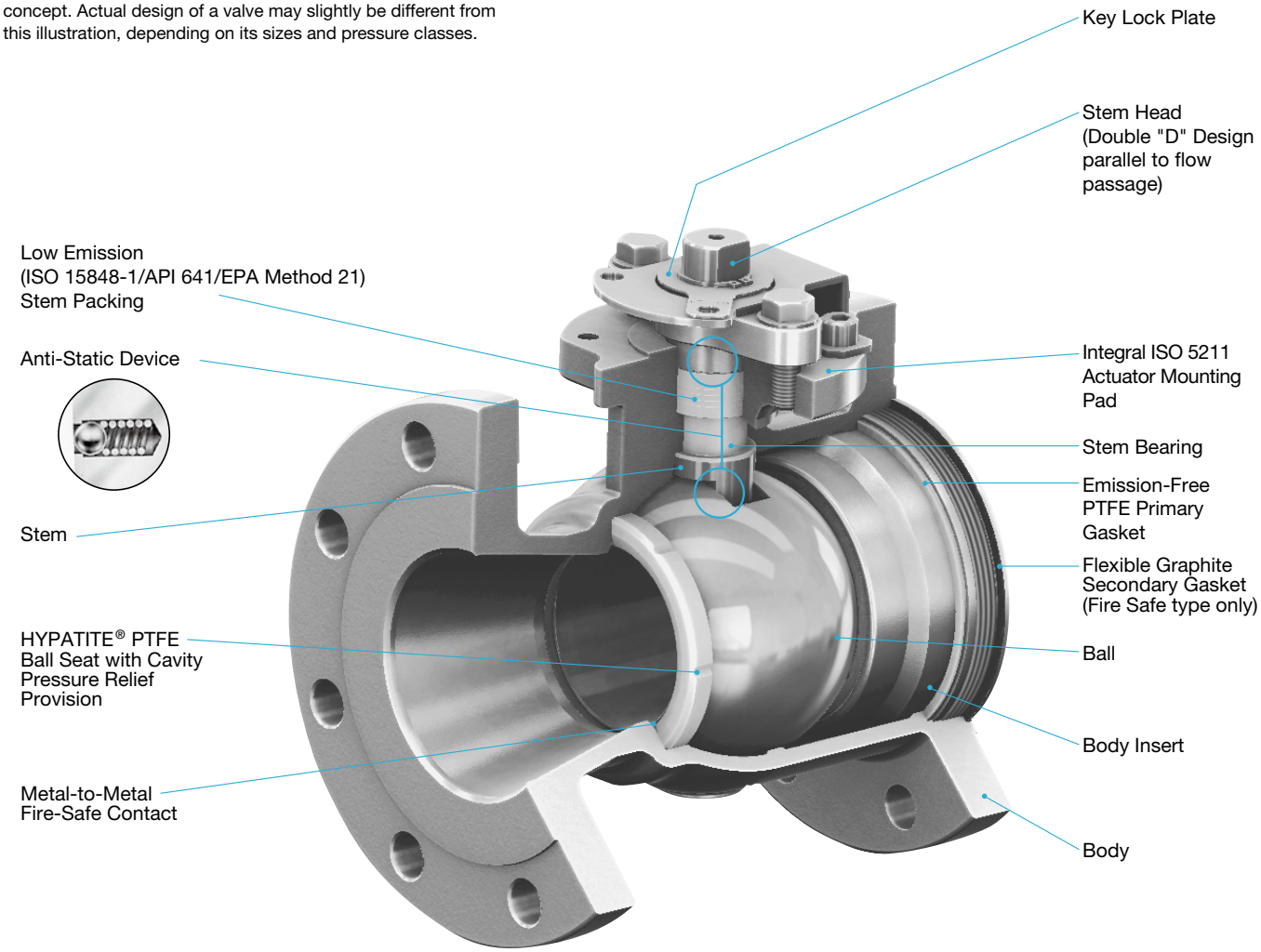
For 150/300SCTDZ/UTDZM and SCTAZ/UTAZM Series Ball Valves, **ISO 5211** actuator mounting pad is integrally provided for uniformly simplified mounting of any actuators provided with valve mounting flanges designed to ISO 5211. 150UTBM Series Ball Valves are provided with KITZ Standard integral actuator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

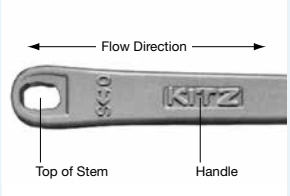


Fig. 1

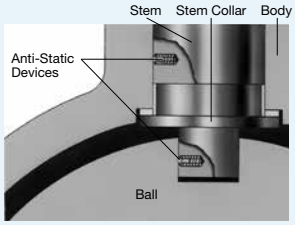


Fig. 2

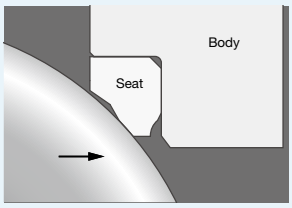


Fig. 3 (Before Fire)

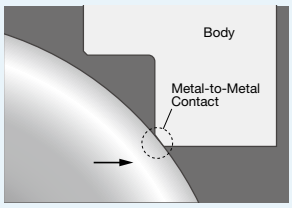


Fig. 4 (After Fire)

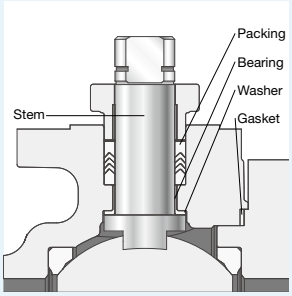


Fig. 5 (Before Fire)

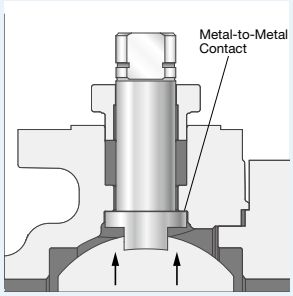


Fig. 6 (After Fire)

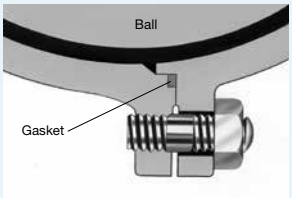


Fig. 7 (Before Fire)

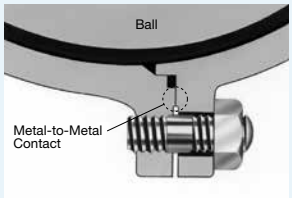


Fig. 8 (After Fire)

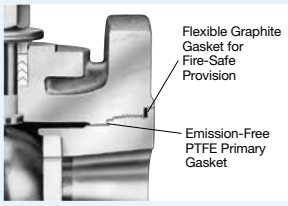


Fig. 9 (Uni-Body Insert)

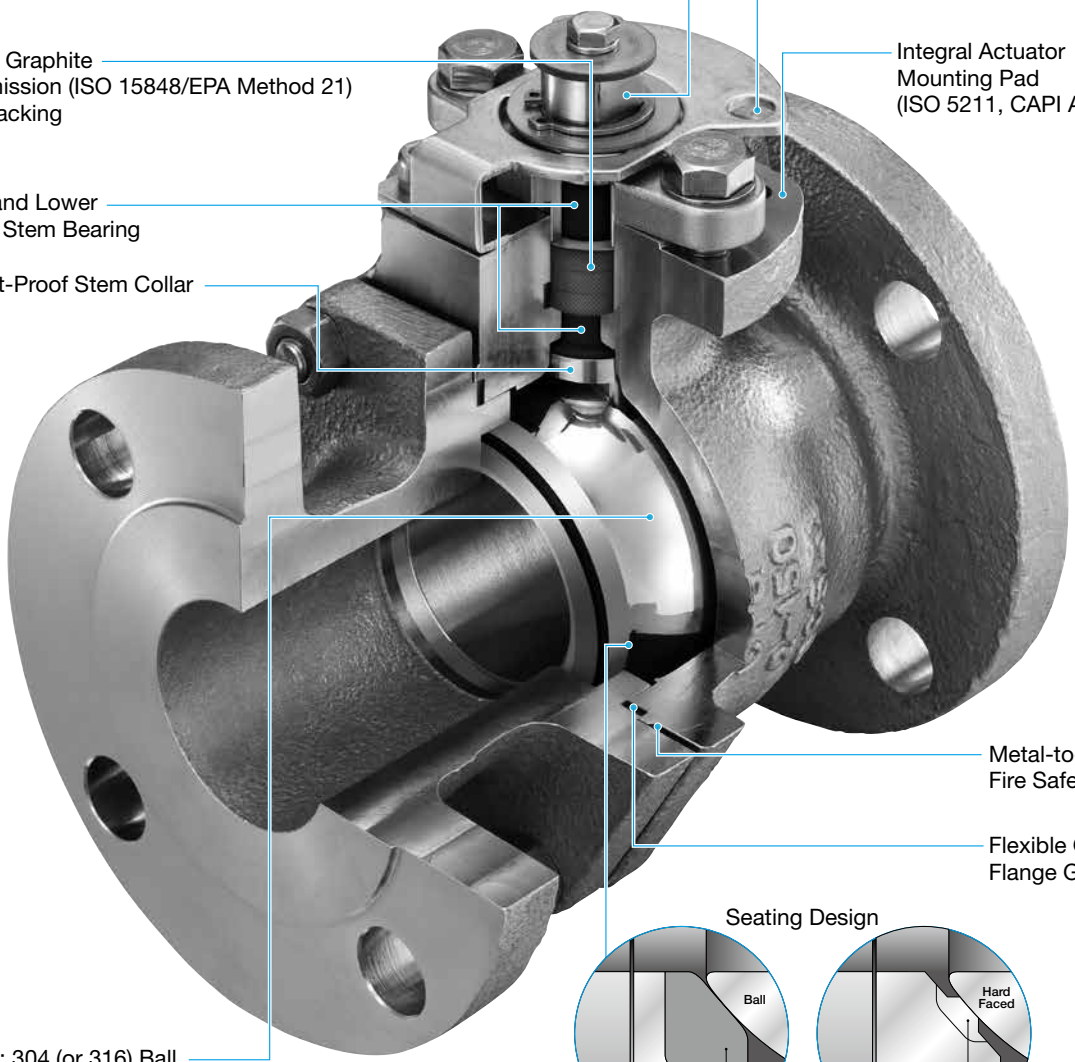
Emission Free PTFE Gasket is provided as standard for primary body seal. Flexible Graphite Gasket may be additionally employed as the secondary body seal for Fire-Safe Provision.

KITZ Steel Ball Valves for High Temperature

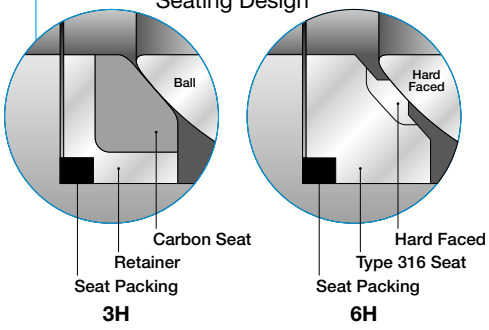
Design Features for Trim 3H, 5H, 6H

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.



Seating Design

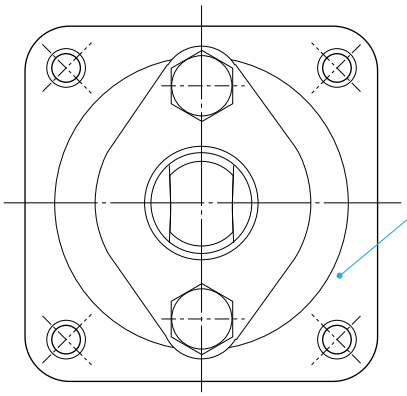


Note:
Dimensions of Stem Head is in accordance with CAPI ADDS 2.02, but maximum specified dimension is CAPI ADDS 2.02 is "F14".
For NPS 8 and 10, Mounting Pads are in F16/ISO 5211.

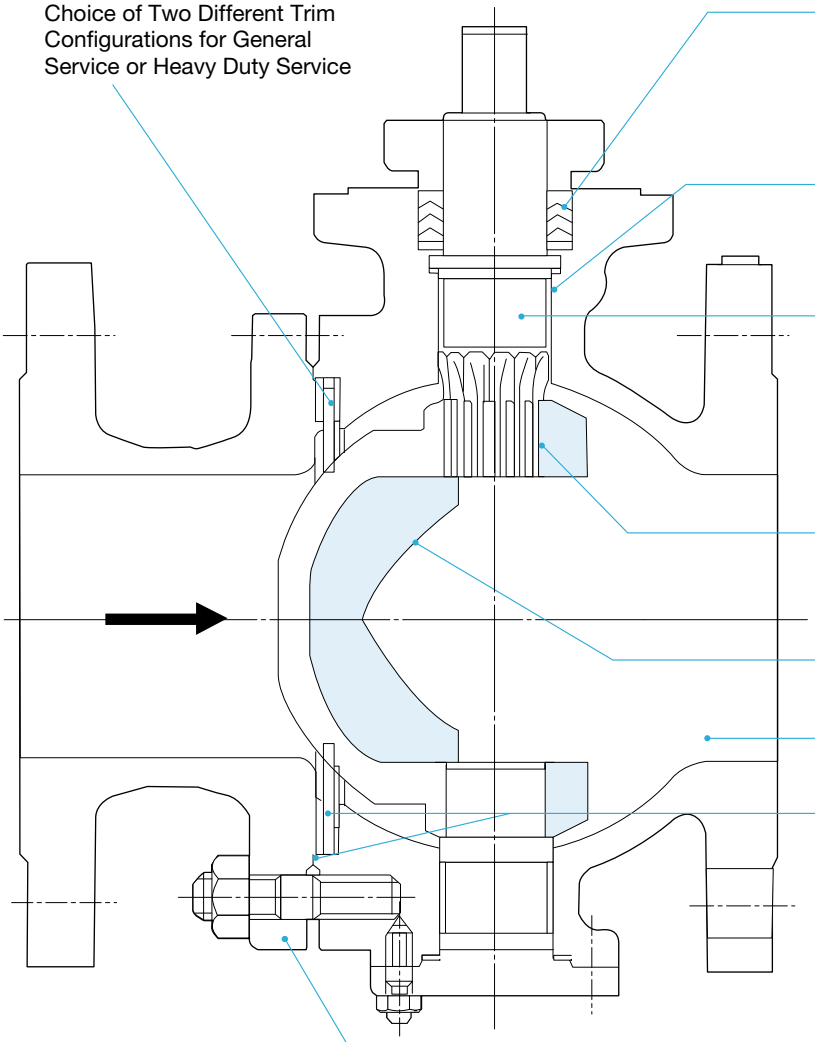
150UTDZ6H Size 2

Λ (Lambda)-Port Control Valves

Design Features



Integral Actuator Mounting Pad conforming to ISO 5211



Choice of Two Different Trim Configurations for General Service or Heavy Duty Service

Low Friction and High Seal PTFE Gland Packing Set

Low Friction Metal Backed PTFE Stem Bearing on Top and Bottom Stem

Top and Bottom Stem for Trunnion Mounting of Disc

Spline Shafted Stem Ends are firmly jointed with Disc

Sharply Edged Λ-Port with Wide Rangeability

Full Bore Design for High Flow Efficiency

Metal-to-Metal Contact for correct seat centering and high operational durability

Two Piece Bolted Body Construction for Easy Maintenance

Design Features

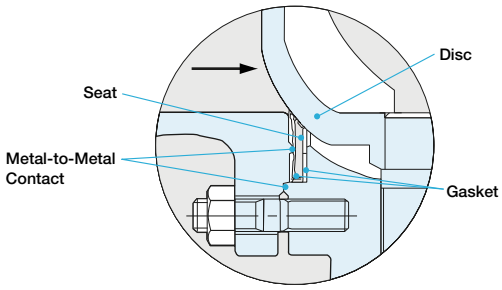
1. Sharp Solid Cutting

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.

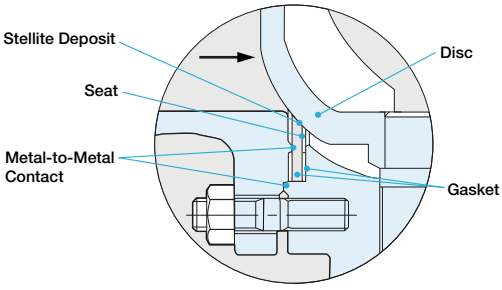
2. Choice of Trims

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

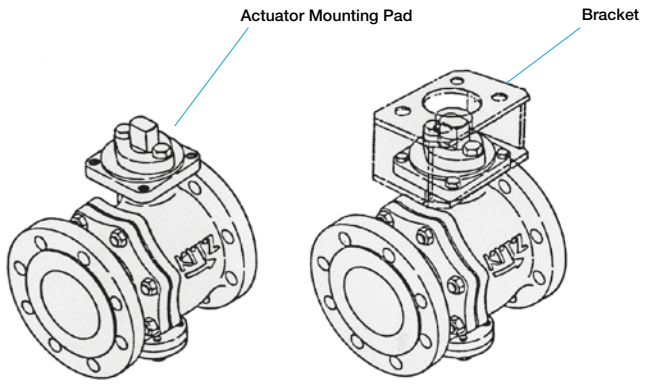
Two-Piece Split Body Construction provides convenience of easy maintenance which is always critically required for handling viscous or fibrous line fluids.

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 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)

Design Features

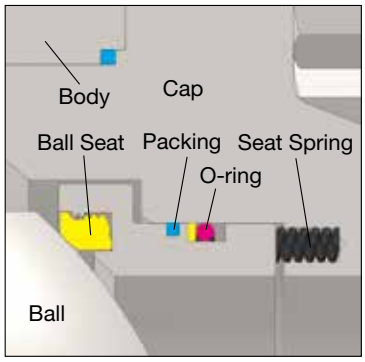
1. Fire Safe Design

(1) Internal Leakage Prevention

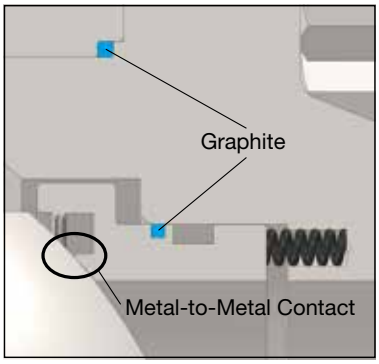
When resilient sealing materials are damaged or destroyed by plant fire, edges of upstream and downstream metal seat retainers preloaded by seat springs to come in contact with the ball to shut-off line fluid to minimize internal leakage through valve bore. And by flexible graphite seat retainer packing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

(2) External Leakage Prevention

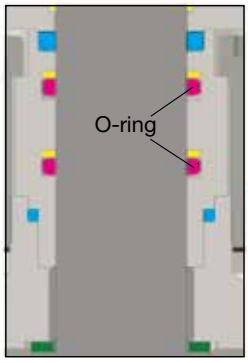
External leakage from valve stem area is prevented by double sealing mechanism with O-rings and flexible graphite gland packing rings. Leakage through valve body joint is protected by flexible graphite gaskets. Even after fire deteriorates O-rings, flexible graphite gland packing rings and gaskets remain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



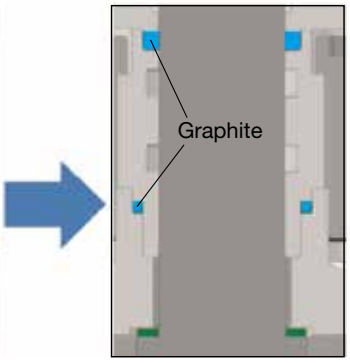
Before



After



Before



After

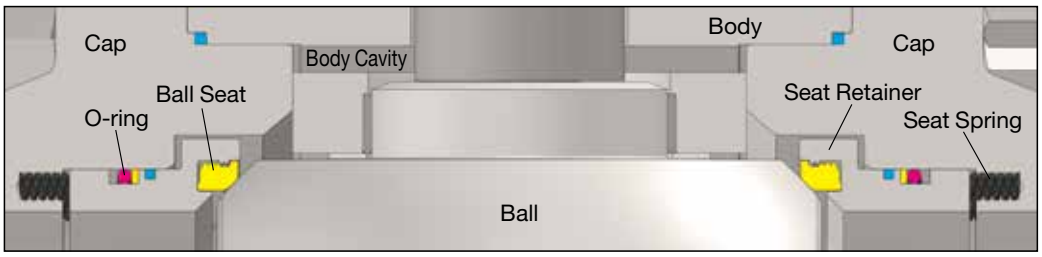
2. Tight Shut-off Sealing Mechanism

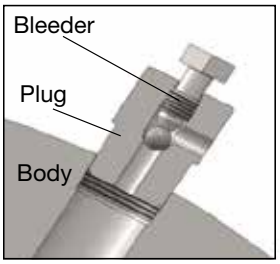
Resilient seat design maintains each upstream and downstream ball seats in contact with the ball adequately, by means of repulsing force of seat springs inserted behind seat retainers. Line fluid pressure also helps this contact method. This sealing mechanism features unfailing thru-the-bore sealing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

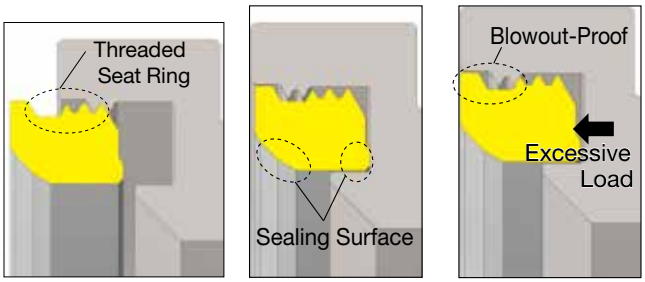
Relieving cavity pressure with a vent valve is recommended for safe draining.





4. Blowout–proof Ball Seat Assembly

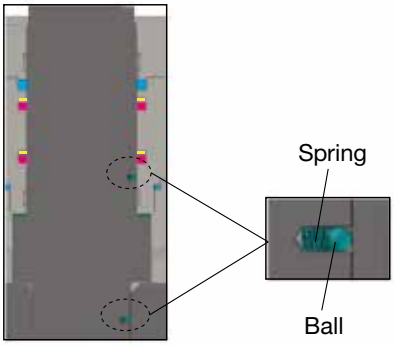
As illustrated below, ball seats are threaded into unthreaded back of seat retainers to reach inner walls and lower shoulders of seat retainers for tight sealing surface-to-surface contact. This unique design provides easy maintenance and blowout-proof seat assembly when ball seats are excessively loaded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



Assembly　Fully Closed　During Operation

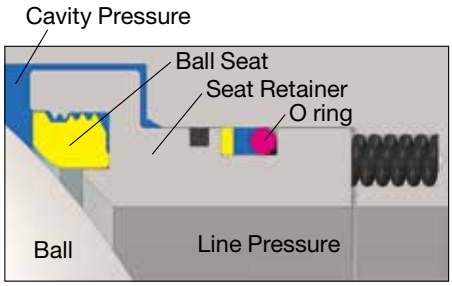
5. Antistatic Design

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.



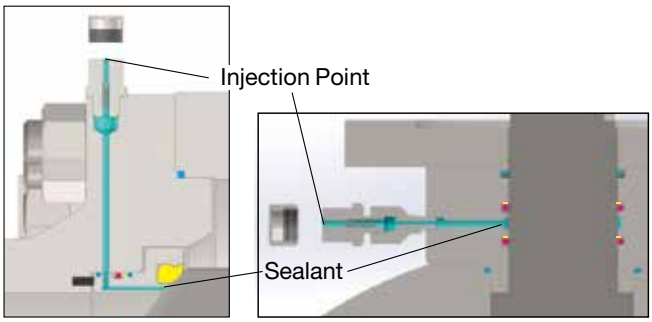
7. Low Emission Guaranteed Design

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.



Ball Seat Area　Stem Area

(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

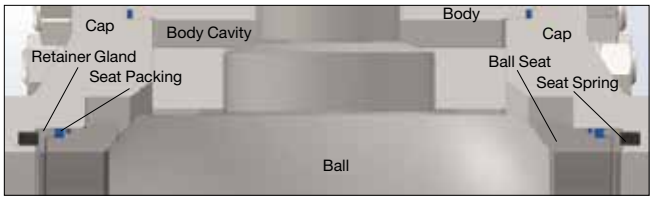
Certification
- Fugitive Emission: ISO 15848-1 BH CO1
- Fire Test: API 6FA
- PED: 2014/68/EU
- ATEX: 2014/34/EU
- SIL: IEC 61508 (SIL 2)

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

Design Features

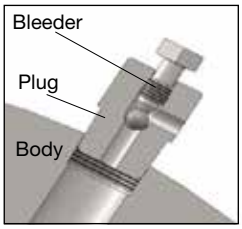
1. High Performance Sealing Mechanism

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.



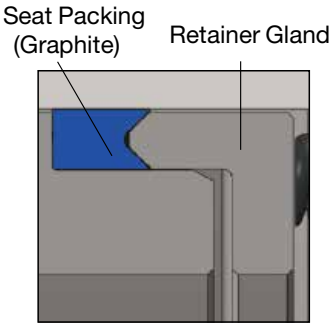
2. Double Block and Bleed Function

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.



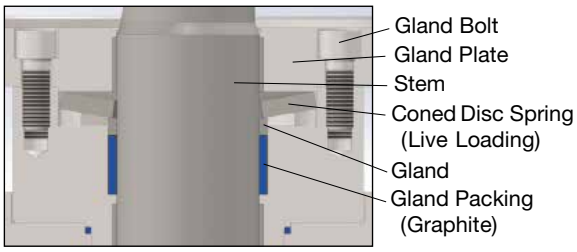
3. High Performance Seat Packing

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



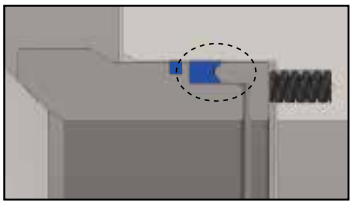
4. Live Loaded Packing Structure

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.

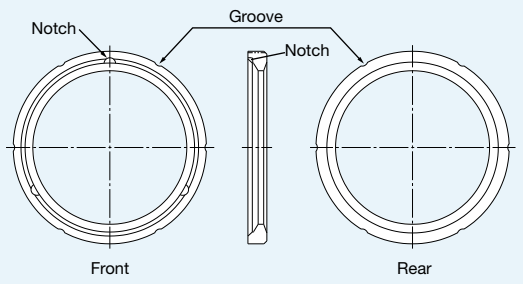
Material	Features	Maximum Service Temperature
Virgin PTFE	High chemical resistance and operation efficiency	200℃
HYPATITE® PTFE	Monomer permeability is lower and resistance against compression and creeping is higher than other PTFE materials	260℃/270℃ *1
Carbon filled PTFE	Excellent heat and abrasion 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 300°C (572°F) for trim symbol 5H and 500°C (932°F) for trim symbol 6H*1*2. With hard graphite seated ball valves, maximum service temperature of 500°C (932°F) 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 300°C (572°F). 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 RateD/ 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 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).
*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.

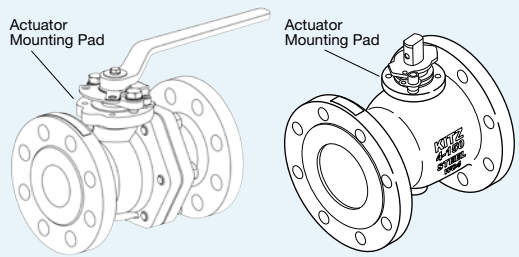
Dimension of Actuator Mounting Pads

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.

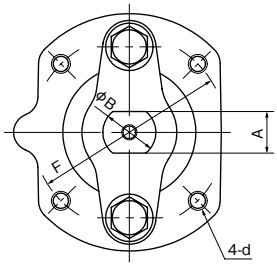
Note: Customers are requested to prepare mounting brackets and connectors for the actuators chosen for their valve automation. Actuators can be mounted on KITZ ball valves without disassembly of valve glands.

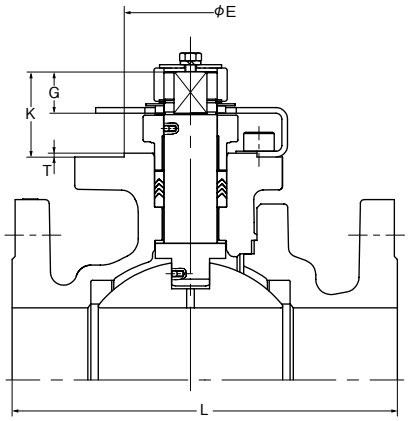
Actuator Mounting Pad



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

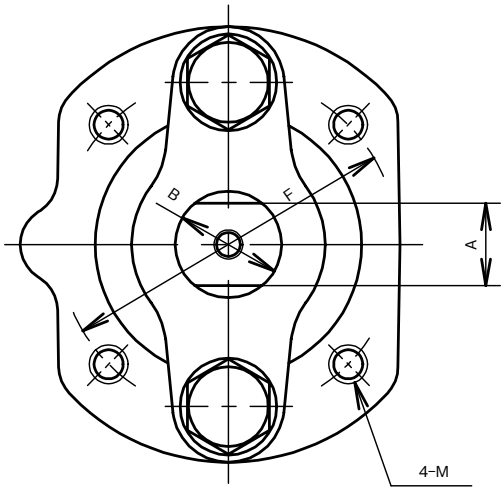
Unit: mm

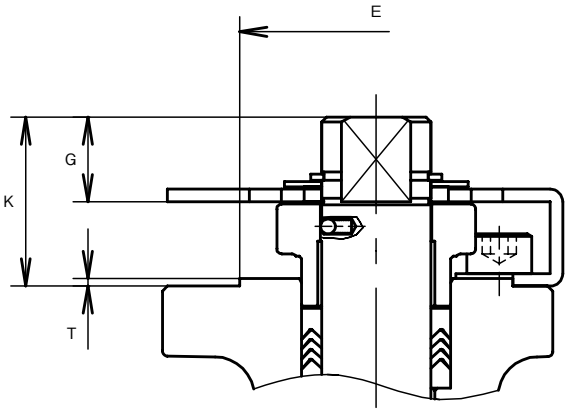
Nominal Pressure	Nominal Size (NPS)	-0.05 -0.10 A	-0.1 -0.2 ϕB	-0.1 -0.2 ϕE	±0.2 ϕF	G	K	L	d M Thread	T	ISO 5211 Flange Type
Class 150	1/2	9	12	25	36	9	22	108	M5	1	F03
	3/4	9	12	25	36	9	22	117	M5	1	F03
	1	14	18	35	50	14	30	127	M6	1.5	F05
	1 1/4	14	18	35	50	14	30	140	M6	1.5	F05
	1 1/2	17	22	55	70	17	34	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.

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

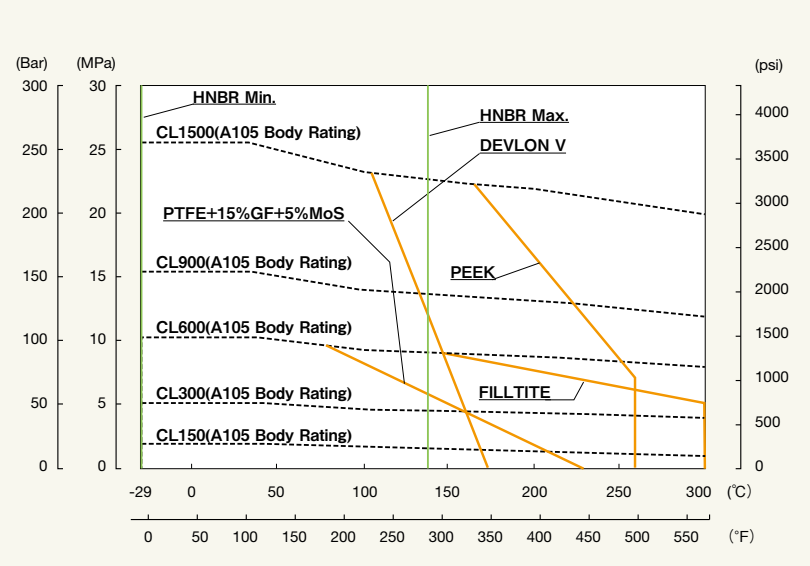
Pressure-Temperature rating of ball valves are determined, not only by valve shell materials, but more essentially by sealing materials used for ball seats, gland packing and gaskets. Sealing materials may be high molecule or rubber, but the choice is limited by the characteristics of service fluid, 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.

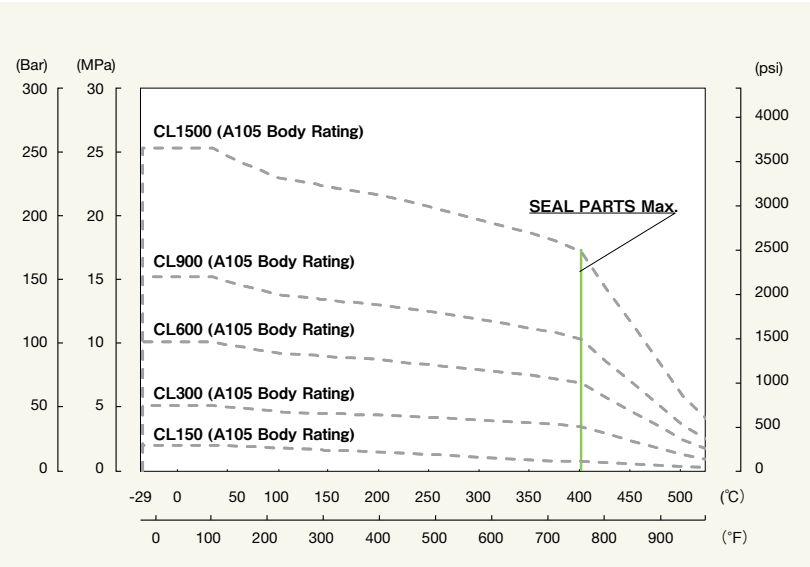
FILLTITE is specially reinforced ball seat using carbon based fillers into PTFE at higher rate than conventional carbon filled PTFE, which greatly improves heat and abrasion resistance. This material has excellent operability, durability, chemical resistance and sealing performance at high temperature 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

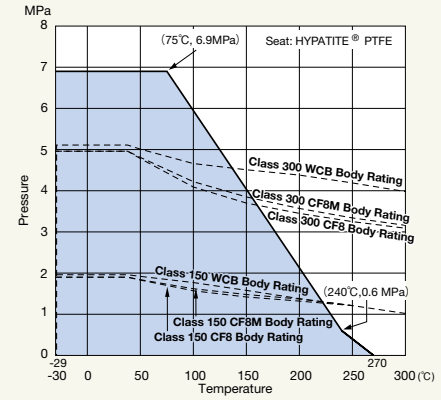
■Metal Seated 3-Piece Trunnion Mounted Ball Valves: Trim 6H



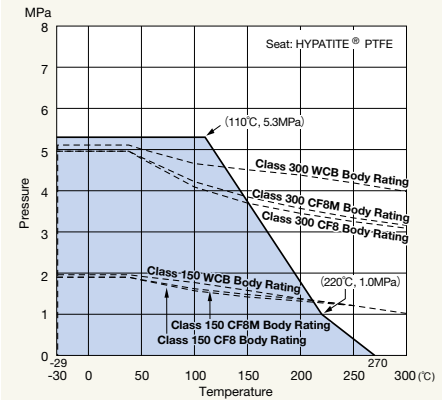
NOTE : In case of using at higher than 400℃ please contact KITZ Corporation.

Pressure-Temperature Ratings

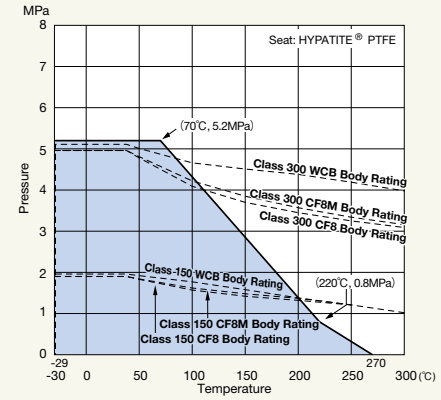
10/20/150/300UTDZ(M)/SCTDZ: NPS ½, ¾



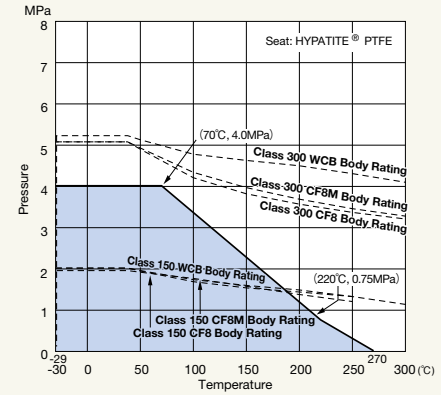
10/20/150/300UTDZ(M)/SCTDZ: NPS 1 to 2 ½



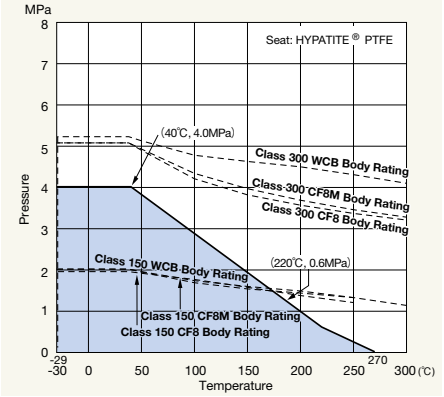
10/20/150/300UTDZ(M)/SCTDZ: NPS 3, 4



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

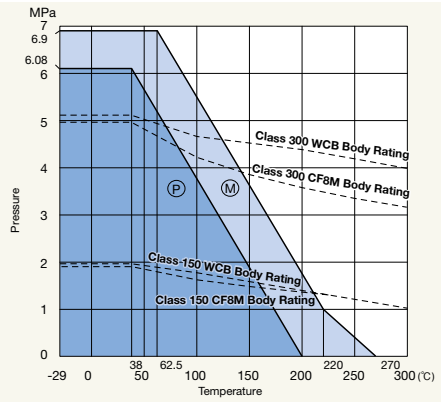


10/20/150/300UTDZ(M)/SCTDZ: NPS 8, 10
TDR series: NPS 10

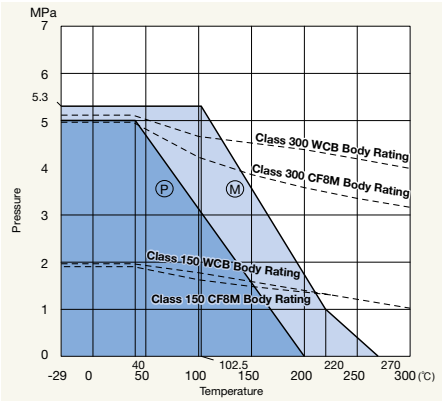


Note: Lowest working temperature for WCB is −29°C.

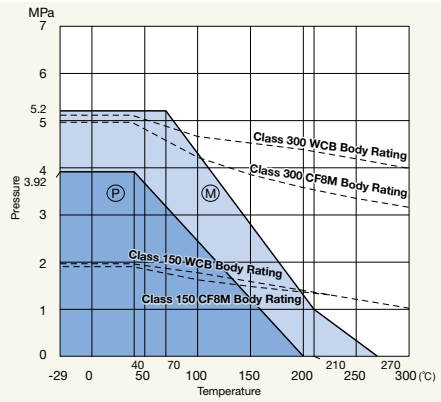
150/300UTAZ(M)/SCTAZ: NPS ½ to 1



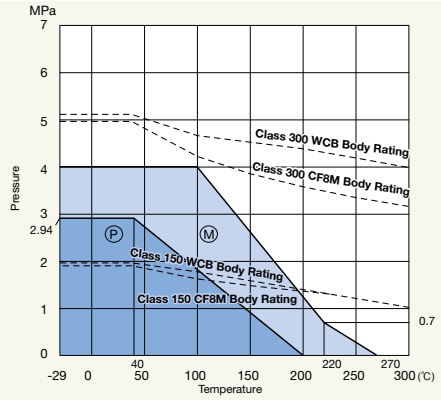
150/300UTAZ(M)/SCTAZ: NPS 1½ to 3



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

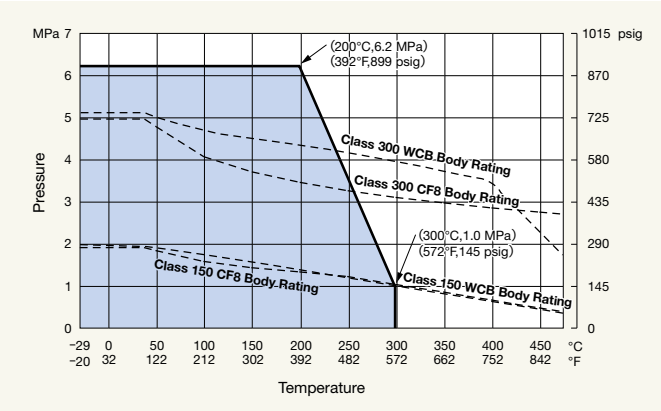


150/300UTAZ(M)/SCTAZ: NPS 8, 10

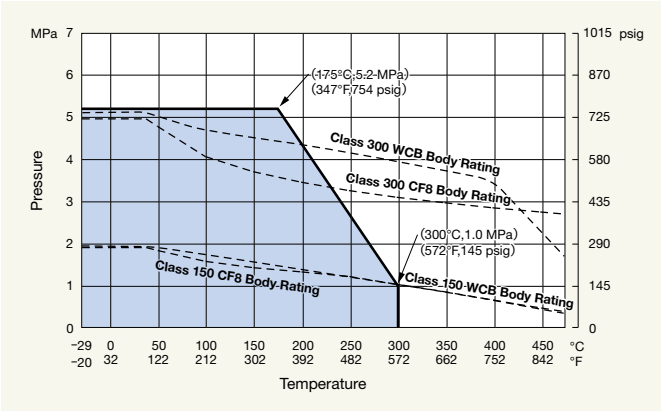


Seat: Ⓟ Virgin PTFE
Ⓜ HYPATITE® PTFE / Carbon-filled PTFE

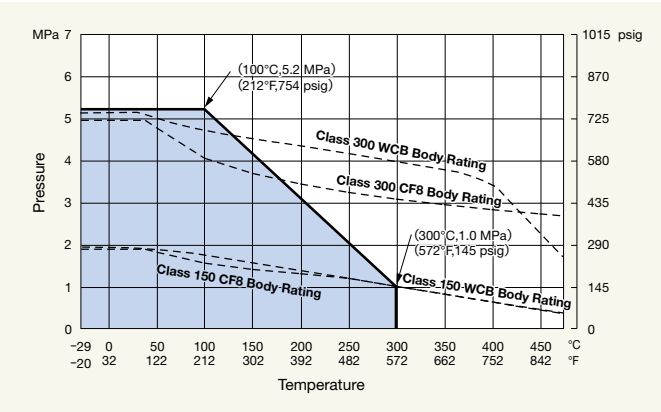
FILLTITE Seated Floating Ball Valves: Trim 1H: NPS ½ to 2½



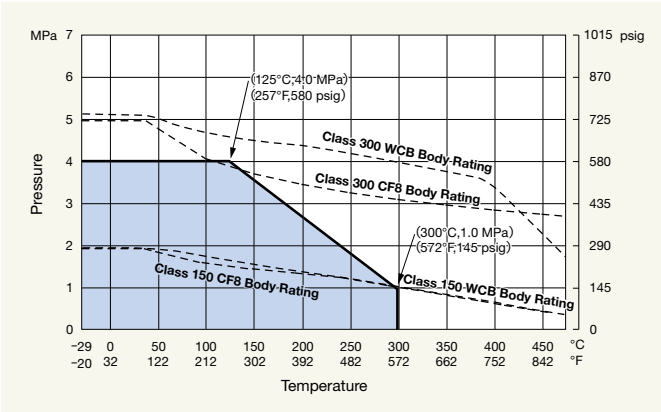
FILLTITE Seated Floating Ball Valves: Trim 1H: NPS 3, 4



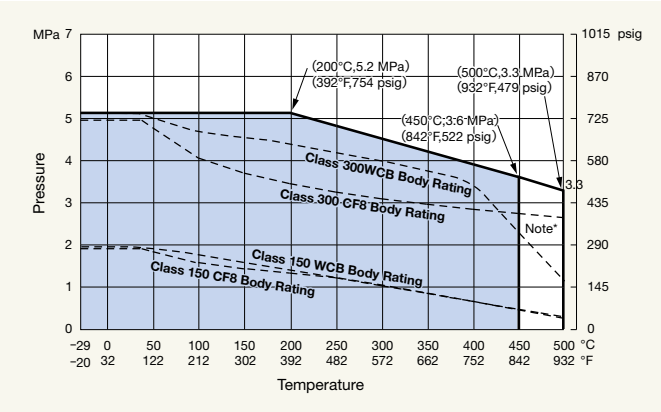
FILLTITE Seated Floating Ball Valves: Trim 1H: NPS 5, 6



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

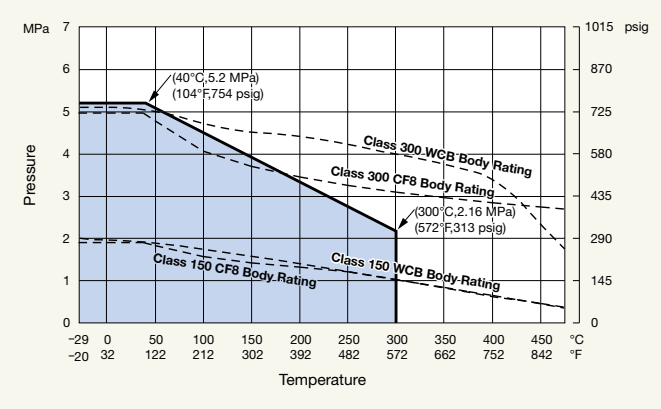


Hard Graphite Seated Floating Ball Valves: Trim 3H

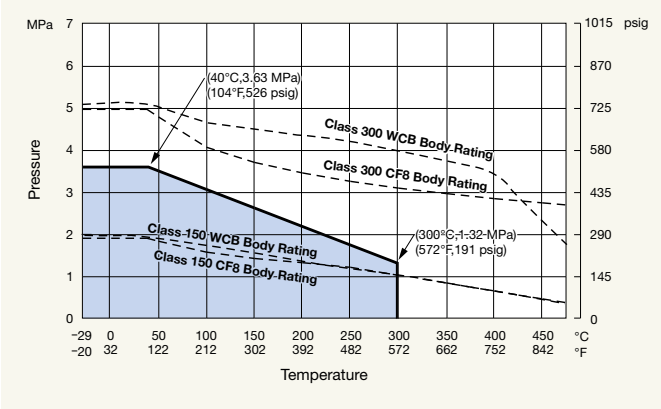


Note: **3H** Maximum working temperature for oxidizing service, such as high temperature air, is 450°C (842°F).
Note: **3H/6H** Serviceable temperature terminates at 300℃ (572°F) for JIS 10K and at 425℃ (797F°) for JIS 20K.
Note: **3H/6H** WCB Shell material: Upon prolonged exposure to temperatures above 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.

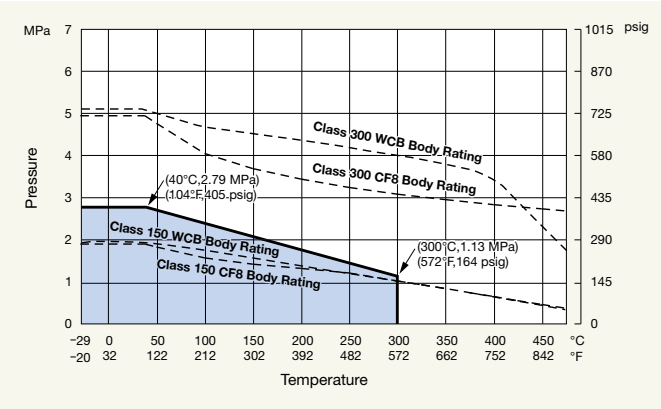
Metal Seated Floating Ball Valves: Trim 5H: NPS ½ to 1¼



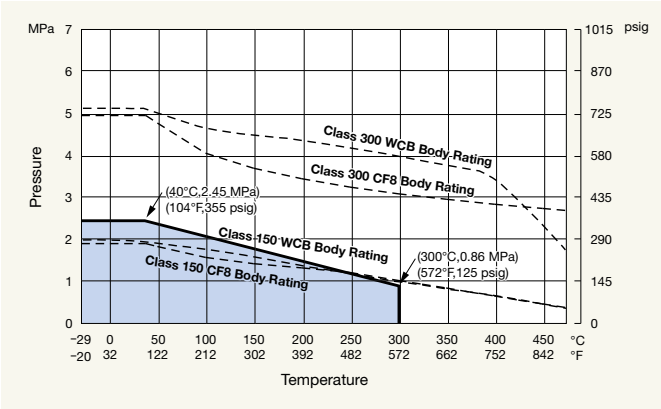
Metal Seated Floating Ball Valves: Trim 5H: NPS 1½, 2



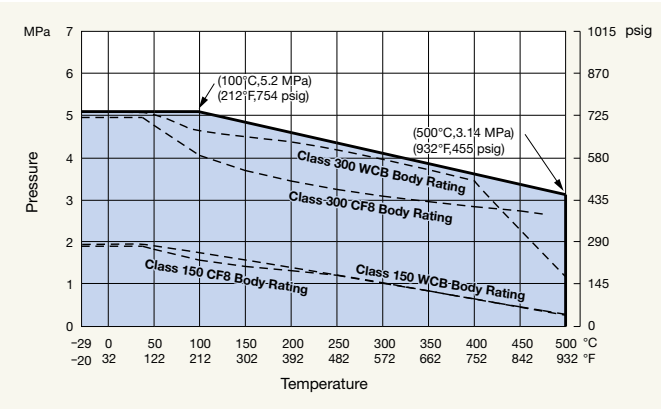
Metal Seated Floating Ball Valves: Trim 5H: NPS 2½, 4



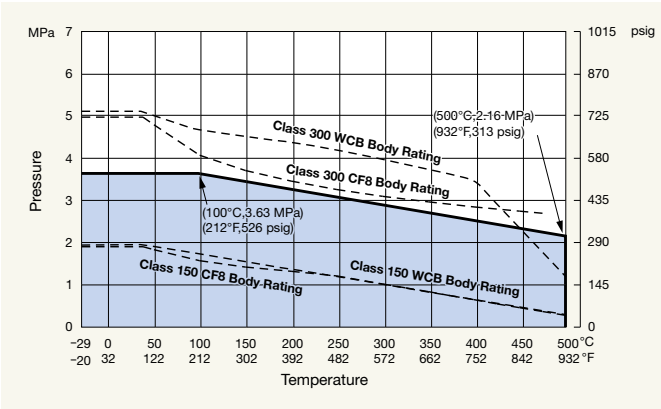
Metal Seated Floating Ball Valves: Trim 5H: NPS 5 to 8



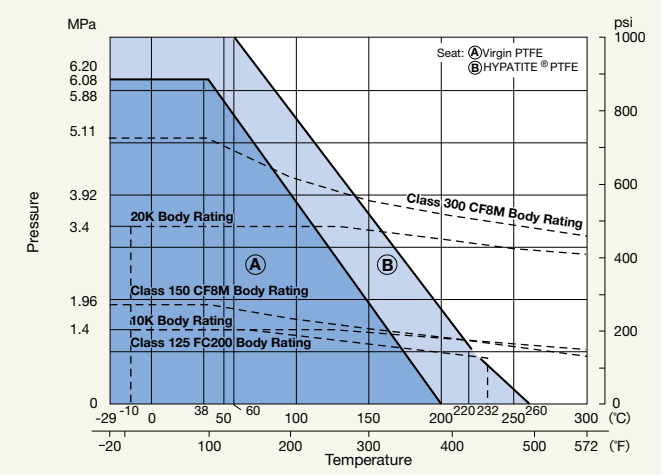
Metal Seated Floating Ball Valves: Trim 6H: NPS ½ to 5



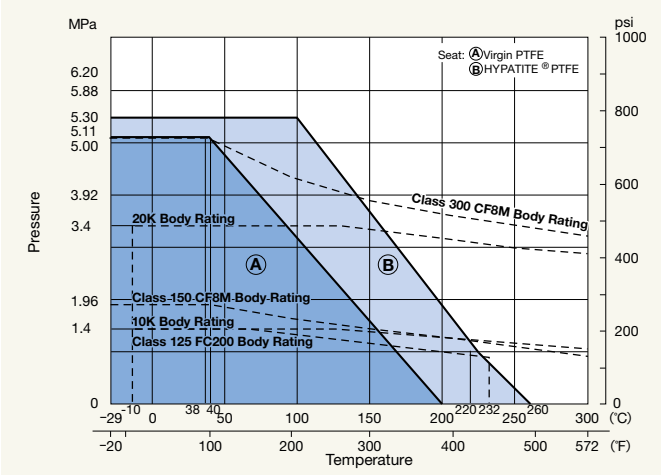
Metal Seated Floating Ball Valves: Trim 6H: NPS 6, 8



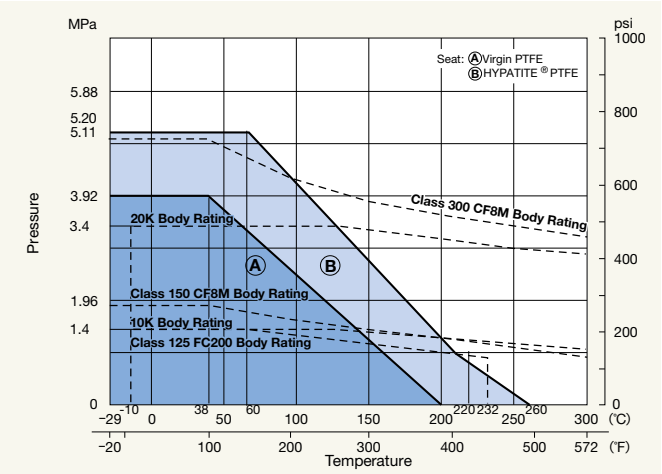
TB Series(*): NPS ½, ¾
TR Series(*): NPS ½ to 1



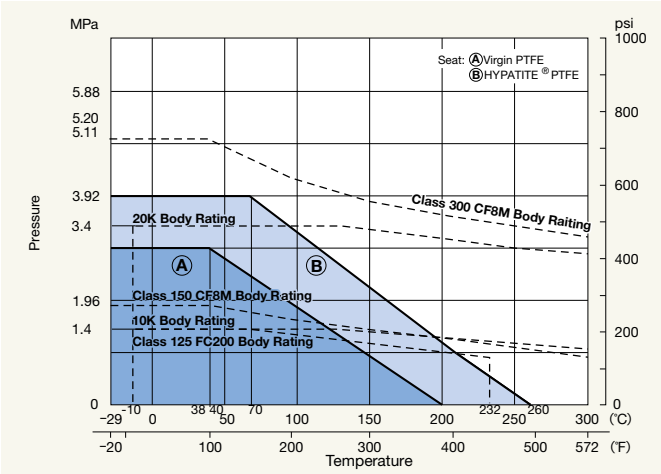
TB Series(*): NPS 1 to 2½
TR Series(*): NPS 1½ to 3



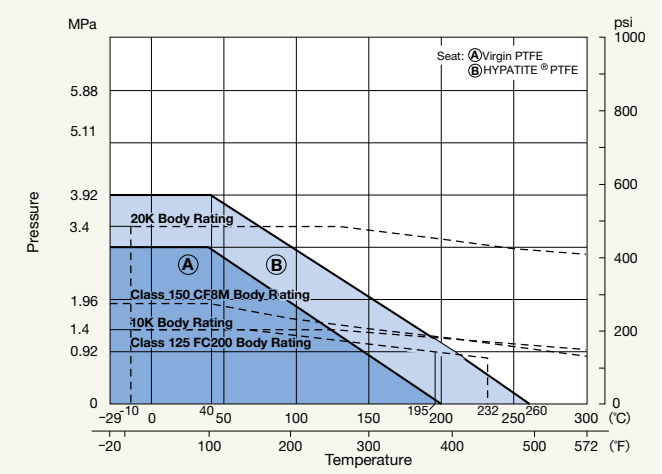
TB Series(*): NPS 3, 4
TR Series(*): NPS 4, 5



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

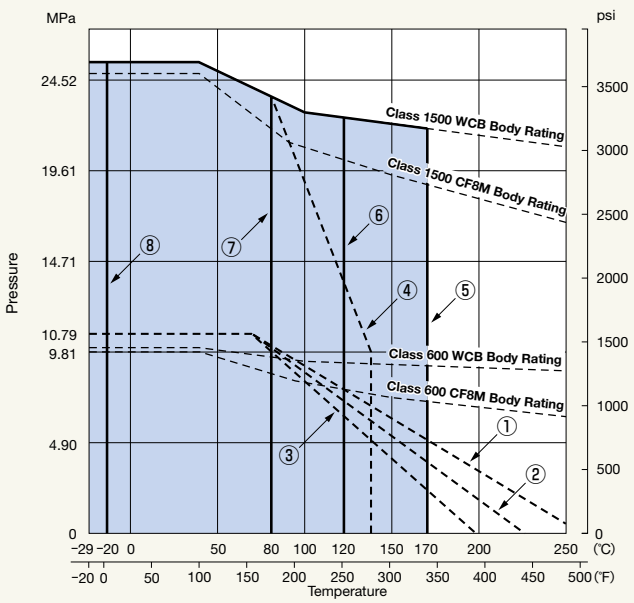


TB Series(*): NPS 8, 10
TR Series(*): NPS 10, 12



(*) 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

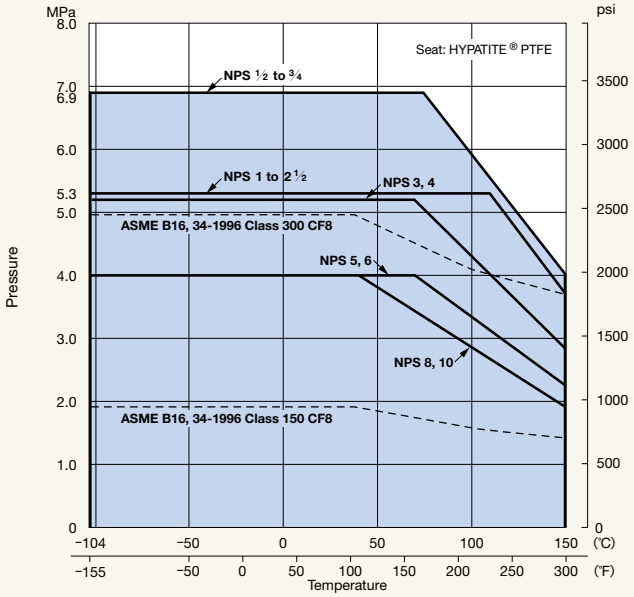
⑤: (1) FKM
(2) Low Temperature FKM
⑥: (1) EPDM
(2) ECO (Epichlorohydrin Copolymer)
⑦: (1) NBR
(2) Low Temperature NBR

O-ring Lower Limit

⑧: FKM

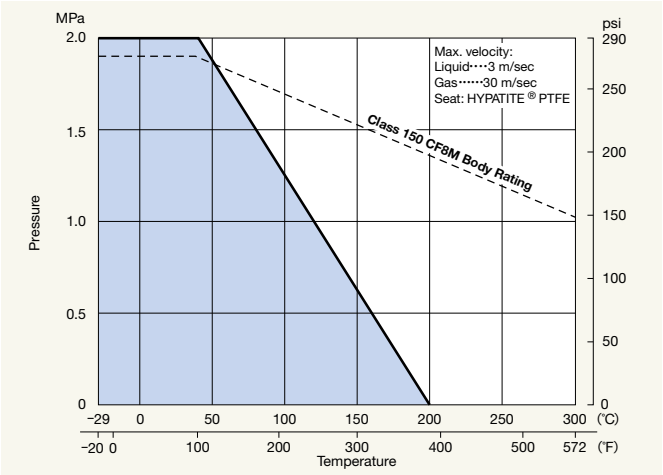
* O-rings made of others than FKM can with stand −29℃ (−20℉)

150/300UTDZXL(M)

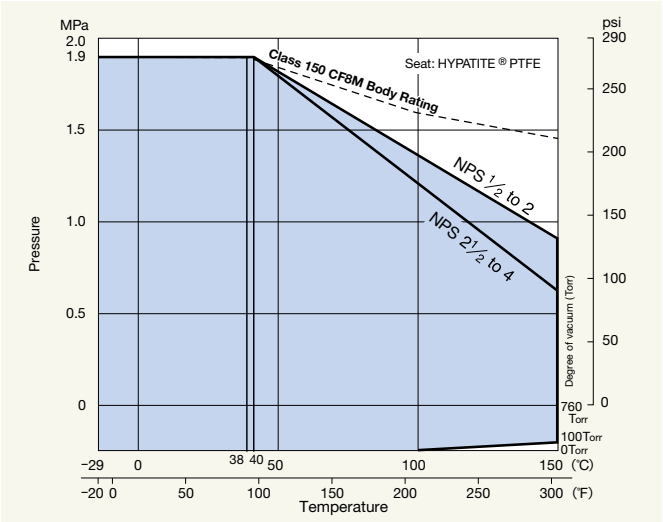


3-way: 150UTB/TR4LA(M)/4TA(M)

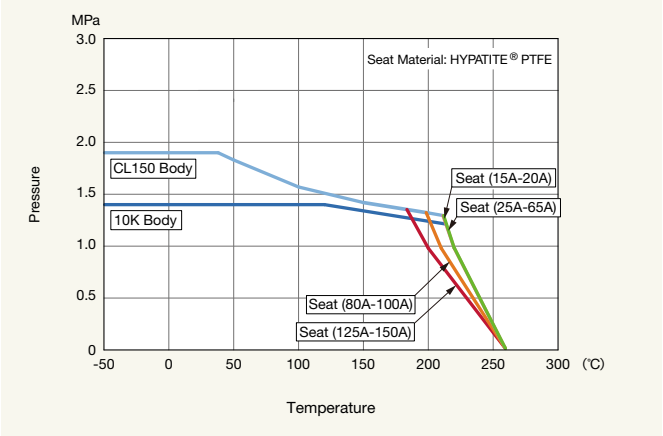
*Refer to 150UTBM Ratings for 150UTB2LM/2TM



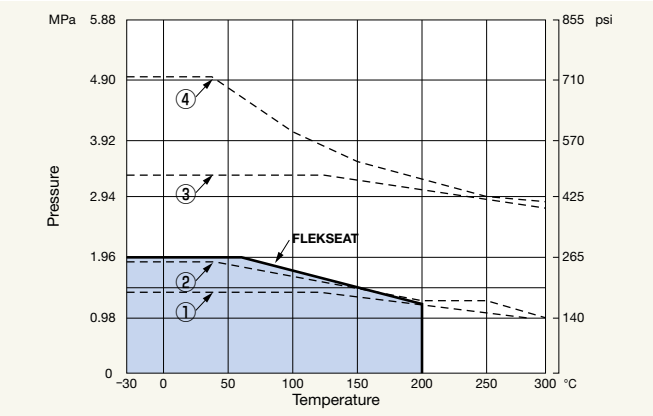
PFA Lined: 150UTBLN



10/15010UTBDXK(M)

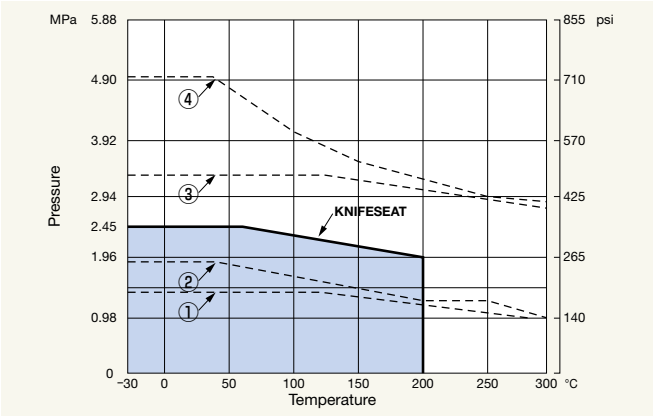


■150/300UVC(M) 60/20UVC(M)



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)



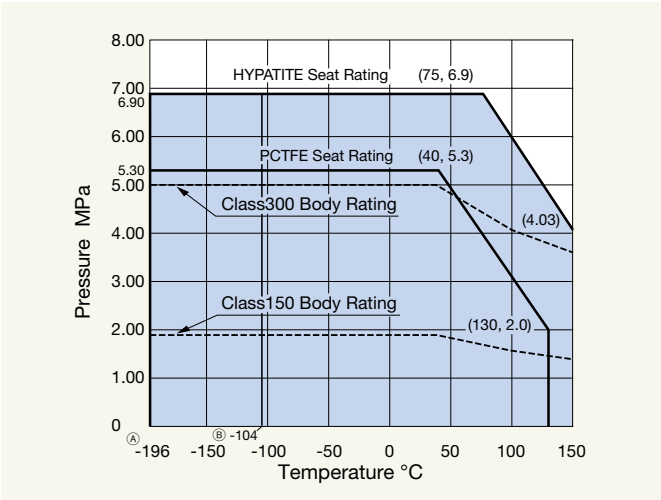
①: Valve Body Rating to JIS B2220 10K Steel
②: Valve Body Rating to ASME B16.34 Class 150 CF8
③: Valve Body Rating to JIS B2220 20K Steel
④: Valve Body Rating to ASME B16.34 Class 300 CF8

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.

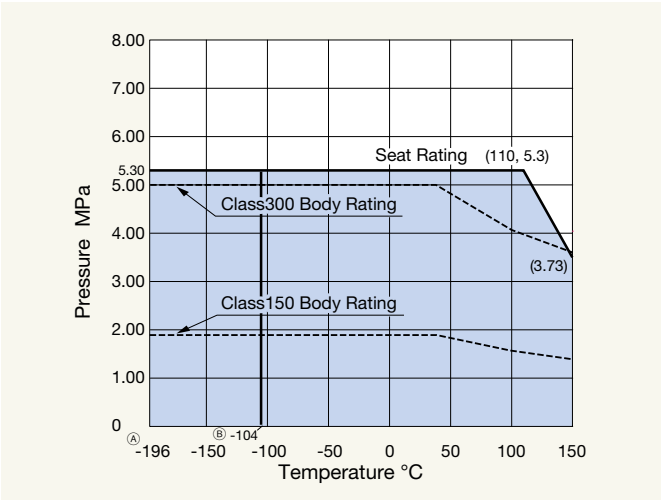
Pressure-Temperature Rating (Seat Rating)

Stainless Steel

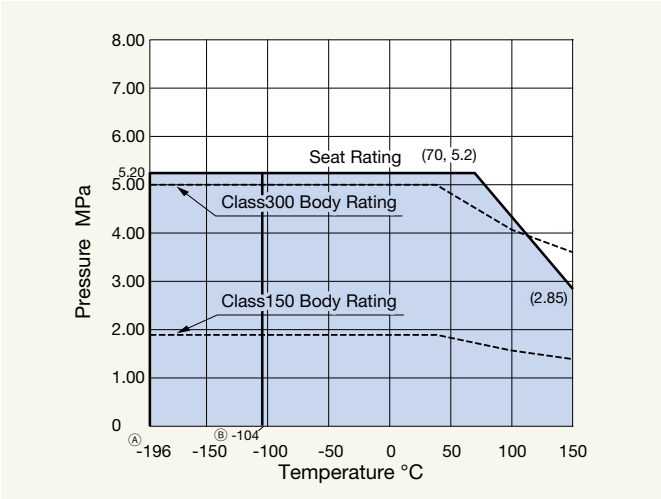
Ⓐ UTAZLM : ½B to 2B
Ⓐ UTDZL : ½B to 1½B
Ⓑ UTAZXLM : ½B to 1B
Ⓑ UTDZXL : ½B • ¾B



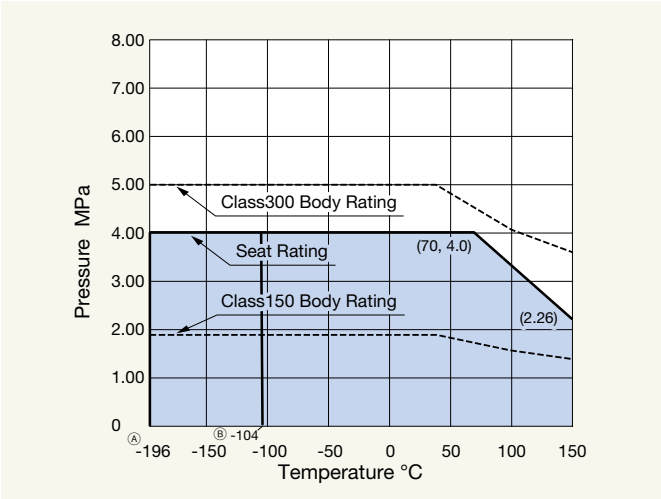
Ⓐ UTAZLM : 3B
Ⓐ UTDZL : 2B • 2½B
Ⓑ UTAZXLM : 1½B to 3B
Ⓑ UTDZXL : 1B to 2½B



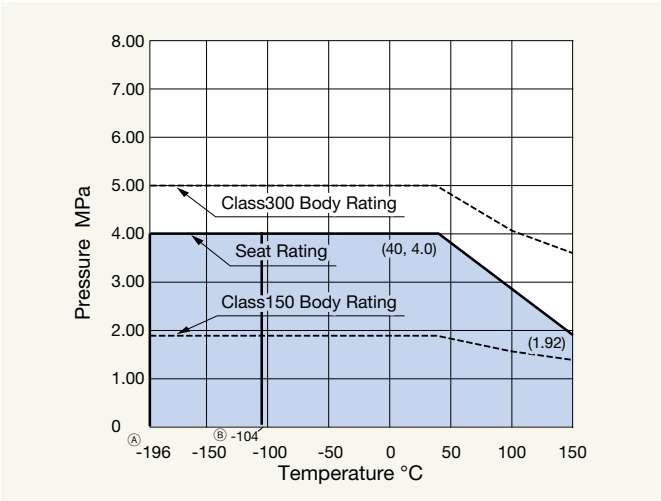
Ⓐ UTAZLM / Ⓑ UTAZXLM : 4B • 6B
Ⓐ UTDZL / Ⓑ UTDZXL : 3B • 4B



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

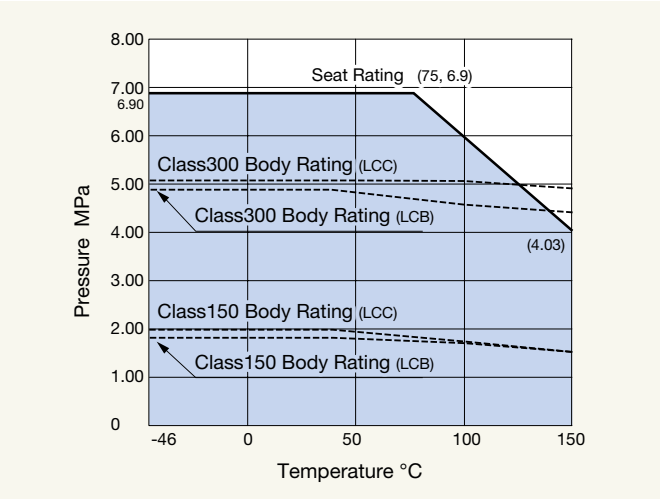


Ⓐ UTDZL / Ⓑ UTDZXL : 8B • 10B

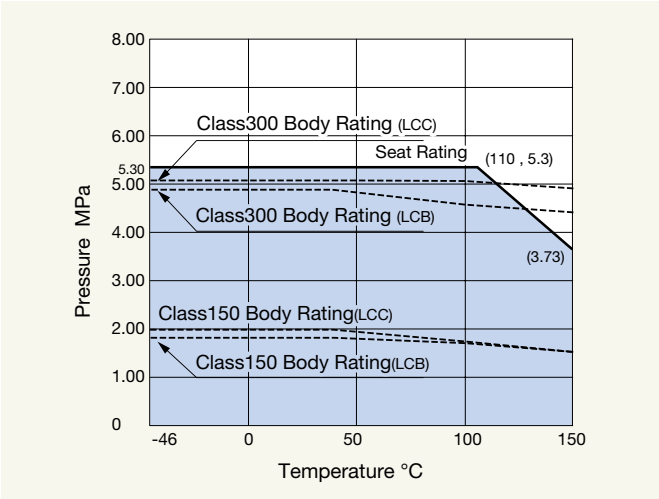


Cast Carbon Steel

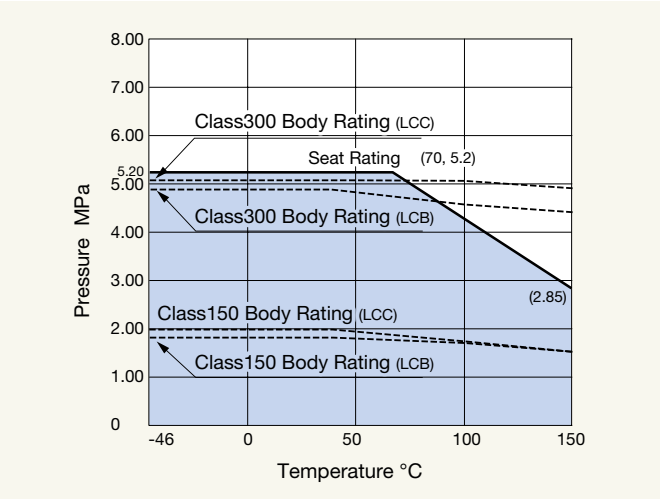
SCTAZXCL(BODY/LCC) : ½B to 1B
SCTDZXCL(BODY/LCC) : ½B • ¾B
SCTDZXBL(BODY/LCB) : ½B • ¾B



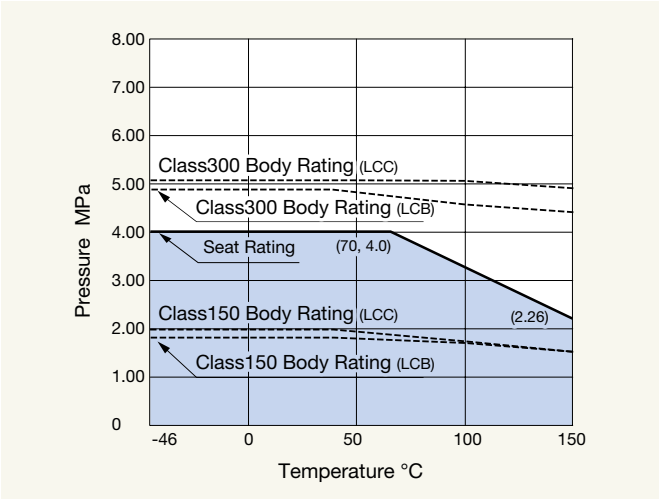
SCTAZXCL(BODY/LCC) : 1½B to 3B
SCTDZXCL(BODY/LCC) : 1B to 2½B
SCTDZXBL(BODY/LCB) : 1B to 2½B



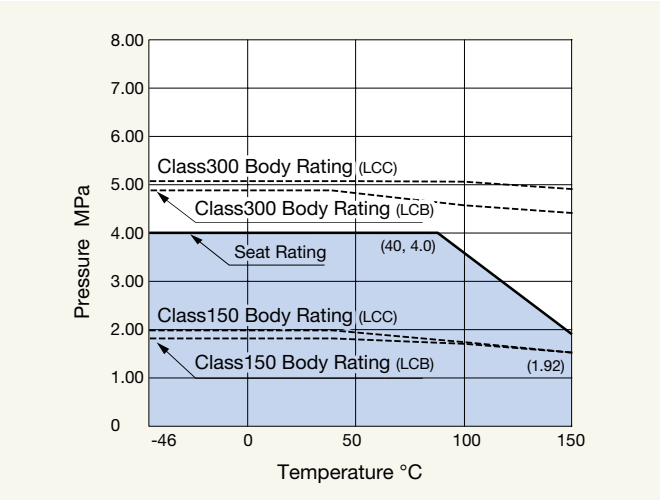
SCTAZXCL(BODY/LCC) : 4B • 6B
SCTDZXCL(BODY/LCC) : 3B • 4B
SCTDZXBL(BODY/LCB) : 3B • 4B



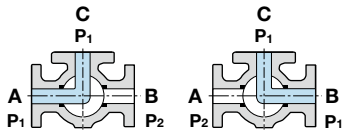
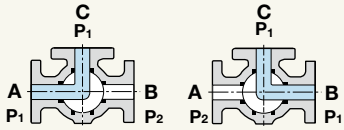
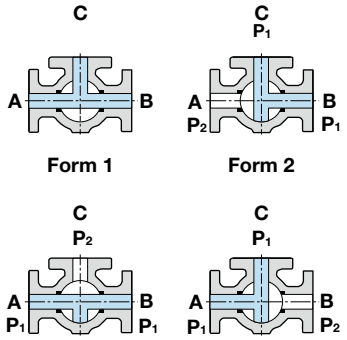
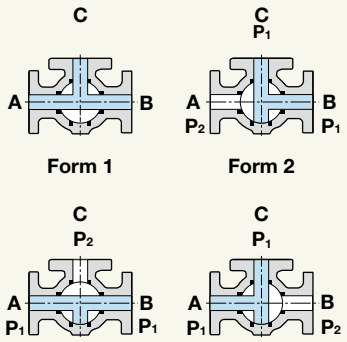
SCTAZXCL(BODY/LCC) : 8B • 10B
SCTDZXCL(BODY/LCC) : 5B • 6B
SCTDZXBL(BODY/LCB) : 5B • 6B



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.

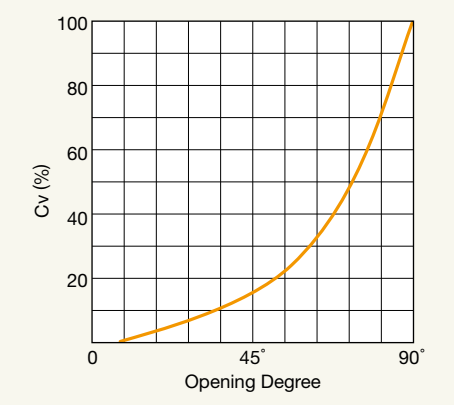
Inspection and Warranty

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

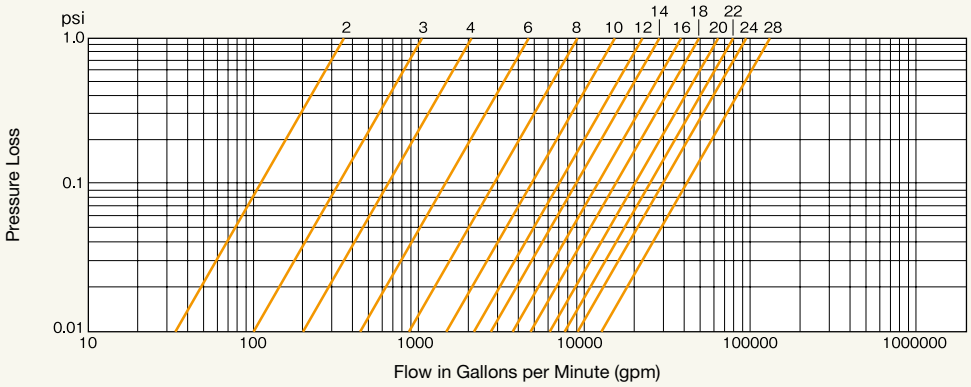
One of the best advantages of ball valves is that every flow per any given bore size is larger than other types of valves. Fluid is much less disturbed by eddy currents or pulsation. To obtain the figure of flow per valve opening, simply multiply the flow rate (%) by the corresponding value given in the table of Pressure Loss vs. Flow Rate.

Valve Opening vs. Cv

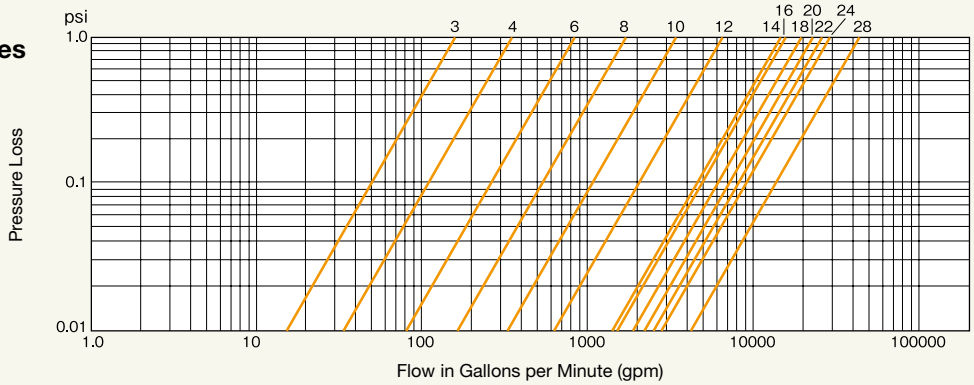


Pressure Loss vs. Flow Rate

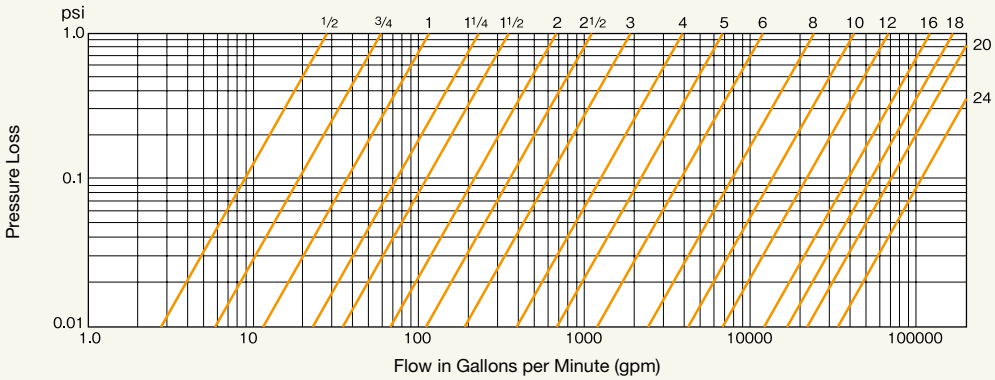
Full Port Valves



Reduced Port Valves



Schedule 40 Steel Pipe (10m)



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