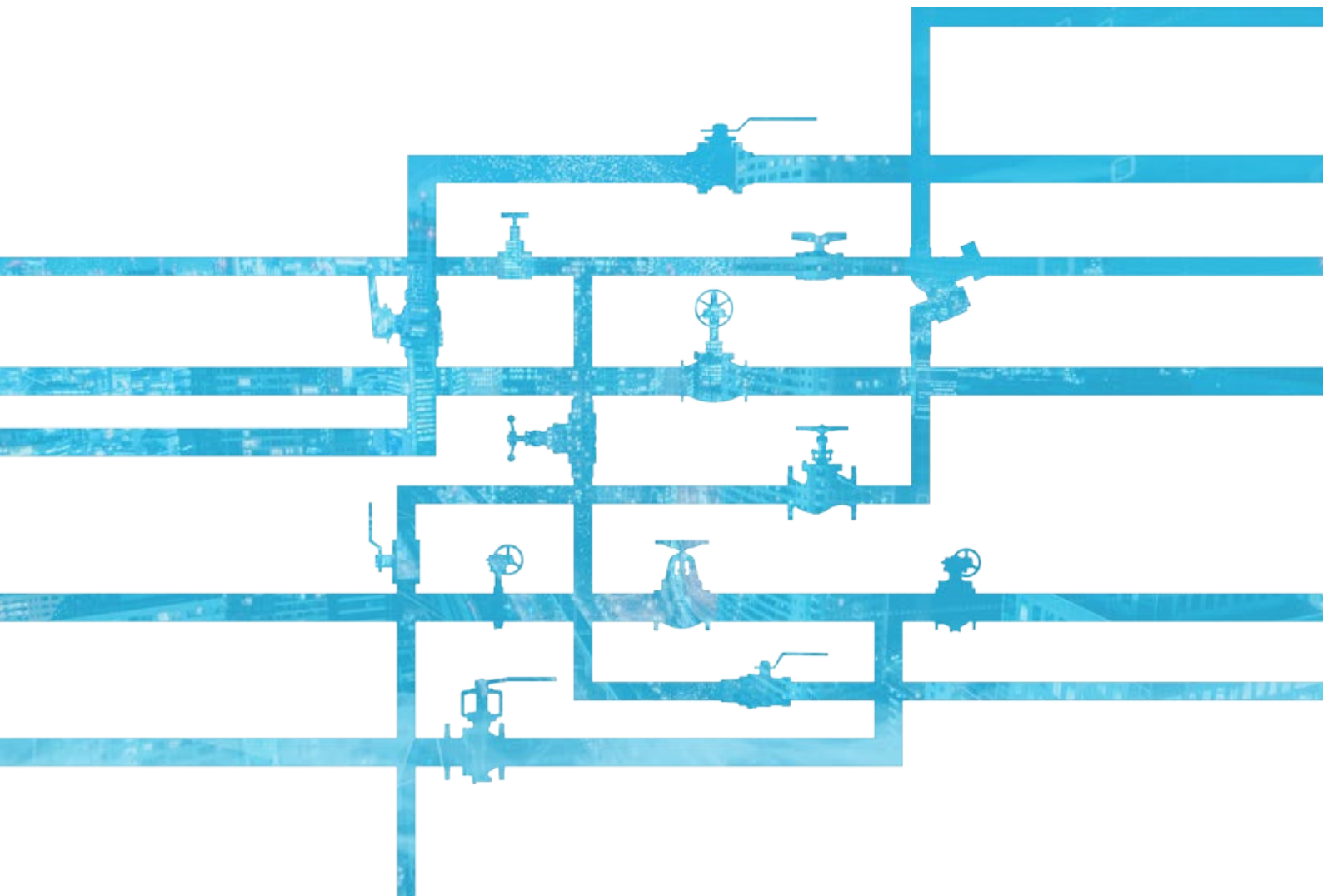


KITZ

GENERAL CATALOG

Steel Ball Valves



INDEX

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

Series	Body Material	Class	End Connection	Bore	Face to Face Dimension	Actuator Mounting Pad	Body Design	Size Range	Fig	Page				
TDRZ	SS	150	RF	RB	ASME B16.10	ISO 5211	Split	6 ^B - 10 ^B	150UTDRZ	BAL16 159				
		10K		FB				6 ^B - 10 ^B	150UTDRZM					
TDZ	CS	150		RB				1/2 ^B - 10 ^B	10SCTDZ/G-10SCTDZ		150SCTDZ/G-150SCTDZ			
TDRZ				FB				6 ^B - 8 ^B	150SCTDRZ					
TDZ	SS	20K		FB					20UTDZ					
		300						1/2 ^B - 8 ^B	20UTDZM					
								300UTDZ						
				300UTDZM										
TDRZ		20K		RB				6 ^B - 10 ^B	20UTDRZ					
									20UTDRZM					
	6 ^B - 8 ^B							300UTDRZ						
		300UTDRZM												
TDZ		20K		FB			1/2 ^B - 8 ^B	20SCTDZ						
TDRZ		300		RB			6 ^B - 8 ^B	300SCTDZ						
								300SCTDRZ						
TDZX (-46°C)	CS	150		FB				Split/Ext. Bonnet	1/2 ^B - 10 ^B	150SCTDZXBL/G-150SCTDZXBL	BAL18 161			
		300							1/2 ^B - 8 ^B	150SCTDZXCL/G-150SCTDZXCL				
										300SCTDZXBL/G-300SCTDZXBL				
		300SCTDZXCL/G-300SCTDZXCL												
TDZXL (-104°C)	SS	10K							1/2 ^B - 10 ^B	10UTDZXL/G-10UTDZXL		10UTDZXL/G-10UTDZXL		
		20K							1/2 ^B - 8 ^B	20UTDZXL/G-20UTDZXL		20UTDZXL/G-20UTDZXL		
		150							1/2 ^B - 10 ^B	150UTDZXL/G-150UTDZXL		150UTDZXL/G-150UTDZXL		
		300							1/2 ^B - 8 ^B	300UTDZXL/G-300UTDZXL	300UTDZXL/G-300UTDZXL			
		TDZL (-196°C)							10K	1/2 ^B - 10 ^B	10UTDZL/G-10UTDZL	10UTDZL/G-10UTDZL		
			20K							1/2 ^B - 8 ^B	20UTDZL/G-20UTDZL	20UTDZL/G-20UTDZL		
150			1/2 ^B - 10 ^B							150UTDZL/G-150UTDZL	150UTDZL/G-150UTDZL			
300			1/2 ^B - 8 ^B							300UTDZL/G-300UTDZL	300UTDZL/G-300UTDZL			
TBDXK (-50°C)			10K					10UTBDXK/G-10UTBDXK		10UTBDXK/G-10UTBDXK	10UTBDXK/G-150UTBDXK			
								150		150UTBDXK/G-150UTBDXK	150UTBDXK/G-150UTBDXK			
		TDZ (Filtite)						CS	10K	10UTDZ1H/G-10UTDZ1H	10UTDZ1H/G-10UTDZ1H			
									150	10SCTDZ1H/G-10SCTDZ1H	10SCTDZ1H/G-150SCTDZ1H			
	20K								20UTDZ1H/G-20UTDZ1H	20UTDZ1H/G-20UTDZ1H				
	300								300UTDZ1H/G-300UTDZ1H	300UTDZ1H/G-300UTDZ1H				
TDZ (Carbotite)	SS		10K						10UTDZ3H/G-10UTDZ3H	10UTDZ3H/G-10UTDZ3H				
			150						150UTDZ3HM/G-150UTDZ3HM	150UTDZ3HM/G-150UTDZ3HM				
		20K	10SCTDZ3H/G-10SCTDZ3H					10SCTDZ3H/G-150SCTDZ3H						
		300	20UTDZ3H/G-20UTDZ3H					20UTDZ3H/G-20UTDZ3H						
		TDZ (Metal)	CS					20K	300UTDZ3HM/G-300UTDZ3HM	300UTDZ3HM/G-300UTDZ3HM				
								300	20SCTDZ3H/G-20SCTDZ3H	20SCTDZ3H/G-20SCTDZ3H				
300SCTDZ3H/G300SCTDZ3H	300SCTDZ3H/G300SCTDZ3H													
TDZ (Metal)	SS			10K	10UTDZ5H/G-10UTDZ5H	10UTDZ5H/G-10UTDZ5H								
				150	150UTDZ5HM/G-150UTDZ5HM	150UTDZ5HM/G-150UTDZ5HM								
				20K	10SCTDZ5H/G-10SCTDZ5H	10SCTDZ5H/G-150SCTDZ5H								
		300	20UTDZ5H/G-20UTDZ5H	20UTDZ5H/G-20UTDZ5H										
		TDZ (Metal)	CS	20K	300UTDZ5HM/G-300UTDZ5HM	300UTDZ5HM/G-300UTDZ5HM								
				300	20SCTDZ5H/G-20SCTDZ5H	20SCTDZ5H/G-20SCTDZ5H								
300SCTDZ5H/G300SCTDZ5H	300SCTDZ5H/G300SCTDZ5H													
TDZ (Metal)	SS			10K	10UTDZ6H/G-10UTDZ6H	10UTDZ6H/G-10UTDZ6H								
				150	150UTDZ6HM/G-150UTDZ6HM	150UTDZ6HM/G-150UTDZ6HM								
				20K	10SCTDZ6H/G-10SCTDZ6H	10SCTDZ6H/G-150SCTDZ6H								
		300	20UTDZ6H/G-20UTDZ6H	20UTDZ6H/G-20UTDZ6H										
		TDZ (Metal)	CS	20K	300UTDZ6HM/G-300UTDZ6HM	300UTDZ6HM/G-300UTDZ6HM								
				300	20SCTDZ6H/G-20SCTDZ6H	20SCTDZ6H/G-20SCTDZ6H								
300SCTDZ6H/G300SCTDZ6H	300SCTDZ6H/G300SCTDZ6H													
Λ Port (Flek)	SS			10K	1 ^B - 8 ^B	L-10UVC	BAL25 168							
				150	1 ^B - 8 ^B	L-150UVC								
				10K	6 ^B - 14 ^B	G-10UVC								
		150	6 ^B - 14 ^B	G-150UVC										
		20K	1 ^B - 8 ^B	L-20UVC										
		300	1 ^B - 8 ^B	L-300UVC										
20K	6 ^B - 10 ^B	G-20UVC												
300	6 ^B - 10 ^B	G-300UVC												

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	1 ^B - 8 ^B	L-10UVCT	BAL26 169
		150						L-150UVCTM		
		10K						G-10UVCT		
		150						G-150UVCTM		
		20K						L-20UVCT		
		300						L-300UVCTM		
20K	G-20UVCT	BAL27 170								
300	G-300UVCTM									
3TC (T60S)	10K			2 ^B - 24 ^B			10UF3TCSCM/G-10UF3TCSCM	BAL28 171		
150	150UF3TCSCM/G-150UF3TCSCM									
3TCR (T60S)	10K			3 ^B - 24 ^B			10UF3TCRSM/G-10UF3TCRSM			
150	150UF3TCRSM/G-150UF3TCRSM									
3TC (T60S)	10K	2 ^B - 24 ^B		10SF3TCS/G-10SF3TCS			BAL29 172			
150	10SF3TCS/G-10SF3TCS									
3TCR (T60S)	10K	3 ^B - 24 ^B		10SF3TCRS/G-10SF3TCRS						
150	150SF3TCRS/G-150SF3TCRS									
3TC (T60S)	10K	2 ^B - 24 ^B		10SF3TCRSG/G-10SF3TCRSG				BAL30 173		
150	10SF3TCRSG/G-10SF3TCRSG									
3TCR (T60S)	10K	3 ^B - 24 ^B	10SF3TCRSL/G-10SF3TCRSL							
150	150SF3TCRSL/G-150SF3TCRSL									
3TC (T60S)	20K	2 ^B - 24 ^B	20UF3TCSCM/G-20UF3TCSCM	BAL31 174						
300	300UF3TCSCM/G-300UF3TCSCM									
3TCR (T60S)	20K	3 ^B - 24 ^B	20UF3TCRSM/G-20UF3TCRSM							
300	300UF3TCRSM/G-300UF3TCRSM									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCS/G-20SF3TCS		BAL32 175					
300	300SF3TCS/G-300SF3TCS									
3TCR (T60S)	20K	3 ^B - 24 ^B	20SF3TCRS/G-20SF3TCRS							
300	300SF3TCRS/G-300SF3TCRS									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCRSG/G-20SF3TCRSG	BAL33 176						
300	300SF3TCRSG/G-300SF3TCRSG									
3TCR (T60S)	20K	3 ^B - 24 ^B	20SF3TCRSL/G-20SF3TCRSL							
300	300SF3TCRSL/G-300SF3TCRSL									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCRSL/G-20SF3TCRSL		BAL34 177					
300	300SF3TCRSL/G-300SF3TCRSL									
3TCR (T60S)	20K	3 ^B - 24 ^B	20SF3TCRSL/G-20SF3TCRSL							
300	300SF3TCRSL/G-300SF3TCRSL									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCRSL/G-20SF3TCRSL	BAL35 178						
300	300SF3TCRSL/G-300SF3TCRSL									
3TC (T60S)	20K	2 ^B - 24 ^B	20UF3TCSCM/G-20UF3TCSCM		BAL36 179					
300	300UF3TCSCM/G-300UF3TCSCM									
3TCR (T60S)	20K	3 ^B - 24 ^B	20UF3TCRSM/G-20UF3TCRSM							
300	300UF3TCRSM/G-300UF3TCRSM									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCS/G-20SF3TCS	BAL37 180						
300	300SF3TCS/G-300SF3TCS									
3TCR (T60S)	20K	3 ^B - 24 ^B	20SF3TCRS/G-20SF3TCRS							
300	300SF3TCRS/G-300SF3TCRS									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCRSG/G-20SF3TCRSG		BAL38 181					
300	300SF3TCRSG/G-300SF3TCRSG									
3TCR (T60S)	20K	3 ^B - 24 ^B	20SF3TCRSL/G-20SF3TCRSL							
300	300SF3TCRSL/G-300SF3TCRSL									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCRSL/G-20SF3TCRSL	BAL39 182						
300	300SF3TCRSL/G-300SF3TCRSL									
3TC (T60S)	20K	2 ^B - 24 ^B	20UF3TCSCM/G-20UF3TCSCM		BAL40 183					
300	300UF3TCSCM/G-300UF3TCSCM									
3TCR (T60S)	20K	3 ^B - 24 ^B	20UF3TCRSM/G-20UF3TCRSM							
300	300UF3TCRSM/G-300UF3TCRSM									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCS/G-20SF3TCS	BAL41 184						
300	300SF3TCS/G-300SF3TCS									
3TCR (T60S)	20K	3 ^B - 24 ^B	20SF3TCRS/G-20SF3TCRS							
300	300SF3TCRS/G-300SF3TCRS									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCRSG/G-20SF3TCRSG		BAL42 185					
300	300SF3TCRSG/G-300SF3TCRSG									
3TCR (T60S)	20K	3 ^B - 24 ^B	20SF3TCRSL/G-20SF3TCRSL							
300	300SF3TCRSL/G-300SF3TCRSL									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCRSL/G-20SF3TCRSL	BAL43 186						
300	300SF3TCRSL/G-300SF3TCRSL									
3TC (T60S)	20K	2 ^B - 24 ^B	20UF3TCSCM/G-20UF3TCSCM		BAL44 187					
300	300UF3TCSCM/G-300UF3TCSCM									
3TCR (T60S)	20K	3 ^B - 24 ^B	20UF3TCRSM/G-20UF3TCRSM							
300	300UF3TCRSM/G-300UF3TCRSM									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCS/G-20SF3TCS	BAL45 188						
300	300SF3TCS/G-300SF3TCS									
3TCR (T60S)	20K	3 ^B - 24 ^B	20SF3TCRS/G-20SF3TCRS							
300	300SF3TCRS/G-300SF3TCRS									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCRSG/G-20SF3TCRSG		BAL46 189					
300	300SF3TCRSG/G-300SF3TCRSG									
3TCR (T60S)	20K	3 ^B - 24 ^B	20SF3TCRSL/G-20SF3TCRSL							
300	300SF3TCRSL/G-300SF3TCRSL									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCRSL/G-20SF3TCRSL	BAL47 190						
300	300SF3TCRSL/G-300SF3TCRSL									
3TC (T60S)	20K	2 ^B - 24 ^B	20UF3TCSCM/G-20UF3TCSCM		BAL48 191					
300	300UF3TCSCM/G-300UF3TCSCM									
3TCR (T60S)	20K	3 ^B - 24 ^B	20UF3TCRSM/G-20UF3TCRSM							
300	300UF3TCRSM/G-300UF3TCRSM									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCS/G-20SF3TCS	BAL49 192						
300	300SF3TCS/G-300SF3TCS									
3TCR (T60S)	20K	3 ^B - 24 ^B	20SF3TCRS/G-20SF3TCRS							
300	300SF3TCRS/G-300SF3TCRS									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCRSG/G-20SF3TCRSG		BAL50 193					
300	300SF3TCRSG/G-300SF3TCRSG									
3TCR (T60S)	20K	3 ^B - 24 ^B	20SF3TCRSL/G-20SF3TCRSL							
300	300SF3TCRSL/G-300SF3TCRSL									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCRSL/G-20SF3TCRSL	BAL51 194						
300	300SF3TCRSL/G-300SF3TCRSL									
3TC (T60S)	20K	2 ^B - 24 ^B	20UF3TCSCM/G-20UF3TCSCM		BAL52 195					
300	300UF3TCSCM/G-300UF3TCSCM									
3TCR (T60S)	20K	3 ^B - 24 ^B	20UF3TCRSM/G-20UF3TCRSM							
300	300UF3TCRSM/G-300UF3TCRSM									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCS/G-20SF3TCS	BAL53 196						
300	300SF3TCS/G-300SF3TCS									
3TCR (T60S)	20K	3 ^B - 24 ^B	20SF3TCRS/G-20SF3TCRS							
300	300SF3TCRS/G-300SF3TCRS									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCRSG/G-20SF3TCRSG		BAL54 197					
300	300SF3TCRSG/G-300SF3TCRSG									
3TCR (T60S)	20K	3 ^B - 24 ^B	20SF3TCRSL/G-20SF3TCRSL							
300	300SF3TCRSL/G-300SF3TCRSL									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCRSL/G-20SF3TCRSL	BAL55 198						
300	300SF3TCRSL/G-300SF3TCRSL									
3TC (T60S)	20K	2 ^B - 24 ^B	20UF3TCSCM/G-20UF3TCSCM		BAL56 199					
300	300UF3TCSCM/G-300UF3TCSCM									
3TCR (T60S)	20K	3 ^B - 24 ^B	20UF3TCRSM/G-20UF3TCRSM							
300	300UF3TCRSM/G-300UF3TCRSM									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCS/G-20SF3TCS	BAL57 200						
300	300SF3TCS/G-300SF3TCS									
3TCR (T60S)	20K	3 ^B - 24 ^B	20SF3TCRS/G-20SF3TCRS							
300	300SF3TCRS/G-300SF3TCRS									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCRSG/G-20SF3TCRSG		BAL58 201					
300	300SF3TCRSG/G-300SF3TCRSG									
3TCR (T60S)	20K	3 ^B - 24 ^B	20SF3TCRSL/G-20SF3TCRSL							
300	300SF3TCRSL/G-300SF3TCRSL									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCRSL/G-20SF3TCRSL	BAL59 202						
300	300SF3TCRSL/G-300SF3TCRSL									
3TC (T60S)	20K	2 ^B - 24 ^B	20UF3TCSCM/G-20UF3TCSCM		BAL60 203					
300	300UF3TCSCM/G-300UF3TCSCM									
3TCR (T60S)	20K	3 ^B - 24 ^B	20UF3TCRSM/G-20UF3TCRSM							
300	300UF3TCRSM/G-300UF3TCRSM									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCS/G-20SF3TCS	BAL61 204						
300	300SF3TCS/G-300SF3TCS									
3TCR (T60S)	20K	3 ^B - 24 ^B	20SF3TCRS/G-20SF3TCRS							
300	300SF3TCRS/G-300SF3TCRS									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCRSG/G-20SF3TCRSG		BAL62 205					
300	300SF3TCRSG/G-300SF3TCRSG									
3TCR (T60S)	20K	3 ^B - 24 ^B	20SF3TCRSL/G-20SF3TCRSL							
300	300SF3TCRSL/G-300SF3TCRSL									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCRSL/G-20SF3TCRSL	BAL63 206						
300	300SF3TCRSL/G-300SF3TCRSL									
3TC (T60S)	20K	2 ^B - 24 ^B	20UF3TCSCM/G-20UF3TCSCM		BAL64 207					
300	300UF3TCSCM/G-300UF3TCSCM									
3TCR (T60S)	20K	3 ^B - 24 ^B	20UF3TCRSM/G-20UF3TCRSM							
300	300UF3TCRSM/G-300UF3TCRSM									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCS/G-20SF3TCS	BAL65 208						
300	300SF3TCS/G-300SF3TCS									
3TCR (T60S)	20K	3 ^B - 24 ^B	20SF3TCRS/G-20SF3TCRS							
300	300SF3TCRS/G-300SF3TCRS									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCRSG/G-20SF3TCRSG		BAL66 209					
300	300SF3TCRSG/G-300SF3TCRSG									
3TCR (T60S)	20K	3 ^B - 24 ^B	20SF3TCRSL/G-20SF3TCRSL							
300	300SF3TCRSL/G-300SF3TCRSL									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCRSL/G-20SF3TCRSL	BAL67 210						
300	300SF3TCRSL/G-300SF3TCRSL									
3TC (T60S)	20K	2 ^B - 24 ^B	20UF3TCSCM/G-20UF3TCSCM		BAL68 211					
300	300UF3TCSCM/G-300UF3TCSCM									
3TCR (T60S)	20K	3 ^B - 24 ^B	20UF3TCRSM/G-20UF3TCRSM							
300	300UF3TCRSM/G-300UF3TCRSM									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCS/G-20SF3TCS	BAL69 212						
300	300SF3TCS/G-300SF3TCS									
3TCR (T60S)	20K	3 ^B - 24 ^B	20SF3TCRS/G-20SF3TCRS							
300	300SF3TCRS/G-300SF3TCRS									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCRSG/G-20SF3TCRSG		BAL70 213					
300	300SF3TCRSG/G-300SF3TCRSG									
3TCR (T60S)	20K	3 ^B - 24 ^B	20SF3TCRSL/G-20SF3TCRSL							
300	300SF3TCRSL/G-300SF3TCRSL									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCRSL/G-20SF3TCRSL	BAL71 214						
300	300SF3TCRSL/G-300SF3TCRSL									
3TC (T60S)	20K	2 ^B - 24 ^B	20UF3TCSCM/G-20UF3TCSCM		BAL72 215					
300	300UF3TCSCM/G-300UF3TCSCM									
3TCR (T60S)	20K	3 ^B - 24 ^B	20UF3TCRSM/G-20UF3TCRSM							
300	300UF3TCRSM/G-300UF3TCRSM									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCS/G-20SF3TCS	BAL73 216						
300	300SF3TCS/G-300SF3TCS									
3TCR (T60S)	20K	3 ^B - 24 ^B	20SF3TCRS/G-20SF3TCRS							
300	300SF3TCRS/G-300SF3TCRS									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCRSG/G-20SF3TCRSG		BAL74 217					
300	300SF3TCRSG/G-300SF3TCRSG									
3TCR (T60S)	20K	3 ^B - 24 ^B	20SF3TCRSL/G-20SF3TCRSL							
300	300SF3TCRSL/G-300SF3TCRSL									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCRSL/G-20SF3TCRSL	BAL75 218						
300	300SF3TCRSL/G-300SF3TCRSL									
3TC (T60S)	20K	2 ^B - 24 ^B	20UF3TCSCM/G-20UF3TCSCM		BAL76 219					
300	300UF3TCSCM/G-300UF3TCSCM									
3TCR (T60S)	20K	3 ^B - 24 ^B	20UF3TCRSM/G-20UF3TCRSM							
300	300UF3TCRSM/G-300UF3TCRSM									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCS/G-20SF3TCS	BAL77 220						
300	300SF3TCS/G-300SF3TCS									
3TCR (T60S)	20K	3 ^B - 24 ^B	20SF3TCRS/G-20SF3TCRS							
300	300SF3TCRS/G-300SF3TCRS									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCRSG/G-20SF3TCRSG		BAL78 221					
300	300SF3TCRSG/G-300SF3TCRSG									
3TCR (T60S)	20K	3 ^B - 24 ^B	20SF3TCRSL/G-20SF3TCRSL							
300	300SF3TCRSL/G-300SF3TCRSL									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCRSL/G-20SF3TCRSL	BAL79 222						
300	300SF3TCRSL/G-300SF3TCRSL									
3TC (T60S)	20K	2 ^B - 24 ^B	20UF3TCSCM/G-20UF3TCSCM		BAL80 223					
300	300UF3TCSCM/G-300UF3TCSCM									
3TCR (T60S)	20K	3 ^B - 24 ^B	20UF3TCRSM/G-20UF3TCRSM							
300	300UF3TCRSM/G-300UF3TCRSM									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCS/G-20SF3TCS	BAL81 224						
300	300SF3TCS/G-300SF3TCS									
3TCR (T60S)	20K	3 ^B - 24 ^B	20SF3TCRS/G-20SF3TCRS							
300	300SF3TCRS/G-300SF3TCRS									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCRSG/G-20SF3TCRSG		BAL82 225					
300	300SF3TCRSG/G-300SF3TCRSG									
3TCR (T60S)	20K	3 ^B - 24 ^B	20SF3TCRSL/G-20SF3TCRSL							
300	300SF3TCRSL/G-300SF3TCRSL									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCRSL/G-20SF3TCRSL	BAL83 226						
300	300SF3TCRSL/G-300SF3TCRSL									
3TC (T60S)	20K	2 ^B - 24 ^B	20UF3TCSCM/G-20UF3TCSCM		BAL84 227					
300	300UF3TCSCM/G-300UF3TCSCM									
3TCR (T60S)	20K	3 ^B - 24 ^B	20UF3TCRSM/G-20UF3TCRSM							
300	300UF3TCRSM/G-300UF3TCRSM									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCS/G-20SF3TCS	BAL85 228						
300	300SF3TCS/G-300SF3TCS									
3TCR (T60S)	20K	3 ^B - 24 ^B	20SF3TCRS/G-20SF3TCRS							
300	300SF3TCRS/G-300SF3TCRS									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCRSG/G-20SF3TCRSG		BAL86 229					
300	300SF3TCRSG/G-300SF3TCRSG									
3TCR (T60S)	20K	3 ^B - 24 ^B	20SF3TCRSL/G-20SF3TCRSL							
300	300SF3TCRSL/G-300SF3TCRSL									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCRSL/G-20SF3TCRSL	BAL87 230						
300	300SF3TCRSL/G-300SF3TCRSL									
3TC (T60S)	20K	2 ^B - 24 ^B	20UF3TCSCM/G-20UF3TCSCM		BAL88 231					
300	300UF3TCSCM/G-300UF3TCSCM									
3TCR (T60S)	20K	3 ^B - 24 ^B	20UF3TCRSM/G-20UF3TCRSM							
300	300UF3TCRSM/G-300UF3TCRSM									
3TC (T60S)	20K	2 ^B - 24 ^B	20SF3TCS/G-20SF3TCS	BAL89 232						
300	300SF3TCS/G-300SF3TCS									
3TCR (T60S)	20K	3 ^B - 24 ^B	20SF3TCRS/G-20SF3TCRS</							

PRODUCT CODING

Steel Floating Ball Valves

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

G - 150 SC TDZ 1H M -FS

1 2 3 4 5 6 7

1 Operation

None Lever
G Gear

2 Pressure Class

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

3 Symbols for Shell Material

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

4 Design & Type

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

5 Seat Material

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

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

6 Shell / Trim Material

For U in ③

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

For SC of ③

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

7 Packing / Gasket Material

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

Λ (Lambda) - Port Control Valves

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

L - 150 UVC T M

1 2 3 4 5

1 Operation

L Lever for Λ Port
G Gear

2 Pressure Class

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

4 Seat Type

None Flekseal for General Service
T Knifeseal for Heavy Duty Service

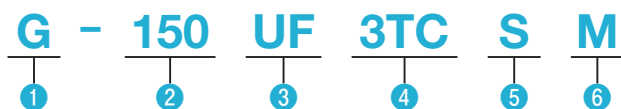
5 Shell / Trim Material

For U of ③

None CF8 (304)
M CF8M (316)

Steel Trunnion Mounted Ball Valves

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



1 Operation

None Lever
G Gear

2 Pressure Class

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

3 Symbols for Shell Material

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

4 Design & Type

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

5 Seat Type

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

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

6 Shell Material

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

Design Specification

Ball Valves

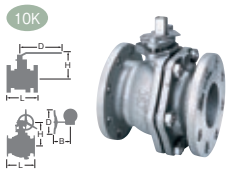
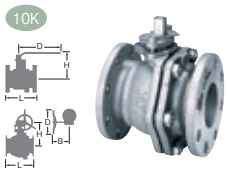
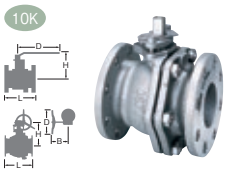
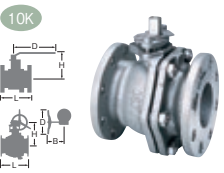
Series		TB/TR/TBD	TAZ/TDZ/TDRZ	3TC/3TCR	△ Port
P-T Rating	Shell	ASME B16.34			
	Resilient Seating Parts	KITZ Standard			
Bore Size		KITZ Standard	API 608/ISO 17292	API 6D/ISO 14313	KITZ Standard
Shell Wall Thickness & General Valve Design		ASME B16.34	ASME B16.34/ISO 17292	ASME B16.34	
Face to Face Dimension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

^{*1} For 10UTBD, 150UTBP, 150/300UTR/SCTR, 150/600UTB only. Others are KITZ Standard.

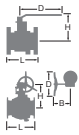
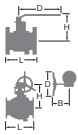
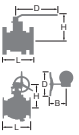
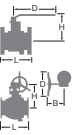
^{*2} (1) 10K Type is JIS B2220

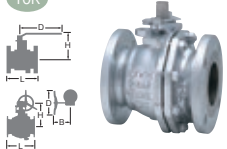
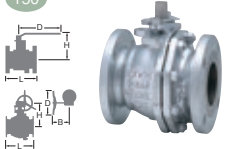
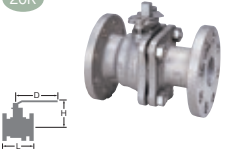
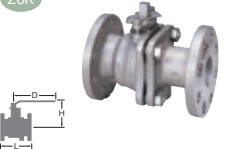
(2) Dimensions in Pipe Connection except 3TC/3TCR Series shall indicate dimensions in millimeters converted from dimensions in inches according to ASME B16.5.

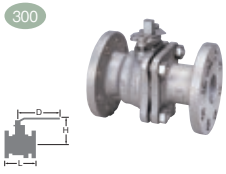
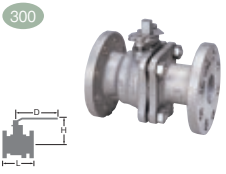
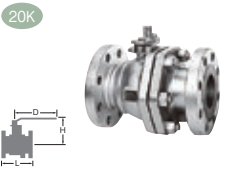
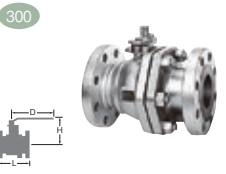
^{*3} For X, XL, L (Low Temperature & Cryogenic Service Valves)

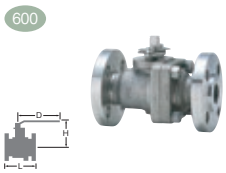
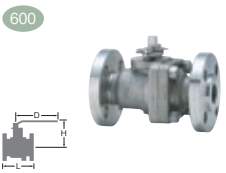
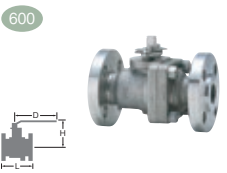
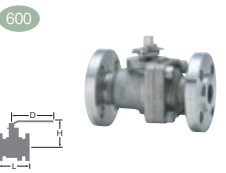
Type	TB Series					TB Series					TB Series					TB Series				
Ball Valve	10K 					10K 					10K 					10K 				
	10UTB/G-10UTB					10UTBM/G-10UTBM					10UTBD/G-10UTBD					10UTBDM/G-10UTBDM				
Fig	10UTB/G-10UTB					10UTBM/G-10UTBM					10UTBD/G-10UTBD					10UTBDM/G-10UTBDM				
End Connection	JIS B2220 10K 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				
1 1/4	32	140	128	160		140	128	160		140	128	160		140	128	160				
1 1/2	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				
2 1/2	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 10 ^B Gear for 21/2 ^B & over: Available					Anti-Static Design Anti-Blowout Stem Fire Safe Design Gear for 10 ^B Gear for 21/2 ^B & over: Available					Anti-Static Design Anti-Blowout Stem Fire Safe Design Gear for 10 ^B Gear for 21/2 ^B & over: Available					Anti-Static Design Anti-Blowout Stem Fire Safe Design Gear for 10 ^B Gear for 21/2 ^B & over: Available				

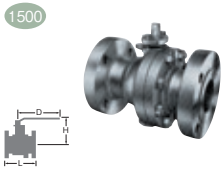
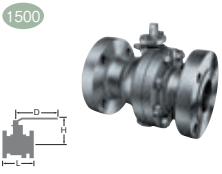
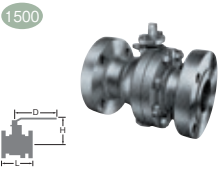
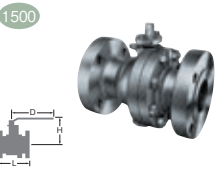
Type	TB Series					TB Series					TB Series (Pocketless)					TB Series (Pocketless)				
Ball Valve	150																			

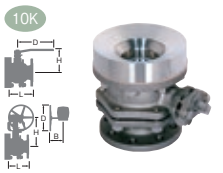
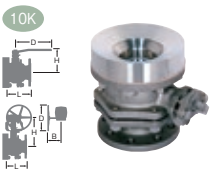
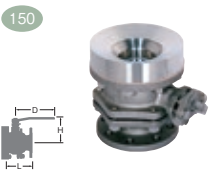
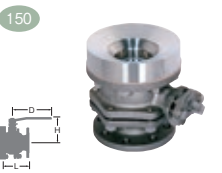
Type	TR Series					TR Series					TR Series					TR Series					
Ball Valve	10K   RB					10K   RB					150   RB					150   RB					
	Fig	10UTR/G-10UTR					10UTRM/G-10UTRM					150UTR/G-150UTR					150UTRM/G-150UTRM				
End Connection		JIS B2220 10K RF					JIS B2220 10K RF					ASME B16.5 Class 150 RF					ASME 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					
2 1/2	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 12 ^B Gear for 3 ^B & over: Available					Anti-Static Design Anti-Blowout Stem Fire Safe Design Gear for 12 ^B Gear for 3 ^B & over: Available					Anti-Static Design Anti-Blowout Stem Fire Safe Design Gear for 12 ^B Gear for 3 ^B & over: Available					Anti-Static Design Anti-Blowout Stem Fire Safe Design Gear for 12 ^B Gear for 3 ^B & over: Available				

Type	TR Series					TR Series					TR Series			TR Series		
Ball Valve	10K 					150 					20K 			20K 		
	10SCTR/G-10SCTR					150SCTR/G-150SCTR					20UTR			20UTRM		
	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 12 ^B Gear for 5 ^B & over: Available					Anti-Static Design Anti-Blowout Stem Fire Safe Design Gear for 12 ^B Gear for 5 ^B & 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					300					20K					300				
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								403	263	750		
3	80	283	154	400		283	154	400								419	292	1000		
4	100	305	163	400		305	163	400								457	355	1500		
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 12 ^B Gear for 5 ^B & over: Available					Anti-Static Design Anti-Blowout Stem Fire Safe Design Gear for 12 ^B Gear for 5 ^B & over: Available				

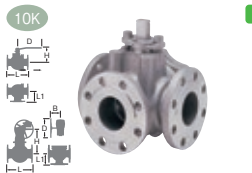
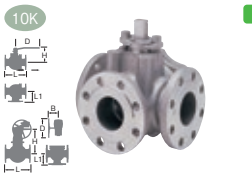
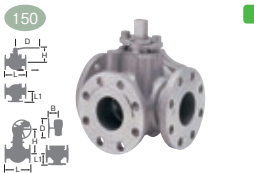
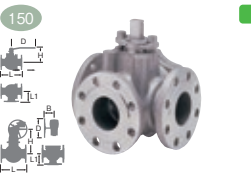
Type	TB Series					TB Series					TB Series					TB Series				
Ball Valve																				
	600					600					600					600				
Fig	600UTBM					600UTBSM					600SCTB					600SCTBS				
End Connection	ASME B16.5 Class 600 RF					ASME B16.5 Class 600 RF					ASME B16.5 Class 600 RF					ASME B16.5 Class 600 RF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

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

Type	TB Series(Tank Ball)					TB Series(Tank Ball)					TB Series(Tank Ball)					TB Series(Tank Ball)				
Ball Valve																				
Fig	10UTBT/G-10UTBT					10UTBTM/G-10UTBTM					150UTBT					150UTBTM				
End Connection	JIS B2220 10K RF					JIS B2220 10K RF					ASME B16.5 Class 150 RF					ASME B16.5 Class 150 RF				
inch	L H D B					L H D B					L H D					L H D				
mm	L H D B					L H D B					L H D					L H D				
1	25 105 150 160					25 105 150 160					25 102 150 160					25 102 150 160				
1 1/2	40 125 133 230					40 125 133 230					40 125 133 230					40 125 133 230				
2	50 143 142 230					50 143 142 230					50 142 142 230					50 142 142 230				
2 1/2	65 160 176 400					65 160 176 400					65 160 176 400					65 160 176 400				
3	80 167 185 400					80 167 185 400					80 171 185 400					80 171 185 400				
4	100 176.5 221 460					100 176.5 221 460					100 176 221 460					100 176 221 460				
5	125 227 241 460					125 227 241 460					125 255 241 460					125 255 241 460				
6	150 265 311 1000					150 265 311 1000					150 292 312 1000					150 292 312 1000				
8	200 358 434 360 210					200 358 434 360 210														
10	250 454 497 500 363					250 454 497 500 363														
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				

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

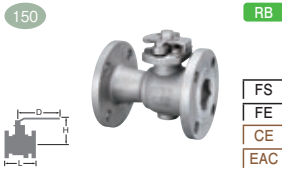
Type	TR Series(3-way,4-seat,L or T-Port)						TR Series(3-way,4-seat,L or T-Port)						TR Series(3-way,4-seat,L or T-Port)						TR Series(3-way,4-seat,L or T-Port)							
Ball Valve	10K   RB						10K   RB						150   RB						150   RB							
	Fig	10UTR4L(T)A/G-10UTR4L(T)A						10UTR4L(T)AM/G-10UTR4L(T)AM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

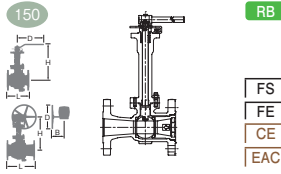
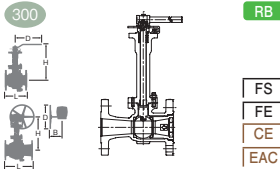
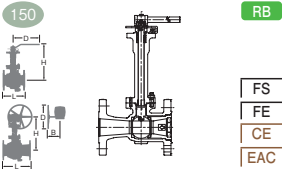
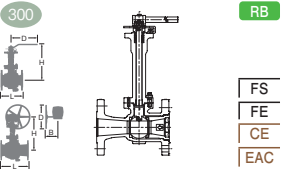
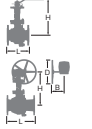
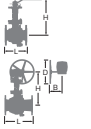
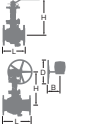
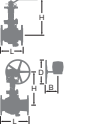
Type	TB Series(Jacketed)					TB Series(Jacketed)					TB Series(Jacketed)					TB Series(Jacketed)				
Ball Valve	10K   FB					10K   FB					150   FB					150   FB				
	Fig 10UTBJ					Fig 10UTBJM					Fig 150UTBJ					Fig 150UTBJM				
End Connection	JIS B2220 10K RF					JIS B2220 10K RF					ASME B16.5 Class 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	
1 1/2	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	
2 1/2	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°C/1.37MPa Anti-Static Design F*: Flange Size (inch)					Rating for Jacket: 260°C/1.37MPa Anti-Static Design F*: Flange Size (inch)					Rating for Jacket: 260°C/1.37MPa Anti-Static Design F*: Flange Size (inch)					Rating for Jacket: 260°C/1.37MPa Anti-Static Design F*: Flange Size (inch)				

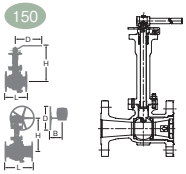
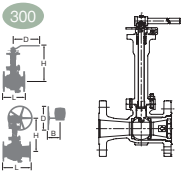
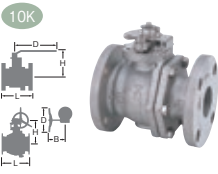
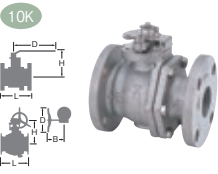
Type	TR Series(Jacketed)					TR Series(Jacketed)					TR Series(Jacketed)					TR Series(Jacketed)				
Ball Valve	10K   FB					10K   FB					150   FB					150   FB				
	Fig 10UTRJ					Fig 10UTRJM					Fig 150UTRJ					Fig 150UTRJM				
End Connection	JIS B2220 10K RF					JIS B2220 10K RF					ASME B16.5 Class 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°C/1.37MPa Anti-Static Design F*: Flange Size (inch)					Rating for Jacket: 260°C/1.37MPa Anti-Static Design F*: Flange Size (inch)					Rating for Jacket: 260°C/1.37MPa Anti-Static Design F*: Flange Size (inch)					Rating for Jacket: 260°C/1.37MPa Anti-Static Design F*: Flange Size (inch)				

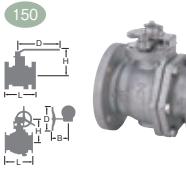
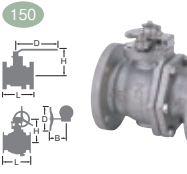
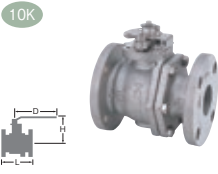
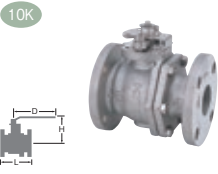
Type	TB Series(Jacketed)						TB Series(Jacketed)					TB Series(Jacketed)					TB Series(Jacketed)				
Ball Valve	20K  FB						20K  FB					300  FB					300  FB				
																					
Fig	20UTBJ						20UTBJM					300UTBJ					300UTBJM				
End Connection	JIS B2220 20K RF						JIS B2220 20K RF					ASME B16.5 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				
1 1/2	40	190	149	230	2 1/2	190	149	230	2 1/2	190	150	230	2 1/2	190	150	230	2 1/2				
2	50	216	156	230	3	216	156	230	3	216	157	230	3	216	157	230	3				
2 1/2	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°C/1.37MPa Anti-Static Design F-to-F: KITZ Standard F*: Flange Size (inch)					Rating for Jacket: 260°C/1.37MPa Anti-Static Design F-to-F: KITZ Standard F*: Flange Size (inch)					Rating for Jacket: 260°C/1.37MPa Anti-Static Design F-to-F: KITZ Standard F*: Flange Size (inch)					Rating for Jacket: 260°C/1.37MPa Anti-Static Design F-to-F: KITZ Standard F*: Flange Size (inch)					

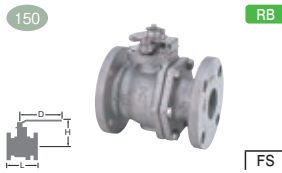
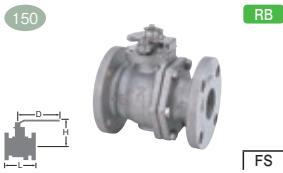
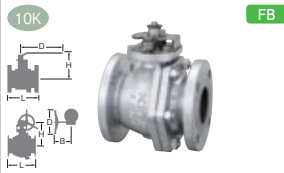
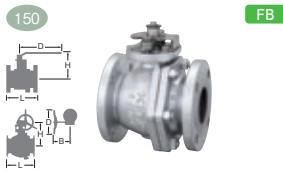
Type	TDZ Series(Jacketed)					TDZ Series(Jacketed)					TB Series(PFA lining)			TB Series(PFA lining)			
Ball Valve	150 FB					150 FB					150 FB			150 FB			
	Fig					Fig					Fig			Fig			
End Connection		ASME B16.5 Class 150 RF					ASME B16.5 Class 150 RF					JIS B2220 10K RF			ASME B16.5 Class 150 RF		
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		
1 1/2	40	165	157	230	2 1/2	165	157	230	2 1/2	191	118	230	191	118	230		
2	50	180	166	230	3	180	166	230	3	216	124	230	216	124	230		
2 1/2	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				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																
																
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	
1 1/2	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			

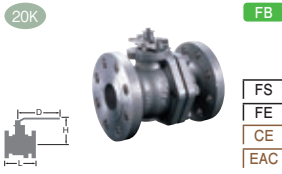
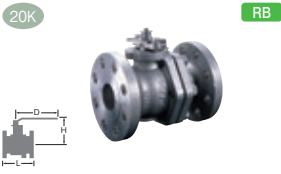
Type	TAZ Series(-46°C)						TAZ Series(-46°C)						TAZ Series(-104°C)						TAZ Series(-104°C)					
Ball Valve																								
																								
Fig	150SCTAZXCL/G-150SCTAZXCL						300SCTAZXCL/G-300SCTAZXCL						150UTAZXLM/G-150UTAZXLM						300UTAZXLM/G-300UTAZXLM					
End Connection	ASME 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					
1 1/2	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					

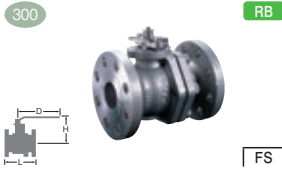
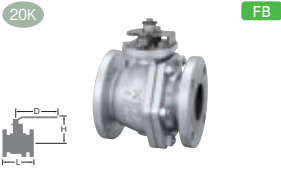
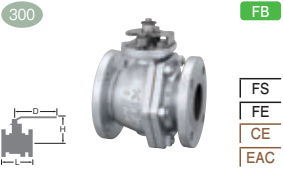
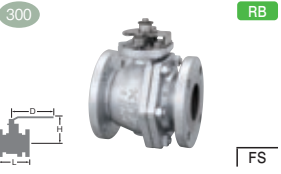
Type	TAZ Series(-196°C)					TAZ Series(-196°C)					TDZ Series				TDZ Series			
Ball Valve																		
Fig	150UTAZLM/G-150UTAZLM					300UTAZLM/G-300UTAZLM					10UTDZ/G-10UTDZ				10UTDZM/G-10UTDZM			
End Connection	ASME B16.5 Class 150 RF					ASME B16.5 Class 300 RF					JIS B2220 10K RF				JIS B2220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

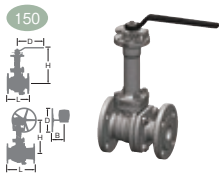
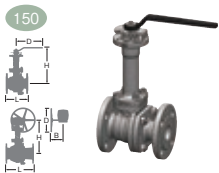
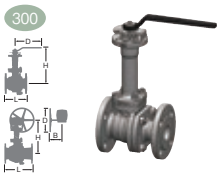
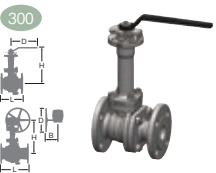
Type	TDZ Series					TDZ Series					TDRZ Series				TDRZ Series			
Ball Valve																		
Fig	150UTDZ/G-150UTDZ					150UTDZM/G-150UTDZM					10UTDRZ				10UTDRZM			
End Connection	ASME B16.5 Class 150 RF					ASME B16.5 Class 150 RF					JIS B2220 10K RF				JIS B2220 10K RF			
inch	mm	L	H	D	B	L	H	D	B		L	H	D		L	H	D	
1/2	15	108	108	130		108	108	130										
3/4	20	117	111	130		117	111	130										
1	25	127	124	160		127	124	160										
1 1/4	32	140	128	160		140	128	160										
1 1/2	40	165	134	230		165	134	230										
2	50	178	143	230		178	143	230										
2 1/2	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																
	FS				FS				FS				FS			
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		
1 1/2	40							165	134	230		165	134	230		
2	50							178	143	230		178	143	230		
2 1/2	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			

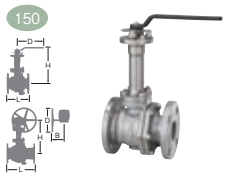
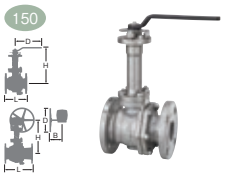
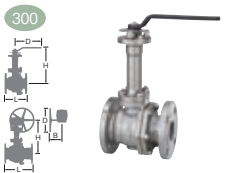
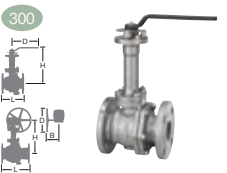
Type	TDRZ Series					TDZ Series			TDZ Series			TDZ Series		
Ball Valve	150  RB					20K  FB			20K  FB			300  FB		
	 FS											 FS FE CE EAC		
Fig	150SCTDRZ/G-150SCTDRZ					20UTDZ			20UTDZM			300UTDZ		
End Connection	ASME B16.5 Class 150 RF					JIS B2220 20K RF			JIS B2220 20K RF			ASME B16.5 Class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

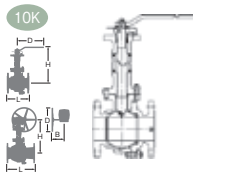
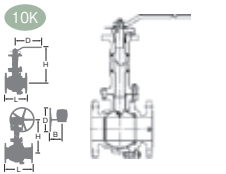
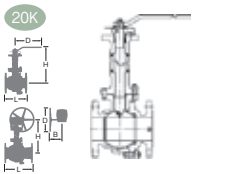
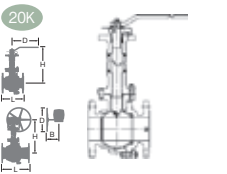
Type	TDZ Series					TDR Series			TDRZ Series			TDRZ Series		
Ball Valve														
														
Fig	300UTDZM					20UTDRZ			20UTDRZM			300UTDRZ		
End Connection	ASME B16.5 Class 300 RF					JIS B2220 20K RF			JIS B2220 20K RF			ASME B16.5 Class 300 RF		
inch	mm	L	H	D		L	H	D	L	H	D	L	H	D
1/2	15	140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

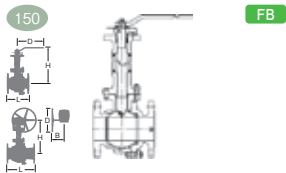
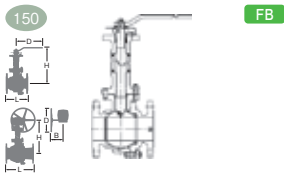
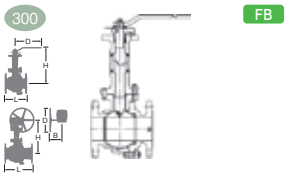
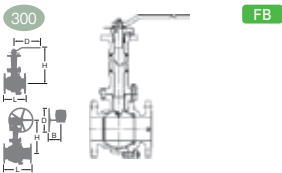
Type	TDRZ Series					TDZ Series			TDZ Series			TDRZ Series		
Ball Valve														
														
Fig	300UTDRZM					20SCTDZ			300SCTDZ			300SCTDRZ		
End Connection	ASME B16.5 Class 300 RF					JIS B2220 20K RF			ASME B16.5 Class 300 RF			ASME B16.5 Class 300 RF		
inch	mm	L	H	D		L	H	D	L	H	D	L	H	D
1/2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

Type	TDZ Series(-46°C)					TDZ Series(-46°C)					TDZ Series(-46°C)					TDZ Series(-46°C)				
Ball Valve																				
	150 FS FE CE EAC					150 FS FE CE EAC					300 FS FE CE EAC					300 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						

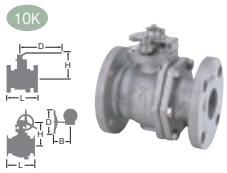
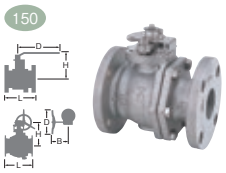
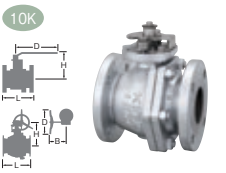
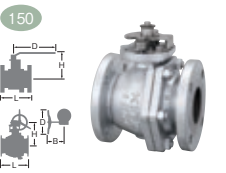
Type	TDZ Series(-104°C)					TDZ Series(-104°C)					TDZ Series(-104°C)					TDZ Series(-104°C)				
Ball Valve																				
	10UTDZXL/G-10UTDZXL					10UTDZXLM/G-10UTDZXLM					20UTDZXL/G-20UTDZXL					20UTDZXLM/G-20UTDZXLM				
End Connection		JIS B2220 10K RF				JIS B2220 10K RF				JIS B2220 20K RF				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				
1 1/4	32	140	272	160		140	272	160		178	272	160		178	272	160				
1 1/2	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				
2 1/2	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						

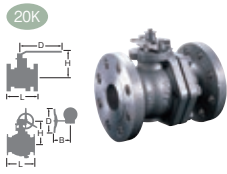
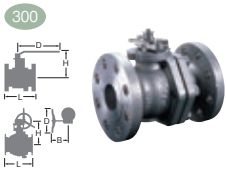
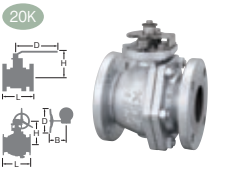
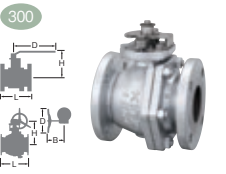
Type	TDZ Series(-104℃)						TDZ Series(-104℃)						TDZ Series(-104℃)						TDZ Series(-104℃)					
Ball Valve	150 						150 						300 						300 					
Fig	150UTDZXL/G-150UTDZXL						150UTDZXL/G-150UTDZXL						300UTDZXL/G-300UTDZXL						300UTDZXL/G-300UTDZXL					
End Connection	ASME B16.5 Class 150 RF						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					
1 1/4	32	140	272	160			140	272	160															
1 1/2	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					
2 1/2	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					

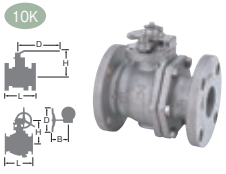
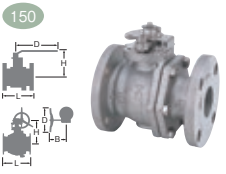
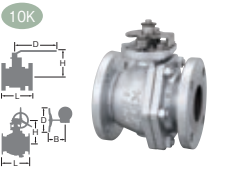
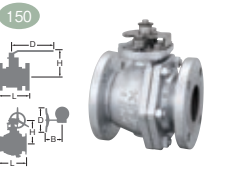
Type	TDZ Series(-196°C)						TDZ Series(-196°C)						TDZ Series(-196°C)						TDZ Series(-196°C)					
Ball Valve																								
	10K						10K						20K						20K					
Fig	10UTDZL/G-10UTDZL						10UTDZLM/G-10UTDZLM						20UTDZL/G-20UTDZL						20UTDZLM/G-20UTDZLM					
End Connection	JIS B2220 10K 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					
1 1/4	32	140	358	160			140	358	160			178	358	160			178	358	160					
1 1/2	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					
2 1/2	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 2 ^ø & above						SUS304CSP for 2 ^ø & above						SUS304CSP for 2 ^ø & above						SUS304CSP for 2 ^ø & 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 1 1/2 ^ø or HYPATITE [®]						A:HYPATITE [®] PTFE, B: PCTFE up to 1 1/2 ^ø or HYPATITE [®]						A:HYPATITE [®] PTFE, B: PCTFE up to 1 1/2 ^ø or HYPATITE [®]						A:HYPATITE [®] PTFE, B: PCTFE up to 1 1/2 ^ø or 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					

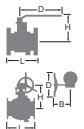
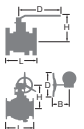
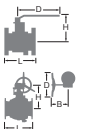
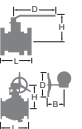
Type	TDZ Series(-196°C)					TDZ Series(-196°C)					TDZ Series(-196°C)					TDZ Series(-196°C)				
Ball Valve																				
	150UTDZL/G-150UTDZL					150UTDZLM/G-150UTDZLM					300UTDZL/G-300UTDZL					300UTDZLM/G-300UTDZLM				
	ASME B16.5 Class 150 RF					ASME B16.5 Class 150 RF					ASME B16.5 Class 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				
1 1/4	32	140	358	160		140	358	160												
1 1/2	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				
2 1/2	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 2 ⁵ & above					SUS304CSP for 2 ⁵ & above					SUS304CSP for 2 ⁵ & above					SUS304CSP for 2 ⁵ & 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 1 1/2"or HYPATITE®					A:HYPATITE® PTFE, B: PCTFE up to 1 1/2"or HYPATITE®					A:HYPATITE® PTFE, B: PCTFE up to 1 1/2"or HYPATITE®					A:HYPATITE® PTFE, B: PCTFE up to 1 1/2"or 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				

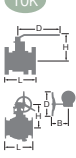
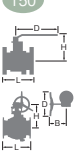
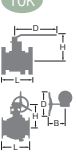
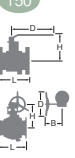
Type	TBDXK Series(-50°C)					TBDXK Series(-50°C)					TBDXK Series(-50°C)					TBDXK Series(-50°C)				
Ball Valve																				
	10UTBDXK/G-10UTBDXK					10UTBDXKM/G-10UTBDXKM					150UTBDXK/G-150UTBDXK					150UTBDXKM/G-150UTBDXKM				
	JIS B2220 10K RF					JIS B2220 10K RF					ASME B16.5 Class 150 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				
1 1/2	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				
2 1/2	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				

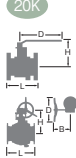
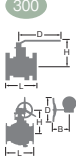
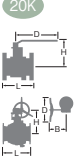
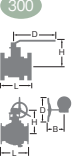
Type	TDZ Series(Filtite(1H))					TDZ Series(Filtite(1H))					TDZ Series(Filtite(1H))					TDZ Series(Filtite(1H))				
Ball Valve	10K  FB					150  FB FE CE EAC					10K  FB					150  FB FE CE EAC				
	Fig	10UTDZ1H/G-10UTDZ1H					150UTDZ1HM/G-150UTDZ1HM					10SCTDZ1H/G-10SCTDZ1H					150SCTDZ1H/G-150SCTDZ1H			
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				
1 1/4	32	140	128	160		140	128	160												
1 1/2	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				
2 1/2	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				

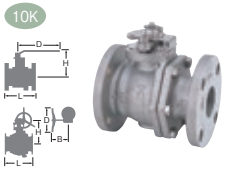
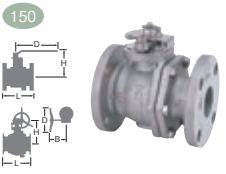
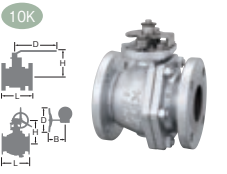
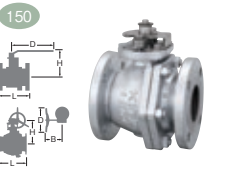
Type	TDZ Series(Filtite(1H))					TDZ Series(Filtite(1H))					TDZ Series(Filtite(1H))					TDZ Series(Filtite(1H))				
Ball Valve	20K  FB					300  FB FE CE EAC					20K  FB					300  FB FE CE EAC				
	Fig	20UTDZ1H/G-20UTDZ1H					300UTDZ1HM/G-300UTDZ1HM					20SCTDZ1H/G-20SCTDZ1H					300SCTDZ1H/G300SCTDZ1H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

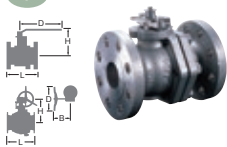
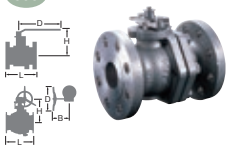
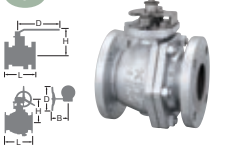
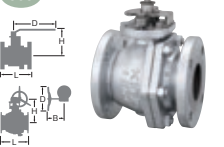
Type	TDZ Series(Carbotite(3H))					TDZ Series(Carbotite(3H))					TDZ Series(Carbotite(3H))					TDZ Series(Carbotite(3H))				
Ball Valve																				
																				
Fig	10UTDZ3H/G-10UTDZ3H					150UTDZ3HM/G-150UTDZ3HM					10SCTDZ3H/G-10SCTDZ3H					150SCTDZ3H/G-150SCTDZ3H				
End Connection	JIS B2220 10K RF					ASME B16.5 Class 150 RF					JIS B2220 10K RF					ASME B16.5 Class 150 RF				
inch	mm	L	H	D	B	L	H	D	B		L	H	D	B		L	H	D	B	
1/2	15	108	108	130		108	108	130			108	108	130			108	108	130		
3/4	20	117	111	130		117	111	130			117	111	130			117	111	130		
1	25	127	124	160		127	124	160			127	124	160			127	124	160		
1 1/4	32	140	128	160		140	128	160												
1 1/2	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		
2 1/2	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				
1 1/4	32	178	128	160																
1 1/2	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				
2 1/2	65	241	209	1000		241	209	1000		241	209	1000		241	209	1000				
3	80	283	219	1000		283	219	1000		283	219	1000		283	219	1000				
4	100	305	286	360	210	305	286	360	210	305	286	360	210	305	286	360	210			
5	125	381	302	360	210					381	302	360	210							
6	150	403	360	500	377	403	360	500	377	403	360	500	377	403	360	500	377			
8	200	502	488	500	377	502	489	500	377	502	489	500	377	502	489	500	377			
Body/Cap	CF8					CF8M					WCB					WCB				
Stem	304SS					316SS/630 for 4 ^B & over					304SS					304SS				
Ball	304SS/CF8					316SS/CF8M					304SS/CF8					304SS/CF8				
Gland Packing	Flexible Graphite					Flexible Graphite					Flexible Graphite					Flexible Graphite				
Gasket	Flexible Graphite					Flexible Graphite					Flexible Graphite					Flexible Graphite				
Ball Seat	Carbon+329J1					Carbon+329J1					Carbon+329J1					Carbon+329J1				
Bore	Full Bore					Full Bore					Full Bore					Full Bore				
Cap B/N	B8/8					B8/8					B7/2H					B7/2H				
F-to-F Dimension	ASME B16.10					ASME B16.10					ASME B16.10					ASME B16.10				
Actuator Mounting Pad	ISO 5211					ISO 5211					ISO 5211					ISO 5211				
Handle	DI/CS/Gear Unit					DI/CS/Gear Unit					DI/CS/Gear Unit					DI/CS/Gear Unit				
Standard/Approval						ISO 17292, API 608 FE: API641, SIL3, PED/CE, TR-CU/ EAC										ISO 17292, API 608 FE: API641, SIL3, PED/CE, TR-CU/ EAC				
Reference Page	P-T Rating : Page BAL56					P-T Rating : Page BAL56					P-T Rating : Page BAL56					P-T Rating : Page BAL56				
Remarks	Anti-Static Design Anti-Blowout Stem Fire Safe Design					Anti-Static Design Anti-Blowout Stem Fire Safe Design					Anti-Static Design Anti-Blowout Stem Fire Safe Design					Anti-Static Design Anti-Blowout Stem Fire Safe Design				

Type	TDZ Series(Metal Seat(5H))					TDZ Series(Metal Seat(5H))					TDZ Series(Metal Seat(5H))					TDZ Series(Metal Seat(5H))				
Ball Valve	10K					150					10K					150				
																				
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		
1 1/4	32	140	128	160		140	128	160												
1 1/2	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		
2 1/2	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				

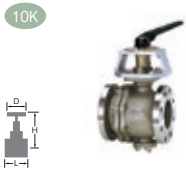
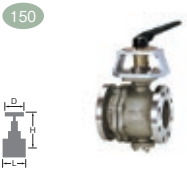
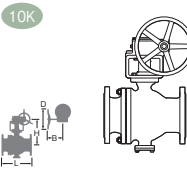
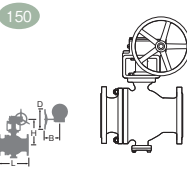
Type	TDZ Series(Metal Seat(5H))					TDZ Series(Metal Seat(5H))					TDZ Series(Metal Seat(5H))					TDZ Series(Metal Seat(5H))				
Ball Valve	20K 					300 					20K 					300 				
	FE CE EAC					FE CE EAC					FE CE EAC					FE CE EAC				
Fig	20UTDZ5H/G-20UTDZ5H					300UTDZ5HM/G-300UTDZ5HM					20SCTDZ5H/G-20SCTDZ5H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

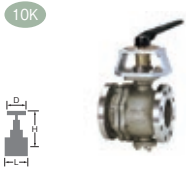
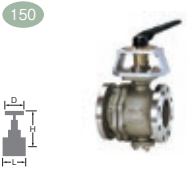
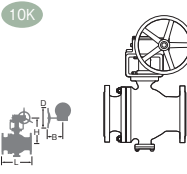
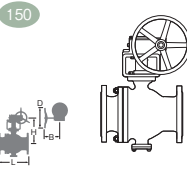
Type	TDZ Series(Metal Seat(6H))					TDZ Series(Metal Seat(6H))					TDZ Series(Metal Seat(6H))					TDZ Series(Metal Seat(6H))				
Ball Valve																				
																				
Fig	10UTDZ6H/G-10UTDZ6H					150UTDZ6HM/G-150UTDZ6HM					10SCTDZ6H/G-10SCTDZ6H					150SCTDZ6H/G-150SCTDZ6H				
End Connection	JIS B2220 10K RF					ASME B16.5 Class 150 RF					JIS B2220 10K RF					ASME B16.5 Class 150 RF				
inch	mm	L	H	D	B	L	H	D	B		L	H	D	B		L	H	D	B	
1/2	15	108	108	130		108	108	130			108	108	130			108	108	130		
3/4	20	117	111	130		117	111	130			117	111	130			117	111	130		
1	25	127	124	160		127	124	160			127	124	160			127	124	160		
1 1/4	32	140	128	160		140	128	160												
1 1/2	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		
2 1/2	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				

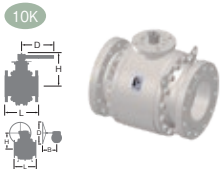
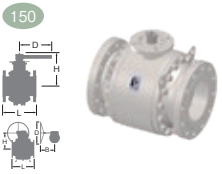
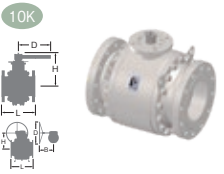
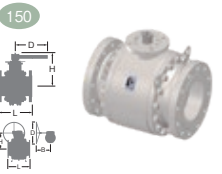
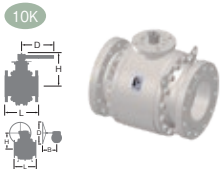
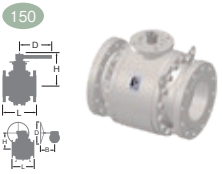
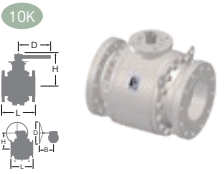
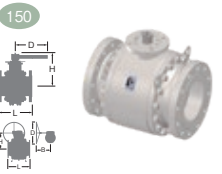
Type	TDZ Series(Metal Seat(6H))					TDZ Series(Metal Seat(6H))					TDZ Series(Metal Seat(6H))					TDZ Series(Metal Seat(6H))				
Ball Valve	20K 					300 					20K 					300 				
	FE CE EAC					FE CE EAC					FE CE EAC					FE CE EAC				
Fig	20UTDZ6H/G-20UTDZ6H					300UTDZ6HM/G-300UTDZ6HM					20SCTDZ6H/G-20SCTDZ6H					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				
1 1/4	32	178	128	160																
1 1/2	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				
2 1/2	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				

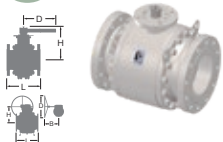
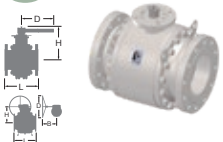
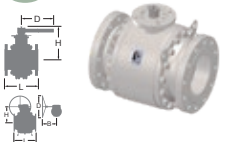
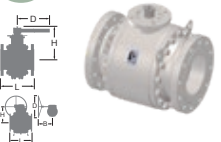
Type	Lambda Port (Flekseat)				Lambda Port (Flekseat)				Lambda Port (Flekseat)				Lambda Port (Flekseat)			
Ball Valve	10K 				150 				10K 				150 			
																
Fig	L-10UVC				L-150UVC				G-10UVC				G-150UVC			
End Connection	JIS B2220 10K RF				ASME B16.5 Class 150 RF				JIS B2220 10K RF				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									
1 1/2	40	165	199	230	165	198	230									
2	50	178	205	230	178	204	230									
2 1/2	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: A Port				CF8M + Cr Plating: A Port				CF8M + Cr Plating: A Port				CF8M + Cr Plating: A 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			

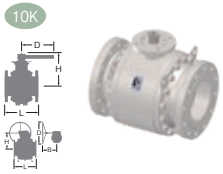
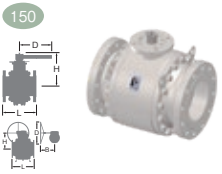
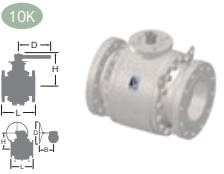
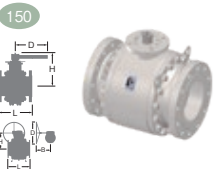
Type	Lambda Port (Flekseat)				Lambda Port (Flekseat)				Lambda Port (Flekseat)				Lambda Port (Flekseat)			
Ball Valve	20K 				300 				20K 				300 			
																
Fig	L-20UVC				L-300UVC				G-20UVC				G-300UVC			
End Connection	JIS B2220 20K RF				ASME B16.5 Class 300 RF				JIS B2220 20K RF				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									
1 1/2	40	190	198	230	190	198	230									
2	50	216	204	230	216	204	230									
2 1/2	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: A Port				CF8M + Cr Plating: A Port				CF8M + Cr Plating: A Port				CF8M + Cr Plating: A 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			

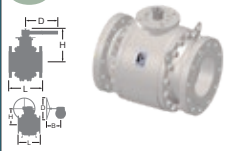
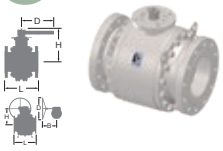
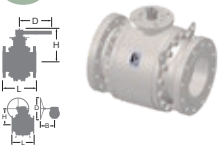
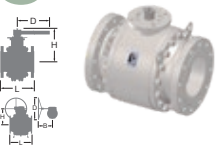
Type	Lambda Port (Knifeseat)				Lambda Port (Knifeseat)				Lambda Port (Knifeseat)				Lambda Port (Knifeseat)			
Ball Valve																
																
Fig	L-10UVCT				L-150UVCTM				G-10UVCT				G-150UVCTM			
End Connection	JIS B2220 10K RF				ASME B16.5 Class 150 RF				JIS B2220 10K RF				ASME B16.5 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									
1 1/2	40	165	199	230	165	198	230									
2	50	178	205	230	178	204	230									
2 1/2	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: Δ Port				CF8M + Cr Plating: Δ Port				CF8M + Cr Plating: Δ Port				CF8M + Cr Plating: Δ 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			

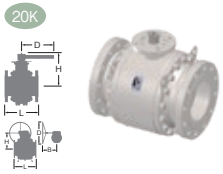
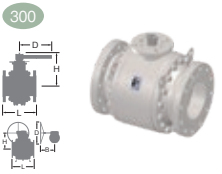
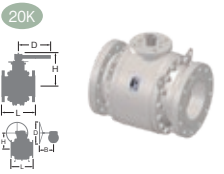
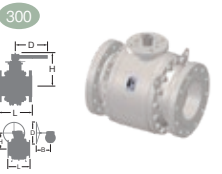
Type	Lambda Port (Knifeseat)				Lambda Port (Knifeseat)				Lambda Port (Knifeseat)				Lambda Port (Knifeseat)			
Ball Valve																
																
Fig	L-20UVCT				L-300UVCTM				G-20UVCT				G-300UVCTM			
End Connection	JIS B2220 20K RF				ASME B16.5 Class 300 RF				JIS B2220 20K RF				ASME B16.5 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									
1 1/2	40	190	198	230	190	198	230									
2	50	216	204	230	216	204	230									
2 1/2	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: Δ Port				CF8M + Cr Plating: Δ Port				CF8M + Cr Plating: Δ Port				CF8M + Cr Plating: Δ 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			

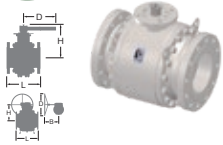
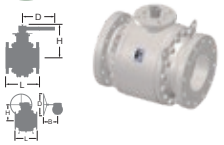
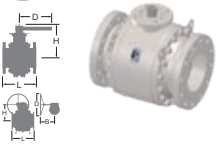
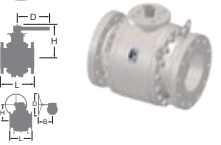
Type	3TC (T60S) Series					3TC (T60S) Series					3TCR (T60S) Series					3TCR (T60S) Series				
Ball Valve																				
																				
Fig	10UF3TCSM/G-10UF3TCSM					150UF3TCSM/G-150UF3TCSM					10UF3TCRSM/G-10UF3TCRSM					150UF3TCRSM/G-150UF3TCRSM				
End Connection	JIS B2220 10K RF					ASME 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			203	159	300			203	159	300		
3	80	203	201	400		203	201	400			229	201	400			229	201	400		
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  FS FE CE EAC					10K  RB					150  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				

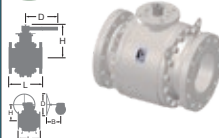
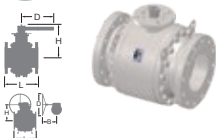
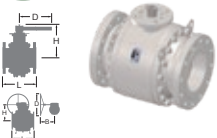
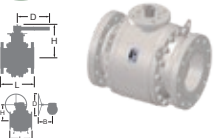
Type	3TC (T60S) Series					3TC (T60S) Series					3TCR (T60S) Series					3TCR (T60S) Series				
Ball Valve																				
	10K					150					10K					150				
Fig	10SF3TCSBL/G-10SF3TCSBL					150SF3TCSBL/G-150SF3TCSBL					10SF3TCRSBL/G-10SF3TCRSBL					150SF3TCRSBL/G-150SF3TCRSBL				
End Connection	JIS 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			203	159	300			203	159	300		
3	80	203	201	400		203	201	400			229	201	400			229	201	400		
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				

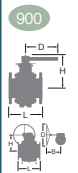
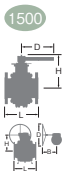
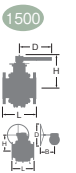
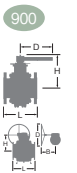
Type	3TC (T60S) Series					3TC (T60S) Series					3TCR (T60S) Series					3TCR (T60S) Series				
Ball Valve	20K  FB					300  FB FS FE CE EAC					20K  RB					300  RB FS FE CE EAC				
	Fig	20UF3TCSM/G-20UF3TCSM					300UF3TCSM/G-300UF3TCSM					20UF3TCRSM/G-20UF3TCRSM					300UF3TCRSM/G-300UF3TCRSM			
End Connection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

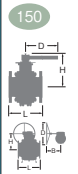
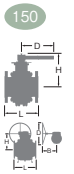
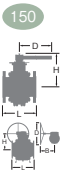
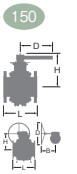
Type	3TC (T60S) Series					3TC (T60S) Series					3TCR (T60S) Series					3TCR (T60S) Series				
Ball Valve																				
	FB					FB					RB					RB				
Fig	20SF3TCS/G-20SF3TCS					300SF3TCS/G-300SF3TCS					20SF3TCRS/G-20SF3TCRS					300SF3TCRS/G-300SF3TCRS				
End Connection	JIS B2220 20K RF					ASME 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			283	159	300			283	159	300		
3	80	283	201	400		283	198	400			305	201	400			305	201	400		
4	100	305	260	450		305	254	450			403	260	450			403	260	450		
6	150	403	326	750		403	326	750			502	326	750			502	326	750		
8	200	502	316	500	305	502	316	500	305		568	316	500	305		568	316	500	305	
10	250	568	372	600	396	568	372	600	396		648	372	600	396		648	372	600	396	
12	300	648	415	600	396	648	415	600	396		762	415	600	396		762	415	600	396	
14	350	762	441	600	396	762	441	600	396		838	441	600	396		838	441	600	396	
16	400	838	511	800	567	838	511	800	567		914	511	800	567		914	511	800	567	
18	450	914	551	800	567	914	551	800	567		991	551	800	567		991	551	800	567	
20	500	991	613	800	567	991	613	800	567		1143	613	800	567		1143	613	800	567	
24	600	1143	695	800	580	1143	695	800	580											
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					
	20SF3TCSBL/G-20SF3TCSBL					300SF3TCSBL/G-300SF3TCSBL					20SF3TCRSBL/G-20SF3TCRSBL					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							

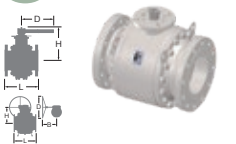
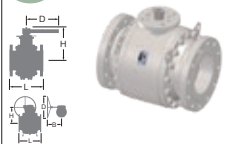
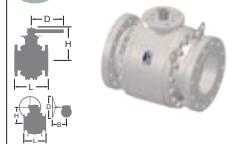
Type	3TC (T60S) Series						3TCR (T60S) Series						3TC (T60S) Series						3TCR (T60S) Series						
Ball Valve																									
	600						600						600						600						
	FB						RB						FB						RB						
	FS FE CE EAC						FS FE CE EAC						FS FE CE EAC						FS FE CE EAC						
Fig	600UF3TCSM/G-600UF3TCSM						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		L	H	D	B
2	50	292	182	400								292	182	400								356	182	400	
3	80	356	236	450			356	182	400			356	236	450			356	182	400			432	236	450	
4	100	432	263	800			432	236	450			432	263	800			432	236	450			559	263	800	
6	150	559	282	500	305		559	263	800			559	282	500	305		559	263	800			660	282	500	305
8	200	660	335	600	396		660	282	500	305		660	335	600	396		660	282	500	305		787	335	600	396
10	250	787	382	600	396		787	335	600	396		787	382	600	396		787	335	600	396		838	382	600	396
12	300	838	448	800	567		838	382	600	396		838	448	800	567		838	382	600	396		889	448	800	567
14	350	889	478	800	567		889	448	800	567		889	478	800	567		889	448	800	567		991	478	800	567
16	400	991	540	800	567		991	478	800	567		991	540	800	567		991	478	800	567		1092	540	800	567
18	450	1092	588	800	581		1092	540	800	567		1092	588	800	581		1092	540	800	567		1194	588	800	581
20	500	1194	652	800	581		1194	588	800	581		1194	652	800	581		1194	588	800	581		1397	652	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						

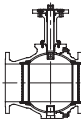
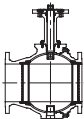
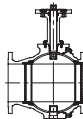
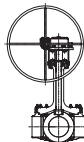
Type	3TC (T60S) Series						3TCR (T60S) Series						3TC (T60S) Series						3TC (T60S) Series						
Ball Valve	600  FB FS FE CE EAC						600  RB FS FE CE EAC						900  FB FS FE CE EAC						900  FB FS FE CE EAC						
	600SF3TCSBL/G-600SF3TCSBL						600SF3TCRSBL/G-600SF3TCRSBL						900UF3TCSM/G-900UF3TCSM						900SF3TCS/G-900SF3TCS						
	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		L	H	D
2	50	292	182	400								368	211	700			368	211	700			368	211	700	
3	80	356	236	450			356	182	400			381	243	700			381	243	700			381	243	700	
4	100	432	263	800			432	236	450			457	276	900			457	276	900			457	276	900	
6	150	559	282	500	305		559	263	800			610	295	600	305		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		737	355	600	396
10	250	787	382	600	396		787	335	600	396		838	406	600	417		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		965	480	800	567
14	350	889	478	800	567		889	448	800	567		1029	547	800	581		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		1130	588	800	581
18	450	1092	588	800	581		1092	540	800	567		1219	673	800	570		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		1321	780	800	701
24	600	1397	749	800	570		1397	652	800	581		1549	930	800	701		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						F40+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						

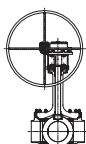
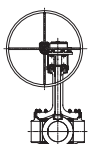
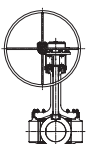
Type	3TC (T60S) Series						3TC (T60S) Series						3TC (T60S) Series						3TC (T60S) Series						
Ball Valve	900   FB FS FE CE EAC						1500   FB FS FE CE EAC						1500   FB FS FE CE EAC						900   FB FS FE CE EAC						
	Fig	900SF3TCSBL/G-900SF3TCSBL						1500UF3TCSM/G-1500UF3TCSM						1500SF3TCS/G-1500SF3TCS						1500SF3TCSBL/G-1500SF3TCSBL					
	End Connection	ASME B16.5 Class 900 RF						ASME B16.5 Class 1500 RF						ASME B16.5 Class 1500 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		L	H	D
2	50	368	211	700			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			470	243	900	
4	100	457	276	900			546	262	500	305		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		705	353	600	396
8	200	737	355	600	396		832	435	600	567		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		991	482	800	567
12	300	965	480	800	567		1130	605	800	570		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		1257	625	800	570
16	400	1130	588	800	581		1384	729	800	701		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		1537	806	800	701
20	500	1321	780	800	701		1664	912	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		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		L	H	D
2	50	178	182	300								178	182	300											
3	80	203	188	200	215		203	187	300			203	188	200	215		203	187	300						
4	100	229	234	300	282		229	185	200	217		229	234	300	282		229	185	200	217					
6	150	394	283	500	305		394	233	300	282		394	283	500	305		394	233	300	282					
8	200	457	349	500	396		457	283	500	305		457	349	500	396		457	283	500	305					
10	250	533	398	600	567		533	345	500	396		533	398	600	567		533	345	500	396					
12	300	610	463	600	567		610	399	500	566		610	463	600	567		610	399	500	566					
14	350	686	483	600	567		686	464	600	566		686	483	600	567		686	464	600	566					
16	400	762	582	800	570		762	478	600	566		762	582	800	570		762	478	600	566					
18	450	864	612	800	570		864	583	800	571		864	612	800	570		864	583	800	571					
20	500	914	724	800	613		914	611	800	571		914	724	800	613		914	611	800	571					
24	600	1067	807	800	613		1067	712	800	531		1067	807	800	613		1067	712	800	531					
Body/Cap	A182 Gr.F316						A182 Gr.F316						A105						A105						
Stem/Bottom Stem	A564 Type 630 H1150D						A564 Type 630 H1150D						A564 Type 630 H1150D						A564 Type 630 H1150D						
Ball	316+SFNi (Ni-Cr Alloy Thermal Spraying)						316+SFNi (Ni-Cr Alloy Thermal Spraying)						316+SFNi (Ni-Cr Alloy Thermal Spraying)						316+SFNi (Ni-Cr Alloy Thermal Spraying)						
Gland Packing	Flexible Graphite						Flexible Graphite						Flexible Graphite						Flexible Graphite						
Gasket	Flexible Graphite						Flexible Graphite						Flexible Graphite						Flexible Graphite						
Ball Seat	316+SFNi (Ni-Cr Alloy Thermal Spraying)						316+SFNi (Ni-Cr Alloy Thermal Spraying)						316+SFNi (Ni-Cr Alloy Thermal Spraying)						316+SFNi (Ni-Cr Alloy Thermal Spraying)						
Bore	Full Bore						Reduced Bore						Full Bore						Reduced Bore						
Cap B/N	B8M/8M						B8M/8M						B7M/2HM						B7M/2HM						
Seat Spring	B637 N07750 (INCONEL® X750)						B637 N07750 (INCONEL® X750)						B637 N07750 (INCONEL® X750)						B637 N07750 (INCONEL® X750)						
Plug/Vent Valve	316L/316L+WC (Tungsten Carbide)						316L/316L+WC (Tungsten Carbide)						LF2/LF2+316L+WC (Tungsten Carbide)						LF2/LF2+316L+WC (Tungsten Carbide)						
F-to-F Dimension	ASME B16.10						ASME B16.10						ASME B16.10						ASME B16.10						
Actuator Mounting Pad	ISO 5211						ISO 5211						ISO 5211						ISO 5211						
Handle	DI/CS/Gear Unit						DI/CS/Gear Unit						DI/CS/Gear Unit						DI/CS/Gear Unit						
Standard/Approval	API 6D, ISO 14313 FS: API607/API6FA/ ISO 10497, FE: ISO15848-1, SIL2, PED/ATEX/CE TR-CU/EAC						API 6D, ISO 14313 FS: API607/API6FA/ ISO 10497, FE: ISO15848-1, SIL2, PED/ATEX/CE TR-CU/EAC						API 6D, ISO 14313 FS: API607/API6FA/ ISO 10497, FE: ISO15848-1, SIL2, PED/ATEX/CE TR-CU/EAC						API 6D, ISO 14313 FS: API607/API6FA/ ISO 10497, FE: ISO15848-1, SIL2, PED/ATEX/CE TR-CU/EAC						
Reference Page	P-T Rating : Page BAL54						P-T Rating : Page BAL54						P-T Rating : Page BAL54						P-T Rating : Page BAL54						
Remarks	Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175						Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175						Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175						Anti-Static Design/Anti-Blowout Stem/ Fire Safe Design/NACE MR0175						

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

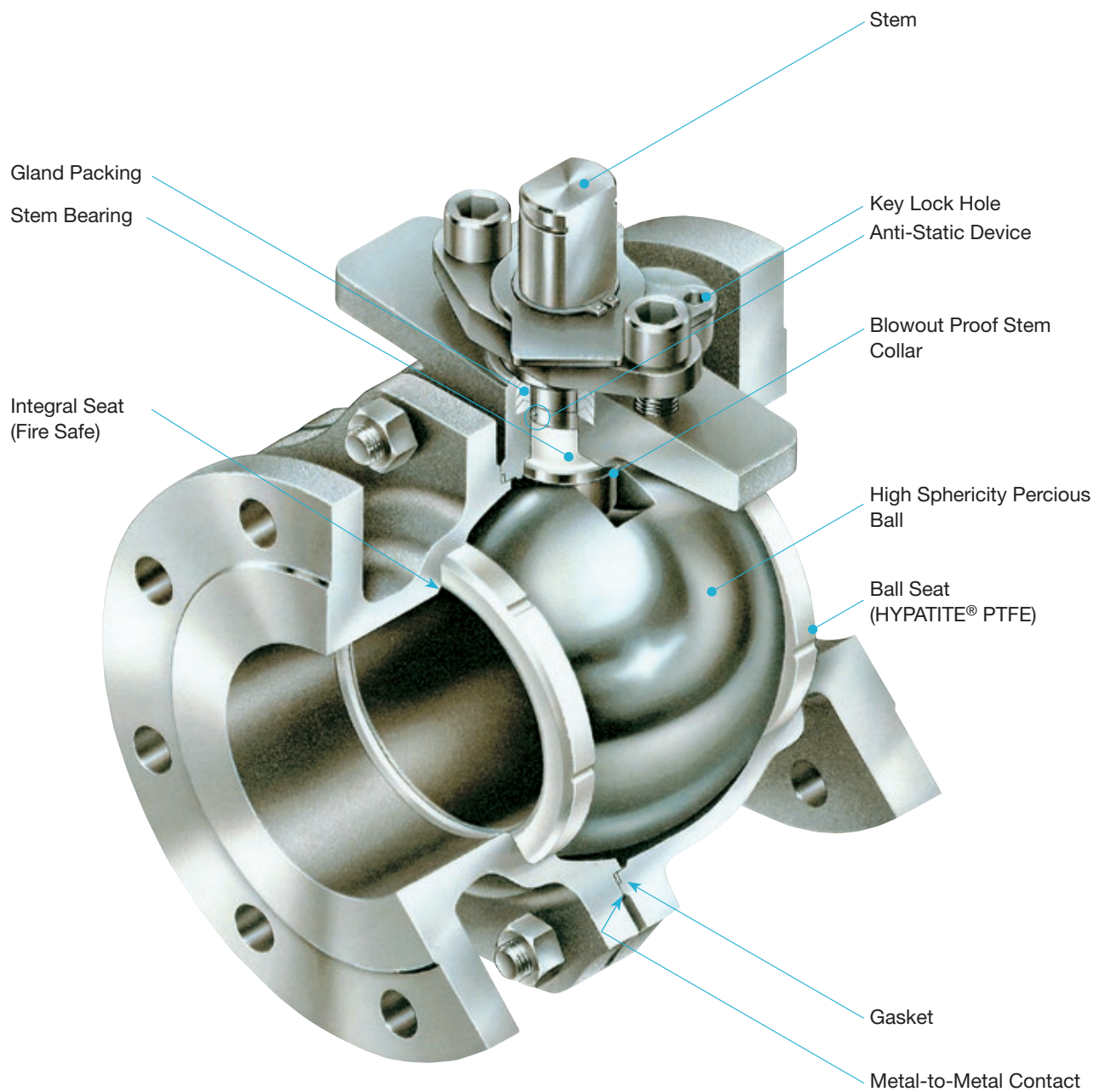
Type	14-K Series(-196°C)					14-K Series(-196°C)					14-K Series(-196°C)					67-K Series(-196°C)				
Ball Valve	150  FB					300  FB					600  FB					150  FB				
	(G)-150UPG14K					(G)-300UPG14K					(G)-600UPG14K					(G)-W150UPG67K				
End Connection		ASME B16.5 CI 150 RF					ASME B16.5 CI 300 RF					ASME B16.5 CI 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°C)						67-K Series(-196°C)						67-K Series(-196°C)						66-K Series(-196°C)						
Ball Valve	300 						600 						900 						150  NO IMAGE						
	(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										
1 1/2	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										
2 1/2	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						300				600				150					
	(G)-W300UPG66K						(G)-W600UPG66K				(G)-W900UPG66K				(G)-W1500UPG66K					
	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			
1 1/2	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®)				

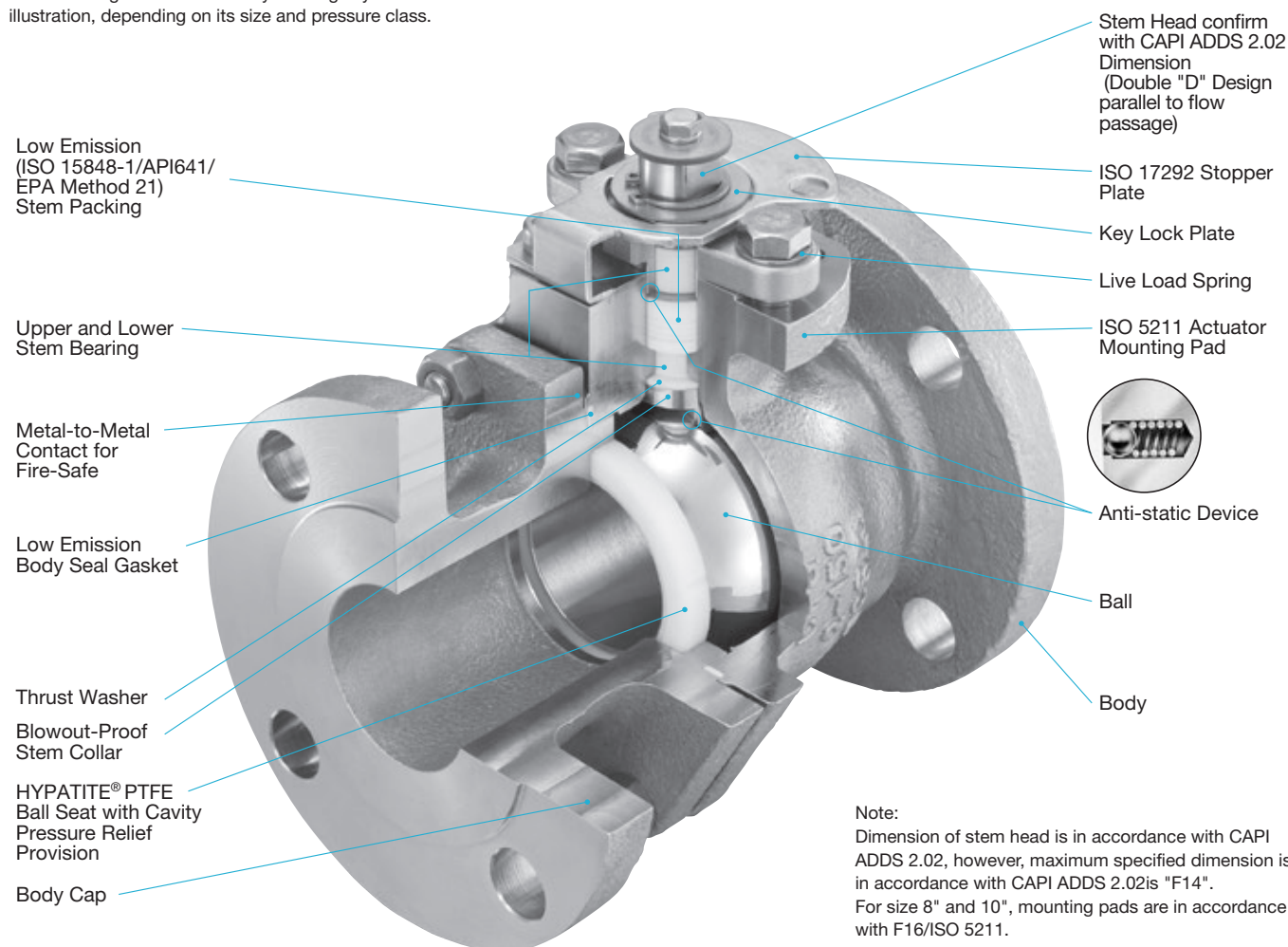
Type	64-K Series(-196°C)					64-K Series(-196°C)					64-K Series(-196°C)					64-K Series(-196°C)					
Ball Valve	150					300					600					900					
Fig	(G)-W150UPG64K					(G)-W300UPG64K					(G)-W600UPG64K					(G)-W900UPG64K					
End Connection		ASME B16.25 (BW)					ASME B16.25 (BW)					ASME B16.25 (BW)					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°C)					
Ball Valve	1500  NO IMAGE	FB				
		(G-)W1500UPG64K				
		End ConnectionASME B16.25 (BW)				
		inch	mm	L	H	D
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.



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

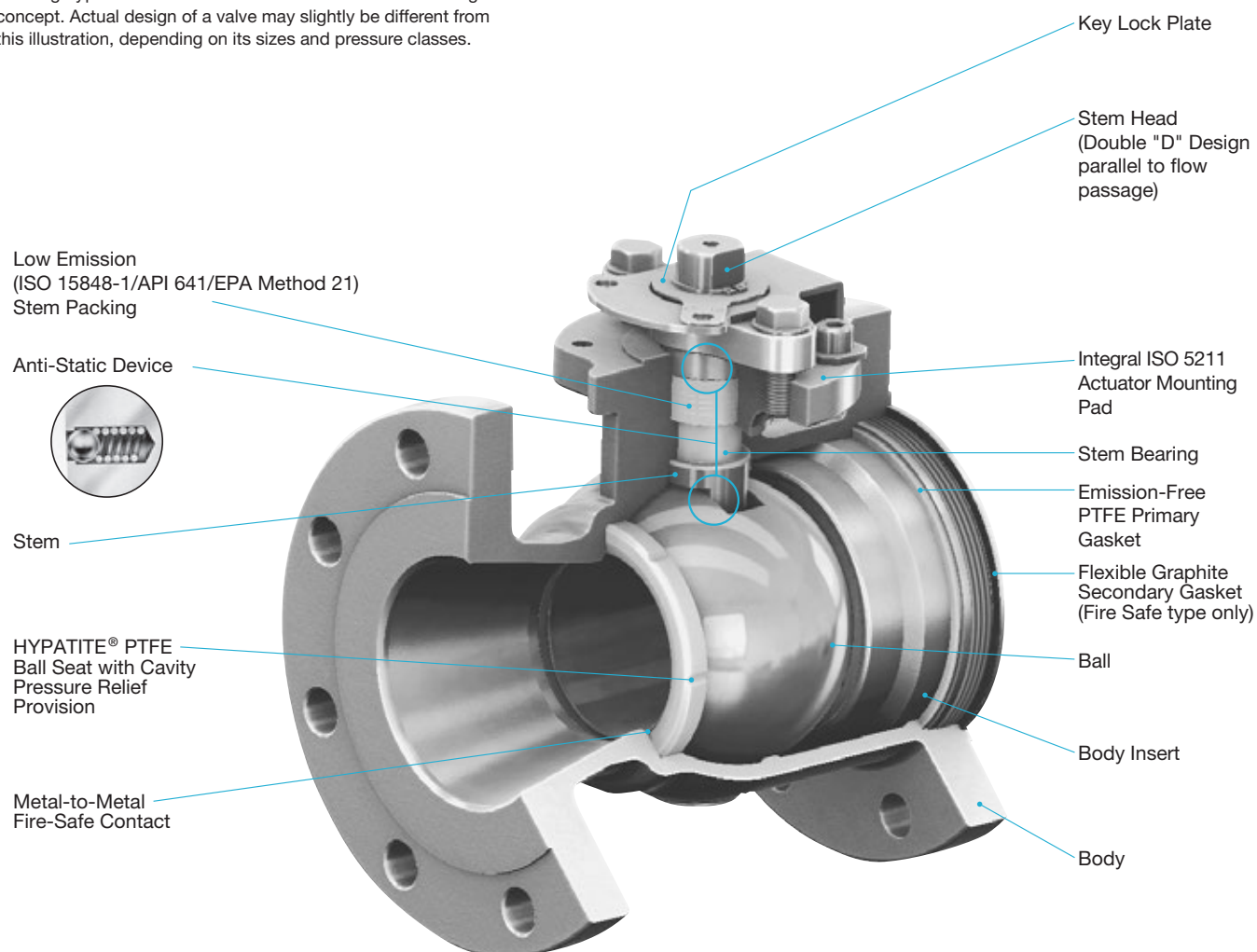
For 150/300SCTDZ/UTDZM and SCTAZ/UTAZM Series Ball Valves, **ISO 5211** actuator mounting pad is integrally provided for uniformly simplified mounting of any actuators provided with valve mounting flanges designed to ISO 5211. 150UTBM Series Ball Valves are provided with KITZ Standard integral actuator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

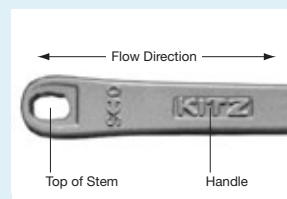


Fig. 1

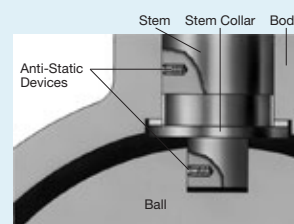


Fig. 2

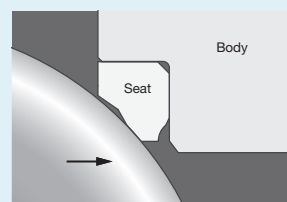


Fig. 3 (Before Fire)

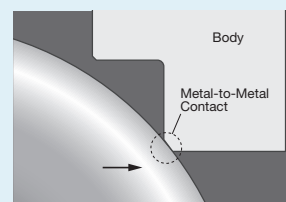


Fig. 4 (After Fire)

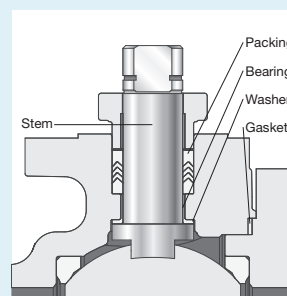


Fig. 5 (Before Fire)

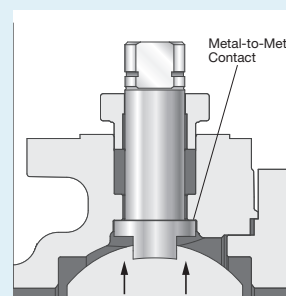


Fig. 6 (After Fire)

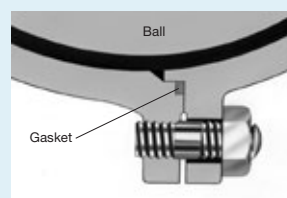


Fig. 7 (Before Fire)

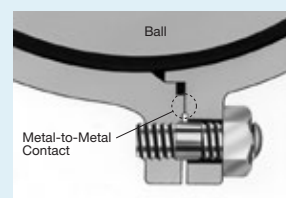


Fig. 8 (After Fire)

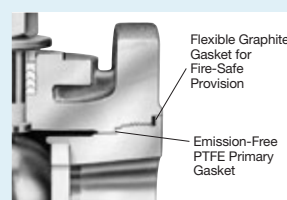


Fig. 9 (Uni-Body Insert)

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.

Stem Head conforms to CAPI ADDS 2.02 Dimension
(Double "D" Design parallel to flow passage)

Flexible Graphite
Low Emission (ISO 15848/EPA Method 21)
Stem Packing

Upper and Lower
Carbon Stem Bearing

Blowout-Proof Stem Collar

Locking Hole

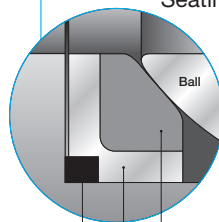
Integral Actuator
Mounting Pad
(ISO 5211, CAPI ADDS 2.02)

Trim 3H: 304 (or 316) Ball
Trim 6H: Hard-Faced 316 Ball

Metal-to-Metal
Fire Safe Contact

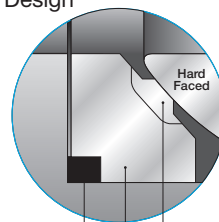
Flexible Graphite
Flange Gasket

Seating Design



Carbon Seat
Retainer
Seat Packing

3H



Hard Faced
Type 316 Seat
Seat Packing

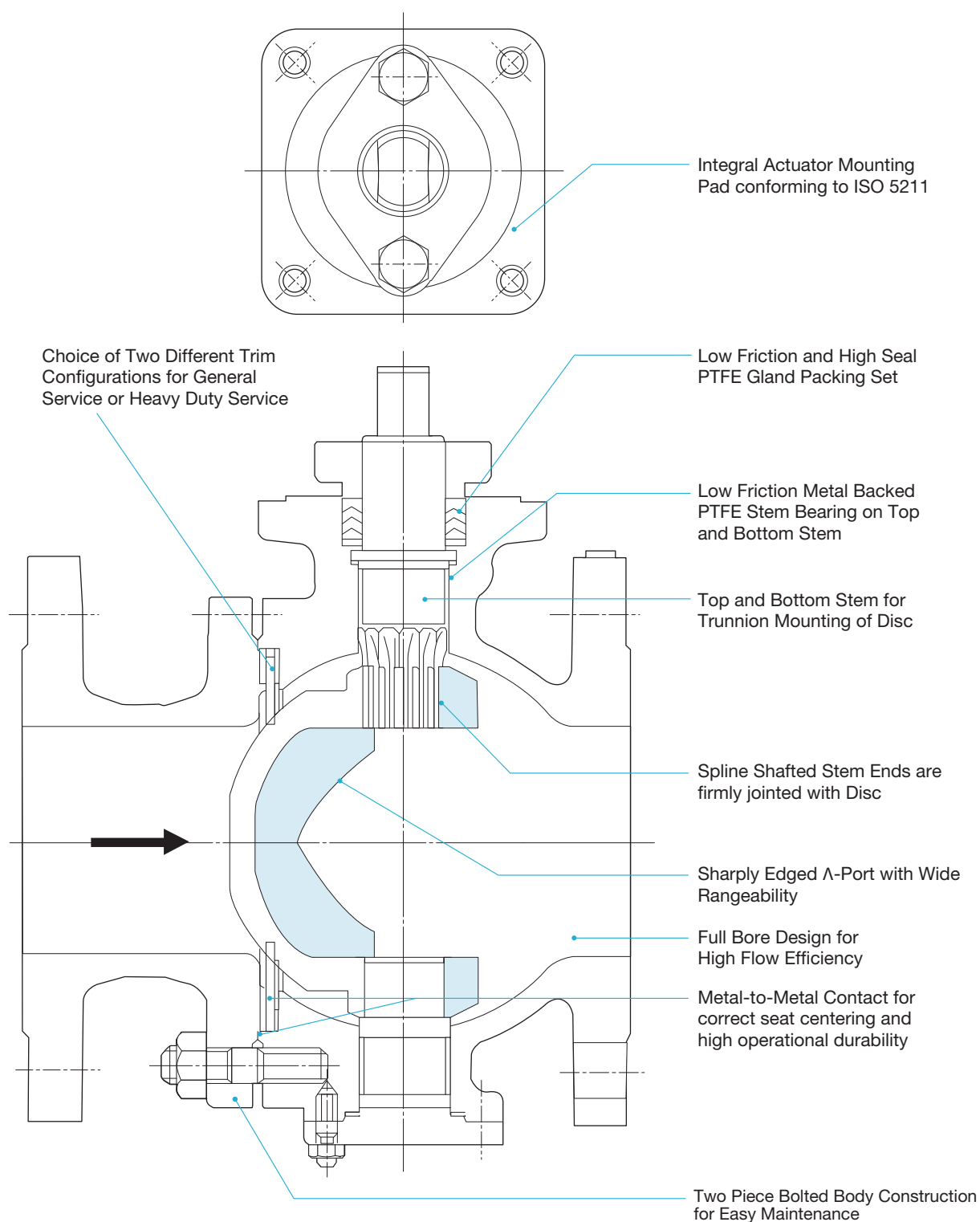
6H

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

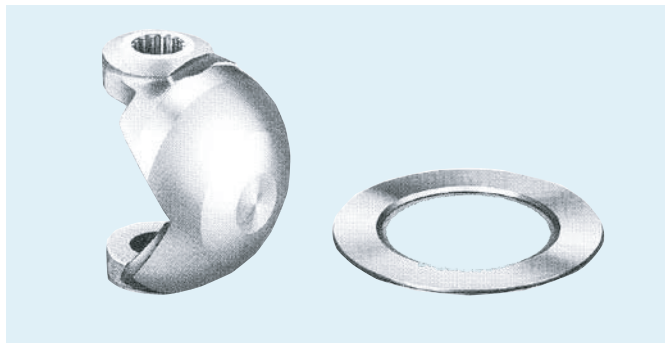
Design Features



Design Features

1. Sharp Solid Cutting

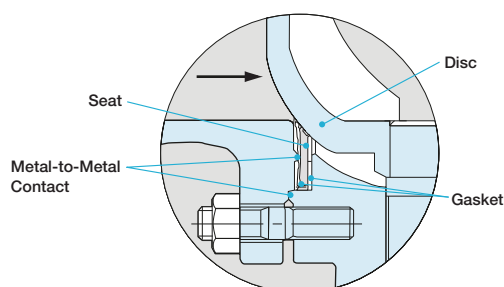
Trunnion mounted disc is sharply edged for cutting solids and fibrous objects mixed in line fluids, preventing disturbance to valve closing operation and minimizing fluid residue within the valve bore.



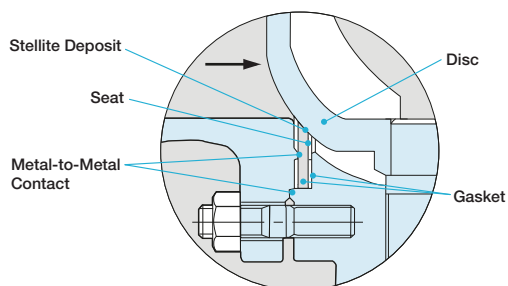
2. Choice of Trims

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

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



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



3. Structural Reliability

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

4. Stabilized Operating Torque

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

5. Maintenance Ease

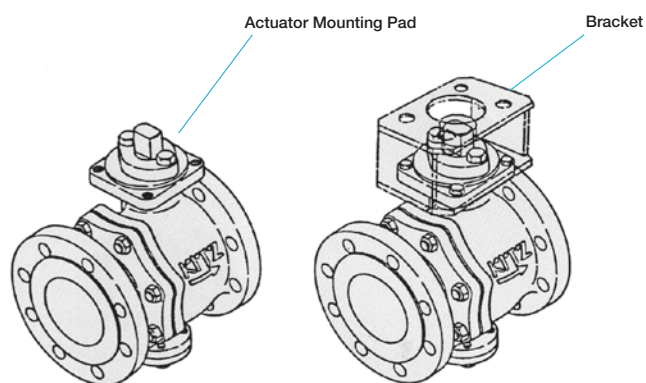
Two-Piece Split Body Construction provides convenience of easy maintenance which is always critically required for handling viscous or fibrous line fluids.

6. High Flow Efficiency

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

7. Valve Automation

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



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

Design Data

Design Specifications

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

Test Pressure

Seat Test Hydrostatic or Pneumatic at 0.39 MPa (4 kgf/cm ² 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 V III

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

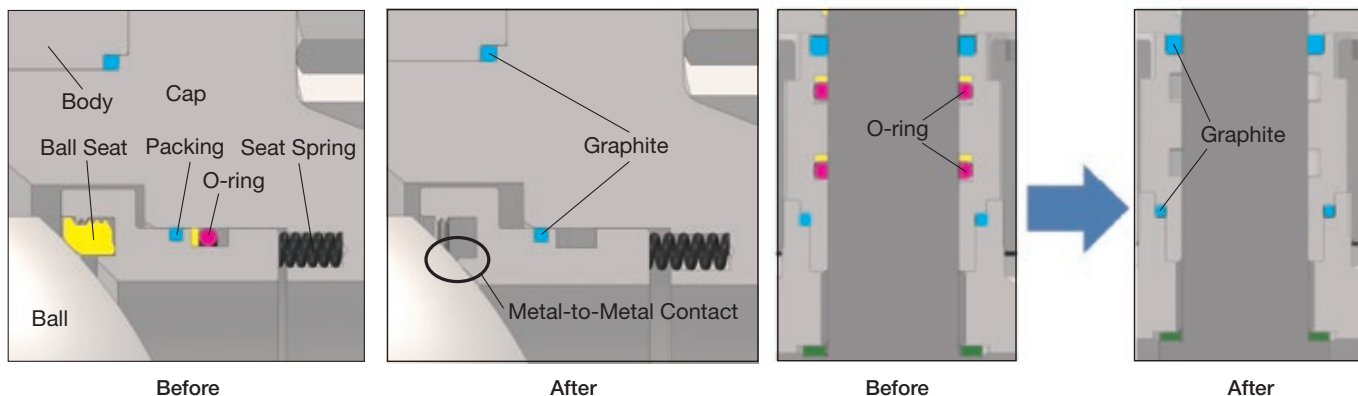
- Structure: 3-piece Bolted Body and Cap
- Standard Materials: NACE MR0175, ASTM and others
- Tight Shut-off Sealing Mechanism
- Low Operating Torque
- Triple Stem Sealing System with 2-Orings & Packing
- Double Block and Bleed Function
- Self Relief of Excessive Cavity Pressure
- Fire Safe Tested
- 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.

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

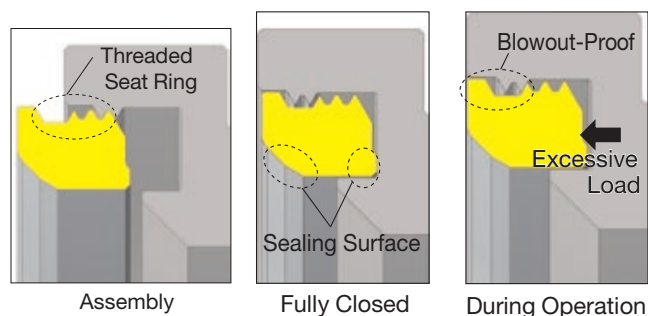
Ball seats independently shuts off line fluid on upstream and downstream side of the ball. Valve bore and body cavity are isolated from each other when valve is fully open or closed. Under this condition, cavity pressure can be discharged with a vent valve and a drain plug. Vent valve is equipped with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



Design Features

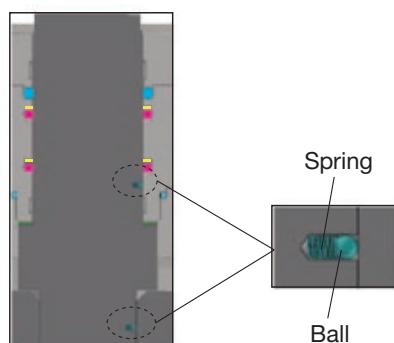
4. Blowout-proof Ball Seat Assembly

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



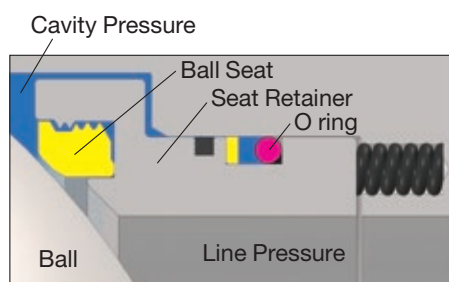
5. Antistatic Design

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



6. Cavity Pressure Relief

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



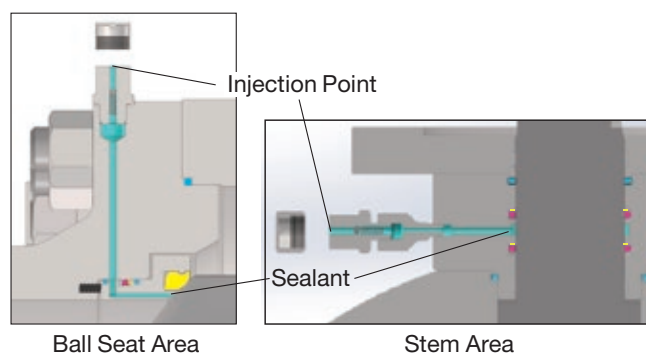
7. Low Emission Guaranteed Design

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

8. Options^{*1}

(1) Emergency Seal Restoration^{*2}

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



(2) Special Shell and Trim Materials

(3) Special Sealing Component Materials

(4) Butt-weld Piping Connection

(5) Pipe Pups Welded to Valve Ends

(6) DIB: Double Isolation and Bleed (Double Seal)^{*3}

(7) Stem Extension

(8) Overlay for Bore and Cavity

(9) Actuation (Pneumatic and Electric)

^{*1} For all optional provisions, please contact KITZ representative or local distributors.

^{*2} Standard design for North American market.

^{*3} Any combination of DPE (Double Piston Effect)/SPE (Single Piston Effect) is available.

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



Design Standards

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

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)

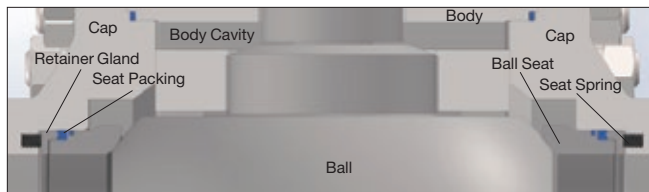
Design Features

- 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

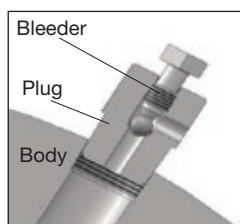
1. High Performance Sealing Mechanism

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.



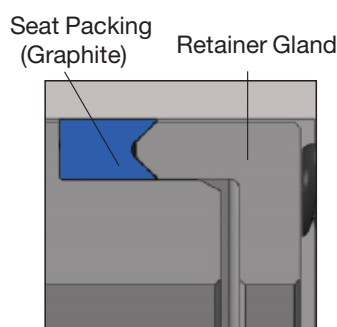
2. Double Block and Bleed Function

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.



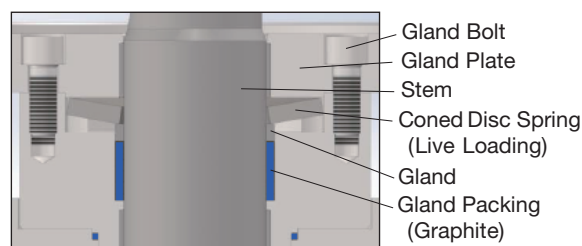
3. High Performance Seat Packing

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



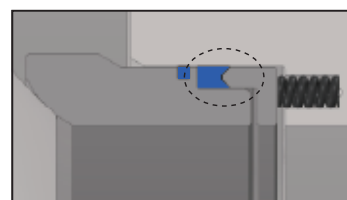
4. Live Loaded Packing Structure

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 seats 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°C
HYPATITE® PTFE	Monomer permeability is lower and resistance against compression and creeping is higher than other PTFE materials	260°C/270°C * ¹
Carbon filled PTFE	Excellent heat and abrasion resistance	260°C/270°C * ¹
FILLTITE*	Highest heat resistance among PTFE based materials	300°C * ²
Graphite	Excellent for high temperature service	500°C
Metal	Excellent for high temperature and abrasive service	500°C/525°C * ³
PEEK	Higher heat resistance and mechanical strength	270°C
Glass fiber filled PTFE with MoS ₂	Higher abrasion resistance and operation efficiency	230°C
Nylon with MoS ₂	Higher mechanical strength	140°C

*: FILLTITE 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°C. In addition, ball seats are interchangeable with most of our conventional ball seats, and also have the cost advantage.

*1 270°C: SCTDZ/UTDZM Series only.

*2 Uni-body design: 260°C

*3 525°C: T60M/SF3TC 6H UF3TC6HM Series only.

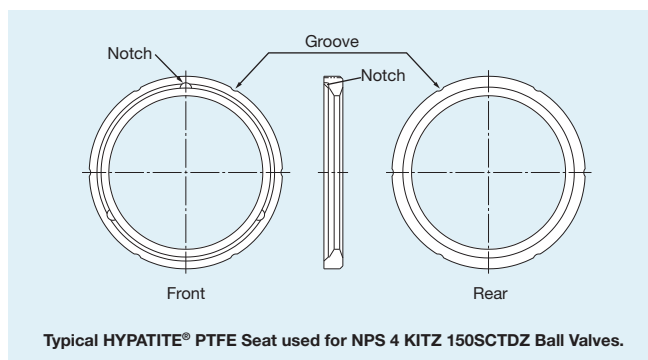
HYPATITE® PTFE Ball Seats (Carbon and Stainless Steel Valves)

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.



FILLTITE Ball Seats

Highest heat resistance among PTFE based materials.

- Service temperature range: -29°C to 300°C

- Trim symbol: 1H

Technical Data

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.

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

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

● Trim Materials

Valve Design	Floating Ball Valve		Trunnion Mounted Ball Valve	
			Split body	3-piece body
Trim Symbol	5H	6H ^{*3}	6H	
Temperature	300°C	500°C	450°C	525°C
	572°F	932°F	842°F	977°F
Seat Leakage ^{*1}	ANSI FCI 70-2 Class VI			ISO 5208 RateC/ ANSI FCI 70-2 Class VI ^{*4}
Parts	Ball	ASTM A276 Type 316 or ASTM A351 CF8M + Cr plated	ASTM A276 Type 316 or A351 Gr.CF8M + SFNi ^{*2}	ASTM A276 Type 304 + SFNi ^{*2}
	Ball Seat	ASTM A276 Type 316 + SFNi ^{*2}	ASTM A276 Type 316 + SFNi ^{*2}	ASTM A276 Type304 + 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.

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 ^{*3}
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).



● 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:

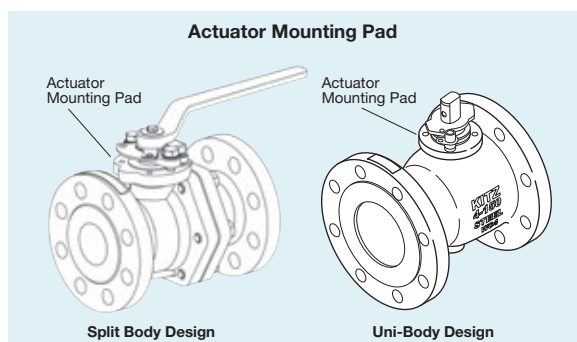
● Use gear operator or valve actuator to fix valve position when used for throttling service.

Dimension of Actuator Mounting Pads

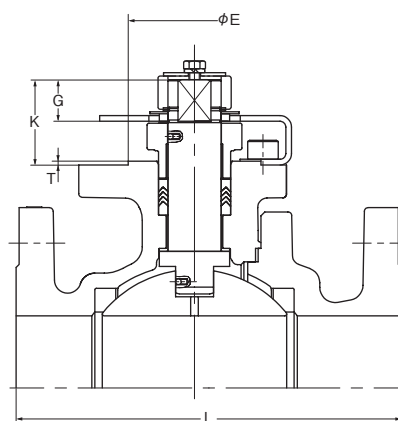
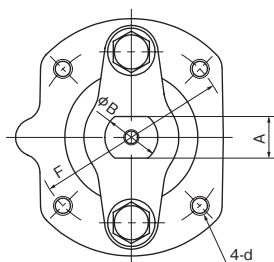
Integral Actuator Mounting Pads

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.



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
Class 300	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
	1/2	9	12	25	36	9	22	140	M5	1	F03
	3/4	9	12	25	36	9	22	152	M5	1	F03
	1	14	18	35	50	14	30	165	M6	1.5	F05
	1 1/2	17	22	55	70	17	34	190	M8	1.5	F07
	2	17	22	55	70	17	34	216	M8	1.5	F07
	2 1/2	22	28	70	102	22	45	241	M10	2	F10
	3	22	28	70	102	22	45	283	M10	2	F10
	4	27	36	85	125	27	52	305	M12	2	F12
	6	36	48	100	140	36	63	403	M16	2	F14
	8	46	60	130	165	46	79	502	M20	2	F16

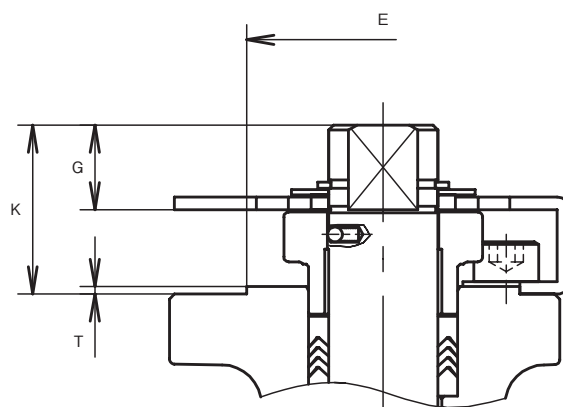
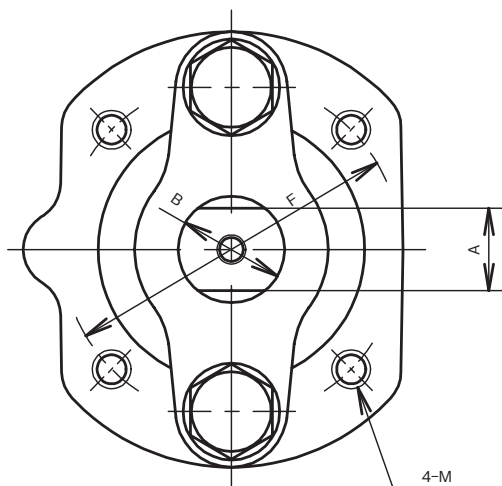
*KITZ Product Codes:

- (1) 150UTDZ(M) (4) 300SCTDZ
 (2) 150SCTDZ (5) 150UTDZXL(M)
 (3) 300UTDZ(M) (6) 300UTDZXL(M)

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

Dimension of Actuator Mounting Pads

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



Dimensions

Unit: mm

Nominal Pressure	Nominal Size (NPS)	Mounting Dimensions for Actuator								ISO 5211 Flange Type
		A	B	E	F	G	K	T	M	
Class 150	1/2	7	10	25	36	8.5	18	1	M5	F03(2)
	3/4	7	10	25	36	8.5	18	1	M5	F03(2)
	1	9	12	25	36	9	22	1	M5	F03
	1 1/2	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
Class 300	10	46	60	130	165	46	79	2	M20	F16
	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
	1 1/2	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

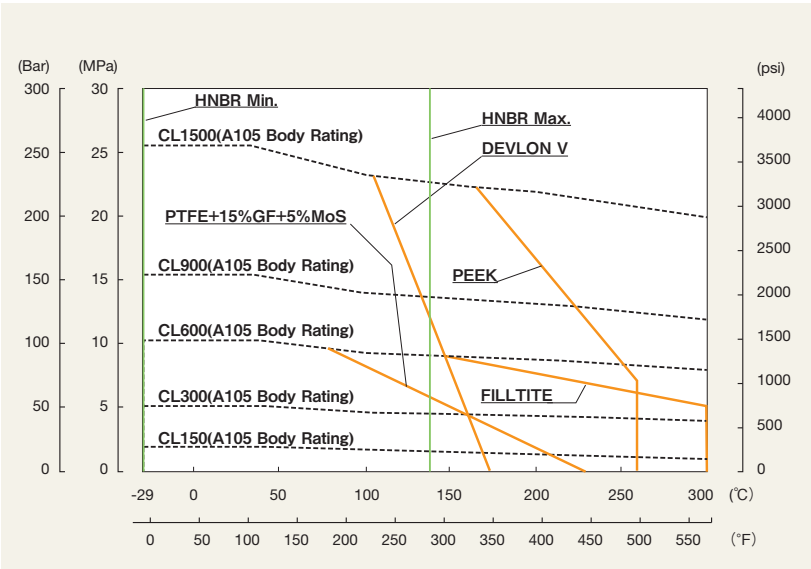
and in our laboratory, we have prepared general rating charts for non-shock fluid service as below. In case of extraordinary service conditions as the following, kindly contact KITZ representative or its distributors for technical advice:

- 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.

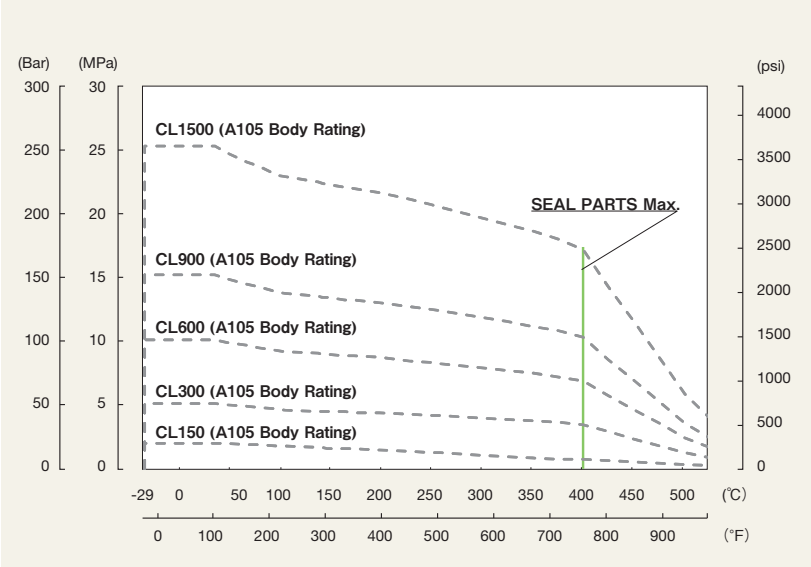
FILLTITE is specially reinforced ball seat using carbon based fillers into PTFE at higher rate than conventional carbon filled PTFE, which greatly improves heat and abrasion resistance. This material has excellent operability, durability, chemical resistance and sealing performance at high temperature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

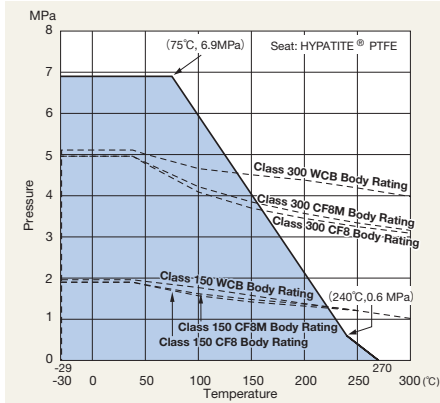
Metal Seated 3-Piece Trunnion Mounted Ball Valves: Trim 6H



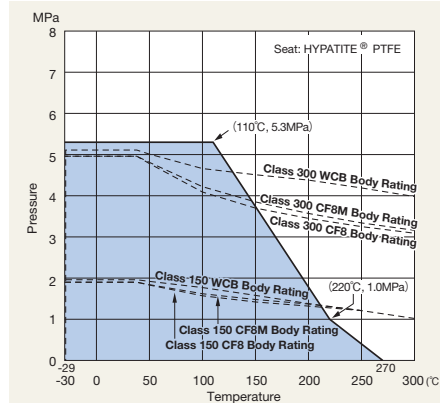
NOTE : In case of using at higher than 400°C please contact KITZ Corporation.

Pressure-Temperature Ratings

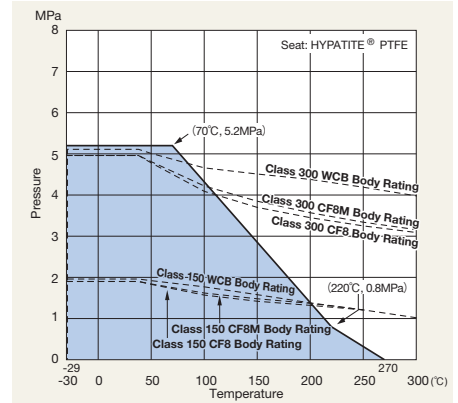
■ 10/20/150/300UTDZ(M)/SCTDZ: NPS 1/2, 3/4



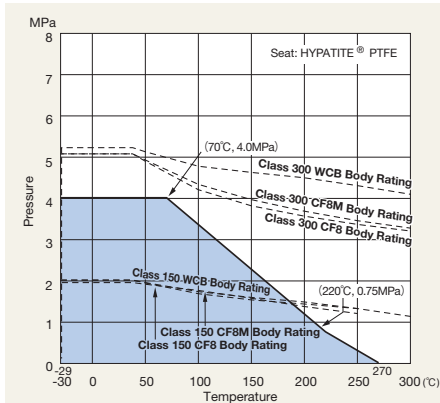
■ 10/20/150/300UTDZ(M)/SCTDZ: NPS 1 to 2 1/2



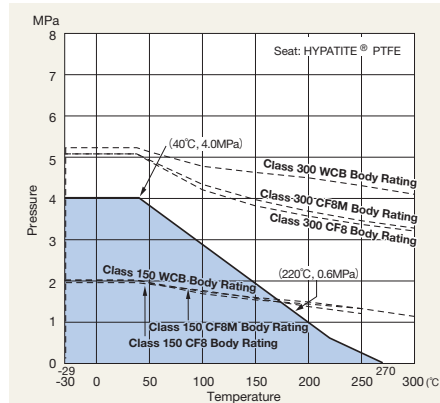
■ 10/20/150/300UTDZ(M)/SCTDZ: NPS 3, 4



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

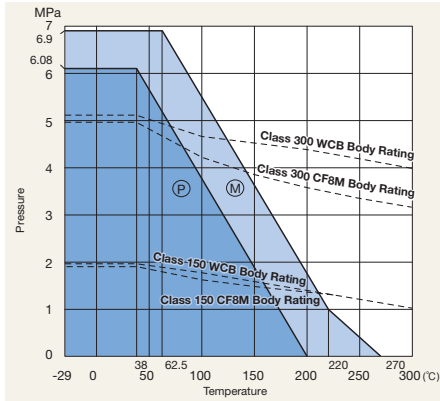


■ 10/20/150/300UTDZ(M)/SCTDZ: NPS 8, 10
TDR series: NPS 10

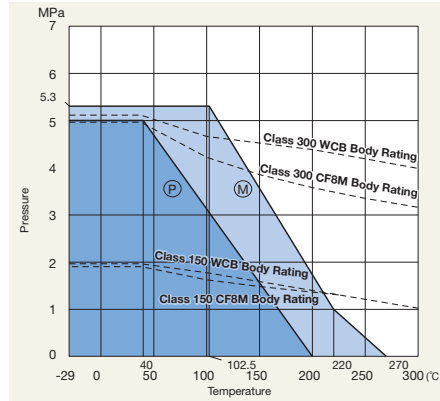


Note: Lowest working temperature for WCB is -29°C.

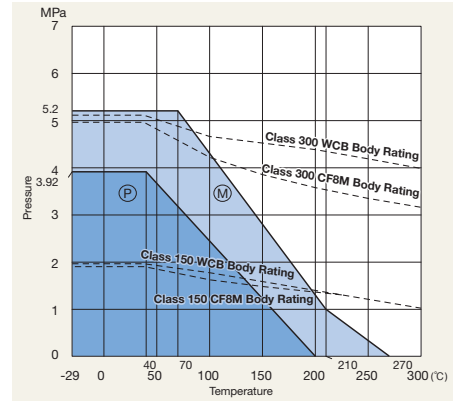
■ 150/300UTAZ(M)/SCTAZ: NPS 1/2 to 1



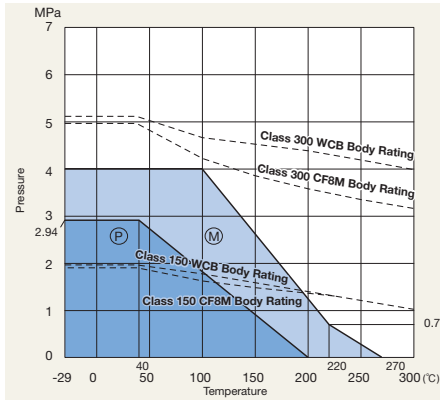
■ 150/300UTAZ(M)/SCTAZ: NPS 1 1/2 to 3



■ 150/300UTAZ(M)/SCTAZ: NPS 4, 6



■ 150/300UTAZ(M)/SCTAZ: NPS 8, 10

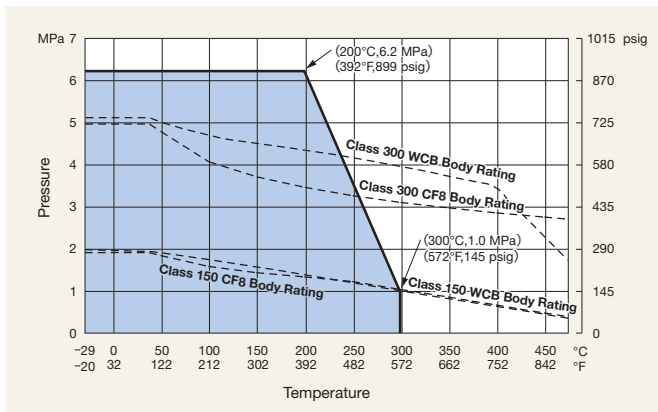


Seat: (P) Virgin PTFE

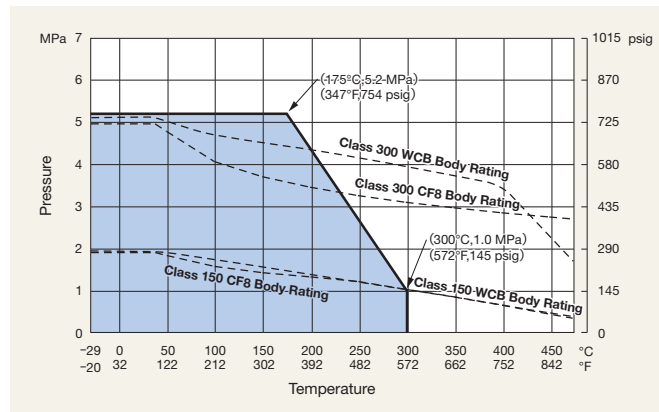
(M) HYPATITE® PTFE / Carbon-filled PTFE

Pressure-Temperature Ratings

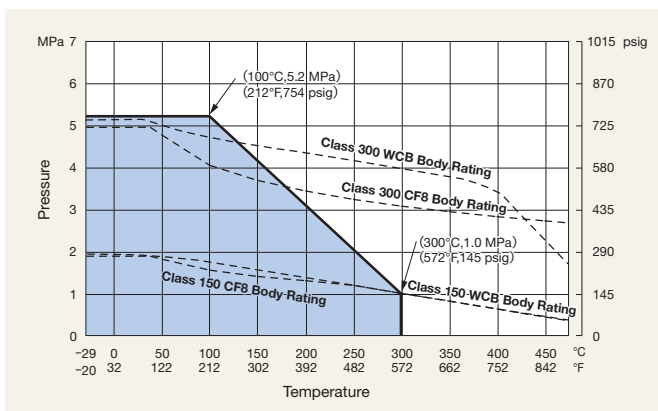
FILLTITE Seated Floating Ball Valves: Trim 1H: NPS 1/2 to 2 1/2



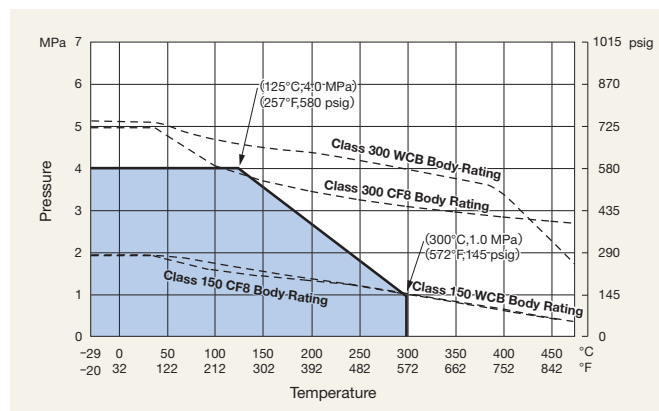
FILLTITE Seated Floating Ball Valves: Trim 1H: NPS 3, 4



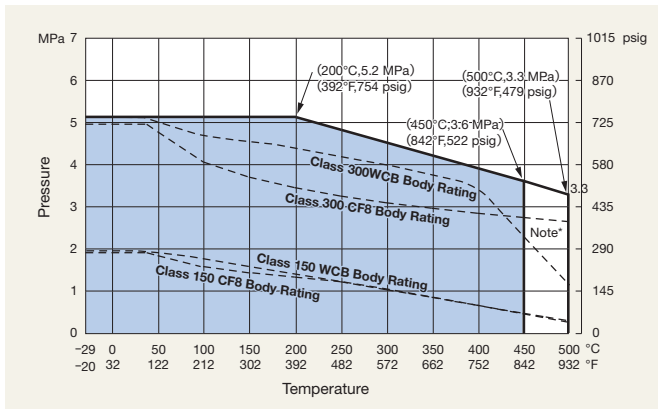
FILLTITE Seated Floating Ball Valves: Trim 1H: NPS 5, 6



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).

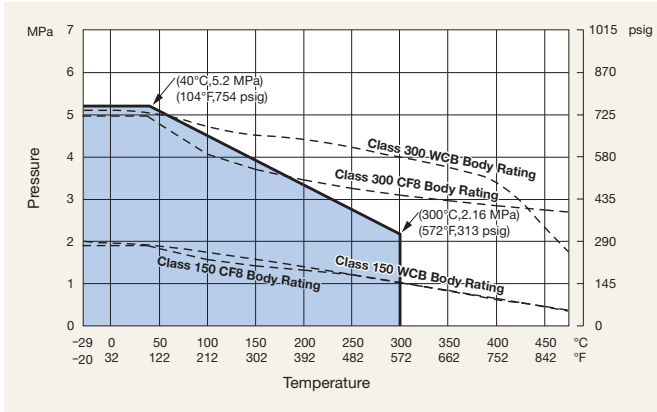
Note: **3H/6H** Serviceable temperature terminates at 300°C (572°F) for JIS 10K and at 425°C (797°F) for JIS 20K.

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).

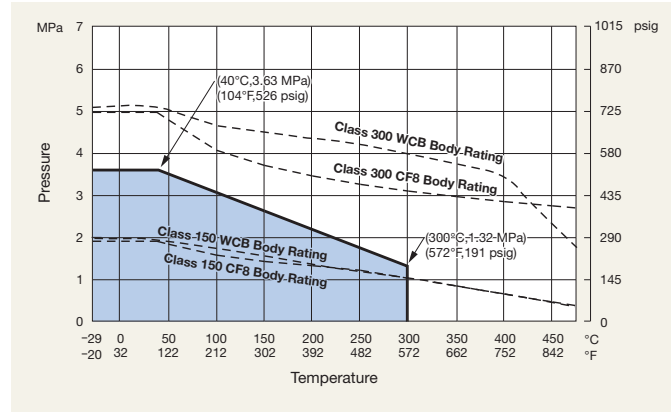
Note: **3H/6H** WCB Shell Material: Upon prolonged exposure to temperatures above 425°C (797°F), carbide phase of steel may be converted to graphite.

Pressure-Temperature Ratings

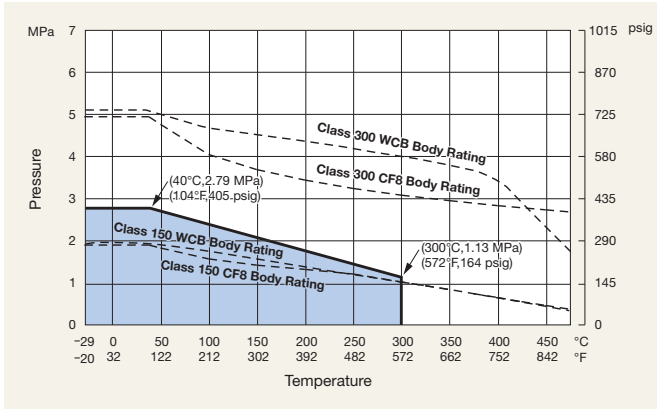
■ Metal Seated Floating Ball Valves: Trim 5H: NPS 1/2 to 1 1/4



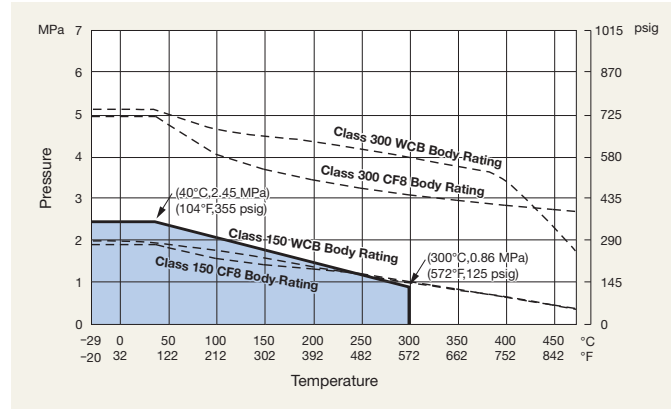
■ Metal Seated Floating Ball Valves: Trim 5H: NPS 1 1/2, 2



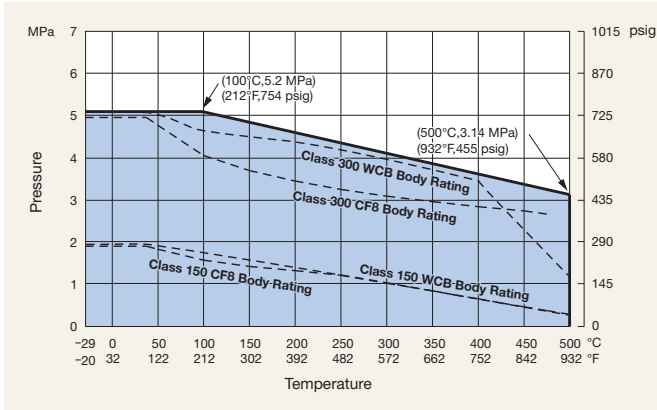
■ Metal Seated Floating Ball Valves: Trim 5H: NPS 2 1/2, 4



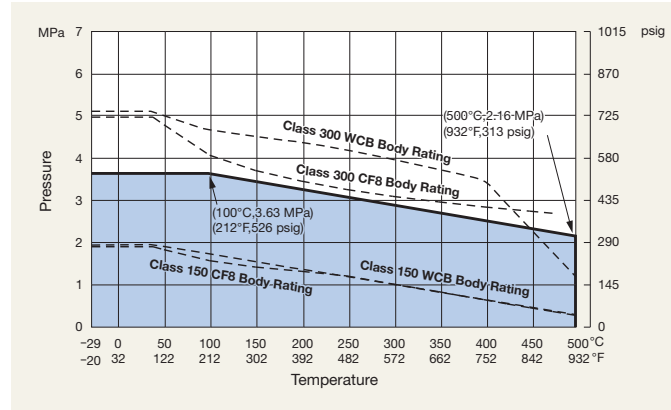
■ Metal Seated Floating Ball Valves: Trim 5H: NPS 5 to 8



■ Metal Seated Floating Ball Valves: Trim 6H: NPS 1/2 to 5

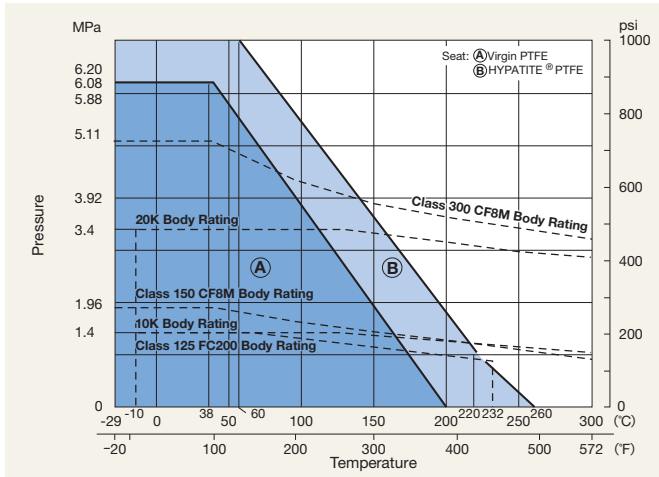


■ Metal Seated Floating Ball Valves: Trim 6H: NPS 6, 8

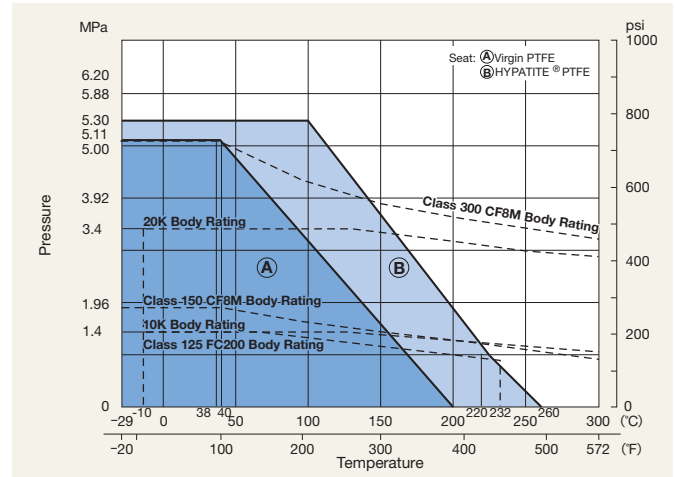


Pressure-Temperature Ratings

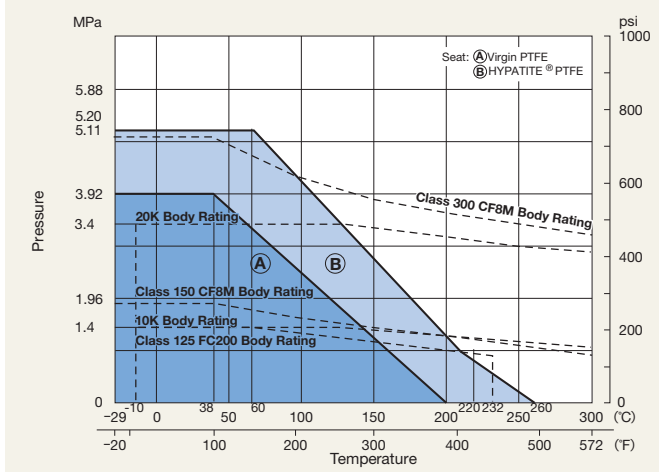
TB Series(*): NPS 1/2, 3/4
TR Series(*): NPS 1/2 to 1



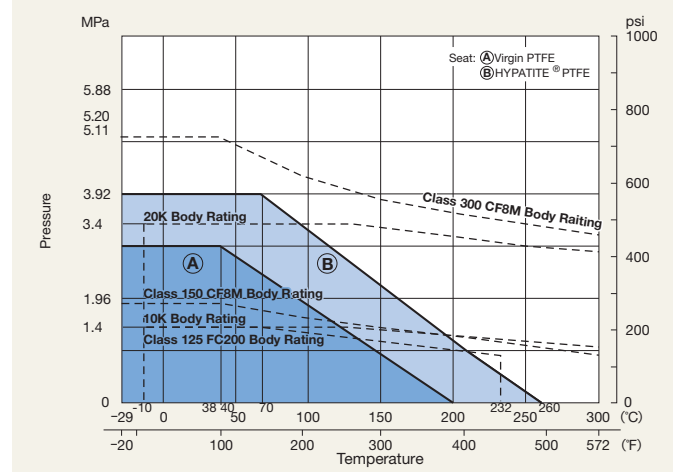
TB Series(*): NPS 1 to 2 1/2
TR Series(*): NPS 1 1/2 to 3



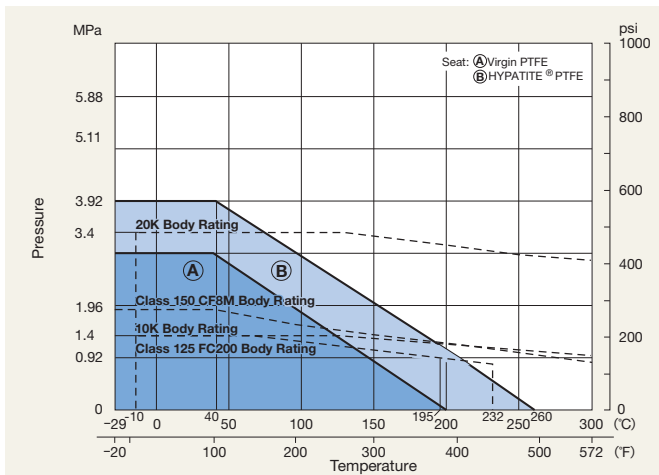
TB Series(*): NPS 3, 4
TR Series(*): NPS 4, 5



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



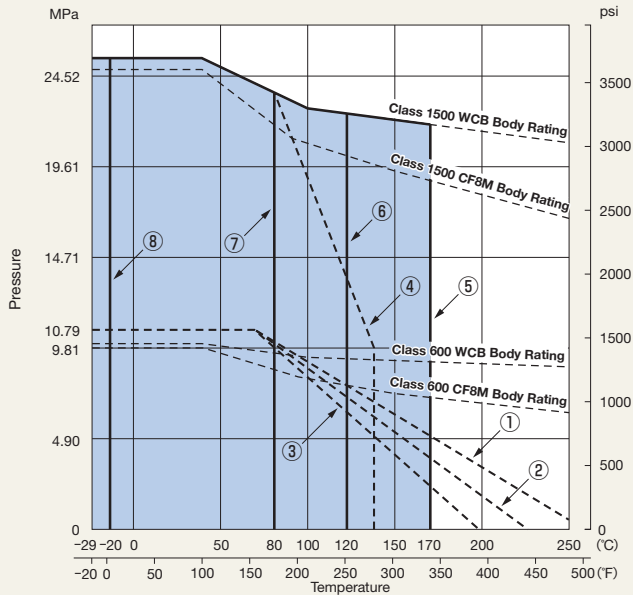
TB Series(*): NPS 8, 10
TR Series(*): NPS 10, 12



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

Pressure-Temperature Ratings

600/1500SCTB(S)/UTB(M)(S)



Ball Seat Materials

- ①: KITZ HYPATITE[®] or Carbon-filled PTFE
- ②: Glass-filled PTFE with MoS₂
- ③: Virgin PTFE
- ④: Nylon with MoS₂

O-ring Upper Limit

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

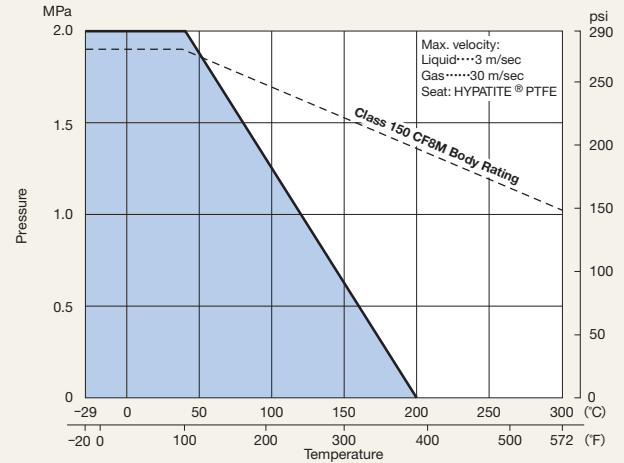
O-ring Lower Limit

- ⑧: FKM

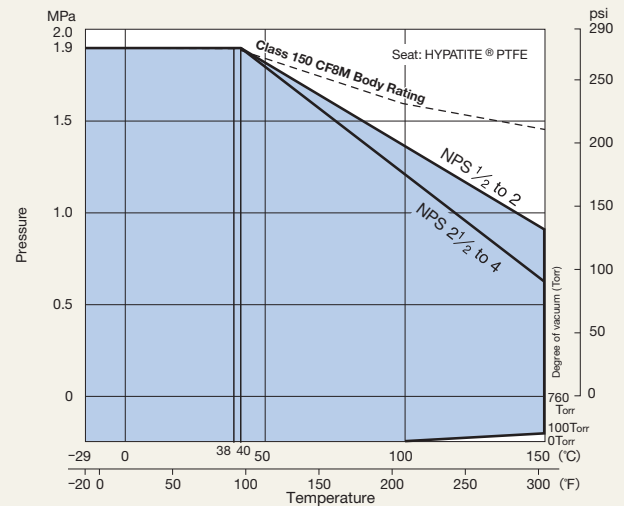
* O-rings made of others than FKM can with stand -29°C (-20°F)

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

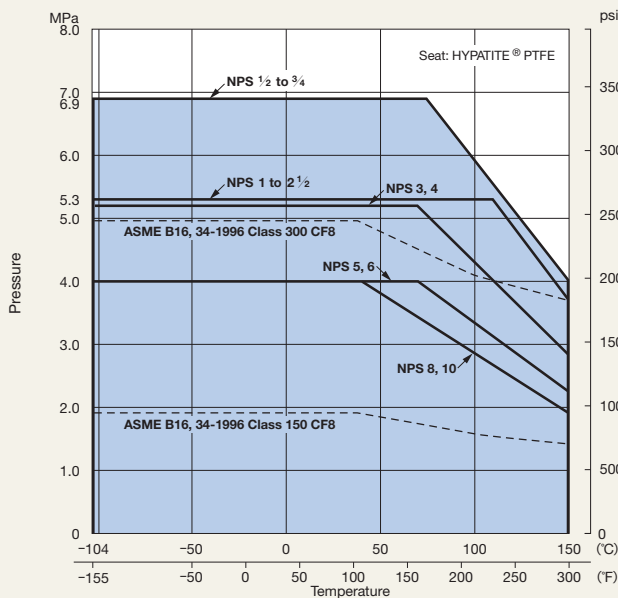
*Refer to 150UTBM Ratings for 150UTB2LM/2TM



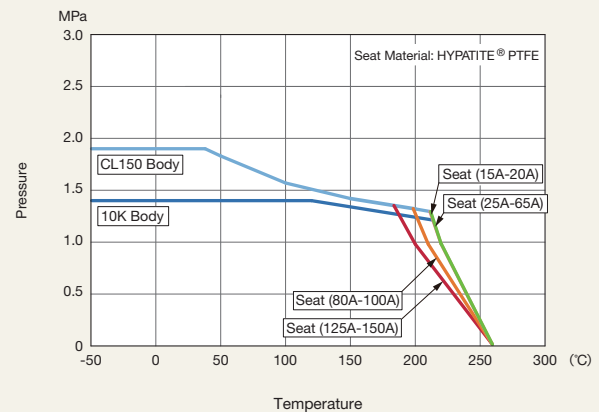
PFA Lined: 150UTBLN



150/300UTDZXL(M)

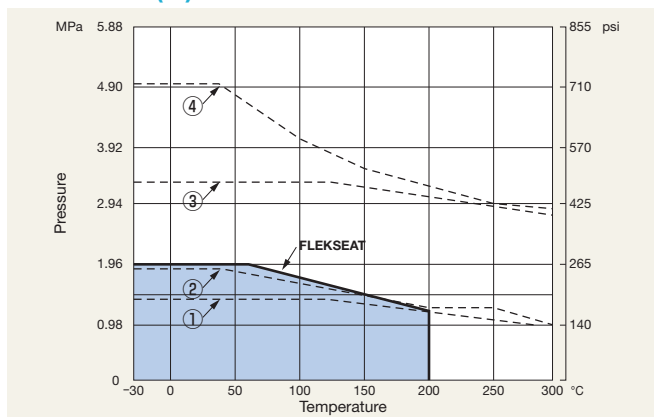


10/15010UTBDXK(M)



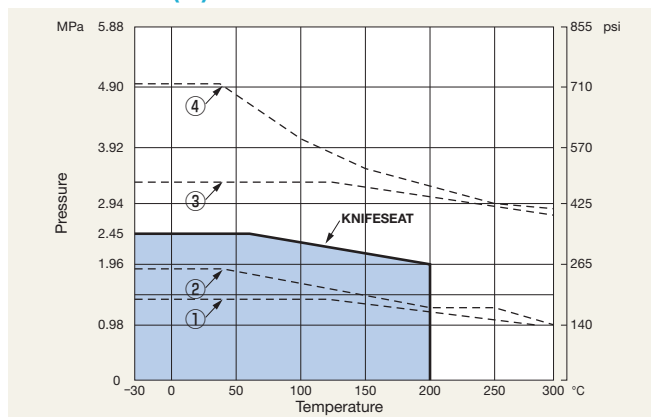
Pressure-Temperature Ratings

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

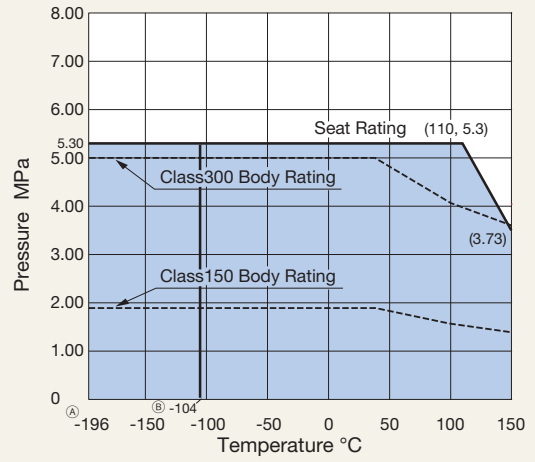
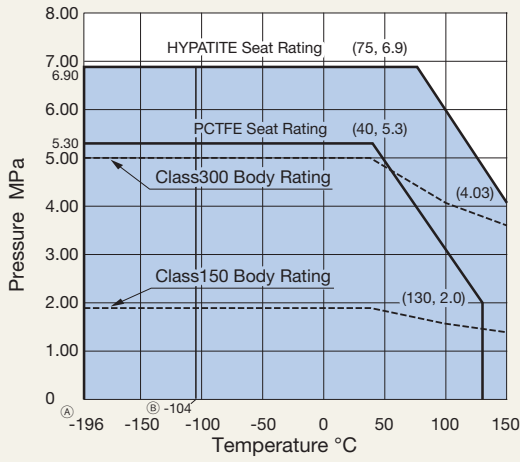
The products introduced in this catalog are all covered by the ISO 9001 Certification awarded KITZ Corporation in 1989, the earliest in the valve industry in Japan.

Pressure-Temperature Rating (Seat Rating)

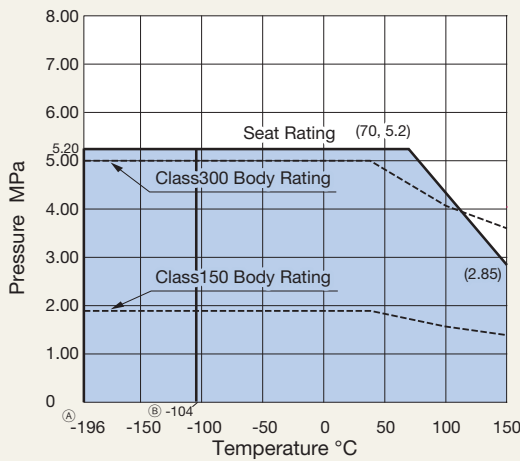
Stainless Steel

- (A) UTAZLM : $\frac{1}{2}B$ to $2B$
 (A) UTDZL : $\frac{1}{2}B$ to $1\frac{1}{2}B$
 (B) UTAZXLM : $\frac{1}{2}B$ to $1B$
 (B) UTDZXL : $\frac{1}{2}B$ to $\frac{3}{4}B$

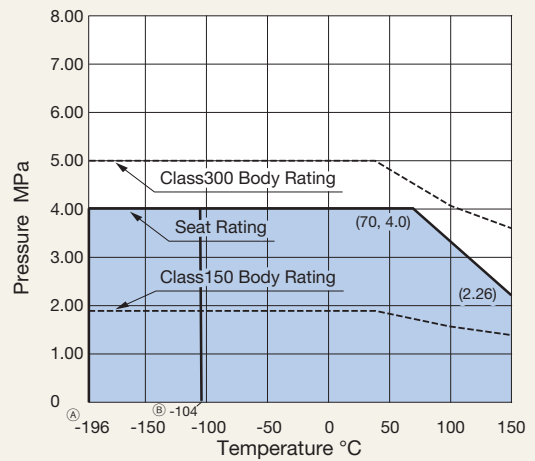
- (A) UTAZLM : $3B$
 (A) UTDZL : $2B$ to $2\frac{1}{2}B$
 (B) UTAZXLM : $1\frac{1}{2}B$ to $3B$
 (B) UTDZXL : $1B$ to $2\frac{1}{2}B$



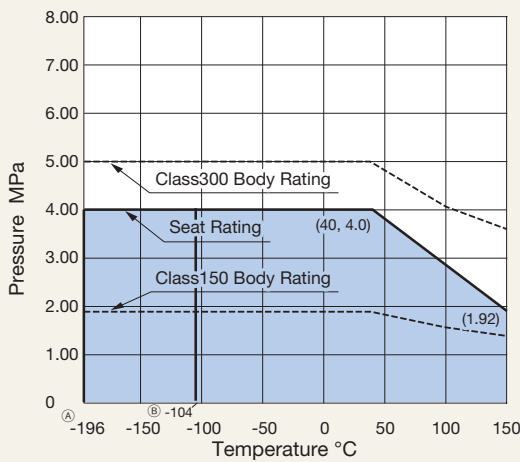
- (A) UTAZLM / (B) UTAZXLM : $4B \cdot 6B$
 (A) UTDZL / (B) UTDZXL : $3B \cdot 4B$



- (A) UTAZLM / (B) UTAZXLM : $8B \cdot 10B$
 (A) UTDZL / (B) UTDZXL : $5B \cdot 6B$



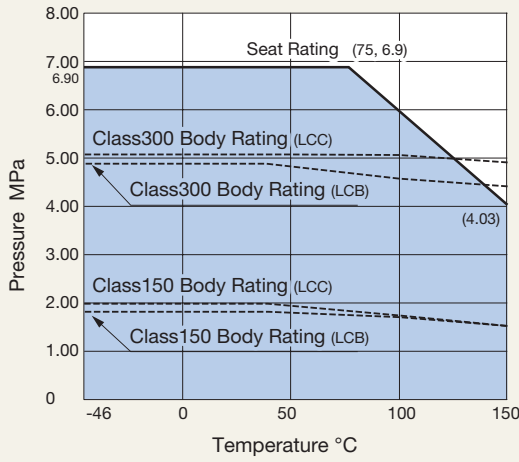
- (A) UTDZL / (B) UTDZXL : $8B \cdot 10B$



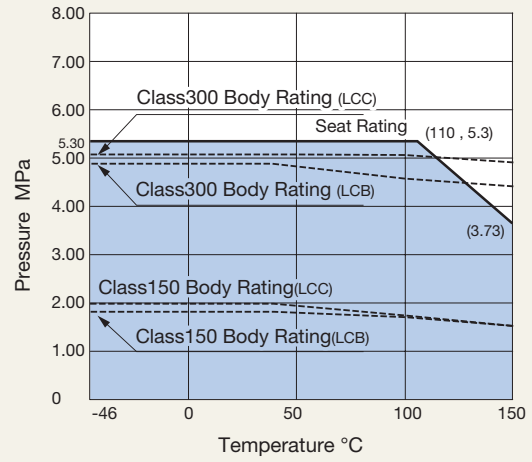
Pressure-Temperature Rating (Seat Rating)

Cast Carbon Steel

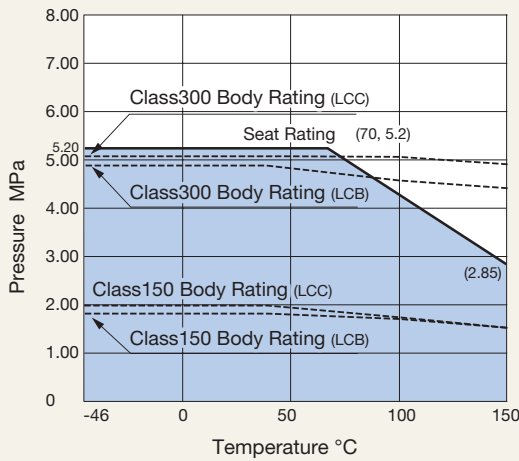
SCTAZXCL(BODY/LCC) : 1/2^B to 1^B
 SCTDZXCL(BODY/LCC) : 1/2^B • 3/4^B
 SCTDZXBL(BODY/LCB) : 1/2^B • 3/4^B



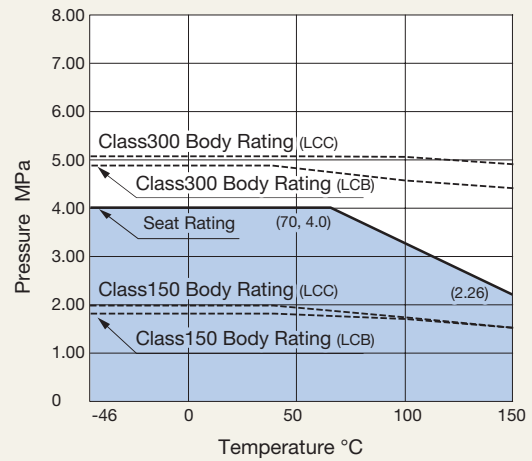
SCTAZXCL(BODY/LCC) : 1 1/2^B to 3^B
 SCTDZXCL(BODY/LCC) : 1^B to 2 1/2^B
 SCTDZXBL(BODY/LCB) : 1^B to 2 1/2^B



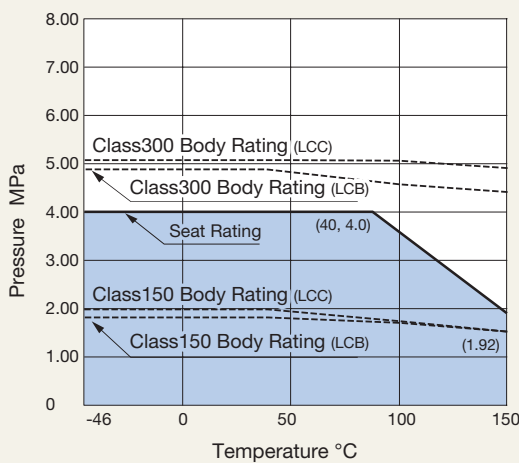
SCTAZXCL(BODY/LCC) : 4^B • 6^B
 SCTDZXCL(BODY/LCC) : 3^B • 4^B
 SCTDZXBL(BODY/LCB) : 3^B • 4^B



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



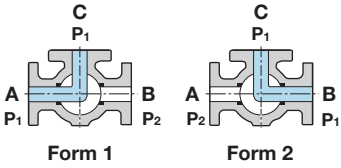
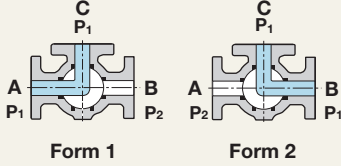
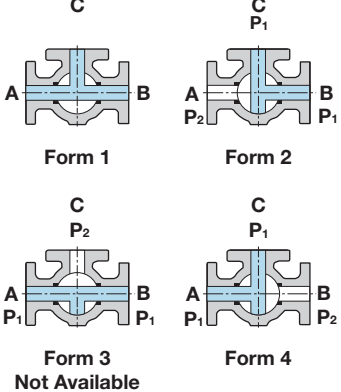
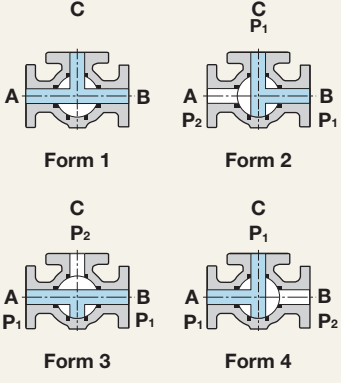
SCTDZXCL(BODY/LCC) : 8^B • 10^B
 SCTDZXBL(BODY/LCB) : 8^B • 10^B



BAL

Steel Ball Valves

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 Form 4 Not Available	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 always 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.

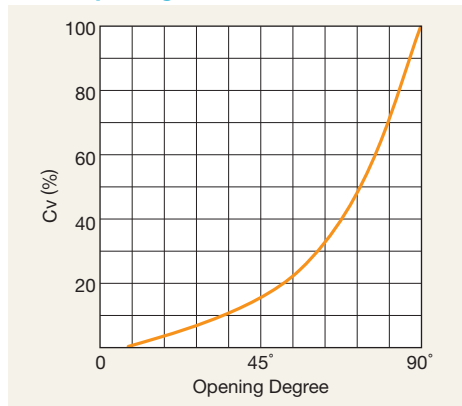
Inspection and Warranty

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

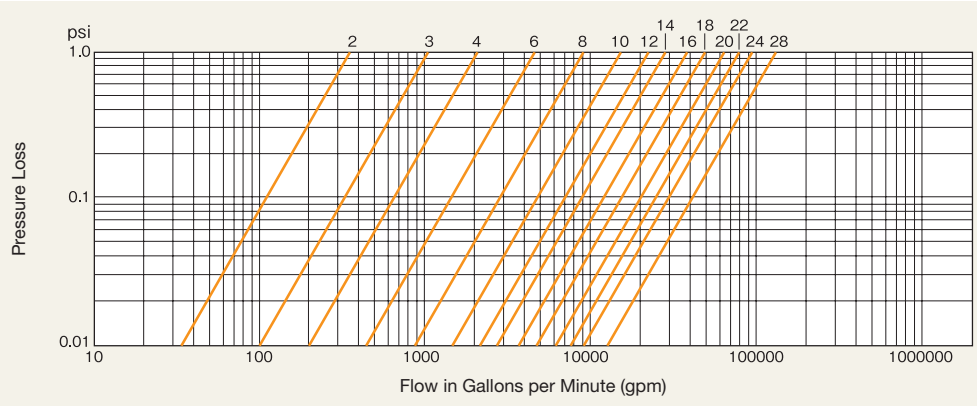
One of the best advantages of ball valves is that every flow per any given bore size is larger than other types of valves. Fluid is much less disturbed by eddy currents or pulsation. To obtain the figure of flow per valve opening, simply multiply the flow rate (%) by the corresponding value given in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

Valve Opening vs. Cv

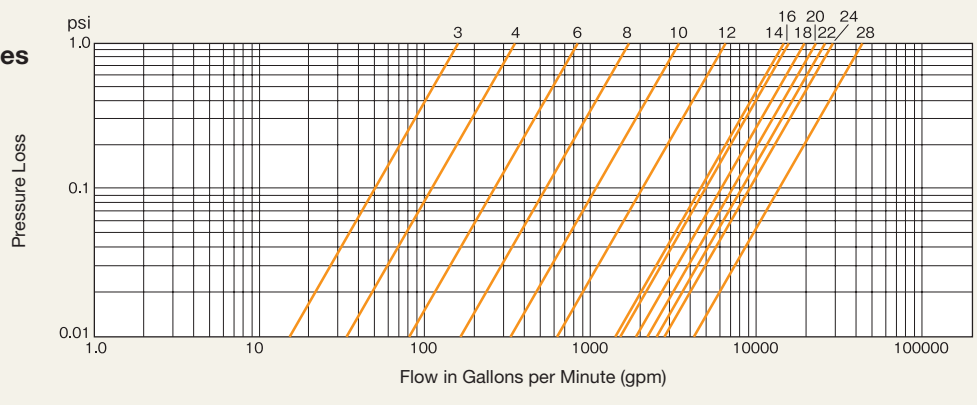


Pressure Loss vs. Flow Rate

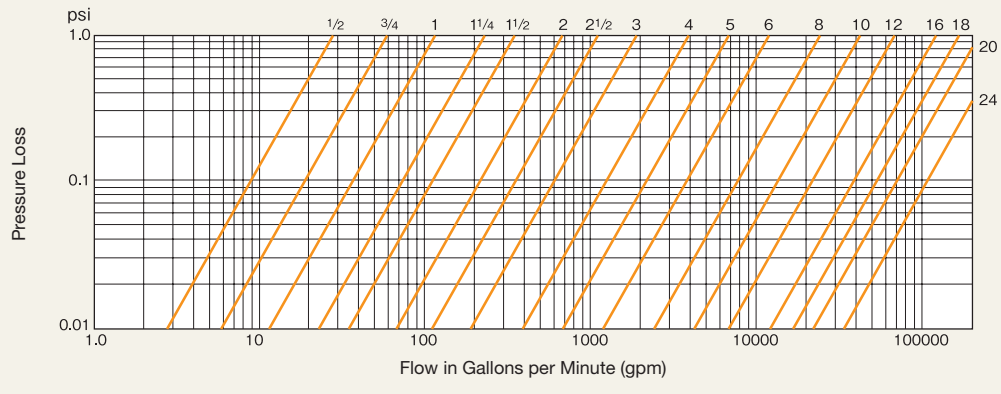
Full Port Valves



Reduced Port Valves



Schedule 40 Steel Pipe (10m)



[illegible]