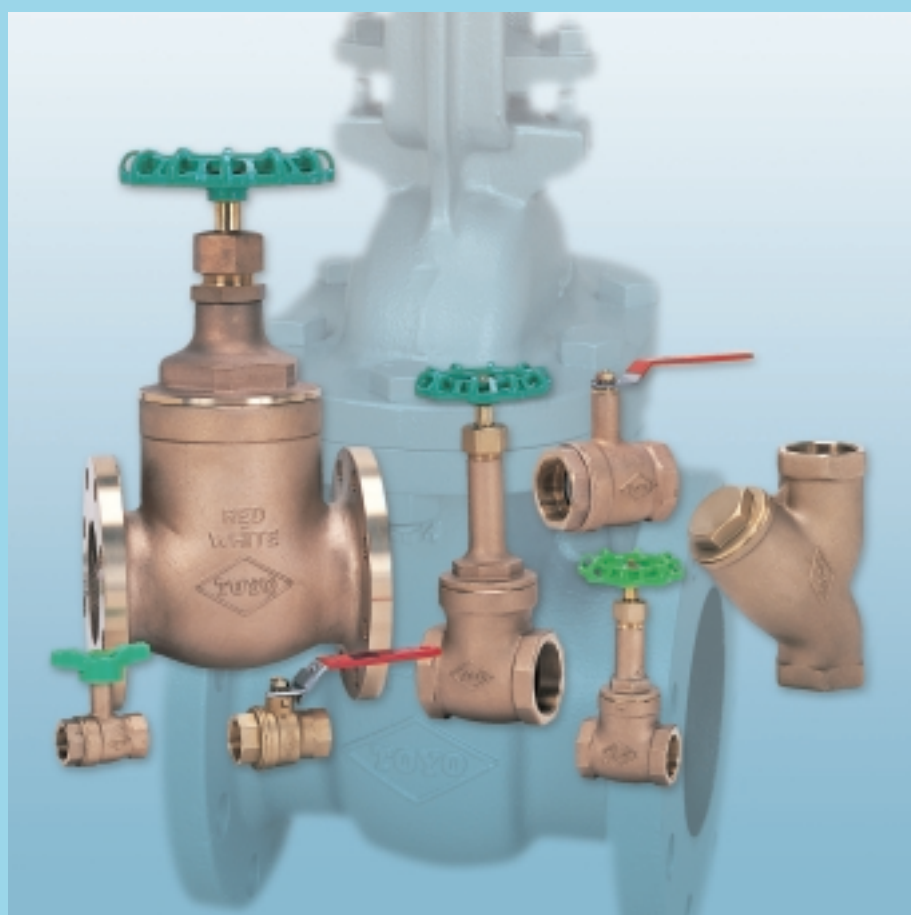


Bronze, Brass & Cast Iron Valves



TOYO VALVE CO., LTD.

<http://www.toyovalve.co.jp/>

Contributing to tomorrow's soc



Notes

- 1) Refer to the individual specification sheet or the drawing for details of a product.
- 2) Main units of this catalog are shown in SI (MPa, , millimeter) and psig.
- 3) Refer to the attached P-T ratings about applicable pressure and temperature.
- 4) The non-asbestos product is used for the gland packing and gasket of bronze, brass and cast iron valves as a manufacturer's standard. Please consult about other products.
- 5) Bronze and cast iron strainers have the perforated metal screen equivalent to 12-16 meshes. Other meshes of the screen are also available upon request. Please consult Toyo sales staff for details.
- 6) Legends
d: Port diameter (mm)
(L, H, D: shown on each page)
- 7) Teflon is Du Pont's tradename.

Products guarantee

Term of a guarantee: Within one year after the date of delivery from our factory to the original customer.

Contents of a guarantee: If the installations and the service conditions (such as pressure, temperature, fluid, etc.) are proper, necessary replacement and repair of our product will be carried out without charge.

Guarantee exceptions: Please keep in mind that the above articles of guarantee will not apply to the case owing to the following reasons:

- 1) Non-compliance of the customer with the technical instructions furnished by our catalog and specification sheet
- 2) Natural disaster incidents, such as a fire, flood damage, an earthquake, and falling stone
- 3) Reconstruction or repair by any third party other than Toyo Valve Co., Ltd.
- 4) Deterioration (such as shot rust, degradation, chemical changes, etc.)
- 5) Any other matter resulting from the damage not being regarded as manufacturer's responsibility

In addition, you will be required necessary charge for repair or exchange of parts on failure or damage by the guarantee exceptions. Please contact our sales staff or agency for details.

The specification and the performance term of our product indicated in this catalog are based on the internationally governed standards and specifications, our products experience or the design calculation and our in-house examination.

ity as a fluid control specialist



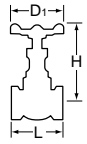
CHINO PLANT, JAPAN

When using the product beyond the service conditions mentioned in this catalog, users are requested to consult Toyo Valve for further advice in advance, or to conduct the verification or evaluation for the performance under users' responsibility. We shall not be liable for any damages resulting from lack of aforementioned procedures by the customer.

Items mentioned in this catalog are subject to change without prior notice to the customers.
Don't use our products in flammable or toxic gas services.

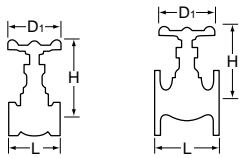
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Bronze & Brass Valves











Design		TOYO Standard									MSS SP-80		
Type		Gate Valves											
Class		125											
Fig.		275A/272			206A			272A			280A		
Size		L	H	D ₁	L	H	D ₁	L	H	D ₁	L	H	D ₁
8 (mm)	1/4"				42	75	48						
10	3/8"	43	76	48	42	75	48	38	74	48	43	87	48
15	1/2"	43	76	48	45	81	48	42	74	48	49	93	55
20	3/4"	48	85	55	50	90	55	47	87	55	53	111	63
25	1"	53	97	63	57	106	63	50	98	63	61	127	70
32	1 1/4"	60	117	70	61	119	70	60	119	70	64	145	80
40	1 1/2"	63	128	70	67	135	80	63	126	80	68	170	90
50	2"	71	151	80	74	159	90	72	154	90	74	189	100
65	2 1/2"	87	180	90	90	201	110	82	187	100			
80	3"	96	211	100	100	223	125	92	204	110			
100	4"				140	302	160						
Material	Body	Bronze			Bronze			Brass			Bronze		
	Stem	DZR Brass			DZR Brass			DZR Brass			Bronze		
	Disc	Bronze			Bronze			Brass			Bronze		
Service conditions		1.37MPa (200psi) WOG non-shock 0.86MPa (125psi) Saturated steam											
Remarks		Lead-washed surface treatment available upon request					BS/JIS taper threads only						

Design		MSS SP-80											
Type		Gate Valves											
Class		150			150			125			150		
Fig.		204A			204A			208			209		
Size		L	H	D ₁	L	H	D ₁	L	H	D ₁	L	H	D ₁
8 (mm)	1/4"												
10	3/8"	43	87	48									
15	1/2"	48	96	55	49	98	55	51	129	55	51	137	55
20	3/4"	53	112	63	53	115	70	56	156	63	56	157	63
25	1"	62	123	70	61	127	70	66	181	70	66	180	70
32	1 1/4"	69	141	80	68	145	80	68	216	80	68	216	80
40	1 1/2"	75	164	90	74	176	90	74	257	90	74	257	90
50	2"	86	197	100	84	201	100	84	296	100	84	296	100
65	2 1/2"	105	224	110									
80	3"	116	261	125									
100	4"												
Material	Body	Bronze			Bronze			Bronze			Bronze		
	Stem	DZR Brass			Bronze			Bronze			Bronze		
	Disc	Bronze			Bronze			Bronze			Bronze		
Service conditions		2.06MPa (300psi) WOG non-shock 1.03MPa (150psi) Saturated steam			2.06MPa (300psi) WOG non-shock 1.03MPa (150psi) Saturated steam			1.37MPa (200psi) WOG non-shock 0.86MPa (125psi) Saturated steam			2.06MPa (300psi) WOG non-shock 1.03MPa (150psi) Saturated steam		
Remarks		BS/JIS taper threads only					ASME taper threads only						

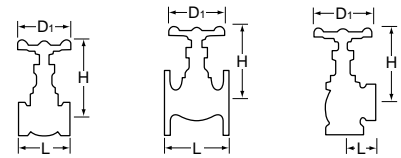






Bronze Valves


Design		MSS SP-80											
Type		Gate Valves											
Class		125			150			300			150		
													
Fig.		293			298			318A			205A		
Size		L	H	D ₁	L	H	D ₁	L	H	D ₁	L	H	D ₁
8 (mm)	1/4"												
10	3/8"												
15	1/2"	51	137	55	51	137	55	51	150	70	75	96	55
20	3/4"	56	158	70	56	158	70	56	173	80	80	112	63
25	1"	66	181	70	66	181	70	66	194	80	95	123	70
32	1 1/4"	68	216	80	68	216	80	74	228	100	110	142	80
40	1 1/2"	74	257	90	74	257	90	84	273	110	120	165	90
50	2"	84	297	100	84	297	100	98	313	125	140	197	100
65	2 1/2"										165	225	110
80	3"										190	263	140
100	4"										230	309	225
Material	Body	Bronze			Bronze			Bronze			Bronze		
	Stem	Bronze			Bronze			Bronze			DZR Brass		
	Disc	Bronze			Bronze			Bronze			Bronze		
Service conditions		1.37MPa (200psi) WOG non-shock 0.86MPa (125psi) Saturated steam			2.06MPa (300psi) WOG non-shock 1.03MPa (150psi) Saturated steam			6.89MPa (1000psi) WOG non-shock 2.06MPa (300psi) Saturated steam			1.55MPa (225psi) WOG non-shock 1.03MPa (150psi) Saturated steam		
Remarks		JIS 10K flange available											

Design		TOYO Standard			MSS SP-80			TOYO Standard			MSS SP-80		
Type		Globe Valves											
Class		100			125			150			300		
													
Fig.		210A			211A			213A			335		
Size		L	H	D ₁	L	H	D ₁	L	H	D ₁	L	H	D ₁
8 (mm)	1/4"	40	67	48	44	67	48	44	67	48			
10	3/8"	42	68	48	44	69	48	44	69	48	55	114	63
15	1/2"	48	69	55	53	77	63	53	80	63	64	126	80
20	3/4"	53	81	63	65	99	70	65	94	70	78	139	90
25	1"	63	95	70	77	108	80	77	104	80	90	159	100
32	1 1/4"	73	104	80	85	137	90	85	127	90	105	186	110
40	1 1/2"	81	127	90	100	160	100	100	145	100	120	195	125
50	2"	94	147	100	119	179	110	119	173	110	145	223	140
65	2 1/2"	115	178	110	150	202	125	139	199	125			
80	3"	131	200	125	178	245	160	158	214	140			
100	4"												
Material	Body	Bronze			Bronze			Bronze			Bronze		
	Stem	DZR Brass			Bronze			DZR Brass			Bronze		
	Disc	Bronze			Bronze			Bronze			Bronze		
Service conditions		1.03MPa (150psi) WOG non-shock 0.68MPa (100psi) Saturated steam			1.37MPa (200psi) WOG non-shock 0.86MPa (125psi) Saturated steam			2.06MPa (300psi) WOG non-shock 1.03MPa (150psi) Saturated steam			4.18MPa (600psi) WOG non-shock 2.06MPa (300psi) Saturated steam		
Remarks													

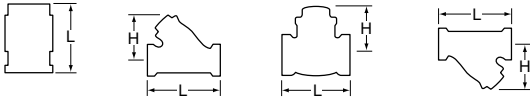
Bronze Valves







Design	TOYO Standard						MSS SP-80						
Type	Globe Valves			Angle Valves			Globe Valves with PTFE seat						
Class	150						125			150			
													
Fig.	215			260A			220A			221			
Size	L	H	D ₁	L	H	D ₁	L	H	D ₁	L	H	D ₁	
8 (mm) 1/4"				21	67	48							
10 3/8"				24	69	48	53	88	55				
15 1/2"	83	80	63	28	80	63	57	101	63	64	117	70	
20 3/4"	88	95	70	34	94	70	66	111	70	78	136	90	
25 1"	100	105	80	40	104	80	76	120	80	90	149	100	
32 1 1/4"	113	127	90	47	127	90	88	140	90	105	172	110	
40 1 1/2"	120	145	100	52	145	100	100	156	100	120	181	110	
50 2"	145	173	110	61	173	110	120	184	110	145	209	125	
65 2 1/2"	165	198	125	74	199	125	147	210	125				
80 3"	177	214	140	85	214	140	162	228	140				
100 4"	220	259	160										
Material	Body	Bronze			Bronze			Bronze			Bronze		
	Stem	DZR Brass			DZR Brass			DZR Brass			DZR Brass		
	Disc	Bronze			Bronze			R-PTFE			R-PTFE		
Service conditions	1.55MPa (225psi) WOG non-shock 1.03MPa (150psi) Saturated steam			2.06MPa (300psi) WOG non-shock 1.03MPa (150psi) Saturated steam			1.37MPa (200psi) WOG non-shock 0.86MPa (125psi) Saturated steam			2.06MPa (300psi) WOG non-shock 1.03MPa (150psi) Saturated steam			
Remarks	JIS 10K flange available												




Design	MSS SP-80			
Type	Globe Valves with PTFE seat			
Class	150			
				
Fig.	223			
Size	L	H	D ₁	
8 (mm) 1/4"				
10 3/8"				
15 1/2"	82	114	63	
20 3/4"	95	138	90	
25 1"	108	156	100	
32 1 1/4"	120	183	110	
40 1 1/2"	140	186	110	
50 2"	165	212	125	
65 2 1/2"	190	243	140	
80 3"	220	290	160	
100 4"	270	321	225	
Material	Body	Bronze		
	Stem	DZR Brass		
	Disc	R-PTFE		
Service conditions	1.55MPa (225psi) WOG non-shock 1.03MPa (150psi) Saturated steam			
Remarks	JIS10K flange available			

- * Standard color of handwheel on bronze/brass valve is as follows,
- BS21 or JIS B0203 taper threads and JIS B2240 10K flanged = Green color
 - ASME B1.20.1 threads and ASME B16.24 class 150 flanged = Red & White color

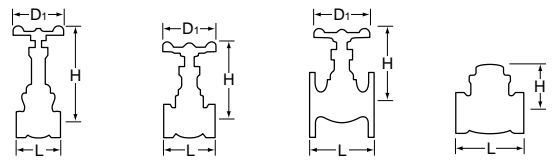


Bronze Valves

Design	TOYO Standard	MSS SP-80								
Type	Lift Check Valve	Swing Check Valves						Lift Check Valve		
Class		125						150		
										
Fig.	231	236A		236T		234		230A		
Size	L	L	H	L	H	L	H	L	H	
8 (mm)	1/4"	54	40	54	40					
10	3/8"	54	40	54	40	53	39	44	26	
15	1/2"	53	56	40	56	40	60	39	53	
20	3/4"	59	70	49	70	49	70	45	65	
25	1"	67	80	58	80	58	80	52	77	
32	1 1/4"	78	95	71	95	71	92	62	85	
40	1 1/2"	84	110	80	110	80	102	67	100	
50	2"	98	128	95	128	95	122	79	119	
65	2 1/2"		156	119	156	114	150	91	139	
80	3"		184	139	184	131	165	102	158	
100	4"									
Material	Body	Bronze		Bronze		Bronze		Bronze		
	Pin	-		Brass		Brass		-		
	Disc	FKM		Brass or Bronze		PTFE		Brass		
Service conditions	1.37MPa (200psi) WOG non-shock 0.86MPa (125psi) Saturated steam						2.06MPa (300psi) WOG non-shock 1.03MPa (150psi) Saturated steam			
Remarks	ASME taper threads only, Spring loaded			PTFE seat		BS/JIS taper threads only				

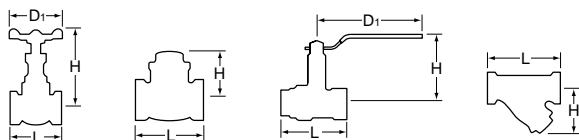
Design	MSS SP-80	TOYO Standard					
Type	Swing Check Valve	Swing Check Valve				Strainer	
Class	150	300				150	
							
Fig.	238	360				380A	
Size	L	H	L	H	L	H	
8 (mm)	1/4"						
10	3/8"	54	39				
15	1/2"	60	39	60	42	80	
20	3/4"	72	49	72	51	100	
25	1"	84	58	84	61	115	
32	1 1/4"	99	70	99	74	135	
40	1 1/2"	113	79	113	83	160	
50	2"	131	95	131	98	195	
65	2 1/2"	162	114			230	
80	3"	186	132			240	
100	4"					180	
Material	Body	Bronze		Bronze		Bronze	
	Pin	Brass		Brass		Screen	SUS304
	Disc	Bronze		Bronze			
Service conditions	2.06MPa (300psi) WOG non-shock 1.03MPa (150psi) Saturated steam		4.13MPa (600psi) WOG non-shock 2.06MPa (300psi) Saturated steam		1.72MPa (250psi) WOG non-shock 1.03MPa (150psi) Saturated steam		
Remarks					Perforated screen equivalent to 14-16 meshes		

JIS Standard Bronze Valves



Design	JIS Standard												
Type	Gate Valves						Globe Valves						
Class	5K			10K			5K			10K			
	JIS B2011			JIS B2011			JIS B2011			JIS B2011			
Fig.	031			035			001			005			
Size	L	H	D ₁	L	H	D ₁	L	H	D ₁	L	H	D ₁	
8 (mm)	1/4"									50	87	48	
10	3/8"									55	87	55	
15	1/2"	50	127	55	55	127	55	60	91	63	65	94	63
20	3/4"	60	146	63	65	154	70	70	103	70	80	122	80
25	1"	65	171	70	70	178	80	80	112	80	90	135	90
32	1 1/4"	75	213	90	80	223	90	100	137	90	105	157	100
40	1 1/2"	85	244	100	90	254	100	110	142	100	120	170	110
50	2"	95	293	110	100	301	110	135	172	110	140	196	125
65	2 1/2"	115	366	125	120	377	140	160	203	125	180	231	140
80	3"	130	429	140	140	441	160	190	232	140	200	277	160
100	4"												
Material	Body	Bronze			Bronze			Bronze			Bronze		
	Stem	DZR Brass			DZR Brass			DZR Brass			DZR Brass		
	Disc	Bronze			Bronze			Bronze			Bronze		
Service conditions	120 water, non-shock 0.7MPa			120 water, non-shock 1.4MPa			120 water, non-shock 0.7MPa			120 water, non-shock 1.4MPa			
	120 oil, gas, air, water 0.5MPa			120 oil, gas, air, water 1.0MPa			120 oil, gas, air, water 0.5MPa			120 oil, gas, air, water 1.0MPa			
	Saturated steam 0.2MPa			Saturated steam 0.7MPa			Saturated steam 0.3MPa			Saturated steam 1.0MPa			
Remarks	Lead-free copper alloy available upon request						Lead-free copper alloy available upon request						

Design	JIS Standard	
Type	Swing Check Valve	
Class	10K	
	JIS B2011	
Fig.	065	
Size	L	H
8 (mm)	1/4"	
10	3/8"	55
15	1/2"	65
20	3/4"	80
25	1"	90
32	1 1/4"	105
40	1 1/2"	120
50	2"	140
65	2 1/2"	
80	3"	
100	4"	
Material	Body	Bronze
	Pin	Brass
	Disc	Bronze
Service conditions	120 water, non-shock 1.4MPa	
	120 oil, gas, air, water 1.0MPa	
	Saturated steam 1.0MPa	
Remarks	Lead-free copper alloy available upon request	



- Rusty Water-Proof Series - Lead-Free Core-Tight® Valves

Design		TOYO Standard							
Type		Gate Valves						Swing Check Valve	
Class		5K			10K				
Fig.		031SK/031HN			035SK/035HN			065SK/065HN	
Size		L	H	D ₁	L	H	D ₁	L	H
15 (mm)	1/2"	61	127	55	63	127	55	82	43
20	3/4"	65	146	63	67	154	70	98	51.5
25	1"	75	171	70	75	178	80	109	58.5
32	1 1/4"	85	213	90	85	223	90	125	67
40	1 1/2"	90	244	100	90	254	100	138	73.5
50	2"	103	293	110	103	301	110	162	86
Material	Body	Lead-Free Bronze			Lead-Free Bronze			Lead-Free Bronze	
	Stem	Lead-Free DZR Brass			Lead-Free DZR Brass			Pin	Brass
	Disc	Lead-Free Bronze			Lead-Free Bronze			Lead-Free Bronze	
Service conditions	See P-T ratings								
Remarks									

Design		TOYO Standard							
Type		Ball Valve				Strainer			
Class		10K							
Fig.		5011SK/5011HN				380SK/380HN			
Size		d	L	H	D ₁	L	H		
15 (mm)	1/2"	10	69	75	80	91	49		
20	3/4"	15	79	79	80	104	57		
25	1"	20	93	83	110	123	72		
32	1 1/4"	25	105	99	110	141	82		
40	1 1/2"	32	114	102	110	160	98		
50	2"	40	131	109	140	198	121		
Material	Body	Lead-Free Bronze				Lead-Free Bronze			
	Stem	Lead-Free DZR Brass				Screen	SUS304		
	Ball	SUS304							
	Seat	PTFE							
Service conditions	See P-T ratings								
Remarks		T-Handle available on request				Perforated screen equivalent to 14-16 meshes			

P-T Rating for Core-Tight® Valves

SK type (For cold water)

		Nominal Pressure (MPa)	
		5K	10K
40	water	0.7	1

HN type (For heated water)

		Nominal Pressure (MPa)	
		5K	10K
85	water	0.7	1

Toyo Lead-Free Copper Alloy MUEN-KUN®

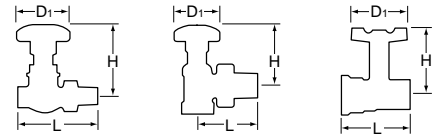
無鉛くん®





This globally patented lead-free copper alloy employs bismuth and selenium instead of lead. This has met the world's most rigorous criterion of a maximum of 0.01mg/liter of lead elution into drinking water, which came into force in Japan in April 2003.




Remark:

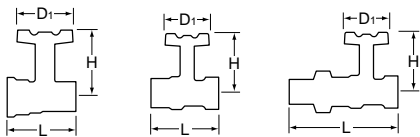
- 1) Some valves are lead-free surface treated instead.
- 2) Maximum allowable temperature: 100° C

Fan Coil Valves Ball / Utility Use



Design	TOYO Standard											
Type	Fan Coil Valves											
Class	200											
												
Fig.	250A			252A			251A			253A		
Size	L	H	D ₁	L	H	L	H	D ₁	L	H		
15 (mm)	1/2"	82	77	47.5	82	70	57	68	47.5	57	61	
20	3/4"	88.5	79	47.5	88.5	72	62.5	68	47.5	62.5	61	
25	1"	98.5	90	47.5	98.5	83	70.5	77	47.5	70.5	70	
32	1 1/4"			110	89					81	81	
Material	Body	Bronze			Bronze			Bronze			Bronze	
	Stem	DZR Brass			DZR Brass			DZR Brass			DZR Brass	
	Disc	PTFE			PTFE			PTFE			PTFE	
Service conditions	60 WOG 1.37MPa 120 WOG 1.57MPa											
Remarks	Flow control			On-off			Flow control			On-off		

Design	TOYO Standard																
Type	Ball Valves / Check valve built in ball valve body																
Class	10K																
																	
Fig.	5088				5089				5084								
Size	d	L	H	D ₁	d	L	H	D ₁	d	L	H	D ₁	d	L	H	D ₁	
15	1/2"	12.7	73.5	54	45	12.7	72.5	54	45	12.7	78.0	54	45	12.7	81.5	54	45
20	3/4"	12.7	76.5	54	45	12.7	75.0	54	45	12.7	81.5	54	45				
25	1"																
Material	Body	Brass / Nickel Plated				Brass / Nickel Plated				Brass / Nickel Plated							
	Stem	Brass / Chrome Plated				Brass / Chrome Plated				Brass / Chrome Plated							
	Ball	Brass / Chrome Plated				Brass / Chrome Plated				Brass / Chrome Plated							
	Seat	PTFE				PTFE				PTFE							
Service conditions	80 water 1.0MPa																
Remarks	Taper female x Parallel male				Taper male x Parallel male				Taper female x Taper female								
	Long neck handle available upon request JWWA approved																



B-Ball / Utility Use

Design	TOYO Standard																
Type	Ball Valves																
Class	10K																
Fig.	5017				5027				5037				5018				
Size	d	L	H	D ₁	d	L	H	D ₁	d	L	H	D ₁	d	L	H	D ₁	
15 (mm)	1/2"	9.2	59	64	45	9.2	57	64	45	9.2	54	64	45	9.2	56.0	64	45
20	3/4"	12.5	67	66	45	12.5	64	66	45	12.5	63	66	45	12.5	67.0	66	45
25	1"													15.0	77.5	73	60
Material	Body	Bronze				Bronze				Bronze				Bronze			
	Stem	DZR Brass				DZR Brass				DZR Brass				DZR Brass			
	Ball	Brass / Chrome Plated				Brass / Chrome Plated				Brass / Chrome Plated				Brass / Chrome Plated			
	Seat	PTFE				PTFE				PTFE				PTFE			
Service conditions	100 water 1.0MPa (100psi)																
Remarks	Taper male x Taper male				Taper male x Parallel male				Taper male x Taper female				Taper female x Taper female				

Design	TOYO Standard											
Type	Ball Valves											
Class	10K											
Fig.	5028					5038						
Size	d	L	H	D ₁	d	L	H	D ₁	d	L	H	D ₁
15 (mm)	1/2"	9.2	59.0	64	45	9.2	87.5	64	45			
20	3/4"	12.5	68.0	66	45	12.5	107.0	66	45			
25	1"	15.0	81.5	73	60	15.0	113.0	73	60			
Material	Body	Bronze					Bronze					
	Stem	DZR Brass					DZR Brass					
	Ball	Brass / Chrome Plated					Brass / Chrome Plated					
	Seat	PTFE					PTFE					
Service conditions	100 water 1.0MPa (150psi)											
Remarks	Taper female x Parallel male					Taper female x Nipple joint						

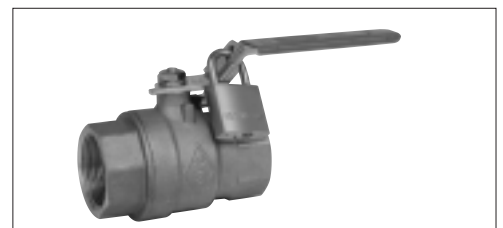
Memory Stop Plate



A memory stop plate is attached to a lever handle, and if it adjusts to the arbitrary degrees of full opening beforehand, a ball valve can be maintained at the same degrees at any time.

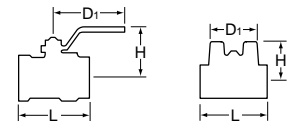
(Available for Fig. 5044E/5044EW/5026/5026W)

Locking Handle



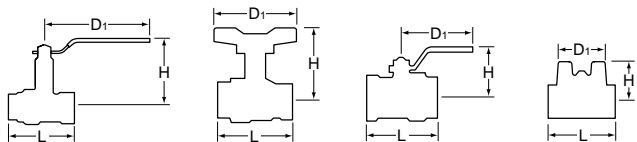
With a locking device, lever handle can be fixed in full open or closed position. However, please purchase padlock and key on your side (Fig. 5041A).

Ball Valves



Design	TOYO Standard																							
Type	Ball Valves																							
Class	Type 600																							
	Full bore				Full bore				Full bore				Reduced bore				Reduced bore							
Fig.	5044E				5044EW				5046A				5080				5080W							
Size	d	L	H	D ₁	d	L	H	D ₁	d	L	H	D ₁	d	L	H	D ₁	d	L	H	D ₁				
8 (mm)	1/4"	10	50	37	70	10	50	38	60					4.5	39	31	60	4.5	39	25	39			
10	3/8"	10	50	37	70	10	50	38	60					6.8	44	36	70	6.8	44	29	40			
15	1/2"	15	65	40	80	15	65	43	65	15	74	42	82	9.2	56.5	41	85	9.2	56.5	35	55			
20	3/4"	20	68	44	80	20	68	47	65	20	84	51	100	12.5	59	44	85	12.5	59	39	55			
25	1"	25	79	50	110	25	79	57	100					16	71	48	100							
32	1 1/4"	32	86	55	110	32	86	62	100					20	78	54	100							
40	1 1/2"	40	96	65	150	40	96	76	120					24.5	83	65	125							
50	2"	50	109	72	150	50	109	83	120					32	100	72	125							
65	2 1/2"	50	127	91	200																			
80	3"	65	153	105	300																			
Material	Body	Brass				Brass				Brass				Brass				Brass						
	Stem	DZR Brass				DZR Brass				DZR Brass				DZR Brass				DZR Brass						
	Ball	Brass / Chrome Plated				Brass / Chrome Plated				Brass / Chrome Plated				Brass / Chrome Plated				Brass / Chrome Plated						
	Seat	PTFE				PTFE				PTFE				Reinforced PTFE				Reinforced PTFE						
Service conditions	8-50: 4.13MPa (600psi) WOG non-shock								4.13MPa (600psi) WOG non-shock								65 & 80: 2.75MPa (400psi) WOG non-shock							
Remarks	65 & 80: Std. bore				T-Handle				W/Cap & Chain				One piece body				One piece body T-Handle							

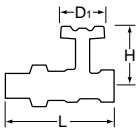
Design	MSS SP-110												TOYO Standard											
Type	Type 600												Ball Valves											
Class	Type 600				Type 200				10K				Type 400											
	Full bore				Full bore				Full bore				Std. bore				Std. bore							
Fig.	5026				5026W				5042A				5044H				5011							
Size	d	L	H	D ₁	d	L	H	D ₁	d	L	H	D ₁	d	L	H	D ₁	d	L	H	D ₁				
8 (mm)	1/4"	10	50	37	70	10	50	38	60					8	42	44	72							
10	3/8"	10	50	37	70	10	50	38	60					8	43	44	72							
15	1/2"	15	65	40	80	15	65	43	65	15	53	42	82	10	51	46	87	10	56	75	80			
20	3/4"	20	68	44	80	20	68	47	65	20	60	51	100	15	59	49	87	15	65	79	80			
25	1"	25	79	50	110	25	79	57	100	25	72	59	130	20	71	63	107	20	78	83	110			
32	1 1/4"	32	86	55	110	32	86	62	100	32	82	64	130	25	78	67	107	25	86	98	110			
40	1 1/2"	40	96	65	150	40	96	76	120	40	92	73	150	32	88	71	108	32	96	102	110			
50	2"	50	109	72	150	50	109	83	120	50	105	80	150	38	99	76	108	40	109	109	140			
65	2 1/2"	65	138	100	200																			
80	3"	76	167	112.5	300																			
100	4"																							
Material	Body	Brass				Brass				Brass				Brass				Bronze						
	Stem	Brass / Nickel Plated				Brass / Nickel Plated				DZR Brass				DZR Brass				DZR Brass						
	Ball	Brass / Chrome Plated				Brass / Chrome Plated				Brass / Chrome Plated				Brass / Chrome Plated				SUS304						
	Seat	PTFE				PTFE				PTFE				Reinforced PTFE				PTFE						
Service conditions	4.13MPa (600psi) WOG non-shock								1.38MPa (200psi) WOG non-shock								2.75MPa (400psi) WOG non-shock 150 water, non-shock 0.7MPa (100psi) non-shock							
Remarks					T-Handle				W/Locking Handle Automatic drain				1.0MPa (150psi) Saturated steam				Long neck for thermal insulation							



Ball Valves

Design	TOYO Standard																								
Type	Ball Valves																								
Class	Type 400								10K																
	Std. bore				Full bore				Full bore				Full bore				Full bore								
Fig.	5011T				5090				5090T				5091				5091T								
Size	d	L	H	D ₁	d	L	H	D ₁	d	L	H	D ₁	d	L	H	D ₁	d	L	H	D ₁					
8 (mm)	1/4"				10	49	39	80	10	49	38	60													
10	3/8"				15	62	45	100	15	62	41	60	15	73	73	100	15	73	70	80					
15	1/2"	10	56	79	82	20	71	48	100	20	71	44	60	20	81	77	100	20	81	73	80				
20	3/4"	15	65	83	82	25	83	54	130	25	83	60	100	25	94	82	120	25	94	81	90				
25	1"	20	78	90	94	32	96	59	130	32	96	65	100	32	107	98	130	32	107	98	100				
32	1 1/4"	25	86	105	94	40	106	70	150	40	106	79	120	40	120	105	130	40	120	105	100				
40	1 1/2"	32	96	109	94	50	125	77	150	50	125	86	120	50	138	112	150	50	138	112	120				
50	2"	40	109	124	120																				
65	2 1/2"																								
80	3"																								
Material	Body	Bronze				Bronze				Bronze				Bronze				Bronze							
	Stem	DZR Brass				Brass				Brass				DZR Brass				DZR Brass							
	Ball	SUS304				Brass / Chrome Plated				Brass / Chrome Plated				SUS304				SUS304							
	Seat	PTFE				PTFE				PTFE				PTFE				PTFE							
Service conditions	2.75MPa (400psi) WOG non-shock				120 water, non-shock 1.4MPa (200psi)				120 WOG 1.0MPa (150psi)																
Remarks	Long neck for thermal insulation								Long neck for thermal insulation								Long neck for thermal insulation								
	T-Handle								T-Handle								T-Handle								

Design	TOYO Standard												
Type	Ball Valves												
Class	Type 400												
	3-way, Std. bore					Split type, Std. bore							
Fig.	5045A					5002							
Size	d	L	H	D ₁	d	L	H	D ₁	d	L	H	D ₁	
8 (mm)	1/4"	4.5	40	30	60	11	54	51	90				
10	3/8"	6.8	46	35	70	15	58	51	90	15	68	54	90
15	1/2"	10	67	45	80	20	80	64	115	20	80	64	115
20	3/4"	15	68	48	80	25	92	76	142	25	92	76	142
25	1"	20	79	55	110	31	104	80	142	31	104	80	142
32	1 1/4"	25	89	60	110	38	118	94	150	38	118	94	150
40	1 1/2"	32	100	65	110	50	145	123	180	50	145	123	180
50	2"	40	115	75	140	60	165	141	220	60	165	141	220
65	2 1/2"												
80	3"												
Material	Body	Brass					Bronze						
	Stem	DZR Brass					DZR Brass						
	Ball	Brass / Chrome Plated					Brass / Chrome Plated						
	Seat	PTFE					Reinforced PTFE						
Service conditions	2.75MPa (400psi) WOG non-shock												
Remarks	L-port												



T-Flow (Constant Flow Ball Valves)

Design	TOYO Standard				
Type	Constant Flow Ball Valves				
Class	10K				
Fig.	370				
Size	d	L	H	D ₁	
15 (mm)	1/2"	9.2	98	64	45
20	3/4"	12.5	107	66.0	45
25	1"	15.0	116	73.0	60
Material	Body	Bronze			
	Stem	Brass			
	Ball	Brass / Chrome Plated			
	Seat	PTFE			
	Cartridge	Polyacetal			
Service conditions	90	water 1.0MPa			
	60	water 1.0MPa (35 & 40 l/min)			
Setting flow rates	4, 6, 8, 10, 12, 15, 17, 20, 25, 30, (l/min) 35, 40				
Allowable differential pressure	0.03 ~ 0.49MPa				
Remarks					



By T-FLOW installed in piping with pressure fluctuation, the predetermined flow rate can be always supplied.

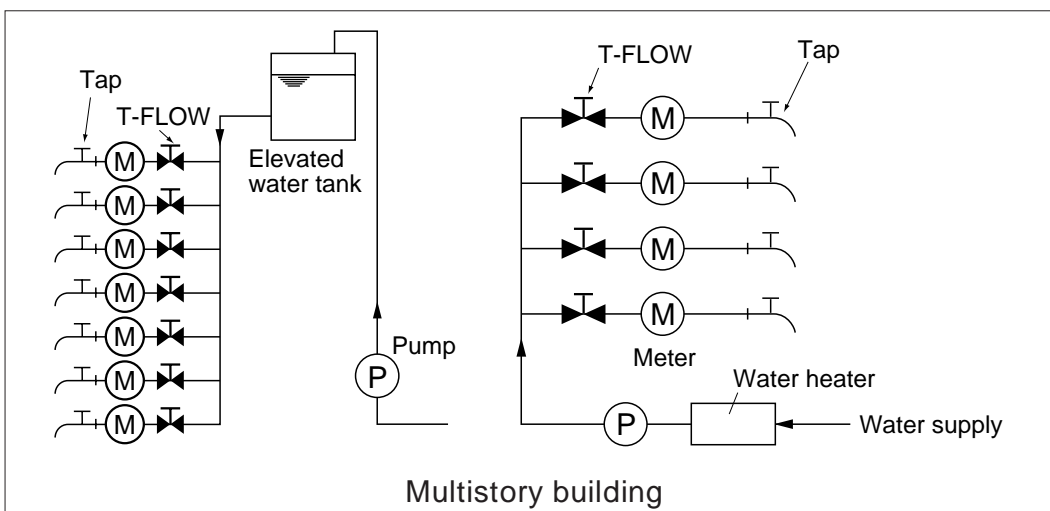
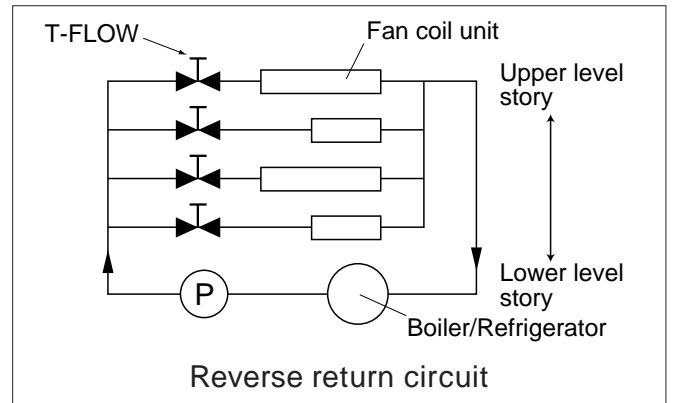
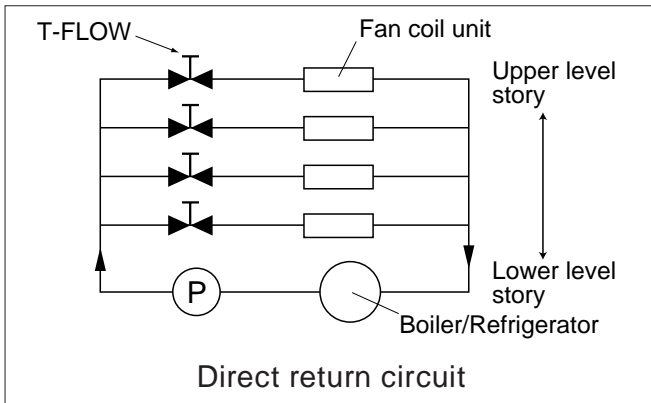
Applications

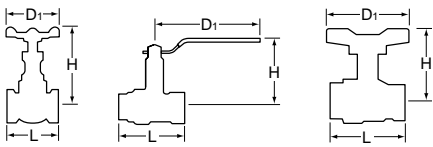
- Regular flow in cold and hot water supply lines
- Proper flow in cold and hot water lines for fan coil unit etc.
- Trouble prevention of over-flow into flow meter etc.

Features




- Compact designed and multifunctional ball valve with the flow regulator
- Cartridge-type flow regulator with a variety of flow rates easily exchanged
- Easy installation of thermal insulation with resin long neck handle free from dew-condensation

In air conditioning facility like fan coil unit or panel heater, by supplying the suitable flow for the capability of the equipment, comfortable indoor environment, energy saving and laborsaving are realizable.





Bronze HIPVC Socket End Valves

Design	TOYO Standard								
Type	Gate Valve			Ball Valves					
Class	10K								
									
Fig.	358			5098			5098T		
Size	L	H	D ₁	L	H	D ₁	L	H	D ₁
13 ^(mm)	1/2"	87	81	48					
20	3/4"	109	94	55	123	77	100	123	73
25	1"	121	108	63					
Material	Body	Lead-Free Bronze			Body	Lead-Free Bronze			
	Stem	Lead-Free DZR Brass			Stem	Lead-Free DZR Brass			
	Disc	Lead-Free Bronze			Ball	SUS304			
	Socket	HIPVC			Seat	PTFE			
Service conditions	45 water 1.0MPa								
Remarks									

Direct Joint to VCM/PVC pipe!

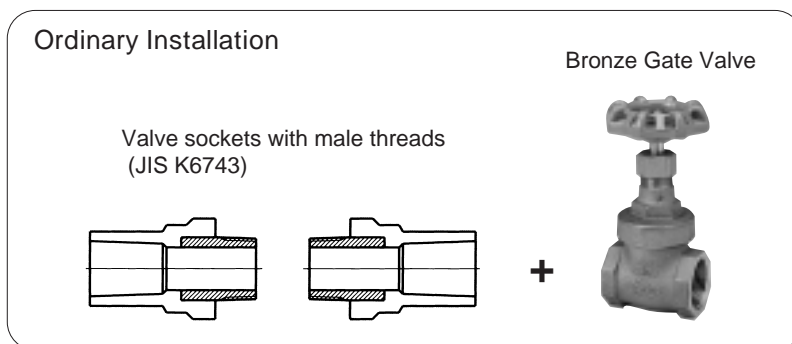
Features

No valve socket - No valve socket, seal tape nor wrench

Shorter face-to-face dimension - 30% shorter than those in case of using valve sockets

Strong connection - Special socket is covered with bronze body

Ecology friendly - Valve and resin sockets can be disassembled and be recyclable

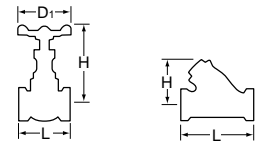






Applicable Vinyl pipes





JIS K6741, Unplasticized polyvinyl chloride (PVC) pipes

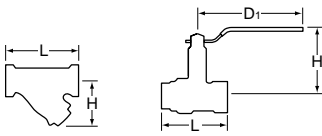
JIS K6742, Unplasticized polyvinyl chloride pipes for water works, HVP and VP

Solder End Valves





Design		JIS Standard						TOYO Standard					
Type		Gate Valves											
Class		5K			10K			125					
													
		JIS B2011			JIS B2011			207A			276A		
Fig.		041			045			207A			276A		
Size		L	H	D ₁	L	H	D ₁	L	H	D ₁	L	H	D ₁
10 (mm)	3/8"							39	75	48			
15	1/2"	50	127	55	50	127	55	46	81	48	46.5	77	48
20	3/4"	65	146	63	65	154	70	61	90	55	60	87	55
25	1"	75	171	70	75	178	80	72	106	63	69.5	100	63
32	1 1/4"	80	213	90	82	223	90	78	119	70	76	117	70
40	1 1/2"	88	244	100	92	254	100	87	135	80	83.5	128	70
50	2"	108	293	110	110	301	110	102	159	90	100	152	80
65	2 1/2"							115	201	110			
80	3"							130	223	125			
100	4"							174.6	302	160			
Material	Body	Bronze			Bronze			Bronze			Bronze		
	Stem	DZR Brass			DZR Brass			DZR Brass			DZR Brass		
	Disc	Bronze			Bronze			Bronze			Brass or Bronze		
Service conditions	See Solder P-T rating on page 25						1.37MPa (200psi) WOG non-shock 0.86MPa (125psi) Saturated steam See Solder P-T rating on page 25						
Remarks							BS 2871/864 Solder ends available upon request						

Design		MSS SP-80											
Type		Gate Valves						Globe Valve			Swing Check Valve		
Class		125											
													
Fig.		208C			281A			212A			237A		
Size		L	H	D ₁	L	H	D ₁	L	H	D ₁	L	H	
10 (mm)	3/8"				39	87	48						
15	1/2"	49	129	55	46	93	55	64	77	63	67	38	
20	3/4"	64	156	63	60	111	70	84	99	70	86	47	
25	1"	76	181	70	71	127	70	100	108	80	105	56	
32	1 1/4"	82	216	80	79	145	80	115	137	90	121	69	
40	1 1/2"	86	257	90	88	176	90	130	160	100	137	77	
50	2"	109	296	100	108	201	100	155	179	110	170	92	
65	2 1/2"										194	118	
80	3"										222	139	
100	4"												
Material	Body	Bronze			Bronze			Bronze			Bronze		
	Stem	Bronze			Bronze			Bronze			Pin	Brass	
	Disc	Bronze			Bronze			Bronze			Brass or Bronze		
Service conditions	1.37MPa (200psi) WOG non-shock 0.86MPa (125psi) Saturated steam See Solder P-T rating on page 25												
Remarks							BS 2871/864 Solder ends available upon request						



Solder End Valves

Design	TOYO Standard		TOYO Standard				
Type	Strainer		Ball Valves				
Class	150		400				
							
			Std. bore				
Fig.	387A		5014				
Size	L	H	d	L	H	D ₁	
15 (mm)	1/2"	80	49	10	58	75	80
20	3/4"	105	57	15	73	79	80
25	1"	125	70	20	88	83	110
32	1 1/4"	145	82	25	99	98	110
40	1 1/2"	170	98	32	114	102	110
50	2"	210	121	40	135	109	140
65	2 1/2"						
80	3"						
Material	Body	Bronze		Bronze			
	Stem	Screen	SUS304	DZR Brass			
	Ball			SUS304			
	Seat			PTFE			
Service conditions	2.06MPa (300psi) WOG non-shock 1.03MPa (150psi) Saturated steam See Solder P-T rating on page 25		2.75MPa (400psi) WOG non-shock See Solder P-T rating on page 25				
Remarks	14-16 meshes/perforated screen		Long neck for thermal insulation				

Toyo DZR brass (Dezincification Resistant brass)

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

The copper alloy used in bronze valves contains zinc, tin, and lead with copper as a base. When bronze valves are subjected to unfavorable service conditions, the zinc component contained in the copper alloy separates from the copper base, and the metal corrodes. This is called dezincification.

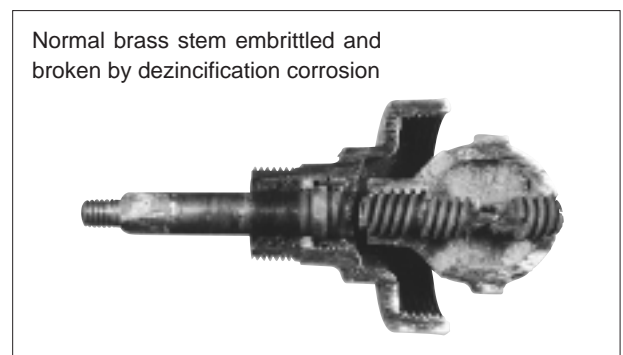
In case of bronze valve, the body, bonnet, and other cast bronze parts hardly corrode due to the small percent of zinc contained in the alloy. But brass valve parts such as stems, which contain 40% zinc, often corrodes due to extreme dezincification.

The following factors cause dezincification. These factors are generally believed to occur together, rather than independently.

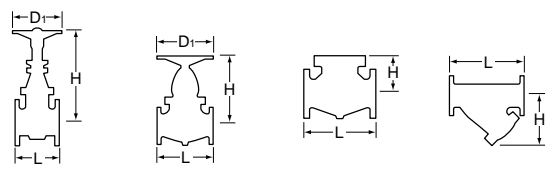
- 1) Excessive aqueous solution in acidity.
- 2) Warm water containing excessive free carbonic acid with high electric conductivity.
- 3) High electric conductivity with excessive presence of chlorides and sulfides.
- 4) Copper or vinyl chloride pipes.
- 5) Excessive dissolved oxygen.

To struggle with dezincification corrosion, Toyo Valve developed TOYO DZR brass as the stem material of bronze/brass valves. Our test data show excellent corrosion resistance to be comparable to bronze continuous casting bars.

TOYO bronze/brass valves have these DZR brass or bronze stems in standard specification, and offer longer service life.



Cast Iron Valves

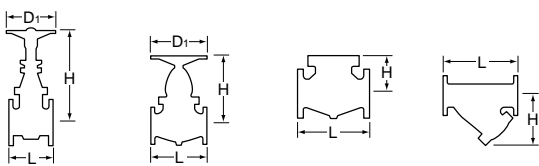


Design	TOYO Standard												
Type	Gate Valves						Globe Valve			Swing Check Valve			
Class	10K												
Fig.	410E			420E			405E			430E			
Size	L	H	D ₁	L	H	D ₁	L	H	D ₁	L	H		
50 (mm)	2"	178	319	180	178	357	180	203	318	200	203	153	
65	2 1/2"	190	350	180	190	412	180	216	333	200	216	162	
80	3"	203	401	200	203	482	200	241	361	200	241	176	
100	4"	229	457	250	229	569	250	292	390	250	292	220	
125	5"	254	523	280	254	672	280	330	439	300	330	226	
150	6"	267	602	300	267	783	300	356	477	300	356	307	
200	8"	292	711	360	292	985	355	495	542	360	495	325	
250	10"	330	842	400	330	1196	400	622	624	450	622	384	
300	12"	356	941	450	356	1390	450	698	735	500	698	426	
350	14"												
400	16"												
Material	Body	Cast Iron			Cast Iron			Cast Iron			Cast Iron		
	Stem/Pin	Brass			Brass			Brass			Brass		
	Disc	Cast Iron			Cast Iron			Cast Iron			Cast Iron		
	Seat	Bronze			Bronze			Bronze			Bronze		
Service conditions	120 water, non-shock 1.37MPa 120 oil, water, air 0.98MPa Saturated steam 0.20MPa												
Remarks	Body Marking: MSS standard indicating "125S 200WOG", Connection JIS B2239 10K-FF												

Design	TOYO Standard	
Type	Strainer	
Class	10K	
Fig.	450E	
Size	L	H
40 (mm)	1 1/2"	
50	2"	225
65	2 1/2"	273
80	3"	292
100	4"	352
125	5"	391
150	6"	470
200	8"	543
250	10"	660
300	12"	762
350	14"	
400	16"	
Material	Body	Cast Iron
	Screen	SUS304 (SUS316 Screen available)
Service conditions	120 water, non-shock 1.37MPa 120 oil, water, air 0.98MPa Saturated steam 0.69MPa	
Remarks	Body Marking: MSS standard	

Trim Combination (JIS Standard)

Fig.	Stem/Pin	Disc	Seat
425J	Brass	C.I./Same material as Seat	Bronze
425JS	13%Cr		13%Cr
425JU	SUS304		SUS304
405J	Brass		Bronze
405JS	13%Cr		13%Cr
405JU	SUS304		SUS304
435J	Brass		Bronze
435JS	13%Cr		13%Cr
435JU	SUS304		SUS304

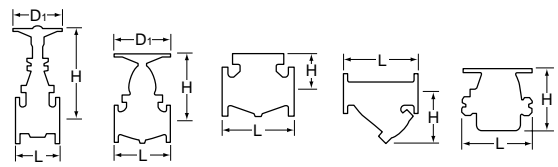


JIS Cast Iron Valves

Design	JIS Standard												
Type	Gate Valves									Globe Valve			
Class	10K			5K			10K						
	JIS B2031/Non-rising			JIS B2031/Rising			JIS B2031/Rising			JIS B2031			
Fig.	415J			424J			425J/JS/JU			405J/JS/JU			
Size	L	H	D ₁	L	H	D ₁	L	H	D ₁	L	H	D ₁	
40 (mm)	1 1/2"	*165	285	160	328	160	*165	306	160	190	260	160	
50	2"	180	313	180	328	180	180	343	180	200	277	180	
65	2 1/2"	190	344	180	382	180	190	389	180	220	307	180	
80	3"	200	401	200	436	180	200	462	200	240	353	230	
100	4"	230	444	250	532	200	230	547	250	290	404	280	
125	5"	250	517	280	627	230	250	648	280	360	454	300	
150	6"	270	577	300	726	250	270	759	300	410	533	360	
200	8"	290	693	360	919	280	290	956	360	500	642	450	
250	10"	330	814	400	1134	360	330	1168	400	*620	665	450	
300	12"	350	925	450			350	1363	450	*700	883	500	
350	14"						*381	1560	500				
Material	Body	Cast Iron			Cast Iron			Cast Iron			Cast Iron		
	Stem	Brass			Brass			Brass/SUS403/SUS304			Brass/SUS403/SUS304		
	Disc	Cast Iron or same material as seat			Cast Iron or same material as seat			Cast Iron or same material as seat			Cast Iron or same material as seat		
	Seat	Bronze			Bronze			Bronze/SUS403/SUS304			Bronze/SUS403/SUS304		
Service conditions	120 water, non-shock 1.37MPa 120 oil, water, air 0.98MPa Saturated steam 0.20MPa			120 water, non-shock 0.69MPa 120 oil, water, air 0.49MPa Saturated steam 0.20MPa			120 water, non-shock 1.37MPa 120 oil, water, air 0.98MPa Saturated steam 0.69MPa			120 water, non-shock 1.37MPa 120 oil, water, air 0.98MPa Saturated steam 0.69MPa			
Remarks	*TOYO Standard						*TOYO Standard			*TOYO Standard			

Design	JIS Standard				TOYO Standard			
Type	Swing Check Valves				Strainer			
Class	10K							
	JIS B2031							
Fig.	435J/JS/JU		437J		450			
Size	L	H	L	H	L	H	L	H
40 (mm)	1 1/2"	*190	106	200	111	250	167	
50	2"	200	111	200	111	250	167	
65	2 1/2"	220	121	220	121	285	193	
80	3"	240	145	240	145	315	210	
100	4"	290	165	290	165	370	256	
125	5"	360	207	360	207	450	318	
150	6"	410	225	410	225	410	364	
200	8"	500	268	500	268	600	507	
250	10"	*620	315			740	600	
300	12"					850	673	
350	14"					950	757	
400	16"					1050	845	
Material	Body	Cast Iron		Cast Iron		Cast Iron		
	Pin	Brass/SUS403/SUS304		SUS304		Screen		SUS304
	Disc	Cast Iron or same material as seat		Cast Iron or same material as seat				
	Seat	Bronze/SUS403/SUS304		SUS304				
Service conditions	120 water, non-shock 1.37MPa 120 oil, water, air 0.98MPa Saturated steam 0.69MPa		120 water, non-shock 1.4MPa 120 oil, water, air 1.0MPa Saturated steam 0.69MPa		120 water, oil, air below size 200 1.1MPa above size 250 0.7MPa Saturated steam below size 200 0.7MPa above size 250 0.20MPa			
Remarks	*TOYO Standard		c/w counter weight		Perforated screen equivalent to 12-16 meshes			

- Rusty Water-Proof Series - JIS Nylon Lined Cast Iron Valves



Design		JIS Standard										
Type		Gate Valves						Globe Valve			Check Valve	
Class		5K			10K			10K				
		JIS B2031			JIS B2031			JIS B2031			JIS B2031	
Fig.		419			429			409			439	
Size		L	H	D ₁	L	H	D ₁	L	H	D ₁	L	H
50 (mm)	2"				180	343	180					
65	2 1/2"	170	382	180	190	389	180	220	307	180	220	121
80	3"	180	436	180	200	462	200	240	353	230	240	145
100	4"	200	532	200	230	547	250	290	404	280	290	165
125	5"	220	627	230	250	648	280	360	454	300	360	207
150	6"	240	726	250	270	759	300	410	533	360	410	225
200	8"	260	919	280	290	956	360	500	642	450	500	268
250	10"	300	1134	360	330	1168	400					
300	12"				350	1363	450					
Material	Body	Cast Iron/Nylon Lined			Cast Iron/Nylon Lined			Cast Iron/Nylon Lined			Cast Iron/Nylon Lined	
	Stem	Brass			Brass			Brass			Brass	
	Disc	Bronze			Bronze			Bronze			Bronze	
	Seat	Bronze			Bronze			Bronze			Bronze	
Service conditions	60	water, non-shock 0.69MPa			60 water, non-shock 1.37MPa							
	60	oil, water, air 0.49MPa			60 oil, water, air 0.98MPa							
Remarks												

Design		TOYO Standard			
Type		Strainer		Foot Valve	
Class		10K			
Fig.		459		469	
Size		L	H	L	H
65 (mm)	2 1/2"	285	193	173	161
80	3"	315	210	193	188
100	4"	370	256	236	229
125	5"	450	318	271	289
150	6"	510	364	305	335
200	8"	600	507	388	449
250	10"	740	600		
300	12"	850	673		
Material	Body	Cast Iron/Nylon Lined		Cast Iron/Nylon Lined	
	Screen	SUS304		Seat	EPDM
				Ball	Polycarbonate
Service conditions	60	water 0.7MPa		60 water 0.2MPa	
Remarks					

Features

Toyo Nylon Lined Cast Iron Valves conform to JIS B2031.(Gate, Globe & Check Valves)

There is no RUSTY-WATER accrual from valves since all surface of cast iron in direct contact with water is lined by Nylon 11.

Nylon 11 can be used for a wide range of fluid with having its corrosion resistance, sea water-proof nature & chemical resistance. (Please consult Toyo sales staff for details.

Nylon 11 can be used in food industries.

Electrolytic corrosion does not occur, as Nylon 11 is an insulator.

Specifications

Lining material

Nylon 11 Special Grade Resin (Heat-resistance)

Color : White Film thickness : Above 300 μm

Service temperature

Addicted service temperature : 0 ~ 60

Trim material

Standard trim material for gate, globe & swing check valves

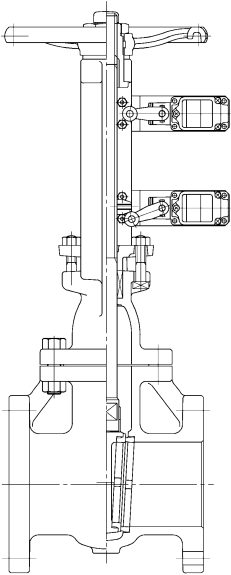
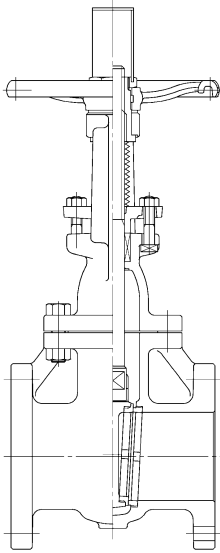
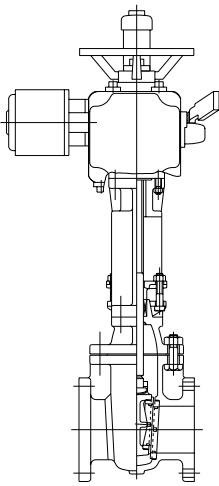
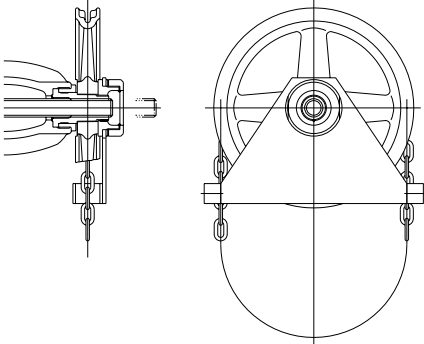
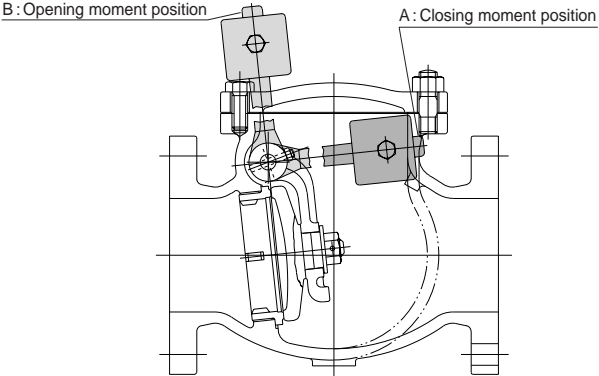
Seat : CAC406(BC6)	Stem : Brass
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*Screen material of a strainer is SUS304.

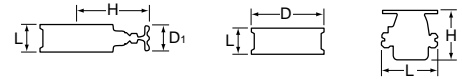
Special Valves



Valves with special functions



Toyo Valve has much experience in not only standard products but also products with special functions. Please consult Toyo sales staff or our local agent for details.

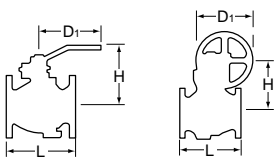
Limit switches	Stem cap & cover	Moterized valve
<p data-bbox="140 412 580 506">It is attached at open, closed or both open and closed positions for remote surveillance.</p> 	<p data-bbox="603 412 1043 506">Protection of stem from dust, foreign objects, etc. in order to avoid a poor operation.</p> 	<p data-bbox="1066 412 1506 568">Toyo has much and long experience to supply motorized valves with high quality. On request, valves can be provided with each maker's actuator like LIMITORQUE, ROTORK, SEIBU, etc.</p> 
Chain handle	Counter-weight check valve	
<p data-bbox="140 1202 667 1234">Easy operation for a valve on elevated piping line.</p> 	<p data-bbox="836 1202 1506 1391">By adjusting the counter-weight to the closed moment, water-hammer is restrained by quicker closing and excellent seat sealing capability is acquired. Balance of disc is maintained by adjusting the counter-weight to the open moment, the flow with low pressure is facilitated and opening and closing disc is made smooth.</p> 	

Dual Plate Check / Ball Foot

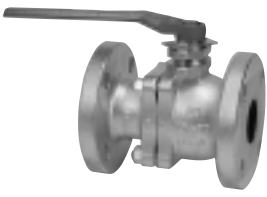



Design	TOYO Standard									
Type	Dual Plate Check Valves									
Class	10K							150		
										
Fig.	365			440				442F		
Size	L	H	D ₁	L	H	D ₁	L	D		
40 (mm)	1 1/2"	54	132	63	54	128	55			
50	2"	56	140	70	56	143	70	54	105	
65	2 1/2"	56	150	70	56	150	70	54	124	
80	3"	59	156	70	59	156	70	57	137	
100	4"	66	169	70	66	169	70	64	175	
125	5"	72	183	70	72	183	70	70	197	
150	6"	78	212	80	78	216	80	76	222	
200	8"	96	240	80	96	243	80	95	279	
250	10"	109	289	90	109	290	90	108	340	
300	12"	145	316	90	145	315	90	143	410	
350	14"				184	330	90	184	451	
400	16"				191	355	90	191	514	
450	18"				204	388	90	203	549	
Material	Body	Bronze			Cast Iron			Cast Iron		
	Plate	Bronze			Bronze			Bronze		
	Seat	NBR			NBR			NBR		
Service conditions	80 water, non-shock 1.4MPa						1.03MPa (150psi) 80 water			
	80 water, oil, air 1.0MPa									
Remarks	FPM or EPDM seat available By-pass valve mounted									

Design	TOYO Standard				
Type	Ball Foot Valves				
Class	10K				
					
Fig.	097		461		
Size	L	H	L	H	
40 (mm)	1 1/2"	133	121		
50	2"	148	147		
65	2 1/2"			173	161
80	3"			193	188
100	4"			236	229
125	5"			271	289
150	6"			305	335
200	8"			388	449
Material	Body	Bronze		Cast Iron	
	Seat	EPDM		EPDM	
	Ball	Polycarbonate		Polycarbonate	
Service conditions	70 water 0.20MPa (29psi)				
Remarks					



Cast Iron Ball Valves

Design	TOYO Standard						
Type	Ball Valves						
Class	10K						
							
	Full bore			Full bore			
Fig.	470L			470G			
Size		L	H	D ₁	L	H	D ₁
15 ^(mm)	1/2"	110	102	130			
20	3/4"	120	105	130			
25	1"	130	124	160			
32	1 1/4"	140	130	160			
40	1 1/2"	165	115	230			
50	2"	180	120	230			
65	2 1/2"	190	155	400			
80	3"	200	165	400			
100	4"	230	200	460			
125	5"	300	220	460	300	312	310
150	6"	340	295	1000	340	337	310
200	8"	450	355	1500	450	414	360
Material	Body	Cast Iron			Cast Iron		
	Stem	SUS403			SUS403		
	Disc	SUS304 or SCS13A			SUS304 or SCS13A		
	Seat	PTFE			PTFE		
Service conditions	See P-T rating at page 26						
Remarks	ASME Class 125 flanged ends available upon request						

Toyo Dual Plate Check Valve

A water hammer is prevented (Silent Check Type)

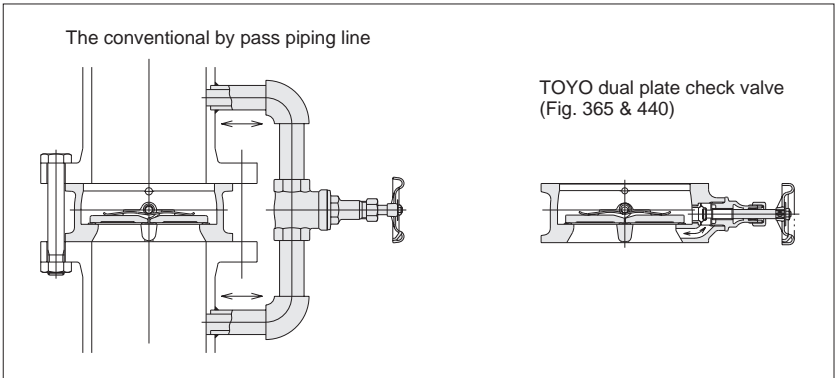
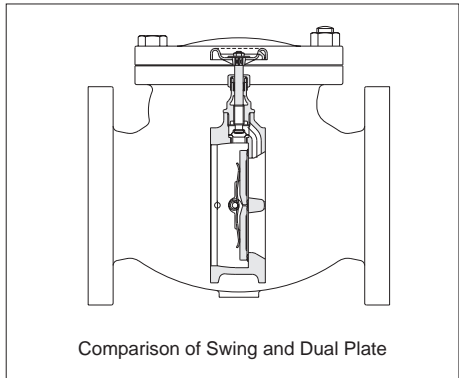
By action of the coil spring built in a valve, plates are gently opened at the time of starting a pump or it closes quickly when a pump stops. For this reason, a water hammer is prevented and generating a shock pressure is controlled.

It is compact.

A small and lightweight wafer body. As compared with a swing check, the face-to-face dimension is about 1/4 and the weight is about 1/5. Piping work is easy, and attachment space for installation is also small.

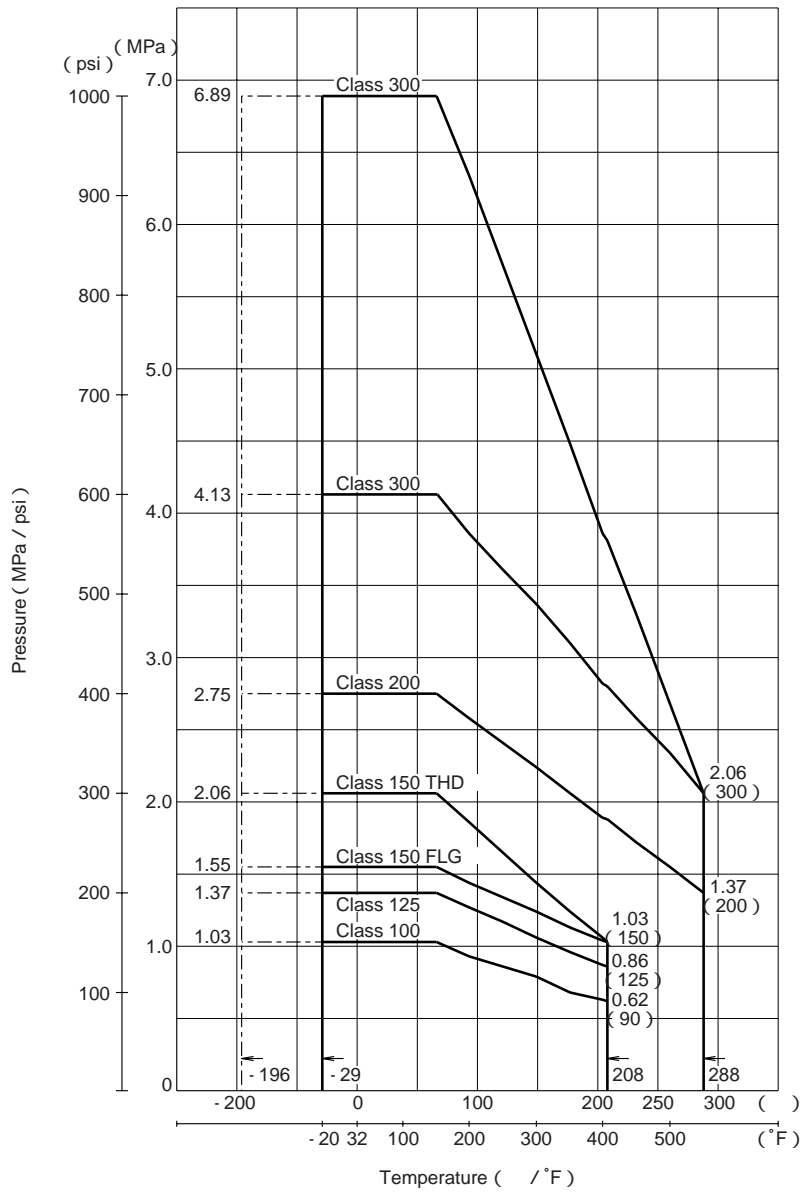
By-pass piping is unnecessary. (Fig. 365 and 440)

Since the by-pass valve is built in, the by-pass piping for discharge of the fluid in a pipe or priming when starting a pump are unnecessary. It is a big merit on design and construction.



Pressure-Temperature Ratings

Bronze and Brass Valves (Extracted from MSS SP-80)



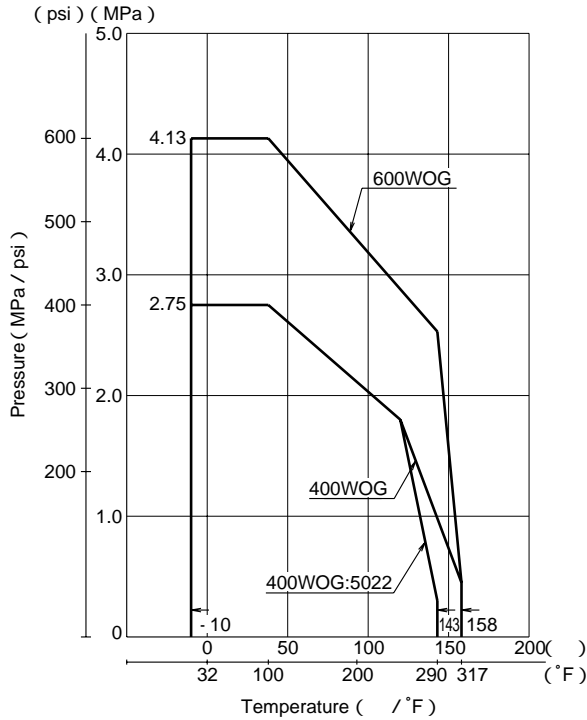
Pressure-Temperature Ratings

Service temperature			100		125		150		200		300					
			THD		THD		FLG		THD		THD		THD			
	°F	MPa	psi	MPa	psi	MPa	psi	MPa	psi	MPa	psi	MPa	psi	MPa	psi	
-29 - 66	-20 - 150	1.03	150	1.37	200	2.06	300	1.55	225	2.75	400	4.13	600	6.89	1000	
93	200	0.93	136	1.27	185	1.86	270	1.44	210	2.58	375	3.86	560	6.34	920	
121	250	0.86	126	1.17	170	1.65	240	1.34	195	2.41	350	3.61	525	5.72	830	
149	300	0.79	116	1.06	155	1.44	210	1.24	180	2.24	325	3.37	490	5.10	740	
177	350	0.68	100	0.96	140	1.24	180	1.13	165	2.06	300	3.10	450	4.48	650	
204	400	0.63	92	-	-	-	-	-	-	1.89	275	2.82	410	3.86	560	
208	406	0.62	90	0.86	125	1.03	150	1.03	150	-	-	-	-	-	-	
232	450	-	-	-	-	-	-	-	-	1.72	250	2.58	375	3.30	480	
260	500	-	-	-	-	-	-	-	-	1.55	225	2.34	340	2.68	390	
288	550	-	-	-	-	-	-	-	-	1.37	200	2.06	300	2.06	300	
Saturated steam		0.68	100	0.86	125	1.03	150	1.03	150	1.37	200	2.06	300	2.06	300	
Test pressure	shell	water	1.55	225	2.06	300	3.10	450	2.41	350	4.13	600	6.20	900	10.34	1500
	seat		air	0.55	80	0.55	80	0.55	80	0.55	80	0.55	80	0.55	80	0.55

NOTE: Class 100 outside of MSS SP-80

Pressure-Temperature Ratings

Ball Valves

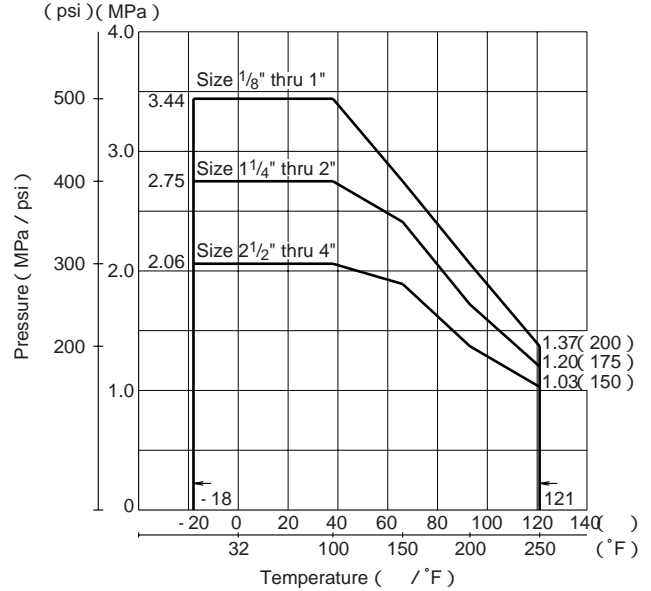


Pressure-Temperature Ratings

Class	WOG 38		Test pressure			
	(3°F)		shell (water)		seat (air)	
	MPa	psi	MPa	psi	MPa	psi
400 WOG	2.75	400	4.13	600	0.55	80
600 WOG	4.13	600	6.20	900	0.55	80

Do not use products in flammable or toxic gas.

Solder



Pressure-Temperature Ratings

Joint material	Working temperature		Maximum working gage pressure						Test pressure	
	°F	°C	1/8" thru 1"		1/4" thru 2"		2 1/2" thru 4"		shell water	seat air
			MPa	psi	MPa	psi	MPa	psi		
ASTM B32 Alloy Grade 50A [Notes (1), (2)]	38	100	1.37	200	1.20	175	1.03	150	300psi	80psi
	66	150	1.03	150	0.86	125	0.68	100		
	93	200	0.68	100	0.62	90	0.51	75		
ASTM B32 Alloy Grade 95TA [Note (2)]	38	100	3.44	500	2.75	400	2.06	300	2.06	0.55
	66	150	2.75	400	2.41	350	1.89	275		
	93	200	2.06	300	1.72	250	1.37	200		
	121	250	1.37	200	1.20	175	1.03	150		

Notes: (1) The Safe Drinking Water Act Amendment of 1986 prohibits the use in potable water systems of any solder having a lead content in excess of 0.2%.

(2) The safe working pressure-rating for a solder end valve is restricted to the lower pressure-rating.

JIS Standard Valves

Bronze Gate, Globe and Check Valves (JIS B2011)

Service temperature	Maximum working pressure (MPa)	
	5K	10K
Water, Non-shock at less than 120	0.7	1.4 1.18(*3)
Oil, gas(*4), air, water at less than 120	0.5	1.0 0.85(*3)
Saturated steam(*1)	0.3 0.2(*2)	1.0 0.7(*2)
Test pressure	shell	water
	seat	air
	1.1	2.1
	0.6	0.6

(*1) Not applied to solder ends

(*2) Applicable to gate valves

(*3) Applicable to solder ends in size 32mm (1.1/4") and larger

(*4) Do not use products in flammable or toxic gas

Gray Cast Iron Gate, Globe and Check Valves (JIS B2031)

Service temperature	Maximum working pressure (MPa)	
	5K	10K
Water, Non-shock at less than 120 (*1)	0.69	1.37
Oil, gas(*3), air, water at less than 120 (*1)	0.49	0.98
Saturated steam	0.20	0.69 0.20(*2)
Test pressure	shell	water
	seat	air
	1.1	2.1
	0.6	0.6

(*1) The max. working temperature for nylon lined valves is restricted to 60

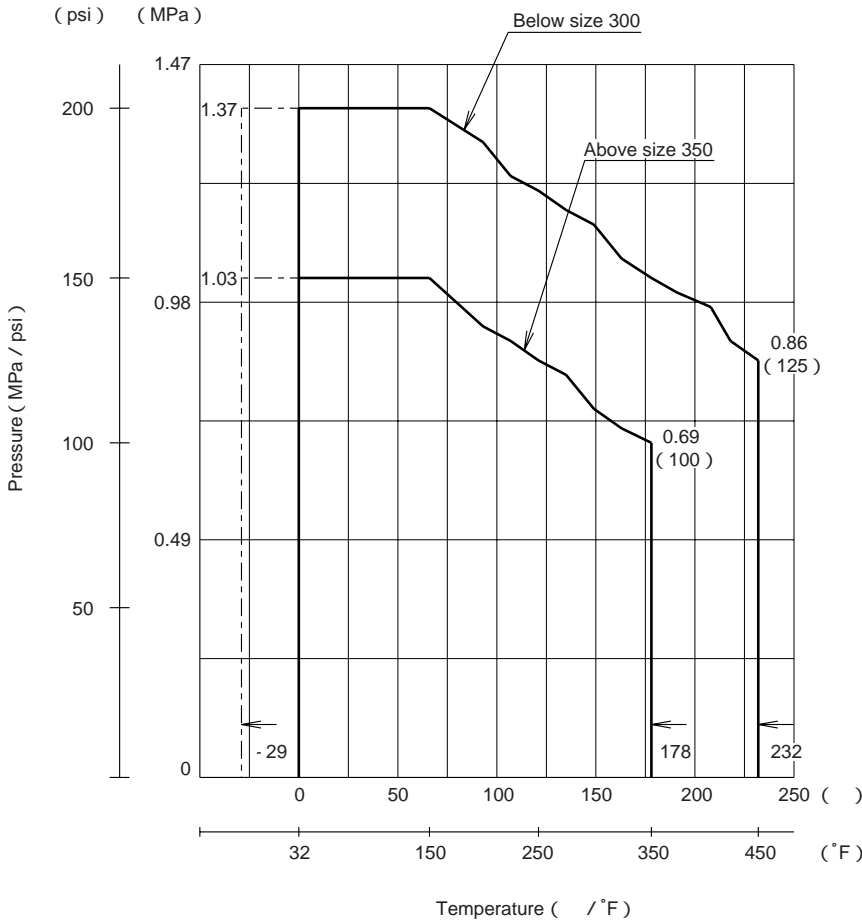
(*2) Inside screw gate valves and pressed seat rings only

(*3) Do not use products in flammable or toxic gas

Pressure-Temperature Ratings

Cast Iron Valves (Extracted from MSS SP-70, 71 & 85)

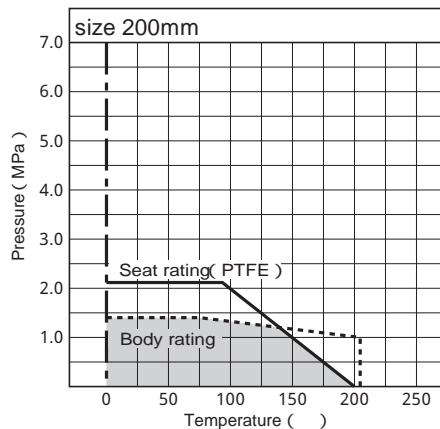
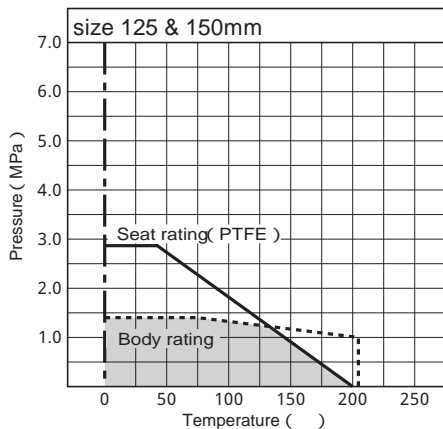
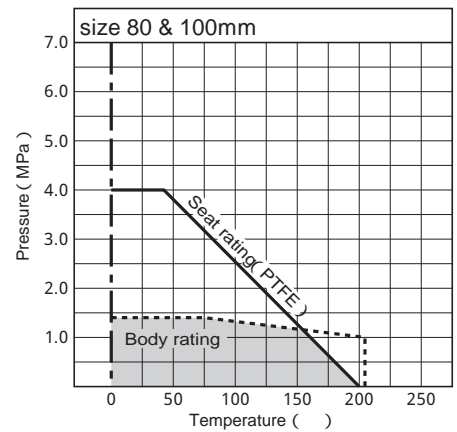
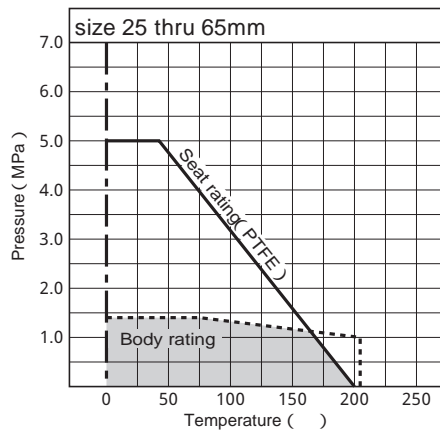
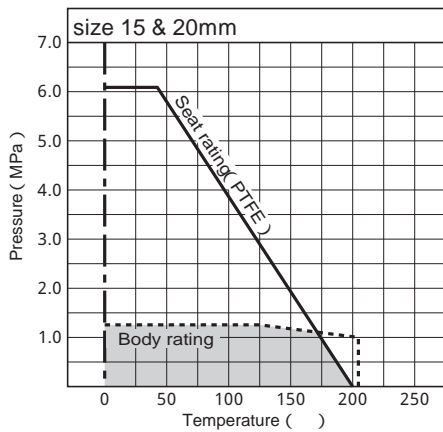
Class 125 Gate, Globe and Check Valves



Pressure-Temperature Ratings

Temperature	Size 50 thru 300		Above size 350			
	° F	MPa	psi	MPa	psi	
-29 - 66	-20 - 150	1.37	200	1.03	150	
93	200	1.31	190	0.93	135	
107	225	1.24	180	0.90	130	
121	250	1.21	175	0.86	125	
135	275	1.17	170	0.83	120	
149	300	1.14	165	0.76	110	
163	325	1.07	155	0.72	105	
178	350	1.03	150	0.69	100	
191	375	1.00	145			
208	400	0.97	140			
218	425	0.90	130			
232	450	0.86	125			
Saturated steam		0.86	125	0.68	100	
Test pressure	shell	water	2.41	350	1.83	265
	seat	air	0.55	80	0.55	80

10K Cast Iron Ball Valves



Cv Value

The Cv value – which is used by TOYO VALVE to indicate the capacity of a valve – is a flow rate represented in terms of U.S. gallons per minute when clear water at 60°F flows through a valve, in which the differential pressure between its outlet and inlet is kept at 1 psi – 6.89kPa.

The Cv value can be determined by experiment, and the relation between the Cv value and the flow rate or pressure drop, when the fluid is water.

In case of water, the pressure drop or the flow rate can be obtained by the following formulas.

$$P = 0.134 \frac{Q^2 G_L}{C_v^2}$$

P = pressure drop (MPa)

Q = flow rate

$$Q = 2.735 C_v \sqrt{\frac{P}{G_L}}$$

G_L = specific gravity of fluid when setting water to 1

C_v = Cv value

Cast Bronze Valves

Valve type		GATE	GLOBE		ANGLE	CHECK		BALL	STRAINER
Nominal size						LIFT	SWING	FULL BORE	
mm	Inch	206A	210A	211A/213A	260A	230A	236A	5090	380A
8	1/4	2.8					1.5		
10	3/8	5.7	2	2	2.5	2	2.8		
15	1/2	15	3	3.5	4	3.5	5	26	4.5
20	3/4	18	4.5	6.5	7.5	6.5	9	46	7.5
25	1	29	8.5	12	13	11	20	80	14
32	1 1/4	59	16	21	23	19	36	105	19
40	1 1/2	120	23	30	34	28	51	141	30
50	2	190	38	49	55	46	92	215	47
65	2 1/2	335	64	87	97	81	162		
80	3	486	93		166	123	247		
100	4	772				163			

Cast Iron Valves

Valve type		GATE	GLOBE	CHECK		BALL	STRAINER	BALL FOOT
Nominal size				SWING	DUAL PLATE	FULL BORE		
mm	Inch	410E/420E	405E	430E	440	470	450E	461
15	1/2					26		
20	3/4					53		
25	1					95		
32	1 1/4					165		
40	1 1/2	129	33	54	40	235		17
50	2	216	55	110	56	485	51	28
65	2 1/2	345	88	143	93	730	80	44
80	3	495	126	206	157	1240	116	75
100	4	875	224	440	325	2250	205	125
125	5	1370	350	575	540	3550	325	190
150	6	1920	485	830	815	5200	465	330
200	8	3600	920	1500	1450	9900	845	380
250	10	5680	1450	2370	2350		1350	
300	12	8290	2120	3470	3640		2080	
350	14				5480			
400	16				7930			

ISO9001 and 14001 authorized

Toyo Valve Co., Ltd. has been approved by Lloyd's Register Quality Assurance Limited (LRQA) to the following quality management system of " ISO 9001 "and environmental management system of " ISO 14001 ".

ISO9001



ISO14001



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RED-WHITE



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