

# BRONZE & BRASS

# Presenting Design Features of KITZ Bronze/Brass Valves

## Human Engineering in Handwheel Design

Computer-designed handwheels of all KITZ bronze/brass valves, the product of KITZ human engineering, are featured with an ideal combination of operational efficiency and high mechanical strength for reliability.

## Asbestos-free Gland Packings

All KITZ bronze/brass gate and globe valves employ aramid fiber PTFE as the material of the asbestos-free gland packing, meeting the latest industrial demand to minimize pollution concerns. With its leak-free sealing performance and reduced valve operating torque, aramid fiber PTFE is considered a reliable substitution for conventional asbestos sheets for the service of water, oil, gas and saturated steam pressure of a maximum 300 psi within the temperature range of 300°C.

## Pressure Rating

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

\*Please refer to our website ([www.kitz.co.jp](http://www.kitz.co.jp)) or contact KITZ for details.

## Inspection and Testing

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

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

## Pressure-Temperature Ratings of PN Series Valves

Maximum permissible working pressure (bar)

Service temperature (°C)	Bronze & Brass valves		
	PN16	PN20	PN25
-10 to 66			
100	16.0	20.0	25.0
120	13.5	17.2	21.8
150	9.5	13.0	16.5
170	7.0	10.3	12.8
180	—	9.0	11.3
186	—	—	10.5
198	—	—	—
200	—	—	—

(Note) : Intermediate values may be obtained by linear interpolation.


## Bronze/Brass Valve Solder Joints

Copper tubing is widely used with bronze/brass valves in steam and waterline applications in schools, hospitals, hotels, and private houses because of its excellent physical characteristics. It resists corrosion, meets sanitation requirements, and is easy to install.

**Copper Tubes:** There are three types of copper tubing for complying with ASTM B88, as listed below.

Each type is provided with a different wall thickness to meet application requirements.

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

 <b>CAUTION</b>	Solder-jointed end valves should not be used in service where the temperature of the line fluid is higher than the softening point of the solder.
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## Soldering Leak-free Joints

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

## Solder P-T Rating

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

## KITZ Bronze and Brass Materials to JIS Standards

### JIS H5120-2006 (Copper & Copper Alloy Castings)

Cast bronze Class 6	Designation	Chemical composition (%)										Mechanical properties	
		Cu	Sn	Zn	Pb	Ni	Fe	P	Sb	Al	Si	Tensile strength 195 Min. (N/mm <sup>2</sup> )	Elongation (%) 15 Min.
	CAC406 (BC6)	83.0-87.0	4.0-6.0	4.0-6.0	4.0-6.0	1.0 Max.	0.3 Max.	0.05 Max.	0.2 Max.	0.01 Max.	0.01 Max.		

### JIS H3250-2006 (Copper & Copper Alloy Rods and Bars)

Forged brass Alloy No.3771	Designation		Chemical composition (%)				Mechanical properties	
	Extruded	Drawn	Cu	Pb	Fe + Sn	Zn	Tensile strength 315 Min. (N/mm <sup>2</sup> )	Elongation (%) 15 Min.
	C3771BE	C3771BD	57.0-61.0	1.0-2.5	1.0 Max.	Remainder		

### JIS H3250-2006 (Copper & Copper Alloy Rods and Bars)

Free-cutting brass Alloy No.3604	Designation		Chemical composition (%)					Mechanical properties	
	Extruded	Drawn	Cu	Pb	Fe	Fe + Sn	Zn	Tensile strength 335 Min. (N/mm <sup>2</sup> )	Elongation (%) —
	C3604BE	C3604BD	57.0-61.0	1.8-3.7	0.5 Max.	1.0 Max.	Remainder		

## KITZ Bronze and Brass Materials to ASTM Standards

### ASTM B62-2002

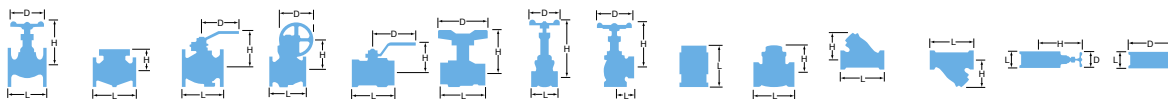
Chemical composition (%)											Mechanical properties		
Copper	Tin	Lead	Zinc	Nickel & Cobalt	Iron	Sulfur	Phosphorus	Antimony	Aluminum	Silicon	Minimum		
84.0-86.0	4.0-6.0	4.0-6.0	4.0-6.0	1.0 Max.	0.30 Max.	0.08 Max.	0.05 Max.	0.25 Max.	0.005 Max.	0.005 Max.	Tensile strength 30 ksi	Yield strength 14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






### ASTM B584 C84400-2004






Chemical composition (%)											Mechanical properties		
Copper	Tin	Lead	Zinc	Nickel & Cobalt	Iron	Sulfur	Phosphorus	Antimony	Aluminum	Silicon	Minimum		
78.0-82.0	2.3-3.5	6.0-8.0	7.0-10.0	1.0 Max.	0.40 Max.	0.08 Max.	0.02 Max.	0.25 Max.	0.005 Max.	0.005 Max.	Tensile strength 29 ksi	Yield strength 13 ksi	Elongation in 2 in. 18%

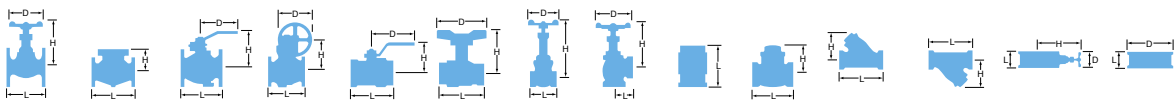
### ASTM B283 C37700-2004

Chemical composition (%)				Mechanical properties		
Copper	Lead	Iron	Zinc	Minimum		
58.0-61.0	1.5-2.5	0.30 Max.	Remainder	Tensile strength 50 ksi	Yield strength 18 ksi	Elongation in 4x thickness 25%



TYPE		GATE			GATE			GATE			GATE			GATE		
Bronze&Brass																
FIG		S			H			E			FH			FR		
PRESSURE		Class 125			Class 125			Class 150			Class 125			Class 125		
END CONNECTION		BS21 (JIS B0203)			BS21 (JIS B0203)			BS21 (JIS B0203)			BS21			BS21 (JIS B0203)		
DIMENSIONS		inch	mm	L	H	D	L	H	D	L	H	D	L	H	D	L
	1/4	8	—	—	—	—	—	—	—	—	—	—	35	70	50	—
	3/8	10	38	75	50	42	74	50	43	86	50	38	73	50	38	73
	1/2	15	42	75	50	45	80	50	48	96	55	42	73	50	42	73
	3/4	20	47	86	55	50	90	55	53	111	60	47	87	55	47	87
	1	25	50	97	60	57	105	60	62	122	70	50	97	60	50	97
	1 1/4	32	60	117	70	61	118	70	69	141	80	60	118	70	60	118
	1 1/2	40	63	126	80	67	135	80	75	164	90	63	126	80	63	126
	2	50	72	154	90	74	159	90	86	197	100	72	154	90	72	154
	2 1/2	65	80	167	100	90	202	115	105	225	115	82	187	100	—	—
	3	80	90	200	115	100	223	135	116	261	135	92	205	115	—	—
	4	100	—	—	—	121	280	155	—	—	—	—	—	—	—	—
BODY		Cast Bronze			Cast Bronze			Cast Bronze			Forged Brass			Forged Brass		
BONNET		Forged Brass			Cast Bronze			Forged Brass			Forged Brass			Forged Brass		
STEM		Special Brass			Special Brass			Special Brass			Special Brass			Special Brass		
DISC		Forged Brass			Cast Bronze			Cast Bronze			Forged Brass			Forged Brass		
		Non-rising Stem			Non-rising Stem			Non-rising Stem			Non-rising Stem			Non-rising Stem		

TYPE		GATE			GATE			GATE			GATE			GATE		
Bronze&Brass																
FIG		M			L			LB			125M			150S		
PRESSURE		5K			10K			10K			Class 125			Class 150		
END CONNECTION		BS21 (JIS B0203)			BS21 (JIS B0203)			JIS B2011			BS21 (JIS B0203)			BS21 (JIS B0203)		
DIMENSIONS		inch	mm	L	H	D	L	H	D	L	H	D	L	H	D	L
	1/4	8	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	3/8	10	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	1/2	15	50	126	60	55	126	60	—	—	—	51	129	55	42	75
	3/4	20	60	145	60	65	153	70	90	153	70	56	155	60	47	86
	1	25	65	170	70	70	178	80	100	178	80	66	180	70	50	97
	1 1/4	32	75	213	90	80	223	90	110	223	90	68	216	80	60	117
	1 1/2	40	85	244	100	90	254	100	125	254	100	74	257	90	63	126
	2	50	95	294	115	100	302	115	140	302	115	84	296	100	72	154
	2 1/2	65	115	366	135	120	376	155	170	376	155	—	—	—	80	167
	3	80	130	428	155	140	436	180	190	282	180	—	—	—	90	200
	4	100	—	—	—	—	—	—	220	327	225	—	—	—	—	—
BODY		Bronze			Bronze			Bronze			Cast Bronze			Cast Bronze		
BONNET		Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze		
STEM		Special Brass			Special Brass			Special Brass			Cast Bronze			Cast Bronze		
DISC		Bronze			Cast Bronze			Cast Bronze			Cast Bronze			Copper-Nickel Alloy		
														Non-rising Stem		



TYPE	GATE					GATE			GATE			GATE			GATE		
Bronze&Brass																	
FIG	150L					300LU			CH			CFS			CFH		
PRESSURE	Class 150					Class 300			Class 125			Class 125			Class 125		
END CONNECTION	BS21 (JIS B0203)					BS21 (JIS B0203)			ASME B16.18			Solder Joint			ASME B16.18		
DIMENSIONS	inch	mm	L	H	D	L	H	D	L	H	D	L	H	D	L	H	D
	1/4	8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	3/8	10	—	—	—	—	—	—	39	74	50	—	—	—	37	77	50
	1/2	15	51	137	55	51	149	70	46	80	50	45	75	50	45	77	50
	3/4	20	56	157	70	56	173	80	61	90	55	60	86	55	60	87	55
	1	25	66	180	70	66	194	80	72	105	60	70	97	60	70	97	60
	1 1/4	32	68	216	80	74	228	100	78	118	70	77	117	70	77	118	70
	1 1/2	40	74	257	90	84	274	115	87	135	80	86	126	80	86	126	80
	2	50	84	296	100	98	313	135	102	159	90	102	154	90	104	154	90
	2 1/2	65	—	—	—	—	—	—	115	202	115	—	—	—	115	187	100
	3	80	—	—	—	—	—	—	130	223	135	—	—	—	127	205	115
	4	100	—	—	—	—	—	—	173	280	155	—	—	—	—	—	—
BODY	Cast Bronze					Cast Bronze			Cast Bronze			Forged Brass			Forged Brass		
BONNET	Cast Bronze					Cast Bronze			Cast Bronze			Forged Brass			Forged Brass		
STEM	Cast Bronze					Cast Bronze			Special Brass			Special Brass			Special Brass		
DISC	Cast Bronze					Copper—Nickel Alloy			Cast Bronze			Forged Brass			Forged Brass		
									Solder end joint Non-rising Stem			Solder end joint Non-rising Stem			Solder end joint Non-rising Stem		

TYPE	GATE					GATE			GATE			GATE			GATE		
Bronze&Brass																	
FIG	CM					CL			C125E			C125M			C150E		
PRESSURE	5K					10K			Class 125			Class 125			Class 150		
END CONNECTION	JIS B2011					JIS B2011			ASME B16.18			ASME B16.18			ASME B16.18		
DIMENSIONS	inch	mm	L	H	D	L	H	D	L	H	D	L	H	D	L	H	D
	1/4	8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	3/8	10	—	—	—	—	—	—	39	86	50	—	—	—	—	—	—
	1/2	15	50	126	60	50	126	60	46	93	55	49	129	55	46	98	55
	3/4	20	65	145	60	65	153	70	60	110	70	64	155	60	60	114	70
	1	25	75	170	70	75	178	80	71	126	70	76	180	70	71	126	70
	1 1/4	32	80	213	90	82	223	90	79	145	80	82	216	80	79	145	80
	1 1/2	40	88	244	100	92	254	100	88	176	90	86	257	90	88	176	90
	2	50	108	294	115	110	302	115	108	201	100	109	296	100	108	201	100
	2 1/2	65	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	3	80	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	4	100	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
BODY	Cast Bronze					Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze		
BONNET	Cast Bronze					Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze		
STEM	Special Brass					Special Brass			Cast Bronze			Cast Bronze			Cast Bronze		
DISC	Cast Bronze					Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze		
	Solder end joint					Solder end joint			Solder end joint Non-rising Stem			Solder end joint			Solder end joint Non-rising Stem		

Bronze &amp; Brass

Cast Iron

Ductile Iron

Stainless Steel

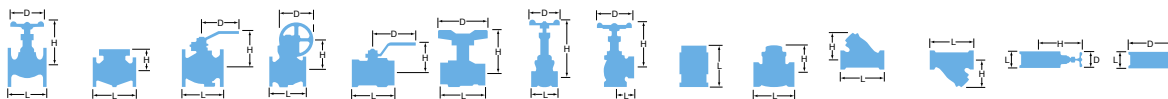
Carbon Steel






Butterfly Valve






Ball Valve

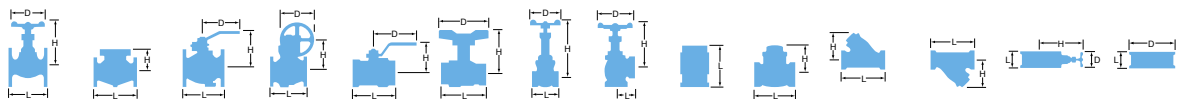
Ball Valve Seat






Actuated Valve








TYPE	GATE					GATE			GATE			GATE			GATE		
Bronze&Brass																	
FIG	C150L					C150LU			AKH			AKFS			AKFH		
PRESSURE	Class 150					Class 150			Class 125			—			Class 125		
END CONNECTION	ASME B16.18					ASME B16.18			NPT			ASME B1.20.1			ASME B1.20.1		
DIMENSIONS	inch	mm	L	H	D	L	H	D	L	H	D	L	H	D	L	H	D
	1/4	8	—	—	—	—	—	—	—	—	—	—	—	—	35	70	50
	3/8	10	—	—	—	—	—	—	42	74	50	38	75	50	38	73	50
	1/2	15	49	137	55	49	137	55	45	80	50	42	75	50	42	73	50
	3/4	20	64	157	70	64	157	70	50	90	55	47	86	55	47	87	55
	1	25	76	180	70	76	180	70	57	105	60	50	97	60	50	97	60
	1 1/4	32	82	216	80	82	216	80	61	118	70	60	117	70	60	118	70
	1 1/2	40	86	257	90	86	257	90	67	135	80	63	126	80	63	126	80
	2	50	109	296	100	109	296	100	74	159	90	72	154	90	72	154	90
	2 1/2	65	—	—	—	—	—	—	90	202	115	80	167	100	82	187	100
	3	80	—	—	—	—	—	—	100	223	135	90	200	115	92	205	115
	4	100	—	—	—	—	—	—	121	280	155	—	—	—	—	—	—
BODY	Cast Bronze					Cast Bronze			Cast Bronze			Forged Brass			Forged Brass		
BONNET	Cast Bronze					Cast Bronze			Cast Bronze			Forged Brass			Forged Brass		
STEM	Cast Bronze					Cast Bronze			Special Brass			Special Brass			Special Brass		
DISC	Cast Bronze					Cast Bronze			Cast Bronze			Forged Brass			Forged Brass		
	Solder end joint					Solder end joint			Non-rising Stem			Non-rising Stem			Non-rising Stem		

TYPE	GATE					GATE			GATE			GATE			GATE		
Bronze&Brass																	
FIG	AK125E					AK125M			AK150E			AK150L			AK150LU		
PRESSURE	Class 125					Class 125			Class 150			Class 150			Class 150		
END CONNECTION	ASME B1.20.1					ASME B1.20.1			BS21 (JIS B0203)			ASME B1.20.1			ASME B1.20.1		
DIMENSIONS	inch	mm	L	H	D	L	H	D	L	H	D	L	H	D	L	H	D
	1/4	8	—	—	—	—	—	—	—	—	—	—	—	—	45	108	50
	3/8	10	43	86	50	—	—	—	43	86	50	—	—	—	46	108	50
	1/2	15	49	93	55	51	129	55	49	98	55	51	137	55	51	137	55
	3/4	20	53	110	60	56	155	60	53	114	70	56	157	70	56	157	70
	1	25	61	126	70	66	180	70	61	126	70	66	180	70	66	180	70
	1 1/4	32	64	145	80	68	216	80	68	145	80	68	216	80	68	216	80
	1 1/2	40	68	170	90	74	257	90	74	176	90	74	257	90	74	257	90
	2	50	74	189	100	84	296	100	84	201	100	84	296	100	84	297	100
	2 1/2	65	—	—	—	115	371	135	—	—	—	120	385	155	—	—	—
	3	80	—	—	—	130	432	155	—	—	—	140	432	155	—	—	—
	4	100	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
BODY	Cast Bronze					Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze		
BONNET	Cast Bronze					Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze		
STEM	Special Brass					Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze		
DISC	Cast Bronze					Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze		
	Non-rising Stem								Non-rising Stem								



TYPE	GATE					GATE			GATE			GATE			GATE		
Bronze&Brass																	
FIG	AK300LU					AS-FH			PN16S			PN16FH			PN20E		
PRESSURE	Class 300					Class 125			PN16			PN16			PN20		
END CONNECTION	ASME B1.20.1					AS 1722.1			BS21 (JIS B0203)			ASME B1.20.1			BS21 (JIS B0203)		
DIMENSIONS	inch	mm	L	H	D	L	H	D	L	H	D	L	H	D	L	H	D
	1/4	8	-	-	-	-	-	-	-	-	-	35	70	50	-	-	-
	3/8	10	46	125	60	-	-	-	-	-	-	38	73	50	-	-	-
	1/2	15	51	149	70	55	74	55	42	75	50	42	73	50	48	96	55
	3/4	20	56	173	80	60	86	55	47	86	55	47	87	55	53	111	60
	1	25	66	194	80	68	94	60	50	97	60	50	97	60	62	122	70
	1 1/4	32	74	228	100	78	116	70	60	117	70	60	118	70	69	141	80
	1 1/2	40	84	274	115	81	128	80	63	126	80	63	126	80	75	164	90
	2	50	98	313	135	94	158	90	72	154	90	72	154	90	86	197	100
	2 1/2	65	-	-	-	-	-	-	-	-	-	82	187	100	-	-	-
	3	80	-	-	-	-	-	-	-	-	-	92	205	115	-	-	-
	4	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BODY	Cast Bronze					Dezincification Resistance Brass			Cast Bronze			Forged Brass			Cast Bronze		
BONNET	Cast Bronze					Dezincification Resistance Brass			Forged Brass			Forged Brass			Forged Brass		
STEM	Cast Bronze					Dezincification Resistance Brass			Special Brass			Special Brass			Special Brass		
DISC	Copper-Nickel Alloy					Dezincification Resistance Brass			Forged Brass			Forged Brass			Cast Bronze		
						Non-rising Stem			Non-rising Stem			Non-rising Stem			Non-rising Stem		

TYPE	GATE					GLOBE			GLOBE			GLOBE			GLOBE		
Bronze&Brass																	
FIG	PN25H					A			Q			QA			G		
PRESSURE	PN25					Class 100			Class 100			Class 100			Class 125		
END CONNECTION	BS21 (JIS B0203)					BS21 (JIS B0203)			BS21			BS21 (JIS B0203)			BS21		
DIMENSIONS	inch	mm	L	H	D	L	H	D	L	H	D	L	H	D	L	H	D
	1/4	8	-	-	-	40	66	50	-	-	-	-	-	-	47	68	50
	3/8	10	-	-	-	42	67	50	-	-	-	-	-	-	53	88	55
	1/2	15	45	80	50	48	69	55	44	70	50	44	70	50	57	100	60
	3/4	20	50	90	55	53	80	60	50	73	55	50	73	55	66	110	70
	1	25	57	105	60	63	94	70	63	86	60	63	86	60	76	120	80
	1 1/4	32	61	118	70	73	104	80	-	-	-	73	108	80	88	140	90
	1 1/2	40	67	135	80	81	127	90	-	-	-	81	132	90	100	156	100
	2	50	74	159	90	94	147	100	-	-	-	94	150	100	120	185	115
	2 1/2	65	-	-	-	115	179	115	-	-	-	-	-	-	147	210	135
	3	80	-	-	-	131	200	135	-	-	-	-	-	-	162	229	155
	4	100	-	-	-	171	250	180	-	-	-	-	-	-	-	-	-
BODY	Cast Bronze					Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze		
BONNET	Cast Bronze					Forged Brass			Forged Brass			Forged Brass			Forged Brass		
STEM	Special Brass					Special Brass			Special Brass			Special Brass			Special Brass		
DISC	Special Brass					Cast Bronze			Uletan Rubber			PTFE			G/F PTFE		
	Non-rising Stem								Soft Seated disc			Soft Seated disc			Soft Seated disc		

Bronze &amp; Brass

Cast Iron

Ductile Iron

Stainless Steel

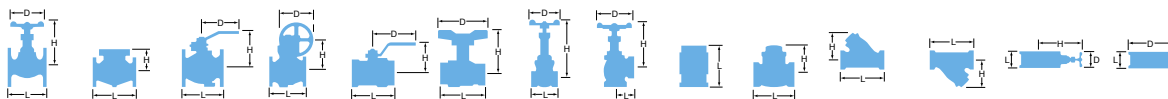
Carbon Steel





Butterfly Valve






Ball Valve

Ball Valve Seat

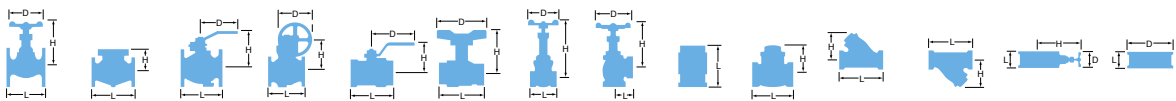
Actuated Valve













TYPE		GLOBE			GLOBE			GLOBE			GLOBE			GLOBE		
Bronze&Brass																
FIG		C			CA			B			BH			D		
PRESSURE		Class 150			Class 150			Class 150			Class 150			Class 150		
END CONNECTION		BS21 (JIS B0203)			BS21			JIS B2240			JIS B2240			BS21		
DIMENSIONS		inch	mm	L	H	D	L	H	D	L	H	D	L	H	D	D
	1/4	8	44	66	50	21	66	50	-	-	-	-	-	-	-	-
	3/8	10	44	68	50	24	68	50	-	-	-	-	-	-	-	-
	1/2	15	53	79	60	28	79	60	83	79	60	83	79	60	64	113
	3/4	20	65	93	70	34	93	70	88	94	70	88	94	70	78	138
	1	25	77	104	80	40	104	80	100	105	80	100	105	80	90	156
	1 1/4	32	85	127	90	47	127	90	113	127	90	113	127	90	105	184
	1 1/2	40	100	145	100	52	145	100	120	145	100	120	145	100	120	187
	2	50	119	174	115	61	174	115	145	174	115	145	174	115	145	212
	2 1/2	65	139	199	135	74	199	135	165	198	135	165	198	135	-	-
	3	80	158	215	155	85	215	155	177	215	155	177	215	155	-	-
	4	100	-	-	-	-	-	-	220	250	180	220	250	180	-	-
BODY		Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze		
BONNET		Forged Brass			Forged Brass			Forged Brass			Forged Brass			Forged Brass		
STEM		Special Brass			Special Brass			Special Brass			Special Brass			Special Brass		
DISC		Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze			G/F PTFE		
								Framed ends undrilled						Soft Seated disc		

TYPE		GLOBE			GLOBE			GLOBE			GLOBE			GLOBE		
Bronze&Brass																
FIG		DB			DBH			K			J			JB		
PRESSURE		Class 150			Class 150			5K			10K			10K		
END CONNECTION		JIS B2240			JIS B2240			BS21 (JIS B0203)			BS21 (JIS B0203)			JIS B2011		
DIMENSIONS		inch	mm	L	H	D	L	H	D	L	H	D	L	H	D	D
	1/4	8	-	-	-	-	-	-	-	-	50	86	50	-	-	-
	3/8	10	-	-	-	-	-	-	-	50	87	55	55	87	55	-
	1/2	15	82	113	60	82	113	60	60	90	60	65	93	60	85	93
	3/4	20	95	138	90	95	138	90	70	102	70	80	122	80	95	122
	1	25	108	156	100	108	156	100	80	112	80	90	135	90	110	135
	1 1/4	32	120	184	115	120	184	115	100	137	90	105	157	100	130	157
	1 1/2	40	140	187	115	140	187	115	110	142	100	120	171	115	150	171
	2	50	165	212	135	165	212	135	135	173	115	140	196	135	180	196
	2 1/2	65	190	244	155	190	244	155	160	203	135	180	232	155	210	232
	3	80	220	281	180	220	281	180	190	233	155	200	268	180	240	268
	4	100	270	321	225	270	321	225	-	-	-	-	-	-	280	323
BODY		Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze		
BONNET		Forged Brass			Forged Brass			Forged Brass			Forged Brass			Forged Brass		
STEM		Special Brass			Special Brass			Special Brass			Special Brass			Special Brass		
DISC		G/F PTFE			G/F PTFE			Cast Bronze			Cast Bronze			Cast Bronze		
		Soft Seated disc Framed ends undrilled			Soft Seated disc											





TYPE	GLOBE					GLOBE			GLOBE			GLOBE			GLOBE		
Bronze&Brass																	
FIG	150D					300D			C125C			C150D			AKA		
PRESSURE	Class 150					Class 300			Class 125			Class 150			Class 100		
END CONNECTION	BS21 (JIS B0203)					BS21 (JIS B0203)			ASME B16.18			ASME B16.18			ASME B1.20.1		
DIMENSIONS	inch	mm	L	H	D	L	H	D	L	H	D	L	H	D	L	H	D
	1/4	8	53	109	60	53	113	60	—	—	—	58	109	60	40	66	50
	3/8	10	55	109	60	55	113	60	—	—	—	61	109	60	42	67	50
	1/2	15	64	116	70	64	126	80	64	76	60	72	116	70	48	69	55
	3/4	20	78	136	90	78	139	90	84	98	70	95	136	90	53	80	60
	1	25	90	149	100	90	157	100	100	108	80	112	149	100	63	94	70
	1 1/4	32	105	173	115	105	187	115	115	137	90	126	173	115	73	104	80
	1 1/2	40	120	182	115	120	192	135	130	160	100	145	182	115	81	127	90
	2	50	145	209	135	145	221	155	155	180	115	180	209	135	94	147	100
	2 1/2	65	—	—	—	—	—	—	192	202	135	205	247	155	115	179	115
	3	80	—	—	—	—	—	—	232	246	155	244	275	180	131	200	135
	4	100	—	—	—	—	—	—	—	—	—	312	298	225	171	250	180
BODY	Cast Bronze					Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze		
BONNET	Cast Bronze					Cast Bronze			Forged Brass			Cast Bronze			Forged Brass		
STEM	Cast Bronze					Cast Bronze			Cast Bronze			Cast Bronze			Special Brass		
DISC	G/F PTFE					G/F PTFE			Cast Bronze			G/F PTFE			Cast Bronze		
	Soft Seated disc					Soft Seated disc			Solder end joint			Soft Seated disc Solder end joint					

TYPE	GLOBE					GLOBE			GLOBE			GLOBE			GLOBE		
Bronze&Brass																	
FIG	AKG					AKC			AKCA			AK125C			AK150D		
PRESSURE	Class 125					Class 150			Class 150			Class 125			Class 150		
END CONNECTION	ASME B1.20.1					ASME B1.20.1			ASME B1.20.1			ASME B1.20.1			ASME B1.20.1		
DIMENSIONS	inch	mm	L	H	D	L	H	D	L	H	D	L	H	D	L	H	D
	1/4	8	47	68	50	44	66	50	21	66	50	—	—	—	53	109	60
	3/8	10	53	88	55	44	68	50	24	68	50	—	—	—	55	109	60
	1/2	15	57	100	60	53	79	60	28	79	60	53	76	60	64	116	70
	3/4	20	66	110	70	65	93	70	34	93	70	65	98	70	78	136	90
	1	25	76	120	80	77	104	80	40	104	80	77	108	80	90	149	100
	1 1/4	32	88	140	90	85	127	90	47	127	90	85	137	90	105	173	115
	1 1/2	40	100	156	100	100	145	100	52	145	100	100	160	100	120	182	115
	2	50	120	185	115	119	174	115	61	174	115	119	180	115	145	209	135
	2 1/2	65	147	210	135	139	199	135	74	199	135	150	202	135	170	247	155
	3	80	162	229	155	158	215	155	85	215	155	178	246	155	200	275	180
	4	100	—	—	—	—	—	—	—	—	—	—	—	—	245	298	225
BODY	Cast Bronze					Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze		
BONNET	Forged Brass					Forged Brass			Forged Brass			Forged Brass			Cast Bronze		
STEM	Special Brass					Special Brass			Special Brass			Cast Bronze			Cast Bronze		
DISC	G/F PTFE					Cast Bronze			Cast Bronze			Cast Bronze			G/F PTFE		
	Soft Seated disc														Soft Seated disc		

Bronze &amp; Brass

Cast Iron

Ductile Iron

Stainless Steel

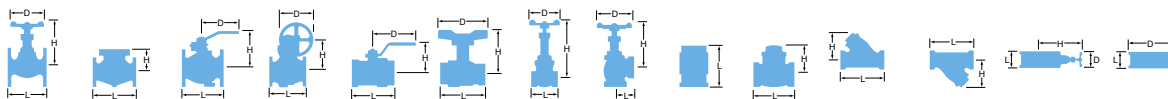
Carbon Steel






Butterfly Valve






Ball Valve

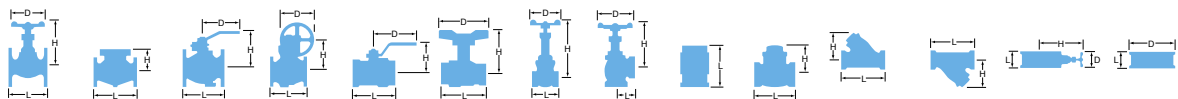
Ball Valve Seat






Actuated Valve








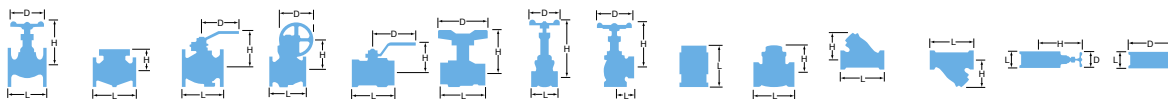
TYPE	GLOBE					GLOBE			GLOBE			GLOBE			GLOBE		
Bronze&Brass																	
FIG	AK300D					AK300J			PN16A			PN16G			PN20D		
PRESSURE	Class 300					Class 300			PN16			PN16			PN20		
END CONNECTION	ASME B1.20.1					ASME B1.20.1			BS21 (JIS B0203)			BS21 (JIS B0203)			BS21 (JIS B0203)		
DIMENSIONS	inch	mm	L	H	D	L	H	D	L	H	D	L	H	D	L	H	D
	1/4	8	53	113	60	53	113	60	—	—	—	—	—	—	—	—	—
	3/8	10	55	113	60	55	113	60	—	—	—	—	—	—	—	—	—
	1/2	15	64	126	80	64	126	80	48	69	55	57	100	60	64	113	60
	3/4	20	78	139	90	78	139	90	53	80	60	66	110	70	78	138	90
	1	25	90	157	100	90	159	100	63	94	70	76	120	80	90	156	100
	1 1/4	32	105	187	115	105	187	115	73	104	80	88	140	90	105	184	115
	1 1/2	40	120	192	135	120	195	135	81	127	90	100	156	100	120	187	115
	2	50	145	221	155	145	224	155	94	147	100	120	185	115	145	212	135
	2 1/2	65	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	3	80	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	4	100	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
BODY	Cast Bronze					Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze		
BONNET	Cast Bronze					Cast Bronze			Forged Brass			Forged Brass			Forged Brass		
STEM	Cast Bronze					Cast Bronze			Special Brass			Special Brass			Special Brass		
DISC	G/F PTFE					Cast Bronze			Cast Bronze			G/F PTFE			G/F PTFE		
	Soft Seated disc											Soft Seated disc			Soft Seated disc		

TYPE			GLOBE			LIFT CHECK			SWING CHECK			SWING CHECK			SWING CHECK		
Bronze&Brass																	
FIG			PN25C			F			R			O			OB		
PRESSURE			PN25			Class 150			Class 125			10K			10K		
END CONNECTION			BS21 (JIS B0203)			BS21 (JIS B0203)			BS21 (JIS B0203)			JIS B0203			JIS B2240		
DIMENSIONS	inch	mm	L	H	D	L	H	D	L	H	D	L	H	D	L	H	D
	1/4	8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	3/8	10	—	—	—	44	26	23	53	39	23	55	38.5	24	—	—	—
	1/2	15	53	79	60	53	28	28	60	39	28	65	43	29	85	43	95
	3/4	20	65	93	70	65	34	35	70	45	35	80	51.5	35	95	52	100
	1	25	77	104	80	77	42	43	80	52	43	90	58.5	44	110	59	125
	1 1/4	32	85	127	90	85	50	52	92	62	52	105	67	54	130	67	135
	1 1/2	40	100	145	100	100	56	59	102	67	59	120	73.5	60	150	74	140
	2	50	119	174	115	119	67	72	122	79	72	140	86	74	180	86	155
	2 1/2	65	—	—	—	139	79	88	150	91	87	180	97	90	210	97	175
	3	80	—	—	—	158	91	105	165	102	102	200	108	103	240	108	185
4	100	—	—	—	—	—	—	195	119	127	—	—	—	280	127	210	
BODY			Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze		
BONNET			Forged Brass			—			—			—			—		
CAP			—			Brass			Brass			Brass			Brass		
STEM			Special Brass			—			—			—			—		
HINGE PIN			—			—			Brass Rod			Brass Rod			Brass Rod		
DISC			Cast Bronze			Cast Bronze			Forged Brass			Cast Bronze			Cast Bronze		



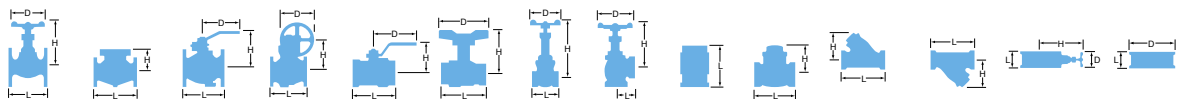
TYPE	SWING CHECK					WAFER CHECK			LIFT CHECK			LIFT CHECK			FOOT CHECK		
Bronze&Brass																	
FIG	YR					10BWZ			RF			VF			FT		
PRESSURE	Class 125					10K			10K			—			—		
END CONNECTION	BS21 (JIS B0203)					Wafer Type			BS21 (JIS B0203)			BS21			BS21 (JIS B0203)		
DIMENSIONS	inch	mm	L	H	D	L	H	D	L	H	D	L	H	D	L	H	D
	3/8	10	54	40	23	—	—	—	—	—	—	—	—	—	—	—	—
	1/2	15	56	40	28	—	—	—	53	—	28	37	—	24	—	—	—
	3/4	20	70	49	34	—	—	—	59	—	34	44	—	30	48	—	41
	1	25	80	58	41	—	—	—	67	—	41	51	—	36	58	—	52
	1 1/4	32	95	71	50	—	—	—	78	—	50	62	—	45	62	—	62
	1 1/2	40	110	80	57	54	132	55	84	—	57	69	—	52	70	—	70
	2	50	128	95	70	56	139	70	98	—	70	82	—	63	80	—	83
	2 1/2	65	—	—	—	56	146	70	—	—	—	—	—	—	90	—	102
	3	80	—	—	—	59	152	70	—	—	—	—	—	—	100	—	116
	4	100	—	—	—	66	165	70	—	—	—	—	—	—	—	—	—
	5	125	—	—	—	72	183	70	—	—	—	—	—	—	—	—	—
	6	150	—	—	—	78	208	80	—	—	—	—	—	—	—	—	—
	8	200	—	—	—	96	237	80	—	—	—	—	—	—	—	—	—
	10	250	—	—	—	109	289	90	—	—	—	—	—	—	—	—	—
	12	300	—	—	—	145	316	90	—	—	—	—	—	—	—	—	—
BODY	Bronze					Cast Bronze+NBR			Cast Bronze			Cast Bronze			Cast Bronze		
CAP	Brass					—			Bronze			Brass / Bronze			Bronze		
HINGE PIN	Copper					SUS304			—			—			—		
DISC	Bronze					Cast Bronze			NBR			Special Brass			NBR		
									Soft Seated disc						Soft Seated disc		




TYPE	FOOT CHECK					SWING CHECK			SWING CHECK			SWING CHECK			SWING CHECK		
Bronze&Brass																	
FIG	FTS					150YR			300YR			CR			CYR		
PRESSURE	—					Class 150			Class 300			Class 125			Class 125		
END CONNECTION	BS21 (JIS B0203)					BS21 (JIS B0203)			BS21			JIS B2011 / ASME B16.18(21/2 & 3)			ASME B16.18		
DIMENSIONS	inch	mm	L	H	D	L	H	D	L	H	D	L	H	D	L	H	D
	1/4	8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	3/8	10	—	—	—	54	39	23	—	—	—	56	39	—	—	—	—
	1/2	15	—	—	—	60	39	27	60	42	29	67	39	—	67	38	—
	3/4	20	25	—	31	72	49	33	72	51	35	89	45	—	86	47	—
	1	25	29	—	38	84	58	41	84	61	44	104	52	—	105	56	—
	1 1/4	32	32	—	47	99	70	51	99	74	54	120	62	—	121	69	—
	1 1/2	40	35	—	53	113	79	58	113	83	60	134	67	—	137	77	—
	2	50	43	—	66	131	95	71	131	98	74	164	79	—	170	92	—
	2 1/2	65	50	—	81	—	—	—	—	—	—	193	91	—	194	111	—
	3	80	51	—	94	—	—	—	—	—	—	213	102	—	222	127	—
	4	100	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
BODY	Cast Bronze					Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze		
CAP	—					Brass			Brass			Brass			Brass		
HINGE PIN	—					Copper			Copper			Copper			Copper		
DISC	NBR					Cast Bronze			Cast Bronze			Forged Brass			Cast Bronze		
	Soft Seated disc											Solder end joint			Solder end joint		



TYPE			SWING CHECK			LIFT CHECK			SWING CHECK			SWING CHECK			SWING CHECK		
Bronze&Brass																	
FIG			C150YR			CAF			AKYR			AK150YR			AK300YR		
PRESSURE			Class 150			Class 150			Class 125			Class 150			Class 300		
END CONNECTION			ASME B16.18			ASME B16.18			ASME B1.20.1			ASME B1.20.1			ASME B1.20.1		
DIMENSIONS	inch	mm	L	H	D	L	H	D	L	H	D	L	H	D	L	H	D
	1/4	8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	3/8	10	61	39	—	—	—	—	—	—	—	54	39	—	—	—	—
	1/2	15	67	39	—	61	—	—	56	40	—	60	39	—	60	42	—
	3/4	20	86	49	—	76	—	—	70	49	—	72	49	—	72	51	—
	1	25	105	58	—	89	—	—	80	58	—	84	58	—	84	61	—
	1 1/4	32	121	70	—	97	—	—	95	71	—	99	70	—	99	74	—
	1 1/2	40	137	79	—	110	—	—	110	80	—	113	79	—	113	83	—
	2	50	170	95	—	132	—	—	128	95	—	131	95	—	131	98	—
	2 1/2	65	194	114	—	—	—	—	156	114	—	162	114	—	—	—	—
	3	80	222	132	—	—	—	—	184	131	—	186	132	—	—	—	—
	4	100	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
BODY			Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze		
CAP			Brass			Cast Bronze			Brass			Brass			Brass		
HINGE PIN			Copper			—			Copper			Copper			Copper		
DISC			Cast Bronze			—			Cast Bronze			Cast Bronze			Cast Bronze		
SEAT			—			FKM			—			—			—		
			Solder end joint			Solder end joint											

TYPE			LIFT CHECK			SWING CHECK			SWING CHECK			LIFT CHECK			Y TYPE STRAINER		
Bronze&Brass																	
FIG			AKAF			PN16R			PN16YR			PN25F			Y		
PRESSURE			Class 150			PN16			PN16			PN25			10K		
END CONNECTION			ASME B1.20.1			BS21 (JIS B0203)			ASME B1.20.1			BS21 (JIS B0203)			BS21 (JIS B0203)		
DIMENSIONS	inch	mm	L	H	D	L	H	D	L	H	D	L	H	D	L	H	D
	1/4	8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	3/8	10	—	—	—	—	—	—	—	—	—	—	—	—	70	44	—
	1/2	15	53	26	—	60	39	—	56	40	28	53	28	28	80	49	—
	3/4	20	59	32	—	70	45	—	70	49	35	65	34	35	100	57	—
	1	25	67	39	—	80	52	—	80	58	43	77	42	43	115	70	—
	1 1/4	32	78	48	—	92	62	—	95	71	52	85	50	52	135	82	—
	1 1/2	40	84	54	—	102	67	—	110	80	59	100	56	59	160	98	—
	2	50	98	67	—	122	79	—	128	95	72	119	67	72	195	121	—
	2 1/2	65	—	—	—	—	—	—	—	—	—	—	—	—	230	148	—
	3	80	—	—	—	—	—	—	—	—	—	—	—	—	240	180	—
	4	100	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
BODY			Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze		
CAP			—			Brass			Brass			Brass			Brass		
HINGE PIN			—			Forged Brass			Copper			—			—		
DISC			—			Forged Brass			Cast Bronze			Cast Bronze			—		
SEAT			FKM			—			—			—			—		
SCREEN			—			—			—			—			SUS304		



TYPE			Y TYPE STRAINER			Y TYPE STRAINER			Y TYPE STRAINER		
Bronze&Brass											
FIG			CY			AKY			PN25Y		
PRESSURE			10K			Class 150			PN25		
END CONNECTION			Solder Joint			ASME B1.20.1			BS21 (JIS B0203)		
DIMENSIONS			L	H	D	L	H	D	L	H	D
	1/4	8	—	—	—	—	—	—	—	—	—
	3/8	10	—	—	—	70	44	—	—	—	—
	1/2	15	80	49	—	80	49	—	80	49	—
	3/4	20	105	57	—	100	57	—	100	57	—
	1	25	125	70	—	115	70	—	115	70	—
	1 1/4	32	145	82	—	135	82	—	135	82	—
	1 1/2	40	170	98	—	160	98	—	160	98	—
	2	50	210	121	—	195	121	—	195	121	—
	2 1/2	65	250	148	—	—	—	—	—	—	—
	3	80	280	180	—	—	—	—	—	—	—
	4	100	—	—	—	—	—	—	—	—	—
BODY			Bronze			Cast Bronze			Cast Bronze		
CAP			Brass			Brass			Brass		
STEM			—			—			—		
DISC			—			—			—		
SCREEN			SUS304			SUS304			SUS304		
			Solder end joint								

Bronze & Brass

Cast Iron

Ductile Iron

Stainless Steel

Carbon Steel

Butterfly Valve

Ball Valve

Ball Valve Seat

Actuated Valve

