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Madco valves & fittings Co.,Ltd.

Madco

Steel Valves

ISO9001 CE API 600 API 607 API 6D

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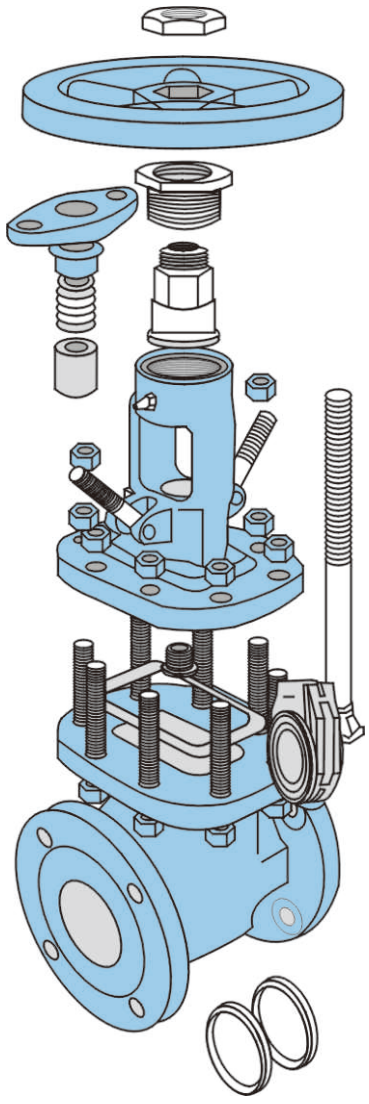
Steel Gate Valve



◎ Standards

Design and Manufacture: Cast steel gate valve to API600（ISO 10434）; Cast stainless steel gate valve to API 603 or API 600; Forged steel gate valve to API 602.Inspection and Test: API 598.

End flange dimension: ASME B16.5Jfor NPSŸ24J; ASME B16.47 series B, ASME B16.47 series A, MSS SP-44Jfor NPSJ24J.

BW end dimension: ASME B16.25.
Socket-weld dimension: ASME B16.11.
Face to face and end to end: ASME B16.10.
Pressure-temperature ratings: ASME B16.34.

◎ Gasket of Cover Flange

Stainless steel + flexible graphite combined gasket is used for Class150 and Class300 gate valve; Stainless steel + flexible graphite wounded gasket is used for Class600 gate valve and ring joint gasket is also optional for Class600 gate valve; Ring Joint gasket is used for Class 900 gate valve; Pressurized seal design is used for Class1500 ŸClass2500 gate valve.

◎ Packing Seal

Molded flexible graphite is used for packing material. PTFE or combined packing material can be also used if being requested by the customer. The internal surface of the stuffing box, of which area is contacted with the packing, is of excellent finish (Ra3.2μm). The stem surface, contacting with the packing, should be rolled and pressed after being precisely machined, so as to reach to the high finish and compactness (Ra0.8μm) and ensure the reliable tightness of the stem area.

Back Seating Design

All our gate valves have the back seating design. In most cases, the carbon steel gate valve is fitted with a renewable back seat. For stainless steel gate valve, the back seat is machined directly in the bonnet or is machined after welding. When the gate valve is at fully open position, the sealing of the back seat can be very reliable. However, as per the requirement of API 600, it is not advisable to add or change packing by the mean of back seating when the valve is Pressure containing.

◎ Stem Design

The stem is of integral forged design. The minimum diameter of the stem shall per the standard requirement. The connection of the stem and disc is T type. The strength of the connecting area is bigger than that of the T threaded part of the stem. The strength test of that area conforms to API 591.

Steel Gate Valve

◎ Body and Bonnet Connection

The body and bonnet of Class150 ~ Class900 gate valves are usually connected with studs and nuts. And the body and bonnet of Class1500 ~ Class2500 gate valves are usually of pressure seal design.

˅ Design of Disc

Gate Valves with NPS ⩾ 2 are of wedge flexible gate;
Gate valves with NPS < 2 are of wedge solid gate.

◎ Actuation

Hand wheel or gear box is usually used for gate valve actuation. Chain wheel and electric actuator can be also used for gate valve actuation if being requested by the customers.

◎ Stem Nut

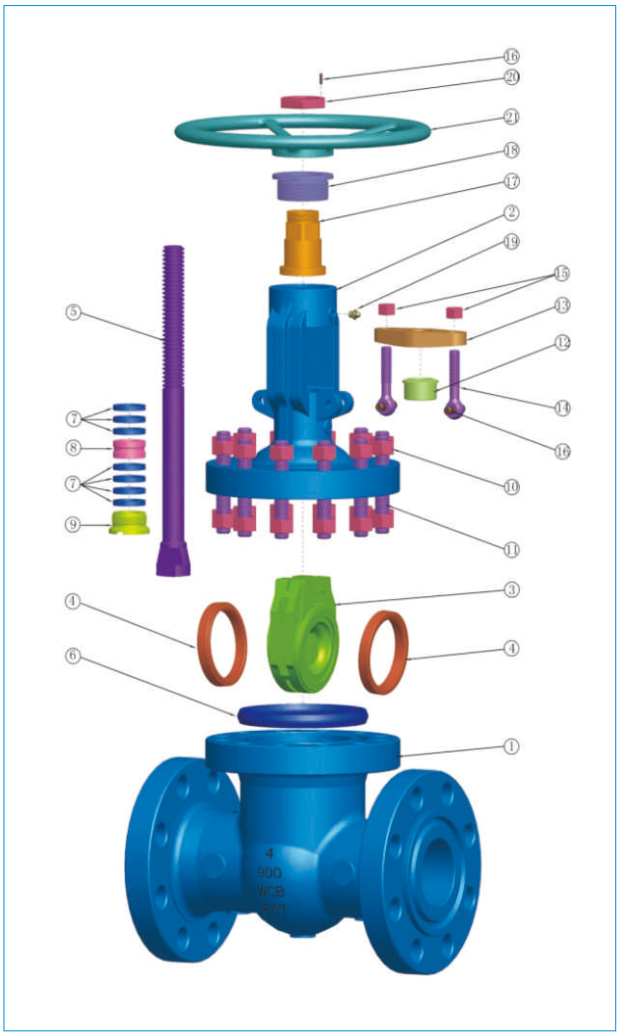
Usually, the stem nut is made of copper alloy. it is also can be made of ASTM A439 D2 if being requested by the customer. For large sized gate valves (NPS 10 for Class 150, NPS 8 for Class 300, NPS 6 for Class 600, NPS 5 for Class 900), rolling bearing is fitted at the two sides of the stem nut in order to minimize the open and close torque of the gate valve.

◎ Seat

For carbon steel gate valve, the seat is usually forged steel. The sealing surface of the seat is spray welded with hard alloy specified by the customer. Renewable threaded seat is used for NPS ⩽ 10 gate valves, and welded on seat can be also optional if being requested by the customer. Welded on seat is used for NPS ⩽10 carbon steel gate valves. For Stainless steel gate valve, integral seat is usually adopted, or to weld hard alloy directly integrally. Threaded or welded on seat is also optional for stainless steel gate valve if being requested by the customer.

˅ Belleville Spring Loaded Packing Impacting System

If being requested by the customer, the Belleville spring loaded packing impacting system can be adopted for enhancing the durability and reliability of the packing seal.



No	Part Name	No	Part Name	No	Part Name
1	Body	8	Lantern Ring	15	Gland Nut
2	Bonnet	9	Backseat Bushing	16	Pin
3	Wedge	10	Nut	17	Stem Nut
4	Seating Ring	11	Bolt	18	Retaining Nut
5	Stem	12	Gland	19	Nipple
6	Gasket	13	Gland Flange	20	H.W.Lock Nut
7	Stem Packing	14	Gland Eyebolt	21	Handwheel

Steel Gate Valve

Trim material

Trim code	Seat ring surface	Wedge seat surface	Stem & backseat bushing
1	13Cr	13Cr	A182 F6a
2	18Cr-8Ni	18Cr-8Ni	A182 F304
3	25Cr-20Ni	25Cr-20Ni	A182 F310
4	Hard 13Cr	Hard 13Cr	A182 F6a
5	Stellite	Stellite	A182 F6a
6	13Cr	Cu-Ni Alloy	Monel
7	13Cr	Hard 13Cr	A182 F6a
8	Stellite	13Cr	A182 F6a
9	Cu-Ni Alloy	Cu-Ni Alloy	Monel
10	18Cr-8Ni-Mo	18Cr-8Ni-Mo	A182 F316
11	Cu-Ni Alloy	Cu-Ni Alloy	Monel
12	Stellite	18Cr-8Ni-Mo	A182 F316
13	19Cr-29Ni	19Cr-29Ni	20 Alloy

ASTM Material list of API600 Rising Stem Cast Steel Gate Valve

No	Part Name	Carbon Steel to ASTM		Stainless Steel to ASTM				Alloy Steel to ASTM		
1	Body	A216 WCB	A352 LCB	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A217 WC6	A217 WC9	A217 C5
2	Bonnet	A216 WCB	A352 LCB	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A217 WC6	A217 WC9	A217 C5
3	Wedge	A216 WCB	A352 LCB	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A217 WC6	A217 WC9	A217 C5
4	Seating Ring	A105N	A350LF2	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A182 F11	A182 F22	A182 F5
5	Stem	A182 F6a	A182 F304	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F304		
6	Gasket	Graphite+SS304, PTFE								
7	Stem Packing	Flexible Graphite								
8	Lantern Ring	A182 F6a	A182 F304	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F304		
9	Backseat Bushing	A182 F6a	A182 F304	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F304		
10	Nut	A194 2H	A194 4	A194 8				A194 7		
11	Bolt	A193 B7	A320 L7	A193 B8				A193 B16		
12	Gland	F6a	A182 F304	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F304		
13	Gland Flange	A216 WCB	A352 LCB	A351 CF8	A351 CF8	A351 CF8	A351 CF8	A217 WC6	217 WC9	A217 C5
14	Gland Eyebolt	A193 B7		A193 B8				A193 B16		
15	Gland Nut	A194 2H		A194 8				A194 7		
16	Pin	ANSI 1045		A182 F304				ANSI 1045		
17	Stem Nut	A439 D2 / B148 952A								
18	Retaining Nut	ANSI 1020								
19	Nipple	Copper Alloy								
20	H.W.Lock Nut	ANSI 1020								
21	Handwheel	A197								

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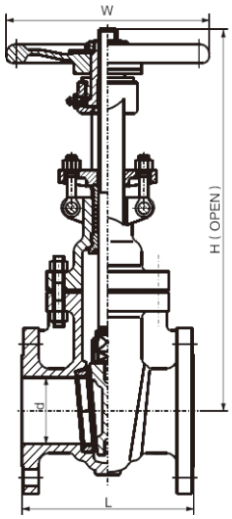
Steel Gate Valve

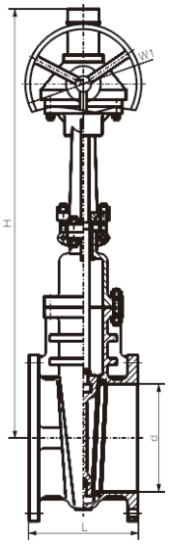
◎ Construction feature

Bolted bonnet
Fexible or solid wedge
Renewable seat
(Threaded or welded seat ring)
⩒8" Yoke integral with bonnet
⩓10" Spearete yoke bolted to bonnet

◎API598 Pressure Test

Pressure ratings ..Class150
Hydraulic Shell test ..3.2MPa
Hydraulic Seat test ..2.2MPa
Air test ..0.6MPa





Main size of outside & weight

Class	Size		Dimensions (mm)								Weight (Kg)	
	NPS	DN	L			d	H	H1	W	W1	Hand wheel	Gear box
			RF	RTJ	BW							
Class 150	2	50	178	191	216	51	400	–	200	–	19	–
	2 1/2	65	190	203	241	64	435	–	200	–	25	–
	3	80	203	216	283	76	515	–	250	–	33	–
	4	100	229	241	305	102	595	–	280	–	49	–
	5	125	254	267	381	127	725	–	280	–	62	–
	6	150	267	279	403	152	780	820	300	310	77	104
	8	200	292	305	419	203	975	1020	350	310	123	150
	10	250	330	343	457	254	1150	1200	400	310	188	215
	12	300	356	368	502	305	1380	1430	450	310	288	315
	14	350	381	394	572	337	1545	1580	500	310	385	435
	16	400	406	419	610	387	1733	1780	500	460	500	552
	18	450	432	445	660	438	1915	1990	500	460	601	653
	20	500	457	470	711	489	2122	2220	600	460	764	816
	24	600	508	521	813	591	2520	2600	600	460	1007	1185
	28	700	610	623	914	684	–	3050	–	600	–	1880
	30	750	610	623	914	735	–	3130	–	600	–	2300
	32	800	660	673	965	779	–	3280	–	600	–	2550
	36	900	711	724	1016	874	–	3720	–	600	–	3390
	40	1000	762	–	1066	–	–	4100	–	–	–	4880
	42	1050	787	–	1092	–	–	4300	–	–	–	5300
	48	1200	864	–	1168	–	–	5080	–	–	–	7520

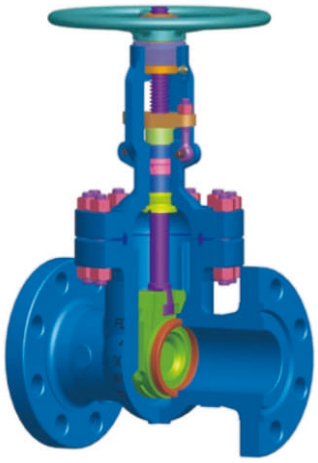
Steel Gate Valve

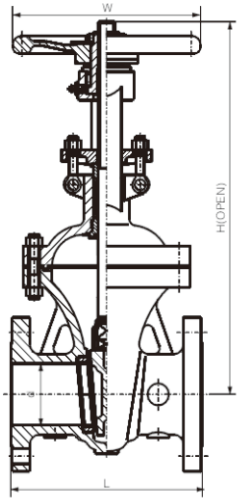
◎ Construction feature

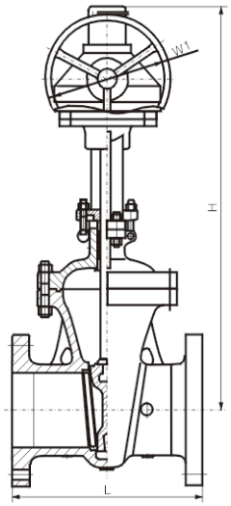
Bolted bonnet
Fexible or solid wedge
Renewable seat
(Threaded or welded seat ring)
⩒8" Yoke integral with bonnet
⩓10" Spearete yoke bolted to bonnet

◎API598 Pressure Test

Pressure ratings ..Class300
Hydraulic Shell test ..7.8MPa
Hydraulic Seat test ..5.7MPa
Air test ..0.6MPa







Main size of outside & weight

Class	Size		Dimensions (mm)								Weight(Kg)	
	NPS	DN	L			d	H	H1	W	W1	Hand wheel	Gear box
			RF	RTJ	BW							
Class 300	2	50	216	232	216	51	420	–	200	–	25	–
	2 1/2	65	241	257	241	64	446	–	200	–	30	–
	3	80	283	298	283	76	537	–	250	–	48	–
	4	100	305	321	305	102	619	650	280	310	73	100
	5	125	381	397	381	127	722	750	300	310	99	126
	6	150	403	419	403	152	806	835	350	310	130	186
	8	200	419	435	419	203	1000	1030	400	310	208	235
	10	250	457	473	457	254	1240	1280	450	310	334	386
	12	300	502	518	502	305	1425	1460	500	310	450	502
	14	350	762	778	762	337	1585	1620	600	460	704	756
	16	400	838	854	838	387	1790	1830	500	460	923	965
	18	450	914	930	914	438	1960	2000	650	460	1131	1224
	20	500	991	1010	991	489	2158	2220	750	460	1345	1400
	24	600	1143	1165	1143	584	2576	2620	900	600	2122	2385
	28	700	1346	1372	1346	684	–	3080	–	600	–	3300
	30	750	1397	1422	1397	735	–	3180	–	600	–	3550
	32	800	1524	1553	1524	779	–	3300	–	600	–	4400
	36	900	1727	1756	1727	874	–	3760	–	600	–	6050

Steel Gate Valve

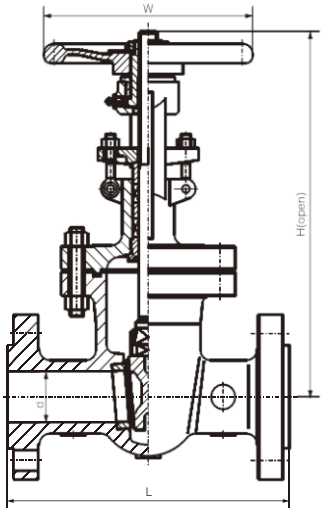
◎ Construction feature

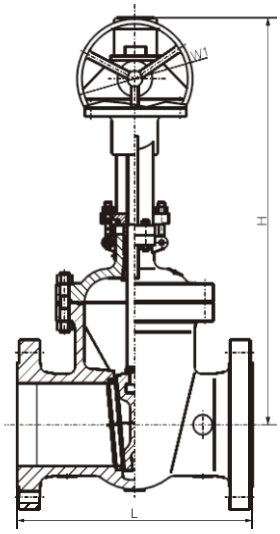
Bolted bonnet
Fexible or solid wedge
Renewable seat
(Threaded or welded seat ring)
⩒6" Yoke integral with bonnet
⩓8" Spearete yoke bolted to bonnet

◎API598 Pressure Test

Pressure ratings ..Class600
Hydraulic Shell test ..15.6MPa
Hydraulic Seat test ..11.4MPa
Air test ..0.6MPa

Pressure ratings ..Class900
Hydraulic Shell test ..23.3MPa
Hydraulic Seat test ..17.1MPa
Air test ..0.6MPa





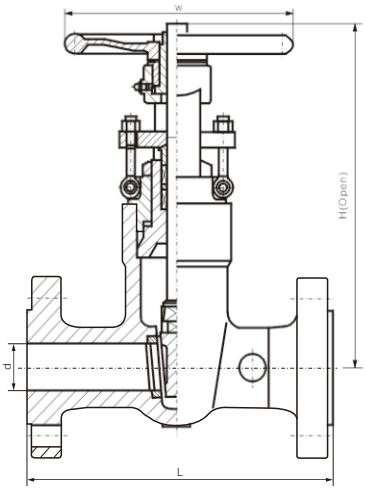
Main size of outside & weight

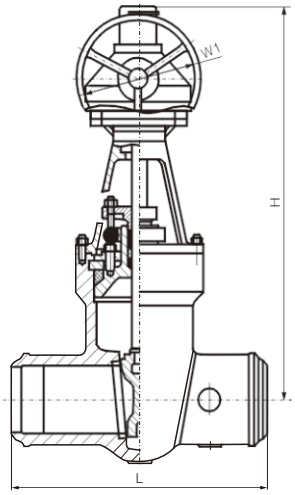
Class	Size		Dimensions (mm)								Weight(Kg)	
	NPS	DN	L			d	H	H1	W	W1	Hand wheel	Gear box
			RF	RTJ	BW							
Class 600	2	50	292	295	292	51	444	–	200	–	32	–
	2 1/2	65	330	333	330	64	500	–	250	–	52	–
	3	80	356	359	356	76	558	585	280	310	60	87
	4	100	432	435	432	102	665	695	300	310	107	134
	5	125	508	511	508	127	760	790	350	310	175	227
	6	150	559	562	559	152	868	900	450	310	216	268
	8	200	660	664	660	200	1073	1110	500	310	399	451
	10	250	787	791	787	248	1263	1300	650	460	605	657
	12	300	838	841	838	298	1600	1650	700	460	851	893
	14	350	889	892	889	327	1705	1750	900	460	1177	1232
	16	400	991	994	991	375	1835	1900	900	460	1513	1568
	18	450	1092	1095	1092	419	–	2020	–	600	–	1980
	20	500	1194	1200	1194	464	–	2172	–	600	–	2460
	24	600	1397	1407	1397	559	–	2650	–	600	–	3650
Class 900	2	50	368	371	368	47	500	–	280	–	70	–
	2 1/2	65	419	422	419	57	550	–	280	–	110	–
	3	80	381	384	381	73	610	660	300	310	140	167
	4	100	457	460	457	98	702	750	350	310	200	227
	5	125	559	562	559	121	850	900	400	310	258	285
	6	150	610	613	610	146	980	1060	500	460	358	410
	8	200	737	740	737	190	1100	1140	650	460	550	600
	10	250	838	841	838	234	1320	1370	700	460	1000	1100
	12	300	965	968	965	282	1500	1560	900	460	1215	1310
	14	350	1029	1038	1029	311	1900	1950	900	600	1600	1700
	16	400	1130	1140	1130	354	2050	2100	900	600	2150	2330

Steel Gate Valve

◎ Construction feature

Bolted bonnet
Fexible or solid wedge
Renewable seat
(Threaded or welded seat ring)
⩒6" Yoke integral with bonnet
⩓8" Spearete yoke bolted to bonnet





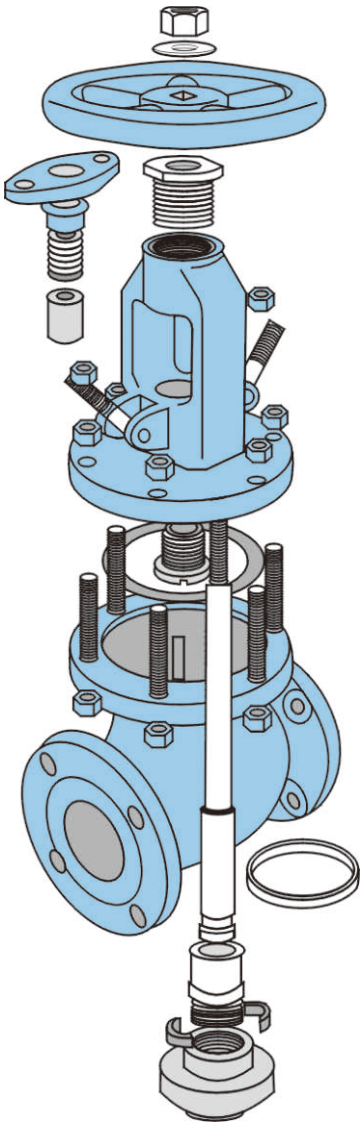
◎API598 Pressure Test

Pressure ratings ..Class1500
Hydraulic Shell test ..38.8MPa
Hydraulic Seat test ..28.5MPa
Air test ..0.6MPa

Main size of outside & weight

Class	Size		Dimensions (mm)								Weight(Kg)	
	NPS	DN	L			d	H	H1	W	W1	Hand wheel	Gear box
			RF	RTJ	BW							
Class 1500	2	50	368	371	368	47	510	–	280	–	70	–
	2 1/2	65	419	422	419	57	560	–	300	–	110	–
	3	80	470	473	470	70	620	670	350	310	175	202
	4	100	546	549	546	92	728	770	400	310	270	300
	5	125	673	676	673	111	870	920	450	310	378	405
	6	150	705	711	705	136	1000	1070	500	460	520	575
	8	200	832	841	832	174	1130	1180	750	460	820	915
	10	250	991	1000	991	222	1360	1410	900	600	1560	1750
	12	300	1130	1146	1130	263	–	1620	–	600	–	2120
	14	350	1257	1276	1257	289	–	2020	–	600	–	2600
	16	400	1384	1407	1384	330	–	2180	–	600	–	3450
Class 2500	2	50	451	454	451	35	530	580	280	310	100	130
	2 1/2	65	508	514	508	47	580	630	300	310	150	180
	3	80	578	584	578	57	650	700	350	310	245	275
	4	100	673	683	673	73	750	800	400	310	390	420
	5	125	794	807	794	92	900	960	500	460	550	580
	6	150	914	927	914	111	1040	1100	600	460	780	835
	8	200	1022	1038	1022	146	1150	1200	750	460	1260	1355
	10	250	1270	1292	1270	184	1400	1460	900	600	2380	2565
	12	300	1422	1445	1422	219	–	1660	–	600	–	3250

Steel Globe Valve



◎ Standards

Design and Manufacture: Cast steel globe valve to BS 1873 and ASME B16.34； Forged steel globe valve to API 602.
Inspection and Test: API 598.
End flange dimension: ASME B16.5.
BW end dimension: ASME B16.25.
Socket-weld dimension: ASME B16.11.
Face to face and end to end: ASME B16.10.
Pressure-temperature ratings: ASME B16.34.

◎ The features of globe valve

Bolted Bonnet; Outside Screw and Yoke; Rising stems; Metallic seating surfaces.

◎ Body and Bonnet Connection

The body and bonnet of Class150 ~ Class900 globe valves are usually with studs and nuts. And the body and bonnet of Class1500 ~ Class2500 globe valves are usually of pressure seal design.

◎ Gasket of Cover Flange

Stainless steel + flexible graphite wounded gasket is used for Class150 and Class300 globe valve. Stainless steel + flexible graphite wounded gasket is used for Class 600, and ring joint gasket is also optional for Class600. Ring joint gasket is used for Class900 globe valve. Pressurized seal design is used for Class 1500 ~ Class2500 globe valve.

◎ Actuation

Hand wheel, impact hand wheel & gear box is usually used for globe valve actuation. Chain wheel and electric actuator can be also used for globe valve actuation if being requested by the customers.

◎ Packing Seal

Molded flexible graphite is used for packing material. PTFE or combined packing material can be also used if being requested by the customer. The internal surface of the stuffing box, of which area is contacted with the packing, is of excellent finish (Ra 3.2 μ m). The stem surface, contacting with the packing, should be rolled and pressed after being precisely machined, so as to reach to the high finish and com-pactness (Ra 0.8 μ m) and ensure the reliable tightness of the stem area.

◎ Belleville Spring Loaded Packing Impacting System

If being requested by the customer, the Belleville spring loaded packing impacting can be adopted for enhancing the durability and reliability of the packing seal.

Steel Globe Valve

◎ Back Seating Design

All our globe valves have the back seat design. In most cases, the carbon steel globe valve is fitted with a renewable back seat. For stainless steel globe valve, the back seat is machined directly in the bonnet or is machined after welding. When the globe valve is at fully open position, the sealing of the back seat can be very reliable. However, as per the requirement ofAPI, it is not advisable to add or change packing by the mean of back seating when the valve is pressure containing.

◎ Seat

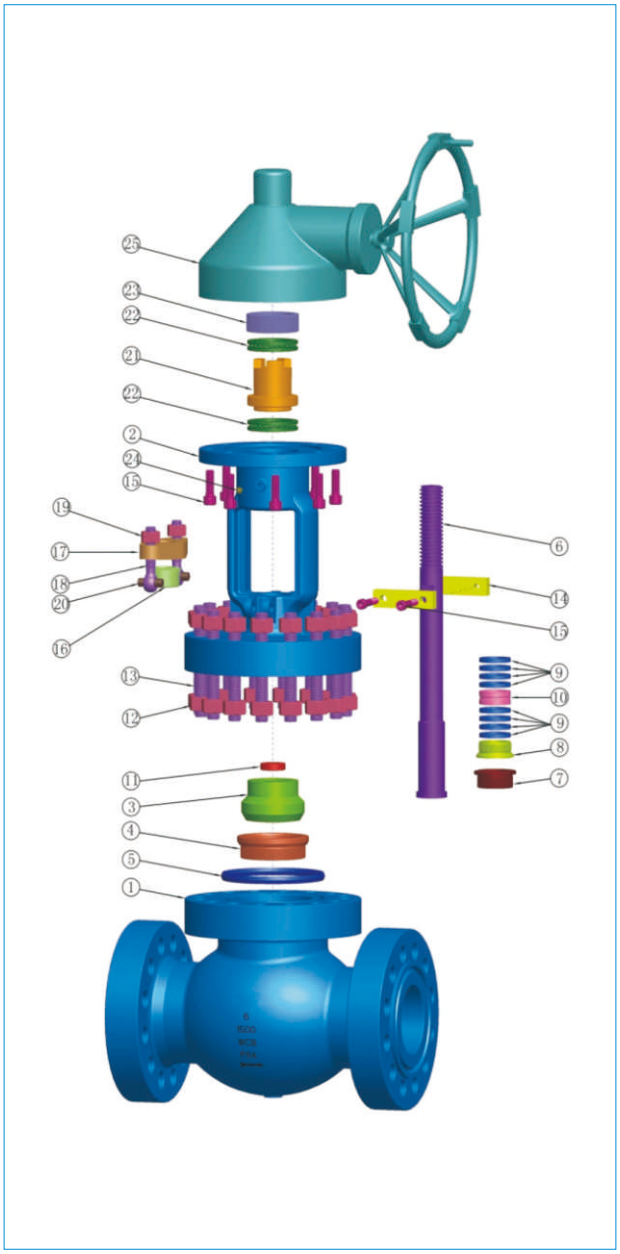
For carbon steel globe valve, the seat is usually forged steel. The sealing surface of the seat is spray welded with hard alloy specified by the customer. Renewable threaded seat is used for NPS⩽10 globe valve and welded on seat can be also optional if being requested by the customer. Welded on seat is used for NPS ⩾ 12 carbon steel globe valves. For stainless steel globe valve, integral seat is usually adopted, or to weld hard alloy directly integrally. Threaded or welded on seat is also optional for stainless steel globe valve if being requested by the customer.

◎ Stem Design

The stem is of integral forged design. The minimum diameter of the stem shall per the standard requirement.

◎ Stem Nut

Usually, the stem nut is copper alloy. It is also can be made of ASTM A439 D2 if being requested by the customer. For large sized globe valve, rolling bearing is fitted at the two sides of stem nut in order to minimize the open and close torque of the globe valve.



No	Part Name	No	Part Name	No	Part Name
1	Body	10	Lantern Ring	19	Gland Nut
2	Bonnet	11	Thrust Washer	20	Pin
3	Disc	12	Nut	21	Stem Nut
4	Seating Ring	13	Bolt	22	Bearing
5	Gasket	14	Anti–rotating Device	23	Retaining Nut
6	Stem	15	Screw	24	Nipple
7	Disc Nut	16	Gland	25	Bevel gearbox
8	Backseat Bushing	17	Gland Flange		
9	Stem Packing	18	Gland Eyebolt		

Steel Globe Valve

Trim material

Trim code	Seat ring surface	Wedge seat surface	Stem & backseat bushing
1	13Cr	13Cr	A182 F6a
2	18Cr-8Ni	18Cr-8Ni	A182 F304
3	25Cr-20Ni	25Cr-20Ni	A182 F310
4	Hard 13Cr	Hard 13Cr	A182 F6a
5	Stellite	Stellite	A182 F6a
6	13Cr	Cu-Ni Alloy	Monel
7	13Cr	Hard 13Cr	A182 F6a
8	Stellite	13Cr	A182 F6a
9	Cu-Ni Alloy	Cu-Ni Alloy	Monel
10	18Cr-8Ni-Mo	18Cr-8Ni-Mo	A182 F316
11	Cu-Ni Alloy	Cu-Ni Alloy	Monel
12	Stellite	18Cr-8Ni-Mo	A182 F316
13	19Cr-29Ni	19Cr-29Ni	20 Alloy

ASTM Material list of BS1873 Cast Steel Globe Valve

No	Part Name	Carbon Steel to ASTM		Stainless Steel to ASTM				Alloy Steel to ASTM		
1	Body	A216 WCB	A352 LCB	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A217 WC6	A217 WC9	A217 C5
2	Bonnet	A216 WCB	A352 LCB	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A217 WC6	A217 WC9	A217 C5
3	Disc	A216 WCB	A352 LCB	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A217 WC6	A217 WC9	A217 C5
4	Seating Ring	A105N	A350LF2	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A182 F11	A182 F22	A182 F5
5	Gasket	Graphite+SS304, PTFE								
6	Stem	A182 F6a	A182 F304	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F304		
7	Disc Nut	A182 F6a	A182 F304	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F304		
8	Backseat Bushing	A182 F6a	A182 F304	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F304		
9	Stem Packing	Flexible Graphite								
10	Lantern Ring	A182 F6a	A182 F304	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F304		
11	Thrust Washer	A182 F6a	A182 F304	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F304		
12	Nut	A194 2H	A194 4	A194 8				A194 7		
13	Bolt	A193 B7	A320 L7	A193 B8				A193 B16		
14	Anti–rotating Device	ANSI 1020		A182 F304				ANSI 1020		
15	Gland	A194 2H		A194 8				A194 2H		
16	Screw	F6a	A182 F304	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F304		
17	Gland Flange	A216 WCB	A352 LCB	A351 CF8	A351 CF8	A351 CF8	A351 CF8	A217 WC6	A217 WC9	A217 C5
18	Gland Eyebolt	A193 B7		A193 B8				A193 B16		
19	Gland Nut	A194 2H		A194 8				A194 7		
20	Pin	ANSI 1045		A182 F304				ANSI 1045		
21	Stem Nut	A439 D2/ B148 952A								
22	Bearing	/								
23	Retaining Nut	ANSI 1020								
24	Nipple	Copper Alloy								
25	Bevel gearbox	/								

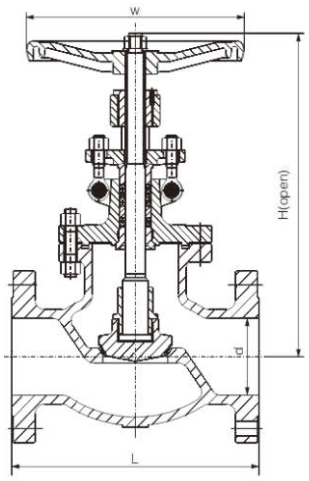
Steel Globe Valve

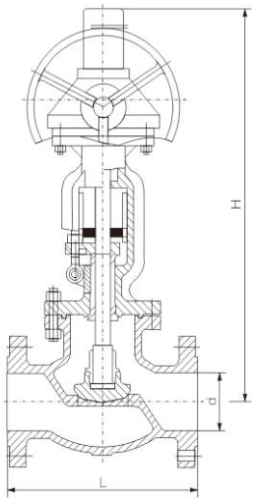
◎ Construction feature

Bolted bonnet
Flat or plug type disc
Renewable seat
(Threaded or welded seat ring)
∧10" Thrust bearing design

◎API598 Pressure Test

Pressure ratings ..Class150
Hydraulic Shell test ..3.2MPa
Hydraulic Seat test ..2.2MPa
Air test ..0.6MPa





Class	Size		Dimensions (mm)								Weight (Kg)	
	NPS	DN	L			d	H	H1	W	W1	H.W	G.O
			RF	RTJ	BW							
Class 150	2	50	203	216	203	51	330	–	200	–	19	–
	2 1/2	65	216	229	216	64	360	–	250	–	27	–
	3	80	241	254	241	76	390	–	280	–	36	–
	4	100	292	305	292	102	445	–	300	–	53	–
	5	125	356	369	356	127	480	–	350	–	75	–
	6	150	406	419	406	152	520	556	350	310	94	126
	8	200	495	508	495	203	600	658	400	310	148	180
	10	250	622	635	622	254	773	805	450	460	242	291
	12	300	698	711	698	305	880	955	500	460	438	480
	14	350	787	800	787	337	950	1100	600	460	–	600
	16	400	914	927	914	387	996	1175	600	460	–	850
	20	500	978	991	978	488	–	1450	–	600	–	1650
	24	600	1295	1308	1295	590	–	1690	–	600	–	2200

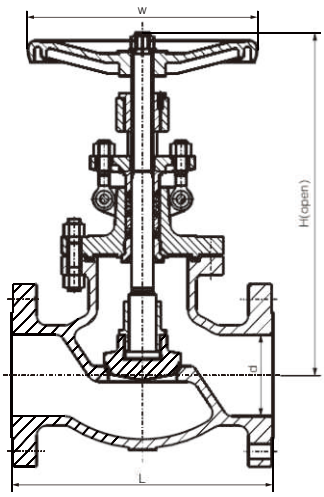
Steel Globe Valve

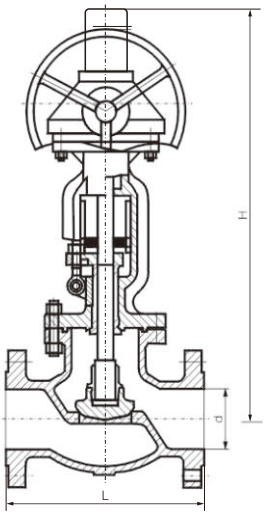
◎ Construction feature

Bolted bonnet
Flat or plug type disc
Renewable seat
(Threaded or welded seat ring)
⩚10" Thrust bearing design

◎API598 Pressure Test

Pressure ratings ..Class300
Hydraulic Shell test ..7.8MPa
Hydraulic Seat test ..5.7MPa
Air test ..0.6MPa





Main size of outside & weight

Class	Size		Dimensions (mm)								Weight (Kg)	
	NPS	DN	L			d	H	H1	W	W1	H.W	G.O
			RF	RTJ	BW							
Class 300	2	50	267	283	267	51	385	–	200	–	25	–
	2 1/2	65	292	308	292	64	420	–	200	–	42	–
	3	80	318	333	318	76	440	–	280	–	46	–
	4	100	356	371	356	102	515	–	350	–	74	–
	5	125	400	416	400	127	580	–	350	–	111	–
	6	150	444	460	444	152	660	690	400	310	165	195
	8	200	559	575	559	203	900	950	550	460	275	327
	10	250	622	638	622	254	950	990	600	460	400	452
	12	300	711	727	711	305	1030	1080	700	460	624	725
	14	350	762	854	762	337	1130	1155	–	600	–	880
	16	400	864	879	864	387	1310	1325	–	600	–	1300
	18	450	977	–	977	431	–	1473	–	720	–	1600
	20	500	1016	–	1016	482	–	1574	–	720	–	2100

Steel Globe Valve

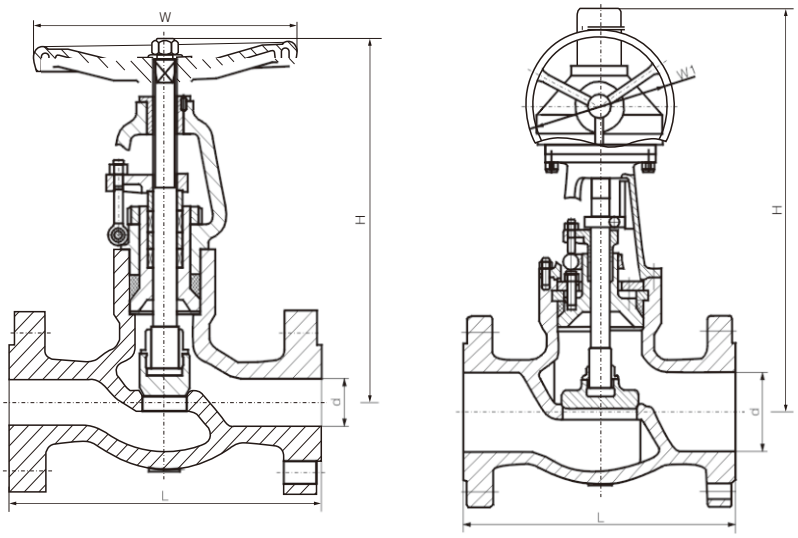
◎ Construction feature

Bolted bonnet
Flat or plug type disc
Renewable seat
(Threaded or welded seat ring)
∧6" Thrust bearing design

◎API598 Pressure Test

Pressure ratings ..Class600
Hydraulic Shell test ..15.6MPa
Hydraulic Seat test ..11.4MPa
Air test ..0.6MPa

Pressure ratings ..Class900
Hydraulic Shell test ..23.3MPa
Hydraulic Seat test ..17.1MPa
Air test ..0.6MPa

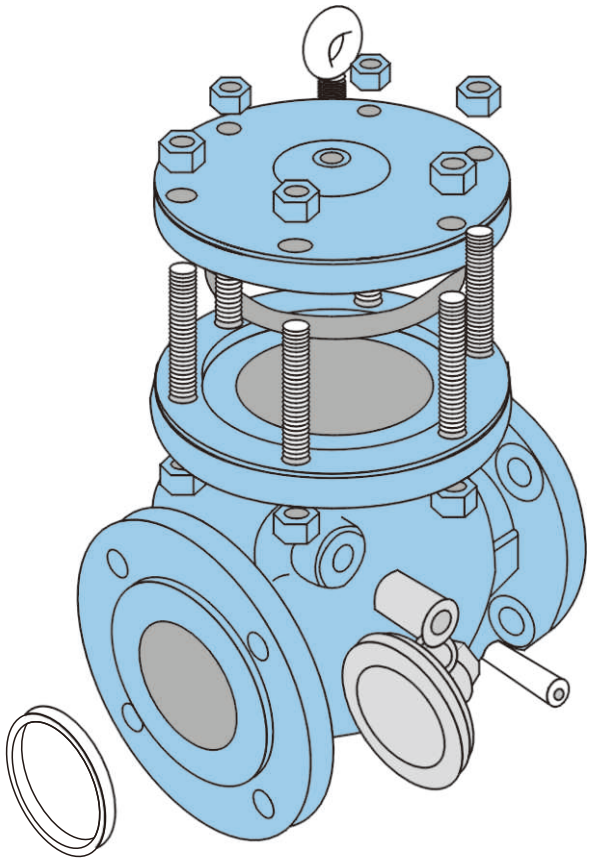


Main size of outside & weight

Class	Size		Dimensions (mm)								Weight (Kg)	
	NPS	DN	L			d	H	H1	W	W1	H.W	G.O
			RF	RTJ	BW							
Class 600		50	292	295	292	51	360	–	250	–	32	–
	2 1/2	65	330	333	330	64	410	–	280	–	42	–
		80	356	359	356	76	465	–	300	–	63	–
	3	100	432	435	432	102	545	575	400	310	107	138
	4	125	508	511	508	127	625	660	500	310	185	215
	5	150	559	562	559	152	785	820	550	460	290	342
	6	200	660	664	660	200	930	960	650	460	540	645
Class 900	8	50	368	371	368	47	480	–	350	–	55	–
	2 1/2	65	419	422	419	57	520	–	350	–	68	–
		80	381	384	381	73	564	630	400	310	95	128
	3	100	457	460	457	98	685	720	450	310	160	210
	4	125	559	562	559	121	780	840	550	460	270	325
	5	150	610	613	610	146	950	1015	650	460	410	480
	6											

Class	DN		RTJ							
	mm	in	L	D	D1	D2	b	n-ϕd	H	DO
Class 1500	65	21/2	422	244	190.5	108.0	49.0	8–ϕ28.5	461	400
	80	3	473	267	203.2	136.5	55.7	8–ϕ32	554	450
	100	4	549	311	241.3	161.9	61.8	8–ϕ35	639	500
	125	5	676	375	292.1	193.7	81.1	8–ϕ41	780	560
	150	6	711	394	317.5	211.1	92.1	12–ϕ38	904	630
	200	8	841	483	393.7	269.9	103.0	12–ϕ44.5	1140	680

Steel Check Valve



◎ Reliable seat seal

Design and Manufacture: Cast steel check valve to BS1868, ASME B16.34 and API 6D;
Forged steel check valve to API 602.
Inspection and Test: API 598.
End flange dimension: ASME B16.5Jfor NPSŸ24JJ
ASME B 16.47 series B, ASME B16.47 series A,
MSS SP-44Jfor NPSJ24J.
BW end dimension: ASME B16.25.
Socket-weld dimension: ASME B16.11.
Face to face and end to end: ASME B16.10.
Pressure-temperature ratings: ASME B16.34.

◎ Seat

For carbon steel check valve, the seat is usually forged Steel. The sealing surface of the seat is spray welded with hard alloy Specified by the customer. Renewable threaded seat is used for NPS≤10 check valves, and welded on seat can be also optional if being requested by the customer. Welded on seat is used for NPS ≥12 carbon steel check valves. For stainless steel check Valve, integral seat is usually adopted, or to weld hard alloy directly integrally. Threaded or welded on seat is also optional for stainless steel check valve if being requested by the customer.

◎ The features of check valve

Bolted Bonnet;
Swing and lift disc;
Metallic seating surfaces.

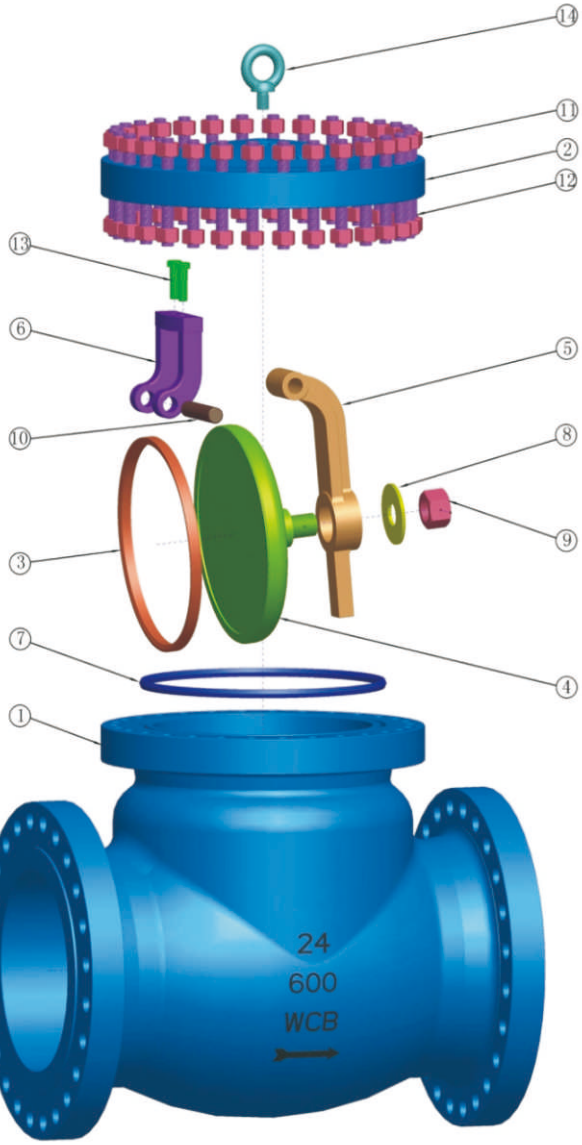
◎ Body-To-Bonnet Joint

Stainless steel + flexible graphite wounded gasket is used for Class150 and Class300 check valve; Stainless steel + flexible graphite wounded gasket is used for Class600 check valve, and joint gasket is also optional for Class600 check valve; Ring joint gasket is used for Class900 check valve; Pressure seal design is used for Class1500 ~ Class2500 check valves.

◎ Body and Bonnet Connection

The body and bonnet of Class150～Class900 check valves are usually with studs and nuts. And the body and bonnet of Class1500～Class2500 check valves are usually of pressure seal design.

Steel Check Valve



No	Part Name	No	Part Name	No	Part Name
1	Body	6	Yoke	11	Nut
2	Cover	7	Gasket	12	Bolt
3	Seat Ring	8	Disc Washer	13	Screw
4	Disc	9	Disc Nut	14	Lifting Lug
5	Hinge	10	Pin		

Steel Check Valve

Trim material

Trim code	Seat ring surface	Wedge seat surface	Hinge Pin
1	13Cr	13Cr	A182 F6a
2	18Cr-8Ni	18Cr-8Ni	A182 F304
3	25Cr-20Ni	25Cr-20Ni	A182 F310
4	Hard 13Cr	Hard 13Cr	A182 F6a
5	Stellite	Stellite	A182 F6a
6	13Cr	Cu-Ni Alloy	Monel
7	13Cr	Hard 13Cr	A182 F6a
8	Stellite	13Cr	A182 F6a
9	Cu-Ni Alloy	Cu-Ni Alloy	Monel
10	18Cr-8Ni-Mo	18Cr-8Ni-Mo	A182 F316
11	Cu-Ni Alloy	Cu-Ni Alloy	Monel
12	Stellite	18Cr-8Ni-Mo	A182 F316
13	19Cr-29Ni	19Cr-29Ni	20 Alloy

ASTM Material list of BS1868 Swing Check Valve

No.	Part name	Carbon Steel to ASTM		Stainless Steel to ASTM				Alloy Steel to ASTM		
1	Body	A216 WCB	A352 LCB	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A217 WC6	A217 WC9	A217 C5
2	Cover	A216 WCB	A352 LCB	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A217 WC6	A217 WC9	A217 C5
3	Seat Ring	A105N	A352 LF2	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A182 F11	A182 F22	A182 F5
4	Disc	A216 WCB	A352 LCB	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A217 WC6	A217 WC9	A217 C5
5	Hinge	A216 WCB	A352 LCB	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A217 WC6	A217 WC9	A217 C5
6	Yoke	A216 WCB	A352 LCB	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A217 WC6	A217 WC9	A217 C5
7	Gasket	Graphite+SS304, PTFE								
8	Disc Washer	A182 F6a	A182 F6a	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F304		
9	Disc Nut	A182 F6a	A182 F304	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F304		
10	Pin	A182 F6a	A182 F304	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F304		
11	Nut	A194 2H	A194 4	A194 8				A194 7		
12	Bolt	A193 B7	A320 L7	A193 B8				A193 B16		
13	Screw	193 B7	A320 L7	A182 F304	A182 F316	A182 F304L	A182 F316L	A193 B16		
14	Lifting Lug	A194 2H								

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Steel Swing Check Valve

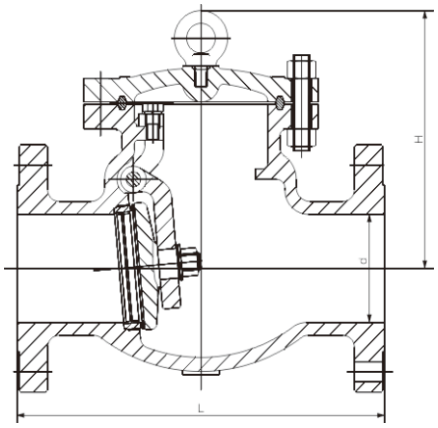
◎ Construction feature

Bolted cover
Renewable seat
(Threaded or welded seat ring)

◎API598 Pressure Test

Pressure ratings: Class150
Hydraulic Shell test: 3.2MPa
Hydraulic Seat test: 2.2MPa
Air test: 0.6MPa

Pressure ratings: Class300
Hydraulic Shell test: 7.8MPa
Hydraulic Seat test: 5.7MPa
Air test: 0.6MPa



Main size of outside & weight

Size		Class 150						Class 300					
NPS	DN	L			d	H	Weight (Kg)	L			d	H	Weight (Kg)
		RF	RTJ	BW				RF	RTJ	BW			
2	50	203	216	203	51	132	15	267	283	267	51	144	20
2 1/2	65	216	229	216	64	147	20	292	308	292	64	169	35
3	80	241	254	241	76	176	27	318	333	318	76	210	40
4	100	292	305	292	102	198	45	356	371	356	102	260	61
5	125	330	343	330	127	255	58	400	416	400	127	295	80
6	150	356	368	356	152	320	69	445	460	445	152	326	130
8	200	495	508	495	203	380	131	533	549	533	203	380	190
10	250	622	635	622	254	440	219	622	638	622	254	440	296
12	300	699	711	699	305	480	321	711	727	711	305	520	450
14	350	787	800	787	337	530	380	838	854	838	337	540	640
16	400	864	876	864	387	580	560	864	879	864	387	588	850
18	450	978	991	978	438	618	630	978	994	978	432	670	1030
20	500	978	991	978	489	657	770	1016	1035	1016	483	720	1330
24	600	1295	1308	1295	591	760	960	1346	1368	1346	584	850	1950
26	650	1295	–	1295	633	840	1250	1346	1372	1346	633	920	2300
28	700	1448	–	1448	684	920	1580	1499	1524	1499	684	1150	2600
30	750	1524	1537	1524	735	980	1950	1594	1619	1594	735	1260	3200
32	800	1727	–	1727	779	1016	2800	1727	–	1727	779	1380	3700
36	900	1956	1969	1956	874	1092	3200	2083	–	2083	874	1540	4300

Steel Swing Check Valve

◎ Construction feature

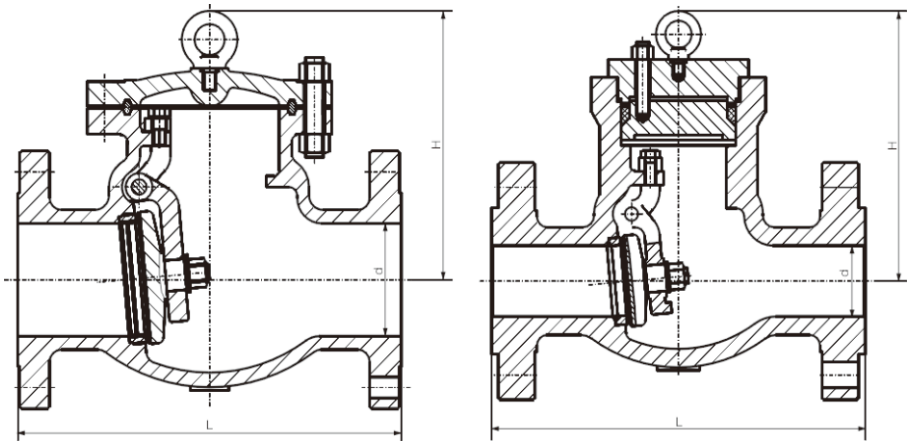
Bolted cover
Renewable seat
(Threaded or welded seat ring)

◎API598 Pressure Test

Pressure ratings: Class600
Hydraulic Shell test: 15.6MPa
Hydraulic Seat test: 11.4MPa
Air test: 0.6MPa

Pressure ratings: Class900
Hydraulic Shell test: 23.3MPa、
Hydraulic Seat test: 17.1MPa、
Air test: 0.6MPa

Pressure ratings: 1500
Hydraulic Shell test: 38.8MPa
Hydraulic Seat test: 28.5MPa
Air test: 0.6MPa

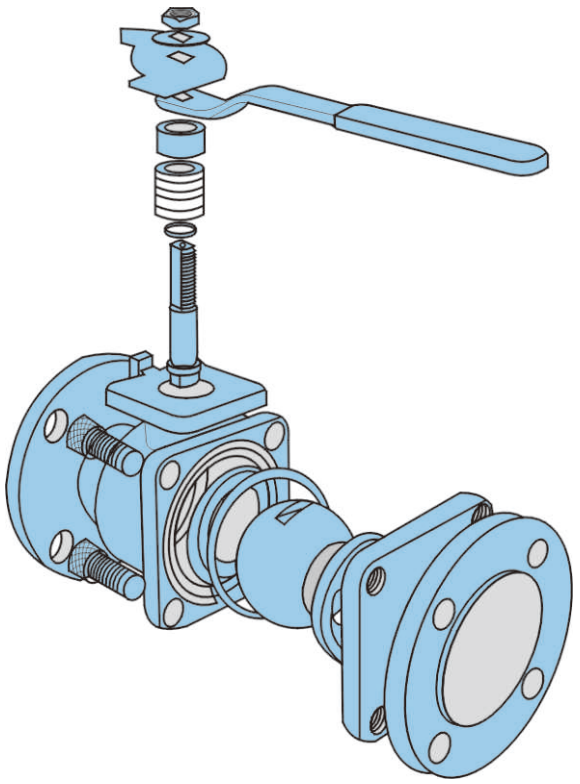


Main size of outside & weight

Size		Class 600						Class 900					
NPS	DN	L			d	H	Weight (Kg)	L			d	H	Weight (Kg)
		RF	RTJ	BW				RF	RTJ	BW			
2	50	292	295	292	51	170	28	368	371	368	47	200	48
2 1/2	65	330	333	330	64	178	40	419	422	419	57	220	75
3	80	356	359	356	76	246	68	381	384	381	73	280	95
4	100	432	435	432	102	290	117	457	460	457	98	320	135
5	125	508	511	508	127	320	155	559	562	559	121	360	200
6	150	559	562	559	152	360	192	610	613	610	146	400	264
8	200	660	664	660	200	430	340	737	740	737	190	480	424
10	250	787	791	787	248	502	515	838	841	838	234	560	730
12	300	838	841	838	298	554	750	965	968	965	282	632	1070
14	350	889	892	889	327	595	890	1029	1038	1029	311	680	1180
16	400	991	994	991	375	680	1303	1130	1140	1130	354	780	1790
18	450	1092	1095	1092	419	778	1800	1219	1232	1219	400	880	2500
20	500	1194	1200	1194	464	970	2150	1321	1334	1321	444	1050	3080
24	600	1397	1407	1397	559	1100	3200	1549	1568	1549	533	1200	4600

Size		Class 1500						Class 2500					
NPS	DN	L			d	H	Weight (Kg)	L			d	H	Weight (Kg)
		RF	RTJ	BW				RF	RTJ	BW			
2	50	368	371	368	47	210	48	451	454	451	35	230	68
2 1/2	65	419	422	419	57	240	75	508	514	508	47	260	100
3	80	470	473	470	70	303	120	578	584	578	57	330	165
4	100	546	549	546	92	340	180	673	683	673	73	370	260
5	125	673	676	673	111	380	294	794	807	794	92	410	440
6	150	705	711	705	136	430	385	914	927	914	111	460	580
8	200	832	841	832	174	500	634	1022	1038	1022	146	530	970
10	250	991	1000	991	222	590	1140	1270	1292	1270	184	620	1700
12	300	1130	1146	1130	263	660	1650	1422	1445	1422	219	690	2600
14	350	1257	1276	1257	289	710	2000	–	–	–	–	–	–
16	400	1384	1407	1384	330	820	2700	–	–	–	–	–	–

Floating Ball Valve

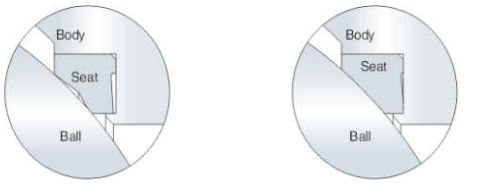


◎ Standards

Design and Manufacture: API 6D, BS5351, ASME B16.34
API 608, MSS-SP-72
Face To Face Dimension: ASME B16.10
Flange Connection Dimension: ASME B16.5
BW Connection Dimension: ASME B16.25
Test And Inspection: API 598
Fire-safe Design: API 607
Anti-static Design&Anti Blow-out Stem

◎ Application

Floating ball valves are suitable for various kinds of pipelines of Class 150 to Class 600, to turn on or off the pipeline medium, of which the operation types include manual, worm gear and pneumatic or electric actuators.



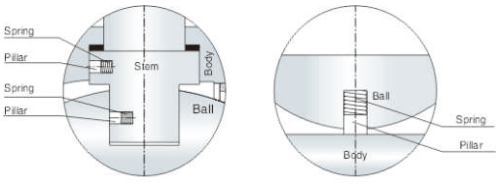
At lower medium pressure　　At higher medium pressure

◎ Reliable seat seal

The structure design of elastic sealing ring has been adopted for floating ball valves. This seat design features a bigger sealing pressure ratio between the ring surface and the ball when medium pressure gets lower, where the contacting area is smaller. Thus, the reliable seal is ensured. When the medium pressure gets higher, the contacting area between seat ring and ball becomes bigger as the sealing ring transforms elastically to undertake the bigger force pushed by the medium without any damage.

◎ Anti-static feature

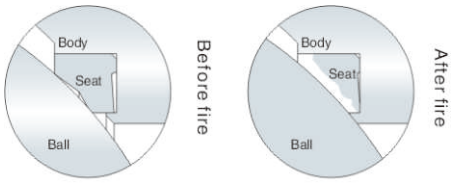
The traditional packing flange design has been improved to be of two piece structure, i.e., being as a packing flange plate and a follower, the latter contacts the flange plate with spherical surface. Thus, the follower remains vertical always, and is lined internally with a PTFE bush to prevent the galling against and friction between the stem, which can also reduce the operation torque of the valve.



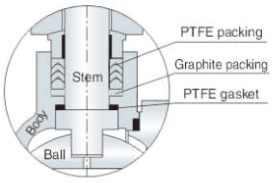
Anti-Static design for ball valve ⩾32mm　Anti-Static design for ball valve ⩽25mm

◎ Fire safe design

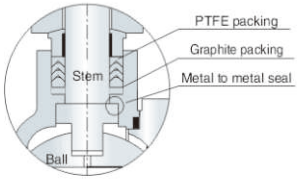
With the valve heated in a fire application, the non-metal material parts such as seat sealing ring of PTFE, stem back seat gasket, gland packing, and the sealing gasket between body and bonnet might disintegrate or be damaged due to high temperature. Our company specially designed structure of auxiliary metal to metal seal is provided to effectively prevent both internal and external leakage of the valve.As required by customers, Our company floating ball valves with design can meet the requirement of API 607.



Fire safe design of seat

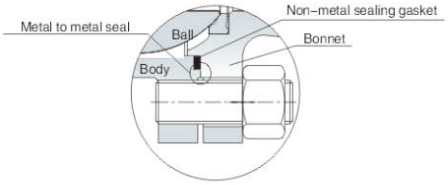


Before fire



After fire

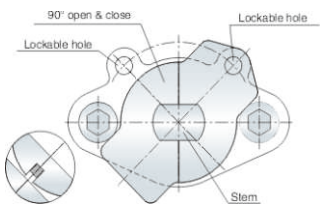
Fire safe design of stem



Fire safe design of valve body and bonnet flanges

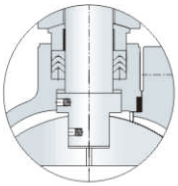
◎ Mounting pad provided

Our company has provided for floating ball valve with a mounting pad , through which it is easy to fix the actuators, such as worm gear, pneumatic and electric actuators.

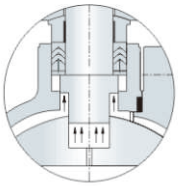


◎ Reliable stem seal

The blow-out proof design has been adopted for the stem to ensure that even if the pressure in the body cavity is risen accidently and the packing flange becomes invalid, the stem may not be blown out by medium. The stem features the design with a backseat, being assembled from underneath. The sealing force against the backseat gets higher as the medium pressure becomes higher So the reliable seal of the stem can be assured under variable medium pressure.

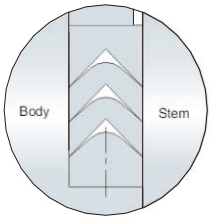


Stem assembled from underneath may not be blown out by medium

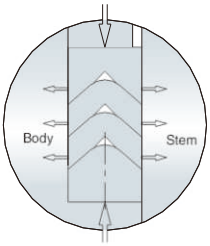


Stem assembled downward may be blown out

V type packing structure has been employed to effectively transform the pushing force of the gland flange and the medium pressure into the sealing force against the stem.



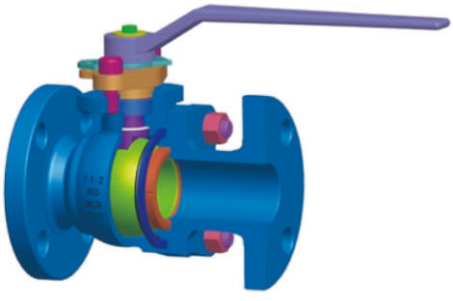
Packing before pressed



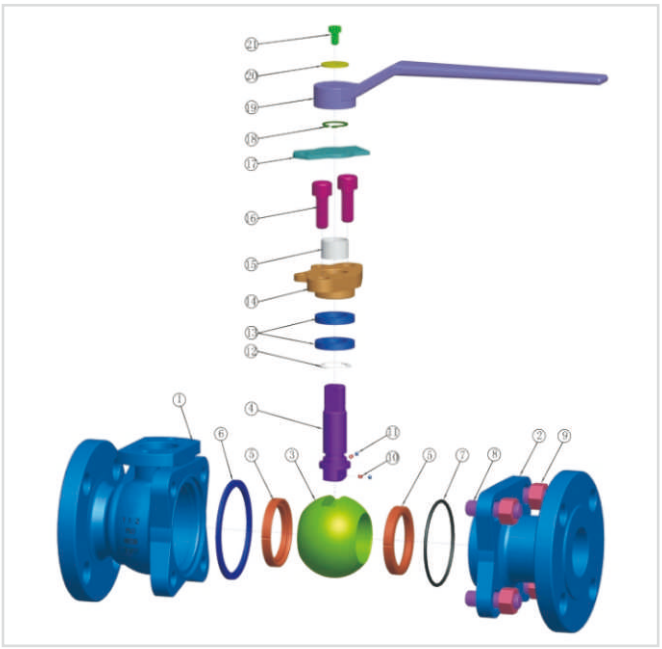
Packing after pressed

◎ Wrong operation prevention

To prevent the ball valve from wrong operation, the keylock with 90° of open and close positioning pad has been provided, Which can be lockable as required. At the stem head, where the lever fixes, a flat is designed so that the valve opens with the lever in parallel to piping, and with the lever right-angled to the piping, the valve is closed. So, it is ensured that the valve indicator of open and close can never make mistake.



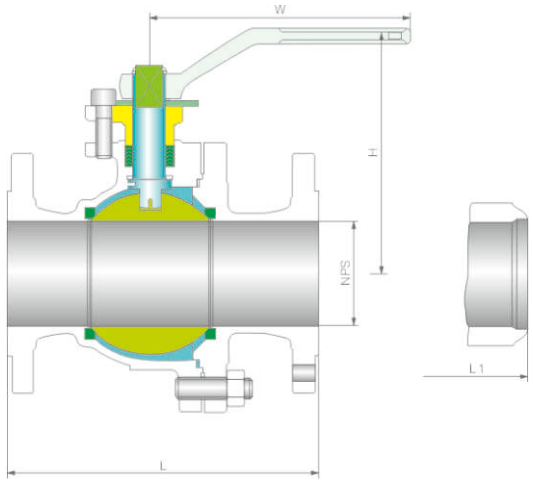
Floating Ball Valve



ASTM Material list of floating ball valve

No	Part Name	Carbon Steel to ASTM		Stainless Steel to ASTM			
1	Body	A216 WCB	A352 LCB	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M
2	Bonnet	A216 WCB	A352 LCB	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M
3	Ball	A351 CF8	A352 LCB	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M
4	Stem	A182 F6a	A182 F304	A182 F304	A182 F316	A182 F304L	A182 F316L
5	Seat ring	PTFE, RTFE, PEEK, DELRIN					
6	Gasket	Graphite+SS304, PTFE					
7	O–ring	Fluororubber					
8	Bolt	A193 B7/B7M	A193 L7/L7M	A193 B8/B8M			
9	Nut	A194 2H/2HM	A194 4/4M	194 8/8M			
10	Small spring	SS304					
11	Small ball	SS304					
12	Thrust washer	PTFE					
13	Stem packing	Flexible Graphite/PTFE					
14	Packing gland	A216 WCB	A352 LCB	A351 CF8	A351 CF8M	A351 CF3	A351 CF8M
15	Shaft sleeve	PTFE					
16	Screw	A193 B7	A320 L7	A193 B8/B8M			
17	Positioning plate	Galvanized Steel					
18	Rataining ring	Carbon Steel					
19	Lever	Carbon Steel					
20	Gasket	Carbon Steel					
21	Screw	Carbon Steel					

Floating Ball Valve



Main size of outside & weight													150Lb
Size	in	1/2	3/4	1	1 1/2	2	2 1/2	3	4	6	8	10	12
	mm	15	20	25	40	50	65	80	100	150	200	250	300
L (RF)	in	4.25	4.62	5.00	6.50	7.00	7.50	8.00	9.00	15.50	18.00	21.00	24.00
	mm	108	117	127	165	178	190	203	229	394	457	533	610
L1 (BW)	in	5.50	6.00	6.50	7.50	8.50	9.50	11.12	12.00	18.00	20.50	22.00	25.00
	mm	140	152	165	190	216	241	283	305	457	521	559	635
H	in	2.12	2.12	2.75	3.50	4.12	6.12	7.25	8.00	10.00	11.00	13.50	16.50
	mm	55	55	70	90	105	155	185	205	255	280	345	420
WT (Kg)	RF	2.3	3	4.5	7	9.5	15	19	33	93	160	200	280
	BW	1.8	2.8	3.7	6.2	8.5	14	21	35	98	170	225	295

Main size of outside & weight													300Lb
Size	in	1/2	3/4	1	1 1/2	2	2 1/2	3	4	6	8	10	12
	mm	15	20	25	40	50	65	80	100	150	200	250	300
L (RF)	in	5.50	6.00	6.50	7.50	8.50	9.50	11.12	12.00	15.88	19.75	22.38	25.50
	mm	140	152	165	190	216	241	283	305	403	502	568	648
L1 (BW)	in	5.50	6.00	6.50	7.50	8.50	9.50	11.12	12.00	18.00	20.50	22.00	25.00
	mm	140	152	165	190	216	241	283	305	457	521	559	635
H	in	2.12	2.12	2.75	3.50	4.12	6.12	7.25	8.00	10.00	11.00	13.50	16.50
	mm	55	55	70	90	105	153	187	206	255	280	345	420
WT (Kg)	RF	2.5	3.5	5.5	10.5	14.5	23.5	30	55	118	200	250	330
	BW	1.8	2	3.2	5.5	8.7	15	18	36	85	152	182	232

Main size of outside & weight									600Lb
Size	in	1/2	3/4	1	1 1/2	2	2 1/2	3	4
	mm	15	20	25	40	50	65	80	100
L/L1 (RF/BW)	in	6.50	7.50	8.50	9.50	11.50	13.00	14.00	17.00
	mm	165	190	216	241	292	330	356	432
L2 (RTJ)	in	–	–	–	–	11.62	13.12	14.12	17.12
	mm	–	–	–	–	295	333	359	435
H	in	2.38	2.38	3.00	4.00	4.75	6.88	8.38	9.25
	mm	61.5	61.5	78	101	120	174	212	234
WT (Kg)	RF/RTJ	3.3	4.5	7.2	13.5	19	31	39	71
	BW	2.6	3.1	4.8	8	13	22	27	53

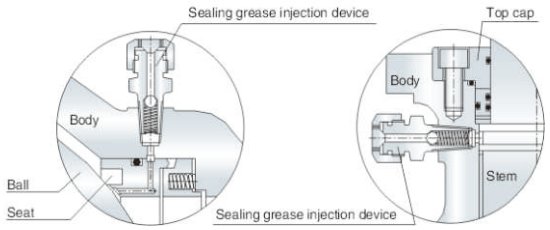
Trunnion Ball Valve

Standards

Design and Manufacture: API 6D, BS5351, ASME B16.34
API 608, MSS-SP-72
Face To Face Dimension: ASME B16.10
End flange dimension: ASME B16.5(for NPS 24); ASME B16.47 series B, ASME B16.47 series A, MSS SP-44(for NPS 24).
BW Connection Dimension: ASME B16.25
Test And Inspection: API 598
Fire-safe Design: API 607
Anti-static Design&Anti Blow-out Stem

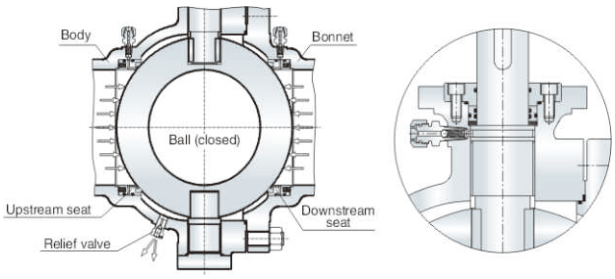
Urgent grease injection device

According to customers' requirement, the trunnion ball valves made by Our company are provided with devices for urgent grease injection, which are on both the stem and seat for the trunnion ball valves of DN>150mm (NPS6), and in the body cavity for the valve of DN<125mm. When the O ring of stem or the body seat ring is damaged due to accident, the medium leakage between body and stem can be prevented by injecting the sealing grease through the device.



Double-block and bleed functions

In MADCO company, trunnion ball valve features the front ball sealing design structure. Each seat of the ball valve can separately cut off the medium at both inlet and outlet of the valve to realize double-block functions. When the ball valve is closed, body cavity and two of the body ends can be blocked with each other even if both the inlet and outlet are under pressure, when the medium left in the body cavity might be bled through the relief valve.

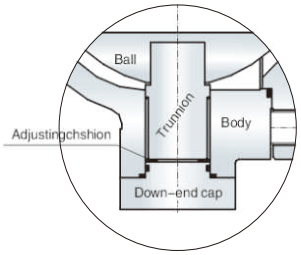


Blow-out proof stem

Blow-out proof structure is provided with for the stem, which is positioned by the up-end cap and screw, being guaranteed not to be blown-out by the medium even if at abnormal risen pressure in the cavity.

◎ Anti-static design

The ball of the trunnion ball valve gets close contact with each other through the trunnion, adjusting cushion, and down-end cap, the passage of static electricity thus forms together with the valve, which may lead the static electricity caused by sparks generated by friction between the ball and seat during on and off performance to the ground to prevent the possible risk of fire or explosion.

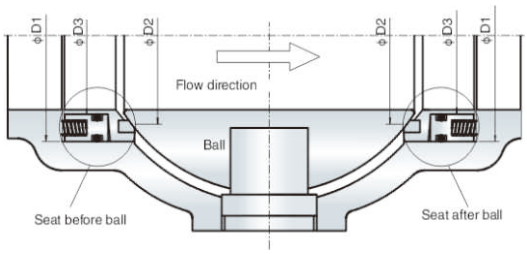


◎ The Bi-sealing design structure, i.e. seat sealing in front of the ball and seat sealing behind the ball

According to some special working conditions and customers' requirement, We has provided the trunnion ball valve with the Bi-sealing design structure, i.e. seat sealing in front of the ball and seat sealing behind the ball, thus the reliable sealing of the valve is ensured because the valve can perform normally even if one of the effective sealing designs becomes lost due to the abnormal condition.

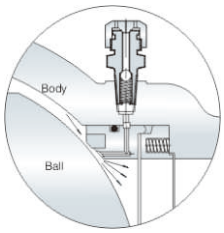
Regarding the seat in front of the ball, the piston effect formed by the area difference between D1 and D2 ,plus the pre-tightened force of a spring would cause the seat in front of the ball by the pressure difference of the medium before and after the valve to touch the ball closely to form the tightness, of which the sealing force will become bigger as the pressure difference gets higher.

Regarding the seat after the ball, the piston effect formed by the area difference between D2 and D3 ,plus the pretig-htened force of a spring would cause the seat behind the ball to touch the ball closely to form the tightness, of which the sealing force will become bigger as the pressure difference gets higher.



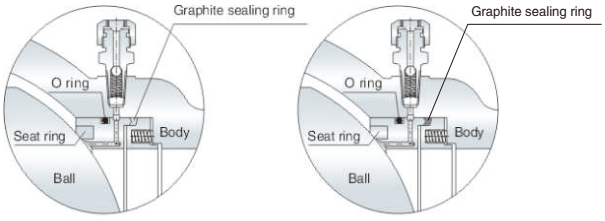
◎ Self-relief in the body cavity

As the liquid medium left in the body cavity gasifies due to increased temperature, the pressure in the body cavity becomes abnormally higher when the medium itself in the cavity would propel the seat and self-relieves the pressure to ensure the safety of valve.



◎ Fire safe design

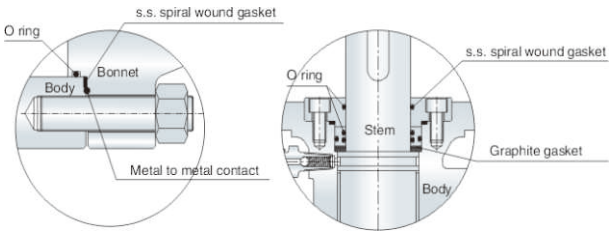
With the valve heated in a fire application, the non-metal material parts such as seat sealing ring of PTFE, O ring for the stem, and sealing gasket for body and bonnet, might be damaged due to high temperature. Our company special design of auxiliary metal to metal or the graphite seal is provited for the trunnion ball valve to effectively prevent both internal and external leakage of the valve. As required by customers, Our company fire safe design for the trunnion ball valve meets the requirement of API 607, API 6Fa, BS 6755.



Before fire

After fire

Fire safe design of seat



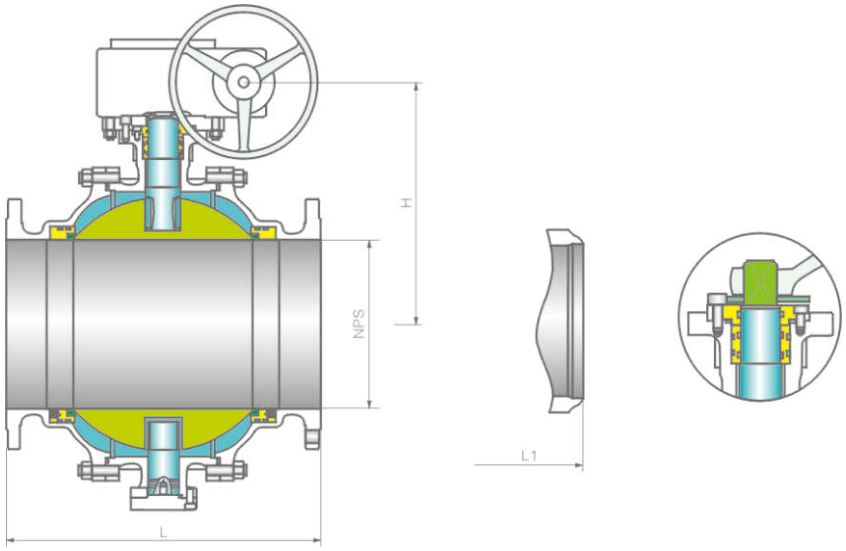
Fire safe design of valve body and bonnet flanges

Fire safe design of stem

◎ Mounting pad provided

Our company has provided for trunnion ball valve with a mounting pad for fixing the actuators, such as worm gear, pneumatic, electric, hydraulic, and pneumatic & hydraulic acturtors.

Cast Steel Trunnion Ball Valve



Main size of outside & weight																			150Lb
Size	in	2	2 1/2	3	4	6	8	10	12	14	16	18	20	24	26	28	30	32	36
	mm	50	65	80	100	150	200	250	300	350	400	450	500	600	650	700	750	800	900
L (RF)	in	7.00	7.50	8.00	9.00	15.50	18.00	21.00	24.00	27.00	30.00	34.00	36.00	42.00	45.00	49.00	51.00	54.00	60.00
	mm	178	190	203	229	394	457	533	610	686	762	864	914	1067	1143	1245	1295	1372	1524
L1 (BW)	in	8.50	9.50	11.12	12.00	18.00	20.50	22.00	25.00	30.00	33.00	36.00	39.00	45.00	49.00	53.00	55.00	60.00	68.00
	mm	216	241	283	305	457	521	559	635	762	838	914	991	1143	1245	1346	1397	1524	1727
H	in	7.00	7.50	8.25	9.25	20.88	24.62	25.62	30.75	31.00	36.25	38.25	43.38	5.25	50.75	55.12	64.12	70.88	80.75
	mm	177	190	210	235	530	625	650	780	790	920	970	1100	1150	1290	1400	1630	1840	2050
W	in	14	16	20	20	24	24	24	24	32	32	32	32	32	32	32	32	32	32
	mm	350	400	500	500	600	600	600	600	800	800	800	800	800	800	800	800	800	800
WT (Kg)	RF	15	19	27	38	81	140	160	205	260	390	510	750	1200	1400	1860	2100	2530	2970
	BW	13.5	15.5	24.5	32.5	76	132	147	182	241	370	495	726	1125	1250	1640	1930	2390	2760

Main size of outside & weight																			300Lb
Size	in	2	2 1/2	3	4	6	8	10	12	14	16	18	20	24	26	28	30	32	36
	mm	50	65	80	100	150	200	250	300	350	400	450	500	600	650	700	750	800	900
L (RF)	in	8.50	9.50	11.12	12.00	15.88	19.75	22.38	25.50	30.00	33.00	36.00	39.00	45.00	49.00	53.00	55.00	60.00	–
	mm	216	241	283	305	403	502	568	648	762	838	914	991	1143	1245	1346	1397	1524	–
L1 (BW)	in	8.50	9.50	11.12	12.00	18.00	20.50	22.00	25.00	30.00	33.00	36.00	39.00	45.00	49.00	53.00	55.00	60.00	–
	mm	216	241	283	305	403	521	559	635	762	838	914	991	1143	1245	1346	1397	1524	–
H	in	7.00	7.50	8.25	9.25	20.88	24.62	25.62	30.75	31.00	36.25	38.25	43.38	45.25	50.75	55.12	64.12	70.88	–
	mm	177	190	210	235	530	625	650	780	790	920	970	1100	1150	1290	1400	1630	1800	–
W	in	14	16	20	20	24	24	24	24	32	32	32	32	32	32	32	32	32	–
	mm	350	400	500	500	600	600	600	600	800	800	800	800	800	800	800	800	800	–
WT (Kg)	RF	19	24	34	48	101	175	200	255	325	485	635	935	1500	1750	2225	2450	2870	–
	BW	14	16	25	34	82	145	155	185	238	375	516	782	1280	1375	1825	2180	2260	–

Cast Steel Trunnion Ball Valve

Main size of outside & weight 600Lb

Size		2	2 1/2	3	4	6	8	10	12	14	16	18	20	24	26	28
	mm	50	65	80	100	150	200	250	300	350	400	450	500	600	650	700
L/L1 (RF/BW)	in	11.50	13.00	14.00	17.00	22.00	26.00	31.00	33.00	35.00	39.00	43.00	47.00	55.00	57.00	61.00
	mm	292	330	356	432	559	660	787	838	889	991	1092	1194	1397	1448	1549
L2 (RTJ)	in	11.62	13.12	14.12	17.12	22.12	26.12	31.12	33.12	35.12	39.12	43.12	47.25	55.38	57.50	61.50
	mm	295	333	359	435	562	664	791	841	892	994	1095	1200	1407	1461	1562
H	in	7.12	7.62	8.50	9.50	21.52	25.00	26.12	31.12	31.88	36.38	38.75	44.50	46.62	52.50	57.00
	mm	180	193	215	241	540	635	665	790	810	925	985	1130	1185	1335	1450
W	in	14	16	20	20	24	24	24	24	32	32	32	32	32	32	32
	mm	350	400	500	500	600	600	600	600	800	800	800	800	800	800	800
WT (Kg)	RF/RTJ	26	35	58	81	142	287	540	780	1000	1300	1700	2100	3400	3800	4500
	BW	19	25	42	51	82	200	395	610	805	1010	1350	1656	2775	3125	3790

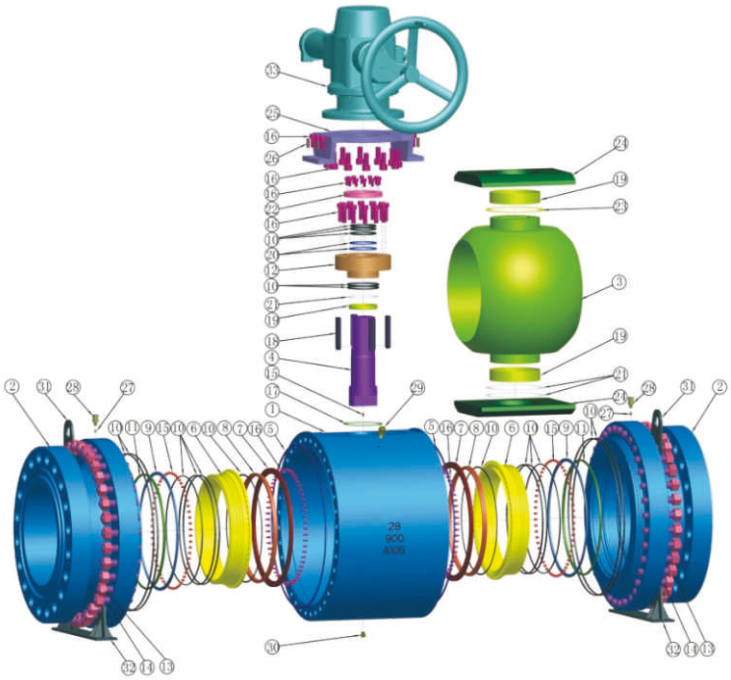
Main size of outside & weight 900Lb

Size		2	2 1/2	3	4	6	8	10	12	14	16	18	20	24
	mm	50	65	80	100	150	200	250	300	350	400	450	500	600
L/L1 (RF/BW)	in	14.50	16.50	15.00	18.00	24.00	29.00	33.00	38.00	40.50	44.50	48.00	52.00	61.00
	mm	368	419	381	457	610	737	838	965	1029	1130	1219	1321	1549
L2 (RTJ)	in	14.62	16.62	15.12	18.12	24.12	29.12	33.12	38.12	40.88	44.88	48.50	52.50	61.75
	mm	371	422	384	460	613	740	841	968	1038	1140	1232	1334	1568
H	in	8.62	9.25	10.25	15.38	25.75	30.25	31.75	38.00	38.50	45.00	47.00	53.50	56.00
	mm	219	235	260	390	655	770	805	965	980	1145	1195	1360	1425
W	in	20	20	20	24	24	24	24	32	32	32	32	32	32
	mm	500	500	500	600	600	600	600	800	800	800	800	800	800
WT (Kg)	RF/RTJ	31	43	68	98	171	345	650	940	1205	1565	2050	2535	3950
	BW	23	31	51	61	102	240	480	735	965	1215	1625	1995	3335

Main size of outside & weight 1500Lb

Size		2	2 1/2	3	4	6	8	10	12	14	16
	mm	50	65	80	100	150	200	250	300	350	400
L/L1 (RF/BW)	in	14.50	16.50	18.50	21.50	27.75	32.75	39.00	44.50	49.50	54.50
	mm	368	419	470	546	705	832	991	1130	1257	1384
L2 (RTJ)	in	14.62	16.62	18.62	21.62	28.00	33.12	39.38	45.12	50.25	55.38
	mm	371	422	473	549	711	841	1000	1146	1276	1407
H	in	11.25	12.00	13.25	20.00	33.50	39.38	41.12	49.38	50.00	58.50
	mm	285	306	338	506	852	1000	1045	1255	1270	1485
W	in	20	20	24	24	24	32	32	32	32	32
	mm	500	500	600	600	600	800	800	800	800	800
WT (Kg)	RF/RTJ	49	67	106	153	268	540	1020	1475	1885	2455
	BW	33	44	73	87	145	345	685	1050	1385	1735

Forged Steel Trunnion ball valve



ASTM Material list of cast steel trunnion mounted ball valve

No	Part Name	Carbon Steel to ASTM		Stainless Steel to ASTM				
1	Body	ASTM A105N	A350 LF2	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F51
2	Bonnet	ASTM A105N	A350 LF2	A182 F304	A182 F3316	A182 F304L	A182 F316L	A182 F51
3	Ball	A351 CF8	A351 CF8	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	CD4MCU
4	Stem	A182 F6a	A182 F304	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F51
5	Gasket	SS304 +Graphite, PDFE						
6	Seat	A105N+ENP	LF2+ENP	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F51
7	Clamping ring	A105N+ENP	LF2+ENP	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F51
8	Seat ring	PTFE, RTFE, PEEK, DELRIN						
9	Seat back	A105N+ENP	LF2+ENP	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F51
10	O–ring	Fluororubber						
11	Seat gasket	Flexible Graphite						
12	Stuffing box	A105N+ENP	LF2+ENP	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F51
13	Bolt	A193 B7/B7M	A320 L7/L7M	A193 B8/B8M				
14	Nut	A194 2H/2HM	A194 4/4M	A194 8/8M				
15	Spring	INCONEL X–750						
16	Screw	A193 B7	A320 L7	A193 B8/B8M				
17	Gasket	PTFE						
18	Flat key	Cabon Steel						
19	Shaft sleeve	PTFE						
20	Stem packing	PTFE Flexible Graphite						
21	Thrust washer	PTFE						
22	Packing gland	ASTM A105N	A350 LF2	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F51
23	Shaft sleeve	PTFE						
24	Support plate	ASTM A105N	A350 LF2	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F51
25	Yoke	Carbon Steel						
26	Pin	Carbon Steel						
27	Small check valve	ASTM A105N	A350 LF2	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F51
28	Grease injector	Garbon steel	Garbon steel	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F51
29	Vent plug	Garbon steel	Garbon steel	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F51
30	Drain plug	Garbon steel	Garbon steel	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F51
31	Lifting lug	Carbon Steel						
32	Support feet	Carbon Steel						

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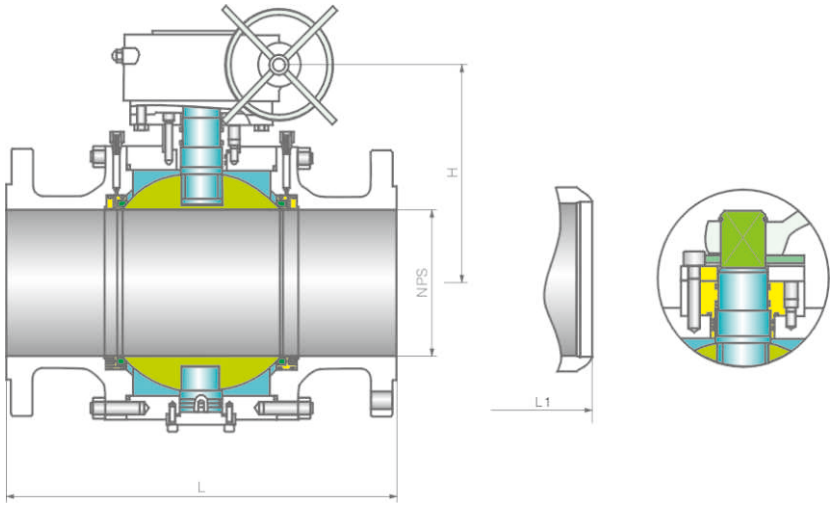
Forged Steel Trunnion ball valve



Main size of outside & weight — **150Lb**

Size		2	2 1/2	3	4	6	8	10	12	14	16	18	20	24	26	28	30	32	36
	mm	50	65	80	100	150	200	250	300	350	400	450	500	600	650	700	750	800	900
L (RF)	in	7.00	7.50	8.00	9.00	15.50	18.00	21.00	24.00	27.00	30.00	34.00	36.00	42.00	45.00	49.00	51.00	54.00	60.00
	mm	178	190	203	229	394	457	533	610	686	762	864	914	1067	1143	1245	1295	1372	1524
L1 (BW)	in	8.50	9.50	11.12	12.00	18.00	20.50	22.00	25.00	30.00	33.00	36.00	39.00	45.00	49.00	53.00	55.00	60.00	68.00
	mm	216	241	283	305	457	521	559	635	762	838	914	991	1143	1245	1346	1397	1524	1727
H	in	4.00	6.00	7.00	9.25	9.88	11.00	12.62	15.38	16.50	21.88	23.62	25.00	28.00	29.50	31.50	34.00	36.00	38.50
	mm	120	150	180	235	250	280	320	390	420	555	600	635	710	750	800	865	915	980
W	in	16	16	24	24	24	24	32	32	32	32	32	32	32	40	40	40	40	40
	mm	400	4.00	600	600	600	600	800	800	800	800	800	800	800	1000	1000	1000	1000	1000
WT (Kg)	RF/RTJ	28	35	55	80	190	290	445	570	780	1520	2300	2500	3950	4890	6300	7100	8950	13500
	BW	25	28	49	71	182	277	423	553	747	1481	2266	2460	3904	4939	6362	8149	9000	13570

Main size of outside & weight — **300Lb**

Size		2	2 1/2	3	4	6	8	10	12	14	16	18	20	24	26	28	30	32	36
	mm	50	65	80	100	150	200	250	300	350	400	450	500	600	650	700	750	800	900
L (RF)	in	8.50	9.50	11.12	12.00	15.88	19.75	22.38	25.50	30.00	33.00	36.00	39.00	45.00	49.00	53.00	55.00	60.00	–
	mm	216	241	283	305	403	502	568	648	762	838	914	991	1143	1245	1346	1397	1524	–
L1 (BW)	in	8.50	9.50	11.12	12.00	18.00	20.50	22.00	25.00	30.00	33.00	36.00	39.00	45.00	49.00	53.00	55.00	60.00	–
	mm	216	241	283	305	403	521	559	635	762	838	914	991	1143	1245	1346	1397	1524	–
H	in	4.00	6.00	7.00	9.25	9.88	11.00	12.62	15.38	16.50	21.88	23.62	25.00	28.00	29.50	31.50	34.00	36.00	–
	mm	120	150	180	235	250	280	320	390	420	555	600	635	710	750	800	865	915	–
W	in	16	16	24	24	24	24	32	32	32	32	32	32	32	40	40	40	40	–
	mm	400	400	600	6.00	600	600	800	800	800	800	800	800	800	1000	1000	1000	1000	–
WT (Kg)	RF/RTJ	30	40	60	90	200	325	490	690	990	1810	2620	2860	4430	5430	6810	7655	9590	–
	BW	24	31	49	72	169	280	424	598	872	1665	2440	2635	4075	4880	6225	7115	9230	–

Forged Steel Trunnion ball valve

Main size of outside & weight																600Lb
Size	in	2	2 1/2	3	4	6	8	10	12	14	16	18	20	24	26	28
	mm	50	65	80	100	150	200	250	300	350	400	450	500	600	650	700
L/L1 (RF/BW)	in	11.50	13.00	14.00	17.00	22.00	26.00	31.00	33.00	35.00	39.00	43.00	47.00	55.00	57.00	61.00
	mm	292	330	356	432	559	660	787	838	889	991	1092	1194	1397	1448	1549
L2 (RTJ)	in	11.62	13.12	14.12	17.12	22.12	26.12	31.12	33.12	35.12	39.12	43.12	47.25	55.38	57.50	61.50
	mm	295	333	359	435	562	664	791	841	892	994	1095	1200	1407	1461	1562
H	in	6.50	7.00	7.88	11.00	12.25	14.00	16.12	18.00	19.25	21.00	24.88	2562	30.12	31.88	34.62
	mm	165	180	200	280	310	355	410	455	490	535	630	650	765	810	880
W	in	16	24	24	24	32	32	32	32	32	32	40	40	40	40	40
	mm	400	600	600	600	800	800	800	800	800	800	1000	1000	1000	1000	1000
WT (Kg)	RF/RTJ	34	53	65	125	245	505	640	910	1380	2250	3400	3850	4900	6700	8300
	BW	27	43	49	95	188	418	495	740	1185	1960	3050	3406	4275	6025	7590

Main size of outside & weight														900Lb
Size	in	2	2 1/2	3	4	6	8	10	12	14	16	18	20	24
	mm	50	65	80	100	150	200	250	300	350	400	450	500	600
L/L1 (RF/BW)	in	14.50	16.50	15.00	18.00	24.00	29.00	33.00	38.00	40.50	44.50	48.00	52.00	61.00
	mm	368	419	381	457	610	737	838	965	1029	1130	1219	1321	1549
L2 (RTJ)	in	14.62	16.62	15.12	18.12	24.12	29.12	33.12	38.12	40.88	44.88	48.50	52.50	61.75
	mm	371	422	384	460	613	740	841	968	1038	1140	1232	1334	1568
H	in	6.72	7.50	8.25	11.38	12.62	15.38	17.00	18.50	20.88	24.00	26.00	27.50	30.75
	mm	170	190	210	290	320	390	430	470	530	610	660	700	780
W	in	24	24	24	32	32	32	32	32	32	40	40	40	40
	mm	600	600	600	800	800	800	800	800	800	1000	1000	1000	1000
WT (Kg)	RF/RTJ	45	65	73	135	360	650	930	1350	1890	3100	4300	4950	7100
	BW	37	53	56	98	291	545	760	1145	1650	2750	3875	4410	6485

Main size of outside & weight											1500Lb
Size	in	2	2 1/2	3	4	6	8	10	12	14	16
	mm	50	65	80	100	150	200	250	300	350	400
L/L1 (RF/BW)	in	14.50	16.50	18.50	21.50	27.75	32.75	39.00	44.50	49.50	54.50
	mm	368	419	470	546	705	832	991	1130	1257	1384
L2 (RTJ)	in	14.62	16.62	18.62	21.62	28.00	33.12	39.38	45.12	50.25	55.38
	mm	371	422	473	549	711	841	1000	1146	1276	1407
H	in	6.75	7.50	8.25	11.38	13.00	15.75	17.38	22.00	25.25	27.12
	mm	170	190	210	290	330	400	440	560	640	690
W	in	24	24	32	32	32	32	32	40	40	40
	mm	600	600	800	800	800	800	800	1000	1000	1000
WT (Kg)	RF/RTJ	55	75	95	150	540	880	1360	1980	3100	4650
	BW	40	55	65	115	420	865	1025	1555	2600	3930

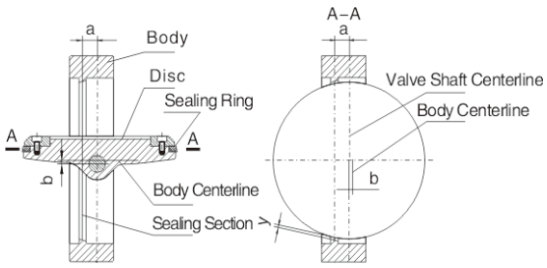
Our butterfly valves are structured to centered seal, single eccentric seal, double eccentric seal, triple eccentric seal and variable eccentric seal. The sealing principles of these structures are stated as following.

Butterfly Valve

◎ Sealing Principle of Double Eccentric Seal Butterfly Valve

The rotation center of disc(namely the center of valve shaft)and the centerline of body form up a’ b’ eccentric on the base of single eccentric butterfly valve. Making the sealing face of disc disengaged from seat sealing face more quickly than single eccentric seal butterfly valves during the process of open and close Once disc turns to 8° ～12° . the disc sealing face will be completely disengaged from the seat sealing face. Once fully opened，a gap 'Y’ will be formed up between the two sealing faces. This type of butterfly valves are designed to have greatly lowered the mechanical wear and extrusion deformation between the two sealing faces, making the sealing performance of butterfly valve much better.

The character rustic of this structure is to make stem axis not only deviated from the center of disc, but also the center of the body. The effect of double eccentric is that，when valve has been opened, disc can be quickly disengaged from seat, thus to greatly eliminate the unnecessary excessive extrusion and scratch between the disc and seat，reduce opening resistance，lower the abrasion and improve the service life of seat. As scratch has been greatly Lowered, metal seat can be used for double eccentric butterfly valve, so that butterfly valves are able to be used in high temperature fields. However, as its seal is positioned sealing construction. i.e. the sealing faces disc and seat is lineal contact, disc extruding seat to produce elastic deformation，thus to effect the sealing perforce has high requirement on close position, especially for Ihasa with metal seat and is given poor pressure endurance. This is why butterfly valves are conventionallV，not resistant to high temperature and leakage.



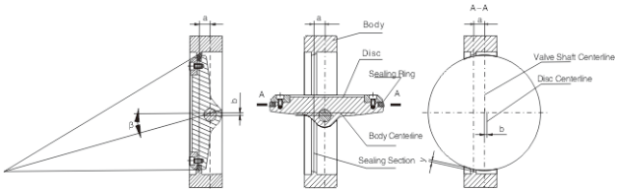
Sealing Structure of Double Eccentric Seal Butterfly Valve

◎ Sealing Principle of Triple Eccentric Seal ButterflY Valve

A B eccentric is formed up between the centerline of seat and the centerline of body on the base of double eccentric butterfly valve, making disc sealing face immediately disengaged from seat sealing face upon the opening of butterfly valve, and in close contact with the seat sealing face upon closing. When fully opened, a gap 'Y', which is the same as that in double eccentric seal butterfly valve, is formed up between the two sealing faces. The design of this type of valves has thoroughly eliminated the mech-anical wear and scratch between the two sealing faces, making the sealing performance and service life of butterfly valves greatly improved. When valve is closed, with sealing ring under the extrusion of body sealing face and disc, two upward elastic deformations are produced. the sealing face is fallen under outward tension at long shaft and

inward compressive stress at short shaft The long and short shafts produce elastic deformation of different directions, thus to maximizing the sealing force between the sealing faces of valve.

This distinctive eccentric combination not only uses cam effect, but also eliminates friction completely, thus to ensure no friction between seat and sealing ring on disc during the 90 ° stroke of valve, a perfect solution to clear away the possibilities of abrasion and leakage.



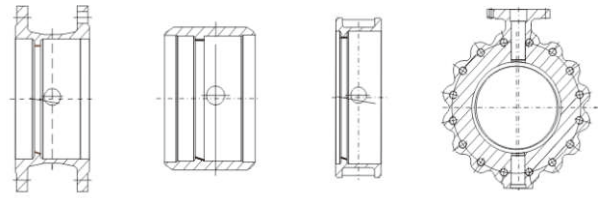
Close State Diagram of Triple Eccentric Seal Butterfly Valve

Open State Diagram of Triple Eccentric Seal Butterfly Valve

Sealing Principle of Triple Eccentric Seal Butterfly Valve

Butterfly valves are used to open and close(seal type)or adjust the medium flow in pipes in the fields of foodstuf, drinks, chemical, industrial water treatment, high-rise constructions, water supply and drainage etc, They are mainly structured as following:

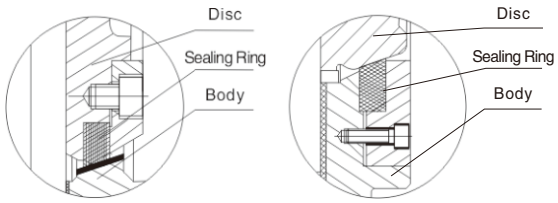
1、Simple structure, small sizes, light weight and low installation dimensions. According to the types of body connection, they are basically classified to wafer type(including lug wafer type), flanged and welded.



Flanged Connection | Butt-welded Connection | Wafer Connection | Lug Wafer Connection

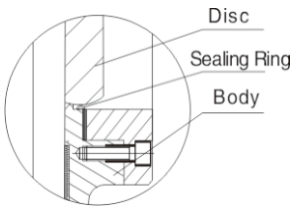
1. Multilayer Hard Seal Structure(See fig. right)

Multilayer hard seal structure is applicable. double and triple eccentric butterfly valves, pressure rating≤CLASS 600. And triple eccentric butterfly valve can maintain two—way leak—tightness. Multilayer sealing ring is composite of stainless steel and nonmetal material. The nonmetal material can be flexible graphite。PTFE or non asbestos material etc. according to the actual working conditions.



Multilayer Hard Seal Structure

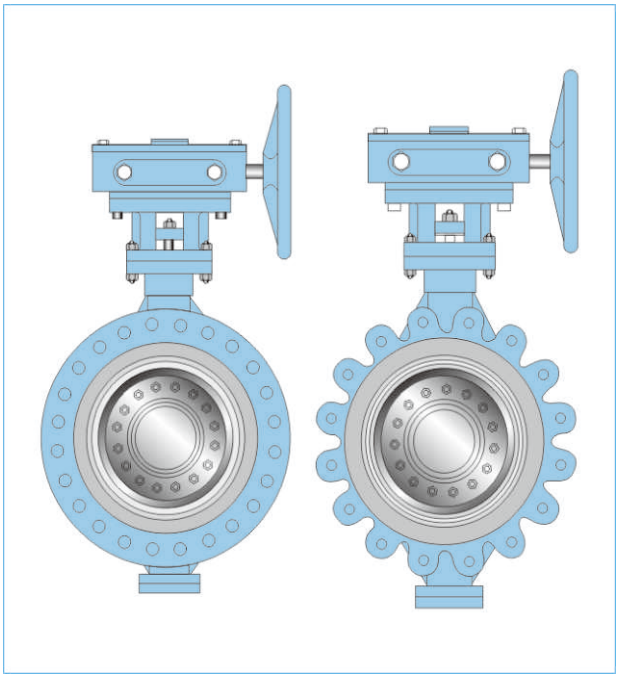
2. Elastic ring hard seal structure(see fig right)is of the structure of J-type metal sealing ring. It is applicable and double eccentric butterfly valves. pressure rating≤CLASS 300. Provided with fireproof structure to adapt to conditions with great temperature changes, it is featured by outstanding seal, long service life and easy workmanship.



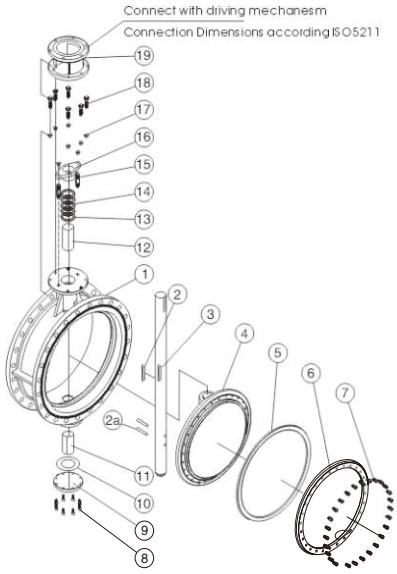
Elastifc Ring Hard Seal Structure

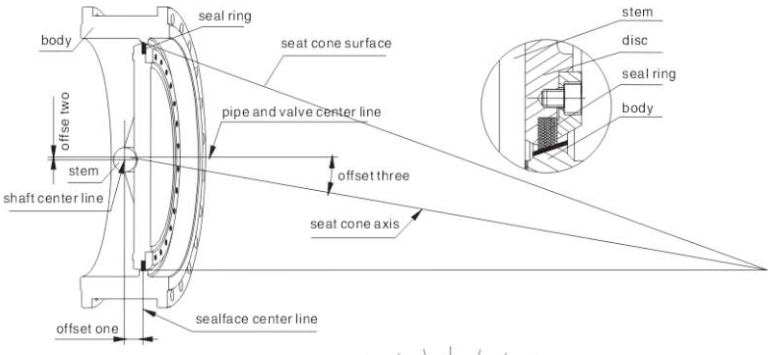
3. When butterfly valve is fully opened, flow resistance is low. When partially opened, it may carry out sensitive flow control.

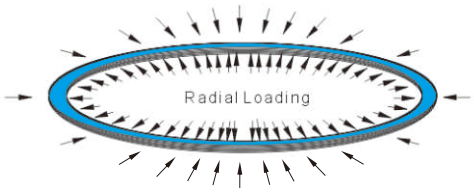
4. Low driving moment, easy and quick operation.



The Triple Offset Geometry



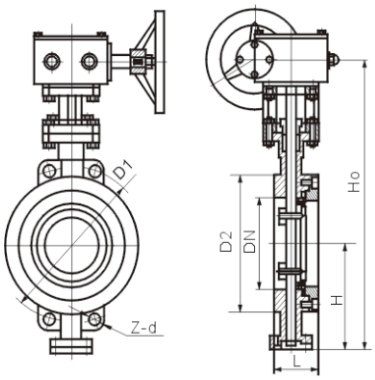




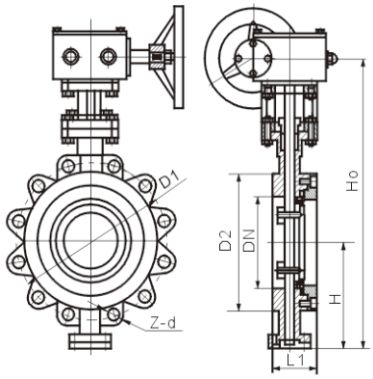
ASTM Materials list of Butterfly Valve

No.	Part Name	Carbon Steel to ASTM	Stainless Steel to ASTM	
1	Body	A216 WCB	A351 CF8	A351 CF8M
2	Key	A182 F6a	SS304	SS316
2a	Pin		SS304	SS316
3	Stem		A182 F304	A182F316
4	Disc	A216 WCB	A351 CF8	A351 CF8M
5	Seal Ring	Graphite+304		
6	Retainer Flange	A216 WCB		
7	Bolt	A193 B7		
8	Bolt			
9	Cover			
10	Gasket	PTFE+Bronze		
11	Bushing	PTFE+Bronze		
12	Bushing	SS		
13	Packing Seat	Graphite		
14	Packing	–		
15	Bolt	SS		
16	Packing Bushing	–		
17	Nut	–		
18	Bolt	Carbon Steel		
19	Yoke			

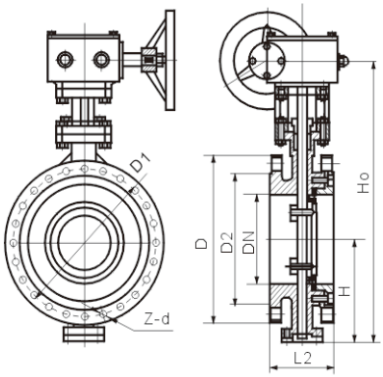
Ariple Offset Butterfly Valve



Wafer Butterfly



LUG Butterfly

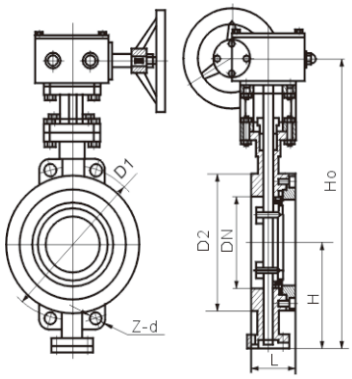


Flange Butterfly

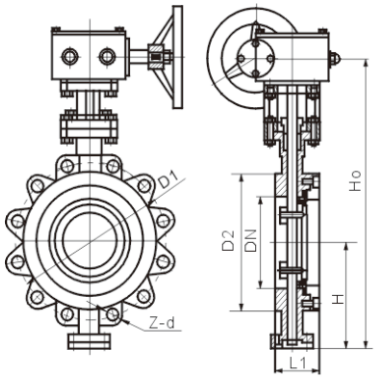
API 150LB Wafer , LUG, Flange Butterfly

Nominal Diameter		Structure Length						External Dimension				Connection Dimension							Weight kg	
		Wafer L		LUG L1		Flange L2		H		H0		D		D1		D2		Z-d		
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm		Wafer	Flange
2"	50	1.69	43	1.69	43	4.25	108	4.33	110	13.58	345	6	150	4.75	120.5	3.625	92	4–19	9	20
3"	80	1.88	48	1.88	48	4.50	114	4.92	125	14.96	380	7	190	6	152.5	5.000	127	4–19	11	29
4"	100	2.12	54	2.12	54	5.00	127	5.70	145	16.34	415	7.50	230	7.5	190.5	6.19	157	8–19	13	33
5"	125	2.19	56	2.19	56	5.50	140	6.50	165	17.91	455	9	255	8.5	216	7.31	186	8–22	16	38
6"	150	2.25	57	2.25	57	5.50	140	6.89	175	21.45	545	10	280	9.5	241.5	8.5	216	8–22	26	74
8"	200	2.50	64	2.50	64	6.00	152	8.26	210	24.21	615	11	345	11.75	298.5	10.625	270	8–22	34	86
10"	250	2.81	71	2.81	71	6.50	165	9.84	250	27.36	695	13.50	405	14.25	362	12.75	324	12–25	51	142
12"	300	3.19	81	3.19	81	7.00	178	11.24	285	32.78	830	19	485	17	432	15	381	12–25	72	167
14"	350	3.62	92	3.62	92	7.50	190	12.60	320	35.43	900	21	535	18.75	476	16.25	413	12–29	106	218
16"	400	4.00	102	4.00	102	8.50	216	13.98	355	38.58	980	23.5	600	21.25	540	18.5	470	16–29	133	275
18"	450	4.50	114	4.50	114	8.75	222	14.96	380	40.55	1030	25	635	22.25	578	21	533	16–32	176	315
20"	500	5.00	127	5.00	127	9.00	229	16.34	415	43.70	1110	27.5	700	25.00	635	23	584	20–32	190	395
24"	600	6.06	154	6.06	154	10.50	267	18.70	475	51.37	1305	32	815	29.5	749.5	27.25	692	20–35	394	580
26"	650	6.50	165	6.50	165	11.50	292	20.85	530	54.72	1390	34.25	870	31.75	806.5	29.25	749	24–35	415	620
28	700	6.50	165	6.50	165	11.50	292	22.04	560	58.07	1475	36.5	927	34.00	863.6	31.5	800	28–35	435	650
30"	750	6.50	165	6.50	165	12.52	318	22.38	580	60.03	1525	38.75	984	36.00	914.4	33.75	857	28–35	476	717
32"	800	7.50	190	7.50	190	12.50	318	24.80	630	62.40	1585	41.75	1060	38.5	978	36.00	914	28–41	618	880
34	850	7.88	200	7.88	200	13.00	330	25.60	650	63.00	1600	43.75	1111	40.5	1029	38.00	965	32–41	670	980
36"	900	7.88	200	7.88	200	13.00	330	26.77	680	69.48	1765	46.00	1168	42.75	1086	40.25	1022	32–41	762	1042
38"	950	7.88	200	7.88	200	16.14	410	27.95	710	72.84	1850	48.75	1238	45.25	1149	42.25	1073	32–41	960	1250
40"	1000	8.50	216	8.50	216	16.14	410	29.53	750	76.00	1930	50.75	1289	47.25	1200.2	44.25	1124	36–41	1050	1500

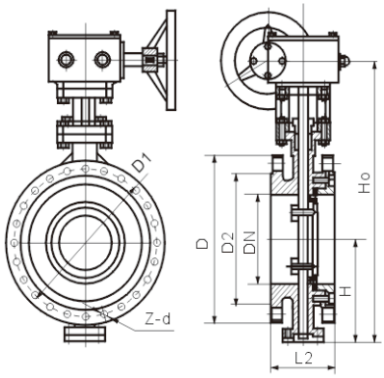
Triple Offset Butterfly Valve



Wafer Butterfly



LUG Butterfly

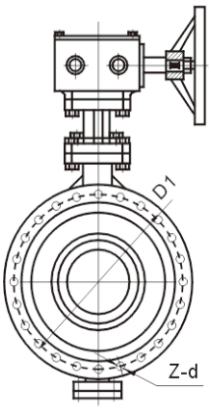


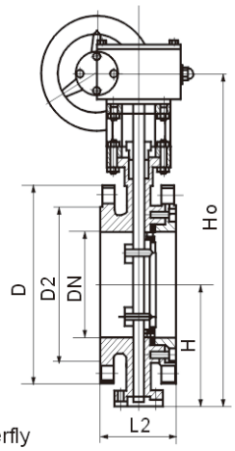
Flange Butterfly

API 300LB Wafer , LUG, Flange Butterfly

Nominal Diameter		Structure Length								External Dimension				Connection Dimension						Z-d	Weight JkgJ	
		Wafer L		LUG L1		Flange (Short) L2		Flange (Long) L2		H		H0		D		D1		D2				
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm		Wafer	Flange (Short)
2"	50	1.69	43	1.69	43	4.25	108	–	–	4.33	110	13.58	345	6.5	165	5.0	127	3.62	92	8–19	9	20
3"	80	1.88	48	1.88	48	4.50	114	7.09	180	4.92	125	14.96	380	8.25	210	6.62	168.5	5.0	127	8–22	12	29
4"	100	2.12	54	2.12	54	5.00	127	7.48	190	5.70	145	16.34	415	10	25	7.88	200	6.19	157	8–22	13	35
5"	125	2.19	56	2.19	56	5.50	140	–	–	6.50	165	17.91	455	11	280	9.25	235	7.31	186	8–22	18	40
6"	150	2.31	59	2.31	59	5.50	140	8.27	210	6.89	175	21.45	545	12.5	320	10.62	270	8.5	216	12–22	28	81
8"	200	2.88	73	2.88	73	6.00	152	9.06	230	8.26	210	24.21	645	15	380	13.0	330	10.62	270	12–26	37	94
10"	250	3.25	83	3.25	83	6.50	165	9.84	250	9.84	250	27.36	695	17.5	445	15.25	387.5	12.75	324	16–29	56	158
12"	300	3.62	92	3.62	92	7.00	178	10.63	270	11.24	285	32.78	830	20.5	520	17.75	451	15.0	381	16–32	79	183
14"	350	4.62	117	4.62	117	7.50	190	11.42	290	12.60	320	35.43	900	23.0	585	20.25	514.5	16.25	413	20–32	116	239
16"	400	5.25	133	5.25	133	8.50	216	12.20	310	13.98	355	38.58	980	25.5	650	22.5	571.5	18.5	470	20–35	146	302
18"	450	5.88	149	5.88	149	8.74	222	12.99	330	14.96	380	40.55	1030	28.0	710	24.75	628.5	21.0	533	24–35	193	346
20"	500	6.25	159	6.25	159	9.00	229	13.78	350	16.34	415	43.70	1110	30.5	775	27.0	686	23.0	584	24–35	209	434
24"	600	7.12	181	7.12	181	10.50	267	15.35	390	18.70	475	51.37	1305	36.0	915	32.0	813	27.25	692	24–41	433	638
26"	650	8.25	210	8.25	210	11.50	292	16.14	410	20.00	510	54.0	1370	38.25	972	34.5	876.3	29.5	749	28–45	450	650
28"	700	9.01	229	9.01	229	11.50	292	16.93	430	22.04	560	58.07	1475	40.75	1035	37.0	934	31.5	800	28–45	498	698
30"	750	9.01	229	9.01	229	12.52	318	17.72	450	22.38	580	60.03	1525	43.0	1092	39.25	997	33.75	857	28–48	523	788
32"	800	9.48	241	9.48	241	12.52	318	18.50	470	25.59	650	64.37	1635	45.25	1149	41.5	1054.1	36.0	914	28–51	588	988
34"	850	9.50	241	9.50	241	13.00	330	20.80	510	26.00	660	66.0	1675	47.5	1207	43.5	1105	38.0	965	32–51	750	1050
36"	900	9.48	241	9.48	241	13.00	330	20.80	510	26.77	680	69.48	1765	50.0	1270	46.0	1168.4	40.25	1022	32–54	838	1146
38"	950	11.80	300	11.80	300	16.15	410	20.87	530	28.5	725	72.0	1830	46.0	1168	43.0	1092.2	40.5	1029	32–41	1200	1450
40"	1000	11.80	300	11.80	300	16.15	410	21.65	550	31.0	785	78.0	1980	48.75	1238	45.5	1156	42.75	1086	32–45	1600	2000

Triple Offset Butterfly Valve



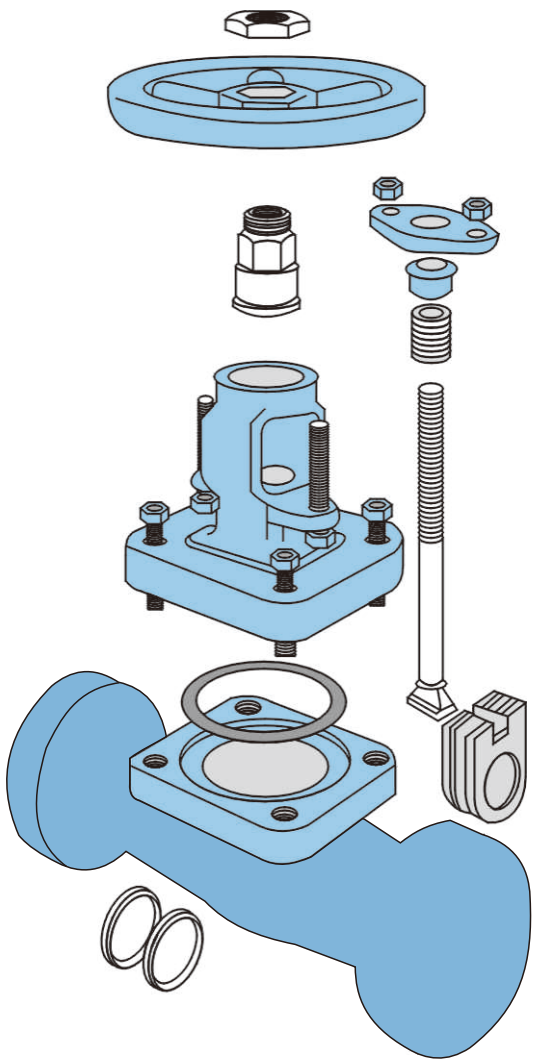


Flange Butterfly

API 600LB Flange Butterfly

Nominal Diameter		Face-to-face (Standard)		External Dimension				Connection Dimension							Reference Weight Jkgj
		L		H		H0		D		D1		D2		Z-d	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm		
2	50	5.90	150	4.5	115	15.0	380	6.5	165	5.0	127	3.62	92	8–19	20
3	80	7.10	180	6.1	155	17.5	445	8.25	210	6.62	168.3	5.0	127	8–22	35
4	100	7.48	190	7.8	195	20.8	530	10.72	275	8.5	215.9	6.19	157	8–26	60
5	125	7.88	200	8.8	225	23.2	590	13.0	330	10.5	266.7	7.31	186	8–29	90
6	150	8.25	210	9.4	240	24.5	620	14.0	355	11.5	292.1	8.5	216	12–29	120
8	200	9.05	230	11.0	280	29.0	735	16.5	420	13.75	349.2	1.62	270	12–32	170
10	250	9.85	250	12.4	315	32.0	810	20.0	510	17.0	431.8	12.75	324	16–35	250
12	300	10.62	270	13.5	345	34.5	875	22.0	560	19.25	489	15.0	381	20–35	340
14	350	11.42	290	14.5	370	37.8	960	23.75	605	20.75	527	16.25	413	20–39	450
16	400	12.20	310	16.5	420	41.7	1060	27.0	685	23.75	603.2	18.5	470	20–42	570
18	450	13.00	330	17.5	445	43.7	1110	29.25	745	25.75	654	21.0	533	20–45	700
20	500	13.78	350	19.0	485	50.0	1270	32.0	815	28.5	723.9	23.0	584	24–45	900
24	600	15.36	390	22.5	570	56.7	1440	37.0	940	33.0	838.2	27.25	692	24–51	1300
26	650	16.15	410	23.0	585	60.0	1525	40.0	1016	36.0	914.4	29.56	749	28–51	1600
28	700	16.93	430	24.5	620	62.6	1590	42.25	1073	38.0	965.2	31.5	800	28–55	1800
30	750	17.72	450	25.5	650	65.0	1650	44.5	1130	40.25	1022.4	33.75	857	28–55	2000
32	800	18.50	470	27.0	685	68.9	1750	47.0	1194	42.5	1079.5	36.0	914	28–60	2300
34	850	19.30	490	28.0	710	71.0	1800	49.0	1245	44.5	1130.3	38.0	965	28–60	2500
36	900	20.08	510	30.5	775	76.0	1930	51.75	1314	47.0	1194	40.25	1022	28–67	2800
38	950	20.86	530	29.8	755	75.2	1910	50.0	1270	45.75	1162	41.5	1054	28–60	2700
40	1000	21.65	550	31.5	800	78.7	2000	52.0	1321	47.75	1213	43.75	1111	32–60	3000

Forged Steel Gate Valves

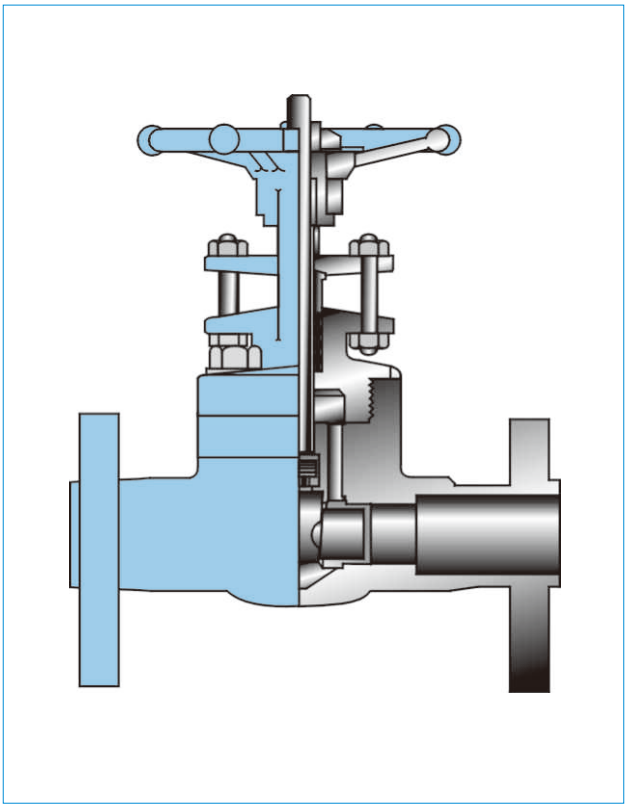


◎ Forged steel gate valves

Our company are available in three bonnet designs. The first design is the Bolted Bonnet, with male-female joint, spiral wound gasket, made in F304L/graphite, Ring joint gasket are also available on request. The second design is the welded bonnet, with a threaded and seal welded joint. On request a full penetration strength welded joint is available. The third design is the pressure seal bonnet, with a threaded and pressure seal bonnet joint.

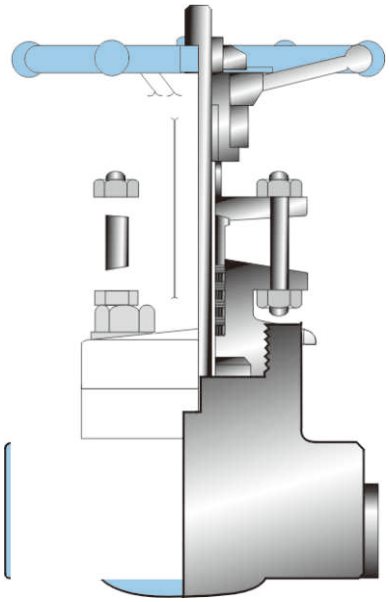
◎ Construction is as follows

※ Full port or conventional port;
※ Outside screw and yoke (OS & Y);
※ Two piece self-aligning packing gland;
※ Bolted bonnet & spiral wound gasket seal bonnet;
※ Bolted bonnet with spiral-wound gasket,threaded and seal welded bonnet or threaded and pressure seal bonnet;
※ Integral backseat;
※ Socket weld ends to ASME B16.11;
※ Screwed ends (NPT) to ANSI/ASME B1.20.1.



◎ Application standards

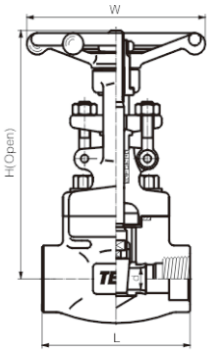
1′ Design and manufacture conform to
API 602′ BS5352′ ANSI B16.34;
2′ Connection ends conform to˙˙
1)Socket welded dimension conform to ANSI B16.11
2)Screw ends dimension conform to ANSI B1.20.1
3)Butt-welded conform to ANSI B16.25
4)Flanged ends conform to ANSI B16.5
3′ Test and inspection conform to:
API 598
4′ Structure features˙˙
Bolted bonnet, outside screw and yoke;
Welded bonnet, outside screw and yoke.
5′ Materials conform to ANIS/ASTM.
6′ Main materials˙˙
A105˙˙LF2˙˙F5˙˙F11˙˙F22˙˙F304˙˙F304L˙˙F316˙˙
F316L˙˙F321˙˙F51˙˙F53˙˙Monel˙˙Alloy Steel.



Main part materials list

NO.	Part name	A105/F6a	A105/F6aHFS	LF2/304	F11/F6aHF	F304(L)/304(L)	F316(L)/316(L)	F51/F51
1	Body	A105	A105	LF2	F11	F304(L)	F316(L)	F51
2	Seat	410	410HF	304	410HF	304(L)	316(L)	F51
3	Wedge	F6a	F6a	F304	F6aHF	F304(L)	F316(L)	F51
4	Stem	410	410	304	410	304(L)	316(L)	F51
5	Gasket	304+graphite	304+graphite	304+graphite	304+graphite	304+graphite	316+graphite	316+graphite
6	Bonnet	A105	A105	LF2	F11	F304(L)	F316(L)	F51
7	Bolt	B7	B7	L7	B16	B8(M)	B8(M)	B8M
8	Pin	410	410	410	410	304	304	304
9	Gland	410	410	304	410	304	316	F51
10	Gland eyebolt	B7	B7	L7	B16	B8(M)	B8(M)	B8M
11	Gland flange	A105	A105	LF2	F11	F304	F304	F304
12	Hex nut	2H	2H	2H	2H	8(M)	8(M)	8M
13	Stem nut	410	410	410	410	410	410	410
14	Locking nut	35	35	35	35	35	35	35
15	Nameplate	AL	AL	AL	AL	AL	AL	AL
16	Handwheel	A197	A197	A197	A197	A197	A197	A197
17	Lubricating gasket	410	410	410	410	410	410	410
18	Packing	Graphite	Graphite	Graphite	Graphite	Graphite	Graphite	Graphite

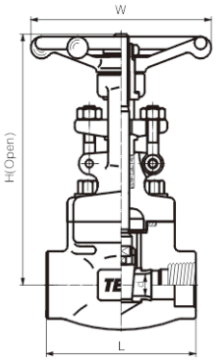
Forged Steel THD and SW Gate Valve



◎CL800

Bolted bonnet, full port reduced port outside screw and yoke(OS & Y)
Threaded, butt-welded or socket welded ends; design to API 602

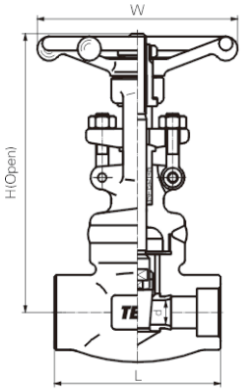
Specification	R.P	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
	F.P	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
Face to face	L	79	92	111	120	120	140	178	180
Handwheel diameter	W	100	100	125	160	160	180	200	220
Height	H	161	163	196	223	251	290	333	370
Flow port dimension	d	10.5	13.5	18	24	29	36.5	45	51
Weight(Kg)		2.22	2.39	4.24	5.7	7.05	10.9	16.8	24



◎CL900-CL1500

Bolted bonnet, full port reduced port outside screw and yoke(OS&Y)
Threaded, butt-welded or socket welded ends; design to API 602

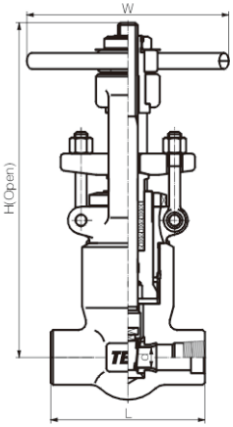
Specification	R.P	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
	F.P	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	111	111	120	120	140	178	180
Handwheel diameter	W	125	125	160	160	180	200	220
Height	H	191	192	219	243	296	316	370
Flow port dimension	d	10.5	13.5	18	24	29	36.5	45
Weight(Kg)		4.4	4.3	6	7.2	11.4	16	23



◎CL1500-CL2500

Welded bonnet, full port or red. port, outside screw and yoke(OS&Y)
Threaded, butt-welded or socket welded ends; design to API 602

Specification(NPS)	F.P	Pressure pound level	1/2	3/4	1	1 1/2	2
Face to face	L	CL1500	110	150	150	210	235
Handwheel diameter	W	CL1500	110	130	130	180	250
Height	H	CL1500	277	300	390	400	435
Flow port dimension	d	CL1500	14	17	22	35	37
Weight(Kg)		CL1500	5.1	11	12.1	22	37

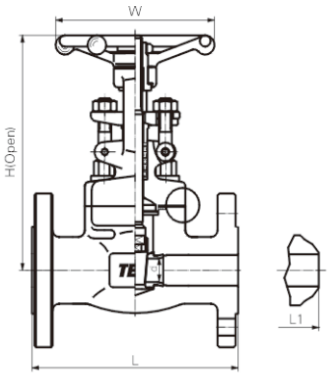


◎CL1500-CL2500

Pressure seal bonnet, full port outside screw and yoke(OS & Y)
Socket welded ends, design conform to ASME B16.34

Specification	F.P	Pressure pound level	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	CL2500	186	186	186	232	232	279
Handwheel diameter	W	CL2500	200	200	200	280	280	300
Height	H	CL2500	325	325	327	467	468	540
Flow port dimension	d	CL2500	14	14	19	25	30	36.5
Weight(Kg)		CL2500	12.3	11.6	10.8	26.0	28.4	60.0

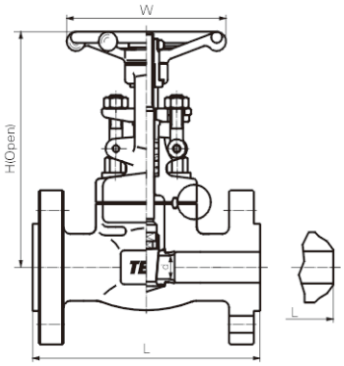
Forged Steel Flange Gate Valve



◎CL150–300–600

Bolted bonnet, red., outside screw and yoke(OS & Y)
Flange–welded or butt–welded ends; design to API602;BS5352

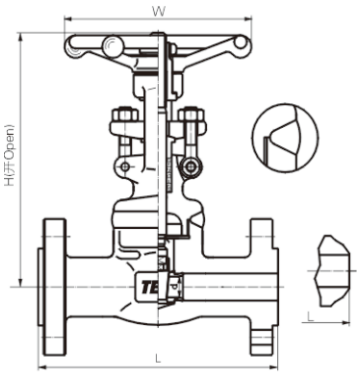
Specification				1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
Face to face (mm)	CL150		L(RF) L1(BW)	108	117	127	140	165	178	190
	CL300			140	152	165	178	190	216	241
	CL600			165	190	216	229	241	292	330
Handwheel diameter			W	100	100	125	160	160	180	200
Height	CL150		H	176	184	217	226	250	290	357
	CL300,CL600			161	163	196	226	250	290	357
Flow port dimension			d	10	13.5	18	24	29	36.5	45
Weight (Kg)	CL150	RF		3.4	3.98	6.12	7.2	10.4	15.5	24.5
		BW		2.8	3.3	5.4	7.1	8.2	12.5	20
	CL300	RF		3.77	4.89	7.23	9.6	12.65	18	26.2
		BW		3.5	4.4	6.8	8.1	9.2	15.4	22
	CL600	RF		4.2	5.8	8.8	12.1	15.6	19.5	32
		BW		4.5	5.1	8.2	10.5	12.4	20.1	28



◎CL900–CL1500

Bolted bonnet, red., outside screw and yoke(OS & Y)
Flange–welded or butt–welded ends; design to API602;BS5352

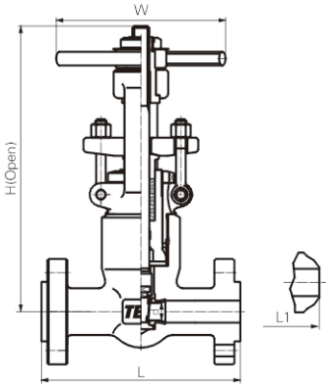
Specification		1/2	3/4	1	1 1/4	1 1/2	2
Face to face (mm)	L(RF) L1(BW)	216	229	254	279	305	368
	L(RTJ)	216	229	254	279	305	371
Handwheel diameter	W	125	125	160	180	200	220
Height	H	191	192	219	257	296	316
Flow port dimension	d	13.5	18	24	29	36.5	45
Weight (Kg)		7.2	11.5	15.6	16.2	22.6	28.2



◎CL2500

Welded bonnet, red., outside screw and yoke(OS & Y)
Flange–welded or butt–welded ends; design to API602;BS5352

Specification		1/2	3/4	1	1 1/2	2
Face to face (mm)	L(RF) L1(BW)	264	273	308	384	451
	L(RTJ)	264	273	308	387	454
Handwheel diameter	W	125	160	160	200	240
Height	H	207	240	258	355	370
Flow port dimension	d	13.5	13.5	19	30	36.5
Weight (Kg)		19.5	21.5	42	65	95

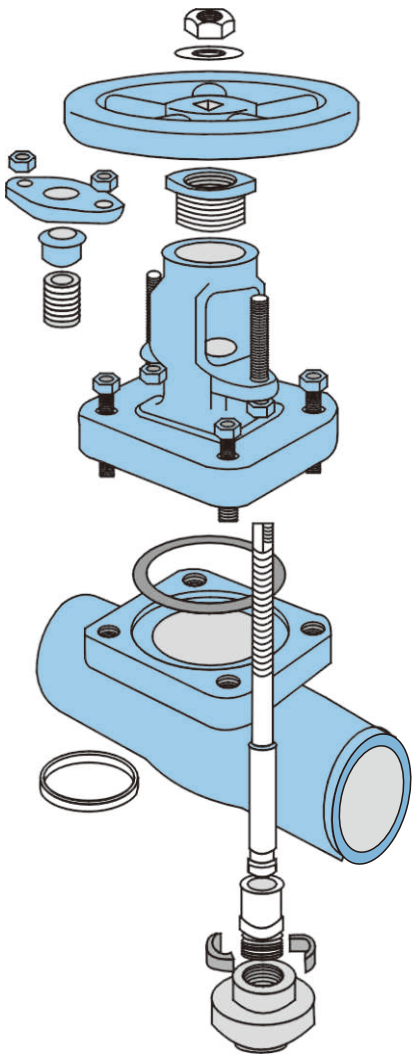


◎CL2500

Pressure seal gate valves, red., outside screw and yoke(OS & Y)
Flange–welded or butt–welded ends; design to ASME B16.34

Specification		1/2	3/4	1	1 1/2	2
Face to face (mm)	L(RF) L1(BW)	264	273	308	384	451
	L(RTJ)	264	273	308	387	451
Handwheel diameter	W	200	200	200	280	300
Height	H	325	325	327	478	540
Flow port dimension	d	13.5	13.5	19	30	36.5
Weight (Kg)		4.6	6.8	7.6	15	21.9

Forged Steel Globe Valves

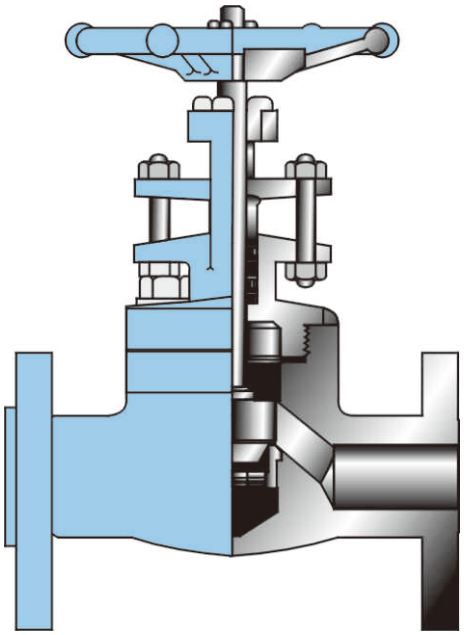


◎ Forged steel globe valves

Our company are available in three bonnet designs. The first design is the Bolted Bonnet, with male-Female joint, spiral wound gasket, made in F304L/graphite, Ring joint gasket are also available on request. The second design is the welded bonnet, with a threaded and seal welded joint. On request a full penetration strength welded joint is available. The third design is the pressure seal bonnet, with a threaded and pressure seal bonnet joint.

◎ Construction is as follows

※ Full port or conventional port;
※ Outside screw and yoke (OS&Y);
※ Two piece self-aligning packing gland;
※ Bolted bonnet with spiral-wound gasket, threaded and seal welded bonnet or threaded and pressure seal bonnet;
※ Integral backseat;
※ Socket weld ends to ASME B16.11;
※ Screwed ends(NPT) to ANSI/ASME B1.20.1;
※ Disc can change for throttle type、needle type、ball type and check type.



Forged Steel Globe Valves

◎ Application standards

1′ Design and manufacture conform to BS5352 MSS SP-118.

2′ Connection ends conform to.

1)Scoket welded ends conform to ANSI B16.11

2)Screw ends conform to ANSI B1.20.1

3)Butt-welded ends conform to ANSI B16.25

4)Flanged ends conform to ANSI B16.5

3′ Test and inspection conform to.

API 598

4′ Structure features.

Bolted bonnet, outside screw and yoke;

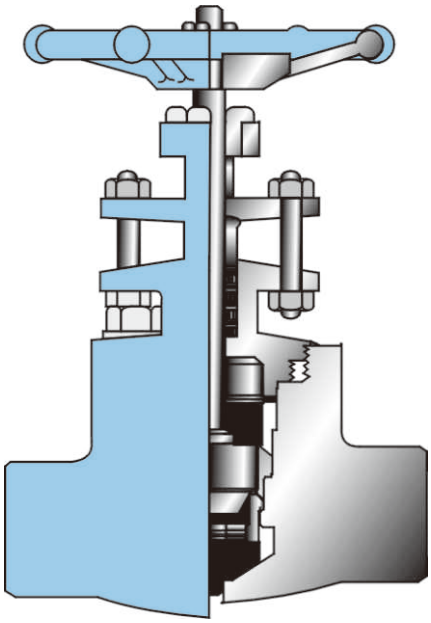
Welded bonnet, outside screw and yoke.

5′ Materials conform to ANSI/ASTM.

6′ Main materials.

A105. LF2. F5. F11. F22. F304. F304L. F316.

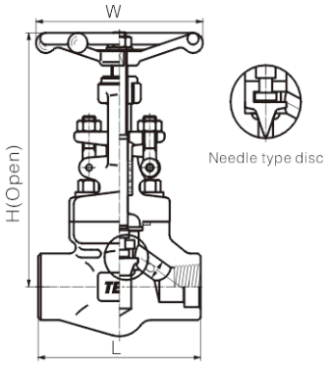
F316L. F321. F51. F53. Monel. Alloy Steel.



Main part materials list

NO.	Part name	A105/F6a	A105/F6aHFS	LF2/304	F11/F6aHF	F304(L)/304(L)	F316(L)/316(L)	F51/F51
1	Body	A105	A105+HF	LF2	F11+HF	F304(L)	F316(L)	F51
3	Disc	F6a	F6a	F304	F6aHF	F304(L)	F316(L)	F51
4	Stem	410	410	304	410	304(L)	316(L)	F51
5	Gasket	304+ graphite	304+ graphite	304+ graphite	304+ graphite	304+ graphite	316+ graphite	316+ graphite
6	Bonnet	A105	A105	LF2	F11	F304(L)	F316(L)	F51
7	Bolt	B7	B7	L7	B16	B8(M)	B8(M)	B8M
8	Pin	410	410	410	410	304	304	304
9	Gland	410	410	304	410	304	316	F51
10	Gland eyebolt	B7	B7	L7	B16	B8(M)	B8(M)	B8M
11	Gland flange	A105	A105	LF2	F11	F304	F304	F304
12	Hex nut	2H	2H	2H	2H	8(M)	8(M)	8M
13	Stem nut	410	410	410	410	410	410	410
14	Locking nut	35	35	35	35	35	35	35
15	Nameplate	AL	AL	AL	AL	AL	AL	AL
16	Handwheel	A197	A197	A197	A197	A197	A197	A197
18	Packing	Graphite	Graphite	Graphite	Graphite	Graphite	Graphite	Graphite

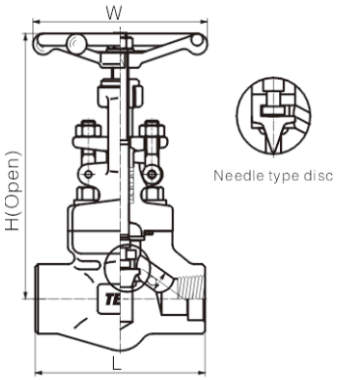
Forged Steel THD and SW globe valves



◎CL800

Bolted bonnet, full port or red. port outside screw and yoke(OS & Y)
THD., SW or BW ends, design standard: BS5352

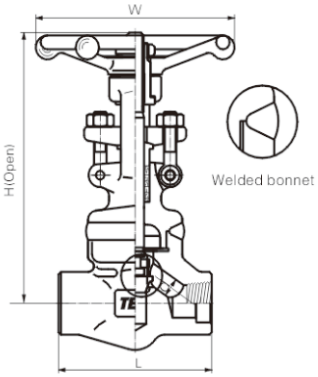
Specification	R.P	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
	F.P	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	79	92	111	120	152	172	200
Handwheel diameter	W	100	100	125	160	160	180	200
Height	H	164	164	203	224	260	300	355
Flow port dimension	d	9	13	17.5	23	30	35	46
Weight(Kg)		2.28	2.37	4.3	5.75	7.8	12.5	17.5



◎CL900–CL1500

Bolted bonnet, red. port or full port outside screw and yoke(OS&Y)
THD.,BW or SW ends, design standard: BS5352

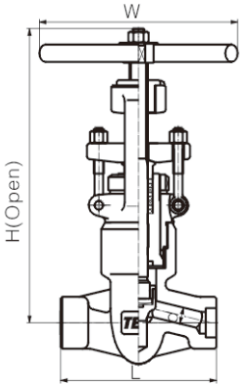
Specification	R.P	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
	F.P	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	111	111	120	152	172	200	220
Handwheel diameter	W	125	125	160	160	180	200	240
Height	H	207	207	240	258	330	355	370
Flow port dimension	d	12	15	20	28	32	40	45
Weight(Kg)		3.7	3.6	6.8	7.6	11.6	15	21.9



◎CL2500

Welded bonnet (RJ), red. port, outside screw and yoke(OS & Y)
SW ends, design standard: ASME B16.34

Specification	F.P	1/2	3/4	1	1 1/2	2
Face to face	L	150	150	210	235	235
Handwheel diameter	W	130	130	250	300	300
Height	H	293	300	390	435	435
Flow port dimension	d	11	14	19	28	35
Weight(Kg)		10	10.3	22.4	38	38

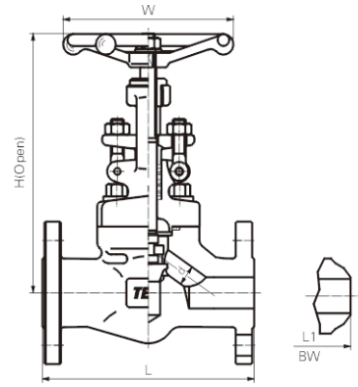


◎CL2500

Pressure seal bonnet, red. port, outside screw and yoke(OS & Y)
SW ends, design standard:ASME B16.34

Specification	F.P	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	186	186	186	232	232	279
Handwheel diameter	W	200	200	200	280	280	300
Height	H	375	378	380	490	490	540
Flow port dimension	d	11	14	19	25	28	35
Weight(Kg)		12.3	11.6	10.8	26.0	28.4	60

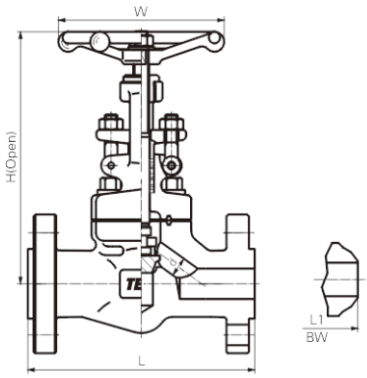
Forged Steel Flange Globe Valve



◎CL150–300–600

Bolted bonnet, reducing port, outside screw and yoke(OS & Y)
Flanged or BW ends, design standard: BS5352

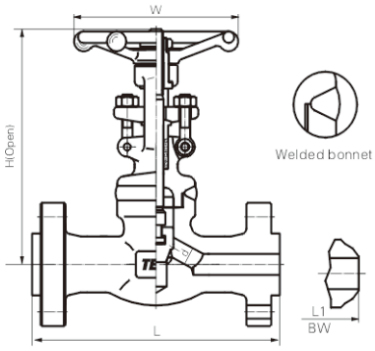
Specification			R.P	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	CL150		L(RF) L1(BW)	108	117	127	140	165	203
	CL300			152	178	203	216	229	267
	CL600			165	190	216	229	241	292
Handwheel diameter			W	100	100	125	160	160	180
Height	CL150/CL300		H	180	184	217	224	260	300
	CL600			164	164	203	224	260	300
Flow port dimension(mm)			d	9	13	17.5	23	30	35
Weight (Kg)	CL150	R F		3.45	4.00	6.19	9.6	10.5	17
		BW		2.3	3.6	7.8	8.2	12.0	15.0
	CL300	R F		3.8	5.1	7.2	12	13.5	19.7
		BW		2.8	4.0	8.5	9.2	12.6	16.8
	CL600	R F		5.6	7.8	12.5	17	23.5	38.8
		BW		3.4	4.7	9.2	10.5	13.3	18.9



◎CL900–CL1500

Bolted bonnet, reducing port, outside screw and yoke(OS & Y)
Flanged or BW ends, design standard: BS5352

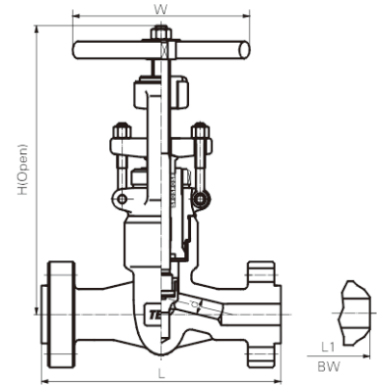
Specification	F.P	1/2	3/4	1	1 1/4	1 1/2	2
Face to face (mm)	L(RF),L1(BW)	216	229	254	279	305	368
	L(RTJ)	216	229	254	279	305	371
Handwheel diameter(mm)	W	125	125	160	160	180	200
Height(mm)	H	207	207	230	160	300	355
Flow port dimension(mm)	d	12	15	20	28	32	40
Weight (Kg)		11	13.2	17.4	19	24.5	31



◎CL2500

Welded bonnet, reducing port, outside screw and yoke(OS & Y)
Flanged or BW ends, design standard: ASME B16.34

Specification	F.P	1/2	3/4	1	1 1/2	2
Face to face (mm)	L(RF),L1(BW)	264	273	308	384	451
	L(RTJ)	264	273	308	387	454
Handwheel diameter(mm)	W	125	160	200	250	240
Height(mm)	H	207	240	258	355	300
Flow port dimension(mm)	d	11	14	19	28	35
Weight (Kg)		19.5	21.5	42	65	95

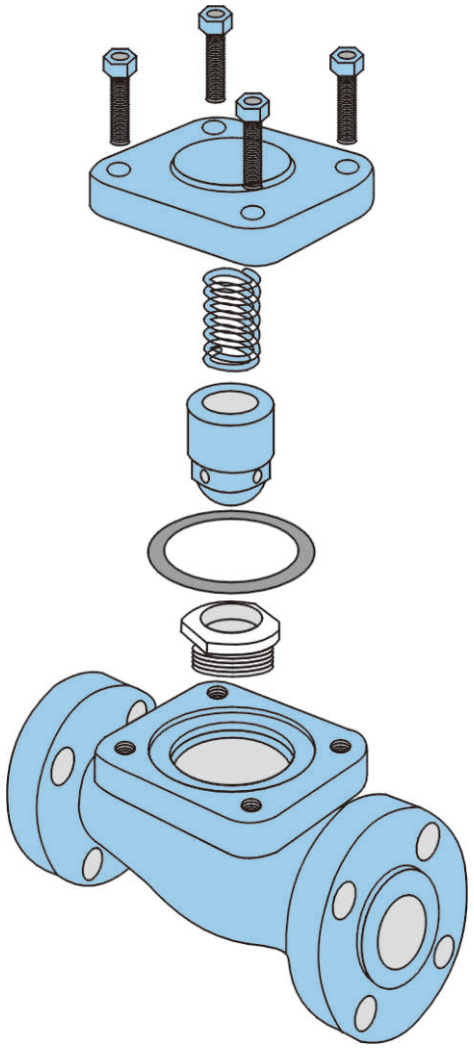


◎CL2500

Pressure seal bonnet, reducing port, outside screw and yoke(OS & Y)
Flanged or BW ends, design standard: ASME B16.34

Specification	F.P	1/2	3/4	1	1 1/4	1 1/2	2
Face to face (mm)	L(RF),L1(BW)	264	273	308	349	384	451
	L(RTJ)	264	273	308	349	387	454
Handwheel diameter(mm)	W	200	200	280	280	280	300
Height(mm)	H	320	320	320	440	440	490
Flow port dimension(mm)	d	11	14	19	25	28	35
Weight (Kg)		21.5	24.7	30.4	48.1	58.1	130

Forged Steel Check Valves

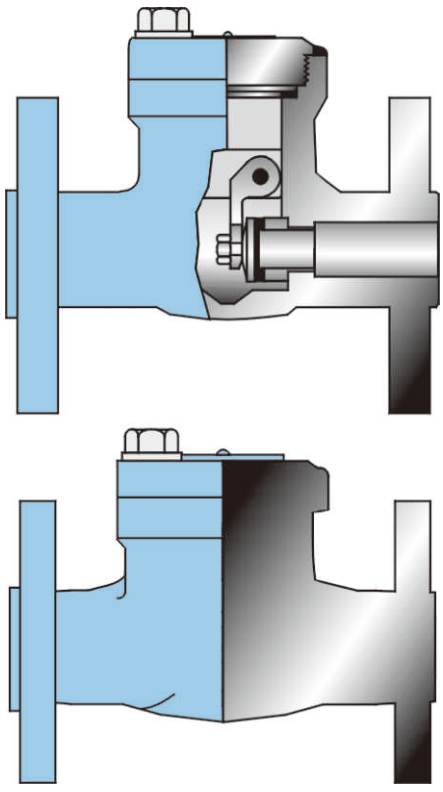


◎ Forged steel check valves

Our company are available in three bonnet designs. The first design is the Bolted Bonnet, with male-female joint, spiral wound gasket, made in F304L/graphite, Ring joint gasket are also available on request. The second design is the welded bonnet, with a threaded and seal welded joint. On request a full penetration strength welded joint is available. The third design is the pressure seal bonnet, with a threaded and pressure seal bonnet joint. The check valves are also available in three different design configurations. These are piston check, ball check, or swing check designs.

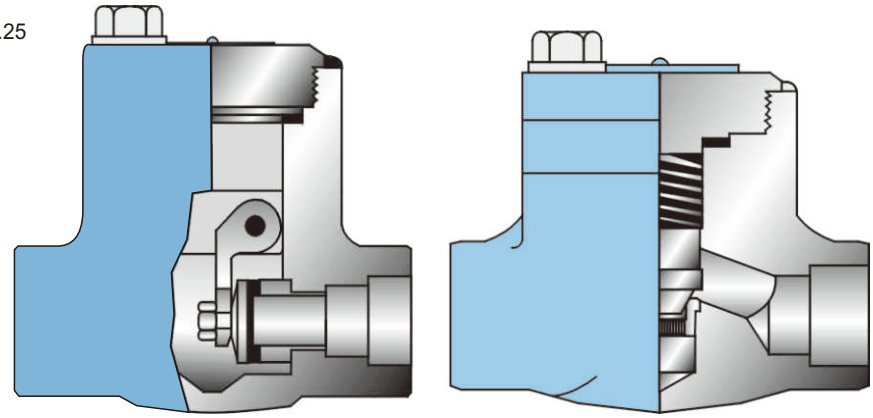
◎ Construction is as follows

※ Full port or conventional port;
※ Lift type check valves;
※ Ball type check valves;
※ Swing type check valves;
※ Acceding to requirement equip inside spring;
※ Bolted bonnet with spiral-wound gasket, threaded and seal welded bonnet or threaded and pressure seal bonnet;
※ Socket weld ends to ASME B16.11;
※ Screwed ends (NPT) to ANSI/ASME B1.20.1;
※ Disc can change for soft seal disc and ball disc.



◎ Application standards

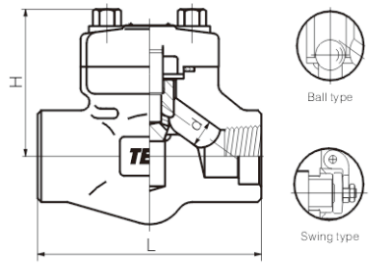
1、Design and manufacture conform to BS5352 MSS SP-118；
2、Connection ends conform to：
1)Scoket welded ends conform to ANSI B16.11
2)Screw ends conform to ANSI B1.20.1
3)Butt-welded ends conform to ANSI B16.25
4)Flanged ends conform to ANSI B16.5
3、Test and inspection conform to：API 598
4、Structure features：
Bolted bonnet
5、Materials conform to ANSI/ASTM.
6、Main materials：
A105；LF2；F5；F11；F22；F304；
F304L；F316；F316L；F321；F51；
F53；Monel；Alloy Steel.



Main part materials list

NO.	Part name	A105/F6a	A105/F6aHFS	LF2/304	F11/F6aHF	F304(L)/304(L)	F316(L)/316(L)	F51/F51
1	Body	A105	A105	LF2	F11	F304(L)	F316	F51
2	Seat ring	410	410HF	304	410HF	304(L)	316(L)	F51
3	Disc	F6a	F6a	F304	F6aHF	F304(L)	F316(L)	F51
5	Gasket	304+G	304+G	304+G	304+G	304+G	316+G	316+G
6	Bonnet	A105	A105	LF2	F11	F304(L)	F316(L)	F51
7	Bolt	B7	B7	L7	B16	B8(M)	B8(M)	B8M
15	Nameplate	AL	AL	AL	AL	AL	AL	AL
32	Revit	AL	AL	AL	AL	AL	AL	AL
33	Steel ball	430	430	304	STL	316(L)	316(L)	STL
34	Disc nut	2H	2H	8	8	8(M)	8(M)	8M
35	Hinge	410	410	304	410	316(L)	316(L)	F51
36	Pin	410	410	304	410	304(L)	316(L)	F51

Forged Steel Check Valves

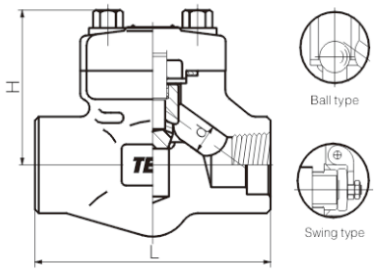


Spring-load acc. to client's requirement

◎CL800

BB, Full Bore or Red. Bore, THD or BW or SW ends, Design Standard: BS5352

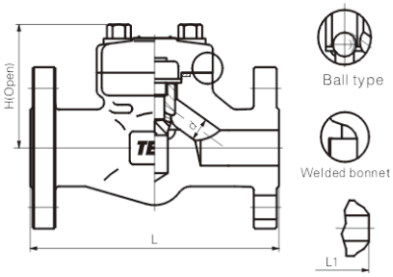
Specification	R.P	-	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
	F.P	-	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	Lift	79	92	111	120	152	172	200
		Swing	79	92	111	120	120	140	178
Height	H	Lift	61	61	78	84	84	118	132
		Swing	61	61	78	84	84	120	133
Flow port dimension	d	Lift	9	13	17.5	23	30	35	46
		Swing	10.5	13.5	18	24	29	36.5	45
Weight(Kg)		Lift	1.5	1.7	3.3	4.2	4.2	10.5	12.5
		Swing	1.5	1.7	3.3	4.2	4.2	8.5	10.9



Spring-load acc. to client's requirement

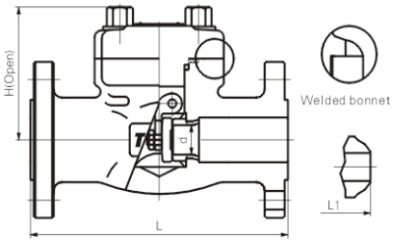
◎CL900-CL1500

Specification	R.P	-	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
	F.P	-	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	Lift	92	111	111	120	152	172	200
		Swing	92	111	111	120	120	140	178
Height	H	Lift	61	78	78	84	103	118	132
		Swing	61	78	78	84	101	120	133
Flow port dimension	d	Lift	7	12	15	20	28	32	40
		Swing	8	10.5	13.5	18	24	29	45
Weight(Kg)		Lift	1.5	3.4	3.3	4.2	6.3	10.5	12.5
		Swing	1.5	3.4	3.3	4.2	5.0	8.5	10.9



◎CL150-300-600

Specification			R.P	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	CL150		L(RF) L1(BW)	108	118	127	140	165	203
	CL300			153	178	203	216	229	267
	CL600			165	191	216	229	241	292
Height	CL150		H	77	81	93	95	103	118
	CL300/600			61	78	84	101	120	133
Flow port dimension(mm)			d	10	13	17.5	23	30	35
Weight (Kg)	CL150	RF		3.6	4.6	8.5	9.2	12.5	14.8
		BW		3.0	3.6	7.6	8.5	11.3	13.6
	CL300	RF		3.7	4.8	8.8	9.6	13.7	17.8
		BW		3.2	4.3	8.0	8.6	12.7	16.2
	CL600	RF		4.0	5.8	9.5	10.4	15.6	24.5
		BW		3.4	5.1	8.8	9.2	14.8	22.5



◎CL150-300-600

Specification			R.P	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	CL150		L(RF) L1(BW)	108	118	127	140	165	203
	CL300			153	178	203	216	229	267
	CL600			165	191	216	229	241	292
Height	CL150		H	77	81	93	95	103	118
	CL300/600			61	78	84	101	120	133
Flow port dimension(mm)			d	10.5	13.5	18	24	29	36.5
Weight (Kg)	CL150	RF		3.6	4.6	8.5	9.2	12.5	14.8
		BW		3.0	3.6	7.6	8.5	11.3	13.6
	CL300	RF		3.7	4.8	8.8	9.6	13.7	17.8
		BW		3.2	4.3	8.0	8.6	12.7	16.2
	CL600	RF		4.0	5.8	9.5	10.4	15.6	24.5
		BW		3.4	5.1	8.8	9.2	14.8	22.5