



# BALL VALVE



### MVC FACTORY

Add: Building 9, District 1, Wanyang Zhongchuang City, Bihu  
Town, Liandu District, Lishui City, Zhejiang Province  
www.mvcvalves.com  
E-mail: sales@marcovalve.com

### MVC VALVES USA

HQ Add: 1150 NW 72ND AVE TOWER 1 STE 455 #18087  
MIAMI, FL 331261, USA

## MVC Industrial Valves

In order to efficiently serve our customers, we have opened MVC in USA. All this infrastructure enables us to serve the market of North America, Central America, South America, Europe and Africa.

It is fully committed to promoting technological development in the fields of low temperature, high temperature, high pressure air sealing, low torque and minimal leakage.

In 2012, we established factory in China. With extensive application experience and comprehensive capabilities, we provide tailor-made solutions for your valve automation needs.



## Quality System

MVC's management team adheres to strict policies ensuring that no defects occur in the valves used for industrial services. To maintain this discipline, we enforce internal regulations and a robust working process system. Third parties and customers are regularly invited to audit and approve our system.

MVC holds ISO9001, API6D, CE, TS, and other key certifications. All raw materials undergo re-testing for properties and mechanical performance upon arrival at our factory to ensure they meet machining standards. Non-destructive testing (NDE), including UT, MT, PT, and RT, is conducted by our quality control department during or before machining.

Every valve undergoes shell and sealing hydraulic tests, as well as air sealing tests. For valves used in special applications, additional tests such as fugitive emission, high/low temperature cycling, life, fire safety, cryogenic, and cleanliness tests after degreasing are available upon client request.





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Top Entry Ball Valve Series

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048

Other Ball Valve Series

048 Metal to Metal Sealing Ball Valve

050 Metal to Metal Sealing Floating Ball Valve

052 Metal to Metal Sealing Trunnion Ball Valve

057 Cryogenic Ball Valve

060 Three Way Ball Valve

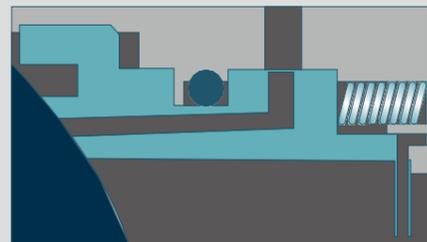
063 Threaded Ends Ball Valve

065 Special Material Ball Valve

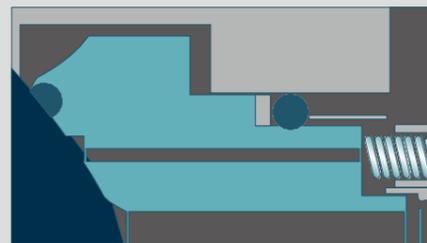


## Structure Features

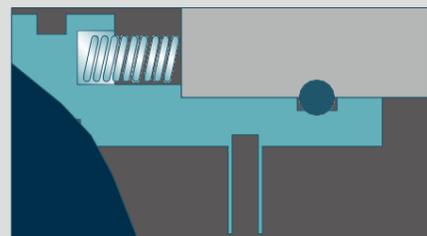
- Fully welded construction
- Designed in conformity with API 6D Standard
- Floating type, self-centering seating ring systems with pre-tensioned spring elements
- Trunnion-mounted Ball type
- Low torques
- Maintenance-free sealing and mounting systems
- Double block and bleed(DDB)
- Single piston effect(SPE) with Self-relieving seating rings
- Optional double piston effect (DPE)
- Optional sealing system PMSS
- Adjustable Dual or Single Stem Sealing
- Secondary injection of sealant
- Anti Blow-out Stem Protection Design
- Drain and Vent Connection Construction
- Anti-static design
- Optional stem extension
- Fireproof design in conformity with API 6FA and BS 6755 Standard



Sealing system: Soft-seated



Sealing system: Primary metallic/  
Secondary Soft-seated



Sealing system: Metal to metal



### Design

The body of valve are designed as fully-welded structure,there are two systematically distributed ring type welding joints,the minimum wall thickness of these two joints are strictly designed as per API 6D,ASME B16.34,ASME SECTION VIII, which can completely avoid any body leakage,and withstand the stress from the pipeline.

### Replaceable Stem Seal

The stem sealing of MVC ball valve can be replaced even under the pipeline maximum pressure. The modular design enables us to provide various stem sealing structures to meet your specific requirements.

## Technical Specifications

Design Basis	GB		API	ASME
Design Standard	GB/T 12237	GB/T 19672	API 6D	ASME B16. 34
Face-to-Face	GB/T 12221	GB/T 19672	API 6D	ASME B16. 10
End Connection*	Flanged	GB/T 9113	GB/T 9113	ASME B16. 5/MSS SP-44/ASME B16. 47*
	Butt-Welding	GB/T 12224	GB/T 12224	ASME B16. 25
Materials	NACE MRO175	NACE MRO175	NACE MRO175	
Test and Check	JB/T 9092	GB/T 19672	GB/T 598	API 6D ASME B 16. 34
Fire Test	GB/T 6899	GB/T 6899	API F6A/API 607	

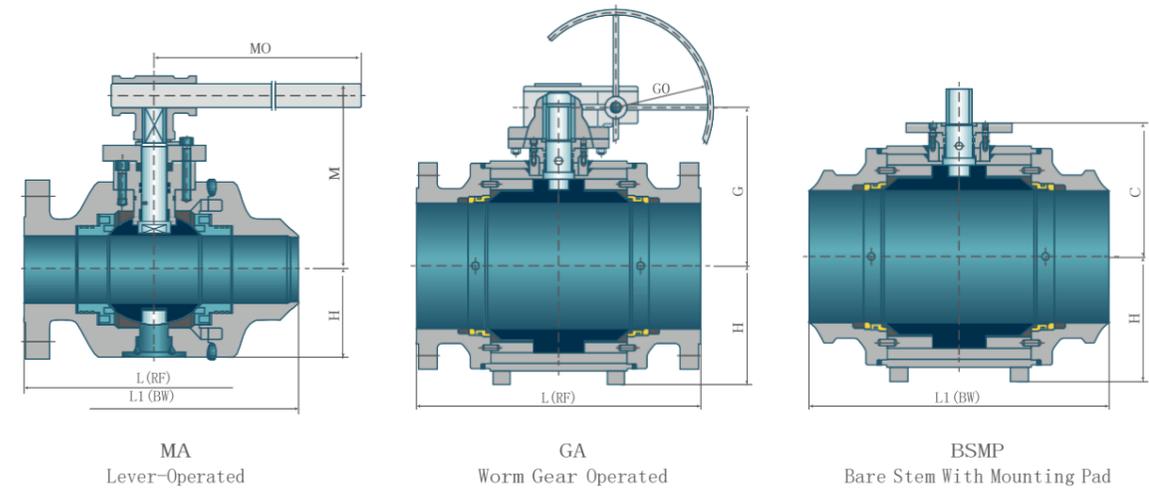
\* The valve end connection is standard designed or manufactured according to user requirements.

MSS SP-44 for size 22" ASME B16. 47 Series A for size 26" & over.



Main Parts and Materials

Part Name	Carbon Steel		Low Temp Steel		Stainless Steel	
	GB	ASTM	GB	ASTM	GB	ASTM
	Body	A105	A105	0Cr18Ni9	A350-LF2	0Cr18Ni9 00Cr17Ni12Mo2
Bolt or Nut	35CrMo	A193-B7	304	A320-L7	304	A193 B8
	45	A194-2H	304	A194-4	304	A194 8
Ball	25+ENP	A105+ENP	0Cr18Ni9	A350-LF2+ENP	0Cr18Ni9 00Cr17Ni12Mo2	A182-F304 A182-F316
Stem	1Cr13	A276-410	304	A276-304	304	A276-304
	2Cr13	A276-420			316	A276-316
Seat	25+ENP	A105+ENP	304	A350 LF2+ENP	0Cr18Ni9 00Cr17Ni12Mo2	A182-F304 A182-F316
	Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON		Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON		Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON	
O-Ring	NBR OR VITON		NBR OR VITON		VITON	
Gasket	Graphite+ Stainless steel		Graphite+ Stainless steel		Graphite+ Stainless steel	



Main Parts and Materials

Part Name	Carbon Steel		Low Temp Steel		Stainless Steel	
	GB	ASTM	GB	ASTM	GB	ASTM
	Body	A105	A105	0Cr18Ni9	A350-LF2	0Cr18Ni9 00Cr17Ni12Mo2
Bolt or Nut	35CrMo	A193-B7M	304	A320-L7	304	A193 B8
	45	A194-2HM	304	A194-4	304	A194 8
Ball	25+ENP	A105+ENP	0Cr18Ni9	A350-LF2+ENP	0Cr18Ni9 00Cr17Ni12Mo2	A182-F304 A182-F316
Stem	17-4PH	17-4PH	For use at low temperatures resilient steels.		304	A276-304
					316	A276-316
Seat	25+ENP	A105+ENP	304	A350-LF2+ENP	0Cr18Ni9 00Cr17Ni12Mo2	A182-F304 A182-F316
	Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON		Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON		Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON	
O-Ring	NBR OR VITON		NBR OR VITON		VITON	
Gasket	Graphite+ Stainless steel		Graphite+ Stainless steel		Graphite+ Stainless steel	

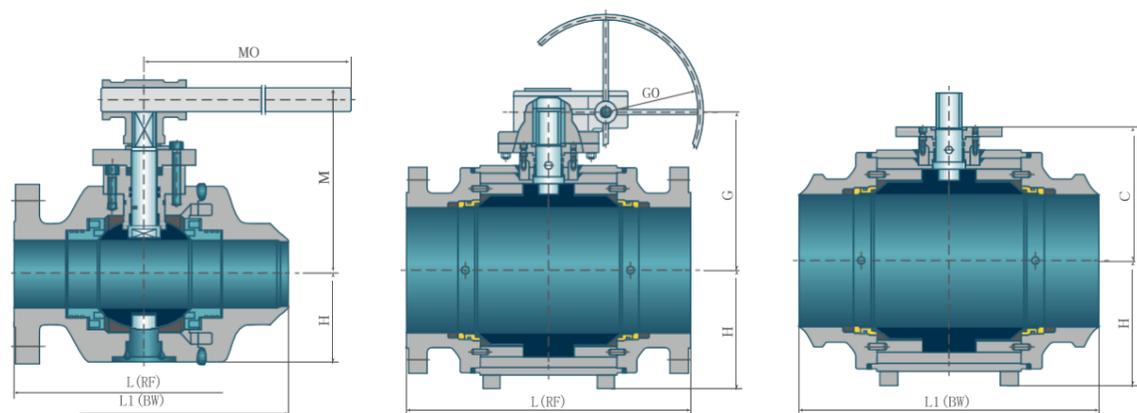
Sulfur-resistant Type

Main External Dimensions

Unit: mm

PN16/PN20/Class150

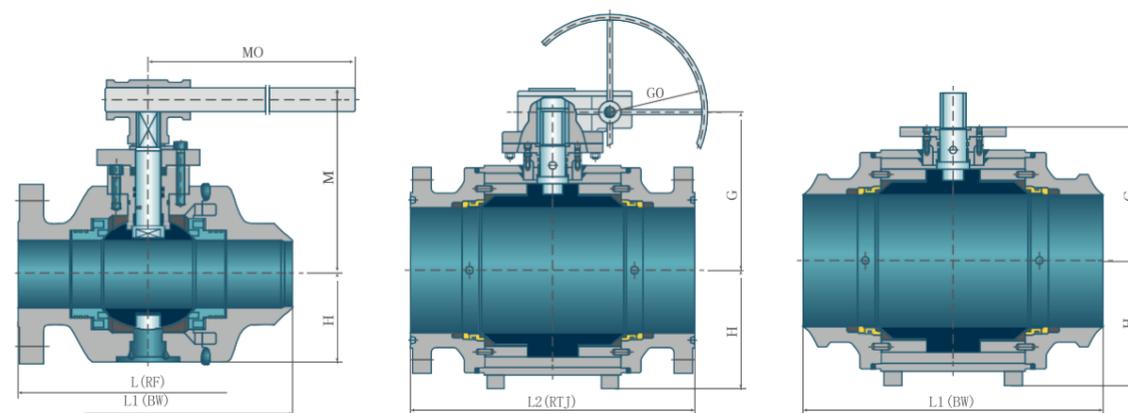
Nominal Diameter DN	NPS	Structural Length		MA		GA		BA		Weight WT (kg)	Torque (N · M)
		L (RF)	L1 (BW)	M	MO	B	B0	C	H		
50	2	178	216	161	250	---	---	105	100	28	57
65	2-1/2	191	241	178	300	---	---	130	110	39	71
80	3	203	283	189	350	185	280	155	125	49	95
100	4	229	305	214	500	235	280	200	160	88	192
150	6	394	457	265	800	325	300	250	185	160	485
200	8	457	521	---	---	390	400	278	222	248	832
250	10	533	559	---	---	445	400	323	280	379	1105
300	12	610	635	---	---	520	500	340	303	571	1655
350	14	686	762	---	---	550	500	375	330	759	2695
400	16	762	838	---	---	580	600	410	355	1150	3164
450	18	864	914	---	---	605	600	440	390	1192	3793
500	20	914	991	---	---	610	600	495	430	1769	5500
550	22	991	1092	---	---	670	600	525	475	2367	6650
600	24	1067	1143	---	---	725	700	585	520	3450	7529
650	26	1143	1245	---	---	760	700	630	560	4050	8693
700	28	1245	1346	---	---	790	700	645	650	4830	10770
750	30	1295	1397	---	---	825	700	690	700	5960	12365
800	32	1372	1524	---	---	870	700	740	745	7480	14070
850	34	1473	1626	---	---	910	700	760	775	8032	21148
900	36	1524	1727	---	---	950	700	810	805	9100	22987
1000	40	1753	1956	---	---	1005	700	895	900	14100	26059
1050	42	1790	2083	---	---	1045	800	950	935	15320	28149
1200	48	1995	2388	---	---	1235	800	1095	1070	22000	42776
1400	56	2489	2489	---	---	1450	800	1300	1250	34150	65654
1500	60	2640	2640	---	---	1550	1000	1380	1350	42500	85654
1600	64	---	---	---	---	---	---	---	---	---	---



MA  
Lever-Operated

GA  
Worm Gear Operated

BSMP  
Bare Stem With Mounting Pad



MA  
Lever-Operated

GA  
Worm Gear Operated

BSMP  
Bare Stem With Mounting Pad

Main External Dimensions

Unit: mm

PN25/PN40/PN50/Class300

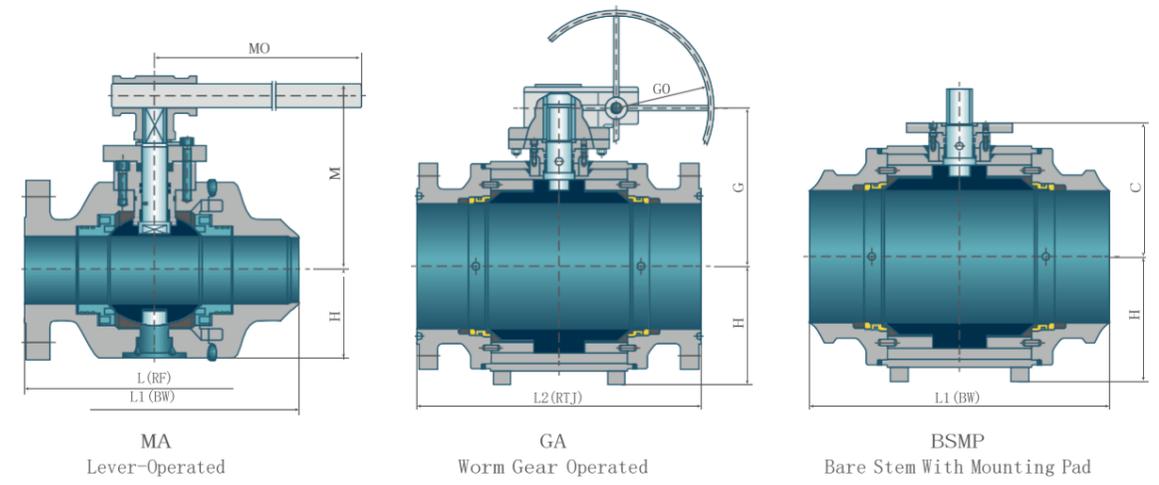
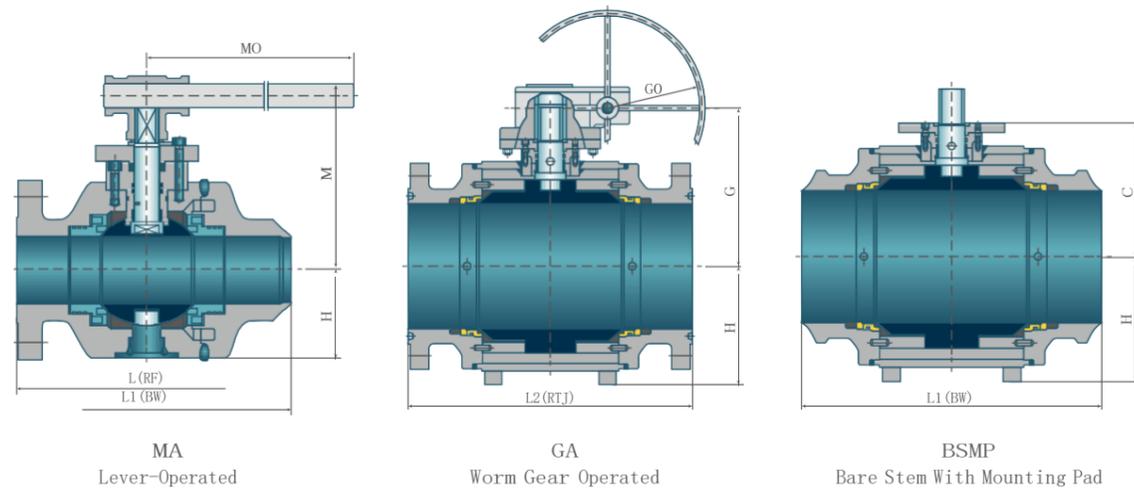
Nominal Diameter		Structural Length		MA		GA		BA		Weight WT (kg)	Torque (N • M)
DN	NPS	L (RF)	L1 (BW)	M	MO	B	B0	C	H		
50	2	216	216	130	250	---	---	105	100	29	99
65	2-1/2	241	241	142	350	---	---	130	110	40	124
80	3	283	283	191	400	185	280	155	125	57	212
100	4	305	305	200	500	235	280	200	160	97	335
150	6	403	457	226	800	325	300	250	203	185	544
200	8	502	521	242	1000	390	400	278	232	287	1250
250	10	568	559	---	---	445	400	333	298	507	1736
300	12	648	635	---	---	520	500	360	333	740	2388
350	14	762	762	---	---	550	500	395	350	1038	3224
400	16	838	838	---	---	580	600	433	398	1452	5139
450	18	914	914	---	---	605	600	460	410	1648	7970
500	20	991	991	---	---	610	600	505	470	2207	10570
550	22	1092	1092	---	---	670	600	530	485	2797	12140
600	24	1143	1143	---	---	725	700	590	550	3940	17240
650	26	1245	1245	---	---	760	700	635	585	4670	20340
700	28	1346	1346	---	---	790	700	645	670	5780	25069
750	30	1397	1397	---	---	825	700	700	730	6600	27640
800	32	1524	1524	---	---	870	700	750	770	7940	29550
850	34	1626	1626	---	---	910	700	760	800	9100	31558
900	36	1727	1727	---	---	950	700	810	825	10150	35170
1000	40	1956	1956	---	---	1005	700	905	920	13800	39115
1050	42	2083	2083	---	---	1045	800	960	955	16120	42414
1200	48	2170	2170	---	---	1235	800	1100	1105	24070	71868
1400	56	2743	2743	---	---	1450	1000	1300	1275	38200	108550

Main External Dimensions

Unit: mm

PN100/PN110/Class600

Nominal Diameter		Structural Length			MA		GA		BA		Weight WT (kg)	Torque (N • M)
DN	NPS	L (RF)	L1 (BW)	L2 (RTJ)	M	MO	B	B0	C	H		
50	2	292	292	295	136	500	---	---	105	100	33	168
65	2-1/2	330	330	333	164	650	---	---	135	115	43	210
80	3	356	356	359	191	650	220	300	165	130	64	360
100	4	432	432	435	244	800	254	400	210	162	124	572
150	6	559	559	562	---	---	360	400	253	203	255	912
200	8	660	660	664	---	---	390	400	290	257	487	2177
250	10	787	787	791	---	---	450	500	333	310	760	3093
300	12	838	838	841	---	---	500	500	380	350	984	4282
350	14	889	889	892	---	---	520	500	395	360	1266	7458
400	16	991	991	994	---	---	550	500	433	413	1532	9310
450	18	1092	1092	1095	---	---	635	600	470	430	2097	14693
500	20	1194	1194	1200	---	---	675	600	505	490	2640	20011
550	22	1295	1295	1305	---	---	728	600	545	510	3790	24785
600	24	1397	1397	1407	---	---	780	600	595	570	4740	31226
650	26	1448	1448	1461	---	---	810	700	635	620	5650	35184
700	28	1549	1549	1562	---	---	840	700	665	690	6760	38987
750	30	1651	1651	1664	---	---	870	800	710	750	8380	41832
800	32	1778	1778	1794	---	---	915	800	755	780	9740	63865
850	34	1930	1930	1946	---	---	951	800	780	815	11340	71720
900	36	2083	2083	2099	---	---	987	1000	815	840	13300	89020
1000	40	2337	2337	2366	---	---	1212	1000	915	940	18340	109900
1050	42	2439	2439	2467	---	---	1292	1000	970	980	21550	121165
1200	48	2540	2540	2540	---	---	1440	1000	1105	1120	31500	145345
1400	56	2949	2949	2949	---	---	1600	1000	1300	1290	48050	169230



Main External Dimensions

Unit: mm

PN150/PN160/Class900

Nominal Diameter		Structural Length			MA		GA		BA		Weight WT (kg)	Torque (N • M)
DN	NPS	L (RF)	L1 (BW)	L2 (RTJ)	M	MO	B	BO	C	H		
50	2	368	368	371	148	650	---	---	105	110	50	228
65	2-1/2	419	419	422	191	800	---	---	135	118	61	263
80	3	381	381	384	216	800	255	400	165	130	76	512
100	4	457	457	460	---	---	285	400	210	167	150	946
150	6	610	610	613	---	---	370	400	260	251	367	1784
200	8	737	737	740	---	---	400	500	295	280	600	4116
250	10	838	838	841	---	---	450	500	345	340	1027	5910
300	12	965	965	968	---	---	500	500	384	390	1558	10137
350	14	1029	1029	1038	---	---	520	500	400	442	1765	14141
400	16	1130	1130	1140	---	---	550	600	440	490	2157	18866
450	18	1219	1219	1232	---	---	600	600	482	500	2860	22400
500	20	1321	1321	1334	---	---	630	600	530	500	4220	28544
550	22	---	---	---	---	---	---	---	---	---	---	---
600	24	1549	1549	1568	---	---	810	700	615	630	7150	43276
650	26	1651	1651	1673	---	---	850	700	650	650	8040	48580
700	28	1753	1753	1775	---	---	900	800	670	710	10840	60000
750	30	1880	1880	1902	---	---	980	1000	725	780	12210	76000
800	32	2032	2032	2054	---	---	1240	1000	785	810	14992	90195
850	34	2159	2159	2188	---	---	1275	1000	805	850	17230	100460
900	36	2286	2286	2315	---	---	1310	1000	845	900	19920	131875
1000	40	2283	2100	2311	---	---	1420	1000	955	980	24251	---
1050	42	2438	2200	2461	---	---	1455	1000	986	990	28660	---
1200	48	2769	2300	2797	---	---	1530	1000	1150	1199	36156	---

Main External Dimensions

Unit: mm

PN250/PN260/Class1500

Nominal Diameter		Structural Length			MA		GA		BA		Weight WT (kg)	Torque (N • M)
DN	NPS	L (RF)	L1 (BW)	L2 (RTJ)	M	MO	B	BO	C	H		
50	2	368	368	371	175	650	---	---	105	105	53	390
65	2-1/2	419	419	422	191	650	---	---	138	120	63	448
80	3	470	470	473	216	750	255	500	165	130	98	931
100	4	546	546	549	---	---	285	500	215	167	200	1524
150	6	705	705	711	---	---	460	500	260	270	485	2934
200	8	832	832	841	---	---	520	500	300	300	827	7215
250	10	991	991	1000	---	---	640	500	365	360	1507	10990
300	12	1130	1130	1146	---	---	720	500	420	423	2272	16103
350	14	1257	1257	1276	---	---	760	500	440	460	2880	24518
400	16	1384	1384	1407	---	---	820	600	480	510	4120	29630
450	18	1537	1537	1559	---	---	880	600	550	600	6260	34392
500	20	1664	1664	1686	---	---	900	700	620	650	9120	40918
550	22	---	---	---	---	---	---	---	---	---	---	---
600	24	---	---	1972	---	---	920	800	700	720	14320	65351

PN420/Class2500

Nominal Diameter		Structural Length			MA		GA		BA		Weight WT (kg)	Torque (N • M)
DN	NPS	L (RF)	L1 (BW)	L2 (RTJ)	M	MO	B	BO	C	H		
50	2	451	451	454	168	800	170	350	120	125	90	589
65	2-1/2	508	508	514	190	1000	210	450	140	160	152	736
80	3	578	578	584	205	1000	250	500	175	200	200	1577
100	4	673	673	683	---	---	290	500	225	230	385	1965
150	6	914	914	927	---	---	340	600	260	250	778	5501
200	8	1022	1022	1038	---	---	470	600	380	340	1352	11786
250	10	1270	1270	1292	---	---	490	700	450	425	2137	13222
300	12	1422	1422	1445	---	---	615	800	515	480	3267	20075

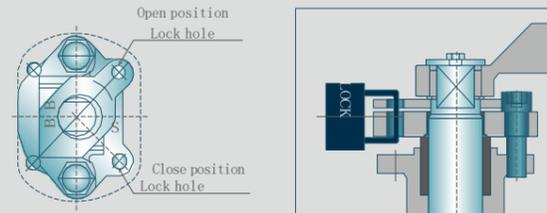
Structure Features:

**Use** The valves are widely used in the oil & gas storage and transportation, to act as the media control device to perform opening and closing in the sectors of chemical, metallurgy, paper making, food, shipbuilding and other industries.

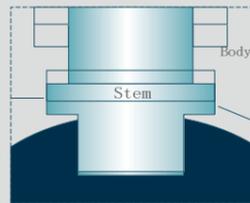
The valves can be equipped with pneumatic and electrical actuators to achieve remote control to ensure the safety of the valve operators.

**Feature**

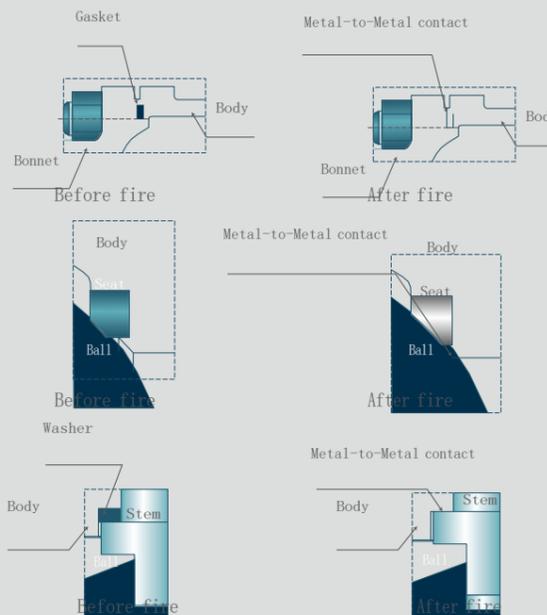
1. Locking and Limit Devices, in order to prevent any inappropriate operations to the valves, valves can be equipped with the locking and limit device, especially the valves are installed in the yield working sites or valves are not allowed often open-close in terms of technically. It is very necessary to lock the valves in case of any safety accidents resulted from any misoperations.



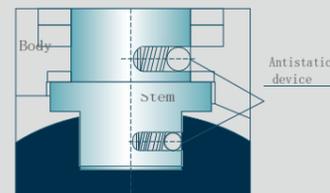
3. Blow-out proof design, The lower loading stem prevents being blown-out by the medium at the abnormal risen pressure into the cavity, PTFE thrust washers ensure the smooth operation between the stem and body.



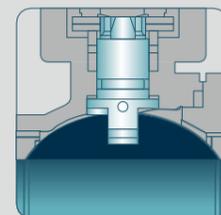
2. Fire safe design, if fire occurs, when the non-metallic materials of the valve seat and seal are damaged at high temperatures, a special design of metal to metal secondary seal structure effectively prevent the media to avoid leakage;



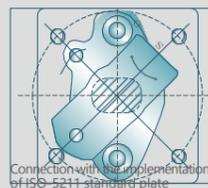
4. Anti-static design, to ensure that the valve works in the flammable and explosive working conditions.



5. Body cavity pressure relief design to ensure the reliable sealing and extend the service life.



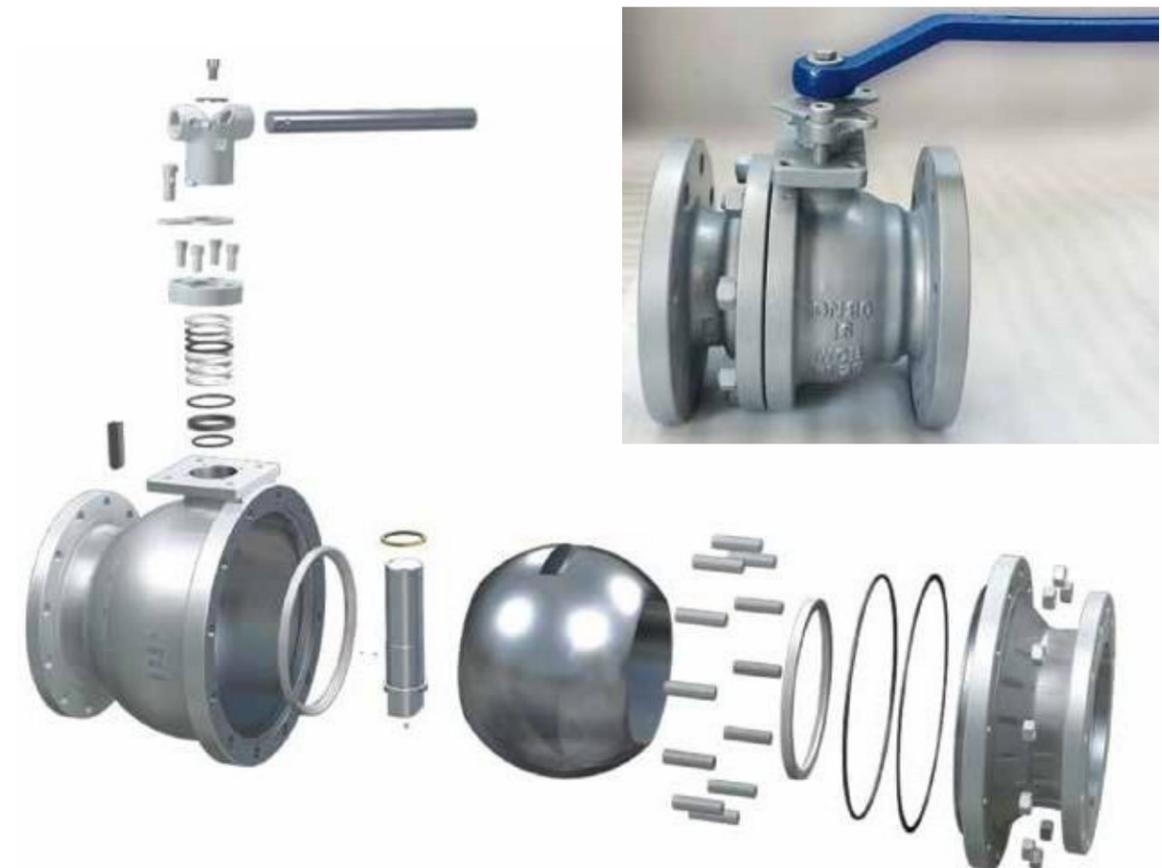
6. ISO-5211 mounting pad design, to replace the operation modes conveniently any time.



Technical Specifications

Design Basis	GB	API		ASME
Design Standard	GB/T 12237	API 608	API 6D	ASME B16. 34
Face-to-Face	GB/T 12221	ASME B16. 10	API 6D	ASME B16. 10
Connection End*	Flanged	GB/T 9113	ASME B16. 5	ASME B16. 5
	Butt-Welding	GB/T 12224	ASME B16. 25	ASME B16. 25
Materials	NACE MRO175	NACE MRO175	NACE MRO175	NACE MRO175
Test and Check	JB/T 9092	API 598	API 6D	ASME B 16. 34
Fire Test	GB/T 6899	API F6A/API 607		API F6A/API 607

\*The valve connection end is standard designed or manufactured according to user requirements.



Main Parts and Materials

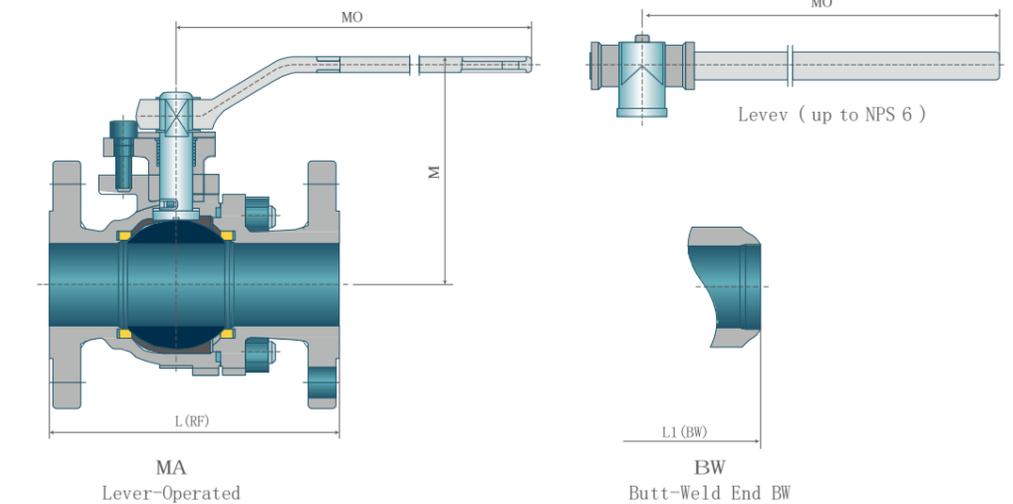
Part Name	Carbon Steel		Low Temp Steel		Stainless Steel	
	GB	ASTM	GB	ASTM	GB	ASTM
	Body	WCB	A105	0Cr18Ni9	A350-LF2	0Cr18Ni9 00Cr17Ni12Mo2
Bolt or Nut	35CrMo	A193-B7	304	A320-L7	304	A193 B8
	45	A194-2H	304	A194-4	304	A194 8
Ball	25+ENP	A105+ENP	0Cr18Ni9	A350-LF2+ENP	0Cr18Ni9 00Cr17Ni12Mo2	A182-F304 A182-F316
Stem	1Cr13	A276-410	304	A276-304	304	A276-304
	2Cr13	A276-420			316	A276-316
Seat	Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON		Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON		Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON	
O-Ring	NBR OR VITON		NBR OR VITON		VITON	
Gasket	Graphite+ Stainless steel		Graphite+ Stainless steel		Graphite+ Stainless steel	

Conventional Type

Main Parts and Materials

Part Name	Carbon Steel		Low Temp Steel		Stainless Steel	
	GB	ASTM	GB	ASTM	GB	ASTM
	Body	A105	A105	0Cr18Ni9	A350-LF2	0Cr18Ni9 00Cr17Ni12Mo2
Bolt or Nut	35CrMo	A193-B7M	304	A320-L7	304	A193 B8
	45	A194-2HM	304	A194-4	304	A194 8
Ball	25+ENP	A105+ENP	0Cr18Ni9	A350-LF2+ENP	0Cr18Ni9 00Cr17Ni12Mo2	A182-F304 A182-F316
Stem	17-4PH	17-4PH	For use at low temperatures resilient steels.		304	A276-304
					316	A276-316
Seat	Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON		Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON		Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON	
O-Ring	NBR OR VITON		NBR OR VITON		VITON	
Gasket	Graphite+ Stainless steel		Graphite+ Stainless steel		Graphite+ Stainless steel	

Sulfur-resistant Type



Main External Dimensions

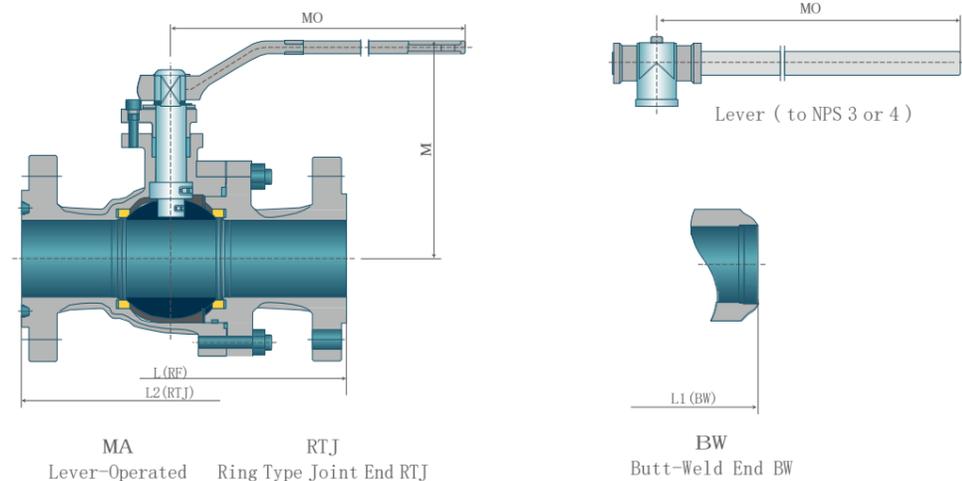
Unit: mm PN16/PN20/Class150

Nominal Diameter DN	NPS	Structural Length		MA		Weight WT (kg)
		L (RF)	L1 (BW)	M	MO	
15	1/2	108	140	85	140	3
20	3/4	117	152	90	140	4
25	1	127	165	99	150	5
40	1-1/2	165	190	126	200	8
50	2	178	216	140	250	12
65	2-1/2	191	241	165	300	18
80	3	203	283	178	350	24
100	4	229	305	230	500	38
150	6	394	457	310	800	82
200	8	457	521	350	1000	145
250	10	533	559	400	1000	235

Main External Dimensions

Unit: mm PN25/PN40/Class300

Nominal Diameter DN	NPS	Structural Length		MA		Weight WT (kg)
		L (RF)	L1 (BW)	M	MO	
15	1/2	140	140	85	140	3
20	3/4	152	152	90	140	5
25	1	165	165	99	150	6
40	1-1/2	190	190	126	200	11
50	2	216	216	140	250	16
65	2-1/2	241	241	165	300	24
80	3	283	283	178	350	34
100	4	305	305	230	500	56
150	6	403	457	310	800	125
200	8	502	521	350	1000	222



Main External Dimensions

Unit: mm PN100/PN110/Class600

DN	NPS	L (RF)	L1 (BW)	L2 (RTJ)	MA		Weight WT (kg)
					M	MO	
15	1/2	165	165	165	79	140	5
20	3/4	191	191	191	83	140	7
25	1	216	216	216	114	200	9
40	1-1/2	241	241	241	125	250	17
50	2	292	292	295	156	300	25
65	2-1/2	330	330	333	172	350	42
80	3	356	356	359	220	500	56
100	4	432	432	435	250	650	85



Technical Specifications

Design Basis	GB	API		ASME
Design Standard	GB/T 12237	API 608	API 6D	ASME B16.34
Face-to-Face	GB/T 12221	ASME B16.10	API 6D	ASME B16.10
Connection End*	Flanged	GB/T 9113	ASME B16.5	ASME B16.5
	Butt-Welding	GB/T 12224	ASME B16.25	ASME B16.25
Materials	NACE MRO175	NACE MRO175	NACE MRO175	NACE MRO175
Test and Check	JB/T 9092	API 598	API 6D	ASME B 16.34
Fire Test	GB/T 6899	API F6A/API 607		API F6A/API 607

\*The valve connection end is standard designed or manufactured according to user requirements.

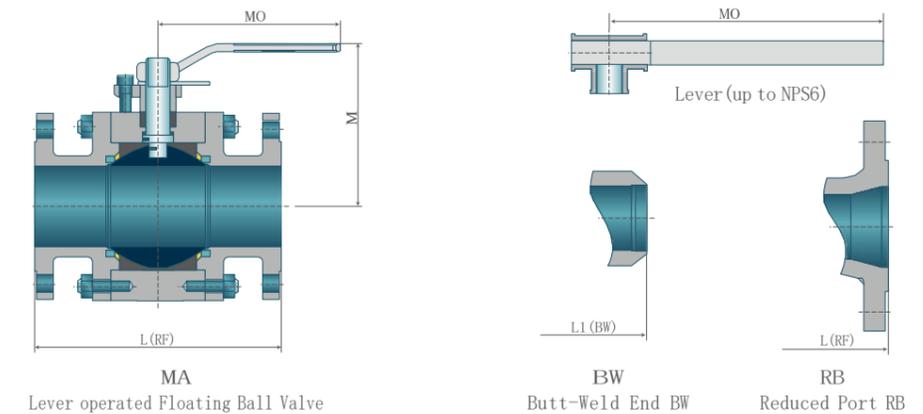


Main Parts and Materials

Part Name	Carbon Steel		Low Temp Steel		Stainless Steel	
	GB	ASTM	GB	ASTM	GB	ASTM
Body	25	A105	0Cr18Ni9	A350-LF2	0Cr18Ni9	A182-F304
					00Cr17Ni12Mo2	A182-F316
Bolt or Nut	35CrMo 45	A193-B7 A194-2H	304	A320-L7 A194-4	304	A193 B8
					304	A194 8
Ball	25+ENP	A105+ENP	0Cr18Ni9	A350-LF2+ENP	0Cr18Ni9	A182-F304
Stem	1Cr13 2Cr13	A276-410 A276-420	304	A276-304	304	A276-304
					316	A276-316
Seat	Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON		Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON		Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON	
O-Ring	NBR OR VITON		NBR OR VITON		VITON	
Gasket	Graphite+ Stainless steel		Graphite+ Stainless steel		Graphite+ Stainless steel	

Main Parts and Materials

Part Name	Carbon Steel		Low Temp Steel		Stainless Steel	
	GB	ASTM	GB	ASTM	GB	ASTM
Body	25	A105	0Cr18Ni9	A350-LF2	0Cr18Ni9	A182-F304
					00Cr17Ni12Mo2	A182-F316
Bolt or Nut	35CrMo 45	A193-B7M A194-2HM	304	A320-L7 A194-4	304	A193 B8
					304	A194 8
Ball	25+ENP	A105+ENP	0Cr18Ni9	A350-LF2+ENP	0Cr18Ni9	A182-F304
Stem	17-4PH	17-4PH	For use at low temperatures resilient steels.		304	A276-304
					316	A276-316
Seat	Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON		Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON		Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON	
O-Ring	NBR OR VITON		NBR OR VITON		VITON	
Gasket	Graphite+ Stainless steel		Graphite+ Stainless steel		Graphite+ Stainless steel	



Main External Dimensions

Unit: mm

PN16/PN20/Class150

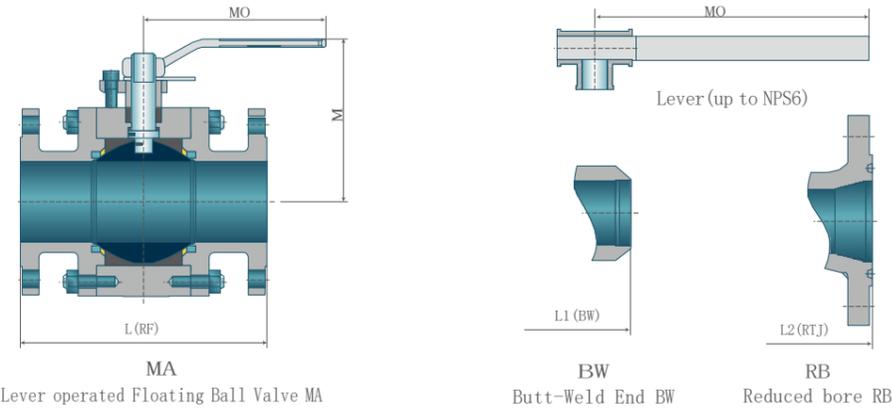
Nominal Diameter		Structural Length		MA		Weight WT (kg)
DN	NPS	L (RF)	L1 (BW)	M	MO	
15	1/2	108	140	82	140	3
20	3/4	117	152	87	140	4
25	1	127	165	92	150	6
40	1-1/2	165	190	108	200	12
50	2	178	216	119	250	15
65	2-1/2	191	241	150	300	19
80	3	203	283	175	350	22
100	4	229	305	220	500	46
150	6	394	457	280	800	110
200	8	457	521	320	1000	175
250	10	533	559	380	1000	--

Main External Dimensions

Unit: mm

PN25/PN40/Class300

Nominal Diameter		Structural Length		MA		Weight WT (kg)
DN	NPS	L (RF)	L1 (BW)	M	MO	
15	1/2	140	140	82	140	34
20	3/4	152	152	87	140	6
25	1	165	165	92	150	10
40	1-1/2	190	190	108	200	18
50	2	216	216	119	250	22
65	2-1/2	241	241	150	300	28
80	3	283	283	175	350	38
100	4	305	305	220	500	78
150	6	403	457	280	800	148
200	8	502	521	320	1000	196



Main External Dimensions

Unit: mm PN100/PN110/Class600

Nominal Diameter		Structural Length			MA		Weight
DN	NPS	L (RF)	L1 (BW)	L2 (RTJ)	M	MO	WT (kg)
15	1/2	165	165	163.5	82	140	5
20	3/4	191	191	191	87	140	7
25	1	216	216	216	98	200	10
40	1-1/2	241	241	241	118	250	15
50	2	292	292	295	130	300	22
65	2-1/2	330	330	333	158	350	28
80	3	356	356	359	180	500	38
100	4	432	432	435	220	650	78

Main External Dimensions

Unit: mm PN150/PN160/Class900  
PN250/PN250/Class1500

Nominal Diameter		Structural Length			MA		Weight
DN	NPS	L (RF)	L1 (BW)	L2 (RTJ)	M	MO	WT (kg)
15	1/2	216	216	216	85	140	10
20	3/4	229	229	229	90	140	14
25	1	254	254	254	98	200	17
40	1-1/2	305	305	305	118	250	23
50	2	368	368	371	130	300	34
65	2-1/2	419	419	422	160	350	40

Main External Dimensions

Unit: mm PN420/Class2500

Nominal Diameter		Structural Length			MA		Weight
DN	NPS	L (RF)	L1 (BW)	L2 (RTJ)	M	MO	WT (kg)
15	1/2	264	264	264	81	200	12
20	3/4	273	273	273	84	200	16
25	1	308	308	308	107	300	20

Construction and Features of Trunnion Mounted Ball Valve

Emergency Grease Injection Device

According to customers' requirement, the trunnion ball valve made by the company is provided with devices for emergency grease injection, which are on both the stem and seat for the trunnion ball valve of DN > 150mm (NPS6), and in the body cavity for the valve of DN < 125mm.

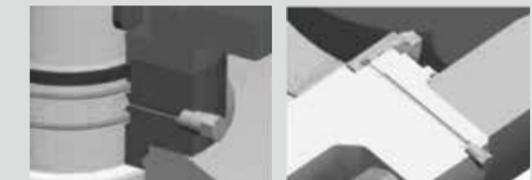
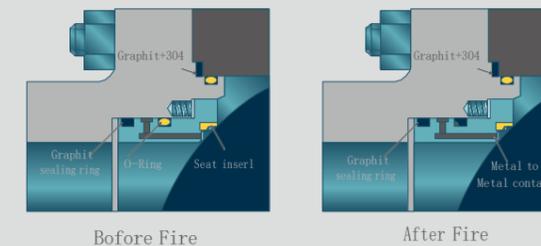
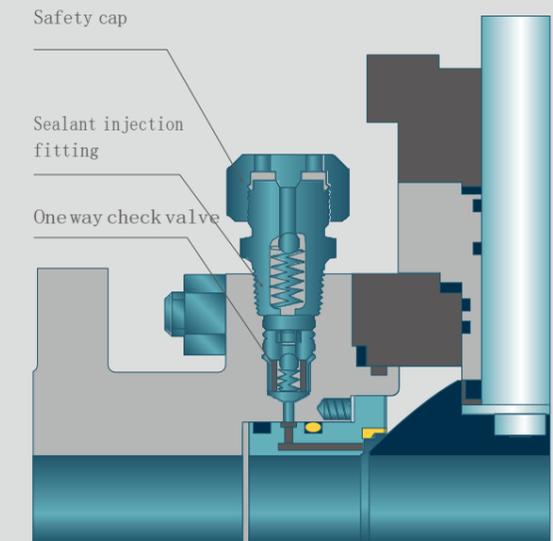
When the O-ring of stem or the body seat ring is damaged due to accident, the medium leakage between body and stem can be prevented by injecting the sealing grease through the device.

Blow-out Proof Stem

Blow-out proof structure is provided 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 pressurization in the cavity.

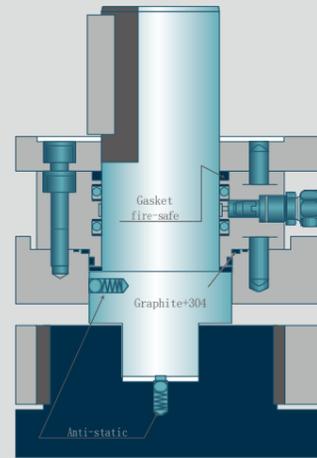
Fire Safe Design

With the valve heated in a fire application, the non-metallic 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, Marco special design of auxiliary metal to metal or the graphite seal is provided for the trunnion ball valve to effectively prevent both internal and external leakage of the valve. As required by customers, Marco fire safe design for the trunnion ball valve meets the requirement of API 607, API 6Fa, BS 6755 and JB/T 6899.

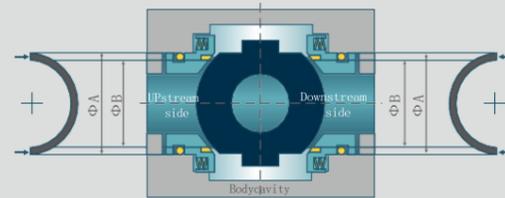


**Anti-static Design**

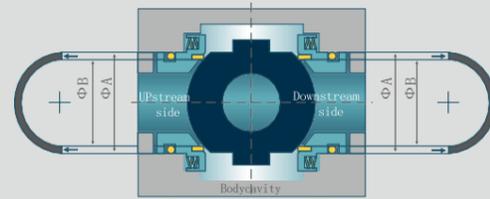
By anti-static design, the ball, stem and body of the trunnion mounted ball valve forms a static channel through which the static electricity caused in the switching process of ball and body will be guided to the ground. Thus it can prevent the valve from the potential fire and explosion risk.



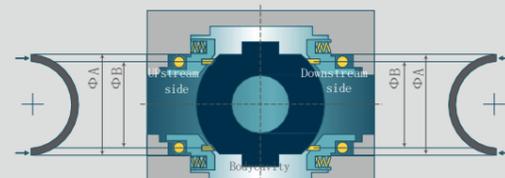
**Single piston effect**



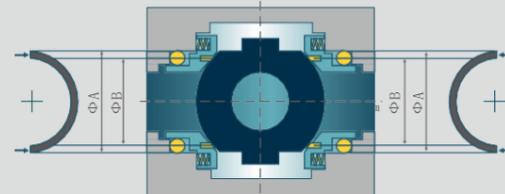
Pressure acting upstream and/or downstream



Double piston effect



Pressure acting upstream and/or downstream



Pressure acting in the body cavity

**Standard Single Piston Effect (Self-relieving Seats)**

- Fluid pressure, both upstream and downstream, creates a resultant thrust that pushes the seat rings against the ball.
- Fluid pressure acting in the body cavity creates a resultant thrust that pushes the seat rings away from the ball.
- The single piston design permits the automatic release of any over-pressure in the body cavity when the valve is in the fully open or fully closed position, therefore the seat rings are "self-relieving".

**Optional Double Piston Effect**

- Fluid pressure, both upstream and downstream, as well as in the body cavity creates a resultant thrust that pushes the seat rings towards the ball.
- Valves with double piston effect seat rings require a relief valve in order to reduce the build-up of over pressure in the body cavity.

**Mounting Pad Provided**

Provided for trunnion ball valve with mounting pad for fixing the actuators, such as worm gear, pneumatic, electric, hydraulic, and hydro-pneumatic actuators.

**Technical Specifications**

Design Basis	GB		API		ASME
Design Standard	GB/T 12237	GB/T 19672	API 608	API 6D	ASME B16. 34
Face-to-Face	GB/T 12221	GB/T 19672	ASME B16. 10	API 6D	ASME B16. 10
End Connection*	Flanged	GB/T 9113	GB/T 9113	ASME B16. 5/MSS SP-44/ASME B16. 47	
	Butt-Welding	GB/T 12224	GB/T 12224	ASME B16. 25	ASME B16. 25
Materials	NACE MRO175	NACE MRO175	NACE MRO175	NACE MRO175	NACE MRO175
Test and Check	JB/T 9092	JB/T 19672	API 598	API 6D	ASME B 16. 34
Fire Test	GB/T 6899	GB/T 6899	API F6A/API 607		

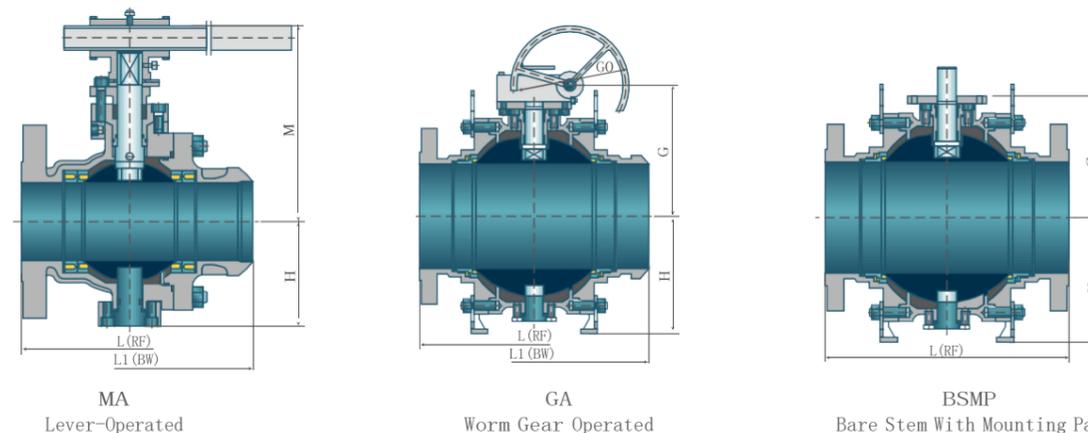
\*The dimension of welded end connection can be designed and manufactured according to the buyer request. MSS SP-44 for size 22" ASME B16. 47 Series A for size 26" & over.



Main Parts and Materials

Conventional Type

Part Name	Carbon Steel		Low Temp Steel		Stainless Steel	
	GB	ASTM	GB	ASTM	GB	ASTM
Body	WCB	A216-WCB	LCB LCC	A352-LCB A352-LCC	CF8 CF8M	A351-CF8 A351-CF8M
Bolt or Nut	35CrMo 45	A193-B7 A194-2H	304 304	A320-L7 A194-4	304 304	A193-B8 A194-8
Ball	25+ENP	A105+ENP	0Cr18Ni9	A350-LF2+ENP	0Cr18Ni9 00Cr17Ni12Mo2	A182-F304 A182-F316
Stem	1Cr13 2Cr13	A276-410 A276-420	304	A276-304	304 316	A276-304 A276-316
Seat	25+ENP	A105+ENP	304	A350 LF2+ENP	0Cr18Ni9 00Cr17Ni12Mo2	A182-F304 A182-F316
Seat insert	Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON		Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON		Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON	
O-Ring	NBR OR VITON		NBR OR VITON		VITON	
Gasket	Graphite+ Stainless steel		Graphite+ Stainless steel		Graphite+ Stainless steel	



Main Parts and Materials

Sulfur-resistant Type

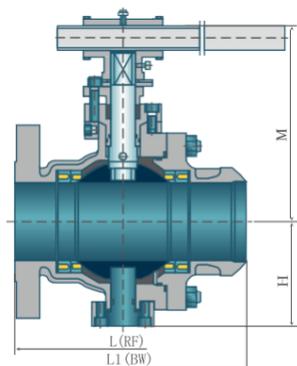
Part Name	Carbon Steel		Low Temp Steel		Stainless Steel	
	GB	ASTM	GB	ASTM	GB	ASTM
Body	WCB	A216-WCB	LCB LCC	A352-LCB A352-LCC	CF8 CF8M	A351-CF8 A352-CF8M
Bolt or Nut	35CrMo 45	A193-B7M A194-2HM	304 304	A320-L7 A194-4	304 304	A193 B8 A194 8
Ball	25+ENP	A105+ENP	0Cr18Ni9	A350-LF2+ENP	0Cr18Ni9 00Cr17Ni12Mo2	A182-F304 A182-F316
Stem	17-4PH 17-4PH	17-4PH	For use at low temperatures resilient steels.		304 316	A276-304 A276-316
Seat	25+ENP	A105+ENP	304	A350-LF2+ENP	0Cr18Ni9 00Cr17Ni12Mo2	A182-F304 A182-F316
Seat insert	Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON		Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON		Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON	
O-Ring	NBR OR VITON		NBR OR VITON		VITON	
Gasket	Graphite+ Stainless steel		Graphite+ Stainless steel		Graphite+ Stainless steel	

Main External Dimensions

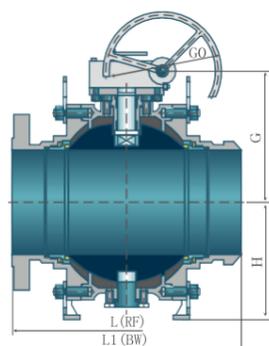
Unit: mm

PN16/PN20/Class150

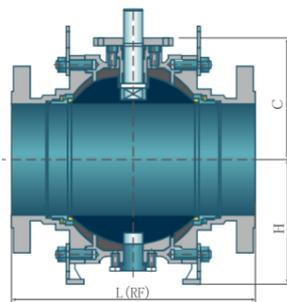
Nominal Diameter	Structural Length	MA		GA		BA		Weight	Torque		
		L (RF)	LI (BW)	M	MO	G	GO			C	H
50	2	178	216	168	250	---	---	115	85	10	57
65	2-1/2	191	241	175	300	---	---	135	98	14	71
80	3	203	283	186	350	---	---	165	117	22	95
100	4	229	305	225	450	235	280	220	141	35	192
150	6	394	457	330	800	280	300	260	193	75	485
200	8	457	521	370	1000	398	400	300	240	111	832
250	10	533	559	---	---	495	400	350	293	217	1105
300	12	610	635	---	---	530	500	370	340	385	1655
350	14	686	762	---	---	580	500	400	372	457	2695
400	16	762	838	---	---	602	600	450	412	739	3164
450	18	864	914	---	---	640	600	510	462	930	3793
500	20	914	991	---	---	700	600	550	511	1657	5500
550	22	991	1092	---	---	740	600	580	556	2568	6650
600	24	1067	1143	---	---	823	700	650	601	2887	7529
650	26	1143	1245	---	---	895	700	700	700	3376	8693
700	28	1245	1346	---	---	906	700	720	780	4183	10770
750	30	1295	1397	---	---	968	700	770	800	4705	12365
800	32	1372	1524	---	---	1048	700	800	840	5735	14070
850	34	1473	1626	---	---	1098	700	830	860	6573	21148
900	36	1524	1727	---	---	1118	700	885	880	7537	22987
1000	40	1753	1956	---	---	1285	700	950	930	9848	26059
1050	42	1855	2083	---	---	1340	800	1000	960	11355	28149
1200	48	2134	2388	---	---	1435	800	1130	1070	17210	42776
1400	56	2489	2489	---	---	1478	800	1320	1250	26822	65654
1500	60	2640	2640	---	---	1560	800	1400	1300	37822	85654
1600	64	---	---	---	---	---	---	---	---	---	---



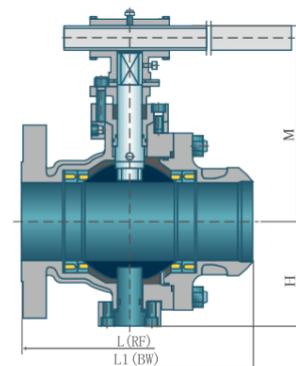
MA  
Lever-Operated



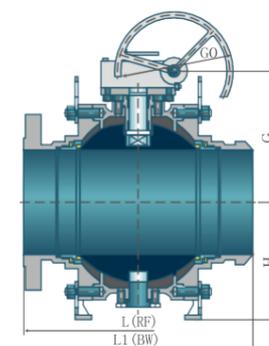
GA  
Worm Gear Operated



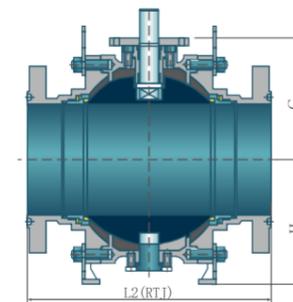
BSMP  
Bare Stem With Mounting Pad



MA  
Lever-Operated



GA  
Worm Gear Operated



BSMP  
Bare Stem With Mounting Pad

Main External Dimensions

Unit: mm

PN25/PN40/PN50/Class300

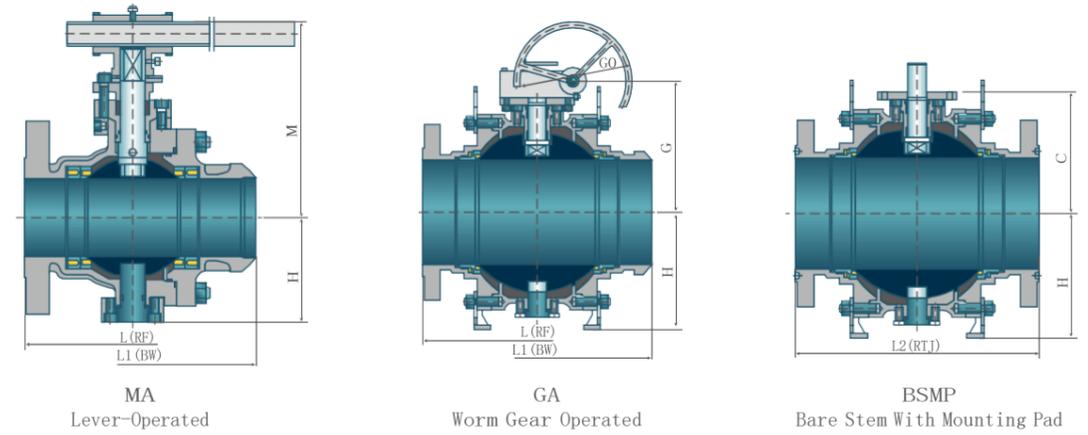
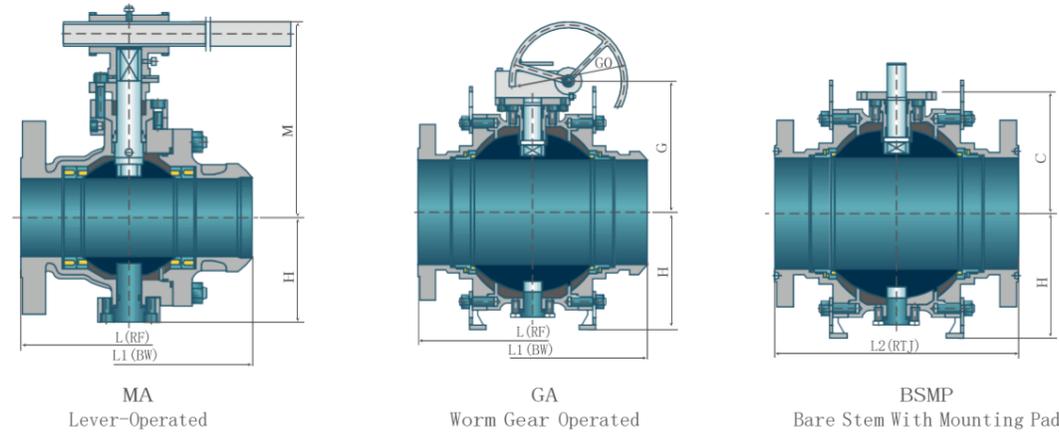
Nominal Diameter		Structural Length		MA		GA		BA		Weight WT (kg)	Torque (N • M)
DN	NPS	L (RF)	L1 (BW)	M	MO	G	GO	C	H		
50	2	216	216	168	250	---	---	115	85	15	99
65	2-1/2	241	241	175	300	---	---	135	98	24	124
80	3	283	283	186	350	---	---	165	117	30	212
100	4	305	305	225	450	235	280	220	141	55	335
150	6	403	457	330	800	285	300	260	193	90	544
200	8	502	521	370	1000	398	400	300	240	201	1250
250	10	568	559	---	---	495	400	350	293	350	1736
300	12	648	635	---	---	530	500	370	340	510	2388
350	14	762	762	---	---	580	500	400	372	720	3224
400	16	838	838	---	---	602	600	450	412	1330	5139
450	18	914	914	---	---	640	600	510	462	1602	7970
500	20	991	991	---	---	712	600	562	511	1988	10570
550	22	1092	1092	---	---	799	600	620	556	2557	12140
600	24	1143	1143	---	---	826	700	656	601	3258	17240
650	26	1245	1245	---	---	895	700	700	700	3720	20340
700	28	1346	1346	---	---	906	700	720	780	4261	25069
750	30	1397	1397	---	---	968	700	770	800	5423	27640
800	32	1524	1524	---	---	1048	700	800	840	6558	29550
850	34	1626	1626	---	---	1098	700	830	860	7323	31558
900	36	1727	1727	---	---	1118	700	885	880	8254	35170
1000	40	1956	1956	---	---	1285	700	950	930	10577	39115
1050	42	2083	2083	---	---	1340	800	1000	960	12425	42414
1200	48	2170	2170	---	---	1435	800	1130	1070	19467	71868
1400	56	2743	2743	---	---	1490	800	1325	1250	30825	108550

Main External Dimensions

单位Unit: mm

PN100/PN110/Class600

Nominal Diameter		Structural Length			MA		GA		BA		Weight WT (kg)	Torque (N • M)
DN	NPS	L (RF)	L1 (BW)	L2 (RTJ)	M	MO	G	GO	C	H		
50	2	292	292	295	195	500	---	---	105	100	33	168
65	2-1/2	330	330	333	220	600	---	---	135	115	47	210
80	3	356	356	359	247	700	220	300	165	130	58	360
100	4	432	432	435	275	800	254	400	210	162	83	572
150	6	559	559	562	---	---	360	400	253	203	180	912
200	8	660	660	664	---	---	390	400	290	257	340	2177
250	10	787	787	791	---	---	450	500	333	310	530	3093
300	12	838	838	841	---	---	500	500	380	350	960	4282
350	14	889	889	892	---	---	520	500	395	360	1250	7458
400	16	991	991	994	---	---	550	500	433	413	1549	9310
450	18	1092	1092	1095	---	---	635	600	470	430	1830	14693
500	20	1194	1194	1200	---	---	675	600	505	490	2320	20011
550	22	1295	1295	1305	---	---	728	600	545	510	3899	24785
600	24	1397	1397	1407	---	---	780	600	595	570	4665	31226
650	26	1448	1448	1461	---	---	810	700	635	620	5751	35184
700	28	1549	1549	1562	---	---	840	700	665	690	6405	38987
750	30	1651	1651	1664	---	---	870	800	710	750	7056	41832
800	32	1778	1778	1794	---	---	915	800	755	780	8253	63865
850	34	1930	1930	1946	---	---	951	800	780	815	8978	71720
900	36	2083	2083	2099	---	---	987	800	815	840	10182	89020
1000	40	2337	2337	2366	---	---	1212	800	915	940	14584	109900
1050	42	2439	2439	2467	---	---	1292	800	970	980	20779	121165
1200	48	2540	2540	2540	---	---	1440	800	1105	1120	25699	145345
1400	56	2949	2949	2949	---	---	1600	800	1300	1290	35700	169230



Main External Dimensions

Unit: mm

PN150/PN160/Class900

Nominal Diameter		Structural Length			MA		GA		BA		Weight WT (kg)	Torque (N • M)
DN	NPS	L (RF)	L1 (BW)	L2 (RTJ)	M	MO	G	GO	C	H		
50	2	368	368	371	217	650	---	---	105	110	39	228
65	2-1/2	419	419	422	241	650	---	---	135	118	55	263
80	3	381	381	384	259	800	255	400	165	130	68	512
100	4	457	457	460	---	---	285	400	210	167	98	946
150	6	610	610	613	---	---	370	400	260	251	220	1784
200	8	737	737	740	---	---	410	500	305	280	500	4116
250	10	838	838	841	---	---	480	500	368	340	942	5910
300	12	965	965	968	---	---	525	500	405	390	1200	10137
350	14	1029	1029	1038	---	---	545	500	425	442	1655	14141
400	16	1130	1130	1140	---	---	580	600	470	490	1998	18866
450	18	1219	1219	1232	---	---	625	600	505	500	2415	22400
500	20	1321	1321	1334	---	---	666	600	560	500	3135	28544
550	22	---	---	---	---	---	---	---	---	---	---	---
600	24	1549	1549	1568	---	---	835	700	640	630	5495	43276
650	26	1651	1651	1673	---	---	875	700	668	650	6565	48580
700	28	1753	1753	1775	---	---	930	800	700	710	7735	60000
750	30	1880	1880	1902	---	---	1005	800	750	780	8946	76000
800	32	2032	2032	2054	---	---	1275	800	800	810	10568	90195
850	34	2159	2159	2188	---	---	1315	800	835	850	14550	100460
900	36	2286	2286	2315	---	---	1340	800	880	900	15572	131875

Main External Dimensions

Unit: mm

PN250/PN260/Class1500

Nominal Diameter		Structural Length			MA		GA		BA		Weight WT (kg)	Torque (N • M)
DN	NPS	L (RF)	L1 (BW)	L2 (RTJ)	M	MO	G	GO	C	H		
50	2	368	368	371	237	800	---	---	105	105	40	390
65	2-1/2	419	419	422	261	800	---	---	138	120	63	448
80	3	470	470	473	269	1000	255	500	165	130	95	931
100	4	546	546	549	297	1000	285	500	215	167	180	1524
150	6	705	705	711	---	---	460	500	260	270	400	2934
200	8	832	832	841	---	---	520	500	300	300	750	7215
250	10	991	991	1000	---	---	640	500	365	360	1165	10990
300	12	1130	1130	1146	---	---	720	500	420	423	1725	16103
350	14	1257	1257	1276	---	---	760	500	440	460	2080	24518
400	16	1384	1384	1407	---	---	820	600	480	510	3718	29630
450	18	1537	1537	1559	---	---	880	600	550	600	5065	34392
500	20	1664	1664	1686	---	---	900	700	620	650	7612	40918
550	22	---	---	---	---	---	---	---	---	---	---	---
600	24	---	---	1972	---	---	920	800	700	720	11387	65351

Technical Specifications

Design Basis	GB		API		ASME
	GB/T 12237	GB/T 19672	API 608	API 6D	ASME B16. 34
Design Standard	GB/T 12237	GB/T 19672	API 608	API 6D	ASME B16. 34
Face-to-Face	GB/T 12221	GB/T 19672	ASME B16. 10	API 6D	ASME B16. 10
End Connection*	Flanged	GB/T 9113	ASME B16. 5/MSS SP-44/ASME B16. 47		
	Butt-Welding	GB/T 12224	ASME B16. 25	ASME B16. 25	ASME B16. 25
Materials	NACE MRO175	NACE MRO175	NACE MRO175	NACE MRO175	NACE MRO175
Test and Check	JB/T 9092	JB/T 19672	API 598	API 6D	ASME B 16. 34
Fire Test	GB/T 6899	GB/T 6899	API F6A/API 607		

\* The dimension of welded end connection can be designed and manufactured according to the buyer request. MSS SP-44 for size 22" ASME B16. 47 Series A for size 26" & over.



Main Parts and Materials

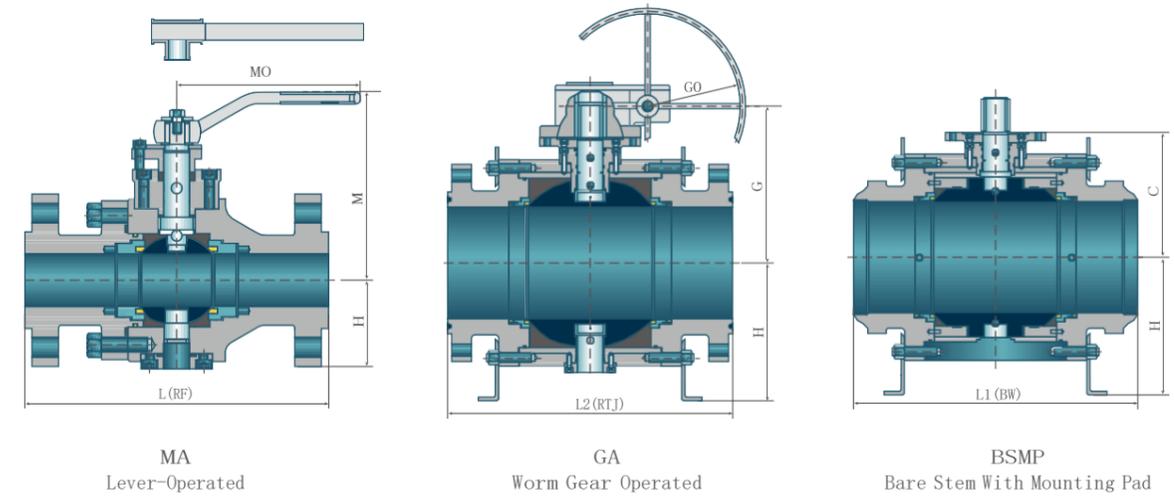
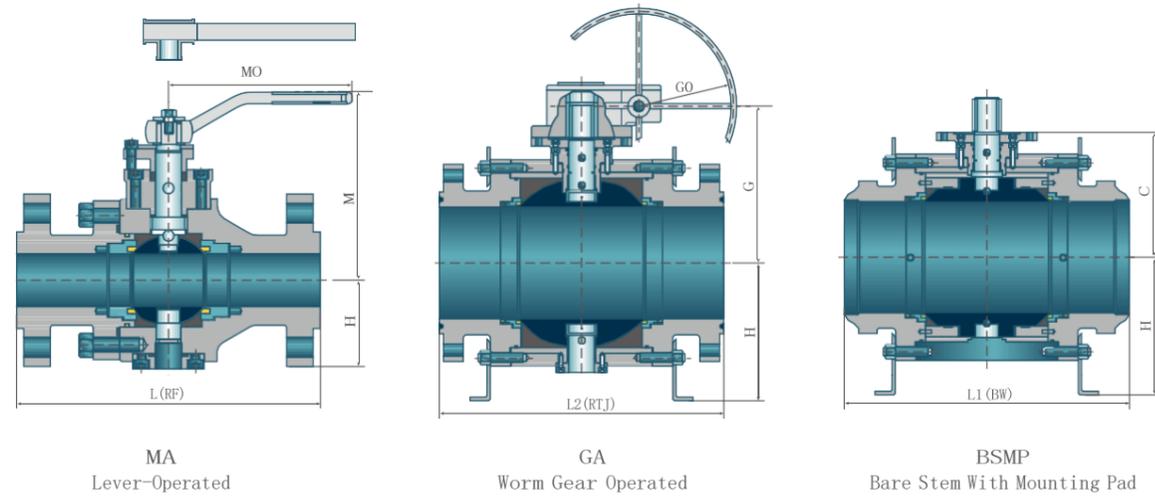
Part Name	Carbon Steel		Low Temp Steel		Stainless Steel	
	GB	ASTM	GB	ASTM	GB	ASTM
Body	25	A105	0Cr18Ni9	A350-LF2	0Cr18Ni9 00Cr17Ni12Mo2	A182-F304 A182-F316
Bolt or Nut	35CrMo 45	A193-B7 A194-2H	304	A320-L7 A194-4	304	A193-B8 A194-8
Ball	25+ENP	A105+ENP	0Cr18Ni9	A350-LF2+ENP	0Cr18Ni9 00Cr17Ni12Mo2	A182-F304 A182-F316
Stem	1Cr13 2Cr13	A276-410 A276-420	304	A276-304	304 316	A276-304 A276-316
Seat	25+ENP	A105+ENP	304	A350 LF2+ENP	0Cr18Ni9 00Cr17Ni12Mo2	A182-F304 A182-F316
Seat insert	Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON		Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON		Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON	
O-Ring	NBR OR VITON		NBR OR VITON		VITON	
Gasket	Graphite+ Stainless steel		Graphite+ Stainless steel		Graphite+ Stainless steel	

Conventional Type

Main Parts and Materials

Part Name	Carbon Steel		Low Temp Steel		Stainless Steel	
	GB	ASTM	GB	ASTM	GB	ASTM
Body	25	A105	0Cr18Ni9	A350-LF2	0Cr18Ni9 00Cr17Ni12Mo2	A182-F304 A182-F316
Bolt or Nut	35CrMo 45	A193-B7M A194-2HM	304	A320-L7 A194-4	304	A193 B8 A194 8
Ball	25+ENP	A105+ENP	0Cr18Ni9	A350-LF2+ENP	0Cr18Ni9 00Cr17Ni12Mo2	A182-F304 A182-F316
Stem	17-4PH	17-4PH	For use at low temperatures resilient steels.		304 316	A276-304 A276-316
Seat	25+ENP	A105+ENP	304	A350-LF2+ENP	0Cr18Ni9 00Cr17Ni12Mo2	A182-F304 A182-F316
Seat insert	Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON		Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON		Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON	
O-Ring	NBR OR VITON		NBR OR VITON		VITON	
Gasket	Graphite+ Stainless steel		Graphite+ Stainless steel		Graphite+ Stainless steel	

Sulfur-resistant Type



Main External Dimensions

Unit: mm

PN16/PN20/Class150

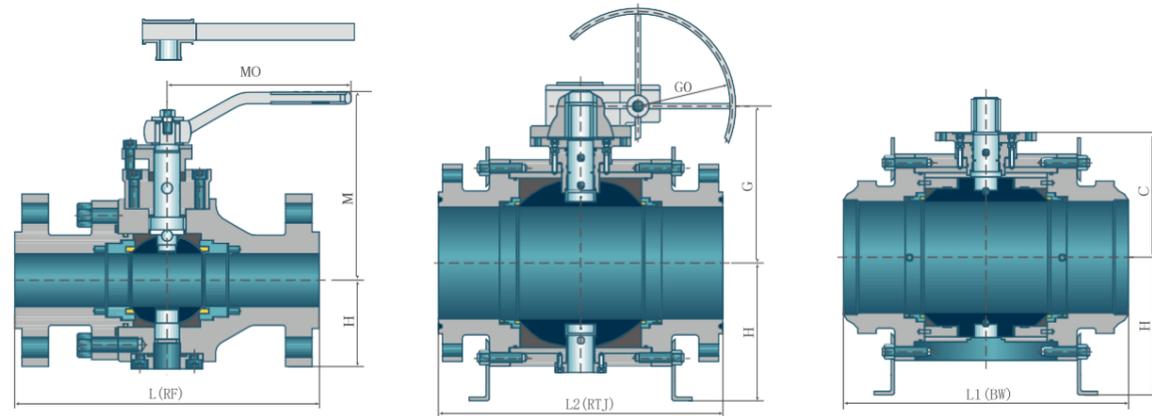
Nominal Diameter		Structural Length		MA		GA		BA		weight	Torque
DN	NPS	L(RF)	L1(BW)	M	MO	G	GO	C	H	WT(kg)	(N · M)
50	2	178	216	130	250	---	---	105	100	28	57
65	2-1/2	191	241	142	300	---	---	130	110	39	71
80	3	203	283	191	350	185	280	155	125	49	95
100	4	229	305	200	500	235	280	200	160	88	192
150	6	394	457	226	800	325	300	250	185	160	485
200	8	457	521	242	1000	390	400	278	222	248	832
250	10	533	559	---	---	445	400	323	280	379	1105
300	12	610	635	---	---	520	500	340	303	571	1655
350	14	686	762	---	---	550	500	375	330	759	2695
400	16	762	838	---	---	580	600	410	355	1150	3164
450	18	864	914	---	---	605	600	440	390	1192	3793
500	20	914	991	---	---	610	600	495	430	1769	5500
550	22	991	1092	---	---	670	600	525	475	2367	6650
600	24	1067	1143	---	---	725	700	585	520	3450	7529
650	26	1143	1245	---	---	760	700	630	560	4050	8693
700	28	1245	1346	---	---	790	700	645	650	4830	10770
750	30	1295	1397	---	---	825	700	690	700	5960	12365
800	32	1372	1524	---	---	870	700	740	745	7480	14070
850	34	1473	1626	---	---	910	700	760	775	8032	21148
900	36	1524	1727	---	---	950	700	810	805	9100	22987
1000	40	1753	1956	---	---	1005	700	895	900	14100	26059
1050	42	1790	2083	---	---	1045	800	950	935	15320	28149
1200	48	1995	2388	---	---	1235	800	1095	1070	22000	42776
1400	56	2489	2489	---	---	1450	800	1300	1250	34150	65654
1500	60	2640	2640	---	---	1550	800	1380	1350	42500	85654

Main External Dimensions

Unit: mm

PN25/PN40/PN50/Class300

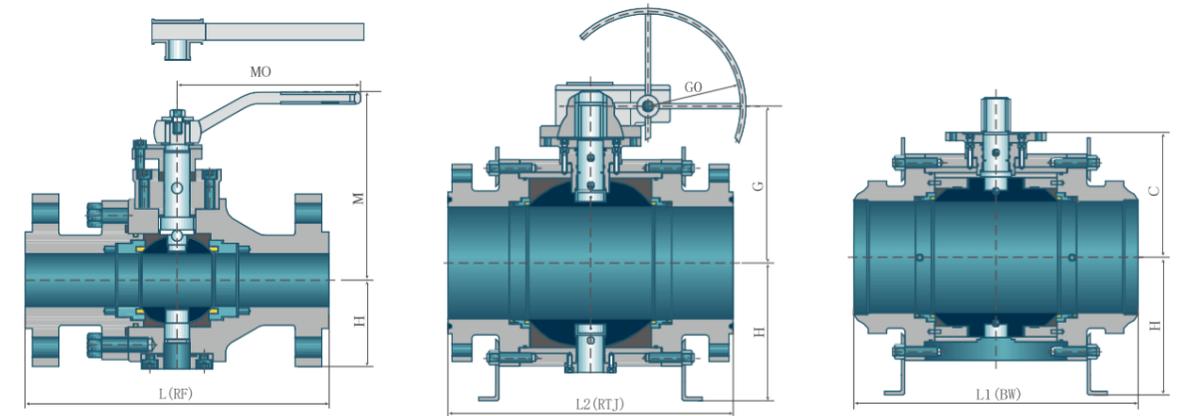
Nominal Diameter		Structural Length		MA		GA		BA		weight	Torque
DN	NPS	L(RF)	L1(BW)	M	MO	G	GO	C	H	WT(kg)	(N · M)
50	2	216	216	130	250	---	---	105	100	29	99
65	2-1/2	241	241	142	350	---	---	130	110	40	124
80	3	283	283	191	400	185	280	155	125	57	212
100	4	305	305	200	500	235	280	200	160	97	335
150	6	403	457	226	800	325	300	250	203	185	544
200	8	502	521	242	1000	390	400	278	232	287	1250
250	10	568	559	---	---	445	400	333	298	507	1736
300	12	648	635	---	---	520	500	360	333	740	2388
350	14	762	762	---	---	550	500	395	350	1038	3224
400	16	838	838	---	---	580	600	433	398	1452	5139
450	18	914	914	---	---	605	600	460	410	1648	7970
500	20	991	991	---	---	610	600	505	470	2207	10570
550	22	1092	1092	---	---	670	600	530	485	2797	12140
600	24	1143	1143	---	---	725	700	590	550	3940	17240
650	26	1245	1245	---	---	760	700	635	585	4670	20340
700	28	1346	1346	---	---	790	700	645	670	5780	25069
750	30	1397	1397	---	---	825	700	700	730	6600	27640
800	32	1524	1524	---	---	870	700	750	770	7940	29550
850	34	1626	1626	---	---	910	700	760	800	9100	31558
900	36	1727	1727	---	---	950	700	810	825	10150	35170
1000	40	1956	1956	---	---	1005	700	905	920	13800	39115
1050	42	2083	2083	---	---	1045	800	960	955	16120	42414
1200	48	2170	2170	---	---	1235	800	1100	1105	24070	71868
1400	56	2743	2743	---	---	1450	800	1300	1275	38200	108550



MA  
Lever-Operated

GA  
Worm Gear Operated

BSMP  
Bare Stem With Mounting Pad



MA  
Lever-Operated

GA  
Worm Gear Operated

BSMP  
Bare Stem With Mounting Pad

Main External Dimensions

Unit: mm

PN100/PN110/Class600

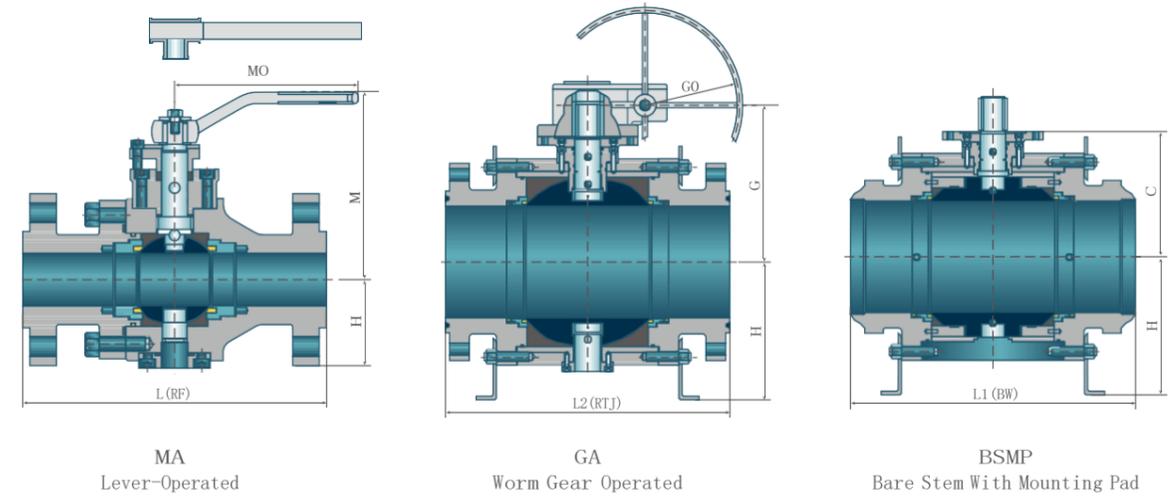
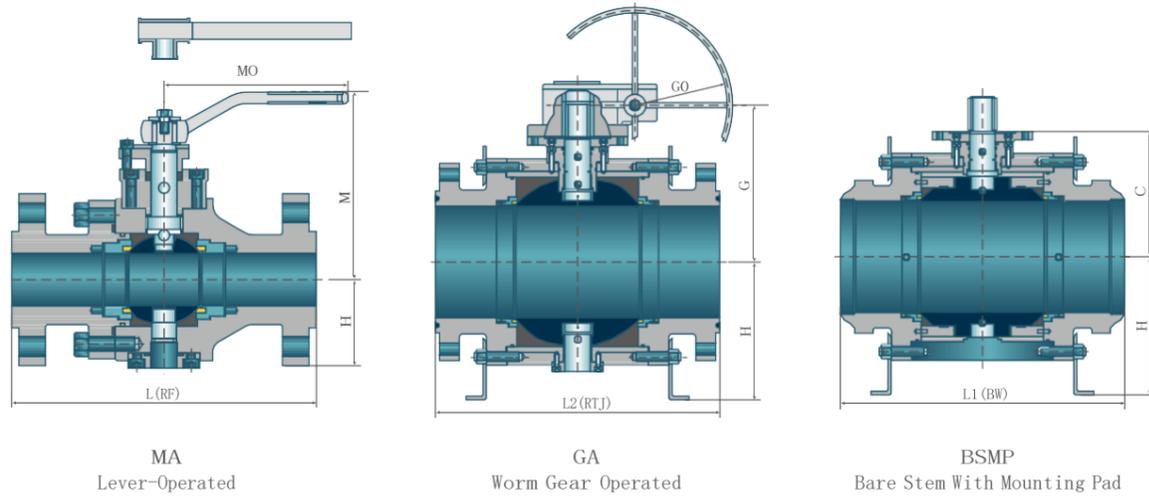
Nominal Diameter		Structural Length			MA		GA		BA		weight	Torque
DN	NPS	L(RF)	L1(BW)	L2(RTJ)	M	MO	G	GO	C	H	WT(kg)	(N • M)
50	2	292	292	295	136	500	---	---	105	100	33	168
65	2-1/2	330	330	333	164	650	---	---	135	115	43	210
80	3	356	356	359	191	650	220	300	165	130	64	360
100	4	432	432	435	244	800	254	400	210	162	124	572
150	6	559	559	562	---	---	360	400	253	203	255	912
200	8	660	660	664	---	---	390	400	290	257	487	2177
250	10	787	787	791	---	---	450	500	333	310	760	3093
300	12	838	838	841	---	---	500	500	380	350	984	4282
350	14	889	889	892	---	---	520	500	395	360	1266	7458
400	16	991	991	994	---	---	550	500	433	413	1532	9310
450	18	1092	1092	1095	---	---	635	600	470	430	2097	14693
500	20	1194	1194	1200	---	---	675	600	505	490	2640	20011
550	22	1295	1295	1305	---	---	728	600	545	510	3790	24785
600	24	1397	1397	1407	---	---	780	600	595	570	4740	31226
650	26	1448	1448	1461	---	---	810	700	635	620	5650	35184
700	28	1549	1549	1562	---	---	840	700	665	690	6760	38987
750	30	1651	1651	1664	---	---	870	800	710	750	8380	41832
800	32	1778	1778	1794	---	---	915	800	755	780	9740	63865
850	34	1930	1930	1946	---	---	951	800	780	815	11340	71720
900	36	2083	2083	2099	---	---	987	800	815	840	13300	89020
1000	40	2337	2337	2366	---	---	1212	800	915	940	18340	109900
1050	42	2439	2439	2467	---	---	1292	800	970	980	21550	121165
1200	48	2540	2540	2540	---	---	1440	800	1105	1120	31500	145345
1400	56	2949	2949	2949	---	---	1600	800	1300	1290	48050	169230

Main External Dimensions

Unit: mm

PN150/PN160/Class900

Nominal Diameter		Structural Length			MA		GA		BA		weight	Torque
DN	NPS	L(RF)	L1(BW)	L2(RTJ)	M	MO	G	GO	C	H	WT(kg)	(N • M)
50	2	368	368	371	148	650	---	---	105	110	50	228
65	2-1/2	419	419	422	191	650	---	---	135	118	61	263
80	3	381	381	384	216	800	255	400	165	130	76	512
100	4	457	457	460	---	---	285	400	210	167	150	946
150	6	610	610	613	---	---	370	400	260	251	367	1784
200	8	737	737	740	---	---	400	500	295	280	600	4116
250	10	838	838	841	---	---	450	500	345	340	1027	5910
300	12	965	965	968	---	---	500	500	384	390	1558	10137
350	14	1029	1029	1038	---	---	520	500	400	442	1765	14141
400	16	1130	1130	1140	---	---	550	600	440	490	2157	18866
450	18	1219	1219	1232	---	---	600	600	482	500	2860	22400
500	20	1321	1321	1334	---	---	630	600	530	500	4220	28544
550	22	---	---	---	---	---	---	---	---	---	---	---
600	24	1549	1549	1568	---	---	810	700	615	630	7150	43276
650	26	1651	1651	1673	---	---	850	700	650	650	8040	48580
700	28	1753	1753	1775	---	---	900	800	670	710	10840	60000
750	30	1880	1880	1902	---	---	980	800	725	780	12210	76000
800	32	2032	2032	2054	---	---	1240	800	785	810	14992	90195
850	34	2159	2159	2188	---	---	1275	800	805	850	17230	100460
900	36	2286	2286	2315	---	---	1310	800	845	900	19920	131875
1000	40	2283	2100	2311	---	---	1420	800	955	980	24251	---
1050	42	2438	2200	2461	---	---	1455	800	986	990	28660	---
1200	48	2769	2300	2797	---	---	1530	800	1150	1199	36156	---



Main External Dimensions

Unit: mm

PN250/PN260/Class1500

Nominal Diameter		Structural Length			MA		GA		BA		weight WT (kg)	Torque (N • M)
DN	NPS	L (RF)	L1 (BW)	L2 (RTJ)	M	MO	G	GO	C	H		
50	2	368	368	371	175	650	—	—	105	105	53	390
65	2-1/2	419	419	422	191	650	—	—	138	120	63	448
80	3	470	470	473	216	750	255	500	165	130	98	931
100	4	546	546	549	—	—	285	500	215	167	200	1524
150	6	705	705	711	—	—	460	500	260	270	485	2934
200	8	832	832	841	—	—	520	500	300	300	827	7215
250	10	991	991	1000	—	—	640	500	365	360	1507	10990
300	12	1130	1130	1146	—	—	720	500	420	423	2272	16103
350	14	1257	1257	1276	—	—	760	500	440	460	2880	24518
400	16	1384	1384	1407	—	—	820	600	480	510	4120	29630
450	18	1537	1537	1559	—	—	880	600	550	600	6260	34392
500	20	1664	1664	1686	—	—	900	700	620	650	9120	40918
550	22	—	—	—	—	—	—	—	—	—	—	—
600	24	—	—	1972	—	—	920	800	700	720	14320	65351

Main External Dimensions

Unit: mm

PN420/Class2500

Nominal Diameter		Structural Length			MA		GA		BA		weight WT (kg)	Torque (N • M)
DN	NPS	L (RF)	L1 (BW)	L2 (RTJ)	M	MO	G	GO	C	H		
50	2	451	451	454	168	800	170	350	120	125	90	589
65	2-1/2	508	508	514	190	1000	210	450	140	160	152	736
80	3	578	578	584	205	1000	250	500	175	200	200	1577
100	4	673	673	683	—	—	290	500	225	230	385	1965
150	6	914	914	927	—	—	340	600	260	250	778	5501
200	8	1022	1022	1038	—	—	470	600	380	340	1352	11786
250	10	1270	1270	1292	—	—	490	700	450	425	2537	13222
300	12	1422	1422	1445	—	—	615	800	515	480	3667	20075



Technical Specifications

Design Basis	GB		API		ASME
Design Standard	GB/T 12237	GB/T 19672	API 608	API 6D	ASME B16. 34
Face-to-Face	GB/T 12221	GB/T 19672	ASME B16. 10	API 6D	ASME B16. 10
End Connection*	Flanged	GB/T 9113	GB/T 9113	ASME B16. 5	ASME B16. 5
	Butt-Welding	GB/T 12224	GB/T 12224	ASME B16. 25	ASME B16. 25
Materials	NACE MRO175	NACE MRO175	NACE MRO175	NACE MRO175	NACE MRO175
Test and Check	JB/T 9092	JB/T 19672	API 598	API 6D	ASME B 16. 34
Fire Test	GB/T 6899	GB/T 6899	API F6A/API 607		API F6A/API 607

\*The dimension of welded end connection can be designed and manufactured according to the buyer request.



Main Parts and Materials

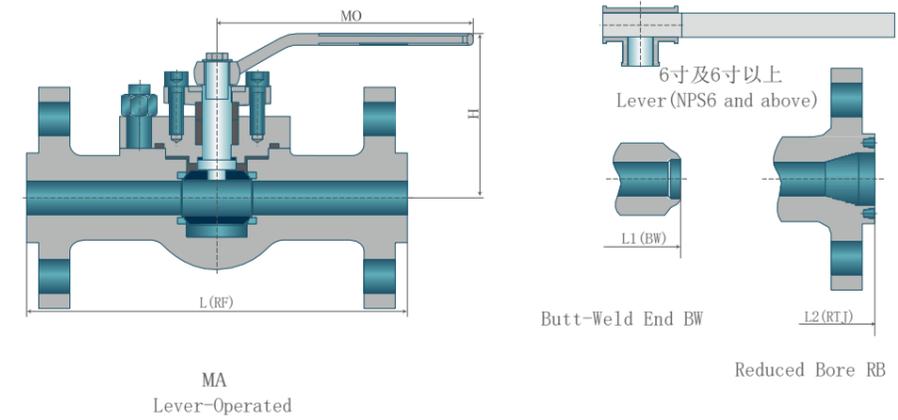
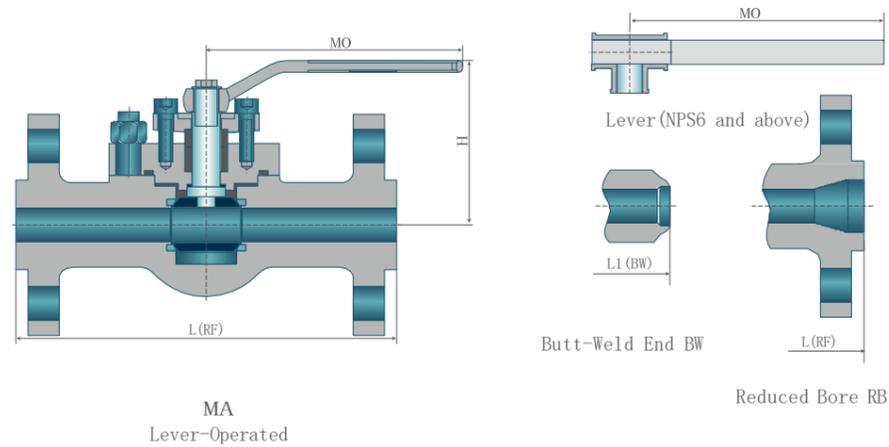
Part Name	Carbon Steel		Low Temp Steel		Stainless Steel	
	GB	ASTM	GB	ASTM	GB	ASTM
Body	WCB	A216-WCB	LCB	A352-LCB	CF8	A351-CF8
			LCC	A352-LCC	CF8M	A351-CF8M
Bolt or Nut	35CrMo	A193-B7	304	A320-L7	304	A193-B8
	45	A194-2H	304	A194-4	304	A194-8
Ball	25+ENP	A105+ENP	0Cr18Ni9	A350-LF2+ENP	0Cr18Ni9	A182-F304
					00Cr17Ni12Mo2	A182-F316
Stem	1Cr13	A276-410	304	A276-304	304	A276-304
	2Cr13	A276-420			316	A276-316
Seat	Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON		Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON		Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON	
O-Ring	NBR OR VITON		NBR OR VITON		VITON	
Gasket	Graphite+ Stainless steel		Graphite+ Stainless steel		Graphite+ Stainless steel	

Conventional Type

Main Parts and Materials

Part Name	Carbon Steel		Low Temp Steel		Stainless Steel	
	GB	ASTM	GB	ASTM	GB	ASTM
Body	WCB	A216-WCB	LCB	A352-LCB	CF8	A351-CF8
			LCC	A352-LCC	CF8M	A351-CF8M
Bolt or Nut	35CrMo	A193-B7M	304	A320-L7	304	A193-B8
	45	A194-2HM	304	A194-4	304	A194-8
Ball	25+ENP	A105+ENP	0Cr18Ni9	A350-LF2+ENP	0Cr18Ni9	A182-F304
					00Cr17Ni12Mo2	A182-F316
Stem	1Cr13	A276-410	304	A350-LF2	304	A276-304
	2Cr13	A276-420		A276-304	316	A276-316
Seat	Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON		Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON		Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON	
O-Ring	NBR OR VITON		NBR OR VITON		VITON	
Gasket	Graphite+ Stainless steel		Graphite+ Stainless steel		Graphite+ Stainless steel	

Sulfur-resistant Type



Main External Dimensions

Unit: mm

PN16/PN20/Class150

Nominal Diameter		Structural Length		MA		Weight WT (kg)
DN	NPS	L (RF)	L1 (BW)	M	MO	
15	1/2	165	165	85	140	5
20	3/4	191	191	90	140	8
25	1	216	216	99	150	10
40	1-1/2	241	241	126	200	16
50	2	292	292	140	250	25
65	2-1/2	330	330	165	300	40
80	3	356	356	178	350	70
100	4	432	432	230	500	85
150	6	559	559	310	800	190
200	8	660	660	350	1000	410
250	10	787	787	400	1000	680

Main External Dimensions

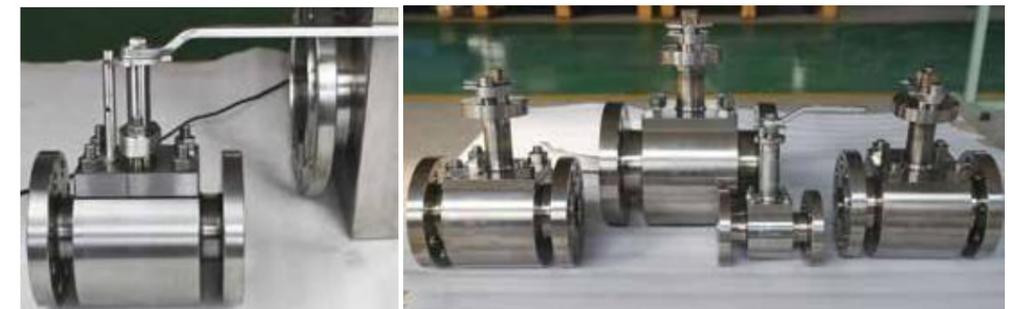
Unit: mm

PN100/PN110/Class600

Nominal Diameter		Structural Length			MA		Weight WT (kg)
DN	NPS	L (RF)	L1 (BW)	L2 (RTJ)	M	MO	
15	1/2	165	165	165	79	140	7
20	3/4	191	191	191	83	140	10
25	1	216	216	216	114	200	12
40	1-1/2	241	241	241	125	250	22
50	2	292	292	292	156	300	31
65	2-1/2	330	330	333	172	350	52
80	3	356	356	359	220	500	80
100	4	432	432	435	250	650	105

PN25/PN40/Class300

Nominal Diameter		Structural Length		MA		Weight WT (kg)
DN	NPS	L (RF)	L1 (BW)	M	MO	
15	1/2	165	165	85	140	6
20	3/4	191	191	90	140	9.5
25	1	216	216	99	150	11
40	1-1/2	241	241	126	200	19
50	2	292	292	140	250	29
65	2-1/2	330	330	165	300	45
80	3	356	356	178	350	75
100	4	432	432	230	500	95
150	6	559	559	310	800	202
200	8	660	660	350	1000	445



Technical Specifications

Design Basis	GB		API		ASME
Design Standard	GB/T 12237	GB/T 19672	API 608	API 6D	ASME B16. 34
Face-to-Face	GB/T 12221	GB/T 19672	ASME B16. 10	API 6D	ASME B16. 10
End Connection*	Flanged	GB/T 9113	ASME B16. 5/MSS SP-44/ASME B16. 47		
	Butt-Welding	GB/T 12224	GB/T 12224	ASME B16. 25	ASME B16. 25
Materials	NACE MRO175	NACE MRO175	NACE MRO175	NACE MRO175	NACE MRO175
Test and Check	JB/T 9092	JB/T 19672	API 598	API 6D	ASME B 16. 34
Fire Test	GB/T 6899	GB/T 6899	API F6A/API 607		

\* The dimension of welded end connection can be designed and manufactured according to the buyer request. MSS SP-44 for size 22" ASME B16. 47 Series A for size 26" & over.



Main Parts and Materials

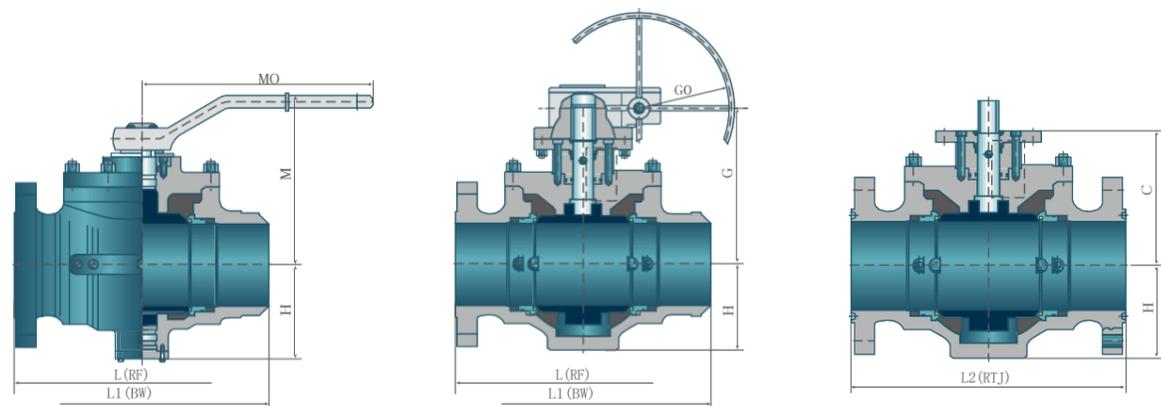
Part Name	Carbon Steel		Low Temp Steel		Stainless Steel	
	GB	ASTM	GB	ASTM	GB	ASTM
Body	WCB	A216-WCB	LCB	A352-LCB	CF8	A351-CF8
			LCC	A352-LCC	CF8M	A351-CF8M
Bolt or Nut	35CrMo	A193-B7	304	A320-L7	304	A193-B8
	45	A194-2H	304	A194-4	304	A194-8
Ball	25+ENP	A105+ENP	0Cr18Ni9	A350-LF2+ENP	0Cr18Ni9	A182-F304
					00Cr17Ni12Mo2	A182-F316
Stem	1Cr13	A276-410	304	A276-304	304	A276-304
	2Cr13	A276-420			316	A276-316
Seat	25+ENP	A105+ENP	304	A350 LF2+ENP	0Cr18Ni9	A182-F304
					00Cr17Ni12Mo2	A182-F316
Seat insert	Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON		Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON		Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON	
O-Ring	NBR OR VITON		NBR OR VITON		VITON	
Gasket	Graphite+ Stainless steel		Graphite+ Stainless steel		Graphite+ Stainless steel	

Conventional Type

Main Parts and Materials

Part Name	Carbon Steel		Low Temp Steel		Stainless Steel	
	GB	ASTM	GB	ASTM	GB	ASTM
Body	WCB	A216-WCB	LCB	A352-LCB	CF8	A351-CF8
			LCC	A352-LCC	CF8M	A352-CF8M
Bolt or Nut	35CrMo	A193-B7M	304	A320-L7	304	A193 B8
	45	A194-2HM	304	A194-4	304	A194 8
Ball	25+ENP	A105+ENP	0Cr18Ni9	A350-LF2+ENP	0Cr18Ni9	A182-F304
					00Cr17Ni12Mo2	A182-F316
Stem	17-4PH	17-4PH	For use at low temperatures resilient steels.		304	A276-304
					316	A276-316
Seat	25+ENP	A105+ENP	304	A350-LF2+ENP	0Cr18Ni9	A182-F304
					00Cr17Ni12Mo2	A182-F316
Seat insert	Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON		Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON		Standard: PTFE/NYLON Special: PEEK/DEVLON/VITON	
O-Ring	NBR OR VITON		NBR OR VITON		VITON	
Gasket	Graphite+ Stainless steel		Graphite+ Stainless steel		Graphite+ Stainless steel	

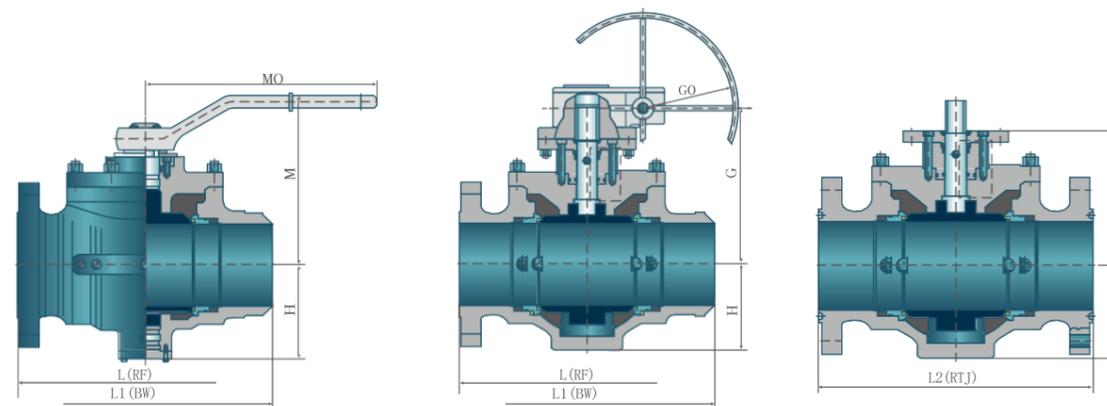
Sulfur-resistant Type



MA  
Lever-Operated

GA  
Worm Gear Operated

BSMP  
Bare Stem With Mounting Pad



MA  
Lever-Operated

GA  
Worm Gear Operated

BSMP  
Bare Stem With Mounting Pad

Main External Dimensions

Unit: mm

PN16/PN20/Class150

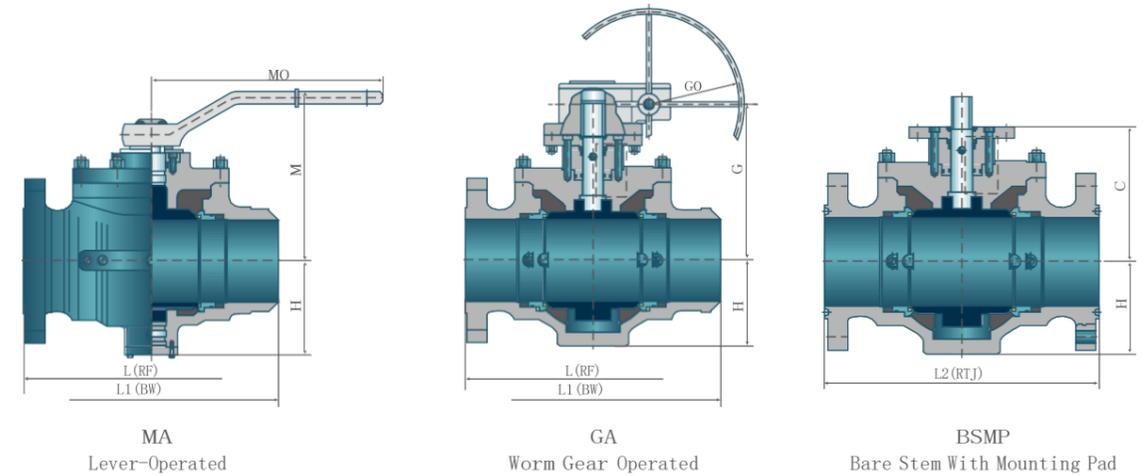
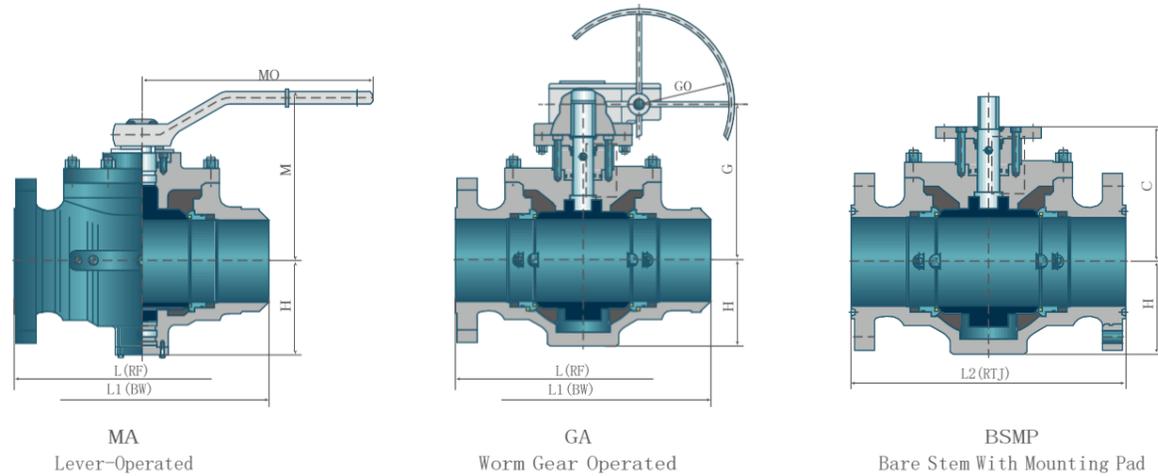
Nominal Diameter		Structural Length			MA		GA		BA		Weight	Torque
DN	NPS	L (RF)	L1 (BW)	L2 (RTJ)	M	MO	G	GO	C	H	WT (kg)	(N • M)
40	1-1/2	260	260	264	206	300	---	---	145	63	28	40
50	2	292	292	295	231	300	---	---	170	78	40	57
65	2-1/2	330	330	333	245	400	---	---	182	90	48	71
80	3	356	356	359	273	450	---	---	212	100	65	95
100	4	432	432	435	297	500	---	---	236	120	110	192
150	6	559	559	562	351	800	338	300	271	162	210	485
200	8	660	660	664	388	1000	375	400	308	207	375	832
250	10	787	787	791	---	---	415	400	348	244	462	1105
300	12	838	838	841	---	---	452	500	385	290	660	1655
350	14	889	889	892	---	---	473	500	398	370	930	2695
400	16	991	991	994	---	---	498	600	423	405	1354	3164
450	18	1092	1092	1095	---	---	545	600	470	445	2100	3793
500	20	1194	1194	1200	---	---	603	600	528	540	2680	5500
550	22	1295	1295	1305	---	---	688	600	578	550	3400	6650
600	24	1397	1397	1407	---	---	742	700	630	595	4180	7529
650	26	1448	1448	1461	---	---	750	700	635	640	4850	8693
700	28	1549	1549	1562	---	---	797	700	685	680	5850	10770
750	30	1651	1651	1664	---	---	835	700	720	745	6400	12365
800	32	1778	1778	1794	---	---	896	700	760	770	7850	14070
850	34	1930	1930	1946	---	---	926	700	790	800	8600	21148
900	36	2083	2083	2099	---	---	950	700	810	820	9850	22987
1000	40	2337	2337	2366	---	---	1036	700	900	850	14500	26059

Main External Dimensions

Unit: mm

PN25/PN40/PN50/Class300

Nominal Diameter		Structural Length			MA		GA		BA		Weight	Torque
DN	NPS	L (RF)	L1 (BW)	L2 (RTJ)	M	MO	G	GO	C	H	WT (kg)	(N • M)
40	1-1/2	260	260	264	206	300	---	---	145	63	30	50
50	2	292	292	295	231	300	---	---	170	78	40	99
65	2-1/2	330	330	333	245	400	---	---	182	90	47	124
80	3	356	356	359	273	450	---	---	212	100	65	212
100	4	432	432	435	297	500	---	---	236	120	125	335
150	6	559	559	562	351	800	338	300	271	162	277	544
200	8	660	660	664	388	1000	375	400	308	207	407	1250
250	10	787	787	791	---	---	423	400	348	244	484	1736
300	12	838	838	841	---	---	460	500	385	290	664	2388
350	14	889	889	892	---	---	481	500	398	370	1060	3224
400	16	991	991	994	---	---	515	600	436	405	1450	5139
450	18	1092	1092	1095	---	---	555	600	478	445	2200	7970
500	20	1194	1194	1200	---	---	648	600	536	537	3400	10570
550	22	1295	1295	1305	---	---	712	600	600	550	1950	12140
600	24	1397	1397	1407	---	---	758	700	645	595	4400	17240
650	26	1448	1448	1461	---	---	786	700	650	640	5410	20340
700	28	1549	1549	1562	---	---	845	700	708	680	6640	25069
750	30	1651	1651	1664	---	---	856	700	720	745	7780	27640
800	32	1778	1778	1794	---	---	921	700	785	770	9550	29550
850	34	1930	1930	1946	---	---	951	700	815	800	11230	31558
900	36	2083	2083	2099	---	---	1008	700	848	800	13180	35170
1000	40	2337	2337	2366	---	---	1095	700	935	850	17310	39115



Main External Dimensions

Unit: mm

PN100/PN110/Class600

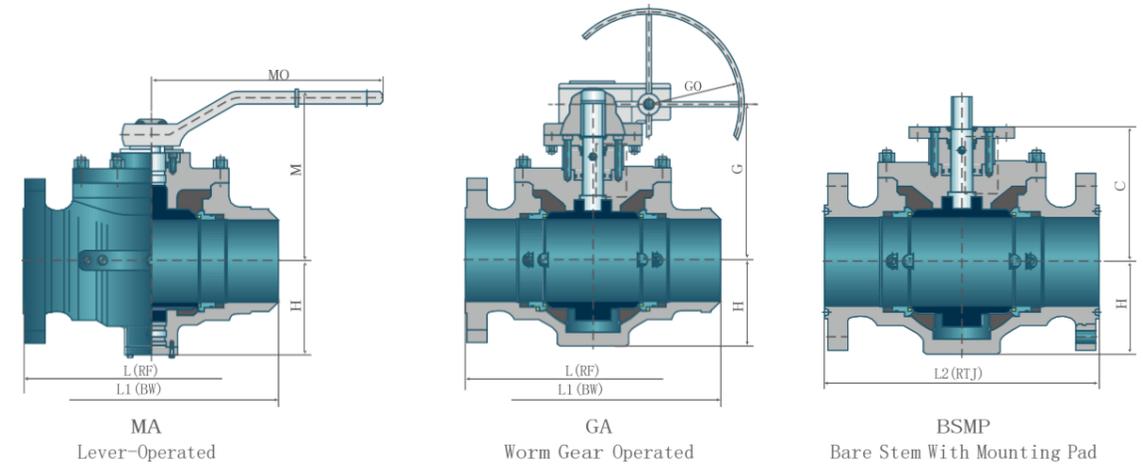
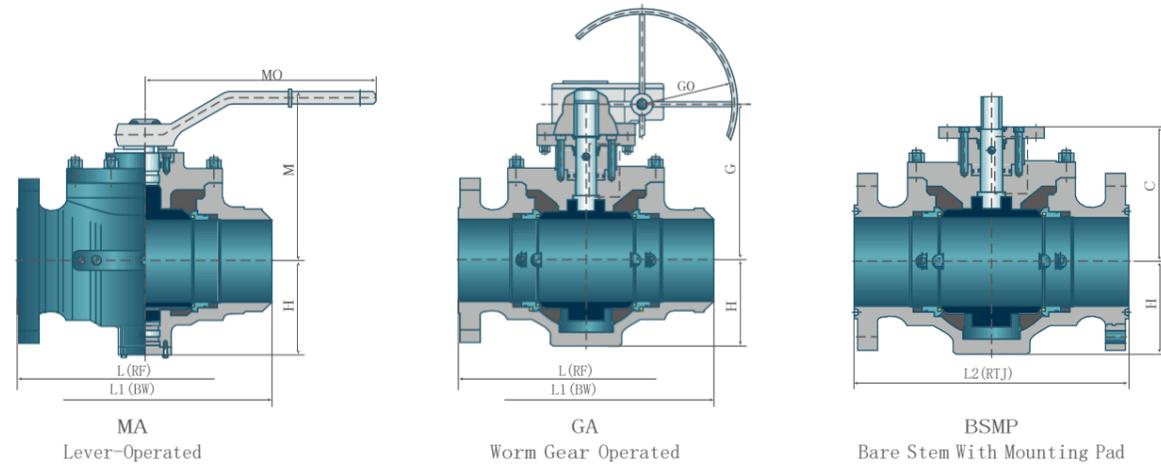
Nominal Diameter		Structural Length			MA		GA		BA		Weight WT (kg)	Torque (N • M)
DN	NPS	L (RF)	L1 (BW)	L2 (RTJ)	M	MO	G	GO	C	H		
40	1-1/2	260	260	264	206	400	---	---	145	63	35	130
50	2	292	292	295	231	500	---	---	170	78	50	168
65	2-1/2	330	330	333	243	600	---	---	182	90	59	210
80	3	356	356	359	273	700	---	---	212	100	75	360
100	4	432	432	435	316	800	303	400	236	120	155	572
150	6	559	559	562	---	---	338	400	271	162	290	912
200	8	660	660	664	---	---	383	400	308	207	480	2177
250	10	787	787	791	---	---	423	500	348	244	710	3093
300	12	838	838	841	---	---	460	500	385	290	1050	4282
350	14	889	889	892	---	---	500	500	425	365	1530	7458
400	16	991	991	994	---	---	605	500	493	430	1980	9310
450	18	1092	1092	1095	---	---	642	600	530	475	2460	14693
500	20	1194	1194	1200	---	---	700	600	588	540	3420	20011
550	22	1295	1295	1305	---	---	781	600	645	580	4030	24785
600	24	1397	1397	1407	---	---	815	600	679	620	5010	31226
650	26	1448	1448	1461	---	---	915	700	755	655	6340	35184
700	28	1549	1549	1562	---	---	930	700	770	730	8080	38987
750	30	1651	1651	1664	---	---	1030	800	870	800	9150	41832
800	32	1778	1778	1794	---	---	1055	800	895	830	10760	63865
850	34	1930	1930	1946	---	---	1105	800	945	870	12750	71720
900	36	2083	2083	2099	---	---	1180	1000	1020	900	15200	89020
1000	40	2337	2337	2366	---	---	1325	1000	1165	960	19210	109900

Main External Dimensions

Unit: mm

PN150/PN160/Class900

Nominal Diameter		Structural Length			MA		GA		BA		Weight WT (kg)	Torque (N • M)
DN	NPS	L (RF)	L1 (BW)	L2 (RTJ)	M	MO	G	GO	C	H		
40	1-1/2	362	362	365	234	650	---	---	173	68	50	163
50	2	368	368	371	251	650	---	---	190	83	67	228
65	2-1/2	419	419	422	278	650	---	---	202	98	75	263
80	3	381	381	384	305	800	---	---	225	110	90	512
100	4	457	457	460	---	---	335	400	268	127	185	946
150	6	610	610	613	---	---	396	400	321	170	380	1784
200	8	737	737	740	---	---	436	500	361	225	620	4116
250	10	838	838	841	---	---	445	500	368	260	880	5910
300	12	965	965	968	---	---	535	500	460	310	1360	10137
350	14	1029	1029	1038	---	---	590	500	478	395	1910	14141
400	16	1130	1130	1140	---	---	625	600	513	450	2790	18866
450	18	1219	1219	1232	---	---	702	600	590	505	3740	22400
500	20	1321	1321	1334	---	---	801	600	665	565	4600	28544
550	22	1423	1423	1439	---	---	910	700	750	620	6150	42427
600	24	1549	1549	1568	---	---	953	700	793	660	7850	43276
650	26	1651	1651	1673	---	---	995	700	835	685	10900	48580
700	28	1753	1753	1775	---	---	1053	800	893	740	12500	60000
750	30	1880	1880	1902	---	---	1110	800	950	830	14150	76000
800	32	2032	2032	2054	---	---	1160	1000	1000	880	17100	90195
850	34	2159	2159	2188	---	---	1203	1000	1043	930	18570	100460
900	36	2286	2286	2315	---	---	1260	1000	1096	960	21000	131875



Main External Dimensions

Unit: mm

PN250/PN260/Class1500

Nominal Diameter		Structural Length			MA		GA		BA		Weight WT (kg)	Torque (N · M)
DN	NPS	L (RF)	L1 (BW)	L2 (RTJ)	M	MO	G	GO	C	H		
40	1-1/2	362	362	365	234	700	—	—	173	68	50	—
50	2	368	368	371	251	800	—	—	190	83	67	390
65	2-1/2	419	419	422	278	800	—	—	202	98	75	448
80	3	470	470	473	—	—	310	500	243	110	130	931
100	4	546	546	549	—	—	357	500	290	142	260	1524
150	6	705	705	711	—	—	436	500	361	188	560	2934
200	8	832	832	841	—	—	505	500	430	250	870	7215
250	10	991	991	1000	—	—	568	500	493	300	1380	10990
300	12	1130	1130	1146	—	—	663	500	553	350	2290	16103
350	14	1257	1257	1276	—	—	705	500	593	440	2890	24518
400	16	1384	1384	1407	—	—	755	600	643	460	4700	29630
450	18	1537	1537	1559	—	—	849	600	713	560	5985	34392
500	20	1664	1664	1686	—	—	941	700	805	615	7770	40918
550	22	1820	1820	1842	—	—	1005	800	845	695	10240	46075
600	24	—	—	1972	—	—	1038	800	878	720	12980	65351

Main External Dimensions

Unit: mm

PN420/Class2500

Nominal Diameter		Structural Length			MA		GA		BA		Weight WT (kg)	Torque (N · M)
DN	NPS	L (RF)	L1 (BW)	L2 (RTJ)	M	MO	G	GO	C	H		
40	1-1/2	384	384	387	269	700	—	—	208	75	68	320
50	2	451	451	454	291	800	—	—	230	95	122	589
65	2-1/2	508	508	514	305	1000	—	—	258	105	167	736
80	3	578	578	584	—	—	349	500	282	128	250	1577
100	4	673	673	683	—	—	411	500	336	165	468	1965
150	6	914	914	927	—	—	487	600	375	245	950	5501
200	8	1022	1022	1038	—	—	572	600	460	315	1790	11786
250	10	1270	1270	1292	—	—	625	700	513	350	2650	13222
300	12	1422	1422	1445	—	—	695	700	583	410	4300	20075



### Function

In general, the seat material of ball valve employs non-metal, such as PTFE.

Limited by the seat material, ball valves can not be used in case of high temperature, medium with solids and the ash disposal system.

For this condition, with years of research, we have developed the hard seal ball valve, including floating type and trunnion type, making the ball valve able to be used extensible in petroleum, chemical, metallurgy, polycrystalline silicon and power industry.

### Structural Design Characteristic

Except for such features like wrong operation prevention, stem blowout proof, mounting pad is provision, the hard seal ball valves are equipped with the following unique features.

#### Advanced Hardening Technology Used For Ball and Seats

Hard seal ball valve design has been used perfectly for the ball and seats, which has also adopted the advanced hardening technologies, such as ultra-sonic spray coating, nickel base spray welding, surface specially hardening, stellite spray welding, ceramic material with high strength and hardness, and so on. Surface hardness of the ball and seat may generally reach more than HRC60, Maximum is up to HRC74, and application temperature of the material may be up to 540°C, Maximum is 980°C.

Combining strength of the material deposited to more than 10,000 psi. Besides the surface materials get also very good resistance properties of friction and impact. Hard seal ball valves are manufactured to be suitable in the most critical working conditions.

#### Valve Stuck Under High Temperature Prevention

In the case of high temperature working condition, the valve seats and ball would easily get stuck due to heat expansion, therefore the valve can not open. Hard seal ball valves are manufactured using the patented design of beveling spring, so it is ensured that the valves would not get stuck, and open and close easily in case of high temperature condition.

#### Excellent Tightness Function

A unique technique has been employed for the ball grinding, which makes the ball surface to reach extreme roundness and smoothness by rotating the ball in a grinding device at different directions in space. The tightness function of the valve meets completely and even exceeds the standard requirement.

#### Anti-static Structure

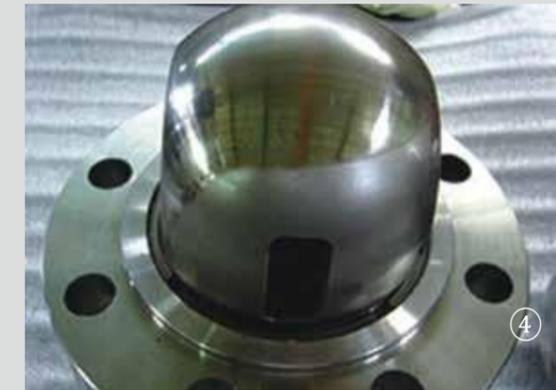
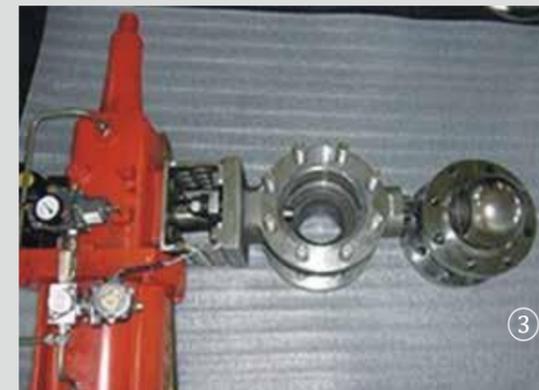
Hard seal ball valve with its body seat, ball, other metal parts, and so forth are in contact with each other, having naturally a static electricity relief. So, there is no need to provide any special antistatic Device.

#### Double-block and Bleed Function

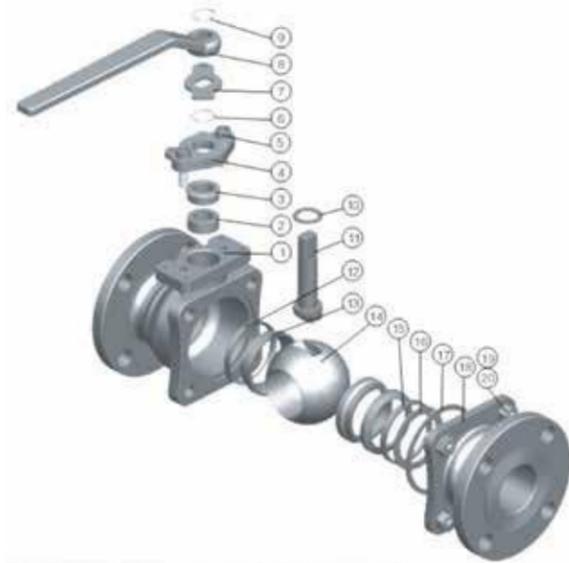
Hard seal ball valves are in general of the front ball sealing structure.

Actually, two seats of the metal to metal sealed trunnion ball valve can both cut off separately the medium at inlet and outlet to realize double-block function. When the valve is closed, the body cavity and both the bore ends can be blocked with each other even if both ends of the valve are under pressure at the same time, whereas the medium left in the body cavity may relieve through the relief valve.

### Test With Poly Silicon Power (Seal Test)

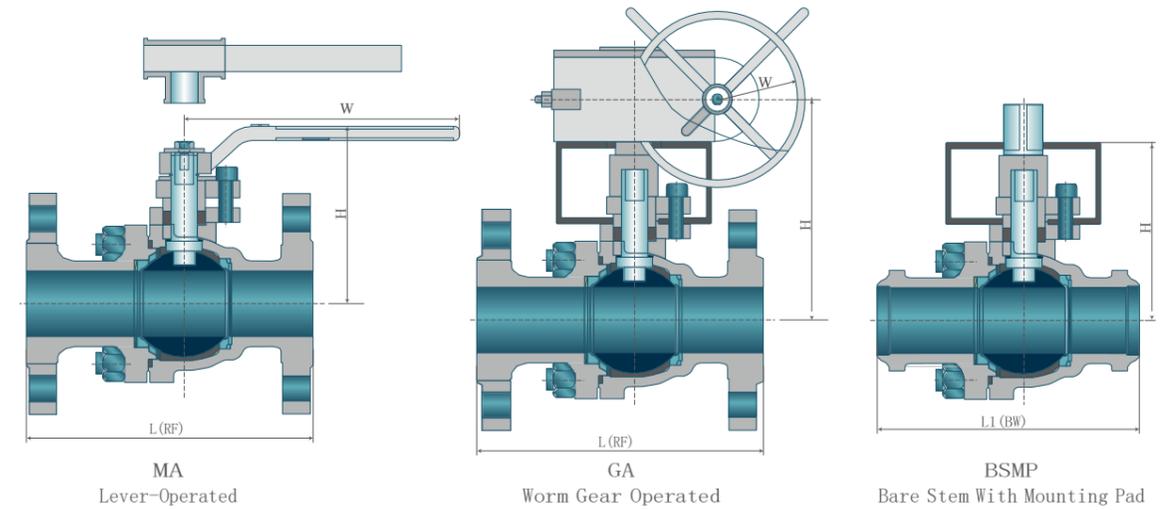


- ① Operation with metal poly silicon powder
- ② Open/ Close 3,000 times operation
- ③ The valve without damage or leaking
- ④ After continuous opening and closing, there is no damage on the ball surface
- ⑤ There is no visible leakage within certain time, while testing by coal oil



Technical Standard

Design Standard	GB/T 21385
Face to Face Dimension	GB/T 12221
Flanged end dimension	GB/T 9113
Test and inspection	JB/T 9092



Main Parts and Materials

No.	Part Name	Materials			Materials	
		WCB/13Cr	WCB/304	WCB/316	CF8	CF8M
1	Body	ASTM A216 WCB	ASTM A216 WCB	ASTM A216 WCB	ASTM A216 WCB	ASTM A351 CF8M
2	Packing	Graphite	Graphite	Graphite	Graphite	Graphite
3	Gland	ASTM A182 F6a	ASTM A182 F304	ASTM A182 F304	ASTM A182 F304	ASTM A182 F316
4	Gland flange	ASTM A216 WCB	ASTM A216 WCB	ASTM A216 WCB	ASTM A351 WCB	ASTM A351 CF8M
5	Gland bolt	ASTM A193 B7	ASTM A193 B7	ASTM A193 B7	ASTM A193 B8	ASTM A193 B8M
6	Circlip	Carbon steel	Carbon steel	Carbon steel	Carbon steel	Carbon steel
7	Stop collar	Carbon steel	Carbon steel	Carbon steel	Carbon steel	Carbon steel
8	Lever	Carbon steel	Carbon steel	Carbon steel	Carbon steel	Carbon steel
9	Circlip	Carbon steel	Carbon steel	Carbon steel	Carbon steel	Carbon steel
10	Thrust washer	304 Sheet+Graphite	304 Sheet+Graphite	316 Sheet+Graphite	304 Sheet+Graphite	316 Sheet+Graphite
11	Stem	ASTM A182 F6a	ASTM A182 F304	ASTM A182 F316	ASTM A182 F316	ASTM A182 F316
12	Seat seal	Graphite	Graphite	Graphite	Graphite	Graphite
13	Seat	ASTM A182 F6a + WC-Co	ASTM A182 F304 + WC-Co	ASTM A182 F316 + WC-Co	ASTM A182 F304 + WC-Co	ASTM A182 F316 + WC-Co
14	Ball	ASTM A182 F6a + WC-Co	ASTM A182 F304 + WC-Co	ASTM A182 F316 + WC-Co	ASTM A182 F304 + WC-Co	ASTM A182 F316 + WC-Co
15	Seat seal gland	ASTM A182 F6a	ASTM A182 F304	ASTM A182 F316	ASTM A182 F304	ASTM A182 F316
16	Spring	Inconel 750	Inconel 750	Inconel 750	Inconel 750	Inconel 750
17	Gasket	304 Sheet +Graphite	304 Sheet +Graphite	316 Sheet +Graphite	304Sheet +Graphite	316 Sheet +Graphite
18	Closure	ASTM A216 WCB	ASTM A216 WCB	ASTM A216 WCB	ASTM A251 WCB	ASTM A251 CF8M
19	Body bolting	ASTM A193 B7	ASTM A193 B7	ASTM A193 B7	ASTM A193 B8	ASTM A193 B8M
20	Body nut	ASTM A194 2H	ASTM A194 2H	ASTM A194 2H	ASTM A194 8	ASTM A194 8M

Note: The chart above only lists out some common composition of steel ball valve parts, We may provide other different parts material composition according to the customer request or the actual valve working condition.

Main External Dimensions

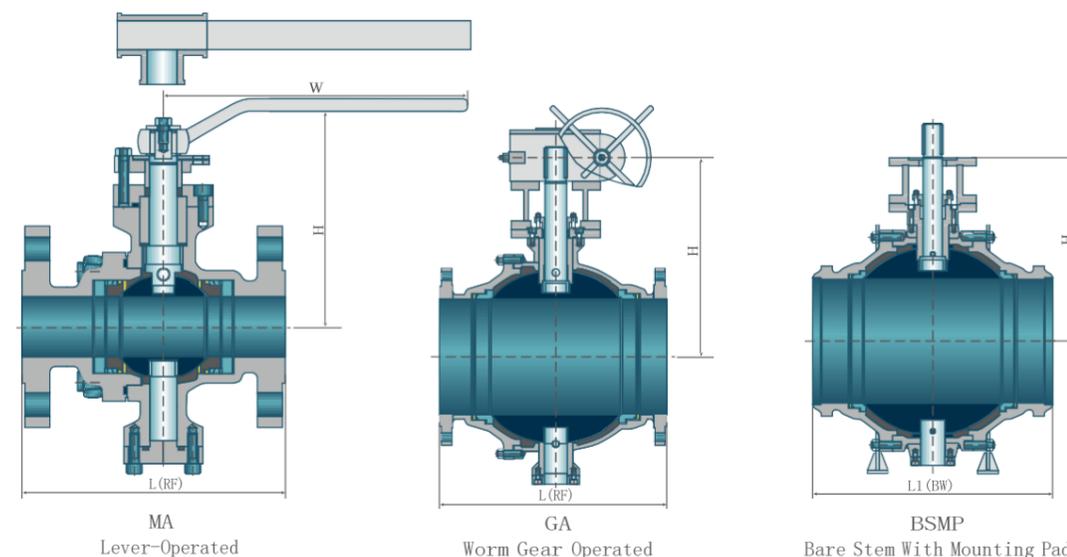
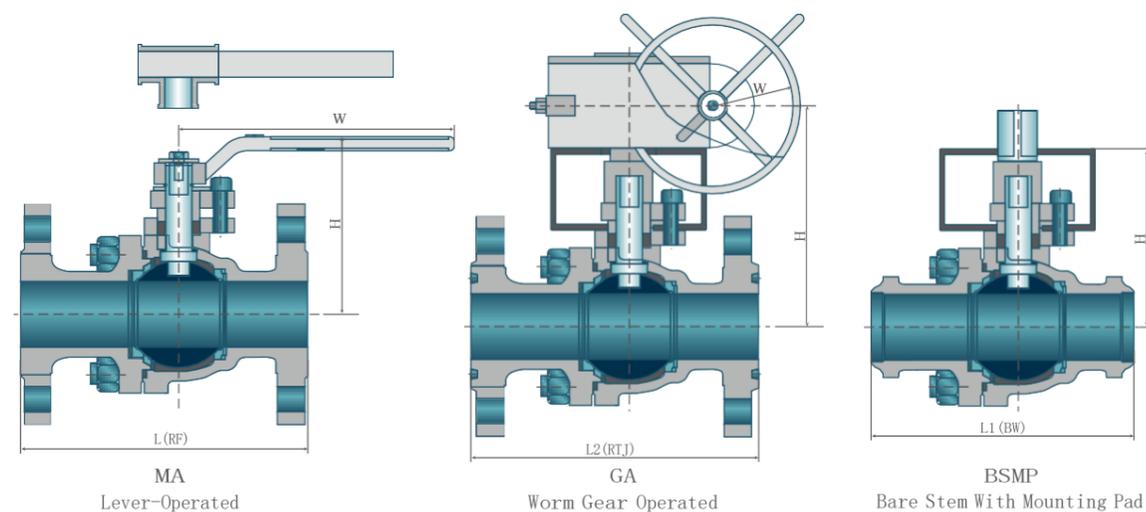
Unit: mm

PN16/PN20/Class150

Nominal Diameter	Structural Length	Lever-operated			Worm Gear Operated			Pneumatic Actuator					Electric Actuator					
		L(RF)	L1(BW)	H	W	WT(Kg)	H	W	WT(Kg)	H	W	L2	L3	WT(Kg)	H	H1	W	WT(Kg)
15	1/2	105	—	59	130	2.3	—	—	—	200	122	326	136	6.1	—	—	—	—
20	3/4	117	—	63	130	3.0	—	—	—	204	126	326	136	6.1	—	—	—	—
25	1	127	—	75	160	4.5	—	—	—	257	162	347	181	8.1	—	—	—	—
40	1-1/2	165	—	95	230	7.0	—	—	—	264	169	420	181	14.1	—	—	—	—
50	2	178	216	107	230	9.5	—	—	—	340	209	426	257	16.6	472	377	190	23
65	2-1/2	190	241	142	350	15.0	—	—	—	370	239	426	257	38	486	391	190	25
80	3	203	283	152	400	19.0	—	—	—	389	258	590	257	42.1	579	484	190	60
100	4	229	305	178	500	33.0	—	—	—	594	337	523	287	53	595	500	190	75
125	5	356	381	252	750	58.0	—	—	—	646	437	610	378	95.3	650	500	400	97
150	6	394	457	272	750	93.0	292	400	180	646	437	610	378	105.2	739	589	400	162
200	8	457	521	342	900	160.0	398	600	240	781	537	885	530	207.8	799	649	400	226

PN25/PN40/PN50/Class 300

Nominal Diameter	Structural Length	Lever-operated			Worm Gear Operated			Pneumatic Actuator					Electric Actuator					
		L(RF)	L1(BW)	H	W	WT(Kg)	H	W	WT(Kg)	H	W	L2	L3	WT(Kg)	H	H1	W	WT(Kg)
15	1/2	140	—	59	130	2.5	—	—	—	200	122	326	136	6.2	—	—	—	—
20	3/4	152	—	63	130	3.5	—	—	—	204	126	326	136	6.4	—	—	—	—
25	1	165	—	75	160	5.5	—	—	—	257	162	347	181	8.5	—	—	—	—
40	1-1/2	190	—	95	230	10.5	—	—	—	264	169	420	181	16.9	—	—	—	—
50	2	216	216	107	230	14.5	—	—	—	340	209	426	257	20.9	472	377	190	23
65	2-1/2	241	241	142	350	23.5	—	—	—	379	248	426	257	42.5	486	391	190	25
80	3	283	283	152	400	30	—	—	—	452	295	590	257	52.7	579	484	190	60
100	4	305	305	178	500	55	—	—	—	594	375	523	287	77.9	595	500	190	75
125	5	381	381	252	750	81	—	—	—	646	437	610	378	107	650	500	400	100
150	6	403	457	272	750	118	292	400	220	477	500	610	378	130	739	589	400	170
200	8	502	521	342	900	200	398	600	365	920	615	885	530	220	799	649	400	240



Main External Dimensions

Unit: mm

PN100/PN110/Class 600

Nominal Diameter		Structural Length			Lever-operated			Worm Gear Operated			Pneumatic Actuator					Electric Actuator			
DN	NPS	L(RF)	L1(BW)	L2(RTJ)	H	W	WT(Kg)	H	W	WT(Kg)	H	W	L2	L3	WT(Kg)	H	H1	W	WT(Kg)
15	1/2	165	—	—	59	160	6.5	—	—	—	200	122	283	136	6.5	—	—	—	—
20	3/4	190	—	—	63	160	9	—	—	—	204	145	283	11	6.8	—	—	—	—
25	1	216	—	—	75	230	13	—	—	—	241	146	283	181	9.3	—	—	—	—
40	1-1/2	241	—	—	95	400	16.5	—	—	—	264	169	350	181	17.8	—	—	—	—
50	2	292	292	295	167	400	25	—	—	—	340	209	590	257	33.6	472	377	190	25
65	2-1/2	330	330	333	180	650	30	—	—	—	379	248	590	257	45.1	599	449	190	60
80	3	356	356	359	198	650	55	292	400	72	452	295	523	287	59.3	599	449	190	75
100	4	432	432	435	198	1050	66	398	600	85	584	375	610	378	81.2	632	472	190	90

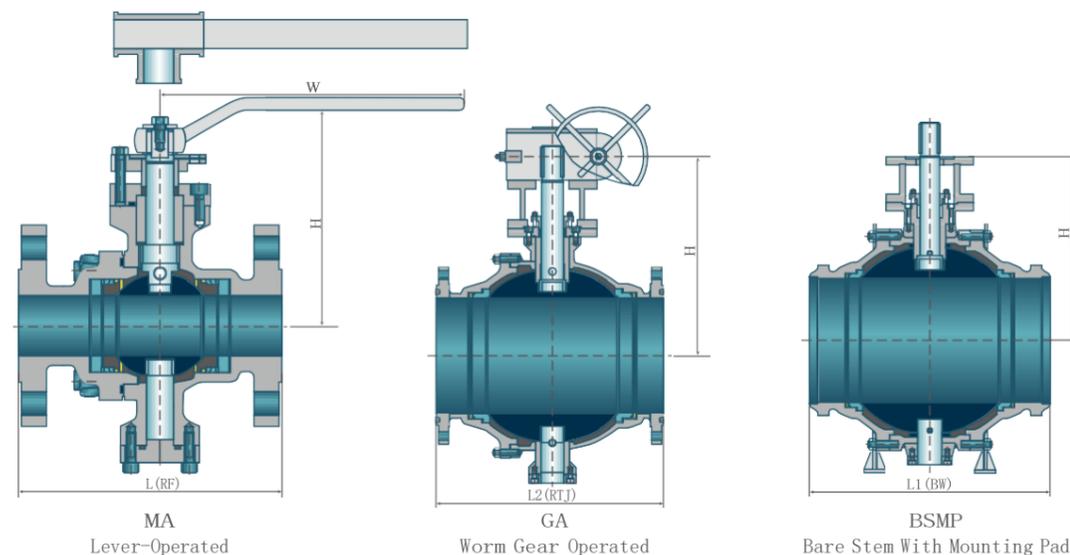
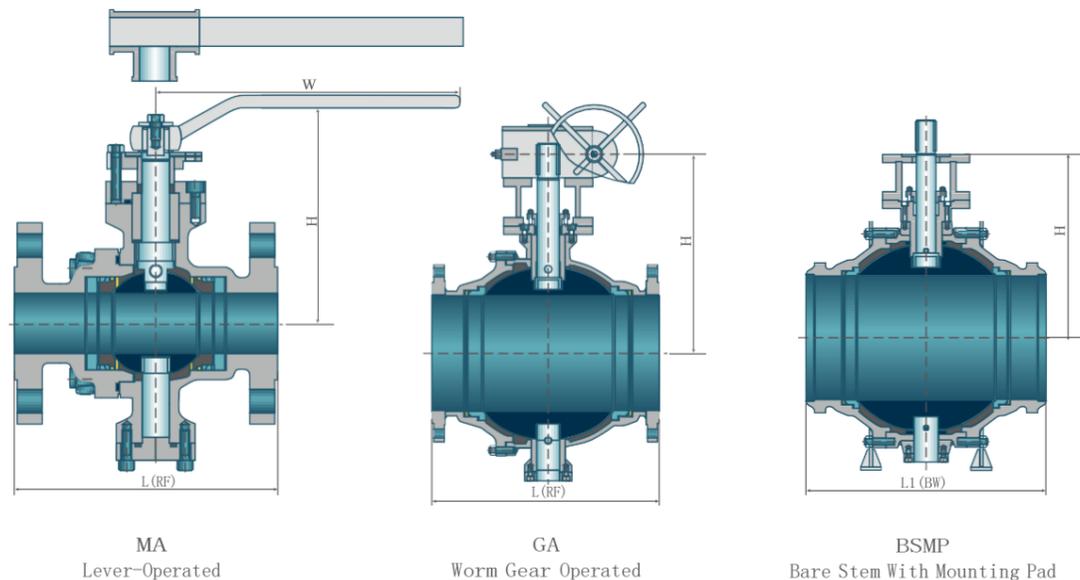


Main External Dimensions

Unit: mm

PN16/PN20/Class 150

Nominal Diameter		Structural Length		Lever-operated			Worm Gear Operated			Pneumatic Actuator					Electric Actuator			
DN	NPS	L(RF)	L1(BW)	H	W	WT(Kg)	H	W	WT(Kg)	H	W	L2	L3	WT(Kg)	H	H1	W	WT(Kg)
50	2	178	216	107	130	9.5	—	—	—	269	174	89	181	16.6	—	—	—	—
65	2-1/2	191	241	125	400	15	—	—	—	379	248	148	257	38	—	—	—	—
80	3	203	283	152	400	19	—	—	—	389	258	148	257	42.1	—	—	—	—
100	4	229	305	178	450	33	—	—	—	479	322	287	287	53	—	—	—	—
125	5	356	381	300	700	58	—	—	—	552	395	287	287	95.3	—	—	—	—
150	6	394	457	330	750	93	—	—	—	666	457	378	378	105.2	554	337	200	127
200	8	457	521	—	—	—	398	600	160	804	595	378	378	207.8	600	382	200	210
250	10	533	559	—	—	—	495	600	180	839	630	378	378	255	652	435	200	270
300	12	610	635	—	—	—	580	800	240	972	728	530	530	409	761	480	280	420
350	14	686	762	—	—	—	625	800	390	1127	883	530	530	518	771	520	280	535
400	16	762	838	—	—	—	670	800	510	1459	1154	680	680	838	731	580	280	862
450	18	864	914	—	—	—	698	800	750	1529	1224	680	680	1067	921	670	305	1100
500	20	914	991	—	—	—	840	800	1190	1559	1294	680	680	1295	943	770	305	1350
600	24	1067	1143	—	—	—	1050	800	2600	1145	915	1455	1455	2330	1123	850	305	2420
700	28	1245	1346	—	—	—	1100	800	3000	1160	930	1455	1455	3200	1218	945	400	3410
800	32	1372	1524	—	—	—	1150	800	4490	1460	1100	1665	1665	4750	1328	1055	400	5120
900	36	1524	1727	—	—	—	1230	800	7800	1540	1180	1665	1665	8200	1696	1130	460	9100



Main External Dimensions

Unit: mm

PN25/PN40/PN50/Class 300

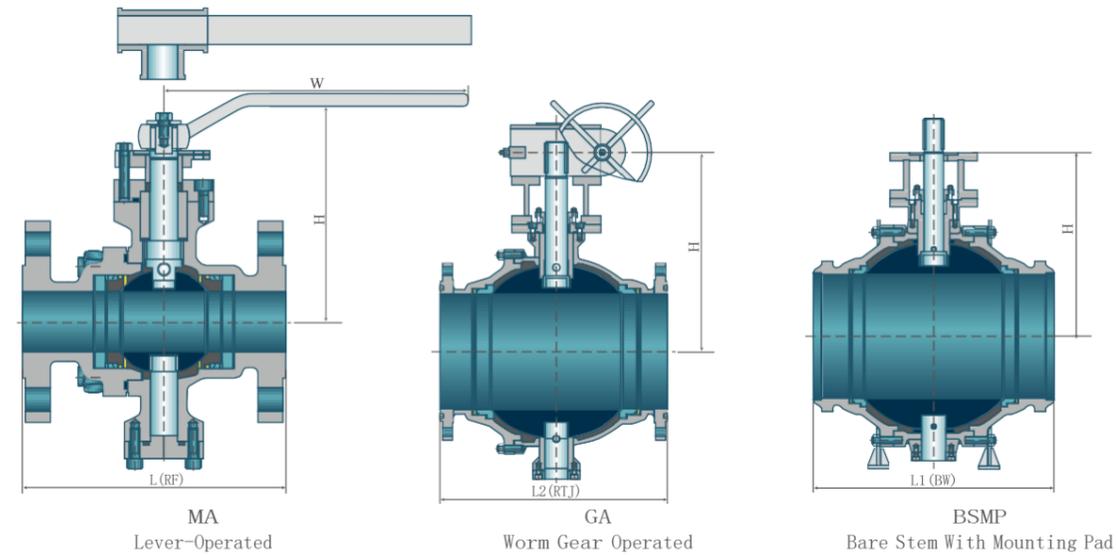
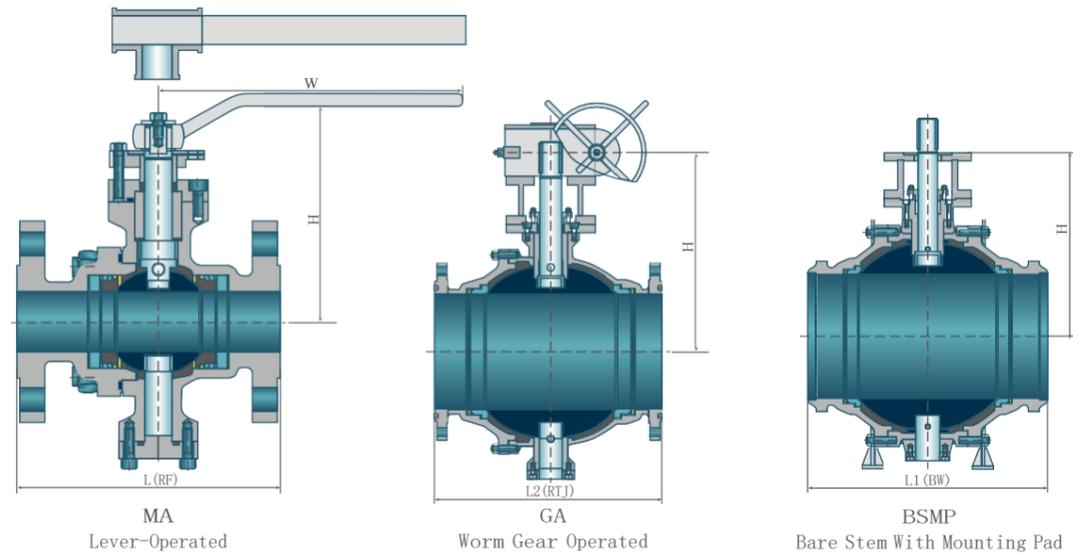
Nominal Diameter		Structural Length		Lever-operated			Worm Gear Operated			Pneumatic Actuator					Electric Actuator			
DN	NPS	L(RF)	L1(BW)	H	W	WT(Kg)	H	W	WT(Kg)	H	W	L2	L3	WT(Kg)	H	H1	W	WT(Kg)
50	2	216	216	107	230	20.9	--	--	--	360	229	148	181	45	--	--	--	--
65	2-1/2	241	241	125	400	42.5	--	--	--	388	257	148	257	70	--	--	--	--
80	3	283	283	152	400	52.9	--	--	--	476	319	287	287	95	--	--	--	--
100	4	305	305	178	600	92	--	--	--	418	361	287	287	153	--	--	--	--
125	5	381	381	300	700	145	--	--	--	621	412	378	378	260	--	--	--	--
150	6	403	457	330	800	182	--	--	--	701	492	378	378	450	710	492	200	460
200	8	502	521	--	--	--	398	600	278	701	492	378	378	450	710	492	200	460
250	10	568	559	--	--	--	495	600	500	771	527	530	530	750	744	527	200	780
300	12	648	635	--	--	--	580	800	733	814	570	530	530	1140	851	570	280	1150
350	14	762	762	--	--	--	625	800	1029	913	608	680	680	1580	859	608	280	1620
400	16	838	838	--	--	--	670	800	1418	1013	708	680	680	2550	959	708	280	2160
450	18	914	914	--	--	--	698	800	1592	1148	748	680	680	2800	999	748	305	2400
500	20	991	991	--	--	--	840	800	2195	1190	790	1455	1455	3100	963	790	305	3120
600	24	1143	1143	--	--	--	1050	800	3460	1316	886	1455	1455	4400	1141	866	305	4500
700	28	1346	1346	--	--	--	1100	800	5770	1410	960	1665	1665	6000	1233	960	400	6100
800	32	1524	1524	--	--	--	1150	800	7932	1518	1068	1665	1665	8120	1341	1068	400	8210
900	36	1727	1727	--	--	--	1230	800	10093	1740	1140	1960	1960	11200	1696	1100	460	114000

Main External Dimensions

Unit: mm

PN100/PN110/Class 600

Nominal Diameter		Structural Length			Lever-operated			Worm Gear Operated			Pneumatic Actuator					Electric Actuator			
DN	NPS	L(RF)	L1(BW)	L2(RTJ)	H	W	WT(Kg)	H	W	WT(Kg)	H	W	L2	L3	WT(Kg)	H	H1	W	WT(Kg)
50	2	292	292	295	136	500	35	--	--	--	269	209	148	257	60	--	--	--	--
65	2-1/2	330	330	333	164	650	42	--	--	--	--	--	--	--	--	--	--	--	--
80	3	356	356	359	191	650	66	--	--	--	519	295	287	287	112	--	--	--	--
100	4	432	432	435	--	--	--	244	600	180	636	479	287	287	196	--	--	--	--
150	6	559	559	562	--	--	--	309	600	270	728	519	378	378	380	527	309	200	410
200	8	660	660	664	--	--	--	361	800	500	839	595	530	530	585	533	361	200	480
250	10	787	787	791	--	--	--	412	800	780	1014	770	530	530	760	653	412	280	860
300	12	838	838	841	--	--	--	475	800	1100	1120	810	680	680	1190	652	475	280	1320
350	14	889	889	892	--	--	--	502	800	1200	1224	1004	1445	1445	1650	801	502	280	1750
400	16	991	991	994	--	--	--	533	800	1600	1374	1154	1445	1445	2550	784	533	305	2280
450	18	1092	1092	1095	--	--	--	636	800	2160	--	--	--	--	--	809	636	305	2620
500	20	1194	1194	1200	--	--	--	675	800	2700	1490	1210	1665	1665	3200	948	675	305	3350
600	24	1397	1397	1407	--	--	--	759	800	5000	1615	1335	1665	1665	4520	1038	765	400	4720
700	28	1549	1549	1562	--	--	--	836	800	7000	1760	1410	1960	1960	6350	1253	980	400	6540
800	32	1778	1778	1794	--	--	--	915	800	9800	--	--	--	--	--	1473	1150	600	8800
900	36	2083	2083	2099	--	--	--	987	800	14000	--	--	--	--	--	1287	987	600	14500



Main External Dimensions

Unit: mm

PN150/PN160/Class 900

Nominal Diameter		Structural Length			Lever-operated			Worm Gear Operated			Pneumatic Actuator					Electric Actuator			
DN	NPS	L(RF)	L1(BW)	L2(RTJ)	H	W	WT(Kg)	H	W	WT(Kg)	H	W	L2	L3	WT(Kg)	H	H1	W	WT(Kg)
50	2	368	368	372	148	650	50	---	---	---	519	295	287	287	80	---	---	---	---
65	2-1/2	419	419	422	191	650	55	---	---	---	---	---	---	---	---	---	---	---	---
80	3	381	381	384	216	650	80	---	---	---	728	519	378	378	145	---	---	---	---
100	4	457	457	460	---	---	---	270	600	150	842	595	530	530	225	418	270	200	240
150	6	610	610	613	---	---	---	384	800	360	1014	770	530	530	380	625	384	280	390
200	8	737	737	740	---	---	---	435	800	620	1120	815	680	680	700	612	435	280	710
250	10	838	838	841	---	---	---	518	800	1100	1124	1004	1455	680	1200	817	518	280	1300
300	12	965	965	968	---	---	---	657	800	1600	1374	1154	1455	680	1750	908	657	305	1780
350	14	1092	1092	1038	---	---	---	693	800	1850	1490	1210	1665	1455	1900	866	693	305	2000
400	16	1130	1130	1140	---	---	---	762	800	2200	1615	1335	1665	1455	2300	1035	762	305	2410
450	18	1219	1219	1232	---	---	---	866	800	2800	1760	1410	1960	1960	2900	1139	866	400	3110
500	20	1321	1321	1334	---	---	---	894	800	4250	1760	1410	1960	1960	4350	1167	894	400	4420
600	24	1549	1549	1568	---	---	---	965	800	7000	1760	1410	1960	1960	8100	1279	956	600	8250

Main External Dimensions

Unit: mm

PN250/PN260/Class 1500

Nominal Diameter		Structural Length			Lever-operated			Worm Gear Operated			Pneumatic Actuator					Electric Actuator			
DN	NPS	L(RF)	L1(BW)	L2(RTJ)	H	W	WT(Kg)	H	W	WT(Kg)	H	W	L2	L3	WT(Kg)	H	H1	W	WT(Kg)
50	2	368	368	371	175	650	60	175	400	65	519	295	287	287	90	---	---	---	---
65	2-1/2	419	419	422	191	650	70	191	400	82	728	519	378	378	135	---	---	---	---
80	3	470	470	473	216	750	85	216	600	100	842	595	530	530	155	388	216	200	160
100	4	546	546	549	---	---	---	247	600	210	1014	770	530	530	280	488	247	280	280
150	6	705	705	711	---	---	---	329	800	500	1120	815	680	680	510	506	329	280	520
200	8	832	832	841	---	---	---	492	800	850	1124	1004	1455	680	900	519	392	280	950
250	10	991	991	1000	---	---	---	428	800	1600	1374	1154	1455	680	1710	679	428	305	1800
300	12	1130	1130	1146	---	---	---	640	800	2300	1490	1210	1665	1455	2350	813	640	305	2400
350	14	1257	1257	1276	---	---	---	670	800	2950	1615	1335	1665	1455	3100	943	670	305	3300
400	16	1384	1384	1407	---	---	---	700	800	4200	1760	1410	1960	1960	4410	973	700	400	4510
450	18	1537	1537	1559	---	---	---	755	800	5000	1760	1410	1960	1960	5100	1048	755	400	6200
500	20	1664	1664	1686	---	---	---	830	800	5600	1760	1410	1960	1960	6100	1153	830	600	7200
600	24	2043	2043	1972	---	---	---	952	800	2200	---	---	---	---	---	---	---	---	---

## Function

Cryogenic ball valves are mainly used in chemical equipment handling mediums as cryogenic liquid, ethylene, Liquid oxygen, liquid hydrogen, LNG, etc. These types of flammable and explosive medium can be volumetrically expanded by several hundred times when it is being gasified under rising temperature, and they are difficult to handle because they have highly penetrative and leaky properties.

## Structure Characteristics

1. The materials of compression parts can endure the expansion and shrinkage as a result of the temperature variation of the medium, and seal structure is away from permanent deformation under temperature changes. To work under the conditions below-100°C, the parts of the valves shall be subject to sub-zero treatment before finish machining.

Having the parts cooled in liquid nitrogen box, when the temperature of the parts reaches -196°C, Keep the temperature for 1-2hours, then take them out to return to the room temperature naturally, and repeat this process once again.

2. Bonnet is long-necked shaped for the purpose to protect the function of packing box, making it away from the low temperature to ensure good seal of packing. Besides, it can be wound with cold insulating materials to prevent loss of cold energy. The length of neck depends on service temperature and the thickness of cold insulating material. When the seal effect of packing turns lower, fill in grease to form up oil seal layer in the middle of packing box(see combined packing structure) to lower the differential pressure of packing box and enhance the dependability of seal.

3. To serve a temperature below- 100°C, the stem shall be treated with chrome plating or nitriding to enhance the surface hardness of stem.

4. Cryogenic ball valve takes a structure to avoid abnormal pressurerise. As the medium in cryogenic valve is gasified and rapidly expanded in volume, the pressure will go extremely high. When the pressure in the middle cavity of valve rises, the middle cavity and the inlet side can be communicated, or a relief can be mounted at the inlet side of valve, thus to ensure the safe use of valves.

5. The gaskets used on cryogenic ball valves will have function deapbelne seal and restoration under normal and cryogenic or under theconditions of temperature changes.

## Technical Standard

Standard	GB	API
Design codes	GB/T 12237	ASME B 16. 34
Applications of cryogenic technology	JB/T 7794	BS 6364
Pressure-temperature rating	GB/T 12224	ANSI B 16. 34
Face to face dimension	GB/T 12221	ASME B 16. 10
Connection flange	GB/T 9113/ HG20596	ASME B 16. 2
Test and inspection	JB/T 9092*	API 598*

\*Cryogenic ball valves shall be subjected to pressure test under low teemperature after under normal temperature, with its principle is shown at the diaphragm of oryogenic ball valves.

## Main Parts and Materials

Part Name	Material
Body	Cast steel, Cast stainless steel
Bonnet	Cast steel, Cast stainless steel
Stem	Martensitic stainless steel, Austenitic stainless steel
Ball	Martensitic stainless steel, Austenitic stainless steel
Seal ring	Reinforced PTFE, Carbon fiber, PEEK

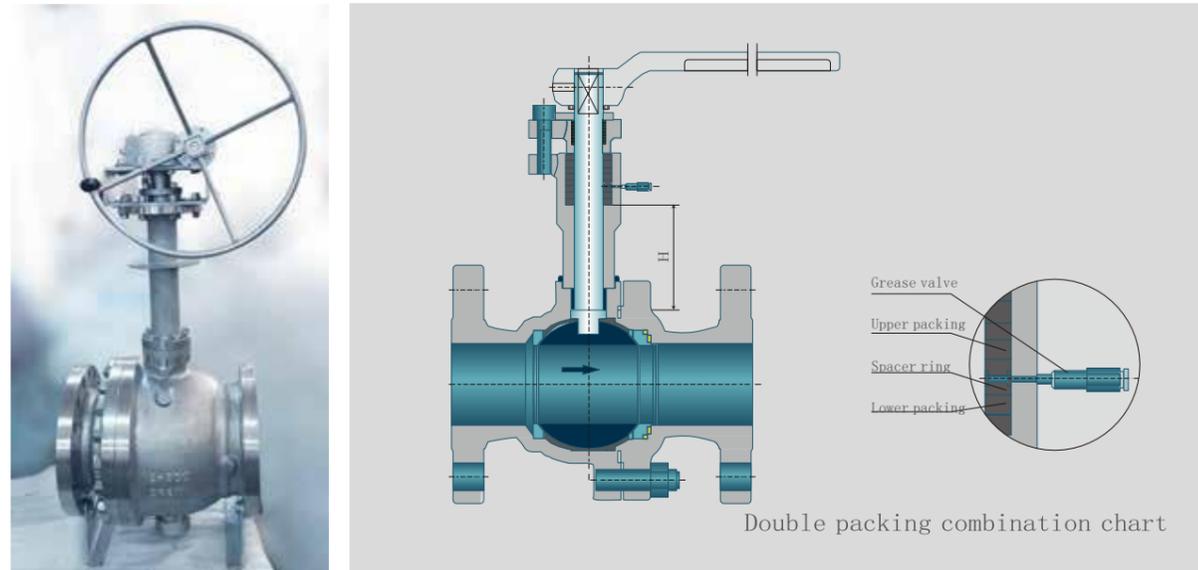
## Dimensions of the bonnet and extended stem of the cryogenic ball valve (for reference)

Nominal size		Neck Dimension (mm)			Nominal size		Pressure PN1. 6-10. 0MPa 150Lb、 300Lb
DN	NPS	≥-60°C	≥-100°C	<-100°C	DN	in	
15	1/2	90	110	130	15	1/2	△/●
20	3/4	100	110	140	20	3/4	△/●
25	1	100	120	150	25	1	△/●
32	1-1/4	110	120	150	32	1 1/4	△/●
40	1-1/2	110	130	160	40	1 1/2	△/●
50	2	110	130	170	50	2	△/★/●
65	1-1/2	120	140	180	65	1 1/2	△/★/●
80	3	120	150	190	80	3	△/★/●
100	4	130	160	200	100	4	△/★/●
125	5	130	160	200	125	5	△/★/●
150	6	140	170	220	150	6	△/★/●
200	8	140	170	220	200	8	△/★/●
250	10	150	180	240	250	10	△/★/●
300	12	150	180	240	300	12	△/★/●
350	14	160	190	250	350	14	△/★/●
400	16	160	190	250	400	16	△/★/●

Note:★Stands for electrical operated valves; △Stands for pneumatic operated valves;

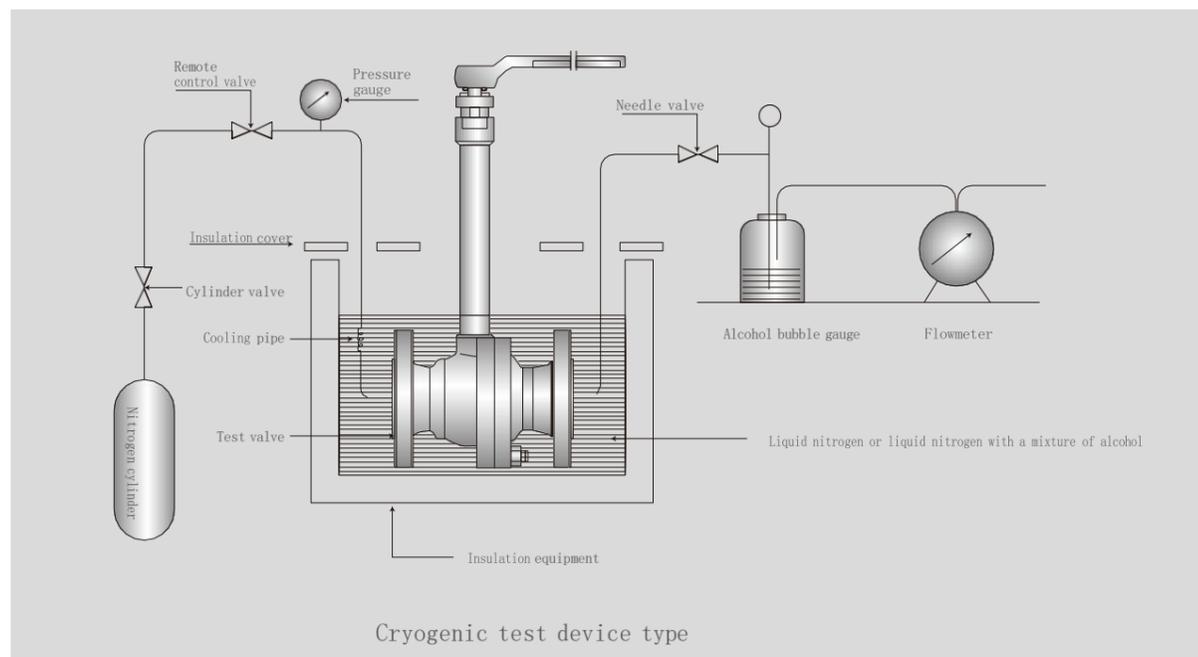
● Stands for lever operated valves;

Those sizes not covered in the table can be made according to users requirements.



### Pressure Test of Cryogenic Ball Valve

According to the requirements of certain standards, the test of cryogenic ball valves shall be carried out under both normal and cryogenic temperature. With its principle as following.



### Main External Dimensions & Weight

The main overall connection dimensions of low temperature ball valve may be referred to side-mounted floating ball valve and trunnion ball valve, with the height of valve being the height of the long neck added to that basis, so dimensions list is omitted here.

### Ball Valve Function

Three way ball valves are used to switch, mix and divide the flow of corrosive or non corrosive liquid, gas or power mediums -46°C~+200°C. Upon opening and closing, the smooth flow channel makes less pressure loss, making the operation labor - saving and maintenance fairly easy. The five types of flow direction (figure on the right, 1 for L-shaped and 4 for T-shaped) meet different technological requirements, it can be hand, pneumatic and electrically operated.

### Structural Characteristics

1. Valve seat can be designed with four-side floating ball and trunnion ball, with smooth fluid state and reliable seal;
2. The structure may be designed as side entry type and top entry type, with bidirectional seal, no series flow upon switch of flow direction;
3. Blow out proof design of valve stem;
4. Antistatic design;
5. Two position(ON and OFF) locking design.



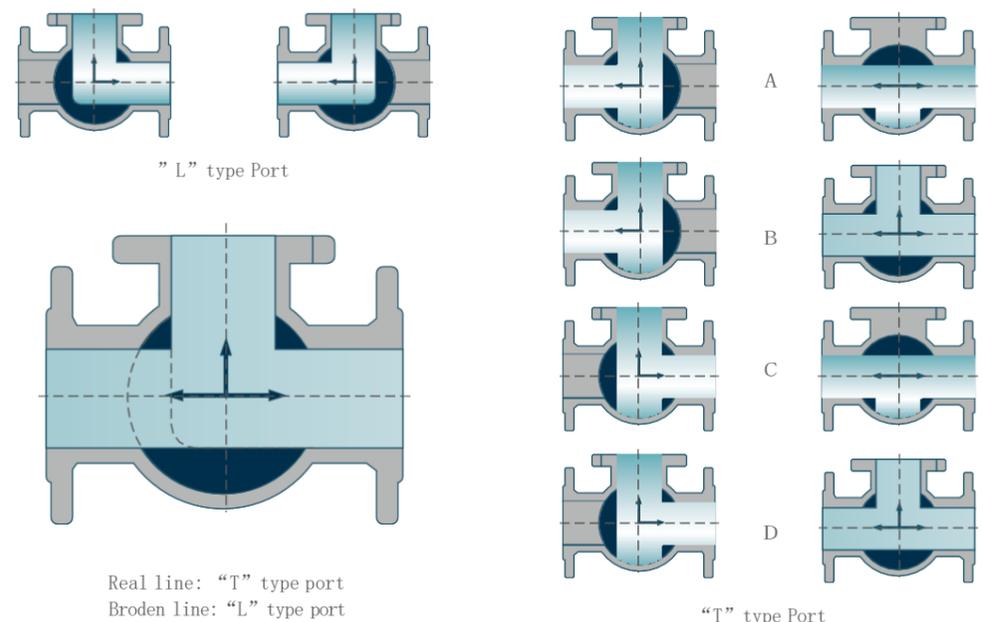
### Technical Standard

Design Standard	GB/T 12237
Face to Face Dimension	GB/T 12221
Flanged end dimension	GB/T 9113
Test and inspection	JB/T 9092

### Main Parts and Materials

Part Name	Material
Body	Cast steel, Cast stainless steel
Bonnet	Cast steel, Cast stainless steel
Stem	Martensitic stainless steel, Austenitic stainless steel
Ball	Martensitic stainless steel, Austenitic stainless steel
Seal ring	Reinforced PTFE, Carbon fiber, PEEK

Diagram of medium circulation of the three ways ball valve



Main External Dimensions

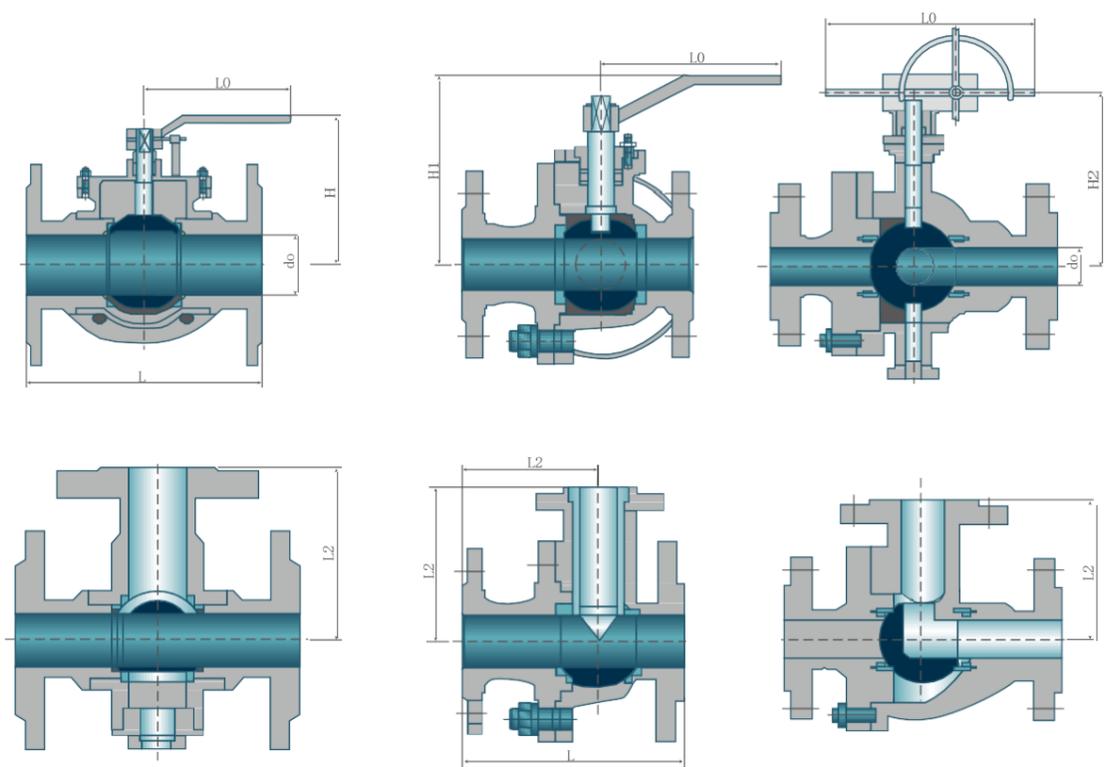
Unit: mm

PN16/PN20/Class 150

Nominal Diameter		L	d0	H	H1	H2	L0	W	Weight WT (kg)
DN	NPS								
15	1/2	140	13	90	70	—	160	—	3
20	3/4	150	15	106	86	—	230	—	4
25	1	160	25	109	88	—	230	—	6
32	1-1/4	—	32	125	106	—	400	—	10
40	1-1/2	210	38	149	132	—	400	—	14
50	2	220	51	154	137	—	400	—	20
65	2-1/2	250	64	189	162	—	700	—	25
80	3	260	76	198	170	—	700	—	32
100	4	330	102	254	229	—	1050	—	45
125	5	430	127	273	247	—	1050	—	—
150	6	510	152	—	—	314	—	450	—
200	8	580	203	—	—	430	—	600	—
250	10	670	250	—	—	475	—	600	—

PN25/PN40/Class 300

Nominal Diameter		L	d0	H	H1	H2	L0	W	Weight WT (kg)
DN	NPS								
15	1/2	140	13	90	70	—	160	—	3
20	3/4	150	15	106	86	—	230	—	4
25	1	160	25	109	88	—	230	—	6.5
32	1-1/4	—	32	125	106	—	400	—	11
40	1-1/2	210	38	149	132	—	400	—	15
50	2	220	51	154	137	—	400	—	21.5
65	2-1/2	250	64	189	162	—	700	—	—
80	3	260	76	198	170	—	700	—	35
100	4	330	102	254	229	—	1050	—	49
125	5	430	127	273	247	—	1050	—	—
150	6	510	152	—	—	314	—	450	—
200	8	580	203	—	—	430	—	600	—
250	10	670	250	—	—	475	—	600	—



### Product Design Features

The series of the threaded ends ball valves are mainly used in the equipment for marine exploration, which takes helium as medium, and they are also used in systems which takes water, oil, acdi, etc, as medium, for cutting or releasing the gas or liquid.

The main features of construction:

1. Compact construction, light weight, small flow resistance.
2. Low opening and Closing Torque,excellent sealing performance.
3. The type of constructions can be divided into one-piece, two-piece, three-piece type, it is vert convenient to maintenance and replace the trim parts.
4. Two sides are connected with pipe by internal and external threaded screw screw for quick installation.
5. Can provide different type of connecting ends for the right or left side, according to user demand.
6. Equip with the corresponding electrical or pneumatic actuators for remote control or corresponding electric or pneumatic installations for remote control or automatic control, according to user demand.

### Technical Standard

Face to face	Female threaded connection	GB/T 12221
	Male threaded connection	GB/T 12221
Female threaded connection		GB/T 7073
Male threaded connection		JB/T 1752、JB/T 1754、JB/T 1755
Test and inspection		JB/T 9092

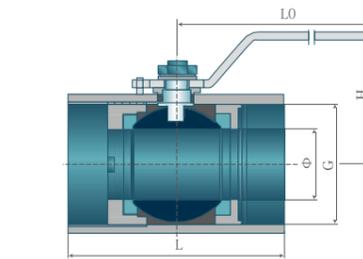
### Standard Applicable

Pressure	Nominal Pressure			
	1.6	2.5	4.0	
Test pressure (Mpa)	Shell test	2.4	3.75	6.0
	Sealing test	1.76	2.75	4.4
Service temperature	-29℃~120℃ (Different raw material for different working temperature)			
Service medium	Water, oil, gas and other corrosive medium			

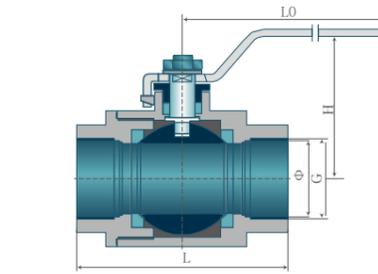
### Standard Applicable

NO	Part Name	Material	
		GB	ASTM
1	Body	WCB、CF8、CF8M、CF3、CF3M	A216-WCB、A351-CF8、CF8M、CF3、CF3M
2	Bonnet	WCB、CF8、CF8M、CF3、CF3M	A216-WCB、A351-CF8、CF8M、CF3、CF3M
3	Ball	1Cr13、0Cr18Ni9、1Cr18n12Mo2TI	A276-410、304、316、304L、316L
4	Stem	1Cr13、0Cr18Ni9、1Cr18n12Mo2TI	A276-410、304、316、304L、316L
5	sealing surface	Nyion PTFE、RPTFE	Nyion PTFE、RPTFE

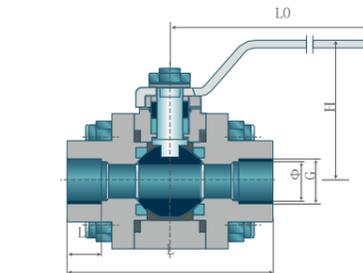
Notes: The materials of main parts and sealing surface can be chosen according to actual working condition and customer special requirement.



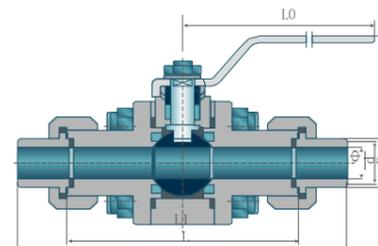
One pc female threaded ball valve



Two pc female threaded ball valve



Three pc female threaded ball valve



Three pc male threaded ball valve

### Main External Dimensions

Unit: mm

Female threaded connection

DN	One-sided type					Two-sided type					Three-sided type					
	Φ	G	L	L0	H	Φ	G	L	L0	H	Φ	G	L	L1	L0	H
6	4.2	1/4	40	80	22	10	1/4	55	95	42	—	—	—	—	—	—
10	6	3/8	45	80	26	10	3/8	55	95	42	12	3/8	65	12	95	46
15	8	1/2	57	88	31	15	1/2	64	108	51	15	1/2	75	14	110	465
20	12	3/4	60	88	34	20	3/4	75	115	58	20	3/4	85	16	110	54
24	15	1	72	105	38	25	1	85	135	77	25	1	90	18	140	65
32	19	1 1/4	79	105	43	32	1 1/4	102	150	83	32	1 1/4	112	20	140	69
40	24	1 1/2	85	125	50	38	1 1/2	108	175	97	38	1 1/2	120	22	155	76
50	32	2	101	124	57	50	2	124	190	106	50	2	145	24	180	86
65	—	—	—	—	—	65	2 1/2	163	220	122	65	2 1/2	170	28	220	120
80	—	—	—	—	—	80	3	185	250	133	80	3	200	32	260	150

### Main External Dimensions

Unit: mm

Male threaded connection

DN	Φ	d	D	L	L1	L0	M	H
6	8	10	14	150	85	96	20 x 1.5	57
10	10	12	18	150	85	96	24 x 1.5	57
15	15	17	22	175	108	110	30 x 2	68
20	20	22	28	190	120	120	36 x 2	70
24	25	27	33	200	132	135	42 x 2	80
32	32	34	40	230	158	160	52 x 2	84

### Purpose

Special Alloy Ball Valves are widely used in the transportation pipelines with corrosive media of Natural Gas, Oil, Petroleum, Chemical, Seawater Desalination, Metallurgy, Alkaline Making, Fertilizer, Environmental Protection, Pharmacy and other industries.



#### Notes:

1. Our company can provide products according to the customer request.
2. Valve face to face dimension, connecting flange and butt-welding end can be designed and manufactured according to the customer request.

### Floating Ball Valve Soft/ Metal Seat



#### Products Range

- Size : 1/2~8", DN 15~200mm
- Rating: 150LB~300LB, PN 1.6~4.0 MPA
- Body Material : Alloy Steel , Duplex SS , Titanium, Nickel, Zirconium, AL-Bronze
- Trim: Alloy Steel , Duplex SS , Titanium, Nickel, Zirconium, AL-Bronze
- End Connection : RF, RTJ, BW
- HOoperation: Wrench, Gear, Motor, Pneumatic
- Design Standard : GB/T12237, API 6D & API 608, ASME B16.34, BS EN 5351
- Face to face Dimension : GB/T12221, API 6D, ASME B16.10, BS EN 558 & BS EN12982
- Flange Dimension : GB/T9113 & JB/T79 & HG20592, ASME B16.5, BS EN4504 & BS EN1560
- Butt-welding End Dimension : GB/T12224, ASME B16.25, BS EN12627
- Test & Inspection : JB/T9092, API 6D, API 598, BS EN12266

### Trunnion Mounted Ball Valve Soft/ Metal Seat

#### Products Range

- Size : 2~32"
- Rating: 150LB~2500LB
- Body Material : Alloy Steel , Duplex SS , Titanium, Nickel, Zirconium, AL-Bronze
- Trim: Alloy Steel , Duplex SS , Titanium, Nickel, Zirconium, AL-Bronze
- End Connection : RF, RTJ, BW
- Operation: Wrench, Gear, Motor, Pneumatic
- Design Standard : GB/T12237, API 6D & API 608, ASME B16.34, BS EN 5351
- Face to face Dimension : GB/T12221, API 6D, ASME B16.10, BS EN 558 & BS EN12982
- Flange Dimension : GB/T9113 & JB/T79&HG20592, ASME B16.5, BS EN4504 & BS EN1560
- Butt-welding End Dimension : GB/T12224, ASME B16.25, BS EN12627
- Test & Inspection : JB/T9092, API 6D, API 598, BS EN12266

