KV CONTROLS

Control & Isolation Valves

PIPELINE BALL VALVE

KV CONTROLS
Total Cost of Ownership

The following standards are referred for the products in this catalogue.

American Petroleum Institute

API 6D. Petroleum and natural gas industries — Pipeline transportation systems — Pipeline valves

API 607. Fire Test for Soft Seated Quarter-Turn Valve

API 6FA. Specification for Fire Test for Valves

API Q1. Specification for Quality Programs for the Petroleum,Petrochemical and Natural Gas Industry.

Manufacturers Standardization Association

MSS SP-25. Standard Marking System for Valves, Fittings, Flanges and Unions

MSS SP-55. Steel Castings for Controlled Quality Level,-General Industrial Steel Casting Grades for Valves Visual Surface Inspection and Scheduled Radiographic Inspection

NACE (National Association of Corrosive Equipment)

NACE MR-01-75 2002. Sulfide Stress Cracking Resistance of Metallic Materials for Oilfield Equipment

ANSI (American National Standard Institute)

ASME/ANSI B 16.10. Face to Face and End to End Dimensions of Valve

ASME/ANSI B 16.5. Steel pipe flanges and flanged fittings

ASME/ANSI B 16.34. Valves—Flanged, Threaded, and Welding End

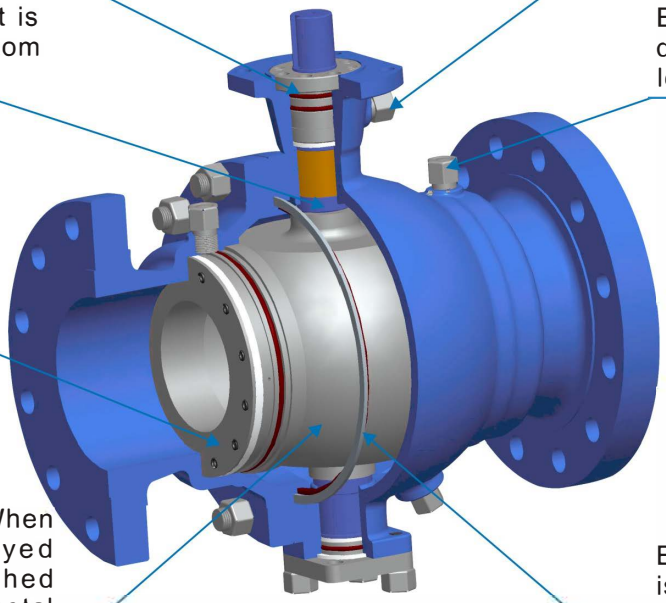
ASME/ANSI B 31.1. Chemical plant and petroleum refinery piping

ASME 31.4. Liquid petroleum transportation piping systems

ASME B 31.8. Gas transmission and distribution piping systems

KV CONTROLS
Total Cost of Ownership

RB Series Ball Valve



Two-piece Body, Trunnion Mounted Ball Valve

RB series is a two-piece body, trunnion mounted ball valve. It is designed as per API 6D and fire tested as per API 6FA, applicable for various applications in oil and natural gas industry.

RB series trunnion ball valve is with fire safe, blow-out proof shaft, anti-static and no emission design. Spring loaded seat design to ensure good tightness under low differential pressure with low operation torque requirement.Special seat design for low temperature or high temperature application is available.

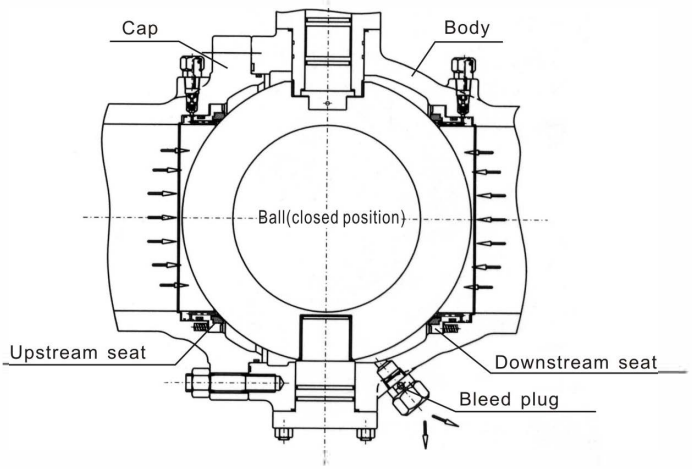
Size Range：1/2″-8″ (DN15-DN200)

Pressure Rating Range：150LB-300LB,PN10-PN40

Operating Temperature Range：-40~+200℃, -100~+425℃

Double Block and Bleed (DBB)

When the valve is closed, the medium left in the middle cavity can be discharged through the bleed valve. The upstream and downstream seats will independently block the fluid at the inlet and outlet to realize double block function.
Another function of the bleed device is that the valve seat can be checked if there is any leakage during the test. In addition, the deposits inside the body can be flushed and discharged through the bleed valve to prevent damage to the seat by impurities in the medium.



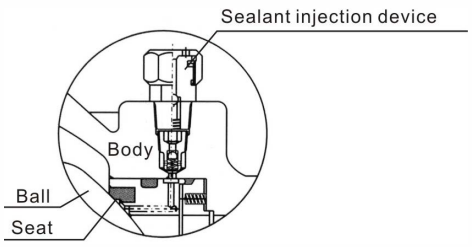
Low Operation Torque

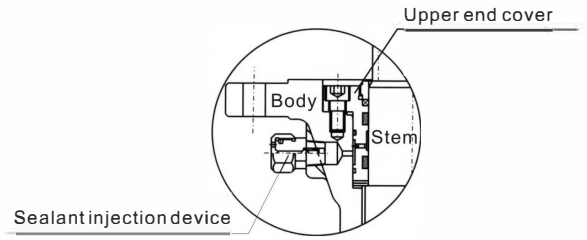
The ball valve is with trunnion mounted design and seat to achieve low torque under operating pressure. It uses self-lubricating PTFE and metal sliding bearing to reduce the friction coefficient to the lowest to work with the high intensity and highfineness stem.

Emergency Sealing Device

The ball valves with the diameter more than or equal to 6" (DN150) are all designed with sealant injection device on shaft and seat. When the seat ring or shaft O ring is damaged accidently, the corresponding sealant can be injected through the sealant injection device to prevent leakage through seat and shaft. When necessary, the auxiliary sealing system can be used for flushing and lubricating the seat to maintain its cleanliness.

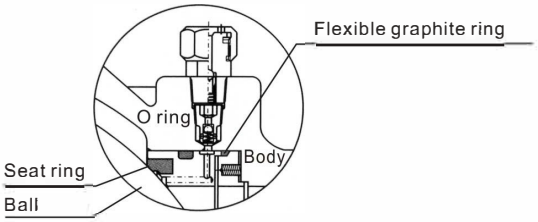
Sealant Injection Decice



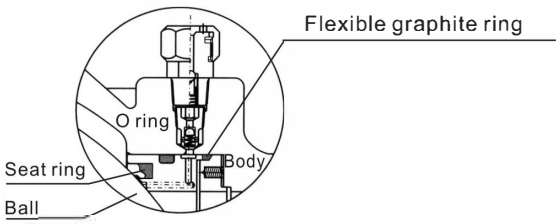


Fireproof Design

In case of fire during operation, the seat ring, shaft O ring and middle flange O ring made of PTFE, rubber or other non-metal materials will be decomposed or damaged under high temperature. Under pressure of the medium, the seat retainer will be pushed against ball quickly with the metal to metal contact and form the auxiliary metal to metal sealing, which can effectively control valve leakage. The fireproof design conforms to API 607, API 6FA, BS 6755 and other standards.

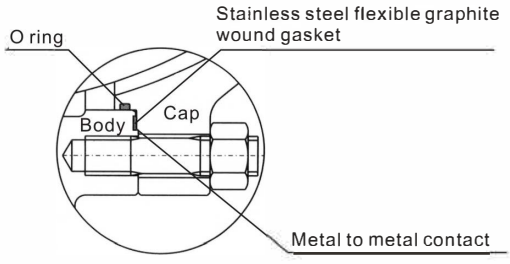


Normal use

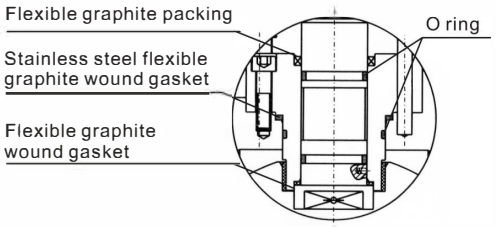


After burning

Fireproof Design Of Middle Flange



Fireproof Design Of Stem



Anti-static Design

The ball valve is with anti-static design. Static electricity discharge device forms a static channel between the ball and body directly or through the shaft, to discharge the static electricity produced by friction during the operation, avoiding fire or explosion that may be caused by static spark and ensuring system safety.

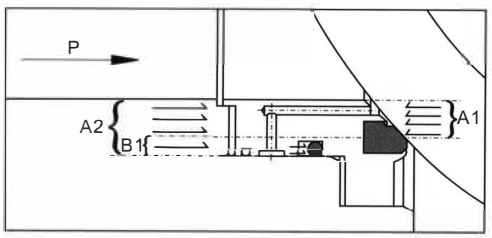
Reliable Seat Tightness

The seat tightness achieved with two floating seat retainers. They can float axially to block the fluid for seat sealing and body sealing. Spring loaded seat to ensure seat tightness even under low differential pressure. In addition, the piston effect design valve seat provide high pressure sealing by the medium pressure itself. The following two kinds of seat tightness can be realized.

Unidirectional Tightness (Automatic Pressure Relief in Body Cavity of Valve)

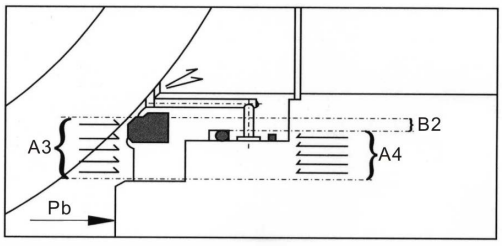
When the single sealing design is used, there is only the upstream sealing. As the spring loaded upstream and downstream sealing seats are used, the over-pressure inside valve cavity will overcome the pre-tightening stress of the spring, push the seat away from the ball and pressure will be released through the downstream parts.

The upstream side: when the seat moves axially along the valve, the pressure P exerted on the upstream part (inlet) produces a reverse force on A1. As A2 is higher than A1, A2-A1=B1, the force on B1 will push the seat against the ball to realize tightness of the upstream tightness.



A2>A1

The downstream side: once the pressure Pb inside the valve cavity increases, the force exerted on A3 is higher than that on A4. As A3-A4=B2, the differe-ntial pressure B2 will overcome the spring force to push the seat away from the ball and pressure inside valve cavity will be released through the downstream part. Afterwards, the seat and ball will be in contact again by spring.

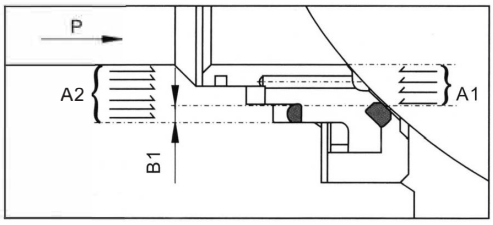


A3>A4

Bidirectional Tightness

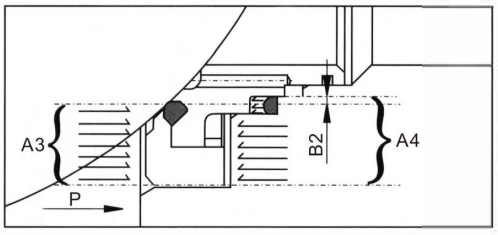
Bidirectional tightness design is available for special service applications and user's requirements. It is with double piston effect. Under normal condition, the valve generally used primary sealing. When the primary seat sealing is damaged with leakage, the secondary seat will provide tightness and ensure reliable tightness. The seat is in combined design. The primary seal is metal to metal. The secondary seal is fluorine rubber O ring which ensure the bubble tightness. When the differential pressure is very low, the tightness will still be ensured by spring. When the differential pressure rises, the sealing force on seat and body will increase accordingly with good tightness.

Primary sealing: upstream. When the differential pressure is low or there is no differential pressure, the floating seat will move axially along the valve by the spring and push the seat against the ball to keep tightness. When the pipeline pressure P increases, the force exerted on the area A2 of valve seat is higher than the force exerted on the area A1, A2-A1=B1. Therefore, the force on B1 will push the seat against the ball and achieve the upstream tightness.

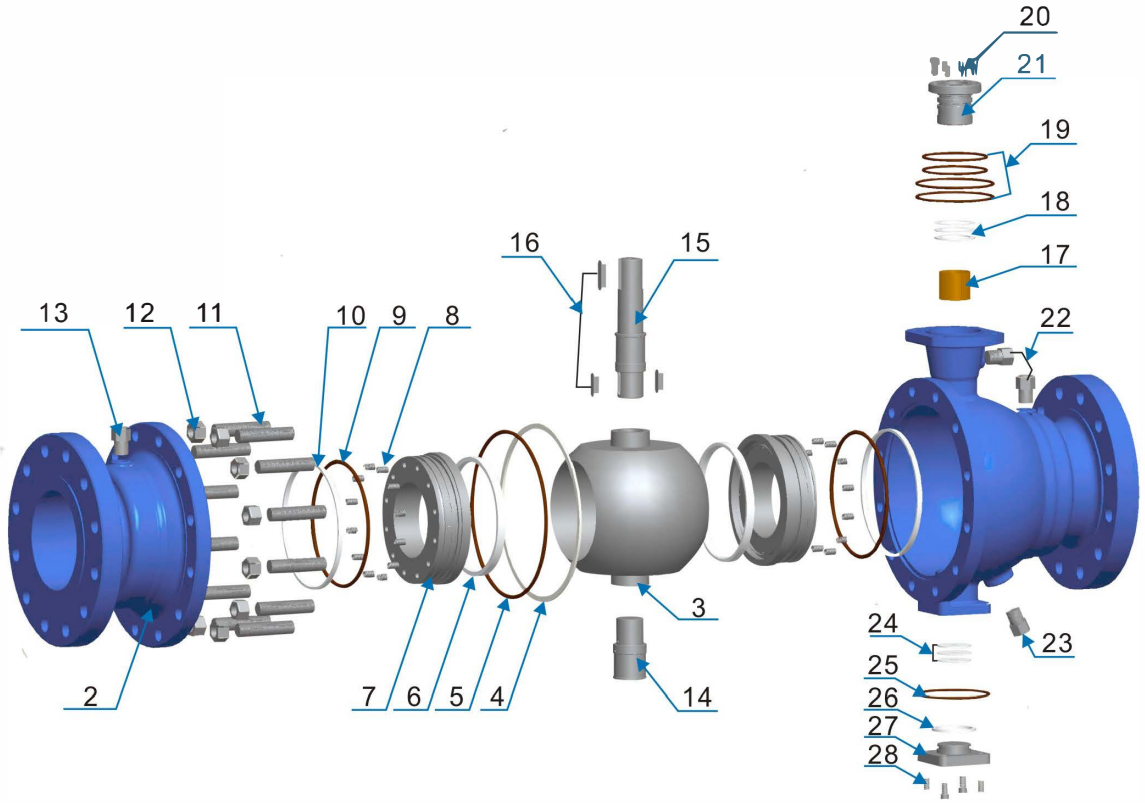


A2>A1

Secondary sealing: downstream. When the differential pressure is low or there is no differential pressure, the floating seat will move axially along the valve by the spring and push the seat against the ball to keep tightness. When the valve cavity pressure P increases, the force exerted on the area A4 of valve seat is higher than the force exerted on the area A3, A4-A3=B1. Therefore, the force on B1 will push the seat against the ball and achieve tightness of the upstream part.



A4>A3



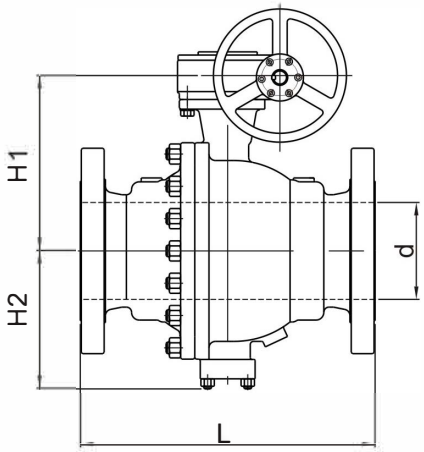
NO.	PARTS
1	BODY
2	BONNET
3	BALL
4	GASKET
5	O RING
6	SEAL RING
7	SEAT
8	SPRING
9	O RING
10	PACKING
11	STUD
12	NUT
13	SEALANT INJECTION PLUG
14	SHAFT

NO.	PARTS
15	SHAFT
16	FLAT KEY
17	BEARING
18	GASKET
19	O RING
20	BOLT
21	PACKING BOX
22	SEALANT INJECTION PLUG
23	PRESSURE RELIEF PLUG
24	GASKET
25	O RING
26	WASHER
27	BLIND FLANGE
28	BOLTS

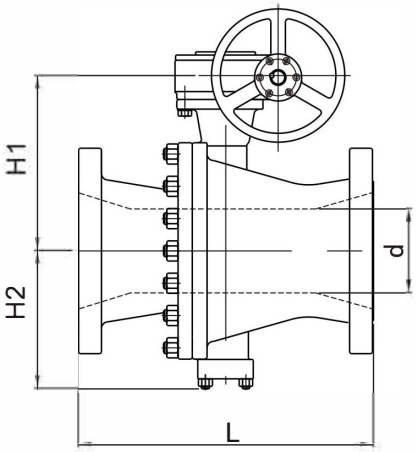
KV CONTROLS
Total Cost of Ownership

RB BALL VALVE PART LIST

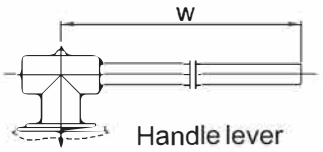
NO.	PARTS	CARBON STEEL	STAINLESS STEEL304(CF8)	STAINLESS STEEL316(CF8M)
01	BODY	ASTM A216 WCB	ASTM A351 CF8	ASTM A351 CF8M
02	BONNET	ASTM A216 WCB	ASTM A351 CF8	ASTM A351 CF8M
03	BALL	ASTM A216 WCB	ASTM A351 CF8	ASTM A351 CF8M
04	GASKET	304+DUCTILE GRAPHITE	304+DUCTILE GRAPHITE	316+DUCTILE GRAPHITE
05	O RING	NBR	NBR	NBR
06	SEAL RING	PTFE+25%GLASS FIBER	PTFE+25%GLASS FIBER	PTFE+25%GLASS FIBER
07	SEAT	ASTM A216 WCB	ASTM A182 F304	ASTM A182 F316
08	SPRING	INCONEL X-750	INCONEL X-750	INCONEL X-750
09	O RING	NBR	NBR	NBR
10	PACKING	DUCTILE GRAPHITE	DUCTILE GRAPHITE	DUCTILE GRAPHITE
11	STUD	ASTM A193 B7	ASTM A193 B8	ASTM A193 B8
12	NUT	ASTM A194 2H	ASTM A194 8	ASTM A194 8
13	SEALANT INJECTION PLUG	CARBON STEEL	STAINLESS STEEL	STAINLESS STEEL
14	SHAFT	ASTM A 182 F6a	ASTM A182 F304	ASTM A182 F316
15	SHAFT	ASTM A 182 F6a	ASTM A182 F304	ASTM A182 F316
16	FLAT KEY	CARBON STEEL	STAINLESS STEEL	STAINLESS STEEL
17	BEARING	316+PTFE+MoS2	316+PTFE+MoS2	316+PTFE+MoS2
18	GASKET	DUCTILE GRAPHITE	DUCTILE GRAPHITE	DUCTILE GRAPHITE
19	O RING	NBR	NBR	NBR
20	BOLT	ASTM A193 B7	ASTM A193 B8	ASTM A193 B8
21	PACKING BOX	ASTM A105	ASTM A182 F304	ASTM A182 F316
22	SEALANT INJECTION PLUG	CARBON STEEL	STAINLESS STEEL	STAINLESS STEEL
23	BLEED PLUG	CARBON STEEL	STAINLESS STEEL	STAINLESS STEEL
24	GASKET	DUCTILE GRAPHITE	DUCTILE GRAPHITE	DUCTILE GRAPHITE
25	O RING	NBR	NBR	NBR
26	WASHER	ASTM A276 304	ASTM A276 304	ASTM A276 316
27	BLIND FLANGE	ASTM A216 WCB	ASTM A351 CF8	ASTM A351 CF8M
28	BOLT	ASTM A193 B7	ASTM A193 B8	ASTM A193 B8

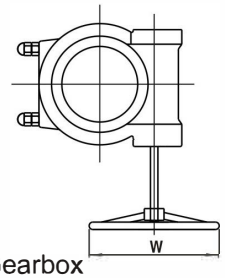


Full Bore



Reduced bore





Gearbox

CLASS150 Dimensions

Full Bore（mm）

DN	d	L	H1	H2	W	Weight(kg)
50	51	178	176	95	350	17
80	76	203	215	120	400	33
100	102	229	252	142	500	50
150	152	394	330	220	*300	93
200	203	457	448	259	*300	166
250	254	533	505	305	*300	273
300	305	610	556	348	*500	475
350	337	686	620	395	*600	570
400	387	762	700	450	*600	778
450	438	864	750	485	*600	935
500	489	914	805	525	*600	1190
550	540	1016	890	615	*600	1346
600	591	1067	1110	680	*800	1579

Full Bore（inch）

NPS	d	L	H1	H2	W	Weight(kg)
2	2.01	7.01	6.93	3.74	13.78	17
3	2.99	7.99	8.46	4.72	15.75	33
4	4.02	9.02	9.92	5.59	19.69	50
6	5.98	15.51	12.99	8.66	*11.81	93
8	7.99	17.99	17.56	10.20	*11.81	166
10	10.00	20.98	19.88	12.01	*11.81	273
12	12.01	24.02	21.89	13.70	*19.69	475
14	13.27	26.22	24.41	15.55	*23.62	570
16	15.24	30.00	27.56	17.72	*23.62	778
18	17.24	34.02	29.53	19.09	*23.62	935
20	19.25	35.98	31.69	20.67	*23.62	1190
22	21.26	40.00	35.04	24.21	*23.62	1346
24	23.27	42.01	43.70	26.77	*31.50	1579

*With gearbox operation

CLASS150 Dimensions

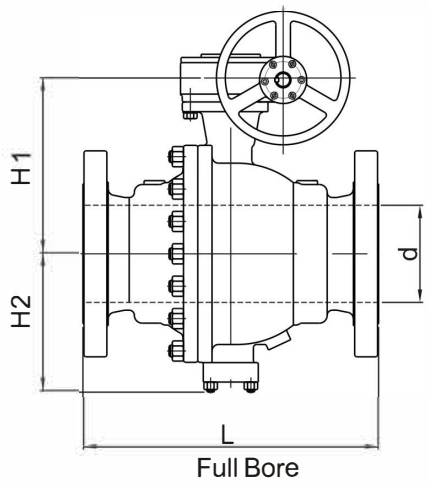
Reduced Bore（mm）

DN	d	L	H1	H2	W	Weight(kg)
80*50*80	51	203	176	95	350	30
100*80*100	76	229	215	120	400	47
150*100*150	102	394	252	142	500	90
200*150*200	152	457	330	220	*300	161
250*200*250	203	533	448	259	*300	268
300*250*300	254	610	505	305	*300	467
350*300*350	305	686	556	348	*500	560
400*350*400	337	762	620	395	*600	766
450*400*450	387	864	700	450	*600	902
500*450*500	438	914	750	485	*600	1130
550*450*550	438	1016	750	485	*600	1300
600*500*600	489	1067	805	525	*600	1520

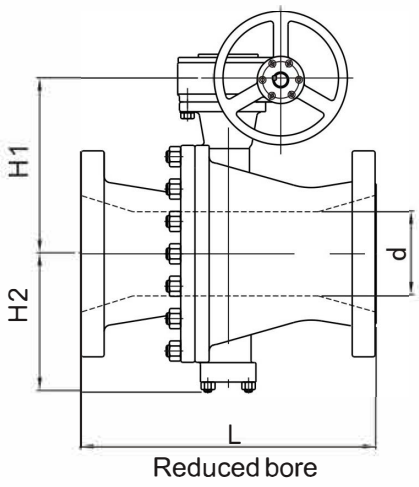
Reduced Bore（inch）

NPS	d	L	H1	H2	W	Weight(kg)
3*2*3	2.01	7.99	6.93	3.74	13.78	30
4*3*4	2.99	9.02	8.46	4.72	15.75	47
6*4*6	4.02	15.51	9.92	5.59	19.69	90
8*6*8	5.98	17.99	12.99	8.66	*11.81	161
10*8*10	7.99	20.98	17.56	10.20	*11.81	268
12*10*12	10.00	24.02	19.88	12.01	*11.81	467
14*12*14	12.01	26.22	21.89	13.70	*19.69	560
16*14*16	13.27	30.00	24.41	15.55	*23.62	766
18*16*18	15.24	34.02	27.56	17.72	*23.62	902
20*18*20	17.24	35.98	29.53	19.09	*23.62	1130
22*18*22	17.24	40.00	29.53	19.09	*23.62	1300
24*20*22	19.25	42.01	31.69	20.67	*23.62	1520

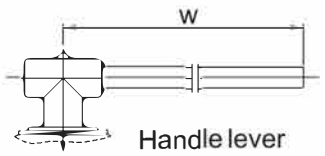
*With gearbox operation



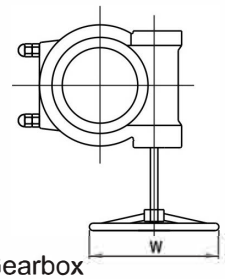
Full Bore



Reduced bore



Handle lever



Gearbox

CLASS300 Dimensions

Full Bore（mm）

DN	d	L	H1	H2	W	Weight(kg)
50	51	216	176	95	350	18
80	76	283	215	120	400	40
100	102	305	252	142	500	63
150	152	403	330	220	*300	150
200	203	502	448	259	*300	240
250	254	568	505	305	*400	305
300	305	648	556	348	*500	507
350	337	762	620	395	*600	602
400	387	838	700	450	*600	1000
450	438	914	750	485	*600	1160
500	489	991	805	525	*600	1320
550	540	1092	890	615	*600	1540
600	591	1143	1110	680	*800	1874

Full Bore（inch）

NPS	d	L	H1	H2	W	Weight(kg)
2	2.01	8.50	6.93	3.74	13.78	18
3	2.99	11.14	8.46	4.72	15.75	40
4	4.02	12.01	9.92	5.59	19.69	63
6	5.98	15.87	12.99	8.66	*11.81	150
8	7.99	19.76	17.64	10.20	*11.81	240
10	10.00	22.36	19.88	12.01	*15.75	305
12	12.01	25.51	21.89	13.70	*19.69	507
14	13.27	30.00	24.41	15.55	*23.62	602
16	15.24	32.99	27.56	17.72	*23.62	1000
18	17.24	35.98	29.53	19.09	*23.62	1160
20	19.25	39.02	31.69	20.67	*23.62	1320
22	21.26	42.99	35.04	24.21	*23.62	1540
24	23.27	45.00	43.70	26.77	*31.50	1874

* With gearbox operation

CLASS300 Dimensions

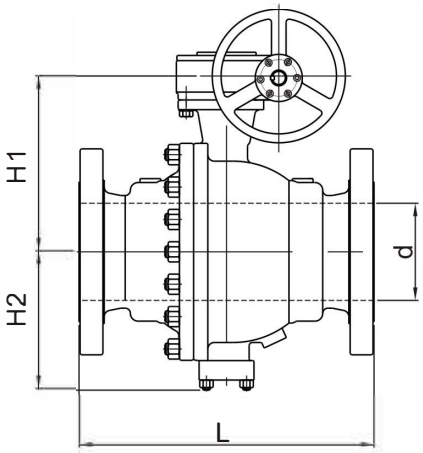
Reduced Bore（mm）

DN	d	L	H1	H2	W	Weight(kg)
80*50*80	51	283	176	95	350	38
100*80*100	76	305	215	120	400	60
150*100*150	102	403	252	142	500	147
200*150*200	152	502	330	220	*300	234
250*200*250	203	568	448	259	*300	295
300*250*300	254	648	505	305	*400	488
350*300*350	305	762	556	348	*500	577
400*350*400	337	838	620	395	*600	910
450*400*450	387	914	700	450	*600	1020
500*450*500	438	991	750	485	*600	1280
550*450*550	438	1092	750	485	*600	1360
600*500*600	489	1143	805	525	*600	1670

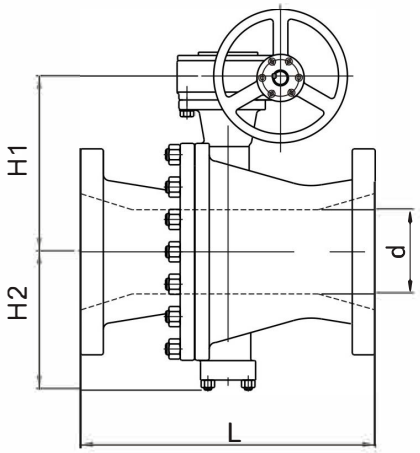
Reduced Bore（inch）

NPS	d	L	H1	H2	W	Weight(kg)
3*2*3	2.01	11.14	6.93	3.74	13.78	38
4*3*4	2.99	12.01	8.46	4.72	15.75	60
6*4*6	4.02	15.87	9.92	5.59	19.69	147
8*6*8	5.98	19.76	12.99	*8.66	*11.81	234
10*8*10	7.99	22.36	17.64	*10.20	*11.81	295
12*10*12	10.00	25.51	19.88	*12.01	*15.75	488
14*12*14	12.01	30.00	21.89	*13.70	*19.69	577
16*14*16	13.27	32.99	24.41	*15.55	*23.62	910
18*16*18	15.24	35.98	27.56	*17.72	*23.62	1020
20*18*20	17.24	39.02	29.53	*19.09	*23.62	1280
22*18*22	17.24	42.99	29.53	*19.09	*23.62	1360
24*20*24	19.25	45.00	31.69	*20.67	*23.62	1670

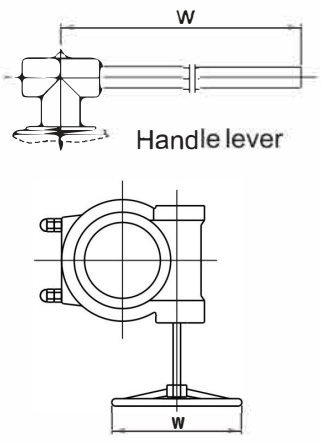
* With gearbox operation



Full Bore



Reduced bore



Gearbox

CLASS600 Dimensions

Full Bore（mm）

DN	d	L	H1	H2	W	Weight (kg)
50	51	292	192	142	600	27
80	76	356	279	142	1000	50
100	102	432	315	172	1500	80
150	152	559	323	205	*300	252
200	203	660	381	272	*400	350
250	254	787	518	335	*500	600
300	305	838	568	405	*600	820
350	337	889	665	513	*600	1130
400	387	991	730	583	*600	1550
450	438	1092	795	646	*600	2100
500	489	1194	825	706	*600	2800
600	591	1397	973	831	*800	3626

Full Bore（inch）

NPS	d	L	H1	H2	W	Weight (kg)
2	2.01	11.50	7.56	5.59	23.62	27
3	2.99	14.02	10.89	5.59	39.37	50
4	4.02	17.01	12.40	6.77	59.06	80
6	5.98	22.01	12.72	8.07	*11.81	252
8	7.99	25.98	15.00	10.71	*15.75	350
10	10.00	30.98	20.39	13.19	*19.69	600
12	12.01	32.99	22.36	15.94	*23.62	820
14	13.27	35.00	26.18	20.20	*23.62	1130
16	15.24	39.02	28.74	22.95	*23.62	1550
18	17.24	42.99	31.30	25.43	*23.62	2100
20	19.25	47.01	32.48	27.80	*23.62	2800
24	23.27	55.00	38.31	32.72	*31.50	3626

* With gearbox operation

CLASS600 Dimensions

Reduced Bore（mm）

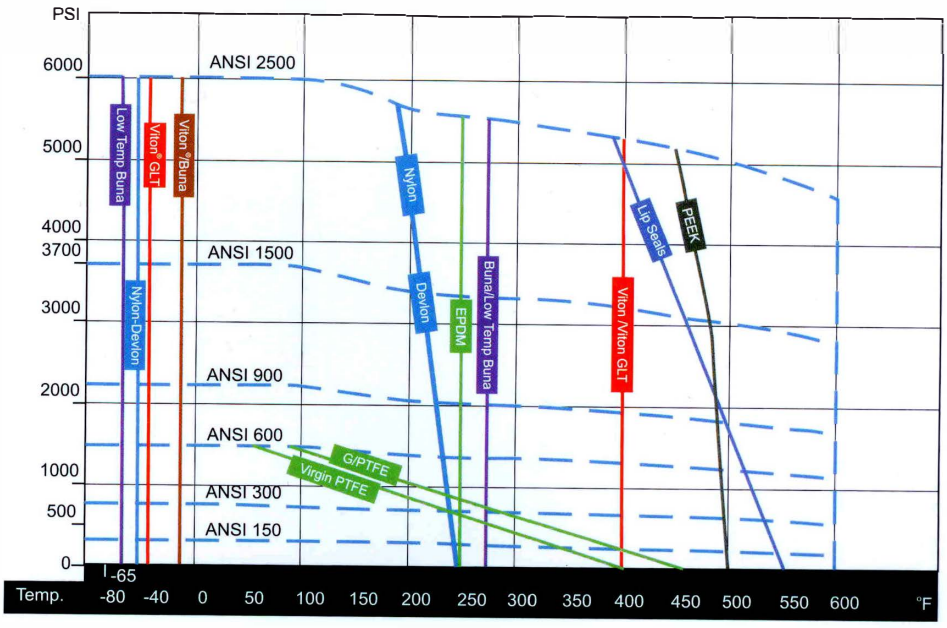
DN	D	L	H1	H2	W	Weight (kg)
80*50*80	51	356	192	142	600	41
100*80*100	76	432	279	142	1000	70
150*100*150	102	559	315	172	1500	122
200*150*200	152	660	323	205	*300	255
250*200*250	203	787	381	272	*300	440
300*250*300	254	838	518	335	*500	620
350*300*350	305	889	568	405	*600	1060
400*350*400	337	991	665	513	*600	1440
450*400*450	387	1092	730	583	*600	1860
500*450*500	438	1194	795	646	*600	2400
600*500*600	489	1397	825	706	*600	3240

Reduced Bore（inch）

NPS	d	L	H1	H2	W	Weight (kg)
3*2*3	2.01	14.02	7.56	5. 59	23.6	41
4*3*4	2.99	17.01	10.98	5.59	39.37	70
6*4*6	4.02	22.01	12.40	6.77	59.06	122
8*6*8	5.98	25.98	12.72	8.07	*11.81	255
10*8*10	7.99	30.98	15.00	10.71	*15.75	440
12*10*12	10.00	32.99	20.39	13.19	*19.69	620
14*12*14	12.01	35.00	22.36	15.94	*23.62	1060
16*14*16	13.27	39.02	26.18	20.20	*23.62	1440
18*16*18	15.24	42.99	28.74	22.95	*23.62	1860
20*18*20	17.24	47.01	31.30	25.43	*23.62	2400
24*20*24	19.25	55.00	32.48	27. 80	*23.62	3240

* With gearbox operation

ENGINEERING DATA



Torque Value—Floating Ball Valve

Unit :N.M

Class\Size(inch)	½	¾	1	1½	2	2½	3	4	5	6	8
150	10	15	20	40	50	80	90	180	300	520	800
300	20	25	30	60	70	120	160	280	600	950	1550

Torque Value—Trunnion Mounted Ball Valve

Unit :N.M

Class \Size(inch)	2	2½	3	4	5	6	8	10	12	14	16	18	20	24	28	30	36	40
150	25	50	65	125	250	410	700	1100	1750	2600	3900	6200	7500	10500	14500	21000	28000	35000
300	60	120	160	280	600	950	1550	2000	3300	5000	7500	11800	14400	19600	28200	29800	40000	45000
400	140	240	350	540	740	1260	1910	3250	5340	7500	10000	12400	18500	29500	40500	53000	51000	71000
600	190	360	460	770	1050	1980	3280	5250	7200	9860	14500	19600	29000	42500	58000	62000	75000	105000

NOTE:

1.The above torque value is calculated as per normal condition with PTFE seat.

2.For actuator selection, safety factor 1.3-1.5 is recommended.

3.The torque value will be subject to change with different trim material and medium .

Cv

Size		Class				
mm	inch	150	300	600	900	1500
15	1/2	25	25	20	16	16
20	3/4	65	56	40	34	34
25	1	95	95	64	55	55
40	1½	308	308	308	165	165
50	2	500	430	370	320	320
80	3	1360	1100	1020	920	820
100	4	2500	2000	1850	1760	1600
150	6	4060	4056	3410	4300	4150
200	8	8090	7720	6730	8475	8010
250	10	13510	13090	11120	14160	13220
300	12	20440	19830	17440	21200	18800
350	14	25050	23770	22010	26700	24180
400	16	34200	32595	29980	36600	33150
450	18	44430	43200	39520	49000	45703
500	20	57665	55380	60460	64600	60750
550	22	70080	70080	68900		
600	24	87680	84720	76630		
700	28	120000	115350	107510		
750	30	141850	136600	125630		
800	32	160390	152000	140900		
900	36	205450	192995	175730		
1000	40	248700	248700	239160		
1050	42	275260	275260	275260		
1200	48	364180	364180	247080		
1400	56	529430	529430	520500		

Remark :

1. The above Cv value is for full bore design.
2. The design for all pressure ratings are as per API6D

How To Calculate Cv:

What is the Cv Value? The volume flow in US gallons per minute of water at a temperature of 60° fahrenheit with a pressure drop across the valve of 1 psi.
Cv value is calculated with the following formula:

Liquids:

$QL=Cv(P/G)^{1/2}$
QL: Flow rate (gallons / min)
P: Differential pressure through the Valve
G: Specific gravity of the liquid (Water:G=1)

Gas:

$Qg=61Cv(P_2P/g)^{1/2}$
(For non-critical:$P_2/P<1$)
QL: Flow rate (CFH at STP)
P2: Outlet pressure (psia)
G: Specific gravity of the gas (Air: g=1.0)

METAL SEATED BALL VALVE

Ball and Seat Hardening Technology

According to different service conditions and requirements of users, various advanced ball and seat hardening technologies can be adopted, including HVOF coating, nickel-base alloy spray welding, high nickel alloy spray welding, nickel-base tungsten carbide alloy spray welding, cobalt-base hard alloy spray welding, etc. the ball and seat surface hardness can reach HRC55~70. Generally, the coating on the sealing face is good for heat resistance for 540℃, maximum 980℃. They are also with good wear resistant and impact resistant performances.

Flexible Valve Opening and Closing

For high temperature application, the ball and seat will have large thermal expansion, causing jamming problem. The ball valve adopts the Belleville spring or spring loaded sealing design so that thermal expansion of parts under high temperature can be compensated by the Bellville spring or spring, and it is ensured that the valve will be flexibly opened and closed under high temperature.

Fireproof Design

In the metal to metal ball valve seat design, gasket is the stainless steel flexible graphite and the packing is the flexible graphite. Therefore, reliable sealing of the valve can be ensured even in case of fire.

Reliable Tightness

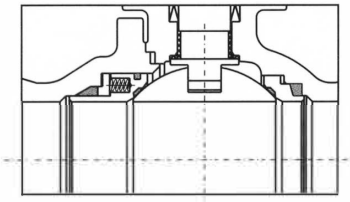
Ball grinding technology is adopted to grind the ball against the grinder at different positions. The ball surface will achieve high roundness and fineness. The seat tightness under low differential pressure is realized by spring pre-tightening. In addition, the piston effect of valve seat is designed reasonably, realizing high pressure sealing by the pressure of the medium itself. The tightness class meets ANSI/FCI70.2 class IV to class VI.

Double Block and Bleed (Metal Seated Trunnion mounted Ball Valve)

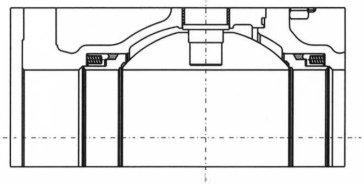
The metal seated trunnion mounted ball valve is with seat located in front of the ball. When the valve is closed, the medium left in the middle cavity can be discharged through the bleed valve. The upstream and downstream seats will independently block the fluid at the inlet and outlet to realize double block function.

The metal seated floating ball valve is with seat is located behind the ball. Unidirectional sealing is adopted with flow direction marked on the body. If users have special requirements, bidirectional sealing design can be adopted.

Metal seated floating ball valve



Metal seated trunnion mounted ball valve



HOW TO ORDER

RB	300	F1 – 01	C	21	R	P0	R – SD – GL
①	②	③ ④	⑤	⑥	⑦	⑧	⑨ ⑩ ⑪

① | VALVE TYPE
BALL VALVE
RR | Floating ball two-piece body
RB | Trunnion mounted ball two -piece body
RC | Trunnion mounted ball three-piece body

② | VALVE SIZE		
015 | 1/2″	100 | 4″	450 | 18″
020 | 3/4″	125 | 5″	500 | 20″
025 | 1″	150 | 6″	600 | 24″
032 | 1-1/4″	200 | 8″	700 | 28″
040 | 1-1/2″	250 | 10″	800 | 32″
050 | 2″	300 | 12″	900 | 36″
065 | 2-1/2″	350 | 14″	1000 | 40″
080 | 3"	400 | 16"	

③ | CONNECTION TYPE	
F1 | Flanged (RF)	R1 | Flanged (RTJ)
S1 | Socked welding	B1 | Butt Welding

④ PRESSURE RATING	
MNSI STANDARD	GB STANDARD
01 | 150Lb	10 | PN10
03 | 300Lb	16 | PN16
06 | 600Lb	25 | PN25
09 | 900Lb	40 | PN40
15 | 1500Lb	64 | PN64
20 | 2500Lb	80 | PN100
	90 | PN160

⑤ BODY MATERIAL		
C | WCB/A105	M | CF8M/F316	B | LCB
P | CF8/F304	L | CF3M/F316L	D | LCC
Q | CF3/F304L	G | CG8M/F317	W | WC6/F11

⑥ TRIM MATERIAL&SURFACE TREATMENT	
TRIM MATERIAL	SURFACE TREATMENT
1 | WCB/A105	01 | Poshing
2 | F6a	1 | Hard Chrome Plating
3 | CF8/F304	2 | Nickle Plating (ENP)
4 | CF3/F304L	3 | Spray welding Nickle based alloy
5 | CF8M/F316	4 | Spray welding Tungsten Carbide
6 | CF3M/F316L	5 | Plasma Nitriding
7 | CG8M/F317	6 | Overlaying welding Stellite

⑦ SEAT TYPE	
Normal Temperature.Metal Seat	Y
High Temperature.Metal Seat	G
Soft Seat	R

⑧ | SEAT MATERIAL&SURFACE TREATMENT		
Y-Metal Seat		R-Soft Seat
Material	Surface Treatment	Material
1 | A105	1 | Hard Chrome Plating	PO | PTFE
2 | F6a	2 | Nickle Plating(ENP)	RO | RTFE
3 | 304	3 | Spray welding Nickle based alloy	NO | NYLON
4 | 304L	4 | Spray welding Tungsten Carbide	LO | PPL
5 | 316	5 | Plasma Nitriding	KO | PEEK
6 | 316L	6 | Overlaying welding Stellite	
7 | 317		

⑨ | O-RING MATERIAL	
Material & Application Temperature	
E | EPDM -40~+120℃	A | PFA -40~+230℃
R | NBR -40~+100℃	F | FEP -40~+160℃
V | VITON -40~+230℃	G | GRAPHITE -100~+425℃
S | SI -60~+230℃	

⑩ | ACTUATOR
SD | Manual
ZS | Pneumatic
ZK | Electric

⑪ | OTHERS
GL | Seat/Shaft Injection
AS | Shaft Extension
AB | Bonnet Extension
NC | NACE

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