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Contact us: sales@globalsupplyline.com.au

FANGZHENG VALVE GROUP CO., LTD

Add: NO.1921, Binhai 1st Avenue, Economy & Technology Development Zone,
Wenzhou City, Zhejiang Province, China 325025
Tel: +86-577-6735 6515 Fax: +86-577-673508449

E-mail: fzvalve@fzvgroup.com

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PROVIDING COMPLETE CONTROL SOLUTIONS
FOR INDUSTRIAL PIPELINES

DOUBLE BLOCK AND BLEED BALL VALVE

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FANGZHENG VALVE GROUP CO., LTD

INDUSTRIAL PIPELINE CONTROL EXPERT

FANGZHENG VALVE GROUP



We (FZV) commit ourselves to manufacturing excellent valves and achieving our customer satisfaction based on the principles of quality assurance and continual improvement.

We specialize in supplying a wide range of API 6D, API 609, API 600, API 594, API 6A, and API 16C products and wellhead equipment.

FZV was formally established in 1992, and so far, FZV has been approved by well-known international and domestic End-users and EPC companies.

FZV has set up three factories based in Shanghai and Wenzhou city with total area 76000 m² and maximum production capacity up to 32000 tons.

To enhance engineering designs and manufacture high-end products, FZV has in-house laboratory equipped with various facilities and test equipment to check and verify the product quality. The following tests are conducted in-house:

- Chemical analysis
- Mechanical test, Hardness, and impact test
- Non-destructive examination
- Salt spray test
- Fugitive emission test(ISO 15848-1 & 2)
- Deign validation testing (DVT) as per SHELL(MESC SPE 77/300)
- High temperature (Up to 550°C) and Cryogenic test (Up to -196°C)

FZV is certified by ISO 9001, ISO 14001, OHSAS 18001, API6D, API600, API609, API594, API607, API6A, API6A-PR2, API Spec.Q1, ABS, CCS, DNV, ATEX, and CE/PED, etc.

FZV Main Products Range:

Product types: Ball Valve, Gate Valve, Globe Valve, Check Valve, Butterfly Valve, Slab Gate Valve, Pipe Fitting, Cryogenic Valve, API6A Valve, Wellhead Equipment, Manifold & Christmas tree, etc.

Implemented Standards: ISO, API, BS, etc.

Casting material: WCB, LCB, WC6, WC9, C5, C12, CF3, CF3M, CF8, CF8M, C95500, 4A, 5A, Monel 400/500, Inconel 825/625, Titanium Alloy, etc.

Forging material: A105, LF2, F11, F12, F304, F321, F347, F316, 304L, 316L, C61900, F51, F53, F55, Inconel, Titanium Alloy, etc.

Nominal diameter: NPS 1/2"-68"(DN 15-DN 1,700)

Nominal pressure: API600 & API6D: CLASS 150~CLASS 2,500 (PN16~PN420) API 6A: 2,000PSI~15,000PSI

Temperature range: -196°C-550°C

Applications: Onshore oil and gas exploitation and transportation, offshore oil and gas platform and FPSO / FLNG / FSRU, natural gas purification and liquefaction unit, LNG receiving station and vaporization unit, refining, chemical industry and chemistry, coal to gas (oil) and coal chemical industry, air separation, power station, aerospace, military industry and new energy (solar power generation, hydrogen energy, etc.) etc.

The Business purpose of FZV: Providing Complete Control Solutions For Industrial Pipelines.

Our Advantages:

1. Strict quality management system to ensure excellent product quality;
2. Excellent production management system to ensure the shortest delivery;
3. Competitive price;
4. Reponsive after-sales service.

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OVERVIEW OF DOUBLE BLOCK AND BLEED VALVE TWIN BALL DBB

Twin ball (DBB) valves are designed to replace the complex form of multiple valve connections in traditional pipelines. Reduce leakage points in the system, quickly achieve bleed and block functions, and also have pipeline fluid sampling. The Twin ball (DBB) valve maximize space-saving installation, simplify installation procedures, facilitate instrument cleaning and maintenance, and reduce costs.

The main features of Twin ball (DBB) valves are to have common characteristics of general ball valves, such as low fluid resistance, short opening and closing time, anti-blowout stem design, fire safe design, anti-static, and emergency grease injection device for valve stem and seat. (For Trunnion mounted ball valve) each single valve provides drain and bleed.

Twin ball (DBB) valves consist of one piece body with two balls, and the middle cavity between the two balls provides an external bleed valve (Needle type globe valve) to reduce the leakage points of the pipeline. The structure is compact, the installation space is small, the weight is light, the operation is convenient, and the cost is reduced.

A twin ball (DBB) valve has the sealing effect like using two general ball valves. With higher sealing performance, using twin ball valves are effective to meet high sealing requirements of pipelines.

A useful function of Twin ball (DBB) valve is to add an opening in the middle chamber position and connect a needle valve for pipeline sampling.

CLASSIFICATION

Twin ball (DBB) valves are classified as floating and trunnion mounted according to their sealing principles and structural forms; According to the installation method of ball valves, they can be classified as side entry integrated type or three-piece type.



APPLICATION

Twin ball (DBB) valves are widely used in industries such as pharmaceuticals, petroleum, natural gas, chemicals, power plants, and food.



DESIGN SPECIFICATIONS

Design and Manufacturing Standards: API 6D, ISO 17292,
API 608, API 6A
Pressure and Temperature rating: ASME B16.34
Face to face: FZV Manufacturing Standard
Flange End Dimension: ASME B16.5, HG20592-20615, API 6A
BW End: ASME B16.25
SW/Threaded End: ASME B16.11/ASME B16.1.20, API 6A
Test and Inspection: API 598, ISO 5208, API 6D, API 6A
F.S.Test: API 607, API6FA
Sulfur resistance requirements: NACE MR 0175

DESIGN PARAMETER

Nominal diameter: NPS1/2~6(Floating Ball)
NPS2~24(Trunnion Mounted Ball)
NPS1-13/16~13-5/8(API 6A)
Nominal Pressure: Class150, 300, 600, 900, 1500, 25002000PSI,
3000PSI, 5000PSI, 10000PSI
Material pressure temperature rating: ASME B16.34
Seat test: API 598, ISO 5208, API 6D(Soft seat: 0 Leakage,
Metal seat: ISO 5208 Class D), API 6A
Operation Method : Manual, Worm gear, Electric, Pneumatic...

DESIGN FEATURES OF TWIN BALL (DBB) VALVE

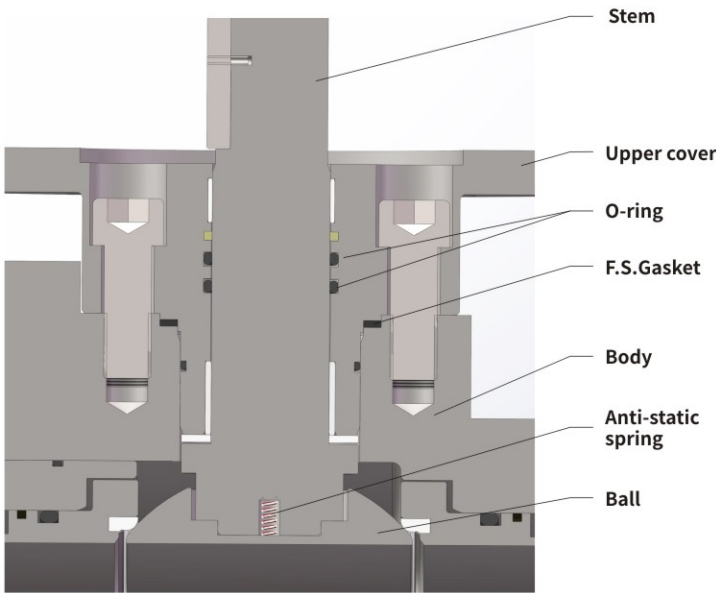
Design features of Twin ball (DBB) valves include some characteristics of typical ball valves along with some new features.

anti-blowout stem design

The valve stem and the ball are independent of each other. To avoid the stem is blown out by the cavity pressure, the lower end of the stem is designed with a protruding shape which is secured by the valve body or upper cover.

Anti-static design

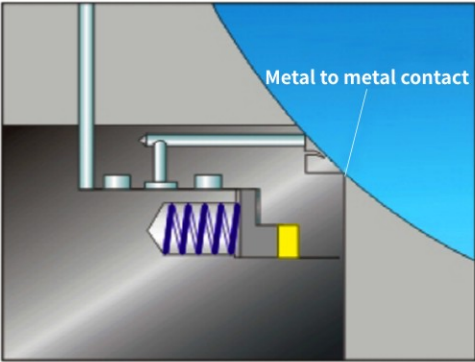
Install springs or small steel ball between the valve stem and the ball, and between the valve stem and the valve body. A conductive path between the ball, stem and valve body prevents a potential fire hazard where the constant friction between ball and soft seat will generate static electricity, and the spark caused by static electricity may ignite the inflammable fluid inside the ball valve.



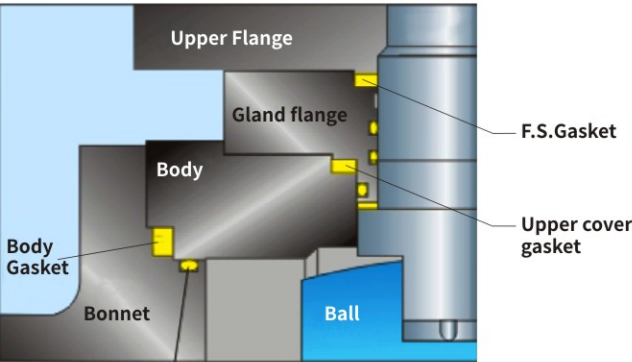
Anti static and anti blow stem structure

FIRE SAFE DESIGN

The valve sealing parts provides a sealing feature, with the primary seal and the secondary seal. The primary seal consists of non-metallic materials (rubber) that are easy to seal, and the secondary seal material consists of flexible graphite or spiral wound gasket, which has high melting point about 1000°C. The sealing position of the valve seat is machined with an angle, which makes a metal to metal seal with the ball to prevent internal leakage when the line pressure pushes the seat against the ball, and non-metallic seat insert is burn out by the fire. Valve products have undergone fire safe certification testing.



After the fire



O-ring

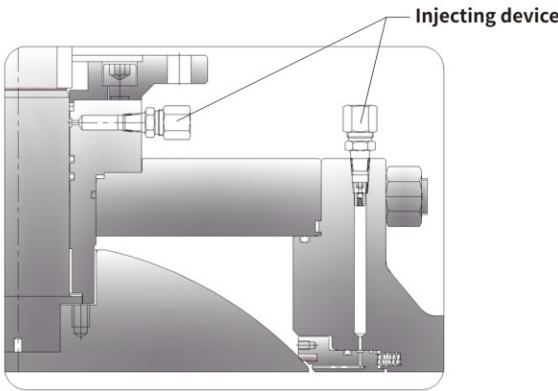
EMERGENCY SEALANT INJECTOR

The stem / seal injection feature, provides a system of sealing worn out o-rings and ball seals.

During the service life of a valve, the seals and o-rings can become worn out, causing leakage at the stem and at the ball seal when the valve is closed.

This leakage is stopped, or at least slowed down, by injecting a mineral based sealant, through the stem / seal injectors till replace the valve or repair it during maintenance.

This sealant flows through the injector ports and channels until it reaches the o-rings of the stem/seal housing and the ball/seal face.

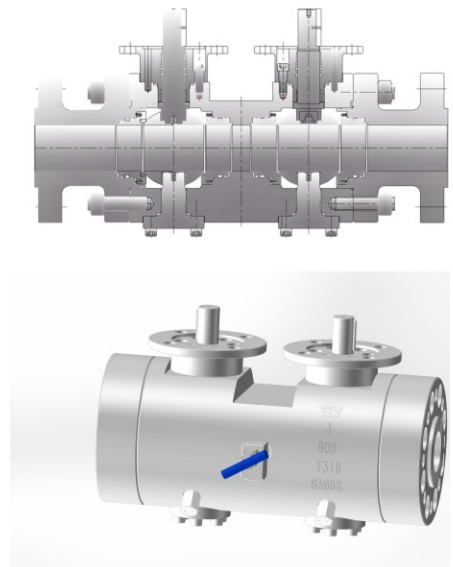


DOUBLE BLOCKING AND BLEED FUNCTION

Both floating and trunnion mounted Twin ball (DDB) valves have this function. Trunnion mounted can achieve both single ball valve double block and bleed functions, as well as double ball valve double block and bleed functions.

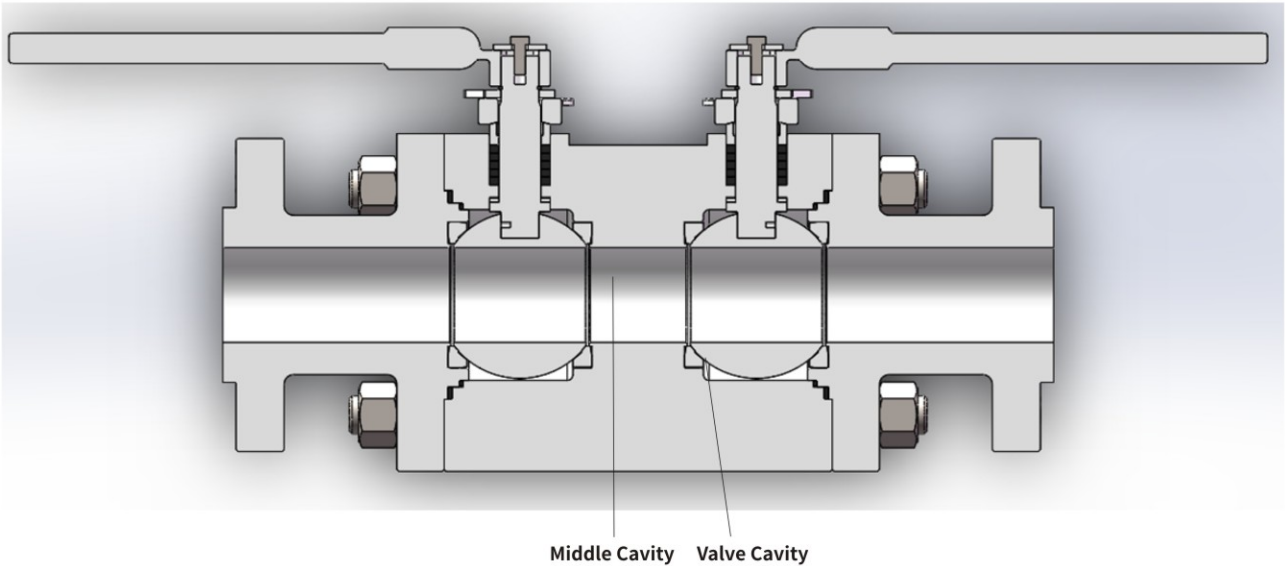
Two seats of the Twin ball (DDB) valves can cut off the medium from the inlet and outlet ends, achieving a double block function. When the ball is in the fully closed position, the inlet and outlet ends of the floating double ball valve are sealed (the floating ball valve has a bidirectional seat structure, but can only sealing in one direction), and the inlet end, middle cavity, and outlet end of the trunnion mounted Twin ball (DDB) valve can simultaneously block the medium.

The middle cavity of the floating Twin ball (DDB) valve (i.e. the cavity between two floating ball valves) is blocked from the inlet and outlet ends, and the middle cavity is released through a bleed valve. The trunnion mounted Twin ball (DDB) can achieve single valve cavity and double valve cavity release.



SELF RELEASE OF PRESSURE IN THE MIDDLE CAVITY

Floating win ball Twin ball (DBB) valves can automatically release pressure in the middle cavity, while trunnion mounted win ball Twin ball (DBB) valves cannot automatically release pressure in the middle cavity (single valve cavity can automatically release pressure)



When the pressure in the valve cavity increases, the medium pushes the ball, causing the pressure to be released into the valve cavity. The ball resets and the pressure in the valve cavity enters the upstream and downstream pipelines.

Twin ball (DDB) valves have the advantages of light weight, small installation space, fewer leakage points for safety, and easier installation and maintenance.

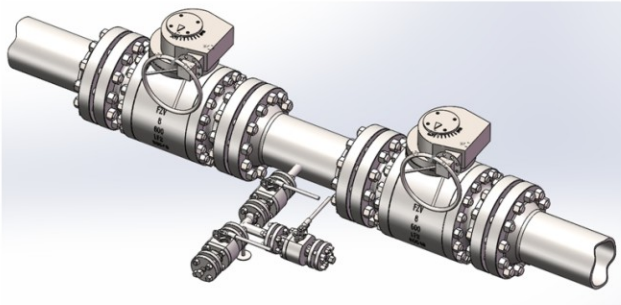
The following figure shows the traditional combination structure for implementing DBB function, and the right figure shows a compact twin ball (DDB) valve.

Weight reduction: Traditional implementation of DBB function requires two conventional ball valves and bleed valve. The twin ball (DDB) valve only requires one valve. The combined bleed valve requires additional auxiliary support due to its heavy weight. But only one Bleed valve (DDB) is needed on the twin ball (DDB) valve.

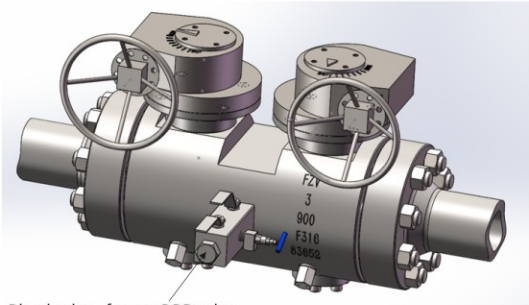
Space saving: A single twin ball (DDB) valve can replace multiple valves, reducing space by more than half. It can reduce the layout space of process pipelines

Easy installation and maintenance: Compared to traditional combination structures, the twin ball (DDB) valve can reduce bolts, gaskets, and piping by half. And the detection of leakage points is also much less, reducing manual labor.

Overall, twin ball (DDB) valve can significantly reduce procurement and usage costs compared to traditional methods.



Traditional DBB combination structure

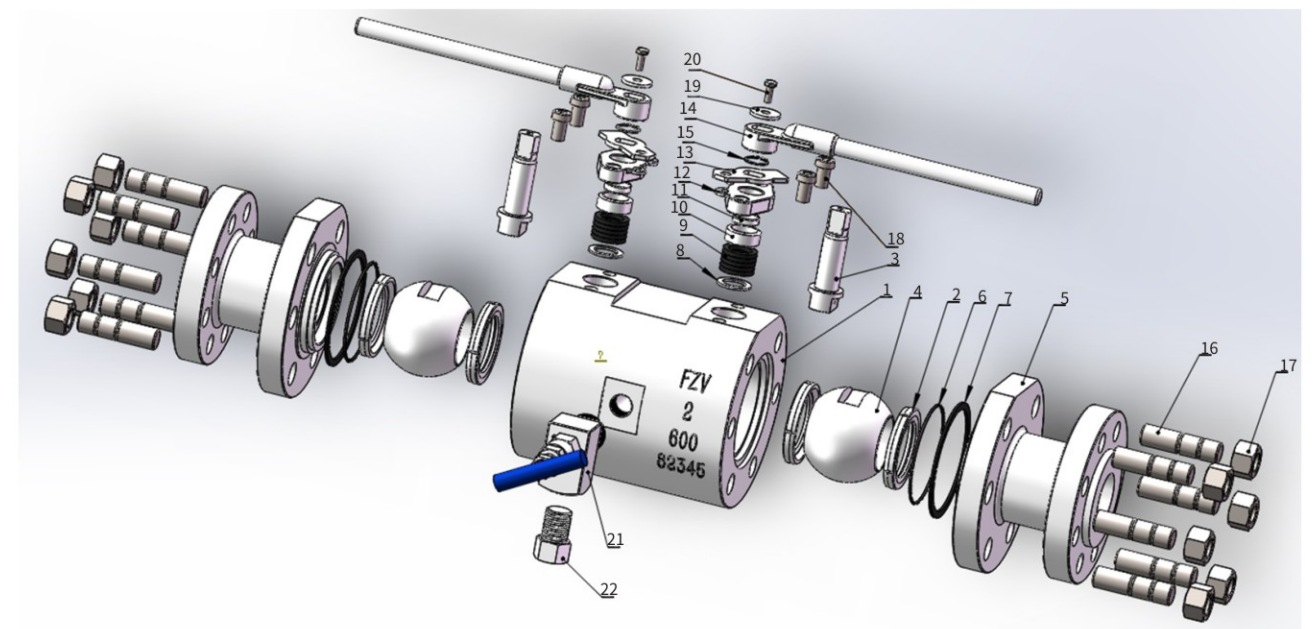


Bleed valve - for any DBB valve

Twin ball (DDB) valve

STRUCTURAL EXAMPLE OF FLOATING TWIN BALL (DBB) VALVE

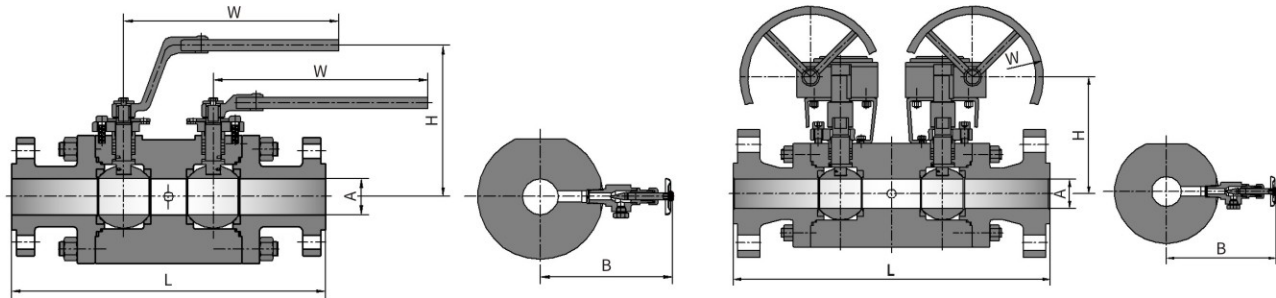
ITEM	DESCRIPTION	MATERIAL (APPLICABLE TEMPERATURE -29°C~120°C)	MATERIAL (APPLICABLE TEMPERATURE -46°C~120°C)	MATERIAL (APPLICABLE TEMPERATURE -46°C~120°C)
1	Body	A105	A350 LF2	A182 F304
2	Seat	PTFE/RPTFE/PEEK	PTFE/RPTFE/PEEK	PTFE/RPTFE/PEEK
3	Stem	A182 F304	A182 F304	A182 F304
4	Ball	A182 F304	A182 F304	A182 F304
5	Body adapter	A105	A350 LF2	A182 F304
6	O-ring	Viton	Viton	Viton
7	Flange gasket	304/316+Graphite	304/316+Graphite	304/316+Graphite
8	Gaske	RPTFE	RPTFE	RPTFE
9	Packing	Flex Graphite	Flex Graphite	Flex Graphite
10	Gland ring	A276 304	A276 304	A276 304
11	Bearing	PTFE	PTFE	PTFE
12	Gland flange	A216 WCB	A352 LCB	A351 CF8
13	Limit block	A36+ENP	A36+ENP	304
14	Lever	AISI 1020	AISI 1020	AISI 1020
15	Retainer	AISI 1566	AISI 1566	AISI 1566
16	Stud	A193 B7	A320 L7	A193 B8
17	Nut	A194 2H	A194 7	A194 8
18	Screw	A193 B7	A320 L7	A193 B8
19	Lever plate	SS	SS	SS
20	Bolt	A193 B7	A320 L7	A193 B8
21	Needle valve	A105(Trim304)	A350 LF2(Trim304)	A182 F304(Trim304)
22	Plug	A182 F304	A182 F304	A182 F304



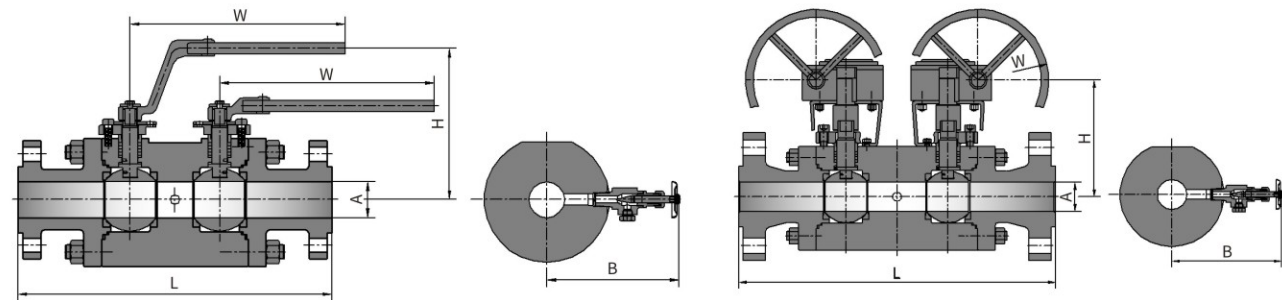
OPERATION METHOD OF FLOATING TWIN BALL (DBB) VALVE

NOMINAL DIAMETER in(DN)	Class 150	Class 300	Class 600	Class 900	Class 1500	Class 2500
1/2" (DN15)	◆ ★	◆ ★	◆ ★	◆ ★	◆ ★	◆ ★
3/4" (DN20)	◆ ★	◆ ★	◆ ★	◆ ★	◆ ★	◆ ★
1" (DN25)	◆ ★	◆ ★	◆ ★	◆ ★	◆ ★	◆ ★
1-1/2" (DN40)	◆ ★	◆ ★	◆ ★	◆ ★	◆ ★	◆ ★
2" (DN50)	◆ ★	◆ ★	◆ ★	◆ ★	◆ ★	★
3" (DN80)	◆ ★	◆ ★	◆ ★	★	★	★
4" (DN100)	◆ ★	◆ ★	★	★	★	★
6" (DN150)	★	★	★	★	★	★

◆ Manual ★ Worm gear, electric, pneumatic



MAIN DIMENSIONS AND WEIGHT OF FLOATING TWIN BALL (DBB) VALVE



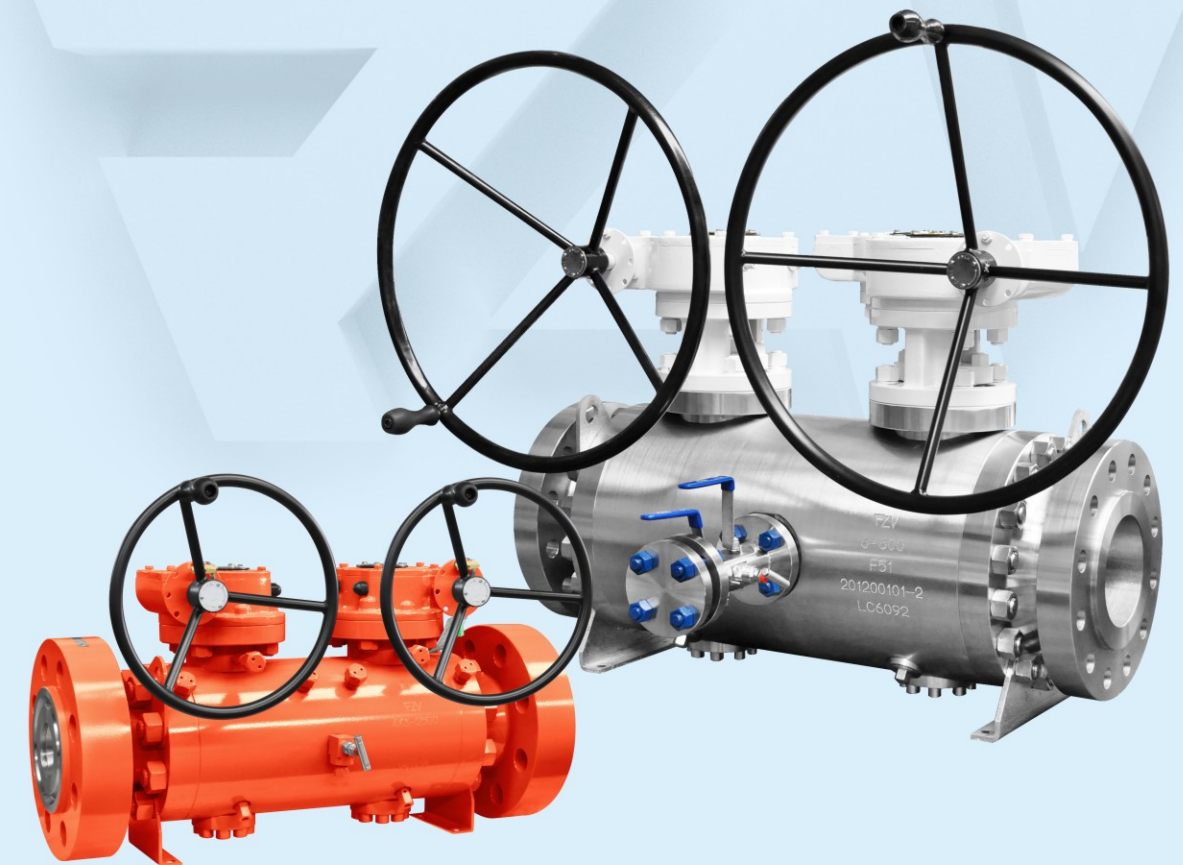
Class 150									
Nominal Diameter in(DN)	L	L (Worm Gear)	W (Manual)	W	H	B	Torque Nm	CV	Weight(KG)
1/2" (DN15)	196	-	150	-	76	150	7	25	4.6
3/4" (DN20)	214	-	150	-	76	155	10	56	5.5
1" (DN25)	229	-	230	-	94	155	13	95	10.3
1-1/2" (DN40)	305	-	300	-	135	180	27	308	20.5
2" (DN50)	316	336	300	200	145/225	187	45	500	23.5/26.8
3" (DN80)	356	376	400	200	170/253	203	90	1360	34/37.3
4" (DN100)	428	428	460	200	196/284	230	132	2500	69/62.3
6" (DN150)	-	652	-	350	342	275	540	5300	172

Class 300									
Nominal Diameter in(DN)	L	L (Worm Gear)	W (Manual)	W	H	B	Torque Nm	CV	Weight(KG)
1/2" (DN15)	240	-	150	-	76	150	7	25	5.1
3/4" (DN20)	245	-	150	-	76	157	10	56	6.2
1" (DN25)	275	-	300	-	117	163	18	95	16
1-1/2" (DN40)	310	365	300	200	136/216	180	40	308	27/30.5
2" (DN50)	352	407	400	200	148/228	187	70	430	34.8/38.4
3" (DN80)	440	469	550	200	173/256	203	122	1100	57.2/60.6
4" (DN100)	505	505	600	200	206/294	230	234	2000	117/121
6" (DN150)	-	664	-	350	367	275	855	5250	231

Class 600									
Nominal Diameter in(DN)	L	L (Worm Gear)	W (Manual)	W	H	B	Torque Nm	CV	Weight(KG)
1/2" (DN15)	260	-	150	-	76	150	8	20	6.8
3/4" (DN20)	305	-	300	-	112	162	20	48	15.2
1" (DN25)	342	-	300	-	120	166	27	64	25.5
1-1/2" (DN40)	402	436	400	200	152	184	55	308	28.3/32.1
2" (DN50)	450	485	550	200	159	190	100	370	35.2/38.6
3" (DN80)	527	537	700	200	180	216	180	1020	60/65.6
4" (DN100)	665	725	850	350	234	240	300	1850	120/128



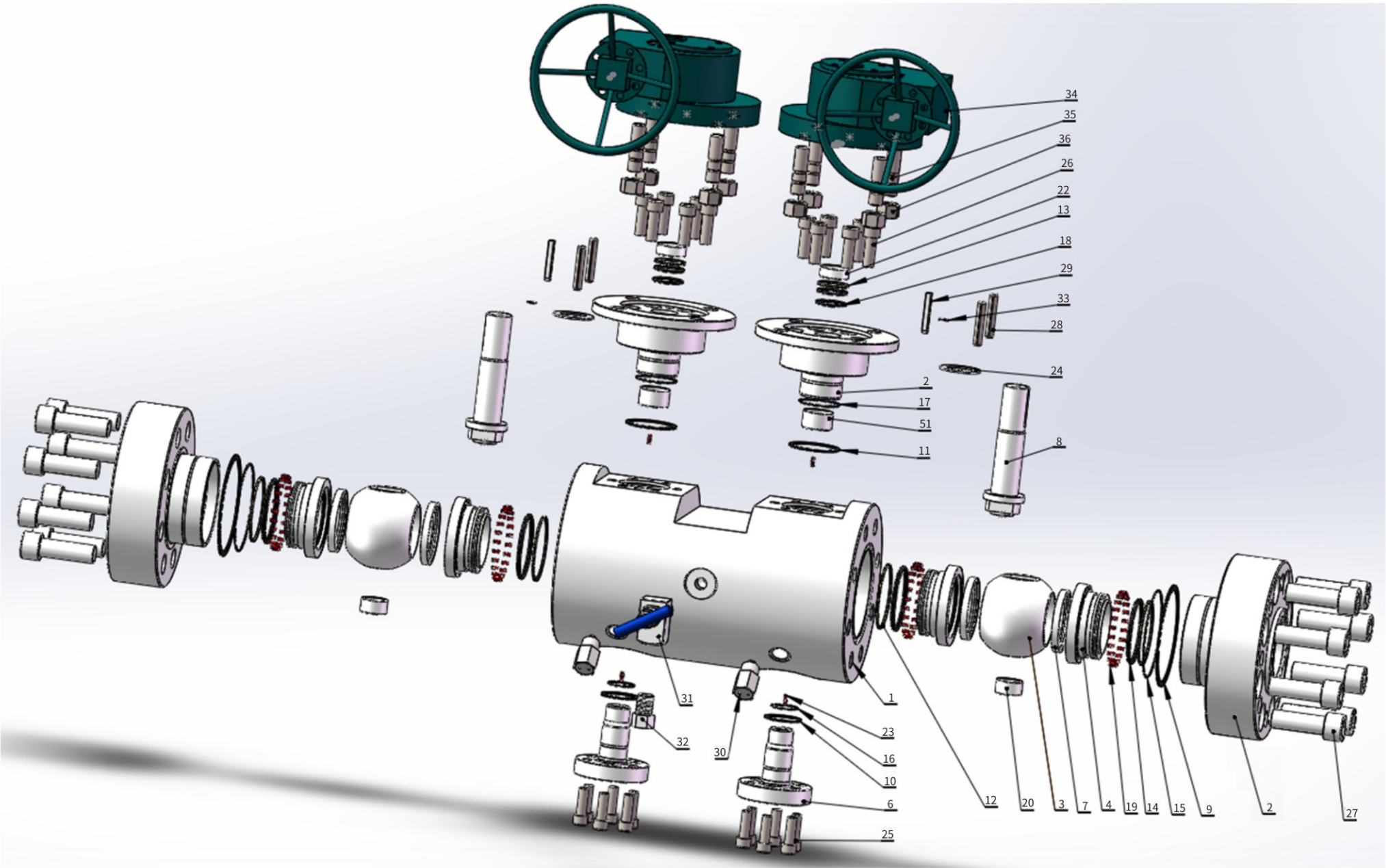
Class 2500									
Nominal Diameter in(DN)	L	L (Worm Gear)	W (Manual)	W	H	B	Torque Nm	CV	Weight(KG)
1/2" (DN15)	385	-	400	-	124	175	56	16	22
3/4" (DN20)	412	-	500	-	175	190	135	34	29.4
1" (DN25)	454	508	650	200	192/284	210	230	55	38.5/46.5
1-1/2" (DN40)	576	648	900	250	215/325	245	245	165	58.6/66.8



STRUCTURAL EXAMPLE OF TRUNNION MOUNTED
TWIN BALL (DBB) VALVE

MATERIAL SELECTION

ITEM	DESCRIPTION	MATERIAL (Applicable Temperature -29°C~120°C)	MATERIAL (Applicable Temperature -46°C~120°C)	MATERIAL (Applicable Temperature -46°C~120°C)
1	Body	A105	A350 LF2	A182 F304
2	Body adapter	A105	A350 LF2	A182 F304
3	Ball	A182 F304	A182 F304	A182 F304
4	Seat	A105+ENP	A350 LF2+ENP	A182 F304
5	Upper cover	A105+ENP	A350 LF2+ENP	A182 F304
6	Trunnion	A105+ENP	A350 LF2+ENP	A182 F304
7	Seat ring	PTFE/RPTFE/PEEK	PTFE/RPTFE/PEEK	PTFE/RPTFE/PEEK
8	Stem	A105+ENP	A182 F304	A182 F304
9	Flange gasket	304/316+Graphite	304/316+Graphite	304/316+Graphite
10	Flange gasket	304/316+Graphite	304/316+Graphite	304/316+Graphite
11	Flange gasket	304/316+Graphite	304/316+Graphite	304/316+Graphite
12	Packing	Flexible Graphite+304	Flexible Graphite+304	Flexible Graphite+304
13	packing	Flexible Graphite+304	Flexible Graphite+304	Flexible Graphite+304
14	O-ring	Viton	Viton	Viton
15	O-ring	Viton	Viton	Viton
16	O-ring	Viton	Viton	Viton
17	O-ring	Viton	Viton	Viton
18	O-ring	Viton	Viton	Viton
19	Spring	INCONEL X 715	INCONEL X 715	INCONEL X 715
20	Bearing	CS+PTFE	CS+PTFE	304+PTFE
21	Bearing	CS+PTFE	CS+PTFE	304+PTFE
22	Bearing	RPTFE	RPTFE	RPTFE
23	Spring	316	316	316
24	Gasket	RPTFE	RPTFE	RPTFE
25	Screw	A193 B7	A320 L7	A193 B8
26	Screw	A193 B7	A320 L7	A193 B8
27	Screw	A193 B7	A320 L7	A193 B8
28	Pin	AISI 1566	AISI 1566	AISI 1566
29	Key	AISI 1045	AISI 1045	AISI 1045
30	Bleed valve	A182 F304	A182 F304	A182 F304
31	Plug	A182 F304	A182 F304	A182 F304
32	Needle valve	A105(Trim 304)	A350 Lf2(Trim 304)	A182 F304(Trim 304)
33	Pin	AISI 1566	AISI 1566	AISI 1566
34	Worm gear	Combination	Combination	Combination
35	Stud	A193 B7	A320 L7	A193 B8
36	Nut	A194 2H	A194 7	A194 8

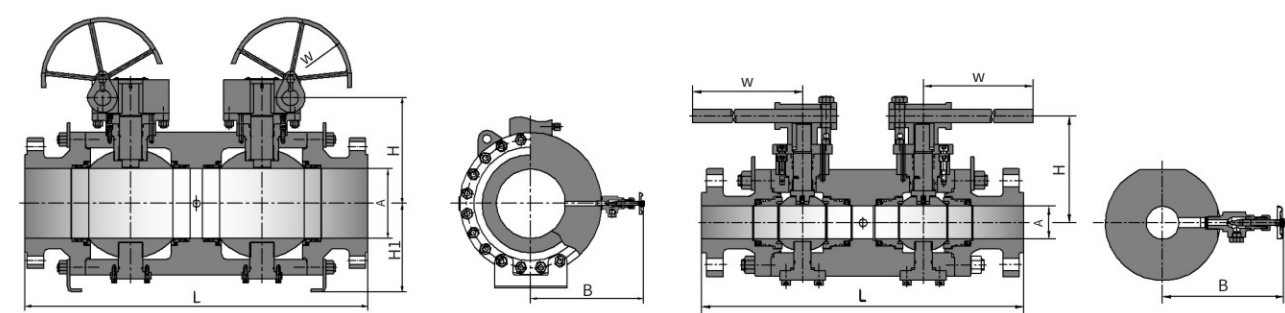


OPERATION METHOD OF TRUNNION MOUNTED TWIN BALL (DBB) VALVE

NOMINAL DIAMETER in(DN)	Class 150	Class 300	Class 600	Class 900	Class 1500	Class 2500
2" (DN50)	◆ ★	◆ ★	◆ ★	◆ ★	◆ ★	◆ ★
3" (DN80)	◆ ★	◆ ★	◆ ★	◆ ★	★	★
4" (DN100)	◆ ★	◆ ★	◆ ★	★	★	★
6" (DN150)	◆ ★	◆ ★	★	★	★	★
8" (DN200)	◆ ★	★	★	★	★	★
10" (DN250)	★	★	★	★	★	★
12" (DN300)	★	★	★	★	★	★
14" (DN350)	★	★	★	★	★	★
16" (DN400)	★	★	★	★	★	★
18" (DN450)	★	★	★	★	★	★
20" (DN500)	★	★	★	★	★	★
24" (DN600)	★	★	★	★	★	★

◆ Manual ★ Worm gear, electric, pneumatic

MAIN DIMENSIONS AND WEIGHT OF TRUNNION MOUNTED TWIN BALL (DBB) VALVE



Class 150										
Nominal Diameter in(DN)	L	L (Worm Gear)	W (Manual)	W	B	H	H 1	Torque Nm	CV	Weight(KG)
2" (DN50)	316	332	300	200	176	146/146	78	32	500	29/35.4
3" (DN80)	366	372	400	200	197	192/175	109	54	1360	63/71
4" (DN100)	428	458	450	350	217	222/215	130	110	2500	84/96
6" (DN150)	684	684	750	460	265	265/268	179	310	5300	252/268
8" (DN200)	-	810	-	460	310	306	213	612	10750	462
10" (DN250)	-	965	-	600	350	365	300	850	17500	786
12" (DN300)	-	1120	-	600	381	390	335	1200	26750	1098

Class 150										
Nominal Diameter in(DN)	L	L (Worm Gear)	W (Manual)	W	B	H	H 1	Torque Nm	CV	Weight(KG)
14" (DN350)	-	1252	-	600	410	420	357	1600	31850	1629
16" (DN400)	-	1394	-	600	450	484	410	2770	44000	2122
18" (DN450)	-	1548	-	600	490	537	488	3150	51214	2448
20" (DN500)	-	1665	-	750	533	670	510	4185	63896	3332
24" (DN600)	-	1948	-	750	616	681	617	5901	96465	4778

Class 300										
Nominal Diameter in(DN)	L	L (Worm Gear)	W (Manual)	W	B	H	H 1	Torque Nm	CV	Weight(KG)
2" (DN50)	370	382	300	200	182	166/146	90	59	430	37.4/44.6
3" (DN80)	485	485	500	350	200	199/195	110	82	1100	76.5/92
4" (DN100)	525	525	500	350	220	221/211	130	165	2000	119/138
6" (DN150)	-	736	-	460	265	266	205	522	5250	298
8" (DN200)	-	904	-	600	310	315	243	1000	10100	556
10" (DN250)	-	996	-	600	350	360	300	1748	16820	692
12" (DN300)	-	1140	-	600	388	408	345	2260	25950	1250
14" (DN350)	-	1325	-	600	420	459	388	3200	30900	1975
16" (DN400)	-	1465	-	850	456	500	422	3990	42600	2536
18" (DN450)	-	1645	-	750	498	549	488	5310	51214	2978
20" (DN500)	-	1803	-	750	545	600	500	7605	63896	4582
24" (DN600)	-	2068	-	750	705	705	600	11200	96465	5457

Class 600										
Nominal Diameter in(DN)	L	L (Worm Gear)	W (Manual)	W	B	H	H 1	Torque Nm	CV	Weight(KG)
2" (DN50)	494	494	500	200	186	170/150	95	92	370	54.5/62
3" (DN80)	582	582	620	350	205	204/200	115	184	1020	95/103.4
4" (DN100)	724	724	860	350	225	225/221	138	306	1850	179/192
6" (DN150)	-	918	-	600	273	218	221	855	4400	442
8" (DN200)	-	1080	-	600	318	279	280	1845	8450	790
10" (DN250)	-	1285	-	600	358	328	326	2556	14250	1275
12" (DN300)	-	1395	-	750	400	520	355	3316	22550	1853
14" (DN350)	-	1468	-	750	425	546	390	5850	30055	2270
16" (DN400)	-	1621	-	750	468	560	420	7952	39934	3077
18" (DN450)	-	1788	-	750	528	605	500	9207	51214	4250
20" (DN500)	-	1958	-	750	572	664	543	11520	63896	5100
24" (DN600)	-	2292	-	750	650	743	630	19121	96465	8500

Class 2500										
Nominal Diameter in(DN)	L	L (Worm Gear)	W (Manual)	W	B	H	H 1	Torque Nm	CV	Weight(KG)
2" (DN50)	-	725	-	350	216	215	-	446	306	192
3" (DN80)	-	928	-	460	235	251	187	802	798	420
4" (DN100)	-	1078	-	600	272	288	240	1588	1560	960
6" (DN150)	-	1462	-	600	356	385	320	4950	4004	2438
8" (DN200)	-	1638	-	750	398	516	395	7798	7476	3008
10" (DN250)	-	2032	-	750	478	616	460	14732	11603	5024
12" (DN300)	-	2276	-	750	542	725	545	30690	16385	6816



OVERVIEW OF INSTRUMENT DBB VALVE

Our company not only produces Twin Ball (DBB) Valves for the above-mentioned process pipelines, but also produces Double Block and Bleed Valve instruments. The reliability of instrument DBB ball valves make them ideal for use in both process instruments and process pipelines.. Features: light weight, less leakage points, small installation space, low flow resistance, and low pressure drop.

APPLICATION

1. Isolation points for process pipelines;
2. Install directly into the instrument panel;
3. Connection between instruments;
4. Double ended block .

SIZE AND PRESSURE RANGE

Size: NPS1/2~NPS2

Pressure: Class150~Class2500

END CONNECTION

Flanges/flanges, flanges/threads, threads/threads, butt welding.

Flanges according to ASME B16.5, threads according to ASME B1.20.1, Welding ends shall be in accordance with ASME B16.25/ASME B16.11.

The threaded connection end provides 1/2NPT direct connection to the instrument.

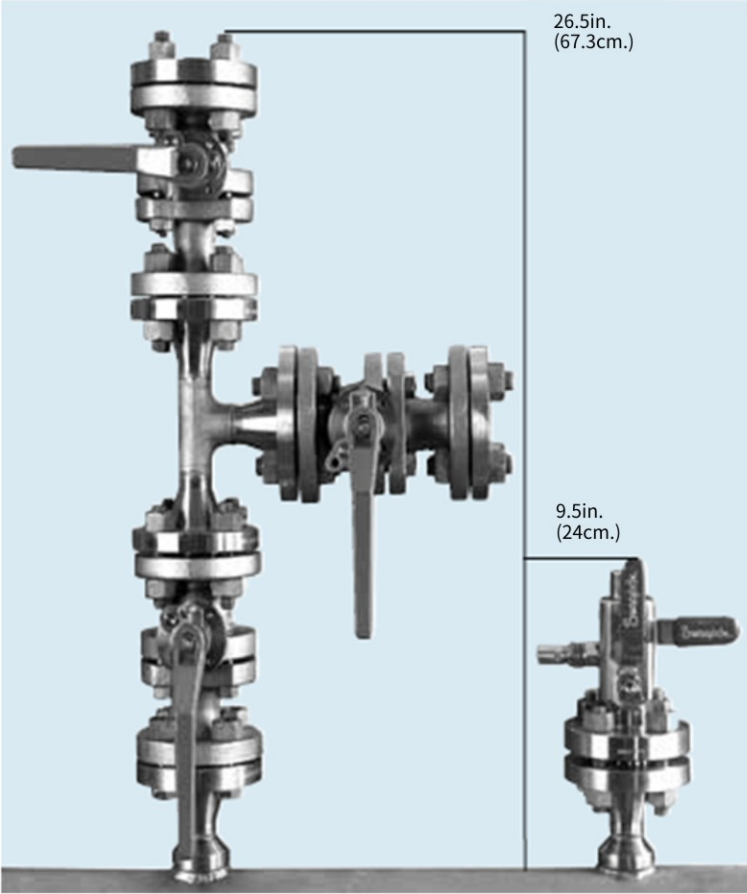
We can also provide 3/4NPT or 1/4NPT according to customer requirements.

OPERATING TEMPERATURE

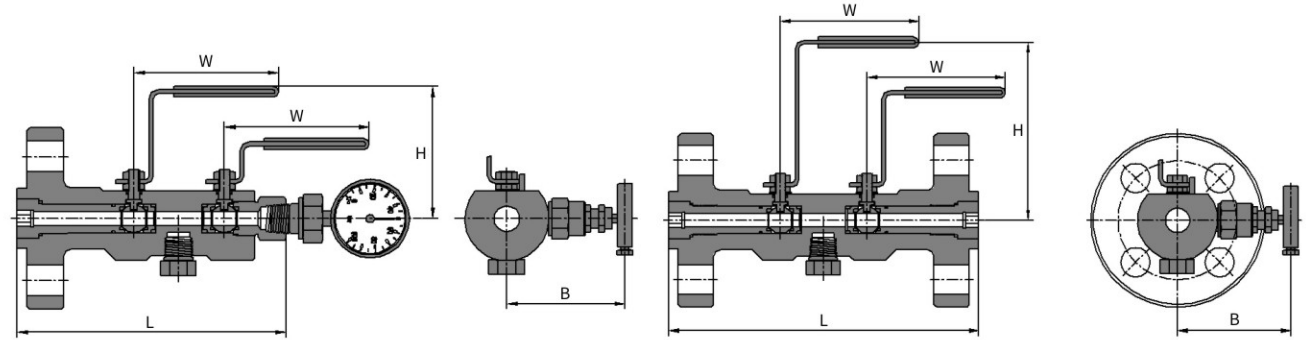
Valve application at -29~200 °C

CHARACTERISTIC

- Improved Safety: Reduced number of leak points as compared to traditional methods.
 - Cost Savings: One valve incorporates the bleed so additional piping and bleeds are not required.
 - Reduced Space
 - Reduced Weight: Results in less stress due to loading and vibration
- Installation and maintenance are simpler - compared to traditional methods, it reduces the installation of many components and the inspection of leakage points.



MAIN DIMENSIONS AND WEIGHT OF INSTRUMENT DBB VALVE



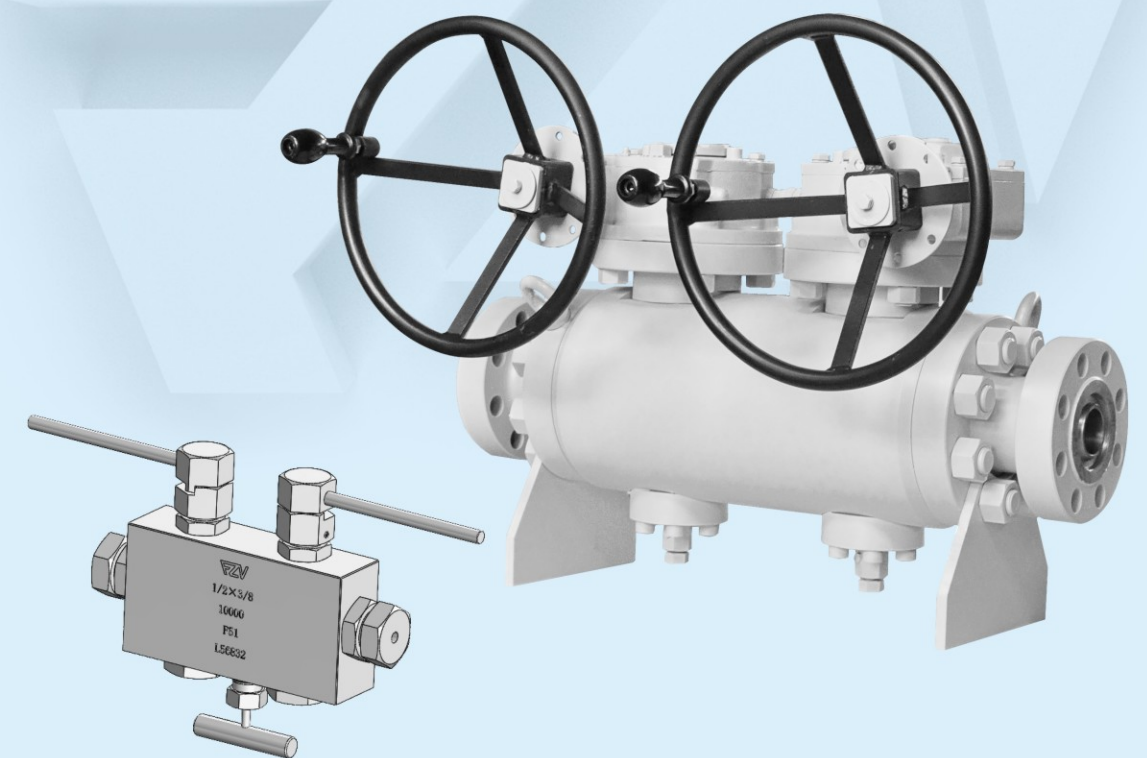
Class 150							
Nominal Diameter in(DN)	L	W	H	B	Torque Nm	CV	Weight(KG)
1/2" (DN15)	155	150	105	92	6	9	3.2
3/4" (DN20)	155	150	112	98	8	20	3.8
1" (DN25)	160	150	127	106	10	45	6.1
1-1/2" (DN40)	178	200	144	128	18	82	12.4
2" (DN50)	190	200	166	151	32	180	17.1

Class 300							
Nominal Diameter in(DN)	L	W	H	B	Torque Nm	CV	Weight(KG)
1/2" (DN15)	155	150	105	95	6	9	3.7
3/4" (DN20)	155	150	116	106	8	20	4.3
1" (DN25)	160	150	134	118	11	45	7.4
1-1/2" (DN40)	178	200	152	137	22	82	14.1
2" (DN50)	190	200	174	157	48	180	19.6

Class 600							
Nominal Diameter in(DN)	L	W	H	B	Torque Nm	CV	Weight(KG)
1/2" (DN15)	155	150	112	95	7	9	5.2
3/4" (DN20)	155	150	122	106	13	20	7.1
1" (DN25)	165	150	136	120	18	43	10.3
1-1/2" (DN40)	185	200	156	142	34	76	18.3
2" (DN50)	200	260	176	162	74	164	25.8



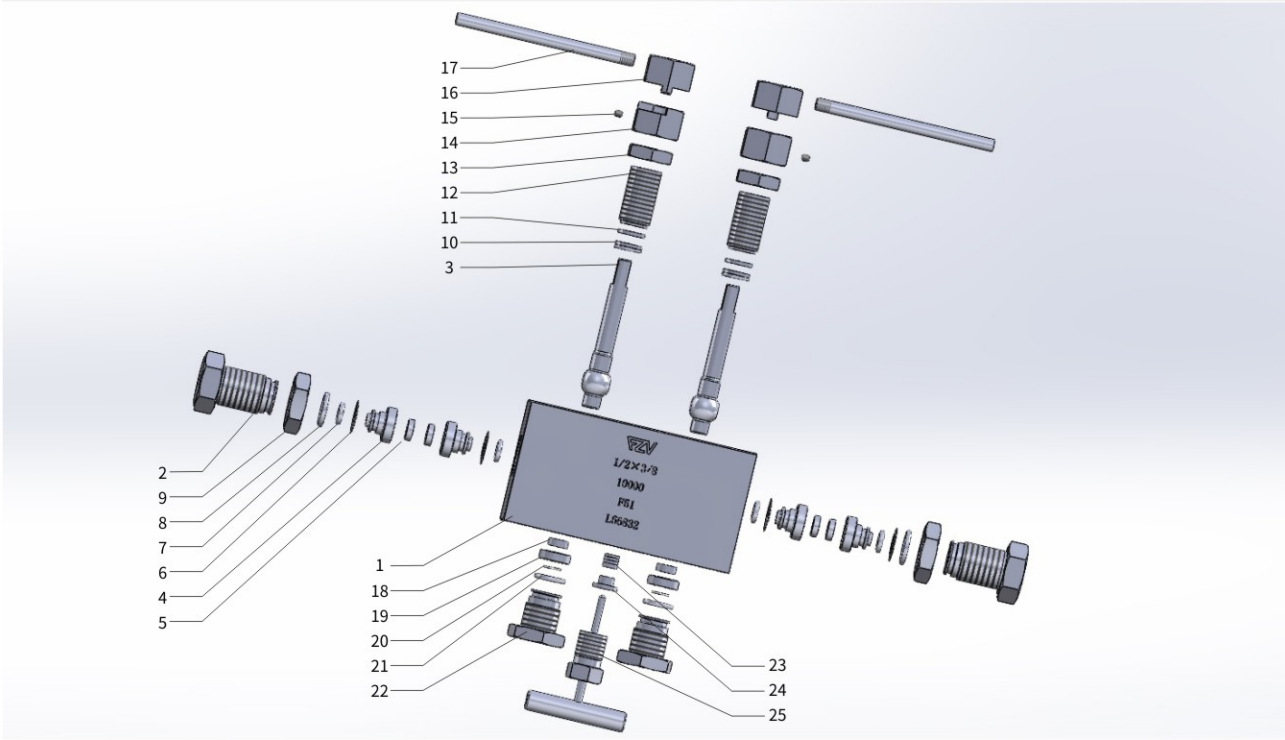
Class 2500							
Nominal Diameter in(DN)	L	W	H	B	Torque Nm	CV	Weight(KG)
1/2" (DN15)	216	200	124	175	56	16	11.2
3/4" (DN20)	216	300	175	190	135	34	16.2
1" (DN25)	238	400	192	210	230	55	23.2
1-1/2" (DN40)	254	500	214	245	560	165	38.1



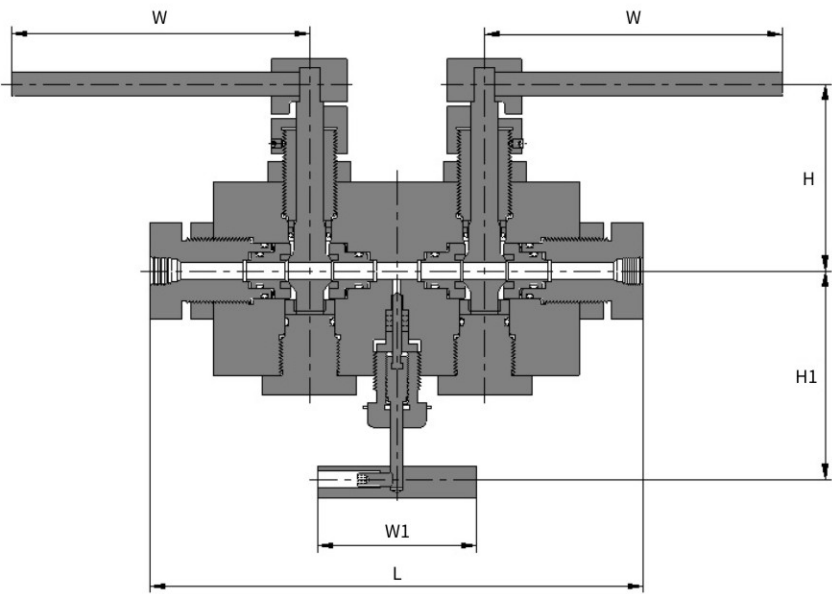
STRUCTURAL EXAMPLE OF 6A THREADED END TRUNNION MOUNTED TWIN BALL (DBB) VALVE

MATERIAL SELECTION

ITEM	DESCRIPTION	MATERIAL (applicable temperature -29 °C~121 °C) (only applicable to 5000PSI)	MATERIAL (applicable temperature -46 °C~121 °C)	MATERIAL (applicable temperature -60 °C~121 °C)
1	Body	A182 F316	A182 F51	INCONEL 625
2	Body adapter	A182 F316	A182 F51	INCONEL 625
3	Ball-Stem	A182 F316	A182 F51	INCONEL 625
4	Seat	A182 F316	A182 F51	INCONEL 625
5	Seat insert	PEEK	PEEK	PEEK
6	Disc spring	INCONEL 750	INCONEL 750	INCONEL 750
7	O-ring	Viton	Viton	Viton
8	O-ring	Viton	Viton	Viton
9	Valve cover locking nut	A182 F316	Viton	Viton
10	Lip seal	PTFE+ELGILOY	PTFE+ELGILOY	PTFE+ELGILOY
11	Retainer	PEEK	PEEK	PEEK
12	Upper cover	A182 F316	A182 F51	INCONEL 625
13	Lock Nut	A182 F316	A182 F51	INCONEL 625
14	Limit nut	A182 F316	A182 F51	INCONEL 625
15	Lock Screw	A182 F316	A182 F51	INCONEL 625
16	Joint	A182 F316	A182 F51	INCONEL 625
17	Lever	A182 F316	A182 F51	INCONEL 625
18	Bearing	316+PTFE	S31803+PTFE	UNS N06625+PTFE
19	Bushing	A182 F316	A182 F51	INCONEL 625
20	Gasket	PEEK	PEEK	PEEK
21	O-ring	Viton	Viton	Viton
22	Trunnion	A182 F316	A182 F51	INCONEL 625
23	Packing of Needle Valve	RPTFE	RPTFE	RPTFE
24	Gland Ring	A182 F316	A182 F51	INCONEL 625
25	Needle Valve	A182 F316	A182 F51	INCONEL 625



MAIN DIMENSIONS AND WEIGHT OF 6A THREADED END TRUNNION MOUNTED TWIN BALL (DBB) VALVE



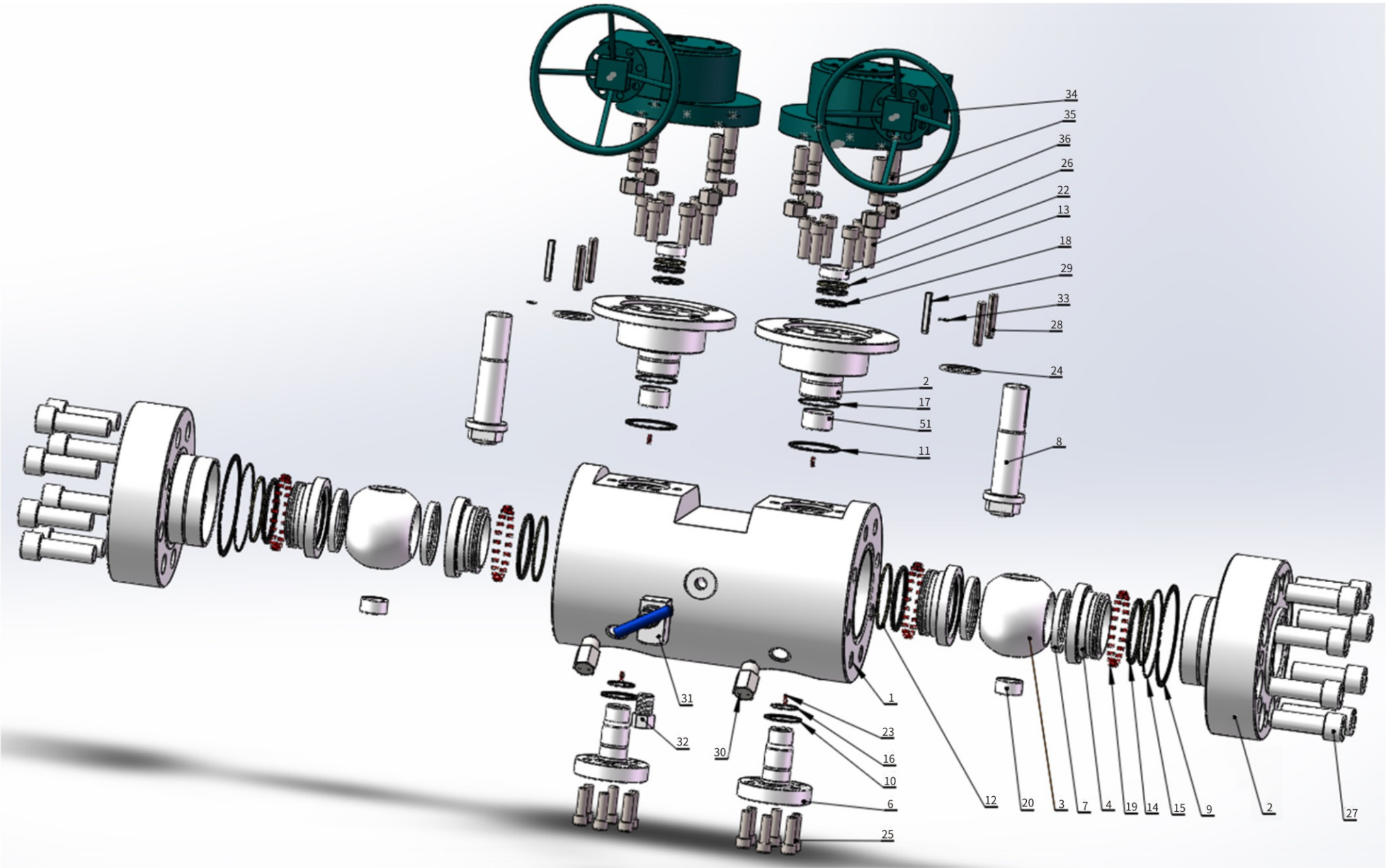
5000PSI							
Nominal Diameter in(DN)	L	W	H	H 1	Torque Nm	CV	Weight(KG)
3/8"NPT	254	180	105	121	32	12	11.2
1/2"NPT	254	180	105	121	54	16	11.2
3/4"NPT	457	350	180	205	62	34	23.2
1"NPT	457	350	180	205	78	55	23.2

10000PSI							
Nominal Diameter in(DN)	L	W	H	H 1	Torque Nm	CV	Weight(KG)
3/8"NPT	254	180	105	121	48	12	11.2
1/2"NPT	254	180	105	121	72	16	11.2
3/4"MP	457	350	180	205	78	34	23.2
1"MP	457	350	180	205	96	55	23.2

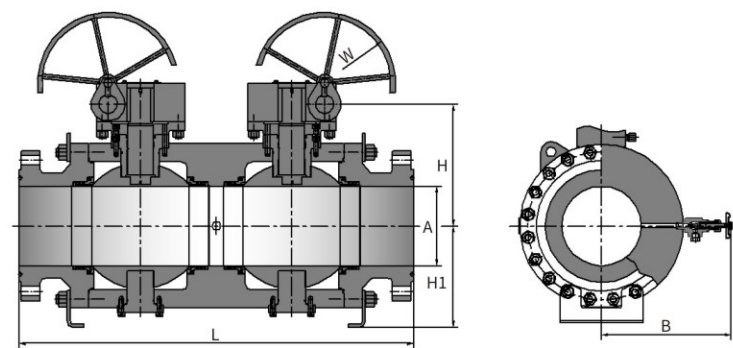
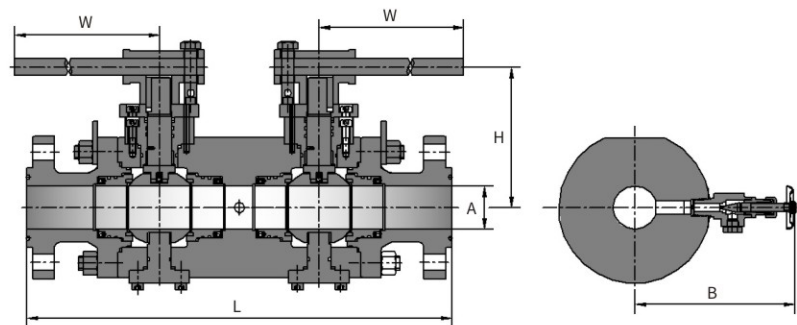
STRUCTURAL EXAMPLE OF 6A SOFT-SEATED TRUNNION MOUNTED TWIN BALL (DBB) VALVE

MATERIAL SELECTION

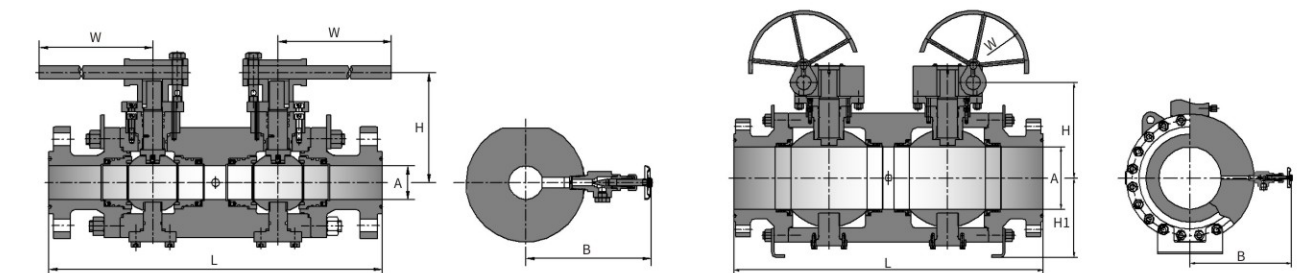
ITEM	DESCRIPTION	MATERIAL (Applicable Temperature -29°C~121°C)	MATERIAL (Applicable Temperature -46°C~121°C)	MATERIAL (Applicable Temperature -60°C~121°C)
1	Middle Body	ANSI 4130	A276 410	INCONEL 625
2	Body Adaptor	ANSI 4130	A276 410	INCONEL 625
3	Ball	ANSI 4130+ENP	A276 410	INCONEL 625
4	Seat	ANSI 4130+ENP	A276 410	INCONEL 625
5	Upper Cover	ANSI 4130+ENP	A276 410	INCONEL 625
6	Lower Cover	ANSI 4130+ENP	A276 410 P	INCONEL 625
7	Seat Ring	DEVLON/PEEK	DEVLON/PEEK	PDEVLON/PEEK
8	Stem	ANSI 4130+ENP	A276 410	INCONEL 625
9	Flange Gasket	304/316+Graphite	304/316+Graphite	UNS NO6625+Graphite
10	Flange Gasket	304/316+Graphite	304/316+Graphite	UNS No6625+Graphite
11	Flange Gasket	304/316+Graphite	304/316+Graphite	UNS NO6625+Graphite
12	Packing	Flexible Graphite+304	Flexible Graphite+304	Flexible Graphite +UNS NO6625
13	Packing	Flexible Graphite+304	Flexible Graphite+304	Flexible Graphite +UNS NO6625
14	O-ring	Viton	Viton	Viton
15	O-ring	Viton	Viton	Viton
16	O-ring	Viton	Viton	Viton
17	O-ring	Viton	Viton	Viton
18	O-ring	Viton	Viton	Viton
19	Spring	INCONEL X 715	INCONEL X 715	INCONEL X 715
20	Bearing	SS+PTFE	SS+PTFE	SS+PTFE
21	Bearing	SS+PTFE	SS+PTFE	SS+PTFE
22	Bearing	RPTFE	RPTFE	RPTFE
23	Spring	INCONEL 750	INCONEL 750	INCONEL 750
24	Gasket	RPTFE	RPTFE	RPTFE
25	Screw	A193 B7	A320 L7	A453 660D
26	Screw	A193 B7	A320 L7	A453 660D
27	Screw	A193 B7	A320 L7	A453 660D
28	Pin	AISI 1566	A276 410	A276 410
29	Key	AISI 1045	A276 410	A276 410
30	Bleed valve	A182 F304	A182 F304	INCONEL 625
31	Plug	A182 F304	A182 F304	INCONEL 625
32	Needle valve	ANSI 4130(Trim 304)	A276 410	INCONEL 625
33	Pin	AISI 1566	A276 410	A276 410
34	Worm Gear	Combination	Combination	Combination
35	Stud	A193 B7	A320 L7	A453 660D
36	Nut	A194 2H	A194 7	A453 660D



MAIN DIMENSIONS AND WEIGHT OF 6A SOFT-SEATED
TRUNNION MOUNTED TWIN BALL (DBB) VALVE



2000PSI										
Nominal Diameter in(DN)	L	L (Worm Gear)	W	W (Worm Gear)	H	H 1	B	Torque Nm	CV	Weight(KG)
2-1/16"	546	586	400	200	165/182	95	191	135	372	424/455
2-9/16"	618	675	500	200	182/208	115	205	186	585	502/535
3-1/8"	668	716	600	320	215/235	138	232	221	1020	672/705
4-1/16"	-	812	-	320	252	165	276	384	1850	896
5-1/8"	-	991	-	460	285	221	325	820	3460	1360
7-1/16"	-	1221	-	460	325	266	360	1850	7630	2592
9"	-	1456	-	460	360	324	385	2552	11230	3648
11"	-	1459	-	600	512	355	412	3470	18650	4532
13-5/8"	-	1651	-	600	548	394	445	7255	27680	5465



3000PSI										
Nominal Diameter in(DN)	L	L (Worm Gear)	W	W (Worm Gear)	H	H 1	B	Torque Nm	CV	Weight(KG)
2-1/16"	665	686	500	200	172/191	102	204	145	372	472/495
2-9/16"	683	711	600	200	195/215	121	213	186	585	564/605
3-1/8"	787	787	800	320	223/242	145	241	283	1020	782/818
4-1/16"	-	832	-	320	264	174	285	526	1850	992
5-1/8"	-	1029	-	460	293	242	334	1180	3460	1456
7-1/16"	-	1367	-	460	336	283	372	2384	7630	2876
9"	-	1529	-	460	373	335	396	3680	11230	3865
11"	-	1838	-	600	522	364	421	5920	18650	4920
13-5/8"	-	1952	-	600	560	406	458	9845	27680	5632

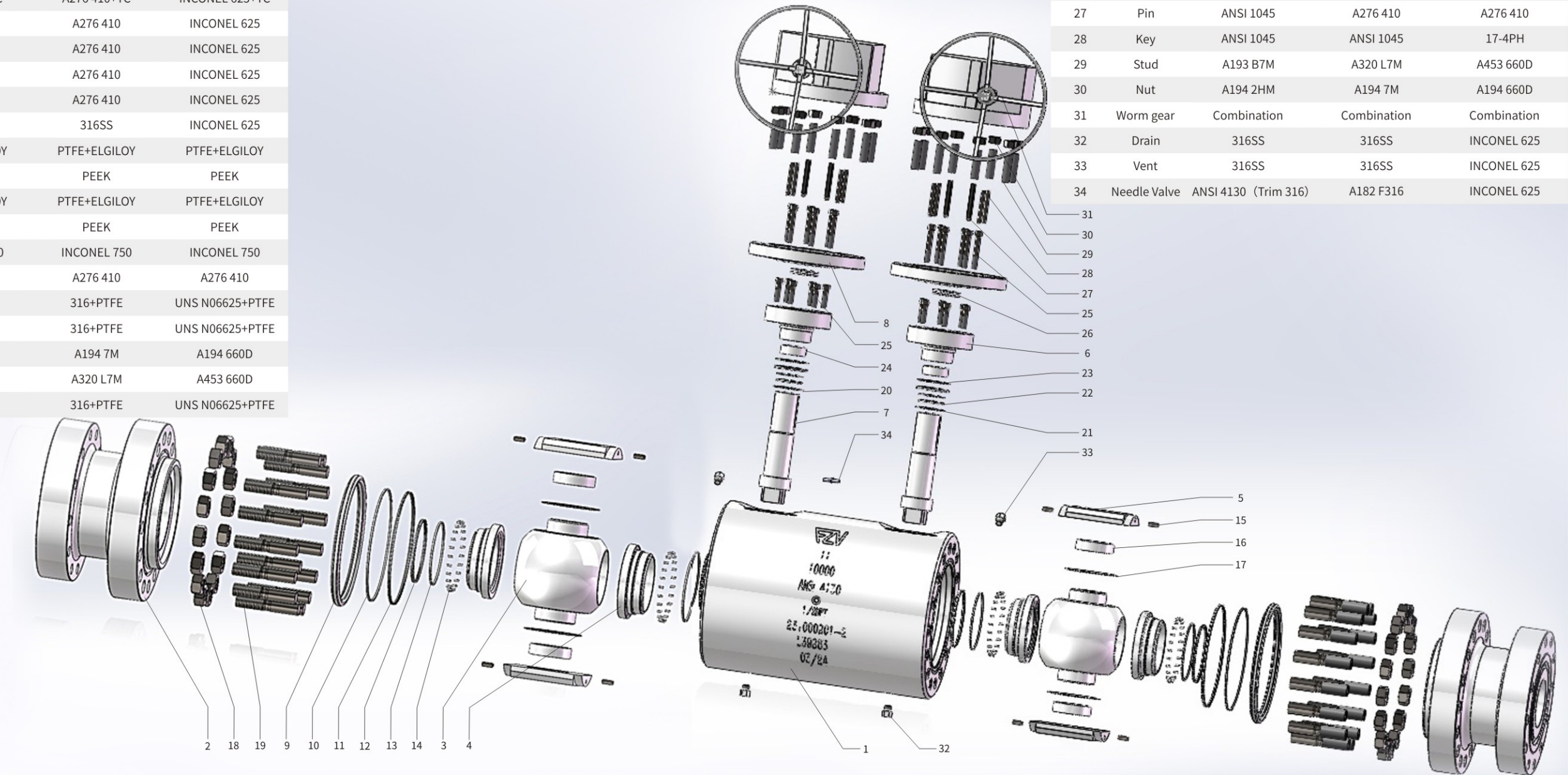
5000PSI										
Nominal Diameter in(DN)	L	L (Worm Gear)	W	W (Worm Gear)	H	H 1	B	Torque Nm	CV	Weight(KG)
2-1/16"	711	787	600	320	178/198	115	216	296	372	542/576
2-9/16"	852	889	800	320	208/221	130	226	392	585	656/685
3-1/8"	-	889	-	320	246	157	257	545	1020	938
4-1/16"	-	1001	-	460	272	182	298	1240	1850	1215
5-1/8"	-	1257	-	460	308	253	351	2806	3460	1608
7-1/16"	-	1497	-	460	345	296	388	6320	7630	3260
9"	-	1783	-	600	395	346	410	9408	11230	4155
11"	-	2056	-	600	548	381	436	17424	18650	5230
13-5/8"	-	2287	-	750	574	432	467	28120	27680	5920

STRUCTURAL EXAMPLE OF 6A METAL-SEATED
TRUNNION MOUNTED TWIN BALL (DBB) VALVE

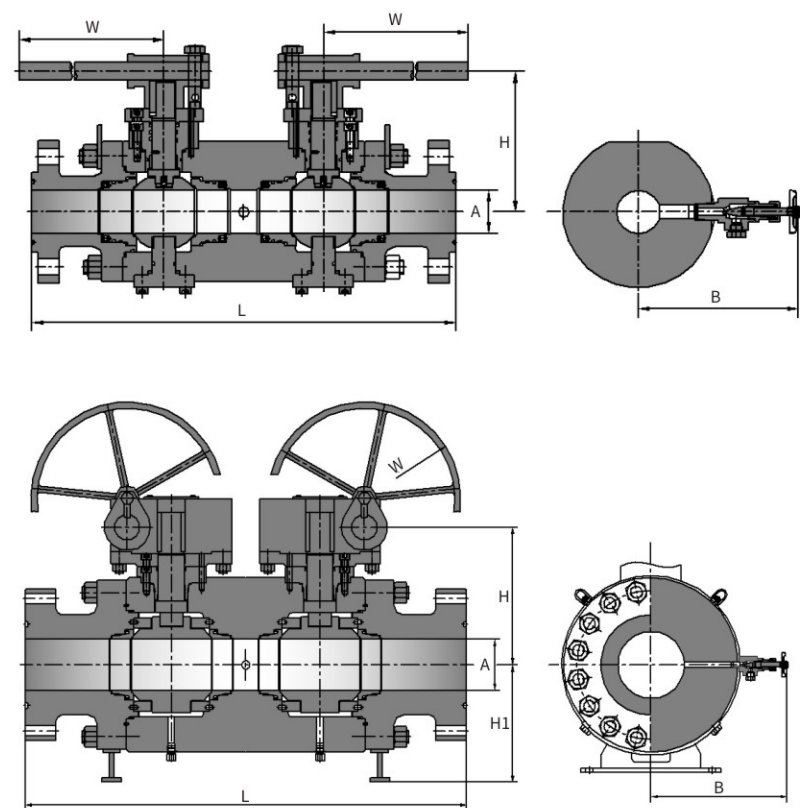
MATERIAL SELECTION

ITEM	DESCRIPTION	MATERIAL (Applicable temperature -29 °C~121 °C)	MATERIAL (Applicable temperature -46 °C~121 °C)	MATERIAL (Applicable temperature -60 °C~121 °C)
1	Body	ANSI 4130	A276 410	INCONEL 625
2	Body adapter	ANSI 4130	A276 410	INCONEL 625
3	Ball	A276 410+TC	A276 410+TC	INCONEL 625+TC
4	Seat	A276 410+TC	A276 410+TC	INCONEL 625+TC
5	Support Plate	ANSI 4130	A276 410	INCONEL 625
6	Upper cover	ANSI 4130	A276 410	INCONEL 625
7	Stem	A276 410	A276 410	INCONEL 625
8	Top Flange	ANSI 4130	A276 410	INCONEL 625
9	Body Gasket	316SS	316SS	INCONEL 625
10	Body Lip seal	PTFE+ELGILOY	PTFE+ELGILOY	PTFE+ELGILOY
11	Retainer	PEEK	PEEK	PEEK
12	Seat Lip seal	PTFE+ELGILOY	PTFE+ELGILOY	PTFE+ELGILOY
13	Seat Retainer	PEEK	PEEK	PEEK
14	Spring	INCONEL 750	INCONEL 750	INCONEL 750
15	Pin	ANSI 1045	A276 410	A276 410
16	Bearing	316+PTFE	316+PTFE	UNS N06625+PTFE
17	Flat Bearing	316+PTFE	316+PTFE	UNS N06625+PTFE
18	Nut	A194 2HM	A194 7M	A194 660D
19	Stud	A193 B7M	A320 L7M	A453 660D
20	Thrust Gasket	316+PTFE	316+PTFE	UNS N06625+PTFE

ITEM	DESCRIPTION	MATERIAL (Applicable temperature -29 °C~121 °C)	MATERIAL (Applicable temperature -46 °C~121 °C)	MATERIAL (Applicable temperature -60 °C~121 °C)
21	Stem Lip seal	PTFE+ELGILOY	PTFE+ELGILOY	PTFE+ELGILOY
22	Upper cover Lip seal	PTFE+ELGILOY	PTFE+ELGILOY	PTFE+ELGILOY
23	Flange Gasket	316+Graphite	316+Graphite	UNS N06625+Graphite
24	Bearing	316+PTFE	316+PTFE	UNS N06625+PTFE
25	Hex Screw	A193 B7M	A320 L7M	A453 660D
26	Packing	Graphite	Graphite	Graphite
27	Pin	ANSI 1045	A276 410	A276 410
28	Key	ANSI 1045	ANSI 1045	17-4PH
29	Stud	A193 B7M	A320 L7M	A453 660D
30	Nut	A194 2HM	A194 7M	A194 660D
31	Worm gear	Combination	Combination	Combination
32	Drain	316SS	316SS	INCONEL 625
33	Vent	316SS	316SS	INCONEL 625
34	Needle Valve	ANSI 4130 (Trim 316)	A182 F316	INCONEL 625



MAIN DIMENSIONS AND WEIGHT OF 6A METAL-SEATED TRUNNION MOUNTED TWIN BALL (DBB) VALVE



2000PSI										
Nominal Diameter in(DN)	L	L (Worm Gear)	W	W (Worm Gear)	H	H 1	B	Torque Nm	CV	Weight(KG)
2-1/16"	546	586	500	250	175/192	98	194	275	372	437/468
2-9/16"	618	675	650	250	189/212	123	215	385	298	514/546
3-1/8"	-	716	-	320	225/248	146	245	530	1632	721
4-1/16"	-	812	-	320	252	168	282	810	2960	928
5-1/8"	-	991	-	460	285	228	334	1725	5531	1390
7-1/16"	-	1221	-	460	325	275	362	3690	12206	2632
9"	-	1456	-	600	360	333	392	5575	16845	3685
11"	-	1459	-	600	512	363	418	7892	29840	4596
13-5/8"	-	1651	-	600	548	402	453	12519	43734	5521

3000PSI										
Nominal Diameter in(DN)	L	L (Worm Gear)	W	W (Worm Gear)	H	H 1	B	Torque Nm	CV	Weight(KG)
2-1/16"	665	686	600	250	178/197	112	211	445	372	486/508
2-9/16"	-	711	-	320	204/223	128	219	588	585	580/615
3-1/8"	-	787	-	320	229/251	154	254	840	1020	826
4-1/16"	-	832	-	320	276	182	293	1338	1850	1023
5-1/8"	-	1029	-	460	303	252	342	3048	3460	1502
7-1/16"	-	1367	-	460	342	295	383	6772	7630	2935
9"	-	1529	-	460	384	348	406	9406	11230	3986
11"	-	1838	-	600	534	377	433	16160	18650	5078
13-5/8"	-	1952	-	600	573	416	467	29412	27680	5749

5000PSI										
Nominal Diameter in(DN)	L	L (Worm Gear)	W	W (Worm Gear)	H	H 1	B	Torque Nm	CV	Weight(KG)
2-1/16"	-	787	600	320	185/206	121	227	546	372	596
2-9/16"	-	889	800	320	211/230	138	235	628	585	709
3-1/8"	-	889	-	360	257	162	265	920	1020	966
4-1/16"	-	1001	-	460	283	188	301	2102	1850	1258
5-1/8"	-	1257	-	460	314	261	365	5324	3460	1672
7-1/16"	-	1497	-	600	355	304	394	12112	7630	3390
9"	-	1783	-	600	414	359	419	22852	11230	4322
11"	-	2056	-	600	560	392	446	29401	18650	5439
13-5/8"	-	2287	-	750	588	444	478	44992	27680	6232

10000PSI										
Nominal Diameter in(DN)	L	L (Worm Gear)	W	W (Worm Gear)	H	H 1	B	Torque Nm	CV	Weight(KG)
1-13/16"	-	825	-	320	218	128	232	1115	320	254
2-1/16"	-	889	-	360	239	147	245	2030	372	624
2-9/16"	-	964	-	360	270	174	276	2650	585	792
3-1/8"	-	1178	-	460	292	197	312	3970	1020	1230
4-1/16"	-	1211	-	460	321	275	370	12375	1850	1568
5-1/8"	-	1346	-	600	365	316	406	19495	3460	2086
7-1/16"	-	1664	-	600	425	368	435	36830	7630	3786
9"	-	2229	-	600	572	410	457	76725	11230	5910
11"	-	2559	-	750	603	452	484	95000	18650	6563
13-5/8"	-	2768	-	750	655	508	519	135000	27680	8432