VALVULAS FEVISA S.A.U

Quality Engineered Since 1968

BALL VALVES

COMPANY OVERVIEW

VALVULAS FEVISA *originated through the industrially inclined ALVAREZ family. The establishment was founded in 1920 by Mr. Avellino Alvarez Prieto, in the Industrial Area of Asturias, Spain. It was intended to principally serve as an industrial machining, fabrication & maintenance services company with a captive foundry. In due course, the management decided to venture into Industrial Valves and with the collaboration and technical support of Spanish and French Valve experts, then the brand FEVISA (Franco Espanola de Valvulas Industriales SA) was created.*

FEVISA *along the years expanded its scope to include design , engineering & production of Control Valves. Presently our valve production facility that ranges over 90000 Sq. Ft is located at the Industrial Area to the north of Spain. It features modern state of the art CNC lathes, CNC drilling, and CNC machining Centers amongst other technologies complemented with expert workmanship and requisite industry certifications.*

FEVISA *Valves set the standard for performance and reliability year after year with their superior designs and quality engineered products.*

FEVISA products covers the following industry area:

Water supply system, Water treatment, Chemical, Cement, Air-conditioning systems, Industrial engineering, Nuclear power, Papermaking, Petrochemical Industry, Pharmaceutical, Powder Industry, Steel industry, Sugar refining, textiles and so on.

FEVISA *caters to anti-pollution environmental protection industry by providing various valves for wastewater and exhaust gas processing.*

FEVISA *has wide variety of industrial valves, which includes the following:*

- *Gate Valves, Globe Valves,Check Valves, Ball Valves, Plug Valves,*
- *Butterfly Valves*
- *Strainers*
- *Safety Valves*
- *Wellhead Valves*
- *Control Valves*
- *Air Release Valves, Needle Valves*
- *Fire Protection Valves*

All products are designed, manufactured, assembled and tested conforming to applicable standards by FEVISA S.A.U

Certificate No 6D-1839

Industry Certificates

API CERTIFICATE :

Certificate of Authority to use the Official API Monogram

License Number: 6D-1839 ORIGINAL

The American Petroleum Institute hereby grants to

VALVULAS FEVISA S.A.U
Calle De La Siderurgia Parcela 4-1
Ciudad Industrial Valnalon
La Felguera, Asturias
Spain

the right to use the Official API Monogram® on manufactured products under the conditions in the official publications of the American Petroleum Institute entitled API Spec Q1® and **API-6D** and in accordance with the provisions of the License Agreement.

In all cases where the Official API Monogram is applied, the API Monogram shall be used in conjunction with this certificate number: **6D-1839**

The American Petroleum Institute reserves the right to revoke this authorization to use the Official API Monogram for any reason satisfactory to the Board of Directors of the American Petroleum Institute.

The scope of this license includes the following: Check Valves, Ball Valves, Plug Valves, Gate Valves

QMS Exclusions: No Exclusions Identified as Applicable

Effective Date: MARCH 13, 2018
Expiration Date: MARCH 13, 2021

To verify the authenticity of this license, go to www.api.org/compositelist.

American Petroleum Institute

CE-PED CERTIFICATE :

BUREAU VERITAS

CERTIFICADO DE APROBACION DEL SISTEMA DE CALIDAD

CERTIFICATE OF QUALITY SYSTEM APPROVAL

Nº CE-0956-PED-H-TJA 001-18-ESP

ECA Entidad Colaboradora de la Adm. S.L.Unipersonal. Organismo de Control Acreditado por ENAC con el nº 49/C-SG008 actuando dentro del campo de su notificación (Organismo Notificado 0956) , certifica que el sistema de calidad aplicado por el fabricante para el diseño, la fabricación, la inspección del producto acabado y los ensayos de los equipos a presión identificados a continuación, ha sido evaluado según los requisitos del módulo H del anexo III de la Directiva de Equipos a Presión 2014/68/UE y satisface las disposiciones de la directiva que le aplican.

Fabricante (Nombre)	VALVULAS FEVISA SAU
Dirección	CL SIDERURGIA PARC. 4-1 CIUDAD IND.VALNALON 33930 LA FELGUERA-LANGREO, Spain
Nombre comercial - Marca	FEVISA
Descripción del equipo	VALVULAS / VALVES
Identificación de los ítems afectados (o lista en anexo en caso necesario)	Ver lista en página 2 / See list in page 2
Referencia de un anexo al certificado de aprobación del sistema de calidad	NO
Este certificado es válido hasta (dd/mm/aaaa)	09/07/2021

La aprobación está supeditada a las auditorías de vigilancia, visitas, ensayos y verificaciones que llevará a cabo la entidad local de Bureau Veritas que firma un contrato con el fabricante, de conformidad con las disposiciones de dicho contrato.

Este certificado será presentado sólo y solo el fabricante (quedará estrictamente prohibido de su utilización, cuando el fabricante no cumpla con sus obligaciones según el acuerdo con respecto a la implementación de sus sistema de calidad aprobado, (b) conformidad de los equipos con el diseño aprobado o (c) transmisión del producto acabado y ensayos, y de forma general, cuando el fabricante no cumpla en particular con cualquiera de sus obligaciones indicadas en la Directiva 2014/68/UE de 15 mayo 2014 (transposición a R.D. 1969/2015).

Fecha de la auditoría inicial o de renovación (dd/mm/aaaa)	10/05/2018
Inspector	JUAN JOSE MENENDEZ CASTAÑO

Realizado en	Establecimiento	Aplicable y expedido en	Firmado por	Firma autorizada por el Organismo Notificado nº 0956
LLANERA	10/07/2018	Spain	JAVIER BISCOTTI RECALDE	ORGANISMO DE CONTROL Autorizado por ENAC con acreditación nº 49/C-SG008

Código de registro: 20180502-ACC-0956-PED

El presente documento está sujeto a los términos de las Condiciones Generales de Servicio adjuntas al acuerdo firmado por el solicitante.

El presente documento no reproducido, sólo por el fabricante, de conformidad con las disposiciones del contrato firmado entre el mismo y Bureau Veritas y el laboratorio.

Cami Can Amatller, 34 Edificio Bureau Veritas, 08195 Sant Cugat del Vallès (Barcelona)

ISO CERTIFICATE:

BUREAU VERITAS Certification

VALVULAS FEVISA SAU
CL SIDERURGIA PARC. 4-1 CIUDAD IND.VALNALON
33930 LA FELGUERA-LANGREO
SPAIN

Bureau Veritas Certification Holding SAS – UK Branch certifies that the Management System of the above organisation has been audited and found to be in accordance with the requirements of the management system standards detailed below

ISO 9001:2015

Scope of certification

DESIGN, MANUFACTURING AND REPAIR OF VALVES. MANUFACTURING AND REPAIR OF MECHANISM AND INDUSTRIAL EQUIPMENTS.

Original cycle start date:	08-10-1999
Expiry date of previous cycle:	07-04-2018
Certification / Recertification Audit date:	14-02-2018
Certification / Recertification cycle start date:	08-04-2018

Subject to the continued satisfactory operation of the organization's Management System, this certificate expires on: 07-04-2021

Certificate No. ES690745 Version : 1 Revision date: 06-04-2018

Signed on behalf of BVQI SAS UK Branch
Certification Manager
Mónica Botos

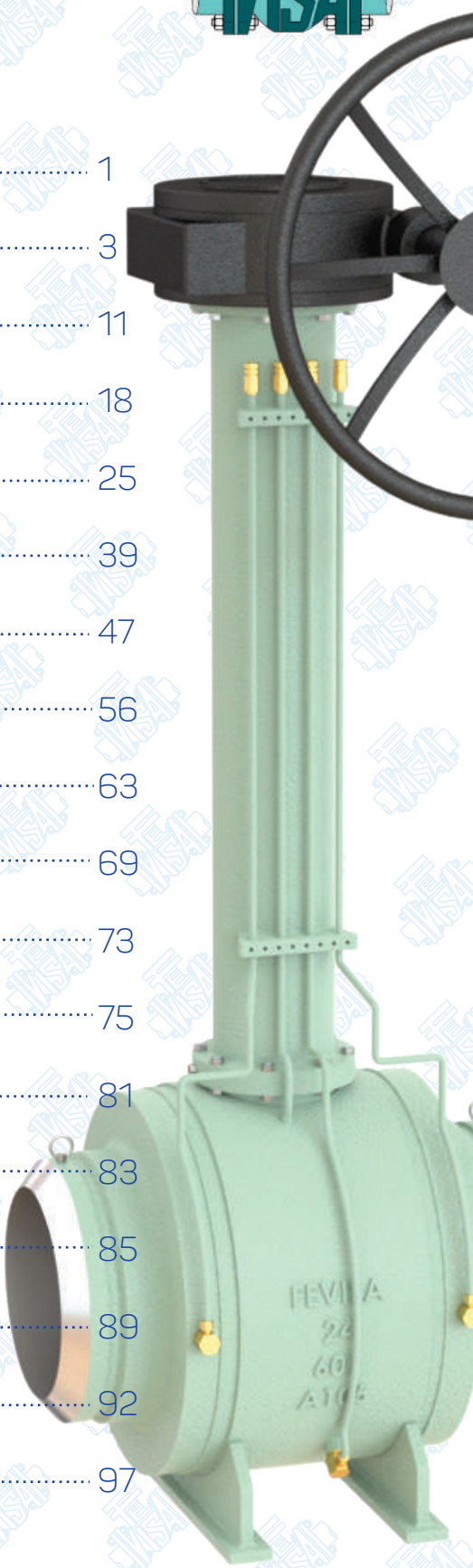
UKAS

Certification body address: 5th Floor, 66 Prescot Street, London E1 8HG, United Kingdom
Local office: C/Valportillo Primera 22-24, Polígono Costa, Pol. Ind. La Granja, 28108 Alcobendas, Madrid, Spain

Further clarifications regarding the scope of this certificate and the applicability of the management system requirements may be obtained by consulting the organization.
To check this certificate validity please call: +34917290240

UKAS Certificate Template dagile six v3.3 1 / 1 January 26, 2017

TABLE OF CONTENTS



FEVISA Ball Valves

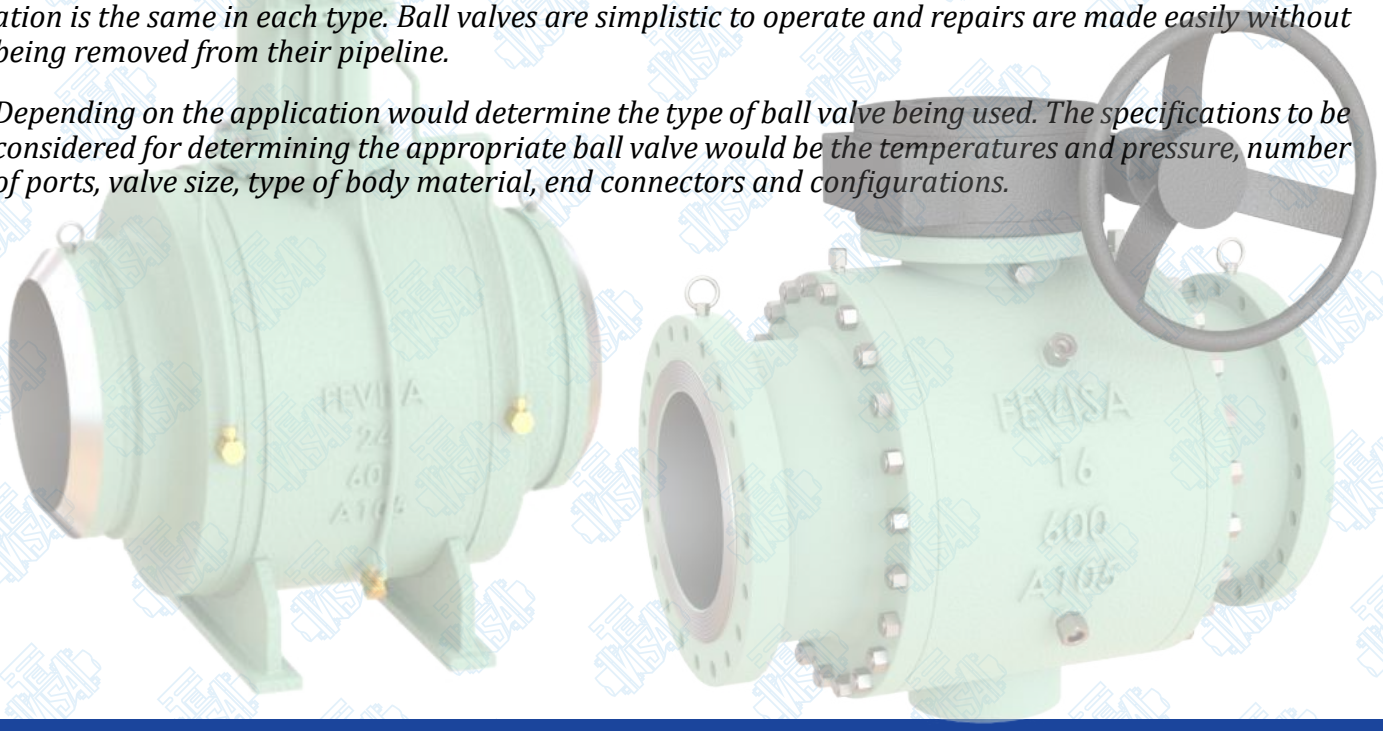
FEVISA Ball valve is a device with a spherical closure unit that provides on/off control of flow. Ball valves consist of a spherical obturator with a cylindrical hole, usually of the same diameter as the pipe, although it can be smaller. Operation is by rotation (Quarter-turn) of a shaft mounted (often horizontally) with its axis at right angles to the cylindrical hole. The sphere has a port, also known as a bore, through the center. When the valve is positioned such that the bore is aligned in the same direction as the pipeline, it is in open position and fluid can flow through it. When rotated 90 degrees, the bore becomes perpendicular to the flow path, meaning the valve is closed and the fluid cannot pass through.

Ball valves are the quick-acting type. The way a ball valve functions makes it easy to see if the valve is open or shut. They require a 90-degree turn of the actuator lever to either fully open or completely close the valve. This feature, coupled with the turbulent flow generated when the ball opening is partially open, limits the use of ball valves as a flow control device.

Ball valves are durable, performing well after many cycles, and reliable, closing securely even after long periods of disuse. Ball valves are known for reliable, bubble-tight sealing. Thus, they are a great choice for gas applications where tight shutoff is necessary. Due to the potential of constant wearing on the seats, ball valves are not ideal for throttling applications. The ball valve can have very low fluid resistance and consequently very high Cv values. The most common ball valves are considered to be two-way, which allows flow to travel linearly from the inlet to the exit. Furthermore, the three-way and four-way ball valves allow for flow to travel in multiple directions, including 90-degree angles.

Here are four general body styles of ball valves: Fully Welded,Split body, Side Entry, and Top-Entry. The difference is based on how the pieces of the valve are manufactured and assembled, but the valve operation is the same in each type. Ball valves are simplistic to operate and repairs are made easily without being removed from their pipeline.

Depending on the application would determine the type of ball valve being used. The specifications to be considered for determining the appropriate ball valve would be the temperatures and pressure, number of ports, valve size, type of body material, end connectors and configurations.



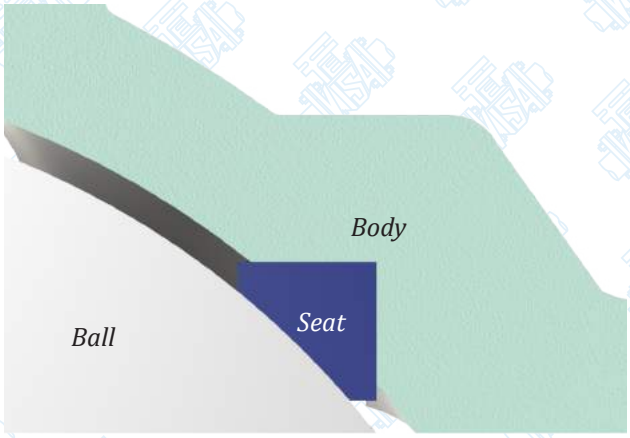
MAIN CHARACTERISTICS

1. *Quarter Turn Stop*
2. *Compact Size (Very small outstanding dimensions)*
3. *Round Bore*
4. *Very low pressure drop with "Reduced Bore" type and nil with "Full bore" type*
5. *Easy Operation*
6. *Low operating Torque permitting lower cost actuation.*
7. *Electric, Hydraulic and Pneumatic actuators easily fitted.*
8. *Double-sealing owing to the upstream and downstream seats which are adjustable at any time by ring with graphite back-up.*
9. *Automatic decompression device of the dead chamber.*
10. *Possibility of checking tightness of the valve while under pressure in the "open" or "shut" position.*
11. *Possibility of adapting a bleed valve.*
12. *No pollution of the conveyed fluids.*
13. *Useable in any position.*
14. *Economic, easy and fast maintenance. Furthermore and for the "top entry" pattern, by just removing the valve bonnets, free access is given to all internal parts. There is therefore no necessity of dismantling the valves from the pipes on which they are installed.*
15. *Interchangeable single parts*

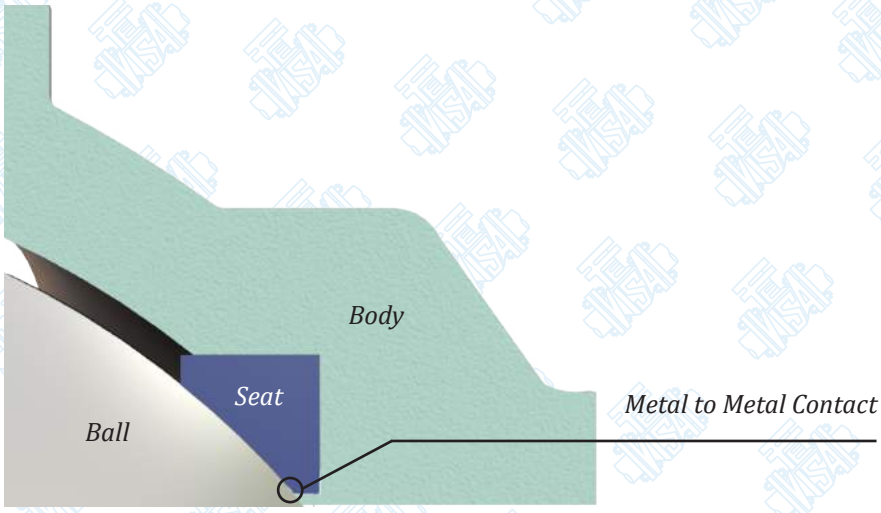
Dimensions and weights shown in the catalogue are only indicative figures. Actually and as a result of constant improvements imposed by industrial progress we may have to alter our patterns. We therefore do not bind ourselves to deliver material strictly in agreement with details shown on drawings or descriptions of this catalogue unless particular agreements.We reserve exclusive rights to our drawings, which can not be used by others for manufacturing similar equipment.

Ball Valve Design Feature

Fire Safe Seat Sealing



Before Fire Sealing

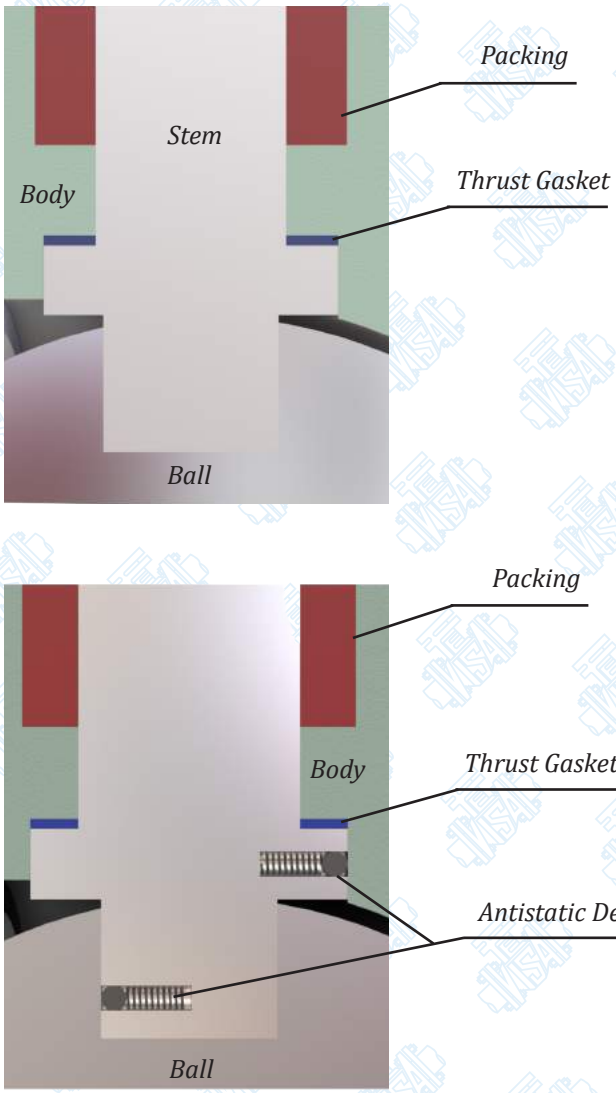


After Fire Sealing

FEVISA ball valves fire safe is designed in accordance with API 607 & API 6FA Specification, When non-metal resilient seats are destroyed in a fire, the upstream medium pressure push the ball into the downstream metal seat lip to cut off the line fluid and prevent the internal leakage due to a secondary metal-to-metal seals.

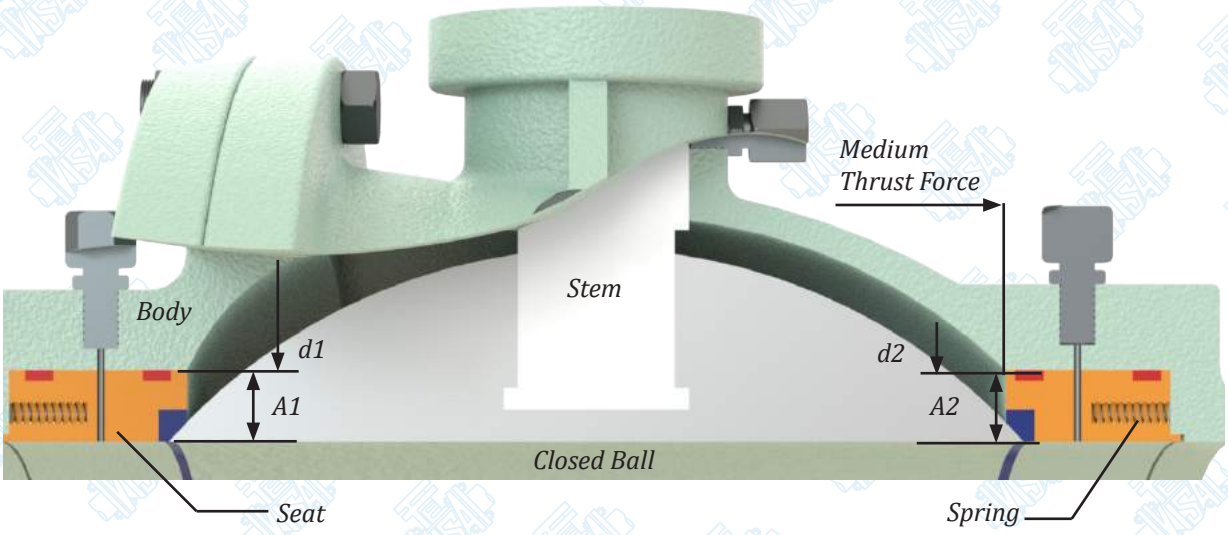
Ball Valve Design Feature

Blow-Out Proof Stem



The stem is designed with integral T-type shoulder to provide blow-out proof effectively. It is internally inserted as the backseat function to assure stem sealing safety at all pressures. Using the spring & stainless ball combined between the valve ball & stem and stem & body, it ensures all valve metal parts are grounding.

Ball Valve Design Feature



The effective sealing for valve seat

A) The sealing for upstream seat

The seat ring can be moved slightly along the valve axis, the pressure of upstream line and the spring thrust force acted on the seat ring area (A1), it is caused the piston action when the pressure is over the area (d1), which pushed the seat ring tightly against the surface of ball and resulting an effective seal for valve seat.

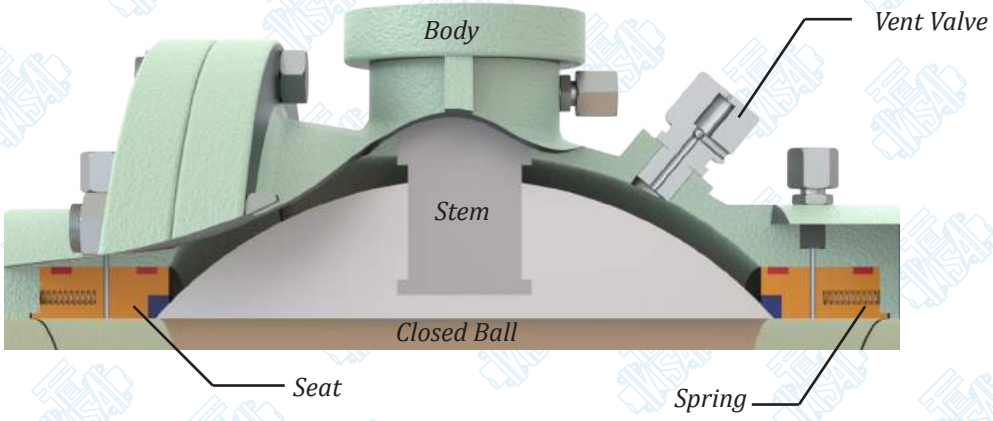
B) The sealing for downstream seat

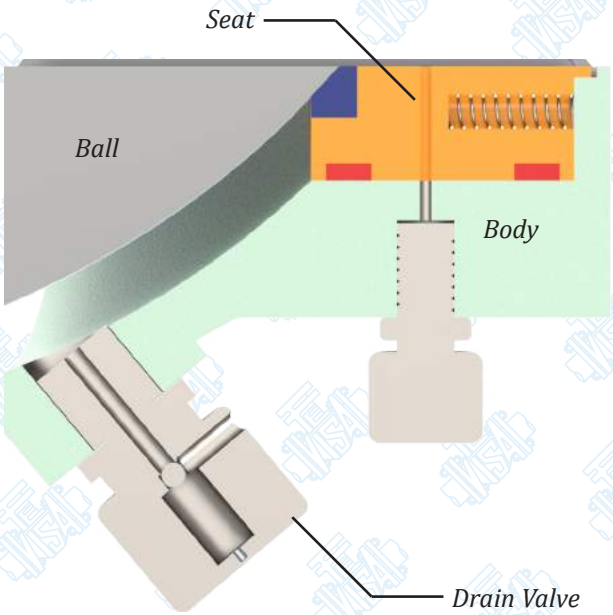
When the pressure in body cavity is lower than the downstream line and the thrust force, the net difference of pressure acted over the area (A2), it is caused the piston action when the pressure is over the area (d2), which pushed the seat ring tightly against the surface of ball, and resulting an effective seal for valve seat.

Self-Relieving Seat

When the body cavity pressure exceeds the downstream seat spring preloaded force, the differential force in the area (d2) pushes the downstream seat away from the ball, the body cavity pressure will automatically relieved. And then the seat returns to the ball under spring action.

Ball Valve Design Feature

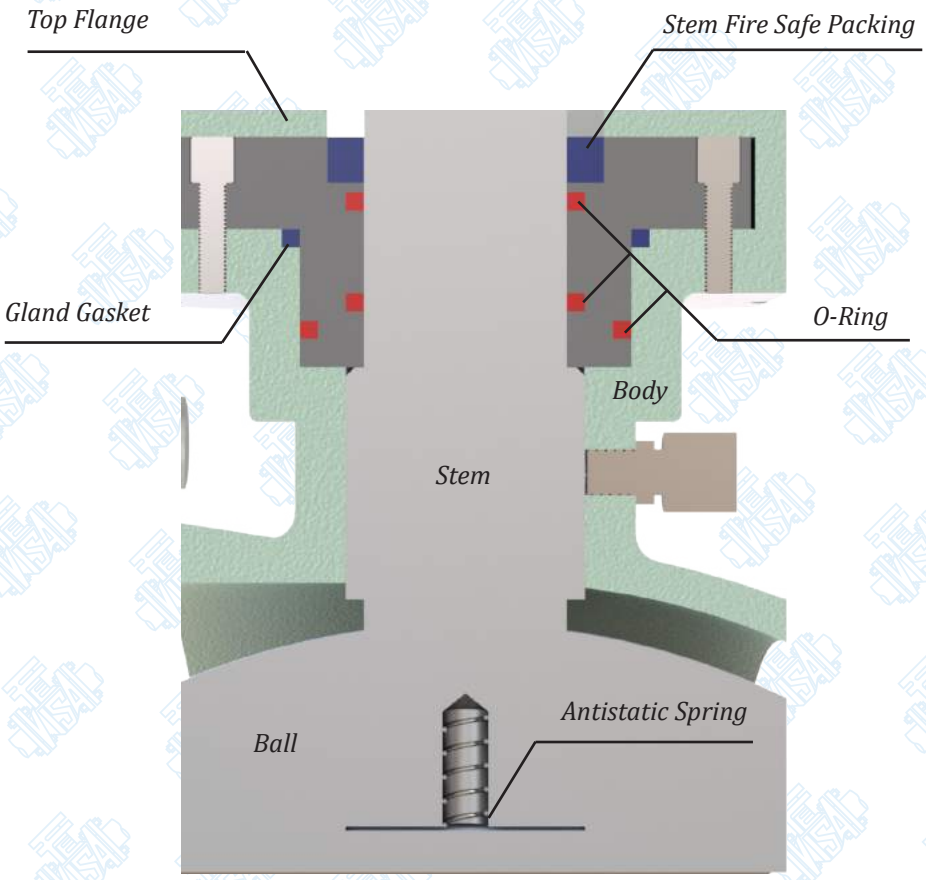




Double Block and Bleed

When the ball is in the closed position, each seat of the ball valve can cut off the medium independently on the upstream and downstream side to realize double-block functions. The body cavity is isolated from each side of the valve, the body cavity pressure could be released through the vent valve.

Ball Valve Design Feature



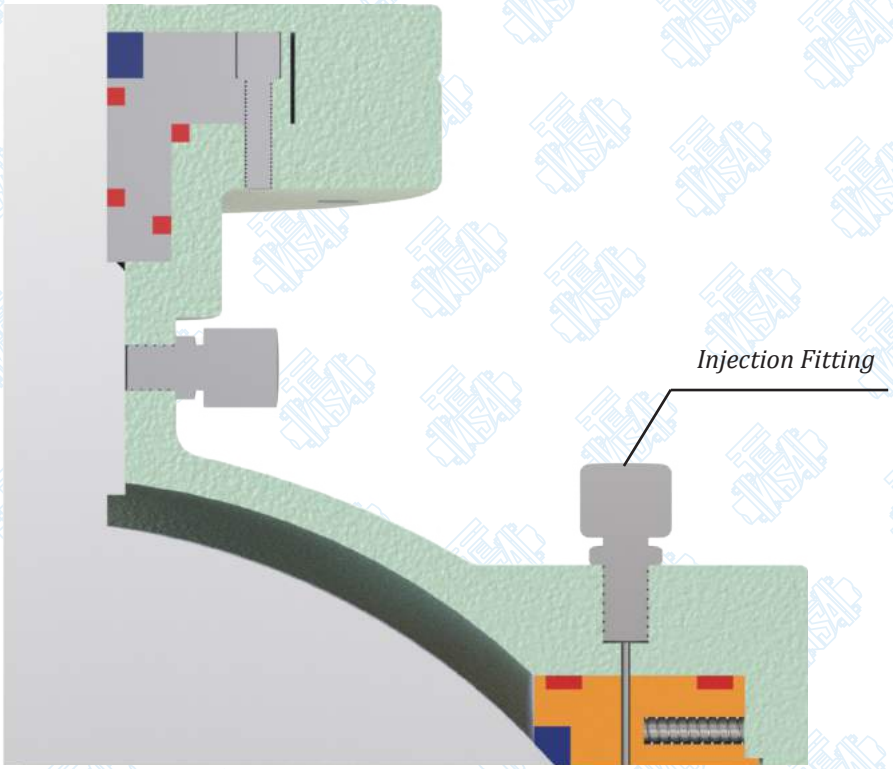
Blow-Out Proof Stem

The stem with integral T-type shoulder, supported by gland, which can be guaranteed not to be blow-out by the medium even if at abnormal risen pressure from the cavity.

Anti-Static Device

During turning of the stem to open or closing the valve, static electricity is easily caused by sparks generated by friction. Antistatic devices, assembled by a spring & a grounding plunger, which assure the electrical continuance between ball & stem and stem & body, to prevent the possible risk of fire or explosion.

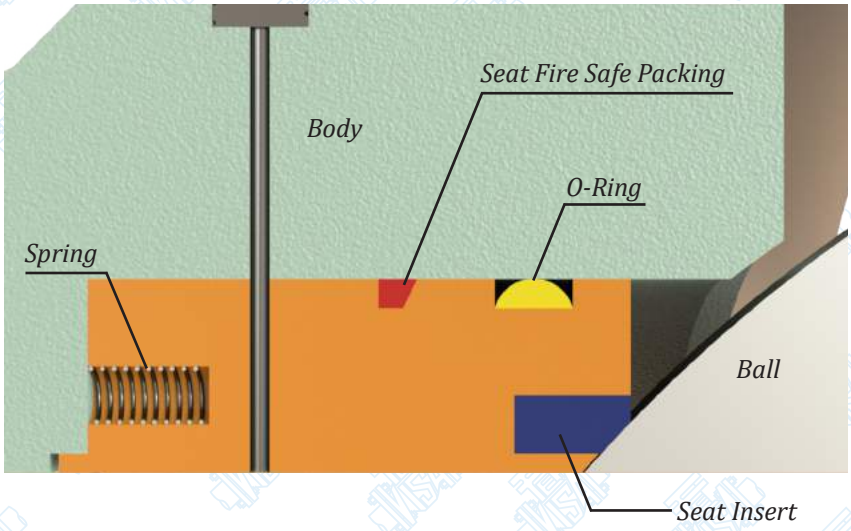
Ball Valve Design Feature

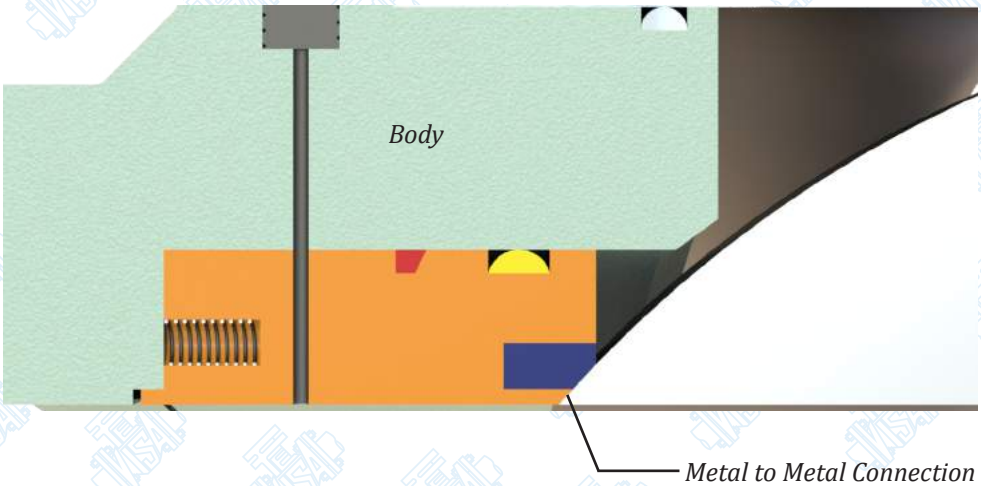


Emergency Sealant Injection System

Trunnion mounted ball valves, special sealants could be injected through sealant injection fittings which are located on the bonnet and the gland to obtain emergency sealing, In case of seat or stem O-ring are damaged and leakage occur by fire or other accidental. Fittings also internally installed a secondary check to provide backup sealing.

Ball Valve Design Feature

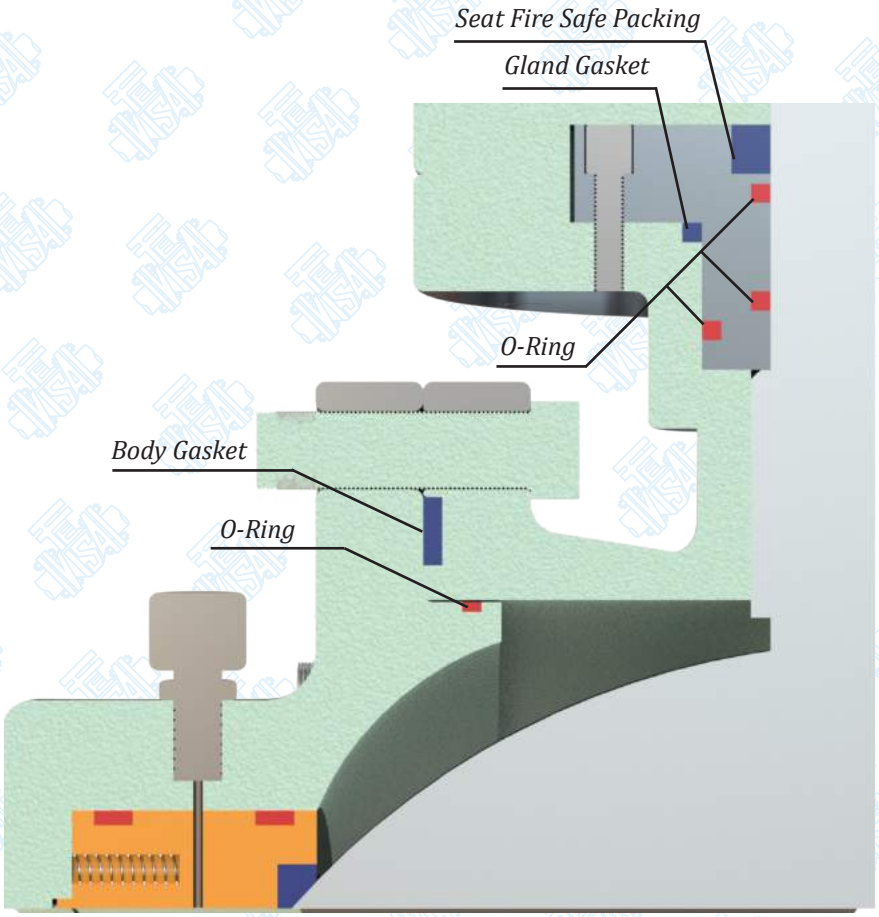




Fire Safe Design

a) Internal leakage prevention.

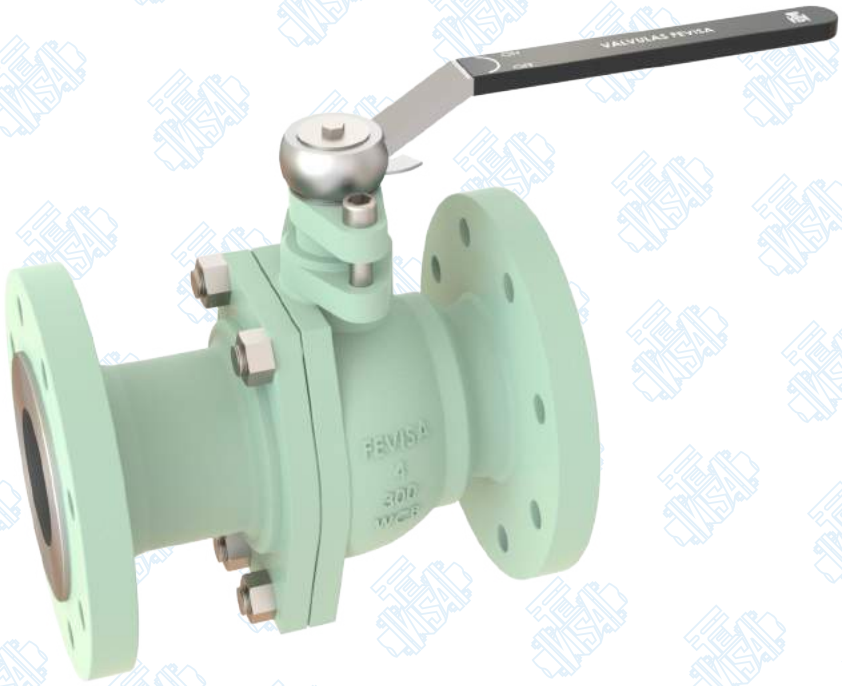
When seat insert, O-ring and spacer are damaged in a fire, the line pressure and the seat preloaded spring push the seat metal lip onto the ball surface to cut off the line fluid and prevent the internal leakage to reach the fire-safe purpose. Besides, the seat graphite packing can prevent fluid leakage between the valve body and the seat.



b) External leakage prevention

A combination of O-ring and graphite gasket on body & bonnet connection, body & gland connection, and stem & gland joint, can prevent the external leakage. When O-rings are damaged after a fire, body gasket, gland gasket, and stem packing, It is still on the performance of sealing and prevents external fluid leakage.

Cast Steel Floating Ball Valve



Features:

Valve Size
1/2" – 10"

Pressure Rating
150 LB ~ 600 LB

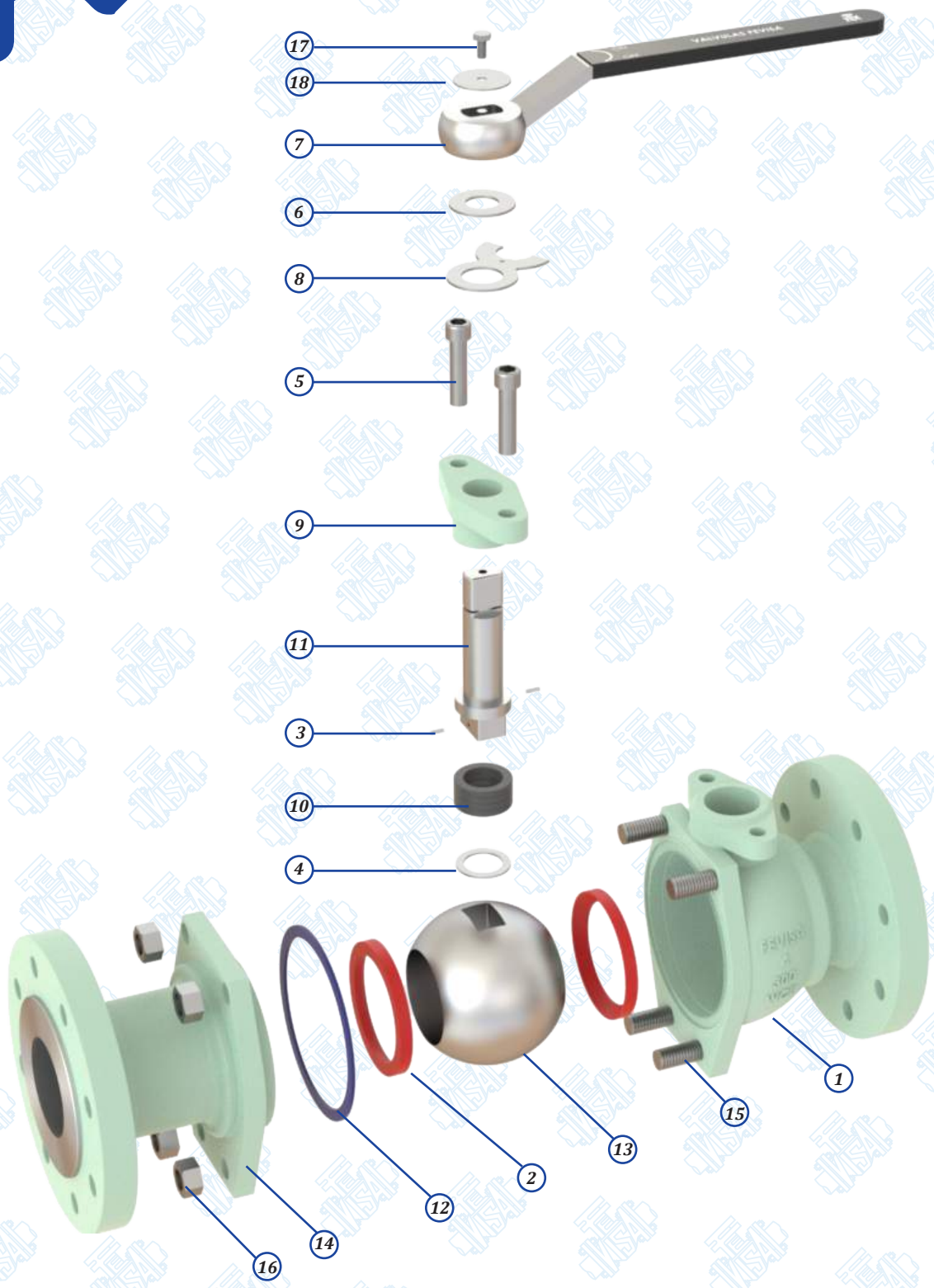
Design Features

- *Two Pieces Cast Steel Body*
- *Floating Ball, Full & Reduced Bore*
- *Anti-Static Device*
- *Blow-out Proof Stem*
- *Fire Safe Design*
- *Low Emission*

Standards:

Design	*API 6D*
Face to Face	*ASME B16.10/API 6D*
End Flange	*ASME B16.5*
BW End	*ASME B16.25*
Test	*API 598/ API 6D*
Fire Safe Test	*API 607/ API 6FA*
Special	*NACE MR-01-75*

Standard Materials of Constructions:



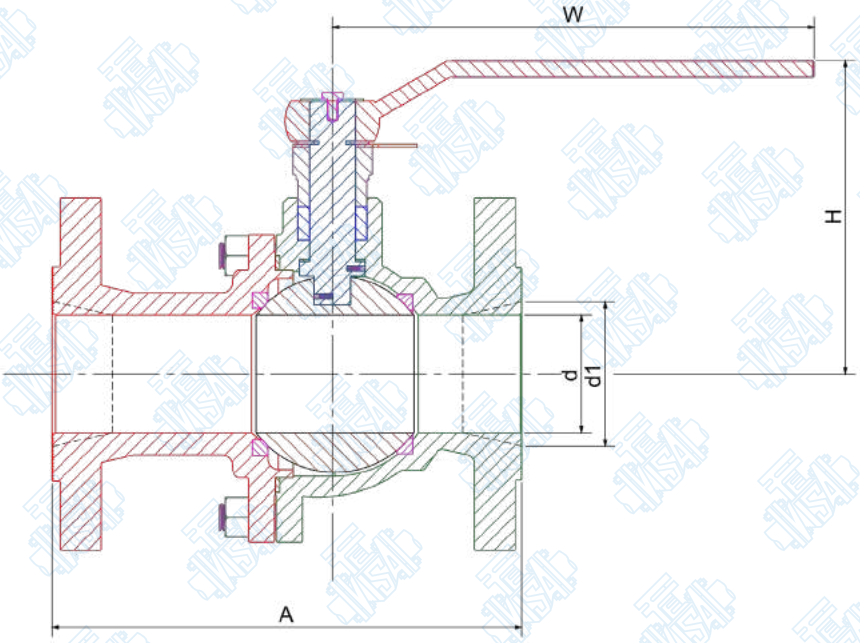
Cast Steel Floating Ball Valve

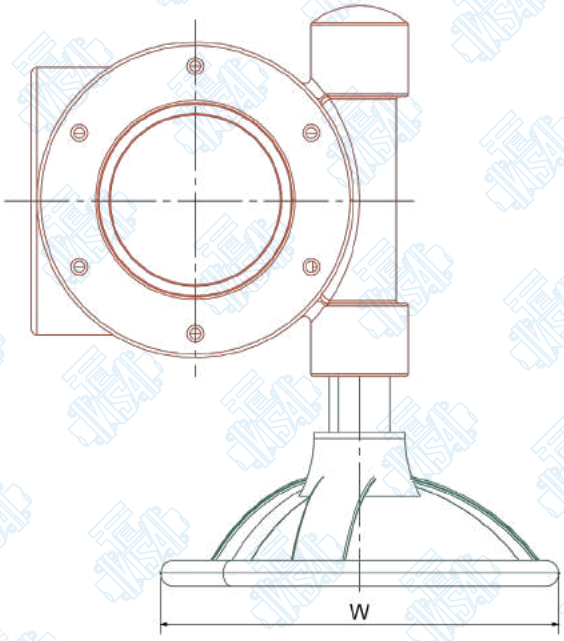
Material Specifications:

No.	Part	Material
1	Body	WCB, WCC, LCB, LCC, C5, C12, WC6, WC9, CF8, CF8M, CF3, CF3M, CA15, B62, etc
2	Seat	PTFE, RPTFE, CPTFE, PEEK, NYLON, DEVLON, PPL, DERLIN, MOLON, etc
3	Antistatic Spring	Stainless Steel, SS316
4	Thrust Washer	PTFE
5	Screw	ASTM A193 B7, B8
6	Retainer	Carbon Steel
7	Lever	A216 WCB, A216 WCB+Zn, A351 CF8M
8	Limited Plate	1015+Cr, Carbon Steel + Cr
9	Gland Flange	WCB, WCC, LCB, LCC, C5, C12, WC6, WC9, CF8, CF8M, CF3, CF3M, CA15, B62, etc
10	Packing	PTFE, Graphite
11	Stem	A105+ENP, A182 F6, F316, F316L, F304, F304L, 17-4PH, Bronze, etc
12	Body Gasket	PTFE, SS304+Graphite, SS316+Graphite
13	Ball	A105+ENP, A182 F6, SS316, SS316L, SS304, SS304L, Bronze, etc
14	Bonnet	WCB, WCC, LCB, LCC, C5, C12, WC6, WC9, CF8, CF8M, CF3, CF3M, CA15, B62, etc
15	Stud	A193 B7, B7M, B8, B8M, B16, L7, L7M
16	Nut	A194 2H, 2HM, 8, 8M, 4, 7, 7M
17	Stop Screw	1035+Cr
18	Steel Gasket	1025+Cr

*Recommended Spare Part

Dimensions and Weights:





Cast Steel Floating Ball Valve

Dimensions and Weights:

FULL BORE **Class 150**

Size	d	A	H	W	Weight
in	mm	mm	mm	mm	kg
½	13	108	75	130	2.3
¾	19	117	84	170	2.5
1	25	127	90	170	3.5
1 ½	38	165	127	250	7.3
2	49	178	140	250	9.8
2 ½	62	190	164	350	15
3	74	203	177	350	18
4	100	229	206	420	33
6	150	394	320	*1000	66
8	201	457	365	*1300	102
10	252	533	420	*1800	166

*Gear Operated

FULL BORE **Class 300**

Size	d	A	H	W	Weight
in	mm	mm	mm	mm	kg
½	13	140	75	130	3.5
¾	19	152	84	170	4.2
1	25	165	90	170	5.8
1 ½	38	190	127	250	10.5
2	49	216	140	250	14
2 ½	62	241	164	350	19
3	74	283	177	350	31
4	100	305	206	420	54
6	150	403	320	*1000	90
8	201	502	365	*1300	151

*Gear Operated

Cast Steel Floating Ball Valve

Dimensions and Weights:

FULL BORE **Class 600**

Size	d	A	H	W	Weight
in	mm	mm	mm	mm	kg
½	13	165	80	170	3.5
¾	19	190	89	200	5.0
1	25	216	95	200	7.5
1 ½	38	241	132	350	15.0
2	49	292	145	350	20.8
3	74	356	182	420	41
4	100	432	211	700	76

REDUCED BORE **Class 150**

Size	d	d1	A	H	W	Weight
in	mm	mm	mm	mm	mm	kg
3/4x1/2	13	19	117	75	130	2.7
1x3/4	19	25	127	84	170	3.0
1-1/2x1	25	38	165	90	170	4.3
2x1-1/2	38	49	178	127	250	9.5
2-1/2x2	49	62	190	140	250	12
3x2	49	74	203	140	250	16.5
4x3	74	100	229	177	350	24
6x4	100	150	394	206	420	43
8x6	150	201	457	320	*1000	85.5
10x8	201	252	533	365	*1300	132.6

*Gear Operated

Cast Steel Floating Ball Valve

Dimensions and Weights:

REDUCED BORE **Class 300**

Size	d	d1	A	H	W	Weight
in	mm	mm	mm	mm	mm	kg
3/4x1/2	13	19	152	75	130	4.0
1x3/4	19	25	165	84	170	5.0
1-1/2x1	25	38	190	90	170	7.0
2x1-1/2	38	49	216	127	250	12
2-1/2x2	49	62	241	140	250	17
3x2	49	74	283	140	250	21.5
4x3	74	100	305	177	350	37
6x4	100	150	403	206	420	66
8x6	150	201	419	320	*1000	127
10x8	201	252	457	365	*1300	196.5

*Gear Operated

REDUCED BORE **Class 600**

Size	d	d1	A	H	W	Weight
in	mm	mm	Mm	mm	mm	kg
3/4x1/2	13	19	190	80	170	4.0
1x3/4	19	25	216	89	200	5.0
1-1/2x1	25	38	241	95	200	10.5
2x1-1/2	38	49	292	132	350	14.7
3x2	49	74	356	145	350	29.0
4x3	74	100	432	182	420	56.0
6x4	100	150	559	211	700	95.0

*Gear Operated

Cast Steel Trunnion Mounted Ball Valve

Features:

Valve Size
2" – 60"

Pressure Rating
150 LB ~ 2500 LB

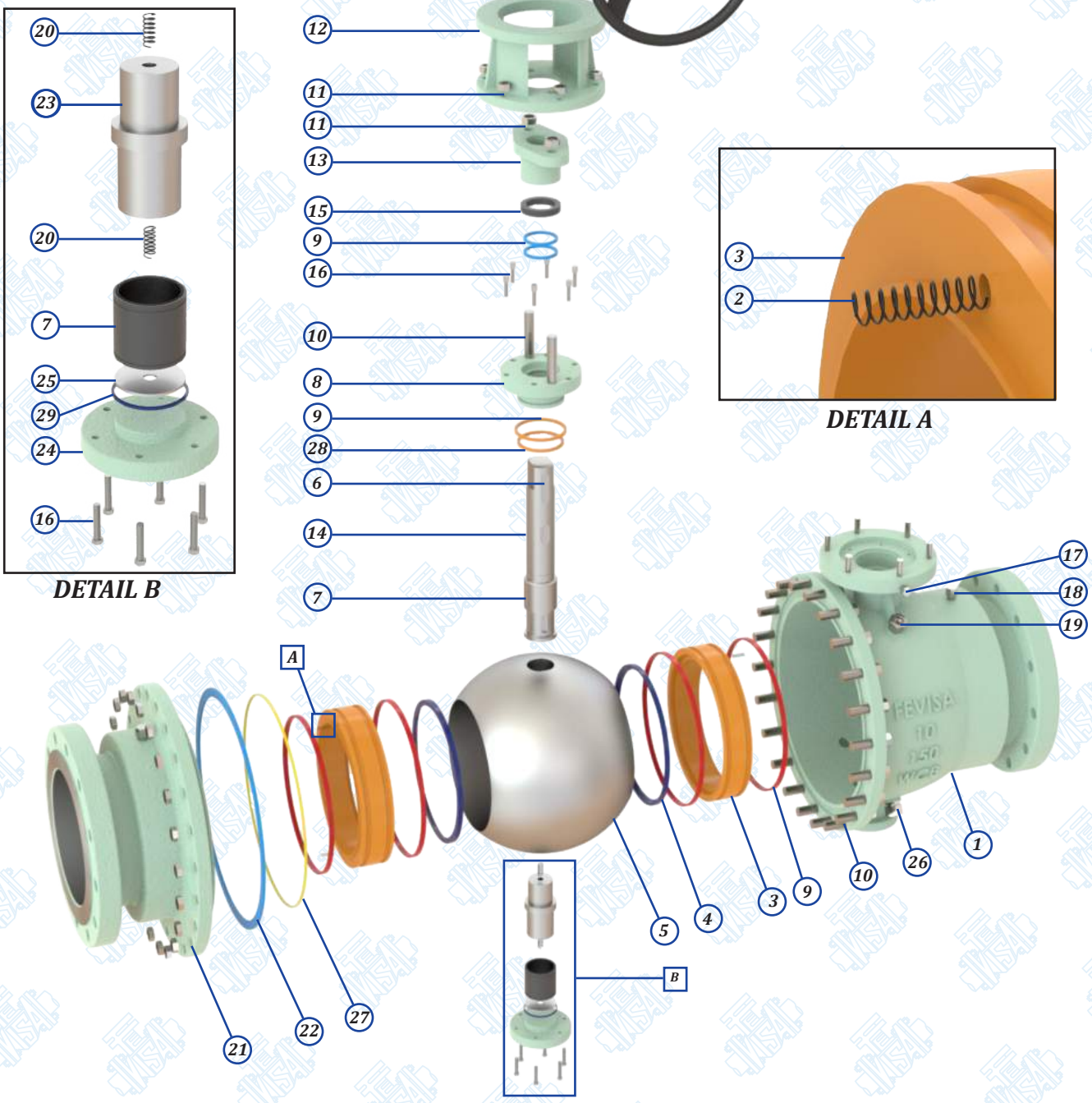
Design Features

- Two & Three Pieces Cast Steel Body
- Trunnion Mounted Ball, Full & Reduced Bore
- Anti-Static Device
- Blow-out Proof Stem
- Fire Safe Design
- Emergency Sealant Injector
- Vent Valve, Drain Valve
- Lifting lugs and Supporting Legs (8"& larger)

Standards:

Design	API 6D
Face to Face	ASME B16.10/API 6D
End Flange	ASME B16.5
BW End	ASME B16.25
Test	API 598/ API 6D
Fire Safe Test	API 607/ API 6FA
Special	NACE MR-01-75

Standard Materials of Constructions:

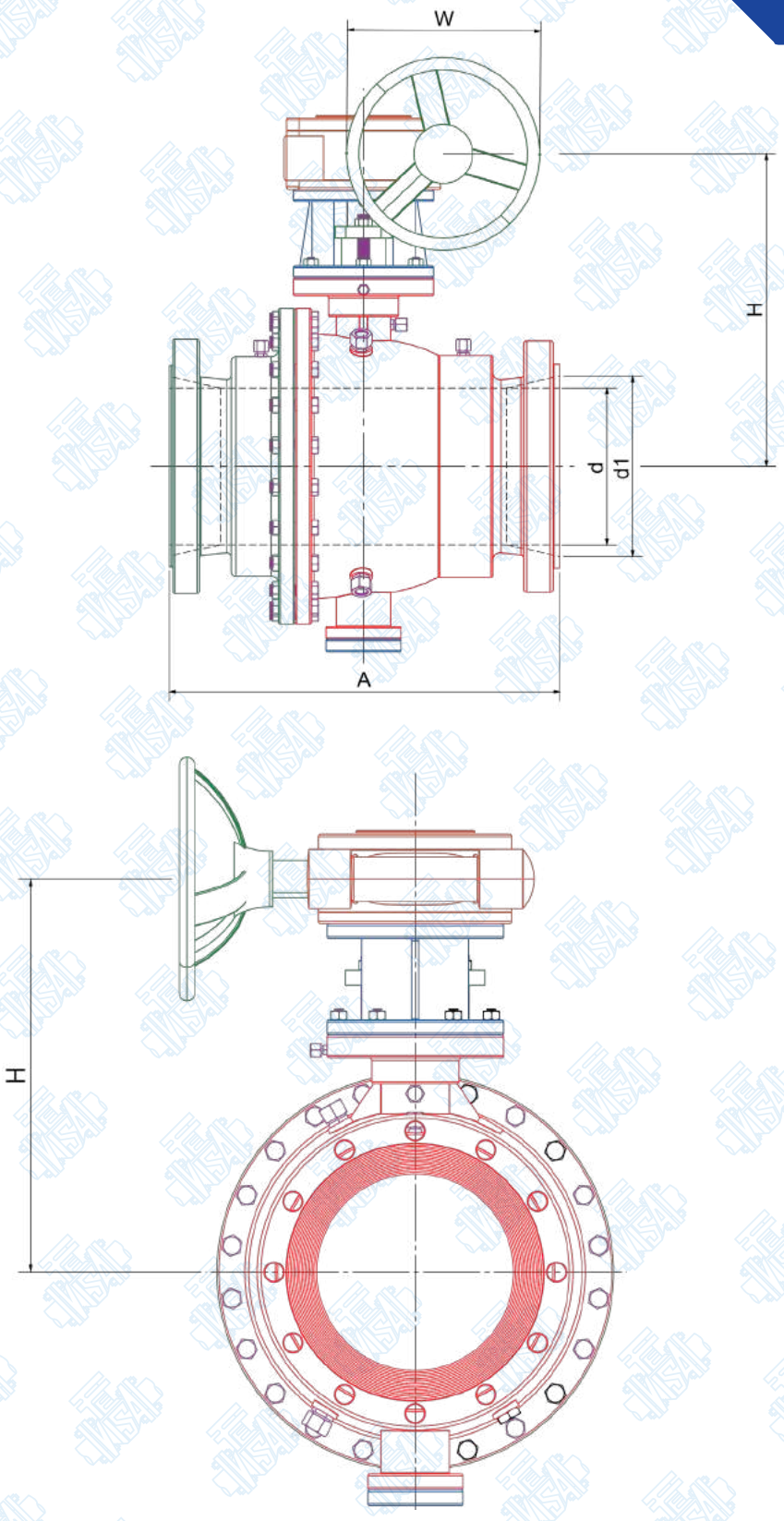


Material Specifications:

No.	Part	Material
1	Body	WCB, WCC, LCB, LCC, C5, C12, WC6, WC9, CF8, CF8M, CF3, CF3M, CA15, B62, etc
2	Seat Spring	Inconel X-750, SS304, SS316, 17-7PH
3	Seat Ring	A105+ENP, A182 F304, F316L, F316, F316L, F6, F51
4	Seat	PTFE, RPTFE, CPTFE, PEEK, NYLON, DEVLON, PPL, DERLIN, MOLON, etc
5	Ball	A105+ENP, A182 F6, SS316, SS316L, SS304, SS304L, Bronze, etc
6	Key	1045, A182 F304, F304L, F316, F316L
7	Sliding Bearing	Stainless Steel+PTFE, SS316+PTFE, SF1, Pb
8	Thrust Washer	PTFE
9	O-ring	NBR, Viton, PTFE
10	Stud	A193 B7, B7M, B8, B8M, B16, L7, L7M
11	Nut	A194 2H, 2HM, 8, 8M, 4, 7, 7M
12	Yoke	A216-WCB
13	Gland Flange	WCB, WCC, LCB, LCC, C5, C12, WC6, WC9, CF8, CF8M, CF3, CF3M, CA15, B62, etc
14	Stem	A105+ENP, A182-F6, F304,F316, F316L, F304L, 17-4PH, F51
15	Packing	PTFE, Graphite
16	Screw	A193 B7, B7M, B8, B8M, B16, L7, L7M
17	Stem Injection	1020+Zn, A182 F304, F304L, F316, F316L
18	Seat Injection	1020+Zn, A182 F304, F304L, F316, F316L
19	Vent Valve	1020+Zn, A182 F304, F304L, F316, F316L
20	Antistatic Spring	Stainless Steel, SS316
21	Bonnet	WCB, WCC, LCB, LCC, C5, C12, WC6, WC9, CF8, CF8M, CF3, CF3M, CA15, B62, etc
22	Body Gasket	PTFE, SS304+Graphite, SS316+Graphite
23	Trunnion	A105+ENP, A182-F6, F304, F304L, F316, F316L, 17-4PH, F51, etc
24	Bottom Cover	A105+ENP, A182-F6, F304,F316, F316L, F304L, 17-4PH, F51
25	Lower Gasket	PTFE, SS304+Graphite, SS316+Graphite
26	Drain Valve	1020+Zn, A182 F304, F304L, F316, F316L
27	Seat Sealing	Graphite
28	Gland Gasket	PTFE, SS304+Graphite, SS316+Graphite
29	Bottom Cover Gasket	PTFE, SS304+Graphite, SS316+Graphite
30	Gearbox	Assembly

*Recommended Spare Part

Dimensions and Weights:



Dimensions and Weights:

FULL BORE **Class 150**

Size	d	A	H	W	Weight
in	mm	mm	mm	mm	kg
2	49	178	140	250	15
3	74	203	177	350	24
4	100	229	206	420	40
6	150	394	305	*280	95
8	201	457	398	*320	170
10	252	533	495	*350	255
12	303	610	580	*400	390
14	334	686	625	*500	510
16	385	762	720	*500	820
18	436	864	770	*500	1010
20	489	914	840	*500	1828
24	591	1067	920	*600	2100

*Gear Operated

FULL BORE **Class 300**

Size	d	A	H	W	Weight
in	mm	mm	mm	mm	kg
2	49	216	140	250	18
3	74	283	177	350	33
4	100	305	206	420	55
6	150	403	305	*280	135
8	201	502	398	*320	210
10	252	568	495	*350	391
12	303	648	580	*400	550
14	334	762	625	*500	710
16	385	838	720	*500	1250
18	436	914	770	*500	1300
20	489	991	840	*500	2180
24	591	1143	920	*600	2930

*Gear Operated

Dimensions and Weights:

FULL BORE **Class 600**

Size	d	A	H	W	Weight
in	mm	mm	mm	mm	kg
2	49	292	145	350	25
3	74	356	182	420	50
4	100	432	211	700	56
6	150	559	435	*400	250
8	201	660	530	*500	437
10	252	787	615	*500	735
12	303	838	680	*500	1050
14	334	889	720	*600	1300
16	385	991	540	*600	1775
18	436	1092	590	*600	2100
20	489	1194	925	*600	3100
24	591	1397	980	*600	4750

*Gear Operated

REDUCED BORE **Class 150**

Size	d	d1	A	H	W	Weight
in	mm	mm	mm	mm	mm	kg
3X2	49	74	203	140	250	21
4X3	74	100	229	177	350	30
6X4	100	150	394	206	420	68
8X6	150	201	457	305	*280	115
10X8	201	252	533	398	*320	214
12X10	252	303	610	495	*350	284
14X12	303	335	686	580	*400	418
16X14	334	385	762	625	*500	612
18X16	385	436	864	720	*500	970
20X18	436	489	914	770	*500	1137
24X20	489	591	1067	840	*500	2000

*Gear Operated

Dimensions and Weights:

REDUCED BORE **Class 300**

Size	d	d1	A	H	W	Weight
in	mm	mm	mm	mm	mm	kg
3X2	49	74	283	140	250	25
4X3	74	100	305	177	350	41
6X4	100	150	403	206	420	92
8X6	150	201	502	305	*280	164
10X8	201	252	568	398	*320	350
12X10	252	303	648	495	*350	400
14X12	303	335	762	580	*400	590
16X14	334	385	838	625	*500	850
18X16	385	436	914	720	*500	1220
20X18	436	489	991	770	*500	1460
24X20	489	591	1143	840	*500	2220

*Gear Operated

REDUCED BORE **Class 600**

Size	d	d1	A	H	W	Weight
in	mm	mm	mm	mm	mm	kg
3X2	49	74	356	145	350	39
4X3	74	100	432	182	420	65
6X4	100	150	559	211	700	136
8X6	150	201	660	435	*400	292
10X8	201	252	787	530	*500	505
12X10	252	303	838	615	*500	760
14X12	303	335	889	680	*500	1105
16X14	334	385	991	420	*600	1417
18X16	385	436	1092	840	*600	1955
20X18	436	489	1194	890	*600	2380
24X20	489	591	1397	925	*600	3640

*Gear Operated

Forged Steel Trunnion Mounted Ball Valve

Features:

Valve Size
2" – 60"

Pressure Rating
150 LB ~ 2500 LB

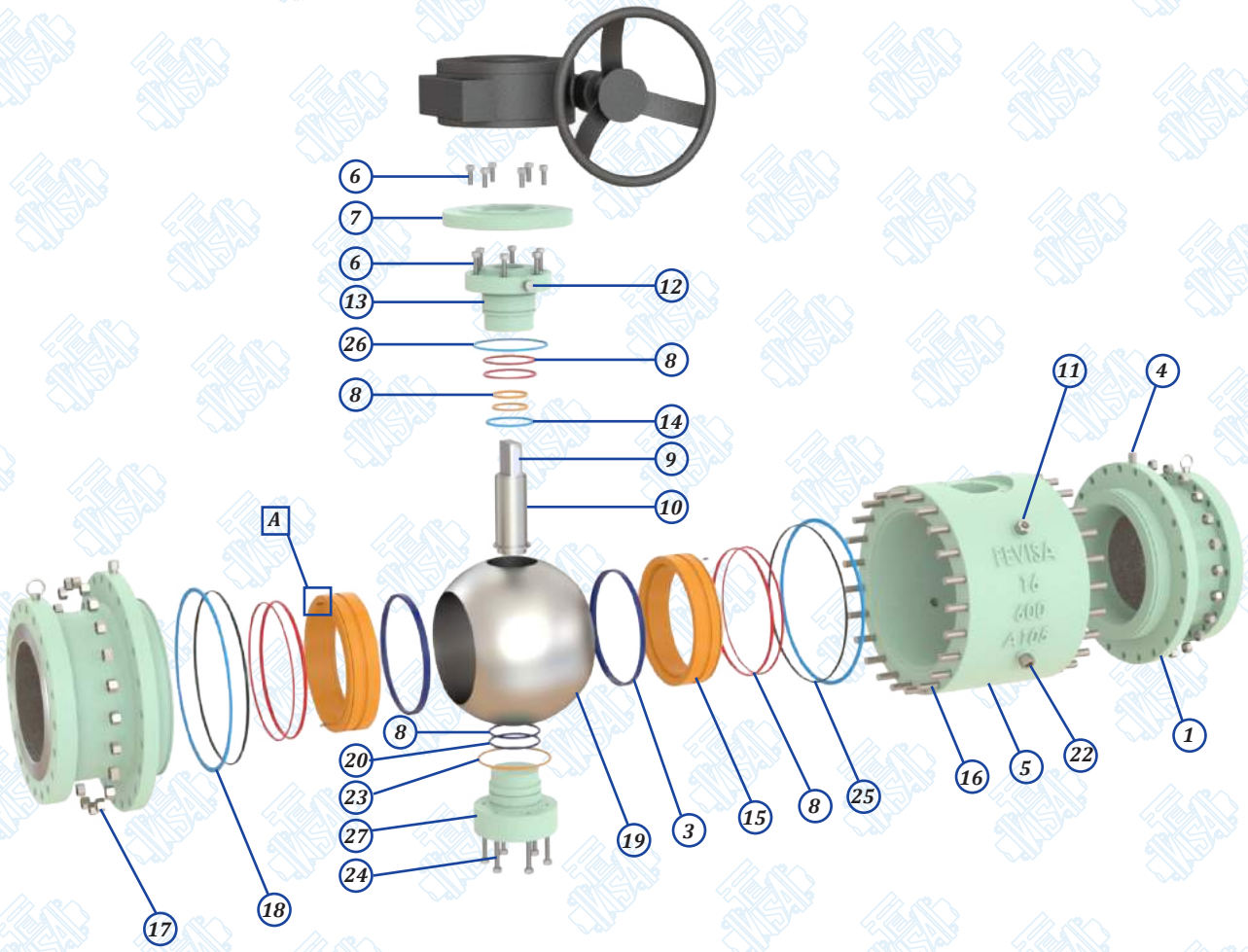
Design Features

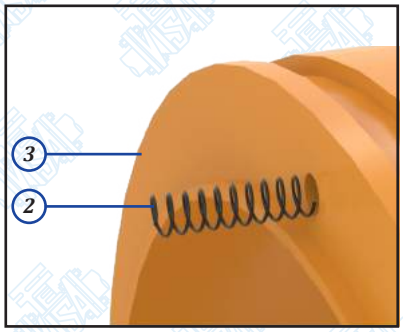
- Two & Three Pieces Cast Steel Body
- Trunnion Mounted Ball, Full & Reduced Bore
- Anti-Static Device
- Blow-out Proof Stem
- Fire Safe Design
- Emergency Sealant Injector
- Vent Valve, Drain Valve
- Lifting lugs and Supporting Legs (8"& larger)

Standards:

Design	API 6D
Face to Face	ASME B16.10/API 6D
End Flange	ASME B16.5
BW End	ASME B16.25
Test	API 598/ API 6D
Fire Safe Test	API 607/ API 6FA
Special	NACE MR-01-75

Standard Materials of Constructions:





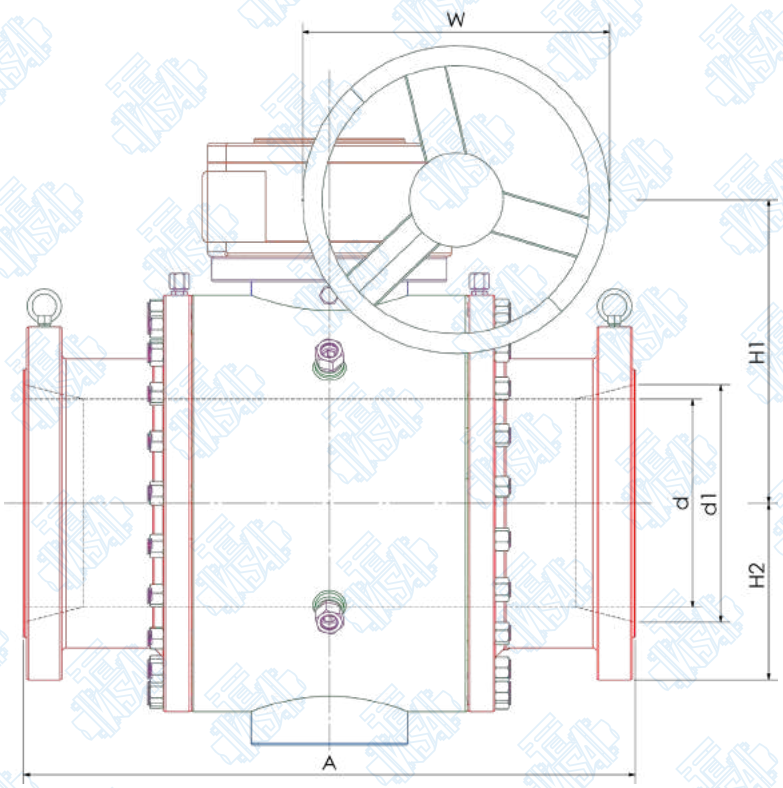
DETAIL A

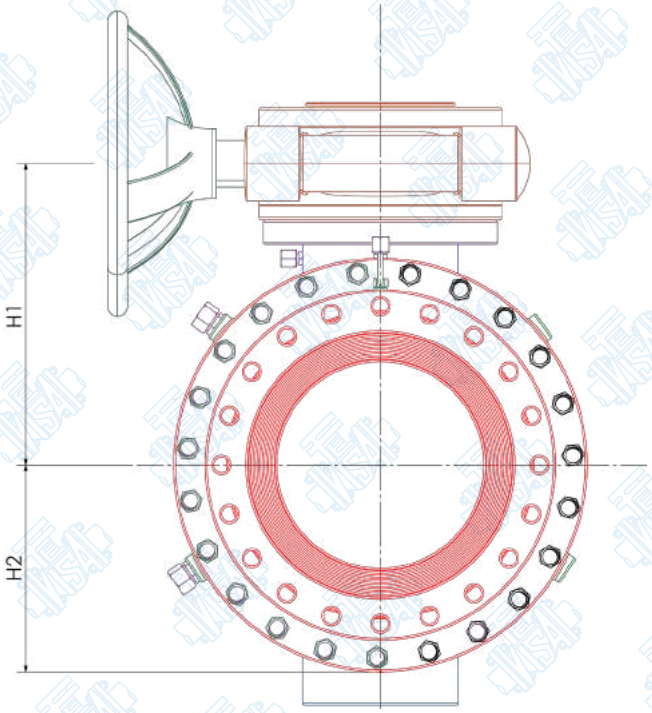
Material Specifications:

No.	Part	Material
1	Bonnet	A105, LF2, F5, F11, F22, F304(L), F316(L), F321, F347, F51, F55, INCONEL, MONEL, HASTELLOY C, etc
2	Seat Spring	Inconel X-750, SS304, SS316, 17-7PH
3	Seat	PTFE, RPTFE, CPTFE, PEEK, NYLON, DEVLON, PPL, DERLIN, MOLON, etc
4	Seat Injection	1020+Zn, A182 F304, F304L, F316, F316L
5	Body	A105, LF2, F5, F11, F22, F304(L), F316(L), F321, F347, F51, F55, INCONEL, MONEL, HASTELLOY C, etc
6	Screw	A193 B7, B7M, B8, B8M, B16, L7, L7M
7	Top Flange	A105, A182 F304
8	O-ring	NBR, Viton, PTFE
9	Key	1045, A182 F304, F304L, F316, F316L
10	Stem	A105+ENP, A182-F6, F304,F316, F316L, F304L, 17-4PH, F51
11	Vent Valve	1020+Zn, A182 F304, F304L, F316, F316L
12	Stem Injection	1020+Zn, A182 F304, F304L, F316, F316L
13	Sliding Bearing	Stainless Steel+PTEF, SS316+PTFE
14	Thrust Washer	PTFE
15	Seat Ring	A105+ENP, A182 F304, F316L, F316, F316L, F6, F51
16	Stud	A193 B7, B7M, B8, B8M, B16, L7, L7M
17	Nut	A194 2H, 2HM, 8, 8M, 4, 7, 7M
18	Body Gasket	PTFE, SS304+Graphite, SS316+Graphite
19	Ball	A105+ENP, A182 F6, SS316, SS316L, SS304, SS304L, Bronze, etc
20	Lower Gasket	PTFE, SS304+Graphite, SS316+Graphite
21	Drain Valve	1020+Zn, A182 F304, F304L, F316, F316L
22	Antistatic Spring	Stainless Steel, SS316
23	Trunnion	A105+ENP, A182-F6, F304, F304L, F316, F316L, 17-4PH, F51, etc
24	Screw	A193 B7, B7M, B8, B8M, B16, L7, L7M
25	Seat Sealing	Graphite
26	Gland Gasket	PTFE, SS304+Graphite, SS316+Graphite
27	Bottom Cover Gasket	PTFE, SS304+Graphite, SS316+Graphite
28	Gearbox	Assembly

*Recommended Spare Part

Dimensions and Weights:





Dimensions and Weights:

FULL BORE **Class 150**

Size	d	A	H1	H2	W	Weight
in	mm	mm	mm	mm	mm	kg
2	49	170	180	138	265	30
3	74	203	190	150	285	60
4	100	229	212	170	285	92
6	150	394	277	183	*400	190
8	201	457	301	216	*400	345
10	252	533	359	260	*500	495
12	303	610	419	287	*600	705
14	335	686	460	338	*600	859
16	385	762	494	375	*600	1020
18	436	864	521	402	*600	1440
20	489	914	656	427	*600	1918
22	540	991	733	480	*600	2352
24	591	1067	795	518	*700	2803
26	635	1143	870	535	*800	3200
28	686	1245	935	542	*800	4045
30	737	1295	1010	605	*800	4820
32	781	1372	1060	650	*800	5490
34	832	1473	1077	650	*800	6704
36	876	1524	1115	700	*800	7615
40	978	1727	1400	865	*800	10271

*Gear Operated

Dimensions and Weights:

FULL BORE **Class 300**

Size	d	A	H1	H2	W	Weight
in	mm	mm	mm	mm	mm	kg
2	49	216	180	138	265	31
3	74	283	190	150	285	69
4	100	305	212	170	285	110
6	150	403	277	183	*400	211
8	201	502	308	217	*500	376
10	252	568	381	265	*600	540
12	303	648	429	307	*600	763
14	335	762	460	338	*600	900
16	385	838	581	375	*600	1300
18	436	914	674	414	*700	1715
20	489	991	713	450	*700	2090
22	540	1092	780	492	*700	2220
24	591	1143	850	531	*700	2890
28	686	1346	958	556	*800	4575
30	737	1397	1035	620	*800	5590
32	781	1524	1087	666	*800	6240
34	832	1626	1104	666	*800	7370
36	876	1727	1143	718	*800	8435
40	978	1930	1435	887	*800	11200

*Gear Operated

Dimensions and Weights:

FULL BORE **Class 600**

Size	d	A	H1	H2	W	Weight
in	mm	mm	mm	mm	mm	kg
2	49	292	172	130	285	45
3	74	356	205	150	400	80
4	100	432	308	170	755	150
6	150	559	274	185	*500	248
8	201	660	342	223	*600	438
10	252	787	393	270	*600	701
12	303	838	522	310	*600	925
14	335	889	551	340	*600	1230
16	385	991	637	378	*700	1535
18	436	1092	583	418	*760	2135
20	489	1194	719	451	*760	2640
22	540	1295	754	492	*800	3370
24	591	1397	823	539	*800	3960
28	686	1549	958	556	*800	6060
30	737	1651	1035	620	*800	6690
32	781	1778	1087	666	*800	7825
34	832	1930	1104	666	*800	8460
36	876	2083	1143	718	*800	10650
40	978	2337	1435	887	*800	14700

*Gear Operated

Dimensions and Weights:

FULL BORE **Class 900**

Size	d	A	H1	H2	W	Weight
in	mm	mm	mm	mm	mm	kg
2	49	371	193	136	400	52
3	74	384	302	158	755	87
4	100	460	332	180	*400	160
6	150	613	320	187	*600	385
8	201	740	365	226	*600	560
10	252	841	495	280	*600	820
12	303	968	600	329	*700	1125
14	322	1038	625	390	*760	1610
16	373	1140	675	407	*760	2010
18	423	1232	715	526	*760	2810
20	471	1334	750	600	*760	3460
22	524	1422	780	640	*800	4410
24	570	1568	800	690	*800	5497
28	667	1753	987	573	*800	10202
30	714	1880	1066	638	*800	11442
32	762	2032	1120	686	*800	12102
34	810	2159	1137	688	*800	17462
36	857	2286	1177	739	*800	20154

*Gear Operated

Dimensions and Weights:

FULL BORE **Class 1500**

Size	d	A	H1	H2	W	Weight
in	mm	mm	mm	mm	mm	kg
2	49	371	193	150	400	60
3	74	473	270	168	1135	115
4	100	549	275	176	*500	194
6	144	711	325	203	*600	580
8	192	841	501	248	*700	752
10	239	1000	536	297	*760	1195
12	287	1146	614	357	*760	1970
14	315	1276	662	383	*760	2250
16	360	1407	700	434	*760	2760
18	406	1559	750	506	*760	3646
20	454	1686	864	586	*800	4497
22	495	1816	925	631	*800	5731
24	546	1972	1065	675	*800	7151

*Gear Operated

FULL BORE **Class 2500**

Size	d	A	H1	H2	W	Weight
in	mm	mm	mm	mm	mm	kg
2	42	454	230	121	815	90
3	62	584	284	146	*500	200
4	87	683	303	164	*500	385
6	131	927	394	220	*600	778
8	179	1038	488	312	*700	1352
10	223	1292	600	425	*760	2137
12	265	1445	872	629	*760	3267

*Gear Operated

Dimensions and Weights:

REDUCED BORE **Class 150**

Size	d	d1	A	H1	H2	W	Weight
in	mm	mm	mm	mm	mm	mm	kg
2x1-1/2	38	49	178	140	110	250	26
3x2	49	74	203	180	130	265	34
4x3	74	100	229	190	150	285	62
6x4	100	150	394	212	170	285	102
8x6	150	201	457	277	183	*400	225
10x8	201	252	533	301	216	*400	373
12x10	252	303	610	359	260	*500	533
14x12	303	335	686	419	287	*600	730
16x14	335	385	762	460	338	*600	790
18x16	385	436	864	494	375	*600	1095
20x18	436	489	914	521	402	*600	1152
22x18	436	540	991	521	402	*600	2343
24x20	489	591	1067	656	427	*600	2060
26x22	540	635	1143	733	480	*600	2215
28x24	591	686	1245	795	518	*700	2700
30x24	591	737	1295	795	518	*700	2918
32x26	635	781	1372	870	535	*800	4005
34x28	686	832	1473	935	542	*800	4445
36x30	737	876	1524	1010	605	*800	4995
40x34	832	978	1727	1077	650	*800	8200

Dimensions and Weights:

REDUCED BORE **Class 300**

Size	d	d1	A	H1	H2	W	Weight
in	mm	mm	mm	mm	mm	mm	kg
2x1-1/2	38	49	216	140	110	250	30
3x2	49	74	283	180	130	265	37
4x3	74	100	305	190	150	285	74
6x4	100	150	403	212	170	400	142
8x6	150	201	502	277	183	*400	253
10x8	201	252	568	308	217	*500	410
12x10	252	303	648	381	265	*600	580
14x12	303	335	762	429	307	*600	830
16x14	335	385	838	460	338	*600	970
18x16	385	436	914	581	375	*600	1530
20x18	436	489	991	974	414	*700	1830
22x18	436	540	1092	974	414	*700	2010
24x20	489	591	1143	713	450	*700	2220
28x24	591	686	1346	850	531	*760	3200
30x24	591	737	1397	850	531	*760	3200
34x28	686	832	1626	958	556	*800	4845
36x30	737	876	1727	1035	620	*800	6100
40x34	832	978	1930	1104	666	*800	8200

*Gear Operated

Dimensions and Weights:

REDUCED BORE **Class 600**

Size	d	d1	A	H1	H2	W	Weight
in	mm	mm	mm	mm	mm	mm	kg
2x1-1/2	38	49	292	164	110	265	40
3x2	49	74	356	172	130	285	54
4x3	74	100	432	205	150	400	99
6x4	100	150	559	308	170	755	212
8x6	150	201	660	274	185	*500	304
10x8	201	252	787	342	223	*600	510
12x10	252	303	838	393	270	*600	902
14x12	303	335	889	522	310	*600	1090
16x14	335	385	991	551	340	*600	1310
18x16	385	436	1092	637	378	*600	1640
20x18	436	489	1194	683	418	*760	2270
22x18	436	540	1295	683	418	*760	2430
24x20	489	591	1397	719	451	*760	3440
28x24	591	686	1549	823	539	*800	4250
30x24	591	737	1651	823	539	*800	4730
34x28	686	832	1930	958	556	*800	7200
36x30	737	876	2083	1035	620	*800	8600
40x34	832	978	2337	1104	666	*800	10020

*Gear Operated

Dimensions and Weights:

REDUCED BORE **Class 900**

Size	d	d1	A	H1	H2	W	Weight
in	mm	mm	mm	mm	mm	mm	kg
2x1-1/2	38	49	371	175	110	285	45
3x2	49	74	384	193	136	400	56
4x3	74	100	460	302	158	755	94
6x4	100	150	613	332	180	*400	226
8x6	150	201	740	320	187	*600	480
10x8	201	252	841	365	226	*600	650
12x10	252	303	968	495	280	*600	868
14x12	303	322	1038	600	329	*700	1310
16x14	322	373	1140	625	390	*760	1830
18x16	373	423	1232	675	407	*760	2205
20x18	423	471	1334	715	526	*760	3140
22x18	423	522	1422	715	526	*760	3288
24x20	471	570	1568	750	600	*760	3810
28x24	570	667	1753	800	690	*800	7580
30x24	570	714	1880	945	547	*800	7981
34x28	667	810	2159	987	573	*800	11202
36x30	714	857	2286	1066	638	*800	15653

*Gear Operated

Dimensions and Weights:

REDUCED BORE **Class 1500**

Size	d	d1	A	H1	H2	W	Weight
in	mm	mm	mm	mm	mm	mm	kg
2x1-1/2	38	49	371	183	110	285	56
3x2	49	74	473	193	150	400	82
4x3	74	100	549	270	168	1135	150
6x4	100	144	711	275	176	*500	295
8x6	144	192	841	325	203	*600	960
10x8	192	239	1000	501	248	*700	930
12x10	239	287	1146	536	297	*700	1340
14x12	287	315	1276	614	357	*760	2070
16x14	315	360	1407	662	383	*760	2470
18x16	360	406	1559	700	434	*760	2950
20x18	406	454	1686	750	506	*760	3350
22x18	406	495	1816	750	506	*800	3600
24x20	406	546	1972	864	586	*800	5850

*Gear Operated

REDUCED BORE **Class 2500**

Size	d	d1	A	H1	H2	W	Weight
in	mm	mm	mm	mm	mm	mm	kg
2x1-1/2	38	42	454	170	100	400	80
3x2	42	62	584	230	121	815	160
4x3	62	87	683	284	146	*500	320
6x4	87	131	927	303	164	*500	640
8x6	131	179	1038	360	365	*600	1170
10x8	179	223	1292	420	410	*760	1919
12x10	223	265	1445	509	470	*760	2972

*Gear Operated

Top Entry Cast Steel Ball Valve

Features:

Valve Size
2" – 30"

Pressure Rating
150 LB ~ 1500 LB

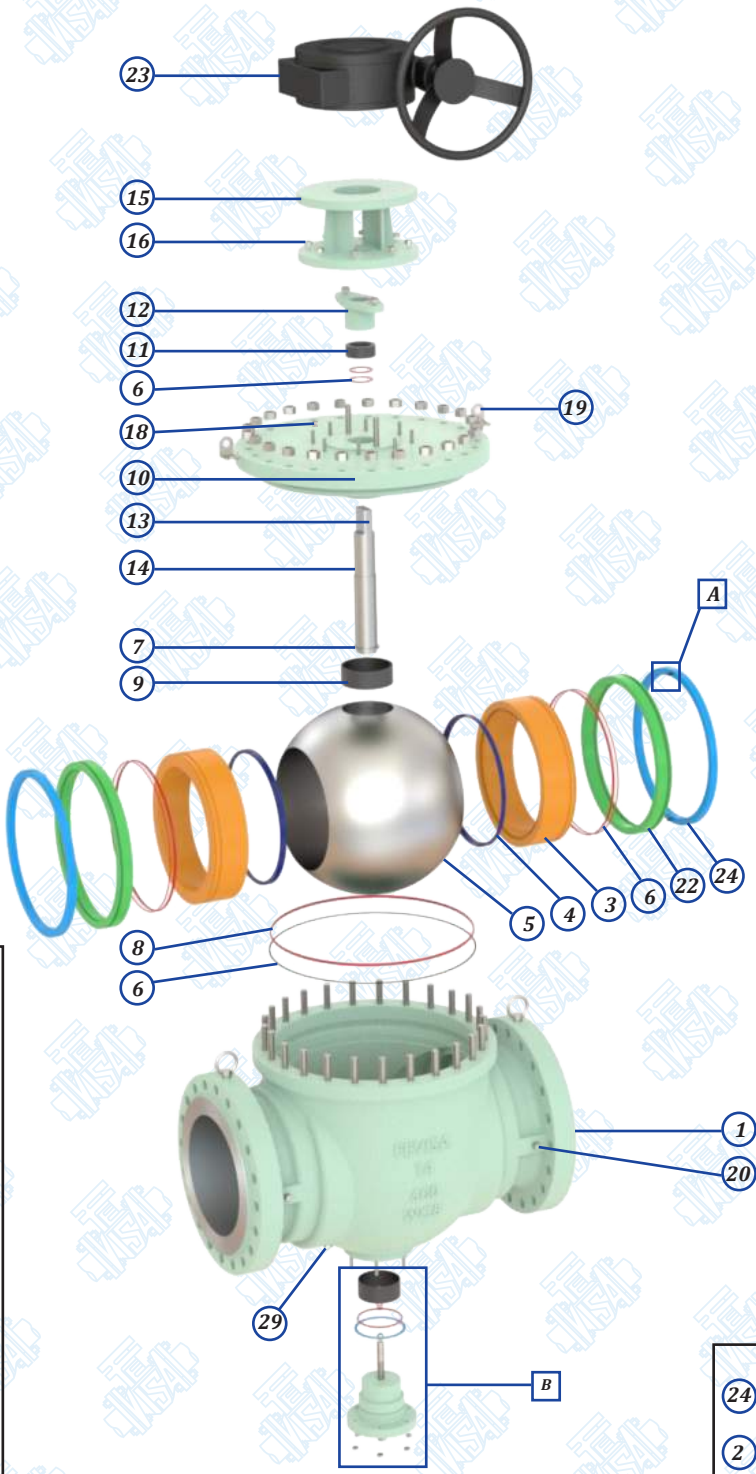
Standards:

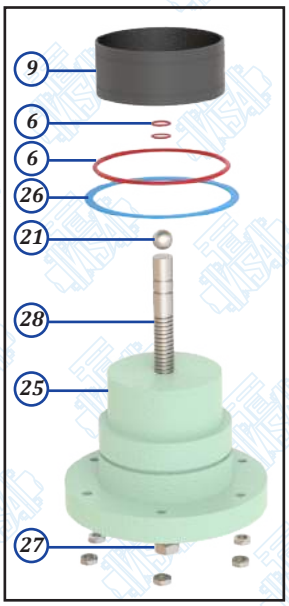
Design	*ASME B16.34/API 6D*
Face to Face	*ASME B16.10*
End Flange	*ASME B16.5*
BW End	*ASME B16.25*
Test	*API 598/ API 6D*
Fire Safe Test	*API 607/ API 6FA*
Special	*NACE MR-01-75*

Design Features

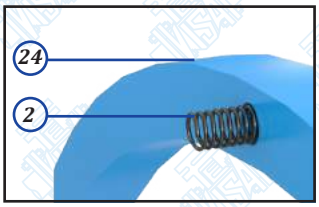
- *The Monolithic Cast Steel Body*
- *Floating & Trunnion Mounted Ball, Full & Reduced Bore*
- *Anti-Static Device*
- *Blow-out Proof Stem*
- *Fire Safe Design*
- *Emergency Sealant Injector*

Standard Materials of Constructions:





DETAIL B



DETAIL A

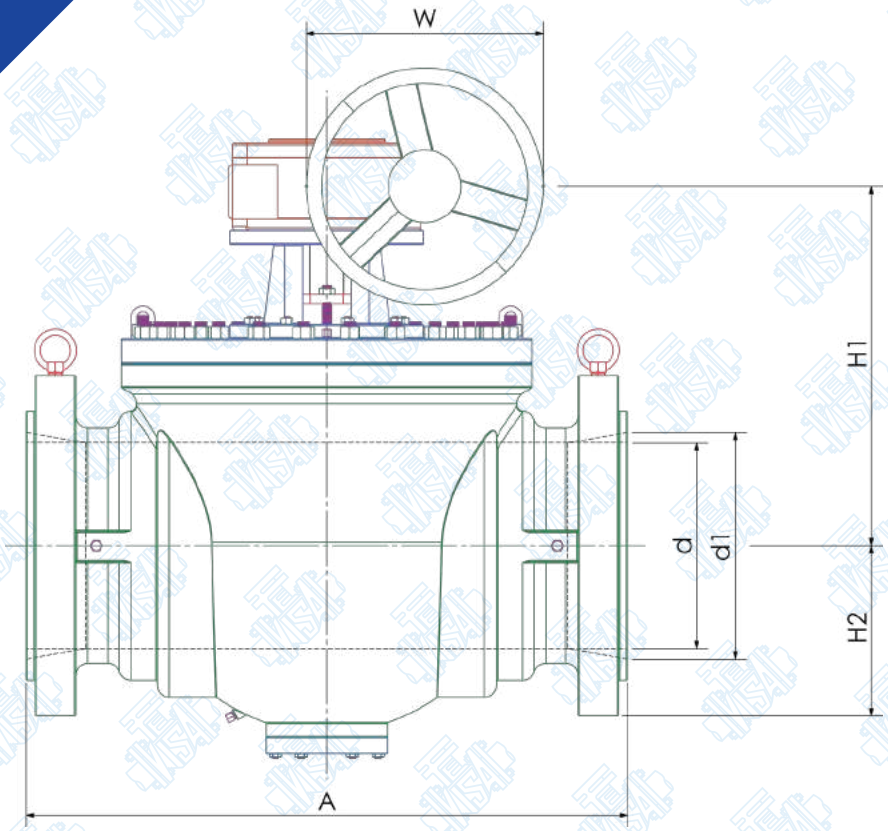
Top Entry Cast Steel Ball Valve

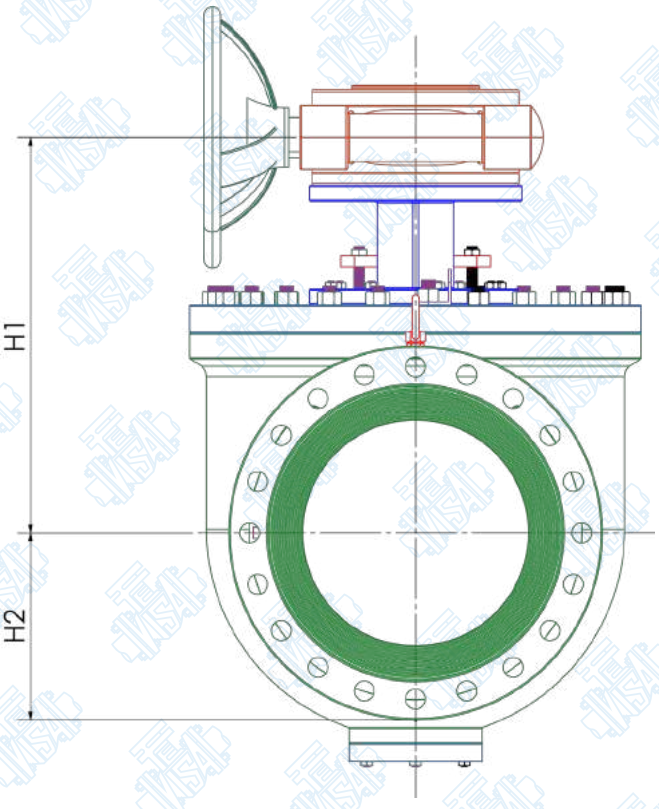
Material Specifications:

No.	Part	Material
1	Body	WCB, WCC, LCB, LCC, C5, C12, WC6, WC9, CF8, CF8M, CF3, CF3M, CA15, B62, etc
2	Seat Spring	Inconel X-750, SS304, SS316, 17-7PH
3	Seat Ring	A105+ENP, A182 F304, F316L, F316, F316L, F6, F51
4	Seat	PTFE, RPTFE, CPTFE, PEEK, NYLON, DEVLON, PPL, DERLIN, MOLON, etc
5	Ball	A105+ENP, A182 F6, SS316, SS316L, SS304, SS304L, Bronze, etc
6	O-ring	NBR, Viton, PTFE
7	Thrust Washer	PTFE
8	Body Gasket	PTFE, SS304+Graphite, SS316+Graphite
9	Sliding Bearing	Stainless Steel+PTFE, SS316+PTFE, SF1, Pb
10	Bonnet	WCB, WCC, LCB, LCC, C5, C12, WC6, WC9, CF8, CF8M, CF3, CF3M, CA15, B62, etc
11	Packing	PTFE, Graphite
12	Gland Flange	WCB, WCC, LCB, LCC, C5, C12, WC6, WC9, CF8, CF8M, CF3, CF3M, CA15, B62, etc
13	Key	1045, A182 F304, F304L, F316, F316L
14	Stem	A105+ENP, A182-F6, F304,F316, F316L, F304L, 17-4PH, F51
15	Yoke	A216-WCB
16	Nut	A194 2H, 2HM, 8, 8M, 4, 7, 7M
17	Stud	A193 B7, B7M, B8, B8M, B16, L7, L7M
18	Vent Valve	1020+Zn, A182 F304, F304L, F316, F316L
19	Lifting Lug	1020
20	Seat Injection	1020+Zn, A182 F304, F304L, F316, F316L
21	Steel Ball	Stainless Steel
22	Adjusting Ring	1045+N, A182 F304, F304L, F316, F316L
23	Gearbox	Assembly
24	Steel Gasket	1045+N, A182 F304, F304L, F316, F316L
25	Trunnion	A105+ENP, A182-F6, F304, F304L, F316, F316L, 17-4PH, F51, etc
26	Trunnion Gasket	PTFE, SS304+Graphite, SS316+Graphite
27	Adjusting Nut	A194 2H, 2HM, 8, 8M, 4, 7, 7M
28	Adjusting Stud	A182-F6, F304, A193 B7, B7M, B8, B8M, B16, L7, L7M
29	Drain Valve	1020+Zn, A182 F304, F304L, F316, F316L

*Recommended Spare Part

Dimensions and Weights:





Top Entry Cast Steel Ball Valve

Dimensions and Weights:

FULL BORE **Class 150**

Size	d	A	H	H2	W	Weight
in	mm	mm	mm	mm	mm	kg
2	49	292	170	76	285	46
3	74	356	210	95	285	83
4	100	432	250	115	400	156
6	150	559	265	140	*400	256
8	201	660	355	172	*400	453
10	252	787	385	203	*600	622
12	303	838	400	242	*600	747
14	335	889	450	267	*600	959
16	385	991	510	299	*600	1220
18	436	1092	565	318	*600	1640
20	489	1194	620	349	*600	2118
24	591	1397	680	407	*700	2950

*Gear Operated

FULL BORE **Class 300**

Size	d	A	H	H2	W	Weight
in	mm	mm	mm	mm	mm	kg
2	49	292	170	83	285	49
3	74	356	210	105	285	87
4	100	432	250	127	400	164
6	150	559	265	159	*400	272
8	201	660	355	191	*500	479
10	252	787	385	222	*600	657
12	303	838	400	261	*600	783
14	335	889	450	292	*600	1007
16	385	991	510	324	*600	1281
18	436	1092	565	356	*700	1722
20	489	1194	620	388	*700	2224
24	591	1397	680	457	*760	3100

*Gear Operated

Top Entry Cast Steel Ball Valve

Dimensions and Weights:

FULL BORE **Class 600**

Size	d	A	H	H2	W	Weight
in	mm	mm	mm	mm	mm	kg
2	49	292	180	83	285	52
3	74	356	220	105	285	92
4	100	432	260	137	400	173
6	150	559	275	175	*400	285
8	201	660	370	210	*400	504
10	252	787	398	254	*600	680
12	303	838	410	280	*700	819

*Gear Operated

FULL BORE **Class 900**

Size	d	A	H	H2	W	Weight
in	mm	mm	mm	mm	mm	kg
2	49	368	190	108	760	60
3	74	381	230	121	1140	100
4	100	457	270	146	*400	204
6	150	610	320	191	*500	420
8	201	737	375	235	*600	644
10	252	838	440	273	*700	943
12	303	965	498	305	*700	1295

*Gear Operated

FULL BORE **Class 1500**

Size	d	A	H	H2	W	Weight
in	mm	mm	mm	mm	mm	kg
2	49	368	195	108	760	69
3	74	470	233	134	*400	133
4	100	546	276	156	*500	253
6	144	705	324	197	*600	667
8	179	832	397	242	*700	865
10	239	991	462	292	*700	1375
12	287	1130	493	337	*760	2175

*Gear Operated

Top Entry Cast Steel Ball Valve

Dimensions and Weights:

REDUCED BORE **Class 150**

Size	d	d1	A	H1	H2	W	Weight
in	mm	mm	mm	mm	mm	mm	kg
2x1-1/2	38	49	292	165	76	265	41
3x2	49	74	356	170	95	285	58
4x3	74	100	432	210	115	285	104
6x4	100	150	559	250	140	400	228
8x6	150	201	660	265	172	*400	320
10x8	201	252	787	355	203	*400	536
12x10	252	303	838	385	242	*600	685
14x12	303	335	889	400	267	*600	840
16x14	335	385	991	450	299	*600	1070
18x16	385	436	1092	510	318	*600	1430
20x18	436	489	1194	565	349	*600	1850
24x20	489	591	1397	620	407	*600	2450

*Gear Operated

REDUCED BORE **Class 300**

Size	d	d1	A	H1	H2	W	Weight
in	mm	mm	mm	mm	mm	mm	kg
2x1-1/2	38	49	292	165	83	265	44
3x2	49	74	356	170	105	285	62
4x3	74	100	432	210	127	285	110
6x4	100	150	559	250	159	400	243
8x6	150	201	660	265	191	*400	343
10x8	201	252	787	355	222	*400	559
12x10	252	303	838	385	261	*600	725
14x12	303	335	889	400	292	*600	890
16x14	335	385	991	450	324	*600	1120
18x16	385	436	1092	510	356	*600	1480
20x18	436	489	1194	565	388	*700	1960
24x20	489	591	1397	620	457	*760	2650

*Gear Operated

Top Entry Cast Steel Ball Valve

Dimensions and Weights:

REDUCED BORE **Class 600**

Size	d	d1	A	H1	H2	W	Weight
in	mm	mm	mm	mm	mm	mm	kg
2x1-1/2	38	49	292	174	83	285	46
3x2	49	74	356	180	105	285	74
4x3	74	100	432	220	137	760	120
6x4	100	150	559	260	178	1140	249
8x6	150	201	660	275	210	*500	380
10x8	201	252	787	370	254	*600	587
12x10	252	303	838	398	280	*600	752

*Gear Operated

REDUCED BORE **Class 900**

Size	d	d1	A	H1	H2	W	Weight
in	mm	mm	mm	mm	mm	mm	kg
2x1-1/2	38	49	368	182	108	760	54
3x2	49	74	381	190	121	760	80
4x3	74	100	457	230	146	1140	148
6x4	100	150	610	270	191	*400	305
8x6	150	201	737	320	235	*500	552
10x8	201	252	838	375	273	*600	748
12x10	252	303	965	440	305	*700	1048

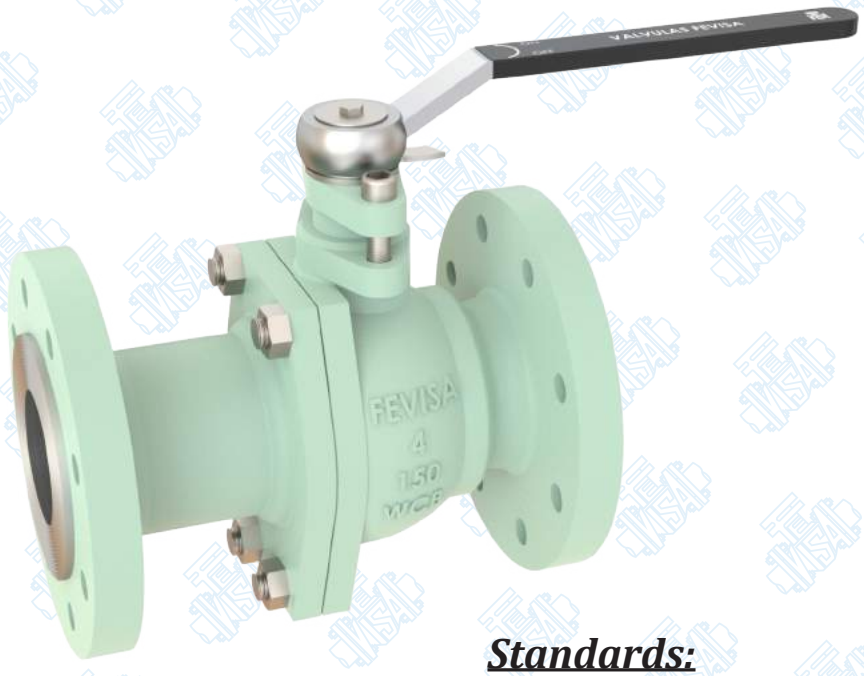
*Gear Operated

REDUCED BORE **Class 1500**

Size	d	d1	A	H1	H2	W	Weight
in	mm	mm	mm	mm	mm	mm	kg
2x1-1/2	38	49	368	189	108	760	63
3x2	49	74	470	195	134	760	95
4x3	74	100	546	233	156	*400	183
6x4	100	144	705	276	197	*500	359
8x6	144	192	832	324	242	*600	794
10x8	192	239	991	397	292	*700	1070
12x10	239	287	1130	462	337	*700	1541

*Gear Operated

Metal to Metal Seat Ball Valve



Features:

Valve Size
2" – 60"

Pressure Rating
150 LB ~ 2500 LB

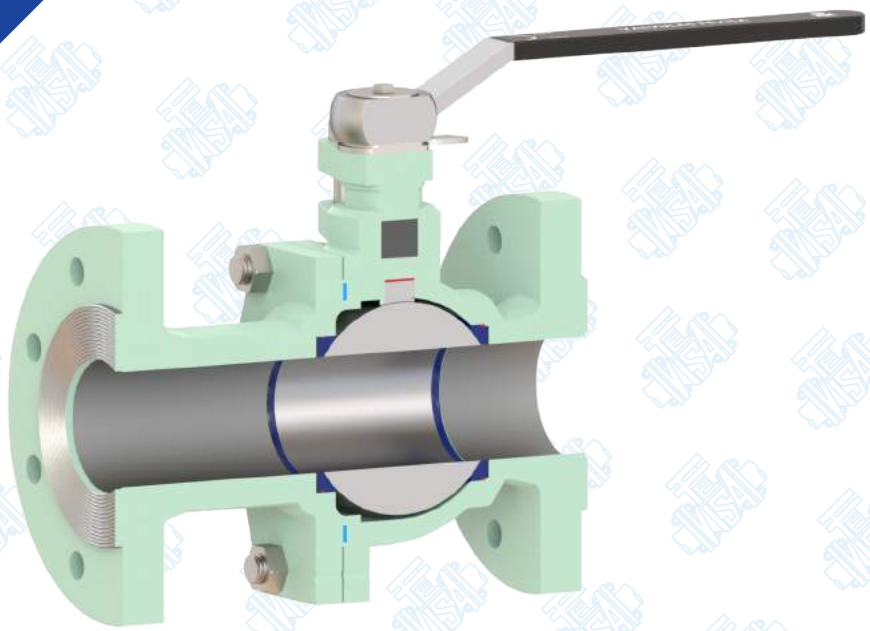
Design Features

- *Two & Three Pieces Cast Steel Body*
- *Floating or Trunnion Mounted Ball, Full & Reduced Bore*
- *Anti-Static Device*
- *Blow-out Proof Stem*
- *Fire Safe Design*
- *Emergency Sealant Injector*
- *Vent Valve, Drain Valve*
- *Lifting lugs and Supporting Legs (8"& larger)*

Standards:

Design	*API 6D*
Face to Face	*ASME B16.10/API 6D*
End Flange	*ASME B16.5*
BW End	*ASME B16.25*
Test	*API 598/ API 6D*
Fire Safe Test	*API 6FA*
Special	*NACE MR-01-75*

Metal to Metal Seat Ball Valve



High Temperature Service

General soft seat Ball valves working temperature is limited up to 400 F, but metal-seat ball valves are guaranteed for a maximum service temperature of 800 F.

Low Pressure Reliable Sealing

Valvulas FEVISA metal-seat ball valves adopt seat spring structure, which can push upstream seat tightly against the ball surface creating a reliable sealing even if extremely low pressure.

Pressure Test

Metal-seat ball valves maximum allowable seat leakage
Air: ANSI/FC170-2 Class V

Absolute Fire Safe Guarantee

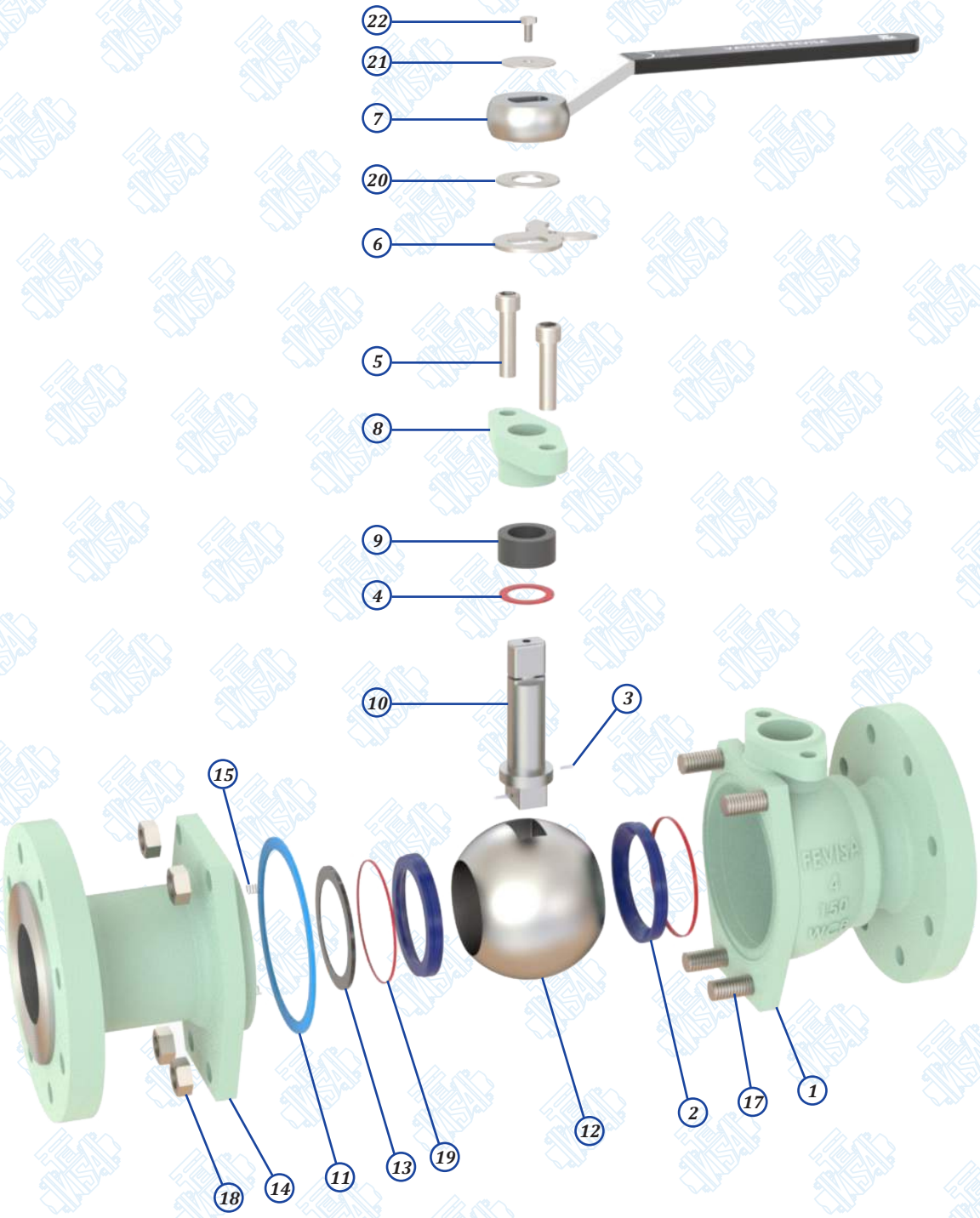
Valvulas FEVISA metal-seated ball valves are absolute fire safe design. Metal-to-metal contact is designed between ball and seat, where is unconditional fire safe function. Flexible graphite gasket can prevent fluid leakage from between body & seat or body & bonnet even if high temperature environments to reach fire-safe purpose. In addition, other sealing components such as stem packing can also reach fire-safe function and prevent external leakage. So, all parts of the valve will not be damaged by high temperature service.

Blow-out proof Stem & Anti-Static Device

As general ball valves, metal-seated ball valves are provided with blow-out proof stem & anti-static device.

Metal to Metal Seat Ball Valve

Standard Materials of Constructions:



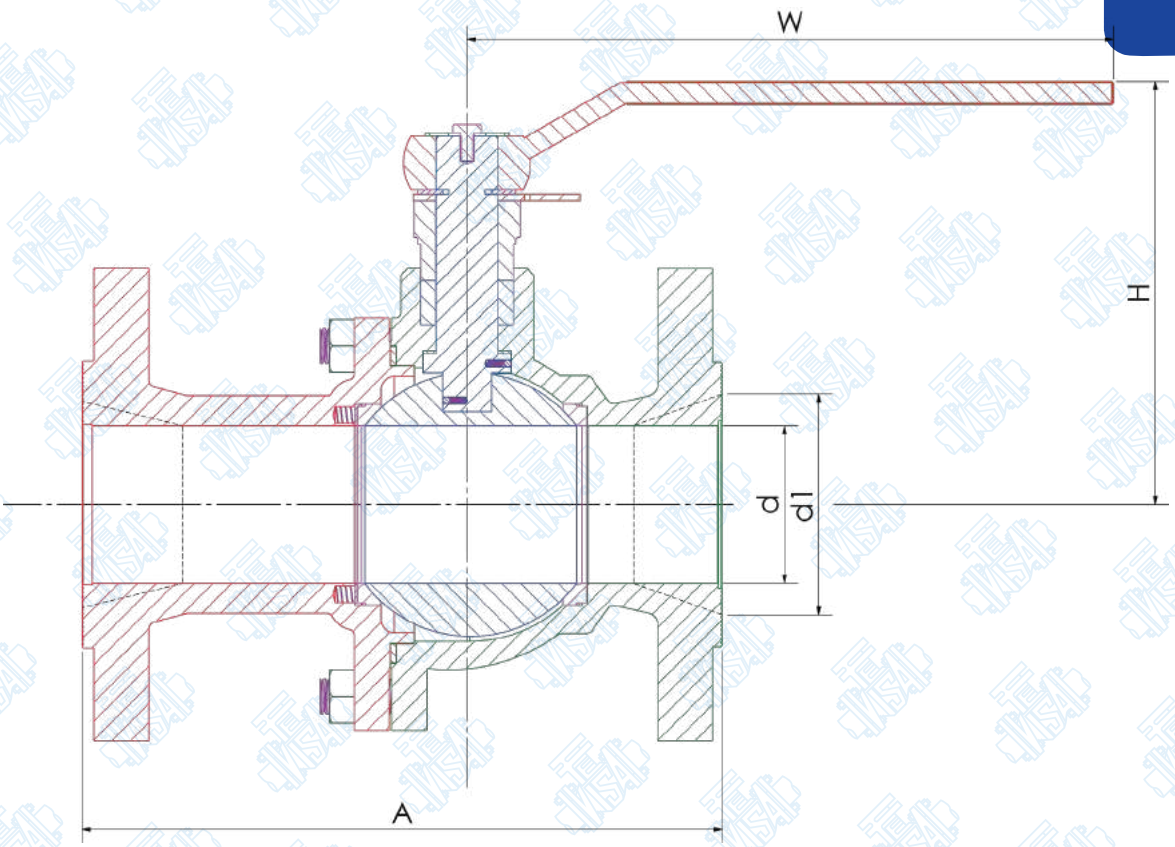
Metal to Metal Seat Ball Valve

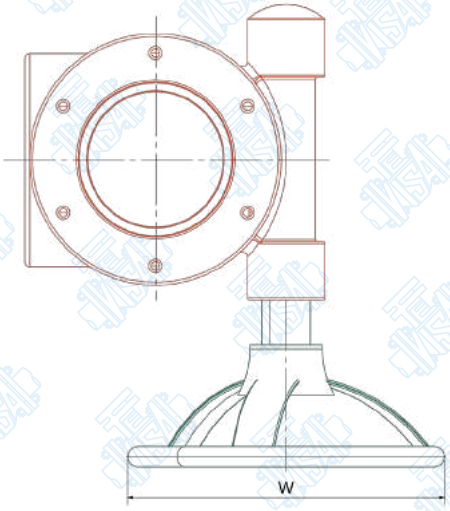
Material Specifications:

No.	Part	Material
1	Body	WCB, WCC, LCB, LCC, C5, C12, WC6, WC9, CF8, CF8M, CF3, CF3M, CA15, B62,etc
2	Seat	A182 F6+STL, F304+STL, F304L+STL, F316+STL, F316L+STL, etc
3	Antistatic Spring	Stainless Steel, SS316
4	Thrust Washer	PTFE PPL
5	Screw	A193 B7, B7M, B8, B8M, B16, L7, L7M
6	Limited Plate	1015+Cr,Carbon Steel+Cr
7	Lever	WCB, SS316
8	Gland Flange	WCB, WCC, LCB, LCC, C5, C12, WC6, WC9, CF8, CF8M, CF3, CF3M, CA15, B62,etc
9	Packing	PTFE, Graphite
10	Stem	A105+ENP, A182-F6, F304,F316, F316L, F304L, 17-4PH, F51, etc
11	Body Gasket	PTFE, SS304+Graphite, SS316+Graphite, Stainless Steel+PTFE, SS316+PTFE
12	Ball	A105+ENP, A182 F6, SS316, SS316L, SS304, SS304L, Bronze, etc
13	Seat Gasket	A182-F6, F304,F316, F316L
14	Bonnet	WCB, WCC, LCB, LCC, C5, C12, WC6, WC9, CF8, CF8M, CF3, CF3M, CA15, B62,etc
15	Seat Spring	Inconel X-750, SS304, SS316
16	Seat Sealing	Graphite
17	Stud	A193 B7, B7M, B8, B8M, B16, L7, L7M
18	Nut	A194 2H, 2HM, 8, 8M, 4, 7, 7M
19	O-ring	NBR, Viton, PTFE
20	Retainer	Carbon Steel
21	Steel Gasket	1025+Cr
22	Stop Screw	1035+Cr

*Recommended Spare Part

Dimensions and Weights:





Dimensions and Weights:

FULL BORE **Class 150**

Size	d	A	H	W	Weight
in	mm	mm	mm	mm	kg
1/2	13	108	75	130	2.3
3/4	19	117	84	170	2.5
1	25	127	90	170	3.5
1-1/2	38	165	127	250	7.3
2	49	178	140	250	9.8
2-1/2	64	190	164	350	15
3	74	203	177	350	18
4	100	229	206	420	33
5	125	356	292	700	57
6	150	394	320	*1000	66
8	201	457	398	*320	170
10	252	533	495	*350	255
12	303	610	580	*400	390
14	335	686	625	*500	510
16	385	762	720	*500	820
18	436	864	770	*500	1010
20	489	914	840	*500	1828

*Gear Operated

Dimensions and Weights:

FULL BORE **Class 300**

Size	d	A	H	W	Weight
in	mm	mm	mm	mm	kg
1/2	13	140	75	130	3.5
3/4	19	152	84	170	4.2
1	25	165	90	170	5.8
1-1/2	38	191	127	250	10.5
2	49	216	140	250	14
2-1/2	64	241	164	350	19
3	74	283	177	350	31
4	100	305	206	420	54
6	150	403	305	*280	135
8	201	502	398	*320	210
10	252	568	495	*350	391
12	303	648	580	*400	550
14	335	762	625	*500	710
16	385	838	720	*500	1250
18	436	914	770	*500	1300
20	489	991	840	*500	2180
24	591	1143	920	*600	2930

*Gear Operated

Metal to Metal Seat Ball Valve

Dimensions and Weights:

REDUCED BORE **Class 150**

Size	d	d1	A	H	W	Weight
in	mm	mm	mm	mm	mm	kg
3/4x1/2	13	19	117	75	130	2.7
1x3/4	19	25	127	84	170	3.0
1-1/2x1	25	38	165	90	170	4.3
2x1-1/2	38	49	178	127	250	9.5
2-1/2x2	49	64	191	140	250	12
3x2	51	74	203	140	250	16.5
4x3	74	100	229	177	350	24
6x4	100	150	394	206	420	43
8x6	150	201	457	320	*1000	85.5
10x8	201	252	533	398	*320	214
12x10	252	303	610	495	*350	284
14x12	303	335	686	580	*400	418
16x14	335	385	762	625	*500	612
18x16	385	436	864	720	*500	970
20x18	436	489	914	770	*500	1137
24x20	489	591	1067	840	*500	2000

*Trunnion Mounted Gear Operated

Metal to Metal Seat Ball Valve

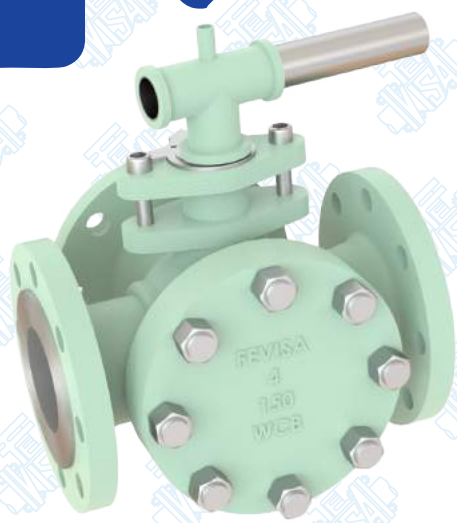
Dimensions and Weights:

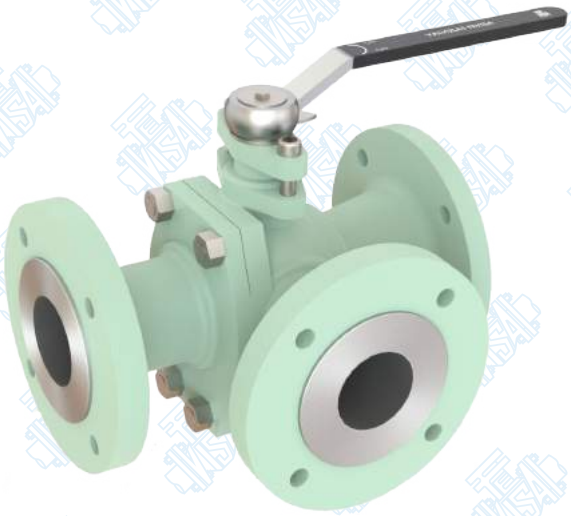
REDUCED BORE **Class 300**

Size	d	d1	A	H	W	Weight
in	mm	mm	mm	mm	mm	kg
3/4x1/2	13	19	152	75	130	4.0
1x3/4	19	25	165	84	170	5.0
1-1/2x1	25	38	190	90	170	7.0
2x1-1/2	38	49	216	127	250	12
2-1/2x2	49	64	241	140	250	17
3x2	49	74	283	140	250	21.5
4x3	74	100	305	177	350	37
6x4	100	150	403	206	420	66
8x6	150	201	502	305	*280	164
10x8	201	252	568	398	*320	350
12x10	252	303	648	495	*350	400
14x12	303	335	762	580	*400	590
16x14	335	385	838	625	*500	850
18x16	385	436	914	720	*500	1220
20x18	436	489	991	770	*500	1460
24x20	489	591	1143	840	*500	2220

*Trunnion Mounted Gear Operated

Three-Way Ball Valve





Features:

Valve Size
1/2" – 8"

Pressure Rating
150 LB ~ 300 LB

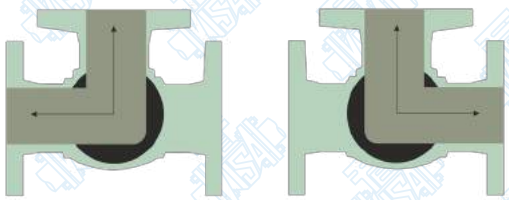
Design Features

- *The Monolithic Two Pieces Cast Steel Body*
- *Floating Ball, Full Bore*
- *Blow-out Proof Stem*

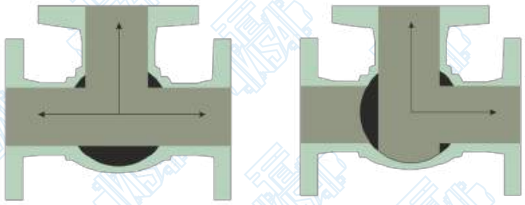
Standards:

Design	*API 6D ASME B16.34*
Face to Face	*Manufacturer Standard*
End to End	*ASME B16.5*
BW End	*ASME B16.25*
Test	*API 598*

Flow Graph A



Flow Graph B



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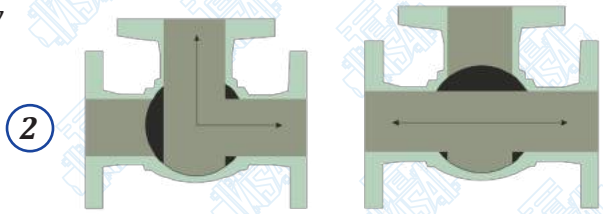

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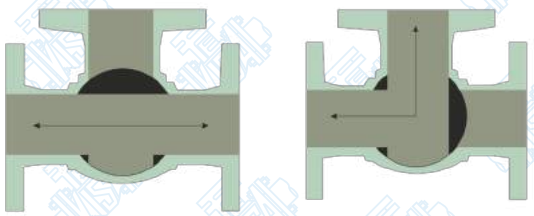

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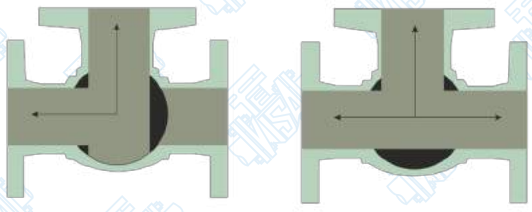
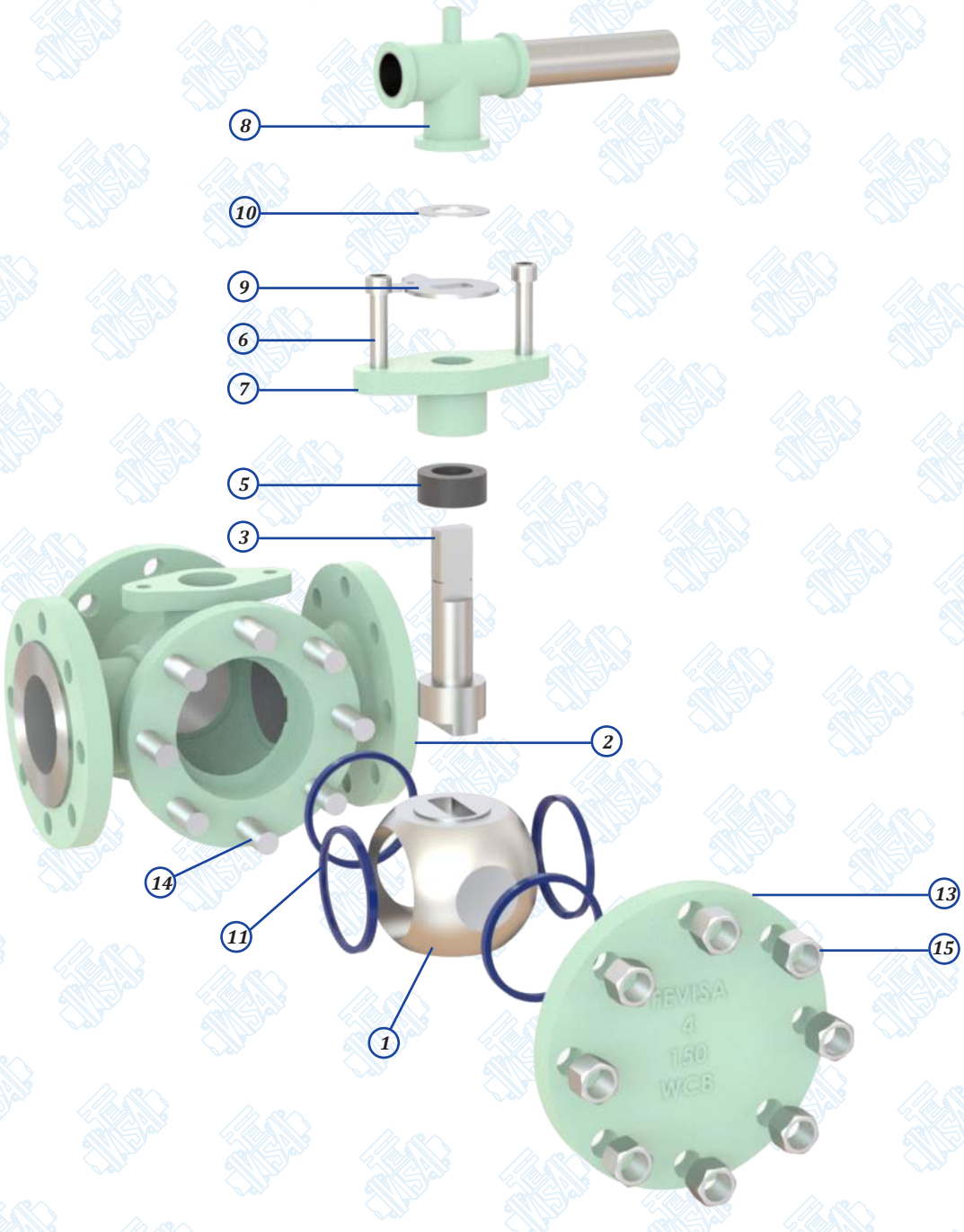


4

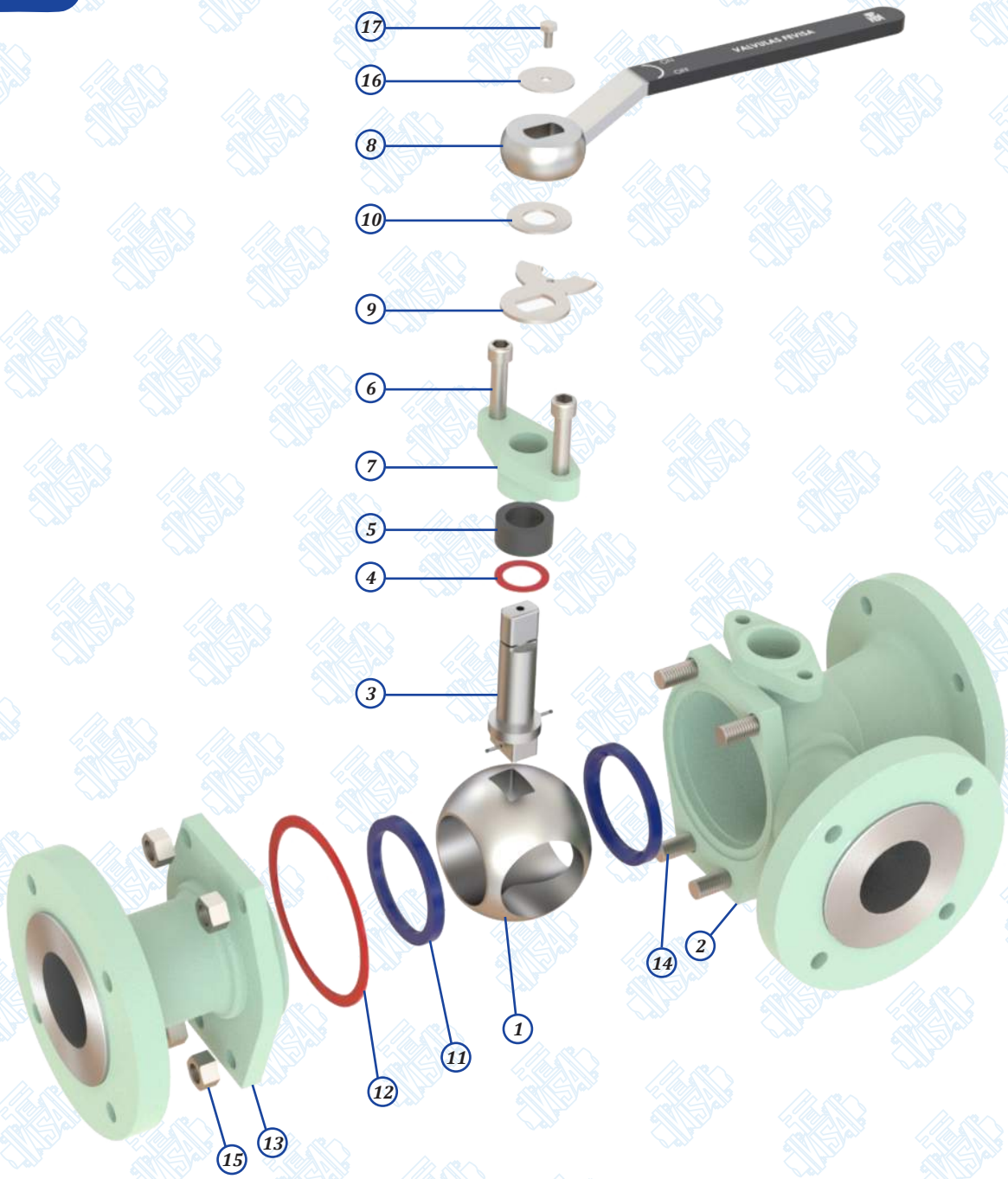
Three-Way Ball Valve

Standard Materials of Constructions:



Three-Way Ball Valve

Standard Materials of Constructions:



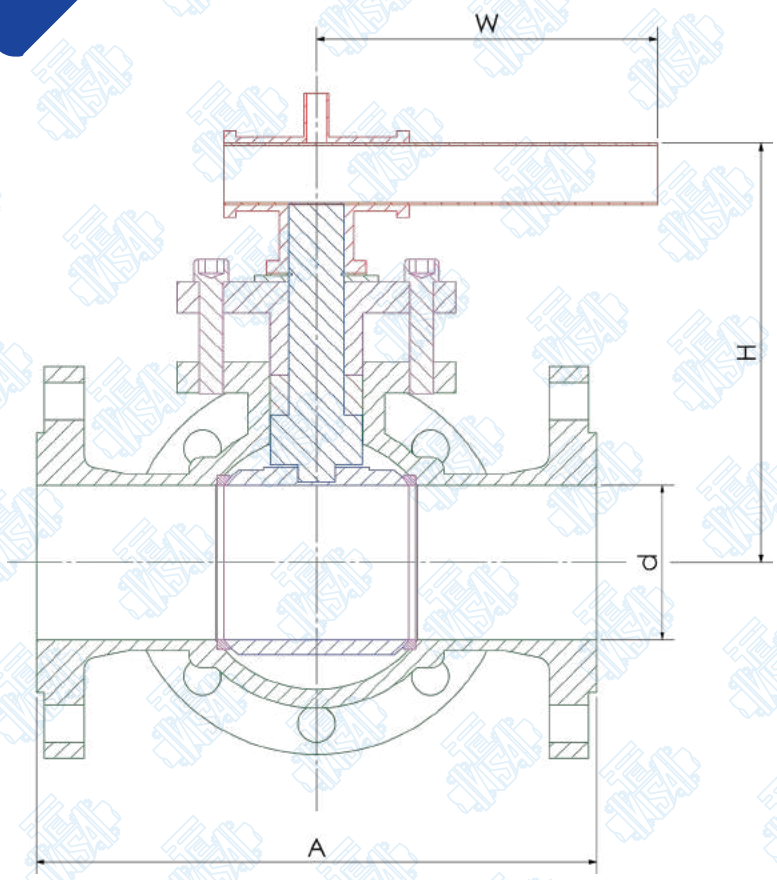
Three-Way Ball Valve

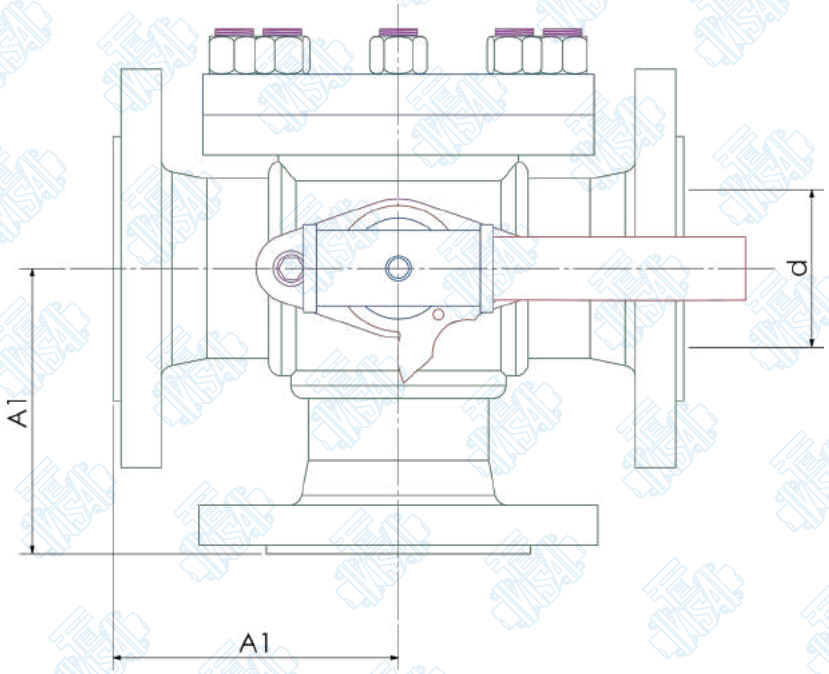
Material Specifications:

No.	Part	Material
1	Ball	A351-CF8, CF8M, CF3, CF3M, Duplex
2	Body	WCB, WCC, LCB, LCC, C5, C12, WC6, WC9, CF8, CF8M, CF3, CF3M, CA15, B62, Duplex, etc
3	Stem	A105+ENP, A182-F6, F304,F316, F316L, F304L, 17-4PH, F51
4	Thrust Washer	PTFE
5	Packing	PTFE, Graphite
6	Screw	A193 B7, B7M, B8, B8M, B16, L7, L7M
7	Gland Flange	WCB, WCC, LCB, LCC, C5, C12, WC6, WC9, CF8, CF8M, CF3, CF3M, CA15, B62, Duplex, etc
8	Lever	A216-WCB
9	Limited Plate	1015+Cr,Carbon Steel+Cr
10	Retainer	Carbon Steel
11	Seat	PTFE, RPTFE, CPTFE, PEEK, NYLON, DEVLON, PPL, DERLIN, MOLON, etc
12	Body Gasket	PTFE, SS304+Graphite, SS316+Graphite, Stainless Steel+PTFE, SS316+PTFE
13	Bonnet	WCB, WCC, LCB, LCC, C5, C12, WC6, WC9, CF8, CF8M, CF3, CF3M, CA15, B62, Duplex, etc
14	Stud	A193 B7, B7M, B8, B8M, B16, L7, L7M
15	Nut	A194 2H, 2HM, 8, 8M, 4, 7, 7M
16	Steel Gasket	1025+Cr
17	Stop Screw	1035+Cr

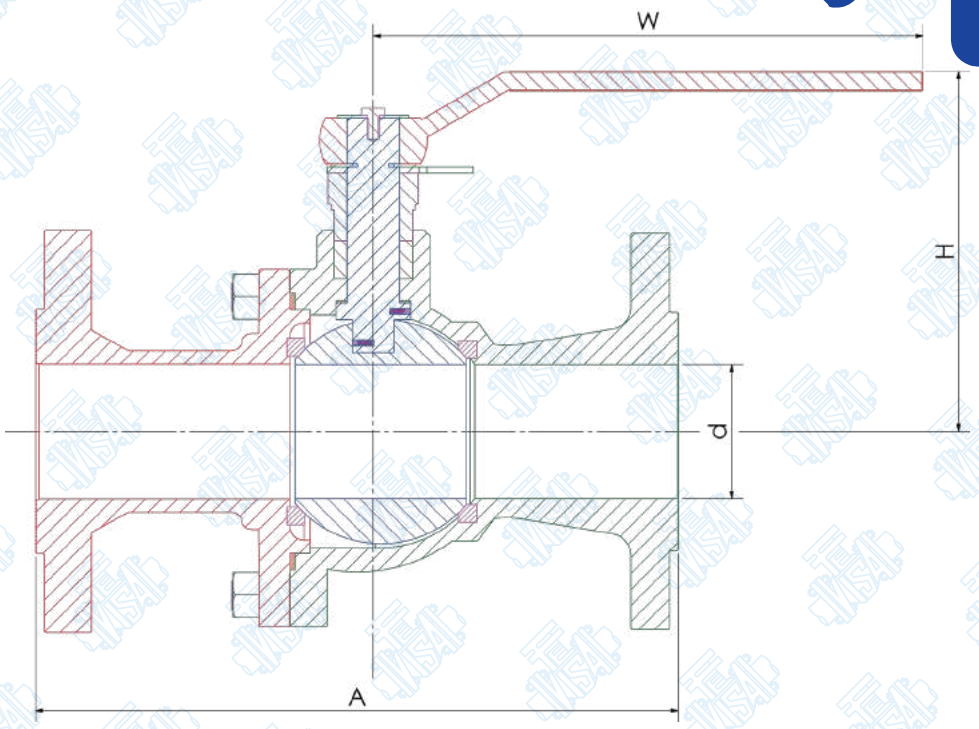
*Recommended Spare Part

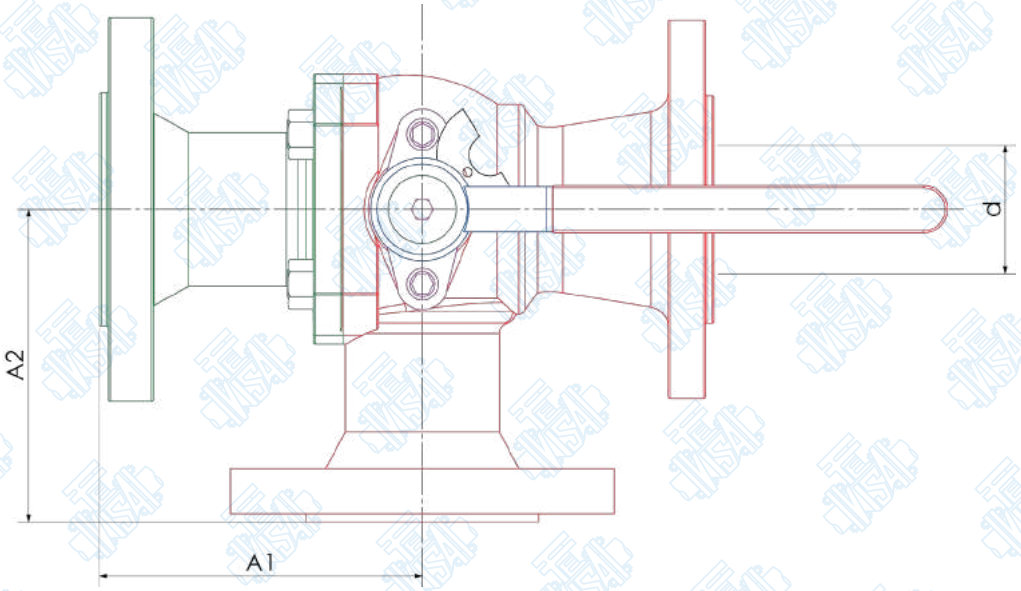
Dimensions and Weights:





Dimensions and Weights:





Three-Way Ball Valve

Dimensions and Weights:

FULL BORE **Class 150/300**

Size	d	A	A1	H	W
1/2"	14	150	75	90	140
3/4"	19	150	75	90	140
1"	25	180	90	102	155
1-1/4"	38	200	100	115	250
1-1/2"	48	220	110	135	250
2"	50	240	120	140	350
2-1/2"	65	260	130	155	350
3"	78	280	140	185	420
4"	100	320	160	210	700
5"	125	380	190	270	1000
6"	148	440	220	305	1300
8"	198	550	275	335	1800

*Gear Operated

Four-Way Ball Valve

Features:

Valve Size
1/2" – 20"

Pressure Rating
150 LB ~ 300 LB

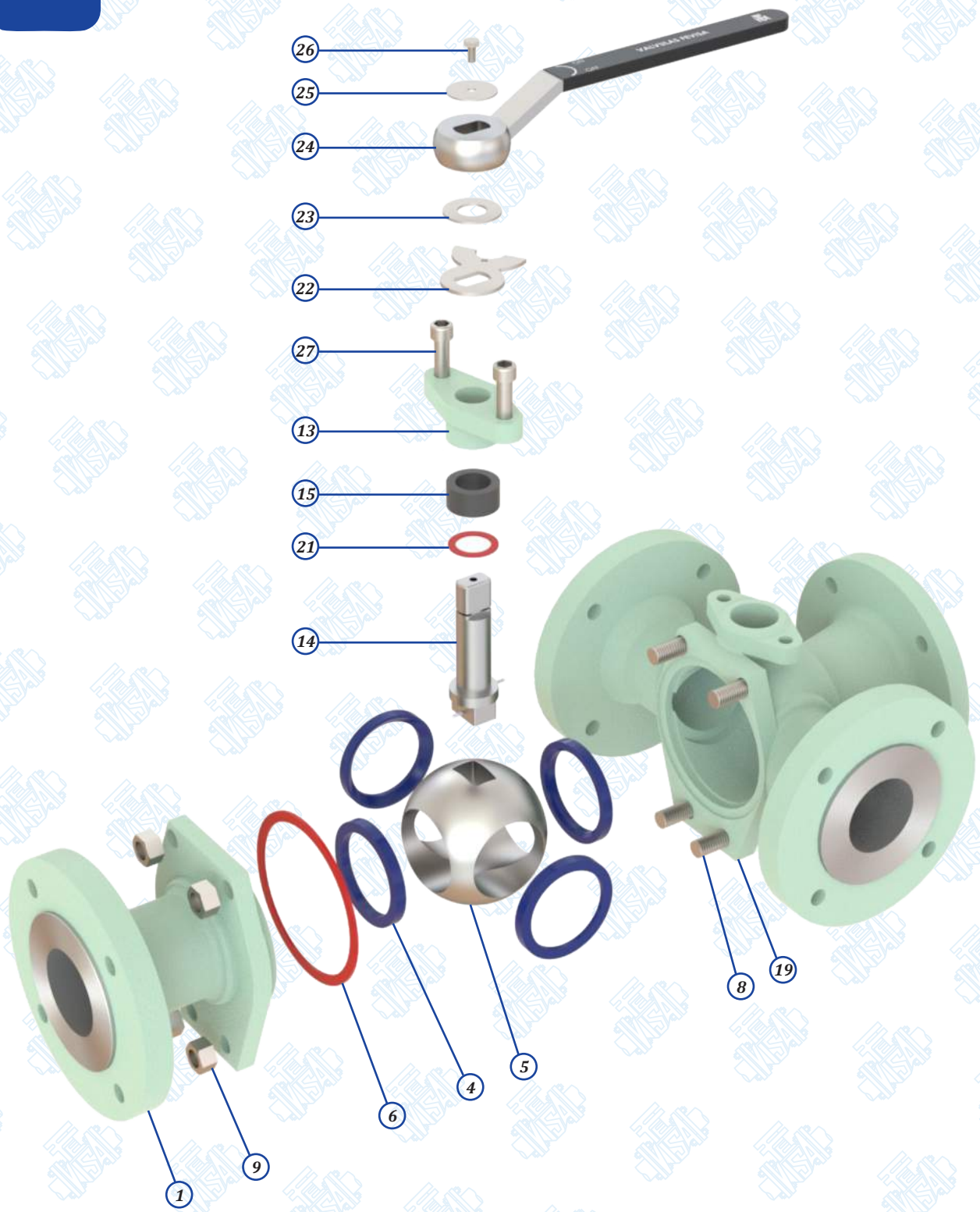
Design Features
- *Two Pieces & Multi-pieces Cast Body*
- *Blow-out Proof Stem*

Standards:

Design	*API 6D ASME B16.34*
Face to Face	*Manufacturer Standard*
End to End	*ASME B16.5*
Test	*API 598*

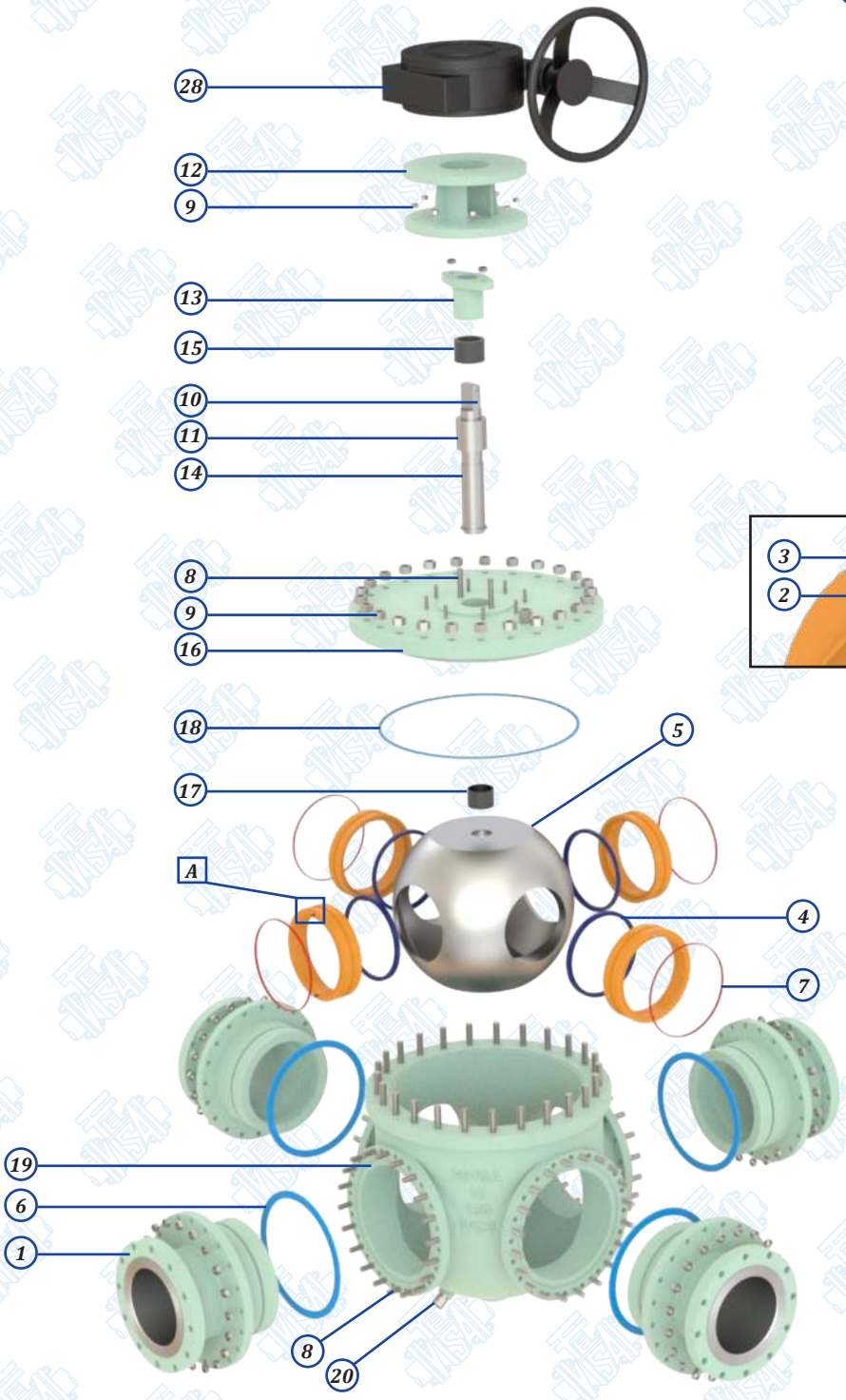
Four-Way Ball Valve

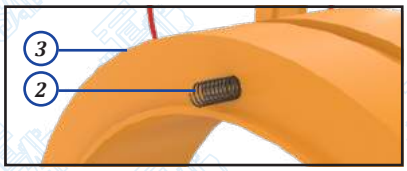
Standard Materials of Constructions:



Four-Way Ball Valve

Standard Materials of Constructions:





DETAIL A

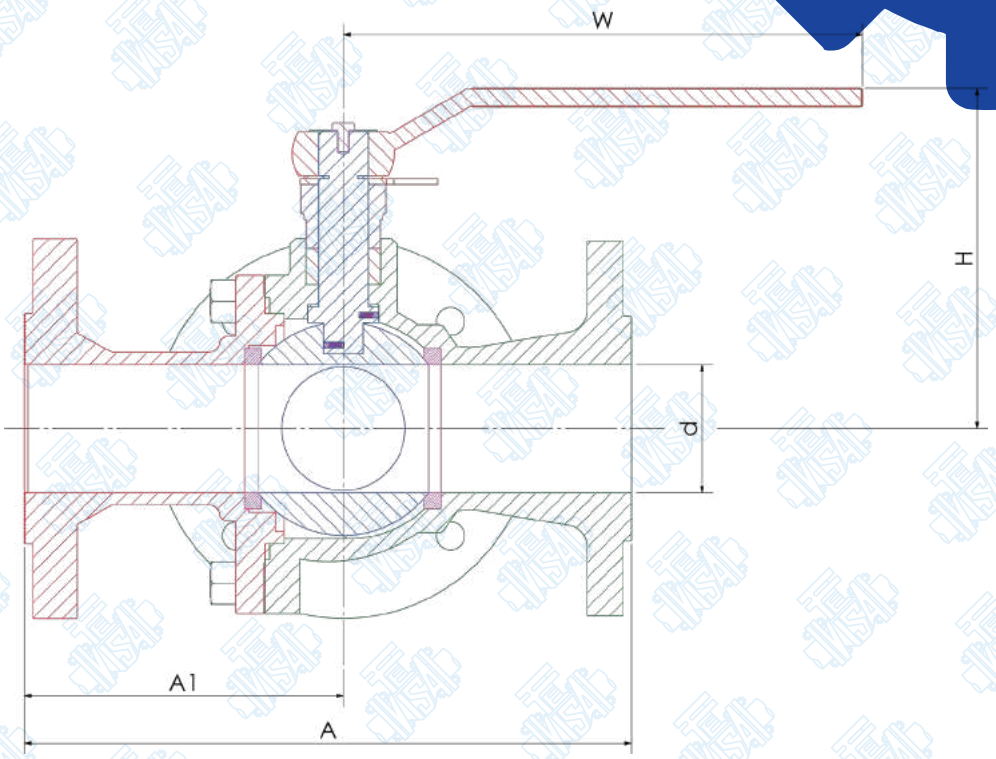
Four-Way Ball Valve

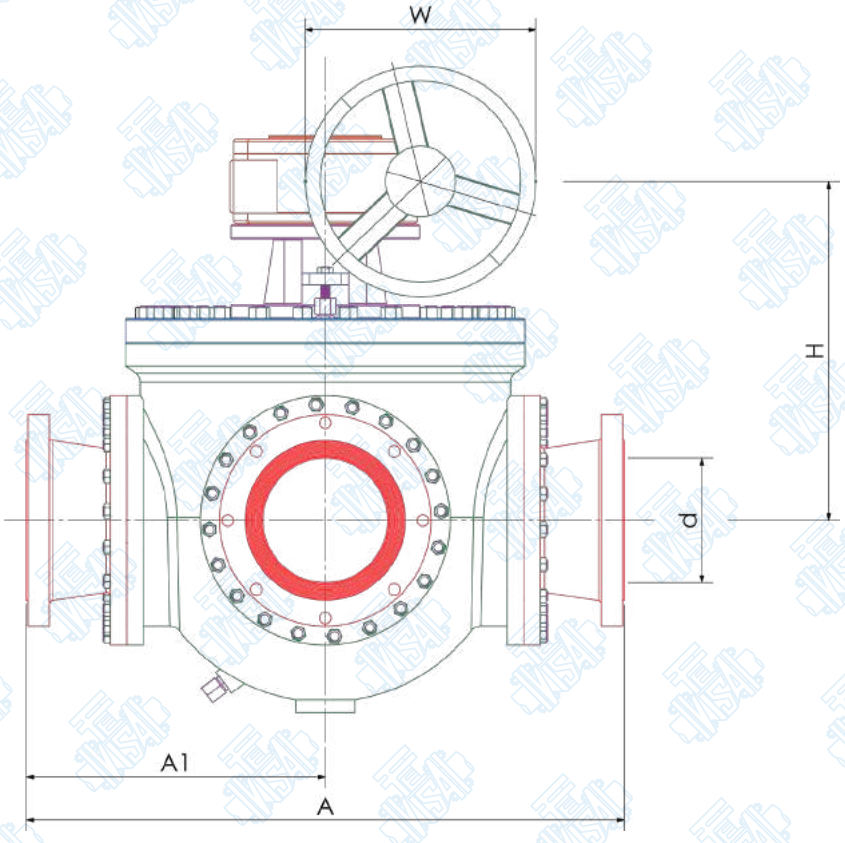
Material Specifications:

No.	Part	Material
1	Bonnet	WCB, WCC, LCB, LCC, C5, C12, WC6, WC9, CF8, CF8M, CF3, CF3M, CA15, B62, Duplex, etc
2	Seat Spring	Inconel X-750, SS304, SS316, 17-7PH
3	Seat Ring	A105+ENP, A182 F304, F316L, F316, F316L, F6, F51
4	Seat	PTFE, RPTFE, CPTFE, PEEK, NYLON, DEVLON, PPL, DERLIN, MOLON, etc
5	Ball	A351-CF8, CF8M, CF3, CF3M, Duplex
6	Body Gasket	PTFE, SS304+Graphite, SS316+Graphite
7	O-ring	NBR, Viton, PTFE
8	Stud	A193 B7, B7M, B8, B8M, B16, L7, L7M
9	Nut	A194 2H, 2HM, 8, 8M, 4, 7, 7M
10	Key	1045, A182 F304, F304L, F316, F316L
11	Coupling	ASTM A105+ENP, A182-F6
12	Yoke	A216-WCB, A351-CF8
13	Gland Flange	WCB, WCC, LCB, LCC, C5, C12, WC6, WC9, CF8, CF8M, CF3, CF3M, CA15, B62, Duplex, etc
14	Stem	A105+ENP, A182-F6, F304,F316, F316L, F304L, 17-4PH, F51
15	Packing	PTFE, Graphite
16	Cover	WCB, WCC, LCB, LCC, C5, C12, WC6, WC9, CF8, CF8M, CF3, CF3M, CA15, B62, Duplex, etc
17	Sliding Bearing	Stainless Steel+PTFE, SS316+PTFE, SF1, Pb
18	Gasket	PTFE, SS304+Graphite, SS316+Graphite
19	Body	WCB, WCC, LCB, LCC, C5, C12, WC6, WC9, CF8, CF8M, CF3, CF3M, CA15, B62, Duplex, etc
20	Vent Valve	1020+Zn, A182 F304, F304L, F316, F316L
21	Thrust Washer	PTFE
22	Limited Plate	1015+Cr,Carbon Steel+Cr
23	Retainer	Carbon Steel
24	Lever	A216-WCB
25	Steel Gasket	1025+Cr
26	Stop Screw	1035+Cr
27	Screw	A193 B7, B7M, B8, B8M, B16, L7, L7M
28	Gearbox	Assembly

*Recommended Spare Part

Dimensions and Weights:





Four-Way Ball Valve

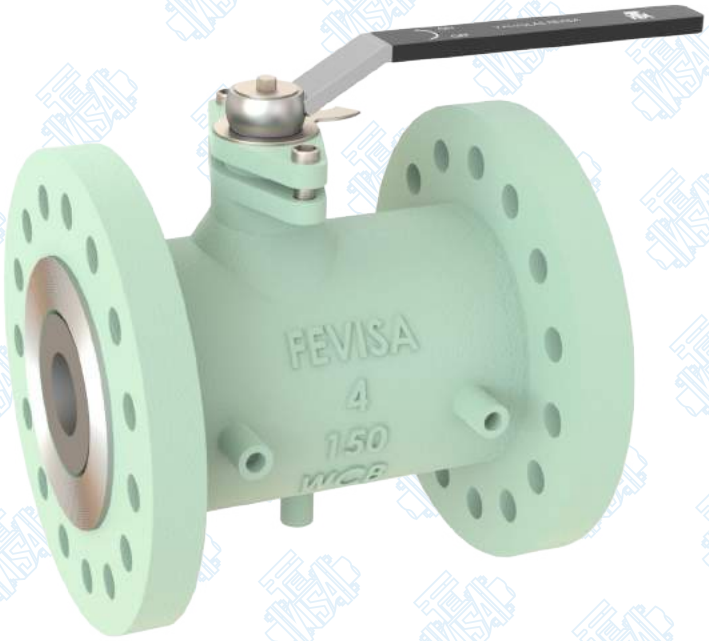
Dimensions and Weights:

FULL BORE **Class 150/300**

Size	d	A	A1	H	W
1/2"	14	150	75	90	140
3/4"	19	150	75	90	140
1"	25	180	90	102	155
1-1/4"	38	200	100	115	250
1-1/2"	48	220	110	135	250
2"	50	240	120	140	350
2-1/2"	65	260	130	155	350
3"	78	280	140	185	420
4"	100	320	160	210	700
5"	125	380	190	270	1000
6"	148	440	220	305	1300
8"	198	550	275	335	1800
10"	248	730	365	480	*350
12"	298	850	425	510	*400
14"	337	980	590	560	*500
16"	387	1100	550	620	*500
20"	489	1250	625	680	*500

*Gear Operated

Jacket Ball Valve



Features:

Valve Size
2" – 8"

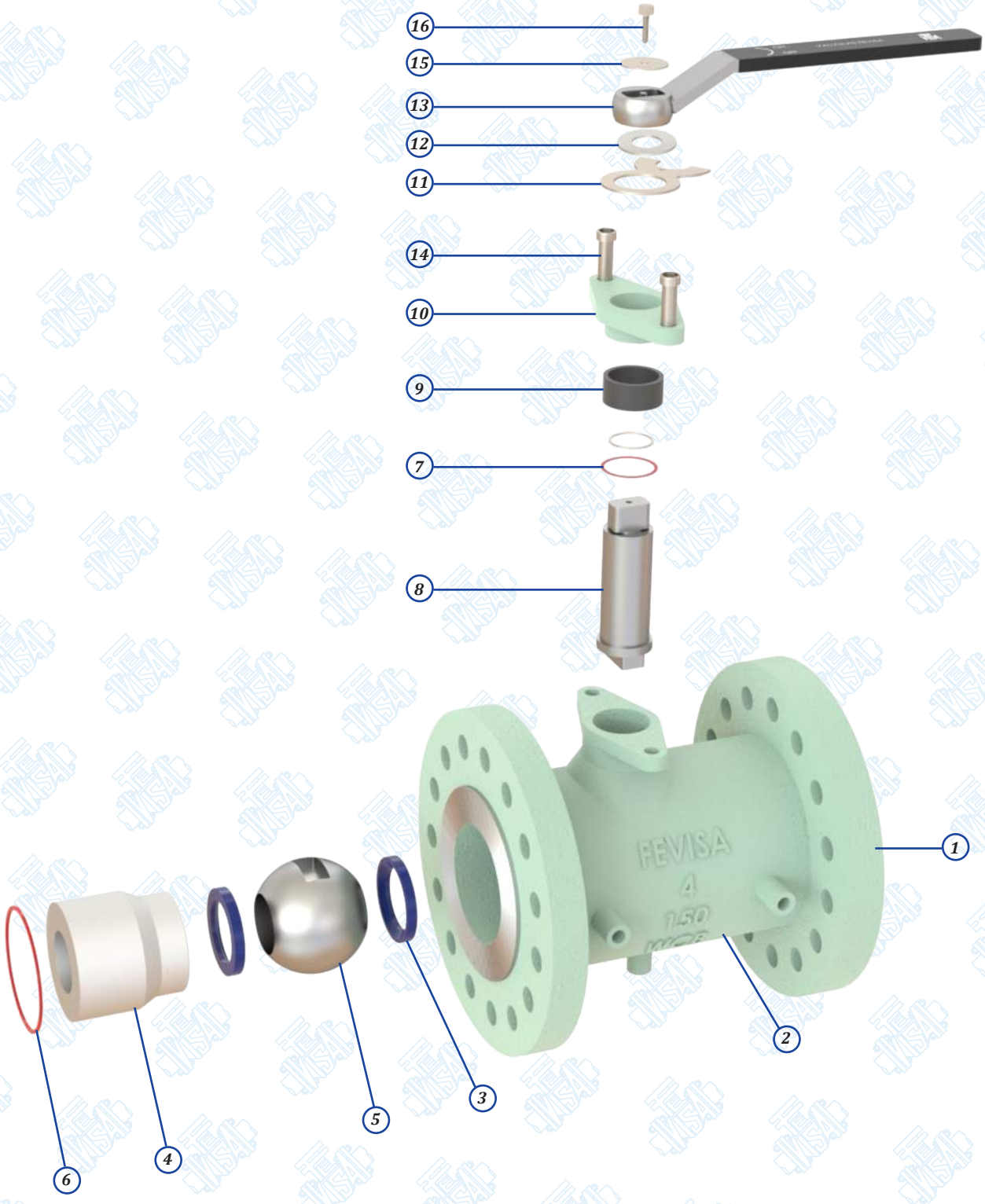
Pressure Rating
150 LB ~ 600 LB

Design Features

- *Two & Three Pieces Cast Steel Body*
- *Floating or Trunnion Mounted Ball, Full & Reduced Bore*
- *Anti-Static Device*
- *Blow-out Proof Stem*
- *Fire Safe Design*
- *Emergency Sealant Injector*
- *Vent Valve, Drain Valve*
- *Lifting lugs and Supporting Legs (8"& larger)*

Jacket Ball Valve

Standard Materials of Constructions:



Jacket Ball Valve

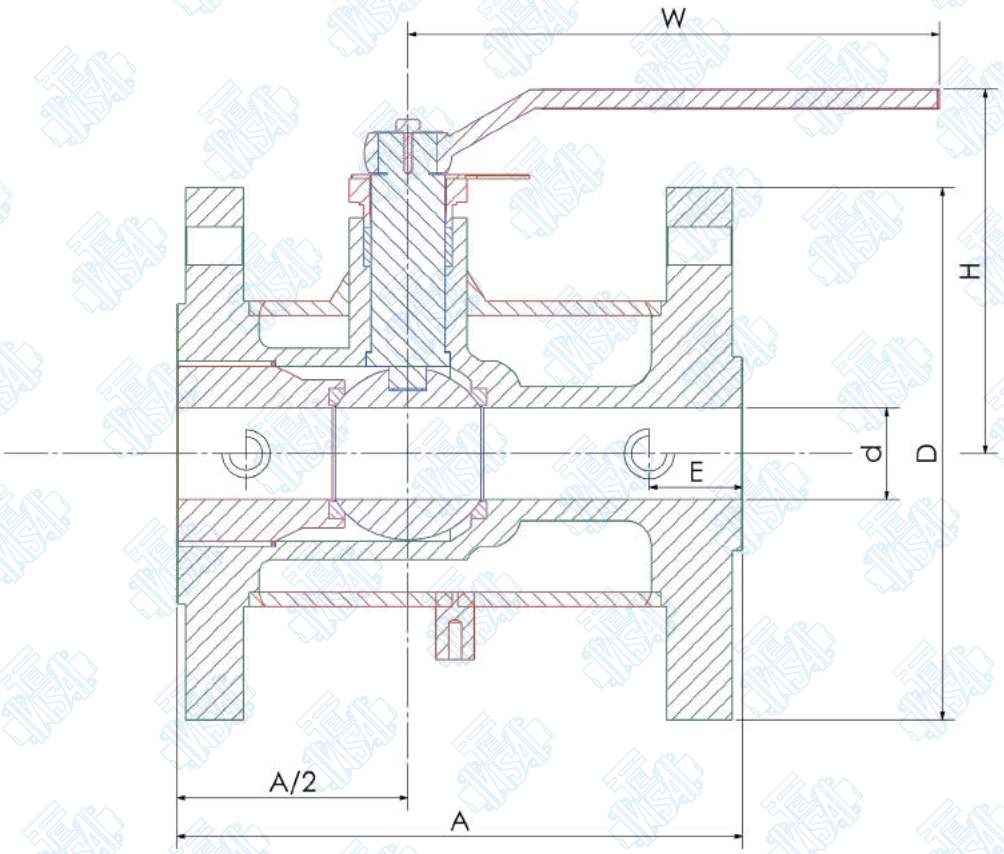
Material Specifications:

No.	Part	Material
1	Body	WCB, WCC, LCB, LCC, C5, C12, WC6, WC9, CF8, CF8M, CF3, CF3M, CA15, B62, Duplex etc
2	Jacket	1015, Carbon Steel, Stainless Steel, etc
3	Seat	PTFE, RPTFE, CPTFE, PEEK, NYLON, DEVLON, PPL, DERLIN, MOLON, etc
4	Screwed Cover	WCB, WCC, LCB, LCC, C5, C12, WC6, WC9, CF8, CF8M, CF3, CF3M, CA15, B62, Duplex etc
5	Ball	A105+ENP, A182 F6, SS316, SS316L, SS304, SS304L, Bronze, etc
6	Gasket	PTFE, SS304+Graphite, SS316+Graphite
7	Thrust Washer	PTFE
8	Stem	A105+ENP, A182-F6, F304,F316, F316L, F304L, 17-4PH, F51
9	Packing	PTFE, Graphite
10	Gland Flange	WCB, WCC, LCB, LCC, C5, C12, WC6, WC9, CF8, CF8M, CF3, CF3M, CA15, B62, Duplex etc
11	Limited Plate	1015+Cr, Carbon Steel+Cr
12	Retainer	Carbon Steel
13	Lever	Carbon Steel, Stainless Steel
14	Screw	A193 B7, B7M, B8, B8M, B16, L7, L7M
15	Steel Gasket	1025+Cr
16	Stop Screw	1025+Cr

*Recommended Spare Part

Jacket Ball Valve

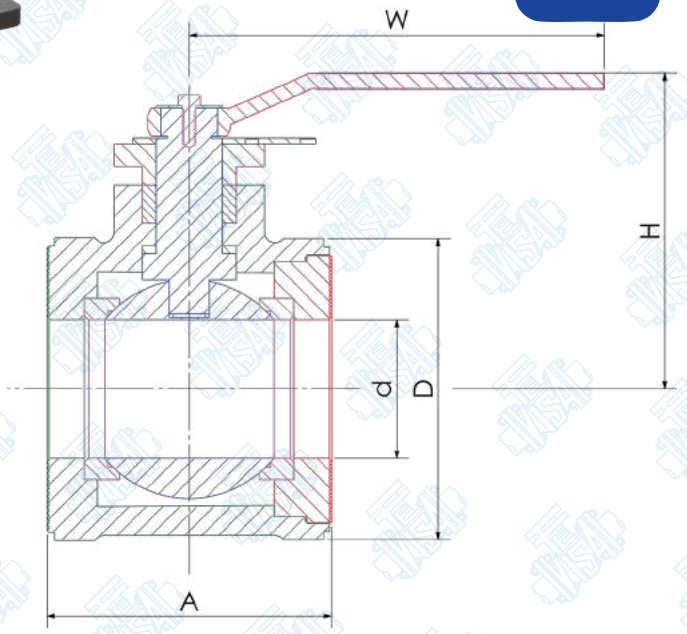
Dimensions and Weights:



FULL BORE **Class 150/300**

Size	d	A	D	E	Q	H	W	P
1/2"	14	110	1-1/2"	58.5	147	101	170	3/4"
3/4"	19	117	1-1/2"	58.5	147	101	170	3/4"
1"	25	127	2"	62.5	156	106	170	3/4"
1-1/2"	38	165	2-1/2"	63.5	181	125	250	3/4"
2"	49	178	3"	68	218	135	250	3/4"
3"	74	229	6"	82	275	193	350	3/4"
4"	100	254	8"	83	300	265	420	3/4"
6"	150	292	10"	95	403	355	1000	3/4"
8"	201	330	12"	100	492	410	1300	3/4"

Wafer Ball Valve



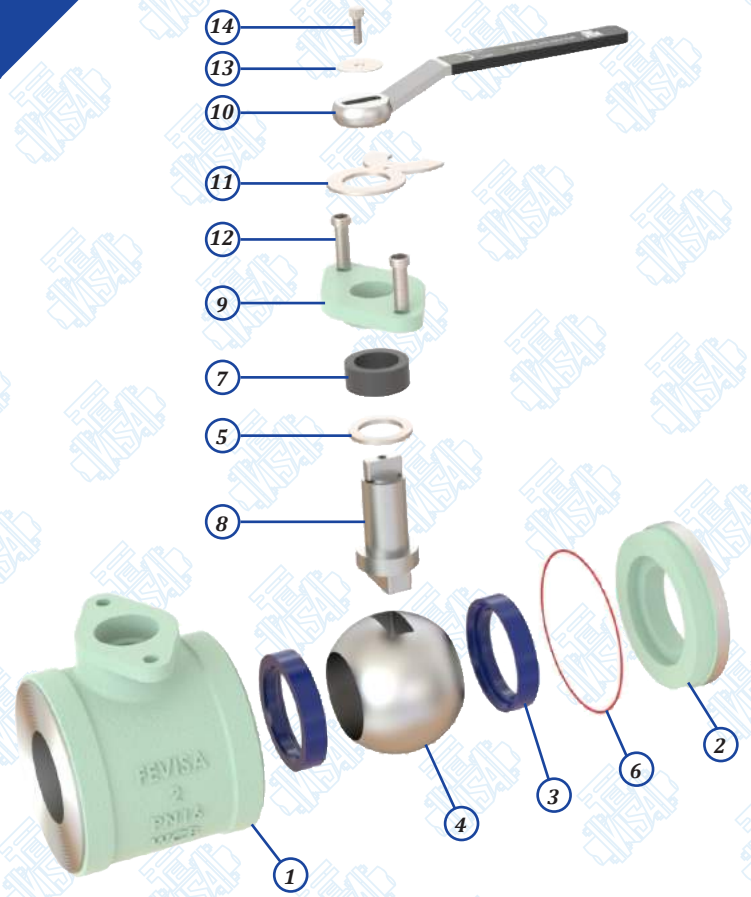
Dimensions and Weights:

DIMENSION **Class 150 LB/PN 16, 10K**

Size	D			A	H	W
	150 LB	PN 16	10K			
1/2"	47	53	58	40	80	130
3/4"	57	63	63	45	80	170
1"	66	73	74	50	100	170
1-1/4"	75	84	84	60	110	200
1-1/2"	85	94	89	70	120	250
2"	103	109	104	80	130	250
2-1/2"	122	129	124	110	140	350
3"	135	144	134	120	150	350
4"	173	170	159	140	180	420

Wafer Ball Valve

Standard Materials of Constructions:

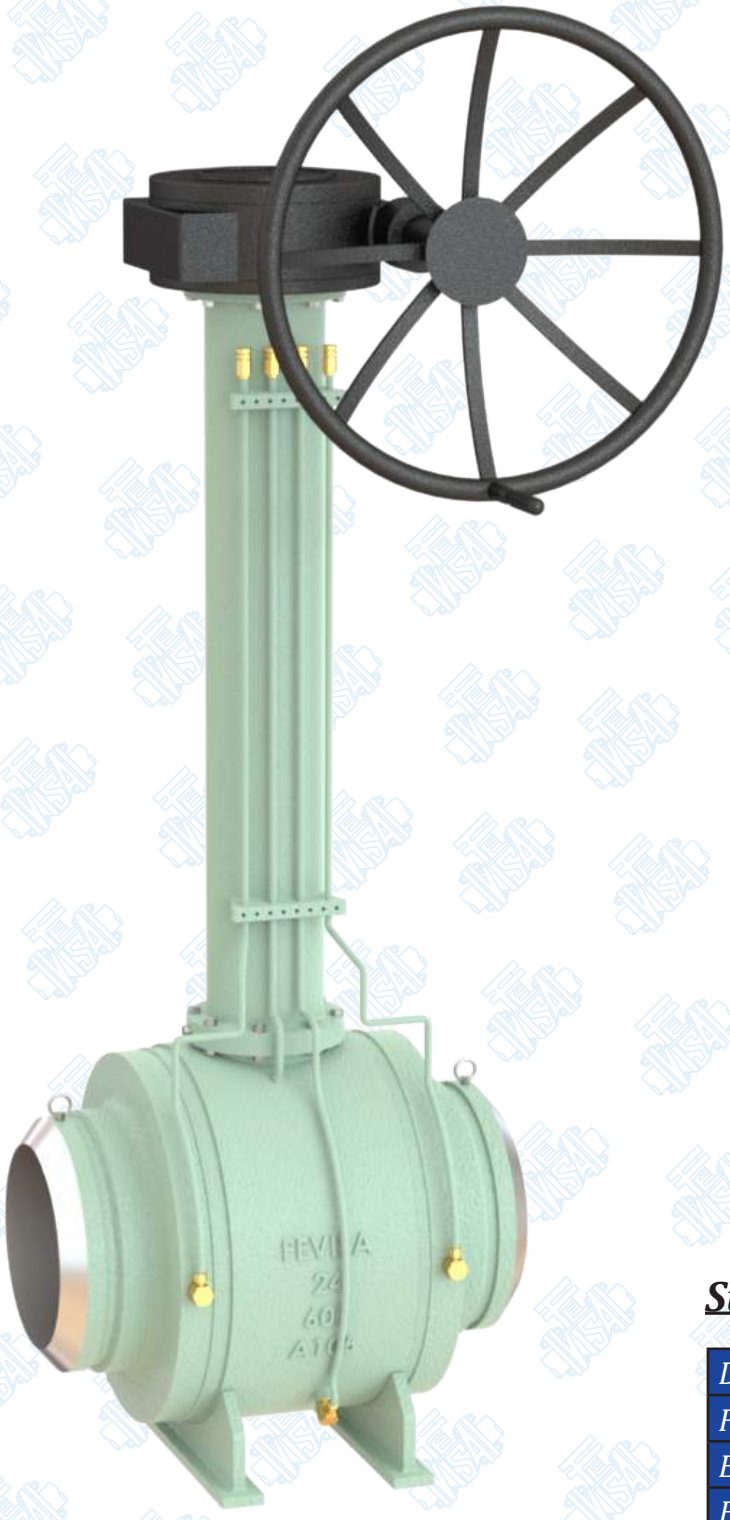


Material Specifications:

No.	Part	Material
1	Body	WCB, WCC, LCB, LCC, C5, C12, WC6, WC9, CF8, CF8M, CF3, CF3M, CA15, B62,etc
2	Screwed Cover	WCB, WCC, LCB, LCC, C5, C12, WC6, WC9, CF8, CF8M, CF3, CF3M, CA15, B62,etc
3	Seat	PTFE, RPTFE, CPTFE, PEEK, NYLON, DEVLON, PPL, DERLIN, MOLON, etc
4	Ball	A105+ENP, A182 F6, SS316, SS316L, SS304, SS304L, Bronze, etc
5	Thrust Washer	PTFE
6	Gasket	PTFE, SS304+Graphite, SS316+Graphite
7	Packing	PTFE, Graphite
8	Stem	A105+ENP, A182-F6, F304,F316, F316L, F304L, 17-4PH, F51
9	Gland Flange	WCB, WCC, LCB, LCC, C5, C12, WC6, WC9, CF8, CF8M, CF3, CF3M, CA15, B62,etc
10	Lever	Carbon Steel, Stainless Steel
11	Limited Plate	1015+Cr, Carbon Steel+Cr
12	Screw	A193 B7, B7M, B8, B8M, B16, L7, L7M
13	Steel Gasket	1025+Cr
14	Stop Screw	1025+Cr

*Recommended Spare Part

Fully Welded Ball Valve



Features:

Valve Size
2" – 60"

Pressure Rating
150 LB ~ 2500 LB

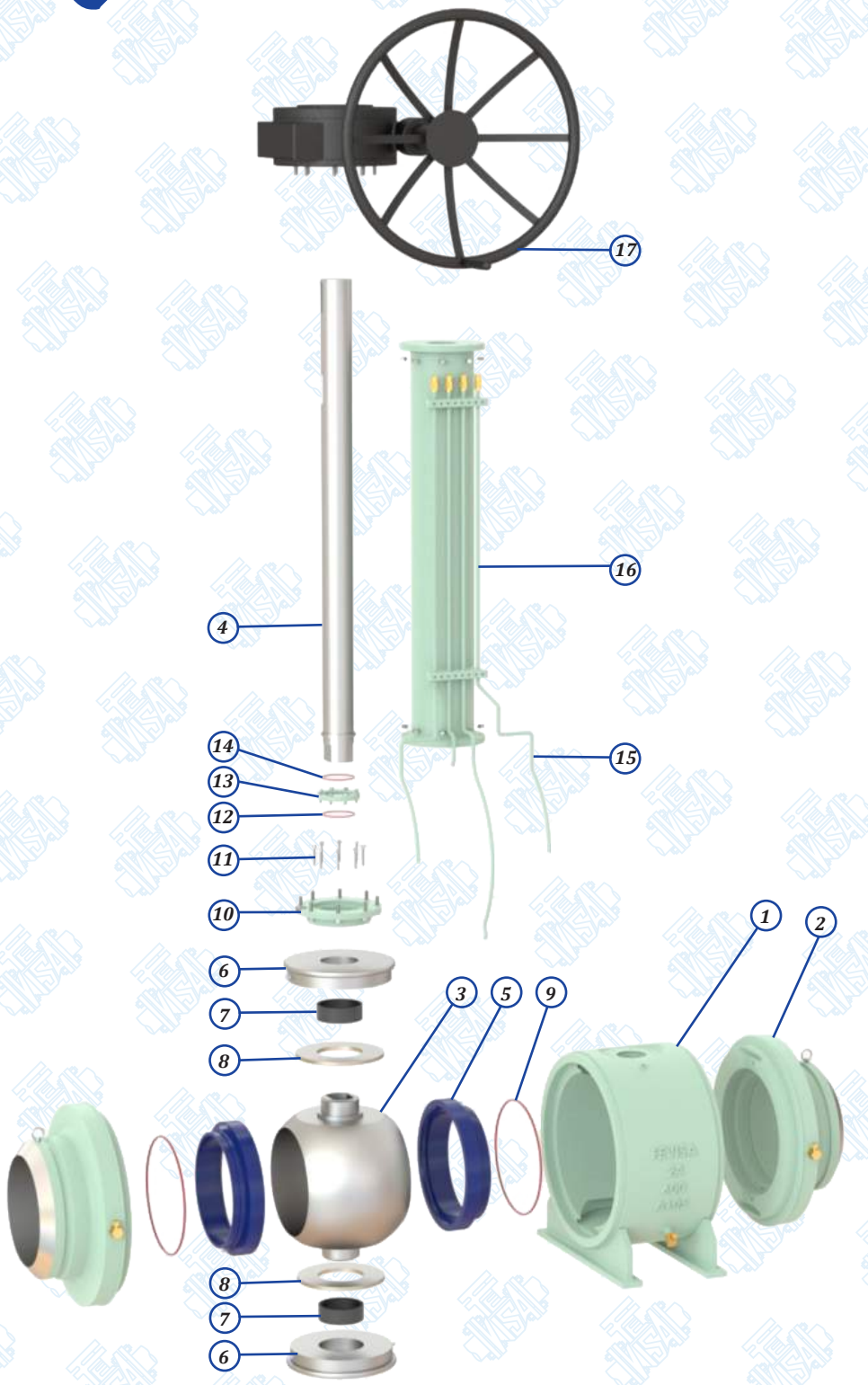
Design Features

- *Body and Bonnet Welded Integral*
- *Trunnion Mounted Ball, Full & Reduced Bore*
- *Cavity Pressure Self Relief*
- *Stem Extension*
- *Anti-Static Device*
- *Blow-out Proof Stem*
- *Double Block and Bleed*
- *Fire Safe Design*
- *Emergency Sealant Injector*
- *Vent Valve, Drain Valve*
- *Zero Leakage*
- *Lifting Lugs & Supporting Legs (8" & Larger)*

Standards:

Design	*ASME B16.34 / API 6D*
Face to Face	*ASME B16.10/API 6D*
End Flange	*ASME B16.5 / ASME B16.47*
BW End	*ASME B16.25*
Test	*API 598/ API 6D*
Fire Safe Test	*API 607/ API 6FA*
Special	*NACE MR-01-75*

Standard Materials of Constructions:



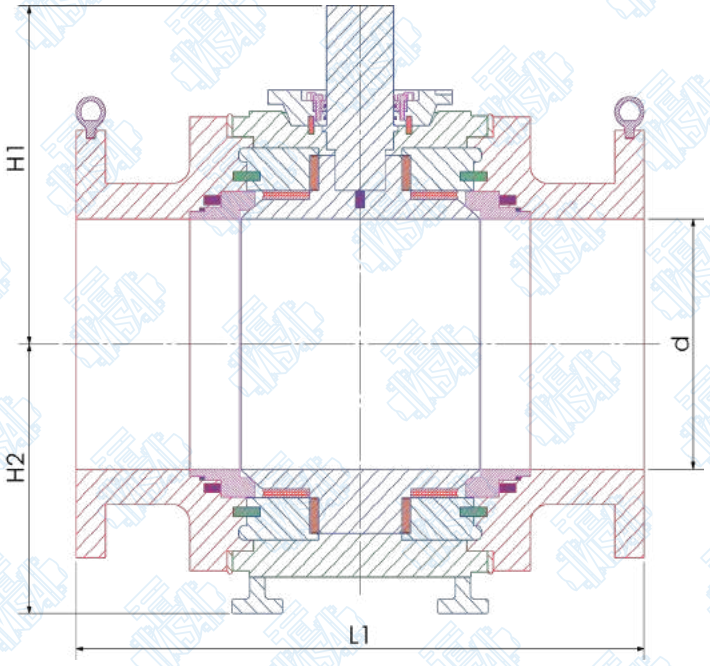
Fully Welded Ball Valve

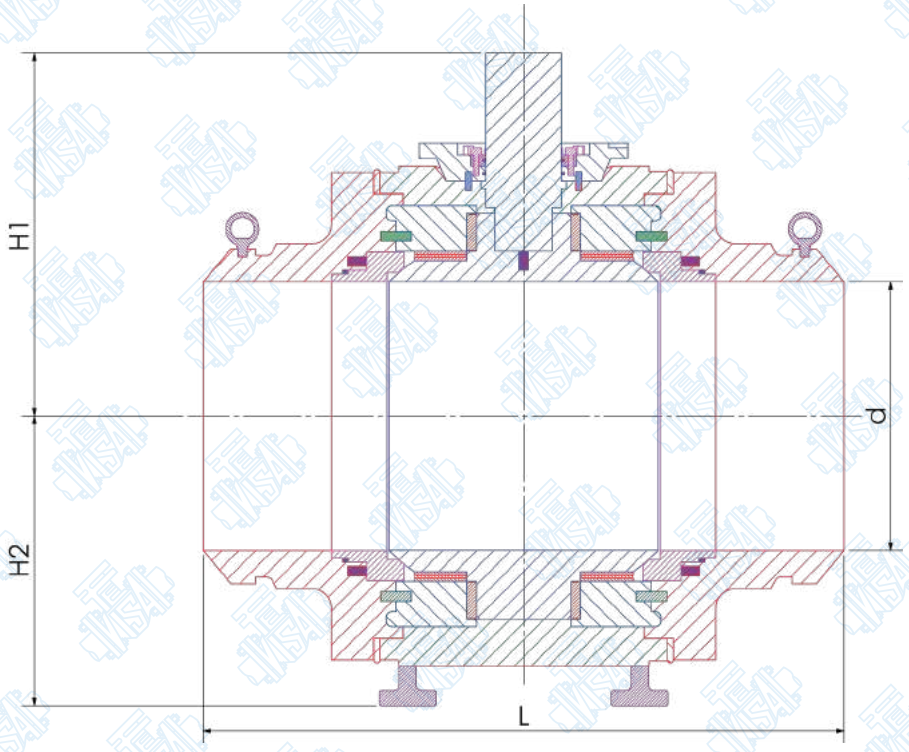
Material Specifications:

No.	Part	Material
1	Body	WCB, WCC, LCB, LCC, C5, C12, WC6, WC9, CF8, CF8M, CF3, CF3M, CA15, B62, A105, LF2, F5, F11, F22, F304(L), F316(L), F321, F347, F51, F55, INCONEL, MONEL, HASTELLOY C, etc
2	Bonnet	WCB, WCC, LCB, LCC, C5, C12, WC6, WC9, CF8, CF8M, CF3, CF3M, CA15, B62, A105, LF2, F5, F11, F22, F304(L), F316(L), F321, F347, F51, F55, INCONEL, MONEL, HASTELLOY C, etc
3	Ball	A105+ENP, A182 F6, SS316, SS316L, SS304, SS304L, etc
4	Stem	A105+ENP, A182-F6, F304,F316, F316L, F304L, 17-4PH, F51
5	Seat	PTFE, RPTFE, CPTFE, PEEK, NYLON, DEVLON, PPL, DERLIN, MOLON, Metal Seats, etc
6	Trunnion Block	A105+ENP, A182-F6, F304, F304L, F316, F316L, 17-4PH, F51, etc
7	Trunnion Bearing	Metal + PTFE
8	Thrust Washer	PTFE
9	O-Ring	NBR, Viton, PTFE
10	Top Flange	WCB, WCC, LCB, LCC, C5, C12, WC6, WC9, CF8, CF8M, CF3, CF3M, CA15, B62, A105, LF2, F5, F11, F22, F304(L), F316(L), F321, F347, F51, F55, INCONEL, MONEL, HASTELLOY C, etc
11	Bolt	A193 B7, B7M, B8, B8M, B16, L7, L7M
12	O-Ring	NBR, Viton, PTFE
13	Internal Stop Plate	WCB, WCC, LCB, LCC, C5, C12, WC6, WC9, CF8, CF8M, CF3, CF3M, CA15, B62, A105, LF2, F5, F11, F22, F304(L), F316(L), F321, F347, F51, F55, INCONEL, MONEL, HASTELLOY C, etc
14	Packing	PTFE, Graphite
15	Tubing	Stainless Steel
16	Extended Stem Cover	WCB, WCC, LCB, LCC, C5, C12, WC6, WC9, CF8, CF8M, CF3, CF3M, CA15, B62, A105, LF2, F5, F11, F22, F304(L), F316(L), F321, F347, F51, F55, INCONEL, MONEL, HASTELLOY C, etc
17	Gearbox	Assembly

*Recommended Spare Part

Dimensions and Weights:





Fully Welded Ball Valve

Dimensions and Weights:

FULL BORE **Class 150/300**

Size	d	L	L1 (150#/300#)	H1	H2	W	Weight
in	mm	mm	mm	Mm	mm	Mm	Kg
6	152	457	394/403	303	185	460	185
8	203	521	457/502	342	226	460	276
10	254	559	533/568	379	272	705	385
12	305	635	610/648	418	311	705	535
14	337	762	686/762	455	348	705	735
16	387	838	762/838	558	417	800	1585
18	438	914	864/914	598	453	800	2340
20	489	991	914/991	630	479	800	2520
24	591	1143	1067/1143	705	587	800	3985
26	635	1245	1143/1245	777	600	800	4800
28	686	1346	1245/1346	800	650	800	5760
30	737	1397	1295/1397	860	692	800	6715
32	781	1524	1372/1524	908	736	800	8120

FULL BORE **Class 600**

Size	d	L	L1	H1	H2	W	Weight
in	mm	mm	mm	Mm	mm	Mm	Kg
6	152	559	559	309	245	460	230
8	203	660	660	358	300	705	445
10	254	787	787	409	340	705	658
12	305	838	838	474	390	800	952
14	337	889	889	502	428	800	1330
16	387	991	991	532	475	800	2040
18	438	1092	1092	636	545	800	2890
20	489	1194	1194	674	570	800	3350
24	591	1397	1397	765	700	800	5650

Fully Welded Ball Valve

Dimensions and Weights:

FULL BORE **Class 900**

Size	d	L	L1	H1	H2	W	Weight
in	mm	mm	mm	Mm	mm	Mm	Kg
6	152	610	610	305	300	705	330
8	203	737	737	395	400	800	595
10	254	838	838	430	430	800	935
12	305	965	965	465	455	800	1485
14	324	1029	1029	545	545	800	1955
16	375	1130	1130	615	615	800	2975
18	426	1219	1219	685	645	800	4010
20	473	1321	1321	750	685	800	4710
24	571	1549	1549	895	775	800	8285

FULL BORE **Class 1500**

Size	d	L	L1	H1	H2	W	Weight
in	mm	mm	mm	Mm	mm	Mm	Kg
6	146	705	705	380	300	800	503
8	194	832	832	490	400	800	795
10	241	991	991	510	430	800	1615
12	289	1130	1130	560	460	800	1945
14	317	1257	1257	635	550	800	3350
16	362	1384	1384	620	800	800	4615

Ball Valves Serial Torque Form

FLOATING BALL VALVE TORQUE FORM (N.M)

Size(mm) / Class(MPa)	15	20	25	40	50	65	80	100	125	150	200
PN 16	3	5	10	16	25	50	65	125	250	340	485
PN 25	3	5	11	18	30	60	80	140	300	400	680
PN 40	5	10	24	35	50	100	150	250	450	585	996
PN 64	15	30	30	80	100	200	300	400	-	-	-
PN 100	19	35	68	130	190	360	460	700	-	-	-
Size(mm) / Class(MPa)	1/2"	3/4"	1"	1-1/2"	2"	2-1/2"	3"	4"	5"	6"	8"
150	3	5	5	16	25	50	65	125	250	410	700
300	7	12	12	38	60	120	160	280	600	950	1550
400	15	30	30	90	140	240	350	540	-	-	-
600	19	35	35	130	190	360	460	770	-	-	-

TRUNNION TYPE BALL VALVE TORQUE FORM (N.M)

Size(mm) / Class(MPa)	50	65	80	100	125	150	200	250	300	350	400
PN 16	25	50	65	125	250	340	485	125	1310	1910	2860
PN 25	30	60	80	140	300	400	680	140	1870	1870	4150
PN 40	50	100	150	250	450	585	996	250	2800	2800	6300
PN 64	100	200	300	400	650	890	1500	400	4290	4290	9750
PN 100	190	300	460	770	1050	1980	3280	700	7200	7200	14500
Size(mm) / Class(MPa)	2"	2-1/2"	3"	4"	5"	6"	8"	10"	12"	14"	16"
150	25	50	65	125	250	410	700	1100	1750	2600	3900
300	60	120	160	280	600	950	1550	2000	3300	5000	7500
400	140	240	350	540	740	1260	1910	3250	5340	7500	10000
600	190	360	460	770	1050	1980	3280	5250	7200	9860	14500

Ball Valves Serial Torque Form

TRUNNION TYPE BALL VALVE TORQUE FORM (N.M)

Size(mm) / Class(MPa)	450	500	600	700	800
PN 16	4500	5860	8920	13320	24000
PN 25	6500	7800	13210	19830	35420
PN 40	8900	12000	20380	30670	55200
PN 64	13500	18660	21820	48020	85830
PN 100	19600	29000	42500	58000	82000
Size(mm) / Class(MPa)	**18"**	**20"**	**24"**	**28"**	**32"**
150	6200	7500	10500	14500	21000
300	11800	14400	19600	28200	29800
400	12400	18500	29500	40500	53000
600	19600	29000	42500	58000	62000

THREE-WAY BALL VALVE TORQUE FORM (N.M)

Size(mm) / Class(MPa)	15	20	25	40	50	65	80	100	125	150	200	250	300
PN 16	5	8	15	24	35	75	100	180	350	500	730	1210	1950
PN 25	5	8	16	27	45	90	120	210	450	600	1000	1600	2800
PN 40	8	15	36	50	75	145	220	350	650	850	1450	2400	4200
Size(mm) / Class(MPa)	**1/2"**	**2-1/2"**	**3"**	**4"**	**5"**	**6"**	**8"**	**10"**	**12"**	**14"**	**16"**	**18"**	**20"**
150	5	8	16	24	38	75	95	185	380	600	1050	1650	2625
300	8	18	38	58	90	180	240	420	900	1425	2300	3000	4950

Notes: *The data in the form are not practically, just for reference.*

Soft Materials Data

SPECIFICATION FOR SEAT MATERIALS

	PTFE	RPTFE	Molon(Nylon+MoS2)	PEEK
Tensile strength(MPa)	24.8	25.4	75~100	91
Compressive Strength(MPa)	35	52	100~14	137
Elongation(%)	250	120	10~30	50
Hardness(SH.A)	56	60	78	82
Water Absorption(%)	<0.01	<0.01	0.7	0.12
Specific Gravity(G/cm^3)	2.2	2.2	1.2	1.35
Temperature Range(F)	-300~400	-150~425	-40~300	-150~500
Pressure Rating(Class)	150-600	150-600	150~1500	150~1500
Service Application	Chemical & Cryogenic	Chemical & Cryogenic	High Pressure & Low Temperature	High Pressure & Low Temperature

	Nylon 1010	Nylon 12	Devlon V	Delrin
Tensile strength(MPa)	55	60	80	68
Compressive Strength(MPa)	70	79	140	110
Elongation(%)	150	200	5.37	220
Hardness(SH.A)	70	75	78	78
Water Absorption(%)	0.3	0.2	0.1	0.2
Specific Gravity(G/cm^3)	1.04	1.01	1.14	1.41
Temperature Range(F)	-40~200	-58~250	-50~300	-58~230
Pressure Rating(Class)	600~1500	600~1500	150~1500	150~1500
Service Application	High Pressure & Low Temperature	High Pressure & Low Temperature	High Pressure & Low Temperature	High Pressure & Low Temperature

Soft Materials Data

SPECIFICATION FOR SEAL MATERIALS

	Viton A	NBR	Viton B	HN-BR(HSN)	Viton AED
Temperature Range(F)	-20~400	-50~250	-20~400	-40~320	-20~480
Hardness(SH.A)	70	70	70	80	90
Specific Gravty (G/cm^3)	1.85	1.2	1.85	1.33	1.9
Service Application	Petroleum Oils, Gasoline, Transmission Fluid	Petroleum Oils, Water, Hydraulic Oils	Mineral Acid, Steam, MTBE	Petroleum Oils, H_2S & CO_2	Anti-Explosive Decompression

SPECIFICATION FOR GASKET MATERIALS

	Flexible Graphite	Spiral Wound 316+Graphite	PTFE	Spiral Wound Monel+PTFE
Temperature Range(F)	-300~900	-300~900	-300~400	-300~400
PH	0~14	0~14	0~14	0~14
Service Application	Fire-safe	Fire-safe	Cryogenic, High Corrosive	High Corrosive

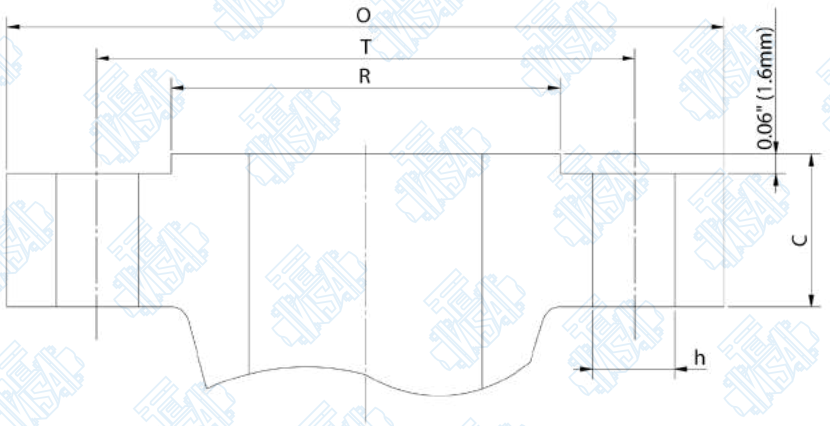
*Due to quick develop, We reverse the right institute changes in material,

Design and specification for all Valvulas FEVISA designed valves without prior notice.

Steel End Flange Dimensions

(Class 150-2500 ASME B16.5/B16.47)

CLASS 150 300 RF



CLASS	SIZE		O		R		C		T		h		BOLT	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Qty.	Diameter
150	2	50	6.00	152	3.62	92	0.62	16	4.75	120.5	0.75	19	4	5/8
	2.5	65	7.00	178	4.12	105	0.69	18	5.50	139.5	0.75	19	4	5/8
	3	80	7.50	190	5.00	127	0.75	19	6.00	152.5	0.75	19	4	5/8
	4	100	9.00	229	6.19	157	0.94	24	7.50	190.5	0.75	19	8	5/8
	6	150	11.00	279	8.50	216	1.00	26	9.50	241.5	0.88	22	8	3/4
	8	200	13.50	343	10.62	270	1.12	29	11.75	298.5	0.88	22	8	3/4
	10	250	16.00	406	12.75	324	1.19	31	14.25	362	1.00	25	12	7/8
	12	300	19.00	483	15.00	381	1.25	32	17.00	432	1.00	25	12	7/8
	14	350	21.00	533	16.25	413	1.38	35	18.75	476	1.12	29	12	1
	16	400	23.50	597	18.50	470	1.44	37	21.25	540	1.12	29	16	1
	18	450	25.00	635	21.00	533	1.56	40	22.75	578	1.25	32	16	$1_{1/8}$
	20	500	27.50	699	23.00	584	1.69	43	25.00	635	1.25	32	20	$1_{1/8}$
	24	600	32.00	813	27.25	692	1.88	48	29.50	749.5	1.38	35	20	$1_{1/4}$
	28	700	36.50	927	31.50	800	2.81	72	34.00	963.5	1.38	35	28	$1_{1/4}$
	30	750	38.75	984	33.75	857	2.94	75	36.00	914.5	1.38	35	28	$1_{1/4}$
	32	800	41.75	1060	36.00	914	3.19	81	38.50	978	1.62	41	28	$1_{1/2}$
	36	900	46.00	1168	40.25	1022	3.56	91	42.75	1086	1.62	41	32	$1_{1/2}$

Steel End Flange Dimensions

(Class 150-2500 ASME B16.5/B16.47)

CLASS	SIZE		O		R		C		T		h		BOLT	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Qty.	Diameter
300	2	50	6.50	165	3.62	92	0.88	23	5.00	127	0.75	19	8	5/8
	2.5	65	7.50	190	4.12	105	1.00	26	5.88	179	0.88	22	8	3/4
	3	80	8.25	210	5.00	127	1.12	29	6.62	168.5	0.88	22	8	3/4
	4	100	10.00	254	6.19	157	1.25	32	7.88	200	0.88	22	8	3/4
	6	150	12.50	318	8.50	216	1.44	37	10.62	270	0.88	22	12	3/4
	8	200	15.00	381	10.62	270	1.62	42	13.00	330	1.00	25	12	7/8
	10	250	17.50	445	12.75	324	1.88	48	15.25	387.5	1.12	29	16	1
	12	300	20.50	521	15.00	381	2.00	51	17.75	451	1.25	32	16	1 1/8
	14	350	23.00	584	16.25	413	2.12	54	20.25	514.5	1.25	32	20	1 1/8
	16	400	25.50	648	18.50	470	2.25	58	22.50	571.5	1.38	35	20	1 1/4
	18	450	28.00	711	21.00	533	2.38	61	24.75	628.5	1.38	35	24	1 1/4
	20	500	30.50	775	23.00	584	2.50	64	27.00	686	1.38	35	24	1 1/4
	24	600	36.00	914	27.25	692	2.75	70	32.00	813	1.62	41	24	1 1/2
	28	700	40.75	1035	31.50	800	3.38	86	37.00	940	1.75	45	28	1 5/8
	30	750	43.00	1092	33.75	857	3.62	92	39.25	997	1.88	48	28	1 3/4

End Flange Dimensions: Size 2”-24” to ASME B16.5, Size 28”-36” to ASME B16.47 A.

Tolerances: Unit - inch

Thickness C:

NPS ≤ 18” +0.12, -0
NPS ≥ 20” +0.19, -0

Drilling and Facing:

Bolt Circle Diameter h: ±0.06
Center to Center of Adjacent Volt Holes: ±0.03

Eccentricity Between Bolt Circle Diameter and Machined Facing Diameters:

NPS ≤ 2 1/2” ±0.03
NPS ≥ 2 1/2” ±0.06

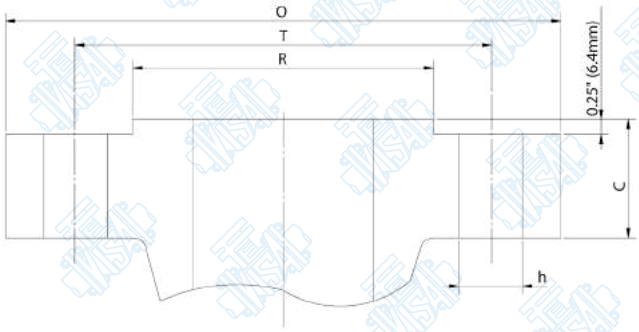
Outside Diameter R:

0.06 Raised Face: ±0.03
0.25 Raised Face: ±0.02

Steel End Flange Dimensions

(Class 150-2500 ASME B16.5)

CLASS 600-2500 RF



CLASS	SIZE		O		R		C		T		h		BOLT	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Qty.	Diameter
600	2	50	6.50	165	3.62	92	1.00	26	5.00	127	0.75	19	8	5/8
	2.5	65	7.50	190	4.12	105	1.12	29	5.88	149	0.88	22	8	3/4
	3	80	8.25	210	5.00	127	1.25	32	6.62	168	0.88	22	8	3/4
	4	100	10.75	273	6.19	157	1.50	38	8.50	216	1.00	25	12	7/8
	6	150	14.00	356	8.50	216	1.88	48	11.50	292	1.12	29	12	1
	8	200	16.50	419	10.62	270	2.19	56	13.75	349	1.25	32	12	1 1/8
	10	250	20.00	508	12.75	324	2.50	64	17.00	432	1.38	35	16	1 1/4
	12	300	22.00	559	15.00	381	2.62	67	19.25	489	1.38	35	20	1 1/4
	14	350	23.75	603	16.25	413	2.75	70	20.75	527	1.50	38	20	1 3/8
	16	400	27.00	686	18.50	470	3.00	77	23.75	603	1.62	41	20	1 1/2
	18	450	29.25	743	21.00	533	3.25	83	25.75	654	1.75	44	20	1 5/8
	20	500	32.00	813	23.00	584	3.50	89	28.50	7247	1.75	44	24	1 5/8
	24	600	37.00	940	27.25	692	4.00	102	33.00	838	2.00	51	24	1 7/8
900	2	50	8.50	216	3.62	92	1.50	38.5	6.50	165.1	1.00	26	8	7/8
	2.5	65	9.62	244	4.12	105	1.62	41.5	7.50	190.5	1.12	29	8	1
	3	80	9.50	241	5.00	127	1.50	38.5	7.50	190.5	1.00	26	8	7/8
	4	100	11.50	292	6.19	157	1.75	44.5	9.25	234.9	1.25	32	8	1 1/8
	6	150	15.00	381	8.50	216	2.19	56.0	12.50	317.5	1.25	32	12	1 1/8
	8	200	18.50	470	10.62	270	2.50	63.5	15.50	393.7	1.50	39	12	1 3/8
	10	250	21.50	545	12.75	324	2.75	70.0	18.50	469.9	1.50	39	16	1 3/8
	12	300	24.00	610	15.00	381	3.12	79.5	21.00	533.4	1.50	39	20	1 3/8
	14	350	25.25	640	16.25	413	3.38	86.0	22.00	558.8	1.62	42	20	1 1/2
	16	400	27.25	705	18.50	470	3.50	89.0	24.25	615.9	1.75	45	20	1 5/8
	18	450	31.00	785	21.00	533	4.00	102.0	27.00	685.8	2.00	51	20	1 7/8
	20	500	33.75	855	23.00	584	4.25	108.0	29.50	749.3	2.12	54	20	2
	24	600	41.00	1040	27.25	692	5.50	140.0	35.50	901.7	2.62	67	20	2 1/2

Steel End Flange Dimensions

(Class 150-2500 ASME B16.5)

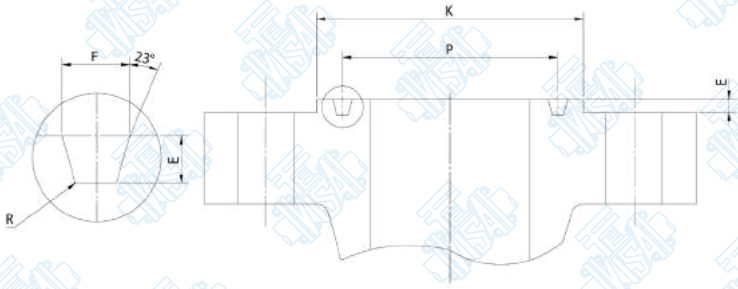
CLASS	SIZE		O		R		C		T		h		BOLT	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Qty.	Diameter
1500	2	50	8.50	216	3.62	92	1.50	38.5	6.50	165.1	1.00	26	8	1
	2.5	65	9.62	244	4.12	105	1.62	41.5	7.50	190.5	1.12	29	8	1 1/8
	3	80	10.50	267	5.00	127	1.88	48.5	8.00	203.2	1.25	32	8	1 1/4
	4	100	12.25	311	6.19	157	2.12	54.0	9.50	241.3	1.38	35	8	1 3/8
	6	150	15.50	394	8.50	216	3.25	83.0	12.50	317.5	1.50	39	12	1 1/2
	8	200	19.00	483	10.62	270	3.62	92.9	15.50	393.7	1.75	45	12	1 3/4
	10	250	23.00	585	12.75	324	4.25	108.0	19.00	482.6	2.00	51	12	2
	12	300	26.50	675	15.00	381	4.88	124.0	22.50	571.5	2.12	54	16	2 1/8
	14	350	29.50	750	16.25	413	5.25	133.5	25.00	635	2.38	61	16	2 3/8
	16	400	32.50	825	18.50	470	5.75	146.5	27.75	698.5	2.62	67	16	2 5/8
	18	450	36.00	915	21.00	533	6.38	162.0	30.50	774.7	2.88	74	16	2 7/8
	20	500	38.75	985	23.00	584	7.00	178.0	32.75	831.9	3.12	80	16	3 1/8
	24	600	46.00	1170	27.25	692	8.00	203.5	39.00	990.6	3.62	93	16	3 5/8
2500	2	50	9.25	235	3.62	92	2.00	51.0	6.75	171.4	1.12	29	8	1
	2.5	65	10.50	267	4.12	105	2.25	57.5	7.75	196.9	1.25	32	8	1 1/8
	3	80	12.00	305	5.00	127	2.62	67.0	9.00	228.6	1.38	35	8	1 1/4
	4	100	14.00	356	6.19	157	3.00	76.5	10.75	273.1	1.62	42	8	1 1/2
	6	150	19.00	483	8.50	216	4.25	108.0	14.50	368.3	2.12	54	8	2
	8	200	21.75	550	10.62	270	5.00	127.0	17.25	450.8	2.12	54	12	2
	10	250	26.50	675	12.75	324	6.50	165.5	21.25	539.7	2.62	67	12	2 1/2
	12	300	30.00	760	15.00	381	7.25	184.5	24.38	619.3	2.88	74	12	2 3/4

***End Flange Dimensions**: ASME B16.5*

***Tolerances:** Same as Class 150 and 300*

Dimensions of Ring Joint Facing
(Class 150-2500 ASME B16.5/B16.47)

CLASS 150-2500 RTJ



CLASS	SIZE		Ring No.	P		E		F		R		K	
	in	mm	in	in	mm	in	mm	in	mm	in	mm	in	mm
150	2	50	R22	3.250	82.55	0.250	6.35	0.344	8.74	0.03	0.8	4.00	102
	2.5	65	R25	4.000	101.60	0.250	6.35	0.344	8.74	0.03	0.8	4.75	121
	3	80	R29	4.500	114.30	0.250	6.35	0.344	8.74	0.03	0.8	5.25	133
	4	100	R36	5.875	149.22	0.250	6.35	0.344	8.74	0.03	0.8	6.62	171
	6	150	R43	7.625	193.68	0.250	6.35	0.344	8.74	0.03	0.8	8.62	219
	8	200	R48	9.750	247.65	0.250	6.35	0.344	8.74	0.03	0.8	10.75	273
	10	250	R52	12.000	304.80	0.250	6.35	0.344	8.74	0.03	0.8	13.00	330
	12	300	R56	15.000	381.00	0.250	6.35	0.344	8.74	0.03	0.8	16.00	406
	14	350	R59	15.625	396.88	0.250	6.35	0.344	8.74	0.03	0.8	16.75	425
	16	400	R64	17.875	454.02	0.250	6.35	0.344	8.74	0.03	0.8	19.00	483
	18	450	R68	20.375	517.52	0.250	6.35	0.344	8.74	0.03	0.8	21.50	546
	20	500	R72	22.000	558.80	0.250	6.35	0.344	8.74	0.03	0.8	23.50	597
	24	600	R76	26.500	673.10	0.250	6.35	0.344	8.74	0.03	0.8	28.00	711
	28	700	R94	31.500	800.10	0.500	12.7	0.781	19.844	0.06	1.5	33.88	861
	30	750	R95	33.750	857.25	0.500	12.7	0.781	19.844	0.06	1.5	36.12	917
	32	800	R96	36.000	914.40	0.562	14.3	0.906	23.019	0.09	2.3	38.75	984
	36	900	R98	40.250	1022.35	0.562	14.3	0.906	23.019	0.09	2.3	40.75	1035

Dimensions of Ring Joint Facing

(Class 150-2500 ASME B16.5/B16.47)

CLASS	SIZE		Ring-No.	P		E		F		R		K	
	in	mm	in	in	mm	in	mm	in	mm	in	mm	in	mm
300 600	2	50	R26	3.250	82.55	0.312	7.92	0.469	11.91	0.03	0.8	4.25	10
	2.5	65	R26	4.000	101.60	0.312	7.92	0.469	11.91	0.03	0.8	5.00	127
	3	80	R31	4.875	123.82	0.312	7.92	0.469	11.91	0.03	0.8	5.75	146
	4	100	R37	5.875	149.22	0.312	7.92	0.469	11.91	0.03	0.8	6.88	175
	6	150	R45	8.312	211.13	0.312	7.92	0.469	11.91	0.03	0.8	9.50	214
	8	200	R49	10.625	269.88	0.312	7.92	0.469	11.91	0.03	0.8	11.88	302
	10	250	R53	12.750	323.85	0.312	7.92	0.469	11.91	0.03	0.8	14.00	356
	12	300	R57	15.000	381.00	0.312	7.92	0.469	11.91	0.03	0.8	16.25	413
	14	350	R61	16.500	419.10	0.312	7.92	0.469	11.91	0.03	0.8	18.00	457
	16	400	R65	18.500	469.90	0.312	7.92	0.469	11.91	0.03	0.8	20.00	508
	18	450	R69	21.000	533.40	0.312	7.92	0.469	11.91	0.03	0.8	22.62	575
	20	500	R73	23.000	584.20	0.375	9.52	0.531	13.49	0.06	1.5	25.00	635
	24	600	R77	27.250	692.15	0.438	11.13	0.656	16.66	0.06	1.5	29350	749
	28	700	R94	31.500	800.10	0.500	12.7	0.781	19.84	0.06	1.5	33.88	861
	30	750	R95	33.750	857.25	0.500	12.7	0.781	19.84	0.06	1.5	36.12	917
900	2	50	R24	3.750	95.25	0.312	7.92	0.469	11.91	0.03	0.8	4.88	124
	2.5	65	R27	4.250	107.95	0.312	7.92	0.469	11.91	0.03	0.8	5.38	137
	3	80	R31	4.875	123.82	0.312	7.92	0.469	11.91	0.03	0.8	6.12	156
	4	100	R37	5.875	149.22	0.312	7.92	0.469	11.91	0.03	0.8	7.12	181
	6	150	R45	8.312	211.12	0.312	7.92	0.469	11.91	0.03	0.8	9.50	241
	8	200	R49	10.625	269.88	0.312	7.92	0.469	11.91	0.03	0.8	12.12	308
	10	250	R53	12.750	323.85	0.312	7.92	0.469	11.91	0.03	0.8	14.25	362
	12	300	R57	15.000	381.00	0.312	7.92	0.469	11.91	0.03	0.8	16.50	419
	14	350	R62	16.500	419.10	0.438	11.13	0.656	16.66	0.06	1.5	18.38	467
	16	400	R66	18.500	469.90	0.438	11.13	0.656	16.66	0.06	1.5	20.62	524
	18	450	R70	21.000	533.40	0.500	12.70	0.781	19.84	0.06	1.5	23.38	594
	20	500	R74	23.000	584.20	0.500	12.70	0.781	19.84	0.06	1.5	25.50	648
	24	600	R78	27.250	692.15	0.625	15.88	1.062	26.97	0.09	2.3	30.38	772

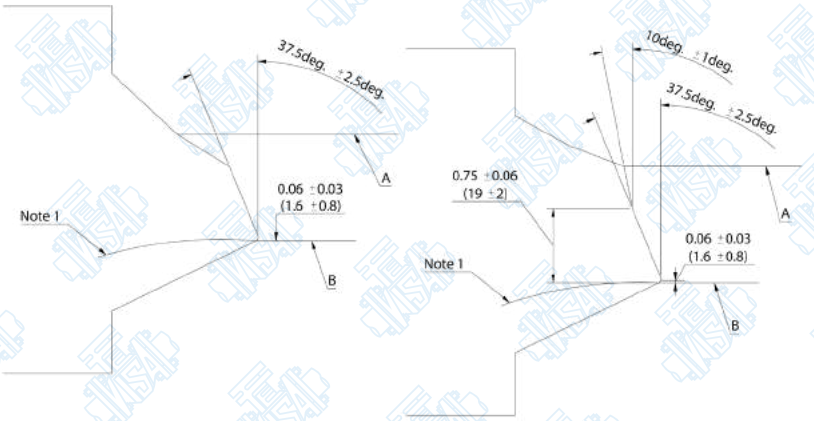
Dimensions of Ring Joint Facing

(Class 150-2500 ASME B16.5/B16.47)

CLASS	SIZE		Ring-No.	P		E		F		R		K	
	in	mm	in	in	mm	in	mm	in	mm	in	mm	in	mm
1500	2	50	R27	3.750	95.25	0.312	7.92	0.469	11.91	0.03	0.8	4.88	124
	2.5	65	R27	4.250	10.95	0.312	7.92	0.469	11.91	0.03	0.8	5.38	137
	3	80	R35	4.875	123.82	0.312	7.92	0.469	11.91	0.03	0.8	6.62	168
	4	100	R39	5.875	149.22	0.312	7.92	0.469	11.91	0.03	0.8	7.62	194
	6	150	R46	8.312	211.12	0.375	9.52	0.531	13.49	0.06	1.5	9.75	248
	8	200	R50	10.625	269.88	0.438	11.13	0.656	16.66	0.06	1.5	12.50	318
	10	250	R54	12.750	323.85	0.438	11.13	0.656	16.66	0.06	1.5	14.62	371
	12	300	R58	15.000	381.00	0.562	14.27	0.906	23.01	0.06	2.3	17.25	438
	14	350	R63	16.500	419.10	0.625	15.88	1.062	26.97	0.09	2.3	19.25	489
	16	400	R67	18.500	469.90	0.688	17.48	1.188	30.18	0.09	2.3	21.50	546
	18	450	R71	21.000	533.40	0.688	17.48	1.188	30.18	0.09	2.3	24.12	613
	20	500	R75	23.000	584.20	0.688	17.48	1.312	33.32	0.09	2.3	26.50	673
	24	600	R79	27.250	692.15	0.812	20.62	1.438	36.53	0.09	2.3	31.25	794
2500	2	50	R26	4.000	101.60	0.312	7.92	0.469	11.91	0.03	0.8	5.25	133
	2.5	65	R28	4.375	111.12	0.375	9.52	0.531	13.49	0.03	0.8	5.88	149
	3	80	R32	5.000	127.00	0.375	9.52	0.531	13.49	0.06	1.5	6.62	168
	4	100	R38	6.188	157.18	0.438	11.13	0.656	16.66	0.06	1.5	8.00	203
	6	150	R47	9.000	228.60	0.500	12.70	0.781	19.84	0.06	1.5	11.00	279
	8	200	R51	11.000	279.40	0.562	14.27	0.906	23.01	0.06	1.5	13.38	340
	10	250	R55	13.500	342.90	0.688	17.48	1.188	30.18	0.09	2.3	16.75	425
	12	300	R60	16.000	406.40	0.688	17.48	1.312	33.32	0.09	2.3	19.50	495
	10	250	R53	12.750	323.85	0.312	7.92	0.469	11.91	0.03	0.8	14.25	362
	12	300	R57	15.000	381.00	0.312	7.92	0.469	11.91	0.03	0.8	16.50	419
	14	350	R62	16.500	419.10	0.438	11.13	0.656	16.66	0.06	1.5	18.38	467
	16	400	R66	18.500	469.90	0.438	11.13	0.656	16.66	0.06	1.5	20.62	524
	18	450	R70	21.000	533.40	0.500	12.70	0.781	19.84	0.06	1.5	23.38	594
	20	500	R74	23.000	584.20	0.500	12.70	0.781	19.84	0.06	1.5	25.50	648
	24	600	R78	27.250	692.15	0.625	15.88	1.062	26.97	0.09	2.3	30.38	772

End Flange Dimensions: *Size 2"-24" to ASME B16.5, Size 28"-36" to ASME B16.47 A,* ***Tolerances:*** *Unit - inch,* ***Depth E:*** *+0.016, -0,* ***Width F:*** *±0.008,* ***Pitch Diameter P:*** *±0.005,* ***Radius at Bottom R:*** *R ≤ 0.06" ±0.03, 0, R ≥ 0.06" ±0.3 ,* ***Angle 23 Deg:*** *±0.5 Deg*

Buttwelding End Dimensions
(ASME B16.25)



Note 1: Internal surface may be as formed or machined for dimension B at root face. Comtour with in the envelope shall be in acordance with section

Wall thicknesses not over 0.88in(22mm)
Welding End Detail for Joint Without Backing Ring

Nominal Pipe Size		Schedule No. [Note(1)]	O.D at Welding Ends				B		C [Note(3)]		T	
			Wrought or Fabricated Components, A[Note(2)]		Cast Steel Valves A[Note(2)]							
DN	NPS		mm	in	mm	in	mm	in	mm	in	mm	in
65	2.5	40	43.0	2.88	75	2.96	62.5	2.469	62.93	2.479	5.16	0.203
		80					59	2.323	59.69	2.341	7.01	0.276
		160					54	2.125	55.28	2.178	9.53	0.375
		XXS					45	1.771	47.43	1.868	14.02	0.552
80	3	40	88.9	3.50	91	3.95	78	3.068	78.25	3.081	5.49	0.126
		80					73.5	2.900	74.53	2.934	7.62	0.300
		160					66.5	2.625	68.38	2.962	11.13	0.438
		XXS					58.5	2.300	61.19	2.409	15.24	0.600
90	3.5	40	101.6	4.00	105	4.12	90	3.548	60.52	3.564	5.74	0.226
		80					85.5	3.346	86.42	3.402	8.08	0.318
100	4	40	114.3	4.50	117	4.62	102	4.026	102.73	4.044	6.02	0.237
		80					97	3.826	98.28	3.869	8.56	0.337
		120					92	3.624	93.78	3.692	11.13	0.438
		160					87.5	3.428	89.65	3.530	13.49	0.531
		XXS					80	3.152	83.30	3.279	17.12	0.674
125	5	40	141.3	5.56	144	5.69	128	5.047	128.80	5.070	6.55	0.258
		80					122	1.813	123.58	4.866	9.53	0.375
		120					116	4.563	118.04	4.647	12.70	0.500
		160					109.5	4.313	112.47	4.428	15.88	0.625
		XXS					103	4.063	106.92	4.209	19.05	0.750

Buttwelding End Dimensions
(ASME B16.25)

Nominal Pipe Size		Schedule No. [Note(1)]	O.D at Welding Ends				B		C [Note(3)]		T	
			Wrought or Fabricated Components, A[Note(2)]		Cast Steel Valves A[Note(2)]							
DN	NPS		mm	in	mm	in	mm	in	mm	in	mm	in
150	6	40	168.3	6.62	172	6.78	154	6.065	154.82	6.094	7.11	0.280
		80					145.5	5.761	148.06	5.828	10.97	0.432
		120					140	5.501	142.29	5.600	14.27	0.562
		160					132	5.187	135.31	5.326	18.26	0.719
		XXS					124.5	4.897	128.85	5.072	21.95	864
200	8	40	219.1	8.62	223	8.78	203	7.981	203.75	8.020	8.18	0.322
		60					198.5	7.813	200.02	7.783	1031.	0.406
		80					193.5	7.625	195.84	7.709	12.70	0.500
		100					189	7.437	191.65	7.544	15.09	0.594
		120					182.5	7.187	186.11	7.326	18.26	0.719
		140					178	7.001	181.98	7.163	20.62	0.812
		XXS					174.5	6.875	179.16	7.053	22.23	0.875
		160					173	6.813	177.79	6.998	23.01	0.906
250	10	40	273.0	10.75	278	10.94	254.5	10.020	255.74	10.070	9.27	0.365
		60					247.5	9.75	249.74	9.834	12.70	0.500
		80					243	9.652	245.55	9.670	15.09	0.594
		100					236.5	9.312	240.01	9.451	18.26	0.719
		120					230	9.062	234.44	9.232	21.44	0.844
		140					222	8.750	227.51	8.959	25.40	1.000
		160					216	8.500	221.95	8.740	28.58	1.125

Buttwelding End Dimensions
(ASME B16.25)

Nominal Pipe Size		Schedule No. [Note(1)]	O.D at Welding Ends				B		C [Note(3)]		T	
			Wrought or Fabricated Components, A[Note(2)]		Cast Steel Valves A[Note(2)]							
DN	NPS		mm	in	mm	in	mm	in	mm	in	mm	in
300	12	STD	323.8	12.75	329	12.97	305	12.000	306.08	12.053	9.53	0.375
		40					303	11.938	304.72	11.999	10.31	0.406
		XS					298.5	11.750	300.54	11.834	12.70	0.500
		60					295	11.626	297.79	11.725	14.27	0.562
		80					289	11.374	292.17	11.505	17.48	0.688
		100					281	11.062	285.24	11.232	21.44	0.844
		120					273	10.750	278.31	10.959	25.40	1.000
		140					266.5	10.500	272.75	10.740	28.58	1.125
		160					257	10.126	264.45	10.413	33.32	1.312
350	14	STD	355.6	14.00	362	14.25	336.5	13.250	337.88	13.303	9.53	0.375
		40					333.5	13.124	335.08	13.192	11.13	0.438
		X3					330	13.000	332.34	13084	12.70	0.500
		60					325.5	12.812	328.15	12.920	15.09	0.594
		80					317.5	12.500	321.22	12.646	19.05	0.750
		100					308	12.124	312.86	12.318	23.83	0.938
		120					300	11.812	305.93	12.044	27.79	1.094
		140					292	11.500	299.00	11.771	31.75	1.250
		160					284	11.188	292.07	11.498	35.71	1.106
400	16	STD	406.4	16.00	413	16.25	387.5	15.250	388.68	15.303	9.53	0.375
		40					381	15.000	383.14	15.084	12.70	0.500
		60					373	14.688	376.21	14.811	16.66	0.656
		80					363.5	14.312	367.84	14.482	21.44	0.844
		100					354	13.938	359.53	14.155	26.19	1.031
		120					344.5	13.562	351.18	13.826	30.96	1.219
		140					333.5	13.124	341.43	13.422	36.53	1.438
		160					325.5	12.812	334.50	13.170	40.49	1.594

Buttwelding End Dimensions
(ASME B16.25)

Nominal Pipe Size		Schedule No. [Note(1)]	O.D at Welding Ends				B		C [Note(3)]		T	
			Wrought or Fabricated Components, A[Note(2)]		Cast Steel Valves A[Note(2)]							
DN	NPS		mm	in	mm	in	mm	in	mm	in	mm	in
500	20	STD	508.0	20.00	516	20.31	489	19.250	490.28	19.303	9.53	0.375
		XS					482.5	19.000	484.74	19.084	12.70	0.500
		40					478	18.812	480.55	18.920	15.09	0.594
		60					467	18.376	470.88	18.538	20.62	0.812
		80					455.5	17.938	461.13	18.155	26.19	1.031
		100					443	17.438	450.02	17.717	32.54	1.281
		120					432	17.000	440.29	17.334	38.10	1.500
		140					419	16.500	429.17	16.896	44.45	1.750
		160					408	16.062	419.44	16.513	50.01	1.969
550	22	STD	558.8	22.00	567	22.34	539	21.250	541.08	21.303	9.53	0.375
		XS					533	21.000	535.54	21.084	12.70	0.500
		60					514	20.250	518.86	20.428	22.23	0.875
		80					501	19.750	507.75	19.990	28.58	1.125
		100					488.5	19.250	496.63	19.553	34.93	1.375
		120					476	18.750	485.52	19.115	41.28	1.625
		140					463	18.250	474.41	18.678	47.63	1.875
		160					450.5	17.750	463.30	18.240	53.98	2.125
600	24	STD	609.6	24.00	619	24.38	590.5	23.250	591.88	23.303	9.53	0.375
		XS					584	23.000	586.34	23.084	12.70	0.500
		30					581	22.876	583.59	22.975	14.27	0.562
		40					574.5	22.624	577.97	22.755	17.48	0.688
		60					560.5	22.062	565.49	22.263	24.61	0.969
		80					547.5	21.562	554.38	21.826	30.96	1.219
		100					532	20.938	540.49	21.280	38.89	1.531
		120					517.5	20.376	528.03	20.788	46.02	1.812
		140					505	19.876	516.91	20.350	52.37	2.062
		160					490.5	19.312	504.37	19.857	59.54	2.344

Buttwelding End Dimensions
(ASME B16.25)

Nominal Pipe Size		Schedule No. [Note(1)]	O.D at Welding Ends				B		C [Note(3)]		T	
			Wrought or Fabricated Components, A[Note(2)]		Cast Steel Valves A[Note(2)]							
DN	NPS		mm	in	mm	in	mm	in	mm	in	mm	in
650	26	10	660.4	26.00	670	26.38	645.5	25.376	645.50	25.413	7.92	0.312
		20					635	25.000	637.14	25.084	12.70	0.500
700	28	10	711.2	28.00	721	28.38	695.5	27.376	696.30	27.413	7.92	0.312
		20					686	27.000	387.94	27.084	12.70	0.500
		30					679.5	26.750	682.37	26.865	15.88	0.625
750	30	10	762.0	30.00	772	30.38	746	29.376	747.10	29.413	7.92	0.312
		20					736.5	29.000	738.74	29.084	12.70	0.500
		30					730	28.750	733.17	28.865	15.88	0.625
800	32	10	812.8	32.00	825	32.50	797	31.376	797.90	31.413	7.92	0.312
		20					787.5	31.000	789.54	31.084	12.70	0.500
		30					781	30.750	783.97	30.865	15.88	0.625
		40					778	30.624	781.17	30.755	17.48	0.688
850	34	10	863.6	34.00	876	34.50	848	33.376	848.70	33.413	7.92	0.312
		20					838	33.000	840.34	33.084	12.70	0.500
		30					832	32.750	834.77	32.865	15.88	0.625
		40					828.5	32.624	831.97	32.755	17.48	0.688
900	36	10	914.4	36.00	927	36.50	898.5	35.376	899.50	35.413	7.92	0.312
		20					889	35.000	891.50	35.084	12.70	0.500
		30					882.5	34.750	885.57	34.865	15.88	0.625
		40					876.5	34.500	880.02	34.646	19.05	0.750

Notes:

1. Letter Designations signify
   - STD – Standard Wall Thickness
   - XS – Extra Strong Wall Thickness
   - XXS – Double-Extra Strong Wall Thickness
2. The Diameters listed are not requirements. Thery are provided for the convenience of the user.
3. Internal Machining for continuous backing rings for sizes DN50 (NPS 2) and smaller is not contemplated.

Materials

Material	CHEMICAL COMPOSITIONS(%) max								
	C	mn	P	S	Si	Ni	Cr	Mo	Other
WCB	0.30	1.00	0.040	0.045	0.60	0.50	0.50	0.20	Cu 0.30 V 0.03
WC1	0.25	0.50-0.80	0.040	0.045	0.60	0.50	0.35	0.45-0.65	Cu 0.50 V 0.10
WC6	0.05-0.20	0.50-0.80	0.040	0.045	0.60	0.50	1.00-1.50	0.45-0.65	Cu 0.50 V 0.10
WC9	0.05-0.18	0.40-0.70	0.040	0.045	0.60	0.50	2.00-2.75	0.90-1.20	Cu 0.50 V 0.10
C5	0.20	0.40-0.70	0.040	0.045	0.75	0.50	4.00-6.50	0.45-0.65	Cu 0.50 V 0.10
C12	0.20	0.35-0.65	0.040	0.045	1.00	0.50	8.00-10.00	0.90-1.20	Cu 0.50 V 0.10
CA15	0.15	1.00	0.040	0.040	1.50	1.00	11.50-14.00	0.50	-
LCB	0.30	1.00	0.040	0.045	0.60	0.50	0.50	0.20	Cu 0.30 V 0.03
LCC	0.25	1.20	0.040	0.045	0.60	0.50	0.50	0.20	Cu 0.30 V 0.03
LC2	0.25	0.50-0.80	0.040	0.045	0.60	2.0-3.0	-	-	-
LC3	0.15	0.50-0.80	0.040	0.040	0.60	3.0-4.0	-	-	-
CF8	0.08	1.50	0.040	0.040	2.00	8.0-11.0	18.0-21.0	-	-
CF8M	0.08	1.50	0.040	0.040	1.50	9.0-12.0	18.0-21.0	2.0-3.0	-

Materials

Material	CHEMICAL COMPOSITIONS(%) max								
	C	mn	P	S	Si	Ni	Cr	Mo	Other
CF3	0.03	1.50	0.040	0.040	2.00	8.0-12.0	17.0-21.0	0.50	-
CF3M	0.03	1.50	0.040	0.040	1.50	9.0-12.0	17.0-21.0	2.0-3.0	-
CF8C	0.08	1.50	0.040	0.040	2.00	27.5-30.5	18.0-21.0	0.50	No ≥ 8xc ≤1
CN7M	0.07	1.50	0.040	0.040	1.50	0.40	19.0-22.0	2.0-3.0	Cu 0.40 V 0.03 Nb 0.02
A105	0.35	0.60-1.05	0.040	0.050	0.35	-	0.30	0.12	-
F1	0.28	0.60-0.90	0.045	0.450	0.15-0.35	-	-	0.44-0.65	-
F5	0.15	0.30-0.60	0.030	0.030	0.50	0.50	4.0-6.0	0.44-0.65	-
F11-1	0.05-0.15	0.30-0.60	0.030	0.030	0.50-1.00	-	1.00-1.50	0.44-0.65	-
F22-1	0.05-0.15	0.30-0.60	0.040	0.040	0.50	-	2.00-2.50	0.87-1.13	-
F6A	0.15	1.00	0.040	0.030	1.00	0.50	11.5-13.5	-	-
F304	0.08	2.00	0.040	0.030	1.00	8.0-11.0	18.0-20.0	-	-
F304L	-	2.00	0.040	0.030	1.00	8.0-13.0	18.0-20.0	-	-

Materials

Material	CHEMICAL COMPOSITIONS(%) max								
	C	mn	P	S	Si	Ni	Cr	Mo	Other
F316	0.08	2.00	0.040	0.030	1.00	10.0-14.0	16.0-18.0	2.00-3.00	-
F316L	0.035	2.00	0.040	0.030	1.00	10.0-15.0	16.0-18.0	2.00-3.00	-
F321	0.08	2.00	0.040	0.030	1.00	9.0-12.0	≥ 17.0	-	To ≥5xC≤0.70
F347	0.08	2.00	0.040	0.030	1.00	9.0-13.0	17.0-20.0	-	Nb+Ta ≥5xC≤0.70
410	0.15	1.00	0.040	0.030	1.00	-	11.50-13.50	-	-
416	0.15	1.25	0.06	≥ 0.15	1.00	-	12.00-14.00	-	-
420	Over 0.15	1.00	0.040	0.030	1.00	-	12.00-14.00	-	-

Materials

Material	MECHANICAL PROPERTIES				
	Tensile, min Mpa(Ksi)	Yield, min Mpa(Ksi)	Elongation min(%)	Reduction Of Area min(%)	Hardness Brinell
WCB	485-655 (70-95)	250(36)	22	35	-
WC1	450-620 (65-90)	240(35)	24	35	-
WC6	485-655 (70-95)	275(40)	20	35	-
WC9	485-655 (70-95)	275(40)	20	35	-
C5	620-795 (90-115)	415(60)	18	35	-
C12	620-795 (90-115)	415(60)	18	35	-
CA15	620-795 (90-115)	450(65)	18	35	
LCB	450-650 (65.0-90.0)	240(35.0)	24	35	J(lbf • ft)18(13)
LCC	485-655 (70.0-95.0)	275(40.0)	22	35	J(lbf • ft)20(15)
LC2	485-655 (70.0-95.0)	275(40.0)	24	35	J(lbf • ft)20(15)
LC3	485-655 (70.0-95.0)	275(40.0)	24	35	J(lbf • ft)20(15)
CF8	485(70)	205(30)	35	-	-
CF8M	485(70)	205(30)	30	-	-

Materials

Material	MECHANICAL PROPERTIES				
	Tensile, min Mpa(Ksi)	Yield, min Mpa(Ksi)	Elongation min(%)	Reduction Of Area min(%)	Hardness Brinell
CF3	485(70)	205(30)	35	-	-
CF3M	485(70)	205(30)	30	-	-
CF8C	485(70)	205(30)	30	-	-
CN7M	450(62)	170(25)	35	-	-
A105	485(70)	250(36)	22	30	≤ 187
F1	485(70)	275(40)	20	30	143-192
F5	485(70)	275(40)	20	35	143-217
F11-1	415(60)	205(30)	20	45	121-174
F22-1	415(60)	205(30)	20	35	≤170
F6A	585(85)	380(55)	18	35	167-229
F304	515(75)	205(30)	30	50	-
F304L	485(70)	170(70)	30	50	-
F316	515(75)	250(30)	30	50	-
F316L	485(70)	170(25)	30	50	-
F321	515(75)	205(30)	30	50	-
F347	515(75)	205(30)	30	50	-
410	480(70)	275(40)	20	45	-
416	-	-	-	-	≤ 262
420	-	-	-	-	≤ 241

Quality Assurance:

All our valves are designed, manufactured, inspected and tested under a very efficient ISO 9001 quality system verified by BUREAU VERITAS, which assures the best quality for the valves.

Warranty:

Our products are supplied with a standard warranty of up to 12 months from the date of installation or 18 months from the date of delivery. Extended warranty periods will be negotiable for specific cases.

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