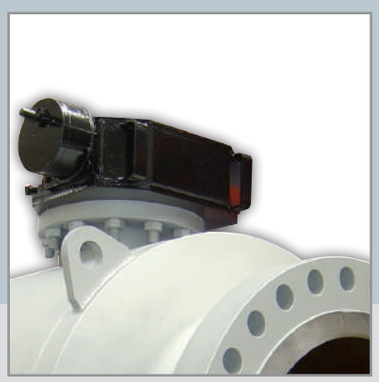
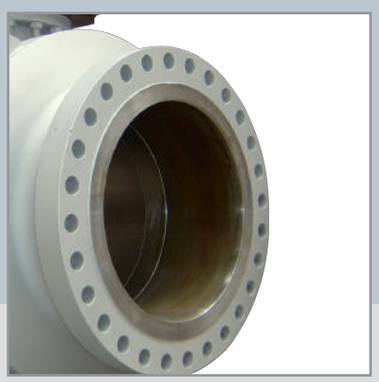
Ball Valves





SMART IN FLOW CONTROL

COMPANY OVERVIEW

Ringo Válvulas (RV) is located in the industrial city of Zaragoza, Spain. Since its establishment RV has designed and manufactured its own cast and forged valves. Our experience over 40 years on the valve industry is the key to our international success and recognition. We export more than 75% of our production all over the world.

RV activities include the design, material procurement, manufacturing, assembly and thesting of valves. We supply Gate, Globe, Check, Ball Plug, Butterfly, Control and Special Valves produced according to different standards (ASME-ANSI, DIN, API, BS), sizes, pressure ratings and materials (Carbon Steel, Alloy Steel, Stainless Steel, Duplex, Monel, etc.).

Our valves are used in many different applications such as Oil & Gas, chemical and Petrochemical, Cryogenic and Power Generation (including Nuclear, Combined Cycle, Thermoelectric and Hydraulic Plants).

RV facilities are modern and fitted with advanced equipment for manufacturing, assembly, testing and inspection. This equipment guarantees the conformity with the most stringent specifications.

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QUALITY

Ringo Válvulas is totally committed to Quality, and a smooth integration of all departments with the Quality Assurance and Quality Procedures.

Ringo Válvulas is qualified to ISO 9001, ISO 14001, OSHAS 18001, SA 8000, PED, ATEX, TUV AD-2000 HPO & WO, EN-ISO 3834-2 and Functional Safety Management system (SIL) among others.

This guarantees that all our products are designed, manufactured and delivered in accordance with the most strict customer requirements. By this we achieve our main goal "to offer a high quality product and service to ensure a high degree of satisfaction and fidelity of our customers".

MARKETS

Our valves are used in many different applications such as Nuclear Power Plants, Conventional Power Plants, Oil & Gas, upstream and downstream offshore, chemical, petrochemical, cryogenic, etc.

We export more than 75% of our production to countries all over the world.

Worldwide customer service, we provide spare parts and field engineers to support our customers anywhere.

Ringo Válvulas has been involved in many large international projects carried out by the world's leading engineering construction companies.

OUR INTERNATIONAL ACREDITATIONS:

ISO 9001 | ISO 14001 | OHSAS 18001

CE stamp holder
PED 2019/68/EU

ATEX stamp holder

EAC

Management System SA 8000:2008 — TÜVRheinland CERTIFIED — www.tuv.com ID 9105075752

N

NPT

SIL IEC 61508 Validated

TÜV SÜD Industrie Service

Certified by TÜV according to EN ISO 3834-2
Certified by TÜV according to AD 2000-Merkblatt HP 0, TRD 201
Certified by TÜV according to AD 2000-Merkblatt W 0/A4

kiwa

Inspection Type Certificate issued by KIWA INSPECTA nuclear

ROMANIA ISCIR FONDAT 1910

ISCIR Cetificate of authorization

01. STANDARDS AND SPECIFICATIONS

Our ball valve program covers floating type ball valves, and trunnion mounted. Side entry and Top Entry constructions are available. Ball valves are intended for a wide range of applications such as oil & gas (both upstream & downstream) chemical, petrochemical, energy and process industries.

Ball Valve Standards

Ball valves are mainly designed to conform API 6D (Specification for pipeline valves) and ANSI B16.34 (Valves Flanged, Threaded and Welding End) or API 6A (Specification for Wellhead and Christmas Tree Equipment) in case of upstream applications. Other related standards such as ANSI B16.5 (Pipe Flanges and Flanged Fittings), ANSI B16.25 (Buttwelding Ends), ANSI B16.10 (Face to Face and End-to-End Dimensions of Valves) are also used for the design of ball valves.

Also our ball valves are designed to meet FIRE SAFE requirements to BS6755, API 6FA and API 607.

Final testing is done to conform API 598 (Valve Inspection and Testing) MSS-SP-61 (Pressure Testing of Steel Valves) API 6D (Specification for Pipeline Valves) or API 6A (Specification for Wellhead and Christmas Tree Equipment) requirements.

Materials are selected mainly to ASTM standards and when sour service is specified to meet NACE MR-01-75 (Sulfide Stress Cracking resistant Metallic Materials for Oilfield Equipment).

Size & Pressure

BALL VALVE SERIES							
SIZE	API 6D						
	150	300	600	800	900	1500	2500
Floating (Top entry & Side entry)	From 1/2 to 6"	From 1/2 to 6"	From 1/2 to 6"	From 1/2 to 2"			
Trunnion (Top entry & Side entry)	From 2" to 56"	From 2" to 56"	From 2" to 56"		From 2" to 42"	From 2" to 36"	From 2" to 24"

SIZE	API 6A						
	2000	3000	5000	10.000	15.000		
Trunnion	From 2-1/6" to 7- 1/16"	From 2-1/6" to 7- 1/16"	From 1-13/16" to 7- 1/16"	From 1-13/16" to 7- 1/16"	From 1-13/16" to 5- 1/8"		

Actuators

RV valves can be supplied with any kind of automatic operator, such as electric actuators, pneumatic actuators, hydraulic actuators, gas-over-oil actuators, etc.

Wide Selection of Seats / Seals

Depending on the application, RV ball valves are provided with a wide variety of trim materials.

Metal & Soft Seated valves are available as well as large range of different seal materials covering different services.

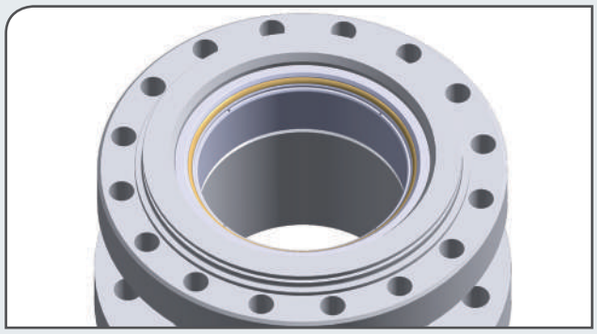
Carbon steel, stainless steel, duplex and special alloys trims, etc, are available.

02. FEATURES AND BENEFITS

Trunnion Valves

Bi-directional Flow

Standard RV ball valves are suitable for bi-directional sealing.

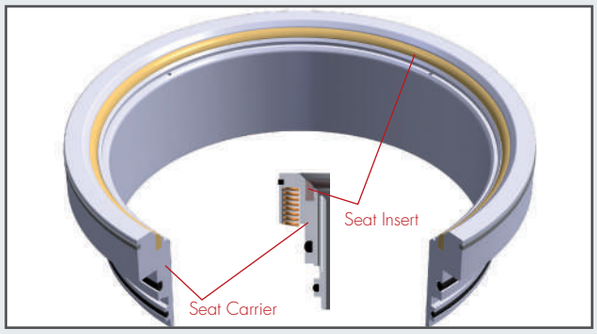


Soft Seated Valves

The seat design features a deep pocket with a protective lip which makes the design a long lasting design.The seat assembly consists in an outer metallic seat carrier with a soft seat insert. The soft insert is located into a groove in the metallic seat carrier.

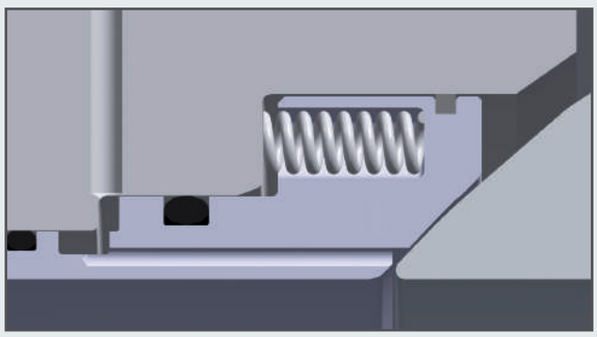
The complete seat assembly is floating inside valve body and it is energized by a set of springs which load the seat assembly against the ball preventing leakage from behind the seat.

Seat assembly is provided with outer o-ring to avoid leakage through the seat carrier and a graphite back up ring which ensure the tighness in case the o-ring is damaged.



Metal Seated Valves

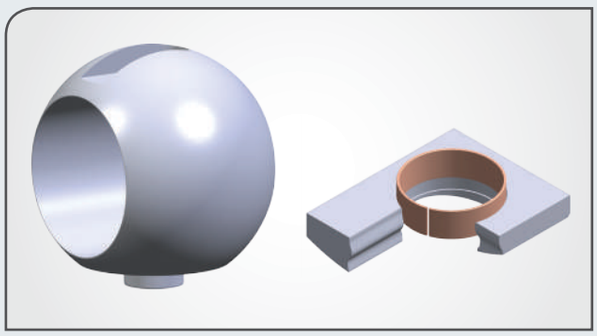
Similar seat construction is done in case of metal seated valve. However the seat in this case consists only in a metallic seat ring (without any insert). The surface in contact with the ball is hardfaced with Tungsten Carbide, stellite etc., achieving a minimum hardness of 42 HRC to stellite or convectional hardfaced and 78 HRC to Tungsten Carbide or special hardfaced. This makes the design long durable and reliable and able to achieve classes V & VI leakage class.



Trunnion Ball Valves

Trunnion Design for Low Torque Operation

The large diameter trunnions provide smooth, easy operation and extended bearing life. The trunnion bearings are stainless steel with heavy-duty PTFE coated.

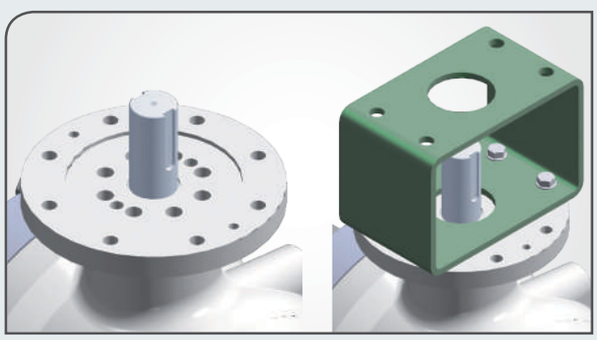


One-Way Operating Lever arm

Operating wrenches are keyed so they may be installed only in one position in line with the bore of the valve, when the valve is in the open position. They serve as an open-closed indicator in addition to the stop plate indicator on the bonnet cap. Wrenches are available as an option on full bore through regular port models. Worm gear actuators are required on all larger sizes for manual operation.

Actuator Mounting Provisions

Actuator mounting brackets, shown below, are available as option for users who prefer to install their own actuators. We recommend that buyers specify factory-installed actuators to assure reliable, long life performance and to gain the benefits of RV "single source responsibility, single source warranty" policy.



Bare Shaft Valves

RV Valves can also be provided bare shaft ready to receive any kind of actuator.

Grease Fittings

Three grease fittings are supplied, providing the ability to inject lubricant into both seat pockets and stem area.

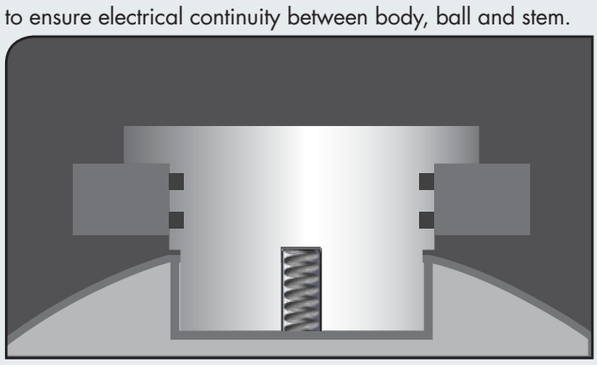
Manual Operated Valves

For manual valves up to 4", operating lever can be provided. Lever operated valves are also provided with a stop plate valve to avoid travel of more than.
The lever together with the stop plate provides valve position indication.

For valves larger than 4", worm gear actuator is provided.

Antistatic Device

Internal parts that are insulated from the body may build up a static electric charge.
When service conditions require electrical continuity to prevent static discharge, this is ensured by the adoption of coil springs to ensure electrical continuity between body, ball and stem.



Stem Extension for Buried Service

A stem extension is a need when valves are being installed in underground pipeline making the valve operator non accessible.

RV valves offer a wide variety of stem extensions for manual operated valves as well as for actuated valves, including gas-over-oil operated valves.

The stem extension includes the complete system of grease injection, actuator gas supply, etc as a part of it.

Floating Seats

The seat assembly, either soft seat or metal seat, which seals against the ball is provided with coil springs on its back side. The coil springs press the seat assembly against the ball making sure the contact between the seat area and the ball even in absence of line pressure.

When line pressure increases, the seat differential area (C=A-B) creates a piston effect forcing the seat against the ball. This additional load increases the effectiveness of the seat/ball interface.

The higher the line pressure is the greater the piston effect.

Automatic Cavity Pressure Relief

The pressure-actuated seat construction, used in trunnion ball valves ensures positive relief of excess of valve central cavity pressure. If valve central cavity pressure exceeds a pre-set pressure in the seat, the seat assembly will automatically back-off to relieve the excess of pressure.

Double Piston Effect (optional)

With normal floating seats a ball valve is-bi-directional, creating a single seal on the seat exposed to line pressure. The opposing seat vents pressure downstream. If the upstream seat fails, it may be appropriate to use the downstream seat as a back up seal to the primary seat.
Modified seats can offer this feature. The outer diameter of the seat is designed with a double piston profile, exposing more surface area to cavity pressure that a normal floating seat. In the case of an upstream leak, this enhances the contact pressure between downstream seat and ball.

The differential area A= B-C creates a piston effect forcing the seat against the ball.

In such cases, it is recommended that an automatic pressure relief valve be installed to protect the body cavity from excess pressure.

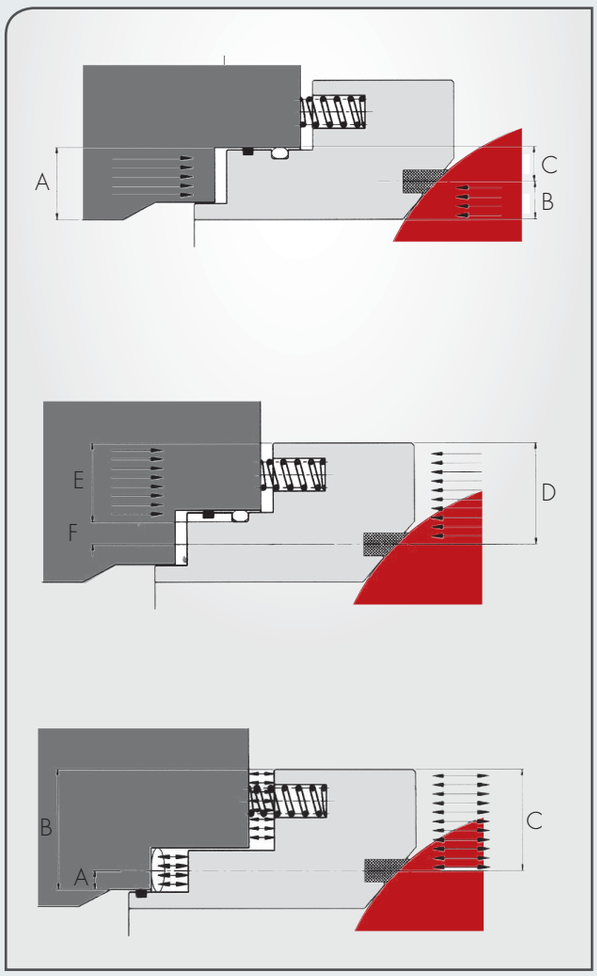
As an option, it is possible to adopt the double piston effect on one side only. Although this eliminates the need for a pressure relief valve, it does make the valve uni-directional.

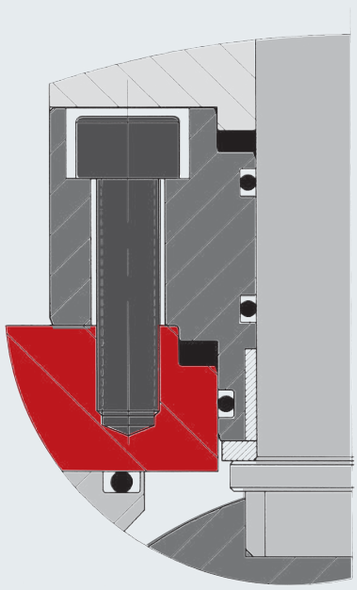
Double Block-Bleed (optional)

Because the floating seats seal, both upstream and downstream, simultaneously, double block and bleed procedures can be performed. With the valve under pressure, the body cavity may be vented or drained to the atmosphere through the bleed valve.

Anti Blow-Out Stem

RV valves are always provided with anti-blow out stem design, which ensures total safety and integrity.





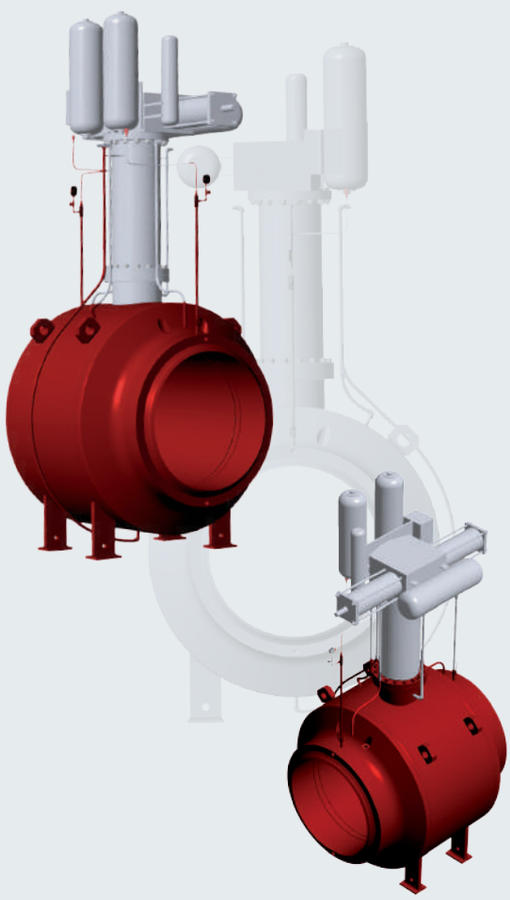
Fire Safe Design

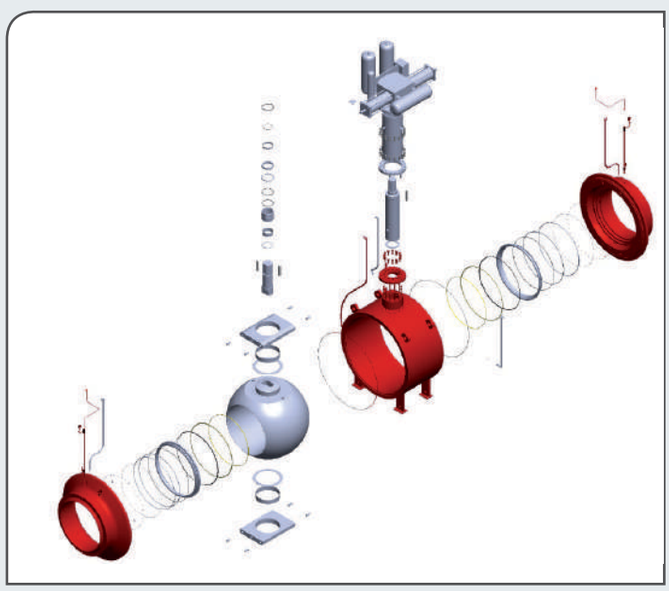
RV valves are of FIRE SAFE design, which substantially prevent the leakage when valve is subject to high temperatures.

In case of fire accident inside the valve, seals, and seat inserts (for soft seated valves) are melted and then a metal to metal seat is made between the metallic seat and the ball ensuring a degree internal sealing tightness.

All o-ring are also disappeared and only graphite back-up rings remain in seats and valve stem, making the valve tight for leakages to the atmosphere.

RV valve designs conform requirements of API 6FA, API607 and BS6755.





03. MATERIALS

Valve Material

RV valves are manufactured using a wide selection of materials such as:

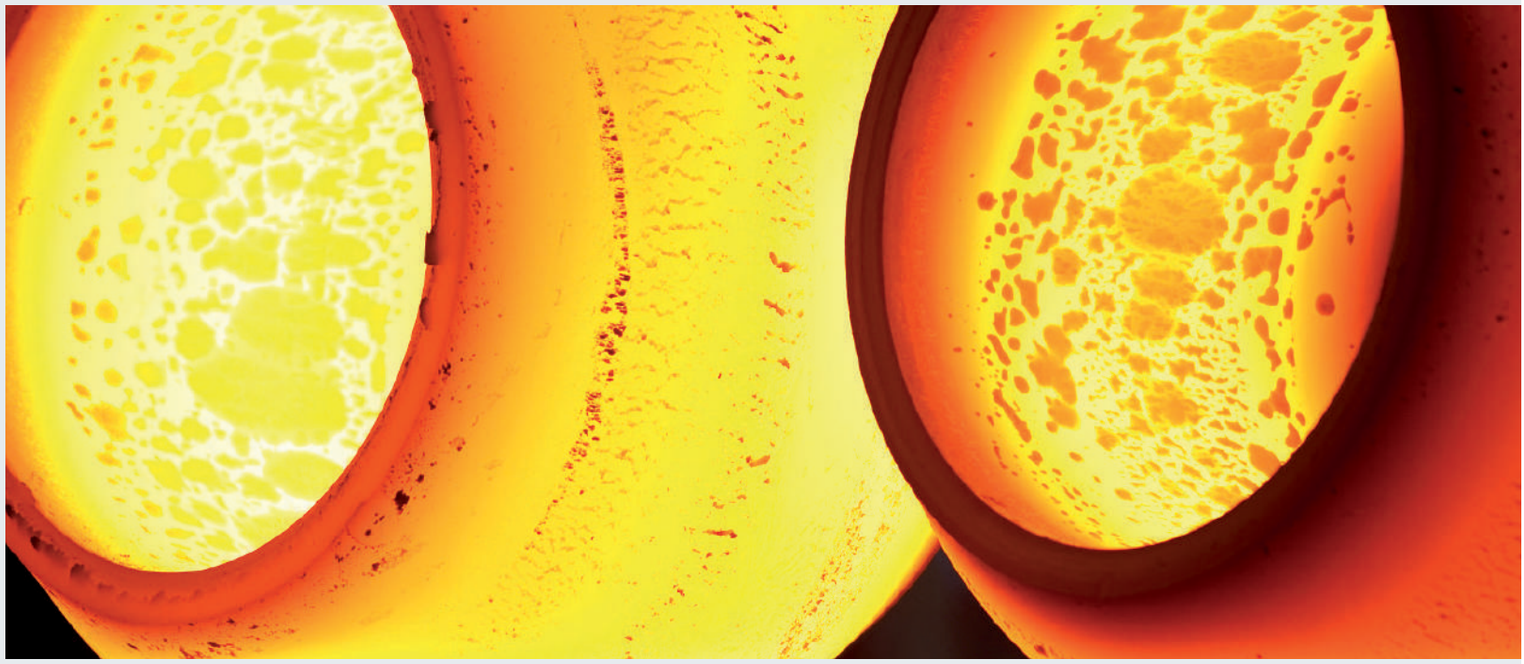
- Carbon steel.
- Killed carbon steel for low temperature applications.
- High resistance alloy steels for API 6A applications.
- Stainless Steel.
- Duplex & Superduplex steel.
- Nickel alloys.

Materials also meet the requirements of NACE MR-0175/ISO 15156 when sour gas services are specified.
Our technical staff is ready and available to provide customized material selection for those special customer applications RV always provides the customer with suitable information of material selection which is agreed prior valves are manufactured.
For majority of industry applications the following table gives the main guidelines of material selection.

Trim	Service	Temperature	Class	Body	Internal	Seat	Seal
A	General Purpose	-29° to 150°	150-300-600 900-1500-2500	A105	A105+ENP	PTFE Devlon	Viton
B	General Purpose	-29° to 250°	150-300-600 900-1500-2500	A105	A105+ENP	Peek	Viton
C	Moderate Corrosive	-29° to 150°	150-300-600 900-1500-2500	A105	316SS or 321SS	RPTFE Devlon	Viton
D	Low Temperature	-46° to 150°	150-300-600 900-1500-2500	LF2	LF2+ENP	RPTFE Devlon	Viton
E	High Corrosive	-29° to 150°	150-300-600 900-1500-2500	F316/F321/ F51	F316/F321/F51	RPTFE Devlon	Viton
F	Sour service	-29° to 150°	150-300-600 900-1500-2500	A105	A105+ENP	RPTFE Devlon	Viton
G	Offshore	-29° to 150°	150-300-600 900-1500-2500	F51	F51	RPTFE Devlon	Viton
H	Seawater	-29° to 150°	150-300-600 900-1500-2500	F44	F44	RPTFE Devlon	PTFE
I	Cryogenic	-196° to 150°	150-300-600 900-1500-2500	F316/F321	F316/F321	KEL-F	PTFE

Remarks

- The above table is orientative and intended only for information.
- In case of Metal to Metal valves seat and ball are both hardfaced with different materials such as stellite, Tungsten Carbide, Chromium Carbide, etc, being the base materials selected upon the valve application and the design pressure/ temperatures.



Sealing Material

Commonly O-rings or Lip Seals as used as sealing element of ball valves. The most commonly used materials are
O-RINGS:
BUNA-N (Nitrilic rubber).
VITON including its alternatives of high temperature VITON (up to 210/°C) and VITON for explosive decompression.
Others depending on application.

Lip Seals

Lip seals are used normally for more severe applications such as cryogenic services, high temperature or also in nuclear valve application (when the seal must be radiation-resistant).

The lip seal is made of different materials such as PTFE, KEL-F, etc, and it is self energized by an internal spring of stainless or inconel alloy.

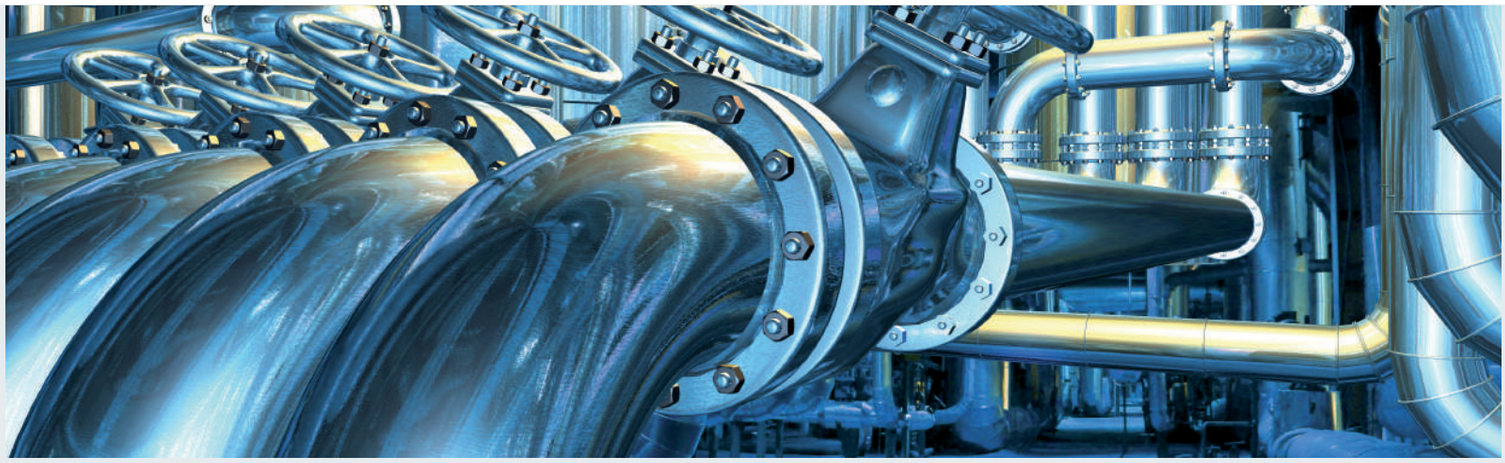
Lip seals must be mounted in the positive direction of pressure in such a way that fluid improves the sealing load of spring.

SEAT MATERIALS • Soft Seated Valves

- PTFE or Teflon suitable up to ANSI Class 600.
- PTFE reinforced by graphite.
- Nylon suitable for high pressure, and for temperature range
up to 120°C.
- Devlon suitable for high pressure, and for a wider range from low to high temperature.
- PCTFE or KEL-F suitable for low temperature, up to -196°C.
- PEEK suitable for high temperature up to 260°C.

Metal Seated Valves

• Stellite	Hardness up to 45 HRC
• Tungsten Carbide	Hardness up to 85 HRC
• Chromium Carbide	Hardness up to 70 HRC



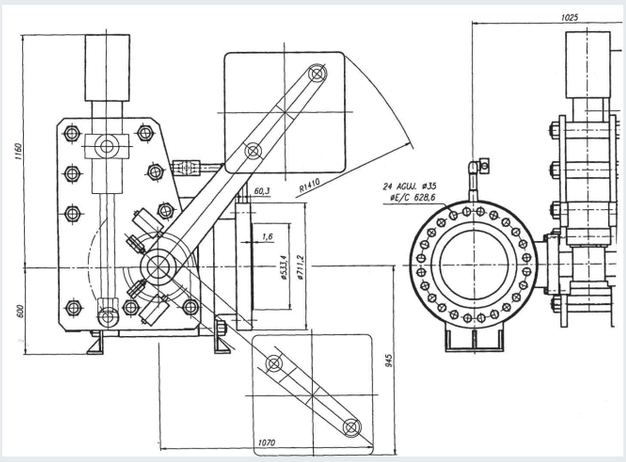
04. OTHER RINGO BALL VALVES

▪ Gas-Over-Oil Actuated Valves

This valve is used in gas pipelines and the actuator is powered directly from the line gas pressure.
Valves actuator may be provided with line break detection system which closes the valve in case that the gradient of pressure drop in the line is greater than a preset value.

▪ Emergency Assisted Ball Valves

This valve is intended for protection of turbine/pump in hydroelectric power stations. Valve is assembled in horizontal position and provided with a hydraulic piston to open the valve. In case of reverse flow which may damage the turbine/pump, this is detected by a pressure transducer which sends a signal to the valve releasing the pressure in the hydraulic piston and allowing the valve counterweight to close the valve in few seconds avoiding line counterflow to reach the turbine/pump.



Fully Welded Ball Valves

Fully Welded ball valves are available for those cases when leakage throughout atmosphere must be absolutely avoided such as in gas transmission pipelines.

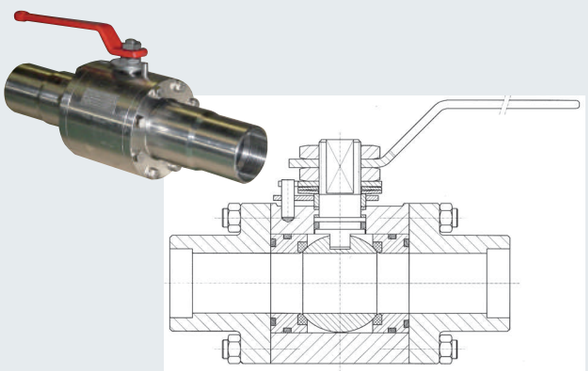
Valve is built in three pieces fully welded constructions.

Top-entry Ball valves

The Top-entry valve types have a major application when a frequent maintenance must be carried out and the valve can not be easily removed from the pipe.

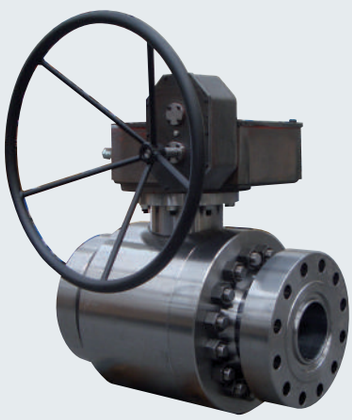
In this valve model, all the internals can be easily dismounted by loosening the bonnet of the valve and removing the ball, the seat-holders and the shaft.

When mounting the valve again, the seat-holders have a system to regulate the compression of these to the ball.



In-Line Serviceable Ball valves

For sizes up to 6”, this type of valve can be used giving the same possibility of maintenance as top entry ball valve but being a construction much more economical.



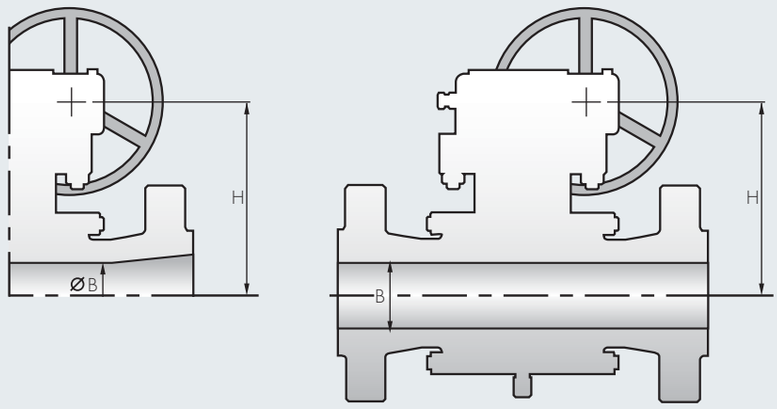
API6A Ball valves

For upstream applications, three pieces side entry ball valve is used in accordance with the requirements of API 6A. Valve classes from class 2000 to class 20000 In sizes from 2-1/16” to 7-1/16” are available.

Material selection is done in full compliance with API 6A requirements.

Valve designs are available to meet Pressure Product Requirement levels PSL-1, PSL-2, PSL-3 / PSL-3G and PSL-4.

05. SIDE ENTRY API 6D DIMENSIONS



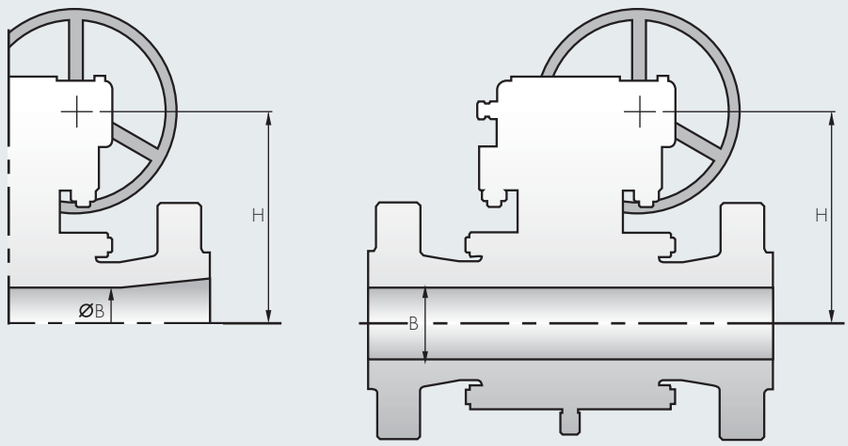
Class 150

NOMINAL	FACE TO FACE			VALVE BORE	VALVE HEIGHT
NPS	RF	RTJ	BW	B	H
inch	mm	mm	mm	mm	mm
2	178	190,5	216	51	140
3 x 2	203	216	283	51	140
3	203	216	283	76	165
4 x 3	229	241	305	76	165
4	229	241	305	102	235
6 x 4	394	406,5	457	102	235
6	394	406,5	457	152,5	241
8 x 6	457	470	521	152,5	241
8	457	470	521	204	280
10 x 8	533,5	546	559	204	280
10	533,5	546	559	254	305
12 x 10	609,5	622	635	254	305
12	609,5	622	635	305	356
14 x 12	686	698,5	762	305	356
14	686	698,5	762	336,5	406
16 x 12	762	775	838	305	356
16	762	775	838	387,5	457
18	864	876	914,5	438	508
20 x 16	914,5	927	991	387,5	457
20	914,5	927	991	489	584
24 x 20	1067	1079,5	1143	489	584
24	1067	1079,5	1143	590	711
26	1143		1245	635	762
28	1245		1346	686	813
30 x 24	1295		1397	590	711
30	1295		1397	737	864
36 x 30	1524		1727	737	864
36	1524		1727	876	965
40 x 36	1780		1780	876	965
40	1780		1780	978	1100
42 x 36	1854		1854	876	965
42	1854		1854	1020	1250
48	2135		2135	1170	1380

Class 300

NOMINAL	FACE TO FACE			VALVE BORE	VALVE HEIGHT
NPS	RF	RTJ	BW	B	H
inch	mm	mm	mm	mm	mm
2	216	232	216	51	152
3 x 2	283	299	283	51	152
3	283	299	283	76	178
4 x 3	305	321	305	76	178
4	305	321	305	102	203
6 x 4	404	419	457	102	203
6	404	419	457	152,5	254
8 x 6	502	518	521	152,5	254
8	502	518	521	204	280
10 x 8	569	584	559	204	280
10	569	584	559	254	305
12 x 10	648	664	635	254	305
12	648	664	635	305	355
14 x 12	762	778	762	305	355
14	762	778	762	336,5	406
16 x 12	838	854	838	305	355
16	838	854	838	387,5	457
18	915	930	915	438	495
20 x 16	991	1010	991	387,5	457
20	991	1010	991	489	635
24 x 20	1143	1165	1143	489	635
24	1143	1165	1143	590	762
26	1245	1270	1245	635	813
28	1346	1372	1346	686	864
30 x 24	1397	1423	1397	590	762
30	1397	1423	1397	737	914
36 x 30	1727	1756	1727	737	914
36	1727	1756	1727	876	965
40 x 36	1980		1780	876	965
40	1980		1780	978	1100
42 x 36	2032		1854	876	965
42	2032		1854	1020	1250
48	2388		2135	1170	1350

Dimensions of larger sizes & rating upon request.

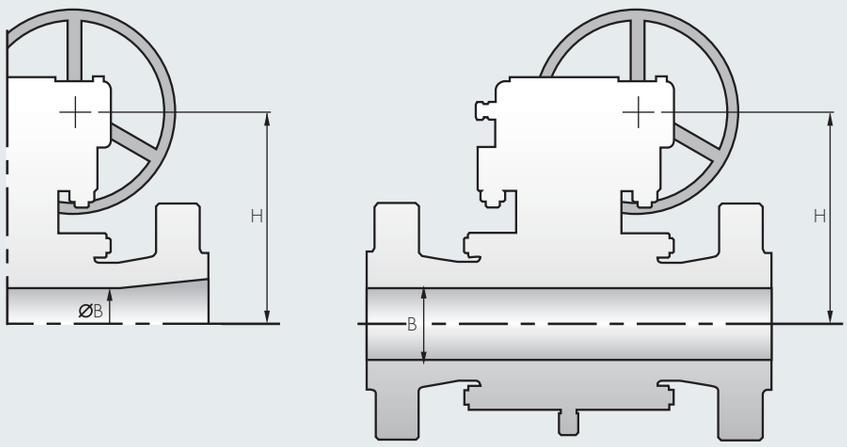


Class 600

NOMI-NAL	FACE TO FACE			VALVE BORE	VALVE HEIGHT
NPS	RF	RTJ	BW	B	H
inch	mm	mm	mm	mm	mm
2	292	295	292	51	140
3 x 2	356	359	356	51	140
3	356	359	356	76	197
4 x 3	432	435	432	76	197
4	432	435	432	102	197
6 x 4	559	562	559	102	254
6	559	562	559	152,5	254
8 x 6	661	664	661	152,5	290
8	661	664	661	204	290
10 x 8	788	791	788	204	310
10	788	791	788	254	310
12 x 10	838	841	838	254	350
12	838	841	838	305	350
14 x 12	889	892	889	305	400
14	889	892	889	336,5	400
16 x 12	991	994	991	305	430
16	991	994	991	387,5	400
18	1093	1096	1093	438	520
20 x 16	1194	1200	1194	387,5	560
20	1194	1200	1194	489	660
24 x 20	1397	1407	1397	489	660
24	1397	1407	1397	590	750
26	1448	1461	1448	635	800
28	1550	1562	1550	686	860
30 x 24	1651	1664	1651	590	750
30	1651	1664	1651	737	940
36 x 30	2083	2099	2083	737	940
36	2083	2099	2083	876	1100
40 x 36	2337		2337	876	1100
40	2337		2337	978	1150
42 x 36	2240		2240	876	1100
42	2240		2240	1020	1300
48	2845		2845	1168	1480

Class 900

NOMI-NAL	FACE TO FACE			VALVE BORE	VALVE HEIGHT
NPS	RF	RTJ	BW	B	H
inch	mm	mm	mm	mm	mm
2	369	372	369	51	140
3 x 2	381	385	381	51	140
3	381	385	381	76	170
4 x 3	458	461	458	76	170
4	458	461	458	102	185
6 x 4	610	613	610	102	185
6	610	613	610	152,5	240
8 x 6	737	740	737	152,5	240
8	737	740	737	204	310
10 x 8	838	841	838	204	310
10	838	841	838	254	350
12 x 10	965	968	965	254	350
12	965	968	965	305	400
14 x 12	1029	1038	1029	305	400
14	1029	1038	1029	324	455
16 x 12	1130	1140	1130	305	400
16	1130	1140	1130	375	545
18	1219	1232	1219	425	597
20 x 16	1321	1334	1321	375	545
20	1321	1334	1321	473	711
24 x 20	1549	1568	1549	473	711
24	1549	1568	1549	572	813
26	1650		1650	620	
28	1778		1778	667	
30 x 24	1880		1880	572	
30	1880		1880	715	
36 x 30	2286		2286	715	
36	2286		2286	857	



Class 1500

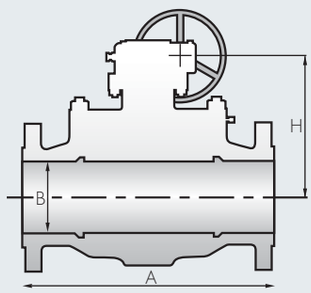
NOMI-NAL	FACE TO FACE			VALVE BORE	VALVE HEIGHT
NPS	RF	RTJ	BW	B	H
inch	mm	mm	mm	mm	mm
2	369	372	369	51	140
3 x 2	470	473	470	51	140
3	470	473	470	76	170
4 x 3	546	550	546	76	170
4	546	550	546	102	250
6 x 4	705	711	705	102	250
6	705	711	705	146	280
8 x 6	832	841	832	146	280
8	832	841	832	194	420
10 x 8	991	1000	991	194	420
10	991	1000	991	241	470
12 x 10	1130	1146	1130	241	470
12	1130	1146	1130	289	520
14 x 12	1257	1276	1257	289	520
14	1257	1276	1257	318	600
16 x 12	1384	1407	1384	289	520
16	1384	1407	1384	362	700
18	1537	1559	1537	410	890
20 x 16	1664	1686	1664	362	700
20	1664	1686	1664	456	940
24 x 20	1943	1972	1943	456	940
24	1943	1972	1943	548	1143

Dimensions of larger sizes & rating upon request.

Class 2500

NOMI-NAL	FACE TO FACE			VALVE BORE	VALVE HEIGHT
NPS	RF	RTJ	BW	B	H
inch	mm	mm	mm	mm	mm
2	451	454	451	44	235
3 x 2	578	584	578	44	235
3	578	584	578	64	300
4 x 3	673	683	673	64	300
4	673	683	673	90	343
6 x 4	914	927	914	90	343
6	914	927	914	135	445
8 x 6	1022	1038	1022	135	445
8	1022	1038	1022	180	508
10 x 8	1270	1292	1270	180	508
10	1270	1292	1270	225	584
12 x 10	1422	1445	1422	225	584
12	1422	1445	1422	267	686

06. TOP ENTRY API 6D DIMENSIONS



Top entry, cast steel, full bore ASME Class 150

ASME Class 150 dimensional data, mm

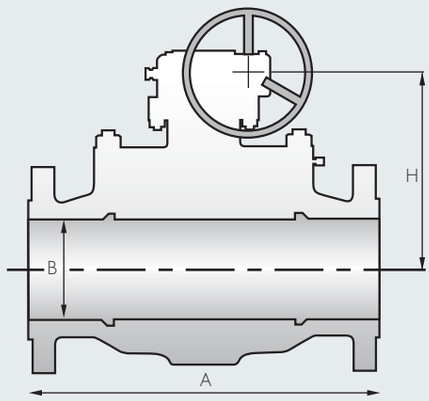
NOMI-NAL	FACE TO FACE			VALVE BORE	VALVE HEIGHT
NPS	RF	RTJ	BW	B	H
inch	mm	mm	mm	mm	mm
2	292	295	292	51	161
3 x 2	356	359	356	51	161
3	356	359	356	76	227
4 x 3	432	435	432	76	227
4	432	435	432	102	292
6 x 4	559	562	559	102	292
6	559	562	559	152,5	334
8 x 6	661	664	661	152,5	334
8	661	664	661	204	357
10 x 8	788	791	788	204	357
10	788	791	788	254	403
12 x 10	838	841	838	254	403
12	838	841	838	305	460
14 x 12	889	893	889	305	460
14	889	893	889	336,5	495
16 x 12	991	994	991	305	460
16	991	994	991	387,5	598
18	1093	1096	1093	438	644
20 x 16	1194	1200	1194	387,5	598
20	1194	1200	1194	489	759
24 x 20	1397	1407	1397	489	759
24	1397	1407	1397	590	863
26	1448	1461	1448	635	920
28	1550	1562	1550	686	989
30 x 24	1651	1664	1651	590	863
30	1651	1664	1651	737	1081
36 x 30	2083	2099	2083	737	1081
36	2083	2099	2083	876	1265
40 x 36	2337		2337	876	1265
40	2337		2337	978	1323
42 x 36	2240		2240	876	1265
42	2240		2240	1020	1495
48	2845		2845	1168	1702

Dimensions of larger sizes & rating upon request.

Top entry, cast steel, full bore ASME Class 300

ASME Class 300 dimensional data, mm

NOMI-NAL	FACE TO FACE			VALVE BORE	VALVE HEIGHT
NPS	RF	RTJ	BW	B	H
inch	mm	mm	mm	mm	mm
2	292	295	292	51	161
3 x 2	356	359	356	51	161
3	356	359	356	76	227
4 x 3	432	435	432	76	227
4	432	435	432	102	292
6 x 4	559	562	559	102	292
6	559	562	559	152,5	334
8 x 6	661	664	661	152,5	334
8	661	664	661	204	357
10 x 8	788	791	788	204	357
10	788	791	788	254	403
12 x 10	838	841	838	254	403
12	838	841	838	305	460
14 x 12	889	893	889	305	460
14	889	893	889	336,5	495
16 x 12	991	994	991	305	460
16	991	994	991	387,5	598
18	1093	1096	1093	438	644
20 x 16	1194	1200	1194	387,5	598
20	1194	1200	1194	489	759
24 x 20	1397	1407	1397	489	759
24	1397	1407	1397	590	863
26	1448	1461	1448	635	920
28	1550	1562	1550	686	989
30 x 24	1651	1664	1651	590	863
30	1651	1664	1651	737	1081
36 x 30	2083	2099	2083	737	1081
36	2083	2099	2083	876	1265
40 x 36	2337		2337	876	1265
40	2337		2337	978	1323
42 x 36	2240		2240	876	1265
42	2240		2240	1020	1495
48	2845		2845	1168	1702



Top entry, cast steel, full bore ASME Class 600

ASME Class 600 dimensional data, mm

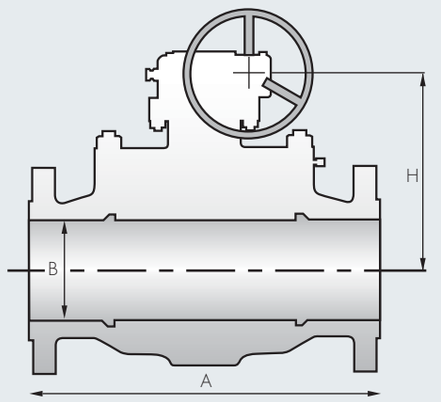
NOMI-NAL	FACE TO FACE			VALVE BORE	VALVE HEIGHT
NPS	RF	RTJ	BW	B	H
inch	mm	mm	mm	mm	mm
2	292	296	292	51	161
3 x 2	356	359	356	51	161
3	356	359	356	76	227
4 x 3	432	435	432	76	227
4	432	435	432	102	292
6 x 4	559	562	559	102	292
6	559	562	559	152,5	334
8 x 6	661	664	661	152,5	334
8	661	664	661	204	357
10 x 8	788	791	788	204	357
10	788	791	788	254	403
12 x 10	838	841	838	254	403
12	838	841	838	305	460
14 x 12	889	893	889	305	460
14	889	893	889	336,5	495
16 x 12	991	994	991	305	460
16	991	994	991	387,5	598
18	1093	1096	1093	438	644
20 x 16	1194	1200	1194	387,5	598
20	1194	1200	1194	489	759
24 x 20	1397	1407	1397	489	759
24	1397	1407	1397	590	863
26	1448	1461	1448	635	920
28	1550	1562	1550	686	989
30 x 24	1651	1664	1651	590	863
30	1651	1664	1651	737	1081
36 x 30	2083	2099	2083	737	1081
36	2083	2099	2083	876	1265
40 x 36	2337		2337	876	1265
40	2337		2337	978	1323
42 x 36	2240		2240	876	1265
42	2240		2240	1020	1495
48	2845		2845	1168	1702

Dimensions of larger sizes & rating upon request.

Top entry, cast steel, full bore ASME Class 900

ASME Class 900 dimensional data, mm

NOMI-NAL	FACE TO FACE			VALVE BORE	VALVE HEIGHT
NPS	RF	RTJ	BW	B	H
inch	mm	mm	mm	mm	mm
2	369	372	369	51	161
3 x 2	381	385	381	51	161
3	381	385	381	76	195
4 x 3	458	461	458	76	195
4	458	461	458	102	213
6 x 4	610	613	610	102	213
6	610	613	610	152,5	275
8 x 6	737	740	737	152,5	275
8	737	740	737	204	357
10 x 8	838	841	838	204	357
10	838	841	838	254	456
12 x 10	965	968	965	254	456
12	965	968	965	305	460
14 x 12	1029	1038	1029	305	460
14	1029	1038	1029	324	523
16 x 12	1130	1140	1130	305	460
16	1130	1140	1130	375	627
18	1219	1232	1219	425	687
20 x 16	1321	1334	1321	375	627
20	1321	1334	1321	473	820
24 x 20	1549	1568	1549	473	820
24	1549	1568	1549	572	935
26	1650		1650	620	
28	1778		1778	667	
30 x 24	1880		1880	572	
30	1880		1880	715	
36 x 30	2286		2286	715	
36	2286		2286	857	



Top entry, cast steel, full bore ASME Class 1500

ASME Class 1500 dimension al data, mm

NOMI-NAL	FACE TO FACE			VALVE BORE	VALVE HEIGHT
NPS	RF	RTJ	BW	B	H
inch	mm	mm	mm	mm	mm
2	369	372	369	51	161
3 x 2	470	473	470	51	161
3	470	473	470	76	196
4 x 3	546	550	546	76	196
4	546	550	546	102	288
6 x 4	705	711	705	102	288
6	705	711	705	146	322
8 x 6	832	841	832	146	322
8	832	841	832	194	483
10 x 8	991	1000	991	194	483
10	991	1000	991	241	540
12 x 10	1130	1146	1130	241	540
12	1130	1146	1130	289	598
14 x 12	1257	1276	1257	289	598
14	1257	1276	1257	318	690
16 x 12	1384	1407	1384	289	598
16	1384	1407	1384	362	805
18	1537	1559	1537	410	1024
20 x 16	1664	1686	1664	362	805
20	1664	1686	1664	456	1082
24 x 20	1943	1972	1943	456	1082
24	1943	1972	1943	548	1315

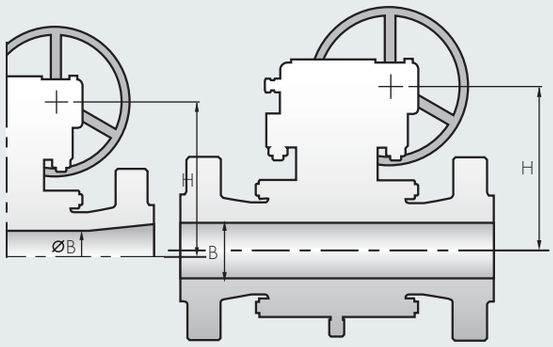
Dimensions of larger sizes & rating upon request.

Top entry, cast steel, full bore ASME Class 2500

ASME Class 2500 dimensional data, mm

NOMI-NAL	FACE TO FACE			VALVE BORE	VALVE HEIGHT
NPS	RF	RTJ	BW	B	H
inch	mm	mm	mm	mm	mm
2	451	454	451	44	270
3 x 2	578	584	578	44	270
3	578	584	578	64	345
4 x 3	673	683	673	64	345
4	673	683	673	90	395
6 x 4	914	927	914	90	395
6	914	927	914	135	512
8 x 6	1022	1038	1022	135	512
8	1022	1038	1022	180	584
10 x 8	1270	1292	1270	180	584
10	1270	1292	1270	225	672
12 x 10	1422	1445	1422	225	672
12	1422	1445	1422	267	790

07. API 6A DIMENSIONS:



API 6A Class 2000

API 6A Class 2000 dimensional data, mm

NOMINAL	VALVE BORE		VALVE HEIGHT
SIZE	A-RTJ	Ø B	H
inch	mm	mm	mm
2 1/16" x 1 13/16"	295	46	160
2 1/16"	295	52,4	180
3 1/8" x 2 1/16"	359	52,4	180
3 1/8"	359	79,4	200
4 1/16" x 3 1/8"	435	79,4	200
4 1/16"	435	103,2	255
5 1/8" x 4 1/16"	562	103,2	255
5 1/8"	562	130,2	320
7 1/16" x 6"	562	152,4	320
7 1/16"	664	179,4	410

API 6A Class 5000

API 6A Class 5000 dimensional data, mm

NOMINAL	VALVE BORE		VALVE HEIGHT
SIZE	A-RTJ	Ø B	H
inch	mm	mm	mm
2 1/16" x 1 13/16"	371	46	195
2 1/16"	371	52,4	195
3 1/8" x 2 1/16"	473	52,4	195
3 1/8"	473	79,4	210
4 1/16" x 3 1/8"	549	79,4	210
4 1/16"	549	103,2	255
5 1/8" x 4 1/16"	727	103,2	255
5 1/8"	727	130,2	320
7 1/16" x 6"	737	152,4	320
7 1/16"	813	179,4	410

Dimensions of larger sizes & rating upon request.

API 6A Class 3000

API 6A Class 3000 dimensional data, mm

NOMINAL	VALVE BORE		VALVE HEIGHT
SIZE	A-RTJ	Ø B	H
inch	mm	mm	mm
2 1/16" x 1 13/16"	371	46	160
2 1/16"	371	52,4	180
3 1/8" x 2 1/16"	384	52,4	180
3 1/8"	384	79,4	200
4 1/16" x 3 1/8"	460	79,4	200
4 1/16"	460	103,2	255
5 1/8" x 4 1/16"	613	103,2	255
5 1/8"	613	130,2	320
7 1/16" x 6"	613	152,4	320
7 1/16"	714	179,4	410

API 6A Class 10000

API 6A Class 10000 dimensional data, mm

NOMINAL	VALVE BORE		VALVE HEIGHT
SIZE	A-RTJ	Ø B	H
inch	mm	mm	mm
2 1/16" x 1 13/16"	521	46	198
2 1/16"	521	52,4	245
3 1/16" x 2 1/16"	619	52,4	245
3 1/16"	619	77,8	280
4 1/16" x 3 1/8"	670	79,4	280
4 1/16"	670	103,2	365
5 1/8" x 4 1/16"	737	103,2	365

API 6A Class 15000

API 6A Class 15000 dimensional data, mm

NOMINAL	VALVE BORE		VALVE HEIGHT
SIZE	A-RTJ	Ø B	H
inch	mm	mm	mm
2 1/16" x 1 13/16"	597	46	208
2 1/16"	597	52,4	257
3 1/16" x 2 1/16"	745	52,4	257
3 1/16"	745	77,8	294
4 1/16" x 3 1/8"	920	79,4	294
4 1/16"	920	103,2	383
5 1/8" x 4 1/16"	1110	103,2	383

08. BALL VALVE CV VALUES

24"- 900 Ball Valves for Hipps System

BALL FB	150, 300&600	900	1500	2500
1/2	26	26	26	26
3/4	61	61	61	61
1	114	114	114	114
1-1/2	268	268	268	186
2	501	501	501	384
3	1158	1158	1158	804
4	2118	2118	2118	1622
6	5074	5074	4660	3885
8	9337	9337	8483	7407
10	14590	14590	13167	11492
12	21009	21009	18875	16085
14	26581	24613	23657	20903
16	35211	32940	30745	28625
18	46892	44213	41613	39091
20	58396	54665	51770	48261
22	71160	67036	63825	59922
24	85186	79778	76272	69496
26	102871	97792	93821	
28	119989	113416	108079	
30	138424	130196	127892	
32	155634	148135	144454	
34	176537	167230	160736	
36	195908	187483	1179243	
38	219280	210361		
40	243970	231460		
42	266653	253567		
48	365280			
54	462308			
60	570750			

BALL FB	150, 300&600	900	1500	2500
3x2x3	212	212	212	180
4x3x4	629	629	629	393
6x4x6	895	895	980	685
8x6x8	2755	2755	2560	2031
10x8x10	5821	5821	5325	4652
12x10x12	9925	9925	9000	8058
14x12x14	17065	18510	15490	12700
16x14x16	19768	18105	17955	15005
18x16x18	27171	25208	23319	21506
20x18x20	37241	35383	33084	31333
22x20x22	47458	44130	41557	38450
24x22x24	58932	55863	52955	51316
26x24x26	73188	67469	64266	58773
28x26x28	87567	83746	80920	
30x28x30	103331	98180	90610	
32x30x32	122483	113770	112619	
34x32x34	136436	130516	129223	
36x34x36	158370	148420	143460	
38x36x38	174167	166250		
40x38x40	196181	190411		
42x40x42	222384	210470		
48x42x48	201308	185711		
54x48x54	285163			
60x54x60	370560			
16x12x16	13119	14090	12156	
20x16x20	21496	20095	18466	
24x20x24	39180	36661	34369	
30x24x30	53351	49735		
36x30x36	95927	88572		
40x36x40	155589			
42x36x42	141539			

09. MANUFACTURING RANGE

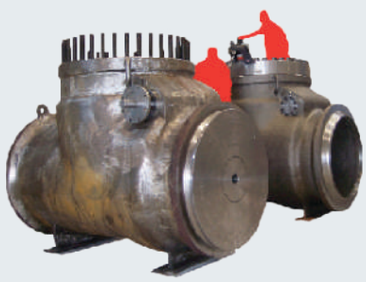
Gate

Standards	Sizes	Features Design - Materials	
ANSI B16.34 API 600 API 6D BS - 1414	1/2"-72" 150# 1/2"-64" 300# 1/2"-48" 600# 1/2"-42" 900# 1/2"-36" 1500# 1/2"-30" 2500# 1/2"-24" 4500#	**Types:** Wedge Gate/ through conduit / Double expanding **Construction:** Bolted bonnet / Pressure seal **Disc type:** Solid / Flexible/ Split /Parallel slide **Standard features:** OS&Y / Backseat **Optional features:** Lantern ring Equalizer Locking device Stem extension Leak-Off & Packing Expulsor Low emission packing Non rising stem Bellows seal gate **Materials:** Cast and forged **Operation:** Manual / MOV / AOV / HOV / Electrohydraulic	
API 6A	2-1/16"- 7 1/16" 2000 psi 2-1/16"- 7 1/16" 3000 psi 2-1/16"- 9" 5000 psi 1-13/16"- 7 1/16" 10000 psi 1-13/16"- 5-1/8" 15000 psi 1-13/16"- 3-1/16" 20000 psi		

Globe

Standards	Sizes	Features Design - Materials	
ANSI B16.34 BS 1873	1/2"-48" 150#-300# 1/2"-42" 600# 1/2"-36" 900# 1/2"-30" 1500# 1/2"-24" 2500# 1/2"-12" 4500#	**Types:** Straight pattern / Y pattern / Angle pattern / 3-Way / Stop check **Construction:** Bolted bonnet / Pressure seal **Disc type:** Flat / Parabolic / Needle **Standard features:** OS&Y / Backseat **Optional features:** Lantern ring Leak-Off & Packing Expulsor Locking device Stem extension Low emission packing Bellows seal Zero stem leakage **Materials:** Cast and forged **Operation:** Manual / MOV / AOV / HOV / Electrohydraulic	

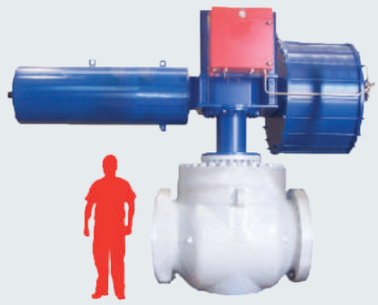
Check

Standards	Sizes	Features Design - Materials	
ANSI B16.34 API 6D BS 1868	1/2"-72" 150# 1/2"-64" 300# 1/2"-56" 600# 1/2"-48" 900# 1/2"-36" 1500# 1/2"-30" 2500# 1/2"-24" 4500#	**Types:** Swing check / Dual plate / Tilting Disc / Piston check / Ball check / Single Disc / Axial check **Construction:** Bolted bonnet / Pressure seal Wafer / Lug / Double flanged **Optional features:** Position indicator Locking device Emergency assisted valves Dumpered valves **Materials:** Cast and forged	
API 6A	2-1/16"- 11" 2000 psi 2-1/16"- 11" 3000 psi 2-1/16"- 11" 5000 psi 1-13/16"- 7 1/16" 10000 psi 1-13/16"- 4 1/16" 15000 psi 1-13/16"- 3-1/16" 20000 psi		

Butterfly (on-off and control)

Standards	Sizes	Features Design - Materials	
AWWA C-504	40"-120" CLASS 25A-250A	**Types:** Concentric Double eccentric Triple eccentric **Seats:** Soft / Metal Seated **Construction:** Wafer / Lug / Double flanged **Materials:** Cast and forged **Optional features:** Control butterfly valves **Operation:** Manual / MOV / AOV / HOV / Electrohydraulic	
BS - 3952	3"-40" ANSI 600#		

■ Ball (on-off and control)

Standards	Sizes	Features Design - Materials	
ANSI B16.34 API 6D	1/2"-60" 150#-600# 1/2"-56" 900# 1/2"-48" 1500# 1/2"-30" 2500#	**Types:** Trunnion Mounted / Floating **Construction**: Side entry Split body: 2 or 3 pieces Fully welded Top entry Non contact Ball Valve **Seats:** Soft / Metal Seated **Standard features Trunnion:** Bidirectional Flow Trunnion Design for low torque Automatic cavity pressure relief Double block & bleed Anti-blow out stem Grease fittings, drain and vent Antistatic device Fire safe **Optional features:** Double piston effect Seat with scrapper Locking device Stem extension Low emission packing Live loaded packing 3-Way ball valves Control ball valves High temperature service **Materials:** Cast and forged **Operation:** Manual / MOV / AOV / HOV / Electrohydraulic	
API 6A	2-1/16"- 7 1/16" 2000 psi 2-1/16"- 7 1/16" 3000 psi 2-1/16"- 7 1/16" 5000 psi 1-13/16"-7 1/16" 10000 psi 1-13/16"-5-1/8" 15000 psi 1-13/16"-3-1/8" 20000 psi		

Choke

Standards	Sizes	Features Design - Materials	
API 6A	Customized up to 20000 psi	**Types:** Positive, Adjustable and Control **Materials:** Cast and forged **Operation:** Pneumatic diaphragm Pneumatic piston Hydraulic piston Electrohydraulic	

Axial flow valves (on-off control)

Standards	Sizes	Features Design - Materials	
ASME B16.34	4"-48" 150#-900# 4"-24" 1500#	**Types:** One piece body **Trim type:** STD / LDB / DobDrill / DobCage **Materials:** Cast **Operation:** Manual Pneumatic Hydraulic Electric Electrohydraulic	

Globe control - cage guided

Standards	Sizes	Features Design - Materials	
ANSI B16.34	1/2"-36" 150#-300# 1/2"-30" 600# 1/2"-28" 900 1/2"-24"1500# 1/2"-20" 2500# 1/2"-12" 4500#	**Types:** Straight pattern / Y pattern / Angle / 3-Way / Bellows seal **Construction:** Bolted bonnet / Pressure seal **Trim type:** Mini flow / Multistep / USS STD / USS LDB BSS STD / BSS LDB Pilot / Multicylinder / Cascade **Standard features:** OS&Y / Backseat **Optional features:** Lantern ring Leak-Off & Packing Expulsor Double packing Stem extension Low emission packing Bellows sealed control globe **Materials:** Cast and forged **Operation:** Pneumatic diaphragm / Pneumatic piston / Hydraulic piston / Electric Electrohydraulic	

SAMSON

RINGO VALVULAS

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Polígono Empresarium
C/ Romero, 6 - 50720 Zaragoza (Spain)
Tel. +34 976 45 49 40 - Fax. +34 976 45 48 40
ringo@ringospain.com - www.ringospain.com

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