



# *Valbart* *API 6D & 6A Trunnion mounted ball valves*

Bolted body side entry • Welded body • Top entry



*Experience In Motion*

- A • Headquarters
- B • Production
- C • Production
- D • Warehouse



## Profile

Valbart was founded in 2003 as a joint venture. Since then, the company has witnessed tremendous growth and has been recognized as the fastest growing firm in its sector.

Acquired in 2010 by Flowserve Corporation following a long period of sustained growth, Valbart further expanded its technical resources and product offerings.

The company specializes in designing and manufacturing API 6A and API 6D Trunnion Mounted ball and API 6D Gate Valves. The company is driven by constant innovation to increase its existing range of products. Apart from being one of the leading suppliers of TMBV, Valbart is also recognized for its production of Trunnion Mounted Control Ball Valves, Cryogenic Valves, DBB Valves and Rising Stem Friction Free Ball Valves.

The technical know-how, design and experience in producing TMBV's are Valbart's strongest assets. The company continuously improves and builds on these assets. The employment of highly talented and experienced professionals in key technical management positions is proof of the Company's commitment to a continuous improvement.

With a highly equipped facility distributed in four buildings with a total internal area of 18,000 sqm (194,000 sq. ft), Valbart aims at continuing to produce and provide valves of the highest quality and with a growth reflecting the one experienced so far.

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Product range

Core products		Specialized applications
 <p>API 6D/6A Side Entry (Up to 64")</p>	 <p>API 6D Slab &amp; Exp. T.C. Gate (up to 64")</p>	 <p>Cryogenic</p>
 <p>API 6D/6A Top Entry (Up to 56")</p>	 <p>Trunnion Mounted Control Ball Valve</p>	 <p>Subsea</p>
 <p>API 6D/6A Welded Body (Up to 64")</p>	 <p>Rising Stem Ball Valve</p>	 <p>Double Block &amp; Bleed</p>

**A • Side-Entry**

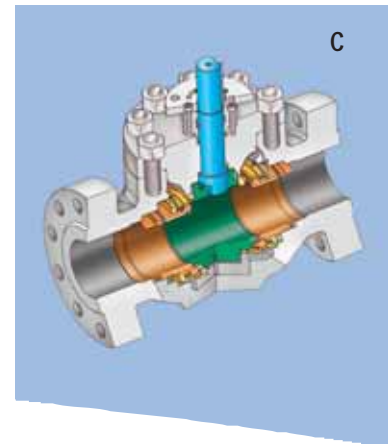
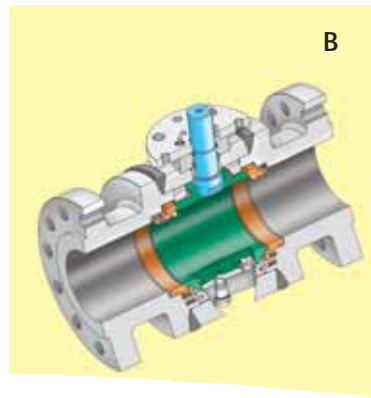
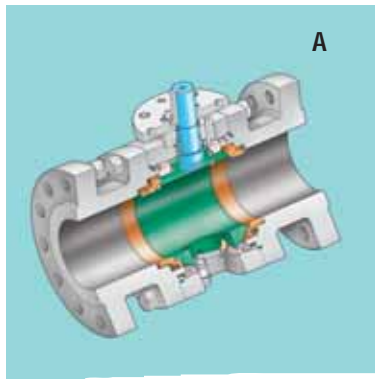
The Side-Entry design is the most popular.

**B • Welded body**

No leak path through the body.

**C • Top-entry**

Design for easy in-line maintenance.



## Product range

PRODUCT RANGE	API 6D				API 6A				
	Size (in/mm) – Pressure Range				Size (in/mm) – Pressure Range(1)				
Service	ASME 150-600	ASME 900	ASME 1500	ASME 2500	API 2000	API 3000	API 5000	API 10000	API 15000
<b>SIDE-ENTRY - MOD. VB2 /VB3</b>									
Standard	1-64 25-1600	1-56 25-1400	1-40 25-1000	1-32 25-800	1-18 25-450	1-18 25-450	1-18 25-450	1-18 25-450	1-12 25-300
Low temperature -46°C / -50°F	1-64 25-1600	1-56 25-1400	1-40 25-1000	1-32 25-800	1-18 25-450	1-18 25-450	1-18 25-450	1-18 25-450	1-12 25-300
Cryogenic -47°C to -196°C / -52°F to -320°F	1-36 25-900	1-36 25-900	1-24 25-600	1-12 25-400	N/A	N/A	N/A	N/A	N/A
Sub sea	1-64 25-1600	1-56 25-1400	1-40 25-1000	1-32 25-800	1-18 25-450	1-18 25-450	1-18 25-450	1-18 25-450	1-12 25-300
Underground	1-64 25-1600	1-56 25-1400	1-40 25-1000	1-32 25-800	1-18 25-450	1-18 25-450	1-18 25-450	1-18 25-450	1-12 25-300
High temperature 280°C to 450°C / 536°F to 842°F	1-36 25-900	1-36 25-900	1-24 25-600	1-12 25-400	1-18 25-450	1-18 25-450	1-18 25-450	1-18 25-450	1-12 25-300
Underground - low temperature -46°C / -50°F	1-64 25-1600	1-56 25-1400	1-40 25-1000	1-32 25-800	1-18 25-450	1-18 25-450	1-18 25-450	1-18 25-450	1-12 25-300
<b>WELDED BODY - MOD. VW1</b>									
Standard	2-64 50-1600	2-36 50-900	2-16 50-400	N/A					
Low temperature -46°C / -50°F	2-64 50-1600	2-36 50-900	2-16 50-400	N/A					
Sub sea	2-64 50-1600	2-36 50-900	2-16 50-400	N/A					
Underground	2-64 50-1600	2-36 50-900	2-16 50-400	N/A					
Underground - low temperature -46°C / -50°F	2-64 50-1600	2-36 50-900	2-16 50-400	N/A					
<b>TOP-ENTRY - MOD. VT1</b>									
Standard	2-56 50-1400	2-48 50-1200	2-30 50-750	2-16 50-400	1-8 25-200	1-8 25-200	1-8 25-200	1-8 25-200	N/A
Low temperature -46°C / -50°F	2-56 50-1400	2-48 50-1200	2-30 50-750	2-16 50-400	1-8 25-200	1-8 25-200	1-8 25-200	1-8 25-200	N/A
Cryogenic -47°C to -196°C / -52°F to -320°F	2-36 50-900	2-36 50-900	2-24 50-600	2-12 50-300	N/A	N/A	N/A	N/A	N/A
Sub sea	2-56 50-1400	2-48 50-1200	2-30 50-750	2-16 50-400	1-8 25-200	1-8 25-200	1-8 25-200	1-8 25-200	N/A
Underground	2-56 50-1400	2-48 50-1200	2-30 50-750	2-16 50-400	1-8 25-200	1-8 25-200	1-8 25-200	1-8 25-200	N/A
High temperature 280°C to 450°C / 536°F to 842°F	2-36 50-900	2-36 50-900	2-24 50-600	2-12 50-300	1-18 25-450	1-18 25-450	1-18 25-450	1-18 25-450	N/A
Underground - low temperature -46°C / -50°F	2-56 50-1400	2-48 50-1200	2-30 50-750	2-16 50-400	1-8 25-200	1-8 25-200	1-8 25-200	1-8 25-200	N/A

(1) The API designation is the actual working pressure in psi.



## **Manufacturing capabilities**

### **VALBART**

Valbart, located in Mezzago, Italy, is a world leader in industrial valve manufacturing, and a group of professional engineers with long standing experience in ball valve design and manufacturing.

### **Valbart R&D department**

Valbart's R&D facilities provide the company with extensive testing capabilities such as qualification tests to determine reliability and service life under critical operating conditions and pressure testing in accordance with the ASME code as well as the other industry standards (see page 32 for details).

### **In-house capabilities**

Valbart has a machining shop and a welding shop in house.

The welding facility is equipped with hi-tech SAW robots operated by fully qualified welders.

The NDT examinations of the weld bevels and beams are carried out by our qualified QC personnel using our own ultrasonic, magnetic particle, and dye penetrant equipment.

### **Certification and approvals**

Valbart's quality program is fully compliant with the industry's most stringent standards.

Valbart holds all major approvals, including ISO 9001:2000, PED, API 6D, API 6A, API 6D SS, SIL 3, and TA-Luft.

### **Inventory of finished components**

Valbart has an inventory of finished components stored in our workshop facility that are fully identified with a code number.

The storage area will keep expanding along with our company's growth.





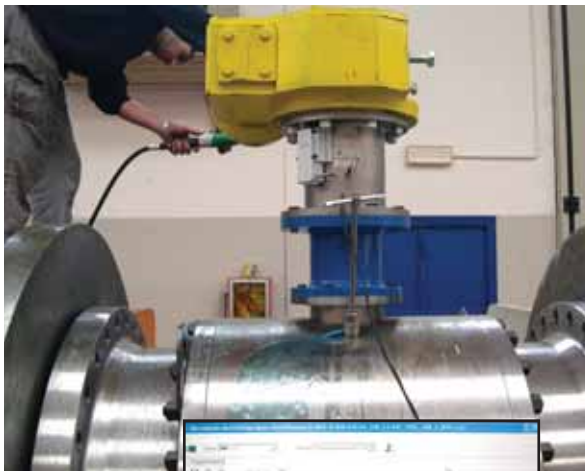
## Engineered solutions

Valbart has a strong Engineering Design Group with extensive experience in critical applications and hands-on expertise using advanced software and technology that meet the most demanding performance requirements.

Our R&D and testing facilities enable us to run the most comprehensive testing programs and accommodate valves up to 64" (1600 mm) in diameter and 40 tons in weight. In addition, given our proximity to major university and testing laboratories, we're well positioned to handle any extremely specialized tests – such as the hyperbaric test for sub-sea valves – that cannot be done in house.



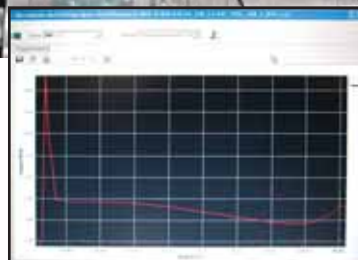
*Cryogenic testing on an 8" (20 mm) class 300 valve.*



*48" Class 600 valve with Electrohydraulic actuator*



*Torque measuring device with computerized results.*





### ***Machinery and equipment***

Valbart's production equipment uses the latest automation technology and is specially engineered to meet the requirements of advanced large valve manufacturing.

This includes large CNC horizontal and vertical boring mills with tool changers, NC lathes, and NC machining centers for valve bodies and parts. Valbart has qualified procedures, welders, and welding operators for all major weld processes.

The production testing equipment is designed to safely and efficiently test 100% of the current production of low- and high-pressure valves in strict accordance with industry codes and standards, as well as customer-imposed criteria.

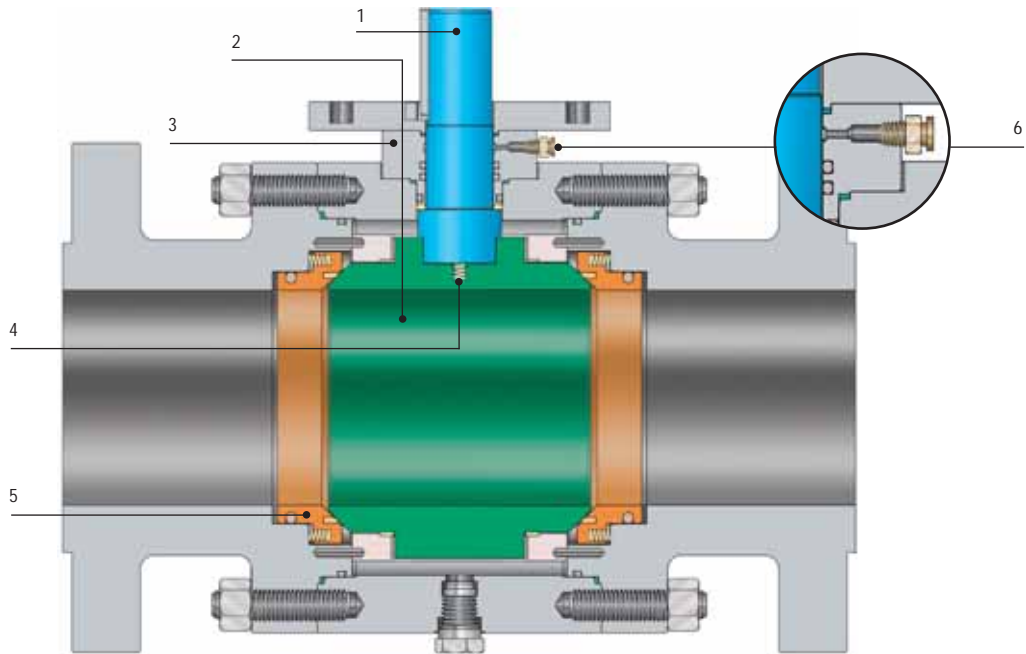


*SAW welding robot applying weld overlay on valve closure*



*Boring machine.*

Valbart's standard trunnion-mounted ball valves offer increased value by incorporating advanced design features.



## VALBART trunnion-mounted ball valve design features

### 1 Independent ball and stem

The ball and stem are independent to minimize the effect of the side thrust generated by the pressure acting on the ball.

### 2 Trunnion-mounted ball

The ball is fixed and the seat rings are floating, free to move along the valve axis.

Side load generated by the pressure acting on the ball is absorbed by bearings.

At low pressure, the seat sealing action is achieved by the thrust of the springs acting on the seat rings.

As the pressure increases, the fluid pressure pushes the seat rings against the ball.

### 3 Anti-blowout stem

Stem is retained by the stem cover (other designs available on request).

### 4 Anti-static design

The electrical conductance continuity between all the metallic components is guaranteed and certified.

### 5 Floating self-relieving seat rings

Two independent floating seat rings assure the bi-directional tightness of the valve. The seats are carefully designed to minimize the torque required to operate the valves without losing sealing power, which is assured from zero differential pressure to the valve's maximum rated pressure.

Self-relieving seats are supplied as a standard feature. Double piston or combination seats (self-relieving/upstream, double piston/down-stream) can be supplied upon request.

### 6 Emergency sealant injection

Each valve is supplied complete with emergency sealant injection feature located between the upper O-rings and the graphite gasket.

An emergency sealant injection feature on seats is available upon request only, for 6" full port and larger.

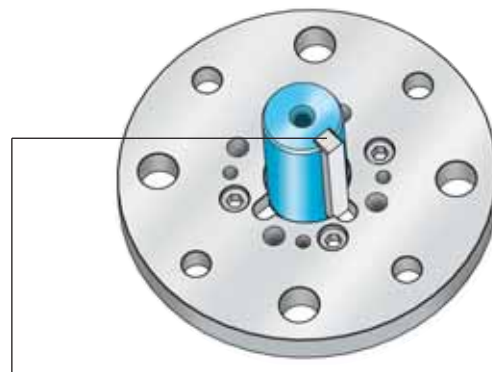
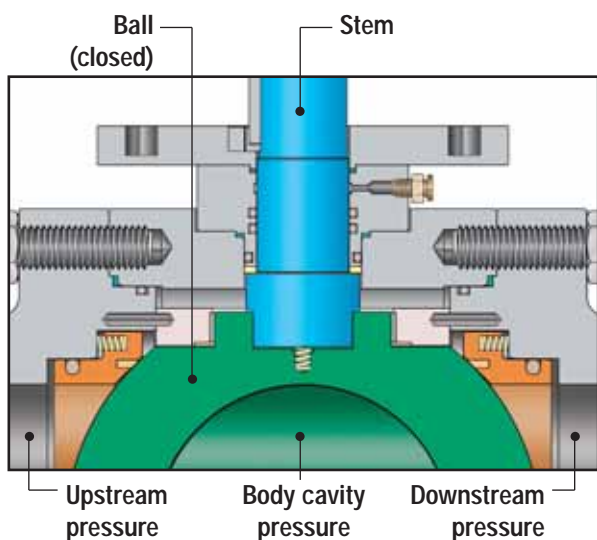
Emergency grease injection features are not available on low-and high-temperature valves.

### Low emission valves

Accurate machining of stem and bonnet sealing surfaces ensures compliance with the most severe pollution-control regulations.







### Ball seat alignment

Mechanical stops ensure control over ball rotation.

### Double Block and Bleed

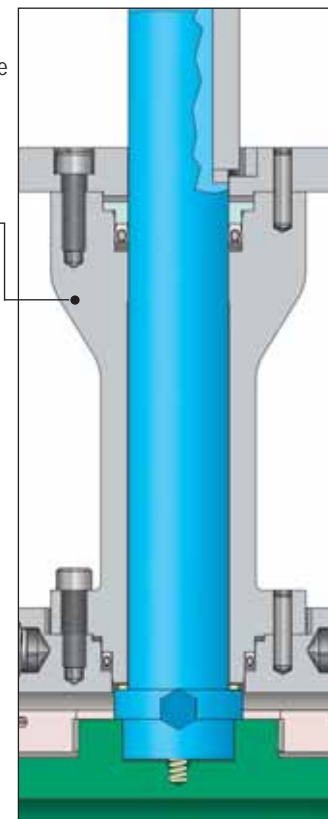
All Valbart trunnion-mounted ball valves are designed and manufactured to seal off both seats at the same time and allow bleeding of the entrapped cavity pressure (DBB) with the ball in the closed position.

Both seats hold their respective pressures independent of the body cavity pressure. The double block and bleed feature makes it possible to do such things as flush the valve under pressure and verify that the seats are sealing properly.

### Extended Bonnet

Valve designs are available with extended bonnets for applications in extreme temperature service.

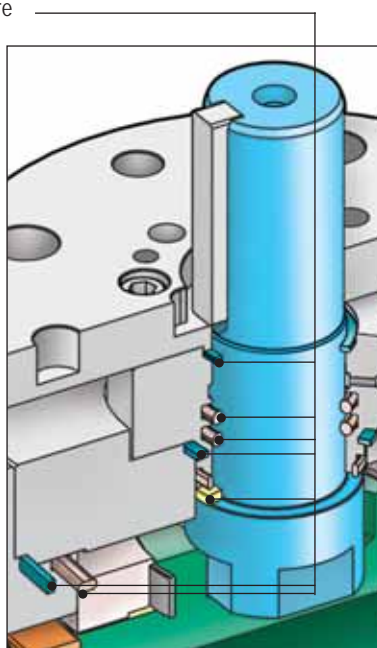
Extended bonnets are recommended for service at temperatures below  $-50^{\circ}\text{C}$  ( $-58^{\circ}\text{F}$ ) or above  $220^{\circ}\text{C}$  ( $428^{\circ}\text{F}$ ).



### Stem Sealing

Two O-rings and one graphite gasket ensure the stem seal. The graphite gasket can be replaced while the valve is under pressure and with the ball in any position. First, release any pressure that may exist between the upper O-ring and the graphite gasket through the grease injection fitting hole and then remove the adaptor plate.

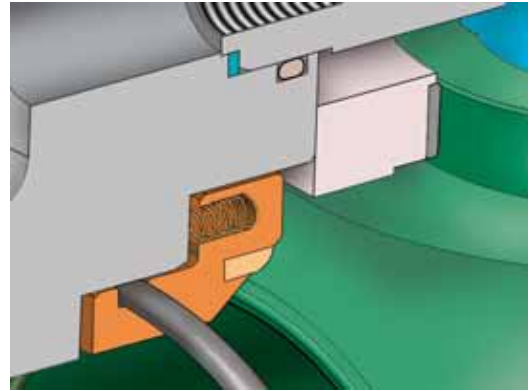
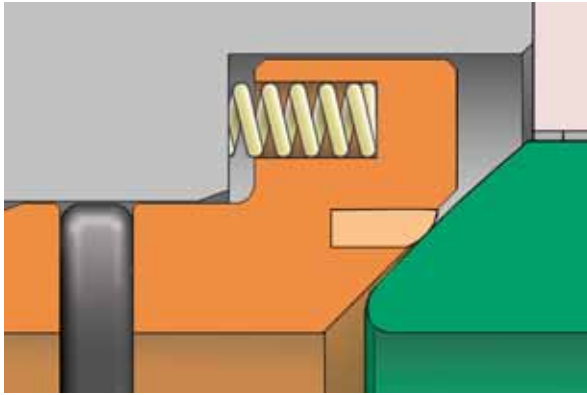
The O-rings can be replaced with the valve in fully open or fully closed position by removing the stem cover (after having released all the pressure in the body cavity).



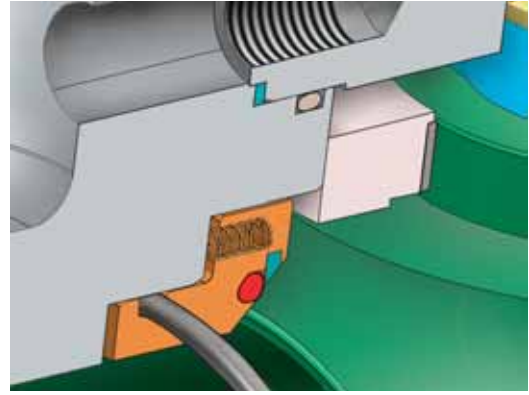
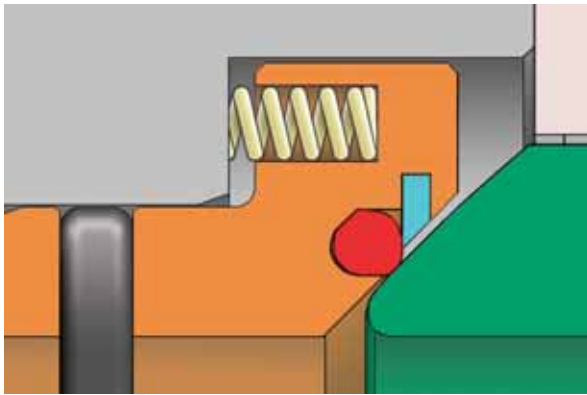
### Body Sealing

The double sealing action of O-rings and graphite gaskets in all the static joints of the body components ensures zero leakage and the Fire Safe feature.

Lip-seal rings and/or graphite gaskets can be used for special service.



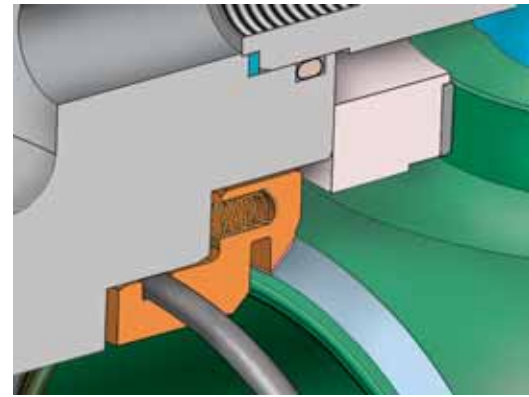
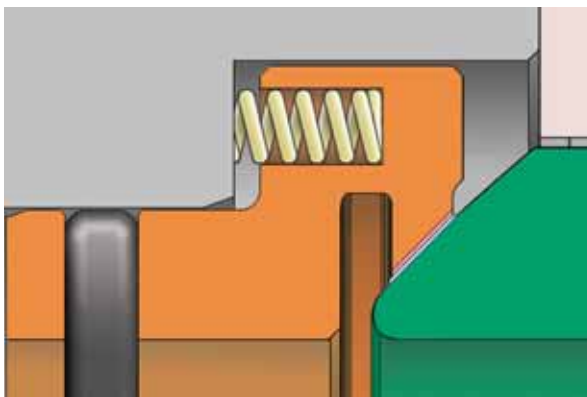
All sizes and pressure classes.



6" and larger – ASME class 150–600 only

**Soft-seated valves**  
(primary metal, secondary soft)

In valves designed for standard service, a resilient material is inserted into the metal seat holder to provide a soft seating action in addition to the metal to metal seating between the ball and the seat rings.



**Metal-seated valves**

Valves designed for abrasive service or for operation in temperatures that prohibit the use of a resilient material have seating action provided by the metal-to-metal contact between the ball and the seat rings. Seating faces are hardfaced.

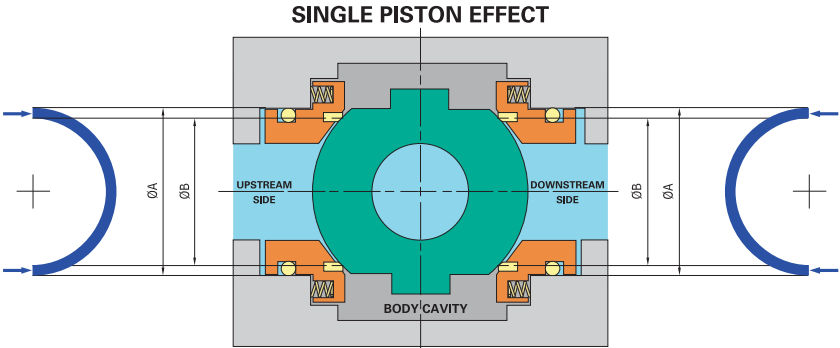
**STANDARD**  
*Single piston effect*  
*(self-relieving seats)*

Fluid pressure, both upstream and downstream, creates a resultant thrust that pushes the seat rings against the ball.

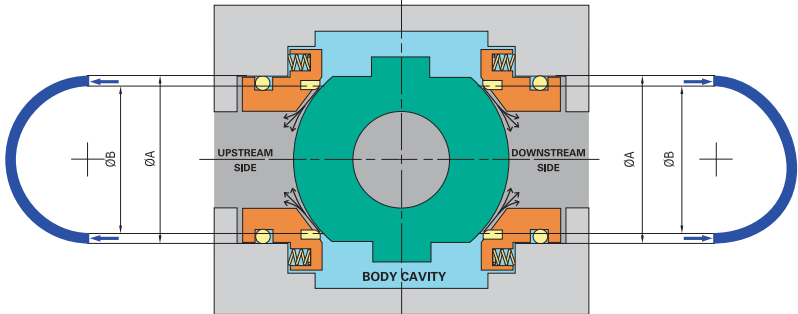
Fluid pressure acting in the body cavity creates a resultant thrust that pushes the seat rings away from the ball.

The single piston design permits the automatic release of any overpressure in the body cavity when the valve is in the fully open or fully closed position.

Consequently, the seat rings are "self-relieving."



PRESSURE ACTING UPSTREAM AND/OR DOWNSTREAM

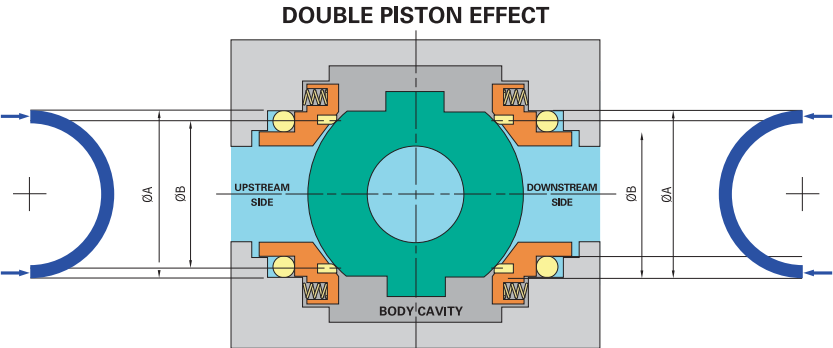


PRESSURE ACTING IN THE BODY CAVITY

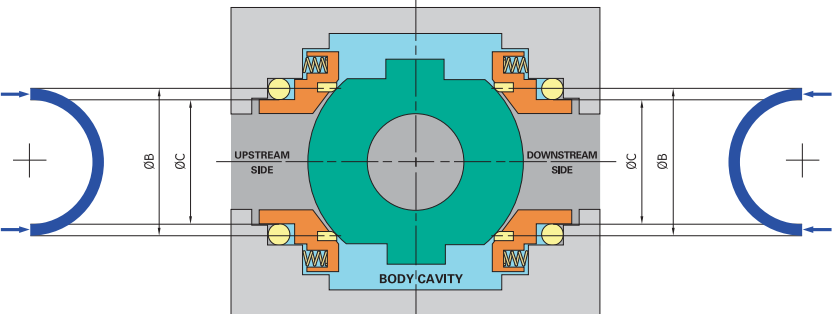
**OPTIONAL**  
*Double piston effect*

Fluid pressure, both upstream and downstream as well as in the body cavity, creates a resultant thrust that pushes the seat rings towards the ball.

Valves with double piston effect seat rings require a relief valve to reduce the build-up of overpressure in the body cavity.



PRESSURE ACTING UPSTREAM AND/OR DOWNSTREAM



PRESSURE ACTING IN THE BODY CAVITY



### Fire safe

Valbart trunnion-mounted ball valves are designed and certified Fire Safe to API 6FA, API 607, and ISO 10497.

### Extended stem

Valves installed underground or in remote locations can be operated with an optional extended stem.

All the drain, vent, and emergency sealant connections can be operated using extended connecting pipes firmly attached to the stem protective cover.

### Ends

Valve ends can be manufactured to several configurations to comply with customer requests, such as:

Flanged RF or RTJ to ASME B16.5 up to 24" (MSS SP-44 for 22") and B16.47A for 26" and larger. Other type of flanges are available upon request.

Butt-weld ends to ASME B16.25. Others types of weld ends are available upon request.

Hub ends for clamped connections are available as per customer specification.

### Actuation

Hand-operated valves are supplied either with a lever or gear operator.

The use of a wrench is limited to valves equal to or smaller than:

- 4" – Class 150      • 4" – Class 300
- 3" – Class 600      • 3" – Class 900
- 2" – Class 1500    • 1" – Class 2500

Actuated valves can be supplied with:

- Electric actuators

- Pneumatic actuators
- Hydraulic actuators
- Gas over oil actuators for ESDV, SDV, BDV, MOV, GOV, and HIPPS services

### Mounting operators valve automation center

Operator mounting should be made at the Valbart Valve Automation Center before shipment.

If the operators will be assembled on site, the mounting will be carried out before installing the valves in line, following Valbart instructions.

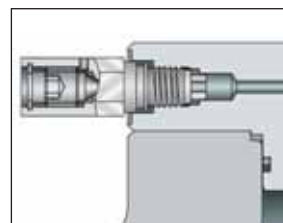
Mounting of operators on valves already installed in line is not recommended and will be performed only under the supervision of Valbart.

Operator mounting flanges are in accordance with ISO 5211-FF.

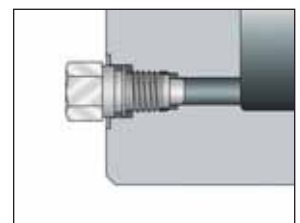
### Vent valve and drain plug

Each valve 6" and larger is supplied complete with a 1/2" NPT vent valve located in the upper part of the body and complete with a drain plug located in the lower part of the body.

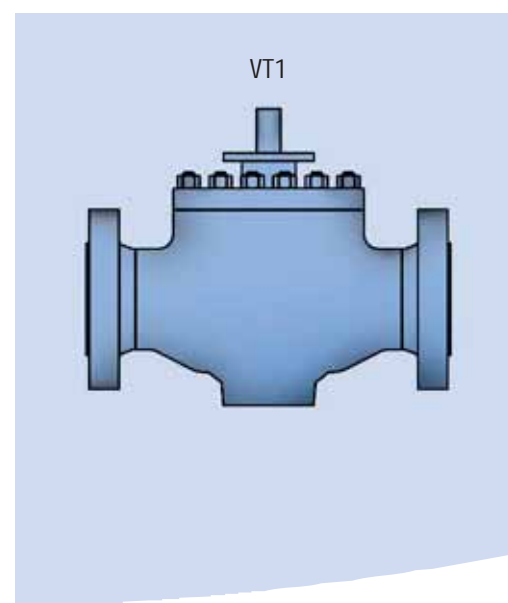
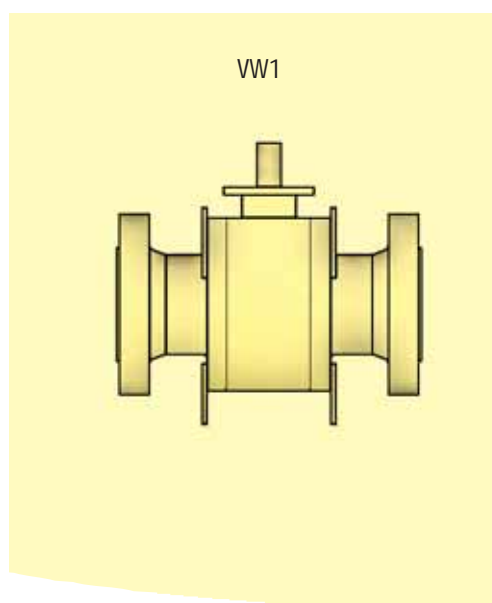
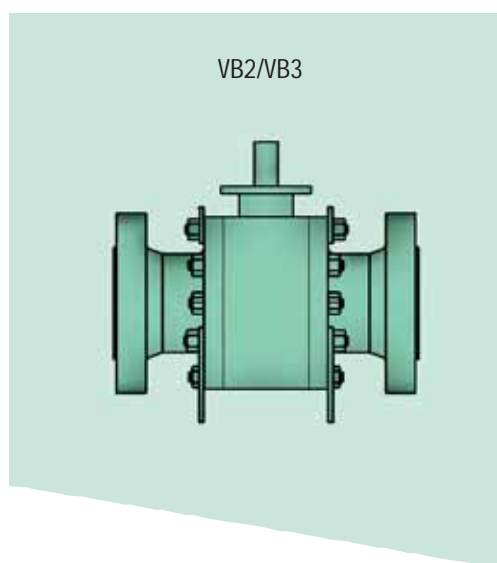
Each valve 6 x 4" and smaller is supplied complete with a 1/2" NPT vent/drain valve located in the lower part of the body.



1/2" NPT vent valve bleeder

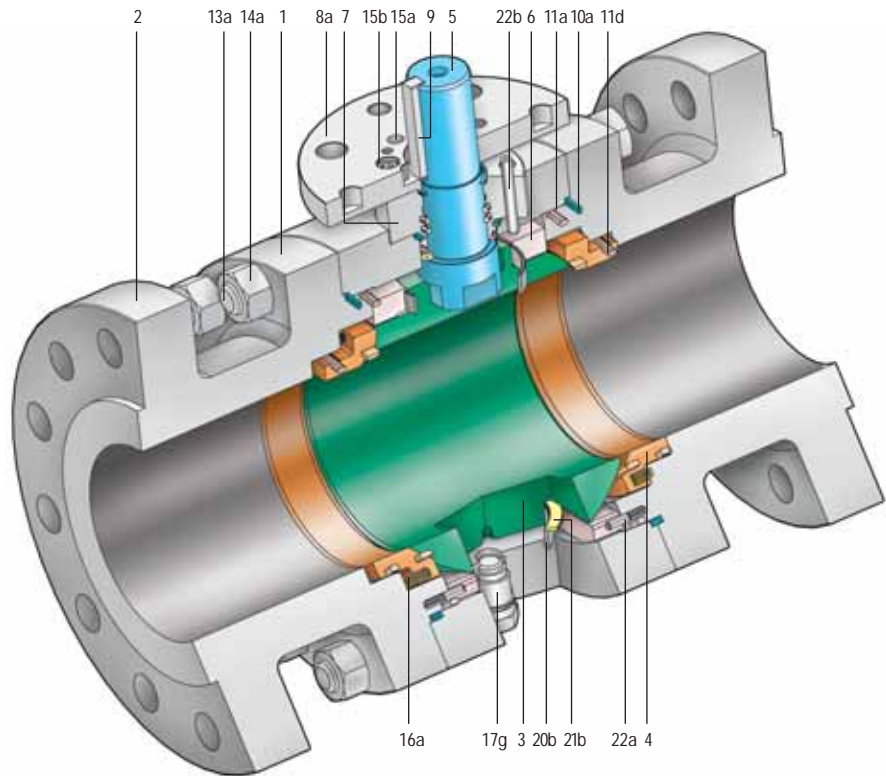


1/2" NPT vent/drain plug



FEATURES	SIDE-ENTRY	WELDED BODY	TOP-ENTRY
Trunnion-mounted	Standard	Standard	Standard
Independent stem and ball	Standard	Standard	Standard
Independent floating seats	Standard	Standard	Standard
Primary soft seat - secondary metal seat	Standard	Standard	Standard
Primary metal seat - secondary soft seat	On request	On request	On request
Metal-to-metal seat	On request	N/A	On request
Self relieving seats	Standard	Standard	Standard
Single piston seat effect	Standard	Standard	Standard
Double piston seat effect	On request	On request	On request
Combination (self relieving/double piston) seats	On request	On request	On request
API 6a or API 6d design and construction	As required	As required	As required
Face-to-face dimensions to API 6d and ANSI B16.10	Standard	Standard	Standard
Fire safe design to API 6fa - API 607 - BS 6755 part 2	Standard	Standard	Standard
Full, reduced or venturi port	As required	As required	As required
Flanged ends - welded ends - hub ends	As required	As required	As required
Transition pups for welded end valves	On request	On request	On request
Antistatic	Standard	Standard	Standard
Anti-blowout stem	Standard	Standard	Standard
Double block and bleed	As required	As required	As required
Possibility to check seat integrity in line with ball in open or closed position	Standard	Standard	Standard
Double body seals	Standard	Not required	Standard
Triple stem seals	Standard	Standard	Standard
Drain plug	Standard	Standard	Standard
Drain valve	On request	On request	On request
Vent valve (on 6" and larger)	Standard	Standard	Standard
Emergency sealant injection on stem	Standard	Standard	Standard
Emergency sealant injection on seats (on 6" and larger)	On request	On request	On request
Seat pocket overlay	On request	On request	On request
Seals area overlay	On request	On request	On request
Wetted parts overlay	On request	On request	On request
Body internal lining	On request	N/A	On request
Extended stem for underground installation	As required	As required	As required
Extended bonnet for low or high temperature	As required	N/A	As required
Locking device	On request	On Request	On request
Lifting lugs	Standard On 6" and larger	Standard On 6" and larger	Standard On 6" and larger
Supporting feet	Standard On 6" and larger	Standard On 6" and larger	Standard On 6" and larger
Manual or motorized operation	As required	As required	As required
In-line maintenance	N/A	N/A	Yes
On site maintenance	Yes	N/A On stem & ancillaries only	Yes

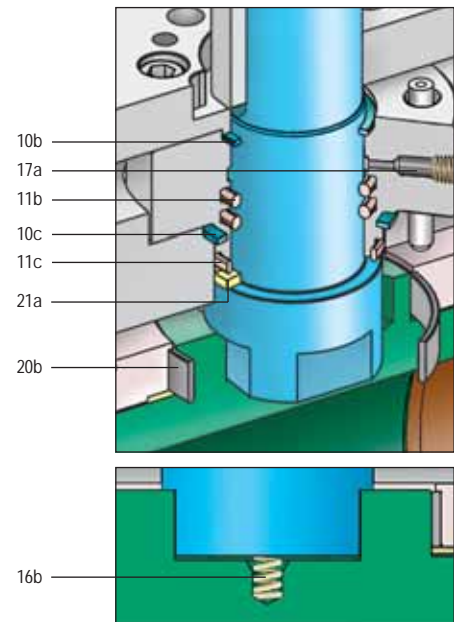
Note: Other features are available on request.

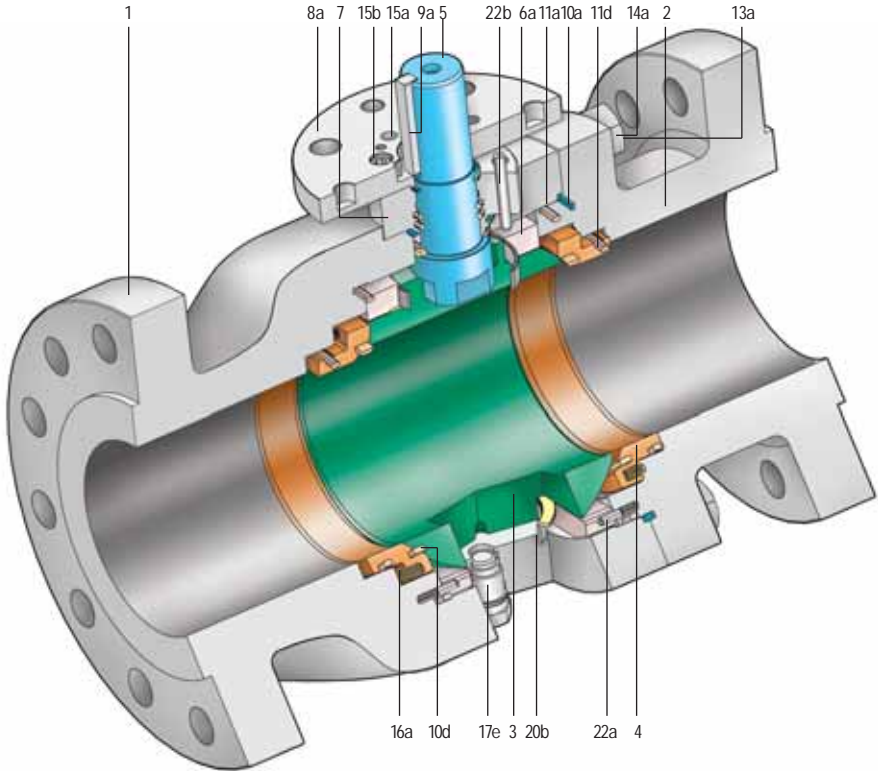


## Bolted body side-entry 6" and larger - Mod VB3

PARTS LIST			
1	Body	14a	Body/closure nut
2	Closure	15a	Stem cover/body socket screw <sup>(2)</sup>
3	Ball	15b	Operator flange/body socket screw
4	Seat	15d	Stop seat socket screw <sup>(1)(2)</sup>
5	Stem	16a	Seat spring
6	Bearing retainer	16b	Antistatic spring
7	Stem cover	17a	Stem greaser
8a	Operator flange	17e	Vent bleeder valve <sup>(2)</sup>
9a	Stem key	17g	Drain plug
10a	Body gasket	20b	Ball bushing
10b	Stem gasket	21a	Stem thrust washer
10c	Stem cover gasket	21b	Ball thrust washer
11a	Body O-ring	22a	Bearing retainer pin
11b	Stem O-ring	22b	Operator flange/body pin
11c	Stem cover O-ring	23a	Lifting lug <sup>(2)</sup>
11d	Seat O-ring	23b	Valve support <sup>(2)</sup>
13a	Body/closure stud	24a	Stop seat washer <sup>(1)(2)</sup>

(1) Only for DN > 8" (2) Not visible in drawing opposite.

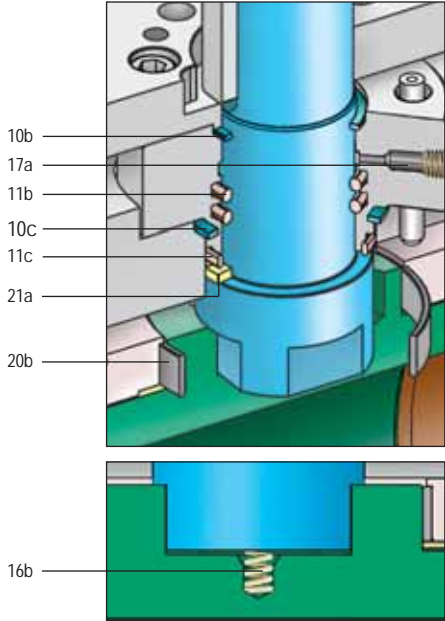


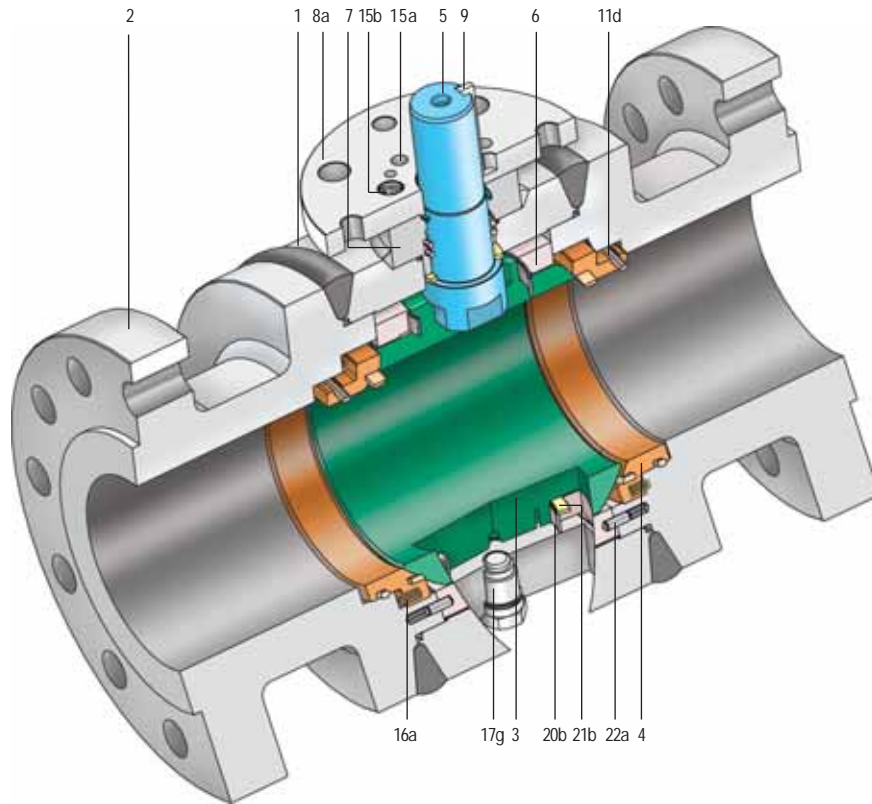


**Bolted body side-entry 4" and smaller - Mod VB2**

PARTS LIST			
1	Body	11c	Stem cover O-ring
2	Closure	11d	Seat O-ring
3	Ball	13a	Body/closure stud(1)
4	Seat	14a	Body/closure nut
5	Stem	15a	Stem cover/body socket screw(1)
6a	Trunnion	15b	Operator flange/body socket screw
7	Stem cover	16a	Seat spring
8a	Operator flange	16b	Antistatic spring
9a	Stem key	17a	Stem greaser
10a	Body gasket	17e	Vent bleeder valve
10b	Stem gasket	20b	Ball bushing
10d	Seat gasket	21a	Stem thrust washer
11a	Body O-ring	22a	Bearing retainer pin
11b	Stem O-ring	22b	Operator flange/body pin

(1) Not visible in drawing opposite.

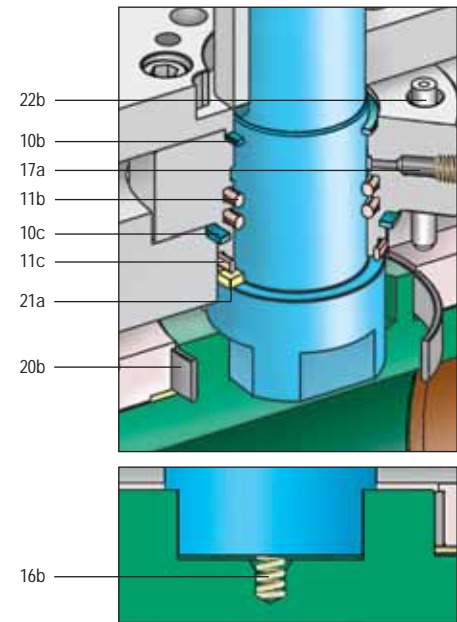




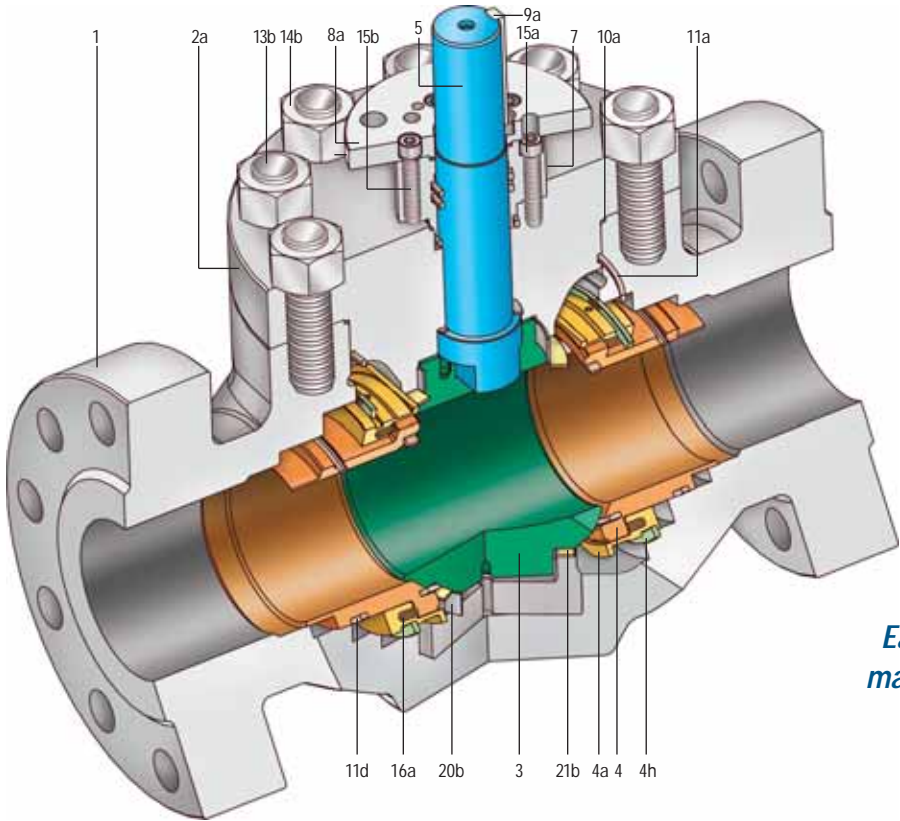
## Welded body - Mod VW1

PARTS LIST			
1	Body	15b	Operator flange/body socket screw
2	Closure	15d	Stop seat socket screw <sup>(1)(2)</sup>
3	Ball	16a	Seat spring
4	Seat	16b	Antistatic spring
5	Stem	17a	Stem greaser
6	Bearing retainer	17e	Vent bleeder valve
7	Stem cover	17g	Drain plug
8a	Operator flange	20b	Ball bushing
9a	Stem key	21a	Stem thrust washer
10b	Stem gasket	21b	Ball thrust washer
10c	Stem cover gasket	22a	Bearing retainer pin
11b	Stem O-ring	22b	Operator flange/body pin
11c	Stem cover O-ring	23a	Lifting lug <sup>(2)</sup>
11d	Seat O-ring	23b	Valve support <sup>(2)</sup>
15a	Stem cover/body socket screw <sup>(2)</sup>	24a	Stop seat washer <sup>(1)(2)</sup>

(1) Only for DN > 8" (2) Not visible in drawing opposite.





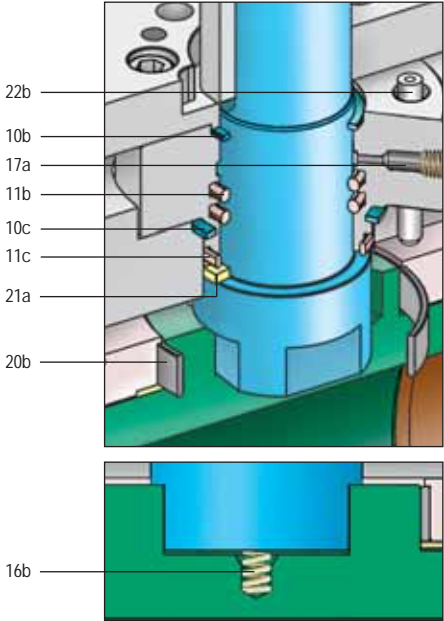


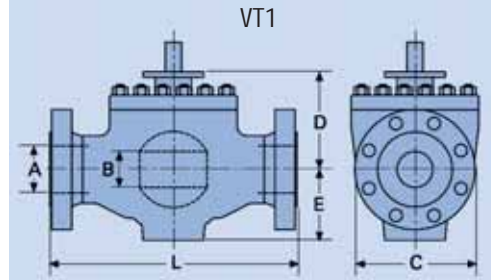
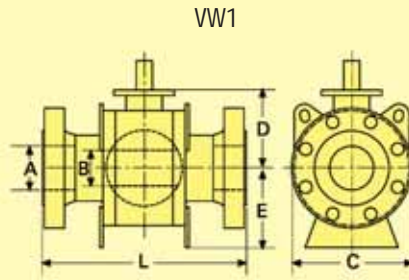
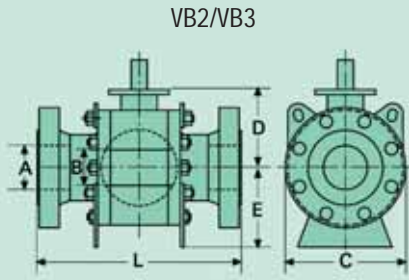
Easy in-line maintenance

Top-entry - Mod VT1

PARTS LIST			
1	Body	11c	Stem cover O-ring
2a	Bonnet	11d	Seat O-ring
3	Ball	13b	Body/bonnet stud
4	Seat	14b	Body/bonnet nut
4a	Spring holder ring	15a	Stem cover/body socket screw
4h	Retaining ring	15b	Operator flange/body socket screw
5	Stem	16a	Seat spring
7	Stem cover	16b	Antistatic spring
8a	Operator flange	17a	Stem greaser
9a	Stem key	17e	Vent bleeder valve <sup>(1)</sup>
10a	Body gasket	17g	Drain plug <sup>(1)</sup>
10b	Stem gasket	20b	Ball bushing
10c	Stem cover gasket	21a	Stem thrust washer
11a	Body O-ring	21b	Ball thrust washer
11b	Stem O-ring	22b	Operator flange/body pin

(1) Not visible in drawing opposite.





## Dimensions and weights

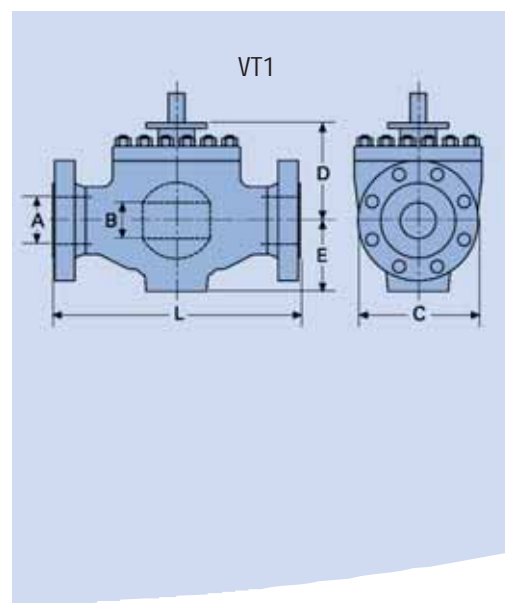
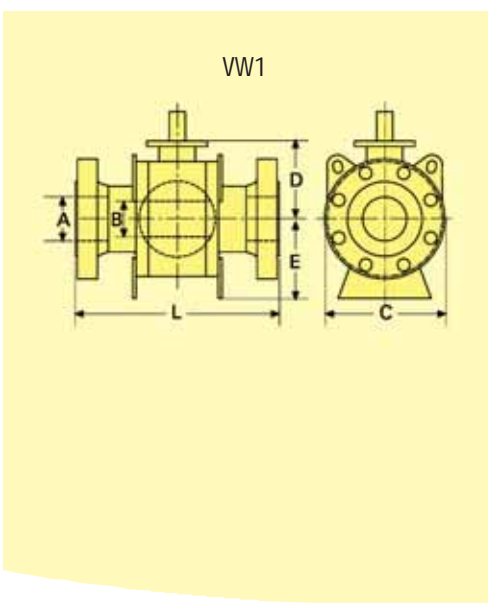
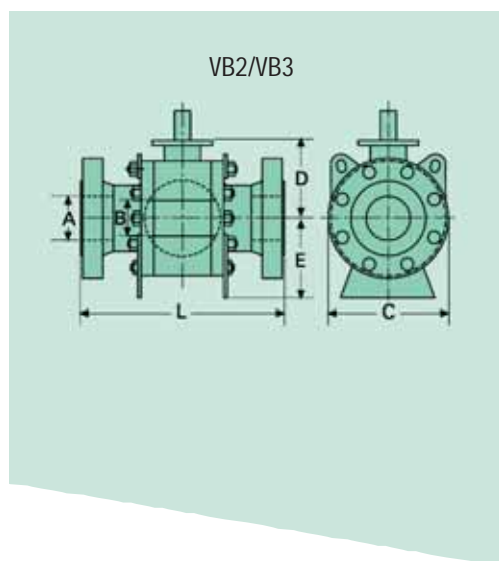
### ASME CLASS 150 FULL BORE

ALL TYPES			SIDE-ENTRY						WELDED BODY						TOP-ENTRY					
SIZE in/mm	A	B	L-RF	L-WE	C	D	E	WEIGHT lb/kg*	L-RF	L-WE	C	D	E	WEIGHT lb/kg*	L-RF	L-WE	C	D	E	WEIGHT lb/kg*
2	1.93	1.93	7.00	8.50	6.02	4.17	4.02	59	7	8.5	6.02	4.17	4.02	(1)	11.5	11.5	7.09	8.15	3.35	66
50	49	49	178	216	153	106	102	27	178	216	153	106	102	(1)	292	292	180	207	85	30
3	2.91	2.91	8.00	11.13	7.52	6.18	4.96	119	8	11.13	7.52	6.18	4.96	(1)	14	14	9.06	8.78	4.49	125.4
80	74	74	203	283	191	157	126	54	203	283	191	157	126	(1)	356	356	230	223	114	57
4	3.94	3.94	9	12	9.13	7.80	6.42	196	9	12	9.13	7.80	6.42	(1)	17	17	11.10	11.02	5.51	220
100	100	100	229	305	232	198	163	89	229	305	232	198	163	(1)	432	432	282	280	140	100
6	5.91	5.91	15.5	18	12.09	9.72	7.36	352	15.5	18	12.09	9.72	7.36	(1)	22	22	12.72	10.83	8.62	473
150	150	150	394	457	307	247	187	160	394	457	307	247	187	(1)	559	559	323	275	219	215
8	7.91	7.91	18	20.5	15.43	11.02	8.82	557	18	20.5	15.43	11.02	8.82	(1)	26	26	15.94	12.64	10.43	895.4
200	201	201	457	521	392	280	224	253	457	521	392	280	224	(1)	660	660	405	321	265	407
10	9.92	9.92	21	22	18.31	12.60	10.94	851	21	22	18.31	12.60	10.94	(1)	31	31	19.29	13.98	12.40	1232
250	252	252	533	559	465	320	278	387	533	559	465	320	278	(1)	787	787	490	355	315	560
12	11.93	11.93	24	25	21.38	13.27	12.05	1230	24	25	21.38	13.27	12.05	(1)	33	33	22.24	18.50	15.94	1562
300	303	303	610	635	543	337	306	559	610	635	543	337	306	(1)	838	838	565	470	405	710
14	13.15	13.15	27	30	23.94	14.72	13.15	1672	27	30	23.94	14.72	13.15	(1)	35	35	25.98	17.91	17.01	1672
350	334	334	686	762	608	374	334	760	686	762	608	374	334	(1)	889	889	660	455	432	760
16	15.16	15.16	30	33	26.57	16.06	14.09	2244	30	33	26.57	16.06	14.09	(1)	39	39	27.56	18.11	17.76	2420
400	385	385	762	838	675	408	358	1020	762	838	675	408	358	(1)	991	991	700	460	451	1100
18	17.17	17.17	34	36	25.00	17.28	15.35	2673	34	36	25.00	17.28	15.35	(1)	43	43	29.41	19.80	18.58	3326.4
450	436	436	864	914	635	439	390	1215	864	914	635	439	390	(1)	1092	1092	747	503	472	1512
20	19.17	19.17	36	39	33.43	19.37	17.09	3945	36	39	33.43	19.37	17.09	(1)	47	47	33.43	22.05	22.05	4246
500	487	487	914	991	849	492	434	1793	914	991	849	492	434	(1)	1194	1194	849	560	560	1930
22	21.18	21.18	40	43	36.81	20.79	18.78	5190	40	43	36.81	20.79	18.78	(1)	51	51	36.81	22.24	23.27	6050
550	538	538	991	1092	935	528	477	2359	991	1092	935	528	477	(1)	1296	1296	935	565	591	2750
24	23.19	23.19	42	45	39.57	23.15	20.59	6818	42	45	39.57	23.15	20.59	(1)	55	55	39.57	24.02	23.62	7040
600	589	589	1067	1143	1005	588	523	3099	1067	1143	1005	588	523	(1)	1397	1397	1005	610	600	3200
26	24.92	24.92	45	49	41.97	24.69	22.20	8107	45	49	41.97	24.69	22.20	(1)	57	57	41.97	26.38	24.88	8360
650	633	633	1143	1245	1066	627	564	3685	1143	1245	1066	627	564	(1)	1448	1448	1066	670	632	3800
28	26.93	26.93	49	53	44.72	25.35	25.91	9878	49	53	44.72	25.35	25.91	(1)	61	61	44.72	28.74	27.95	10120
700	684	684	1244	1347	1136	644	658	4490	1244	1347	1136	644	658	(1)	1549	1549	1136	730	710	4600
30	28.94	28.94	51	55	38.78	27.20	27.72	11473	51	55	38.78	27.20	27.72	(1)	65	65	49.57	31.50	31.10	12386
750	735	735	1295	1397	985	691	704	5215	1295	1397	985	691	704	(1)	1651	1651	1295	800	790	5630
32	30.67	30.67	54	60	51.18	29.21	29.37	14960	54	60	51.18	29.21	29.37	(1)	70	70	51.18	33.31	32.68	15587
800	779	779	1371	1524	1300	742	746	6800	1371	1524	1300	742	746	(1)	1778	1778	1300	846	830	7085
34	32.68	32.68	58	64	53.94	29.88	30.43	17160	58	64	53.94	29.88	30.43	(1)	76	76	55.12	34.25	34.65	17160
850	830	830	1473	1626	1370	759	773	7800	1473	1626	1370	759	773	(1)	1930	1930	1400	870	880	7800
36	34.41	34.41	60	68	56.30	31.97	31.77	19360	60	68	56.30	31.97	31.77	(1)	82	82	56.61	36.81	36.73	20020
900	874	874	1524	1728	1430	812	807	8800	1524	1728	1430	812	807	(1)	2083	2083	1438	935	933	9100
40	38.43	38.43	69	77	62.80	35.43	35.35	27632	69	77	62.80	35.43	35.35	(1)	92	92	64.96	39.84	40.55	28138
1000	976	976	1753	1956	1595	900	898	12560	1753	1956	1595	900	898	(1)	2337	2337	1650	1012	1030	12790
42	40.16	40.16	70.47	82	64.96	37.13	36.89	31416	70.47	82	64.96	37.13	36.89	(1)	96	96	66.93	42.13	41.93	33220
1050	1020	1020	1790	2083	1650	943	937	14280	1790	2083	1650	943	937	(1)	2437	2437	1700	1070	1065	15100
48	45.91	45.91	78.54	94	75.59	43.19	41.97	48180	78.54	94	75.59	43.19	41.97	(1)	100	100	76.77	46.85	48.43	49720
1200	1166	1166	1995	2388	1920	1097	1066	21900	1995	2388	1920	1097	1066	(1)	2540	2540	1950	1190	1230	22600
56	53.54	53.54	97.99	97.99	88.98	51.26	49.33	70520	97.99	97.99	88.98	51.26	49.33	(1)	TBA	TBA	TBA	TBA	TBA	TBA
1400	1360	1360	2489	2489	2260	1302	1253	34100	2489	2489	2260	1302	1253	(1)	TBA	TBA	TBA	TBA	TBA	TBA

\* Weight figures are relevant to flanged end valves. - (1) Please consult the factory. - Note: For dimensions and weights in larger sizes consult the factory.

Dimensions C, D, E, and weights are subject to change without notice.

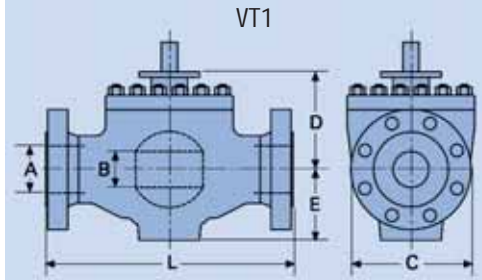
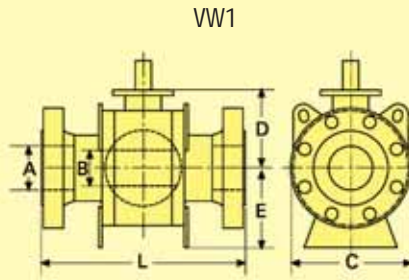
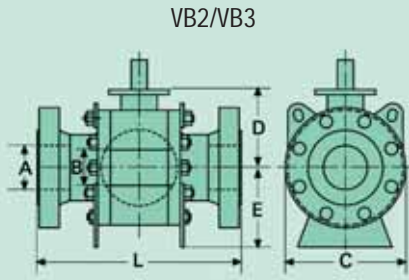
Face-to-face dimensions not listed in industry standards are subject to change without notice.



ASME CLASS 150 REDUCED BORE

ALL TYPES			SIDE-ENTRY						WELDED BODY						TOP-ENTRY					
SIZE in/mm	A	B	L-RF	L-WE	C	D	E	WEIGHT lb/kg*	L-RF	L-WE	C	D	E	WEIGHT lb/kg*	L-RF	L-WE	C	D	E	WEIGHT lb/kg*
2 x 1½ 50 x 40	1.93 49	1.50 38	7 178	8.5 216	5.98 152	3.70 94	3.86 98	55 25	7 178	8.5 216	5.98 152	3.70 94	3.86 98	(1)	11.50 292	11.50 292	6.89 175	8.15 207	3.35 85	55 25
3 x 2 80 x 50	2.91 74	1.93 49	11.13 203	3.03 283	7.52 191	4.17 106	3.94 100	66 30	11.13 203	3.03 283	7.52 191	4.17 106	3.94 100	(1)	14.02 356	14.02 356	7.52 191	8.27 210	3.43 87	74.8 34
4 x 3 100 x 80	3.94 100	2.91 74	12 229	4.02 305	9.02 229	6.06 154	5.00 127	132 60	12 229	4.02 305	9.02 229	6.06 154	5.00 127	(1)	17.01 432	17.01 432	9.06 230	8.86 225	4.33 110	154 70
6 x 4 150 x 100	5.91 150	3.94 100	15.5 394	18 457	10.98 279	7.80 198	6.42 163	220 100	15.5 394	18 457	10.98 279	7.80 198	6.42 163	(1)	22.01 559	22.01 559	10.98 279	10.63 270	5.63 143	286 130
8 x 6 200 x 150	7.91 201	5.91 150	18 457	20.5 521	13.50 343	9.92 252	7.36 187	407 185	18 457	20.5 521	13.50 343	9.92 252	7.36 187	(1)	25.98 660	25.98 660	13.50 343	10.83 275	8.46 215	550 250
10 x 8 250 x 200	9.92 252	7.91 201	21 533	22 559	15.98 406	11.02 280	8.74 222	640 291	21 533	22 559	15.98 406	11.02 280	8.74 222	(1)	30.98 787	30.98 787	15.98 406	12.60 320	10.31 262	1001 455
12 x 10 300 x 250	11.93 303	9.92 252	24 610	25 635	19.02 483	12.72 323	11.02 280	1016 462	24 610	25 635	19.02 483	12.72 323	11.02 280	(1)	32.99 838	32.99 838	19.09 485	13.98 355	12.20 310	1067 485
14 x 10 350 x 250	13.15 334	9.92 252	27 30	30 762	21.06 535	12.76 324	10.83 275	1140 518	27 30	30 762	21.06 535	12.76 324	10.83 275	(1)	35.00 889	35.00 889	21.06 535	13.98 355	12.20 310	1463 665
14 x 12 350 x 300	13.15 334	11.93 303	27 686	30 762	21.06 535	13.46 342	11.81 300	1342 610	27 686	30 762	21.06 535	13.46 342	11.81 300	(1)	35.00 889	35.00 889	21.06 535	18.70 475	15.55 395	1738 790
16 x 12 400 x 300	15.16 385	11.93 303	30 762	33 838	23.43 595	13.62 346	11.93 303	1536 698	30 762	33 838	23.43 595	13.62 346	11.93 303	(1)	39.02 991	39.02 991	23.43 595	18.70 475	15.55 395	2068 940
16 x 14 400 x 350	15.16 385	13.15 334	30 762	33 838	23.43 595	14.57 370	13.19 335	1804 820	30 762	33 838	23.43 595	14.57 370	13.19 335	(1)	39.02 991	39.02 991	25.98 660	17.72 450	16.93 430	1997.6 908
18 x 16 450 x 400	17.17 436	15.16 385	34 864	36 914	25.00 635	16.34 415	13.70 348	2332 1060	34 864	36 914	25.00 635	16.34 415	13.70 348	(1)	42.99 1092	42.99 1092	27.56 700	18.11 460	17.72 450	2745.6 1248
20 x 16 500 x 400	19.17 487	15.16 385	36 914	39 991	27.56 700	16.34 415	13.78 350	2420 1100	36 914	39 991	27.56 700	16.34 415	13.78 350	(1)	47.01 1194	47.01 1194	27.56 700	18.11 460	17.72 450	3392.4 1542
20 x 18 500 x 450	19.17 487	17.17 436	36 914	39 991	27.56 700	17.28 439	15.35 390	2618 1190	36 914	39 991	27.56 700	17.28 439	15.35 390	(1)	47.01 1194	47.01 1194	29.33 745	19.49 495	18.50 470	3828 1740
24 x 20 600 x 500	23.19 589	19.17 487	42 1067	45 1143	32.09 815	19.29 490	17.13 435	4334 1970	42 1067	45 1143	32.09 815	19.29 490	17.13 435	(1)	55.00 1397	55.00 1397	34.25 870	21.65 550	22.83 583	5231.6 2378
30 x 24 750 x 600	28.94 735	23.19 589	51 1295	55 1397	38.78 985	23.15 588	20.28 515	7150 3250	51 1295	55 1397	38.78 985	23.15 588	20.28 515	(1)	65.00 1651	65.00 1651	40.16 1020	23.23 590	23.31 592	8817.6 4008
36 x 30 900 x 750	34.41 874	28.94 735	60 1524	68 1728	46.06 1170	27.17 690	27.56 700	13891 6314	60 1524	68 1728	46.06 1170	27.17 690	27.56 700	(1)	82.01 2083	82.01 2083	49.21 1250	31.30 795	30.12 765	15505.6 7048

\* Weight figures are relevant to flanged end valves. - (1) Please consult the factory. - Note: For dimensions and weights in larger sizes consult the factory. Dimensions C, D, E, and weights are subject to change without notice. Face-to-face dimensions not listed in industry standards are subject to change without notice.

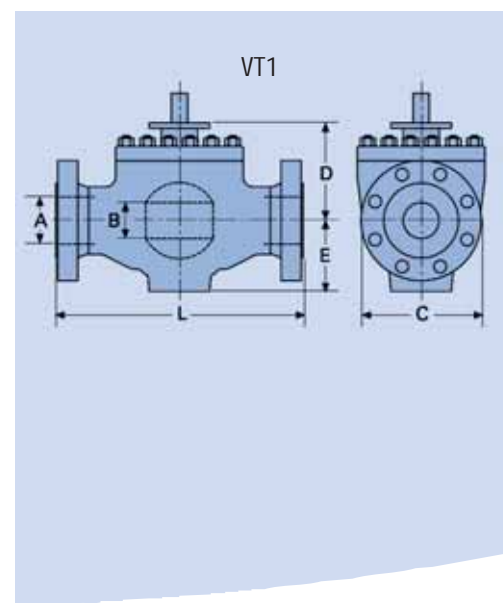
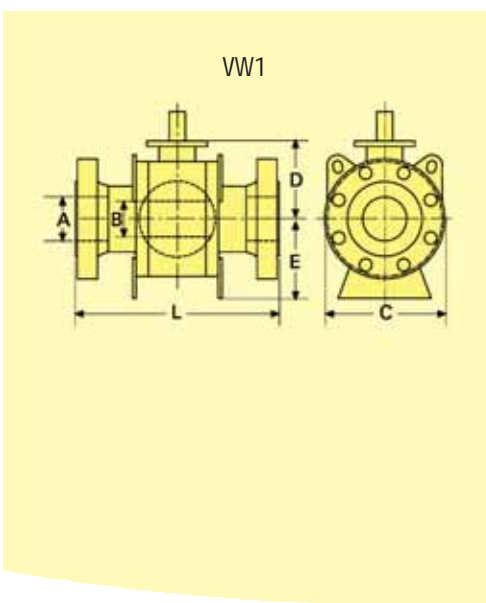
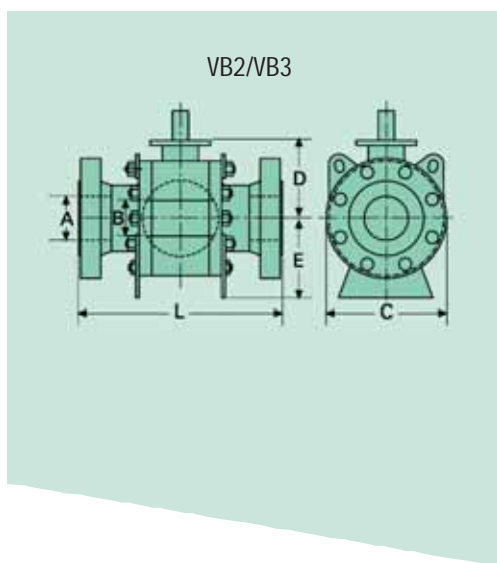


### ASME CLASS 300 FULL BORE

ALL TYPES		SIDE-ENTRY							WELDED BODY							TOP-ENTRY				
SIZE in/mm	A	B	L-RF	L-WE	C	D	E	WEIGHT lb/kg*	L-RF	L-WE	C	D	E	WEIGHT lb/kg*	L-RF	L-WE	C	D	E	WEIGHT lb/kg*
2	1.93	1.93	8.5	8.5	6.5	3.9	3.7	59	8.5	8.5	6.5	3.9	3.7	(1)	11.50	11.50	7.28	8.31	3.54	79
50	49	49	216	216	165	100	95	27	216	216	165	100	95	(1)	292	292	185	211	90	36
3	2.91	2.91	11.1	11.1	8.3	5.9	4.7	121	11.1	11.1	8.3	5.9	4.7	(1)	14.02	14.02	9.25	8.90	4.69	139
80	74	74	283	283	210	150	120	55	283	283	210	150	120	(1)	356	356	235	226	119	63
4	3.94	3.94	12.0	12.0	10.0	7.9	6.3	202	12.0	12.0	10.0	7.9	6.3	(1)	17.01	17.01	11.30	11.26	5.71	233
100	100	100	305	305	254	200	160	92	305	305	254	200	160	(1)	432	432	287	286	145	106
6	5.91	5.91	15.9	18.0	12.5	9.6	7.9	400	15.9	18.0	12.5	9.6	7.9	(1)	22.01	22.01	12.99	11.10	8.82	486
150	150	150	403	457	318	245	200	182	403	457	318	245	200	(1)	559	559	330	282	224	221
8	7.91	7.91	19.8	20.5	15.2	10.8	9.1	612	19.8	20.5	15.2	10.8	9.1	(1)	25.98	25.98	16.14	12.80	10.63	906
200	201	201	502	521	385	275	230	278	502	521	385	275	230	(1)	660	660	410	325	270	412
10	9.92	9.92	22.4	22.0	18.5	13.0	11.6	1100	22.4	22.0	18.5	13.0	11.6	(1)	30.98	30.98	19.69	14.17	12.60	1245
250	252	252	568	559	470	330	295	500	568	559	470	330	295	(1)	787	787	500	360	320	566
12	11.93	11.93	25.5	25.0	21.3	14.0	13.0	1613	25.5	25.0	21.3	14.0	13.0	(1)	32.99	32.99	22.44	18.70	16.14	1573
300	303	303	648	635	540	355	330	733	648	635	540	355	330	(1)	838	838	570	475	410	715
14	13.15	13.15	30.0	30.0	24.8	15.4	13.6	2264	30.0	30.0	24.8	15.4	13.6	(1)	35.00	35.00	26.18	18.11	17.20	1685
350	334	334	762	762	630	390	345	1029	762	762	630	390	345	(1)	889	889	665	460	437	766
16	15.16	15.16	33.0	33.0	27.3	16.9	15.4	3120	33.0	33.0	27.3	16.9	15.4	(1)	39.02	39.02	27.83	18.31	17.95	2433
400	385	385	838	838	693	430	390	1418	838	838	693	430	390	(1)	991	991	707	465	456	1106
18	17.17	17.17	36.0	36.0	30.3	17.9	16.1	3502	36.0	36.0	30.3	17.9	16.1	(1)	42.99	42.99	29.61	20.00	18.78	3342
450	436	436	914	914	770	455	410	1592	914	914	770	455	410	(1)	1092	1092	752	508	477	1519
20	19.17	19.17	39.0	39.0	33.5	19.7	18.3	4829	39.0	39.0	33.5	19.7	18.3	(1)	47.01	47.01	33.66	22.24	22.24	4259
500	487	487	991	991	850	500	465	2195	991	991	850	500	465	(1)	1194	1194	855	565	565	1936
22	21.18	21.18	43.0	43.0	37.0	20.7	18.9	6134	43.0	43.0	37.0	20.7	18.9	(1)	51.02	51.02	37.09	22.52	23.46	6063
550	538	538	1092	1092	940	525	480	2788	1092	1092	940	525	480	(1)	1296	1296	942	572	596	2756
24	23.19	23.19	45.0	45.0	40.2	23.2	21.5	7612	45.0	45.0	40.2	23.2	21.5	(1)	55.00	55.00	39.76	24.29	23.82	7058
600	589	589	1143	1143	1020	590	545	3460	1143	1143	1020	590	545	(1)	1397	1397	1010	617	605	3208
26	24.92	24.92	49.0	49.0	42.5	24.8	22.8	10252	49.0	49.0	42.5	24.8	22.8	(1)	57.01	57.01	42.20	26.69	25.08	8378
650	633	633	1245	1245	1080	630	580	4660	1245	1245	1080	630	580	(1)	1448	1448	1072	678	637	3808
28	26.93	26.93	53.0	53.0	45.3	25.2	26.2	12694	53.0	53.0	45.3	25.2	26.2	(1)	60.98	60.98	44.92	29.06	28.15	10135
700	684	684	1346	1346	1150	640	665	5770	1346	1346	1150	640	665	(1)	1549	1549	1141	738	715	4607
30	28.94	28.94	55.0	55.0	48.6	27.6	28.7	14498	55.0	55.0	48.6	27.6	28.7	(1)	65.00	65.00	49.80	31.93	31.30	12404
750	735	735	1397	1397	1235	700	730	6590	1397	1397	1235	700	730	(1)	1651	1651	1265	811	795	5638
32	30.67	30.67	60.0	60.0	52.0	29.3	30.1	17450	60.0	60.0	52.0	29.3	30.1	(1)	70.00	70.00	51.65	33.46	32.87	15602
800	779	779	1524	1524	1320	745	765	7932	1524	1524	1320	745	765	(1)	1778	1778	1312	850	835	7092
34	32.68	32.68	64.0	64.0	54.7	29.9	31.5	19888	64.0	64.0	54.7	29.9	31.5	(1)	75.98	75.98	55.43	34.53	34.84	17184
850	830	830	1626	1626	1390	760	800	9040	1626	1626	1390	760	800	(1)	1930	1930	1408	877	885	7811
36	34.41	34.41	68.0	68.0	56.9	31.7	32.5	22205	68.0	68.0	56.9	31.7	32.5	(1)	82.01	82.01	56.89	37.09	36.93	20046
900	874	874	1727	1727	1445	805	825	10093	1727	1727	1445	805	825	(1)	2083	2083	1445	942	938	9112
40	38.43	38.43	77.0	77.0	63.8	35.4	36.2	30305	77.0	77.0	63.8	35.4	36.2	(1)	92.01	92.01	65.47	40.16	40.79	28156
1000	976	976	1956	1956	1620	900	920	13775	1956	1956	1620	900	920	(1)	2337	2337	1663	1020	1036	12798
42	40.16	40.16	82.0	82.0	66.3	38.1	37.4	35431	82.0	82.0	66.3	38.1	37.4	(1)	95.94	95.94	67.52	42.56	42.13	33249
1050	1020	1020	2083	2083	1685	968	950	16105	2083	2083	1685	968	950	(1)	2437	2437	1715	1081	1070	15113
48	45.91	45.91	85.4	85.4	57.5	43.3	43.3	52932	85.4	85.4	57.5	43.3	43.3	(1)	100.00	100.00	77.36	47.28	48.66	49751
1200	1166	1166	2170	2170	1460	1100	1100	24060	2170	2170	1460	1100	1100	(1)	2540	2540	1965	1201	1236	22614
56	53.54	53.54	108.0	108.0	89.6	50.6	50.0	83941	108.0	108.0	89.6	50.6	50.0	(1)	(1)	(1)	(1)	(1)	(1)	(1)
1400	1360	1360	2743	2743	2275	1285	1270	38155	2743	2743	2275	1285	1270	(1)	(1)	(1)	(1)	(1)	(1)	(1)

\* Weight figures are relevant to flanged end valves. - (1) Please consult the factory. - Note: For dimensions and weights in larger sizes consult the factory. Dimensions C, D, E, and weights are subject to change without notice.

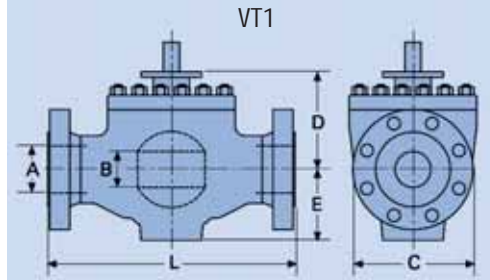
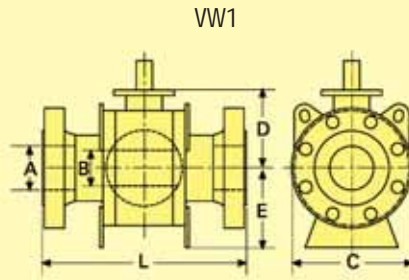
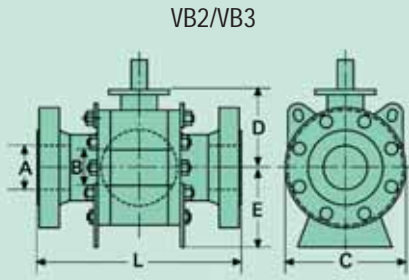
Face-to-face dimensions not listed in industry standards are subject to change without notice.



ASME CLASS 300 REDUCED BORE

ALL TYPES			SIDE-ENTRY						WELDED BODY						TOP-ENTRY					
SIZE in/mm	A	B	L-RF	L-WE	C	D	E	WEIGHT lb/kg*	L-RF	L-WE	C	D	E	WEIGHT lb/kg*	L-RF	L-WE	C	D	E	WEIGHT lb/kg*
2 x 1½ 50 x 40	1.93 49	1.50 38	8.5 216	8.5 216	6.5 165	3.7 94	3.9 100	55 25	8.5 216	8.5 216	6.5 165	3.7 94	3.9 100	(1)	11.5 292	11.5 292	7.0 178	8.1 206	3.1 80	57.2 26
3 x 2 80 x 50	2.91 74	1.93 49	11.1 283	11.1 283	8.3 210	3.9 100	3.7 95	70.4 32	11.1 283	11.1 283	8.3 210	3.9 100	3.7 95	(1)	14.0 356	14.0 356	8.3 210	8.3 211	3.5 90	92.4 42
4 x 3 100 x 80	3.94 100	2.91 74	12.0 305	12.0 305	10.0 254	5.9 150	4.7 120	136.4 62	12.0 305	12.0 305	10.0 254	5.9 150	4.7 120	(1)	17.0 432	17.0 432	10.0 254	8.9 226	4.7 119	180.4 82
6 x 4 150 x 100	5.91 150	3.94 100	15.9 403	18.0 457	12.5 318	7.9 200	6.3 160	253 115	15.9 403	18.0 457	12.5 318	7.9 200	6.3 160	(1)	22.0 559	22.0 559	12.5 318	11.3 286	5.7 145	354.2 161
8 x 6 200 x 150	7.91 201	5.91 150	19.8 502	20.5 521	15.0 381	9.6 245	7.9 200	481.8 219	19.8 502	20.5 521	15.0 381	9.6 245	7.9 200	(1)	26.0 660	26.0 660	15.0 381	11.1 282	8.8 224	627 285
10 x 8 250 x 200	9.92 252	7.91 201	22.4 568	22.0 559	17.5 445	10.8 275	9.1 230	642.4 292	22.4 568	22.0 559	17.5 445	10.8 275	9.1 230	(1)	31.0 787	31.0 787	17.5 445	12.8 325	10.6 270	1179.2 536
12 x 10 300 x 250	11.93 303	9.92 252	25.5 648	25.0 635	20.5 520	13.0 330	11.6 295	1306.8 594	25.5 648	25.0 635	20.5 520	13.0 330	11.6 295	(1)	33.0 838	33.0 838	20.5 520	14.2 360	12.6 320	1258.4 572
14 x 10 350 x 250	13.15 334	9.92 252	30.0 762	30.0 762	23.0 585	13.0 330	11.6 295	1414.6 643	30.0 762	30.0 762	23.0 585	13.0 330	11.6 295	(1)	35.0 889	35.0 889	20.5 520	14.2 360	12.6 320	1718.2 781
14 x 12 350 x 300	13.15 334	11.93 303	30.0 762	30.0 762	23.0 585	14.0 355	13.0 330	1795.2 816	30.0 762	30.0 762	23.0 585	14.0 355	13.0 330	(1)	35.0 889	35.0 889	23.0 585	18.7 475	16.1 410	2015.2 916
16 x 12 400 x 300	15.16 385	11.93 303	33.0 838	33.0 838	25.6 650	14.0 355	13.0 330	2123 965	33.0 838	33.0 838	25.6 650	14.0 355	13.0 330	(1)	39.0 991	39.0 991	25.6 650	18.7 475	16.1 410	2402.4 1092
16 x 14 400 x 350	15.16 385	13.15 334	33.0 838	33.0 838	25.6 650	15.4 390	13.6 345	2475 1125	33.0 838	33.0 838	25.6 650	15.4 390	13.6 345	(1)	39.0 991	39.0 991	26.2 665	18.1 460	17.2 437	2409 1095
18 x 16 450 x 400	17.17 436	15.16 385	36.0 914	36.0 914	28.0 710	16.9 430	15.4 390	3504.6 1593	36.0 914	36.0 914	28.0 710	16.9 430	15.4 390	(1)	43.0 1092	43.0 1092	28.0 710	18.3 465	18.0 456	3216.4 1462
20 x 16 500 x 400	19.17 487	15.16 385	39.0 991	39.0 991	30.5 775	16.9 430	15.4 390	3658.6 1663	39.0 991	39.0 991	30.5 775	16.9 430	15.4 390	(1)	47.0 1194	47.0 1194	30.5 775	18.3 465	18.0 456	3979.8 1809
20 x 18 500 x 450	19.17 487	17.17 436	39.0 991	39.0 991	30.5 775	17.9 455	16.1 410	3942.4 1792	39.0 991	39.0 991	30.5 775	17.9 455	16.1 410	(1)	47.0 1194	47.0 1194	30.5 775	20.0 508	18.8 477	4450.6 2023
24 x 20 600 x 500	23.19 589	19.17 487	45.0 1143	45.0 1143	36.0 915	19.7 500	18.3 465	5854.2 2661	45.0 1143	45.0 1143	36.0 915	19.7 500	18.3 465	(1)	55.0 1397	55.0 1397	36.0 915	22.2 565	22.2 565	6102.8 2774
30 x 24 750 x 600	28.94 735	23.19 589	55.0 1397	55.0 1397	42.9 1090	23.2 590	21.5 545	9864.8 4484	55.0 1397	55.0 1397	42.9 1090	23.2 590	21.5 545	(1)	65.0 1651	65.0 1651	42.9 1090	24.3 617	23.8 605	10263 4665
36 x 30 900 x 750	34.41 874	28.94 735	68.0 1727	68.0 1727	50.0 1270	27.6 700	28.7 730	18002.6 8183	68.0 1727	68.0 1727	50.0 1270	27.6 700	28.7 730	(1)	82.0 2083	82.0 2083	50.0 1270	31.9 811	31.3 795	18255.6 8298

\* Weight figures are relevant to flanged end valves. - (1) Please consult the factory. - Note: For dimensions and weights in larger sizes consult the factory. Dimensions C, D, E, and weights are subject to change without notice. Face-to-face dimensions not listed in industry standards are subject to change without notice.

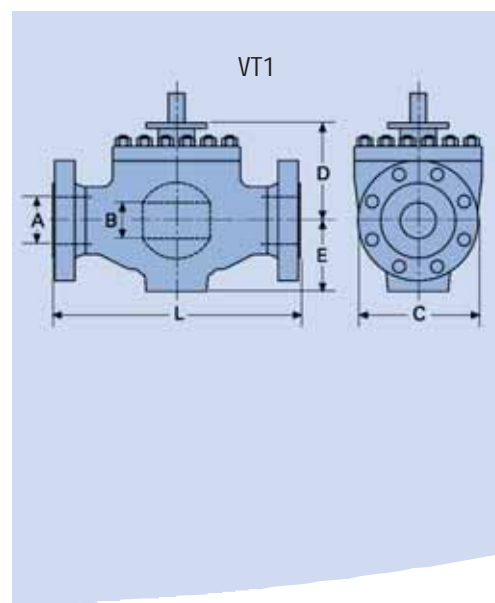
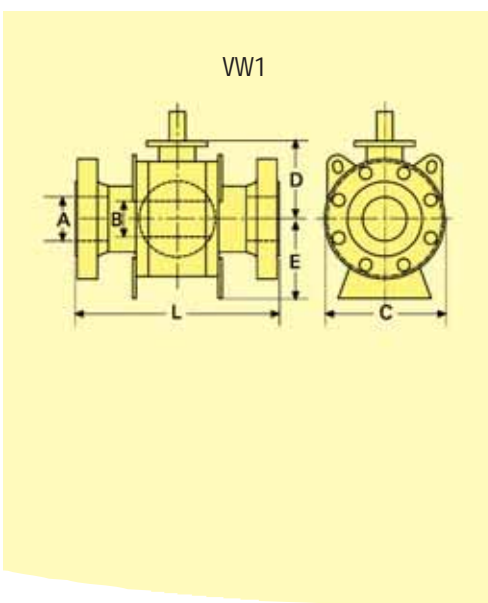
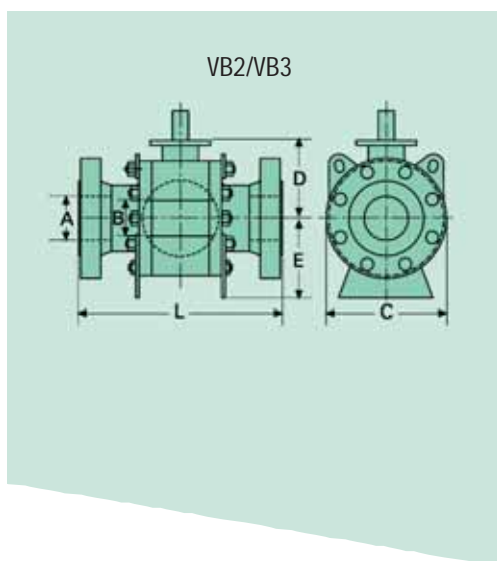


### ASME CLASS 600 FULL BORE

SIZE in/mm	ALL TYPES			SIDE-ENTRY					WELDED BODY					TOP-ENTRY										
	A	B	L-RF	L-RTJ	L-WE	C	D	E	WEIGHT lb/kg*	L-RF	L-RTJ	L-WE	C	D	E	WEIGHT lb/kg*	L-RF	L-RTJ	L-WE	C	D	E	WEIGHT lb/kg*	
2 50	1.93 49	1.93 49	11.5 292	11.63 295	11.5 292	6.5 165	4.0 102	3.9 98	68 31	11.5 292	11.63 295	11.5 292	6.5 165	4.0 102	3.9 98	(1)	11.50 292	11.63 295	11.50 292	7.48 190	8.46 215	3.74 95	90 41	
3 80	2.91 74	2.91 74	14.0 356	14.13 359	14.0 356	8.3 210	6.5 165	5.0 128	136 62	14.0 356	14.13 359	14.0 356	8.3 210	6.5 165	5.0 128	(1)	14.02 356	14.13 359	14.02 356	9.45 240	9.13 232	4.88 124	147 67	
4 100	3.94 100	3.94 100	17.0 432	17.13 435	17.0 432	10.7 273	8.3 210	6.3 160	249 113	17.0 432	17.13 435	17.0 432	10.7 273	8.3 210	6.3 160	(1)	17.01 432	17.13 435	17.01 432	11.42 290	11.57 294	5.91 150	242 110	
6 150	5.91 150	5.91 150	22.0 559	22.13 562	22.0 559	14.0 356	9.8 250	7.9 200	557 253	22.0 559	22.13 562	22.0 559	14.0 356	9.8 250	7.9 200	(1)	22.01 559	22.13 562	22.01 559	13.19 335	13.19 287	5.08 129	497 226	
8 200	7.91 201	7.91 201	26.0 660	26.13 664	26.0 660	16.5 419	11.3 288	10.0 255	1067 485	26.0 660	26.13 664	26.0 660	16.5 419	11.3 288	10.0 255	(1)	25.98 660	26.13 664	25.98 660	16.34 415	12.76 324	10.83 275	917 417	
10 250	9.92 252	9.92 252	31.0 787	31.13 791	31.0 787	20.1 510	13.0 330	12.1 308	1668 758	31.0 787	31.13 791	31.0 787	20.1 510	13.0 330	12.1 308	(1)	30.98 787	31.13 791	30.98 787	19.88 505	18.31 365	12.80 325	1254 570	
12 300	11.93 303	11.93 303	33.0 838	33.13 841	33.0 838	22.6 575	14.9 378	13.7 348	2347 1067	33.0 838	33.13 841	33.0 838	22.6 575	14.9 378	13.7 348	(1)	32.99 838	33.13 841	32.99 838	22.64 575	18.90 480	16.34 415	1584 720	
14 350	13.15 334	13.15 334	35.0 889	35.13 892	35.0 889	24.7 628	15.5 394	14.2 360	2383 1083	35.0 889	35.13 892	35.0 889	24.7 628	15.5 394	14.2 360	(1)	35.00 889	35.13 892	35.00 889	26.38 670	18.31 465	17.40 442	1694 770	
16 400	15.16 385	15.16 385	39.0 991	39.13 994	39.0 991	27.6 700	16.9 430	16.1 410	3355 1525	39.0 991	39.13 994	39.0 991	27.6 700	16.9 430	16.1 410	(1)	39.02 991	39.13 994	39.02 991	28.03 712	18.50 470	18.15 461	2446 1112	
18 450	17.17 436	17.17 436	43.0 1092	43.13 1095	43.0 1092	30.5 774	18.4 467	16.9 430	4609 2095	43.0 1092	43.13 1095	43.0 1092	30.5 774	18.4 467	16.9 430	(1)	42.99 1092	43.13 1095	42.99 1092	29.80 757	20.16 512	18.98 482	3351 1523	
20 500	19.17 487	19.17 487	47.0 1200	47.25 1194	47.0 1200	34.1 865	19.7 500	19.4 492	5804 2638	47.0 1194	47.25 1200	47.0 1194	34.1 865	19.7 500	19.4 492	(1)	47.01 1194	47.25 1200	47.01 1194	33.86 860	22.44 570	22.44 570	4268 1940	
22 550	21.18 538	21.18 538	51.0 1296	51.38 1305	51.0 1296	37.4 950	37.4 950	19.9 505	8331 3787	51.0 1296	51.38 1305	51.0 1296	37.4 950	37.4 950	19.9 505	(1)	51.02 1296	51.38 1305	51.02 1296	37.28 947	22.76 578	23.70 602	6072 2760	
24 600	23.19 589	23.19 589	55.0 1397	55.38 1406	55.0 1397	40.5 1028	23.4 594	22.4 570	10419 4736	55.0 1397	55.38 1406	55.0 1397	40.5 1028	23.4 594	22.4 570	(1)	55.00 1397	55.38 1406	55.00 1397	39.96 1015	24.49 622	24.02 610	7069 3213	
26 650	24.92 633	24.92 633	57.0 1448	57.50 1460	57.0 1448	40.0 1015	24.8 630	24.3 618	12423 5647	57.0 1448	57.50 1460	57.0 1448	40.0 1015	24.8 630	24.3 618	(1)	57.01 1448	57.50 1460	57.01 1448	42.44 1078	26.85 682	25.20 640	8389 3813	
28 700	26.93 684	26.93 684	61.0 1549	61.50 1562	61.0 1549	46.1 1172	26.2 665	27.2 692	14868 6758	61.0 1549	61.50 1562	61.0 1549	46.1 1172	26.2 665	27.2 692	(1)	60.98 1549	61.50 1562	60.98 1549	45.12 1146	29.21 742	28.43 722	10146 4612	
30 750	28.94 735	28.94 735	66.3 1684	66.50 1697	66.3 1684	50.8 1290	29.2 741	31.5 800	18429 8377	66.3 1651	66.50 1697	66.3 1684	50.8 1290	29.2 741	31.5 800	(1)	66.30 1684	66.50 1697	66.30 1684	50.00 1270	32.17 817	31.65 804	12408 5640	
32 800	30.67 779	30.67 779	70.0 1778	70.72 1794	70.0 1778	52.4 1330	29.8 756	31.7 804	21424 9738	70.0 1778	70.72 1794	70.0 1778	52.4 1330	29.8 756	31.7 804	(1)	70.00 1778	70.72 1794	70.00 1778	51.85 1317	33.66 855	33.07 840	15627 7103	
34 850	32.68 830	32.68 830	76.0 1946	76.52 1960	76.0 1946	55.1 1400	30.8 782	32.2 817	24939 11336	76.0 1930	76.52 1960	76.0 1930	55.1 1400	30.8 782	32.2 817	(1)	75.98 1930	76.52 1960	75.98 1930	56.02 1423	35.16 893	35.04 890	17208 7828	
36 900	34.41 874	34.41 874	82.0 2083	82.63 2098	82.0 2083	60.9 1546	34.2 869	37.2 945	29256 13298	82.0 2083	82.63 2098	82.0 2083	60.9 1546	34.2 869	37.2 945	(1)	82.01 2083	82.63 2098	82.01 2083	57.09 1450	37.39 947	37.17 944	20060 9118	
40 1000	38.43 976	38.43 976	81.9 2080	85.43 2170	85.4 2170	64.8 1645	36.1 916	38.6 980	40337 18335	81.9 2080	85.43 2170	85.4 2170	64.8 1645	36.1 916	38.6 980	(1)	85.43 2170	85.43 2170	85.43 2170	65.67 1668	40.35 1025	40.98 1041	28815 12805	
42 1050	40.16 1020	40.16 1020	85.6 2175	85.63 2175	85.6 2175	70.7 1795	39.2 995	43.7 1110	46983 21356	85.6 2175	85.63 2175	85.6 2175	70.7 1795	39.2 995	43.7 1110	(1)	85.63 2175	85.63 2175	85.63 2175	67.72 1720	42.76 1086	42.32 1075	33260 15118	
48 1200	45.91 1166	45.91 1166	95.9 2435	95.87 2435	95.9 2435	81.5 2070	44.6 1132	49.8 1132	68629 31195	95.9 2435	95.87 2435	95.9 2435	81.5 2070	44.6 1132	49.8 1132	(1)	95.87 2435	95.87 2435	95.87 2435	77.56 1970	59.29 1506	48.82 1240	49762 22619	
56 1400	53.54 1360	53.54 1360	106.7 2710	106.69 2710	106.7 2710	94.1 2390	50.8 1290	57.1 1450	104463 47483	106.7 2710	106.69 2710	106.7 2710	94.1 2390	50.8 1290	57.1 1450	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)

\* Weight figures are relevant to flanged end valves. - (1) Please consult the factory. - Note: For dimensions and weights in larger sizes consult the factory. Dimensions C, D, E, and weights are subject to change without notice.

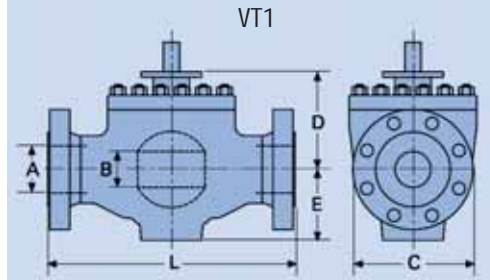
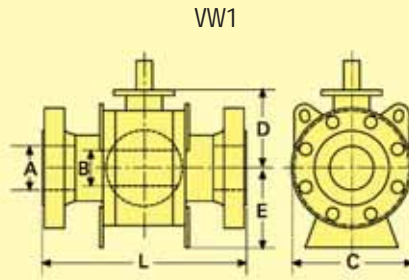
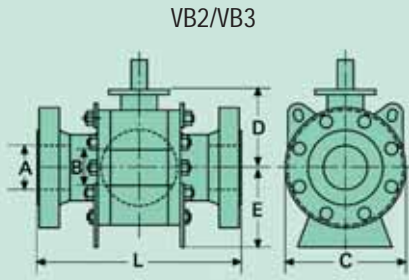
Face-to-face dimensions not listed in industry standards are subject to change without notice.



ASME CLASS 600 REDUCED BORE

ALL TYPES		SIDE-ENTRY							WELDED BODY							TOP-ENTRY							
SIZE in/mm	A	B	L-RF	L-RTJ	L-WE	C	D	E	WEIGHT lb/kg*	L-RF	L-RTJ	L-WE	C	D	E	WEIGHT lb/kg*	L-RF	L-RTJ	L-WE	C	D	E	WEIGHT lb/kg*
2 x 1 1/2 50 x 40	1.93 49	1.50 38	11.5 292	11.63 295	11.5 292	6.5 165	3.7 95	4.0 102	68 31	11.5 292	11.63 295	11.5 292	6.5 165	3.7 95	4.0 102	(1)	14.5 368	11.63 295	14.5 368	7.0 178	8.3 210	3.3 85	75 34
3 x 2 80 x 50	2.91 74	1.93 49	14.0 356	14.13 359	14.0 356	8.3 210	4.0 102	3.9 98	86 39	14.0 356	14.13 359	14.0 356	8.3 210	4.0 102	3.9 98	(1)	14.0 356	14.13 359	14.0 356	8.3 210	8.5 215	3.7 95	101 46
4 x 3 100 x 80	3.94 100	2.91 74	17.0 432	17.13 436	17.0 432	14.7 373	6.5 165	5.0 128	172 78	17.0 432	17.13 436	17.0 432	14.7 373	6.5 165	5.0 128	(1)	17.0 432	17.13 436	17.0 432	10.7 273	9.1 232	4.9 124	207 94
6 x 4 150 x 100	5.91 150	3.94 100	22.0 559	22.13 562	22.0 559	14.0 356	8.3 210	6.3 160	330 150	22.0 559	22.13 562	22.0 559	14.0 356	8.3 210	6.3 160	(1)	22.0 559	22.13 562	22.0 559	14.0 356	11.6 294	5.9 150	180 82
8 x 6 200 x 150	7.91 201	5.91 150	26.0 660	26.13 664	26.0 660	16.5 419	9.8 250	7.9 200	642 308	26.0 660	26.13 664	26.0 660	16.5 419	9.8 250	7.9 200	(1)	26.0 660	26.13 664	26.0 660	16.5 419	11.3 287	5.1 129	699.6 318
10 x 8 250 x 200	9.92 252	7.91 201	31.0 787	31.13 791	31.0 787	20.1 510	11.3 288	10.0 255	1210 550	31.0 787	31.13 791	31.0 787	20.1 510	11.3 288	10.0 255	(1)	31.0 787	31.13 791	31.0 787	21.0 510	12.8 324	10.8 275	1320 600
12 x 10 300 x 250	11.93 303	9.92 252	33.0 838	33.13 841	33.0 838	22.0 605	13.0 330	12.1 308	1784 811	33.0 838	33.13 841	33.0 838	22.0 605	13.0 330	12.1 308	(1)	33.0 838	33.13 841	33.0 838	22.0 605	14.4 365	12.8 325	1582 719
14 x 10 350 x 250	13.15 334	9.92 252	35.0 889	35.13 892	35.0 889	23.8 605	13.0 330	12.1 308	2006 912	35.0 889	35.13 892	35.0 889	23.8 605	13.0 330	12.1 308	(1)	35.0 889	35.13 892	35.0 889	23.8 605	14.4 365	12.8 325	2180 991
14 x 12 350 x 300	13.15 334	11.93 303	35.0 889	35.13 892	35.0 889	23.8 605	14.9 378	13.7 348	2519 1145	35.0 889	35.13 892	35.0 889	23.8 605	14.9 378	13.7 348	(1)	35.0 889	35.13 892	35.0 889	23.8 605	18.9 480	16.3 415	2620 1191
16 x 12 400 x 300	15.16 385	11.93 303	39.0 991	39.13 994	39.0 991	27.0 685	14.9 378	13.7 348	2966 1348	39.0 991	39.13 994	39.0 991	27.0 685	14.9 378	13.7 348	(1)	39.0 991	39.13 994	39.0 991	27.0 685	18.9 480	16.3 415	3104 1411
16 x 14 400 x 350	15.16 385	13.15 334	35.0 889	39.13 994	35.0 889	24.7 628	15.5 394	14.2 360	2383 1083	35.0 889	39.13 994	35.0 889	24.7 628	15.5 394	14.2 360	(1)	39.0 991	39.13 994	39.0 991	27.0 685	18.3 465	17.4 442	3029 1377
18 x 16 450 x 400	17.17 436	15.16 385	43.0 1092	43.13 1095	43.0 1092	29.3 745	16.9 430	16.1 410	3696 1680	43.0 1092	43.13 1095	43.0 1092	29.3 745	16.9 430	16.1 410	(1)	43.0 1092	43.13 1095	43.0 1092	29.3 745	18.5 470	18.1 461	4083 1856
20 x 16 500 x 400	19.17 487	15.16 385	47.0 1194	47.25 1200	47.0 1194	32.1 815	16.9 430	16.1 410	4587 2085	47.0 1194	47.25 1200	47.0 1194	32.1 815	16.9 430	16.1 410	(1)	47.0 1194	47.25 1200	47.0 1194	32.1 815	18.5 470	18.1 461	6371 2896
20 x 18 500 x 450	19.17 487	17.17 436	47.0 1194	47.25 1200	47.0 1194	32.1 815	18.4 467	16.9 430	5225 2375	47.0 1194	47.25 1200	47.0 1194	32.1 815	18.4 467	16.9 430	(1)	47.0 1194	47.25 1200	47.0 1194	32.1 815	20.2 512	19.0 482	5755 2616
24 x 20 600 x 500	23.19 589	19.17 487	55.0 1397	55.38 1406	55.0 1397	37.0 940	19.7 500	19.4 492	7146 3248	55.0 1397	55.38 1406	55.0 1397	37.0 940	19.7 500	19.4 492	(1)	55.0 1397	55.38 1406	55.0 1397	37.0 940	22.4 570	22.4 570	7740 3518
30 x 24 750 x 600	28.94 735	23.19 589	66.3 1684	65.50 1697	66.3 1684	44.5 1130	23.4 594	22.4 570	12690 5768	66.3 1684	65.50 1697	66.3 1684	44.5 1130	23.4 594	22.4 570	(1)	66.3 1684	65.50 1697	66.3 1684	44.5 1130	24.5 622	24.0 610	13130 5968
36 x 30 900 x 750	34.41 874	28.94 735	82.0 2083	82.63 2098	82.0 2083	51.8 1315	27.9 708	29.6 751	22827 10376	82.0 2083	82.63 2098	82.0 2083	51.8 1315	27.9 708	29.6 751	(1)	82.0 2083	82.63 2098	82.0 2083	51.8 1315	32.2 817	31.7 804	23258 10572

\* Weight figures are relevant to flanged end valves. - (1) Please consult the factory. - Note: For dimensions and weights in larger sizes consult the factory. Dimensions C, D, E, and weights are subject to change without notice. Face-to-face dimensions not listed in industry standards are subject to change without notice.

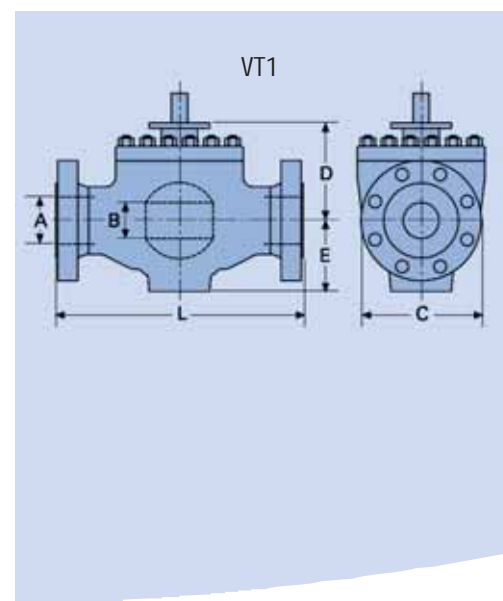
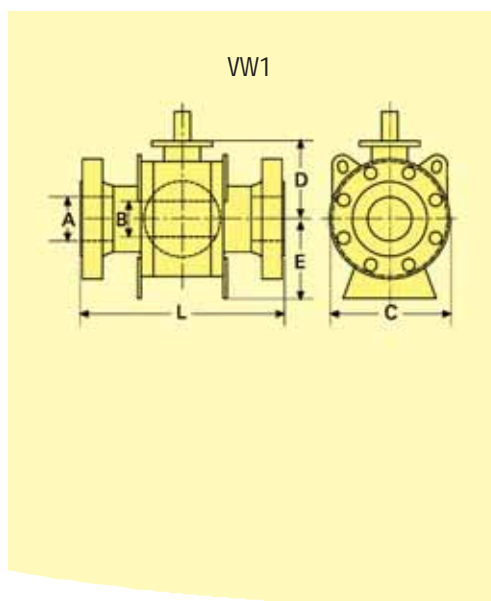
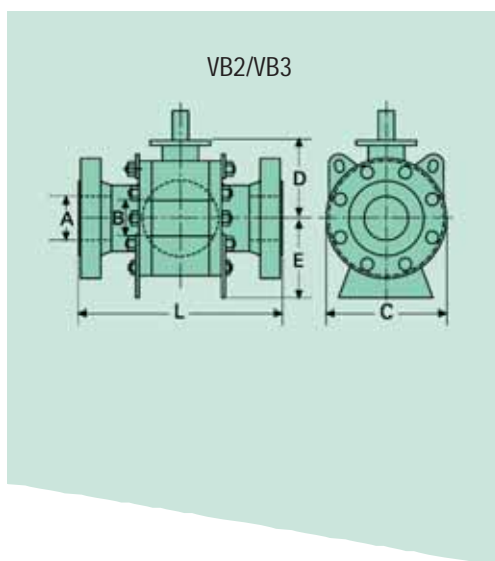


### ASME CLASS 900 FULL BORE

SIZE in/mm	ALL TYPES			SIDE-ENTRY						WELDED BODY						TOP-ENTRY								
	A	B		L-RF	L-RTJ	L-WE	C	D	E	WEIGHT lb/kg*	L-RF	L-RTJ	L-WE	C	D	E	WEIGHT lb/kg*	L-RF	L-RTJ	L-WE	C	D	E	WEIGHT lb/kg*
2 50	1.93 49	1.93 49		14.49 368	14.61 371	14.49 368	8.50 216	4.09 104	4.06 103	106 48	14.49 368	14.61 371	14.49 368	8.50 216	4.09 104	4.06 103	(1)	14.49 368	14.61 371	14.49 368	8.50 216	8.35 212	3.35 85	114 52
3 80	2.91 74	2.91 74		15.00 381	15.12 384	15.00 381	9.49 241	6.42 163	5.20 132	121 55	15.00 381	15.12 384	15.00 381	9.49 241	6.42 163	5.20 132	(1)	15.00 381	15.12 384	15.00 381	9.49 241	8.94 227	4.45 113	242 110
4 100	3.94 100	3.94 100		17.99 457	18.11 460	17.99 457	11.50 292	8.31 211	6.65 169	145	17.99 457	18.11 460	17.99 457	11.50 292	8.31 211	6.65 169	(1)	17.99 457	18.11 460	17.99 457	11.50 292	10.91 277	5.67 144	440 200
6 150	5.91 150	5.91 150		24.02 610	24.13 613	24.02 610	15.00 381	10.20 259	8.39 213	360	24.02 610	24.13 613	24.02 610	15.00 381	10.20 259	8.39 213	(1)	24.02 610	24.13 613	24.02 610	15.00 381	11.14 283	13.11 333	946 430
8 200	7.91 201	7.91 201		29.02 737	29.13 740	29.02 737	18.50 470	11.69 297	10.39 264	580	29.02 737	29.13 740	29.02 737	18.50 470	11.69 297	10.39 264	(1)	29.02 737	29.13 740	29.02 737	18.50 470	13.15 334	10.79 274	1760 800
10 250	9.92 252	9.92 252		32.99 838	33.11 841	32.99 838	21.46 545	13.46 342	13.11 333	1010	32.99 838	33.11 841	32.99 838	21.46 545	13.46 342	13.11 333	(1)	32.99 838	33.11 841	32.99 838	21.46 545	14.96 380	12.60 320	2200 1000
12 300	11.93 303	11.93 303		37.99 965	38.11 968	37.99 965	24.02 610	15.12 384	14.92 379	1510	37.99 965	38.11 968	37.99 965	24.02 610	15.12 384	14.92 379	(1)	37.99 965	38.11 968	37.99 965	24.02 610	19.96 507	16.46 418	2860 1300
14 350	12.68 322	12.68 322		40.51 1029	40.87 1038	40.51 1029	25.20 640	15.67 398	14.49 368	1450	40.51 1029	40.87 1038	40.51 1029	25.20 640	15.67 398	14.49 368	(1)	40.51 1029	40.87 1038	40.51 1029	25.20 640	20.47 520	17.44 443	3729 1695
16 400	14.69 373	14.69 373		44.49 1130	44.88 1140	44.49 1130	27.95 710	17.17 436	17.20 437	2150	44.49 1130	44.88 1140	44.49 1130	27.95 710	17.17 436	17.20 437	(1)	44.49 1130	44.88 1140	44.49 1130	27.95 710	21.18 538	18.19 462	5632 2560
18 450	16.65 423	16.65 423		47.99 1219	48.50 1232	47.99 1219	31.50 800	19.06 484	19.57 497	2820	47.99 1219	48.50 1232	47.99 1219	31.50 800	19.06 484	19.57 497	(1)	47.99 1219	48.50 1232	47.99 1219	31.50 800	22.83 580	19.17 487	7480 3400
20 500	18.54 471	18.54 471		52.01 1321	52.48 1333	52.01 1321	35.04 890	20.94 532	19.80 503	4200	52.01 1321	52.48 1333	52.01 1321	35.04 890	20.94 532	19.80 503	(1)	52.01 1321	52.48 1333	52.01 1321	35.04 890	24.61 625	23.82 605	9680 4400
24 600	22.44 570	22.44 570		60.98 1549	61.73 1568	60.98 1549	41.69 1059	24.29 617	24.92 633	4960	60.98 1549	61.73 1568	60.98 1549	41.69 1059	24.29 617	24.92 633	(1)	60.98 1549	61.73 1568	60.98 1549	41.69 1059	27.17 690	24.61 625	15840 7200
28 700	26.18 665	26.18 665		69.02 1753	69.88 1775	69.02 1753	48.58 1234	26.54 674	27.80 706	9900	69.02 1753	69.88 1775	69.02 1753	48.58 1234	26.54 674	27.80 706	(1)	69.02 1753	69.88 1775	69.02 1753	48.58 1234	32.28 820	28.46 723	22880 10400
30 750	28.03 712	28.03 712		74.02 1880	74.88 1902	74.02 1880	51.18 1300	28.46 723	30.59 777	12180	74.02 1880	74.88 1902	74.02 1880	51.18 1300	28.46 723	30.59 777	(1)	74.02 1880	74.88 1902	74.02 1880	51.18 1300	34.65 880	31.50 800	28325 12875
32 800	29.92 760	29.92 760		80.00 2032	80.87 2054	80.00 2032	53.43 1357	30.87 784	31.85 809	11820	80.00 2032	80.87 2054	80.00 2032	53.43 1357	30.87 784	31.85 809	(1)	80.00 2032	80.87 2054	80.00 2032	53.43 1357	36.93 938	34.25 870	35090 15950
34 850	31.81 808	31.81 808		85.00 2159	86.14 2188	85.00 2159	57.80 1468	31.77 807	33.54 852	17200	85.00 2159	86.14 2188	85.00 2159	57.80 1468	31.77 807	33.54 852	(1)	85.00 2159	86.14 2188	85.00 2159	57.80 1468	38.66 982	36.22 920	38500 17500
36 900	33.66 855	33.66 855		90.00 2286	91.14 2315	90.00 2286	60.31 1532	33.39 848	35.35 898	18900	90.00 2286	91.14 2315	90.00 2286	60.31 1532	33.39 848	35.35 898	(1)	90.00 2286	91.14 2315	90.00 2286	60.31 1532	41.34 1050	38.98 990	45320 20600

\* Weight figures are relevant to flanged end valves. - (1) Please consult the factory. - Note: For dimensions and weights in larger sizes consult the factory. Dimensions C, D, E, and weights are subject to change without notice. Face-to-face dimensions not listed in industry standards are subject to change without notice.

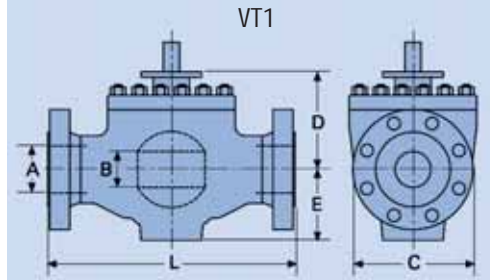
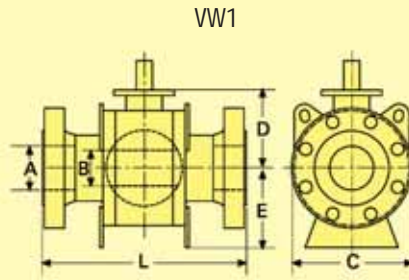
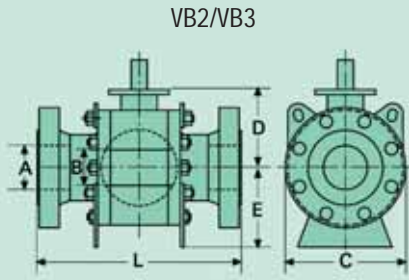




ASME CLASS 900 REDUCED BORE

ALL TYPES		SIDE-ENTRY							WELDED BODY							TOP-ENTRY								
SIZE in/mm	A	B	L-RF	L-RTJ	L-WE	C	D	E	WEIGHT lb/kg*	L-RF	L-RTJ	L-WE	C	D	E	WEIGHT lb/kg*	L-RF	L-RTJ	L-WE	C	D	E	WEIGHT lb/kg*	
2 x 1 1/2 50 x 40	1.93 49	1.50 38	14.49 368	14.61 371	14.49 368	8.50 216	4.06 102	4.02 102	90 41	14.49 368	14.61 371	14.49 368	8.50 216	4.06 102	4.02 102	(1)	14.49 368	14.61 371	14.49 368	8.50 216	8.31 211	8.31 211	3.31 84	110 50
3 x 2 80 x 50	2.91 74	1.93 49	15.00 381	15.12 384	15.00 381	9.49 241	4.06 103	4.02 102	114 52	15.00 381	15.12 384	15.00 381	9.49 241	4.06 103	4.02 102	(1)	15.00 381	15.12 384	15.00 381	9.49 241	8.31 211	8.31 211	3.31 84	165 75
4 x 3 100 x 80	3.94 100	2.91 74	17.99 457	18.11 460	17.99 457	11.50 292	6.54 166	5.00 127	209 95	17.99 457	18.11 460	17.99 457	11.50 292	6.54 166	5.00 127	(1)	17.99 457	18.11 460	17.99 457	11.50 292	8.94 227	8.94 227	4.29 109	308 140
6 x 4 150 x 100	5.91 150	3.94 100	24.02 610	24.13 613	24.02 610	15.00 381	8.19 208	6.42 163	451 205	24.02 610	24.13 613	24.02 610	15.00 381	8.19 208	6.42 163	(1)	24.02 610	24.13 613	24.02 610	15.00 381	10.87 276	10.87 276	5.71 145	601 273
8 x 6 200 x 150	7.91 201	5.91 150	29.02 737	29.13 740	29.02 737	18.50 470	10.35 263	8.39 213	968 440	29.02 737	29.13 740	29.02 737	18.50 470	10.35 263	8.39 213	(1)	29.02 737	29.13 740	29.02 737	18.50 470	11.02 280	11.02 280	8.78 223	1206 548
10 x 8 250 x 200	9.92 252	7.91 201	32.99 838	33.11 841	32.99 838	21.46 545	11.57 294	10.59 269	1518 690	32.99 838	33.11 841	32.99 838	21.46 545	11.57 294	10.59 269	(1)	32.99 838	33.11 841	32.99 838	21.46 545	13.35 339	10.67 271	10.67 271	1993 906
12 x 10 300 x 250	11.93 303	9.92 252	37.99 965	38.11 968	37.99 965	24.02 610	13.70 348	12.91 328	2541 1155	37.99 965	38.11 968	37.99 965	24.02 610	13.70 348	12.91 328	(1)	37.99 965	38.11 968	37.99 965	24.02 610	14.96 380	14.96 380	16.14 324	2398 1090
14 x 10 350 x 250	12.68 322	9.92 252	40.51 1029	40.87 1038	40.51 1029	25.20 640	13.70 348	12.91 328	2728 1240	40.51 1029	40.87 1038	40.51 1029	25.20 640	13.70 348	12.91 328	(1)	40.51 1029	40.87 1038	40.51 1029	25.20 640	14.96 380	14.96 380	16.14 324	3289 1495
14 x 12 350 x 300	12.68 322	11.93 303	40.51 1029	40.87 1038	40.51 1029	25.20 640	15.75 400	15.04 382	3597 1635	40.51 1029	40.87 1038	40.51 1029	25.20 640	15.75 400	15.04 382	(1)	40.51 1029	40.87 1038	40.51 1029	25.20 640	20.28 515	20.28 515	16.14 410	3960 1800
16 x 12 400 x 300	14.69 373	11.93 303	44.49 1130	44.88 1140	44.49 1130	27.76 705	15.75 400	15.04 382	3806 1730	44.49 1130	44.88 1140	44.49 1130	27.76 705	15.75 400	15.04 382	(1)	44.49 1130	44.88 1140	44.49 1130	27.76 705	20.28 515	20.28 515	16.14 410	4620 2100
16 x 14 400 x 350	14.69 373	12.68 322	44.49 1130	44.88 1140	44.49 1130	27.56 700	15.83 402	17.32 440	3740 1700	44.49 1130	44.88 1140	44.49 1130	27.76 705	15.83 402	17.32 440	(1)	44.49 1130	44.88 1140	44.49 1130	27.76 705	20.47 520	17.52 445	17.52 445	4400 2000
18 x 16 450 x 400	16.65 423	14.69 373	47.99 1219	48.50 1232	47.99 1219	31.10 790	17.28 439	17.40 442	5368 2440	47.99 1219	48.50 1232	47.99 1219	30.91 785	17.28 439	17.40 442	(1)	47.99 1219	48.50 1232	47.99 1219	30.91 785	21.10 536	18.23 463	18.23 463	6241 2837
20 x 16 500 x 400	18.54 471	14.69 373	52.01 1321	52.48 1333	52.01 1321	31.10 790	17.28 439	17.40 442	6325 2875	52.01 1321	52.48 1333	52.01 1321	33.66 855	17.28 439	17.40 442	(1)	52.01 1321	52.48 1333	52.01 1321	33.66 855	21.10 536	18.23 463	18.23 463	7733 3515
20 x 18 500 x 450	18.54 471	16.65 423	52.01 1321	52.48 1333	52.01 1321	33.66 855	18.90 485	19.09 485	7150 3250	52.01 1321	52.48 1333	52.01 1321	33.66 855	18.90 485	19.09 485	(1)	52.01 1321	52.48 1333	52.01 1321	33.66 855	22.83 580	19.09 485	19.09 485	8525 3875
24 x 20 600 x 500	22.44 570	18.54 471	60.98 1549	61.73 1568	60.98 1549	40.94 1040	21.02 534	19.69 500	11880 5400	60.98 1549	61.73 1568	60.98 1549	40.94 1040	21.02 534	19.69 500	(1)	60.98 1549	61.73 1568	60.98 1549	40.94 1040	24.76 629	23.78 604	23.78 604	11869 5395
30 x 24 750 x 600	28.03 712	22.44 570	74.02 1880	74.88 1902	74.02 1880	48.43 1230	23.94 608	24.88 632	19140 8700	74.02 1880	74.88 1902	74.02 1880	48.43 1230	23.94 608	24.88 632	(1)	74.02 1880	74.88 1902	74.02 1880	48.43 1230	25.20 640	26.18 665	26.18 665	19800 9000
36 x 30 900 x 750	33.66 855	28.03 712	90.00 2286	91.14 2315	90.00 2286	57.48 1460	28.70 729	30.87 784	33770 15350	90.00 2286	91.14 2315	90.00 2286	57.48 1460	28.70 729	30.87 784	(1)	90.00 2286	91.14 2315	90.00 2286	57.48 1460	30.59 777	31.30 795	31.30 795	33517 15235

\* Weight figures are relevant to flanged end valves. - (1) Please consult the factory. - Note: For dimensions and weights in larger sizes consult the factory. Dimensions C, D, E, and weights are subject to change without notice. Face-to-face dimensions not listed in industry standards are subject to change without notice.



### ASME CLASS 1500 FULL BORE

SIZE in/mm	ALL TYPES			SIDE-ENTRY						WELDED BODY						TOP-ENTRY							
	A	B	L-RF	L-RTJ	L-WE	C	D	E	WEIGHT lb/kg*	L-RF	L-RTJ	L-WE	C	D	E	WEIGHT lb/kg*	L-RF	L-RTJ	L-WE	C	D	E	WEIGHT lb/kg*
2 50	1.93 49	1.93 49	14.49 368	14.61 371	14.49 368	8.50 216	4.17 106	4.09 104	110 50	14.49 368	14.61 371	14.49 368	8.50 216	4.17 106	4.09 104	(1)	14.49 368	14.61 371	14.49 368	8.50 216	8.35 212	3.43 87	123 56
3 80	2.91 74	2.91 74	18.50 470	18.62 473	18.50 470	10.51 267	6.57 167	5.04 128	213 97	18.50 470	18.62 473	18.50 470	10.51 267	6.57 167	5.04 128	(1)	18.50 470	18.62 473	18.50 470	10.51 267	9.29 236	4.65 118	337 153
4 100	3.94 100	3.94 100	21.50 546	21.61 549	21.50 546	12.24 311	7.05 179	6.69 170	436 198	21.50 546	21.61 549	21.50 546	12.24 311	7.05 179	6.69 170	(1)	21.50 546	21.61 549	21.50 546	12.24 311	11.57 294	5.91 150	612 278
6 150	5.67 144	5.67 144	27.76 705	27.99 711	27.76 705	15.51 394	10.24 260	9.17 233	1056 480	27.76 705	27.99 711	27.76 705	15.51 394	10.24 260	9.17 233	(1)	27.76 705	27.99 711	27.76 705	15.51 394	11.93 303	9.29 236	1320 600
8 200	7.56 192	7.56 192	32.76 832	33.11 841	32.76 832	19.02 483	11.97 304	11.42 290	1804 820	32.76 832	33.11 841	32.76 832	19.02 483	11.97 304	11.42 290	(1)	32.76 832	33.11 841	32.76 832	19.02 483	13.94 354	11.22 285	2420 1100
10 250	9.41 239	9.41 239	39.02 991	39.37 1000	39.02 991	23.03 585	14.29 363	13.86 352	3300 1500	39.02 991	39.37 1000	39.02 991	23.03 585	14.29 363	13.86 352	(1)	39.02 991	39.37 1000	39.02 991	23.03 585	15.67 398	13.11 333	3164 1438
12 300	11.30 287	11.30 287	44.49 1130	45.11 1146	44.49 1130	27.91 709	16.42 417	16.73 425	4950 2250	44.49 1130	45.11 1146	44.49 1130	27.91 709	16.42 417	16.73 425	(1)	44.49 1130	45.11 1146	44.49 1130	27.91 709	20.47 520	16.81 427	4437 2017
14 350	12.40 315	12.40 315	49.49 1257	50.24 1276	49.49 1257	30.12 765	17.20 437	16.77 426	6270 2850	49.49 1257	50.24 1276	49.49 1257	30.12 765	17.20 437	16.77 426	(1)	49.49 1257	50.24 1276	49.49 1257	30.12 765	21.65 550	17.95 456	5746 2612
16 400	14.17 360	14.17 360	54.49 1384	55.39 1407	54.49 1384	33.39 848	18.70 475	19.41 493	8954 4070	54.49 1384	55.39 1407	54.49 1384	33.39 848	18.70 475	19.41 493	(1)	54.49 1384	55.39 1407	54.49 1384	33.39 848	22.24 565	19.17 487	8558 3890
18 450	15.94 405	15.94 405	58.15 1477	59.01 1499	58.15 1477	38.58 980	22.17 563	23.94 608	13629 6195	N/A	N/A	N/A	N/A	N/A	N/A	N/A	58.15 1477	59.01 1499	58.15 1477	38.58 980	23.31 592	20.75 527	11220 5100
20 500	17.91 455	17.91 455	65.51 1664	66.38 1686	65.51 1664	39.96 1015	24.29 617	25.39 645	19965 9075	N/A	N/A	N/A	N/A	N/A	N/A	N/A	65.51 1664	66.38 1686	65.51 1664	39.96 1015	25.59 650	24.80 630	14692 6678
24 600	20.87 530	20.87 530	70.15 1782	71.25 1810	70.15 1782	80.43 2043	50.91 1293	27.48 724	31416 14280	N/A	N/A	N/A	N/A	N/A	N/A	N/A	70.15 1782	71.25 1810	70.15 1782	80.43 2043	25.98 660	25.20 640	25740 11700

### ASME CLASS 2500 FULL BORE

SIZE in/mm	ALL TYPES			SIDE-ENTRY						TOP-ENTRY						
	A	B	L-RF	L-RTJ	L-WE	C	D	E	WEIGHT lb/kg*	L-RF	L-RTJ	L-WE	C	D	E	WEIGHT lb/kg*
2 50	1.65 42	1.65 42	17.76 451	17.87 454	17.76 451	9.25 235	4.72 120	5.00 127	194 88	17.76 451	17.87 454	17.76 451	9.25 235	8.35 212	3.86 98	264 120
3 80	2.44 62	2.44 62	22.76 578	22.99 584	22.76 578	12.01 305	6.97 177	7.80 198	411 187	22.76 578	22.99 584	22.76 578	12.56 319	9.57 243	4.80 122	541 246
4 100	3.43 87	3.43 87	26.50 673	26.89 683	26.50 673	14.02 356	8.94 227	9.17 233	836 380	26.50 673	26.89 683	26.50 673	14.33 364	11.77 299	6.46 164	1034 470
6 150	5.16 131	5.16 131	35.98 914	36.50 927	35.98 914	19.02 483	10.39 264	9.92 252	1694 770	35.98 914	36.50 927	35.98 914	19.02 483	13.98 355	9.57 243	2061 937
8 200	7.05 179	7.05 179	40.24 1022	40.87 1038	40.24 1022	24.41 620	15.08 383	15.08 339	2985 1357	40.24 1022	40.87 1038	40.24 1022	21.65 550	16.69 424	11.50 292	3102 1410
10 250	8.78 223	8.78 223	50.00 1270	50.87 1292	50.00 1270	29.33 745	17.83 453	16.61 422	4620 2100	50.00 1270	50.87 1292	50.00 1270	26.57 675	19.80 503	13.86 352	5720 2600
12 300	10.43 265	10.43 265	55.98 1422	56.89 1445	55.98 1422	34.25 870	20.47 520	18.98 482	7062 3210	55.98 1422	56.89 1445	55.98 1422	30.12 765	23.15 588	17.17 436	9240 4200

\* Weight figures are relevant to flanged end valves. - (1) Please consult the factory. - Note: For dimensions and weights in larger sizes consult the factory. Dimensions C, D, E, and weights are subject to change without notice. Face-to-face dimensions not listed in industry standards are subject to change without notice.

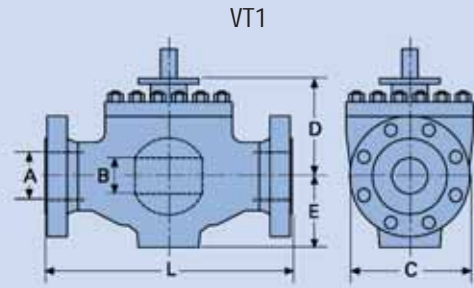
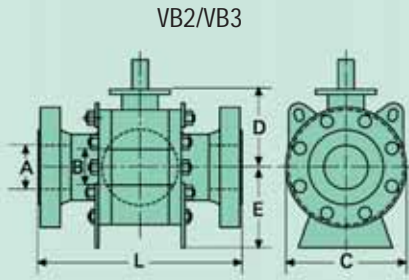
**ASME CLASS 1500 REDUCED BORE**

ALL TYPES			SIDE-ENTRY							WELDED BODY							TOP-ENTRY								
SIZE in/mm	A	B	L-RF	L-RTJ	L-WE	C	D	E	WEIGHT lb/kg*	L-RF	L-RTJ	L-WE	C	D	E	WEIGHT lb/kg*	L-RF	L-RTJ	L-WE	C	D	E	WEIGHT lb/kg*		
2 x 1½ 50 x 40	1.93 49	1.50 38	14.49 368	14.61 371	14.49 368	8.50 216	4.09 104	4.06 103	90 41	14.49 368	14.61 371	14.49 368	8.50 216	4.09 104	4.06 103	(1)	14.49 368	14.61 371	14.49 368	8.50 216	8.31 211	3.15 80	3.15 80	110 50	
3 x 2 80 x 50	2.91 74	1.93 49	18.50 470	18.62 473	18.50 470	10.51 267	4.09 104	4.06 103	150 68	18.50 470	18.62 473	18.50 470	10.51 267	4.09 104	4.06 103	(1)	18.50 470	18.62 473	18.50 470	10.51 267	10.51 267	8.31 211	3.15 80	3.15 80	216 98
4 x 3 100 x 80	3.94 100	2.91 74	21.50 546	21.61 549	21.50 546	12.24 311	6.54 166	5.04 128	268 122	21.50 546	21.61 549	21.50 546	12.24 311	6.54 166	5.04 128	(1)	21.50 546	21.61 549	21.50 546	12.24 311	9.29 236	4.65 118	4.65 118	447 203	
6 x 4 150 x 100	5.67 144	3.94 100	27.76 705	27.99 711	27.76 705	15.51 394	8.39 213	6.61 168	277 285	27.76 705	27.99 711	27.76 705	15.51 394	8.39 213	6.61 168	(1)	27.76 705	27.99 711	27.76 705	15.51 394	15.51 394	11.30 287	6.02 153	6.02 153	827 376
8 x 6 200 x 150	7.56 192	5.67 144	32.76 832	33.11 841	32.76 832	19.02 483	10.43 265	9.02 229	1245 566	32.76 832	33.11 841	32.76 832	19.02 483	10.43 265	9.02 229	(1)	32.76 832	33.11 841	32.76 832	19.02 483	11.93 303	9.29 236	9.29 236	1547 703	
10 x 8 250 x 200	9.41 239	7.56 192	39.02 991	39.37 1000	39.02 991	23.03 585	11.69 297	11.30 287	2248 1022	39.02 991	39.37 1000	39.02 991	23.03 585	11.69 297	11.30 287	(1)	39.02 991	39.37 1000	39.02 991	23.03 585	13.74 349	11.22 285	11.22 285	2801 1273	
12 x 10 300 x 250	11.30 287	9.41 239	44.49 1130	45.12 1146	44.49 1130	26.57 675	14.17 360	13.66 347	3872 1760	44.49 1130	45.12 1146	44.49 1130	26.57 675	14.17 360	13.66 347	(1)	44.49 1130	45.12 1146	44.49 1130	26.57 675	15.91 404	12.99 330	12.99 330	337 1535	
14 x 10 350 x 250	12.40 315	9.41 239	49.49 1257	50.24 1276	49.49 1257	29.53 750	14.17 360	13.66 347	4719 2145	49.49 1257	50.24 1276	49.49 1257	29.53 750	14.17 360	13.66 347	(1)	49.49 1257	50.24 1276	49.49 1257	29.53 750	15.91 404	12.99 330	12.99 330	4620 2100	
14 x 12 350 x 300	12.40 315	11.30 287	49.49 1257	50.24 1276	49.49 1257	29.53 750	16.69 424	16.61 422	5500 2500	49.49 1257	50.24 1276	49.49 1257	29.53 750	16.69 424	16.61 422	(1)	49.49 1257	50.24 1276	49.49 1257	29.53 750	20.87 530	16.81 427	16.81 427	5936 2698	
16 x 12 400 x 300	14.17 360	11.30 287	54.49 1384	55.39 1407	54.49 1384	32.48 825	16.69 424	16.61 422	6160 2800	54.49 1384	55.39 1407	54.49 1384	32.48 825	16.69 424	16.61 422	(1)	54.49 1384	55.39 1407	54.49 1384	32.48 825	20.87 530	16.81 427	16.81 427	7040 3200	
16 x 14 400 x 350	14.17 360	12.40 315	54.49 1384	55.39 1407	54.49 1384	32.48 825	17.44 443	16.85 428	7139 3245	54.49 1384	55.39 1407	54.49 1384	32.48 825	17.44 443	16.85 428	(1)	54.49 1384	55.39 1407	54.49 1384	32.48 825	21.26 540	17.91 475	17.91 475	6820 3100	
18 x 16 450 x 400	15.94 405	14.17 360	58.15 1477	59.01 1499	60.51 1537	36.06 916	19.06 484	19.76 502	10934 4970	N/A	N/A	N/A	N/A	N/A	N/A	N/A	58.15 1477	59.01 1499	60.51 1537	36.06 916	21.93 557	19.41 493	19.41 493	9240 4200	
20 x 16 500 x 400	17.91 455	14.17 360	65.51 1664	66.38 1686	65.51 1664	38.78 985	19.06 484	19.76 502	11297 5135	N/A	N/A	N/A	N/A	N/A	N/A	N/A	65.51 1664	66.38 1686	65.51 1664	38.78 985	21.93 557	19.41 493	19.41 493	9900 4500	
20 x 18 500 x 450	17.91 455	15.94 405	65.51 1664	66.38 1686	65.51 1664	38.78 985	21.85 555	23.74 603	16500 7500	N/A	N/A	N/A	N/A	N/A	N/A	N/A	65.51 1664	66.38 1686	65.51 1664	38.78 985	23.35 593	20.75 527	20.75 527	12980 5900	
24 x 20 600 x 500	20.87 530	17.91 455	70.15 1782	71.25 1810	80.43 2043	46.06 1170	24.57 624	25.31 643	23925 10875	N/A	N/A	N/A	N/A	N/A	N/A	N/A	70.15 1782	71.25 1810	80.43 2043	46.06 1170	25.87 657	24.41 620	24.41 620	20240 9200	

**ASME CLASS 2500 REDUCED BORE**

ALL TYPES			SIDE-ENTRY							TOP-ENTRY						
SIZE in/mm	A	B	L-RF	L-RTJ	L-WE	C	D	E	WEIGHT lb/kg*	L-RF	L-RTJ	L-WE	C	D	E	WEIGHT lb/kg*
2 x 1½ 50 x 40	1.65 42	1.50 38	17.76 451	17.87 454	17.76 451	9.25 235	4.72 120	5.00 127	143 65	17.76 451	17.87 454	17.76 451	9.45 240	8.35 212	3.86 98	176 80
3 x 2 80 x 50	2.44 62	1.65 42	22.76 578	22.99 584	22.76 578	12.01 305	4.72 120	5.00 127	341 155	22.76 578	22.99 584	22.76 578	12.01 305	8.35 212	3.86 98	352 160
4 x 3 100 x 80	3.43 87	2.44 62	26.50 673	26.89 683	26.50 673	14.02 356	6.97 177	7.80 198	581 264	26.50 673	26.89 683	26.50 673	14.02 356	9.57 243	4.80 122	660 300
6 x 4 150 x 100	5.16 131	3.43 87	35.98 914	36.50 927	35.98 914	19.02 483	8.94 227	9.17 233	1122 510	35.98 914	36.50 927	35.98 914	19.02 483	11.77 299	6.46 164	1474 670
8 x 6 200 x 150	7.05 179	5.16 131	40.24 1022	40.87 1038	40.24 1022	21.65 550	10.39 264	9.92 252	2398 1090	40.24 1022	40.87 1038	40.24 1022	21.65 550	13.98 355	9.57 243	2530 1150
10 x 8 250 x 200	8.78 223	7.05 179	50.00 1270	50.87 1292	50.00 1270	26.57 675	15.08 383	13.35 339	3659 1663	50.00 1270	50.87 1292	50.00 1270	26.57 675	16.69 424	11.50 292	4620 2100
12 x 10 300 x 250	10.43 265	8.78 223	55.98 1422	56.89 1445	55.98 1422	29.92 760	20.47 520	18.98 482	5621 2555	55.98 1422	56.89 1445	55.98 1422	29.92 760	19.80 503	13.86 352	7260 3300

\* Weight figures are relevant to flanged end valves. - (1) Please consult the factory. - Note: For dimensions and weights in larger sizes consult the factory. Dimensions C, D, E, and weights are subject to change without notice. Face-to-face dimensions not listed in industry standards are subject to change without notice.



### CLASS API 3000 FULL BORE

SIZE in/mm	ALL TYPES		SIDE-ENTRY					TOP-ENTRY				
	A	B	L-RTJ	C	D	E	WEIGHT lb/kg*	L-RTJ	C	D	E	WEIGHT lb/kg*
2 1/16 50	2.06 52.4	2.06 52.4	14.61 371	8.50 216	6.50 165	4.33 110	(1)	14.61 371	8.50 216	6.50 165	4.33 110	(1)
31/8 80	3.12 79.3	3.12 79.3	17.13 435	9.49 241	7.87 200	5.51 140	(1)	17.13 435	9.49 241	7.87 200	5.51 140	(1)
41/16 100	4.06 103.2	4.06 103.2	20.12 511	11.61 295	8.27 210	6.69 170	(1)	20.12 511	11.61 295	8.27 210	6.69 170	(1)
51/8 150	5.12 130	5.12 130	24.13 613	16.65 423	10.83 275	10.16 258	(1)	24.13 613	16.65 423	10.83 275	10.16 258	(1)
71/16 200	7.06 179.4	7.06 179.4	28.11 714	15.00 381	13.78 350	13.39 340	(1)	28.11 714	15.00 381	13.78 350	13.39 340	(1)

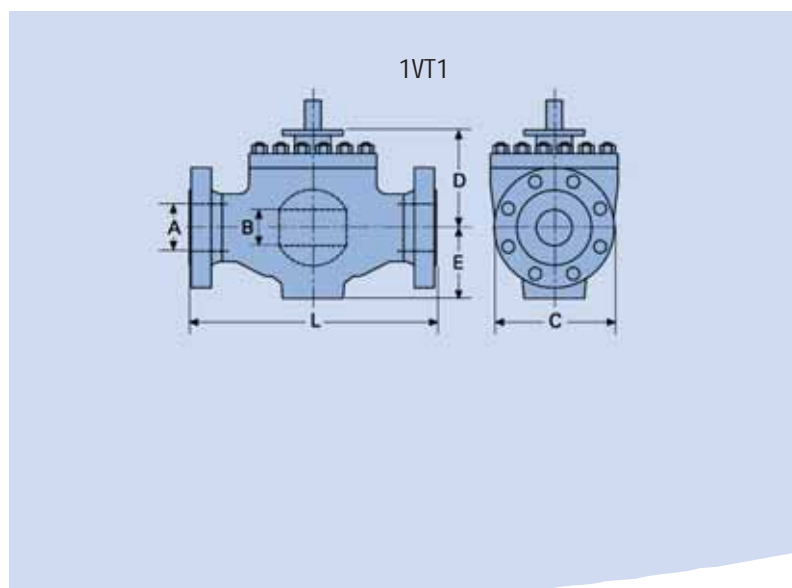
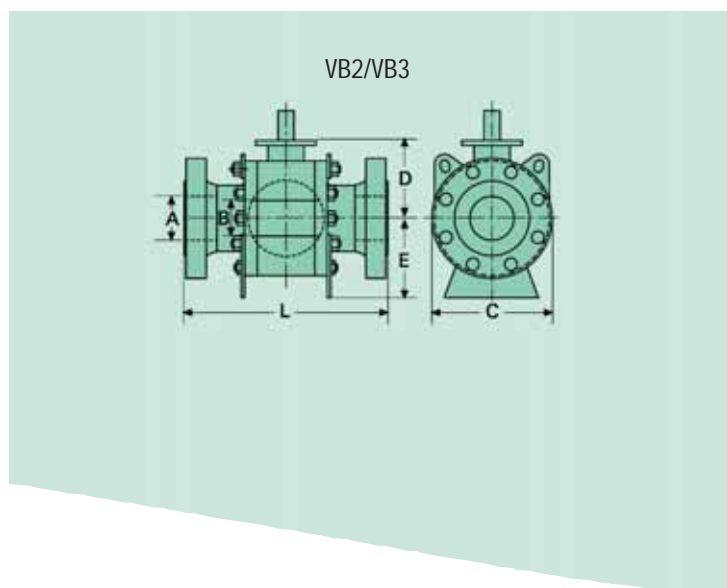
### CLASS API 5000 FULL BORE

SIZE in/mm	ALL TYPES		SIDE-ENTRY					TOP-ENTRY				
	A	B	L-RTJ	C	D	E	WEIGHT lb/kg*	L-RTJ	C	D	E	WEIGHT lb/kg*
2 1/16 50	2.06 52.4	2.06 52.4	14.61 371	8.50 216	6.50 165	4.33 110	(1)	14.61 371	8.50 216	6.50 165	4.33 110	(1)
31/8 80	3.12 79.3	3.12 79.3	18.62 473	10.51 267	7.87 200	5.51 140	(1)	18.62 473	10.51 267	7.87 200	5.51 140	(1)
41/16 100	4.06 103.2	4.06 103.2	21.61 549	12.24 311	8.27 210	6.69 170	(1)	21.61 549	12.24 311	8.27 210	6.69 170	(1)
51/8 150	5.12 130	5.12 130	28.62 727	16.65 423	11.02 280	10.16 258	(1)	28.62 727	16.65 423	11.02 280	10.16 258	(1)
71/16 200	7.06 179.4	7.06 179.4	32.01 813	21.26 540	13.58 345	13.39 340	(1)	32.01 813	21.26 540	13.58 345	13.39 340	(1)

### CLASS API 10000 FULL BORE

SIZE in/mm	ALL TYPES		SIDE-ENTRY					TOP-ENTRY				
	A	B	L-RTJ	C	D	E	WEIGHT lb/kg*	L-RTJ	C	D	E	WEIGHT lb/kg*
2 1/16 50	2.06 52.4	2.06 52.4	20.51 521	11.02 280	7.68 195	8.43 214	(1)	20.51 521	11.02 280	7.68 195	8.43 214	(1)
31/8 80	3.07 78	3.07 78	24.37 619	13.98 355	9.06 230	10.00 254	(1)	24.37 619	13.98 355	9.06 230	10.00 254	(1)
41/16 100	4.06 103.2	4.06 103.2	26.38 670	17.95 456	12.05 306	11.02 280	(1)	26.38 670	17.95 456	12.05 306	11.02 280	(1)

\* Weight figures are relevant to flanged end valves. - (1) Please consult the factory. - Note: For dimensions and weights in larger sizes consult the factory.  
 Dimensions C, D, E, and weights are subject to change without notice.  
 Face-to-face dimensions not listed in industry standards are subject to change without notice.



### CLASS API 3000 REDUCED BORE

SIZE in/mm	ALL TYPES		SIDE-ENTRY				WEIGHT lb/kg*	TOP-ENTRY				WEIGHT lb/kg*
	A	B	L-RTJ	C	D	E		L-RTJ	C	D	E	
2 1/16x1 3/16 50x40	2.06 52.4	1.81 46	14.61 371	8.50 216	6.50 165	4.33 110	(1)	14.61 371	8.50 216	6.50 165	4.33 110	(1)
3 1/8x2 1/16 80x50	3.12 79.3	2.06 52.4	17.13 435	9.49 241	6.50 165	4.33 110	(1)	17.13 435	9.49 241	7.87 200	5.51 140	(1)
4 1/16x3 1/8 100x80	4.06 103.2	3.12 79.3	20.12 511	11.61 295	7.87 200	5.51 140	(1)	20.12 511	11.61 295	8.27 210	6.69 170	(1)
5 1/8x4 1/16 125x100	5.12 130	4.06 103.2	24.13 613	13.78 350	8.27 210	6.69 170	(1)	24.13 613	16.65 423	10.83 275	10.16 258	(1)
7 1/16x6 200x150	7.06 179.4	6.00 152.4	28.11 714	15.00 381	13.78 350	13.39 340	(1)	28.11 714	15.00 381	13.78 350	13.39 340	(1)

### CLASS API 5000 REDUCED BORE

SIZE in/mm	ALL TYPES		SIDE-ENTRY				WEIGHT lb/kg*	TOP-ENTRY				WEIGHT lb/kg*
	A	B	L-RTJ	C	D	E		L-RTJ	C	D	E	
2 1/16 50	2.06 52.4	2.06 52.4	14.61 371	8.50 216	6.50 165	4.33 110	(1)	14.61 371	8.50 216	6.50 165	4.33 110	(1)
3 1/8 80	3.12 79.3	3.12 79.3	18.62 473	10.51 267	7.87 200	5.51 140	(1)	18.62 473	10.51 267	7.87 200	5.51 140	(1)
4 1/16 100	4.06 103.2	4.06 103.2	21.61 549	12.24 311	8.27 210	6.69 170	(1)	21.61 549	12.24 311	8.27 210	6.69 170	(1)
5 1/8 150	5.12 130	5.12 130	28.62 727	16.65 423	11.02 280	10.16 258	(1)	28.62 727	16.65 423	11.02 280	10.16 258	(1)
7 1/16 200	7.06 179.4	7.06 179.4	32.01 813	21.26 540	13.58 345	13.39 340	(1)	32.01 813	21.26 540	13.58 345	13.39 340	(1)

### CLASS API 10000 REDUCED BORE

SIZE in/mm	ALL TYPES		SIDE-ENTRY				WEIGHT lb/kg*	TOP-ENTRY				WEIGHT lb/kg*
	A	B	L-RTJ	C	D	E		L-RTJ	C	D	E	
2 1/16 50	2.06 52.4	2.06 52.4	20.51 521	11.02 280	7.68 195	8.43 214	(1)	20.51 521	11.02 280	7.68 195	8.43 214	(1)
3 1/8 80	3.07 78	3.07 78	24.37 619	13.98 355	9.06 230	10.00 254	(1)	24.37 619	13.98 355	9.06 230	10.00 254	(1)
4 1/16 100	4.06 103.2	4.06 103.2	26.38 670	17.95 456	12.05 306	11.02 280	(1)	26.38 670	17.95 456	12.05 306	11.02 280	(1)

\* Weight figures are relevant to flanged end valves. - (1) Please consult the factory. - Note: For dimensions and weights in larger sizes consult the factory. Dimensions C, D, E, and weights are subject to change without notice. Face-to-face dimensions not listed in industry standards are subject to change without notice.



## Spare parts list

### SIDE-ENTRY - MOD VB2/VB3

Part #	Part	DN < 4" (1)		DN 4" (1)		DN > 4" (1)	
		Spare parts quantity		Spare parts quantity		Spare parts quantity	
		Start up	2 years op.	Start up	2 years op.	Start up	2 years op.
4	Seat	-	(3)	-	(3)	-	(3)
10a	Body gasket	(2)	(3)	(2)	(3)	(2)	(3)
10b	Stem gasket	(2)	(3)	(2)	(3)	(2)	(3)
10c	Stem cover gasket	(2)	(3)	(2)	(3)	(2)	(3)
10d	Seat gasket	(2)	(3)	(2)	(3)		
10e	Trunnion gasket	(2)	(3)	Not applicable	Not applicable	Not applicable	Not applicable
11a	Body O-ring	(2)	(3)	(2)	(3)	(2)	(3)
11b	Stem O-ring	(2)	(3)	(2)	(3)	(2)	(3)
11c	Stem cover O-ring	(2)	(3)	(2)	(3)	(2)	(3)
11d	Seat O-ring	(2)	(3)	(2)	(3)	(2)	(3)
11e	Trunnion O-ring	(2)	(3)	Not applicable	Not applicable	Not applicable	Not applicable

### WELDED BODY - MOD VW1

Part #	Part	DN < 4" (1)		DN 4" (1)		DN > 4" (1)	
		Spare parts quantity		Spare parts quantity		Spare parts quantity	
		Start up	2 years op.	Start up	2 years op.	Start up	2 years op.
10b	Stem gasket	(2)	(3)	(2)	(3)	(2)	(3)
10c	Stem cover gasket	(2)	(3)	(2)	(3)	(2)	(3)
10e	Trunnion gasket	(2)	(3)	Not applicable	Not applicable	Not applicable	Not applicable
11b	Stem O-ring	(2)	(3)	(2)	(3)	(2)	(3)
11c	Stem cover O-ring	(2)	(3)	(2)	(3)	(2)	(3)
11e	Trunnion O-ring	(2)	(3)	Not applicable	Not applicable	Not applicable	Not applicable

### TOP-ENTRY - MOD VT1

Part #	Part	DN < 4" (1)		DN 4" (1)		DN > 4" (1)	
		Spare parts quantity		Spare parts quantity		Spare parts quantity	
		Start up	2 years op.	Start up	2 years op.	Start up	2 years op.
4	Seat	-	(3)	-	(3)	-	(3)
10a	Body gasket	(2)	(3)	(2)	(3)	(2)	(3)
10b	Stem gasket	(2)	(3)	(2)	(3)	(2)	(3)
10c	Stem cover gasket	(2)	(3)	(2)	(3)	(2)	(3)
10d	Seat gasket	(2)	(3)	(2)	(3)		
10e	Trunnion gasket	(2)	(3)	Not applicable	Not applicable	Not applicable	Not applicable
10h	Spring holder ring gasket	(2)	(3)	(2)	(3)	Not applicable	Not applicable
11a	Body O-ring	(2)	(3)	(2)	(3)	(2)	(3)
11b	Stem O-ring	(2)	(3)	(2)	(3)	(2)	(3)
11c	Stem cover O-ring	(2)	(3)	(2)	(3)	(2)	(3)
11d	Seat O-ring	(2)	(3)	(2)	(3)	(2)	(3)
11e	Trunnion O-ring	(2)	(3)	Not applicable	Not applicable	Not applicable	Not applicable



**API 6D & 6A trunnion-mounted ball valves**



24" (600 mm)  
class 300  
side-entry for high  
temperature.



Fully welded 48" (1200 mm)  
class 600 for underground service.



20" (500 mm) class  
1500 side-entry.



24" (600 mm) class 1500  
side-entry.



## Engineering data

### Valve testing

100% of valves manufactured by Valbart are tested in excess of API 6D requirements, prior to shipping.

### LEAKAGE RATES

Standard	Soft seated	Metal-seated	Cryogenic
API 6D	ISO 5208 Rate A	ISO 5208 Rate D	(1)
BS 12266-1	–	Rate D	(1)

(1) Please consult the factory.

Rate D is standard. Higher leakage rates can be achieved upon request

### Standard performance tests

- Visual and dimensional check
- High-pressure hydrostatic shell test
- High-pressure hydrostatic seats test
- Low-pressure air seats test
- Stem torque check

### LEAKAGE RATES

ASME CLASS	Rating <sup>(1)</sup>			Body Test			H.P. seat test			Air Seat Test		
	psi	bar	kg/cm <sup>2</sup>	psi	bar	kg/cm <sup>2</sup>	psi	bar	kg/cm <sup>2</sup>	psi	bar	kg/cm <sup>2</sup>
150	275	19	19.3	413	28.5	29	303	20.9	21	100	6	7
300	720	50	51	1080	75	77	792	55	56	100	6	7
600	1440	99	101	2160	148.5	152	1584	108.9	111	100	6	7
900	2160	149	152	3240	223.5	228	2376	163.9	167	100	6	7
1500	3600	248	253	5400	372	380	3960	272.8	278	100	6	7
2500	5988	413	421	8982	619.5	632	6587	454.3	463	100	6	7
API 3000	3000	207	210	4500	310.5	315	3300	227.7	231	100	6	7
API 5000	5000	345	352	7500	517.5	528	5500	379.5	387	100	6	7
API 10000	10000	690	703	15000	1035	1055	11000	759	773	100	6	7

(1) Typical only - rating pressure may change for different materials.

Conversion factors 1 bar = 14.50 psi and 1 bar = 0,981 kg/cm<sup>2</sup> and 1 bar = 100 kpa 1 kg/cm<sup>2</sup> = 14.22 psi  
 1°F = (1.8 x °C) + 32 and 1°C = (°F - 32) / 1.8

### Quality standards

American Petroleum Institute – API

	API 6D	API 6D SS	API 6FA	API 598
	API 6A	API 607	API 605	

American Society of Mechanical Engineers – ASME

ASME B 16.5	ASME B 16.10	ASME B 16.25
ASME B 16.34	ASME B 31.3	ASME B31.8
ASME B 46.1		

International Organization for Standardisation – ISO

ISO 9001:2000	ISO 14313
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British Standards

BS EN 10222	BS EN 9000
BS 1560	BS EN 10213
BS 4504	BS EN 12266
BS 5351	

Manufacturers Standardization Society – MSS

MSS SP 6	MSS SP 25
MSS SP 44	MSS SP 45
MSS SP 55	MSS SP 61
MSS SP 72	

Compliant to CSA Z245





### *How to avoid problems*

- Ball valves will be transported and stored with the ball in the fully open position.
- Flanged ends and welded ends will be protected.
- End protection will be removed only when the valve is installed in the line.
- Valves will be handled using the proper lifting lugs.
- Valves will be stored according to Valbart storage procedures. Long-term storage should be avoided.
- In case of long storage the valve shall be flushed and cycled a few times.
- For welded-end valves, advise Valbart if there will be a post-weld heat treatment (transition pups may be necessary to avoid damages to seals).
- Flush and clean the line before operating the valve.
- Make sure no line-testing fluid is left in the line and/or the valve body.
- Avoid leaving the valve body filled with salt water to prevent internal corrosion.
- During line-testing, valves will be left in the partially open position for the minimum possible amount of time.
- Standard ball valves will be used for on-off service only. Throttling service (use of the valve with the ball partially open) can damage the seats.

- Make sure to take into consideration the actual service conditions when selecting materials for O-rings and seat inserts.
- Always specify anti-explosive decompression material for valves to be used in high-pressure gas service.
- Make sure the selected actuator has been properly sized (an oversized actuator can be as dangerous as an undersized one).
- Advise Valbart of cycle frequency to ensure proper sizing of actuator.
- Do not use the actuator to lift the valve.

### *Warranty clause*

**WARNING:** Valbart will not accept claims for damages due to poor handling on site and/or for valves service conditions different from the ones for which they have been manufactured and sold by Valbart.

In any case in which Valbart is not made aware of the actual use of the valves (e.g., valves ordered by a third party, such as a Distributor) it is the responsibility of the third party and/or the user to verify the suitability of the valve materials and design for the medium and service conditions in which the valves will be used.

## Materials

### Body and trim material

#### Carbon Steel

A105N      A216 WCB      A216 WCC

#### Low temperature Carbon steel

A350 LF2      A352 LCB      A352 LCC

#### Low alloy steel

AISI 4140      A694 F65      A694 F52  
 A694 F60      A350 LF3  
 API 6A 60K (A694 F60 Mod)

#### Martensitic Stainless Steel

A182 F6A      A182 F6NM  
 A217 CA15      A487 CA6NM

#### Austenitic Stainless Steel

A182 F316      A182 F316L  
 A182 F316LN-Mod.      A182 F347  
 A182 F44 (6% Mo)      A182 FXM-19  
 (UNS S31254)      (Nitronic 50)  
 A351 CF8M      A351 CF3  
 A351 CF3M

#### Precipitation Hardening Stainless Steel

A564 Gr 630 H1150M (UNS S17400)

#### Duplex Stainless Steel

A181 F51 (UNS S31803)  
 A182 F53 (UNS S31750)  
 A182 F55 (UNS S31760)  
 A890-4A (UNS S31803)  
 A890-6A (UNS S32760)

#### Nickel Alloys

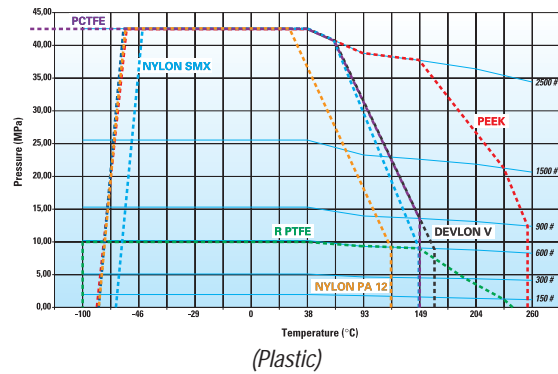
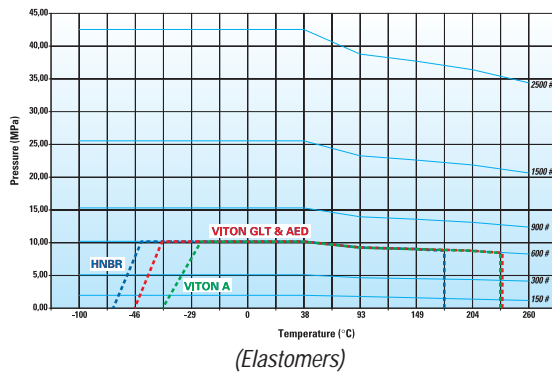
Incoloy 825 (UNS N08825)  
 Inconel 625 (UNS N06625)  
 Inconel 750 (UNS N07750)  
 Monel 400  
 Monel K500

Incoloy 925 (UNS N09925)  
 Inconel 718 (UNS N07718)

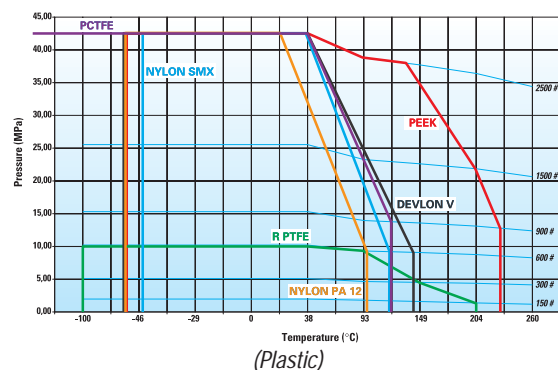
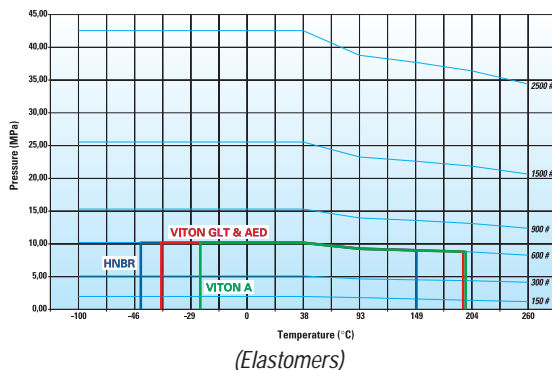
### SEAT INSERT AND SEALS MATERIALS OPERATING (DYNAMIC) LIMITS\*

Material	Temp. °C		Pressure Class		Size	
	Min.	Max.	Seat Insert	Seal	Seat Insert	Seal
Nylon SMX	-40	120	2500	N/A	64"	N/A
Lauramid (Nylon 12G)	-60	100	2500	N/A	64"	N/A
Devlon (Nylon 6)	-60	140	2500	N/A	64"	N/A
Peek	-60	220	2500	N/A	36"	N/A
PTFE Glass Filled (25%)	-100	200	600	N/A	24"	N/A
PTFE Carbon Filled (25%)	-100	180	300	N/A	24"	N/A
PCTFE	-196	150	2500	N/A	36"	N/A
HNBR-Therban	-40	150	600	2500	64"	64"
FKM A (Viton A)	-29	180	600	2500	64"	64"
FKM GLT (Viton GLT)	-40	180	600	2500	64"	64"
FKM AED	-29	180	600	2500	64"	64"
PTFE + Elgiloy Springs	-196	200	N/A	2500	N/A	36"

### SEAT INSERTS – STATIC/SHORT PERIOD\*



### SEAT INSERTS – OPERATING CONDITION\*



\*Given as reference only.

## Cv flow coefficients

### API 6D

Bore (inches)	Classes					
	150	300	600	900	1500	2500
2	420	420	400	330	330	250
2 1/2	690	690	610	520	510	320
3 x 2	200	200	200	190	180	200
3	1200	1050	1000	910	820	500
4 x 3	600	600	600	590	550	560
4	2200	2100	1850	1800	1700	1100
6 x 4	800	800	790	790	780	745
6	5150	5100	4600	4380	3800	2500
8 x 6	2150	2150	2150	2150	2150	2150
8	9500	9400	9000	8500	7400	5300
10 x 8	4300	4300	4300	4450	4450	4100
10	15000	15000	14700	14500	11500	8300
12 x 10	7550	7550	7550	8000	9000	7550
14 x 10	6000	6000	6000	6100	6100	-
12	23000	23000	22500	21100	18000	13000
14 x 12	14000	14000	14000	12800	13000	-
16 x 12	9100	9100	9100	8900	8900	-
14	28000	28000	28000	25000	21000	-
16 x 14	15000	15000	15000	14200	14100	-
16	37200	37200	37200	34500	27500	-
18 x 16	21000	21000	21000	19200	19000	-
20 x 16	15300	15300	15300	13800	12000	-
18	49000	49000	49000	45000	37000	-
20 x 18	28400	28400	28400	25000	25000	-
20	59000	59000	59000	55200	47800	-
24 x 20	28200	28200	28000	25100	20600	-
22	68200	68200	68200	62000	54000	-
24	92000	92000	92000	83800	70000	-
30 x 24	36000	36000	36000	32900	-	-
26	110000	110000	110000	98500	-	-
28	121000	121000	121000	113000	-	-
30	145000	144000	144000	130000	-	-
36 x 30	64000	64000	64000	61500	-	-
32	170000	170000	170000	151000	-	-
36 x 32	87000	87000	87000	69500	-	-
36	210000	210000	210000	198200	-	-
40	267500	267500	267500	-	-	-
42 x 36	96700	96700	96000	-	-	-
42	280000	280000	280000	-	-	-
48	384000	384000	384000	-	-	-
56 x 42	89000	89000	89000	-	-	-
56	521000	521000	521000	-	-	-

### API 6D

Bore (inches)	Classes		
	3000	5000	10000
1 13/16	270	270	230
2 1/16	350	350	300
3 1/8	1000	940	890
4 1/16	1750	1700	1600
5 1/8	2900	2700	2450
7 1/16	5930	5400	5220



### Data for calculation of flow

The coefficient of flow  $C_v$  expresses the rate of flow in gallons per minute at 60°F water with a pressure drop of 1 psig across the valve. The  $C_v$  coefficients for the various types and sizes, shown in the tables, have been determined from actual flow tests.

**NOTE:**  $K_v$  is the metric equivalent of  $C_v$ .

$$K_v = C_v \times 0.85$$

#### FOR LIQUIDS:

$$(1) Q_L = C_v \sqrt{\frac{\Delta P}{G_L}}$$

$$(2) \Delta P = G_L \left( \frac{Q_L}{C_v} \right)^2$$

WHERE:  $Q_L$  = Flow in U.S. gallons per minute.

$\Delta P$  = (P1-P2) Pressure drop in psi

$G_L$  = Specific gravity of liquid (water = 1 at 60°F)

#### FOR GASES:

$$(3) Q_g = 1360 C_v \sqrt{\frac{\Delta P}{G_g T}} \cdot \sqrt{\frac{P_1 + P_2}{2}}$$

$$(4) \Delta P = P_1 - \sqrt{P_1^2 - 2G_g T \left( \frac{Q_g}{1360 C_v} \right)^2}$$

WHERE:  $Q_g$  = Volumetric flow of gas (SCFH)

$G_g$  = Specific gravity of gas at standard conditions (air at atmosphere and 60°F = 1)

$T$  = Absolute temperature of gas (°F + 460)

**NOTE:** For gas, max.  $\Delta P = 1/2 P_1$ , and min.

$P_2 = 1/2 P_1$ , and  $P_1, P_2$  are absolute pressures (psia)



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