FLOWSERVE

TECHNICAL BULLETIN

Valbart RSBV

Rising Stem Ball Valve

FCD VBEETB1012-02 04/14

Experience in Motion

Valbart Rising Stem Ball Valve

The RSBV uses a unique helix system that opens and closes the valve without rotation. The linear only operation of the stem makes it an excellent choice for frequent cycling. Each linear operation, from opening to closing and back again, is a friction-free movement between seat and ball that significantly reduces valve wear and keeps routine maintenance to a bare minimum. The outside yoke and screw, with stuffing box-type gland packing, including gland and gland flange, eliminates the need for special tools when adjusting or repacking the stem seal. Top entry convenience allows visual inspection inside the valve without removing the valve from the pipeline. The stem also has a backseat to prevent possible blowout and repacking stem seals under pressure when the valve is fully open. A special lapping technique applied to the Stellite6® ball and seat sealing areas allows for zero seat leakage. Heavy wall thickness provides extra corrosion allowance to reduce wear and extend the valve lifetime.

Figure 1: RSBV Helix Stem

Contents

Main Features

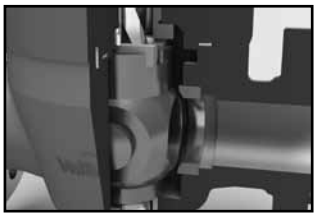
- Helix coil stem ensures friction free open and close
- Linear stem operation without rotation for optimal actuation
- No contact, friction-free opening and closing is excellent for frequent cycling
- Ensures excellent applicability for linear actuation
- Blowout proof stem meets international standards of API 600 and API 6D
- Seat tightness up to ANSI FCI-70-2 Class VI with the use of special lapping on the Stellite6 ball and seat sealing area, ensures zero seat leakage
- High quality material selection significantly reduces wear and corrosion; extend product life
- Backseat allows stem to be repacked when valve is under pressure and in fully open position
- Outside screw and yoke design. Low emission stuffing box integrates normal gland flange and follower (no lubricated seal) for easy adjusting of stem packing without special tools
- Bellow seal construction is possible for critical and lethal services
- Minimum heavy valve wall thickness to API 600 / API 6D provides extra corrosion allowance
- Top entry design allows easy in-line inspection and maintenance

RSBV Specifications

Sizes	1” through 24”
Pressure Ratings	ANSI Classes 150 through 2500, DIN PN 10 through PN 320
End Connections	Flanged RF/RJ, Butt weld, Socket weld, Hub end, Screwed.
Face to Face	To B16.10, Manufacturer Std. or at special request.
Trim Area	Full bore or Reduced bore to API 6D dimensions or at special request.
Packing Options	Graphite or PTFE or combination composition at request.
Flow Direction	Preferred flow toward seat or Bi Directional at request.
Leakage Rates	To API 598 or BS 6755 or ANSI FCI-70-2 Class V or VI
Flow Coefficients	CV Value as per the enclosed tables pages 6 through 11
Temperature Range	From minus 196 degrees C to 600 degrees C

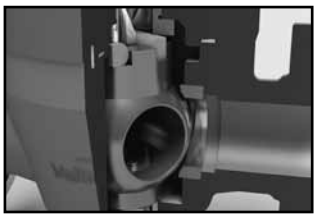
Opening and Closing

Open position



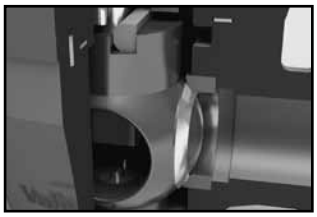
In the fully open position, the stem is raised to its maximum limit with no contact between the ball and the seat. The valve in its fully open position provides a clear through flow.

Open to close position



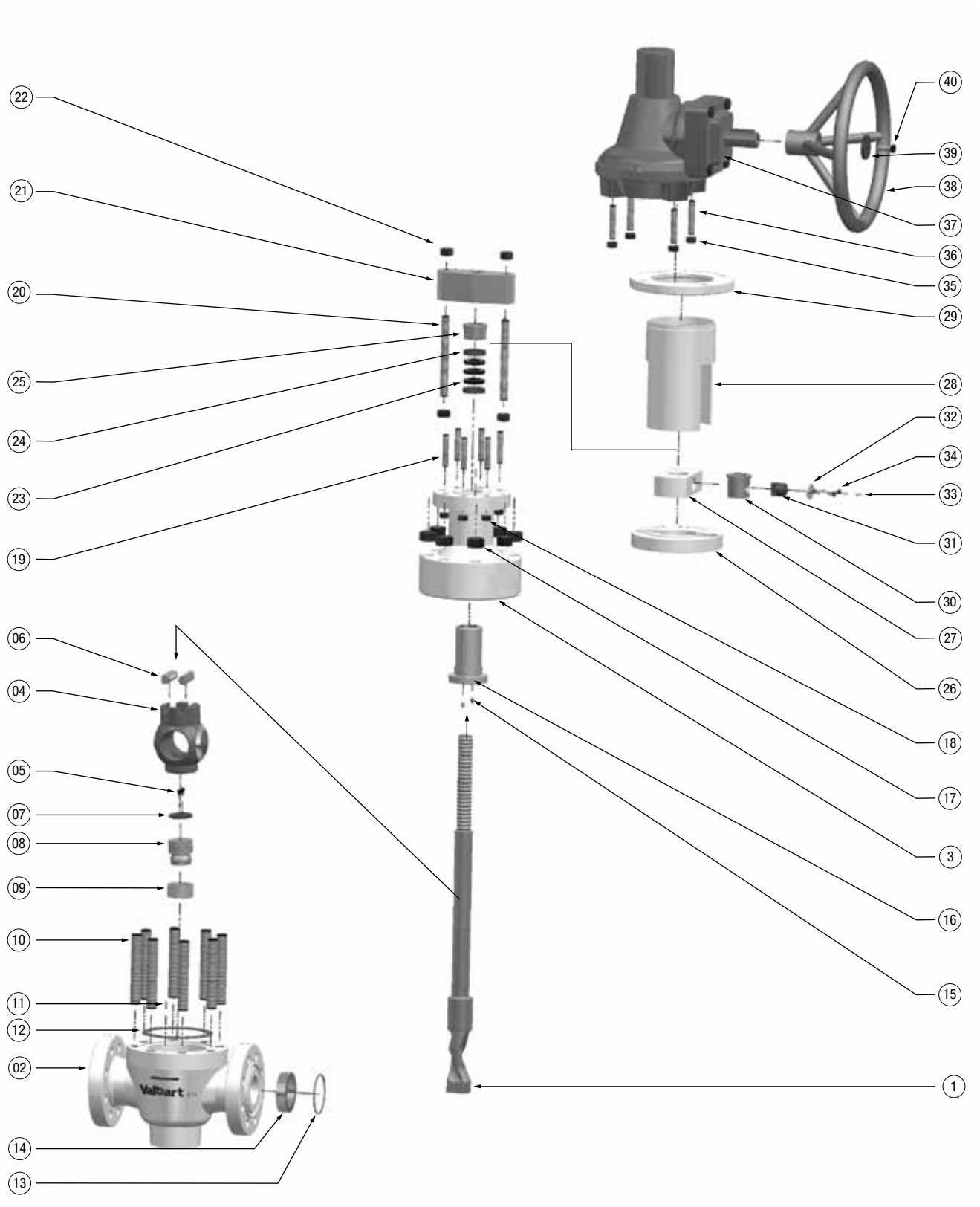
The downwards linear movement of the helix passing through the roller bars on the top of the ball cause the ball to rotate 90 degrees (Figure 1, Area 1). There is still no contact between the ball and the seat during this movement which highlights the friction free /non-rubbing feature of the valve.

Closed position



In the fully close position, the ball turned 90 degrees and is mechanically wedged toward the seat by the upper part of the helix shaped stem which is flat and angled (Figure 1, Area 2). The movement of the ball towards the seat achieves the positive metal-to-metal sealing when the valve is fully closed.

RSBV Bill of Material



RSBV Bill of Material (continued)

Bill of Material – Standard Materials for Carbon Steel Execution (manual gear operated)

Part No.	Description	Standard Material
1	Helix coil stem	Alloy steel ASTM A564 630 (17/4PH-H11502xT)
2	Body	Cast ASTM A216 WCB or forged ASTM A105N
3	Bonnet	Cast ASTM A216 WCB or forged ASTM A105N
4	Ball	Cast ASTM A216 WCB+STELLITE6 or Forged ASTM A105N+STELLITE6 (weld overlay)
5	Lock screw	Stainless steel A2/70
6	Roller bars	INCONEL 718
7	Positioning ball lock plate	Forged ASTM A105N
8	Positioning ball	Alloy steel ASTM A564 630 (17/4PH-H900)
9	Lower trunnion bushing	Alloy steel ASTM A564 630 (17/4PH-H11502xT)
10	Bonnet studs	ASTM A193 B7
11	Mounting indication pin	Stainless steel A2/70
12	Gasket	Spiral Wound SS316L with graphite filler
13	Seat seal	Graphite
14	Seat	Forged ASTM A105N+STELLITE6 (weld overlay)
15	Lock screw	Stainless steel A2/70
16	Upper bonnet bushing	Nodular C.I. (GGG50)
17	Bonnet nuts	ASTM A194 2H
18	Bracket nut	ASTM A194 2H
19	Bracket stud	ASTM A193 B7
20	Gland flange stud	ASTM A193 B7
21	Gland flange	Forged ASTM A105N or commercial carbon steel
22	Gland flange nut	ASTM A194 2H
23	Packing top & bottom	Braided graphite reinforced
24	Packing rings	Pure graphite
25	Gland	Stainless steel ASTM A182 F6a or AISI 410
26	Lower bracket flange	Forged steel ASTM A106 or ASTM A105
27	Bearing platform	Forged steel ASTM A106 or ASTM A105
28	Bracket tube	Forged steel ASTM A106 or equivalent
29	Top bracket flange	Forged steel ASTM A106 or ASTM A105
30	Stem bushing	B148 Gr.933
31	Anti rotation guide	Stainless steel ASTM 895 Gr.416 or AISI 416 (13% Cr.)
32	Anti rotation guide plate	Stainless steel type 316
33	Grease nipple	Stainless steel A1
34	Lock screw	Stainless steel A2/70
35	Operator stud	ASTM A193 B7
36	Operator nut	ASTM A194 2H
37	Gear operator	Cast iron (GGG25)
38	Hand wheel	Carbon steel (coated)
39	Wheel lock plate	Stainless steel type 316
40	Wheel lock plate screw	Stainless steel A2/70

Engineering Data

Valve Testing

100% of Rising Stem Ball Valves manufactured by Valbart are tested in excess of API 6D requirements, prior to shipping.

Standard Performance Tests

Visual and dimensional check
High-pressure hydrostatic shell test
High-pressure hydrostatic seat test
Low-pressure air seat test
Stem torque thrust check
Actuation performance test

Applied Standards

American Petroleum Institute – API
API 6D API 6D SS API 6FA API 598
API 6A API 607 API 605

American National Standards Institute - ANSI
ANSI FCI-70-2

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

British Standards - BS
BS EN 12266

International Organization for Standardization – ISO
ISO 9001 ISO 14313 ISO 14001 ISO 15848

Leakage Rates

Standard	Soft Seated	Metal Seated	Cryogenic
API 6D	ISO 5208 RATE A	ISO 5208 RATE B	(1)
API 598	TABLE 6	½ OF TABLE 6 (METAL SEATED)	(1)
ANSI FCI-70-2	CLASS VI	CLASS V (CLASS VI UPON REQUEST)	(1)
BS EN 12266 1	RATE A	RATE B	(1)

(1) Please consult the factory

Leakage rates mentioned above are standard. Stricter leakage rates can be achieved upon request

Testing Pressures

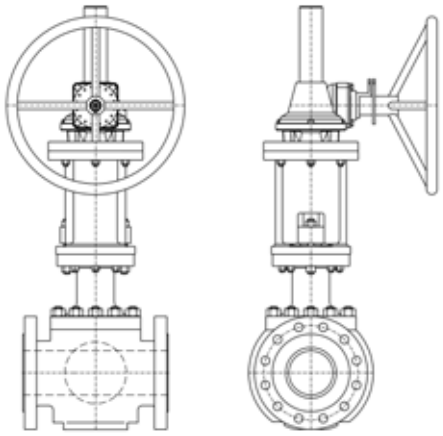
ASME	BODY TEST		H.P. SEAT TEST		AIR SEAT TEST	
CLASS	psi	bar	psi	bar	psi	bar
150	413	28.5	303	20.9	100	6.9
300	1080	75	792	55	100	6.9
600	2160	148.5	1584	108.9	100	6.9
900	3240	223.5	2376	163.9	100	6.9
1500	5400	372	3960	272.8	100	6.9
2500	8982	619.5	6587	454.3	100	6.9

Typical only - rating pressure may change for different materials

Conversion factors 1 bar = 14.50 psi

Rising Stem Ball Valve

Available configurations



Pressure Class	Size Range
150# - 600#	1”-24”
900#	1”-20”
1500#	1”-16”
2500#	1”-8”

Flow Direction	
Uni-Directional	✓
Bi-Directional	✓

End Connection	
Butt Weld	✓
Flanged RF/RTJ	✓
HUB	✓
Screwed	✓

Seating	
Soft Seated	✓
Metal Seated	✓

Temp Range	From -196°C to 600°C

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
A694 F52 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 + F321
A182 F44 (6% Mo) (UNS S31254)
A351 CF8M + CT8C A351 CF3
A351 CF3M

Precipitation Hardening Stainless Steel
A564 Gr 630 H1150M (UNS S17400)
A564 Gr 630 H900 (UNS)

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 718 (UNS N07718)
Monel 400
Monel K500

Soft Seat Insert and Seals Materials temperature limits

Material	Temp. °C	
	Min.	Max.
Devlon (Nylon 6)	-60	140
Peek	-60	220
PTFE Glass Filled (25%)	-100	260
PTFE Carbon Filled (25%)	-100	180
PCTFE	-196	150

Extended stem

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

For valves in cryogenic or low temperature service, extended bonnets are applied.

Actuation

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

The gear operator is used for valves equal to or larger than:
11/2" – Class 150 # - 1500 #

Valves can be supplied with the following actuation configurations:
- Electric actuators
- Pneumatic actuators
- Hydraulic actuators
- Gas over oil actuators

Qualifications & Certifications

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

Safety Integrity Level – Valbart rising stem ball valves are SIL2 certified

Fugitive Emmission – Valbart rising stem ball valves have succesfully passed fugitive emmission testing as per ISO 15848

Mounting operators

Valve Automation Center

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

If the operators are to be assembled on site, the mounting should be carried out before installing the valves in line as per Valbart instructions.

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

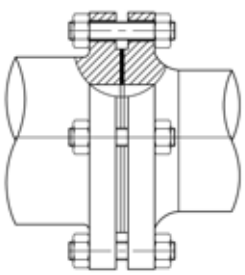
Operator mounting flanges are in accordance with ISO 5211-FF.

Ends

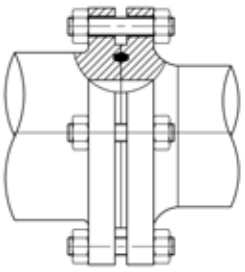
Valve ends can be manufactured to several configurations to comply with customer requests, such as:

- Flanged RF or RTJ to ASME B16.5 up to 24" (MSS SP-44 for 22"). 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 connect-ions are available as per customer specification.

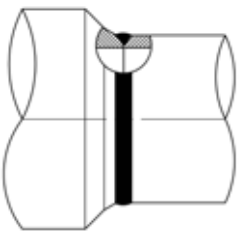
FLANGED (RF)



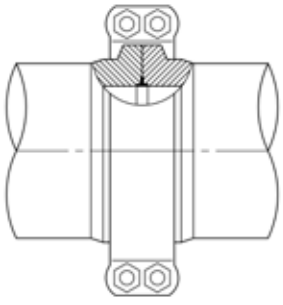
FLANGED (RTJ)



BUTT WELDED



HUB



Preventive & Troubleshooting Guide

All the Valbart Rising Stem Ball Valves are pressure and functional tested at the Valbart Facilities. However, during or after installation at the site unforeseen possible problems could occur. Please see below some common possible valve problems and their initial solution(s).

CASE	SOLUTION
Leakage from Valve body/bonnet gaskets	Ensure that the valve is de-pressurized. Check the tightness of the body bolting's or disassemble the bonnet and replace body/bonnet gasket.
Leakage from Valve stem packing	Check to see if the gland nuts are properly fastened. If not, fasten gland nuts until leakage stops. Also check that the gland and gland flange are correctly aligned.
Seat leakage	Ensure that the valve is de-pressurized. Disassemble the bonnet and inspect the ball core and seat for possible damage inside the valve from fluid /medium
Valve suffers from shocks and slip stick behaviour during operation (Actuated Valves)	Check the air / oil supply pressure or the electrical power supply against the specified values in the order Check the stem anti rotation guide and apply grease if necessary Check correctness of valve mounting position, flow direction and correct differential pressure as specified in the order Check the gland nuts to see if they are tightened more than needed. If so, loosen the gland nuts taking care to avoid any leakage through the stem packing. **Warning:** this operation can be dangerous when valve is under pressure
Valve is jamming	Ensure that the actual pressure/ temperature is not more than the permissible pressure of the valve If the valve is actuated, check the air/ oil supply pressure or the electrical power supply against the specified values in the order. Do not increase the air / oil pressure supply as this may cause further damage Check the condition of the stem guide(s). Ensure that the valve is de-pressurized. Disassemble the bonnet and inspect the ball core and seat for possible damage inside the valve from fluid/medium
Notes: In case the above solutions are insufficient or in case of any questions please contact the Valbart Engineering Department	

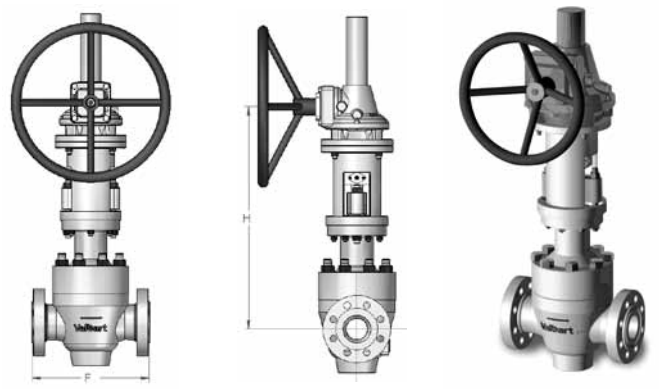
Preventive (periodic) actions

1. In general, verify at least once a year the tightness of bolts, drains, vents and any other devices fitted to the valve, if any.
2. Periodic greasing of the valve stem and the anti rotation guide is recommended
3. Check the sealing of the stem packing and the tightness of the gland flange bolts
4. Check the sealing of the body/bonnet gasket and the tightness of the bolting
5. Check if the open close operation (actuated or manual) is smooth by stroking the valve open and close.

Dimensions and Weights

Model Number Explanation

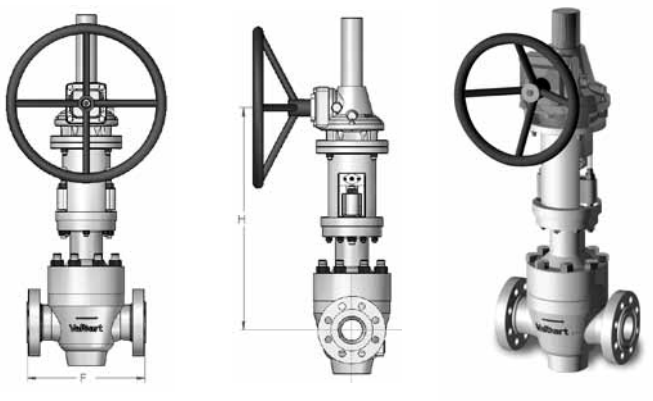
EXAMPLE: V-RSBV-6-R-600-RF-A	
V-RSBV	Valbart – Rising Stem Ball Valve
8	Size
R/F	Reduce Bore/Full Bore
600	Pressure Class
RF RJ BW	Ends Flanged Raised Face Ends Ring-type Joint Butt Weld Ends
A GO HW RTA	Actuated Manual Gear Operated Hand Wheel Operated Ready Take Actuator



RSBV Class 150# Full Bore and Reduced Bore Dimensions

Valve Model Number	Size (inch)	F (mm)	H (mm)	Weight (kg)	Cv Value (GPM)
V-RSBV-1-F-150	1 x 1 x 1	216	285	40	60
V-RSBV-11/2-F-150	11/2 x 11/2 x 11/2	242	325	50	140
V-RSBV-2-R-150	2 x 11/2 x 2	178	325	45	150
V-RSBV-2-F-150	2 x 2 x 2	178	370	85	450
V-RSBV-3-R-150	3 x 2 x 3	203	370	70	220
V-RSBV-3-F-150	3 x 3 x 3	203	450	90	1170
V-RSBV-4-R-150	4 x 3 x 4	229	450	80	570
V-RSBV-4-F-150	4 x 4 x 4	305	530	115	2070
V-RSBV-6-R-150	6 x 4 x 6	394	530	125	760
V-RSBV-6-F-150	6 x 6 x 6	404	675	185	4860
V-RSBV-8-R-150	8 x 6 x 8	457	675	210	2045
V-RSBV-8-F-150	8 x 8 x 8	457	825	260	9000
V-RSBV-10-R-150	10 x 8 x 10	533	825	325	4540
V-RSBV-10-F-150	10 x 10 x 10	674	965	675	16020
V-RSBV-12-R-150	12 x 10 x 12	762	965	735	7500
V-RSBV-12-F-150	12 x 12 x 12	762	1200	975	23460
V-RSBV-14-R-150	14 x 12 x 14	826	1100	1195	13310
V-RSBV-14-F-150	14 x 14 x 14	826	1290	1205	28800
V-RSBV-16-R-150	16 x 12 x 16	902	1100	1310	11500
V-RSBV-16-F-150	16 x 16 x 16	902	1420	1880	39600
V-RSBV-18-R-150	18 x 16 x 18	914	1420	1985	21110
V-RSBV-18-F-150	18 x 18 x 18	1093	1550	3100	52200
V-RSBV-20-R-150	20 x 16 x 20	991	1420	2285	17100
V-RSBV-20-F-150	20 x 20 x 20	1149	1735	3640	67500
V-RSBV-24-R-150	24 x 20 x 24	1170	1685	3745	27000
Note: Dimensions F, H and Weights are subject to change without notice					

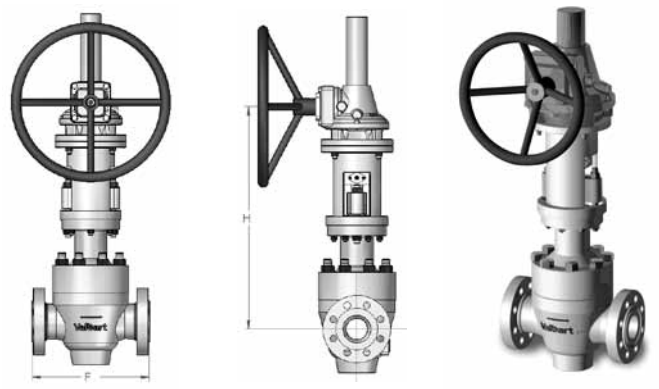
Dimensions and Weights (continued)



RSBV Class 300# Full Bore and Reduced Bore Dimensions

Valve Model Number	Size (inch)	F (mm)	H (mm)	Weight (kg)	Cv Value (GPM)
V-RSBV-1-F-300	1 x 1 x 1	216	285	45	60
V-RSBV-11/2-F-300	11/2 x 11/2 x 11/2	216	375	50	140
V-RSBV-2-R-300	2 x 11/2 x 2	216	375	50	160
V-RSBV-2-F-300	2 x 2 x 2	216	430	105	425
V-RSBV-3-R-300	3 x 2 x 3	282	435	75	240
V-RSBV-3-F-300	3 x 3 x 3	282	530	110	990
V-RSBV-4-R-300	4 x 3 x 4	305	535	90	620
V-RSBV-4-F-300	4 x 4 x 4	305	630	135	2100
V-RSBV-6-R-300	6 x 4 x 6	403	630	210	760
V-RSBV-6-F-300	6 x 6 x 6	403	915	295	4860
V-RSBV-8-R-300	8 x 6 x 8	502	915	275	1650
V-RSBV-8-F-300	8 x 8 x 8	502	1105	310	9000
V-RSBV-10-R-300	10 x 8 x 10	568	1105	365	4700
V-RSBV-10-F-300	10 x 10 x 10	673	1275	600	15390
V-RSBV-12-R-300	12 x 10 x 12	762	1275	790	7600
V-RSBV-12-F-300	12 x 12 x 12	762	1450	1090	22500
V-RSBV-14-R-300	14 x 12 x 14	826	1455	1195	13310
V-RSBV-14-F-300	14 x 14 x 14	826	1560	1350	27900
V-RSBV-16-R-300	16 x 12 x 16	902	1460	1350	10200
V-RSBV-16-F-300	16 x 16 x 16	902	1725	2080	42000
V-RSBV-18-R-300	18 x 16 x 18	914	1725	1915	21200
V-RSBV-18-F-300	18 x 18 x 18	914	1890	3430	50400
V-RSBV-20-R-300	20 x 16 x 20	991	1725	2080	15200
V-RSBV-20-F-300	20 x 20 x 20	991	2055	4730	64800
V-RSBV-24-R-300	24 x 20 x 24	1143	2060	4680	25650
Note: Dimensions F, H and Weights are subject to change without notice					

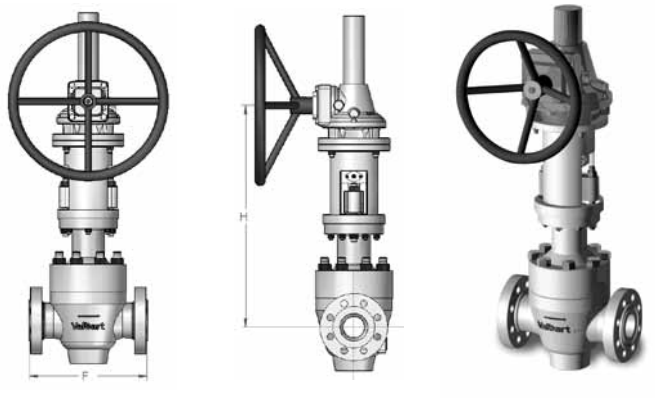
Dimensions and Weights (continued)



RSBV Class 600# Full Bore and Reduced Bore Dimensions

Valve Model Number	Size (inch)	F (RF) (mm)	RF (RTJ) (mm)	H (mm)	Weight (kg)	Cv Value (GPM)
V-RSBV-1-F-600	1 x 1 x 1	216	216	355	42	60
V-RSBV-11/2-F-600	11/2 x 11/2 x 11/2	242	242	424	47	140
V-RSBV-2-R-600	2 x 11/2 x 2	292	295	425	62	130
V-RSBV-2-F-600	2 x 2 x 2	292	295	490	104	310
V-RSBV-3-R-600	3 x 2 x 3	356	359	489	88	260
V-RSBV-3-F-600	3 x 3 x 3	356	359	612	125	900
V-RSBV-4-R-600	4 x 3 x 4	432	435	613	125	650
V-RSBV-4-F-600	4 x 4 x 4	432	435	733	208	1620
V-RSBV-6-R-600	6 x 4 x 6	559	562	731	187	960
V-RSBV-6-F-600	6 x 6 x 6	559	562	1052	374	4360
V-RSBV-8-R-600	8 x 6 x 8	660	663	1054	312	2010
V-RSBV-8-F-600	8 x 8 x 8	660	663	1275	520	9500
V-RSBV-10-R-600	10 x 8 x 10	787	790	1209	541	4040
V-RSBV-10-F-600	10 x 10 x 10	787	790	1482	874	12100
V-RSBV-12-R-600	12 x 10 x 12	838	841	1473	972	7310
V-RSBV-12-F-600	12 x 12 x 12	838	841	1689	1466	18200
V-RSBV-14-R-600	14 x 12 x 14	889	892	1677	1612	13230
V-RSBV-14-F-600	14 x 14 x 14	889	892	1816	1924	31500
V-RSBV-16-R-600	16 x 12 x 16	991	994	1677	1789	10100
V-RSBV-16-F-600	16 x 16 x 16	991	994	2011	2704	42400
V-RSBV-18-R-600	18 x 16 x 18	1092	1095	2086	2080	23100
V-RSBV-18-F-600	18 x 18 x 18	1092	1095	2207	4950	45900
V-RSBV-20-R-600	20 x 16 x 20	1194	1200	2086	2371	16480
V-RSBV-20-F-600	20 x 20 x 20	1194	1197	2400	5500	59400
V-RSBV-24-R-600	24 x 20 x 24	1397	1407	2467	6032	27000
Note: Dimensions F, H and Weights are subject to change without notice						

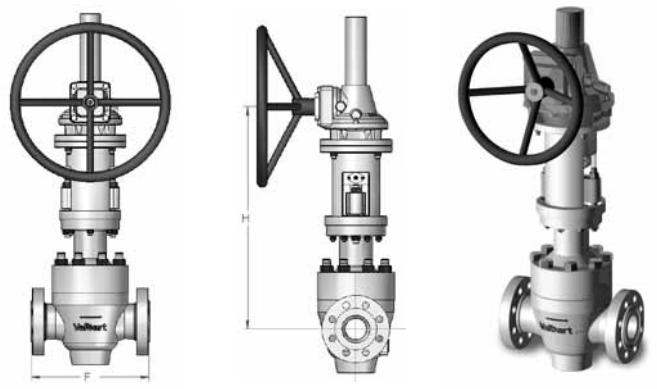
Dimensions and Weights (continued)



RSBV Class 900# Full Bore and Reduced Bore Dimensions

Valve Model Number	Size (inch)	F (RF) (mm)	RF (RTJ) (mm)	H (mm)	Weight (kg)	Cv Value (GPM)
V-RSBV-1-F-900	1 x 1 x 1	254	254	380	60	40
V-RSBV-11/2-F-900	11/2 x 11/2 x 11/2	305	305	455	95	120
V-RSBV-2-R-900	2 x 11/2 x 2	368	371	455	95	120
V-RSBV-2-F-900	2 x 2 x 2	368	371	530	125	285
V-RSBV-3-R-900	3 x 2 x 3	381	385	530	145	190
V-RSBV-3-F-900	3 x 3 x 3	381	385	760	155	860
V-RSBV-4-R-900	4 x 3 x 4	457	460	665	155	515
V-RSBV-4-F-900	4 x 4 x 4	457	460	900	205	1510
V-RSBV-6-R-900	6 x 4 x 6	610	613	805	240	950
V-RSBV-6-F-900	6 x 6 x 6	610	613	1150	470	3400
V-RSBV-8-R-900	8 x 6 x 8	737	740	1150	520	3000
V-RSBV-8-F-900	8 x 8 x 8	737	740	1395	725	9000
V-RSBV-10-R-900	10 x 8 x 10	838	841	1395	810	3955
V-RSBV-10-F-900	10 x 10 x 10	838	841	1625	1090	10800
V-RSBV-12-R-900	12 x 10 x 12	965	968	1600	1145	6620
V-RSBV-12-F-900	12 x 12 x 12	965	968	1850	2070	16200
V-RSBV-14-R-900	14 x 12 x 14	1029	1038	1850	1795	12075
V-RSBV-14-F-900	14 x 14 x 14	1029	1038	1940	2390	37080
V-RSBV-16-R-900	16 x 12 x 16	1130	1140	1850	1955	8535
V-RSBV-16-F-900	16 x 16 x 16	1130	1140	2160	4100	41400
V-RSBV-18-R-900	18 x 16 x 18	1219	1232	2160	3585	19900
V-RSBV-20-R-900	20 x 16 x 20	1321	1334	2160	4350	11860
Note: Dimensions F, H and Weights are subject to change without notice						

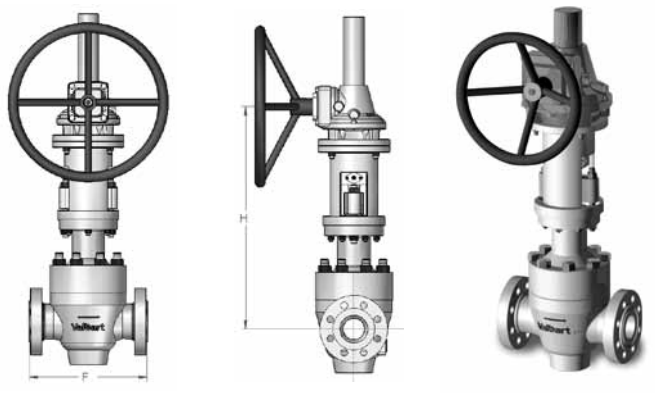
Dimensions and Weights (continued)



RSBV Class 1500# Full Bore and Reduced Bore Dimensions

Valve Model Number	Size (inch)	F (RF) (mm)	RF (RTJ) (mm)	H (mm)	Weight (kg)	Cv Value (GPM)
V-RSBV-1-F-1500	1 x 1 x 1	254	254	418	57	40
V-RSBV-11/2-F-1500	11/2 x 11/2 x 11/2	305	305	507	94	120
V-RSBV-2-R-1500	2 x 11/2 x 2	368	371	511	94	115
V-RSBV-2-F-1500	2 x 2 x 2	368	371	690	125	280
V-RSBV-3-R-1500	3 x 2 x 3	470	473	597	166	200
V-RSBV-3-F-1500	3 x 3 x 3	470	473	847	177	700
V-RSBV-4-R-1500	4 x 3 x 4	546	549	849	187	505
V-RSBV-4-F-1500	4 x 4 x 4	546	549	1004	255	1440
V-RSBV-6-R-1500	6 x 4 x 6	705	711	1005	343	945
V-RSBV-6-F-1500	6 x 6 x 6	705	711	1257	832	3200
V-RSBV-8-R-1500	8 x 6 x 8	832	841	1258	1030	2045
V-RSBV-8-F-1500	8 x 8 x 8	832	841	1522	1352	7800
V-RSBV-10-R-1500	10 x 8 x 10	991	1000	1527	1860	4000
V-RSBV-10-F-1500	10 x 10 x 10	991	1000	1778	2330	11700
V-RSBV-12-R-1500	12 x 10 x 12	1130	1146	1779	2548	6290
V-RSBV-12-F-1500	12 x 12 x 12	1130	1146	2023	3120	17100
V-RSBV-14-R-1500	14 x 12 x 14	1257	1276	2026	3360	11475
V-RSBV-16-R-1500	16 x 12 x 16	1384	1407	2026	4576	9200
Note: Dimensions F, H and Weights are subject to change without notice						

Dimensions and Weights (continued)



RSBV Class 2500# Full Bore and Reduced Bore Dimensions

Valve Model Number	Size (inch)	F (RF) (mm)	RF (RTJ) (mm)	H (mm)	Weight (kg)	Cv Value (GPM)
V-RSBV-1-F-2500	1 x 1 x 1	451	451	462	94	35
V-RSBV-11/2-F-2500	11/2 x 11/2 x 11/2	451	451	567	99	110
V-RSBV-2-R-2500	2 x 11/2 x 2	451	454	667	208	110
V-RSBV-2-F-2500	2 x 2 x 2	451	454	710	146	160
V-RSBV-3-R-2500	3 x 2 x 3	578	584	720	224	175
V-RSBV-3-F-2500	3 x 3 x 3	578	584	850	218	510
V-RSBV-4-R-2500	4 x 3 x 4	673	683	860	312	420
V-RSBV-4-F-2500	4 x 4 x 4	673	683	1035	421	790
V-RSBV-6-R-2500	6 x 4 x 6	914	927	1037	530	600
V-RSBV-6-F-2500	6 x 6 x 6	914	927	1333	1019	2300
V-RSBV-8-R-2500	8 x 6 x 8	1022	1038	1344	1238	1590
V-RSBV-8-F-2500	8 x 8 x 8	1022	1038	1642	1810	6370
V-RSBV-10-R-2500	10 x 8 x 10	1270	1292	1645	2260	3575
Note: Dimensions F, H and Weights are subject to change without notice						

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