

# VOLK VALVES



## Company Profile

With their headquarters in Houston, Texas, USA, VOLK Flow Controls, Inc. is a leading manufacturer of valves for all industries. Valves such as soft seated ball valves, gate valves, globe valves, check valves, control valves, and instrument valves, together with severe service metal seated zero leakage ball valves and severe service control valves, are available in all types, sizes, materials, pressure classes and automation.

To better serve the customers throughout the globe, VOLK Flow Controls, Inc. established Gu'an VOLK Flow Controls, Inc. near Beijing in China in 2007. The two manufacturing bases offer valve products with the same design and strict quality control procedures.

In addition to valves, VOLK Flow Controls, Inc. also offers the GT (GIANT TORK) complete range of electric and pneumatic actuators suitable for all types of linear and quarter-turn valves.

VOLK Flow Controls, Inc. is a major manufacturer and

supplier of valves and actuators to the Power, Oil & Gas, Refining, Petrochemical, Chemical, Mining, Marine, Metals, and Aerospace Industries with installations throughout the globe.

All VOLK Flow Controls, Inc. products are designed, engineered and manufactured by experienced industry engineers to provide safe, reliable, dependable and affordable valves, actuators and solutions. All VOLK Flow Controls, Inc. products are tracked in the field using our database to monitor performance and service life. Together with continual feedback from our customers from valves operating in their plants, and our high manufacturing, rigorous testing and quality control procedures, VOLK Flow Controls, Inc. guarantees long service life with minimal maintenance.

VOLK Flow Controls, Inc. provides customers with affordable, dependable and reliable solutions.



## Quality

VOLK's complete in-house machining, assembly and testing, along with material traceability and extensive quality procedures, ensure customers a top-quality product at a very competitive price. VOLK ball valves are designed according to the highest standards of the valve industry, using the best raw materials for the service required. With an over 86,000 square feet facility and over 16 new state of the art CNC machines, VOLK is known for maintaining high quality standards and meeting the stringent demands of all industrial applications.

VOLK Flow Controls, Inc. is certified to API Q1-6D, 602, and 607, as well as ISO 9001:2008. VOLK also has NACE Certified Coating Inspectors on staff to ensure our products meet the stringent requirements.

## Design Standards

Standards	Name of the Standard
ASME B16.34	Valve-Flanged, Threaded, and Welding End
API 602	Steel Gate, Globe and Check Valves for Sizes DN 100 and Smaller
API 603	Corrosion-resistant, Bolted Bonnet Gate Valves-Flanged and Butt-welding Ends
API 6D	Specification for Pipeline Valves
API 597	Steel Venturi Gate Valves, Flanged, Buttwelding Ends
API 600	Steel Gate Valves-Flanged and Butt Welded Ends, Bolted Bonnet
API 608	Metal Ball Valves-Flanged, Threaded, and Welding Ends
API 6A	Specification for Wellhead and Christmas Tree Equipment
MSS-SP-42	Corrosion Resistant Gate, Globe, Angle and Check Valves with Flanged and Butt Weld Ends (Classes 150, 300 & 600)
BS 1873	Specification for Steel Globe and Globe Stop and Check Valves (Flanged and Butt-welding Ends)
BS 6364	Specification for Valves for Cryogenic Service

## Other Standards

Standards	Name of the Standard
ASME B16.10	Face-to-Face and End-to-End Dimension of Valves
ASME B16.5	Pipe Flanges and Flanged Fittings
ASME B16.25	Buttwelding Ends
ASME B16.11	Forged Fittings, Socket-Welding and Threaded
ASME B16.47	Large Diameter Steel Flanges (NPS 26 Through NPS 60)
API 598	Valve Inspection and Testing
API 607	Testing of Valves-Fire Type-testing Requirements
API 6FA	Specification for Fire Test for Valves
NACE MR0103	Materials Resistant to Sulfide Stress Cracking in Corrosive Petroleum Refining Environments
NACE MR0175	Materials for Use in H <sub>2</sub> S-containing Environments in Oil and Gas Production



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# How to Order VOLK Ball Valve

A B C D E F G — H I

## A. VALVE TYPE

V1	One piece body ball valve
V2	Two piece body ball valve
V3	Three piece body ball valve

## B. OPERATOR MODE

L	LEVER	E	ELECTRIC
W	WORM GEARING	P	PNEUMATIC
Cy	CYLINDER GEAR-DRIVEN	H	HYDRAULIC
C	CONIC GEAR-DRIVEN	BS	BARE STEM

## C. ANSI CLASS CODE

1	CLASS 150	9	CLASS 1500
3	CLASS 300	0	CLASS 2500
6	CLASS 600	D	CLASS 3200
8	CLASS 800	A	CLASS 3500
7	CLASS 900	B	CLASS 4500

## D. PORT CODE

FP	Full Port
RP	Reduced Port
XX	Others

## E. BODY MATERIAL CODE

01	A105	21	A216 WCB
02	A182 F11	22	A217 WC6
03	A182 F22	23	A217 WC9
04	A182 F91	24	A217 C12A
05	A182 F304	25	A351 CF8
06	A182 F316	26	A351 CF8M
07	A182 F304L	27	A351 CF3
08	A182 F316L	28	A351 CF3M
09	A350 LF2	29	A352 LCB
10	A350 LF5	30	A352 LC1
11	A350 LF9	31	A352 LC2
12	A350 LF3	32	A352 LC3
13	A182 F51	00	OTHERS

## F. SEAT MATERIAL CODE

H	Chrome carbide coated	C	Hard chrome plating
W	Tungsten carbide coated	X	Oxidizing
S	Overlay Stellite	T	PTFE
M	Overlay martensite stainless steel	P	PEEK
U	Overlay austenite stainless steel	A	No special treatment on the surface
N	Electric Nickel Plated		

## G. END CONNECTION CODE

BW	BUTT WELD
SW	SOCKET WELD
RF	RAISED FACE
RJ	RING JOINT
TH	THREAD

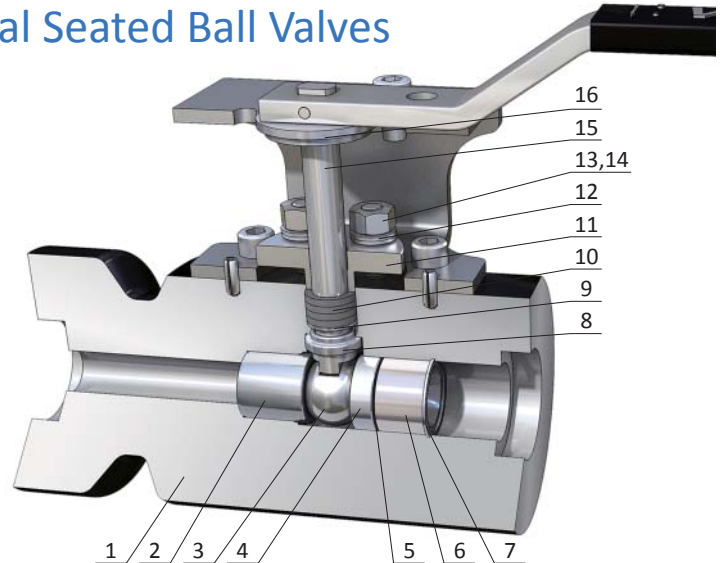
## H. SIZE

1/2" thru 28"

## I. Design

T	Trunnion Ball Design
F	Floating Ball Design

# One Piece Body Forged Steel Metal Seated Ball Valves



## 1. Zero Leakage

VOLK Flow Controls, Inc. guarantees **ZERO LEAKAGE**.

## 2. Stem Protection Feature

The thrust collar on the stem prevents any abnormal external force pushing the stem into the ball. Without this feature, there is always the possibility that the stem can be driven into the ball, thus dislodging the ball in the seat and resulting in leakage.

## 3. Positive Blowout Proof Stem

Unlike some designs which use a pin through the stem to achieve blowout prevention, the VOLK design uses oversized split collars around the base of the stem, which creates a diameter larger than the stem and in turn locates within a recess in the valve body. This ensures the stem is held captive at all times within the valve body, unlike pins which have been known to shear and allow the stem to blow out of the body.

## 4. Reliable Packing Gland Design

Reliable packing gland design and the use of **Belleville springs** provide long lasting, maintenance-free, stem packing seal and tightness.

## 5. Quarter Turn Action

The quarter turn action reduces the wear on the stem and stem packing normally associated with linear travel valves, such as gate valves, globe valves and other rising stem valves.

Since the action is rotational rather than linear, the stem is not pulled and pushed through the packing and eliminates the possibility of solids being dragged into the packing gland area and damaging the packing. This, therefore, extends the stem and packing life of the ball valve.

The fast quarter turn action, complete with zero leakage shut off makes this valve the ideal choice for emergency shut down applications.

## 6. Application of HVOF Coatings

The ball and seat are chromium or tungsten carbide impregnated by HVOF coating techniques, with surface hardness of Rc 68-72, and are mate-lapped to a very high RMS finish (5 micro inches RMS), providing **ZERO LEAKAGE**, and a long, maintenance-free service life.

## 7. Belleville Spring

The Belleville spring provides a constant force to load the ball into the downstream sealing seat, allowing the valve to achieve zero leakage in both high and low pressure applications.

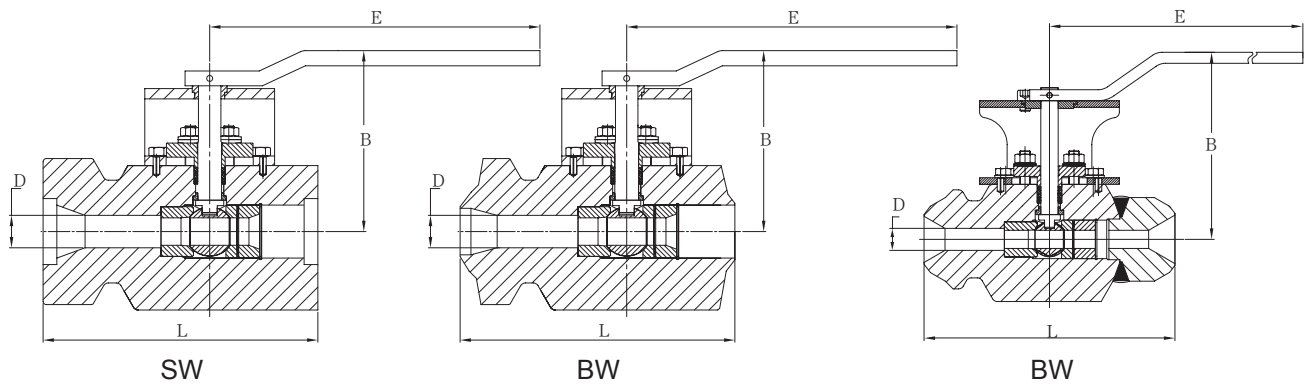
## 8. Belleville Spring Guide Sleeve

In case of incorrect installation or reverse flow pressure, the design prevents the ball and the upstream seat from blowing out.

## Materials

Item	Description	Materials for Class 900, 1500, 2500, 3200				Materials for Class 3500, 4500			
		A105	A 182 F22	A 182 F91	A182 F316	A105	A 182 F22	A 182 F91	A182 F316
1	Body	A105	F22	F91	F316	A105	F22	F91	F316
2	Seat	F6a.Cl.3 / HF	Gr.660 / HF, Inconel 718/ HF			Gr.660 / HF, Inconel 718/ HF			
3	Ball	F6a.Cl.3 / HF	Gr.660 / HF, Inconel 718/ HF			Gr.660 / HF, Inconel 718/ HF			
4	Upstream seat	F6a.Cl.3 /431SS			431SS				
5	Belleville spring	Inconel 750 / Inconel 718				Inconel 750 / Inconel 718			
6	Guide sleeve	F6a.Cl.3 /431SS			F6a.Cl.3 /431SS				
7	Retainer ring	302 SS/ 304SS / 316SS			302 SS/ 304SS / 316SS				
8	Thrust washer	F6a.Cl.3	Gr.660 /Inconel 718			Gr.660 / Inconel 718			
9	Packing washer	F6a.Cl.3 / Gr.660			F6a.Cl.3 / Gr.660				
10	Packing	Graphite + 316 SS			Graphite + 316 SS				
11	Gland	F6a.Cl.3			F6a.Cl.3				
12	Live loading	17-7PH / 302 SS			17-7PH / 302 SS				
13	Bolt	A 193 B8M			A 193 B8M				
14	Nut	A 194 8M			A 194 8M				
15	Stem	F6a.Cl.3 / A638 Gr.660		Inconel 718		Inconel 718			
16	Thrust collar	1045			1045				





## Dimensions

### ANSI CLASS 900 - 1500

NPS(in)	Dimensions	D(in) Bore	B(in)	E(in)	L(in)		Weight(lb)	
					SW	BW	SW	BW
1/2, 3/4, 1, 1-1/2		0.65	5.23	13.00	6.49	7.50	27.00	26.00
2, 2-1/2		1.00	5.75	18.90	7.48	9.00	42.90	35.90
3		1.40	5.75	18.90	-	11.00	-	50.60
4		1.75	7.50	18.90	-	12.00	-	77.00

### ANSI CLASS 2500 - 3200

NPS(in)	Dimensions	D(in) Bore	B(in)	E(in)	L(in)		Weight(lb)	
					SW	BW	SW	BW
1/2, 3/4, 1, 1-1/4, 1-1/2		0.65	5.43	13.00	8.50	9.00	36.30	29.70
2, 2-1/2		1.00	5.95	18.90	9.00	10.00	55.70	42.70
3		1.40	5.95	18.90	-	12.00	-	62.70
4		1.40	5.95	18.90	-	12.00	-	66.90
4		1.75	7.95	18.90	-	13.50	-	89.00

### ANSI CLASS 3500 - 4500

NPS(in)	Dimensions	D(in) Bore	B(in)	E(in)	L(in)		Weight(lb)	
					SW	BW	SW	BW
1/2, 3/4, 1, 1-1/2		0.65	5.83	13.00	8.50	9.00	39.00	29.70
2, 2-1/2		1.00	6.35	18.90	9.56	10.00	64.50	42.70
3		1.40	6.35	18.90	-	12.00	-	78.30
4		1.40	6.35	18.90	-	12.00	-	84.50
4		1.75	8.40	18.90	-	13.50	-	144.50

\* Valves with 0.75 inch or 1.5 inch bore can also be provided.

\* Products with special size or class requirements can be designed and manufactured.

**VOLK has designed ball valves with light weight to better operate on pipes which require low burden. Here are the dimensions of the light ball valve.**

### ANSI CLASS 150 - 1500

NPS(in)	Dimensions	D(in) Bore	B(in)	E(in)	L(in)		Weight(lb)	
					SW	BW	SW	BW
1/2, 3/4, 1-1/2		0.65	4.92	12.00	7.08	7.08	15.80	15.20
2, 2-1/2		1.00	5.50	18.70	9.25	9.25	32.00	31.00
3		1.40	5.50	18.70	10.24	10.24	47.30	45.70
4		1.75	7.26	18.70	12.20	12.20	74.20	72.10



# Features of two piece body and three piece body ball valves

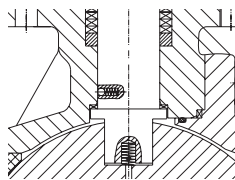
## 1. Positive Blowout Proof Stem

Unlike some designs which use a pin through the stem to achieve blowout prevention, the VOLK design uses oversized split collars around the base of the stem, which creates a diameter larger than the stem and in turn locates within a recess in the valve body. This ensures the stem is held captive at all times within the valve body, unlike pins which have been known to shear and allow the stem to blow out of the body.



## 2. Anti-static Design of Soft Seated Ball Valves

The spring on the stem connects the ball, stem and body, which can transfer the static electricity generated during the open-close of valves or when the fluid flows through the cavity, avoiding the aggregation of electricity



## 3. Double Block & Bleed Feature

VOLK trunnion ball valves are suitable for use in block and bleed applications, where fluid in the body is evacuated through a bleed port while both the upstream and downstream pressures are isolated.

## 4. Fire Safe Seat on Soft Seat Designs

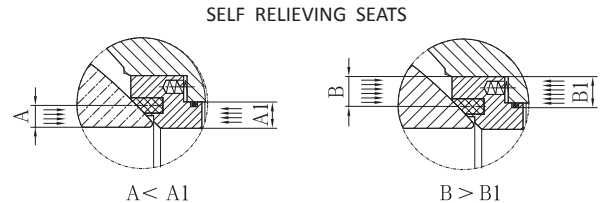
Under fire conditions, the metal back-up seat ring seals between the seat and the ball as the soft seat melts and extrudes downstream. This provides isolation in accordance with API 607.



## 5. Seat Design on Trunnion Design Valves

### • Single Piston Seat

Fluid pressure acts on the surface area of the piston in each seat pocket, resulting in the seat being pushed on to the ball. In the event the pressure in the cavity is greater than the spring force and fluid pressure, the seats are no longer loaded on to the ball. Over-pressure in the valve can be relieved in the open or closed position.

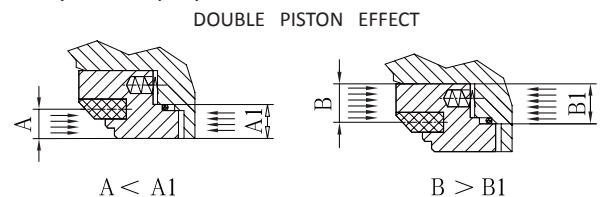


### • Single Piston Upstream Seat and Double Piston Downstream Seat

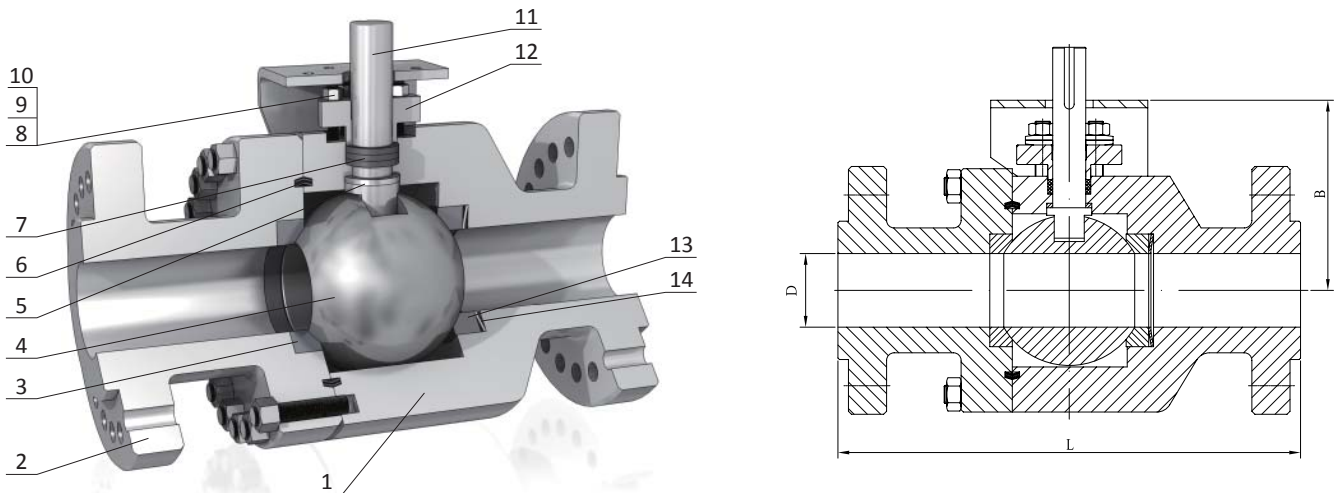
The fluid pushes the upstream seat towards the ball to seal. The over-pressure in the cavity can push the upstream seat away from the ball to relieve the pressure. The double piston downstream seat design makes the fluid push the downstream seat to the ball at all times to ensure seal.

### • Double Piston Seat

The force generated by the upstream and downstream fluid pressure pushes the seat on to the ball for the seal. Double piston seals cannot self-relieve over-pressure in the cavity and a vent valve has to be installed in the cavity for this purpose.



# Two Piece Body Metal Seated Ball Valves-Floating Ball Design



## Materials

Item	Description	Materials for Class 150 - 600				Materials for Class 900 - 2500			
		A216 WCB	A217 WC6	A351 CF8M	A217 C12A	A105	A182 F22	A182 F91	A182 F316
1	Body	A216 WCB	A217 WC6	A351 CF8M	A217 C12A	A105	A182 F22	A182 F91	A182 F316
2	End flange	A216 WCB	A217 WC6	A351 CF8M	A217 C12A	A105	A182 F22	A182 F91	A182 F316
3	Seat	F6a. Cl. 3 / HF				F6a. Cl. 3 / HF	Gr.660 / HF	Inconel 718 / HF	
4	Ball	F6a. Cl. 3 / HF				F6a. Cl. 3 / HF	Gr.660 / HF	Inconel 718 / HF	
5	Thrust collar	410 SS				410 SS	410 SS	Inconel 718	
6	Washer	Inconel 718				Inconel 718			
7	Packing	Graphite + 316 SS				Graphite + 316 SS			
8	Bolt	A193 B8M				A193 B8M			
9	Nut	A194 8M				A194 8M			
10	Live loading	302 SS				302 SS			
11	Stem	A638 Gr. 660				F6a. Cl. 3	Gr.660	Inconel 718	
12	Gland	410 SS				410 SS			
13	Upstream seat	F6a. Cl. 3				F6a. Cl. 3 / HF	Gr.660 / HF		
14	Belleville spring	Inconel 718				Inconel 718			

## Dimensions

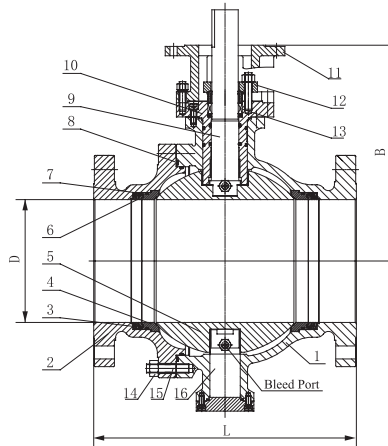
### ANSI CLASS 150 - 600

NPS(in)	L(in)			D(in)			B(in)			Weight(lb)		
	150	300	600	150	300	600	150	300	600	150	300	600
1	5.00	6.50	8.50	1.06	1.06	1.06	9.00	9.00	9.00	9.00	13.00	19.80
1-1/2	6.50	7.50	9.50	1.06	1.06	1.06	9.00	9.00	9.00	16.00	25.00	38.00
2	7.00	8.50	11.50	2.00	2.00	2.00	10.00	10.00	10.00	24.00	35.00	55.00
3	8.00	-	-	3.06	-	-	11.00	-	-	55.00	-	-
4	9.00	-	-	4.06	-	-	13.50	-	-	105.00	-	-

### ANSI CLASS 900 - 2500

NPS(in)	L(in)			D(in)			B(in)			Weight(lb)		
	900	1500	2500	900	1500	2500	900	1500	2500	900	1500	2500
1	10.00	12.12	12.12	1.00	1.00	0.65	2.50	2.50	2.20	25.00	32.00	40.00
1-1/2	12.00	15.12	15.12	1.40	1.40	1.00	3.50	3.50	2.90	45.00	55.00	75.00
2	14.50	17.75	17.75	1.75	1.75	1.40	4.40	4.40	4.00	68.00	90.00	125.00

# Two Piece Body Metal Seated Ball Valves-Trunnion Ball Design



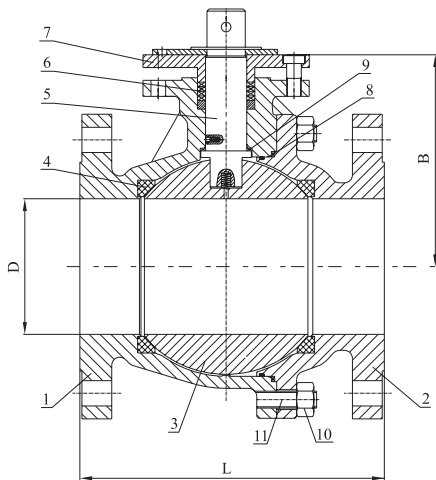
## Materials

Item	Description	A216 WCB / A105	A351 CF8M / A182 F316	A352 LCB / A350 LF2
1	Body	A216 WCB / A105	A351 CF8M / A182 F316	A352 LCB / A350 LF2
2	End flange	A216 WCB / A105	A351 CF8M / A182 F316	A352 LCB / A350 LF2
3	Spring	Inconel X-750		
4	Seat ring	A105+ENP	A182 F316	A350 LF2+ENP
5	Ball	A105+ENP	A182 F316	A350 LF2+ENP
6	Back seat	A105	A182 F316	A350 LF2
7	Seat seal ring	Graphite+316SS		
8	Washer	PTFE/PEEK/Nylon		
9	Upper stem	A182 F6a+ENP	17-4PH	A182 F51
10	Packing box	VITON	VITON	VITON
11	Yoke	A216 WCB / A105	A217 CF8	A216 WCB
12	Gland	A105	A182 F316	A350 LF2
13	Packing	PTFE/Graphite+316SS		
14	Nut	A194 2H	A194 8	A194 7
15	Double end bolt	A193 B7	A193 B8	A193 B7
16	Lower stem	A182 F6a+ENP	17-4PH	A182 F51

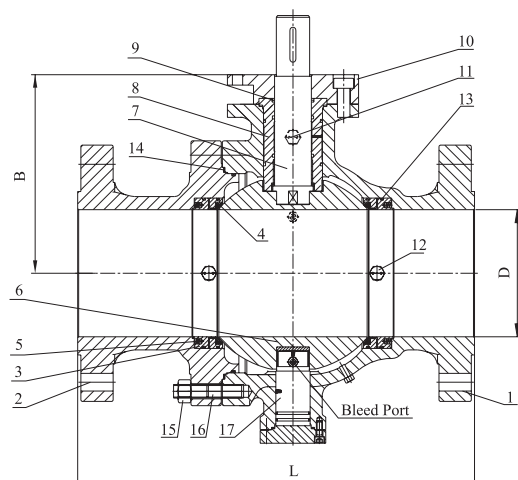
## Dimensions

NPS(in)	L (in)			D (in)			B (in)			Weight (lb)		
	150	300	600	150	300	600	150	300	600	150	300	600
2	7.00	8.50	11.50	2.00	2.00	2.00	6.50	6.50	6.90	47.60	50.70	70.60
3	8.00	11.00	14.00	3.00	3.00	3.00	7.70	7.70	9.60	81.70	100.30	130.00
4	9.00	12.00	17.00	4.00	4.00	4.00	9.00	9.00	10.80	129.70	160.80	220.30
6	15.50	16.00	22.00	6.00	6.00	6.00	13.00	13.00	14.40	241.30	390.00	570.60
8	18.00	19.80	26.00	8.00	8.00	8.00	15.50	15.50	14.40	395.60	603.40	890.70
10	21.00	22.40	31.00	10.00	10.00	10.00	15.70	15.70	16.70	680.70	761.00	1540.00
12	24.00	25.50	33.00	12.00	12.00	12.00	17.30	17.30	21.70	1223.50	1344.00	2050.30
14	27.00	30.00	35.00	14.00	14.00	14.00	31.00	31.00	31.88	1504.00	1520.00	3040.00
16	30.00	33.00	39.00	16.00	16.00	16.00	36.25	36.25	36.38	2930.00	3960.00	4980.00
18	34.00	36.00	43.00	18.00	18.00	18.00	38.25	38.25	38.75	5100.00	5800.00	7080.00
20	36.00	39.00	47.00	20.00	20.00	20.00	43.38	43.38	44.50	5520.00	6100.00	8356.00
24	42.00	45.00	55.00	24.00	24.00	24.00	45.25	45.25	46.62	9040.00	9980.00	12564.00
<b>NPS(in)</b>	<b>900</b>	<b>1500</b>	<b>2500</b>	<b>900</b>	<b>1500</b>	<b>2500</b>	<b>900</b>	<b>1500</b>	<b>2500</b>	<b>900</b>	<b>1500</b>	<b>2500</b>
2	14.50	14.50	17.75	2.00	2.00	2.00	8.62	11.25	12.00	110.00	121.00	132.00
3	15.00	18.50	22.75	3.00	3.00	3.00	10.25	13.25	14.25	176.00	220.00	273.00
4	18.00	21.50	26.50	4.00	4.00	4.00	15.38	20.00	21.25	308.00	363.00	430.00
6	24.00	27.75	36.00	6.00	6.00	6.00	25.75	33.50	35.88	858.00	1298.00	1663.00
8	29.00	32.75	40.25	8.00	8.00	8.00	30.25	39.38	42.12	1540.00	2046.00	2435.00
10	33.00	39.00	50.00	10.00	10.00	10.00	31.75	41.12	44.00	2420.00	4180.00	5627.00
12	38.00	44.50	56.00	12.00	12.00	12.00	38.00	49.38	53.00	3850.00	5016.00	6320.00
14	40.50	49.50	-	14.00	14.00	-	38.50	50.00	-	5060.00	8668.00	-
16	44.50	54.50	-	16.00	16.00	-	45.00	58.50	-	7700.00	11946.00	-
18	48.00	60.50	-	18.00	18.00	-	47.00	-	-	10406.00	-	-
20	52.00	65.50	-	20.00	20.00	-	53.50	-	-	12188.00	-	-

# Two Piece Body Soft Seated Ball Valves



Floating Ball Design



Trunnion Ball Design

## Materials

Item	Description	A216 WCB / A105	A351 CF8M / A182 F316	A352 LCB / A350 LF2
1	Body	A216 WCB / A105	A351 CF8M / A182 F316	A352 LCB / A350 LF2
2	End flange	A216 WCB / A105	A351 CF8M / A182 F316	A352 LCB / A350 LF2
3	Ball	A105+ ENP	A182 F316	A350 LF2+ ENP
4	Seat	PTFE/PEEK/Nylon		
5	Stem	A182 F6a+ENP	17-4PH	A182 F51
6	Packing	Graphite/ PTFE		
7	Gland	A105	A182 F316	A350 LF2
8	Washer	VITON	VITON	VITON
9	Thrust washer	304 spiral wound graphite	316 spiral wound graphite	304 spiral wound graphite
10	Nut	A194 2H	A194 8	A194 7
11	Double end bolt	A193 B7	A193 B8	A193 B7

Note: VOLK can offer VICTREX T-series polymers which perform excellently at temperature up to 572 °F

## Materials

Item	Description	A216 WCB / A105	A351 CF8M / A182 F316	A352 LCB / A350 LF2
1	Body	A216 WCB / A105	A351 CF8M / A182 F316	A352 LCB / A350 LF2
2	End flange	A216 WCB / A105	A351 CF8M / A182 F316	A352 LCB / A350 LF2
3	Seat ring	A105+ ENP	A182 F316	A350 LF2+ ENP
4	Seat Insert	PTFE/PEEK/Nylon		
5	Spring	Inconel X-750		
6	Ball	A105+ENP	A182 F316	A350 LF2+ ENP
7	Upper stem	A182 F6a+ENP	17-4PH	A182 F51
8	Packing box	A105	A182 F316	A350 LF2
9	O-ring	VITON	VITON	VITON
10	Yoke	A216 WCB / A105	A217 CF8	A216 WCB
11	Stem Injection	CS/SS		
12	Seat Injection	CS/SS		
13	Seat seal ring	PTFE/PEEK/Nylon	PTFE/PEEK/Nylon	PTFE/PEEK/Nylon
14	Washer	VITON	VITON	VITON
15	Nut	A194 2H	A194 8	A194 7
16	Double end bolt	A193 B7	A193 B8	A193 B7
17	Lower Stem	A182 F6a+ENP	17-4PH	A182 F51

## Dimensions

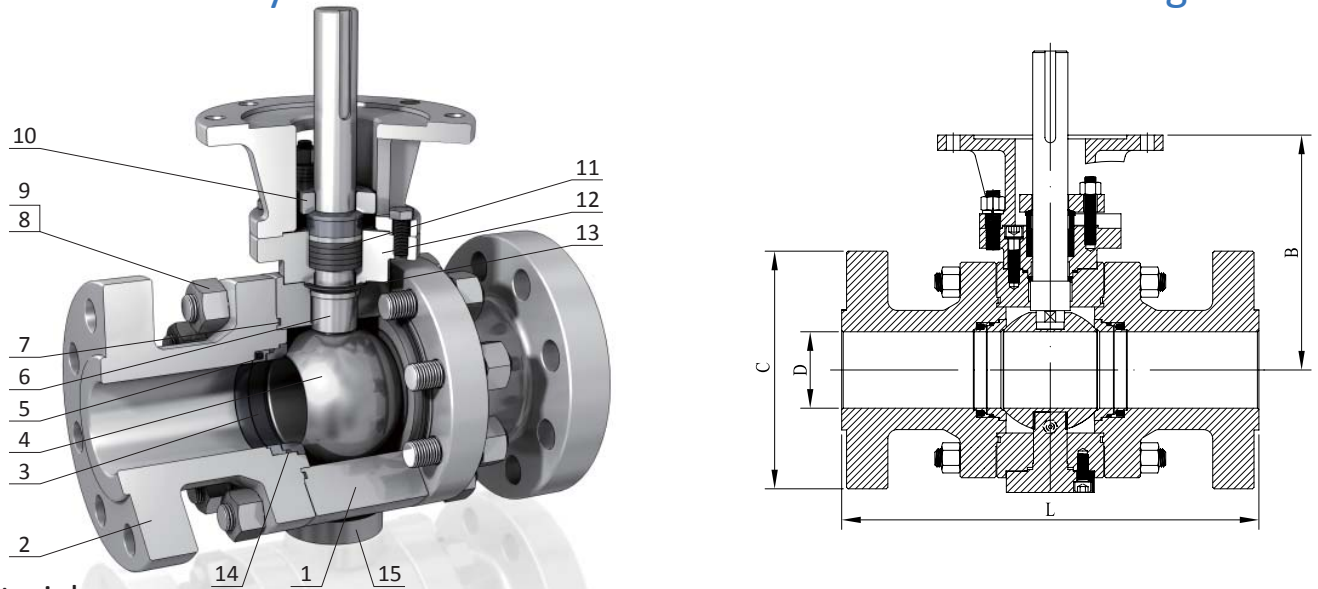
### Floating Design

NPS(in)	L (in)			D (in)			B (in)			Weight (lb)		
	150	300	600	150	300	600	150	300	600	150	300	600
1/2	4.25	5.50	6.50	0.50	0.50	0.50	2.12	2.12	2.38	5.00	5.50	7.30
3/4	4.62	6.00	7.50	0.75	0.75	0.75	2.12	2.12	2.38	6.60	7.70	10.00
1	5.00	6.50	8.50	1.00	1.00	1.00	2.75	2.75	3.00	10.00	12.00	15.85
1-1/2	6.50	7.50	9.50	1.50	1.50	1.50	3.50	3.50	4.00	15.40	23.00	29.80
2	7.00	8.50	-	2.00	2.00	-	4.12	4.12	-	21.00	32.00	-
2-1/2	7.50	9.50	-	2.50	2.50	-	6.12	6.12	-	33.00	51.70	-
3	8.00	-	-	3.00	-	-	7.25	-	-	41.80	-	-

### Trunnion Design

NPS(in)	L (in)			D (in)			B (in)			Weight (lb)		
	150	300	600	150	300	600	150	300	600	150	300	600
2	7.00	8.50	11.50	2.00	2.00	2.00	6.50	6.50	6.90	37.40	39.60	59.40
3	8.00	11.00	14.00	3.00	3.00	3.00	7.70	7.70	9.60	72.60	88.00	110.00
4	9.00	12.00	17.00	4.00	4.00	4.00	9.00	9.00	10.80	110.00	138.60	176.00
6	15.50	16.00	22.00	6.00	6.00	6.00	13.00	13.00	14.40	209.00	330.00	484.00
8	18.00	19.80	26.00	8.00	8.00	8.00	15.50	15.50	14.40	363.00	528.00	770.00
10	21.00	22.40	31.00	10.00	10.00	10.00	15.70	15.70	16.70	605.00	671.00	1320.00
12	24.00	25.50	33.00	12.00	12.00	12.00	17.30	17.30	21.70	1045.00	1122.00	1804.00

# Three Piece Body Metal Seated Ball Valves—Trunnion Ball Design



## Materials

Item	Description	Materials for Class 150 - 600				Materials for Class 900 - 2500			
		A216 WCB	A217 WC6	A351 CF8M	A217 C12A	A105	A182 F22	A182 F91	A182 F316
1	Body	A216 WCB	A217 WC6	A351 CF8M	A217 C12A	A105	A182 F22	A182 F91	A182 F316
2	End flange	A216 WCB	A217 WC6	A351 CF8M	A217 C12A	A105	A182 F22	A182 F91	A182 F316
3	Seat	F6a. Cl. 3 / HF				F6a. Cl. 3 / HF	Gr.660 / HF	Inconel 718 / HF	
4	Ball	F6a. Cl. 3 / HF				F6a. Cl. 3 / HF	Gr.660 / HF	Inconel 718 / HF	
5	Springs	17-4PH				Inconel 718			
6	Upper stem	F6a. Cl. 3		Gr. 660		F6a. Cl. 3	Gr.660	Inconel 718	
7	Gasket	Graphite+316 SS / 304 SS				Graphite+316 SS / 304 SS			
8	Bolt	A193 B8M				A193 B8M			
9	Nut	A194 8M				A194 8M			
10	Gland	410 SS				410 SS			
11	Packing	Graphite + 316 SS				Graphite + 316 SS			
12	Bonnet	A216 WCB	A217 WC6	A351 CF8M	A217 C12A	A216 WCB	A217 WC6	A351 CF8M	A217 C12A
13	Thrust collar	410 SS				410 SS			
14	Seat-seal	Graphite + 316 SS				Graphite + 316 SS			
15	Lower stem	F6a. Cl. 3		Gr. 660		F6a. Cl. 3	Gr.660	Inconel 718	

## Dimensions

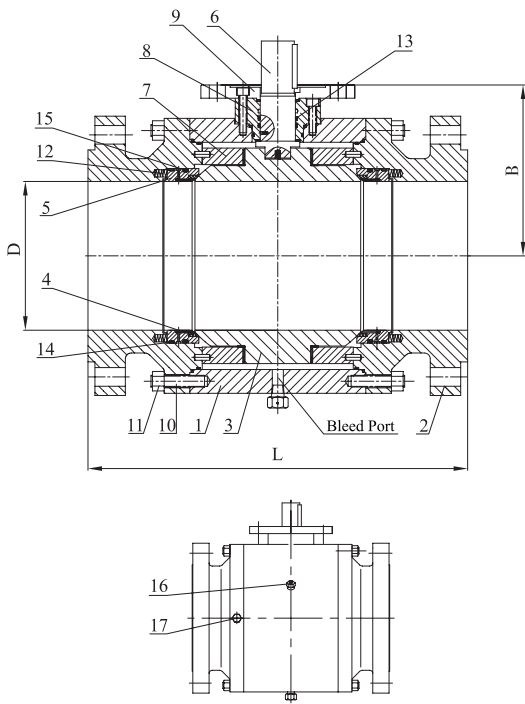
### ANSI CLASS 150 - 600

NPS(in)	D(in)			B (in)			C (in)			L(in)			Weight (lb)		
	150	300	600	150	300	600	150	300	600	150	300	600	150	300	600
2	2.00	2.00	2.00	7.20	7.20	7.20	6.00	6.50	6.50	7.50	8.50	11.50	15	35	80
3	3.00	3.00	3.00	9.50	9.50	9.50	7.50	8.25	8.25	9.00	11.12	14.00	52	120	150
4	4.00	4.00	4.00	9.50	9.50	9.50	9.00	10.00	10.75	9.00	12.00	17.00	180	290	360
6	6.00	6.00	6.00	10.75	10.75	10.75	11.00	12.50	14.00	15.50	16.75	22.00	425	480	760
8	8.00	8.00	8.00	14.00	14.00	14.00	13.50	15.00	16.50	18.00	19.75	26.00	725	825	1325
10	10.00	10.00	10.00	15.80	15.80	15.80	16.00	17.50	20.00	21.00	22.50	31.00	1050	1260	2185
12	12.00	12.00	12.00	18.90	18.90	18.90	19.00	20.50	22.00	24.00	25.50	33.00	1580	1875	3100
14	13.27	13.27	13.27	19.92	20.43	20.43	21.00	23.00	23.75	27.00	30.00	35.00	1960	2285	3950
16	15.28	15.28	15.28	24.49	25.12	25.12	23.50	25.50	27.00	30.00	33.00	39.00	2490	3100	4800
18	17.24	17.24	17.24	26.22	26.89	26.89	25.00	28.00	29.25	34.00	36.00	43.00	3460	3960	5600
20	19.25	19.25	19.25	28.74	29.45	29.45	27.50	30.50	32.00	36.00	39.00	47.00	4850	5100	6450
24	23.27	23.27	23.27	35.24	36.10	36.10	32.00	36.00	37.00	42.00	45.00	55.00	7200	7600	9600
28	27.00	27.00	27.00	36.80	37.72	37.72	36.50	40.80	42.25	49.00	53.00	61.00	12300	12900	14800

### ANSI CLASS 900 - 2500

NPS(in)	D(in)			B (in)			C (in)			L(in)			Weight (lb)		
	900	1500	2500	900	1500	2500	900	1500	2500	900	1500	2500	900	1500	2500
2	2.00	2.00	1.75	7.33	7.33	8.90	8.50	8.50	9.25	14.50	14.50	17.75	145	169	308
3	3.00	3.00	2.50	9.16	9.16	10.20	9.50	10.50	12.00	15.00	18.50	22.75	235	332	540
4	4.00	4.00	3.50	10.50	10.50	12.50	11.50	12.25	14.00	18.00	21.50	26.50	390	510	980
6	6.00	5.76	5.26	13.20	13.20	15.60	15.00	15.50	19.00	24.00	27.75	36.00	950	1200	2240
8	8.00	7.64	7.05	16.97	16.50	17.10	18.50	19.00	21.75	29.00	32.75	40.25	1500	2147	3280
10	10.00	9.50	8.78	17.44	17.30	18.50	21.50	23.00	26.50	33.00	39.00	50.00	2690	3177	4750
12	12.00	11.38	10.55	19.06	20.30	20.80	24.00	26.50	30.00	38.00	44.50	56.00	4125	4833	5528

# Three Piece Body Soft Seated Ball Valves—Trunnion Ball Design



## Materials

Item	Description	A216 WCB / A105	A351 CF8M / A182 F316	A352 LCB / A350 LF2
1	Body	A216 WCB / A105	A351 CF8M / A182 F316	A352 LCB / A350 LF2
2	End flange	A216 WCB / A105	A351 CF8M / A182 F316	A352 LCB / A350 LF2
3	Ball	A105+ ENP	A182 F316	A350 LF2+ ENP
4	Seat insert	PTFE/PEEK/Nylon		
5	Seat ring	A105+ ENP	A182 F316	A350 LF2+ ENP
6	Stem	A182 F6a+ENP	17-4PH	A182 F51
7	Trunnion support	A105+ ENP	A182 F316	A350 LF2+ ENP
8	Gland flange	A105+ ENP	A182 F316	A350 LF2+ ENP
9	Top flange	A105	A182 F316	A105
10	Double end Bolt	A193-B7	A193-B8	A193-B7
11	Nut	A194 2H	A194-8	A194-7
12	Spring	Inconel X-750		
13	O-ring	VITON	VITON	VITON
14	Seat seal ring	PTFE/PEEK/ Nylon	PTFE/PEEK/ Nylon	PTFE/PEEK/ Nylon
15	Washer	VITON	VITON	VITON
16	Vent valve	SS		
17	Seat Injection	SS		

Note: VOLK can offer VICTREX T-series polymers which perform excellently at temperature up to 572 °F

## Dimensions

### ANSI CLASS 150 - 600

NPS(in)	L (in)			D (in)			B (in)			Weight (lb)		
	150	300	600	150	300	600	150	300	600	150	300	600
2	7.00	8.50	11.50	2.00	2.00	2.00	7.00	7.00	7.12	66.00	66.00	70.40
3	8.00	11.12	14.00	3.00	3.00	3.00	8.25	8.25	8.50	121.00	132.00	143.00
4	9.00	12.00	17.00	4.00	4.00	4.00	9.25	9.25	9.50	176.00	220.00	275.00
6	15.50	15.88	22.00	6.00	6.00	6.00	20.88	20.88	21.25	440.00	462.00	583.00
8	18.00	19.75	26.00	8.00	8.00	8.00	24.62	24.62	25.00	638.00	704.00	1144.00
10	21.00	22.38	31.00	10.00	10.00	10.00	25.62	25.62	26.12	990.00	990.00	1716.00
12	24.00	25.50	33.00	12.00	12.00	12.00	30.75	30.75	31.12	1298.00	1298.00	2464.00
14	27.00	30.00	35.00	14.00	14.00	14.00	31.00	31.00	31.88	1804.00	1804.00	3432.00
16	30.00	33.00	39.00	16.00	16.00	16.00	36.25	36.25	36.38	3476.00	4114.00	5280.00
18	34.00	36.00	43.00	18.00	18.00	18.00	38.25	38.25	38.75	5368.00	6050.00	7480.00
20	36.00	39.00	47.00	20.00	20.00	20.00	43.38	43.38	44.50	5720.00	6534.00	8646.00
24	42.00	45.00	55.00	24.00	24.00	24.00	45.25	45.25	46.62	9240.00	10318.00	14564.00

### ANSI CLASS 900 - 2500

NPS(in)	L (in)			D (in)			B (in)			Weight (lb)		
	900	1500	2500	900	1500	2500	900	1500	2500	900	1500	2500
2	14.50	14.50	17.75	2.00	2.00	2.00	8.62	11.25	12.00	110.00	121.00	132.00
3	15.00	18.50	22.75	3.00	3.00	3.00	10.25	13.25	14.25	176.00	220.00	273.00
4	18.00	21.50	26.50	4.00	4.00	4.00	15.38	20.00	21.25	308.00	363.00	430.00
6	24.00	27.75	36.00	6.00	6.00	6.00	25.75	33.50	35.88	858.00	1298.00	1663.00
8	29.00	32.75	40.25	8.00	8.00	8.00	30.25	39.38	42.12	1540.00	2046.00	2435.00
10	33.00	39.00	50.00	10.00	10.00	10.00	31.75	41.12	44.00	2420.00	4180.00	5627.00
12	38.00	44.50	56.00	12.00	12.00	12.00	38.00	49.38	53.00	3850.00	5016.00	6320.00
14	40.50	49.50	-	14.00	14.00	-	38.50	50.00	-	5060.00	8668.00	-
16	44.50	54.50	-	16.00	16.00	-	45.00	58.50	-	7700.00	11946.00	-
18	48.00	-	-	18.00	-	-	47.00	-	-	10406.00	-	-
20	52.00	-	-	20.00	-	-	53.50	-	-	12188.00	-	-
24	61.00	-	-	24.00	-	-	56.00	-	-	21450.00	-	-



# Low Temperature and Cryogenic Ball Valves

VOLK low temperature and cryogenic ball valves are designed for operating in sub-zero temperatures down to -425 deg F for all LPG, LNG, CNG, etc., applications.

The valves are available in a wide range of materials, such as A350 LF2, A352 LCB, A352 LCC etc., to suit the temperature requirements.

The valves are specially designed with extended bonnets and upper stem packings so that the fluid temperature does not affect the stem packing or actuator seals.

All materials for low temperature and cryogenic applications undergo separate testing to ensure they conform to the material specifications.



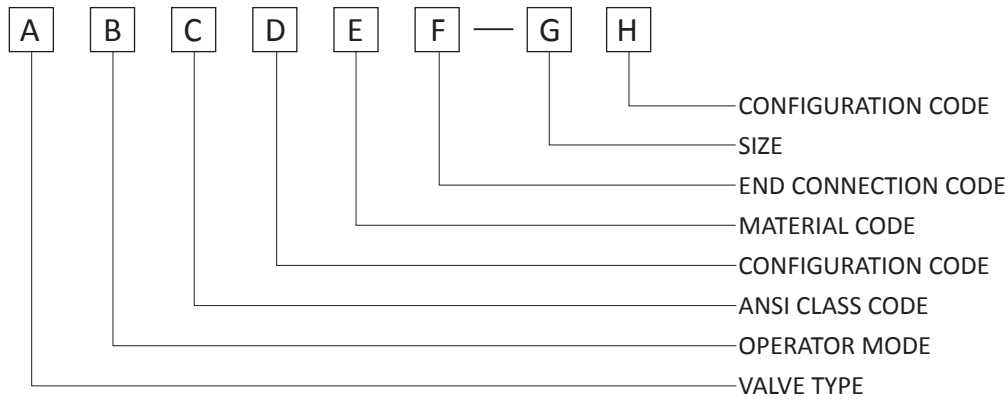
All VOLK low temperature and cryogenic valves are tested under typical cryogenic conditions to guarantee performance in their applications.

The following table identifies materials used along with their lowest working temperature.

Forging		Casting	
Body material	The lowest working temperature	Body material	The lowest working temperature
ASTM A350 LF2	-50.8 °F	ASTM A352 LCB	-50.8 °F
		ASTM A352 LCC	-50.8 °F
ASTM A350 LF5	-74.2 °F	ASTM A352 LC1	-74.2 °F
ASTM A350 LF9	-99.4 °F	ASTM A352 LC2	-99.4 °F
ASTM A350 LF3	-149.8 °F	ASTM A352 LC3	-149.8 °F
ASTM A182 F304	-425.2 °F	ASTM A351 CF8	-425.2 °F
ASTM A182 F316	-425.5 °F	ASTM A351 CF8M	-425.2 °F
ASTM A182 F304L	-425.2 °F	ASTM A351 CF3	-425.2 °F
ASTM A182 F316L	-425.2 °F	ASTM A351 CF3M	-425.2 °F



# How to order VOLK Gate, Globe and Check Valve



## A. VALVE TYPE

Ga	Gate Valve
Gl	Globe Valve
Ch	Check Valve

## Check Valve

A	Swing Type	C	Butterfly Type
B	Lift Type	D	Diaphragm Type

## B. OPERATOR MODE

L	LEVER	E	ELECTRIC
W	WORM GEARING	P	PNEUMATIC
Cy	CYLINDER GEAR-DRIVEN	H	HYDRAULIC
C	CONIC GEAR-DRIVEN	BS	BARE STEM

## E. MATERIAL CODE

01	A105	21	A216 WCB
02	A182 F11	22	A217 WC6
03	A182 F22	23	A217 WC9
04	A182 F91	24	A217 C12A
05	A182 F304	25	A351 CF8
06	A182 F316	26	A351 CF8M
07	A182 F304L	27	A351 CF3
08	A182 F316L	28	A351 CF3M
09	A350 LF2	29	A352 LCB
10	A182 F321	33	A995 4A
13	A182 F51	36	A995 6A
14	A182 F92	00	Special Material
15	WB36		

## C. ANSI CLASS CODE

1	CLASS 150	9	CLASS 1500
3	CLASS 300	0	CLASS 2500
6	CLASS 600	D	CLASS 3200
8	CLASS 800	A	CLASS 3500
7	CLASS 900	B	CLASS 4500

## D. CONFIGURATION CODE

### Gate Valve

A	Flexible Wedge
B	Single Rigidity Wedge
C	Double Rigidity Wedge
D	Parallel Single Rigidity Disc
E	Parallel Double Rigidity Disc

## F. END CONNECTION CODE

BW	BUTT WELD
SW	SOCKET WELD
RF	RAISED FACE
RJ	RING JOINT
TH	THREAD

### Globe Valve

A	Through	C	Straight-flow
B	Angle	D	Three Way

## G. SIZE

1/2", 3/4", 1", 1-1/2", 2".....48"

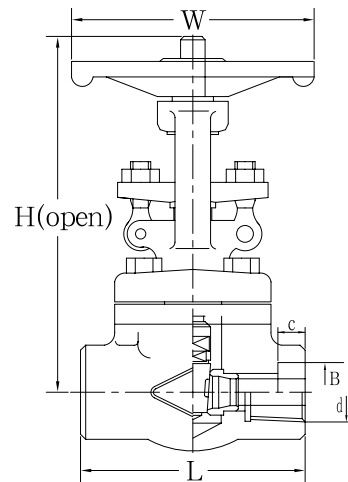
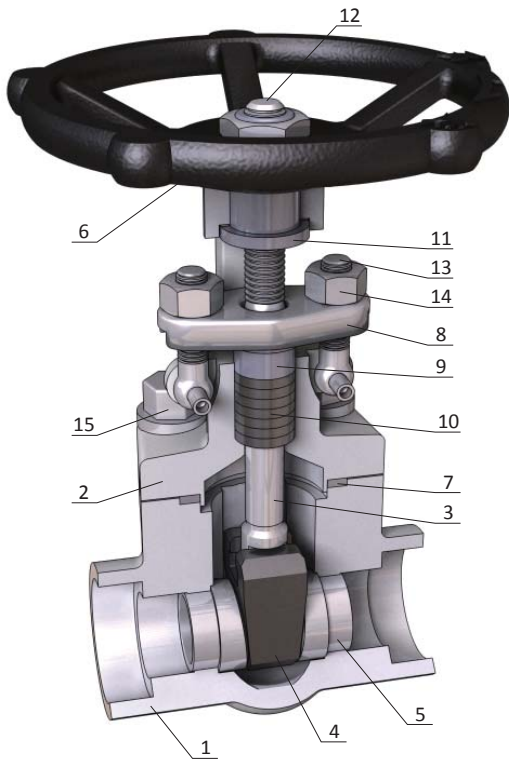
## H. CONFIGURATION CODE

P	Pressure Seal
B	Bolted Bonnet

## Design Features of Gate Valves

- Stem: Ensure seal performance and smooth operation.
- Gland bolt: Stud for easy repacking.
- Yoke: Two arm design for rigidity and accessibility.
- Graphite seal ring: Excellent sealing performance, even under thermal cycling.
- Hardfaced seat surface: Resistance to heat, corrosion and erosion.
- Flexible wedge: This compensates for distortion of the body seat caused by thermal cycling or bolt stress from flange connections. In addition, it provides a tight seal in low flow conditions and prevents galling and sticking in severe service operating conditions. The surface of the seat & the disc are overlaid with stellite for reliable operation in a high differential pressure condition.

## Forged Steel Bolted Bonnet Gate Valve



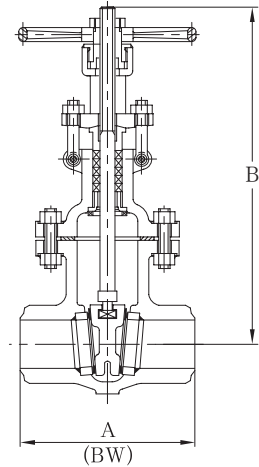
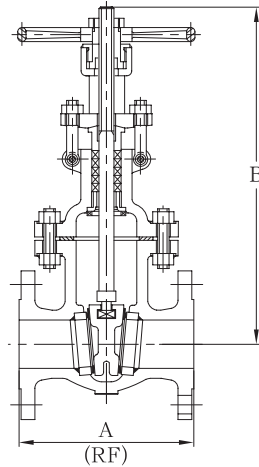
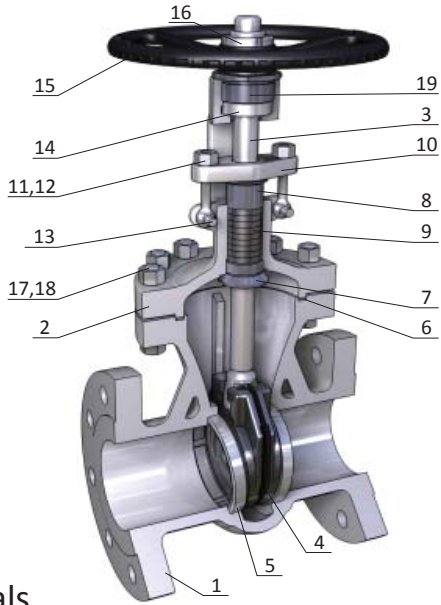
### Dimensions

SIZE(in)	H(in)	W(in)	L(in)	B(in)	C(in)	d(in)
1/2	6.34	3.94	3.11	0.87	0.37	1/2
3/4	6.34	3.94	3.62	1.09	0.49	3/4
1	7.72	4.92	4.37	1.35	0.49	1
1-1/2	9.60	6.30	4.76	1.94	0.49	1-1/2
2	11.26	7.09	5.51	2.43	0.63	2

## Materials

Item	Description	Materials										
		A105	A182-F11	A182-F22	A182-F304	A182-F304L	A182-F316	A182-F316L	A182-F51	A350-LF2	MONEL400	
1	Body	A105	A182-F11	A182-F22	A182-F304	A182-F304L	A182-F316	A182-F316L	A182-F51	A350-LF2	MONEL400	
2	Bonnet	A105	A182-F11	A182-F22	A182-F304	A182-F304L	A182-F316	A182-F316L	A182-F51	A350-LF2	MONEL400	
3	Stem	A182-F6a			A182-F304	A182-F304L	A182-F316	A182-F316L	A182-F51	A350-LF2	MONEL400	
4	Wedge	A182-F6a			A351-CF8	A182-F304L	A182-F316	A182-F316L	A182-F51	A350-LF2	MONEL400	
5	Seat	A182-F6a			A182-F304	A182-F304L	A182-F316	A182-F316L	A182-F51	A350-LF2	MONEL400	
6	Handwheel	A536										
7	Gasket	Graphite+304SS					Graphite+316SS					Graphite+K400
8	Gland Flange	A105				A182-F304						A182-F304
9	Gland	A276-410			A182-F304	A182-F316						MONEL400
10	Gland Packing	Graphite with Inconel Wire										Flexible Graphite
11	Stem Nut	A439-D-2										A276-410
12	Handwheel Nut	A194-2H							A194-8			MONEL400
13	Gland Bolt	A193-B7	A193-B16		A320-B8		A193-B8M		A193-B8M			A193-B8M
14	Gland Bolt Nut	A194-2H	A194-4		A194-8/A194-8M		A194-8M		A194-8M		A194-8M	
15	Bonnet Bolt	A193-B7	A193-B16		A320-B8/A193-B8M		A193-B8M		A193-B8		A193-B8M	
Trim Surface		HF										

# Cast Steel Bolted Bonnet Gate Valve

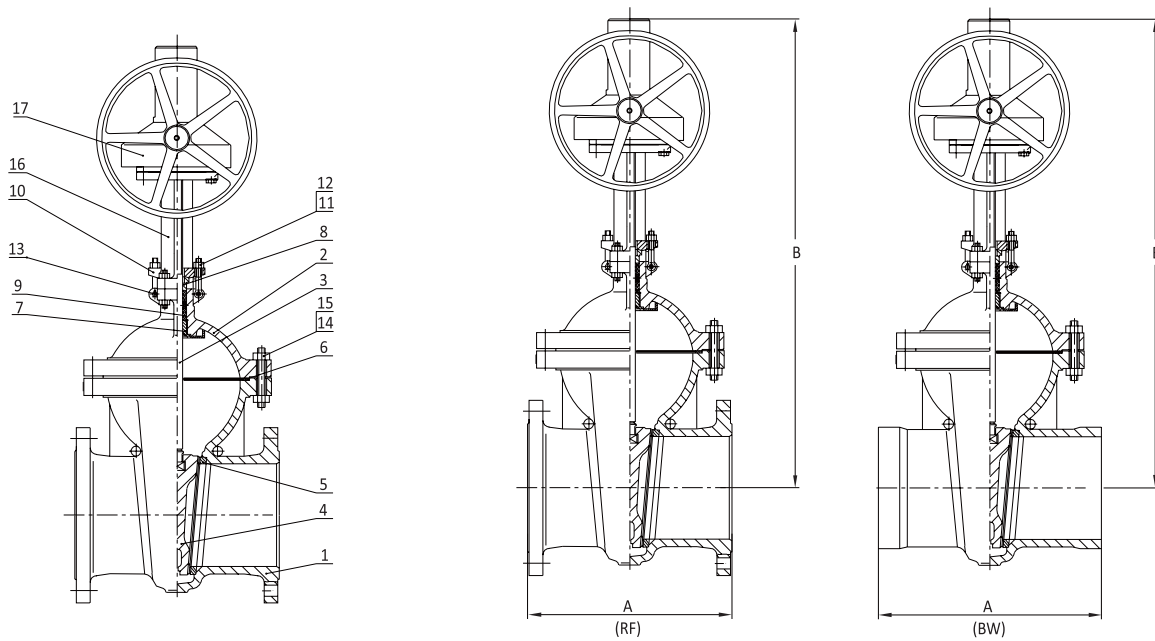


## Materials

Item	Description	Qty.	Materials										
			A216 WCB	A217 WC6	A217 WC9	A217 C12A	A351 CF8	A351 CF8M	A352 LCB	A995 4A	A995 6A	A494 Gr M35-1	
1	Body	1	A216-WCB	A217-WC6	A217-WC9	A217-C12A	A351-CF8	A351-CF8M	A352-LCB	A995-4A	A995-6A	A494-Gr M35-1	
2	Bonnet	1	A216-WCB	A217-WC6	A217-WC9	A217-C12A	A351-CF8	A351-CF8M	A352-LCB	A995-4A	A995-6A	A494-Gr M35-1	
3	Stem	1	A182-F6a			A182-F91	A182-F304	A182-F316	A182-F316	A182-F51	A182-F53	MONEL400	
4	Wedge	1	A216-WCB	A217-WC6	A217-WC9	A217-C12A	A351-CF8	A351-CF8M	A352-LCB	A182-F51 A995-4A	A182-F53 A995-6A	A494-Gr M35-1	
5	Seat	2	A105 A216-WCB	A182-F11 A217-WC6	A182-F22 A217-WC9	A182-F91 A217-C12A	A182-F304 A351-CF8	A182-F316 A351-CF8M	A352-LCB	A182-F51 A995-4A	A182-F53 A995-6A	A494-Gr M35-1	
6	Gasket	1	Graphite+304 Spiral Wound					Graphite+316 Spiral Wound					Spiral Wounded Garphite+K400
7	Bonnet Bushing	1	A276-410				A182-F304	A182-F316	A182-F304	A182-F51	A182-F53	A494-Gr M35-1	
8	Gland	1	A276-410				A182-F304			A182-F51	A182-F53	A494-Gr M35-1	
9	Gland Packing	1 set	Graphite with Inconel Wire							Flexible graphite +Garbon fiber		Flexible graphite +Garbon fiber	
10	Gland Flange	1	A105				A351-CF8 / A182-F304				A182-F304	A494-Gr M35-1	
11	Gland Bolt	2	A193-B7				A193-B8 / A193-B8M / A320-B8				A193-B8M	A193-B8M	
12	Gland Bolt Nut	2	A194-2H	A194-7			A194-8			A194-8M	A194-8M		
13	Bolt Pin	2	A276-410				A182-F304				A276-304	A182-F304	
14	Stem Bushing	1	A439-D-2										
15	Handwheel	1	A536								A536-60	A536-60	
16	Handwheel Nut	1	A194-2H								A276-304	A276-304	
17	Bonnet Bolt Nut	1 set	A194-2H	A194-7 / A194-8M			A194-8M		A194-4	A194-8M	A194-8M	A194-8M	
18	Bonnet Bolt	1 set	A193-B7	A193-B7 / A193-B16			A193-B8M		A320-L7	A193-B8M	A193-B8M	A193-B8M	
19	Stem Nut	1	A105							ALBC		COPPER ALLOY	
Trim Surface			HF										

## Dimensions

SIZE(in)	ANSI Class 150			ANSI Class 300		ANSI Class 600		
	A(in)		B(in) (open)	A(in)	B(in) (open)	A(in)		B(in) (open)
	BW	RF		BW / RF		BW	RF	
2	8.50	7.00	15.25	8.50	15.25	11.50	7.00	15.38
2-1/2	9.50	7.50	16.62	9.50	16.62	13.00	8.50	18.75
3	11.12	8.00	18.88	11.12	20.00	14.00	10.00	21.62
4	12.00	9.00	22.13	12.00	23.38	17.00	12.00	25.87
6	15.88	10.50	31.00	15.88	32.25	22.00	18.00	36.37
8	16.50	11.50	37.62	16.50	40.81	26.00	23.00	43.87
10	18.00	13.00	46.88	18.00	49.12	31.00	28.00	49.00
12	19.75	14.00	56.75	19.75	59.38	33.00	32.00	60.87
14	22.50	15.00	61.38	30.00	61.38	35.00	35.00	72.50
16	24.00	16.00	68.75	33.00	68.75	39.00	39.00	82.25
18	26.00	17.00	73.25	36.00	77.88	43.00	43.00	87.06
20	28.00	18.00	82.88	39.00	86.50	47.00	47.00	102.50
22	30.00	-	-	43.00	101.25	51.00	50.00	114.75
24	32.00	-	-	45.00	123.81	55.00	55.00	122.50



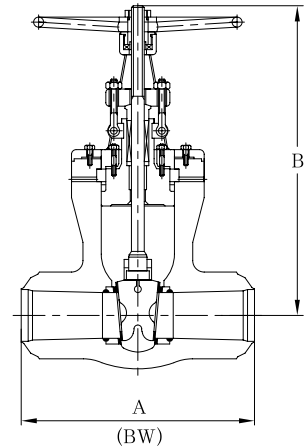
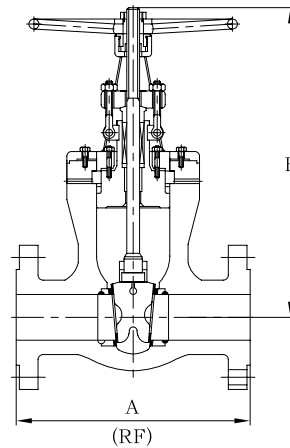
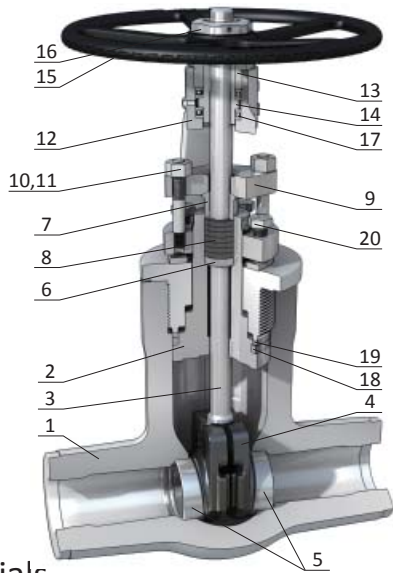
## Materials

Item	Description	Qty.	Materials								
			A216	A217			A351		A352	A995	
			WCB	WC6	WC9	C12A	CF8	CF8M	LCB	4A	
1	Body	1	A216-WCB	A217-WC6	A217-WC9	A217-C12A	A351-CF8	A351-CF8M	A352-LCB	A995-4A	
2	Bonnet	1	A216-WCB	A217-WC6	A217-WC9	A217-C12A	A351-CF8	A351-CF8M	A352-LCB	A995-4A	
3	Stem	1	A182-F6a			A182-F91	A182-F304	A182-F316	A182-F316	A182-F51	
4	Wedge	1	A216-WCB	A217-WC6	A217-WC9	A217-C12A	A351-CF8	A351-CF8M	A352-LCB	A182-F51 / A995-4A	
5	Seat	2	A105 A216-WCB	A182-F11 A217-WC6	A182-F22 A217-WC9	A182-F91 A217-C12A	A182-F304 A351-CF8	A182-F316 A351-CF8M	A352-LCB	A182-F51 A995-4A	
6	Gasket	1	Graphite+304 Spiral Wound					Graphite+316 Spiral Wound			
7	Bonnet Bushing	1	A276-410				A182-F304	A182-F316	A182-F304	A182-F51	
8	Gland	1	A276-410				A182-F304			A182-F51	
9	Gland Packing	1 set	Graphite with Inconel Wire								
10	Gland Flange	1	A105				A351-CF8 / A182-F304				
11	Gland Bolt	2	A193-B7				A193-B8 / A193-B8M / A320-B8				
12	Gland Bolt Nut	2	A194-2H	A194-7			A194-8 / A194-8M				
13	Bolt Pin	2	A276-410				A182-F304				
14	Bonnet Bolt Nut	1 set	A194-2H	A194-7 / A194-8M			A194-8M		A194-4	A194-8M	
15	Bonnet Bolt	1 set	A193-B7	A193-B7 / A193-B16			A193-B8M		A320-L7	A193-B8M	
16	Yoke	1	A216-WCB	A217-WC6	A217-WC9	A217-C12A	A351-CF8	A351-CF8M	A352-LCB	A995-4A	
17	Actuator	1									
Trim Surface			HF								

## Dimensions

SIZE(in)	ANSI Class 150			ANSI Class 300		ANSI Class 600		
	A(in)		B(in) (open)	A(in)	B(in) (open)	A(in)		B(in) (open)
	BW	RF		BW / RF		BW	RF	
26	34.00	22.00		49.00		57.00	57.00	76.61
28	36.00	24.00	119.30	53.00	132.00	61.00	61.00	123.50
30	36.00	24.00	130.60	55.00	139.37	65.00	65.00	129.00
32	38.00	26.00	137.28	60.00	145.50		70.00	
36	40.00	28.00	150.60	68.00	157.00		82.00	
40	42.00	30.00	170.00	77.00	175.00			
42	45.00	32.00	188.26	80.00	185.00			
48	54.00	33.30	220.50	117.56	214.00			

# Cast Steel Pressure Seal Gate Valve



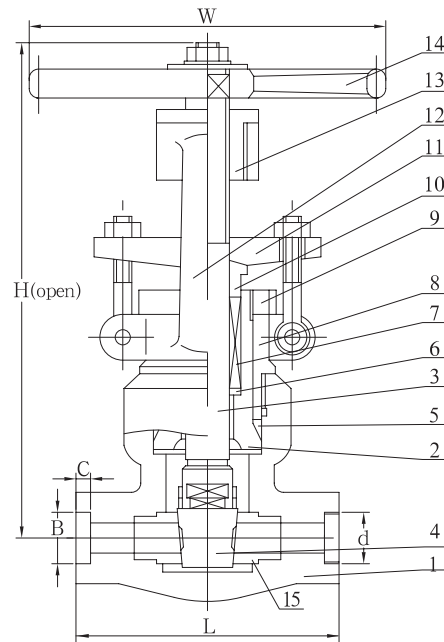
## Materials

Item	Description	Qty.	Materials						
			A216 WCB	A217 WC6	A217 WC9	A217-C12A	A351 CF8	A351-CF8M	A352 LCB
1	Body	1	A216-WCB	A217-WC6	A217-WC9	A217-C12A	A351-CF8	A351-CF8M	A352-LCB
2	Bonnet	1	A105 A216-WCB	A182-F11 A217-WC6	A182-F22 A217-WC9	A182-F91 A217-C12A	A182-F304 A351-CF8	A182-F316 A351-CF8M	A352-LCB
3	Stem	1	A182-F6a			A182-F91	A182-F304	A182-F316	A182-F316
4	Wedge	1	A216-WCB	A217-WC6	A217-WC9	A217-C12A	A351-CF8	A351-CF8M	A352-LCB
5	Seat	2	A105 A216-WCB	A182-F11 A217-WC6	A182-F22 A217-WC9	A182-F91 A217-C12A	A182-F304 A351-CF8	A182-F316 A351-CF8M	A352-LCB
6	Washer	1	A276-410				A182-F304	A182-F316	A182-F304
7	Gland	1	A276-410				A182-F304		
8	Gland Packing	1 set	Graphite with Inconel Wire						
9	Gland Flange	1	A105				A351-CF8/A182-F304		A352-LCB
10	Gland Bolt	2	A193-B7						
11	Gland Bolt Nut	2	A194-2H						
12	Yoke	1	A216-WCB				A351-CF8		A352-LCB
13	Lock Nut	1	A108-1045						
14	Stem Nut	1	A439-D-2						
15	Handwheel	1	A536						
16	Handwheel Nut	1	A194-2H						
17	Thrust Bearing	2 sets	Steel						
18	Seal Ring	1	Graphite with Inconel Wire						
19	Spacer Ring	2	A276-410				A182-F304	A182-F316	A182-F304
20	Clamp Bolt	2	A193-B7				A193-B8		A320-L7
Trim Surface			HF						

## Dimensions

SIZE(in)	ANSI Class 900			ANSI Class 1500			ANSI Class 2500		
	A(in)		B(in) (open)	A(in)		B(in) (open)	A(in)		B(in) (open)
	BW	RF		BW	RF		BW	RF	
2	8.50	14.50	15.63	8.50	14.50	15.63	11.00	17.75	15.44
2-1/2	10.00	16.50	15.63	10.00	16.50	15.63	13.00	20.00	24.69
3	12.00	15.00	25.00	12.00	18.50	25.00	14.50	22.75	24.69
4	14.00	18.00	26.63	16.00	21.50	26.63	18.00	26.50	26.81
6	20.00	24.00	42.63	22.00	27.75	42.63	24.00	36.00	41.00
8	26.00	29.00	47.13	28.00	32.75	47.13	30.00	40.25	48.13
10	31.00	33.00	53.81	34.00	39.00	53.81	36.00	50.00	52.50
12	36.00	38.00	66.19	39.00	44.50	66.19	41.00	56.00	61.25
14	39.00	40.50	66.31	42.00	49.50	66.31	44.00		61.62
16	43.00	44.50	84.56	47.00	54.50	78.88	49.00		74.31
18	43.00	48.00	86.44	47.00	60.50	89.13	55.00		85.75
20	47.00	52.00	95.56	58.00	65.50	94.69	60.00		89.18
22	-		-	-		-	61.02		93.30

# Forged Steel Pressure Seal Gate Valve



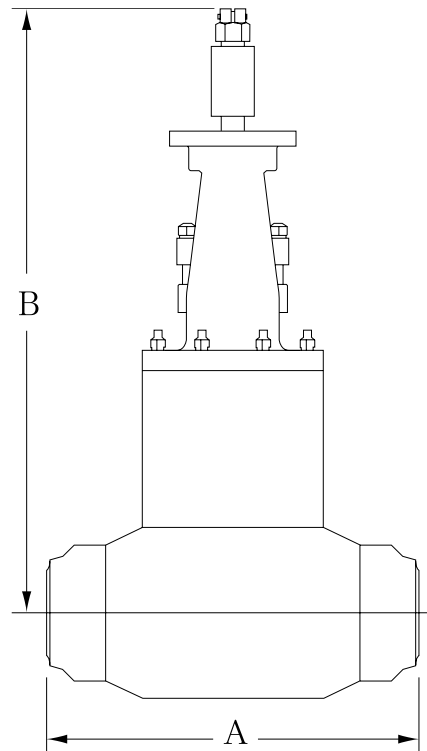
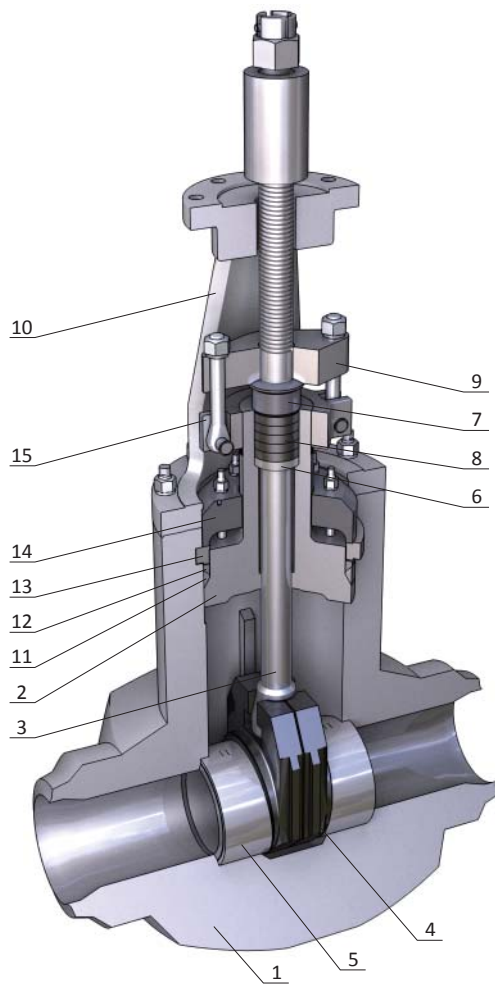
## Materials

Item	Description	Qty.	Materials								
			A105	A182-F11	A182-F22	A182-F304	A182-F304L	A182-F316	A182-F316L	A182-F51	A350-LF2
1	Body	1	A105	A182-F11	A182-F22	A182-F304	A182-F304L	A182-F316	A182-F316L	A182-F51	A350-LF2
2	Bonnet	1	A105	A182-F11	A182-F22	A182-F304	A182-F304L	A182-F316	A182-F316L	A182-F51	A350-LF2
3	Stem	1	A182-F6a			A182-F316	A182-F316	A182-F316	A182-F316L	A182-F51	A182-F304
4	Wedge	1	A105	A182-F11	A182-F22	A182-F304	A182-F304L	A182-F316	A182-F316L	A182-F51	A350-LF2
5	Seal Ring	1	Graphite with Inconel Wire / Soft Steel								
6	Washer	1	A276-410			A182-F304	A182-F316		A182-F51	A182-LF2	
7	Gland Packing	1set	Graphite with Inconel Wire								
8	Gland Collar	1	A105	A182-F11	A182-F22	A182-F304	A182-F316		A182-F51	A350-LF2	
9	Bolt Nut	1	A194-2H			A194-8 / A194-8M					
10	Gland	1	A276-410			A182-F304	A182-F316			A182-F304	
11	Gland Flange	1	A105			A182-F304	A182-F316				
12	Yoke	1	A105			A182-F304					
13	Stem Nut	1	A439-D-2								
14	Handwheel	1	A536								
15	Seat	1	A182-F6a			A182-F304	A182-F304L	A182-F316	A182-F316L	A182-F51	A350-LF2
Trim Surface			HF								

## Dimensions

CLASS	SIZE(in)	H(in)	W(in)	L(in)	B(in)	C(in)	d(in)
900/1500	1/2	12.68	7.09	5.51	0.87	0.37	1/2
	3/4	12.68	7.09	5.51	1.09	0.49	3/4
	1	12.68	7.09	5.51	1.35	0.49	1
	1-1/2	16.30	7.87	7.01	1.94	0.49	1-1/2
	2	20.00	11.81	8.50	2.43	0.63	2
2500	1/2	13.78	9.06	0.39	0.87	0.37	1/2
	3/4	13.78	9.06	5.91	1.09	0.49	3/4
	1	13.78	9.06	5.91	1.35	0.49	1
	1-1/2	22.83	16.14	10.24	1.94	0.49	1-1/2
	2	22.83	16.14	10.24	2.43	0.63	2

# One Piece Body Forged Steel Pressure Seal Gate Valve



## Materials

Item	Description	Qty.	Materials		
1	Body	1	A182-F22	A182-F91	WB36
2	Bonnet	1	A182-F22	A182-F91	WB36
3	Stem	1	SUH630		
4	Wedge	1	A182-F22	A182-F91	WB36
5	Seat	2	A182-F22	A182-F91	WB36
6	Packing washer	1	A182-F22	A182-F91	WB36
7	Gland	1	A182-F22	A182-F91	WB36
8	Gland Packing	1 set	Reinforced Flexible Graphite		
9	Gland Flange	1	A217-WC9		
10	Yoke	1	A217-WC9		
11	Seal Ring	1	Reinforced Flexible Graphite		
12	Spacer Ring	1	A182-F22	A182-F91	WB36
13	Retaining Ring	1	A182-F22	A182-F91	WB36
14	Bonnet Retainer	1	A182-F22	A182-F91	WB36
15	Gland Clamp Ring	1	A217-WC9		

## Dimensions

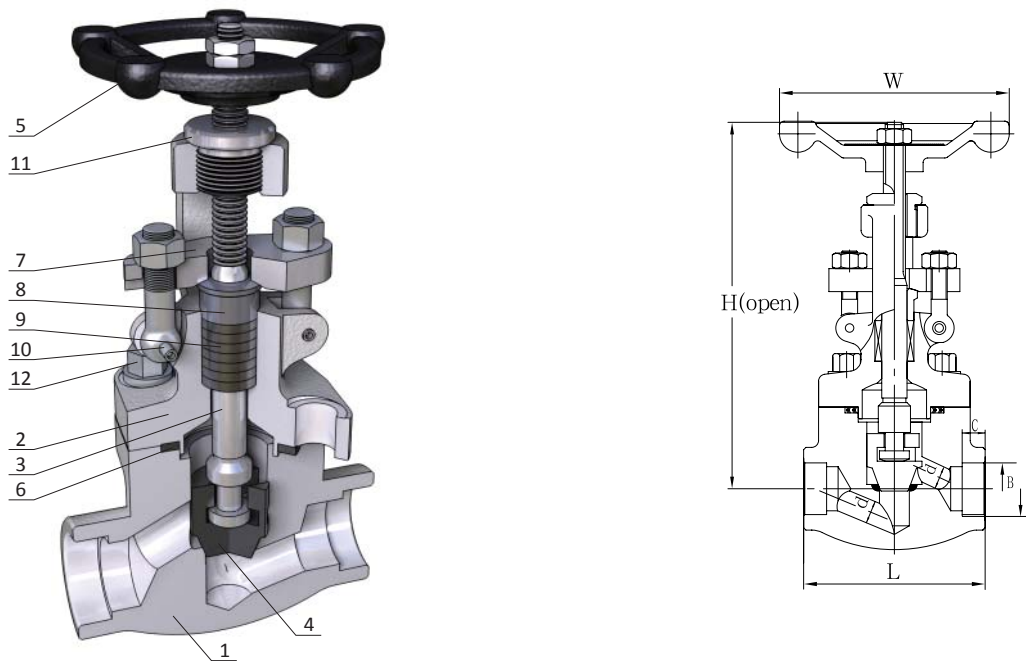
SIZE(in)	ANSI Class 3500	
	A(in)	B(in)
	BW	
2-1/2	15.00	25.80
3	17.00	28.35
4	21.00	32.00
5	24.00	38.65
6	27.00	44.00
8	33.00	53.90
10	39.00	64.70
12	44.00	75.00



## Design Features of Globe Valves

- Stem: Smooth Finish ensures seal and smooth operation; upper stem threaded by machine for toughness and increased durability.
- Seat ring: Renewable and easy-to-replace seat ring is seal welded to minimize distortion from body stress. The hardfaced surface ensures long service life and better resistance to corrosion and erosion.
- Bonnet with cooling chamber: Increases the packing life and sealability by maintaining packing at normal temperature.
- Graphite seal ring: Excellent sealing performance, even under thermal cycling.

## Forged Steel Bolted Bonnet Globe Valve



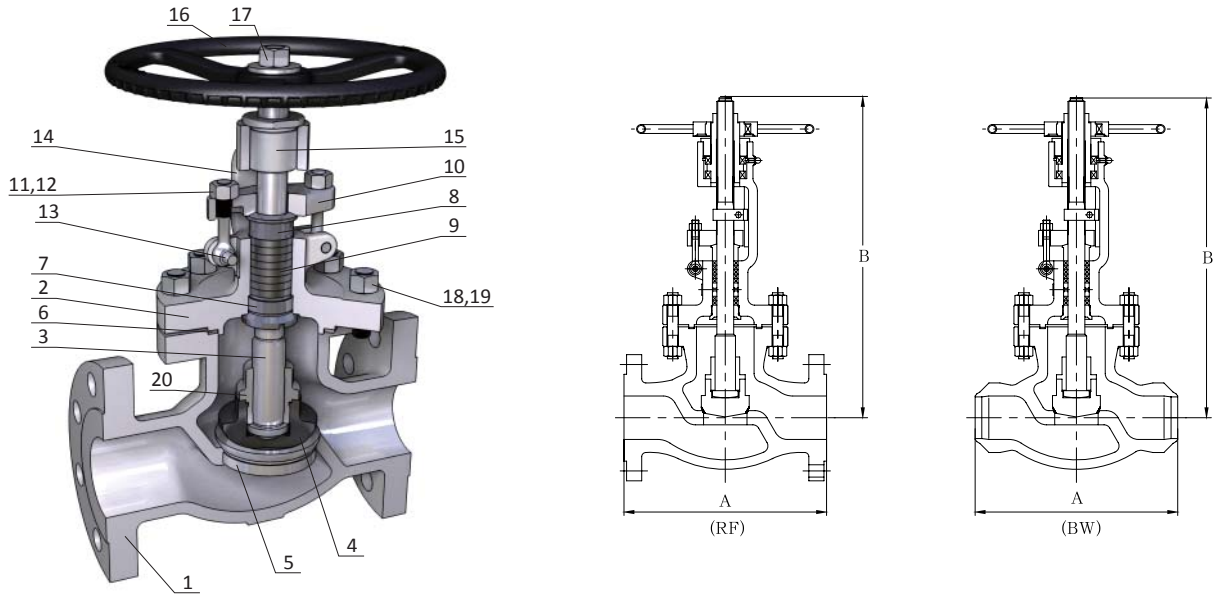
### Materials

Item	Description	Materials									
		A105	A182-F11	A182-F22	A182-F304	A182-F304L	A182-F316	A182-F316L	A182-F51	A350-LF2	MONEL400
1	Body	A105	A182-F11	A182-F22	A182-F304	A182-F304L	A182-F316	A182-F316L	A182-F51	A350-LF2	MONEL400
2	Bonnet	A105	A182-F11	A182-F22	A182-F304	A182-F304L	A182-F316	A182-F316L	A182-F51	A350-LF2	MONEL400
3	Stem	A182-F6a		A182-F304	A182-F304L	A182-F316	A182-F316L	A182-F51	A182-F304	MONEL400	
4	Disc	A182-F6a		A182-F304	A182-F304L	A182-F316	A182-F316L	A182-F51	A182-F304	MONEL400	
5	Handwheel	A536									A197
6	Gasket	Graphite+304 Spiral wound					Graphite+316 Spiral wound				Graphite+K400
7	Gland Flange	A105			A182-F304						A182-F304
8	Gland	A276-410		A182-F304	A182-F316						MONEL400
9	Gland Packing	Graphite with Inconel Wire									Flexible Graphite
10	Gland Bolt	A193-B7		A193-B8		A193-B8M			A320-B8	A193-B8M	
11	Stem Nut	A439-D-2									A276-410
12	Bonnet Bolt	A193-B7	A193-B16	A193-B8 / A193-B8M		A193-B8M			A193-B8	A193-B8M	
Trim Surface		HF									

### Dimensions

SIZE(in)	H(in)	L(in)	W(in)	B(in)	c(in)	d(in)
1/2	6.10	3.11	3.74	0.87	0.37	1/2
3/4	6.10	3.62	3.74	1.09	0.49	3/4
1	7.76	4.37	4.33	1.35	0.49	1
1-1/2	10.80	5.98	5.51	1.91	0.49	1-1/2
2	11.80	6.77	6.69	2.43	0.63	2
2-1/2	13.43	8.66	7.87	2.93	0.63	2-1/2

# Cast Steel Bolted Bonnet Globe Valve



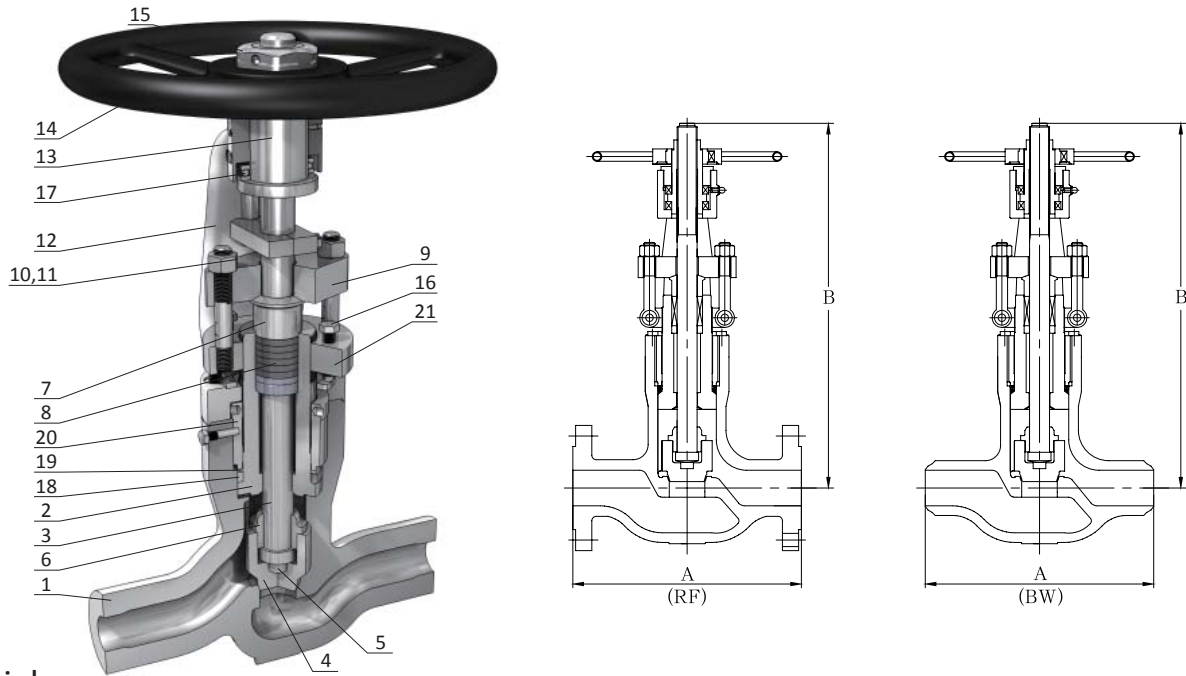
## Materials

Item	Description	Qty.	Materials										
			A216		A217		A351		A352	A995		A494	
			WCB	WC6	WC9	C12A	CF8	CF8M	LCB	4A	6A	Gr M35-1	
1	Body	1	A216-WCB	A217-WC6	A217-WC9	A217-C12A	A351-CF8	A351-CF8M	A352-LCB	A995-4A	A995-6A	A494-Gr M35-1	
2	Bonnet	1	A216-WCB	A217-WC6	A217-WC9	A217-C12A	A351-CF8	A351-CF8M	A352-LCB	A995-4A	A995-6A	A494-Gr M35-1	
3	Stem	1	A182-F6a			A182-F91	A182-F304	A182-F316	A182-F304	A182-F51	A182-F53	MONEL400	
4	Disc	1	A105 A216-WCB	A182-F11 A217-WC6	A182-F22 A217-WC9	A182-F91 A217-C12A	A182-F304 A315-CF8	A182-F316 A351-CF8M	A182-F304 A352-LCB	A182-F51 A995-4A	A182-F53 A995-6A	A494-Gr M35-1	
5	Seat	2	A105 A216-WCB	A182-F11 A217-WC6	A182-F22 A217-WC9	A182-F91 A217-C12A	A182-F304 A315-CF8	A182-F316 A351-CF8M	A182-F304 A352-LCB	A182-F51 A995-4A	A182-F53 A995-6A	A494-Gr M35-1	
6	Gasket	1	Graphite+304 Spiral Wound					Graphite+316 Spiral Wound					Spiral Wounded Graphite+K400
7	Bonnet Bushing	1	A276-410				A182-F304	A182-F316	A182-F304	A182-F51	A182-F53	A494-Gr M35-1	
8	Gland	1	A276-410				A182-F304	A182-F316	A182-F304	A182-F51	A182-F53	A494-Gr M35-1	
9	Gland Packing	1 set	Graphite with Inconel Wire								Flexible graphite +Carbon fiber	Flexible graphite +Carbon fiber	
10	Gland Flange	1	A105			A182-F304			A182-F316	A182-F304	A494-Gr M35-1		
11	Gland Bolt	2	A193-B7			A193-B8 / A193-B8M / A320-B8				A193-B8M	A193-B8M		
12	Gland Bolt Nut	2	A194-2H			A194-8 / A194-8M				A194-8M	A194-8M		
13	Bolt Pin	2	A276-410				A182-F316				A276-304	A182-F304	
14	Yoke	1	A216-WCB			A351-CF8		A352-LCB	A351-CF8	A494-Gr M35-1			
15	Stem Nut	1	A439-D-2								ALBC	COPPER ALLOY	
16	Handwheel	1	A536								A536-60	A536-60	
17	Handwheel Nut	1	A194-2H								A276-304	A276-304	
18	Bonnet Bolt Nut	1 set	A194-2H	A194-7 / A194-8M			A194-8		A194-4	A194-8M	A194-8M	A194-8M	
19	Bonnet Bolt	1 set	A193-B7	A193-B16			A193-B8		A320-L7	A193-B8M	A193-B8M	A193-B8M	
20	Disc Nut	1	A276-410			A182-F316			A182-F51	A182-F53	A182-F53		
Trim Surface			HF										

## Dimensions

SIZE(in)	ANSI Class 150		ANSI Class 300		ANSI Class 600	
	A(in)	B(in)	A(in)	B(in)	A(in)	B(in)
	BW/RF	(open)	BW/RF	(open)	BW/RF	(open)
2	8.00	15.00	10.50	15.00	11.50	15.00
2-1/2	8.50	15.44	11.50	15.44	13.00	17.37
3	9.50	16.88	12.50	16.88	14.00	19.37
4	11.50	19.31	14.00	19.31	17.00	23.00
6	16.00	23.56	17.50	23.56	22.00	31.50
8	19.50	25.75	22.00	35.88	26.00	42.50
10	24.50	35.13	24.50	39.81	31.00	56.06
12	27.50	40.87	19.75	44.06	33.00	64.84

# Cast Steel Pressure Seal Globe Valve



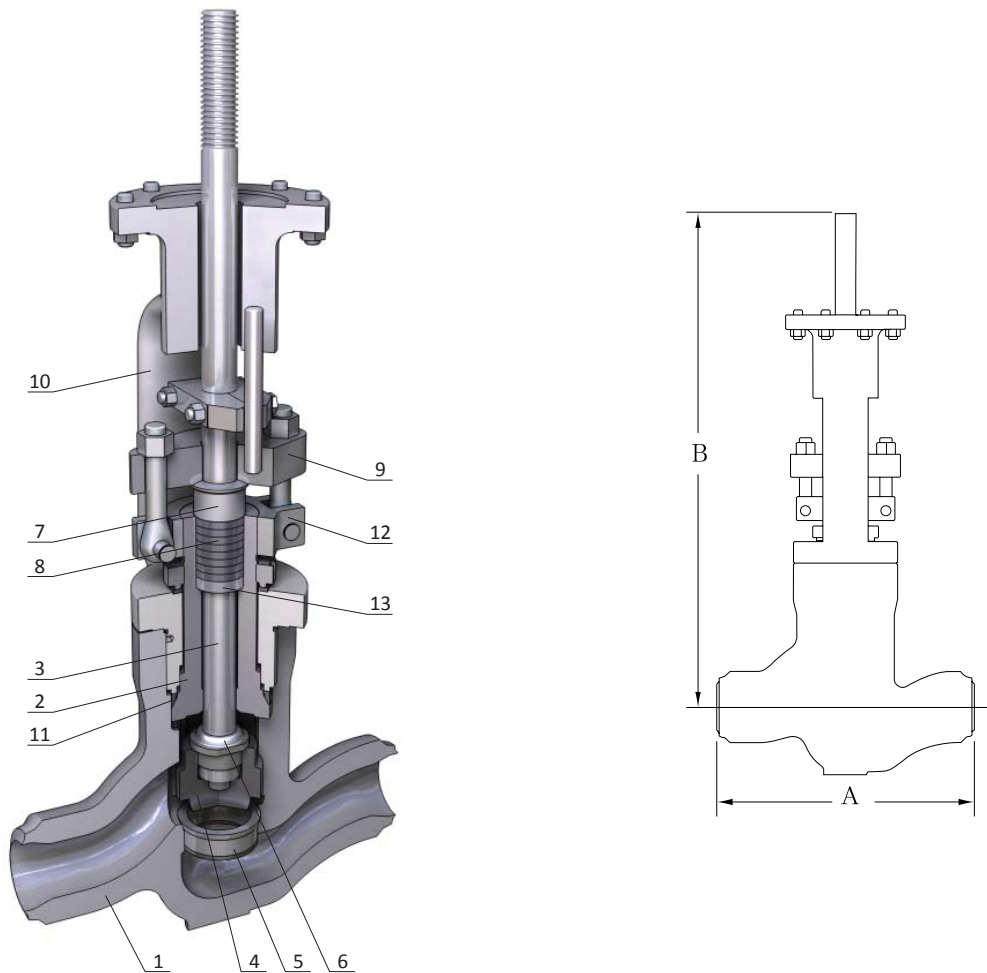
## Materials

Item	Description	Qty.	Materials						
			A216	A217			A351		A352
			WCB	WC6	WC9	C12A	CF8	CF8M	LCB
1	Body	1	A216-WCB	A217-WC6	A217-WC9	A217-C12A	A351-CF8	A351-CF8M	A352-LCB
2	Bonnet	1	A105 A216-WCB	A182-F11 A217-WC6	A182-F22 A217-WC9	A182-F91 A217-C12A	A182-F304 A351-CF8	A182-F316 A351-CF8M	A352-LCB
3	Stem	1	A182-F6a			A182-F91	A182-F304	A182-F316	A182-F304
4	Disc	1	A105 A216-WCB	A182-F11 A217-WC6	A182-F22 A217-WC9	A182-F91 A217-C12A	A182-F304 A351-CF8	A182-F316 A351-CF8M	A352-LCB
5	Disc washer	2	A105	A182-F11	A182-F22	A182-F91	A182-F304	A182-F316	A182-F304
6	Disc Nut	1	A276-410				A182-F304	A182-F316	A182-F304
7	Gland	1	A276-410				A182-F304	A182-F316	A182-F304
8	Gland Packing	1 set	Graphite with Inconel Wire						
9	Gland Flange	1	A105				A182-F304		A352-LCB
10	Gland Bolt	2	A193-B7				A193-B8 / A193-B8M / A320-B8		
11	Gland Bolt Nut	2	A194-2H				A194-8 / A194-8M		
12	Yoke	1	A216-WCB				A351-CF8		A352-LCB
13	Stem Nut	1	A439-D-2						
14	Handwheel	1	A536						
15	Handwheel Nut	1	A194-2H						
16	Yoke Bolt	1 set	A193-B7				A193-B8 / A193-B8M / A320-B8		
17	Thrust Bearing	1 set	Steel						
18	Seal Ring	1	Graphite with Inconel Wire						
19	Spacer Ring	1 set	A276-410				A182-F304	A182-F316	A182-F304
20	Bonnet Retainer	1	A105 / A216-WCB				A182-F304 / A351-CF8		A352-LCB
21	Gland Clamp Ring	1 set	A216-WCB				A182-F304 / A351-CF8		A352-LCB
Trim Surface			HF						

## Dimensions

SIZE(in)	ANSI Class 900			ANSI Class 1500			ANSI Class 2500		
	A(in)		B(in) (open)	A(in)		B(in) (open)	A(in)		B(in) (open)
	BW	RF		BW	RF		BW	RF	
2	8.50	14.50	17.13	8.50	14.50	17.13	11.00	17.75	23.69
2-1/2	10.00	16.50	17.13	10.00	16.50	17.13	13.00	20.00	23.44
3	12.00	15.00	23.50	12.00	18.50	23.50	14.50	22.75	23.44
4	14.00	18.00	25.13	16.00	21.50	25.13	18.00	26.50	25.00
6	20.00	24.00	39.80	22.00	27.75	39.80	24.00	36.00	39.78
8	26.00	29.00	42.88	28.00	32.75	42.88	30.00	40.25	43.00
10	31.00	33.00	50.75	34.00	39.00	47.57	36.00	50.00	45.50
12	36.00	38.00	62.88	39.00	44.50	67.25	41.00	56.00	69.25

# Cast Steel Pressure Seal Globe Valve



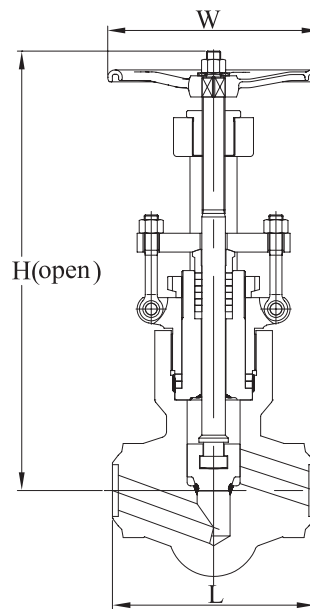
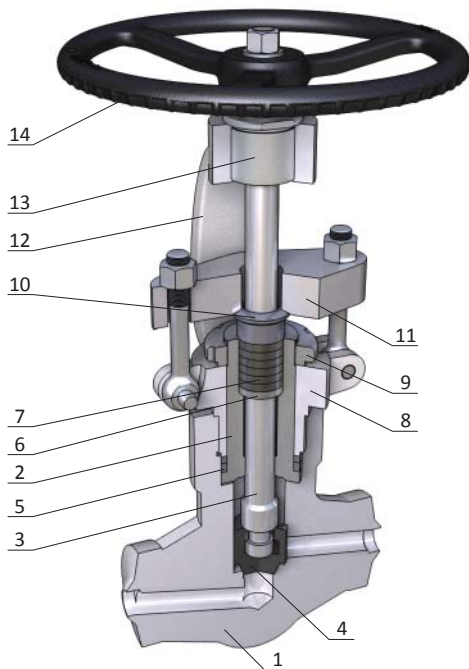
## Materials

Item	Description	Qty.	Materials		
1	Body	1	A217-WC9	A217-C12A	WB36
2	Bonnet	1	A217-WC9	A217-C12A	WB36
3	Stem	1	SUH630		
4	Disc	1	A182-F22	A182-F91	WB36
5	Seat	2	A182-F22	A182-F91	WB36
6	Disc Nut	1	A182-F22	A182-F91	WB36
7	Gland	1	A182-F22	A182-F91	WB36
8	Gland Packing	1 set	Reinforced Flexible Graphite		
9	Gland Flange	1	A217-WC9		
10	Yoke	1	A217-WC9		
11	Seal Ring	1	Reinforced Flexible Graphite		
12	Gland Clamp Ring	1	A217-WC9		
13	Packing Washer	1	A182-F22	A182-F91	WB36

## Dimensions

SIZE(in)	ANSI Class 3500	
	A(in)	B(in)
	BW	
2-1/2	18.90	28.03
3	25.20	33.11
4	30.00	37.80
5	34.02	44.49
6	37.99	49.13
8	45.50	57.95
10	50.00	66.69
12	56.00	77.91

# Forged Steel Pressure Seal Globe Valve



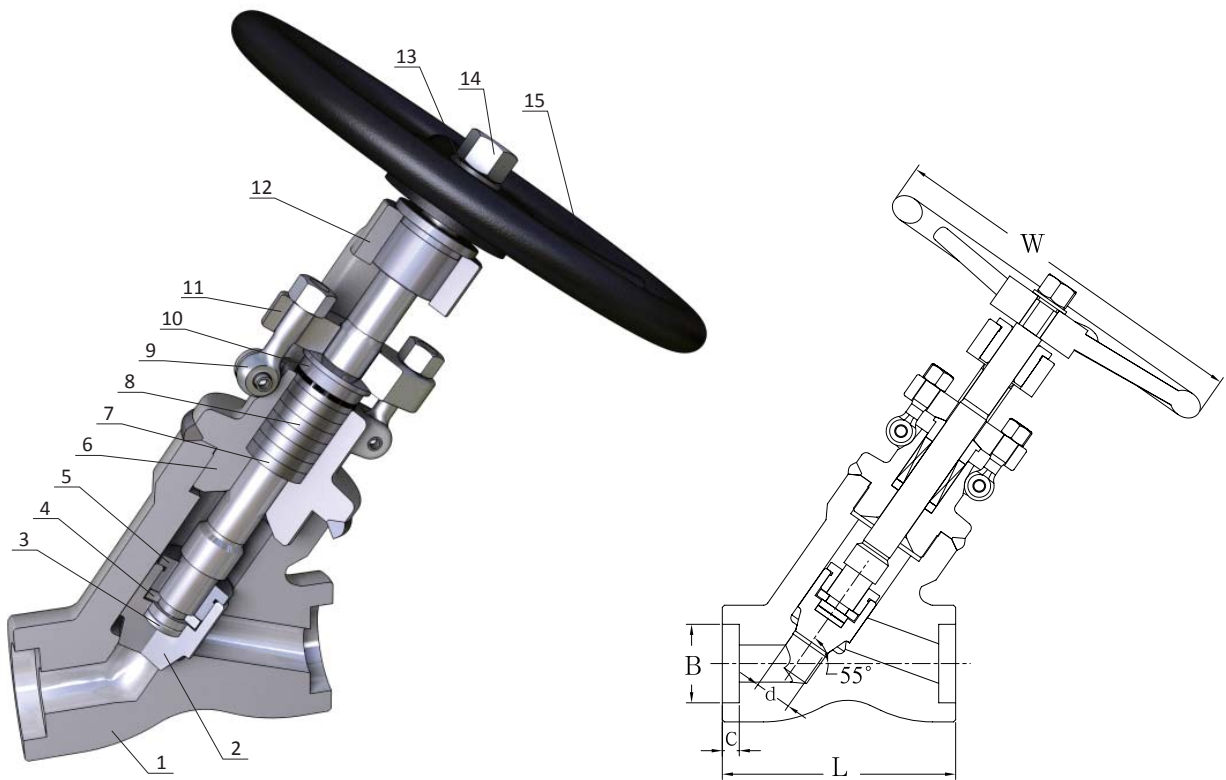
## Materials

Item	Description	Qty.	Materials									
			A105	A182-F11	A182-F22	A182-F304	A182-F304L	A182-F316	A182-F316L	A182-F51	A350-LF2	
1	Body	1	A105	A182-F11	A182-F22	A182-F304	A182-F304L	A182-F316	A182-F316L	A182-F51	A350-LF2	
2	Bonnet	1	A105	A182-F11	A182-F22	A182-F304	A182-F304L	A182-F316	A182-F316L	A182-F51	A350-LF2	
3	Stem	1	A182-F6a			A182-F316	A182-F316	A182-F316	A182-F316L	A182-F51	A182-F304	
4	Disc	1	A105	A182-F11	A182-F22	A182-F304	A182-F304L	A182-F316	A182-F316L	A182-F51	A350-LF2	
5	Seal Ring	1	Graphite with Inconel Wire / Soft Steel									
6	Packing Washer	1	A276-410			A182-F304		A182-F316		A182-F51	A182-F304	
7	Gland Packing	1 set	Graphite with Inconel Wire									
8	Gland Collar	1	A105	A182-F11	A182-F22	A182-F304		A182-F316		A182-F51	A350-LF2	
9	Bolt Nut	1	A194-2H			A194-8 / A194-8M						
10	Gland	1	A276-410			A182-F304	A182-F316				A182-F304	
11	Gland Flange	1	A105			A182-F304		A182-F316			A182-F304	
12	Yoke	1	A105			A182-F304						
13	Stem Nut	1	A439-D-2									
14	Handwheel	1	A536									
Trim Surface			HF									

## Dimensions

CLASS	SIZE(in)	H(in)	W(in)	L(in)
900/1500	1/2	13.00	7.09	5.50
	3/4	13.00	7.09	5.50
	1	13.00	7.09	5.50
	1-1/2	13.10	7.09	6.77
	2	18.30	9.45	8.93
2500	1/2	13.00	7.09	5.50
	3/4	13.00	7.09	5.50
	1	14.25	7.85	7.10
	1-1/2	18.60	9.45	10.85
	2	19.60	11.00	10.85

# Y Type Globe Valve



## Materials

Item	Description	Materials								
		A105	A182-F11	A182-F22	A182-F304	A182-F304L	A182-F316	A182-F316L	A182-F51	A182-LF2
1	Body	A105	A182-F11	A182-F22	A182-F304	A182-F304L	A182-F316	A182-F316L	A182-F51	A182-LF2
2	Disc	A182-F6a			A182-F304	A182-F304L	A182-F316	A182-F316L	A182-F51	A182-LF2
3	Thrust Washer	A182-F6a			A182-F304	A182-F304L	A182-F316	A182-F316L	A182-F51	A182-LF2
4	Lock Nut	A439-D-2								
5	Screw Cover	A182-F6a			A182-F304	A182-F304L	A182-F316	A182-F316L	A182-F51	A182-LF2
6	Bonnet	A105	A182-F11	A182-F22	A182-F304	A182-F304L	A182-F316	A182-F316L	A182-F51	A182-LF2
7	Packing Washer	A276-410			A182-F304		A182-F316		A182-F51	A182-LF2
8	Gland Packing	Graphite with Inconel Wire								
9	Gland Bolt	A193-B7			A193-B8		A193-B8M			A193-B8
10	Gland	A276-410			A182-F304	A182-F316				
11	Gland Flange	A105			A182-F304					
12	Stem Nut	A439-D-2								
13	Washer	A105	A182-F11	A182-F22	A182-F304	A182-F304L	A182-F316	A182-F316L	A182-F51	A182-LF2
14	Handwheel Nut	A439-D-2								
15	Handwheel	A536								
Trim surface		HF								

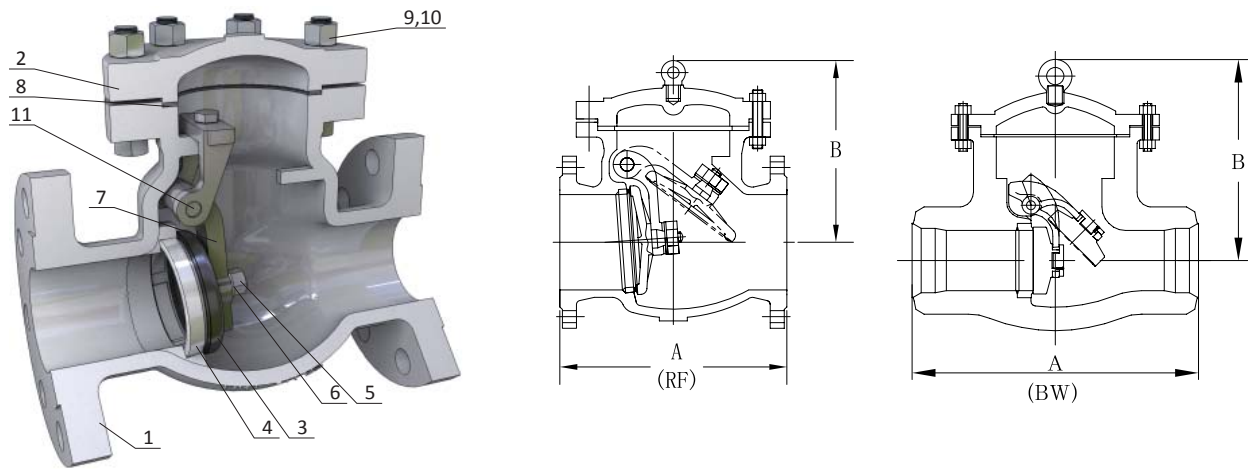
## Dimensions

CLASS	SIZE(in)	L(in)	W(in)	B(in)	c(in)	d(in)
1690/2680	1/2	4.88	7.09	0.87	0.37	0.56
	3/4	4.88	7.09	1.09	0.49	0.56
	1	5.75	7.09	1.35	0.49	0.83
	1-1/2	7.25	7.87	1.94	0.49	1.25
	2	7.25	11.81	2.43	0.63	1.25

## Design Features of Check Valves

- **Seat ring:** Renewable and easy to replace stellited faced seat ring is seal welded to minimize distortion from body stress. The hardfaced seat ensures long service life, better resistance to corrosion and erosion.
- **Disc nut assembly:** Set screw is used to ensure a secure connection between the hinge and the disc nut. The disc assembly is self aligning and closes in the no flow condition.
- **Due to the spherical body shape with large radius,** swing check valves can minimize the effect of water hammer by reducing the open angle of the disc.
- **Retainer ring:** The four-split retainer ring retains the internal pressure and is easily replaced.

## Cast Steel Bolted Bonnet Check Valve



## Materials

Item	Description	Qty.	Materials								
			A216	A217			A351		A352	A995	
			WCB	WC6	WC9	C12A	CF8	CF8M	LCB	4A	
1	Body	1	A216-WCB	A217-WC6	A217-WC9	A217-C12A	A351-CF8	A351-CF8M	A352-LCB	A995-4A	
2	Cover	1	A216-WCB	A217-WC6	A217-WC9	A217-C12A	A351-CF8	A351-CF8M	A352-LCB	A995-4A	
3	Disc	1	A216-WCB	A217-WC6	A217-WC9	A217-C12A	A351-CF8	A351-CF8M	A352-LCB	A995-4A	
4	Seat	1	A105 A216-WCB	A182-F11 A217-WC6	A182-F22 A217-WC9	A182-F91 A217-C12A	A182-F304 A315-CF8	A182-F316 A351-CF8M	A352-LCB	A182-F51	
5	Disc Nut	1	A194-2H	A194-7			A194-8M				
6	Disc Washer	1	A182-F304						A182-F316	A182-F316	A182-F51
7	Hinge	1	A216-WCB	A217-WC6	A217-WC9	A217-C12A	A351-CF8	A351-CF8M	A352-LCB	A995-4A	
8	Gasket	1	Graphite+304 Spiral Wound								
9	Cover Bolt	1 set	A193-B7	A193-B16			A193-B8		A320-L7	A193-B8M	
10	Cover Bolt Nut	1 set	A194-2H	A194-7 / A194-8M				A194-8		A194-4 A194-8M	
11	Hinge Pin	1	A276-410				A182-F304	A182-F316	A182-F304	A182-F51	
12	Eye Bolt	1	A36								
Trim Surface			HF								

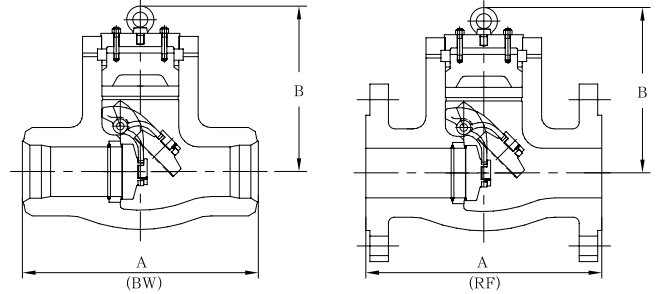
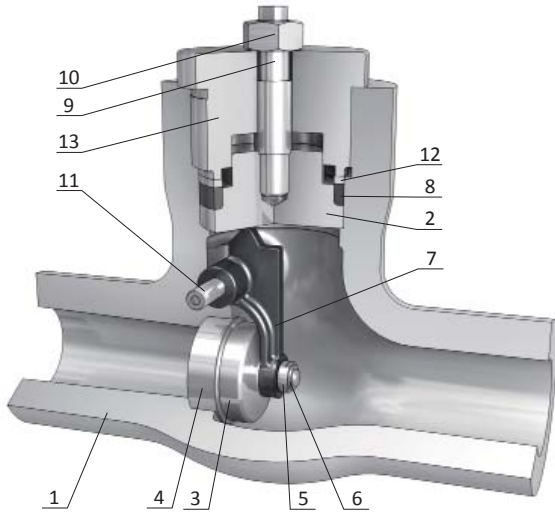
\* Check valves larger than 4" have eye bolt



## Dimensions

SIZE(in)	ANSI Class 150		ANSI Class 300		ANSI Class 600		
	A(in)	B(in)	A(in)	B(in)	A(in)		B(in)
	RF/BW		RF/BW		RF	BW	
2	8.00	5.75	10.50	6.00	11.50	7.00	6.25
2-1/2	8.50	6.13	11.50	6.25	13.00	8.50	6.38
3	9.50	7.63	12.50	7.63	14.00	10.00	8.63
4	11.50	8.63	14.00	8.63	17.00	12.00	9.13
6	16.00	10.75	17.50	10.75	22.00	18.00	11.50
8	19.50	12.75	22.00	12.75	26.00	23.00	13.50
10	24.50	15.38	24.50	16.13	31.00	28.00	16.37
12	27.50	16.88	28.00	17.00	33.00	32.00	18.13
14	31.00	19.63	33.00	19.63	35.00	35.00	20.93
16	36.00	22.00	34.00	22.50	39.00	39.00	23.38
18	38.50	25.00	38.50	25.00	43.00	43.00	24.00
20	38.50	26.50	40.00	26.50	47.00	47.00	26.00
24	51.00	31.25	53.00	31.25	55.00	55.00	30.50
26	51.00				57.00	57.00	
28	57.00	33.00	59.00	30.00	61.00	61.00	42.00
30	60.00	38.63	62.75	34.00	65.00	65.00	46.00
32	68.00	40.00	68.00	40.00	70.00	70.00	
36	77.00	40.75	82.00	45.00	82.00	82.00	56.00
40	85.00	46.00	85.00	49.00			
42	85.00	48.00	85.00	50.00			
48	100.00	52.00					

# Cast Steel Pressure Seal Check Valve



## Materials

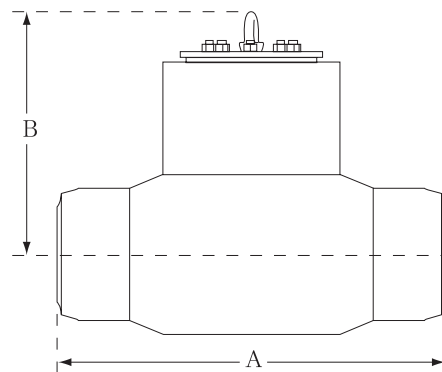
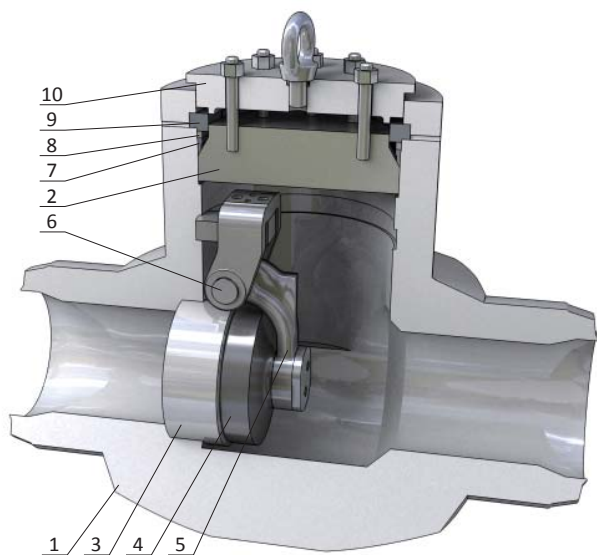
Item	Description	Qty.	Materials							
			A216	A217			A351		A35	
			WCB	WC6	WC9	C12A	CF8	CF8M	LCB	
1	Body	1	A216-WCB	A217-WC6	A217-WC9	A217-C12A	A351-CF8	A351-CF8M	A352-LCB	
2	Cover	1	A216-WCB	A217-WC6	A217-WC9	A217-C12A	A351-CF8	A351-CF8M	A352-LCB	
3	Disc	1	A216-WCB	A217-WC6	A217-WC9	A217-C12A	A351-CF8	A351-CF8M	A352-LCB	
4	Seat	1	A105 A216-WCB	A182-F11 A217-WC6	A182-F22 A217-WC9	A182-F91 A217-C12A	A182-F304 A315-CF8	A182-F304 A351-CF8M	A352-LCB	
5	Disc Nut	1	A194-2H	A194-7			A194-8			
6	Disc Washer	1	A276-304					A182-F316		
7	Hinge	1	A216-WCB	A217-WC6	A217-WC9	A217-C12A	A351-CF8	A351-CF8M	A352-LCB	
8	Seal Ring	1	Graphite with Inconel Wire							
9	Cover Bolt	1 set	A193-B7	A193-B16			A193-B8		A320-L7	
10	Cover Bolt Nut	1 set	A194-2H	A194-7 / A194-8M			A194-8		A194-4	
11	Hinge Pin	1	A276-410				A182-F316			
12	Spacer Ring	1	A105 A216-WCB	A182-F11 A217-WC6	A182-F22 A217-WC9	A182-F91 A217-C12A	A182-F304	A182-F304	A352-LCB	
13	Cover Retainer	1	A216-WCB	A217-WC6	A217-WC9	A217-C12A	A351-CF8	A351-CF8M	A352-LCB	
14*	Eye Bolt	1	A36							
Trim Surface			HF							

\* Check valves larger than 4" have eye bolt

## Dimensions

SIZE(in)	ANSI Class 900			ANSI Class 1500			ANSI Class 2500		
	A(in)		B(in)	A(in)		B(in)	A(in)		B(in)
	BW	RF		BW	RF		BW	RF	
2	8.00	14.50	6.50	8.50	14.50	6.50	11.00	17.75	6.50
2-1/2	10.00	16.50	6.50	10.00	16.50	6.50	13.00	20.00	6.50
3	12.00	15.00	8.50	12.00	18.50	8.50	14.50	22.75	8.81
4	14.00	18.00	9.88	16.00	21.50	9.88	18.00	26.50	9.69
6	20.00	24.00	15.00	22.00	27.75	15.00	24.00	36.00	14.94
8	26.00	29.00	18.00	28.00	32.75	18.00	30.00	40.25	15.00
10	31.00	33.00	19.00	34.00	39.00	19.00	36.00	50.00	19.00
12	36.00	38.00	23.81	39.00	44.50	24.25	42.00	56.00	24.00
14	39.00	40.50	23.81	42.00	49.50	23.81	44.00		24.00
16	43.00	44.50	29.06	47.00	54.50	29.06	49.00		29.61
18	43.00	48.00	23.00	43.00	60.50	23.00	55.00		23.00
20	47.00	52.00	28.38	47.00	65.50	28.38	58.00		28.38
24	47.00	61.00	29.25	47.00	76.50	29.25	55.00		29.25

# One Piece Body Forged Steel Pressure Seal Check Valve



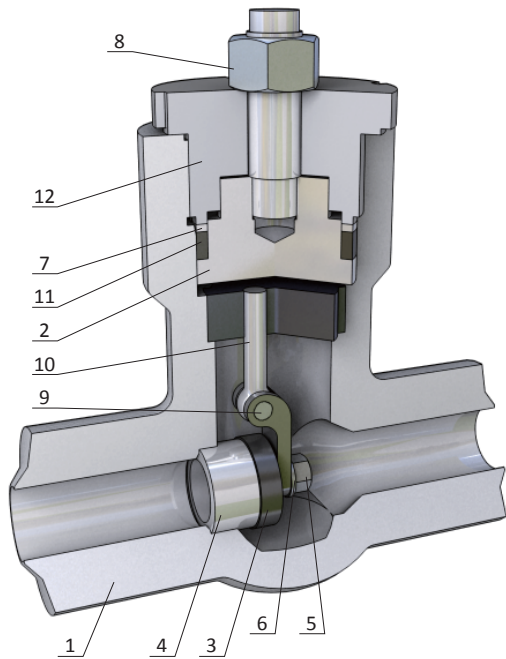
## Materials

Item	Description	Qty.	Materials		
1	Body	1	A182-F22	A182-F91	WB36
2	Bonnet	1	A182-F22	A182-F91	WB36
3	Seat	1	A182-F22	A182-F91	WB36
4	Disc	1	A182-F22	A182-F91	WB36
5	Hinge	1	A217-WC9		WB36
6	Hinge Pin	1	SUH630		
7	Seal Ring	1	Reinforced Flexible Graphite		
8	Spacer Ring	1	A182-F22	A182-F91	WB36
9	Retaining Ring	1	A182-F22	A182-F91	WB36
10	Cover Retainer	1	A182-F22	A182-F91	WB36

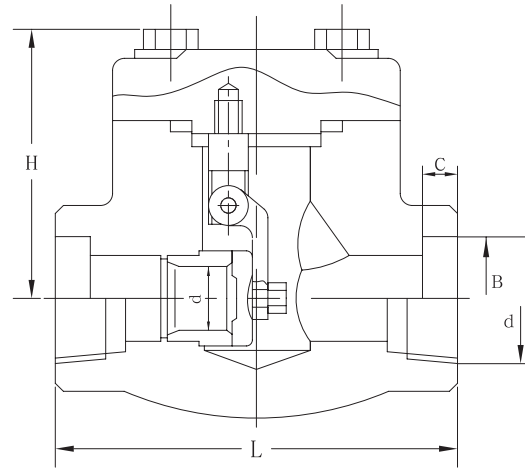
## Dimensions

SIZE(in)	ANSI Class 3500	
	A(in)	B(in)
	BW	
2-1/2	15.00	11.18
3	17.00	12.09
4	21.00	14.33
5	24.00	15.35
6	27.00	20.04
8	33.00	25.20
10	39.00	29.09
12	44.00	31.97

# Forged Steel Swing Check Valve



Pressure Seal Type



Bolted Bonnet Type

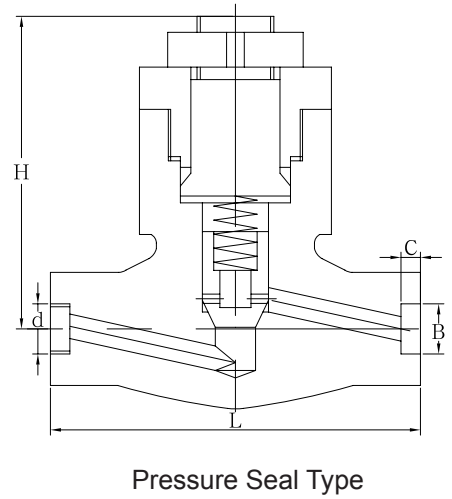
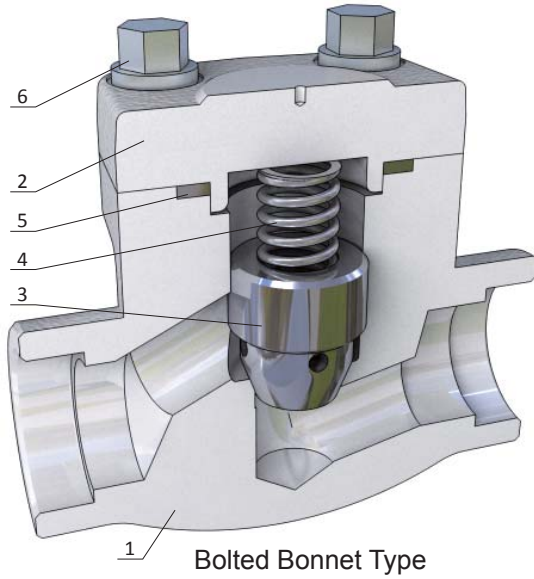
## Materials

Item	Description	Materials								
		A105	A182-F11	A182-F22	A182-F304	A182-F304L	A182-F316	A182-F316L	A182-F51	A350-LF2
1	Body	A105	A182-F11	A182-F22	A182-F304	A182-F304L	A182-F316	A182-F316L	A182-F51	A350-LF2
2	Cover	A105	A182-F11	A182-F22	A182-F304	A182-F304L	A182-F316	A182-F316L	A182-F51	A350-LF2
3	Disc	A105	A182-F11	A182-F22	A182-F304	A182-F304L	A182-F316	A182-F316L	A182-F51	A350-LF2
4	Seat	A105	A182-F11	A182-F22	A182-F304	A182-F304L	A182-F316	A182-F316L	A182-F51	A350-LF2
5	Disc Nut	A194-2H	A194-4		A194-8		A194-8M		A194-8	
6	Hinge	A216-WCB	A217-WC6	A217-WC9	A351-CF8	A351-CF3	A351-CF8M	A351-CF3M	A182-F51	A351-CF8
7	Gasket	Graphite+304 Spiral Wound				Graphite+316 Spiral Wound				
8	Cover Bolt	A193-B7	A193-B16		A193-B8 / A193-B8M / A320-B8			A193-B8M	A320-B8	
9	Hinge Pin	A276-410			A182-F304		A182-F316		A182-F51	A182-F304
10	Support	A105	A182-F11	A182-F22	A182-F304	A182-F304L	A182-F316	A182-F316L	A182-F51	A182-F304
11	Seal Ring	Reinforced Flexible Graphite								
12	Cover Retainer	A105	A182-F11	A182-F22	A182-F304	A182-F304L	A182-F316	A182-F316L	A182-F51	A350-LF2
Trim Surface		HF								

## Dimensions

SIZE(in)	H(in)	L(in)	B(in)	c(in)	d(in)
1	2.83	4.37	1.35	0.49	1
1-1/4	3.39	4.37	1.70	0.49	1-1/4
1-1/2	3.82	4.72	1.94	0.49	1-1/2
2	4.65	5.51	2.43	0.63	2
2-1/2	5.28	6.38	2.93	0.63	2-1/2

# Forged Steel Lift Check Valve



## Materials

Item	Description	Materials								
		A105	A182-F11	A182-F22	A182-F304	A182-F304L	A182-F316	A182-F316L	A182-F51	A350-LF2
1	Body	A105	A182-F11	A182-F22	A182-F304	A182-F304L	A182-F316	A182-F316L	A182-F51	A350-LF2
2	Cover	A105	A182-F11	A182-F22	A182-F304	A182-F304L	A182-F316	A182-F316L	A182-F51	A350-LF2
3	Disc	A182-F6a		A182-F304	A182-F304L	A182-F316	A182-F316L	A182-F51	A350-LF2	
4	Spring	A276-304				A276-316		Inconel750	A182-304	
5	Gasket	Graphite+316 Spiral Wound/Soft Steel								
6	Cover Bolt	A193-B7	A193-B16		A193-B8 / A193-B8M / A320-B8			A193-B8M	A320-B8	
Trim Surface		HF								

## Dimensions

CLASS	SIZE(in)	H(in)	L(in)	B(in)	C(in)	d(in)
150 300 600 800	1/2	2.20	3.11	0.87	0.37	1/2
	3/4	2.20	3.62	1.09	0.49	3/4
	1	2.83	4.37	1.35	0.49	1
	1-1/4	3.31	5.12	1.70	0.49	1-1/4
	1-1/2	3.90	5.98	1.94	0.49	1-1/2
	2	4.57	6.77	2.43	0.63	2
900-1500	1/2	2.83	4.33	0.87	0.37	1/2
	3/4	3.15	4.72	1.09	0.49	3/4
	1	3.74	5.12	1.35	0.49	1
	1-1/4	5.08	7.87	1.70	0.49	1-1/4
	1-1/2	5.08	7.87	1.94	0.49	1-1/2
	2	6.06	9.45	2.43	0.63	2
2500	1/2	3.11	4.53	0.87	0.37	1/2
	3/4	3.78	5.12	1.09	0.49	3/4
	1	4.49	5.91	1.35	0.49	1
	1-1/4	5.94	8.66	1.70	0.49	1-1/4
	1-1/2	5.49	8.66	1.94	0.49	1-1/2
	2	6.61	10.24	2.43	0.63	2
4500	1/2	4.84	6.30	0.87	0.37	1/2
	3/4	4.84	6.30	1.09	0.49	3/4
	1	4.84	6.30	1.35	0.49	1
	1-1/4	7.05	9.84	1.70	0.49	1-1/4
	1-1/2	7.05	9.84	1.94	0.49	1-1/2
	2	7.05	9.84	2.43	0.63	2

## VOLK Instrument Valves



### Materials

Item	Description	Materials			
		316SS	F91	A105	Brass
1	Body	A182-F316	A182-F91	A105	Brass B283-377
	Seat	Weld stellite seat optional			
2	Lower Stem	A182-F316	A182-F91	A105	A216-316
		Optional			
3	Disc	A276-316	A182-F91	A105	Brass B16-316
4	Packing	PTFE or PEEK or Graphite			
5	Gland	A276-316	A182-F91	A105	Brass B16-316
6	Lock Nut	B783-316			
7	Upper Stem	A276-316	A182-F91	A105	Brass B16-316
8	Packing Nut	A276-316	A182-F91	A105	
9	Handle	Stainless steel or black knob			
10	Lock Screw	Nickel cadmium-plated steel			

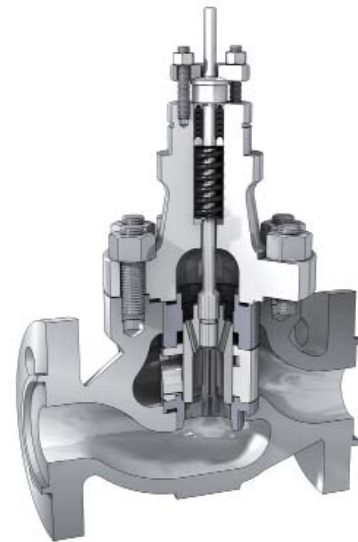
### Features:

1. Straight through and angle type designs are available.
2. Maximum allowable working pressure is 6000 psig.
3. Valves are available in carbon steel, stainless steel and brass.
4. High pressure packing and bonnet seals are available.
5. Maximum allowable operating temperatures: PTFE packing 450 deg F; Graphite packing 650 deg F.

## KV Control Valves

KV high performance, low noise control valves provide precise pressure control for clean fluids at high pressures and temperatures. KV control valves can be designed and supplied with custom designed and engineered trim to handle severe service applications, such as flashing, cavitation, noise, and vibration. All KV control valves are individually sized and, where necessary, custom designed and engineered to suit the customer's exact operating conditions. In addition, all KV control valves utilize a cage guided, balanced disc design for stable and reliable performance while, at the same time, being very easy to service, repair and replace components. KV control valves are available in sizes 1" through 12", ANSI Class 150 through 2500, and all types of materials suitable for the operating conditions in accordance with ANSI/ ASME standards and specifications. KV control valves are widely used in Power, Refining, Petrochemical, Oil & Gas, and Paper Industries.

ANSI Class	150Lb~2500Lb
Size	1"~12"
End Connection	BW, RF, SW, RTJ
Flow Characteristics	Linear / Equal Percentage/Quick Opening/Custom
Leakage	ANSI B16.104 IV (V or VI optional)
Trim	Single Seat and Cage
Basic Error(%)	$\leq \pm 2.5$
Return Difference(%)	$\leq 1.5$
Turndown(%)	$\leq \pm 5$
Ambient Temperature	In accordance with ANSI B16.34



## Features

### *Easily Replaced Disc*

The balanced disc design equalizes pressure around the stem to reduce vibration and prevent other potential problems.

### *Anti-cavitation and Low Noise*

When the pressure fluctuates around the saturation vapor pressure of the fluid and then suddenly increases, the fluid will be compressed and cavitation will follow, which leads to noise, vibration, and erosion of parts. The multi-labyrinth and multi-turn disc design adopted by KV control valves effectively eliminates cavitation, noise, and vibration.

### *Easily Changed Flow Capacity and Characteristics*

Flow capacities and characteristics are customized through the use of trim designs.

### *Acid Gas / Corrosive Fluid*

Multi-choice of material of body and trim enable KV control valves to be used on acid gas and corrosive fluid, in accordance with the technical requirements of National Association of Corrosion Engineers (NACE).

### *Simple Maintenance*

Top-entry design allows simple replacement of seat and seat cage ring.

Note: KV control valves are also available in angle design.

## Principle of Operation

KV control valve is composed of the control valve and the actuator. In the case of an electric actuator, the input direct current is amplified by the servo amplifier and then drives the actuator, which produces axial thrust to drive the control valve, to change the flow rate, so as to control the parameters in the system. Meanwhile, the position signal of the valve shown by the actuator will help the servo amplifier to keep the control valve in the position corresponding to the input signal.



# ASME B 16.34 Pressure-Temperature Ratings (2009)

Material: A105 / A216-WCB

Press. Temp. °F (psig) ANSI Class	-20/100	200	300	400	500	600	650	700	750	800	850	900	950	1000
150	285	260	230	200	170	140	125	110	95	80	65	50	35	20
300	740	680	655	635	605	570	550	530	505	410	320	230	135	85
600	1480	1360	1310	1265	1205	1135	1100	1060	1015	825	640	460	275	170
900	2220	2035	1965	1900	1810	1705	1650	1590	1520	1235	955	690	410	255
1500	3705	3395	3270	3170	3015	2840	2745	2665	2535	2055	1595	1150	685	430
2500/3200	6170	5655	5450	5280	5025	4730	4575	4425	4230	3430	2655	1915	1145	715
3500	8640	7920	7633	7393	7033	6623	6408	6193	5920	4800	3720	2685	1600	1000
4500	11110	10185	9815	9505	9040	8515	8240	7960	7610	6170	4785	3455	2055	1285

Material: A182-F22 / A217-WC9

Press. Temp. °F (psig) ANSI Class	-20/100	200	300	400	500	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
150	290	260	230	200	170	140	125	110	95	80	65	50	35	20	20	20	20	15
300	750	750	730	705	665	605	590	570	530	510	485	450	385	265	175	110	70	40
600	1500	1500	1455	1410	1330	1210	1175	1135	1065	1015	975	900	755	535	350	220	135	80
900	2250	2250	2185	2115	1995	1815	1765	1705	1595	1525	1460	1350	1160	800	525	330	205	125
1500	3750	3750	3640	3530	3325	3025	2940	2840	2660	2540	2435	2245	1930	1335	875	550	345	205
2500/3200	6250	6250	6070	5880	5540	5040	4905	4730	4430	4230	4060	3745	3220	2230	1455	915	570	345
3500	8750	8750	8498	8233	7753	7055	6865	6623	6200	5920	5683	5243	4508	3120	2040	1280	800	480
4500	11250	11250	10925	10585	9965	9070	8825	8515	7970	7610	7305	6740	5795	4010	2625	1645	1030	615

Material: A182-F91 / A217-C12A

Press. Temp. °F (psig) ANSI Class	-20/100	200	300	400	500	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
150	290	260	230	200	170	140	125	110	95	80	65	50	35	20	20	20	20	20
300	750	750	730	705	665	605	590	570	530	510	485	450	385	365	360	300	225	145
600	1500	1500	1455	1410	1330	1210	1175	1135	1065	1015	975	900	775	725	720	605	445	290
900	2250	2250	2185	2115	1995	1815	1765	1705	1595	1525	1460	1350	1160	1090	1080	905	670	430
1500	3750	3750	3640	3530	3325	3025	2940	2840	2660	2540	2435	2245	1930	1820	1800	1510	1115	720
2500/3200	6250	6250	6070	5880	5540	5040	4905	4730	4430	4230	4060	3745	3220	3030	3000	2515	1855	1200
3500	8750	8750	8498	8233	7753	7055	6865	6623	6200	5920	5683	5243	4508	4240	4200	3520	2600	1680
4500	11250	11250	10925	10585	9965	9070	8825	8515	7970	7610	7305	6740	5795	5450	5400	4525	3345	2160

Material: A182-F92 / A335-P92

Press. Temp. °F (psig) ANSI Class	-20/100	200	300	400	500	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
150	290	260	230	200	170	140	125	110	95	80	65	50	35	20	20	20	20	20
300	750	750	730	705	665	605	590	570	530	510	485	450	385	365	360	325	275	190
600	1500	1500	1455	1410	1330	1210	1175	1135	1065	1015	975	900	775	725	720	645	550	385
900	2250	2250	2185	2115	1995	1815	1765	1705	1595	1525	1460	1350	1160	1090	1080	965	825	575
1500	3750	3750	3640	3530	3325	3025	2940	2840	2660	2540	2435	2245	1930	1820	1800	1610	1370	960
2500/3200	6250	6250	6070	5880	5540	5040	4905	4730	4430	4230	4060	3745	3220	3030	3000	2685	2285	1600
3500	8750	8750	8498	8233	7753	7055	6865	6623	6200	5920	5683	5243	4508	4240	4200	3760	3200	2240
4500	11250	11250	10925	10585	9965	9070	8825	8515	7970	7610	7305	6740	5795	5450	5400	4835	4115	2880

Material: A182-F316 / A351-CF8M

Press. Temp. °F (psig) ANSI Class	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500
150	125	110	95	80	65	50	35	20	20	20	20	20	20	20	20	20	20	15
300	440	435	425	420	420	415	385	365	360	305	235	185	145	115	95	75	60	40
600	885	870	855	845	835	830	775	725	720	610	475	370	295	235	190	150	115	85
900	1325	1305	1280	1265	1255	1245	1160	1090	1080	915	710	555	440	350	290	225	175	125
1500	2210	2170	2135	2110	2090	2075	1930	1820	1800	1525	1185	925	735	585	480	380	290	205
2500/3200	3680	3620	3560	3520	3480	3460	3220	3030	3000	2545	1970	1545	1230	970	800	630	485	345
3500	5153	5068	4985	4928	4873	4845	4508	4240	4200	3560	2760	2160	1720	1360	1120	880	680	483
4500	6625	6515	6410	6335	6265	6230	5795	5450	5400	4575	3550	2775	2210	1750	1440	1130	875	620



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