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# GATE, GLOBE & CHECK VALVES

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## | GATE, GLOBE &amp; CHECK VALVES |

# GATE VALVES

2" - 36" | Class 150 - Class 600

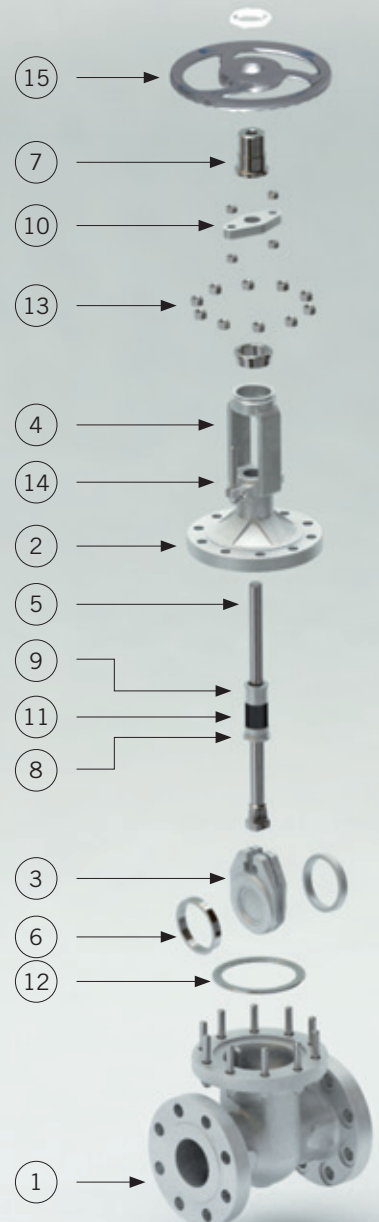


Gate valves serve as efficient on-off valves with flow in either direction. In such a design, a wedge slides across a general passageway in order to control fluid flow (like a sliding gate - hence, the name). One of the most significant characteristics of this type of valves is its straight-through, unobstructed passageway when set in the "full open" position. This is made possible by the wedge lifting entirely out of the passageway. As a result, gate valves are characterized by a minimum of turbulence and pressure drop in operation.

While gate valves are good for applications requiring these two factors, they are not recommended for installations in which throttling would be a function. They are designed for on/off service.

BILL OF MATERIALS		TRIM 8	TRIM 2	TRIM 8	TRIM 10
Item	Description	Carbon Steel	Carbon Steel (Low Temp.)	Alloy Steel	Stainless Steel
1	Body	A 216 Gr. WCB	A 352 Gr. LCB	A 217 Gr. C5	A 351 Gr. CF8M
2	Bonnet	A 216 Gr. WCB	A 352 Gr. LCB	A 217 Gr. C5	A 351 Gr. CF8M
3	Wedge	A 216 Gr. WCB + ER410	A 352 Gr. LCB + ER308	A 217 Gr. C5 + ER410	A 351 Gr. CF8M
4	Yoke	A 216 Gr. WCB	A 352 Gr. LCB	A 217 Gr. C5	A 351 Gr. CF8M
5	Stem	A 182 Gr. F6a	A 182 Graph. F304	A 182 Gr. F6a	A 182 Gr. F316
6	Seat Ring	A 105 + Stellite	A 182 Gr. F304	A 182 Gr. F6a + Stellite	----
7	Stem Nut	B 148 / A 439 Gr. D2	B 148 / A 439 Gr. D2	B 148 / A 439 Gr. D2	B 148 / A 439 Gr. D2
8	Backseat	A182 Gr. F6a	A182 Gr. F304	A 182 Gr. F6a	----
9	Gland	A 105	A 105	A 182 Gr. F6a	A 182 Gr. F316
10	Gland Flange	A 105	A 105	A 105	A 182 Gr. F304
11	Stem Packing	Graphite	Graphite	Graphite	Graphite
12	Gasket (Class 150)	SS304 / Graphite	SS304 / Graphite	SS304 / Graphite	SS316 / Graphite
12	Gasket (Class 300)	Spw SS304 / Graphite	Spw SS304 / Graphite	Spw SS304 / Graphite	Spw SS316 / Graphite
12	Gasket (Class 600)	Spw SS304 / Graphite	Spw SS304 / Graphite	Spw SS304 / Graphite	Spw SS316 / Graphite
12	Gasket (Class 900)	RJ SS304	RJ SS304	RJ SS304	RJ SS316
12	Gasket (Class 1500)	RJ SS304	RJ SS304	RJ SS304	RJ SS316
12	Gasket (Class 2500)	RJ SS304	RJ SS304	RJ SS304	RJ SS316
13	Bonnet Bolt & Nut	A 193 Gr. B7 / A 194 Gr. 2H	A320 Gr. L7 / A194 Gr. 7	A 193 Gr. B7 / A 194 Gr. 2H	A 193 Gr. B7 / A 194 Gr. 2H <sup>(1)</sup>
14	Eye Bolt & Nut	A 193 Gr. B7 / A 194 Gr. 2H	A 193 Gr. B7 / A 194 Gr. 2H	A 193 Gr. B7 / A 194 Gr. 2H	A 193 Gr. B7 / A 194 Gr. 2H
15	Handwheel	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel

\* Standard construction with trim 8, 2 and 10. Others constructions are available.  
(1) Zinc coating.



## Body and Bonnet

Bodies and bonnets are high quality cast and afterwards precisely machined, directing the attention to prevent stress concentration.

The bodies of gate valves consist of a straight through port that guarantees minimal turbulence and resistance to flow. In both designs, bolted bonnet and pressure seal, the bodies consist of guide slots to accommodate the wedge during opening or closing of the valve.

Bonnets are made either of one piece only –the yoke then being an integral part of it– or have two pieces, depending on the size of the valve. This ensures the perfect alignment with the body what leads to an accurate opening and closing.

## Backseat

All UNIMAC Cgate and globe valves have backseat threaded in the bonnet, or for the pressure seal valves, welded to the bonnet. Into pressure seal the hard facing is stellite 6 or equivalent.

## Stem

The stems of UNIMAC gate valves are forged from one piece and ACME threa-ded, then mechanized and finally provided with a smooth finishing in order to minimize friction.

In gate valves, the union of stem and wedge shall be in T form, designed to prevent the stem disengaging itself from the wedge while being in service. This design includes a conical raised surface that presses the seat against the bonnet backseat in the fully open position.

## Body and Bonnet Gaskets

The design of the body-bonnet/gaskets varies depending on the class of the valve.

Class 150 gate valves consist of a square joint in 2” and an oval one for all other sizes. Depending on the valve service it can be supplied flat-face gasket with graphite or PTFE.

Class 300 and 600 valves consist of a circular spiral wound gasket.

Class 900 and above gate valves consist of a ring type joint.

In pressure seal designs the sealing is achieved through a gasket that takes advantage of the internal pressure of the line. The material most commonly used is high-purity graphite being located between the body and the body retainer ring.

## Flexible Wedge

All UNIMAC Gate Valves 3” and above valves feature a flexible wedge unless otherwise specified by the customer. The flexible wedge shifts along the body of the valve during opening and closing, being held in position by a guide slot that minimizes the friction between body seat and wedge. This design is especially suited to compensate slight thermal deformations produced by the pipe or the valve itself safeguarding a better sealing between body and wedge seats.

# SHIFTS

### DESIGN STANDARDS

Bolted Bonnet Gate Valve	API 600/ISO 10434 & ASME B16.34
Pressure Seal Gate Valve (Long & Short pattern)	ASME B16.34
API 603 Gate Valve	API 603
Through Conduit Gate Valve	API 6D
Cryogenic Gate	API 600 / BS 1873 & BS 6364
Face to Face / End to End Dimensions	ASME B16.10 / ISO 5752
End Flanged dimensions	ASME B16.5 / ISO 7005-1, ASME B16.47-A&B, MSS SP- 44 & API 605
Butt-weld End dimensions	ASME B16.25
Valve inspection & testing	API 600 / ISO 10434 & ISO 5208, EN 17266
Pressure - Temperature rating	ASME B16.34

### TEST / INSPECTION METHODS & ACCEPTANCE CRITERIA

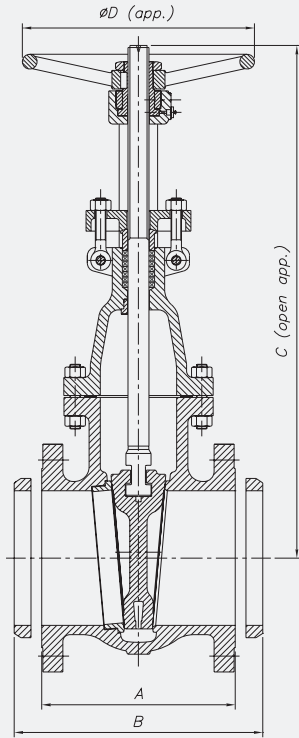
TEST / INSPECTION	METHOD	ACCEPTANCE CRITERIA
Visual Inspection		MSS SP-55
Marking		MSS SP-25 & ISO5208
Dimensional Inspection		Aplicable valve
Chemical Analysis	ASTM E350	Aplicable Standard
Mechanical Properties	ASTM A370	Aplicable Standard
Liquid Penetrant Inspection	ASTM A165	ASME B16.34
Magnetic Particle Inspection	ASTM E709	ASME B16.34
Radiographic Inspection	ASME B16.34	ASME B16.34
Ultrasonic Inspection	ASTM A388	ASME B16.34
Pressure Testing	API 598 / ISO 5208	API 598 / ISO 5208

## API 600 / BS1414 BOLTED BONNET

Class 150

VC150BB

Sizes 2" to 36"



Carbon steel and alloy steel construction

Stainless steel construction

## TRIM

API 600 TRIM N°	Nominal TRIM	Stem / Backseat	Seating Surface Body / Wedge
1	F6	13Cr	13Cr
2	304	18Cr-8Ni	18Cr-8Ni
3	F310	25Cr-20Ni	25Cr-20Ni
4	Hard F6	13Cr	Hard 13Cr
5	Hardfaced	13Cr	Co-Cr A
5A	Hardfaced	13Cr	Ni-Cr
6	F6 and Cu-Ni	13Cr	13Cr and Cu-Ni
7	F6 and Hard F6	13Cr	13Cr and Hard 13Cr
8	F6 and Hardfaced	13Cr	13Cr and Co-Cr A
8A	F6 and Hardfaced	13Cr	13Cr and Ni-Cr
9	Monel	Ni-Cu Alloy	Ni-Cu Alloy
10	316	18Cr-8Ni-Mo	18Cr-8Ni-Mo
11	Monel and Hardfaced	Ni-Cu Alloy	Ni-Cu Alloy and Trim 5 or 5A
12	316 and Hardfaced	18Cr-8Ni-Mo	18Cr-8Ni-Mo and Trim 5 or 5A
13	Alloy 20	19Cr-29Ni	19Cr-29Ni
14	Alloy 20 and Hardfaced	19Cr-29Ni	19Cr-29Ni and Trim 5 or 5A
15	Hardfaced	18Cr-8Ni	Co-CrR A
16	Hardfaced	18Cr-8Ni-Mo	Co-CrR A
17	Hardfaced	18Cr-10Ni-Cb	Co-CrR A
18	Hardfaced	19Cr-29Ni	Co-CrR A

HF: Hard Facing using CoCr welding alloy (Stellite)

## Materials

ACC. / ASME B16.34  
 DI, WCB, WCC, WC1, WC6, WC9, C5, C12, LCB, LCC, CF8, CF8C, CF8M, CF3, CF3M,  
 DUPLEX, SUPERDUPLEX, EXOTIC MATERIALS.

## General dimensions

DN	A	B	C	ØD	WEIGHT (App.) <sup>(*)</sup>
50 (2")	178	216	386	200	17
65 (2½")	190	241	435	200	27
80 (3")	203	282,5	483	250	33
100 (4")	229	305	587	250	48
125 (5")	254	381	673	300	65
150 (6")	267	403	767	300	78
200 (8")	292	419	955	350	120
250 (10")	330	457	1146	450	176
300 (12")	356	502	1328	500	260
350 (14")	381	572	1519	460 <sup>(*)</sup>	380 <sup>(*)</sup>
400 (16")	406	610	1721	460 <sup>(*)</sup>	530 <sup>(*)</sup>
450 (18")	432	660	1900	460 <sup>(*)</sup>	620 <sup>(*)</sup>
500 (20")	457	711	2116	610 <sup>(*)</sup>	810 <sup>(*)</sup>
550 (22")	483	762	2315	610 <sup>(*)</sup>	1050 <sup>(*)</sup>
600 (24")	508	813	2480	610 <sup>(*)</sup>	1150 <sup>(*)</sup>
650 (26")	559	-	2700	610 <sup>(*)</sup>	1380 <sup>(*)</sup>
700 (28")	610	-	2975	610 <sup>(*)</sup>	1980 <sup>(*)</sup>
750 (30")	610	-	3102	610 <sup>(*)</sup>	2200 <sup>(*)</sup>
900 (36")	711	-	3668	710 <sup>(*)</sup>	2800 <sup>(*)</sup>

(\*) With Gear Operator.

(\*\*) With flanges.

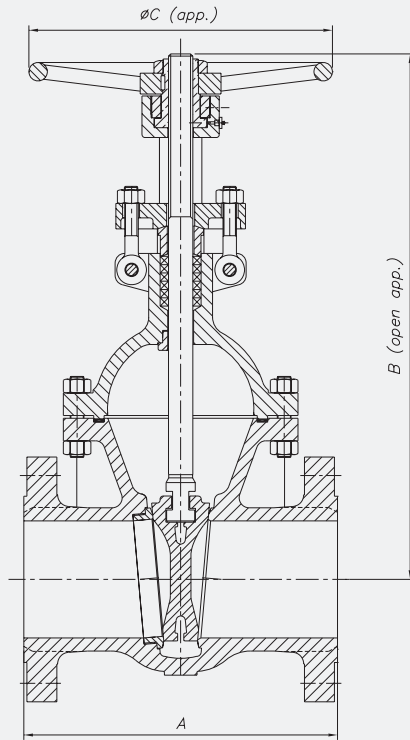
Dimensions in mm and weight in kg.  
 Weights and dimensions can be changed without notice.  
 Bigger sizes available under customer request.

## API 600 / BS1414 BOLTED BONNET

Class 300

VC300BB

Sizes 2" to 24"



Carbon steel and alloy steel construction

Stainless steel construction

## TRIM

API 600 TRIM N°	Nominal TRIM	Stem / Backseat	Seating Surface Body / Wedge
1	F6	13Cr	13Cr
2	304	18Cr-8Ni	18Cr-8Ni
3	F310	25Cr-20Ni	25Cr-20Ni
4	Hard F6	13Cr	Hard 13Cr
5	Hardfaced	13Cr	Co-Cr A
5A	Hardfaced	13Cr	Ni-Cr
6	F6 and Cu-Ni	13Cr	13Cr and Cu-Ni
7	F6 and Hard F6	13Cr	13Cr and Hard 13Cr
8	F6 and Hardfaced	13Cr	13Cr and Co-Cr A
8A	F6 and Hardfaced	13Cr	13Cr and Ni-Cr
9	Monel	Ni-Cu Alloy	Ni-Cu Alloy
10	316	18Cr-8Ni-Mo	18Cr-8Ni-Mo
11	Monel and Hardfaced	Ni-Cu Alloy	Ni-Cu Alloy and Trim 5 or 5A
12	316 and Hardfaced	18Cr-8Ni-Mo	18Cr-8Ni-Mo and Trim 5 or 5A
13	Alloy 20	19Cr-29Ni	19Cr-29Ni
14	Alloy 20 and Hardfaced	19Cr-29Ni	19Cr-29Ni and Trim 5 or 5A
15	Hardfaced	18Cr-8Ni	Co-Cr A
16	Hardfaced	18Cr-8Ni-Mo	Co-Cr A
17	Hardfaced	18Cr-10Ni-Cb	Co-Cr A
18	Hardfaced	19Cr-29Ni	Co-Cr A

HF: Hard Facing using CoCr welding alloy (Stellite)

## Materials

ACC. / ASME B16.34  
 DI, WCB, WCC, WC1, WC6, WC9, C5, C12, LCB, LCC, CF8, CF8C, CF8M, CF3, CF3M,  
 DUPLEX, SUPERDUPLEX, EXOTIC MATERIALS.

## General dimensions

DN	A (RF / BW)	B	ØC	WEIGHT (App.)
50 (2")	216	417	200	24
65 (2½")	241	460	250	35
80 (3")	282,5	526	250	49
100 (4")	305	650	250	69
125 (5")	381	694	300	92
150 (6")	403	824	350	130
200 (8")	419	987	450	208
250 (10")	457	1192	500	333
300 (12")	502	1431	560	536
350 (14")	762	1559	460 (*)	699 (*)
400 (16")	838	1758	460 (*)	1010 (*)
450 (18")	914	1942	610 (*)	1205 (*)
500 (20")	991	2145	610 (*)	1720 (*)
550 (22")	1092	2340	610 (*)	1920 (*)
600 (24")	1143	2526	610 (*)	2580 (*)

(\*) With Gear Operator.

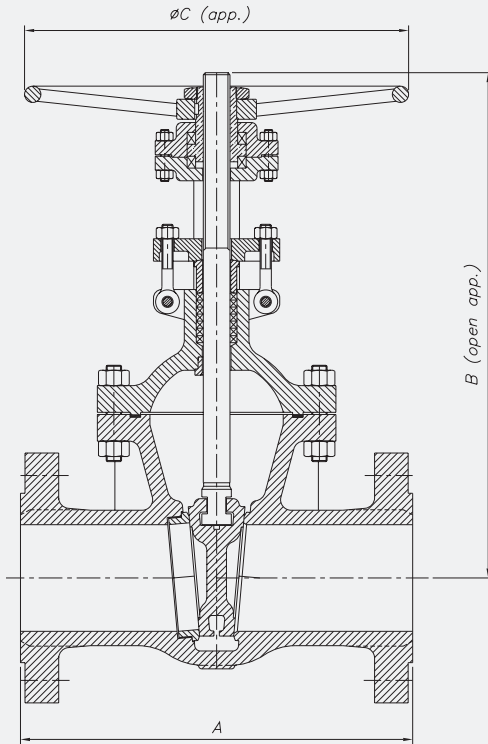
Dimensions in mm and weight in kg.  
 Weights and dimensions can be changed without notice.  
 Bigger sizes available under customer request.

## API 600 / BS1414 BOLTED BONNET

Class 600

VC600BB

Sizes 2" to 24"



Carbon and alloy steel construction

Stainless steel construction

## TRIM

API 600 TRIM N°	Nominal TRIM	Stem / Backseat	Seating Surface Body / Wedge
1	F6	13Cr	13Cr
2	304	18Cr-8Ni	18Cr-8Ni
3	F310	25Cr-20Ni	25Cr-20Ni
4	Hard F6	13Cr	Hard 13Cr
5	Hardfaced	13Cr	Co-Cr A
5A	Hardfaced	13Cr	Ni-Cr
6	F6 and Cu-Ni	13Cr	13Cr and Cu-Ni
7	F6 and Hard F6	13Cr	13Cr and Hard 13Cr
8	F6 and Hardfaced	13Cr	13Cr and Co-Cr A
8A	F6 and Hardfaced	13Cr	13Cr and Ni-Cr
9	Monel	Ni-Cu Alloy	Ni-Cu Alloy
10	316	18Cr-8Ni-Mo	18Cr-8Ni-Mo
11	Monel and Hardfaced	Ni-Cu Alloy	Ni-Cu Alloy and Trim 5 or 5A
12	316 and Hardfaced	18Cr-8Ni-Mo	18Cr-8Ni-Mo and Trim 5 or 5A
13	Alloy 20	19Cr-29Ni	19Cr-29Ni
14	Alloy 20 and Hardfaced	19Cr-29Ni	19Cr-29Ni and Trim 5 or 5A
15	Hardfaced	18Cr-8Ni	Co-CrR A
16	Hardfaced	18Cr-8Ni-Mo	Co-CrR A
17	Hardfaced	18Cr-10Ni-Cb	Co-CrR A
18	Hardfaced	19Cr-29Ni	Co-CrR A

HF: Hard Facing using CoCr welding alloy (Stellite)

## Materials

ACC. / ASME B16.34  
 DI, WCB, WCC, WC1, WC6, WC9, C5, C12, LCB, LCC, CF8, CF8C, CF8M, CF3, CF3M,  
 DUPLEX, SUPERDUPLEX, EXOTIC MATERIALS.

## General dimensions

DN	A (RF/BW)	B	ØC	WEIGHT (App.)
50 (2")	292	427	250	33
65 (2½")	330	473	250	58
80 (3")	356	538	300	63
100 (4")	432	657	350	131
125 (5")	508	770	400	182
150 (6")	559	872	500	253
200 (8")	660	1101	560	413
250 (10")	787	1279	720	623
300 (12")	838	1486	610 (*)	784 (*)
350 (14")	889	1643	610 (*)	1288 (*)
400 (16")	991	1798	610 (*)	1820 (*)
450 (18")	1092	2101	610 (*)	2150 (*)
500 (20")	1194	2259	710 (*)	2540 (*)
550 (22")	1295	2405	760 (*)	2800 (*)
600 (24")	1397	2545	760 (*)	3350 (*)

(\*) With Gear Operator.  
 Dimensions in mm and weight in kg.  
 Weights and dimensions can be changed without notice.  
 Bigger sizes available under customer request.

## | GATE, GLOBE &amp; CHECK VALVES |

# GLOBE VALVES

## 2" - 16" | Class 150 - Class 600

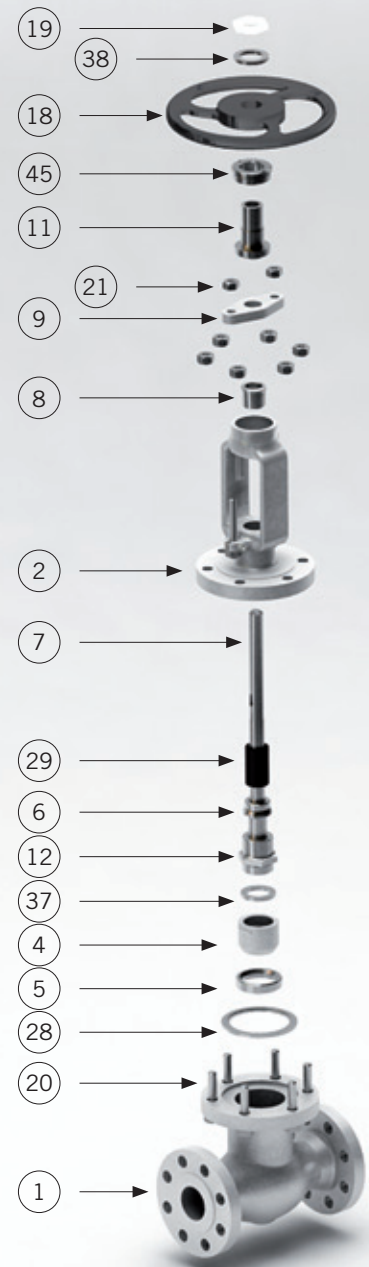


All globe valves utilize the “port closure” concept of valves. By this it meant that fluid passes through a specific opening (rather than a general passageway, as in the case of gate valves), and the fluid is controlled by means of a stem-mounted disc or inserted plug in that area.

Despite of lacking the straight through, unobstructed passageway of the gate valve, these globe types are superior in two key aspects - throttling and serviceability under frequent use. They are better at the throttling function because they permit fluid to exit uniformly around the circumference of a seat, rather than “slicing” down to limit passage through a narrowly restricted area.

BILL OF MATERIALS		TRIM 8	TRIM 2	TRIM 8	TRIM 10
Item	Description	Carbon Steel	Carbon Steel (Low Temp.)	Alloy Steel	Stainless Steel
1	Body	A 216 Gr. WCB	A 352 Gr. LCB	A 217 Gr. C5	A 351 Gr. CF8M
2	Bonnet	A 216 Gr. WCB	A 352 Gr. LCB	A 217 Gr. C5	A 351 Gr. CF8M
4	Disc	A105 + ER 410	A 182 Gr. F304	A 217 Gr. C5 + ER 410	A 351 Gr. CF8M
5	Seat Ring	A105 + Stellite	A 182 Gr. F304	A182 Gr. F6a + Stellite	----
6	Backseat	A182 Gr. F6a	A 182 Gr. F304	A182 Gr. F6a	----
7	Stem	A182 Gr. F6a	A 182 Gr. F304	A182 Gr. F6a	A 182 Gr. F316
8	Gland	A 105	A 105	A182 Gr. F6a	A 182 Gr. F316
9	Gland Flange	A 105	A 105	A 105	A 182 Gr. F304
11	Stem Nut	B 148 / A 439 Gr. D2	B 148 / A 439 Gr. D2	B 148 / A 439 Gr. D2	B 148 / A 439 Gr. D2
12	Disc Nut	A 182 Gr. F6a	A 182 Gr. F304	A 182 Gr. F6a	A 182 Gr. F316
18	Handwheel	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel
19	Handwheel Nut	Steel	Steel	Steel	Steel
20	Bonnet Bolt & Nut	A 193 Gr.B7 / A 194 Gr.2H	A320 Gr. L7 / A194 Gr. 7	A 193 Gr.B7 / A 194 Gr.2H	A 193 Gr.B7 / A 194 Gr.2H <sup>(1)</sup>
21	Eye Bolt & Nut	A 193 Gr.B7 / A 194 Gr.2H	A 193 Gr.B7 / A 194 Gr.2H	A 193 Gr.B7 / A 194 Gr.2H	A 193 Gr.B7 / A 194 Gr.2H
28	Gasket (Class 150)	SS304 / Graphite	SS304 / Graphite	SS304 / Graphite	SS316 / Graphite
28	Gasket (Class 300)	Spw SS304 / Graphite	Spw SS304 / Graphite	Spw SS304 / Graphite	Spw SS316/Graphite
28	Gasket (Class 600)	Spw SS304 / Graphite	Spw SS304 / Graphite	Spw SS304 / Graphite	Spw SS316/Graphite
28	Gasket (Class 900)	RJ SS304	RJ SS304	RJ SS304	RJ SS316
28	Gasket (Class 1500)	RJ SS304	RJ SS304	RJ SS304	RJ SS316
28	Gasket (Class 2500)	RJ SS304	RJ SS304	RJ SS304	RJ SS316
29	Stem Packing	Graphite	Graphite	Graphite	Graphite
37	Thrust Washer	A 182 Gr. F6a	A 182 Gr. F304	A 182 Gr. F6a	A 182 Gr. F316
38	Washer	Steel	Steel	Steel	Steel
42	Grub Screw	A 193 Gr. B7	A 193 Gr. B7	A 193 Gr. B7	A 193 Gr. B7
45	Lock Nut	Steel	Steel	A 182 Gr. F6a	A 182 Gr. F316

\* Standard construction with trim 8,2 and 10. Others constructions are available.  
(1) Zinc coating.



# SHIFTS

## Stem

The stems of UNIMAC globe valves are forged from one piece and ACME threaded, then mechanized and finally provided with a smooth finishing in order to minimize friction.

## Body and Bonnet Gasket

The design of the body-bonnet gasket varies depending on the class of the valve.

Class 150 to 600 globe valves consist of a circular male-female connection with a graphite or spiral wound gasket.

Class 900 and above globe valves consist of a ring type joint.

In pressure seal designs the sealing is achieved through a gasket that takes advantage of the internal pressure of the line. The material most commonly used is high-purity graphite being located between the body and the body retainer ring.

## Body and Bonnet

Bodies and bonnets are high quality cast and afterwards precisely machined, directing the attention to prevent stress concentration.

Bonnets are made either of one piece only –the yoke then being an integral part of it – or have two pieces, depending on the size of the valve. This ensures the perfect alignment with the body what leads to an accurate opening and closing.

Bodies of globe valves are designed considering the same characteristics as gate valves, which in this case means that the disc is guided in bigger valve sizes or high pressure service in order to avoid vibrations and better seat.

## Backseat

All UNIMAC gate and globe valves have backseat threaded in the bonnet, or for the pressure seal valves, welded to the bonnet. The hard facing is stellite 6 or equivalent.

### DESIGN STANDARDS

Bolted Bonnet Globe Valve	ASME B16.34
Bolted Bonnet Globe Valve	BS 1873 & ASME B16.34
Pressure Seal Globe Valve (Long & Short pattern)	ASME B16.34
Face to Face / End to End Dimensions	ASME B16.10 / ISO 5752
End Flanged dimensions	ASME B16.5 / ISO 7005-1, ASME B16.47-A&B MSS SP-44 & API 605
Butt-weld End dimensions	ASME B16.25
Valve inspection & testing	BS1873, ISO 5208, BS 6755, EN 17266
Pressure - Temperature rating	ASME B16.34

### TEST / INSPECTION METHODS & ACCEPTANCE CRITERIA

TEST / INSPECTION	METHOD	ACCEPTANCE CRITERIA
Visual Inspection		MSS SP-55
Marking		MSS SP-25 & ISO5208
Dimensional Inspection		Aplicable valve
Chemical Analysis	ASTM E350	Aplicable Standard
Mechanical Properties	ASTM A370	Aplicable Standard
Liquid Penetrant Inspection	ASTM A165	ASME B16.34
Magnetic Particle Inspection	ASTM E709	ASME B16.34
Radiographic Inspection	ASME B16.34	ASME B16.34
Ultrasonic Inspection	ASTM A388	ASME B16.34
Pressure Testing	API 598 / ISO 5208	API 598 / ISO 5208

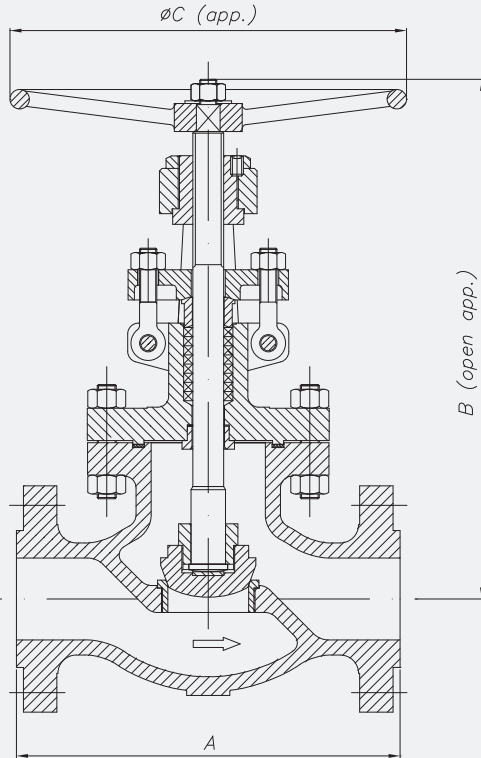


## BS1873 BOLTED BONNET

Class 150

VG150BB

Sizes 2" to 16"



## TRIM

API 600 TRIM N°	Nominal TRIM	Stem / Backseat	Seating Surface Body / Wedge
1	F6	13Cr	13Cr
2	304	18Cr-8Ni	18Cr-8Ni
3	F310	25Cr-20Ni	25Cr-20Ni
4	Hard F6	13Cr	Hard 13Cr
5	Hardfaced	13Cr	Co-Cr A
5A	Hardfaced	13Cr	Ni-Cr
6	F6 and Cu-Ni	13Cr	13Cr and Cu-Ni
7	F6 and Hard F6	13Cr	13Cr and Hard 13Cr
8	F6 and Hardfaced	13Cr	13Cr and Co-Cr A
8A	F6 and Hardfaced	13Cr	13Cr and Ni-Cr
9	Monel	Ni-Cu Alloy	Ni-Cu Alloy
10	316	18Cr-8Ni-Mo	18Cr-8Ni-Mo
11	Monel and Hardfaced	Ni-Cu Alloy	Ni-Cu Alloy and Trim 5 or 5A
12	316 and Hardfaced	18Cr-8Ni-Mo	18Cr-8Ni-Mo and Trim 5 or 5A
13	Alloy 20	19Cr-29Ni	19Cr-29Ni
14	Alloy 20 and Hardfaced	19Cr-29Ni	19Cr-29Ni and Trim 5 or 5A
15	Hardfaced	18Cr-8Ni	Co-CrR A
16	Hardfaced	18Cr-8Ni-Mo	Co-CrR A
17	Hardfaced	18Cr-10Ni-Cb	Co-CrR A
18	Hardfaced	19Cr-29Ni	Co-CrR A

HF: Hard Facing using CoCr welding alloy (Stellite)

## Materials

ACC. / ASME B16.34  
 DI, WCB, WCC, WC1, WC6, WC9, C5, C12, LCB, LCC, CF8, CF8C, CF8M, CF3, CF3M,  
 DUPLEX, SUPERDUPLEX, EXOTIC MATERIALS.

## General dimensions

DN	A (RF / BW)	B	ØC	WEIGHT (App.)
50 (2")	203	341	200	22
65 (2½")	216	367	250	29
80 (3")	241	375	250	40
100 (4")	292	483	300	64
125 (5")	356	537	300	77
150 (6")	406	517	350	105
200 (8")	495	590	400	154
250 (10")	622	754	450	288
300 (12")	698	941	640	507
350 (14")	787	1085	640	520
400 (16")	914	1250	460 <sup>(*)</sup>	810 <sup>(*)</sup>

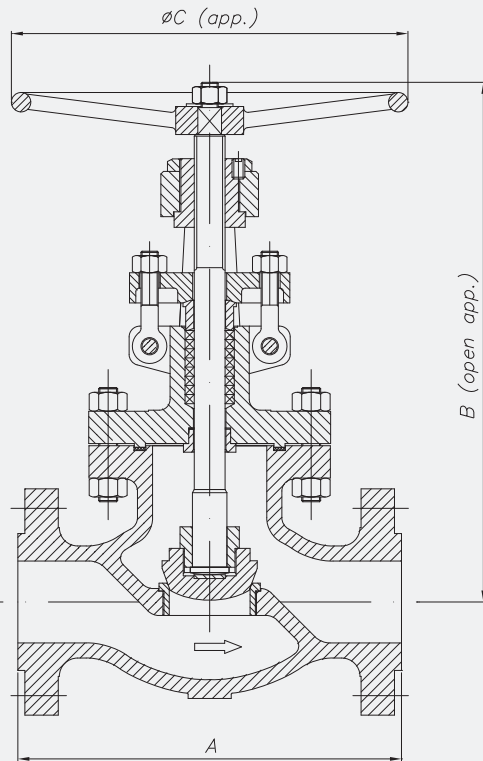
<sup>(\*)</sup> With Gear Operator.  
 Dimensions in mm and weight in kg.  
 Weights and dimensions can be changed without notice.  
 Bigger sizes available under customer request.

## BS1873 BOLTED BONNET

Class 300

VG300BB

Sizes 2" to 12"



## TRIM

API 600 TRIM N°	Nominal TRIM	Stem / Backseat	Seating Surface Body / Wedge
1	F6	13Cr	13Cr
2	304	18Cr-8Ni	18Cr-8Ni
3	F310	25Cr-20Ni	25Cr-20Ni
4	Hard F6	13Cr	Hard 13Cr
5	Hardfaced	13Cr	Co-Cr A
5A	Hardfaced	13Cr	Ni-Cr
6	F6 and Cu-Ni	13Cr	13Cr and Cu-Ni
7	F6 and Hard F6	13Cr	13Cr and Hard 13Cr
8	F6 and Hardfaced	13Cr	13Cr and Co-Cr A
8A	F6 and Hardfaced	13Cr	13Cr and Ni-Cr
9	Monel	Ni-Cu Alloy	Ni-Cu Alloy
10	316	18Cr-8Ni-Mo	18Cr-8Ni-Mo
11	Monel and Hardfaced	Ni-Cu Alloy	Ni-Cu Alloy and Trim 5 or 5A
12	316 and Hardfaced	18Cr-8Ni-Mo	18Cr-8Ni-Mo and Trim 5 or 5A
13	Alloy 20	19Cr-29Ni	19Cr-29Ni
14	Alloy 20 and Hardfaced	19Cr-29Ni	19Cr-29Ni and Trim 5 or 5A
15	Hardfaced	18Cr-8Ni	Co-Cr A
16	Hardfaced	18Cr-8Ni-Mo	Co-Cr A
17	Hardfaced	18Cr-10Ni-Cb	Co-Cr A
18	Hardfaced	19Cr-29Ni	Co-Cr A

HF: Hard Facing using CoCr welding alloy (Stellite)

## Materials

ACC. / ASME B16.34  
 DI, WCB, WCC, WC1, WC6, WC9, C5, C12, LCB, LCC, CF8, CF8C, CF8M, CF3, CF3M,  
 DUPLEX, SUPERDUPLEX, EXOTIC MATERIALS.

## General dimensions

DN	A (RF / BW)	B	ØC	WEIGHT (App.)
50 (2")	267	349	200	31
65 (2½")	292	376	250	43
80 (3")	318	430	250	57
100 (4")	356	486	350	86
125 (5")	400	560	400	130
150 (6")	444	618	450	168
200 (8")	559	937	560	280
250 (10")	622	949	640	385
300 (12")	711	995	460 (*)	671 (*)

(\*) With Gear Operator.

Dimensions in mm and weight in kg.

Weights and dimensions can be changed without notice.

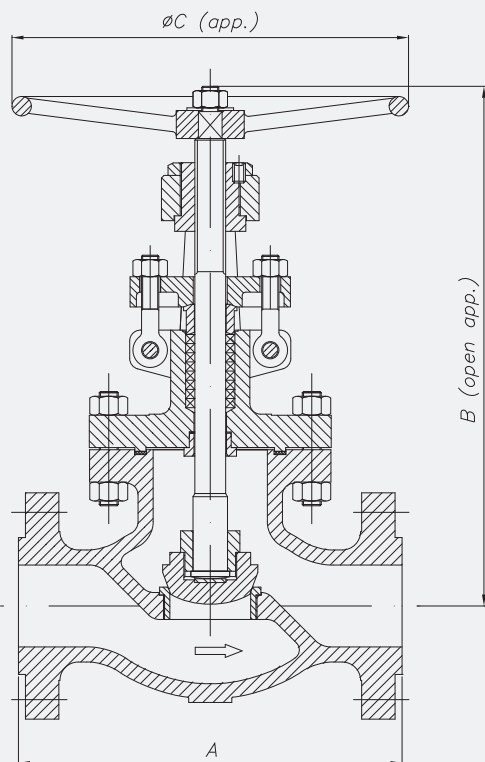
Bigger sizes available under customer request.

## BS1873 BOLTED BONNET

Class 600

VG600BB

Sizes 2" to 12"



## TRIM

API 600 TRIM N°	Nominal TRIM	Stem / Backseat	Seating Surface Body / Wedge
1	F6	13Cr	13Cr
2	304	18Cr-8Ni	18Cr-8Ni
3	F310	25Cr-20Ni	25Cr-20Ni
4	Hard F6	13Cr	Hard 13Cr
5	Hardfaced	13Cr	Co-Cr A
5A	Hardfaced	13Cr	Ni-Cr
6	F6 and Cu-Ni	13Cr	13Cr and Cu-Ni
7	F6 and Hard F6	13Cr	13Cr and Hard 13Cr
8	F6 and Hardfaced	13Cr	13Cr and Co-Cr A
8A	F6 and Hardfaced	13Cr	13Cr and Ni-Cr
9	Monel	Ni-Cu Alloy	Ni-Cu Alloy
10	316	18Cr-8Ni-Mo	18Cr-8Ni-Mo
11	Monel and Hardfaced	Ni-Cu Alloy	Ni-Cu Alloy and Trim 5 or 5A
12	316 and Hardfaced	18Cr-8Ni-Mo	18Cr-8Ni-Mo and Trim 5 or 5A
13	Alloy 20	19Cr-29Ni	19Cr-29Ni
14	Alloy 20 and Hardfaced	19Cr-29Ni	19Cr-29Ni and Trim 5 or 5A
15	Hardfaced	18Cr-8Ni	Co-CrR A
16	Hardfaced	18Cr-8Ni-Mo	Co-CrR A
17	Hardfaced	18Cr-10Ni-Cb	Co-CrR A
18	Hardfaced	19Cr-29Ni	Co-CrR A

HF: Hard Facing using CoCr welding alloy (Stellite)

## Materials

ACC. / ASME B16.34  
 DI, WCB, WCC, WC1, WC6, WC9, C5, C12, LCB, LCC, CF8, CF8C, CF8M, CF3, CF3M,  
 DUPLEX, SUPERDUPLEX, EXOTIC MATERIALS.

## General dimensions

DN	A (RF / BW)	B	ØC	WEIGHT (App.)
50 (2")	292	425	250	35
65 (2½")	330	502	300	48
80 (3")	356	521	350	73
100 (4")	432	620	450	117
125 (5")	508	756	500	245
150 (6")	559	886	560	327
200 (8")	660	932	460 (*)	482 (*)
250 (10")	787	1040	610 (*)	700 (*)
300 (12")	838	1280	760 (*)	900 (*)

(\*) With Gear Operator.

Dimensions in mm and weight in kg.

Weights and dimensions can be changed without notice.

Bigger sizes available under customer request.

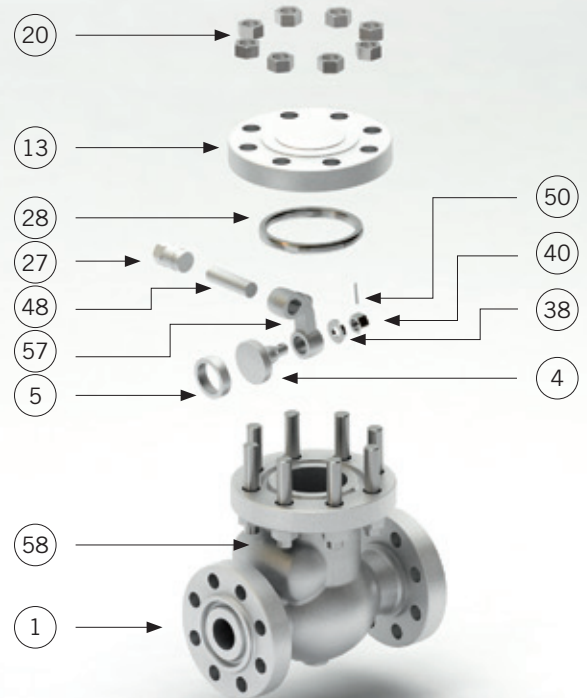
## | GATE, GLOBE &amp; CHECK VALVES |

# CHECK VALVES

## 2" - 36" | Class 150 - Class 600



While not a valve in the traditional sense, check valves serve an important application—namely to prevent flow in one direction while allowing it in the other. A check valve is self-actuated and designed to prevent fluid from flowing back into the system (prevent reverse flow). Real-life applications include preventing backflow into an injection line or into a pump. The fluid flow opens the valve by forcing a disk or ball in one direction. When the flow stops, the disk or ball is seated and closes the valve. They can be installed in horizontal or vertical upward flow piping.



BILL OF MATERIALS		TRIM 8	TRIM 2	TRIM 8	TRIM 10
Item	Description	Carbon Steel	Carbon Steel (Low Temp.)	Alloy Steel	Stainless Steel
1	Body	A 216 Gr. WCB	A 352 Gr. LCB	A 217 Gr. C5	A 351 Gr. CF8M
4	Disc	A105 + ER 410	A 182 Gr. F304	A 182 Gr. F6a	A 182 Gr.F316
5	Seat Ring	A105 + Stellite	A 182 Gr. F304	A 182 Gr. F6a + Stellite	----
13	Cover	A 216 Gr.WCB / A 515 Gr.70	A 352 Gr.LCB / A 182 Gr.F304	A 217 Gr. C5	A 351 Gr. CF8M
20	Cover Bolt & Nut	A 193 Gr.B7 / A 194 Gr.2H	A 320 Gr.L7 / A 194 Gr.7	A 193 Gr.B7 / A 194 Gr.2H	A 193 Gr.B7 / A 194 Gr.2H <sup>(1)</sup>
27	Bracket Stud & Nut	A 193 Gr.B8 / A 194 Gr.8	A 193 Gr.B8 / A 194 Gr.8	A 193 Gr.B8 / A 194 Gr.8	A 193 Gr.B8M / A 194 Gr.8M
28	Gasket	SPW S.S. 304 / Graphite	SPW S.S. 304 / Graphite	SPW S.S. 304 / Graphite	SPW S.S. 316 / Graphite
38	Washer	AISI 410	AISI 304	AISI 410	AISI 316
40	Disc Nut	AISI 304	AISI 304	AISI 304	AISI 316
48	Hinge Pin *	A182 Gr. F6a	A182 Gr. F304	A182 Gr. F6a	A 182 Gr. F316
50	Split Pin	AISI 304	AISI 304	AISI 304	AISI 316
57	Hinge	A 216 Gr.WCB / A 515 Gr.70	A 352 Gr. LCB	A 217 Gr. C5	A 351 Gr. CF8M
58	Hinge Bracket	A 216 Gr.WCB / A 515 Gr.70	A 352 Gr. LCB	A 217 Gr. C5	A 351 Gr. CF8M

(1) Zinc coating.

# SLIGHTS

## Body and Cover

Bodies and covers are high quality cast and afterwards precisely machined, directing the attention to prevent stress concentration.

The design characteristic of check valves is the unobstructed passageway, with a full-opening when required.

## Body and Cover Gasket

The design of the body/cover gasket varies depending on the class of the valve.

Class 150 to 600 check valves consist of a male-female connection with a graphite or spiral wound gasket.

Class 900 and above check valves consist of a ring type joint.

In pressure seal designs the sealing is achieved through a gasket that takes advantage of the internal pressure of the line. The material most commonly used is high purity graphite being located between the body and the body retainer ring.

### DESIGN STANDARDS

Bolted Bonnet Swing Check Valve	BS1868 & ASME B16.34 & API 6D
Pressure Seal Swing Check Valve (Long & Short pattern)	ASME B16.34
Face to Face / End to End Dimensions	ASME B16.10 / ISO 5752
End Flanged dimensions	ASME B16.5 / ISO 7005-1, ASME B16.47-A&B MSS SP- 44 & API 605
Butt-weld End dimensions	ASME B16.25
Valve inspection & testing	BS1868 & ISO 5208 & BS6755
Pressure - Temperature rating	ASME B16.34

### TEST / INSPECTION METHODS & ACCEPTANCE CRITERIA

TEST / INSPECTION	METHOD	ACCEPTANCE CRITERIA
Visual Inspection		MSS SP-55
Marking		MSS SP-25 & ISO5208
Dimensional Inspection		Applicable valve
Chemical Analysis	ASTM E350	Applicable Standard
Mechanical Properties	ASTM A370	Applicable Standard
Liquid Penetrant Inspection	ASTM A165	ASME B16.34
Magnetic Particle Inspection	ASTM E709	ASME B16.34
Radiographic Inspection	ASME B16.34	ASME B16.34
Ultrasonic Inspection	ASTM A388	ASME B16.34
Pressure Testing	API 598 / ISO 5208	API 598 / ISO 5208

## API 6D / BS 1868 BOLTED COVER

Class 150

VR150BC

Sizes 2" to 36"

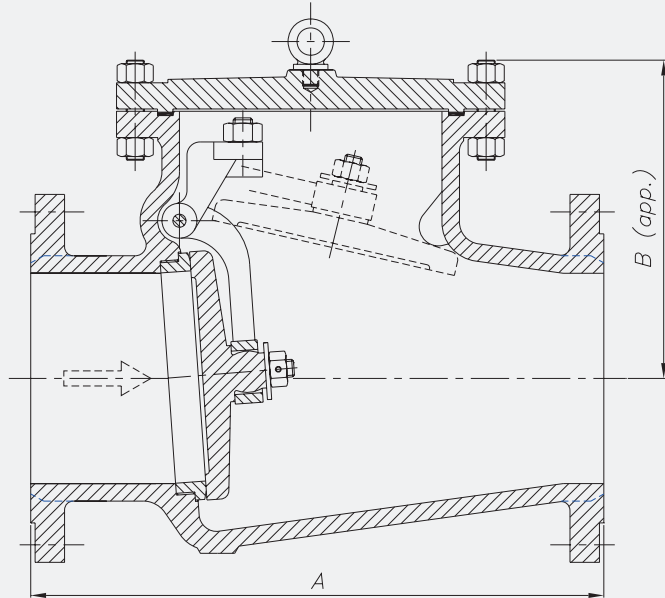
## TRIM

API 600 TRIM N°	Nominal TRIM	Stem / Backseat	Seating Surface Body / Wedge
1	F6	13Cr	13Cr
2	304	18Cr-8Ni	18Cr-8Ni
3	F310	25Cr-20Ni	25Cr-20Ni
4	Hard F6	13Cr	Hard 13Cr
5	Hardfaced	13Cr	Co-Cr A
5A	Hardfaced	13Cr	Ni-Cr
6	F6 and Cu-Ni	13Cr	13Cr and Cu-Ni
7	F6 and Hard F6	13Cr	13Cr and Hard 13Cr
8	F6 and Hardfaced	13Cr	13Cr and Co-Cr A
8A	F6 and Hardfaced	13Cr	13Cr and Ni-Cr
9	Monel	Ni-Cu Alloy	Ni-Cu Alloy
10	316	18Cr-8Ni-Mo	18Cr-8Ni-Mo
11	Monel and Hardfaced	Ni-Cu Alloy	Ni-Cu Alloy and Trim 5 or 5A
12	316 and Hardfaced	18Cr-8Ni-Mo	18Cr-8Ni-Mo and Trim 5 or 5A
13	Alloy 20	19Cr-29Ni	19Cr-29Ni
14	Alloy 20 and Hardfaced	19Cr-29Ni	19Cr-29Ni and Trim 5 or 5A
15	Hardfaced	18Cr-8Ni	Co-CrR A
16	Hardfaced	18Cr-8Ni-Mo	Co-CrR A
17	Hardfaced	18Cr-10Ni-Cb	Co-CrR A
18	Hardfaced	19Cr-29Ni	Co-CrR A

HF: Hard Facing using CoCr welding alloy (Stellite)

## Materials

ACC. / ASME B16.34  
 DI, WCB, WCC, WC1, WC6, WC9, C5, C12, LCB, LCC, CF8, CF8C, CF8M, CF3, CF3M,  
 DUPLEX, SUPERDUPLEX, EXOTIC MATERIALS.



## General dimensions

DN	A (RF / BW)	B	WEIGHT (App.)
50 (2")	203	135	17
65 (2½")	216	155	21
80 (3")	241	168	29
100 (4")	292	235	42
125 (5")	330	249	59
150 (6")	356	277	68
200 (8")	495	339	118
250 (10")	622	398	197
300 (12")	698	525	302
350 (14")	787	553	372
400 (16")	914	584	570
450 (18")	978	668	665
500 (20")	978	712	900
550 (22")	1067	725	1100
600 (24")	1295	740	1359
650 (26")	1295	780	1850
700 (28")	1448	810	2000
750 (30")	1524	1050	2400
900 (36")	1956	1390	3380

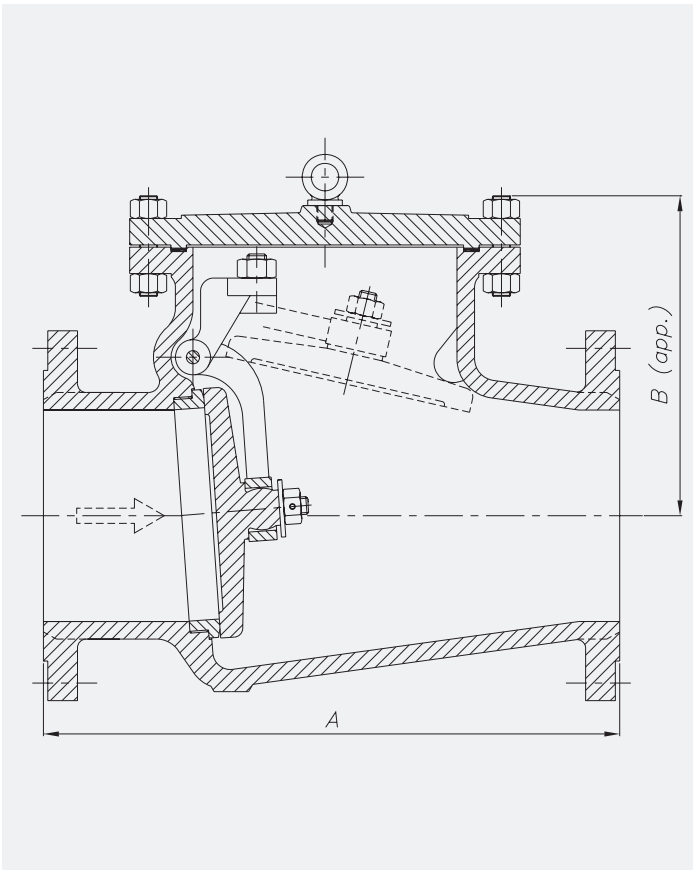
Dimensions in mm and weight in kg.  
 Weights and dimensions can be changed without notice.  
 Bigger sizes available under customer request.

## API 6D / BS 1868 BOLTED COVER

Class 300

VR300BC

Sizes 2" to 20"



## TRIM

API 600 TRIM N°	Nominal TRIM	Stem / Backseat	Seating Surface Body / Wedge
1	F6	13Cr	13Cr
2	304	18Cr-8Ni	18Cr-8Ni
3	F310	25Cr-20Ni	25Cr-20Ni
4	Hard F6	13Cr	Hard 13Cr
5	Hardfaced	13Cr	Co-Cr A
5A	Hardfaced	13Cr	Ni-Cr
6	F6 and Cu-Ni	13Cr	13Cr and Cu-Ni
7	F6 and Hard F6	13Cr	13Cr and Hard 13Cr
8	F6 and Hardfaced	13Cr	13Cr and Co-Cr A
8A	F6 and Hardfaced	13Cr	13Cr and Ni-Cr
9	Monel	Ni-Cu Alloy	Ni-Cu Alloy
10	316	18Cr-8Ni-Mo	18Cr-8Ni-Mo
11	Monel and Hardfaced	Ni-Cu Alloy	Ni-Cu Alloy and Trim 5 or 5A
12	316 and Hardfaced	18Cr-8Ni-Mo	18Cr-8Ni-Mo and Trim 5 or 5A
13	Alloy 20	19Cr-29Ni	19Cr-29Ni
14	Alloy 20 and Hardfaced	19Cr-29Ni	19Cr-29Ni and Trim 5 or 5A
15	Hardfaced	18Cr-8Ni	Co-Cr A
16	Hardfaced	18Cr-8Ni-Mo	Co-Cr A
17	Hardfaced	18Cr-10Ni-Cb	Co-Cr A
18	Hardfaced	19Cr-29Ni	Co-Cr A

HF: Hard Facing using CoCr welding alloy (Stellite)

## Materials

ACC. / ASME B16.34  
 DI, WCB, WCC, WC1, WC6, WC9, C5, C12, LCB, LCC, CF8, CF8C, CF8M, CF3, CF3M,  
 DUPLEX, SUPERDUPLEX, EXOTIC MATERIALS.

## General dimensions

DN	A (RF / BW)	B	WEIGHT (App.)
50 (2")	267	158	21
65 (2½")	292	167	35
80 (3")	318	188	43
100 (4")	356	259	60
125 (5")	400	281	85
150 (6")	444	319	131
200 (8")	533	401	213
250 (10")	622	483	384
300 (12")	711	555	449
350 (14")	838	585	680
400 (16")	864	615	840
450 (18")	978	643	1025
500 (20")	1016	681	1180

Dimensions in mm and weight in kg.  
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## API 6D / BS 1868 BOLTED COVER

Class 600

VR600BC

Sizes 2" to 16"

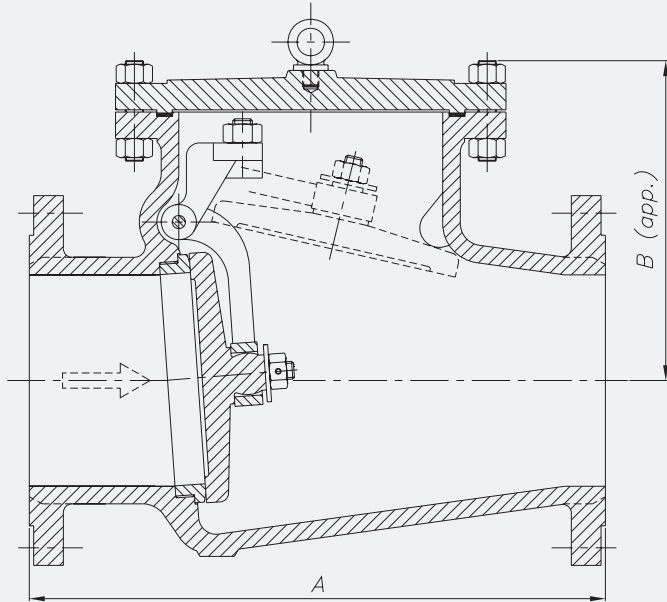
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7	F6 and Hard F6	13Cr	13Cr and Hard 13Cr
8	F6 and Hardfaced	13Cr	13Cr and Co-Cr A
8A	F6 and Hardfaced	13Cr	13Cr and Ni-Cr
9	Monel	Ni-Cu Alloy	Ni-Cu Alloy
10	316	18Cr-8Ni-Mo	18Cr-8Ni-Mo
11	Monel and Hardfaced	Ni-Cu Alloy	Ni-Cu Alloy and Trim 5 or 5A
12	316 and Hardfaced	18Cr-8Ni-Mo	18Cr-8Ni-Mo and Trim 5 or 5A
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15	Hardfaced	18Cr-8Ni	Co-CRr A
16	Hardfaced	18Cr-8Ni-Mo	Co-CRr A
17	Hardfaced	18Cr-10Ni-Cb	Co-CRr A
18	Hardfaced	19Cr-29Ni	Co-CRr A

HF: Hard Facing using CoCr welding alloy (Stellite)

## Materials

ACC. / ASME B16.34  
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125 (5")	508	319	140
150 (6")	559	362	200
200 (8")	660	437	360
250 (10")	787	490	673
300 (12")	838	528	875
350 (14")	889	572	944
400 (16")	991	660	1220

Dimensions in mm and weight in kg.  
 Weights and dimensions can be changed without notice.  
 Bigger sizes available under customer request.





## MORE PRODUCTS



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BALL VALVES - TRIPLE OFFSET BUTTERFLY VALVES - STRAINERS

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## ACCESSORIES



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CHAIN WHEELS - GEAR OPERATORS - ELECTRIC ACTUATOR - POSITION INDICATOR  
LOCKING DEVICES - LANTERN RING - LIMIT SWITCH - BYPASS - DAMPER

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# GATE, GLOBE & CHECK VALVES



## UNIMAC CONTROL SYSTEMS

C-1/39/7, Phase-3,  
Nr. Ambica Weighbridge,  
Naroda, GIDC,  
AHMEDABAD-382330 INDIA

Phone : 91-79- 22133221  
Telefax : 91-79-2213 1349  
E-mail : [info@unimacvalves.co.in](mailto:info@unimacvalves.co.in) ;  
[sales@unimacvalves.co.in](mailto:sales@unimacvalves.co.in) ;  
[samirrawal@hotmail.com](mailto:samirrawal@hotmail.com) ;  
[umsplabd@gmail.com](mailto:umsplabd@gmail.com)  
Website : [www.unimacvalves.co.in](http://www.unimacvalves.co.in)