



Cast Steel Gate, Globe, Check Valve Catalogue



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CERTIFICATES

ISO
CE(PED 97/23/CE)



COMPANY PROFILE

What distinguishes Terofox Valves is the fact that we manufacture industrial valves, employing dedicated engineers, quality assurance personnel, working on our behalf at all our points of manufacture. In this way we are able to make sure that all our customers' needs and concerns are consistently and professionally met and monitored on an ongoing basis.

Our dedicated team, with many years of experience, specialized in providing own valves and sourcing solutions for valves and fittings in both Taiwan and China. This includes ODM and OEM, designed engineering for our customers. Products sourced, service the chemical, petrochemical, process control, water purification and mechanical engineering requirements of our customers all over the world.

Terofox provides one stop service in diversity of valves' procurement too. Not only our own API594 dual plate check valve and industrial ball valves, but also including the valves among API600, API602 and API603 Gates, Globes and Check Valves, Knife Gate Valves, Butterfly Valves, API6D Trunnion mounted Ball Valves, Corrosive PFA valves, Strainers, safety relief valves, hygienic components, plug valves as well as fittings, flanges, nuts and bolts are all available on requests. Our manufacturers all adhere to quality management procedures as laid down in ISO 9001 and PED 97/23/EC approvals.



Valves are available in the following materials. Carbon steel LLC, LCB, WCB, WC6, Austenitic Stainless Steel CF8 (SS304), CF8M (SS316), CF3M (SS316L), Duplex, Alloy 20, Monel and Hastelloy C. Our Cooperative foundry has certified by ISO 9001 which is our minimum approval in allocating the foundry.

Based in Taiwan, our mission, as a team of dedicated professionals, is to assist our customers in obtaining the best possible solutions to their requirements and needs, at the most advantageous prices, without compromising on delivery or quality.



WE GUARANTEE OUR CUSTOMERS:

- * 100% Quality assurance
- * Cost-Efficient on valve procedures
- * Short Delivery
- * 1-year warranty
- * Inventory Status
- * Automation Service
- * One-Stop Shop Service
- * Engineering expertise
- * Free download of all our detailed drawings online

With this in mind, we believe in developing long term relationships, based on mutual trust and honesty. Thinking ahead and Quick response to customers are our permanent goals in Terofox. So we do believe “ The Right Valve For The Right Application, Always. “



CAST STEEL GATE VALVES

Cast Steel Gate Valves have an extended use in many applications such as chemical, petrochemical, oil & gas due to the fact they can work with metal to metal sealing. Widely interior trim no. is changeable from Trim#1 to Trim18 according to API600 Trim# no. Norm.

When the valve is fully open, the free valve area coincides with area of the pipe, therefore the head loss of the valve is small. Also, Gate valves are not designed for throttling service.

Design

All Gate valves are full ported and meet the design requirements API 600 and API6D (option), B16.34 for general design. Valves are available in a complete range of body / bonnet material and trims.

Range Of Material

Standard body/bonnet materials included grade of carbon steel, low alloy and stainless steel. Optional packing and gasket materials are available for full range of applications. Trim# materials are generally in Trim#1, Trim#8 for industrial purpose, Trim#5 is recommendation of using under steam application, for more trim material please see appendix.

Available Modifications for Cast Steel Gate Valves

Also, it has numerous types of body/bonnet joints, dependent upon which type of valve is needed. Some types for you to choose from are bolted bonnet, pressure-seal bonnet, welded bonnet, threaded bonnet, or union bonnet. These different types of bonnets are usually furnished based on the pressure allowances of the valve itself. We can provide also trim changes, gear box, actuator, handwheel extended, undrilled flange and NACE MR0175 treatment for customers.

Capability:

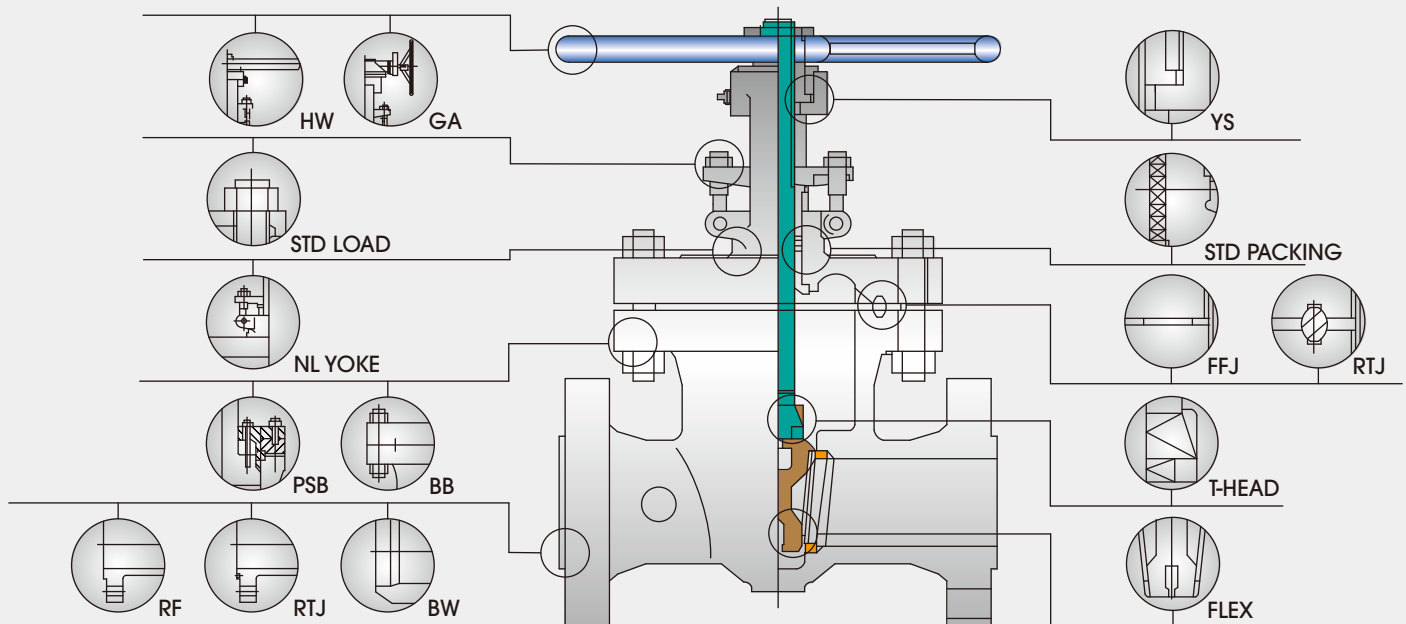
Pressure Rating: Class 150 ~ Class 900

(Class 1500 / 2500 is High pressure sealing gate valve)

Size Range: 2" ~48"

End Connections : Flange RF (125 ~ 260 AAH)/ RTJ, Butt Weld

TYPE OF GATE VALVE:



Operation

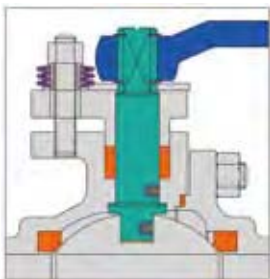
Large handwheels for easy operation, also available with gear box operation, bare shaft for actuation purpose, motor actuators, pneumatic or hydraulic actuators for certain services.

O.S. & Yoke

Outside Screw and Yoke is standard unit, S-Bear and D-Bear are both customized units.

Live Load Packing

In services, requiring frequent cycling or with high pressure / temperature variations, live loading extends the service life between maintenance periods by less frequent gland packing adjustments. Belleville spring are employed to provide constant packing gland stress.



B.B.

Bolted Bonnet is standard unit. Welding bonnet and pressure seal bonnet in

service are querying frequent cycling or with high pressure / temperature variations.

End Connections:

Flange RF, RTJ or Butt weld Ends are all standard unit for customers.

Lantern ring and double packing set

Lantern ring with leak-off fittings connection and double packing stack is optional for severe services.

Stem

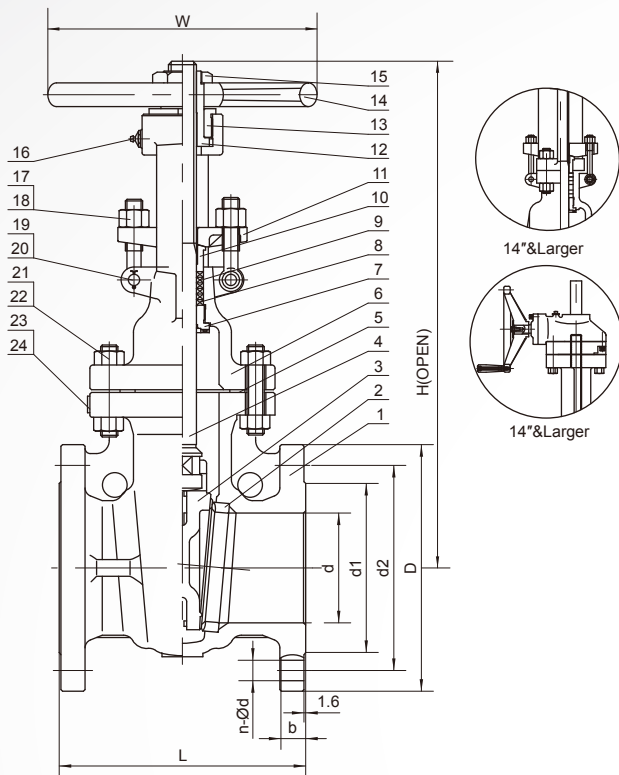
All wedges are provided with forged T-head, the stem at the stem wedge connection is strengthened. This design also allows the wedge to self-align, eliminating the possibility of a bent stem jamming the wedge.

Wedge

Flexible wedge is standard unit on our cast gate valve.

Flexible wedge has a one piece, twin disc wedge which is designed so that each half discs independently. Solid wedge only available for API602 small forged valve ; split wedge is for our conduit gate valve.

DRAWINGS



MATERIALS LIST

NO.	PART NAME	MATERIAL
1	Body	ASTM A216 WCB
2	Seat	ASTM A105+STL#6
3	Wedge	ASTM A216 WCB+F6
4	Stem	ASTM A182 F6
5	Gasket	SS304+Flexible Graphite
6	Bonnet	ASTM A216 WCB
7	Back Seat	ASTM A276 410
8	Packing	Stainless Steel Wire With
9	Packing	Flexible Graphite
10	Gland	ASTM A276 410
11	Gland Flange	ASTM A216 WCB
12	Stem Nut	ASTM A493 D-2
13	Gland Nut	ASTM A29 1035
14	Handwheel	ASTM A536 (60-40-18)
15	Lock Nut	ASTM A29 1035
16	Oilfiller	ASTM A570 Gr.A
17	Eye Bolt	ASTM A193 B7
18	Eye Nut	ASTM A194 2H
19	Pin	ASTM A29 1035
20	Split Pin	ASTM A570 Gr.A
21	Bolt	ASTM A193 B7
22	Nut	ASTM A194 2H
23	Name Plate	ASTM A276 304
24	Rivet	ASTM A276 304


FLANGE DIMENSION: ASME B16.5

FACE TO FACE: ASME B16.10

MATERIAL: WCB / Trim#8

Applicable standards

ANSI Cast Steel Gate Valves

- Wall Thickness : API600, ASME B16.34
- Face to Face : ASME B16.10
- End Flange : ASME B16.5
- Butt Weld Ends ASME B16.25
- Marking: MSS SP-25
- Inspection : API 598
- Label :  Terofox

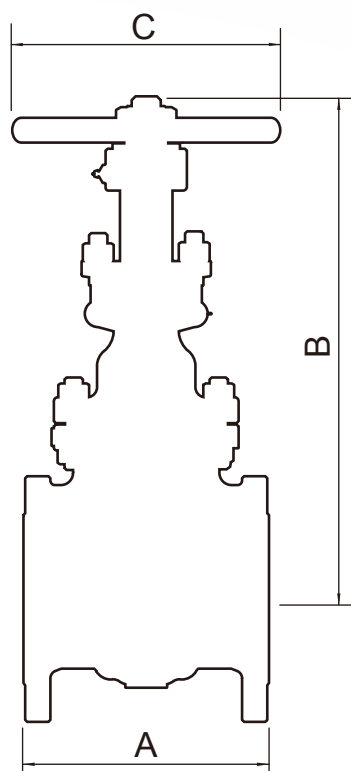
Standard Design

- Standard Bore
- OS & Y – Outside Screw And Yoke
- BB, Bolted Bonnet
- Flexible Wedge
- Rising Stem and Non-Rising Handwheel
- Flange Ends, Butt Weld End
- Available with Gear Box Operator

Dimensions

NPS	2	2-1/2	3	4	6	8	10	12	14	16	18	20	24	26	28	30	32	36	In.
DN	50	65	80	100	150	200	250	300	350	400	450	500	600	650	700	750	800	900	mm

DIMENSIONS



GATE										unit:mm
		BW	RF	H (open)	W		BW	RF	H (open)	W
		A	A	B	C		A	A	B	C
1.5"	150#		165	309	160	300#				
2"		216	178	386	200		216	216	417	200
2.5"		241	190	435	200		241	241	460	200
3"		283	203	483	250		283	283	526	250
4"		305	229	587	250		305	305	650	250
6"		403	267	767	300		403	403	824	350
8"		419	292	955	350		419	419	987	400
10"		457	330	1146	400		457	457	1192	450
12"		502	356	1328	450		502	502	1431	500
14"		572	381	1519	500		762	762	1559	560
16"		610	406	1721	560		838	838	1758	640
18"		660	432	1900	640		914	914	1942	640
20"		711	457	2116	640		991	991	2145	720
24"		813	508	2480	720		1143	1143	2904	760



GATE										unit:mm
		BW	RF	H (open)	W		BW	RF	H (open)	W
		A	A	B	C		A	A	B	C
1.5"	600#					900#				
2"		292	292	427	250		368	368	547	250
2.5"		330	330	473	250		419	419	575	350
3"		356	356	538	300		381	381	578	350
4"		432	432	657	350		457	457	655	400
6"		559	559	872	450		610	610	938	500
8"		660	660	1101	500		737	737	1143	640
10"		787	787	1279	640		838	838	1331	720
12"		838	838	1486	640		965	965	1486	720
14"		889	889	1643	720		1029	1029		
16"		991	991	1798	720		1130	1130		
18"		1092	1092	2101	760					
20"		991	991	2259	760					
24"		1397	1397	2807	760					



CAST STEEL GLOBE VALVES

Globe valves are most commonly used where throttling or both throttling and shutoff are required. which can be frequently operated due to its low friction, and can regulate the flow easily. The lineal movement of its axis is shorter than the gate valves, therefore the operating time and waste is reduced. It can be used with all clean fluids : Liquid, gas and vapor, but the fluid temperature are limited only by the materials of construction.

We provide handwheel, Gear box operation, also work on ISO TOP Flange for actuator purposes.

Design

All Globe valves meet the design requirements B16.34, BS1873 for general design. Valves are available in a complete range of body / bonnet material and trims. Globe valve body is marked with flow-direction arrows to facilitate the installation.

Range Of Material

Standard body/bonnet materials included grade of carbon steel, low alloy and stainless steel. Optional packing and gasket materials are available for full range of applications.

Trim# materials are generally in Trim#1, Trim#8 for industrial purpose, Trim#5 is recommendation of using under steam application, for more trim material please see appendix.

Available Modifications for Cast Steel Globe Valves

Also, it has numerous types of body/bonnet joints, dependent upon which type of valve is needed. Some types for you to choose from are bolted bonnet, pressure-seal bonnet, welded bonnet, threaded bonnet, or union bonnet. These different types of bonnets are usually furnished based on the pressure allowances of the valve itself. We can provide also trim changes, gear box, actuator, handwheel extended, undrilled flange, NACE MR0175 treatment for customers.

Capability:

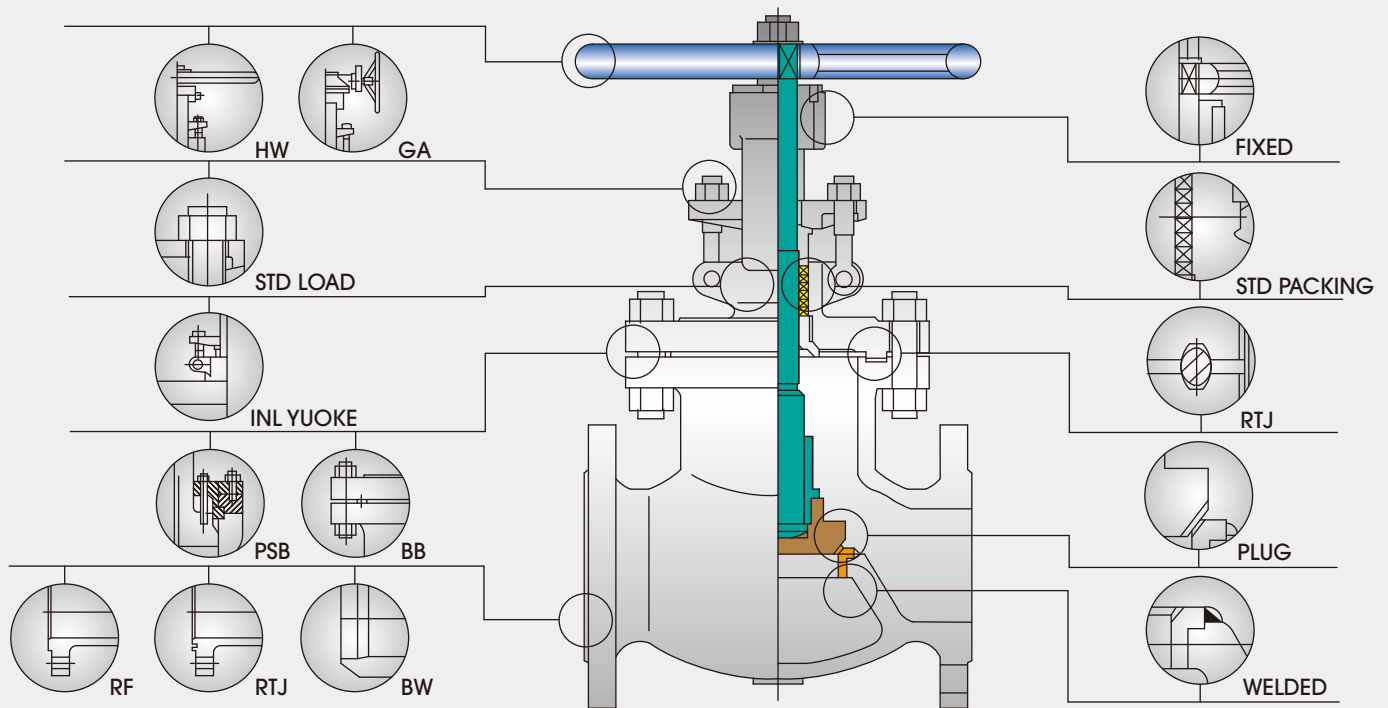
Pressure Rating: Class 150 ~ Class 900

(Class 1500 / 2500 is High pressure sealing globe valve)

Size Range: 2" ~26"

End Connections : Flange RF (125 ~ 260 AAH)/ RTJ, Butt Weld

TYPE OF GLOBE VALVE:



Operation

Large handwheels for easy operation, also available with gear box operation, bare shaft for actuation purpose, motor actuators, pneumatic or hydraulic actuators for certain services.

O.S. & Yoke

Outside Screw and Yoke is standard unit.

B.B.

Bolted Bonnet is standard unit.

Welding bonnet and pressure seal bonnet in service are querying frequent cycling or with high pressure / temperature variations.

End Connections:

Flange RF, RTJ or Butt weld Ends are all standard unit for customers.

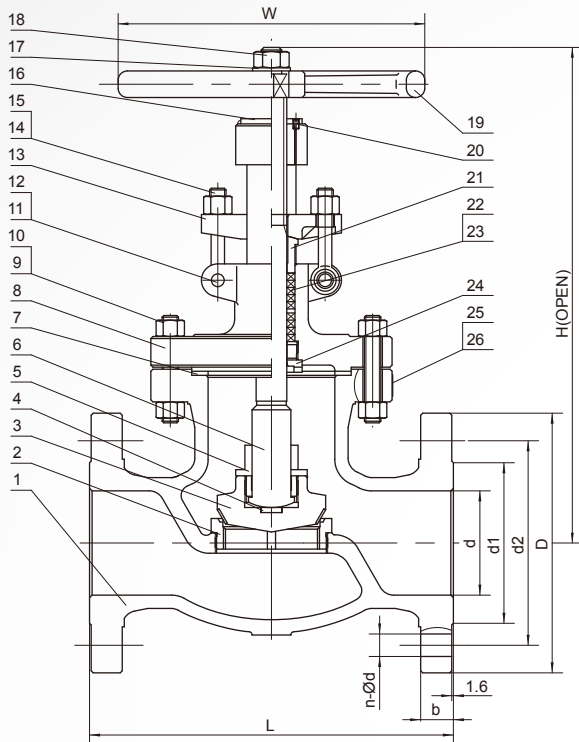
Standard Packing

Stainless steel wire with flexible graphite material provides good tensile and solid reaction in the valve.

Disc

Plug disc is stem guided to all sizes. Disc has a differential angle front the seat to provide a line contact for maximum sealing. It provides virtual line contact and lower closing force for tight seating. The narrow seating area on the disc is subject to erosion in high-velocity flow.

DRAWINGS



MATERIALS LIST

NO.	PART NAME	MATERIAL
1	Body	ASTM A216 WCB
2	Seat Ring	ASTM A105+STL#6
3	Disc	ASTM A105+F6
4	Thrust Plate	ASTM A276 430
5	Disc Cover	ASTM A276 410
6	Stem	ASTM A182-F6
7	Gasket	304+Flexible Graphite
8	Bonnet	ASTM A216 WCB
9	Bolt	ASTM A193-B7
10	Nut	ASTM A194-2H
11	Pin	ASTM A29 1035
12	Split Pin	ASTM A570 Gr.A
13	Gland Flange	ASTM A216 WCB
14	Eye Bolt	ASTM A193-B7
15	Eye Nut	ASTM A194-2H
16	Stem Nut	ASTM A439 D-2
17	Gasket	ASTM A276 410
18	Nut	ASTM A194-2H
19	Handwheel	ASTM A536(60-40-18)
20	Screw	ASTM A29 1035
21	Gland	ASTM A276 410
22	Packing	Flexible Graphite
23	Packing	Stainless Steel Wire
24	Back Seat	ASTM A276 410
25	Rivet	ASTM A276 304
26	Name Plate	ASTM A276 304


FLANGE DIMENSION: ASME B16.5

FACE TO FACE: ASME B16.10

MATERIAL: WCB / Trim#8

Applicable standards

ANSI Cast Steel Globe Valves

- Wall Thickness : API600, ASME B16.34
- Face to Face : ASME B16.10
- End Flange : ASME B16.5
- Butt Weld Ends ASME B16.25
- Marking: MSS SP-25
- Inspection : API 598
- Label :  Terofox

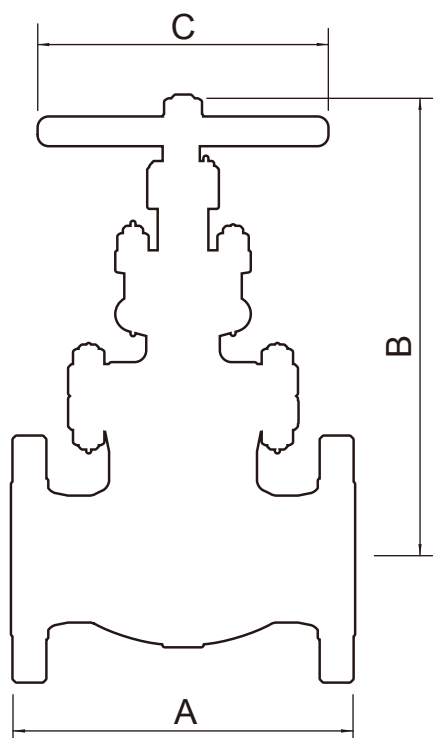
Standard Design

- Standard Bore
- OS & Y – Outside Screw And Yoke
- BB, Bolted Bonnet
- Spherical disc
- Rising Stem and Rising Handwheel
- Flange Ends, Butt Weld Ends
- Seat ring is non-renewable (welded type)
- Available with Gear Box Operator

Dimensions

NPS	2	2-1/2	3	4	6	8	10	12	14	16	18	20	24	26	28	30	32	36	In.
DN	50	65	80	100	150	200	250	300	350	400	450	500	600	650	700	750	800	900	mm

DIMENSIONS



GLOBE										unit:mm
		BW	RF	H (open)	W		BW	RF	H (open)	W
		A	A	B	C		A	A	B	C
2"	150#	203	203	341	200	300#	267	267	349	200
2.5"		216	216	367	200		292	292	376	250
3"		241	241	375	250		318	318	430	250
4"		292	292	483	300		356	356	486	350
6"		406	406	540	350		444	444	618	450
8"		495	495	590	400		559	559	937	560
10"		622	622	754	450		622	622	949	640
12"		698	698	941	560		711	711	995	640
14"		787	787	966	560		838	838	1066	640
16"		914	914	1085	720		864	864	1185	720
18"		978								
20"		978								
24"										



GLOBE										unit:mm
		BW	RF	H (open)	W		BW	RF	H (open)	W
		A	A	B	C		A	A	B	C
2"	600#	292	292	425	250	900#	368	368	478	350
2.5"		330	330	502	300		419	419	502	400
3"		356	356	521	350		381	381	614	450
4"		432	432	620	450		457	457	789	560
6"		559	559	886	560		610	610	886	640
8"		660	660	932	640		737	737	932	640
10"		787	787	1040	640		838	838	1040	640
12"		838	838	1280	720		965	965		
14"		889	889				1029	1029		
16"		991	991				1130	1130		
18"		1092	1092							
20"										
24"										

face to face, Height, Handwheel, Gear box size, Weight



CAST STEEL SWING CHECK VALVES

Check valves are the most commonly used to prevent flow reversal in piping systems, also popular style of the several designs of the rotating flow control element check valve. It means swing check valve is a simple design and has a straight-through flow path, with low resistance to flow when open.

However, as it's drawbacks, it should not be used for high-velocity flow or frequent flow reversals, which can produce disc instability and result in accelerated hinge and hinge-pin wear.

Our Cast Steel Swing Check valves provide diversity of interior trims from trin#1 ~ trim#16 upon on request.

Design

All Cast Steel Swing Check Valves meet the design requirements BS1868, B16.34 for general design. Valves are available in a complete range of body / bonnet material and trims. It's very easy to understand our check valve interior materials on label which welds on the bonnet of each swing check valve.

Range Of Material

Standard body/bonnet materials included grade of carbon steel, low alloy and stainless steel. Optional packing and gasket materials are available for full range of applications.

Available Modifications for Cast Steel Check Valves

We can provide not only trim changes, lift type of check valve, NACE MR0175 treatment, but also outside lever and weight (counter-weight), tilting disc design as well. Many options or configuration could be discussed by requirements.

For other check valves such as API594 Dual plate check valve, small forged check valves, commercial screw stainless steel check valves, please contact Terofox Service Center.

Capability:

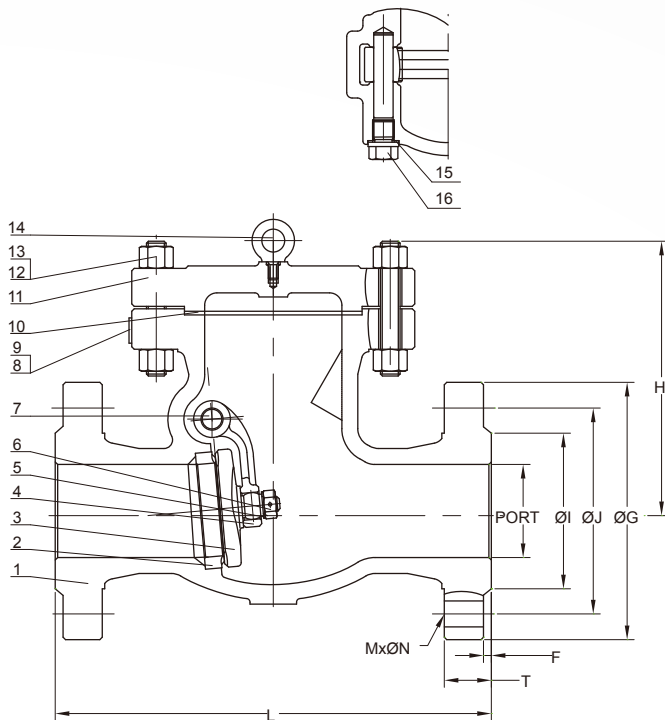
Pressure Rating: Class 150 ~ Class 900

(Class 1500 / 2500 is High pressure sealing check valve)

Size Range: 2" ~ 26"

End Connections : Flange RF (125 ~ 260 AAH)/ RTJ, Butt Weld

DRAWINGS



MATERIALS LIST

NO.	PART NAME	MATERIAL
1	BODY	ASTM A216 Gr.WCB
2	SEAT RING	ASTM A105+STL#6
3	DISC	ASTM A105+F6
4	HINGE	ASTM A216 Gr.WCB
5	WASHER	ASTM A276 410
6	NUT	ASTM A276 410
7	PIN	ASTM A276 410
8	RIVET	SS304
9	NAME PLATE	SS304
10	BODY SEAL	SS304 +FLEXIBLE GRAPHITE
11	BONNET	ASTM A216 Gr.WCB
12	BOLT	ASTM A193 B7
13	NUT	ASTM A194 2H
14	LIFTING RING	ASTM A29 1035
15	BODY SEAL	ASTM A276 410
16	PLUG	ASTM A276 410

FLANGE DIMENSION: ASME B16.5

FACE TO FACE: ASME B16.10

MATERIAL: WCB / Trim#8

Applicable standards

ANSI Cast Steel Check Valves

- Wall Thickness : BS1868, ASME B16.34
- Face to Face : ASME B16.10
- End Flange : ASME B16.5
- Marking: MSS SP-25
- Inspection : API 598

■ Label :  Terofox

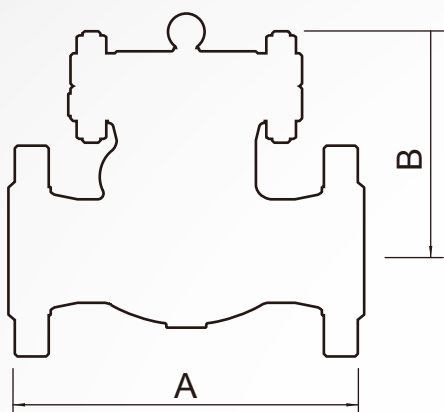
Standard Design

- Standard Bore
- BB, Bolted Bonnet
- Flange Ends
- Seat ring is non-renewable (welded type)

Dimensions

NPS	2	2-1/2	3	4	6	8	10	12	14	16	18	20	24	26	28	30	32	36	In.
DN	50	65	80	100	150	200	250	300	350	400	450	500	600	650	700	750	800	900	mm

DIMENSIONS



CHECK								
unit:mm								
		BW	RF	H		BW	RF	H
		A	A	B		A	A	B
2"	150#	203	203	135	300#	267	267	158
2.5"		216	216	155		292	292	167
3"		241	241	168		318	318	188
4"		292	292	235		356	356	259
6"		356	356	277		444	444	319
8"		495	495	339		533	533	401
10"		622	622	398		622	622	483
12"		698	698	525		711	711	555
14"		787	787	553		838	838	585
16"		864	864	584		864	864	615
18"		978	978	668		978	978	643
20"		978	978	712		1016	1016	681
24"		1295	1295	740		1346	1346	710



CHECK								
unit:mm								
		BW	RF	H		BW	RF	H
		A	A	B		A	A	B
2"	600#	292	292	197	900#	368	368	240
2.5"		330	330	207		419	419	260
3"		356	356	231		381	381	260
4"		432	432	281		457	457	320
6"		559	559	362		610	610	382
8"		660	660	437		737	737	530
10"		787	787	490		838	838	560
12"		838	838	528		965	965	590
14"		889	889	572		1029	1029	630
16"		991	991	660		1130	1130	700
18"		1092	1092	720				
20"		1194	1194	746				
24"		1397	1397	960				

face to face, Height, Handwheel, Gear box size, Weight

APPENDIX:

B16.34 Temperature-Pressure Rating

Pressure temperature ratings are based on ANSI/ASME B16.34 (2009 edition). The temperatures shown are that of the pressure-containing shell, which is considered to be the same temperature as that of the fluid flowing within it. Special considerations should be given to such items as trim, bonnet gasket material, and packing to assure that the rating is merited in all respects.

Maximum Allowable Non-Shock Pressure (bar)

Service Temperature	Class 150							
°C	WCB(a)	LCB(b)	WC6(c)	C5(d)	C12(d)	CF8M(e)	CF8(e)	CF3M(f)
(-29~38)	19.6	18.4	19.8	20	20	19	19	15.9
50	19.2	18.2	19.5	19.5	19.5	18.4	18.4	15.3
100	17.7	17.4	17.7	17.7	17.7	16.2	16.2	13.3
150	15.8	15.8	15.8	15.8	15.8	14.8	14.8	12
200	13.8	13.8	13.8	13.8	13.8	13.7	13.7	11.2
250	12.1	12.1	12.1	12.1	12.1	12.1	12.1	10.5
300	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10
325	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3
350	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4
375	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
400	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
425	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
450	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
475	3.7	3.7	3.7	3.7	3.7	3.7	3.7	
500	2.8	2.8	2.8	2.8	2.8	2.8	2.8	
538	1.4	1.4	1.4	1.4	1.4	1.4	1.4	
550				1.4(1)	1.4(1)	1.4(1)	1.4(1)	
575				1.4(1)	1.4(1)	1.4(1)	1.4(1)	
600				1.4(1)	1.4(1)	1.4(1)	1.4(1)	
625				1.4(1)	1.4(1)	1.4(1)	1.4(1)	
650						1.4(1)	1.4(1)	
675						1.4(1)	1.4(1)	
700						1.4(1)	1.4(1)	
725						1.4(1)	1.4(1)	
750						1.4(1)	1.4(1)	
775						1.4(1)	1.4(1)	
800						1.4(1)	1.4(1)	
816						1.2(1)	1.2(1)	
						1.0(1)	1.0(1)	
Hydrostatic Shell Test Pressure	450psi					425psi	425psi	425psi
valve closure	315psi					305psi	305psi	305psi
Test pressure	80psi							

Flange-end valve ratings terminated at 538°C

APPENDIX:

B16.34 Temperature-Pressure Rating

Maximum Allowable Non-Shock Pressure (bar)

Service Temperature		Class 300							
°C		WCB(a)	LCB(b)	WC6(c)	C5(d)	C12(d)	CF8M(e)	CF8(e)	CF3M(f)
(-29~38)		51.1	48	51.7	51.7	51.7	49.6	49.6	41.4
50		50.1	47.5	51.7	51.7	51.7	48.1	47.8	40
100		46.6	45.3	51.5	51.5	51.5	42.2	40.9	34.8
150		45.1	43.9	49.7	50.3	50.3	38.5	37	31.4
200		43.8	42.5	48	48.6	48.6	35.7	34.5	29.2
250		41.9	40.8	46.3	46.3	46.3	33.4	32.5	27.5
300		39.8	38.7	43.9	42.9	42.9	31.6	30.9	26.1
325		38.7	37.6	41.4	41.4	41.4	30.9	30.2	25.5
350		37.6	36.4	40.3	40.3	40.3	30.3	29.6	25.1
375		36.4	35	38.9	38.9	38.9	29.9	29	24.8
400		34.7	32.6	36.5	36.5	36.5	29.4	28.4	24.3
425		28.8	27.3	35.2	35.2	35.2	29.1	28	23.9
450		23	21.6	33.7	33.7	33.7	28.8	27.4	23.4
475		17.4	15.7	31.7	27.9	31.7	28.7	26.9	
500		11.8	11.1	25.7	21.4	28.2	28.2	26.5	
538		5.9	5.9	14.9	13.7	25.2	25.2	24.4	
550					12	25	25	23.6	
575					8.9	24	24	20.8	
600					6.2	19.5	19.9	16.9	
625					4	14.6	15.8	13.8	
650					2.4	9.9	12.7	11.3	
675							10.3	9.3	
700							8.4	8	
725							7	6.8	
750							5.9	5.8	
775							4.6	4.6	
800							3.5	3.5	
816							2.8	2.8	
Hydrostatic Shell Test Pressure		1125psi					1100psi	1100psi	1100psi
valve closure	Liquid	815psi	825psi				795psi	795psi	795psi
Test pressure	Air	80psi							

APPENDIX:

B16.34 Temperature-Pressure Rating

Maximum Allowable Non-Shock Pressure (bar)

Service Temperature		Class 600							
°C		WCB(a)	LCB(b)	WC6(c)	C5(d)	C12(d)	CF8M(e)	CF8(e)	CF3M(f)
(-29~38)		102.1	96	103.4	103.4	103.4	99.3	99.3	82.7
50		100.2	94.9	103.4	103.4	103.4	96.2	95.6	80
100		93.2	90.7	103	103	103	84.4	81.7	69.6
150		90.2	87.9	99.5	100.3	100.3	77	74	62.8
200		87.6	85.1	95.9	97.2	97.2	71.3	69	58.3
250		83.9	81.6	92.7	92.7	92.7	66.8	65	54.9
300		79.6	77.4	85.7	85.7	85.7	63.2	61.8	52.1
325		77.4	75.2	82.6	82.6	82.6	61.8	60.4	51
350		75.1	72.8	80.4	80.4	80.4	60.7	59.3	50.1
375		72.7	69.9	77.6	77.6	77.6	59.8	58.1	49.5
400		69.4	65.2	73.3	73.3	73.3	58.9	56.9	48.6
425		57.5	54.6	70	70	70	58.3	56	47.7
450		46	43.2	67.7	67.7	67.7	57.7	54.8	46.8
475		34.9	31.3	63.4	55.7	63.4	57.3	53.9	
500		23.5	22.1	51.5	42.8	56.5	56.5	53	
538		11.8	11.8	29.8	27.4	50	50	48.9	
550					24.1	49.8	49.8	47.1	
575					17.8	47.9	47.9	41.7	
600					12.5	39	39.8	33.8	
625					8	29.2	31.6	27.6	
650					4.7	19.9	25.3	22.5	
675							20.6	18.7	
700							16.8	16.1	
725							14	13.5	
750							11.7	11.6	
775							9	9	
800							7	7	
816							5.9	5.9	
Hydrostatic Shell Test Pressure		2225psi	2250psi				2175psi	2175psi	2175psi
valve closure	Liquid	1630psi	1650psi				1590psi	1590psi	1590psi
Test pressure	Air	80psi							

APPENDIX:

B16.34 Temperature-Pressure Rating

Maximum Allowable Non-Shock Pressure (bar)

Service Temperature		Class 900							
°C		WCB(a)	LCB(b)	WC6(c)	C5(d)	C12(d)	CF8M(e)	CF8(e)	CF3M(f)
(-29~38)		153.2	144.1	155.1	155.1	155.1	148.9	148.9	124.1
50		150.4	142.4	155.1	155.1	155.1	144.3	143.5	120.1
100		139.8	136	154.4	154.6	154.6	126.6	122.6	104.4
150		135.2	131.8	149.2	150.6	150.6	115.5	111	94.2
200		131.4	127.6	143.9	145.8	145.8	107	103.4	87.5
250		125.8	122.3	139	139	139	100.1	97.5	82.4
300		119.5	116.1	128.6	128.6	128.6	94.9	92.7	78.2
325		116.1	112.7	124	124	124	92.7	90.7	76.4
350		112.7	109.2	120.7	120.7	120.7	91	88.9	75.2
375		109.1	104.9	116.5	116.5	116.5	89.6	87.1	74.3
400		104.2	97.9	109.8	109.8	109.8	88.3	85.3	72.9
425		86.3	81.9	105.1	105.1	105.1	87.4	84	71.6
450		69	64.8	101.4	101.4	101.4	86.5	82.2	70.2
475		52.3	47	95.1	83.6	95.1	86	80.8	
500		35.3	33.2	77.2	64.1	84.7	84.7	79.5	
538		17.7	17.7	44.7	41.1	75.2	75.2	73.3	
550					36.1	74.8	74.8	70.7	
575					26.7	71.8	71.8	62.5	
600					18.7	58.5	59.7	50.6	
625					12	43.8	47.4	41.4	
650					7.1	29.8	38	33.8	
675							31	28	
700							25	24.1	
725							21	20.3	
750							17.6	17.3	
775							13.7	13.7	
800							10.5	10.5	
816							8.6	8.6i	
Hydrostatic Shell Test Pressure		3350psi							
valve closure	Liquid	2450psi							
Test pressure	Air	80psi							

- (a) Upon prolonged exposure to temperature above 425°C, the carbide phase of steel may be converted to graphite, permissible recommended for prolonged usage above 425°C
- (b) Not to be used over 345°C
- (c) Use normalized and tempered material only. Not to be used over 595°C, The deliberate addition of any element not listed in ASTM A 217, Table 1 is prohibited, except that Ca and Mg may be added for deoxidation
- (d) Use normalized and tempered material only, The deliberate addition of any element not listed in ASTM A 217, Table 1 is prohibited, except that Ca and Mg may be added for deoxidation
- (e) At temperatures above 538°C, use only when the carbon content is 0.04% or higher
- (f) Not to be used over 425°C

APPENDIX:

API600 Gate Valve Trim Number

API Trim Number	Material	Seat	Disc	Backseat	Stem	Notes
1	410	410	410	410	410	
2	304	304	304	304	304	
3	F310	310	310	310	310	
4	Hard 410	Hard 410	Hard 410	410	410	Seats 750 BHN min.
5	Hardfaced	Stellite	Satellite	410	410	
5A	Hardfaced	Ni-Cr	Ni-Cr	410	410	
6	410 and Cu-Ni	Cu-Ni	410	410	410	
7	410 and Hard 410	Hard 410	Hard 410	410	410	Seats 750 BHN min.
8	410 and Hardfaced	Stellite	410	410	410	
8A	410 and Hardfaced	Ni-Cr	410	410	410	
9	Monel	Monel	Monel	Monel	Monel	
10	316	316	316	316	316	
11	Monel and Hardfaced	Stellite	Monel	Monel	Monel	
12	316 and Hardfaced	Stellite	316	316	316	
13	Alloy 20	Alloy 20	Alloy 20	Alloy 20	Alloy 20	
14	Alloy 20 and Hardfaced	Stellite	Alloy 20	Alloy 20	Alloy 20	
15	304 and Hardfaced	Stellite	Stellite	304	304	
16	316 and Hardfaced	Stellite	Stellite	316	316	
17	347 and Hardfaced	Stellite	Stellite	347	347	
18	Alloy 20 and Hardfaced	Stellite	Stellite	Alloy 20	Alloy 20	

Terofox Provides this chart for informational purposes only. Always consult current API publications to verify information and trim data

APPENDIX:

Pressure Testing According To API598 Norm

Hydraulic Shell Test Standard
ASME Standard Class (ASME B16.34,API 6D & API 598)

Material	Valve Class & Testing Pressure				
	150(10K)	300	400	600	900
WCB	450Psi (32bar)	1125Psi (78bar)	1500Psi (104bar)	2225Psi (154bar)	3379Psi (233bar)
CF8M /CF8					

Low-Pressure Closure Test Standard
Standard Class (ASME B16.34,API 6D & API 598)

Material	Valve Class & Testing Pressure				
	150(10K)	300	400	600	900
WCB	325Psi (23bar)	825Psi (57bar)	1100Psi (76bar)	1650Psi (114bar)	2596Psi (170bar)
CF8M /CF8					

Duration Of Required Test Pressure
(ASME B16.34,API 6D & API 598)

Valve Size		Shell	Backseat
DN	NPS	Sec.	Sec.
8~50	1/4"~2"	15 Sec.	15 Sec.
65~150	2 1/2"~6"	60 Sec.	60 Sec.
200	8"	120 Sec.	60 Sec.

Air Test Pressure :80PSI(6Bars)

APPENDIX:

Temperature Limits For Body Material

Material	Upper Limit (°F)	Upper Limit (°C)	Lower Limit (°F)	Lower Limit (°C)
Cast Iron	410	210	-20	-5
Ductile Iron	650	345	-20	-5
* Carbon Steel (Grade WCB)	1000	535	-20	-5
Carbon Steel (Grade LCB)	650	345	-50	-10
Carbon Moly	850	455	-20	-5
1-1/4 Cr - 1/2 Mo (Grade WC6)	1000	535	-20	-5
2-1/4 Cr - 1/2 Mo (Grade WC9)	1050	565	-20	-5
5Cr-1/2 Mo (Grade C5)	1100	595	-20	-5
9Cr - 1 Mo (Grade C12)	1100	595	-20	-5
Type 304 (Grade CF8)	1500	815	-425	-220
Type 347 (Grade CF8C)	1500	815	-425	-220
Type 316 (Grade CF8M)	1500	815	-425	-220
3-1/2 Ni (Grade LC 3)	650	345	-150	-65
Aluminum	400	205	-325	-160
Bronze	550	285	-325	-160
Inconel 600	1200	650	-325	-160
Monel 400	900	480	-325	-160
Hastelloy B	700	370	-325	-160
Hastelloy C	1000	535	-325	-160
Titanium	600	315	N/A	N/A
Nickel	500	260	-325	-160
Alloy 20	300	150	-50	-10

* The carbon phase of carbon steel may be converted to graphite upon long exposure to temperatures above 775°F (415°C).

Consult applicable codes for maximum temperature ratings of various materials in ASME B16.34



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