



Globe Valve

Globe Valve

Model 3000

BS 1873 / API 600

Size - 2" to 24" (50mm to 600mm)

Rating - Class 150 to Class 2500

Cast Steel Valves

Flange Design

Butt-Weld Design

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Company Overview

“INVACO” (Industrial Valve Company) founded and promoted by the technocrats having experience of 18 years in National and International valve industry. INVACO PRIVATE LIMITED (Industrial Valve Company) is registered experience company in Design, Development, Fabrication & Manufacturing of Industrial Valves. Our mission is to produce high quality and reliable Valves to our national & international clients / customers. Our proactive approach to technical issues enables to understand and implement cost-effective solutions to our valuable customers.

“INVACO” (Industrial Valve Company) committed to excellence by manufacturing top quality valves to exceed customer’s needs with low cost, on-time delivery & providing finest service in industry. “INVACO” manufacture Ball valves (Floating & Trunnion Mounted), Butterfly Valves (Damper, Sleeved, Double offset & Triple Offset), Gate Valves, Globe Valves , Check Valves, Strainers, Flap Valves, Dismantling Joints, Flange Adaptor, Flange Couplings & Sluice Gate / Penstock for Oil & Gas, Petrochemicals, Refineries, Power Plants, Water Treatment Plants, Chemical, Paper & Pulp, Sugar, Steel, Pharma, Pipeline Transmission and other process industries.

“INVACO” (Industrial Valve Company) is specialized in design, manufacturing & testing of CAST & FORGED Steel Globe Valve. All globe valves are designed as per ASME B16.34, API 600, API 602, BS 1873 and follows ISO 9001:2015 Quality Management Systems. INVACO, manufacture of Cast Steel Gate, Globe & Check valve size from 2” to 24” (50mm to 600mm) with pressure range from Class 150 to Class 2500 and equivalent EN pressure ratings. Gate , Globe & Check valves produced from FORGED materials like WCB, WC6,WC9, CA15 , LCB, LCC, CF8, CF3 , CF3M, CF8, CF8M, Alloy20, 4A, 5A, 6A, Aluminum Bronze, Inconel, Monel, Hast Alloys, and other special materials.

INVACO (Industrial Valve Company) aims to produced a zero defect valves for long life and reliable services. Making continual improvements aims towards to minimize the Total Ownership Cost for valued customers. Also aims to established sales and services of valves & actuators worldwide

This catalog provides basic information of Globe Valves. Every effort has been made to maintain technical accuracies however INVACO has reserve rights to make any change in design and materials without prior notice.



Quality Policy

At “INVACO”, we established this comprehensive Quality Management System to implement a strategy of continual improvement and compliance with the requirements of the ISO 9001:2008 Quality Assurance standard and other industrial valves standards by:

Customer Focused:

- Make commitments we fully understand and believe we can meet and deliver.
- Meet all commitments to customers on time.
- Satisfy our customer’s needs and exceed their expectations.

Performance Driven:

- Verify that our products and services meet customer requirements.
- Monitor benchmark and continuously improve our business, products, and services, organization and employee’s performance.

Entire “INVACO” stick to the spirit and intent of this policy to ensure customer satisfaction is achieved at all respects and times.



Quality Standards for Globe Valve

American Petroleum Institute (API)

API 600 API 602
API 598 API Spec Q1

American Society of Mechanical Engineers

ASME B16.34 ASME B16.5
ASME B16.47 ASME B16.10
ASME B16.25

British / European Standards

BS 1873 BS 5352
BS EN 1092 BS EN 558
BS EN 12266 BS EN 6364
EN 10204 BS 5154

International Organization for Standardization (ISO)

ISO 9001:2015 ISO 5208
ISO 5211 ISO 14313
ISO 15761 ISO 15848

Manufacturers Standardization Society (MSS - SP)

MSS SP-6 MSS SP-25
MSS SP 44 MSS SP 45
MSS SP 55 MSS SP 61
MSS SP 72 MSS SP 82

National Association of Corrosion Engineers (NACE)

NACE MR 01-75 NACE TM 01-77
NACE TM 02-84 NACE MR 01-03

Materials and Equipment Standards and Code (MESC)

MESC SPE 77/101 MESC SPE 77/103 MESC SPE 77/105 MESC SPE 77/160 MESC SPE 77/300
MESC SPE 77/302 MESC SPE 77/312

Testing & Inspection for Globe Valves

Test	Applicable Standards	Extent of Test
Visual Inspection	MSS SP - 55	100%
Marking Inspection	MSS SP - 25	100%
Chemical, Physical & Heat Treatment	Relevant ASTM Standards	100%
Alloy Verification / Positive Material Identification(PMI)	INVACO Procedure	Upon Customer Request
Hardness Requirement	NACE MR 01 - 75	Upon Customer Request
Radiographic Testing (RT) (X-Ray & Gamma Ray)	ASME B16.34 (Annex B) , ASTM E94 , E142 , E446 , E186 , E280, BPVC Sec V-Art 7 & 22, ASME Sec VIII - Div-1	Upon Customer Request
Ultrasonic Testing (UT)	ASME B16.34 , ASTM A388 , A609 , A578 , BPVC Sec V – Art 4 & 23, ASME VIII Div-1	Upon Customer Request
Magnetic Particle Inspection(MPI)- (Dry & Wet)	ASME B16.34 Annex C , ASTM E709 , ASTM A275 , E1444, ASME Sec VIII Div-2, BPVC Sec V – Art 7 & 23	Upon Customer Request
Liquid / Dye Penetrant Inspection (LP / DP)	ASME B16.34 Annex D ,ASTM E 165 , E1417 , ASME Sec VIII Div 1,BPVC Sec V – Art 6 & 24.	Upon Customer Request
Impact Test	ASTM A 370	Upon Customer Request
Microstructural & Ferrite Content measurement	ASTM E 562	Upon Customer Request
Microscopic / inclusion Count Test	ASTM E 45	Upon Customer Request
Pitting Corrosion	ASTM G 48	Upon Customer Request
Crevice Corrosion	ASTM G 48	Upon Customer Request



Hydrogen Induced Cracking Test (HIC)	NACE TM 02 - 84	Upon Customer Request
Ferric Chloride Corrosion Test	ASTM A 923	Upon Customer Request
Hardness Test	ASTM E 18 , ASTM E 92, NACE MR 01 - 75	Upon Customer Request
Intergranular Corrosion Cracking (IGC)	ASTM A 262	Upon Customer Request
Chloride Stress Corrosion Cracking Test (CSCC)	NACE TM 01 - 75	Upon Customer Request
Size / Dimension Check	INVACO Approved Drawings	100%
Functional Check	INVACO Approved Drawings	100%
Shell Test (Hydro Test)	API 598, Approved GA Drawings	100%
Seat Test (Hydro Test)	API 598, Approved GA Drawings	100%
Backseat Test (Hydro Test)	API 598, Approved GA Drawings	100%
Seat Test (Air/Pneumatic Test)	API 598, Approved GA Drawings	100%
Helium Leak / Fugitive Emission Test	ISO 15848, MESC 77 / 312	Upon Customer Request
Torque Test	API 6D , INVACO Procedure	10% or Upon Customer Request
Blasting Report	INVACO Procedure	10% or Upon Customer Request
Surface Finish Report	INVACO Procedure	10% or Upon Customer Request
Painting / Dry Film Thickness Report	INVACO Procedure	10% or Upon Customer Request
Tag No, Serial No, Name Plate	INVACO Procedure	100%
Note: - 1) Backseat test is applicable to Gate & Globe Valve. 2) Above Test available upon customer request with extra cost. 3) For more information kindly contact "INVACO".		

Manufacturing Range for GGC (Gate, Globe & Check Valve)

Valve	ASME CLASS / Size - in (mm)						
	150	300	600	800	900	1500	2500
Gate Valve	2" - 48" (50 - 1200)	2" - 48" (50 - 1200)	2" - 48" (50 - 1200)	----	2" - 24" (50 - 600)	2" - 12" (50 - 300)	2" - 12" (50 - 300)
Globe Valve	2" - 24" (50 - 600)	2" - 24" (50 - 600)	2" - 24" (50 - 600)	----	2" - 18" (50 - 450)	2" - 16" (50 - 400)	2" - 12" (50 - 300)
Check Valve	2" - 48" (50 - 1200)	2" - 48" (50 - 1200)	2" - 48" (50 - 1200)	----	2" - 16" (50 - 400)	2" - 14" (50 - 350)	2" - 10" (50 - 250)
Forge Valve (GGC)	----	----	----	1/2" - 2" (15 - 50)	1/2" - 2" (15 - 50)	1/2" - 2" (15 - 50)	----



Features of Globe Valve (Model - 3000)



Quality Standards:-

Design Standards	- API 600 / ASME B16.34 / BS 1873 / MESC SPE 77-101,103,105,160,302,300,312.
Testing Standards	- API 598 / EN 12266 / ISO 5208 / BS 6755
End to End Standards	- ASME B 16.10 / EN 558
Flange Drilling Standards	- ASME B16.5 / ASME B 16.47 / BS EN 1092.
Butt-Weld	- ASME B 16.25
Actuator Mounting	- ISO 5211
Fugitive Emission Test	- MESC SPE 77 - 312 / ISO 15848
Cryogenic Services	- BS 6364, MSS SP 134
Valve Marking	- MSS SP 25 / ASME B 16.34
Visual Inspection	- MSS SP 55
Material Testing	- NDE / NACE MR 01- 75 / NACE MR 01- 03 Compliance available.

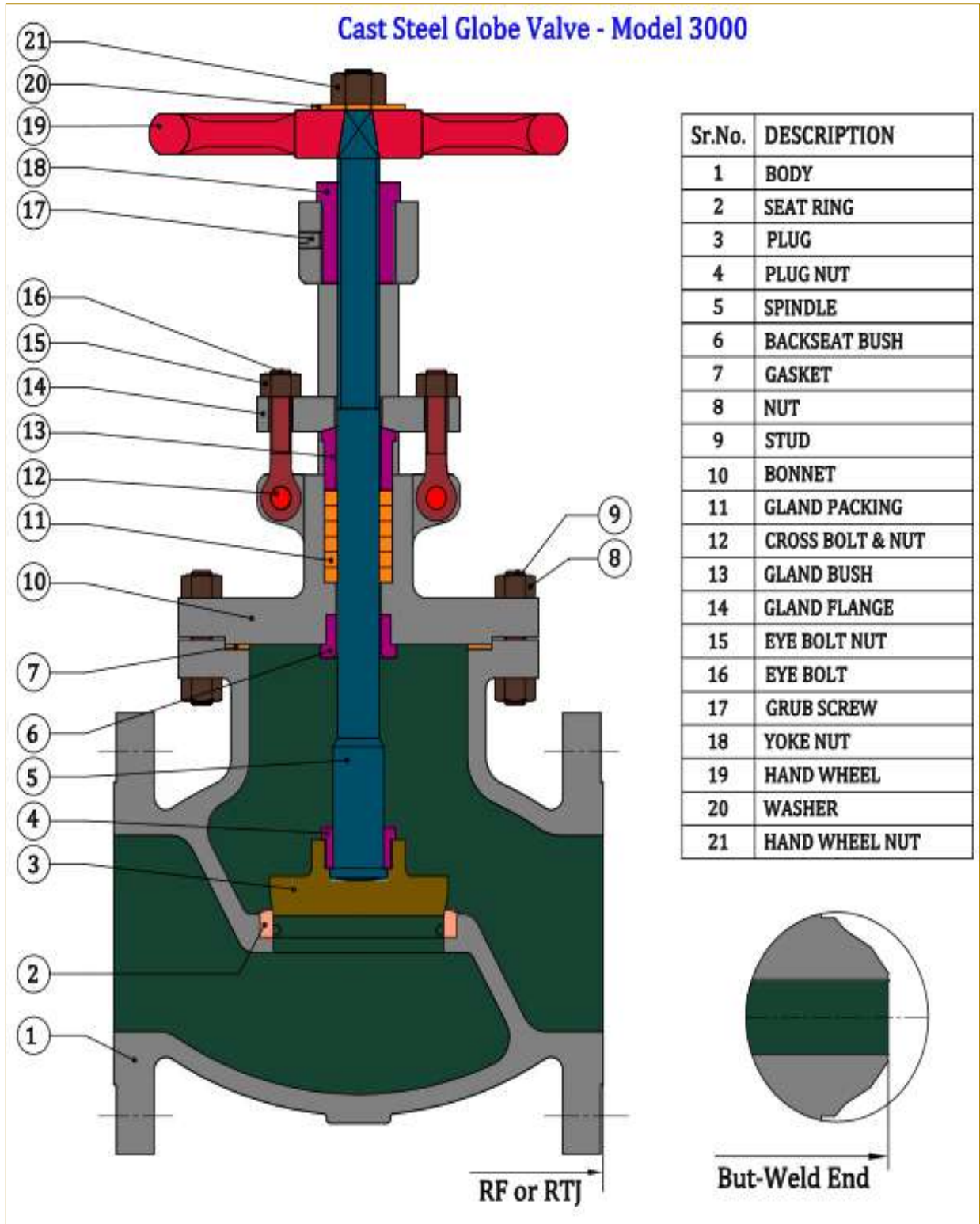
Key Features:-

- Size :- 2" to 24" (50mm to 600mm)
- All API Trim, Hard Face, Stallite
- Extended Bonnet & Extended Stem
- Plug - Swivel, Parabolic, Guided, Regulating,
- Flange RF, FF, RTJ, Butt-Weld End
- Rating:- 150# to 2500# & Equiv. DIN Rating
- Vacuum seal arrangement
- OS & Y, BB, Rising / Non Rising Stem.
- Low Emission Design
- Hand-wheel , Gear Operated & Actuated

Materials - Carbon Steel, Low Temperature Carbon Steel, Stainless Steel, Duplex, Super Duplex, Incoloy, Inconel, Monel, Aluminum Bronze, Hastalloy, Titanium and other materials.

Applications - Offshore / Onshore Oil & Gas, Chemical, Petrochemical & Allied Process, Power Plant, Water Treatment Plant, Liquefied Natural Gas, Sugar, Paper & Pulp, Steel, Piping & Process Industries.

GA Drawing for Globe Valve (Model - 3000)



Material of Construction for Globe Valve (Model - 3000)

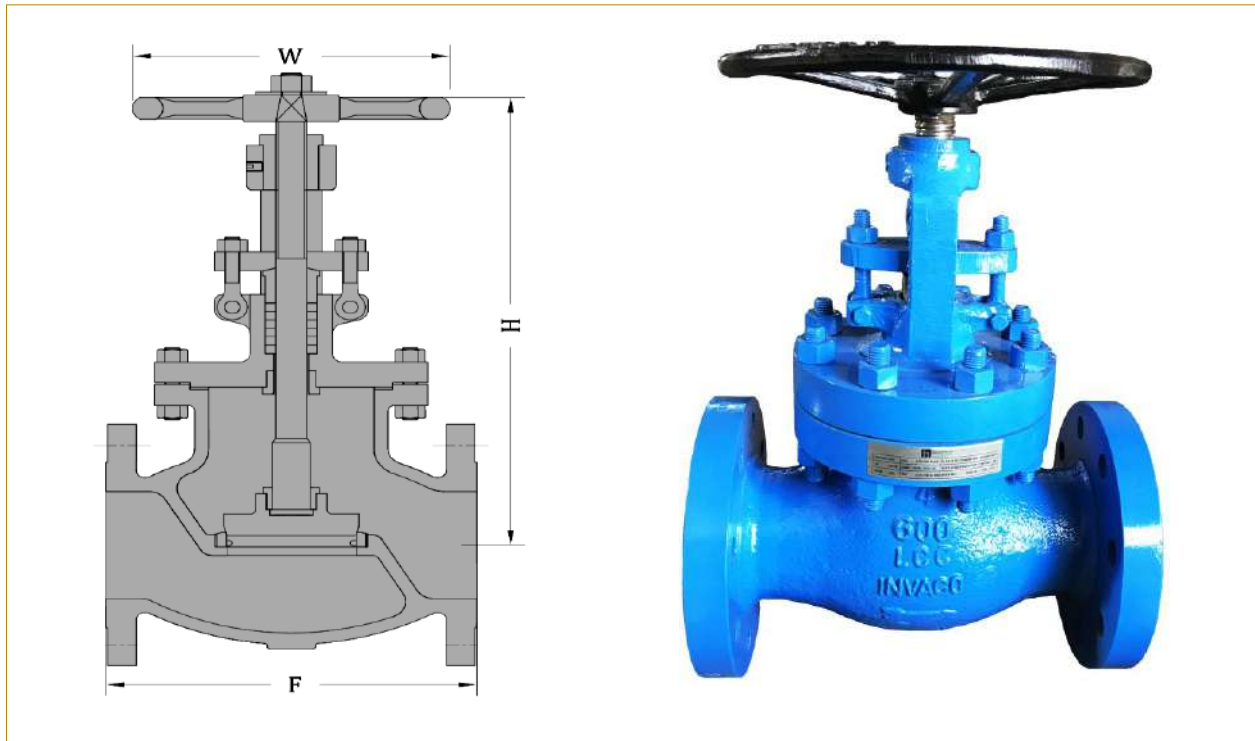
Material of Construction for Globe Valve							
Sr. No.	Part	Carbon Steel	Low Temp. Carbon Steel	Stainless Steel	Duplex	Aluminum Bronze	Nickel Alloys
1	Body	WCB	LCC, LCB	CF8M, CF8	4A, 5A, 6A	C95800, C95500, C63200	CW6MC, CW12M, M35-1
2	Seat Ring	CA15, CF8, CF8M	CF8M, CF8				
3	Plug						
4	Plug Nut	F6a, AISI410, F304, F316	F316, F304		F51, F53, F55	MONEL	Inconel 625, 750, 825, Monel
5	Spindle						
6	Backseat Bush						
7	Gasket	SPWG + (SS304/SS316)	SPWG + SS316	SPWG + (SS304/SS316)	SPEG + Duplex	SPWG (Monel / Inconel)	
8	Nut	A194 Gr. 2H, 2HM	A194 Gr. 4L, 7M, 4	A194 Gr. 8MA, 8M			
9	Stud	A193 Gr. B7 / B7M	A320 Gr L7, L7M	A193 Gr. B8, B8M			
10	Bonnet	WCB	LCC, LCB	CF8M, CF8	4A, 5A, 6A	C95800, C95500, C63200	CW6MC, 12MW, M35-1
11	Gland Packing	Graphite					
12	Cross Bolt & Nut	B7, B7M & 2H, 2HM / Carbon Steel	L7, L7M & 4, 4L, 7M / Carbon Steel	B8, B8M & 8M, 8MA / Stainless Steel			
13	Gland Bush	WCB (ENP), A105 (ENP),	LCC, LCB, LF2, SS316	CF8M, CF8, F316, F304	Duplex	C95800, C95500, C63201, Monel	Inconel / Monel
14	Gland Flange						
15	Eye Bolt Nut	Carbon Steel		Stainless Steel			
16	Eye Bolt						
17	Grub Screw						
18	Yoke Nut	S.G. Iron/ D2 / Brass					
19	Hand Wheel	Malleable, Ductile Iron / Carbon Steel (Fabricated)		Malleable, Ductile Iron / Stainless Steel (Fabricated)			
20	Washer	Carbon Steel		Stainless Steel			
21	Hand Wheel Nut	Carbon Steel		Stainless Steel			

NOTE:

- ** All API Trims are available as per customer requirement.
- ** Stellite or Hardface are optional and as per customer requirement.
- ** "INVACO" reserve rights to change MATERIALS & DESIGN anytime without prior notice.



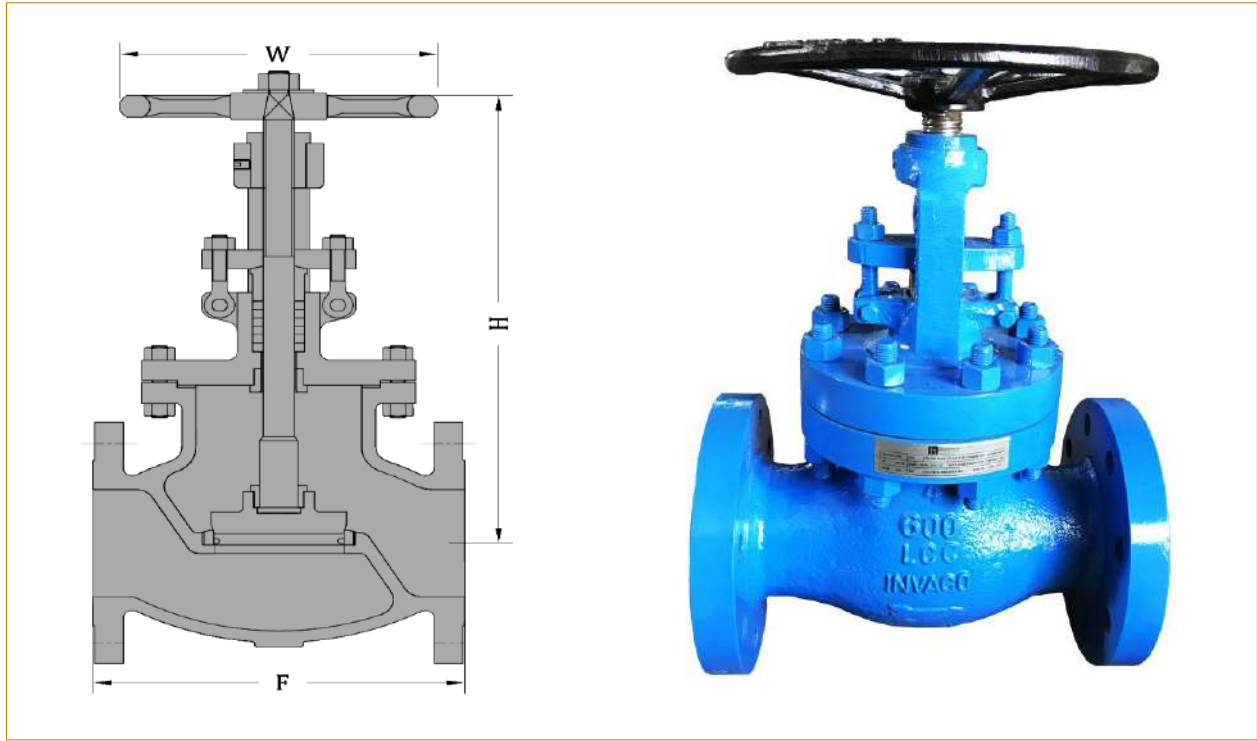
Dimensions for Globe Valve (Model - 3000)



Size		150#				300#				600#			
		Face to Face (mm)		H	W	Face to Face (mm)		H	W	Face to Face (mm)		H	W
in	mm	RF & WE	RTJ	mm	mm	RF & WE	RTJ	mm	mm	RF & WE	RTJ	mm	mm
2	50	203	216	336	200	267	283	355	200	292	295	399	250
2½	65	216	229	375	200	292	308	391	250	330	333	445	250
3	80	241	254	384	250	318	335	423	300	356	359	495	350
4	100	292	305	472	250	356	371	495	350	432	435	592	450
6	150	406	419	522	350	445	460	679	500	559	562	792	550
8	200	495	508	585	400	559	575	913	500	660	663	1017	600
10	250	622	635	753	500	622	638	954	600	787	790	1174	600
12	300	699	711	856	500	711	727	1035	600	838	841	1395	GO
14	350	787	800	949	600	838	854	1134	650	889	892	1444	GO
16	400	914	927	992	600	864	880	1314	GO	991	994	1602	GO
18	450	978	991	1134	600	978	994	1467	GO	1092	1095	1791	GO
20	500	978	991	1258	GO	1016	1032	1638	GO	---	---	---	---
24	600	1295	1308	1521	GO	---	---	---	---	---	---	---	---

NOTE:-

- ** RF – Raised Face, RTJ – Ring Type Joint, BW – But Weld End, GO – Gear Operated
- ** All API Trims are available.
- ** All dimensions are in “mm” unless & otherwise specified.
- ** INVACO reserves the right to change materials, design & dimensions anytime without prior notice.



Size		900#				1500#				2500#			
		Face to Face (mm)		H	W	Face to Face (mm)		H	W	Face to Face(mm)		H	W
in	mm	RF & WE	RTJ	mm	mm	RF & WE	RTJ	mm	mm	RF & WE	RTJ	mm	mm
2	50	368	371	585	350	368	371	562	350	451	454	715	400
2½	65	419	422	655	350	419	422	665	350	508	514	795	500
3	80	381	384	695	450	470	473	875	500	578	584	880	550
4	100	457	460	775	500	546	549	915	500	673	683	1255	GO
6	150	610	613	1400	600	705	711	1705	GO	914	927	1900	GO
8	200	737	740	1495	GO	832	842	1955	GO	1022	1038	2460	GO
10	250	838	841	1595	GO	991	1000	2305	GO	1270	1292	2795	GO
12	300	965	968	1700	GO	1130	1146	2665	GO	1422	1445	3500	GO
14	350	1029	1038	2007	GO	1257	1276	3105	GO	---	---	---	---
16	400	1130	1140	2270	GO	---	---	---	---	---	---	---	---

NOTE:-

- ** RF – Raised Face, RTJ – Ring Type Joint, BW – But Weld End, GO – Gear Operated
- ** All API Trims are available.
- ** All dimensions are in “mm” unless & otherwise specified.
- ** INVACO reserves the right to change materials, design & dimensions anytime without prior notice.

Torque & Thrust for Globe Valve (Model - 3000)

Torque & Thrust for Globe Valve											
Size		150#		300#		600#		900#		1500#	
		Thrust	Torque	Thrust	Torque	Thrust	Torque	Thrust	Torque	Thrust	Torque
in	mm	KN	N-m	KN	N-m	KN	N-m	KN	N-m	KN	N-m
2	50	9	17	19	37	36	89	51	166	93	172
2.1/2	65	14	32	29	61	57	117	---	---	---	---
3	80	18	43	41	90	79	219	113	296	213	794
4	100	26	71	63	169	149	479	190	621	364	1219
6	150	58	112	140	463	283	1258	421	1587	743	3251
8	200	97	284	216	1032	362	2293	736	3222	1076	5508
10	250	144	527	362	1763	504	3941	1157	5651	2209	10997
12	300	207	895	519	2636	676	5952	1399	6841	---	---
14	350	244	1243	613	3344	1231	6812	---	---	---	---
16	400	338	1781	854	5208	1932	11876	---	---	---	---
18	450	486	2613	1196	9597	---	---	---	---	---	---
20	500	605	3141	---	---	---	---	---	---	---	---

- Note: -
- 1 For actuator selection or sizing, factor of safety 1.3 – 1.5 is recommended.
 - 2 This is general information; values can vary with change in materials, trim, bonnet type, hand-wheel size, packing and other factor.
 - 3 INVACO reserve the right to change Design, Material or specification or any other information without prior notice.

Body & Trim Material for Globe Valve (Model - 3000)

Body & Trim Material:-		
Material Group / Type	Casting	Forging
Carbon Steel	A216 Gr WCB , WCA	A105 / A 106
	A216 Gr WCC	A105N
Low Temperature Carbon Steel	A352 Gr LCB	A350 Gr LF2 CL.1
	A352 Gr LCC	
	A352 Gr LC1 / LC2	
	A352 Gr LC3	A350 Gr LF3 CL.1
Alloy Steel	A217 Gr WC1	A182 Gr F1
	A217 Gr WC5	
	A217 Gr WC6	A182 Gr F11 CL.2
	A217 Gr WC9	A182 Gr F22 CL.3
	A217 Gr C5	A182 Gr F5a
	A217 Gr C12	A182 Gr F9
	A217 Gr C12A	A182 Gr F91
Stainless Steel	A217 Gr CA15	A182 Gr F6A / ANSI 410
	A351 Gr CF10M	A182 Gr F304H
	A351 Gr CF8A	A182 Gr F347H
	A351 Gr CF8	A182 Gr F304
	A351 Gr CF3	A182 Gr F304L
	A351 Gr CF8M	A182 Gr F316
	A351 Gr CF3M	A182 Gr F316L
	A351 Gr CF8C	A182 Gr F347
Duplex / Super Duplex	A890 Gr CD4MCuN (1B)	
	A890 Gr CD3MCuN (1C)	
	A890 Gr CE8MN (2A)	
	A890 Gr CD3MN (4A)	A182 Gr F51
	A890 Gr CE3MN (5A)	A182 Gr F53
	A890 Gr CD3MWCuN (6A)	A182 Gr F55
Nickel / Super Nickel Alloys	A494 Gr CY40	Inconel 600
	A494 Gr CZ100	
	A494 Gr CW6MC	Inconel 625
	A494 Gr M 35 -1	Monel 400
		Monel K-500
	A494 Gr CW6M / CW12MW	Hastalloy C / C-276
Aluminum Bronze	B148 Gr C95200	
	B148 Gr C95400	
	B148 Gr C95500	
	B148 Gr C95800	
Titanium	B367 Gr C2	B381 Gr F2
	B367 Gr C3	B381 Gr F3
Special Materials	A351 Gr CN7M	Alloy 20
	A351 Gr CN2MCuN	904L
	A351 Gr CK3MCuN	SMO 254 / A182 Gr F44
	CB7CU -1	17 - 4 PH

Note: - Wrought names are given as a reference for commonly accepted equivalent material. "INVACO" cannot hold any liability for any damages incurred due to this table. For more information kindly contact "INVACO".



Material Specification for Fastener's:-

Bolting Material	Nut Materials	Temperature Range	Body Material
ASTM A193 Gr. B7	ASTM A194 Gr. 2H	-40°C to +538°C	Carbon Steel
ASTM A193 Gr B7M	ASTM A194 Gr. 2HM	-50°C to +538°C	Low Alloy Steel
ASTM A320 Gr. L7	ASTM A194 Gr. 7/4	-100°C to +371°C	Low Temp. Carbon Steel
ASTM A320 Gr. L7M	ASTM A194 Gr. 7M	-75°C to +538°C	Low Temp. Carbon Steel
ASTM A193 Gr. B8	ASTM A194 Gr. 8	-200°C to +538°C	Stainless Steel
ASTM A193 Gr. B8M	ASTM A194 Gr. 8M / 8MA	-200°C to +538°C	Stainless Steel/Nickel Alloys / AL-Br / Duplex
A453 Gr 660 CL A	A453 Gr 660 CL A	-30°C to +538°C	Duplex

NOTE:-

- Above temperature range is for BOLTING, not body materials.
- Welding repair on Bolting is strictly not allowed.
- Temperature range & use may vary with requirement like NACE, Impact Test.
- For more information refer ASME B31.3, B16.34, A193, A194, A320 & A453.
- Other Bolt & Nut material available on request.
- INVACO cannot hold any liability for any damages incurred to this table.

Coating for Fastener's

- ENP
- Hot Deep Galvanized
- Hot Zinc
- Red Xylem
- PTFE Coating
- Cadmium
- Cadmium with PTFE

Static and Dynamic Seals (Gaskets & Packing):-

- Graphite Packing / Gasket.
- PTFE, R-PTFE Packing / Rings.
- Spiral Wound Gasket (Soft + Metal filled)
- Metal Gasket (RTJ, BX, T type seal ring).
- Lip Seal (U/O type, radial or face seal).

Testing Pressure:-

ASME CLASS	Working Pressure			Body Test (Hydro)			Seat Test (Hydro)			Seat Test (Air)		
	psi	bar	Kg/cm ²	psi	bar	Kg/cm ²	psi	bar	Kg/cm ²	psi	bar	Kg/cm ²
150	285	19.6	20	464	32	33	333	23	23.5	100	6	7
300	741	51.1	52	1145	79	81	842	58	59	100	6	7
400	988	68.1	69	1523	105	107	1189	82	84	100	6	7
600	1480	102.1	104	2262	156	159	1653	114	116	100	6	7
800	2001	138	141	3046	210	214	2248	155	158	100	6	7
900	2222	153.2	156	3423	236	240	2494	172	175	100	6	7
1500	3703	255.3	260	5685	392	400	4177	288	293	100	6	7
2500	6171	425.5	434	945	652	665	6932	478	487	100	6	7

Note: - Rating Pressure may be change for different materials.



Globe Valve



Model 3000

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Your Local INVACO Representative -

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We are 70 Km away from Mumbai International Airport.