

FORGED STEEL VALVES

(REV.4) **C-14**



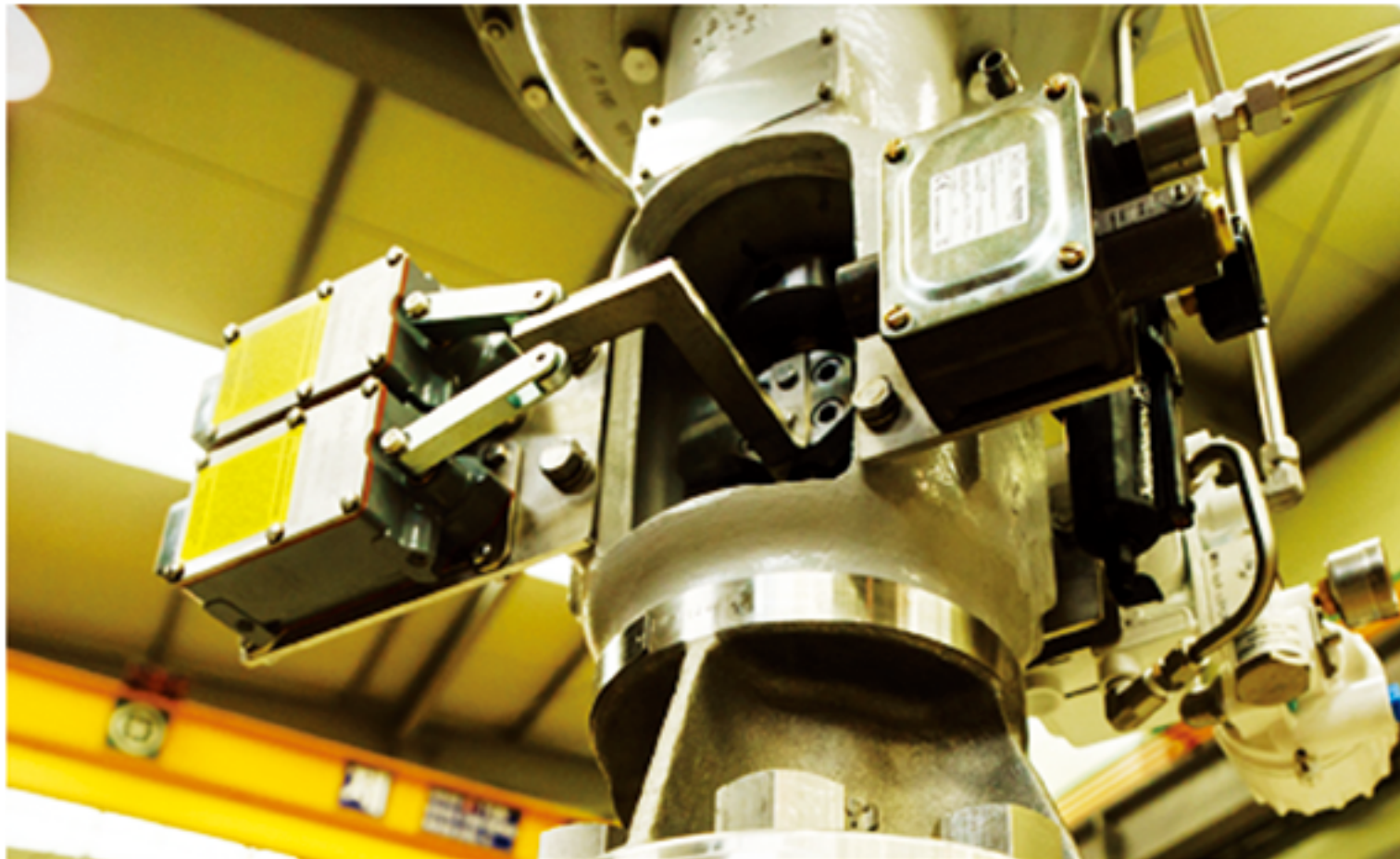
ILSHIN VALVE CO., LTD.

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COMPANY MOTTO

To be the most competitive edge designer and manufacturer over the world.
Satisfy customers with best quality, delivery and price

ESTABLISHMENT

Ilshin Valve Company was incorporated Bucheon City, Korea on July, 1982.



BRIEF HISTORY

1980

- 1982 .07 Founded as ILSHIN Machinery Industrial Company
- 1982 .10 Started Manufacturing Forged Steel Valves in accordance with API602
- 1983 .01 Exported Forged Steel Valves to OIC Valve, USA on OEM
- 1983 .10 Exported Forged Steel Valves to VELAN, CANADA on OEM
- 1983 .11 Registered to the Korean Register of Shipping
- 1984 .01 Exported Forged Steel Valves to PEGLER, AUSTRALIA
- 1984 .02 Authorized to Participate Tender for KEPCO
- 1987 .07 Authorized to Participate Tender for POSCO
- 1989 .07 Registered to GS-CALTEX Oil Corporation Co. Ltd.
- 1989 .10 Registered to S-Oil Refining Co. Ltd.

1990

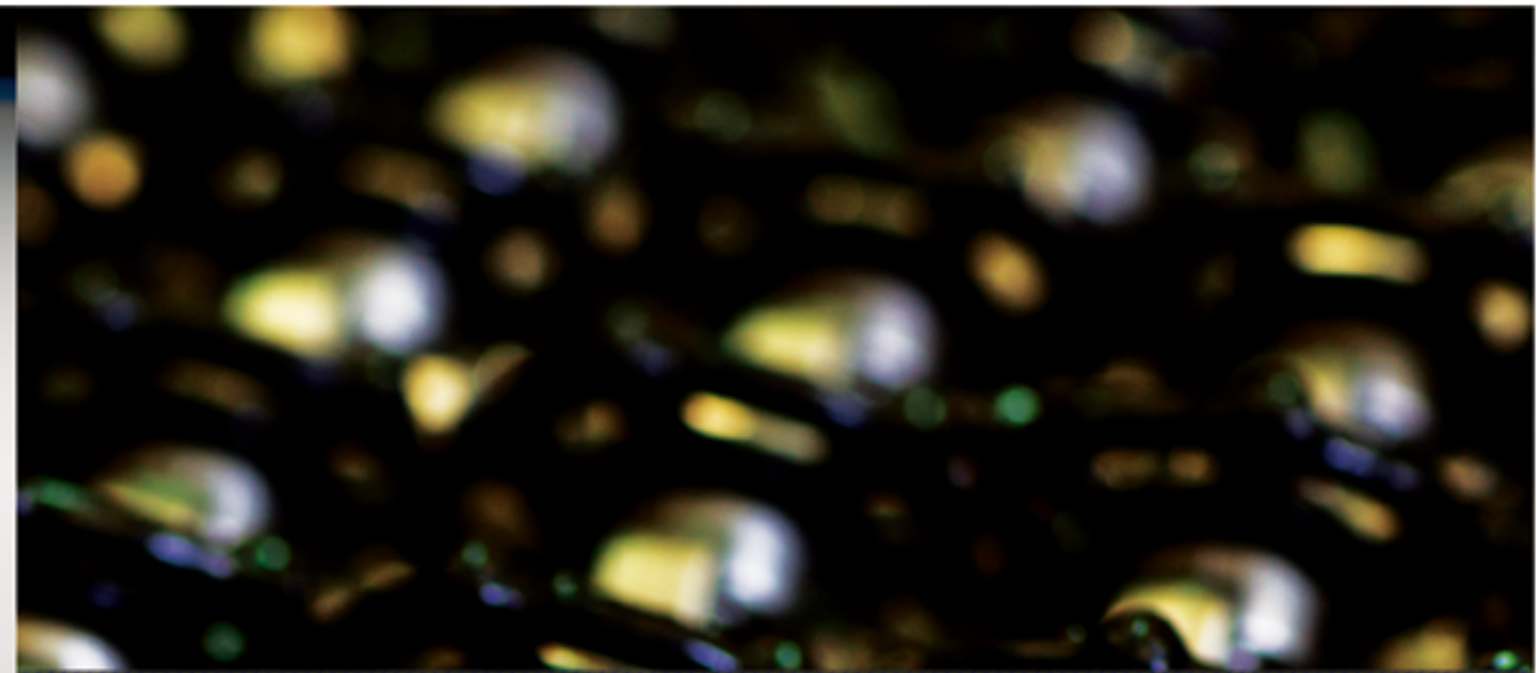
- 1991 .04 Designated as superior company by POSCO for superiority In Quality and Delivery
- 1991 .08 Registered to SAMSUNG Engineering Co. Ltd.
- 1992 .04 Registered to DAEWOO Engineering Co. Ltd.
- 1992 .05 Registered to GS Engineering Co. Ltd.
- 1994 .04 Registered to DAELIM Engineering Co. Ltd
- 1994 .05 Exported Forged Steel Valve Parts to VELAN in CANADA , SMITH in USA and OMB in Singapore
- 1995 .02 Registered to LG chemical Co. Ltd
- 1995 .07 Selected as a prospected (hopeful) company by KIST
- 1995 .08 Selected as a prospected (hopeful) company by Ministry of Commerce and Industry
- 1996 .11 Changed to ILSHIN FORGED STEEL VALVES CO. LTD.
- 1997 .05 Acquired Certification ISO 9001 by DNVs
- 1998 .10 Registered to Kuwait National Petroleum Company(K.N.P.C)

2000

- 2000 .03 Acquired Certification KEPIC-MN by KEPIC
- 2000 .06 Registered to KEPCO Q-Class Gate, Globe, Check Valve manufacturer for Nuclear Power Plant
- 2000 .07 Registered to Kuwait Oil Company(K.O.C)
- 2000 .08 Registered to KEPCO Nuclear Power Plant equipment appliance qualification
- 2001 .01 KEPCO hydraulic and thermoelectric power plant use ASME III R-Class
- 2001 .04 CE/PED 97/23/EC Certification Acquisition (TUV)
- 2002 .05 Registered to Syncrude, CANADA
- 2002 .07 Acquired Certification of Fire Safety Design for Ball Valve by Lloyd's
- 2003 .05 Registered to Nexen Inc, CANADA
- 2004 .04 Registered to Sasol Technology, South Africa
- 2007 .04 ExxonMobil Approval
- 2008 .07 ASME "N" & "NPT" STAMP Changed to ILSHIN VALVE CO., LTD

2010

- 2010 .03 ISO 14001, OHSAS 18001 Certification Acquisition (HSB)
- 2011 .08 Shell EFA contract award
- 2011 .12 Q1, ISO 29001, API 6D



Quality Certificates

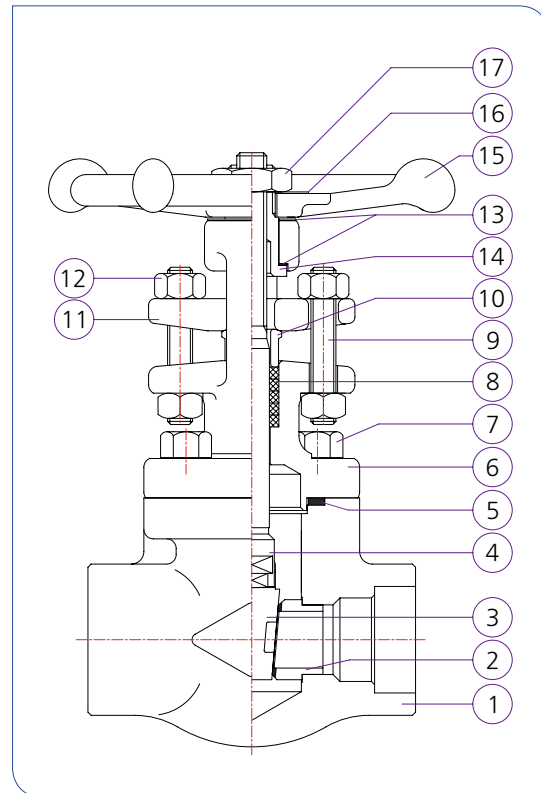
- ISO 9001, ISO 14001, OHSAS 18001 Certified by Hartford
- PED 97/23/EC Certified by Hartford
- API 6D MONOGRAM, ASME N, NPT
- KEPIC-MN Nuclear Quality System



Typical Configurations for Gate Valves

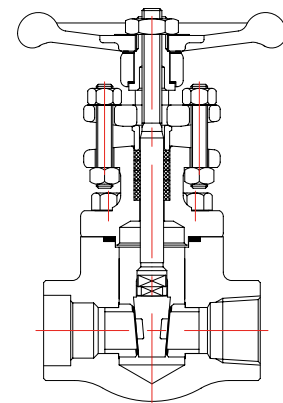
(Design Standard: API 602, BS 5352, ISO 15761, ASME B16.34)

Assembly for General Gate Valve



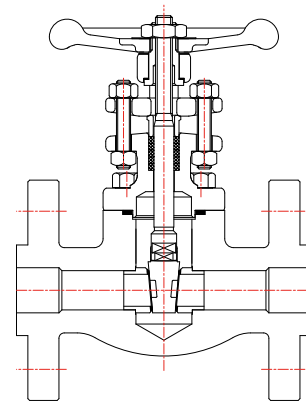
- | | |
|----------------|-------------------|
| 1. Body | 10. Gland |
| 2. Seat Ring | 11. Gland Flange |
| 3. Wedge | 12. Gland Nut |
| 4. Stem | 13. Sleeve Washer |
| 5. Gasket | 14. Yoke Sleeve |
| 6. Bonnet | 15. Handwheel |
| 7. Bonnet Bolt | 16. Nameplate |
| 8. Packing | 17. H/W Nut |
| 9. Gland Bolt | |

SW, NPT Ends



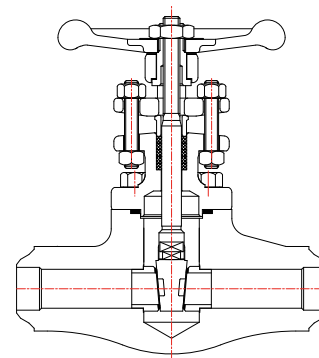
Socket Weld(SW) : ASME B16.11
Thread(NPT) : ASME B1.20.1

Flanged Ends



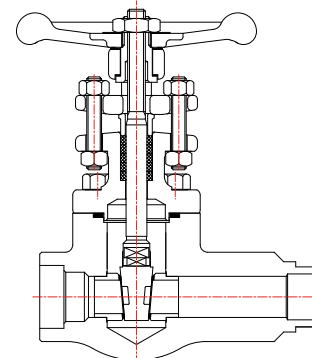
Flange(FLG) : ASME B16.5
Face-to-Face : ASME B16.10

Long Pattern BW Ends



Butt Weld(BW) : ASME B16.25
End-to-End : ASME B16.10

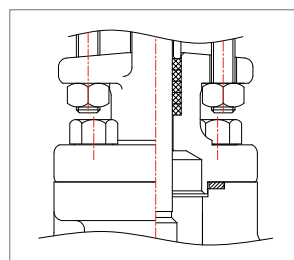
Extended Body Ends



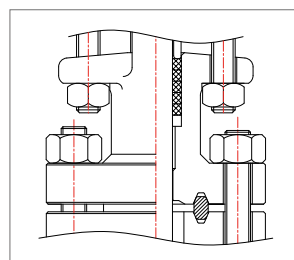
Extended End : API 602
ISO 15761

Typical Configurations for Bonnet Joint

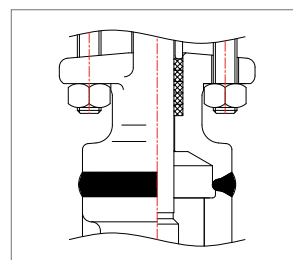
Bolted Bonnet (BB) (Spiral Wound Type)



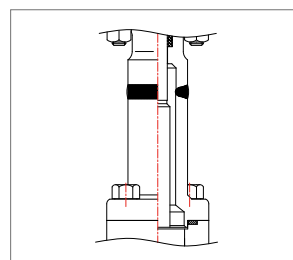
Bolted Bonnet (BB) (Ring Type Joint)



Welded Bonnet (WB) (Full Penetration Welding)



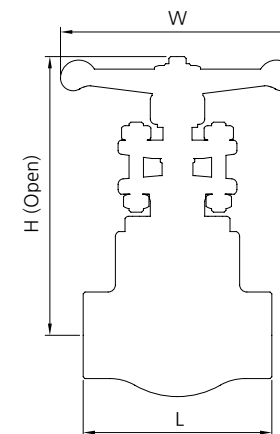
Extended Bonnet (EB) (Fabricated Welding)



※ Extended Bonnet is applied to Cryogenic(SS) & Low temperature(LF2) services.

Value Dimensions - Gate

SW, NPT



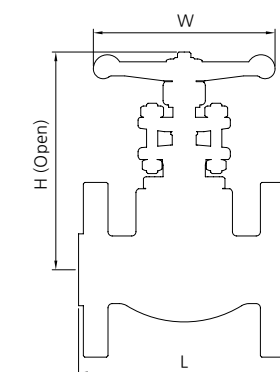
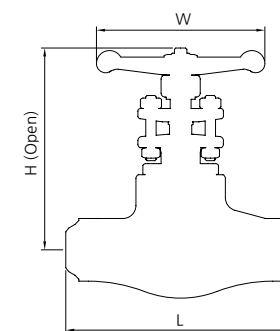
Unit : mm, unless otherwise specified.

Symbol	Bonnet Joint	Class	RP FP	1/4	3/8, 1/2	3/4	1	1-1/2	2
L (End-to-end)	All Type	800		76	76	92	104	115	183
		1500		92	92	104	115	183	210
W (Handwheel)	All Type	800		82	82	102	129	156	156
		1500		102	102	129	156	156	200
P (Port Dia.)	All Type	800		6.4	9.6	12.7	18.0	28.6	37
		1500		6.4	9.6	12.7	18.0	28.6	37
H (Height)	BB, WB	800		138	138	147	174	217	261
		1500		147	147	170	207	246	303
	EB (LowT.)	800		249	249	277	305	390	494
		1500		257	257	305	345	410	528
	EB (Cryo.)	800		407	407	417	446	509	569
		1500		417	417	445	485	519	599
Wt (kg)	BB, WB	800		1.5	1.5	2.1	2.8	4.8	8.2
		1500		2.2	2.2	2.9	5.0	8.2	22.0
	EB (LowT.)	800		2.5	2.5	3.0	4.6	8.8	12.5
		1500		2.9	2.9	4.8	8.6	12.1	19.9
	EB (Cryo.)	800		3.1	3.1	3.7	5.3	9.5	13.1
		1500		3.7	3.7	5.3	9.5	13.1	21.0

※ Abbreviations

BB: Bolted Bonnet / WB: Welded Bonnet / EB: Extended Bonnet / Cryo.: Cryogenic Service / Low T.: Low Temperature Service
RP: Reduced Port / FP: Full Port

BW(Long), FLG



Unit : mm, unless otherwise specified.

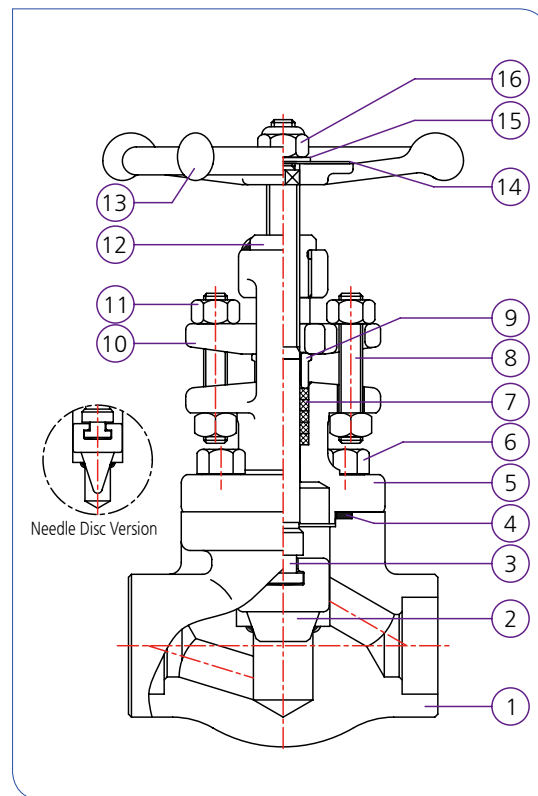
Symbol	Bonnet Joint	Class	1/2 (DN15)	3/4 (DN20)	1 (DN25)	1-1/2 (DN40)	2 (DN50)
L (End-to-end)	All Type	150	108	117	127	165	178
		300	140	152	165	190	216
W (Handwheel)	All Type	600	165	190	216	241	292
		1500	216	229	254	305	368
P (Port Dia.)	All Type	150~600	82	102	129	156	156
		1500	102	129	156	156	200
H (Height)	BB, WB	150~600	9.6	12.7	18.0	28.6	37.0
		1500	9.6	12.7	18.0	28.6	37.0
	EB (LowT.)	150~600	138	147	174	217	261
		1500	147	170	207	246	303
	EB (Cryo.)	150~600	249	277	305	390	494
		1500	258	303	345	410	529
Wt (kg) BW(Long) /FLG	BB, WB	150	409	419	448	508	569
		1500	418	443	485	519	600
		150	1.7/2.7	2.3/3.5	3.2/5.0	5.8/9.2	8.5/12.7
		300	1.8/3.0	2.6/3.7	3.6/5.3	6.2/10.7	9.5/13.1
		600	2.0/3.6	2.9/5.4	4.2/6.7	7.2/12.4	11.5/16.5
		1500	3.5/8.3	4.7/10.2	8.9/13.5	16.7/38.2	28.0/42.0
	EB (LowT.)	150	2.5/3.1	3.1/4.3	4.8/6.6	9.7/13.3	12.3/16.5
		300	2.6/3.8	3.4/5.4	5.2/6.9	10.1/14.6	13.3/16.9
		600	2.8/4.4	3.7/7.1	5.8/8.3	11.1/16.3	15.3/20.3
		1500	4.2/9.0	5.6/11.1	10.0/14.6	18.7/40.2	31.9/45.9
	EB (Cryo.)	150	3.2/3.8	3.9/5.1	5.6/7.4	10.5/14.1	13.0/17.2
		300	3.3/4.5	4.2/6.2	6.0/7.7	10.9/15.4	14.0/17.6
	EB (Cryo.)	600	3.5/5.1	4.5/7.9	6.6/9.1	11.9/17.1	16.0/21.0
		1500	5.4/10.2	6.6/12.1	11.4/16.0	20.2/41.7	33.4/47.4

※ ASME Class 900 is same as Class 1500.

Typical Configurations for Globe Valves

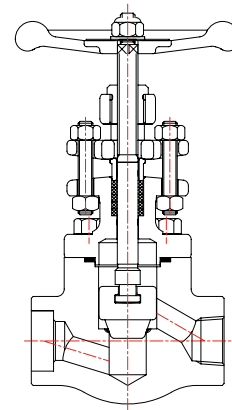
(Design Standard: API 602, BS 5352, ISO 15761, ASME B16.34)

Assembly for General Globe Valve



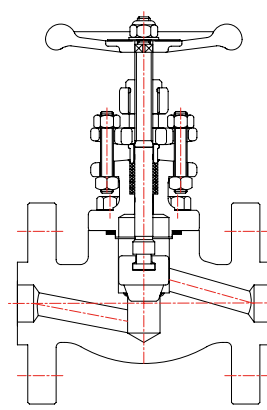
- | | |
|----------------|------------------|
| 1. Body | 10. Gland Flange |
| 2. Disc | 11. Gland Nut |
| 3. Stem | 12. Yoke Bush |
| 4. Gasket | 13. Handwheel |
| 5. Bonnet | 14. Nameplate |
| 6. Bonnet Bolt | 15. H/W Washer |
| 7. Packing | 16. H/W Nut |
| 8. Gland Bolt | |
| 9. Gland | |

SW, NPT Ends



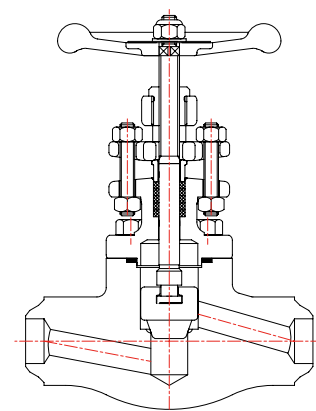
Socket Weld(SW) : ASME B16.11
Thread(NPT) : ASME B1.20.1

Flanged Ends



Flange(FLG) : ASME B16.5
Face-to-Face : ASME B16.10

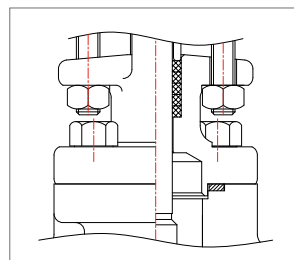
Long Pattern BW Ends



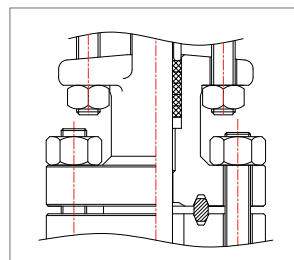
Butt Weld(BW) : ASME B16.25
End-to-End : ASME B16.10

Typical Configurations for Bonnet Joint

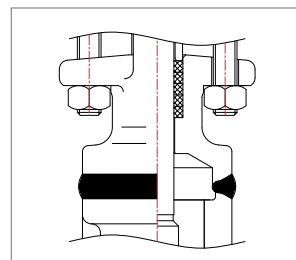
Bolted Bonnet (BB) (Spiral Wound Type)



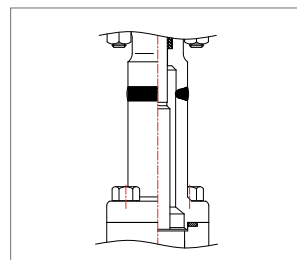
Bolted Bonnet (BB) (Ring Type Joint)



Welded Bonnet (WB) (Full Penetration Welding)



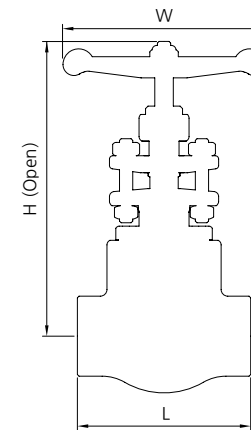
Extended Bonnet (EB) (Fabricated Welding)



※ Extended Bonnet is applied to Cryogenic(SS) & Low temperature(LF2) services.

Value Dimensions - Globe

SW, NPT



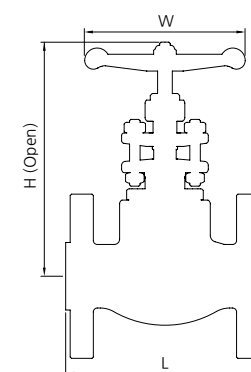
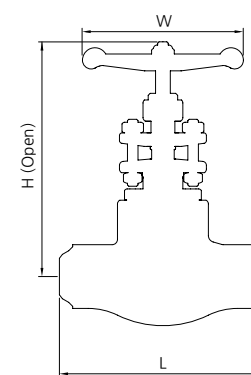
Unit : mm, unless otherwise specified.

Symbol	Bonnet Joint	Class	RP FP	1/4	3/8, 1/2	3/4	1	1-1/2	2
L (End-to-end)	All Type	800		76	76	92	104	140	183
		1500		92	92	104	140	183	210
W (Handwheel)	All Type	800		82	82	102	129	156	156
		1500		102	102	129	156	200	240
P (Port Dia.)	All Type	800		6.4	9.5	12.7	17.5	29.5	36.0
		1500		6.4	9.5	12.7	16.0	25.0	27.0
H (Height)	BB, WB	800		144	144	154	177	219	254
		1500		150	150	179	208	253	301
	EB (LowT.)	800		261	261	286	311	397	493
		1500		265	265	313	340	418	534
	EB (Cryo.)	800		419	419	426	451	504	564
		1500		425	425	453	480	527	605
Wt (kg)	BB, WB	800		1.5	1.5	2.2	3.0	5.6	8.9
		1500		2.4	2.4	3.3	5.8	13.0	22.0
	EB (LowT.)	800		2.1	2.1	2.7	4.3	8.5	12.3
		1500		3.1	3.1	4.0	6.8	14.9	25.6
	EB (Cryo.)	800		3.0	3.0	3.7	5.3	9.5	13.1
		1500		4.2	4.2	5.1	8.1	16.2	27.0

※ Abbreviations

BB: Bolted Bonnet / WB: Welded Bonnet / EB: Extended Bonnet / Cryo.: Cryogenic Service / Low T.: Low Temperature Service
RP: Reduced Port / FP: Full Port

BW(Long), FLG



Unit : mm, unless otherwise specified.

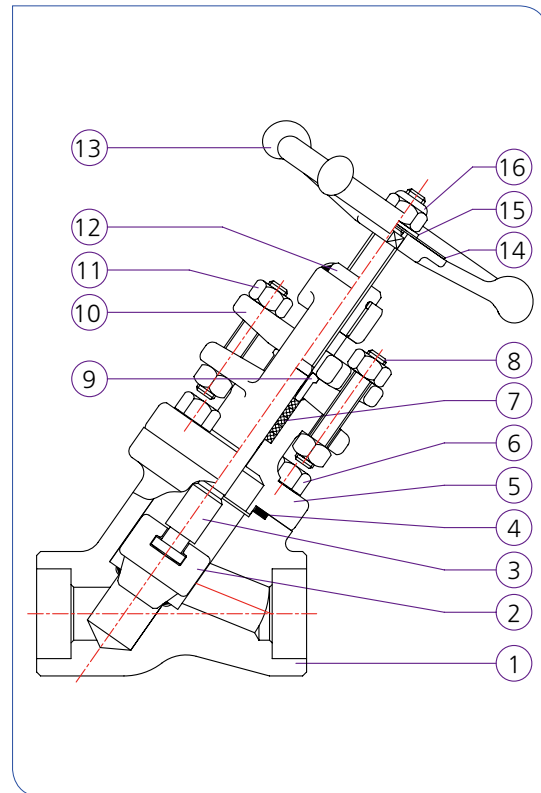
Symbol	Bonnet Joint	Class	1/2 (DN15)	3/4 (DN20)	1 (DN25)	1-1/2 (DN40)	2 (DN50)
L (End-to-end)	All Type	150	108	117	127	165	203
		300	152	178	203	229	267
		600	165	190	216	241	292
W (Handwheel)	All Type	1500	216	229	254	305	368
		1500	82	102	129	156	156
		1500	102	129	156	200	240
P (Port Dia.)	All Type	1500	9.5	12.7	17.5	29.5	36.0
		1500	9.5	12.7	16.0	25	27.0
		1500	9.5	12.7	16.0	25	27.0
H (Height)	BB, WB	1500	144	154	177	225	254
		1500	150	179	218	253	301
	EB (LowT.)	1500	261	286	311	407	493
		1500	265	313	350	418	534
	EB (Cryo.)	1500	419	426	451	514	564
		1500	425	453	490	527	605
Wt (kg) BW(Long) /FLG	BB, WB	150	1.7/2.8	2.4/3.5	3.3/5.1	6.1/9.3	9.5/12.8
		300	1.9/3.1	2.9/3.8	4.2/5.4	7.4/9.6	11.3/13.2
		600	2.0/3.6	3.0/5.0	4.4/6.8	7.6/12.5	12.1/16.6
	EB (LowT.)	1500	3.5/8.3	5.0/10.2	8.6/13.5	17.1/38.2	29.0/42.0
		150	2.3/3.4	2.9/4.0	4.6/6.4	9.0/12.2	12.9/16.2
		300	2.5/3.7	3.4/4.3	5.5/6.7	10.3/12.5	14.7/16.6
	EB (Cryo.)	600	2.6/4.2	3.5/5.5	5.7/8.1	10.5/15.4	15.5/20.0
		1500	4.2/9.0	5.7/10.9	9.6/14.5	19.0/40.1	32.7/45.7
	EB (Cryo.)	150	3.2/4.3	3.9/5.0	5.6/7.4	10.0/13.2	13.7/17.0
		300	3.4/4.6	4.4/5.3	6.5/7.7	11.3/13.5	15.5/17.4
		600	3.5/5.1	4.5/6.5	6.7/9.1	11.5/16.4	16.3/20.8
		1500	5.3/10.1	6.8/12.0	10.9/15.8	20.3/41.4	34.0/47.0

※ ASME Class 900 is same as Class 1500.

Typical Configurations for Y-Globe Valves

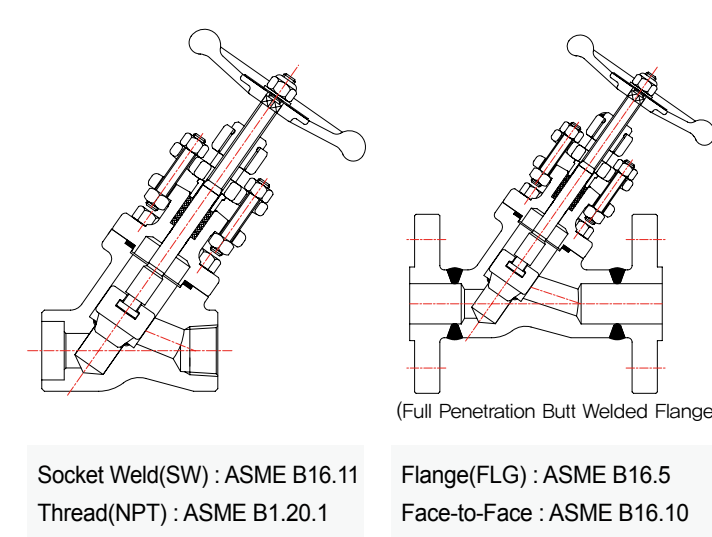
(Design Standard: API 602, BS 5352, ISO 15761, ASME B16.34)

Assembly for General Y-Globe Valve

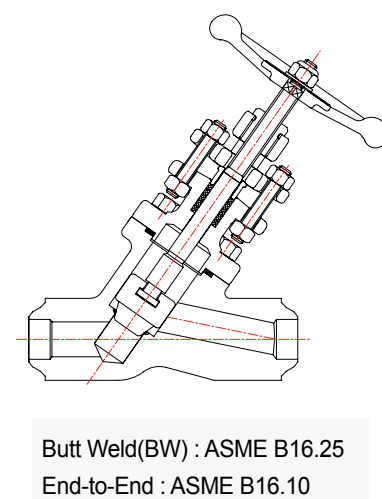


- | | |
|----------------|------------------|
| 1. Body | 10. Gland Flange |
| 2. Disc | 11. Gland Nut |
| 3. Stem | 12. Yoke Bush |
| 4. Gasket | 13. Handwheel |
| 5. Bonnet | 14. Nameplate |
| 6. Bonnet Bolt | 15. H/W Washer |
| 7. Packing | 16. H/W Nut |
| 8. Gland Bolt | |
| 9. Gland | |

SW, NPT Ends

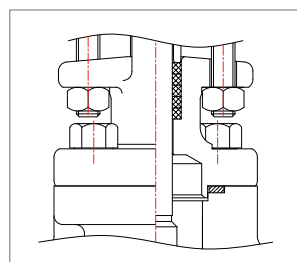


Long Pattern BW Ends

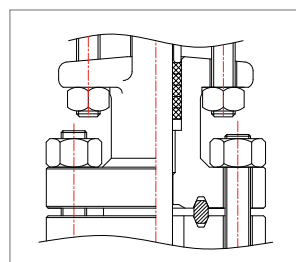


Typical Configurations for Bonnet Joint

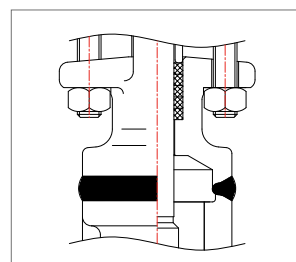
Bolted Bonnet (BB) (Spiral Wound Type)



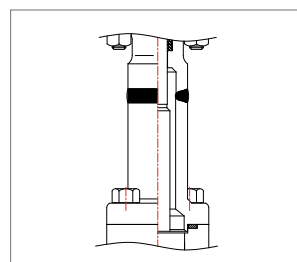
Bolted Bonnet (BB) (Ring Type Joint)



Welded Bonnet (WB) (Full Penetration Welding)



Extended Bonnet (EB) (Fabricated Welding)



※ Extended Bonnet is applied to Cryogenic(SS) & Low temperature(LF2) services.

Value Dimensions - Y-Globe

SW, NPT

Unit : mm, unless otherwise specified.

Symbol	Bonnet Joint	Class	RP FP	1/4	3/8, 1/2	3/4	1	1-1/2	2
L (End-to-end)	All Type	800		76	76	90	102	124	152
		1500		90	90	102	124	152	200
W (Handwheel)		800		82	82	102	129	156	200
		1500		102	102	129	156	200	240
P (Port Dia.)		800		6.4	9.5	12.7	17.5	29.5	36
		1500		6.4	9.5	12.7	16.0	25.0	27.0
									45.0
H (Height)	BB, WB	800		163	163	169	194	244	275
		1500		169	169	194	244	275	352
	EB (LowT.)	800		257	257	277	303	392	472
		1500		263	263	303	365	443	527
	EB (Cryo.)	800		385	385	391	417	479	530
		1500		391	391	417	479	530	585
Wt (kg)	BB, WB	800		1.8	1.8	2.1	3.0	6.7	9.7
		1500		2.2	2.2	3.6	6.0	10.6	14.3
	EB (LowT.)	800		2.4	2.4	2.9	3.8	8.2	12.2
		1500		2.9	2.9	4.4	7.0	12.5	17.9
	EB (Cryo.)	800		3.3	3.3	3.9	4.8	9.2	13
		1500		4.0	4.0	5.4	8.3	13.8	19.3

※ Abbreviations

BB: Bolted Bonnet / WB: Welded Bonnet / EB: Extended Bonnet / Cryo.: Cryogenic Service / Low T.: Low Temperature Service
RP: Reduced Port / FP: Full Port

BW(Long), FLG

Unit : mm, unless otherwise specified.

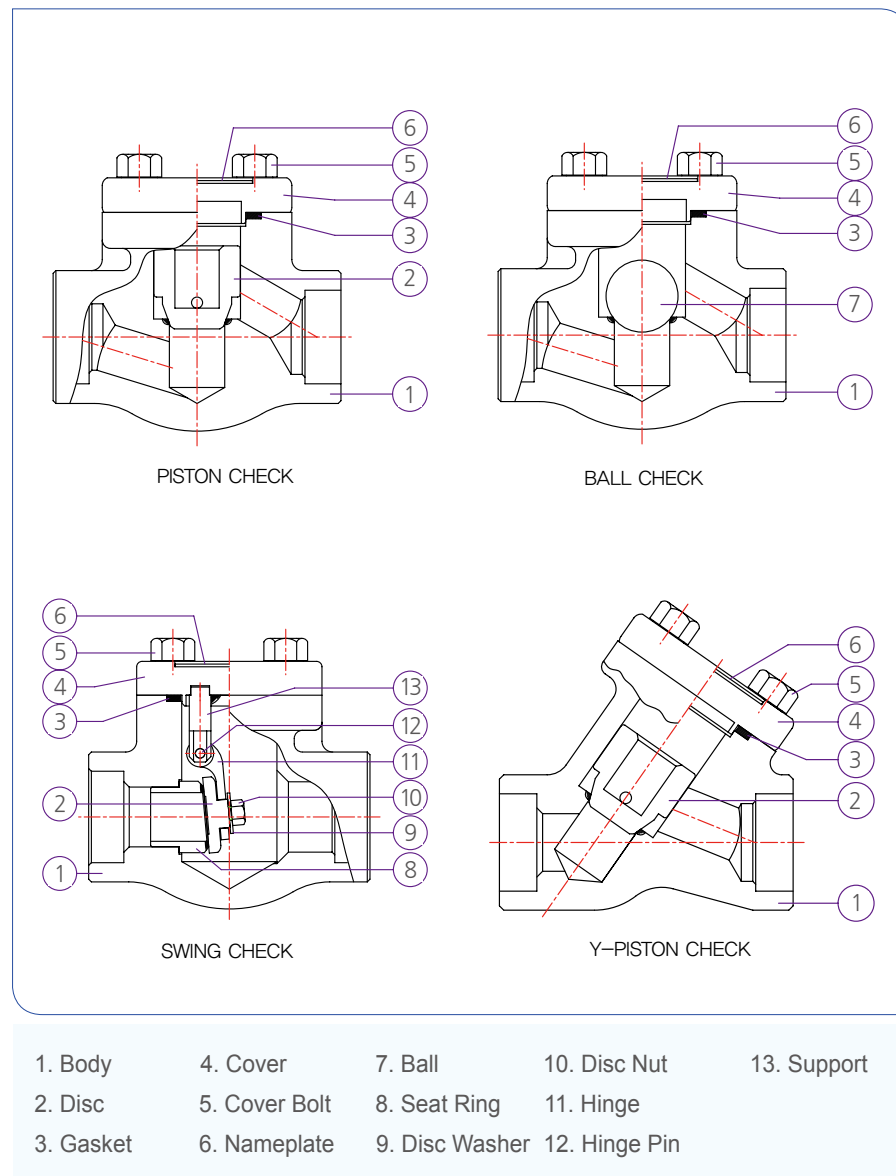
Symbol	Bonnet Joint	Class	1/2 (DN15)	3/4 (DN20)	1 (DN25)	1-1/2 (DN40)	2 (DN50)
L (End-to-end)	All Type	150	140	152	165	203	229
		300	152	178	203	229	267
		600	165	190	216	241	292
W (Handwheel)		1500	216	229	254	305	368
		1500	82	102	129	156	156
		1500	102	129	156	200	240
P (Port Dia.)		1500	9.0	12.7	17.0	28.5	36.0
		1500	9.5	12.7	16.0	25.0	27.0
H (Height)	BB, WB	1500	163	163	169	194	244
		1500	169	169	194	244	275
	EB (LowT.)	1500	257	257	277	303	392
		1500	263	263	303	365	443
	EB (Cryo.)	1500	385	385	391	417	479
		1500	391	391	417	479	530
Wt (kg) BW(Long) /FLG	BB, WB	150	2.2/3.1	2.7/3.4	3.8/5.1	8.3/10.4	12.1/13.6
		300	2.3/3.4	2.9/3.7	4.2/5.4	8.9/10.7	13.3/14.0
		600	2.4/3.9	3.0/4.9	4.4/6.8	9.1/13.6	14.0/17.4
	EB (LowT.)	1500	3.4/5.0	5.2/7.2	9.1/11.6	16.0/19.8	21.7/29.2
		150	2.8/3.7	3.5/4.2	4.6/5.9	9.8/11.9	14.6/16.1
		300	2.9/4.0	3.7/4.5	5.0/6.2	10.4/12.2	15.8/16.5
		600	3.0/4.5	3.8/5.7	5.2/7.6	10.6/15.1	16.5/19.9
	EB (Cryo.)	1500	4.1/7.0	6.0/9.7	10.1/15.8	17.9/27.1	25.3/40.2
		150	3.7/4.6	4.5/5.2	5.6/6.9	10.8/12.9	15.4/16.9
		300	3.8/4.9	4.7/5.5	6.0/7.2	11.4/13.2	16.6/17.3
		600	3.9/5.4	4.8/6.7	6.2/8.6	11.6/16.1	17.3/20.7
		1500	5.2/8.1	7.0/10.7	11.4/17.1	19.2/28.4	26.7/41.6

※ ASME Class 900 is same as Class 1500.

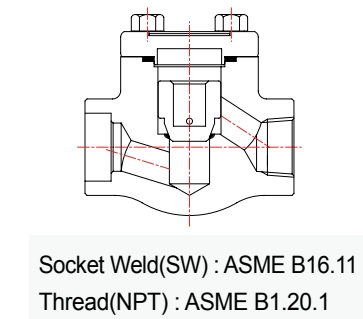
Typical Configurations for Check Values

(Design Standard: API 602, BS 5352, ISO 15761, ASME B16.34)

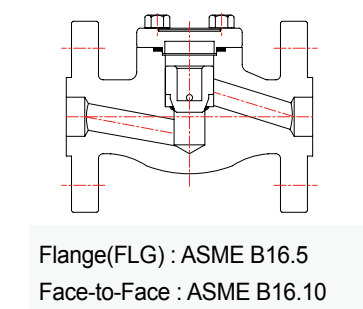
Assembly for General Check Values



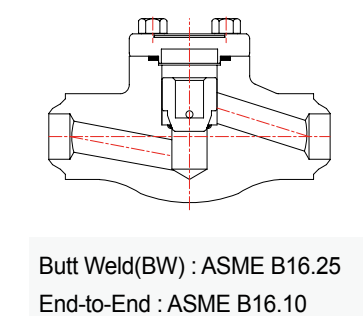
SW, NPT Ends



Flanged Ends

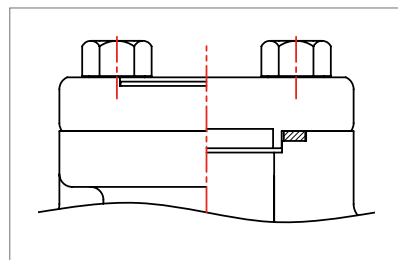


Long Pattern BW Ends

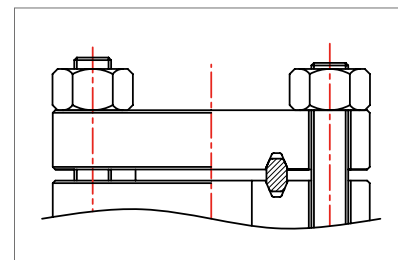


Typical Configurations for Cover Joint

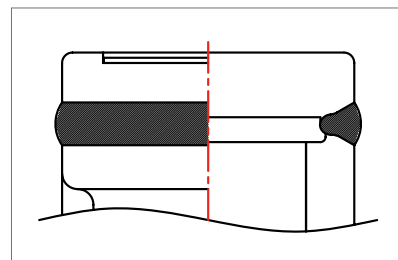
Bolted Cover (BC) (Spiral Wound Type)



Bolted Cover (BC) (Ring Type Joint)

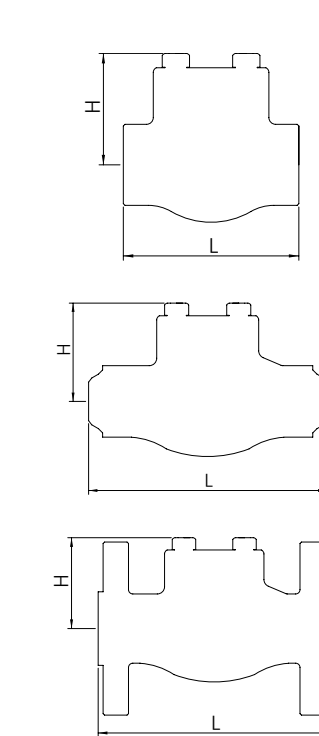


Welded Cover (WC) (Full Penetration Welding)



Value Dimensions - Check

SW, NPT, BW(L), FLG



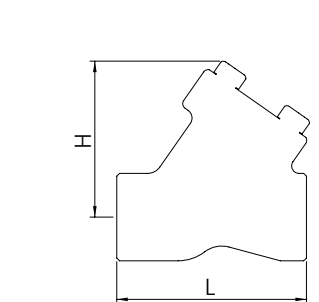
※ Abbreviations
BC: Bolted Cover / WC: Welded Cover / RP: Reduced Port / FP: Full Port

Unit : mm, unless otherwise specified.

Symbol	Cover Joint	Class	RP FP	1/4	3/8, 1/2	3/4	1	1-1/2	2	2
L (End-to-end)	All Type	800		76	76	92	104	140	183	220
		1500		92	92	104	140	183	210	
W (Handwheel)		800		6.4	9.5	12.7	17.5	29.5	36.0	44.0
		1500		6.4	9.5	12.7	16.0	25.0	27.0	
H (Height)		800		46	46	56	65	75	100	140
		1500		56	56	65	75	100	134	
Wt (kg)		800		1.0	1.0	1.5	2.0	4.1	7.1	10.0
		1500		1.5	1.5	2.5	4.1	6.4	9.8	

Symbol	Cover Joint	Class	1/2 (DN15)	3/4 (DN20)	1 (DN25)	1-1/2 (DN40)	2 (DN50)
L (End-to-end)	All Type	150	108	117	127	165	203
		300	152	178	203	229	267
		600	165	190	216	241	292
		1500	216	229	254	305	368
P (Port Dia.)		150~600	9.5	12.7	17.5	29.5	36.0
		1500	9.5	12.7	16.0	25.0	27.0
H (Height)	All Type	150~600	46	56	65	75	100
		1500	56	65	75	100	134
Wt (kg)		150	1.2/2.3	1.7/2.8	2.3/4.1	4.6/7.8	7.7/11.0
		300	1.4/2.6	2.2/3.1	3.2/4.4	5.9/8.1	9.5/11.4
BW(Long) /FLG		600	1.5/3.1	2.3/4.3	3.4/5.8	6.1/11.0	10.3/14.8
		1500	2.6/4.2	4.2/6.1	6.9/9.4	10.5/14.4	16.8/24.2

SW, NPT, BW(L), FLG



Unit : mm, unless otherwise specified.

Symbol	Cover Joint	Class	RP FP	1/4	3/8, 1/2	3/4	1	1-1/2	2	2
L (End-to-end)	All Type	800		76	76	90	102	124	152	200
		1500		90	90	102	124	152	200	
W (Handwheel)		800		6.4	9.5	12.7	17.5	29.5	36.0	44.0
		1500		6.4	9.5	12.7	16.0	25.0	27.0	
H (Height)		800		69	69	80	84	108	134	185
		1500		80	80	84	108	134	185	
Wt (kg)		800		1.0	1.0	1.6	2.2	4.2	7.0	9.8
		1500		1.7	1.7	2.4	4.5	7.2	10.2	

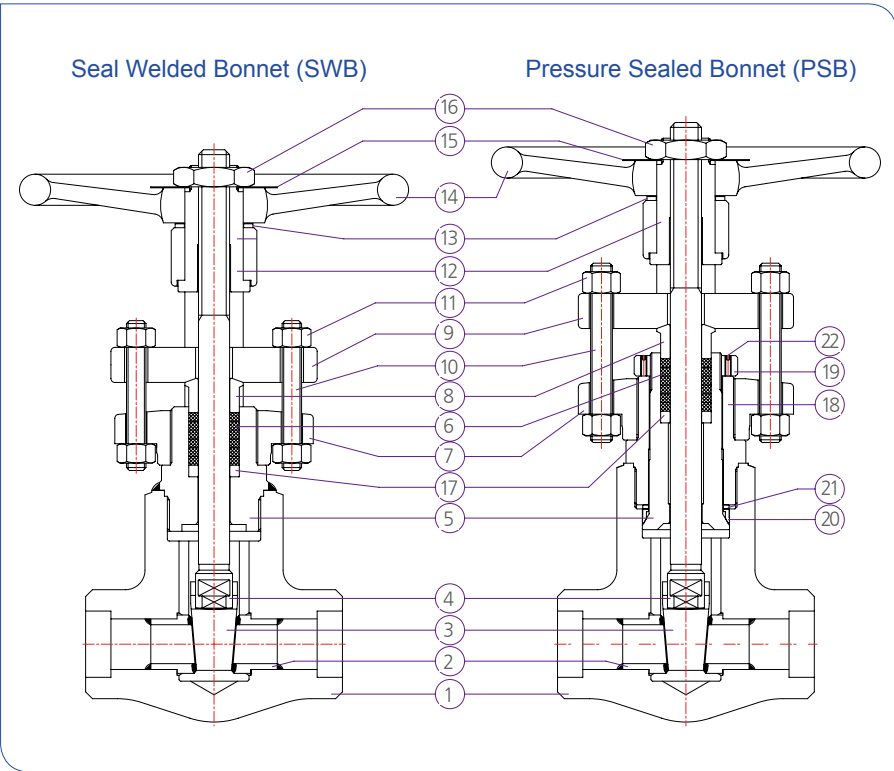
Symbol	Cover Joint	Class	1/2 (DN15)	3/4 (DN20)	1 (DN25)	1-1/2 (DN40)	2 (DN50)
L (End-to-end)	All Type	150	140	152	165	203	229
		300	152	178	203	229	267
		600	165	190	216	241	292
		1500	216	229	254	305	368
P (Port Dia.)		150~600	9.5	12.7	17.5	29.5	36
		1500	9.5	12.7	16	25	27
H (Height)	All Type	150~600	69	80	84	108	134
		1500	80	84	108	134	185
Wt (kg)		150	1.4	2.2	3.1	6.2	10
		300	1.5	2.5	3.6	6.9	11.5
		600	1.6	2.6	3.8	7.2	12.5
		1500	3	4.2	7.8	13.2	18.4

※ ASME Class 900 is same as Class 1500.

High Pressure Gate Values

(Design Standard: ASME B16.34)

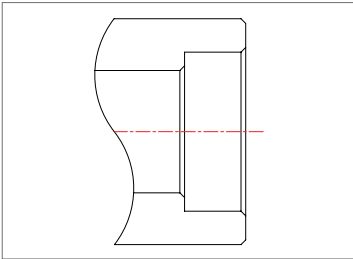
Assembly for General Gate Value



- | | | | |
|--------------|-----------------|--------------------|---------------------|
| 1. Body | 7. Yoke | 13. Thrust Washer | 19. Bonnet Nut |
| 2. Seat Ring | 8. Gland | 14. Handwheel | 20. Gasket |
| 3. Wedge | 9. Gland Flange | 15. Nameplate | 21. Gasket Retainer |
| 4. Stem | 10. Gland Bolt | 16. H/W Nut | 22. Set Screw |
| 5. Bonnet | 11. Gland Nut | 17. Packing Washer | |
| 6. Packing | 12. Yoke Sleeve | 18. Bonnet Guide | |

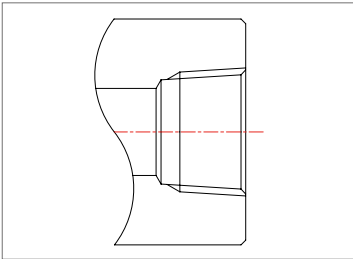
Socket Weld (SW)

Design Standard: ASME B16.11



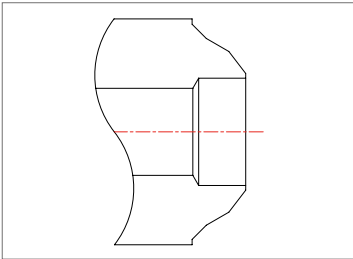
Thread (NPT)

Design Standard: ASME B1.20.1



Butt Weld (BW)

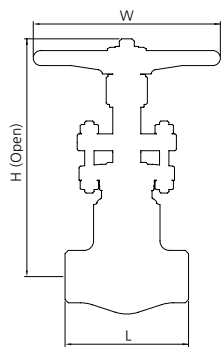
Design Standard: ASME B16.25



Value Dimensions - High Pressure Gate

SW, NPT, BW

Unit : mm, unless otherwise specified.

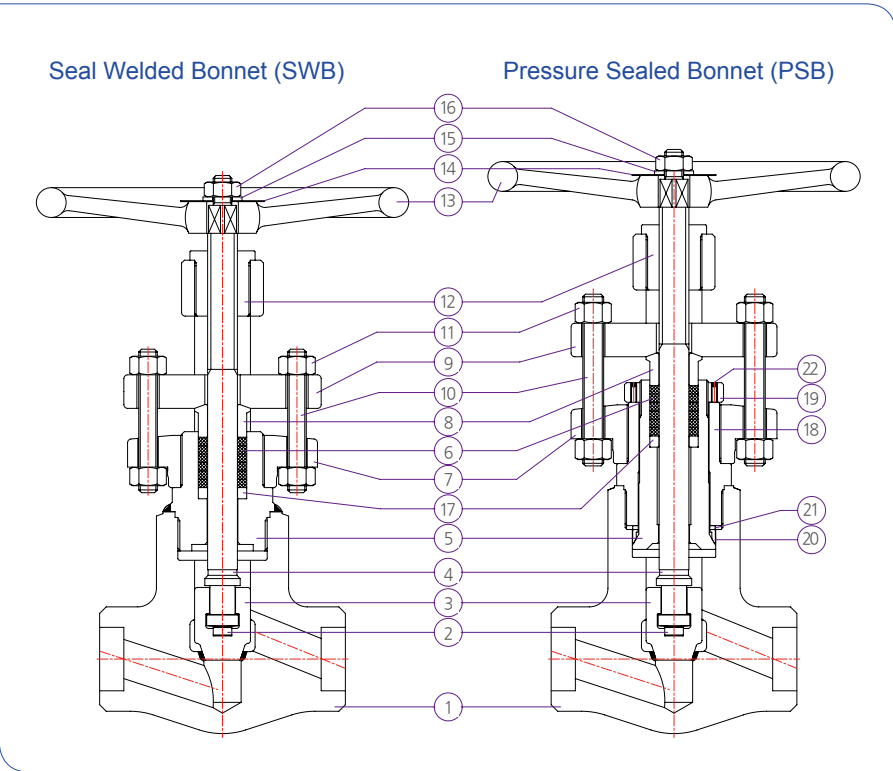


Symbol	Bonnet Joint	Class	1/2 (DN15)	3/4 (DN20)	1 (DN25)	1-1/2 (DN40)	2 (DN50)	2-1/2 (DN65)	3 (DN80)
L (End-to-end)	SWB /PSB	1500	102	120	132	152	178	254	280
		2500	114	132	152	178	203	254	280
W (Handwheel)		1500	150	170	200	280	320	360	360
		2500	170	200	240	320	360	360	360
P (Port Dia.)		1500	12	16	20	32	40	48	59
		2500	10	13	18	26	35	40	52
H (Height)		1500	216/227	243/256	280/294	366/385	450/473	510/536	510/536
		2500	237/249	275/289	330/347	427/449	497/522	510/536	510/536
Wt (kg)		1500	5.7/6.0	6.8/7.2	8.2/8.7	17.2/18.1	34.0/35.7	38.0/39.9	49.0/51.5
		2500	6.8/7.2	8.2/8.7	17.2/18.1	34.0/35.7	44.5/46.8	52.0/54.6	58.0/60.9

High Pressure Globe Values

(Design Standard: ASME B16.34)

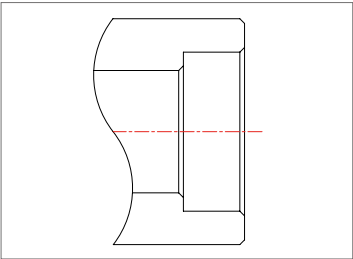
Assembly for General Globe Value



- | | | | |
|-------------|-----------------|--------------------|---------------------|
| 1. Body | 7. Yoke | 13. Handwheel | 19. Bonnet Nut |
| 2. Disc Pad | 8. Gland | 14. Nameplate | 20. Gasket |
| 3. Disc | 9. Gland Flange | 15. H/W Washer | 21. Gasket Retainer |
| 4. Stem | 10. Gland Bolt | 16. H/W Nut | 22. Set Screw |
| 5. Bonnet | 11. Gland Nut | 17. Packing Washer | |
| 6. Packing | 12. Yoke Bush | 18. Bonnet Guide | |

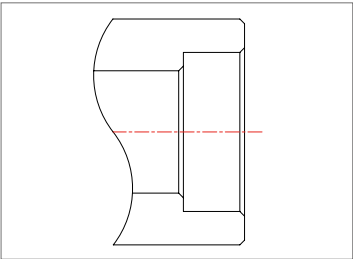
Socket Weld (SW)

Design Standard: ASME B16.11



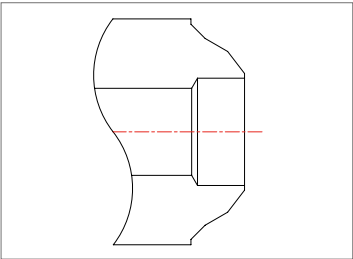
Thread (NPT)

Design Standard: ASME B1.20.1



Butt Weld (BW)

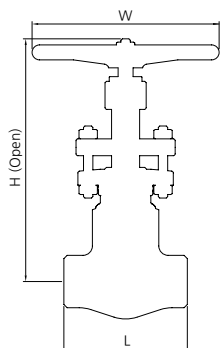
Design Standard: ASME B16.25



Value Dimensions - High Pressure Globe

SW, NPT, BW

Unit: mm, unless otherwise specified.

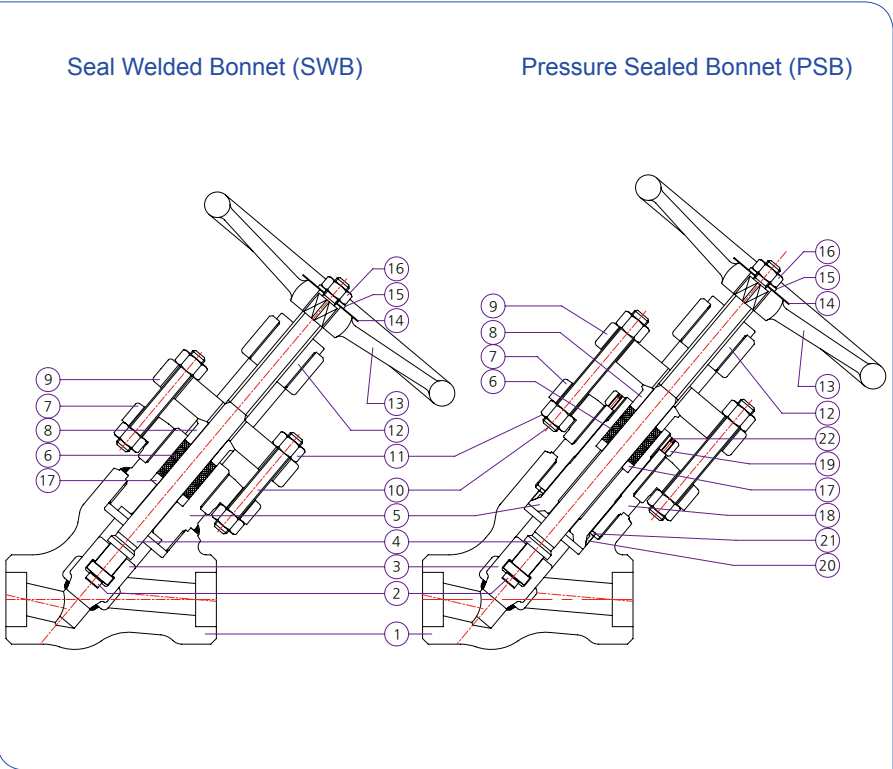


Symbol	Bonnet Joint	Class	1/2 (DN15)	3/4 (DN20)	1 (DN25)	1-1/2 (DN40)	2 (DN50)	2-1/2 (DN65)	3 (DN80)
L (End-to-end)	SWB /PSB	1500	102	120	132	196	248	254	280
		2500	114	132	152	216	260	254	280
W (Handwheel)		1500	150	170	200	280	320	360	360
		2500	170	200	240	320	360	360	360
P (Port Dia.)		1500	12	16	20	32	40	48	59
		2500	10	13	18	26	35	40	52
H (Height)		1500	212/223	240/252	277/291	372/391	455/478	510/536	510/536
		2500	236/248	276/290	331/348	446/469	513/539	510/536	510/536
Wt (kg)		1500	5.7/6.0	6.8/7.2	8.2/8.7	17.2/18.1	34.0/35.7	38.0/39.9	49.0/51.5
		2500	6.8/7.2	8.2/8.7	17.2/18.1	34.0/35.7	44.5/46.8	52.0/54.6	58.0/60.9

High Pressure Y-Globe Valves

(Design Standard: ASME B16.34)

Assembly for General Y-Globe Valve



1. Body

2. Disc Pad

3. Disc

4. Stem

5. Bonnet

6. Packing
7. Yoke

8. Gland

9. Gland Flange

10. Gland Bolt

11. Gland Nut

12. Yoke Bush
13. Handwheel

14. Nameplate

15. H/W Washer

16. H/W Nut

17. Packing Washer

18. Bonnet Guide
19. Bonnet Nut

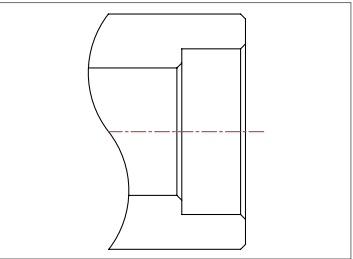
20. Gasket

21. Gasket Retainer

22. Set Screw

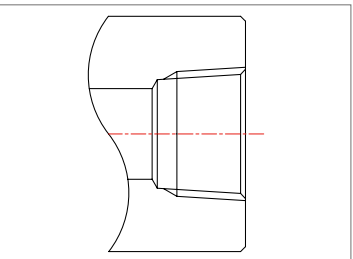
Socket Weld (SW)

Design Standard: ASME B16.11



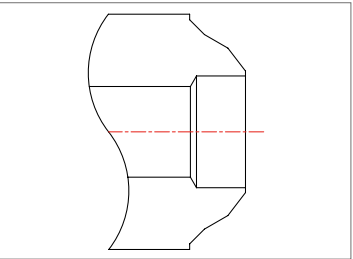
Thread (NPT)

Design Standard: ASME B1.20.1



Butt Weld (BW)

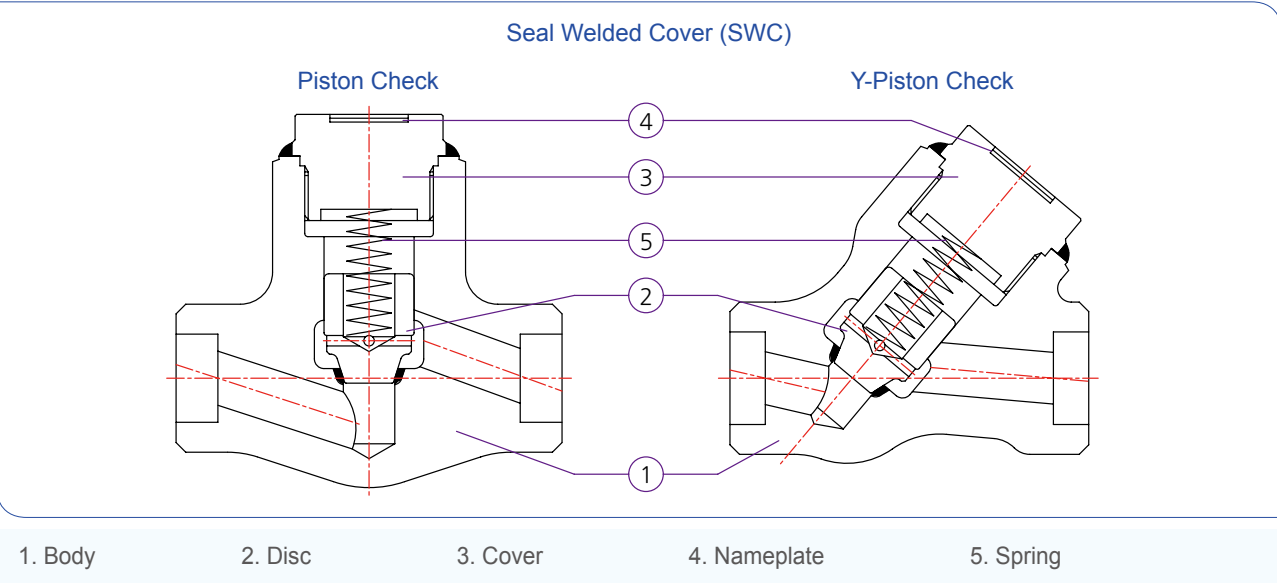
Design Standard: ASME B16.25



High Pressure Check Values

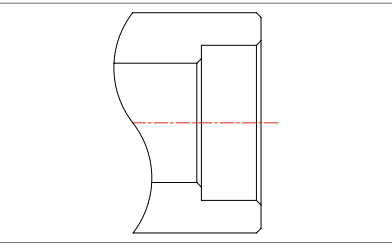
(Design Standard: ASME B16.34)

Assembly for General Piston Check Valve



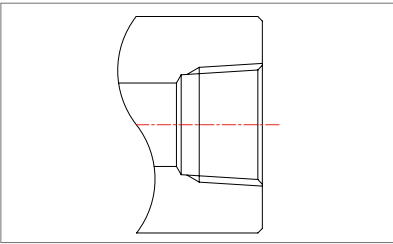
Socket Weld (SW)

Design Standard: ASME B16.11



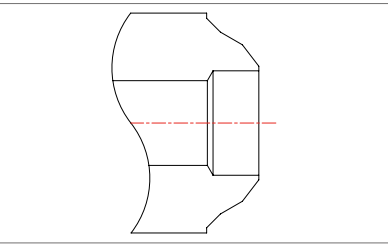
Thread (NPT)

Design Standard: ASME B1.20.1



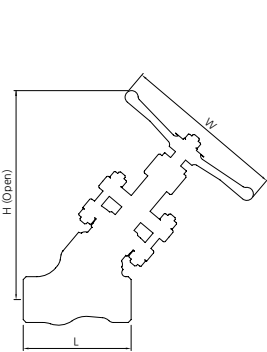
Butt Weld (BW)

Design Standard: ASME B16.25



Value Dimensions - High Pressure Y-Globe

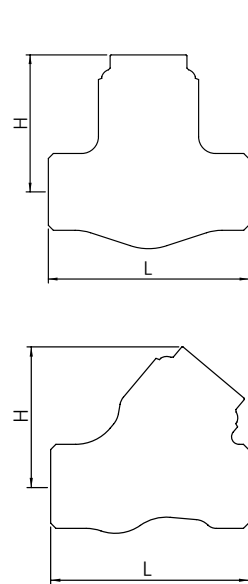
SW, NPT, BW



Unit: mm, unless otherwise specified.

Symbol	Bonnet Joint	Class	1/2 (DN15)	3/4 (DN20)	1 (DN25)	1-1/2 (DN40)	2 (DN50)	2-1/2 (DN65)	3 (DN80)
L (End-to-end)	SWB /PSB	1500	102	120	132	196	248	254	280
W (Handwheel)		2500	114	132	152	216	286	254	280
P (Port Dia.)		1500	150	170	200	280	320	360	360
H (Height)		2500	170	200	240	320	360	360	360
Wt (kg)		1500	12	16	20	32	40	48	59
		2500	10	13	18	26	35	40	52
	SWB /PSB	1500	208/218	233/245	270/283	366/384	440/462	510/535	510/535
		2500	232/244	270/283	323/339	437/459	498/523	510/535	510/535
		1500	3.2/3.4	4.1/4.3	6.1/6.4	14.9/15.6	28.5/29.9	38.0/39.9	49.0/51.4
		2500	4.0/4.2	5.0/5.2	10.4/10.9	22.0/23.1	39.5/41.4	52.0/54.6	58.0/60.9

SW, NPT, BW



Unit: mm, unless otherwise specified.

Symbol	Cover Joint	Class	1/2 (DN15)	3/4 (DN20)	1 (DN25)	1-1/2 (DN40)	2 (DN50)	2-1/2 (DN65)	3 (DN80)
L (End-to-end)	SWC	1500	102	120	132	196	248	254	280
P (Port Dia.)		2500	114	132	152	216	286	254	280
H (Height)		1500	12	16	20	32	40	48	59
Wt (kg)		2500	10	13	18	26	35	40	52
		1500	73	84	92	130	153	206	235
		2500	82	95	114	149	174	206	235
	SWC	1500	2.4	3.0	4.2	10.5	19.5	28	36.0
		2500	2.8	3.5	7.5	12.5	27.5	30.0	38.0
		1500	102	120	132	196	248	254	280
		2500	114	132	152	216	286	254	280
		1500	12	16	20	32	40	48	59
		2500	10	13	18	26	35	40	52
	SWC	1500	70	79	88	119	141	206	235
		2500	80	93	108	146	167	216	235
		1500	2.4	3.0	4.2	10.5	19.5	28	36.0
		2500	2.8	3.5	7.5	12.5	27.5	30.0	38.0

TECHNICAL DATA

TYPICAL C_v VALUES

SIZE (NPS)	GATE		GLOBE			CHECK		
	Reduced Port	Full Port	Reduced Port	Full Port	Y-Pattern	Reduced Port	Full Port	Y-Pattern
1/4	3.9	3.9	1.0	2.0	3.0	0.5	1.6	3.5
3/8	7.2	9.1	2.0	2.2	6.0	1.0	2.0	5.5
1/2	7.2	16	2.0	2.2	6.0	1.0	2.0	5.5
3/4	12	33	2.5	5.0	8.0	2.0	4.0	8.5
1	27	70	5.0	9.0	12	4.0	7.0	12
1 1/4	53	151	10	15	35	7.3	11	35
1 1/2	65	155	15	21	35	11	16	35
2	113	253	23	35	51	18	27	51

FOR FLOW COEFFICIENT C_v

<Nomenclature>

C_v : Flow coefficient for valves or piping components

d : Internal diameter (inch)

K : Resistance coefficient

Q : Rate of flow (gpm)

ΔP : Differential pressure between inlet pressure and outlet pressure (lb/in², psig)

ρ : Weight density of fluid (lb/ft³)

The C_v coefficient of a valve is defined as the flow of water at 60°F, in gallons per minute, at pressure drop of one pound per square inch across the valve.

By the substitution of appropriate equivalent units in Darcy equation, it can be shown that,

$$C_v = \frac{29.9d^2}{\sqrt{K}}$$

Also, the quantity in gallons per minute of liquids of low viscosity that flow through the valve can be determined from:

$$Q = C_v \sqrt{\Delta P \left(\frac{62.4}{\rho} \right)}$$

$$Q = 7.9 C_v \sqrt{\frac{\Delta P}{\rho}}$$

and the pressure drop can be computed from the same formula arranged as follows:

$$\Delta P = \frac{\rho}{62.4} \left(\frac{Q}{C_v} \right)^2$$

Figure 1 illustrates typical flow characteristics. All flow characteristics are available on Globe valve when required.

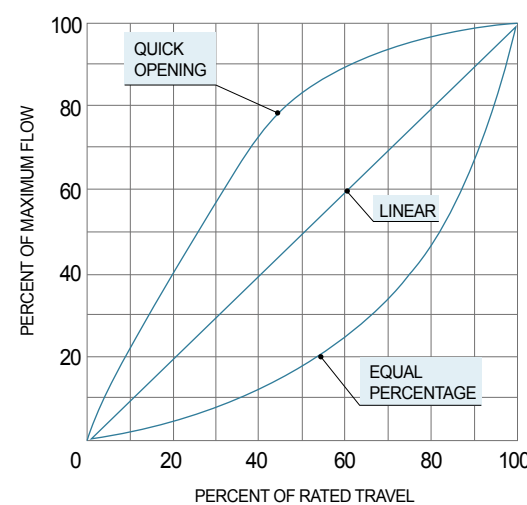


Fig.1 Inherent Flow Characteristics Curves

PRESSURE & TEMPERATURE RATINGS (ASME B16.34)

MAT'L GROUP (GROUP NO.)	CARBON (1.1)		LOW ALLOY (1.9, 1.0, 1.14, 1.15, 1.17)									STAINLESS (2.1, 2.2)				
MATERIAL	A105(a) & A350-LF2(a)		A182-F11(b)		A182-F22(b)		A182-F5		A182-F9		A182-F91		A182-F304(L)(c)		A182-F316(L)(c)	
CLASS	800	1500	800	1500	800	1500	800	1500	800	1500	800	1500	800	1500	800	1500
°F	WORKING PRESSURE, psig															
100	1975	3705	2000	3750	2000	3750	2000	3750	2000	3750	2000	3750	1920	3600	1920	3600
200	1810	3395	2000	3750	2000	3750	1965	3680	2000	3750	2000	3750	1600	3000	1655	3095
300	1745	3270	1925	3610	1940	3640	1865	3495	1940	3640	1945	3640	1435	2690	1495	2795
400	1690	3170	1850	3465	1880	3530	1780	3345	1880	3530	1880	3530	1325	2485	1370	2570
500	1610	3015	1775	3325	1775	3325	1725	3230	1775	3325	1775	3325	1240	2330	1275	2390
600	1515	2840	1615	3025	1615	3025	1615	3025	1615	3025	1615	3025	1180	2210	1205	2255
650	1465	2745	1570	2940	1570	2940	1570	2940	1570	2940	1570	2940	1150	2160	1180	2210
700	1415	2665	1515	2840	1515	2840	1515	2840	1515	2840	1515	2840	1125	2110	1160	2170
750	1350	2535	1420	2660	1420	2660	1420	2660	1420	2660	1420	2660	1100	2065	1140	2135
800	1100	2055	1355	2540	1355	2540	1355	2540	1355	2540	1355	2540	1080	2030	1125	2110
850	850	1595	1300	2435	1300	2435	1300	2435	1300	2435	1300	2435	1055	1980	1115	2090
900	615	1150	1200	2245	1200	2245	995	1870	1200	2245	1200	2245	1035	1945	1105	2075
950	365	685	850	1595	1025	1930	735	11370	1005	1885	1035	1930	1020	1910	1030	1930
1000	225	430	575	1080	710	1335	530	995	675	1270	970	1820	945	1770	970	1820
1050			385	720	465	875	385	720	460	855	960	1800	865	1630	960	1800
1100			255	480	295	550	255	480	300	565	805	1510	685	1285	815	1525
1150			175	325	180	345	165	310	200	375	595	1115	545	1030	630	1185
1200			110	205	110	205	95	170	140	255	385	720	440	825	495	925
1250													355	670	390	735
1300													300	565	310	585
1350													250	465	255	480
1400													200	380	200	380
1450													155	290	155	290
1500													110	205	110	205

MAT'L GROUP (GROUP NO.)	STAINLESS (2.4, 2.5)				DUPLEX (2.8)		SUPER AUST. (3.1)		NICKEL ALLOY (3.4, 3.8)							
MATERIAL	A182-F321(d)		A182-F347H		A182-F51(e) & A182-F53(e)		B462-N08020		B564-N04400		B564-N08825(d)		B564-N06625(f)		B564-N10276(g)	
CLASS	800	1500	800	1500	800	1500	800	1500	800	1500	800	1500	800	1500	800	1500
°F	WORKING PRESSURE, psig															
100	1920	3600	1920	3600	2000	3750	2000	3750	1600	3000	2000	3750	2000	3750	2000	3750
200	1730	3240	1765	3310	1985	3720	1975	3710	1400	2630	2000	3750	2000	3750	2000	3750
300	1585	2975	1645	3085	1780	3335	1890	3550	1305	2450	1940	3640	1940	3640	1940	3640
400	1470	2760	1535	2880	1640	3070	1815	3410	1260	2365	1860	3490	1860	3490	1860	3490
500	1375	2580	1445	2710	1545	2905	1745	3275	1260	2365	1770	3325	1770	3325	1770	3325
600	1300	2435	1375	2580	1485	2785	1610	3025	1260	2365	1610	3025	1610	3025	1610	3025
650	1265	2375	1350	2530	1460	2735	1565	2940	1260	2365	1565	2940	1565	2940	1565	2940
700	1240	2330	1325	2485	1445	2710	1515	2840	1250	2350	1515	2840	1515	2840	1515	2840
750	1220	2290	1310	2460	1420	2660	1415	2660	1240	2330	1415	2660	1415	2660	1415	2660
800	1205	2255	1300	2435			1355	2540	1220	2290	1355	2540	1355	2540	1355	2540
850	1190	2230	1295	2425					1005	1885	1295	2435	1295	2435	1295	2435
900	1180	2210	1200	2245					730	1370	1200	2245	1200	2245	1200	2245
950	1030	1930	1030	1930							1030	1930	1030	1930	1030	1930
1000	970	1820	970	1820							965	1820	965	1820	965	1820
1050	960	1800	960	1800							960	1800	960	1800	960	1800
1100	830	1560	860	1610							855	1610	855	1610	855	1610
1150	630	1185	735	1370							730	1370	730	1370	730	1370
1200	495	925	550	1030							545	1030	545	1030	545	1030
1250	375	705	485	910							440	825	440	825	440	825
1300	295	550	365	685							320	600	320	600	320	600
1350	225	430	275	515												
1400	175	325	200	380												
1450	140	255	155	290												
1500	100	190	110	205												

<GENERAL NOTE>

1. Flanged-end valve ratings terminate at 1000°F.

<NOTES>

(a) Permissible, but not recommended for prolonged use above 800°F.

(b) Permissible, but not recommended for prolonged use above 1100°F.

(c) "L" grade is not to be used over 800°F.

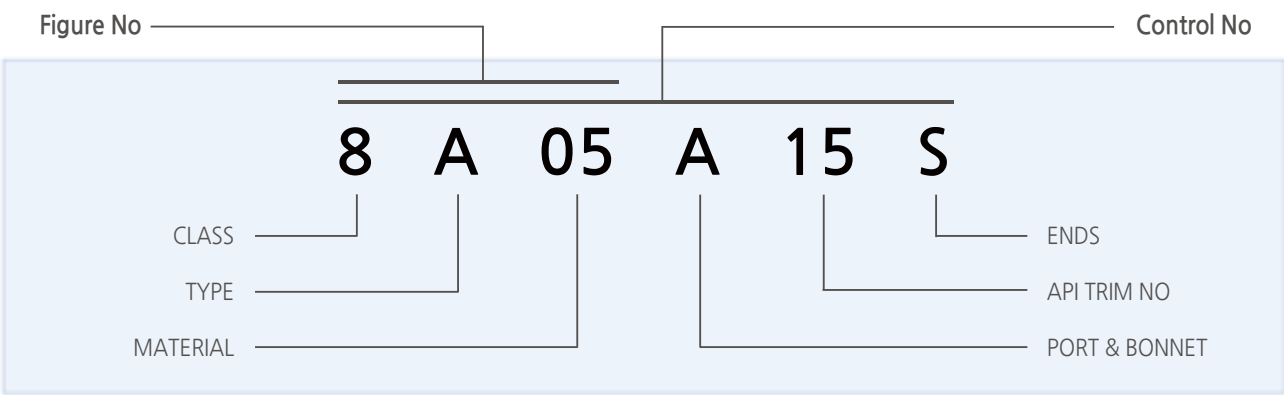
(d) Not to be used over 1000°F.

(e) Not to be used over 600°F.

(f) Not to be used over 1200°F.

(g) Not to be used over 1250°F.

Product figure and control No.



CLASS		TYPE		MATERIAL	
8	800 #	A	GATE	05	A105N
1	150 #	B	GLOBE	F2	LF2
3	300 #	C	Y-GLOBE	11	F11
6	600 #	D	STOP CHECK	22	F22
9	900 #	E	PISTON CHECK	F5	F5
15	1500 #	F	SWING CHECK	51	F51
16	1690 #	G	BALL CHECK	53	F53
25	2500 #	H	Y-PISTON CHECK	F9	F9
26	2680 #	J	Y-BALL CHECK	91	F91
45	4500 #	K	BELLOWS GATE	04	F304 (L/H)
		L	BELLOWS GLOBE	16	F316 (L/H)
		M	BELLOWS Y-GLOBE	17	F317 (L)
		N	BALL CHECK	21	F321 (H)
		O	ANGLE	47	F347 (H)
		P	EXT.-BODY GATE	MN	MONEL
		Q	NEEDLE GLOBE	HS	HASTELLOY
		R	NEEDLE Y-GLOBE	IC	INCONEL
				AL	ALLOY20
				OT	OTHERS

PORT & BONNET		API TRIM NO.		ENDS	
A	Reduced Port Bolted Bonnet	5	13 CrHF	S	SW
B	Reduced Port Welded Bonnet	8	13 Cr	N	NPT
C	Reduced Port Extended Bonnet	9	Monel	X	SWXNPT
D	Full Port Bolted Bonnet	11	Monel - HF	B	BW
E	Full Port Welded Bonnet	15	304 SSHF	F	FLANGE
F	Full Port Extended Bonnet	16	316 SSHF	L	BW LONG
		17	347 SSHF		
		S	Special Alloy		

STANDARD MATERIAL SPECIFICATION

MATERIAL PART NAME	CARBON	LOW-TEMP. CARBON STEEL	LOW ALLOY	STAINLESS	SPECIAL ALLOY / DUPLEX
BODY	A105N	A350-LF2	A182-F5	A182-F304 (L/H)	Monel
BONNET			A182-F5a	A182-F316 (L/H)	Inconel
COVER			A182-F9	A182-F317 (L)	Hastelloy
			A182-F11 CL2	A182-F321 (H)	Alloy20
			A182-F22 CL3	A182-F347 (H)	Duplex
			A182-F91	A182-F44	
STEM	A276-410	A276-410	A276-410	A276-304	Monel
SEAT RING	A276-304	A276-304	A276-304	A276-316	Inconel
	A276-316	A276-316	A276-316	A276-321	Hastelloy
	Monel			A276-317	Alloy20
				A276-347	Duplex
WEDGE	A217-CA15	A217-CA15	A217-CA15	A351-CF8	Monel
DISC	A351-CF8	A351-CF8	A351-CF8	A351-CF8M	Inconel
	A351-CF8M	A351-CF8M	A351-CF8M	A351-CG8M	Hastelloy
	Monel			A351-CF8C	Alloy20
					Duplex
YOKE SLEEVE /BUSH	A582-416	A582-416	A582-416	A582-416	A582-416
GLAND FLANGE	A105N	A105N	A105N	A182-F316	A182-F316
GLAND PACKING	Graphite / PTFE	Graphite / PTFE	Graphite / PTFE	Graphite / PTFE	Graphite / PTFE
BONNET BOLT	A193-B7 / B7M	A320-L7 / L7M	A193-B16	A193-B8	A193-B8M
				A193-B8M	
GLAND BOLT	A193-B8	A193-B8	A193-B8	A193-B8	A193-B8
GLAND NUT	A194-8	A194-8	A194-8	A194-8	A194-8
GLAND	A276-316	A276-316	A276-316	A276-316	A276-316
HANDWHEEL	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel
GASKET	304+Graphite		304+Graphite	Stainless+Graphite	Special Alloy+Graphite
	316+Graphite	316+Graphite	316+Graphite		
HANDWHEEL NUT	Carbon Steel / IRON	Carbon Steel / IRON	Carbon Steel / IRON	Carbon Steel / IRON	Carbon Steel / IRON
NAME PLATE	Aluminium	Aluminium	Aluminium	A240-304	A240-304