



# ***Vogt Valves Catalog and Application Manual***

VVENCT0000-03



***Experience In Motion***



Vogt Valves, Sulphur Springs, TX

## ***Vogt Valves*** ***A History in the Making***

*In the late 1890s, Vogt pioneered the early development of ammonia absorption refrigeration systems that made artificial ice. This business, plus Vogt's fledgling boiler business, created an internal need for quality valves that initiated Vogt's early entry into the valve manufacturing business.*

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*The early reputation of Vogt's quality valves and rapidly growing petroleum processing industry created an outside demand that would firmly establish Vogt in the mass production of high-quality forged steel valves.*

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*For more than 100 years, Vogt's leadership has been evident in the production of forged steel gate, globe, angle and check valves in most popular materials, trims and bonnet configurations.*

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*Today, Vogt valves support a worldwide network of distributors with access to the world's largest capability for manufacturing of forged steel valves.*

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**GATE VALVE INDEX**

Press. Class	Material	Bonnet Joint	Gasket	End Connection	Bonnet Type	Wall Thick.	Ports	SERIES				
								Threaded	Socket Weld	Butt Weld	Flanged	
150	A105	Bolted	Spiral Wound		OS&Y		Conv	See Class 800	See Class 800	See Class 300	353	
	A182 F316/ F316 L				OS&Y		Conv				358	
	A350 LF2				OS&Y		Conv				32353	
300	A105	Bolted	Spiral Wound		OS&Y		Conv	See Class 800	See Class 800	BW363	363	
	A182 F316/ F316 L				OS&Y		Conv			BW13363	13363	
	A350 LF2				OS&Y		Conv			BW368	368	
					OS&Y		Conv			BW13368	13368	
600	A105	Bolted	Spiral Wound		OS&Y		Conv	See Class 800	See Class 800	BW32363	32363	
	A182 F316/ F316 L				OS&Y		Conv			BW33363	33363	
	A350 LF2				OS&Y		Conv			BW373	373	
					OS&Y		Conv			BW13373	13373	
					OS&Y		Full				11403	
					OS&Y		Full			BW378	378	
800	A105	Bolted	Spiral Wound		OS&Y		Conv	12111	SW12111	BW12111		
					OS&Y		Conv	13111	SW13111			
					OS&Y		Conv	12601	SW12601	BW12601		
					OS&Y		Full	13601	SW13601			
					OS&Y		Full	11103	SW11103			
					OS&Y		Conv	12161	SW12161			
					OS&Y		Conv	TT12111				
					OS&Y		Conv	ST 12111	SS12111			
					OS&Y		Conv	CT12111	CS12111			
					OS&Y		Conv	2801	SW2801			
					OS&Y		Conv	2801B	SW2801B			
					OS&Y		Conv	2811	SW2811			
	Bellows Seal					OS&Y		Conv	TT2801			
						OS&Y		Conv	TT2811			
						OS&Y		Conv	ST2801	SS2801		
						OS&Y		Conv	CT2801	CS2801		
						OS&Y		Conv	CT2901	CS2901		
						OS&Y		Conv	CT2911	CS2911		
	Union	Spiral Wound				ISS		Conv	59851	SW59851		
						OS&Y		Conv	32111	SW32111		
						OS&Y		Full	33111	SW33111		
						OS&Y		Conv	23801	SW32801		
						OS&Y		Full	33801	SW33801		
						OS&Y		Conv	12401	SW12401	BW12401	
A182 F316/ F316 L	Weld	Spiral Wound			OS&Y		Conv	13401	SW13401			
					OS&Y		Conv	12602	SW12602	BW12602		
					OS&Y		Full	13602	SW13602			
					OS&Y		Conv	2831	SW2831			
					OS&Y		Conv	TT2831				
					OS&Y		Conv	ST2831	SS2831			
A182 F316H A182 F5 A182 F9 A182 F11, CL2 A182 F22 CL 3	Bolted	Spiral Wound			OS&Y		Conv	59951	SW59951			
					OS&Y		Conv	82401	SW82401			
					OS&Y		Conv	12421	SW12421			
					OS&Y		Conv	12921	SW12921			
					OS&Y		Conv	12321	SW12321			
					OS&Y		Conv	12521	SW12521			
1500	A105	Bolted	Spiral Wound		OS&Y		Conv	15111	SW15111	BW15111		
					OS&Y		Full	16111	SW16111			
					OS&Y		API 600	1033	SW1033			
					OS&Y		API 600	1043	SW1043			
					OS&Y		Conv				15373	
					OS&Y		Full				16373	
	A350 LF2	Bolted	Spiral Wound			OS&Y		Conv	15521	SW15521		
						OS&Y		API 600				11603
						OS&Y		API 600				11683
						OS&Y		Conv	15801	SW15801		
						OS&Y		Conv	ST15801	SS15801		
						OS&Y		Conv	35111	SW35111		
A182 F316/ F316 L	Weld	Spiral Wound			OS&Y		Conv	15401	SW15401			
					OS&Y		Conv	15831	SW15831			
					OS&Y		Conv	15321	SW15321			
					OS&Y		Conv	15521	SW15521			
					OS&Y		Conv	15521	SW15521			
					OS&Y		Conv	15521	SW15521			
1500LTD	A105	Weld			OS&Y		Conv		SW65703			
2500*	A105	Weld		Threaded	OS&Y		Full	66703	SW66703			
	A350 LF2				OS&Y			66743	SW66743			
	A182 F11, CL2				OS&Y			66713	SW66713			
	A182 F22 CL 3				OS&Y			66773	SW66773			
2680*	A182 F91				OS&Y			66791	SW66791			

\* Threaded series rated at 2500 LTD and Socket Weld series rated at 2680 LTD



**CHECK VALVE INDEX**

Press. Class	Material	Bonnet Joint	Gasket	SEAT	Configuration	Bonnet Type	Wall Thick.	Ports	SERIES																	
									Threaded	Socket Weld	Butt Weld	Flanged														
150	A105	Bolted	Bellows Seal	Integral		OS&Y		Conv						473B												
	A182 F316/F316 L																	478B								
	A105																	473								
150	A182 F316/F316 L	Bolted	Spiral Wound	Integral		OS&Y		Conv	See Class 800	See Class 800				478												
	A350 LF2																	478								
																		32473								
300	A105	Bolted	Bellows Seal	Integral		OS&Y		Conv						483B												
	A182 F316/F316 L																	488B								
	A105																	483								
300	A182 F316/F316 L	Bolted	Spiral Wound	Integral		OS&Y		Conv	See Class 800	See Class 800	BW483			483												
	A105																	BW488	488							
	A350 LF2																	BW32488	32488							
300	A105	Bolted	Spiral Wound	Removable		OS&Y		Conv						22483												
	A350 LF2																		36483							
																			493B							
600	A105	Bolted	Bellows Seal	Integral		OS&Y		Conv						498B												
	A182 F316/F316 L																		498B							
	A105																		493							
600	A182 F316/F316 L	Bolted	Spiral Wound	Integral		OS&Y		Conv	See Class 800	See Class 800	BW493			493												
	A105																		BW498	498						
	A350 LF2																		BW32793	32493						
600	A105	Bolted	Spiral Wound	Removable		OS&Y		Conv						22493												
	A350 LF2																			32493						
	A105																			10403						
800	A105	Bolted	Bellows Seal	Integral		OS&Y		Conv						12141B												
	A182 F316/F316 L																		SW12501B							
	A105																		12141	SW12141	BW12141					
800	A105	Bolted	Spiral Wound	Integral		OS&Y		Conv						13141												
														Angle						1971	SW1971					
																				Throttling Needle Pt. Removable	OS&Y	Conv	12443	SW12443		
800	A105	Bolted	Spiral Wound	Integral		OS&Y		Conv						22461												
														Integral								22141	SW22141			
																						Extended Male Thread end	OS&Y	API 600 Full	23141	SW23141
800	A105	Bolted	Spiral Wound	Integral		OS&Y		Conv						10103												
														Integral								12181	SW12181			
																						Extended Male Socket Weld end	OS&Y	API 600 Full	10103	SW10103
800	A105	Bolted	Spiral Wound	Integral		OS&Y		Conv						12181												
														Integral								12181	SW12181			
																						Extended Male Couplet end	OS&Y	Conv	TT12141	
800	A105	Weld		Integral		OS&Y		Conv						2821												
														Union	Spiral Wound	Integral									810	
800	A350 LF2	Bolted	Spiral Wound	Integral		OS&Y		Conv						851												
														Weld		Integral									32141	
800	A182 F316/F316 L	Bolted	Spiral Wound	Integral		OS&Y		Conv						32821												
														Weld		Integral									12501	
800	A182 F316H	Bolted	Spiral Wound	Integral		OS&Y		Conv						2841												
														Weld		Integral									82501	
800	A182 F5	Weld		Integral		OS&Y		Conv						12601												
														A182 F11, CL2	Bolted	Spiral Wound	Integral									811
800	A182 F22 CL 3	Weld		Integral		OS&Y		Conv						12551												
														A182 F22 CL 3	Bolted	Spiral Wound	Integral									822
1500	A105	Bolted	Spiral Wound	Integral		OS&Y		Conv						15141												
														Weld		Integral										16141
1500	A105	Weld	Spiral Wound	Integral	Flanged	OS&Y		Conv						1003												
														Ring Joint	Removable											10683
1500	A350 LF2	Weld		Integral		OS&Y		Conv						15821												
														Bolted	Spiral Wound	Integral										35821
1500	A182 F316/F316 L	Weld		Integral		OS&Y		Conv						35141												
														Bolted	Spiral Wound	Integral										15501
1500	A182 F11, CL2	Bolted	Spiral Wound	Integral		OS&Y		Conv						15351												
														Weld		Integral										15551
1500LTD	A105	Weld		Integral	Y pattern	OS&Y		Conv						SW65723												
														A105	Weld		Integral	Y pattern	OS&Y		Conv					1510
1500LTD	A350 LF2	Weld		Integral	Y pattern	OS&Y		Conv						31510												
														A182 F11, CL2	Weld		Integral	Y pattern	OS&Y		Conv					1511
1500LTD	A182 F22 CL 3	Weld		Integral	Y pattern	OS&Y		Conv						1522												
														Weld		Integral	Y pattern	OS&Y		Conv						1522
2500* 2680*	A105	Weld		Integral	Y pattern	OS&Y		Full						66723												
														Screw	Sp. Wound		Integral	Y pattern	OS&Y		Full					2510
2500* 2680*	A350 LF2	Weld		Integral	Y pattern	OS&Y		Full						66753												
														Weld		Integral	Y pattern	OS&Y		Full						31510
2500* 2680*	A182 F11, CL2	Weld		Integral	Y pattern	OS&Y		Full						66733												
														Weld		Integral	Y pattern	OS&Y		Full						2511
2500* 2680*	A182 F22 CL 3	Screw	Sp. Wound	Integral	Y pattern	OS&Y		Full						R2511												
														Weld		Integral	Y pattern	OS&Y		Full						66793
2500* 2680*	A182 F91	Screw	Sp. Wound	Integral	Y pattern	OS&Y		Full						2522												
														Weld		Integral	Y pattern	OS&Y		Full						R2522

\* Threaded series rated at 2500 LTD and Socket Weld series rated at 2680 LTD

**GLOBE VALVE INDEX**

Press. Class	Material	Bonnet Joint	Gasket	SEAT	Configuration	Type	Wall Thick.	Ports	SERIES											
									Threaded	Socket Weld	Butt Weld	Flanged								
150	A105	Bolted	Spiral Wound	Integral		Piston		Conv	See Class 800	See Class 800			573							
													Pstn/Spring	570						
													Swing	5673						
	A182 F316/F316 L	Bolted	Spiral Wound	Integral		Piston		Conv					578							
													Pstn/Spring	579						
													Swing	5678						
	A350 LF2	Bolted	Spiral Wound	Integral		Piston		Conv					32573							
													Pstn/Spring	32570						
													Swing	32673						
300	A105	Bolted	Spiral Wound	Integral		Piston		Conv	See Class 800	See Class 800			583							
													Pstn/Spring	580						
													Swing	5683						
	A182 F316/F316 L	Bolted	Spiral Wound	Integral		Piston		Conv					588							
													Pstn/Spring	589						
													Swing	5688						
	A350 LF2	Bolted	Spiral Wound	Integral		Piston		Conv					32583							
													Pstn/Spring	32580						
													Swing	32683						
600	A105	Bolted	Spiral Wound	Integral		Piston		Conv	See Class 800	See Class 800			593							
													Pstn/Spring	590						
													Swing	5693						
	A182 F316/F316 L	Bolted	Spiral Wound	Integral		Piston		Conv					598							
													Pstn/Spring	599						
													Swing	5698						
	A350 LF2	Bolted	Spiral Wound	Integral		Piston		Conv					32593							
													Pstn/Spring	32590						
													Swing	32693						
800	A105	None	None	Integral	Also available as ANGLE	ZL Piston		Conv					S74							
													Bolted	Spiral Wound	Integral	Ball	Piston	Ball/Spring	Pstn/Spring	701ZL
																				Union
		API 600	Conv						SW701ZL											
									Full						B701 (AB701)					
							13701													
													SW13701							
																			B13710	
																			SWB13710	
																			13710	
																			SW13710	
																			S701	
																			SWS701	
																			4835	
																			SW4835	
																			9091	
																			SW9091	
						B9091														
												SWB9091								
																		54853		
																		SW54853		
																		B32701		
																		SWB32701		
																		32701		
																		SW32701		
																		32710		
																		SW32710		
																		S32701		
																		SWS32701		
																		B718		
																		SWB718		
																		718		
																		SW718		
																		BW718		
																		B780		
																		SWB780		
																		780		
																		SW780		
																		B13718		
																		SWB13718		
																		13718		
																		SW13718		
																		B13780		
																		SWB13780		
																		13780		
																		SW13780		
																		S718		
																		SWS718		
																		54853		
																		SW54853		
																		82701		
																		SW82701		
																		B15701		
																		SWB15701		
																		15701		
																		SW15701		
																		BW15593		
																		15593		
																		B16701		
																		SW16701		
																		B15710		
																		SWB15710		
																		15710		
																		SW15710		
																		B16710		
																		SW16710		
																		B15718		
																		SWB15718		
																		15718		
																		SW15718		
																		BW15598		
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																		B16718		
																		SW16718		
																		B15780		
																		SWB15780		
																		15780		
																		SW15780		
																		B16780		
																		SW16780		
																		1610		
																		SW1610		
																		1611		
																		SW1611		
																		1622		
																		SW1622		
																		2610		
																		SW2610		
																		2611		
																		SW2611		
																		2622		
																		SW2622		

**HYDRAULIC CHECK VALVES INDEX**

3000	A105	Screw	Flat	Integral		Piston		Conv	1551	SW1551		
6000	A105	Screw	Flat	Integral		Pstn/Spring		Conv	2191	SW2191		

**METER GLOBE VALVES INDEX**

3000	A105	Screw	Flat	Removable		Disc	ISS	Conv	1871	SW1871		
4000	A105	Union	Flat	Integral	Angle	Plug Stem	ISS	Conv	2891	SW2891		
5000	A105	Screw	Flat	Integral	Angle	Needle Pt.	ISS	Conv	9841	SW9841		
6000	A105	Screw	Flat	Removable		Disc	ISS	Conv	9821	SW9821		

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S74	C 105	S698	C 108	R2522	L 65	12141ER	L 71	13718	C 90	15780	C 96	32373	G 24	36111	G 27
351	G 22	701	C 90	2591	L 64	CT12141	L 66	B13718	C 90	B15780	C 96	32443	L 75	36373	G 25
352	G 22	A701	C 97	R2591	L 65	ST12141	L 66	13750	C 90	15801	G 31	32461	L 73	36483	L 80
353	G 22	AB701	C 97	2610	C 102	TT12141	L 66	B13750	C 90	BT15801	G 30	32473	L 50	36493	L 80
358	G 22	B701	C 90	R2610	C 103	12161	G 28	13751	C 90	CT15801	G 30	32483	L 51	36701	C 96
361	G 23	S701	C 106	2611	C 102	12181	L 56	B13751	C 90	ST15801	G 30	32493	L 52	B36701	C 96
362	G 23	710	C 90	R2611	C 103	12188	L 56	13780	C 90	15821	L 59	32570	C 92	36710	C 96
363	G 23	A710	C 97	2622	C 102	12321	G 20	B13780	C 90	15831	G 31	B32570	C 92	B36710	C 96
368	G 23	AB710	C 97	R2622	C 103	12351	L 48	13921	G 20	15841	L59	32573	C 92	36801	G 31
371	G 24	B710	C 90	2691	C 102	12401	G 20	15111	G 27	15851	G 31	B32573	C 92	41000	G 132
372	G 24	718	C 90	R2691	C 103	12401C	G 41	BT15111	G 30	15861	G 31	32580	C 93	42211	G 38
373	G 24	B718	C 90	2801	G 30	12421	G 20	CT15111	G 30	BT15901	G 30	B32580	C 93	42241	L 79
378	G 24	S718	C 106	2801B	G 40	12443	L 75	ST15111	G 30	CT15901	G 30	32583	C 93	43111	G 39
473	L 50	730	C 89	BT2801	G 28	12501	L 48	15141	L 55	ST15901	G 30	B32583	C 93	43211	G 38
473B	L 72	750	C 90	CT2801	G 28	12501C	L 82	15321	G 27	15921	G 27	32590	C 94	43241	L 78
473VP	L 75	B750	C 90	ST2801	G 28	12521	G 20	15343	L 77	16111	G 27	B32590	C 94	B43721	C 98
478	L 50	751	C 90	TT2801	G 28	12543	L 75	15351	L 55	16321	G 27	32593	C 94	52461	L 74
478VP	L 75	B751	C 90	2811	G 29	12551	L 48	15373	G 25	16373	G 25	B32593	C 94	54853	C 100
483	L 51	S751	C 106	2821	L 58	12601	G 42	15378	G 25	16378	G 25	S32673	C 108	54863	C 100
483B	L 72	S761	C 106	2831	G 30	12602	G 42	15401	G 27	16401	G 27	S32683	C 108	58431	L 85
483VP	L 75	780	C 90	2831B	G 40	12603	G 42	15401C	G 41	16421	G 27	S32693	C 108	59851	G 37
488	L 51	B780	C 90	2841	L 58	12604	G 42	15421	G 27	16521	G 27	32701	C 90	59951	G 37
488VP	L 75	801	L 57	2851	G 30	12605	G 42	15443	L 77	16701	C 96	B32701	C 90	65703	G 31
493	L 52	810	L 60	2861	G 30	12921	G 20	15493	L 53	B16701	C 96	S32701	C 106	65713	G 31
493B	L 72	811	L 60	2891	L 84	13111	G 20	15498	L 53	16710	C 96	32710	C 90	65723	L 59
493VP	L 75	822	L 60	BT2901	G 32	13111ER	G 38	15501	L 55	B16710	C 96	B32710	C 90	65773	G 31
498	L 52	851	L 56	CT2901	G 32	13141	L 48	15521	G 27	16718	C 96	32801	G 30	66703	G 36
498VP	L 75	891	L 60	ST2901	G 32	13141B	L 72	15543	L 77	B16718	C 96	32801B	G 40	66713	G 36
570	C 92	1003	L 69	TT2901	G 32	13141ER	L 71	15551	L 55	16750	C 96	32821	L 58	66723	L 63
B570	C 92	1023	L 69	3801	G 30	13321	G 20	15590	C 95	B16750	C 96	33111	G 20	66733	L 63
573	C 92	1033	G 46	3801B	G 40	13351	L 48	B15590	C 95	16751	C 96	33141	L 48	66743	G 36
B573	C 92	1043	G 46	3831	G 30	13361	G 23	15593	C 95	B16751	C 96	33363	G 23	66773	G 36
578	C 92	1331	L 83	3831B	G 40	13362	G 23	B15593	C 95	16760	C 96	33373	G 24	66783	L 63
B578	C 92	1510	L 61	3991	L 88	13363	G 23	15598	C 95	B16760	C 96	33701	C 90	66791	G 36
579	C 92	R1510	L 62	4835	C 104	13368	G 23	B15598	C 95	16761	C 96	B33701	C 90	66793	L 63
B579	C 92	1511	L 61	4881	C 111	13371	G 24	15599	C 95	B16761	C 96	33710	C 90	82401	G 20
580	C 93	R1511	L 62	9091	C 99	13372	G 24	B15599	C 95	16780	C 96	B33710	C 90	82501	L 48
B580	C 93	1522	L 61	B9091	C 99	13373	G 24	S15693	C 109	B16780	C 96	33801	G 30	82718	C 90
583	C 93	R1522	L 62	9821	L 86	13378	G 24	S15698	C 109	16801	G 31	33801B	G 40	82831	G 30
B583	C 93	1551	C 110	9841	L 87	13401	G 20	15701	C 96	16831	G 31	34835	C 104	83401	G 20
588	C 93	B1551	C 110	9871	L 86	13401C	G 41	B15701	C 96	16851	G 31	35111	G 27	83501	L 48
B588	C 93	1591	L 61	10103	L 68	13421	G 20	S15701	C 107	16861	G 31	35141	L 55	85401	G 27
589	C 93	R1591	L 62	10403	L 67	13474B	L 72	15710	C 96	16921	G 27	35373	G 25	85831	G 31
B589	C 93	1610	C 101	10603	L 70	13483B	L 72	B15710	C 96	21000	G 132	35443	L 77	86401	G 27
590	C 94	1611	C 101	10683	L 70	13493B	L 72	15718	C 96	22141	L 81	35493	L 53	86831	G 31
B590	C 94	1622	C 101	11103	G 43	13501	L 48	B15718	C 96	22142	L 81	35590	C 95		
593	C 94	1691	C 101	11403	G 44	13521	G 20	S15718	C 107	22461	L 73	B35590	C 95		
B593	C 94	1871	L 83	11603	G 45	13551	L 48	15750	C 96	22483	L 80	35593	C 95		
598	C 94	1971	L 54	11683	G 45	13601	G 42	B15750	C 96	22493	L 80	B35593	C 95		
B598	C 94	1971VP	L 76	12111	G 20	13602	G 42	15751	C 96	22501	L 81	S35693	C 109		
599	C 94	2191	C 110	12111ER	G 38	13603	G 42	B15751	C 96	22561	L 73	35701	C 96		
B599	C 94	2271	112	BT12111	G 28	13604	G 42	S15751	C 107	23141	L 78	B35701	C 96		
S673	C 108	2510	L 64	CT12111	G 28	13605	G 42	15760	C 96	S32074	C 105	S35701	C 107		
S678	C 108	R2510	L 65	ST12111	G 28	13701	C 90	B15760	C 96	32111	G 20	35710	C 96		
S683	C 108	2511	L 64	TT12111	G 28	B13701	C 90	15761	C 96	32141	L 48	B35710	C 96		
S688	C 108	R2511	L 65	12141	L 48	13710	C 90	B15761	C 96	32353	G 22	35801	G 31		
S693	C 108	2522	L 64	12141B	L 72	B13710	C 90	S15761	C 107	32363	G 23	35821	L 59		

# Description of Series Number System for Vogt Valves

Series Number  
(typical)

2" SW12111F8M

Optional specification

SW12111F8M-09  
SW12111F8M-09P(EPED)

	Size:
-04	1/2" DN 15
-05	3/4" DN 20
-06	1 DN 25
-07	1 1/4 DN 32
-08	1 1/2 DN 40
-09	2 DN 50
-10	2 1/2 DN 65
-11	3" DN 80
-13	4" DN 100

**Prefix:**  
The letter beginning the Vogt series number is normally indicative of the valve connection. Historically, a few design features have also been used as part of the prefix S, B, and R. A fully female threaded valve as the traditional Vogt standard does not have a prefix number.

**Prefix Description:**  
**(Blank)** - Female NPT (both ends)  
**B** - Ball Check (female NPT)  
**BS** - Female SW by Male Butt Weld  
**BT** - Female Thd by Male Butt Weld  
**BW** - Butt Weld  
**CS** - Female SW by Male Couplet  
**CT** - Female Thd by Male Couplet  
**D** - Dial and Indicator  
**FF** Flat Face Flanged  
**R** - In-Line Repair (female NPT)  
**RJ** - Ring Joint Flanges  
**S** - Swing Check (female NPT)  
**SWS** Swing Check SW  
**SS** - Female SW by Male SW  
**ST** - Female NPT by Male SW  
**SW** - Socket Weld  
**SWB** - Ball Check (SW)  
**SWR** - In-line Repair (SW)  
**SWS** - Swing Check (SW)  
**TS** - Female SW by Male NPT  
**TSW** - Female NPT by Female SW  
**TT** - Female NPT by Male NPT

**Valve Design/Material:**  
This numeric character uniquely identifies the valve to its design (gate, globe, angle, check, etc.) and pressure boundary material of construction (A105, A182-F5, F11, F316, etc.).

**Suffix:**  
This alphanumeric character ending of the Vogt valve series number is normally indicative of the valve internal trim package or service application. A valve with the traditional Vogt standard trim package and packing is not assigned a suffix number.

**Suffix Description:**  
**(Blank)** – Standard Trim  
**B** – Bellows Valve  
**C** – Cryogenic Valve  
**CL** – Chlorine Valve Trim – Monel/Hastelloy  
**ER** – Emissions Reduction – Double Packed with Lantern Ring  
**F8M** – 316 Trim  
**F8H** – 316 Trim – Full Hard Faced  
**FHF** – Full Hard Faced (unless standard)  
**FT** – Full Trace (Pressure Retaining components)  
**HF** – Hard Faced Disc (F316 Globe and Check)  
**HF2** – UOP Alkylation – Full Port Valve Only  
**HF4** – UOP Alkylation – Full Port Valve Only  
**HF5** – UOP Alkylation – Full Port Valve Only  
**HF6** – UOP Alkylation  
**HF7** – UOP Alkylation – Locking Device  
**MB6** – 13% Chrome Trim All Hard Faced – NACE\*  
**MB8** – 316 Trim Full Hard Faced – NACE\*  
**MBS** – Monel Trim Hard Faced Wedge – NACE\*  
**MM** – Monel Trim – Grafoil Packing and Gasket  
**MMP** – Phillips Alkylation  
**MMT** – Monel Trim – Teflon Packing and Gasket  
**MT** – Chlorine Valve Trim – Monel/Teflon Disc/Hastelloy  
**MTG** – Vogt Alkylation  
**MTP** – Phillips Alkylation – Monel/Teflon Disc  
**NA6** – 13% Cr Trim – NACE\*  
**NA8** – 316 Trim – NACE\*  
**NAS** – Monel Trim – NACE\*  
**SR** – Nuclear Safety Related  
**T** – Teflon Packing and Gasket  
**VP** – Flow Control Trim (Globe Valve)  
**ZLB** – Zero Leakage Check Valve – Buna N  
**ZLE** – Zero Leakage Check Valve – Ethylene Propylene  
**ZLN** – Zero Leakage Check Valve – Neoprene  
**ZLV** – Zero Leakage Check Valve – Viton

**EPED** - Valves thus noted are constructed under the European Pressure Equipment Directive 97/23/EC - This specification applies to all pressure classes of the ASME B16.34 Vogt product (gate, globe and check valves) size 1.25" through 4" (DN 32-DN 100), pressure classes 150 through 2680 LTD. Valves size 1" and smaller are not within the scope of this specification.

Not all sizes, end connections, or trim configurations are available with all Valve Series. Please check for availability.

\*NACE – Materials meet requirements of NACE MR0103 for sour service



## API 602 Trim Number Versus Vogt Trim Description

API TRIM No.	API NOMINAL TRIM DESC.	TRIM DESC.	SERIES SUFFIX	TYPICAL IN VALVE SERIES	NOTES
1	13 Cr (No Hardfacing)	Trim: 13% Cr	None (Standard)	22461 22141	(1) Offer Trim 8.
2	304 (No Hardfacing)	None	None	None	(2) Offer 316/316L Trim
3	310 (No Hardfacing)	None	None	None	
4	Hard F6 (No Hardfacing)	None	None	None	Offer 1/2 or FHF
5 5A	Hardfaced (13 Cr Stem)	Trim 13% Cr Wedge/Seats: HF	FHF	12111FHF	(3) 5=Stellite 5A=NiCr Hardfacing
		Trim 13% Cr Disc/Seat: HF	FHF None (If Standard)	12141FHF 1510 (4) 2510	
6	F6 and CuNi (13 Cr and Monel Overlay)	None	None	None	(5) Offer MM Trim
7	F6 and Hard F6 (13 Cr Stem)	None	None	None	Offer FHF Trim
8 8A	F6 and Hardfaced	Trim 13% Cr Seat: HF	None	12111	(6) 1/2 HF
		Trim 13% Cr Seat: HF	None	12141	
		Trim 13% Cr Seat: HF	HF	10403HF	
9	Monel	Trim: Monel	MM	12111MM	
10	316	Trim: 316	None	12501 718	
11	Monel & Hardfaced (Monel Trim 1/2 HF)	Trim: Monel Seat: HF	MM	12141MM 701MM	
12	316 & Hardfaced (1/2 HF 316)	Trim: 316 Seat: HF	F8M	12111F8M 12401	
		Trim: 316 Seat: HF	F8M	12141F8M 12501F8M	
13	Alloy 20	None	None	None	
14	Alloy 20 & Hardfaced (1/2 HF Alloy)	None	None	None	
15	Hardfaced (304 FHF Trim)	None	None	None	(7)
16	Hardfaced (316 FHF Trim)	Trim: 316 Wedge/Seat: HF	F8H	12111F8H 12401FHF	
		Trim: 316 Disc/Seat: HF	FHF	12501FHF	
17	Hardfaced (347 FHF Trim)	None	None	None	
18	Hardfaced (Alloy 20 FHF)	None	None	None	

1) Other Vogt Valves with Cr trim and no HF seating meet the API 602 Trim 1 except for minimum hardness. API Trim 8 can be substituted for Trim 1 under API 602 Table 12 alternative trim rules.

2) API Trim 10 can be substituted for Trim 2 under API 602 Table 12 alternative trim rules.

3) Trim 5 requires Stellite (cobalt based) alloys. Trim 5A allows non-cobalt base hard facing alloys.

4) Many Vogt valves are supplied as standard with FHF trim but do not carry the FHF designator with the Series No. Typical of these as these Series 1510, 1610, 2510 and 2610. Most Class 1500 and higher F11 and F22 valves have FHF trims but are carried by the series designator.

5) API 602 Trim 8 can be substituted for Trim 6 under API 602 Table 12 alternative trim rules.

6) Most Vogt carbon and alloy steel gate and globe and 316/316L stainless steel gate valves have 1/2 HF seating surfaces. Such valves do not necessarily carry "HF" designator in their Series Suffix Number.

7) API Trim 16 can be substituted for Trim 15 under API 602 Table 12 alternative trim rules.

## Cross-Reference of ASTM Material Specifications

### Covering Cast and Forged Valves

MATERIAL	FORGINGS	CASTINGS	WROUGHT FITTINGS
Carbon Steel Cold Temperature Service	A105 A350-LF2	A216-WCB A352-LCC	A234-WPB A420-WPL6
Carbon-1/2 Moly Alloy Steel Cold Temperature Service	A182-F1	A217-WC1 A352-LC1	A234-WP1
3-1/2 Nickel Alloy Steel Low Temperature Service	A350-LF3	A352-LC3	A420-WPL3
1/2 Cr-1/2 Mo Alloy Steel 1/2 Cr-1/2 Mo-1 Ni Alloy Steel 3/4 Cr-1 Mo-3/4 Ni Alloy Steel 1 Cr-1/2 Mo Alloy Steel	A182-F2  A182-F12 CL2	 A217-WC4 A217-WC5	  A234-WP12 CL2
1-1/4 Cr-1/2 Mo Alloy Steel 2-1/4 Cr-1 Mo Alloy Steel 5 Cr-1/2 Mo Alloy Steel 5 Cr-1/2 Mo Alloy Steel 9 Cr-1 Mo Alloy Steel 13 Cr Alloy Steel	A182-F11 CL2 A182-F22 CL3 A182-F5 A182-F5a A182-F9 A182-F6	A217-WC6 A217-WC9  A217-C5 A217-C12 A743-CA15	A234-WP11 CL2 A234-WP22 CL3 A234-WP5  A234-WP9
Type 304 Stainless Steel (18 Cr-8 Ni) Standard Low Carbon High Temperature Service	A182-F304 A182-F304L A182-F304H	A351-CF8 A351-CF3 A351 CF10	A403-WP304 A403-WP304L A403-WP304H
Type 310 Stainless Steel (25 Cr-20 Ni) Type 316 Stainless Steel (16 Cr-12 Ni-2 Mo) Standard Low Carbon High Temperature Service	A182-F310H  A182-F316 A182-F316L A182-F316H	A351-CK20  A351-CF8M A351-CF3M A351-CF10M	A403-WP310  A403-WP316 A403-WP316L A403-WP316H
Type 317 Stainless Steel (18 Cr-13 Ni-3 Mo) Type 321 Stainless Steel (18 Cr-10 Ni-Ti) Standard High Temperature Service	A182 - F317  A182-F321 A182-F321H	A351 - CG8M	A403-WP317  A403-WP321 A403-WP321H
Type 347 Stainless Steel (18 Cr-10 Ni-Cb) Standard High Temperature Service	A182-F347 A182-F347H	A351-CF8C	A403-WP347 A403-WP347H
Type 348 Stainless Steel (18 Cr-10 Ni-Cb) Standard High Temperature Service	A182-F348 A182-F348H		A403-WP348 A403-WP348H

## Forging Materials

<p><b>ASTM A105 Carbon Steel (0.24 Carbon max.)</b> Where temperatures are moderate and corrosion resistance is not critical</p> <table border="0"> <tr><td>C</td><td>0.20 - 0.24TS</td><td>Min. psi(Mpa): 70,000(485)</td></tr> <tr><td>Mn</td><td>1.00 - 1.35</td><td>YS Min. psi(Mpa): 36,000(250)</td></tr> <tr><td>Si</td><td>0.15 - 0.30</td><td>EL (2" Min.): 22%</td></tr> <tr><td>P</td><td>0.030 Max.</td><td>RA Min.: 30%</td></tr> <tr><td>Si</td><td>0.015 - 0.040</td><td>Hardness, Bhn: Max. 187</td></tr> <tr><td>Cr</td><td>0.20</td><td></td></tr> <tr><td>Ni</td><td>0.20</td><td></td></tr> <tr><td>Mo</td><td>0.06</td><td></td></tr> <tr><td>V</td><td>0.02</td><td></td></tr> <tr><td>Cb</td><td>0.02</td><td></td></tr> <tr><td>Cu</td><td>0.20</td><td></td></tr> </table> <p>Total Residuals = 0.50</p>	C	0.20 - 0.24TS	Min. psi(Mpa): 70,000(485)	Mn	1.00 - 1.35	YS Min. psi(Mpa): 36,000(250)	Si	0.15 - 0.30	EL (2" Min.): 22%	P	0.030 Max.	RA Min.: 30%	Si	0.015 - 0.040	Hardness, Bhn: Max. 187	Cr	0.20		Ni	0.20		Mo	0.06		V	0.02		Cb	0.02		Cu	0.20		<p><b>ASTM A182, Grade F9 - 9Cr - 1Mo</b> For services where the higher chrome alloys are preferred and where high temperature stability and oxidation resistance of the lower alloy steels are inadequate.</p> <table border="0"> <tr><td>C</td><td>0.15 Max.</td><td>TS Min. psi(Mpa): 85,000(585)</td></tr> <tr><td>Mn</td><td>0.30 - 0.60</td><td>YS Min. psi(Mpa): 55,000(380)</td></tr> <tr><td>P</td><td>0.030 Max.</td><td>EL (2" Min.): 20%</td></tr> <tr><td>S</td><td>0.030 Max.</td><td>RA Min.: 40%</td></tr> <tr><td>Si</td><td>0.50 - 1.00</td><td>Hardness, Bhn: 179 - 217</td></tr> <tr><td>Cr</td><td>8.00 - 10.00</td><td></td></tr> <tr><td>Mo</td><td>0.90 - 1.10</td><td></td></tr> </table>	C	0.15 Max.	TS Min. psi(Mpa): 85,000(585)	Mn	0.30 - 0.60	YS Min. psi(Mpa): 55,000(380)	P	0.030 Max.	EL (2" Min.): 20%	S	0.030 Max.	RA Min.: 40%	Si	0.50 - 1.00	Hardness, Bhn: 179 - 217	Cr	8.00 - 10.00		Mo	0.90 - 1.10										
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<p><b>ASTM A350, LF2 (0.24 Carbon max.)</b> Where cold temperature (-50°F) impact strength is essential.</p> <table border="0"> <tr><td>C</td><td>0.20 - 0.24</td><td>TS Min. psi(Mpa): 70,000(485)</td></tr> <tr><td>Mn</td><td>1.00 - 1.35</td><td>YS Min. psi(Mpa): 36,000(250)</td></tr> <tr><td>Si</td><td>0.15 - 0.30</td><td>EL (2" Min.): 22%</td></tr> <tr><td>P</td><td>0.030 Max.</td><td>RA Min.: 30%</td></tr> <tr><td>Si</td><td>0.015 - 0.040</td><td>Hardness, Bhn: Max. 197</td></tr> <tr><td>Cr</td><td>0.20</td><td>-50F Charpy: Min. Impact</td></tr> <tr><td>Ni</td><td>0.20</td><td>Energy (Ft/Lb): (J)</td></tr> <tr><td>Mo</td><td>0.06</td><td>Average of Each</td></tr> <tr><td>V</td><td>0.02</td><td>Set of 3 Specimen: 15(20)</td></tr> <tr><td>Cb</td><td>0.02</td><td>For One Specimen: 12(15)</td></tr> <tr><td>Cu</td><td>0.20</td><td></td></tr> </table> <p>Total Residuals = 0.50</p>	C	0.20 - 0.24	TS Min. psi(Mpa): 70,000(485)	Mn	1.00 - 1.35	YS Min. psi(Mpa): 36,000(250)	Si	0.15 - 0.30	EL (2" Min.): 22%	P	0.030 Max.	RA Min.: 30%	Si	0.015 - 0.040	Hardness, Bhn: Max. 197	Cr	0.20	-50F Charpy: Min. Impact	Ni	0.20	Energy (Ft/Lb): (J)	Mo	0.06	Average of Each	V	0.02	Set of 3 Specimen: 15(20)	Cb	0.02	For One Specimen: 12(15)	Cu	0.20		<p><b>ASTM A182, Grade F91 - 9Cr - 1Mo - V</b> For high temperature Boiler applications requiring high strength alloys.</p> <table border="0"> <tr><td>C</td><td>0.08 - 0.12</td><td>TS Min. psi(Mpa): 85,000(585)</td></tr> <tr><td>Mn</td><td>0.30 - 0.60</td><td>YS Min. psi(Mpa): 60,000(415)</td></tr> <tr><td>P</td><td>0.020 Max.</td><td>EL (2" Min.): 20%</td></tr> <tr><td>S</td><td>0.010 Max.</td><td>RA Min.: 40%</td></tr> <tr><td>Si</td><td>0.20 - 0.50</td><td>Hardness, Bhn: Max 248</td></tr> <tr><td>Cr</td><td>8.00 - 9.50</td><td></td></tr> <tr><td>Mo</td><td>0.85 - 1.05</td><td></td></tr> <tr><td>Cb</td><td>0.06 - 0.10</td><td></td></tr> <tr><td>Ni</td><td>0.40 Max</td><td></td></tr> <tr><td>V</td><td>0.18 - 0.25</td><td></td></tr> </table>	C	0.08 - 0.12	TS Min. psi(Mpa): 85,000(585)	Mn	0.30 - 0.60	YS Min. psi(Mpa): 60,000(415)	P	0.020 Max.	EL (2" Min.): 20%	S	0.010 Max.	RA Min.: 40%	Si	0.20 - 0.50	Hardness, Bhn: Max 248	Cr	8.00 - 9.50		Mo	0.85 - 1.05		Cb	0.06 - 0.10		Ni	0.40 Max		V	0.18 - 0.25	
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<p><b>ASTM A182, Grade F11, Class 2 (0.15 Carbon max.) 1-1/4Cr - 1/2Mo</b> To minimize graphitization encountered with carbon and carbon moly steels at high temperatures</p> <table border="0"> <tr><td>C</td><td>0.10 - 0.15</td><td>TS Min. psi(Mpa): 70,000(485)</td></tr> <tr><td>Mn</td><td>0.30 - 0.80</td><td>YS Min. psi(Mpa): 40,000(275)</td></tr> <tr><td>P</td><td>0.040 Max.</td><td>EL (2" Min.): 20%</td></tr> <tr><td>S</td><td>0.015 - 0.035</td><td>RA Min.: 30%</td></tr> <tr><td>Si</td><td>0.50 - 1.00</td><td>Hardness, Bhn: 143 - 207</td></tr> <tr><td>Cr</td><td>1.00 - 1.50</td><td></td></tr> <tr><td>Mo</td><td>0.44 - 0.65</td><td></td></tr> </table>	C	0.10 - 0.15	TS Min. psi(Mpa): 70,000(485)	Mn	0.30 - 0.80	YS Min. psi(Mpa): 40,000(275)	P	0.040 Max.	EL (2" Min.): 20%	S	0.015 - 0.035	RA Min.: 30%	Si	0.50 - 1.00	Hardness, Bhn: 143 - 207	Cr	1.00 - 1.50		Mo	0.44 - 0.65		<p><b>ASTM A182, Grade F316 / F316L - 18Cr - 8Ni - 3Mo</b> For corrosion resistance applications where high temperature strength is required. Has restricted carbon level to minimize sensitization. Do not use for Service temperatures above 1000 °F.</p> <table border="0"> <tr><td>C</td><td>0.030 Max.</td><td>TS Min. psi(Mpa): 75,000(515)</td></tr> <tr><td>Mn</td><td>2.00 Max.</td><td>YS Min. psi(Mpa): 30,000(205)</td></tr> <tr><td>P</td><td>0.040 Max.</td><td>EL (2" Min.): 30%</td></tr> <tr><td>S</td><td>0.020 - 0.030</td><td>RA Min.: 30%</td></tr> <tr><td>Si</td><td>1.00 Max.</td><td></td></tr> <tr><td>Ni</td><td>10.00 - 14.00</td><td></td></tr> <tr><td>Cr</td><td>16.00 - 18.00</td><td></td></tr> <tr><td>Mo</td><td>2.00 - 3.00</td><td></td></tr> </table>	C	0.030 Max.	TS Min. psi(Mpa): 75,000(515)	Mn	2.00 Max.	YS Min. psi(Mpa): 30,000(205)	P	0.040 Max.	EL (2" Min.): 30%	S	0.020 - 0.030	RA Min.: 30%	Si	1.00 Max.		Ni	10.00 - 14.00		Cr	16.00 - 18.00		Mo	2.00 - 3.00																			
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<p><b>ASTM A182, Grade F22, Class 3 (0.15 Carbon max.) 2-1/4Cr - 1/2Mo</b> Where elevated temperature, surface stability and greater strength than F11 are needed</p> <table border="0"> <tr><td>C</td><td>0.15 Max.</td><td>TS Min. psi(Mpa): 75,000(515)</td></tr> <tr><td>Mn</td><td>0.30 - 0.60</td><td>YS Min. psi(Mpa): 40,000(275)</td></tr> <tr><td>P</td><td>0.040 Max.</td><td>EL (2" Min.): 20%</td></tr> <tr><td>S</td><td>0.015 - 0.035</td><td>RA Min.: 30%</td></tr> <tr><td>Si</td><td>0.50 Max.</td><td>Hardness, Bhn: 156 - 207</td></tr> <tr><td>Cr</td><td>2.00 - 2.50</td><td></td></tr> <tr><td>Mo</td><td>0.87 - 1.13</td><td></td></tr> </table>	C	0.15 Max.	TS Min. psi(Mpa): 75,000(515)	Mn	0.30 - 0.60	YS Min. psi(Mpa): 40,000(275)	P	0.040 Max.	EL (2" Min.): 20%	S	0.015 - 0.035	RA Min.: 30%	Si	0.50 Max.	Hardness, Bhn: 156 - 207	Cr	2.00 - 2.50		Mo	0.87 - 1.13		<p><b>ASTM A182, Grade F316H - 18Cr - 8Ni - 3Mo</b> For corrosion resistance applications where extreme temperature strength is expected. Has restricted carbon range for high temperature strength above 1000 °F.</p> <table border="0"> <tr><td>C</td><td>0.04 - 0.10</td><td>TS Min. psi(Mpa): 75,000(515)</td></tr> <tr><td>Mn</td><td>2.00 Max.</td><td>YS Min. psi(Mpa): 30,000(205)</td></tr> <tr><td>P</td><td>0.040 Max.</td><td>EL (2" Min.): 30%</td></tr> <tr><td>S</td><td>0.020 - 0.030</td><td>RA Min.: 30%</td></tr> <tr><td>Si</td><td>1.00 Max.</td><td></td></tr> <tr><td>Ni</td><td>10.00 - 14.00</td><td></td></tr> <tr><td>Cr</td><td>16.00 - 18.00</td><td></td></tr> <tr><td>Mo</td><td>2.00 - 3.00</td><td></td></tr> </table>	C	0.04 - 0.10	TS Min. psi(Mpa): 75,000(515)	Mn	2.00 Max.	YS Min. psi(Mpa): 30,000(205)	P	0.040 Max.	EL (2" Min.): 30%	S	0.020 - 0.030	RA Min.: 30%	Si	1.00 Max.		Ni	10.00 - 14.00		Cr	16.00 - 18.00		Mo	2.00 - 3.00																			
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<p><b>ASTM A182, Grade F5 - 5Cr - 1/2Mo</b> With moderately corrosive fluids and in oil refineries where high temperature stability and oxidation resistance of the lower alloy steels are inadequate.</p> <table border="0"> <tr><td>C</td><td>0.15 Max.</td><td>TS Min. psi(Mpa): 70,000(485)</td></tr> <tr><td>Mn</td><td>0.30 - 0.60</td><td>YS Min. psi(Mpa): 40,000(275)</td></tr> <tr><td>P</td><td>0.030 Max.</td><td>EL (2" Min.): 20%</td></tr> <tr><td>S</td><td>0.015 - 0.035</td><td>RA Min.: 35%</td></tr> <tr><td>Si</td><td>0.50 Max.</td><td>Hardness, Bhn: 143 - 217</td></tr> <tr><td>Ni</td><td>0.50 Max.</td><td></td></tr> <tr><td>Cr</td><td>4.00 - 6.00</td><td></td></tr> <tr><td>Mo</td><td>0.44 - 0.65</td><td></td></tr> </table>	C	0.15 Max.	TS Min. psi(Mpa): 70,000(485)	Mn	0.30 - 0.60	YS Min. psi(Mpa): 40,000(275)	P	0.030 Max.	EL (2" Min.): 20%	S	0.015 - 0.035	RA Min.: 35%	Si	0.50 Max.	Hardness, Bhn: 143 - 217	Ni	0.50 Max.		Cr	4.00 - 6.00		Mo	0.44 - 0.65																																									
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## Valve Trim Materials

### Description and General Use

#### 13% Chromium

Stainless Steel

Type 410

This stainless steel material lends itself to hardening by heat treatment and is excellent for contacting parts such as stems, gates and discs.

#### 13% Chromium

Stainless Steel

Type 416

High-quality stainless steel yoke nut material having excellent anti-galling characteristics for better operating threads.

#### 18% Chromium

8% Nickel

2% Molybdenum

Stainless Steel

Type 316

Type 316L

Provides excellent resistance to corrosive media at high temperatures and toughness for service at low temperatures.

#### Nickel-Copper

Monel

Alloy K500

This wrought material is precipitation hardened and possesses excellent corrosion resistance, high-strength properties and hardness for internal valve components.

#### Monel

Alloy 400

Non-hardened alloy, except by work hardened, that has high strength and toughness over a wide temperature range. Has excellent corrosion resistance in chlorine and alkyation service.

#### Alloy 20

Alloy 20 is corrosion resistant to hot sulfuric acids when compared to austenitic stainless steels such as such as 316 or 317.

### Description and General Use

#### Cobalt Base

and Nickel Base

Hard-Facing Materials

Hard-facing materials, when used on seating surfaces of Gate, Globe and Check Valves, give extended service life and trouble-free operation.

#### Nickel-Moly-Chromium

Hastelloy C-276

A high-nickel alloy with exceptional resistance to corrosive attack by chlorine gas.

#### Precipitation-Hardened Stainless Steel

Grade 630 17-4 PH

Provides corrosion resistance and high strength for stems in NACE applications.

#### S-Monel

Grade M-25S

Material used for Monel castings.

ASTM A743, Grade CA-15

Material used for 13 CR castings. The cast equivalent to type 410 stainless steel.

#### Cast Cobalt

RCoCr-A

Material used for cobalt castings. The cast equivalent to Stellite #6.

#### Cast 316

Grade CF8M

Material used for 18-8 castings.

#### Inconel 625

Material is used for its high strength, excellent fabricability (including joining) and outstanding corrosion resistance.

#### Incoloy 825

Material is a nickel-iron-chromium alloy with additions of molybdenum, copper and titanium. The alloy's chemical composition is designed to provide exceptional resistance to many corrosive environments.

## Recommended Valve Orientation

VALVE TYPE	STEM ORIENTATION HORIZONTAL LINE <sup>(1)</sup>	STEM ORIENTATION VERTICAL LINE <sup>(2)</sup>
Gate	Any (except vertical down) Preferred vertical stem upright	Any Preferred stem horizontal
Gate Valve <sup>(3)</sup> Motor/air-operated	Any (except vertical down) Preferred vertical stem upright	Any Preferred stem horizontal
Globe-T pattern	Any (except vertical down) Preferred vertical stem upright	Any Preferred stem horizontal
Globe-T pattern <sup>(3)</sup> Motor/air-operated	Any (except vertical down) Preferred vertical stem upright	Any Preferred stem horizontal
Globe-Y pattern	Any Preferred stem at $\pm 50^\circ$ to pipe run in upright position.	Any Preferred stem at $\pm 50^\circ$ to normal of pipe run
Globe-Y pattern <sup>(3)</sup> Motor/air-operated	Any Preferred stem at $\pm 50^\circ$ to pipe run in upright position.	Any Preferred stem at $\pm 50^\circ$ to normal of pipe run
Angle	Any (except vertical down) Preferred vertical stem upright	Any Preferred stem vertical upright
Angle <sup>(3)</sup> Motor/air-operated	Any (except vertical down) Preferred vertical stem upright	Any Preferred stem vertical upright
Ball or Piston lift check valve-T pattern (no spring) (includes stop check valve)	Preferred vertical Upright Rotation off top dead center $\pm 40^\circ$	Not recommended
Ball or Piston lift check valve-T pattern (spring-controlled)	Preferred vertical upright Rotation off top dead center $\pm 90^\circ$	Any
Piston lift check valve-Y pattern (spring-controlled)	Preferred vertical upright Rotation off top dead center $\pm 90^\circ$	Any
Swing check valve	Preferred vertical upright Rotation off top dead center $\pm 30^\circ$	Any, but upward vertical flow required
Stop check valves	Preferred vertical Upright Rotation off top dead center $\pm 40^\circ$	Not recommended

### General

- Gate, globe, angle and spring-controlled check valve designs oriented with stems or body run vertical down orient the valve body cavities in such a manner that debris can be collected and not get flushed out. This may cause unreliable valve operation. A vertical stem down or body run down orientation is not recommended for fluid service that may include debris.
- Recommended orientation of motor/air-operated valves may be changed by the recommended orientation of the actuator.

### Notes

- <sup>(1)</sup> A  $\pm 5^\circ$  variation off horizontal for the pipe would not change the recommended except for swing check valves. This valve design will not close by gravity if the piping is off horizontal, which allows the swing check mechanism to swing away from the seat.
- <sup>(2)</sup> A  $\pm 5^\circ$  off variation vertical for vertical piping does not change the recommendations in the table.
- <sup>(3)</sup> For small-bore socket welding and threaded valves equipped with a motor or air operator mounted in a horizontal plane, it is recommended that external supports be added to the piping arrangement to remove the load from the connecting socket welds or threads of the valve.



## ***Gate Valve***

Gate valves are designed to operate in a fully open or fully closed position. When open, the media will flow with minimal turbulence and pressure drop through the valve.

Vogt gate valves are available with a variety of bonnet types, body and trim materials, and stem packings, in addition to a broad range of pressure classes and end connections including extended bodies.

The rugged construction of forged gate valves provide an extended life of safe operation. Metal-to-metal seating surfaces accommodate the widest range of pressure-temperature conditions.

Dimensions in the catalog selection pages are in inches and millimeters.

Dimensions are subject to change without notice.

*See pages 20 – 46 for gate valve selections.*



## Auxiliary Operators

The superstructure of Vogt valves are FORGED, RUGGED and lend themselves to the adaptation of auxiliary operators.

Any of Vogt gate and globe valves with bolted or seal-welded bonnets can be furnished with choice of operators. Auxiliary operators are generally limited to 1" and larger size valves. Request for quotations are invited.

Auxiliary operators for Vogt valves are normally custom mounted in our plant where limit and torque switches, as applicable, can be set and valves tested to users' specifications.



Air Operated Valve



Motor Operated Valve

## Vogt Valves for Sour Service NACE Standard MR0103<sup>(1)</sup>

Vogt offers gate, globe and check valves utilizing fabrication processes, welds and materials selected from NACE MR0103. These valves are available with written certification to NACE Standard MR0103 “Materials Resistant to Sulfide Stress Cracking in Corrosive Petroleum Refining Environments” when specified.

In addition to H<sub>2</sub>S, carbon dioxide (CO<sub>2</sub>) and water containing chlorides may also be present in crude oils and gases. This environment can lead to degradation of exposed material by weight loss corrosion (pitting, crevice and general corrosion) and other forms of environmental embrittlement.

MR0103 covers only materials resistant to SSC but other considerations must be recognized and properly dealt with to assure efficient and safe control of hazardous media.

ENVIRONMENT (For oil/gas sour service environments in -20°F to 800°F temp range)	SUGGESTED TRIM	VALVE TRIM CODE	SPECIAL CHARACTERISTICS
H <sub>2</sub> S and H <sub>2</sub> O H <sub>2</sub> S, H <sub>2</sub> O and CO <sub>2</sub> H <sub>2</sub> S, H <sub>2</sub> O and Chlorides H <sub>2</sub> S, H <sub>2</sub> O, CO <sub>2</sub> and Chlorides	13 Cr.	NA6	Soft 13 Cr. Trim 304/Flexible Graphite Spiral Wound Gasket Flexible Graphite Packing B7M Bonnet Bolting Hard faced Seats Full Rating
		MB6	Full Hard Faced
H <sub>2</sub> S and H <sub>2</sub> O H <sub>2</sub> S, H <sub>2</sub> O and CO <sub>2</sub>	316	NA8	Solution Annealed 316 Trim 316/Flexible Graphite Spiral Wound Gasket Flexible Graphite Packing B7M Bonnet Bolting Hard faced Seats Full Rating
		MB8	Full Hard Faced
H <sub>2</sub> S and H <sub>2</sub> O and CO <sub>2</sub> H <sub>2</sub> S, H <sub>2</sub> O and Chlorides H <sub>2</sub> S, H <sub>2</sub> O, CO <sub>2</sub> and Chlorides  In multiphase systems significant general corrosion may occur for monel trim at service temperatures above 300° F when CO <sub>2</sub> , H <sub>2</sub> S and Chlorides are present.	Monel	NAS	Monel Trim Monel/Flexible Graphite Spiral Wound Gasket Flexible Graphite Packing B7M Bonnet Bolting Full Rating
		MBS	Hard faced Gate(Gate Valve only)



Vogt NACE valves use bonnet bolting meeting the exposed bolting requirements of NACE MR0103. NACE bolting other than Vogt standard can be provided at the option of the end user.

**Inquiries for NACE valves for hydrocarbon production applications to NACE MR0175/ISO 15156 are also invited.** See page 129.

(1) MR0103 is a material standard – not a design standard. It is an aid in the selection of materials for those “Sour Environment” applications with conditions present which could result in SSC. See page 129.

## Vogt Valves for Nuclear Service

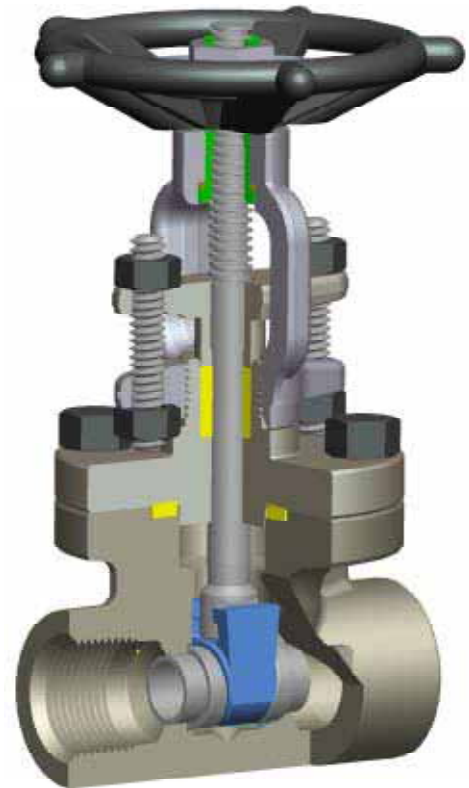
Vogt offers gate, globe and check valves of forged carbon steel in ½" to 2" sizes, in ASME Section III Type construction. Pressure classes 150, 300, 600, 900 and 1500 are offered. The FLOWSERVE Vogt valve for nuclear service (with “N” Stamp) is manufactured by FLOWSERVE Edward Valves in Raleigh, NC under its Nuclear Program.

Request for quotations are invited.

# 12111 Gate Valve

## Class 800 Gate Valve

- 1 Conventional Port
- 2 Full Port



See pages 22 - 24

### The Core of the Pressure Class 150, 300, 600 & 800 Gate Valve

CONNECTION	SERIES		BODY/BONNET	TRIM	RATING	
	1	2				
Threaded Socket Weld (SW) Threaded/Socket Weld (TSW) Butt Weld (BW)*	12111	13111	A105	13 Cr	1975 PSI @ 100 F	136.2 BAR @ 38 C
	32111	33111	A350 LF2	13 Cr	1975 PSI @ -50 F	136.2 BAR @ -46 C
	12401	13401	F316/F316L	316	1920 PSI @ 100 F	132.4 BAR @ 38 C
	82401	83401	F316H	316H		
	12321	13321	F11,Cl.2(1-1/4 Cr.)	13 Cr	2000 PSI @ 100 F	137.9 BAR @ 38 C
	12521	13521	F22,Cl.3(2-1/4 Cr.)			
	12421	13421	F5(5 Cr.)			
	12921	13921	F9(9 Cr.)			

\*See page 26 for Butt Weld Ends

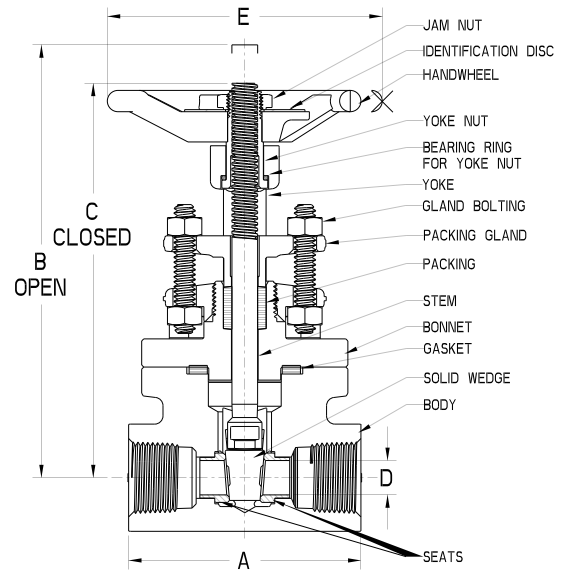
(UOP) Universal Oil Products Approved - For HF Alkylation Service						
CONNECTION	1	2	BODY/BONNET	TRIM	RATING	
Threaded	12111HF6	13111HF4	A105	Monel	1975 PSI @ 100 F	136.2 BAR @ 38 C
Socket Weld (SW)	12111HF7	13111HF5	A105	Monel	1975 PSI @ 100 F	136.2 BAR @ 38 C

# 12111 Gate Valve

## Class 800 Gate Valve

- 1 Conventional Port
- 2 Full Port

Round Bolted Bonnet  
 Spiral Wound Gasket  
 Outside Screw & Yoke  
 Bolted Gland  
 Solid Wedge  
 Hard Faced Seats  
 API 602 (3" is outside of the scope)  
 ASME B16.34



### Dimensions

SIZE			A	B	C	D	E	WEIGHT	Cv	
-04	NPS	½	3.38	6.30	5.74	.50	4.00	5.0	9.6	1
	DN	15	86	160	146	12.7	102	2.3		
-05	NPS	¾	3.38	6.30	5.74	.50	4.00	4.8	9.7	
	DN	20	86	160	146	12.7	102	2.2		
-06	NPS	1	4.00	8.37	7.43	.75	4.75	8.4	20.3	
	DN	25	102	213	189	19.1	121	3.8		
-07	NPS	1¼	4.75	10.12	8.71	1.25	5.75	16.7	80.5	
	DN	32	121	257	221	31.8	146	7.6		
-08	NPS	1½	4.75	10.12	8.71	1.25	5.75	16.2	91.6	
	DN	40	121	257	221	31.8	146	7.3		
-09	NPS	2	5.25	11.12	9.40	1.50	7.00	21.8	117.6	
	DN	50	133	282	239	38.1	178	9.9		
-10	NPS	2½	7.00	14.09	11.76	2.00	8.00	39.8	174	
	DN	65	178	358	299	50.8	203	18.1		
-11	NPS	3	8.00	17.96	15.01	2.75	9.75	75.0	203.9	API 605 and LP2 ONLY
	DN	80	203	456	381	69.9	248	34.0		

-04	NPS	½	3.38	6.30	5.75	.50	4.00	5.0	9.6	2
	DN	15	86	160	146	12.7	102	2.3		
-05	NPS	¾	4.0	8.37	7.43	.75	4.75	8.6	28.7	
	DN	20	102	213	189	19.1	121	3.9		
-06	NPS	1	4.38	9.80	8.59	1.0	5.75	12.2	46.5	
	DN	25	111	249	218	25.4	146	5.5		
-07	NPS	1¼	4.75	10.12	8.71	1.25	5.75	16.7	80.5	
	DN	32	121	257	221	31.8	146	7.6		
-08	NPS	1½	5.25	11.12	9.40	1.50	7.0	23.0	109.6	
	DN	40	133	282	239	38.1	178	10.4		
-09	NPS	2	7.00	14.09	11.76	2.00	8.0	41.8	181.0	
	DN	50	178	358	299	50.8	203	19.0		

Refer to page 8 for optional trim and service configurations.

Refer to pages 11-12 for full materials description.

Refer to page 113 for end connections.

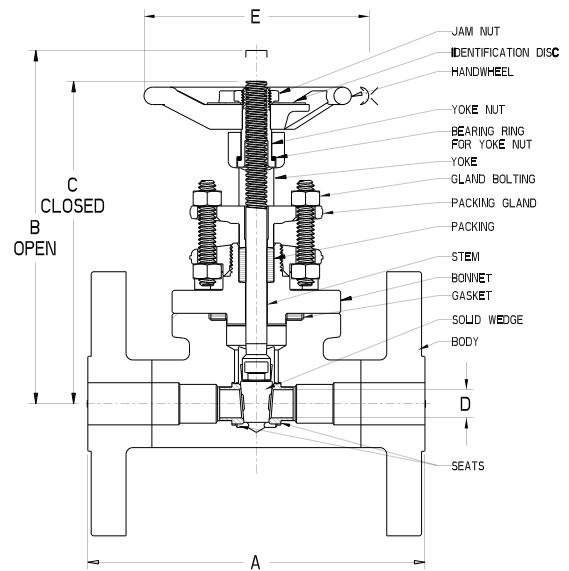
Refer to pages 116-117 for other ratings.



# Forged Gate Valves

## Class 150 Gate Valve Conventional Port

- Round Bolted Bonnet
- Spiral Wound Gasket
- Outside Screw & Yoke
- Bolted Gland
- Solid Wedge
- Hard Faced Seats
- API 602
- ASME B16.34



CONNECTION	SERIES	BODY/BONNET	TRIM	RATING		
1/16 RF Flat Face	FF	353	A105	13% Cr	285 PSI @ 100 F	19.6 BAR @ 38 C
		32353	A350 LF2	13% Cr	285 PSI @ 100 F	19.6 BAR @ 38 C
					285 PSI @ -50 F	19.6 BAR @ -46 C
		358	F316/F316L	316	275 PSI @ 100 F	19.0 BAR @ 38 C
		351	F11*, Cl.2	13% Cr	290 PSI @ 100 F	19.8 BAR @ 38 C
352	F22*, Cl.3	13% Cr	290 PSI @ 100 F	19.8 BAR @ 38 C		

*\*F11 & F22 not available in all sizes*

### Dimensions

SIZE			A	B	C	D	E	WEIGHT	Cv	A105 ONLY
-04	NPS	½	4.25	6.30	5.74	.50	4.00	6.4	9.6	
	DN	15	108	160	146	12.7	102	2.9		
-05	NPS	¾	4.62	6.30	5.74	.50	4.00	8.0	9.7	
	DN	20	117	160	146	12.7	102	3.6		
-06	NPS	1	5.00	8.37	7.43	.75	4.75	12.3	20.3	
	DN	25	127	213	189	19.1	121	5.6		
-08	NPS	1½	6.50	10.12	8.71	1.25	5.75	23.0	91.6	
	DN	40	165	257	221	31.8	146	10.4		
-09	NPS	2	7.00	11.12	9.40	1.50	7.00	31.7	117.6	
	DN	50	178	282	239	38.1	178	14.4		
-10	NPS	2½	7.50	14.09	11.76	2.00	8.00	53.7	174	
	DN	65	191	358	299	50.8	203	24.4		
-11	NPS	3	8.00	14.09	11.76	2.00	8.00	57.6	203.9	
	DN	80	203	358	299	50.8	203	26.1		
-13	NPS	4	9.00	17.96	15.01	2.75	9.75	98.0	230.0	
	DN	100	229	456	381	69.9	248	44.5		

Refer to page 8 for optional trim and service configurations.  
Refer to page 113 for end connections.

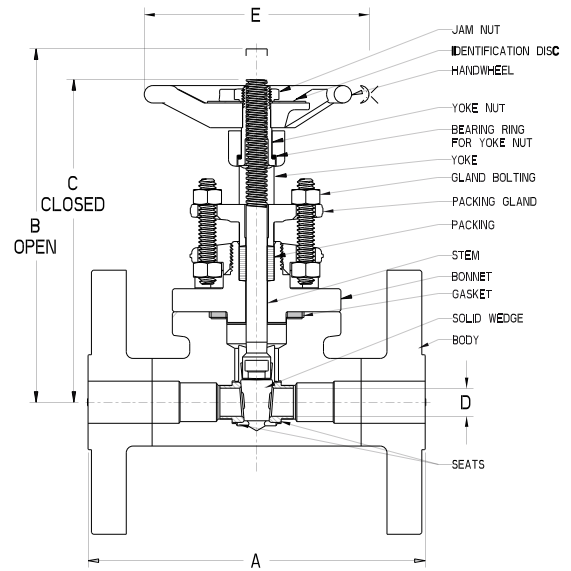
Refer to pages 11-12 for full materials description.  
Refer to pages 116-117 for other ratings.

# Forged Gate Valves

## Class 300 Gate Valve

- 1 Conventional Port
- 2 Full Port

Round Bolted Bonnet  
 Spiral Wound Gasket  
 Outside Screw & Yoke  
 Bolted Gland  
 Solid Wedge  
 Hard Faced Seats  
 API 602  
 ASME B16.34



CONNECTION	SERIES		BODY/BONNET	TRIM	RATING	
	1	2				
1/16 RF Flat Face FF	363	13363	A105	13% Cr	740 PSI @ 100 F	51.1 BAR @ 38 C
	32363	33363	A350 LF2	13% Cr	740 PSI @ 100 F	51.1 BAR @ 38 C
	368	13368	F316/F316L	316	720 PSI @ 100 F	49.6 BAR @ 38 C
	361	13361	F11*, Cl.2	13% Cr	750 PSI @ 100 F	51.7 BAR @ 38 C
	362	13362	F22*, Cl.3	13% Cr	750 PSI @ 100 F	51.7 BAR @ 38 C

**\*F11 & F22 not available in all sizes**

### Dimensions

1								
SIZE	A	B	C	D	E	WEIGHT	Cv	
-04 NPS ½	5.5	6.30	5.74	.50	4.00	8.0	9.6	
	DN 15	140	160	146	12.7	102		3.6
-05 NPS ¾	6.00	6.30	5.74	.50	4.00	10.8	9.7	
	DN 20	152	160	146	12.7	102		4.9
-06 NPS 1	6.50	8.37	7.43	.75	4.75	15.5	20.3	
	DN 25	165	213	189	19.1	121		7.0
-08 NPS 1½	7.50	10.12	8.71	1.25	5.75	29.2	91.6	
	DN 40	191	257	221	31.8	146		13.2
-09 NPS 2	8.50	11.12	9.40	1.50	7.00	37.6	117.6	
	DN 50	216	282	239	38.1	178		17.1
-10 NPS 2½	9.50	14.09	11.76	2.00	8.00	61.6	174	
	DN 65	241	358	299	50.8	203		27.9
-11 NPS 3	11.12	14.09	11.76	2.00	8.00	71.6	203.9	
	DN 80	282	358	299	50.8	203		32.5
-13 NPS 4	12.00	17.96	15.01	2.75	9.75	121.9	230.0	
	DN 100	305	456	381	69.9	248		55.3

A105 ONLY

2									
SIZE	A	B	C	D	E	WEIGHT	Cv		
-04 NPS ½	5.50	6.30	5.74	.50	4.00	8.6	9.6		
	DN 15	140	160	146	12.7	102		3.9	
-05 NPS ¾	6.00	8.37	7.44	.75	4.75	13.9	28.7		
	DN 20	152	213	189	19.1	121		6.3	
-06 NPS 1	6.50	9.80	8.59	1.00	5.75	18.5	46.5		
	DN 25	165	249	218	25.4	146		8.4	
-08 NPS 1½	7.50	11.12	9.40	1.50	7.00	33.2	109.6		
	DN 40	191	282	239	38.1	178		15.1	
-09 NPS 2	8.50	14.09	11.76	2.00	8.00	53.1	181.0		
	DN 50	216	358	299	50.8	203		24.1	

**SEE PAGE 26 FOR BUTT WELD ENDS**

Refer to page 8 for optional trim and service configurations.  
 Refer to page 113 for end connections.

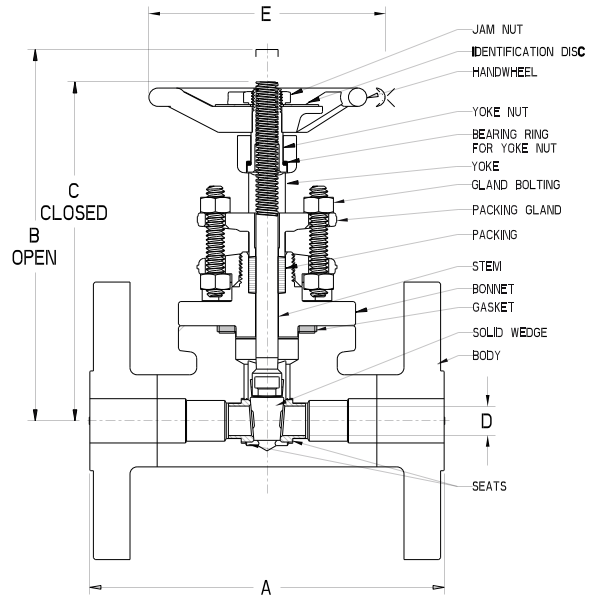
Refer to pages 11-12 for full materials description.  
 Refer to pages 116-117 for other ratings.

# Forged Gate Valves

## Class 600 Gate Valve

- 1 Conventional Port
- 2 Full Port

Round Bolted Bonnet  
 Spiral Wound Gasket  
 Outside Screw & Yoke  
 Bolted Gland  
 Solid Wedge  
 Hard Faced Seats  
 API 602  
 ASME B16.34



CONNECTION		SERIES		BODY/BONNET	TRIM	RATING	
		1	2			1480 PSI @ 100 F	102.1 BAR @ 38 C
1/4 RF Ring Joint	RJ	373	13373	A105	13% Cr	1480 PSI @ 100 F	102.1 BAR @ 38 C
		32373	33373	A350 LF2	13% Cr	1480 PSI @ 100 F	102.1 BAR @ 38 C
		378	13378	F316/F316L	316	1440 PSI @ 100 F	99.3 BAR @ 38 C
		371	13371	F11*, Cl.2	13% Cr	1500 PSI @ 100 F	103.4 BAR @ 38 C
		372	13372	F22*, Cl.3	13% Cr	1500 PSI @ 100 F	103.4 BAR @ 38 C

\*F11 & F22 not available in all sizes

### Dimensions

SIZE		A	B	C	D	E	WEIGHT	Cv
-04	NPS 1/2	6.50	6.30	5.74	.50	4.00	8.6	9.6
	DN 15	165	160	146	12.7	102	3.9	
-05	NPS 3/4	7.50	6.30	5.74	.50	4.00	11.8	9.7
	DN 20	191	160	146	12.7	102	5.4	
-06	NPS 1	8.50	8.37	7.43	.75	4.75	17.6	20.3
	DN 25	216	213	189	19.1	121	8.0	
-08	NPS 1 1/2	9.50	10.12	8.71	1.25	5.75	32.0	91.6
	DN 40	241	257	221	31.8	146	14.5	
-09	NPS 2	11.50	11.12	9.40	1.50	7.00	43.2	117.6
	DN 50	292	282	239	38.1	178	19.6	
-10	NPS 2 1/2	13.00	14.09	11.76	2.00	8.00	70.5	174
	DN 65	330	358	299	50.8	203	32.0	
-11	NPS 3	14.00	14.09	11.76	2.00	8.00	80.7	203.9
	DN 80	356	358	299	50.8	203	36.6	
-13	NPS 4	17.00	17.96	15.01	2.75	9.75	152.1	230.0
	DN 100	432	456	381	69.9	248	69.0	

A105 ONLY

SIZE		A	B	C	D	E	WEIGHT	Cv
-04	NPS 1/2	6.50	6.30	5.74	.50	4.00	8.6	9.6
	DN 15	165	160	146	12.7	102	3.9	
-05	NPS 3/4	7.50	8.37	7.44	.75	4.75	14.7	28.7
	DN 20	191	213	189	19.1	121	6.7	
-06	NPS 1	8.50	9.80	8.59	1.00	5.75	20.4	46.5
	DN 25	216	249	218	25.4	146	9.3	
-08	NPS 1 1/2	9.50	11.12	9.40	1.50	7.00	37.0	109.6
	DN 40	241	282	239	38.1	178	16.8	
-09	NPS 2	11.50	14.09	11.76	2.00	8.00	58.8	181.0
	DN 50	292	358	299	50.8	203	26.7	

SEE PAGE 26 FOR BUTT WELD ENDS

Refer to page 8 for optional trim and service configurations.  
 Refer to page 113 for end connections.

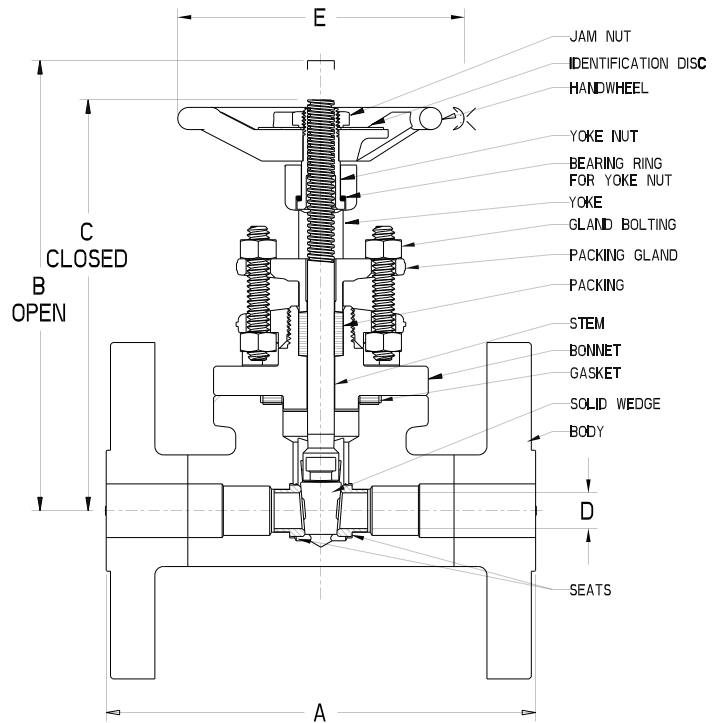
Refer to pages 11-12 for full materials description.  
 Refer to pages 116-117 for other ratings.

# Forged Gate Valves

## Class 1500 Flanged Gate Valve

- 1 Conventional Port
- 2 Full Port

- Round Bolted Bonnet
- Spiral Wound Gasket
- Outside Screw & Yoke
- Bolted Gland
- Solid Wedge
- Hard Faced Seats
- API 602
- ASME B16.34



CONNECTION		SERIES		BODY/BONNET	TRIM	RATING	
		1	2			3705 PSI @ 100 F	255.3 BAR @ 38 C
1/4 RF Ring Joint	RJ	15373	16373	A105	13% Cr	3705 PSI @ 100 F	255.3 BAR @ 38 C
		35373	36373	A350 LF2	13% Cr	3705 PSI @ 100 F	255.3 BAR @ 38 C
		15378	16378	F316/F316L	316	3600 PSI @ 100 F	248.2 BAR @ 38 C

### Dimensions

1		A	B	C	D	E	WEIGHT	Cv
-04	NPS ½	8.50	7.51	6.90	.50	4.75	17.5	9.6
	DN 15	216	191	175	12.7	121	7.9	
-05	NPS ¾	9.00	7.51	6.90	.50	4.75	20.9	9.7
	DN 20	229	191	175	12.7	121	9.5	
-06	NPS 1	10.00	9.69	8.77	.75	7.00	34.7	20.3
	DN 25	254	246	223	19.1	178	15.7	
-08	NPS 1½	12.00	11.40	9.98	1.25	8.00	55.8	91.6
	DN 40	305	290	253	31.8	203	25.3	
-09	NPS 2	14.50	13.84	12.15	1.50	9.75	94.9	117.6
	DN 50	368	352	309	38.1	248	43.0	

2		A	B	C	D	E	WEIGHT	Cv
-04	NPS ½	8.50	7.51	6.90	.50	4.75	17.5	9.6
	DN 15	216	191	175	12.7	121	7.9	
-05	NPS ¾	9.00	9.69	8.78	.75	7.00	29.3	28.7
	DN 20	229	246	223	19.1	178	13.3	
-06	NPS 1	10.00	11.31	9.96	1.00	8.00	46.2	46.5
	DN 25	254	287	253	25.4	203	21.0	
-08	NPS 1½	12.00	13.84	12.15	1.50	9.75	75.0	109.6
	DN 40	305	352	309	38.1	248	34.0	
-09	NPS 2	14.50	17.15	14.82	2.00	9.75	129.4	181.0
	DN 50	368	436	376	50.8	248	58.7	

Refer to page 8 for optional trim and service configurations.  
Refer to page 113 for end connections.

Refer to pages 11-12 for full materials description.  
Refer to pages 116-117 for other ratings.

# Forged Gate Valves-Butt Weld Ends

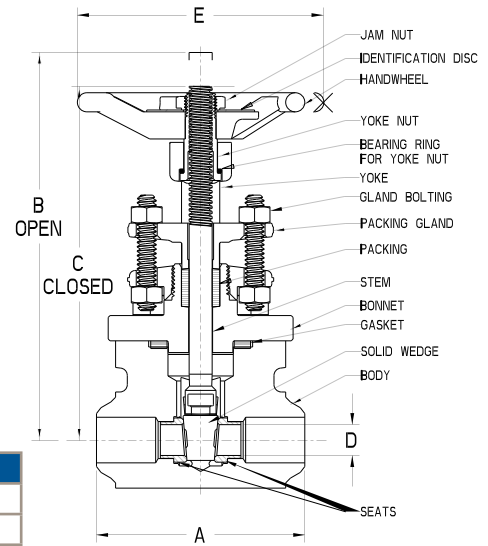
## Butt Weld Class 150, 300, 600, 800 Conventional Port Gate Valve

- Round Bolted Bonnet
- Spiral Wound Gasket
- Outside Screw & Yoke
- Bolted Gland
- Solid Wedge
- Hard Faced Seats
- API 602
- ASME B16.34

**BUTT-WELDING ENDS PER ASME B16.25** – Refer to page 114

BW end-to-end dimensions for Class 800 valves are Vogt standard. ASME B16.10 has no requirements for Class 800 valves.

S40 Suffix for Schedule 40  
 S80 Suffix for Schedule 80  
 S160 Suffix for Schedule 160  
 Example: BW12111S40



CLASS	SERIES	BODY/BONNET	TRIM	RATING	
150	BW353	A105	13 Cr	285 PSI @ 100 F	19.6 BAR @ 38 C
300	BW363	A105	13 Cr	740 PSI @ 100 F	51.1 BAR @ 38 C
600	BW373	A105	13 Cr	1480 PSI @ 100 F	102.1 BAR @ 38 C
800	BW12111	A105	13 Cr	1975 PSI @ 100 F	136.2 BAR @ 38 C
	BW32111	A350 LF2	13 Cr	1975 PSI @ 100 F	136.2 BAR @ 38 C
	BW12401	F316/F316L	316	1920 PSI @ 100 F	132.4 BAR @ 38 C
	BW82401	F316H	316H	1920 PSI @ 100 F	132.4 BAR @ 38 C
	BW12321	F11,Cl.2(1-1/4 Cr.)	13 Cr	2000 PSI @ 100 F	137.9 BAR @ 38 C
	BW12521	F22,Cl.3(2-1/4 Cr.)	13 Cr	2000 PSI @ 100 F	137.9 BAR @ 38 C
	BW12421	F5(5 Cr.)	13 Cr	2000 PSI @ 100 F	137.9 BAR @ 38 C
	BW12921	F9(9 Cr.)	13 Cr	2000 PSI @ 100 F	137.9 BAR @ 38 C

### Dimensions

SIZE		SCH			A 150	A 300	A 600	A 800	B	C	D	E	WEIGHT	Cv		
		40	80	160										SCH 40	SCH 80	SCH 160
-04	NPS 1/2	X	X				3.38	6.30	5.74	.41	4.00	5.0	9.6	9.2		
	DN 15	X	X				85.9	160	146	10.4	102	2.3				
-05	NPS 3/4	X	X	X			3.38	6.30	5.74	.50	4.00	4.8	9.7	9.6	8.8	
	DN 20	X	X	X			85.9	160	146	12.7	102	2.2				
-06	NPS 1	X	X	X			8.50	4.00	8.37	7.43	.75	4.75	8.4	20.3	20.1	18.2
	DN 25	X	X	X			215.9	101.6	213	189	19.1	121	3.8			
-07	NPS 1 1/4	X					4.75	10.12	8.71	1.25	5.75	16.7	80.5			
	DN 32	X					120.7	257	221	31.8	146	7.6				
-08	NPS 1 1/2	X	X			7.50	9.50	4.75	10.12	8.71	1.25	5.75	16.2	91.6	89.4	
	DN 40	X	X			190.5	241.3	120.7	257	221	31.8	146	7.3			
-09	NPS 2	X	X	X	8.50	8.50	11.50	5.25	11.12	9.40	1.50	7.00	21.8	117.6	116.1	102.3
	DN 50	X	X	X	215.9	215.9	292.1	133.4	282	239	38.1	178	9.9			
-10	NPS 2 1/2	X	X		9.50	9.50	13.00	7.00	14.09	11.76	2.00	8.00	40.2	174	171.9	
	DN 65	X	X		241.3	241.3	330.2	177.8	358	299	50.8	203	18.2			
-11	NPS 3	X	X	X	11.12	11.12	14.00		14.09	11.76	2.00	8.00	48.9	203.9	202.6	193.7
	DN 80	X	X	X	282.4	282.4	355.6		358	299	50.8	203	22.2			
-11	NPS 3	X	X					8.00	17.96	15.01	2.75	9.75	74.7	203.9	202.6	
	DN 80	X	X					203.2	456	381	69.9	248	33.9			
-13	NPS 4	X	X	X	12.00	12.00	17.00	8.00	17.96	15.01	2.75	9.75	72.2	230	229	
	DN 100	X	X	X	304.8	304.8	431.8	203.2	456	381	69.9	248	32.7			

A105 ONLY

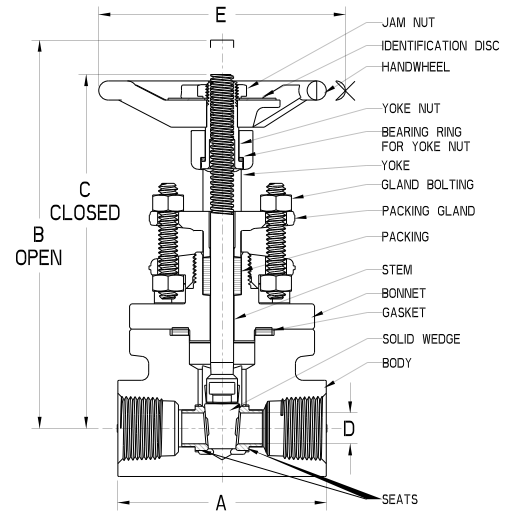


# Forged Gate Valves

## Class 1500 Gate Valve

- 1 Conventional Port
- 2 Full Port

Round Bolted Bonnet  
 Spiral Wound Gasket  
 Outside Screw & Yoke  
 Bolted Gland  
 Solid Wedge  
 Hard Faced Seats  
 API 602  
 ASME B16.34



CONNECTION	SERIES		BODY/BONNET	TRIM	RATING		
	1	2					
	15111	16111	A105	13% Cr	3705 PSI @ 100 F	255.3 BAR @ 38 C	
	35111	36111	A350 LF2	13% Cr	3705 PSI @ 100 F 3705 PSI @ -50 F	255.3 BAR @ 38 C 255.3 BAR @ -46 C	
Threaded	15401	86401	F316/F316L	316	3600 PSI @ 100 F	284.2 BAR @ 38 C	
Socket Weld	SW 85401	86401	F316H	316H	3600 PSI @ 100 F	284.2 BAR @ 38 C	
Threaded x Socket Weld	TSW	15321	16321	F11,C1.2	*13% Cr	3750 PSI @ 100 F	258.6 BAR @ 38 C
		15521	16521	F22,C1.3			
Butt Weld**	BW	15421	16421	F5	*13% Cr	3750 PSI @ 100 F	258.6 BAR @ 38 C
		15921	16921	F9			

\*Hardfaced Wedge/Seats \*\* BW end-to-end is Vogt standard and does not meet B16.10

### Dimensions

SIZE				A	B	C	D	E	WEIGHT	Cv				
	SCH 40	SCH 80	SCH 160							SCH 40	SCH 80	SCH 160		
1	-04	NPS ½	X	X	4.00	7.51	6.90	.50	4.75	.89	9.6	9.2		
		DN 15	X	X	101.6	191	175	12.7	121	4.0				
	-05	NPS ¾	X	X	X	4.00	7.51	6.90	.50	4.75	9.7	9.7	9.6	8.8
		DN 20	X	X	X	101.6	191	175	12.7	121	4.4			
	-06	NPS 1	X	X	X	4.75	9.69	8.77	.75	7.00	17.5	20.3	20.1	18.2
		DN 25	X	X	X	120.7	246	223	19.1	178	7.9			
-07	NPS 1¼	X			5.25	11.40	9.98	1.25	8.00	27.3	80.5			
	DN 32	X			133.4	290	253	31.8	203	12.4				
-08	NPS 1½	X	X	X	5.25	11.40	9.98	1.25	8.00	66.7	91.6	89.4	76.8	
	DN 40	X	X	X	133.4	290	253	31.8	203	30.3				
-09	NPS 2	X	X	X	7.00	13.84	12.15	1.50	9.75	45.1	117.6	116.1	102.3	
	DN 50	X	X	X	177.8	352	309	38.1	248	20.5				
2	-04	NPS ½	X	X	4.00	7.51	6.90	.50	4.75	17.5	9.6	9.2		
		DN 15	X	X	101.6	191	175	12.7	121	7.9				
	-05	NPS ¾	X			4.75	9.69	8.77	.75	7.00	17.9	28.7		
		DN 20	X			120.7	246	223	19.1	178	8.1			
	-06	NPS 1				5.25	11.31	9.96	1.00	8.00	28.3	46.5		
		DN 25				133.4	287	253	25.4	203	12.8			
	-07	NPS 1¼	X			5.25	11.40	9.98	1.25	8.00	27.3	80.5		
		DxAzN 32	X			133.4	290	253	31.8	203	12.4			
	-08	NPS 1½				7.00	13.84	12.15	1.50	9.75	75.0	109.6		
		DN 40				177.8	352	309	38.1	248	34.0			

S40 Suffix for Schedule 40  
 S80 Suffix for Schedule 80  
 S160 Suffix for Schedule 160  
 Example: BW15111S80

Refer to page 8 for optional trim and service configurations.

Refer to pages 11-12 for full materials description.

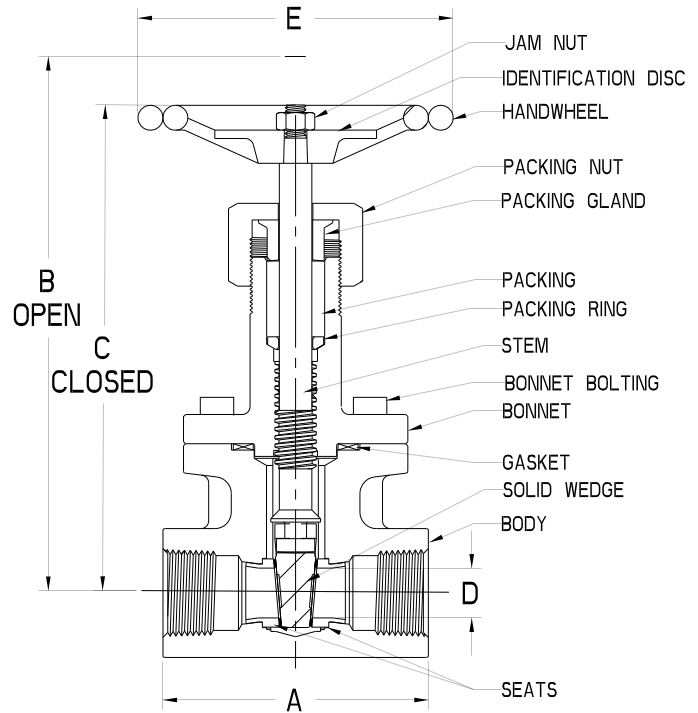
Refer to page 114 and 115 for end connections.

Refer to pages 116-117 for other ratings.

# Forged Gate Valves

## Class 800 Conventional Port Gate Valve

- Round Bolted Bonnet
- Spiral Wound Gasket
- Inside Screw Stem
- Screw Gland
- Solid Wedge
- Hard Faced Seats
- API 602
- ASME B16.34



CONNECTION	SERIES	BODY/BONNET	TRIM	RATING		
Threaded	SW	12161	A105	13% Cr	1975 PSI @ 100 F	136.2 BAR @ 38 C
Socket Weld						
Threaded/ Socket Weld						

### Dimensions

SIZE			A	B	C	D	E	WEIGHT	Cv
-04	NPS	½	3.38	6.44	5.88	.50	4.00	4.8	9.6
	DN	15	86	164	149	12.7	102	2.2	
-05	NPS	¾	3.38	6.44	5.88	.50	4.00	4.7	9.7
	DN	20	86	164	149	12.7	102	2.1	
-06	NPS	1	4.00	8.31	7.38	.75	4.75	7.9	20.3
	DN	25	102	211	187	19.1	121	3.6	
-07	NPS	1¼	4.75	10.75	9.38	1.25	5.75	16.4	80.5
	DN	32	121	273	238	31.8	146	7.4	
-08	NPS	1½	4.75	10.75	9.38	1.25	5.75	16.1	91.6
	DN	40	121	273	238	31.8	146	7.3	
-09	NPS	2	5.25	12.25	10.56	1.50	7.00	23.6	117.6
	DN	50	133	311	268	38.1	178	10.7	

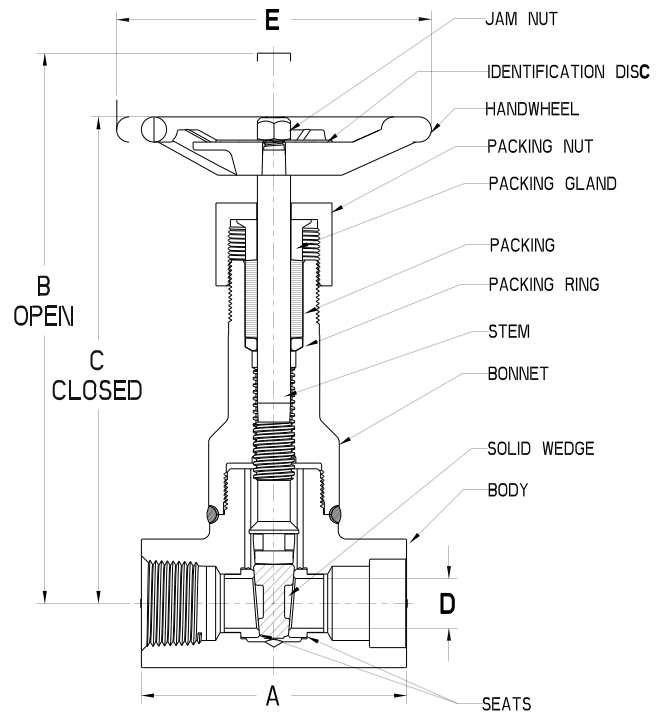
Refer to page 8 for optional trim and service configurations.  
 Refer to page 115 for end connections.

Refer to pages 11-12 for full materials description.  
 Refer to pages 116-117 for other ratings.

# Forged Gate Valves

## Class 800 Conventional Port Gate Valve

- Welded Bonnet
- Inside Screw Stem
- Screw Gland
- Solid Wedge
- Hard Faced Seats
- API 602
- ASME B16.34



CONNECTION		SERIES	BODY/BONNET	TRIM	RATING	
Threaded	SW TSW	2811	A105	13% Cr	1975 PSI @ 100 F	136.2 BAR @ 38 C
Socket Weld						
Threaded/ Socket Weld						

### Dimensions

SIZE			A	B	C	D	E	WEIGHT	Cv
-04	NPS	½	3.38	6.62	6.00	.50	4.00	3.2	9.6
	DN	15	86	168	152	12.7	102	1.5	
-05	NPS	¾	3.38	6.62	6.00	.50	4.00	3.1	9.7
	DN	20	86	168	152	12.7	102	1.4	
-06	NPS	1	4.00	8.38	7.44	.75	4.75	6.1	20.3
	DN	25	102	213	189	19.1	121	2.8	
-07	NPS	1¼	4.75	10.81	9.38	1.25	5.75	11.6	80.5
	DN	32	121	275	238	31.8	146	5.3	
-08	NPS	1½	4.75	10.81	9.38	1.25	5.75	11.0	91.6
	DN	40	121	275	238	31.8	146	5.0	
-09	NPS	2	5.25	12.12	10.56	1.50	7.00	18.5	117.6
	DN	50	133	308	268	38.1	178	8.4	

Refer to page 8 for optional trim and service configurations.  
Refer to page 115 for end connections.

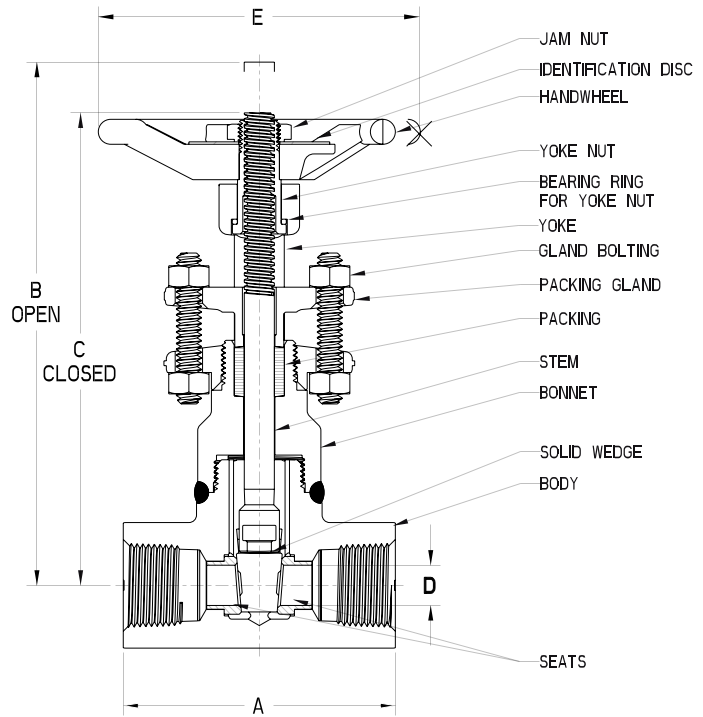
Refer to pages 11-12 for full materials description.  
Refer to pages 116-117 for other ratings.

# Forged Gate Valves

## Class 800 Gate Valve

- 1 Conventional Port
- 2 Full Port

- Welded Bonnet
- Outside Screw & Yoke
- Bolted Gland
- Solid Wedge
- Hard Faced Seats
- API 602
- ASME B16.34



CONNECTION	SERIES		BODY/BONNET	TRIM	RATING		
	1	2					
Threaded Socket Weld Threaded/Socket Weld	SW TSW	2801	3801	A105	13% Cr	1975 PSI @ 100 F	136.2 BAR @ 38 C
		32801	33801	A350 LF2	13% Cr	1975 PSI @ 100 F	136.2 BAR @ 38 C
						1975 PSI @ -50 F	136.2 BAR @ -46 C
		2831	3831	F316/F316L	316	1920 PSI @ 100 F	132.4 BAR @ 38 C
		82831		F316H	316H	1920 PSI @ 100 F	132.4 BAR @ 38 C
		2851		F11,Cl.2	13% Cr	2000 PSI @ 100 F	137.9 BAR @ 38 C
2861		F22,Cl.3					

### Dimensions

SIZE	A		B		C		D		E		WEIGHT	Cv
	1	2	1	2	1	2	1	2	1	2		
1 -04	NPS ½	3.38	6.50	5.87	.50	4.00	3.6				9.6	
	DN 15	86	165	149	12.7	102	1.6					
-05	NPS ¾	3.38	6.50	5.87	.50	4.00	3.4				9.7	
	DN 20	86	165	149	12.7	102	1.5					
-06	NPS 1	4.00	8.38	7.43	.75	4.75	6.6				20.3	
	DN 25	102	213	189	19.1	121	3.0					
-07	NPS 1¼	4.75	10.14	8.71	1.25	5.75	11.5				80.5	
	DN 32	121	258	221	31.8	146	5.2					
-08	NPS 1½	4.75	10.14	8.71	1.25	5.75	11.1				91.6	
	DN 40	121	258	221	31.8	146	5.0					
-09	NPS 2	5.25	11.12	9.40	1.50	7.00	16.1				117.6	
	DN 50	133	282	239	38.1	178	7.3					

SIZE	A		B		C		D		E		WEIGHT	Cv
	1	2	1	2	1	2	1	2	1	2		
2 -04	NPS ½	3.38	6.50	5.87	.50	4.00	3.6				9.6	
	DN 15	86	165	149	12.7	102	1.6					
-05	NPS ¾	4.0	8.38	7.43	.75	4.75	6.8				28.7	
	DN 20	102	213	189	19.1	121	3.1					
-06	NPS 1	4.75	10.13	8.59	1.00	5.75	12.4				46.5	
	DN 25	121	257	218	25.4	146	5.6					
-07	NPS 1¼	4.75	10.14	8.71	1.25	5.75	11.5				80.5	
	DN 32	121	258	221	31.8	146	5.2					
-08	NPS 1½	5.25	11.09	9.40	1.50	7.00	17.4				109.6	
	DN 40	133	282	239	38.1	178	7.9					
-09	NPS 2	7.00	14.09	11.76	2.00	9.75	32.4				181.0	
	DN 50	178	358	299	50.8	248	14.7					

Refer to page 8 for optional trim and service configurations.  
Refer to page 114 and 115 for end connections.

Refer to pages 11-12 for full materials description.  
Refer to pages 116-117 for other ratings.

# Forged Gate Valves

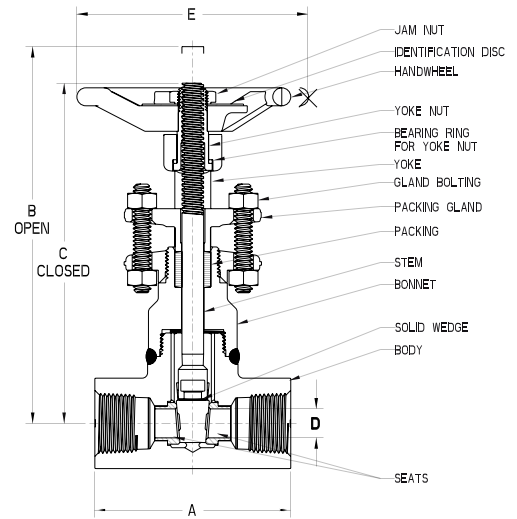
## Class 1500 Gate Valve

- 1 Conventional Port
- 2 Full Port

## Class 1500 LTD

- 1 Conventional Port

- Welded Bonnet
- Outside Screw & Yoke
- Bolted Gland
- Solid Wedge
- Hard Faced Seats
- API 602
- ASME B16.34



CLASS	CONNECTION	SERIES		BODY/BONNET	TRIM	RATING		
		1	2					
Standard	Threaded Socket Weld Threaded/Socket Weld Butt Weld**	SW TSW BW	15801	16801	A105	13% Cr	3705 PSI @ 100 F	255.3 BAR @ 38 C
			35801	36801	A350 LF2	13% Cr	3705 PSI @ 100 F	255.3 BAR @ 38 C
			15831	16831	F316/F316L	316	3600 PSI @ 100 F	248.2 BAR @ 38 C
			85831	86831	F316H	316H		
			15851	16851	F11, Cl.2	*13% Cr	3750 PSI @ 100 F	258.6 BAR @ 38 C
			15861	16861	F22, Cl.3			
LTD	Threaded Socket Weld Threaded/Socket Weld	SW TSW	65703		A105	*13% Cr	3750 PSI @ 100 F	258.6 BAR @ 38 C
			65713		F11, Cl.2			
			65773		F22, Cl.3			

\*Hardfaced Wedge/Seats \*\*BW end-to-end is Vogt standard and does not meet B16.10

### Dimensions

SIZE	A		B		C		D		E		WEIGHT	Cv
	1	2	1	2	1	2	1	2	1	2		
1 -04	NPS 1/2	4.00	7.54	6.90	.50	4.75	6.7	9.6				
	DN 15	102	192	175	12.7	121	3.0					
-05	NPS 3/4	4.00	7.54	6.90	.50	4.75	6.5	9.7				
	DN 20	102	192	175	12.7	121	2.9					
-06	NPS 1	4.75	9.69	8.77	.75	7.00	13.2	20.3				
	DN 25	121	246	223	19.1	178	6.0					
-07	NPS 1 1/4	5.25	11.40	9.98	1.25	8.00	20.5	80.5				
	DN 32	133	290	253	31.8	203	9.3					
-08	NPS 1 1/2	5.25	11.40	9.98	1.25	8.00	20.0	91.6				
	DN 40	133	290	253	31.8	203	9.1					
-09	NPS 2	7.00	13.84	12.15	1.50	9.75	34.8	117.6				
	DN 50	178	352	309	38.1	248	15.8					

S40 Suffix for Schedule 40  
 S80 Suffix for Schedule 80  
 S160 Suffix for Schedule 160  
 Example: BW2801S40  
 See page 27 for allowable schedules.

SIZE	A		B		C		D		E		WEIGHT	Cv
	1	2	1	2	1	2	1	2	1	2		
2 -04	NPS 1/2	4.00	7.54	6.90	.50	4.75	6.7	9.6				
	DN 15	102	192	175	12.7	121	3.0					
-05	NPS 3/4	4.75	9.69	8.77	.75	7.00	13.5	28.7				
	DN 20	121	246	223	19.1	178	6.1					
-06	NPS 1	5.25	11.21	9.86	1.00	8.00	21.6	46.5				
	DN 25	133	285	250	25.4	203	9.8					
-07	NPS 1 1/4	5.25	11.40	9.98	1.25	8.00	20.5	80.5				
	DN 32	133	290	253	31.8	203	9.3					
-08	NPS 1 1/2	7.00	13.84	12.15	1.50	9.75	35.1	109.6				
	DN 40	178	352	309	38.1	248	15.9					

Refer to page 8 for optional trim and service configurations.

Refer to pages 11-12 for full materials description.

Refer to pages 114-115 for end connections.

Refer to pages 116-117 for other ratings.



# Forged Gate Valves – Extended Body Valves

## Class 800 Conventional Port Gate Valve

CONNECTION			
Extended Male End	Female End		
Butt Weld	Threaded	BT	(B)
Butt Weld	Socket Weld	BS	
Couplet	Threaded	CT	(C)
Couplet	Socket Weld	CS	
Socket Weld	Threaded	ST*	(S)
Socket Weld	Socket Weld	SS	
Threaded	Threaded	TT	(T)
Threaded	Socket Weld	TS	

	SERIES	BODY/BONNET	TRIM	RATING	
1	2801*	A105	13%Cr	1975 PSI @ 100 F	136.2 BAR @ 38 C
	2831	F316/F316L	316	1920 PSI @ 100 F	132.4 BAR @ 38 C
2	2901	A105	13%Cr	1975 PSI @ 100 F	136.2 BAR @ 38 C
	2931	F316/F316L	316	1920 PSI @ 100 F	132.4 BAR @ 38 C
	2951	F11, Cl.2(1-1/4 Cr.)	13%Cr	2000 PSI @ 100 F	137.9 BAR @ 38 C
	2961	F22, Cl.3(2-1/4 Cr.)			
3	12111	A105	13%Cr	1975 PSI @ 100 F	136.2 BAR @ 38 C
	32111	A350 LF2		1975 PSI @ -50 F	136.2 BAR @ -46 C
	12401	F316/F316L	316	1920 PSI @ 100 F	132.4 BAR @ 38 C
	12321	F11, Cl.2(1-1/4 Cr.)	13%Cr	2000 PSI @ 100 F	137.9 BAR @ 38 C
	12521	F22, Cl.3(2-1/4 Cr.)			
	12421	F5(5 Cr.)			
	12921	F9(9 Cr.)			

\*Example Series Designation: ST2801, CT2901, BT12111, etc.

### Dimensions

SIZE		A(B)	A(C)	A(S)	A(T)	B	C(B)	C(C)	C(S)	C(T)	D	D(T)	E	F	G	H	J	K	WEIGHT	Cv
-04	NPS 1/2	4.00	4.38	4.00	4.00	1.69	.64	.64	.64	.52	.50	.41	1.25	6.50	5.86	4.00	.81	.84	4.3	6.5
	DN 15	102	111	102	102	43	16.3	16.3	16.3	13.2	12.7	10.4	31.8	165	149	102	20.6	21.3	2.0	
-05	NPS 3/4	4.00	4.38	4.00	4.00	1.69	.64	.64	.64	.64	.50	.47	1.25	6.50	5.86	4.00	.81	1.05	4.2	9.0
	DN 20	102	111	102	102	43	16.3	16.3	16.3	16.3	12.7	11.9	31.8	165	149	102	20.6	26.7	1.9	
-06	NPS 1	4.38	4.75	4.38	4.38	2.00	.89	.89	.89	.89	.75	.69	1.56	8.38	7.43	4.75	1.06	1.32	7.6	27.7
	DN 25	111	121	111	111	51	22.6	22.6	22.6	22.6	19.1	17.5	39.6	213	189	121	26.9	33.5	3.4	
-08	NPS 1 1/2	5.00	5.00	5.00	5.00	2.38	1.47	1.47	1.47	1.47	1.25	1.25	2.25	10.14	8.71	5.75	1.69	1.90	13.2	78.0
	DN 40	127	127	127	127	60	37.3	37.3	37.3	37.3	31.8	31.8	57.2	258	221	146	42.9	48.3	6.0	
-04	NPS 1/2	7.00	7.00	7.00	7.00	1.69	.75	.75	.64	.52	.50	.41	1.56	6.50	5.86	4.00	.97	.84	5.4	9.6
	DN 15	178	178	178	178	43	19.1	19.1	16.3	13.2	12.7	10.4	39.6	165	149	102	24.6	21.3	2.4	
-05	NPS 3/4	7.00	7.00	7.00	7.00	1.69	.75	.75	.75	.64	.50	.47	1.56	6.50	5.86	4.00	.97	1.05	5.4	9.7
	DN 20	178	178	178	178	43	19.1	19.1	19.1	16.3	12.7	11.9	39.6	165	149	102	24.6	26.7	2.4	
-06	NPS 1	7.50	7.50	7.50	7.50	2.00	1.00	1.00	1.00	.89	.75	.69	1.94	8.38	7.43	4.75	1.22	1.32	9.3	20.3
	DN 25	191	191	191	191	51	25.4	25.4	25.4	22.6	19.1	17.5	49.3	213	189	121	31.0	33.5	4.2	
-08	NPS 1 1/2	8.00	8.00	8.00	8.00	2.38	1.50	1.50	1.50	1.47	1.25	1.25	2.56	10.14	8.71	5.75	1.72	1.90	16.5	78.0
	DN 40	203	203	203	203	60	38.1	38.1	38.1	37.3	31.8	31.8	65.0	258	221	146	43.7	48.3	7.5	
-09	NPS 2	10.00	10.00	10.00	10.00	2.63	1.94	1.94	1.94	1.81	1.50	1.50	3.12	11.09	9.40	7.00	2.16	2.38	24.0	117.6
	DN 50	254	254	254	254	67	49.3	49.3	49.3	46.0	38.1	38.1	79.2	282	239	178	54.9	60.5	10.9	
-04	NPS 1/2	7.00	7.00	4.50	4.50	1.69	.75	.75	.64	.52	.50	.41	1.56	6.29	5.73	4.00	.97	.84	6.8	9.6
	DN 15	178	178	114	114	43	19.1	19.1	16.3	13.2	12.7	10.4	39.6	160	146	102	24.6	21.3	3.1	
-05	NPS 3/4	7.00	7.00	4.50	4.50	1.69	.75	.75	.75	.65	.50	.47	1.56	6.29	5.73	4.00	.97	1.05	6.8	9.7
	DN 20	178	178	114	114	43	19.1	19.1	19.1	16.5	12.7	11.9	39.6	160	146	102	24.6	26.7	3.1	
-06	NPS 1	7.50	7.50	5.25	5.25	2.10	1.00	1.00	1.00	.89	.75	.69	1.94	8.37	7.43	4.75	1.22	1.32	11.2	20.3
	DN 25	191	191	133	133	53	25.4	25.4	25.4	22.6	19.1	17.5	49.3	213	189	121	31.0	33.5	5.1	
-08	NPS 1 1/2	8.00	8.00	6.38	6.38	2.38	1.50	1.50	1.50	1.47	1.25	1.25	2.56	10.12	8.71	5.75	1.72	1.90	20.4	78.0
	DN 40	203	203	162	162	60	38.1	38.1	38.1	37.3	31.8	31.8	65.0	257	221	146	43.7	48.3	9.3	
-09	NPS 2	10.00	10.00	6.00	6.00	2.92	1.94	1.94	1.81	1.81	1.50	1.50	3.12	11.12	9.42	7.00	2.16	2.38	27.0	117.6
	DN 50	254	254	152	152	74	49.3	49.3	46.0	46.0	38.1	38.1	79.2	282	239	178	54.9	60.5	12.2	

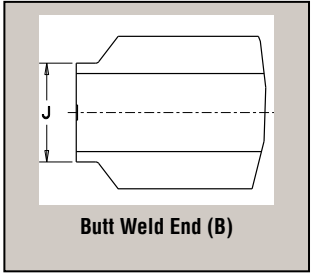
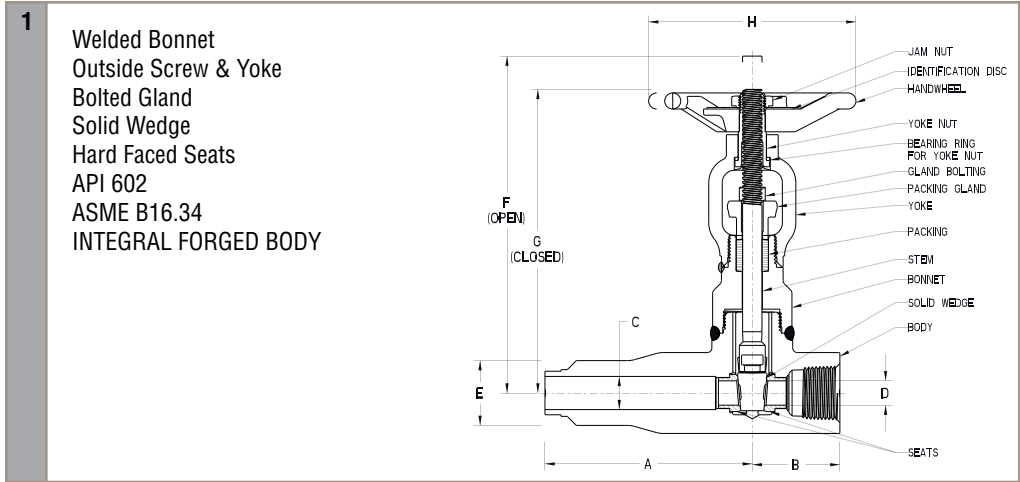
Refer to page 8 for optional trim and service configurations.

Refer to page 115 for female end connections.

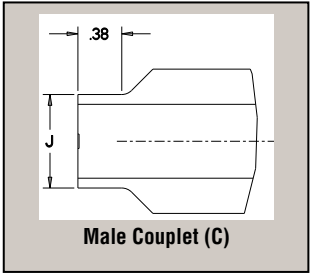
Refer to pages 11-12 for full materials description.

Refer to pages 116-117 for other ratings.

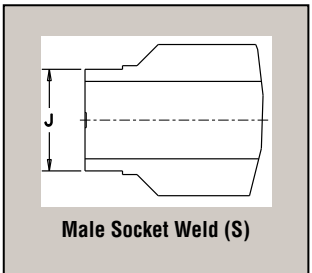
**GATE Class 800**



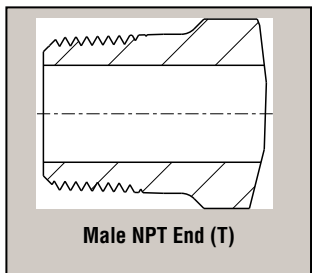
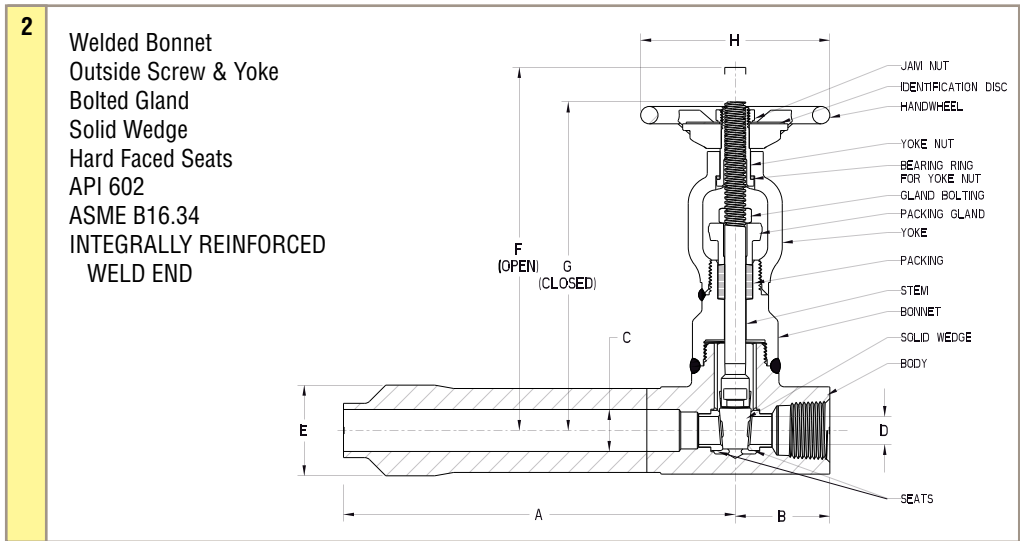
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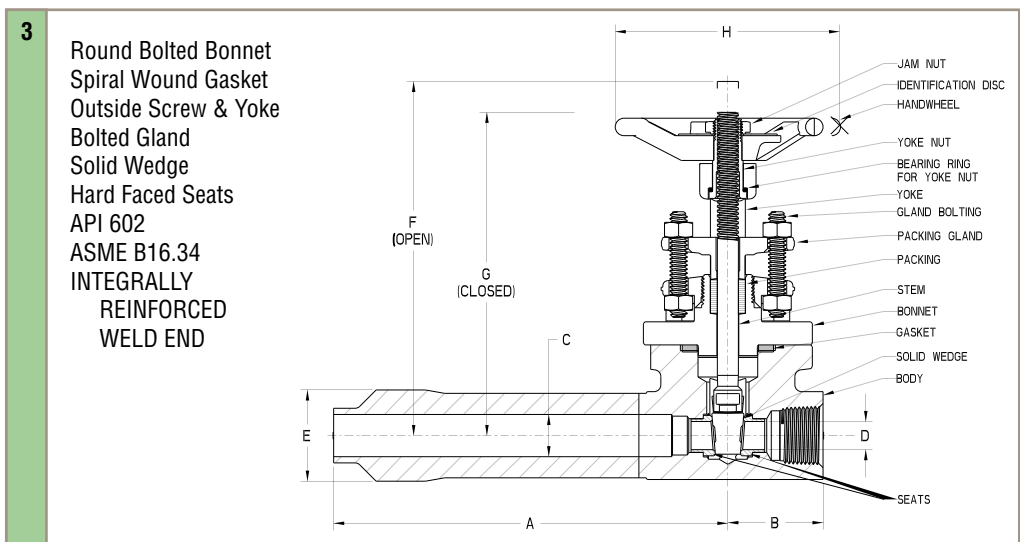
**(C)**



**(S)**



**(T)**



# Forged Gate Valves – Extended Body Valves

## Extended Body/Class 1500 Conventional Port Gate Valve

CONNECTION			
Extended Male End	Female End		
Butt Weld	Threaded	BT	(B)
Butt Weld	Socket Weld	BS	
Couplet	Threaded	CT	(C)
Couplet	Socket Weld	CS	
Socket Weld	Threaded	ST*	(S)
Socket Weld	Socket Weld	SS	

	SERIES	BODY/BONNET	TRIM	RATING	
1	15801*	A105	13%Cr	3705 PSI @ 100 F	255.3 BAR @ 38 C
	15831	F316/F316L	316	3600 PSI @ 100 F	248.2 BAR @ 38 C
2	15901	A105	13%Cr	3705 PSI @ 100 F	255.3 BAR @ 38 C
	15931	F316/F316L	316	3600 PSI @ 100 F	248.2 BAR @ 38 C
	15951	F11, Cl.2(1-1/4 Cr.)	13%Cr	3750 PSI @ 100 F	258.6 BAR @ 38 C
	15961	F22, Cl.3(2-1/4 Cr.)			
3	15111	A105	13%Cr	3705 PSI @ 100 F	255.3 BAR @ 38 C
	35111	A350 LF2		3705 PSI @ -50 F	255.3 BAR @ -46 C
	15401	F316/F316L	316	3600 PSI @ 100 F	248.2 BAR @ 38 C
	15321	F11, Cl.2(1-1/4 Cr.)	13%Cr	3750 PSI @ 100 F	258.6 BAR @ 38 C
	15521	F22, Cl.3(2-1/4 Cr.)			
	15421	F5(5 Cr.)			
	15921	F9(9 Cr.)			

\*Example Series Designation: ST15801, CT15901, BT15111, etc.

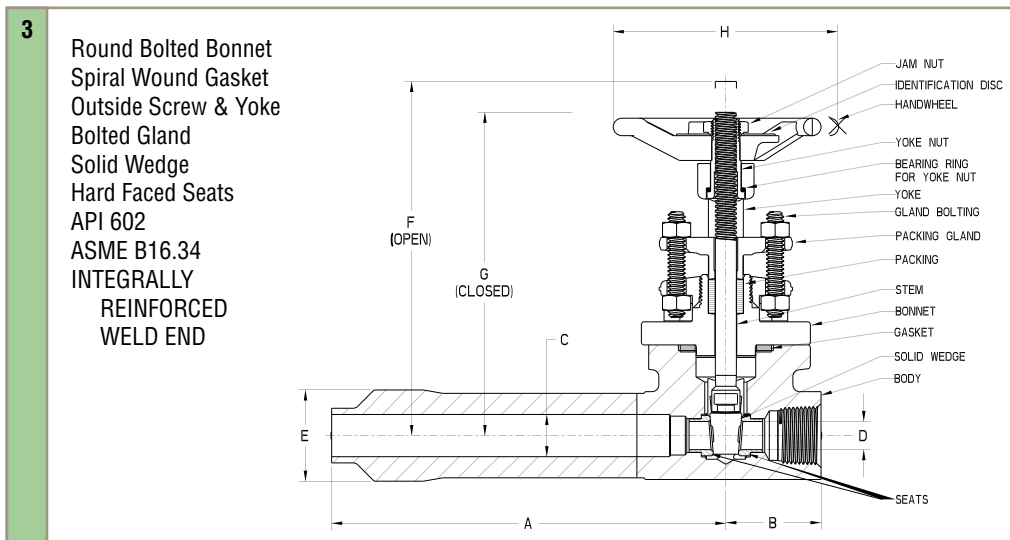
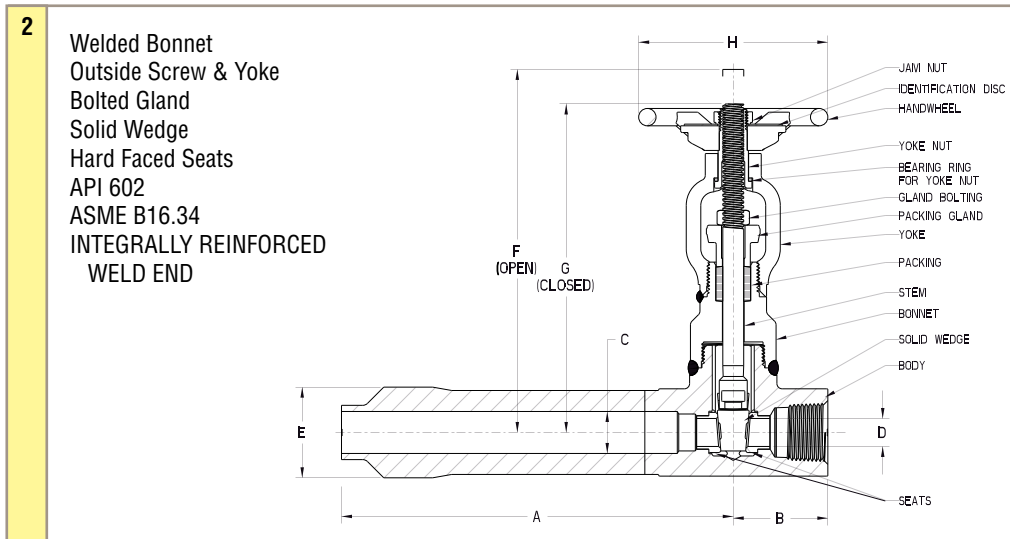
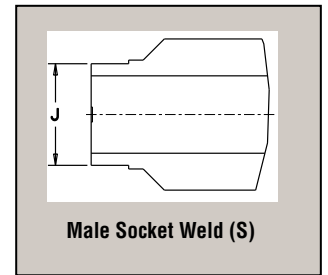
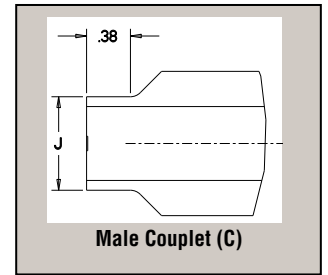
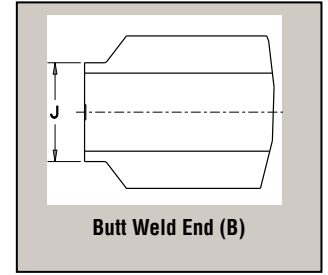
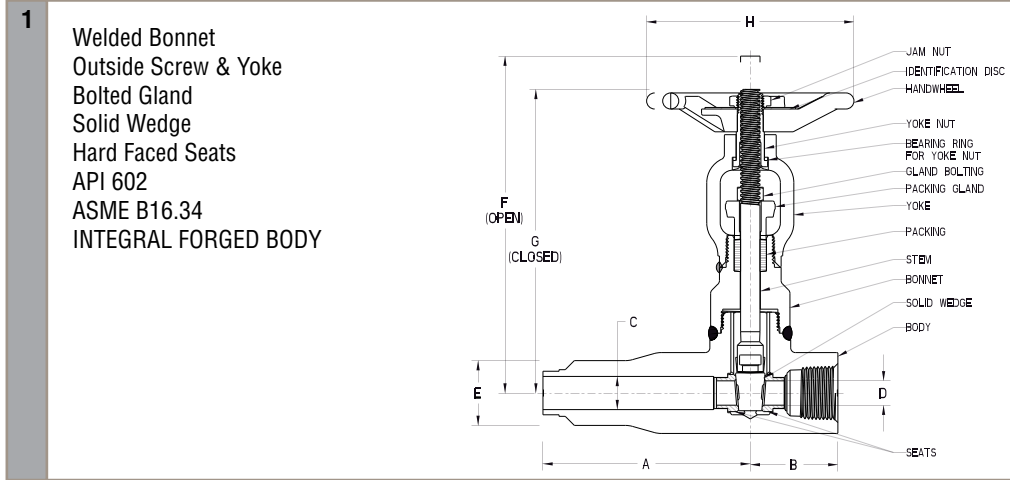
### Dimensions

SIZE	A	B	C(B)	C(C)	C(S)	D	D(T)	E	F	G	H	J	K	WEIGHT	Cv	
-04	NPS ½	4.69	2.00	.75	.75	.69	.50	.41	1.56	7.54	6.90	4.75	.81	.84	7.8	9.6
	DN 15	119	51	19.1	19.1	17.5	12.7	10.4	39.6	192	175	121	20.6	21.3	3.5	
-05	NPS ¾	4.69	2.00	.75	.75	.75	.50	.47	1.56	7.54	6.90	4.75	.81	1.05	7.7	9.7
	DN 20	119	51	19.1	19.1	19.1	12.7	11.9	39.6	192	175	121	20.6	26.7	3.5	
-06	NPS 1	5.37	2.38	1.00	1.00	1.12	.75	.69	2.25	9.69	8.77	7.00	1.06	1.32	15.5	20.3
	DN 25	136	60	25.4	25.4	28.4	19.1	17.5	57.2	246	223	178	26.9	33.5	7.0	
-04	NPS ½	6.50	2.00	.75	.75	.69	.50	.41	1.56	7.54	6.90	4.75	.97	.84	9.7	9.6
	DN 15	165	51	19.1	19.1	17.5	12.7	10.4	39.6	192	175	121	24.6	21.3	4.4	
-05	NPS ¾	7.50	2.00	.75	.75	.75	.50	.47	1.94	7.54	6.90	4.75	.97	1.05	9.6	9.7
	DN 20	191	51	19.1	19.1	19.1	12.7	11.9	49.3	192	175	121	24.6	26.7	4.4	
-06	NPS 1	7.50	2.38	1.00	1.00	1.12	.75	.69	1.94	9.69	8.77	7.00	1.22	1.32	17.2	20.3
	DN 25	191	60	25.4	25.4	28.4	19.1	17.5	49.3	246	223	178	31.0	33.5	7.8	
-08	NPS 1½	10.00	2.63	1.50	1.50	1.50	1.25	1.25	3.12	11.40	9.98	8.00	1.72	1.90	30.1	91.6
	DN 40	254	67	38.1	38.1	38.1	31.8	31.8	79.2	290	253	203	43.7	48.3	13.7	
-04	NPS ½	6.50	2.00	.75	.75	.69	.50	.41	1.56	7.51	6.90	4.75	.97	.84	10.6	9.6
	DN 15	165	51	19.1	19.1	17.5	12.7	10.4	39.6	191	175	121	24.6	21.3	4.8	
-05	NPS ¾	6.50	2.00	.75	.75	.75	.50	.47	1.56	7.51	6.90	4.75	.97	1.05	10.5	9.7
	DN 20	165	51	19.1	19.1	19.1	12.7	11.9	39.6	191	175	121	24.6	26.7	4.8	
-06	NPS 1	7.50	2.38	1.00	1.00	1.12	.75	.69	2.25	9.69	8.78	7.00	1.22	1.32	20.9	20.3
	DN 25	191	60	25.4	25.4	28.4	19.1	17.5	57.2	246	223	178	31.0	33.5	9.5	
-08	NPS 1½	10.00	2.63	1.50	1.50	1.50	1.25	1.25	3.12	11.40	9.98	8.00	1.72	1.90	36.9	91.6
	DN 40	254	67	38.1	38.1	38.1	31.8	31.8	79.2	290	253	203	43.7	48.3	16.7	

Refer to page 8 for optional trim and service configurations.  
Refer to page 115 for female end connections.

Refer to pages 11-12 for full materials description.  
Refer to pages 116-117 for other ratings.

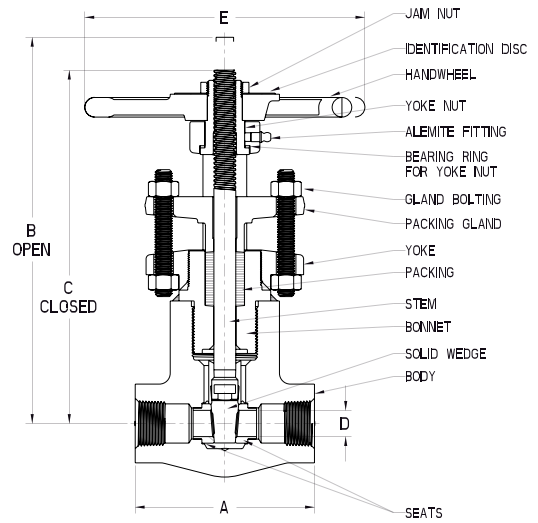
# GATE Class 1500



# Forged Gate Valves

## Class 2500/2680 Gate Valve Full Port

Welded Bonnet  
 Outside Screw & Yoke  
 Bolted Gland  
 Solid Hard Faced Wedge  
 Hard Faced Seats  
 ASME B16.34 LTD. Pressure Class



CONNECTION	SERIES	BODY/BONNET	TRIM	RATING		CLASS
Threaded Threaded X Socket Weld TSW	66703	A105	13% Cr.	6250 PSI @ 100 F	430.9 BAR @ 38 C	2500 LTD
	66743	A350 LF2		6250 PSI @ -50 F	430.9 BAR @ -46 C	
	66713	F11, Cl.2(1-1/4 Cr.)		6250 PSI @ 100 F	430.9 BAR @ 38 C	
	66773	F22, Cl.3(2-1/4 Cr.)				
	66791	F91				
Socket Weld	SW66703	A105	13% Cr.	6700 PSI @ 100 F	461.9 BAR @ 38 C	2680 LTD
	SW66743	A350 LF2		6700 PSI @ -50 F	461.9 BAR @ -46 C	
	SW66713	F11, Cl.2(1-1/4 Cr.)		6250 PSI @ 100 F	430.9 BAR @ 38 C	
	SW66773	F22, Cl.3(2-1/4 Cr.)				
	SW66791	F91		6700 PSI @ 100 F	461.9 BAR @ 38 C	

### Dimensions

SIZE			A	B	C	D	E	WEIGHT	Cv
-04	NPS	1/2	4.00	8.84	8.28	.41	5.75	10.0	5.0
	DN	15	102	225	210	10.4	146	4.5	
-05	NPS	3/4	5.12	11.03	10.09	.75	8.00	20.7	17.5
	DN	20	130	280	256	19.1	203	9.4	
-06	NPS	1	5.12	11.03	10.09	.75	8.00	20.3	16.1
	DN	25	130	280	256	19.1	203	9.2	
-08	NPS	1 1/2	8.50	15.86	14.12	1.50	12.00	90.8	109.6
	DN	40	216	403	359	38.1	305	41.2	
-09	NPS	2	8.50	15.86	14.12	1.50	12.00	88.3	100.2
	DN	50	216	403	359	38.1	305	40.1	

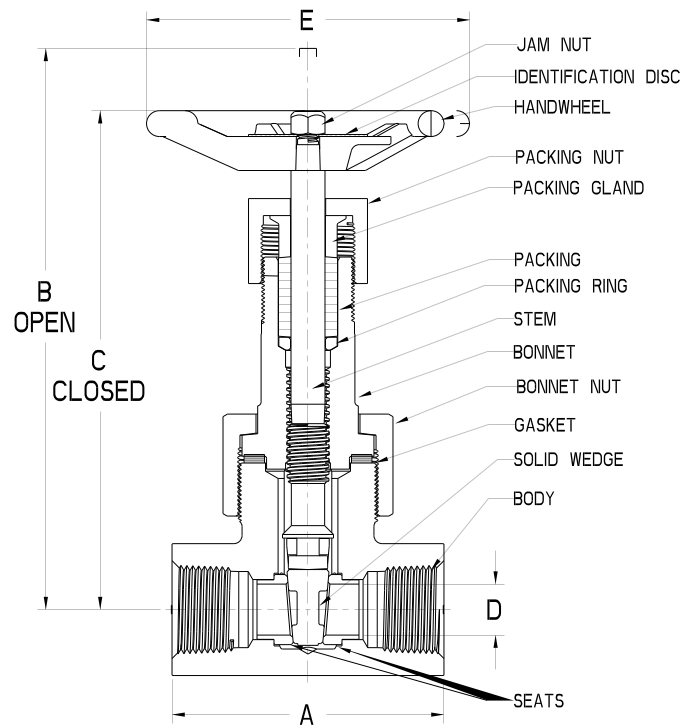
Refer to page 8 for optional trim and service configurations.  
 Refer to page 115 for end connections.

Refer to pages 11-12 for full materials description.  
 Refer to pages 116-117 for other ratings.

# Forged Gate Valves

## Class 800 Conventional Port Gate Valve

Union Bonnet  
Spiral Wound Gasket  
Inside Screw Stem  
Screw Gland  
Solid Wedge  
Hard Faced Seats  
API 602  
ASME B16.34



CONNECTION	SERIES	BODY/BONNET	TRIM	RATING	
Threaded	59851	A105	13% Cr	1975 PSI @ 100 F	136.2 BAR @ 38 C
Socket Weld					
Threaded/Socket Weld	59951	F316/F316L	316	1920 PSI @ 200 F	132.4 BAR @ 38 C

### Dimensions

SIZE	A	B	C	D	E	WEIGHT	Cv	
-04	NPS ½	3.38	6.44	5.88	.50	4.00	4.8	9.6
	DN 15	86	164	149	12.7	102	2.2	
-05	NPS ¾	3.38	6.44	5.88	.50	4.00	4.7	9.7
	DN 20	86	164	149	12.7	102	2.1	
-06	NPS 1	4.00	8.31	7.38	.75	4.75	7.9	20.3
	DN 25	102	211	187	19.1	121	3.6	
-07	NPS 1¼	4.75	10.75	9.38	1.25	5.75	16.4	80.5
	DN 32	121	273	238	31.8	146	7.4	
-08	NPS 1½	4.75	10.75	9.38	1.25	5.75	16.1	91.6
	DN 40	121	273	238	31.8	146	7.3	
-09	NPS 2	5.25	12.25	10.56	1.50	7.00	23.6	117.6
	DN 50	133	311	268	38.1	178	10.7	

A105 only

Refer to page 8 for optional trim and service configurations.  
Refer to page 115 for end connections.

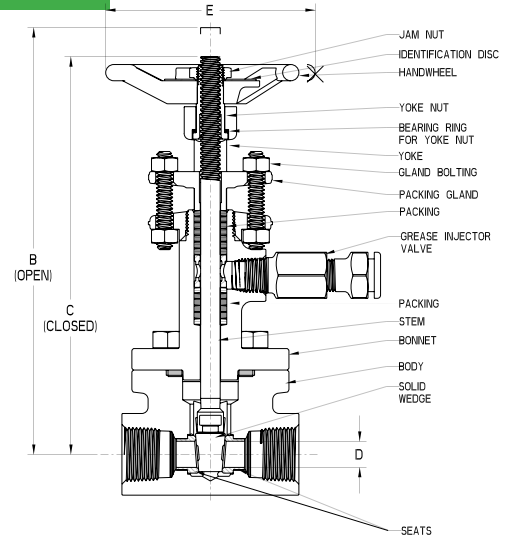
Refer to pages 11-12 for full materials description.  
Refer to pages 116-117 for other ratings.



**Forged Gate Valves – For HF Alkylation Service**  
**Forged Gate Valves – For Emmission Reduction**  
 Class 800 Gate Valve

- 1 Conventional Port
- 2 Full Port

Round Bolted Bonnet  
 Spiral Wound Gasket  
 Outside Screw & Yoke  
 Bolted Gland  
 Double Packing  
 Lantern Ring  
 Grease Injector  
 Solid Wedge  
 API 602 (12111ER & 13111ER)  
 ASME B16.34



(UOP) Universal Oil Products Approved							
CONNECTION	SERIES	BODY/BONNET	TRIM	SEATS	RATING		
Socket Weld	SW43211HF2	A105	Monel	Monel	1975 PSI @ 100 F	136.2 BAR @ 38 C	2
Vogt Alkylation valve - contains TEFLON - max temperature 500°F							
CONNECTION	SERIES	BODY/BONNET	TRIM	SEATS	RATING		
Threaded					1975 PSI @ 100 F	136.2 BAR @ 38 C	1
Socket Weld	SW	42211MTG	Monel	Monel	1975 PSI @ 100 F	136.2 BAR @ 38 C	1
Emission Reduction							
CONNECTION	SERIES	BODY/BONNET	TRIM	SEATS	RATING		
Threaded					1975 PSI @ 100 F	136.2 BAR @ 38 C	1
Socket Weld	SW	12111ER	13% Cr	13% CR Hardfaced	1975 PSI @ 100 F	136.2 BAR @ 38 C	1
Threaded / Socket Weld	TSW						1
Threaded					1975 PSI @ 100 F	136.2 BAR @ 38 C	2
Socket Weld	SW	13111ER	13% Cr	13% CR Hardfaced	1975 PSI @ 100 F	136.2 BAR @ 38 C	2
Threaded / Socket Weld	TSW						2

**Dimensions**

SIZE	A	B	C	D	E	WEIGHT	Cv		
-04	NPS ½	3.38	8.15	7.59	.50	4.00	5.9	9.6	7
	DN 15	86	207	193	12.7	102	2.7		
-05	NPS ¾	3.38	8.15	7.59	.50	4.00	5.8	9.7	
	DN 20	86	207	193	12.7	102	2.6		
-06	NPS 1	4.00	10.27	9.34	.75	4.75	9.8	20.3	
	DN 25	102	261	237	19.1	121	4.4		
-07	NPS 1¼	4.75	12.12	10.72	1.25	5.75	17.7	80.5	
	DN 40	121	308	272	31.8	146	17.6		
-08	NPS 1½	4.75	12.12	10.72	1.25	5.75	8.4	91.6	
	DN 40	121	308	272	31.8	146	3.8		
-09	NPS 2	5.25	13.38	11.69	1.50	7.00	23.0	117.6	
	DN 50	133	340	297	38.1	178	10.4		

SIZE	A	B	C	D	E	WEIGHT	Cv		
-04	NPS ½	3.38	8.15	7.59	.50	4.00	5.9	9.6	2
	DN 15	86	207	193	12.7	102	2.7		
-05	NPS ¾	4.00	10.27	9.34	.75	4.75	9.9	28.7	
	DN 20	102	261	237	19.1	121	4.5		
-06	NPS 1	4.38	11.36	10.15	1.00	5.75	13.4	46.5	
	DN 25	111	289	258	0.0	146	6.1		

Refer to page 8 for optional trim and service configurations.  
 Refer to page 115 for end connections.

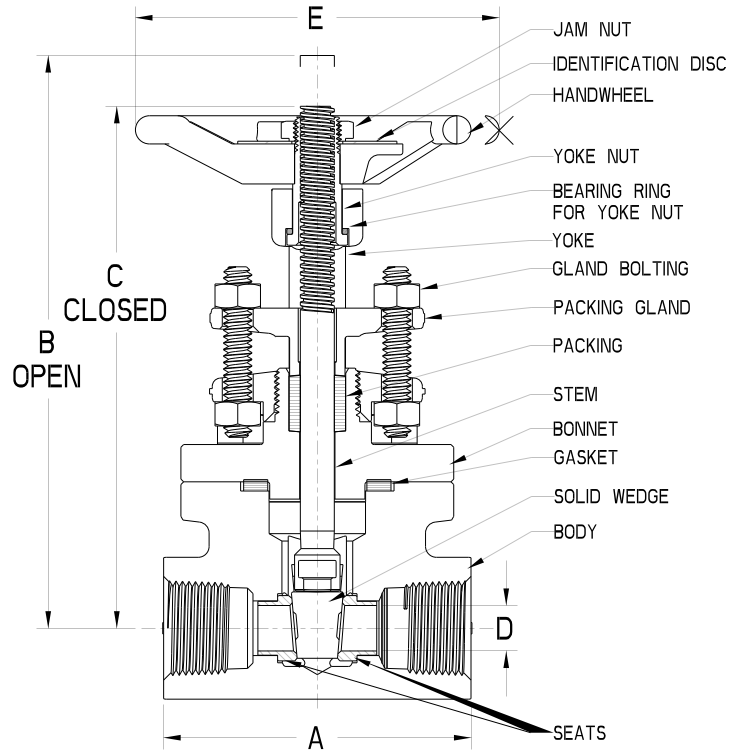
Refer to pages 11-12 for full materials description.  
 Refer to pages 116-117 for other ratings.

# Forged Gate Valves – For HF Alkylation Service

## Class 600 Full Port Gate Valve

Round Bolted Bonnet  
Spiral Wound Gasket  
Outside Screw & Yoke  
Bolted Gland  
Solid Wedge  
API 602  
ASME B16.34

See page 20 for Class 800  
UOP Approved Alkylation  
Service valves.



Listed in Phillips Petroleum Company's HF Alkylation Process Design Spec. Manual

CONNECTION	SERIES	BODY/BONNET	TRIM	RATING	
Threaded	43111MMP	A105	Monel	1480 PSI @ 100 F	102.1 BAR @ 38 C

### Dimensions

SIZE			A	B	C	D	E	WEIGHT	Cv
-04	NPS	½	3.38	6.30	5.75	.50	4.00	5.0	9.6
	DN	15	86	160	146	12.7	102	2.3	
-05	NPS	¾	4.0	8.37	7.43	.75	4.75	8.6	28.7
	DN	20	102	213	189	19.1	121	3.9	
-06	NPS	1	4.38	9.80	8.59	1.0	5.75	12.5	46.5
	DN	25	111	249	218	25.4	146	5.7	

Refer to pages 11-12 for full materials description.  
Refer to pages 116-117 for other ratings.

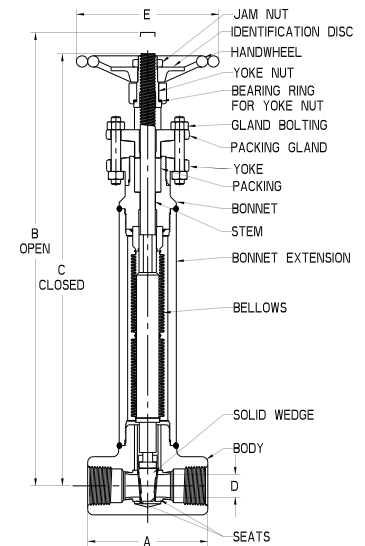
Refer to page 115 for end connections.

# Forged Gate Valves – Bellowseal

## Class 800 Gate Valve

- 1 Conventional Port
- 2 Full Port

- Welded Bonnet
- Outside Screw & Yoke
- Bolted Gland
- Solid Wedge
- ASME B16.34
- Seamless Multi-Ply Bellows 321 SS
- Stem - 316 SS
- Hard Faced Seats/Wedge



Bellowseal gate valves are suitable for applications requiring total containment of the flowing media frequently necessary to protect the environment and to eliminate the loss of hazardous and/or costly fluids. The valve packing is totally isolated by the bellows from the flowing media and pressure. The packing is incorporated in the valve to serve in a "back-up" role only.

CONNECTION	SERIES		BODY/BONNET	TRIM	RATING		
	1	2					
Threaded Socket Weld Threaded/Socket Weld	SW TSW	2801B	3801B	A105	13% Cr	1975 PSI @ 100 F	136.2 BAR @ 38 C
		32801B	33801B	A350 LF2	13% Cr	1975 PSI @ 100 F	136.2 BAR @ 38 C
					13% Cr	1975 PSI @ -50 F	136.2 BAR @ -46 C
		2831B	3831B	F316/F316L	316	1920 PSI @ 100 F	132.4 BAR @ 38 C

### Dimensions

SIZE	SIZE		A	B	C	D	E	WEIGHT	Cv	
	NPS	DN								
1	-04	NPS	½	3.38	10.56	10.06	.50	4.00	8.2	9.6
		DN	15	86	268	256	12.7	102	3.7	
	-05	NPS	¾	3.38	10.56	10.06	.50	4.00	8.1	9.7
		DN	20	86	268	256	12.7	102	3.7	
	-06	NPS	1	4.00	12.88	12.12	.75	4.75	9.5	20.3
		DN	25	102	327	308	19.1	121	4.3	
-08	NPS	1½	5.25	20.25	18.81	1.50	7.00	28.3	109.6	
	DN	40	133	514	478	38.1	178	12.8		
-09	NPS	2	5.25	20.25	18.81	1.50	7.00	27.8	117.6	
	DN	50	133	514	478	38.1	178	12.6		
2	-04	NPS	½	3.38	10.56	10.06	.50	4.00	4.2	9.6
		DN	15	86	268	256	12.7	102	1.9	
	-05	NPS	¾	4.00	12.88	12.12	.75	4.75	9.5	28.7
		DN	20	102	327	308	19.1	121	4.3	
	-08	NPS	1½	5.25	20.25	18.81	1.50	7.00	28.3	109.6
		DN	40	133	514	478	38.1	178	12.8	

Refer to page 8 for optional trim and service configurations.  
Refer to page 115 for end connections.

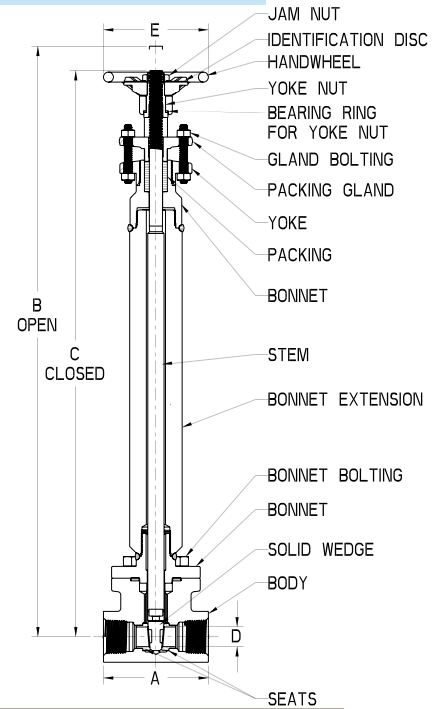
Refer to pages 11-12 for full materials description.  
Refer to pages 116-117 for other ratings.

# Forged Gate Valves – Cryogenic Service to -325°F (-198°C)

## Class 800 & 1500 Gate Valve

- 1 Conventional Port
- 2 Full Port

Round Bolted Bonnet  
 Spiral Wound Gasket  
 Outside Screw & Yoke  
 Bolted Gland  
 Solid Wedge  
 Hard Faced Seats  
 Extended Bonnet  
 ASME B16.34  
 MSS SP-134  
 Valve contains TEFLON – Max temp of 500° F



CONNECTION		SERIES		BODY/BONNET	TRIM	RATING		Class	
		1	2						
Threaded	Socket Weld	SW	12401C	13401C	F316/F316L	316	1920 PSI @ 100 F	132.4 BAR @ 38 C	800
							1920 PSI @ -325 F	132.4 BAR @ -198 C	
Threaded/Socket Weld	TSW		15401C	16401C	F316/F34L	316	3600 PSI @ 100 F	248.2 BAR @ 38 C	1500
							3600 PSI @ -325 F	248.2 BAR @ -198 C	

### Dimensions

1	Size		A	B	C	D	E	WEIGHT	Cv	2	Size		A	B	C	D	E	WEIGHT	Cv	Class 800
	NPS	DN									NPS	DN								
-04	NPS ½	3.38	18.30	17.74	.50	4.00	8.2	9.6	9.6	-04	NPS ½	3.38	18.30	17.74	.50	4.00	8.2	9.6	9.6	Class 800
	DN 15	86	465	451	12.7	102	3.7				DN 15	86	465	451	12.7	102	3.7			
-05	NPS ¾	3.38	18.30	17.74	.50	4.00	8.1	9.7	28.7	-05	NPS ¾	4.00	22.52	21.59	.75	4.75	20.5	28.7	28.7	Class 800
	DN 20	86	465	451	12.7	102	3.7				DN 20	102	572	548	19.1	121	9.3			
-06	NPS 1	4.00	22.52	21.59	.75	4.75	20.4	20.3	46.5	-06	NPS 1	4.38	22.52	21.59	1.00	5.75	37.3	46.5	46.5	Class 800
	DN 25	102	572	548	19.1	121	9.3				DN 25	111	572	548	25.4	146	16.9			
-07	NPS 1¼	4.75	27.06	25.84	1.25	5.75	40.0	80.5	80.5	-07	NPS 1¼	4.75	27.06	25.84	1.25	5.75	40.0	80.5	80.5	Class 800
	DN 32	121	687	656	31.8	146	18.1				DN 32	121	687	656	31.8	146	18.1			
-08	NPS 1½	4.75	27.06	25.84	1.25	5.75	40.0	91.6	109.6	-08	NPS 1½	5.25	28.21	26.52	1.50	7.0	35.0	109.6	109.6	Class 800
	DN 40	121	687	656	31.8	146	18.1				DN 40	133	717	674	38.1	178	15.9			
-09	NPS 2	5.25	28.21	26.52	1.50	7.00	35.0	117.6	117.6	-09	NPS 2	5.25	28.21	26.52	1.50	7.00	35.0	117.6	117.6	Class 800
	DN 50	133	717	674	38.1	178	15.9				DN 50	133	717	674	38.1	178	15.9			
-04	NPS ½	4.00	20.79	20.18	.50	4.75	14.9	9.6	9.6	-04	NPS ½	4.00	20.79	20.18	.50	4.75	14.9	9.6	9.6	Class 1500
	DN 15	102	528	513	12.7	121	6.8				DN 15	102	528	513	12.7	121	6.8			
-05	NPS ¾	4.00	20.79	20.18	.50	4.75	14.7	9.7	28.7	-05	NPS ¾	4.75	21.51	20.59	.75	7.0	25.5	28.7	28.7	Class 1500
	DN 20	102	528	513	12.7	121	6.7				DN 20	121	546	523	19.1	178	11.6			
-06	NPS 1	4.75	21.51	20.59	.75	7.0	25.0	20.3	46.5	-06	NPS 1	4.38	22.52	21.59	1.00	5.75	37.3	46.5	46.5	Class 1500
	DN 25	121	546	523	19.1	178	11.3				DN 25	111	572	548	25.4	146	16.9			
-07	NPS 1¼	5.25	26.53	25.11	1.25	8.0	39.6	80.5	80.5	-07	NPS 1¼	5.25	26.53	25.11	1.25	8.0	39.6	80.5	80.5	Class 1500
	DN 32	133	674	638	31.8	203	18.0				DN 32	133	674	638	31.8	203	18.0			
-08	NPS 1½	5.25	26.53	25.11	1.25	8.0	39.0	91.6	109.6	-08	NPS 1½	7.00	27.53	25.84	1.50	9.75	65.0	109.6	109.6	Class 1500
	DN 40	133	674	638	31.8	203	17.7				DN 40	178	699	656	38.1	248	29.5			
-09	NPS 2	7.00	27.53	25.84	1.50	9.75	64.1	117.6	117.6	-09	NPS 2	7.00	27.53	25.84	1.50	9.75	64.1	117.6	117.6	Class 1500
	DN 50	178	699	656	38.1	248	29.1				DN 50	178	699	656	38.1	248	29.5			

Refer to page 8 for optional trim and service configurations.  
 Refer to page 115 for end connections.

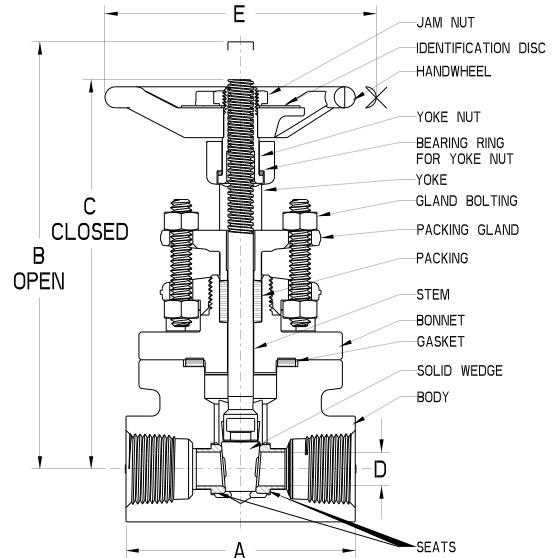
Refer to pages 11-12 for full materials description.  
 Refer to pages 116-117 for other ratings.

# Forged Gate Valves – Meets API-600 Required Wall Thickness

## Class 800 Gate Valve

- 1 Conventional Port
- 2 Full Port

Round Bolted Bonnet  
 Spiral Wound Gasket  
 Outside Screw & Yoke  
 Bolted Gland  
 Solid Wedge  
 Hard Faced Seats  
 Meets API-600 Required Wall Thickness  
 API 602  
 ASME B16.34



CONNECTION	SERIES		BODY/BONNET	TRIM	RATING		
	1	2					
Threaded Socket Weld Threaded x Socket Weld	SW TSW	12601	13601	A105	13% Cr	1975 PSI @ 100 F	136.2 BAR @ 38 C
		12602	13602	A350 LF2	13% Cr	1975 PSI @ 100 F	136.2 BAR @ 38 C
		12603	13603	F316/F316L	316	1920 PSI @ 100 F	132.4 BAR @ 38 C
		12604	13604	F11, Cl.2	*13% Cr	2000 PSI @ 100 F	137.9 BAR @ 38 C
		12605	13605	F22, Cl.3	*13% Cr	2000 PSI @ 100 F	137.9 BAR @ 38 C

\*Hardfaced Wedge/Seats

### Dimensions

SIZE	SIZE		A	B	C	D	E	WEIGHT	Cv
	NPS	DN							
1	-04	NPS ½	4.00	7.51	6.90	.50	4.75	8.9	9.6
		DN 15	101.6	191	175	12.7	121	4.0	
	-05	NPS ¾	4.00	7.51	6.90	.50	4.75	9.7	9.7
		DN 20	101.6	191	175	12.7	121	4.4	
	-06	NPS 1	4.75	9.69	8.77	.75	7.00	17.5	20.3
		DN 25	120.7	246	223	19.1	178	7.9	
-07	NPS 1¼	5.25	11.40	9.98	1.25	8.00	27.3	80.5	
	DN 32	133.4	290	253	31.8	203	12.4		
-08	NPS 1½	5.25	11.40	9.98	1.25	8.00	66.7	91.6	
	DN 40	133.4	290	253	31.8	203	30.3		
-09	NPS 2	7.00	13.84	12.15	1.50	9.75	45.1	117.6	
	DN 50	177.8	352	309	38.1	248	20.5		

2	-04	NPS ½	4.00	7.51	6.90	.50	4.75	17.5	9.6
		DN 15	101.6	191	175	12.7	121	7.9	
	-05	NPS ¾	4.75	9.69	8.77	.75	7.00	17.9	28.7
		DN 20	120.7	246	223	19.1	178	8.1	
	-06	NPS 1	5.25	11.31	9.96	1.00	8.00	28.3	46.5
		DN 25	133.4	287	253	25.4	203	12.8	
-07	NPS 1¼	5.25	11.40	9.98	1.25	8.00	27.3	80.5	
	DN 32	133.4	290	253	31.8	203	12.4		
-08	NPS 1½	7.00	13.84	12.15	1.50	9.75	75.0	109.6	
	DN 40	177.8	352	309	38.1	248	34.0		

Refer to page 8 for optional trim and service configurations.

Refer to pages 11-12 for full materials description.

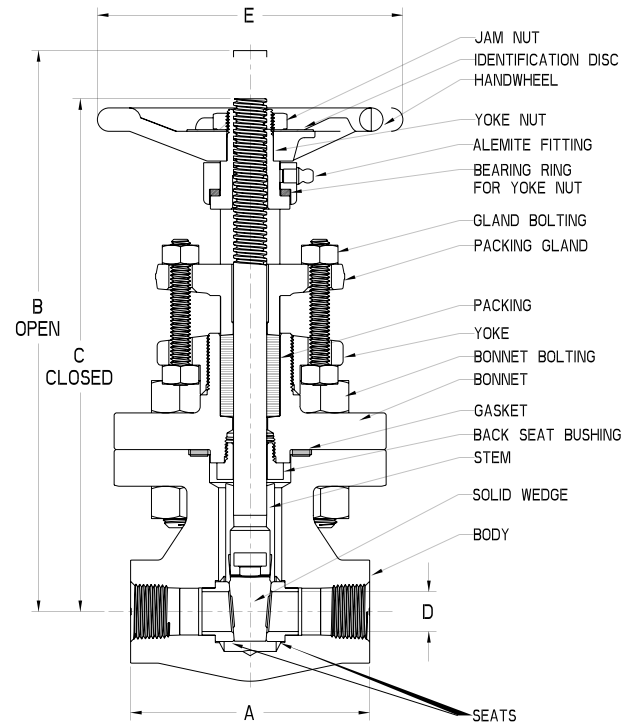
Refer to pages 114-115 for end connections.

Refer to pages 116-117 for other ratings.

# Forged Gate Valves – Meets API-600 Required Wall Thickness

## Class 800 Full Port Gate Valve

- Round Bolted Bonnet
- Spiral Wound Gasket
- Outside Screw & Yoke
- Bolted Gland
- Solid Wedge
- Hard Faced Seats
- Meets API 600 required wall thickness
- ASME B16.34



CONNECTION		SERIES	BODY/BONNET	TRIM	RATING	
Threaded		11103	A105	13% Cr	1975 PSI @ 100 F	136.2 BAR @ 38 C
Socket Weld	SW					

### Dimensions

SIZE			A	B	C	D	E	WEIGHT	Cv
-04	NPS	½	3.62	9.52	8.78	.56	4.75	12.4	9.6
	DN	15	92	242	223	14.2	121	5.6	
-05	NPS	¾	4.50	10.56	9.65	.75	5.75	19.9	28.7
	DN	20	114	268	245	19.1	146	9.0	
-06	NPS	1	5.00	11.75	10.56	1.0	7.00	29.4	46.5
	DN	25	127	298	268	25.4	178	13.3	
-07	NPS	1¼	6.50	14.12	12.62	1.25	8.00	41.2	80.5
	DN	32	165	359	321	31.8	203	18.7	
-08	NPS	1½	7.25	16.37	14.68	1.50	9.75	63.0	109.6
	DN	40	184	416	373	38.1	248	28.6	
-09	NPS	2	9.00	19.00	16.81	2.00	9.75	90.8	181.0
	DN	50	229	483	427	50.8	248	41.2	

Refer to page 8 for optional trim and service configurations.  
Refer to page 115 for end connections.

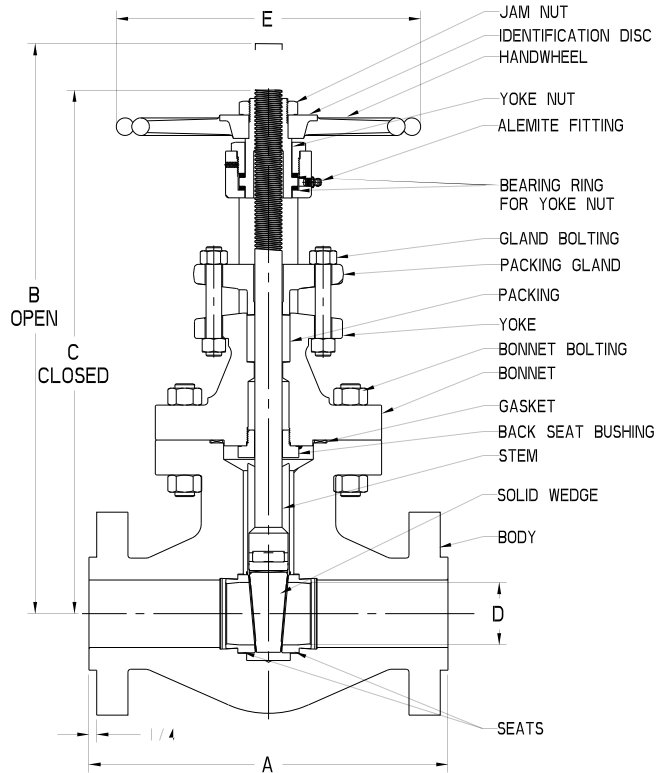
Refer to pages 11-12 for full materials description.  
Refer to pages 116-117 for other ratings.



# Forged Gate Valves – Meets API-600 Required Wall Thicknesses

## Class 600 gate Valve Full Port

- Round Bolted Bonnet
- Spiral Wound Gasket
- Outside Screw & Yoke
- Bolted Gland
- Solid Wedge
- Hard Faced Seats
- Meets API 600 required wall thickness
- ASME B16.34



CONNECTION	SERIES	BODY/BONNET	TRIM	RATING
1/4 RF	11403	A105	13% Cr	1480 PSI @ 100 F 102.1 BAR @ 38 C

SIZE	A	B	C	D	E	WEIGHT	Cv
-04	NPS ½	6.50	10.44	9.69	.56	4.75	19.5
	DN 15	165	265	246	14.2	121	8.8
-05	NPS ¾	7.50	11.31	10.38	.75	5.75	31.2
	DN 20	191	287	264	19.1	146	14.2
-06	NPS 1	8.50	12.56	11.44	1.00	7.00	45.0
	DN 25	216	319	291	25.4	178	20.4
-07	NPS 1¼	9.00	14.12	12.62	1.25	8.00	57.4
	DN 32	229	359	321	31.8	203	26.0
-08	NPS 1½	9.50	16.38	14.69	1.50	9.75	76.2
	DN 40	241	416	373	38.1	248	34.6
-09	NPS 2	11.50	19.00	16.81	2.00	9.75	105.0
	DN 50	292	483	427	50.8	248	47.6

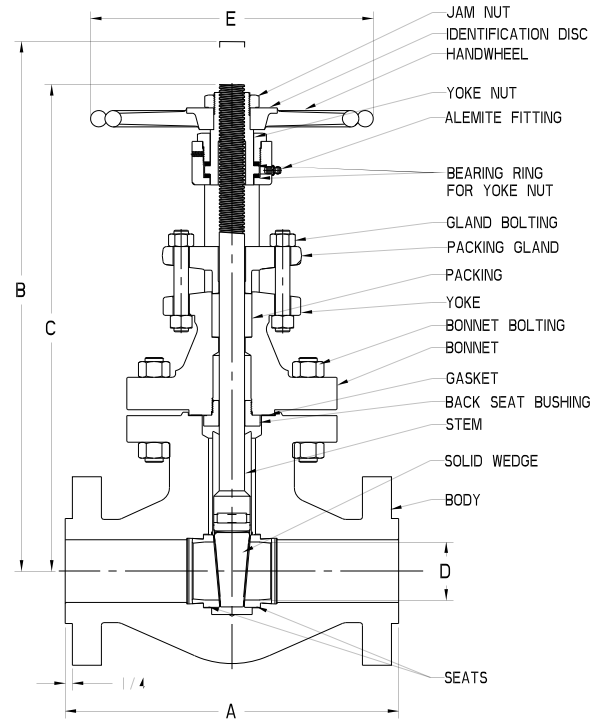
Refer to page 8 for optional trim and service configurations.  
Refer to page 113 for end connections.

Refer to pages 11-12 for full materials description.  
Refer to pages 116-117 for other ratings.

# Forged Gate Valves – Meets API-600 Required Wall Thicknesses

## Class 1500 Full Port Flanged Gate Valve

- Round Bolted Bonnet
- Outside Screw & Yoke
- Bolted Gland
- Solid Wedge
- Hard Faced Seats
- Meets API 600 required wall thickness
- ASME B16.34



BONNET GASKET	CONNECTION	SERIES	BODY/BONNET	TRIM	RATING	
Flat Gasket Joint	1/4 RF	11603	A105	13% Cr	3705 PSI @ 100 F	255.3 BAR @ 38 C
Ring Joint Gasket (Not illustrated)	Ring Joint (Not illustrated)	11683	A105	13% Cr	3705 PSI @ 100 F	255.3 BAR @ 38 C

### Dimensions

SIZE			A	B	C	D	E	WEIGHT	Cv
-04	NPS	1/2	8.50	12.12	11.38	.56	7.00	43.3	11.8
	DN	15	216	308	289	14.2	178	19.6	
-05	NPS	3/4	9.00	14.00	12.94	.75	7.00	55.0	28.7
	DN	20	229	356	329	19.1	178	24.9	
-06	NPS	1	10.00	15.62	14.50	.88	8.00	76.0	32.0
	DN	25	254	397	368	22.4	203	34.5	
-07	NPS	1 1/4	11.00	17.75	16.44	1.12	9.75	92.0	83.2
	DN	32	279	451	418	28.4	248	41.7	
-08	NPS	1 1/2	12.00	20.12	18.38	1.38	12.00	117.8	109.6
	DN	40	305	511	467	35.1	305	53.4	
-09	NPS	2	14.50	23.56	21.25	2.00	13.75	230.0	181.0
	DN	50	368	598	540	50.8	349	104.3	

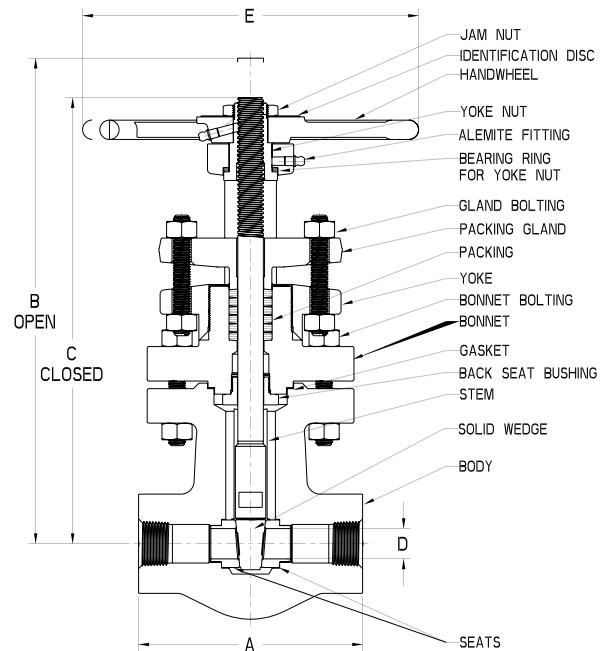
Refer to page 8 for optional trim and service configurations.  
Refer to page 113 for end connections.

Refer to pages 11-12 for full materials description.  
Refer to pages 116-117 for other ratings.

# Forged Gate Valves

## Class 1500 Full Port Gate Valve

Round Bolted Bonnet  
 Outside Screw & Yoke  
 Bolted Gland  
 Solid Wedge  
 Hard Faced Seats  
 Meets API 600 required wall thickness  
 ASME B16.34



BONNET GASKET	CONNECTION	SERIES	BODY/BONNET	TRIM	RATING
Flat Gasket Joint	Threaded Socket Weld SW	1033	A105	13% Cr	3705 PSI @ 100 F 255.3 BAR @ 38 C
Ring Joint Gasket (Not illustrated)	Threaded Socket Weld SW	1043	A105	13% Cr	3705 PSI @ 100 F 255.3 BAR @ 38 C

### Dimensions

SIZE	A	B	C	D	E	WEIGHT	Cv
-04	NPS ½	4.50	10.75	10.00	.56	5.75	21.9
	DN 15	114	273	254	14.2	146	9.9
-05	NPS ¾	5.00	11.69	10.75	.75	7.00	29.9
	DN 20	127	297	273	19.1	178	13.6
-06	NPS 1	6.50	14.06	12.94	.88	8.00	44.4
	DN 25	165	357	329	22.4	203	20.1
-07	NPS 1¼	7.25	13.38	14.88	1.25	9.75	63.0
	DN 32	184	340	378	31.8	248	28.6
-08	NPS 1½	9.00	18.75	17.12	1.38	9.75	100.0
	DN 40	229	476	435	35.1	248	45.4
-09	NPS 2	9.50	21.00	18.69	2.00	12.00	116.3
	DN 50	241	533	475	50.8	305	52.8

Refer to page 8 for optional trim and service configurations.  
 Refer to page 115 for end connections.

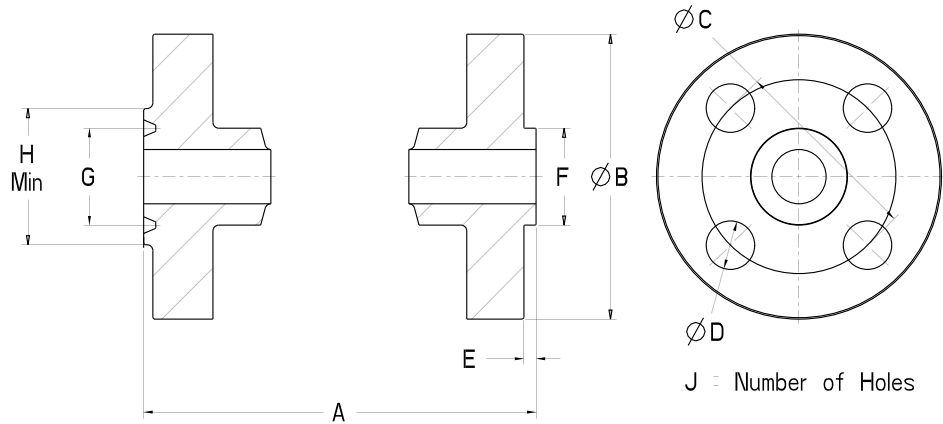
Refer to pages 11-12 for full materials description.  
 Refer to pages 116-117 for other ratings.

# End Connections

## Raised Face & Ring Joint Flange

Valve flanges conform to ASME Standard B16.5 and end-to-end dimensions conform to ASME B16.10

- A0 - Raised Face - Gate, Globe, Check
- A1 - Raised Face - Gate
- A2 - Raised Face - Globe, Check
- A3 - Ring Joint - Gate, Globe
- A4 - Raised Face - Swing Check



### Dimensions

			CLASS 150									
SIZE			A1	A2	B	C	D	E	F	G	H	J
-04	NPS	½	4.25	4.25	3.50	2.38	0.62	0.06	1.38			4
	DN	15	108.0	108.0	88.9	60.45	15.8	1.52	35.1			
-05	NPS	¾	4.62	4.62	3.88	2.75	0.62	0.06	1.69			4
	DN	20	117.4	117.4	98.6	69.85	15.8	0.06	42.9			
-06	NPS	1	5.00	5.00	4.25	3.12	0.62	0.06	2.00	1.875	2.50	4
	DN	25	127.0	127.0	108.0	79.25	15.8	1.52	50.8	47.63	63.5	
-07	NPS	1¼	5.50	5.50	4.62	3.50	0.62	0.06	2.50	2.250	2.88	4
	DN	32	139.7	139.7	117.4	88.90	15.8	1.52	63.5	57.15	73.2	
-08	NPS	1½	6.50	6.50	5.00	3.88	0.62	0.06	2.88	2.562	3.25	4
	DN	40	165.1	165.1	127.0	98.55	15.8	1.52	73.2	65.07	82.6	
-09	NPS	2	7.00	8.00	6.00	4.75	0.75	0.06	3.62	3.250	4.00	4
	DN	50	177.8	203.2	152.4	120.65	19.1	1.52	92.0	82.55	101.6	
-10	NPS	2½	7.50	8.50	7.00	5.50	0.75	0.06	4.12	4.000	4.75	4
	DN	65	190.5	215.9	177.8	139.70	19.1	1.52	104.7	101.60	120.7	
-11	NPS	3	8.00	9.50	7.50	6.00	0.75	0.06	5.00	4.500	5.25	4
	DN	80	203.2	241.3	190.5	152.40	19.1	1.52	127.0	114.30	133.4	
-13	NPS	4	9.00	11.50	9.00	7.50	0.75	0.06	6.19	5.875	6.75	8
	DN	100	228.6	292.1	228.6	190.50	19.1	1.52	157.2	149.23	171.5	

			CLASS 300										
SIZE			A1	A2	A4	B	C	D	E	F	G	H	J
5.50	6.00	6.00	3.75	2.62	0.62	0.06	1.38	1.344	2.00				4
6.00	7.00	7.00	4.62	3.25	0.75	0.06	1.69	1.688	2.50				4
6.50	8.00	8.50	4.88	3.50	0.75	0.06	2.00	2.00	2.75				4
7.00	8.50	9.00	5.25	3.88	0.75	0.06	2.50	2.375	3.12				4
7.50	9.00	9.50	6.12	4.50	0.88	0.06	2.88	2.688	3.56				4
8.50	10.50	10.50	6.50	5.00	0.75	0.06	3.62	3.250	4.25				8
9.50	11.50	11.50	7.50	5.88	0.88	0.06	4.12	4.000	5.00				8
11.12	12.50	12.50	8.25	6.62	0.88	0.06	5.00	4.875	5.75				8
12.00	14.00	14.00	10.00	7.88	0.88	0.06	6.19	5.875	6.88				8

### Dimensions

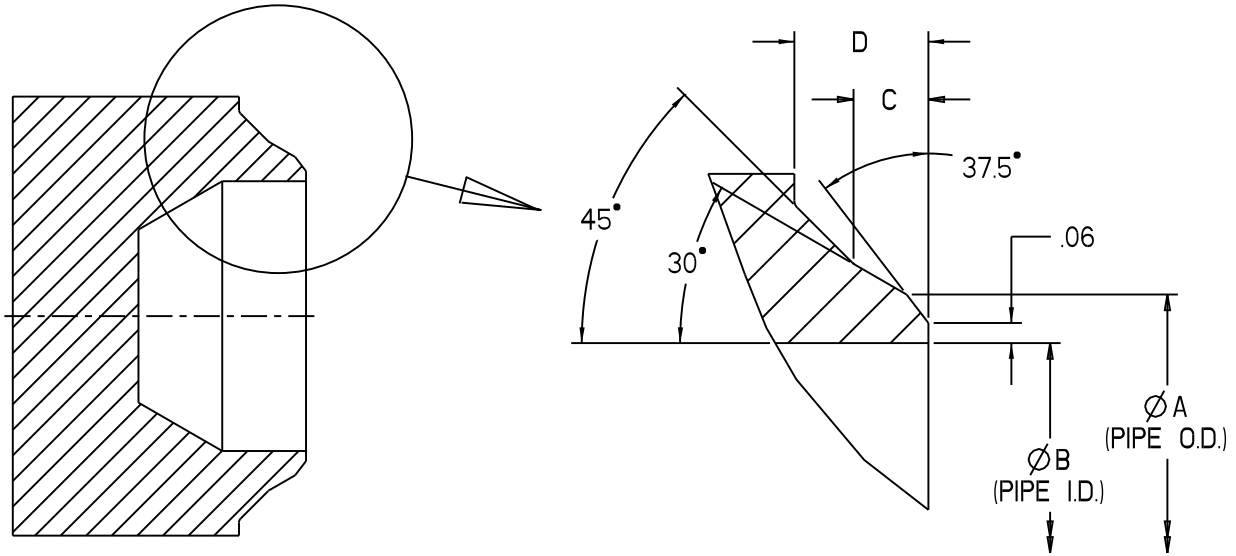
			CLASS 600									
SIZE			A1	A2	B	C	D	E	F	G	H	J
-04	NPS	½	6.50	6.50	3.75	2.62	0.62	0.25	1.38	1.344	2.00	4
	DN	15	165.1	165.1	95.3	66.55	15.8	6.35	35.1	34.14	50.8	
-05	NPS	¾	7.50	7.50	4.62	3.25	0.75	0.25	1.69	1.688	2.50	4
	DN	20	190.5	190.5	117.4	82.55	19.1	0.06	42.9	42.88	63.5	
-06	NPS	1	8.50	8.50	4.88	3.50	0.75	0.25	2.00	2.00	2.75	4
	DN	25	215.9	215.9	124.0	88.90	19.1	6.35	50.8	50.80	69.9	
-07	NPS	1¼	9.00	9.00	5.25	3.88	0.75	0.25	2.50	2.375	3.12	4
	DN	32	228.6	228.6	133.4	98.55	19.1	6.35	63.5	60.33	79.3	
-08	NPS	1½	9.50	9.50	6.12	4.50	0.88	0.25	2.88	2.688	3.56	4
	DN	40	241.3	241.3	155.5	114.30	22.4	6.35	73.2	68.28	90.4	
-09	NPS	2	11.50	11.62	6.50	5.00	0.75	0.25	3.62	3.250	4.25	8
	DN	50	292.1	295.2	165.1	127.00	19.1	6.35	92.0	82.55	108.0	
-10	NPS	2½	13.00	13.12	7.50	5.88	0.88	0.25	4.12	4.000	5.00	8
	DN	65	330.2	333.3	190.5	149.35	22.4	6.35	104.7	101.60	127.0	
-11	NPS	3	14.00	14.12	8.25	6.62	0.88	0.25	5.00	4.875	5.75	8
	DN	80	355.6	358.7	209.6	168.15	22.4	6.35	127.0	123.83	146.1	
-13	NPS	4	17.00	17.12	10.75	8.50	1.00	0.25	6.19	5.875	6.88	8
	DN	100	431.8	434.9	273.1	215.90	25.4	6.35	157.2	149.23	174.8	

			CLASS 1500									
SIZE			A0	A3	B	C	D	E	F	G	H	J
8.50	8.50	4.75	3.25	0.88	0.25	1.38	1.562	2.38				4
9.00	9.00	5.12	3.50	0.88	0.25	1.69	1.750	2.62				4
10.00	10.00	5.88	4.00	1.00	0.25	2.00	2.000	2.81				4
11.00	11.00	6.25	4.38	1.00	0.25	2.50	2.375	3.19				4
12.00	12.00	7.00	4.88	1.12	0.25	2.88	2.688	3.62				4
14.50	14.62	8.50	6.50	1.00	0.25	3.62	3.750	4.88				8
16.50	16.62	9.62	7.50	1.12	0.25	4.12	4.250	5.38				8
18.50	18.62	10.50	8.00	1.25	0.25	5.00	5.375	6.62				8
21.50	21.62	12.25	9.50	1.38	0.25	6.19	6.375	7.62				8

# End Connections

## Butt Weld End Valves

Conforms to ASME B16.25



### Dimensions

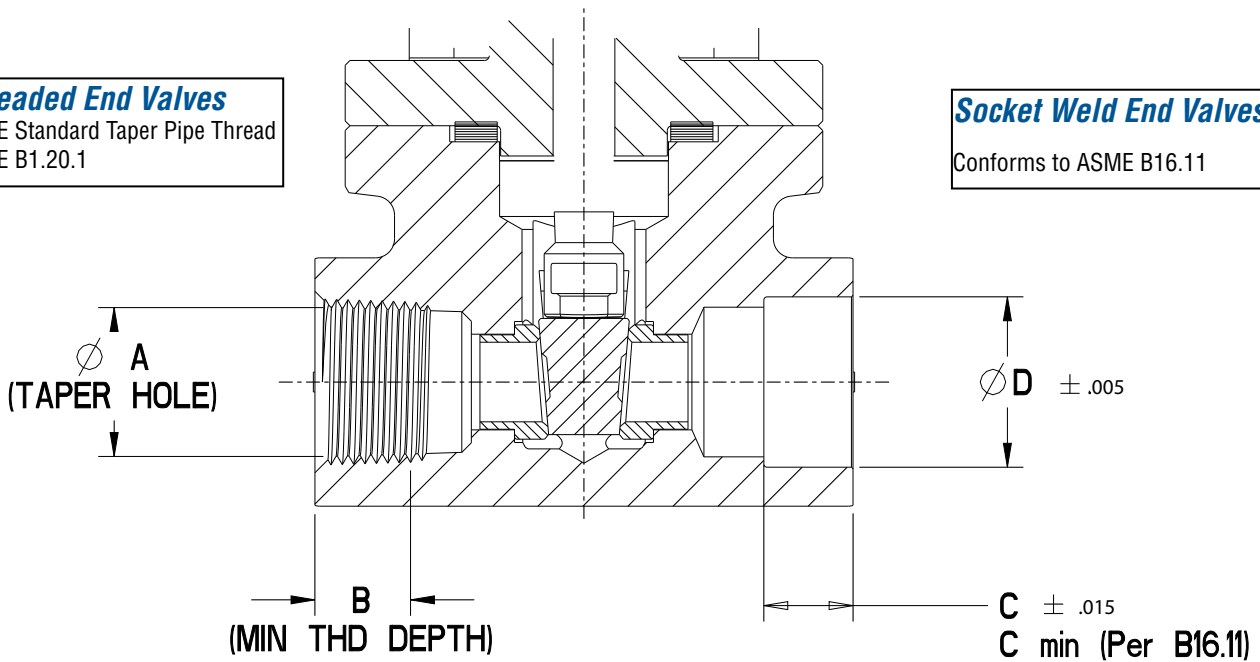
SIZE		A	SCH 40			SCH 80			SCH 160			SCH XXS		
			B	C	D	B	C	D	B	C	D	B	C	D
-04	NPS ½	0.84	0.622	0.16	0.22	0.546	0.22	0.29	0.466	0.28	0.37	0.252	0.44	0.59
	DN 15	21.3	15.8	4.2	5.5	13.87	5.6	7.5	11.84	7.1	9.5	6.4	11.2	14.9
-05	NPS ¾	1.05	0.824	0.17	0.23	0.742	0.23	0.31	0.614	0.33	0.44	0.434	0.46	0.62
	DN 20	26.7	20.93	4.3	5.7	18.85	5.9	7.8	15.6	8.3	11.1	11.02	11.7	15.7
-06	NPS 1	1.315	1.049	0.2	0.27	0.957	0.27	0.36	0.815	0.38	0.5	0.599	0.54	0.72
	DN 25	33.4	26.64	5.1	6.8	24.31	6.8	9.1	20.7	9.5	12.7	15.21	13.6	18.2
-07	NPS 1¼	1.66	1.38	0.21	0.28	1.278	0.29	0.38	1.16	0.38	0.5	0.896	0.57	0.76
	DN 32	42.2	35.05	5.3	7.1	32.46	7.3	9.7	29.46	9.5	12.7	22.76	14.6	19.4
-08	NPS 1½	1.9	1.61	0.22	0.29	1.5	0.3	0.4	1.338	0.42	0.56	1.1	0.6	0.8
	DN 40	48.3	40.89	5.5	7.4	38.1	7.6	10.2	33.99	10.7	14.3	27.94	15.2	20.3
-09	NPS 2	2.375	2.067	0.23	0.31	1.939	0.33	0.44	1.689	0.51	0.69	1.503	0.65	0.87
	DN 50	60.3	52.5	5.9	7.8	49.25	8.3	11.1	42.9	13.1	17.4	38.18	16.6	22.2
-10	NPS 2½	2.875	2.469	0.3	0.41	2.323	0.41	0.55	2.125	0.56	0.75	1.771	0.83	1.1
	DN 65	73	62.71	7.7	10.3	59	10.5	14	53.98	14.3	19.1	44.98	21	28
-11	NPS 3	3.5	3.068	0.32	0.43	2.9	0.45	0.6	2.624	0.66	0.88	2.3	0.9	1.2
	DN 80	88.9	77.93	8.2	11	73.66	11.4	15.2	66.65	16.7	22.3	58.42	22.9	30.5
-13	NPS 4	4.5	4.026	0.36	0.47	3.826	0.51	0.67	3.438	0.8	1.06	3.152	1.01	1.35
	DN 100	114.3	102.26	9	12	97.18	12.8	17.1	87.33	20.2	27	80.06	25.7	34.2

## End Connections

### Threaded End Valves

**Threaded End Valves**  
ASME Standard Taper Pipe Thread  
ASME B1.20.1

**Socket Weld End Valves**  
Conforms to ASME B16.11



### Dimensions

SIZE	THREADED				SOCKET WELD		
	A	B	THD'S/IN	C	C MIN	D	
-04	NPS ½	0.725	0.59	14	0.44	0.38	0.860
	DN 15	18.42	15.0		11.2	9.7	21.84
-05	NPS ¾	0.935	0.59	14	0.56	0.50	1.070
	DN 20	23.75	15.0		14.2	12.7	27.18
-06	NPS 1	1.173	0.75	11½	0.56	0.50	1.335
	DN 25	29.79	19.1		14.2	12.7	33.91
-07	NPS 1¼	1.518	0.78	11½	0.56	0.50	1.680
	DN 32	38.56	19.8		14.2	12.7	42.67
-08	NPS 1½	1.756	0.81	11½	0.56	0.50	1.920
	DN 40	44.60	20.6		14.2	12.7	48.77
-09	NPS 2	2.231	0.84	11½	0.69	0.62	2.411
	DN 50	56.67	21.3		17.5	15.8	61.24
-10	NPS 2½	2.666	1.25	8	0.69	0.62	2.911
	DN 65	67.72	31.8		17.5	15.8	73.94
-11	NPS 3	3.293	1.31	8	0.69	0.62	3.540
	DN 80	83.64	33.3		17.5	15.8	89.92





# Pressure-temperature Ratings for Vogt Products

STANDARD CLASS. - PRESSURE					RATINGS ARE IN ACCORDANCE WITH ASME B16.34-2004, LIMITED CLASS. - PRESSURE (PSIG)																				
CLASS 1500					CLASS 800 LTD				CLASS 1500 LTD				CLASS 1690 LTD				CLASS 2500 LTD				CLASS 2680 LTD				
316H	LF2	F9	F11	F22	SERVICE TEMP	A105	F11	F22	F91	A105	F11	F22	F91	A105	F11	F22	F91	A105	F11	F22	F91	A105	F11	F22	F91
	3705				-50 F																				
3600	3705	3750	3750	3750	-20 TO 100 F	2000	2000	2000	2000	3750	3750	3750	3750	4225	4225	4225	4225	6250	6250	6250	6250	6700	6700	6700	6700
3095	3395	3750	3750	3750	200 F	2000	2000	2000	2000	3750	3750	3750	3750	4225	4225	4225	4225	6250	6250	6250	6250	6700	6700	6700	6700
2795	3270	3640	3610	3640	300 F	1975	2000	1975	2000	3700	3750	3695	3750	4170	4225	4165	4225	6170	6250	6160	6250	6615	6700	6605	6700
2570	3170	3530	3465	3530	400 F	1955	2000	1940	2000	3665	3750	3640	3750	4130	4225	4100	4225	6105	6250	6065	6250	6545	6700	6500	6700
2390	3015	3325	3325	3325	500 F	1955	2000	1935	2000	3665	3750	3620	3750	4130	4225	4080	4225	6105	6250	6035	6250	6545	6700	6470	6700
2255	2840	3025	3025	3025	600 F	1955	2000	1925	2000	3665	3750	3605	3750	4130	4225	4060	4225	6105	6250	6010	6250	6545	6700	6440	6700
2210	2745	2940	2940	2940	650 F	1905	2000	1905	2000	3575	3750	3580	3750	4030	4225	4035	4225	5960	6250	5965	6250	6390	6700	6395	6700
2170	2655	2840	2840	2840	700 F	1945	1955	1885	1955	3455	3665	3535	3665	3895	4130	3985	4130	5760	6110	5895	6110	6175	6550	6320	6550
2135	2535	2660	2660	2660	750 F	1695	1945	1885	1945	3170	3645	3535	3645	3570	4105	3985	4105	5285	6070	5895	6070	5665	6505	6320	6510
2110	2055	2540	2540	2540	800 F	1375	1920	1885	1920	2570	3600	3535	3600	2895	4055	3985	4055	4285	6000	5895	6000	4595	6430	6320	6430
2090	1595	2435	2435	2435	850 F	1060	1805	1805	1805	1996	3385	3385	3385	2245	3815	3815	3815	3320	5645	5645	5645	3560	6050	6050	6050
2075	1150	2245	2245	2245	900 F	765	1565	1600	1600	1435	2935	3000	3000	1615	3305	3380	3380	2395	4895	5000	5000	2565	5245	5360	6360
1930	685	1885	1595	1930	950 F	465	1075	1275	1275	875	2040	2410	2410	990	2305	2725	2725	1485	3445	4075	4075	1595	3700	4380	4380
1820	430	1270	1080	1335	1000 F	295	745	925	1160	570	1445	1785	2250	650	1640	2030	2555	1000	2520	3120	3925	1085	2725	3375	4245
1800		855	720	875	1050 F		495	600	1160		960	1170	2250		1095	1330	2555		1680	2040	3925		1815	2205	4245
1525		565	480	550	1100 F		330	375	1040		640	730	2015		730	835	2290		1120	1280	3520		1210	1385	3810
1185		375	325	345	1150 F		225	235	765		435	460	1490		495	520	1695		760	800	2600		825	865	2810
925		255	205	205	1200 F		145	145	495		275	275	960		310	310	1095		480	480	1680		520	520	1815
735					1250 F																				
585					1300 F																				
480					1350 F																				
380					1400 F																				
290					1450 F																				
205					1500 F																				

STANDARD CLASS. - PRES-SURE					RATINGS ARE IN ACCORDANCE WITH ASME B16.34-2004, LIMITED CLASS. - PRESSURE (BAR)																				
CLASS 1500					CLASS 800 LTD				CLASS 1500 LTD				CLASS 1690 LTD				CLASS 2500 LTD				CLASS 2680 LTD				
316H	LF2	F9	F11	F22	SERVICE TEMP	A105	F11	F22	F91	A105	F11	F22	F91	A105	F11	F22	F91	A105	F11	F22	F91	A105	F11	F22	F91
	255.3				-46 C																				
248.2	255.3	258.6	258.6	258.6	-29 TO 38C	137.9	137.9	137.9	137.9	258.6	258.6	258.6	258.6	291.3	291.3	291.3	291.3	430.9	430.9	430.9	430.9	461.9	461.9	461.9	461.9
240.6	250.6	258.6	258.6	258.6	50 C	137.9	137.9	137.9	137.9	258.6	258.6	258.6	258.6	291.3	291.3	291.3	291.3	430.9	430.9	430.9	430.9	461.9	461.9	461.9	461.9
211.0	233.0	257.6	257.4	257.6	100 C	137.7	137.9	137.7	137.9	258.2	258.6	258.1	258.6	290.9	291.3	290.8	291.3	430.9	430.9	430.2	430.9	461.3	461.9	461.2	461.9
192.5	225.4	250.8	248.7	250.9	150 C	136.1	137.9	135.9	137.9	255.2	258.6	254.8	258.6	287.5	291.3	287.1	291.3	425.3	430.9	424.6	430.9	455.9	461.9	455.2	461.9
178.3	219.0	243.4	239.8	243.4	200 C	134.8	137.9	133.9	137.9	252.9	258.6	251.1	258.6	284.9	291.3	282.9	291.3	421.4	430.9	418.5	430.9	451.7	461.9	448.6	461.9
166.9	209.7	231.8	231.8	231.8	250 C	134.8	137.9	133.3	137.9	252.6	258.6	249.9	258.6	284.6	291.3	281.6	291.3	421.1	430.9	416.5	430.9	451.4	461.9	446.5	461.9
158.1	199.1	214.4	214.4	214.4	300 C	134.8	137.9	132.7	137.9	252.6	258.6	248.9	258.6	284.6	291.3	280.4	291.3	421.1	430.9	414.8	430.9	451.4	461.9	444.7	461.9
154.4	193.6	206.6	206.6	206.6	325 C	133.6	137.9	132.3	137.9	250.6	258.6	248.0	258.6	282.3	291.3	279.4	291.3	417.6	430.9	413.3	430.9	447.7	461.9	443.1	461.9
151.6	187.8	201.1	201.1	201.1	350 C	130.4	137.1	131.2	137.1	244.6	257.1	246.0	257.1	275.6	289.7	277.2	289.7	407.6	428.6	410.0	428.6	436.9	459.5	439.5	459.5
149.4	181.8	194.1	194.1	194.1	375 C	125.6	134.7	130.0	134.7	235.5	252.5	243.8	252.5	265.3	284.5	274.7	284.5	392.5	420.9	406.3	420.9	420.8	451.2	435.6	451.2
147.2	173.6	183.1	183.1	183.1	400 C	115.7	133.9	130.0	133.9	217.0	251.2	243.8	251.2	244.5	282.9	274.7	282.9	361.7	418.3	406.3	418.3	387.7	448.4	435.6	448.4
145.7	143.8	175.1	175.1	175.1	425 C	95.9	132.4	130.0	132.4	179.8	248.2	248.3	248.2	202.6	279.6	274.7	279.6	299.6	413.7	406.3	413.7	321.2	443.5	435.6	443.5
144.2	115.0	169.0	169.0	169.1	450 C	76.7	125.7	125.7	125.7	143.8	235.8	235.8	235.8	162.0	265.7	265.7	265.7	239.6	393.1	393.1	393.1	256.9	421.4	421.4	421.4
143.4	87.2	158.2	158.2	158.2	475 C	58.1	114.0	114.0	114.0	109.0	213.7	213.7	213.7	122.8	240.8	240.8	240.8	181.6	356.3	356.3	356.3	194.7	382.0	382.0	382.0
140.9	58.8	140.9	128.6	140.9	500 C	39.2	85.8	95.2	95.2	73.5	160.8	178.6	178.6	82.8	182.2	201.2	201.2	122.4	268.0	297.5	279.5	131.2	287.3	318.9	318.9
125.5	29.5	87.5	74.5	92.2	538 C	20.4	51.4	63.6	80.0	39.4	99.5	123.1	155.1	44.8	113.1	139.9	176.2	69.0	173.7	215.2	270.7	74.6	187.8	232.6	292.7
124.9		75.0	63.5	78.2	550 C		43.9	53.9	80.0		84.9	104.4	155.1		96.5	118.7	176.2		148.3	182.3	270.7		160.3	197.2	292.7
119.7		52.3	44.0	52.6	575 C		30.4	36.3	78.9		58.8	70.3	152.8		68.8	79.9	173.7		102.7	122.9	266.9		111.1	132.9	288.6
99.5		35.9	30.5	34.4	600 C		21.1	23.7	67.3		40.8	46.0	130.3		46.4	52.2	148.1		71.2	80.3	227.5		77.0	86.8	246.0
79.1		24.8	21.3	22.3	625 C		14.7	15.4	50.4		28.4	29.8	97.6		32.3	33.9	110.9								

## Cv Factors

TYPICAL SERIES NO.	NPS	½	¾	1	1¼	1½	2	2½	3	4
	DN	15	20	25	32	40	50	65	80	100
353, 363, 373, 353R, 12401C, 2801, 2811, 2831, 12111, 12161, 12321, 12401, 12421, 12521, 15111, 15373, 15801, ST15801, 32111, 35111, 42211MTG, 59851, 59951	9.6	9.7	20.3	80.5	91.6	117.6	174.0	203.9	230.0	
13111, 13373, 16111, 43111MMP, SW-43211HF2	9.6	28.7	46.5	80.5	109.6	181.0	-	-	-	
11103, 11403	9.6	28.7	46.5	80.5	109.6	181.0	242.3	322.7	-	
2801B	9.6	9.7	20.3	-	109.6	117.6	-	-	-	
CT-2801, ST-2801, TT-2801, CT-2831, ST-2831, TT-2831	6.5	9.0	27.7	-	78.0	-	-	-	-	
CT-2901, CT, BT, TT, ST-12111	9.6	9.7	20.3	-	78.0	-	-	-	-	
1033, 1043, 11603, 11683	11.8	28.7	32.0	83.2	109.6	181.0	-	-	-	
66703, 66713	5.0	17.4	16.1	-	109.6	100.2	-	-	-	
473, 483, 493, 801, 851, 2821, 12141, 12181, 12501, 12501C	2.4	4.3	7.3	14.2	20.4	23.1	-	-	-	
473B, 483B, 493B, 12141B	2.2	5.7	5.2	-	21.1	20.5	-	-	-	
22141CL, 22141F8M, 22141MT, 22493CL, 22493MT, 42241HF2	1.7	3.1	5.9	13.7	18.4	22.5	-	-	-	
10103, 10403	3.4	7.3	11.9	15.5	28.2	46.9	-	85.1	-	
SW-23141HF4, 43241MMP, 43241MTP	0.7	5.9	13.7	-	21.0	34.0	-	-	-	
13141	3.0	6.8	14.5	17.2	24.4	37.6	-	-	-	
CT-12141, ST-12141, TT-12141	2.4	4.3	7.3	-	20.4	-	-	-	-	
12443	1.46	2.38	4.54	-	9.65	14.6	-	-	-	
1971	2.6	4.5	11.9	21.0	31.4	52.0	-	-	-	
22461	0.68	0.99	1.5	-	-	-	-	-	-	
15141, 15493, 15821	3.1	3.3	5.9	-	13.8	21.4	-	-	-	
1003, 1023, 10603, 10683	3.6	6.0	10.2	15.1	24.2	39.8	-	-	-	
15443	1.46	2.38	4.54	-	11.5	13.0	-	-	-	
1510, 1511, 1522	6.0	4.0	9.3	-	57.8	48.9	-	-	-	
66723, 66733, 66793	1.2	4.3	5.8	-	17.6	19.3	-	-	-	
2510, 2511, 2522	1.8	4.3	9.4	-	32.7	49.4	-	-	-	
R2510, R2511, R2522	1.5	3.9	7.9	-	29.3	39.8	-	-	-	
1331T, 1871T, 3991T	2.9	3.8	8.1	15.3	18.4	25.5	-	-	-	
2891T, 9841T	2.6	4.5	11.9	19.0	25.0	49.0	-	-	-	
9821T, 9871T, 58431T	1.8	3.5	5.8	7.6	11.7	17.7	-	-	-	
573, 583, 593, 701, 701ZL, B701, 718, B718, 32701, 82718	2.1	3.2	5.8	13.3	18.3	25.3	-	-	-	
9091, B9091	3.6	6.7	11.8	20.2	26.1	43.3	-	-	-	
SWB-43721HF2	0.7	5.9	11.8	-	22.6	32.6	-	-	-	
4835	3.3	4.4	17.0	28.2	43.0	63.0	-	-	-	
13701	3.2	6.9	16.0	18.3	25.5	36.9	-	-	-	
54853, 54863	8.7	15.1	30.5	29.1	37.7	45.3	-	-	-	
S74, S701	9.2	6.8	22.0	-	54.6	81.9	-	-	-	
15593, 15701, B15701	3.2	3.3	6.3	13.3	11.0	19.6	-	-	-	
1551, B1551	2.1	4.1	7.3	10.5	17.6	23.3	-	-	-	
810, 811, 822	4.5	9.1	21.3	-	70.0	79.1	-	-	-	

## Flow Data Utilizing Cv Factors

FORMULAS			Fluid Flow Nomenclature
TYPE FLOW	FLOW RATE	PRESSURE DROP	
LIQUID	$Q = Cv \sqrt{\frac{\Delta P}{S}}$	$\Delta P = S \left(\frac{Q}{Cv}\right)^2$	<p><math>Cv</math> - Flow coefficient for valves and fittings.</p> <p><math>P_1</math> - Absolute inlet pressure. (PSIA)</p> <p><math>\Delta P</math> - Pressure drop in pounds per square inch. (PSI)</p> <p><math>Q</math> - Liquid flow in gallons per minute. (GPM)</p> <p><math>q'_m</math> - Rate of gas flow in cubic feet per minute at standard conditions, 14.7 psia and 60°F. (SCFM)</p> <p><math>S</math> - Specific gravity of flowing liquid relative to water at 60°F.</p> <p><math>S_g</math> - Specific gravity of gas relative to air.</p> <p><math>s</math> - Number of degrees of superheat for steam in °F.</p> <p><math>T_1</math> - Absolute inlet temperature in degrees Rankine. (°R)</p> <p><math>W</math> - Steam or vapor flow rate in pounds per hour. (LBS./HR.)</p>
GAS	$q'_m = 22.6 Cv \sqrt{\frac{\Delta P \times P_1}{T_1 S_g}}$	$\Delta P = \frac{.00195 T_1 S_g}{P_1} \left(\frac{q'_m}{Cv}\right)^2$	
WHEN $\Delta P \geq .5P_1$	$q'_m = \frac{13.9 P_1 Cv}{\sqrt{S_g T_1}}$		
DRY SATURATED STEAM			
WHEN $\Delta P < .5P_1$	$W = 2.97 Cv \sqrt{\Delta P \times P_1}$	$\Delta P = \frac{.113}{P_1} \left(\frac{W}{Cv}\right)^2$	
WHEN $\Delta P \geq .5P_1$	$W = 1.82 Cv P_1$		
SUPERHEATED STEAM			
WHEN $\Delta P < .5P_1$	$W = \frac{2.97 Cv \sqrt{\Delta P \times P_1}}{(1 + .0007s)}$	$\Delta P = \frac{.113}{P_1} \left(\frac{W(1 + .0007s)}{Cv}\right)^2$	
WHEN $\Delta P \geq .5P_1$	$W = \frac{1.82 Cv P_1}{(1 + .0007s)}$		

## Flow Data Utilizing Cv Factors (Metric Version)

FORMULAS			Fluid Flow Nomenclature
TYPE FLOW	FLOW RATE	PRESSURE DROP	
LIQUID	$Q = .865Cv \sqrt{\frac{\Delta P}{S}}$	$\Delta P = 1.34S \left(\frac{Q}{Cv}\right)^2$	<p><math>Cv</math> - Flow coefficient for valves and fittings.</p> <p><math>P_1</math> - Absolute inlet pressure. (BAR)</p> <p><math>\Delta P</math> - Pressure drop in bars.</p> <p><math>Q</math> - Liquid flow in cubic meters per hour.</p> <p><math>q'_H</math> - Rate of gas flow in cubic meters per hour at standard conditions, 1.01 BAR @ 15.6°C.</p> <p><math>S</math> - Specific gravity of flowing liquid relative to water at 16°C.</p> <p><math>S_g</math> - Specific gravity of gas relative to air.</p> <p><math>s</math> - Number of degrees of superheat for steam in °C.</p> <p><math>T_1</math> - Absolute inlet temperature in degrees Kelvin. (°K)</p> <p><math>W</math> - Steam or vapor flow rate in kilograms per hour. (KGS./HR.)</p>
GAS	$q'_H = 414.97 Cv \sqrt{\frac{\Delta P \times P_1}{T_1 S_g}}$	$\Delta P = \frac{5.81 \times 10^{-6} T_1 S_g}{P_1} \left(\frac{q'_H}{Cv}\right)^2$	
WHEN $\Delta P \geq .5P_1$	$q'_H = \frac{255.2 P_1 Cv}{\sqrt{S_g T_1}}$		
DRY SATURATED STEAM			
WHEN $\Delta P < .5P_1$	$W = 19.53 Cv \sqrt{\Delta P \times P_1}$	$\Delta P = \frac{.00262}{P_1} \left(\frac{W}{Cv}\right)^2$	
WHEN $\Delta P \geq .5P_1$	$W = 11.97 Cv P_1$		
SUPERHEATED STEAM			
WHEN $\Delta P < .5P_1$	$W = \frac{19.1 Cv \sqrt{\Delta P \times P_1}}{(1 + 0.00123s)}$	$\Delta P = \frac{0.00274}{P_1} \left(\frac{W(1 + 0.00123s)}{Cv}\right)^2$	
WHEN $\Delta P \geq .5P_1$	$W = \frac{11.71 Cv \times P_1}{(1 + 0.00123s)}$		

## Meeting the Demands of Today

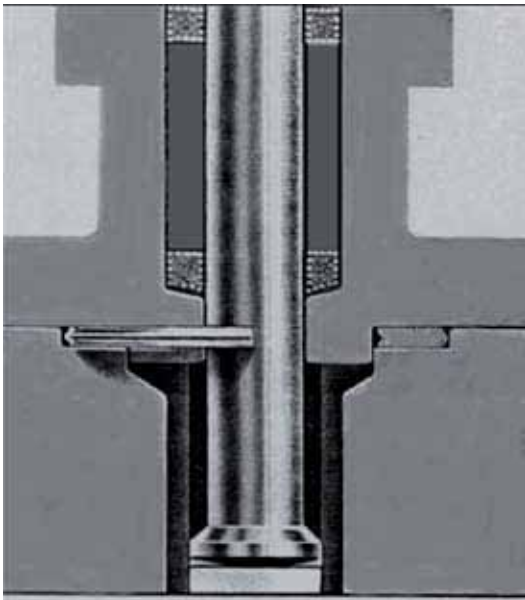
### Asbestos-Free Valves

Asbestos-Free Packing  
Asbestos-Free Gasket

SAFE – EFFICIENT in retaining high and low temperature media.

### ADVANCED TECHNOLOGY PROVIDES:

- Environmental acceptance
- Elimination of media contamination
- Leak-proof integrity
- High thermal conductivity
- Self-lubricating operation
- Shrinkage resistance
- Corrosion-resistant inhibitor
- Less frequent maintenance
- Longer service life



### STANDARD PACKING

Vogt standard valves are packed with one of the following asbestos-free packing sets:

### FLEXIBLE GRAPHITE PACKING

A 95% by weight minimum carbon packing set that consists of a cylindrical ring of flexible graphite packing supported on the top and bottom and braided graphite filament packing rings. The packing dispersed and embedded active corrosion inhibitor to protect against stem pitting. It may be used in fluids having a pH range of 0-14. The packing has minimal residues as follows:

Leachable Chlorides: 100PPM maximum  
Total Chlorides: 500PPM Maximum  
Total Sulfur: 1000PPM Maximum  
PTFE: None

### MOLDED TFE TEFLON-SHAPED PACKING

Vogt valves that have a series number suffixed with the letter "T" are packed with a molded, shaped TFE packing. This virgin TFE material needs no corrosion inhibitor in its composition, and its self-energizing shape ensures superior service and low gland bolting loads in high pressure liquid and dry gas applications. It may also be used in fluids having a pH range of 0-14. Temperature range: -120°F to 500°F (-84° to 260°C).

Since this packing has directional sealing, it can be reoriented for valves used in vacuum and/or combination vacuum/pressure service.

### OTHER PACKING

Other packing sets can be placed in Vogt valves at the user's option.







## Material Compatibility Chart

 1 - Acceptable for Use  
 0 - Not Acceptable for Use

Chemical	Material						
	A105, A182 F5, F9, F11, F22	A182 F316	13 CR	Type 316	Monel	Hastelloy	Teflon Viton Neoprene Ethylene Propylene Buna N Flexible Graphite Packing
Calgon	1	1	1	1			1 1 1 1
Camphene	1						
Camphor	1	1	1	1	1		
Cane Sugar Liquor	1	1	1	1	1	1	1 1 1 1 1
Carbolic Acid (phenol)	1	1	1	1	1	1	0 0 1
Carbon Dioxide(dry)	1	1	1	1	1		1
Carbon Dioxide(wet)	1	1	1	1			1
Carbon Disulfide	1	1	1	1			1 1 0 0 0 1
Carbon Monoxide	1	1	1	1	1		1
Carbon Tetrachloride	1	1	1	1	1		0 0 0 1
Carbonated Beverages	1	1	1	1	1		
Carbonated Water	1	1	1	1			1 1 1 1 1
Carbonic Acid	1	1	1	1	1		
Castor Oil	1	1	1	1			1 1 1 1
Catechol					1		
Caustic Soda	1	1	1	1	1	1	
Cellosolve (butyl or ethyl)	1	1	1	1			
Cellosolve (methyl)	1	1	1	1			
China Wood Oil (tung)	1	1	1	1	1		0 1
Chloracetic Acid	0	0	0	1	1		0 0
Chlorbromomethane	1	1	1	1			
Chlorex	0	1	0	1			
Chloric Acid	0						
Chlorinated Water	0	1	1	0	0	1	
Chlorine (dry)	1	1	1	1	1	1	1
Chlorine (wet)	0	0	0	0	0	0	1
Chlorobenzene	1	1	1	1			0
Chloroethane	1						
Chloroethylbenzene							
Chloroform (dry)	1	1	1	1	1		0 0 0 1
Chlorosulfonic Acid (dry)	1	1	1	1	1		1
Chlorox					0	1	0 1 0
Chrome Plating Solution	1	1	1	0			
Chromic Acid (contains SO3)	0	1	0	1	0	0	1 0 1 0
Chromic Acid (free of SO3)	0	1	0	1	0		1 0 1 0
Chromium Sulfate	0	1	1	1	1		
Cider	1	1	1	1	1		1
Citric Acid	1	1	0	1	1	1	1 1
Clay Slurries	1						
Coal Tar (creosote)	1	1	1	1	1		1
Coca Cola Syrup	0	1	1				
Coconut Oil	1	1	1	1	1		
Cod Liver Oil	1	1	1	1			1
Coffee	0	1	1	1	1	1	1 1 1 1 1
Coke Oven Gas	1	1	1	1	1	1	1
Copal Varnish	1	1	0	1			
Copper Acetate	0	1	1				
Copper Carbonate	1	1	1				
Copper Chloride	0	0	0	0	1	1	1 1 1 1 1
Copper Cyanide	0	1	1	1	1	1	
Copper Nitrate	0	1	1	0	0	1	1 1 1 1 1
Copper Sulfate	0	1	1	1	1	1	1 1 1 1 1
Core Oil	1	1	1	1	1	1	

Chemical	Material						
	A105, A182 F5, F9, F11, F22	A182 F316	13 CR	Type 316	Monel	Hastelloy	Teflon Viton Neoprene Ethylene Propylene Buna N Flexible Graphite Packing
Cornstarch Slurries	2				1		1
Cottonseed Oil	1	1	1	1	1		1
Cream of Tartar	1	1					
Cresylic Acid	0	1	1	1	1	1	1 0 0 0
Cupric Chloride	0	0	0	1	0	1	1
Cupric Nitrate	1	1	0	0			
Cyanogen Chloride	1						
Cyanohydrin	1						
Cyclohexane	1	1		1	1	1	1
Cyclohexylamine				1			1
DDT	1	1					1
Detergents	1	1	1				
Developing Solutions	0	1	1	1	1		
Dextrose	1	1					
Diacetone				1			1 0
Diamylamine				1			1 1 1
Dichloroethane	0	1					0 0 0
Dichloropentane				1			0 0
Diesel Oil (light)	1	1	1	1	1	1	1 1 0 1 1
Diethanolamine				1			1 1 1
Diethyl Sulfate	1	1		1	1		1
Diethylbenzene							0 0 0
Diethylene Glycol	1	1	1	1	1		1 1 1 1 1
Dimethyl Phthalate							1 0 0
Dinitrochlorobenzene	0						
Diocetyl Phthalate	0						
Dioxane (dry)	1	1	1	1	1	1	1
Dipentene - Pinene	1	1	1	1			1 1 0 1
Diphenyl	1	1	1	1			1 0 1
Diphenyloxide				1			
Distilled Water	1	1	1				1
Distillery Wort	1	1					
Doctor Solution	1	1	1				1
Dowtherm	1	1	1	1	1	1	1 1 0 0 0 1
Dyewood Liquor	0	1	1				
Embalming Fluid	1						
Enamel					1		1 1 0 1
Esters					1		
Ethanolamine	1	1	1	1			1 1 1
Ether, Dibutyl	1	1	1	1	1		1 0 0
Ether, Diethyl	1	1	1	1	1	1	1 0 0
Ether, Petroleum	1	1	1	1	1	1	1 0 0
Ethyl Acetate	1	1	1	1	1	1	1 0 0 1
Ethyl Acrylate	1	1	1	1	1	1	1
Ethyl Cellulose	1						1 1 1
Ethyl Chloride (dry)	1	1	1	1	1	1	1 1 0 1 1 1
Ethyl Mercaptan	1	1	1	1			
Ethyl Sulfate	1	1	1	1	1	1	1 1 1 1
Ethylbenzene					1		1 0 0
Ethylene (liquified)	1	1	1				
Ethylene Chloride	1	1	1				1
Ethylene Chlorohydrin	1						
Ethylene Dibromide	1	1					

Material Compatability Chart

1- Acceptable for Use  
0 - Not Acceptable for Use

Chemical	A105, A182 F5, F9, F11, F22 A182 F316	13 CR	Type 316 Monel	Hastelloy	Teflon	Viton	Neoprene	Ethylene Propylene	Buna N	Flexible Graphite Packing
Ethylene Dichloride	1	1	1	1			1			
Ethylene Glycol	1	1	1	1	1	1	1	1	1	1
Ethylene Oxide	1	1	1	1	1	0	0	1		
Fatty Acids	0	1	1	1	1	1				1
Ferric Chloride	0	0	0	0	0	1	1	1	1	1
Ferric Hydroxide				1	0					
Ferric Nitrate	0	1	0	1	0	0	1	1	1	1
Ferric Sulfate	0	1	1	0	0	1	1	1	1	1
Ferrous Ammonium Citrate				1						
Ferrous Chloride solution	0	0	0	0	0	1	1	1	1	1
Ferrous Sulfate 10%	0	1	1	1	1	1	1	1	1	1
Filter Aid				1			1			
Fish Oil	1	1	1	1	1				1	
Flue Gases	1	1	1	1	1	1				
Fluoboric Acid		1	1	1	1	1	1	1		
Fluorine (dry)	1	1	1	1	1	0				1
Fluosilicic Acid	0	1	1	1	1	1	1			
Formaldehyde cold	1	1	1	1	1	1	1			1
Formalin		1	1							
Formic Acid	0	1	1	1	1	1	1			1
Freon (dry)	1	1	1	1	1	1	1			1
Freon (wet)	0	1	1	1	1	1	1			1
Fruit Juices	0	1	0	1	1	1	1	1	1	1
Fuel Oil	1	1	1	1	1	1	1	0	1	1
Fumeric Acid			1			1	1	1		1
Furfural	1	1	1	1	1	1	1	0	1	1
Gallic Acid 5%	0	1	1	1	1	1	1	1	1	1
Gasoline (antioxidant)				1			0			
Gasoline (refined)	1	1	1	1	1	1	1	0	1	1
Gasoline (sour)	1	1	1	0	1	1	1	0	1	1
Gelatin	1	1	1	1	1	1	1	1	1	1
Ginger Ale	0	1	1							
Glauber's Salt		1	1	1			1			
Glucose	1	1	1	1	1	1	1	1	1	1
Glue (most)	1	1	1	1	1	1	1	1	1	1
Glutamic Acid		1	1	1						
Glycerine	1	1	1	1	1	1	1	1	1	1
Glycerol	1	1	1	1	1	1	1	1	1	1
Grease (edible)	1	1	1	1	1	0	1			
Green Sulfate Liquor		1	1	1	1		1			
Gypsum		1	1							
Hagan Solution				1						
Heptane (liquified)	1	1	1	1	1	1	0			
Hexamine		1	1	1						
Hexane	1	1	1	1	1	1				1
Hydobromic Acid	0	0	0	0	1	1	1			1
Hydrofluoric Acid (5%)	1	0	0	0	1	1	1	0	1	1
Hydrofluoric Acid (50%)	0	0	0	0	0	1	1	0	1	1
Hydrofluoric Acid (60%)	0	0	0	0	1	1	1	0	1	1
Hydraulic Oil	1	1	1	1	1	1	1	0	1	1
Hydrazine Hydrate		1	1	1						
Hydrocarbons (alkylated)				1	1	1				1
Hydrocarbons (chlorinated)				1	1	0				1

Chemical	A105, A182 F5, F9, F11, F22 A182 F316	13 CR	Type 316 Monel	Hastelloy	Teflon	Viton	Neoprene	Ethylene Propylene	Buna N	Flexible Graphite Packing
Hydrocarbons (H2SO4)					1					1
Hydrochloric Acid, Cold 10%	0	0	0	0	0	1				1
Hydrocyanic Acid 100%	1	1	1	1	1	1	1	1	1	1
Hydrofluosilicic Acid 100%	0	1	1	1	1	1	1	1	1	1
Hydrogen Chloride (gas)	1	1	1	1	1	1				
Hydrogen Fluoride	1									
Hydrogen Gas	1	1	1	1	1	1	1	1	1	1
Hydrogen Peroxide 33%	0	1	0	1	1	1	0	1	1	0
Hydrogen Sulfide (dry) 100%	0	1	1	1	1	1	1	1	1	1
Hydrogen Sulfide (wet) 100%	0	1	1	1	0	1	1	1	1	1
Hydroquinone	1	1	1	1	1					
HYPO (hyposulfite soda)		1	1	1	1					
Iodoform	0	1	1			1	1	0		
Ink	0	1	1	1	1	1	1			1
Iodine solution	0	1	1	0	1	1	1			1
Isobutane		1	1	1		1	0	0		
Isobutyl Acetate		1	1	1		1				
Isocane	1	1	1	1	1	1	1	0		1
Isopropyl Acetate		1	1			1	0	0		
Isopropyl Ether	1	1	1	1	1	1	0	0		1
Jet Fuel	1	1	1	1	1	1	1	0	1	1
Kerosene	1	1	1	1	1	1	1	0	1	1
Ketchup	0	1	1	1	1	1	1	1	1	1
Ketones 100%	1	1	1	1	1	1	0	0	0	1
Lacquer Solvents	1	1	1	1	1	1	0	0	0	1
Lactic Acid diluted	0	1	0	1	0	1	1	1	1	0
Lard oil	1	1	1	1	1		1			1
Latex	1	1	1							
Lead Acetate	0	1	1	1	1	1	1			
Lead Nitrate	1						1			
Lead Sulfamate							1			
Levulinic Acid					1					
Lime Slurry	1	1	1	1	1	1	1	1	1	1
Lime Sulfur		1	1	1		1	1	1	1	1
Linoleic Acid	0	1	1	1		1				1
Linseed Oil	1	1	1	1	1	1	1	0	0	1
Liquid Petroleum Gas (L. P. G.)	1	1	1	1	1	1	0			1
Lithium Chloride	1	1	1	1		1				1
Lithium Hydroxide		1	1	1	1					
Lubricating Oils	1	1	1	1	1		1	0	1	
Magnesium Carbonate	1	1	1	1	1	1				
Magnesium Chloride	1	1	1	1	1	1	1	1	1	1
Magnesium Hydroxide	1	1	1	1	1	1	1	1	1	1
Magnesium Nitrate		1	1	1	0					
Magnesium Oxide					1		1			
Magnesium Oxychloride	0	0	0							
Magnesium Sulfate	1	1	1	1	1	1	1	1	1	1
Maleic Acid 100%	1	1	0	1	1	1	1	1	1	1
Maleic Anhydride					1					
Malic Acid		1	1	1	1	1	1	1	1	1
Malt Beverages					1	1	1	1	1	1
Manganese Carbonate		1	1	1						
Manganese Chloride		1	1	1						

## Material Compatibility Chart

 1 - Acceptable for Use  
 0 - Not Acceptable for Use

Chemical	Material						
	A105, A182 F5, F9, F11, F22 A182 F316	13 CR	Type 316	Monel	Hastelloy	Teflon	Viton
Manganese Sulfate	1	1	1	1		1	1
Mash		1	1	1			
Mayonnaise	0	1	1	1	1	1	1
Melamine Resins		0	0	1		1	
Meraptobenzothiazole				1			
Mercaptans	1						
Mercuric Bichloride		1	1	0			
Mercuric Chloride	0	0	0	0	1	1	1
Mercuric Cyanide	0	1	1	1	1		1
Mercurous Nitrate	0	1	1	0			
Mercury	1	1	1	1	1	1	1
Mercury Salts		0	0		1	1	1
Mesityl Oxide	1						
Methane	1	1	1	1	1	1	1
Methyl Acetate	1	1	1	1	1	0	1
Methyl Acrylate		1	1				
Methyl Benzene				1			
Methyl Cellosolve	1	1	1	1	1	1	0
Methyl Chloride (dry)	0	1	1	1	1	0	0
Methyl Ethyl Ketone	1	1	1	1	1	0	0
Methyl Formate 100%	1	1	1	1	1		0
Methyl Isobutyl Ketone		1	1	1	1	0	0
Methyl Ketone							
Methyl Methacrylate	0						
Methylene Chloride	1	1	1	1	1	1	1
Milk	0	1	1	0	1	1	1
Mine Water	0	1	1	0	0	1	1
Mineral Oil U. S. P. pure	1	1	1	1	1	1	0
Molasses	1	1	1	1	1	1	1
Monochloroacetic Acid	0	0	0	0	1	1	1
Monochlorobenzene		1			1	0	0
Monochlorodifluoromethane		1	1				
Monoethanolamine	1						1
Mustard	0	1	1				1
Nalco Solution				1		1	
Naphtha	1	1	1	1	1	0	1
Naphthalene 100%	1	1	1	1	1	0	0
Naphthalenic Acid	0	1	1				
Natural Gas	1	1	1	1	1	1	0
Nickel Acetate						1	
Nickel Chloride	0	1	0	1	1	1	1
Nickel Nitrate		1	1	0	1	1	1
Nickel Plating Solution		0	0	0			
Nickel Sulfate	0	1	1	1	1	1	1
Nitric Acid (10%)	0	1	0	1	0	0	0
Nitric Acid (30%)	0	1	0	1	0	0	0
Nitric Acid (60%)	0	1	0	1	0	0	0
Nitric Acid (80%)	0	1	0	0	0	1	0
Nitric Acid (crude)	0	0	0	0	0	1	0
Nitrobenzene	1	1	1	1	1	0	0
Nitroethane	1						
Nitropropane	1						
Nitrous Acid	0						

Chemical	Material						
	A105, A182 F5, F9, F11, F22 A182 F316	13 CR	Type 316	Monel	Hastelloy	Teflon	Viton
Nitrous Oxide	0				0	0	
Nordihydroguaraetic Acid				0			
Oakite				1			
Octyl Alcohol				1			1
Oleic Acid 100%	1	1	1	1	1	1	0
Oleum spirits	1	1	1	0	1	1	0
Olive Oil	0	1	1	1	1	1	1
Organic Esters				1			
Oxalix Acid cold	0	1	0	1	1	1	1
Oxygen	1	1	1	1	1	1	1
Ozone (wet)	0	1	1	1	1	1	
Palm Oil	0	1	1	1	1		1
Palmitic Acid				1			
Palmitic Acid	1	1	1	1	1	1	1
Paraffin	1	1	1	1	1	1	0
Paraffin Oil	1	1	1	1	1		1
Para-formaldehyde				1		1	0
Paraldehyde				1		1	0
Paregoric Compound	0	1	1				
Parez 607	0	0	0			1	
Peanut Oil		1	1	1			
Pectin	0						
Pelargonic Acid				0			
Penicillin Solution	0			1			1
Pentane		1	1	1		1	1
Perfume	0	1	1				0
Petroleum Oils (refined)	1	1	1	1			
Petroleum Oils (sour)	1	1	0	1			
Phenol 100%	1	1	1	1	1	1	0
Phenolic Resins	1	1					
Phenolic Sulfonate	1						
Phenosulfonic Acid		1	1	1			
Phoscaloid				1			
Phosgene	1						
Phosphoric Acid, <45%	0	1	0	1	0	1	1
Phosphoric Acid, 0%-45%	0	1	0	1	1	1	1
Phosphoric Acid, Crude	0	1	0	1	0	1	1
Phosphoric Anhydride	0	1	1				
Phosphorus Trichloride		1	1	0			
Phosphorus, Molten	1	1	1	1	1		1
Phtalic Acid	0					1	1
Phtalic Anhydride	1	1	1	1			1
Picric Acid, solution	0	1	1	0	1	1	1
Pine Oil	1	1	1	1	1	1	0
Pitch				1		1	0
Plating Solution				0			
Potassium Alum						1	1
Potassium Antimonate							1
Potassium Bicarbonate		1	1				1
Potassium Bichromate		1	1	0			
Potassium Bisulfate				0			
Potassium Bromide	0	1	1	1	1	1	1
Potassium Carbonate	1	1	1	1	1	1	1

### Material Compatability Chart

1- Acceptable for Use  
0 - Not Acceptable for Use

Chemical	A105, A182 F5, F9, F11, F22 A182 F316	13 CR	Type 316 Monel	Hastelloy	Teflon	Viton	Neoprene	Ethylene Propylene	Buna N	Flexible Graphite Packing
Potassium Chlorate	1	1	1	1	0	1	1	1	1	1
Potassium Chloride	0	1	1	1	1	1	1	1	1	1
Potassium Chromate	1	1	1	1	1	1	1	1	1	1
Potassium Cyanide	1	1	1	1	1	1	1	1	1	1
Potassium Dichromate	1	1	1	1	1	1	1	1	1	1
Potassium Diphosphate	1	1	1	1	1	1	1	1	1	1
Potassium Ferricyanide	0	1	1	1	1	1	1	1	1	1
Potassium Ferrocyanide	0	1	1	1	1	1	1	1	1	1
Potassium Hydrate	1	1	1	1	1	1	1	1	1	1
Potassium Hydroxide	1	1	1	1	1	1	1	1	1	1
Potassium Hypochlorite	0	1	1	0	0	1	1	1	1	1
Potassium Iodide	0	1	1	1	1	1	1	1	1	1
Potassium Monophosphates	1	1	1	1	1	1	1	1	1	1
Potassium Nitrate	1	1	1	1	1	1	1	1	1	1
Potassium Oxalate	1	1	1	1	1	1	1	1	1	1
Potassium Permanganate	1	1	1	1	0	1	1	1	1	1
Potassium Peroxide	1	1	1	1	1	1	1	1	1	1
Potassium Phosphate (acid)	1	1	1	1	1	1	1	1	1	1
Potassium Phosphate (alkaline)	1	1	1	1	1	1	1	1	1	1
Potassium Sulfate	1	1	1	1	1	1	1	1	1	1
Potassium Sulfide	0	1	1	1	0	1	1	1	1	1
Potassium Triphosphate	1	1	1	1	1	1	1	1	1	1
Prestone	1	1	1	1	1	1	1	1	1	1
Producer Gas	1	1	1	1	1	1	0	1	1	1
Propane Gas	1	1	1	1	1	1	1	0	1	1
Propane, Liquified	1	1	1	1	1	1	1	1	1	1
Propene, Liquified	1	1	1	1	1	1	1	1	1	1
Propyl Alcohol	1	1	1	1	1	1	1	1	1	1
Propylene Dichloride	1	1	1	1	1	1	0	1	1	1
Propylene Glycol	1	1	1	1	1	1	1	1	1	1
Propylene Oxide	1	1	1	1	1	1	1	1	1	1
Pyrethrum Sol.	1	1	1	1	1	1	1	1	1	1
Pyridine	1	0	1	0	1	0	0	0	1	1
Pyrogallic Acid	1	1	1	1	1	1	1	1	1	1
Pyroligneous Acid	0	1	1	1	1	1	1	1	1	1
Qualsol 80	1	1	1	1	1	1	1	1	1	1
Querbracho	1	1	1	1	1	1	1	1	1	1
Quinine Bisulfate	0	1	1	1	1	1	1	1	1	1
Quinine Sulfate	0	1	1	1	1	1	1	1	1	1
Resorcinol	1	1	1	1	1	1	1	1	1	1
Rosin (dark)	0	1	1	1	1	1	1	1	1	1
Rosin (light)	0	1	1	1	1	1	1	1	1	1
Rustang	1	1	1	1	1	1	1	1	1	1
Sal Ammoniac	0	1	1	1	1	1	1	1	1	1
Salicylic Acid	0	1	1	1	1	1	1	1	1	1
Santobrite	1	1	1	1	1	1	1	1	1	1
Santomerse	1	1	1	1	1	1	1	1	1	1
Santophen	1	1	1	1	1	1	1	1	1	1
Santosite	1	1	1	1	1	1	1	1	1	1
Shellac	1	1	1	1	1	1	1	1	1	1
Shellac Orange	1	1	1	1	1	1	1	1	1	1
Silicon Tetrachloride	1	1	1	1	1	1	1	1	1	1
Silicon Tetraiodide	1	1	1	1	1	1	1	1	1	1

Chemical	A105, A182 F5, F9, F11, F22 A182 F316	13 CR	Type 316 Monel	Hastelloy	Teflon	Viton	Neoprene	Ethylene Propylene	Buna N	Flexible Graphite Packing
Silver Bromide	0	1	1	1	1	1	1	1	1	1
Silver Chlorate	0	0	0	1	0	1	1	1	1	1
Silver Cyanide	0	1	1	1	1	1	1	1	1	1
Silver Nitrate	1	1	1	1	1	1	1	0	1	0
Silver Plating Solution	1	1	1	1	1	1	1	1	1	1
Sizing, Acid	1	1	1	1	1	1	1	1	1	1
Sizing, Alkaline	1	1	1	1	1	1	1	1	1	1
Sludge Acid	1	1	1	0	1	1	1	1	1	1
Soap (molten)	1	1	1	1	1	1	1	1	1	1
Sodium Acetate	1	1	1	0	1	1	1	1	1	1
Sodium Acid Sulfate	1	1	1	1	1	1	1	1	1	1
Sodium Aluminate	1	1	1	1	1	1	1	1	1	1
Sodium Benzoate	1	1	1	1	1	1	1	1	1	1
Sodium Bicarbonate	1	1	1	1	1	1	1	1	1	1
Sodium Bichromate	1	1	1	1	0	1	1	1	1	1
Sodium Bisulfate	0	1	1	1	1	1	1	1	1	1
Sodium Bisulfite	1	1	1	0	1	1	1	1	1	1
Sodium Borate	1	1	1	1	1	1	1	1	1	1
Sodium Bromide	0	1	0	1	1	1	1	1	1	1
Sodium Chloride	1	1	1	1	1	1	1	1	1	1
Sodium Chromate	2	1	1	1	1	1	1	1	1	1
Sodium Citrate	3	1	1	1	1	1	1	1	1	1
Sodium Coarbonate (soda ash)	1	1	1	1	1	1	1	1	1	1
Sodium Cyanide	0	1	1	1	0	1	1	1	1	1
Sodium Dichromate	1	1	1	1	1	1	1	1	1	1
Sodium Diphosphate	1	1	1	1	1	1	1	1	1	1
Sodium Diphosphate	1	1	1	1	1	1	1	1	1	1
Sodium Ethylate	1	1	1	1	1	1	1	1	1	1
Sodium Ferrocyanide	1	1	1	1	1	1	1	1	1	1
Sodium Fluoride	0	1	0	1	1	1	1	1	1	1
Sodium Glutamate	1	1	1	1	1	1	1	1	1	1
Sodium Hydroxide 0%-20%	1	1	1	1	1	1	0	1	1	1
Sodium Hydroxide 20% or Hot	0	1	0	1	1	1	1	0	1	1
Sodium Hydrsulfite	1	1	1	1	1	1	1	1	1	1
Sodium Hypochlorite 20%	0	0	0	0	0	0	1	1	1	1
Sodium Hyposulfite	0	1	1	1	1	1	1	1	1	1
Sodium Lactate	0	1	1	1	1	1	1	1	1	1
Sodium Methylate	1	1	1	1	1	1	1	1	1	1
Sodium Monophosphate	1	1	1	1	1	1	1	1	1	1
Sodium Naphthsulfonate	1	1	1	1	1	1	1	1	1	1
Sodium Nitrate	1	1	1	1	1	1	1	1	1	1
Sodium Nitrite	1	1	1	1	1	1	1	1	1	1
Sodium Oleate	1	1	1	1	1	1	1	1	1	1
Sodium Orthosilicate	1	1	1	1	1	1	1	1	1	1
Sodium Perborate	1	1	1	1	1	1	1	1	1	1
Sodium Peroxide	1	1	1	1	1	1	1	1	1	1
Sodium Phosphate	1	1	1	1	1	1	1	1	1	1
Sodium Plumbite	1	1	1	1	1	1	1	1	1	1
Sodium Polyphosphate	1	1	1	1	1	1	1	1	1	1
Sodium Pyrophosphate	1	1	1	1	1	1	1	1	1	1
Sodium Resinate	1	1	1	1	1	1	1	1	1	1
Sodium Salicylate	1	1	1	1	1	1	1	1	1	1
Sodium Salts	1	1	1	1	1	1	1	1	1	1

## Material Compatability Chart

 1- Acceptable for Use  
 0 - Not Acceptable for Use

Chemical	A105, A182 F5, F9, F11, F22	A182 F316	13 CR	Type 316	Monel	Hastelloy	Teflon	Viton	Neoprene	Ethylene Propylene	Buna N	Flexible Graphite Packing
Sodium Silicate	1	1	1	1	1	1	1	1	1	1	1	
Sodium Silicofluoride					1							
Sodium Sulfate	1	1	1	1	1	1	1	1	1	1	1	
Sodium Sulfide	0	1	1	1	1	1	1	1	1	1	1	
Sodium Sulfite	1	1	1	1	0	0	1	1	1	1	1	
Sodium Tetraborate	1	1	1				1	1	1	1		
Sodium Tetraphosphate				1				1				
Sodium Triphosphate	1	1	1				1	1	1	1	1	
Sodium-M-Phosphate	1	1	1				1	1	1	1		
Sodium-M-Silicate				1				1				
Sorbitol	0											
Soybean Oil	1	1	1	1	1	1	1	1	1	1	1	
Stanic Chloride	0	0	0	0	0	1	1	1	1	1	1	
Stannous Bisulfate					1							
Stannous Chloride	0	1	1									
Starch	1	1	1	1	1		1	1	1	1	1	
Steam	1	1	1	1	1		1	0	1	0	1	
Steam Condensate	1	1	1	1	1	1	1	1		1		
Stearic Acid 100%	1	1	1	1	1	1	1	1	1	1	1	
Stoddard Solvent	1	1	1	1							1	
Styrene (dry)	1	1	1	1							1	
Sugar Solution	0	1	1	1	1	1	1	1	1	1	1	
Sulfate Liquor	1	1	1	1				1				
Sulfate Oils					1							
Sulfite Liquor	0	1	1	0			1				1	
Sulfur (molten)	0	1	1	1	1	1	1	0	0	0	1	
Sulfur Chloride	0	0	0	1	1	1	1	0	0	0		
Sulfur Dioxide (dry) 100%	1	1	1	1	1	0	1	1	1	0	1	
Sulfur Trioxide (dry) 100%	1	1	1	1	1	1	1	0	0	0	1	
Sulfuric Acid (spent)				1								
Sulfuric Acid 0%-10%	0	1	0	1	1	1	1	0	0	0	1	
Sulfuric Acid 10%-75%	0	1	0	1	1	1	1	0	0	0	1	
Sulfuric Acid 75%-90%	0	0	0	0	0	1	1	0	0			
Sulfuric Acid 90%-95%	1	1	0	1	0	1	1	0	0			
Sulfuric Acid 95%-100%	1	0	1	0	1	1	1	0	0	0		
Sulfurous Acid	0	1	0	1	0	1	1	1			1	
Sulphonyl Chloride	0	0										
Talc Slurry				1				1				
Tall Oil	1	1	1	1	1	1	1				1	
Tallow, Molten				1			1	1	1			
Tannic Acid	0	1	1	1	1	1	1	1	1	1	1	
Tannin				1			1	1	1			
Tanning Liquor												
Tar	1	1	1	1	1	1	1	0	0		1	
Tar Acids				1								
Tartaric Acid	0	1	1	1	1	1	1	1	1		1	
Tennox				1								
Terpene Monocyclic	1											
Tetrachloroethane	1	1										
Tetramine												
Tetraphosphoglucosate				1			1	1				
Tetraphosphoric Acid					1							
Thiamine Hydrochloride							1					

Chemical	A105, A182 F5, F9, F11, F22	A182 F316	13 CR	Type 316	Monel	Hastelloy	Teflon	Viton	Neoprene	Ethylene Propylene	Buna N	Flexible Graphite Packing
Thiophene					1							
Tin Plating Solution												
Titanium Tetrachloride	0				1	0						
Toluene or Toluol	1	1	1	1	1	1	1	1	0		0	1
Toluene Sulfanic Acid						1						
Tomato Juice	1	1	1	1	1							
Toxaphene					1							
Transmission Oil	1	1	1									
Tretolite					1							
Trichloroacetic Acid	0	0					1	1				
Trichlorobenzene									0			
Trichloroethylene	1	1	1	1	1	1	1	1	0	0	0	1
Trichloromonofluoroethane	1	1										
Trichloropropane	1	1	1	1	1	1	1					
Trichlorotrifluoroethane	1	1										
Triethanolamine	1	1	1	1			1	1	1			
Triethylamine					1		1	1	1			
Triodium Phosphate	1	1										
Triphenylphosphite	1	1										
Tripotassium Phosphate	1	1					1	1	1	1		
Trisodium Phosphate	1	1	1	1				1				
Turpentine	1	1	1	1	1	1	1	0	0	0	0	1
Uric Acid	1	1	1	1								
Varnish	1	1	1	1	1	1	1	1	0		1	
Vegetable Oils	1	1	1	1	1	1	1	1	1		1	1
Vinegar	0	1	1	1	1	1	1	1	1	1	0	1
Vinyl Acetate	1	1	1	1	1	1	1					1
Vinyl Chloride	1	1	1	1	1	1	1					
Water - Fresh	1	1	1	1	1	1	1	1	1	1	1	1
Water - Sea	0	1	0	1	1	1	1	1	1		1	
Wax (molten)	1	1	1	1				1			1	
Whiskey and Wines	0	1	0	1	0			1	1	1	1	1
White Liquor	1	1	1	1								1
Xylene	1	1	1	1	1	1	1	1	0	0	0	0
Zeolite					1		1	1	1			
Zinc Acetate	0	1	1	1			1	1	1	1		
Zinc Ammonium Chloride							1	1	1	1		
Zinc Carbonate												
Zinc Chloride	0	1	0	1	1		1	1	1	1	1	1
Zinc Cyanide Solution	0											
Zinc Hydrosulfite	1	1					1	1	1	1	1	1
Zinc Plating Solution												
Zinc Sulfate	0	1	1	1	1	1	1	1	1	1	1	1
Zinc Sulfate (acid)	0	1	1	1			1	1				

## Glossary of Abbreviations and Terms Used in the Valve Industry

**AARRH** - Arithmetic Average Roughness Height  
**AISI** - American Iron and Steel Institute  
**API** - American Petroleum Institute  
**ANSI** - American National Standards Institute, Inc.  
**ASME** - American Society of Mechanical Engineers  
**ASTM** - American Society for Testing and Materials  
**AWS** - American Welding Society

**BB** - Bolted Bonnet  
**BHN** - Brinell Hardness Number  
**Blind Flange** - A flange with no flow way bore, used to provide a pressure-tight closure of a flanged opening.  
**Btu** - British Thermal Unit  
**BWE** - Butt Weld Ends

**C or Cel** - Celsius Degrees  
**CI** - Cast Iron  
**CI** - Chlorine Institute  
**CR 13** - 13% Chromium Stainless Steel  
**CRES** - Corrosion Resistant Steel  
**Cv** - The number of U.S. gallons per minute of water at 700°F that will flow through a valve at a pressure drop of one psi.  
**CWP** - Cold Working Pressure

**DN** - Diameter Nominal (Metric)

**ELL** - Elbow

**FAS** - Free Alongside Steamer  
**F or Fahr** - Fahrenheit Degrees  
**F & D** - Faced and Drilled  
**FF** - Flat Face  
**FHF** - Full Hard Faced  
**FLG** - Flanged  
**FOB** - Free On Board  
**FTTG** - Fitting

**G** - Gas  
**gpm** - Gallons per Minute

**HF** - Hard Faced  
**HW** - Handwheel

**IBBM** - Iron Body Bronze Mounted  
**ID** - Inside Diameter  
**INT** - Integral  
**IPS** - Iron Pipe Size  
**ISRS** - Inside Screw Rising Stem  
**ISNRS** - Inside Screw Non. Rising Stem

**Kg** - Kilograms  
**Km** - Kilometers

**LH** - Left Hand

**MAV** - Motor Actuated Valve  
**mm** - Millimeter  
**MOV** - See MAV  
**MSS** - Manufacturers Standardization Society of the Valve & Fitting Industry

**NACE** - National Association of Corrosion Engineers  
**NPS** - National Pipe Size  
**NPT** - National Standard Pipe Thread Taper  
**NRS** - Non Rising Stem

**OD** - Outside Diameter  
**One-Piece-Stem** - An inseparable Stem and Disc made from one piece of metal.

**OS&Y** - Outside Screw and Yoke  
**OWG** - Oil, Water & Gas (See CWP)

**PN** - Pressure Nominal (Metric)  
**Psi** - Pounds per square Inch  
**Psia** - Pounds per square Inch absolute  
**Psig** - Pounds per square Inch gage  
**P/T** - Pressure - Temperature

**Rc** - Rockwell "C" Hardness  
**RF** - Raised Face  
**RH** - Right Hand  
**RMS** - Root Mean Square Roughness Height  
**RS** - Rising Stem  
**RTJ** - Ring-Type Joint

**S** - Steam  
**SAE** - Society of Automotive Engineers  
**SC** - Swing Check Valve  
**Sch. Or Sched.** - Schedule (Pipe Wall Thickness)  
**SCFM** - Standard Cubic Feet per Minute  
**Screw Bonnet** - Body and Bonnet threaded together  
**SE** - Screwed Ends  
**Seal Weld** - Threaded Joint Back Welded for Seal  
**SS** - Stainless Steel  
**Stem Nut** - Operating Nut  
**Stuffing Box** - Packing Chamber  
**STD** - Standard Wall Thickness  
**Stop Check** - A Check Valve in which the closure member can be mechanically closed.  
**SWE** - Socket Weld End  
**SWP** - Steam Working Pressure

**T** - Tee  
**Thd.** - Threaded  
**TIR** - Total Indicator Reading

**UB** - Union Bonnet

**W** - Water  
**Wedge** - Gate  
**WOG** - Water, Oil and Gas (See CWP)  
**WSP** - Working Steam Pressure  
**WWP** - Working Water Pressure

**XS** - Extra Strong Wall Thickness  
**XXS** - Double Extra Strong Wall Thickness

**Y** - Wye Valve, Fitting or Strainer  
**Yoke Bushing** - Operating Stem Nut  
**Yoke Nut** - Stem Nut

Refer to MSS-SP-96 for additional Abbreviations and Terms used in the Valve and Fitting Industry. (Manufacturers Standardization Society, 127 Park Street N.E., Vienna, VA 22180)



## Standards in the Valve Industry

Codes and standards play an important role in the design and production of forged steel valves, fittings and unions. These Codes and standards cover material, product dimensions, design, examination, inspection, testing procedure, pressure/temperature ratings and safety.

Material standards are developed by such organizations as the American Society for Testing and Materials (ASTM), the American Iron and Steel Institute (AISI), the Society of Automotive Engineers (SAE) and the National Association of Corrosion Engineers (NACE).

The American National Standards Institute, Inc. (ANSI) has a membership comprised of both user and producer groups and serves as the national coordinator for the majority of code and product standards related to the Valve and Fittings Industry. Product standards are also developed and issued by individual user and/or manufacturing agencies such as the American Society of Mechanical Engineers (ASME), American Petroleum Institute (API) and the Manufacturers' Standardization Society (MSS).

Procedural and Safety standards are issued by ANSI, MSS and ASME.

Following is a partial list of the codes and standards that have a direct bearing on the design and production of Vogt's forged steel valves, fittings and unions. The codes and standards are interrelated as the following descriptions project:

### ASME Boiler & Pressure Vessel Code

- Section I – Power Boilers
- Section II – Material Specifications
- Section III – Nuclear Power Plant Components
- Section V – Non-destructive Examination
- Section VIII – Pressure Vessels
- Section IX – Welding and Brazing Qualifications

The previous codes (Sections I, III and VIII) cover construction requirements for Boilers, Pressure Vessels and Nuclear Components that require Authorized Inspection Agency involvement. Section I and VIII codes relate to the Boiler and Pressure Vessel proper and not to external piping. Section III code includes rules for nuclear components including piping. Section II, V and IX codes cover material, non-destructive examination and welding requirements, respectively, for ASME construction.

### ASME Codes for Pressure Piping

- B31.1 – Power Piping
- B31.2 – Fuel Gas Piping
- B31.3 – Process Piping
- B31.4 - Pipeline Transportation Systems for Liquid Hydrocarbon and Other Liquids
- B31.5 - Refrigeration Piping and Heat Transfer Components
- B31.8 - Gas Transmission and Distribution Piping Systems
- B31.9 - Building Services Piping Systems
- B31.11 - Slurry Transportation Piping Systems

The above are piping construction codes that include requirements for design, materials, fabrication, examination, testing, inspection and components. Valve, fitting, and flange requirements used in these piping systems are normally referenced standards, as follows:

### Inspection and Testing

MSS-SP-61 - Pressure Testing of Steel Valves

API-598 - Valve Inspection and Testing

The above highly recognized standards provide detailed instructions for the inspection and testing of valves.

### Valve Standards

ASME B16.34 - Valves Flanged, Threaded and Welding End

API-600 / ISO 10434 – Bolted Bonnet Steel Gate Valves for Petroleum and Natural Gas Industries

API-602 / ISO 15761 – Steel Gate, Globe and Check Valves for Sizes DN 100 and Smaller for the Petroleum and Natural Gas Industries

MSS-SP-99 - Instrument Valves

MSS-SP-105 - Instrument Valves for Code Applications

MSS-SP-134 - Valves for Cryogenic Service Including Requirements for Body/Bonnet Extensions

The above are component (valve) standards used for construction of Vogt valves as noted in this catalog



## Standards in the Valve Industry

### Valve and Flange Details

ASME B16.5 - Pipe Flanges and Flanged Fittings

ASME B16.11 - Forged Fittings, Socket-Welding and Threaded

ASME B1.20.1 - Pipe Threads, General Purpose, Inch

ASME B16.10 - Face to Face and End to End Dimensions of Valves

ASME B16.20 - Metallic Gaskets for Pipe Flanges: Ring Joint, Spiral Wound, and Jacketed

ASME B16.25 - Buttwelding Ends

MSS-SP-6 - Standard Finishes for Contact Faces of Pipe Flanges and Connecting-End Flanges of Valves and Fittings

MSS-SP-25 - Standard Marking Systems for Valves, Fittings, Flanges and Unions

MSS-SP-45 - Bypass and Drain Connections

The above standards are detailed dimensional, marking, finish and bypass valve and fitting instructions for use in the manufacture of valves, flanges and fittings. The product standards normally refer to these standards for detailed instructions.

### NACE Standard

MR0175 / ISO 15156-1 Petroleum and Natural Gas Industries- Materials for use in H<sub>2</sub>S-containing Environments in Oil and Gas Production.

This standard is a recognized practice for selection of materials for construction of valves to be used in a sour environment. Such materials are recommended when Stress Corrosion Cracking (SCC) and/or Sulfide Stress Cracking (SSC) is anticipated.

MR0103 Materials Resistant to Sulfide Stress Cracking in Corrosive Petroleum Refining Environments.

This standard is a recognized practice for selection of materials for construction of valves to be used in a sour environment. Such materials are recommended when Sulfide Stress Cracking (SSC) is anticipated.

### Chlorine Institute

Pamphlet # 6 – Piping Systems for Dry Chlorine

This publication is intended to provide useful information concerning the construction of Chlorine piping systems including valves.

For detailed Material Standards used by Vogt valves, see pages 11 and 12.

Addresses:

American Iron & Steel Institute (AISI)  
1140 Connecticut Ave., NW  
Suite 705  
Washington, DC 20036

American National Standards Institute (ANSI)  
1819 L Street, NW  
6th floor  
Washington, DC 20036

American Petroleum Institute (API)  
1220 L Street, NW  
Washington, DC 20005-4070

American Society of Mechanical Engineers (ASME)  
ASME International  
Three Park Avenue  
New York, NY 10016-5990

American Society of Testing and Materials  
100 Barr Harbor Drive  
West Conshohocken, PA 19428-2959

Manufacturers Standardization Society of the Valve & Fitting Industry  
127 Park Street, N.E.  
Vienna, VA 22180-4602

NACE International  
1440 South Creek Drive  
Houston, TX 77084-4906

Society of Automotive Engineers (SAE)  
400 Commonwealth Drive  
Warrendale, PA 15096-0001

The Chlorine Institute, Inc.  
1300 Wilson Blvd.  
Arlington, VA 22209

# Replacement Parts

## REPLACEMENT PARTS FOR VOGT VALVES

Vogt valves are carefully made from selected materials to give long, trouble-free service when properly installed in applications for which they were designed. Proper care and maintenance in the field can contribute significantly to maximum performance. Much of the field maintenance is of a routine nature and can be readily performed by the user. However, major repairs are discouraged and it is recommended that valves be returned to the factory for inspection and rework when major repairs are indicated.

The following information is offered as an aid to field maintenance of Vogt valves. However, Vogt valves repaired in the field do NOT carry the "Product Warranty" of valves repaired in our own facilities.

### PRELIMINARY CONSIDERATIONS

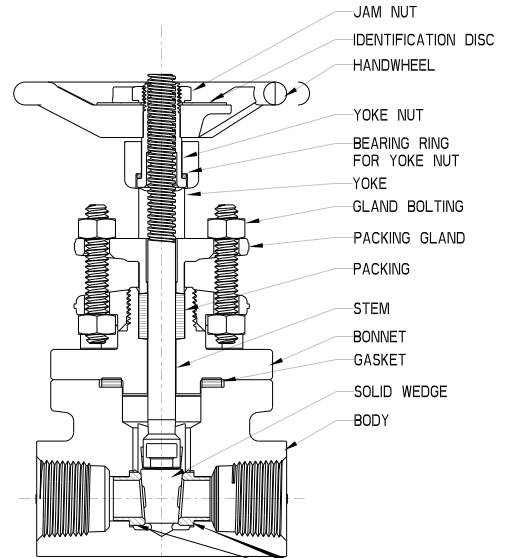
1. Use experienced, trained personnel.
2. Observe all standard safety precautions.
3. If possible, remove the valve from the line so that work can be done in a clean, well-lit area.
4. Use genuine Vogt replacement parts.
5. Use proper tools.
6. Pressure-test the valve before reinstalling. This is particularly essential on valves intended for critical service.
7. Remember that improper repairs can be hazardous.

### REPLACEMENT PARTS – HOW TO ORDER

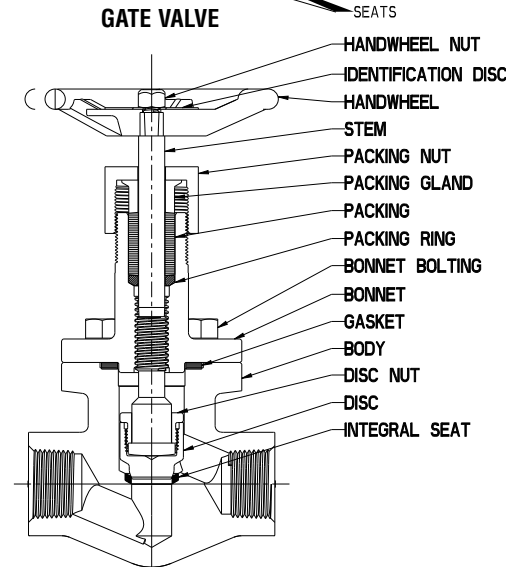
Genuine replacement parts are available for Vogt current standard valves and can usually be shipped from stock. All parts are made to gauge with the same careful inspection and laboratory control given original valves.

Orders for replacement parts should clearly identify the items required and should specify the correct name of the part, valve size, series number, drawing number, revision number and material, etc. This information is shown on the identification disc that is attached to the hand-wheel. The date of purchase and/or the order number will further identify the parts, especially those for special valves.

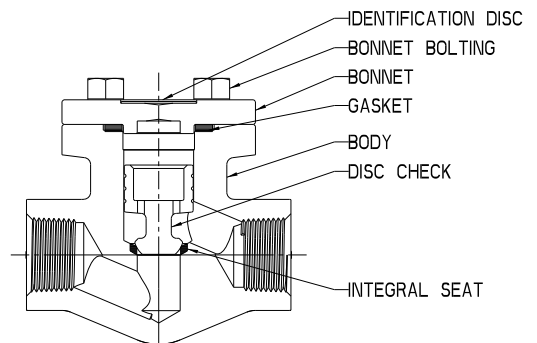
(See page 131 for Gasket and Packing Sets and page 132 for Bonnet assemblies)



**GATE VALVE**



**GLOBE VALVE**



**CHECK VALVE**

## Packing and Gaskets

A high degree of standardization of Flowserve Vogt valves permits a small stock of replacement packing and gaskets to service your Vogt valves. The following matrix and part number tables provide the details for the purchasing of replacement gaskets for your Vogt bolted bonnet valves and packing for our popular class 150, 300, 600, 800, 1500, 1690 and 2680 gate, globe and angle valves.\*

Packing Matrix

PRESSURE CLASS	NPS DN	½ 15	¾ 20	1 25	1¼ 32	1½ 40	2 50	2½ 65	3 80	4 100
150 Conventional Port		B	B	C	D	D	E	F	F	G
300 Conventional Port		B	B	C	D	D	E	F	F	G
600 Conventional Port		B	B	C	D	D	E	F	F	G
800 Conventional Port		B*	B	C	D	D	E	F	F	-
1500 Conventional Port		J	J	D	E	E	F	-	-	-
600 and 800 Full Port		B	C	D	-	E	F	-	-	-
1500 Full Port		B	D	E	E	F	-	-	-	-
Class 800 LTD Class		C	C	D	-	F	F	-	-	-
Class 1690 LTD Class		C	C	E	-	G	G	-	-	-
Class 2680 LTD Class		C	E	E	-	G	G	-	-	-

Gasket Matrix (Spiral-wound Type)

PRESSURE CLASS	NPS DN	½ 15	¾ 20	1 25	1¼ 32	1½ 40	2 50	2½ 65	3 80	4 100
150 Conventional Port		A	A	B	C	C	D	E	E	F
300 Conventional Port		A	A	B	C	C	D	E	E	F
600 Conventional Port		A	A	B	C	C	D	E	E	F
800 Conventional Port		A*	A	B	C	C	D	E	E	-
1500 Conventional Port		A	A	B	C	C	D	-	-	-
600 and 800 Full Port		A	B	G	-	D	E	-	-	-
1500 Full Port		A	B	C	C	D	-	-	-	-

Packing Set Part Numbers

MATRIX	FLEXIBLE GRAPHITE		FLUOROPOLYMER
	PACKING SET PN**	PACKING CARTRIDGE PN***	PACKING SET PN**
B	55163	55175	55276
C	55166	55176	55286
D	55167	55177	55287
E	55169	55178	55288
F	55170	-	55289
G	55171	-	55285
J	55165	55179	55294

\* API 602/ASME B16.34 type valves—see valve description. For other valves, consult your Flowserve distributor.

\*\* Order packing by Packing Set PN. Individual rings of complete set will be supplied.

\*\*\* One-piece or two-piece patented Packing Cartridge will be supplied when this PN is used.

Gasket Usage Table

GASKET	WHERE USED
304/Graphite	A105, A182-F5, F9, F11 Cl 2, F22 C I3 Valves
316/Graphite	A182, F316 Valves
316/fluoropolymer	"T" Suffix Trimmed Valves
Monel/Graphite	MM & HF Acid Trimmed Valves
Monel/fluoropolymer	Chlorine Valves

Gasket Part Numbers

GASKET MATRIX	PART NUMBER	SPIRAL-WOUND GASKET DESCRIPTION
A	55002	304/Graphite-filled
	55003	316/Graphite-filled
	55004	316/fluoropolymer-filled
	55005	Monel/Graphite-filled
	55006	Monel/fluoropolymer-filled
	B	55007
55008		316/Graphite-filled
55009		316/fluoropolymer-filled
55010		Monel/Graphite-filled
55011		Monel/fluoropolymer-filled
C		55025
	55026	316/Graphite-filled
	55027	316/fluoropolymer-filled
	55028	Monel/Graphite-filled
	55029	Monel/fluoropolymer-filled
	D	55017
55018		316/Graphite-filled
55019		316/fluoropolymer-filled
55020		Monel/Graphite-filled
55021		Monel/fluoropolymer-filled
E		55030
	55031	316/Graphite-filled
	55032	316/fluoropolymer-filled
	55033	Monel/Graphite-filled
	55034	Monel/fluoropolymer
	F	55042
55043		316/Graphite-filled
55044		316/fluoropolymer-filled
55045		Monel/Graphite-filled
-		Monel/fluoropolymer
G		55012
	55013	316/Graphite-filled
	55014	316/fluoropolymer-filled
	55015	Monel/Graphite-filled
	55016	Monel/fluoropolymer

## Class 800 Gate Valve Conventional Port Bonnet Replacement Assemblies

Emission Reduction  
Standard

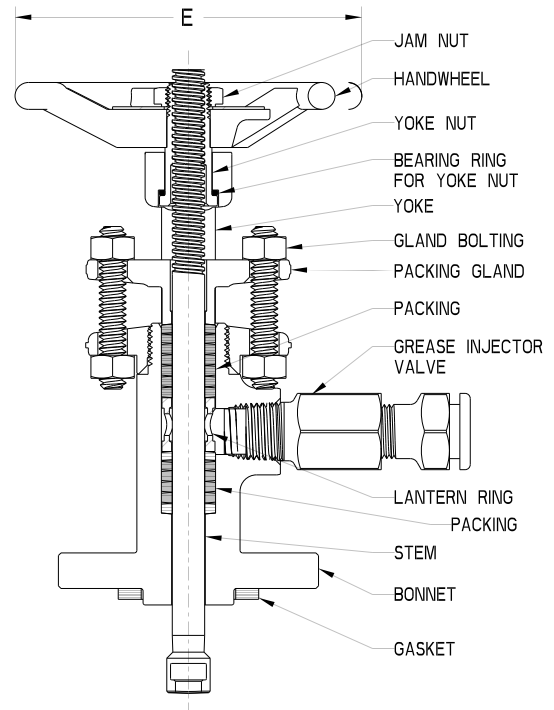
Some valve end users find it more expedient to replace the bonnet subassembly, complete with new packing, when repacking small bore valves. To support this maintenance philosophy, Vogt valve users may purchase A105 bonnet subassemblies for replacement on their Vogt valves by specifying the parts numbers noted below. The removed bonnet assemblies, if not damaged and are serviceable, can be repacked in a valve repair shop environment and be used during a later valve repacking cycle.

- Repacking made easy
- Promotes quick change
- Completely packed and ready to install
- Supports valve repacking in valve shop environment
- High degree of standardization permits retrofitting of popular Vogt Class 150, 300, 600 and 800, 13 Cr trimmed, bolted bonnet valves

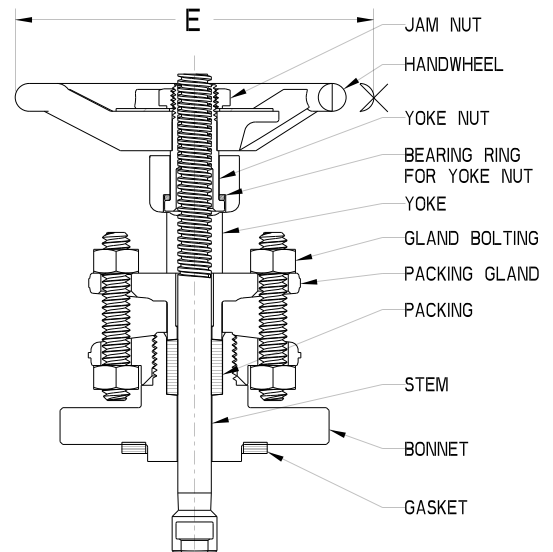
The Replacement Bonnet Assembly Packages can be easily installed on most existing in-line Compact Design Gate Valves in Classes 150, 300, 600 and 800, of A105 bolted bonnet design with 13 Cr. trim. Specify the desired replacement Bonnet Assembly Package for the valve size and series you intend to repack by replacing the bonnet subassembly.

SIZE	EMISSION REDUCTION RETROFIT BONNET ASSEMBLY PACKAGE	STANDARD RETROFIT BONNET ASSEMBLY PACKAGE	E	
			IN	MM
½ ¾	41000-04	21000-04	4.00	102
1	41000-06	21000-06	4.75	121
1-¼ 1-½	41000-08	21000-08	5.75	146
2	41000-09	21000-09	7.00	178

Write for Vogt's installation procedure covering instructions for proper field replacement of these bonnet subassemblies.



**SERIES 41000**  
**EMISSION REDUCTION**  
**A105/13% CR. TRIM**



**SERIES 21000**  
**STANDARD**  
**A105/13% CR. TRIM**

## Torque Requirements

MAX HANDWHEEL CLOSING TORQUE FT-LB										
SIZE	CLASS 800 GATE	CLASS 800 FULL PORT GATE	CLASS 1500 GATE	CLASS 1500 FULL PORT GATE	CLASS 2500 FULL PORT GATE	CLASS 800 GLOBE	CLASS 800 FULL PORT GLOBE	CLASS 1500 GLOBE	CLASS 1690 GLOBE	CLASS 2680 FULL PORT GLOBE
½"	15	15	25	25	30	15	15	25	25	30
¾"	15	20	25	35	75	15	30	25	25	75
1"	20	40	35	55	75	30	40	35	40	75
1¼"	50	50	75	75				60		
1½"	50	70	75	115	175	40	75	60	125	175
2"	70	100	115	N/A	175	75	100	100	125	175

RECOMMENDED MAXIMUM BONNET BOLT TORQUES (DRY, UN-LUBRICATED VALUES)							
		½	¾	1	1 ¼	1 ½	2
CLASS 800	QTY - BOLT DIAMETER	4 - 3/8"	4 - 3/8"	4 - 7/16"	4 - 5/8"	4 - 5/8"	4 - 5/8"
	TORQUE - B7 (ft-lb)	35	35	45	125	125	125
	TORQUE - B16 (ft-lb)	35	35	45	125	125	125
	TORQUE - B8M (ft-lb)	35	35	45	115	115	115
CLASS 1500	QTY - BOLT DIAMETER	4 - 1/2"	4 - 1/2"	4 - 9/16"	8 - 9/16"	8 - 9/16"	8 - 5/8"
	TORQUE - B7 (ft-lb)	85	85	100	100	100	125
	TORQUE - B16 (ft-lb)	85	85	100	100	100	125
	TORQUE - B8M (ft-lb)	75	75	100	100	100	115

**REDUCE ABOVE VALUES BY 25% TO 35% IF ANY TYPE OF LUBRICATION IS USED ON BOLTING**

MAXIMUM PACKING GLAND BOLTING TORQUE				
SIZE	CLASS 150, 300, 600 & 800 CONV. PORT	CLASS 300, 600 & 800 FULL PORT	CLASS 1500	CLASS 1500 FULL PORT
½"	1.8 ft-lb	1.8 ft-lb	4.2 ft-lb	4.2 ft-lb
¾"	1.8 ft-lb	3.7 ft-lb	4.2 ft-lb	7.5 ft-lb
1"	3.7 ft-lb	4.0 ft-lb	7.5 ft-lb	13.9 ft-lb
1¼"	4.0 ft-lb		13.9 ft-lb	13.9 ft-lb
1½"	4.0 ft-lb	7.5 ft-lb	13.9 ft-lb	15.9 ft-lb
2"	7.5 ft-lb	8.5 ft-lb	15.9 ft-lb	
2½"	8.5 ft-lb			
3"	8.5 ft-lb			
4"	12.0 ft-lb			

## ***Care and Maintenance of Vogt Forged Steel Valves***

### ***Valve Care Before Installation***

Vogt valves are carefully made from selected materials to give long, trouble-free service when properly installed in applications for which they were designed. Proper care and maintenance in the field can contribute significantly to maximum performance.

The care the valve receives between the time it is shipped by the manufacturer and installed in the piping system is important. During this period, the valve can be handled many times and can be kept in storage for long periods. Industrial valves are not delicate, but they are mechanical devices that should be treated as such and handled with care.

Vogt always provides valves with appropriate end covers to protect the end connections and to prevent foreign material from entering the valve. In addition, small valves are shipped in sealed cartons while larger valves are usually palletized. If at all practical, keep the valves in the cartons or on pallets with the end covers in place until ready to be installed. Storing the valves off the ground and indoors is always preferable. When stored outside, valves should be off the ground and protected by a weatherproof cover.

Prior to installation, the valves and nameplates should be checked for proper identification to be sure the valve is the proper type and of suitable pressure class. Actuate the valve to check for possible damage from shipping and handling. Also, it is extremely important to inspect the interior of both the valve and the adjoining pipe for cleanliness. By far, the major cause of seat leakage and seat damage is foreign material in the line. Also, inspect the end connections to be sure that pipe threads and flange faces are free of scratches, nicks or dents.

### ***Routine Inspection and Maintenance***

Once the right valve is properly installed, field maintenance is of a generally routine nature and can be readily performed by the user. The critical areas of the valve include the stem threads and those locations where leakage will most likely occur – the stem packing, the bonnet joint, the seat and the end connections. It is desirable that a maintenance program be established that will include periodic inspection of the noted critical areas. Stem threads should be lubricated prior to installation and periodically as part of the regular inspection. A high pressure and temperature lubricant such as Dow Corning Molykote™ G-n paste should be used.

The most common location of a noticeable leak is at the stem seal. Leakage at the stem can usually be stopped by adjusting the packing. If leakage cannot be stopped by packing adjustment, repacking is indicated. However, back-seating the valve and attempting to repack under pressure is hazardous and is not recommended. Rather than attempting to repack under pressure, it is preferable to use the backseat to control stem leakage until a shutdown provides safe repacking conditions.

### ***Major Field Repair***

Maintenance involving rework or replacement parts is considered major repair. When circumstances dictate field repair of Vogt valves, the following information is offered as an aid. It must be pointed out, however, that the Vogt valves repaired in the field are no longer under “Product Warranty,” and in no event is Vogt liable for any cause whatsoever. There are no warranties of any kind whatsoever, expressed or implied, other than those stated in Vogt’s current Terms and Conditions.

#### **Preliminary Considerations for Valve Repair:**

1. Use experienced, trained personnel.
2. Observe all standard safety precautions.
3. If possible, remove the valve from the line so that work can be done in a clean, well-lit area.
4. Use genuine Vogt replacement parts.
5. Use proper tools.
6. Pressure test the valve before reinstalling. This is particularly essential on valves intended for critical service.
7. Remember that improper repairs can be hazardous.

## Care and Maintenance of Vogt Forged Steel Valves

### Replacement Parts ... How to Order

Genuine replacement parts are available for Vogt current standard valves and can usually be shipped from stock. All parts are made to gauge with the same careful inspection and laboratory control given original valves.

Orders for replacement parts should clearly identify the items required and should specify the correct name of the part, valve size, series number, drawing number, revision number and material, etc. This information is shown on the identification disc that is attached to the hand-wheel. The date of purchase and/or the order number will further identify the parts, especially those for special valves.

The embossed number on each hand-wheel, having a prefix letter "V", is the pattern number of the hand-wheel and has no relation to the ordering of other valve parts. Prices for valve parts will be furnished on application.

### Tools For Installing Replacement Parts

Wrenches are available (price on application) for the removal and replacement of renewable seats for globe, angle and check valves. The wrenches are machined to an accurate finish to fit the drive notches or lugs of the seat and are properly heat treated for strength and toughness.

### Disassembly

Small valves of the union bonnet type or of the new screw bonnet type are readily disassembled by unscrewing the union nut or the bonnet. In bolted bonnet valves, the nut should be removed from the bonnet stud bolts or hexagon head cap screws removed from the body. Tight bolt threads may be loosened by applying penetrating oil to the threads or by selectively heating the bolt at the point of the thread engagement. On bonnet joints of the through bolt type, the bolts may be cut between the body and bonnet flanges for removal.

### Stems

Tight stems in valves of the O.S. & Y. type are caused by either dry, worn packing or non-lubrication of the yoke nut threads. Applying a few drops of oil to the stem threads and packing and opening and closing the valve a few times, may loosen the stem. At the same time, make sure the packing gland bolting is pulled down evenly so the gland will not bind against the stem. However, care should be taken not to over-compress the packing.

A tight stem in an inside screw valve may also result from worn or over-compressed packing, or the stem bonnet threads may "freeze" from excessive service temperatures or from corrosive fluids in the valve. If the stem turns freely after all packing is removed and if the surface of the stem in contact with the packing is in good condition, a new packing is the remedy. If the stem is still tight, turn the valve to the upright position, fill the stuffing box with penetrating oil and let soak. If the stem remains tight, a new bonnet and stem are required or, if practical, an O.S. & Y type valve could be substituted.

### Bonnet Joints

On valves of the union bonnet type, repairs can be made without removing the valve from the line, provided there is enough wrench room for loosening and tightening the bonnet nut. Before loosening the bonnet nut, be sure the valve has been relieved of all pressure. A few hammer taps to the side of the bonnet nut or around the body neck on screw bonnet type valves will loosen the nut or bonnet. Gasket joints require a smooth, clean surface on both the body and the bonnet gasket faces and a new gasket is recommended for reassembly. On bolted bonnet valves in high-temperature service and particularly where severe thermal cycling is involved, it is recommended that bolt torque be checked periodically. This recommendation applies to gland bolting as well.

### Packing

Vogt valves have well-proportioned stuffing boxes filled with the best grade packing material available. Before repacking, be sure to have the right grade, type and size of packing.

**Repacking under pressure is hazardous and is not recommended.** The backseat should be used as a temporary measure to control stem leakage until a shutdown provides safe repacking conditions.

Wipe all parts of the stuffing box, inside and out, before installing the new packing. Vogt uses a split ring type packing. If this type is used for replacement, take care to stagger the ring slits so that they are not in-line. After putting in a few rings, tamp them into place well, using the packing gland as a tamping tool. Then add enough packing to fill the stuffing box. Pressure on the packing is applied by the packing nut or gland flange bolting, depending on valve design, which bears on a gland in the stuffing box. Gland bolting should be tightened evenly to obtain the proper packing compression for leak-free service. Upon reassembling the valve, a few turns of the hand-wheel and a few drops of oil applied on the stem just above the packing will help work-in the packing to the stem.

(See page 131 for Gaskets and Packing Sets and page 132 for Bonnet assemblies)



## Care and Maintenance of Vogt Forged Steel Valves

### Disc and Seat

Leakage through the seat and disc is not always easy to detect, but when definitely known to exist, immediate repair is recommended since delay may permanently damage the disc, seat or both.

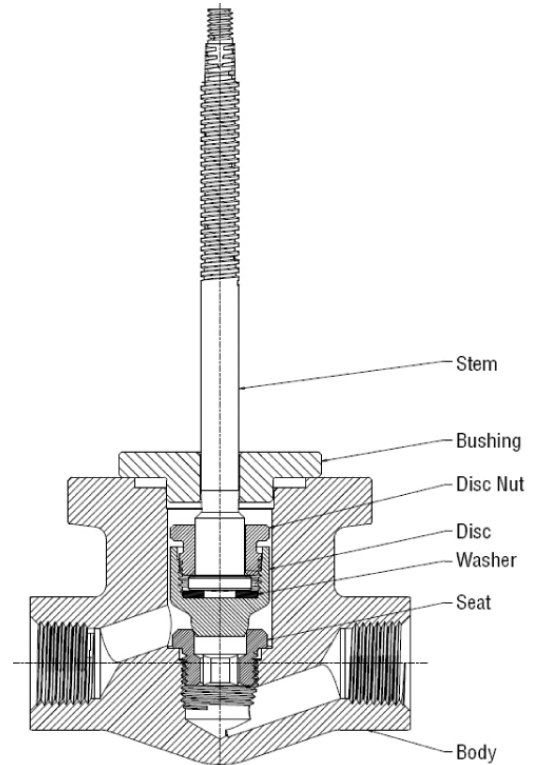
The internal repair of gate valves 2" and smaller is usually found to be uneconomical. However, if a gate valve is disassembled for inspection or cleaning, care should be taken when removing the wedge to note and mark its orientation with respect to the valve body so that when the wedge is reinserted in the valve, it will have precisely the same relationship to the seats that it had in the original assembly.

The seat threads in angle, globe and check valve bodies should be carefully inspected to make sure they are in useable condition. When installing new seats by using proper seat tools, the seats should be screwed tightly into the valve body, then unscrewed and examined to make sure they are making continuous contact for tight seal.

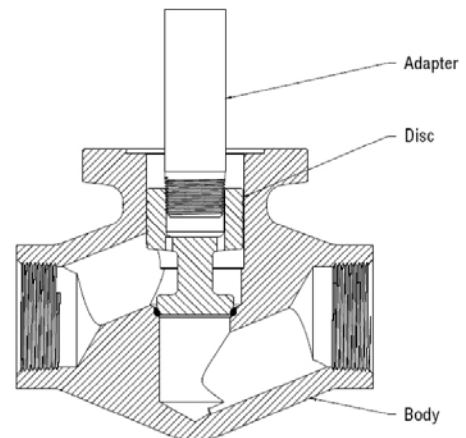
If seating surfaces show galling, slight pitting, grooving or indentations not deeper than 0.010", lapping will usually restore the surfaces sufficiently to permit tight closure. Defects deeper than 0.010" can seldom be corrected by lapping, but seating surfaces can be remachined or new parts installed. For re-lapping the seat and disc of Vogt globe, angle or check valves, use a fine and a coarse grade emery base compound such as Clover Compound A and D. Apply a light coat of fine, or A, compound to the seating surface of the disc or one-piece stem, insert disc or one-piece stem into seat, and lap using an oscillating motion. Lap a few minutes and then wipe seating surfaces clean. This will clearly show the extent of damage. If severe damage is noted, use the coarse, or D, compound and lap until all defects are removed. Then finish with the fine, or A, compound. It is recommended that the face of the disc be "blued" to check for contact between seating surfaces after final lapping.

Globe and angle valves require a lapping guide fixture to maintain alignment during the lapping operation. A fixture as shown in GLOBE Figure may be made or, for O.S. and Y. valves, a valve bonnet with yoke nut removed may be used. For re-lapping loose disc globe valves, place a washer between the disc and head of the stem and retighten the disc nut, as shown in GLOBE Figure.

Vogt piston check valves require an adapter to screw or mate into the piston for lapping the piston seating surface to the seat. The bore of the valve body serves as a guide for lapping, see CHECK Figure. Ball check valves are primarily used for fluids of high viscosity and the rolling action of the ball maintains seating surfaces in good condition until ball size or ball guide is worn and replacement parts are needed.



**GLOBE FIGURE**



**CHECK FIGURE**

# Weight and Pressure Conversion

## Weight Conversion

### Pounds to Kilograms

(1 pound = 0.4536 kilograms)

Pounds	0	1	2	3	4	5	6	7	8	9
0	0.00	0.45	0.91	1.36	1.81	2.27	2.72	3.18	3.63	4.08
10	4.54	4.99	5.44	5.90	6.35	6.80	7.26	7.71	8.16	8.62
20	9.07	9.53	9.98	10.43	10.89	11.34	11.79	12.25	12.70	13.15
30	13.61	14.06	14.52	14.97	15.42	15.88	16.33	16.78	17.24	17.69
40	18.14	18.60	19.05	19.50	19.96	20.41	20.87	21.32	21.77	22.23
50	22.68	23.13	23.59	24.04	24.49	24.95	25.40	25.86	26.31	26.76
60	27.22	27.67	28.12	28.58	29.03	29.48	29.94	30.39	30.84	31.30
70	31.75	32.21	32.66	33.11	33.57	34.02	34.47	34.93	35.38	35.83
80	36.29	36.74	37.20	37.65	38.10	38.56	39.01	39.46	39.92	40.37
90	40.82	41.28	41.73	42.18	42.64	43.09	43.55	44.00	44.45	44.91

### Kilograms to Pounds

(1 kilograms = 2.2046 pounds)

Kilograms	0	1	2	3	4	5	6	7	8	9
0	0.00	2.20	4.41	6.61	8.82	11.02	13.23	15.43	17.64	19.84
10	22.05	24.25	26.46	28.66	30.86	33.07	35.27	37.48	39.68	41.89
20	44.09	46.30	48.50	50.71	52.91	55.12	57.32	59.52	61.73	63.93
30	66.14	68.34	70.55	72.75	74.96	77.16	79.37	81.57	83.77	85.98
40	88.18	90.39	92.59	94.80	97.00	99.21	101.41	103.62	105.82	108.03
50	110.23	112.43	114.64	116.84	119.05	121.25	123.46	125.66	127.87	130.07
60	132.28	134.48	136.69	138.89	141.09	143.30	145.50	147.71	149.91	152.12
70	154.32	156.53	158.73	160.94	163.14	165.35	167.55	169.75	171.96	174.16
80	176.37	178.57	180.78	182.98	185.19	187.39	189.60	191.80	194.01	196.21
90	198.41	200.62	202.82	205.03	207.23	209.44	211.64	213.85	216.05	218.26
90	40.82	41.28	41.73	42.18	42.64	43.09	43.55	44.00	44.45	44.91

## Pressure Conversion

### Bar to Pounds per Square Inch (psi)

(1 Bar = 105 Pa = 14.5 psi)

1 to 20		21 to 40		41 to 60		61 to 80		81 to 100	
Bar	psi	Bar	psi	Bar	psi	Bar	psi	Bar	psi
1	14.5	21	304.6	41	594.7	61	884.7	81	1174.8
2	29.0	22	319.1	42	609.2	62	899.2	82	1189.3
3	43.5	23	333.6	43	623.7	63	913.7	83	1203.8
4	58.0	24	348.1	44	638.2	64	928.2	84	1218.3
5	72.5	25	362.6	45	652.7	65	942.7	85	1232.8
6	87.0	26	377.1	46	667.2	66	957.2	86	1247.3
7	101.5	27	391.6	47	681.7	67	971.8	87	1261.8
8	116.0	28	406.1	48	696.2	68	986.3	88	1276.3
9	130.5	29	420.6	49	710.7	69	1000.8	89	1290.8
10	145.0	30	435.1	50	725.2	70	1015.3	90	1305.3
11	159.5	31	449.6	51	739.7	71	1029.8	91	1319.8
12	174.0	32	464.1	52	754.2	72	1044.3	92	1334.3
13	188.5	33	478.6	53	768.7	73	1058.8	93	1348.9
14	203.1	34	493.1	54	783.2	74	1073.3	94	1363.4
15	217.6	35	507.6	55	797.7	75	1087.8	95	1377.9
16	232.1	36	522.1	56	812.2	76	1102.3	96	1392.4
17	246.6	37	536.6	57	826.7	77	1116.8	97	1406.9
18	261.1	38	551.1	58	841.2	78	1131.3	98	1421.4
19	275.6	39	565.6	59	855.7	79	1145.8	99	1435.9
20	290.1	40	580.2	60	870.2	80	1160.3	100	1450.4

# Temperature Conversion

## Celsius (C) to Fahrenheit (F) - Fahrenheit (F) to Celsius (C)

-459.4° to 0°			1° to 60°			61° to 290°			300° to 890°			900° to 3000°		
C	Cel. or Fah.	F	C	Cel. or Fah.	F	C	Cel. or Fah.	F	C	Cel. or Fah.	F	C	Cel. or Fah.	F
-273	-459.4		-17.2	1	33.8	16.1	61	141.8	149	300	572	482	900	1652
-268	-450		-16.7	2	35.6	16.7	62	143.6	154	310	590	488	910	1670
-262	-440		-16.1	3	37.4	17.2	63	145.4	160	320	608	493	920	1688
-257	-430		-15.6	4	39.2	17.8	64	147.2	166	330	626	499	930	1706
-251	-420		-15.0	5	41.0	18.3	65	149.0	171	340	644	504	940	1724
-246	-410		-14.4	6	42.8	18.9	66	150.8	177	350	662	510	950	1742
-240	-400		-13.9	7	44.6	19.4	67	152.6	182	360	680	516	960	1760
-234	-390		-13.3	8	46.4	20.0	68	154.4	188	370	698	521	970	1778
-229	-380		-12.8	9	48.2	20.6	69	156.2	193	380	716	527	980	1796
-223	-370		-12.2	10	50.0	21.1	70	158.0	199	390	734	532	990	1814
-218	-360		-11.7	11	51.8	21.7	71	159.8	204	400	752	538	1000	1832
-212	-350		-11.1	12	53.6	22.2	72	161.6	210	410	770	549	1020	1868
-207	-340		-10.6	13	55.4	22.8	73	163.4	216	420	788	560	1040	1904
-201	-330		-10.0	14	57.2	23.3	74	165.2	221	430	806	571	1060	1940
-196	-320		-9.4	15	59.0	23.9	75	167.0	227	440	824	582	1080	1976
-190	-310		-8.9	16	60.8	24.4	76	168.8	232	450	842	593	1100	2012
-184	-300		-8.3	17	62.6	25.0	77	170.6	238	460	860	604	1120	2048
-179	-290		-7.8	18	64.4	25.6	78	172.4	243	470	878	616	1140	2084
-173	-280		-7.2	19	66.2	26.1	79	174.2	249	480	896	627	1160	2120
-169	-273	-459.4	-6.7	20	68.0	26.7	80	176.0	254	490	914	638	1180	2156
-168	-270	-454	-6.1	21	69.8	27.2	81	177.8	260	500	932	649	1200	2192
-162	-260	-436	-5.6	22	71.6	27.8	82	179.6	266	510	950	660	1220	2228
-157	-250	-418	-5.0	23	73.4	28.3	83	181.4	271	520	968	671	1240	2264
-151	-240	-400	-4.4	24	75.2	28.9	84	183.2	277	530	986	682	1260	2300
-146	-230	-382	-3.9	25	77.0	29.4	85	185.0	282	540	1004	693	1280	2336
-140	-220	-364	-3.3	26	78.8	30.0	86	186.8	288	550	1022	704	1300	2372
-134	-210	-346	-2.8	27	80.6	30.6	87	188.6	293	560	1040	732	1350	2462
-129	-200	-328	-2.2	28	82.4	31.1	88	190.4	299	570	1058	760	1400	2552
-123	-190	-310	-1.7	29	84.2	31.7	89	192.2	304	580	1076	788	1450	2642
-118	-180	-292	-1.1	30	86.0	32.2	90	194.0	310	590	1094	816	1500	2732
-112	-170	-274	-0.6	31	87.8	32.8	91	195.8	316	600	1112	843	1550	2822
-107	-160	-256	0.0	32	89.6	33.3	92	197.6	321	610	1130	871	1600	2912
-101	-150	-238	0.6	33	91.4	33.9	93	199.4	327	620	1148	899	1650	3002
-96	-140	-220	1.1	34	93.2	34.4	94	201.2	332	630	1166	927	1700	3092
-90	-130	-202	1.7	35	95.0	35.0	95	203.0	338	640	1184	954	1750	3182
-84	-120	-184	2.2	36	96.8	35.6	96	204.8	343	650	1202	982	1800	3272
-79	-110	-166	2.8	37	98.6	36.1	97	206.6	349	660	1220	1010	1850	3362
-73	-100	-148	3.3	38	100.4	36.7	98	208.4	354	670	1238	1038	1900	3452
-68	-90	-130	3.9	39	102.2	37.2	99	210.2	360	680	1256	1066	1950	3542
-62	-80	-112	4.4	40	104.0	37.8	100	212.0	366	690	1274	1093	2000	3632
-57	-70	-94	5.0	41	105.8	43	110	230	371	700	1292	1121	2050	3722
-51	-60	-76	5.6	42	107.6	49	120	248	377	710	1310	1149	2100	3812
-46	-50	-58	6.1	43	109.4	54	130	266	382	720	1328	1177	2150	3902
-40	-40	-40	6.7	44	111.2	60	140	284	388	730	1346	1204	2200	3992
-34	-30	-22	7.2	45	113.0	66	150	302	393	740	1364	1232	2250	4082
-29	-20	-4	7.8	46	114.8	71	160	320	399	750	1382	1260	2300	4172
-23	-10	14	8.3	47	116.6	77	170	338	404	760	1400	1288	2350	4262
-18	0	32	8.9	48	118.4	82	180	356	410	770	1418	1316	2400	4352
			9.4	49	120.2	88	190	374	416	780	1436	1343	2450	4442
			10.0	50	122.0	93	200	392	421	790	1454	1371	2500	4532
<b>Conversion Formulas</b>  $C = \frac{5}{9}(F - 32)$ $F = \frac{9}{5}C + 32$			10.6	51	123.8	99	210	410	427	800	1472	1399	2550	4622
			11.1	52	125.6	104	220	428	432	810	1490	1427	2600	4712
			11.7	53	127.4	110	230	446	438	820	1508	1454	2650	4802
			12.2	54	129.2	116	240	464	443	830	1526	1482	2700	4892
			12.8	55	131.0	121	250	482	449	840	1544	1510	2750	4982
			13.3	56	132.8	127	260	500	454	850	1562	1538	2800	5072
			13.9	57	134.6	132	270	518	460	860	1580	1566	2850	5162
			14.4	58	136.4	138	280	536	466	870	1598	1593	2900	5252
			15.0	59	138.2	143	290	554	471	880	1616	1621	2950	5342
			15.6	60	140.0	149	300	572	477	890	1634	1649	3000	5432

Locate temperature in middle column. If in degrees Celsius, read Fahrenheit equivalent in right hand column; if in degrees Fahrenheit, read Celsius equivalent in left hand column.

# Dimensional Data for Standard & Schedule Pipe

## Carbon Steel Pipe

NPS-Black numbers are inches and pounds DN-Blue numbers are millimeter and kilograms

PIPE	NPS DN Outside Dia.	1/8 8 0.405 10.3	1/4 8 0.540 13.7	3/8 10 0.675 17.1	1/2 15 0.840 21.3	3/4 20 1.050 26.7	1 25 1.315 33.4	1 1/4 32 42.2	1 1/2 40 48.3	2 50 60.3	2 1/2 65 73.0	3 80 88.9	3 1/2 95 101.6	4 100 114.3	5 125 141.3	6 150 168.3	8 200 219.1	10 250 273.0	12 300 323.8
Standard	Inside Dia.	0.269 6.8	0.364 9.2	0.493 12.5	0.622 15.8	0.824 20.9	1.049 25.6	1.380 35.1	1.610 40.9	2.067 52.5	2.469 62.7	3.068 77.9	3.548 90.1	4.026 102	5.047 128	6.065 154	7.981 203	10.020 255	12.000 305
	Wall Thick.	0.068 1.73	0.088 2.24	0.091 2.31	0.109 2.77	0.113 2.87	0.133 3.38	0.140 3.56	0.145 3.68	0.154 3.91	0.203 5.16	0.216 5.49	0.226 5.74	0.237 6.02	0.258 6.55	0.280 7.11	0.322 8.18	0.365 9.27	0.375 9.53
	Wt. Per Ft.	0.24 0.37	0.42 0.63	0.57 0.84	0.85 1.27	1.13 1.69	1.68 2.50	2.27 3.39	2.72 4.05	3.65 5.44	5.79 8.63	7.58 11.29	9.11 13.57	10.79 16.07	14.62 21.77	18.97 28.26	28.55 42.55	40.48 60.31	49.56 73.88
Extra Heavy	Inside Dia.	0.215 5.4	0.302 7.7	0.423 10.7	0.546 13.9	0.742 18.8	0.957 24.3	1.278 32.5	1.50 38.1	1.939 49.2	2.323 59.0	2.900 73.7	3.364 85.4	3.826 97.2	4.813 122	5.761 146	7.625 194	9.750 248	11.750 298
	Wall Thick.	0.095 2.41	0.119 3.02	0.126 3.20	0.147 3.73	0.154 3.91	0.179 4.55	0.191 4.85	0.200 5.08	0.218 5.54	0.276 7.01	0.300 7.62	0.318 8.08	0.337 8.56	0.375 9.53	0.432 10.97	0.500 12.70	0.600 15.24	0.900 22.34
	Wt. Per Ft.	0.31 0.47	0.54 0.80	0.74 1.10	1.09 1.62	1.47 2.20	2.17 3.24	3.00 4.47	3.63 5.41	5.02 7.48	7.66 11.41	10.25 15.27	12.51 18.63	14.98 22.32	20.78 30.97	28.57 42.56	43.39 64.64	54.74 81.55	65.42 97.46
Double Extra Heavy	Inside Dia.				0.252 6.4	0.434 11.0	0.599 15.2	0.896 22.6	1.100 27.9	1.503 36.2	1.771 50.0	2.300 58.4		3.152 80.1	4.063 103	4.897 124	6.875 175		
	Wall Thick.				0.294 7.47	0.308 7.82	0.358 9.09	0.382 9.70	0.400 10.15	0.436 11.07	0.552 14.24	0.600 15.24		0.674 17.12	0.750 19.05	0.864 21.95	0.875 22.23		
	Wt. Per Ft.				1.71 2.55	2.44 3.64	3.66 5.45	5.21 7.77	6.41 9.56	9.03 13.44	13.69 20.39	18.58 27.68		27.54 41.03	38.55 57.43	53.16 79.22	72.4 107.92		
Schedule 10	Inside Dia.																		
	Wall Thick.																		
	Wt. Per Ft.																		
Schedule 20	Inside Dia.																6.125 206	10.250 260	12.250 311
	Wall Thick.																0.250 6.35	0.250 6.35	0.250 6.35
	Wt. Per Ft.																22.36 33.31	28.04 41.77	33.38 49.73
Schedule 30	Inside Dia.																8.071 205	10.136 257	12.090 307
	Wall Thick.																0.277 7.04	0.307 7.80	*0.330 8.38
	Wt. Per Ft.																24.70 36.81	34.24 51.03	43.77 65.20
Schedule 40	Inside Dia.	0.269 6.8	0.364 9.2	0.493 12.5	0.622 15.8	0.824 20.9	1.049 26.6	1.380 35.1	1.610 40.9	2.067 52.5	2.469 62.7	3.068 77.9	3.548 90.1	4.026 102	5.047 128	6.065 154	7.981 203	10.020 255	11.938 303
	Wall Thick.	0.068 1.73	0.088 2.24	0.091 2.31	0.109 2.77	0.113 2.87	0.133 3.38	0.140 3.56	0.145 3.68	0.154 3.91	0.203 5.16	0.216 5.49	0.226 5.74	0.237 6.02	0.258 6.55	0.280 7.11	0.322 8.18	0.365 9.27	0.406 10.32
	Wt. Per Ft.	0.24 0.32	0.42 0.63	0.57 0.84	0.85 1.27	1.13 1.69	1.66 2.50	2.27 3.39	2.72 4.05	3.65 5.44	5.79 8.63	7.58 11.29	9.11 13.57	10.79 16.07	14.62 21.77	18.97 28.26	28.55 42.55	40.48 60.31	53.52 79.73
Schedule 60	Inside Dia.																7.813 198	9.750 248	11.626 295
	Wall Thick.																0.406 10.31	+0.500 12.70	0.562 14.27
	Wt. Per Ft.																35.64 53.08	54.74 81.55	73.15 108.96
Schedule 80	Inside Dia.	0.215 5.5	0.302 7.7	0.423 10.7	0.546 13.9	0.742 18.8	0.957 24.3	1.278 32.5	1.50 38.1	1.939 49.3	2.323 59.0	2.900 73.7	3.364 85.4	3.826 97.2	4.813 122	5.761 145	7.625 194	9.564 243	11.376 289
	Wall Thick.	0.095 2.41	0.119 3.02	0.126 3.20	0.147 3.73	0.154 3.91	0.179 4.55	0.191 4.85	0.200 5.08	0.218 5.54	0.276 7.01	0.300 7.62	0.318 8.08	0.337 8.56	0.375 9.53	0.432 10.97	0.500 12.70	0.594 15.02	0.688 17.48
	Wt. Per Ft.	0.31 0.47	0.54 0.80	0.74 1.10	1.09 1.62	1.47 2.20	2.17 3.24	3.00 4.47	3.63 5.41	5.02 7.48	7.66 11.41	10.25 15.27	12.51 18.63	14.98 22.32	20.78 30.97	28.57 42.56	43.39 64.64	64.43 96.01	88.63 132.08
Schedule 100	Inside Dia.																7.439 189	9.314 237	11.084 281
	Wall Thick.																0.594 15.09	0.719 18.26	0.844 21.44
	Wt. Per Ft.																50.95 75.92	77.03 114.75	107.32 159.91
Schedule 120	Inside Dia.													3.624 92.0	4.563 116	5.501 140	7.189 183	9.064 230	10.75 273
	Wall Thick.													0.438 11.13	0.500 12.70	0.562 14.27	0.719 18.26	0.844 21.44	1.000 25.40
	Wt. Per Ft.													19.00 26.32	27.04 40.28	36.39 54.20	60.71 89.24	89.24 133.06	125.49 186.97
Schedule 140	Inside Dia.																7.001 179	8.750 222	10.50 267
	Wall Thick.																0.812 20.62	1.000 25.40	1.125 28.58
	Wt. Per Ft.																67.76 100.92	104.13 155.15	139.67 208.14
Schedule 160	Inside Dia.				0.466 11.8	0.614 15.6	0.815 20.7	1.160 29.5	1.338 34.0	1.689 42.9	2.125 54.0	2.624 66.6		3.438 87.3	4.313 110	5.189 132	6.813 173	8.500 216	10.126 257
	Wall Thick.				0.188 4.78	0.219 5.56	0.250 6.35	0.250 6.35	0.281 7.14	0.344 8.74	0.375 9.53	0.438 11.13		0.531 13.49	0.625 15.88	0.719 18.26	0.906 23.01	1.125 28.58	1.312 33.32
	Wt. Per Ft.				1.31 1.95	1.94 2.90	2.84 4.24	3.76 5.61	4.76 7.25	7.46 11.11	10.01 14.92	14.32 21.35		22.51 33.54	32.96 49.11	45.35 67.56	74.69 111.27	115.64 177.33	160.27 238.76

## Dimensional Data for Standard & Schedule Pipe

**Stainless Steel Pipe**

*NPS-Black numbers are inches and pounds DN-Blue numbers are millimeter and kilograms*

PIPE	NPS	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	10	12
	DN	6	8	10	15	20	25	32	40	50	63	80	95	100	125	150	200	250	300
	Outside Dia.	0.405	0.540	0.675	0.840	1.050	1.315	1.660	1.900	2.375	2.875	3.500	4.000	4.500	5.563	6.625	8.625	10.750	12.750
	Dia.	10.3	13.7	17.1	21.3	26.7	33.4	42.2	48.3	60.3	73.0	88.9	101.6	114.3	141.3	168.3	219.1	273.1	323.9
Schedule 5S (a)	Inside Dia.				0.710	0.920	1.185	1.530	1.770	2.245	2.709	3.334	3.834	4.334	5.345	6.407	8.407	10.842	12.438
	Wall Thick.				0.065	0.065	0.065	0.065	0.065	0.065	0.083	0.083	0.083	0.083	0.109	0.109	0.109	0.134	0.156
	Wt. Per Ft.				1.65	1.65	1.65	1.65	1.65	1.65	2.11	2.11	2.11	2.11	2.77	2.77	2.77	3.40	3.96
					0.54	0.69	0.87	1.11	1.28	1.61	2.48	3.03	3.48	3.92	6.36	7.60	9.93	15.19	20.98
					0.80	1.03	1.29	1.65	1.90	2.40	3.69	4.51	5.18	5.83	9.46	11.31	14.78	22.61	31.22
Schedule 10S (a)	Inside Dia.	0.307	0.410	0.545	0.674	0.884	1.097	1.442	1.682	2.157	2.635	3.260	3.760	4.260	5.295	6.357	8.329	10.420	12.390
	Wall Thick.	0.049	0.065	0.065	0.083	0.083	0.109	0.109	0.109	0.109	0.120	0.120	0.120	0.120	0.134	0.134	0.148	0.165	0.180
	Wt. Per Ft.	0.19	0.33	0.42	0.67	0.86	1.40	1.81	2.09	2.64	3.53	4.33	4.97	5.61	7.77	9.29	13.40	18.65	24.17
		0.28	0.49	0.63	1.00	1.28	2.08	2.69	3.11	3.93	5.25	6.44	7.40	8.35	11.56	13.83	19.94	27.75	36.0
Schedule 40S	Inside Dia.	0.269	0.364	0.493	0.622	0.824	1.049	1.380	1.610	2.067	2.469	3.068	3.548	4.026	5.047	6.065	7.981	10.020	11.938
	Wall Thick.	0.068	0.088	0.091	0.109	0.113	0.133	0.140	0.145	0.154	0.203	0.216	0.226	0.237	0.258	0.280	0.322	0.365	0.375
	Wt. Per Ft.	0.24	0.42	0.57	0.85	1.13	1.68	2.27	2.72	3.65	5.79	7.68	9.11	10.79	14.62	18.97	28.55	40.48	49.56
		0.36	0.63	0.85	1.26	1.68	2.50	3.38	4.05	5.43	8.62	11.43	13.56	16.06	21.76	28.23	42.49	60.24	73.75
Schedule 80S	Inside Dia.	0.215	0.302	0.423	0.546	0.742	0.957	1.278	1.500	1.999	2.323	2.900	3.354	3.828	4.813	5.761	7.625	9.75	11.75
	Wall Thick.	0.095	0.119	0.128	0.147	0.154	0.179	0.191	0.200	0.218	0.276	0.300	0.318	0.337	0.375	0.432	0.500	0.500	0.500
	Wt. Per Ft.	0.31	0.54	0.74	1.09	1.47	2.17	3.00	3.53	5.02	7.66	10.25	12.50	14.98	20.78	28.57	43.39	54.74	65.42
		0.46	0.80	1.10	1.62	2.19	3.23	4.46	5.25	7.47	11.40	15.25	18.60	22.29	30.92	42.52	64.57	81.46	97.36

(A) Wall thickness of schedule 5S and 10S does NOT permit threading in accordance with USA Standard Pipe Threads (ASME B1.20.1)

CARBON STEEL PIPE DATA: Extracted from ASME B36.10M-1985 Standards (except inside diameter and on size notation)  
 STAINLESS STEEL PIPE DATA: Extracted from ASME B36.19M-1985 Standards (except inside diameter and on size notation)

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## Other Vogt Documents

All of the valves discussed in this catalog have their own technical brochure. You can view them or download them or even order them by following the simple directions on the following page.

### Gate Valves:

VVENBR1002	Emission Reduction Gate Valve and Retrofit Bonnet Assembly
VVENBR1004	Forged Steel Bellowsal Gate Valves Class 800
VVENBR1006	Forged Steel Gate, Globe and Check Valves
VVENBR1022	Extended Body Forged Steel Valves, Welded Bonnet, Bolted Bonnet, Class 800 & 1500
VVENBR10019	Motor-Operated Gate and Globe Valves

### Globe Valves:

VVENBR1005	Forged Steel Bellowsal Globe Valves Class 150, 300, 600 & 800
VVENBR1006	Forged Steel Gate, Globe and Check Valves
VVENBR1007	Forged Steel Globe Valves for Water-Free Chlorine Service, Class 300, 600 & 800
VVENBR1008	Forged Steel "Y" Pattern Class 1690 and 2680
VVENBR1015	Forged Steel Flow Control Valves
VVENBR1016	"Y" Pattern Globe Valves, Class 800
VVENBR1018	"Y" Pattern Globe and Check Valves, Class 1690 & 2680
VVENBR1019	Motor-Operated Gate and Globe Valves

### Check Valves:

VVENBR1003	Zero-Leakage Forged Steel Check Valves
VVENBR1006	Forged Steel Gate, Globe and Check Valves
VVENBR1018	"Y" Pattern Globe and Check Valves, Class 1690 & 2680"

### All Valves:

VVENBR0002	Vogt Special Applications Product Catalog
VVENBR0003	Vogt Valve Product Overview

### Other Special Bulletins:

VVENBR1009	Forged Steel: ASTM A350, Grade LF2
VVENBR1011	Bellowsal Valves
VVENBR1012	Fugitive Emissions: A Leakage Viewpoint
VVENBR1013	A Treatise on Leakage
VVENBR1017	Sour Service Valve Applications
VVENBR1020	Post Weld Heat Treatment (PWHT) of Socket Weld Valves
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