CAMERON

NEWCO®

Forged Steel Valves

Technical Data

TC9308-4

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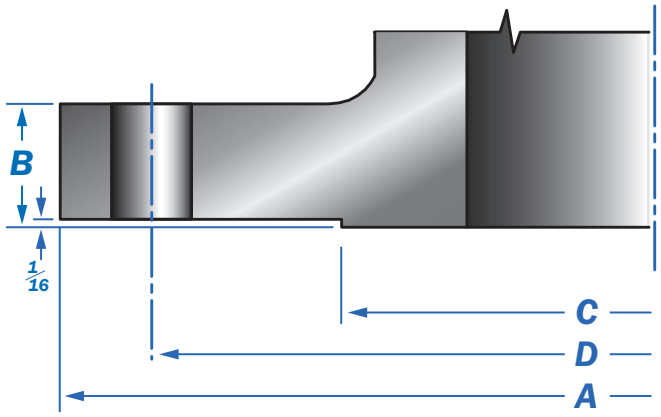
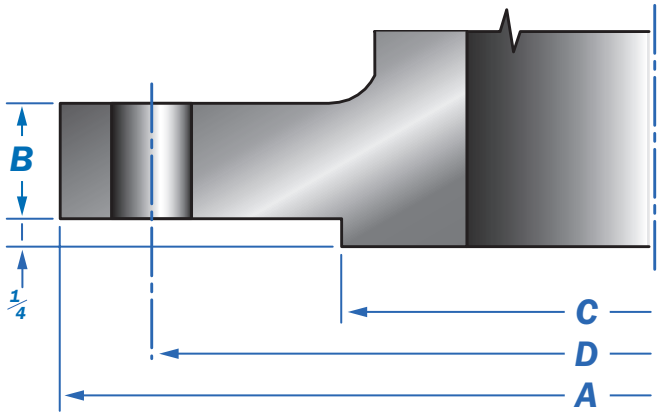
FLANGE DIMENSIONS - ASME B16.5

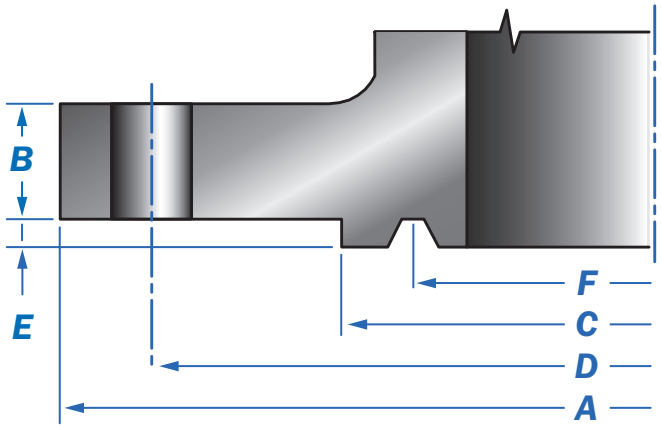
Raised Face Class 150 and 300



Raised Face Class 600 to 2500



RTJ Class 600 to 2500



Flange Dimensions in Inches										
Class 150										
Size In. / mm	A	B	C	D	Ring Joint Facing			Ring No.	Bolt Holes	
					C	F	E		Size	No.
1/2	3.5	0.44	1.38	2.38	-	-	-	-	0.62	4
15	89	11.58	34.9	60.3	-	-	-		16	
3/4	3.88	0.5	1.69	2.75	-	-	-	-	0.62	4
20	98	13	42.9	69	-	-	-		16	
1	4.25	0.55	2	3.12	-	-	-	-	0.62	4
25	108	14.5	50.8	79.4	-	-	-		16	
1-1/4	4.62	0.62	2.5	3.5	-	-	-	-	0.62	4
32	117	16	68.5	88.9	-	-	-		16	
1-1/2	5	0.69	2.88	3.88	-	-	-	-	0.62	4
40	127	17.5	73	98.4	-	-	-		16	
2	6	0.75	3.62	4.75	-	-	-	-	0.75	4
50	152	19.5	92.1	120.6	-	-	-		19	

Flange Dimensions in Inches										
Class 300										
Size In. / mm	A	B	C	D	Ring Joint Facing			Ring No.	Bolt Holes	
					C	F	E		Size	No.
1/2	3.75	0.56	1.38	2.62	-	-	-	-	0.62	4
15	95	14.5	34.9	66.7	-	-	-		16	
3/4	4.62	0.62	1.69	3.25	-	-	-	-	0.75	4
20	117	16	42.9	82.5	-	-	-		19	
1	4.88	0.69	2	3.5	-	-	-	-	0.75	4
25	124	17.5	50.8	88.9	-	-	-		19	
1-1/4	5.25	0.75	2.5	3.88	-	-	-	-	0.75	4
32	133	19.5	68.5	98.4	-	-	-		19	
1-1/2	6.12	0.81	2.88	4.5	-	-	-	-	0.88	4
40	156	21	73	114.3	-	-	-		22.5	
2	6.5	0.88	3.62	5	-	-	-	-	0.75	8
50	165	22.5	92.1	127	-	-	-		19	

Flange Dimensions in Inches Class 600										
Size In. / mm	A	B	C	D	Ring Joint Facing			Ring No.	Bolt Holes	
					C	F	E		Size	No.
1/2	3.75	0.56	1.38	2.62	2	1.34	0.22	R 11	0.62	4
15	95	14.5	34.9	66.7	51	34.14	5.6		16	
3/4	4.62	0.62	1.69	3.25	2.5	1.68	0.25	R 13	0.75	4
20	117	16	42.9	82.5	63.5	42.88	6.3		19	
1	4.88	0.69	2	3.5	2.75	2	0.25	R 16	0.75	4
25	124	17.5	50.8	88.9	70	50.8	6.3		19	
1-1/4	5.25	0.81	2.5	3.88	3.12	2.38	0.25	R 18	0.75	4
32	133	21	63.5	98.4	79.5	60.32	6.3		19	
1-1/2	6.12	0.88	2.88	4.5	3.56	2.69	0.25	R 20	0.88	4
40	156	22.5	73	114.3	90.5	68.28	6.3		22.5	
2	6.5	1	3.62	5	4.25	3.25	0.31	R 23	0.75	8
50	165	25.5	92.1	127	108	82.55	79		19	

Flange Dimensions in Inches Class 1500										
Size In. / mm	A	B	C	D	Ring Joint Facing			Ring No.	Bolt Holes	
					C	F	E		Size	No.
1/2	4.75	0.88	1.38	3.25	2.38	1.56	0.25	R 12	0.88	4
15	121	22.5	34.9	82.5	60.5	39.67	6.3		22.5	
3/4	5.12	1	1.69	3.5	2.62	1.75	0.25	R 14	0.88	4
20	130	22.5	42.9	88.9	66.5	44.45	6.3		22.5	
1	5.88	1.12	2	4	2.81	2	0.25	R 16	1	4
25	149	29	50.8	101.6	71.5	50.8	6.3		25.5	
1-1/4	6.25	1.12	2.5	4.38	3.19	2.37	0.25	R 18	1	4
32	159	29	63.5	111.1	81	60.32	6.3		25.5	
1-1/2	7	1.25	2.88	4.88	3.62	2.68	0.25	R 20	1.12	4
40	178	32	73	123.8	92	68.28	6.3		28.5	
2	8.5	1.5	3.62	6.5	4.88	3.75	0.31	R 24	1	8
50	216	38.5	92.1	165.1	124	95.25	7.9		25.5	

Flange Dimensions in Inches										
Class 2500										
Size In.	A	B	C	D	Ring Joint Facing			Ring No.	Bolt Holes	
mm					C	F	E		Size	No.
1/2	5.25	1.19	1.38	3.5	2.56	1.68	0.25	R 13	0.88	4
15	133.5	30.5	34.9	88.9	65	42.88	6.3		22.5	
3/4	5.5	1.25	1.69	3.75	2.88	2	0.25	R 16	0.88	4
20	139.5	32	42.9	95.3	73.2	50.8	6.3		22.5	
1	6.25	1.38	2	4.25	3.25	2.37	0.25	R 18	1	4
25	159	35	50.8	108	82.5	60.32	6.3		25.5	
1-1/4	7.25	1.5	2.5	5.12	4	2.84	0.31	R 21	1.12	4
32	184	38.5	63.5	130.2	101.6	72.24	7.9		28.5	
1-1/2	8	1.75	2.88	5.75	4.5	3.25	0.31	R 23	1.25	4
40	203	44.5	73	146.1	114.3	82.55	7.9		32	
2	9.25	2	3.62	6.75	5.25	4	0.31	R 26	1.12	8
50	235	51	92.1	171.5	133.4	101.6	7.9		28.5	

PRESSURE TEMPERATURE RATINGS - ASME B16.34 - 2004 (STANDARD)

Class 150																		
°F / PSI	-20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
A105*	285	260	230	200	170	140	125	110	95	80	65	50	35	20	-	-	-	-
LF2*	290	260	230	200	170	140	125	110	95	80	65	50	35	20	-	-	-	-
F11+	290	260	230	200	170	140	125	110	95	80	65	50	35	20	20**	20**	-	-
F22+	290	260	230	200	170	140	125	110	95	80	65	50	35	20	20**	20**	-	-
F5	290	260	230	200	170	140	125	110	95	80	65	50	35	20	20**	20**	20**	20**
F9	290	260	230	200	170	140	125	110	95	80	65	50	35	20	20**	20**	20**	20**
F91	290	260	230	200	170	140	125	110	95	80	65	50	35	20	20	20	20	20

Class 300																		
°F / PSI	-20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
A105*	740	680	655	635	605	570	550	530	505	410	320	230	135	85	-	-	-	-
LF2*	740	680	655	635	605	570	550	530	505	410	320	230	135	85	-	-	-	-
F11+	750	750	720	695	665	605	590	570	530	510	485	450	320	215	145	95	65	40
F22+	750	750	730	705	665	605	590	570	530	500	485	450	385	265	175	110	70	40
F5	750	750	730	705	665	605	590	570	530	510	485	375	275	200	145	100	60	35
F9	750	750	730	705	665	605	590	570	530	510	4185	450	375	255	170	115	75	50
F91	750	750	730	705	665	605	590	570	530	510	485	450	385	365	360	300	225	145

Class 600																		
°F / PSI	-20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
A105*	1480	1360	1310	1265	1205	1135	1100	1060	1015	825	640	460	275	170	-	-	-	-
LF2*	1480	1360	1310	1265	1205	1135	1100	1060	1015	825	640	460	275	170	-	-	-	-
F11+	1500	1500	1445	1385	1330	1210	1175	1135	1065	1015	975	900	640	430	290	190	130	80
F22+	1500	1500	1455	1410	1330	1210	1175	1135	1065	1015	975	900	755	535	350	220	135	80
F5	1500	1470	1400	1335	1290	1210	1175	1135	1065	1015	975	745	550	400	290	190	125	70
F9	1500	1500	1455	1410	1330	1210	1175	1135	1065	1015	975	900	755	505	345	225	150	105
F91	1500	1500	1455	1410	1330	1210	1175	1135	1065	1015	975	900	775	725	720	605	445	290

Class 800																		
°F / PSI	-20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
A105*	1974	1810	1747	1689	1609	1515	1467	1414	1352	1098	850	613	365	227	-	-	-	-
LF2*	1974	1810	1747	1689	1609	1515	1467	1414	1352	1098	850	613	365	227	-	-	-	-
F11+	2000	2000	1925	1849	1774	1614	1569	1515	1419	1355	1298	1200	850	577	383	257	173	110
F22+	2000	2000	1942	1880	1774	1614	1569	1515	1419	1355	1298	1200	1025	712	467	293	182	110
F5	2000	1964	1876	1782	1724	1614	1569	1515	1419	1355	1298	995	733	530	383	257	165	93
F9	2000	2000	1942	1880	1774	1614	1569	1515	1419	1355	1298	1200	1005	675	458	302	200	138
F91	2000	2000	1942	1880	1774	1614	1569	1515	1419	1355	1298	1200	1032	968	960	805	595	383

Class 900																		
°F / PSI	-20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
A105*	2220	2035	1965	1900	1810	1705	1650	1590	1520	1235	955	690	410	255	-	-	-	-
LF2*	2220	2035	1965	1900	1810	1705	1650	1590	1520	1235	955	690	410	255	-	-	-	-
F11+	2250	2250	2165	2080	1995	1815	1765	1705	1595	1525	1460	1350	955	650	430	290	195	125
F22+	2250	2250	2185	2115	1995	1815	1765	1705	1595	1525	1460	1350	1160	800	525	330	205	125
F5	2250	2210	2100	2005	1940	1815	1765	1705	1595	1525	1460	1120	825	595	430	290	185	105
F9	2250	2250	2185	2115	1995	1815	1765	1705	1595	1525	1460	1350	1130	760	515	340	225	155
F91	2250	2250	2185	2115	1995	1815	1765	1705	1595	1525	1460	1350	1160	1090	1080	905	670	430

Class 1500																		
°F / PSI	-20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
A105*	3705	3395	3270	3170	3015	2840	2745	2665	2535	2055	1595	1150	685	430	-	-	-	-
LF2*	3705	3395	3270	3170	3015	2840	2745	2665	2535	2055	1595	1150	685	430	-	-	-	-
F11+	3750	3750	3610	3465	3325	3025	2940	2840	2660	2540	2435	2245	1595	1080	720	480	325	205
F22+	3750	3750	3640	3530	3325	3025	2940	2840	2660	2540	2435	2245	1930	1335	875	550	345	205
F5	3750	3680	3495	3345	3230	3025	2940	2840	2660	2540	2435	1870	1370	995	720	480	310	170
F9	3750	3750	3640	3530	3325	3025	2940	2840	2660	2540	2435	2245	1885	1270	855	565	375	255
F91	3750	3750	3640	3530	3325	3025	2940	2840	2660	2540	2435	2245	1930	1820	1800	1510	1115	720

Class 1690																		
°F / PSI	-20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
A105*	4173	3824	3684	3571	3397	3199	3093	2999	2857	2316	1796	1295	772	484	-	-	-	-
LF2*	4173	3824	3684	3571	3397	3199	3093	2999	2857	2316	1796	1295	772	484	-	-	-	-
F11+	4225	4225	4067	3904	3746	3408	3313	3199	2996	2861	2744	2530	1796	1217	811	541	367	232
F22+	4225	4225	4102	3977	3746	3408	3313	3199	2996	2861	2744	2530	2175	1505	985	619	388	232
F5	4225	4146	3939	3768	3639	3408	3313	3199	2996	2861	2744	2107	1544	1120	811	541	349	192
F9	4225	4225	4102	3977	3746	3408	3313	3199	2996	2861	2744	2530	2124	1431	964	637	423	288
F91	4225	4225	4102	3977	3746	3408	3313	3199	2996	2861	2744	2530	2175	2050	2028	1701	1256	811

Class 2500																		
°F / PSI	-20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
A105*	6170	5655	5450	5280	5025	4730	4575	4425	4230	3430	2655	1915	1145	715	-	-	-	-
LF2*	6170	5655	5450	5280	5025	4730	4575	4425	4230	3430	2655	1915	1145	715	-	-	-	-
F11+	6250	6250	6015	5775	5540	5040	5905	4730	4430	4230	4060	3745	2655	1800	1200	800	545	345
F22+	6250	6250	6070	5880	5540	5040	4905	4730	4430	4230	4060	3745	3220	2230	1455	915	570	345
F5	6250	6135	5830	5570	5385	5040	4905	4730	4430	4230	4060	3115	2285	1655	1200	800	515	285
F9	6250	6250	6070	5880	5540	5040	4905	4730	4430	4230	4060	3745	3145	2115	1430	945	630	430
F91	6250	6250	6070	5880	5540	5040	4905	4730	4430	4230	4060	3745	3220	3030	3000	2515	1855	1200

Class 2680																		
°F / PSI	-20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
A105*	6615	6063	5843	5660	5386	5071	4905	4743	4534	3677	2847	2054	1227	766	-	-	-	-
LF2*	6615	6063	5843	5660	5386	5071	4905	4743	4534	3677	2847	2054	1227	766	-	-	-	-
F11+	6700	6700	6448	6191	5938	5403	5258	5071	4749	4534	4352	4015	2847	1930	1286	858	584	369
F22+	6700	6700	6507	6303	5938	5403	5258	5071	4749	4534	4352	4015	3452	2390	1560	981	611	369
F5	6700	6576	6249	5971	5772	5403	5258	5071	4749	4534	4352	3339	2450	1775	1286	858	552	306
F9	6700	6700	6507	6303	5938	5403	5258	5071	4749	4534	4352	4015	3371	2267	1533	1013	675	461
F91	6700	6700	6507	6303	5938	5403	5258	5071	4749	4534	4352	4015	3452	3248	3216	2696	1989	1286

Class 4500																		
°F / PSI	-20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
A105*	11110	10185	9815	9505	9040	8515	8240	7960	7610	6170	4785	3455	2055	1285	-	-	-	-
LF2*	11110	10185	9815	9505	9040	8515	8240	7960	7610	6170	4785	3455	2055	1285	-	-	-	-
F11+	11250	11250	10830	10400	9965	9070	8825	8515	7970	7610	7305	6740	4785	3240	2160	1440	975	615
F22+	11250	11250	10925	10585	9965	9070	8825	8515	7970	7610	7305	6740	5795	4010	2625	1645	1030	615
F5	11250	11040	10490	10030	9690	9070	8825	8515	7970	7610	7305	5605	4115	2985	2160	1440	925	515
F9	11250	11250	10925	10585	9965	9070	8825	8515	7970	7610	7305	6740	5655	3805	2570	1695	1130	770
F91	11250	11250	10925	10586	9965	9070	8825	8515	7970	7610	7305	6740	5795	5450	5400	4525	3345	2160

***** Not recommended for prolonged use above 800° F.
+ Not recommended for prolonged use above 1100° F.
****** For weld end valves only. Flanged end ratings terminate at 1000° F.

Note: *Packing, gasket or bolting may limit temperature. Please advise service temperature if above 1000° F. Ratings from ASME B16.34 standard class valves. Special class weld end valves to ASME B16.34 are available on special order.*

PRESSURE TEMPERATURE RATINGS - ASME B16.34 - 2004 (METRIC)

Class 150																		
°C / BAR	-29 to 38	100	150	200	250	300	350	375	400	425	450	475	500	538	575	600	625	650
A105*	19.6	17.7	15.8	13.8	12.1	10.2	8.4	7.4	6.5	5.5	4.6	3.7	2.8	1.4	-	-	-	-
LF2*	19.6	17.7	15.8	13.8	12.1	10.2	8.4	7.4	6.5	5.5	4.6	3.7	2.8	1.4	-	-	-	-
F11+	19.8	17.7	15.8	13.8	12.1	10.2	8.4	7.4	6.5	5.5	4.6	3.7	2.8	1.4	1.4**	1.4**	1.4**	1.1**
F22+	19.8	17.7	15.8	13.8	12.1	10.2	8.4	7.4	6.5	5.5	4.6	3.7	2.8	1.4	1.4**	1.4**	1.4**	1.1**
F5	20.0	17.7	15.8	13.8	12.1	10.2	8.4	7.4	6.5	5.5	4.6	3.7	2.8	1.4	1.4**	1.4**	1.4**	0.9**
F9	20.0	17.7	15.8	13.8	12.1	10.2	8.4	7.4	6.5	5.5	4.6	3.7	2.8	1.4	1.4**	1.4**	1.4**	1.4**
F91	20.0	17.7	15.8	13.8	12.1	10.2	8.4	7.4	6.5	5.5	4.6	3.7	2.8	1.4	1.4**	1.4**	1.4**	1.4**

Class 300																		
°C / BAR	-29 to 38	100	150	200	250	300	350	375	400	425	450	475	500	538	575	600	625	650
A105*	51.1	46.6	45.1	43.8	41.9	39.8	37.6	36.4	34.7	28.8	23.0	17.4	11.8	5.9	-	-	-	-
LF2*	51.1	46.6	45.1	43.8	41.9	39.8	37.6	36.4	34.7	28.8	23.0	17.4	11.8	5.9	-	-	-	-
F11+	51.7	51.5	49.7	48.0	46.3	42.9	40.3	38.9	36.5	35.2	33.7	31.7	25.7	14.9	8.8	6.1	4.3	2.8
F22+	51.7	51.5	50.3	48.6	46.3	42.9	40.3	38.9	36.5	35.2	33.7	31.7	28.2	18.4	10.5	6.9	4.5	2.8
F5	51.7	51.5	50.3	48.6	46.3	42.9	40.3	38.9	36.5	35.2	33.7	27.9	21.4	13.7	8.9	6.2	4.0	2.4
F9	51.7	51.5	50.3	48.6	46.3	42.9	40.3	38.9	36.5	35.2	33.7	31.7	28.2	17.5	10.5	7.2	5.0	3.5
F91	51.7	51.5	50.3	48.6	46.3	42.9	40.3	38.9	36.5	35.2	33.7	31.7	28.2	25.2	24.0	19.5	14.6	9.9

Class 600																		
°C / BAR	-29 to 38	100	150	200	250	300	350	375	400	425	450	475	500	538	575	600	625	650
A105*	102.1	93.2	90.2	87.6	83.9	79.6	75.1	72.7	69.4	57.5	46.0	34.9	23.5	11.8	-	-	-	-
LF2*	102.1	93.2	90.2	87.6	83.9	79.6	75.1	72.7	69.4	57.5	46.0	34.9	23.5	11.8	-	-	-	-
F11+	103.4	103.0	99.5	95.9	92.7	85.7	80.4	77.6	73.3	70.0	67.7	63.4	51.5	29.8	17.6	12.2	8.5	5.7
F22+	103.4	103.0	100.3	97.2	92.7	85.7	80.4	77.6	73.3	70.0	67.7	63.4	56.5	36.9	21.1	13.8	8.9	5.7
F5	103.4	103.0	100.3	97.2	92.7	85.7	80.4	77.6	73.3	70.0	67.7	55.7	42.8	27.4	17.8	12.5	8.0	4.7
F9	103.4	103.0	100.3	97.2	92.7	85.7	80.4	77.6	73.3	70.0	67.7	63.4	56.5	35.0	20.9	14.4	9.9	7.1
F91	103.4	103.0	100.3	97.2	92.7	85.7	80.4	77.6	73.3	70.0	67.7	63.4	56.5	50.0	47.9	39.0	29.2	19.9

Class 800																		
°C / BAR	-29 to 38	100	150	200	250	300	350	375	400	425	450	475	500	538	575	600	625	650
A105*	136.0	124.7	120.4	116.3	110.8	104.4	101.1	97.4	93.1	75.7	58.6	42.3	25.2	15.6	-	-	-	-
LF2*	136.0	124.7	120.4	116.3	110.8	104.4	101.1	97.4	93.1	75.7	58.6	42.3	25.2	15.6	-	-	-	-
F11+	137.8	137.8	132.6	127.4	122.2	111.2	108.1	104.4	97.7	93.4	89.5	82.7	58.6	39.7	26.4	17.7	11.9	7.6
F22+	137.8	137.8	133.8	129.5	122.2	111.2	108.1	104.4	97.7	93.4	89.5	82.7	70.6	49.0	32.2	20.2	12.5	7.6
F5	137.8	135.3	128.6	122.8	118.8	111.2	108.1	104.4	97.7	93.4	89.5	68.6	50.5	36.5	26.4	17.7	11.4	6.4
F9	137.8	137.8	133.8	129.5	122.2	111.2	108.1	104.4	97.7	93.4	89.5	82.7	69.3	46.5	31.6	20.8	13.8	9.5
F91	137.8	137.8	133.8	129.5	122.2	111.2	108.1	104.4	97.7	93.4	89.5	82.7	71.1	66.7	66.2	55.5	41.0	26.4

Class 900																		
°C / BAR	-29 to 38	100	150	200	250	300	350	375	400	425	450	475	500	538	575	600	625	650
A105*	153.2	139.8	135.2	131.4	125.8	119.5	112.7	109.1	104.2	86.3	69.0	52.3	35.3	17.7	-	-	-	-
LF2*	153.2	139.8	135.2	131.4	125.8	119.5	112.7	109.1	104.2	86.3	69.0	52.3	35.3	17.7	-	-	-	-
F11+	155.1	154.4	149.2	143.9	139.0	128.6	120.7	116.5	109.8	105.1	101.4	95.1	77.2	44.7	26.4	18.3	12.8	8.5
F22+	155.1	154.6	150.6	145.8	139.0	128.6	120.7	116.5	109.8	105.1	101.4	95.1	84.7	55.3	31.6	20.7	13.4	8.5
F5	155.1	154.6	150.6	145.8	139.0	128.6	120.7	116.5	109.8	105.1	101.4	83.6	64.1	41.1	26.7	18.7	12.0	7.1
F9	155.1	154.6	150.6	145.8	139.0	128.6	120.7	116.5	109.8	105.1	101.4	95.1	84.7	52.5	31.4	21.5	14.9	10.6
F91	155.1	154.6	150.6	145.8	139.0	128.6	120.7	116.5	109.8	105.1	101.4	95.1	84.7	75.2	71.8	58.5	43.8	29.8

Class 1500																		
°C / BAR	-29 to 38	100	150	200	250	300	350	375	400	425	450	475	500	538	575	600	625	650
A105*	255.3	233.0	225.4	219.0	209.7	199.1	187.8	181.8	173.6	143.8	115.0	87.2	58.8	29.5	-	-	-	-
LF2*	255.3	233.0	225.4	219.0	209.7	199.1	187.8	181.8	173.6	143.8	115.0	87.2	58.8	29.5	-	-	-	-
F11+	258.6	257.4	248.7	239.8	231.8	214.4	201.1	194.1	183.1	175.1	169.0	158.2	128.6	74.5	44.0	30.5	21.3	14.2
F22+	258.6	257.6	250.8	243.4	231.8	214.4	201.1	194.1	183.1	175.1	169.0	158.2	140.9	92.2	52.6	34.4	22.3	14.2
F5	258.6	257.6	250.8	243.4	231.8	214.4	201.1	194.1	183.1	175.1	169.0	139.3	106.9	68.6	44.4	31.2	20.0	11.8
F9	258.6	257.6	250.8	243.4	231.8	214.4	201.1	194.1	183.1	175.1	169.0	158.2	140.9	87.5	52.3	35.9	24.8	17.7
F91	258.6	257.6	250.8	243.4	231.8	214.4	201.1	194.1	183.1	175.1	169.0	158.2	140.9	125.5	119.7	97.5	73.0	49.6

Class 1690																		
°C / BAR	-29 to 38	100	150	200	250	300	350	375	400	425	450	475	500	538	575	600	625	650
A105*	287.5	263.5	253.8	246.0	234.0	220.4	213.1	206.7	196.9	159.6	123.8	89.2	53.2	33.4	-	-	-	-
LF2*	287.5	263.5	253.8	246.0	234.0	220.4	213.1	206.7	196.9	159.6	123.8	89.2	53.2	33.4	-	-	-	-
F11+	291.1	291.1	280.2	269.0	258.1	234.8	28.3	220.4	206.4	197.1	189.0	174.3	123.8	83.8	55.9	37.3	25.3	16.0
F22+	291.1	291.1	282.6	274.0	258.1	234.8	228.3	220.4	206.4	197.1	189.0	174.3	149.9	103.7	67.9	42.7	26.7	16.0
F5	291.1	285.7	271.4	259.6	250.8	234.8	228.3	220.4	206.4	197.1	189.0	145.1	106.4	77.2	55.9	37.3	24.0	13.2
F9	291.1	291.1	282.6	274.0	258.1	234.8	228.3	220.4	206.4	197.1	189.0	174.3	146.4	98.6	66.4	43.9	29.2	19.9
F91	291.1	291.1	282.6	274.0	258.1	234.8	228.3	220.4	206.4	197.1	189.0	174.3	149.9	141.2	139.7	117.2	86.5	55.9

Class 2500																		
°C / BAR	-29 to 38	100	150	200	250	300	350	375	400	425	450	475	500	538	575	600	625	650
A105*	425.5	388.3	375.6	365.0	349.5	331.8	313.0	303.1	289.3	239.7	191.7	145.3	97.9	49.2	-	-	-	-
LF2*	425.5	388.3	375.6	365.0	349.5	331.8	313.0	303.1	289.3	239.7	191.7	145.3	97.9	49.2	-	-	-	-
F11+	430.9	429.0	414.5	399.6	386.2	357.1	335.3	323.2	304.9	291.6	281.8	263.9	214.4	124.1	73.4	50.9	35.5	23.6
F22+	430.9	429.4	418.2	405.4	386.2	357.1	335.3	323.2	304.9	291.6	281.8	263.9	235.0	153.7	87.7	57.4	37.2	23.6
F5	430.9	429.4	418.2	405.4	386.2	357.1	335.3	323.2	304.9	291.6	281.8	232.1	178.2	114.3	74.0	51.9	33.3	19.7
F9	430.9	429.4	418.2	405.4	386.2	357.1	335.3	323.2	304.9	291.6	281.8	263.9	235.0	145.8	87.1	59.8	41.4	29.5
F91	430.9	429.4	418.2	405.4	386.2	357.1	335.3	323.2	304.9	291.6	281.8	263.9	235.0	208.9	199.5	162.5	121.7	82.7

Class 2680																		
°C / BAR	-29 to 38	100	150	200	250	300	350	375	400	425	450	475	500	538	575	600	625	650
A105*	455.7	417.7	402.6	390.0	371.1	349.4	337.9	326.8	312.4	253.3	196.1	141.5	84.5	52.8	-	-	-	-
LF2*	455.7	417.7	402.6	390.0	371.1	349.4	337.9	326.8	312.4	253.3	196.1	141.5	84.5	52.8	-	-	-	-
F11+	461.6	461.6	444.3	426.6	409.1	372.2	362.3	349.4	327.2	312.4	299.9	276.6	196.1	132.9	88.6	59.1	40.2	25.4
F22+	461.6	461.6	448.3	434.3	409.1	372.2	362.3	349.4	327.2	312.4	299.9	276.6	237.8	164.7	107.5	67.6	42.1	25.4
F5	461.6	453.1	430.6	411.4	397.7	372.2	362.3	349.4	327.2	312.4	299.9	230.1	168.8	122.3	88.6	59.1	38.0	21.1
F9	461.6	461.6	448.3	434.3	409.1	372.2	362.3	349.4	327.2	312.4	299.9	276.6	232.3	156.2	105.6	69.8	46.5	31.7
F91	461.6	461.6	448.3	434.3	409.1	372.2	362.3	349.4	327.2	312.4	299.9	276.6	237.8	223.8	221.6	185.7	137.0	88.6

Class 4500																		
°C / BAR	-29 to 38	100	150	200	250	300	350	375	400	425	450	475	500	538	575	600	625	650
A105*	765.9	699.0	676.1	657.0	629.1	597.3	563.5	545.5	520.8	431.5	345.1	261.5	176.3	88.6	-	-	-	-
LF2*	765.9	699.0	676.1	657.0	629.1	597.3	563.5	545.5	520.8	431.5	345.1	261.5	176.3	88.6	-	-	-	-
F11+	775.7	772.2	746.2	719.4	694.8	642.6	603.3	581.8	548.5	524.7	507.0	474.8	385.9	223.4	132.0	91.6	63.9	42.6
F22+	775.7	773.0	752.8	729.8	694.8	642.6	603.3	581.8	548.5	524.7	507.0	474.8	423.0	276.6	157.9	103.3	66.9	42.6
F5	775.7	773.0	752.8	729.8	694.8	642.6	603.3	581.8	548.5	524.7	507.0	417.8	320.7	205.7	133.3	93.5	59.9	35.5
F9	775.7	773.0	752.8	729.8	694.8	642.6	603.3	581.8	548.5	524.7	507.0	474.8	423.0	262.4	156.8	107.7	74.5	53.2
F91	775.7	773.0	752.8	729.8	694.8	642.6	603.3	581.8	548.5	524.7	507.0	474.8	423.0	375.8	359.1	292.5	219.1	148.9

***** Not recommended for prolonged use above 425° C.
+ Not recommended for prolonged use above 600° C.
****** For weld end valves only. Flanged end ratings terminate at 538° C.

Note: *Packing, gasket or bolting may limit temperature. Please advise service temperature if above 538° C. Ratings from ASME B16.34 standard class valves. Special class weld end valves to ASME B16.34 are available on special order.*

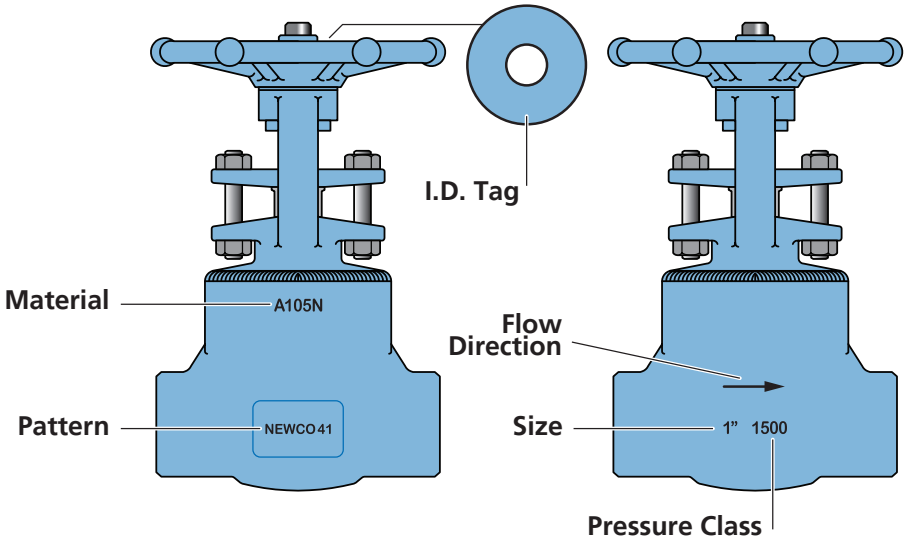
OVERVIEW

Valve and I.D. Tag Overview

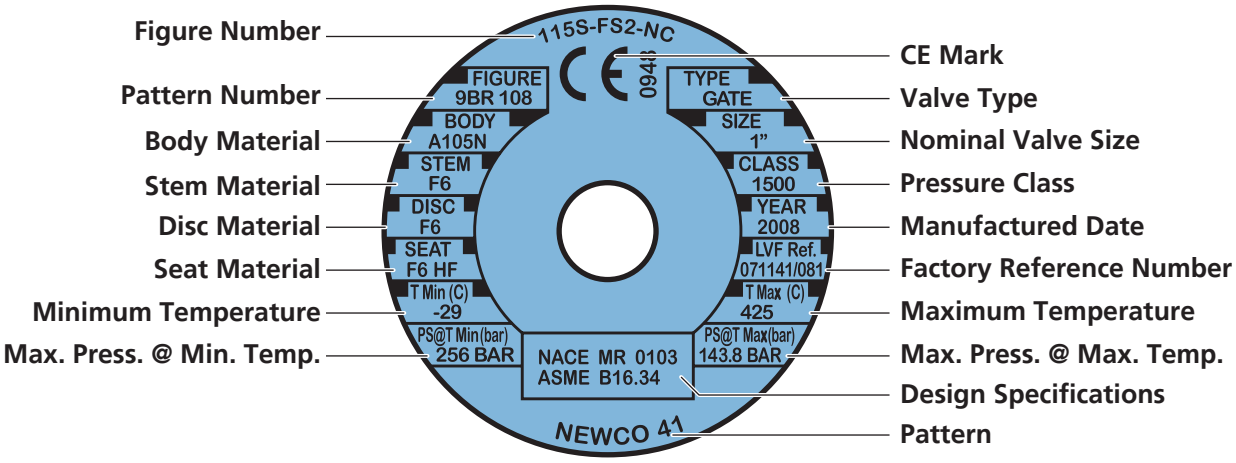
The identification tag displays all construction and tracking data regarding the respective valve on which it is attached. Below is a general overview of the identification tag components.

I.D. tags are located under the handwheel nut.

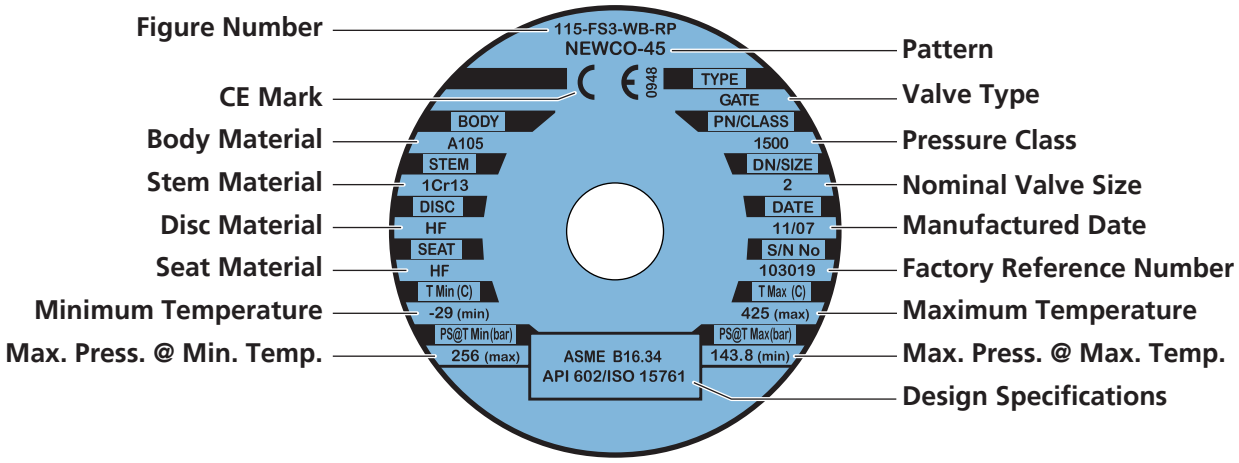
Globe and check valves will have a flow direction arrow on body for proper installation.



Cameron's NEWCO 41 I.D. Tag



Cameron's NEWCO 45 I.D. Tag



Body/Bonnet Materials

Cameron's NEWCO® forged steel valves are available in stock in a wide range of body/bonnet materials and optional trim materials. Listed below are some of the more popular materials. Additional materials are available. Please contact Cameron or your local distributor for details.

NEWCO Material Designation	Common Description	ASTM Specs.	Body/Bonnet Material Service Limitations*
FS	Carbon Steel	A105	Non-corrosive service water, oil and gases at temperatures between -20° F and +800° F.
LF2	Low Temp. Carbon	A350	Low temperature service between -50° F and +800° F.
F11	1.25% Chrome and .5% Moly	A182	Non-corrosive service water, oil and gases at temperatures between -20° F and +1100° F.
F22	2.25% Chrome and 1% Moly	A182	Non-corrosive service water, oil and gases at temperatures between -20° F and +1100° F.
F5	5% Chrome and .5% Moly	A182	Corrosive, non-corrosive or erosive service at temperatures between -20° F and +1200° F.
F9	9% Chrome and 1% Moly	A182	Corrosive, non-corrosive or erosive service at temperatures between -20° F and +1200° F.
F91	9% Chrome, 1% Moly and V	A182	Corrosive, non-corrosive or erosive service at temperatures between -20° F and +1200° F.
F316	316	A182	Corrosive, cryogenic or high temperature service between -450° F and +1200° F.

* Limitations are per 2004 Edition of ASME B16.34.

Trim Materials

The following are Cameron's NEWCO standard trim designations:

Trim Number	Common Name	API 600 Trim No.	Seat Ring Facing (1)	Wedge or Disc Facing (1)	Stem	Other Trim Parts (2)	Service Limitations
1	13 Chrome	1	CR 13	CR 13	CR 13	CR 13	Non-corrosive applications. Steam, gas and general service to 700° F. Oil and oil vapor to 900° F.
2	Half Stellite	8	HF	CR 13	CR 13	CR 13	Steam, gas and general service to 1000° F. Standard trim for gate valves.
3	Full Stellite	5	HF	HF	CR 13	CR 13	Premium trim service to 1200° F. Excellent for high pressure water and steam service.
4	316	10	316	316	316	316	Corrosive services to 850° F. Low temperature service standard for 316 SS valves.
4/2	316/Half Stellite	12	HF	316	316	316	
4/3	316/Full Stellite	16	HF	HF	316	316	
5	Monel	9	NiCu	NiCu	NiCu	NiCu	Corrosive services to 750° F.
5/2	Monel/Half Stellite	11	HF	NiCu	NiCu	NiCu	
5/3	Monel/Full Stellite	-	HF	HF	NiCu	NiCu	
6	Alloy 20	13	A20	A20	A20	A20	Corrosive services to 300° F.
X	Special	Special	Special	Special	Special	Special	Customer to specify.

(1) Facing is defined as the seating surface of a seat ring and wedge/disc.

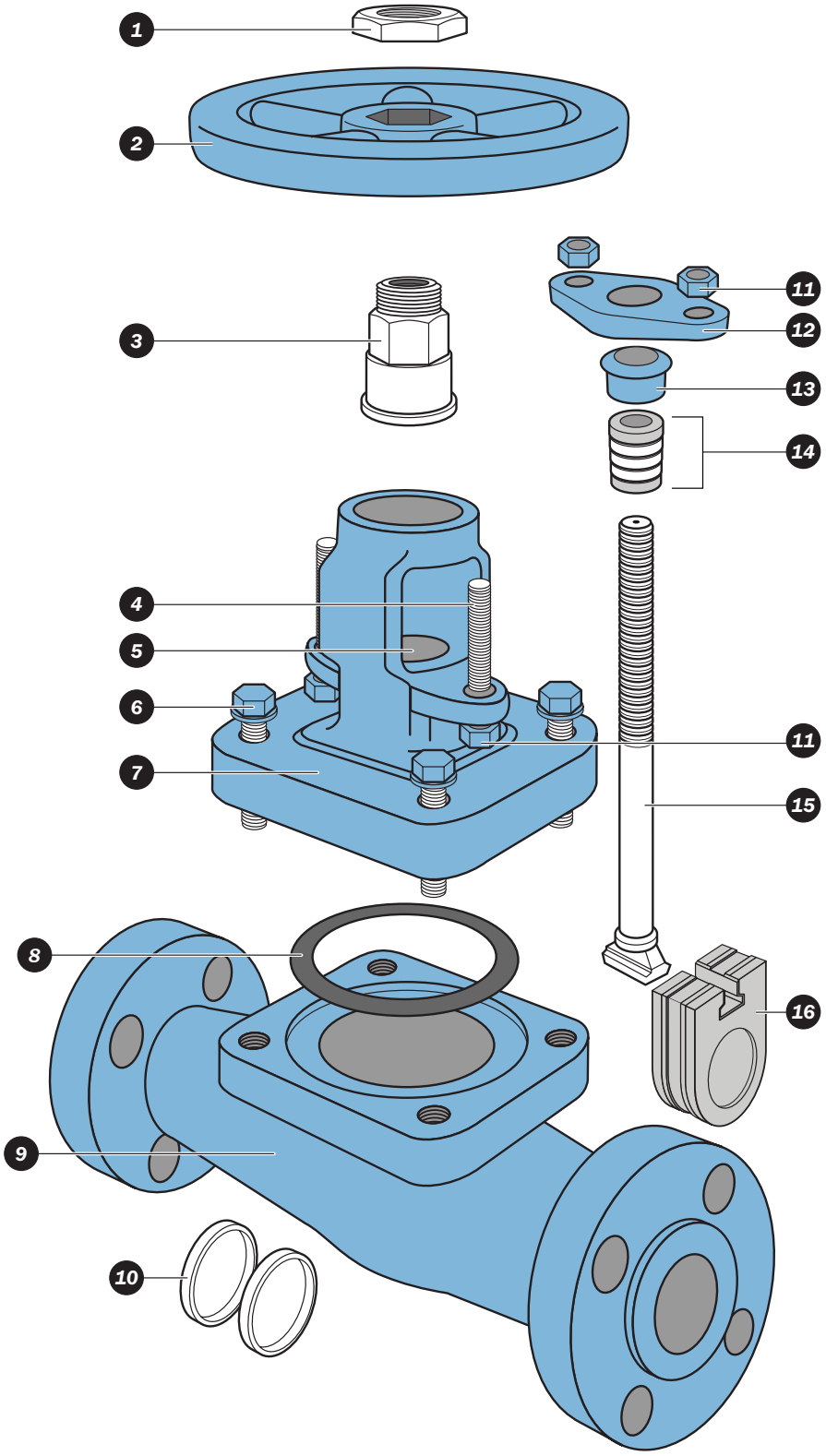
(2) Other trim parts are defined as small internal parts that are normally in contact with the service fluid. This includes the stem, etc. in gate and globe valves and the swing check disc nut.

Features and Benefits

- Material Test Reports
- International Organization for Standardization (ISO)
- Traceability
- Fugitive Emissions Tested
- API-598 Tested
- Major End-user Approved
- Ship from Multiple North American Locations
- Extensive Engineering Capabilities
- Excellent Customer Service
- Warranty
- Field Services for Start-up
- In-house Automation Capabilities

I. FORGED STEEL BOLTED AND WELDED BONNET GATE VALVES SIZES: 1/4" TO 3" (6MM TO 80MM) • PRESSURE CLASS: 150 TO 4500

Cameron's Typical NEWCO Forged Steel Bolted and Welded Bonnet Gate Valve Expanded View



1. Handwheel Nut: The handwheel nut secures the handwheel to the bonnet assembly.

2. Handwheel: The handwheel cycles the valve.

3. Stem Nut: The stem nut provides a precision guide for proper stem alignment.

4. & 11. Gland Bolts and Nuts: The gland bolts and nuts allow for easy adjustments for packing compression.

5. Stuffing Box: The stuffing box contains the packing.

6. Bonnet Bolts: The bonnet bolts secure the bonnet to the body.

7. Yoke and Bonnet: The bonnet assemblies are built to the same standards as the bodies. Larger size gate valves utilize a multi-piece bonnet design.

8. Bonnet Gasket: The bonnet gasket creates a leakproof seal between the bonnet and body.

9. Body: Cameron's NEWCO forged steel bodies provide low resistance flow and optimum strength and performance.

10. Seat Rings: To ensure a stable shutoff, seat rings are aligned and swaged into the valve, then precision ground for optimal seating.

12. Gland Flange: The gland flange applies pressure to the gland for accurate packing adjustments.

13. Gland: The gland compresses the packing to create a stem seal above the back seat between the bonnet and stem.

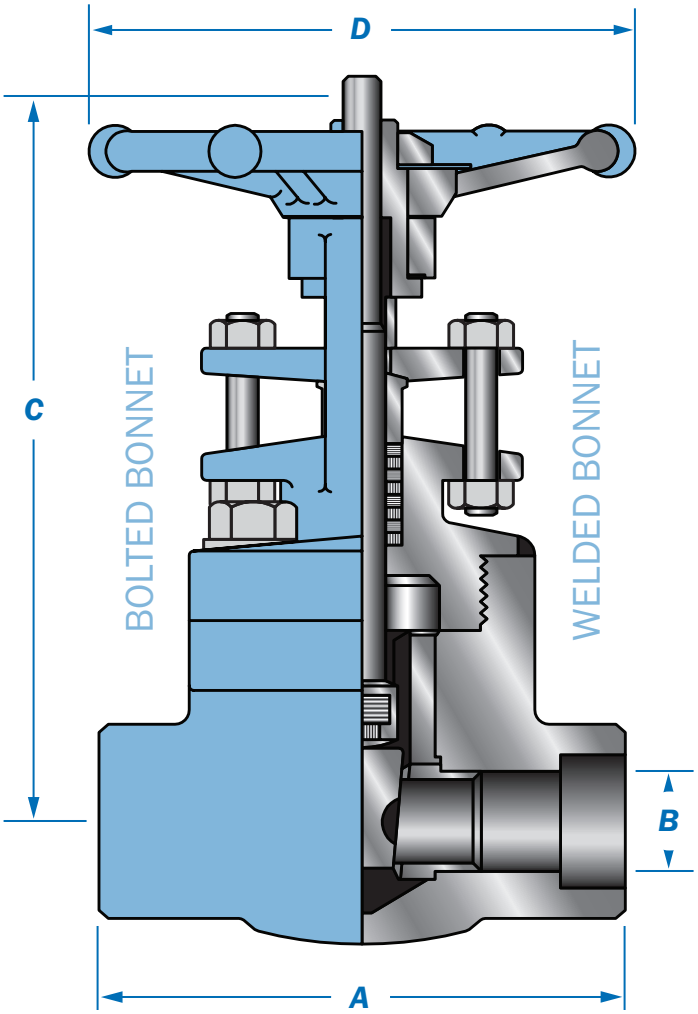
14. Packing: The packing creates a seal above the back seat between the bonnet and stem.

15. Stem: The stem is precision machined and inserts into the horizontal channel in the disc.

16. Wedge: The solid wedge is machined to the tightest tolerances to ensure trouble free shutoff and cycling.

FORGED STEEL BOLTED AND WELDED BONNET GATES
THREADED, SOCKET WELD AND BUTTWELD ENDS CONVENTIONAL PORT
CLASS 800 TO 2500
SIZES: 1/4” TO 3” (6MM TO 80MM)

Design and Manufacturing Standards
Valve Design: API 602
Pipe Threads, General Purpose, Inch: ASME B1.20.1
Socket Welding and Threaded: ASME B16.11
Tested in Accordance With: API 598
Recommended Spare Parts*



Class 800 to 2500
Bolted and Welded Bonnet Gates

Size In. — mm	Class 800 WB										Class 800 BB									
	A		B		C		D		Wt.		A		B		C		D		Wt.	
	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45
1/4	3.1		0.31		5.7		3.1		3.5		3.1		0.31		5.7		3.1		3.9	
6	80		8		145		80		1.6		80		8		145		80		1.8	
3/8	3.1		0.39		5.7		3.1		3.5		3.1		0.39		5.7		3.1		3.9	
9	80		10		145		80		1.6		80		10		145		80		1.8	
1/2	3.2	3.1	0.39	0.39	5.7	4.9	3.2	3.3	3.2	3.1	3.2	3.1	0.39	0.39	5.7	4.9	3.2	3.3	3.9	3.1
15	80	78.7	10	10	145	124.5	80	83.8	1.6	1.4	80	78.7	10	10	145	124.5	80	83.8	1.8	1.4
3/4	3.5	3.6	0.55	0.55	6.1	5.2	3.2	3.3	4.4	3.7	3.5	3.6	0.55	0.55	6.1	5.2	3.2	3.3	4.6	3.7
20	90	91.4	14	14	155	132.1	80	83.8	2	1.7	90	91.4	14	14	155	132.1	80	83.8	2.1	1.7
1	4.3	4.4	0.71	0.71	7.3	6.7	3.9	4.7	7.1	6.6	4.3	4.4	0.71	0.71	7.3	6.7	3.9	4.7	7.9	6.6
25	110	111.8	18	18	185	170.2	100	119.4	3.2	3	110	111.8	18	18	185	170.2	100	119.4	3.6	3
1-1/4	5.0	4.7	0.95	0.95	8.6	7.6	4.7	5.9	10.7	11	5.0	4.7	0.95	0.95	8.6	7.6	4.7	5.9	11.2	11
32	127	119.4	24	24	218	193	120	149.9	4.8	5	127	119.4	24	24	218	193	120	149.9	5.3	5
1-1/2	5.0	4.7	1.22	1.22	10.0	8.3	5.5	5.9	14.3	12.3	5.0	4.7	1.22	1.22	10.0	8.3	5.5	5.9	15.4	12.3
40	127	119.4	30	30	255	210.8	140	149.9	6.5	5.6	127	119.4	30	30	255	210.8	140	149.9	7.5	5.6
2	5.1	5.5	1.44	1.44	10.9	9.3	5.5	6.7	18.7	20.3	5.1	5.5	1.44	1.44	10.9	9.3	5.5	6.7	20.0	20.3
50	130	139.7	36.5	36.5	277	236.2	140	170.2	8.5	9.2	130	139.7	36.5	36.5	277	236.2	140	170.2	9.8	9.2
3	-		-		-		-		-		7.3		2.13		15.5		11.3		56	
75	-		-		-		-		-		184.2		53.98		393.7		285.8		25.5	

Size In. — mm	Class 1500 WB										Class 1500 BB									
	A		B		C		D		Wt.		A		B		C		D		Wt.	
	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45
1/2	3.5	4.4	0.39	0.55	6.07	7.8	3.2	4.9	5.0	9	3.5	4.4	0.39	0.55	6.07	7.8	3.2	4.9	5.5	9
15	90	111.8	10	13.97	152	198.1	80	124.5	2.2	4.1	90	111.8	10	139.7	152	198.1	80	124.5	2.5	4.1
3/4	4.3	4.4	0.55	0.55	7.1	7.8	3.9	4.9	8.4	9.5	4.3	4.4	0.55	0.55	7.1	7.8	3.9	4.9	8.4	9.5
20	110	111.8	14	13.97	180	198.1	100	124.5	3.6	4.3	110	111.8	14	139.7	180	198.1	100	124.5	3.8	4.3
1	4.7	4.5	0.75	0.71	8.6	8.6	4.7	6.2	12.6	13.5	4.7	4.5	0.75	0.71	8.6	8.6	4.7	6.2	11.9	13.5
25	120	114.3	18	18.03	218	218.4	120	157.5	5.2	6.1	120	114.3	18	18.03	218	218.4	120	157.5	5.4	6.1
1-1/4	5.1	4.7	0.95	0.95	9.8	9.3	5.5	6.2	14.6	19.2	5.1	4.7	0.95	0.95	9.9	9.3	5.5	6.2	17.6	19.2
32	130	119.4	24	24.13	250	236.2	140	157.5	7.5	8.7	130	119.4	24	24.13	252	236.2	140	157.5	8	8.7
1-1/2	5.1	5.5	1.16	1.14	10.8	10.8	5.5	7	22.0	26.9	5.1	5.5	1.16	1.14	10.8	10.8	5.5	7	22.4	26.9
40	130	139.7	29	28.95	275	274.3	140	177.8	10	12.2	130	139.7	29	28.95	275	274.3	170	177.8	10	12.2
2	5.9	6.4	1.44	1.44	12.6	12.6	6.7	7.9	33.0	39	5.9	6.4	1.44	1.44	12.6	12.6	6.7	7.9	33.0	39
50	150	162.6	36.5	36.57	320	320.0	170	200.7	14.5	17.7	150	162.6	37	36.57	320	320.0	170	200.7	15	17.7

Size In. — mm	Class 2500 WB										Class 2500 BB									
	A		B		C		D		Wt.		A		B		C		D		Wt.	
	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45
1/2	4.3	5.9	0.39	0.39	6.9	9.5	3.9	6.3	7.7	27.1	4.3	5.9	0.39	0.39	8.3	9.5	3.9	6.3	12.1	27.1
15	110	149.9	10	9.9	175	241.3	100	160	3.5	12.3	110	149.9	9.9	9.9	210	241.3	100	160	5.5	12.3
3/4	4.7	5.9	0.55	0.55	8.3	9.5	4.7	6.3	12.1	26.6	4.7	5.9	0.55	0.55	10.0	9.5	4.7	6.3	18.7	26.6
20	120	149.9	14	13.97	210	241.3	120	160	5.5	12.1	120	149.9	13.97	13.97	255	241.3	120	160	8.5	12.1
1	5.1	6.7	0.75	0.71	9.4	10.8	5.5	7.1	16.5	26	5.1	6.7	0.75	0.71	10.4	10.8	5.5	7.1	22.4	26
25	130	170.2	18	18.03	240	274.3	140	180.3	7.5	11.8	130	170.2	19.05	18.03	265	274.3	140	180.3	10.2	11.8
1-1/4	5.1	8.7	0.95	0.95	11.0	13.1	6.7	7.8	22	46	8.3	8.7	0.95	0.95	14.4	13.1	6.7	7.8	57.2	46
32	130	220.9	24	24.13	280	332.7	170	198.1	10	20.9	210	220.9	24.13	24.13	365	332.7	170	198.1	26	20.9
1-1/2	8.3	8.7	1.16	1.14	12.2	13.1	6.7	7.8	35.2	60.5	8.3	8.7	1.16	1.14	14.8	13.1	6.7	7.8	57.2	60.5
40	210	220.9	29	28.95	310	332.7	170	198.1	16	27.5	210	220.9	29.46	28.95	375	332.7	170	198.1	26	27.5
2	9.4	9.8	1.44	1.44	14	16.8	10.2	11.8	55	117.3	9.4	9.8	1.44	1.44	15.4	16.8	10.2	11.8	81.4	117.3
50	240	248.9	36.5	36.57	355	426.7	260	299.7	25	53.3	240	248.9	36.57	36.57	390	426.7	260	299.7	37	53.3

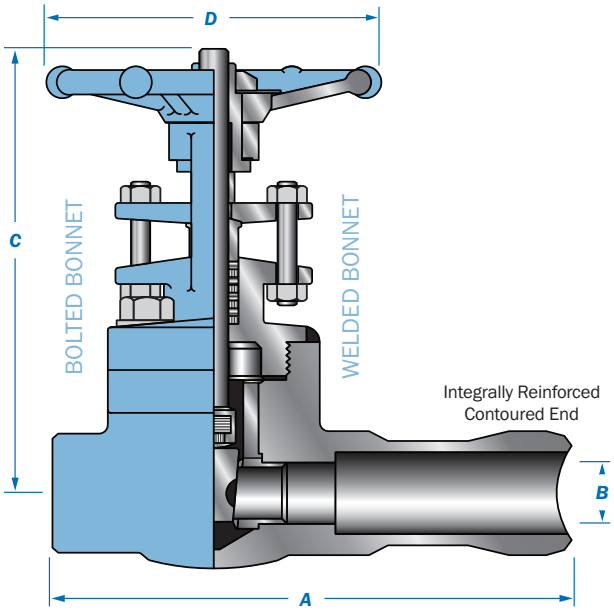
Typical Bill Materials (See page 61 for available materials)

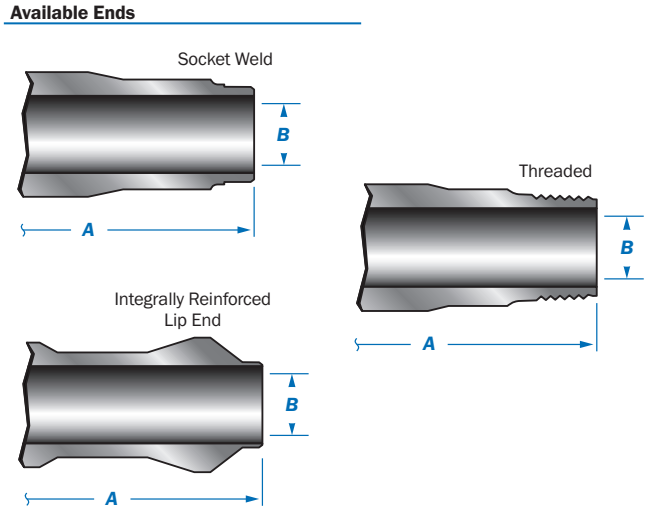
Component	Material	ASTM Spec
Body	Carbon Steel	A105N
Bonnet	Carbon Steel	A105N
* Packing	Graphite W/Braided Carbon Fiber End Rings	
* Gasket	Stainless Steel 316 Graphite	
Stem	Stainless Steel	A479-410
Wedge	Stainless Steel	13 Chrome
Seat Rings	Stainless Steel	A479-410
Bonnet Bolt	Alloy Steel	A193 B7
Handwheel Nut	Carbon Steel	Commercial
Nameplate	Aluminum	Commercial
Handwheel	Carbon Steel	A105N
Yoke Sleeve	Stainless Steel	AISI 416
Gland Nuts	Carbon Steel	A194 2H
Gland Flange	Carbon Steel	A105N
Gland Studs	Stainless Steel	AISI 410
Packing Gland	Stainless Steel	A479-316

Note: *Dimensions: Inches/Millimeters - Weights: Pounds/Kilograms.*
Dimensions are subject to change without notice.

FORGED STEEL EXTENDED BODY GATES
BOLTED AND WELDED BONNET CONVENTIONAL PORT
CLASS 800 TO 1500
SIZES: 1/2” TO 2”

Design and Manufacturing Standards
Valve Design: API 602
Pipe Threads, General Purpose, Inch: ASME B1.20.1
Socket Welding : ASME B16.11
Tested in Accordance With: API 598
Recommended Spare Parts*





Class 800 and 1500 Extended Body Bolted and Welded Bonnet Gate

Size In. — mm	Class 800 IR Contoured End										Class 800 IR - Lip End									
	A		B		C		D		Wt.		A		B		C		D		Wt.	
	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45
1/2	8.6	0.39	5.9	3.2	6		8.6	0.39	5.9	3.2	6									
15	207	9.9	150	81	3		207	9.9	150	81	3									
3/4	8.6	0.55	6.1	3.2	7		8.6	0.55	6.1	3.2	7									
20	218	13.9	155	81	3		218	13.9	155	81	3									
1	9.6	0.71	7.3	3.9	10		9.6	0.71	7.3	3.9	10									
25	245	18	185	99	5		245	18	185	99	5									
1-1/2	10.4	1.14	10.2	5.5	19		10.4	1.14	10.2	5.5	19									
40	263	28.9	259	140	9		263	28.9	259	140	9									
2	11.4	1.44	10.8	5.5	29		11.4	1.44	10.8	5.5	29									
50	289	36.6	274	140	13		289	36.6	274	140	13									

Size In. — mm	Class 800 Threaded										Class 800 Socket Weld									
	A		B		C		D		Wt.		A		B		C		D		Wt.	
	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45
1/2	5.6	0.39	6.4	3.1	5.7		5.6	0.39	6.4	3.1	5.7									
15	141.5	10	162	80	2.6		141.5	10	162	80	2.6									
3/4	5.8	0.55	7.3	3.9	6.4		5.8	0.55	7.3	3.9	6.4									
20	146.5	14	185	100	2.9		146.5	14	185	100	2.9									
1	6.5	0.7	7.6	3.9	9.5		6.5	0.7	7.6	3.9	9.5									
25	166	18	192	100	4.3		166	18	192	100	4.3									
1-1/2	7.5	1.14	10	5.5	19.4		7.5	1.14	10	5.5	19.4									
40	191	29	255	140	8.8		191	29	255	140	8.8									
2	8.5	1.44	10.7	6.7	28.6		8.5	1.44	10.7	6.7	28.6									
50	216	36.5	273	170	13		216	36.5	273	170	13									

Size In. — mm	Class 1500 Re-Out-Forced										Class 1500 Re-In Forced									
	A		B		C		D		Wt.		A		B		C		D		Wt.	
	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45
1/2	8.6	0.39	5.4	3.2	6		8.6	0.39	5.4	3.2	6									
15	218	9.9	138	80	3		218	9.9	138	80	3									
3/4	9.6	0.55	6.3	3.9	10		9.6	0.55	6.3	3.9	10									
20	245	13.9	161	100	5		245	13.9	161	100	5									
1	10.4	0.75	8.6	4.7	15		10.4	0.75	8.6	4.7	15									
25	264	19	218	120	7		264	19	218	120	7									
1-1/2	10.5	1.16	9.4	5.5	25		10.5	1.16	9.4	5.5	25									
40	267	29.5	238	140	11		267	29.5	238	140	11									
2	12.8	1.44	10.9	6.7	35		12.8	1.44	10.9	6.7	35									
50	325	36.6	276	170	16		325	36.6	276	170	16									

Size In. — mm	Class 1500 Threaded										Class 1500 Socket Weld									
	A		B		C		D		Wt.		A		B		C		D		Wt.	
	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45
1/2	5.7	0.39	6.5	3.2	6.4		5.7	0.39	6.5	3.2	6.4									
15	146	10	165	80	2.9		146	10	165	80	2.9									
3/4	6.5	0.55	7.1	3.9	9.5		6.5	0.55	7.1	3.9	9.5									
20	166	14	180	100	4.3		166	14	180	100	4.3									
1	7.5	0.7	9.4	5.5	19.4		7.5	0.7	9.4	5.5	19.4									
25	191	18	240	140	8.8		191	18	240	140	8.8									
1-1/2	8.5	1.14	10.6	6.7	29.7		8.5	1.14	10.6	6.7	29.7									
40	216	29	270	170	13.5		216	29	270	170	13.5									
2	9.8	1.44	12.6	10.2	41.1		9.8	1.44	12.6	10.2	41.1									
50	250	36.5	320	260	18.7		250	36.5	320	260	18.7									

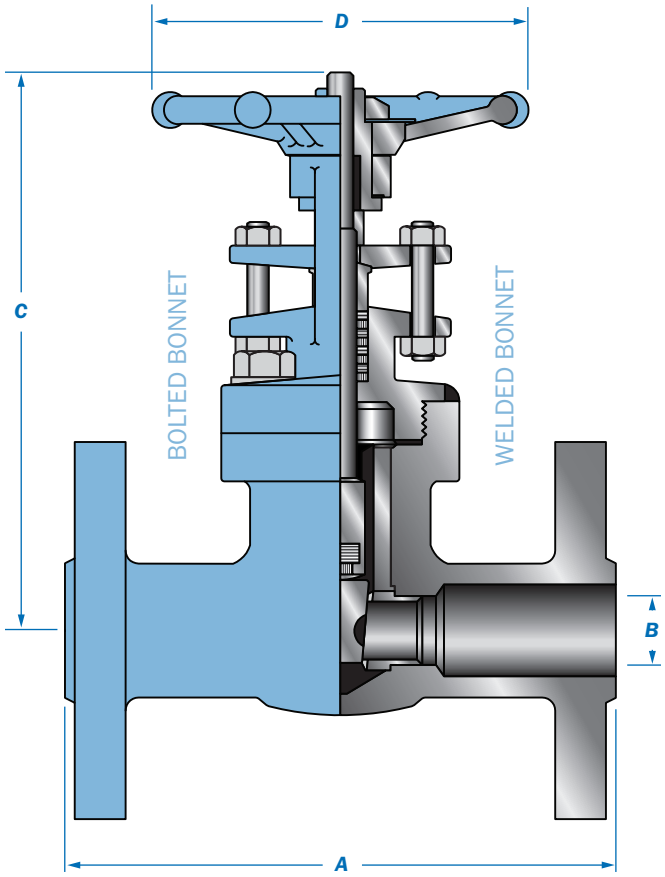
Typical Bill of Materials (See page 61 for available materials.)

Component	Material	ASTM Spec
Body	Carbon Steel	A105N
Bonnet	Carbon Steel	A105N
* Packing	Graphite W/Braided Carbon Fiber End Rings	
* Gasket	Stainless Steel 316 Graphite	
Stem	Stainless Steel	A479-410
Wedge	Stainless Steel	13 Chrome
Seat Rings	Stainless Steel	A479-410
Bonnet Bolt	Alloy Steel	A193 B7
Handwheel Nut	Carbon Steel	Commercial
Nameplate	Aluminum	Commercial
Handwheel	Carbon Steel	A105N
Yoke Sleeve	Stainless Steel	AISI 416
Gland Nuts	Carbon Steel	A194 2H
Gland Flange	Carbon Steel	A105N
Gland Studs	Stainless Steel	AISI 410
Packing Gland	Stainless Steel	A479-316

Note: *Dimensions: Inches/Millimeters - Weights: Pounds/Kilograms.*
Dimensions are subject to change without notice.

FORGED STEEL FLANGED END GATES
BOLTED AND WELDED BONNET CONVENTIONAL PORT
CLASS 150 TO 1500
SIZES: 1/2” TO 2” (15MM TO 50MM)
(1/4” AND 3/8” AVAILABLE UPON REQUEST)

Design and Manufacturing Standards
Valve Design: API 602
Flange Dimensions: ASME B16.5
Face to Face Dimensions: ASME B16.10
Tested in Accordance With: API 598
Recommended Spare Parts*



Class 150 to 1500 Bolted and Welded Bonnet Flanged Gates										
Size In. — mm	Class 150 BB and WB									
	A		B		C		D		Wt.	
	41	45	41	45	41	45	41	45	41	45
1/2	4.3		0.39	0.39	6.8	4.9	3.2		6.8	6.6
15	108		10	10	173	125	80		3.1	3
3/4	4.6		0.55	0.55	7.1	5.2	3.2		8.6	7.7
20	118		14	14	180	132	80		4	3.5
1	5.0		0.71	0.71	8.1	6.7	4.0		12.1	12.1
25	127		18	18	205	170	100		5.7	5.5
1-1/4	5.5		0.94	0.95	9.3	7.6	4.8		18.1	15
32	140		24	24	235	193	120		8.2	6.8
1-1/2	6.5		1.22	1.14	10.2	8.3	5.5		23.4	22.9
40	165		30	29	260	211	140		10.5	10.4
2	7.0		1.44	1.44	11.7	9.3	5.5		32.0	31.7
50	178		37	37	296	236	170		15.4	14.4

Size In. — mm	Class 300 BB and WB									
	A		B		C		D		Wt.	
	41	45	41	45	41	45	41	45	41	45
1/2	5.5		0.39	0.39	6.9	4.9	3.2		7.3	7.9
15	140		10	10	174	125	80		4	3.6
3/4	6.0		0.55	0.55	7.1	5.2	3.2		10.8	10.8
20	153		14	14	180	132	80		5.4	4.9
1	6.5		0.71	0.71	8.1	6.7	3.9		14.7	15.4
25	165		18	18	205	170	100		6.5	7
1-1/4	7.0		0.94	0.95	10.2	7.6	4.7		21.1	20.7
32	178		24	24	260	193	140		12.5	9.4
1-1/2	7.5		1.22	1.14	10.4	8.3	5.5		29.5	29.3
40	191		30	29	265	211	140		13	13.3
2	8.5		1.44	1.44	11.7	9.3	6.7		35.9	39.6
50	216		37	37	296	236	170		17.5	18

Size In. — mm	Class 600 BB and WB									
	A		B		C		D		Wt.	
	41	45	41	45	41	45	41	45	41	45
1/2	6.5		0.39	0.39	5.7	4.9	3.2		7.7	9.2
15	165		10	10	145	125	80		4.2	4.2
3/4	7.5		0.55	0.55	6.1	5.2	3.2		11.7	12.8
20	191		14	14	155	132	80		5.6	5.8
1	8.5		0.71	0.71	7.3	6.7	4.0		15.7	19.4
25	216		18	18	185	170	100		7.2	8.8
1-1/4	9.0		1.14	0.95	9.8	7.6	5.5		30.9	26.6
32	229		29	24	248	193	140		14.5	12.1
1-1/2	9.5		1.22	1.14	9.8	8.3	5.5		30.9	34.3
40	241		30	29	248	211	140		14.5	15.6
2	11.5		1.44	1.44	10.7	9.3	5.6		40.8	34.3
50	292		37	37	273	236	170		18	19.5

Size In. — mm	Class 1500 BB and WB									
	A		B		C		D		Wt.	
	41	45	41	45	41	45	41	45	41	45
1/2	8.5		0.55	0.55	8.3	7.8	3.9		22	9
15	216		14	14	210	198	100		10	4
3/4	9		0.71	0.55	10.0	7.8	4.7		33	9.5
20	229		18	14	255	198	120		15	4.3
1	10		0.94	0.71	10.8	8.6	5.5		37.4	13.5
25	254		24	18	275	218	140		17	6
1-1/4	-		-	0.95	-	9.3	-		-	19.2
32	-		-	24	-	236	-		-	8.7
1-1/2	12		1.44	1.14	15	10.8	6.8		77	26.9
40	305		36.5	29	380	274	172		35	12
2	14.5		1.57	1.44	15.3	12.6	10.2		121	39
50	368		40	37	388	320	260		55	17.7

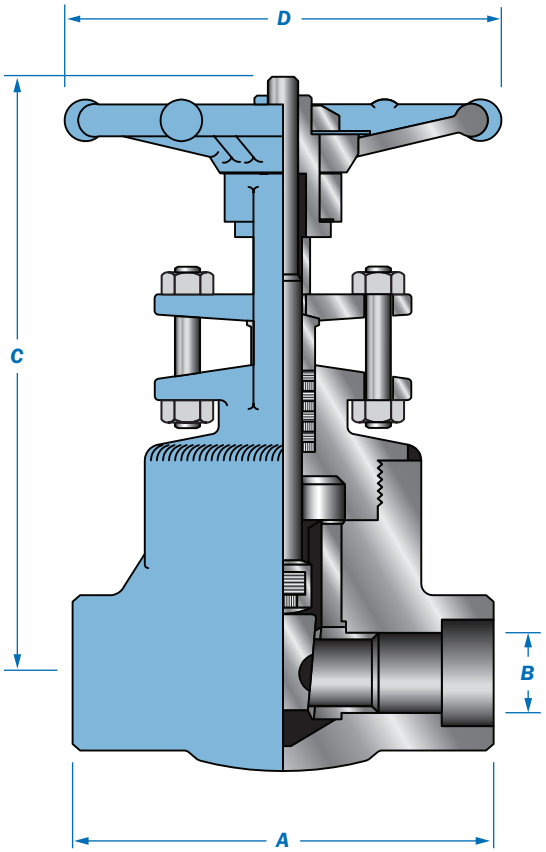
Typical Bill of Materials (See page 61 for available materials)

Component	Material	ASTM Spec
Body	Carbon Steel	A105N
Bonnet	Carbon Steel	A105N
* Packing	Graphite W/Braided Carbon Fiber End Rings	
* Gasket	Stainless Steel 316 Graphite	
Stem	Stainless Steel	A479-410
Wedge	Stainless Steel	13 Chrome
Seat Rings	Stainless Steel	A479-410
Bonnet Bolt	Alloy Steel	A193 B7
Handwheel Nut	Carbon Steel	Commercial
Nameplate	Aluminum	Commercial
Handwheel	Carbon Steel	A105N
Yoke Sleeve	Stainless Steel	AISI 416
Gland Nuts	Carbon Steel	A194 2H
Gland Flange	Carbon Steel	A105N
Gland Studs	Stainless Steel	AISI 410
Packing Gland	Stainless Steel	A479-316

Note: *Dimensions: Inches/Millimeters - Weights: Pounds/Kilograms.*
Larger sizes available on request.
Dimensions are subject to change without notice.

FORGED STEEL HIGH PRESSURE WELDED BONNET GATE CONVENTIONAL PORT CLASS 4500 SIZES: 1/2” TO 2” (15MM TO 50MM)

Design and Manufacturing Standards
Valve Design: ASME B16.34
Pipe Threads, General Purpose, Inch: ASME B1.20.1
Socket Welding: ASME B16.11
Tested in Accordance With: API 598
Recommended Spare Parts*



Size	Class 4500 Welded Bonnet Gate				
	A	B	C	D	Wt.
1/2	4.7	0.47	10.4	5.5	17.6
15	120	12	265	140	8
3/4	5.1	0.47	10.4	5.5	19.8
20	130	12	265	140	9
1	5.1	0.47	10.4	6.7	19.8
25	130	12	265	170	9
1-1/4	8.3	0.63	12.4	6.7	31.9
32	210	16	315	170	14.5
1-1/2	8.3	0.63	12.4	10.2	33
40	210	16	315	260	15
2	9.4	0.83	15.4	10.2	41.8
50	240	21	390	260	19

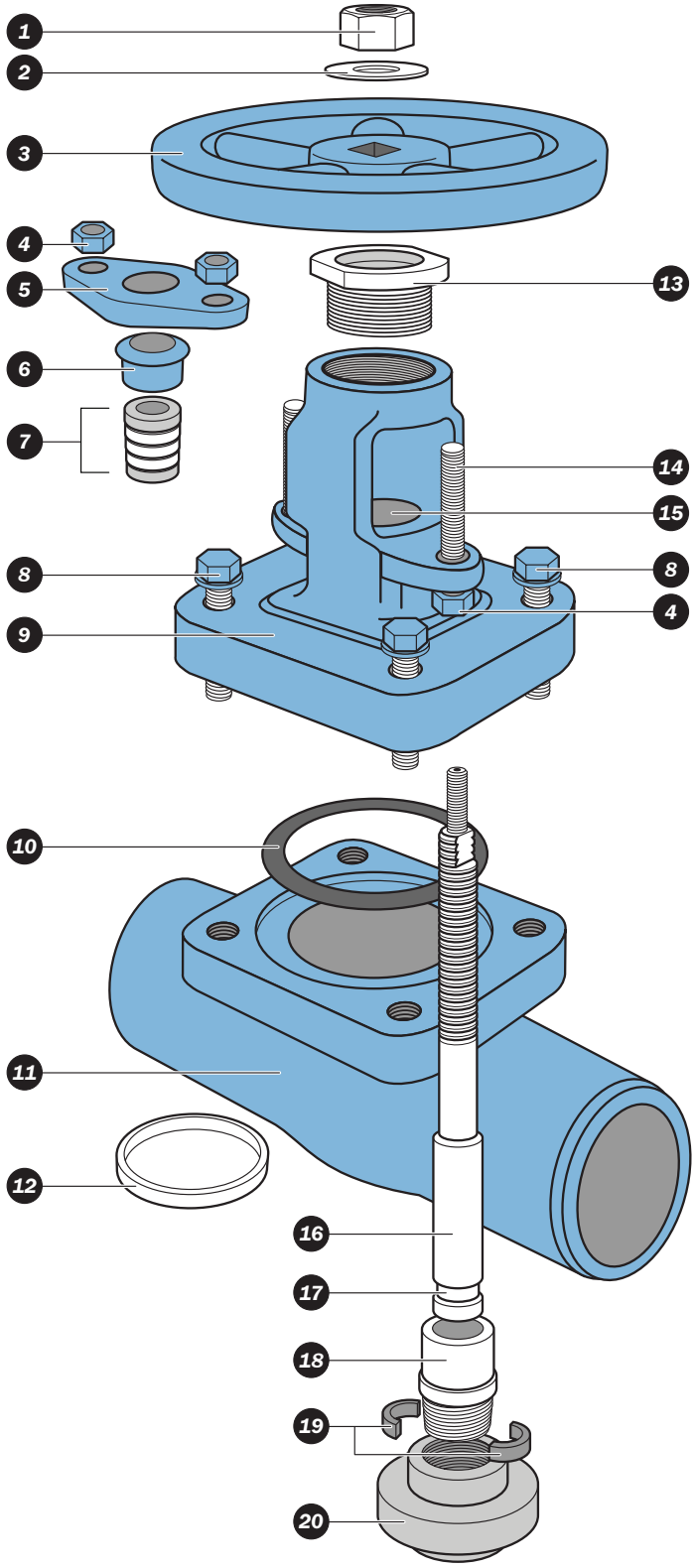
Typical Bill of Materials (See page 61 for available materials)

Component	Material	ASTM Spec
Body	Carbon Steel	A105N
Bonnet	Carbon Steel	A105N
* Packing	Graphite W/Braided Carbon Fiber End Rings	
* Gasket	Stainless Steel 316 Graphite	
Stem	Stainless Steel	A479-410
Wedge	Stainless Steel	13 Chrome
Seat Rings	Stainless Steel	A479-410
Bonnet Bolt	Alloy Steel	A193 B7
Handwheel Nut	Carbon Steel	Commercial
Nameplate	Aluminum	Commercial
Handwheel	Carbon Steel	A105N
Yoke Sleeve	Stainless Steel	AISI 416
Gland Nuts	Carbon Steel	A194 2H
Gland Flange	Carbon Steel	A105N
Gland Studs	Stainless Steel	AISI 410
Packing Gland	Stainless Steel	A479-316

Note: *Dimensions: Inches/Millimeters - Weights: Pounds/Kilograms.*
Larger sizes available on request.
Dimensions are subject to change without notice.

II. FORGED STEEL BOLTED AND WELDED BONNET GLOBE VALVES SIZES: 1/2" TO 2" (15MM TO 50MM) • PRESSURE CLASS: 150 TO 4500

Cameron's Typical NEWCO Forged Steel Bolted and Welded Bonnet Globe Valve Expanded View



1. Handwheel Nut: The handwheel nut secures the handwheel to the bonnet assembly.

2. Handwheel Washer: The washer helps to prevent loosening.

3. Handwheel: The handwheel cycles the valve.

4. & 14. Gland Bolts and Nuts: The gland bolts and nuts allow for easy adjustments for packing compression.

5. Gland Flange: The gland flange applies pressure to the gland for accurate packing compression.

6. Gland: The gland compresses the packing to create a stem seal above the back seat between the bonnet and stem.

7. Packing: The packing creates a seal above the back seat between the bonnet and stem.

8. Bonnet Bolts: The bonnet bolts secure the bonnet to the body.

9. Bonnet: Cameron's NEWCO bonnet assemblies are built to the same standards as the bodies.

10. Bonnet Gasket: The bonnet gasket creates a leakproof seal between the bonnet and body.

11. Body: Cameron's NEWCO forged steel bodies provide low resistance flow and optimum strength and performance

12. Seat Ring: To ensure a stable shutoff, the seat ring is aligned into the valve, then precision ground for optimal seating.

13. Stem Nut: The stem nut provides a precision guide for proper stem alignment.

15. Stuffing Box: The stuffing box contains the packing.

16. Stem: The stem inserts vertically into the disc.

17. Lock Groove: The lock groove receives the split lock ring which allows the disc nut to lift the disc during cycling.

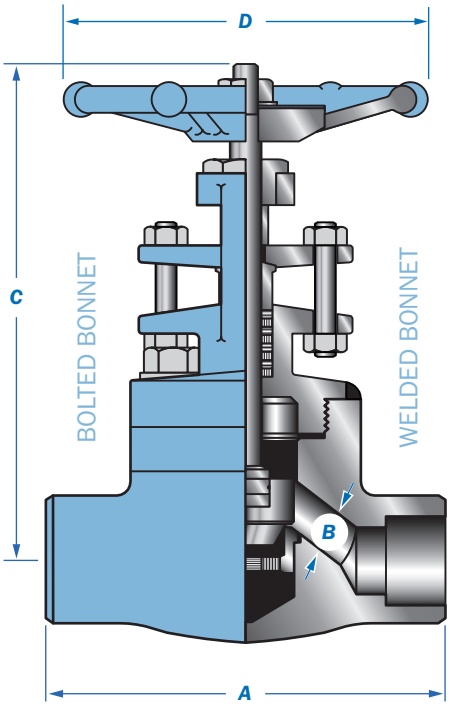
18. Disc Nut: The disc nut, in conjunction with the split lock ring, secures the disc to the stem.

19. Split Ring: The split ring allows the disc nut to lift the disc during cycling.

20. Disc: Cameron's NEWCO plug type disc is machined to the tightest tolerances to ensure trouble free shutoff and cycling.

FORGED STEEL BOLTED AND WELDED BONNET GLOBES
THREADED, SOCKET WELD AND BUTTWELD ENDS CONVENTIONAL PORT
CLASS 800 TO 2500
SIZES: 1/2” TO 2” (15MM TO 50MM)
(1/4” AND 3/8” AVAILABLE UPON REQUEST)

Design and Manufacturing Standards
Valve Design: API 602
Pipe Threads, General Purpose, Inch: ASME B1.20.1
Socket Welding: ASME B16.11
Tested in Accordance With: API 598
Recommended Spare Parts*



Class 800 to 1500
Bolted and Welded Bonnet Globes

Size In. — mm	Class 800 WB										Class 800 BB									
	A		B		C		D		Wt.		A		B		C		D		Wt.	
	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45
1/2	3.2	3.1	0.35		6.3	5.2	3.2	3.3	4	2.9	3.2	3.1	0.35		6.3	5.2	3.2	3.3	4	2.9
15	80	78.7	9		160	132.1	80	83.8	1.8	1.3	80	78.7	9		160	132.1	80	83.8	1.8	1.3
3/4	3.5	3.6	0.49		6.7	5.4	3.2	3.3	4.4	3.7	3.5	3.6	0.49		6.7	5.4	3.2	3.3	4.4	3.7
20	90	91.4	12.5		170	137.2	80	83.8	2	1.7	90	91.4	12.5		170	137.2	80	83.8	2	1.7
1	4.3	4.4	0.68		7.9	7	3.9	4.7	7.3	6.4	4.3	4.4	0.68		7.9	7	3.9	4.7	7.3	6.4
25	110	111.8	17.5		200	177.8	100	119.4	3.3	2.9	110	111.8	17.5		200	177.8	100	119.4	3.3	2.9
1-1/4	5	4.7	0.88		9.3	8.3	4.7	5.9	11.9	15.9	5	4.7	0.88		9.3	8.3	4.7	5.9	11.9	15.9
32	127	119.4	22.5		235	210.8	120	149.9	5.4	7.2	127	119.4	22.5		235	210.8	120	149.9	5.4	7.2
1-1/2	6.1	6	1.14		9.3	8.4	5.5	5.9	17.4	14.9	6.1	6	1.14		9.3	8.4	5.5	5.9	17.4	14.9
40	155	152.4	29		270	213.4	140	149.9	7.9	6.8	155	152.4	29		270	213.4	140	149.9	7.9	6.8
2	6.7	6.8	1.37		11.4	10.3	6.7	6.7	23.8	23.4	6.7	6.8	1.37		11.4	10.3	6.7	6.7	23.8	23.4
50	170	172.7	35		290	261.6	170	170.2	10.8	10.6	170	172.7	35		290	261.6	170	170.2	10.8	10.6

Size In. — mm	Class 1500 WB										Class 1500 BB									
	A		B		C		D		Wt.		A		B		C		D		Wt.	
	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45
1/2	3.5	4.4	0.35	0.39	6.5	8.1	3.2	4.9	4.2	4.4	3.5	4.4	0.35	0.39	6.5	8.1	3.2	4.9	4.4	4.4
15	90	111.8	9	9.9	165	205.7	80	124.5	1.9	2	90	111.8	9	9.9	165	205.7	80	124.5	2	2
3/4	4.3	4.4	0.43	0.51	7.7	8.1	4.7	4.9	7	8.4	4.3	4.4	0.43	0.51	7.7	8.1	4.7	4.9	7.3	8.4
20	110	111.8	11	12.95	195	205.7	120	124.5	3.2	3.8	110	111.8	11	12.95	195	205.7	120	124.5	3.3	3.8
1	4.7	5.1	0.57	0.66	9.3	9.4	5.5	6.2	12.1	9.3	4.7	5.1	0.57	0.66	9.1	9.4	5.5	6.2	12.1	9.3
25	120	129.5	14.5	16.76	235	238.8	140	157.5	5.5	4.2	120	129.5	14.5	16.76	230	238.8	140	157.5	5.5	4.2
1-1/4	5.1	5.9	0.75	0.9	10.4	10.2	5.5	6.2	17.6	17.6	5.1	5.9	0.75	0.9	10.2	10.2	5.5	6.2	19.8	17.6
32	130	149.9	19	22.86	265	259.1	140	157.5	8	8	130	149.9	19	22.86	260	259.1	140	157.5	9	8
1-1/2	6.7	6.8	1.06	1.18	11	11.4	6.7	6.2	24.2	29.1	6.7	6.8	1.06	1.18	11.2	11.4	6.7	6.2	26.4	29.1
40	170	172.7	27	29.97	280	289.6	170	157.5	11	13.2	170	172.7	27	29.97	285	289.6	170	157.5	12	13.2
2	8.3	8.7	1.22	1.49	13.2	13.3	6.7	7.1	39.6	37	8.3	8.7	1.22	1.49	13	13.3	6.7	7.1	39.6	37
50	210	220.9	31	37.85	335	337.8	170	180.3	18	16.8	210	220.9	31	37.85	330	337.8	170	180.3	18	16.8

Size In. — mm	Class 2500 WB										Class 2500 BB									
	A		B		C		D		Wt.		A		B		C		D		Wt.	
	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45
1/2	4.3		0.43		7.7		4.7		8.6		4.3		0.43		10.6		4.7		11	
15	110		11		195		120		3.9		110		11		270		120		5	
3/4	4.7		0.55		8.9		5.5		14.1		4.7		0.55		10.8		5.5		17.6	
20	120		14		225		140		6.4		120		14		275		140		8	
1	5.1		0.75		10		5.5		19.9		5.1		0.75		11.4		5.5		23.5	
25	130		19		255		140		9		130		19		290		140		10.7	
1-1/4	8.3		0.94		12.8		6.7		44		8.3		0.94		15.4		6.7		52.8	
32	210		24		325		170		20		210		24		390		170		24	
1-1/2	8.3		1.1		13		6.7		48.4		8.3		1.1		16.3		10.2		70.4	
40	210		28		330		170		22		210		28		415		260		32	
2	9.5		1.42		14.6		10.2		61.6		9.5		1.42		16.7		10.2		81.4	
50	240		36		370		260		28		240		36		425		260		37	

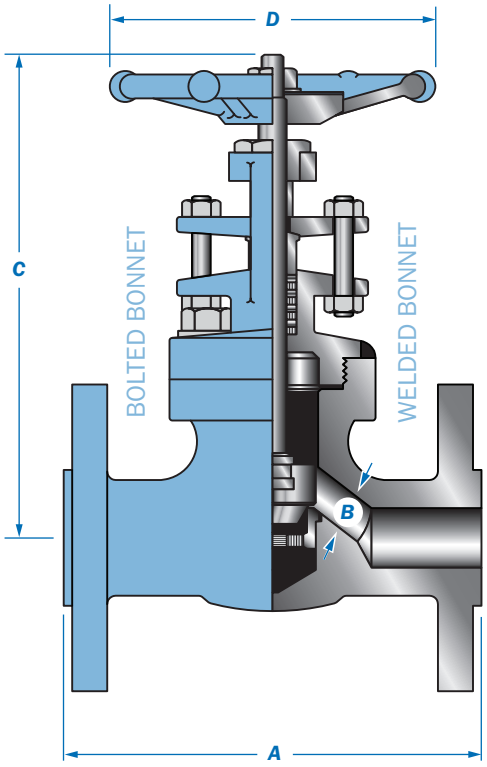
Typical Bill Materials (See page 61 for available materials)

Component	Material	ASTM Spec
Body	Carbon Steel	A105N
Bonnet	Carbon Steel	A105N
* Packing	Graphite W/Braided Carbon Fiber End Rings	
* Gasket	Stainless Steel 316 Graphite	
Stem	Stainless Steel	A479-410
Disc	Stainless Steel	13 Chrome
Seat Rings	Stainless Steel	A479-410
Bonnet Bolt	Alloy Steel	A193 B7
Washer	Carbon Steel	Commercial
Handwheel Nut	Carbon Steel	Commercial
Nameplate	Aluminum	Commercial
Handwheel	Carbon Steel	Commercial
Yoke Sleeve	Stainless Steel	AISI 416
Gland Nuts	Carbon Steel	A194 2H
Gland Flange	Carbon Steel	A105N
Gland Studs	Stainless Steel	AISI 410
Packing Gland	Stainless Steel	AISI 416

Note: *Dimensions: Inches/Millimeters - Weights: Pounds/Kilograms.*
Larger sizes available on request.
Dimensions are subject to change without notice.

FORGED STEEL FLANGED END GLOBES
BOLTED AND WELDED BONNET CONVENTIONAL PORT
CLASS 150 TO 1500
SIZES: 1/2” TO 2” (15MM TO 50MM)
(1/4” AND 3/8” AVAILABLE UPON REQUEST)

Design and Manufacturing Standards
Valve Design: API 602
Flange Dimensions: ASME B16.5
Face to Face Dimensions: ASME B16.10
Tested in Accordance With: API 598
Recommended Spare Parts*



Class 150 to 1500 Bolted and Welded Bonnet Flanged Globes										
Size In. — mm	Class 150 BB and WB									
	A		B		C		D		Wt.	
	41	45	41	45	41	45	41	45	41	45
1/2	4.25		0.35	0.39	7.3	6.8	3.1		7	9.9
15	108		9	9.9	185	173	80		3.1	4.5
3/4	4.63		0.47	0.39	7.6	7.0	3.1		8	15.2
20	118		12.5	9.9	192	178	80		4	6.9
1	5.00		0.67	0.69	8.7	8.3	4.0		17	21.6
25	127		17.5	17.5	220	211	100		5.7	9.8
1-1/2	6.50		1.10	1.18	10.4	9.2	5.5		25	42.9
40	165		29	30	265	234	140		10.6	19.5
2	8.00		1.34	1.46	12.2	10.4	6.7		35	61.6
50	203		35	37.1	310	264	170		15.4	28

Size In. — mm	Class 300 BB and WB									
	A		B		C		D		Wt.	
	41	45	41	45	41	45	41	45	41	45
1/2	6.00		0.35	0.39	6.3	6.26	3.1		8	10.6
15	152.5		9	9.9	160	159	80		3.5	4.8
3/4	7.00		0.47	0.39	6.6	6.26	3.1		11	16.9
20	178		12.5	9.9	168	159	80		4.8	7.7
1	8.00		0.67	0.69	7.9	7.6	4.0		15	24.2
25	203		17.5	17.5	200	193	100		7.2	11
1-1/2	9.00		1.10	1.18	10.6	9.2	5.5		30	46.6
40	229		29	30	268	234	140		14.5	21.2
2	10.5		1.34	1.46	11.4	10.4	6.7		40	71.7
50	267		35	37.1	290	264	170		18	32.6

Size In. — mm	Class 600 BB and WB									
	A		B		C		D		Wt.	
	41	45	41	45	41	45	41	45	41	45
1/2	6.50		0.35	0.39	6.3	6.26	3.1		8.2	12.3
15	165		9	9.9	160	159	80		3.7	5.6
3/4	7.50		0.47	0.39	6.6	6.26	3.1		11.7	17.2
20	190.5		12.5	9.9	168	159	80		5.3	7.8
1	8.50		0.67	0.69	7.9	7.6	4.0		18.1	27.5
25	216		17.5	17.5	200	193	100		8.2	12.5
1-1/2	9.51		1.10	1.18	10.6	8.7	5.5		33.1	51.7
40	241.5		29	30	268	221	140		15	23.5
2	11.5		1.34	1.46	11.4	10.4	6.7		47.4	85.4
50	292		35	37.1	290	264	170		21.5	38.8

Size In. — mm	Class 1500 BB and WB									
	A		B		C		D		Wt.	
	41	45	41	45	41	45	41	45	41	45
1/2	8.5		.43	0.5	8.86	8.1	4.72	3.93	22.0	17.6
15	216		11	13	225	207	120	100	10.0	8.0
3/4	9.0		.57	0.7	10.63	9.4	5.51	4.92	33.0	29.0
20	229		14.5	18	270	240	140	125	15.0	13.2
1	10.0		.75	0.9	11.22	10.2	5.51	6.29	37.4	38.3
25	254		19	24	285	258	140	160	17.0	17.4
1-1/4	11.0		-	1.1	-	11.4	-	6.29	-	42.0
32	279		-	29	-	290	-	160	-	19.0
1-1/2	12.0		1.22	1.4	15.75	13.3	6.69	7.08	79.2	54.0
40	305		31	36.5	400	337	170	180	36.0	24.5
2	14.5		1.48	1.8	16.54	14.0	10.24	9.45	121.0	68.2
50	368		37.5	46.5	420	354	260	240	55.0	31.0

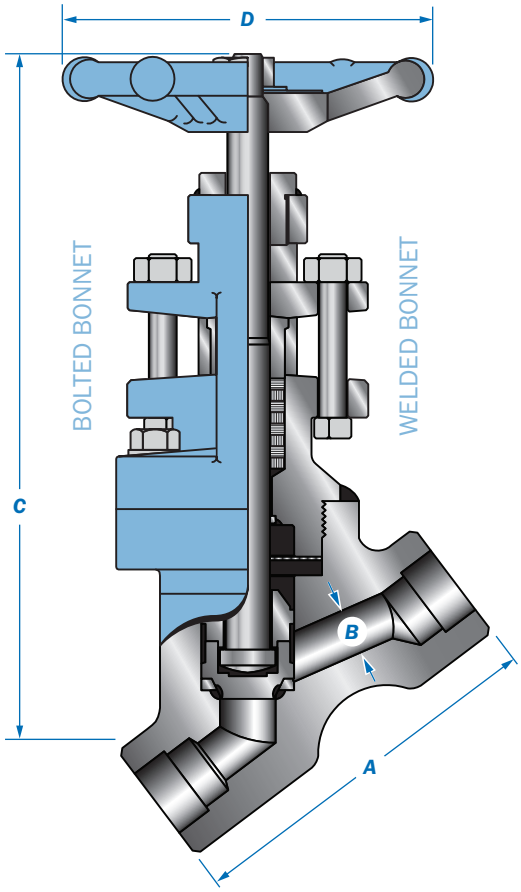
Typical Bill Materials (See page 61 for available materials)

Component	Material	ASTM Spec
Body	Carbon Steel	A105N
Bonnet	Carbon Steel	A105N
* Packing	Graphite W/Braided Carbon Fiber End Rings	
* Gasket	Stainless Steel 316 Graphite	
Stem	Stainless Steel	A479-410
Disc	Stainless Steel	13 Chrome
Seat Rings	Stainless Steel	A479-410
Bonnet Bolts	Alloy Steel	A193 B7
Washer	Carbon Steel	Commercial
Handwheel Nut	Carbon Steel	Commercial
Nameplate	Aluminum	Commercial
Handwheel	Carbon Steel	Commercial
Yoke Sleeve	Stainless Steel	AISI 416
Gland Nuts	Carbon Steel	A194 2H
Gland Flange	Carbon Steel	A105N
Gland Studs	Stainless Steel	AISI 410
Packing Gland	Stainless Steel	AISI 416

Note: *Dimensions: Inches/Millimeters - Weights: Pounds/Kilograms.*
Larger sizes available on request.
Dimensions are subject to change without notice.

FORGED STEEL Y-PATTERN BOLTED AND WELDED BONNET GLOBE CONVENTIONAL PORT
CLASS 800 TO 2680
SIZES: 1/2” TO 2” (15MM TO 50MM)
(1/4” AND 3/8” AVAILABLE UPON REQUEST)

Design and Manufacturing Standards
Valve Design: ASME B16.34
Pipe Threads, General Purpose, Inch: ASME B1.20.1
Socket Welding: ASME B16.11
Tested in Accordance With: API 598
Recommended Spare Parts*



Size	Class 800 Bolted and Welded Bonnet Globe				
	A	B	C	D	Wt.
1/2	3.6	0.39	7.5	3.7	4.4
15	92	10	190	95	2
3/4	3.6	0.51	7.5	3.7	4.4
20	92	13	190	95	2
1	4.4	0.69	9.3	4.3	9
25	111	17.5	235	110	4.1
1-1/4	6	0.94	11.2	5.5	19.8
32	152	24	286	140	9
1-1/2	6	1.22	11.2	5.5	19.8
40	152	31	286	140	9
2	6.8	1.46	12.8	6.7	30.4
50	172	37	325	200	13.8

Size	Class 1500 and 1690 Welded Bonnet Globe				
	A	B	C	D	Wt.
1/2	3.9	0.51	7.3	3.9	6.6
15	100	13	185	100	3
3/4	4.3	0.69	9.1	5.5	8.8
20	110	17.5	230	140	4
1	4.9	0.89	9.4	5.5	11
25	125	22.5	240	140	5
1-1/4	5.9	1.1	12	6.7	20.9
32	150	28	305	170	9.5
1-1/2	6.3	1.38	13.4	7.9	24.2
40	160	35	340	200	11
2	7.5	1.73	15.7	10.2	37.4
50	190	44	400	260	17

Size	Class 2500 and 2680 Welded Bonnet Globe				
	A	B	C	D	Wt.
1/2	3.9	0.47	9.1	4.7	8.8
15	100	12	230	120	4
3/4	4.9	0.59	9.4	5.5	11
20	125	15	240	140	5
1	6.3	0.79	12	6.7	20.9
25	160	20	305	170	9.5
1-1/4	6.3	0.98	12	6.7	23.1
32	160	25	305	170	10.5
1-1/2	7.5	1.22	13.6	7.9	37.4
40	190	31	345	200	17
2	8.3	1.49	15.7	10.2	50.6
50	210	38	400	260	23

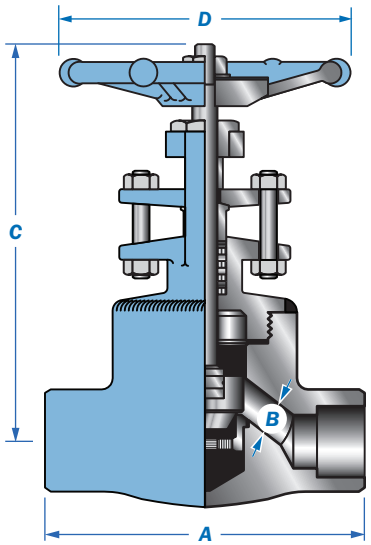
Typical Bill of Materials (See page 61 for available materials)

Component	Material	ASTM Spec
Body	Carbon Steel	A105N
Bonnet	Carbon Steel	A105N
* Packing	Graphite W/Braided Carbon Fiber End Rings	
* Gasket	Stainless Steel 316 Graphite	
Stem	Stainless Steel	A479-410
Disc	Stainless Steel	13 Chrome
Seat Rings	Stainless Steel	A479-410
Bonnet Bolts	Alloy Steel	A193 B7
Washer	Carbon Steel	Commercial
Handwheel Nut	Carbon Steel	Commercial
Nameplate	Aluminum	Commercial
Handwheel	Carbon Steel	Commercial
Yoke Sleeve	Stainless Steel	AISI 416
Gland Nuts	Carbon Steel	A194 2H
Gland Flange	Carbon Steel	A105N
Gland Studs	Stainless Steel	AISI 410
Packing Gland	Stainless Steel	AISI 416

Note: *Dimensions: Inches/Millimeters - Weights: Pounds/Kilograms.*
Larger sizes available on request.
Dimensions are subject to change without notice.

FORGED STEEL HIGH PRESSURE WELDED BONNET GLOBE CONVENTIONAL PORT CLASS 4500 SIZES: 1/2" TO 2" (15MM TO 50MM)

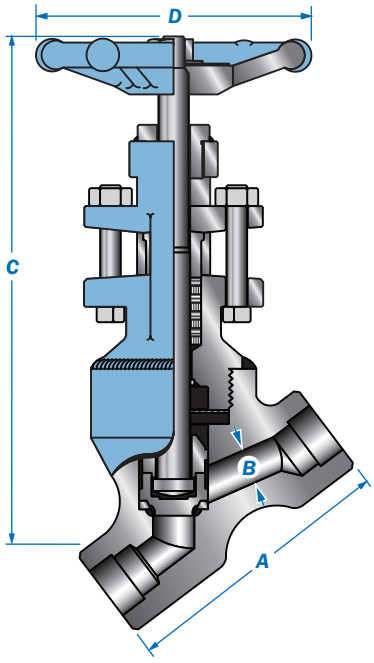
Design and Manufacturing Standards
Valve Design: ASME B16.34
Pipe Threads, General Purpose, Inch: ASME B1.20.1
Socket Welding: ASME B16.11
Tested in Accordance With: API 598
Recommended Spare Parts*



Size	Class 4500 Welded Bonnet Globe				
	A	B	C	D	Wt.
1/2	4.7	0.31	8.9	4.7	17.6
15	120	8	228	120	8
3/4	6.1	0.47	10.8	5.5	4
20	155	12	275	140	11
1	6.1	0.59	11	5.5	41.8
25	155	15	280	140	19
1-1/4	8.3	0.79	16.1	10.2	50.6
32	210	20	410	260	23
1-1/2	8.3	0.98	16.1	10.2	50.6
40	210	25	410	260	23
2	9.4	1.1	16.5	10.2	50.6
50	240	28	420	260	23

Typical Bill of Materials (See page 61 for available materials)

Component	Material	ASTM Spec
Body	Carbon Steel	A105N
Bonnet	Carbon Steel	A105N
* Packing	Graphite W/Braided Carbon Fiber End Rings	
* Gasket	Stainless Steel 316 Graphite	
Stem	Stainless Steel	A479-410
Disc	Stainless Steel	13 Chrome
Seat Rings	Stainless Steel	A479-410
Bonnet Bolts	Alloy Steel	A193 B7
Washer	Carbon Steel	Commercial
Handwheel Nut	Carbon Steel	Commercial
Nameplate	Aluminum	Commercial
Handwheel	Carbon Steel	Commercial
Yoke Sleeve	Stainless Steel	AISI 416
Gland Nuts	Carbon Steel	A194 2H
Gland Flange	Carbon Steel	A105N
Gland Studs	Stainless Steel	AISI 410
Packing Gland	Stainless Steel	AISI 416

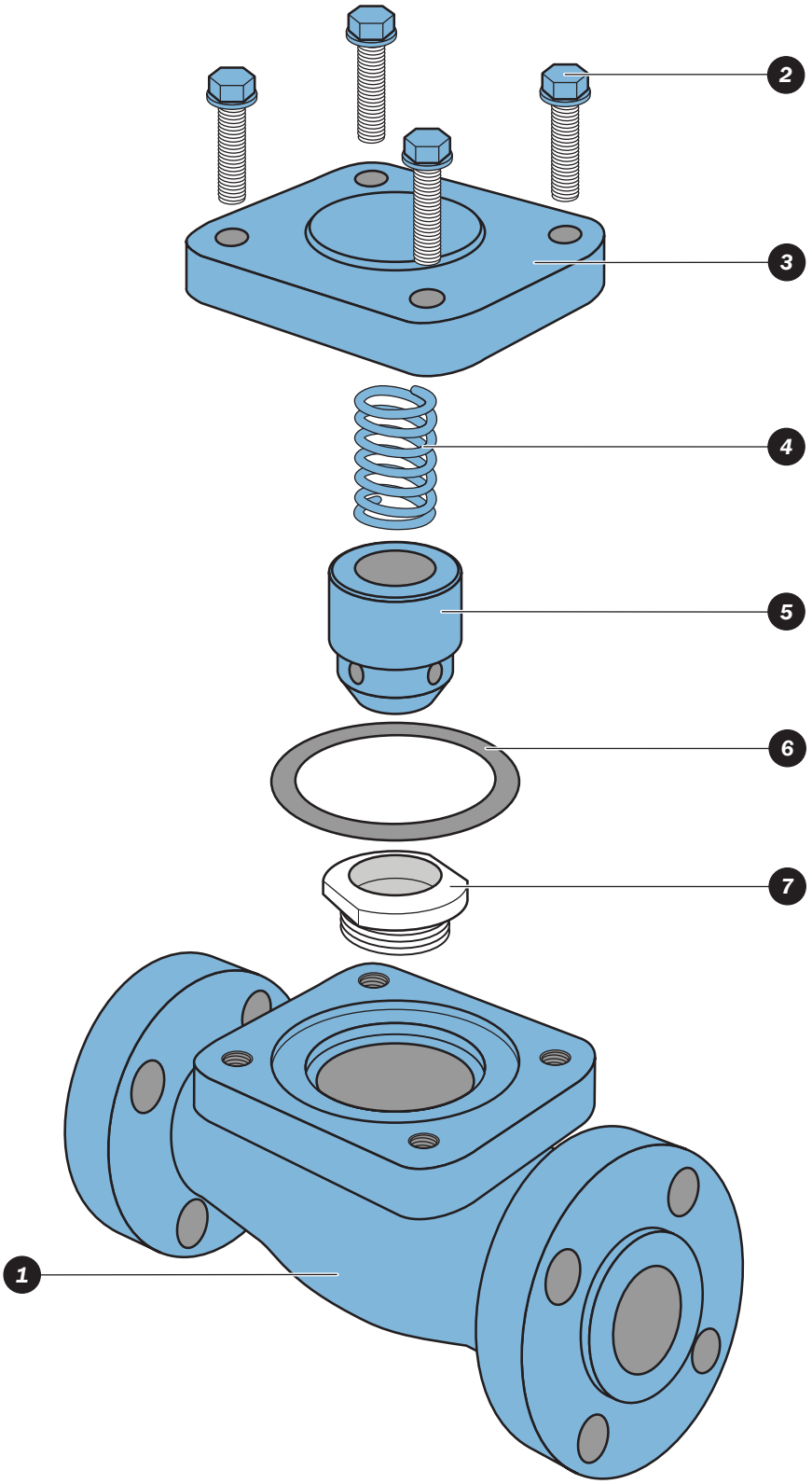


Size	Class 4500 Welded Bonnet Y-Pattern Globe				
	A	B	C	D	Wt.
1/2	4.9	0.31	9.4	5.5	12.1
15	125	8	240	140	5.5
3/4	6.3	0.43	11.2	6.7	22
20	160	11	285	170	10
1	7.5	0.59	12.6	7.9	37.4
25	190	15	320	200	17
1-1/4	7.5	0.71	12.6	7.9	37.4
32	190	18	320	200	17
1-1/2	8.3	0.79	12.6	10.2	41.8
40	210	20	360	260	19
2	11	0.98	17.7	14.6	52.8
50	280	25	450	370	24

Note: *Dimensions: Inches/Millimeters - Weights: Pounds/Kilograms.*
Larger sizes available on request.
Dimensions are subject to change without notice.

III. FORGED STEEL BOLTED AND WELDED BONNET CHECK VALVES SIZES: 1/2" TO 2" (15MM TO 50MM) • PRESSURE CLASS: 150 TO 1500

Cameron's Typical NEWCO Forged Steel Bolted Check Valve Expanded View



1. Body: Cameron's NEWCO forged steel bodies provide low resistance flow and optimum strength and performance.

2. Cover Studs: The cover studs secure the bonnet to the body.

3. Cover: The cover allows access to internal components.

4. Spring: The spring is precision made and loaded for precise pressures.

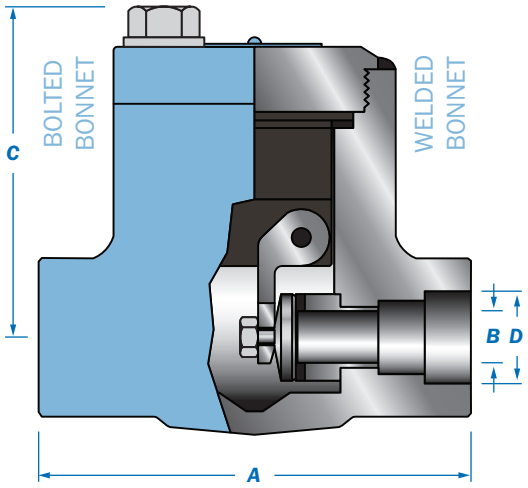
5. Piston: Cameron's NEWCO piston is machined to the tightest tolerances to ensure trouble free shutoff and cycling.

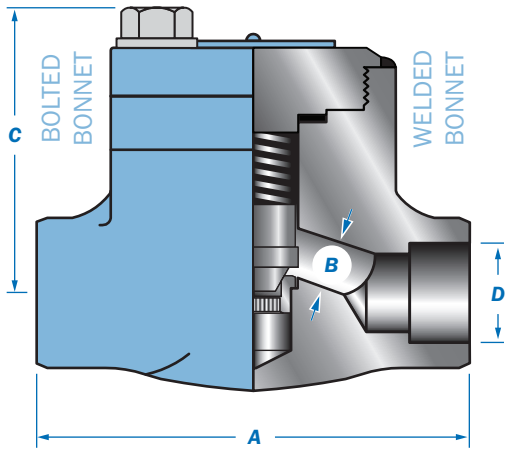
6. Cover Gasket: The cover gasket creates a leak-proof seal between the bonnet and the body.

7. Seat: The seat ensures a stable shutoff. The seat is precision ground for optimal seating.

FORGED STEEL LIFT AND SWING CHECKS
BOLTED AND WELDED COVER CONVENTIONAL PORT
CLASS 800 TO 1500
SIZES: 1/2” TO 2” (15MM TO 50MM)
(1/4” AND 3/8” AVAILABLE UPON REQUEST)

Design and Manufacturing Standards
Valve Design: API 602
Pipe Threads, General Purpose, Inch: ASME B1.20.1
Socket Welding: ASME B16.11
Tested in Accordance With: API 598
Recommended Spare Parts*





Class 800 to 1500 Bolted and Welded Bonnet – Lift and Swing Check																				
Size In. — mm	Class 800 BB Lift										Class 800 BB Swing									
	A		B		C		D		Wt.		A		B		C		D		Wt.	
	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45
1/2	3.2	3.1	0.35	0.39	1.9	1.9	0.85		2.4	2.1	3.2	3.1	0.35	0.39	1.9	1.6	0.85		2.4	2.1
15	80	78.7	9	9.9	49	49	21.6		1.1	1	80	78.7	9	9.9	49	40.6	21.6		1.1	1
3/4	3.5	3.6	0.49	0.54	2.2	2.1	1.07		4	2.6	3.5	3.6	0.49	0.55	2.2	1.8	1.07		4	2.5
20	90	91.4	12.5	13.9	55	53.3	27.2		1.8	1.2	90	91.4	12.5	13.9	55	45.7	27.2		1.8	1.1
1	4.3	4.4	0.68	0.69	2.8	2.7	1.33		5.7	4.3	4.3	4.4	0.68	0.71	2.8	2.3	1.33		5.7	3.9
25	110	111.8	17.5	17.5	70	68.6	33.8		2.6	2	110	111.8	17.5	18	70	58.4	33.8		2.6	1.8
1-1/4	5	4.7	0.88	0.9	3	3.3	1.67		7.9	11.5	5	4.7	0.88	0.95	3	3.3	1.67		7.9	10.6
32	127	119.4	22.5	22.9	77	83.8	42.4		3.6	5.2	127	119.4	22.5	24.1	77	83.8	42.4		3.6	4.8
1-1/2	6.1	6	1.14	1.18	4.1	3.7	1.92		12.1	9.9	5	4.7	1.14	1.14	4.1	3.1	1.92		12.1	8.8
40	155	152.4	29	29.9	105	94	48.8		5.5	4.5	127	119.4	29	29	105	78.7	48.8		5.5	4
2	6.7	6.8	1.38	1.45	4.7	4.4	2.41		18.5	17	5.1	5.5	1.44	1.44	4.7	3.7	2.41		19.6	13.2
50	170	172.7	35	36.8	120	111.8	61.2		8.4	7.7	130	139.7	36.6	36.6	119	94	61.2		8.9	6

Size In. — mm	Class 800 WB Lift										Class 800 WB Swing									
	A		B		C		D		Wt.		A		B		C		D		Wt.	
	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45
1/2	3.2	3.1	0.35	0.39	1.9	1.9	0.85		2	2.1	3.2	3.1	0.35	0.39	1.9	1.6	0.85		2	2.1
15	80	78.7	9	9.9	49	49	21.6		0.9	1	80	78.7	9	9.9	49	40.6	21.6		0.9	1
3/4	3.5	3.6	0.49	0.54	2.2	2.1	1.07		2.6	2.6	3.5	3.6	0.49	0.55	2.2	1.8	1.07		2.6	2.5
20	90	91.4	12.5	13.9	56	53.3	27.2		1.2	1.2	90	91.4	12.5	13.9	56	45.7	27.2		1.2	1.1
1	4.3	4.4	0.68	0.69	2.7	2.7	1.33		4.6	4.3	4.3	4.4	0.68	0.71	2.7	2.3	1.33		4.6	3.9
25	110	111.8	17.5	17.5	69	68.6	33.8		2.1	2	110	111.8	17.5	18	69	58.4	33.8		2.1	1.8
1-1/4	5	4.7	0.88	0.9	3.2	3.3	1.67		7.5	11.5	5	4.7	0.88	0.95	3.2	3.3	1.67		7.5	10.6
32	127	119.4	22.5	22.9	80	83.8	42.4		3.4	5.2	127	119.4	22.5	24.1	80	83.8	42.4		3.4	4.8
1-1/2	6.1	6	1.14	1.18	3.7	3.7	1.92		11.7	9.9	5	4.7	1.14	1.14	3.7	3.1	1.92		11.7	8.8
40	155	152.4	29	29.9	95	94	48.8		5.3	4.5	127	119.4	29	29	95	78.7	48.8		5.3	4
2	6.7	6.8	1.38	1.45	4.1	4.4	2.41		17.2	17	5.1	5.5	1.38	1.44	4.1	3.7	2.41		17.2	13.2
50	170	172.7	35	36.8	105	111.8	61.2		7.8	7.7	130	139.7	35	36.6	105	94	61.2		7.8	6

Size In. — mm	Class 1500 BB Lift										Class 1500 BB Swing									
	A		B		C		D		Wt.		A		B		C		D		Wt.	
	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45
1/2	3.5	4.4	0.35	0.39	2.2	3.1	0.85		4.8	7.5	3.5	4.4	0.35	0.55	2.2	3.1	0.85		4.8	7.9
15	90	111.8	9	9.9	55	78.7	21.6		2.2	3.4	90	111.8	9	13.97	55	78.7	21.6		2.2	3.6
3/4	4.3	4.4	0.43	0.51	2.8	3.1	1.07		6.8	10.6	4.3	4.4	0.43	0.55	2.8	3.1	1.07		6.8	9.5
20	110	111.8	11	12.95	70	78.7	27.2		3.1	4.8	110	111.8	11	13.97	70	78.7	27.2		3.1	4.3
1	4.7	5.1	0.57	0.66	3	3.8	1.33		9.2	15.2	4.7	4.5	0.57	0.71	3	3.8	1.33		9.2	23.5
25	120	129.5	14.5	16.76	77	96.5	33.8		4.2	6.9	120	114.3	14.5	18.03	77	96.5	33.8		4.2	10.7
1-1/4	5.1	-	0.74	-	4.1	-	1.67		12.8	-	5.1	-	0.74	-	4.1	-	1.67		12.8	-
32	130	-	19	-	105	-	42.4		5.8	-	130	-	19	-	105	-	42.4		5.8	-
1-1/2	6.7	6.8	1.06	1.18	4.5	4.7	1.92		20.7	19.4	5.1	5.5	1.06	1.14	4.5	4.7	1.92		20.7	27.7
40	170	172.7	27	29.97	115	119.4	48.8		9.4	8.8	130	139.7	27	28.95	115	119.4	48.8		9.4	12.6
2	8.3	8.7	1.22	1.49	5.7	5.5	2.41		26.6	27.1	8.3	6.4	1.22	1.44	5.7	5.5	2.41		26.6	34.1
50	210	220.9	31	37.85	145	139.7	61.2		12.1	12.3	210	162.6	31	36.57	145	139.7	61.2		12.1	15.5

Size In. — mm	Class 1500 WB Lift										Class 1500 WB Swing									
	A		B		C		D		Wt.		A		B		C		D		Wt.	
	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45	41	45
1/2	3.5	4.4	0.35	0.39	2.2	3.1	0.85		2.9	7.5	3.5	4.4	0.35	0.55	2.2	3.1	0.85		2.9	7.9
15	90	111.8	9	9.9	55	78.7	21.6		1.3	3.4	90	111.8	9	13.97	55	78.7	21.6		1.3	3.6
3/4	4.3	4.4	0.43	0.51	2.8	3.1	1.07		5.5	10.6	4.3	4.4	0.43	0.55	2.8	3.1	1.07		5.5	9.5
20	110	111.8	11	12.95	70	78.7	27.2		2.5	4.8	110	111.8	11	13.97	70	78.7	27.2		2.5	4.3
1	4.7	5.1	0.57	0.66	3.2	3.8	1.33		8.4	15.2	4.7	4.5	0.57	0.71	3.2	3.8	1.33		8.4	23.5
25	120	129.5	14.5	16.76	80	96.5	33.8		3.8	6.9	120	114.3	14.5	18.03	80	96.5	33.8		3.8	10.7
1-1/4	5.1	-	0.74	-	3.5	-	1.67		12.1	-	5.1	-	0.74	-	3.5	-	1.67		12.1	-
32	130	-	19	-	90	-	42.4		5.5	-	130	-	19	-	90	-	42.4		5.5	-
1-1/2	6.7	6.8	1.06	1.18	3.9	4.7	1.92		18.3	19.4	5.1	5.5	1.06	1.14	3.9	4.7	1.92		18.3	27.7
40	170	172.7	27	29.97	100	119.4	48.8		8.3	8.8	130	139.7	27	28.95	100	119.4	48.8		8.3	12.6
2	8.3	8.7	1.22	1.49	4.5	5.5	2.41		24.2	27.1	8.3	6.4	1.22	1.44	4.5	5.5	2.41		24.2	34.1
50	210	220.9	31	37.85	115	139.7	61.2		11	12.3	210	162.6	31	36.57	115	139.7	61.2		11	15.5

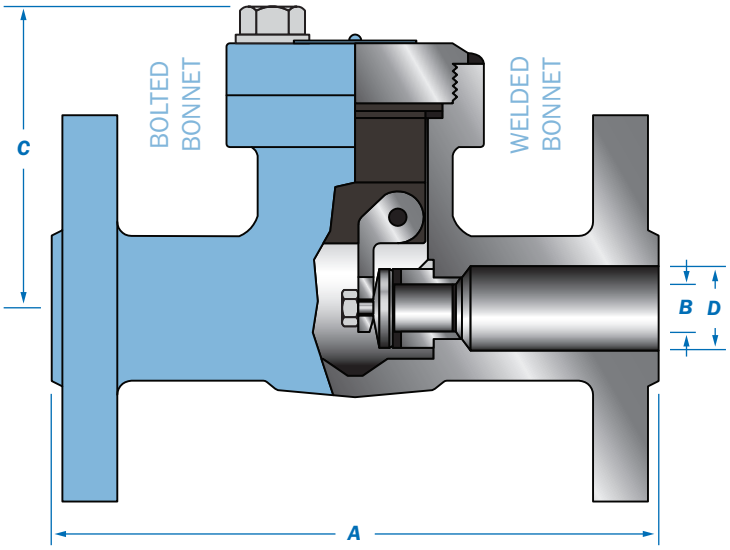
Typical Bill Materials (See page 61 for available materials)

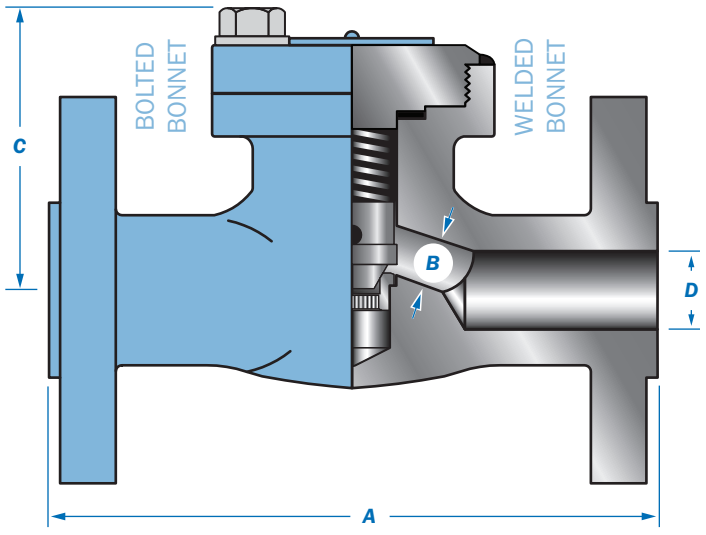
Component	Material	ASTM Spec
Body	Carbon Steel	A105N
Seat Ring	Stainless Steel	A479-410
Piston	Stainless Steel	A479-410
Rivet	Brass	Commercial
Spring	Stainless Steel	A479-316
Nameplate	Aluminum	Commercial
* Gasket	Stainless Steel 316 W/Graphite Spiral Wound	
Cap	Carbon Steel	A105N
Cap Bolt	Alloy Steel	A193-B7

Note: *Dimensions: Inches/Millimeters - Weights: Pounds/Kilograms.*
Larger sizes available on request.
Dimensions are subject to change without notice.

FORGED STEEL LIFT AND SWING CHECKS
BOLTED AND WELDED COVER CONVENTIONAL PORT
CLASS 150 TO 1500
SIZES: 1/2” TO 2” (15MM TO 50MM)
(1/4” AND 3/8” AVAILABLE UPON REQUEST)

Design and Manufacturing Standards
Valve Design: ASME B16.34
Flange Dimensions: ASME B16.5
Face to Face Dimensions: ASME B16.10
Tested in Accordance With: API 598
Recommended Spare Parts*





Class 150 to 1500 Bolted and Welded Bonnet - Lift and Swing Check												
Size In. — mm	Class 150											
	A		B (Lift)		B (Swing)		C		D		Wt.	
	41	45	41	45	41	45	41	45	41	45	41	45
1/2	4.3		0.35		0.4		2.8	1.6	0.5		6.2	
15	108		9		10		70	40.6	12.7		2.8	3.4
3/4	4.6		0.49		0.4		3.2	1.8	0.75		8.8	
20	118		12.5		10		80	45.7	19.1		4	4.4
1	5		0.68		0.7		3.6	2.3	1		11.7	
25	127		17.5		18		92	58.4	25.4		5.3	8.2
1-1/2	6.5		1.14		1.2		3.9	3.1	1.5		19.8	
40	165		29		29.5		100	78.7	38.1		9	12
2	8		1.37		1.4		5.5	3.7	2		33	
50	203		35		36.5		140	94	50.8		15	14.3

Size In. — mm	Class 300													
	A (Lift)		A (Swing)		B (Lift)		B (Swing)		C		D		Wt.	
	41	45	41	45	41	45	41	45	41	45	41	45	41	45
1/2	6		6		0.35		0.4		2	1.6	0.5		6.2	8.1
15	152.5		152.5		9		10		50	40.6	12.7		2.8	3.7
3/4	7		7		0.49		0.6		2.2	1.8	0.75		10.3	10.6
20	178		178		12.5		14		55	45.7	19.1		4.7	4.8
1	8		8.5		0.68		0.7		2.8	2.3	1		12.5	19.4
25	203		216		17.5		18		70	58.4	25.4		5.7	8.8
1-1/2	9		9.5		1.14		1.2		3.9	3.1	1.5		26	30.1
40	229		241		29		30		98	78.7	38.1		11.8	13.7
2	10.5		10.5		1.37		1.4		4.3	3.7	2		37.4	39.2
50	267		267		35		36.5		110	94	50.8		17	17.8

Size In. — mm	Class 600											
	A		B (Lift)		B (Swing)		C		D		Wt.	
	41	45	41	45	41	45	41	45	41	45	41	45
1/2	6.5		0.35		0.4		2	1.6	0.5		6.4	8.8
15	165		9		10		50	40.6	12.7		2.9	4
3/4	7.5		0.49		0.6		2.2	1.8	0.75		10.6	12.8
20	191		12.5		14		55	45.7	19.1		4.8	5.8
1	8.5		0.68		0.7		2.8	2.3	1		21.3	20.9
25	216		17.5		18		70	58.4	25.4		9.7	9.5
1-1/2	9.5		1.14		1.2		3.9	3.1	1.5		26.4	34.3
40	241		29		30		98	78.7	38.1		12	15.6
2	11.5		1.37		1.4		4.3	3.7	2		38.1	53.9
50	292		35		36.5		110	94	50.8		17.3	24.5

Size In. — mm	Class 1500											
	A		B (Lift)		B (Swing)		C		D		Wt.	
	41	45	41	45	41	45	41	45	41	45	41	45
1/2	8.5		0.43		0.6		3.5		0.5		16.7	
15	216		11		14		90		12.7		7.6	
3/4	9		0.57		0.7		4.1		0.69		23.8	
20	229		14.5		18		105		17.5		10.8	
1	10		0.74		0.9		4.7		0.87		31.9	
25	254		19		24		120		22.1		14.5	
1-1/2	12		1.22		1.4		6.3		1.37		68.2	
40	305		31		36		160		34.8		31	
2	14.5		1.48		1.6		6.7		1.87		94.6	
50	368		37.5		40		170		47.5		43	

Typical Bill Materials (See page 61 for available materials)

Component	Material	ASTM Spec
Body	Carbon Steel	A105N
Seat Ring	Stainless Steel	A479-410
Piston	Stainless Steel	A479-410
Rivet	Brass	Commercial
Spring	Stainless Steel	A479-316
Nameplate	Aluminum	Commercial
* Gasket	Stainless Steel 316 W/Graphite Spiral Wound	
Cap	Carbon Steel	A105N
Cap Bolt	Alloy Steel	A193-B7

Note: *Dimensions: Inches/Millimeters - Weights: Pounds/Kilograms.*
Larger sizes available on request.
Dimensions are subject to change without notice.

IV. FORGED STEEL CV VALUES GATES, GLOBES, CHECKS

	NPS	150 - 800 Full Bore	150 - 800 Reduced Bore	1500 Full Bore	1500 Reduced Bore	2500 Full Bore
Cameron's NEWCO Forged Steel Gate Valves Cv Values	1/2	12	6	13	6	5
	3/4	23	10	24	11	12
	1	43	26	44	27	23
	1-1/4	57	44	59	45	43
	1-1/2	98	65	100	66	56
	2	200	103	*	99	97

** 40mm = > 155*

	NPS	150 - 800 Full Bore	150 - 800 Reduced Bore	1500 Full Bore	1500 Reduced Bore
Cameron's NEWCO Forged Steel Globe Valves Cv Values	1/2	3	2	3	2
	3/4	6	4	6	3
	1	12	6	12	6
	1-1/4	15	10	--	--
	1-1/2	21	18	20	16
	2	38	22	24	20

	NPS	800	1500	2500
Cameron's NEWCO Forged Steel Y-Pattern Globe Valves Cv Values	1/2	5	5	3
	3/4	11	11	6
	1	14	15	12
	1-1/4	--	--	--
	1-1/2	37	35	27
	2	68	68	36

	NPS	150 - 800 Full Bore	150 - 800 Reduced Bore	1500 Full Bore	1500 Reduced Bore
Cameron's NEWCO Forged Steel Swing Check Valves Cv Values	1/2	5	4	--	--
	3/4	12	6	--	--
	1	17	13	--	--
	1-1/4	26	18	--	--
	1-1/2	54	28	--	--
	2	101	55	--	--

	NPS	150 - 800 Full Bore	150 - 800 Reduced Bore	1500 Full Bore	1500 Reduced Bore
Cameron's NEWCO Forged Steel Lift Check Valves Cv Values	1/2	3	1	3	2
	3/4	5	3	6	3
	1	11	6	11	5
	1-1/4	--	--	--	--
	1-1/2	18	15	19	11
	2	32	18	22	19

Table applies to both piston and ball check valves.

	NPS	800	1500	2500
Cameron's NEWCO Forged Steel Y-Pattern Lift Check Valves Cv Values	1/2	4	4	3
	3/4	11	11	6
	1	13	14	12
	1-1/4	--	--	--
	1-1/2	36	34	27
	2	67	67	36

Table applies to both piston and ball check valves.

V. HOW TO ORDER ALL CAMERON'S NEWCO PRODUCTS

Figure Number

The figure number shown below identifies specific valve configuration details of Cameron's NEWCO valves such as valve type, pressure class, end connections, body/bonnet and trim materials, and special features.

Please specify end connections, body materials and trims not listed below.

When placing an order, please refer to the respective product section of the catalog for size availability. A detailed description must be included with any special orders.

Fig. 18T-FS2 _ _

Type
1 = Gate, OS&Y
2 = Globe/Globe Stop Check, OS&Y
3 = Swing/Tilting Disc Check
4 = Piston Check
5 = Ball
6 = Gate, NRS
7 = Angle/Angle Stop Check, OS&Y

Pressure Class
1 = 150
2 = 125
3 = 300
6 = 600
8 = 800
9 = 900
15 = 1500
16 = 1690
25 = 2500
26 = 2680
45 = 4500

End Connections
F = Flanged
J = RTJ
S = Socket Weld
T = Threaded
W = Butt Weld
X = Threaded x Socket Weld

Trim Material — API Trim =
1 = CR13 ..... 1, 4, 8A
2 = CR13/HF** 8
3 = CR13/FHF** 5
4 = 316 10
4/2 = 316/HF** 12
4/3 = 316/FHF** 16
5 = NI Cu (Monel***) 9
5/2 = Monel/HF** 11
6 = Alloy 20 13
7 = Bronze ..... N/A
A7 = Aluminum Bronze ..... N/A
8 = Iron ..... N/A
9 = Special (Customer to Specify)

Body/Bonnet Material

A20 =	ASTM A351, CN7M =	Cast Alloy 20
CB =	ASTM A216, WCB =	Cast Carbon Steel
CC =	ASTM A216, WCC =	Cast Carbon Steel
C5 =	ASTM A217, C5 =	Cast Alloy Steel (5% Chrome, .5% Moly)
C6 =	ASTM A217, WC6 =	Cast Alloy Steel (1.25% Chrome, .5% Moly)
C9 =	ASTM A217, WC9 =	Cast Alloy Steel (2.25% Chrome, 1% Moly)
C12 =	ASTM A217, C12 =	Cast Alloy Steel (9% Chrome, 1% Moly)
12A =	ASTM A217, C12A =	Cast Alloy Steel (9% Chrome, 1% Moly, V)
CF3 =	ASTM A351, CF3 =	Cast Stainless Steel
C3M =	ASTM A351, CF3M =	Cast 316L Stainless Steel
CF8 =	ASTM A351, CF8 =	Cast 304 Stainless Steel
C7L =	ASTM A351, CG3M =	Cast 317L Stainless Steel
C8M =	ASTM A351, CF8M =	Cast 316 Stainless Steel
C8C =	ASTM A351, CF8C =	Cast 347 Stainless Steel
CT =	ASTM A351, CG8M =	Cast 317 Stainless Steel
DI =	ASTM A395 =	Cast Ductile Iron
FS =	ASTM A105 =	Forged Carbon Steel
F3M =	ASTM A182, F316L =	Forged 316 Stainless Steel
F5 =	ASTM A182, F5 =	Forged Alloy Steel (5% Chrome, .5% Moly)
F7 =	ASTM A182, 317 =	Forged 317 Stainless Steel
F7L =	ASTM A182, F317L =	Forged 317L Stainless Steel
F11 =	ASTM A182, F11 =	Forged Alloy Steel (1.25% Chrome, .5% Moly)
F22 =	ASTM A182, F22 =	Forged Alloy Steel (2.25% Chrome, 1% Moly)
F9 =	ASTM A182, F9 =	Forged Alloy Steel (9% Chrome, 1% Moly)
F91 =	ASTM A182, F91 =	Forged Alloy Steel (9% Chrome, 1% Moly, V)
F8 =	ASTM A182, F304 =	Forged 304 Stainless Steel
F8M =	ASTM A182, F316 =	Forged 316 Stainless Steel
F8C =	ASTM A182, F321 =	Forged 321 Stainless Steel
IB =	ASTM A126, CLB =	Cast Iron
LCC =	ASTM A352, LCC =	Cast Low Temperature Carbon Steel
LF2 =	ASTM A350, LF2 =	Forged Low Temperature Carbon Steel
MO =	ASTM A414, M35 =	Cast NI Cu (Monel***)
SPL =	Special (Customer to specify)	

Suffix Letters
BP = By Pass
BS = Bellows Seal
CL = Chlorine Service
CR = Cryogenic Service
CW = Chain Wheel
EB = Extended Body
FP = Full Port
FS = Fire Safe
GI = Grease Injection
GO = Gear Operated
HB = Horizontal Ball Check
HP = Horizontal Piston Check
HO = Hydraulic Operator
INT = Integral Flanged
LD = Locking Device
LL = Locking Loop
LV = Live Load Packing
MO = Motor Operated
NC = NACE MR0103 Compliant
OL = Outside Weight & Lever
OX = Oxygen Service
PO = Pneumatic Operator
PS = Pressure Seal Bonnet
PT = PTFE Seats
QS = QuadroSphere
RP = Regular Port
SC = Stop Check
SL = Spring Loading
SPL = Special (Customer to specify)
TD = Tilting Disc Check
TF = Teflon* Insert
TM = Trunnion Mounted
VP = Vertical Ball Check
VL = Vertical Lift Check
VP = V-Port Disc
VT = Viton* Insert
WB = Welded Bonnet
Y = Y Pattern
* = Viton and Teflon are registered trademarks of DuPont Company
**HF = Hardfaced - AWS 5.13 Class $C_O C_R A$
*** = Monel is a registered trademark of International Nickel Company

NOTES:

VI. INDUSTRY STANDARDS TYPICALLY USED IN VALVE MANUFACTURING

(For Reference Only)

ISO 9001: 2000
RWTUV approved Newmans for design, manufacture, sales, & service of industrial valves under certificate registration number #08-1016
ISO 14001: 2004
The Newmans/Yancheng Manufacturing Team has passed the TUV-USA ISO 14001-2004 Certification Audit. All facilities inclusive of two (2) Foundries (Lost Wax and Sand Cast), Ball Valve Factory, Final Processing Center and Warehouses 15 & 16.

American Petroleum Institute (API)

API RP 574 (1998) - Inspection practices for piping system components
API 589 (1998) - Fire test for evaluation of valve stem packing
API RP 591 (2003) - Process valve qualification procedure
API 594 (2004) - Check valves-flanged, lug, wafer & buttwelding
API 597 (1981) - Steel venturi gate valves, flanged, buttwelding ends
API 598 (2004) - Valve inspection & testing
API 599 (2002) - Metal plug valves - flanged, welding ends
API 601 (1988) - Metallic gaskets for raised-face pipe flanges & flanged connections (double-jacketed corrugated & spiral wound)
API 600 (2001) - Bolted bonnet steel gate valves for petroleum & natural as industries "ISO adoption from ISO 10434"
API 602 (2005) - Steel gate, globe, & check valves for sizes DN100 and smaller for the petroleum & natural gas industries
API 603 (2001) - Corrosion-resistant, bolted bonnet gate valves-flanged & buttweld ends
API 604 (1981) - Ductile iron gate valves, flanged ends
API 605 (1988) - Large-diameter carbon steel flanges (nominal pipe sizes 26" through 60", classes 75, 150, 300, 400, 600, & 900 (replaced by ANSI/ASME B16.47)
API 606 (1989) - Compact steel gate valves, extended body (included in API 602) fire test for soft-seated quarter-turn valves "ISO adoption from ISO 10497-5 2004"
API 607 (2005) - Fire test for soft-seated quarter-turn valves "ISO adoption from ISO 10497-5 2004" API 608 (2002) - Metal ball valves, flanged, threaded, & welding ends
API 609 (2004) - Butterfly valves-double flanged, lug- & wafer-type
API RP 941 (2004) - Steel for hydrogen service at elevated temperatures & pressures in petroleum refineries & petrochemical plants
API RP 520 (2000), Part 1 - Sizing, selection & installation of pressure relieving devices in refineries
API RP 520 (2003), Part 2 - Sizing, selection & installation of pressure relieving devices in refineries devices in refineries
API Spec 6A (2005) - Specification for wellhead & christmas tree equipment
API Spec 6D (2005) - Specifications for pipeline valves
API Spec 14D (1994) - Specifications for wellhead surface safety valves & underwater safety valves for offshore service
API 5B (2004) - Threading, gauging thread inspection of coring, tubing, & line pipe threads
API 6AM (2003) - Material toughness
API 6FA (1999) - Fire test for valves
API 6FC (1999) - Fire test for valves with backseats
API 6FD (1995) - Specification for fire test for check valves
API Q1 (2003) - Specification for quality programs for the petroleum, petrochemical, & natural gas

American Society of Mechanical Engineers (ASME)

ASME Code (1997 addenda) - Boiler & pressure vessel code
ASME A13.1 (1996) - Scheme for the identification of piping systems ASME B1.1 (2003) - Unified inch screw threads, UN, & UNR thread form ASME B1.5 (1997) - ACME screw threads
ASME B1.7M (1984) - Nomenclature, definitions, & letter symbols for screw threads
ASME B1.8 (1988) - Stub ACME screw threads
ASME B1.12 (1987) - Class 5 interference - fit thread
ASME B1.20.1 (1983) - Pipe threads, general purpose, inch
ASME B1.20.3 (1976) - Dry-seal pipe threads, inch
ANSI/ASME B16.1 (1998) - Cast iron pipe flanges & flanged fittings
ANSI/ASME B16.5 (2003) - Pipe flanges & flanged fittings: NPS 1/2" through 24" ASME B16.9 (2003) - Factory made wrought steel buttwelding fittings
ANSI/ASME B16.10 (2002) - Face-to-face & end-to-end dimensions of valves
ASME B16.11 (2001) - Forged fittings, socket welding & threaded
ASME B16.20 (1998) - Metallic gaskets for pipe flanges: ring joint spiral wound & jacketed
ASME B16.21 (2005) - Non-metallic flat gaskets for pipe flanges
ASME B16.25 (2003) - Buttwelding ends
ANSI/ASME B16.33 (2002) - Manually operated metallic gas valves for use in gas piping systems up to 125 PSI (sizes NPS 1/2" through 2")
ANSI/ASME B31.1 (2004) - Power piping
ANSI/ASME B31.3 (2004) - Process piping
ANSI/ASME B16.34 (2004) - Valves flanged, threaded & welding end
ANSI/ASME B16.36 (1996) - Orifice flanges
ANSI/ASME B16.38 (1985) - Large metallic valves for gas distribution (manually operated, NPS 2-1/2" through 12", 125 PSIG maximum)
ANSI/ASME B16.42 (1998) - Ductile iron pipe flanges & flanged fittings: classes 150 & 300
ANSI/ASME B16.47 (1996) - Large diameter steel flanges
ANSI B17.1 (1967, R' 89) - Keys & keyseats
ANSI B18.2.2 (1987) - Square & hex nuts
ASME B31.4 (2002) - Pipeline transportation systems for liquid hydrocarbons & other ammonia & alcohols
ANSI/ASME B31.8 (2003) - Gas transmission & distribution piping systems ANSI/ASME B36.10 (2004) - Welded & seamless wrought steel pipe ANSI/ASME B36.19 (2004) - Stainless steel pipe
ANSI FCI-2 (1991) - Control valve seat leakage

American Society Non-destructive Test (ASNT)

ASNT-TC-1A (1996) - Recommended practice no. SNT-TC-1A 1996

American Society for Testing and Materials (ASTM)

British Standards Institute (BS)

BS 1414 (1975, R' 91) - Gate, wedge & double disk valves: steel
BS 1868 (1975, R' 91) - Check valves: steel
BS 1873 (1975, R' 91) - Globe & check valves: steel
BS 2080 (1989) obsolete - Flanged & buttweld end steel valves
BS 5146 - (withdrawn) Replaced by BS 6755 p.1 steel valves testing (1986) & BS 6755 p.2 (1984) BS 5152 (1974, R' 91) - Globe & check: cast iron
BS 5153 (1974, R' 91) - Check: cast iron
BS 5159 (1974, R' 91) - Ball: cast iron & carbon steel
BS 5160 (1974, R' 91) - Globe & check: steel
BS 5163 (1986, R' 91) - Gate, wedge & double disk: cast iron
BS 5351 (1986, R' 91) - Ball: steel
BS 5352 (1986, R' 91) - Globe & check: steel
BS 5418 - (withdrawn) Replaced by BS EN 19 (1992) marking: general purpose industrial
BS 5840 (1980, R' 91) - Valve mating details for actuator operation
BS 6364 (1984, R' 91) - Cryogenic
BS 6683 (1985, R' 91) - Guide: installation & use of valves
BS 6755: Part 1 (1986, R' 91) - Specification for production pressure testing requirements
BS 6755: Part 2 (1987) - Specification for fire type-testing requirements
BS EN 19 (1992) - Marking of general purpose industrial valves

Canadian Standards Association

B51-97 - Boiler, pressure vessel, & pressure piping code Z245.15-96 - Steel valves
CAN3-z299.4-85 (reaffirmed 1997) - Quality assurance program - Category 4
CAN3-z299.3-85 (reaffirmed 1997) - Quality assurance program - Category 3

International Organization for Standardization

ISO 5211/1 (2001) - Industrial valves- part-turn actuator attachments
ISO 5211/2 (2001) - Part-turn valve actuator attachment-flange & coupling performance characteristics
ISO 5211/3 (2001) - Part-turn valve actuator attachment-dimensions of driving components
ISO 5752 (1982) - Metal valves for use in flanged pipe systems face-to-face & center-to-face dimensions
ISO 9000 (2005) - Quality management systems and fundamentals & vocabulary
ISO 10012-1 (1992) - Quality assurance requirements for measuring equipment

Manufacturers Standardization Society

SP-6 (2001) - Standard finishes for contact faces of pipe flanges & connecting-end flanges of valves & fittings
SP-9 (r2005) - Spot facing for bronze, iron & steel flanges
SP-25 (1998) - Standard marking system for valves, fittings, flanges & unions
SP-42 (2004) - Class 150 corrosion resistant gate, globe, angle, & check valves with flanged & buttweld ends
SP-44 (2001) - Steel pipeline flanges
SP-45 (2003) - Bypass & drain connections
SP-51 (2003) - Class 150/w corrosion resistant cast flanges & flanged fittings
SP-53 (2002) - Quality standard for steel castings & forgings for valves, flanges, & fittings & other piping components: magnetic particle exam method
SP-54 (2002) - Quality standard for steel castings for valves, flanges, & fittings and other piping components: radiographic examination method
SP-55 (2001) - Quality standard for steel castings for valves, flanges other piping components-visual method for evaluation of surface irregularities
SP-60 (2004) - Connecting flange joint between tapping sleeves & tapping valves
SP-61 (2003) - Pressure testing of steel valves
SP-65 (2004) - High pressure chemical industry flanges & threaded stubs for use with lens gaskets
SP-67 (2000A) - Butterfly valves
SP-69 (2003) - ANSI/MSS edition pipe hangers & supports, selection & application
SP-70 (1998) - Cast iron gate valves, flanged & threaded ends
SP-71 (1997) - Gray iron swing check valves, flanged & threaded ends
SP-72 (1999) - Ball valves with flanged or butt-welding ends for general service
SP-79 (2004) - Socket-welding reducer inserts
SP-81 (2001) - Stainless steel, bonnetless, flanged knife gate valves
SP-82 (1992) - Valve pressure testing methods
SP-84 (1990) - Valves - socket welding & threaded ends
SP-85 (2002) - Cast iron globe & angle valves, flanged & threaded ends
SP-86 (2002) - Guidelines for metric data in standards for valves, flanges, fittings & actuators
SP-88 (r2001) - Diaphragm valves
SP-91 (1992) - Guidelines for manual operation of valves
SP-92 (1999) - MSS valve user guide
SP-93 (r2004) - Quality standard for steel castings & forgings for valves, flanges & fittings & other piping components- liquid penetrant exam method
SP-94 (r2004) - Quality standard for ferritic & martensitic steel castings for valves, flanges, & fittings and others piping components - ultrasonic exam method
SP-96 (r2005) - Guidelines on terminology for valves & fittings
SP-98 (2001) - Protective coatings for the interior of valves, hydrants, & fittings
SP-99 (r2005) - Instrument valves
SP-101 (r2001) - Part-turn valve actuator attachment-flange and driving component dimensions & performance characteristics
SP-102 (r2001) - Multi-turn valve actuator attachment: flange and driving component dimensions & performance characteristics
SP-110 (1996) - Ball valves threaded, socket-welding, solder joint, grooved, & flared ends
SP-117 (2002) - Bellows seals for globe & gate valves
SP-118 (2002) - Compact steel globe and check valves-flanged, flangeless, threaded & welding ends (chemical & petroleum refinery service)
SP-120 (2002) - Flexible graphite packing system for rising stem steel valves (design requirements) SP-121 (R2002) - Qualification testing methods for stem packing for rising stem steel valves

National Association of Corrosion Engineers (NACE)

MR0175 (2005) - Sulfide stress cracking resistant metallic materials for oil field equipment
MR0103 (2005) - Materials resistant to sulfide street cracking in corrosive petroleum refining environments