

NEWCO®

Pressure Seal Valves

Technical Data



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PREFACE

The procedures included in this book are to be performed in conjunction with the requirements and recommendations outlined in API Specifications. Any repairs to the equipment covered by this book should be done by an authorized Cameron service representative. Cameron will not be responsible for loss or expense resulting from any failure of equipment or any damage to any property or death or injury to any person resulting in whole or in part from repairs performed by anyone other than authorized Cameron personnel. Such unauthorized repairs shall also serve to terminate any contractual or other warranty, if any, on the equipment and may also result in equipment no longer meeting applicable requirements.

File copies of this manual are maintained. Revisions and/or additions will be made as deemed necessary by Cameron. The drawings in this book are not drawn to scale, but the dimensions shown are accurate.

This book covers Cameron products.

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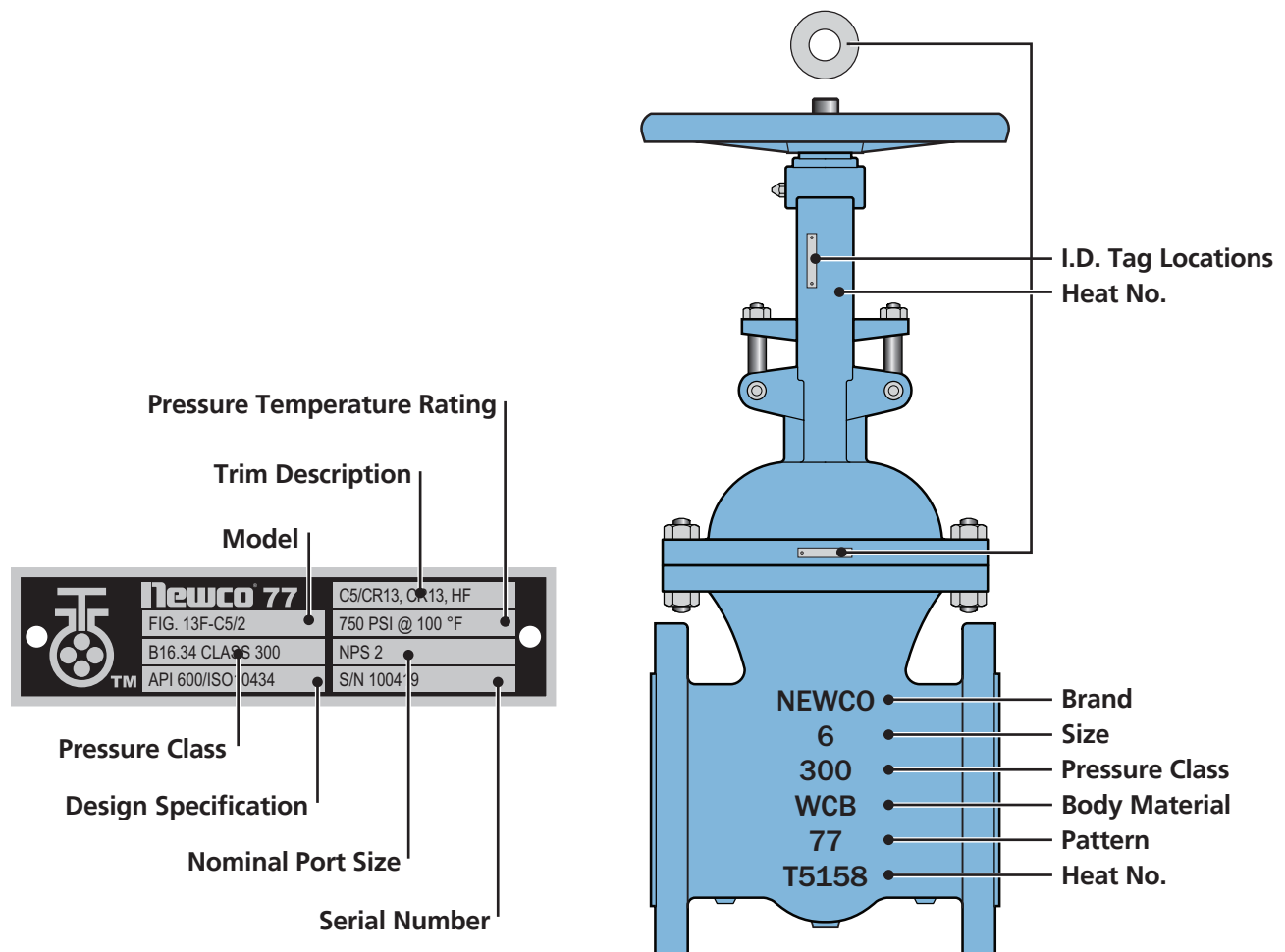
OVERVIEW

Valve and I.D. Tag

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 in 1 of the 3 following areas:

- Yoke
- Body/Bonnet Flange
- Under the Handwheel Nut



MATERIALS

I. BODY/BONNET MATERIALS

Cameron's NEWCO® cast 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.

Material Designation	Common Description	ASTM Specs.	Body/Bonnet Material Service Limitations*
CB	Carbon Steel	A216	Non-corrosive service water, oil and gases at temperatures between -20° F and +800° F.
LCC	Low Temp Carbon	A352	Low temperature service between -50° F and +650° F.
WC6	1.25% Chrome and 1% Moly	A217	Non-corrosive service water, oil and gases at temperatures between -20° F and +1100° F.
WC9	2.25% Chrome and 1% Moly	A217	Non-corrosive service water, oil and gases at temperatures between -20° F and +1100° F.
C5	5% Chrome and .5% Moly	A217	Corrosive, non-corrosive or erosive service at temperatures between -20° F and +1200° F.
C12	9% Chrome and 1% Moly	A217	Corrosive, non-corrosive or erosive service at temperatures between -20° F and +1200° F.
C12A	9% Chrome, 1% Moly, and V	A217	Corrosive, non-corrosive or erosive service at temperatures between -20° F and +1200° F.
C8M	Cast 316	A351	Corrosive, cryogenic or high temperature service between -450° F and +1200° F.
A20	Alloy 20	A351	Corrosive service at temperatures between -20° F and +300° F.

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

II. TRIM MATERIALS

The following are Cameron's NEWCO standard trim designations.

NEWCO 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.
7	Bronze	-	BRZ	BRZ	BRZ	BRZ	Water, gas or low pressure steam to 450° F.
A7	Aluminum Bronze	-	AL BRZ	AL BRZ	AL BRZ	AL BRZ	
8	Iron	-	Iron	Iron	STL	Iron or STL	
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, backseat bushing in gate and globe valves and the swing check disc nut.

III. SOUR GAS SERVICE MATERIALS

Cameron's NEWCO cast steel valves may be furnished with body and trim materials in compliance with NACE MR-01-75 specifications. The standard valve is WCB with double tempered trim 2 and Class II bolting. Other materials, trim and bolting are available. To order the configuration you require, please specify the appropriate figure number and suffix designation as shown on Page 9.

IV. FEATURES AND BENEFITS

- Certifications
- International Organization for Standardization (ISO)
- Traceability
- Fugitive Emissions Tested
- API-598 Tested
- Major End-user Approved
- Multiple Global Locations
- Extensive Engineering Capabilities
- Excellent Customer Service
- Warranty
- Onsite Non-destructive Testing
- Field Services for Start-up
- Inhouse Automation Capabilities

PRESSURE TEMPERATURE RATINGS – ASME B16.34-2004

Class 150							
Temperature °F (°C)	WCB*	LCC	WC6	WC9	C5	C12	C12A
-20 to 100 (-29 to 38)	285	290	290	290	290	290	290
200 (93)	260	260	260	260	260	260	260
300 (148)	230	230	230	230	230	230	230
400 (204)	200	200	200	200	200	200	200
500 (260)	170	170	170	170	170	170	170
600 (316)	140	140	140	140	140	140	140
650 (343)	125	125	125	125	125	125	125
700 (371)	110	-	110	110	110	110	110
750 (399)	95	-	95	95	95	95	95
800 (427)	80	-	80	80	80	80	80
850 (454)	65	-	65	65	65	65	65
900 (482)	50	-	50	50	50	50	50
950 (510)	35	-	35	35	35	35	35
1000 (538)	20	-	20	20	20	20	20
1050 (566)	-	-	20**	20**	20**	20**	20
1100 (593)	-	-	20**	20**	20**	20**	20
1150 (621)	-	-	-	-	20**	20**	20
1200 (649)	-	-	-	-	20**	20**	20

Class 300							
Temperature °F (°C)	WCB*	LCC	WC6	WC9	C5	C12	C12A
-20 to 100 (-29 to 38)	740	750	750	750	750	750	750
200 (93)	680	750	750	750	750	750	750
300 (148)	655	730	720	730	730	730	730
400 (204)	635	705	695	705	705	705	705
500 (260)	605	665	665	665	665	665	665
600 (316)	570	605	605	605	605	605	605
650 (343)	550	590	590	590	590	590	590
700 (371)	530	-	570	570	570	570	570
750 (399)	505	-	530	530	530	530	530
800 (427)	410	-	510	500	510	510	510
850 (454)	320	-	485	485	485	485	485
900 (482)	230	-	450	450	375	450	450

Class 300							
Temperature °F (°C)	WCB*	LCC	WC6	WC9	C5	C12	C12A
950 (510)	135	-	320	385	275	375	385
1000 (538)	85	-	215	265	200	255	365
1050 (566)	-	-	145	175	145	170	360
1100 (593)	-	-	95	110	100	115	300
1150 (621)	-	-	65	70	60	75	225
1200 (649)	-	-	40	40	35	50	145

Class 600							
Temperature °F (°C)	WCB*	LCC	WC6	WC9	C5	C12	C12A
-20 to 100 (-29 to 38)	1480	1500	1500	1500	1500	1500	1500
200 (93)	1360	1500	1500	1500	1500	1500	1500
300 (148)	1310	1455	1445	1455	1455	1455	1455
400 (204)	1265	1405	1385	1410	1410	1410	1410
500 (260)	1205	1330	1330	1330	1330	1330	1330
600 (316)	1135	1210	1210	1210	1210	1210	1210
650 (343)	1100	1175	1175	1175	1175	1175	1175
700 (371)	1060	-	1135	1135	1135	1135	1135
750 (399)	1015	-	1065	1065	1065	1065	1065
800 (427)	825	-	1015	1015	1015	1015	1015
850 (454)	640	-	975	975	975	975	975
900 (482)	460	-	900	900	745	900	900
950 (510)	275	-	640	755	550	755	775
1000 (538)	170	-	430	535	400	505	725
1050 (566)	-	-	290	350	290	345	720
1100 (593)	-	-	190	220	200	225	605
1150 (621)	-	-	130	135	125	150	445
1200 (649)	-	-	80	80	70	105	290

Class 900							
Temperature °F (°C)	WCB*	LCC	WC6	WC9	C5	C12	C12A
-20 to 100 (-29 to 38)	2220	2250	2250	2250	2250	2250	2250
200 (93)	2035	2250	2250	2250	2250	2250	2250
300 (148)	1965	2185	2165	2185	2185	2185	2185
400 (204)	1900	2110	2080	2115	2115	2115	2115
500 (260)	1810	1995	1995	1995	1995	1995	1995
600 (316)	1705	1815	1815	1815	1815	1815	1815
650 (343)	1650	1765	1765	1765	1765	1765	1765
700 (371)	1590	-	1705	1705	1705	1705	1705
750 (399)	1520	-	1595	1595	1595	1595	1595
800 (427)	1235	-	1525	1525	1525	1525	1525
850 (454)	955	-	1460	1460	1460	1460	1460
900 (482)	690	-	1350	1350	1120	1350	1350
950 (510)	410	-	955	1160	825	1130	1160
1000 (538)	255	-	650	805	595	760	1090
1050 (566)	-	-	430	525	430	515	1080
1100 (593)	-	-	290	330	300	340	905
1150 (621)	-	-	195	205	185	225	670
1200 (649)	-	-	125	125	105	155	430

Class 1500							
Temperature °F (°C)	WCB*	LCC	WC6	WC9	C5	C12	C12A
-20 to 100 (-29 to 38)	3705	3750	3750	3750	3750	3750	3750
200 (93)	3395	3750	3750	3750	3750	3750	3750
300 (148)	3270	3640	3610	3640	3640	3640	3640
400 (204)	3170	3520	3465	3530	3530	3530	3530
500 (260)	3015	3325	3325	3325	3325	3325	3325
600 (316)	2840	3025	3025	3025	3025	3025	3025
650 (343)	2745	2940	2940	2940	2940	2940	2940
700 (371)	2665	-	2840	2840	2840	2840	2840
750 (399)	2535	-	2660	2660	2660	2660	2660
800 (427)	2055	-	2540	2540	2540	2540	2540
850 (454)	1595	-	2435	2435	2435	2435	2435
900 (482)	1150	-	2245	2245	1870	2245	2245
950 (510)	685	-	1595	1930	1370	1885	1930

Class 1500							
Temperature °F (°C)	WCB*	LCC	WC6	WC9	C5	C12	C12A
1000 (538)	430	-	1080	1335	995	1270	1820
1050 (566)	-	-	720	875	720	855	1800
1100 (593)	-	-	480	550	495	565	1510
1150 (621)	-	-	325	345	310	375	1115
1200 (649)	-	-	205	205	170	255	720

Class 2500							
Temperature °F (°C)	WCB*	LCC	WC6	WC9	C5	C12	C12A
-20 to 100 (-29 to 38)	6170	6250	6250	6250	6250	6250	6250
200 (93)	5655	6250	6250	6250	6250	6250	6250
300 (148)	5450	6070	6015	6070	6070	6070	6070
400 (204)	5280	5865	5775	5880	5880	5880	5880
500 (260)	5025	5540	5540	5540	5540	5540	5540
600 (316)	4730	5040	5040	5040	5040	5040	5040
650 (343)	4575	4905	4905	4905	4905	4905	4905
700 (371)	4425	-	4730	4730	4730	4730	4730
750 (399)	4230	-	4430	4430	4430	4430	4430
800 (427)	3430	-	4230	4230	4230	4230	4230
850 (454)	2655	-	4060	4060	4060	4060	4060
900 (482)	1915	-	3745	3745	3115	3745	3745
950 (510)	1145	-	2655	3220	2285	3145	3220
1000 (538)	715	-	1800	2230	1655	2115	3030
1050 (566)	-	-	1200	1455	1200	1430	3000
1100 (593)	-	-	800	915	830	945	2515
1150 (621)	-	-	545	570	515	630	1855
1200 (649)	-	-	345	345	285	430	1200

* Not recommended for prolonged use above 800° F.

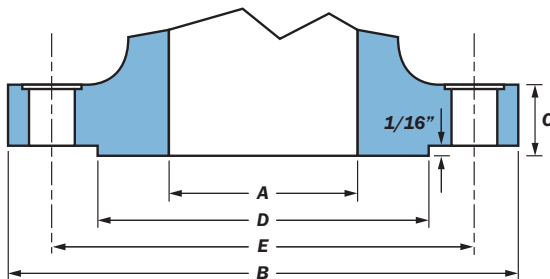
** For weld end valves only. Flanged end ratings terminate at 1000° F.

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.

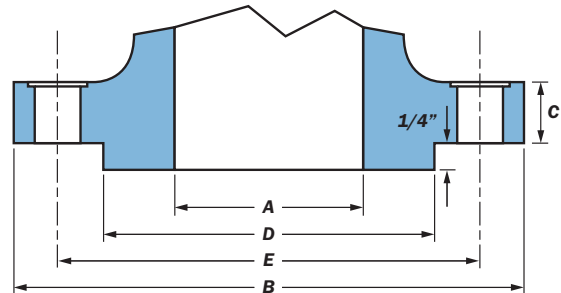
DIMENSIONS

I. FLANGE – ASME B16.5

Class 150 and 300



Class 600 and 2500



Standards: NPS 24 and smaller in all classes conform to ASME B16.5. NPS 30 and larger conform to ASME B16.47 (Series A).

Facing: End flanges are regularly furnished with a raised face having a serrated finish per MSS SP-6. The thickness of the flange dimension (C) includes the raised face for Class 150 and 300. For Class 600 through 2500, the flange dimension (C) does not include the 1/4" raised face.

Bolt Holes: Bolt holes are 1/8" larger than the bolt diameter. Bolt holes are drilled to straddle the center line.

Class 150							
Size In. (mm)	A	B	C	D	E	Stud Bolts	
						No.	Diam.
2 (50)	2.00	6.00	0.75	3.62	4.75	8	0.63
2.5 (65)	2.50	7.00	0.88	4.12	5.50	8	0.63
3 (80)	3.00	7.50	0.94	5.00	6.00	8	0.63
4 (100)	4.00	9.00	0.94	6.19	7.50	8	0.63
5 (125)	5.00	10.00	0.94	7.31	8.50	8	0.75
6 (150)	6.00	11.00	1.00	8.50	9.50	12	0.75
8 (200)	8.00	13.50	1.12	10.62	11.75	12	0.75
10 (250)	10.00	16.00	1.19	12.75	14.25	16	0.88
12 (300)	12.00	19.00	1.25	15.00	17.00	16	0.88
14 (350)	13.25	21.00	1.38	16.25	18.75	20	1.00
16 (400)	15.25	23.50	1.44	18.50	21.25	20	1.00
18 (450)	17.25	25.00	1.56	21.00	22.75	24	1.13
20 (500)	19.25	27.50	1.69	23.00	25.00	24	1.13
24 (600)	23.25	32.00	1.88	27.25	29.50	24	1.25
30 (750)	29.25	38.75	2.94	33.75	36.00	28	1.25
36 (900)	35.06	46.00	3.56	40.25	42.75	32	1.50
42 (1050)	40.87	53.00	3.81	47.00	49.50	36	1.50
48 (1200)	46.00	59.50	4.25	53.50	56.00	44	1.50

Class 300							
Size In. (mm)	A	B	C	D	E	Stud Bolts	
						No.	Diam.
2 (50)	2.00	6.50	0.88	3.62	5.00	8	0.63
2.5 (65)	2.50	7.50	1.00	4.12	5.88	8	0.75
3 (80)	3.00	8.25	1.12	5.00	6.62	8	0.75
4 (100)	4.00	10.00	1.25	6.19	7.88	8	0.75
5 (125)	5.00	11.00	1.38	7.31	9.25	8	0.75
6 (150)	6.00	12.50	1.44	8.50	10.62	12	0.75
8 (200)	8.00	15.00	1.62	10.62	13.00	12	0.88
10 (250)	10.00	17.50	1.88	12.75	15.25	16	1.00
12 (300)	12.00	20.50	2.00	15.00	17.75	16	1.13
14 (350)	13.25	23.00	2.12	16.25	20.25	20	1.13
16 (400)	15.25	25.50	2.25	18.50	22.50	20	1.25
18 (450)	17.00	28.00	2.38	21.00	24.75	24	1.25
20 (500)	19.00	30.50	2.50	23.00	27.00	24	1.25
24 (600)	23.00	36.00	2.75	27.25	32.00	24	1.5
30 (750)	29.00	43.00	3.62	33.75	39.25	28	1.75
36 (900)	34.50	50.00	4.12	40.25	46.00	32	2.00

Class 600							
Size In. (mm)	A	B	C	D	E	Stud Bolts	
						No.	Diam.
2 (50)	2.00	6.50	1.00	3.62	5.00	8	0.63
2.5 (65)	2.50	7.50	1.12	4.12	5.88	8	0.75
3 (80)	3.00	8.25	1.25	5.00	6.62	8	0.75
4 (100)	4.00	10.75	1.50	6.19	8.50	8	0.88
5 (125)	5.00	13.00	1.75	7.31	10.50	8	1.00
6 (150)	6.00	14.00	1.88	8.50	11.50	12	1.00
8 (200)	7.88	16.50	2.19	10.62	13.75	12	1.13
10 (250)	9.75	20.00	2.50	12.75	17.00	16	1.25
12 (300)	11.75	22.00	2.62	15.00	19.25	20	1.25
14 (350)	12.88	23.75	2.75	16.25	20.75	20	1.38
16 (400)	14.75	27.00	3.00	18.50	23.75	20	1.5
18 (450)	16.50	29.25	3.25	21.00	25.75	20	1.63
20 (500)	18.25	32.00	3.50	23.00	28.50	24	1.63
24 (600)	22.00	37.00	4.00	27.25	33.00	24	1.88
30 (750)	27.37	44.50	4.50	33.75	40.25	28	2.00
36 (900)	32.87	51.75	4.88	40.25	47.00	28	2.50

Class 900							
Size In. (mm)	A	B	C	D	E	Stud Bolts	
						No.	Diam.
3 (80)	2.88	9.50	1.50	5.00	7.50	8	0.88
4 (100)	3.88	11.50	1.75	6.19	9.25	8	1.13
5 (125)	4.75	13.75	2.00	7.31	11.00	8	1.25
6 (150)	5.75	15.00	2.19	8.50	12.50	12	1.13
8 (200)	7.50	18.50	2.50	10.62	15.50	12	1.38
10 (250)	9.38	21.50	2.75	12.75	18.50	16	1.38
12 (300)	11.12	24.00	3.12	15.00	21.00	20	1.38
14 (350)	12.25	25.25	3.38	16.25	22.00	20	1.50
16 (400)	14.00	27.75	3.50	18.50	24.25	20	1.63
18 (450)	15.75	31.00	4.00	21.00	27.00	20	1.88
20 (500)	17.50	33.75	4.25	23.00	29.50	20	2.00
24 (600)	21.00	41.00	5.50	27.25	35.50	20	2.50

Class 1500							
Size In. (mm)	A	B	C	D	E	Stud Bolts	
						No.	Diam.
2 (50)	1.88	8.50	1.50	3.62	6.50	8	0.88
2.5 (65)	2.25	9.62	1.62	4.12	7.50	8	1.00
3 (80)	2.75	10.50	1.88	5.00	8.00	8	1.13
4 (100)	3.62	12.25	2.12	6.19	9.50	8	1.25
5 (125)	4.38	14.75	2.88	7.31	11.50	8	1.50
6 (150)	5.38	15.50	3.25	8.50	12.50	12	1.38
8 (200)	7.00	19.00	3.62	10.62	15.50	12	1.63
10 (250)	8.75	23.00	4.25	12.75	19.00	12	1.88
12 (300)	10.38	26.50	4.88	15.00	22.50	16	2.00
14 (350)	11.38	29.50	5.25	16.25	25.00	16	2.25
16 (400)	13.00	32.50	5.75	18.50	27.75	16	2.50
18 (450)	14.62	36.00	6.38	21.00	30.50	16	2.75
20 (500)	16.38	38.75	7.00	23.00	32.75	16	3.00
24 (600)	19.62	46.00	8.00	27.25	39.00	16	3.50

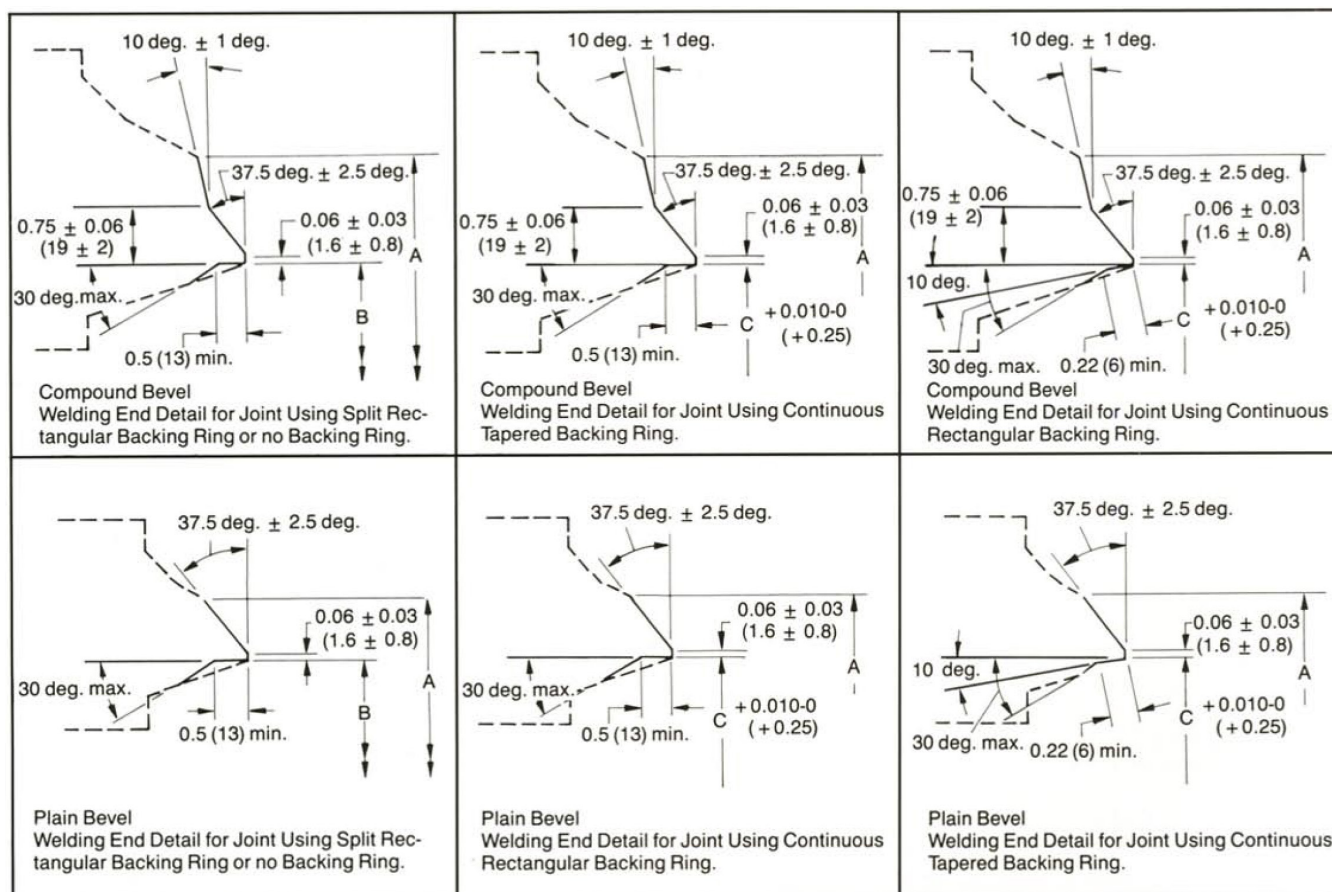
Class 2500							
Size In. (mm)	A	B	C	D	E	Stud Bolts	
						No.	Diam.
2 (50)	1.50	9.25	2.00	3.62	6.75	8	1.00
2.5 (65)	1.88	10.50	2.25	4.12	7.75	8	1.13
3 (80)	2.25	12.00	2.62	5.00	9.00	8	1.25
4 (100)	2.88	14.00	3.00	6.19	10.75	8	1.50
5 (125)	3.62	16.50	3.62	7.31	12.75	8	1.75
6 (150)	4.38	19.00	4.25	8.50	14.50	8	2.00
8 (200)	5.75	21.75	5.00	10.62	17.25	12	2.00
10 (250)	7.25	26.50	6.50	12.75	21.75	12	2.50
12 (300)	8.62	30.00	7.25	15.00	24.38	12	2.75

II. BUTT WELD – ASME B16.25

Butt welding ends to ANSI B16.25 are regularly furnished on most of Cameron's NEWCO steel valves. Other configurations can be supplied when specified.

Inquiries and orders for butt welding and valves must specify the size and schedule of the connecting pipe and the type of backing ring to be used.

ANSI B16.25 contours normally supplied are as shown below. Compound bevels are furnished for wall thickness greater than 0.875 inch.



Nominal Pipe Size	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	24"
A-Inches	3.59	4.62	5.68	6.78	8.78	10.94	12.97	14.25	16.25	18.28	20.31	24.38

B = Nominal Inside Diameter of Pipe

t = Nominal Pipe Wall Thickness

C = $B + 0.25t - 0.041$

A = Outside Diameter (from Chart)

AUXILIARY CONNECTION LOCATIONS

Bypasses

Bypasses serve two purposes. They are used in steam services as a means to warm the line before the main valve is opened. They are also used to balance the pressure on both sides of the main valve as an aid to reduce the torque required to open the main valve.

Cameron's NEWCO cast steel valve can be furnished with all welded bypasses when specified. The standard bypass configuration is the single valve bypass attached to the side of the main valve with the stems of both valves parallel as shown below. Piping and the OS&Y globe bypass valve have a pressure-temperature rating and corrosion resistance equal to exceeding that of the main valve.

When other bypass configurations are required, a sketch or drawing must accompany the order.

Drains

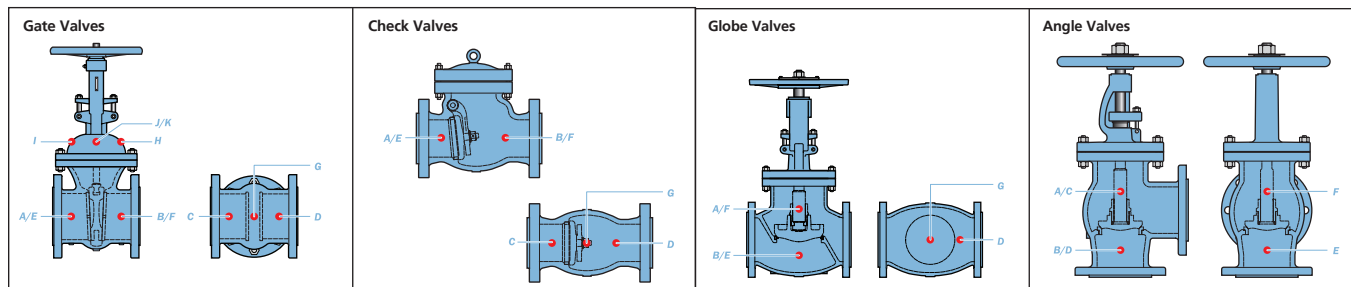
Cameron's NEWCO cast steel valves can be furnished with drains at any of the locations shown. Standard drain connections consist of a drilled, tapped and plugged hole at the location(s) specified. Other types of drains, including welding or threaded nipples with or without shut-off valves can also be furnished when specified.

Please refer to ASME B16.34 for exact auxiliary connection locations, sizes, and threading information.

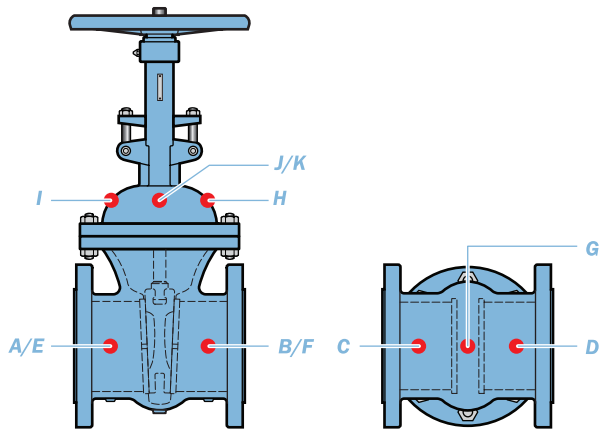
Each letter in the illustration(s) below identifies the possible hole locations for auxiliary connection(s). These illustrations are for reference purposes only.

Unless specified otherwise, auxiliary connection hole sizes shall be drilled and tapped as follows:

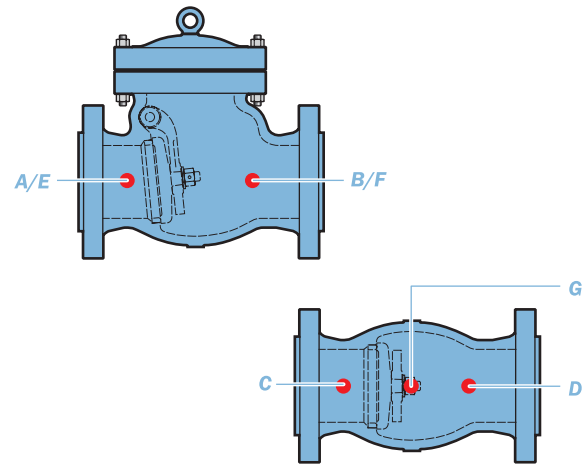
- 2" through 4" utilizes a .50" hole
- 5" through 8" utilizes a .75" hole
- 10" and larger utilizes a 1" hole



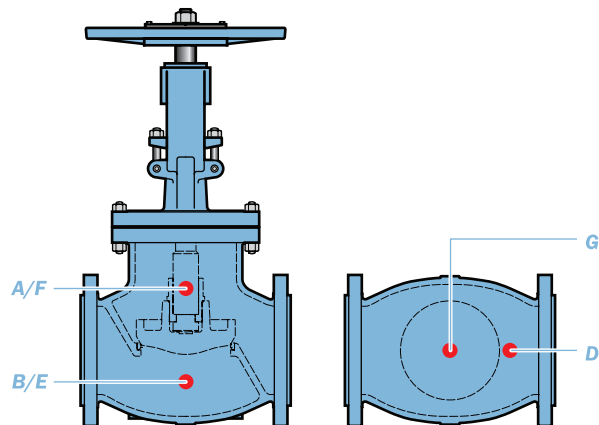
Gate Valves



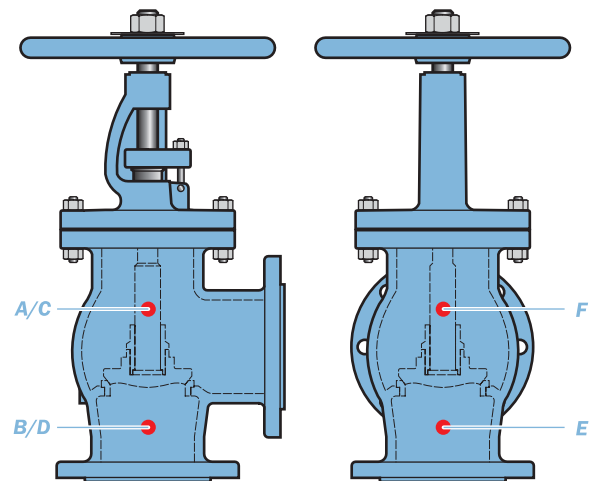
Check Valves



Globe Valves



Angle Valves



GATE VALVE FEATURES

I. CAST STEEL PRESSURE SEAL BONNET

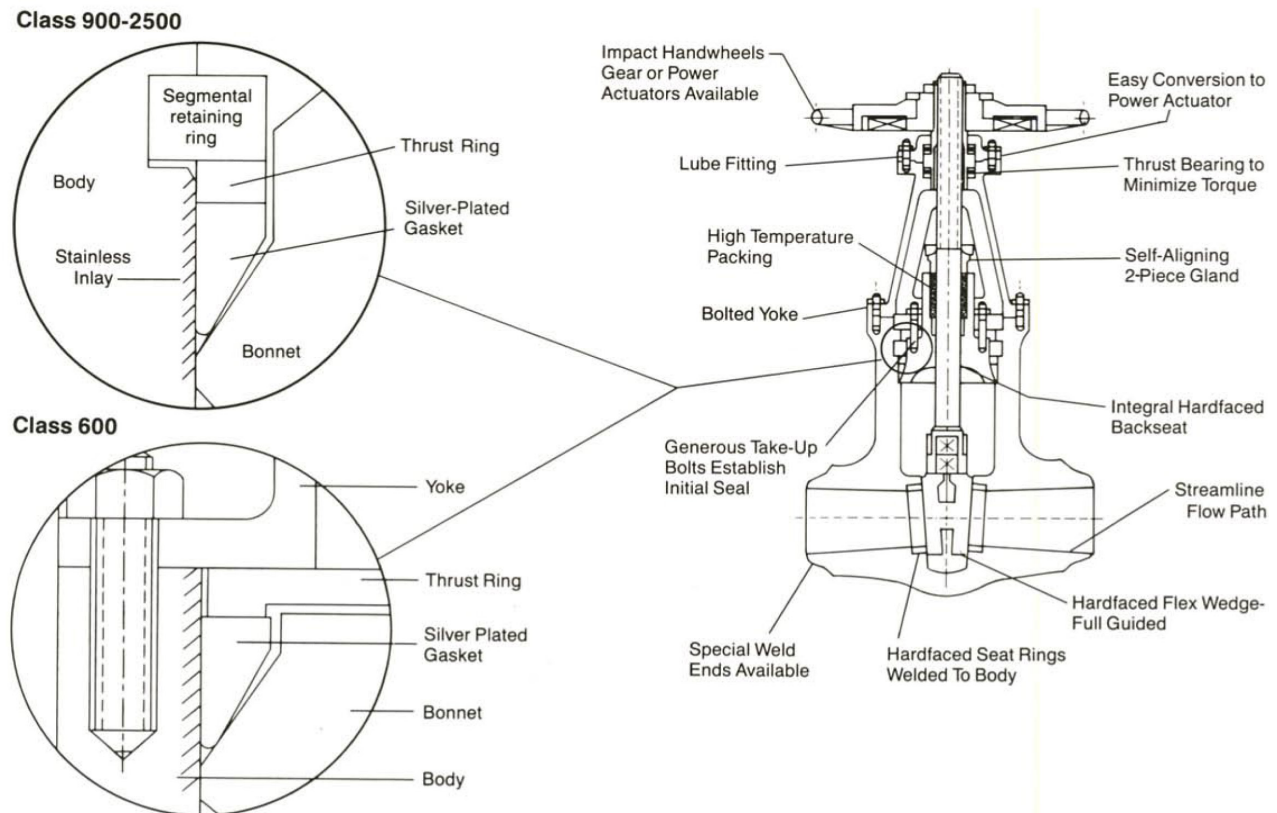
Pressure seal bonnet gate valves have the same application features as bolted bonnet valves. The major difference is in the bonnet design.

The pressure seal bonnet joint eliminates the body/bonnet flanges, reducing weight and simplifying the application of exterior insulation. Contrary to bolted valves, internal pressure applied to a pressure seal valve forces the sealing elements into higher contact — the higher the internal pressure, the tighter the seal.

Gate valves may be installed without consideration for the direction of flow. They are not recommended for use in a partially open, throttling position because erosion, noise and excessive wear can occur. Gate valve installations should always be made with consideration for the potential of bonnet over-pressurization caused by fluids which may become entrapped in the bonnet of a closed valve. Where this possibility exists, it is the user's responsibility to ensure that proper venting is installed.

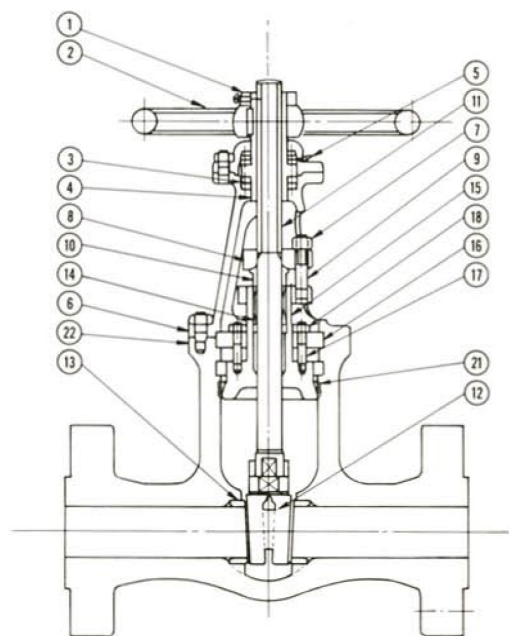
Cameron's NEWCO cast steel pressure seal valves comply with the design and test requirements of ANSI B16.34 and the installation dimensions of ANSI B16.10.

All Cameron's NEWCO pressure seal gate valves have the features shown below. They are engineered to provide convenience, durability and maintainability.



GATE VALVE MATERIALS

I. CAST STEEL PRESSURE SEAL BONNET



	Part Name	Material
1	Hand Wheel Nut	Carbon Steel
2	Hand Wheel	Ductile Iron A536
3	Bearings	Steel
4	Stem Nut	Aust Ductile Iron A459-D2
5	Grease Fitting	Carbon Steel
6	Yoke	A216 Gr WCB
7	Gland Flange Nut	Carbon Steel
8	Gland Flange	Carbon Steel
9	Gland Stud	Alloy Steel
10	Gland	A276-416
Trim Parts		
11	Stem	
12	Wedge	(See Page 36 for Trim Materials)
13	Seat Ring	
14 to 22 — See Below		

	Part Name	WCB	LCC	LC3	WC6	WC9
14	Packing	Commercial	Commercial	Commercial	Commercial	Commercial
15	Bonnet	A105/WCB	A350-LF1/LCC	A350-LF3/LC3	A182-F11/WC6	A182-F22/WC9
16	Bonnet Retainer	AISI 1035	A350-LF1	A350-LF3	AISI 1035	AISI 1035
17	Retainer Stud	A193-B7	A320-L7	A320-L7	A193-B7	A193-B7
18	Retainer Nut	A194-2H	A194-4	A320-B8	A194-2H	A194-2H
19	Gasket	AISI 1015	A276-316	A276-316	AISI 1015	AISI 1015
20	Thrust Ring	A276-420	A276-316	A276-316	A276-420	A276-420
21	Segment Ring	A276-420	A276-316	A276-316	A276-420	A276-420
22	Body	A216 Gr WCB	A352 Gr LCB	A352 Gr LC3	A217 Gr WC6	A217 Gr WC9

	Part Name	C5	C12	CF8M	CN7M	CF8C
14	Packing	Commercial	Commercial	Commercial	Commercial	Commercial
15	Bonnet	A182-F5	A182-F9	A276-316	B473	A182-F347
16	Bonnet Retainer	AISI 1035	AISI 1035	A276-316	AISI 1035	AISI 1035
17	Retainer Stud	A193-B7	A193-B7	A193-B8	A193-B8	A193-B8
18	Retainer Nut	A194-2H	A194-2H	A194-GR8	A194-GR8	A194-GR8
19	Gasket	AISI 1015	AISI 1015	A276-316	A276-316	A276-316
20	Thrust Ring	A276-420	A276-420	A276-316	A276-316	A276-316
21	Segment Ring	A276-420	A276-420	A276-316	A276-316	A276-316
22	Body	A217 Gr C5	A217 Gr C12	A351-CF8M	A351-CN7M	A351-CF8C

Note: Construction and materials may vary between sizes and pressure classes and are subject to change without notice. This is not a complete list of all available materials. Specifications are ASTM unless otherwise noticed.

GATE VALVES

I. CAST STEEL PRESSURE SEAL BONNET – CLASS 600 AND 900

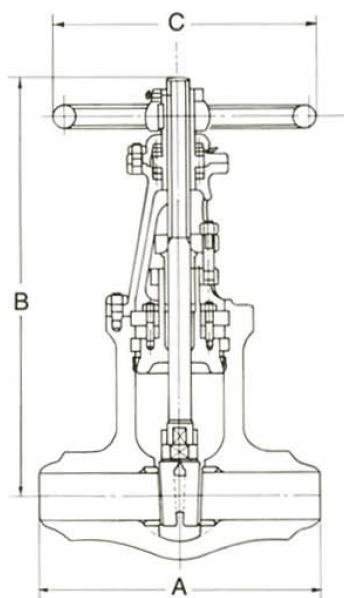


Fig. 16W-CB-PS
19W-CB-PS

Flanged ends are to ANSI B16.10 long pattern.
Weld ends are to ANSI B16.10 short pattern.
NPS 12 and larger Class 600 and NPS 10 and larger Class 900 are furnished with hammer blow handwheel.

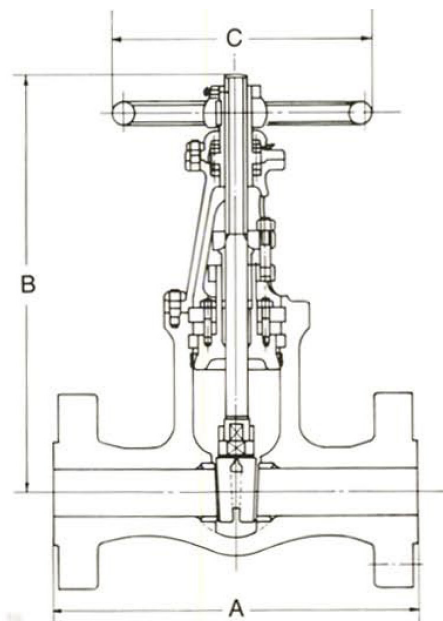


Fig. 16F-CB-PS
19F-CB-PS

		Class 600 Dimensions													
		2	2-1/2	3	4	5	6	8	10	12	14	16	18	20	24
A End to End BW	In.	7.0	8.5	10.0	12.0	15.0	18.0	23.0	28.0	32.0	35.0	39.0	43.0	47.0	55.0
	mm	178	216	254	305	381	457	584	711	813	889	991	1092	1194	1397
A Face to Face RF	In.	11.5	13.0	14.0	17.0	20.0	22.0	26.0	31.0	33.0	35.0	39.0	43.0	47.0	55.0
	mm	292	330	356	432	508	559	660	787	838	889	991	1092	1194	1397
B Valve Open	In.	19.5	21.5	24.8	31.0	35.0	38.0	49.0	60.0	72.0	89.0	102.0	106.0	117.0	126.0
	mm	495	546	632	787	889	965	1245	1524	1829	2261	2591	2692	2972	3200
C Hand Wheel Diam.	In.	9	10	11	14	18	20	22	22	25	28	28	30	36	36
	mm	229	254	279	356	457	508	559	559	635	711	711	762	914	914

		Class 900 Dimensions										
		3	4	5	6	8	10	12	14	16	18	20
A End to End BW	In.	12.0	14.0	17.0	20.0	26.0	31.0	36.0	39.0	43.0	48.0	52.0
	mm	305	356	432	508	660	787	914	991	1092	1219	1321
A Face to Face RF	In.	15.0	18.0	22.0	24.0	29.0	33.0	38.0	40.5	44.5	48.0	52.0
	mm	381	457	559	610	737	838	965	1029	1130	1219	1321
B Valve Open	In.	25.0	32.5	37.0	41.0	53.0	63.0	77.5	90.5	103.0	107.5	118.0
	mm	635	826	940	1041	1346	1600	1969	2299	2616	2731	2997
C Hand Wheel Diam.	In.	10	12	14	18	20	24	30	32	32	36	36
	mm	254	305	356	457	508	610	762	813	813	914	914

II. CAST STEEL PRESSURE SEAL BONNET – CLASS 1500 AND 2500

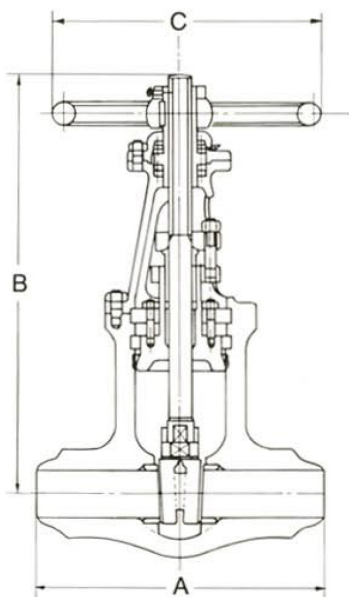


Fig. 115W-CB-PS
125W-CB-PS

Flanged ends are to ANSI B16.10 long pattern.

Weld ends are to ANSI B16.10 short pattern.

NPS 8 and larger Class 1500 are furnished with hammer blow handwheel.

NPS 8 and larger Class 2500 are furnished with gear operator.

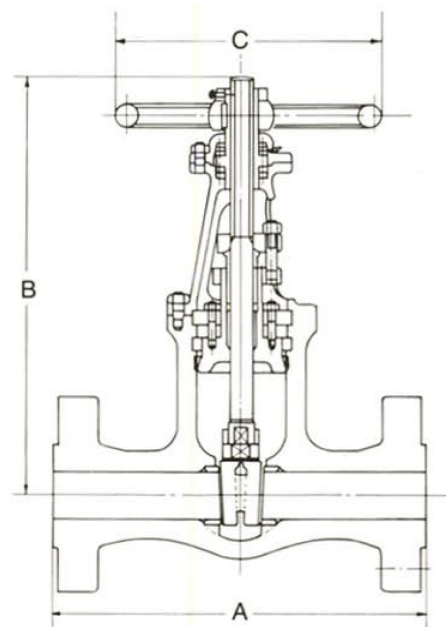


Fig. 115F-CB-PS
125F-CB-PS

Class 1500 Dimensions

		2	2-1/2	3	4	5	6	8	10	12	14	16	18	20	24
A End to End BW	In.	8.5	10.0	12.0	16.0	19.0	22.0	28.0	34.0	39.0	42.0	47.0	53.0	58.0	64.0
	mm	216	254	305	406	483	559	711	863	990	1067	1194	1346	1473	1626
A Face to Face RF	In.	14.5	16.5	18.5	21.5	26.5	27.75	32.75	39.0	44.5	49.5	54.5	60.5	65.5	76.5
	mm	368	419	470	546	673	705	832	991	1130	1258	1382	1537	1664	1943
B Valve Open	In.	21.7	22.8	24.3	37.7	36.9	45.3	55.0	65.3	72.5	74.5	90.4	100.4	110.5	116.8
	mm	551	579	617	958	937	1151	1397	1659	1842	1892	2296	2550	2807	2267
C Hand Wheel Diam.	In.	10	12	14	16	22	25	28	32	32	36	36	36	42	42
	mm	254	305	356	406	559	635	711	813	813	914	914	914	1067	1067

Class 2500 Dimensions

		2	2-1/2	3	4	5	6	8	10	12	14	16	18	20	24
A End to End BW	In.	11.0	13.0	14.5	18.0	21.0	24.0	30.0	36.0	41.0	44.0	49.0	55.0	60.0	72.0
	mm	279	330	368	457	533	610	762	914	1041	1118	1245	1397	1524	1829
A Face to Face RF	In.	19.5	22.4	24.5	28.4	35.5	44.8	56.5	59.5	70.8	79.3	82.8	86.5	91.8	100.5
	mm	495	569	622	721	902	1138	1435	1511	1798	2014	2103	2197	2332	2553
C Hand Wheel Diam.	In.	14	16	18	25	25	28	28	32	32	36	36	42	42	42
	mm	356	406	457	635	635	711	711	813	813	914	914	1067	1067	1067

GLOBE AND ANGLE VALVE FEATURES

I. CAST STEEL PRESSURE SEAL BONNET

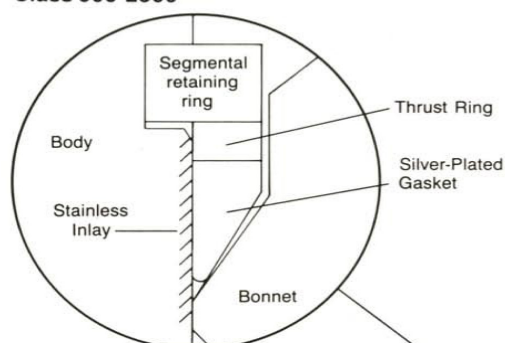
Pressure seal bonnet globe and angle valves have the same application features as bolted bonnet valves. The major difference is in the bonnet retention design.

The pressure seal bonnet joint eliminates the body/bonnet flanges, reducing weight and simplifying the application of exterior insulation. Contrary to bolted bonnet valves, internal pressure applied to a pressure seal valve forces the sealing elements into higher contact — the higher the internal pressure, the tighter the seal.

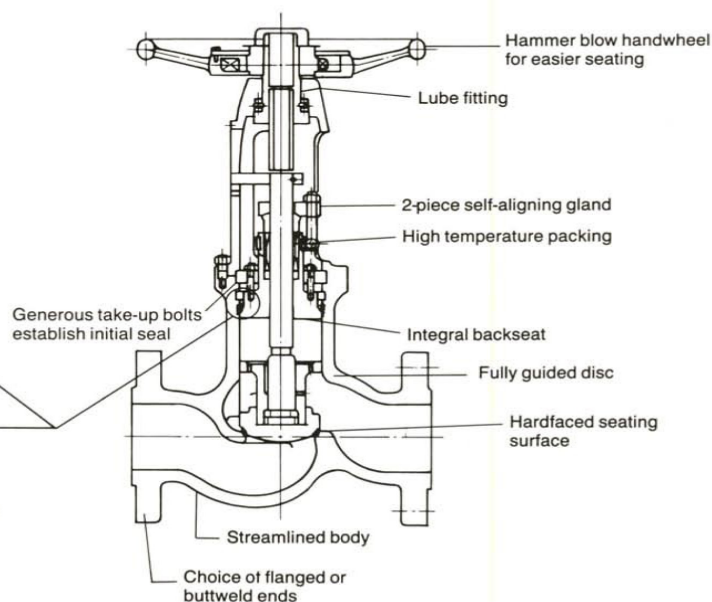
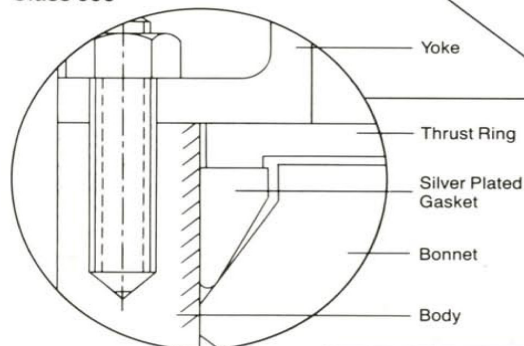
Cameron's NEWCO cast steel pressure seal valves comply with the design and test requirements of ANSI B16.34.

All NEWCO pressure seal globe and angle valves have the features shown below. They are engineered to provide convenience, durability and maintainability.

Class 900-2500



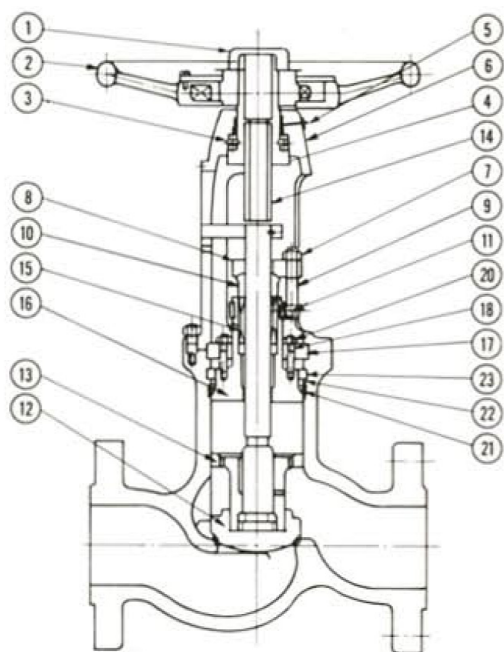
Class 600



Items shown also available in non-return configurations.

GLOBE AND ANGLE VALVE MATERIALS

I. CAST STEEL PRESSURE SEAL BONNET



	Part Name	Material
1	Hand Wheel Nut	Carbon Steel
2	Hand Wheel	Malleable Iron
3	Bearings	Steel
4	Stem Nut	Aust Ductile Iron A439-D2
5	Grease Fitting	Stainless Steel
6	Yoke	Carbon Steel A216-Gr WCB
7	Eyebolt Nut	Carbon Steel
8	Gland Flange	Carbon Steel
9	Eyebolt	Carbon Steel
10	Gland	A276-416
11	Eyebolt Pin	A193-B7
Trim Parts		
12	Disc	
13	Disc Guide	(See Page 36 for Trim Materials)
14	Stem	
15 to 23 — See Below		

	Part Name	WCB	LCC	LC3	WC6	WC9
15	Packing	Commercial	Commercial	Commercial	Commercial	Commercial
16	Bonnet	A105/WCB	A350-LF1/LCC	A350-LF3/LC3	A182-F11/WC6	A182-F22/WC9
17	Bonnet Retainer	AISI 1035	A350-LF1	A350-LF3	AISI 1035	AISI 1035
18	Retainer Stud	A193-B7	A320-L7	A320-L7	A193-B7	A193-B7
19	Retainer Nut	A194-2H	A194-4	A320-B8	A194-2H	A194-2H
20	Gasket	AISI 1015	A276-316	A276-316	AISI 1015	AISI 1015
21	Thrust Ring	A276-420	A276-316	A276-316	A276-420	A276-420
22	Segment Ring	A276-420	A276-316	A276-316	A276-420	A276-420
23	Body	A216 Gr WCB	A352 Gr LCB	A352 Gr LC3	A217 Gr WC6	A217 Gr WC9

	Part Name	C5	C12	CF8M	CN7M	CF8C
15	Packing	Commercial	Commercial	Commercial	Commercial	Commercial
16	Bonnet	A182-F5	A182-F9	A276-316	B473	A182-F347
17	Bonnet Retainer	AISI 1035	AISI 1035	A276-316	AISI 1035	AISI 1035
18	Retainer Stud	A193-B7	A193-B7	A193-B8	A193-B8	A193-B8
19	Retainer Nut	A194-2H	A194-2H	A194-GR8	A194-GR8	A194-GR8
20	Gasket	AISI 1015	AISI 1015	A276-316	A276-316	A276-316
21	Thrust Ring	A276-420	A276-420	A276-316	A276-316	A276-316
22	Segment Ring	A276-420	A276-420	A276-316	A276-316	A276-316
23	Body	A217 Gr C5	A217 Gr C12	A351-CF8M	A351-CN7M	A351-CF8C

Note: Construction and materials may vary between sizes and pressure classes and are subject to change without notice. This is not a complete list of all available materials. Specifications are ASTM unless otherwise noticed.

GLOBE AND ANGLE VALVES

I. CAST STEEL PRESSURE SEAL BONNET – CLASS 600 AND 900

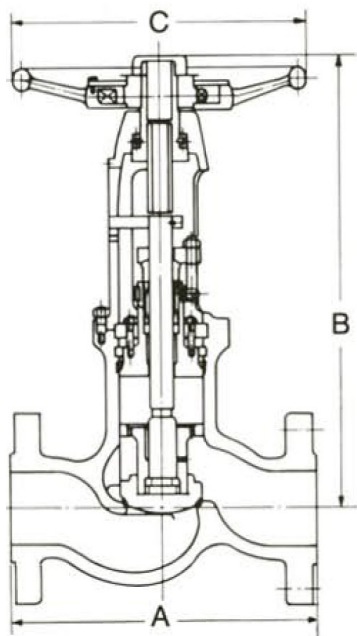


Fig. 26F-CB-PS
29F-CB-PS

Thrust bearings NPS 6 and larger.
Items shown also available in
non-return configurations.
[Customer must specify flow
direction (Horizontal/Vertical)]

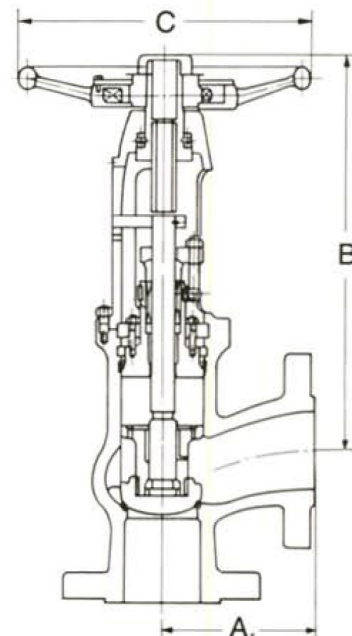


Fig. 76F-CB-PS
79F-CB-PS

Class 600 Dimensions											
		2-1/2	3	4	5	6	8	10	12	14	16
A End to End RF/BW	In.	13.0	14.0	17.0	20.0	22.0	26.0	31.0	33.0	35.0	39.0
	mm	330	356	432	508	559	660	787	838	889	991
A ₁ Center to Face RF/BW	In.	6.5	7.0	8.5	10.0	11.0	13.0	15.5	16.5	17.5	19.5
	mm	165	178	216	254	279	330	394	419	445	495
B Valve Open	In.	16.3	16.8	20.0	24.9	28.5	34.5	39.8	43.5	47.0	53.0
	mm	411	424	508	630	724	876	1008	1105	1194	1346
C Hand Wheel Diam.	In.	12	12	14	16	16	20	26	30	30	32
	mm	305	305	356	406	406	508	660	762	762	813

Class 900 Dimensions										
		3	4	5	6	8	10	12	14	16
A End to End BW	In.	15.0	18.0	22.0	24.0	29.0	33.0	38.0	40.5	52.0
	mm	381	457	559	610	737	838	965	1029	1321
A Face to Face RF	In.	7.5	9.0	11.0	12.0	14.5	16.5	19.0	20.25	26.0
	mm	191	229	279	305	368	419	483	514	660
B Valve Open	In.	22.5	26.3	30.5	37.0	46.0	54.8	64.8	71.3	78.0
	mm	512	667	775	940	1168	1391	1645	1810	1981
C Hand Wheel Diam.	In.	16	16	20	20	28	28	36	36	42
	mm	406	406	508	508	711	711	914	914	1067

II. CAST STEEL PRESSURE SEAL BONNET – CLASS 1500 AND 2500

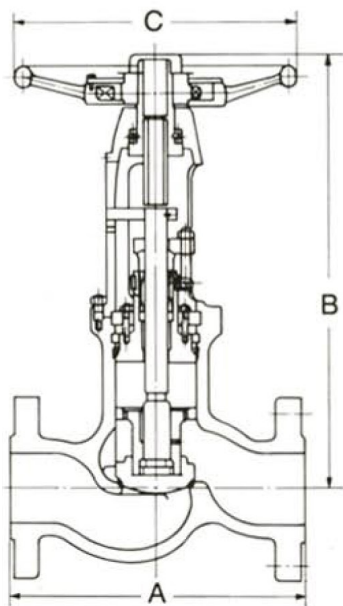


Fig. 215F-CB-PS
225F-CB-PS

Thrust bearings NPS 6 and larger.
Items shown also available in
non-return configurations.
[Customer must specify flow
direction (Horizontal/Vertical)]

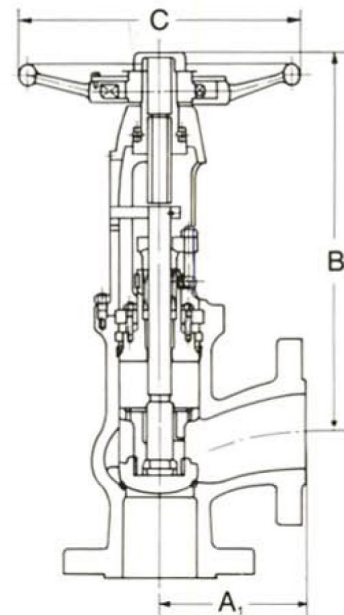


Fig. 715F-CB-PS
725F-CB-PS

		Class 1500 Dimensions								
		3	4	5	6	8	10	12	14	16
A End to End RF/BW	In.	15.0	18.0	22.0	24.0	29.0	33.0	38.0	40.5	52.0
	mm	381	457	559	610	737	838	965	1029	1321
A ₁ Center to Face RF/BW	In.	7.5	9.0	11.0	12.0	14.5	16.5	19.0	20.25	26.0
	mm	191	229	279	305	368	419	483	514	660
B Valve Open	In.	22.5	26.3	30.5	37.0	46.0	54.8	64.8	71.3	78.0
	mm	512	667	775	940	1168	1391	1645	1810	1981
C Hand Wheel Diam.	In.	16	16	20	20	28	28	36	36	42
	mm	406	406	508	508	711	711	914	914	1067

		Class 2500 Dimensions							
		2-1/2	3	4	5	6	8	10	12
A End to End BW	In.	13.0	15.0	18.0	22.0	24.0	29.0	33.0	38.0
	mm	330	381	457	559	610	737	838	965
A Face to Face RF	In.	20.0	22.75	26.5	31.25	36.0	40.25	50.0	56.0
	mm	508	578	673	794	914	1022	1270	1422
A ₁ Center to Face BW	In.	6.5	7.5	9.0	11.0	12.0	14.5	16.5	19.0
	mm	165	191	229	279	305	368	419	483
A ₁ Center to Face RF	In.	10.0	11.38	13.25	15.63	18.0	20.13	25.0	28.0
	mm	254	289	337	397	457	511	635	711
B Valve Open	In.	20.0	22.5	25.5	28.3	37.8	47.5	55.5	72.5
	mm	508	572	648	718	959	1207	1410	1841
C Hand Wheel Diam.	In.	14	16	16	20	28	28	36	48
	mm	356	406	406	508	711	711	914	1219

LIFT CHECK VALVE FEATURES

I. CAST STEEL PRESSURE SEAL BONNET

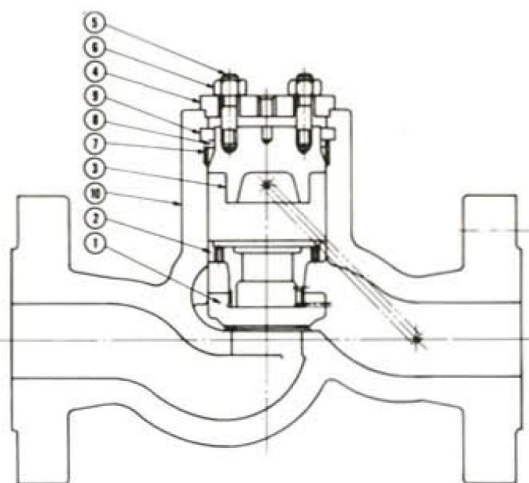
Lift check valves are used to prevent flow reversal in piping systems. The flow configuration through lift check valves is similar to that of globe valves resulting in higher pressure loss and more turbulent flow than experienced with straight-through flow.

Lift check valves must be installed in horizontal lines. They are best suited for moderate velocity applications. Either too low or too high a velocity can seriously damage the valve's internals. Valve damage can also be caused by rapid and frequent flow reversals, pulsation or excessive turbulence.

The pressure seal bonnet is designed for high temperature, high pressure service. This type of body/bonnet joint eliminates heavy flanges reducing weight and simplifying the application. Contrary to bolted bonnet valves, internal pressure applied to a pressure seal valve forces the sealing elements into tighter contact – the higher the internal pressure, the tighter the seal.

Cameron's NEWCO cast steel pressure seal valves comply with the design and test requirements of ANSI B16.34.

All Cameron's NEWCO pressure seal lift check valves have the features shown below. They are engineered to provide convenience, durability and maintainability.



	Trim Parts	Material
1	Disc	(See Page 36 for Trim Materials)
2	Disc Guide	
3 to 10 — See Below		

	Part Name	WCB	LCC	LC3	WC6	WC9
3	Cap	A105/WCB	A350-LF1/LCC	A350-LF3/LC3	A182-F11/WC6	A182-F22/WC9
4	Cap Retainer	AISI 1035	A350-LF1	A350-LF3	AISI 1035	AISI 1035
5	Retainer Stud	A193-B7	A320-L7	A320-L7	A193-B7	A193-B7
6	Retainer Nut	A194-2H	A194-4	A320-B8	A194-2H	A194-2H
7	Gasket	AISI 1015	A276-316	A276-316	AISI 1015	AISI 1015
8	Spacer Ring	A276-420	A276-316	A276-316	A276-420	A276-420
9	Segment Ring	A276-420	A276-316	A276-316	A276-420	A276-420
10	Body	A216 Gr WCB	A352 Gr LCB	A352 Gr LC3	A217 Gr WC6	A217 Gr WC9

	Part Name	C5	C12	CF8M	CN7M	CF8C
3	Cap	A182-F5	A182-F9	A276-316	B473	A182-F347
4	Cap Retainer	AISI 1035	AISI 1035	AISI 1035	AISI 1035	AISI 1035
5	Retainer Stud	A193-B7	A193-B7	A193-B8	A193-B8	A193-B8
6	Retainer Nut	A194-2H	A194-2H	A194-Gr8	A194-Gr8	A194-Gr8
7	Gasket	AISI 1015	AISI 1015	A276-316	A276-316	A276-316
8	Thrust Ring	A276-420	A276-420	A276-316	A276-316	A276-316
9	Segment Ring	A276-420	A276-420	A276-316	A276-316	A276-316
10	Body	A217 Gr C5	A217 Gr C12	A351-CF8M	A351-CN7M	A351-CF8C

Note: Construction and materials may vary between sizes and pressure classes and are subject to change without notice. This is not a complete list of all available materials. Specifications are ASTM unless otherwise noticed.

LIFT CHECK VALVES

I. CAST STEEL PRESSURE SEAL BONNET – CLASS 600 • 900 • 1500 • 2500

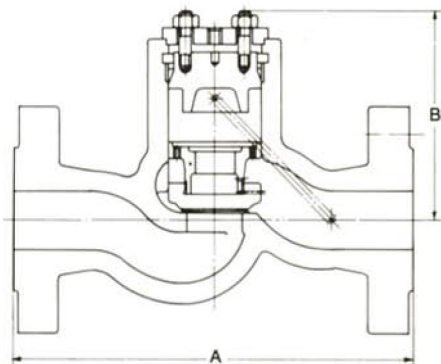


Fig. 415F-CB-PS
46F-CB-PS

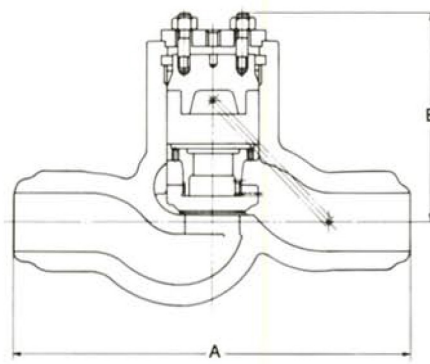


Fig. 425W-CB-PS
49W-CB-PS

		Class 600 Dimensions							
		2-1/2	3	4	5	6	8	10	12
A Face to Face RF/BW	In.	13.0	14.0	17.0	20.0	22.0	26.0	31.0	33.0
	mm	330	356	432	508	559	660	787	838
B Center to Top	In.	7.0	7.5	9.5	12.0	12.8	17.5	20.5	23.5
	mm	178	191	241	305	324	445	521	597

		Class 900 Dimensions							
		3	4	5	6	8	10	12	
A Face to Face RF/BW	In.	15.0	18.0	22.0	24.0	29.0	33.0	38.0	
	mm	381	459	559	610	737	838	965	
B Center to Top	In.	11.0	12.0	14.0	15.8	20.0	23.5	26.0	
	mm	279	305	356	400	508	597	660	

		Class 1500 Dimensions							
		2-1/2	3	4	5	6	8	10	
A End to End BW	In.	10.0	12.0	16.0	19.0	22.0	28.0	34.0	
	mm	254	305	406	483	559	711	864	
A Face to Face RF	In.	16.5	18.5	21.5	26.5	27.75	32.75	39.0	
	mm	419	470	546	673	705	832	991	
B Center to Top	In.	9.0	11.0	12.0	14.0	16.0	19.5	22.0	
	mm	229	279	305	356	406	495	559	

		Class 2500 Dimensions							
		2-1/2	3	4	5	6	8	10	
A End to End BW	In.	13.0	14.5	18.0	21.0	24.0	30.0	36.0	
	mm	330	368	457	533	610	762	914	
A Face to Face RF	In.	20.0	22.75	26.5	31.25	36.0	40.25	50.0	
	mm	508	579	673	794	1022	1270	1422	
B Center to Top	In.	9.5	11.5	11.5	11.5	13.5	17.5	19.5	
	mm	235	292	292	292	343	445	495	

VALVE WEIGHTS

I. PRESSURE SEAL GATE

		Class 600 Dimensions													
		2	2-1/2	3	4	5	6	8	10	12	14	16	18	20	24
RF	Lb	65	70	120	210	310	435	820	1220	1770	2400	3250	-	-	-
	Kg	30	32	55	95	141	198	373	555	805	1091	1477	-	-	-
BW	Lb	45	50	85	150	200	305	630	940	1450	2010	2650	3500	5400	7200
	Kg	20	22	38	68	90	138	286	472	659	913	1204	1590	2454	3272

		Class 900 Dimensions													
		2	2-1/2	3	4	5	6	8	10	12	14	16	18	20	24
RF	Lb	-	-	155	255	420	640	1175	1720	2520	3150	4580	-	-	-
	Kg	-	-	70	116	191	291	534	782	1145	1432	2082	-	-	-
BW	Lb	-	-	110	190	300	480	850	1310	1920	2400	3600	4650	5800	-
	Kg	-	-	50	86	136	218	386	595	872	1090	1636	2113	2636	-

		Class 1500 Dimensions													
		2	2-1/2	3	4	5	6	8	10	12	14	16	18	20	24
RF	Lb	145	175	220	365	630	895	1430	2580	4050	4400	-	-	-	-
	Kg	66	80	100	166	286	407	650	1173	1840	2000	-	-	-	-
BW	Lb	65	95	140	265	410	615	1100	2000	2850	3350	4540	5700	7250	10000
	Kg	29	43	63	120	186	279	500	909	1295	1522	2063	2590	3295	4545

		Class 2500 Dimensions													
		2	2-1/2	3	4	5	6	8	10	12	14	16	18	20	24
RF	Lb	150	180	295	480	950	1560	2000	3000	5450	-	-	-	-	-
	Kg	68	82	134	218	432	709	909	1364	2477	-	-	-	-	-
BW	Lb	90	115	190	300	620	880	1330	2280	3800	4520	7000	7800	9000	11500
	Kg	41	52	86	136	282	400	605	1036	1727	2055	3182	3545	4090	5227

II. PRESSURE SEAL GLOBE

		Class 600 Dimensions													
		2	2-1/2	3	4	5	6	8	10	12	14	16	18	20	24
RF	Lb	-	106	135	248	425	535	900	1530	2170	2640	3550	-	-	-
	Kg	-	48	61	112	193	243	490	695	986	1200	1613	-	-	-
BW	Lb	-	84	103	188	315	405	710	1250	1850	2250	2950	-	-	-
	Kg	-	38	46	85	143	184	322	568	840	1022	1340	-	-	-

		Class 900 Dimensions													
		2	2-1/2	3	4	5	6	8	10	12	14	16	18	20	24
RF	Lb	-	-	220	314	610	800	1550	2425	3700	4600	5460	-	-	-
	Kg	-	-	100	142	277	363	704	1102	1681	2090	2481	-	-	-
BW	Lb	-	-	175	248	490	642	1225	2020	3100	3850	4480	-	-	-
	Kg	-	-	79	112	222	291	556	918	1409	1750	2036	-	-	-

		Class 1500 Dimensions													
		2	2-1/2	3	4	5	6	8	10	12	14	16	18	20	24
RF	Lb	-	167	260	385	790	960	1800	3150	4910	5900	-	-	-	-
	Kg	-	75	118	175	359	432	810	1429	2210	2655	-	-	-	-
BW	Lb	-	90	180	285	570	680	1470	2570	3710	4850	-	-	-	-
	Kg	-	40	81	129	259	309	668	1168	1686	2204	-	-	-	-

		Class 2500 Dimensions													
		2	2-1/2	3	4	5	6	8	10	12	14	16	18	20	24
RF	Lb	-	158	270	442	890	1586	2370	3160	5050	-	-	-	-	-
	Kg	-	72	122	200	404	714	1067	1422	1542	-	-	-	-	-
BW	Lb	-	95	165	260	560	900	1700	2440	3400	-	-	-	-	-
	Kg	-	43	74	115	254	405	765	1098	1542	-	-	-	-	-

III. PRESSURE SEAL LIFT CHECK

		Class 600 Dimensions													
		2	2-1/2	3	4	5	6	8	10	12	14	16	18	20	24
RF	Lb	-	81	107	200	360	450	800	1275	1880	2650	3800	-	-	-
	Kg	-	37	49	91	164	205	634	580	855	1205	1727	-	-	-
BW	Lb	-	59	75	140	250	320	610	1000	1575	2250	3200	4100	6050	7600
	Kg	-	27	34	64	114	145	277	455	716	1023	1455	1864	2750	3455

		Class 900 Dimensions													
		2	2-1/2	3	4	5	6	8	10	12	14	16	18	20	24
RF	Lb	-	-	153	235	425	555	1150	1675	2380	3500	4700	-	-	-
	Kg	-	-	70	107	193	252	523	761	1082	1591	2137	-	-	-
BW	Lb	-	-	108	170	300	400	780	1260	1780	2750	3710	4930	6680	8280
	Kg	-	-	49	77	136	181	354	572	809	1250	1686	2240	3036	3760

		Class 1500 Dimensions													
		2	2-1/2	3	4	5	6	8	10	12	14	16	18	20	24
RF	Lb	-	142	188	280	530	710	1170	2170	3300	4350	-	-	-	-
	Kg	-	64	85	127	240	322	531	986	1500	1977	-	-	-	-
BW	Lb	-	65	108	180	310	430	840	1590	2100	3300	4700	-	-	-
	Kg	-	29	49	81	140	195	381	722	954	1500	2136	-	-	-

		Class 2500 Dimensions													
		2	2-1/2	3	4	5	6	8	10	12	14	16	18	20	24
RF	Lb	-	133	213	397	650	1156	1690	2340	4070	-	-	-	-	-
	Kg	-	60	96	180	295	252	768	1063	1850	-	-	-	-	-
BW	Lb	-	70	108	215	320	470	1020	1620	2420	-	-	-	-	-
	Kg	-	31	49	97	145	213	463	736	1100	-	-	-	-	-

TESTING

Each of Cameron's NEWCO cast steel valves is subjected to an extensive inspection before leaving the plant. Every valve is given a pressure test as described below:

- | | |
|--------------------|---|
| Shell Test: | Each valve is hydrostatically tested at a minimum of 1.5 times the 100°F rated pressure class in accordance with NSI B16.34 and API 598. |
| Seat Closure Test: | All valve seats are hydrostatically tested at a minimum of 1.1 times the 100°F rated pressure for the applicable pressure class in accordance with ANSI B16.34 and API 598. |
| Backseat Test: | All valves having backseats are tested for leakage through the backseat with the valve fully open. Test pressure is 1.1 times the 100°F rated pressure. |

Cameron's NEWCO valves can be provided with one or more of the following optional NDE testing examinations:

- Radiographic
- Magnetic Particle
- Ultrasonic
- Dye Penetrant

Complete material certification and test certification can be supplied upon request for every Cameron NEWCO cast steel valve.

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

Fig. 18T-FS2--

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)	

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)

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 C₆A
- *** = Monel is a registered trademark of International Nickel Company

HOW TO ORDER ALL CAMERON NEWCO PRODUCTS

Figure Number

The figure number shown on the previous page 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.

INDUSTRY STANDARDS TYPICALLY USED IN VALVE MANUFACTURING

(For Reference Only)

ISO 9001: 2000

RWTUV had approved NEWCO for design, manufacture, sales, & service of industrial valves under certificate registration number #05-1026

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 gas 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) - Butt-welding 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 & hex nuts

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 & butt-weld 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 & butt-weld ends

SP-44 (2001) - Steel pipeline flanges

SP-45 (2003) - Bypass & drain connections

SP-51 (2003) - Class 150W 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 stress cracking in corrosive petroleum refining environments

NOTES:



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