

Specifications

The CHEMGUARD vertical and horizontal bladder tanks shall be designed and constructed in accordance with the latest revisions to ASME code, Section VIII, Division I, for unfired pressure vessels with a maximum allowable working pressure (MAWP) of 175 psi (12.1 bar) and tested to the pressure specified by the applicable codes and standards. Tanks designed to ASME code shall be tested to at least 230 psi (15.9 bar). All CE marked tanks shall be tested to at least 255 psi (17.6 bar). The tank shall be of (specify) gallon nominal capacity and overall dimensions as indicated in the appropriate diagram and corresponding information table. The tank shall be constructed of steel complying to ASME specifications possessing a tensile strength of not less than 70,000 psi (4826.3 bar).

The tank heads shall be 2 to 1 elliptical to ensure strength while reducing overall tank weight.

All 1 in. (25 mm) diameter and larger tank openings on the outside of the bladder shall be divided to prevent bladder blow-out. There shall be a water channel between the water inlet opening and water drain opening to establish a water path between the tank shell interior and the bladder.

The tank interior shall have all welds and edges ground smooth. It shall be cleaned, grit blasted to a near white surface, and immediately coated with a high build epoxy coating. The tank data plate shall be of a material compatible with the tank shell and shall be seal welded with appropriate procedure and material to the tank. (This ensures that the data plate will reflect the overall condition of the tank and that no corrosion occurs undetected behind the data plate.) The data plate shall contain as a minimum ASME code stamp: year of manufacture, maximum allowable working pressure (MAWP), National Board number, minimum material thickness, minimum design metal temperature (MDMT), and type of head. The tank shall also have a label specifying the type of foam concentrate the system was designed to use, the quantity of concentrate, and any other pertinent warnings.

The vertical tank assembly shall be supported by a continuous skirt of a diameter equal to the tank with four feet drilled for anchoring. The horizontal tank assembly shall be supported by two saddles permanently welded to the tank and drilled for anchoring. These supports provide maximum stability and a maximum amount of bearing area which protects against horizontal and vertical forces such as vibration and shifting.

Lifting lugs shall be designed to lift the empty weight of the tank with a minimum safety factor of 2 when utilizing a minimum 30 degrees from horizontal lifting angle. Lifting lugs shall have a clear hole of no less than 2 in. (50 mm) diameter.

The tank shall contain a flexible bladder of material tested by Underwriters Laboratories for compatibility with the agent to be used. The bladder material shall be constructed to conform with the inside tank dimensions.

Both the vertical and horizontal tank assemblies shall contain perforated center tubes of P.V.C. or other material compatible with the agent, with holes of no more than 3/4 in. (19 mm) diameter. The vertical tank assembly shall contain a single perforated center tube. The horizontal tank assembly shall contain both vertical and horizontal perforated center tubes connected with a cross fitting of compatible material.

The following shall be assembled to each tank: a bladder drain/fill valve, bladder vent/fill valve, tank shell drain valve, and tank shell vent valve. These valves shall be 1 in. (25 mm), 1/4-turn ball valves with bronze bodies, hard chromium-plated bronze ball, bronze stem, stainless steel locking nut and handle, and high performance TEFLON\* seats and stuffing box ring. Each valve shall have a nameplate secured to it depicting the valve name and operating position. Also, the valve shall have a ring pin and chain attached for securing the valve in the operating position. The valve names shall coincide with those in the tank instruction manual. Bottom valves shall be piped out from under the tank for easy access. All pipe shall be Schedule 40 ASTM-B-43 and all fittings shall be ASTM B-62 or B-584 bronze. The bladder drain/fill piping shall include a tee with 1/2 in. plug for future sight gauge connection.

The tank exterior shall be prepared and finished in accordance with the appropriate red paint system standard or “CR” red per CHEMGUARD specification or equivalent.

A printed filling and maintenance manual shall be supplied with each tank. The manual shall contain a system schematic, installation instructions, initial fill procedures, major and minor refill procedures, inspection and maintenance procedures, sight gauge use instructions, service and repair procedures, and field inspection manual.

Ordering Information

The CHEMGUARD bladder tank shipping assembly part numbers and approximate shipping weights are listed in the dimension tables. Part numbers vary according to tank requirements.

For tanks with special engineered options, such as special pressure ratings, seismic ratings, or trim and finish options, contact Tyco Fire Protection Products Technical Services.

**Note:** The converted metric values in this document are provided for dimensional reference only and do not reflect an actual measurement.

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Vertical and Horizontal Bladder Tanks

Application

The CHEMGUARD bladder tank is one component in a balanced pressure proportioning system. Its operation requires no external power other than a pressurized water system. The bladder tank may be used with any CHEMGUARD foam agent. It can be used in a proportioning system incorporating single or multiple proportioners and any suitable discharge device.

CHEMGUARD bladder tanks have numerous applications including truck loading racks, aircraft hangars, dip tanks, pump rooms, and helipads.

Description

The CHEMGUARD bladder tank is a steel pressure vessel which stores a foam concentrate contained within an elastomeric bladder. The concentrate is discharged from the tank by incoming water applying pressure to the bladder. This applied energy is transferred to the concentrate, supplying pressurized concentrate to the proportioner. (Proportioners are separate items described on a separate data sheet.)

CHEMGUARD bladder tanks are available in both vertical and horizontal tank models and a variety of nominal capacities as listed in the tank information tables. Both tank models feature perforated center tubes which allow improved agent discharge.

- Features incorporated into the CHEMGUARD bladder tanks include the following:
- Water pressurized bladder construction, alleviating the requirement for foam pumps or other energy sources
  - Valves that are pinned in the normal operative positions and are supplied with nameplates identifying their functions and operating instructions
  - Bladder tanks are supplied with corrosion-resistant piping
  - Exterior tank surfaces finished in red standard system paint or coated with an epoxy “CR” red finish for use in marine or corrosive environments
  - Tanks with a high build epoxy coated interior for use with both fresh and salt water



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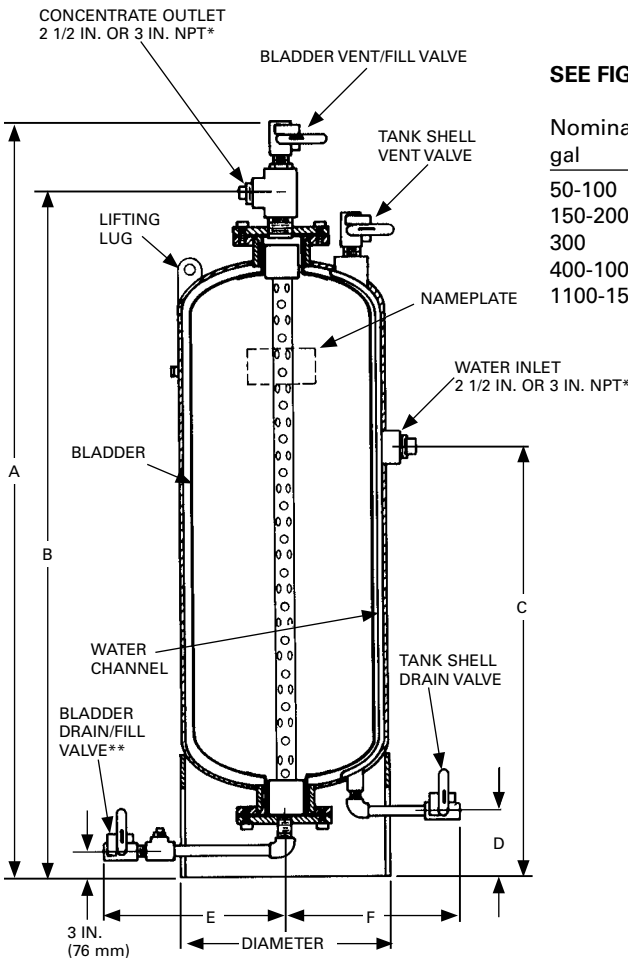
Approvals

The CHEMGUARD vertical and horizontal tank assemblies are both Underwriters Laboratories (UL) listed with various CHEMGUARD proportioners and foam concentrates, and bear the “UL” label along with an American Society of Mechanical Engineers (ASME) code stamp.

Standard bladder tanks 200 gal (757 L) and larger are CE marked in conformance with the European Pressure Equipment Directive. Tanks less than 200 gal (757 L) are acceptable based on sound engineering practices of ASME code.

Vertical Bladder Tank – See Figure 1

Nominal Capacity gal	Bladder Tank Part No. Epoxy/Enamel	Diameter		A	B – Estimated		C	D		E	F	Approximate Shipping Weight	
		in.	(mm)	in.	(mm)	(mm)	in.	(mm)	(mm)	in.	(mm)	lb	(kg)
50	(189) 700000/700001	24	(610)	64.0	(1626)	56.0	(1442)	24	(610)	7.5	(191)	19	(483)
100	(379) 700002/700003	24	(610)	90.5	(2299)	83.0	(2108)	51	(1295)	8.5	(216)	19	(483)
150	(568) 700004/700005	30	(762)	89.5	(2273)	82.0	(2083)	49	(1245)	10.5	(267)	22	(559)
200	(757) 700006/700007	30	(762)	107.5	(2731)	100.0	(2540)	67	(1702)	10.5	(267)	22	(559)
300	(1136) 700008/700009	36	(914)	111.5	(2832)	104.0	(2642)	69	(1753)	10.5	(267)	25	(635)
400	(1514) 700010/700011	48	(1219)	92.5	(2350)	85.0	(2159)	55	(1397)	10.5	(267)	31	(787)
500	(1893) 700012/700013	48	(1219)	105.5	(2680)	98.0	(2489)	64	(1626)	10.5	(267)	31	(787)
600	(2271) 700014/700015	48	(1219)	118.5	(3010)	111.0	(2819)	73	(1854)	10.5	(267)	31	(787)
700	(2650) 700016/700017	48	(1219)	132.5	(3366)	125.0	(3175)	87	(2010)	10.5	(267)	31	(787)
800	(3028) 700018/700019	48	(1219)	146.5	(3721)	139.0	(3531)	95	(2413)	10.5	(267)	31	(787)
900	(3407) 700020/700021	48	(1219)	160.5	(4077)	153.0	(3886)	106	(2692)	10.5	(267)	31	(787)
1000	(3785) 700022/700023	48	(1219)	174.5	(4432)	167.0	(4242)	117	(2972)	10.5	(267)	31	(787)
1100	(4164) 700024/700025	60	(1524)	144.0	(3658)	136.0	(3454)	90	(2286)	18.5	(470)	37	(940)
1200	(4542) 700026/700027	60	(1524)	153.0	(3886)	145.0	(3683)	96	(2438)	18.5	(470)	37	(940)
1300	(4921) 700028/700029	60	(1524)	162.0	(4115)	154.0	(3912)	104	(2642)	18.5	(470)	37	(940)
1400	(5300) 700030/700031	60	(1524)	171.0	(4343)	163.0	(4140)	110	(2794)	18.5	(470)	37	(940)
1500	(5678) 700032/700033	60	(1524)	180.0	(4572)	172.0	(4369)	117	(2972)	18.5	(470)	37	(940)



\* 2 1/2 in. NPT on tanks 1000 gal (3785 L) or less  
\* 3 in. NPT on tanks over 1000 gal (3785 L)  
\*\* Pipe shown out of position for clarity

FIGURE 1

SEE FIGURE 2

Nominal Capacity gal	(L)	J		K		L		M	
		in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)
50-100	(189-379)	24	(610)	1.7	(43)	19.5	(495)	1	(25)
150-200	(568-757)	30	(762)	1.7	(43)	23.7	(602)	1	(25)
300	(1136)	36	(914)	1.7	(43)	27.9	(709)	1	(25)
400-1000	(1514-3785)	48	(1219)	2.2	(56)	37.1	(942)	1	(25)
1100-1500	(4164-5678)	60	(1524)	2.2	(56)	45.6	(1158)	1	(25)

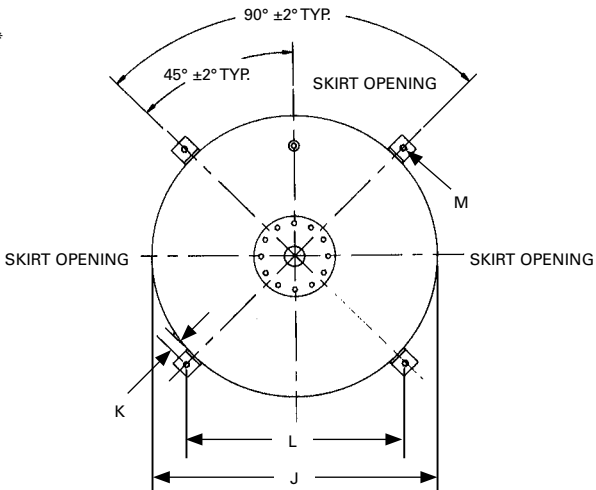
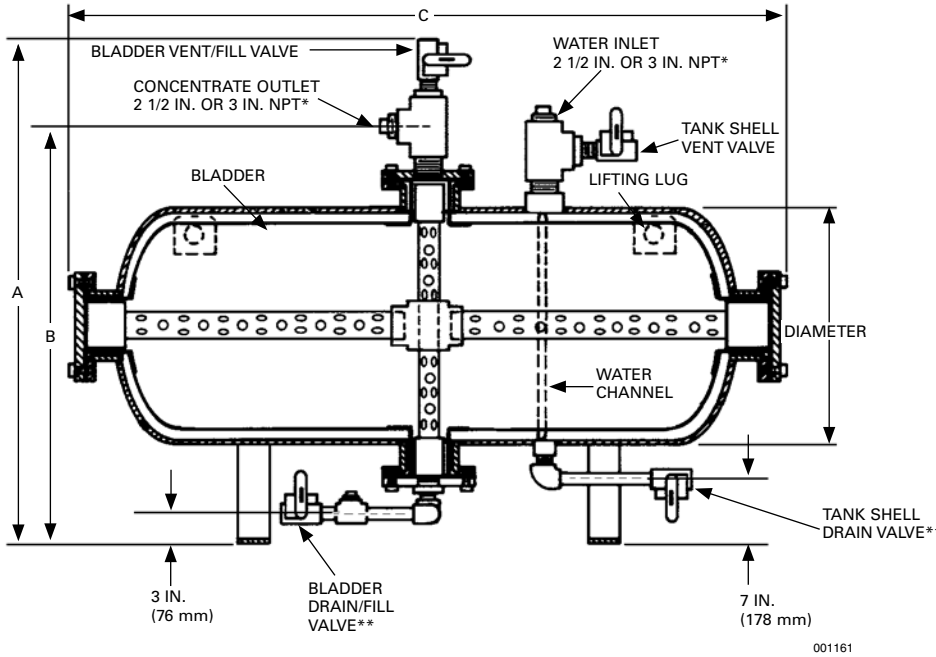


FIGURE 2

Horizontal Bladder Tank – See Figure 3

Nominal Capacity gal (L)		Bladder Tank Part No. Epoxy/Enamel	Diameter		A		B		C		Approximate Shipping Weight	
			in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)	lb	(kg)
100	(379)	700083/700084	24	(610)	52	(1321)	44	(1118)	74	(1880)	720	(327)
150	(568)	700085/700086	30	(762)	58	(1473)	50	(1270)	74	(1880)	1050	(476)
200	(757)	700087/700088	30	(762)	58	(1473)	50	(1270)	91	(2311)	1320	(599)
300	(1136)	700089/700090	36	(914)	64	(1626)	56	(1422)	96	(2438)	1600	(726)
400	(1514)	700091/700092	48	(1219)	76	(1930)	68	(1727)	77	(1956)	2300	(1043)
500	(1893)	700093/700094	48	(1219)	76	(1930)	68	(1727)	90	(2286)	2550	(1157)
600	(2271)	700095/700096	48	(1219)	76	(1930)	68	(1727)	103	(2616)	2800	(1270)
700	(2650)	700097/700098	48	(1219)	76	(1930)	68	(1727)	117	(2972)	3050	(1383)
800	(3028)	700099/700100	48	(1219)	76	(1930)	68	(1727)	131	(3327)	3250	(1474)
900	(3407)	700101/700102	48	(1219)	76	(1930)	68	(1727)	145	(3683)	3420	(1551)
1000	(3785)	700103/700104	48	(1219)	76	(1930)	68	(1727)	159	(4037)	3600	(1633)
1100	(4164)	700105/700106	60	(1524)	88	(2235)	80	(2032)	123	(3124)	4150	(1882)
1200	(4542)	700107/700108	60	(1524)	88	(2235)	80	(2032)	132	(3353)	4370	(1982)
1300	(4921)	700109/700110	60	(1524)	88	(2235)	80	(2032)	141	(3581)	4550	(2064)
1400	(5300)	700111/700112	60	(1524)	88	(2235)	80	(2032)	150	(3810)	4760	(2159)
1500	(5678)	700113/700114	60	(1524)	88	(2235)	80	(2032)	159	(4039)	4940	(2441)
1600	(6057)	700115/700116	60	(1524)	88	(2235)	80	(2032)	169	(4293)	5130	(2327)
1700	(6435)	700117/700118	60	(1524)	88	(2235)	80	(2032)	178	(4521)	5330	(2418)
1800	(6814)	700119/700120	60	(1524)	88	(2235)	80	(2032)	187	(4750)	5510	(2499)
1900	(7192)	700121/700122	60	(1524)	88	(2235)	80	(2032)	196	(4978)	5690	(2581)
2000	(7571)	700123/700124	72	(1829)	100	(2540)	93	(2362)	154	(3912)	6030	(2735)
2200	(8328)	700125/700126	72	(1829)	100	(2540)	93	(2362)	166	(4216)	6390	(2898)
2400	(9085)	700127/700128	72	(1829)	100	(2540)	93	(2362)	180	(4572)	6770	(3071)
2600	(9842)	700129/700130	72	(1829)	100	(2540)	93	(2362)	193	(4902)	7190	(3261)
2800	(10599)	700031/700132	72	(1829)	100	(2540)	93	(2362)	205	(5207)	7480	(3393)
3000	(11356)	700033/700134	72	(1829)	100	(2540)	93	(2362)	218	(5537)	7870	(3570)

Note: Dimensions rounded to nearest inch.



\* 2 1/2 in. NPT on tanks 1000 gal (3785 L) or less  
\* 3 in. NPT on tanks over 1000 gal (3785 L)  
\*\* Pipes are shown out of position for clarity

FIGURE 3

Horizontal Bladder Tank (Continued) – See Figure 4

Nominal Capacity gal	(L)	D		E		F		G		Saddle Width
		in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)	in. (mm)
100	(379)	16.0	(406)	33.75	(857)	35.5	(902)	0.63	(16)	3 (76)
150	(568)	18.0	(457)	37.75	(959)	35.0	(889)	0.63	(16)	3 (76)
200	(757)	20.0	(508)	41.75	(1061)	44.0	(1118)	0.63	(16)	3 (76)
300	(1136)	20.0	(508)	41.75	(1061)	46.0	(1168)	0.63	(16)	3 (76)
400	(1514)	15.8	(400)	33.75	(857)	36.5	(927)	0.88	(22)	4 (102)
500	(1893)	19.5	(495)	41.25	(1048)	43.0	(1092)	0.88	(22)	4 (102)
600	(2271)	22.5	(572)	47.25	(1200)	49.5	(1257)	0.88	(22)	4 (102)
700	(2650)	26.0	(660)	54.25	(1378)	56.5	(1435)	0.88	(22)	4 (102)
800	(3028)	29.5	(749)	61.25	(1556)	63.5	(1613)	0.88	(22)	4 (102)
900	(3407)	33.0	(838)	68.25	(1734)	70.5	(1791)	0.88	(22)	4 (102)
1000	(3785)	36.5	(927)	75.25	(1911)	77.5	(1969)	0.88	(22)	4 (102)
1100	(4164)	28.0	(711)	58.25	(1480)	60.0	(1524)	0.88	(22)	4 (102)
1200	(4542)	30.5	(775)	63.25	(1607)	64.5	(1638)	0.88	(22)	4 (102)
1300	(4921)	32.5	(826)	67.25	(1708)	69.0	(1753)	0.88	(22)	4 (102)
1400	(5299)	35.0	(889)	72.25	(1835)	73.5	(1867)	0.88	(22)	4 (102)
1500	(5678)	37.0	(940)	76.25	(1937)	78.0	(1981)	0.88	(22)	4 (102)
1600	(6057)	39.5	(1003)	81.25	(2064)	88.0	(2235)	0.88	(22)	4 (102)
1700	(6435)	42.0	(1067)	86.25	(2191)	87.5	(2223)	0.88	(22)	4 (102)
1800	(6814)	44.0	(1118)	90.25	(2292)	92.0	(2337)	0.88	(22)	4 (102)
1900	(7192)	46.5	(1181)	95.25	(2419)	96.5	(2451)	0.88	(22)	4 (102)
2000	(7571)	36.0	(914)	74.25	(1886)	72.2	(1834)	0.88	(22)	4 (102)
2200	(8328)	39.0	(991)	80.25	(2038)	81.7	(2075)	0.88	(22)	4 (102)
2400	(9085)	42.5	(1080)	87.25	(2216)	88.2	(2240)	0.88	(22)	4 (102)
2600	(9842)	45.5	(1156)	93.25	(2369)	94.7	(2405)	0.88	(22)	4 (102)
2800	(10599)	48.5	(1232)	99.25	(2521)	100.7	(2558)	0.88	(22)	4 (102)
3000	(11356)	52.0	(1321)	106.25	(2699)	107.2	(2723)	0.88	(22)	4 (102)

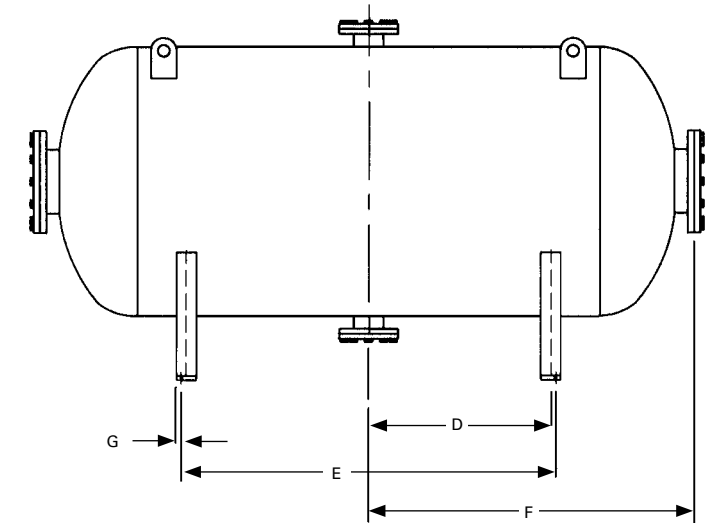


FIGURE 4

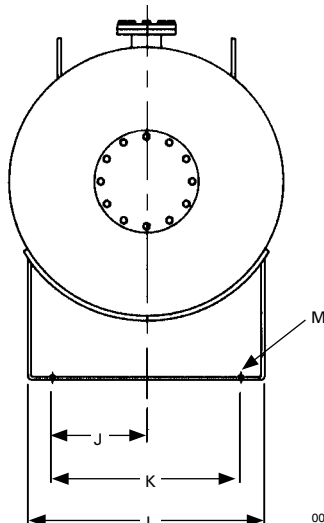


FIGURE 5

SEE FIGURE 5

Nominal Capacity gal	(L)	Diameter		J		K		L		M	
		in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)
100	(379)	24	(610)	5	(127)	10	(254)	18	(457)	0.63	(16)
150-200	(568-757)	30	(760)	8	(203)	16	(406)	24	(610)	0.63	(16)
300	(1136)	36	(914)	11	(279)	22	(559)	30	(762)	0.63	(16)
400-1000	(1514-3785)	48	(1219)	17	(432)	34	(864)	42	(1067)	0.88	(22)
1100-1900	(4164-7192)	60	(1524)	23	(584)	46	(1168)	54	(1372)	1.00	(25)
2000-3000	(7571-11356)	72	(1829)	29	(737)	58	(1473)	66	(1676)	1.00	(25)