

Horizontal Bladder Tanks

Features

- UL Listed and FM Approved for use with various ANSUL® proportioners and foam concentrates
- 175 psi (12.1 bar) maximum allowable working pressure (design pressure)
- Nominal capacities up to 3,000 gal with larger tanks available on special request
- Tanks up to 800 gal meet the requirements for Seismic Zone 4 earthquake resistant design
- Available with brass or 316 stainless steel trim piping and valves
- Options for grooved, NPT, and flanged connections
- Choice of Standard or Corrosion-Resistant Epoxy exterior paint, available in a variety of colors
- Optional sight gauge and thermal pressure relief valves available

Application

The ANSUL® Horizontal Bladder Tank is one component of a balanced pressure proportioning system. ANSUL® Horizontal Bladder Tanks require only a pressurized water supply for operation. No other external power is required. They can be used with one or more ANSUL® proportioners and any suitable discharge device to create a complete foam system. ANSUL® Horizontal Bladder Tanks can be used with most ANSUL® foam concentrates.

ANSUL® Horizontal Bladder Tanks have numerous applications including aircraft hangars, foam-water sprinkler systems, truck loading racks, and helipads.

Description

The ANSUL® Horizontal Bladder Tank is a steel pressure vessel, which stores a foam concentrate 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.

Trim piping and connections

ANSUL® bladder tanks are available in horizontal models up to 3,000 gal. All models feature top discharge foam concentrate connections and the option to pipe using either grooved or NPT threaded connections. Adapters for flanged connections are available separately. Trim piping is available in brass or stainless steel. All valves are clearly identified by permanently attached nameplates and can be secured in position with included ring pins and tamper seals.



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Protective coatings

All ANSUL® Horizontal Bladder Tanks feature a high-build epoxy internal coating. Exterior paint is available in two grades: Standard and Corrosion-Resistant Epoxy (Epoxy CR). Paint systems used on ANSUL® Horizontal Bladder Tanks have been subjected to and passed salt spray corrosion testing per ASTM B117-90. Standard paint has been tested to a minimum of 240 hours in accordance with UL 162, UL Subject 139, and FM 5130. Epoxy CR paint has been tested to a minimum of 3,000 hours and is suitable for marine and offshore use.

Support and mounting

Horizontal tanks are supported by two saddles with slotted holes for mounting. Refer to dimensional drawings for mounting slot spacing.

Each tank is fitted with two lifting lugs designed to lift the empty weight of the tank with a minimum safety factor of 2 when utilizing appropriate slings rigged at a lifting angle of not less than 30 degrees from horizontal. All lifting lugs have a minimum clear hole size of 2 in. (50 mm).

Internal components

ANSUL® Horizontal Bladder Tanks contain an elastomeric bladder that has been approved for use by Underwriter's Laboratory and FM Approvals for use with ANSUL® foam concentrates. All ANSUL Horizontal Bladder Tanks utilize a center tube(s) to facilitate agent discharge. Center tubes are constructed of materials compatible with ANSUL® foam concentrates. Horizontal tanks utilize two center tubes, one oriented horizontally and one oriented vertically, connected by a cross fitting.

Sight gauge

A sight gauge is available as an optional accessory for ANSUL® Horizontal Bladder Tanks for estimation of the fill level in the tank. The sight gauge is equipped with a clear 1 in. PVC tube. The sight gauge is shipped as a loose item and must be assembled on the tank during installation.

Description

Thermal relief valve

A thermal relief valve is available as an option for ANSUL® Horizontal Bladder Tanks. A thermal relief valve should be used when the bladder tank is stored in an isolated/hydraulically locked condition in order to relieve pressure due to thermal expansion. This valve is factory set to 175 psi (12.1 bar) and it is recommended that the design pressure of the system be maintained at least 5 psi (0.34 bar) or 10% below the set pressure of the valve to avoid seat leakage and early valve maintenance. This valve is **not** a substitute for a properly sized ASME pressure relief valve to protect the entire system from overpressure.

ASME information

The ANSUL® Horizontal Bladder Tank is designed and constructed in accordance with the latest revisions to ASME Code Section VIII, Division 1 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 are tested to at least 230 psi (15.9 bar). CE marked tanks are tested to at least 255 psi (17.6 bar). All ANSUL Horizontal Bladder Tanks are constructed of steel complying with ASME specifications. The tank heads are 2:1 elliptical unless otherwise specified.

All ANSUL® Horizontal Bladder Tanks include a permanently affixed stainless steel ASME data plate. At a minimum, the data plate includes the following information: year of manufacture, maximum allowable working pressure (MAWP), nominal volume, part number, National Board number, minimum material thickness, minimum design metal temperature (MDMT), and type of head used.

Approvals and certifications

ANSUL® Horizontal Bladder Tanks are UL Listed and FM Approved for use with various ANSUL foam concentrates and proportioners. The UL mark and FM Approval diamond are applied at the factory along with a label identifying the ANSUL® foam concentrate for use in the tank.

Every tank bears a permanently affixed ASME data plate showing the National Board number which identifies the tank as compliant with ASME code Section VIII, Division 1 for unfired pressure vessels.

ANSUL® Horizontal Bladder Tanks, 200 gal (757 L) and larger, are CE marked in conformance with the European Pressure Equipment Directive, 2014/68/EU. Under European Pressure Equipment Directive 2014/68/EU, tanks smaller than 200 gallons are acceptable based on sound engineering practices of ASME code and cannot be CE marked.

ANSUL® Horizontal Bladder Tanks up to 800 gal (3,028 L) meet the minimum requirements for Seismic Zone 4 Earthquake Resistant Design as calculated according to the 1997 Uniform Building Code.

Operation and maintenance

Refer to the ANSUL® Horizontal and Vertical Bladder Tank operation and maintenance manual for detailed procedures on installation, operation, inspection, and maintenance. A printed copy of this manual is included with every tank.

Valve position information

Table 1: Valve position information

Valve description		Normal valve position	
Valve* No.	Description	Manual system	Automatic system
1	Manual foam concentrate Shutoff (not shown)	N.C.**	N.O.***
2	Water supply Shut-off (not shown)	N.C.	N.O.
3	Sight gauge Shut-off (not shown)	N.C.	N.C.
4	Tank shell vent valve	N.C.	N.C.
5	Bladder vent valve	N.C.	N.C.
6	Tank shell drain valve	N.C.	N.C.
7	Bladder drain/fill valve	N.C.	N.C.
8	Automatic foam concentrate isolation (not shown)	–	N.C.
9	Isolation valve	N.C.	N.C.
* Reference Figure 1 for valve location ** N.C. – Normally closed *** N.O. – Normally open In this arrangement, valves listed as not shown are either supplied as loose items or supplied by others.			

Ordering information

Specify the following information when ordering:

- Part No. for required bladder tank size and orientation (see Table 3)
- Foam concentrate type to be used ¹
- One option² from each of the following categories:

Table 2: Ordering options

Category	Options
Exterior paint	Option 1: Standard Option 2: CR epoxy
Exterior paint color ³	Option 1: Red (RAL 3001) Option 2: Blue (RAL 5019) Option 3: Yellow (RAL 1021) Option 4: Other ⁴
Trim piping / valve material	Option 1: Brass piping/brass valves Option 2: 316 SS piping/ SS valves
Sight gauge	Option 1: Sight gauge included Option 2: No sight gauge
Thermal relief valve ⁵	Option 1: No thermal relief valve Option 2: Thermal relief valve included
Packaging	Option 1: Domestic packaging Option 2: Export crating

Ordering notes:

1. Tanks will be marked as UL Listed and/or FM Approved based on the foam concentrate type specified. If foam concentrate type is not specified, the tank will not be marked as UL Listed or FM Approved.
2. If an option is not specified from a category, Option 1 will be used as the default.
3. UL Listing of paint systems is color-specific. The red, blue, and yellow color shade options shown in Table 2 are UL Listed. Contact Johnson Controls Technical Services to determine if other color shades are UL Listed.
4. If **other** is selected, the specific paint shade required must be supplied. Availability of the paint shade selected may impact lead time.
5. Set pressure is 175 psi (12.1 bar). The set pressure cannot exceed the design pressure of the tank per ASME code.

Expediting service

Selected sizes of ANSUL® Horizontal Bladder Tanks, including most of the standard options listed above, are available for optional expediting service. These tanks can be shipped in two weeks or less after order confirmation. See Table 3 for the specific sizes eligible for this service.

Note: Expedited tanks are only available in RAL 3001 Red. Contact Johnson Controls Technical Services or an ANSUL® Regional Sales Manager for additional information and limitations on this service.

Table 3: Ordering part numbers

Nominal capacity – gal	Part No.	Expediting available
100	444044	
150	444045	
200	444046	√
300	444047	√
400	444048	
500	444049	√
600	444050	
700	444051	
800	444052	
900	444053	
1,000	444054	
1,200	444055	
1,400	444056	
1,600	444057	
1,800	444058	
2,000	444059	
2,200	444060	
2,400	444061	
2,600	444062	
2,800	444063	
3,000	444064	

Ordering information

Flange adapters

Johnson Controls Figure 71 Flange Adapters are available to adapt the grooved fittings supplied with ANSUL® Horizontal Bladder Tanks to flanged piping for field installation. The sizes listed in Table 4 have a maximum pressure rating of 300 psi (20.7 bar). The flange adapter body is ductile iron and utilizes a Grade T Nitrile gasket. The adapter is finished with a non-lead paint.

Table 4: Flange adapters

Adapter size		Recommended flange mating bolts (supplied by others)				
Grooved in. (mm)	ANSI flange in. (DIN)	Size Dia x L in.	Qty.	Bolt torque range ft-lb (N-m)	Approx. weight lb (kg)	Ordering Part No.
2 (50)	2 (DN50)	5/8 x 3	4	110 to 140 (149 to 190)	3.0 (1.4)	7120TS
2 1/2 (65)	2 1/2 (DN65)	5/8 x 3	4	110 to 140 (149 to 190)	5.0 (2.3)	7125TS
3 (80)	3 (DN80)	5/8 x 3	4	110 to 140 (149 to 190)	5.6 (2.5)	7130TS
4 (100)	4 (DN100)	3/4 x 3 1/2	8	220 to 250 (298 to 339)	7.0 (3.2)	7140TS
6 (150)	6 (DN150)	3/4 x 3 1/2	8	220 to 250 (298 to 339)	10.0 (4.5)	7160TS
8 (200)	8 (DN200)	3/4 x 3 1/2	8	220 to 250 (298 to 339)	16.6 (7.5)	7180TS

Touch-up paint

Touch-up paint for Red (RAL 3001) equipment is available in a convenient 7 oz spray can. Touch-up paint for other colors is not available in spray cans. Contact Johnson Controls Technical Services for touch-up paint in other colors.

- Red (RAL 3001) touch-up paint: Part No. 405581

Custom engineering

ANSUL® Horizontal Bladder Tanks can be customized to accommodate a variety of special requirements, including but not limited to ladders, platforms, alternate materials of construction, higher design pressures, space constraints, larger capacities, and seismic rated tanks. Contact Johnson Controls Technical Services or an ANSUL® Regional Sales Manager for additional information or to obtain a quote.

Note: UL Listed tanks are limited to maximum capacities of 4,000 gal for horizontal tanks with maximum working pressures of 175 psi to 250 psi (12.1 bar to 17.2 bar). FM Approved tanks are limited to maximum capacities of 3,000 gal.

Dimensions

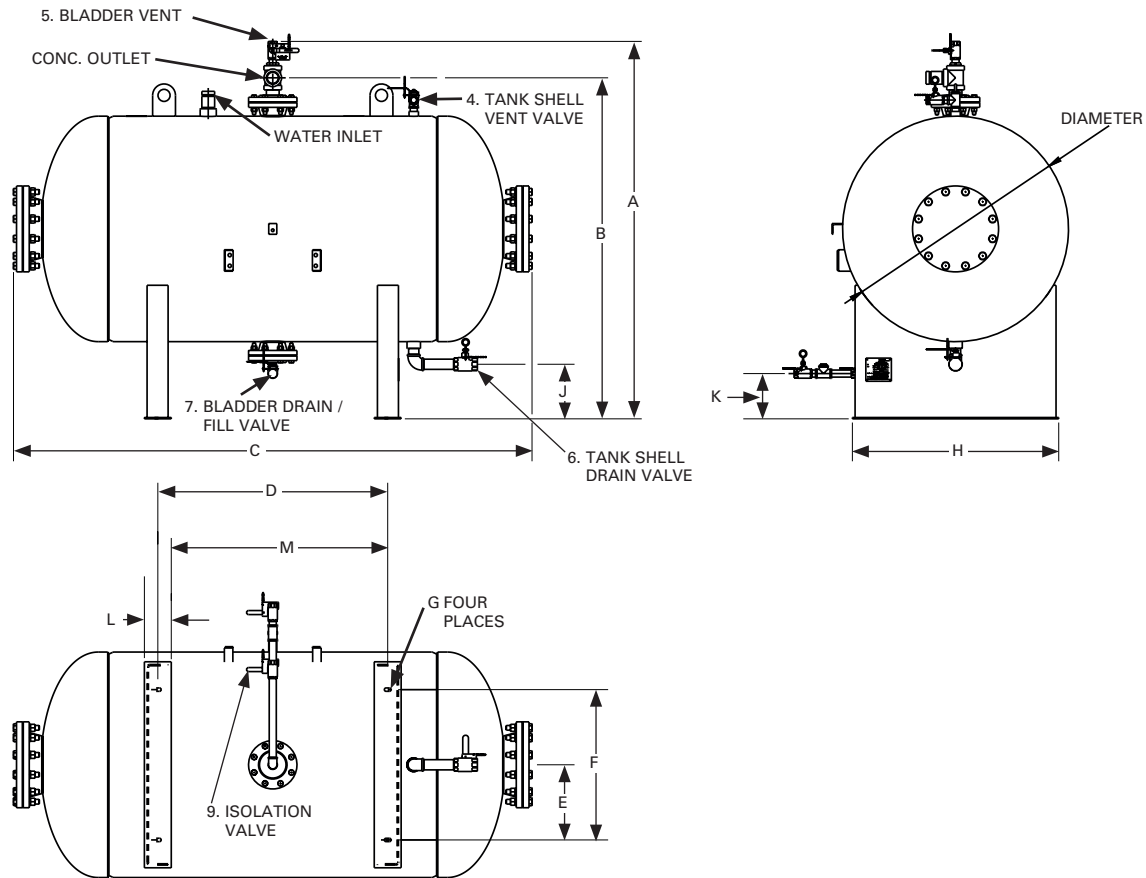


FIGURE 1
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Table 5: Dimensions

Part No.	Nominal capacity gal (L)	Dia. in. (mm)	Tank weight (empty) lb (kg)	Water inlet – NPT or grooved in.	Concentrate outlet – NPT or grooved in.	Tank shell vent – NPT in.	Bladder vent/ fill – NPT in.	Bladder drain/ fill – NPT in.	Tank shell drain – NPT in.	A in. (mm)	B in. (mm)	C in. (mm)
444044	100 (379)	24 (610)	598 (271)	2	2	1	1	1	1	53 (1,346)	45 3/4 (1,162)	74 1/2 (1,892)
444045	150 (568)	30 (762)	824 (374)	2	2	1	1	1	1 1/2	58 1/2 (1,486)	51 3/4 (1,314)	74 (1,880)
444046	200 (757)	30 (762)	929 (421)	2	2	1	1	1	1 1/2	58 1/2 (1,486)	51 3/4 (1,314)	93 1/2 (2,375)
444047	300 (1,136)	42 (1,067)	1,429 (648)	2	2	1	1	1	1 1/2	70 1/2 (1,791)	63 3/4 (1,619)	76 1/2 (1,943)
444048	400 (1,514)	42 (1,067)	1,668 (757)	2	2	1	1	1	1 1/2	70 1/2 (1,791)	63 3/4 (1,619)	96 1/2 (2,451)
444049	500 (1,893)	48 (1,219)	2,053 (931)	3	3	1	1	1	1 1/2	78 (1,981)	71 (1,803)	94 (2,388)
444050	600 (2,271)	48 (1,219)	2,261 (1,026)	3	3	1	1	1	1 1/2	78 (1,981)	71 (1,803)	109 (2,769)
444051	700 (2,650)	48 (1,219)	2,467 (1,119)	3	3	1	1	1	1 1/2	78 (1,981)	71 (1,803)	123 1/2 (3,137)
444052	800 (3,028)	48 (1,219)	2,702 (1,226)	3	3	1	1	1	1 1/2	78 (1,981)	71 (1,803)	140 (3,556)
444053	900 (3,407)	60 (1,524)	3,075 (1,395)	3	3	1	1	1	1 1/2	90 (2,286)	82 1/4 (2,089)	108 (2,743)
444054	1,000 (3,785)	60 (1,524)	3,275 (1,486)	3	3	1	1	1	1 1/2	90 (2,286)	82 1/4 (2,089)	118 (2,997)
444055	1,200 (4,542)	60 (1,524)	3,571 (1,620)	3	3	1	1	1	1 1/2	90 (2,286)	82 1/4 (2,089)	132 (3,353)
444056	1,400 (5,300)	60 (1,524)	3,991 (1,810)	3	3	1	1	1	1 1/2	90 (2,286)	82 1/4 (2,089)	151 (3,835)
444057	1,600 (6,057)	73 (1,854)	5,308 (2,408)	3	3	1	1	1	1 1/2	103 1/2 (2,629)	95 3/4 (2,432)	122 1/2 (3,112)
444058	1,800 (6,814)	73 (1,854)	5,704 (2,587)	3	3	1	1	1	1 1/2	103 1/2 (2,629)	95 3/4 (2,432)	135 (3,429)
444059	2,000 (7,571)	73 (1,854)	6,330 (2,871)	3	3	1	1	1	1 1/2	103 1/2 (2,629)	95 3/4 (2,432)	153 (3,886)
444060	2,200 (8,328)	73 (1,854)	6,633 (3,009)	3	3	1	1	1	1 1/2	103 1/2 (2,629)	95 3/4 (2,432)	162 (4,115)
444061	2,400 (9,085)	73 (1,854)	7,048 (3,197)	3	3	1	1	1	1 1/2	103 1/2 (2,629)	95 3/4 (2,432)	174 1/2 (4,432)
444062	2,600 (9,842)	73 (1,854)	7,463 (3,385)	3	3	1	1	1	1 1/2	103 1/2 (2,629)	95 3/4 (2,432)	187 (4,750)
444063	2,800 (10,599)	73 (1,854)	7,878 (3,573)	3	3	1	1	1	1 1/2	103 1/2 (2,629)	95 3/4 (2,432)	199 1/2 (5,067)
444064	3,000 (11,356)	73 (1,854)	8,289 (3,760)	3	3	1	1	1	1 1/2	103 1/2 (2,629)	95 3/4 (2,432)	212 (5,385)

Dimensions

Table 5: Dimensions (Continued)

Part No.	Nominal capacity gal (L)	Dia. in. (mm)	D in. (mm)	E in. (mm)	F in. (mm)	G in. (mm)	H in. (mm)	J in. (mm)	K in. (mm)	L in. (mm)	M in. (mm)
444044	100 (379)	24 (610)	31 1/2 (800)	5 (127)	10 (254)	5/8 x 1 1/4 (16 x 32)	23 (584)	11 1/4 (286)	8 1/4 (210)	5 (127)	26 1/2 (673)
444045	150 (568)	30 (762)	25 11/16 (652)	8 (203)	16 (406)	5/8 x 1 1/4 (16 x 32)	28 (711)	10 (254)	8 1/4 (210)	5 (127)	20 11/16 (525)
444046	200 (757)	30 (762)	45 1/4 (1,149)	8 (203)	16 (406)	5/8 x 1 1/4 (16 x 32)	28 (711)	10 (254)	8 1/4 (210)	5 (127)	40 1/4 (1,022)
444047	300 (1,136)	42 (1,067)	22 1/2 (572)	14 (356)	28 (711)	5/8 x 1 1/4 (16 x 32)	38 3/8 (975)	10 (254)	8 1/4 (210)	5 (127)	17 1/2 (445)
444048	400 (1,514)	42 (1,067)	42 3/4 (1,086)	14 (356)	28 (711)	5/8 x 1 1/4 (16 x 32)	38 3/8 (975)	10 (254)	8 1/4 (210)	5 (127)	37 3/4 (959)
444049	500 (1,893)	48 (1,219)	35 1/8 (892)	17 (432)	34 (864)	7/8 x 1 1/4 (22 x 32)	44 (1,118)	10 (254)	8 (203)	7 (178)	28 1/8 (714)
444050	600 (2,271)	48 (1,219)	47 5/8 (1,210)	17 (432)	34 (864)	7/8 x 1 1/4 (22 x 32)	44 (1,118)	10 (254)	8 (203)	7 (178)	40 5/8 (1,032)
444051	700 (2,650)	48 (1,219)	65 (1,651)	17 (432)	34 (864)	7/8 x 1 1/4 (22 x 32)	44 (1,118)	10 (254)	8 (203)	7 (178)	58 (1,473)
444052	800 (3,028)	48 (1,219)	81 1/8 (2,061)	17 (432)	34 (864)	7/8 x 1 1/4 (22 x 32)	44 (1,118)	10 (254)	8 (203)	7 (178)	74 1/8 (1,883)
444053	900 (3,407)	60 (1,524)	42 15/16 (1,091)	23 (584)	46 (1,168)	1 x 1 1/4 (25 x 32)	54 1/2 (1,384)	10 (254)	8 (203)	7 (178)	35 15/16 (913)
444054	1,000 (3,785)	60 (1,524)	52 5/8 (1,337)	23 (584)	46 (1,168)	1 x 1 1/4 (25 x 32)	54 1/2 (1,384)	10 (254)	8 (203)	7 (178)	45 5/8 (1,159)
444055	1,200 (4,542)	60 (1,524)	66 7/8 (1,699)	23 (584)	46 (1,168)	1 x 1 1/4 (25 x 32)	54 1/2 (1,384)	10 (254)	8 (203)	7 (178)	59 7/8 (1,521)
444056	1,400 (5,300)	60 (1,524)	66 (1,676)	23 (584)	46 (1,168)	1 x 1 1/4 (25 x 32)	54 1/2 (1,384)	10 (254)	8 (203)	7 (178)	59 (1,499)
444057	1,600 (6,057)	73 (1,854)	48 1/2 (1,232)	29 (737)	46 (1,168)	1 x 1 1/4 (25 x 32)	66 1/4 (1,683)	10 (254)	7 1/2 (191)	9 (229)	39 1/2 (1,003)
444058	1,800 (6,814)	73 (1,854)	60 5/8 (1,540)	29 (737)	58 (1,473)	1 x 1 1/4 (25 x 32)	66 1/4 (1,683)	10 (254)	7 1/2 (191)	9 (229)	51 5/8 (1,311)
444059	2,000 (7,571)	73 (1,854)	72 15/16 (381)	29 (737)	58 (1,473)	1 x 1 1/4 (25 x 32)	66 1/4 (1,683)	10 (254)	7 1/2 (191)	9 (229)	63 15/16 (1,624)
444060	2,200 (8,328)	73 (1,854)	63 3/4 (1,653)	29 (737)	58 (1,473)	1 x 1 1/4 (25 x 32)	66 1/4 (1,683)	10 (254)	7 1/2 (191)	9 (229)	54 3/4 (1,391)
444061	2,400 (9,085)	73 (1,854)	100 1/2 (2,553)	29 (737)	58 (1,473)	1 x 1 1/4 (25 x 32)	66 1/4 (1,683)	10 (254)	7 1/2 (191)	9 (229)	91 1/2 (2,324)
444062	2,600 (9,842)	73 (1,854)	113 1/16 (2,872)	29 (737)	58 (1,473)	1 x 1 1/4 (25 x 32)	66 1/4 (1,683)	10 (254)	7 1/2 (191)	9 (229)	104 1/16 (2,643)
444063	2,800 (10,599)	73 (1,854)	125 9/16 (3,189)	29 (737)	58 (1,473)	1 x 1 1/4 (25 x 32)	66 1/4 (1,683)	10 (254)	7 1/2 (191)	9 (229)	116 9/16 (2,961)
444064	3,000 (11,356)	73 (1,854)	137 15/16 (3,504)	29 (737)	58 (1,473)	1 x 1 1/4 (25 x 32)	66 1/4 (1,683)	10 (254)	7 1/2 (191)	9 (229)	128 15/16 (3,275)

Dimension and installation notes:

- Dimensions listed are approximate and subject to change without notice.
- Foam concentrate discharge pipe
 - Tank sizes 100 gal to 400 gal (379 L to 1,514 L):
2 in. female NPT or grooved
 - Tank sizes 500 gal to 3,000 gal (1,893 L to 11,355 L):
3 in. female NPT or grooved
- Water inlet pipe
 - Tank sizes 100 gal to 400 gal (379 L to 1,514 L):
2 in. female NPT or grooved
 - Tank sizes 500 gal to 3,000 gal (1,893 L to 11,355 L):
3 in. female NPT or grooved
- Rooms or buildings intended to house a bladder tank should have accommodations for the removal of the internal center tubes. Center tubes are approximately the full height and width of the bladder tank.

Note: While NFF (also known as SFFF) agents may be compatible with existing AFFF and/or NFF hardware, system contamination from fluorinated agents may exist if hardware and piping is not replaced upon conversion to non-fluorinated agents.

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

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