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 gallons with larger tanks available on special request
- Tanks up to 800 gallons 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 Bladder Tank is one component of a balanced pressure proportioning system. ANSUL 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 the foam system. ANSUL Bladder Tanks can be used with most ANSUL foam concentrates.

ANSUL bladder tanks have numerous applications including aircraft hangars, foam-water sprinkler systems, truck loading racks, and helipads.

Description

The ANSUL 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 gallons. 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 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 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 hole spacing.

Horizontal Tanks

Diameter	Nominal Capacity	Mounting Slot Size
24 in. to 42 in. (610 mm to 1,067 mm)	100 gal to 400 gal	5/8 in. x 1 1/4 in. (16 mm x 32 mm)
48 in. (1,219 mm)	500 gal to 800 gal	7/8 in. x 1 1/4 in (22 mm x 32 mm)
60 in. to 72 in. (1,524 mm to 1,829 mm)	900 gal to 3,000 gal	1 in x 1 1/4 in. (25 mm x 32 mm)

Each tank is fitted with two lifting lugs designed to lift the empty weight of the tank with a minimum safety factory 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 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 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.

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 / Form No. F-2016321-02

Description (Continued)

Sight Gauge

A sight gauge is available as an optional accessory for ANSUL 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.

Thermal Relief Valve

A thermal relief valve is available as an option for ANSUL bladder tanks. A thermal relief valve should be used when the bladder tank will be 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 bladder tanks are constructed of steel complying with ASME specifications. Tank heads are 2:1 elliptical unless otherwise specified.

All ANSUL 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 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 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 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 & Maintenance

Refer to the ANSUL Horizontal & Vertical Bladder Tank Operation & 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

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.

Dimension Information (Reference Figure 1)

Part No.	Nominal Capacity gal	(L)	Diameter in.	(mm)	Water Inlet – NPT or Groved in.	Concentrate Outlet – NPT or Groved 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)	2	2	1	1	1	1	53	(1,346)	45 3/4	(1,162)	74 1/2	(1,892)
444045	150	(568)	30	(762)	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)	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)	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)	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)	3	3	1	1	1	1 1/2	78	(1,981)	71	(1,803)	94	(2,388)
444050	600	(2,271)	48	(1,219)	3	3	1	1	1	1 1/2	78	(1,981)	71	(1,803)	109	(2,769)
444051	700	(2,650)	48	(1,219)	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)	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	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	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	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	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)	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)	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)	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)	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)	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)	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)	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)	3	3	1	1	1	1 1/2	103 1/2	(2,629)	95 3/4	(2,432)	212	(5,385)

Horizontal Bladder Tank

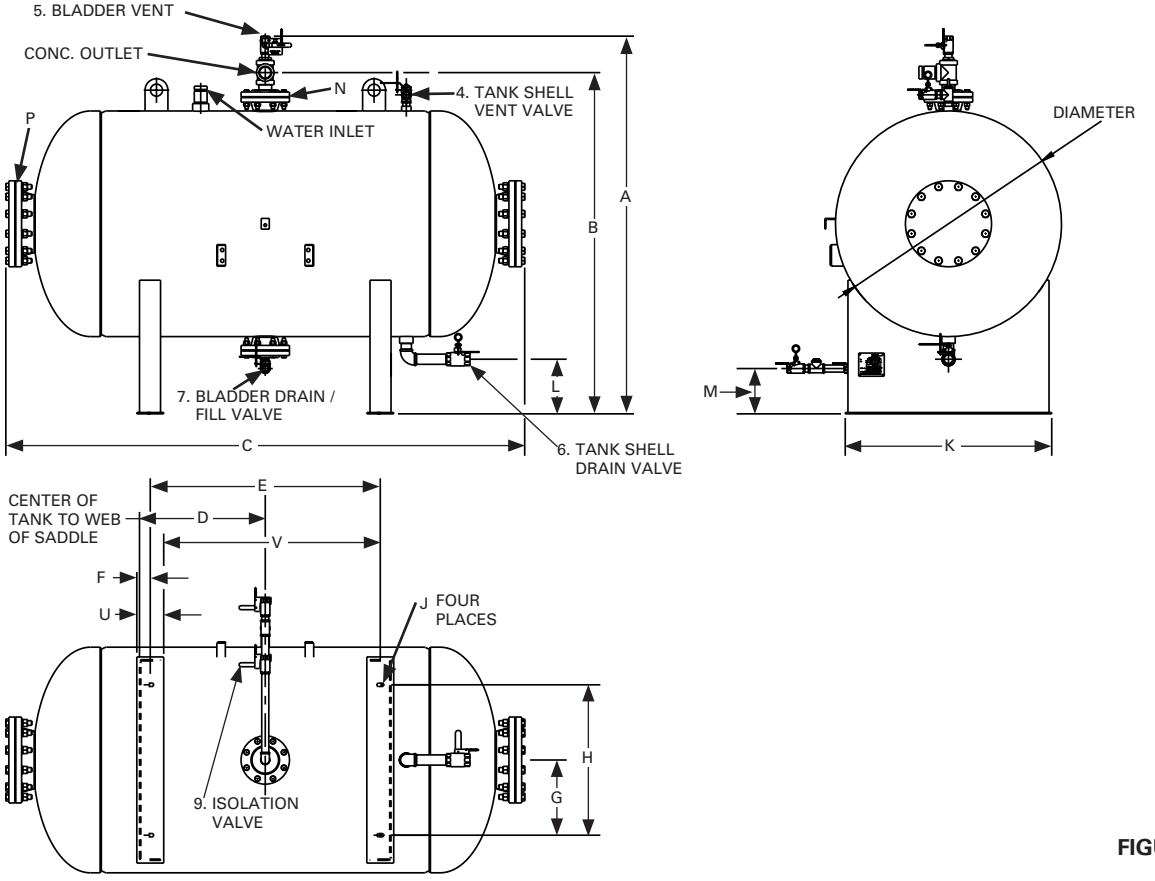

FIGURE 1
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Dimension Information (Continued)

E		G		H		J	K		L		M		U		V	
in.	(mm)	in.	(mm)	in.	(mm)	in. (mm)	in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)
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)
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)
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)
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)
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)
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)
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)
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)
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)
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)
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)
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)
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)
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)
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)
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)
63 3/4	(1,853)	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)
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)
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)
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)
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:

1. Dimensions listed are approximate and subject to change without notice.
2. Foam Concentrate Discharge Pipe
   – Tank sizes 50 gal to 400 gal (189 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
3. Water Inlet Pipe
   – Tank sizes 50 gal to 400 gal (189 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
4. Rooms or buildings intended to house a bladder tank should have accommodations for the removal of the internal center tube(s). Center tubes are approximately the full height and/or width of the bladder tank.

Ordering Information

Please specify the following when ordering:

- Part Number for required bladder tank size and orientation (See Ordering Part Numbers Table)
- Foam concentrate type to be used [1]
- One option from each of the following categories [2]:

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 above are UL Listed. Contact TFPP 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). Set pressure cannot exceed the design pressure of the tank per ASME code.

Expediting Service

Selected sizes of ANSUL 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 the list of ordering part numbers for the specific sizes eligible for this service. Due to availability, expedited tanks are only available in RAL3001 Red. Contact Tyco Fire Protection Products Technical Services or an ANSUL Regional Sales Manager for additional information and limitations on this service.

Horizontal Bladder Tank Ordering Part Numbers

Nominal Capacity (gal)	Part Number	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	

Flange Adapters

Tyco Fire Protection Products Figure 71 Flange Adapters are available to adapt the grooved fittings supplied with ANSUL bladder tanks to flanged piping for field installation. The sizes listed below have a maximum pressure rating of 300 psi (20.7 bar). The flange adapter body is ductile iron and utilizes a Grade "E" EPDM gasket. Finished with Red (RAL 3000) non-lead paint.

Ordering Information (Continued)

Adapter Size		Recommended Flange Mating Bolts (supplied by others)				
Grooved in. (mm)	ANSI Flange (DIN)	Size Dia x L in.	Qty.	Bolt Torque Range lb-ft (N·m)	Approx. Weight lb (kg)	Ordering Part Number
2 (50)	2 (DN50)	5/8 x 3	4	110 – 140 (149 – 190)	3.0 (1.4)	7120TS
2 1/2 (65)	2 1/2 (DN65)	5/8 x 3	4	110 – 140 (149 – 190)	5.0 (2.3)	7125TS
3 (80)	3 (DN80)	5/8 x 3	4	110 – 140 (149 – 190)	5.6 (2.5)	7130TS
4 (100)	4 (DN100)	3/4 x 3 1/2	8	220 – 250 (298 – 339)	7.0 (3.2)	7140TS
6 (150)	6 (DN150)	3/4 x 3 1/2	8	220 – 250 (298 – 339)	10.0 (4.5)	7160TS
8 (200)	8 (DN200)	3/4 x 3 1/2	8	220 – 250 (298 – 339)	16.6 (7.5)	7180TS

Touch Up Paint

Touch up paint for Red (RAL 3001) equipment is available in a convenient 7 ounce spray can. Touch up paint for other colors is not available in spray cans. Contact Tyco Fire Protection Products Technical Services for touch up paint in other colors.

Red (RAL 3001) Touch Up Paint – Part Number: 405581.

Custom Engineering

ANSUL 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 Tyco Fire Protection Products 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 gallons 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 gallons.

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

ANSUL

by Tyco Fire Suppression & Building Products

FOAM CHAMBERS

Data/Specifications

FEATURES

- Choice of four foam chamber sizes for various foam solution flow rate requirements.
- Hinged inspection hatch with captive bolt securement for ease of inspection and maintenance.
- Choice of primed or standard red finish. Polyamide “CR” epoxy finish available for marine and other corrosive environments.
- Teflon vapor seal allows unrestricted flow of expanded foam.
- Convenient vapor seal replacement without removal of retaining bolts.
- UL Listed.

APPLICATION

ANSUL foam chambers are air-aspirating foam discharge devices that are used to protect various types of flammable liquid storage tanks including open top floating roof tanks and cone roof tanks with or without internal floaters. Additional applications include most types of open tanks where flammable liquid products are involved.

Foam chambers are defined by NFPA 11 as Type II discharge outlets for delivering foam to the surface of a flammable liquid. They are commonly used with bladder tanks, balanced pressure pump proportioning systems, line proportioners, or foam trucks. These foam chambers can be used with ANSUL low-expansion foam agents that are determined to be suitable for the flammable liquid being protected.

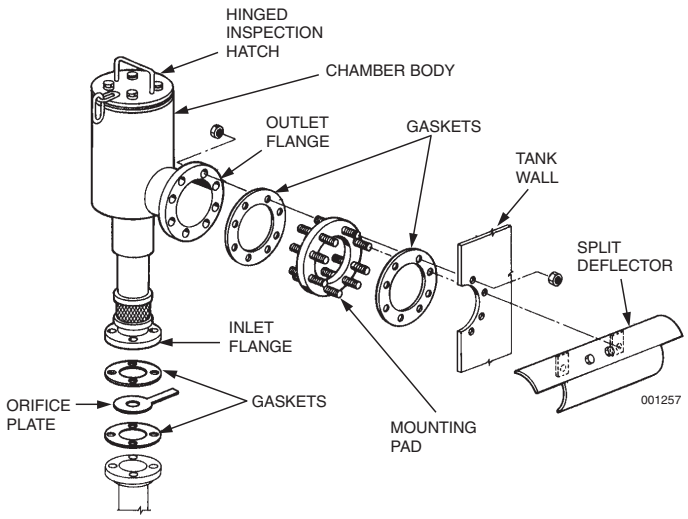
DESCRIPTION

The ANSUL foam chambers consist of a foam expansion chamber and an integral foam maker with a stainless steel screened air inlet. A removable orifice plate located at the flanged inlet to the foam maker is sized to deliver the required flow rate of foam solution at a specified inlet pressure. A frangible Teflon vapor seal is burst upon entry of foam solution allowing an unrestricted flow of expanded foam into the chamber body. From the chamber body, the foam flows through the foam deflector which disperses the foam into the storage tank.

The chamber vapor seal is accessible for inspection and service through a hinged inspection hatch that is secured with captive bolts. The hatch also contains a lifting handle that is designed to support the weight of the foam chamber.

The foam deflector directs the foam stream down the tank sidewall to lessen the submergence of the foam and agitation of the fuel surface (Type II application). The foam deflector is a split (two-piece) style. The split deflector allows for either bolting or welding to storage tanks when installation may be performed from both sides of the tank wall as with newly constructed tanks. The split deflector also allows for insertion of the deflector through the flange opening from the outside wall as is often required with tanks already in service.

The foam chamber and deflector can be bolted to the storage tank using a mounting pad. The pad contains mounting studs to fit standard flange holes.



SPECIFICATIONS

The foam chamber assembly shall consist of a chamber body with an integral foam maker and orifice plate. A foam deflector and foam chamber mounting pad shall be included with the assembly as required.

The foam chamber body shall be of steel construction with a choice of primed, standard red, or “CR” epoxy finish. The discharge outlet shall be of the flat-faced flange design that may be welded or bolted to the storage tank. For ease of access to the vapor seal, the chamber body shall contain a hinged inspection hatch secured with stainless steel captive bolts. The hatch shall also contain a lifting handle designed to support the weight of the chamber for hoisting.

The foam maker shall contain a stainless steel screen that is cylindrically shaped to conform to the air inlet surface to help prevent damage. The vapor seal shall be of Teflon construction to allow an unrestricted flow. The Teflon vapor seal shall be designed of a thickness to meet the UL required burst pressure range of 10 to 25 psi (0.69 to 1.72 bar). The vapor seal retainer shall be designed with slotted keyholes to eliminate bolt removal during replacement. The inlet to the foam maker shall be a raised-face flange with an orifice sized to allow the required flow rate of foam solution at the available pressure.

A split foam deflector shall be provided for either bolting or welding to the mounting surface, or for installation from the outside wall of the storage tank. For bolting applications, a mounting pad shall be available with a stud pattern compatible with the flat-face flange of the foam chamber body and the foam deflector.

A stainless steel nameplate shall be attached to the foam chamber hatch. The nameplate shall specify manufacturer, model number, and part number.

FLOW RANGE

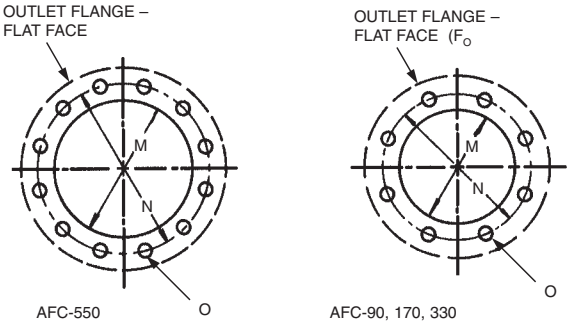
The flow rate of the foam chamber is determined by the orifice size and the inlet pressure. The flow ranges listed in the following table are based on 40 psi (2.76 bar) using the smallest orifice for the minimum flow and 100 psi (6.9 bar) using the largest orifice for the maximum flow.

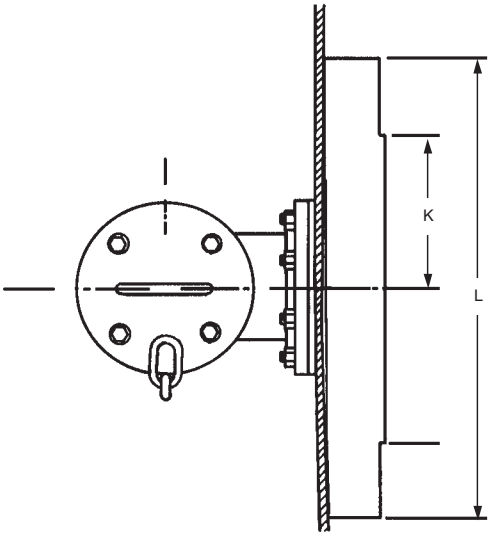
Model	Flow Range	K-Factor Range
AFC-90	49 to 151 gpm (185 to 572 Lpm)	7.8 to 15.1
AFC-170	94 to 279 gpm (356 to 1056 Lpm)	14.9 to 27.9
AFC-330	183 to 610 gpm (693 to 2309 Lpm)	28.9 to 61.0
AFC-550	350 to 980 gpm (1325 to 3709 Lpm)	55.3 to 98.0

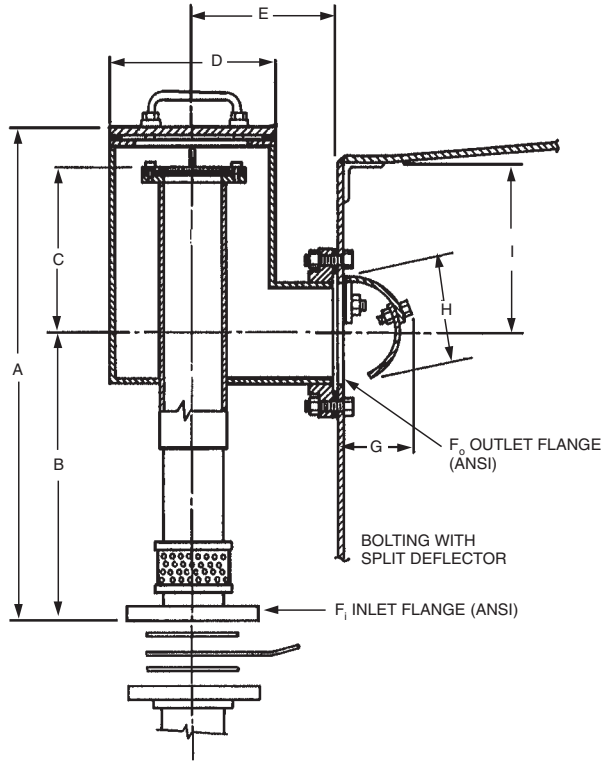
To determine flow rates for specific applications and proper orifice sizing, consult Technical Services, Marinette, WI 54143-2542.

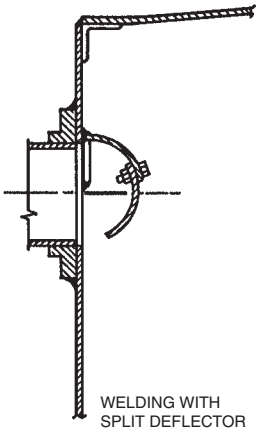
DIMENSION TABLE

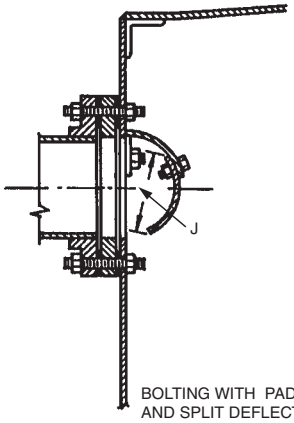
Dimension	AFC-90	AFC-170	AFC-330	AFC-550
A	26 1/16 in. (66.2 cm)	31 7/8 in. (81.0 cm)	35 3/8 in. (89.9 cm)	42 in. (106.7 cm)
B	15 5/16 in. (38.9 cm)	19 5/8 in. (49.8 cm)	20 5/8 in. (52.4 cm)	24 3/4 in. (62.9 cm)
C	8 1/2 in. (21.6 cm)	10 in. (25.4 cm)	11 1/8 in. (28.3 cm)	12 3/8 in. (31.4 cm)
D	8 3/8 in. (21.2 cm)	10 3/8 in. (26.4 cm)	12 3/8 in. (31.4 cm)	15 in. (38.1 cm)
E	7 in. (17.8 cm)	9 in. (22.9 cm)	10 in. (25.4 cm)	12 in. (30.5 cm)
F_i	2 1/2 in. (6.4 cm)	3 in. (7.6 cm)	4 in. (10.2 cm)	6 in. (15.2 cm)
F_o	4 in. (10.2 cm)	6 in. (15.2 cm)	8 in. (20.3 cm)	10 in. (25.4 cm)
G	3 1/4 in. (8.3 cm)	4 1/16 in. (10.3 cm)	5 in. (12.7 cm)	6 7/8 in. (17.5 cm)
H	5 5/16 in. (13.5 cm)	7 3/8 in. (18.7 cm)	9 1/8 in. (23.1 cm)	9 3/4 in. (24.8 cm)
I	8 in. (20.3 cm)	9 1/2 in. (24.1 cm)	11 in. (27.9 cm)	12 in. (30.5 cm)
J	4 5/8 in. (11.7 cm)	6 1/8 in. (15.6 cm)	7 3/4 in. (19.7 cm)	8 1/4 in. (20.9 cm)
K	8 in. (20.3 cm)	12 in. (30.5 cm)	16 in. (40.6 cm)	20 in. (50.8 cm)
L	12 in. (30.5 cm)	18 in. (45.7 cm)	24 in. (61.0 cm)	30 in. (76.2 cm)
M	4 1/2 in. (11.4 cm)	6 5/8 in. (16.8 cm)	8 5/8 in. (21.9 cm)	10 3/4 in. (27.3 cm)
N	7 1/2 in. (19.1 cm)	9 1/2 in. (24.1 cm)	11 3/4 in. (29.8 cm)	14 1/4 in. (36.2 cm)
O	3/4 in. (1.9 cm)	7/8 in. (2.2 cm)	7/8 in. (2.2 cm)	1 in. (2.5 cm)
P	2 7/8 in. (7.3 cm)	3 1/2 in. (8.9 cm)	4 1/2 in. (11.4 cm)	6 5/8 in. (16.8 cm)
Q	5 1/2 in. (13.9 cm)	6 in. (15.2 cm)	7 1/2 in. (19.1 cm)	9 1/2 in. (24.1 cm)
R	3/4 in. (1.9 cm)	3/4 in. (1.9 cm)	3/4 in. (1.9 cm)	7/8 in. (2.2 cm)
S	8 1/2 in. (21.6 cm)	12 in. (30.5 cm)	16 in. (40.6 cm)	20 in. (50.8 cm)
T	14 1/2 in. (36.8 cm)	16 in. (40.6 cm)	24 1/2 in. (62.2 cm)	23 1/4 in. (59 cm)
U	1 1/2 in. (3.8 cm)	1 1/2 in. (3.8 cm)	1 1/2 in. (3.8 cm)	3 5/16 in. (8.4 cm)
V	6 15/16 in. (17.6 cm)	8 25/32 in. (22.3 cm)	10 27/32 in. (27.5 cm)	13 3/4 in. (34.9 cm)
W	4 5/16 in. (11 cm)	4 11/16 in. (11.9 cm)	5 3/4 in. (14.6 cm)	7 5/32 in. (18.2 cm)











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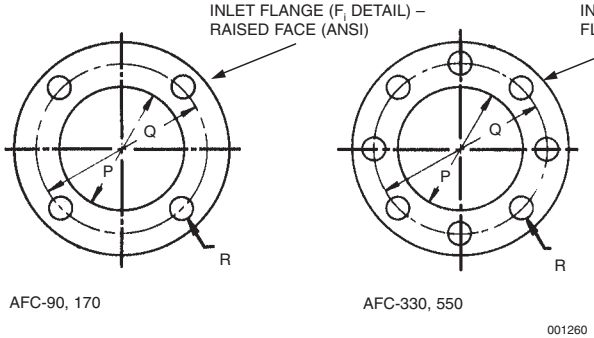

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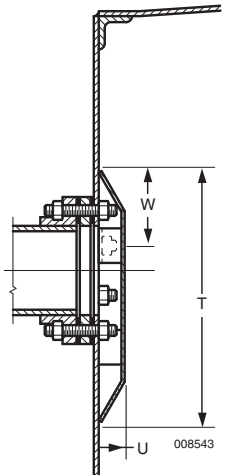
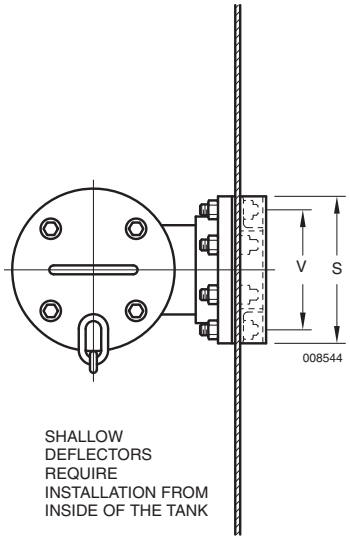




ORDERING INFORMATION

Part No.	Description	Approximate Shipping Weight lb	(kg)
Foam Chambers			
75887	Foam Chamber/Maker, AFC-90, Primed	60	(27.2)
75883	Foam Chamber/Maker, AFC-90, Standard Red	60	(27.2)
75879	Foam Chamber/Maker, AFC-90, CR EpoxyRed	60	(27.2)
74376	Split Deflector, AFC-90, Primed	5	(2.3)
428637	Shallow Deflector, AFC-90, Primed	5	(2.3)
75888	Foam Chamber/Maker, AFC-170, Primed	100	(45.4)
75884	Foam Chamber/Maker, AFC-170, Standard Red	100	(45.4)
75880	Foam Chamber/Maker, AFC-170, CR Epoxy Red	100	(45.4)
74380	Split Deflector, AFC-170, Primed	10	(4.5)
428638	Shallow Deflector, AFC-170, Primed	10	(4.5)
75889	Foam Chamber/Maker, AFC-330, Primed	145	(65.8)
75885	Foam Chamber/Maker, AFC-330, Standard Red	145	(65.8)
75881	Foam Chamber/Maker, AFC-330, CR Epoxy Red	145	(65.8)
74384	Split Deflector, AFC-330, Primed	20	(9.1)
428639	Shallow Deflector, AFC-330, Primed	20	(9.1)
75890	Foam Chamber/Maker, AFC-550, Primed	270	(122.5)
75886	Foam Chamber/Maker, AFC-550, Standard Red	270	(122.5)
75882	Foam Chamber/Maker, AFC-550, CR Epoxy Red	270	(122.5)
74388	Split Deflector, AFC-550, Primed	30	(13.6)
428640	Shallow Deflector, AFC-550, Primed	30	(13.6)

Note: Shallow deflectors are a lower protrusion option than the standard split deflectors illustrated on Page 3. Shallow deflectors may be required for cone roof tanks with internal floaters where the protrusion of a split deflector interferes with the internal floater operation.

Foam Chamber Accessories			
74392	Foam Chamber AFC-90 Mounting Pad, Primed	15	(6.8)
74390	Foam Chamber AFC-90 Mounting Pad, CR Epoxy Red	15	(6.8)
74396	Foam Chamber AFC-170 Mounting Pad, Primed	20	(9.1)
74394	Foam Chamber AFC-170 Mounting Pad, CR Epoxy Red	20	(9.1)
74400	Foam Chamber AFC-330 Mounting Pad, Primed	35	(15.9)
74398	Foam Chamber AFC-330 Mounting Pad, CR Epoxy Red	35	(15.9)
74404	Foam Chamber AFC-550 Mounting Pad, Primed	50	(22.7)
74402	Foam Chamber AFC-550 Mounting Pad, CR Epoxy Red	50	(22.7)
418581	Foam Chamber AFC-90 Vapor Seal Assembly	0.5	(0.23)
418582	Foam Chamber AFC-170 Vapor Seal Assembly	0.5	(0.23)
418583	Foam Chamber AFC-330 Vapor Seal Assembly	0.5	(0.23)
418584	Foam Chamber AFC-550 Vapor Seal Assembly	0.5	(0.23)
75985	Foam Chamber AFC-90 Cover Gasket	0.3	(0.14)
75986	Foam Chamber AFC-170 Cover Gasket	0.3	(0.14)
75987	Foam Chamber AFC-330 Cover Gasket	0.3	(0.14)
75988	Foam Chamber AFC-550 Cover Gasket	0.3	(0.14)
74610	Foam Chamber AFC-90 Orifice Plate	1	(0.45)
74611	Foam Chamber AFC-170 Orifice Plate	1	(0.45)
74612	Foam Chamber AFC-330 Orifice Plate	1	(0.45)
74613	Foam Chamber AFC-550 Orifice Plate	1	(0.45)
74408	Foam Chamber AFC-90 Foam Diverter Test Tube	15	(6.8)
74412	Foam Chamber AFC-170 Foam Diverter Test Tube	20	(9.1)
74416	Foam Chamber AFC-330 Foam Diverter Test Tube	40	(18.1)
74420	Foam Chamber AFC-550 Foam Diverter Test Tube	65	(29.5)
75968	Foam Chamber Cover Screw, All Models	0.3	(0.14)

Note: Foam chambers, mounting pads, foam deflectors are available constructed of 304 stainless steel.
► Contact Technical Services for pricing and availability.

ANSUL

A Tyco International Company

MONITOR/NOZZLE HIGH-FLOW SERIES
MODEL FJM-200
Data/Specifications

FEATURES

- Powerful unit with exceptional throw characteristics
- Compact and lightweight
- Welded stainless steel monitor construction which allows for use in corrosive environments and minimizes maintenance
- Patented stainless steel slide-bearing system to prevent unwanted movement or swings
- Versatile nozzle patterns in a solid jet or fog spray pattern with water or foam

DESCRIPTION

The FJM-200 series of monitors is designed to deliver approximately 5300 gpm (20,000 Lpm), however actual flow rate is dependent on nozzle setting and inlet pressure. This monitor is a dual waterway design. The balanced design reduces unwanted torque and swing, while the range of movement is easily operated with geared handwheels. The S version of the monitor/nozzle is self educting. The G version is gear operated. The EL/MV version is electric gear motor driven with remote nozzle pattern control.

SPECIFICATIONS

Waterway: 8 in. (200 mm) nominal

Sweep (rotation): Manual: Full 360°, Electric: ± 165°

Elevation (vertical movement):

Monitor	Elevation	Depression
FJM-200 G	+70°	–60°
FJM-200 S G	+70°	–45°
FJM-200 EL	+70°	–60°

Nozzle: Integral with monitor

Nozzle Pattern:
Manually adjustable straight to fog, water hydraulic driven
Electric: Solenoid valve, water driven hydraulic straight to fog

Nozzle Flow: Adjustable by turning deflector and locking

Material: Monitor: 316L Stainless steel
Nozzle: Bronze

Finish: Painted red

Stability: Manual Monitors: Worm gear driven
Electric Monitors: Electric gear motors

Mounting: 8 in., 150 lb ANSI flange standard

Weight:

FJM-200 G	199 lb (90 kg)
FJM-200 S G	205 lb (93 kg)
FJM-200 EL	276 lb (125 kg)

Maximum Pressure: 232 psi (16 bar)

Range: Up to 400 ft (122 m)

006499

APPLICATION

- Refineries
- Chemical Plants
- Petrochemical Storage
- Marine Tankers/Barges
- Marine Loading Docks
- Loading Docks
- LNG/LPG Storage
- Paper Mills
- Lumber Yards
- Rail Cars
- Coal Storage
- Process Areas
- Fire Trucks/ARFF Vehicles
- Fire Boats
- Aerial Apparatus

FJM-200 SELF-EDUCTING ACCESSORIES

Part No.	Description	Shipping Weight lb	(kg)
429414	Drum Kit (double)	7	(3.2)
434980	Kit Connection to Drum Kit (required for double drum kit)	2	(0.9)
434982	Tote Connection Kit	3	(1.4)
434983	Vacuum Relief Assembly for Totes	3	(1.4)

NOZZLE K FACTORS

Turns	K Factor
5	208.1
6	232.4
7	263.7
9	319.2
11	374.7
13.6	437.1

$Q = K\sqrt{P}$ Q = gpm P = psi

ORDERING INFORMATION

Part No.	Description
431114	FJM-200 G
431115	FJM-200 S G with suction hose*
431116	FJM-200/C EL/MV**

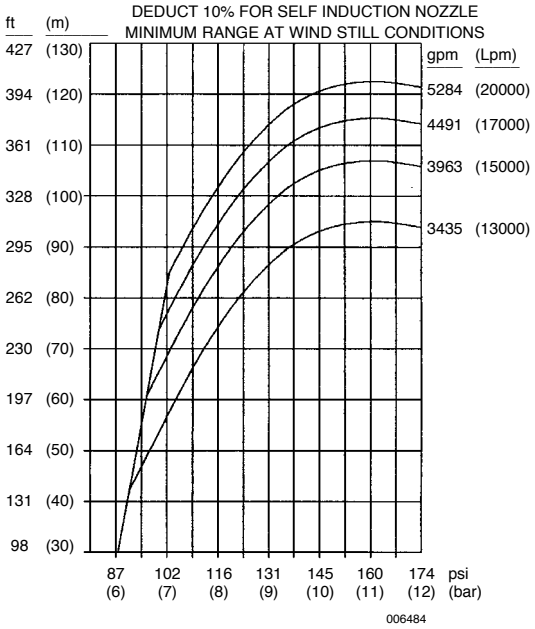
* Specify flow, inlet pressure, concentrate and % concentration, maximum foam concentrate induction 158 GPM (600 LPM)

** Specify Voltage and current type

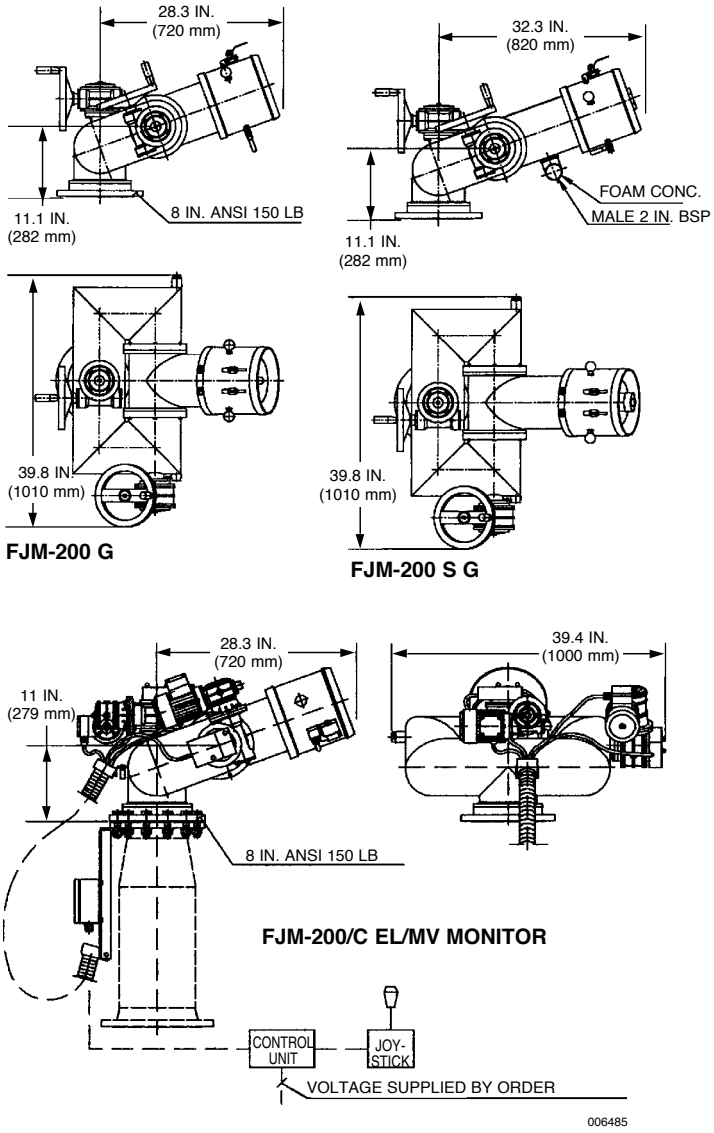
Note: On EL models, electric gear motors, limit switches, terminal box, control unit and joy-stick are included as standard items. Manual override and optional motors (for hazardous locations) are available as options.

For pricing and availability of various electric remote control options, contact Ansul Technical Services.

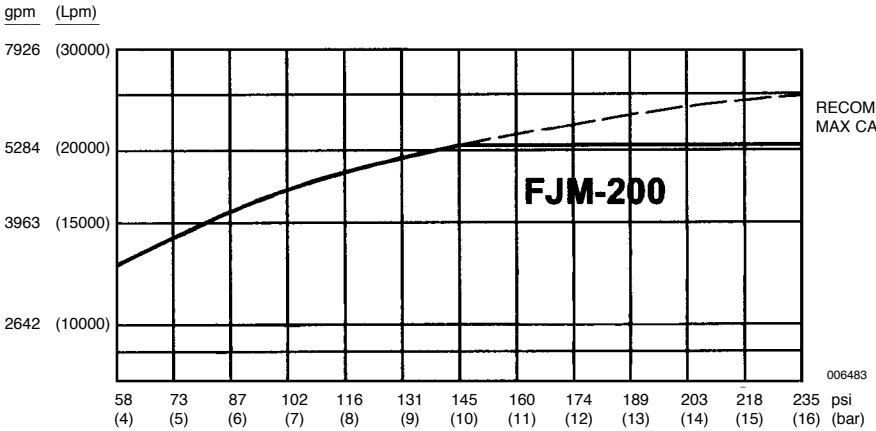
FJM-200 MONITOR RANGE OF JET



DRAWINGS OF MONITORS



CAPACITY RANGES FOR FJM-200 MONITORS



Note: The nozzle is an internal part of the monitor, therefore, performance criteria is based upon pressure at the flanged inlet connection.

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

tyco Fire Protection Products

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Form No. F-2002075-02

BALANCED PRESSURE PUMP PROPORTIONING SYSTEM

Data/Specifications

FEATURES

- Six Proportioner Sizes to Handle Wide Range of Flows with Minimum Friction Loss
- Diaphragm Valve Design Ensures Accurate Pressure Regulation and Rapid Response to Changes in Flow Demand
- ▸ Choice of Standard Red or Corrosion-Resistant Polyamide Epoxy Finish
- Brass Foam Concentrate Piping Standard for Use in Marine Applications and Other Corrosive Environments
- Compatible with Ansul Foam Concentrates
- Stainless Steel Nameplates for Valve Identification and Instruction

APPLICATION

ANSUL® balanced pressure pump proportioning systems are designed to accurately control the flow of a foam liquid concentrate into a water stream over a wide range of flow rates and pressures. These pump proportioning systems are compatible with ANSUL foam concentrates by matching the required foam concentrate pump output to the proportioner maximum flow demand. For other special requirements, contact Ansul Incorporated, Technical Services, Marinette, WI 54143-2542.

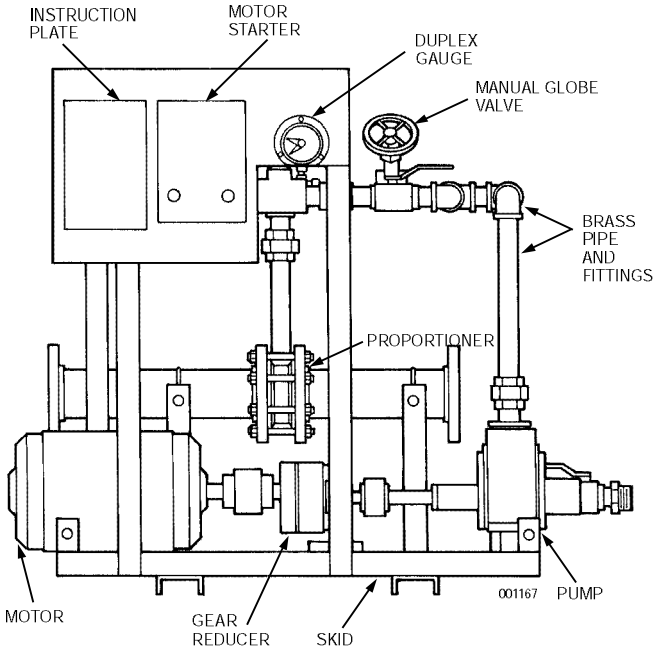
Because they are capable of continuously generating large volumes of foam solution, balanced pressure pump proportioning systems are typically used to protect tank farms, marine docks, chemical processing plants, offshore oil platforms, aircraft hangars, and loading racks.

DESCRIPTION

The balanced pressure proportioning system functions by maintaining an equal pressure in the foam concentrate and water inlets to the proportioner. This balancing ability allows the proportioner to be used over a wide range of flows and pressures. The system will also respond quickly and accurately to changes in the water inlet pressures and flow rates.

The system operates by passing the required portion of foam concentrate from a positive displacement pump to a venturi proportioner with the remaining portion recirculating through a diaphragm valve in the return line to the tank. The diaphragm valve senses and balances the pressures in the foam concentrate and water lines to the proportioner. (The pressures can also be balanced manually by using the manual regulating globe valve and the duplex gauge.) The foam concentrate then enters the proportioner where a built-in orifice regulates the flow of pressurized foam concentrate entering the water stream.

The skid units are available in six proportioner sizes ranging from 2 to 8 in. with flow rates from 30 to 5500 gpm (114 to 20816 Lpm) as listed under the Proportioner Flow Range Table. Each unit consists of a positive displacement foam pump with electric motor and starter; various control, drain, and check valves; pressure balancing diaphragm valve; duplex gauge; foam proportioner; interconnecting brass pipe; and stainless steel valve identification and system instruction nameplates. The entire assembly is mounted on a steel skid and available with either
▸ standard red or corrosion-resistant polyamide epoxy "CR" finish.



SPECIFICATIONS

The balanced pressure proportioning skid shall contain all necessary components including control valves, proportioner, interconnecting piping, water flush-out connections, positive displacement foam liquid pump, pump driver, and duplex pressure gauge.

Balancing shall be accomplished through the use of a diaphragm pressure balancing valve.

The skid shall have manual override capability through use of a manually-controlled globe valve and duplex pressure gauge. Interconnecting foam concentrate piping shall be of brass construction. Valve nameplates shall be of 304 stainless steel and shall specify valve function and stand-by position.

ORDERING INFORMATION

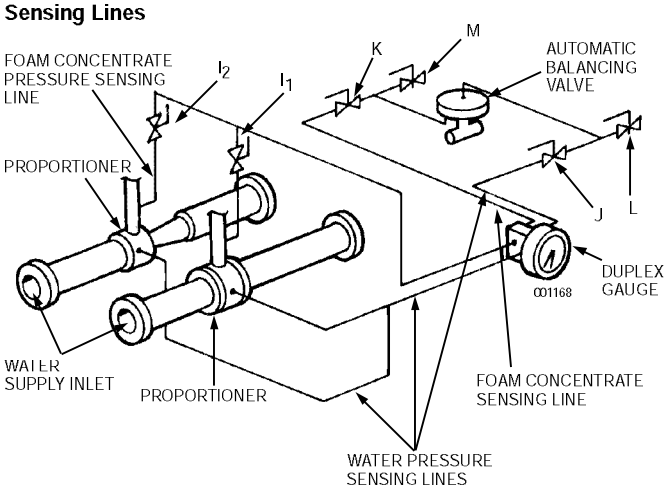
When ordering, the following information must be provided:

- Type and Percentage of Concentrate
- Minimum and Maximum Water Inlet Pressure Available to Proportioner
- Minimum and Maximum Foam Solution Flow Required
- Power Supply Available
- ▸ Desired Paint System (Standard or Epoxy "CR")

PROPORTIONER FLOW RANGES

Proportioner Size	Approximate Flow Range gpm	(Lpm)
2 in.	30 – 300	(114 – 1136)
2 1/2 in.	35 – 400	(132 – 1514)
3 in.	70 – 800	(265 – 3028)
4 in.	200 – 1600	(757 – 6057)
6 in.	300 – 3400	(1136 – 12870)
8 in.	500 – 5500	(1892 – 20819)

Sensing Lines

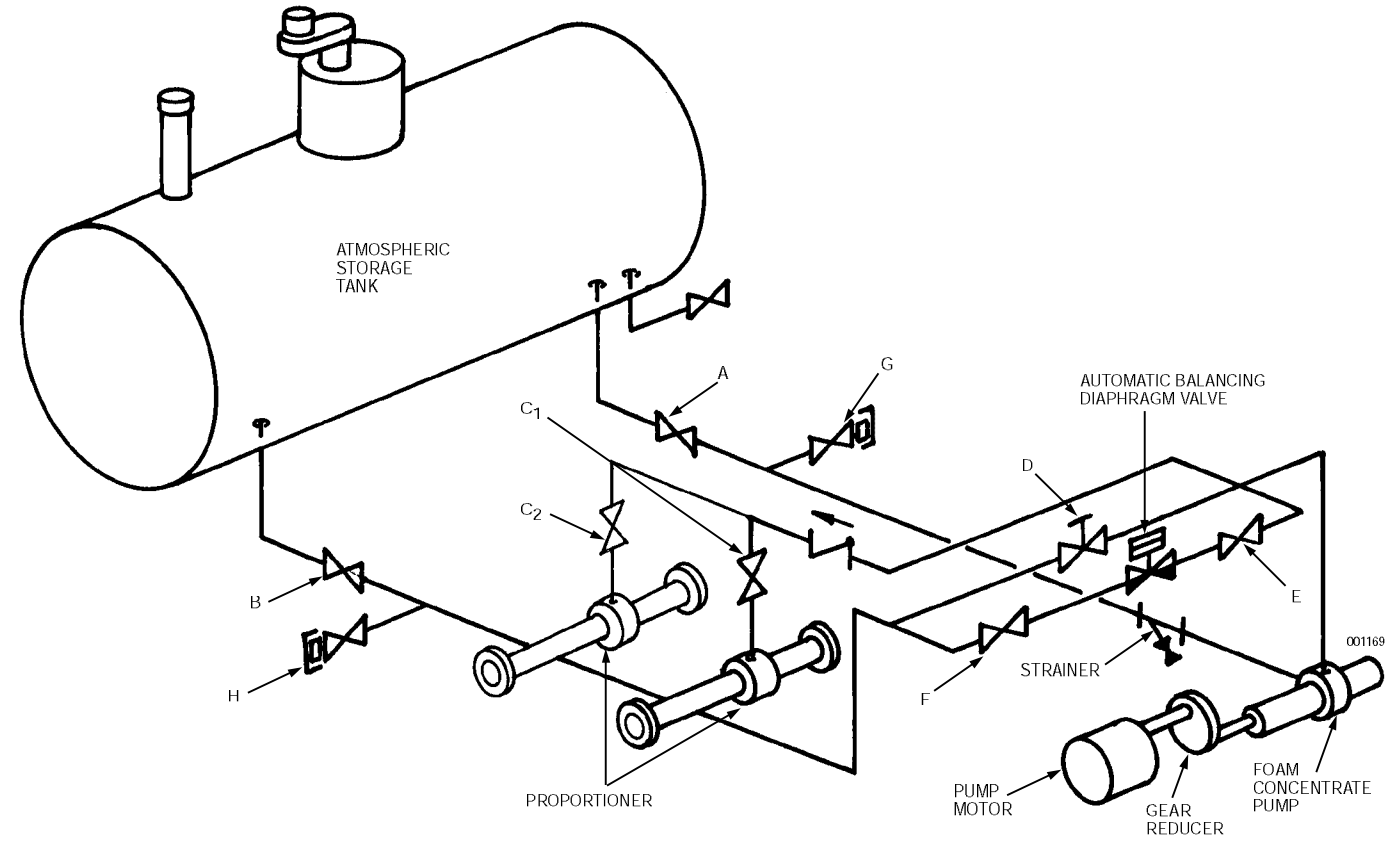


▸ Depicted for manual operation. Refer to ANSUL Balanced Pressure Pump Proportioning System Manual, Part No. 77166, for installation and operation instructions.

VALVE IDENTIFICATION

Valve	Description
A	Foam Tank Suction
B	Foam Tank Return
C_1	Foam Proportioner Supply
C_2	Foam Proportioner Supply (If Required)
D	Manual Foam Balancing
E	Foam Supply to Automatic Balancing Valve
F	Foam Discharge from Automatic Balancing Valve
G	Flush Inlet
H	Flush Outlet
I_1	Foam Pressure Sensing (If Required)
I_2	Foam Pressure Sensing (If Required)
J	Water Sensing to Automatic Balancing Valve
K	Foam Sensing to Automatic Balancing Valve
L	Water Flush Out
M	Foam Flush Out

Typical Balanced Pressure Pump Proportioning System



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Ansul Incorporated
Marinette, WI 54143-2542
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Form No. F-85174-3

ANSUL

A Tyco International Company

IN-LINE BALANCED PRESSURE PROPORTIONERS MODELS IBP, IBP-M

Data/Specifications

FEATURES

- Six standard sizes to handle a wide range of flows with minimum friction loss
- Spool valve design ensures accurate pressure regulation and rapid response to changes in flow demand
- Brass foam concentrate piping with stainless steel trim accessories standard for use in marine applications and other corrosive environments
- Compatible with all ANSUL foam concentrates
- Choice of unpainted brass or standard red paint finish

APPLICATION

ANSUL in-line balanced pressure proportioners are used with an atmospheric foam concentrate tank and a positive displacement foam concentrate pump. In-line balanced pressure proportioners are designed to accurately control the flow of a foam liquid concentrate into a water stream over a wide range of flow rates and pressures. These devices can be used with all types of foam concentrates. Advantages of the in-line balanced pressure proportioner include the following:

- Multiple proportioning devices from a single pressurized foam concentrate supply.
- Foam concentrate can be proportioned near the discharge devices while the foam concentrate storage tank and pump are placed in a remote location.
- Water supply pressure may vary at proportioners under simultaneous operation without affecting foam solution concentration.
- Capable of combining various sizes of in-line balanced pressure proportioners to best suit the flow requirements of each hazard area.

DESCRIPTION

The in-line balanced pressure proportioning system functions by maintaining an equal pressure in the foam concentrate and water inlets to the proportioner. This balancing ability allows the proportioner to be used over a wide range of flows and pressures. The system will also respond quickly and accurately to changes in the water inlet pressures and flow rates.

The system utilizes a positive displacement foam pump to pressurize foam concentrate within the supply manifold. A pressure control valve, located in the return line to the foam concentrate storage tank, is set to maintain a regulated pressure in the supply manifold that is higher than the pressure in the water supply line. The foam concentrate that is not required by the proportioner is returned to the atmospheric storage tank through the pressure control valve. The spool valve senses the foam concentrate pressure and automatically adjusts to balance it with the water pressure. A duplex pressure gauge provides a reading of the foam concentrate and water pressures. The foam concentrate then enters the proportioner, where a built-in orifice regulates the flow of pressurized foam concentrate entering the water stream.

The units are available in six standard sizes to supply proportioners ranging from 2 to 8 inches with flow rates from 30 to 5,500 gpm (114 to 20820 Lpm) as listed under the System Information Table. Each unit consists of a foam proportioner; pressure balancing spool valve; duplex gauge; various control, drain and check valves; interconnecting brass pipe and fittings; stainless steel braid flexible pressure sensing hoses; and valve identification nameplates. The IBP-M models are also provided with a manual foam balancing valve. The in-line balanced pressure proportioner is factory pressure tested after being assembled.

APPROVALS

The ANSUL in-line balanced pressure proportioner assemblies are both Underwriters Laboratories listed and Factory Mutual approved with ANSULITE 3% AFFF, ANSULITE 3x3 Low-Viscosity AR-AFFF, and ANSULITE ARC 3% or 6% AR-AFFF Foam Concentrates. Models IBP-4/IBP-4M and IBP-6/IBP-6M are UL listed with JET-X 2% and JET-X 2 3/4% High-Expansion Foam Concentrates.

SPECIFICATIONS

The in-line balanced pressure proportioner assembly shall contain all necessary components including: foam proportioner; pressure balancing spool valve; duplex gauge; control, drain and check valves; interconnecting brass pipe; and valve identification nameplates.

Balancing shall be accomplished through the use of a spool-type pressure balancing valve. This valve shall sense foam concentrate and water inlet pressures at the outer ends of a dumbbell-shaped piston and shall react to pressure changes by covering or uncovering the foam supply port to the proportioner. The balancing valve shall be of UNS-83600 brass construction with a bronze piston and Buna-N rubber O-rings and seals. The in-line balanced pressure proportioner shall be completely pressure tested by the manufacturer.

Interconnecting foam concentrate piping shall be of brass construction. Pressure sensing hoses shall be Teflon® with stainless braid cover and permanently attached brass couplings. Valve nameplates shall be provided and shall specify valve function and normal operating position. The "foam concentrate" ball valve shall have a ring pin and chain for securing the ball valve in the operating position.

SYSTEM INFORMATION TABLE

The following table lists the nominal flow range for each proportioner size. For flow ranges using specific concentrates, consult ANSUL Technical Services.

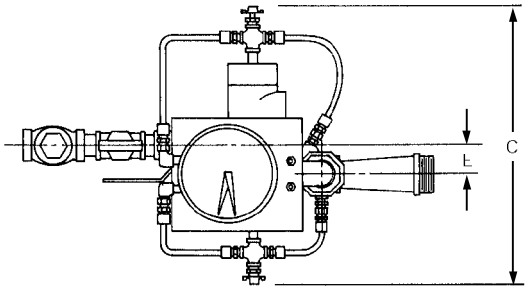
	Model IBP-2/IBP-2M	Model IBP-2 1/2/IBP-2 1/2M	Model IBP-3/IPB-3M	Model IBP-4/IBP-4M	Model IBP-6/IBP-6M	Model IBP-8/IBP-8M
Proportioner Size	2 in.	2 1/2 in.	3 in.	4 in.	6 in.	8 in.
Nominal Flow Range gpm	30-300	35-400	70-800	200-1600	300-3400	500-5500
Nominal Flow Range (Lpm)	(114-1136)	(132-1514)	(265-3028)	(757-6057)	(1136-12870)	(1892-20819)

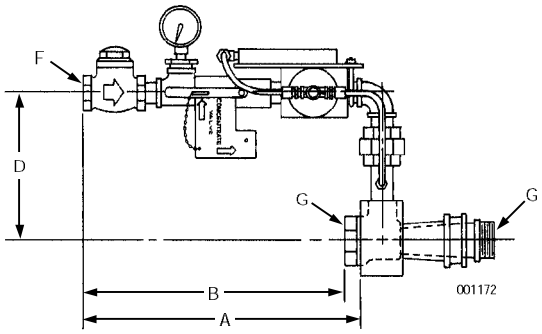
In-line balanced pressure proportioner systems will proportion slightly higher concentrations at the low end of the nominal flow range.

NOTICE: Listed Nominal Flow Ranges do not apply for Alcohol Resistant Concentrate.

IN-LINE BALANCED PRESSURE PROPORTIONERS (MODELS IBP-2 TO IBP-8)

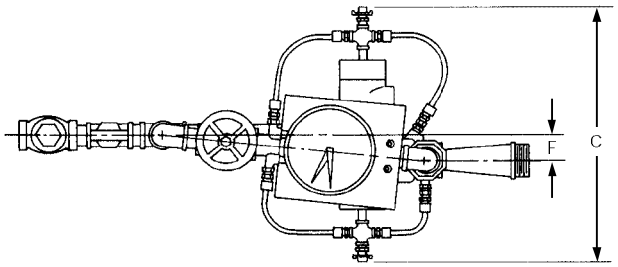
	Model IBP-2 in.	(mm)	Model IBP-2 1/2 in.	(mm)	Model IBP-3 in.	(mm)	Model IBP-4 in.	(mm)	Model IBP-6 in.	(mm)	Model IBP-8 in.	(mm)
Dimension A	–		–		17	(430)	18 1/2	(470)	18 1/4	(460)	22 1/2	(570)
Dimension B	16	(410)	16	(410)	–		–		–		–	
Dimension C	16 3/4	(430)	16 3/4	(430)	16 3/4	(430)	16 3/4	(430)	16 3/4	(430)	20	(510)
Dimension D	9	(230)	9	(230)	9 3/4	(250)	10 1/2	(270)	12	(310)	14	(360)
Dimension E	1 3/4	(45)	1 3/4	(45)	1 3/4	(45)	1 3/4	(45)	1 3/4	(45)	2 3/16	(55)
Dimension F	1 NPT		1 NPT		1 NPT		1 1/2 NPT		1 1/2 NPT		2 NPT	
Dimension G	2 NPT		2 1/2 NPT		3*		4*		6*		8*	

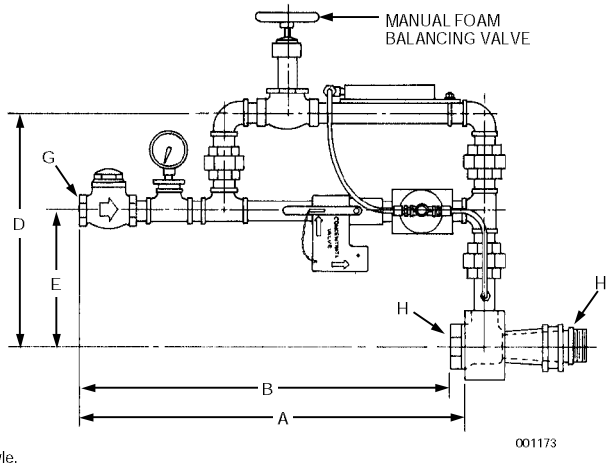




IN-LINE BALANCED PRESSURE PROPORTIONERS WITH MANUAL FOAM BALANCING VALVE (MODELS IBP-2M TO IBP-8M)

	Model IBP-2M in.	(mm)	Model IBP-2 1/2M in.	(mm)	Model IBP-3M in.	(mm)	Model IBP-4M in.	(mm)	Model IBP-6M in.	(mm)	Model IBP-8M in.	(mm)
Dimension A	–		–		25 1/2	(650)	28 1/2	(720)	28	(710)	32 3/8	(820)
Dimension B	24 1/2	(620)	24 1/2	(620)	–		–		–		–	
Dimension C	16 3/4	(430)	16 3/4	(430)	16 3/4	(430)	16 3/4	(430)	16 3/4	(430)	20	(510)
Dimension D	15 5/8	(400)	15 5/8	(400)	16 3/8	(420)	18	(460)	19 1/2	(500)	22 1/2	(570)
Dimension E	9	(230)	9	(230)	9 3/4	(250)	10 1/2	(270)	12	(310)	14	(360)
Dimension F	1 3/4	(45)	1 3/4	(45)	1 3/4	(45)	1 3/4	(45)	1 3/4	(45)	2 3/16	(55)
Dimension G	1 NPT		1 NPT		1 NPT		1 1/2 NPT		1 1/2 NPT		2 NPT	
Dimension H	2 NPT		2 1/2 NPT		3*		4*		6*		8*	





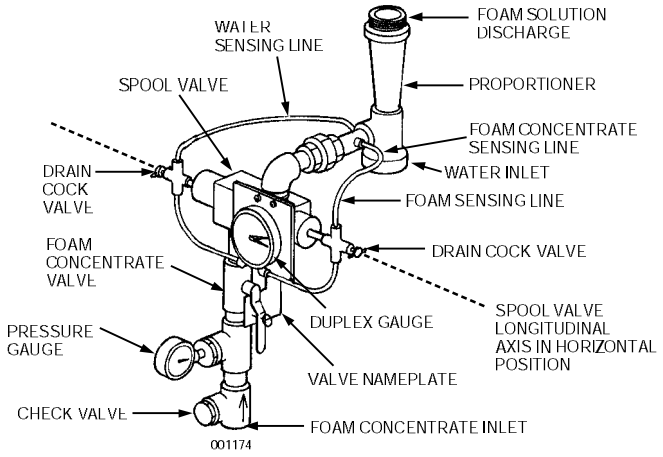
*Between flange proportioner is standard. Upon request, proportioners can also be supplied in flanged style.

Note: ANSUL in-line balanced pressure proportioners require a minimum of 5 pipe diameters of straight, unobstructed water inlet supply pipe.

ORDERING INFORMATION

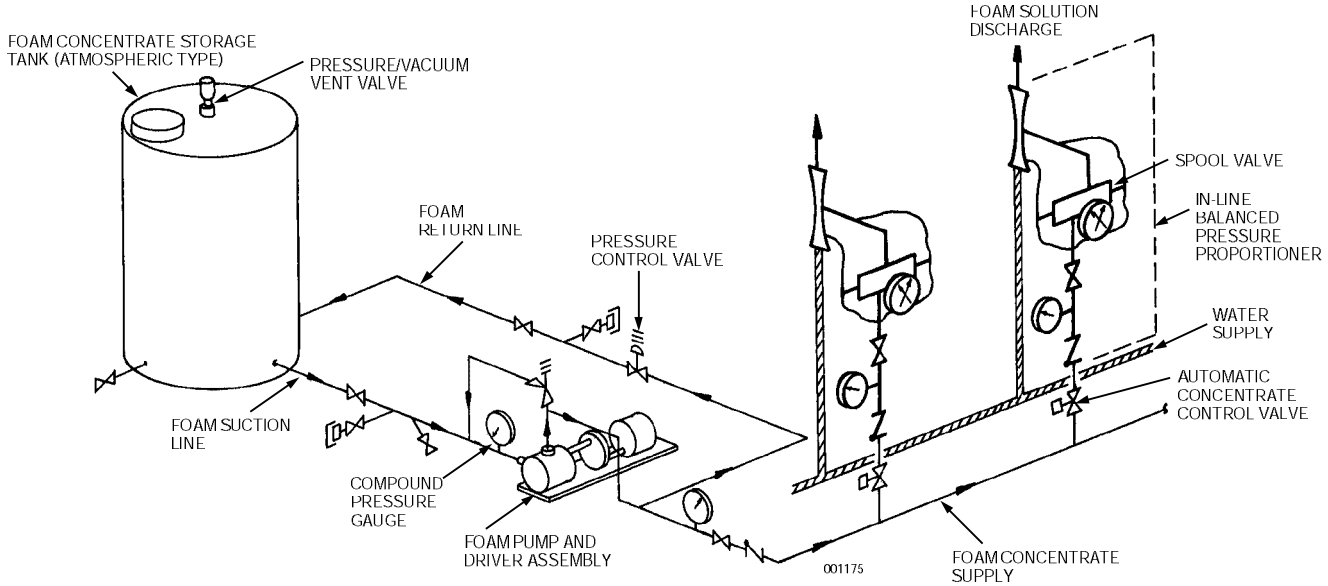
Part No. Unpainted	Part No. Standard Red Paint	Description	Approximate Shipping Weight lb	(kg)
73700	73701	Model IBP-2 In-line proportioner assembly	45	(20.4)
73702	73703	Model IBP-2 1/2 In-line proportioner assembly	45	(20.4)
73704	73705	Model IBP-3 In-line proportioner assembly	50	(22.7)
73706	73707	Model IBP-4 In-line proportioner assembly	65	(29.5)
73708	73709	Model IBP-6 In-line proportioner assembly	80	(36.3)
73710	73711	Model IBP-8 In-line proportioner assembly	135	(61.2)
73712	73713	Model IBP-2M In-line proportioner assembly	60	(27.2)
73714	73715	Model IBP-2 1/2M In-line proportioner assembly	60	(27.2)
73716	73717	Model IBP-3M In-line proportioner assembly	65	(29.5)
73718	73719	Model IBP-4M In-line proportioner assembly	90	(40.8)
73720	73721	Model IBP-6M In-line proportioner assembly	105	(47.6)
73722	73723	Model IBP-8M In-line proportioner assembly	170	(77.1)

IN-LINE BALANCED PRESSURE PROPORTIONER



NOTE: Spool valve must be installed with the longitudinal axis in the horizontal (level) position.

TYPICAL IN-LINE BALANCED PRESSURE PROPORTIONING SYSTEM

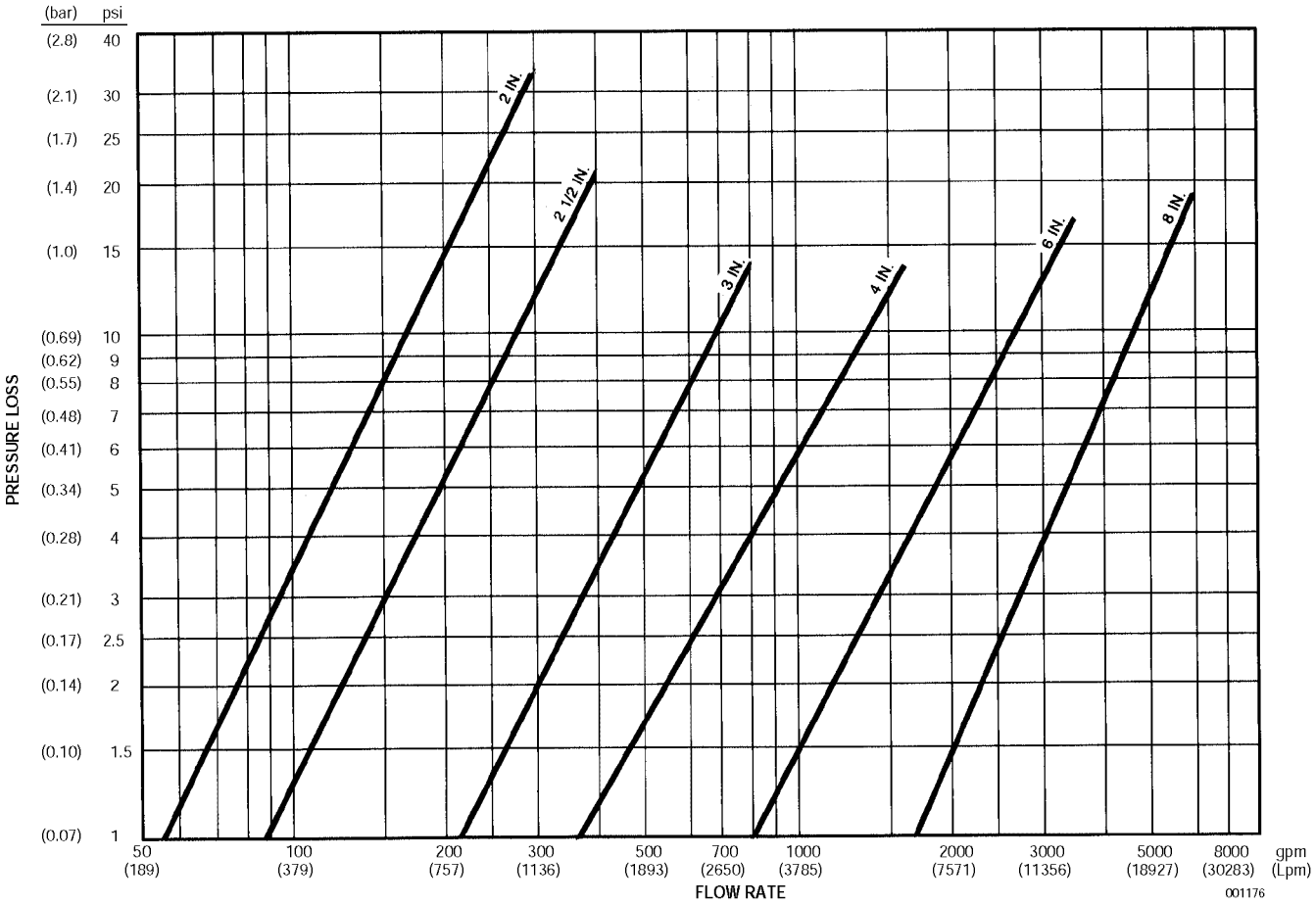


NOTE: Flush connections are only required with protein based foam concentrates.

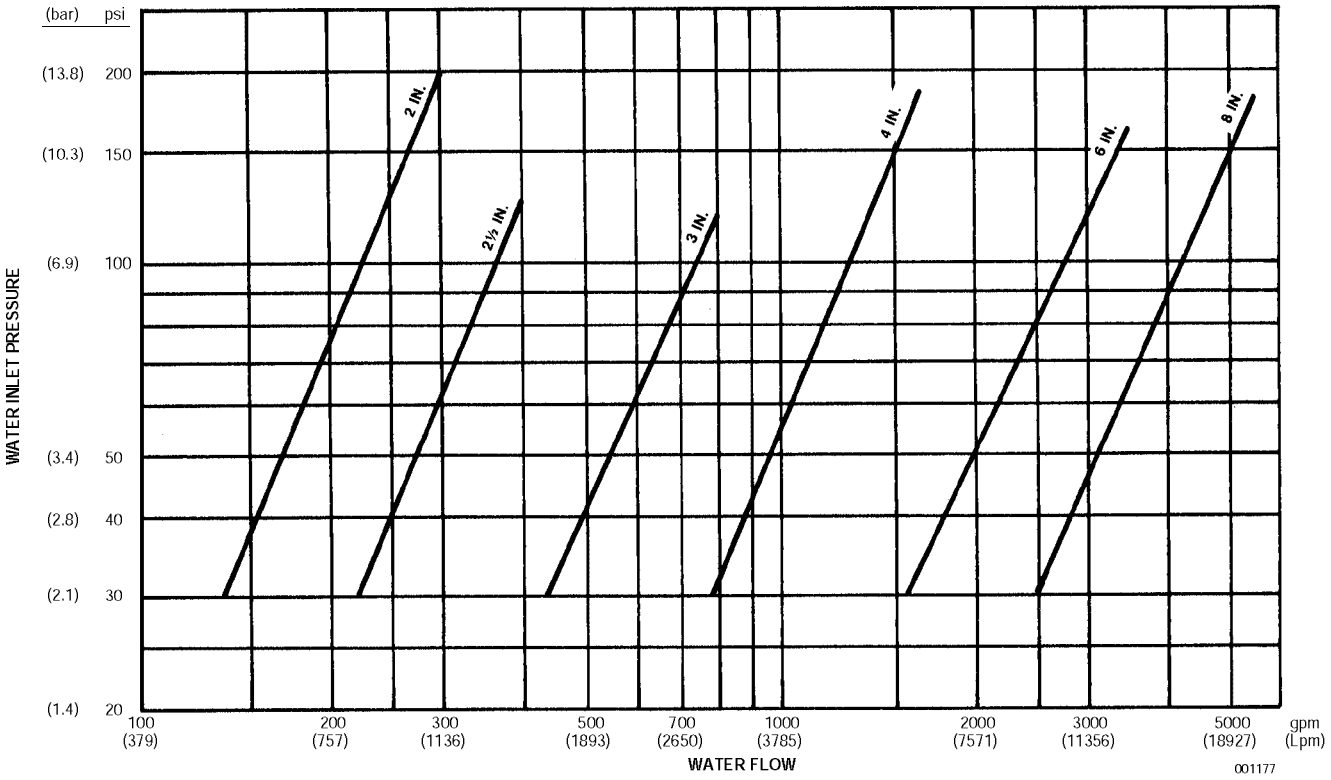
LEGEND:

- SHUT-OFF VALVE
- CHECK VALVE
- PRESSURE RELIEF VALVE
- PRESSURE GAUGE
- DUPLEX PRESSURE GAUGE
- COMPOUND PRESSURE GAUGE
- PROPORTIONER
- FLUSH CONNECTION
- STRAINER
- SPOOL VALVE
- DIRECTION OF FLOW

FRICTION LOSS CURVES (THROUGH PROPORTIONER)



MINIMUM INLET PRESSURE VERSUS WATER FLOW



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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Form No. F-9130-03

ATMOSPHERIC POLY FOAM CONCENTRATE TANKS

Data/Specifications

APPLICATION

An atmospheric foam concentrate storage tank is one component of a foam proportioning system. The high density cross-linked polyethylene (XLPE) storage tanks supplied by ANSUL® are compatible with all ANSUL foam concentrates including ANSULITE® AFFF, ANSULITE Alcohol Resistant AFFF, JET-X® High Expansion, SILV-EX®, along with ANSUL 3% Protein and Fluoroprotein concentrates. Because of the excellent properties of XLPE relating to stress crack resistance, impact strength, light weight and overall toughness, poly tanks are an excellent choice for many foam system applications. An atmospheric concentrate tank is typically used in conjunction with an ANSUL "balanced pressure pump proportioning" skid unit or "in-line balanced pressure proportioning" system. Additionally, similar tanks could be used with an ANSUL "line proportioning" system.

DESCRIPTION

The atmospheric poly foam concentrate tanks are supplied with fittings as shown on drawings enclosed. There are two (2) return fittings provided on all tanks located 180 degrees apart to enable ease and flexibility for piping on site. Either connection can be used as the foam concentrate return with the other return connection having the provided pipe plug installed. The poly tanks are translucent and have a level gauge strip for approximating tank contents.

Optional tank trim components are also available including:

- Tank Trim Package (2 in. pressure/vacuum vent and 1 1/2 in. drain valve)
- Low Liquid Level Float Switch – normally open or normally closed contact
- Flex Connectors (1 1/2 in. – 6 in.)
- Seismic Restraints (Contact Ansul Technical Services for details.)

Poly tanks of alternate sizes and configurations are also available. ANSUL can also provide tanks in fiberglass, carbon steel, and stainless steel. Contact ANSUL Applications Engineering Department for additional information.

SPECIFICATIONS

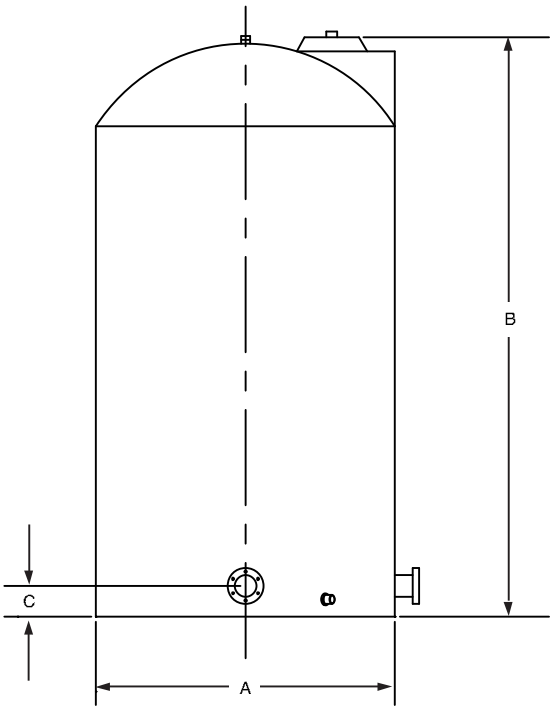
Storage tanks shall be designed for storage of foam concentrate at atmospheric pressure and shall be of vertical, cylindrical, high density cross-linked polyethylene construction. Tanks shall be equipped with the following: valved drain/fill connection, foam concentration pump suction and return connections, inspection hatch, pressure/vacuum vent valve, and gauge or unbreakable sight glass to permit visual determination of level of tank contents. The foam concentrate storage tank shall have a minimum capacity to provide sufficient foam concentrate for the time specified when the system is discharging foam solution at total maximum system flow.

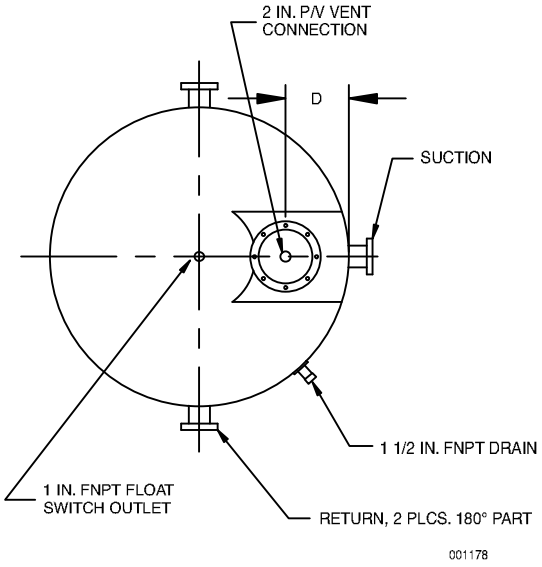
ORDERING INFORMATION

Part No.	Description	Approximate Shipping Weight lb.	(kg)
416850	100 gal (379 L) Poly Foam Tank	75	(34)
416851	205 gal (776 L) Poly Foam Tank	100	(45)
416852	295 gal (1117 L) Poly Foam Tank	125	(57)
▸ 416853	475 gal (1798 L) Poly Foam Tank	130	(59)
416854	540 gal (2044 L) Poly Foam Tank	150	(68)
416855	805 gal (3047 L) Poly Foam Tank	220	(100)
416856	1000 gal (3785 L) Poly Foam Tank	250	(113)
416857	1150 gal (4353 L) Poly Foam Tank	300	(137)
416858	1450 gal (5489 L) Poly Foam Tank	350	(159)
416859	2250 gal (8517 L) Poly Foam Tank	350	(159)
416860	2550 gal (9653 L) Poly Foam Tank	450	(204)
416861	3000 gal (11356 L) Poly Foam Tank	550	(250)
416862	3900 gal (14763 L) Poly Foam Tank	800	(363)
416863	5050 gal (19116 L) Poly Foam Tank	1300	(590)
404377	Tank Trim Package (2 in. P/V Vent and 1 1/2 in. Drain Vent)	25	(11)
403508	Low Liquid Level Switch (Normally Closed Contact)	15	(7)
405777	Low Liquid Level Switch (Normally Open Contact)	15	(7)
405613	Flex Connector – 1 1/2 in.	3	(1.4)
404886	Flex Connector – 2 in.	4	(1.8)
404854	Flex Connector – 3 in.	7	(3.2)
404855	Flex Connector – 4 in.	9	(4.1)
405538	Flex Connector – 6 in.	14	(6.4)
404382	Mineral Oil Concentrate Sealer – 5 gal Pail	45	(20)

Seismic Zone Restraints are available.

STORAGE TANK DIMENSIONAL INFORMATION





Ansul Part No.	Nominal Tank Size* Gal	(L)	Liquid Full Capacity Gal	(L)	A in.	(cm)	B in.	(cm)	C in.	(cm)	D in.	(cm)	Suction Diameter	Return Diameter	Shipping Weight lb	(kg)	Wall Thick. in.	(cm)
416850	100	379	106	401	23.0	58.4	66.50	168.9	8.0	20.3	11.5	29.2	2 in. FNPT	1.5 in. FNPT	75	34	0.25	0.64
416851	205	776	214	810	31.0	78.7	73.50	186.7	8.0	20.3	15.5	39.4	2 in. FNPT	1.5 in. FNPT	95	43	0.25	0.64
416852	295	1117	319	1208	46.0	116.8	53.00	134.6	8.0	20.3	23.0	58.4	2 in. FNPT	1.5 in. FNPT	115	52	0.25	0.64
► 416853	475	1798	503	1904	48.0	121.9	75.00	190.5	8.0	20.3	24.0	60.9	2 in. FNPT	1.5 in. FNPT	125	57	0.25	0.64
416854	540	2044	565	2139	48.0	121.9	81.75	207.6	8.0	20.3	17.5	44.5	3 in. Flange	2 in. FNPT	165	75	0.25	0.64
416855	805	3047	834	3157	48.0	121.9	119.00	302.3	8.0	20.3	14.0	35.6	3 in. Flange	2 in. FNPT	215	98	0.25	0.64
416856	1000	3785	1164	4406	86.0	218.4	56.50	143.5	8.0	20.3	17.5	44.5	3 in. Flange	2 in. FNPT	230	104	0.31	0.79
416857	1150	4353	1229	4652	64.0	162.6	98.50	250.2	8.0	20.3	18.0	45.7	3 in. Flange	3 in. Flange	290	132	0.31	0.79
416858	1450	5489	1611	6098	86.0	218.4	75.00	190.5	8.0	20.3	16.0	40.6	3 in. Flange	3 in. Flange	310	141	0.31	0.79
416859	2250	8517	2492	9433	96.0	243.8	93.25	236.9	8.0	20.3	18.5	47.0	4 in. Flange	3 in. Flange	360	163	0.38	0.97
416860	2550	9653	2701	10224	85.0	215.9	123.50	313.7	8.0	20.3	19.0	48.3	4 in. Flange	3 in. Flange	455	206	0.38	0.97
416861	3000	11356	3173	12011	85.0	215.9	139.50	354.3	8.0	20.3	19.0	48.3	4 in. Flange	3 in. Flange	655	297	0.44	1.12
416862	3900	14763	4131	15637	94.0	238.8	152.75	388.0	10.0	25.4	23.5	59.7	6 in. Flange	4 in. Flange	880	399	0.56	1.42
416863	5050	19116	5244	19851	94.0	238.8	192.25	488.3	10.0	25.4	23.0	58.4	6 in. Flange	4 in. Flange	1550	703	0.75	1.91

* Nominal tank size is used for design purposes. Up to 1.3% of nominal tank size volume may not discharge from tank based on suction drop tube being 1" from tank bottom. (liquid pad)

Tank sizing should include room for required agent quantity + liquid pad + thermal expansion of agent (2.5% of fill volume) + required 1/4" mineral oil sealer.

Manufacturing tolerance for A and B dimensions are + / – 3% of number shown.

Notes for factory installed fittings:

1. 1.5 in. and 2 in. connections are PVC Bulk Head Type with FNPT, 3 in. and larger connections are PVC gusseted bolt on flange type which mate to Standard ANSI Flange Connection for Pipe Size shown.
2. All Flanged Connections extend 6.5 in. (17 cm) from tank wall to flange face
3. Suction connections supplied with drop tube.
4. (1) return connection supplied with appropriate plug or blind flange, float switch connection supplied with pipe plug.
5. ► 100-295 gallon (379-1117 L) tanks have 7 in. (18 cm) threaded inspection port; 540-1450 gallon (2044-5489 L) tanks have a 19 in. (48 cm) bolted ► manway with a 10 in. (25 cm) threaded inspection port. (Exception: 475 gallon (1798 L) and 1000 gallon (3785 L) tanks have 17 in. (43 cm) manway); 2250-5050 gallon (8517-19116 L) tanks have a 24 in. (61 cm) combination manway.

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Form No. F-93215-3

ANSUL

by Tyco Fire Suppression & Building Products

FOAM SYSTEMS LINE PROPORTIONERS

Data/Specifications

APPLICATION

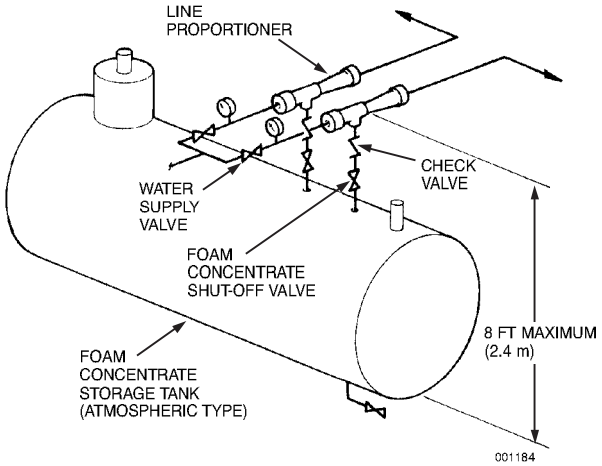
ANSUL line proportioners are designed to introduce a controlled flow of foam concentrate into a pressurized water stream. They provide an inexpensive foam proportioning means for systems requiring fixed flow rates and where available water supply pressures are adequate. Depending on specific foam systems design, line proportioners may operate with inlet pressures as low as 80 psi (552 kPa). However, in most systems a water pressure between 125 psi and 200 psi (862 and 1379 kPa) is required. The flow rate and operating pressure required at the foam making device are of primary importance in determining the required line proportioner inlet pressure. The line proportioner must match the flow rate of the foam making discharge device.

ANSUL model "PL" line proportioners can be used with all types of foam concentrates. The proportioners are available in a wide range of sizes for fixed foam system applications. These applications also require an atmospheric foam concentrate storage tank as shown in the Typical Line Proportioning System schematic.

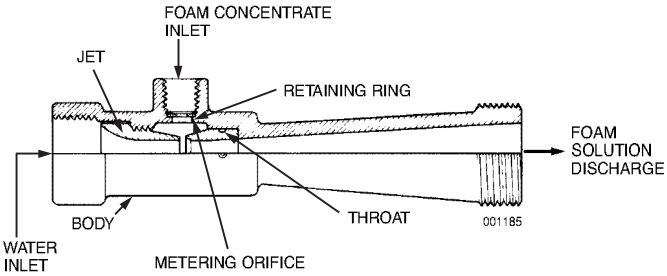
Portable line proportioners with fire hose thread connections (typically for use with matched handline nozzles) are also available for the PL-60 through PL-350 sizes.

Typical applications include use by municipal fire departments and CFR type vehicles, or with fixed systems for protecting flammable liquid storage tanks, loading racks, dike areas, and anywhere flammable liquids are used, stored, processed, or transported.

Typical Line Proportioning System



Line Proportioner Cross Section



DESCRIPTION

Each ANSUL line proportioner consists of a body, jet, throat, and metering orifice – all of which are corrosion-resistant brass.

The line proportioner body is designed with a female NPT threaded inlet and a male NPT threaded outlet (see Line Proportioner Dimensions). The proportioner body is clearly marked with a flow direction arrow and the designed concentration percentage.

The inlet jet is secured by a stainless steel retaining ring on models PL-60 through PL-350; the inlet jet is threaded in place on models PL-420 through PL-730. The metering orifice or adjustable metering valve is sized according to the type and percentage of foam concentrate used. The metering orifice is secured with a stainless steel retaining ring to enable ease of change-over to other concentrate percentages.

In fixed systems, the line proportioner may be mounted at a maximum distance of 8 ft (2.4 m) above the minimum foam liquid surface.

SPECIFICATIONS

The line proportioner body, jet, and throat shall be of brass construction. Retaining rings for both the inlet jet and the metering orifice shall be stainless steel.

The line proportioner body shall have a female NPT inlet and male NPT outlet (see Line Proportioner Dimensions). The body shall be clearly marked with a flow direction arrow and the percentage of foam concentrate that the proportioner was designed to provide.

The convergent inlet jet shall have a rounded inlet and a smooth machined finish to ensure minimum friction loss. It shall be retained by a stainless steel retaining ring or shall be threaded in place. The inlet jet shall terminate in the foam concentrate annulus chamber, and shall be concentric with and set back from the throat and pressure recovery section. Line proportioner outlet pressure recovery shall be 65% of the inlet pressure. The line proportioner shall be approved for mounting up to a maximum height of 8 ft (2.4 m) above the minimum foam liquid surface.

The foam concentrate metering orifice shall be machined to the proper diameter for the agent. It shall rest on a machined surface to prevent leakage and shall be secured by a removable stainless steel retaining ring.

ORDERING INFORMATION

Line Proportioner Model	Part No. with 3% Concentrate Orifice	Part No. with 6% Concentrate Orifice	Approximate Shipping Weight lb	(kg)
PL-60	75650	75656	7	(3.2)
PL-95	75662	75668	7	(3.2)
PL-120	75674	75679	12	(5.4)
PL-210	75684	75689	19	(8.6)
PL-240	76890	76895	19	(8.6)
PL-280	75694	75699	19	(8.6)
PL-350	75704	75709	19	(8.6)
PL-420	71508	71504	24	(10.9)
PL-480	71518	71514	24	(10.9)
PL-550	71528	71524	24	(10.9)
PL-600	71538	71534	29	(13.2)
PL-660	71548	71544	29	(13.2)
PL-730	71558	71554	29	(13.2)

Flow Rate at Given Pressure

Line Proportioner Model	K Factor Water (No Proportioning)	K Factor 3%	K Factor 6%
PL-60	4.3	4.5	4.6
PL-95	6.7	7.0	7.1
PL-120	8.5	8.8	9.0
PL-210	15.3	15.9	16.2
PL-240	16.8	17.4	17.8
PL-280	20.2	21.0	21.5
PL-350	26.3	27.2	27.9
PL-420	32.1	33.2	34.1
PL-480	35.5	36.8	37.7
PL-550	41.8	43.3	44.4
PL-600	44.2	45.8	46.9
PL-660	50.1	51.9	53.2
PL-730	56.3	58.4	59.8

Formula: $Q = (K\sqrt{P})$

Example: Find flow of PL-350 @ 180 psi (1241 kPa) when used with a 3% foam concentrate:

PL-350 3% K Factor		27.2
Square root of 180 psi	X	13.41
FLOW RATE		365 gpm @ 180 psi (1382 Lpm @ 1241 kPa)

INSTALLATION REQUIREMENTS

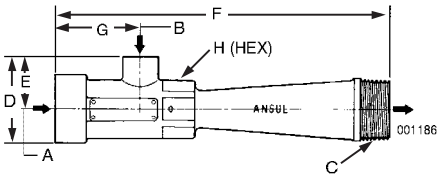
1. The line proportioner must not be mounted more than 8 ft (2.4 m) above the minimum foam concentrate liquid level as shown on Page 1.
2. Downstream pipe, fittings, elevation head, and discharge devices must not result in line proportioner outlet backpressure in excess of 65% of line proportioner inlet pressure. (Consult with the system designer to verify.)
3. A check valve must be installed in the foam concentrate line with the direction of flow from the foam concentrate storage tank to the line proportioner. (See Page 1.)
4. A shutoff valve in the foam concentrate line is recommended to enable flush out of foam solution piping or allow for water only discharge. (See Page 1.)
5. Piping to foam concentrate inlet must be sized to match the foam concentrate inlet piping size. (See Dimension B below.)
6. The foam concentrate inlet line should not exceed 11 ft (3.4 m) of pipe, two 90° elbows, one swing check valve, and one nonrestricting shutoff valve.

NOTICE

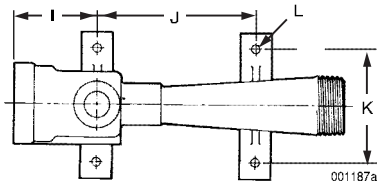
Exceeding foam concentrate line limitations or using pipe sizes smaller than the foam concentrate inlet of the line proportioner may reduce concentration percentages.

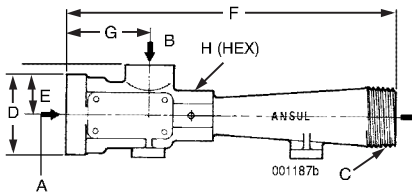
LINE PROPORTIONER DIMENSIONS

MODELS PL-420 THROUGH PL-730



MODELS PL-60 THROUGH PL-350





Dimensions – Inches (cm)

	A	B	C	D	E	F	G	H	I	J	K	L
PL-60	1 1/2 – 11 1/2 NPT	1/2 – 14 NPT	1 1/2 – 11/12 NPT	2.50 (6.35)	1.59 (4.04)	10.00 (25.40)	2.47 (6.27)	1.25 (3.18)	2.47 (6.25)	5.00 (12.70)	3.50 (8.89)	.281 (.714)
PL-95	1 1/2 – 11 1/2 NPT	1/2 – 14 NPT	1 1/2 – 11/12 NPT	2.50 (6.35)	1.59 (4.04)	10.25 (26.04)	2.63 (6.68)	1.38 (3.51)	2.63 (6.68)	5.00 (12.70)	3.50 (8.89)	.281 (.714)
PL-120	2 1/2 – 8 NPT	1/2 – 14 NPT	2 1/2 – 8 NPT	3.56 (9.04)	2.38 (10.80)	14.25 (36.20)	2.88 (7.32)	2.00 (5.08)	2.88 (7.32)	8.00 (20.32)	3.50 (8.89)	.281 (.714)
PL-210	2 1/2 – 8 NPT	1 – 11 1/2 NPT	2 1/2 – 8 NPT	3.75 (9.53)	2.69 (6.83)	16.00 (40.64)	4.25 (10.80)	2.63 (6.68)	4.25 (10.80)	8.50 (21.59)	4.00 (10.16)	.343 (.87)
PL-240	2 1/2 – 8 NPT	1 – 11 1/2 NPT	2 1/2 – 8 NPT	3.75 (9.53)	2.69 (6.83)	16.00 (40.64)	4.25 (10.80)	2.63 (6.68)	4.25 (10.80)	8.50 (21.59)	4.00 (10.16)	.343 (.87)
PL-280	2 1/2 – 8 NPT	1 – 11 1/2 NPT	2 1/2 – 8 NPT	3.75 (9.53)	2.69 (6.83)	16.00 (40.64)	4.25 (10.80)	2.63 (6.68)	4.25 (10.80)	8.50 (21.59)	4.00 (10.16)	.343 (.87)
PL-350	2 1/2 – 8 NPT	1 – 11 1/2 NPT	2 1/2 – 8 NPT	3.75 (9.53)	2.69 (6.83)	16.00 (40.64)	4.25 (10.80)	2.63 (6.68)	4.25 (10.80)	8.50 (21.59)	4.00 (10.16)	.343 (.87)
PL-420	2 1/2 – 8 NPT	1 – 11 1/2 NPT	3 – 8 NPT	4.03 (10.24)	2.97 (7.54)	18.38 (46.69)	4.75 (12.07)	3.00 (7.62)				
PL-480	2 1/2 – 8 NPT	1 – 11 1/2 NPT	3 – 8 NPT	4.03 (10.24)	2.97 (7.54)	18.38 (46.69)	4.75 (12.07)	3.00 (7.62)				
PL-550	2 1/2 – 8 NPT	1 – 11 1/2 NPT	3 – 8 NPT	4.03 (10.24)	2.97 (7.54)	18.38 (46.69)	4.75 (12.07)	3.00 (7.62)				
PL-600	3 – 8 NPT	1 1/4 – 11 1/2 NPT	4 – 8 NPT	4.38 (11.13)	3.21 (8.15)	20.19 (51.28)	5.06 (12.85)	3.25 (8.26)				
PL-660	3 – 8 NPT	1 1/4 – 11 1/2 NPT	4 – 8 NPT	4.38 (11.13)	3.21 (8.15)	20.19 (51.28)	5.06 (12.85)	3.25 (8.26)				
PL-730	3 – 8 NPT	1 1/4 – 11 1/2 NPT	4 – 8 NPT	4.38 (11.13)	3.21 (8.15)	20.19 (51.28)	5.06 (12.85)	3.25 (8.26)				

NOTICE

Mounting feet are not provided with models PL-420 through PL-730.

tyco Fire Suppression & Building Products

www.ansul.com
One Stanton Street
Marinette, WI 54143-2542

Form No. F-8739-3

AROUND-THE-PUMP PROPORTIONING SYSTEMS

Data/Specifications

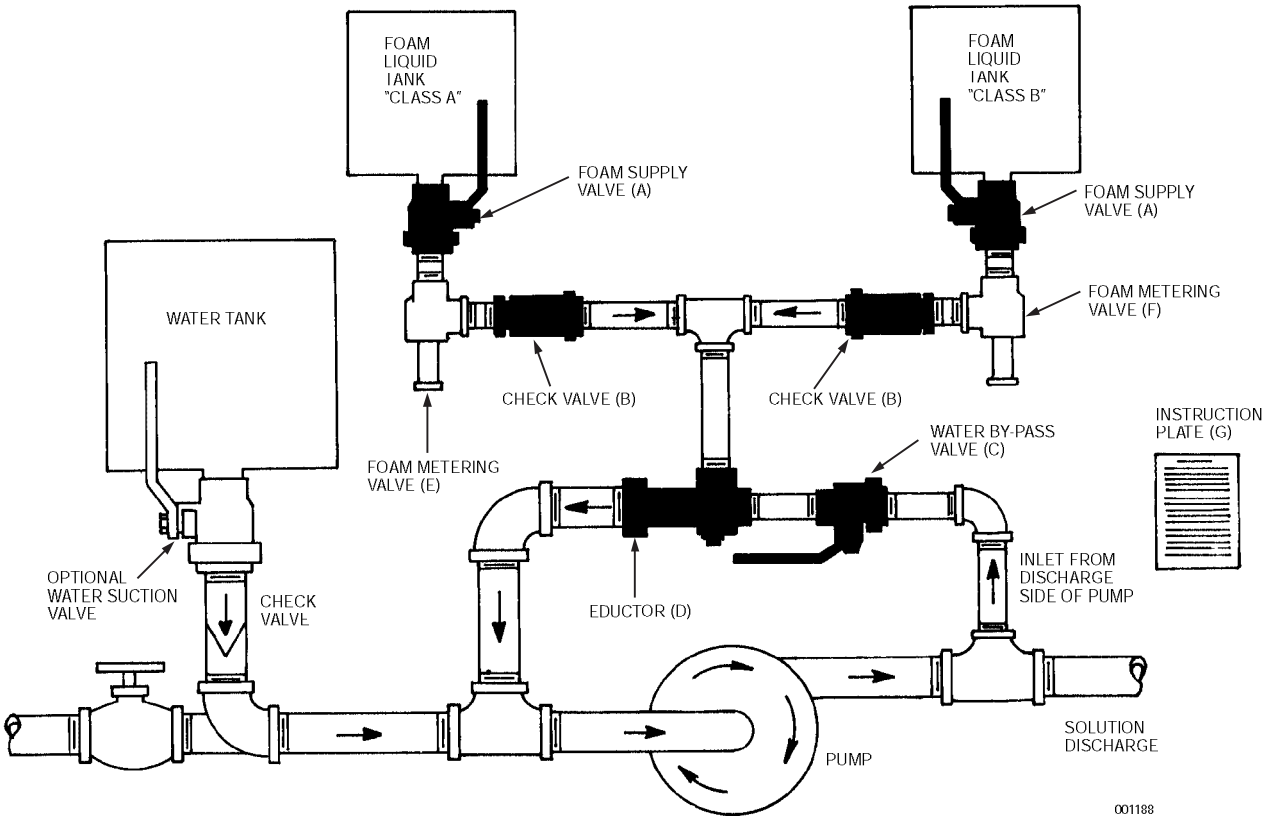
APPLICATION

The ANSUL® Around-The-Pump proportioning systems provide a simple and effective means to introduce a foam concentrate at the desired percentage to the water being discharged in a fire pump system. The number of different foam concentrates is only limited by available space as each foam concentrate would require its own separate tank. The types of foam concentrates might typically include ANSULITE® AFFF of either 1%, 3%, or 6%; ANSULITE AR-AFFF of either 3X3 LV or ARC types; or SILV-EX® Class A foam concentrate. A fire truck pumper system may therefore have a dual proportioning system with one tank having a Class B foam concentrate for flammable liquid fires and a second tank having Class A foam concentrate for structural fire attack or other ordinary combustible fire materials.

Besides applications for fire pumper trucks, an around-the-pump proportioning system can be used aboard various shipboard applications where the addition of foam to water is desired to enhance the fire fighting operations. Only a fire pump with the inlet pressure to the pump not exceeding 10 psi is required for proper operation. The sole limitations are that the flow rate is within the around-the-pump proportioning system range with the type of foam concentrate selected.

DESCRIPTION

With an ANSUL Around-The-Pump proportioning system a small portion of the discharge from the pressure side of the pump serves as a "drive motor" being recirculated through an eductor to the suction side of the pump. The eductor is a modified venturi device which creates a suction, drawing foam concentrate into it at a rich ratio. At the junction point of the piping from the eductor and the water suction line, the rich foam solution is mixed with the incoming water and is diluted to the proper foam solution concentration. After the initial cycle, the operation is continuous, with a portion of the foam solution utilized as the "drive motor." Adjustment of a foam concentrate metering valve is initially required, but once properly set, the operation is continuous and automatic. In the event of a complete shutdown at the discharge nozzle(s), the system is check valved to prevent entry of water into the concentrate storage tank.



TECHNICAL INFORMATION

Dual B-2 Package – Part No. 420011

Flow Rate*	Type of Foam Concentrate	A	B	C	D	E	F	G
20-400 gpm (75-1514 lpm)	Class A and B	(2) 1 in Supply Valves Part No. 420081	(2) 1 in Check Valves Part No. 420783	3/4 in By-Pass Valve Part No. 420080	Eductor Part No. 420016 3/4 in water inlet 1 in foam concentrate inlet 1 1/2 in foam solution outlet	Class A 1 in Foam Metering Valve Part No. 420018	Class B 1 in Foam Metering Valve Part No. 420017	Instruction Plate Part No. 420792
B-2 Package – Part No. 420012								
20-400 gpm (75-1514 lpm)	Class B	1 in. Supply Valve Part No. 420081	1 in. Check Valve Part No. 420783	3/4 in. By-Pass Valve Part No. 420080	Eductor Part No. 420016 3/4 in. water inlet 1 in foam concentrate inlet 1 1/2 in foam solution outlet	---	Class B 1 in Foam Metering Valve Part No. 420017	Instruction Plate Part No. 420792
W-2 Package – Part No. 420013								
20-400 gpm (75-1514 lpm)	Class A	1 in Supply Valve Part No. 420081	1 in Check Valve Part No. 420783	3/4 in By-Pass Valve Part No. 420080	Eductor Part No. 420016 3/4 in water inlet 1 in foam concentrate inlet 1 1/2 in foam solution outlet	Class A 1 in Foam Metering Valve Part No. 420018	---	Instruction Plate Part No. 420792
1200 Package – Part No. 420014								
60-1200 gpm (227-4543 lpm)	Class B	1 in Supply Valve Part No. 420081	1 in Check Valve Part No. 420783	3/4 in By-Pass Valve Part No. 420080	Eductor Part No. 420795 3/4 in water inlet 1 in foam concentrate inlet 1 1/2 in foam solution outlet	---	Class B 1 in Foam Metering Valve Part No. 420019	Instruction Plate Part No. 420800
1600 Package – Part No. 420015								
150-1600 gpm (568-6057 lpm)	Class B	1 1/2 in Supply Valve Part No. 420083	1 1/2 in Check Valve Part No. 420831	1 1/2 in By-Pass Valve Part No. 420083	Eductor Part No. 420801 2 in water inlet 2 in water foam concentrate inlet 2 in foam solution outlet Valve	---	Class B 1 1/2 in Foam Metering Part No. 420808	Instruction Plate Part No. 420832

* Flow rates listed apply to 3% ANSUL foam concentrates.

ORDERING INFORMATION

Part No.	Description	Approximate Shipping Wt. lb	(kg)
420011	ATP, Model Dual B-2 Package (20-400 gpm) Class A and B (76-1515 lpm)	60	(27)
420012	ATP, Model B-2 Package (20-400 gpm) Class B (76-1515 lpm)	50	(23)
420013	ATP, Model W-2 Package (20-400 gpm) Class A (76-1515 lpm)	50	(23)
420014	ATP, Model 1200 Package (60-1200 gpm) Class B (227-4543 lpm)	75	(34)
420015	ATP, Model 1600 Package (150-1600 gpm) Class B (227-4543 lpm)	75	(34)

ANSUL tyco
Ansul Incorporated
Marinette, WI 54143-2542
715-735-7411
www.ansul.com

Form No. F-9490-1

ANSULITE 3% (AFC-3A) AFFF Concentrate

Description

ANSULITE 3% (AFC-3A) AFFF (Aqueous Film-Forming Foam) Concentrate is formulated from specialty fluorochemical and hydrocarbon type surfactants along with solvents. It is transported and stored as a concentrate to provide ease of use and considerable savings in weight and volume.

It is intended for use as a 3% proportioned solution in fresh, salt or hard water. It may also be used and stored as a 3% premixed solution in fresh or potable water only. The correct proportioning or mixture ratio is 3 parts concentrate to 97 parts water.

Three fire suppressing mechanisms are in effect when using ANSULITE 3% (AFC-3A) AFFF Concentrate. First, an aqueous film is formed which works to help prevent the release of fuel vapor. Second, the foam blanket from which the film-forming liquid drains effectively excludes oxygen from the fuel surface. Third, the water content of the foam provides a cooling effect.

TYPICAL PHYSIOCHEMICAL PROPERTIES AT 77 °F (25 °C)

Appearance	Colorless to Pale Yellow Liquid
Density	1.026 g/ml ± 0.020
pH	7.0 – 8.5
Refractive Index	1.3490 ± 0.0025
Surface Tension (3% Solution)	18 ± 1 dynes/cm
Viscosity	2.9 ± 1 centistokes

Application

ANSULITE 3% (AFC-3A) AFFF Concentrate is intended for use on Class B hydrocarbon fuel fires having low water solubility such as various crude oils, gasolines, diesel fuels, aviation fuels, etc. **It is not suitable for use on fuels having appreciable water solubility (polar solvents), i.e., methyl and ethyl alcohol, acetone, and methyl ethyl ketone.** It can be used with both aspirating and non-aspirating discharge devices because of the low energy required to make it foam.

The excellent wetting characteristics make it useful in combating Class A fires as well. It can be used with dry chemical suppressing agents without regard to the order of application to provide even greater fire protection capability.

009138

Fire Performance

ANSULITE 3% (AFC-3A) AFFF Concentrate has been tested to Underwriters Laboratories Standard 162. Reports covering this fire performance are available on request since standards and specifications such as those cited are continuously being upgraded and changed.

Foaming Properties

When used with fresh, salt, or hard water, at the correct dilution with most conventional foam making equipment, the expansion ratio will vary depending on the performance characteristics of the equipment. Aspirating discharge devices produce expansion ratios from 6:1 to 10:1 depending primarily on type of aspirating device and flow rate. Subsurface injection is a special case where generally expansion ratios of 2:1 to 3:1 are preferred but up to 4:1 is allowed. Non-aspirating devices such as handline water fog/stream nozzles or standard sprinkler heads give expansion ratios of 2:1 to 4:1.

Proportioning

ANSULITE 3% (AFC-3A) AFFF Concentrate can be easily proportioned (at the correct dilution) using most conventional proportioning equipment such as:

1. Balanced pressure and in-line balanced pressure pumped proportioning equipment
2. Balanced pressure bladder tank proportioners
3. Around-the-pump type proportioners
4. Fixed or portable (in-line) venturi type proportioners
5. Handline nozzles with fixed induction/pickup tubes

The usable temperature range for ANSULITE 3% (AFC-3A) AFFF Concentrate with this equipment is 35 °F to 120 °F (2 °C to 49 °C).

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Storage/Shelf Life

When stored in the packaging supplied (polyethylene drums or pails) or in equipment recommended by the manufacturer as part of the foam system and within the temperature limits specified, the shelf life of ANSULITE 3% (AFC-3A) AFFF Concentrate may exceed 20 years.

The factors affecting shelf life and stability for ANSULITE AFFF concentrates are discussed in detail in ANSUL® Technical Bulletin No. 54. If the product is frozen during storage or transportation, thawing will render the product completely usable. Gentle mixing after freeze-thaw cycle is recommended.

Compatibility

Refer to ANSUL Technical Bulletin No. 64 for a detailed discussion of compatibility.

Different types of foam concentrates, i.e., AFFF, protein base, etc., should not be mixed under any circumstances.

Materials of Construction Compatibility

Tests have been performed with ANSULITE 3% (AFC-3A) AFFF Concentrate verifying its compatibility with standard carbon steel "black" pipe and pipe manufactured from various stainless steel or brass compounds. Alternative pipe, fittings, and valves may be used in some cases if acceptable to the customer and/or the authority having jurisdiction. Refer to ANSUL Technical Bulletin No. 59 addressing acceptable materials of construction for use with ANSUL foam concentrates.

Galvanized pipe and fittings must not be used in areas where undiluted concentrate will contact them since corrosion will result.

Please **first** consult Tyco Fire Protection Products for specific guidelines concerning materials of construction.

Inspection

As with any fire suppressing agent, ANSULITE 3% (AFC-3A) AFFF Concentrate, whether in the concentrate or pre-mixed form, should be inspected periodically per requirements of NFPA 11 "Standard for Low-, Medium-, and High-Expansion Foam." Annually submit samples to the manufacturer or a qualified laboratory for quality condition testing. Refer to the Field Inspection Manual (Part No. 31274) for detailed inspection procedures. An annual inspection is recommended unless unusual conditions of exposure occur such as described in ANSUL Technical Bulletin No. 54. In such cases, contact Tyco Fire Protection Products for more information.

Approvals and Listing

ANSULITE 3% (AFC-3A) AFFF Concentrate is approved, qualified under, listed or meets the requirements of the following specifications and standards:

Underwriters Laboratories Inc. – UL Standard 162

1. Foam Quality Tests
2. Class B Hydrocarbon Fuel Fire Tests
3. Foam Identification Tests
4. Tests of Shipping Containers
5. Class B Hydrocarbon Fuel Sprinkler Tests (Foam water and standard type both upright and pendent approvals)

Factory Mutual Research Corporation – Approval Guide

It is impractical to list ANSULITE 3% AFFF Concentrate with every piece of UL listed hardware. Moreover, there are numerous foam hardware components without UL listings that cannot be listed for use with any AFFF concentrate.

Many unlisted pieces of foam hardware should be similar to those listed. However, on installations where ANSULITE 3% (AFC-3A) AFFF Concentrate may be used with hardware components of significantly different types than those tested, contact Technical Services for recommendations.

Ordering Information

ANSULITE 3% (AFC-3A) Concentrate is available in pails, drums, totes, or bulk shipment.

Part No.	Description	Shipping Weight	Cube
55800	Pail 5 gal (19 L)	45 lb (20.4 kg)	1.25 ft^3 (0.0353 m^3)
55809	Drum 55 gal (208 L)	495 lb (224.5 kg)	11.83 ft^3 (0.335 m^3)
431499	Tote 265 gal (1000 L)	2465 lb (1118 kg)	50.05 ft^3 (1.42 m^3)
26700	Bulk Order	Contact Technical Services	

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

ANSULITE® ARC 3% or 6% AR-AFFF CONCENTRATE

Data/Specifications

DESCRIPTION

ANSULITE® ARC (Alcohol-Resistant Concentrate) 3% or 6% AR-AFFF (Aqueous Film-Forming Foam) Concentrate is formulated from special fluorochemical and hydrocarbon surfactants, a high molecular weight polymer, and solvents. It is transported and stored as a concentrate to provide ease of use and considerable savings in weight and volume.

It is intended for use as a 3% or 6% proportioned solution (depending on the type of fuel) in fresh, salt or hard water. It may also be used and stored as a premixed solution in fresh or potable water for use with the ANSUL® Model AR-33-D wheeled fire extinguisher.

There are three fire extinguishing mechanisms in effect when using ANSULITE ARC 3% or 6% AR-AFFF Concentrate on either a conventional Class B hydrocarbon fuel such as gasoline, diesel fuel, etc., or a Class B polar solvent (water miscible fuel) such as methyl alcohol, acetone, etc. First, an aqueous film is formed in the case of a conventional hydrocarbon fuel, or a polymeric membrane in the case of a polar solvent fuel. This film or membrane forms a barrier to help prevent the release of fuel vapor. Second, regardless of the fuel type, a foam blanket is formed which excludes oxygen and from which drains the liquids that form the film or the polymeric membrane. Third, the water content of the foam produces a cooling effect.

Physiochemical Properties at 77 °F (25 °C)

Appearance	Pale Yellow Gelled Liquid
Density	1.000 g/ml ± 0.02
pH	7.0 – .8.5
Refractive Index	1.3480 ± 0.0020
Surface Tension (3% Solution)	18 ± 1 dynes/cm
Viscosity	2525 ± 700 centipoise*

*Brookfield Viscometer Spindle #4, Speed 30

ANSULITE ARC 3% or 6% AFFF Concentrate is a non-Newtonian fluid that is both pseudoplastic and thixotropic. Because of these properties, dynamic viscosity will decrease as shear increases.

APPLICATION

ANSULITE ARC 3% or 6% AR-AFFF Concentrate is unique among AFFF agents in that it can be used on either conventional Class B fuels or the polar solvent type Class B fuels. Its excellent wetting characteristics make it useful in combating Class A Fires as well. Because of the low energy to make foam, it can be used with both aspirating and non-aspirating discharge devices.

To provide even greater fire protection capability, it can be used with dry chemical extinguishing agents without regard to the order of application to provide even greater fire protection capability. Due to the velocity of the dry chemical discharge, care must be taken **not** to submerge the polymeric membrane below the fuel surface.

APPLICATION RATES

Application Rates using UL 162 Standard 50 ft^2 Fire Test on representative hydrocarbon and polar solvent fuels are listed below.

UL Type II Application(1) – Polar Solvents

Fuel Group	Concentration	UL(2) Recommended Application Rate gpm/ft^2	(Lpm/m^2)
Alcohol			
Methanol (MeOH)	6%	**0.10**	(4.1)
Ethanol (EtOH)	6%	**0.10**	(4.1)
Isopropanol (IPA)	6%	**0.15**	(6.1)
Ketone			
Acetone	6%	**0.15**	(6.1)
Methyl Ethyl Ketone (MEK)	6%	**0.15**	(6.1)
Carboxylic Acid			
Acetic Acid	6%	**0.17**	(6.9)
Aldehyde			
Propionaldehyde	6%	**0.17**	(6.9)
Ester			
Ethyl Acetate	6%	**0.10**	(4.1)
Butyl Acetate	6%	**0.10**	(4.1)
U.L. Type III Application(3) – Hydrocarbons			
Heptane	3%	**0.10**	(4.1)
Toluene	3%	**0.10**	(4.1)
Gasoline	3%	**0.10**	(4.1)
10% Gasohol (EtOH)	3%	**0.10**	(4.1)

(1) TYPE II DISCHARGE OUTLET – A device that delivers foam onto the burning liquid and partially submerges the foam or produces restricted agitation of the surface as described in UL 162.

(2) UL builds in a 5/3 safety factor from its test rate to its recommended rate of application.

(3) TYPE III DISCHARGE OUTLET – A device that delivers the foam directly onto the burning liquid as described in UL 162.

PERFORMANCE

Fire Performance – The fire performance of ANSULITE ARC 3% or 6% AR-AFFF Concentrate is measured primarily against Underwriters Laboratories Standard 162.

Foaming Properties – When used with fresh, salt or hard water, at the correct dilution with most conventional foam making equipment, the expansion will vary depending on the performance characteristics of the equipment. Aspirating discharge devices produce expansion ratios of from 5:1 to 10:1 depending primarily on type of aspirating device and flow rate. Non-aspirating devices such as handline water fog/stream nozzles or standard sprinkler heads give expansion ratios of 2:1 to 4:1.

Proportioning – ANSULITE ARC 3% or 6% AR-AFFF Concentrate can be easily proportioned (at the correct dilution) using most conventional proportioning equipment such as:

1. Balanced pressure and in-line balanced pressure pumped proportioning equipment
2. Balanced pressure bladder tank type proportioner
3. Around-the-pump proportioners
4. Fixed or portable (in-line) venturi type proportioners
5. Handline nozzles with fixed induction/pickup tubes

The minimum and maximum usable temperature for ANSULITE ARC 3% or 6% AR-AFFF Concentrate in this equipment is 35 °F (2 °C) to 120 °F (49 °C) respectively.

Storage/Shelf Life – When stored in the packaging supplied (polyethylene drums or pails) or in equipment recommended by the manufacturer and within the temperature limits specified, the shelf life of ANSULITE ARC 3% or 6% AR-AFFF Concentrate is about 20-25 years. The factors affecting shelf life and stability for ANSULITE AFFF Agents are discussed in detail in Ansul Technical Bulletin No. 54. Freezing of the product should be avoided. If, however, the product is frozen during transport or storage, it must be thawed and inspected for signs of separation. If separation has occurred, the product must be mechanically mixed until homogeneous.

When the concentrate is to be stored in an atmospheric storage tank, a 1/4 in. layer of mineral oil should be added to seal the concentrate and minimize the effects of evaporation.

Compatibility – Since ANSULITE ARC 3% or 6% AR-AFFF Concentrate is a unique blend of surfactants, high molecular weight polymers, and solvents; it is recommended that ANSUL be consulted before ANSULITE ARC concentrate is mixed with any other concentrates.

Materials of Construction Compatibility – Tests have been performed with ANSULITE ARC Concentrate verifying its compatibility with standard carbon steel "black" pipe and pipe manufactured from various stainless steel or brass compounds. Alternative pipe, plastic fittings, and valves may be used in some cases if acceptable to the customer and/or the authority having jurisdiction. Refer to Ansul Technical Bulletin No. 59, Form No. F-90109, addressing acceptable materials of construction for use with ANSUL foam concentrates.

Galvanized pipe and fittings must not be used in areas where undiluted concentrate will contact them since corrosion will result.

Please **first** consult Ansul Fire Protection for specific guidelines concerning materials of construction.

Inspection – As with any fire extinguishing agent, ANSULITE ARC 3% or 6% AR-AFFF Concentrate, whether in the concentrate or pre-mixed form, should be inspected periodically. Please refer to the Field Inspection Manual, (Part No. 31274), for the detailed procedures to perform this inspection. An annual inspection is recommended unless unusual conditions of exposure occur such as are described in Ansul Technical Bulletin No. 54. In such cases, ANSUL's recommendation should be sought.

APPROVALS AND LISTINGS

There are no military or federal specifications covering products such as ANSULITE ARC 3% or 6% AR-AFFF Concentrate.

Underwriters Laboratories successfully tested ANSULITE ARC 3% or 6% AR-AFFF Concentrate to the requirements contained in the UL Standard 162, "Standard for Air-Foam Equipment and Liquid Concentrates." To receive the UL listing, the following tests had to be performed successfully:

1. Foam Quality Tests
2. Class B Hydrocarbon Fuel Fire Tests
3. Class B Polar Solvent Fuel Fire Tests
4. Foam Identification Tests
5. Tests of Shipping Containers
6. Class B Hydrocarbon and Polar Solvent Fuel Sprinkler Tests (Standard type both upright and pendent)
7. Subsurface Injection

Besides determining agent characteristics, Underwriters Laboratories lists ANSULITE ARC foam concentrate for use with specific hardware components that also carry the UL listing. To obtain these listings, ANSUL selected various hardware components from the major U.S. manufacturers of foam hardware.

ORDERING INFORMATION

ANSULITE ARC 3% or 6% AR-AFFF Concentrate is available in pails, drums, totes, or bulk shipment.

Part No. 55797	5 gallon pail
Part No. 55808	55 gallon drum
Part No. 432157	265 gallon tote
Part No. 56084	Bulk (contact ANSUL about domestic truckload delivery)

Shipping Weight:

5 gal (19 L) pail – 45 lb (20.4 kg)

55 gal (208.1 L) drum – 495 lb (224.5 kg)

265 gal (1000 L) tote – 2465 lb (1118 kg)

Cube:

5 gal (19 L) pail – 1.25 ft^3 (0.0353 m^3)

55 gal (208.1 L) drum – 11.83 ft^3 (0.3350 m^3)

265 gal (1000 L) tote – 50.05 ft^3 (1.42 m^3)

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Form No. F-81105-10