PRE-PIPED VERTICAL BLADDER TANK

DESCRIPTION

The NAFFCO Pre-piped Vertical Bladder tank is an integral component of balanced pressure proportioning system. Its operation requires no external power other than a pressurized water system. NAFFCO bladder tank, with an appropriate proportioner, injects foam concentrate into the water supply of a fire protection system and automatically proportions at wide range of flows and pressures.

NAFFCO Pre-piped Foam Vertical bladder tank is a steel pressure vessel fitted with an Internal Elastomeric bladder that stores foam concentrate. During operation, the concentrate is discharged by incoming water pressure to the bladder tank until the concentrate is depleted. The bladder tank discharges foam concentrate at approximately the same pressure as the water supplied at the water inlet connection to the tank. Since the bladder tank is pressurized, the bladder should not be refilled during operation.

TECHNICAL SPECIFICATIONS

NAFFCO Foam vertical bladder tank system is a complete self-contained proportioning system consisting of a bladder tank, ratio controller, and assembled piping. The bladder tank shall be constructed in accordance to ASME Section VIII, for unfired pressure vessels with a working pressure of 175 psi (12 bar) and tested to at least 260 psi (18 bar).

The tanks are fabricated to nominal capacity and overall dimensions are indicated in corresponding data sheet. The tank shall be constructed of steel complying with ASME having a Tensile strength of not less than 70,000 psi (4827 bar).

The bladder material is tested by Underwriter's Laboratory for compatibility with the agent to be used. This Bladder separates the foam concentrate from the incoming water. The tank can be supplied in Horizontal and Vertical configuration and shall be mounted on permanently attached saddle supports with holes for mounting bolts.

The tank shall has perforated PVC schedule 80 center discharge piping, located within the bladder, to ensure that foam concentrate flows to the bottom discharge. A section of 1-inch I.D. rubber hose installed between the bladder and tank shell, shall extend from the water vent to the water drain connection, preventing bladder obstruction at these openings.

The ratio controller (RC) is a flanged and wafer type for mounting in Schedule 40 pipe between two 150 # flat or raised flanges of the same nominal size as the RC. The RC is cast bronze or Stainless Steel and shall be rated for a Working pressure of 175 psi (12 bar). A ¼" (6.35 mm) female NPT port for sensing water pressure at the inlet to the ratio controller water orifice shall be incorporated into the casting. Each ratio controller is automatically proportions over the range indicated on flow range chart without any manual adjustment. The foam concentrate inlet shall contains a calculated foam concentrate metering orifice allowing for proper proportioning. The ratio controller is pre-piped to the bladder tank. All external piping shall be

Schedule 40, and is St. Steel for foam concentrate and Carbon steel for water. Brass or bronze ball valves is supplied, and is complete with identification labels on the handles. Tank includes all necessary drain and vent valves, pressure relief valve, and tank content/identification labels. External surfaces of tank and piping are coated with RED Enamel finish.

FEATURES

- **UL LISTED/FM APPROVED/ASME 'U' STAMP/NBBI 'R' STAMP**
- Pre-piped vertical bladder tank offers the foam system designer fixed dimensions and eliminates uncertainty during sizing of foam equipment room and piping layout.
- Pre-fabricated foam bladder proportioning system eliminates loose components and simplifies the installation.
- Bladder is manufactured of a vinyl based polymer as per ASTM D-412 with a Tensile strength of at least 3000 psi and ASTM D-624 with tear strength of at least 420lbs/in.
- Bladder of Reinforced rubber as per ASTM D-412 with tensile strength of at least 1750 psi ASTM D-262 with tear strength of at least 30KGF.
- Tanks are supplied with Brass trim valves and Teflon seats.
- All valves are labeled with working position and function.
- FM approval cover total foam system which includes liquid foam (3% and 6% Foam) Bladder tank with proportioner, hydraulic concentrate control valve and discharge devices.
- Permanently welded lifting lugs for easy tank movement and positioning.
- Designed for Maximum agent discharge
- Tanks are oversized to allow thermal expansion of foam concentrate if any

- Tanks are supplied with label identifying foam concentrate type, percentage ratio and tank size
- Tanks are Externally RED enamel coated and Internally Coal tar Epoxy coated.

APPLICATION

The NAFFCO Pre-piped Vertical Bladder tank is a complete balanced pressure proportioning system frequently used in;

- Fixed Fire Protection system for storage tank
- Bund area surface fire protection
- Truck & Rail Loading area fire protection
- Warehouse fire protection
- Chemical warehouse & Industrial fire protection
- Generator room fire protection
- Waste storage room fire protection
- Diesel storage room fire protection
- Helipad fire protection
- Aircraft hangar fire protection

OPTIONS

- Paint color code/special finishes
- Piping material (S.S./Brass/Carbon steel)
- Coal tar epoxy coating the interior shell of the tank when use in salt-water environment
- Sight glass

MODERN MANUFACTURING PROCESS

The circumferential as well as the longitudinal body seam are SMAW + SAW welded as per approved welding procedure in accordance with ASME codes. The interior weld joints are made smooth, cleaned, and free from sharp edge. The tank has flexible bladder constructed to suit inside tank dimensions.

INSTALLATION, INSPECTION AND MAINTENANCE

An installation, inspection and maintenance manual is packed with each unit. The manual provides detail schematic, initial procedure, inspection and maintenance procedures. The instruction manual must be read carefully and followed during installation and commissioning of the system. After few initial successful tests an authorized person must be trained to perform inspection and testing of the system. It is recommended to carry out physical inspection of the system regularly, the inspection should verify that no damages have taken place to any component and all the valves are in their proper position as per the system requirement.

The system should be fully tested at least once in a year and in accordance with applicable NFPA code or in accordance to the guidelines of the organization having local jurisdiction. Do not turn off the system or any valve to repair or test the system, without placing a roving Fire Patrol in the area covered by the system. The patrol should continue until the system is put back in service. Also inform the local security personnel and the control room so that a false alarm is not signaled.

CAUTION

- Do not weld on the tank as it may damage the bladder fitted inside the tank.
- Release pressure before an inspection and maintenance of the system.
- Sight gauge is not pressure tight, so before taking concentrate level reading, tank pressure must be released.
- The bladder tank is to be installed under a shade to avoid direct sunlight on the equipment.
- While designing a foam system, step shall be taken to allow for removal of the internal centre tube(s). The centre tubes are full length and/or height of the bladder tank.
- ASME Code may require over pressure protection before pressurizing the system. NAFFCO does not supply an over pressure relief valve with the tanks. It shall be the owner's responsibility to provide over pressure protection for the tank in accordance to ASME Code.
- Foam concentrate filling procedure must be followed. Incorrect filling procedure may damage the bladder. NAFFCO product have limited warranty and incorrect fill procedure will void the warranty.

NOTE

- The foam concentrate is to be filled in the bladder very carefully to avoid rupture of the bladder. The filling guidelines provided with the equipment must be strictly adhered.
- Air supply with regulator (0 to 1.0 kg/cm^2) required during filling procedure, to be arranged by installer/user.
- Water supply at 0-1.5 kg/cm^2 required for tank filling during commissioning, to be arranged by installer/user.
- Concentrate fill pump need to be arranged by installer/user.
- A minimum length of 5 (five) times the pipe diameter of unobstructed straight pipeline should be provided at the inlet and outlet of the ratio controller, where pipe diameter is the nominal size of the ratio controller.
- U-Stamp / R-Stamp shall be provided upon request at aditional cost

MAINTENANCE MANUAL

A maintenance manual will be supplied with each tank. The manual will contain a system schematic installation instruction, concentrate filling procedure, inspection and

maintenance procedure, sight gauge use instructions, and service repair procedure and field inspection.

**NOTE: Listings, Approvals and/or Certifications for NAFFCO foam concentrate and/or equipment are valid only when used with other NAFFCO foam concentrates or equipment in a manner as outlined in the applicable Listing, Approval and/or Certification.*

DESIGN DATA

Tank Mounting	Vertical
Concentrate Storage Capacity	36-3200 Gallon (see table Dimensional Data)
Ratio Controller (Type, Size & Flow Range)	Refer to the Ratio Controller Detail table below
Foam Concentrate	Refer to the Ratio Controller Detail table below
Design Pressure	175 psi (12.09 bar)
Storage Temperature	+1.7°C - +49°C
Foam Concentrate Proportioning Orifice	1%, 2%, 3%, 6%

TECHNICAL INFORMATION

Tank Shell	Carbon Steel, SA 516 Gr.70. Stainless Steel 316L
Bladder	Vinyl based polymer or Buna-N or Neoprene
Pressure Relief Valve *(Optional)*	Brass Construction with Set Pressure @ 15 bar
Internal Piping	Perforated PVC, sch. 80/316L
Flanges	ASTM A105, Class 150
Water Pipe	Carbon Steel. sch. 40.
Foam Pipes	Stainless Steel 316L
Vent/Drain/NRV Valves	Brass/Bronze.
Sight Glass Valve	Sight Gauge with Shut Off & Drain Valve
Painting External	Zinc Rich Primer with Red Enamel Finish
Painting Internal	Zinc Rich Primer with Coal Tar Epoxy Paint

RATIO CONTROLLER DETAILS

RATIO CONTROLLER, MODEL: WRC-B AND WRC-S, FLOW RATE IN GPM

Foam Concentrate	Approval	65NB	65NB*	80NB	80NB*	100NB	100NB*	150NB	200NB
AFFF 3%	UL	53-415	20-150	231-614	125-840	460-1585	140-712	775-2399	845-2364
AFFF 6%	UL	61-410	--	119-817	243-618	445-1559	193-491	752-2289	859-2315
AR-AFFF 3/3	UL	99-300	--	221-623	--	465-1020	--	793-2214	1089-2400
AFFF 3%	FM	55-313	--	237-614	--	455-1200	--	780-2400	845-2320
AFFF 6%	FM	66-220	--	241-619	--	445-1150	--	725-2135	890-2305
AR-AFFF 3/3	FM	98-348	--	229-616	--	465-1032	--	758-2375	853-2311
AR-AFFF 3/6-3%	FM	93-324	--	232-632	--	455-1026	--	765-2270	837-2360
AR-AFFF 3/6-6%	FM	101-322	--	251-646	--	460-1035	--	775-2260	1103-2100
AFFF 1% (NFP1)	UL	69-357	--	116-315	--	--	--	--	--
AR-AFFF 1/3-1%	UL	56-376	--	131-374	--	--	--	--	--
AR-AFFF 1/3-3%	UL	71-378	--	146-373	--	--	--	--	--
FP P3-3%	UL	71-357	--	96-371	--	--	--	--	--
NF HEFC 2%	UL	40-351	--	125-735	--	172-1128	--	--	--
AR-AFFF 3/3 (NFP)	UL	--	38-153	228-806	--	--	--	--	--
AR-AFFF 3/6-3% (NFP)	UL	--	--	200-704	--	--	--	--	--
AR-AFFF 3/6-6% (NFP)	UL	--	--	233-736	--	--	--	--	--

**These models are available with different orifices.*

WAFER TYPE WIDE RANGE RATIO CONTROLLER FLOW RATE IN GPM

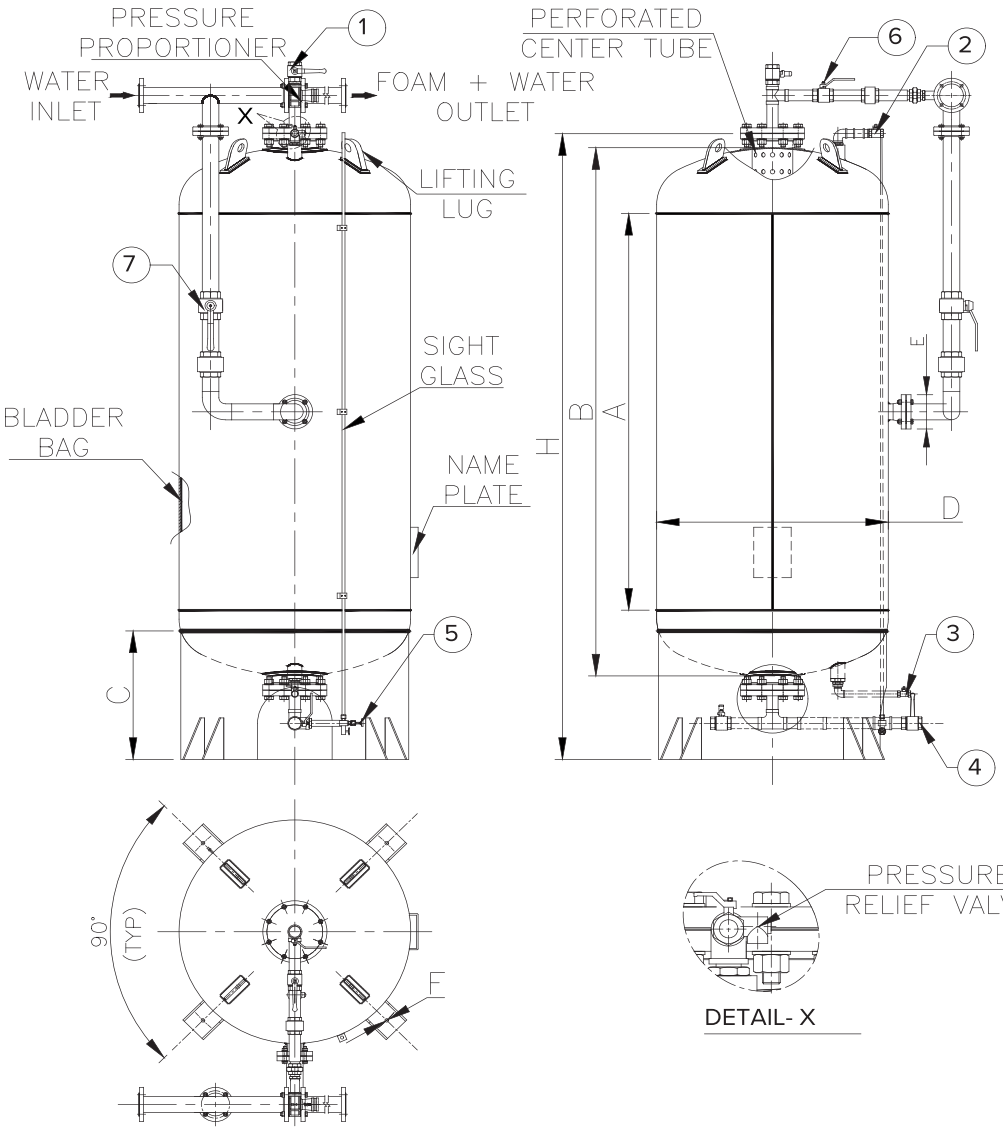
Foam Concentrate	Approval	NFWRP100-50	NFWRP150-50	NFWRP200-80	NFWRP250-80
1%, 3%, 6%	--	25-645	29-1450	34-2773	40-4225

DIMENSIONAL DATA

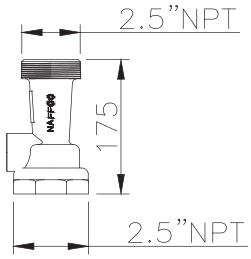
SL No.	Bladder Tank Capacity (Gal)	Model	A (mm)	B (mm)	C (mm)	D (mm)	E (Inlet Flange to Tank)	F	H (mm)
1	36	NFVBT-36	650	1042	440	536	3"	ø19 HOLE 4 Nos.ON PCD 686	1407
2	50	NFVBT-50	900	1276	440	536	3"	ø19 HOLE 4 Nos.ON PCD 686	1695
3	100	NFVBT-100	1044	1472	475	640	3"	ø19 HOLE 4 Nos.ON PCD 790	1900
4	150	NFVBT-150	1026	1554	510	840	3"	ø19 HOLE 4 Nos.ON PCD 990	1927
5	200	NFVBT-200	1066	1594	510	840	3"	ø19 HOLE 4 Nos.ON PCD 990	1967
6	300	NFVBT-300	1160	1788	565	1040	3"	ø19 HOLE 4 Nos.ON PCD 1190	2226
7	400	NFVBT-400	1400	2050	575	1083	3"	ø19 HOLE 4 Nos.ON PCD 1235	2475
8	500	NFVBT-500	1865	2515	575	1083	3"	ø19 HOLE 4 Nos.ON PCD 1235	2940
9	600	NFVBT-600	1650	2380	700	1239	3"	ø19 HOLE 4 Nos.ON PCD 1390	2910
10	700	NFVBT-700	1900	2680	700	1239	3"	ø19 HOLE 4 Nos.ON PCD 1390	3160
11	800	NFVBT-800	2200	2930	700	1239	3"	ø19 HOLE 4 Nos.ON PCD 1390	3460
12	900	NFVBT-900	1338	2258	940	1620	3"	ø19 HOLE 4 Nos.ON PCD 1770	2930
13	1000	NFVBT-1000	1428	2348	940	1620	3"	ø19 HOLE 4 Nos.ON PCD 1770	3040
14	1100	NFVBT-1100	1578	2498	940	1620	3"	ø19 HOLE 4 Nos.ON PCD 1770	3187
15	1200	NFVBT-1200	1910	2830	940	1620	3"	ø19 HOLE 4 Nos.ON PCD 1770	3520
16	1300	NFVBT-1300	2115	3035	940	1620	3"	ø19 HOLE 4 Nos.ON PCD 1770	3725
17	1400	NFVBT-1400	1310	3230	940	1620	3"	ø19 HOLE 4 Nos.ON PCD 1770	3920
18	1500	NFVBT-1500	2500	3420	940	1620	3"	ø19 HOLE 4 Nos.ON PCD 1770	4110
19	1600	NFVBT-1600	2230	3192	1072	1700	3"	ø19 HOLE 4 Nos.ON PCD 1850	4025
20	1700	NFVBT-1700	2400	3362	1072	1700	3"	ø19 HOLE 4 Nos.ON PCD 1850	4195
21	1800	NFVBT-1800	2575	3537	1072	1700	3"	ø19 HOLE 4 Nos.ON PCD 1850	4370
22	1900	NFVBT-1900	2742	3704	1072	1700	3"	ø19 HOLE 4 Nos.ON PCD 1850	4535
23	2000	NFVBT-2000	2915	3877	1072	1700	3"	ø19 HOLE 4 Nos.ON PCD 1850	4710
24	2100	NFVBT-2100	2510	3550	1125	1850	3"	ø19 HOLE 4 Nos.ON PCD 2000	4360
25	2200	NFVBT-2200	2660	3700	1125	1850	3"	ø19 HOLE 4 Nos.ON PCD 2000	4510
26	2300	NFVBT-2300	2805	3842	1125	1850	3"	ø19 HOLE 4 Nos.ON PCD 2000	4652
27	2400	NFVBT-2400	2950	3987	1125	1850	3"	Ø19 HOLE 4 NOS.ON PCD 2000	4800
28	2500	NFVBT-2500	3095	4132	1125	1850	3"	Ø19 HOLE 4 NOS.ON PCD 2000	4942
29	2600	NFVBT-2600	2610	3722	1175	2000	3"	Ø19 HOLE 4 NOS.ON PCD 2150	4535
30	2700	NFVBT-2700	2735	3847	1175	2000	3"	Ø19 HOLE 4 NOS.ON PCD 2150	4660
31	2800	NFVBT-2800	2865	3977	1175	2000	3"	Ø19 HOLE 4 NOS.ON PCD 2150	4790
32	2900	NFVBT-2900	2990	4102	1175	2000	3"	Ø19 HOLE 4 NOS.ON PCD 2150	4915
33	3000	NFVBT-3000	3120	4232	1175	2000	3"	Ø19 HOLE 4 NOS.ON PCD 2150	5045
34	3100	NFVBT-3100	3245	4357	1175	2000	3"	Ø19 HOLE 4 NOS.ON PCD 2150	5170
35	3200	NFVBT-3200	3375	4487	1175	2000	3"	Ø19 HOLE 4 NOS.ON PCD 2150	5300

**NOTES:*

- *All dimensions are approximate and may vary.*
- *All tank and valve openings will be plugged for Shipping.*
- *Fill funnel and sight glass tube will be packed and shipped separately.*
- *Contents label will be supplied to customer by NAFFCO and applied by customer to area provided on caution label.*
- *When designing a building to house bladder tanks, provisions must be made to allow for the removal of the internal piping and bladder.*
- *Hydraulic foam concentrate control valve (optional) supplied with only FM approved bladder tank.*



PROPORTIONER



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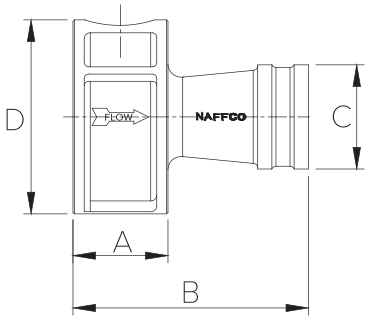

Size: 3", 4", 6" & 8" *(Wafer Type)*

*NOTE: For dimensions please refer individual ratio controller datasheet

Valve No.	Description	Normal Position
1	Concentrate Vent/Fill	Closed
2	Tank Water Vent	Closed
3	Water Drain/Fill	Closed
4	Concentrate Drain/Fill	Closed
5	Sight Glass Valve	Closed
6	Concentrate Outlet Ball Valve	Open
7	Water Inlet Ball Valve	Open

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PRE-PIPED HORIZONTAL BLADDER TANK

DESCRIPTION

The NAFFCO Pre-piped Horizontal Bladder tank is an integral component of balanced pressure proportioning system. Its operation requires no external power other than a pressurized water system. NAFFCO bladder tank, with an appropriate proportioner, injects foam concentrate into the water supply of a fire protection system and automatically proportions at wide range of flows and pressures.

NAFFCO Pre-piped Foam Horizontal bladder tank is a steel pressure vessel fitted with an Internal Elastomeric bladder that stores foam concentrate. During operation, the concentrate is discharged by incoming water pressure to the bladder tank until the concentrate is depleted. The bladder tank discharges foam concentrate at approximately the same pressure as the water supplied at the water inlet connection to the tank. Since the bladder tank is pressurized, the bladder should not be refilled during operation.

TECHNICAL SPECIFICATIONS

NAFFCO Foam horizontal bladder tank system is a complete self-contained proportioning system consisting of a bladder tank, ratio controller, and assembled piping. The bladder tank shall be constructed in accordance to ASME Section VIII, for unfired pressure vessels with a working pressure of 175 psi (12 bar) and tested to at least 261 psi (18 bar). The tanks are fabricated to nominal capacity and overall dimensions are indicated in corresponding data sheet. The tank shall be constructed of steel complying with ASME having a Tensile strength of not less than 70,000 psi (4827 bar).

The bladder material is tested by Underwriter's Laboratory for compatibility with the agent to be used. This Bladder separates the foam concentrate from the incoming water. The tank can be supplied in Horizontal and Vertical configuration and shall be mounted on permanently attached saddle supports with holes for mounting bolts.

The tank shall has perforated PVC schedule 80 center discharge piping, located within the bladder, to ensure that foam concentrate flows to the bottom discharge. A section of 1-inch I.D. rubber hose installed between the bladder and tank shell, shall extend from the water vent to the water drain connection, preventing bladder obstruction at these openings.

The ratio controller (RC) is a flanged and wafer style for mounting in Schedule 40 pipe between two 150 # flat or raised flanges of the same nominal size as the RC. The RC is cast bronze or Stainless Steel and shall be rated for a Working pressure of 175 psi (12 bar). A ¼" (6.35 mm) female NPT port for sensing water pressure at the inlet to the ratio controller water orifice shall be incorporated into the casting. Each ratio Controller is automatically proportions over the range indicated on flow range chart without any manual adjustment. The foam concentrate inlet shall contains a calculated foam concentrate metering orifice allowing for proper proportioning. The ratio controller is pre-piped to the bladder tank.

All external piping shall be Schedule 40, and is St. Steel for foam concentrate and Carbon steel for water. Brass or bronze ball valves is supplied, and is complete with identification labels on the handles. Tank includes all necessary drain and vent valves, pressure relief valve, and tank content/identification labels. External surfaces of tank and piping are coated with RED Enamel finish.

FEATURES

- **UL LISTED/FM APPROVED/ASME 'U' STAMP/NBBI 'R' STAMP**
- Pre-piped horizontal bladder tank offers the foam system designer fixed dimensions and eliminates uncertainty during sizing of foam equipment room and piping layout.
- Pre-fabricated foam bladder proportioning system eliminates loose components and simplifies the installation.
- Bladder is manufactured of a vinyl based polymer as per ASTM D-12 with a Tensile strength of at least 3000 psi and ASTM D-624 with tear strength of at least 420lbs/in.
- Bladder of Reinforced rubber as per ASTM D-412 with tensile strength of at least 1750 psi ASTM D-262 with tear strength of at least 30KGF.
- Tanks are supplied with Brass trim valves and Teflon seats.
- All valves are labeled with working position and function.
- FM approval cover total foam system which includes liquid foam (3% and 6% Foam) Bladder tank with proportioner, hydraulic concentrate control valve and discharge devices.
- Permanently welded lifting lugs for easy tank movement and positioning.
- Designed for Maximum agent discharge
- Tanks are oversized to allow thermal expansion of foam concentrate if any
- U-Stamp / R-Stamp shall be provided upon request at additional cost.

- Tanks are supplied with label identifying foam concentrate type, percentage ratio and tank size
- Tanks are Externally RED enamel coated and Internally Coal tar Epoxy coated.

APPLICATION

The NAFFCO Pre-piped Horizontal Bladder tank is a complete balanced pressure proportioning system frequently used in;

- Fixed Fire Protection system for storage tank
- Bund area surface fire protection
- Truck & Rail Loading area fire protection
- Warehouse fire protection
- Chemical warehouse & Industrial fire protection
- Generator room fire protection
- Waste storage room fire protection
- Diesel storage room fire protection
- Helipad fire protection
- Aircraft hangar fire protection

OPTIONS

- Paint color code/special finishes
- Piping material (S.S./Brass/Carbon steel)
- Coal tar epoxy coating the interior shell of the tank when use in salt-water environment
- Sight glass

MODERN MANUFACTURING PROCESS

The circumferential as well as the longitudinal body seam are SMAW+SAW welded as per approved welding procedure in accordance with ASME codes. The interior weld joints are made smooth, cleaned, and free from sharp edge. The tank has flexible bladder constructed to suit inside tank dimensions.

INSTALLATION, INSPECTION AND MAINTENANCE

An installation, inspection and maintenance manual is packed with each unit. The manual provides detail schematic, initial procedure, inspection and maintenance procedures. The instruction manual must be read carefully and followed during installation and commissioning of the system.

After few initial successful tests an authorized person must be trained to perform inspection and testing of the system. It is recommended to carry out physical inspection of the system regularly, the inspection should verify that no damages have taken place to any component and all the valves are in their proper position as per the system requirement. The system should be fully tested at least once in a year and in accordance with applicable NFPA code or in accordance to the guidelines of the organization having local jurisdiction.

Do not turn off the system or any valve to repair or test the system, without placing a roving Fire Patrol in the area covered by the system. The patrol should continue until the system is put back in service. Also inform the local security personnel and the control room so that a false alarm is not signaled.

CAUTION

- Do not weld on the tank as it may damage the bladder fitted inside the tank.
- Release pressure before an inspection and maintenance of the system.
- Sight gauge is not pressure tight, so before taking concentrate level reading, tank pressure must be released.
- The bladder tank is to be installed under a shade to avoid direct sunlight on the equipment.
- While designing a foam system, step shall be taken to allow for removal of the internal center tube(s). The center tubes are full length and/or height of the bladder tank.
- ASME Code may require over pressure protection before pressurizing the system. NAFFCO does not supply an over pressure relief valve with the tanks. It shall be the owner's responsibility to provide over pressure protection for the tank in accordance to ASME Code.
- Foam concentrate filling procedure must be followed. Incorrect filling procedure may damage the bladder. NAFFCO product have limited warranty and incorrect fill procedure will void the warranty.

NOTE

- The foam concentrate is to be filled in the bladder very carefully to avoid rupture of the bladder. The filling guidelines provided with the equipment must be strictly adhered.
- Air supply with regulator (0 to 1.0 kg/cm^2) required during filling procedure, to be arranged by installer/user.
- Water supply at 0-1.5 kg/cm^2 required for tank filling during commissioning, to be arranged by installer/user.
- Concentrate fill pump need to be arranged by installer/user.
- A minimum length of 5 (five) times the pipe diameter of unobstructed straight pipeline should be provided at the inlet and outlet of the ratio controller, where pipe diameter is the nominal size of the ratio controller.

MAINTENANCE MANUAL

A maintenance manual will be supplied with each tank. The manual will contain a system schematic installation instruction, concentrate filling procedure, inspection and maintenance procedure, sight gauge use instructions, and service repair procedure and field inspection.

TECHNICAL INFORMATION

Tank Shell	Carbon Steel, SA 516 Gr.70. Stainless Steel 316L
Bladder	Vinyl based polymer or Buna-N or Neoprene
Pressure Relief Valve *(Optional)*	Brass Construction with Set Pressure @ 15 bar
Internal Piping	Perforated PVC, sch. 80/316L
Flanges	ASTM A105, Class 150
Water Pipe	Carbon Steel. sch. 40.
Foam Pipes	Stainless Steel 316L
Vent/Drain/NRV Valves	Brass/Bronze.
Sight Glass Valve	Sight Gauge with Shut Off & Drain Valve
Painting External	Zinc Rich Primer with Red Enamel Finish
Painting Internal	Zinc Rich Primer with Coal Tar Epoxy Paint

DESIGN DATA

Tank mounting	Horizontal
Concentrate Storage Capacity	50-6000 Gallon (see table Dimensional Data)
Ratio Controller (Type, Size & Flow Range)	Refer to the Ratio Controller Detail table below
Foam Concentrate	Refer to the Ratio Controller Detail table below
Design Pressure	175 psi (12.09 bar)
Storage Temperature	+1.7°C - +49°C
Foam Concentrate Proportioning Orifice	1%, 2%, 3%, 6%

RATIO CONTROLLER DETAILS

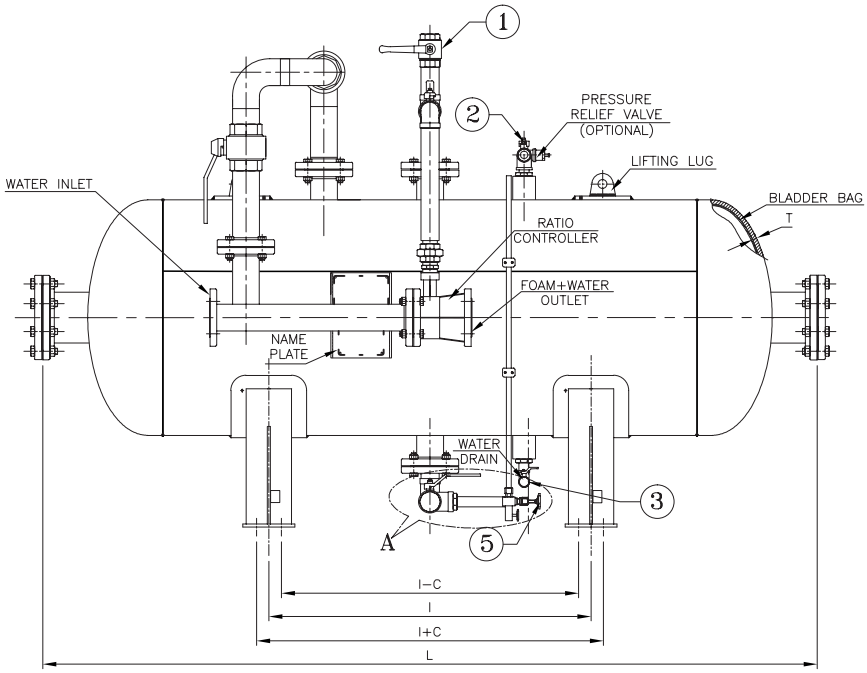
RATIO CONTROLLER, MODEL: WRC-B AND WRC-S, FLOW RATE IN GPM

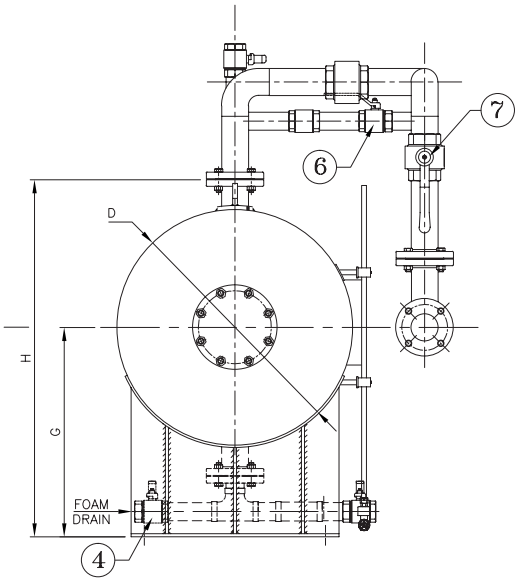
Foam Concentrate	Approval	65NB	65NB*	80NB	80NB*	100NB	100NB*	150NB	200NB
AFFF 3%	UL	53-415	20-150	231-614	125-840	460-1585	140-712	775-2399	845-2364
AFFF 6%	UL	61-410	--	119-817	243-618	445-1559	193-491	752-2289	859-2315
AR-AFFF 3/3	UL	99-300	--	221-623	--	465-1020	--	793-2214	1089-2400
AFFF 3%	FM	55-313	--	237-614	--	455-1200	--	780-2400	845-2320
AFFF 6%	FM	66-220	--	241-619	--	445-1150	--	725-2135	890-2305
AR-AFFF 3/3	FM	98-348	--	229-616	--	465-1032	--	758-2375	853-2311
AR-AFFF 3/6-3%	FM	93-324	--	232-632	--	455-1026	--	765-2270	837-2360
AR-AFFF 3/6-6%	FM	101-322	--	251-646	--	460-1035	--	775-2260	1103-2100
AFFF 1% (NFP1)	UL	69-357	--	116-315	--	--	--	--	--
AR-AFFF 1/3-1%	UL	56-376	--	131-374	--	--	--	--	--
AR-AFFF 1/3-3%	UL	71-378	--	146-373	--	--	--	--	--
FP P3-3%	UL	71-357	--	96-371	--	--	--	--	--
NF HEFC 2%	UL	40-351	--	125-735	--	172-1128	--	--	--
AR-AFFF 3/3 (NFP)	UL	--	38-153	228-806	--	--	--	--	--
AR-AFFF 3/6-3% (NFP)	UL	--	--	200-704	--	--	--	--	--
AR-AFFF 3/6-6% (NFP)	UL	--	--	233-736	--	--	--	--	--

**These models are available with different orifices.*

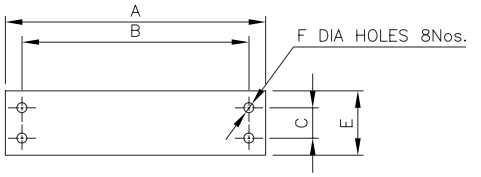
WAFER TYPE WIDE RANGE RATIO CONTROLLER FLOW RATE IN GPM

Foam Concentrate	Approval	NFWRP100-50	NFWRP150-50	NFWRP200-80	NFWRP250-80
1%, 3%, 6%	--	25-645	29-1450	34-2773	40-4225

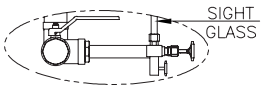




PROPORTIONER



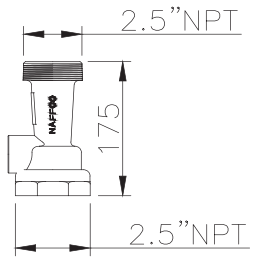
MOUNTING DETAILS



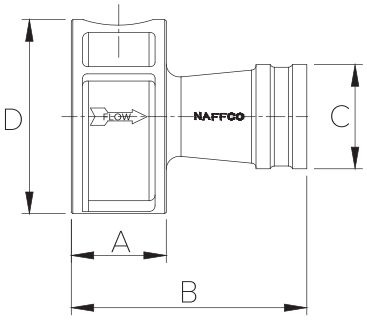
DETAIL A

Size: 3”, 4”, 6” & 8” *(Wafer Type)*

*NOTE: For dimensions please refer individual ratio controller datasheet



Size: 2.5” *(Threaded)*



VALVE TYPE & POSITION

No.	Description	Normal Position
1	Concentrate Vent/Fill	Closed
2	Tank Water Vent	Closed
3	Water Drain/Fill	Closed
4	Concentrate Drain/Fill	Closed
5	Sight Glass Valve	Closed
6	Concentrate Outlet Ball Valve	Open
7	Water Inlet Ball Valve	Open

DIMENSIONAL DATA

SL No.	Bladder Tank Capacity *(Gal)*	Model	A *(mm)*	B *(mm)*	C *(mm)*	D *(mm) Outside Dia.*	E *(mm)*	F *(mm)*	G *(mm)*	H *(mm)*	I *(mm)*	J *(Inlet Flange to Tank)*	L *(mm)*
1	50	NFHBT-50	468	378	80	524	170	26	559	921	661	3"	1751
2	100	NFHBT-100	556	466	80	626	170	26	616	1029	708	3"	1928
3	150	NFHBT-150	688	598	80	778	170	26	692	1181	654	3"	1950
4	200	NFHBT-200	688	598	80	778	170	26	692	1181	1064	3"	2560
5	300	NFHBT-300	819	729	80	930	170	26	760	1325	1054	3"	2619
6	400	NFHBT-400	959	785	140	1083	250	26	848	1490	1042	3"	2691
7	500	NFHBT-500	959	785	140	1083	250	26	851	1493	1246	3"	2894
8	600	NFHBT-600	959	785	140	1083	250	26	851	1493	1652	3"	3300
9	700	NFHBT-700	1095	875	140	1239	250	26	1025	1745	1459	3"	3088
10	800	NFHBT-800	1095	875	140	1239	250	26	1025	1745	1639	3"	3368
11	900	NFHBT-900	1095	875	140	1239	250	26	1024	1744	2071	3"	3800
12	1000	NFHBT-1000	1095	875	140	1239	250	26	1018	1738	2503	3"	4232
13	1100	NFHBT-1100	1095	875	140	1239	250	26	1025	1745	2808	3"	4537
14	1200	NFHBT-1200	1370	1150	140	1548	250	26	1168	2042	1398	3"	3183
15	1300	NFHBT-1300	1370	1150	140	1548	250	26	1168	2042	1448	3"	3333
16	1400	NFHBT-1400	1370	1150	140	1548	250	26	1168	2042	1868	3"	3757
17	1500	NFHBT-1500	1370	1150	140	1548	250	26	1168	2042	2173	3"	4062
18	1600	NFHBT-1600	1640	1380	140	1863	250	26	1321	2353	1191	3"	3080
19	1800	NFHBT-1800	1640	1380	140	1863	250	26	1321	2353	1442	3"	3385
20	2000	NFHBT-2000	1640	1380	140	1863	250	26	1321	2353	1647	3"	3690
21	2200	NFHBT-2200	1640	1380	140	1863	250	26	1321	2353	1952	3"	3995
22	2400	NFHBT-2400	1640	1380	140	1863	250	26	1321	2353	2256	3"	4299
23	2600	NFHBT-2600	1640	1380	140	1863	250	26	1321	2353	2561	3"	4604
24	2800	NFHBT-2800	1640	1380	140	1863	250	26	1321	2353	2866	3"	4909
25	3000	NFHBT-3000	1640	1380	140	1863	250	26	1321	2353	3170	3"	5213
26	3200	NFHBT-3200	1640	1380	140	1863	250	26	1321	2353	3476	3"	5519
27	3500	NFHBT-3500	1640	1380	140	1863	250	26	1321	2353	3976	3"	6019
28	4000	NFHBT-4000	1689	1429	140	1950	250	26	1375	2450	1300	3"	5900
29	4500	NFHBT-4500	1732	1472	140	2000	250	26	1400	2500	1350	3"	6520
30	5000	NFHBT-5000	1732	1472	140	2000	250	26	1400	2500	1400	3"	7150
31	5500	NFHBT-5500	2013	1753	140	2300	250	26	1566	2816	1450	3"	6200
32	6000	NFHBT-6000	2013	1753	140	2300	250	26	1566	2816	1500	3"	6542

**NOTES:*

- *All dimensions are approximate and may vary.*
- *All tank and valve openings will be plugged for Shipping.*
- *Fill funnel and sight glass tube will be packed and shipped separately.*
- *Contents label will be supplied to customer by NAFFCO and applied by customer to area provided on caution label.*
- *When designing a building to house bladder tanks, provisions must be made to allow for the removal of the internal piping and bladder*
- *Hydraulic foam concentrate control valve (optional) supplied with only FM approved bladder tank.*