FIRETECH
Transforming Challenges with Expertise

**Document No.:** FPC-660-MKT-BT
**Revision:** 0
**Product Number:** 660


# FOAM PROPORTIONING UNIT - BLADDER TANK
## 12 BAR VERSION

- Capacity: 100 Litres to 20,000 Litres
- Design Code: Designed and constructed as per ASME Sec. VIII Div.1
- Approval: UL LISTED with AFFF 1%, AFFF 3%, AR-AFFF 3x3%
- Rated Pressure: 12.06 Bar (175 psi)
- Mounting: Vertical / Horizontal
- Wide Flow Range: 75 to 36,000 LPM
- Wide Range of MOC: Carbon Steel, Stainless Steel 304/L, Stainless Steel 316/L
- Optional - ASME 'U Stamped', 'CE' Mark

## DESCRIPTION

FIRETECH bladder type foam proportioning unit (bladder tank) is provided for accurate foam proportioning of the foam concentrate with the fire-water over a wide range of flow. FIRETECH horizontal and vertical bladder tanks consist of main components i.e. foam vessel, foam bladder, water piping, foam piping, vent & drain valves and level indicator.

UL listed units are available from 100 to 15,000 litres in vertical mounting & 200 to 20,000 litres in horizontal mounting. General arrangement of vertical mounting shall be as per fig no. 660-1 and horizontal mounting shall be as per fig no. 600-2. for the dimensions of foam vessel, foam bladder, foam proportioner, interconnecting piping, valves and concentrate level gauge, please reach out to FIRETECH team.

*Note: Foam bladder is UL listed for use with AFFF 1%, AFFF 3% and AR-AFFF 3X3%*

The general arrangement of foam proportioner shall be as per fig no. 600-3. It is connected to the tank by means of interconnecting piping. Inlet of foam proportioner is connected to the fire-water supply and outlet of foam proportioner to the foam solution delivery piping. Units can also be installed in double vessel configuration to facilitate

stand-by arrangement for immediate switchover (main & reserve). In application of multiple hazard areas and single centralised foam storage & proportioning unit, bladder tanks can also be installed with multiple ratio controllers.

## OPERATION

During operation, the water is charged into the bladder tank between the vessel wall and the bladder to the inlet water pressure. Bladders transfer this water pressure to the foam concentrate stored inside the bladder, this causes pressurization of the foam concentrate. Pressurized foam concentrate is delivered to the foam concentrate inlet of the foam proportioner. A foam concentrate orifice is provided for accurate mixing of the foam concentrate into the fire-water. The metering pressure drop is created in the foam proportioner which causes the foam concentrate to flow into the fire water stream.

Bladder tanks with horizontal layout are referred as horizontal bladder tanks. Firetech manufactures UL certified horizontal bladder tank from range of 200L to 15000L capacity. Bladder tanks are also available in vertical layout. They functions same as horizontal bladder tanks. Vertical bladder tanks are preferred in case of space constraint.

## SPECIFICATION

FIRETECH bladder tank foam vessel is designed and fabricated to ASME Sec. VIII Div. 1. The vessels are UL listed for two version of a maximum working pressure viz. 12.06 Bar (175 psi) which is hydro tested to a pressure of xxx Bar (yyy psi). All the welded joints and sharp corners are ground smooth. Internal surface is coated with coal tar epoxy and external surface with fire-red polyurethane paint. Lifting lugs are welded to the vessel. Vertical vessel is provided with leg support and horizontal vessel with saddle supports. Anchoring holes are drilled in the base plate of support. Anchor bolts are also supplied with the unit.

Foam bladder is made up of nylon reinforced nitrile rubber, which is mounted inside the vessel. It is tested for foam concentrate compatibility as per UL-162, for AFFF 1%, AFFF 3% and AR-AFFF 3x3%.

Foam proportioner and spool piece are made of carbon steel with internals of stainless steel construction. As an option, complete stainless steel construction is also available. The foam proportioners are designed for maximum working pressure of 12.06 Bar (175 psi) and hydrotested to 18 Bar (261 psi). Proportioners are flow tested for flow rate and proportioning ratio for various flows within the flow range of foam proportioner.

Interconnecting piping connects the foam vessel to the foam proportioner. It consists of water piping and foam piping. Water piping is of carbon steel construction and foam piping of stainless steel construction. Interconnecting piping is designed for maximum working pressure of 12.06 Bar (175 psi) and hydrotested to 18 Bar (261 psi). Piping is externally coated with fire-red polyurethane paint. For sea water application, both water and foam side piping are available in stainless steel construction.

## APPLICATION

FIRETECH foam proportioning - unit bladder type is a very versatile and reliable foam proportioning unit, which provides accurate and automatic foam proportioning with very low proportioning losses. Unit can be supplied with a single or multiple proportioners for covering a wide flow range. Units can also be installed in double vessel configuration to facilitate stand-by arrangement for immediate switchover (main & reserve).

Foam proportioning - unit bladder type is most ideal for foam systems employed for protection of hazardous areas, such as:

- Flammable liquid storage tanks in refineries and petrochemical units
- Chemical process plants
- Aircraft hangars
- Loading & unloading gantries
- Oil Jetties
- Off-shore platforms
- Warehouses
- Foam application through spray nozzle and foam sprinkler

## ORDERING INFORMATION

**While ordering a foam proportioning unit – bladder type specify the following:**

- Item code
- Max. working pressure
- Flange drilling (foam proportioner)
- Flow direction - left to right / right to left
- Material of construction for various components
- Optional requirements
- Quantity

**Please refer FIRETECH Product Datasheet for more technical details.**

**For further details on application, installation, commissioning and on-site testing, contact FIRETECH.**

**FIRETECH EQUIPMENT & SYSTEMS PVT. LTD.**

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# FOAM PROPORTIONING UNIT - BLADDER TYPE - VERTICAL MOUNTING

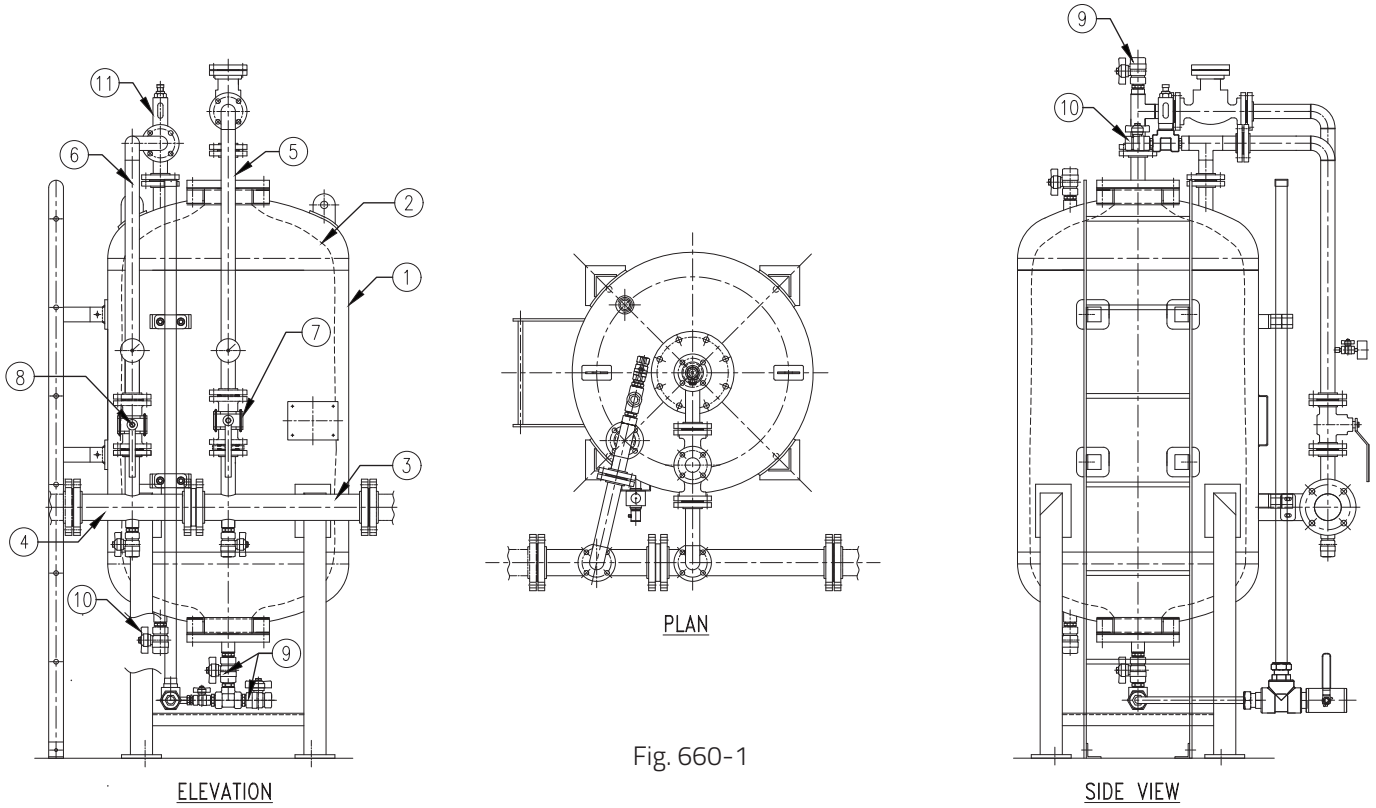


Fig. 660-1

## MATERIAL OF CONSTRUCTION

| SR.NO | DESCRIPTION | MATERIAL |
|---|---|---|
| 1 | Foam Vessel | Carbon Steel, Stainless Steel 304/L. Stainless Steel 316/L |
| 2 | Foam Bladder | Nylon Reinforced Nitrile Rubber (Buna-N) |
| 3 | Foam Proportioner | Carbon Steel With Stainless Steel internals / Stainless Steel |
| 4 | Spool Piece | Carbon Steel / Stainless Steel |
| 5 | Foam Piping | Stainless Steel |
| 6 | Water Piping | Carbon Steel / Stainless Steel |
| 7 | Foam Supply Valve | Stainless Steel |
| 8 | Water Charging Valve | Stainless Steel |
| 9 | Bladder Vent / Bladder Drain | Stainless Steel |
| 10 | Bladder Vent / Bladder Drain | Stainless Steel |
| 11 | Vessel Vent / Vessel Drain | Copper Alloy / Stainless Steel |

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# FOAM PROPORTIONING UNIT - BLADDER TYPE - HORIZONTAL MOUNTING

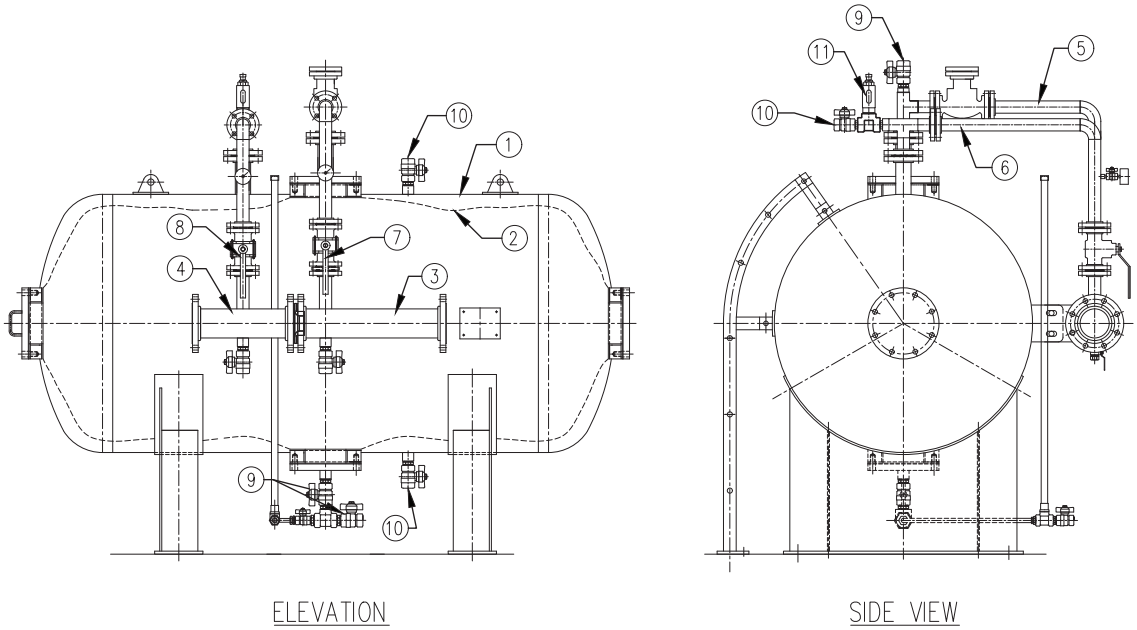


Fig. 660-2

## TECHNICAL DATA

| | |
|---|---|
| 1 | Item Code – VBT/HBT# (#Indicates capacity of foam vessel in litres) |
| 2 | Capacity – 100 to 15,000 Litres (Vertical) & 200 to 20,000 litres (Horizontal) |
| 3 | Design Code – ASME Sec.VIII Div.1 Latest Edition (Optional – ASME 'U Stamped') |
| 4 | Maximum Working Pressure – 12.06 Bar (175 psi) |
| 5 | Hydrostatic Test Pressure – 18.09 Bar (263 psi) |
| 6 | Painting & Finish |
| 6.1 | Internal Of Vessel – Coal Tar Epoxy |
| 6.2 | External – Painted Epoxy Fire-Red To Shade No. RAL 3000 |

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# BLADDER TANK FOAM PROPORTIONER / RATIO CONTROLLER

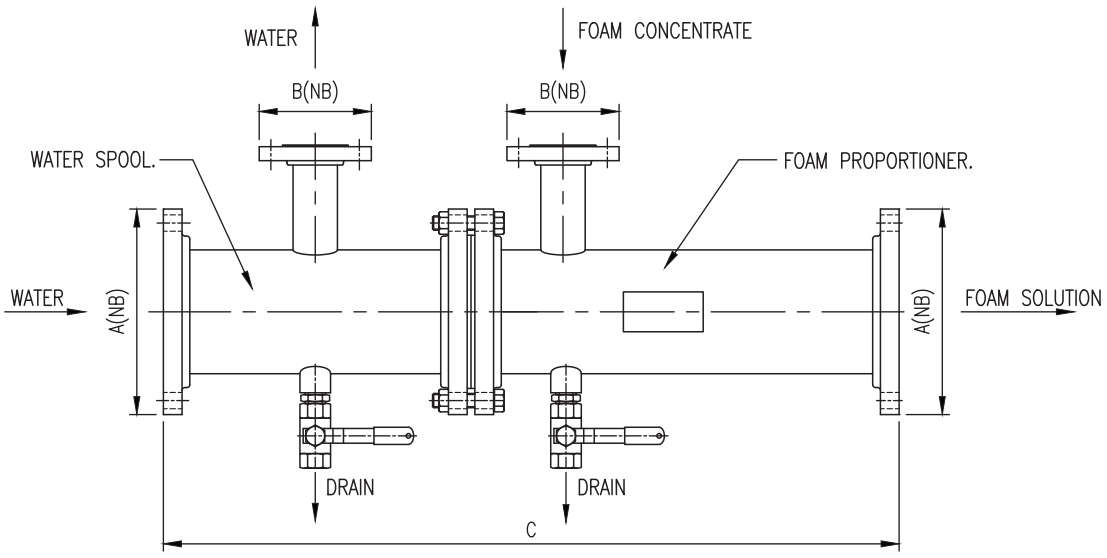


Fig. 660-3

## MATERIAL OF CONSTRUCTION

| NO. | DESCRIPTION | MATERIAL |
|---|---|---|
| 1 | Body | Carbon Steel / Stainless Steel 304/L, 316/L |
| 2 | Water Nozzle | Stainless Steel 304/L, 316/L |
| 3 | Foam Nozzle | Stainless Steel 304/L, 316/L |
| 4 | Drain Valve | Stainless Steel |

## PERFORMANCE & DIMENSIONAL DATA

| MODEL-SIZE (NB) | NOMINAL FLOW RANGE IN LPM* | PROP. RATIO IN % | A (NB) | B (NB) | C |
|---|---|---|---|---|---|
| BTFP-50 | 75 - 1000 | 1%, 3% | 50 | 25 | 1000 |
| BTFP-80 | 200 - 3200 | 1%, 3% | 80 | 40 | 1000 |
| BTFP-100 | 400 - 6200 | 1%, 3% | 100 | 40 | 1000 |
| BTFP-150 | 1000 - 11500 | 1%, 3% | 150 | 50 | 1000 |
| BTFP-200 | 3000 - 36300 | 1%, 3% | 200 | 65 | 1000 |

*NOTE:* *1. All dimensions are in mm, unless specified otherwise*
*2. *Flow range mentioned above is nominal flow range. For flow range with specific foam concentrate contact FIRETECH*

## TECHNICAL DATA

| | |
|---|---|
| 1 | Model – BTFP |
| 2 | Approval – UL Listed with AFFF 1%, AFFF 3%, AR-AFFFF 3x3% (UL file no. EX15733) |
| 3 | Maximum Working Pressure – 12.06 Bar (175 psi) / 16 Bar (232 psi) |
| 4 | Foam Proportioning Ratio – 1% for AFFF 1% & 3% for AFFF 3% & AR-AFFF 3x3% |
| 5 | Hydrostatic Test Pressure – 18.09 Bar (263 psi) |
| 6 | Flange Drilling – As Per ANSI B16.5, 150#, RF |
| 7 | Finish – Internal – Coal Tar Epoxy |
| 8 | Finish – External – Painted Polyurethane Fire-Red To Shade No. RAL 3000 |

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