

BLADDER TANK PROPORTIONING SYSTEM



TECHNICAL DATA :

| | |
|------------------------------|--|
| TANK MOUNTING TYPE | Vertical or Horizontal |
| CONCENTRATE STORAGE CAPACITY | For Vertical Tank : 150 litres to 5000 litres. (40 TO 1320 Gallons(US)) For Horizontal Tank : 150 litres to 10000 litres. (40 to 2640 Gallons (US)) |
| RATED PRESSURE | 12 Bar (175 PSI) |
| FACTORY TEST PRESSURE | 18 Bar (261 PSI) |
| VESSEL CONSTRUCTION | Carbon steel as per ASME Code Section VIII for unfired pressure vessels. |
| BLADDER | Thermo Plastic, Mullen burst pressure +800 PSI. Thickness 1.44 ± 0.127 mm |
| CENTRE TUBE | PVC |
| EXTERNAL PIPING | Water side : Carbon steel seamless pipe sch 40. Foam concentrate side : SS sch 40 |
| VENT AND DRAIN | Ball valve (Bronze / SS) |
| OPTIONAL | Sight gauge with shut off and drain valve, ladder and concentrate supply control valve. |
| FINISH | Epoxy red painted. |
| ORDERING INFORMATION | Please specify 1) Tank type, vertical or horizontal 2) Storage capacity of foam concentrate 3) Model number, size of ratio controller with flow and pressure. 4) Type of foam concentrate to be used and percentage of induction required. |



APPLICATION

The Bladder Tank Foam Proportioning System utilises the water pressure to inject foam concentrate into a water supply and automatically proportions foam concentrate over wide range of flow and pressure, with very low pressure drop. This system does not require concentrate supply pump.

SPECIFICATION

The Bladder Tank Foam Proportioning System are available with vertical and horizontal bladder tanks. The carbon steel tanks are designed and constructed in accordance with ASME Code Section VIII for unfired pressure vessels. The maximum working pressure is 12 Bar (175 psi) and factory tested for 18 Bar (261 psi). The vertical tank assembly is supported by a continuous skirt with provision for anchoring. The horizontal tanks are supported by two saddles welded to the tank and drilled for anchoring. Tank is provided with lifting lugs.

The system is supplied with pressure vessel, bladder, fill and drain valve for water and foam concentrate, ratio controller and vent valve. The ladder and sight glass assembly is supplied as optional item on request.

PRINCIPAL OF OPERATION

The foam concentrate is to be filled into the bladder very carefully to avoid rupture of the bladder. The instructions for filling are provided with the equipment. Once the main water flow is established and water inlet and foam outlet valves are opened, the water

enters the area between vessel wall and bladder, applying pressure to the bladder. The foam concentrate is forced out of the bladder through the foam outlet pipe and into the ratio controller through metering orifice. The concentrate pressure and water inlet pressure at ratio controller will be same, as the main water supply pressure is utilised to expel the foam from the bladder. The water flowing through the ratio controller jet creates a low pressure area common both to down stream water and foam concentrate. This injects the concentrate in to the ratio controller through an accurate sized orifice proportioned to water venturi. This ensures correct proportioning over a wide range of flow condition.

The bladder tank proportioning system operates on same principle as that of a balance pressure proportioning system. In bladder system, the bladder is used as diaphragm to separate the water and foam concentrate within the tank. The foam concentrate is injected into the ratio controller utilising water pressure.

The system is also supplied with foam concentrate control valve as an optional item. The valve allows concentrate flow only when minimum of 3.0 kg/sq.cm. water pressure is established in the system. For pressure drop and flow characteristics refer catalogue of ratio controller.

INSTALLATION, INSPECTION AND MAINTENANCE

An installation, inspection and maintenance manual is provided 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 authorised 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/TAC code or in accordance to the guidelines of the organisation 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 signalled.

CAUTION

1. Do not weld on the tank as it may damage the bladder.
2. Release pressure before an inspection and

maintenance of the system.

3. Sight glass is not pressure tight, so before taking concentrate level reading, tank pressure must be released.
4. The bladder tank is to be installed under a shade to avoid direct sunlight on the equipment.

NOTE

1. **The foam concentrate is to be filled in the bladder very carefully to avoid rupture of the bladder. The filling guideline provided with the equipment must be adhered to strictly.**
2. Air supply with regulator (0 to 1.0 kg/sqcm) required during filling procedure, to be provided by user/installer
3. Water supply at 0-1.5 kg/sqcm required for tank filling during commissioning , to be provided by installer/user.

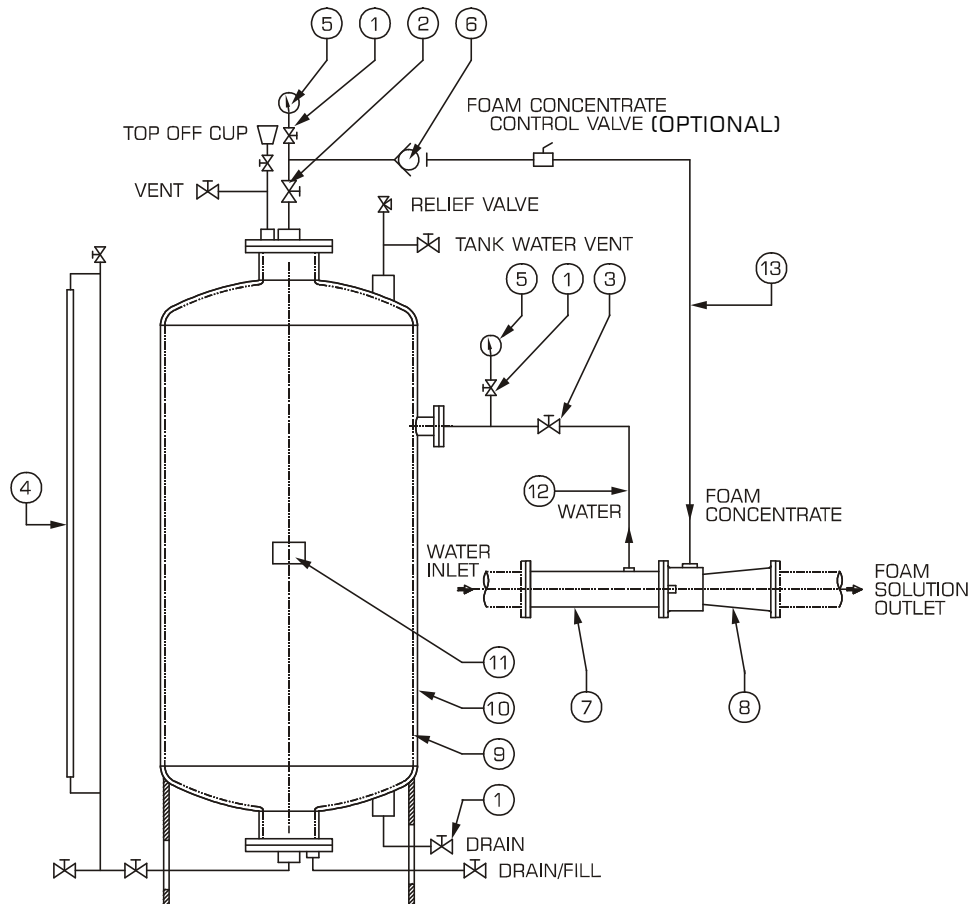
LIMITED WARRANTY

Products manufactured by HD FIRE PROTECT PVT.LTD.. are warranted against defects in material and workmanship for a period of Two (2) years from the date of shipment.

HD's obligation under this warranty is limited to replace or repair the products or its parts, which are shown to HD's examination to be in a defective condition attributable to HD. No warranty is given for products or components which have been subject, to misuse, improper installation, corrosion, wear and tear, improper storage, modification or repaired. If the defect attributable to HD cannot be rectified by repair or replacement, then HD may elect to refund the purchase price of the equipment in complete discharge of its obligation under this Limited Warranty.

IN NO EVENT SHALL HD FIRE PROTECT PVT. LTD. BE LIABLE IN CONTRACT, STRICT LIABILITY OR ANY OTHER LEGAL THEORY, FOR INCIDENTAL, IN-DIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES, INCLUDING DAMAGES, FOR INJURY TO PERSON OR DEATH OR DAMAGE TO PROPERTY AND OR PENALTIES RESULTING FROM ANY PRODUCTS OR COMPONENT MANUFACTURED OR ASSEMBLED BY HD. THIS IS LIMITED WARRANTY ONLY. HD DISCLAIMS WITH RESPECT TO THE PRODUCTS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND ALL IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE. THERE IS NO WARRANTY OF ANY NATURE MADE BY HD BEYOND AS STATED ABOVE.

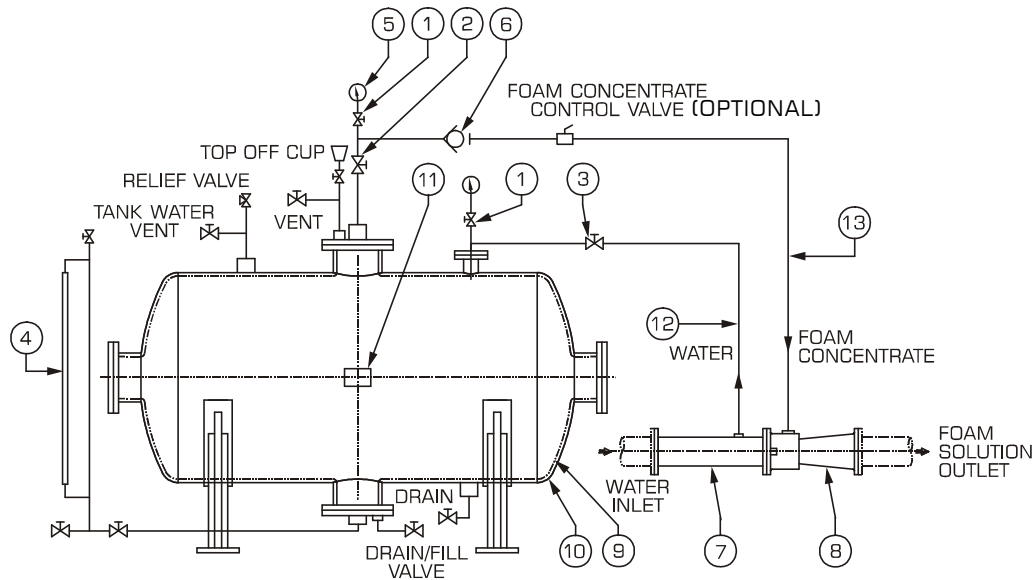
VERTICAL BLADDER TANK PROPORTIONING SYSTEM



MATERIAL OF CONSTRUCTION

| SR.NO. | DESCRIPTION | SPECIFICATION |
|--------|---------------------------------|----------------------|
| 1 | VALVE | SS/BRONZE |
| 2 | FOAM CONCENTRATE SHUT OFF VALVE | SS/BRONZE |
| 3 | WATER SHUT OFF VALVE | SS/BRONZE |
| 4 | LEVEL INDICATOR | GLASS/ACRYLIC |
| 5 | PRESSURE GAUGE | 0-16 KG/SQCM |
| 6 | CHECK VALVE | SS/BRONZE |
| 7 | SPOOL PIECE | CARBON STEEL |
| 8 | RATIO CONTROLLER | BRONZE |
| 9 | BLADDER | THERMOPLASTIC RUBBER |
| 10 | TANK | CARBON STEEL |
| 11 | NAME PLATE | BRASS |
| 12 | WATER LINE PIPING | CARBON STEEL |
| 13 | FOAM CONCENTRATE PIPING | SS |

HORIZONTAL BLADDER TANK PROPORTIONING SYSTEM



MATERIAL OF CONSTRUCTION

| SR.NO. | DESCRIPTION | SPECIFICATION |
|--------|---------------------------------|----------------------|
| 1 | VALVE | SS / BRONZE |
| 2 | FOAM CONCENTRATE SHUT OFF VALVE | SS / BRONZE |
| 3 | WATER SHUT OFF VALVE | SS / BRONZE |
| 4 | LEVEL INDICATOR | GLASS/ ACRYLIC |
| 5 | PRESSURE GAUGE | 0-16 KG/ SQCM |
| 6 | CHECK VALVE | SS/ BRONZE |
| 7 | SPOOL PIECE | CARBON STEEL |
| 8 | RATIO CONTROLLER | BRONZE |
| 9 | BLADDER | THERMOPLASTIC RUBBER |
| 10 | TANK | CARBON STEEL |
| 11 | NAME PLATE | BRASS |
| 12 | WATER LINE PIPING | CARBON STEEL |
| 13 | FOAM CONCENTRATE PIPING | SS |

NOTICE :

The equipment presented in this bulletin is to be installed in accordance with the latest publication standards of NFPA or other similar organisations and also with the provision of government codes or ordinances wherever applicable.

The information provided by us are to the best of our knowledge and belief, and are general guidelines only. Site handling and installation control is beyond our reach. Hence we give no guarantee for result and take no liability for damages, loss or penalties whatsoever, resulting from our suggestion, information, recommendation or damages due to our product.

Product development is a continuous programme of HD FIRE PROTECT PVT. LTD. and hence the right to modify any specification without prior notice is reserved with the company.