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 **AZEIDK** 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 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 AZEIDK.

FOAM PROPORTIONING UNIT - BLADDER TYPE - VERTICAL MOUNTING

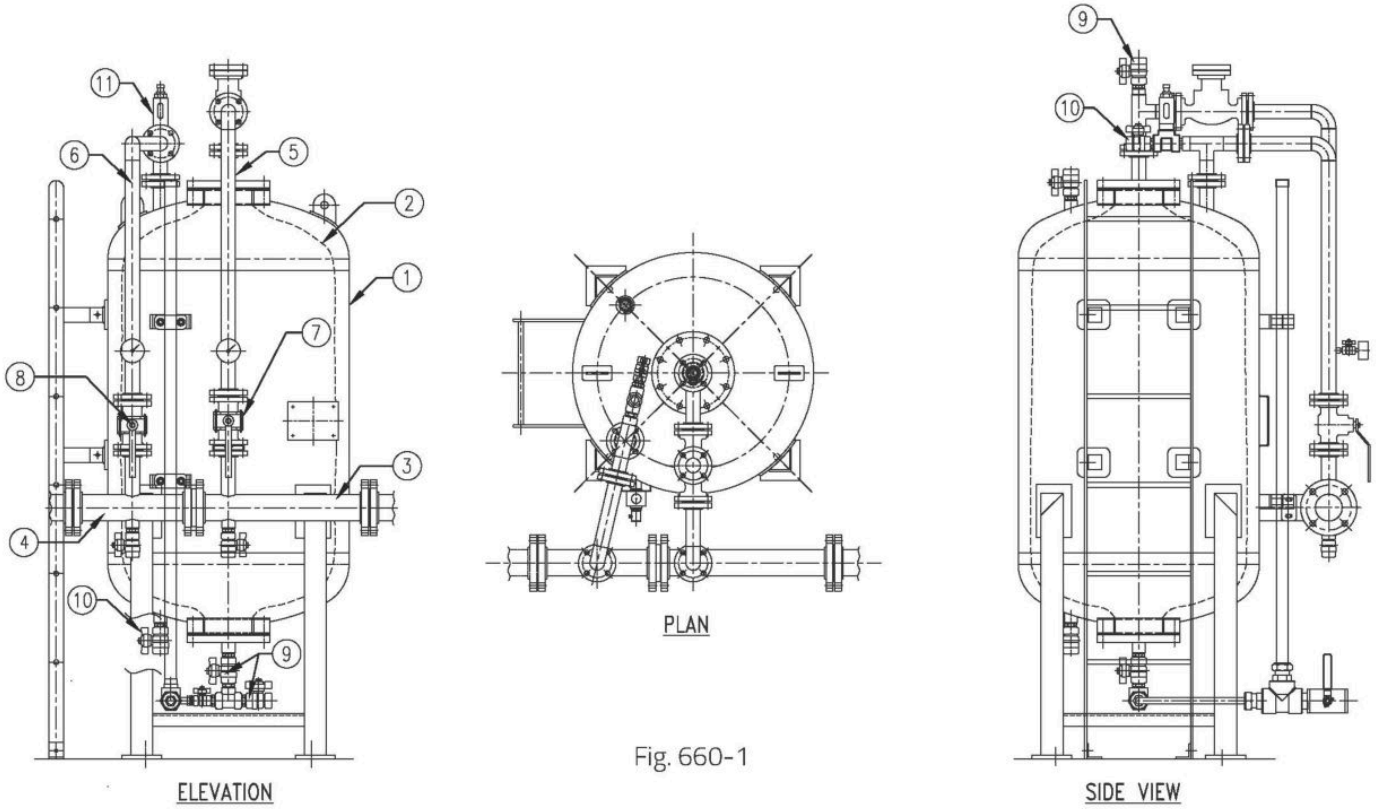


Fig. 660-1

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

FOAM PROPORTIONING UNIT - BLADDER TYPE - HORIZONTAL MOUNTING

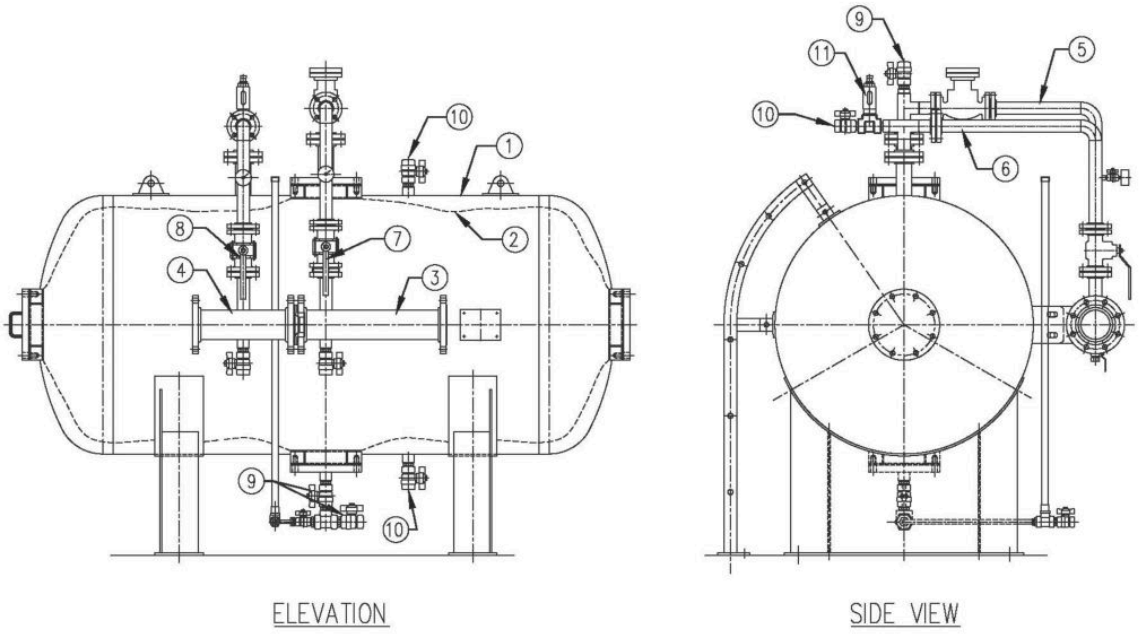


Fig. 660-2

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

BLADDER TANK FOAM PROPORTIONER / RATIO CONTROLLER

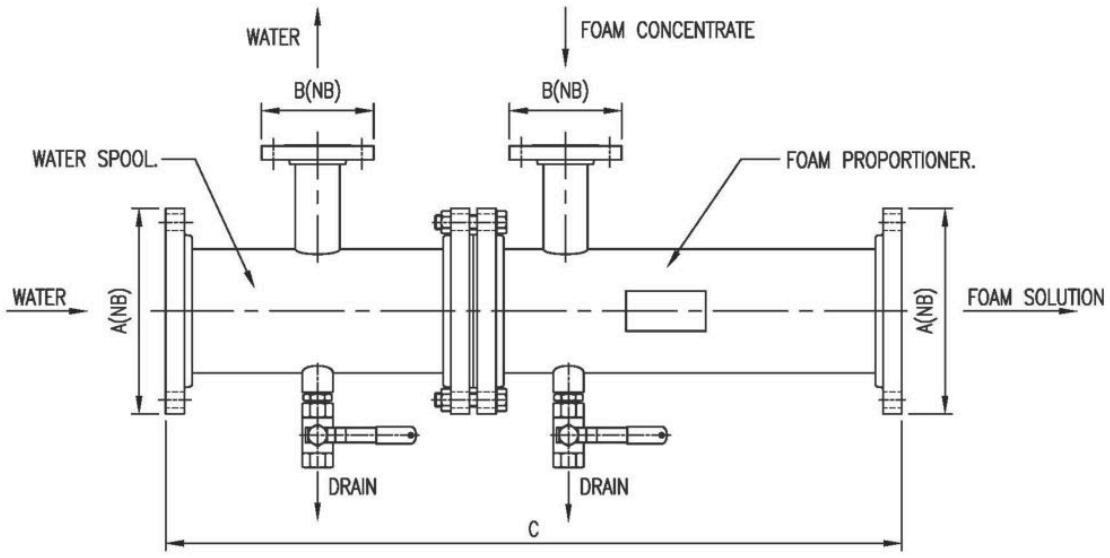


Fig. 660-3

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

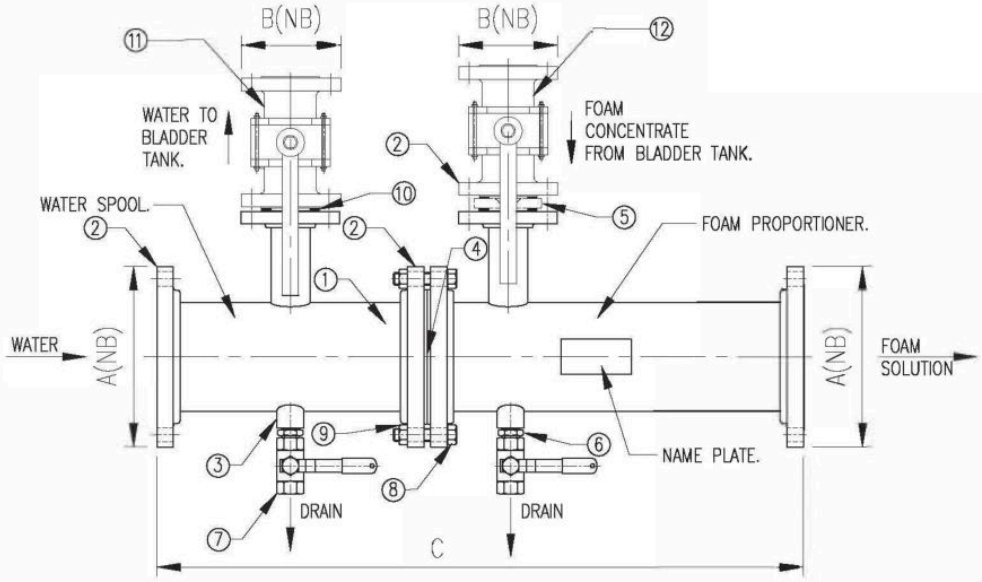
MODEL-SIZE (NB)	NOMINAL FLOW RANGE IN LPM*	PROP. RATIO IN %	A (NB)	B (NB)	C
BTFP-50	75 - 1000	1%, 3%	50	25	1000
BTFP-80	200 - 3200	1%, 3%	80	40	1000
BTFP-100	400 - 6200	1%, 3%	100	40	1000
BTFP-150	1000 - 11500	1%, 3%	150	50	1000
BTFP-200	3000 - 36300	1%, 3%	200	65	1000

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* **AZEIDK**

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

THIS DRAWING AND DESIGN IS A PROPERTY OF 'FIRETECH' AND MUST NOT BE COPIED OR LEND WIHOUT THEIR PERMISSION IN WRITING.



MATERIAL OF CONSTRUCTION

SR.NO.	DESCRIPTION	MATERIAL
1	BODY	CARBON STEEL
2	FLANGES	CARBON STEEL
3	COUPLINGS	CARBON STEEL
4	WATER NOZZLE	STAINLESS STEEL 304
5	FOAM NOZZLE	STAINLESS STEEL 304
6	HEX NIPPLE	CARBON STEEL
7	DRAIN VALVE	BRASS CHROME PLATED.
8	BOLTS	ASTM A193 GR.B7,ZINC COATED.
9	NUTS	ASTM A194 GR.2H,ZINC COATED.
10	GASKET	NON-CAF-AF-120
11	WATER CHARGING VALVE	STAINLESS STEEL 304
12	FOAM SUPPLY VALVE	STAINLESS STEEL 304

TECHNICAL DATA

1.MODEL:-AFP
2.ITEM CODE:-AFP-80
3.WORKING PRESSURE:-4BAR(MIN.)-12.06BAR(MAX.)
5.FOAM PROPORTIONING RATIO:-3% (+0.9/-0)
6.HYDROSTATIC TEST PRESSURE:-18.09BAR.(FOR 30MIN.)
7.FLANGE DRILLING:-AS PER ANSI.B.16.5,150#
8.FINISH:-INTERNAL-ONE COAT OF PENGAURD STORAGE (100-200 MIC.DFT.)
9.FINISH:-EXTERNAL-FIRE-RED RAL 3000.
10.SERIAL NO:- 7062-3.1 TO 3.18 50NB 7062-9.1 TO 9.2 80NB 7062-13.1 100NB

PERFORMANCE & DIMENSION DETAIL

ITEM CODE	FLOW RANGE IN LPM (3% AFFF)	PROP.RATION IN %	A(NB)	B(NB)	C	QTY
AFP-50	75-1000	3%	50	25	1000	18 NOS.
AFP-80	200-3200	3%	80	40	1000	02 NOS.
AFP-100	400-6200	3%	100	40	1000	01 NOS.

NOTE:
1. ALL DIMENSIONS ARE IN mm, UNLESS OTHERWISE STATED.
2. FLOW RANGE MENTIONED IS WITH AFFF 3% FOAM CONCENTRATE,FOR FLOW RANGE WITH OTHER FOAM CONCENTRATE PLEASE CONTACT FIRETECH.

					PROJECT:	2024	NAME	DATE
					CONSULTANT:	DRN.	MS	23.07.24
					CLIENT: WBE FOR SAFETY COMPANY	CHD.	TJ	23.07.24
					TITLE: FOAM PROPORTIONER FOR BLADDER TANK-CS	APPD.	NM	23.07.24
0	ISSUED FOR APPROVAL.	MS	NM	23.07		DRG.NO.		REV.
REV.	DESCRIPTION	BY.	APPD	DATE		OD-7062-16-GAD		0

SHEET 01 OF 01

☐ ISSUED FOR APPROVAL. ☐ APPROVAL NOT REQUIRED. ☐ CLIENT APPROVED COPY. DATE:-23.07.2024 SIGN:-

	MANUFACTURER'S NAME AND ADDRESS			MANUFACTURING QUALITY PLAN				CLIENT:- WBE FOR SAFETY COMPANY				
				ITEM :- FOAM PROPORTIONER - 50NB,80NB &100NB.		DRG NO . OD-7062-16-GAD REV.0		PROJECT :-				
						QAP NO . OD-7062-17-QAP REV.0		PO NO :- 10020870/2024-00				
				ITEM CODE:- BTFP-50,BTFP80 & BTFP100.		DATE: 23.07.2024	PAGE: 1 OF 1	Date :- 06.07.2024				

SL. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
					M	TPI					M	TPI	N	
1	2	3	4	5	6		7	8	9	10*	11			12
A1	Ratio Controller / Foam Porportioner	Pipes, Flanges, Water Nozzle & Foam Orifice	Major	Physical & Chemical	1/ Heat	--	As per appr. Drg/TDS	As per appr. Drg/TDS	LTR/ MTC	√	P	--	R	
		Material Control Record	Major	Heat Number Verification	100%	--	As Per ASME SEC II.		Material Co-Relation Chart	√	P	--	R	
		Visual & Dimensional	Major	Measurement	100%	--	As per appr. Drg	As per appr. Drg	Inspection Report	√	P	--	R	
		Hydrostatic Test	Major	18 Bar for 30 mins	100%	--	As per appr. Drg/TDS	No Leakage & pressure drop during holding time	Inspection Report	√	P	--	R	
		Performance Test (Flow& induction)	Major	Measurement	1/Size	--	Appr.Drg/TDS	3%(0.9 , -0)	Inspection Report	√	P	--	R	
B1	Final painting	Paint Shade, DFT & Visual Inspection	Major	Visual & DFT Measurement Randomnly.	100%	--	Appr Drg/TDS	DFT Measurement	Inspection Report	√	P	--	R	
NOTE:-Water shall be used during internal performance testing.														

LEGEND: * RECORDS, INDENTIFIED WITH "TICK" ( ) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION
M: MANUFACTURER , N:CLIENT/END USER , P: PERFORM, R: REVIEW, LTR-LAB TEST REPORT, MTC-MATERIAL TEST CERTIFICATE, TDS- TECHNICAL DATA SHEET

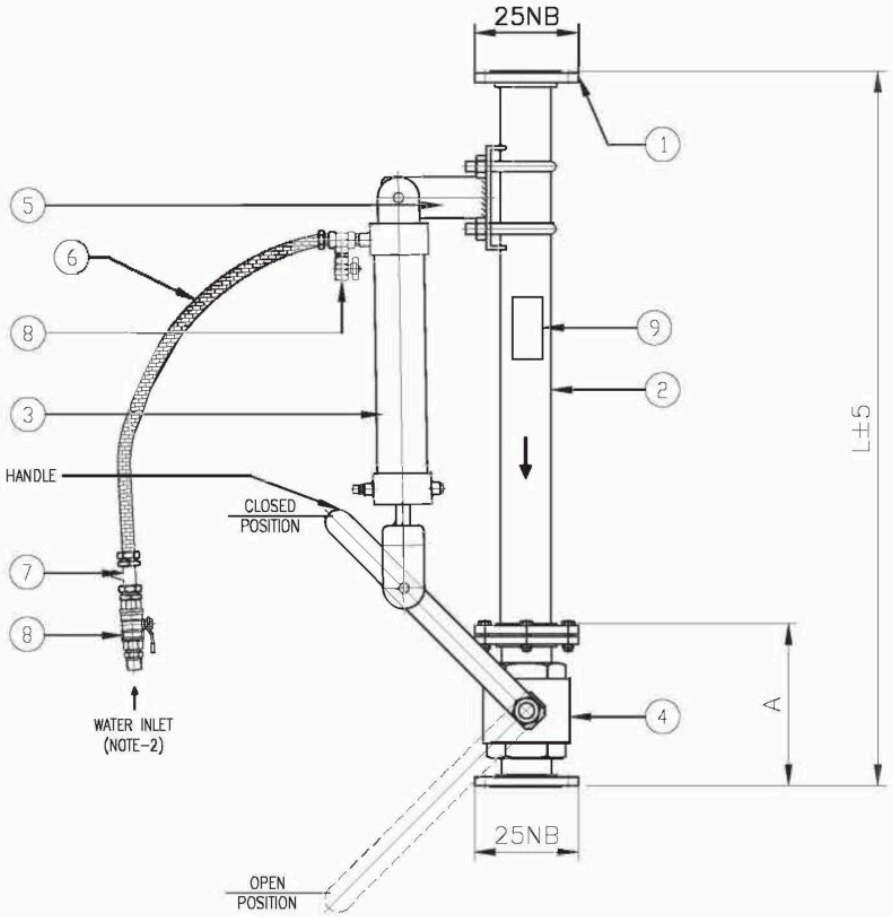
MANUFACTURER

SIGNATURE & STAMP

CLIENT

SIGNATURE & STAMP

THIS DRAWING AND DESIGN IS A PROPERTY OF **'FIRETECH'** AND MUST NOT BE COPIED OR LEND WIHOUT THEIR PERMISSION IN WRITING.



MATERIAL OF CONSTRUCTION

SR.NO.	DESCRIPTION	MATERIAL
1	FLANGE	ASTM A182 F304 (SS:304)
2	PIPE	ASTM A312 TP304 SCH.40(SS:304)
3	HYDRAULIC CYLINDER	SS:304
4	BALL VALVE	ASTM A351 CF8 (SS:304)
5	CYLINDER MTG.BRKT.	SS:304
6	HOSE	SS:304
7	STRAINER	BRASS
8	BALL VALVE	BRASS
9	NAME PLATE	SS:304

TECHNICAL DETAILS

1.MODEL : FCV-H-25-S4
2.MIN. WORKING PRESSURE : 3 BAR
3.MAX. WORKING PRESSURE : 12 BAR
4.HYDRAULIC TEST PRESSURE : 18 BAR FOR 2 MINUTES.
5.FINISH : PAINTED FIRE-RED TO SHADE RAL 3000 (190-260 MIC.DFT)

SELECTION OF FOAM CONCENTRATE VALVE

SR.NO.	FOAM CONTROL VALVE SIZE	SIZE OF PROPORTIONER	A	L	SR.NO	QTY
1	25NB	50NB	128	680	7062 4.1 TO -4.18	18 No.

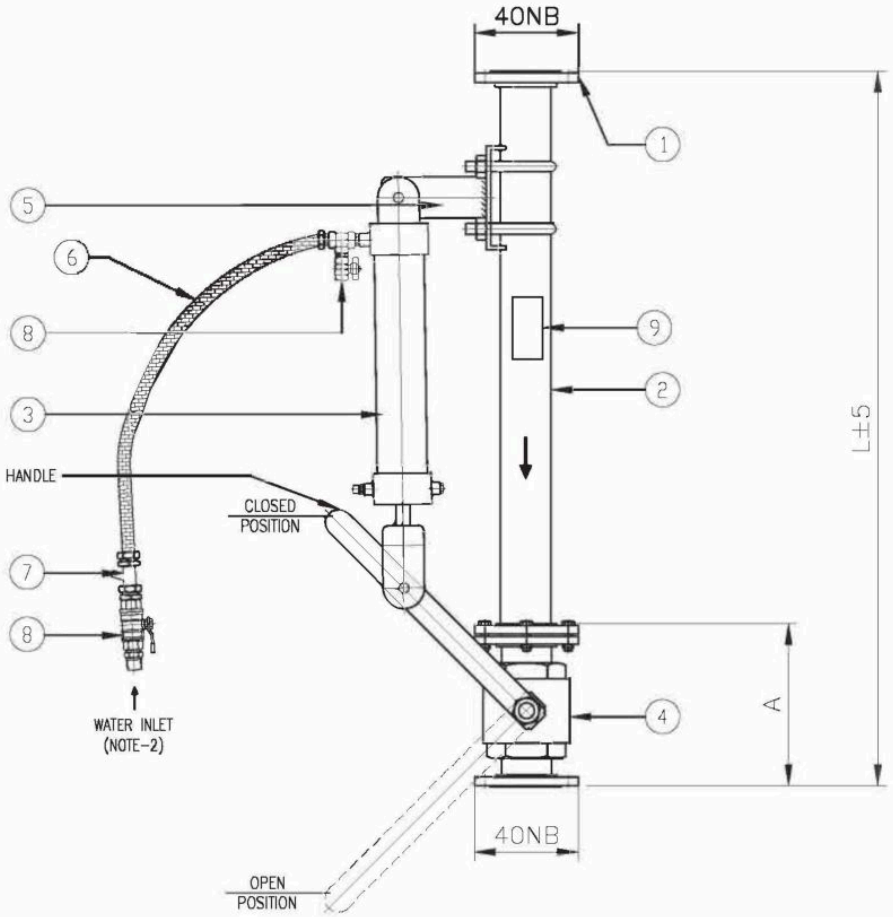
NOTE:-1. ALL DIMENSIONS ARE IN mm,UNLESS OTHERWISE STATED.
2. TRIM CONNECTION TO BE CONNECTED ON THE INLET WATER PIPING BEFORE SPOOL PIECE.

					PROJECT.:-	2024	NAME	DATE
					CONSULTANT:	DRN.	MS	23.07.24
					CLIENT:- WBE FOR SAFETY COMPANY	CHD.	TJ	23.07.24
					TITLE: FOAM CONCENTRATE CONTROL VALVE-HYDRAULIC-25NB	APPD.	NM	23.07.24
0	ISSUED FOR APP.	MS	NM	23.07		DRG.NO.		REV.
REV.	DESCRIPTION	BY.	APPD	DATE		OD-7062-13-GAD		0

☐ CLIENT APPROVED COPY.
☐ APPROVAL NOT REQUIRED.
● ISSUED FOR APPROVAL.

SIGN:- _____
DATE:- 23.07.2024

THIS DRAWING AND DESIGN IS A PROPERTY OF **'FIRETECH'** AND MUST NOT BE COPIED OR LEND WIHOUT THEIR PERMISSION IN WRITING.



MATERIAL OF CONSTRUCTION

SR.NO.	DESCRIPTION	MATERIAL
1	FLANGE	ASTM A182 F304 (SS:304)
2	PIPE	ASTM A312 TP304 SCH.40(SS:304)
3	HYDRAULIC CYLINDER	SS:304
4	BALL VALVE	ASTM A351 CF8 (SS:304)
5	CYLINDER MTG.BRKT.	SS:304
6	HOSE	SS:304
7	STRAINER	BRASS
8	BALL VALVE	BRASS
9	NAME PLATE	SS:304

TECHNICAL DETAILS

1.MODEL : FCV-H-40-S4
2.MIN. WORKING PRESSURE : 3 BAR
3.MAX. WORKING PRESSURE : 12 BAR
4.HYDRAULIC TEST PRESSURE : 18 BAR FOR 2 MINUTES.
5.FINISH : PAINTED FIRE-RED TO SHADE RAL 3000 (190-260 MIC.DFT)

SELECTION OF FOAM CONCENTRATE VALVE

SR.NO.	FOAM CONTROL VALVE SIZE	SIZE OF PROPORTIONER	A	L	SR.NO	QTY
1	40NB	80NB & 100NB	165	720	7062 10.1 TO -10.2 7062 14.1	02 No. 01 No.

NOTE:-1. ALL DIMENSIONS ARE IN mm,UNLESS OTHERWISE STATED.
2. TRIM CONNECTION TO BE CONNECTED ON THE INLET WATER PIPING BEFORE SPOOL PIECE.

					PROJECT.:-	2024	NAME	DATE
					CONSULTANT:	DRN.	MS	23.07.24
					CLIENT:- WBE FOR SAFETY COMPANY	CHD.	TJ	23.07.24
					TITLE: FOAM CONCENTRATE CONTROL VALVE-HYDRAULIC-40NB	APPD.	NM	23.07.24
0	ISSUED FOR APP.	MS	NM	23.07		DRG.NO.		REV.
REV.	DESCRIPTION	BY.	APPD	DATE		OD-7062-14-GAD		0

☐ CLIENT APPROVED COPY. ☐ APPROVAL NOT REQUIRED. ● ISSUED FOR APPROVAL.

SIGN:- DATE:- 23.07.2024

	MANUFACTURER'S NAME AND ADDRESS	MANUFACTURING QUALITY PLAN			CLIENT :- WBE FOR SAFETY COMPANY
		ITEM :- FOAM CONCENTRATE CONTROL VALVE-HYDRULIC-25NB & 40NB	DRG NO :- OD-7062-13&14-GAD	REV.0	PROJECT :-
			QAP NO :- OD-7062-15-QAP	REV.0	PO NO :- 10020870/2024-00
		ITEM CODE :- FCV-H-25-S4 , FCV-H-40-S4	DATE :- 23-07-2024	PAGE :- 1 OF 1	DATE :- 06-07-2024

SL. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
					M	TPI					M	TPI	N	
1	2	3	4	5	6		7	8	9	10*	11			12
A	Raw Material	Pipe,Flange	Major	Physical & Chemical	1/ Heat	-------	As per appr. Drg	As per appr Drg	LTR /MTC	√	P	-------	R	
B	In process inspection	Dimensional -Flange Drilling	Major	Measurement	100%	-------	ANSI B 16.5, 150#	ANSI B 16.5, 150#	Inspection Report	√	P	-------	R	
C	Final	Hydrostatic Test	Major	18 Barfor 2 mins	100%	-------	As per appr. Drg/TDS	No Leakage & pressure drop during holding time	Inspection Report	√	P	-------	R	
		Opening Of Valve	Critical	Measurement	1/Size	-------	-------	Valve Should Open @ 3 Bar(min)	Inspection Report	√	P	-------	R	
		Painting	Major	Visual & Measurement Randomly	100%	-------	-------	-------	inspection Report	√	P	-------	R	
D	Marking	Model,Inlet Pressure,Year of Mfg.,NPS,Sr.No.& Mfg.Name	Major	visual	100%	-------	As per appr. Drg/TDS	As per appr. Drg/TDS	inspection Report	√	P	-------	R	

LEGEND: * RECORDS, INDENTIFIED WITH "TICK" ( ) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION M: MANUFACTURER , N:CLIENT/END USER , P: PERFORM, W: WITNESS, R-REVIEW, LTR-LAB TEST REPORT, MTC-MATERIAL TEST CERTIFICATE ,TPI- THIRD PARTY INSPECTION,TDS-TECHNICAL DATA SHEET ,STC- SUPPLIER TEST CERTIFICATE

MANUFACTURER	CLIENT
SIGNATURE & STAMP	SIGNATURE & STAMP

Document No.: FPC-684-MKT-FWS
Revision: 0
Product Number: 684



FIRETECH FOAM SPRAY NOZZLE - UL LISTED (NON - AIR ASPIRATING TYPE)

SPECIAL FEATURES

- Light weight, compact design
- Produces similar spray patterns with Foam & Water
- Available in two K- Factors – K-43 (2.9) & K-79 (5.5)
- Lowest operating pressure at farthest nozzle starting 0.7 Bar
- UL listed with AFFF & AR-AFFF Foam Concentrates
- Suitable for application with Low Expansion Foam

DESCRIPTION

FIRETECH UL Listed Foam Spray nozzles are open, non-air aspirating discharge heads. It is manufactured and designed for installation as part of an engineered fire protection system. FIRETECH foam water nozzles are designed for applications where a low expansion foam application is needed followed by a period of water cooling. The nozzles are designed in such a manner as to produce a very similar spray pattern with foam and water.

The general arrangement of FIRETECH UL Listed Foam Spray nozzle shall be as per fig. 684-1. The Flow Vs Pressure graph for this nozzle shall be as per shown in graph fig. 684-2. The spray patterns for K-43 (2.9) & K-79 (5.5) nozzles shall be as shown in graph fig. 684-3 & 684-4 respectively.

OPERATION

On supply of pressurized foam water solution to the FIRETECH Foam Spray nozzle, the solution is deflected under applied pressure from the surface of deflector to produce a similar pattern of low expansion foam. The low expansion foam is discharged in a conical spray patterns as shown in spray coverage graph fig. 684-3 & 684-4 for applicable K-Factors.

SPECIFICATION

FIRETECH UL Listed Foam Spray nozzle (non air aspirating type) shall be manufactured in Stainless Steel 316 construction for longer life. The end connection shall be 15 NB (1/2") NPT (M) or BSPT (M) as per requirement with discharge coefficients or K-Factors K-43 (2.9) & K-79 (5.5) as applicable and derived from design calculation of foam spray system. It weighs only 30% of the weight compared to conventional air aspirated open head foam spray nozzles.

The discharge angle shall be 140° (Degrees) and these shall be available under UL listing approval with AFFF & AR-AFFF foam concentrates for mentioned specification.

Note: *Foam water spray nozzle spacing and operating pressure shall be governed by foam solution application density required for flammable liquid being protected. Consult* **AZEIDK** *team for more information on it.*

HOW TO SELECT FIRETECH UL LISTED FOAM SPRAY NOZZLE?

The major factors to be considered while selecting foam spray nozzles are:

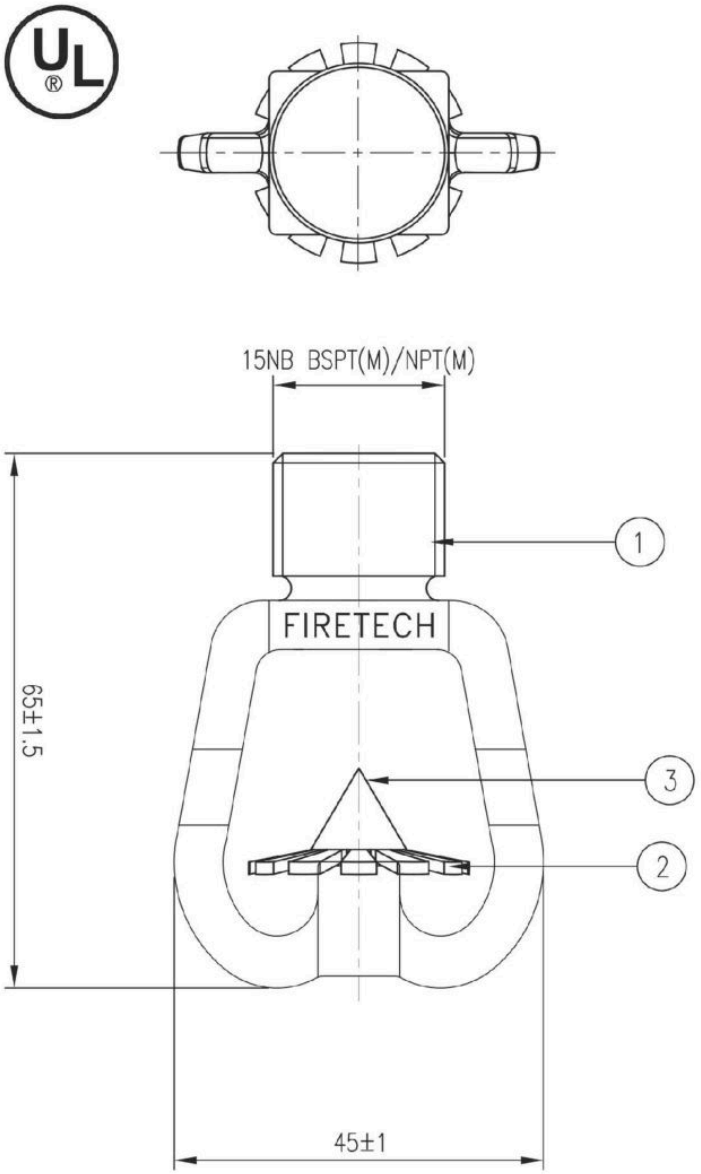
1. Type of hazard
2. Exposed area of equipment / area where system is being installed
3. Discharge density as per the design standards (like NFPA, OISD etc.) and hazard to be protected
4. Consideration of dry spots w.r.t the coverage areas & maximum allowable spacing between nozzles

Based on the above factors, required number of nozzles can be calculated which in turn dictate minimum total required flow through the system. Suitable K-factor is identified to meet the calculated flow requirement.

APPLICATION

FIRETECH UL Listed Foam Spray Nozzle (Non Air Aspirating type) is an open head designed for spray application of low expansion foam for protection of flammable liquid hazards followed by water application for cooling effect. Foam Spray nozzles / Foam water sprinklers are used in foam water deluge / manual spray systems installed for protection of various hazardous areas such as,

- Chemical process plants
- Tanker loading bays
- Railway gantry
- Air-craft hangars
- Warehouses
- Flammable liquid pumping/metering sheds etc.



TECHNICAL DETAILS:–		
SPRAY ANGLES 140°	'K' FACTOR AVERAGE BETWEEN 0.7–12.0 BAR	
WORKING PRESSURE 2.1–12.0 BAR(K–43) 0.7–12.0 BAR(K–79)	METRIC	US
	K–43	2.9
	K–79	5.53
WEIGHT – 0.095 KG (APPROX.)	K FACTOR = $\frac{\text{FLOW IN LPM}}{\sqrt{\text{PRESSURE}}}$	
FINISH	STAINLESS STEEL–NATURAL FINISH.	
MARKING	MFG.NAME OR IDENTIFYING SYMBOL OF THE MFG,K–FACTOR,ANGLE&MODEL ANY OTHER REQUIREMENT AS PER CLIENT CAN BE ADDED.	
END CONNECTION	1/2" BSPT(M) 1/2" NPT(M)(OPTIONAL)	
APPROVAL	UL LISTED	
ORDERING INFORMATION	SPECIFY K–FACTOR, SPRAY ANGLE, FINISH, MODEL AND END CONNECTION	

NOTE.:–

1. ALL DIMENSIONS ARE IN mm,UNLESS OTHERWISE SPECIFIED.

FOAM SPRAY NOZZLE

MODEL	SIZE	MATERIAL OF CONSTRUCTION
F226	15NB	STAINLESS STEEL(SS:316)

SR.NO.	DESCRIPTION	MATERIAL GRADE
03	PIN	ASTM A479 S31803/S32750
02	DEFLECTOR	ASTM A240 S32205/S32750
01	BODY	ASTM A351 Gr.CF8M(SS:316)

MATERIAL OF CONSTRUCTION

Fig No. 684-1

PERFORMANCE DETAILS

Model	K–Factor (Metric)	Discharge Angle Deg.	Spacing (mtrs)	Min.Pressure @Farthest Nozzle
F226	43	140°	3.0Mx3.0M	2.1 Bar
F226	79	140°	3.0Mx3.0M	0.7 Bar

FLOW V/S PRESSURE GRAPH

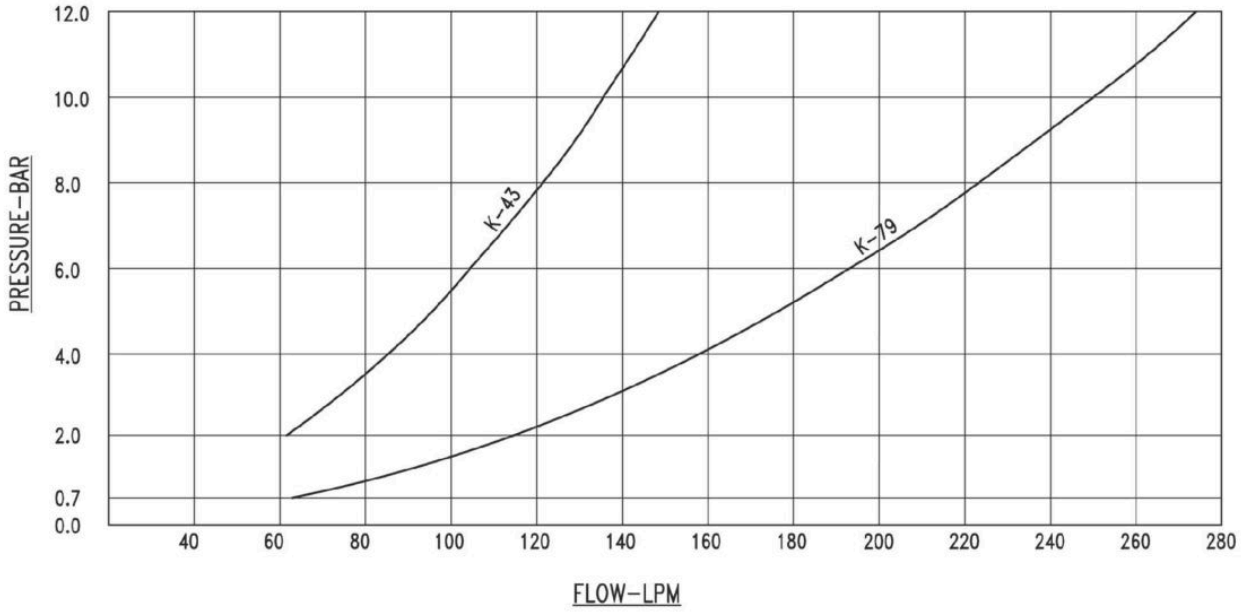
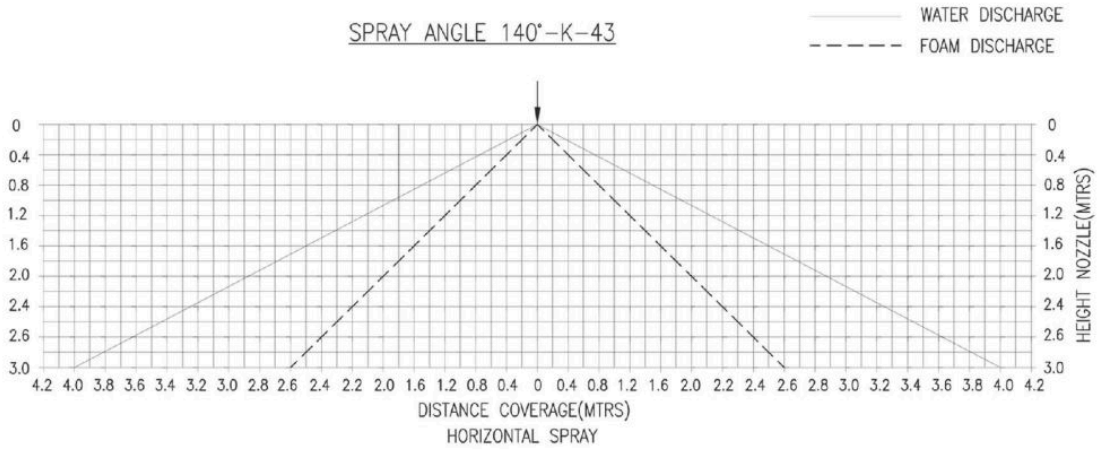


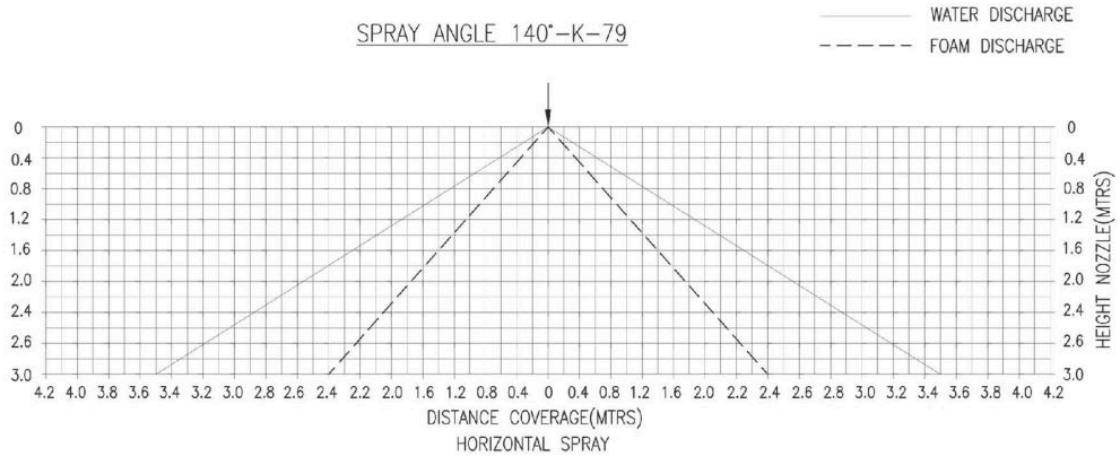
Fig No. 684-2



NOTE:

1. ALL DIMENSIONS ARE IN METERS.
2. RECOMMENDED OPERATING PRESSURE – 2.1 BAR TO 4.2 BAR FOR K-43
3. TEST SPRAY PATTERN OBTAINED IS IN STILL AIR CONDITION.

Fig No. 684-3



NOTE:

1. ALL DIMENSIONS ARE IN METERS.
2. RECOMMENDED OPERATING PRESSURE – 0.7 BAR TO 4.2 BAR FOR K-79
3. TEST SPRAY PATTERN OBTAINED IS IN STILL AIR CONDITION.

Fig No. 684-4

DELUGE VALVE

AUTOMATIC AND MANUAL OPERATIONAL PROCEDURES PERIODIC TESTING AND SAFETY PROCEDURES. AND OPERATION MANUAL

SPECIFICATION:-

Deluge Valves are hydraulic (wet trim) / pneumatic (pneumatic trim) or electrically operated (electric trim), self-actuated, diaphragm operated having resilient (soft-seat) quad-ring for zero leakage – to class VI as per ANSI B16.104/ANSI FCI 70-2-2006. The valve shall be of pack less design, top and bottom guided for vibration-free operation.

MODEL	ACV-FTV-100
NORMAL SIZES	2" (50MM) 2.5" (65MM) 3" (80MM) 4" (100MM) 6" (150MM) 8" (200MM) 10" (250MM)
SERVICE PRESSURE	1.4 TO 17.5 KG/CM2 (20 PSI TO 250PSI)
HYDRO TEST PRESSURE	35 KG/CM2 (500 PSI)
FLANGED END CONNECTION	ANSI B 16.5 CL-150,RF
MOUNTING	HORIZONTALLY & VERTICALLY
APPROVAL	UL LISTED
WET PILOT HIGHT LIMITATION	GRAPH ATTACHED
THREADED OPENING	BSPT
WEIGHT OF VALVE (APPROX)	2" (50 NB) - 14 KG 2.5" (65 NB) - 24 KG 3" (80 NB) - 30 KG 4" (100 NB) - 45 KG 6" (150 NB) - 94 KG 8" (200 NB) - 170 KG 10" (250 NB) - 380 KG

OPERATION

GENERAL DESCRIPTION

FIRETECH Deluge Valve, Model ACV-FTV-100 are diaphragm operated, Line Fluid Actuated, Globe Type-Straight Pattern Valves. The valve remains closed when line fluid (water is loaded above the diaphragm in the cover chamber and valve opens fully, when line fluid (water) is emptied from the cover chamber.

SYSTEM DESCRIPTION:-

Deluge Valve is a quick release, hydraulically operated diaphragm valve. It has three chambers, isolated from each other by the diaphragm operated clapper and seat seal. While in SET position, water pressure is transmitted through an Preassembled bypass check valve, Isolation valve and restriction orifice from the system supply side to the top chamber, so that supply pressure in the top chamber act across the diaphragm operated clapper which holds the seat against the inlet supply pressure, because of the differential pressure design. On detection of fire, the top chamber is vented to atmosphere through the outlet port via opened actuation devices. The top chamber pressure cannot be replenished through the restricted inlet port, and the upward force of the supply pressure lifts the clapper allowing the water flow to the system piping network and alarm devices.

OPTION AVAILABLE:-

- WET PILOT TRIM,
- DRY PILOT TRIM
- WET WITH ELECTRIC TRIM Solenoid Valve 2/2 way NC type for Electric Actuation (energized to open)
- DRY WITH ELECTRIC TRIM Solenoid Valve 2/2 way NC type for Electric Actuation (energized to open)
- Drain valve 2 Nos. one each for inlet & outlet side
- Test trim (isolation valve & check valve)
- Detection Line

ALL TRIMS ARE FACTORY FITTED ON THE DELUGE VALVE. THERE IS NO NEED FOR TUBING AND TRIM FITTING AT SITE.

A Deluge System is a fixed fire protection system in which the upstream pipe system is empty until the deluge valve operates to distribute pressurized water from open nozzles or sprinklers. The deluge valve is activated by operation of a fire detection system installed in the same area as the sprinklers.

Various types of detection systems may be used, including smoke, heat, ultraviolet (UV), or infrared (IR) detection. The deluge system can be activated by a hydraulic, pneumatic, electric, or manual Release system or any combination of these release systems. But, in all cases, the deluge valve itself is activated hydraulically. When the detection device is activated, the deluge valve is tripped and water flows into the piping system, discharging through all spray nozzles or sprinklers simultaneously

THE COMPONENTS OF BASIC DELUGE VALVE ASSEMBLY MODEL ACV FTV 100

MAIN VALVE ACV FTV 100

- Needle Valve-Restriction orifice
- 'Y' Strainer
- Dry Pilot Valve FT-M- 100 M for Pneumatic Actuation
- Manual Release station-MRS

FUNCTION

WET PILOT / WET WITH ELECTRIC PILOT:-

When the detection system senses a fire, either there is a loss of pressure in the detection line or it gives electric signal. In case of loss of pressure, the water from the Cover Chamber is drained, which opens the main valve (ACV FTV 100) cover chamber, opening the deluge valve FULLY and INSTANTLY. In the case of electric signal, the 2/2 way solenoid valve is energized which opens the Deluge Valve. When the electric signal is de-energized, it closes / resets the deluge valve automatically.

DRY PILOT / DRY WITH ELECTRIC PILOT:- (RELEASE BY QBDs)

Dry pilot operation uses a pilot line of closed Sprinkles/QB Detectors containing air under pressure, located in the area to be protected. It requires regulated dry air supply with main supply point, through restricted orifice. The air pressure to be maintained at 3.0 kg/sq.cm. The pilot line is connected to air inlet side of actuator. The top chamber of the deluge valve is connected to water inlet side of actuator. When there is an air pressure drop, or due to release of any of the release device on detection of fire, the diaphragm of actuator is lifted and allows the water to drain. This releases the water pressure in the top chamber of the deluge valve, allowing the deluge valve to open and water to flow into the system piping & alarm devices. Recommended air supply pressure for dry pilot trim system is 3.0 - 3.5 kg/sq.cm. In dry pilot trim, a Dry Pilot Actuator FT-M-100 is provided, In the case of electric signal, the 2/2 way solenoid valve is energized which opens the pilot valve (FT-M-100) which opens the Deluge Valve. When the electric signal is de-energized, it closes / resets the deluge valve automatically

RESETTING PROCEDURE:

(i) The deluge valve will reset automatically when release devices which were responsible for deluge valve opening are closed or restored back to their original status, (i.e. closing of ERS or replacing the damaged Sprinkler if release was through Sprinkler/ QB Detector, or closing of Solenoid valve). The reset time may be long or cause vibration while closing, depending upon the system back pressure at the outlet of the valve.

INSPECTION AND MAINTENANCE

Installed system piping network must be flushed properly before placing the Deluge valve in service. A qualified and trained person must commission 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 have regular inspection and test run of the system as per NFPA guideline or in accordance to the organization having local jurisdiction.

(I) WARNING

Inspection and testing is to be carried out only by authorized and trained personnel. DO NOT TURN OFF the water supply or close any valve to make repair(s), or test the valve without placing a roving fire patrol in the area covered by the system. Also inform the local security personnel and central alarm station, so that there is no false alarm signal. It is recommended to carry out physical inspection of the system at least twice in a week. The inspection should verify that all the control valves are in proper position as per the system requirement and that there are no damages to any component. The frequency of inspections must be increased in the presence of contaminated water supplies, corrosive/scaling water supplies, and corrosive atmospheres.

(ii) **NORMAL CONDITION**

(a) All main valves are open and are sealed with tamper proof seal
(b) Drain valves must be kept closed
(c) All the gauges except the system side water pressure gauge, should show the required pressure
(d) There should be no leakage in the system

(iii) **NORMAL CONDITION TEST**

(a) The system should be checked for normal condition at least once in
(b) Test the sprinkler alarm bell or electric alarm by turning the alarm test valve to the test position. The alarm should sound. This test should be carried out at least once in a week
(c) Conduct the water flow test as per the procedure of system testing at least once a month

(iv) **PERIODIC CHECK**

Conduct the water flow test by actuating few of the release devices provided in the system. Clean all strainer(s) and priming line restriction. This test is to be carried out at least once in three months.

ABNORMAL CONDITION

(i) **ALARM FAILS TO SOUND**

(a) Check for any obstruction in the alarm test line, make certain that the sprinkler alarm is free to Operate
(b) If an electric alarm is provided, check the electrical circuitry to the alarm

(ii) **FALSE TRIPS**

(a) Check for clogging in self preassembled priming line strainer, restriction orifice check valve, Isolation valve
(b) Leakage in the release system
(c) The deluge Detection airline orifice clogged or low supply pressure

(iii) **LEAKAGE THROUGH THE DELUGE VALVE**

(a) Damaged deluge valve seat or obstruction on the seat face by foreign object
(b) Leakage in release system
(c) Partly clogged self-priming line restriction orifice check valve
(d) Low air pressure on release system line or leakage in release system

MAINTENANCE MANUAL

AS DESCRIBED EARLIER, DELUGE VALVE ASSEMBLY CONSISTS OF THE FOLLOWING:

- Main Valve ACV FTV 100
- Needle Valve – Restriction orifice – "D" (FLOW CONTROL DEVICE) – Stainless Steel
- 'Y' strainer – "F" Stainless Steel
- Dry Pilot Valve FT-M-100 – Stainless Steel
- Manual Release Station – "C" MR STATION (EMERGENCY RELEASE STATION)

Please find attached the datasheet and maintenance instruction for each of the above separately.

ACV-FTV-100 BASIC VALVE MAINTENANCE:-

DISASSEMBLY:-

Inspection or maintenance of the valve can be accomplished without removal from the line. To replace diaphragm (7) and / or seat quad ring (13), please refer the Assembly drawing

- Remove tube nuts where necessary to release valve covers from controls or control line
- Remove cover (2) and by loosening nuts (17-18)
- Remove diaphragm and stem assembly, being careful not to damage diaphragm when removing from studs.
- With assembly removed, examine diaphragm (7) and seat quad ring (13) for we are or damage

DO NOT DISASSEMBLE UNLESS REPLACEMENT IS NECESSARY.

- To replace diaphragm (7), seat quad ring (13) and / or stem 'O'-Ring, hold stem in vice or with wrench on flats at bottom end of stem and remove nuts
- Remove diaphragm washer, diaphragm, etc. in proper sequence
- Check all surfaces, seat grooves and diaphragm clamping surfaces for damages and foreign
- Particles

REASSEMBLY

- To reassemble, follow reverse order of disassembly
- Tighten stem nuts securely to assure proper clamping of diaphragm
- To assure positive and even-clamping of diaphragm between body and cover, gradually tighten cover nuts diametrically opposite each other

INSTALLATION

- The valve is to be installed on the line as per Flow Direction Arrow on the valve body
- Please ensure that tubing is not damaged or bent during the installation. Proper care should be taken. If tubing is already damaged in transit, it must be repaired properly before installation.
- All valves for petroleum services must be installed for 'Over the Seat 'Flow. 'R' after the figure number denotes 'Over the Seat 'flow. This will help valve to close, in case of diaphragm failure
- Item (D-FLOW CONTROL DEVICE) of ACV FTV 100 is needle valve for adjustable closing speed of the valve. Please keep this needle valve only ½ turn open
- Item (F) of ACV FTV 100 is 'Y' strainer 40/80 mesh stainless steel
- (DRY PILOT TRIM) Pilot FT-M-100M which actuates Deluge Valve in case of fire
- Item (C-EMERGENCY RELEASE STATION) Manual Release Station-open ball valve, as instructed on the label to open deluge valve, in case of emergency

TROUBLE SHOOTING AND REPAIR GUIDE

(A) **VALVE WILL NOT OPEN**

No.	Probable cause	Remedy
1	Diaphragm assembly stuck	Disassemble Valve, Clean it thoroughly, make it free by polishing both ends of stem.
2	Closed / jammed needle valve or ball valve	Ensure needle valve and ball valves are open
3	Problems in solenoid control or pilot (optional)	Ensure solenoid control and pilot are working properly, check their functions
4	Jammed strainer	Disassemble bottom strainer cover and clean Thoroughly. Replace screen if necessary.

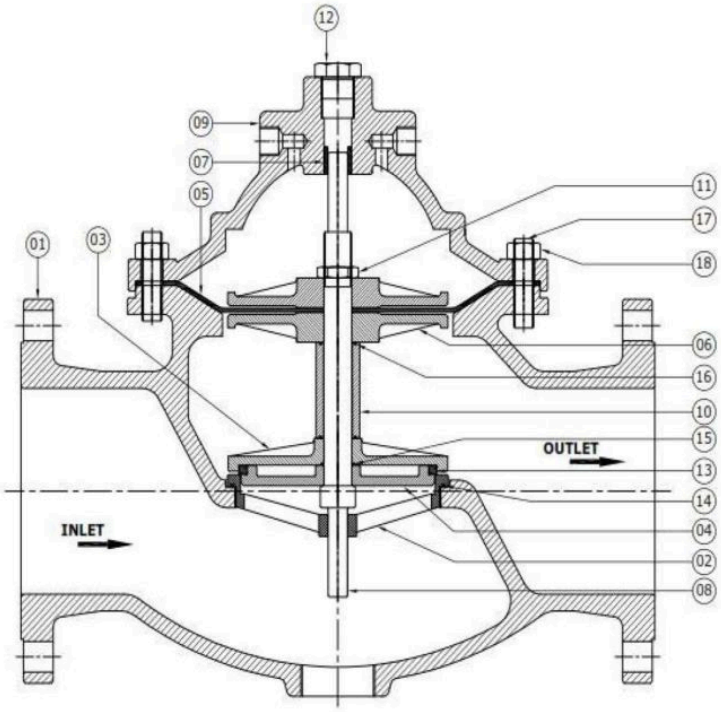
(B) **VALVE WILL NOT CLOSE**

No.	Probable cause	Remedy
1	Valve diaphragm assembly stuck	Disassemble valve, polish top and bottom ends of stem and make it free
2	Problems in solenoid control pilot	Check its function
3	Closed / jammed manual release	Ensure manual release is open
4	Leakage in pilot 100M	If so, repair the pilot, check its diaphragm

(C) **VALVE IS LEAKING**

No.	Probable cause	Remedy
1	Dirt or foreign object between seat and 'O'- Ring	Open the valve and clean seat
2	'O'- Ring seat has been wormed out or damaged	Replace 'O'- Ring seat
3	Gasket below seat has been Damaged	Check and replace the Gasket, if necessary

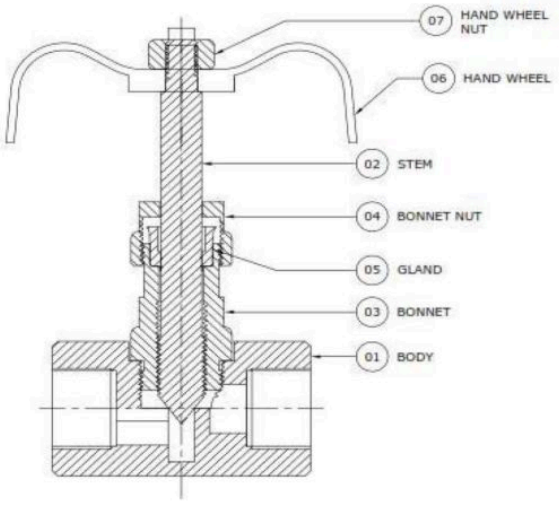
ACV FTV 100 BASIC VALVE (ASSEMBLY DRAWING) (GLOBE TYPE PATTERN)



PIPE THREADING AS PER ANSI / ASME B 1.20.1

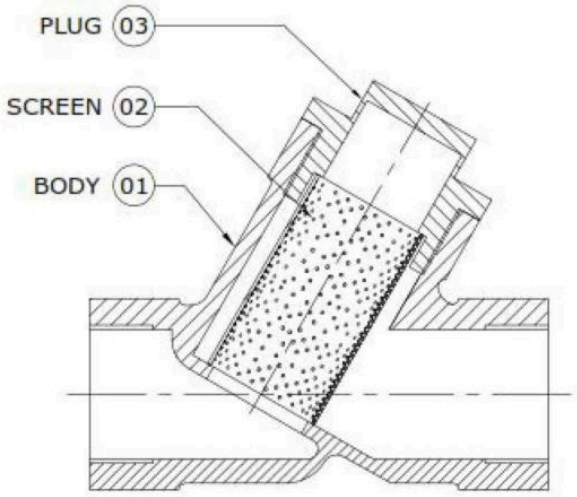
SR. NO.	DESCRIPTION	MATERIAL	QTY.
18	STUD NUT	ASTM A 194 GR. 2H	---
17	STUD	ASTM A 193 GR. B7	---
16	SPACER O RING	BUNA-N	02
15	STEM O RING	BUNA-N	01
14	SEAT O RING	BUNA-N	01
13	QUADRING	BUNA-N	01
12	PLUG	ASTM A 105	01
11	STEM NUT	S.S. 304	01
10	SPACER	AISI 304	01
09	COVER	ASTM A 216 GR. WCB	01
08	STEM	AISI 304	01
07	COVER BUSH	AISI 304	01
06	DIAPHRAGM WASHER	ASTM A 351 GR. CF8	02
05	DIAPHRAGM	BUNA-N WITH NYLON REINFORCE	01
04	QUADRING WASHER	ASTM A 351 GR. CF8	01
03	RETAINER	ASTM A 351 GR. CF8	01
02	SEAT	ASTM A 351 GR. CF8	01
01	BODY	ASTM A 216 GR. WCB	01

NEEDLEVALVE FTV-NV-250



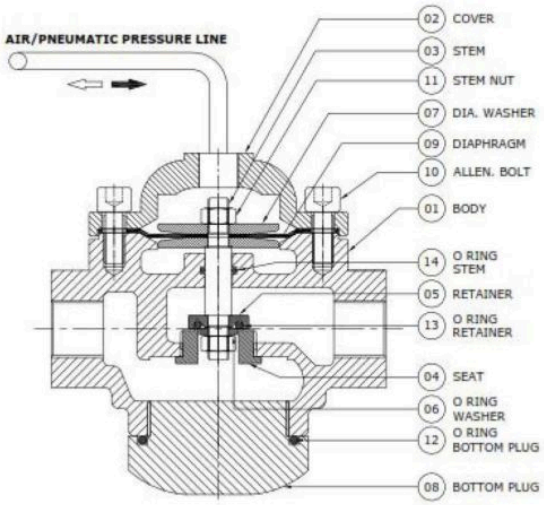
- 'Closing speed needle valve' FTNV - 101, should be normally two to three turns open
- There is provision to keep the valve locked in position by grub screw lock, if necessary
- NV are completely stainless steel with 1/4", 3/8" & ½"NPT (F) threaded

Y-S**STRAINER FTST 101**



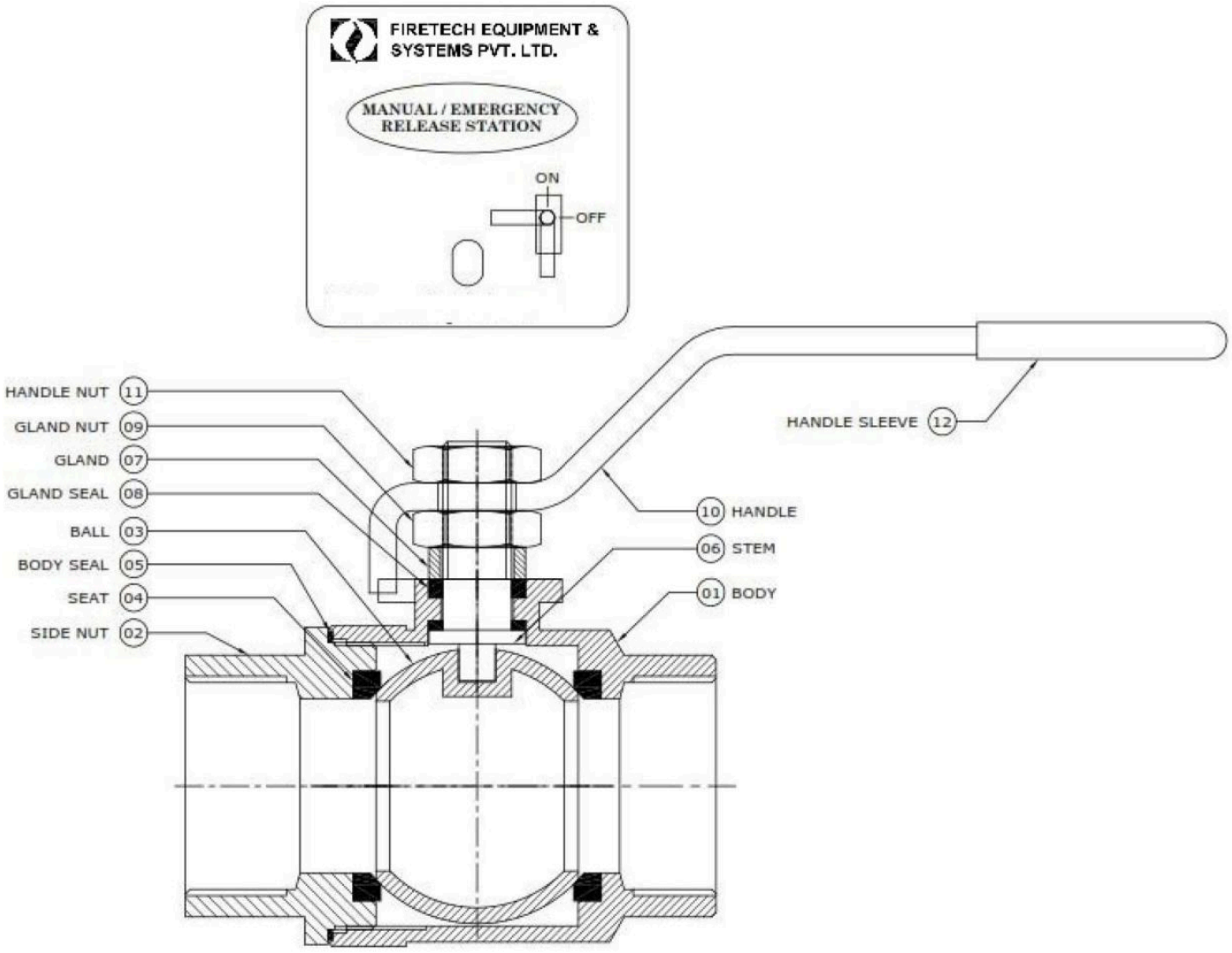
- 'Y' - Strainer are provided with 40 mesh stainless steel screen
- Open the bottom plug periodically and clean the screen
- 'Y' - Strainer are completely stainless steel with 1/4", 3/8" & ½"NPT (F) threaded

FT-M-100 PILOT VALVE



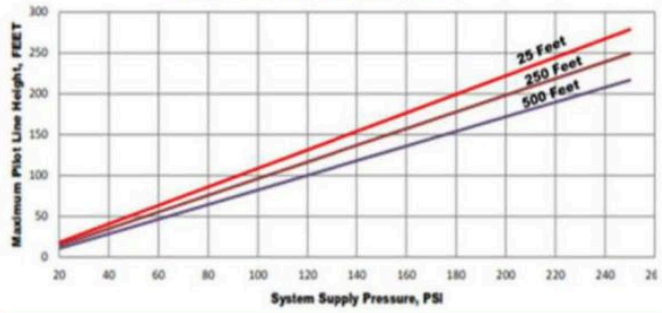
FT-M-100 is normally open type small valve
It closes when there is water or air pressure above diaphragm and opens when the water or air is drained from the diaphragm Check the spring, diaphragm and 'O' - Ring, if pilot is continuously leaking

MANUAL RELEASE STATION (MRS)

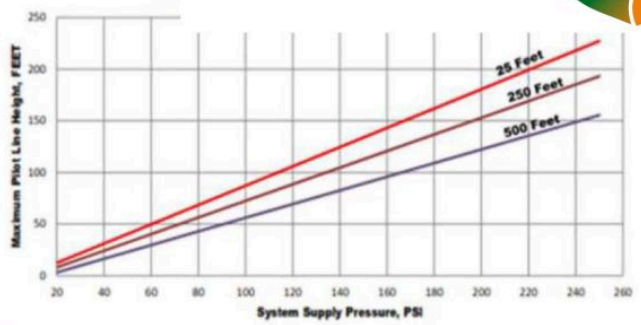


Manual Release Station is provided to open deluge valve in case of emergency, when it does not operate automatically. It drains water from the deluge valve cover, when ball valve is opened which allows deluge valve to fully open.

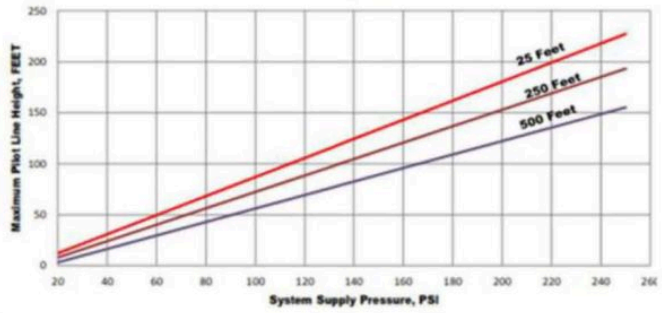
2 INCH ACV FTV 100- HORIZONTAL



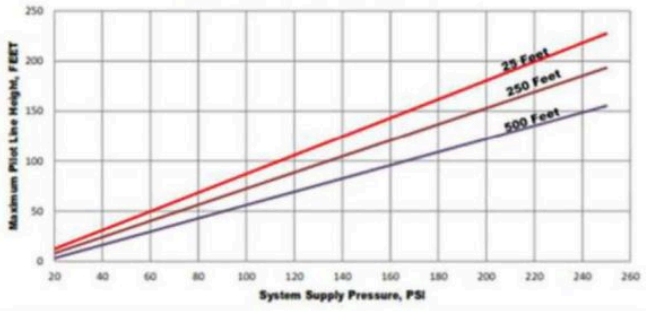
2.



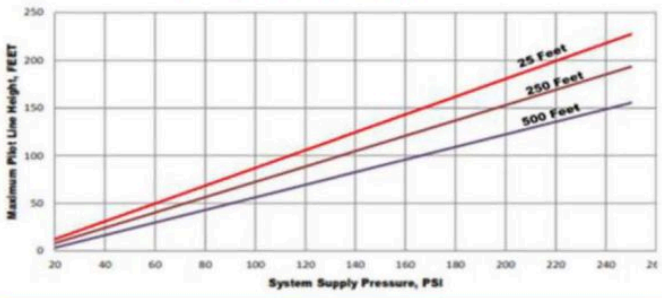
3 INCH ACV FTV 100- HORIZONTAL



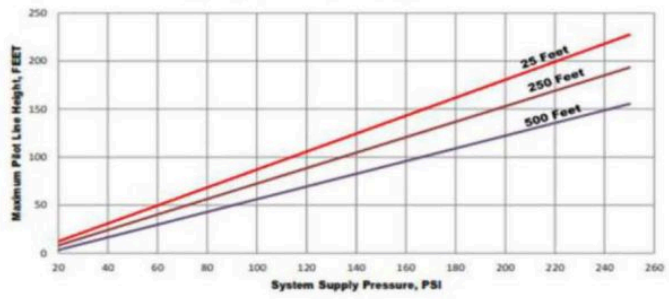
4 INCH ACV FTV 100- HORIZONTAL



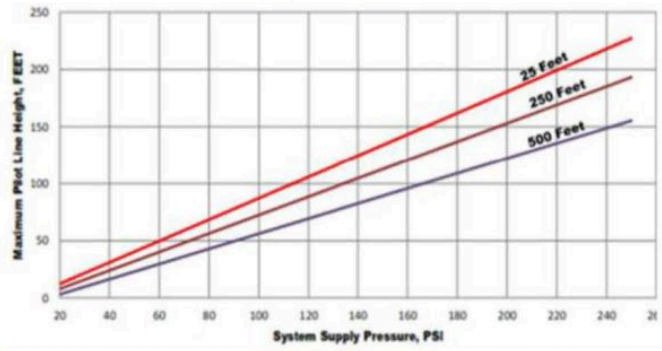
6 INCH ACV FTV 100- HORIZONTAL



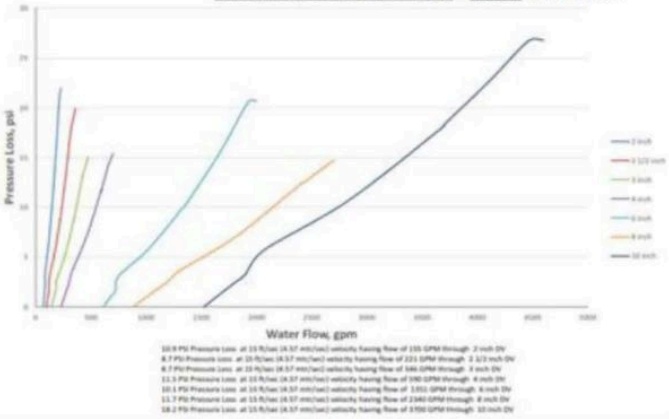
8 INCH ACV FTV 100- HORIZONTAL



10 INCH ACV FTV 100- HORIZONTAL



NORMAL PRESSURE LOSS vs FLOW **MODEL : ACV FTV 100**



WEHERE DIFFICULTY IN PERFORMANCE IS EXPERIENCED, THE MANUFACTURER OR HIS AUTHORISED REPRESENTATIVE SHALL BE CONTACTED IF ANY FIELD ADJUSTMENT IS TO BE MADE

THIS DRAWING AND DESIGN IS A PROPERTY OF 'RAPIDROP' AND MUST NOT BE COPIED OR LEND WIHOUT THEIR PERMISSION IN WRITING.

LISTED

SERIAL NO.- 7062-16.1 TO 16.21

WORKING PRESSURE	250 PSI
HYDRO TEST PRESSURE	35 Kg/Cm2
DRILLING	AS PER ANSI B16.5 CLASS 150
END CONNECTION	FLANGE END (RF)
RATING	150#
PAINT	RED TO SHADE RAL 3000 (DFT 140 TO 160 DFT)

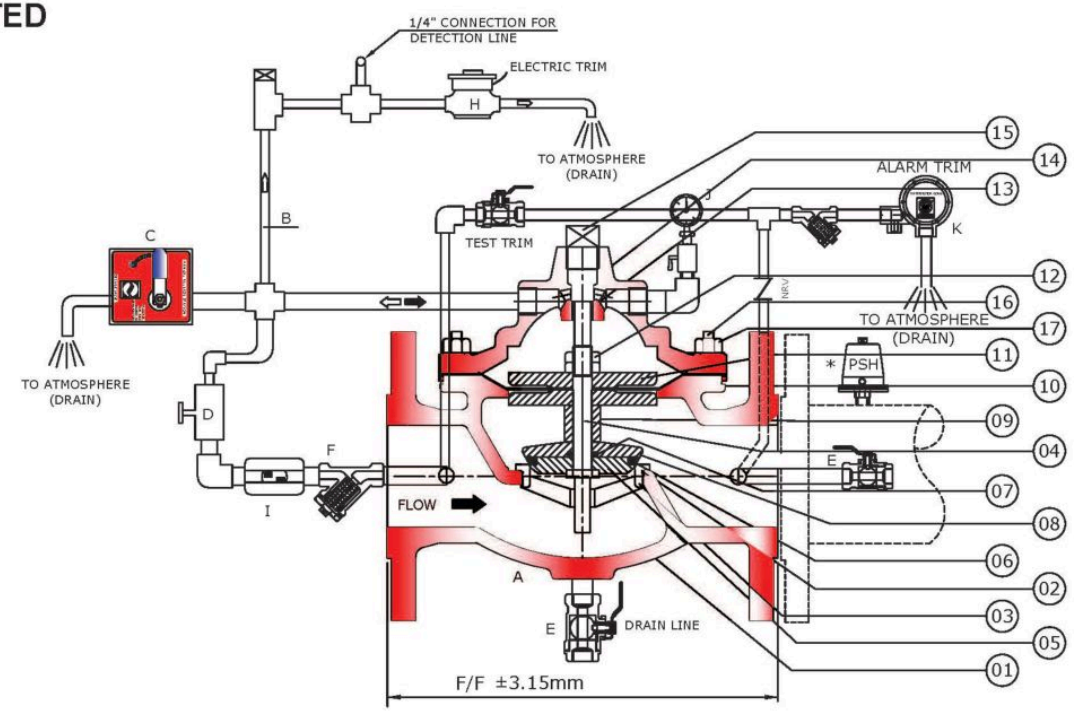
NOTES :

ALL DIMENSIONS ARE IN MM UNSPECIFIED TOLERANCE ± 0.1

* PRESSURE SWITCH (PSH) INSTALLED AT SITE IN CLIENT SCOPE

VALVE FUNCTION :-

(1) Valve Opens when solenoid is ENERGIZED.
(2) Valve Closes when solenoid is DE-ENERGIZED.
(3) M.R. Station provides manual override of controls.



VALVE SIZE		F/F	FL. O.D.	P.C.D.	R.F. DIA.	FL. THK.	HOLE DIA	NO. OF HOLE	QTY
IN	M.M.								
2"	50	238.0	150.0	120.7	92.0	15.8	19.0	04	21

SR. NO.	DESCRIPTION	MATERIAL	QTY.
17	STUD NUT	ASTM A 194 GR. 2H	--
16	STUD	ASTM A 193 GR. B7	--
15	PLUG	ASTM A 105	01
14	COVER	ASTM A 216 GR. WCB	01
13	COVER BUSH	AISI 304	01
12	STEM NUT	AISI 304	01
11	DIAPHRAGM WASHER	ASTM A 351 GR. CF8	02
10	DIAPHRAGM	BUNA-N WITH NYLON REINFORCE	01
09	SPACER	AISI 304	01
08	RETAINER	ASTM A 351 GR. CF8	01
07	O RING (STEM)	BUNA-N	01
06	QUADRING	BUNA-N	01
05	RETAINER PLATE	ASTM A 351 GR. CF8	01
04	STEM	AISI 304	01
03	SEAT	ASTM A 351 GR. CF8	01
02	O-RING SEAT	BUNA-N	01
01	BODY	ASTM A 216 GR. WCB	01

➡ CLOSES VALVE
⇨ OPENS VALVE

NO.	DESCRIPTION	MATERIAL	SIZE	QTY.
K	WATER MOTOR GONG			01
J	PRESSURE GAUGE			01
I	RESTRICTION ORIFICE CHECK VALVE			01
H	2/2 WAY SOLENOID VALVE	S.S. 304	1/2"	01
G	NRV	S.S. 304	1/2"	01
F	Y-TYPE STRAINER	ASTM A 351 GR. CF8	1/2"	01
E	INLET / OUTLET DRAIN VALVE	ASTM A 351 GR. CF8	3/4" BSP	01
D	FLOW CONTROL DEVICE	S.S. 304	1/2"	01
C	M.R. STATION	ASTM A 351 GR. CF8	1/2"	01
B	TUBING & FITTING	S.S. 304	3/8"	01
A	BASIC VALVE	ASTM A 216 GR. WCB	2"	01

MODEL NO.	FX
OPERATION	WET/HYDRAULIC TRIM
VALVE NAME	DELUGE VALVE

REV.	DESCRIPTION	BY.	APPD	DATE
0	ISSUE FOR APPROVAL	MS	NM	22.07

PROJECT:-	2024	NAME	DATE
CONSULTANT:-	DRN.	MS	22.07.24
CLIENT:- WBE FOR SAFETY COMPANY	CHD.	TJ	22.07.24
TITLE:-DELUGE VALVE-50NB	APPD.	NM	22.07.24
FIRETECH EQUIPMENT & SYSTEMS PVT. LTD. MUMBAI - 400 078, INDIA	DRG.NO.		REV.
	OD-7062-9-GAD		0

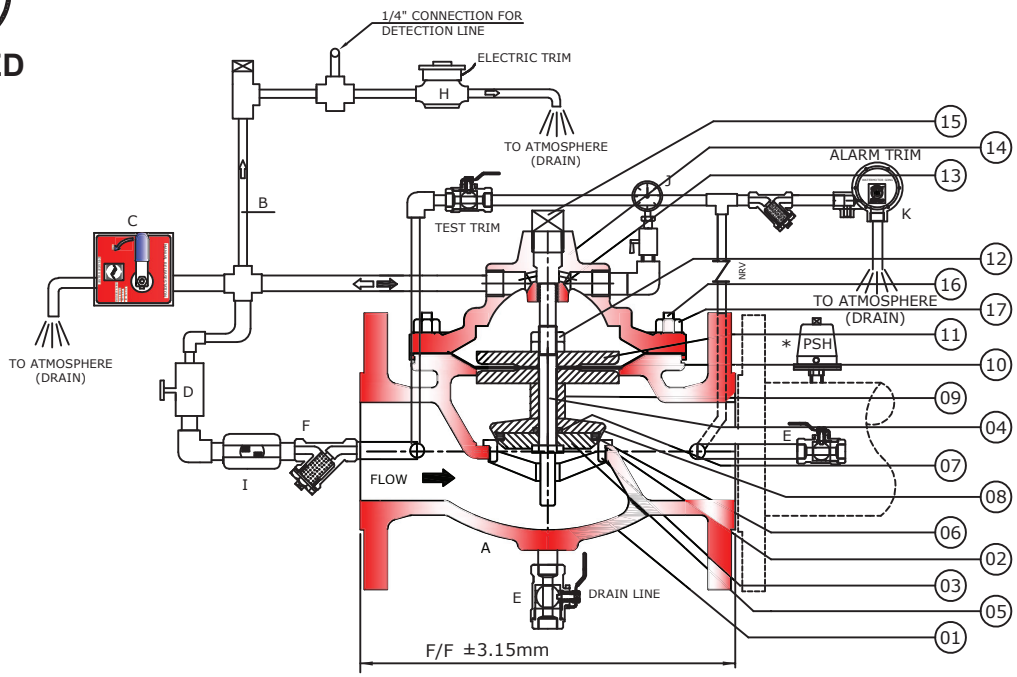
SIGN:- DATE:-22.07.2024

☐ CLIENT APPROVED COPY.
☐ APPROVAL NOT REQUIRED.
● ISSUED FOR APPROVAL.

THIS DRAWING AND DESIGN IS A PROPERTY OF 'FIRETECH' AND MUST NOT BE COPIED OR LEND WIHOUT THEIR PERMISSION IN WRITING

LISTED

SERIAL NO.- 7176-1.1 TO 1.10
7176-2.1 TO 2.10



SERVICE PRESSURE	17.5 Kg/Cm2
HYDRO TEST PRESSURE	35 Kg/Cm2
DRILLING	AS PER ANSI B16.5 CLASS 150
END CONNECTION	FLANGE END (RF)
RATING	150#
PAINT	RED TO SHADE RAL 3000 (DFT 140 TO 160 DFT)

NOTES :

ALL DIMENSIONS ARE IN MM UNSPECIFIED TOLERANCE ± 0.1

* PRESSURE SWITCH (PSH) INSTALLED AT SITE IN CLIENT SCOPE

VALVE FUNCTION :-

(1) Valve Opens when solenoid is ENERGIZED.
(2) Valve Closes when solenoid is DE-ENERGIZED.
(3) M.R. Station provides manual override of controls.

VALVE SIZE		F/F	FL. O.D.	P.C.D.	R.F. DIA.	FL. THK.	HOLE DIA	NO. OF HOLE
IN	M.M.							
3"	80	305.0	190.0	152.4	127.0	19.5	19.0	10
4"	100	382.0	230.0	190.5	157.1	23.8	19.0	10

SR. NO.	DESCRIPTION	MATERIAL	QTY.
17	STUD NUT	ASTM A 194 GR. 2H	--
16	STUD	ASTM A 193 GR. B7	--
15	PLUG	ASTM A 105	01
14	COVER	ASTM A 216 GR. WCB	01
13	COVER BUSH	AISI 304	01
12	STEM NUT	AISI 304	01
11	DIAPHRAGM WASHER	ASTM A 351 GR. CF8	02
10	DIAPHRAGM	BUNA-N WITH NYLON REINFORCE	01
09	SPACER	AISI 304	01
08	RETAINER	ASTM A 351 GR. CF8	01
07	O RING (STEM)	BUNA-N	01
06	QUADRING	BUNA-N	01
05	RETAINER PLATE	ASTM A 351 GR. CF8	01
04	STEM	AISI 304	01
03	SEAT	ASTM A 351 GR. CF8	01
02	O-RING SEAT	BUNA-N	01
01	BODY	ASTM A 216 GR. WCB	01

K	WATER MOTOR GONG				01
J	PRESSURE GAUGE				01
I	RESTRICTION ORIFICE CHECK VALVE				01
H	2/2 WAY SOLENOID VALVE	S.S. 304	1/2"	1/2"	01
G	NRV	S.S. 304	1/2"	1/2"	01
F	Y-TYPE STRAINER	ASTM A 351 GR. CF8	1/2"	1/2"	01
E	INLET / OUTLET DRAIN VALVE	ASTM A 351 GR. CF8	1-1/4" BSP	2" BSP	01
D	FLOW CONTROL DEVICE	S.S. 304	1/2"	1/2"	01
C	M.R. STATION	ASTM A 351 GR. CF8	1/2"	1/2"	01
B	TUBING & FITTING	S.S. 304	3/8"	3/8"	01
A	BASIC VALVE	ASTM A 216 GR. WCB	**3"**	**4"**	01
NO.	**DESCRIPTION**	**MATERIAL**	**SIZE**		**QTY.**

CLOSES VALVE
OPENS VALVE

MODEL NO.	FX
OPERATION	WET/HYDRAULIC TRIM WITH ELECTRIC TRIM
VALVE NAME	DELUGE VALVE

REV.	DESCRIPTION	BY.	APPD	DATE
0	ISSUE FOR APPROVAL	MS	NM	22.10

	2024	NAME	DATE
PROJECT:–			
CONSULTANT:–	DRN.	MS	22.10.24
CLIENT:– WBE FOR SAFETY COMPANY	CHD.	TJ	22.10.24
TITLE:–DELUGE VALVE	APPD.	NM	22.10.24
	DRG.NO.		REV.
FIRETECH EQUIPMENT & SYSTEMS PVT. LTD. MUMBAI - 400 078, INDIA	OD–7176–1–GAD		0

SPECIAL INSTRUCTION THEN VALVE:-

C. INSPECTIONS, TESTS, AND MAINTENANCE:

WARNING:

Prior to operating the solenoid valve, be sure to close the system control valve to avoid Unintentional operation of the deluge valve.

1. The valve must be operated at least monthly. The valve must open and close freely. When open, the water flow must be clear and clean at the proper flow rate. When closed, a total water shut-off Must be observed. After the test, the strainer must be cleaned. Prior to cleaning the strainer, the Priming line valve must be closed and the priming line depressurized. After the strainer is cleaned, The priming line valve must be reopened.

2. The valve must be inspected at least monthly for cracks, corrosion, leakage, etc., and cleaned, Repaired, or replaced as necessary.

3. At least annually, the valve diaphragms and seats must be inspected and if necessary, repaired or replaced.

WARNING:- CLOSE SYSTEM CONTROL VALVE, TURN OFF POWER SUPPLY, AND DEPRESSURIZE

VALVE BEFORE DISASSEMBLING VALVE. IT IS NOT NECESSARY TO REMOVE THE VALVE FROM THE PIPE LINE TO MAKE INSPECTIONS.

4. After maintenance is completed, operate the valve a few times to be sure of proper operation. A Metallic "click" signifies the solenoid is operating.

5. It is recommended that the valve be replaced at seven-year intervals. Shorter intervals may be required if the valve is subject to corrosive water supplies or atmospheres.

6. All service must be performed by qualified personnel. Upon completion of inspections or replacement Of the valve, the entire system must be checked for proper operation. See appropriate system description and testing instructions for additional information.

==========THANKYOU==========

ELECTRONIC

1. Goods consigned from (Exporter's business name, address, country):

FIRETECH EQUIPMENT & SYSTEMS PRIVATE LIMITED
C-5/2,LOTE PARSHURAM , KHED, MAHARASHTRA (415722)
INDIA

Reference No: FIEO/2023/016/0140588A/00142903

CERTIFICATE OF ORIGIN

(NON PREFERENTIAL)

(Combined declaration and certificate)

Issued in India

FEDERATION OF INDIAN EXPORT ORGANISATIONS
Set up by Ministry of Commerce, Govt. of India, TIMES SQUARE, Unit No. 3A, B-Wing, 4th Floor, Andheri Kurla Road, Andheri (East), Mumbai-400059

E-mail : fieowr@fieo.org

2. Goods consigned to (Consignee's name, address, country):

3. Means of transport and route (as far as known):

4. For Office use

5. Item number	6. Marks and numbers of packages	7. Number and kind of Packages, description of goods	8. Origin criteria	9. Gross weight or other quantity	10. Number and date of Invoices
1					
2					
3					
4					
5					

11. Certification

It is hereby certified, on the basis of control carried out that the declaration by the exporter is correct.

To verify this certificate, you may scan the QR code here

FEDERATION OF INDIAN EXPORT ORGANISATIONS FIEO INDIA

MILIND SHIRKE, Mumbai, 18/02/2023

.....

Place and date, signature and Stamp of Certifying authority

12. Declaration by the exporter:

The undersigned hereby declare that the above details and statements are correct that all the good(s) were produced in India and that they comply with the origin requirements for export to KUWAIT (Importing Country)

MUMBAI, 17/02/2023

.....

Place & Date Signature & Stamp of authorized signatory

13. Where appropriate please tick:

❑ Third Country Invoicing ❑ Exhibition ❑ Back-to-Back CO ❑ Cumulation

UL Product iQ®

Proportioners, Foam Concentrate

COMPANY

FIRETECH EQUIPMENT & SYSTEMS PRIVATE LTD
F-302/303, 3rd Floor
Eastern Business District, Neptune Mall
LBS Marg, Bhandup west
MUMBAI, Maharashtra 400078 India

EX15733

Trademark and/or Tradename: FIRETECH

Note: For additional marking information, refer to the Guide Information Page.

View model for additional information

RATIO-FLOW CONTROLLER WITH BALANCED PRESSURE VALVE, Model(s): ILBP-100, ILBP-150, ILBP-65, ILBP-80

RATIO-FLOW CONTROLLER WITH BLADDER TANK, Model(s): BTFP

RATIO-FLOW CONTROLLER WITH BLADDER TANK, Model(s): 25-3963 gallon capacity ASME bladder tank for vertical installation

RATIO-FLOW CONTROLLER WITH BLADDER TANK, Model(s): 53-5300 gallon capacity ASME bladder tank for horizontal installation

Last Updated on 2024-01-17

The appearance of a company's name or product in this database does not in itself assure that products so identified have been manufactured under UL Solutions' Follow - Up Service. Only those products bearing the UL Mark should be considered to be Certified and covered under UL Solutions' Follow - Up Service. Always look for the Mark on the product.

UL Solutions permits the reproduction of the material contained in Product iQ subject to the following conditions: 1. The Guide Information, Assemblies, Constructions, Designs, Systems, and/or Certifications (files) must be presented in their entirety and in a non-misleading manner, without any manipulation of the data (or drawings). 2. The statement "Reprinted from Product iQ with permission from UL Solutions" must appear adjacent to the extracted material. In addition, the reprinted material must include a copyright notice in the following format: "©2024 UL LLC."

UL Product iQ®

Nozzles, Fixed Spray, Foam

COMPANY

FIRETECH EQUIPMENT & SYSTEMS PRIVATE LTD
F-302/303, 3rd Floor
Eastern Business District, Neptune Mall
LBS Marg, Bhandup west
MUMBAI, Maharashtra 400078 India

EX27977

Trademark and/or Tradename: "FIRETECH"
Note: For additional marking information, refer to the Guide Information Page.

View model for additional information

Model(s): F226

Last Updated on 2022-03-03

The appearance of a company's name or product in this database does not in itself assure that products so identified have been manufactured under UL Solutions' Follow - Up Service. Only those products bearing the UL Mark should be considered to be Certified and covered under UL Solutions' Follow - Up Service. Always look for the Mark on the product.

UL Solutions permits the reproduction of the material contained in Product iQ subject to the following conditions: 1. The Guide Information, Assemblies, Constructions, Designs, Systems, and/or Certifications (files) must be presented in their entirety and in a non-misleading manner, without any manipulation of the data (or drawings). 2. The statement "Reprinted from Product iQ with permission from UL Solutions" must appear adjacent to the extracted material. In addition, the reprinted material must include a copyright notice in the following format: "©2024 UL LLC."

UL Product iQ®

Note: In the process of enhancing our systems, we are transitioning data to a new PiQ data view. This data is being verified with the "Historical" view for accuracy. Once the data is confirmed, the "Historical" view will be discontinued. During this transition, you may encounter duplicate entries or missing/outdated data. For queries during this interim period, please visit our Historical View FAQs or contact our Customer Service.

Special System Water Control Valves, Deluge Type

COMPANY

FIRETECH EQUIPMENT & SYSTEMS PRIVATE LTD
F-302/303, 3rd Floor
Eastern Business District, Neptune Mall
LBS Marg, Bhandup west
MUMBAI, Maharashtra 400078 India

EX27978

Deluge valve, Model FX in 2, 2 1/2, 3, 4, 6, 8, 10 nominal pipe size (NPS) with flanged ends for use in horizontal and vertical position for a rated working pressure not to exceed 250 psig. For operation by dry pilot line, manually, electrically or wet pilot line of sprinklers. Height of pilot line above valve limited as shown in the Installation Instructions. For accessories used with these valves, see listing under "Accessories for Special Systems". The valves are for hydraulically calculate systems only.

Authorities having jurisdiction should be consulted before installation.

Last Updated on 2021-04-27

The appearance of a company's name or product in this database does not in itself assure that products so identified have been manufactured under UL Solutions' Follow - Up Service. Only those products bearing the UL Mark should be considered to be Certified and covered under UL Solutions' Follow - Up Service. Always look for the Mark on the product.

UL Solutions permits the reproduction of the material contained in Product iQ subject to the following conditions: 1. The Guide Information, Assemblies, Constructions, Designs, Systems, and/or Certifications (files) must be presented in their entirety and in a non-misleading manner, without any manipulation of the data (or drawings). 2. The statement "Reprinted from Product iQ with permission from UL Solutions" must appear adjacent to the extracted material. In addition, the reprinted material must include a copyright notice in the following format: "©2024 UL LLC."