WATER POWERED OSCILLATING MONITOR

MODEL: SFM-400SS

TECHNICAL DATA

Monitor	SFM-400SS
Nozzle	*WITH SELF INDUCTING NOZZLE* SF-FFN500SI SF-FFN750SI *WITH PRE-MIX NOZZLE* SF-FFN500MI SF-FFN750MI SF-FFN1000MI
Nominal Size	3" (80 mm)
Maximum Operating Pressure	12 bar
Maximum Flow	1000 GPM (3800 LPM) Refer Table I for flow
Factory Hydrostatic Test Pressure	350 psi (25 bar)
Swivel Joint	Bronze to ASTM B 62 with double row of Stainless Steel Ball Bearing and Grease Fittings
Nozzle Thrust Reaction in kg.	Flow in LPM x √Pressure in kg/cm^2 x 0.0228
Inlet Connection	4" (100NB) Flange to ANSI B16.5 #150, F.F.
Outlet Connection	3" BSP (M) or 3" NH
Monitor Elevation	80° above horizontal & -40° below horizontal
Oscillation Gear Box	Stainless Steel, double reduction, oil bath gear box
Pelton Wheel	Stainless Steel
Oscillation Links	Stainless Steel
Enclosure	Stainless Steel
Pelton Wheel Feeder Trim	Bronze Valve, Copper tubing & DI fittings
Oscillation Speed	Adjustable from 0°-30°/sec. at 7 bar pressure (100 psi)
Speed Control	By Brass Valve externally accessible
Arc of Oscillation	Adjustable 0° to 120° with six set points
Test Connection	½" Garden Hose (½" BSP F)
Monitor Rotation	360° continuous
Finish	Red RAL 3001
Weight (Approx)	67 kg
Ordering	Specify Monitor & Nozzle Model Pressure Gauge is optional supply

DESCRIPTION

Monitor mounted on Water Powered Oscillating Unit, transforms the manual monitor into an oscillating monitor. The unit is suitable for use in high risk areas such as tank farm facilities, aircraft hangars, offshore, refineries, chemical plants, and heliports. The monitor posses

several design features that provides ease of operation, minimum maintenance and resistance to corrosive environments. The monitor is used with Nozzle as premix solution with flow up to 1000 GPM.

The monitor can be used with water-foam self-inducting nozzle having flow up to 750 GPM. The monitor has cast bronze 3" (75 mm) water way. Vertical & horizontal rotation is through corrosion resistant bronze swiveling joint with double row of stainless steel ball bearing. Both vertical & horizontal movement is controlled by handle with twist lock. A water drive wheel is connected to a double reduction gearbox drive and oscillating mechanism. To operate the drive wheel, a small quantity of flow is diverted from the monitor inlet. The monitor requires no external wiring or hydraulic control for operation.

The minimum operating water pressure of the oscillation mechanism is 3.5 kg/cm^2 The flow of water through oscillation mechanism is 42 LPM at 3.5 kg/cm^2 and 60 LPM at 7 kg/cm^2 of water pressure. The design ensures to prevent jet reaction forces from affecting the horizontal and vertical position of the monitor during operation. The vertical angle of elevation and horizontal arc of oscillation is field adjustable and can be set and locked in position. The monitor can be set to oscillate over a range of 0°-120° and the oscillation arc can be set anywhere within the 360° field of operation. The unit is equipped with a garden hose test connection. This allows functional check of the oscillating mechanism without system flow.

NOTES:

- *Pressure Gauge is optional supply and is for indicative purpose only; should not be considered for friction loss movement.*
- *The vertical lock needs quarter turn for locking and unlocking, excessive movement may again lock for lock position or unlock to unlock position.*

INSTALLATION, TESTING & MAINTENANCE

The monitor must be installed and operated carefully by a trained person, having good knowledge of equipment. Before assembly of the monitor to supply piping, thoroughly flush the piping with water to avoid sand, residue, welding slag or other debris hindering the proper functioning of the monitor. The vertical angle of elevation and horizontal arc of oscillation is field adjustable and can be set & locked in position.

Monitor can be set at oscillation over a range of 0°-120° and oscillation arc can be set anywhere with 360° field of operation. The elevation angle of monitor is between +80° to −40° from horizontal. After few initial successful tests, an authorized person must be trained to perform the inspection and testing of the monitor. The monitor should be ready for use to achieve this condition, scheduled inspection and maintenance operation should be performed and it must be recorded in the maintenance register book indicating the requirement or recommendation.

The recommended maintenance, procedure must be followed as given in the manual and also as per the local authority having jurisdiction. It is recommended to carry out physical inspection of the monitor on weekly basis. The inspection should verify that no damage has taken place to any component and the monitor is ready for use. Carry out functional test every three months for the flow, regular rotation in horizontal and vertical plane for the entire operating range to observe any leakage. Periodic proper greasing through grease nipple provided on bearing, must be ensured. Use water resistant low friction synthetic grease.

Lubrication is required for smooth operation. Each monitor must be operated with full flow once in a year in accordance to the guidelines of the organization having local jurisdiction. The owner is responsible for maintaining the equipment in proper operating condition. Each monitor is supplied with Instruction Manual for installation, operation and maintenance.

CAUTION

Trained personnel for firefighting must use the monitor. Appropriate guidance & training must be given to reduce the risk or injury. The nozzle must be fixed to the monitor carefully; the flange bolts must be tightened uniformly. The piping must be able to withstand the horizontal reaction force. Serious injury to personnel and equipment can result from improper installation. When installing monitor it is critical that flange bolts be tightened uniformly to prevent cocking of the monitor relative to the flange or valve.

Before flowing water from monitor, check that all personnel are out of stream path and stream direction will not cause avoidable property damage. Application of water or foam on an electric appliance can cause serious injury. The water supply to monitor must be increased/ decreased gradually to prevent possible water hammer occurrence.

WARNING

The oscillating unit contains moving parts. Keep hands, fingers and objects away from the moving parts and never operate without cover fitted on the unit.

Do not try to stop the monitor oscillation, as the monitor can cause injury to person and the gear may slip and oscillation may stop. This monitor should not be used for any other purpose, other than for fire-fighting.

ADJUST THE ARC OF OSCILLATION

1. To adjust the arc of oscillation, shut off the water supply and open the top cover plate.
2. Close the speed control valve.
3. Arc of oscillation can be set at 25°, 45°, 60°, 80°, 100° or 120° by unscrewing the bolt on link and fixing at desired angle as marked. (Fig.4)
4. Refix the top cover plate, after opening the speed control valve.

TROUBLE SHOOTING

If the Oscillating unit fails to oscillate, then check the following:

- Check the speed control valve is open. Make sure the operating pressure is minimum 3.5 kg/cm^2
- Check and make sure the pelton wheel water exhaust is freely flowing without any obstruction.
- Make sure all links are free from debris and bolts are loose and are in place.
- If the unit is not operated from long time, then clean and operate at 7 bar for few minutes, to make sure the line link is free to move.
- The oscillating unit may wear and tear, hence the unit needs to be opened and inspected after approximately two hours of oscillation. If considerable wear and tear is observed then the parts of oscillation unit need to be replaced, to keep the monitor in healthy condition.

WATER-POWERED OSCILLATING MONITOR RANGE DATA-MONITOR MODEL SFM-400SS

Nozzle Model	Monitor Elevation Angle	Flow GPM	50 PSI *		80 PSI		100 PSI		120PSI	
			Reach in Meters							
			Fixed	Oscillating	Fixed	Oscillating	Fixed	Oscillating	Fixed	Oscillating
SF-FFN500MI	5	500	4	4	8	7	10	8.5	11	9.5
	15		12	9	19	15	24	19	22	18
	30		28	24	48	40	60	50	61	50
SF-FFN750MI	5	750	5.5	4.5	9	7.5	11	9	12	10
	15		12	10	19.5	16.5	24.5	20.5	25	21
	30		29	24	49	41	61.5	51	62	52
SF-FFN1000MI	5	1000	5.5	5	9.6	8	12	10	13.5	11.3
	15		12	9	20.5	15.5	26	22	28	23.5
	30		26	26	52	44.5	65	56	66	55
SF-FFN500SI	5	500	2.5	2	5.5	4	7	5.5	7.5	6.5
	15		7	5.5	14.5	11	18	14	19	15
	30		18	15	36	30	45	38	47	39
SF-FFN750SI	5	750	3.5	3	7.5	6	9.5	7.8	10	8
	15		8.5	7	16.5	13	21	17	22.5	29
	30		21.5	18	43	36	54	46	55	45

**Self inducting nozzles will not have good self inducting function at 50 psi.*

NOTES:

- *SF-FFN1000MI, SF-FFN500MI, SF-FFN750MI is Non self Inducting, non self Aspirating nozzle used for premix solution.*
- *SF-FFN500SI, SF-FFN750SI is Self Inducing, non self Aspirating nozzle used with listed foam, AFFF3%*
- *Above readings are considered in no wind conditions. Wind or other environmental factors can affect the readings.*
- *Some ranges are based on extrapolation of existing data and observations.*

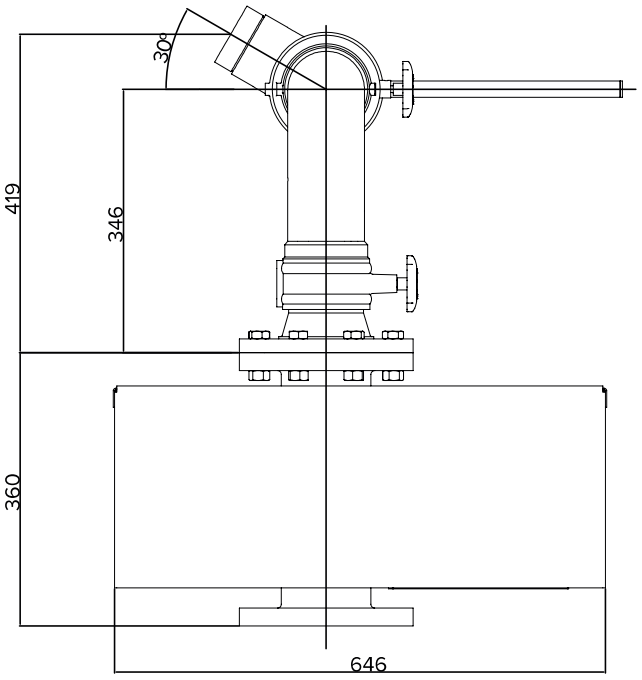


Fig.1

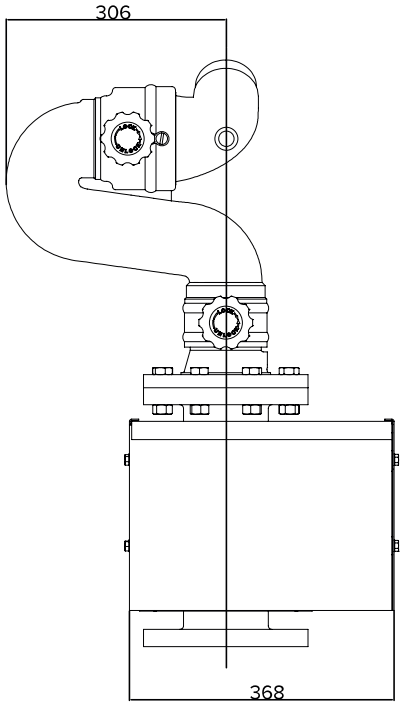


Fig.2

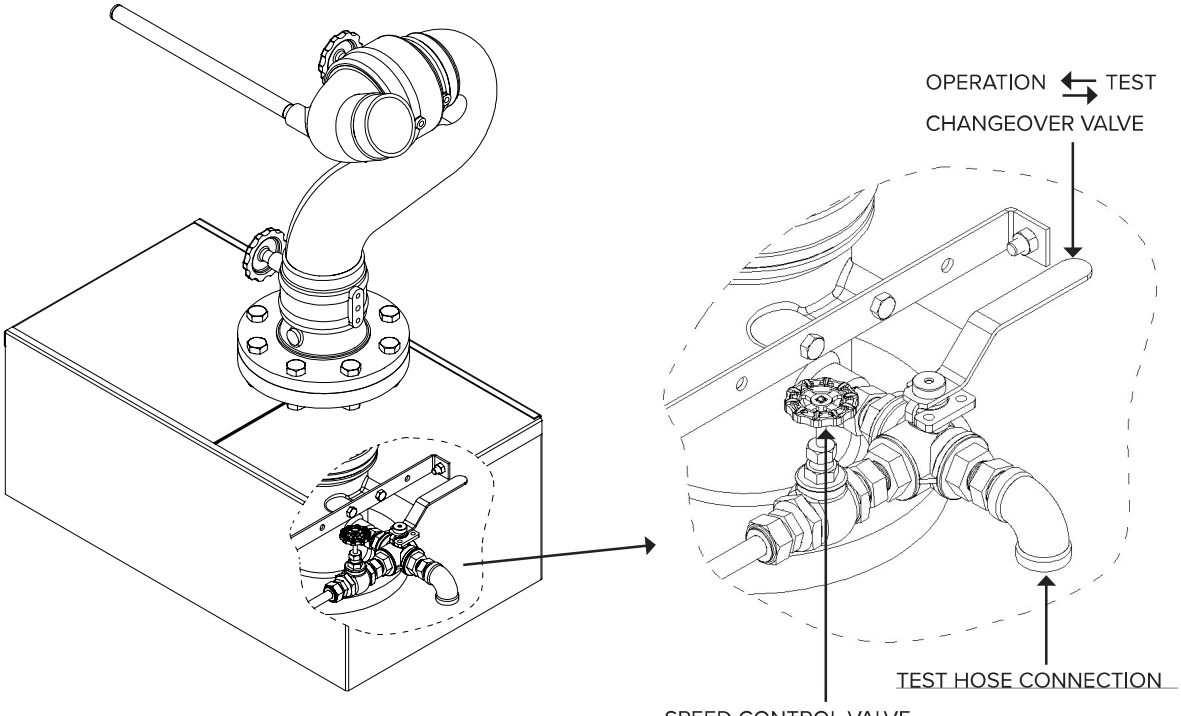
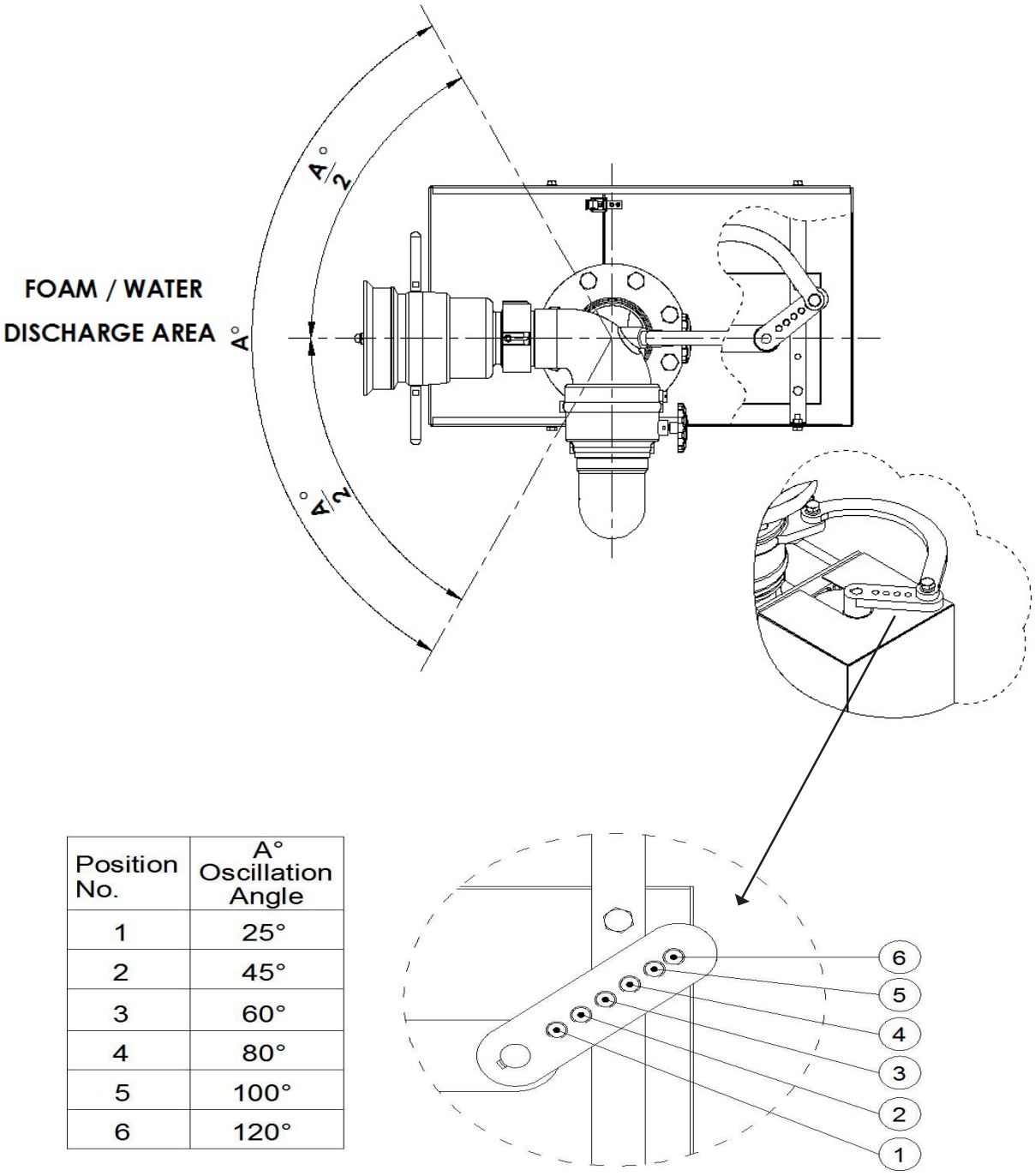


Fig.3



Position No.	A° Oscillation Angle
1	25°
2	45°
3	60°
4	80°
5	100°
6	120°

OSCILLATION ANGLE SETTING DETAILS (Fig.3)

Fig.4