Frozenfire UL Listed "KAVACH" SERIES HVLR Foam Monitor

Product Description



The **Frozenfire "KAVACH" HVLR (High Volume Long Range) Foam Monitor** is a premium fixed firefighting appliance engineered to deliver high-capacity water or foam streams over extended distances for the protection of high-risk industrial hazards. Designed and tested in accordance with **UL Listed** requirements, the monitor provides exceptional hydraulic performance, durability, and reliability for critical fire protection applications.

Capable of delivering large volumes of water or foam solution with superior stream quality, the HVLR Foam Monitor is ideally suited for protecting storage tank farms, petrochemical complexes, refineries, offshore platforms, aviation facilities, marine terminals, power plants, and other industrial installations where rapid suppression of large-scale fires is essential.

Manufactured from **marine-grade Stainless Steel (SS316L), Stainless Steel (SS316), Stainless Steel (SS304),** the monitor is engineered to withstand corrosive environments while ensuring long-term operational reliability. Its precision-machined waterways minimize friction losses and produce a highly efficient discharge pattern, enabling maximum throw distance with reduced pressure loss.

The monitor offers smooth **360° continuous horizontal rotation** and **elevation adjustment from -45° to +90° (model dependent)** through precision worm gear mechanisms, allowing operators to accurately direct the firefighting stream under all operating conditions. It is compatible with both **Aspirating Foam Barrels** and **Non-Aspirating Aqua Foam Nozzles**, as well as Water Jet/Fog Nozzles for versatile firefighting performance.

Certified to meet stringent UL requirements, the Frozenfire UL Listed HVLR Foam Monitor provides dependable fire protection for critical infrastructure where performance, safety, and reliability are paramount.

Working Principle

The UL Listed HVLR Foam Monitor operates by converting pressurized water or foam solution into a concentrated, long-range firefighting stream.

Water Operation

1. Pressurized water enters the monitor through the flanged inlet.
2. The streamlined waterway minimizes turbulence and pressure loss.
3. The monitor directs water through the selected nozzle.
4. The nozzle forms either a straight stream or adjustable fog pattern.
5. The concentrated stream reaches long distances for effective fire suppression and cooling.

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Foam Operation

1. Water flows through a foam proportioning system (Balanced Pressure, Bladder Tank, Inline Inductor, or Pump Proportioner).
2. Foam concentrate is accurately mixed with water to produce a foam solution.
3. The foam solution enters the monitor.
4. The foam nozzle expands the solution into high-quality firefighting foam.
5. The expanded foam blankets the fuel surface, suppresses vapors, cools the fuel, and prevents re-ignition.

Frozenfire "KAVACH" Aqua Foam Nozzle – Fixed Flow

The Frozenfire Fixed Flow HVLR (High Volume Low Range) Nozzle is designed to deliver a predetermined discharge rate with a consistent, high-quality spray pattern. It provides reliable water distribution for firefighting, exposure protection, cooling operations, and dust suppression. The fixed-flow design ensures stable hydraulic performance without the need for flow adjustment, making it ideal for applications requiring dependable and repeatable operation.

Key Features:

- Fixed discharge flow for consistent performance
- Uniform spray pattern with excellent water distribution
- Rugged corrosion-resistant construction
- Low maintenance and long service life
- Suitable for industrial, municipal, and fire vehicle applications
- Compatible with water monitors and hydrant systems



Frozenfire "KAVACH" Aqua Foam Nozzle – Variable Flow

The Frozenfire Variable Flow HVLR (High Volume Low Range) Nozzle is engineered to provide adjustable flow rates while maintaining an efficient spray pattern. Operators can easily select the required flow according to fire conditions, optimizing water usage and firefighting effectiveness. Its versatile design makes it suitable for a wide range of industrial firefighting and cooling applications.

Key Features:

- Adjustable flow settings for operational flexibility
- Efficient water distribution with controlled spray pattern
- Smooth flow adjustment without interrupting operation
- Durable corrosion-resistant construction
- Ideal for changing firefighting requirements
- Compatible with manual and remote-controlled water monitors
- Low maintenance and reliable field performance



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Available Type of "KAVACH" Aqua Foam Nozzles

The Frozenfire "KAVACH" HVLR Monitor is available in various Types of Nozzles including:

MODEL	Nozzle Type	Size (MM)	Flow Capacity GPM
FIL KAVACH AFN 500F	Fixed Flow	75	500
FIL KAVACH AFN 750F		75	750
FIL KAVACH AFN 1000F		100	1000
FIL KAVACH AFN 500 -750 V	Variable Flow	75	500-750
FIL KAVACH AFN 500 -750 -1000 V		100	500-750-1000

Operating Features

The Frozenfire "KAVACH" HVLR Monitor provides precise manual control through independently operated handwheels.

Horizontal Rotation

The monitor offers smooth 360° continuous rotation, enabling complete coverage of protected areas without repositioning the installation.

Vertical Movement

The elevation mechanism allows the monitor to move from below horizontal to high elevation angles, enabling both direct fire attack and elevated cooling applications.

Manual Gear Drive

The worm gear drive system ensures effortless operation with minimal input force while maintaining accurate positioning under high reaction forces.

Stream Control

Depending on the installed nozzle, the operator can produce:

- Straight Jet Stream
- Adjustable Fog Pattern
- Wide Protective Fog
- Foam Stream
- Variable Flow Selection

Key Features

- **UL Listed** for proven performance and reliability.
- High-volume, long-range discharge capability.
- Suitable for water and foam firefighting.
- Heavy-duty stainless steel construction.
- Low friction hydraulic waterway for maximum efficiency.
- 360° continuous horizontal rotation.
- Wide vertical travel for accurate targeting.

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- Precision worm gear drive for smooth positioning.
- Locking mechanism to secure monitor position.
- Compatible with aspirating and non-aspirating foam nozzles.
- Compatible with electric, hydraulic, pneumatic, or manual operation (model dependent).
- Low maintenance and long service life.
- Excellent corrosion resistance for marine and industrial environments.

Applications

- Oil & Gas Facilities
- Petrochemical Plants
- Refineries
- Tank Farms
- LNG & LPG Storage Facilities
- Chemical Industries
- Offshore Platforms
- Marine & Port Terminals
- Aircraft Hangars
- Airports
- Power Plants
- Steel Plants
- Mining Industries
- Defence Installations
- Fire Water Pump Stations
- Hazardous Process Areas

The assembly generally consists of:

- Heavy-duty monitor body with streamlined waterway
- Horizontal swivel mechanism
- Vertical elevation mechanism
- Stainless steel operating handwheels
- Precision worm gear drive system
- Stainless steel shafts and bearings
- Low-friction sealing arrangement
- Flanged inlet connection
- Flanged or threaded nozzle outlet
- Drain valve
- Locking arrangement for monitor positioning
- Corrosion-resistant epoxy-coated finish
- Stainless steel fasteners

The monitor body is designed to withstand high operating pressures while ensuring smooth movement with minimum operator effort.

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Standard Technical Specifications

Parameter	Specification
Product Type	"KAVACH" HVLR Foam Monitor
Certification	UL-162
Construction	SS316L / SS316 / SS304
Flow Capacity	500–1,000 GPM (1850–3850 LPM), model dependent
Inlet Size	4" & 6"
Outlet Size	Matching nozzle connection
Working Pressure	Up to 16 Bar (232 psi)
Test Pressure	24 Bar
Horizontal Rotation	360° Continuous
Vertical Movement	-45° to +90° (model dependent)
Operation	Manual / Electric Operated
Nozzle Compatibility	Water Jet, Fog, Aqua Foam
Finish	Natural Stainless Steel / Epoxy Coated (where applicable)
Compliance	UL Listed, NFPA 11, NFPA 15, NFPA 20, NFPA 24 (system dependent)

Available Models

The Frozenfire "KAVACH" HVLR Monitor is available in various inlet sizes including:

Model Number	Monitor Size (MM)	Flow in GPM	Water Jet in Meters	Horizontal Throw (Foam) in meters
FIL KAVACH HVLR 500F	75	500	55	50
FIL KAVACH HVLR 750F	75	750	60	65
FIL KAVACH HVLR 1000F	100	1000	65	60
FIL KAVACH HVLR 500-750V	75	500-750	60	55
FIL KAVACH HVLR 500-750-1000V	100	500-750-1000	65	60

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Operation

Before Operation

- Verify that the fire water supply is available and pressurized.
- Ensure all inlet and outlet valves are open and ready for service.
- Confirm that the monitor is securely mounted on its pedestal or pipeline.
- Inspect the nozzle for cleanliness and ensure it is free from obstructions.
- Check that the foam proportioning system is filled and correctly calibrated if foam operation is required.
- Confirm smooth movement of horizontal and vertical gear mechanisms.
- Verify that all locking devices are released before aiming the monitor.

During Operation

1. Open the supply valve gradually to avoid water hammer.
2. Aim the monitor using the horizontal and vertical hand wheels or remote controls.
3. Select the desired stream pattern using the nozzle controls.
4. For foam application, activate the foam proportioning system before directing the stream toward the fire.
5. Sweep the stream methodically across the hazard to ensure complete coverage.
6. Maintain continuous foam application until the fuel surface is completely blanketed and the risk of re-ignition has been eliminated.

After Operation

- Shut down the foam concentrate supply.
- Continue flowing clean water to flush all foam residue from the monitor and nozzle.
- Close the water supply valve gradually.
- Drain any remaining water from the monitor if required.
- Return the monitor to its designated standby position.
- Lock the monitor in place if applicable.

Maintenance

Routine maintenance is essential to ensure dependable performance and preserve UL Listed operational integrity.

Weekly Inspection

- Visually inspect the monitor for physical damage.
- Verify smooth monitor movement in all directions.
- Check for leaks around flanged joints and seals.
- Confirm that all fasteners remain secure.

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Monthly Maintenance

- Operate the monitor through its complete horizontal and vertical range.
- Lubricate worm gears, bearings, and moving components using the manufacturer's recommended lubricant.
- Inspect nozzle attachment and locking mechanisms.
- Verify all labels and identification markings remain legible.

Quarterly Inspection

- Check gearbox lubrication levels.
- Inspect seals, bearings, and gear assemblies.
- Verify monitor alignment and structural mounting bolts.
- Inspect foam nozzle expansion screens (where applicable).

Annual Maintenance

- Perform a complete functional test under operating pressure.
- Verify flow rate and discharge range against design requirements.
- Inspect internal waterways for corrosion or scale buildup.
- Replace worn seals, bearings, or gear components as required.
- Flush the monitor thoroughly with clean water.
- Conduct hydrostatic testing in accordance with applicable standards and site procedures.
- Maintain inspection and maintenance records for regulatory compliance.

Safety Precautions

- Only trained personnel should operate the monitor.
- Never stand directly in front of the nozzle during operation.
- Open and close valves gradually to prevent water hammer.
- Ensure the monitor is securely locked before maintenance.
- Flush foam residue after every foam operation to prevent deposits and corrosion.
- Use only compatible foam concentrates approved for the installed proportioning system.
- Always isolate and depressurize the system before servicing.

Frozenfire Advantage

The **Frozenfire UL Listed "KAVACH" HVLR Foam Monitor** combines certified performance, superior hydraulic efficiency, and rugged construction to provide dependable protection for the world's most demanding fire hazards. Designed for high-capacity water and foam delivery, it offers exceptional throw distance, precise directional control, and long-term reliability in harsh industrial and marine environments. With **UL Listed certification**, NFPA-compliant design, and compatibility with a wide range of firefighting nozzles and proportioning systems, it delivers confidence where uninterrupted fire protection is critical.

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