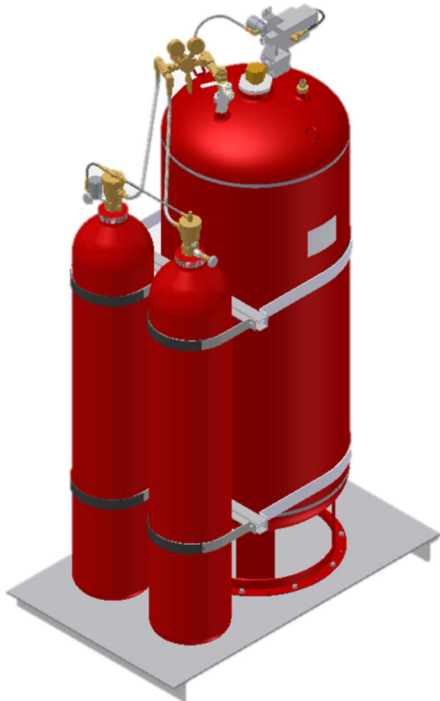


MICROMIST® PRE-ENGINEERED WATERMIST SYSTEM



70 Gallon (265 Liter) Micromist Skid



112 Gallon (424 Liter) Micromist Skid

Description

The Fike Micromist System is a self-contained, single fluid, water-mist fire suppression system. It is designed to provide total compartment protection of machinery spaces and gas turbine spaces. With an operating pressure of 320 psig (22 barg), Micromist is classified by NFPA 750 as an Intermediate pressure system.

Micromist is a pre-engineered system having predetermined water storage quantities, pipe and tube sizes, maximum and minimum pipe lengths, number of fittings and number and types of nozzles. Acceptance of the system design is determined by simple pressure drop calculations and do not require additional hydraulic calculations.

Micromist systems have been tested for use in protecting flammable liquid Class B processes and incidental combustible Class A materials. Typical applications where Micromist can be used includes but is not limited to the following:

- Compartmentalized gas turbines
- Transformers
- Generator rooms
- Machinery spaces with incidental storage of flammable liquids
- Oil pumps
- Lubrication skids
- Oil reservoirs
- Diesel emergency rooms
- Fuel filters
- Dipping, electrostatic coating, or cleaning processes using flammable liquids
- Gear boxes
- Drive shafts
- Diesel engine driven generators
- Chemical processes
- Flammable or combustible liquid pumps, piping, or containers under pressure such as may be used with hydraulic pumping equipment

For applications not listed above, contact Fike Product Support (1-816-229-3405) for application approval.

This document is only intended to be a guideline and is not applicable to all situations. Information is subject to Fike's full disclaimer at <http://www.fike.com/disclaimer>.

System Limitations

The following limitations apply to the use and application of Fike Micromist systems:

1. Micromist systems are capable of protecting hazards with maximum volumes not exceeding 9,175 ft³ (260 m³), with a maximum ceiling height of 16 ft. (4.9 m).
2. Micromist systems can be used to protect hazards having a range in temperature from +40°F to +325°F (+4.4°C to +162.7°C).
3. The following items pertain to the hazard enclosure:
 - The protected hazard should be equipped with automatic door closures, a ventilation system, and automatic fuel shutdown.
 - Lubrication supply should be shutoff as soon as possible.
 - It is recommended that all, non-emergency, electrical power to the protected space be interrupted at the time of system discharge.
4. The Micromist skid must be installed in a location where the ambient temperature is maintained within +40°F to +130°F (4.4°C to 54.4°C) and must be protected from inclement weather, mechanical, chemical, or other damage.
5. The Micromist skid shall not be installed within the hazard area it protects.
6. The Micromist system shall not be used for direct application to materials, or products, that react with water to produce violent reactions or significant amounts of hazardous products. These materials include:
 - Reactive metals (e.g. Sodium, Potassium, Magnesium, Titanium, Lithium, Uranium, and Plutonium)
 - Metal Alkoxides (e.g. Sodium Methoxide)
 - Metal Amides (e.g. Sodium Amide)
 - Carbides (e.g. Calcium Carbide)
 - Halides (e.g. Benzoyl Chloride)
 - Hydrides (e.g. Lithium Aluminum Hydride)
 - Oxyhalides (e.g. Phosphorus Oxybromide)
 - Silanes (e.g. Trichlormethyl Silane)
 - Sulfides (e.g. Phosphorus Pentasulfide)
 - Cyanates (e.g. Methylisocyanate)
 - The Micromist System SHALL NOT be used for direct application to liquefied gases at cryogenic temperatures, such as liquefied natural or propane gases, which boil violently when heated by water.
7. Micromist systems CAN be used to protect an area having a flammable liquid present, provided it is a Flammability Class of 1, 2, or 3 as defined by the Fire Protection Guide to Hazardous Materials, 2001 Edition. Examples of Class 1, 2, and 3 flammable liquids are:
 - Fuels such as #2 Diesel Fuel, Gasoline, Kerosene, Mineral Spirits, and Jet Fuels (4, 5, & 6)
 - Oils such as Lubricating, Hydraulic Oil & Fluid, Transformer, and Crude.
8. Liquids with a flash point below 73°F (22.8°C) and a boiling point below 100°F (37.8°C) are Class 1A liquids that CANNOT be protected with a Micromist System. Liquids with a flash point above 73°F (22.8°C) that are categorized as Class 1B, 1C, 2, or 3 (A or B) as defined by the Fire Protection Guide to Hazardous Materials, 2001 Edition CAN be protected with a Micromist System.
9. Micromist systems CANNOT be used to protect an area with a Class 4 flammable liquid as defined by Fire Protection Guide to Hazardous Materials, 2001 Edition. Examples of Class 4 flammable liquids are: Methane, Propane, Natural Gas, Butane, and Hydrogen.

Exception: Natural Gas and Propane driven Turbine Generator units may be protected if the fuel source is shut down prior to discharge.
10. The Micromist System provides 10 minutes of active protection for both Machinery Spaces and Gas Turbine Spaces.

This document is only intended to be a guideline and is not applicable to all situations. Information is subject to Fike's full disclaimer at <http://www.fike.com/disclaimer>.

How Watermist Extinguishes a Fire

Water is an outstanding fire suppression agent due to its high heat capacity and latent heat of vaporization. The Micromist nozzles use a plate to slice the small jets of water that flow through the nozzle orifice. The resulting water mist contains a variety of droplet sizes. The larger droplets provide the necessary energy and momentum to carry the smaller droplets to the base of the fire where the mist vaporizes and extinguishes the fire. The simple theory behind this development is that a larger quantity of small droplets have a greater surface area than the same number of large droplets; therefore, absorbing more heat.

Micromist systems extinguish fires using the following basic principles:

- **Cooling** – As the mist is converted into vapor, it removes heat from the fire source.
- **Oxygen displacement** – As the water mist turns to steam it expands approximately 1,700 times, which forces oxygen away from the flame front, thus denying it the oxygen necessary to support combustion (localized inert environment).
- **Wetting** – Primarily for incidental class A fires; wetting of the surface helps extinguish the fire as well as contain it.

System Operation

During normal standby operation, the water storage container is filled with water but is not pressurized. Upon activation of the detection system serving the protected area, the solenoids attached to the skid's nitrogen cylinder valve (high pressure side) and water valve (low pressure side) are simultaneously activated in response to the event. Pressure from the nitrogen cylinder(s) flows through the skid's pressure-regulating valve into the water storage container. The regulating valve reduces the nitrogen pressure delivered to the water storage container to 320 psig (22 barg). The pressurization of the water storage container with nitrogen forces the stored water out of the water storage container into the pre-engineered distribution piping network and out of the water-mist nozzles. The nozzles create a fine water mist by the impingement of the water on the edge of a plate. The fine mist produced is directed into the protected space by the placement of the nozzles. Both the nitrogen and water valve solenoids are cycled simultaneously on for 40 seconds and off for 40 seconds on a continual basis until the water storage tank is completely empty or the host releasing panel is reset.

System Components

Releasing Control Panels

Fike offers three FM Approved releasing control panels that are designed to provide the command and control operation required for the Micromist system. Each panel is capable of providing both automatic and manual activation of the Micromist system and provides the required ON/OFF cycling of the system discharge.

- SHP-Pro (P/N 10-063) is a microprocessor based, conventional suppression control system designed to serve a single hazard area. The system is capable of providing command and control of a single Micromist skid. Refer to the SHP-Pro product manual (P/N 06-125) for more information.
- Cheetah Xi 50 point (P/N 10-071) is a microprocessor based, intelligent, peer-to-peer, addressable suppression control system designed to service small to medium applications that do not require a system addressable device capacity greater than fifty. The system is capable of providing command and control for up to eight (8) Micromist skids simultaneously. Refer to the Cheetah Xi 50 product manual (P/N 06-369) for more information.
- Cheetah Xi 1016 (P/N 10-068) is a microprocessor based, intelligent, peer-to-peer, addressable suppression control system designed to service large applications that require a system capacity up to 1016 addressable devices. The system is capable of providing command and control for up to eight (8) Micromist skids simultaneously. Refer to Cheetah Xi product manual (P/N 06-356) for more information.

This document is only intended to be a guideline and is not applicable to all situations.
Information is subject to Fike's full disclaimer at <http://www.fike.com/disclaimer>.

Automatic Detection

The recommended detector for Micromist applications is a vertical, stick-type, fixed-temp thermal detector that detects the presence of heat exceeding its set-point and provides closed internal contacts to signal the releasing panel. This recommendation is due to the extreme conditions encountered in most Micromist applications (i.e., extended temperatures, presence of fumes, dust and dirt, etc.) and the impact these conditions would have on traditional detection devices.



Part Number	Description
60-021	190°F (87.8°C)
60-018	225°F (107.1°C)
60-038	275°F (134.8°C)
60-022	325°F (162.6°C)
C60-007	450°F (231.9°C)

Micromist Skids

The Micromist system is offered in 70 (265 Liter) and 112 gallon (424 Liter) skid configurations. The 70 gallon skid consists primarily of one nitrogen cylinder and a water storage container. The 112 gallon skid has two nitrogen cylinders and one water storage container. As an option, the skids can be ordered with pressure switches attached to the nitrogen cylinders for pressure monitoring.

Refer to data sheet W.1.03.01 for skid details.

Part Number	Description
73-010	70 Gallon (265 liter) skid
73-011	112 Gallon (424 liter) skid
73-001	70 Gallon (265 liter) skid with pressure switch on nitrogen cylinder
73-002	112 Gallon (424 liter) skid with pressure switches on nitrogen cylinders



Micromist Nozzles

There are two different Micromist nozzles. One for machinery spaces applications and one for gas turbine space applications. The nozzles are identical, except for the distance of the diffuser plate from the nozzle orifice. The nozzles used for the protection of gas turbine spaces have the diffuser plate somewhat closer to the nozzle orifice than the nozzle for the machinery spaces. With the plate closer to the nozzle orifice, the stream hits the diffuser plate at a slightly different angle, creating smaller water mist droplets overall. Each nozzle comes with a strainer screen to catch any particles that might clog the nozzle orifice.

Refer to data sheet W.1.02.01 for nozzle details.

Part Number	Description
73-0023	Gas Turbine Space Nozzle
73-0024	Machinery Space Nozzle



This document is only intended to be a guideline and is not applicable to all situations. Information is subject to Fike's full disclaimer at <http://www.fike.com/disclaimer>.

Signs

The following signs are offered by Fike and are designed to inform personnel about the operation of the water mist system and potential hazards to personnel. The signs are made from white, flame retardant Lexan polycarbonate and have silk-screened text. Each sign has an adhesive backing for easy installation.

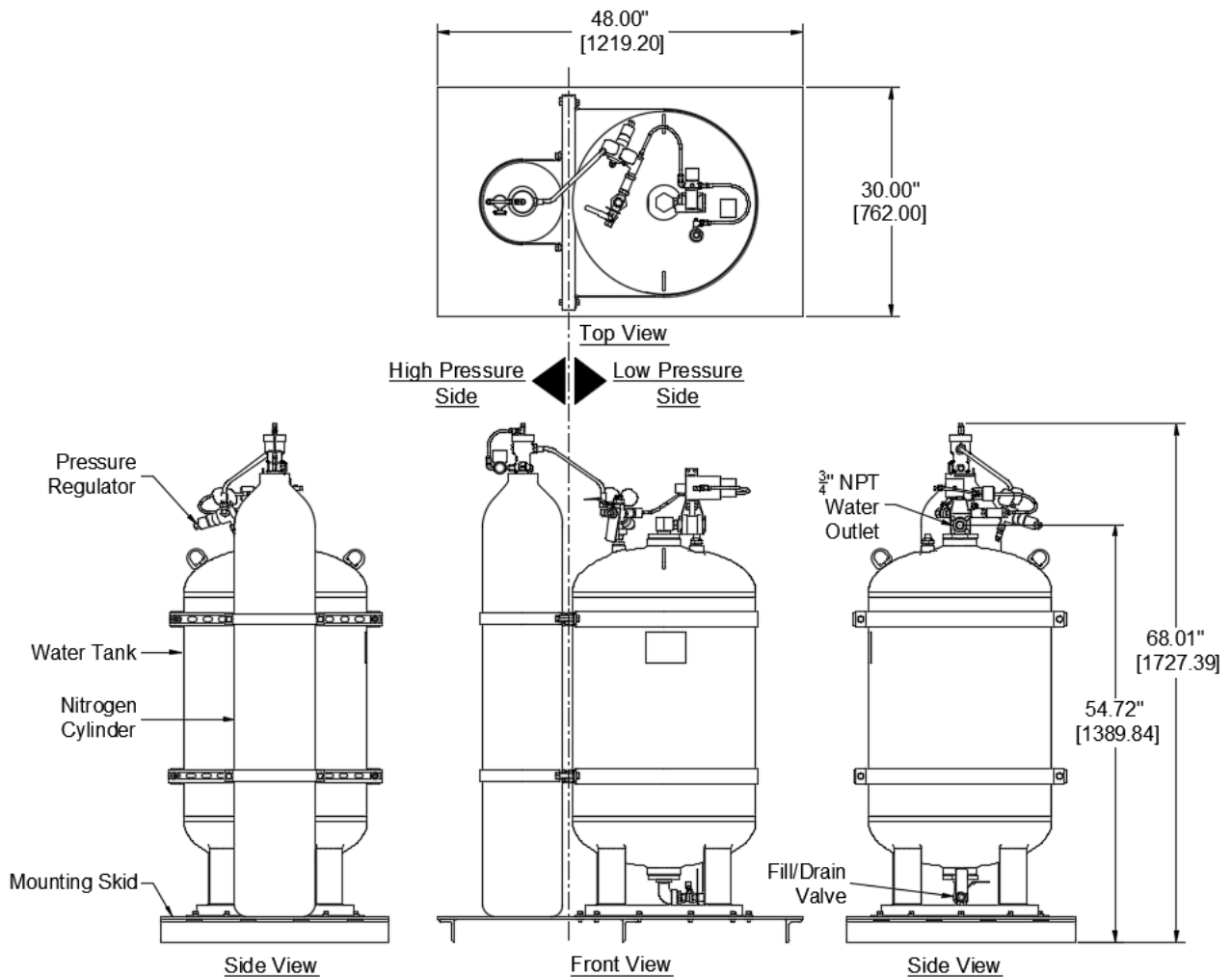
Refer to data sheet W.05.01 for signage details.

Part Number	Description
02-10262	NOTICE, Water Mist Extinguishing System Discharge Alarm – If Active Do Not Enter
02-10263	NOTICE, Water Mist Extinguishing System Alarm – If Active Exit Area Immediately
02-10264	CAUTION, This Area Is Protected By A Water Mist Extinguishing System
02-10265	Water Mist Extinguishing System Release – Lift And Pull

Discharge Piping

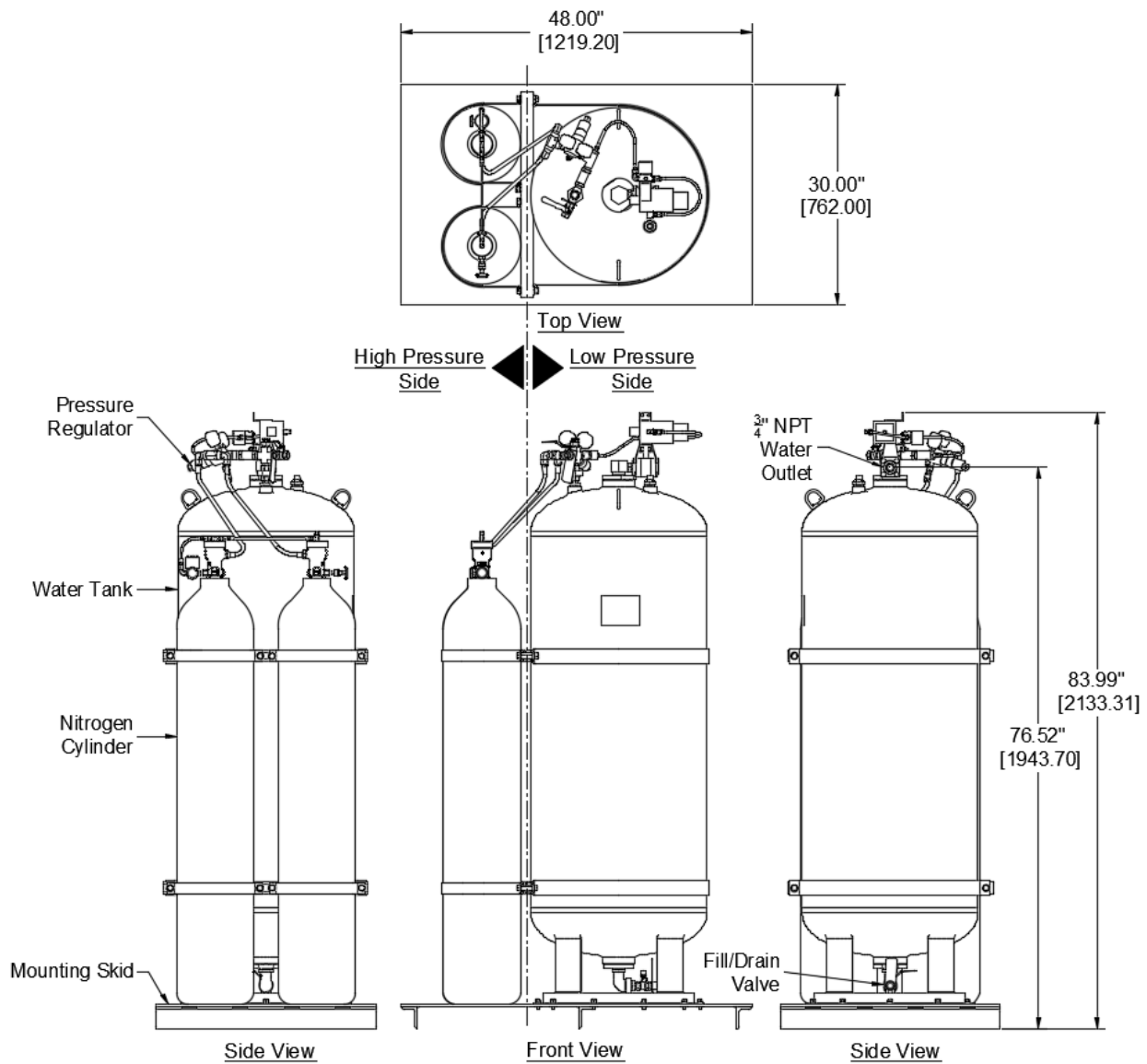
Copper tubing type K or L, stainless steel tubing or stainless steel pipe as specified in NFPA 750 must be used on the Micromist system. Non-metallic pipe, cast-iron pipe, black pipe, or galvanized pipe shall not be used. Consult the Micromist Design, Installation, and Maintenance Manual (P/N 06-153) for detailed piping limitations.

70 Gallon (265 Liter) Micromist Skid Dimensions



This document is only intended to be a guideline and is not applicable to all situations. Information is subject to Fike's full disclaimer at <http://www.fike.com/disclaimer>.

112 Gallon (424 Liter) Micromist Skid Dimensions



This document is only intended to be a guideline and is not applicable to all situations. Information is subject to Fike's full disclaimer at <http://www.fike.com/disclaimer>.