ANSUL

A Tyco International Company

LVS LIQUID AGENT FIRE SUPPRESSION SYSTEM

Data/Specifications

FEATURES

- Versatility – Stand-alone Liquid Agent System or in a Twin-Agent Concept with Dry Chemical
- Wet Chemical Agent – A Blend of Organic and Inorganic Salts Coupled with Surface Active Ingredients
- Pre-mixed 5 gal (18.9 L) Containers – Allows for Convenient Filling of the Agent Tank
- Effective on Class A and Class B Fires
- Wide Temperature Operating Range of –40 °F to 140 °F (–40 °C to 60 °C)
- Does Not Require Annual Agent Replacement
- LVS Agent Shelf Life of 25 Years
- Field-proven Cooling Agent – LVS Agent Has Been Used in ANSUL Twin-Agent Systems Around the Globe Since 1998
- Rugged Construction
- Ease of Maintenance and Recharge
- Mild Steel Agent Tanks in Multiple Sizes
- Rigid Seismic Ring Mounting Brackets
- LVS-5 can be Mounted Horizontally or Vertically
- Proven External Pressurization Cartridge – Provides Constant Nozzle Pressure and Full Discharge Pattern Throughout Duration of Discharge
- Brass 1/2 in. Discharge Nozzles with 45° Discharge Pattern
- Utilizes Standard SAE 100R1 or 100R5 Hose
- Flexible Design and Installation Parameters
- Multiple Detection and Actuation Options
- CE Marked
- FM Approved
- AS 5062 Compliant

APPLICATION

LVS Liquid Agent Fire Suppression System: The LVS liquid agent utilized in a stand-alone system can be used for the protection of off-road equipment such as above-ground and sub-surface mining equipment of various types including haul trucks, wheeled loaders, dozers, scoop trams, and shuttle cars. The system is also well suited for other off-road vehicles such as landfill equipment; forestry vehicles; construction equipment; and specialty vehicles such as slag pot carriers, iron/steel slab carriers, and tunnel boring equipment. Additional applications include on-road vehicles such as public transportation, waste management, over-the-road trucking, and cargo transport. The system suppresses fires and helps to secure hazard areas by various means:

- The LVS system agent formulation, sprayed into fire hazard areas, interrupts the chemical reaction that supports combustion
- Because the agent formulation is liquid, it can flow into areas in which flammable liquids can settle
- The water content of the solution cools the fuel and the surrounding super-heated surfaces, minimizing the chance for fire re-ignition
- The LVS system agent formulation forms a film over flammable fuels, which also minimizes reflash potential

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Twin-Agent System: The fire suppression system can also be used as a dry chemical/liquid agent twin-agent system for the protection of large, off-road type vehicles and non-vehicle construction and mining equipment such as large excavators/shovels, draglines, haul trucks, and wheeled loaders. The system also protects underground mining equipment, and specialty vehicles such as slag pot and/or slab carriers and tunnel boring machines, as well as waste management equipment, and forestry vehicles.

When the LVS liquid agent system is used in a twin-agent system, the dry chemical portion is primarily responsible for quick fire knockdown and suppression. And although the LVS wet chemical system has similar fire suppression capabilities, the wet chemical solution utilized in a twin-agent concept is primarily intended for cooling.

DESCRIPTION

The LVS Liquid Agent Fire Suppression System is intended to be used as a stand-alone fire suppression system, or in combination with an ANSUL A-101 Dry Chemical System. The LVS Liquid Agent system is designed for fire suppression and/or surface area cooling in the protected hazard areas.

LVS Liquid Agent Fire Suppression System: The LVS Liquid Agent system consists of a 5 gal (18.9 L), 15 gal (56.8 L), or 30 gal (113.6 L) tank(s) containing a pre-mixed proprietary solution of LVS wet chemical agent. The LVS system is discharged through hydraulic hose and nozzles that can be arranged in certain straight-line configurations, depending on the tank size, and is discharged through a maximum of 4 nozzles (5 gal), 10 nozzles (15 gal), or 20 nozzles (30 gal) respectively. The LVS system, using the maximum nozzles allowed, is designed to discharge for approximately 60 seconds (approximately 30 seconds for the LVS-5).

The system is designed to operate within a temperature range of –40 °F to 140 °F (–40 °C to 60 °C).

The LVS wet chemical can be stored at temperatures as low as –60 °F (–51 °C).

DESCRIPTION (Continued)

Twin-Agent System: The fire suppression system consists of both dry chemical and liquid agent. The dry chemical portion of the system is the ANSUL A-101/LT-A-101 or LT-A-101-50/125/250 system and the liquid agent portion of the system consists of an LVS-5, LVS-15, or LVS-30 tank(s).

The twin-agent system, consisting of dry chemical and liquid agent, is designed to operate within a temperature range of –40 °F to 140 °F (–40 °C to 60 °C).

COMPONENT DESCRIPTION

Wet Chemical: LVS wet chemical is a unique blend of organic and inorganic salts, coupled with surface active agents. This blend provides a strong measure of freeze protection along with the foaming properties associated with conventional Class B liquid agents.

The wet chemical is shipped in 5 gal (18.9 L) plastic containers.

Tank: The LVS tank is constructed of steel, finished with a red corrosion-resistant paint. The tank holds 5 gal (18.9 L), 15 gal (56.8 L), or 30 gal (113.6 L) of LVS wet chemical solution. A nitrogen cartridge equipped with a pneumatic actuator supplies the required expellant gas. The LVS-5 tank is capable of vertical or horizontal mounting.

Nozzles: The 9.5 nozzle is a non-aspirating nozzle, constructed of brass, with a blue rubber blow-off cap that differentiates the LVS nozzles from dry chemical nozzles when used in a twin-agent system.

The LVS system allows the use of 1 to 4 nozzles on an LVS-5 tank, 5 to 10 nozzles on an LVS-15 tank, and 11 to 20 nozzles on an LVS-30 tank, depending on the application.

Detection and Control: The detection and control system utilized with the LVS system is the ANSUL CHECKFIRE SC-N or MP-N Electric Detection and Actuation System (ASC-N in Australia). The system is composed of components which are combined to provide automatic fire detection and actuation. The system is particularly suited for protection of equipment that is subjected to extreme environmental and physical conditions.

ORDERING INFORMATION

Part No.	Description
438821 (438839)*	LVS-30 Shipping Assembly Consisting of: LVS-30 Tank 55 ft^3 (1.6 m^3) Nitrogen Cartridge with Pneumatic Actuator Expellant Gas Hose (2) 1/4 in. Street Elbows
438775 (438838)*	LVS-15 Shipping Assembly Consisting of: LVS-15 Tank 23 ft^3 (0.7 m^3) Nitrogen Cartridge with Pneumatic Actuator Expellant Gas Hose (2) 1/4 in. Street Elbows
435876	LVS-5 Shipping Assembly Consisting of: LVS-5 Tank Bracket
24883	LT-A-101-30 Cartridge, Bracket, and Pneumatic Actuator Shipping Assembly (LVS-5)
433325	9.5 Nozzle Assembly (1/2 in. NPT) Consisting of: Nozzle, with Blow-Off Cap “L” Mounting Bracket (2) Lockwashers
438835	Distribution Manifold Block (4 outlets)
438834	Distribution Manifold Block (2 outlets)
428405	Mounting Ring (for LVS-30)
428404	Mounting Ring (for LVS-15)
433685	LT-A-101-50/LVS-5 Bracket
433294	9.5 Nozzle (1/2 in. NPT), with Blow-Off Cap (Single)
434403	9.5 Nozzle Blow-Off Cap (Package of 50)
427531	LVS Wet Chemical, 5 gal (18.9 L) Pail
428061	55 ft^3 (1.6 m^3) Nitrogen Cartridge (for LVS-30)
428060	23 ft^3 (0.7 m^3) Nitrogen Cartridge (for LVS-15)
423491 (428442)*	LT-A-101-30 Nitrogen Cartridge (for LVS-5)
16511	Fill Cap Spanner Wrench (LVS-5)
428363	Sealed Burst Disc Assembly Package (15 Discs)
427560	System Blow-Down Kit
427109	Manual: Installation, Operation, Design, Maintenance, and Recharge
53081	Owner’s Manual

*CE Version Part No. in parentheses

SPECIFICATIONS

1.0 General

1.1 Requirements

1.1.1 The equipment to be protected shall utilize a [freeze-protected stand-alone liquid agent system] [twin-agent fire suppression system incorporating both a dry chemical and a wet chemical system] and an approved automatic detection system.

1.1.2 The fire detection/suppression system shall consist of the following ANSUL components or approved equal:

- [LVS liquid agent fire suppression system (wet chemical only)]
- [LVS liquid agent/LT-A-101 dry chemical fire suppression system (twin-agent system)]
- CHECKFIRE SC-N detection and actuation system (ASC-N in Australia)

1.1.3 As backup to the fire detection/suppression system, the equipment shall contain a minimum of two hand portable fire extinguishers.

1.1.3.1 Each hand portable extinguisher shall be a RED LINE cartridge-operated dry chemical model or approved equal.

2.0 Products

2.1 The [liquid agent] [twin-agent] fire detection/suppression system shall be supplied as a pre-engineered system, requiring specific design (by trained and authorized personnel) for the vehicle intended to be protected. The pre-engineered system shall consist of components including agent storage tanks, expellant gas cartridges/cylinders, discharge nozzles, agent distribution lines, actuation and expellant gas lines, an ANSUL CHECKFIRE control module, manual/automatic and manual-only actuators, and a detection network that may include thermal detection alone or combined with infra-red (IR^3) flame detection.

2.1.1 The ANSUL CHECKFIRE control module shall respond to electrical input from the detection network and initiate an output(s) for alarm, vehicle shutdown, and fire suppression system actuation functions. The control module power source shall be provided from a 12 to 24 VDC source (by others) and/or a replaceable internal lithium battery that will supply power for one year under normal operating conditions. The control module shall be programmable for alarm-to-shutdown and shutdown-to-discharge delays. The module cover shall contain audible and visual status indicators for power, alarm, detection, and release circuits.

2.1.2 The system shall provide both a manual and automatic means to pneumatically actuate the fire suppression systems.

2.1.3 The system shall provide heat detection using [linear detection wire] [spot detectors] [IR^3 detection] when minimal detection response times are essential.

2.1.4 Agent storage shall consist of one or more steel pressure vessels each capable of being easily inspected for agent condition and fill level without requiring depressurization.

2.1.5 Each wet chemical storage tank shall be pressurized upon actuation from a separate steel nitrogen cylinder meeting either [DOT 3AA-1800] [DOT-3AA-2015] [Transport Canada] [CE] specifications.

2.1.6 Each dry chemical storage tank shall be pressurized from a separate steel nitrogen cartridge meeting either [DOT-3AA-1800] [DOT-3AA-2015] [Transport Canada] [CE] specifications.

2.1.7 The wet chemical and dry chemical agents shall be distributed through [SAE 100R1] [SAE 100R5] minimum rated hydraulic hoses and brass nozzles that are permanently installed in the hazard areas. The nozzles shall employ blow-off caps that shall be easily displaced upon agent discharge.

2.1.8 The wet chemical shall be a blend of inorganic salts suitable for Class A and B fires and is freeze protected to and can be stored at –60 °F (–51 °C).

2.1.9 The dry chemical shall be monoammonium phosphate suitable for Class A, B, and C fires.

2.1.10 The liquid agent system shall be capable of operating within a temperature range of –40 to 140 °F (–40 to 60 °C).

2.1.11 The dry chemical system shall be capable of operating within a temperature range of –65 to 210 °F (–54 to 99 °C).

2.2 The hand portable fire extinguisher shall consist of a mild steel pressure vessel capable of being easily inspected for agent condition and fill level without requiring depressurization. Upon operation, it shall be pressurized from a separate steel nitrogen cartridge meeting [DOT 3A-2100] [DOT 3E-1800] [Transport Canada] [CE] specifications. The extinguishing agent shall be monoammonium phosphate dry chemical suitable for Class A, B, and C fires.

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Fire Protection
Products

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