LVS Liquid Agent Fire Suppression System

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 3 gal (11.4 L) and 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), CE temperature rating is –22 °F to 140 °F (–30 °C to 60 °C)
- Does not require annual agent replacement
- LVS Agent shelf life may exceed 20 years when stored in original plastic container
- 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 for LVS-15 and LVS-30 tanks
- LVS-3, LVS-5, and LVS-10 tanks can be mounted horizontally or vertically
- Proven external pressurization cartridge – Provides constant nozzle pressure and full discharge pattern throughout duration of discharge
- 1/2 in. Brass Discharge Nozzles with 45° discharge pattern
- Utilizes standard SAE 100 R1 or 100 R5 hose; or stainless steel tube meeting ATM A213 or ASME SA 213, 316L tubing specifications
- 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 ANSUL® LVS Liquid Agent stand-alone fire suppression system can protect the following types of equipment:

On-Road Vehicles	Non-Road Vehicles/Equipment
Public transportation	Landfill equipment
Waste management	Forestry vehicles
Over-the-road trucking	Construction equipment
Cargo transport	Mining equipment –
Intermodal	above ground and sub-surface:
	Haul trucks
Specialty Vehicles	Wheeled loaders
Slag carriers	Dozers
Pot carriers	Scooptrams
Iron/steel slab carriers	Shuttle cars
Tunnel boring machines	

The system suppresses fires and helps to secure hazard areas by various means:

- The LVS wet chemical agent formulation, sprayed into fire hazard areas, interrupts the chemical reaction that supports combustion
- The liquid agent can flow into areas where flammable liquids also flow
- The LVS agent formulation forms a film over flammable fuels, which also minimizes reflash potential
- The LVS wet chemical solution cools the fuel and the surrounding super-heated surfaces, reducing the possibility for fire re-ignition

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Application (Continued)

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 non-road construction and mining equipment.

Off-road Vehicles/ Equipment	Specialty and Underground Mining
Large excavators/shovels	Slag, pot, and/or slab carriers
Draglines	Tunnel boring machines
Haul trucks	Waste management equipment
Wheeled loaders	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 either a stand-alone fire suppression system or a Twin-Agent System when combined 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 liquid agent is a pre-mixed proprietary solution of LVS wet chemical. The agent discharges through hydraulic hose or stainless steel tube arranged in certain straight-line configurations, depending on tank size.

LVS System Parameters per Tank Size

Tank	Agent Qty. gal	(L)	Max. Noz.	Avg. Noz. Discharge Time-Sec.	Single Nozzle Coverage Area ft^2	(m^2)
LVS-3	3	(11.4)	6	20	3	(0.28)
LVS-5	5	(18.9)	4	30	7	(0.65)
LVS-10	10	(37.9)	8	40	7	(0.65)
LVS-15	15	(56.8)	10	60	7	(0.65)
LVS-30	30	(113.6)	20	60	7	(0.65)

The system is designed to operate within a temperature range of –40 °F to 140 °F (–40 °C to 60 °C), CE temperature rating is –22 °F to 140 °F (–30 °C to 60 °C).

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

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-3, LVS-5, LVS-10, 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), CE temperature rating is –22 °F to 140 °F (–30 °C to 60 °C).

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 3 gal (11.4 L) or 5 gal (18.9 L) plastic containers.

Tank: The LVS tank is constructed of steel, finished with a red corrosion-resistant paint. A nitrogen cartridge equipped with a pneumatic actuator supplies the required expellant gas. The LVS-3, LVS-5 and LVS-10 tanks are 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.

Detection and Control: The detection and control system utilized with the LVS system is the approved ANSUL CHECKFIRE Electric Detection and Actuation System. 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 Two 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 Two 1/4 in. Street Elbows
439361	LVS-10 Shipping Assembly Consisting of: LVS-10 Tank Bracket
435876	LVS-5 Shipping Assembly Consisting of: LVS-5 Tank Bracket

Note: LVS-10 and LVS-5 require LT-A-101-30 Nitrogen Cartridge, Bracket, and Electric-Pneumatic Actuator Shipping Assembly, Part No. 24883 (41735)*

441774	LVS-3 Shipping Assembly Consisting of: LVS-3 Tank Bracket

Note: LVS-3 requires LT-30-R Nitrogen Cartridge, Bracket, and Electric-Pneumatic Actuator, Part No. 442586 (442587)*

24883 (431735)*	LT-A-101-30 Nitrogen Cartridge, Bracket, and Electric-Pneumatic Actuator Shipping Assembly (LVS-5/LVS-10)
433325	9.5 Nozzle Assembly (1/2 in. NPT) Consisting of: Nozzle with Blow-Off Cap "L" Mounting Bracket Two Lockwashers
438835	Distribution Manifold Block (4 outlets)
438834	Distribution Manifold Block (2 outlets on 2 opposing sides)
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)
441775	LVS Wet Chemical, 3 gal (11.4 L) Pail
426961	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/LVS-10)
423425 (428441)*	LT-30-R Nitrogen Cartridge (for LVS-3)
16511	Fill Cap Spanner Wrench (LVS-5/LVS-10)
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 electric detection and actuation system

1.1.3 As backup to the fire detection/suppression system, the equipment shall contain a minimum of two 20 lb 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/containers, 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] [IR3 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 [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 [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 100 R1] [SAE 100 R5] minimum rated hydraulic hoses or stainless steel tube meeting ATM A213 or ASME SA 213, 316L tubing specifications, 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), CE temperature rating is –22 °F to 140 °F (–30 °C 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.

Note: The converted values in this document are provided for dimensional reference only and do not reflect an actual measurement.