

Large Mobile and Specialty Equipment



- ◆ LVS™ Liquid Agent Fire Suppression Systems
- ◆ LT-A-101 Dry Chemical Fire Suppression Systems
- ◆ CHECKFIRE® SC-N Fire Detection & Actuation Systems
- ◆ RED LINE® Hand Portable Fire Extinguishers



Large non-road mobile equipment needs special fire protection

There are several reasons why large mobile and specialty equipment is susceptible to fire. Many operate virtually nonstop, 24 hours per day, 7 days per week. They use a host of flammable liquids including lubricating oils, diesel fuels, greases, and hydraulic fluids. And they generate considerable heat from engine blocks, manifolds, turbochargers, electrical components, and brake systems.

When fire breaks out, the results can be dramatic. Expensive repair or replacement is the obvious loss. Extensive downtime and business interruption can result in even greater expense as this equipment often takes many months to replace. And most importantly, fire can mean serious injury to the equipment operator.

Insurance companies are well aware of these risks. That's why insurance rates are increasing and coverage for this equipment is becoming more difficult to obtain.

Protecting LARGE equipment

In response to the mining industry's need for mobile equipment fire protection, Ansul invented and introduced dry chemical fire suppression systems in the 1960's. Since then, equipment in mining and other industries has grown in size and complexity – and Ansul has responded over the years with various fire detection and suppression innovations.

Today, "mega class" equipment such as large excavators, shovels, draglines, haul trucks, wheeled loaders, and other specialized equipment presents a formidable fire protection challenge. This equipment contains hundreds of feet of highly pressurized hydraulic lines with hundreds of gallons of hydraulic fluid creating a substantial source of fuel. With size in mind, Ansul system engineers and agent chemists jointly developed a new generation of fire suppression systems.

The Ansul "twin-agent" solution

The ultimate fire protection solution for "mega class" equipment features the one-two punch of the time-proven LT-A-101 Dry Chemical System and the new LVS™ Liquid Agent System. This combination offers the rapid flame knockdown and pressure-fire extinguishing capabilities of FORAY® Dry Chemical... PLUS the superior cooling effects of LVS™ Wet Chemical.

•LT-A-101 Dry Chemical System

You'll find LT-A-101 cartridge-operated dry chemical systems on more heavy equipment than any other brand – and for good reason. These corrosion-resistant systems are designed to be reliable in the most hostile environments and operate in extreme temperatures ranging from –65 to 210 °F (–54 to 99 °C). Agent containers are available in 30, 125, and 250 lb. (13.6, 56.7, and 113.4 kg) capacities to fit a variety of applications. Dependable expellant gas cartridges are tested to detect a leak rate of just 1/4 oz. (7g) over 127 years.

•LVS™ Liquid-Agent System

Responding to a need for a system that would provide rapid cooling capabilities, Ansul developed the LVS liquid agent system. LVS wet chemical agent is stored in 30-gallon (114 L) tanks connected to expellant nitrogen cartridges. As a liquid, the LVS agent tends to flow along the same path as the burning fuel to areas otherwise not accessible to firefighters. LVS system components are corrosion resistant, built for rugged environments, and designed to operate within a temperature range of –40 to 120 °F (–40 to 49 °C).

•CHECKFIRE® Detection and Actuation System

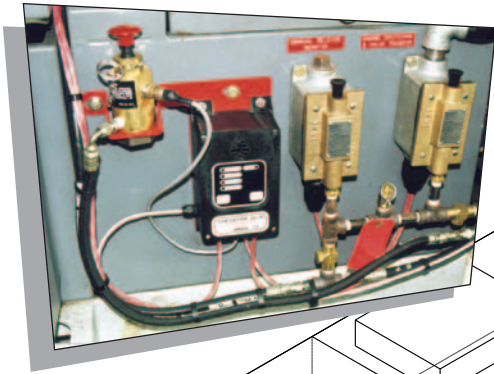
For 24-hour protection, the CHECKFIRE system provides automatic detection, alarm, equipment shutdown, and fire suppression system(s) operation. Its environmentally-sealed control module is shock and vibration resistant; and features a self-contained internal power source (and/or external power connection), self-checking diagnostics, and supervised circuitry. Thermal detection options include linear detection wire or spot detectors.

•RED LINE® Hand-Portable Fire Extinguishers

As fires on large mobile equipment can sometimes be unpredictable, Ansul recommends the installation of RED LINE dry chemical extinguishers as back-up to the fire suppression system. These rugged cartridge-operated extinguishers have been protecting high-risk industries since 1939.



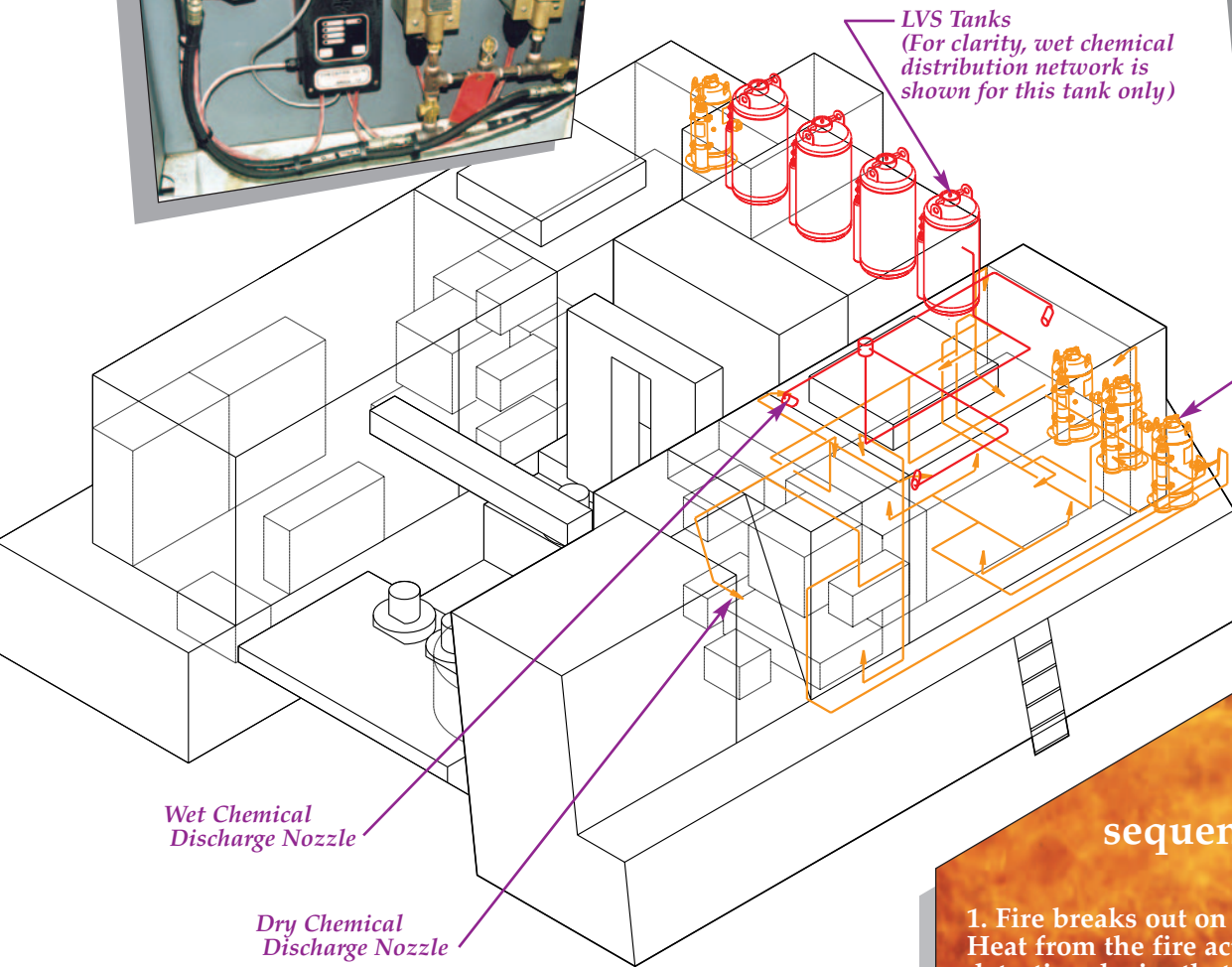
LT-A-101-250 Dry Chemical Fire Suppression System



CHECKFIRE® SC-N Fire Detection & Actuation System



RED LINE® Hand Portable Fire Extinguishers



LT-A-101-125 Tanks (For clarity, dry chemical distribution network is shown for this tank only)

Wet Chemical Discharge Nozzle

Dry Chemical Discharge Nozzle

NOTE: This drawing is conceptual in nature and constitutes nominal hardware requirements. The final system design must consider other potential ignition and fuel sources through a pre-installation in-depth analysis of all likely areas of probable fire incident.



LVS™/LT-A-101 Twin Agent Fire Suppression System

Typical sequence of operation (twin-agent)

1. Fire breaks out on a large excavator. Heat from the fire activates a linear or spot detection device that alerts the CHECKFIRE control module.
2. The control module immediately sounds its integral alarm alerting the operator that a fire has been detected.
3. After a specified time delay period, the control module actuates the LT-A-101 dry chemical system. The system can also be operated manually. (High level alarms and automatic equipment shutdown options are also available.)
4. At the same time, the pneumatic time delay begins its count prior to actuating the LVS system.
5. Nitrogen from the expellant gas cartridge pressurizes the dry chemical storage tanks.
6. The dry chemical extinguishing agent is expelled from the tanks through a network of distribution hoses and discharge nozzles to the protected areas.
7. Immediately following the dry chemical discharge, nitrogen cartridges are actuated and pressurize the LVS tanks.
8. LVS wet chemical agent is expelled from the tanks through a network of distribution hoses and discharge nozzles to the protected areas.

Specifications – Twin-Agent System

1.0 General

1.1 Requirements

- 1.1.1 The equipment shall be protected with a "twin-agent" fire detection/suppression system.
- 1.1.2 The fire detection/suppression system shall consist of the following Ansul components or approved equal.
 - LVS wet chemical fire suppression system
 - LT-A-101 dry chemical fire suppression system – FM Approved
 - CHECKFIRE SC-N detection/actuation system – FM Approved
- 1.1.3 As backup to the fire detection/suppression system, the equipment shall contain a minimum of two UL/ULC-listed, FM-approved hand-portable fire extinguishers.
- 1.1.4 Each hand portable extinguisher shall be a RED LINE cartridge-operated dry chemical extinguisher or approved equal.

2.0 Products

- 2.1 The "twin-agent" fire detection/suppression system shall be supplied as a pre-engineered package consisting of agent storage tanks, expellant gas cartridges, discharge nozzles, agent distribution lines, control module, manual/automatic actuator, pneumatic discharge delay, and thermal detection network.
 - 2.1.1 The control module shall respond to electrical input from the detection network and produce output to initiate alarm, vehicle shutdown, hydraulic tank venting, and fire suppression system actuation functions. The control module power source shall be [a replaceable lithium battery that will supply power for one year under normal operating conditions] [connection to the equipment power source]. 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].
 - 2.1.4 Agent storage shall consist of one or more steel pressure vessels appropriately sized to fit the application. Each pressure vessel shall be capable of being easily inspected for agent condition and fill level without requiring depressurization.

- 2.1.5 Each dry chemical storage tank shall be pressurized from a separate steel nitrogen cartridge meeting DOT-3AA-1800 and Transport Canada specifications.
- 2.1.6 Each liquid agent storage tank shall be pressurized upon actuation from a separate steel nitrogen cartridge meeting DOT-3AA-2015 and Transport Canada specifications.
- 2.1.7 A brass discharge delay device shall be installed in the actuation line to delay the actuation of the liquid agent system for approximately 20 seconds after the actuation of the dry chemical system.
- 2.1.8 The extinguishing agents shall be distributed through SAE 100R1 or SAE 100R5 minimum rated hydraulic hoses and brass nozzles that are permanently installed in the hazard areas. The nozzles shall employ rubber blow-off caps that shall be easily displaced upon agent discharge.
- 2.1.9 The dry chemical extinguishing agent shall be monoammonium phosphate suitable for Class A, B, and C fires.
- 2.1.10 The liquid extinguishing agent shall be a blend of aqueous film-forming foam (AFFF) and inorganic salt suitable for Class A and B fires, and freeze-protected to -60°F (-51°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).
- 2.1.12 The liquid agent system shall be capable of operating within a temperature range of -40 to 120°F (-40 to 49°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 3AA-1800 and Transport Canada specifications. The extinguishing agent shall be monoammonium phosphate dry chemical suitable for Class A, B, and C fires.

ANSUL, CHECKFIRE, and RED LINE are registered trademarks; and LVS is a trademark.

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