



Certificate of Conformity

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Product designation

Ansul®, A-101 / LT-A-101 dry-chemical and LVS™ twin agent (wet/dry-chemical), pre-engineered fire suppression system

(Refer to the Schedule/enclosures for further specified details)

Agent/distributor

Tyco Fire Protection Products
Level 3, 95 Coventry Street, SOUTHBANK, VIC, AUSTRALIA, 3006

Registrant

Tyco Fire Protection Products
451 North Cannon Avenue, LANSDALE, PA, UNITED STATES, 19446-2256

Producer

Tyco Fire Protection Products
One Stanton Street, MARINETTE, WI, UNITED STATES, 54143-2542

Conformance criteria and evaluation

The Ansul®, A-101 / LT-A-101 dry-chemical and LVS™ twin agent (wet/dry-chemical), pre-engineered fire suppression system has been evaluated and verified as conforming with the relevant requirements of the following criteria.

1. Australian Standard AS 5062-2006, 'Fire protection for mobile and transportable equipment'.
2. SSL Appraisal Specification FAS-121, Version 1.0, 'Pre-engineered dry chemical type fixed fire-suppression systems for mobile and transportable machinery, and stationary industrial risks'.
3. Factory Mutual - Evaluation and approval, 'FM approval'.
4. Australian/New Zealand Standard AS/NZS 1841.5:1997, 'Portable fire extinguishers - Specific requirements for powder type extinguishers'.
5. NFPA Standard NFPA 17-2002, 'Standard for Dry Chemical Extinguishing Systems'.

Limitations/conditions of conformance

Limitations/conditions of conformance, where identified on this certificate, are derived from qualifications from evaluation(s) for conformity and/or other related technical documentation. All details with respect to design, assembly and installation instructions and restrictions should be checked against the producer's current technical manual/data sheets and the requirements of the Authority having Jurisdiction.

(Limitations/conditions of conformance continue)

This certification is issued within the scope of CSIRO Verification Services – Rules governing ActivFire Scheme and is valid only for the product(s) as submitted for evaluation and verification of conformity, subject to the following conditions.

- Reference to details, limitations and requirements, where documented as a schedule/enclosure with this certificate.
- The Registrant is responsible for their attestation of conformity and ensuring that on-going production complies with the conformance criteria defined in this certificate.
- This certificate will not be valid if any changes or modifications are made to the product which have not been notified and validated by CSIRO Verification Services.
- This certificate is subject to periodical re-validation upon verification that all requirements, as determined by the conformity assessment body, continue to be satisfactorily met by the Registrant.
- This certificate may only be reproduced in its published form, without modification and inclusive of all schedules/enclosures.
- Any changes, errors or omissions, must be submitted in writing and if necessary or requested, substantiated with relevant evidence.
- Any representations, such as advertising or other marketing related activities or articles shall reflect the correct contents of this certificate and conform with all relevant trade practices and consumer protection legislation and regulations.
- Any terms or conditions of use as applicable to content and documentation as published or accessed through web sites administered by the CSIRO Verification Services.

Issued by

David Whittaker
Executive Officer – ActivFire Scheme



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Specified limitations/conditions, determined from the evaluation for conformity, include the following.

- i. Application is for those Ansul®, A-101 / LT-A-101 dry-chemical and LVS™ twin agent (wet/dry-chemical), pre-engineered fire suppression systems that have been designed, installed, operated, and maintained, in accordance with the system's FMRC-Approved "Installation, Recharge, Inspection, and Maintenance Manual, Revision 2, dated 15 May 2002" (Ansul part num. 24327) and Ansul®, A-101 / LT-A-101 dry-chemical and LVS™ twin agent (wet/dry-chemical), pre-engineered fire suppression systems that have been designed, installed, operated, and maintained, in accordance with the system's FMRC-Approved "Installation, Recharge, Inspection, and Maintenance Manual, Revision 2, dated 30 June 2005" (Ansul part num. 427865).
- ii. Systems fitted with carbon dioxide cartridges (i.e. Model A-101 systems) shall be used only within the temperature range 0°C to 49°C
- iii. Systems fitted with nitrogen cartridges (i.e. Model LT-A-101 systems) shall be used only within the temperature range -49°C to 99°C (-40°C to 49°C), if fitted with a CHECKFIRE Pneumatic Detection and Actuation System, or -40°C to 60°C if fitted with a CHECKFIRE Series I or Series SC or CHECKFIRE 210 Electric Detection and Actuation System)
- iv. An A-101 system shall not be fitted to industrial enclosures that have non-closable openings totalling more than 15% of the enclosure's total surface area (ceiling, floors, and all walls)
- v. Maximum coverage radius shall be 1.88 m for a C-1/2 (conical pattern) nozzle, 1.22 m for a V-1/2 (180° V-fan pattern) nozzle, and 0.84 m for a F-1/2 (180° wedge-fan pattern) nozzle
- vi. The hose operating temperature -40°C to + 93°C
- vii. Maximum number of nozzles served by a 10 lb (3.9 kg) agent tank shall be 2
- viii. Maximum number of nozzles served by a 20 lb (7.7 kg) agent tank shall be 4
- ix. Maximum number of nozzles served by a 30 lb (11.3 kg) agent tank shall be 6
- x. For a 2-nozzle system with 10 lb (3.9 kg) agent tank, the supply line length from release valve to reducing tee shall not exceed 9.1 m, and to farthest nozzle 15.2 m
- xi. For a 20 lb or 30 lb 4-nozzle balanced system with triple tee, the supply line length from release valve to triple tee shall not exceed 12.2 m, and to farthest nozzle 15.2 m
- xii. For a 30 lb 6-nozzle balanced system with 4-way distribution tee, the supply line length from release valve to distribution tee shall not exceed 12.2 m, and to farthest nozzle 17.7 m
- xiii. For a 10 lb (3.9 kg) total-flooding industrial system, coverage shall not exceed 1.5 m x 3.0 m x 2.1 m high, and nozzles shall not exceed 2 x F-1/2
- xiv. For a 20 lb (7.7 kg) total-flooding industrial system, coverage shall not exceed 3.0 m x 3.0 m x 2.1 m high, and nozzles shall not exceed 4 x F-1/2
- xv. For a 30 lb (11.3 kg) total-flooding industrial system, coverage shall not exceed 3.0 m x 3.0 m x 3.0 m high, and nozzles shall not exceed 4 x F-1/2
- xvi. For a 125 lb (56.7 kg) total-flooding industrial system, maximum linear hazard size for each set of (4) four nozzles is 3.0 m x 3.0 m x 3.0 m utilising either a 16 or 12 nozzle system
- xvii. For a 250 lb (113.4 kg) total-flooding industrial system, maximum linear hazard size for each set of (4) four nozzles is 3.0 m x 3.0 m x 3.0 m utilising either a 16 or 12 nozzle system
- xviii. Only F-1/2 nozzles shall be fitted to A-101/LT-A-101-50/125/250 industrial systems
- xix. The length of expellant gas hose between gas cartridge and agent tank shall not exceed 6.1 m
- xx. Number of expellant gas cartridges actuated by one remote pneumatic actuator shall not exceed 8, and shall be reduced by 1 for each other actuated parallel device, such as engine shut-down actuators, pressure switches, and damper-tripping devices
- xxi. The total length of the 6 mm actuation hoses and tubing connected to one pneumatic actuator shall not exceed 38 metres
- xxii. The maximum number of actuators that can be actuated from a single actuator cartridge for A-101/LT-A-101-50/125/250 systems is ten (10)
- xxiii. The maximum number of nozzles that can be used A-101/LT-A-50/101-125 system is sixteen (8, 12 and 16).
- xxiv. The maximum number of nozzles that can be used A-101/LT-A-50/101-250 system is twenty four (8, 12, 16 and 24).

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xxv. System shall be constructed using hoses as specified in the Ansul A-101/LT-A-101 Installation, Recharge, Inspection, and Maintenance Manual, part num. 24327, or if the hoses are installed with bend radii less than specified in that Manual

xxvi. The LVS™ Fire Suppression System is designed to operate within a temperature range of -40°C to 49°C.

Producer's description

The Ansul®, A-101 / LT-A-101 dry-chemical and LVS™ twin agent (wet/dry-chemical), pre-engineered fire suppression system is a fixed multiple-nozzle central-storage manual and/or automatic single or twin agent type system that is supplied in kit form for application to on-highway or off-highway vehicles, and certain suitably-enclosed industrial risks. The A-101/LT-A-101 system consists of three major components: a container to store the dry chemical extinguisher agent; an actuation system operated manually or automatically, and an agent distribution system which delivers the agent from the tank through hydraulic hose and fixed nozzles to the hazard areas. The A-101/LT-A-101 system employs gas-cartridge propelled FORAY® mono-ammonium phosphate type dry-chemical powder and is suitable for use on Classes 'A', 'B', and 'C' fires. It is a suppression system only, and is not intended to fully extinguish all fires. If the application temperatures are within the range 0°C to 49°C, a Model A-101 system fitted with *carbon dioxide* cartridges is supplied. If the application temperatures are within the range -54°C to 99°C, a Model LT-A-101 system fitted with *nitrogen* cartridges is supplied. The LT-A-101-125/250 systems utilise nitrogen as the expellant gas and are approved for temperature range of -54°C to 54°C. Typical mobile applications include surface mining equipment, underground mining machines, forest-harvesting equipment, farming machinery and transportation vehicles such as trucks and buses. The A-101/LT-A-101 system provides fire protection using total flooding and local application methods. Typical industrial applications include flammable liquid storage, dip tanks, solvent cleaning tanks, transformer vaults, quench tanks, and furnace rooms. Vehicle applications are usually controlled by pneumatic manual actuation only. A pneumatic-powered engine shut-down kit is also supplied when required. When required by the customer, kits of components providing automatic fire-detection and system actuation are supplied. These are fixed-temperature type systems employing electric linear detection wire, electric spot-type detectors, pneumatic detection tubing, or a fusible-link and pull-cable arrangement. In addition to the LT-A-101, CHECKFIRE Releasing Panel, Model A-SCN (SC) or CHECKFIRE 210, can be used as detection and control equipment for protection large non-road mobile equipment.

The fire-suppression systems shall include one or more dry chemical agent storage tanks, one or more expellant gas cartridges, mounting brackets for storage tanks and cartridges, distribution piping (hose) and nozzles, manual/automatic actuator(s), an automatic detection system, various pipe fittings and installation accessories, engine shut-down actuators, servicing and re-filling kits, and an Installation, Operation and Maintenance Manual. The specified manuals, Ansul part num. 24327 (5-15-02; Rev. 2), part num. 427865 (6-30-05; Rev. 2), part num. 427109 (5-15-02; Rev. 1) and part num. 423522 (8-01-02; Rev. 1) include instructions for designing of industrial systems.

The agent storage tanks are not pressurised until the system is actuated, and the agent tanks are hermetically-sealed after filling, to prevent moisture absorption by the powdered agent. Systems may be multiple-tank arrangements, but each agent tank must be connected to its own expellant cartridge/release valve assembly and agent distribution system. Each agent tank of a multiple-tank system is therefore installed, with its associated pre-engineered pipework (hoses) and nozzles, as a discrete fire-suppression "module", but all agent tanks in the system are discharged simultaneously by actuating their expellant cartridges from a shared pneumatic actuator.

Twin-agent system

The system consists of both dry chemical and liquid agent. The dry chemical used in conjunction with the LVS™ system is the ANSUL A-101/LT-A-101, 125 or 250. Upon actuation of the dry chemical system, the pneumatic time delay for the LVS™ system will start. During the end of the dry chemical discharge, the time delay will allow pressure to enter the LVS actuation line. This pressure will then actuate the nitrogen cartridge on the LVS tank(s), causing the LVS system to discharge the wet chemical solution.

Enhanced protection scheme for large excavators and for other non-road mobile equipment can be offered by using of the LVS™ Liquid Agent Suppression System. The following protection schemes are required for excavator of these specific sizes:

- **Standard discharge application: small equipment (weight: 99,000 to 200,000 lb. (44,906 to 90,720 kg))**
Standards discharge application of an A-101 dry chemical system can be used for this smallest class of excavators. Design of the suppression system shall be in accordance with the LT-A-101-30 or LT-A-101-125/250 Installation, Recharge, Inspection and maintenance manual.

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- Twin-agent application: mid-size equipment (weight 200,000 to 1,000,000 lb. (90,720 to 453,600 kg))**
 Use of twin-agent system consisting of the LVS™ liquid agent system connected to an A-101 dry chemical (extended or standard discharge) system. The A-101 system can utilise 250 lb., 125 lb. Or 30 lb (nominal) agent containers.
- Twin-agent application: large equipment (weight: 1,000,000 lb. (453,600 kg) and greater).**
 Use of a twin-agent system consisting of the LVS™ liquid agent system connected to an A-101-125/250 dry chemical (extended discharge) system.

Technical specification

The following details are a representative extract of the technical specification for the Ansul®, A-101 / LT-A-101 dry-chemical and LVS™ twin agent (wet/dry-chemical), pre-engineered fire suppression system and may be subject to change. Complete and current details should be determined from the designated producer's technical manual/data sheets.

1. Details, agent tank assemblies

Characteristic	Tank assembly model ref.								
	A-101-10 (LT-A-101-10)	A-101-20 (LT-A-101-20)	A-101-30 (LT-A-101-30)	LP-A-101-20B (LT-LP-A-101-20B)	A-101/LT-A-101-125	A-101/LT-A-101-250	A-101/LT-A101-50	A-101/LT-A101-125	A-101/LT-A101-250
Ansul part num.	24855 (24966)	24970 (24894)	53000 (29375)	24427 (24425)	427745	427746	433788	427745	427746
Powder Agent Contents (kg)	3.9	7.7	11.3	7.7	56.7	113.4	20.4	50.8	102.1
Overall Height (mm)	410	495	570	406	787	1100	546	787	1100
Overall Width (mm)	260	279	301	250	546	718	290	546	718

2. Details, expellant gas cartridges (DOT 3A-2100 or 3AA-1800 Specification)

Characteristic	Tank assembly model ref.			
	A-101-10 (LT-A-101-10)	A-101-20 (LT-A-101-20)	A-101-30 (LT-A-101-30)	LP-A-101-20B (LT-LP-A-101-20B)
Ansul part num.	15850 (423429)	423441 (423435)	423443 (423491)	423441 (323435)
Gas Contained	Carbon Dioxide (Nitrogen)	Carbon Dioxide (Nitrogen)	Carbon Dioxide (Nitrogen)	Carbon Dioxide (Nitrogen)
Overall Height (mm)	229 (200)	200 (289)	295 (371)	200 (289)
Diameter (mm)	51 (64)	64 (64)	64 (90)	64 (64)

3. Details, actuation gas cartridges (DOT 3E-1800 specification)

Cartridge model	Ansul part num.		Dimensions (mm)	
	RH Thread	LH Thread	Diameter	Overall length
LT-5	6979	7013	51	152
LT-10	13193	13177	51	173

4. Schedule of designated system components

Description	Part num.
Tank Assembly, Charged, A-101 Model 10, (3.9 kg Standard model)	24855
Tank Assembly, Charged, A-101 Model 20, (7.7 kg Standard model)	24970
Tank Assembly, Charged, A-101 Model 30 (11.3 kg Standard model)	53000
Tank Assembly, Charged, LT-A-101 Model 10 (3.9 kg Low Temperature model)	24966
Tank Assembly, Charged, LT-A-101 Model 20 (7.7 kg Low Temperature model)	24894
Tank Assembly, Charged, LT-A-101 Model 30 (11.3 kg Low Temperature model)	29375
Tank Assembly, Charged, LP-A-101 Model 20-B (7.7 kg Low-Profile model)	24427
Tank Assembly, Charged, LT-LP-A-101 Model 20-B (7.7 kg Low Temperature Low Profile model)	24425
Tank Assembly, Charged, LT-A-101 Model 50 (20.4kg model)	433788
Tank Assembly, Charged, LT-A-101 Model 125 (50.8kg model)	427745

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Description	Part num.
Tank Assembly, Charged, LT-A-101 Model 250 (102.1kg model)	427746
Tank Assembly, Charged, LT-A-101 Model 125 (56.7kg model)	427745
Tank Assembly, Charged, LT-A-101 Model 250 (113.4 kg model)	427746
Primary Supply Line Triple Tee	428065
Secondary Supply Line Triple Tee	16424
Primary Supply Line Distribution Tee	551715
Reducing Tee Package Includes: 2 Reducing Tees	53040
Reducing Tee	4655
Tank Bracket, A-101-10 and LT-A-101-10 tanks	24854
Tank Bracket, A-101-20 tank	24971
Tank Bracket, LT-A-101-20 tank	24895
Tank Bracket, A-101-30 tank	14098
Tank Bracket, LT-A-101-30 tank	30494
Tank Bracket, LT-A-101-50 tank	433685
Tank Bracket, LP-A-101-20B and LT-LP-A-101-20B tanks	31171
FOREY Multi-Purpose Dry Chemical, 20.4 kg pail	53080
Cartridge, Expellant Gas, A-101-10 systems (DOT)	15850
Cartridge, Expellant Gas, A-101-20 and LP-A-101-20B systems	423441
Cartridge, Expellant Gas, A-101-30 systems	423443
Cartridge, Expellant Gas, LT- A-101-10 systems	423429
Cartridge, Expellant Gas, LT-A-101-20 and LT-LP-A-101-20B systems	423435
Cartridge, Expellant Gas, LT-A-101-30 systems	423491
Cartridge, Expellant Gas, LT-A-101-50 systems	423491
Cartridge Bracket, Lt-A-101-50 system	29193
Seal Burst Assembly for A-101-50 Tank	433706
Cartridge, Actuation Gas, Model LT-10, RH Thread (DOT)	13193
Cartridge, Actuation Gas, Model LT-10, LH Thread (DOT)	13177
Cartridge, Actuation Gas, Model LT-10, RH Thread (TC/DOT)	423423
Cartridge, Actuation Gas, Model LT-10, LH Thread (TC/DOT)	423425
Cartridge Bracket, LT-A-101-20 and LT-LP-A-101-20B systems	24325
Cartridge Bracket, LT-A-101-30 systems	29193
Cartridge, Expellant Gas, A-101-10 systems (TC/DOT)	423439
Distribution Tee, 1/2" x 1/2" x 1/2" x 3/4"	25031
Reducing Tee Package Includes: 2 Reducing Tee, 1/2" x 1/2" x 3/4"	53040
Reducing Tee, 1/2" x 1/2" x 3/4"	4655
Distribution Tee Package Includes: 4 Distribution Tee	53036
Triple Tee, 3/4" inlet with four 1/2" outlets	16424
1/4" Check Valve	53051
Triple Tee Package Includes: 2 Triple Tee	53038
Y Lateral	419695
Manual Actuator, Cartridge Guard Type, for RH cartridges	19330
Manual Actuator, Cartridge Guard Type, for LH cartridges	16186
Manual Actuator, Standard Type, for RH cartridges	57452
Manual Actuator, Standard Type, for LH cartridges	70581
Manual Actuator Bracket, 'L' Type	70580
Manual Actuator Bracket, 'S' Type	57661
Label, Operating Instructions for Electrically Driven Equipment	16459
Remote Manual Actuator Package includes: LT-10-L Cartridge, "S" Bracket, Elbow, Check Valve, Seal, Operating Instruction Labels and Installation Instructions	70584
Remote Manual Actuator Package includes: LT-10-L Cartridge, "L" Bracket, Elbow, Check Valve, Seal, Operating Instruction Labels and Installation Instructions	71699
Remote Manual Actuator Package includes: LT-10-R Cartridge, "S" Bracket, Elbow, Check Valve, Seal, Operating Instruction Labels and Installation Instructions	57484
Remote Manual Actuator Package includes: LT-10-R Cartridge, "L" Bracket, Elbow, Check Valve, Seal, Operating Instruction Labels and Installation Instructions	71804
Remote Manual Actuator for LT-10-L Cartridge only	70581

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Description	Part num.
Remote Actuator Package, Cartridge Guard Type (Left Hand) Includes: Actuator, LT-10-L Cartridge, Check Valve, Operating Instruction Labels and Lead Wire Seal	32747
Remote Actuator Package, Cartridge Guard Type (Right Hand) Includes: Actuator, LT-10-R Cartridge, Check Valve, Operating Instruction Labels and Lead Wire Seal	32739
Label, Operating Instructions for Gasoline and Diesel Driven Equipment	16033
Safety Relief Valve, 1/4" x 18.3 bar	15677
Pressure Switch, Non-Weatherproof, SPDT re-settable, 15A-250 VAC non-inductive	8372
Pressure Switch, Manually resettable 3-conductor SPDT, 6A, 12~36 VDC	437266
Pressure Switch Connector Kit	437412
Pressure Switch Installation Instructions	437292
Agent Nozzle, Wedge-fan Pattern, Model F-1/2	16449
Agent Nozzle, V-fan Pattern, Model V-1/2	56748
Agent Nozzle, Conical Pattern, Model C-1/2	53791
Lead Wire seal	197
Pressure switch, Weatherproof, DPST re-settable, 30A-250 VAC/DC non-inductive	46250
Blow-off Cap Package: Includes 50 Blow-Off Caps, Part. No. 4120, For F-1/2 Nozzle	73870
Blow-off Cap Package: Includes 12 Brackets 2 in. x 2 in. Angle	73871
Blow-off Cap With Retaining Strap Package: Includes 50 Blow-Off Caps (Part. No. 415108), For V-1/2 and C-1/2 Nozzle Only	415192
C-1/2 Nozzle Package Includes: 4 Nozzles, 4 Nozzle Brackets, 4 Blow-Off Caps and 8 Lockwashers	57046
V-1/2 Nozzle Package Includes: 4 Nozzles, 4 Nozzle Brackets, 4 Blow-Off Caps and 8 Lockwashers	57044
F-1/2 Nozzle Package Includes: 4 Nozzles, 4 Nozzle Brackets, 4 Blow-Off Caps and 8 Lockwashers	53042
Nozzle Bracket, 2 in. x 3 in. Angle	427149
Nozzle Bracket, Straight 5 in. x 2 in., 4 Brackets	427228
Nozzle Lockwasher Package: Includes 50 Lockwashers, Part. No. 25581	73872
Safety Vent Relief Valve Package Includes: 2 Safety Vent Relief Valves	53050
LT and LP Model Pneumatic Actuator Assembly	57488
A-101 Pneumatic Actuator with Cartridge Receiver Assembly	16408
LT-A-101-10 Pneumatic Actuator Assembly	31579
Engine Shutdown Device	427425
Air Cylinder and Tubing Assembly	15733
Pneumatic Actuator	430221
Bursting Disc Nipple Assembly	428324
Cartridge Scale and Hook Assembly	3923
23 Cu. Ft. Nitrogen Cartridge	428060
55 Cu. Ft. Nitrogen Cartridge	428061
Cartridge Scale and Hook Assembly (LT-A-101-30)	75382
Bursting Disc Union Assembly	15496
Fill Cap Spanner Wrench	16511
Bursting Disc Package (Includes: 15 Bursting Disc Assemblies, part num. 428271)	428363
A-101-10 Includes: Agent Tank, Tank Mounting Bracket, 101-10 Cartridge	16559
A-101-20 Includes: Agent Tank, Tank Mounting Bracket, 101-20 Cartridge	16430
A-101-30 Includes: Agent Tank, Tank Mounting Bracket, 101-30 Cartridge	16131
LT-A-101-10 Includes: Agent Tank, Tank Mounting Bracket, LT-20-R Cartridge	31581
LT-A-101-20 Includes: Agent Tank, Tank Mounting Bracket, LT-30-R Cartridge, Cartridge Bracket and Pneumatic Actuator	24306
LT-A-101-30 Includes: Agent Tank, Tank Mounting Bracket, (Does not Include Cartridge, Cartridge Bracket and Pneumatic Actuator)	53003
LT-A-101-30 Includes: Cartridge, Cartridge Bracket and Pneumatic Actuator for LT-A-101-30 Unit	24883
LP-A-101-20-B Includes: Agent Tank, Tank Mounting Bracket, 101-20 Cartridge, Cartridge Bracket and Pneumatic Actuator	31344
LT-LP-A-101-20-B Includes: Agent Tank, Tank Mounting Bracket, LT-30-R Cartridge, Cartridge Bracket and Pneumatic Actuator	24307
A-101 Installation, Recharge, Inspection and Maintenance Manual	24327
Owner's Manual	53081
Installation, Operation, Recharge, Inspection and Maintenance Manual, A-101-10/20/30; LT-A-101-10/20/30 Vehicle Fire Suppression Systems, Rev. 1, 15 May 2002	24327

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Description	Part num.
Installation, Operation, Recharge, Inspection and Maintenance Manual, A-101/LT-A-101-125/250 Vehicle Fire Suppression Systems, Rev. 2, 30 June 2005	427865
LVS Fire Suppression System	42109
LVS Manual, Installation, Operation, design, Maintenance and Recharge	427109
LVS-15 Shipping Assembly	432486
LVS-30 Shipping Assembly	426959
3/4 in Nozzle - 2 pack	427227
Nozzle Bracket, Straight with 1/2 in. and 3/4 in. Nozzle Holes, 4 pack	427228
20 Second LVS Time Delay Device	427088
Pneumatic Actuator Assembly	430221
10 Second LVS Time Delay Device	427561
LVS Wet Chemical, 5 Gallon Pail	427531
Nitrogen Cartridge 23 cu ft.	428060
Bursting Disc Package	428363
System Blow Down Kit	427560
LVS Owner Manual	53081
Time delay Replacement Filter (Pack of 5)	430886

5. Schedule of designated control system (CHECKFIRE) components

Description	Part Num.
System components	
CHECKFIRE ASC-N, Control Module	434670
CHECKFIRE ASC-N, Manual/automatic Actuator	24479
CHECKFIRE ASC-N,LT-10-R Cartridge	13193
CHECKFIRE ASC-N, Protracting Actuation Device	436026
CHECKFIRE ASC-N, ¼ in check valve	25627
CHECKFIRE ASC-N, battery shipping assembly	427308
CHECKFIRE ASC-N, detection wire	71230
CHECKFIRE ASC-N, Pressure actuated thermal detector	416113
CHECKFIRE ASC-N, Combined mounting bracket	423525
Installation, Recharge, Inspection and Maintenance Manual, CHECKFIRE ASC-N Electric Detection and Actuation System, Rev. 3, Nov 11, 2009	434674
CHECKFIRE 210 Electric Detection and Actuation System per Planning Installation, Operation, and Maintenance Manual	440392
Display Module, CHECKFIRE 210	439560
Mounting Bracket, CHECKFIRE 110/210	439564
Interface Control Module (ICM), CHECKFIRE 210	439561
Electric-Pneumatic Actuator (normally supplied with agent tanks)	439569
Electric Manual Actuator (EMA)	439400
Electric Manual Actuator Bracket	440537
Detection circuit cables and fittings	
Cable, Detection Circuit - 0.61 m (2 ft)	439364
Cable, Detection Circuit - 1.53 m (5 ft)	439366
Cable, Detection Circuit - 3.05 m (10 ft)	439368
Cable, Detection Circuit - 6.10 m (20 ft)	439390
Cable, Detection Circuit - 9.15 m (30 ft)	440759
Cable, Detection Circuit - 15.24 m (50 ft)	440762
Connector, Tee, Detection Circuit (M x F x F)	439394
Connector, EOL Device, Detection Circuit	439396
Connector, Branch Terminator, Detection Circuit	439398
Connector, Bulkhead, Detection Circuit	439404
Linear detector	
Linear Detector - 0.61 m (2 ft)*	439406
Linear Detector - 1.53 m (5 ft)*	439478
Linear Detector - 3.05 m (10 ft)*	439460

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Linear Detector - 6.10 m (20 ft)				439408
Linear Detector - 9.15 m (30 ft)*				439410
Linear Detector - 15.24 m (50 ft)*				440765
Release circuit cables and fittings				
Cable, Release Circuit - 0.61 m (2 ft)				439418
Cable, Release Circuit - 1.53 m (5 ft)				439420
Cable, Release Circuit - 3.05 m (10 ft)				439422
Cable, Release Circuit - 6.10 m (20 ft)				439424
Cable, Release Circuit - 9.15 m (30 ft)				439426
Cable, Release Circuit - 15.24 m (50 ft)				439428
Cable, Release Circuit Drop - 0.77 m (30 in.)				439430
Cable, Release Circuit Drop - 0.97 m (38 in.)				439432
Connector, Tee, Release Circuit (MxFxF)				439434
Connector, Release Circuit Terminator				439436
Connector, Bulkhead, Release and Power Circuits				439405
Protracting Actuation Device (PAD), w/Spade Connectors				439448
Power circuit cables and fittings				
Cable, Power Circuit - 0.61 m (2 ft)				439436
Cable, Power Circuit - 1.53 m (5 ft)				439440
Cable, Power Circuit - 3.05 m (10 ft)				439442
Cable, Power Circuit - 6.10 m (20 ft)				439444
Cable, Power Circuit - 9.15 m (30 ft)				439446
Cable, Power Circuit - 15.24 m (50 ft)				440187
Connector, Bulkhead, Release and Power Circuits				439405
Cable, Fused Power Circuit, (w/Inline Fuse Holder) - 0.91 m (3 ft)				439492
Display circuit cables and fittings				
Cable, Display - 0.61 m (2 ft)				439452
Cable, Display - 1.53 m (5 ft)				439454
Cable, Display - 3.05 m (10 ft)				439456
Cable, Display - 6.10 m (20 ft)				439456
Cable, Display - 9.15 m (30 ft)				439460
Cable, Display - 15.24 m (50 ft)				439462
Connector, Bulkhead, Display Cable				439449
Relay #1 & #2 circuit cable				
Cable, Relay Cable-Leads, 0.91 m (3 ft)				439466
Cable, Backup Power/Relay Circuit, 0.61 m (2 ft)				440410
Cable, Backup Power/Relay Circuit, 1.53 m (5 ft)				440413
Cable, Backup Power/Relay Circuit, 3.05 m (10 ft)				439462
Cable, Backup Power/Relay Circuit, 6.10 m (20 ft)				440416
Auxiliary output circuit cable				
Cable, Auxiliary Power Output Circuit, 0.91 (3 ft)				439450
Accessory equipment				
ICM Battery Module, CHECKFIRE 210				440352
Spot Thermal Detector, 121°C (250°F)*				438280
Spot Thermal Detector, 177°C (350°F)*				438281
Spot Thermal Detector Bracket and Heat Shield*				440905
Discharge Pressure Switch*				440389
Double-Loop Cable Ties (Pkg. of 50)				440737
Rubber Sleeve (Pkg. of 20)				56692
Label Package				440798
Detection Circuit Tester (DCT)				440097
Release Circuit Tester (RCT)				441021
Release Circuit Test Plug (Pkg. of 3)				440912

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Label, Branch Circuit (Pkg. of 10)	440768
Guard Door, Display Module	440082
Enclosure Nut, Display Module	440083
Battery Cover, Interface Control Module (ICM)	439567
Mounting Plate, Interface Control Module (ICM)	439566
Receptacle Cap, Female, Detection Circuit #2 (Pkg. of 5)	440489
Receptacle Cap, Female, Relay #1 and #2 or Aux. Output (Pkg. of 5)	440490
Receptacle Cap, Male, Power (Pkg. of 5)	440491
O-ring, Interface Control Module (ICM) (Pkg. of 5)	440179

6. Schedule of relevant articles

Reference		Title / description	Date issued (or date validated)	Source
Ident. type	Ident.			
Report #	XF1783/R1	SSL Listing Investigation of the Ansul® A-101 Vehicle Fire Suppression Systems	24-Apr-2003	Scientific Services Laboratory, AU
Project Class	3051373 5320	Approval examination of CHECKFIRE 210 Electric Detection and Actuation System for use in off-road vehicle protection systems	14-Apr-2014	FM Approvals, US
Data Sheet	F-2014011	CHECKFIRE 210 Detection and Actuation System	7-May-2014	Tyco Fire Protection Products, WI, US