Kidde Fire Systems
ADS™ with HFC-227ea Agent Cylinder Component Datasheet

450 lb. Cylinder and Valve Assemblies

Effective: March 2021
K-90-145 Rev AA

FEATURES

- **Well Suited for Complicated Pipe Networks and Large Area Coverage with Minimal Room for Cylinder Storage**
- **260 lb. to 505 lb. Fill Capacity**
- **Agent Cylinder Liquid Level Indicator**
- **Uses one Nitrogen Driver**
- **UL Listed, File Number 4674**
- **FM Approved**
- **For RoHS Compliance, See the Individual Component Datasheets**

DESCRIPTION

Kidde Fire Systems Advanced Delivery Systems (ADS™ system) are Listed by the Underwriters Laboratory, Inc. (UL) and tested by Factory Mutual (FM). These systems are designed for total flooding in accordance with NFPA 2001, *Standard on Clean Agent Extinguishing Systems*. These systems have been tested to UL 2166, *Standard for Safety; Standard for Halocarbon Clean Agent Extinguishing System Units*, and other parameters established jointly by UL and FM.

The ADS system uses a unique method for propelling the HFC-227ea agent (herein referred to as agent) from the storage cylinder, through the piping system and out of the discharge nozzles. Nitrogen gas pressure from a separate storage cylinder is introduced into the vapor space of the agent cylinder at a controlled rate. This nitrogen pressure acts to propel the agent through the pipe at a higher flow rate. It can also propel the agent farther through the pipe network allowing for the placement of storage cylinders remotely from the protected hazard.

The ADS system is extremely well-suited to applications involving remote agent storage and situations which limit the maximum pipe size to be used. The system is capable of using smaller pipe sizes to discharge large quantities of agent.

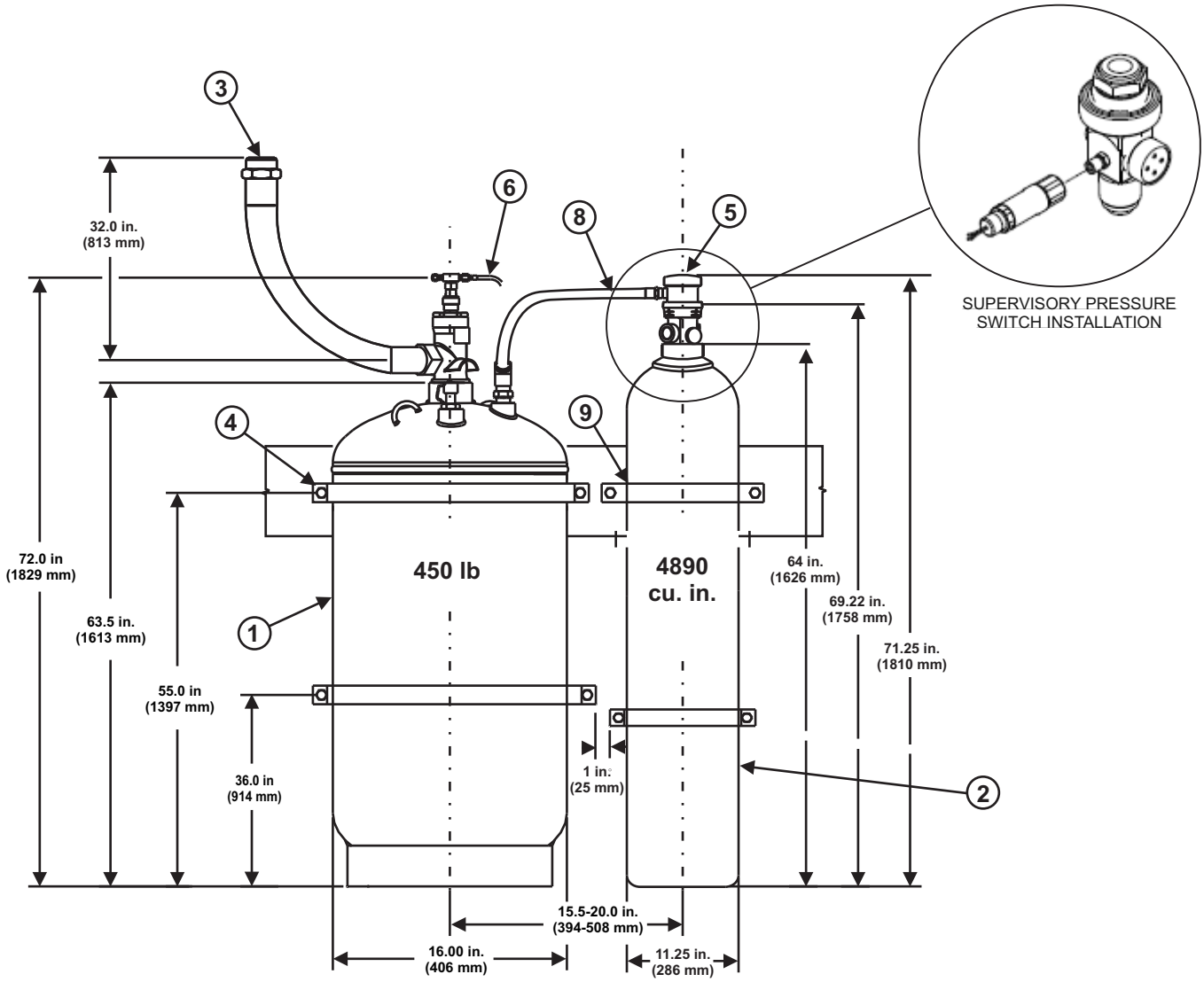
This system can be successfully applied to many existing Halon 1301 system pipe networks, providing easy retrofit of these systems to a new agent with long-term availability.

OPERATION

When a control head actuates the nitrogen cylinder discharge valve, the nitrogen pressure actuates the agent cylinder discharge valve and pressurizes the cylinder. Agent is then propelled by its own vapor pressure and the nitrogen pressure through the discharge valve and into the system pipe network. The agent travels through the system pipe network at a high flow rate.

OPERATING RANGE LIMITATIONS

- The operating temperature range for all components used in the ADS system is 32° to 130°F (0° to 54°C)
- The agent cylinder operating temperature must be between 60° to 80°F (16° to 27°C) for unbalanced pipe network systems.



1. Agent Cylinder and Valve Assembly (90-500501-001)
2. Nitrogen Driver Cylinder and Vale Assembly (90-104890-001)
3. Flexible Discharge Hose (WK-283899-000)
4. Agent Cylinder Straps (WK-281866-000)
5. Discharge Head Assembly (WK-872450-000)
6. Actuation Assembly (06-129882-001)
7. Orifice Fitting (85-194129-XXX)
8. High Pressure Nitrogen Transfer Hose (06-118207-003)
9. Nitrogen Driver Cylinder Straps (38-109879-001)

Figure 1. Nitrogen and Agent Cylinders

INSTALLATION

The ADS system installation is based on the requirements of NFPA 2001, *Standard on Clean Agent Extinguishing Systems*, Current Edition.

ASSEMBLY

Both the nitrogen driver and agent storage cylinders are to be installed in the vertical position only. The nitrogen driver is located to the immediate right apart from the agent cylinder (see Figure 1). Both the agent cylinder and nitrogen driver require 2 straps each. The nitrogen driver cylinder is connected to the agent cylinder by using the nitrogen transfer components (1-in. nitrogen transfer hose, 3/4-in. NPT transfer fitting, see Figure 2). The 3/4-in. transfer fitting connects into the orifice fitting. The orifice fitting is a custom fitting that is designed to regulate the nitrogen pressure flow required for the specific system. The orifice fitting then connects into the 3/4-in. check diffuser assembly to diffuse the nitrogen in a horizontal pattern.

ACTUATION

The control head is attached to the nitrogen driver by means of electric, cable, lever, or pneumatic devices. The actuating of the agent cylinder is done upon transfer of nitrogen from the driver cylinder using the actuation assembly kit (P/N 06-129882-001).

This assembly kit includes:

- Nitrogen transfer fitting
- Pressure operated control head
- 1/8-in. flare fitting
- 1/8-in. flex loop
- 1/8-in. branch tee
- 1/8-in. Schrader fitting
- 1/8-in. Schrader cap

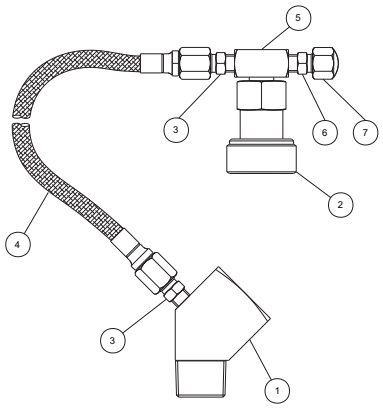


Figure 2. Nitrogen Transfer Components.

Item	Qty.	P/N	Description
1	1	06-236124-001	Nitrogen Transfer Fitting
2	1	82-878737-000	Pressure Operated Control Head (Pneumatic Actuator)
3	1	06-118191-001	Fitting Flared 1/8-in. x 1/4-in.
4	1	06-118193-001	3/16-in. Flexible Actuation Hose
5	1	06-118192-001	1/8-in. Branch Tee
6	1	WK-263303-000	1/8-in. Schrader Valve
7	1	WK-263304-000	1/8-in. Schrader Valve Cap

MAINTENANCE

According to NFPA standards, the following inspection and/or maintenance procedure must be scheduled as listed below and performed upon the occurrence of any event, which might affect the reliability of the system. For more information, see DIOM P/N 06-236068-001.

Perform preventive maintenance per the following table:

Schedule	Requirement	DIOM P/N: 06-236068-000 Paragraph
Weekly	Check nitrogen cylinder pressure	5-4.1
Monthly	Inspect hazard area system components	5-4.2
Semi-Annually	Test pressure switches	5-4.3
	Test electric control heads	
	Check agent cylinder weights	
Every 2 Years	Blow out distribution piping	5-4.4.1
Every 5 Years	Agent and nitrogen cylinder and flexible hose hydrostatic pressure test and/or inspection	5-4.5 and 6-8.1

RECONDITIONING

After a system has been discharged, it is recommended that the local authorized Kidde Fire Systems Distributor be contacted to recondition the system. Please reference the DIOM manual (P/N 06-236068-001) for the appropriate reconditioning kit used with the 2” valve.

SPECIFICATIONS

Element	Agent Storage Container (P/N: 90-500501-001)		Nitrogen Driver (P/N: 90-104890-001)	
	Imperial	Metric	Imperial	Metric
Fill Range	260 to 505 lb.	117.9 to 229.1 kg	Factory Filled to 1800 psig	Factory Filled to 124 bar
Height	70.8 in.	1798 mm	69 in.	1753 mm
Diameter	16.0 in.	406 mm	11.25 in.	286 mm
Internal Volume	6.429 $ft.^3$	0.182 m^3	4880 cu. in.	0.0801 cu. m
Empty Weight	269 lb.	122 kg	270.0 lb.	122.5 kg
Temperature Range	32°F to 130°F	0°C to 54°C	32°F to 130°F	0°C to 54°

Note: The Nitrogen used is A-A-59155 Grade A, Type 1.

ORDERING INFORMATION FOR AGENT CYLINDER AND DRIVERS

Part Number	Description
90-500501-001	450 lb. Agent Storage Cylinder
90-104890-001	4890 cu. in. Nitrogen Driver Cylinder without Supervisory Pressure Switch
85-111540-001	Supervisory Pressure Switch
85-111540-100	ATEX Supervisory Pressure Switch

EXPORT INFORMATION (USA)
Jurisdiction: EAR
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This document contains technical data subject to the EAR.

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