

# Kidde ECS Advanced Delivery Fire Suppression System

## Component Description

1010 lb. Cylinder and Valve Assembly with Nitrogen Driver  
Assemblies, P/N: 90-1010X-001



Effective: June 2014

K-90-111

### FEATURES

- *Designed for "Drop-In" Replacement for Halon Retrofit Applications*
- *Well Suited for Complicated Pipe Networks and Large Area Coverage with Minimal Room for Cylinder Storage*
- *3-inch Valve Outlet*
- *520 lb. to 1010 lb. Fill Capacity*
- *Optional Liquid Level Indicator*
- *UL Listed*
- *FM Approved*
- *For RoHS Compliance, See Component Data Sheets*

### DESCRIPTION

Kidde ECS ADS Systems with FM-200<sup>®</sup> Agent (Herein referred to as HFC-227ea) 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, Edition 2012 *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 Kidde ECS ADS System uses a unique method for propelling the HFC-227ea from the storage cylinder, through the piping system and out of the discharge nozzles. Nitrogen gas pressure from two separate storage cylinders is introduced into the vapor space of the HFC-227ea cylinder at a controlled rate. This nitrogen pressure acts to propel the liquid 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 Kidde ECS ADS Systems are extremely well-suited to applications involving remote agent storage and situations which limit the maximum pipe size to be used. The Kidde ECS ADS System is capable of using smaller pipe sizes to discharge large quantities of HFC-227ea. 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 two nitrogen cylinder discharge valves, the nitrogen pressure actuates the agent cylinder discharge valve and pressurizes the cylinder. The liquid agent is then propelled by its own vapor pressure and the nitrogen pressure through the discharge valve and into the system pipe network. The liquid 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 Kidde ECS ADS System is 32°F to 130°F (0°C to 54°C).
- The agent cylinder operating temperature must be between 60°F to 80°F (16°C to 27°C) when protecting two or more separate hazards.

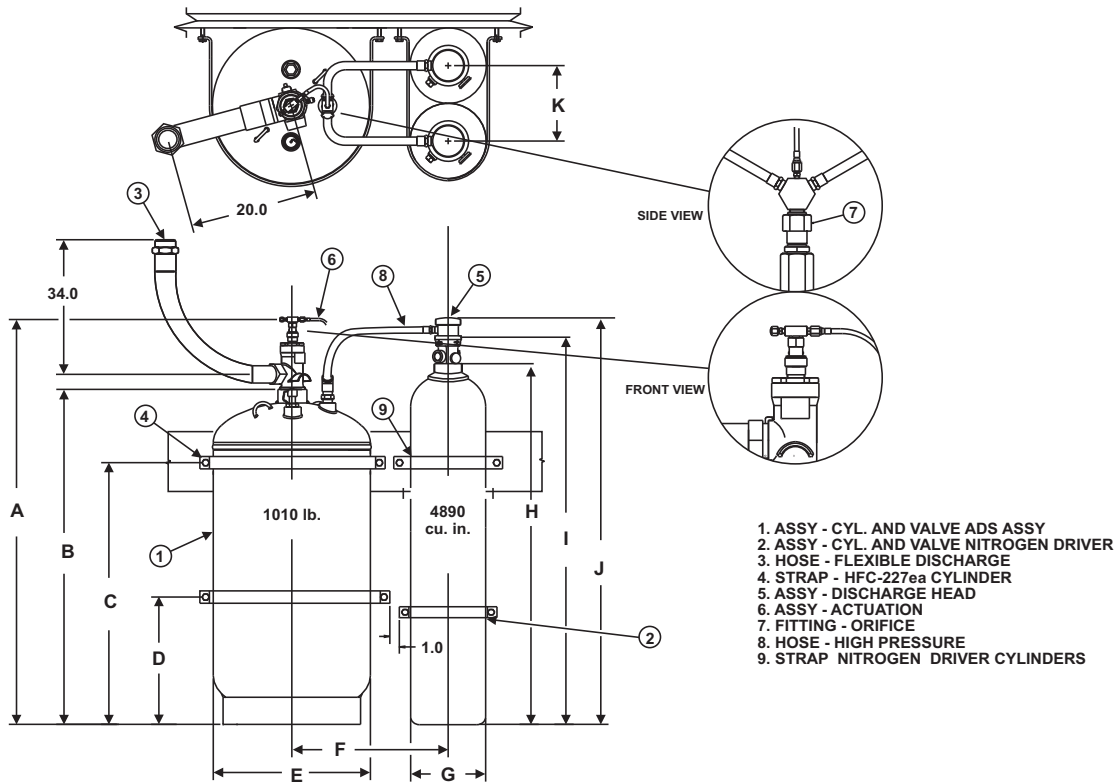


Figure 1. Nitrogen and Agent Cylinders

Cylinder P/N	A	B	C	D	E	F	G	H	I	J	K
90-10101X-001	70.0 0	58.60	44.60	22.00	24.00	22.62	11.25	64.00	69.22	71.25	11.25

Note: The "X" within the part numbers denotes whether a liquid level indicator is ordered with the cylinder. A one (1) is used if a LLI is needed, a zero (0) is used if one is not.

Table 1. Nitrogen and Agent Cylinder Dimensions, Imperia

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Cylinder P/N	A	B	C	D	E	F	G	H	I	J	K
90-10101X-001	1778	1488	1133	559	610	575	286	1626	1758	1810	286

Note: The "X" within the part numbers denotes whether a liquid level indicator is ordered with the cylinder. A one (1) is used if a LLI is needed, a zero (0) is used if one is not.

Table 2. Nitrogen and Agent Cylinder Dimensions, Metric

## INSTALLATION

The Kidde ECS ADS System installation is based on the requirements of NFPA 2001, *Standard on Clean Agent Extinguishing Systems*, Edition 2012.

### ASSEMBLY:

Both the nitrogen drivers 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). The nitrogen driver cylinder is connected to the agent cylinder by using the nitrogen transfer components (two 1-in. nitrogen transfer hoses [P/N 06-118207-003] and a 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 nitrogen injector assembly to diffuse the nitrogen in a horizontal pattern.

### ACTUATION:

The control head is attached to the master nitrogen driver by means of electric, cable, lever, or pneumatic devices. The actuating of the second nitrogen driver and agent cylinder is done upon transfer of nitrogen from the master driver cylinder using the actuation assembly kit (P/N 06-129985-001).

Assembly includes:

- Nitrogen Transfer Fitting
- 1/8-in. Flex Loop
- 1/8-in. Flare Fitting
- 1/8-in. Branch Tee
- 1/8-in. Schrader Fitting and Cap
- Pressure Operated Control Head
- 3/4-in. Nipple (Hex)

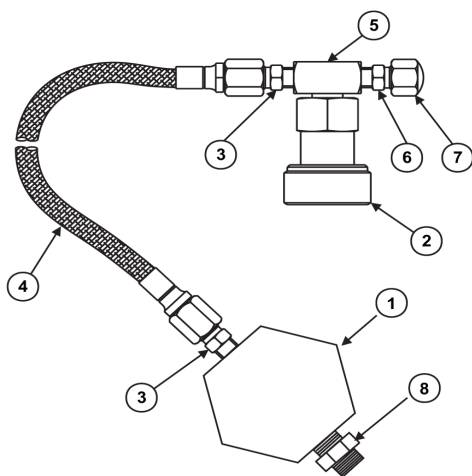


Figure 2. Nitrogen Transfer Components

## 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.

### QUARTERLY:

1. Check the weight of each agent storage container and the pressure of the nitrogen drivers.
  - Nitrogen driver if the pressure is less than 1800 PSI (124 bar) at 70°F (21°C)

**Note:** Pressure changes with temperature.

- The containers should be removed and carefully inspected by certified personnel.
  - The containers should then be reconditioned, recharged or replaced.
2. Check all components supporting hardware and tighten, repair or replace as required.
  3. Visually check all components for evidence of physical wear and tear and take whatever action is required. Replace any component that looks like it may be damaged or worn.

### SEMI-ANNUAL:

The following checks/tests should be conducted by qualified personnel:

1. Determine the weight of agent in each agent cylinder by the procedure indicated in the Design, Installation, Operation and Maintenance (DIOM) Manual (P/N 06-236068-001).
2. Functional tests of required system devices (reference the DIOM manual).

All outlet piping must be cleaned and free of dirt, chips and other foreign material that may become hazardous projectiles or cause the system to become inoperative or ineffective at the time of discharge

Item No.	Qty.	Part Number	Description
1	1	06-236260-001	Nitrogen Transfer "Y" Fitting
2	1	82-878737-000	Pressure Operated Control Head
3	2	06-118191-001	Fitting Flared 1/8" x 1/4"
4	1	06-118193-001	3/16" Flexible Actuation Hose
5	1	06-118192-001	1/8" Branch Tee
6	1	WK-263303-000	1/8" Schrader Valve
7	1	WK-263304-000	1/8" Schrader Valve Cap
8	1	06-118330-001	3/4" Nipple

**SPECIFICATIONS**

Element	Agent Storage Container 90-10101X-001		Nitrogen Driver 90-104890-001	
	Imperial	Metric	Imperial	Metric
Fill Range (w/o LLI)	520 to 1010 lb.	236 to 466 kg	Factory Filled to 1800 PSIG	Factory Filled to 127 bar
Fill Range (w/ LLI)	520 to 1010 lb.	236 to 466 kg	N/A	N/A
Height	70.0 in.	178.0 cm	65.25 in.	65.70 cm
Diameter	24.0 in.	61.0 cm	10.50 in.	26.70 cm
Internal Volume	13.0 cu. ft.	0.37 cu. m	4880 cu. in.	0.0667 cu. m
Empty Weight	505.0 lb.	229.0 kg	184.0 lb.	83.5 kg
Temperature Range	32°F to 130°F	0°C to 54°C	32°F to 130°F	0°C to 54°C

**RECONDITIONING**

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

**ORDERING INFORMATION**

Part Number	Description
90-10101X-001*	Agent Storage Cylinder
90-104890-001**	Nitrogen Driver with Standard Gauge
90-104890-101**	Nitrogen Driver with Switch-In Gauge
<p>* Note: X denotes liquid level indicator. Use a 1 in place of the X to order a cylinder with an LLI or a 0 to order a cylinder without an LLI.                      Example: 90-101010-001 (no LLI)                      ** Note: Two are required for each 1010lb. agent cylinder.</p>	

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