

Fire Suppression System Component Description

225 lb. Cylinder and Valve Assembly with Nitrogen Driver Assembly

F-93-105

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
- 114 lb. to 225 lb. Fill Capacity
- Optional Liquid Level Indicator
- UL Listed
- FM Approved
- For RoHS Compliance, See the Individual Component Datasheets

DESCRIPTION

NITRO Systems 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 System uses a unique method for propelling the FM-200® Agent (herein referred to as HFC-227ea) 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 HFC-227ea Cylinder at a controlled rate. This nitrogen pressure acts to propel the liquid HFC-227ea 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 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 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 nitrogen cylinder discharge valve, the nitrogen pressure actuates the agent cylinder discharge valve and pressurizes the cylinder. HFC-227ea is then propelled by its own vapor pressure and the nitrogen pressure through the discharge valve and into the system pipe network. The HFC-227ea travels through the system pipe network at a high flow rate.

OPERATING RANGE LIMITATIONS

- The operating temperature range for all components used in the Fenwal Phoenix NITRO 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.

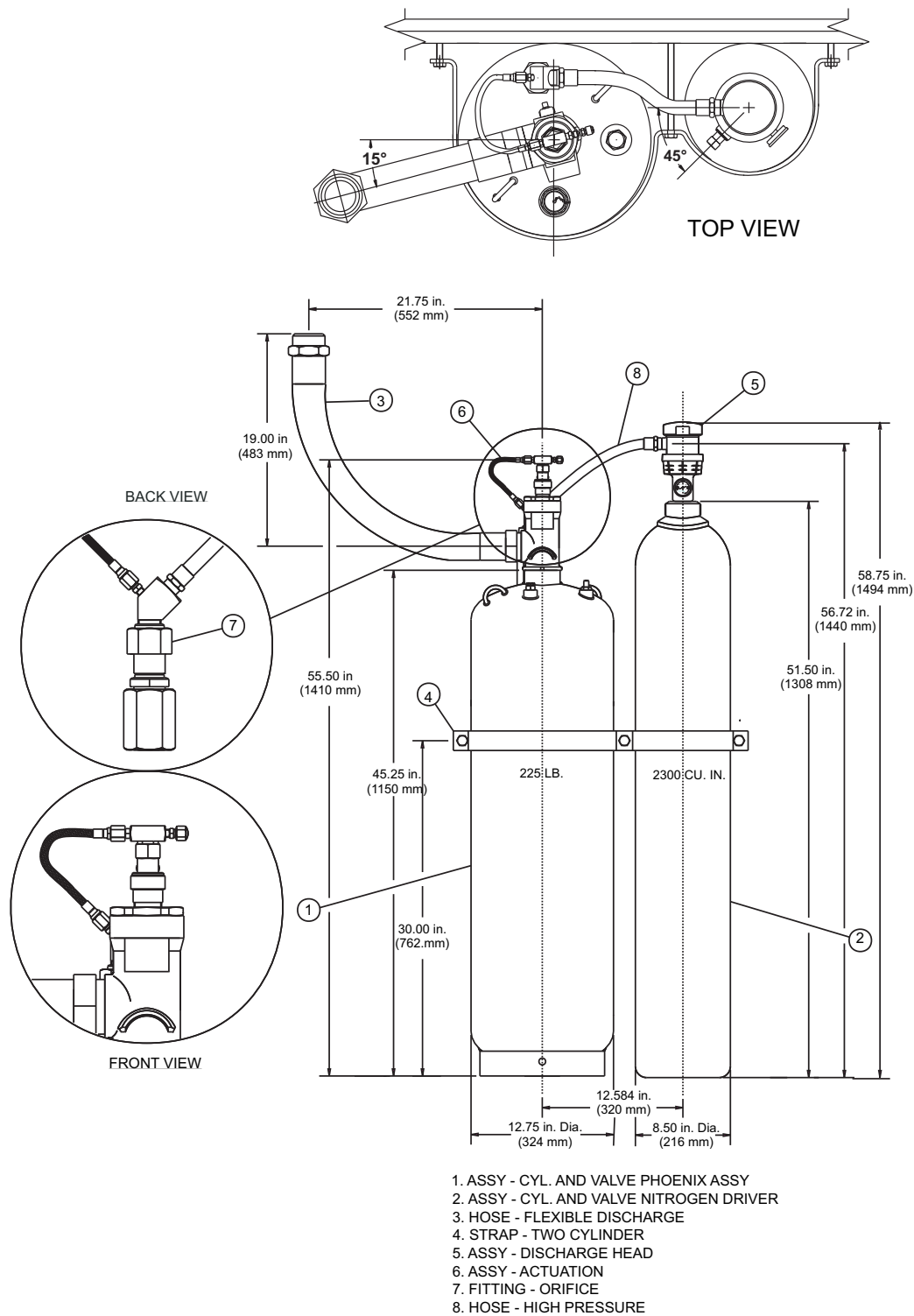


Figure 1. Nitrogen and Agent Cylinders

INSTALLATION

The [REDACTED] stem 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). 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.

ACTION:

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).

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

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 pressure gauge of the nitrogen driver and the weight of the agent storage container.
 - 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.

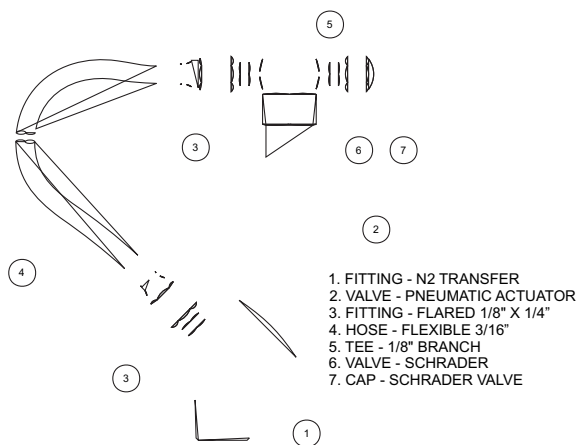
SEMI-ANNUAL:

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

1. Determine the weight of HFC-227ea in each agent cylinder by the procedure indicated in the Design, Installation, Operation and Maintenance (DIOM) Manual (P/N 06-236069-001).
2. Functional tests of required system devices (reference the DIOM manual).
3. 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.

RECONDITIONING

After a system has been discharged, it is recommended that the local authorize [REDACTED] be contacted to recondition the system. Please reference the DIOM manual (P/N 06-236069-001) for the appropriate reconditioning kit.



Item No.	Qty.	P/N	Description
1	1	06-236124-001	nitrogen transfer fitting
2	1	82-878737-000	pressure operated control head
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

Figure 2. Nitrogen Transfer Components

SPECIFICATIONS

Element	Agent Storage Container 93-10022X-001		Nitrogen Driver 93-102300-001	
	Imperial	Metric	Imperial	Metric
Fill Range (lb. w/o LLI)	114 to 225 lb.	52 to 102 kg	Factory Filled 1800 PSI	Factory Filled 124 bar
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Height	55.50 in.	141.00 cm	58.75 in.	130.80 cm
Diameter	12.75 in.	32.00 cm	8.50 in.	21.60 cm
Internal Volume	2.859 ft.3	0.0810 m3	2300 cu. in.	0.0377 m3
Empty Weight	133.0 lb.	60.0 kg	98 lb.	44.5 kg
Temperature Range	32°F to 130°F	0°C to 54°C	32°F to 130°F	0°C to 54°

ORDERING INFORMATION

Agent Storage Container:

93-10022X-001



1: w/Liquid Level Indicator
5: w/o Liquid Level Indicator

Nitrogen Driver:
93-102300-001

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