

Fenwal Phoenix

**395 lb. Cylinder and Valve Assembly with
Nitrogen Driver Assembly
P/N: 93-10039X-001**



A UTC Fire & Security Company

F-93-104

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
- 200 lb. to 395 lb. Fill Capacity
- Optional Liquid Level Indicator
- UL Listed
- FM Approved

DESCRIPTION

Fenwal FM-200® Phoenix Series Engineered Fire Suppression 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 Phoenix system uses a unique method for propelling the FM-200 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 FM-200 cylinder at a controlled rate. This nitrogen pressure acts to propel the liquid FM-200 agent through the pipe at a higher flow rate. It can also propel the FM-200 agent farther through the pipe network allowing for the placement of storage cylinders remotely from the protected hazard.

The FM-200 Phoenix is extremely well-suited to applications involving remote agent storage and situations which limit the maximum pipe size to be used. The Phoenix is capable of using smaller pipe sizes to discharge large quantities of FM-200.

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. FM-200 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 FM-200 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 FM-200 Phoenix 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.

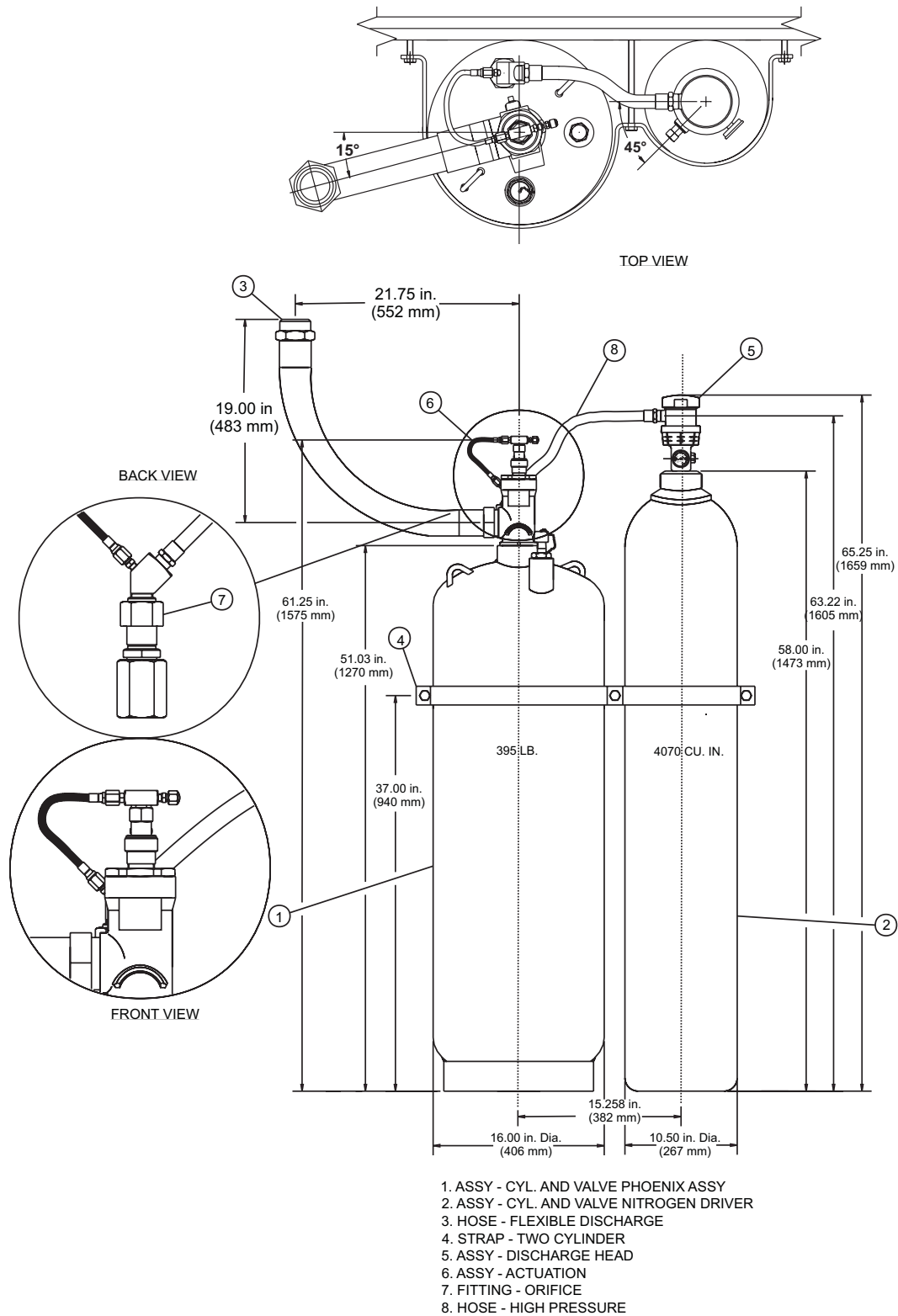
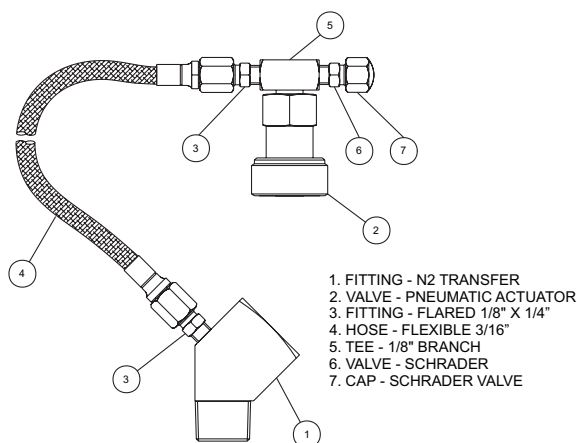


Figure 1. Nitrogen and Agent Cylinders



Item No.	Qty.	P/N	Description
1	1	06-236124-001	nitrogen transfer fitting
2	1	878737	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

INSTALLATION

The FM-200 Phoenix 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.

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).

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 FM-200 in each agent cylinder by the procedure indicated in the Design, Installation, Operation and Maintenance (DIOM) Manual (P/N 93-FM200M-030).
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 authorized Fenwal Distributor be contacted to recondition the system. Please reference the DIOM manual (P/N 93-FM200M-030) for the appropriate reconditioning kit.

SPECIFICATIONS

Element	Agent Storage Container 90-10039X-001		Nitrogen Driver 90-104070-001	
	Imperial	Metric	Imperial	Metric
Fill Range (lb. w/o LLI)	200 to 395 lb.	91 to 180 kg	Factory Filled 1800 PSI	Factory Filled 124 bar
Fill Range (lb. w/ LLI)	200 to 395 lb.	91 to 180 kg	—	—
Height	61.25 in.	155.60 cm	65.25 in.	165.70 cm
Diameter	16.0 in.	41.0 cm	10.5 in.	26.7 cm
Internal Volume	5.000 ft. ³	0.142 m ³	4070 cu. in.	0.0667 m ³
Empty Weight	201 lb.	91.4 kg	184 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

ORDERING INFORMATION

Agent Storage Cylinder:

93-10039X-001

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

Nitrogen Driver:

93-104070-001

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