

## PRE-ENGINEERED AUTOMATIC DIRECT SUPPRESSION UNIT

### Designed for use with HFC-227ea Clean Agent Fire Suppressant

#### DESCRIPTION

Firetrace Pre-Engineered Automatic Direct Suppression Units are designed, manufactured, and tested in ISO 9001:2008 certified facilities. All system cylinders are stamped in accordance with the relevant DOT/TC requirements.

Each system is equipped with a nickel plated brass valve, a pressure gauge to monitor cylinder pressure, and a quarter turn ball valve that interfaces with the Firetrace Detection Tubing.

The system utilizes Firetrace Detection and Activation Tubing (FDT) that is attached to the top of the cylinder valve. The FDT is pressurized with dry nitrogen, is temperature sensitive, and acts as a continuous linear thermal detector that ruptures upon flame impingement. Once the FDT is ruptured, it forms a nozzle at the burst point, allowing the HFC-227ea agent to flow through, distributing the extinguishing agent through the protected area.



Upon system actuation the pressure switch can be used to indicate system discharge, shutdown ventilation, shut-off electrical power, etc. as may be required.

Each assembly is equipped with a straight siphon tube and can only be mounted in a vertical (upright) position.

All size cylinder valves are equipped with a pressure relief (rupture disc) device in compliance with DOT requirements.

#### GENERAL SPECIFICATIONS

SYSTEM INFORMATION			CYLINDER INFORMATION			PERFORMANCE INFORMATION		
MODEL NUMBER	AGENT AMOUNT	GROSS WEIGHT	VOLUME	SPECIFICATION		OPERATING PRESSURE 70°F	MAX AREA COVERAGE*	MAX VOLUME COVERAGE*
920302	3.0 lbs (1.36 kg)	6.4 lbs (2.9 kg)	75 in <sup>3</sup> (1.2 L)	DOT 4BA240	TC 4BAM16	150 PSI (10.34 Bar)	36 ft <sup>2</sup> (3.34 m <sup>2</sup> )	61.0 ft <sup>3</sup> (1.73 m <sup>3</sup> )
920602	6.0 lbs (2.72 kg)	10.8 lbs (4.9 kg)	145 in <sup>3</sup> (2.4 L)	DOT 4BA240	TC 4BAM16	150 PSI (10.34 Bar)	36 ft <sup>2</sup> (3.34 m <sup>2</sup> )	123.0 ft <sup>3</sup> (3.48 m <sup>3</sup> )
921202	12 lbs (5.44 kg)	20.0 lbs (9.1 kg)	300 in <sup>3</sup> (4.9 L)	DOT 4BA360	TC 4BAM25	150 PSI (10.34 Bar)	36 ft <sup>2</sup> (3.34 m <sup>2</sup> )	246.0 ft <sup>3</sup> (6.97 m <sup>3</sup> )

\*Figures based on ideal conditions in fully enclosed space. Actual figures will vary according to application.

## SUPPRESSION AGENT

The suppression agent used in Firetrace pre-engineered automatic direct fire suppression units is Heptafluoropropane, more commonly known as HFC-227ea.

HFC-227ea (1,1,1,2,3,3,3-heptafluoropropane,  $\text{CF}_3\text{CHFCF}_3$ ) is a colorless odorless gas, low in toxicity, electrically non-conductive, leaves no residue, and is an extremely effective fire suppression agent.

HFC-227ea is included in NFPA-2001 and has been evaluated and approved for use in occupied areas as a Total Flooding agent when used as specified under the U.S. Environmental Protection Agency (EPA) SNAP Program rules. Refer to the SNAP Program rules for more information.

## ENVIRONMENTAL LIMITATIONS

- Storage Temperature:  
0°F [-17.8°C] to 130°F [54.4°C]
- System Operating Pressure:  
150 psig [10.3 bar] at 70°F [21°C]

## ENGINEERING CONSIDERATIONS

Each installed Pre-Engineered Automatic Direct Suppression Unit is equipped with its own detection/discharge tubing. The Pre-Engineered concept minimizes the amount of engineering involved in system design. When the detection/discharge tubing is installed within the limitations stated in the manual, no hydraulic calculations are required to determine pressure drop, agent flow, or discharge time.

For the HFC-227ea Systems, the Firetrace tubing performs three functions: heat detection, system activation, and agent discharge. The tubing is installed throughout the hazard volume with one end connected to the top of the cylinder valve, then pressurized with nitrogen to 195 psig. The detector tubing is heat sensitive and in a fire situation is designed to burst at any point along the tube upon direct flame impingement or where the radiant heat from the flame reaches

approximately 375°F to 400°F (190.5°C to 204°C). The rupture of the tube results in a formation of a discharge nozzle that will perform a complete discharge of the HFC-227ea agent.

The hazard being protected can be any size, shape, or volume provided that the hazard being protected is within the limitations described in the manual. Each suppression unit shall be equipped with its own automatic (non-electric) detection system, which when actuated, automatically releases the suppression agent into the hazard area.

Since the units are supplied as automatic units (e.g. no simultaneous manual or electric actuation means is provided), only one (1) suppression unit can be used to protect one hazard. These suppression units cannot be combined to protect a larger size hazard, since they are not designed to provide for simultaneous actuation of (2) or more units.

Local authorities having jurisdiction should be consulted as to the acceptability for particular hazards and requirements covering installation.

## USAGE

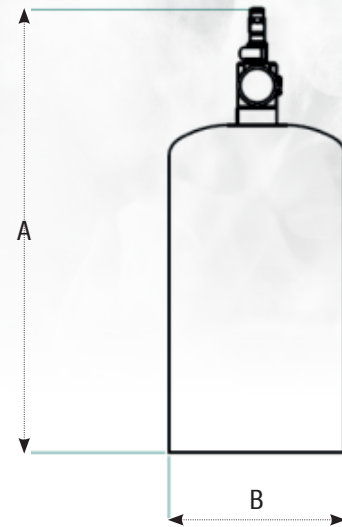
HFC-227ea is a gaseous fire-extinguishing agent that is effective for use on:

- Class A – Surface type fires
- Class B – Flammable liquid fires
- Class C – Electrical equipment fires

**SERVICE NOTE:** Cylinders Assemblies shall be designed, filled, pressurized and maintained by trained personnel in accordance with Firetrace Design, Installation, Operation and Maintenance Manuals and related prescriptive documents.

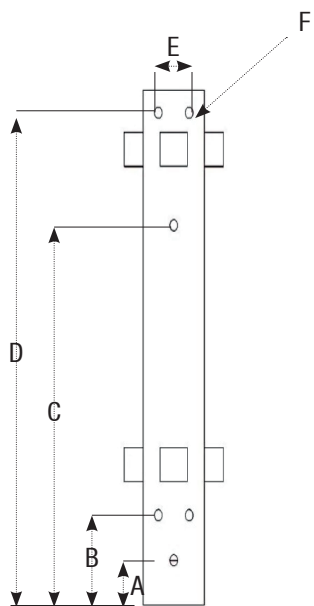
## ASSEMBLY DIMENSIONS

MODEL NUMBER	TOTAL HEIGHT "A"	OUTSIDE DIAMETER "B"
920302	15.94 in (40.49 cm)	3.0 in (7.6 cm)
920602	15.64 in (39.73 cm)	4.3 in (10.8 cm)
921202	15.90 in (40.39 cm)	6.3 in (16.0 cm)

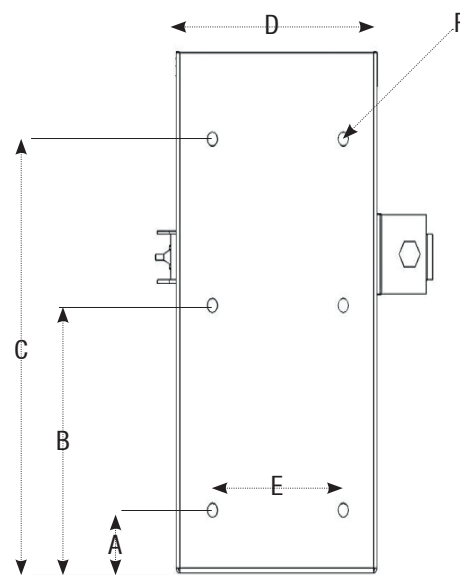


## BRACKET BOLT PATTERN

MODEL NUMBER	A	B	C	D	E	F
920302	1 in (2.7 cm)	2 in (5.2 cm)	9 in (23.0 cm)	11 in (28.01cm)	1 in (2.5 cm)	0.25 in (0.64 cm)
920602	1 in (2.7 cm)	2 in (5.2 cm)	9 in (23.0 cm)	11 in (28.0 cm)	1 in (2.5 cm)	0.25 in (0.64 cm)
921202	1 7/8 in (4.7 cm)	5 7/8 in (14.9 cm)	9 3/8 in (23.8 cm)	6 in (15.2 cm)	3 in (7.6 cm)	0.44 in (1.1 cm)



Models: 920302/920602



Model: 921202

## SUPPRESSION UNIT COMPONENTS

ITEM	DESCRIPTION
1	DLP Valve
2	O-Ring
3	Gauge
4	Neck O-Ring
5	Siphon Tube
6	Cylinder
7	Bonded Seal
8	Plug, Pressure Switch Port on Valve
9	Bracket
10	HP Slip-on Union Connector

