



## HFC-227ea (FM200) Agent

### DESCRIPTION

Chemori 227 is a trademark of Chemori Americas' HFC-227ea (FM200) Heptafluoropropane. HFC-227ea is an effective fire extinguishing agent that can be used on many types of fires ranging from sensitive electrical equipment to industrial applications using flammable liquids. Chemori 227™ is ideal for applications where clean-up of other medium presents a problem, where an electrically non-conductive medium is needed and where people compatibility is an overriding factor. When environmental impact becomes a consideration, Chemori 227™ is particularly useful. It has Zero ozone-depleting potential, low global warming potential and short atmospheric lifetime. These characteristics make it suitable not only for new installations using Chemori Americas' total flooding system, but also for Halon 1301 replacement applications. Chemori 227™ is an odorless, colorless liquefied compressed gas. It is stored as a liquid and dispensed into the hazard as a colorless, electrically non-conductive vapor that is clear and does not obscure physical vision. It leaves no residue and has acceptable toxicity for use in occupied spaces at design concentration. Chemori 227™ extinguishes a fire by a combination of chemical and physical mechanisms. Chemori 227™ does not displace and therefore is safe for use in occupied spaces without fear of oxygen deprivation.

### PHYSICAL AND CHEMICAL CHARACTERISTICS

Chemical Name	Heptafluoropropane (CF <sub>3</sub> CHFCF <sub>3</sub> ) (FM200)
General	Colorless, Odorless Liquefied Gas
Molecular Weight	170.03
Boiling Point	-16.4°C/2.48°F
Freezing Point	-131°C/-203.8°F
Vapor Pressure @ 21°C/70°F	58.8 psia
Critical Temperature	101.7°C/215.1°F
Critical Pressure (psia)	422.3 psia
Vapor Density (AIR=1)	6.04
Water Reactive	No
Specific Gravity (H <sub>2</sub> O=1)	1.46
Percent Volatile (by volume)	n/a
Evaporation Rate (Butyl acetate=1)	n/a
Viscosity @ 20°C/68°F	n/a
Water Solubility (V/V @ 20°C/68°F)	260mg/L
Ozone Depletion Potential	0
Estimated Atmospheric Lifetime (years)	31-42

Chemori 227™ fully complies with the standards of UL Listed and FM Approved and has achieved a minimum purity of 99.95 percent and less than 10 ppm of moisture. It has less than 1 ppm acidity as HF. The non-volatile residue is less than 0.05g/100ml. and

Chemori 227™ fully complies with the standards of ASTM D6064 and NFPA 2001



## Clean Agent Cylinders

### DESCRIPTION

The Clean Agent cylinders are manufactured, tested and stamped in accordance with DOT 4BW500 or DOT 4BA500. All cylinders are equipped with back pressure type valve. A piston in the valve bore is equipped with a rubber seal that keeps the HFC-227ea Clean Agent under pressure within the cylinder. A small hole in the piston allows cylinder pressure to be equalized on both sides of the piston. Since the area at the top of the piston is greater than the area at the bottom of the piston, the net force seals the piston against the valve discharge outlet. When the cylinder pressure on the top of the piston is relieved by means of automatic or manual activation, there is only cylinder pressure acting against the piston seal, and the piston slides to it's full open position, allowing cylinder discharge through the distribution piping network.

Attached to the bottom of the cylinder valve is a siphon tube, which is straight and runs from the top of the cylinder to the bottom of the cylinder. The cylinder must be installed in an upright position (valve on top).

There is a 1/8" NPT outlet stamped "P" on the cylinder valve. This outlet transmits cylinder pressure to an optional low pressure supervisory switch, which when used, monitors the internal pressure of the cylinder. Another 1/8" NPT outlet stamped "M" on the cylinder valve is available for use as a pressure source to drive the piston actuators on a multiple cylinders system or to actuate a pressure operated switch in the event of the cylinder discharge.

### Cylinder Model

HFC-227ea Clean Agent cylinders are available in the following capacities:

Part Number	Cylinder Size	Max Fill at 70 lb/ft³	Min Fill at 30 lb/ft³	Valve Size
CR90020-E	20 LB	20 LB	9 LB	1" Valve
CR90035-E	35 LB	35 LB	16 LB	1" Valve
CR90070-E	70 LB	71 LB	31 LB	1" Valve
CR90100-E	100 LB	101 LB	44 LB	1 1/2" Valve
CR90150-E	150 LB	152 LB	66 LB	1 1/2" Valve
CR90250-E	250 LB	253 LB	109 LB	1 1/2" Valve
CR90375-E	375 LB	379 LB	163 LB	2 1/2" Valve
CR90560-E	560 LB	561 LB	241 LB	2 1/2" Valve
CR90650-E	650 LB	656 LB	282 LB	2 1/2" Valve

**Note:** Each of the basic sizes can be filled with one pound increments to meet the exact amount of HFC-227ea Clean Agent required, within their fill ranges.

**Temperature Range:** 32°F (0°C) to 130°F (54.4°C)

**System Operating Pressure:** 360 psi at 70°F (25.3 kg/cm² at 21.1°C)

### Cylinder Bracket

The cylinder bracket is manufactured from galvanized steel band formed to the radius of the cylinder with flanges for bolting to the continuous slot metal framing channel of 12-gauge steel with corrosion resistant paint or galvanized. The channel must be supplied by the installer. The cylinder bracket must be secured to a surface that the bracket will withstand a load up to 5 times of the cylinder weight. This precaution is to have the bracket safely supports the weight of the cylinder and the reaction force of the HFC-227ea Clean Agent when discharge.

Part Number	Cylinder O.D	A	B	C	D	E	F	Bracket Part #
CR90020-E	10.00"	11"	14"	12.6"	1.5"	5.6"	2"	CR50139
CR90035-E	10.00"	11"	14"	12.6"	1.5"	5.6"	2"	CR50139
CR90070-E	10.00"	11"	14"	12.6"	1.5"	5.6"	2"	CR50139
CR90100-E	12.75"	13"	16.05"	14.65"	1.65"	6.475"	2"	CR60780
CR90150-E	12.75"	13"	16.05"	14.65"	1.65"	6.475"	2"	CR60780
CR90250-E	16.00"	16.25"	19.2"	17.7"	1.5"	8.2"	2"	CR60760
CR90375-E	16.00"	16.25"	19.2"	17.7"	1.5"	8.2"	2"	CR60760
CR90560-E	20.00"	20.25"	23.2"	21.7"	1.5"	12.2"	2"	CR60770
CR90650-E	20.00"	20.25"	23.2"	21.7"	1.5"	12.2"	2"	CR60770

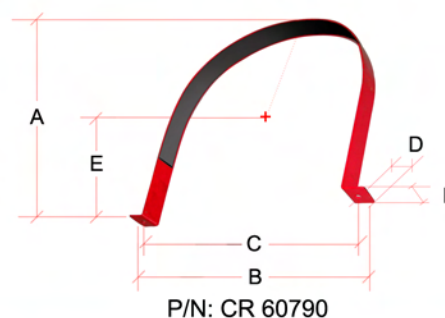
For the 20 lb. to 250 lb. cylinders - One cylinder bracket must be used

For the 375 lb. to 650 lb. cylinders - Two cylinder brackets must be used



### Cylinder Dimension

Part Number	A	B	C
CR90020-E	10"	13.507"	18.235"
CR90035-E	10"	17.607"	22.336"
CR90070-E	10"	28.04"	32.769"
CR90100-E	12.75"	27.127"	32.706"
CR90150-E	12.75"	37.127"	42.706"
CR90250-E	16"	39.883"	45.462"
CR90375-E	16"	57.16"	65.76"
CR90560-E	20"	55.516"	64.116"
CR90650-E	20"	63.12"	71.716"



P/N: CR 60790





## Clean Agent Cylinders



1" Brass Valve  
P/N: CR 90001



1 1/2" Brass Valve  
P/N: CR 90002



2 1/2" Brass Valve  
P/N: CR 90003



1" Stainless Steel Valve  
P/N: CR 90001-SS



1 1/2" Stainless Steel Valve  
P/N: CR 90002-SS



2 1/2" Stainless Steel Valve  
P/N: CR 90003-SS



4" Stainless Steel Valve  
P/N: CR 90004



## Electric Solenoid

### DESCRIPTION

The electric solenoid valve is a normally closed valve that requires electrical energy to open. It is used to vent the pressure from the top of the piston in the cylinder valve, allowing the piston to slide upward and commence cylinder discharge. The electric solenoid valves are available in 24 VDC. The source of the electrical energy will determine the number and rating of the electric solenoid used. The solenoid circuit must be supervised for a break in the wiring, a ground or a short circuit.

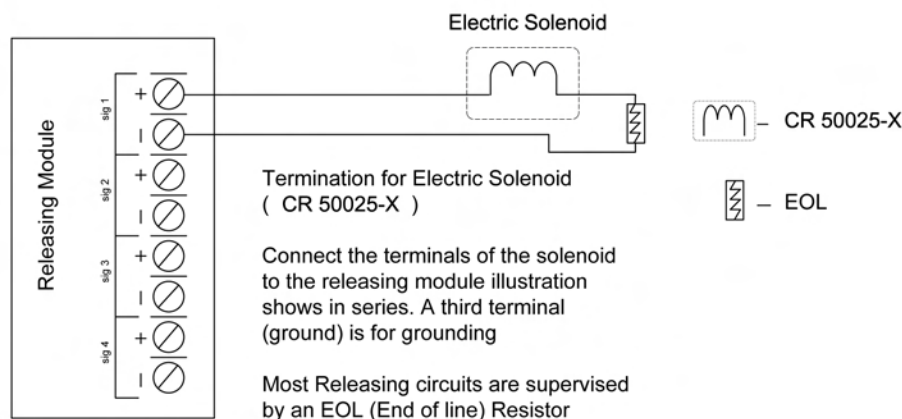
The cylinder discharge valve that is equipped with a solenoid valve is to be connected to a control panel, which is UL listed for releasing devices and is compatible with Chemori Fire Suppression equipment.



Connect solenoid pigtails to actuation circuit wires with wire nuts within a junction box or by means designated by the authority having jurisdiction.

Whenever an electric solenoid is used as the sole means of actuation, a top plug must be used to seal the top of the cylinder valve.

Part Number	Description	Electrical Rating
CR 50025-2	Electric Solenoid	24 VDC, 11 Watts
CR 50025-2E	Electric Solenoid, Explosion-Proof	24 VDC, 11 Watts
CR 50025-6	Electric Solenoid	24 VDC, 15 Watts
CR 50025-6E	Electric Solenoid, Explosion-Proof	24 VDC, 15 Watts





## Control Heads

### LOCAL MANUAL CONTROL HEAD

- Used for manual actuation of cylinder
- Equipped with safety pull-pin to prevent accidental manual discharge of Clean Agent
- Self-venting
- Solid brass construction
- Stainless steel operation lock-pin

The Local Manual Control Head features a local lever driven push rod that depresses a Schrader check valve, thereby venting the pressure from the top of the piston in the cylinder valve, allowing the piston to slide upward and commence cylinder discharge. The Local Manual Control Head mounts directly to a top plug adapter, which is located on top of the cylinder valve.



P/N : CR 61033

### PISTON ACTUATOR CONTROL HEAD-SLAVE

- High quality brass construction
- Mounts directly on top of cylinder valves
- Self-venting

The Piston Actuator features a pneumatically driven piston that depresses a Schrader check valve, thereby venting the pressure from the top of the piston in the cylinder valve, allowing the piston to slide upward and commence cylinder discharge. The pneumatic pressure required to operate the Piston Actuator is obtained from the "M" port of a cylinder, which is designated as "Master" cylinder that is either mechanically and/or electrically actuated. Multiple cylinders equipped with Piston Actuators can be activated from one master cylinder using 1/4" copper tubing or 1/4" metal flex hose. The Piston Actuator mounts directly to a top plug adapter, which is located on top of the cylinder valve.



P/N: CR 61041