

UNIQUE 227



HFC-227ea  
FIRE SUPPRESSION SYSTEM

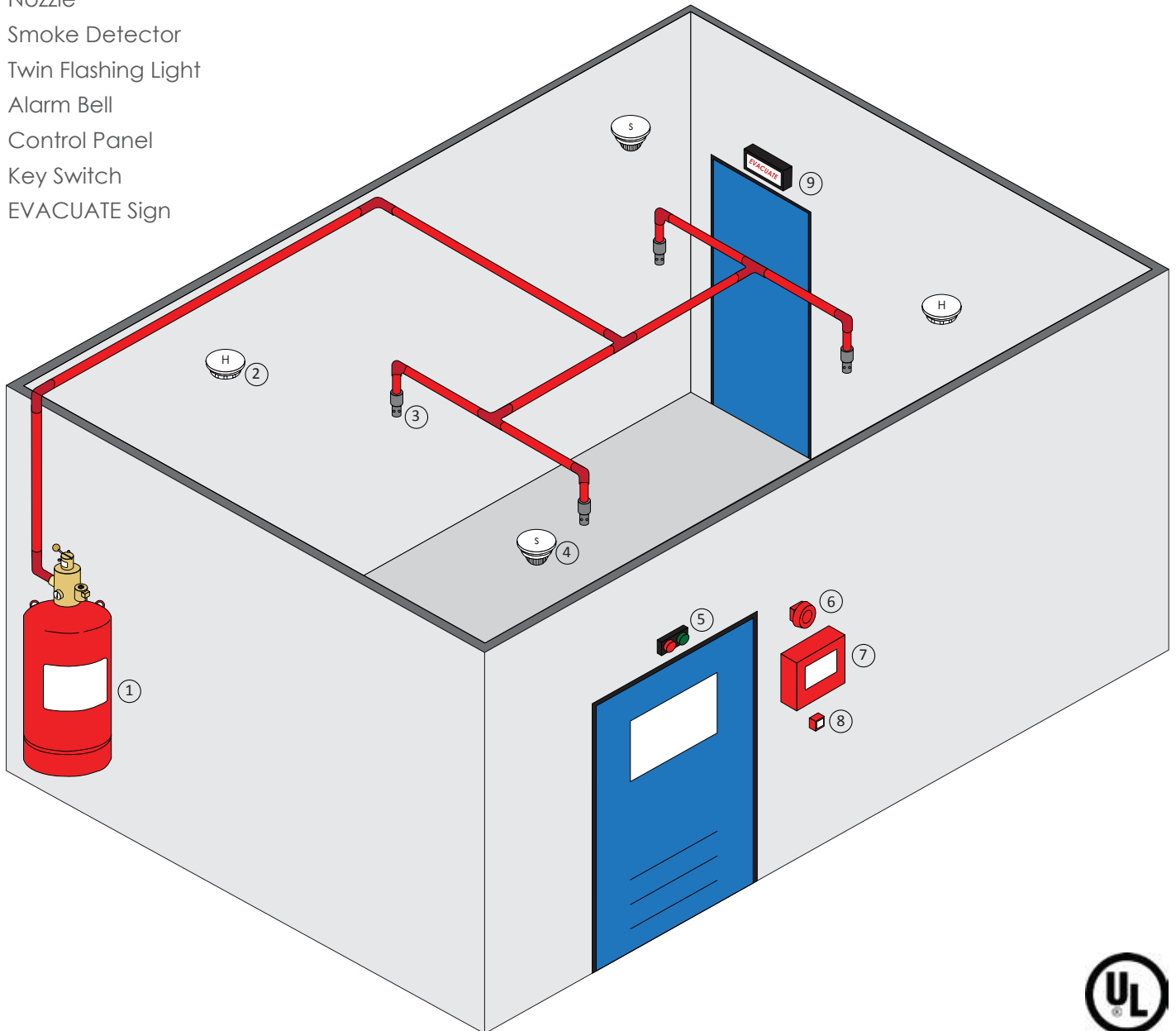
Unique227 Fire Suppression System are agency tested for total flooding applications and should be used in accordance with the guidelines contained in NFPA 2001. The design of such a system requires that the Unique227 chemical agent be discharged from its container within 10 seconds and be thoroughly mixed throughout the protected volume, reaching a minimum concentration level of 7%.

## UNIQUE227 Fire Suppression System Features

- Safe for people
- Safe for environment
- Leaves no residue after discharge

## UNIQUE227 System Typical Arrangement

1. Cylinder and Valve Assembly
2. Heat Detector
3. Nozzle
4. Smoke Detector
5. Twin Flashing Light
6. Alarm Bell
7. Control Panel
8. Key Switch
9. EVACUATE Sign



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## UNIQUE FIRE INDUSTRY SDN BHD

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## DESCRIPTION

Unique 227 is a trademark of Unique's HFC-227ea, Heptafluoropropane. Unique 227 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. Unique 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, Unique 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 Unique's total flooding system, but also for Halon 1301 replacement applications. Unique 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. Unique 227 extinguishes a fire by a combination of chemical and physical mechanisms. Unique 227 does not displace and therefore is safe for use in occupied spaces without fear of oxygen deprivation.

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

Unique 227 fully complies with the standards of ASTM D6064 and NFPA 2001 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.



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## Clean Agent Cylinders



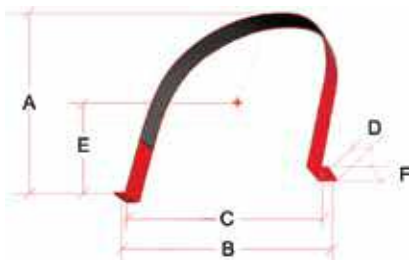
TECHNICAL DATA							
Part No.	Cylinder Size	Valve Size	Dimension			Max Fill at 70 lb/ft <sup>3</sup>	Min Fill at 70 lb/ft <sup>3</sup>
			A	B	C		
20 LB	UFI 90020-E	1" VALVE	10"	13.057"	18.235"	20 LB	9LB
35 LB	UFI 90035-E	1" VALVE	10"	17.607"	22.336"	35 LB	16 LB
70 LB	UFI 90070-E	1" VALVE	10"	28.04"	32.763"	71 LB	31 LB
100 LB	UFI 90100-E	1" VALVE	12.75"	27.127"	32.706"	101 LB	44 LB
150 LB	UFI 90150-E	1 1/2" VALVE	12.75"	37.127"	42.706"	152 LB	66 LB
250 LB	UFI 90250-E	1 1/2" VALVE	16"	39.883"	45.462"	253 LB	109 LB
375 LB	UFI 90375-E	2 1/2" VALVE	16"	57.16"	65.76"	379 LB	163 LB
560 LB	UFI 90560-E	2 1/2" VALVE	20"	55.516"	64.116"	561 LB	241 LB

\* The valve is available in stainless steel



TECHNICAL DATA							
Part No.	Cylinder Size	Valve Size	Diameter	Total Height	Height to Discharge Outlet	Max Fill at 70 lb/ft <sup>3</sup>	Min Fill at 70 lb/ft <sup>3</sup>
UFI 90800-E	800LB	4"	30.00"	56.701"	56.701"	806 LB	16LB
UFI 91000-E	1000LB	4"	30.00"	64.409"	64.409"	1008 LB	439LB

## Cylinder Bracket



TECHNICAL DATA									
Part No.	Cylinder O.D	A	B	C	D	E	F	Bracket Part #	
UFI 90020-E	10.00"	11"	14"	12.6"	1.5"	5.6"	2"	UFI 50139	
UFI 90035-E	10.00"	11"	14"	12.6"	1.5"	5.6"	2"	UFI 50139	
UFI 90070-E	10.00"	11"	14"	12.6"	1.5"	5.6"	2"	UFI 50139	
UFI 90100-E	12.75"	13"	16.05"	14.65"	1.65"	6.475"	2"	UFI 60780	
UFI 90150-E	12.75"	13"	16.05"	14.65"	1.65"	6.475"	2"	UFI 60780	
UFI 90250-E	16.00"	16.25"	19.2"	17.7"	1.5"	8.2"	2"	UFI 60760	
UFI 90375-E	16.00"	16.25"	19.2"	17.7"	1.5"	8.2"	2"	UFI 60760	
UFI 90560-E	20.00"	20.25"	23.2"	21.7"	1.5"	12.2"	2"	UFI 60770	

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## Electric Solenoid



TECHNICAL DATA		
Part No.	Description	Electrical Rating
UFI 50025-2	Electric Solenoid	24 VDC, 11Watts
UFI 50025-2E	Electric Solenoid, Explosion-Proof	24 VDC, 11Watts
UFI 50025-6	Electric Solenoid	24 VDC, 15Watts
UFI 50025-6E	Electric Solenoid, Explosion-Proof	24 VDC, 15Watts
UFI 50025-7L	Electric Solenoid, with LMC	24 VDC, 15Watts

## Pressure Supervisory Switch



TECHNICAL DATA		
Part No.	Description	Operation
UFI 50138-5	240psi	Normally Closed
UFI 50138-4	240psi	Normally Open
UFI 50138-1	360psi	Normally Closed
UFI 50138-2	360psi	Normally Open

## Pressure Gauge Guard



TECHNICAL DATA		
Part No.	Size (NPT)	Material
UFI 70198-3	1/4"	Brass

## Pressure Supervisory Switch Guard



TECHNICAL DATA		
Part No.	Size (NPT)	Material
UFI 70215-2	1/4"	Brass

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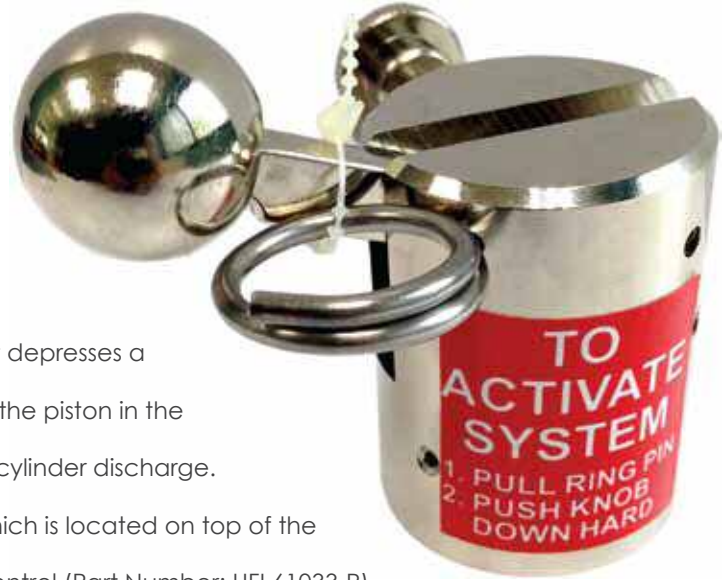
## Mechanical Controls

### LOCAL MANUAL CONTROL

- 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 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 mounts directly to a top plug adapter, which is located on top of the cylinder valve. Unique also offers a plunger type of Local Manual Control (Part Number: UFI 61033-P).



P/N: UFI 61033

### PISTON ACTUATOR ASSEMBLY

- 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: UFI 61041

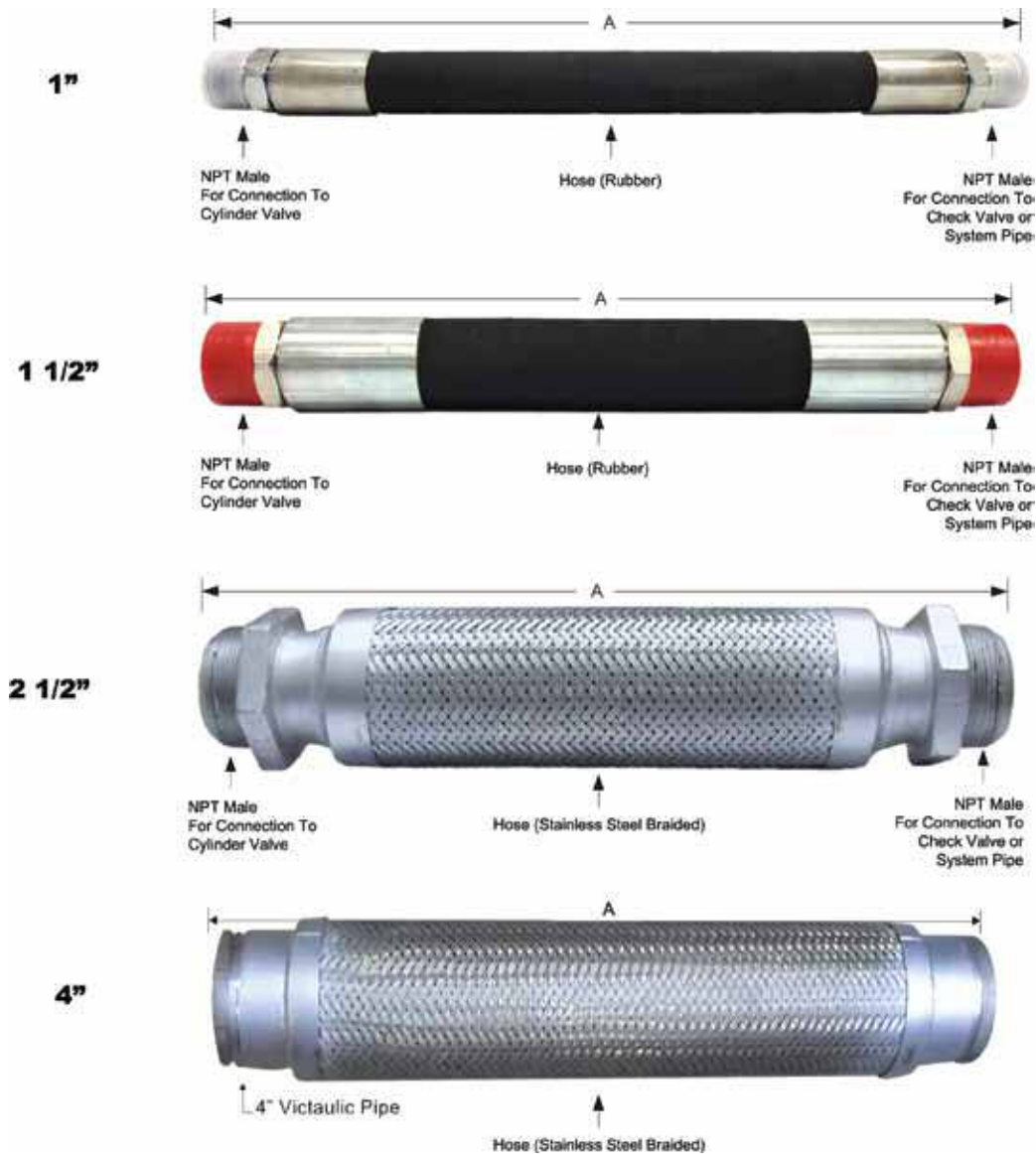


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## Flexible Hoses



TECHNICAL DATA			
Part No.	Diameter	A	Material
UFI 60255	1"	18"	Rubber
UFI 60256	1-1/2"	18"	Rubber
UFI 60257	2-1/2"	18"	Stainless Steel Braided
UFI 91230	4"	18"	Stainless Steel Braided

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## Check Valve



4"



1" , 1-1/2" , 2-1/2"

TECHNICAL DATA		
Part No.	Description	Valve Size
UFI 60261	Check Valve	1"
UFI 60262	Check Valve	1-1/2"
UFI 60263	Check Valve	2-1/2"
UFI 91231-2	Check Valve Assembly	4"

## Shuttle Valve



TECHNICAL DATA	
Part No.	Description
UFI 50123	1" Shuttle Valve
UFI 60619	1-1/2" Shuttle Valve

\* It is used to connect two cylinders to a common discharge pipe and nozzles

## Discharge Nozzle



TECHNICAL DATA			
Part No.	Description	Part No.	Description
UFI 60704-2	1/2"(180°) Sidewall	UFI 60707-2	1 1/4"(180°) Sidewall
UFI 60704-3	1/2"(360°) Central	UFI 60707-3	1 1/4"(360°) Central
UFI 60705-2	3/4"(180°) Sidewall	UFI 60708-2	1 1/2"(180°) Sidewall
UFI 60705-3	3/4"(360°) Central	UFI 60708-3	1 1/2"(360°) Central
UFI 60706-2	1"(180°) Sidewall	UFI 60709-2	2"(180°) Sidewall
UFI 60706-3	1"(360°) Central	UFI 60709-3	2"(360°) Central

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## Room Integrity Test

### Enclosure Integrity Test

Now, the NFPA 2001, NFPA 12A, ISO 14520 and EN 15004 recognize an enclosure integrity test as part of the acceptance procedure for all clean agent systems. This includes halocarbon and inert agents. The comprehensive test and calculation procedure predicts how long the agent would stay in the room if it were ever discharged.

The Enclosure Integrity Test's primary goal is to predict the enclosure's retention time in the event that the Clean Agent Fire Suppression System is discharged. This is accomplished by performing a Door-Fan test.



### What is a Door Fan Test ?

Door Fan Test, also known as a Room Integrity Fan Test, is simply a way to measure the leakage of a protected room. A large fan is temporarily installed in the doorway of the protected room to be tested, with the fan blowing into the room (pressurizing the room). The fan speed is adjusted to obtain flow pressure equivalent to the pressure exerted during a fire suppression system discharge. The fan is then reversed on the door to draw air from the room (depressurizing the room). The airflow and pressure readings obtained are entered into a computer program designed to calculate the equivalent leakage area (ELA) for the room. Then, the software will calculate the retention time and determine whether it exceeds the minimum retention time of 10 minutes.

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