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HFC-227ea Fire Suppression Cylinder Set- Technical Datasheet

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TECHNICAL DATA SHEET

Direct LowPressure(DLP)FireSuppression System

Product Descriptions:

VariEx® in-panel Tube Based Suppression System (VATS) take the fire detection and suppression inside of the hazard, a growing fire can be caught quickly, preventing the spread of fire to other parts of the building that would require firefighters or water sprinklers extinguish. The VATS system use UL listed continues linear sensor tube that reliably detects and actuates release of the extinguishing agent using pneumatic technology. It is more flexible, space efficient and cost effective.

Sl No	Particular	Specifications
1	Extinguisheing agents	Clean Agents- FK-5-1-12 (Novec1230), HFC227ea (FM200),
2	Cylinder Capacity Options	1kg, 2 kg, 4 kg, 6 kg, 9 kg
3	Refill & Recharge	Factory recharging required after discharge
4	Cylinder	CE/PESO
5	Discharge Valve (DLP)	CE
6	Clean Agent gas	UL listed
7	Discharge Method	Direct discharge through detection tube rupture
8	Fire Detection Tube	UL listed
9	End line adopter	Standard- Threaded
10	Operating temperature	(-) 30 Deg Cto (+) 60 Deg C
11	Agent Type	FK-5-1-12 / HFC-227ea
12	Cylinder Material	Seamless Steel
13	Cylinder Finish	Red epoxy powder coated

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VariEx™ FIRE IMMUNISER

How it works?

The most prominent feature of VariEX® automatic panel suppression system is the specially designed heat-sensitive pneumatic polymer tubing.

Extinguishing agent container is connected to one end of tube, while the rest of sensor tube easily be installed directly inside machine and enclosure. When the flame comes in contact with the heat-sensitive tubing and reaches a temperature of 110°C (approx). The heat that immediately precedes or accompanies a fire causes the pressurized sensor tube to burst at the hottest spot.

The sudden tube depressurization actuates the special valve and floods the enclosed area with extinguishing agent. The fire is quickly suppressed just moments after it began. Hence minimizing damage and repair downtime.

This most innovative technology makes this system entirely self-activated. It requires no power and human interference specially applicable for "micro-environments", and where the fire hazard likely to be in enclosed space. or areas where the fire hazard is likely to beinan enclosed space.

Features:

- Noexternalpower source required. So protection is uninterrupted (24x7).
- Easy to maintain, operational readiness, expansion flexibility.
- 100% effective, automatic & full execution of system, so it doesn't required any human involvement
- Quick response system & it also extinguishes fire very quickly.

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System Supply Schedule – DLP Fire Suppression System:

Sl No	Particular	Model No.	Capacity
1	Supply of MS Deep Drawn Cylinder Fitted with DLP Valve -1 No filled with UL Listed **1kg** HFC 227 Ea. Clean Agent along with 1) Pressure Switch 2) Control panel Along with Hooter 3) Cylinder Bracket 4) Tube Adapter 5) Spring with Spring Top. 6) Pressure Gauge VariEx®	VSS-1CA	01 kg
2	Supply of MS Deep Drawn Cylinder Fitted with DLP Valve -1 No filled with UL Listed **2kg** HFC 227 Ea. Clean Agent along with 1) Pressure Switch 2) Control panel Along with Hooter 3) Cylinder Bracket 4) Tube Adapter 5) Spring with Spring Top 6) Pressure Gauge VariEx®	VSS-2CA	02 kg
3	Supply of MS Deep Drawn Cylinder Fitted with DLP Valve -1 No filled with UL Listed **4kg** HFC 227 Ea. Clean Agent along with 1) Pressure Switch 2) Control panel Along with Hooter 3) Cylinder Bracket 4) Tube Adapter 5) Spring with Spring Top. 6) Pressure Gauge VariEx®	VSS-4CA	04 kg
4	Supply of MS Deep Drawn Cylinder Fitted with DLP Valve -1 No filled with UL Listed **6kg** HFC 227 Ea. Clean Agent along with 1) Pressure Switch 2) Control panel Along with Hooter 3) Cylinder Bracket 4) Tube Adapter 5) Spring with Spring Top. 6) Pressure Gauge VariEx®	VSS-6CA	06 kg
5	Supply of MS Deep Drawn Cylinder Fitted with DLP Valve -1 No filled with UL Listed **9kg** HFC 227 Ea. Clean Agent along with 1) Pressure Switch 2) Control panel Along with Hooter 3) Cylinder Bracket 4) Tube Adapter 5) Spring with Spring Top. 6) Pressure Gauge VariEx®	VSS-9CA	09 kg

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HFC-227ea Clean Agent Tube-Based Fire Suppression System – Supply & Accessories;

The Variex tube-based clean agent fire suppression system is supplied with a Mild Steel (MS) deep drawn cylinder, manufactured from a single seamless steel body. This deep drawn construction eliminates welded joints, thereby improving structural integrity and minimizing the possibility of leakage under long-term pressurized storage conditions. The seamless cylinder design provides superior strength, enhanced pressure fatigue resistance, and reliable performance during system actuation. This construction is suitable for clean agent storage and is consistent with the requirements expected for LPCB-approved fire suppression equipment.

The cylinder is filled with 1 kg of UL Listed HFC-227ea clean agent, also commercially known as FM-200. The agent is stored as a liquefied gas under pressure and discharges rapidly in gaseous form to achieve quick suppression. UL Listing ensures that the agent quality, discharge characteristics, and system compatibility have been evaluated to meet internationally recognized performance and safety standards. HFC-227ea extinguishes fire primarily through rapid heat absorption, with a secondary effect of interrupting the combustion chain reaction. the agent is electrically non-conductive, leaves no residue, and does not cause corrosion, making it suitable for protection of electrical panels, control cabinets, and sensitive equipment.

The cylinder is fitted with a DLP (Direct Line Pneumatic) valve, forming the main discharge and control mechanism of the system. In Variex tube-based systems, the DLP valve is designed to activate automatically upon detection tube operation, either by tube burst at elevated temperature or by mechanical triggering through the tube network. The valve ensures secure sealing during standby conditions and provides immediate, controlled release of the extinguishing agent during actuation. The DLP valve is a critical functional component of the system, governing release initiation and agent flow into the discharge tube/nozzle arrangement to ensure effective suppression performance.

1) Pressure Switch:

What it is?

A pressure switch is an electrical device installed on the cylinder valve that detects cylinder pressure.

What it does

It gives a signal for:

- Low pressure (system fault / leakage)
- Discharge occurred (pressure drop after release)

Pressure Switch – Monitors cylinder pressure and provides feedback to the control panel for alarm indication, engine shutdown, and system status signal.

A pressure switch is provided along with the cylinder valve assembly to monitor system discharge status. **When** the cylinder **discharges**, the pressure change is **detected** by the switch and it sends a **signal to the control panel**. This helps in confirming activation, triggering alarms, and enabling optional outputs such as engine shutdown or **indication signals.**

2) Control Panel along with Hooter:

What it is?

The control panel monitors the system and shows status indications.
The hooter is the built-in alarm that sounds during fire detection or agent discharge.

Function

The control panel provides:

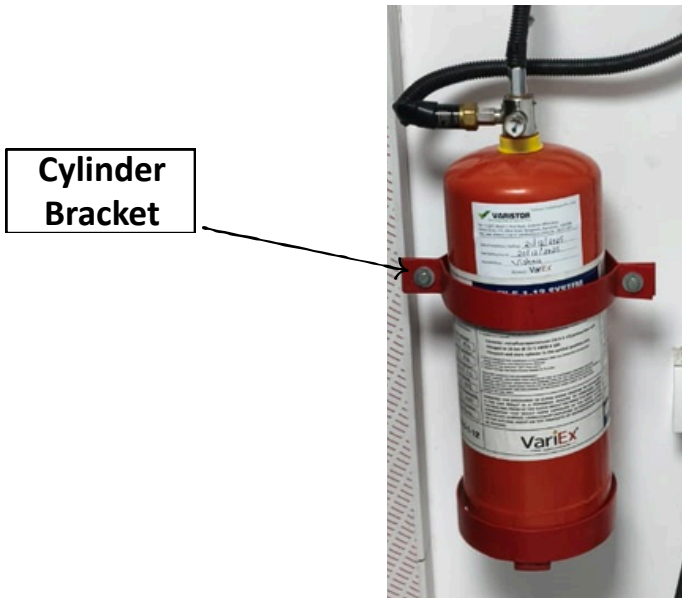
- System healthy indication
- Fault indication (open circuit, short circuit, low pressure switch fault)
- Fire condition indication
- Discharge indication (from pressure switch)
- Audible hooter alarm to warn driver/operators

Control Panel with Integrated Hooter – Healthy, Fault, Fire & Discharge Indications.

The Control Panel with Hooter is the **electronic monitoring** & indication unit **(the "brain")** of the VariEx® fire suppression system. It **continuously monitors** system health and **provides clear** indications for healthy, fault (open/short circuit, low pressure switch fault), fire, and discharge confirmation through the pressure switch. The built-in hooter alarm gives an immediate audible warning to the **driver/operators** during fire detection or system **activation**, ensuring **quick** response and confirmed successful discharge.

3).Cylinder Bracket:

A cylinder bracket is a strong mounting clamp used to hold the fire suppression cylinder firmly in position. Its main function is to prevent the cylinder from moving due to vibration, shock, or vehicle movement. Since the cylinder is pressurized, secure mounting is essential to avoid damage to the valve and fittings, prevent accidental discharge, and ensure safe and reliable system operation.



Fire suppression cylinder with secure bracket.

4).Tube Adapter:

What it is?

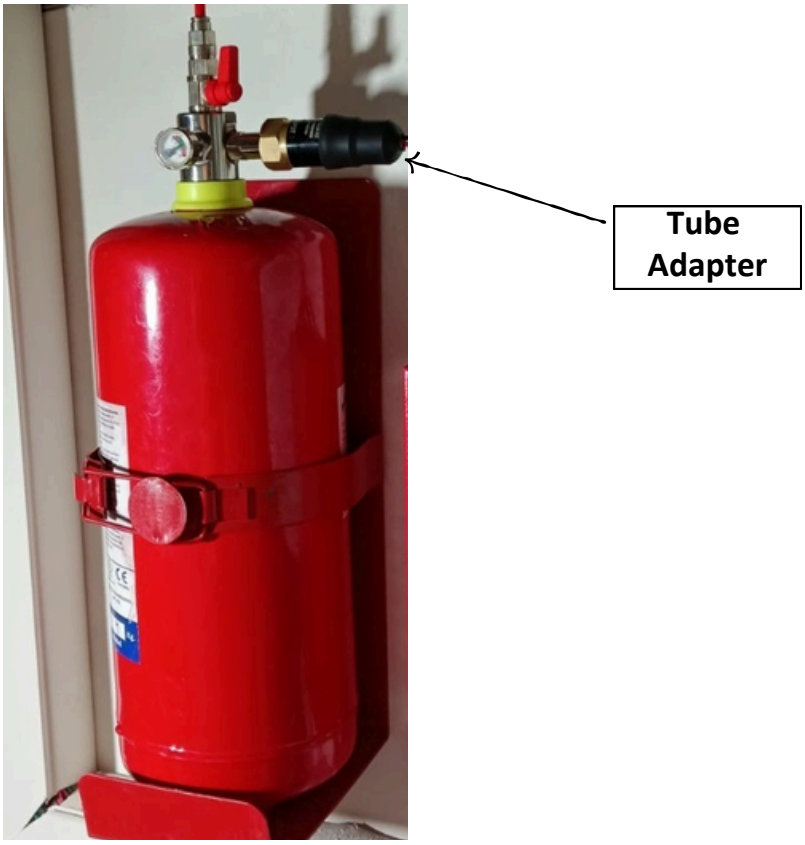
It is a **threaded coupling/connector** fixed on the **valve outlet,** and it allows you to attach the discharge tube securely.
Think of it like a **bridge fitting** that converts the valve outlet into the correct size/type needed for the tube.

In simple words

1. **Valve outlet** side → connects to the cylinder valve
2. **Tube side** → connects to the discharge tube
3. Makes the joint **tight, leak-proof, and correctly aligned**

Why Required

The valve outlet and discharge tube may have different connection standards, so the tube adapter ensures compatibility and safe sealing.



Tube Adapter Connection Between Cylinder Valve Outlet and Discharge Tube.

A tube adapter is supplied for connecting the **VariEx®** detection and suppression tube to the valve outlet assembly. This adapter ensures a secure, leak-proof connection **between the tube and the cylinder** system, supporting correct discharge flow and ensuring the tube performs effectively during suppression activation.

5).Spring with spring top:

Definition

The **spring and spring top** are internal mechanical components used inside the valve actuation mechanism. They assist in **returning or holding** the valve mechanism in its correct position.

Function

Depending on the valve design, this assembly provides:

- Proper tension for valve operation
- Stable positioning of actuation pin or plunger
- Controlled opening/closing action
- Reliable reset mechanism (in mechanical sections)

Spring with Spring Top Used in Cylinder Valve Actuation Mechanism.

Importance

Springs ensure the valve mechanism operates smoothly and reliably under pressure, vibration, and temperature variations.

6).Pressure Gauges:

Definition

A **pressure gauge** is a mechanical dial-type instrument fitted on the cylinder valve to show the **internal cylinder** pressure.

Pressure gauges are provided to monitor the cylinder pressure level during service life. The gauge helps in periodic inspection and maintenance by showing whether the cylinder pressure is within normal range. This ensures system readiness at all times and supports timely refilling or replacement if pressure is low.

Why it is Critical

A cylinder may look physically fine, but only the pressure gauge can confirm:

- Agent is still present
- Cylinder pressure is within safe operating range

Function

It helps in:

- Checking whether the cylinder is properly charged
- Identifying pressure drop/leakage
- Routine maintenance inspection
- Ensuring system readiness at all times

Pressure Gauge Installed on Fire Suppression Cylinder for Pressure Monitoring.