

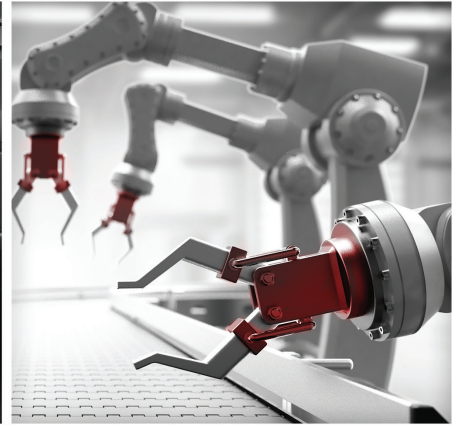
Honeywell

THE POWER OF **CONNECTED**

Fire Suppression System



**FIRE
SUPPRESSION
SYSTEM**



Honeywell is building a smarter, safer, and more sustainable world. That's the Power of Connected. That's the Power of Honeywell.

We are Honeywell

With a history dating back to 1885 Honeywell is a Fortune 100 company that invents and manufactures technologies to address some of the world's toughest challenges linked to global macro-trends such as energy efficiency, clean energy generation, safety and security, globalization and customer productivity. A recognized world leader in energy savings and comfort control with approximately 132,000 employees worldwide, including more than 22,000 engineers and scientists, we have an unrelenting focus on performance, quality, delivery, value and technology in everything we make and do.

Honeywell's ability to continually improve comes from successfully achieving two seemingly competing tasks at once – productivity and growth. Our global processes – or Enablers – are Honeywell's core internal business processes that drive efficiency and service quality. Enablers bring world-class products and services to market faster and more cost-effectively for our customers.



Honeywell
Aerospace



Home and Building
Technologies (HBT)



Safety and
Productivity
Solutions (SPS)

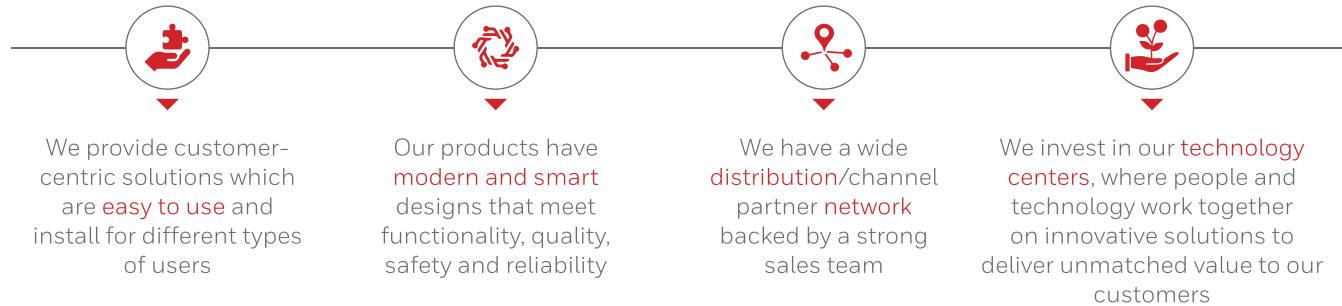


Performance
Materials and
Technologies

Why Honeywell?

From our innovative approach to product design and delivery to technically advanced manufacturing and installation capabilities, our aim is to apply our many years of experience in building environments of all sizes.

Honeywell Operating Systems (HOS) and Velocity Product Development processes (VPD) drive continuous sustainable improvement in our manufacturing processes and product design & development cycles that helps us deliver quality products faster to the market.



Why are we different?

At Honeywell, we can draw on more than 25 years of combined expertise in the field of management and control solutions for air, water, gas, electricity and energy utilities for any size and type of application:

With more than 30,000 patents or patents pending worldwide, we generate innovative, world-class results. Our teams typically have members from every level of the organisation focused on improving processes to first understanding our customers' needs, then meeting – and even exceeding – their expectations.



Fortune 100 Company

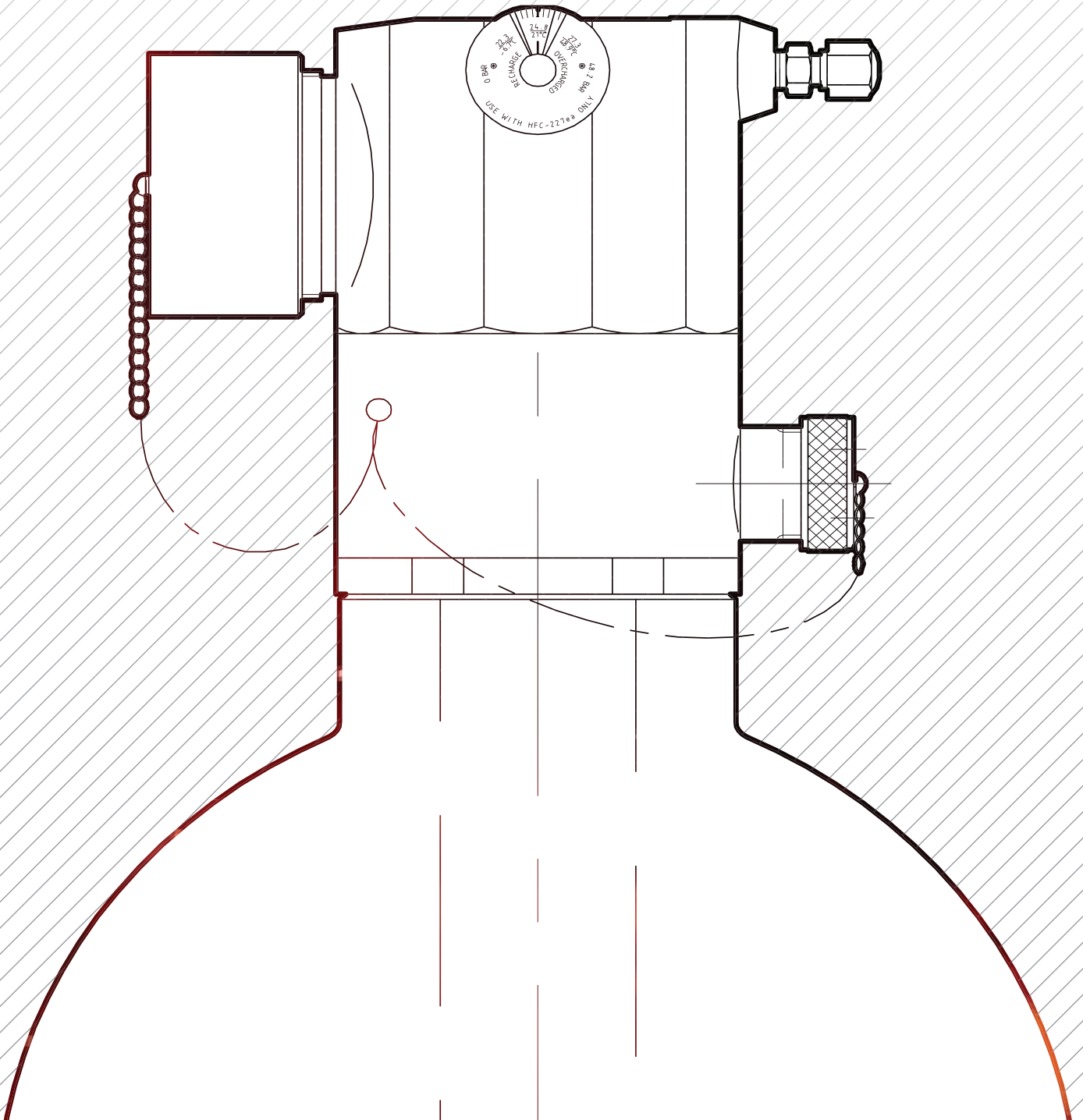


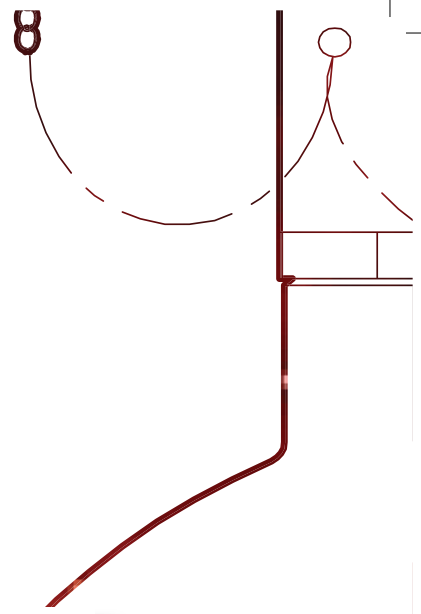
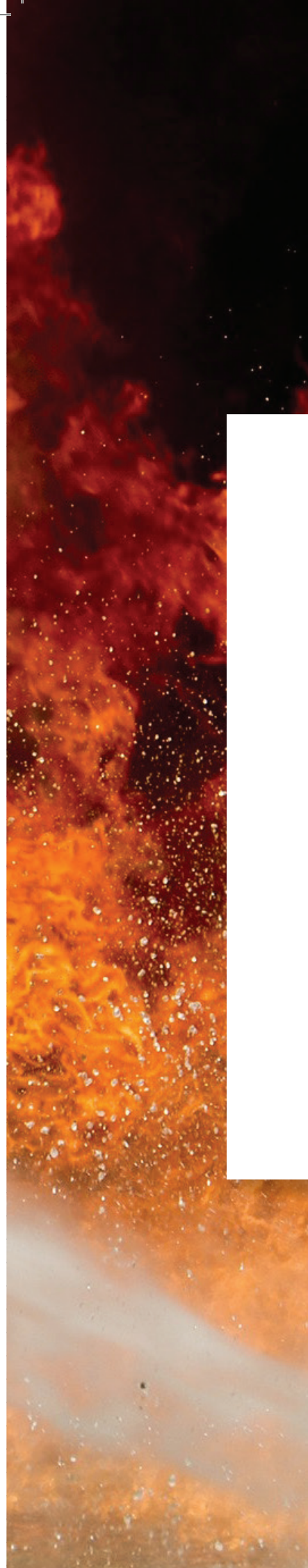
131,000 Employees Worldwide



22,000 Engineers and Scientists







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Clean Agent System
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Clean Agent System





FIRE SUPPRESSION SYSTEM

The causes of fire are many and the classification of fire is important. As per the National Fire Protection Association NFPA 2001 burning is classified into Class A/B/C/D and Class K. A Fire protection specialist therefore, must select the appropriate fire extinguishing system for suppressing the fire.

As the name suggests, Fire Suppression System uses Inert gas or Chemical agents to extinguish a fire, also called as Clean Agent Fire Suppression System. These agents are governed by the NFPA Standard for Clean Agent Fire Extinguishing Systems – NFPA 2001. The

system typically consists of the agent, agent storage containers, agent release valves, agent delivery piping, and agent dispersion nozzles.

There are 2 ways clean agents can extinguish a fire:

- » Reduction of heat by using FK-5-1-12 & HFC-227ea type Chemical agent Fire Suppression System
- » Reduction or isolation of oxygen by using Argonite, Inert Gas, Dry Chemical, Wet Chemical & CO2 type Fire Suppression System

What causes fire



Fuel

+



Oxygen

+



Heat

=



Fire

Key Features

The latest range of Fire Suppression systems stands up to the legendary reputation that Honeywell enjoys in the area of Fire Safety Equipments. Offering top of the line quality, adhering to the Indian classifications, and delivering every time when it matters the most.

Honeywell UL listed Fire Suppression System uses clean agents - FK-5-1-12 & HFC-227ea for both 25bar and 42bar applications to release suppressant gases to ensure life safety & assets. Here are the key features that make Honeywell Fire Suppression systems a preferred choice for Fire Fighters across the world :

- » UL listed clean agent (HFC-227ea, FK-5-1-12) gas suppression system for both 25 bar/42 bar application. This supports: -
 - Large & complex piping network with UL listed 42 bar system
 - Requires smaller dia pipe size
 - Faster extinguishing
- » Complied to UL 2166 & NFPA 2001 standards
- » UL Listed discharge nozzle
- » PESO approved seamless gas filled cylinders
- » All in one make offering- Advance Detection, Addressable Detection, Gas Suppression System
- » Best in Class nozzle coverage area in the industry (1.5 times more efficient in suppressing the Fire)
- » Best suited for Class C Fires
- » Minimizes downtime & protects electrical/electronic equipments
- » Clean in nature- Harmless for people & environment with highest safety margins
- » 3 years' warranty on mechanical components
- » 2 in 1 manually/electronically operated Electric Control Head (Solenoid Valve)

- » ISO Certified, PESO & UL approved Filling station in India
- » Better design concentration compared to Vds approved system. UL requires less hardware & Agent quantity.
- » UL Listed Flow Calculation/Drawing Software
- » Best lead time in the industry - Support "Make In India Campaign"
- » Training, Design, Technical Support- End to End

Clean Agent Benefits

Fast

Meets within 10 sec discharge time criteria

Effective

Clean Agents are designed to control and extinguish a fire in its incipient stage – before it has a chance to spread. Clean Agents are electrically non-conductive and non-corrosive, and there will be no damage to electronics and delicate mechanical devices.

Safe

Clean Agents are designed to provide a wide margin of human safety – they are safe to use where people are present.

Clean

Clean Agents rapidly vaporizes to gas during discharge and evaporates cleanly, leaving no residue behind, which means no costly cleanup.

Earth Friendly

Clean Agents are non-ozone depleting and have a short atmospheric lifetime

Product Application Areas

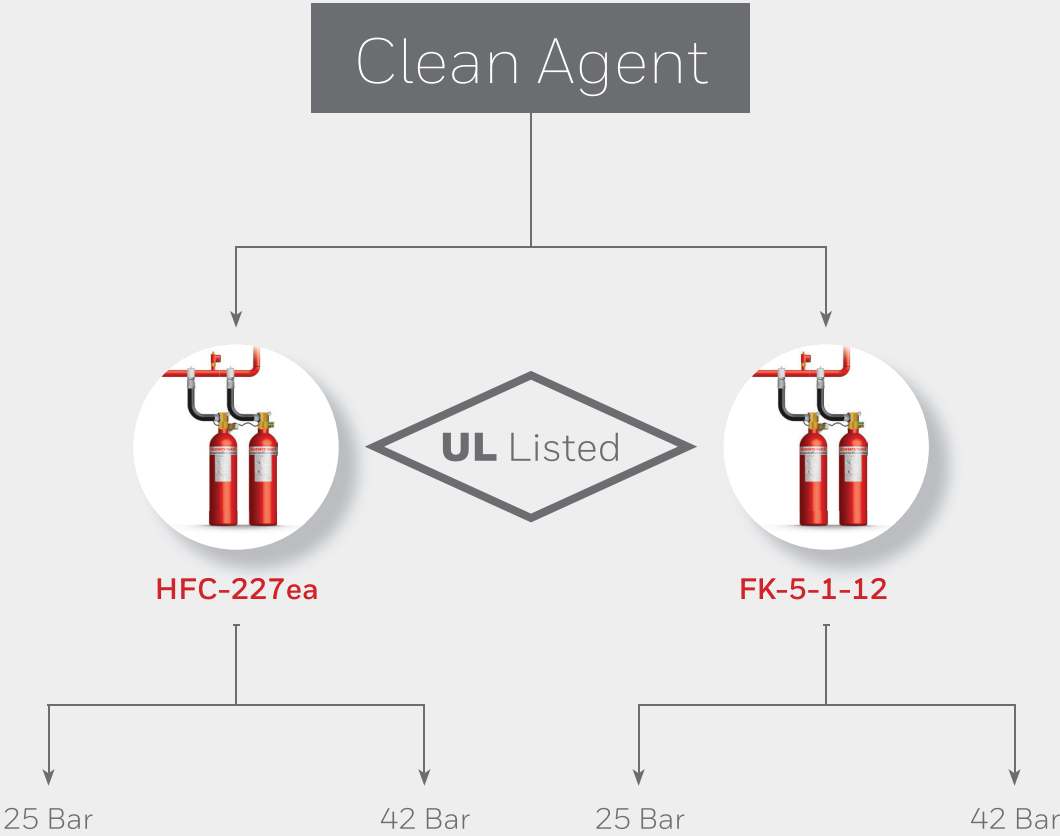
Honeywell Fire Suppression System finds their applications in a variety of commercial and institutional setups, where one needs a quick and reliable fire suppression while considering a number of complexities that comes with industrial setups. Ranging from complex and Highly Volatile setups like Marine, Oil and Gas industries to dense commercial setups like Data

centers, Museums, Server Rooms, Control Rooms, UPS Rooms, Telecommunication Centres, Battery Rooms etc what makes our fire suppressants a preferred choice worldwide is the adherence to not just international quality benchmarks but the compatibility and compliance with National Fire Protection Association (NFPA) guidelines.



Product Offering

Our product range is broadly categorised into two sections suiting well to a variety of applications/industry types.



UL Listed 25 Bar HFC-227ea Clean Agent System

Fire Suppression System

General Information

HFC-227ea Clean Agent System is employed to protect critical installations formerly protected by Halon 1301.

These include:

- » Data Processing Centers
- » Telephone Switches
- » Process Control Rooms
- » Art and Historical Collections
- » Archive & Museums
- » Marine, Oil & Gas
- » Aerospace, Aviation & Military



HFC-227ea Fire Suppression Agent

Part Number – H1-120-000

HFC-227ea agent complies with NFPA Standard 2001: standard for Clean Agent fire Extinguishing systems, EPA SNAP Program (Significant New Alternate Policy)

These agents are classified as suitable for use in occupied areas and are considered to have no ozone depleting potential (ODP)

HFC-227ea fire suppressant can be safely used where people are present.

Description

HFC-227ea systems reach extinguishing levels in 10 seconds or less, stopping ordinary combustible, electrical, and flammable liquid fires before they cause significant damage. That's the fastest fire protection available, period. When fire is extinguished this quickly, it means less damage, lower repair costs, and an extra margin of safety for people. It also means less downtime and disruption of business.

AGENT	CLASS A MEC	CLASS A DESIGN	CLASS B MEC	CLASS B DESIGN	CLASS C DESIGN
HFC-227EA	5.2	6.7	6.7	8.7	7.0

NFPA 2001 Requirements For Minimum Values

CLASS B CONCENTRATION	
Flammable Liquid	Design Concentration (Vol%)
Acetone	9.0
Ethyl Acetate	8.9
N-Heptane	8.7
N-Hexane	9.0
Diesel Fuel	8.7
JP4	9.0
Transformer Oil	9.5

Physical & Chemical Properties

Empirical formulae.....	CF ₃ CHF ₂ CF ₃
IUPAC Designation.....	1,1,1,2,3,3,3,- Heptafluoropropane
ASHRAE Designation.....	HFC-227ea
Molecular Weight.....	170.03
Boiling Point at 1 Atm.....	2.6 °F (-16.4 °C)
Freezing Point.....	-204 °F (-131°C)
Ozone Depletion Potential.....	0
Atmospheric Lifetime.....	31-42 years
No Observed Adverse Effect Level.....	9 %
Lowest Observed Adverse.....	10.5%

ENVIRONMENTALLY FRIENDLY	
Description	HFC-227EA
Ozone Depletion Potential	0.0
Global Warming Potential	3220
Atmospheric Lifetime (Years)	31-42 years
Snap (Yes/No)	Yes

34, 80, 120 & 140 liter Capacity Seamless Cylinder - Standard Unit

PESO Approved Seamless cylinder of HFC-227ea Clean Agent System is used with 25 Bar (360 PSI) system.

SEAMLESS CYLINDER DATA - STANDARD UNIT					
Part Number	Capacity	Valve (NB)	Agent Fill Range (kg)	Height (mm)	Diameter (mm)
H1-25-34-000	34 L	1-1/2" (40NB)	16.4 to 38.1	1118	Ø 232
H1-25-80-000	80 L	2" (50NB)	38.5 to 89.7	1842	Ø 267
H1-25-120-000	120 L	2" (50NB)	57.7 to 134.6	1642	Ø 356
H1-25-140-000	140 L	2" (50NB)	67.3 to 157.0	1867	Ø 356

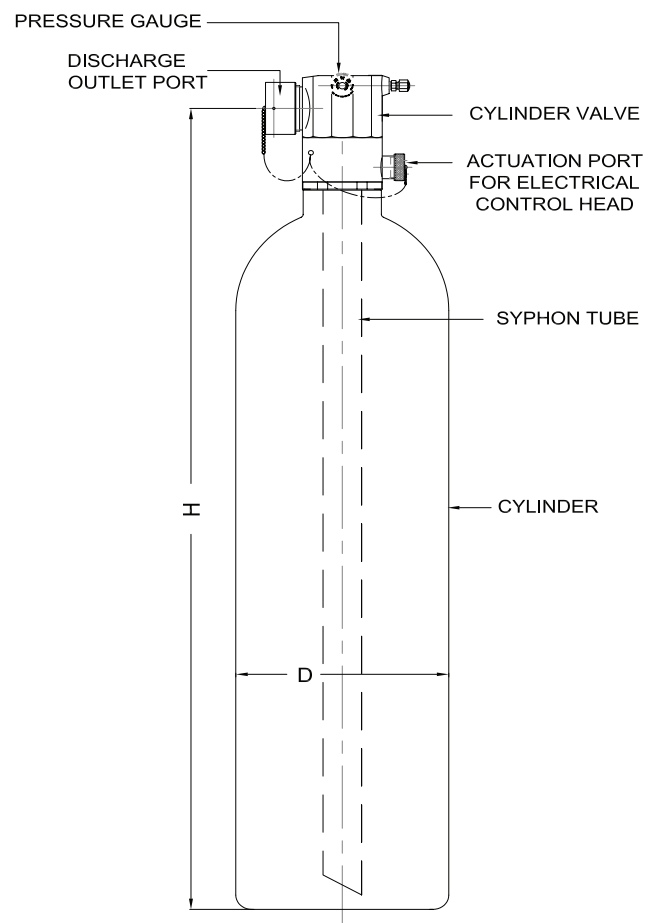
Storage Temperature

HFC-227ea is stored in cylinder as liquid, superpressurized with dry nitrogen to 25 bar at 21°C (360 PSIG at 70 °F)

Materials

Valve Body: Brass

Cylinder: Seamless type, manufactured and tested in accordance with IS 7285 Standard and approved by PESO for their use



Notes

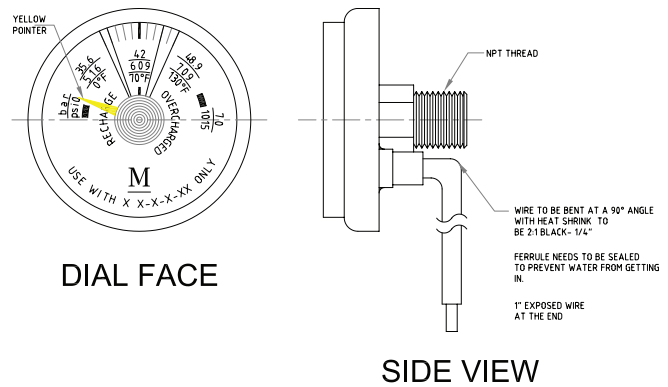
1. Clean Agent Cylinder must be installed in vertical position only.
2. Do not cover remove or deface caution label

34, 80, 120 & 140 liter Capacity Seamless Cylinder With Switch-in-Gauge Unit

The seamless cylinder is PESO approved for 25 Bar (360 PSI) system are used with HFC-227ea clean agent. It is also equipped with Switch-in-Gauge unit, design to monitor health of cylinder pressure.

This 2 in 1 unit offers unique facility whereas we can monitor cylinder pressure locally and healthiness of cylinder can be monitored remotely via using Fire Alarm Panel interface unit or any other control panel.

For ordering purpose please refer part number given below. This switch will come as a package along with Cylinder Valve Assembly.



SEAMLESS CYLINDER DATA - SWITCH-IN-GAUGE UNIT					
Part Number	Capacity	Valve (NB)	Agent Fill Range (Kg)	Height (mm)	Diameter (mm)
H1-25-34-002	34 L	1-1/2" (40NB)	16.4 to 38.1	1118	Ø 232
H1-25-80-002	80 L	2" (50NB)	38.5 to 89.7	1842	Ø 267
H1-25-120-002	120 L	2" (50NB)	57.7 to 134.6	1642	Ø 356
H1-25-140-002	140 L	2" (50NB)	67.3 to 157.0	1867	Ø 356

1-1/2" & 2" Flexible Discharge Hose

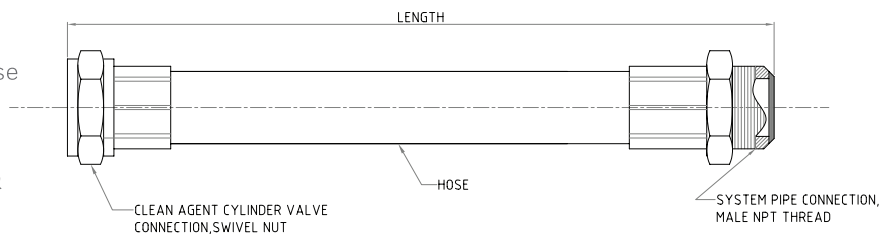
Flexible discharge hose is used to connect cylinder valve to the pipeline or the manifold of the manifold check valve.

Technical Data

Hose MOC : Reinforce Rubber Hose

Fitting MOC : Carbon Steel

Working Pressure : 1-1/2" (1305 PSIG) &
: 2" (1160 PSIG)



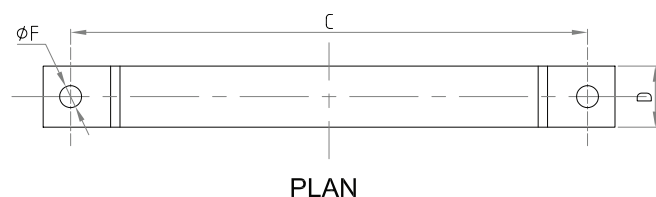
DISCHARGE HOSE DATA FOR IS SEAMLESS CYLINDER				
Part Number	Hose Size	Use With Cylinder Capacity	Length	Minimum Bending Radius
H4-001-000	Ø 1-1/2" (40NB)	34 L (Use With 40NB Cylinder Valve)	23"	10.5"
H4-002-000	Ø 2" (50NB)	80, 120 & 140 L (Use With 50NB Cylinder Valve)	29"	13.5"

Cylinder Mounting Strap

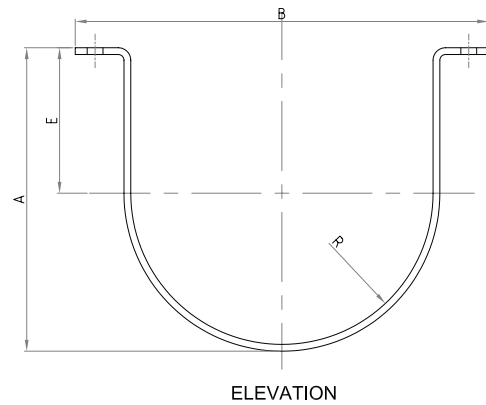
Cylinder straps are used to mount the clean agent cylinders in vertical position.

Technical Data

Body: Mild Steel.



ORDERING INFORMATION								
Part Number	Cyl. Size	A	B	C	D	E	F	R
		mm	mm	mm	mm	mm	mm	mm
H4-011-000	34 L	233	330	295	39	111	Ø14	116
H4-012-000	80 L	268	365	330	39	128	Ø14	133
H4-013-000	120 & 140 L	357	454	419	39	173	Ø14	178

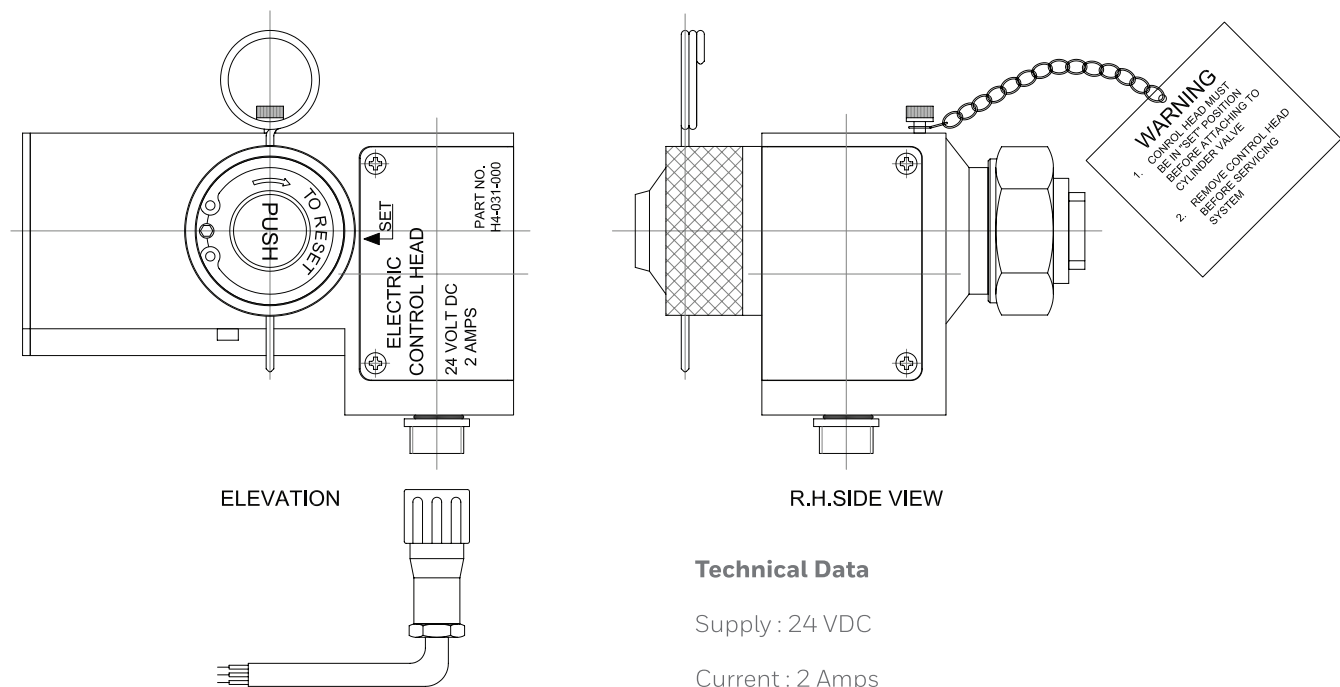


Electric Cum Manual Actuator (Electric Control Head)

Part Number – H4-031-000

The Electric control heads is an electromechanical device mounted on the master cylinder actuation port. On receiving a 24 VDC signal from the fire alarm panel or other similar source, the Electric control head gets actuated and triggers the master cylinder actuation port. It also houses a manual release plunger which can be used to manually trigger the cylinder actuation port.

The actuator also has a feature of supervisory switch. The switch is integrated such a way in electric control head that it will give signal to releasing control panel to indicate that the electric control head is removed from master cylinder actuation port.



Pressure Operated Control Head (Pneumatic Actuator)

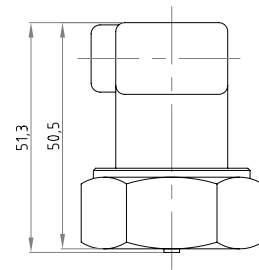
Part Number – H4-032-000

In multiple cylinder system, a pressure operated control head is attached to each slave cylinder at the valve actuation port. On the actuation of electric control head mounted on master cylinder, pressure from the master cylinder causes each pressure operated control head to open its attached cylinder valve pneumatically.

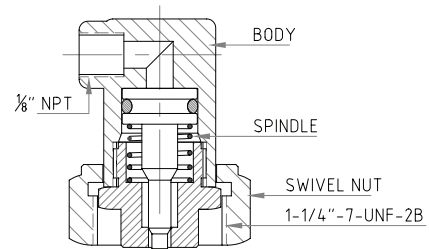
Technical Data

MOC : Brass

Thread Type : Female NPT 1-1/4"-&-UNC-2B



ELEVATION



SECTION A-A

ASSEMBLY OF PRESSURE OPERATED CONTROL HEAD

Master Cylinder Adapter Kit

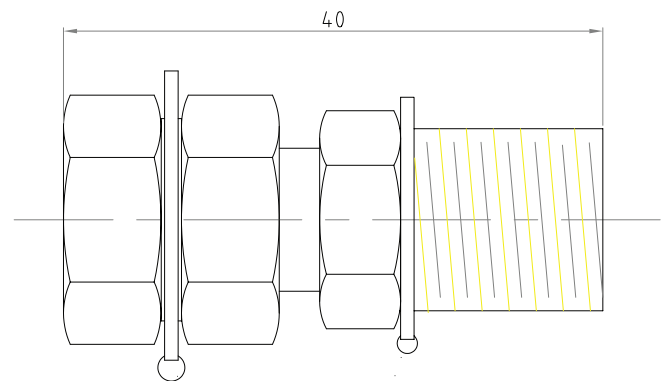
Part Number – H4-050-000

The master cylinder adapter kit provides a means of connecting a flexible actuation hose to the master and slave cylinder assembly. This enables system to actuate the Slave Clean Agent Cylinder.

Technical Data

MOC : Brass

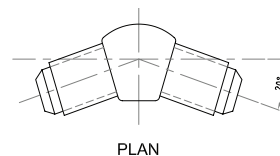
Thread Type : 1/4" Male NPT



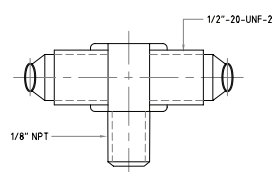
1/4" Pilot Actuation Male Tee and Elbow

Male Tee, Part Number – H4-051-000

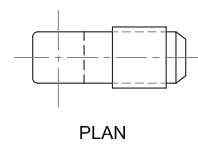
The male tee is primarily used in manifold system for connecting actuation hose from one slave cylinder to the next.



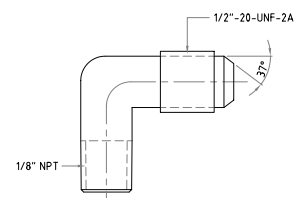
PLAN



ELEVATION



PLAN



ELEVATION

Male Elbow, Part Number – H4-052-000

The male elbow is used on the last slave cylinder in manifold system.

1-1/2" & 2" Manifold Check Valve

1-1/2" Valve Part Number H4-060-000

2" Valve Part Number H4-061-000

In a multiple cylinder arrangement where the master and slave cylinders share a common manifold or in a connected main/reserve arrangement, a manifold check valve must be placed between the discharge outlet and the discharge manifold. The manifold check valve prevents back flow from the manifold, should the system be inadvertently discharged.

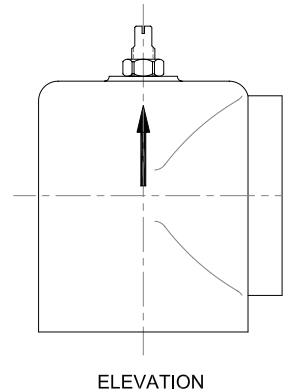
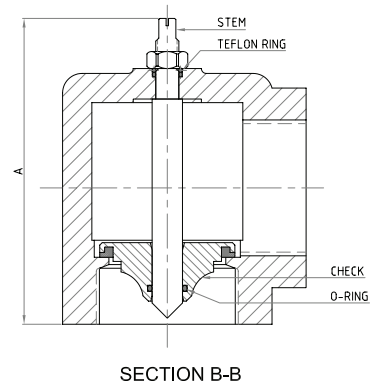
Note

Manifold Check valve to be installed in vertical position only. Please refer arrow mark during installation.

Technical Data

Valve Body : SS 316

Check : SS 316



180 & 360 Degree Nozzle

360° Nozzle Part Number H5-001-XXX

180° Nozzle Part Number H5-002-XXX

HFC-227ea Nozzles are available in two discharge pattern 180 & 360 degree.

Discharge nozzles have a NPT female pipe thread for attachment to the discharge piping network. The nozzles are selected based on the hazard to be protected to achieve the best flow rate and distribution of HFC-227ea in protected hazard area.

Part number / orifice for nozzle will be generated by HFC-227ea fire suppression system design software.

Technical Data

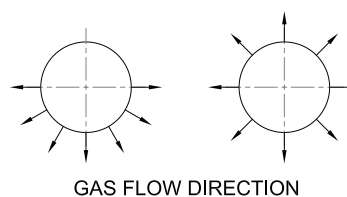
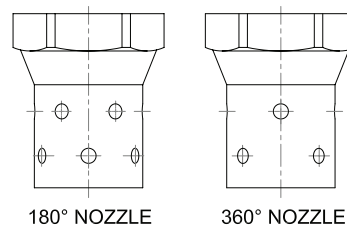
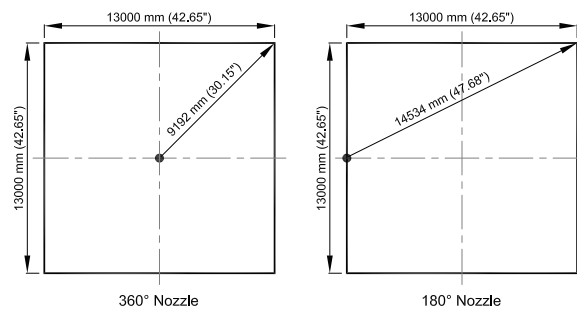
MOC : Brass

Thread Type : Female, NPT

Nozzle Type : 180 degree & 360 degree nozzle

Sizes : 15NB, 20NB, 25NB, 32NB, 40NB
& 50NB.

Nozzle Placement and Coverage :-



Manifold or Piping Agent Discharge Pressure Switch

Part Number H4-081-000

The discharge pressure switch is activated by pressure from the agent during discharge and can be used to signal a control panel that the system has discharged. The pressure switch incorporates a reset button which has to be depressed following a discharge.

Manifold Discharge Pressure Switch

Technical Data

Pressure Inlet Connection : 3/4" Male

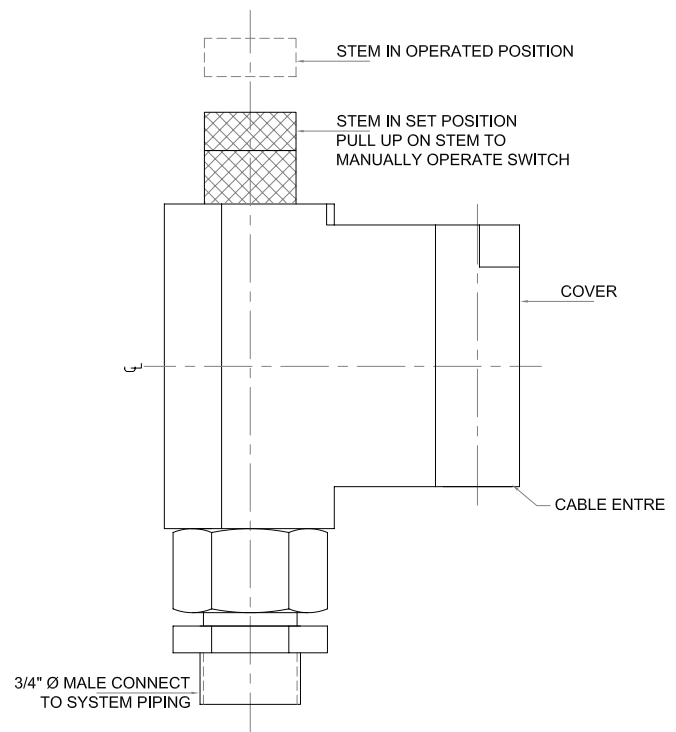
Switch Rating : 6 Amp

Housing : Aluminium

Switch Point : ± 52 PSI

Note

The preferred installation position for the discharge pressure switch is upright as described in the figure.



UL Listed 42 Bar HFC-227ea Clean Agent System

Fire Suppression System

General Information

HFC-227ea Clean Agent System is employed to protect critical installations formerly protected by Halon 1301.

These include:

- » Data Processing Centers
- » Telephone Switches
- » Process Control Rooms
- » Art and Historical Collections
- » Archive & Museums
- » Marine, Oil & Gas
- » Aerospace, Aviation & Military



HFC-227ea Fire Suppression Agent

Part Number – H1-120-000

HFC-227ea agent complies with NFPA Standard 2001 : standard for Clean Agent fire Extinguishing systems, EPA SNAP Program (Significant New Alternate Policy)

These agents are classified as suitable for use in occupied areas and are considered to have no ozone depleting potential (ODP)

HFC-227ea fire suppressant can be safely used where people are present.

Description

HFC-227ea systems reach extinguishing levels in 10 seconds or less, stopping ordinary combustible, electrical, and flammable liquid fires before they cause significant damage. That's the fastest fire protection available, period. When fire is extinguished this quickly, it means less damage, lower repair costs, and an extra margin of safety for people. It also means less downtime and disruption of business.

AGENT	CLASS A MEC	CLASS A DESIGN	CLASS B MEC	CLASS B DESIGN	CLASS C DESIGN
HFC-227EA	5.2	6.7	6.7	8.7	7.0
<i>NFPA 2001 Requirements For Minimum Values</i>					

CLASS B CONCENTRATION	
Flammable Liquid	Design Concentration (Vol%)
Acetone	9.0
Ethyl Acetate	8.9
N-Heptane	8.7
N-Hexane	9.0
Diesel Fuel	8.7
JP4	9.0
Transformer Oil	9.5

Physical & Chemical Properties

Empirical formulae.....	CF ₃ CHFCF ₃
IUPAC Designation.....	1,1,1,2,3,3,3,- Heptafluoropropane
ASHRAE Designation.....	HFC-227ea
Molecular Weight.....	170.03
Boiling Point at 1 Atm.....	2.6 °F (-16.4 °C)
Freezing Point.....	-204 °F (-131°C)
Ozone Depletion Potential.....	0
Atmospheric Lifetime.....	31-42 years
No Observed Adverse Effect Level.....	9 %
Lowest Observed Adverse.....	10.5%

ENVIRONMENTALLY FRIENDLY	
Description	HFC-227EA
Ozone Depletion Potential	0.0
Global Warming Potential	3220
Atmospheric Lifetime (Years)	31-42 years
Snap (Yes/No)	Yes

34, 80, 120 & 140 liter Capacity Seamless Cylinder - Standard Unit

PESO Approved Seamless cylinder of HFC-227ea Clean Agent System is used with 42 Bar (610 PSI) system.

SEAMLESS CYLINDER DATA - STANDARD UNIT					
Part Number	Capacity	Valve (NB)	Agent Fill Range (kg)	Height (mm)	Diameter (mm)
H1-42-34-000	34 L	1-1/2" (40NB)	16.4 to 38.1	1118	Ø 232
H1-42-80-000	80 L	1-1/2" (40NB)	38.5 to 89.7	1842	Ø 267
H1-42-120-000	120 L	1-1/2" (40NB)	57.7 to 134.6	1642	Ø 356
H1-42-140-000	140 L	1-1/2" (40NB)	67.3 to 157.0	1867	Ø 356

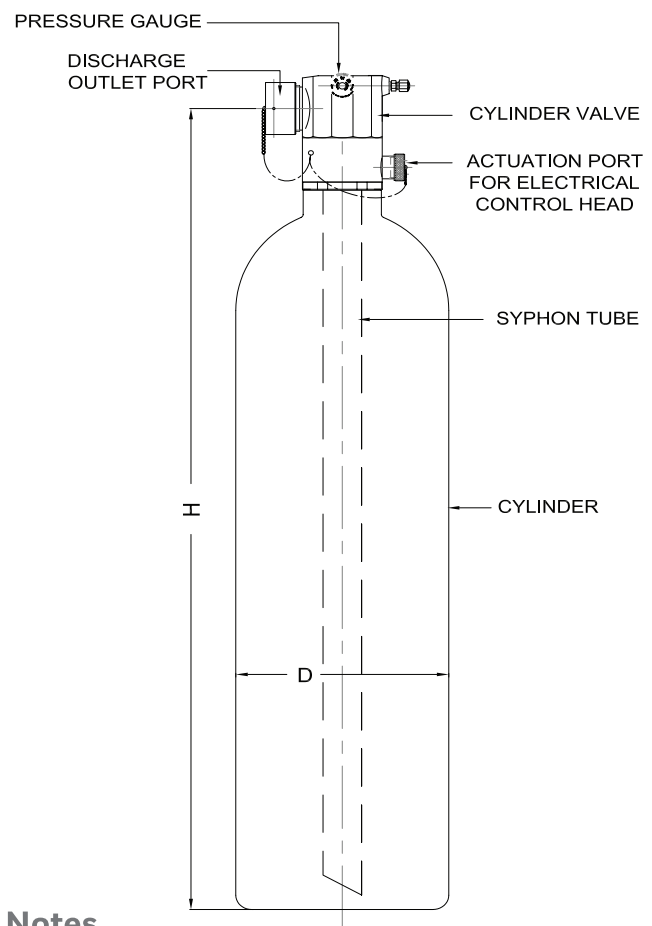
Storage Temperature

HFC-227ea is stored in cylinder as liquid, superpressurized with dry nitrogen to 42 bar at 21°C (610 PSIG at 70 °F)

Materials

Valve Body: Brass

Cylinder: Seamless type, manufactured and tested in accordance with IS 7285 Standard and approved by PESO for their use



Notes

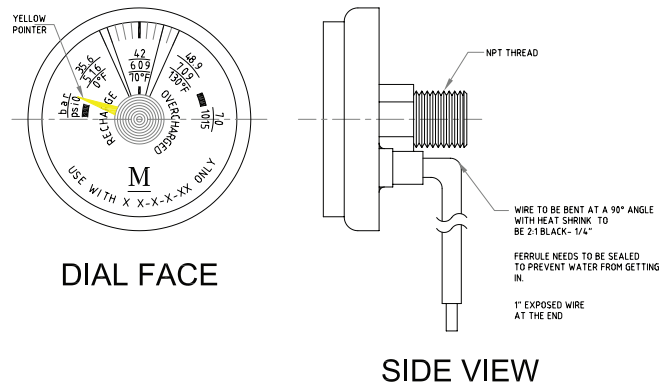
1. Clean Agent Cylinder must be installed in vertical position only.
2. Do not cover remove or deface caution label

34, 80, 120 & 140 liter Capacity Seamless Cylinder With Switch-in-Gauge Unit

The seamless cylinder is PESO approved for 42 Bar (610 PSI) system are used with HFC-227ea clean agent. It is also equipped with Switch-in-Gauge unit, designed to monitor health of cylinder pressure.

This 2 in 1 unit offers unique facility whereas we can monitor cylinder pressure locally and healthiness of cylinder can be monitored remotely via using Fire Alarm Panel interface unit or any other control panel.

For ordering purpose please refer part number given below. This switch will come as a package along with Cylinder Valve Assembly.



SEAMLESS CYLINDER DATA - SWITCH-IN-GAUGE UNIT					
Part Number	Capacity	Valve (NB)	Agent Fill Range (kg)	Height (mm)	Diameter (mm)
H1-42-34-002	34 L	1-1/2" (40NB)	16.4 to 38.1	1118	Ø 232
H1-42-80-002	80 L	1-1/2" (40NB)	38.5 to 89.7	1842	Ø 267
H1-42-120-002	120 L	1-1/2" (40NB)	57.7 to 134.6	1642	Ø 356
H1-42-140-002	140 L	1-1/2" (40NB)	67.3 to 157.0	1867	Ø 356

1-1/2" & 2" Flexible Discharge Hose

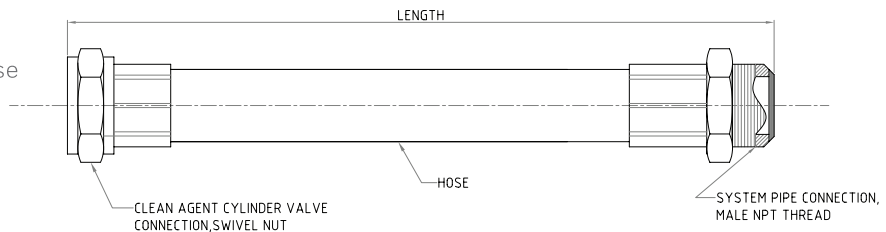
Flexible discharge hose is used to connect cylinder valve to the pipeline or the manifold of the manifold check valve.

Technical Data

Hose MOC : Reinforce Rubber Hose

Fitting MOC : Carbon Steel

Working Pressure : 1-1/2" (1305 PSIG)



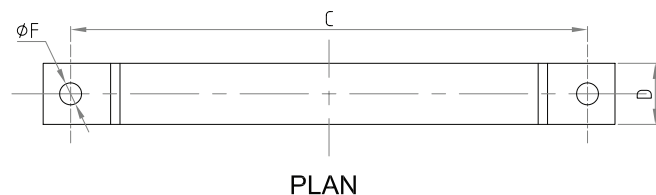
DISCHARGE HOSE DATA FOR IS SEAMLESS CYLINDER				
Part Number	Hose Size	Use With Cylinder Capacity	Length	Minimum Bending Radius
H4-001-000	Ø 1-1/2" (40NB)	34 L (Use With 40NB Cylinder Valve)	23"	10.5"

Cylinder Mounting Strap

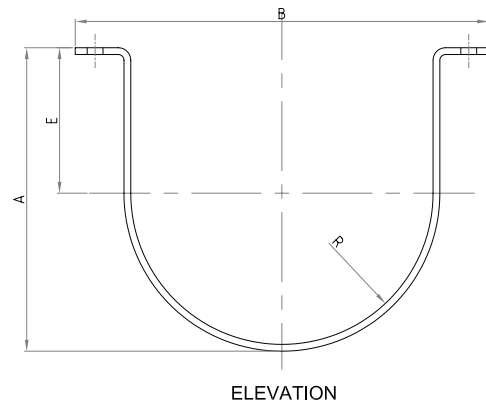
Cylinder straps are used to mount the clean agent cylinders in vertical position.

Technical Data

Body : Mild Steel.



ORDERING INFORMATION								
Part Number	Cyl. Size	A	B	C	D	E	F	R
		mm	mm	mm	mm	mm	mm	mm
H4-011-000	34 L	233	330	295	39	111	Ø14	116
H4-012-000	80 L	268	365	330	39	128	Ø14	133
H4-013-000	120 & 140 L	357	454	419	39	173	Ø14	178

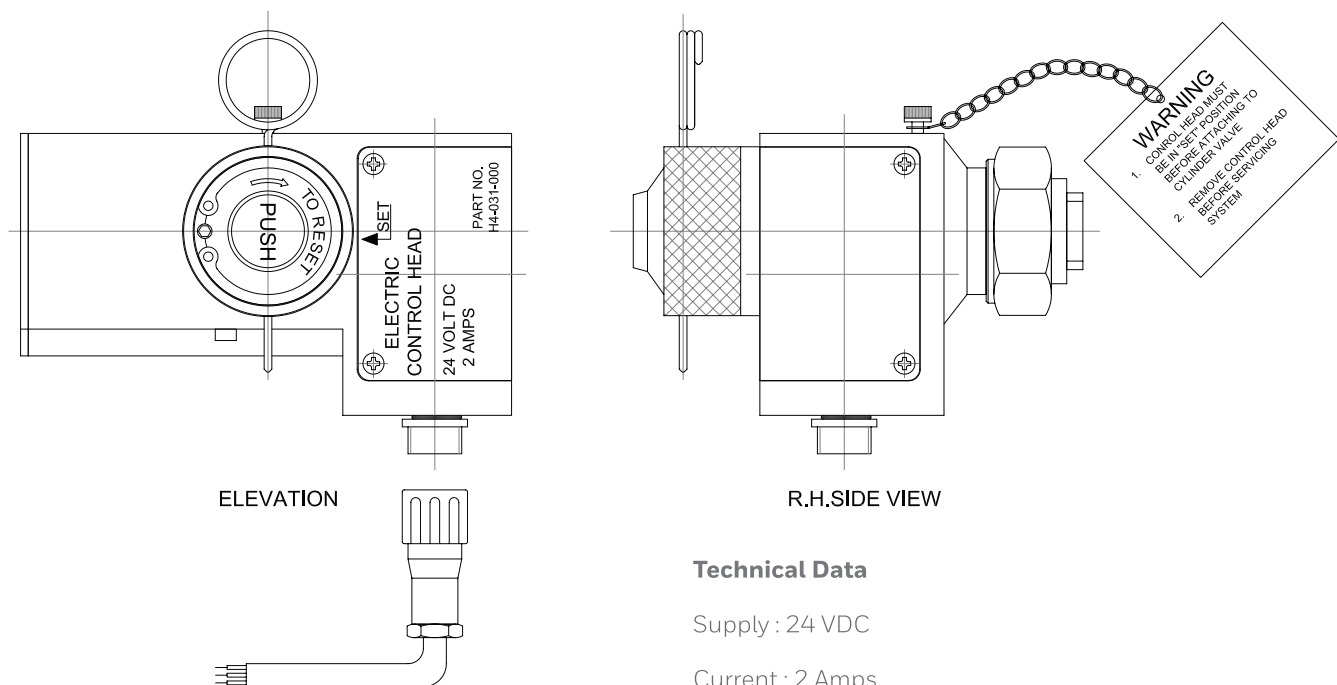


Electric Cum Manual Actuator (Electric Control Head)

Part Number – H4-031-000

The Electric control heads is an electromechanical device mounted on the master cylinder actuation port. On receiving a 24 VDC signal from the fire alarm panel or other similar source, the Electric control head gets actuated and triggers the master cylinder actuation port. It also houses a manual release plunger which can be used to manually trigger the cylinder actuation port.

The actuator also has a feature of supervisory switch. The switch is integrated such a way in electric control head that it will give signal to releasing control panel to indicate that the electric control head is removed from master cylinder actuation port.



Technical Data

Supply : 24 VDC

Current : 2 Amps

Pressure Operated Control Head (Pneumatic Actuator)

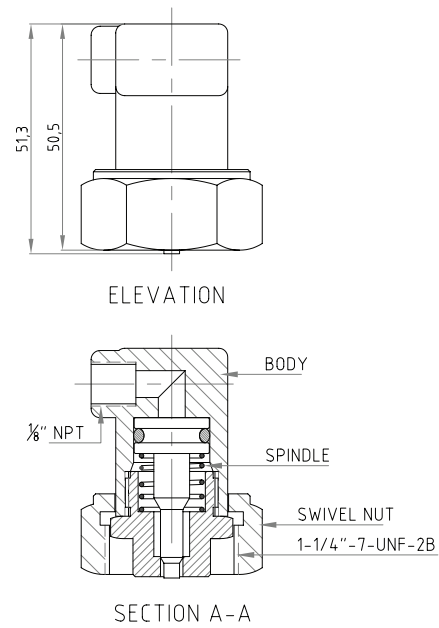
Part Number – H4-032-000

In multiple cylinder system, a pressure operated control head is attached to each slave cylinder at the valve actuation port. On the actuation of electric control head mounted on master cylinder, pressure from the master cylinder causes each pressure operated control head to open its attached cylinder valve pneumatically.

Technical Data

MOC : Brass

Thread Type : Female NPT 1-1/4"-&-UNC-2B



ASSEMBLY OF PRESSURE OPERATED CONTROL HEAD

Master Cylinder Adapter Kit

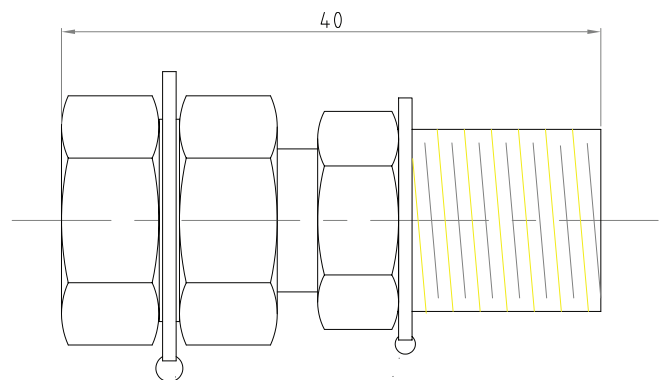
Part Number – H4-050-000

The master cylinder adapter kit provides a means of connecting a flexible actuation hose to the master and slave cylinder assembly. This enables system to actuate the Slave Clean Agent Cylinder.

Technical Data

MOC : Brass

Thread Type : 1/4" Male NPT



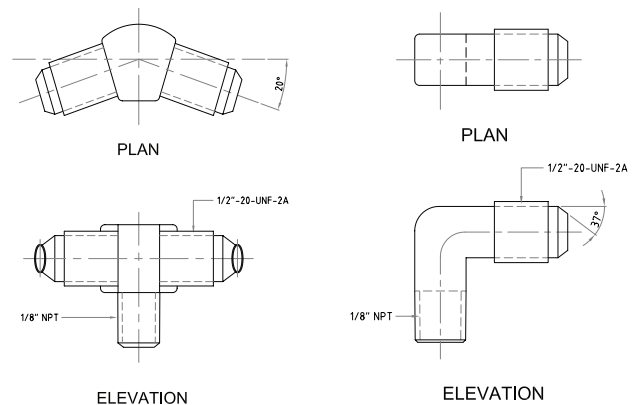
1/4" Pilot Actuation Male Tee and Elbow

Male Tee, Part Number – H4-051-000

The male tee is primarily used in manifold system for connecting actuation hose from one slave cylinder to the next.

Male Elbow, Part Number – H4-052-000

The male elbow is used on the last slave cylinder in manifold system.



1-1/2" Manifold Check Valve

1-1/2" Valve Part Number H4-060-000

In a multiple cylinder arrangement where the master and slave cylinders share a common manifold or in a connected main/reserve arrangement, a manifold check valve must be placed between the discharge outlet and the discharge manifold. The manifold check valve prevents back flow from the manifold, should the system be inadvertently discharged.

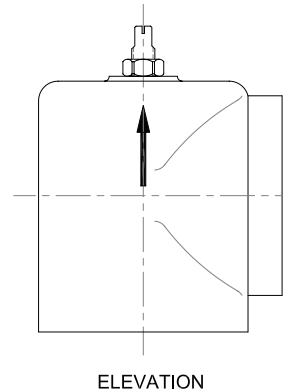
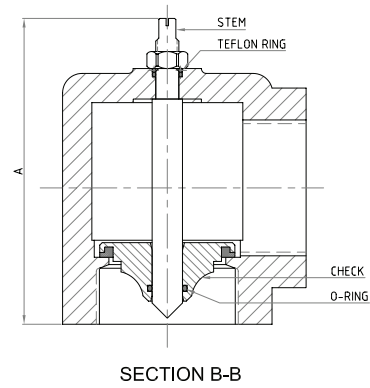
Note

Manifold Check valve to be installed in vertical position only. Please refer arrow mark during installation.

Technical Data

Valve Body : SS 316

Check : SS 316



180 & 360 Degree Nozzle

360° Nozzle Part Number H5-001-XXX

180° Nozzle Part Number H5-002-XXX

HFC-227ea Nozzles are available in two discharge patterns 180 & 360 degree.

Discharge nozzles have a NPT female pipe thread for attachment to the discharge piping network. The nozzles are selected based on the hazard to be protected to achieve the best flow rate and distribution of HFC-227ea in protected hazard area.

Part number / orifice for nozzle will be generated by HFC-227ea fire suppression system design software.

Technical Data

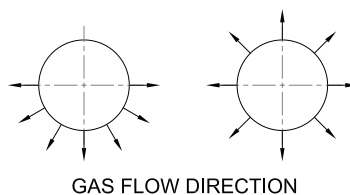
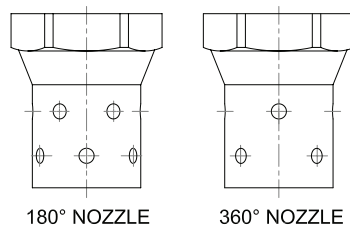
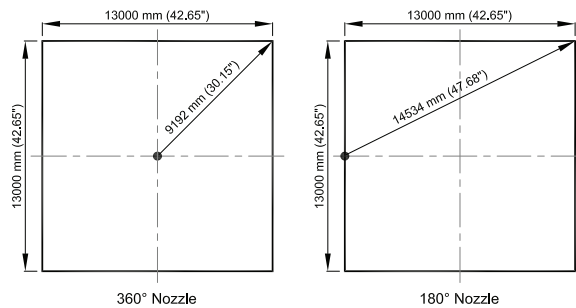
MOC : Brass

Thread Type : Female, NPT

Nozzle Type : 180 degree & 360 degree nozzle

Sizes : 15NB, 20NB, 25NB, 32NB, 40NB & 50NB.

Nozzle Placement and Coverage :-



Manifold or Piping Agent Discharge Pressure Switch

Part Number H4-081-000

The discharge pressure switch is activated by pressure from the agent during discharge and can be used to signal a control panel that the system has discharged. The pressure switch incorporates a reset button which has to be depressed following a discharge.

Manifold Discharge Pressure Switch

Technical Data

Pressure Inlet Connection : 3/4" Male

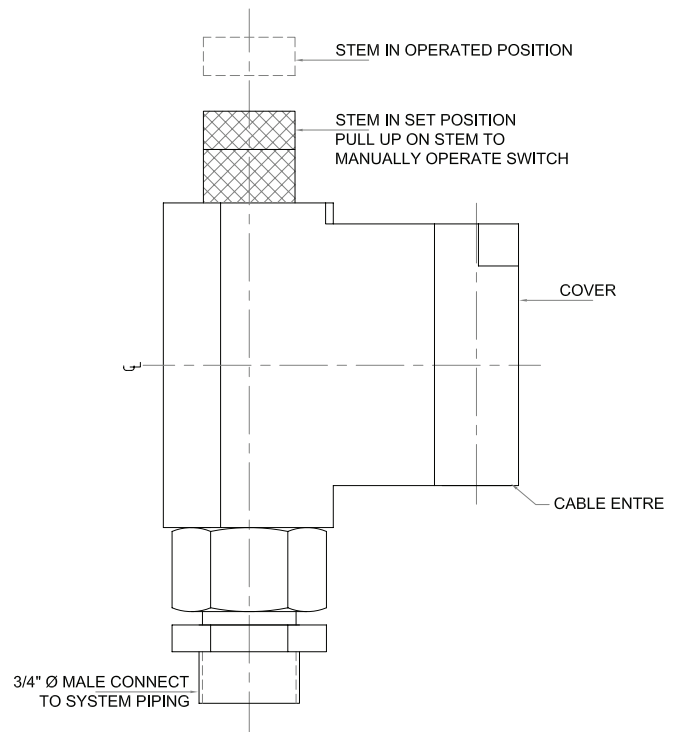
Switch Rating : 6 Amp

Housing : Aluminium

Switch Point : \pm 52 PSI

Note

The preferred installation position for the discharge pressure switch is upright as described in the figure.



UL Listed 25 Bar FK 1230 (FK-5-1-12) Clean Agent System

Fire Suppression System

General Information

FK 1230 (FK-5-1-12) Clean Agent System is employed to protect critical installations formerly protected by Halon 1301.

These include:

- » Data Processing Centers
- » Telephone Switches
- » Process Control Rooms
- » Art and Historical Collections
- » Archive & Museums
- » Marine, Oil & Gas
- » Aerospace, Aviation & Military



FK 1230 (FK-5-1-12) Fire Suppression Agent

Part Number – H2-120-000

FK 1230 (FK-5-1-12) agent complies with NFPA Standard 2001 : standard for Clean Agent fire Extinguishing systems, EPA SNAP Program (Significant New Alternate Policy)

These agents are classified as suitable for use in occupied areas and are considered to have no ozone depleting potential (ODP)

FK 1230 (FK-5-1-12) fire suppressant can be safely used where people are present.

Description

FK 1230 (FK-5-1-12) systems reach extinguishing levels in 10 seconds or less, stopping ordinary combustible, electrical, and flammable liquid fires before they cause significant damage. That's the fastest fire protection available, period. When fire is extinguished this quickly, it means less damage, lower repair costs, and an extra margin of safety for people. It also means less downtime and disruption of business.

AGENT	CLASS A MEC	CLASS A DESIGN	CLASS B MEC	CLASS B DESIGN	CLASS C DESIGN
FK-5-1-12	3.3	4.0	4.5	5.9	4.5
<i>NFPA 2001 Requirements For Minimum Values</i>					

CLASS B CONCENTRATION	
Flammable Liquid	Design Concentration (Vol%)
Acetone	5.59
Ethanol	7.15
N-Heptane	5.85
Transformer Oil	5.85
Diesel Fuel	4.42
JP4	9.0
Prrrolidine	6.11

Physical & Chemical Properties

Empirical formulae..... $CF_3CF_2C(O)CF_3$ ₂
 IUPAC DesignationDodecafluoro-2-methylpentan-3one
 ASHRAE Designation.....FK-5-1-12
 Molecular Weight.....316.04
 Boiling Point at 1 Atm.....49.2 °C (120.6 °F)
 Freezing Point.....-108.0°C (-162.4°F)
 Ozone Depletion Potential.....0
 Atmospheric Lifetime.....5 days
 No Observed Adverse Effect Level.....10 %
 Lowest Observed Adverse.....>10%

ENVIRONMENTALLY FRIENDLY	
Description	FK-5-1-12 (FK 1230)
Ozone Depletion Potential	0.0
Global Warming Potential	1
Atmospheric Lifetime (Years)	5 Days
Snap (Yes/No)	Yes

34, 80, 120 & 140 liter Capacity Seamless Cylinder - Standard Unit

PESO Approved Seamless cylinder of FK-1-5-12 Clean Agent System are used with 25 Bar (360 PSI) system.

SEAMLESS CYLINDER DATA - STANDARD UNIT					
Part Number	Capacity	Valve (NB)	Agent Fill Range (kg)	Height (mm)	Diameter (mm)
H2-25-34-000	34 L	1-1/2" (40NB)	16.4 to 38.1	1118	Ø 232
H2-25-80-000	80 L	2" (50NB)	38.5 to 89.7	1842	Ø 267
H2-25-120-000	120 L	2" (50NB)	57.7 to 134.6	1642	Ø 356
H2-25-140-000	140 L	2" (50NB)	67.3 to 157.0	1867	Ø 356

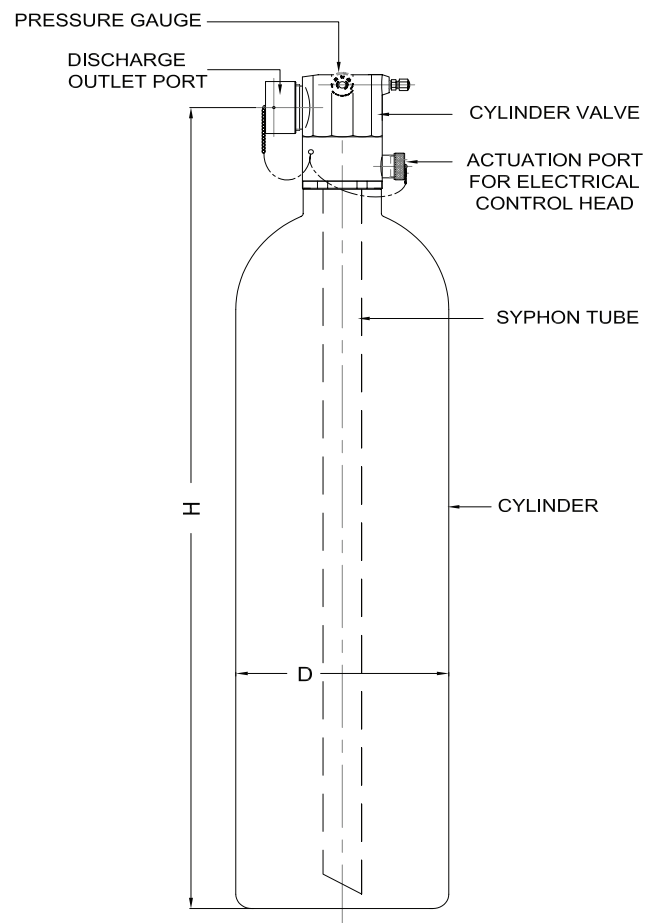
Storage Temperature

FK 1230 (FK-5-1-12) is stored in cylinder as liquid, superpressurized with dry nitrogen to 25 bar at 21°C (360 PSIG at 70 °F)

Materials

Valve Body: Brass

Cylinder: Seamless type, manufactured and tested in accordance with IS 7285 Standard and approved by PESO for their use



Notes

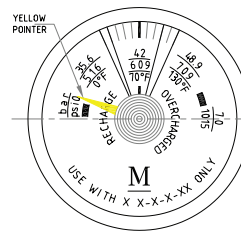
- Clean Agent Cylinder must be installed in vertical position only.
- Do not cover, remove or deface caution label

34, 80, 120 & 140 liter Capacity Seamless Cylinder With Switch-in-Gauge Unit

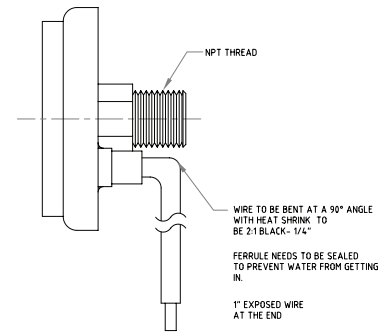
The seamless cylinder is PESO approved for 25 Bar (360 PSI) system are used with FK 1230 (FK-5-1-12) clean agent. It is also equipped with Switch-in-Gauge unit, design to monitor health of cylinder pressure.

This 2 in 1 unit offers unique facility whereas we can monitor cylinder pressure locally and healthiness of cylinder can be monitored remotely via using Fire Alarm Panel interface unit or any other control panel.

For ordering purpose please refer part number given below. This switch will come as a package along with Cylinder Valve Assembly.



DIAL FACE



SIDE VIEW

SEAMLESS CYLINDER DATA - SWITCH-IN-GAUGE UNIT					
Part Number	Capacity	Valve (NB)	Agent Fill Range (kg)	Height (mm)	Diameter (mm)
H2-25-34-002	34 L	1-1/2" (40NB)	16.4 to 38.1	1118	Ø 232
H2-25-80-002	80 L	2" (50NB)	38.5 to 89.7	1842	Ø 267
H2-25-120-002	120 L	2" (50NB)	57.7 to 134.6	1642	Ø 356
H2-25-140-002	140 L	2" (50NB)	67.3 to 157.0	1867	Ø 356

1-1/2" & 2" Flexible Discharge Hose

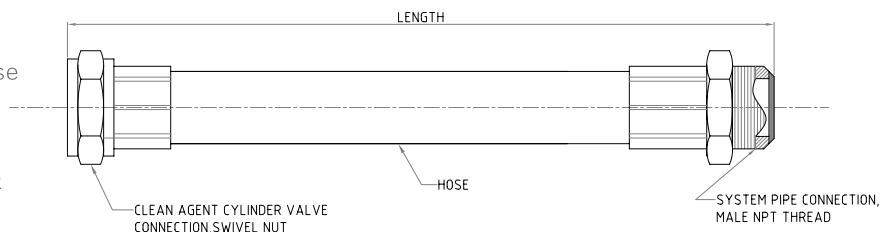
Flexible discharge hose is used to connect cylinder valve to the pipeline or the manifold of the manifold check valve.

Technical Data

Hose MOC : Reinforce Rubber Hose

Fitting MOC : Carbon Steel

Working Pressure : 1-1/2" (1305 PSIG) &
: 2" (1160 PSIG)



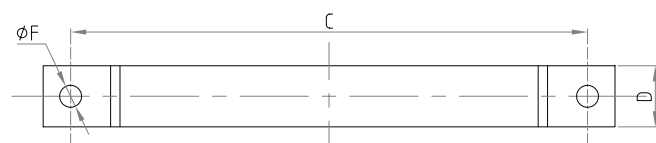
DISCHARGE HOSE DATA FOR IS SEAMLESS CYLINDER				
Part Number	Hose Size	Use With Cylinder Capacity	Length	Minimum Bending Radius
H4-001-000	Ø 1-1/2" (40NB)	34 L (Use With 40NB Cylinder Valve)	23"	10.5"
H4-002-000	Ø 2" (50NB)	80, 120 & 140 L (Use With 50NB Cylinder Valve)	29"	13.5"

Cylinder Mounting Strap

Cylinder straps are used to mount the clean agent cylinders in vertical position.

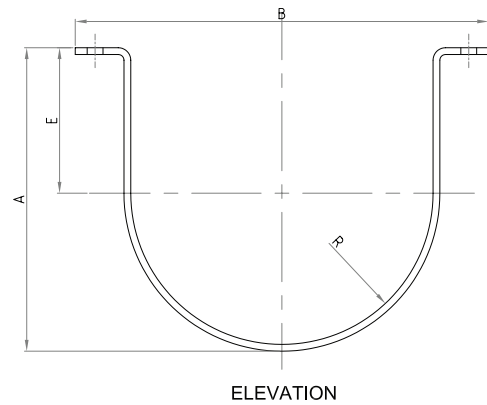
Technical Data

Body : Mild Steel.



PLAN

ORDERING INFORMATION								
Part Number	Cyl. Size	A	B	C	D	E	F	R
		mm	mm	mm	mm	mm	mm	mm
H4-011-000	34 L	233	330	295	39	111	Ø14	116
H4-012-000	80 L	268	365	330	39	128	Ø14	133
H4-013-000	120 & 140 L	357	454	419	39	173	Ø14	178

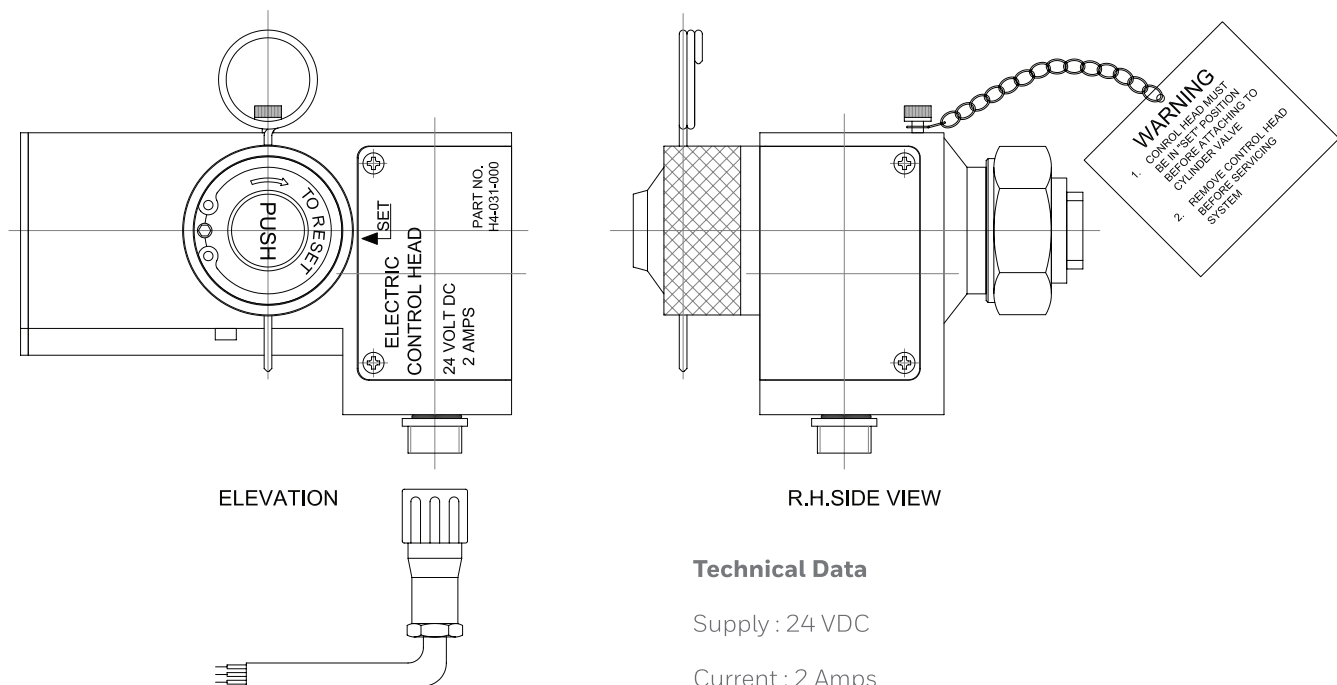


Electric Cum Manual Actuator (Electric Control Head)

Part Number – H4-031-000

The Electric control heads is an electromechanical device mounted on the master cylinder actuation port. On receiving a 24 VDC signal from the fire alarm panel or other similar source, the Electric control head gets actuated and triggers the master cylinder actuation port. It also houses a manual release plunger which can be used to manually trigger the cylinder actuation port.

The actuator also has a feature of supervisory switch. The switch is integrated such a way in electric control head that it will give signal to releasing control panel to indicate that the electric control head is removed from master cylinder actuation port.



Pressure Operated Control Head (Pneumatic Actuator)

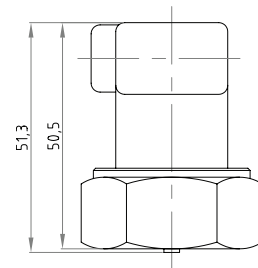
Part Number – H4-032-000

In multiple cylinder system, a pressure operated control head is attached to each slave cylinder at the valve actuation port. On the actuation of electric control head mounted on master cylinder, pressure from the master cylinder causes each pressure operated control head to open its attached cylinder valve pneumatically.

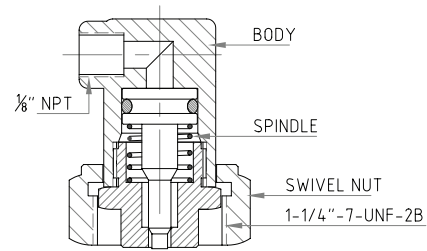
Technical Data

MOC : Brass

Thread Type : Female NPT 1-1/4" -7-UNC-2B



ELEVATION



SECTION A-A

ASSEMBLY OF PRESSURE OPERATED CONTROL HEAD

Master Cylinder Adapter Kit

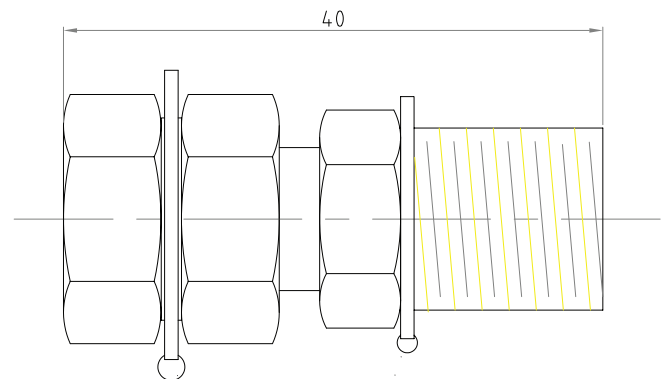
Part Number – H4-050-000

The master cylinder adapter kit provides a means of connecting a flexible actuation hose to the master and slave cylinder assembly. This enables system to actuate the Slave Clean Agent Cylinder.

Technical Data

MOC : Brass

Thread Type : 1/4" Male NPT



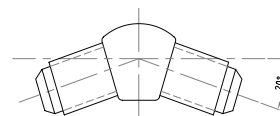
1/4" Pilot Actuation Male Tee and Elbow

Male Tee, Part Number – H4-051-000

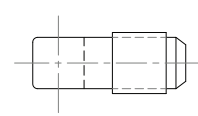
The male tee is primarily used in manifold system for connecting actuation hose from one slave cylinder to the next.

Male Elbow, Part Number – H4-052-000

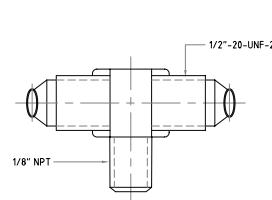
The male elbow is used on the last slave cylinder in manifold system.



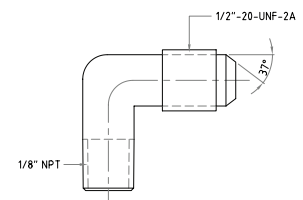
PLAN



PLAN



ELEVATION



ELEVATION

1-1/2" & 2" Manifold Check Valve

1-1/2" Valve Part Number H4-060-000

2" Valve Part Number H4-061-000

In a multiple cylinder arrangement where the master and slave cylinders share a common manifold or in a connected main/reserve arrangement, a manifold check valve must be placed between the discharge outlet and the discharge manifold. The manifold check valve prevents back flow from the manifold, should the system be inadvertently discharged.

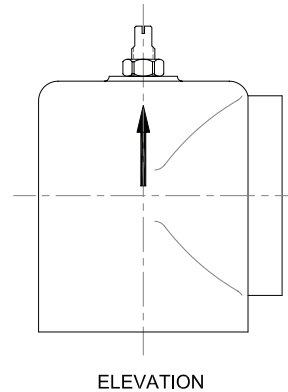
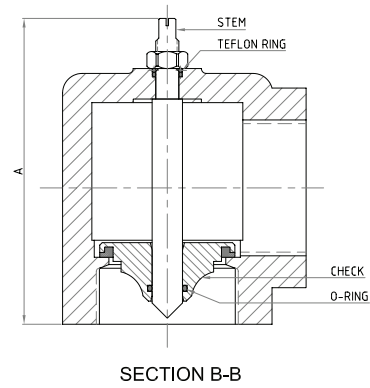
Note

Manifold Check valve to be installed in vertical position only. Please refer arrow mark during installation.

Technical Data

Valve Body : SS 316

Check : SS 316



180 & 360 Degree Nozzle

360° Nozzle Part Number H5-001-XXX

180° Nozzle Part Number H5-002-XXX

FK 1230 (FK-5-1-12) Nozzles are available in two discharge patterns 180 & 360 degree.

Discharge nozzles have a NPT female pipe thread for attachment to the discharge piping network. The nozzles are selected based on the hazard to be protected to achieve the best flow rate and distribution of FK 1230 (FK-5-1-12) in protected hazard area.

Part number / orifice for nozzle will be generated by FK 1230 (FK-5-1-12) fire suppression system design software.

Technical Data

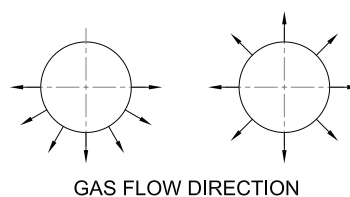
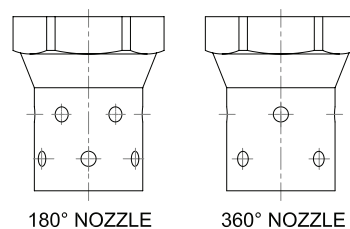
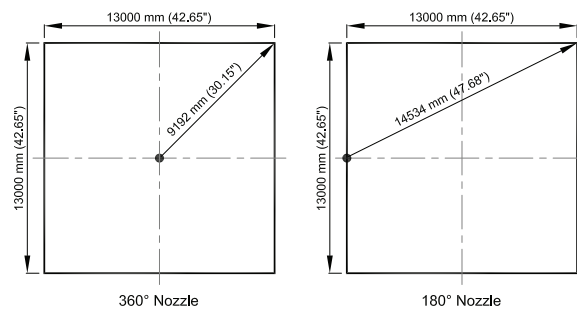
MOC : Brass

Thread Type : Female, NPT

Nozzle Type : 180 degree & 360 degree nozzle

Sizes : 15NB, 20NB, 25NB, 32NB, 40NB
& 50NB.

Nozzle Placement and Coverage :-



Manifold or Piping Agent Discharge Pressure Switch

Part Number H4-081-000

The discharge pressure switch is activated by pressure from the agent during discharge and can be used to signal a control panel that the system has discharged. The pressure switch incorporates a reset button which has to be depressed following a discharge.

Manifold Discharge Pressure Switch

Technical Data

Pressure Inlet Connection : 3/4" Male

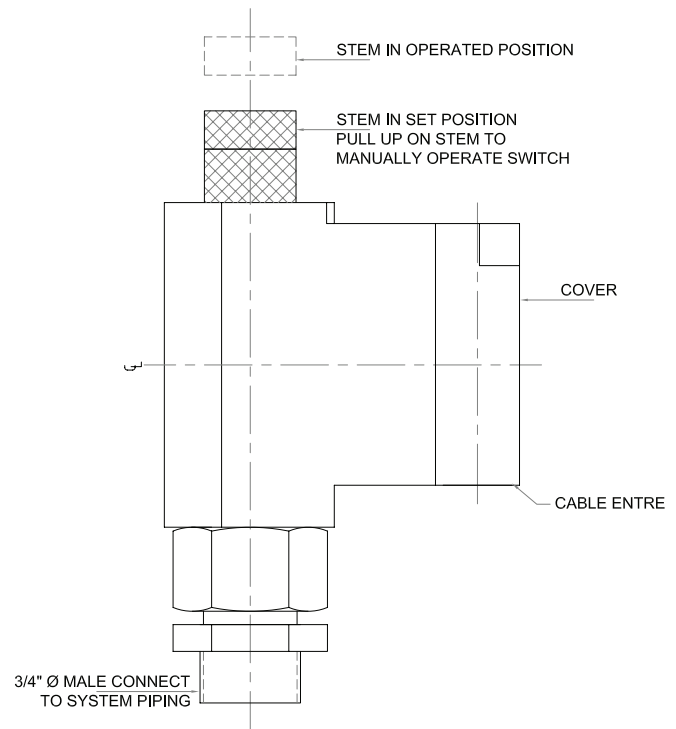
Switch Rating : 6 Amp

Housing : Aluminium

Switch Point : ± 52 PSI

Note

The preferred installation position for the discharge pressure switch is upright as described in the figure.



UL Listed 42 Bar FK 1230 (FK-5-1-12) Clean Agent System

Fire Suppression System

General Information

FK 1230 (FK-5-1-12) Clean Agent System is employed to protect critical installations formerly protected by Halon 1301.

These include:

- » Data Processing Centers
- » Telephone Switches
- » Process Control Rooms
- » Art and Historical Collections
- » Archive & Museums
- » Marine, Oil & Gas
- » Aerospace, Aviation & Military



FK 1230 (FK-5-1-12) Fire Suppression Agent

Part Number – H1-120-000

FK 1230 (FK-5-1-12) agent complies with NFPA Standard 2001 : standard for Clean Agent fire Extinguishing systems, EPA SNAP Program (Significant New Alternate Policy)

These agents are classified as suitable for use in occupied areas and are considered to have no ozone depleting potential (ODP)

FK 1230 (FK-5-1-12) fire suppressant can be safely used where people are present.

Description

FK 1230 (FK-5-1-12) systems reach extinguishing levels in 10 seconds or less, stopping ordinary combustible, electrical, and flammable liquid fires before they cause significant damage. That's the fastest fire protection available, period. When fire is extinguished this quickly, it means less damage, lower repair costs, and an extra margin of safety for people. It also means less downtime and disruption of business.

AGENT	CLASS A MEC	CLASS A DESIGN	CLASS B MEC	CLASS B DESIGN	CLASS C DESIGN
FK-5-1-12	3.3	4.0	4.5	5.9	4.5
<i>NFPA 2001 Requirements For Minimum Values</i>					

CLASS B CONCENTRATION	
Flammable Liquid	Design Concentration (Vol%)
Acetone	5.59
Ethanol	7.15
N-Heptane	5.85
Transformer Oil	5.85
Diesel Fuel	4.42
JP4	9.0
Prrrolidine	6.11

Physical & Chemical Properties

Empirical formulae..... $CF_3CF_2C(O)CF_3$ ₂
 IUPAC DesignationDodecafluoro-2-methylpentan-3one
 ASHRAE Designation.....FK-5-1-12
 Molecular Weight.....316.04
 Boiling Point at 1 Atm.....49.2 °C (120.6 °F)
 Freezing Point.....-108.0°C (-162.4°F)
 Ozone Depletion Potential.....0
 Atmospheric Lifetime.....5 days
 No Observed Adverse Effect Level.....10 %

Environmentally Friendly	
Description	FK-5-1-12 (FK 1230)
Ozone Depletion Potential	0.0
Global Warming Potential	1
Atmospheric Lifetime (Years)	5 Days
Snap (Yes/No)	Yes

34, 80, 120 & 140 liter Capacity Seamless Cylinder - Standard Unit

PESO Approved Seamless cylinder of FK 1230 (FK-5-1-12) Clean Agent System are used with 42 Bar (610 PSI) system.

SEAMLESS CYLINDER DATA - STANDARD UNIT					
Part Number	Capacity	Valve (NB)	Agent Fill Range (kg)	Height (mm)	Diameter (mm)
H2-42-34-000	34 L	1-1/2" (40NB)	16.4 to 38.1	1118	Ø 232
H2-42-80-000	80 L	1-1/2" (40NB)	38.5 to 89.7	1842	Ø 267
H2-42-120-000	120 L	1-1/2" (40NB)	57.7 to 134.6	1642	Ø 356
H2-42-140-000	140 L	1-1/2" (40NB)	67.3 to 157.0	1867	Ø 356

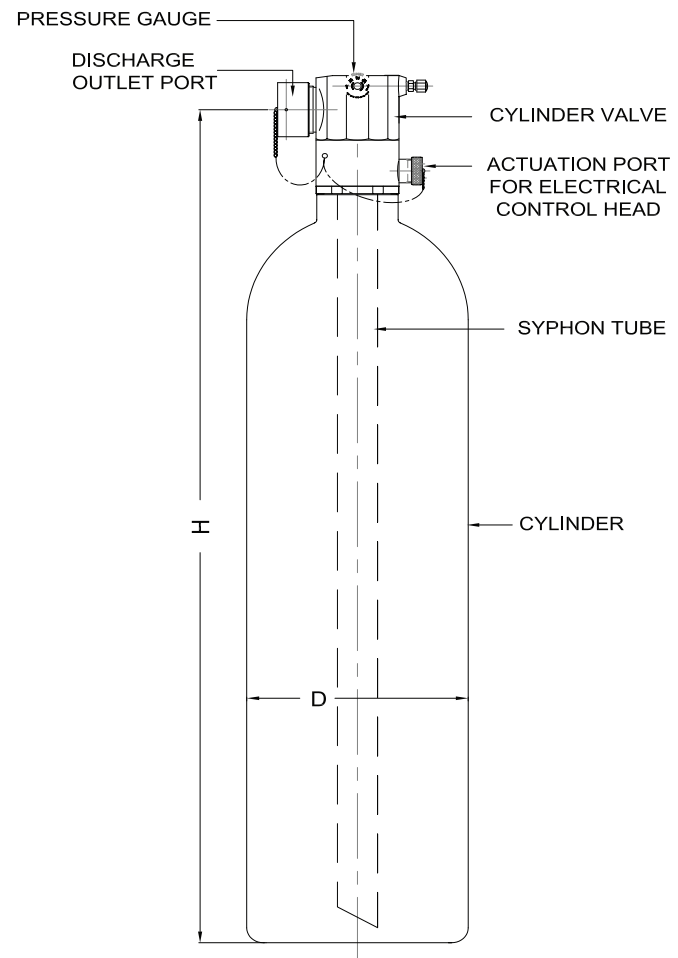
Storage Temperature

FK 1230 (FK-5-1-12) is stored in cylinder as liquid, superpressurized with dry nitrogen to 42 bar at 21°C (610 PSIG at 70 °F)

Materials

Valve Body: Brass

Cylinder: Seamless type, manufactured and tested in accordance with IS 7285 Standard and approved by PESO for their use



Notes

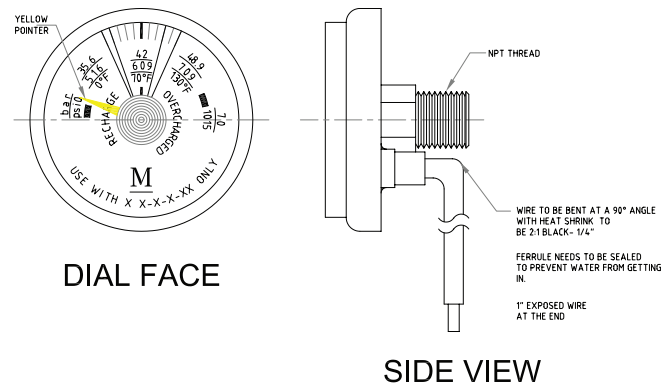
1. Clean Agent Cylinder must be installed in vertical position only.
2. Do not cover remove or deface caution label

34, 80, 120 & 140 liter Capacity Seamless Cylinder With Switch-in-Gauge Unit

The seamless cylinder is PESO approved for 42 Bar (610 PSI) system are used with FK 1230 (FK-5-1-12) clean agent. It is also equipped with Switch-in-Gauge unit, design to monitor health of cylinder pressure.

This 2 in 1 unit offers unique facility whereas we can monitor cylinder pressure locally and healthiness of cylinder can be monitored remotely via using Fire Alarm Panel interface unit or any other control panel.

For ordering purpose please refer part number given below. This switch will come as a package along with Cylinder Valve Assembly.



SEAMLESS CYLINDER DATA - SWITCH-IN-GAUGE UNIT					
Part Number	Capacity	Valve (NB)	Agent Fill Range (kg)	Height (mm)	Diameter (mm)
H2-42-34-002	34 L	1-1/2" (40NB)	16.4 to 38.1	1118	Ø 232
H2-42-80-002	80 L	1-1/2" (40NB)	38.5 to 89.7	1842	Ø 267
H2-42-120-002	120 L	1-1/2" (40NB)	57.7 to 134.6	1642	Ø 356
H2-42-140-002	140 L	1-1/2" (40NB)	67.3 to 157.0	1867	Ø 356

1-1/2" & 2" Flexible Discharge Hose

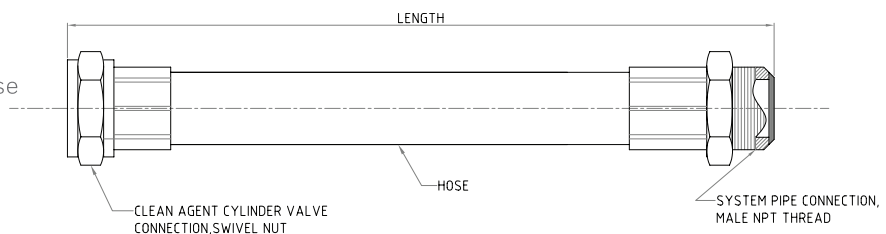
Flexible discharge hose is used to connect cylinder valve to the pipeline or the manifold of the manifold check valve.

Technical Data

Hose MOC : Reinforce Rubber Hose

Fitting MOC : Carbon Steel

Working Pressure : 1-1/2" (1305 PSIG)



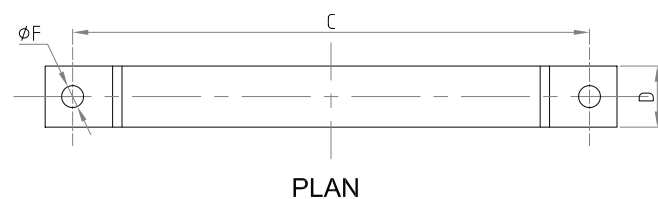
DISCHARGE HOSE DATA FOR IS SEAMLESS CYLINDER				
Part Number	Hose Size	Use With Cylinder Capacity	Length	Minimum Bending Radius
H4-001-000	Ø 1-1/2" (40NB)	34 L (Use With 40NB Cylinder Valve)	23"	10.5"

Cylinder Mounting Strap

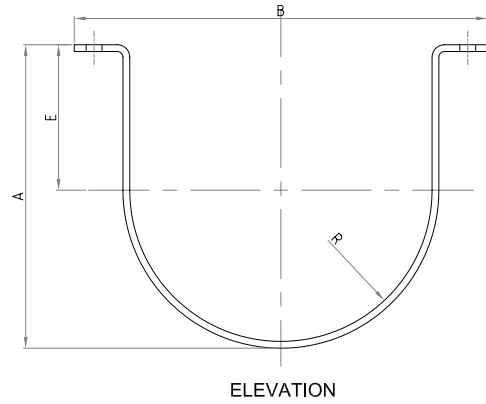
Cylinder straps are used to mount the clean agent cylinders in vertical position.

Technical Data

Body : Mild Steel.



ORDERING INFORMATION								
Part Number	Cyl. Size	A	B	C	D	E	F	R
		mm	mm	mm	mm	mm	mm	mm
H4-011-000	34 L	233	330	295	39	111	Ø14	116
H4-012-000	80 L	268	365	330	39	128	Ø14	133
H4-013-000	120 & 140 L	357	454	419	39	173	Ø14	178

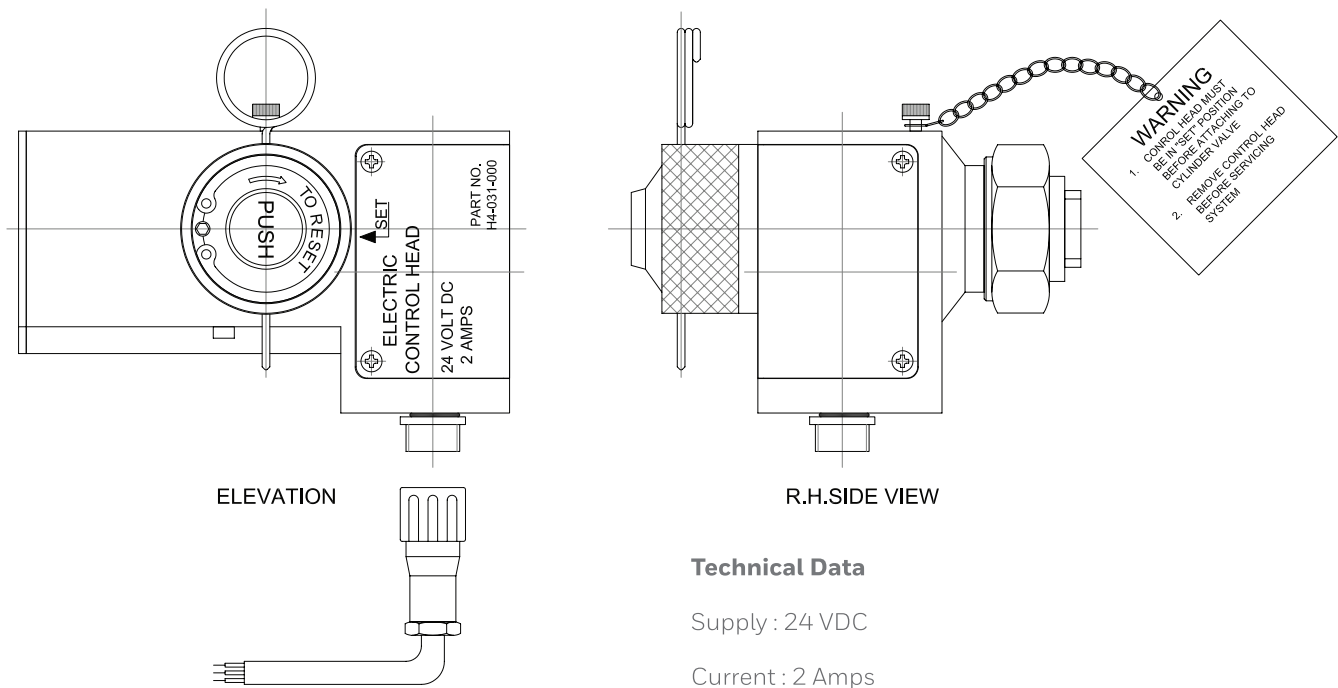


Electric Cum Manual Actuator (Electric Control Head)

Part Number – H4-031-000

The Electric control heads is an electromechanical device mounted on the master cylinder actuation port. On receiving a 24 VDC signal from the fire alarm panel or other similar source, the Electric control head gets actuated and triggers the master cylinder actuation port. It also houses a manual release plunger which can be used to manually trigger the cylinder actuation port.

The actuator also has a feature of supervisory switch. The switch is integrated such a way in electric control head that it will give signal to releasing control panel to indicate that the electric control head is removed from master cylinder actuation port.



Pressure Operated Control Head (Pneumatic Actuator)

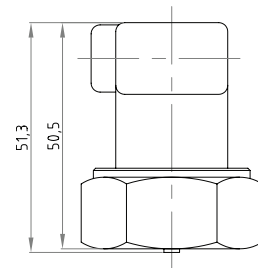
Part Number – H4-032-000

In multiple cylinder system, a pressure operated control head is attached to each slave cylinder at the valve actuation port. On the actuation of electric control head mounted on master cylinder, pressure from the master cylinder causes each pressure operated control head to open its attached cylinder valve pneumatically.

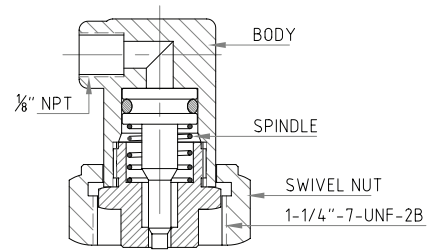
Technical Data

MOC : Brass

Thread Type : Female NPT 1-1/4"-7-UNC-2B



ELEVATION



SECTION A-A

ASSEMBLY OF PRESSURE OPERATED CONTROL HEAD

Master Cylinder Adapter Kit

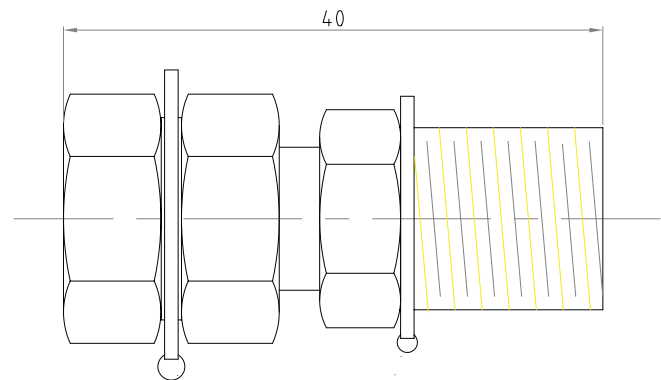
Part Number – H4-050-000

The master cylinder adapter kit provides a means of connecting a flexible actuation hose to the master and slave cylinder assembly. This enables system to actuate the Slave Clean Agent Cylinder.

Technical Data

MOC : Brass

Thread Type : 1/4" Male NPT



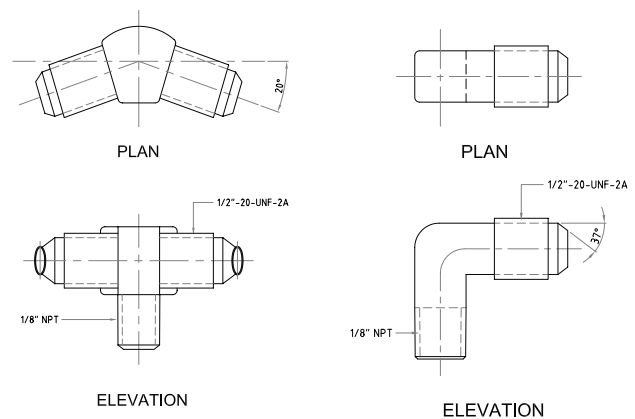
1/4" Pilot Actuation Male Tee and Elbow

Male Tee, Part Number – H4-051-000

The male tee is primarily used in manifold system for connecting actuation hose from one slave cylinder to the next.

Male Elbow, Part Number – H4-052-000

The male elbow is used on the last slave cylinder in manifold system.



1-1/2" & 2" Manifold Check Valve

1-1/2" Valve Part Number H4-060-000

In a multiple cylinder arrangement where the master and slave cylinders share a common manifold or in a connected main/reserve arrangement, a manifold check valve must be placed between the discharge outlet and the discharge manifold. The manifold check valve prevents back flow from the manifold, should the system be inadvertently discharged.

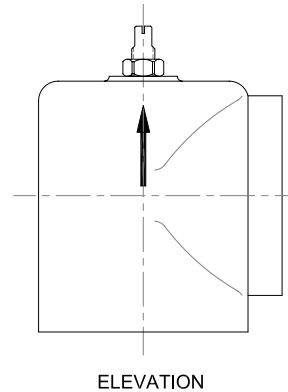
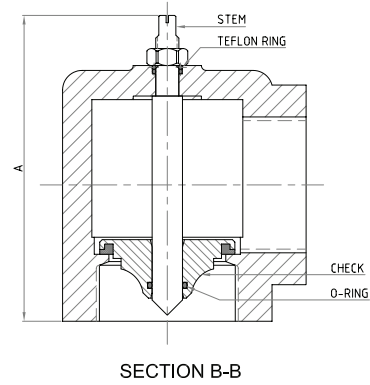
Note

Manifold Check valve to be installed in vertical position only. Please refer arrow mark during installation.

Technical Data

Valve Body : SS 316

Check : SS 316



180 & 360 Degree Nozzle

360° Nozzle Part Number H5-001-XXX

180° Nozzle Part Number H5-002-XXX

FK 1230 (FK-5-1-12) Nozzles are available in two discharge patterns 180 & 360 degree.

Discharge nozzles have a NPT female pipe thread for attachment to the discharge piping network. The nozzles are selected based on the hazard to be protected to achieve best the flow rate and distribution of FK 1230 (FK-5-1-12) in protected hazard area.

Part number / orifice for nozzle will be generated by FK 1230 (FK-5-1-12) fire suppression system design software.

Technical Data

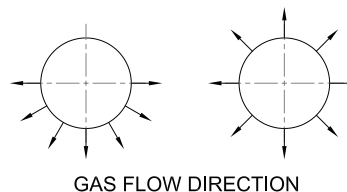
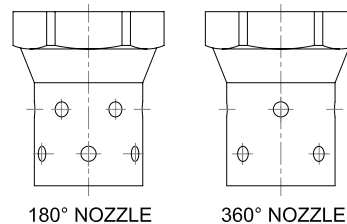
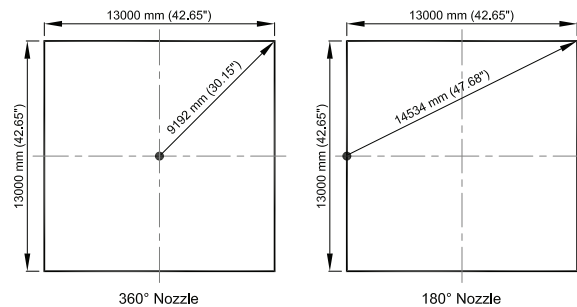
MOC : Brass

Thread Type : Female, NPT

Nozzle Type : 180 degree & 360 degree nozzle

Sizes : 15NB, 20NB, 25NB, 32NB, 40NB
& 50NB.

Nozzle Placement and Coverage :-



Manifold or Piping Agent Discharge Pressure Switch

Part Number H4-081-000

The discharge pressure switch is activated by pressure from the agent during discharge and can be used to signal a control panel that the system has discharged. The pressure switch incorporates a reset button which has to be depressed following a discharge.

Manifold Discharge Pressure Switch

Technical Data

Pressure Inlet Connection : 3/4" Male

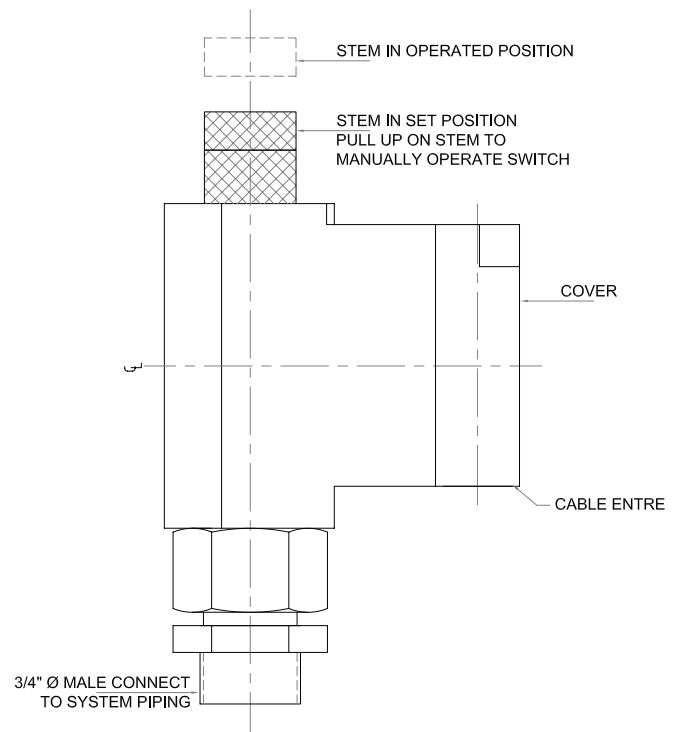
Switch Rating : 6 Amp

Housing : Aluminium

Switch Point : ± 52 PSI

Note

The preferred installation position for the discharge pressure switch is upright as described in the figure.



Honeywell

Honeywell HBT India Buildings

Unitech Trade Centre,
5th Floor, Sector – 43, Block C,
ushant Lok Phase – 1,
Gurgaon – 122002,
Haryana, India

For more information

Email: HBTIndiaBuildings@Honeywell.com | Tel: +91 124 4975000

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