



NAFFCO
PASSION TO PROTECT

HFC227ea Fire Suppression System

with Impulse Valve





AN INTRODUCTION TO NAFFCO

NAFFCO was founded in Dubai, UAE to become the world's leading producer and supplier of life safety solutions. By recognizing the importance and convenience of having easy access to multiple safety services, we became specialized by offering complete solutions under one roof for all types of high quality firefighting equipment, fire protection systems, fire alarms, addressable emergency systems, security systems, custom-made vehicles such as fire trucks, ambulances, mobile hospitals and airport rescue firefighting vehicles (ARFF).

With the most talented and dedicated employees from around the world, NAFFCO has over 2,000 passionate engineers and over 8.5 million square feet of manufacturing facilities. We are currently exporting to over 100 countries worldwide.

NAFFCO manufactures UL, FM, BSI & Global Mark approved products in our facility in consistent with International Standards UL-DQS, for the Quality Management System against ISO 9001. Our Environmental (ISO 14001) & Occupational Health & Safety (ISO 45001) Management Systems have been certified by UL-DQS. Our Trucks & Vehicles division has been assessed & certified for Quality Management System requirement for Aviation, Space & Defense organization (AS 9100) by UL-DQS.

Our success is driven by our passion to protect; our vision is to become the world's number one provider of innovative solutions in protecting life, environment and property.



HFC-227ea[®] CLEAN AGENT FIRE SUPPRESSION SYSTEM

CLEAN AGENT: HFC-227ea (FM-200[®])

CHEMICAL NAME: Heptafluoropropane ASHRAE Designation HFC-227ea

TRADE NAME: HFC-227ea[®]

PRODUCT APPROVALS



PHYSICAL PROPERTIES

Chemical Name	Heptafluoropropane (CF ₃ CHFCF ₃)
Molecular Weight	170.03
Boiling Point @ 760 mm Hg	3.9°F (-15.6°C)
Freezing Point	-204°F (-131.1°C)
Critical Temperature	215°F (101.7°C)
Critical Pressure (psia)	422 psia (2912 kPa)
Critical Volume (ft ³ /lbm) (cc/mole)	0.0258 (274)
Critical Density (lbm/ft ³)	38.8 (621 kg/m ³)
Specific Heat, Liquid (BTU/lb-F°) @ 77°F (25°C)	0.283 (1.184 kJ/kg/°C)
Specific Heat, Vapor (BTU/lb-F°) @ constant pressure of 1 ATM @ 77°F (25°C)	0.1932 (0.808 kJ/kg/°C)
Heat of Vaporization (BTU/lb) at Boiling Point	57.0 (132.6 kJ/kg)
Thermal Conductivity (BTU/h ft°F) of Liquid @ 77°F (25°C)	0.040 (0.069 w/m°C)
Viscosity, Liquid (lb/ft/hr) @ 77°F (24°C)	0.443 (0.184 centipoise)
Vapor Pressure (psia) @ 77°F (25°C)	66.4 (457.7 kPa)
Ozone Depletion Potential	0
Estimated Atmospheric Lifetime (years)	31 - 41
LC50 (Rats; 4hrs - ppm)	>788,000

FEATURES

- Colorless, odorless, liquefied compressed gas, stored as a liquid.
- Electrically-nonconductive.
- Discharge as gaseous vapor (due to its relatively low boiling point).
- Zero ozone depleting potential.
- Low global warming potential.
- Included on the U.S. EPA Significant New Alternative Policy (SNAP) rules.

USE & LIMITATIONS

HFC-227ea system shall be used on the following Class of Hazards:	HFC-227ea systems shall "NOT" be used on fire involving the following materials:
Class A & C: Electrical and Electronic Hazards Telecommunication Facilities High value assets, where the associated down-time would be costly.	Chemicals or mixtures of chemicals that are capable of rapid oxidation in the absence of air. (Examples include: Cellulo Nitrate and Gunpowder)
Class B: Flammable liquids and gases.	Reactive metals such as Lithium, Sodium, Potassium, Magnesium, Titanium, Zirconium, Uranium and Plutonium
	Metal hydrides such as Sodium Hydride and Lithium Aluminium Hydride.
	Chemicals capable of undergoing auto-thermal decomposition. (Examples: Organic Peroxides and Hydrazine)

EXPOSURE LIMITATIONS

Hazard Type	Design Concentration	Maximum Human Expose Time
Normally Occupied Space	6.25% to 10.5%	5 minutes
Not Normally Occupied Space	11.0% to 12.0%	30 seconds

AGENT STORAGE CONTAINER: HFC-227ea®

FEATURES

- Pressure Vessel to hold agent until activated.
- Container Super – Pressurization Level 360 psig at 70°F (24.8 bar at 21°C) after filling with dry nitrogen
- Container Storage Temperature Limitation
32°F (0°C) Minimum
130°F (54.4°C) Maximum
- Container Rating
DOT 4BW500
TC 4BWM534
- Container Actuation Methods*
Electric / Pneumatic / Manual
- Container Color Options
White (Default)
Red
- Fill Increments
1.0 lbs (0.5 kg)
- Fill Range
40 to 70 lbs/ft3 (630 to 1121 kg/m3)

**If container temperatures exceeding 130°F (54.4°C), valve will open automatically, this also fulfils the pressure relief valve requirements in accordance with DOT regulations.*



PRODUCT APPROVALS



SPECIFICATION

Container		Fill range		Tare Weight lbs. (kg)	Dimension (approximate)		Valve Size in. (mm)
Size Lb. (L)	P/N	Minimum lbs. (kg)	Maximum lbs. (kg)		Diameter in. (mm)	Height in. (mm)	
20 (8.5)	NF-70-263	12 (5.5)	21 (9.5)	22 (10.0)	7.0 (178)	22.50 (571.5)	1 (25)
35 (15)	NF-70-264	22 (10.0)	38 (17.0)	32.5 (14.7)	7.0 (178)	33.75 (857.3)	1 (25)
60 (27)	NF-70-265	39 (18.0)	68 (30.5)	52.5 (23.8)	10.75 (273)	28.13 (714.4)	1 (25)
100 (44)	NF-70-266	63 (28.5)	108 (49.0)	77 (34.9)	10.75 (273)	39.63 (1006.5)	1 (25)
150 (61)	NF-70-267	87 (39.5)	150 (68.0)	118 (53.5)	20.0 (508)	24.25 (616.0)	3 (80)
150i (61)	NF-70-267	87 (39.5)	150 (68.0)	114 (51.7)	20.0 (508)	24.25 (616.0)	3 (80)
215 (88)	NF-70-268	124 (56.5)	216 (98.0)	146 (66.2)	20.0 (508)	30.13 (765.2)	3 (80)
375 (153)	NF-70-269	217 (98.5)	378 (171.5)	213 (96.6)	20.0 (508)	43.38 (1101.7)	3 (80)
650 (267)	NF-70-270	378 (171.5)	660 (299.0)	373 (169.2)	24.0 (610)	50.50 (1282.7)	3 (80)
1000 (423)	NF-70-271	598 (271.5)	1045 (474.0)	535 (242.7)	24.0 (610)	71.88 (1825.6)	3 (80)

IMPULSE VALVE

FEATURES

- The 1" & 3" Impulse Valves are a rupture disc (metal diaphragm), pressure operated device that allows the agent to be released from the container and into the protected enclosure via the associated piping network and discharge nozzle(s). Agent Discharge Port allows agent release from container and also fulfills the pressure relief valve requirements in accordance with DOT regulations. Agent Fill Port used to fill (refill) and pressurize the container and also used for the Low Pressure Switch.
- Actuator Port used to connect an Impulse Valve Operator (IVO) with Manual Strike Button for electric and manual actuation of the container or an Impulse Valve Pneumatic Operator (IVPO) for pneumatic operation.
- Pressure Gauge Port is used to connect a Pressure Gauge that will monitor internal container pressure, also equipped with an orifice plug that allows the pressure gauge to be removed safely when the container is pressurized.



MODEL NF-06-520

Component	Material
Valve Body	Brass
Rapture Disc Assembly	Hastelloy C276/316SST

IMPULSE VALVE OPERATOR (IVO) KIT MODEL: NF-70-279

FEATURES

- Provides the means to electrically or manually activate the Impulse Valve clean agent container by providing the force required to extend a piston that will open the rupture disc, allowing the agent to be released from the container.
- The IVO can be activated electrically via a signal from NAFFCO control panel or manually by depressing red strike button.
- NAFFCO Clean Agent Containers with Impulse Valve must use an Impulse Releasing Module (IRM) to supervise the agent release circuit wiring (for open and ground fault conditions) from the container to the control panel.



SPECIFICATION

Item No.	Model	Description
1	NF-02-12728	Impulse Valve Operator (IVO)
2	02-14782	Multi-Reset Tool
3	02-12755	Wire Lead (3' long.) w/ Connector
4	NF-10-2748	Impulse Releasing Module Assembly (IRM)
Normal Supply Voltage		24 VDC
Current Consumption		0 Amps (for Battery Calculation)
Electrical Consumption		DIN Connector w/ Cable & ½" NPT for conduit connection
IVO Material		Stainless Steel (Body) / Brass (End Cap)
Temperature Range		32°F to 130°F (0°C to 54.4°C)

MULTI-RESET TOOL

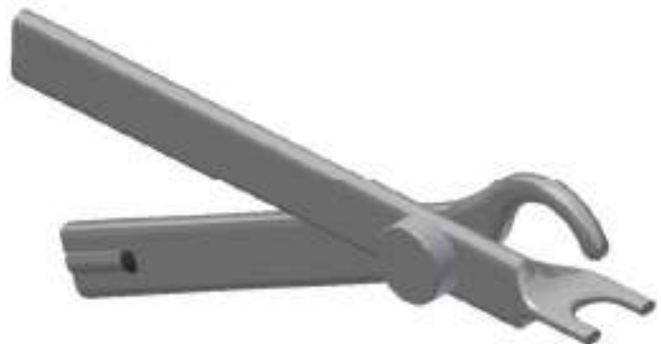
Model: 02-14782

The original reset tool was a simple plunger type assembly. It required the technician to lock the tool in place with a U-Clip, then apply force by whatever means available to push the plunger into a reset position. If enough force was not used, the technician would not know until the tool was removed and revealed that the actuator tip had not reset, requiring the process to be repeated.

The improved functionality of the new reset tool (p/n 02-14782) doesn't require a U-clip to be held in place, nor does it hide the actuator tip from sight as you try to reset it. Additionally, a simple squeeze of the grips (as with a pair of pliers) is all the force required to reset the actuator.

This new tool has expanded features that include the ability to:

- Reset all variations of Impulse Valve Operator
- Reset the Universal Valve Operator
- Reset ProInert pneumatic actuators
- Remove ProInert blanking plugs



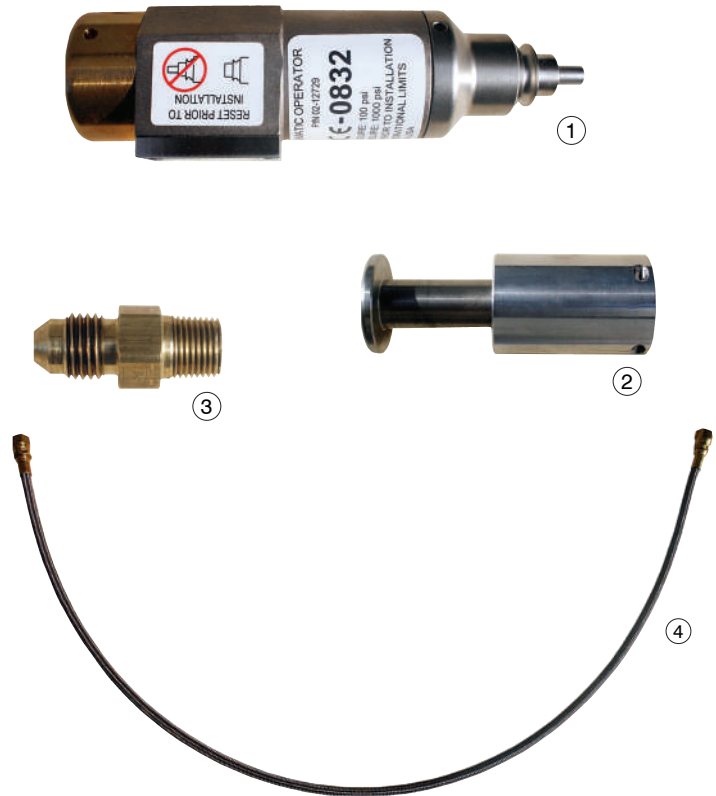
IMPULSE VALVE PNEUMATIC OPERATOR (IVPO) KIT

MODEL: NF-70-280

FEATURES

- The Impulse Valve Pneumatic Operator (IVPO) provides the means to pneumatically activate the Impulse Valve clean agent container by providing the force required to extend a piston that will open the rupture disc, allowing the agent to be released from the container.
- The IVPO is installed in systems utilizing multiple clean agent containers.
- NAFFCO Clean Agent Containers with IVPO are operated by pneumatic pressure from Container with Impulse Valve Operator (IVO).

PRODUCT APPROVALS



SPECIFICATION

Item No.	Model	Description
1	NF-02-12729	Impulse Valve Pneumatic Operator (IVPO)
2	70-286	Reset Tool
3	02-4543	1/8" x 1/4" JIC Adaptor
4	02-4977	1/4" JIC x 3.0' lg. Actuation Hose
IVPO Material		Stainless Steel (Body) / Brass (End Cap)
Pneumatic Connection		1/8" NPT
Temperature Range		32°F to 130°F (0°C to 54.4°C)

IMPULSE VALVE OPERATOR SUPERVISOR (IVOS)

FEATURES

The Impulse Valve Operator Supervisor (P/N 02-14263) provides the means to secure and electrically supervise the connection of an electric actuator or pneumatic operator to the discharge valve on an Impulse Valve container. The IVOS has a built-in Form-C push-button switch that supervises the connection of the electric actuator or pneumatic actuator to the containers discharge valve. Removal of the IVOS from the discharge valve will trigger the IVOS switch causing a visual and audible “Trouble or Supervisory” indication at the control panel signalling that the container’s actuator has been removed.



ORDERING INFORMATION

The IVOS can be ordered separately or it can be ordered as part of the following kits.

SPECIFICATION

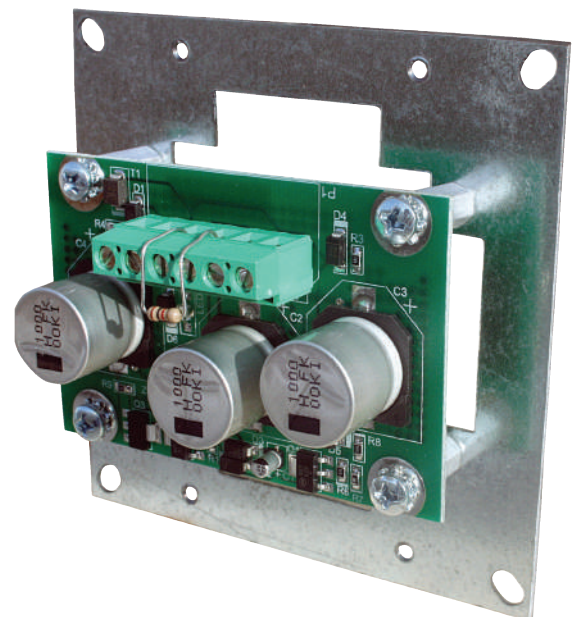
Current Consumption	+24V Supervisory: 20.0 ma (during capacitor charging), 3.0 ma (after capacitor is charged) -24V Activated: -37.0 ma (LED active)
Temperature	32°F to 130°F (0° to 54.4°C), 93% maximum humidity
Module Wiring	Control panel to IRM connections are supervised and power-limited. Impulse Valve Operator connection is non-supervised and power-limited
Compatible Actuation Devices	NF-02-12728, Impulse Valve Operator (IVO)
Compatible Releasing Panels	NAFFCO Single Hazard Panel*

Component P/N	Description
IVO Kit (P/N NF-70-279)	
NF-02-12728	Impulse Valve Operator (IVO)
02-14263	Impulse Valve Operator Supervisor (IVOS)
NF-10-2748	Impulse Releasing Module (IRM)
02-2213	Security Ties

IMPULSE RELEASE MODULE

FEATURES

- The Impulse Releasing Module provides the primary interface between the supervised releasing circuit(s) of a NAFFCO fire suppression system and the Impulse Valve Operator (IVO); which is used to release the fire suppressant agent from an impulse valve container.
- The IRM is equipped with three capacitors that receive a constant charging current from the releasing circuit of the control panel. When fully charged, the module is capable of firing a single IVO.
- Upon circuit activation, the output circuit reverses its output voltage polarity, causing the energy in the capacitors to be released to the Impulse Valve Operator.
- Each IRM is equipped with a red LED to provide positive indication that the module is in the active (release) state.



SPECIFICATION

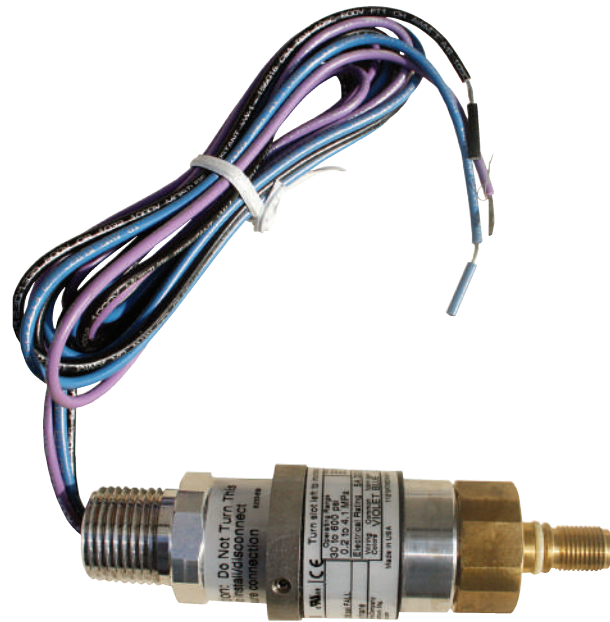
Model	NF-10-2748
Current Consumption	+24V Supervisory: 20.0 ma (during capacitor charging), 3.0 ma (after capacitor is charged) -24V Activated: -37.0 ma (LED active)
Temperature	32°F to 130°F (0° to 54.4°C), 93% maximum humidity
Module Wiring	Control panel to IRM connections are supervised and power-limited Impulse Valve Operator connection is non-supervised and power-limited
Compatible Actuation Devices	NF-02-12728, Impulse Valve Operator (IVO)
Compatible Releasing Panels	NAFFCO Single Hazard Panel*

*Note: A maximum of six IRM's, wired in parallel, can be connected to each panel's releasing circuit.

LOW PRESSURE SWITCH

FEATURES

- Continuously monitoring the container pressure for a low-pressure condition. If the pressure inside the container drops below 288 psig (1986 kPa), the switch contacts will transfer and invoke a “supervisory” indication on the control panel.
- Installed in the fill port on the container with an Impulse Valve.
- Can be installed when the container is charged without the concern of agent/pressure loss.



PRODUCT APPROVALS



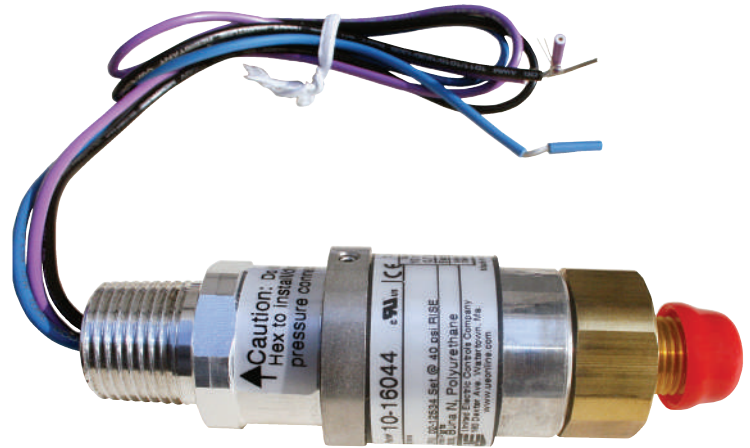
SPECIFICATION

Model	02-12533
Temperature Limits	+32 to +130°F (0 to 54.4°C)
Enclosure Classification	NEMA 4
Contact Rating	Single pole, double throw; 5 amps resistive, 3 amps inductive @ 30VDC
Body Material	Aluminium with irridite finish
Weight	6.5 ounces
Pressure Connection	M10 x 1-6G
Electrical Connection	½" NPT (15 mm)
Pressure Setting	288 psig (20 bar) (decreasing)

DISCHARGE PRESSURE SWITCH

FEATURES

- Used to provide a positive pneumatic confirmation to the control system that the NAFFCO Fire Suppression system has been discharged.
- When a system is discharged manually (by Impulse Valve Operator (IVO) with Strike Button), the discharge pressure switch is required to provide the input to the control system needed to activate various audio/visual warning devices and auxiliary relays.
- The switch is operated pneumatically using the agent pressure in the discharge piping network.



PRODUCT APPROVALS



SPECIFICATION

Model	02-12534
Temperature Limits	+32 to +130°F (0 to 54.4°C)
Enclosure Classification	NEMA 4
Contact Rating	Single pole, double throw; 5 amps resistive, 3 amps inductive @ 30VDC
Body Material	Aluminium with irridite finish
Weight	6.5 ounces
Pressure Connection	¼" NPT (6 mm)
Electrical Connection	½" NPT (15 mm)
Pressure Setting	40 psig (3 bar) (increasing)

ENGINEERED DISCHARGE NOZZLES

PRODUCT APPROVALS



DESCRIPTION

The function of the NAFFCO discharge nozzle is to control the agent flow and distribute the agent throughout the protected enclosure in a uniform, predetermined pattern and concentration.

FEATURES

- The discharge nozzle size refers to the size of schedule 40 or 80 pipe that it can be connected to.
- The discharge nozzle is mounted to allow the agent to be discharge on a horizontal axis.
- The nozzle orifice area is determined by performing a hydraulic calculation using the NAFFCO Engineered Flow Calculation program.
- Nozzle should not be ordered until the clean agent system pipe network is installed and an "As Built" hydraulic calculation is performed.
- Nozzle orifice drilling must be done at NAFFCO factory.

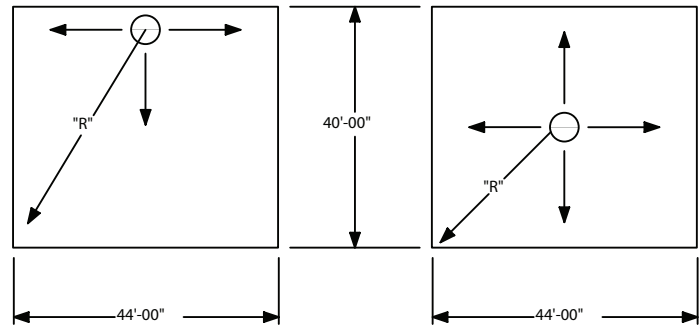


360° Nozzle



180° Nozzle

NOZZLE SIZE AND AREA COVERAGE



Nozzle Size - 3/8"-2"(10-50mm)

Nozzle Type	Radius "R" Dimensions ft.(m)	Ceiling Height Range ft.(m)
180°	45.67(13.92)	1.0 to 16.0(0.3 to 4.9)
360°	29.67(9.04)	1.0 to 16.0(0.3 to 4.9)

SPECIFICATION

Nozzle Size <i>inches (mm)</i>	360° Engineered Nozzles <i>(12 Orifices)</i>		180° Engineered Nozzles <i>(11 Orifices)</i>		Nozzle Length <i>inches (mm)</i>
	Part Number	Drill Diameter <i>(inches)</i> <i>Min. Max.</i>	Part Number	Drill Diameter <i>(inches)</i> <i>Min. Max.</i>	
3/8" (10)	NF-80-091-XXXX	0.0670 0.1250	NF-80-098-XXXX	0.0670 0.1285	1.56 (40)
1/2" (15)	NF-80-092-XXXX	0.0810 0.1590	NF-80-099-XXXX	0.0860 0.1660	1.88 (48)
3/4" (20)	NF-80-093-XXXX	0.1065 0.2090	NF-80-100-XXXX	0.1130 0.2210	2.19 (56)
1" (25)	NF-80-094-XXXX	0.1360 0.2660	NF-80-101-XXXX	0.1440 0.2812	2.50 (64)
1 1/4" (32)	NF-80-095-XXXX	0.1820 0.3480	NF-80-102-XXXX	0.1875 0.3680	3.13 (79)
1 1/2" (40)	NF-80-096-XXXX	0.2090 0.4130	NF-80-103-XXXX	0.2188 0.4219	3.38 (86)
2" (50)	NF-80-097-XXXX	0.2720 0.5312	NF-80-104-XXXX	0.2812 0.5469	3.75 (95)
Material		Brass			
Listings & Approval		UL Listed & FM Approved			

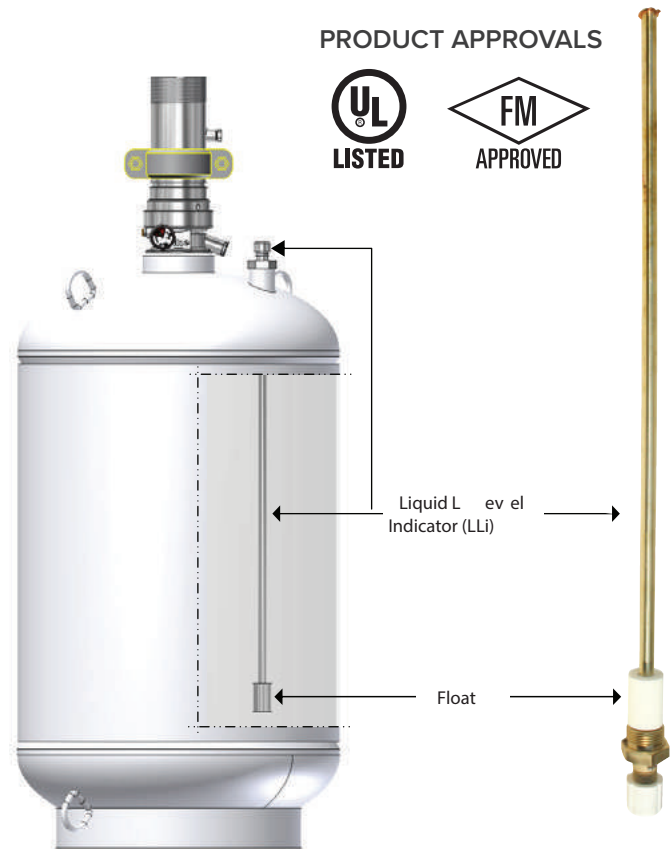
LIQUID LEVEL INDICATOR (LLI)

DESCRIPTION

Clean Agent Containers are used in fire extinguishing systems to store the Clean Agent until fire develops and the agent must be released. The Clean Agent is retained in the container by an Impulse Valve assembly which contains a fast-acting rupture disc. The disc will be ruptured, and the Clean Agent released, through the operation of an actuator by an electric signal that is automatically, manually or pneumatically controlled.

FEATURES

- Provides a means of verifying the weight of agent in a container without having to remove the container and weigh it on a calibrated scale.
- Enables the inspector to determine the weight of agent with the container safely secured in its installed position.
- Furnished on the 150, 215, 375, 650 and 1000 lb. (44, 61, 88, 153, 267 and 423 L) containers.



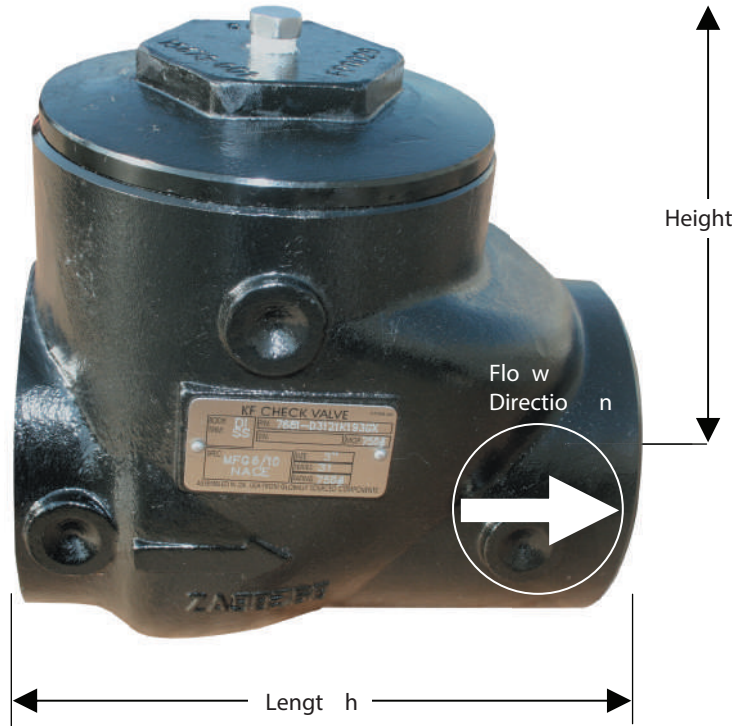
SPECIFICATION

Container Size Lb. (L)	LLI Part Number
100 (44)	NF-70-1353-27
150 (61)	NF-70-1353-14
215 (88)	NF-70-1353-18
375 (153)	NF-70-1353-27
650 (267)	NF-70-1353-38
1000 (423)	NF-70-1353-49
Listings and approvals	UL listed & FM Approved

CHECK VALVE

FEATURES

- Used to prevent agent loss from the open end of a manifold and/or piping system in the event that one or more containers are removed for servicing / maintenance.
- Required for multiple containers connected in a manifold arrangement and for containers used in a main / reserve system, without the need for redundant piping systems, to prevent agent loss and to ensure personnel safety if the system is operated when any containers are removed for maintenance. All containers must be the same size & same weight.



PRODUCT APPROVALS



SPECIFICATIONS

Check Valve Data		Dimensions		Approximate Weight	Equivalent Length
Model	Description	Height	Length		
02-2980	1" (25 mm) Check Valve	3.75" (95 mm) (maximum)	4.25" (108 mm)	9 lbs. (4.1 kg)	2.0' (0.61 m)
02-4158	2" (50 mm) Check Valve	4.5" (144 mm) (maximum)	6" (152 mm)	12 lbs. (5.4 kg)	4.0' (1.22 m)
02-4157	3" (80 mm) Check Valve	6" (152 mm)	8" (203 mm)	31 lbs. (14.1 kg)	4.5' (1.37m)
Check Valve Data		Carbon Steel			
Working Pressure		750 psi (50 bar)			
Thread Type		Female NPT (Both Ends)			

**Note: Check Valves have threaded female connections on both ends; therefore piping leading into and exiting from must be threaded.*

**Important Note: The Check Valves must be installed with the flow arrow pointing in the direction of discharge. If revised, the system will not charge.*

CAUTION / ADVISORY SIGNS – HFC-227ea

PRODUCT APPROVALS



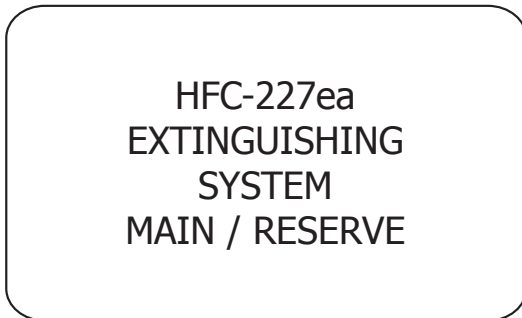
SYSTEM RELEASE SIGN
Model 02-10137



CAUTION – AREA PROTECTED BY HFC-227ea SIGN
Model 02-10139



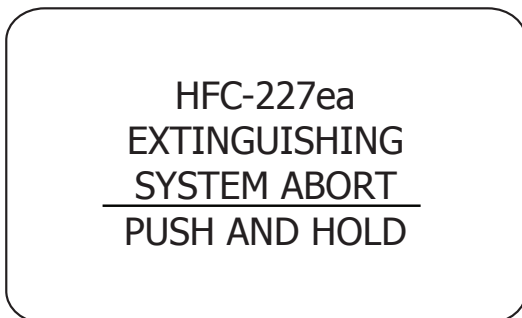
MAIN / RESERVE SIGN
Model 02-10107



CAUTION – SYSTEM DISCHARGE ALARM SIGN
Model 02-10138



SYSTEM ABORT SIGN
Model 02-10106



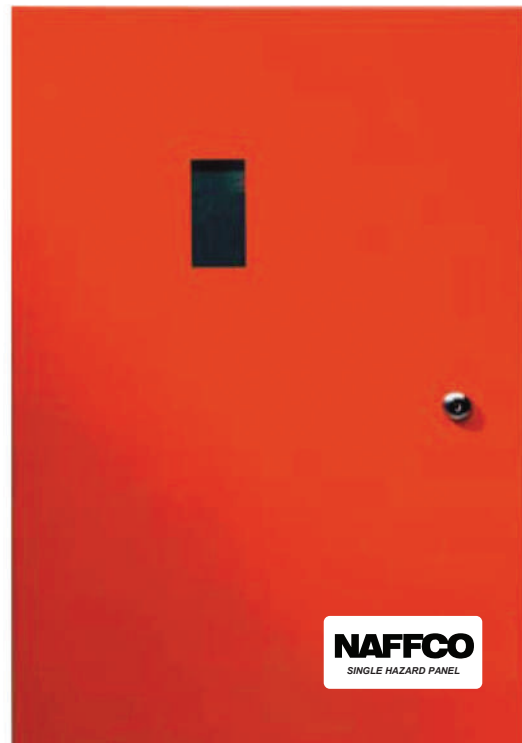
CAUTION – EXIT AREA SIGN
Model 02-10105



NAFFCO Single Hazard Panel ½

FEATURES

- The NAFFCO Single Hazard Panel is a compact, cost-effective, conventional fire alarm and suppression releasing panel.
- The NAFFCO Single Hazard Panel is designed for use with NAFFCO Clean Agent Fire Suppressant and sprinkler (pre-action/deluge).



SPECIFICATIONS

Part Number	Description
NF-10-063-m-c-p	Control System
	m: 1 = all modes
	c: R = red, G = gray
	p: 2 = 240VAC
10-2452 - m	Controller Printed Circuit Board
	m: 1 = all modes
10-2450	Class A Input Module
10-2448	Class A Output Module
10-2204	CRM4 Relay Module
10-2190-b	Battery Assembly AH selection
	b: 1 = 7 AH, 2 = 18 AH
02-3468	Battery 12VDC, 33 AH
10-2154-C	Battery Enclosure 33 AH, where C= R for Red; G for Gray
A02-0252	Battery 12 VDC, 40 AH (requires 66AH enclosure)
10-2236-C	Battery Enclosure 66 AH, where C= R for Red; G for Gray

SHIELD A-XT

EXTINGUISHANT CONTROL PANEL

Shield A-XT is a new generation extinguishant releasing panel which is UL,FM listed. The simple, programmable configuration options and easy to install construction make Shield A-XT panels the ideal choice for small to medium sized systems using all extinguishant agents.

PROGRAMMABLE FUNCTIONS

Access Level 2

- Test Zones 1 to 3
- Disable Zones 1 to 3
- Disable 1st Stage Alarms
- Disable Pre-activated 1st Stage Relay Disable Pre-activated 2nd Stage Relay Disable Extract Fan Output
- Disable Manual Release Input Disable Extinguishant Sub System Activate Extract Fan Output
- Activate Alarm Delays

Access Level 3

- Sounder Delay
- Coincidence Detection
- Disable Panel Features
- Zone Alarm Delays (Detectors) Zone Alarm Delay (Call Points) Configure Zone for I.S Barrier Use Zone Short Circuit Alarm
- Zone Non Latching
- Zone Inputs Delay
- Extinguishant Release Time Delay Extinguishant Release Duration Timer Extinguishant Reset Delay Timer

FEATURES

- UL864 and FM listed
- Three initiation circuits as standard
- Any single zone or any combinations of zones can be configured to release
- Configurable first stage
- NAC delays
- Configurable detection delays
- Zero time delay upon manual release option
- Compatible with I.S. barriers
- Non-latching zone input option to receive signals from other systems such as aspirating equipment
- Configurable extinguishant delays up to 60 seconds in 5 second steps
- Configurable extinguishant duration up to 5 minutes in 5 second steps
- Countdown timer shows time remaining until release
- Supports up to seven, four wire status indicators
- Built in Extract Fan control



PRODUCT OVERVIEW

- Designed and manufactured to the highest standards in a quality controlled environment and with approvals, the Shield A-XT releasing panel offers outstanding value and performance for all small to medium fixed firefighting installations
- With three detection zones as standard, extinguishant release can be configured to activate from any combination of detection zone inputs to allow (among other combinations) any two from three type activations such as would be required for detection in ceiling void, room and floor void applications.
- The extensive configuration options of the Shield A-XT allow the functionality of the system to be extensively modified
- The panel contains a large LED display to enable easy configuration and control which also displays the time remaining until extinguishant release for added user safety.
- The countdown timer is duplicated on up to seven remote status units to provide local indication of the system status.
- With all of the electronics mounted on a single, easily removable, steel plate Shield A-XT panels are both robust and easy to install.
- Shield A-XT is supplied in an enclosure that matches the design and colour of the elite RS range and is available in standard red or optional grey.

Construction	1.2mm mild sheet steel
IP Rating	IP30
Finish	Epoxy powder coated
Colour - Lid & Box	Red RAL 3002 (optional grey BS 00 A 05 semi-matt)
Mains Supply	230V AC or 115V AC
Mains Supply Fuse	1.6 Amp (F1.6A L250V)
Power Supply Rating	3 Amps total including battery charge 28V +/- 2V
Maximum Ripple Current	200 millivolts
Battery Type (Yuasa NP)	Two 12 Volt 7Ah sealed lead acid in series
Battery Charge Voltage	27.6VDC nominal (temperature compensated)
Battery Charge Current	0.7A maximum
Battery Fuse	20mm, 3.15A glass
Maximum current draw for batteries	3 Amps
Quiescent current of panel in mains fail	0.095A
ROV output	Fused at 500mA with electronic fuse
Sounder Outputs	24V Fused at 500mA with electronic fuse
Fault Relay Contact Rating	30VDC 1A Amp maximum
Fire Relay Contact Rating	30VDC 1A Amp maximum
Local Fire Relay Contact Rating	30VDC 1A Amp maximum
First Stage Contact Rating	30VDC 1A Amp maximum
Second Stage Contact Rating	30VDC 1A Amp maximum
Extract Contact Rating	30VDC 1A Amp maximum
Zone Quiescent Current	2mA maximum
Terminal Capacity	12 AWG
Number of Detectors per zone	Dependent on type (maximum 32)
NAC rating	0.5A per circuit
Detection circuit end of line	6K8 5% 1/2 Watt resistor
Monitored input end of line	6K8 5% 1/2 Watt resistor
Sounder circuit end of line	10K 5% 1/4 Watt resistor
Extinguishant output EOL	1N4004 Diode
No. of initiating circuits	3
No. of NAC circuits	2 x 1st Stage, 1 x 2nd Stage
Extinguishant Release Output	Fused at 1 Amp
Extinguishant Release Delay	Adjustable 0 to 60 seconds (in 5 second steps)
Extinguishant Release Duration	Adjustable 60 to 300 seconds (in 5 second steps)
SIL, AL, FLT, RST inputs	Switched - ve, max resistance 100 Ohms
Zone Normal Threshold	8K ohms to 1K ohm
Detector Alarm Threshold	999 ohms to 400 ohms
Call Point Alarm Threshold	399 ohms to 100 ohms
Short Circuit Threshold	99 ohms to 0 ohms
Monitored Inputs Normal Threshold	8K ohms to 1K ohm
Monitored Inputs Alarm Threshold	999 ohms to 400 ohms
Monitored Inputs Short Circuit Threshold	99 ohms to 0 ohms
Status Unit/ Ancillary Board Connection	Two wire RS485 connection
Status Unit Power Output	Fused at 500mA with electronic fuse

Product Code	Description	Size (mm)
S115R-EXT	Surface mounting panel - Red 115V	368 x 310 90
S230R-EXT	Surface mounting panel - Red 230V	368 x 310 90
S115G-EXT	Surface mounting panel - Red 115V	368 x 310 90
S230G-EXT	Surface mounting panel - Red 230V	368 x 310 90

NAFFCO Single Hazard Panel 1/2

GENERAL

- Microprocessor-controlled.
- Power-limited on all circuits except power connections (P1).
- Four operational modes:
 1. Clean agent release.
 2. Clean agent release with sprinkler operation.
 3. Sprinkler operation.
 4. Industrial releasing.
- Ten system status LEDs to provide positive indication of system status.
- Seven segment diagnostic LED for trouble and event occurrences.
- System configuration via dip-switches.
- Local piezo with distinct event tones.
- Reset switch.
- Audible silence switch.
- Disable Mode for audible and release circuits, and relays.

GENERAL

- Integral power supply at 24VDC nominal;
 - 1.0 Amp total normal standby.
 - 4.0 Amp alarm
- Selection of 120, or 240VAC power input at 50 or 60 hertz.
- Re-settable and non-resettable special application power output
- Battery/Earth fault supervision.
- 7 AH to 40 AH battery options, up to 90 hours (Factory Mutual) standby.

ENCLOSURE

- Steel enclosure 21" high by 14.35" wide by 4" deep (Back-box dimensions)
- Enclosure is equipped with a .50" wide lip to facilitate flush mounting
- Removable door for easy installation
- Enclosure is available in Red or Gray.

INITIATING DEVICE CIRCUITS

- Up to two Style B initiating device circuits capable of sequential alarm, cross-zone or single detector release operation with an overall system capacity of 50 detectors maximum.
- Three Style B initiating device circuits capable of monitoring closed contact devices.
- Optional Class A module that converts all five initiating device circuits to Style D wiring and operation.

FEATURES

- The controller is shipped from the factory pre-configured for Clean Agent suppression operation.
- The main controller contains all electronics required for a complete detection and control system suitable for most applications. Optional modules, which plug into the main circuit board, are available

PRODUCT APPROVALS



NOTIFICATION APPLIANCE CIRCUITS

- Three Style Y notification appliance circuits rated at 2.0 amps each.
- Optional Class A module that converts all five output circuits to Style Z (3 NAC, 2 releasing).

RELEASING CIRCUITS

- One Agent Release circuit with maximum of 6 IRM's
- One Solenoid release circuit which can activate one 24V or two 12V solenoids
- Model NF-10-063-1 provides option to use both releasing circuits simultaneously.

RELAYS

- General Alarm, Supervisory and Trouble relays
- Two Optional CRM4 modules to add eight more SPDT dry relay contact outputs.

SPRINKLER MONITORING POINTS

- Waterflow input
- Supervisory input

INPUT DEVICES

PHOTO ELECTRIC DETECTOR 63-1024

Light Source	GaAlAs Infrared Emitting Diode
Rated	17.7 - 30.0 VDC
Working Voltage	15.0 - 33.0 VDC
Maximum Voltage	42 VDC
Supervisory Current	45mA @ 24 VDC
Surge Current	160mA max. @ 24 VDC
Alarm Content	150mA max. @ 24 VDC
Air Velocity Range	0 - 4000 fpm
Ambient Temperature	32°F to 120°F (0°C to 49°C)
Color & Case Material	Bone PC/ABS Blend
Sensitivity Test Feature	Automatic Sensitivity window verification test



HEAT DETECTOR 60-1030

Response	Temperature 135° ± 7.5°F, Temperature 190° ± 7.5°F
Rated Voltage	17.7 - 30.0 VDC
Working Voltage	15.0 - 33.0 VDC
Maximum Voltage	42 VDC
Supervisory Current	40mA @ 24 VDC
Surge Current	160mA max. @ 24 VDC
Alarm Content	150mA max. @ 24 VDC
Ambient Temperature	32°F to 120°F (0°C to 49°C)
Contact Rating	N/O Contacts, 150mA max. @ 24V
Color & Casing Material	Bone PC/ABS Blend



CONVENTIONAL BASES



67-1034



67-1036



67-1035



67-1037

4" and 6" BASES	ALARM CURRENT
67 - 1034 or 67-1036	43mA (70mA @ 33.0V Max.) (430Ω)
67-1035 or 67-1037	93mA (136mA @ 33.0V Max.) (220Ω)

FM-200®
CLEAN AGENT FIRE SUPPRESSION SYSTEM
 OUTPUT DEVICES

PRODUCT APPROVALS



Model	Shell Size	Input Voltage (VDC)	Input Current	DBA 10ft
20 - 10	6"	24	0.030	92
20 - 111	10"	24	0.030	92



BELL

Model	Input Voltage (VDC)	Rated Candela	Average Strobe Current (Amps)
20 - 10	24	75	0.200
20 - 111	24	--	--



HORN STROBE

Model	Strobe Candela	Mounting	Average	Current Peak	Current Peak	Inrush	Sync
20 - 10	24	75		75	0.200		
20 - 111	24	--		--	--		



STROBE

FM-200®
CLEAN AGENT FIRE SUPPRESSION SYSTEM
CONTROL ACCESSORIES

PRODUCT APPROVALS



The Manual Release Switch is a dual actuation device which provides a means of manually discharging the automatic fire extinguishing system when used in conjunction with the NAFFCO Control Panel.



**MANUAL RELEASE
SWITCH 10-1638**

The System Abort Switch is designed to be used in conjunction with other system equipment. It provides a temporary manual means by which the system actuation circuit may be interrupted, when operated prior to the circuit actuation.



**SYSTEM ABORT
SWITCH 10-1639**

The "Main" to "Reserve" switch is used with systems that incorporate main and reserve (back-up) agent storage. The switch may utilize 1 or 2 Form "C" Contact blocks which will provide an electrical path to either the "Main" or "Reserve" releasing modules.



**MAIN-RESERVE
SWITCH 10-1640**



Serving Over 100 Countries Worldwide

NAFFCO

Email: info@naffco.com
www.naffco.com

In line with NAFFCO policy for continuous product development,
NAFFCO has the right to change specifications without prior notice.

NF-CA-FIV-U1022F-P1022A-DXB



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