

Integrated Fire Protection System

FIRE FLEX[®] 1230

Pre-engineered NOVEC 1230 500 Psi



Owner's Operation and Maintenance Manual

May 2012



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Integrated Fire Protection System
OWNER'S OPERATION & MAINTENANCE MANUAL

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1. GENERAL

The **FIREFLEX® 1230** integrated system consists of a clean agent fire extinguishing system, factory-assembled in a single cabinet. All the components necessary for the extinguishing system are integrated.

The **FIREFLEX® 1230** system uses **3M™ NOVEC™ 1230** fire protection fluid. The clean extinguishing agent is based on sustainable technology and is the only chemical agent currently available that meets the most stringent actual and future environmental standards.

1.1 APPLICABLE STANDARDS

In addition to being fabricated under stringent ISO-9001 manufacturing and quality control procedures, your **FIREFLEX® 1230** complies with the following standards:

- NFPA-70 National Electrical Code
- NFPA-72 Fire Alarm Systems
- NFPA-2001 Clean agent fire extinguishing system

Before the installation, the contractor installing the unit shall also be familiar with the following documents and standards:

- Applicable Local & State Building Codes
- Any additional requirements of the Local Authority Having Jurisdiction

1.2 LISTINGS & APPROVALS

- Approbation Factory Mutual: **FIREFLEX® 1230** systems are FM Approved under the heading: "FIXED EXTINGUISHING SYSTEMS, CLEAN AGENT FIRE EXTINGUISHING SYSTEMS".
- Uses UL/ULC and/or FM approved components.

Warning! Any unauthorized modification or addition made on-site to a factory built Listed Unit will void this Listing. Such modifications or additions may void the unit's warranty as well. Consult your nearest **FIREFLEX Systems** Authorized Distributor before proceeding with such modifications or additions.

1.3 ENVIRONMENT

FIREFLEX® 1230 unit shall be installed in a dry and clean location. Verify that all equipments are properly heated and protected to prevent freezing and physical damage.

The unit and its components must be kept free of foreign matter, freezing conditions, corrosive atmospheres, contaminated water supplies, and any condition that could impair its operation or damage the components.

The frequency of the inspections and maintenance will vary depending on the environmental conditions.

The owner is responsible for maintaining the fire protection system and devices in proper operating condition (refer to section 3 INSTALLATION, OPERATION & MAINTENANCE INSTRUCTIONS).

1.4 GENERAL DESCRIPTION

The **FIREFLEX® 1230** system uses **SEVO®** cylinder designed for a high volume discharge rate in order to meet the rapid discharge requirements specified in the NFPA-2001 Standard. Discharge valve is of brass construction and is designed as per the pressure differential concept. The valve is equipped with a pressure-indicating gauge and an electric actuator. The cylinder is also provided with an integrated pressure safety device.

FIREFLEX® 1230 system is pre-engineered by **FIREFLEX Systems Inc.** (or an authorized contractor) to meet the specific protection requirements of the application for which it is being installed.

Each system is designed per NFPA-2001 Standard and in compliance with instructions found in the following manufacturer design manuals:

- **SEVO Design Manual: SE 1230 500 PRE 3-28-11**
- **Potter PFC-4410RC Manual #5403550- Rev. K**

The cylinder is filled with the extinguishing agent and then pressurized to 500 Psi at 70°F (34.5 bar at 21.1°C) with Nitrogen allowing maximum flexibility at the time of installation. The cylinder is fabricated, tested and stamped according to D.O.T. 4BA500 or 4BW500 or TPED specifications depending on its size and capacity.

The **FIREFLEX® 1230** cabinet is of the free-standing type and is made of robust 14 gauge steel with a rustproof fire red paint finish, polyester powder coated and oven baked on a phosphate base. Each cabinet is provided with one or two frontal locked doors, reducing space requirements for ease of installation and maintenance. Furthermore, all doors are provided with a neoprene gasket to reduce vibrations and can be removed without special tools for easier access.

Table 1.1 - FIREFLEX® 1230 capacity of cabinet (cylinder quantity)

Cabinet width	Size of cylinder (lbs)					
	40	76	164	322	601	850
24"	1	1	1	1	1	n/a
52"	n/a	n/a	n/a	n/a	n/a	1

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1.5 FEATURES

FIREFLEX® 1230 main features are:

- Trouble-free design for safe and easy application
- Compact, aesthetic and easy to move
- Available in 2 cabinet sizes
- User-friendly standardized owner's manual with every unit
- Unique serial number on every unit
- Uses UL, ULC and/or FM Approved components
- Designed in accordance with NFPA Standards
- Completely assembled and checked in factory
- Sturdy 14 gauge steel cabinet painted fire red with oven baked polyester powder on phosphate base
- Textured rust proof finish
- Neoprene gasket on all doors to eliminate vibrations
- Easily removable doors for ease of access
- Key-alike locks on all cabinet doors
- Manufactured under ISO-9001 quality control procedures

1.6 CONFIGURATION

Configuration for **FIREFLEX® 1230**:

- Pre-engineered **NOVEC 1230** single cylinder with electric release

1.7 RELEASING

1.7.1 Electric releasing conditions

The electric releasing condition is needed in order to operate the electric actuator (C) of the **NOVEC 1230**. It can be achieved as the following:

- a) Single zone detection activated by **either** Zone 1 or Zone 2.
- b) Cross zone detection activated by **both** Zone 1 and Zone 2.
- c) Manual pull station activated by Zone 4.

1.7.2 Electric release

See figure 1.1.

Electric release is achieved with an electric actuator (C) installed on the discharge valve (B) of the cylinder (A). When the releasing conditions are fulfilled, a 24Vdc source is applied to the electric actuator (C) thereby venting the pressure on top of the discharge valve (B) thus allowing the extinguishing agent **NOVEC 1230** to be discharged through the piping and nozzles.

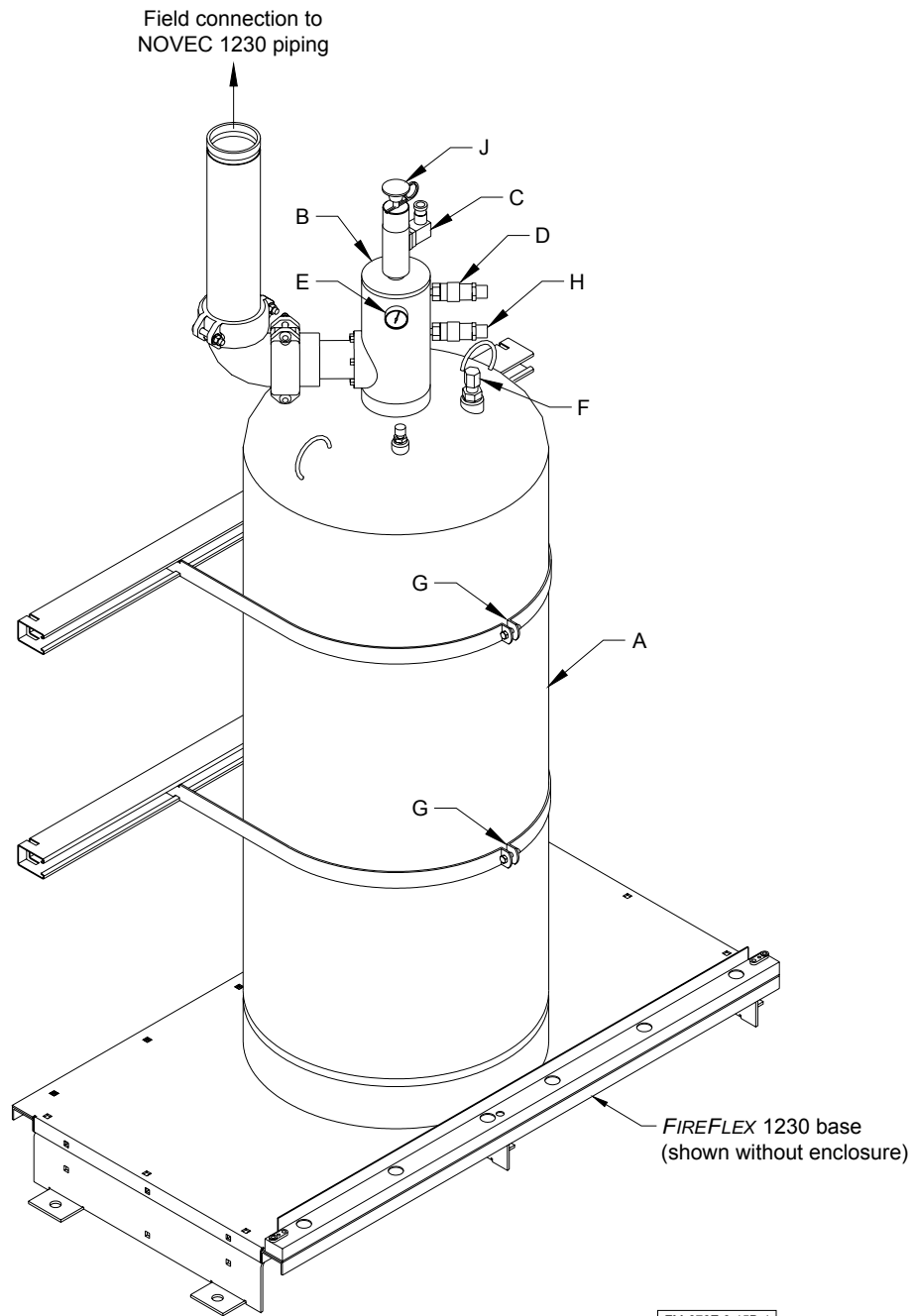
1.8 ABORT

When abort release switch is activated, pre-discharge timer will continue to count down until it reaches 10 seconds and then wait. Releasing the abort release switch will allow the pre-discharge to continue its count down from 10 seconds. If the abort release switch is again activated before the pre-discharge timer reaches zero, the timer will reset to 10 seconds and wait.

CAUTION ! Abort does not function and has no effect on panel operation from zones programmed as Manual RELEASE.

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Figure 1.1 - Single NOVEC 1230 cylinder with electric release



Components:

- | | |
|--------------------------------|--|
| A Cylinder | F Liquid level indicator |
| B Cylinder valve | G Bracket |
| C Electric actuator | H Discharge pressure switch (optional) |
| D Low cylinder pressure switch | J Mechanical actuator (optional) |
| E Pressure gauge | |

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2. CLEAN EXTINGUISHING AGENT

2.1 AGENT

The clean extinguishing agent used in **FIREFLEX® 1230** total flooding system is **NOVEC 1230**.

Note: The term **NOVEC 1230** employed throughout this manual refers to the extinguishing agent Dodecafluoro-2-methylpentan-3-one known as SEVO 1230 Fire Protection Fluid (also known as FK-5-1-12, 3M™ NOVEC™ 1230 Fire Protection Fluid, C₆-F-ketone) produced by 3M™.

2.2 DESCRIPTION

NOVEC 1230 is a colorless fluid. It is stored as a pressurized liquid and injected into a room, area, or compartment that has the structural integrity to retain the agent that has been discharged.

NOVEC 1230 is dispensed as an odorless, electrically non-conductive vapor. It leaves no residue.

NOVEC 1230 is a clean, efficient fire-extinguishing agent that can be used on Class A, B, or C fires. It is a very stable, inert and electrically non-conductive gas. Its primary use is for energized electric equipment fire containment and preventing reigniting.

On a weight of agent basis, **NOVEC 1230** is a very effective gaseous extinguishing agent. The **NOVEC 1230** extinguishing concentration for normal heptanes (cup burner method) is approximately 4.5% by volume. The minimum design concentration for total flooding applications in accordance with NFPA 2001 shall be 4.2%.

2.3 ENVIRONMENTAL

NOVEC 1230 does not contribute to depletion of the stratospheric ozone layer. **NOVEC 1230** has an atmospheric lifetime of 0.014 years. Its global warming potential is 1.

2.4 SAFETY CONSIDERATIONS

2.4.1 TOXICITY

The table 2.1 identifies the toxicological data on **NOVEC 1230** and compares this with **HALON 1301**.

Table 2.1 - Toxicological data

	NOVEC 1230	HALON 1301
No Observed Adverse Effect Level (NOAEL)	10%	5.0%
Low Observed Adverse Effect Level (LOAEL)	10%	7.5%
Acute Exposure LC50 (4 hour rate - ppm)	100,000	800,000
Design Concentration (minimum)	4.2%	4.3%

2.4.2 NOISE

Discharge of a **NOVEC 1230** system can cause noise loud enough to be startling but ordinarily insufficient to cause traumatic injury.

2.4.3 TURBULENCE

High velocity discharge from nozzles may be sufficient to dislodge substantial objects directly in the path of the discharge. General turbulence in the enclosure may be sufficient to move light objects, unsecured paper, etc. Ceiling tiles in the vicinity of the nozzles should be clipped in place to prevent them from being dislodged during the discharge.

2.4.4 COOLING

Direct contact with vaporizing liquid **NOVEC 1230** will have a strong chilling effect on objects and can cause frostbite burns to the skin. The liquid phase vaporizes rapidly when mixed with air and thus limits the hazard to the immediate vicinity of the discharge nozzle.

2.4.5 VISIBILITY

Upon discharge reduced visibility will be evident, especially in humid atmospheres, as a result of the condensations of vapor. The period of reduced visibility will normally be brief.

2.4.6 PRESSURE

The discharge nozzle is between 73 Psi and 290 Psi (5 bar and 20 bar).

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3. INSTALLATION, OPERATION & MAINTENANCE INSTRUCTIONS

3.1 INSTALLATION

IMPORTANT! The **FIREFLEX® 1230** unit IS NOT designed to be installed in area subject to freezing conditions. Refer to section 1.3 ENVIRONMENT for additional details.

1. Install the **FIREFLEX® 1230** cabinet (refer to section 6 CABINET).

IMPORTANT! THE CABINET MUST BE FIRMLY ANCHORED TO THE FLOOR USING ALL FOUR (4) ANCHORING HOLES.

2. Install the clean agent releasing piping, detection and signaling circuits (if applicable) in accordance with applicable standards.
3. Connect all detection and alarm audible devices, where applicable, according to electrical schematics (refer to section 5.2 WIRING DIAGRAMS).
4. Connect the AC power for the release control panel on a separate breaker in the electric distribution panel (refer to section 5.2 WIRING DIAGRAMS).
5. Conform to local municipal or other codes regarding installations of fire protection systems.
6. Place the **FIREFLEX® 1230** system in service (refer to chapters 3.2 PRELIMINARY INSPECTION & 3.3 PLACING SYSTEM IN SERVICE).
7. If the system does not operate as it should, make the necessary corrections according to manuals issued or consult your distributor or *FIREFLEX Systems Inc.*
8. Make sure that building owner or a delegated representative has received instructions regarding the operation of the system.

3.2 PRELIMINARY INSPECTION

See figure 1.1.

1. **FIREFLEX® 1230** cabinet shall be firmly anchored to the floor.
2. Open door to mechanical section.
3. Cylinder (A) shall be solidly fixed with brackets (G).
4. Check the pressure of the cylinder with pressure gauge (E) according to table 3.1. If the cylinder shows a loss in pressure of more than 10%, it shall be refilled or replaced.
5. Check that piping supports have been installed at the correct intervals and are adequate for the purpose.

6. The piping distribution system shall be inspected to determine that it is in compliance with the design and installation documents.
7. Nozzles and pipe size shall be in accordance with system drawings. Means of pipe size reduction and attitudes of tees shall be checked for conformance to the design.
8. Check that all nozzles are fitted in accordance with the design requirements and are aimed in the correct alignment away from obstructions or barriers that could prevent adequate distribution/mixing of the gas.
9. Protected area Integrity test shall be considered to locate and then effectively seal any significant air leaks that could result in a failure of the enclosure to hold the specified agent concentration level for the specified holding period. The currently preferred method is using a blower door fan unit and smoke pencil.

3.3 PLACING SYSTEM IN SERVICE

1. Check all detectors.
2. Check all manual pull stations.
3. Check all audible & visual devices.
4. Check if extinguishments electric actuator (C) operates after preset time delay.
5. Simulate a low cylinder pressure by shorting low cylinder pressure switch (D) terminals.

CAUTION! Activate the **releasing circuit disable switch** before doing any tests on the system (see figure 4.2).

6. Perform sequence of operation (refer to chapter 3.4).

Table 3.1 - Cylinder pressure versus temperature

Cylinder pressure	Temperature
413 psi (28.4 bar)	0°F (-17.8°C)
425 psi (29.3 bar)	10°F (-12.2°C)
438 psi (30.1 bar)	20°F (-6.67°C)
450 psi (31 bar)	32°F (0°C)
463 psi (31.9 bar)	40°F (4.4°C)
475 psi (32.7 bar)	50°F (10°C)
488 psi (33.6 bar)	60°F (15.6°C)
500 psi (34.5 bar)	70°F (21.2°C)
513 psi (35.3 bar)	80°F (26.7°C)
525 psi (36.2 bar)	90°F (32.2°C)
538 psi (37 bar)	100°F (37.8°C)
550 psi (37.9 bar)	110°F (43.3°C)
563 psi (38.8 bar)	120°F (48.9°C)

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3.4 SEQUENCE OF OPERATION

3.4.1 Automatic release

1. Actuation of a detector from one detection zone:
 - a) "COMMON ALARM" lamp flashes.
 - b) "ZONE 1" (or "ZONE 2") lamp flashes.
 - c) "DETECTION ZONE 1" (or "DETECTION ZONE 2") message appears on the display.
 - d) "OUTPUT 1" (1ST ALARM) activates.
 - e) "ALARM" contact activates.
2. Actuation of a detector from the other detection zone for crossed zones configuration:
 - a) "ZONE 2" (or "ZONE 1") lamp flashes.
 - b) "DETECTION ZONE 2" (or "DETECTION ZONE 1") message appears on the display.
3. Pre-discharge sequence occurs:
 - a) "PRE-DISCHARGE" lamp flashes.
 - b) "OUTPUT 2" (2ND ALARM) activates.
 - c) Pre-discharge delay starts (not exceeding 60 sec).

Note: The abort station will prevent the **NOVEC 1230** discharge as long as being maintained if activated during the pre-discharge delay (refer to chapter 3.4.3).

4. After pre-discharge delay is completed:
 - a) "DISCHARGING" lamp illuminates steady.
 - b) "OUTPUT 4" lamp flashes.
 - c) "OUTPUT 4" (RELEASING) message appears on the display.
 - d) **NOVEC 1230** electric actuator (C) activates.
- If **NOVEC 1230** discharge switch option is selected:
- e) "ZONE 3" lamp flashes.
 - f) "DETECTION ZONE 3" (RELEASING) message appears on the display.
 - g) "RELEASING" contact activates.

3.4.2 Manual release

1. Actuation of a manual release pull station within the system:
 - a) "COMMON ALARM" lamp flashes.
 - b) "ZONE 4" lamp flashes.
 - c) "PRE-DISCHARGE" lamp flashes.
 - d) "DETECTION ZONE 4" (MANUAL RELEASE) message appears on the display.
 - e) "OUTPUT 2" (2ND ALARM) activates.
 - f) "ALARM" contact activates.
 - g) Pre-discharge delay starts (not exceeding 30 sec).
 2. After pre-discharge delay is completed:
 - a) "DISCHARGING" lamp illuminates steady.
 - b) "OUTPUT 4" lamp flashes.
 - c) "OUTPUT 4" (RELEASING) message appears on the display.
 - d) **NOVEC 1230** electric actuator (C) activates.
- If **NOVEC 1230** discharge switch option is selected:
- e) "ZONE 3" lamp flashes.
 - f) "DETECTION ZONE 3" (RELEASING) message appears on the display.
 - g) "RELEASING" contact activates.

Note: At any time, if the optional mechanical activator (J) is activated, the **NOVEC 1230** will be released.

3.4.3 Abort Station

1. Actuation of an abort station within the system:
 - a) "SYSTEM TBL" lamp flashes.
 - b) " SUP 1 / ABORT " lamp flashes.
 - c) "TROUBLE ABORT" message appears on the display.
 - d) "TROUBLE" contact activates.

When abort release switch is activated, pre-discharge timer will continue to count down until it reaches 10 seconds and then wait. Releasing the abort release switch will allow the pre-discharge to continue its count down from 10 seconds. If the abort release switch is again activated before the pre-discharge timer reaches zero, the timer will reset to 10 seconds and wait.

CAUTION ! Abort does not function and has no effect on panel operation from zones programmed as Manual RELEASE.

3.4.4 System supervisory

1. Actuation of a supervisory device such as low pressure switch within the system:
 - a) "SUPERVISORY 2" lamp flashes.
 - b) "SUPERVISORY 2" message appears on the display.
 - c) "SUPERVISORY" contact activates.

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3.5 EMERGENCY INSTRUCTIONS

To take system out of service:

WARNING ! Placing a system out of service may eliminate the fire protection capabilities of the system. Prior to proceeding, notify all Authorities Having Jurisdiction. Consideration should be given to employ a fire patrol in the affected areas.

After placing the system out of service has been authorized by the appropriate Authority Having Jurisdiction:

1. Turn the **releasing circuit disable switch** to **DISABLED** before doing any tests on the system (see figure 4.2).
2. To return the system back in service, turn the **releasing circuit disable switch** to **NORMAL** (see figure 4.2).

3.6 PLACING THE SYSTEM BACK IN SERVICE AFTER OPERATION

See figure 1.1.

1. Remove the electric actuator (C) from the cylinder (A).
2. Remove cylinder (A) and send it to an authorized agent for filling.
3. Reinstall the cylinder (A) inside the cabinet.
4. Reset the electric actuator (C) (refer to chapter 3.7).
5. Install the electric actuator (C) on the cylinder (A).
6. Check that the piping and nozzles have not been altered.

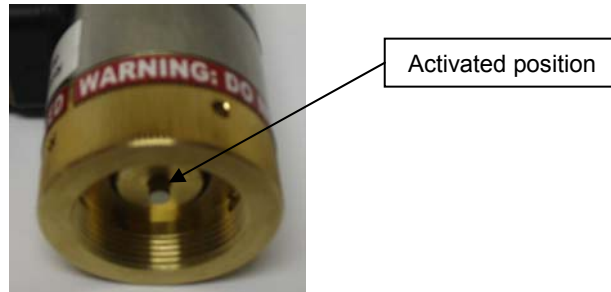
WARNING ! the optional mechanical release (J) SHALL be in **NORMAL** position, handle upwards and safety pin installed **BEFORE** installing it on the cylinder valve (B).

7. Notify the Authority Having Jurisdiction, remote station alarm monitors, and those in the affected area that the system is back in service.

3.7 ELECTRIC ACTUATOR

When the electric actuator (C) gets energized, it stays in the activated position (see figure 3.1).

Figure 3.1



Reset the actuator (C) to normal position by turning or pushing the resetting tool (see figures 3.2 & 3.3).

Figure 3.2

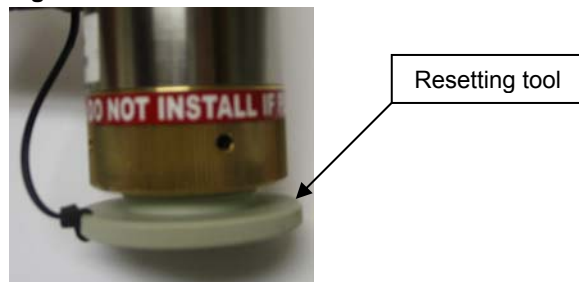
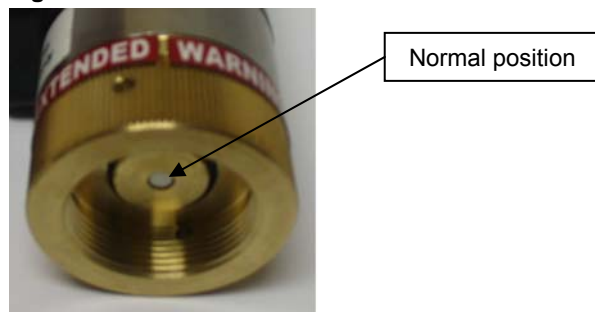


Figure 3.3



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3.8 INSPECTIONS & TESTS

NOTICE: THE OWNER IS RESPONSIBLE FOR MAINTAINING THE FIRE PROTECTION SYSTEM AND DEVICES IN PROPER OPERATING CONDITION.

The purpose of the periodic inspection and tests is to insure that the system is operating satisfactory and to identify problems that could adversely affect the performance of the system. Inspection and tests of the system shall be accomplished in accordance with NFPA-25, NFPA-72 and NFPA-2001. At least annually, the system shall be thoroughly inspected and tested for proper operation by competent personnel. In addition, the Authority Having Jurisdiction may have additional maintenance, testing, and inspection requirements that must be followed.

WARNING! Any system maintenance that involves placing the system out of service may eliminate the fire protection capabilities of that system. Prior to proceeding, notify all Authorities Having Jurisdiction.

Records

Records of inspections, tests, and maintenance of the system and its components shall be made available to the Authority Having Jurisdiction upon request. Typical records include, but are not limited to, detection system, and **NOVEC 1230** cylinder inspections.

Acceptance test records should be retained for the life of the system. Subsequent test records should be retained for a period of 1 year after the next test. The comparison determines deterioration of system performance or condition and the need for further testing or maintenance.

3.8.1 Monthly inspection

1. Visually inspect all **NOVEC 1230** system components and cylinder pressure.
2. Refer any noted problems or deficiencies to authorized service personnel for correction.

3.8.2 Semi-annual inspection

1. Check the nozzles piping for corrosion and damage.
2. Check all piping supports to insure they are tight and properly secured.
3. Check the discharge nozzle orifice(s) to see if they are clear with no obstructions.
4. Check to insure that the nozzles are positioned correctly.
5. Check the quantity of liquid and pressure in the cylinder (A). If a loss in net weight of more than 5% or a loss in pressure of more than 10% (refer to table 3.1), it shall be refilled or replaced.
6. Perform functional test of all components of the system.

WARNING! Prior to any functional tests, the actuator (C) must be removed to prevent cylinder (A) discharge.

3.8.3 Annual inspection

1. Perform semi-annual inspection.
2. Check all detectors.
3. Check all manual pull stations.
4. Check all audible & visual devices.
5. Check all HVAC shut down, etc.
6. Check if extinguishment electric actuator (C) operates after pre-discharge delay.
7. Simulate a low pressure of cylinder (A) by shorting low cylinder pressure switch (D) terminals.
8. Perform sequence of operation (refer to chapter 3.4).

3.9 MAINTENANCE

The system shall be maintained in full operation condition at all times.

All troubles or impairments shall be corrected promptly consistent with the hazard being protected.

Any penetration made through the enclosure protected by the clean agent shall be sealed immediately. The method of sealing shall restore the original fire resistance rating of the enclosure.

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4. CONTROLS

4.1 PRODUCT DESCRIPTION

The release control panel of the **FIREFLEX® 1230** system is an add-on unit that is installed inside the cabinet at the factory.

Once the left door opened, the locked control panel door can be opened to give access to the control panel keyboard, the emergency battery compartment, and other related equipment.

The releasing circuit disabled switch of the **NOVEC 1230** is located at left of the release control panel.

The control panel can be easily flipped once unlatched from the right side, giving access to electrical junction boxes of the unit (refer to figure 5.1 FIELD WIRING DIAGRAM for additional details).

4.2 PFC-4410RC RELEASE CONTROL PANEL

The Potter model PFC-4410RC releasing control panel is an approved and listed microprocessor based unit, primarily designed for use as a releasing panel. The panel is available for use with 120VAC, 60Hz or 220VAC, 50/60Hz main power supply. The battery compartment can hold two 12 volt batteries which are recharged by an internal battery charger. Batteries are available to provide up to 90 hours of backup power during AC power failure.

The PFC-4410RC panel can be used with a wide range of compatible initiating devices such as pull stations, heat detectors (including linear heat detectors), photoelectric and ionization smoke detectors.

In fire conditions when an initiating device circuit (or predetermined combination of circuits) is energized, the panel activates the release and signaling circuits according to the Program settings.

On the panel's display board, the appropriate alarm, trouble and supervisory lamps (LED type) will flash until the event has been acknowledged. A message will be displayed on the LCD as well.

WARNING ! For more information and technical data, please refer to the Potter PFC-4410RC INSTALLATION, OPERATION AND INSTRUCTION MANUAL provided with the **FIREFLEX® 1230** unit.

4.3 PFC-4410RC VISUAL INDICATORS

Green lamps:

AC POWER

Red lamps:

COMMON ALARM

ZONE circuit active (4)

OUTPUT circuit active (4)

Yellow lamps:

POWER TROUBLE

SYSTEM TROUBLE

SUPERVISORY TROUBLE

GROUND FAULT

ALARM SILENCE

PRE-DISCHARGE / DISCHARGING

SUPERVISORY 1 / ABORT

SUPERVISORY 2

OUTPUT trouble (4)

ZONE / SUPERVISORY circuit trouble (4)

SUPERVISORY circuit active (4)

4.4 PFC-4410RC CONTROL BUTTONS

SCROLL UP / BUZZER SILENCE

SCROLL DOWN / BUZZER SILENCE

It acknowledges supervisory and trouble events.

SCROLL UP will scroll up every event.

SCROLL DOWN will scroll down every event.

Once all alarm, supervisory and trouble events have been viewed, the panel buzzer and appropriate output will silence. The applicable lamps will change from flashing to steady state.

Any subsequent abnormal condition will resound the panel buzzer.

LAMP TEST

Holding both SCROLL UP and SCROLL DOWN buttons will lit all lamps of the control panel to verify their operation.

SIGNAL SILENCE

It acknowledges alarm events and deactivates audible devices.

Once pressed, all silenceable outputs will de-activate; the yellow ALARM SILENCE lamp will lit. A trouble condition will be created, TROUBLE contact will be activated.

WARNING ! Audible devices initiated from a RELEASING signal cannot be silenced. They will not silence until the panel is reset.

SYSTEM RESET

It returns the control panel to normal condition.

It will breaks power to all initiating circuits, 4-wire smoke detectors power and activated output circuits.

Note: If any abnormal condition is still active after RESET, they will reactivate the control panel.

Trouble conditions are self restoring once all cleared. Alarm and supervisory conditions are latched and require a SYSTEM RESET to be cleared.

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4.5 TIME AND DATE SETTINGS

Time and date settings must be done for each cold start of the control panel.

1. Flip the slide switch to PROGRAM position.
2. Press FUNCTION button until the following message is displayed:

SET TIME?

3. Press SELECT button until MINUTES is displayed:

01/21/2009
MINUTES 02:58:04

4. Press SELECT button to increase the value, or SET to decrease the value.
5. Press FUNCTION button until HOURS is displayed:

01/21/2009
HOURS 02:58:04

6. Press SELECT button to increase the value, or SET to decrease the value.
7. Press FUNCTION button until DAY is displayed:

DAY 01/21/2009
02:58:04

8. Press SELECT button to increase the value, or SET to decrease the value.
9. Press FUNCTION button until MONTH is displayed:

MONTH 01/21/2009
02:58:04

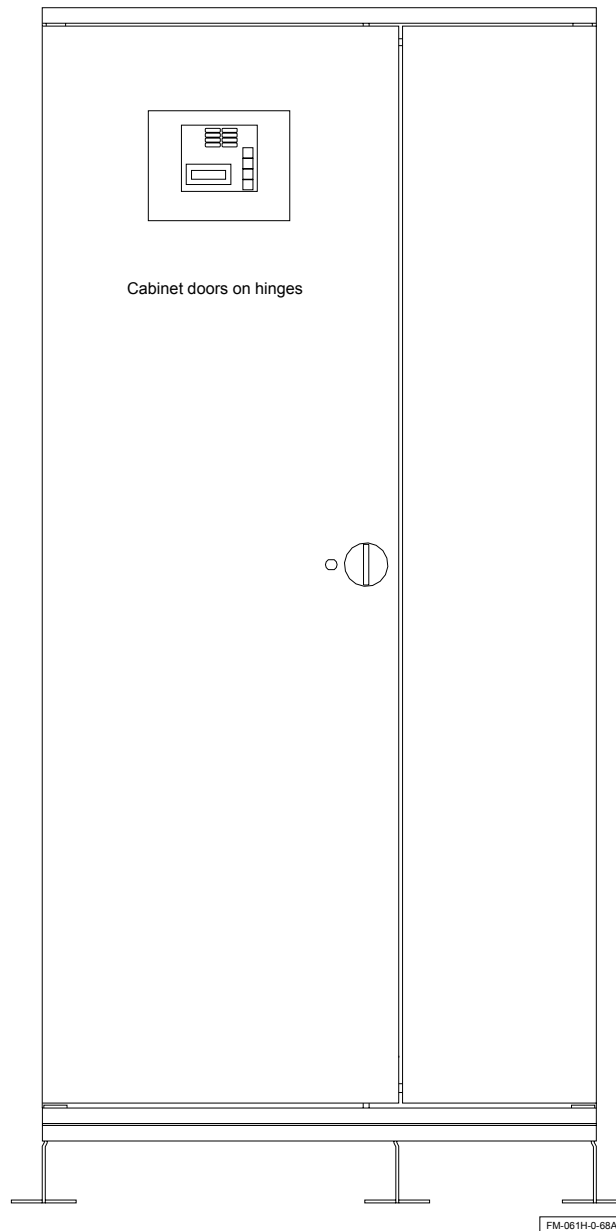
10. Press SELECT button to increase the value, or SET to decrease the value.
11. Press FUNCTION button until YEAR is displayed:

YEAR 01/21/2009
02:58:04

12. Press SELECT button to increase the value, or SET to decrease the value.
13. Return the slide switch to RUN position.

Figure 4.1 - Cabinet doors assembly

The right door is available only with cabinet greater than 24".



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Figure 4.2 - Control equipment layout

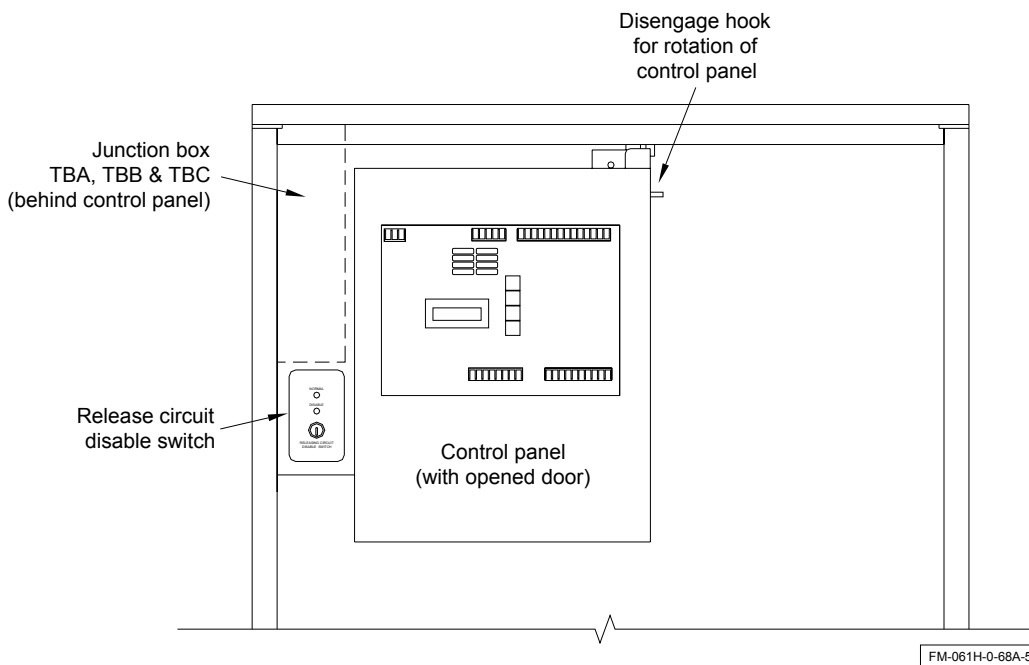
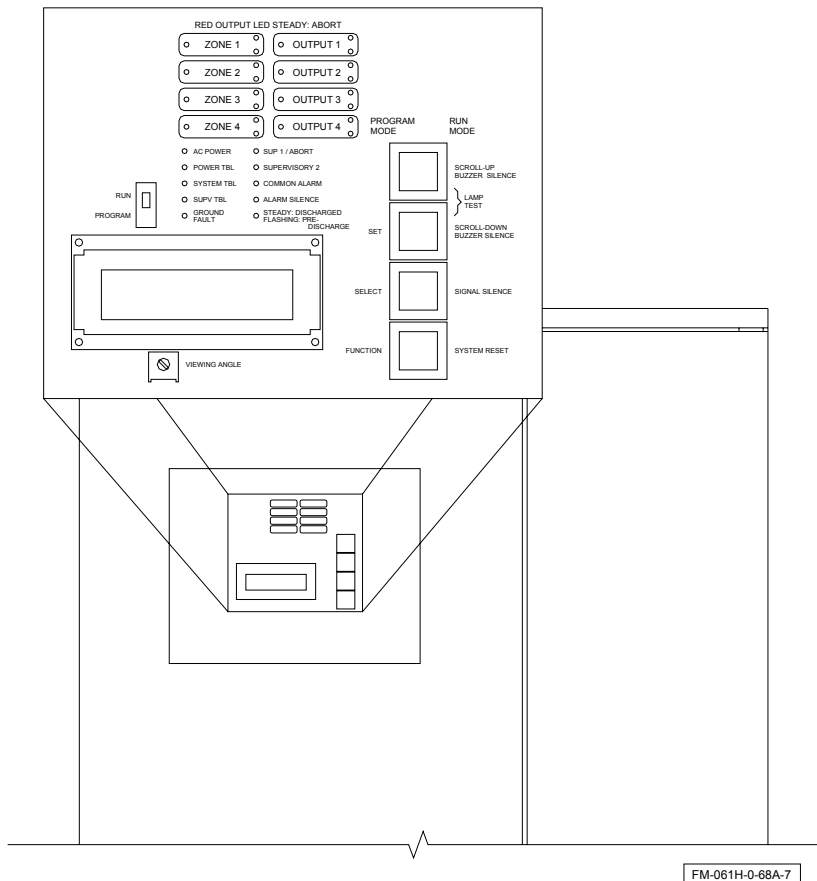


Figure 4.3 - PFC-4410RC control panel detail



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5. PROGRAMMING & WIRING DIAGRAMS

5.1 FIREFLEX® 1230 PROGRAMMING

The Potter PFC-4410RC release control panel included with the **FIREFLEX® 1230** unit is factory programmed and wired for the following configurations:

- ◆ Activation by ZONE 1 **OR** ZONE 2 (single zone) or
- ◆ Activation by ZONE 1 **AND** ZONE 2 (crossed zones)
- ◆ Activation by ZONE 4 (pull station)

This programming makes sure the system will perform as required and was factory tested to make sure it meets all requirements.

Note : The control panel motherboard is factory pre-wired and programmed for the configuration selected at the time of purchase. All field wiring should be terminated as shown at figure 5.1.

Table 5.1 - Programming for single zone activation

SINGLE HAZARD Activation by ZONE 1 OR ZONE 2 (single zone)	OUTPUT CIRCUITS				RELAYS			
	OUTPUT 1 (1 ST Alarm)	OUTPUT 2 (2 ND Alarm)	OUTPUT 3 (Discharge)	OUTPUT 4 (NOVEC 1230 electric actuator)	ALARM	TROUBLE	RELEASING	SUPERVISORY
INPUT CIRCUITS								
SUPERVISORY 1 (Abort)						X		X
SUPERVISORY 2 (Low cylinder pressure)						X		X
ZONE 1 (Detection Zone 1)	X	X		X	X	X		
ZONE 2 (Detection Zone 2)	X	X		X	X	X		
ZONE 3 (NOVEC 1230 releasing opt.)			X		X	X	X	
ZONE 4 (Manual pull station)		X		X	X	X		

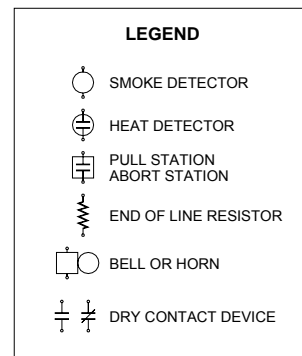
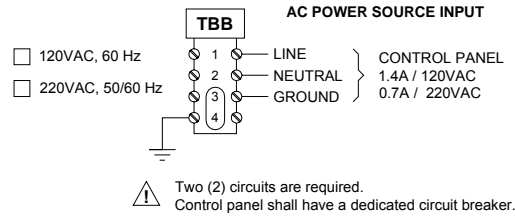
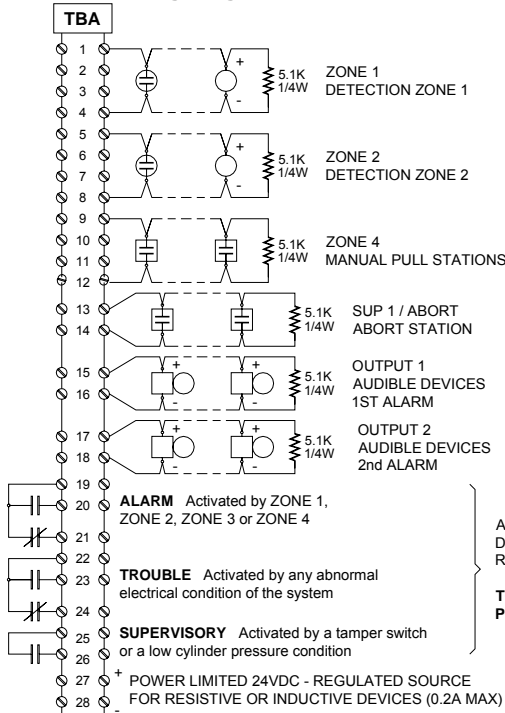
Table 5.2 - Programming for crossed zones activation

SINGLE HAZARD Activation by ZONE 1 AND ZONE 2 (crossed zones)	OUTPUT CIRCUITS				RELAYS			
	OUTPUT 1 (1 ST Alarm)	OUTPUT 2 (2 ND Alarm)	OUTPUT 3 (Discharge)	OUTPUT 4 (NOVEC 1230 electric actuator)	ALARM	TROUBLE	RELEASING	SUPERVISORY
INPUT CIRCUITS								
SUPERVISORY 1 (Abort)						X		X
SUPERVISORY 2 (Low cylinder pressure)						X		X
ZONE 1 (Detection Zone 1)	X	X		X X	X	X		
ZONE 2 (Detection Zone 2)	X	X		X X	X	X		
ZONE 3 (NOVEC 1230 releasing opt.)			X		X	X	X	
ZONE 4 (Manual pull station)		X		X	X	X		

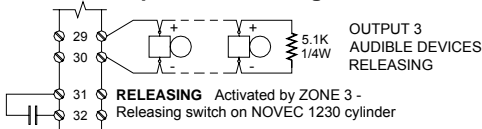
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5.2 FIRE FLEX® 1230 WIRING DIAGRAMS

Figure 5.1 - Field wiring diagrams

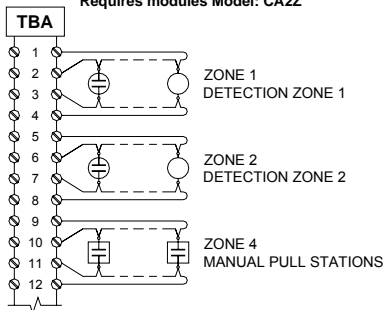


Optional Releasing Circuits



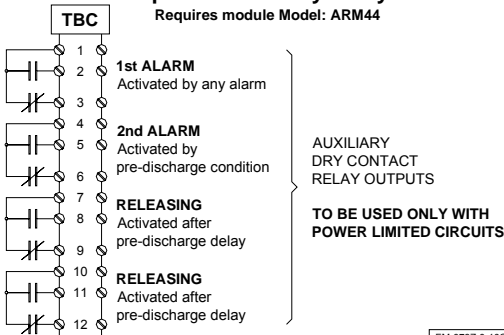
Optional Class A (Style D) Wiring

Requires module Model: CA2Z



Optional Auxiliary Relays

Requires module Model: ARM44



Power limited (supervised) initiating device circuits

ZONE 1, 2, 3 and 4 (Class B or Class A opt.)

End of line resistor: 5.1KΩ, 1/4W

Leave EOL resistor (provided) on all unused circuits.

Loop resistance: 100Ω max.

Refer to the PFC-4410RC control panel manual for smoke detector compatibility.

Power limited (supervised) initiating device circuits

SUP 1 / ABORT and SUPERVISORY 2 (Class B)

End of line resistor: 5.1KΩ, 1/4W

Leave EOL resistor (provided) on all unused circuits.

Loop resistance: 100Ω max.

For dry contact supervisory devices only

Power limited (supervised) notification appliance circuits

OUTPUT 1, 2 and 3 (Class B)

End of line resistor: 5.1KΩ, 1/2W

Leave EOL resistor (provided) on all unused circuits.

Operating voltage: 27VDC max. (ripple: 0.3V)

Usable current per circuit: 1A max.

Total current (all circuits): 2.5A max.

Polarity is reversed in supervisory condition.

Refer to the PFC-4410RC control panel manual for device compatibility.

Auxiliary Power 24VDC Regulated Source

Available current: 0.2A max. for resettable 4 wires smoke detectors

Auxiliary relay contacts

Rated 3A, 30VDC resistive

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6. CABINET

The **FIREFLEX® 1230** cabinet is made of sturdy 14 gauge steel. Refer to table 6.1 and figure 6.2 for dimensions.

All surfaces are rust proof coated, inside and outside, with fire red, oven baked polyester powder on phosphate base. Cabinet is provided with one or two doors, each provided with a neoprene gasket to avoid vibrations, giving the access to the pressure gauges reading once opened.

Each cabinet door is provided with hinges that can easily be disassembled on site to remove the door assemblies for installation and servicing. The cabinet assembly is pre-assembled, pre-wired, and factory tested under ISO-9001 conditions. Refer to table 6.2 and figures 6.3 & 6.4 for installation and clearances details.

Electrical junction boxes are integrated inside the cabinet for connection of detection system, auxiliary contacts and signaling devices. Knockouts can be drilled by the installing contractor on-site but must adhere to the restrictions indicated on figure 6.1.

Figure 6.1 - Drilling details

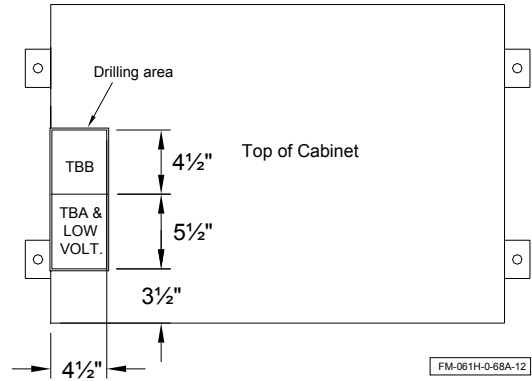


Table 6.1 - Cabinet dimensions

Size	A	B	C	D	E	F	G
24"	23"	25"	77 1/8"	29"	15"	27"	N / A
52"	52"	31"	81"	56"	21"	54"	26"

Table 6.2 - NOVEC 1230 piping installation

Lbs	H	J	K	L
40	1"	2 3/4"	6"	3 1/4"
76	1 1/4"	2 3/4"	6"	3 1/4"
164	1 1/2"	2 3/4"	6"	1 3/4"
322	2"	6 3/4"	6"	4 3/4"
601	2 1/2"	6 1/2"	6"	3 3/4"
850	3"	9"	7"	5"

Note: Dimensions may slightly differ from real unit.

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Figure 6.2 - Cabinet dimensions

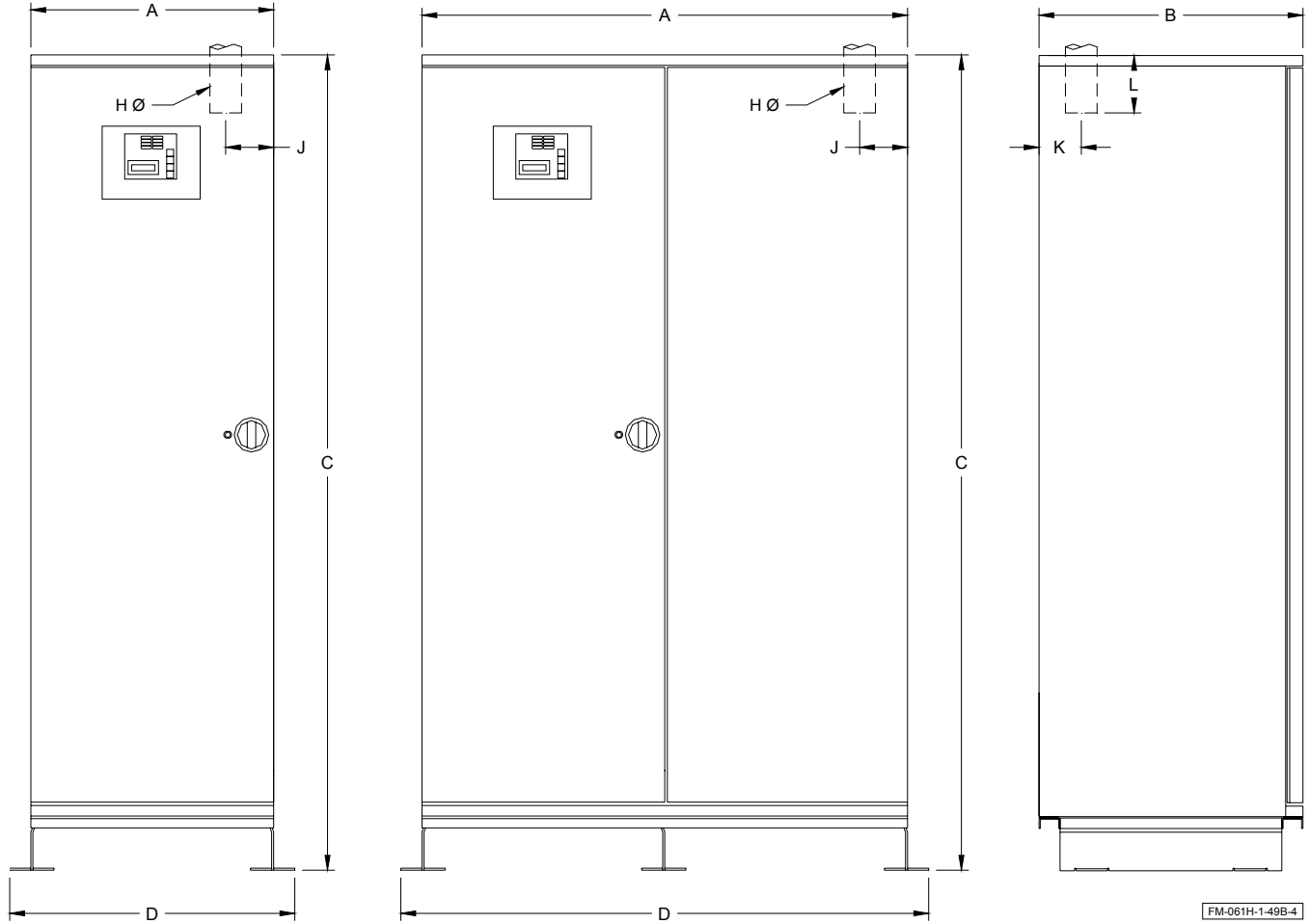


Figure 6.3 - Floor anchoring template

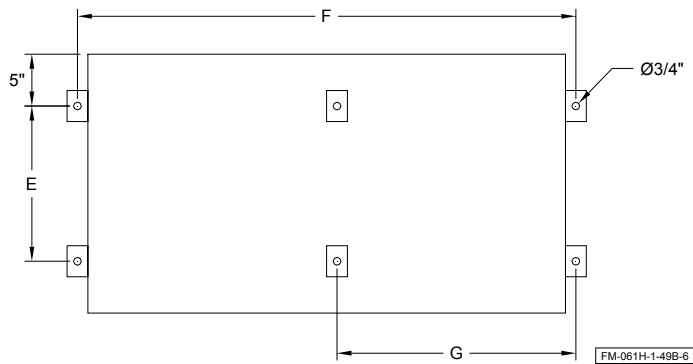
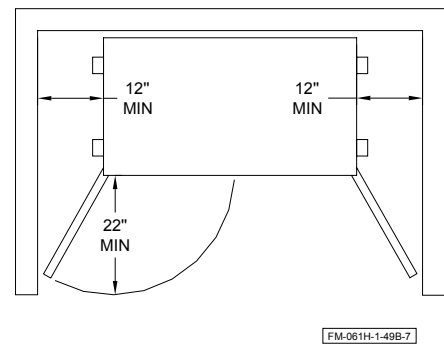


Figure 6.4 - Required clearance



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**Integrated Fire Protection System
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FireFlex Systems Inc. (known herein as "the Manufacturer") warrants to its customer that its products shall be free of defects in material or part(s) and workmanship for a period of twelve (12) months from the date of original delivery, under normal use and service by the Customer (and provided that the product has been properly installed and maintained).

The obligation of the Manufacturer in case of a claim made by the Customer hereunder, shall be, at the Manufacturer's option, limited to repair or replace, free of charge for parts or his labor, any product or part, which in the opinion of the Manufacturer, shall be proven to be defective. The Manufacturer will NOT accept labor back-charges incurred by the Customer to repair or replace said product or part.

The present warranty shall be void should the product or part(s) be altered by anyone other than the Manufacturer. In case of a claim under the present warranty, the Customer must contact the Manufacturer's Customer Service Department as soon as he is aware of a claim and, subject to the authorization of the manufacturer, return the defective product or part(s), transportation prepaid, to the address listed below.

This warranty constitutes the entire warranty given by the Manufacturer to the Customer with respect to the product. The present warranty is non-transferable and non-assignable. The Manufacturer does not represent that the products will prevent any loss by fire or otherwise or that the product will in all cases provide the protection for which it has been installed or intended.

The Customer acknowledges that the Manufacturer is not an insurer. The manufacturer shall not be liable for any loss or damages of any nature whatsoever, including but not limited to incidental or special or consequential damages including but not limited to, property damages, personal injury, revenue loss or lost profits, inconveniences, transportation charges or other damages suffered by anyone.

There are no other warranties, expressed or implied with regard to the products, other than those contained herein.

Some jurisdictions may not allow limitations on how long an expressed warranty lasts, so the above limitations may not apply to you. Under no circumstances, shall the Manufacturer be liable for any loss of, or damage to property, direct or indirect, incidental or special or consequential damages, arising out of the use or inability to use the Manufacturer's products. The Manufacturer shall not be liable for any personal injury which may arise in the course of or as a result of the use of the manufacturer's products.

This warranty replaces all previous warranties and is the only warranty given by the Manufacturer with respect to its products. This warranty shall not be modified, unless such modification is made in writing by an executive officer of the Manufacturer.

In consideration of the warranty provisions contained herein, the Customer hereby waives the benefit of any statutory warranty or protection or remedy to which he may be entitled under the terms of any sales of goods act or similar legislation available to him in any jurisdiction in which the Customer carries on business.

Defective part(s) must be returned to the address listed below within (30) days of receiving replacement part(s). If defective part(s) is not returned before delay expires, an invoice will be issued for replacement part(s) and shipping. On reception, an extended analysis will be performed on the said part(s). If proven to be defective, no invoice will be issued. If the part(s) is proven to be in working condition an invoice will be issued for replacement part(s) and shipping.

Special Limitation: Due to their self discharge characteristics when not charged during extended storage periods, Batteries supplied with integrated Releasing Control Panels are covered by the above warranty for a period limited to three (3) months only.

Product Support**1-866-347-3353**

Our Product Support Organization is dedicated to assisting you regarding our products, warranty and service procedures.

The number above is a toll free number to Product Support.



Manufactured by **FIREFLEX Systems Inc.**

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