INSTALLATION, OPERATION, AND MAINTENANCE MANUAL

Serial Number ________________________________________________

Date of Installation ___________ Date of Commissioning ___________

FM APPROVED

UNITED Fire Protection Corporation
1 Mark Road
Kenilworth, NJ USA 07033
908-688-0300
www.unitedfireprotection.com
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HAZARD IDENTIFICATION

Carefully read, understand, and follow instructions identified by these symbols.

DANGER
The use of the word “DANGER” identifies an immediate hazard with a likelihood of death or serious personal injury if instructions, including recommended precautions, are not followed.

WARNING
The use of the word “WARNING” identifies the presence of hazards or unsafe practices that could result in death, personal injury, or serious property damage if instructions, including recommended precautions, are not followed.

CAUTION
The use of the word “CAUTION” identifies possible hazards or unsafe practices that could result in personal injury or property damage if instructions, including recommended precautions, are not followed.

IMPORTANT
The use of the word “IMPORTANT” identifies special instructions, not related to hazards, that should be followed.
FOREWORD

This manual is written for those who install, operate and maintain United Fire Protection PREACTION-PAC sprinkler valve assemblies. The manual contains installation, operation, and maintenance information for these assemblies.

IMPORTANT

United Fire Protection assumes no responsibility for the installation, operation, or maintenance of any systems other than those addressed in this manual. The data contained in this manual is for information purposes only. United Fire Protection believes this data to be accurate at the time of publication, but the data is published and presented without any guarantee or warranty whatsoever. United Fire Protection disclaims any liability for any use that may be made of the data and information contained in this manual by any and all parties.

IMPORTANT

The United Fire Protection PREACTION-PAC sprinkler valve assembly is a vital part of the fire protection of any facility where these units are installed. Life safety and property protection depends on continuing proper operation of the assembly. The owner of the PREACTION-PAC is responsible for the condition of the assembly and its continued proper operation. United Fire Protection strongly recommends that all owners of PREACTION-PACs engage the services of qualified, trained fire protection professionals to design the system containing the assembly, and to install and maintain the assembly.

United Fire Protection PREACTION-PAC sprinkler valve assemblies are to be installed and maintained by qualified, trained personnel in accordance with:

- This Installation, Operation, and Maintenance Manual P/N 10-500001-00A.
- National Fire Protection Association No. 70, “National Electrical Code®.”

Any questions on the information in this manual should be addressed to:

United Fire Protection Corporation
1 Mark Road
Kenilworth, NJ USA 07033
908-688-0300
www.unitedfireprotection.com
Figure 1 – PREACTION-PAC Shown With Enclosure Doors Closed
1. GENERAL

1.1. Introduction. The United Fire Protection PREACTION-PAC is a fully assembled and factory tested pre-action fire suppression system, including pre-action valve, trim, and control panel providing one complete zone of pre-action water sprinkler fire protection. All components are contained in two steel enclosures assembled one above the other. The system pressure gages and the required manual release handle are mounted on the front of the lower enclosure. The system detection and control panel is mounted behind a door in the upper enclosure with a clear polycarbonate window allowing visual access to the system indicators. Lockable latches on both doors permit authorized access to all system components. Both enclosures are finished in powder-coat red paint. Gasketing provides sealing of the enclosure doors. Knockouts permit easy attachment of external electrical conduits.

1.1.1. Pre-Action-Valve. The pre-action valve installed in the PREACTION-PAC is a low-differential, latched clapper valve that uses a unique direct-acting diaphragm to separate the system water supply from the system piping. The positive latching system uses the supply water pressure to hold the clapper shut. When the water pressure in the diaphragm chamber is released, the latch retracts from the clapper and the valve actuates. The low differential and unique latch and actuator design of the valve allows the valve to be self-resetting.

1.1.2. Piping. Water inlet pipe connections are located on the lower left and lower right sides and the upper right corner of the lower enclosure. (NOTE: Assemblies equipped with 1/2HP compressors do not have upper right corner inlet connection.) The unused inlets are left plugged. Grooved pipe is used for the inlet connection. The water outlet pipe connection is located at the top center of the lower enclosure, behind the upper enclosure. The drain connection is accessible within the lower enclosure, and knockouts are provided allowing exit of the drain from either side. All pipe connections are done in the lower enclosure.

1.1.3. Control Panel. A Potter 4410-RC releasing control panel is factory-installed in the upper enclosure. Programming for a basic pre-action system is factory programmed and tested. Additional programming may be necessary after installation to suit field conditions. This manual provides complete instructions for additional programming. All necessary internal wiring connections are factory-installed and tested.

1.1.4. Wiring. All wiring from the integral control panel to the valve solenoid and all switches is factory installed and tested. Wiring for compressor power and control is also factory installed and tested. All field wiring for control panel power, compressor power, detection circuits, notification appliance circuits, and circuits requiring contact closure is connected to terminal strips in the upper enclosure. No access to the lower enclosure is necessary to complete the wiring installation.

1.1.5. Compressor. The compressor for air pressurization of the pre-action sprinkler piping is pre-installed, wired and adjusted. Three sizes of compressor are available, depending on the volume of installed piping to be pressurized. The compressor is mounted using molded rubber mounts and bushings to minimize noise and vibration during motor operation. A compressor disconnect switch is located in the upper enclosure.

1.2. Features

1.2.1. Attractive and rugged metal enclosure. The entire enclosure is manufactured from steel with continuous welded seams. The lower enclosure is 12 gage, while the upper enclosure is 14 gage. Both enclosures are coated with red powder-coat paint inside and out. Continuous piano-style hinges attach the doors to the enclosures.

1.2.2. Easy-to-see gages on front of enclosure. Three pressure gages are mounted on the front of the lower enclosure, and are visible at all times. These gages monitor the air pressure in the system piping, the water supply pressure up to the pre-action valve, and the water pressure keeping the valve clapper piston closed.

1.2.3. Easy access to manual release valve. The emergency manual release ball valve is located behind a small unlocked door on the front of the lower enclosure. Operation of this ball valve opens the pre-action valve, filling the system piping with water. No power is necessary to accomplish this
The key for the lower enclosure main door does not have to be available to accomplish this operation.

1.2.4. Lower and upper water inlet connections. The water inlet piping may attach to the lower enclosure either near the bottom on either side, or to a pre-piped upper inlet at the top of the lower enclosure. (NOTE: Assemblies equipped with 1/2HP compressors do not have upper inlet connection.)

1.2.5. Easy-to-follow instructions on enclosure front. System instructions, mounted behind clear plastic, are located on the front of the upper enclosure.

1.2.6. Space for required spare sprinkler heads and wrench. As required by NFPA 13, a built-in storage location for spare sprinkler heads and a sprinkler wrench is behind the door of the upper enclosure.

1.2.7. Separate mechanical and electrical enclosures. This allows mechanical and electrical trades to keep their work areas separate.
Figure 3 – Diagram - Functional Description
1.3. Functional Description. Refer to Figure 3 on page 4.

1.3.1. Control panel (1). The control panel receives signals from fire detectors located in the protected space, as well as signals from various switches within the assembly. The panel processes the input signals per a pre-determined sequence of operation, and operates outputs for external audible / visual devices and building fire alarm signaling, as well as the signal to open the pre-action valve within the assembly. Refer to the control panel instruction manual in Section 4 for details on the panel and the sequence of operation.

1.3.2. Terminal strip (2). The terminal strip provides a convenient point for landing some of the required field wiring, and also serves as the interface point between the control panel (1) and the various connections in the lower enclosure.

1.3.3. Pre-action valve (3). The pre-action valve is the heart of the assembly. The valve holds back the sprinkler water until the control panel (1) reacts to the signal from the fire detectors and sends a signal to the valve actuation solenoid (4). In single-interlock assemblies, actuation of the valve actuation solenoid (4) sends water into the sprinkler pipe. In double-interlock assemblies, fusing of a sprinkler head from heat is required, along with valve actuation solenoid (4) actuation, to send water into the sprinkler pipe. Refer to Manual I-769P in Section 2 for more detailed information on the pre-action valve.

1.3.4. Valve actuation solenoid (4). The valve actuation solenoid receives the signal from the control panel (1), and actuates the pre-action valve (3). The solenoid is the Victaulic Series 753-E, and is rated at 24VDC, 0.364 amps, 8.7 watts, 66 ohms. The solenoid is FM Approved under Group I (as in India). Refer to Manual I-769P in Section 2 for more detailed information.

1.3.5. Waterflow signal switch (5). The水流信号 switch responds to waterflow in the pipe downstream of the pre-action valve (3). The switch contains Quantity 2, SPDT switches, rated at 10A-125/250VAC, 1/2HP, 2.5A-6/12/24VDC. Contacts transfer when waterflow begins after pre-action valve opens. Contacts automatically restore when waterflow ceases. One contact is factory-wired to send a signal to the control panel (1). Refer to the control panel instruction manual in Section 4 for details on the response of the panel to the waterflow signal switch.

1.3.6. Manual shutoff valve (6). The manual shutoff valve is used to shut off the flow of water after actuation of the pre-action valve (3). The normal position of this valve when the system is in service is open. Refer to Manual I-769P in Section 2 for more detailed information on the use of this valve.

1.3.7. Shutoff valve tamper signal switch (7). The shutoff valve tamper signal switch sends a supervisory signal to the control panel (1) when the manual shutoff valve (6) is closed. The switch contains Quantity 2, SPDT switches, rated at 10A-125/250VAC, 0.5A-125VDC. Contacts transfer when valve begins to close. Contacts restore when valve is fully open. One contact is factory-wired to send a signal to the control panel (1). Refer to the control panel instruction manual in Section 4 for details on the response of the panel to the shutoff valve tamper signal switch.

1.3.8. Compressor (8). The compressor supplies supervisory air pressure to fill the sprinkler pipe downstream of the pre-action valve (3). The sprinkler pipe is pressurized to 13 PSIG minimum and 18 PSIG maximum by the compressor (8). Loss of this pressure, from damage to the pipe or a sprinkler head, results in a supervisory signal at the control panel (1).

1.3.9. High / low air pressure limit switch (9). The high / low air pressure limit switch is built in to the compressor (8). When pressure in the pipe falls below 13 PSIG, the switch turns the compressor (8) on. When pressure in the pipe rises to 18 PSIG, the switch turns the compressor (8) off.

1.3.10. Low air pressure signal switch (10). The low air pressure signal switch sends the supervisory signal for low air pressure to the control panel (1). The switch contains Quantity 2, SPDT switches, rated at 10A-125/250VAC, 1/2HP, 2.5A-6/12/24VDC. Contacts transfer when pressure in the piping falls below 13PSIG. Contacts automatically restore when pressure rises above 13PSIG. One contact is factory-wired to send a signal to the control panel (1). Refer to the control panel instruction manual in Section 4 for details on the response of the panel to the low air pressure signal switch.

1.3.11. Compressor disconnect switch (11). The compressor disconnect switch is used to manually interrupt the 110VAC power to the compressor motor, during inspection, maintenance, and
Resetting of the assembly. Only trained personnel should use this switch. The normal position of this switch when the system is in service is ON.

1.3.12. Manual station valve (12). The manual station valve is located behind a separate door on the front of the lower enclosure. No key is needed to open this door. To manually open the pre-action valve (3), open the door and pull the lever on the manual station valve forward. The pre-action valve (3) will open, and the sprinkler pipe will fill with water. No power is needed to manually open the pre-action valve (3) in this manner.

1.3.13. Drain valve (13). The drain valve is used to drain the sprinkler pipe after actuation of the pre-action valve (3). This valve is used only during inspection, maintenance, and resetting of the assembly. Only trained personnel should use this valve. Refer to Manual I-769P in Section 2 for more detailed information on this valve. The normal position of this valve is closed.

1.3.14. Input connection for 110 VAC power (14). 110VAC is required to power the assembly. This power shall come from a source in compliance with all applicable codes and standards. Internal wiring (factory assembled) takes this power to the control panel (1) and the compressor (8). If local codes require individual 110VAC power sources for the control panel (1) and the compressor (8), jumpers may be removed from the terminal strip (2) permitting this. Refer to Section 1.10 for additional information on this connection.

1.3.15. Input connection for automatic fire detectors (15). Automatic fire detectors are required to provide the signal for opening the pre-action valve (3). These detectors are field-connected to this connection. See Section 1.10, and refer to the control panel instruction manual in Section 4 for details on these detectors and this connection.

1.3.16. Water inlet connection (16). The sprinkler water supply is field-connected to this connection. One of three optional water inlet connections may be chosen. The first is at the upper right corner of the lower enclosure. Use this connection if it is desired to bring the pipe to the assembly from above. (NOTE: Assemblies equipped with 1/2HP compressors do not have upper right corner inlet connection.) If it is desired to bring the pipe to the assembly from a location close to the floor, the connection may be made on the lower left of the assembly, or by disconnecting the top inlet piping, the connection may be made on the lower right of the assembly. Refer to Section 1.10 and Section 2 – Victaulic manual I-769P for more detailed information on this connection.

1.3.17. Outlet connection to fire sprinklers (17). The outlet connection from the assembly to the fire sprinklers is field-connected to this connection. The connection is located in the top center of the lower enclosure, behind the upper enclosure. Refer to Section 1.10 and Section 2 – Victaulic manual I-769P for more detailed information on this connection.

1.3.18. Notification appliance output connection (18). Notification appliances are required by code to alert occupants that a fire has been detected. These appliances are field-connected to this
connection. Refer to the control panel instruction manual in Section 4 for details on this connection.

1.3.19. Output connection to building fire alarm system (19). Most codes require a fire protection sub-
system to signal the building fire alarm system. This signal is field-connected to this connection. Refer to the control panel instruction manual in Section 4 for details on this connection.

1.3.20. Drain connection (20). Drain water from the assembly must be piped away to a drain. The drain piping may be connected to the assembly on the left or the right side. Refer to Section 1.10 and Section 2 – Victaulic manual I-769P 2 for more detailed information on this connection.

1.4. Configurations. United Fire Protection PREACTION-PAC sprinkler valve assemblies are available in the following configurations:

1.4.1. Valve sizes: 1-1/2" through 4".
1.4.2. Valve types: Single-interlock and double-interlock available in all valve sizes.

1.4.3. Compressor sizes:
1.4.3.1. For 1-1/2" and 2" valves: 1/6HP compressor only.
1.4.3.2. For 2-1/2" valves: 1/6HP and 1/3HP compressors available.
1.4.3.3. For 3" and 4" valves: 1/6HP, 1/3HP, and 1/2HP compressors available.
1.4.3.4. Compressors are capable of pressurizing piping systems up to the following limits:
1.4.3.4.1. 1/6HP compressor: maximum system capacity is 290 gallons.
1.4.3.4.2. 1/3HP compressor: maximum system capacity is 475 gallons.
1.4.3.4.3. 1/2HP compressor: maximum system capacity is 780 gallons.

1.4.4. Control panel: A Potter 4410-RC conventional detection control panel is factory-installed in the upper enclosure.

1.5. Options – None at this time.

1.6. Approvals. United Fire Protection PREACTION-PAC sprinkler valve assemblies, as listed in this Manual, are Approved by FM Approvals under the heading “Automatic Water Control Valves.” See pages 11 and 12 for Approved assemblies. NOTE: Although most PREACTION-PAC assemblies are FM Approved, custom-built units are supplied from time to time upon request. Various components within these custom assemblies maintain their individual approvals, but these custom assemblies are not FM Approved as a unit.

1.7. Applicable Standards. United Fire Protection PREACTION-PAC sprinkler valve assemblies are to be installed and maintained by qualified, trained personnel in accordance with:

1.7.3. National Fire Protection Association No. 70, “National Electrical Code®”.

1.8. Applicable Manuals. Manuals supplied by the manufacturers of components used in United Fire Protection PREACTION-PAC assemblies are included with this manual. In some cases, these manuals contain references that are NOT APPLICABLE to PREACTION-PAC assemblies. The following tables detail these NOT APPLICABLE items. Care should be taken to be clear on what is applicable and what is not when referring to these manuals for installation, operation, inspection, and maintenance instructions.
### Table 1.8.1 – Items Applicable and Not Applicable in Section 2 – Victaulic Manual

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<td>Series 757P Regulated AMTA is NOT applicable.</td>
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<td>13</td>
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<tr>
<td>14</td>
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<td>Compression fittings and tubes installed at UFP factory.</td>
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<tr>
<td>15</td>
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| 16 - 17  | X                             | 1. Series 776 Low Pressure Actuator is applicable to Double Interlock only.  
2. Step 11 – Ball valves on AMTA are NOT applicable. |       |
| 18 - 19  | X                             | Series 746-LPA Dry Accelerator is NOT applicable. |       |
| 20 - 21  | X                             | AMTA and Dry Accelerator ball valves are NOT applicable. |       |
| 22       |                               | X                                 |       |
| 23       | X                             | AMTA and Dry Accelerator ball valves are NOT applicable. |       |
| 24       |                               | X                                 |       |
| 25       | X                             | Series 746-LPA Dry Accelerator is NOT applicable. |       |
| 26       |                               | X                                 | AMTA ball valves are NOT applicable. |
| 27 - 28  | X                             | AMTA and Dry Accelerator ball valves are NOT applicable. |       |
| 29 - 33  | X                             |                                   |       |
| 34       | X                             | AMTA ball valves are NOT applicable. |       |
| 35 - 37  | X                             |                                   |       |
| 38       | X                             | Applicable valve sizes are 1-1/2” through 4”. |       |
| 39       |                               | X                                 |       |
| 40       | X                             | Applicable valve sizes are 1-1/2” through 4”. |       |
| 41       |                               | X                                 |       |
| 42       | X                             | Series 776 Low Pressure Actuator is applicable to Double Interlock only. |       |
| 43       | X                             | 1. Series 776 Low Pressure Actuator is applicable to Double Interlock only.  
2. Series 746-LPA Dry Accelerator is NOT applicable. |       |
| 44       | X                             | AMTA is not applicable. |       |

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### Table 1.8.2 – Items Applicable and Not Applicable in Section 3 – General Air Products
Manual OILLESSINST – Compressor

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| 1        | X                             |                                   | 1. For assistance, please contact United Fire Protection.  
|          |                               |                                   | 2. The sections on “Receiving” and “Mounting” are not applicable, since the compressor has been unpacked, mounted in the assembly, and tested by UFP. |
| 2        | X                             |                                   | 1. The AMD-1 is not applicable.  
|          |                               |                                   | 2. Applicable units are OL11016, OL21533, and OL33550. All other units are not applicable. |
| 3        | X                             |                                   | 1. Applicable pressure switch setting is 13 PSIG cut-in and 18 PSIG cut-out.  
|          |                               |                                   | 2. Compressors used by UFP are single-phase models. Three-phase information is not applicable.  
|          |                               |                                   | 3. Warranty is supplied by United Fire Protection Corporation. Warranty information on this page is not applicable. |
| 4        | X                             |                                   | For excessive noise in operation, contact United Fire Protection. General Air Products contact note is not applicable. |
| 5 - 6    | X                             |                                   | |
| 7        | X                             |                                   | Figure 1 is applicable. Figure 2 is not applicable. |
| 8        | X                             |                                   | |
Table 1.8.3 – Items Applicable and Not Applicable in Section 4 – Potter Manual
5403545 – PFC-4410-RC Control Panel

<table>
<thead>
<tr>
<th>Page No.</th>
<th>X Indicates Page IS Applicable</th>
<th>X Indicates Page IS NOT Applicable</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cover</td>
<td>X</td>
<td></td>
<td>PFC-4410-RC is applicable control panel.</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>X</td>
<td>Warranty is supplied by United Fire Protection Corporation. Warranty information on this page is not applicable.</td>
</tr>
<tr>
<td>3 - 4</td>
<td>X</td>
<td></td>
<td>Operating instructions are located on the front of the assembly by UFP.</td>
</tr>
<tr>
<td>5</td>
<td>X</td>
<td></td>
<td>Remote annunciators are not supplied as standard equipment.</td>
</tr>
<tr>
<td>6 - 14</td>
<td>X</td>
<td></td>
<td>The control panel is factory-programmed by UFP with a basic pre-action system program. When changes are necessary to suit field conditions, follow the instructions on these pages. NOTE: Cross-zoned systems connected for pre-action release are not accepted in New York City, NY.</td>
</tr>
<tr>
<td>15</td>
<td>X</td>
<td></td>
<td>These programs are not applicable to pre-action systems.</td>
</tr>
<tr>
<td>16</td>
<td>X</td>
<td></td>
<td>The control panel is factory-programmed by UFP with a basic pre-action system program. When changes are necessary to suit field conditions, follow the instructions on these pages. NOTE: Cross-zoned systems connected for pre-action release are not accepted in New York City, NY.</td>
</tr>
<tr>
<td>17 - 47</td>
<td>X</td>
<td></td>
<td>Only the two paragraphs and graphic at the top of the page are applicable.</td>
</tr>
<tr>
<td>48 - 61</td>
<td>X</td>
<td></td>
<td>Connect AC power to terminal strip in upper enclosure per Section 1.10. If calculated battery size exceed 26 A-H, use separate battery cabinet. Inputs from supervisory switches and solenoid output for pre-action valve wired by UFP.</td>
</tr>
<tr>
<td>62 - 66</td>
<td></td>
<td></td>
<td>Connect AC power to terminal strip in upper enclosure per Section 1.10. If calculated battery size exceed 26 A-H, use separate battery cabinet. Inputs from supervisory switches and solenoid output for pre-action valve wired by UFP.</td>
</tr>
<tr>
<td>67</td>
<td>X</td>
<td></td>
<td>Follow the guidelines on this page for wire routing, keeping in mind that the panel is installed in the PREACTION-PAC upper enclosure, not the OEM enclosure.</td>
</tr>
<tr>
<td>68 - 72</td>
<td></td>
<td>X</td>
<td>Bezel for semi-flush enclosure installation not applicable.</td>
</tr>
<tr>
<td>73</td>
<td>X</td>
<td></td>
<td>Connect AC power to terminal strip in upper enclosure per Section 1.10. If calculated battery size exceed 26 A-H, use separate battery cabinet. Inputs from supervisory switches and solenoid output for pre-action valve wired by UFP.</td>
</tr>
<tr>
<td>74 - 81</td>
<td>X</td>
<td></td>
<td>Connect AC power to terminal strip in upper enclosure per Section 1.10. If calculated battery size exceed 26 A-H, use separate battery cabinet. Inputs from supervisory switches and solenoid output for pre-action valve wired by UFP.</td>
</tr>
<tr>
<td>82</td>
<td>X</td>
<td></td>
<td>Connect AC power to terminal strip in upper enclosure per Section 1.10. If calculated battery size exceed 26 A-H, use separate battery cabinet. Inputs from supervisory switches and solenoid output for pre-action valve wired by UFP.</td>
</tr>
<tr>
<td>83</td>
<td>X</td>
<td></td>
<td>Connect AC power to terminal strip in upper enclosure per Section 1.10. If calculated battery size exceed 26 A-H, use separate battery cabinet. Inputs from supervisory switches and solenoid output for pre-action valve wired by UFP.</td>
</tr>
<tr>
<td>84</td>
<td>X</td>
<td></td>
<td>Connect AC power to terminal strip in upper enclosure per Section 1.10. If calculated battery size exceed 26 A-H, use separate battery cabinet. Inputs from supervisory switches and solenoid output for pre-action valve wired by UFP.</td>
</tr>
<tr>
<td>85</td>
<td>X</td>
<td></td>
<td>Connect AC power to terminal strip in upper enclosure per Section 1.10. If calculated battery size exceed 26 A-H, use separate battery cabinet. Inputs from supervisory switches and solenoid output for pre-action valve wired by UFP.</td>
</tr>
<tr>
<td>86</td>
<td></td>
<td>X</td>
<td>Connect AC power to terminal strip in upper enclosure per Section 1.10. If calculated battery size exceed 26 A-H, use separate battery cabinet. Inputs from supervisory switches and solenoid output for pre-action valve wired by UFP.</td>
</tr>
</tbody>
</table>

Page 10 of 23
1.9 FM Approved Assemblies

Part Number Coding:

G2 - XX - P - X - X - A

Codes Generation II
PREACTION-PAC. Future generations, incorporating major changes, will be G3, G4, etc.

Codes valve size:
- 15 = 1-1/2" valve
- 20 = 2" valve
- 25 = 2-1/2" valve
- 30 = 3" valve
- 40 = 4" valve

P = Preaction (Other codes reserved for future use)

Codes compressor size:
- 1 = 1/6HP
- 2 = 1/3HP
- 3 = 1/2HP

Codes control panel:
- A = Potter 4410-RC

Codes Single or Double Interlock:
- 1 = Single Interlock
- 2 = Double Interlock

PREACTION-PAC assemblies with indicated part numbers are FM Approved. From time to time, custom-built units are supplied upon request. The components in these custom-built units retain their individual approvals, but these custom-built units are not FM Approved.

When the Preaction-Pac is installed where FM Global is an AHJ, follow the requirements of FM Approvals Class Numbers 1011, 1012, 1013 and FM Global Property Loss Prevention Data Sheet 5-40 dated 2007, especially:

- Alarm control panels for automatic release of preaction sprinkler systems are required to have 90 hours of secondary power followed by 10 minutes of release power and alarm operation.
- Include the installation of Class A (Style D or E) initiating device circuits. All FM Approved systems / installations must be configured as Class A for Deluge and Preaction Releasing Service.
- Do not include abort switches to abort the preaction sprinkler actuation function.
### Table 1.9.1 – Approved PREACTION-PAC Assemblies with Potter 4410-RC Control Panel

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Valve Size, in.</th>
<th>Valve Type</th>
<th>Compressor Size, HP</th>
<th>Control Panel</th>
</tr>
</thead>
<tbody>
<tr>
<td>G215P11A</td>
<td>1-1/2&quot;</td>
<td>Single Interlock</td>
<td>1/6</td>
<td>Potter 4410-RC</td>
</tr>
<tr>
<td>G215P21A</td>
<td>1-1/2&quot;</td>
<td>Double Interlock</td>
<td>1/6</td>
<td>Potter 4410-RC</td>
</tr>
<tr>
<td>G220P11A</td>
<td>2&quot;</td>
<td>Single Interlock</td>
<td>1/6</td>
<td>Potter 4410-RC</td>
</tr>
<tr>
<td>G220P21A</td>
<td>2&quot;</td>
<td>Double Interlock</td>
<td>1/6</td>
<td>Potter 4410-RC</td>
</tr>
<tr>
<td>G225P11A</td>
<td>2-1/2&quot;</td>
<td>Single Interlock</td>
<td>1/6</td>
<td>Potter 4410-RC</td>
</tr>
<tr>
<td>G225P21A</td>
<td>2-1/2&quot;</td>
<td>Double Interlock</td>
<td>1/6</td>
<td>Potter 4410-RC</td>
</tr>
<tr>
<td>G225P22A</td>
<td>2-1/2&quot;</td>
<td>Double Interlock</td>
<td>1/3</td>
<td>Potter 4410-RC</td>
</tr>
<tr>
<td>G230P11A</td>
<td>3&quot;</td>
<td>Single Interlock</td>
<td>1/6</td>
<td>Potter 4410-RC</td>
</tr>
<tr>
<td>G230P12A</td>
<td>3&quot;</td>
<td>Single Interlock</td>
<td>1/3</td>
<td>Potter 4410-RC</td>
</tr>
<tr>
<td>G230P13A</td>
<td>3&quot;</td>
<td>Single Interlock</td>
<td>1/2</td>
<td>Potter 4410-RC</td>
</tr>
<tr>
<td>G230P21A</td>
<td>3&quot;</td>
<td>Double Interlock</td>
<td>1/6</td>
<td>Potter 4410-RC</td>
</tr>
<tr>
<td>G230P22A</td>
<td>3&quot;</td>
<td>Double Interlock</td>
<td>1/3</td>
<td>Potter 4410-RC</td>
</tr>
<tr>
<td>G230P23A</td>
<td>3&quot;</td>
<td>Double Interlock</td>
<td>1/2</td>
<td>Potter 4410-RC</td>
</tr>
<tr>
<td>G240P11A</td>
<td>4&quot;</td>
<td>Single Interlock</td>
<td>1/6</td>
<td>Potter 4410-RC</td>
</tr>
<tr>
<td>G240P12A</td>
<td>4&quot;</td>
<td>Single Interlock</td>
<td>1/3</td>
<td>Potter 4410-RC</td>
</tr>
<tr>
<td>G240P13A</td>
<td>4&quot;</td>
<td>Single Interlock</td>
<td>1/2</td>
<td>Potter 4410-RC</td>
</tr>
<tr>
<td>G240P21A</td>
<td>4&quot;</td>
<td>Double Interlock</td>
<td>1/6</td>
<td>Potter 4410-RC</td>
</tr>
<tr>
<td>G240P22A</td>
<td>4&quot;</td>
<td>Double Interlock</td>
<td>1/3</td>
<td>Potter 4410-RC</td>
</tr>
<tr>
<td>G240P23A</td>
<td>4&quot;</td>
<td>Double Interlock</td>
<td>1/2</td>
<td>Potter 4410-RC</td>
</tr>
</tbody>
</table>
1.10. Installation.
1.10.1. Location. Locate the PREACTION-PAC assembly as shown on the system shop drawings or design plans. The location should be dry, clean, and within the Approved temperature range of the assembly (+40 deg F to +110 deg F). Refer to Figure 4 for overall dimensions.

1.10.2. Unpacking, Placement & Leveling. Unpack the PREACTION-PAC as follows:
1.10.2.1. Remove the outer carton and any other packing material surrounding the assembly.
1.10.2.2. Open the lower enclosure door.
1.10.2.3. Use a flat-bladed or Phillips screwdriver to remove the (4) bolts holding the assembly to the pallet. See Figure 5.
1.10.2.4. Close the lower enclosure door. Remove the unit from the pallet, and place in the intended installation location.
1.10.2.5. Level the unit:
1.10.2.5.1. Open the lower enclosure door.
1.10.2.5.2. Using a flat-bladed screwdriver, adjust the (4) leveling feet from inside the enclosure until all feet are firmly in contact with the floor. See Figure 5.
1.10.2.5.3. Using a spirit level, adjust the leveling feet until the assembly is level both front-to-back and side-to-side.

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Assemblies with 1-1/2” thru 3” Pre-Action Valves</th>
<th>Assemblies with 4” Pre-Action Valves</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>22.00</td>
<td>24.00</td>
</tr>
<tr>
<td>B</td>
<td>52.00</td>
<td>52.00</td>
</tr>
<tr>
<td>C</td>
<td>20.00</td>
<td>20.00</td>
</tr>
<tr>
<td>D</td>
<td>30.00</td>
<td>30.00</td>
</tr>
<tr>
<td>E</td>
<td>72.00</td>
<td>72.00</td>
</tr>
</tbody>
</table>

NOTE: All units are in inches.

Figure 4 – Diagram - Overall Dimensions
Figure 5 – Diagram - Location of Pallet Bolts and Leveling Feet

1 = BOLTS HOLDING ASSEMBLY TO THE PALLET
2 = LEVELING FEET
1.10.3. Serial Number. The serial number of each assembly is located on a permanent metal nameplate, located behind the upper enclosure door above the compressor disconnect switch. The serial number is coded as follows:

G2 – 25P11A – XXXX - XXX

Codes for Generation II PREACTION-PAC
Part number (See Section 1.9 for explanation)
Date code (2 digit month followed by 2 digit year)
3 digit serial number

Note the serial number, date of installation, and date of commissioning on the front of this manual where indicated.

1.10.4. External Attachments.
1.10.4.1. Pre-Action Valve. Use Section 2 - Victaulic manual I-769P to guide the installation of inlet, outlet, and drain piping. See Figure 6 for details.

1.10.4.1.1. Inlet Piping. Inlet piping may be attached to the PREACTION-PAC in one of three locations:
• The standard connection is at the upper right corner of the lower enclosure. The assembly is pre-piped to accept inlet piping at this location. This location is labeled INLET. (NOTE: Assemblies equipped with 1/2HP compressors do not have upper right corner inlet connection. Use either lower left center or lower right center connection as described below.) Remove the plastic protection cap from the inlet pipe, and use a field-supplied grooved coupling to make this connection.
• An optional connection at the lower left center of the lower enclosure. Remove the precut knockout from the lower left center of the lower enclosure. Remove the steel cap from the grooved coupling on the left side of the tee at the bottom of the enclosure. Attach the inlet piping to the left side of the tee using the grooved coupling. Remove the plastic protection cap from the top inlet connection, and assemble the steel cap removed from the tee to the top inlet connection using a field-supplied grooved coupling.

Failure to assemble the steel cap to the top inlet will result in property damage due to water escaping from the top inlet.

• An optional connection at the lower right center of the lower enclosure. Remove the precut knockout from the lower right center of the lower enclosure. Remove the two grooved couplings from the elbow attached to the right side of the tee. (The elbow and one coupling may be discarded.) Attach the inlet piping to the right side of the tee using one of the grooved couplings. DO NOT attempt to remove any of the rest of the top inlet piping.

1.10.4.1.2. Outlet Piping. Outlet piping is attached to the PREACTION-PAC in one location; at the top center of the lower enclosure. This location is labeled OUTLET. Remove the plastic protection cap from the outlet pipe, and used a field-supplied grooved coupling to make this connection.

Page 15 of 23
1.10.4.1.3. Drain Piping. Drain piping is attached to the PREACTION-PAC at a nipple located in the lower enclosure. The drain pipe may exit the enclosure on either the left or right side. Remove the precut knockout from the chosen side. Attach the drain pipe to the nipple with two field-supplied grooved couplings and a field-supplied grooved elbow.

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Assemblies with 1-1/2” thru 3” Pre-Action Valves</th>
<th>Assemblies with 4” Pre-Action Valves</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>26.64</td>
<td>26.14</td>
</tr>
<tr>
<td>B</td>
<td>15.00</td>
<td>15.00</td>
</tr>
<tr>
<td>C</td>
<td>3.11</td>
<td>3.61</td>
</tr>
<tr>
<td>D</td>
<td>10.50</td>
<td>12.50</td>
</tr>
<tr>
<td>E</td>
<td>9.36</td>
<td>9.86</td>
</tr>
<tr>
<td>F</td>
<td>8.36</td>
<td>8.86</td>
</tr>
<tr>
<td>G</td>
<td>3.75</td>
<td>5.75</td>
</tr>
<tr>
<td>H</td>
<td>10.50</td>
<td>12.50</td>
</tr>
</tbody>
</table>

NOTE: All units are in inches.

Figure 6 – Diagram - Piping Attachment
1.10.4.2. Terminal Strip and Control Panel. See Figure 7 for information on connection to the terminal strip in the upper enclosure. Use Section 4 – Potter manual 5403545 to guide the installation of connections to the control panel. Terminals for 110VAC power accept qty. (1) 10 ga. max. conductor. NOTE: All conductors used for field wiring must comply with NFPA 70 – National Electrical Code, and control panel manufacturer’s instructions (see Section 4). See Section 4, pages 82 and 83 for information on power-limited conductor runs.

---

**CAUTION**

DO NOT drill or punch the upper enclosure to attach conduit. Use the knockouts supplied at the lower back of the upper enclosure. Failure to follow these instructions can result in damage to the control panel. United Fire Protection Corporation will not be responsible for warranty adjustment of damaged control panels when these instructions are not followed.

---

**CAUTION**

This assembly contains static-sensitive components. ALWAYS ground yourself with a proper wrist strap before handling any electronic components or circuits. Failure to do so can lead to equipment damage from static electricity.
Figure 7 – Diagram - Terminal Strip Wiring Detail
**LEGEND**

**FIELD WIRING**

<table>
<thead>
<tr>
<th>NO JUMPER USED</th>
<th>COLOR OF TERMINAL BLOCK</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 DEDICATED 110 VAC GROUND FOR CONTROL PANEL (COMPRESSOR WILL ALSO BE GROUNDED THROUGH THIS TERMINAL)</td>
<td>GREEN/YELLOW</td>
</tr>
<tr>
<td>2 DEDICATED 110 VAC GROUND FOR AIR COMPRESSOR (USE ONLY IF REQUIRED BY ANSI)</td>
<td>GREEN/YELLOW</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WITH JUMPER(R) IN PLACE</th>
<th>WITH JUMPER(R) REMOVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 110 VAC NEUTRAL FOR CONTROL PANEL AND COMPRESSOR</td>
<td>110 VAC NEUTRAL FOR CONTROL PANEL ONLY</td>
</tr>
<tr>
<td>4 DO NOT USE</td>
<td>110 VAC NEUTRAL FOR COMPRESSOR ONLY</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FACTORY WIRING</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 110 VAC GROUND TO CONTROL PANEL</td>
</tr>
<tr>
<td>8 110 VAC GROUND TO AIR COMPRESSOR</td>
</tr>
<tr>
<td>9 110 VAC NEUTRAL TO CONTROL PANEL</td>
</tr>
<tr>
<td>10 110 VAC NEUTRAL TO AIR COMPRESSOR</td>
</tr>
<tr>
<td>11 110 VAC HOT TO CONTROL PANEL</td>
</tr>
<tr>
<td>12 110 VAC HOT TO AIR COMPRESSOR</td>
</tr>
<tr>
<td>13 PREACTION SOLENOID WIRING (-) FROM LOWER ENCLOSURE</td>
</tr>
<tr>
<td>14 PREACTION SOLENOID WIRING (+) FROM LOWER ENCLOSURE</td>
</tr>
<tr>
<td>15 LOW AIR SIGNAL SWITCH Wiring (NO) FROM LOWER ENCLOSURE</td>
</tr>
<tr>
<td>16 LOW AIR SIGNAL SWITCH Wiring (COM) FROM LOWER ENCLOSURE</td>
</tr>
<tr>
<td>17 WATERFLOW SIGNAL SWITCH Wiring (NO) FROM LOWER ENCLOSURE</td>
</tr>
<tr>
<td>18 WATERFLOW SIGNAL SWITCH Wiring (COM) FROM LOWER ENCLOSURE</td>
</tr>
<tr>
<td>19 TAPFER SIGNAL SWITCH Wiring (NO) FROM LOWER ENCLOSURE</td>
</tr>
<tr>
<td>20 TAPFER SIGNAL SWITCH Wiring (COM) FROM LOWER ENCLOSURE</td>
</tr>
<tr>
<td>21 PREACTION SOLENOID (-) TO CONTROL PANEL</td>
</tr>
<tr>
<td>22 PREACTION SOLENOID (+) TO CONTROL PANEL</td>
</tr>
<tr>
<td>23 LOW AIR SIGNAL SWITCH Wiring (NO) TO CONTROL PANEL</td>
</tr>
<tr>
<td>24 LOW AIR SIGNAL SWITCH Wiring (COM) TO CONTROL PANEL</td>
</tr>
<tr>
<td>25 WATERFLOW SIGNAL SWITCH Wiring (NO) TO CONTROL PANEL</td>
</tr>
<tr>
<td>26 WATERFLOW SIGNAL SWITCH Wiring (COM) TO CONTROL PANEL</td>
</tr>
<tr>
<td>27 TAPFER SIGNAL SWITCH Wiring (NO) TO CONTROL PANEL</td>
</tr>
<tr>
<td>28 TAPFER SIGNAL SWITCH Wiring (COM) TO CONTROL PANEL</td>
</tr>
</tbody>
</table>

**JUMPERS**

- XV CONNNECTS CONTROL PANEL & COMPRESSOR 110 VAC NEUTRAL CONDUCTORS – REMOVE TO SEPARATE
- XZ CONNECTS CONTROL PANEL & COMPRESSOR 110 VAC HOT CONDUCTORS – REMOVE TO SEPARATE

Legend for Figure 7
1.10.4.2.1. **Power.** 110VAC, 3-wire, single-phase power is attached to the terminal strip in the upper enclosure. See Figure 7. Terminals for 110VAC power accept qty.(1) 10 ga. max. conductor. Current draw: With 1/6HP compressor = 9.0 amps; with 1/3HP compressor = 9.0 amps; with 1/2HP compressor = 10.4 amps.

**DANGER**

Only qualified electricians should connect incoming power to the assembly. Failure to follow this instruction could result in death or serious personal injury.

A. Turn off circuit breaker at the main power distribution panel.
B. Connect service ground conductor to terminal marked GROUND.
C. Connect primary neutral conductor to terminal marked NEUTRAL.
D. Connect primary hot conductor to terminal marked HOT.

1.10.4.2.2. **Backup Batteries.** Calculate backup battery requirements, and connect backup batteries, per Section 4 – Potter manual 5403545. The upper enclosure is capable of holding batteries up to 26 A-H. If larger batteries are needed, use an external battery enclosure per Section 4 – Potter manual 5403545.

1.10.4.2.3. **Fire Detectors (Initiating Devices).** Fire detectors (initiating devices), located in the area protected by the sprinklers connected to the PREACTION-PAC, are necessary to provide the signal to open the pre-action valve. Refer to NFPA 72 for information on the number, type, and spacing of fire detectors. Install detectors, wiring, and panel connections per Section 4 – Potter manual 5403545. All FM Approved systems / installations must be configured as Class A for Deluge and Preaction Releasing Service. The Potter Class A Module is factory-installed on the control panel.

1.10.4.2.4. **Audible / Visual Appliances (Indicating Devices).** Audible / visual appliances (indicating devices), located in and around the area protected by the sprinklers connected to the PREACTION-PAC, are necessary to warn occupants that a fire has been detected. Refer to NFPA 72 for information on the number, type, and spacing of audible / visual appliances. Install audible / visual devices, wiring, and panel connections per Section 4 – Potter manual 5403545.

1.10.4.2.5. **Building Fire Alarm Systems.** In buildings with fire alarm systems separate from the PREACTION-PAC detection system, most national and local codes and authorities having jurisdiction require the PREACTION-PAC to provide signals to the building fire alarm system. The Potter control panel installed in the PREACTION-PAC contains dry contacts capable of providing the necessary signals. Install audible / visual devices, wiring, and panel connections per Section 4 – Potter manual 5403545.

1.10.4.2.6. **Other Connections.** From time to time, additional signals from the PREACTION-PAC control panel may be required. Such signals can be associated with building management systems, equipment shutdown, or security notification. Additional dry contacts may be needed to satisfy all of these requirements.

1.10.4.3. **Compressor.** See Figure 7. 110VAC, 3-wire, single-phase power is attached to the terminal strip in the upper enclosure. The compressor power is factory-wired to the terminal strip in the upper enclosure. In the default configuration, the same 110VAC source used for the control panel serves for the compressor. If the local authority having jurisdiction requires separate power sources for the control panel and the compressor, jumpers can be removed from the terminal strip. The compressor pressure outlet is factory-attached to the system piping within the lower enclosure.
1.10.5. Prior To Placing In Service. Before placing the PREACTION-PAC in service, perform the following steps. Ensure that all discrepancies are corrected before proceeding to the next step.

1.10.5.1. Ensure the entire system is installed per the latest revision of all applicable shop drawings.
1.10.5.2. Ensure all testing has been performed on the sprinkler piping per the requirements of the authority having jurisdiction and NFPA 13.
1.10.5.3. Use Section 4 – Potter manual 5403545 to perform all preliminary tests on the control panel, field wiring, and field devices.
1.10.5.4. Use Section 2 – Victaulic manual I-769P to perform all preliminary tests on the pre-action valve, trim, and sprinkler piping.
1.10.5.5. Perform all tests required to be witnessed by the authority having jurisdiction. Obtain AHJ approval of the installation.

1.10.6. Placing In Service.
1.10.6.1. Verify that the control panel is indicating POWER ON, with no alarm or trouble indicators illuminated, and no error messages on the display.
1.10.6.2. Verify that the water supply is on.
1.10.6.3. Using Section 2 – Victaulic manual I-769P, verify that all valves are in the proper position for in-service status. Verify that the three pressure gages on the front of the lower enclosure are indicating expected values within expected limits.
1.10.6.4. Ensure that the owner of the system has received adequate introductory training.
1.10.6.5. Turn over this manual and the enclosure door keys to the owner. The manual may be stored in the pocket on the inside of the lower enclosure door.

1.11. Operation.
1.11.1. Automatic. Fully automatic operation of the system will be conducted by the control panel. Power from 110VAC and / or batteries is required for the control panel to function in this way. No manual intervention is required for the control panel to perform its functions. Manual intervention to acknowledge and silence signals may be performed. Refer to Section 4 – Potter manual 5403545 for information on signals.

! IMPORTANT

Fusing of a sprinkler head by heat is necessary for water to be discharged onto a fire, even after operation of automatic fire detectors.

1.11.2. Manual. Manual operation of the pre-action valve is accomplished with the manual release valve. Open the door marked IN CASE OF FIRE OPEN DOOR AND PULL LEVER. No key is needed to open this door. Pull the lever. No power is needed to open the pre-action valve in this manner. The door may not be closed until the lever is restored to its normal position.
1.11.3. Restoring To Service. After automatic or manual system operation, follow instructions in Section 2 – Victaulic manual I-769P and Section 4 – Potter manual 5403545 to restore the individual parts of the PREACTION-PAC to service.

1.12. Inspection, Testing, and Maintenance. Regular inspection, testing and maintenance of the PREACTION-PAC assembly is essential to the assembly's continued proper operation. Follow all instructions in the documents described in this section. Pay particular attention to the required minimum interval for each item of inspection, testing, and maintenance. The owner of the system (or their designated representative) is responsible for the overall condition of the system, and ensuring that all inspection, testing, and maintenance items are conducted as recommended.

Fusing of a sprinkler head by heat is necessary for water to be discharged onto a fire, even after operation of the manual station valve.

The United Fire Protection PREACTION-PAC sprinkler valve assembly is a vital part of the fire protection of any facility where these units are installed. Life safety and property protection depends on continuing proper operation of the assembly. The owner of the PREACTION-PAC is responsible for the condition of the assembly and its continued proper operation. United Fire Protection strongly recommends that all owners of PREACTION-PACs engage the services of qualified, trained fire protection professionals to inspect, test, maintain, and repair the assembly.

1.12.1. Inspection. Inspection involves carrying out a set of procedures to discover and note any and all discrepancies that could render the system impaired, inoperative, or ineffective. The result of an inspection is a comprehensive list of these discrepancies. Inspection does not specifically include maintenance or repair; however, maintenance and repair can be and usually is conducted at the time of inspection.

1.12.2. Testing. Testing involves carrying out procedures to discover if tested components function as intended. Testing is an integral part of performing inspection. Testing is also done after the performance of some maintenance procedures.

1.12.3. Maintenance. Maintenance involves carrying out procedures to ensure that maintained components continue to function as intended. Maintenance is usually preventive in nature. Maintenance can be conducted during inspection.

1.12.4. Repair. Repair involves carrying out procedures to correct the deficiencies found during inspection, or as a result of other events such as system actuation or control panel trouble / alarm signals.
1.12.5. **Documents Relevant To Inspection, Testing, Maintenance, and Repair.**

1.12.5.1. Victaulic Manual I-769P.
1.12.5.2. General Air Products Manual OILLESSINST.
1.12.5.3. Potter Manual 5403545.
SECTION 2

Victaulic Manual I-769P

Firelock NXT Preaction Valve
FireLock NXT™ Preaction Valve

SERIES 769
NON-INTERLOCKED, PNEUMATIC RELEASE WITH SERIES 776 LOW-PRESSURE ACTUATOR
NON-INTERLOCKED, PNEUMATIC/ELECTRIC RELEASE WITH SERIES 776 LOW-PRESSURE ACTUATOR AND SERIES 753-E SOLENOID VALVE
SINGLE-INTERLOCKED, PNEUMATIC RELEASE WITH SERIES 776 LOW-PRESSURE ACTUATOR
SINGLE-INTERLOCKED, ELECTRIC RELEASE WITH SERIES 753-E SOLENOID VALVE
DOUBLE-INTERLOCKED, ELECTRIC (ELECTRIC-PNEUMATIC/ELECTRIC) RELEASE WITH SERIES 753-E SOLENOID VALVE

WARNING

Failure to follow instructions and warnings can cause product failure, resulting in serious personal injury and property damage.
Read and understand all instructions before attempting to install any Victaulic piping products.
Wear safety glasses, hardhat, and foot protection.
Save this installation, maintenance, and testing manual for future reference.

If you need additional copies of any literature, or if you have any questions concerning the safe installation and operation of this product, contact Victaulic, P.O. Box 31, Easton, PA 18044-0031, USA, Telephone: 1-800 PICK VIC, e-mail: pickvic@victaulic.com.

www.victaulic.com
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REV_D
FireLock NXT™ Preaction Valve
SERIES 769

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HAZARD IDENTIFICATION

Definitions for identifying the various hazard levels are provided below. When you see this symbol, be alert to the possibility of personal injury. Carefully read and fully understand the message that follows.

WARNING
• The use of the word “WARNING” identifies the presence of hazards or unsafe practices that could result in death or serious personal injury if instructions, including recommended precautions, are not followed.

CAUTION
• The use of the word “CAUTION” identifies possible hazards or unsafe practices that could result in personal injury and product or property damage if instructions, including recommended precautions, are not followed.

NOTICE
• The use of the word “NOTICE” identifies special instructions that are important but not related to hazards.

<content continues...>
INSTALLER SAFETY INSTRUCTIONS

WARNING

- An experienced, trained installer must install this product in accordance with all instructions. These instructions contain important information.
- Depressurize and drain the piping system before attempting to install, remove, adjust, or maintain any Victaulic piping products.

Failure to follow these instructions can cause product failure, resulting in serious personal injury and/or property damage.

GENERAL

1. Read and understand all instructions and refer to the trim diagrams before proceeding with the installation, maintenance, and testing of this Victaulic Series 769 FireLock NXT Preaction Valve.
2. Inspect the shipment. Make sure all components are included in the shipment and that all necessary tools are available for installation.
3. Use only recommended accessories. Accessories and equipment that are not approved for use with this valve may cause improper system operation.
4. Wear safety glasses, hardhat, foot protection, and hearing protection. Wear hearing protection if you are exposed to long periods of noisy job-site operations.
5. Prevent back injury. Larger and pre-trimmed valves are heavy and require more than one person or mechanical lifting equipment to position and install the assembly. Always practice proper lifting techniques.
6. Avoid using electrically powered tools in dangerous environments. When using electrically powered tools for installation, make sure the area is moisture-free. Keep the work area well lit, and allow enough space to accommodate proper installation of the valve, trim, and accessories.
7. Watch for pinch points. Do not place fingers under the valve body where they could be pinched by the weight of the valve. Use caution around spring-loaded components (i.e. clapper assembly).
8. Keep work areas clean. Cluttered areas, benches, and slippery floors can create hazardous working conditions.
9. PROTECT THE SYSTEM FROM FREEZING CONDITIONS. THE VALVE AND SUPPLY PIPING MUST BE PROTECTED FROM FREEZING TEMPERATURES AND MECHANICAL DAMAGE.
10. IF THE INLET WATER SUPPLY IS INTERRUPTED FOR ANY REASON, AND SYSTEM SUPPLY PRESSURE TO THE VALVE DECREASES, MAKE SURE THE DIAPHRAGM CHARGE LINE IS FULLY PRESSURIZED BEFORE PLACING THE SYSTEM BACK IN SERVICE.

MAINTENANCE AND TESTING

1. Notify the authority having jurisdiction. Always notify the authority having jurisdiction before performing any maintenance that eliminates the fire protection provided by the system.
2. Follow NFPA requirements for system testing and inspection schedules. The building owner or their representative is responsible for inspecting the system in accordance with current NFPA-25 requirements or in accordance with the requirements of the local authority having jurisdiction (whichever is more stringent).
3. Depressurize and drain the system completely before performing any maintenance. Water under pressure can cause the cover plate to blow off during removal if the system is not depressurized and drained completely.
4. Protect the valve from freezing temperatures, foreign matter, and corrosive atmospheres. Any condition that might degrade the system or affect system performance must be avoided.
**INTRODUCTION**

The following instructions are a guide for proper installation of Victaulic Series 769 FireLock NXT Preaction Valves. These instructions involve pipe that is properly prepared and grooved in accordance with current Victaulic specifications.

### NOTICE

- Drawings and/or pictures in this manual may be exaggerated for clarity.
- This product and this installation, maintenance, and testing manual contain trademarks, copyrights, and/or patented features that are the exclusive property of Victaulic.

### TRIM DIMENSIONS

**The 4-Inch/114.3-MM Configuration is shown below. 1 ½ – 2-Inch/48.3 – 60.3-MM Configurations contain 1/8-Inch/10-MM Drain Valves. 2 ½ – 3-Inch/73.0 – 88.9-MM Configurations contain 1/8-Inch/31-MM Drain Valves. 4 – 8-Inch/114.3 – 219.1-MM Configurations contain 2-Inch/50-MM Drain Valves.**

#### NOTES:
The drawings shown above reflect the single-interlocked, pneumatic release trim with Series 776 Low-Pressure Actuator. In addition, these dimensions can be applied to single-interlocked, pneumatic release; non-interlocked, pneumatic/electric release; single-interlocked, electric release; and double-interlocked, electric (electric-pneumatic/electric) release trim.

The "A" dimension coupling is not shown for clarity.

Components shown as dotted lines denote optional equipment

* Measurements denoted with an asterisk take optional equipment into account

Optional drain connection kit is shown for reference and takeout dimensions.

---

**Dimensions – inches/mm**

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<th>Size</th>
<th>Nominal Size</th>
<th>Actual O.D. Dia.</th>
<th>&quot;A&quot;</th>
<th>&quot;B&quot;</th>
<th>&quot;C&quot;</th>
<th>&quot;D&quot;</th>
<th>&quot;E&quot;</th>
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**Apvr. Weight E.A. lbs/kg**

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<th>With Trim</th>
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<td>2.775</td>
<td>6.93</td>
<td>41.0</td>
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<td>3&quot;</td>
<td>2.65</td>
<td>6.93</td>
<td>41.0</td>
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</tbody>
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**NOTES:**
The drawings shown above reflect the single-interlocked, pneumatic release trim with Series 776 Low-Pressure Actuator. In addition, these dimensions can be applied to single-interlocked, pneumatic release; non-interlocked, pneumatic/electric release; single-interlocked, electric release; and double-interlocked, electric (electric-pneumatic/electric) release trim.

The "A" dimension coupling is not shown for clarity.

Components shown as dotted lines denote optional equipment

* Measurements denoted with an asterisk take optional equipment into account

Optional drain connection kit is shown for reference and takeout dimensions.

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FireLock NXT™ Preaction Valve

SERIES 769

EXPLODED VIEW DRAWING – TRIM COMPONENTS

SERIES 769 FIRELOCK NXT PREACTION VALVE – NON-INTERLOCKED, PNEUMATIC RELEASE TRIM

(OPTIONAL ACCESSORIES ALSO SHOWN)

Bill of Materials

1. Series 769 FireLock NXT Preaction Valve
2. FireLock Rigid Coupling (Optional/Sold Separately – Comes Standard when VQR Assembly is Ordered)
3. Water Supply Main Control Valve (Optional/Sold Separately – Comes Standard when VQR Assembly is Ordered)
4. Drain Swing Check Valve
5. Drip Cup with Cap
6. Alarm Pressure Switch (Optional/Sold Separately – Comes Standard when VQR Assembly is Ordered)
7. Series 729 Drip Check Valve
8. Diaphragm-Charge-Line Ball Valve (Normally Open)
9. 3-in-1 Strainer/Check/Restrictor Assembly
10. Series 760 Water Motor Alarm (Optional/Sold Separately)
11. Alarm Test Ball Valve
12. Diaphragm-Charge-Line Pressure Gauge (0-300 psi/0-2068 kPa/0-20.7 Bar)
13. Series 749 Auto Drain
14. Series 776 Low-Pressure Actuator
15. Air Manifold
16. Air Supervisory Pressure Switch (Optional/Sold Separately – Comes Standard when VQR Assembly is Ordered)
17. System Pressure Gauge (0-80 psi/0-552 kPa/0-5.5 Bar with Retard)
18. Water Supply Main Drain Valve - Flow Test
19. Water Supply Pressure Gauge (0-300 psi/0-2068 kPa/0-20.7 Bar)
20. Drain Connection Kit (Optional/Sold Separately – Comes Standard when VQR Assembly is Ordered)
21. Gauge Valve
22. System Main Drain Valve
24. Series 748 Ball Check Valve

NOTE 1: Connection point for the Series 75D Water Column Device Kit
For information regarding installation of the Series 75B Supplemental Alarm Device or the Series 7C7 Air Maintenance/Compressor Assembly (not shown), refer to the instructions supplied with the product.

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I-769P.4
FireLock NXT™ Preaction Valve

SERIES 769

EXPLODED VIEW DRAWING – TRIM COMPONENTS

SERIES 769 FIRELOCK NXT PREACTION VALVE – NON-INTERLOCKED, PNEUMATIC/ELECTRIC RELEASE TRIM

(Optional Accessories Also Shown)

Bill of Materials

1. Series 769 FireLock NXT Preaction Valve
2. FireLock Rigid Coupling (Optional/Sold Separately – Comes Standard when VQR Assembly is Ordered)
3. Water Supply Main Control Valve (Optional/Sold Separately – Comes Standard when VQR Assembly is Ordered)
4. Drain Swing Check Valve
5. Drip Cup with Cap
6. Alarm Pressure Switch (Optional/Sold Separately – Comes Standard when VQR Assembly is Ordered)
7. Series 729 Drip Check Valve
8. Diaphragm-Charge-Line Ball Valve (Normally Open)
9. 3-in-1 Strainer/Check/Restrictor Assembly
10. Series 760 Water Motor Alarm (Optional/Sold Separately)
11. Alarm Test Ball Valve
12. Diaphragm-Charge-Line Pressure Gauge (0-300 psi/0-2068 kPa/0-20.7 Bar)
13. Series 749 Auto Drain
14. Series 776 Low-Pressure Actuator
15. Air Manifold
16. Air Supervisory Pressure Switch (Optional/Sold Separately – Comes Standard when VQR Assembly is Ordered)
17. System Pressure Gauge (0-80 psi/0-552 kPa/0-5.5 Bar with Retard)
18. Water Supply Main Drain Valve - Flow Test
19. Water Supply Pressure Gauge (0-300 psi/0-2068 kPa/0-20.7 Bar)
20. Drain Connection Kit (Optional/Sold Separately – Comes Standard when VQR Assembly is Ordered)
21. Gauge Valve
22. System Main Drain Valve
24. Series 748 Ball Check Valve
25. Series 753 L Solenoid Valve
26. Series 746-LPA Dry Accelerator (Optional/Sold Separately)

NOTE 1: Connection point for the Series 75D Water Column Device Kit

For information regarding installation of the Series 75B Supplemental Alarm Device or the Series 7C7 Air Maintenance/Compressor Assembly (not shown), refer to the instructions supplied with the product.
FireLock NXT™ Preaction Valve

BILL OF MATERIALS

1. Series 769 FireLock NXT Preaction Valve
2. FireLock Rigid Coupling (Optional/Sold Separately – Comes Standard when VQR Assembly is Ordered)
3. Water Supply Main Control Valve (Optional/Sold Separately – Comes Standard when VQR Assembly is Ordered)
4. Drain Swing Check Valve
5. Drip Cup with Cap
6. Alarm Pressure Switch (Optional/Sold Separately – Comes Standard when VQR Assembly is Ordered)
7. Series 729 Drip Check Valve
8. Diaphragm-Charge-Line Ball Valve (normally Open)
9. 3-in-1 Strainer/Check/Restrictor Assembly
10. Series 760 Water Motor Alarm (Optional/Sold Separately)
11. Alarm Test Ball Valve
12. Diaphragm-Charge-Line Pressure Gauge (0-300 psi/0-2068 kPa/0-20.7 Bar)
13. Series 749 Auto Drain
14. Series 776 Low-Pressure Actuator
15. Air Manifold
16. Air Supervisory Pressure Switch (Optional/Sold Separately – Comes Standard when VQR Assembly is Ordered)
17. System Pressure Gauge (0-80 psi/0-552 kPa/0-5.5 Bar with Retard)
18. Water Supply Main Drain Valve - Flow Test
19. Water Supply Pressure Gauge (0-300 psi/0-2068 kPa/0-20.7 Bar)
20. Drain Connection Kit (Optional/Sold Separately – Comes Standard when VQR Assembly is Ordered)
21. Gauge Valve
22. System Main Drain Valve
24. Series 748 Ball Check Valve
25. Series 746-LPA Dry Accelerator (Optional/Sold Separately)

NOTE 1: Connection point for the Series 75D Water Column Device Kit
For information regarding installation of the Series 75B Supplemental Alarm Device or the Series 7C7 Air Maintenance/Compressor Assembly (not shown), refer to the instructions supplied with the product.
FireLock NXT™ Preaction Valve

SERIES 769

EXPLODED VIEW DRAWING – TRIM COMPONENTS

SERIES 769 FIRELOCK NXT PREACTION VALVE – SINGLE-INTERLOCKED, ELECTRIC RELEASE TRIM

SERIES 769 FIRELOCK NXT PREACTION VALVE – DOUBLE-INTERLOCKED, ELECTRIC RELEASE (ELECTRIC-PNEUMATIC/ELECTRIC) TRIM

(OPTIONAL ACCESSORIES ALSO SHOWN)

Bill of Materials

1 Series 769 FireLock NXT Preaction Valve
2 FireLock Rigid Coupling (Optional/Sold Separately – Comes Standard when VQR Assembly is Ordered)
3 Water Supply Main Control Valve (Optional/Sold Separately – Comes Standard when VQR Assembly is Ordered)
4 Drain Swing Check Valve
5 Drip Cup with Cap
6 Alarm Pressure Switch (Optional/Sold Separately – Comes Standard when VQR Assembly is Ordered)
7 Series 729 Drip Check Valve
8 Diaphragm-Charge-Line Ball Valve (Normally Open)
9 3-in-1 Strainer/Check/Restrictor Assembly
10 Series 760 Water Motor Alarm (Optional/Sold Separately)
11 Alarm Test Ball Valve
12 Diaphragm-Charge-Line Pressure Gauge (0-300 psi/0-2068 kPa/0-20.7 Bar)
13 Series 749 Auto Drain
14 Series 753-E Solenoid Valve
15 Air Supervisory Pressure Switch**
16 System Pressure Gauge (0-80 psi/0-552 kPa/0-5.5 Bar with Retard)
17 Water Supply Main Drain Valve - Flow Test
18 Water Supply Pressure Gauge (0-300 psi/0-2068 kPa/0-20.7 Bar)
19 Drain Connection Kit (Optional/Sold Separately – Comes Standard when VQR Assembly is Ordered)
20 Gauge Valve
21 System Main Drain Valve
22 Series 755 Manual Pull Station
23 Series 748 Ball Check Valve

**Item #15 is optional/sold separately (or standard when VQR assembly is ordered) for single-interlocked, electric release trim.
**Item #15 is standard for double-interlocked, electric release (electric-pneumatic/electric) trim.

NOTE 1: Connection point for the Series 75D Water Column Device Kit

For information regarding installation of the Series 75B Supplemental Alarm Device or the Series 7C7 Air Maintenance/Compressor Assembly (not shown), refer to the instructions supplied with the product.

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REV. D
FireLock NXT™ Preaction Valve
SERIES 769

EXPLODED VIEW DRAWING – INTERNAL VALVE COMPONENTS

Bill of Materials

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<td>19</td>
<td>Diaphragm Cover</td>
</tr>
<tr>
<td>20</td>
<td>Diaphragm Cover Cap Screws (Qty. 8)</td>
</tr>
<tr>
<td>21</td>
<td>Latch Shaft</td>
</tr>
</tbody>
</table>

*NOTE: The 1½-inch/48.3-mm and 2-inch/60.3-mm valve sizes contain washers under the heads of the cover plate bolts.
The Series 776 Low-Pressure Actuator is located in the trim of Series 769 FireLock NXT Preaction Valves and acts as the trigger for these systems.

Diaphragms separate the low-pressure actuator into three chambers. The upper air chamber controls activation, while the middle and lower chambers act as the water valve.

During setup, system air is applied to the upper chamber of the low-pressure actuator. When the Auto Vent Sleeve of the low-pressure actuator is pulled up, the upper chamber manually sets. Air pressure in the upper chamber holds the Auto Vent closed, while it exerts force on the water seal of the middle chamber.

When the diaphragm charge line is opened, water enters the lower chamber of the low-pressure actuator. Water that enters the low-pressure actuator flows to the middle chamber through the inlet eyelet, which is pressurized by system air pressure in the upper chamber.

Since the area of the lower diaphragm (exposed to water pressure in the middle chamber) is greater than the area of the lower chamber, the lower chamber seals off. Water does not flow to the outlet of the low-pressure actuator, and the supply water pressure creates the water seal.

When system air pressure decays to 7 psi/48 kPa/0.5 Bar, the force exerted by the compression spring in the Auto Vent is greater than the force exerted by air in the upper chamber. The Auto Vent opens, and all air pressure in the upper chamber evacuates.

The upper diaphragm releases water pressure in the middle chamber of the low-pressure actuator, which allows the lower diaphragm to lift and water to flow from the inlet to the outlet. This flow of water releases pressure from the diaphragm charge line of the Series 769 FireLock NXT Preaction Valve, thus allowing the diaphragm to retract. The clapper opens, and water flows into the sprinkler system.
The Series 746-LPA Dry Accelerator is a quick-opening device, which exhausts air from the Series 776 Low-Pressure Actuator to speed valve operation.

A diaphragm separates the Series 746-LPA Dry Accelerator into two chambers. The closing chamber contains a compression spring, which maintains the chamber in the closed position. The closed position is maintained as long as the pressure differential between the opening and closing chambers is less than 3 psi/21 kPa/0.2 Bar.

When the system introduces air pressure into the dry accelerator, air enters the closing chamber and passes through a check valve to the opening chamber. The check valve, which allows flow into the opening chamber, prevents pressure from escaping the opening chamber. Therefore, air can escape only through the restrictor.

When a rapid loss of system air pressure occurs, such as an open sprinkler, air escapes from the closing chamber faster than it escapes from the opening chamber. As the sprinkler system’s pressure continues to decay, a differential pressure develops across the diaphragm. When this differential pressure reaches 3 – 5 psi/21 – 34 kPa/0.2 – 0.3 Bar, the opening chamber’s pressure overcomes the compression spring’s closing force, causing the closing chamber to open to the atmosphere. The closing chamber opens immediately and releases pressure from the actuator, resulting in valve operation.

**NOTE:** The Series 746-LPA Dry Accelerator must be used only on systems operating below 30 psi/206 kPa/2.1 Bar of air. If air pressure higher than 30 psi/206 kPa/2.1 Bar is required, the Series 746 Dry Accelerator should be used.

### Bill of Materials

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Opening/Air Chamber</td>
</tr>
<tr>
<td>2</td>
<td>Restrictor</td>
</tr>
<tr>
<td>3</td>
<td>Piston</td>
</tr>
<tr>
<td>4</td>
<td>O-Ring</td>
</tr>
<tr>
<td>5</td>
<td>Diaphragm</td>
</tr>
<tr>
<td>6</td>
<td>Actuator Shaft</td>
</tr>
<tr>
<td>7</td>
<td>Closing Chamber</td>
</tr>
<tr>
<td>8</td>
<td>Compression Spring</td>
</tr>
<tr>
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<td>O-Ring</td>
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<td>10</td>
<td>Seal Support</td>
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<tr>
<td>11</td>
<td>Closing Chamber Seal</td>
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<tr>
<td>12</td>
<td>Button-Head Cap Screw</td>
</tr>
<tr>
<td>13</td>
<td>Washer</td>
</tr>
<tr>
<td>14</td>
<td>Adjustable Seat</td>
</tr>
<tr>
<td>15</td>
<td>Check Valve</td>
</tr>
</tbody>
</table>

---

**Exaggerated for Clarity**
AIR SUPPLY REQUIREMENTS

The required air pressure for Series 769 FireLock NXT Preaction Valves is 13 psi/90kPa/0.9 Bar minimum, regardless of the system supply water pressure. Normal air pressure should not exceed 18 psi/124kPa/1.2 Bar. Failure to maintain air pressure within the 13 psi/90kPa to 18 psi/124kPa/1.2 Bar range may reduce system operation response time.

Systems with air pressure higher than 18 psi/124kPa/1.2 Bar may require the addition of a Series 746-LPA Dry Accelerator. **NOTE:** The Series 746-LPA Dry Accelerator must be used only on systems operating below 30 psi/206kPa/2.1 Bar of air. If air pressure higher than 30 psi/206kPa/2.1 Bar is required, the Series 746 Dry Accelerator should be used.

If multiple Series 769 FireLock NXT Preaction Valves are installed with a common air supply, isolate the systems with a spring-loaded, soft-seated ball check valve to ensure air integrity for each system. Good practice is to include a ball valve for isolation and service of each individual system.

Set the air pressure to the required system air pressure. Air pressure differing from the required system air pressure could reduce system operation response time.

The engineer/system designer is responsible for sizing the compressor so that the entire system is charged to the required air pressure within 30 minutes. **DO NOT** oversize the compressor to provide more airflow. An oversized compressor will slow down or possibly prevent valve operation.

If the compressor fills the system too fast, it may be necessary to restrict the air supply. Restricting the air supply will ensure that air being exhausted from an open sprinkler or manual release valve is not replaced by the air supply system as fast as it is being exhausted.

COMPRESSOR SIZING

BASE OR RISER-MOUNTED AIR COMPRESSORS

For base or riser-mounted air compressors, the recommended air pressure of 13 psi/90kPa/0.9 Bar is the “on” or “low” pressure setting for the compressor. The “off” or “high” pressure setting should be 18 psi/124kPa/1.2 Bar.

When a base or riser-mounted air compressor supplies air to a Series 769 FireLock NXT Preaction Valve, it is not necessary to install the Victaulic Series 757 Regulated Air Maintenance Trim Assembly (AMTA). In this case, the air line of the compressor connects to the trim at the fitting where the Series 757 Regulated AMTA is normally installed (refer to the applicable trim drawing). If the compressor is not equipped with a pressure switch, the Series 757P Air Maintenance Trim Assembly with Pressure Switch should be installed.

SHOP AIR OR TANK-MOUNTED AIR COMPRESSORS

In the event a compressor becomes inoperative, a properly sized tank-mounted air compressor provides the greatest protection for systems. When shop air or a tank-mounted air compressor is used, the Series 757 Regulated AMTA must be installed. The Series 757 Regulated AMTA provides proper air regulation from the air reservoir to the sprinkler system. For tank-mounted air compressors, the recommended air pressure of 13 psi/90kPa/0.9 Bar should be used as the set point for the air regulator. The “on” pressure of the compressor should be at least 5 psi/34kPa/0.3 Bar above the set point of the air regulator.

VICTAULIC SERIES 757 REGULATED AIR MAINTENANCE TRIM ASSEMBLY (AMTA) OPTION

**NOTICE**

- Victaulic recommends a maximum of two Series 769 FireLock NXT Preaction Valves per Series 757 Regulated AMTA.

Bill of Materials
- 1 1/4/3.2 mm Restrictor
- 2 Slow Fill Ball Valve (Normally Open)
- 3 Air Regulator
- 4 Strainer (100 Mesh)
- 5 Spring-Loaded, Soft-Seated Ball Check Valve
- 6 Fast Fill Ball Valve (Normally Closed)
**VICTAULIC SERIES 757P AIR MAINTENANCE TRIM ASSEMBLY (AMTA) WITH PRESSURE SWITCH OPTION**

- Victaulic recommends a maximum of two Series 769 FireLock NXT Preation Valves per Series 757P AMTA with Pressure Switch.
- Refer to the I-757P Air Maintenance Trim Assembly with Pressure Switch Installation Instructions, supplied with the product, for complete installation, electrical, and pressure switch adjustment information.

---

**Bill of Materials**

<table>
<thead>
<tr>
<th>Item</th>
<th>Qty</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Restriction (½-inch NPT)</td>
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<tr>
<td>2</td>
<td>1</td>
<td>Strainer (½-inch NPT)</td>
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<td>3</td>
<td>1</td>
<td>Swing Check (½-inch NPT)</td>
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<td>4</td>
<td>1</td>
<td>Slow-Fill Ball Valve (Normally Open)</td>
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<td>5</td>
<td>1</td>
<td>Spring-Loaded, Soft-Seated Check Valve</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>Pressure Switch</td>
</tr>
<tr>
<td>7</td>
<td>2</td>
<td>Compression Fitting, Straight (¼-inch NPT x ¼-inch Tube)</td>
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<td>8</td>
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<td>Copper Tubing (¼-inch OD)</td>
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<td>Female Tee (½-inch NPT)</td>
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<td>Union (½-inch NPT)</td>
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<td>12</td>
<td>2</td>
<td>Reducing Bushing (½-inch NPT x ¼-inch NPT)</td>
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<td>13</td>
<td>1</td>
<td>Fast-Fill Ball Valve (Normally Open)</td>
</tr>
<tr>
<td>14</td>
<td>1</td>
<td>Pressure Switch Isolation Ball Valve (Normally Open - Lockable)</td>
</tr>
</tbody>
</table>

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**COMPRRESSOR REQUIREMENTS AND SETTINGS FOR SERIES 769 FIRELOCK NXT PREACTION VALVES INSTALLED WITH SERIES 746-LPA DRY ACCELERATORS**

Set the air regulator of the Series 757 Regulated AMTA to a minimum of 13 psi/90 kPa/0.9 Bar.

The Series 757P Air Maintenance Trim Assembly with Pressure Switch MUST NOT be used on a Series 769 FireLock NXT Preaction Valve installed with a Series 746-LPA Dry Accelerator, unless a tank and air regulator are added.

In the event a compressor becomes inoperative, a properly sized tank-mounted air compressor provides the greatest protection for systems installed with a Series 746-LPA Dry Accelerator. In this situation, air can be supplied continuously to the sprinkler system for an extended time period. **NOTE:** The Series 757 Regulated AMTA should be used with a tank-mounted air compressor to supply air to a Series 769 FireLock NXT Preaction Valve when the Series 746-LPA Dry Accelerator is used. The use of an air regulator with a base or riser-mounted air compressor could cause short cycling, resulting in premature wear of the compressor.

The air regulator of the Series 757 Regulated AMTA is a relief-type design. Any pressure in the system that is above the set point of the air regulator will be released. Therefore, charging the air regulator above the set point could cause premature operation of a valve installed with a Series 746-LPA Dry Accelerator.

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**SETTINGS FOR AIR SUPERVISORY PRESSURE SWITCHES AND ALARM PRESSURE SWITCHES**

1. Air supervisory pressure switches are required for preaction systems and must be set according to the following notes. **NOTE:** Switches for Vic-Quick Risers are pre-set at the factory.

   a. Wire the air supervisory pressure switches to activate a low-pressure alarm signal. **NOTE:** In addition, the local authority having jurisdiction may require a high-pressure alarm. Contact the local authority having jurisdiction for this requirement.

   b. Set the air supervisory pressure switches to activate at 2 – 4 psi/14 – 28 kPa/0.1 – 0.3 Bar below the minimum air pressure required (but not lower than 10 psi/69 kPa/0.7 Bar).

   c. Wire the alarm pressure switch to activate a water flow alarm.

   d. Set the alarm pressure switch to activate on a pressure rise of 4 – 8 psi/28 – 55 kPa/0.3 – 0.6 Bar.

**REMOTE SYSTEM TEST VALVE REQUIREMENTS**

The remote system test valve (inspector’s test connection) should contain a UL Listed and/or FM Approved valve (normally closed), which can be opened to simulate the operation of a sprinkler.

The remote system test valve (inspector’s test connection) should be located at the most hydraulically demanding location in the release system. **NOTE:** Multiple restrictions on the remote system test valve (inspector’s test connection) may slow the air decay rate and cause the system to respond slower than required.

The remote system test valve (inspector’s test connection) should terminate with an orifice equal to the smallest orifice in the releasing system. The remote system test valve (inspector’s test connection) is used to ensure that water reaches the most remote part of the system within 60 seconds.

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**Air supervisory pressure switches are required for preaction systems and must be set according to the following notes.**

**NOTE:** Switches for Vic-Quick Risers are pre-set at the factory.

1a. Wire the air supervisory pressure switches to activate a low-pressure alarm signal. **NOTE:** In addition, the local authority having jurisdiction may require a high-pressure alarm. Contact the local authority having jurisdiction for this requirement.

1b. Set the air supervisory pressure switches to activate at 2 – 4 psi/14 – 28 kPa/0.1 – 0.3 Bar below the minimum air pressure required (but not lower than 10 psi/69 kPa/0.7 Bar).

1c. Wire the alarm pressure switch to activate a water flow alarm.

1d. Set the alarm pressure switch to activate on a pressure rise of 4 – 8 psi/28 – 55 kPa/0.3 – 0.6 Bar.
FireLock NXT™ Preaction Valve
SERIES 769

IMPORTANT INSTALLATION INFORMATION

1. For proper operation and approval, the Series 769 FireLock NXT Preaction Valve must be installed in accordance with the specific trim diagrams included with the shipment. NOTE: Victaulic provides specific trim diagrams for installations involving a Series 746-LPA Dry Accelerator.

2. Before installing the Series 769 FireLock NXT Preaction Valve, flush the water supply piping thoroughly to remove all foreign material.

3. Series 769 FireLock NXT Preaction Valves MUST NOT be located in an area where the valve can be exposed to freezing temperatures. In addition, the Series 769 FireLock NXT Preaction Valve MUST NOT be located in an area where physical damage may occur.

4. It is the system designer’s responsibility to confirm material compatibility of the Series 769 FireLock NXT Preaction Valve, trim, and associated accessories when a corrosive environment or contaminated water is present.

5. SERIES 769 FIRELOCK NXT PREACTION VALVES MUST BE INSTALLED ONLY IN THE VERTICAL POSITION WITH THE ARROW ON THE BODY POINTING UPWARD.

6. Air or nitrogen supply to the dry piping system must be clean, dry, and oil-free.

7. Air supplies must be regulated, restricted, and continuous.

8. When an uninterruptible water flow alarm is required, Victaulic recommends the use of a low-pressure alarm installed on the diaphragm charge line downstream of the strainer/check restrictor. Another option is to install a Series 75B Supplemental Alarm Device.

9. Per NFPA 13 requirements, piping must be pitched so that systems can drain properly. For areas that are subject to high levels of condensation, or where piping is not properly pitched, an optional Series 75D Water Column Device kit is available to assist in automatically draining water out of the riser.

VALVE/TRIM INSTALLATION

1. Make sure the trim drawing matches the system’s requirements.

2. Remove all plastic caps and foam spacers from the valve.

3. Apply a small amount of pipe joint compound or Teflon* tape to the external threads of all threaded pipe connections. DO NOT get any tape, compound, or other foreign material into the valve body, pipe nipples, or valve openings.

4. Install the valve, trim, and accessories per the trim drawing.

5. FOR VALVES INSTALLED WITH A SERIES 746-LPA DRY ACCELERATOR: Make sure the Series 746-LPA Dry Accelerator is installed in accordance with the trim drawing provided. The end with the vent seal “button” must be installed facing down (toward the trim).

6. Supply pressure to the diaphragm charge line by providing an uninterrupted source of water from upstream of the main control valve.

* Teflon is a registered trademark of the DuPont Company
Compression fittings and tubes are provided for connection from the outlet of the auto drain, drip check, and actuator to the drip cup or drain. These compression fittings and tubes must be installed, in accordance with the trim drawing provided. **NEVER** insert a plug into the outlet of the auto drain, drip check, or actuator in place of the compression fitting/tube.

The Victaulic Series 769 FireLock NXT Preaction Valve is UL Listed and FM Approved for a maximum working pressure of 300 psi/2065 kPa/20.7 Bar and is factory tested to 600 psi/4135 kPa/41.4 Bar for all sizes. The valve can be hydrostatically tested against the clapper at 200 psi/1380 kPa/13.8 Bar or 50 psi/345 kPa/3.4 Bar above the normal water supply pressure (2-hour limited time period) for acceptance by the authority having jurisdiction.
FireLock NXT™ Preaction Valve
SERIES 769

PLACING THE SYSTEM IN SERVICE
- NON-INTER-LOCKED, PNEUMATIC RELEASE
- NON-INTER-LOCKED PNEUMATIC/ELECTRIC RELEASE
- SINGLE-INTER-LOCKED, PNEUMATIC RELEASE
- SINGLE-INTER-LOCKED, ELECTRIC RELEASE
- DOUBLE-INTER-LOCKED, ELECTRIC (ELECTRIC-PNEUMATIC/ ELECTRIC) RELEASE

CAUTION
- Make sure the Series 769 FireLock NXT Preaction Valve is properly heated and protected from freezing temperatures and physical damage. Failure to follow this instruction could cause improper valve operation, resulting in personal injury and/or property damage.

NOTICE
- A non-interlocked, pneumatic release system is shown in the photos below.

1. Open the system main drain valve. Confirm that the system is drained.

2. Close the system main drain valve.

3. Confirm that all system drains are shut and that the system is free of leaks.

3a. Confirm that the system has been depressurized. The gauges should indicate zero pressure.

4. FOR SYSTEMS INSTALLED WITH A SERIES 746-LPA DRY ACCELERATOR: Confirm that the isolation ball valve to the accelerator is closed.

4a. FOR SYSTEMS INSTALLED WITH A SERIES 746-LPA DRY ACCELERATOR: Open the ¼-turn vent ball valve.
5. Open the diaphragm-charge-line ball valve.

6. Confirm that water is flowing steadily from the Auto Drain. Pull up on the Auto Drain Sleeve.

7. **FOR SYSTEMS INSTALLED WITH A SERIES 776 LOW-PRESSURE ACTUATOR:** Confirm that water is flowing through the Series 776 Low-Pressure Actuator after opening the diaphragm-charge-line ball valve and pulling up on the Auto Drain Sleeve.

8. **FOR SYSTEMS INSTALLED WITH A SERIES 753-E SOLENOID VALVE:** Make sure no water flows through the solenoid after opening the diaphragm-charge-line ball valve. **DO NOT** pull up on the Auto Drain Sleeve.


10. Confirm that the alarm test ball valve is closed.

11. Charge the system with air by turning on the compressor or by opening the fast-fill ball valve on the AMTA (fast-fill ball valve is shown above). Charge the system to 13 psi/90 kPa/0.9 Bar minimum. Refer to the "Air Supply Requirements" section.

12. Confirm that the system is charging by observing the air pressure gauge. If the gauge is not showing an increase in air pressure, there is a leak or an opening in the line. Repair any leaks or openings and restart the setup procedures.
FireLock NXT™ Preaction Valve
SERIES 769

13. **FOR SYSTEMS INSTALLED WITH A SERIES 776 LOW-PRESSURE ACTUATOR:** Confirm that no water is being exhausted from the Auto Vent of the Series 776 Low-Pressure Actuator. If water is being exhausted from the Auto Vent, continue to run air through the system in order to remove moisture from the upper chamber of the Series 776 Low-Pressure Actuator. If a Series 746-LPA Dry Accelerator is installed, make sure the accelerator is not flooded.

14. **FOR SYSTEMS INSTALLED WITH A SERIES 776 LOW-PRESSURE ACTUATOR:** When the system reaches approximately 10 psi/69 kPa/0.7 Bar, and no additional moisture is being released from the Auto Vent, pull up on the Auto Vent Sleeve of the Series 776 Low-Pressure Actuator. **NOTE:** The Auto Vent Screw should seal and remain in the set ("UP") position.

15. **FOR SYSTEMS INSTALLED WITH A SERIES 753-E SOLENOID VALVE:** Confirm that the solenoid is closed.

16. When system air pressure is established, close the fast-fill ball valve on the AMTA.

17. Open the slow-fill ball valve on the AMTA. **NOTE:** Failure to leave the slow-fill ball valve open may allow system pressure to drop, resulting in valve operation in the event of a system leak.

18. Open the diaphragm-charge-line ball valve. Allow water to flow through the Auto Drain tube.

19. Open the manual pull station.
20. Close the manual pull station.

21. Pull up on the Auto Drain Sleeve until the screw is in the set ("UP") position. Verify that there is pressure on the gauge to the diaphragm charge line.

22. When the diaphragm charge line is pressurized, temporarily close the diaphragm-charge-line ball valve. Confirm that the diaphragm charge line is maintaining pressure by observing the diaphragm-charge-line pressure gauge.

22a. If pressure in the diaphragm charge line drops, the diaphragm must be replaced and/or any leaks in the diaphragm charge line must be corrected. Refer to the "Removing and Replacing the Diaphragm Assembly" section.

22b. If pressure in the diaphragm charge line does not drop, re-open the diaphragm-charge-line ball valve, and proceed to the following step.

23. FOR SYSTEMS INSTALLED WITH A SERIES 746-LPA DRY ACCELERATOR: Close the 1/4-turn vent ball valve on the accelerator.

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24. **FOR SYSTEMS INSTALLED WITH A SERIES 746-LPA DRY ACCELERATOR:** Open the isolation ball valve. This will set the accelerator.

25. Observe the system air pressure over a 24-hour period to confirm system integrity. If there is degradation in system air pressure, find and correct all leaks. **NOTE:** NFPA requires less than 1½-psi/14-kPa/0.1-Bar leakage in 24 hours.

26. Open the water supply main drain valve.

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**CAUTION**

- Take precautions when opening the water supply main control valve, since water will flow from all open system valves. Failure to follow this instruction could result in property damage.

27. Open the water supply main control valve slowly until water flows steadily from the open water supply main drain valve.

28. Close the water supply main drain valve when a steady flow of water occurs.

29. Confirm that there is no leakage from the intermediate valve chamber. The drip check in the alarm line should not be leaking water or air.
30. If water is flowing from the drip check, close the water supply 30 control valve, and start over at step 1. Refer to the “Troubleshooting” section.

31. Open the water supply main control valve fully.

32. Record the system air pressure and the water supply pressure.

33. Confirm that all valves are in their normal operating positions (refer to the table below).

<table>
<thead>
<tr>
<th>Valve</th>
<th>Normal Operating Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diaphragm-Charge-Line Ball Valve</td>
<td>Open</td>
</tr>
<tr>
<td>Alarm Test Ball Valve</td>
<td>Closed</td>
</tr>
<tr>
<td>Water Supply Main Control Valve</td>
<td>Open</td>
</tr>
<tr>
<td>Water Supply Main Drain Valve</td>
<td>Closed</td>
</tr>
<tr>
<td>System Main Drain Valve</td>
<td>Closed</td>
</tr>
<tr>
<td>Slow-Fill Ball Valve of the Victaulic AMTA (if applicable)</td>
<td>Open</td>
</tr>
<tr>
<td>Fast-Fill Ball Valve of the Victaulic AMTA (if applicable)</td>
<td>Closed</td>
</tr>
<tr>
<td>Isolation Ball Valve for Series 746-LPA Dry Accelerator (if applicable)</td>
<td>Open</td>
</tr>
<tr>
<td>¼-Turn Vent Ball Valve for Series 746-LPA Dry Accelerator (if applicable)</td>
<td>Closed</td>
</tr>
</tbody>
</table>

34. Notify the authority having jurisdiction, remote station alarm monitors, and those in the affected area that the system is in service.
FireLock NXT™ Preaction Valve
SERIES 769

EXTERNAL INSPECTION

**WARNING**

- The building owner or their representative is responsible for maintaining the fire protection system in proper operating condition.
- To ensure proper system operation, valves must be inspected in accordance with current NFPA-25 requirements or in accordance with the requirements of the local authority having jurisdiction (whichever is more stringent). Always refer to the instructions in this manual for additional inspection and testing requirements.
- The frequency of inspections must be increased in the presence of contaminated water supplies, corrosive/scaling water supplies, and corrosive atmospheres.
- Depressurize and drain the piping system before attempting to install, remove, adjust, or maintain any Victaulic products. Failure to follow these instructions could cause system failure, resulting in death, serious personal injury, and property damage.

**NOTICE**

- Any activities that require taking the valve out of service may eliminate the fire protection provided.
- Consideration of a fire patrol should be given for the affected areas.
- Before servicing or testing the system, notify the authority having jurisdiction.

**WEEKLY INSPECTION**

1. Perform a visual inspection on the valve and trim on a weekly basis. **NOTE:** If the preaction system is equipped with a low-pressure alarm, monthly inspections may be sufficient. Contact the local authority having jurisdiction for specific requirements.

2. Confirm that there is no leakage from the intermediate valve chamber. The drip check in the alarm line should not be leaking water or air.

3. Inspect the valve and trim for mechanical damage and corrosion. Replace any damaged or corroded parts.

4. Confirm that the preaction valve and trim are located in an area that is not subject to freezing temperatures.

5. Confirm that all valves are in their normal operating positions (refer to the table below).

6. If a Series 746-LPA Dry Accelerator is installed, record the pressure in the air chamber of the dry accelerator. The pressure in the air chamber should equal the system air pressure within the allowable tolerances of the gauges. If the air chamber’s pressure is below the system air pressure, follow the “Troubleshooting” section.

**MONTHLY INSPECTION**

1. Record the system air pressure and water supply pressure. Confirm that the water supply pressure is within the range of normal pressures observed in the area. Significant loss of water supply pressure could indicate an adverse condition in the water supply. Confirm the proper water-to-air ratio is being maintained.

2. Confirm that the preaction system is equipped with a low-pressure alarm, monthly inspections may be sufficient. Contact the local authority having jurisdiction for specific requirements.

3. Confirm that the preaction valve and trim are located in an area that is not subject to freezing temperatures.

4. Confirm that all valves are in their normal operating positions (refer to the table below).

<table>
<thead>
<tr>
<th>Valve</th>
<th>Normal Operating Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diaphragm-Charge-Line Ball Valve</td>
<td>Open</td>
</tr>
<tr>
<td>Alarm Test Ball Valve</td>
<td>Closed</td>
</tr>
<tr>
<td>Water Supply Main Control Valve</td>
<td>Open</td>
</tr>
<tr>
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<td>Closed</td>
</tr>
<tr>
<td>System Main Drain Valve</td>
<td>Closed</td>
</tr>
<tr>
<td>Slow-Fill Ball Valve of the Victaulic AMTA (if applicable)</td>
<td>Open</td>
</tr>
<tr>
<td>Fast-Fill Ball Valve of the Victaulic AMTA (if applicable)</td>
<td>Closed</td>
</tr>
<tr>
<td>Isolation Ball Valve for Series 746-LPA Dry Accelerator (if applicable)</td>
<td>Open</td>
</tr>
<tr>
<td>¼-Turn Vent Ball Valve for Series 746-LPA Dry Accelerator (if applicable)</td>
<td>Closed</td>
</tr>
</tbody>
</table>
Perform the main drain test on a frequency required by the current NFPA-25 code. The authority having jurisdiction in the area may require these tests on a more frequent basis. Verify these requirements by contacting the authority having jurisdiction in the affected area.

1. Notify the authority having jurisdiction, remote station alarm monitors, and those in the affected area that the main drain test will be performed.
2. Confirm that sufficient drainage is available.
3. Record the water supply pressure and system air pressure.
4. Open the water supply main drain valve fully to flush the water supply of any contaminants.
5. While the water supply main drain valve is fully open, record the water supply pressure (from the water supply gauge) as the residual pressure.
8. Close the water supply main drain valve slowly.

9. Record the water pressure established after closing the water supply main drain valve.

10. Compare the residual pressure reading, taken above, to the residual pressure readings taken in previous main drain tests. If there is degradation in the residual water supply reading, restore the proper water supply pressure.

11. Confirm that all valves are in their normal operating positions (refer to the table below).

<table>
<thead>
<tr>
<th>Valve</th>
<th>Normal Operating Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diaphragm-Charge-Line Ball Valve</td>
<td>Open</td>
</tr>
<tr>
<td>Alarm Test Ball Valve</td>
<td>Closed</td>
</tr>
<tr>
<td>Water Supply Main Control Valve</td>
<td>Open</td>
</tr>
<tr>
<td>Water Supply Main Drain Valve</td>
<td>Closed</td>
</tr>
<tr>
<td>System Main Drain Valve</td>
<td>Closed</td>
</tr>
<tr>
<td>Slow-Fill Ball Valve of the Victaulic AMTA (if applicable)</td>
<td>Open</td>
</tr>
<tr>
<td>Fast-Fill Ball Valve of the Victaulic AMTA (if applicable)</td>
<td>Closed</td>
</tr>
<tr>
<td>Isolation Ball Valve for Series 746-LPA Dry Accelerator (if applicable)</td>
<td>Open</td>
</tr>
<tr>
<td>1/4-Turn Vent Ball Valve for Series 746-LPA Dry Accelerator (if applicable)</td>
<td>Closed</td>
</tr>
</tbody>
</table>

12. Confirm that there is no leakage from the intermediate valve chamber. The drip check in the alarm line should not be leaking water or air.

13. Notify the authority having jurisdiction, remote station alarm monitors, and those in the affected area that the valve is back in service.

14. Provide test results to the authority having jurisdiction, if required.
Perform the water flow alarm test on a frequency required by the current NFPA-25 code. The authority having jurisdiction in the area may require these tests on a more frequent basis. Verify these requirements by contacting the authority having jurisdiction in the affected area.

1. Notify the authority having jurisdiction, remote station alarm monitors, and those in the affected area that the water flow alarm test will be performed.

**CAUTION**

- Use caution to prevent opening the system main drain valve accidentally.
Opening the system main drain valve will cause the valve to operate, resulting in property damage.

2. Open the water supply main drain valve fully to flush the water supply of any contaminants.

3. Close the water supply main drain valve.

4. Open the alarm test ball valve. Confirm that mechanical and electrical alarms are activated and that remote monitoring stations, if provided, receive an alarm signal.

5. Close the alarm test ball valve after verifying proper operation of all alarms.

6. Push in the plunger of the drip check to verify that there is no pressure in the alarm line.
FireLock NXT™ Preaction Valve
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7. Verify that all alarms stopped sounding, that the alarm line drained properly, and that remote station alarms reset properly.
8. Confirm that there is no leakage from the intermediate valve chamber. The drip check in the alarm line should not be leaking water or air.
9. Notify the authority having jurisdiction, remote station alarm monitors, and those in the affected area that the valve is back in service.
10. Provide test results to the authority having jurisdiction, if required.

WATER LEVEL AND LOW AIR ALARM TESTS

Perform the water level and low air alarm tests on a frequency required by the current NFPA-25 code. The authority having jurisdiction in the area may require these tests on a more frequent basis. Verify these requirements by contacting the authority having jurisdiction in the affected area.

NOTICE

- If a Series 746-LPA Dry Accelerator is installed, make sure the authority having jurisdiction is notified that the water level and low air alarm tests are in progress. Failure to close the isolation ball valve of the Series 746-LPA Dry Accelerator may cause the valve to trip, resulting in a false alarm.

1. Notify the authority having jurisdiction, remote station alarm monitors, and those in the affected area that the water level and low air alarm tests will be performed.
2. If a Series 746-LPA Dry Accelerator is installed, close the isolation ball valve.
3. Open the water supply main drain valve fully to flush the water supply of any contaminants.
4. Close the water supply main drain valve.

5. Close the water supply main control valve.

6. Partially open the system main drain valve slowly. Confirm that water is not flowing from the drain. **NOTE:** If water is flowing from the drain, the system may not have drained properly. In this case, follow all steps under the “Placing the System in Service” section.

7. Record the system air pressure at which the low air alarm activates.

8. Close the system main drain valve.

9. Close the slow-fill ball valve on the AMTA.

10. Open the fast-fill ball valve on the AMTA. Bring the pressure back up to the normal system pressure.
11. When the normal system air pressure is reached, close the fast-fill ball valve on the AMTA.

12. Open the slow-fill ball valve on the AMTA.

13. If a Series 746-LPA Dry Accelerator is installed, open the isolation ball valve.

14. Open the water supply main drain valve.

**CAUTION**

- Take precautions when opening the water supply main control valve, since water will flow from all open system valves. Failure to follow this instruction could result in property damage.

15. Open the water supply main control valve slowly until water flows steadily from the open water supply main drain valve.
16. Close the water supply main drain valve when a steady flow of water occurs.

17. Open the water supply main control valve fully.

18. Confirm that all valves are in their normal operating positions (refer to the table below).

<table>
<thead>
<tr>
<th>Valve</th>
<th>Normal Operating Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diaphragm-Charge-Line Ball Valve</td>
<td>Open</td>
</tr>
<tr>
<td>Alarm Test Ball Valve</td>
<td>Closed</td>
</tr>
<tr>
<td>Water Supply Main Control Valve</td>
<td>Open</td>
</tr>
<tr>
<td>Water Supply Main Drain Valve</td>
<td>Closed</td>
</tr>
<tr>
<td>System Main Drain Valve</td>
<td>Closed</td>
</tr>
<tr>
<td>Slow-Fill Ball Valve of the Victaulic AMTA (if applicable)</td>
<td>Open</td>
</tr>
<tr>
<td>Fast-Fill Ball Valve of the Victaulic AMTA (if applicable)</td>
<td>Closed</td>
</tr>
<tr>
<td>Isolation Ball Valve for Series 746-LPA Dry Accelerator (if applicable)</td>
<td>Open</td>
</tr>
<tr>
<td>¼-Turn Vent Ball Valve for Series 746-LPA Dry Accelerator (if applicable)</td>
<td>Closed</td>
</tr>
</tbody>
</table>

19. Notify the authority having jurisdiction, remote station alarm monitors, and those in the affected area that the valve is back in service.

20. Provide test results to the authority having jurisdiction, if required.
REQUIRED OPERATIONAL (TRIP) TESTS
PARTIAL OPERATIONAL (TRIP) TEST

**WARNING**

- The building owner or their representative is responsible for maintaining the fire protection system in proper operating condition.
- To ensure proper system operation, valves must be inspected in accordance with current NFPA-25 requirements or in accordance with the requirements of the local authority having jurisdiction (whichever is more stringent). Always refer to the instructions in this manual for additional inspection and testing requirements.
- The frequency of inspections must be increased in the presence of contaminated water supplies, corrosive/scaling water supplies, and corrosive atmospheres.
- Depressurize and drain the piping system before attempting to install, remove, adjust, or maintain any Victaulic products. Failure to follow these instructions could cause system failure, resulting in death, serious personal injury, and property damage.

Partial operational (trip) tests are required to confirm proper valve operation; however, this test does not confirm full system operation. Victaulic recommends performing the partial operational (trip) test annually (at minimum). **NOTE:** The frequency of the partial operational (trip) test must be increased in the presence of contaminated water supplies, corrosive/scaling water supplies, and corrosive atmospheres. In addition, the authority having jurisdiction in the area may require partial operational (trip) tests on a more frequent basis. Verify these requirements by contacting the authority having jurisdiction in the affected area.

1. Notify the authority having jurisdiction, remote station alarm monitors, and those in the affected area that the partial operational (trip) test will be performed.
2. Record the water supply pressure and system air pressure.
3. Open the water supply main drain valve fully to flush the water supply of any contaminants.
4. Close the water supply main control valve to the point where additional closure will not provide flow through the water supply main drain valve.
5. Open the water supply main control valve slowly until a small amount of water flows through the water supply main drain valve.
6. Close the water supply main drain valve.
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7. Trip the valve by doing one of the following:
   a. Energize the solenoid valve
   b. Relieve the air pressure from the pilot line
   c. Open the manual pull station

8. Confirm that the diaphragm charge line’s pressure drops to zero and that water is flowing through the auto drain to the drip cup.

9. Close the water supply main control valve fully.

10. Close the remote system test valve (inspector’s test connection) or the system main drain valve. **NOTE:** The system main drain valve is shown above.

11. **SHUT OFF THE AIR SUPPLY.**
Victaulic recommends the full operational (trip) test every 3 years (at minimum). NOTE: The frequency of the full operational (trip) test must be increased in the presence of contaminated water supplies, corrosive/scaling water supplies, and corrosive atmospheres. This test allows a full flow of water into the sprinkler system; therefore, this test must be performed when there is no chance for freezing conditions. In addition, the authority having jurisdiction in the area may require full operational (trip) tests on a more frequent basis. Verify these requirements by contacting the authority having jurisdiction in the affected area.

1. Notify the authority having jurisdiction, remote station alarm monitors, and those in the affected area that the full operational (trip) test will be performed.
2. Record the water supply pressure and system air pressure.
3. Open the water supply main drain valve fully to flush the water supply of any contaminants.
4. Close the water supply main drain valve.
5. Trip the valve by doing one of the following:
   a. Energize the solenoid valve
   b. Relieve the air pressure from the pilot line
   c. Open the manual pull station
6. Record the following:
   a. Time between opening the remote system test valve (inspector’s test connection) to the operation of the preaction valve
   b. System air pressure when the valve operated
   c. Time from opening the remote system test valve (inspector’s test connection) to when water flows from the test connection’s outlet
   d. All information required by the authority having jurisdiction
7. Confirm that all alarms operate properly.
8. Continue to run water until it is clear.
9. Close the water supply main control valve.

Water Supply Main Drain Valve

Water Supply Main Control Valve

11. **SHUT OFF THE AIR SUPPLY.**

12. Open the system main drain valve to drain the system.

13. After the system is properly drained, close the remote system test valve (inspector’s test connection).

14. Close the system main drain valve.

15. Perform all steps in the “Placing the System in Service” section.
REQUIRED INTERNAL INSPECTION
Inspect internal components on a frequency required by the current NFPA-25 code. The authority having jurisdiction in the area may require these inspections on a more frequent basis. Verify these requirements by contacting the authority having jurisdiction in the affected area.

**WARNING**
- Depressurize and drain the piping system before attempting to remove the cover plate from the valve.
  Failure to follow this instruction could result in serious personal injury and/or property damage.

**CAUTION**
- Any activities that require taking the valve out of service may eliminate the fire protection provided.
- Before servicing or testing the system, notify the authority having jurisdiction.
- Consideration of a fire patrol should be given in the affected areas.
  Failure to follow these instructions could result in serious personal injury and/or property damage.

1. Notify the authority having jurisdiction, remote station alarm monitors, and those in the affected area that the system is being taken out of service.

2. Open the water supply main drain valve fully to flush the water supply of any contaminants.

3. Close the water supply main drain valve.

4. Close the water supply main control valve to take the system out of service.

5. Open the water supply main drain valve.

6. Confirm that water is not flowing from the water supply main drain valve.
7. Close the diaphragm-charge-line ball valve.

8. Open the system main drain valve to drain any water that has accumulated and to release system air pressure. **NOTE**: If the system has operated, open the remote system test valve (inspector’s test connection) and any auxiliary drain valves.

9. Close the slow-fill ball valve on the AMTA.

10. OPEN THE MANUAL PULL STATION.

11. After all pressure is released from the system, loosen the cover plate bolts slowly. **NOTE**: DO NOT remove any cover plate bolts until all cover plate bolts are loosened.

11a. Remove all cover plate bolts, along with the cover plate and cover plate gasket. **NOTE**: The 1½-inch/48.3-mm and 2-inch/60.3-mm valve sizes contain washers under the heads of the cover plate bolts. Keep these washers for re-installation.

12. Push the latch back (toward the diaphragm).
13. Rotate the clapper out of the valve body. Inspect the clapper seal and seal-retaining ring. Wipe away any contaminants, dirt, and mineral deposits. Clean out any holes that are plugged in the valve-body seat ring. **DO NOT USE SOLVENTS OR ABRASIVES.**

14. While the clapper is rotated out of the valve body, pull the latch forward to inspect the diaphragm. If the diaphragm shows any signs of wear or damage, replace it with a new, Victaulic-supplied diaphragm. Refer to the “Removing and Replacing the Diaphragm Assembly” section.

15. Inspect the clapper for freedom of movement and physical damage. Replace any damaged or worn parts by following the applicable instructions in the “Maintenance” section.

16. Re-install the cover plate by following the “Installing the Cover Plate Gasket and Cover Plate” section.

17. Place the system back in service by following the “Placing the System in Service” section.
The following sections instruct on how to remove and replace internal valve components. Care must be taken to avoid damage to parts during removal and installation.

**WARNING**

- Depressurize and drain the piping system before attempting to remove the cover plate from the valve.
- Failure to follow this instruction could result in serious personal injury and/or property damage.

**CAUTION**

- Any activities that require taking the valve out of service may eliminate the fire protection provided.
- Before servicing or testing the system, notify the authority having jurisdiction.
- Consideration of a fire patrol should be given in the affected areas.
- Failure to follow these instructions could result in serious personal injury and/or property damage.

**REMOVING AND REPLACING THE CLAPPER SEAL**

1. Perform steps 1 – 12 of the “Required Internal Inspection” section.

2. Remove the seal assembly bolt/bolt seal from the clapper seal.

3. Remove the seal-retaining ring.

4. Pry the edge of the seal washer from inside the clapper seal, as shown above.

5. Remove the seal washer from the clapper seal. Dry up any moisture that is under the seal washer and on the clapper seal.

**CAUTION**

- DO NOT pry the seal washer out of the clapper seal from the inner hole.
- Failure to follow this instruction could damage the seal washer, resulting in improper clapper sealing and valve leakage.

**CAUTION**

- Use only Victaulic-supplied replacement parts.
- Failure to follow this instruction could cause improper valve operation, resulting in property damage.
6. Pry the clapper seal, along with the seal ring, out of the clapper. Inspect the clapper seal. If the clapper seal is torn or worn, replace it with a new, Victaulic-supplied clapper seal. If replacing the clapper seal assembly with a new assembly, skip to step 7.

6a. If using the same clapper seal assembly and the seal ring was removed from the clapper seal in the previous step: Re-insert the seal ring carefully underneath the outer lip of the clapper seal. Make sure the smaller diameter of the seal ring is toward the sealing surface of the clapper seal.

7. Insert the seal washer carefully underneath the sealing lip of the gasket.

8. Remove any contaminants, dirt, and mineral deposits from the clapper.

9. Install the clapper seal into the clapper carefully. Make sure the seal ring snaps into the clapper completely.

10. Place the seal-retaining ring onto the seal washer of the clapper seal. Install the seal-assembly bolt/bolt seal through the seal-retaining ring and clapper.
11. Tighten the seal-assembly bolt/bolt seal to the torque value, listed in the table below, to ensure a proper seal.

### REQUIRED SEAL-ASSEMBLY BOLT/BOLT SEAL TORQUES

<table>
<thead>
<tr>
<th>Size</th>
<th>Actual Outside Diameter inches mm</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 ½</td>
<td>1.900 48.3</td>
<td>40</td>
</tr>
<tr>
<td>2</td>
<td>2.375 60.3</td>
<td>40</td>
</tr>
<tr>
<td>2 ½</td>
<td>2.875 73.0</td>
<td>90</td>
</tr>
<tr>
<td>3</td>
<td>3.500 88.9</td>
<td>90</td>
</tr>
<tr>
<td>4</td>
<td>4.500 114.3</td>
<td>110</td>
</tr>
<tr>
<td>165.1 mm</td>
<td>6.500 165.1</td>
<td>160</td>
</tr>
<tr>
<td>6</td>
<td>6.625 168.3</td>
<td>160</td>
</tr>
<tr>
<td>8</td>
<td>8.625 219.1</td>
<td>160</td>
</tr>
</tbody>
</table>

2. Replace the cover plate by following the “Installing the Cover Plate Gasket and Cover Plate” section.

13. Place the system back in service by following the “Placing the System in Service” section.

2. Remove the clapper shaft bushings from the valve body.

3. Remove the clapper shaft. **NOTE:** As the shaft is being removed, the clapper spring will drop out of position. Keep the clapper spring for re-installation.

4. Remove the clapper from the valve body.
5. Place the new clapper assembly onto the valve-body seat ring. Make sure the holes in the clapper arms align with the holes in the valve body.

6. Insert the clapper shaft halfway into the valve body.
7. Install the clapper spring onto the clapper shaft. Make sure the loop of the clapper spring is facing toward the clapper, as shown above.
8. Finish inserting the clapper shaft through the clapper arm and valve body.

9. Apply thread sealant to the clapper shaft bushings. Install the clapper shaft bushings into the valve body until hand-tight.
10. Tighten the clapper shaft bushings until metal-to-metal contact occurs with the valve body.
11. Check the clapper for freedom of movement.
12. Replace the cover plate by following the “Installing the Cover Plate Gasket and Cover Plate” section.
13. Place the system back in service by following the “Placing the System in Service” section.
INSTALLING THE COVER PLATE GASKET AND COVER PLATE

**CAUTION**

- Use only Victaulic-supplied replacement parts. Failure to follow this instruction could cause improper valve operation, resulting in property damage.

1. Verify that the cover plate gasket is in good condition. If the gasket is torn or worn, replace it with a new, Victaulic-supplied gasket.

2. Align the holes of the cover plate gasket with the holes in the cover plate.

3. Insert one cover plate bolt through the cover plate and cover plate gasket to ease alignment. **NOTE:** For 1 ½-inch/48.3-mm and 2-inch/60.3-mm valve sizes, a washer must be re-installed under the head of each cover plate bolt.

4. Align the cover plate/cover plate gasket to the valve. Make sure the clapper spring’s arms are rotated to their installed position. Tighten all cover plate bolts into the cover plate/valve body.

5. Torque all cover plate bolts in an even, crossing pattern. Refer to the “Required Cover Plate Bolt Torques” table below for the required torque values. **DO NOT** over-tighten the cover plate bolts.

6. Place the system back in service by following the “Placing the System in Service” section.

### REQUIRED COVER PLATE BOLT TORQUES

<table>
<thead>
<tr>
<th>Nominal Size</th>
<th>Actual Outside Diameter</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>inches</td>
<td>ft-lbs Nm</td>
</tr>
<tr>
<td>1 ½</td>
<td>1.900 48.3</td>
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</tr>
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</tr>
<tr>
<td>76.1 mm</td>
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<td>60</td>
</tr>
<tr>
<td>3</td>
<td>3.500 88.9</td>
<td>60</td>
</tr>
<tr>
<td>4</td>
<td>4.500 114.3</td>
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</tr>
<tr>
<td>8</td>
<td>8.625 219.1</td>
<td>156</td>
</tr>
</tbody>
</table>

**CAUTION**

- **DO NOT** over-tighten the cover plate bolts. Failure to follow this instruction could cause damage to the cover plate gasket, resulting in valve leakage.
FireLock NXT™ Preaction Valve
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REMOVING AND REPLACING THE DIAPHRAGM ASSEMBLY

1. Remove the system from service by following steps 1 – 11 of the “Required Internal Inspection” section.

2. Break the unions that connect the trim to the diaphragm cover. Refer to the applicable trim drawing for details.

3. Remove the cap screws from the diaphragm cover, and pull the diaphragm cover/trim off the valve.

4. Remove the diaphragm from the valve body.

5. Clean the back of the valve body to remove any debris that may interfere with proper diaphragm seating.

5a. Clean the inside of the diaphragm cover to remove any foreign material.

6. Replace the diaphragm with a new, Victaulic-supplied diaphragm. Align the holes in the diaphragm with the holes in the valve body. Be careful not to damage the diaphragm during installation.

7. Align the holes of the diaphragm cover with the holes in the diaphragm/valve body. Tighten all cap screws into the diaphragm cover/valve body.

8. Re-attach the trim at the unions that were loosened in step 2. Refer to the applicable trim drawing for details. MAKE SURE ALL UNIONS THAT WERE LOOSENED TO PERMIT ACCESS TO THE DIAPHRAGM COVER ARE RE-TIGHTENED BEFORE ATTEMPTING TO PLACE THE SYSTEM BACK IN SERVICE.

9. Place the system back in service by following the “Placing the System in Service” section.

CAUTION

- Use caution when installing a new diaphragm into the valve body.

Failure to follow this instruction could cause damage to the diaphragm, resulting in improper valve operation and valve leakage.
REPLACING THE STRAINER SCREEN FOR SERIES 776 LOW-PRESSURE ACTUATORS

1. Remove the system from service by following steps 1 – 11 of the "Required Internal Inspection" section.

2. Remove the Series 776 Low-Pressure Actuator from the trim. Refer to the applicable trim drawing for details.

3. Remove the strainer assembly from the Series 776 Low-Pressure Actuator, as shown above. Discard the strainer screen only.

CAUTION

- DO NOT re-use strainer screens. After removal, the old strainer screen must be replaced with a new, Victaulic-supplied screen. Failure to follow this instruction could cause improper valve operation, resulting in property damage.

4. Use only a new, Victaulic-supplied strainer screen. Insert the strainer screen into the strainer assembly.

5. Install the strainer assembly into the Series 776 Low-Pressure Actuator carefully. Avoid damage to the o-ring seals.

6. Re-install the Series 776 Low-Pressure Actuator into the trim. Refer to the applicable trim drawing for details.

7. Place the system back in service by following the "Placing the System in Service" section.
## TROUBLESHOOTING – SERIES 776 LOW-PRESSURE ACTUATOR

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>When the Auto Vent Sleeve of the Series 776 Low-Pressure Actuator is pulled up, the screw does not stay set in the “UP” position.</td>
<td>The Series 776 Low-Pressure Actuator is not receiving enough air.</td>
<td>Increase the air pressure going into the Series 776 Low-Pressure Actuator.</td>
</tr>
<tr>
<td>Water is leaking through the Series 776 Low-Pressure Actuator.</td>
<td>The air chamber of the Series 776 Low-Pressure Actuator is not set.</td>
<td>Make sure the vent seal of the Series 776 Low-Pressure Actuator is in the set position and the air chamber is pressurized.</td>
</tr>
<tr>
<td>Water is leaking through the Series 776 Low-Pressure Actuator.</td>
<td>The strainer on the Series 776 Low-Pressure Actuator is clogged.</td>
<td>Replace the strainer screen of the Series 776 Low-Pressure Actuator. Refer to the “Replacing the Strainer Screen for Series 776 Low-Pressure Actuator” section.</td>
</tr>
<tr>
<td>Water is leaking through the Series 776 Low-Pressure Actuator.</td>
<td>The Series 776 Low-Pressure Actuator has a ripped diaphragm.</td>
<td>If water still leaks through the Series 776 after performing the above procedures, contact Victaulic.</td>
</tr>
<tr>
<td>No water is passing through the Series 776 Low-Pressure Actuator.</td>
<td>The strainer on the diaphragm charge line is clogged.</td>
<td>Disassemble and clean the diaphragm charge line strainer. Refer to the applicable trim drawing for details.</td>
</tr>
</tbody>
</table>

## TROUBLESHOOTING – SERIES 753-E SOLENOID VALVE

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>No water is passing through the Series 753-E Solenoid Valve.</td>
<td>The strainer on the diaphragm charge line is clogged.</td>
<td>Disassemble and clean the diaphragm charge line strainer. Refer to the applicable trim drawing for details.</td>
</tr>
<tr>
<td>The Series 776 Low Pressure Actuator does not open.</td>
<td>No power is going to the solenoid.</td>
<td>Check all electrical connections to make sure power is being supplied to the solenoid.</td>
</tr>
</tbody>
</table>

## TROUBLESHOOTING – SERIES 746-LPA DRY ACCELERATOR

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>The valve operates without sprinkler activation.</td>
<td>There is a loss of air pressure in the lower inlet chamber of the Series 746-LPA Dry Accelerator.</td>
<td>Check for air loss at the lower chamber seal. If a leak is present, turn the adjustment nut counterclockwise to seal.</td>
</tr>
<tr>
<td>The Series 746-LPA Dry Accelerator does not operate within a 5-psi/34-kPa/0.3-Bar pressure drop in system air pressure.</td>
<td>There is a loss of air pressure in the upper air chamber of the Series 746-LPA Dry Accelerator.</td>
<td>Check for any leaks in the system and trim. Confirm that the AMTA is operating properly.</td>
</tr>
<tr>
<td>The Series 746-LPA Dry Accelerator does not operate within a 5-psi/34-kPa/0.3-Bar pressure drop in system air pressure.</td>
<td>The air decay rate of the system is too slow.</td>
<td>Make sure there are no restrictions in the remote system test valve (inspector’s test connection).</td>
</tr>
<tr>
<td>The Series 746-LPA Dry Accelerator does not set up properly (cannot get pressure on the upper gauge, and the button pops up immediately when pressure is introduced).</td>
<td>The Series 746-LPA Dry Accelerator is installed upside-down.</td>
<td>Remove the Series 746-LPA Dry Accelerator from the trim, and turn the unit around so that the vent seal “button” is facing down (toward the Series 776 Low-Pressure Actuator).</td>
</tr>
</tbody>
</table>

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REV. D

I-769P_43
# TROUBLESHOOTING – SYSTEM

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>The valve operates without sprinkler activation.</td>
<td>There is a loss of air pressure in the system or trim.</td>
<td>Check for any leaks in the system and trim. Confirm that the AMTA is operating properly. Consider installing a low-air supervisory switch.</td>
</tr>
<tr>
<td>The pressure switch on the air compressor is set too low, or the compressor is not operating properly.</td>
<td></td>
<td>Increase the &quot;ON&quot; setting of the air compressor's pressure switch, and check the air compressor for proper operation.</td>
</tr>
<tr>
<td>Water is leaking from the drip check located in the alarm line.</td>
<td>Water is getting past the clapper seal and into the intermediate chamber of the valve.</td>
<td>Check the clapper seal and valve body seat ring for physical damage and foreign material.</td>
</tr>
<tr>
<td></td>
<td>Water is under the clapper seal.</td>
<td>Inspect the clapper seal to make sure no water is under the seal. If water is present, remove and replace the seal. Refer to the &quot;Removing and Replacing the Clapper Seal&quot; section.</td>
</tr>
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</tr>
<tr>
<td>The clapper will not latch closed.</td>
<td>There is no water pressure on the diaphragm.</td>
<td>Check the water pressure in the diaphragm charge line. Make sure the restrictor in the diaphragm charge line is clean.</td>
</tr>
<tr>
<td></td>
<td>The Auto Drain is not set.</td>
<td>Set the Auto Drain by pulling up on the Auto Drain Sleeve.</td>
</tr>
<tr>
<td>Water is leaking from the diaphragm assembly.</td>
<td>The diaphragm is damaged.</td>
<td>Contact Victaulic.</td>
</tr>
<tr>
<td>Air is leaking from the diaphragm assembly.</td>
<td>The diaphragm is damaged.</td>
<td>Contact Victaulic.</td>
</tr>
</tbody>
</table>
FireLock NXT™ Preaction Valve

SERIES 769
NON-INTERLOCKED, PNEUMATIC RELEASE WITH SERIES 776 LOW-PRESSURE ACTUATOR
NON-INTERLOCKED, PNEUMATIC/ELECTRIC RELEASE WITH SERIES 776 LOW-PRESSURE ACTUATOR AND SERIES 753-E SOLENOID VALVE
SINGLE-INTERLOCKED, PNEUMATIC RELEASE WITH SERIES 776 LOW-PRESSURE ACTUATOR
SINGLE-INTERLOCKED, ELECTRIC RELEASE WITH SERIES 753-E SOLENOID VALVE
DOUBLE-INTERLOCKED, ELECTRIC (ELECTRIC-PNEUMATIC/ELECTRIC) RELEASE WITH SERIES 753-E SOLENOID VALVE
SECTION 3

General Air Products
Manual OILLESSINST

Compressor
OIL-LESS COMPRESSOR INSTRUCTION SHEETS

NOTE
This compressor is intended for installation indoors for use on dry sprinkler systems in accordance with the Standard for Installation of Sprinkler Systems, NFPA 13 and the National Electrical Code, NFPA 70. The compressor should be sized to restore and maintain the air pressure in the sprinkler system in accordance with the requirements in NFPA 13.

DANGER
This compressor is not equipped and should NOT be used “as is” to supply breathing quality air.

WARNING
Motors, electrical equipment and controls can cause electrical arcs that will ignite a flammable gas or vapor. Never operate or repair in or near a flammable gas or vapor. Never store flammable liquids or gases near the compressor.

WARNING
These compressors are suitable for pumping only atmospheric air. As defined in Compressed Gas Association Pamphlet G-7, page 3, atmospheric air is a mixture of elements and compounds where nitrogen and oxygen comprise more than 99% with all other trace gases comprising less than 1%. DO NOT USE THIS COMPRESSOR IN CONTAMINATED ENVIRONMENTS OR FOR PUMPING MIXTURES OTHER THAN ATMOSPHERIC AIR

WARNING
Compressed air contains liquid water and is saturated with water vapor, which can freeze. Do not connect compressor outlet to freezer rooms or systems exposed to temperatures below freezing. If system connects to a freezer room or area exposed to freezing temperatures, a Dry Air Pac™ should be used.

Receiving
Your compressor is inspected at the factory and packaged to protect against shipping damage. When the compressor is unpacked, inspect for damage or missing parts. All claims should be settled directly with the freight company.

WARNING: Do not operate this compressor if damaged during shipment, handling, or use. Damage may result in bursting and cause injury or property damage.

Location

NOTE: Do not connect compressor intake to freezer room. – CALL 1-800-345-8207.

Locate the compressor in a clean, well-ventilated area where the air is relatively cool, clean, and dry. A 110°F (35 C) maximum and 40°F (4.5 C) minimum temperature for surrounding and inlet air are recommended. Provide at least 12 to 18 inches from any wall or other obstruction that will interfere with airflow through the motor’s fan built into the motor. Blocking airflow through the fan may cause the compressor to over heat. Do not place the compressor in an area of excessive heat, such as near a boiler.

Mounting
Riser mounted compressors may be mounted to a firm level floor, wall or system riser. A mounting bracket and straps are provided. Tank mounted compressors should be bolted to the floor using the bolt holes provided in the tank legs. Always shim the unit level before bolting it to the floor. Vibration isolators (P/N KVP4X4) are recommended. When using isolator pads, do not draw bolts tight. Allow the pad to absorb vibrations. When isolators are used, a flexible hose (P/N P1202MP) should be installed between the compressor and service piping.

Lubrication

NOTE: This compressor is designed for non-lubricated service. Bearings are permanently lubricated. Do not lubricate any part of the compressor or motor.

Piping (reference "Installation Instructions" drawings)

WARNING
Compressed air contains liquid water and is saturated with water vapor, which can freeze. Do not connect compressor outlet to freezer rooms or systems exposed to temperatures below freezing. If system connects to a freezer room or area exposed to freezing temperatures, a Dry Air Pac™ should be used.

Piping between the compressor, accessory items and the sprinkler system should be at least ½” internal
diameter to minimize pressure drop from the compressor to system. Larger pipe size may be required by code and may be substituted with no adverse effects. Smaller line size must not be used and will restrict the compressor flow, lowering capacity and causing the compressor/motor to work harder, which shortens compressor/motor life. All piping connected to the compressor must be fully supported and not transfer any loads to the compressor.

If an AMD-1 is used, allow sufficient distance between the compressor and AMD-1 to ensure that the maximum temperature at the AMD-1 is 200°F or less. When an AMD is used with riser mounted units, a riser mounted tank kit (p/n OLR-TK) should be installed to prevent short cycling the compressor. All oil-less compressors include a relief valve. For riser mounted models, the relief valve is installed on the compressor outlet. For tank mounted models, an ASME Code relief valve is mounted on the compressor’s tank. This valve will open at a preset value above the pressure switch setting to prevent excess tank pressure in the event of switch failure.

**WARNING:** Do not attempt to change the safety relief valve setting.

A manual drain is provided on the bottom of each tank mounted compressor. Moisture accumulated in the tank, must be drained weekly. An automatic drain, P/N DVA-2T, is recommended in areas of high humidity.

The compressor outlet piping should contain an accessible drain. As a minimum a manual drain may be used, but an automatic drain is recommended to remove excess water.

**NOTE:** Accumulation of condensed water in a system causes corrosion of components and reduces system capacity.

**NOTICE:** Warranty is void if a separate check valve is not installed to prevent water back flow.

Wiring (reference “Wiring Instructions” drawings)

**WARNING:** Have a qualified electrician wire the compressor to ensure that the supply line has the same characteristics (voltage, frequency and phasing) as the motor. Wiring must comply with all local and national codes.

### CAUTION

Inadequate wiring size can cause insufficient voltage at the compressor during start-up. Overheating and damage to the motor and controls may result. The supply wire must be of adequate size and no other equipment should be connected to the same line. The table below lists the recommended wire size for each model, based on a 100’ run. Consult factory for longer runs.

<table>
<thead>
<tr>
<th>MINIMUM RECOMMENDED WIRE SIZE</th>
<th>1 PHASE</th>
<th>3 PHASE</th>
</tr>
</thead>
<tbody>
<tr>
<td>OL11016**</td>
<td>12</td>
<td>N/A</td>
</tr>
<tr>
<td>OL21533**</td>
<td>10</td>
<td>N/A</td>
</tr>
<tr>
<td>OL33550**</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>OL42575**</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>OL435V75**</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>OL525100**</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>OL610V100**</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>OL675150**</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>OL900V100**</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>OL900V150**</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>OL1200V200**</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

The motors supplied are multiple voltage motors. A label on the pressure switch cover indicates the voltage the motor is pre-wired for. If the supply voltage, on site, is different from the voltage indicated on this label, change the internal motor voltage connections to match the supply voltage. To change internal voltage connections, remove the cover plate located on the rear or side of the motor and reconnect the wire leads as shown on the motor’s wiring diagram.

On all three phase and ½ Hp and ¾ Hp single phase models, an arrow on the motor indicates the direction of rotation of the compressor. If the compressor rotates in the opposite direction, reverse the rotation of the motor. On single phase units, reverse motor rotation by interchanging the red and black motor leads. Interchanging any two incoming supply wires reverses rotation of three phase motors.

**NOTICE:** Single-phase oil-less compressors can not be operated at 208V. Operating the compressor at 208V voids the warranty.

**NOTICE:** Single-phase motors include internal thermal overload protection, which has an automatic reset device.

**WARNING:** Disconnect electrical power before servicing to disable reset devices. Thermal protection can automatically start the motor when the protector resets.

On single phase models, the motor is pre-wired to the pressure switch provided, which controls starting (cut OFF...
in pressure) and stopping (cut out pressure) of the motor. The pressure switch is factory set. Standard models switch is set at 27 psig cut in and 40 psig cut out. Low pressure models (“-LP”) switch is set at 13 psig cut in and 18 psig cut out. Consult General Air Products before adjusting the pressure switch.

On three-phase compressors, the motor is not pre-wired to the pressure switch. Refer to the three phase wiring instruction drawing for recommended wiring.

A magnetic starter is required, for all three phase models, to protect the motor from overload conditions. A magnetic starter is recommended, for all single phase models. Consult the National Electric Code and local codes for motor starter requirements. Refer to the proper wiring instruction drawing for recommended wiring to a starter.

**NOTE:** Do not run two phases of a three phase supply through the pressure switch. Serious damage can result.

**NOTE:** Failure to use the pressure switch may result in overpressure of the compressor or other components in the system. Overpressure of the compressor may result in blown head gaskets or other damage.

### Maintenance Instructions

**WARNING**

DISCONNECT, TAG AND Lock OUT POWER SOURCE THEN RELEASE ALL PRESSURE FROM THE SYSTEM BEFORE ATTEMPTING TO INSTALL, SERVICE, RELOCATE OR PERFORM ANY SERVICE.

The following instructions are based on NORMAL operation. If the compressor is in an excessively dusty area, increase frequency of maintenance checks.

**WEEKLY**

- Drain condensate from receiver and traps.
- Check for unusual noise or vibration.
- Clean air filters. – **NOTE:** Do not clean filters with petroleum based products.
- Clean all external parts of the compressor and motor.

**MONTHLY**

- Manually test safety relief valve.
- Inspect air system for leaks and tighten nuts and cap screws as required.

**QUARTERLY**

- Change filters.

### Limited Warranty

General Air Products, Inc. warrants its products to be free of defects in material and workmanship under normal use and service for 12 months from date of purchase. Our warranty applies only when such defective parts are returned to us, or our Authorized Service Depot, transportation prepaid, and subject to our inspection and approval. Liability is limited to repair or replacement of material found defective, free of charge, FOB our plant. Unauthorized repairs or replacements will not be subject to factory warranty. This warranty is in lieu of all other warranties, expressed or implied.

### General Notes

1) Warranty can be voided if modifications or adjustments are made without consultation and approval; from factory personnel.
2) If there are any questions regarding installation or operation of this compressor, please call the 800 number listed below.

**GENERAL AIR PRODUCTS, INC.**

For Assistance Please Call 1-800 345-8207
Please keep these instructions for future reference.
<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible Cause(s)</th>
<th>Corrective Action</th>
</tr>
</thead>
</table>
| Motor hums and runs slowly or not at all                     | 1. Low voltage or no voltage  
2. Shorted or open motor winding  
3. Defective check valve  
4. Defective pressure switch – contacts will not close | 1. Check voltage during attempt to start. Voltage must be within +/-10% of nominal voltage to start motor. Increase wire size if necessary to lower voltage drop.  
2. Replace motor  
3. Replace check valve  
4. Repair or replace pressure switch |
| Reset mechanism cuts out repeatedly or fuses blow repeatedly | 1. Insufficient voltage to motor  
2. Pressure switch set too high  
3. Wrong fuse size  
4. Piping too restrictive  
5. Defective motor | 1. Check voltage during attempt to start. Voltage must be within +/-10% of nominal voltage to start motor. Increase wire size if necessary to lower voltage drop.  
2. Consult factory, adjust or replace  
3. Be sure fuses and heaters are rated properly  
4. Add receiver vessel or increase pipe volume after compressor.  
5. Replace motor |
| Unit short cycles repeatedly                                | 1. Piping too restrictive  
2. Leak in line before system check valve | 1. Add receiver vessel or increase pipe volume after compressor.  
2. Repair leaks(s) |
| Compressor Overheating                                     | 1. Dirty intake filter  
2. Wrong motor rotation  
3. Air flow to fan on flywheel blocked | 1. Clean intake filter  
2. Correct rotation  
3. Clear air flow to fan or relocate unit |
| Excessive noise in operation                               | 1. Damaged bearings  
2. Worn piston rings or skirts  
3. Broken valves  
4. Loose blower wheel  
5. Damaged Blower baffle | 1. Contact General Air Products, Inc. Service Department. 1-(800)345-8207 |
| System pressure builds slowly                               | 1. Compressor sized incorrectly  
2. Leaks or restrictions in piping  
3. Dirty intake filter  
4. Blown head gasket | 1. Check system size and compressor sizing  
2. Correct leaks and remove restrictions  
3. Clean intake filter  
4. Replace head gasket |
CONNECT TO REQUIRED SYSTEM TRIM

MULTIPLE CHECK VALVES IN FEED LINES CAN RESULT IN LOWER SYSTEM PRESSURES DUE TO PRESSURE DROPS.

1/2" MINIMUM, LARGER IF REQUIRED BY CODE.

200 F MAX.

P/N AMD - 1 AIR MAINTENANCE DEVICE

COPPER TUBING OR RUBBER HOSE NOT RECOMMENDED DUE TO HIGH TEMPERATURES AND HIGH PRESSURE DROPS WHEN USED.

RISER TANK KIT TANK, STRAPS, RELIEF VALVE AND GAGE INCLUDED

PART NUMBERS LISTED ARE FOR ACCESSORY ITEMS RECOMMENDED FOR COMPLETE INSTALLATION - CONSULT YOUR LOCAL DISTRIBUTOR FOR AVAILABILITY

WARNING!
DO NOT INSTALL IN AREAS EXPOSED TO TEMPERATURES BELOW 40 DEGREES F OR AREAS EXPOSED TO WEATHER. CONSULT FACTORY FOR WEATHERPROOF OPTIONS.
GENERAL AIR PRODUCTS, INC.

TANK MOUNTED OIL-LESS COMPRESSORS
INSTALLATION INSTRUCTIONS

WARNING!
IF SYSTEM IS FEEDING FREEZER ROOM OR AREA EXPOSED TO TEMPERATURES BELOW FREEZING.
IN TAKES SHOULDN'T BE CONNECTED TO FREEZER ROOMS.
(SEE DRY AIR PAC INFORMATION)

MAGNETIC STARTER REQUIRED FOR ALL 3 PHASE UNITS. STARTER IS RECOMMENDED FOR ALL SINGLE PHASE COMPRESSORS. CONSULT NEC AND LOCAL CODES FOR SPECIFIC REQUIREMENTS.

MOST MOTORS ARE MULTIPLE VOLTAGE. CHECK NAMEPLATE FOR CORRECT INTERNAL CONNECTIONS FOR VOLTAGE BEING SUPPLIED TO UNIT.

PRESSURE SWITCH IS FACTORY SET 27# CUT IN 40# CUT OUT; HIGHER PRESSURE SETTINGS MAY REQUIRE A LARGER MOTOR ON THE COMPRESSOR. CONSULT FACTORY FOR DETAILS.

PRESSURE SWITCH MUST BE WIRED IN CIRCUIT TO CONTROL COMPRESSOR.

FLEX HOSE (P/N 1202MP) RECOMMENDED ON DRIP LEG TO REMOVE EXCESS WATER ACCUMULATION.

MANUAL DRAIN STANDARD. AUTOMATIC DRAIN (P/N DVA-2T) RECOMMENDED FOR HUMID AREAS.

PART NUMBERS LISTED ARE FOR ACCESSORY ITEMS RECOMMENDED FOR COMPLETE INSTALLATION. CONSULT YOUR LOCAL DISTRIBUTOR FOR AVAILABILITY.

GENERAL
AIR PRODUCTS, INC.
NOTE: MOST MOTORS ARE MULTIPLE VOLTAGE. CHECK NAMEPLATE AND VERIFY CORRECT INTERNAL CONNECTIONS FOR VOLTAGE BEING SUPPLIED TO UNIT.

FIG 1
SINGLE PHASE BUILT IN OVERLOAD PROTECTION. (NOT TO EXCEED 3/4 HP).
FOR 115V ELIMINATE FUSE IN GROUND LEG.
PRESSURE SWITCH HP RATING MUST NOT BE EXCEEDED.
OTHER WIRING VARIATIONS POSSIBLE DEPENDING ON LOCAL CODES.

FIG 2
SINGLE PHASE WITH OR WITHOUT OVERLOAD PROTECTION.
FOR 115V ELIMINATE FUSE IN GROUND LEG.
PRESSURE SWITCH TO CONTROL PILOT CIRCUIT.
OTHER WIRING VARIATIONS POSSIBLE DEPENDING ON LOCAL CODES.
CONSULT MANUFACTURER'S INSTRUCTIONS ON STARTER FOR VARIATIONS ON DIAGRAM SHOWN.
OIL-LESS COMPRESSOR
THREE PHASE WIRING INSTRUCTIONS

NOTE: MOST MOTORS ARE MULTIPLE VOLTAGE. CHECK NAMEPLATE AND VERIFY CORRECT INTERNAL CONNECTIONS FOR VOLTAGE BEING SUPPLIED TO UNIT.

FEEDER WIRE SIZE MUST BE CAPABLE OF CARRYING CURRENT LOAD OF COMPRESSOR AT MAXIMUM PRESSURE.

NOTE: MOST MOTORS ARE MULTIPLE VOLTAGE. CHECK NAMEPLATE AND VERIFY CORRECT INTERNAL CONNECTIONS FOR VOLTAGE BEING SUPPLIED TO UNIT.

FUSED DISCONNECT

PRESSURE SWITCH

MAGNETIC STARTER

LINE

THREE PHASE

OTHER WIRING VARIATIONS POSSIBLE DEPENDING ON LOCAL CODES

PRESSURE SWITCH TO CONTROL PILOT CIRCUIT

CONSULT MANUFACTURERS INSTRUCTIONS ON STARTER FOR VARIATIONS ON DIAGRAM SHOWN

NOTE: MOST MOTORS ARE MULTIPLE VOLTAGE. CHECK NAMEPLATE AND VERIFY CORRECT INTERNAL CONNECTIONS FOR VOLTAGE BEING SUPPLIED TO UNIT.
SECTION 4

Potter Manual 5403545

PFC-4410-RC Control Panel
INSTALLATION, OPERATION AND INSTRUCTION MANUAL

PFC-4410-RC
PFC-4410A-RC

FIRE ALARM/RELEASING PANEL
FOR SPRINKLER SYSTEMS AND CHEMICAL EXTINGUISHING SYSTEMS

ALL SPECIFICATIONS SUBJECT TO REVISION
WARRANTY INFORMATION

The essential purpose of any sale or contract for sale of any of the products listed in the POTTER catalog or price list is the furnishing of that product. It is expressly understood that in furnishing said product, POTTER does not agree to insure the Purchaser against any losses the Purchaser may incur, even if resulting from the malfunction of said product.

POTTER warrants that the equipment herein shall conform to said descriptions as to all affirmation of fact and shall be free from defects of manufacture, labeling and packaging for a period of one (1), three (3), or five (5) year(s), depending on the product, from the invoice date to the original purchaser, provided that representative samples are returned to POTTER for inspection. The product warranty period is stated on the exterior of the product package. Upon a determination by POTTER that a product is not as warranted, POTTER shall, at its exclusive option, replace or repair said defective product or parts thereof at its own expense except that Purchaser shall pay all shipping, insurance and similar charges incurred in connection with the replacement of the defective product or parts thereof. This Warranty is void in the case of abuse, misuse, abnormal usage, faulty installation or repair by unauthorized persons, or if for any other reason POTTER determines that said product is not operating properly as a result of causes other than defective manufacture, labeling or packaging.

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THIS IS THE SAFETY ALERT SYSTEM. IT IS USED TO ALERT YOU TO POTENTIAL PERSONAL INJURY HAZARDS. OBEY ALL SAFETY MESSAGES THAT FOLLOW THIS SYMBOL TO AVOID POSSIBLE INJURY OR DEATH.

**WARNING**

The detection and suppression system employing this release panel must be designed by people trained and competent in the design and layout of fire alarm and/or suppression systems for special hazard locations. The system shall be designed and installed in accordance with all local and national codes and ordinances as well as the approval of the Authority Having Jurisdiction. Only trained, qualified and competent individuals should install, program and/or service the PFC-4410-RC and PFC-4410A-RC. Competent people would be aware of these warnings, limitations, and requirements.

The abort circuit will not abort the release or stop the predischarge timer activated by zones programmed as MANUAL RELEASE. If it is desired to have the abort circuit stop the release activated from a Manual Dump zone, program that zone as a CONVENTIONAL zone instead.

High voltage electrocution hazard. Do not handle live AC wiring or work on the device while ac power is active.

This manual is designed to help with the specification, installation, and programming of the PFC-4410-RC and PFC-4410A-RC release panel. It is imperative that this manual be completely read and understood before the installation or programming of the panel. Save this manual for future reference.

Zones programmed as MANUAL RELEASE will override any cross zoning features. If it is desired to not have a manual station override the cross zoning, program the zone as CONVENTIONAL and map accordingly.

Per ULC requirements; if this equipment is running on battery power only, it will shut off and cease to operate when the battery voltage reaches approximately 19-20 volts.

**CAUTION**

*Locate the panel and all system components in the following nominal environment:

*Temperature 32-120°F, Humidity 93% non-condensing.

*Verify that the wire sizes are adequate for all initiating, notification, and release circuits.

*Make certain the panel is properly grounded.

*Remove all electronic assemblies prior to any drilling, filing, reaming, or punching of the enclosure. When possible make all cable entries from the sides, bottom, or rear of the cabinet. Verify that they will not interfere with the batteries or other components.

*The panel and system must be tested and maintained in accordance with all local and national codes and ordinances.

**NOTICE**

**OPERATING INSTRUCTIONS FORM**

Fill in the name, address and telephone number of the servicing agency on the instruction sheet provided and frame and place adjacent to control panel at eye level.

The following documentation shall be delivered to the owner or their representative upon final acceptance of the system:

- An owners manual and installation instructions covering all system equipment.
- Wiring diagrams
- A detailed description of the programming and operating sequence of the system
Fire Alarm System Limitations

Smokes detectors may not detect smoke when the smoke does not reach the detector. Such as smoke within walls, on the other side of walls, on other floors, behind closed doors, explosions, etc. Smoke detectors will not operate if they are not properly connected to the fire/release panel. The detectors and bases must be UL listed as being compatible with the panel. The detectors have a visible flashing light that indicates power is supplied to the detectors.

Notification appliances may not alert people if the people are not able to hear or see the appliances such as if they are in separate areas of the building or room.

A fire alarm/release panel will not operate without electrical power. The panel must have sufficient backup battery capability to power the panel for a specified amount of time in the event of an AC power failure. The batteries and release panel shall be tested and maintained in accordance with the testing and maintenance requirements of NFPA72.

In order for emergency forces, (Fire departments, etc.), to respond to events associated with this panel, the panel must transmit trouble, supervisory, and alarm signals to a monitoring facility either directly or through a main building fire panel.

A problem in an audible or visual device may not be apparent when the panel is in a normal condition.

GENERAL DESCRIPTION

The Model PFC-4410-RC and Model PFC-4410A-RC are listed and approved, microprocessor based fire control/releasing panels. They are primarily designed for use as releasing panels for pre-action and deluge, water based extinguishing systems or for chemical extinguishing systems. They may also be used as stand alone fire control panels. These units comply with NFPA-12, NFPA-12A, NFPA-13, NFPA-15, NFPA-17, NFPA-17A, NFPA-72, NFPA-750, NFPA-2001.


SYSTEM FEATURES

- Four Class B (Style B) Initiating zones. Each initiating zone can be set up for any of the following:
  - *Alarm*
    - Conventional alarm zone
    - Waterflow
    - Linear Heat Detection up to 3500 ft. (700 ohms) per zone.
    - Manual Release
  - *Supervisory*
    - Supervisory
    - Tamper
    - Low Air Supervisory
    - High Air
    - Low Air Alarm
  - Note: Only zones programmed as Conventional, Waterflow, Linear Heat, Manual Release, and Low Air Alarm can be mapped to outputs programed as release.

- One Supervisory Zone, Class B (Style B). This zone can be set up for any of the following:
  - Supervisory
  - Tamper
  - Low Air Supervisory
  - High Air

- Four Class B (Style Y) Output circuits. Each output can be set up for any of the following:
  - Notification Appliance circuit, (First or Second alarm notification in chemical extinguishing mode)
  - Releasing circuit
  - Supervisory Bell circuit
  - Trouble Bell circuit
- One Abort Circuit (Available in Chemical Mode only) Programmable for three different operating modes
  - ULI – Stops the pre-discharge timer at 10 seconds
  - IRI – Abort must be activated before the second alarm is received
  - NYC (not UL listed) A one time operation that adds 90 seconds to the remaining predischarge time

**CAUTION**
Abort does not function and has no effect on panel operation from zones programmed as MANUAL RELEASE.
In chemical extinguishing mode only, outputs programmed as "Indicating or first alarm" will operate continuously when activated until the release circuit operates. Then the indicating outputs will operate in a temporal pattern. Outputs programmed as second alarm will continue to operate in a continuous mode.

- Fourteen Standard Programs for water based systems or custom program capability
- Five Standard Programs for Chemical based systems or custom program capability
- User selectable between Water Based or Chemical Extinguishing
- Releasing Zones can be set up for either normal or cross zoning operation
- Discharge time is user selectable for either 7, 8, 9, 10, 20 minutes or continuous in the custom program
- All circuits inherently power limited per NEC 760 and UL 864 Section 14.4(PFC-4410-RC and PFC-4410A-RC)
- Initiating Circuit Disable feature
- Output Disable feature
- One-Man Walktest feature with automatic 30 minute restoration and releasing circuit disable
- Class B (Style B) Abort circuit available in Chemical mode. Three Abort modes available
- Pre-Discharge timer from 0-60 seconds available in Chemical mode only
- Manual Release 0-30 seconds predischarge timer in Chemical Mode only
- Notification Appliance Circuits can be programmed to operate upon 1st or 2nd alarm in Chemical Mode
- Diagnostic Indicators
- Signal Silence button
- Buzzer Silence button
- Automatic resound of silenced trouble signals after 24 hours
- Built-in Trouble buzzer
- Auxiliary Contacts for Alarm/Trouble/Supervisory
- 32 Character Liquid Crystal Display (LCD)
- 33 LED Annunciator Module with lamp test button (PFC-4410A-RC only)
- User Generated Banner Message
- User Generated Zone Labeling
- 24 or 90 hour Battery Standby available (Where required by FM and Others)
- 24 Hour Clock
- Password Protection
- Remote annunciator output
- Remote annunciator (RA-4410-RC)

**Options:**
1) CAM - Module to convert one Class B Indicating Appliance Circuit to one Class A circuit.
2) CA2Z - Module to convert two Class B Initiating Device Circuits to two Class A circuits.
3) ARM-2 - Module to provide two Form C contacts activated by Indicating or Releasing, polarity reversing circuits
4) RA-4410-RC – Remote annunciator provides 33 LED’s for each zone in alarm supervisory or trouble, each output activated or in trouble, AC power, Power trouble, System trouble, Ground fault, Supervisory, Supervisory trouble, Alarm, Alarm silence and Pre-discharge/Discharge. The annunciator also has a trouble buzzer and a lamp test / trouble silence switch.
5) – Abort switch

**ORDERING INFORMATION**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Description</th>
<th>Stock No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PFC-4410A-RC</td>
<td>Zone Control w/LED Annunciator Module (red cabinet)</td>
<td>3006204</td>
</tr>
<tr>
<td>PFC-4410A-RC</td>
<td>Zone Control w/LED Annunciator Module (white cabinet)</td>
<td>3006206</td>
</tr>
<tr>
<td>PFC-4410-RC</td>
<td>4 Zone Control (red cabinet)</td>
<td>3006203</td>
</tr>
<tr>
<td>PFC-4410-RC</td>
<td>4 Zone Control (white cabinet)</td>
<td>3006200</td>
</tr>
</tbody>
</table>
**RA-4410-RC** Remote annunciator

**EOLP-R** End of Line Plate f/Resistor

**EOLP-D** End of Line Plate f/Diode Assy

**P32-MRS** Manual Release Station

Label for Manual Station: Non Stock

**BC-2** Battery Cabinet for 18AH Batteries

**PFC-TW** Bezel for Semi-Flush mounting (white)

**PFC-TR** Bezel for Semi-Flush mounting (red)

**BT80** Battery, for 24 hour standby, 12V, 8.0AH (2 req’d)

**BT120** Battery, for 60-90 hour standby, 12V, 12.0AH (2 req’d)

**CA2Z** 2-Zone Class A initiating module

**CAM** Class A Indicating Circuit Module

**ARM-1** Auxiliary Relay Module 4 Pole

**ARM-2** Auxiliary Relay Module

**Spare or Replacement Parts**
- EOL Resistor
- EOL Resistor and Diode Assembly for releasing circuit
- Main Circuit Board Module
- LED Annunciator Module (PFC-4410A-RC only)

**WARNING:** This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

**SPECIFICATIONS**

**PFC-4410-RC and PFC-4410A-RC HOUSING**

Type - 18 gauge sheet steel with hinged, removable, locked door (Door is not removable on 4410A-RC)

Size - 18 1/2" x 14 1/4" x 4 3/4"

Finish - Off-white or red cabinet with red on black logo.

Knockouts - Combination 1/2" / 3/4", 2 on each side, top and back

Option - Bezel for semi-flush mounting

**PFC-4410-RC VISUAL INDICATORS (Visible with door closed):**

- System Trouble - Yellow LED
- 32 Character Alpha-Numeric Liquid Crystal Display (LCD)

**LCD:** A 2 line 32 character alpha-numeric liquid crystal display shows the condition, status and circuit for all Alarm, Supervisory and Trouble conditions (PFC-4410-RC only):

<table>
<thead>
<tr>
<th>CONDITION</th>
<th>STATUS</th>
<th>CIRCUIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALARM</td>
<td>SILENCED</td>
<td>&lt;user defined message&gt; (up to 10 characters)</td>
</tr>
<tr>
<td>TROUBLE</td>
<td>DISABLED</td>
<td>OUTPUT #1</td>
</tr>
<tr>
<td>SUPERVISORY</td>
<td>ACKNOWLEDGED</td>
<td>OUTPUT #2</td>
</tr>
<tr>
<td>TAMPER</td>
<td></td>
<td>OUTPUT #3</td>
</tr>
<tr>
<td>LOW AIR</td>
<td></td>
<td>OUTPUT #4</td>
</tr>
<tr>
<td>HIGH AIR</td>
<td></td>
<td>BATTERY</td>
</tr>
<tr>
<td>ABORTED</td>
<td></td>
<td>A.C.</td>
</tr>
<tr>
<td>PRE-DISCHARGING</td>
<td></td>
<td>SUPERVISORY</td>
</tr>
<tr>
<td>RELEASING</td>
<td></td>
<td>ZONE #1</td>
</tr>
<tr>
<td>RELEASED</td>
<td></td>
<td>ZONE #2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ZONE #3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ZONE #4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GROUND</td>
</tr>
</tbody>
</table>
PFC-4410A-RC VISUAL INDICATORS (Visible with door closed) In accordance with ULC S527-99 option B:

LED Annunciator Module (Refer to LED Annunciator Module Dwg. on page 75)

Red LED’s:
- Initiating Device Circuits Active (4), Notification/Release Circuits Active (4)
- Common Alarm (1)

Green LED:
- AC Power

Yellow LED’s:
- Initiating Device Circuits Troubles (4), Output Circuits Troubles (4)
- Supervisory Initiating Zone (4)
- Supervisory Bell Output Active (4)

(1) each: Supervisory Zone, Power Trouble, Supervisory Trouble, System Trouble, Ground Fault, Discharging/Discharged, Alarm Silenced

<table>
<thead>
<tr>
<th>CONDITION</th>
<th>STATUS</th>
<th>LED State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trouble</td>
<td>Non-Silenced</td>
<td>Flashing</td>
</tr>
<tr>
<td>Trouble</td>
<td>Silenced</td>
<td>Steady ON</td>
</tr>
<tr>
<td>Alarm</td>
<td>Non-Silenced</td>
<td>Flashing</td>
</tr>
<tr>
<td>Alarm</td>
<td>Silenced</td>
<td>Steady ON</td>
</tr>
<tr>
<td>Supervisory</td>
<td>Non-Silenced</td>
<td>Flashing</td>
</tr>
<tr>
<td>Supervisory</td>
<td>Silenced</td>
<td>Steady ON</td>
</tr>
<tr>
<td>Pre-discharge</td>
<td></td>
<td>Flashing</td>
</tr>
<tr>
<td>Discharged</td>
<td></td>
<td>Steady ON</td>
</tr>
</tbody>
</table>

PFC-4410A-RC VISUAL INDICATORS (Visible with door OPEN):
System Trouble - Yellow LED
32 Character Alpha-Numeric Liquid Crystal Display (LCD)
LCD: Displays prompts for programming system. Condition or status information is not shown.

CONTROL BUTTONS:
- Signal Silence - Momentary, silences signaling circuits
- Buzzer Silence - Momentary, silences the trouble buzzer and outputs programmed as supervisory bell or trouble bell.
- System Reset - Momentary, resets all alarm circuits if condition has been corrected, removes power from initiating device circuits.

INITIATING DEVICE CIRCUITS: 4 Class B (Class-A Module available) All values nominal.
- Power limited, current limited to protect two wire detectors
- Capacity, two wire detectors (per zone) 25 - 0.1 mA type; or 20 - 0.12 mA type at 24 VDC
- Line resistance - 100 ohms max. (except with linear heat detection)
- Override of signal silence for waterflow application, if desired
- End-of-Line Resistance - 5.1K ohms
- Normal standby current - approximately 4.0 mA
- Trouble-Low current - approximately 3.3 mA
- Alarm - approximately 10 mA
- Maximum Impedance for Alarm - 1400 ohms
- Ground also causes trouble and ground indicator to come on (no zone indication on ground)
- Ripple Voltage - 0.4VDC
- Max operating voltage range - 22.5 VDC to 25.9 VDC

INDICATING/RELEASING CIRCUITS: (All values nominal)
In water based mode, the output circuits are Non-Coded, this allows the use of both Horns and Strobes on the same circuit. If a temporal tone is needed, use a horn such as Potter model AH-24R with adjustable tones.
In chemical based mode, the outputs can be programmed as 1st alarm or 2nd alarm. The operating characteristics of 1st alarm and 2nd alarm are described on page 50.
- Indicating Appliance Circuits (Class B), reverses polarity on alarm (optional Class A Module is available)
- Current limited
- 24VDC regulated, rated 1.0 Amp continuous max. (2.5 Amps total for all outputs combined Including Auxiliary Devices and RA-4410-RC)
• End-of-Line resistance - 5.1K ohms
• Ripple Voltage - 0.3V
• For outputs programmed as RELEASING:
  maximum allowable line resistance = 1 divided by current draw of solenoid (In Release Mode)

DEDICATED SUPERVISORY INITIATING CIRCUIT:
• Supervisory includes any of the following:
  • Supervisory
  • Tamper
  • Low Air
  • High Air
• One Class B/Initiating Device Circuit, latching
• Power limited
• End of Line resistance 5.1K ohms
• Resistance 100 ohms max.
• Increase in resistance causes supervisory trouble and system trouble
• Decrease in resistance causes supervisory signal
• Ripple Voltage - 0.1VDC

RELEASE ABORT CIRCUIT
• Available only in Chemical Mode
• One class B circuit
• Circuit is power limited
• Maximum loop resistance is 100 ohms
• End of Line Resistance – 5.1K ohms
• THREE PROGRAMMABLE MODES OF OPERATION
  • MOMENTARY (NON-LATCHING) CIRCUIT
  Mode 1 – (ULI) Activation of the abort circuit stops the pre-discharge timer at 10 seconds. If there is less than 10 seconds remaining, the time goes back to 10 seconds. Releasing the abort switch starts the timer at 10 seconds.
  Mode 2 – (IRI) Operates the same as the ULI mode except the abort circuit only functions if the abort button is pressed before the second alarm is received by the panel. The panel must be programmed for cross zoning for the IRI mode to function.
  Mode 3 – (NYC) This mode is not UL listed. Activation of the Abort circuit during the pre-discharge countdown adds 90 seconds to the original pre-discharge time. This is a one-time feature. Repeated pressing of the abort button has no effect.

CAUTION

Zones programmed as Manual Release cannot be aborted. If it is necessary to abort a manual station zone, program that zone as Conventional.
If the pre-discharge timer is set at 0 the abort circuit will not stop the release circuit.
NFPA 12 prohibits the use of abort circuits on Suppression Systems deploying carbon dioxide.

LOW/MISSING BATTERY:
Causes battery and system trouble if battery falls below 22 volts. Battery circuit is fused and reverse polarity protection is provided.

INPUT POWER:
• Universal Input 120VAC, (60 Hz, 165VA) or 220VAC, (50 Hz, 185VA) 15 Amp Branch Line overcurrent protection required.
• Backlight on LCD goes off on AC power loss
• AC Power indicator on LED annunciator module goes off on AC power loss (PFC-4410A-RC only)
• System trouble is also generated if voltage drops below 102V.

BACKUP POWER REQUIREMENTS:
• PFC-4410-RC - Standby 92 mA, alarm 215 mA at 24VDC
• PFC-4410A-RC - Standby 110 mA, alarm 245 mA at 24VDC
• Max charging current - 590 mA
(Does not include power for any auxiliary devices)
SERVICE USE:
NFPA 12 – Carbon Dioxide systems
NFPA 12A – Halon 1301 fire systems
NFPA 13 - Automatic Sprinkler
NFPA 15 - Water Spray Fixed System
NFPA 16 - Foam Water Sprinkler and Foam Water Spray
NFPA 17 - Dry Chemical
NFPA 17A - Wet Chemical
NFPA 72 - National Fire Alarm Code
  • Local
  • Remote Station (protected premise unit)
  • Central Station (protected premise unit)
NFPA 750 - Water Mist
NFPA 2001 - Clean Agent Fire Extinguishing System

LISTINGS and APPROVALS:
PFC-4410-RC - UL Standard 864, FM, CSFM and NYMEA

TERMINALS:
• All terminals capable of handling #14 AWG wire
• All terminations have transient protection
• All four initiating device circuit terminals capable of handling linear heat detection.

RELAY OUTPUTS:
• System alarm contacts SPDT rated 3 Amps, 30VDC
• Supervisory contacts SPDT rated 3 Amps, 30VDC
• System trouble contacts SPDT rated 3 Amps, 30VDC

AUXILIARY POWER:
• Auxiliary Power - 24VDC regulated. Rated 200 mA max. Current limited

ANNUNCIATOR CONNECTION
• Auxiliary Power - 24VDC regulated. Rated 200 mA max. Current limited for RA-4410-RC Annunciator
• RS-485 For connection to RA-4410-RC remote annunciator

OPTIONAL ACCESSORIES
CA2Z MODULE (CLASS A INITIATING DEVICE CIRCUIT):
Converts two Class B initiating device circuits to two Class A circuits.

CAM MODULE (CLASS A INDICATING APPLIANCE CIRCUIT):
Converts indicating appliance circuit from Class B to Class A. One model CAM (Class A Module) is required for each circuit. (Do not use this on an output programmed as “TROUBLE BELL”.)

ARM-1/ARM-2 MODULE (AUXILIARY RELAY MODULE)
Activated by 24VDC Indicating and/or Releasing, polarity reversing circuits. The module provides a non-supervised DPDT Relay that can be used for fan shutdown, door release, elevator recall, etc.

RA-4410-RC (REMOTE ANNUNCIATOR)
Connects to RS-485 & 24VDC terminals. Provides 33 LED’s for each zone in alarm supervisory, or trouble, each output activated or in trouble, AC power, Power trouble, System trouble, Ground fault, Supervisory, Supervisory trouble, Alarm, Alarm silence and Pre-discharge/Discharge.
The annunciator also has a trouble buzzer and a lamp test / trouble silence switch.

BASIC OPERATION:
In addition to the following events, the panel also provides an output via the RS-485 terminals to the RA-4410-RC remote annunciator to light the appropriate indicators. The visual indications on the RA-4410-RC remote annunciator would be the same as those for the LED annunciator module of the PFC-4410A-RC. In addition, the remote annunciator has a silenceable buzzer that sounds on supervisory or trouble conditions.
INITIATING DEVICE CIRCUITS ALARM CONDITION:
An increase of current on any alarm or supervisory initiating device circuit to approximately 10 mA or greater will result in the following:

ALARM, (Except zones programmed as LOW AIR ALARM):
*Model PFC-4410-RC and PFC-4410A-RC:*
1) Activation of the alarm relay contacts.
2) Activation of the output circuit(s) which are mapped to the initiating device circuit(s). Providing all zone(s) necessary for the activation of those circuits is in alarm.

*Model PFC-4410-RC only:*
3) “ALARM” and zone # displayed on LCD.
4) “PRE-DISCHARGE” displayed on LCD if zone(s) in alarm activated pre-discharge timer (In chemical mode only).

*Model PFC-4410A-RC only:*
5) Activation of red ZONE indicator(s) on LED annunciator module for the initiating device circuit(s).
6) Activation of red ALARM indicator on LED annunciator.
7) Activation of red OUTPUT indicator(s) on LED annunciator module for the output circuit(s) which are mapped to the initiating device circuit(s).
8) Activation of flashing red PRE-DISCHARGE indicator on LED Annunciator module if in chemical mode and pre-discharge timer was activated by zone(s) in alarm. Providing all zone(s) necessary for the activation of those circuits is in alarm.

**CAUTION**
When in CHEMICAL EXTINGUISHING mode, the release circuit(s), are not activated until the pre-discharge timer expires, if a pre-discharge time was programmed. The predischarge time defaults to 30 seconds for Manual Release and 60 seconds for all other alarm tones.

LOW AIR ALARM
*Model PFC-4410-RC and PFC-4410A-RC*
1) Operation of supervisory relay contacts and local buzzer.
2) Operation of the notification appliance circuit(s) or releasing circuit(s) which are mapped to the initiating device circuit(s). Providing all zone(s) necessary for the activation of those circuits is in alarm.

*Model PFC-4410-RC only*
3) LOW AIR ALARM and <CIRCUIT #> displayed on LCD. Model PFC-4410-RC only

*Model PFC-4410A-RC*
4) Activation of yellow ZONE indicator on LED annunciator module for the initiating device circuit.
5) Activation of yellow ZONE indicator(s) on LED annunciator module for the initiating device circuit(s) described as “LOW AIR ALARM”.
6) Activation of yellow OUTPUT indicator(s) on LED annunciator module for the output circuit(s) which are mapped to the zone. Providing all zone(s) necessary for the activation of those circuits is in alarm.

SUPERVISORY:
*Model PFC-4410-RC and PFC-4410A-RC:*
An increase of current to approximately 8 mA or greater on the supervisory initiating device circuit(s) will result in the following:
1) Operation of supervisory relay contacts and local buzzer.
2) Operation of any output circuits that have been described as SUPERVISORY BELL.

*Model PFC-4410-RC only:*
3) “SUPERVISORY”, “TAMPER”, “LOW AIR”, or “HIGH AIR” and <CIRCUIT> displayed on LCD.

*Model PFC-4410A-RC only:*
4) Activation of yellow SUPERVISORY indicator on LED annunciator module.
5) Activation of yellow ZONE indicator(s) on LED annunciator module for the initiating device circuit(s) described as “SUPERVISORY”, “TAMPER”, “LOW AIR SUPERVISORY”, or “HIGH AIR”.
6) Activation of yellow OUTPUT indicator(s) on LED annunciator module for the Notification appliance circuit(s) described as SUPERVISORY BELL.
TROUBLE CONDITIONS:
INITIATING DEVICE CIRCUITS
A decrease of current to approximately 3.3 mA or programming the zone as disabled on any initiating device circuit will result in the following:

Model PFC-4410-RC and PFC-4410A-RC:
1) Activation of trouble relay contacts, trouble LED and local buzzer.
2) Operation of any output circuits which have been described as TROUBLE BELL.

Model PFC-4410-RC only:
3) “TROUBLE” and <CIRCUIT> displayed on LCD.

Model PFC-4410A-RC only:
4) Activation of yellow ZONE indicator(s) on LED annunciator module for the initiating device circuit(s).
5) Activation of yellow SYSTEM TROUBLE indicator on LED annunciator module.
6) Activation of yellow OUTPUT indicator(s) on LED annunciator module of any output circuit(s) which have been described as TROUBLE BELL.

NOTE: When the circuits are operated in the Class A mode any trouble condition will require manual operation of the reset switch to restore the panel to normal after the fault has been removed.

NOTIFICATION APPLIANCE/RELEASING CIRCUITS:
An increase of current to approximately 0.63 mA or a decrease in current to approximately 0.11 mA on any output circuit or connecting an indicating appliance backwards, or disabling an output will result in the following:

Model PFC-4410-RC and PFC-4410A-RC:
1) Activation of trouble relay contacts, trouble LED and local buzzer.
2) Operation of any output circuits which have been described as TROUBLE BELL. If this output is in trouble, a TROUBLE BELL on this output may not function correctly, depending on the type of trouble.

Model PFC-4410-RC only:
3) “TROUBLE” and “OUTPUT #” <CIRCUIT NO.> displayed on LCD.

Model PFC-4410A-RC only:
4) Activation of yellow OUTPUT indicator(s) on LED annunciator module for the notification appliance(s).
5) Activation of yellow SYSTEM TROUBLE indicator on LED annunciator module.
6) Activation of yellow OUTPUT indicator(s) on LED annunciator module of any output circuit(s) which have been described as TROUBLE BELL.

NOTE: A current in excess of 1.5 Amps, when the panel is in the alarm condition, will result in an output trouble as described above.

A problem in an audible or visual device may not be apparent when the panel is in a normal condition. If the circuit indicates a trouble condition when the panel is in an alarm condition the problem must be located and corrected.

GROUND FAULT:
A ground fault will result in the following:

Model PFC-4410-RC and PFC-4410A-RC:
1) Activation of trouble relay contacts, trouble LED and local buzzer.
2) Operation of any output circuits which have been described as TROUBLE BELL.

Model PFC-4410-RC only:
3) “TROUBLE” and “GROUND” displayed on LCD.

Model PFC-4410A-RC only:
4) Activation of yellow SYSTEM TROUBLE indicator on LED annunciator module.
5) Activation of yellow GROUND FAULT indicator on LED annunciator module.
6) Activation of yellow OUTPUT indicator(s) on LED annunciator module of any output circuit(s) which have been described as TROUBLE BELL.
LOSS OR REDUCTION OF AC POWER:
A reduction in the AC input voltage will result in the following:

Model PFC-4410-RC and PFC-4410A-RC:
1) Activation of trouble relay contacts, trouble LED and local buzzer.
2) Operation of any output circuits which have been described as TROUBLE BELL.

Model PFC-4410-RC only:
3) “TROUBLE” and “A.C.” displayed on LCD.
4) LCD Backlight will be extinguished.

Model PFC-4410A-RC only:
5) Green AC POWER indicator on LED annunciator module will be extinguished.
6) Activation of yellow POWER TROUBLE indicator on LED annunciator module.
7) Activation of yellow SYSTEM TROUBLE indicator on LED annunciator module.
8) Activation of yellow OUTPUT indicator(s) on LED annunciator module of any output circuit(s) which have been described as TROUBLE BELL.

LOW BATTERY VOLTAGE:
Loss of or reduction of battery voltage to 22 volts will result in the following:

Model PFC-4410-RC and PFC-4410A-RC:
1) Activation of trouble relay contacts, trouble LED and local buzzer.
2) Operation of any output circuits that have been described as TROUBLE BELL.

Model PFC-4410-RC only:
3) “TROUBLE” and “BATTERY” displayed on LCD.

Model PFC-4410A-RC only:
4) Activation of yellow POWER TROUBLE indicator on LED annunciator module.
5) Activation of yellow SYSTEM TROUBLE indicator on LED annunciator module.
6) Activation of yellow OUTPUT indicator(s) on LED annunciator module of any output circuit(s) which have been described as TROUBLE BELL.

LOSS OF AUXILIARY POWER OUTPUT:
Loss of output of the auxiliary power will result in the following:

Model PFC-4410-RC and PFC-4410A-RC:
1) Activation of trouble relay contacts, trouble LED and local buzzer.
2) Operation of any output circuits that have been described as TROUBLE BELL.

Model PFC-4410-RC only:
3) “TROUBLE” and “AUX LOW” displayed on LCD.

Model PFC-4410A-RC only:
4) Activation of yellow POWER TROUBLE indicator on LED annunciator module.
5) Activation of yellow SYSTEM TROUBLE indicator on LED annunciator module.
6) Activation of yellow OUTPUT indicator(s) on LED annunciator module of any output circuit(s) which have been described as TROUBLE BELL.

7) The remote annunciator RA-4410RC will not function.

TO SILENCE THE BUZZER OR OUTPUTS THAT HAVE BEEN DESCRIBED AS TROUBLE OR SUPERVISORY BELL:
Press the BUZZER SILENCE button on the PFC-4410-RC, PFC-4410A-RC or on the RA-4410-RC.
NOTE: Any continuous trouble conditions that have been silenced automatically resound 24 hours after the first trouble condition was silenced.

TO SILENCE A SIGNALING APPLIANCE:
Press the SIGNAL SILENCE button.

⚠️ CAUTION ⚠️
Where audible and/or visual indicators are being used as an evacuation signal, do not silence an alarm condition without investigating and determining that an emergency condition does not exist.
NOTES: 1) Alarms initiated from zones that are in the water flow mode cannot be silenced. The panel must be reset to silence audible alarm devices.  
2) If silenceable water flow indication is desired it must be programmed as conventional alarm and annunciated on the zone identification portion of the LCD.

TO RESET AN ALARM OR SUPERVISORY CONDITION:
1) Determine the cause of the alarm condition and if necessary remove the cause.  
2) Press the reset button.

TO RESET A TROUBLE CONDITION:
1) Determine the cause of the trouble condition and remove the cause.  
2) This circuit is self-restoring. When all trouble conditions are removed all indications will return to normal.  
NOTE: When an initiating device zone is operated in a Class A (Style D) mode any trouble condition will require manual operation of the reset switch to restore the panel to normal after the fault has been corrected.

REMOTE ANNUNCIATOR MODEL RA-4410-RC OPERATION:

Red LED’s: Initiating Device Circuits Active (4)  
Notification/Release Circuits Active (4)  
Common Alarm (1)

Green LED’s: AC Power

Yellow LED’s: Initiating Device Circuits troubles (4)  
Output Circuit Troubles (4)  
Supervisory Initiating Zone (4)  
Supervisory Bell Output Active (4)  
(1) each: Supervisory Zone, Power Trouble, Supervisory Trouble, System Trouble, Ground Fault, Discharging/Discharged, Alarm Silenced

The appropriate LED flashes to indicate a change of status on the panel. A trouble or supervisory condition will flash the appropriate Yellow LED indicating the location of the condition. If any outputs are programmed as TROUBLE or SUPERVISORY BELL, that Yellow output LED will flash indicating the output is activated. Pressing the BUZZER SILENCE button on the panel changes the flashing zone Amber LED to steady on and turns the flashing Yellow output LED off. An alarm condition will flash a Red LED indicating the zone in alarm and any outputs mapped to that zone that have activated. Pressing the SIGNAL SILENCE button changes the flashing Red Zone LED to steady on and the flashing Red Output LED
mapped to that zone off unless the output is programmed as RELEASE. In addition, the Yellow ALARM/ SILENCE LED will light.
Any zone programmed as WATERFLOW is considered non-silenceable so the signal and buzzer silence buttons will have no effect on the flashing zone and output LED's. A buzzer on the annunciator sounds for any trouble condition. When the panel has a trouble or supervisory condition, pressing the SILENCE/LAMP TEST button silences the condition at the panel and all annunciators. When no non-silenced trouble or supervisory conditions exist, pressing the SILENCE/LAMP TEST button can be used to test the LED's. The release panel supervises and communicates with the annunciator via separate connections for the RS-485 communication and 24VDC power requirements of the RA-4410-RC. Separate cables should be used for power and communication. Shielded cable shall be used for the communication line. Up to four annunciators can be connected to one panel. A rotary switch is provided on the panel to indicate how many annunciators are connected. Another rotary switch is on the annunciator to set the address. The annunciators must be addressed consecutively. See page 79 for wiring information. Refer to bulletin #8840024 for installation instructions and maximum wire run.

TEST PROCEDURE (PFC-4410-RC and PFC-4410A-RC):
The system should be inspected, tested and maintained in accordance with NFPA-72 National Fire Alarm Code, Chapter 10 and any other requirements of the local authority having jurisdiction.

TEST PROCEDURE (PFC-4410A-RC only):
The system should be inspected, tested and maintained in accordance with ULC Standard CAN/ULC-S536 and any other requirements of the local authority having jurisdiction.

**CAUTION**
Testing should be done as a minimum as described below:

1) Notify the fire department or other receiving station if alarm, supervisory and/or trouble signals are transmitted.
2) Notify the proper building personnel so that audible and/or visual signals can be ignored.
3) If the release panel is monitored by a building fire alarm panel, take appropriate action to eliminate any unwanted events.
4) Momentarily open each of the following circuits.
   a) Each initiating device zone
   b) Supervisory circuit
   c) Indicating Appliance/Releasing circuit - observe that this results in a trouble condition and all indicators operate as described in the appropriate preceding section for the particular circuit that is faulted.

5) Move the PROGRAM switch to the right. The LCD should respond: “LOOK AT HISTORY?”. Press the FUNCTION (bottom) button until the LCD reads “SYSTEM MODE: NORMAL”. Press the SELECT (middle) button. The LCD will read “SYSTEM MODE: ONE MAN WALKTEST”. Press the SET (top) button then move the PROGRAM switch to the left. The panel will respond with “ONE MAN WALKTEST” and the time. The trouble LED will light. Any output described as “RELEASING” will automatically be disabled.

**WARNING**

FAILURE TO ENTER THE WALKTEST MODE AND SUBSEQUENT OPERATION OF INITIATING ZONES MAY RESULT IN A RELEASE.

After 30 minutes of no activity in the walk test mode the panel automatically reverts to normal operation.
6) Operate each initiating device on all zones. All audible and visual alarm devices should operate for about 3 seconds. Then the system will automatically reset allowing the user to go to the next initiating device.
7) Operate each initiating device on the supervisory circuit. Observe that all the indications described in the section on supervisory conditions occur.
8) Move the PROGRAM switch to the right again. The LCD should respond: “LOOK AT HISTORY?”

Press the FUNCTION (bottom) button until the LCD reads: “SYSTEM MODE: ONE MAN WALKTEST”
Press the SELECT (middle) button. The LCD will read: “SYSTEM MODE: NORMAL”
Press the SET (top) button then restore the PROGRAM switch to the left position. The LCD will show the normal banner message.
9) All audible and visual indicators should be off.
10) Notify all building, fire department, and/or other receiving station personnel that the test has concluded.

**Maintenance:** Test batteries per local and national standards. At a minimum replace batteries every four (4) years or sooner depending on test results. The date of purchase shall be marked on all batteries.
PROGRAMMING MODE INSTRUCTIONS
To use the Programming Mode push the program switch to the right (see drawing below).

PANEL VISUAL DISPLAY
As a general rule, the following applies on the Programming Mode buttons:

The top button (SET) sets the message on the display into the memory.
The middle button (SELECT) scrolls through the selections available for the function displayed.
The bottom button (FUNCTION) allows the user to skip the function without changing the program.

To program, push the Program Switch to the right.
There is no capability to back up screens in the program mode. If a mistake was made during programming, move the program switch back to the left, then move it to the right and start from the beginning.
To exit the program mode at any time, move the Program Switch to the left.
When the programming switch is to the right (see Panel Visual Display) the following will appear in the display window:

```
LOOK AT HISTORY ?
```

HISTORY
To examine the HISTORY press the top button, the display window will show the time and date of the last event or action. To skip to the next function or to exit history, press the FUNCTION (bottom) button.

SET
Press the top button to discover the time and date of the last event or action and to scroll forward.

SELECT
To scroll back, press the middle button.

FUNCTION
To exit or skip HISTORY, press the bottom button.
After pressing the FUNCTION (bottom) button the following will appear in the display window:

```
| S | E | T | T | I | M | E | ? |
```

**DATE/TIME**

**SELECT** To change the time, press the middle button.

**FUNCTION** To exit to the next function, press the bottom button.

If the middle button is pushed, the date and time will appear in the display window:

```
<table>
<thead>
<tr>
<th>M</th>
<th>I</th>
<th>N</th>
<th>U</th>
<th>T</th>
<th>E</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>/</td>
<td>0</td>
<td>5</td>
<td>/</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>5</td>
<td>:</td>
<td>1</td>
<td>9</td>
<td>:</td>
</tr>
</tbody>
</table>
```

The date is shown at the top and the time at the bottom of the display window. “MINUTES” indicates that the user can now change the minutes.

**SET** Pressing the top button will decrease the minutes.

**SELECT** Pressing the middle button will increase the minutes.

**FUNCTION** When finished setting the minutes, Press the bottom button. The minutes will change to hours.

Continue this process and change the DAY, MONTH and YEAR. When you have finished changing the year, press the FUNCTION (bottom) button. A display similar to the following will appear:

```
P | A | S | S | W | O | R | D = 0 | 0 | 0 | ^
```

**PASSWORD**

This display prevents unauthorized programming of the panel by requiring the user to enter the proper password. To select the appropriate number for the space indicated by the ^ symbol, press the middle button. When the proper number is displayed press the top button to set the number and move to the next space. If the wrong password is entered, the panel will automatically return to a normal condition. All panels are shipped from the factory with a password of 000. If the password is lost contact Potter.

**SET** After selecting the desired number, press the top button to set and move to the next number.

**SELECT** Press the middle button to scroll through the numbers.

**FUNCTION** Pressing the bottom button will have no effect.
After entering the correct password, a display similar to the following will appear:

```
<table>
<thead>
<tr>
<th>INIT</th>
<th>ZONE #1</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ENABLED</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```

**ZONE DISABLED/ENABLED**

This display allows the user to ENABLE or DISABLE Initiating zones. This display window shows that initiating ZONE #1 is enabled. To toggle from ENABLED to DISABLED or visa versa, press the SELECT (middle) button.

- **SET**
  - After selecting ENABLED or DISABLED, press the top button to set and move to the next zone.

- **SELECT**
  - Press the middle button to toggle between ENABLED or DISABLED.

- **FUNCTION**
  - To skip to the next function, press the bottom button.

After selecting all four zones or pressing the FUNCTION (bottom) button, the following will appear in the display window:

```
<table>
<thead>
<tr>
<th>OUTPUT #1</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ENABLED</td>
<td></td>
</tr>
</tbody>
</table>
```

**OUTPUT ENABLE/DISABLE**

This display allows the user to ENABLE or DISABLE any of the output circuits.

- **SET**
  - After selecting ENABLED or DISABLED, press the top button to set and move to the next output.

- **SELECT**
  - Press the middle button to toggle between ENABLED or DISABLED.

- **FUNCTION**
  - To skip to the next function, press the bottom button.

After selecting all four outputs or pressing the FUNCTION (bottom) button, the following will appear in the display window:

```
<table>
<thead>
<tr>
<th>SYSTEM MODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>NORMAL</td>
</tr>
</tbody>
</table>
```

**NOTICE**

Disabling any input or outputs will create a trouble condition on the panel.
ONE MAN WALKTEST
This display allows the user to select system mode NORMAL or ONE MAN WALKTEST by pressing the SELECT (middle) button to toggle back and forth from NORMAL to ONE MAN WALKTEST. When the desired mode is displayed, press the SET (top) button. If ONE MAN WALKTEST is selected for test purposes, the display must be restored to the NORMAL setting after the test is completed by toggling to it using the SELECT (middle) button.

⚠️ WARNING ⚠️ After 30 minutes of no activity the panel automatically reverts to normal.

SET After selecting NORMAL or ONE MAN WALKTEST, press the top button to set that mode.

SELECT Press the middle button to toggle between NORMAL and CROSS ZONED.

FUNCTION Press the bottom button to skip to the next function.

After selecting the operating mode or pressing the FUNCTION button a display similar to the following will appear in the display window:

```
P R O G R A M   #   0
```

PFC-4410-RC / PFC-4410A-RC STANDARD PROGRAM INFORMATION
The PFC-4410-RC and PFC-4410A-RC have 20 standard programs which are detailed in the following pages. Selecting one of these programs will automatically program every function of the panel except the custom banner and zone message functions.

NOTES:
The release discharge time is continuous for all 20 programs.
In the chemical extinguishing programs the pre-discharge timer defaults to 60 seconds, manual dump pre-discharge timer defaults to 30 seconds, the abort mode defaults to UL.

The following is an explanation of how the various programs operate and information about the types of devices that are to be connected to the input and output zones.

If none of the standard programs are acceptable for the installation required, select the custom program #0 then press the SET (top) button. This will allow the user to custom program the panel. Turn to page 61 for custom program information.

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alarm Zones</td>
<td></td>
</tr>
<tr>
<td>Conventional</td>
<td>Smoke Detectors, Spot Type Heat Detectors</td>
</tr>
<tr>
<td>Waterflow</td>
<td>PS10A Pressure Switch</td>
</tr>
<tr>
<td>Linear Heat</td>
<td>Cable Type Heat Detectors</td>
</tr>
<tr>
<td>Manual Release</td>
<td>Pull Stations</td>
</tr>
<tr>
<td>Supervisory Zones</td>
<td></td>
</tr>
<tr>
<td>Supervisory</td>
<td>Valve Tamper, Low Air, High Air, Room Temperature</td>
</tr>
<tr>
<td>Low Air supervisory</td>
<td>Low Air Switch</td>
</tr>
<tr>
<td>High Air</td>
<td>High Air Switch</td>
</tr>
<tr>
<td>Tamper</td>
<td>Valve Tamper Switch</td>
</tr>
<tr>
<td>Low Air Alarm</td>
<td>PS10A, PS40A</td>
</tr>
</tbody>
</table>
Outputs

<table>
<thead>
<tr>
<th></th>
<th>Alarm</th>
<th>24VDC Bells, Horns, Strobes, to indicate an alarm condition.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release</td>
<td>Solenoid Valve, Squib, Releasing Mechanism</td>
<td></td>
</tr>
<tr>
<td>Supervisory</td>
<td>24VDC Bells, Horns, Strobes, to indicate a supervisory condition.</td>
<td></td>
</tr>
<tr>
<td>Trouble</td>
<td>24VDC Bells, Horns, Strobes, to indicate a trouble condition.</td>
<td></td>
</tr>
</tbody>
</table>

To program the PFC-4410-RC or PFC-4410A-RC to operate with one of the following 20 standard programs:
The water based extinguishing programs are numbered 1-14. The chemical extinguishing programs are numbered 20-25. A description, theory of operation, and wiring diagrams for all standard programs start on the next page.
1) Press SELECT (center) button to scroll to the program number (#1 thru #25) you desire.
2) Press SET (top) button.
3) Turn to page 64 to program the banner message and to finish programming the panel.

SET
After selecting the proper program number, press the top button to set the program and move to the next function.

SELECT
Press the middle button to scroll through the programs.

FUNCTION
Press the bottom button to skip to the next function.

NOTICE
After selecting the desired program number with the middle button, SET (top button) must be pressed to set the program.
WIRING DIAGRAM PROGRAM #1
SINGLE HAZARD, 3 ALARM ZONES WITH 1 WATERFLOW ZONE
AND 1 SUPERVISORY ZONE

NOTES:
1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit.
3. Leave EOLR (provided) on all unused circuits.
4. Polarity mark on output terminal is for a normal, no alarm condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 1 Amp.
7. Maximum current for all four outputs combined is 2-1/2 Amps.
8. All initiating and NAC/Release circuits are supervised and power limited.
9. Refer to pgs. 16, 73-76 for installation, test and maintenance information.
PROGRAM #1 MODE

1. Apply power to panel.

2. Move the program switch to the right.

3. Press the FUNCTION (bottom) button until the display reads “PASSWORD = 000”.

4. To enter a password, press the SELECT (middle) button until the proper number is displayed above the ^ symbol, then press the SET (top) button to move to the next digit. After entering the third number the display will change. (All panels are shipped with a 000 password.)

5. Press the FUNCTION (bottom) button until the display reads “PROGRAM #0”.

6. Press the SELECT (middle) button until the display reads “PROGRAM #1”.

7. Press the SET (top) button.

8. The panel is completely programmed except for the custom banner and zone messages. Move the program switch back to the left.

<table>
<thead>
<tr>
<th>ZONES</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUPERVISORY</td>
</tr>
<tr>
<td>OUTPUTS</td>
</tr>
<tr>
<td>#1 Alarm</td>
</tr>
<tr>
<td>#2 Alarm</td>
</tr>
<tr>
<td>#3 Release</td>
</tr>
<tr>
<td>#4 Supervisory</td>
</tr>
</tbody>
</table>

Description: Single hazard - 3 zone
Inputs: 2 conventional zones, 1 waterflow zone, 1 manual release zone, 1 supervisory zone
Outputs: 1 general alarm bell, 1 waterflow bell, 1 solenoid release circuit, 1 supervisory bell
Operation: Activation of either conventional zone or the manual release zone will operate the release circuit and general alarm output.
Activation of the waterflow zone will operate the waterflow bell output.
Activation of the supervisory zone will operate the supervisory bell output.
When either zone 1, 2 or 4 is in alarm - output #1 (general alarm) and output #3 (solenoid release) will operate.
When zone 3 is in alarm - output #2 will operate (waterflow bell).
When the supervisory zone is activated - output #4 will operate (supervisory bell).
WIRING DIAGRAM PROGRAM #2
SINGLE HAZARD, 2 ALARM ZONES (CROSS ZONED), 1 MANUAL STATION ZONE, 1 WATERFLOW ZONE AND 1 SUPERVISORY ZONE

NOTES:
1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit.
3. Leave EOLR (provided) on all unused circuits.
4. Polarity mark on output terminal is for a normal, no alarm condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 1 Amp.
7. Maximum current for all four outputs combined is 2-1/2 Amps.
8. All initiating and NAC/Release circuits are supervised and power limited.
9. Refer to pgs. 16, 73-76 for installation, test and maintenance information.

See page 80 or label inside panel door for smoke detector compatibility data.

See page 76 for battery information.
PROGRAM #2 MODE

1. Apply power to panel.

2. Move the program switch to the right.

3. Press the FUNCTION (bottom) button until the display reads “PASSWORD = 000”.

4. To enter a password, press the SELECT (middle) button until the proper number is displayed above the ^ symbol, then press the SET (top) button to move to the next digit. After entering the third number the display will change. (All panels are shipped with a 000 password.)

5. Press the FUNCTION (bottom) button until the display reads “PROGRAM #0”.

6. Press the SELECT (middle) button until the display reads “PROGRAM #2”.

7. Press the SET (top) button.

8. The panel is completely programmed except for the custom banner and zone messages. Move the program switch back to the left.

<table>
<thead>
<tr>
<th>PROGRAM #2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ZONES</strong></td>
</tr>
<tr>
<td>SUPERVISORY</td>
</tr>
<tr>
<td>OUTPUTS</td>
</tr>
<tr>
<td>#1 Alarm</td>
</tr>
<tr>
<td>#2 Alarm</td>
</tr>
<tr>
<td>#3 Release</td>
</tr>
<tr>
<td>#4 Supervisory</td>
</tr>
</tbody>
</table>

Description: Single hazard, cross zone with manual station override.
Inputs: 2 conventional zones (cross zoned), 1 waterflow zone, 1 manual release zone, 1 supervisory zone
Outputs: 1 general alarm bell, 1 waterflow bell, 1 solenoid release circuit, 1 supervisory bell
Operation: Activation of both conventional zones at the same time, or activation of the manual release zone will operate the release output and the general alarm output. Activation of one conventional zone will operate the general alarm output. Activation of the waterflow zone will operate the waterflow bell output. Activation of the supervisory zone will operate the supervisory bell output.
When zone 1, 2 or 4 is in alarm - output #1 will operate (general alarm bell).
When zone 3 is in alarm - output #2 will operate (waterflow bell).
When both zones 1 and 2 are in alarm at the same time - output #3 will operate (solenoid release).
When zone 4 is in alarm - outputs #3 (solenoid release) and #1 (general alarm) will operate.
DUAL HAZARD, COMBINED RELEASE - 2 ALARM ZONES, 1 MANUAL STATION ZONE, 1 WATERFLOW ZONE AND 1 SUPERVISORY ZONE

NOTES:
1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit.
3. Leave EOLR (provided) on all unused circuits.
4. Polarity mark on output terminal is for a normal, no alarm condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 1 Amp.
7. Maximum current for all four outputs combined is 2-1/2 Amps.
8. All initiating and NAC/Release circuits are supervised and power limited.
9. Refer to pgs. 16, 73-76 for installation, test and maintenance information.

See page 80 or label inside panel door for smoke detector compatibility data.

See page 76 for battery information.
PROGRAM #3 MODE

1. Apply power to panel.

2. Move the program switch to the right.

3. Press the FUNCTION (bottom) button until the display reads “PASSWORD = 000”.

4. To enter a password, press the SELECT (middle) button until the proper number is displayed above the ^ symbol, then press the SET (top) button to move to the next digit. After entering the third number the display will change. (All panels are shipped with a 000 password.)

5. Press the FUNCTION (bottom) button until the display reads “PROGRAM #0”.

6. Press the SELECT (middle) button until the display reads “PROGRAM #3”.

7. Press the SET (top) button.

8. The panel is completely programmed except for the custom banner and zone messages. Move the program switch back to the left.

<table>
<thead>
<tr>
<th>OUTPUTS</th>
<th>ZONES</th>
<th>SUPERVISORY</th>
<th>#1</th>
<th>#2</th>
<th>#3</th>
<th>#4</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1 Alarm</td>
<td></td>
<td>Supervisory</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>#2 Supervisory</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#3 Release</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>#4 Release</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Description: Dual hazard, combined release.
Inputs: 2 conventional zones, 1 waterflow zone, 1 manual release zone, 1 supervisory zone
Outputs: 1 general alarm bell, 1 supervisory bell, 2 solenoid release circuits
Operation: Activation of either conventional zone or the manual release zone will activate both solenoid release outputs and the general alarm bell.
Activation of the waterflow zone will operate the general alarm bell.
Activation of the supervisory zone will operate the supervisory bell output.
When either zone 1, 2 or 4 is in alarm - outputs #1 (general alarm), #3 and #4 (solenoid release) will operate.
When zone 3 is in alarm - output #1 (general alarm) will operate.
When the supervisory zone is activated - output #2 (supervisory bell) will operate.
WIRING DIAGRAM PROGRAM #4
DUAL HAZARD, SPLIT RELEASE - 2 ALARM ZONES, 1 WATERFLOW ZONE AND 2 SUPERVISORY ZONES

NOTES:
1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit.
3. Leave EOLR (provided) on all unused circuits.
4. Polarity mark on output terminal is for a normal, no alarm condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 1 Amp.
7. Maximum current for all four outputs combined is 2-1/2 Amps.
8. All initiating and NAC/Release circuits are supervised and power limited.
9. Refer to pgs. 16, 73-76 for installation, test and maintenance information.

See page 80 or label inside panel door for smoke detector compatibility data.
See page 76 for battery information.
PROGRAM #4 MODE

1. Apply power to panel.

2. Move the program switch to the right.

3. Press the FUNCTION (bottom) button until the display reads “PASSWORD = 000”.

4. To enter a password, press the SELECT (middle) button until the proper number is displayed above the ^ symbol, then press the SET (top) button to move to the next digit. After entering the third number the display will change. (All panels are shipped with a 000 password.)

5. Press the FUNCTION (bottom) button until the display reads “PROGRAM #0”.

6. Press the SELECT (middle) button until the display reads “PROGRAM #4”.

7. Press the SET (top) button.

8. The panel is completely programmed except for the custom banner and zone messages. Move the program switch back to the left.

<table>
<thead>
<tr>
<th>PROGRAM #4</th>
<th>ZONES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SUPERVISORY</td>
</tr>
<tr>
<td>OUTPUTS</td>
<td>Supervisory</td>
</tr>
<tr>
<td>#1 Alarm</td>
<td></td>
</tr>
<tr>
<td>#2 Supervisory</td>
<td></td>
</tr>
<tr>
<td>#3 Release</td>
<td></td>
</tr>
<tr>
<td>#4 Release</td>
<td></td>
</tr>
</tbody>
</table>

Description: Dual hazard, split release.
Inputs: 2 conventional zones, 1 waterflow zone, 2 supervisory zones
Outputs: 1 general alarm bell, 1 supervisory bell, 2 solenoid release circuits
Operation: Activation of conventional zone #1 will operate solenoid release circuit #1 (output #3) and the general alarm bell.
Activation of conventional zone #2 will operate solenoid release circuit #2 (output #4) and the general alarm bell.
Activation of the waterflow zone will operate the general alarm bell.
Activation of either supervisory zone will operate the supervisory bell.
When zone 1 is in alarm - output #1 (general alarm) and output #3 (solenoid release #1) will operate.
When zone 2 is in alarm - output #1 (general alarm) and output #4 (solenoid release #2) will operate.
When either zone 4 or the supervisory zone are activated - output #2 (supervisory bell) will operate.
WIRING DIAGRAM PROGRAM #5
SINGLE HAZARD WITH TROUBLE BELL - 2 ALARM ZONES, 1 MANUAL STATION ZONE, 1 WATERFLOW ZONE AND 1 SUPERVISORY ZONE

NOTES:
1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit.
3. Leave EOLR (provided) on all unused circuits.
4. Polarity mark on output terminal is for a normal, no alarm condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 1 Amp.
7. Maximum current for all four outputs combined is 2-1/2 Amps.
8. All initiating and NAC/Release circuits are supervised and power limited.
9. Refer to pgs. 16, 73-76 for installation, test and maintenance information.

See page 80 or label inside panel door for smoke detector compatibility data.

See page 76 for battery information.
**PROGRAM #5 MODE**

1. Apply power to panel.

2. Move the program switch to the right.

3. Press the FUNCTION (bottom) button until the display reads “PASSWORD = 000”.

4. To enter a password, press the SELECT (middle) button until the proper number is displayed above the ^ symbol, then press the SET (top) button to move to the next digit. After entering the third number the display will change. (All panels are shipped with a 000 password.)

5. Press the FUNCTION (bottom) button until the display reads “PROGRAM #0”.

6. Press the SELECT (middle) button until the display reads “PROGRAM #5”.

7. Press the SET (top) button.

8. The panel is completely programmed except for the custom banner and zone messages. Move the program switch back to the left.

<table>
<thead>
<tr>
<th>PROGRAM #5</th>
<th>ZONES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SUPERVISORY</td>
</tr>
<tr>
<td>OUTPUTS</td>
<td>Supervisory</td>
</tr>
<tr>
<td>#1 Alarm</td>
<td>X</td>
</tr>
<tr>
<td>#2 Trouble</td>
<td></td>
</tr>
<tr>
<td>#3 Supervisory</td>
<td>X</td>
</tr>
<tr>
<td>#4 Release</td>
<td>X</td>
</tr>
</tbody>
</table>

Description: Single hazard, 3 zone with trouble bell.

Inputs: 2 conventional zones, 1 waterflow zone, 1 manual release zone, 1 supervisory zone

Outputs: 1 general alarm bell, 1 trouble bell, 1 supervisory bell, 1 solenoid release circuit

Operation:
- Activation of either conventional zone or the manual release zone will operate the solenoid release circuit and the general alarm bell.
- Activation of the waterflow zone will operate the general alarm bell.
- Activation of the supervisory zone will operate the supervisory bell.
- A trouble condition (low battery, wire problem, etc.) will operate the trouble bell.

When either zone 1, 2 or 4 is in alarm - outputs #1 (general alarm) and #4 (solenoid release) will operate.
When zone 3 is in alarm - output #1 (general alarm) will operate.
When the supervisory zone is activated - output #3 (supervisory bell) will operate.
When the panel is in a trouble condition - output #2 (trouble bell) will operate.
WIRING DIAGRAM PROGRAM #6
SINGLE HAZARD, 2 ALARM ZONES WITH 1 WATERFLOW AND 2 SUPERVISORY ZONES

NOTES:
1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit.
3. Leave EOLR (provided) on all unused circuits.
4. Polarity mark on output terminal is for a normal, no alarm condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 1 Amp.
7. Maximum current for all four outputs combined is 2-1/2 Amps.
8. All initiating and NAC/Release circuits are supervised and power limited.
9. Refer to pgs. 16, 73-76 for installation, test and maintenance information.

See page 80 or label inside panel door for smoke detector compatibility data.
See page 76 for battery information.
PROGRAM #6 MODE

1. Apply power to panel.

2. Move the program switch to the right.

3. Press the FUNCTION (bottom) button until the display reads “PASSWORD = 000”.

4. To enter a password, press the SELECT (middle) button until the proper number is displayed above the ^ symbol, then press the SET (top) button to move to the next digit. After entering the third number the display will change. (All panels are shipped with a 000 password.)

5. Press the FUNCTION (bottom) button until the display reads “PROGRAM #0”.

6. Press the SELECT (middle) button until the display reads “PROGRAM #6”.

7. Press the SET (top) button.

8. The panel is completely programmed except for the custom banner and zone messages. Move the program switch back to the left.

<table>
<thead>
<tr>
<th>PROGRAM #6</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZONES</td>
</tr>
<tr>
<td>OUTPUTS</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>SUPERVISORY</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>#1 Alarm</td>
</tr>
<tr>
<td>#2 Alarm</td>
</tr>
<tr>
<td>#3 Supervisory</td>
</tr>
<tr>
<td>#4 Release</td>
</tr>
</tbody>
</table>

Description: Single hazard, 2 zones and 2 supervisory zones.
Inputs: 1 conventional zone, 1 manual dump zone, 1 workflow zone, 1 low air zone, 1 supervisory zone
Outputs: 1 general alarm bell, 1 workflow bell, 1 supervisory bell, 1 solenoid release circuit
Operation: Activation of either the conventional zone or the manual release zone will operate the solenoid release circuit and the general alarm bell.
Activation of the workflow zone will operate the workflow bell.
Activation of either the low air zone or the supervisory zone will operate the supervisory bell.
When either zone 1 or 2 is in alarm - output #1 (general alarm) and output #4 (solenoid release) will operate. When zone 3 is in alarm - output #2 (workflow bell) will operate. When either zone 4 or the supervisory zone is activated - output #3 (supervisory bell) will operate.
WIRING DIAGRAM PROGRAM #7
SINGLE HAZARD - CROSS ZONED, 2 ALARM ZONES, 1 WATERFLOW ZONE AND 2 SUPERVISORY ZONES

NOTES:
1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit.
3. Leave EOLR (provided) on all unused circuits.
4. Polarity mark on output terminal is for a normal, no alarm condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 1 Amp.
7. Maximum current for all four outputs combined is 2-1/2 Amps.
8. All initiating and NAC/Release circuits are supervised and power limited.
9. Refer to pgs. 16, 73-76 for installation, test and maintenance information.

See page 80 or label inside panel door for smoke detector compatibility data.

See page 76 for battery information.
PROGRAM #7 MODE

1. Apply power to panel.

2. Move the program switch to the right.

3. Press the FUNCTION (bottom) button until the display reads “PASSWORD = 000”.

4. To enter a password, press the SELECT (middle) button until the proper number is displayed above the ^ symbol, then press the SET (top) button to move to the next digit. After entering the third number the display will change. (All panels are shipped with a 000 password.)

5. Press the FUNCTION (bottom) button until the display reads “PROGRAM #0”.

6. Press the SELECT (middle) button until the display reads “PROGRAM #7”.

7. Press the SET (top) button.

8. The panel is completely programmed except for the custom banner and zone messages. Move the program switch back to the left.

<table>
<thead>
<tr>
<th>PROGRAM #7</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZONES</td>
</tr>
<tr>
<td>SUPERVISORY #1</td>
</tr>
<tr>
<td>OUTPUTS</td>
</tr>
<tr>
<td>#1 Alarm</td>
</tr>
<tr>
<td>#2 Alarm</td>
</tr>
<tr>
<td>#3 Supervisory</td>
</tr>
<tr>
<td>#4 Release</td>
</tr>
</tbody>
</table>

Description: Single hazard, 2 zones and cross zoned with 2 supervisory zones.
Inputs: 2 conventional zones (cross zoned), 1 workflow zone, 1 low air zone, 1 supervisory zone
Outputs: 1 general alarm bell, 1 workflow bell, 1 supervisory bell, 1 solenoid release circuit
Operation: Activation of both conventional zones at the same time will operate the solenoid release circuit and the general alarm bell.
Activation of either conventional zone will operate the general alarm bell.
Activation of the workflow zone will operate the workflow bell.
Activation of either the low air zone or the supervisory zone will operate the supervisory bell.
When either zone 1 or 2 is in alarm - output #1 (general alarm) will operate.
When zones 1 and 2 are in alarm at the same time - output #4 (solenoid release) and output #1 (general alarm) will operate.
When zone 3 is in alarm - output #2 (workflow bell) will operate.
When either zone 4 or the supervisory zone is activated - output #3 (supervisory bell) will operate.
NOTES:
1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit
3. Leave EOLR (provided) on all unused circuits.
4. Polarity mark on output terminal is for a normal, no alarm condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 1 Amp.
7. Maximum current for all four outputs combined is 2-1/2 Amps.
8. All initiating and NAC/Release circuits are supervised and power limited.
9. Refer to pgs. 16, 73-76 for installation, test and maintenance information.

See page 80 or label inside panel door for smoke detector compatibility data.

See page 76 for battery information.
PROGRAM #8 MODE

1. Apply power to panel.

2. Move the program switch to the right.

3. Press the FUNCTION (bottom) button until the display reads “PASSWORD = 000”.

4. To enter a password, press the SELECT (middle) button until the proper number is displayed above the ^ symbol, then press the SET (top) button to move to the next digit. After entering the third number the display will change. (All panels are shipped with a 000 password.)

5. Press the FUNCTION (bottom) button until the display reads “PROGRAM #0”.

6. Press the SELECT (middle) button until the display reads “PROGRAM #8”.

7. Press the SET (top) button.

8. The panel is completely programmed except for the custom banner and zone messages. Move the program switch back to the left.

<table>
<thead>
<tr>
<th>ZONES</th>
<th>SUPERVISORY</th>
<th>#1</th>
<th>#2</th>
<th>#3</th>
<th>#4</th>
</tr>
</thead>
<tbody>
<tr>
<td>OUTPUTS</td>
<td>Low Air</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Supervisory</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#1 Alarm</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#2 Alarm</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#3 Release</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>#4 Alarm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

Description: Single hazard, dual zone.

Inputs: 1 low air zone, 2 conventional detection zones, 1 tamper switch zone, 1 waterflow zone

Outputs: 1 general alarm output, 2 waterflow outputs, 1 solenoid release circuit

Operation: Activation of either conventional zone will operate the general alarm bell and the solenoid release circuit.

Activation of the waterflow zone will operate the general alarm bell and both of the waterflow bell outputs.

When zone 1 or zone 2 is in alarm - output #1 (general alarm) and output #3 (solenoid release) will operate.

When either zone 3 or the supervisory zone is activated - the panel will be in a supervisory condition, no outputs will be activated.

When zone 4 is in alarm - output #1 (general alarm) and outputs #2 and #4 (both waterflow bells) will operate.
**NOTES:**

1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit.
3. Leave EOLR (provided) on all unused circuits.
4. Polarity mark on output terminal is for a normal, no alarm condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 1 Amp.
7. Maximum current for all four outputs combined is 2-1/2 Amps.
8. All initiating and NAC/Release circuits are supervised and power limited.
9. Refer to pgs. 16, 73-76 for installation, test and maintenance information.

See page 80 or label inside panel door for smoke detector compatibility data.

See page 76 for battery information.
PROGRAM #9 MODE
1. Apply power to panel.

2. Move the program switch to the right.

3. Press the FUNCTION (bottom) button until the display reads “PASSWORD = 000”.

4. To enter a password, press the SELECT (middle) button until the proper number is displayed above the ^ symbol, then press the SET (top) button to move to the next digit. After entering the third number the display will change. (All panels are shipped with a 000 password.)

5. Press the FUNCTION (bottom) button until the display reads “PROGRAM #0”.

6. Press the SELECT (middle) button until the display reads “PROGRAM #9”.

7. Press the SET (top) button.

8. The panel is completely programmed except for the custom banner and zone messages.

<table>
<thead>
<tr>
<th>SUPERVISORY</th>
<th>OUTPUTS</th>
<th>ZONES</th>
<th>#1</th>
<th>#2</th>
<th>#3</th>
<th>#4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supervisory</td>
<td>Supervisory</td>
<td>Conventional</td>
<td>Low Air Supervisory</td>
<td>Waterflow</td>
<td>Low Air Alarm</td>
<td></td>
</tr>
<tr>
<td>#1 Alarm</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#2 Alarm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>#3 Supervisory</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>#4 Release</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

Description: Single Hazard, conventional detection and low air alarm zones Cross-zoned.
Inputs: 1 supervisory zone, 1 conventional detection zone, 1 low air supervisory zone, 1 water flow zone, 1 low air alarm zone.

Outputs: 1 general alarm, 1 supervisory, 1 water flow, 1 solenoid release circuit

Operation: Activation of the conventional detection zone and the low air alarm zone at the same time will operate the solenoid release circuit and the general alarm bell.
Activation of the conventional zone only will operate the general alarm output
Activation of the low air supervisory zone will operate the supervisory bell output.
Activation of the water flow zone will operate the water flow bell output
Activation of the low air alarm zone will operate the supervisory bell output. It will not operate the alarm relay.

When zone 1 is in alarm, output 1 will operate
When zone 2 is activated, output 3 will operate
When zone 3 is in alarm, output 2 will operate
When zone 4 is activated, output 3 will operate. This will create a supervisory condition not an alarm condition. The alarm relay will not operate, the supervisory relay will.
When both zones 1 & 4 are activated at the same time, the solenoid release circuit will operate.
WIRING DIAGRAM PROGRAM #10
SINGLE HAZARD - CROSS ZONED, 2 DETECTION ZONES WITH 1 LOW AIR ALARM ZONE
1 WATERFLOW ZONE, AND 1 SUPERVISORY ZONE

NOTES:
1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit.
3. Leave EOLR (provided) on all unused circuits.
4. Polarity mark on output terminal is for a normal, no alarm condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 1 Amp.
7. Maximum current for all four outputs combined is 2-1/2 Amps.
8. All initiating and NAC/Release circuits are supervised and power limited.
9. Refer to pgs. 16, 73-76 for installation, test and maintenance information.
PROGRAM #10 MODE
1. Apply power to panel.

2. Move the program switch to the right.

3. Press the FUNCTION (bottom) button until the display reads “PASSWORD = 000”.

4. To enter a password, press the SELECT (middle) button until the proper number is displayed above the ^ symbol, then press the SET (top) button to move to the next digit. After entering the third number the display will change. (All panels are shipped with a 000 password.)

5. Press the FUNCTION (bottom) button until the display reads “PROGRAM #0”.

6. Press the SELECT (middle) button until the display reads “PROGRAM #10”.

7. Press the SET (top) button.

8. The panel is completely programmed except for the custom banner and zone messages.

<table>
<thead>
<tr>
<th>PROGRAM #10</th>
<th>ZONES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SUPERVISORY</td>
</tr>
<tr>
<td>OUTPUTS</td>
<td>Supervisory</td>
</tr>
<tr>
<td>#1 Alarm</td>
<td>X</td>
</tr>
<tr>
<td>#2 Alarm</td>
<td></td>
</tr>
<tr>
<td>#3 Supervisory</td>
<td>X</td>
</tr>
<tr>
<td>#4 Release</td>
<td>X</td>
</tr>
</tbody>
</table>

Description: Single Hazard, 2 conventional detection and low air alarm zones Cross-zoned.
Inputs: 1 supervisory zone, 2 conventional detection zone, 1 waterflow zone, 1 low air alarm zone.
Outputs: 1 general alarm, 1 supervisory, 1 waterflow, 1 solenoid release circuit
Operation: Activation of both conventional detection zones and the low air alarm zone at the same time will operate the solenoid release circuit and the general alarm bell.
Activation of either conventional zone only will operate the general alarm output
Activation of the waterflow zone will operate the waterflow bell output
Activation of the low air alarm zone will operate the supervisory bell output. It will not operate the alarm relay
When either zone 1 or 2 is in alarm, output 1 will operate
When zone 3 is in alarm, output 2 will operate
When zone 4 is activated, output 3 will operate. This will create a supervisory condition not an alarm condition. The alarm relay will not operate, the supervisory relay will.
When zones 1, 2 & 4 are activated at the same time, the solenoid release circuit will operate.
WIRING DIAGRAM PROGRAM #11
SINGLE HAZARD - CROSS ZONED, 1 DETECTION ZONE WITH LOW AIR ALARM ZONE
1 WATERFLOW, 1 MANUAL RELEASE AND 1 SUPERVISORY ZONE

NOTES:
1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit.
3. Leave EOLR (provided) on all unused circuits.
4. Polarity mark on output terminal is for a normal, no alarm condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 1 Amp.
7. Maximum current for all four outputs combined is 2-1/2 Amps.
8. All initiating and NAC/Release circuits are supervised and power limited.
9. Refer to pgs. 16, 73-76 for installation, test and maintenance information.

See page 80 or label inside panel door for smoke detector compatibility data.

See page 76 for battery information.
PROGRAM #11 MODE
1. Apply power to panel.

2. Move the program switch to the right.

3. Press the FUNCTION (bottom) button until the display reads “PASSWORD = 000”.

4. To enter a password, press the SELECT (middle) button until the proper number is displayed above the ^ symbol, then press the SET (top) button to move to the next digit. After entering the third number the display will change. (All panels are shipped with a 000 password.)

5. Press the FUNCTION (bottom) button until the display reads “PROGRAM #0”.

6. Press the SELECT (middle) button until the display reads “PROGRAM #11”.

7. Press the SET (top) button.

8. The panel is completely programmed except for the custom banner and zone messages.

<table>
<thead>
<tr>
<th>PROGRAM #11</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZONES</td>
</tr>
<tr>
<td><strong>SUPERVISORY</strong></td>
</tr>
<tr>
<td>Supervisory</td>
</tr>
<tr>
<td>#1 Alarm</td>
</tr>
<tr>
<td>#2 Alarm</td>
</tr>
<tr>
<td>#3 Release</td>
</tr>
<tr>
<td>#4 Supervisory</td>
</tr>
</tbody>
</table>

Description: Single Hazard, conventional detection and low air alarm zones cross-zoned. Also 1 waterflow and 1 manual release zone. Manual release overrides cross zoning.

Inputs: 1 supervisory zone, 1 conventional detection zone, 1 low air alarm zone, 1 waterflow zone, 1 manual release zone.

Outputs: 1 general alarm, 1 supervisory, 1 waterflow, 1 solenoid release circuit

Operation: Activation of the conventional detection zone and the low air alarm zone at the same time will operate the solenoid release circuit and the general alarm bell.

Activation of the waterflow zone will operate the waterflow bell output

Activation of the low air alarm zone will operate the supervisory bell output. It will not operate the alarm relay.

When zone 1 is in alarm, output 1 will operate
When zone 2 is activated, output 4 will operate. This will create a supervisory condition not an alarm condition. The alarm relay will not operate, the supervisory relay will.
When zone 3 is in alarm, output 2 will operate
When zone 4 is in alarm, outputs 1 & 3 will operate
When both zones 1 & 2 are activated at the same time, the solenoid release circuit, output 3, will operate.
WIRING DIAGRAM PROGRAM #12
SINGLE HAZARD, 2 DETECTION ZONES, 2 SUPERVISORY ZONES
1 WATERFLOW ZONE

NOTES:
1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit.
3. Leave EOLR (provided) on all unused circuits.
4. Polarity mark on output terminal is for a normal, no alarm condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 1 Amp.
7. Maximum current for all four outputs combined is 2-1/2 Amps.
8. All initiating and NAC/Release circuits are supervised and power limited.
9. Refer to pgs. 16, 73-76 for installation, test and maintenance information.

See page 80 or label inside panel door for smoke detector compatibility data.

See page 76 for battery information.
**PROGRAM #12 MODE**

1. Apply power to panel.

2. Move the program switch to the right.

3. Press the FUNCTION (bottom) button until the display reads “PASSWORD = 000”.

4. To enter a password, press the SELECT (middle) button until the proper number is displayed above the ^ symbol, then press the SET (top) button to move to the next digit. After entering the third number the display will change. (All panels are shipped with a 000 password.)

5. Press the FUNCTION (bottom) button until the display reads “PROGRAM #0”.

6. Press the SELECT (middle) button until the display reads “PROGRAM #12”.

7. Press the SET (top) button.

8. The panel is completely programmed except for the custom banner and zone messages.

<table>
<thead>
<tr>
<th>ZONES</th>
<th>#1</th>
<th>#2</th>
<th>#3</th>
<th>#4</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUPERVISORY</td>
<td>Low Air</td>
<td>Conventional</td>
<td>Conventional</td>
<td>Tamper</td>
</tr>
<tr>
<td>#1 Alarm</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#2 Alarm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#3 Release</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#4 Alarm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Single Hazard, 2 conventional detection zones, 1 waterflow, and 2 supervisory zones.

**Inputs:** 1 supervisory zone, 2 conventional detection zone, 1 waterflow zone, 1 tamper switch zone.

**Outputs:** 2 general alarm, 1 waterflow, 1 solenoid release circuit

**Operation:** Activation of either conventional detection zone will operate the release and the general alarm bell outputs.

Activation of the waterflow zone will operate the waterflow and both general alarm bell outputs.

Activation of either the tamper or supervisory zones will operate the supervisory relay only.

When zone 1 is in alarm, outputs 1 & 3 will operate

When zone 2 is in alarm, outputs 1 & 3 will operate

When zone 3 or the supervisory zone is activated, only the supervisory relay operates

When zone 4 is in alarm, outputs 1, 2 & 4 will operate
WIRING DIAGRAM PROGRAM #13
SINGLE HAZARD - CROSS ZONED, 1 DETECTION ZONE WITH LOW AIR ALARM ZONE, 2 SUPERVISORY ZONES, AND 1 WATERFLOW ZONE

NOTES:
1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit.
3. Leave EOLR (provided) on all unused circuits.
4. Polarity mark on output terminal is for a normal, no alarm condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 1 Amp.
7. Maximum current for all four outputs combined is 2-1/2 Amps.
8. All initiating and NAC/Release circuits are supervised and power limited.
9. Refer to pgs. 16, 73-76 for installation, test and maintenance information.

See page 80 or label inside panel door for smoke detector compatibility data.

See page 76 for battery information.
**PROGRAM #13 MODE**
1. Apply power to panel.

2. Move the program switch to the right.

3. Press the FUNCTION (bottom) button until the display reads “PASSWORD = 000”.

4. To enter a password, press the SELECT (middle) button until the proper number is displayed above the ^ symbol, then press the SET (top) button to move to the next digit. After entering the third number the display will change. (All panels are shipped with a 000 password.)

5. Press the FUNCTION (bottom) button until the display reads “PROGRAM #0”.

6. Press the SELECT (middle) button until the display reads “PROGRAM #13”.

7. Press the SET (top) button.

8. The panel is completely programmed except for the custom banner and zone messages.

<table>
<thead>
<tr>
<th>ZONES</th>
<th>SUPERVISORY</th>
<th>#1</th>
<th>#2</th>
<th>#3</th>
<th>#4</th>
</tr>
</thead>
<tbody>
<tr>
<td>OUTPUTS</td>
<td>Supervisory</td>
<td>Conventional</td>
<td>Low Air Alarm</td>
<td>Tamper</td>
<td>Waterflow</td>
</tr>
<tr>
<td>#1 Alarm</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>#2 Alarm</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>#3 Release</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#4 Alarm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

Description: Single Hazard, conventional detection and low air alarm zones cross-zoned. Also 1 waterflow, 1 tamper and 1 supervisory zone

Inputs: 1 supervisory zone, 1 conventional detection zone, 1 low air alarm zone, 1 tamper switch zone, 1 waterflow zone,

Outputs: 1 general alarm, 2 waterflow, 1 solenoid release circuit

Operation: Activation of the conventional detection zone and the low air alarm zone at the same time will operate the solenoid release circuit and the general alarm bell.

Activation of the waterflow zone will operate both waterflow bell outputs

Activation of the low air alarm zone will not operate the alarm relay, only the supervisory relay.

When zone 1 is in alarm, output 1 will operate
When zone 2 is activated, it will create a supervisory condition not an alarm condition. The alarm relay will not operate, the supervisory relay will.
When zone 3 is activated, only the supervisory relay will operate.
When zone 4 is in alarm, outputs 1, 2 & 4 will operate
When both zones 1 & 2 are activated at the same time, the solenoid release circuit, output 3, will operate.
WIRING DIAGRAM PROGRAM #14
ELECTRONIC ACCELERATOR, 4 ALARM ZONES, 4 RELEASE CIRCUITS MAPPED 1 TO 1

NOTES:
1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit.
3. Leave EOLR (provided) on all unused circuits.
4. Polarity mark on output terminal is for a normal, no alarm condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 1 Amp.
7. Maximum current for all four outputs combined is 2-1/2 Amps.
8. All initiating and NAC/Release circuits are supervised and power limited.
9. Refer to pgs. 16, 73-76 for installation, test and maintenance information.

See page 80 or label inside panel door for smoke detector compatibility data.

See page 76 for battery information.
PROGRAM #14 MODE

1. Apply power to panel.

2. Move the program switch to the right.

3. Press the FUNCTION (bottom) button until the display reads “PASSWORD = 000”.

4. To enter a password, press the SELECT (middle) button until the proper number is displayed above the ^ symbol, then press the SET (top) button to move to the next digit. After entering the third number the display will change. (All panels are shipped with a 000 password.)

5. Press the FUNCTION (bottom) button until the display reads “PROGRAM #0”.

6. Press the SELECT (middle) button until the display reads “PROGRAM #14”.

7. Press the SET (top) button.

8. The panel is completely programmed except for the custom banner and zone messages. Move the program switch back to the left.

9. Wait 60 seconds before any testing is performed on the QRS.

<table>
<thead>
<tr>
<th>PROGRAM #14</th>
<th>ZONES</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUPERVISORY</td>
<td>#1</td>
</tr>
<tr>
<td>OUTPUTS</td>
<td>Supervisory</td>
</tr>
<tr>
<td>#1 Release</td>
<td>X</td>
</tr>
<tr>
<td>#2 Release</td>
<td></td>
</tr>
<tr>
<td>#3 Release</td>
<td></td>
</tr>
<tr>
<td>#4 Release</td>
<td></td>
</tr>
</tbody>
</table>

Description: QRS System 4 manual station zones and 4 Release outputs mapped 1 to 1
Inputs: 4 Manual station zones
Outputs: 4 release circuits
Operation: Activation of conventional zone 1 will activate release output #1
Activation of conventional zone 2 will activate release output #2
Activation of conventional zone 3 will activate release output #3
Activation of conventional zone 4 will activate release output #4
Resetting the QRS:
1. Follow the valve manufacturers instructions to reset the valve.
2. When procedure calls for the system piping to be pressurized, proceed as follows:
3. Press the bottom SYSTEM RESET button, then immediately move the program switch to the right. Display will read "OK to charge system". Begin to apply pressure to the system. (NOTE - you will have 30 minutes to charge the system.)
4. When system pressure reaches the intended pressure, return the program switch back to the left.
5. Wait 60 seconds before testing the QRS.

NOTE: If more than 30 minutes will be required to fill the system, you must restart the countdown before 30 minutes have elapsed. The system pressure must be above 8 PSI to restart the countdown.
To restart the countdown, flip the program switch position back to the left and then quickly back to the right; this will start a new 30 minute countdown.
The control valve should be in the closed position during the procedure to prevent waterflow in case of inadvertent operation of the QRS.
To view the history buffer or make programming changes, slide the program switch to the right then press the top SET button.
The following programs are for chemical or gas extinguishing systems. Selecting the CHEMICAL mode allows the use of a pre-discharge timer and an abort circuit. The timer defaults to 60 seconds for all alarm zones programmed as other than MANUAL RELEASE. The MANUAL RELEASE default timer is 30 seconds. The system offers the programmer the ability to change the pre-discharge times.

Systems intended for the release of Halon 1301 as described in NFPA 12A, or clean agents as described in NFPA 2001, shall have provision for a pre-discharge notification circuit. If this signal is required to be separate and/or distinct from the evacuation signal, two notification circuits are required. One shall be programmed as FIRST ALARM. It will provide a steady output upon activation of any initiating zone programmed as an alarm zone. This is the evacuation signal. This output will change to a temporal signal upon activation of the release circuit. This is the discharge signal.

The other notification circuit shall be programmed as SECOND ALARM. It will provide a steady output upon activation of a second initiating zone programmed as an alarm zone. This is when the pre-discharge timer would start and would be the pre-discharge signal. If a temporal signal is required, notification appliances such as Amseco model HW-24R or others that can produce a temporal tone shall be used. This allows the use of strobes and horns on the same circuit. If a separate signal for discharge were required, a third notification circuit would be used that would be programmed to operate whenever the release circuit is activated.

Zones programmed as Manual Release can not be aborted. If it is necessary to abort a manual release zone, that zone must be programmed as Conventional.

If the pre-discharge timer is set at 0, the abort circuit will not stop the release.

NFPA 12 prohibits the use of abort circuits on suppression systems deploying carbon dioxide.

Systems intended for the release of Halon 1301 in accordance with NFPA 12A and/or clean agents in accordance with NFPA 2001 shall be provided with a mechanical manual release system.

Notification outputs do not provide synchronization. If synchronization is required, use Amseco SMD10-3A or equivalent. The notification appliances shall be compatible with the sync’ module selected. The current requirements of the appliances, wire gauge and length of wire run determine the maximum number of appliances that can be connected to one NAC. The maximum can not exceed 1 amp or whatever the maximum that the sync’ module can support, whichever is lower.
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WIRING DIAGRAM PROGRAM #20
DUAL HAZARD, 2 CONVENTIONAL DETECTION ZONES CROSS ZONED TO 1 RELEASE CIRCUIT. 2 OTHER CONVENTIONAL DETECTION ZONES CROSS ZONED TO A SEPARATE RELEASE CIRCUIT. 1 SUPERVISORY ZONE.

NOTES:
1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit.
3. Leave EOLR (provided) on all unused circuits.
4. Polarity mark on output terminal is for a normal, no alarm condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 1 Amp.
7. Maximum current for all four outputs combined is 2-1/2 Amps.
8. All initiating and NAC/Release circuits are supervised and power limited.
9. Refer to pgs. 16, 73-76 for installation, test and maintenance information.

See page 80 or label inside panel door for smoke detector compatibility data.

See page 76 for battery information.
**PROGRAM #20 MODE**

1. Apply power to panel.

2. Move the program switch to the right.

3. Press the FUNCTION (bottom) button until the display reads “PASSWORD = 000”.

4. To enter a password, press the SELECT (middle) button until the proper number is displayed above the ^ symbol, then press the SET (top) button to move to the next digit. After entering the third number the display will change. (All panels are shipped with a 000 password.)

5. Press the FUNCTION (bottom) button until the display reads “PROGRAM #0”.

6. Press the SELECT (middle) button until the display reads “PROGRAM #20”.

7. Press the SET (top) button.

8. Press the SELECT (middle) button to change the pre-discharge time.

9. Press the SET (top) button to enter the pre-discharge time displayed.

10. Press the SELECT (middle) button to change the abort mode.

11. Press the SET (top) button to enter the abort mode displayed.

12. The panel is completely programmed except for the custom banner and zone messages. Move the program switch back to the left.

<table>
<thead>
<tr>
<th>ZONES</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUPERVISORY</td>
</tr>
<tr>
<td>OUTPUTS</td>
</tr>
<tr>
<td>Supervisory</td>
</tr>
<tr>
<td>#1 Alarm</td>
</tr>
<tr>
<td>#2 Release</td>
</tr>
<tr>
<td>#3 Alarm</td>
</tr>
<tr>
<td>#4 Release</td>
</tr>
</tbody>
</table>

Description: Dual Hazard, 2 conventional detection zones cross-zoned to 1 release circuit and 2 other conventional detection zones cross zoned to another release circuit

Inputs: 1 supervisory zone, 4 conventional detection zones,

Outputs: 2 general alarm, 2 release circuit

Operation: Activation of either conventional detection zones 1 and 2 will activate the alarm output #1
Activation of both conventional detection circuits at the same time will start the pre-discharge timer for release circuit output #2 as well as activate the alarm output #1
Activation of either conventional detection zones 3 and 4 will activate the alarm output #3
Activation of both conventional detection circuits at the same time will start the pre-discharge timer for release circuit output #4 as well as activate the alarm output #3

When either zone 1 or 2 is in alarm, output 1 will operate
When both zones 1 and 2 are in alarm at the same time, the pre-discharge timer for output #2 will operate
When either zone 3 or 4 is in alarm, output 3 will operate
When both zones 3 and 4 are in alarm at the same time, the pre-discharge timer for output #4 will operate
WIRING DIAGRAM PROGRAM #21
DUAL HAZARD, 2 CONVENTIONAL DETECTION ZONES MAPPED TO 1 RELEASE CIRCUIT
AND 2 OTHER CONVENTIONAL ZONES MAPPED TO A SEPARATE CIRCUIT.

NOTES:
1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit.
3. Leave EOLR (provided) on all unused circuits.
4. Polarity mark on output terminal is for a normal, no alarm condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 1 Amp.
7. Maximum current for all four outputs combined is 2-1/2 Amps.
8. All initiating and NAC/Release circuits are supervised and power limited.
9. Refer to pgs. 16, 73-76 for installation, test and maintenance information.

See page 80 or label inside panel door for smoke detector compatibility data.
See page 76 for battery information.
PROGRAM #21 MODE
1. Apply power to panel.

2. Move the program switch to the right.

3. Press the FUNCTION (bottom) button until the display reads “PASSWORD = 000”.

4. To enter a password, press the SELECT (middle) button until the proper number is displayed above the ^ symbol, then press the SET (top) button to move to the next digit. After entering the third number the display will change. (All panels are shipped with a 000 password.)

5. Press the FUNCTION (bottom) button until the display reads “PROGRAM #0”.

6. Press the SELECT (middle) button until the display reads “PROGRAM #21”.

7. Press the SET (top) button.

8. Press the SELECT (middle) button to change the pre-discharge time.

9. Press the SET (top) button to enter the pre-discharge time displayed.

10. Press the SELECT (middle) button to change the abort mode.

11. Press the SET (top) button to enter the abort mode displayed.

12. The panel is completely programmed except for the custom banner and zone messages. Move the program switch back to the left.

<table>
<thead>
<tr>
<th>Program</th>
<th>Zones</th>
</tr>
</thead>
<tbody>
<tr>
<td>#21</td>
<td>SUPERVISORY</td>
</tr>
<tr>
<td>Outputs</td>
<td>Supervisory</td>
</tr>
<tr>
<td>#1 Alarm</td>
<td>X</td>
</tr>
<tr>
<td>#2 Release</td>
<td>X</td>
</tr>
<tr>
<td>#3 Alarm</td>
<td>X</td>
</tr>
<tr>
<td>#4 Release</td>
<td>X</td>
</tr>
</tbody>
</table>

Description: Dual Hazard, 2 conventional detection zones mapped to 1 release circuit and 2 other conventional detection zones mapped to another release circuit
Inputs: 1 supervisory zone, 4 conventional detection zones,
Outputs: 2 general alarm, 2 release circuit
Operation: Activation of either conventional detection zone 1 or 2 will activate the alarm output #1 and start the pre-discharge timer for the release circuit output #2
Activation of either conventional detection zone 3 or 4 will activate the alarm output #3 and start the pre-discharge timer for the release circuit output #2

When either zone 1 or 2 is in alarm, outputs 1 & 2 will operate
When either zone 3 or 4 is in alarm, outputs 3 & 4 will operate
WIRING DIAGRAM PROGRAM #22
SINGLE HAZARD, 2 CONVENTIONAL DETECTION ZONES CROSS ZONED TO 1 RELEASE CIRCUIT, 1 MANUAL STATION AND A DISCHARGE CONFIRMATION ZONE.

NOTES:
1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit.
3. Leave EOLR (provided) on all unused circuits.
4. Polarity mark on output terminal is for a normal, no alarm condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 1 Amp.
7. Maximum current for all four outputs combined is 2-1/2 Amps.
8. All initiating and NAC/Release circuits are supervised and power limited.
9. Refer to pgs. 16, 73-76 for installation, test and maintenance information.

See page 80 or label inside panel door for smoke detector compatibility data.

See page 76 for battery information.
PROGRAM #22 MODE
1. Apply power to panel.

2. Move the program switch to the right.

3. Press the FUNCTION (bottom) button until the display reads “PASSWORD = 000”.

4. To enter a password, press the SELECT (middle) button until the proper number is displayed above the ^ symbol, then press the SET (top) button to move to the next digit. After entering the third number the display will change. (All panels are shipped with a 000 password.)

5. Press the FUNCTION (bottom) button until the display reads “PROGRAM #0”.

6. Press the SELECT (middle) button until the display reads “PROGRAM #22”.

7. Press the SET (top) button.

8. Press the SELECT (middle) button to change the pre-discharge time.

9. Press the SET (top) button to enter the pre-discharge time displayed.

10. Press the SELECT (middle) button to change the abort mode.

11. Press the SET (top) button to enter the abort mode displayed.

12. The panel is completely programmed except for the custom banner and zone messages. Move the program switch back to the left.

<table>
<thead>
<tr>
<th>ZONES</th>
<th>#1</th>
<th>#2</th>
<th>#3</th>
<th>#4</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUPERVISORY</td>
<td>Supervisory</td>
<td>Conventional</td>
<td>Conventional</td>
<td>Manual Release</td>
</tr>
<tr>
<td>#1 First Alarm</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#2 Second Alarm</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>#3 Release</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>#4 Alarm</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

Description: Single Hazard, 2 conventional detection zones cross-zoned to 1 release circuit. A manual station zone and a discharge confirmation zone. Also first and second alarm notification circuits.

Inputs: 1 supervisory zone, 3 conventional detection zones, 1 manual station zone
Outputs: 3 general alarm, 1 release circuit

Operation:
- Activation of either conventional detection zones 1 or 2 will activate the alarm output #1
- Activation of both conventional detection circuits at the same time will activate the alarm outputs #1, #2 and start the pre-discharge timer for the release circuit output #3
- Activation of the manual release zone #3 will activate the alarm output #2 and start the manual release pre-discharge timer for release circuit output #3
- Activation of zone 4 will operate output #4
- When either zone 1 or 2 is in alarm, output 1 will operate
- When both zones 1 and 2 are in alarm at the same time, outputs #1,2 will operate and the pre-discharge timer for output #3 will start
- When zone 3 is in alarm, output 2 will operate and the manual release pre-discharge timer for output #3 will start
- When zone 4 is in alarm, output #4 will operate
WIRING DIAGRAM PROGRAM #23
SINGLE HAZARD, 4 CONVENTIONAL DETECTION ZONES MAPPED TO 1 RELEASE CIRCUIT, 1 SUPERVY ORY ZONE.

NOTES:
1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit
3. Leave EOLR (provided) on all unused circuits.
4. Polarity mark on output terminal is for a normal, no alarm condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 1 Amp.
7. Maximum current for all four outputs combined is 2-1/2 Amps.
8. All initiating and NAC/Release circuits are supervised and power limited.
9. Refer to pgs. 16, 73-76 for installation, test and maintenance information.

See page 80 or label inside panel door for smoke detector compatibility data.

See page 76 for battery information.
PROGRAM #23 MODE
1. Apply power to panel.

2. Move the program switch to the right.

3. Press the FUNCTION (bottom) button until the display reads “PASSWORD = 000”.

4. To enter a password, press the SELECT (middle) button until the proper number is displayed above the ^ symbol, then press the SET (top) button to move to the next digit. After entering the third number the display will change. (All panels are shipped with a 000 password.)

5. Press the FUNCTION (bottom) button until the display reads “PROGRAM #0”.

6. Press the SELECT (middle) button until the display reads “PROGRAM #23”.

7. Press the SET (top) button.

8. Press the SELECT (middle) button to change the pre-discharge time.

9. Press the SET (top) button to enter the pre-discharge time displayed.

10. Press the SELECT (middle) button to change the abort mode.

11. Press the SET (top) button to enter the abort mode displayed.

12. The panel is completely programmed except for the custom banner and zone messages. Move the program switch back to the left.

<table>
<thead>
<tr>
<th>PROGRAM #23</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZONES</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>SUPERVISORY</td>
</tr>
<tr>
<td>OUTPUTS</td>
</tr>
<tr>
<td>#1 Indicating</td>
</tr>
<tr>
<td>#2 Trouble</td>
</tr>
<tr>
<td>#3 Supervisory</td>
</tr>
<tr>
<td>#4 Release</td>
</tr>
</tbody>
</table>

Description: Single Hazard, 4 conventional detection zones mapped to 1 release
Inputs: 1 supervisory zone, 4 conventional detection zones,
Outputs: 1 general alarm, 1 trouble, 1 supervisory, 1 release circuit
Operation: Activation of any conventional detection zone will activate the alarm output #1 and start the pre-discharge timer for the release circuit output #4.
Activation of the supervisory zone will operate the supervisory bell.
A trouble condition (low battery, wire problem, etc.) will operate the trouble bell.

When either zone 1, 2, 3, or 4 is in alarm, outputs 1 & 4 will operate
When the supervisory zone is activated - output #3 (supervisory bell) will operate.
When the panel is in a trouble condition - output #2 (trouble bell) will operate.
WIRING DIAGRAM PROGRAM #24
SINGLE HAZARD, 2 CONVENTIONAL DETECTION ZONES 1 MANUAL STATION ZONE AND
A DISCHARGE CONFIRMATION ZONE.

NOTES:
1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit.
3. Leave EOLR (provided) on all unused circuits.
4. Polarity mark on output terminal is for a normal, no alarm condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 1 Amp.
7. Maximum current for all four outputs combined is 2-1/2 Amps.
8. All initiating and NAC/Release circuits are supervised and power limited.
9. Refer to pgs. 16, 73-76 for installation, test and maintenance information.

See page 80 or label inside panel door for smoke detector compatibility data.

See page 76 for battery information.
PROGRAM #24 MODE
1. Apply power to panel.

2. Move the program switch to the right.

3. Press the FUNCTION (bottom) button until the display reads “PASSWORD = 000”.

4. To enter a password, press the SELECT (middle) button until the proper number is displayed above the ^ symbol, then press the SET (top) button to move to the next digit. After entering the third number the display will change. (All panels are shipped with a 000 password.)

5. Press the FUNCTION (bottom) button until the display reads “PROGRAM #0”.

6. Press the SELECT (middle) button until the display reads “PROGRAM #24”.

7. Press the SET (top) button.

8. Press the SELECT (middle) button to change the pre-discharge time.

9. Press the SET (top) button to enter the pre-discharge time displayed.

10. Press the SELECT (middle) button to change the abort mode.

11. Press the SET (top) button to enter the abort mode displayed.

<table>
<thead>
<tr>
<th>PROGRAM #24</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZONES</td>
</tr>
<tr>
<td>SUPERVISORY</td>
</tr>
<tr>
<td>OUTSETS</td>
</tr>
<tr>
<td>#1 Indicating</td>
</tr>
<tr>
<td>#2 Indicating</td>
</tr>
<tr>
<td>#3 Release</td>
</tr>
<tr>
<td>#4 Supervisory</td>
</tr>
</tbody>
</table>

Description: Single Hazard, 2 conventional detection zones, a manual station zone and a discharge confirmation zone. Inputs: 1 supervisory zone, 1 low air zone, 2 conventional detection zones, 1 manual station zone Outputs: 2 general alarm, 1 release circuit, 1 supervisory Operation: Activation of either conventional detection zones 1 or 2 will activate the alarm output #1 and start the pre-discharge timer for the release circuit output #3 Activation of the manual release zone #3 will activate the alarm output #2 and start the manual release pre-discharge timer for release circuit output #3 Activation of zone 4 will operate output #4

When either zone 1 or 2 is in alarm, output 1 will operate and the pre-discharge timer for output #3 will start When zone 3 is in alarm, output 2 will operate and the manual release pre-discharge timer for output #3 will start When zone 4 is activated, output #4 will operate
## CUSTOM PROGRAM

<table>
<thead>
<tr>
<th>OUTPUTS</th>
<th>SUPERVISORY</th>
<th>#1</th>
<th>#2</th>
<th>#3</th>
<th>#4</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>#2</td>
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<tr>
<td>#3</td>
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<tr>
<td>#4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### WIRING DIAGRAM CUSTOM PROGRAM

- **TO CIRCUIT**
  - HOT = BLACK
  - NEUTRAL = WHITE
  - 120VAC/60Hz
- **BREAKER PANEL**
  - 155 VA MAX
  - 220VAC/50Hz
- **185 VA MAX, EARTH GROUND - GREEN**

- **AC IN CONNECTOR**
  - CG: Non-Power Limited and Supervised

- **Non-Power Limited and Supervised**
  - Battery

- **Output**
  - Output
  - Output
  - Output
  - Output

- **Relay Contacts**
  - DRY CONTACTS RATED AT 3A, 32VDC
  - TROUBLE
  - ALARM
  - SUPERVISORY

**NOTES:**

1. Polarity marked on output terminals is for a normal, no alarm condition. Polarity reverses when output is activated.

**DWG. #3545-99**
PFC-4410-RC / PFC-4410A-RC CUSTOM PROGRAM INFORMATION FOR WATER BASED EXTINGUISHING SYSTEMS

If the user has selected program # 0 for a custom configuration of the panel the following will appear in the display window.

<table>
<thead>
<tr>
<th>PROGRAM TYPE: WATER BASED</th>
</tr>
</thead>
</table>

This display allows the user to select functions for either water or chemical based extinguishing systems. This window is for water based, to toggle from water based to chemical based or visa versa, press the SELECT (middle) button.

**SET**  
Press the top button to set the description displayed into the panels program.

**SELECT**  
Press the middle button to scroll between water or chemical based modes.

**FUNCTION**  
Press the bottom button to skip to the next function.

After setting the WATER BASED mode or pressing FUNCTION, the following will appear in the display:

<table>
<thead>
<tr>
<th>INITIATING ZONE # 1</th>
<th>CONVENTIONAL</th>
</tr>
</thead>
</table>

INITIATING ZONE DESCRIPTION
This allows the user to describe the initiating zones. Nine different descriptions are available. They are:
1) **CONVENTIONAL** - These include smoke detectors, pull stations, heat detectors and other devices put on a conventional zone.
2) **WATERFLOW** - Alarms from waterflow zones are non-silenceable
3) **LINEAR HEAT DETECTION** - These use a special wire with a fuseable insulation
4) **MANUAL RELEASE** - Used to override cross zoning and cause instant release
5) **LOW AIR ALARM** – This is for a low air switch used in a double interlock system. Usually cross zoned with a smoke or heat detector. Activation of this zone creates a supervisory condition on the panel but can still operate the release circuit.
6) **SUPERVISORY** - For monitoring any supervisory function as assigned
7) **TAMPER** - For control valve monitoring
8) **LOW AIR** - Used to detect low air pressure
9) **HIGH AIR** - Used to detect high air pressure

The first four descriptions (CONVENTIONAL, WATERFLOW, LINEAR HEAT DETECTION and MANUAL RELEASE) are Alarm Zones. When activated, they will put the panel into alarm and operate the appropriate output as well as operating the alarm relay.

The 5th description (LOW AIR ALARM) creates a supervisory condition on the panel but can be used to activate the release circuit. This activates the Supervisory relay not the Alarm relay.

The last four descriptions (SUPERVISORY, TAMPER, LOW AIR and HIGH AIR) are Supervisory Zones. When activated, they will put the panel in a supervisory condition and activate any output described as “SUPERVISORY BELL”. They cannot activate the release circuit.
SET
Press the top button to set the description displayed.

SELECT
Press the middle button to scroll through the nine descriptions.

FUNCTION
Press the bottom button to skip to the next function.

After describing all initiating zones or skipping to the next function, the following will appear in the display window:

ZONE 5 IS - SUPERVISORY

Zone 5 is a supervisory zone and can only be described as SUPERVISORY, TAMPER, LOW AIR or HIGH AIR.

SET
Press the top button to set the description displayed.

SELECT
Press the middle button to scroll through the four supervisory descriptions.

FUNCTION
Press the bottom button to skip to the next function.

After describing what the supervisory zone is to be or skipping to the next function, the following will appear in the display window:

OUTPUT # 1
INDICATING

OUTPUT DESCRIPTION
This allows the user to describe the functions of the output circuits. Four descriptions are available:
1) ALARM INDICATING - Indicating appliances include bells, horns, strobes and other appliances used to indicate an alarm.
2) RELEASING - Releasing appliances include solenoids and other electrically compatible devices.
3) SUPERVISORY BELL - Appliances on this circuit are used to indicate the presence of a supervisory condition. Any zone programmed as LOW AIR ALARM, SUPERVISORY, TAMPER, HI AIR or LOW AIR is automatically mapped to this output.
4) TROUBLE BELL - Appliances on this circuit are used to indicate the presence of a trouble condition.

The user should describe each output circuit in the same manner as the initiating circuit was described by pressing the middle button to select and the top button to set the desired function.

SET
Press the top button to set the description displayed.

SELECT
Press the middle button to scroll through the descriptions.

FUNCTION
Press the bottom button to skip to the next function.

After selecting all four outputs or pressing FUNCTION, the following will be displayed if any outputs have been described as RELEASING:

OUTPUT # <a>
NORMAL

Where “<a>” is the number of the releasing circuit output.
NORMAL/CROSS ZONING
Each releasing circuit can be set up for the normal or cross zoned operation. In NORMAL operation, any alarm initiating zone including LOW AIR ALARM mapped to a releasing output must be in alarm before the output is activated. In cross zoned operation ALL initiating zones mapped to the releasing circuit must be in alarm before the output is activated. An initiating zone previously described as “MANUAL RELEASE” will override the cross zoning feature.

SET
Press the top button to set the operation displayed.

SELECT
Press the middle button to toggle between NORMAL and CROSS ZONED.

FUNCTION
Press the bottom button to skip to the next function.

After selecting normal or cross zone operation the next function will be displayed as follows:

<table>
<thead>
<tr>
<th>Discharge Time</th>
<th>Continuous</th>
</tr>
</thead>
</table>

RELEASING OUTPUT TIME
This allows the user to determine how long the releasing circuit is energized upon alarm. The available times are 7, 8, 9, 10 and 20 minutes and continuous (Potter recommends Continuous). Use the middle button to scroll through the possible options and the top button to set that option. Press the bottom button to skip to the next function.

SET
Press the top button to set the time displayed.

SELECT
Press the middle button to scroll through the available time.

FUNCTION
Press the bottom button to skip to the next function.

After choosing the discharge time, a display similar to the following will appear:

| Zone 1 | V | Output 1 2 3 4 |

This display is where the outputs are mapped to the initiating zones. Any output that was previously described as “RELEASING” or “ALARM INDICATING” can be mapped to any initiating zones that were described as alarm zones, including zones programmed as LOW AIR ALARM.

Any initiating zone that was described as supervisory will automatically be mapped to outputs described as “SUPERVISORY BELL”, including zones programmed as LOW AIR ALARM. The “v” is pointing to the first available output for the zone indicated on the display. If the output number is displayed, it is turned on for that zone. If the number is not displayed, it is turned off. If an output is not available for that zone, i.e. “SUPERVISORY BELL”, the “v” will skip to the next available output.

SET
Press the top button to set the output to the zone displayed and move to the next available output.

SELECT
Press the middle button to turn the output either on or off (the output number will be displayed when turned on).

FUNCTION
Press the bottom button to skip to the next function.
After all available outputs for the zone displayed are mapped, the display will automatically change to the next zone. After mapping the last zone or skipping to the next function, the following will appear in the display window:

<table>
<thead>
<tr>
<th>B</th>
<th>A</th>
<th>N</th>
<th>N</th>
<th>E</th>
<th>R</th>
<th>M</th>
<th>E</th>
<th>S</th>
<th>S</th>
<th>A</th>
<th>G</th>
<th>E</th>
<th>?</th>
</tr>
</thead>
</table>

CUSTOM MESSAGE

To change the banner message, press the middle button. If you don’t want to change the banner message press the bottom button.

PRESS THE MIDDLE BUTTON TO CHANGE BANNER MESSAGE.

PRESS THE BOTTOM BUTTON TO SKIP TO THE NEXT FUNCTION.

If the middle button was pressed, the following will appear in the display window:

The “^” is pointing to the first character on the top line. Press the top button to scroll one direction through the character set, or press the middle button to scroll the other direction. The entire alphabet, numbers and punctuation are included.

PRESS THE TOP BUTTON TO SCROLL THROUGH THE CHARACTER SET IN ONE DIRECTION.

PRESS THE MIDDLE BUTTON TO SCROLL IN THE OPPOSITE DIRECTION.

PRESS THE BOTTOM BUTTON TO ENTER THE CHARACTER DISPLAYED AND TO MOVE TO THE NEXT POSITION.

After programming the top line (maximum 10 characters), continue this process for the bottom line and the initiating zones. To keep the initiating zones as “ZONE 1”, etc., press the bottom button when they are displayed.

When finished with the last zone, the following will appear in the display window:

<table>
<thead>
<tr>
<th>N</th>
<th>E</th>
<th>W</th>
<th>P</th>
<th>A</th>
<th>S</th>
<th>S</th>
<th>W</th>
<th>O</th>
<th>R</th>
<th>D</th>
<th>=</th>
<th>0</th>
<th>0</th>
<th>0</th>
</tr>
</thead>
</table>

This allows the user to change the password. All panels are shipped from the factory with a password of 000.

PRESS THE TOP BUTTON TO SET THE DISPLAYED NUMBER AND MOVE TO THE NEXT SPACE.

PRESS THE MIDDLE BUTTON TO SCROLL THROUGH THE NUMBERS.

PRESS THE BOTTOM BUTTON TO SKIP THIS FUNCTION.
When finished with this section, the following will appear in the display window:

<table>
<thead>
<tr>
<th>PUSH</th>
<th>PROGRAMMING</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWITCH BACK UP</td>
<td></td>
</tr>
</tbody>
</table>

Quit by returning the programming switch to the left position. The system is now ready for operation.

**PFC-4410-RC / PFC-4410A-RC CUSTOM PROGRAM INFORMATION FOR CHEMICAL BASED EXTINGUISHING SYSTEMS**

If the user has selected program # 0 for a custom configuration of the panel the following will appear in the display window.

| PROGRAM TYPE: WATER BASED |

This display allows the user to select functions for either water or chemical based extinguishing systems. This window is for water based, to toggle from water based to chemical based or visa versa, press the SELECT (middle) button

| SET | Press the top button to set the description displayed into the panel’s program |
| SELECT | Press the middle button to scroll between water or chemical based modes |
| FUNCTION | Press the bottom button to skip to the next function |

After setting the CHEMICAL BASED mode or pressing FUNCTION, the following will appear in the display:

| INITIATING ZONE # 1 | CONVENTIONAL |

**INITIATING ZONE DESCRIPTION**

This allows the user to describe the initiating zones. Nine different descriptions are available. They are:

1) **CONVENTIONAL** - These include smoke detectors, pull stations, heat detectors and other devices put on a conventional zone.
2) **WATERFLOW** - Alarms from waterflow zones are non-silenceable
3) **LINEAR HEAT DETECTION** - These use a special wire with a fuseable insulation
4) **MANUAL RELEASE** - Used to override cross zoning and cause instant release
5) **LOW AIR ALARM** – This is for a low air switch used in a double interlock system. Usually cross zoned with a smoke or heat detector. Activation of this zone creates a supervisory condition on the panel but can still operate the release circuit.
6) **SUPERVISORY** - For monitoring any supervisory function as assigned
7) **TAMPER** - For control valve monitoring
8) **LOW AIR** - Used to detect low air pressure
9) **HIGH AIR** - Used to detect high air pressure

The first four descriptions (CONVENTIONAL, WATERFLOW, LINEAR HEAT DETECTION and MANUAL RELEASE) are Alarm Zones. When activated, they will put the panel into alarm and operate the appropriate output as well as operating the alarm relay.

The 5th description (LOW AIR ALARM) creates a supervisory condition on the panel but can be used to activate the release circuit, this activates the Supervisory relay not the Alarm relay.
The last four descriptions (SUPERVISORY, TAMPER, LOW AIR and HIGH AIR) are Supervisory Zones. When activated, they will put the panel in a supervisory condition and activate any output described as “SUPERVISORY BELL”. They cannot activate the release circuit

**SET**
Press the top button to set the description displayed.

**SELECT**
Press the middle button to scroll through the eight descriptions.

**FUNCTION**
Press the bottom button to skip to the next function.

After describing all initiating zones or skipping to the next function, the following will appear in the display window:

```
ZONE 5 IS - SUPERVISORY
```

Zone 5 is a supervisory zone and can only be described as SUPERVISORY, TAMPER, LOW AIR or HIGH AIR.

**SET**
Press the top button to set the description displayed.

**SELECT**
Press the middle button to scroll through the four supervisory descriptions.

**FUNCTION**
Press the bottom button to skip to the next function.

After describing what the supervisory zone is to be or skipping to the next function, the following will appear in the display window:

```
OUTPUT #1 INDICATING
```

OUTPUT DESCRIPTION
This allows the user to describe the functions of the output circuits and whether they indicate first or second alarm, or release activated. Four descriptions are available:

1) ALARM INDICATING - Indicating appliances include bells, horns, strobes and other appliances used to indicate an alarm. These outputs are also programmable as first or second alarm. The outputs programmed as first alarm will activate continuously until the release circuit operates. It will then operate in a temporal pattern. Outputs programmed as second alarm will continue to operate in a continuous mode.

2) RELEASING - Releasing appliances include solenoids and other electrically compatible devices.

3) SUPERVISORY BELL - Appliances on this circuit are used to indicate the presence of a supervisory condition. Any zone programmed as LOW AIR ALARM, SUPERVISORY, TAMPER, HIGH AIR or LOW AIR is automatically mapped to this output.

4) TROUBLE BELL - Appliances on this circuit are used to indicate the presence of a trouble condition.

The user should describe each output circuit in the same manner as the initiating circuit was described by pressing the middle button to select and the top button to set the desired function.

**SET**
Press the top button to set the description displayed.

**SELECT**
Press the middle button to scroll through the descriptions.

**FUNCTION**
Press the bottom button to skip to the next function.
After selecting an output as INDICATING, a display similar to the following will appear:

| OUT | PUT | # | <a> | NORMAL |

Where “<a>” is the number of the indicating circuit output.

FIRST OR SECOND ALARM
Each output programmed as INDICATING can be designated to operate on first or second alarm. First alarm is identified as NORMAL, second alarm is identified as 2ND ALARM. Any outputs programmed as INDICATING & NORMAL will operate when the zone they are mapped to is activated. These outputs will switch to a temporal pattern when the release circuit activates. Any output programmed as INDICATING & 2ND ALARM will operate when two or more zones mapped to it are activated. These outputs will operate in a continuous pattern even after the release circuit activates.

CAUTION:
An output programmed as INDICATING & 2ND ALARM that has only one initiating zone mapped to it will never operate. Likewise, if multiple zones are mapped to that output and only one zone activates, that output will not operate until another zone mapped to it activates.

SET
Press the top button to set the description displayed.

SELECT
Press the middle button to scroll between NORMAL & 2ND ALARM

FUNCTION
Press the bottom button to skip to the next function.

After selecting all four outputs or pressing FUNCTION, the following will be displayed if any outputs have been described as RELEASING:

| OUT | PUT | # | <a> | NORMAL |

Where “<a>” is the number of the releasing circuit output.

NORMAL/CROSS ZONING
Each releasing circuit can be set up for the normal or cross zoned operation. In NORMAL operation, any alarm initiating zone including LOW AIR ALARM mapped to a releasing output must be in alarm before the output is activated. In cross zoned operation ALL initiating zones mapped to the releasing circuit must be in alarm before the output is activated. An initiating zone previously described as “MANUAL RELEASE” will override the cross zoning feature.

SET
Press the top button to set the operation displayed.

SELECT
Press the middle button to toggle between NORMAL and CROSS ZONED.

FUNCTION
Press the bottom button to skip to the next function.

After selecting normal or cross zone operation the next function will be displayed as follows:

<table>
<thead>
<tr>
<th>AL</th>
<th>PRE- DISCHARGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SECONDS</td>
</tr>
</tbody>
</table>

Pre-Discharge timer for alarm zones
A time delay of 0-60 seconds can be entered to delay the activation of the release circuit. The pre-discharge timer starts when all
of the zones necessary for the operation of the release circuit have been activated. Pressing the middle button increases the time delay by one second. Pressing the middle button after 60 seconds is displayed will start the timer over at 0.

SET
Press the top button to set the time displayed.

SELECT
Press the middle button to increase the time by one second.

FUNCTION
Press the bottom button to skip to the next function.

If a zone has not been programmed as MANUAL RELEASE, skip to the next programming step.

If a zone has been programmed as MANUAL RELEASE, the following will appear in the display window after choosing an alarm zone pre-discharge time:

<table>
<thead>
<tr>
<th>M</th>
<th>R</th>
<th>P</th>
<th>R</th>
<th>E</th>
<th>D</th>
<th>I</th>
<th>S</th>
<th>C</th>
<th>H</th>
<th>A</th>
<th>R</th>
<th>G</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>S</td>
<td>E</td>
<td>C</td>
<td>O</td>
<td>N</td>
<td>D</td>
<td>S</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Pre-Discharge timer for MANUAL RELEASE zones
A time delay of 0-30 seconds can be entered to delay the activation of the release circuit. The pre-discharge timer starts when the manual dump zone has been activated. Pressing the middle button increases the time delay by one second. Pressing the middle button after 30 seconds is displayed will start the timer over at 0.

SET
Press the top button to set the time displayed.

SELECT
Press the middle button to increase the time by one second.

FUNCTION
Press the bottom button to skip to the next function.

After choosing an alarm zone pre-discharge time, the following will appear in the display window:

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>O</th>
<th>R</th>
<th>T</th>
<th>T</th>
<th>Y</th>
<th>P</th>
<th>E :</th>
</tr>
</thead>
<tbody>
<tr>
<td>U</td>
<td>L</td>
<td>I</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Abort modes
The abort function is used to stop the release circuit from activating. Activation of the abort circuit will create a trouble condition. There are three different abort modes.

ULI – Activation of the abort circuit will stop the pre-discharge timer at 10 seconds. If the time is less than 10 seconds, it will go back to 10 seconds. Releasing the abort button re-starts the timer. Pressing it again will stop the timer again.

IRI – This mode, only functions if the release circuit is cross zoned. The IRI mode has the same functions as the ULI mode except the abort button must be pressed and held before the second zone necessary for the activation of the release circuit goes into alarm. Activation of the abort after the second alarm is received will have no effect. If the release circuit is not cross zoned, operation of the abort circuit in the IRI mode will not stop the release circuit.

NYC – This mode is not UL listed. This is a one shot function. Activation of the abort circuit will add 90 seconds to the original pre-discharge time. The countdown with the additional 90 seconds will begin when the abort button is released. Pressing the abort button again will have no effect.
The abort zone is a non-latching zone. In order for the abort function to operate, the abort button must be pressed and held continuously. Releasing the abort button will continue the pre-discharge timer.

The abort function will not prevent the activation of the release circuit if a zone programmed as MANUAL RELEASE has been activated. MANUAL RELEASE always overrides the abort function.

The abort function will not prevent the activation of the release circuit if there is no pre-discharge time set or if the pre-discharge time is 1 second or less when the abort button is pressed.

The next function will be displayed as follows:

```
  D I S C H A R G E  T I M E
  C O N T I N U O U S
```

**RELEASING OUTPUT TIME**

This allows the user to determine how long the releasing circuit is energized upon alarm. The available times are 7, 8, 9, 10, 20 minutes and continuous. Use the middle button to scroll through the possible options and the top button to set that option. Press the bottom button to skip to the next function.

**SET**

Press the top button to set the time displayed.

**SELECT**

Press the middle button to scroll through the available time.

**FUNCTION**

Press the bottom button to skip to the next function.

After a discharge time is entered, a display similar to the following will appear:

```
  Z O N E  1  V
  O U T P U T S :  1  2  3  4
```

This display is where the outputs are mapped to the initiating zones. Any output that was previously described as “RELEASING” or “ALARM INDICATING” can be mapped to any initiating zones that were described as alarm zones, including zones programmed as LOW AIR ALARM. Any initiating zone that was described as supervisory will automatically be mapped to outputs described as “SUPERVISORY BELL”, including zones programmed as LOW AIR ALARM. The “v” is pointing to the first available output for the zone indicated on the display. If the output number is displayed, it is turned on for that zone. If the number is not displayed, it is turned off. If an output is not available for that zone, i.e. “SUPERVISORY BELL”, the “v” will skip to the next available output.

**SET**

Press the top button to set the output to the zone displayed and move to the next available output.

**SELECT**

Press the middle button to turn the output either on or off (the output number will be displayed when turned on).

**FUNCTION**

Press the bottom button to skip to the next function.

After all available outputs for the zone displayed are mapped, the display will automatically change to the next zone. After mapping the last zone or skipping to the next function, the following will appear in the display window:

```
  B A N N E R  M E S S A G E ?
  C U S T O M  M E S S A G E
```
To change the banner message, press the top or middle buttons. If you don’t want to change the banner message press the bottom button. If the top or middle button was pressed, the following will appear in the display window:

The “^” is pointing to the first character on the top line. Press the top button to scroll one direction through the character set, or press the middle button to scroll the other direction. The entire alphabet, numbers and punctuation are included.

SET   Press the top button to scroll through the character set in one direction.

SELECT  Press the middle button to scroll in the opposite direction.

FUNCTION  Press the bottom button to enter the character displayed and to move to the next position.

After programming the top line (maximum 10 characters), continue this process for the bottom line and the initiating zones. To keep the initiating zones as “ZONE 1”, etc., press the bottom button when they are displayed.

When finished with the last zone, the following will appear in the display window:

This allows the user to change the password. All panels are shipped from the factory with a password of 000.

SET   Press the top button to set the displayed number and move to the next space.

SELECT  Press the middle button to scroll through the numbers.

FUNCTION  Press the bottom button to skip this function.

When finished with this section, the following will appear in the display window:

Quit by returning the programming switch to the left position. The panel is now ready for operation.

**PFC-4410 / PFC-4410A PROGRAMMING SUMMARY**
- Examine History Buffer
- Set Time
- Enter Password
- Enable/Disable Initiating Zones
- Enable/Disable Output Zones
- System Mode - Normal/One Man Walktest
- Select Program - #0 thru #25
Custom Program (#0 only)

<table>
<thead>
<tr>
<th>Alarm Zones</th>
<th>Supervisory Zones</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conventional</td>
<td>Supervisory</td>
</tr>
<tr>
<td>Waterflow</td>
<td>Tamper</td>
</tr>
<tr>
<td>Linear Heat Detection</td>
<td>Low Air</td>
</tr>
<tr>
<td>Manual Dump</td>
<td>Hi Air</td>
</tr>
<tr>
<td>Hi Air Alarm</td>
<td></td>
</tr>
</tbody>
</table>

- Describe Initiating Zone 5 (dedicated supervisory)
  - Supervisory
  - Tamper
  - Low Air
  - Hi Air

- Describe Output Zones
  - Alarm Indicating
  - Releasing
  - Supervisory Bell
  - Trouble Bell

  1) Releasing circuits: normal/cross-zoned
  2) Discharge time: 7, 8, 9, 10, 20 minutes or continuous

- Map Alarm Inputs to Outputs
- Put in Banner Message
- Put in Banner Message Bottom Line
- Put Zone Description for Each Initiating Zone
- Change Password
- Finished

---

**INSTALLATION INSTRUCTIONS**

Read the entire manual before attempting to install this panel.

**Model PFC-4410-RC and PFC-4410A-RC:**

**NOTICE**

This panel wiring should be installed and maintained in accordance with section 760 (Fire Protection Signaling Systems) and all other applicable sections of the National Electrical Code, all other applicable NFPA Code and Standards, local code and the authority having jurisdiction. Review the circuit parameters listed below before installing the panel.

**Model PFC-4410A-RC:**

**CAUTION:** This panel wiring should be installed and maintained in accordance with CAN/ULC-S524M, (Standard for the Installation of Fire Alarm Systems), and all other applicable sections of the Canadian Electrical Code, all other applicable NFPA Code and Standards, local code and the authority having jurisdiction. Review the circuit parameters listed below before installing the panel.

**NOTICE**

All wiring terminals support 14 to 18 AWG sizes. 18 AWG stranded or solid copper wire, (or wire size rated for the current carrying capacity of the circuit application), with 300V, 85°C insulation is recommended.

**CIRCUIT PARAMETERS:**

1) Alarm and Supervisory Initiating Device Circuits:

Maximum Standby Voltage - 23VDC, Minimum - 13.4VDC
Maximum short circuit current - approximately 36 mA. (power limited)
Maximum circuit resistance - 100 ohms (except with linear heat detection)
Maximum 2 wire detector load (per zone)- 2.5 mA (use only detectors that are listed in compatibility list)
Maximum impedance for alarm - 1400 ohms
Normal supervisory current - approximately 4.0 mA
Low current trouble - approximately 3.3 mA
Activation current - approximately 10 mA

2) Dedicated Supervisory Circuit:
Use supervisory devices with normally open contacts
Maximum voltage - 23.0VDC
Maximum short circuit current - approximately 36 mA (power limited)
Maximum circuit resistance - 100 ohms
Normal supervisory current - approximately 4.0 mA
Low current trouble - approximately 3.3 mA
Supervisory condition current - approximately 10 mA

3) Output circuit(s):
Use any listed polarized indicating appliances rated 24VDC
Maximum voltage - 26.5VDC
Maximum current 1.0 Amps per circuit (2.5 Amps total of all outputs combined)
Maximum short circuit current - 1.5 Amps (power limited)
Maximum circuit resistance - dependent on loading
Normal supervisory current - approximately 0.38 mA
Low current trouble - approximately 0.11 mA
High current trouble - approximately 0.63 mA

4) Auxiliary power circuit:
Maximum voltage - 26.5VDC
Maximum combined current - 200 mA (power limited)

Wire checkout:
With all initiating devices and notification appliances installed and with the EOLR’s in place, check the wires with an ohmmeter.
Meter readings outside of the following will prevent normal operation.
From any wire to ground – more than 100K ohms.
Across the 2 wires on each initiating zone – between 1.8K ohms and 5.4K ohms.
Across the 2 wires on each notification circuit – between 1.8K ohms and 23.9K ohms.

MOUNTING INSTRUCTIONS:
1) The unit should be mounted in a convenient location, approximately 5 ft. from the floor where it will be accessible for testing and servicing.

1a) PFC-4410A-RC ONLY: False front panel must be removed from the enclosure, see assembly drawing on page 75. Remove the six mounting screws that secure the false front to the enclosure. Remove false front, taking care to not damage LED annunciator module cable. Carefully remove LED annunciator module cable from header J3, see connection drawing on page 79, and proceed to remove main circuit board module.

**WARNING**
Removal of this false front exposes electrical components at potentially hazardous voltages and should be performed by qualified personnel only.

2) The main circuit board module should be removed before attempting to mount the cabinet. Disconnect the AC power from TB201. To remove the module, remove the two screws holding the chassis to the cabinet. Lift the module upwards, approximately 1/2", in order to clear the cross-beam of the cabinet on which the module rests. Remove the module and set aside.
3) The PFC unit may be surface mounted or semi-flush mounted using the optional trim bezel. (See drawing for installation of bezel on page 84). For semi-flush installations mount the housing so that the front edge protrudes 1" from the finished wall surface. After all conduits and wiring are in place and the wall surface is completely finished, slide the trim bezel in place and fasten with 4 #6-32 x 1/4" machine screws and nuts.

4) Install all required conduits, external wiring and devices and make all connections that are external to the panel. Replace the module. (PFC-4410A-RC only: reconnect LED annunciator module cable to header J3 on main board. Ensure that pin 1 of cable, noted by red marking stripe, mates to pin 1 of header J3.) With the AC power still turned off at the circuit breaker panel, connect the AC hot, neutral and ground wires to the terminal block TB201 as shown on the connection drawing. (See connection drawings on page 79)

5) Connect all the other wiring to the terminals as shown in the connection drawings. Turn the AC power on and connect the standby batteries with the cable provided, polarity must be observed.

5a) PFC-4410A-RC ONLY: Replace false front panel and secure with mounting screws, taking care to not damage LED annunciator module cable.

6) The operation of the complete system should be verified as outlined in the test procedure section.
INACTIVE CIRCUITS

All inactive initiating device circuits and indicating appliance circuits must have the end-of-line resistor on the panel terminal.

OPERATING INSTRUCTIONS FORM

Fill in the name, address and telephone number of the servicing agency on the appropriate instruction sheet provided and frame and place adjacent to control panel at eye level.

BATTERY SIZE CALCULATIONS

To use Calculation Table:

1) List in column #1 all devices used in the system, include all modules, bells, horns, door holders, and smoke detectors (see table #1 or manufacturers specifications).
2) List in column #2 the quantity of each device.
3) List in column #3 the standby current of each device (exclude all signal indicating devices).
4) List in column #5 the alarm current of each device.
5) For each line, multiply the figure in column #2 by the figure in column #3 and enter the product in column #4. Then multiply the figure in column #2 by the figure in column #5 and enter the product in column #6.
6) Add the figures in columns #3 and #6, enter the sums in the appropriate Total mA box.
7) Convert these figures from milliamperes to amperes by multiplying by 0.001, enter the product in the appropriate Total A box.
8) Multiply the standby total amperes by required time in hours from table 2.
9) Divide the alarm total amperes by 12 (5 mins.).
10) Add the standby AH and the alarm AH and divide this sum by 0.85 (efficiency factor). Select a battery that has an AH rating above this figure but not less than 6.5AH.

BATTERY SIZE REQUIREMENTS AND MAINTENANCE

These panels require a 24 volt gel-cell battery for proper operation. 24 hours of standby power is required for Local Systems and Central Station (NFPA-72).

The chart below will assist you in selecting the proper size battery: (Does not include LED Annunciator)

<table>
<thead>
<tr>
<th>No. of Smoke Detectors</th>
<th>No. of Bells (100mA each)</th>
<th>Auxiliary Power Requirements</th>
<th>Standby Hours Required</th>
<th>Battery Size/Part No. (2 Req.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-100</td>
<td>0-10</td>
<td>0-25mA</td>
<td>24</td>
<td>8AH/5130084/BT 80</td>
</tr>
<tr>
<td>0-100</td>
<td>0-10</td>
<td>0mA</td>
<td>90</td>
<td>12AH/5130090/BT 120</td>
</tr>
<tr>
<td>0-100</td>
<td>0-10</td>
<td>0-30mA</td>
<td>90</td>
<td>18AH/5130086/BT 180</td>
</tr>
</tbody>
</table>

Maximum allowed battery size for UL applications is 12AH. FM and others may require more than 24 hours of standby time and may use larger batteries. Batteries rated above 12AH require a separate battery cabinet (Potter Model BC-2). Mark the purchase date on the batteries. Test the batteries at least semi annually according to the battery test methods in NFPA72 or the battery manufacturers instructions. Replace the batteries if they either fail the test or after four years of use. The PFC-4410-RC and the PFC-4410A-RC are capable of charging 24 AH batteries, (FM Applications only).
TABLE 1  CURRENT REQUIREMENTS

<table>
<thead>
<tr>
<th>Module/Device</th>
<th>Standby mA*</th>
<th>Alarm mA*</th>
</tr>
</thead>
<tbody>
<tr>
<td>PFC-4410-RC</td>
<td>92</td>
<td>215</td>
</tr>
<tr>
<td>RA-4410-RC</td>
<td>12</td>
<td>12</td>
</tr>
</tbody>
</table>

*Add 23 mA plus current requirement of all devices connected for each output programmed as Trouble Bell
**Includes one zone short circuit current.

TABLE 2  SECONDARY POWER SUPPLY REQUIREMENTS

<table>
<thead>
<tr>
<th>Service Use</th>
<th>Standby Time</th>
<th>Alarm Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>NFPA 72</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Central Station (PPU)</td>
<td>24 hrs.</td>
<td>5 mins.</td>
</tr>
<tr>
<td>• Local</td>
<td>24 hrs.</td>
<td>5 mins.</td>
</tr>
<tr>
<td>FMRC 1011 and 1012, Deluge and Pre-action Systems</td>
<td>90 hrs.</td>
<td>10 mins.</td>
</tr>
<tr>
<td>Where requested by FM or others.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>90 Hours is not a UL requirement.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CALCULATION TABLE

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Module/Device</td>
<td>Quantity</td>
<td>Standby mA Per Unit</td>
<td>Total Standby Current</td>
<td>Alarm mA Per Unit</td>
<td>Total Alarm Current</td>
</tr>
<tr>
<td>---------------</td>
<td>----------</td>
<td>---------------------</td>
<td>-----------------------</td>
<td>------------------</td>
<td>--------------------</td>
</tr>
</tbody>
</table>

Total mA
Convert to A  x 0.001
Total A
Multiply by hours from table 2  x ___
Total Standby AH

Total mA
Convert to A  x 0.001
Total A
5 min/12 or 10 min/6  + ___
Total Alarm AH

Use a battery with a higher AH rating than Required AH
TYPICAL 2 WIRE DETECTOR CONNECTION DRAWING
Base wiring for Potter models IS-24 Ionization Detectors and PS-24 Photoelectric Detectors.

TYPICAL STYLE B (CLASS B) WIRING USING SB-46 BASE
(These bases can be used in style B or Style D wiring)

TYPICAL STYLE D (CLASS A) WIRING
(These bases can be used in style B or style D wiring)

Note: The 6" diameter bases will mount on a 3" or 4" octagon box or a 4" square box.
PFC-4410-RC AND PFC-4410A-RC CONNECTION DRAWING
FOR ADDITIONAL INFORMATION SEE TEXT IN THIS MANUAL
IDENTIFIER A

NOTES:
1.) USE ONLY SMOKE DETECTORS THAT ARE LISTED IN COMPATIBILITY LIST, ON INSIDE OF DOOR.
2.) LEAVE END OF LINE RESISTORS ON INACTIVE CIRCUITS.
3.) ALL CIRCUITS POWERED BY THIS CONTROL PANEL ARE SUPERVISED AND POWER LIMITED.
4.) COMBINED LOAD OF ALL EXTERNAL DEVICES INCLUDING INDICATING AND RELEASING APPLIANCES IS NOT TO EXCEED 2.5 AMPS. REGULATED 24VDC MAXIMUM RMS VOLTAGE RANGE LIMIT, 16-33 VDC.
5.) COMMON RELAY CONTACTS RATED 3A 30VDC RESISTIVE.
COMMON RELAY CONTACTS ARE SHOWN IN THE NORMAL CONDITION, NOT TO BE USED FOR MOTOR LOADS OR PILOT DUTY APPLICATION.
6.) AUXILIARY POWER
FOR LIMITATIONS, SEE SECTION "BATTERY SIZE REQUIREMENTS" combined load on these terminals not to exceed 200mA MAX.
SEE SECTION ON "COMPATIBILITY DATA".
7.) FOR MAX. CURRENT, RESISTANCE, AND MIN. BATTERY VOLTAGE, SEE SECTION ON "RELEASING CIRCUIT".
FOR LIST OF COMPATIBLE SOLENOIDS AND VALVES, SEE SECTION ON "EXTINGUISHING AGENT CONTROL VALVE COMPATIBILITY DATA".
8.) POLARITY SHOWN ON BELL AND RELEASING CIRCUITS IS FOR NORMAL STANDBY CONDITION. REVERSES TO ACTIVATE DEVICES.
CONNECT THE NEGATIVE LEAD OF THE INDICATING APPLIANCE TO THE POSITIVE TERMINAL OF THE PANEL.
9.) END OF LINE DIODE ASSEMBLY (PART #3005012) MUST BE LOCATED AT SOLENOID VALVE LOCATION.
10.) POWER AND COMMUNICATION FOR RA-4 ANNUNCIATOR. SHIELDED CABLE MUST USED FOR THE RS-485 CONNECTION, MAXIMUM 2000' WITH 22 AWG OR 4000' WITH 20 AWG WIRE.
REMOVE 120 OHM RESISTOR FROM PANEL AND PLACE ON LAST ANNUNCIATOR.
11.) ROTARY SWITCH FOR REMOTE ANNUNCIATOR SWITCH TO NUMBER OF ANNUNCIATORS (4 MAX).
## 2-Wire Smoke Detector Compatibility Data

### System Sensor (BRK) (Max. No. of Detectors Per Zone Is 20)

<table>
<thead>
<tr>
<th>DET. MODEL</th>
<th>IDENTIFIER</th>
<th>BASE MODEL</th>
<th>IDENTIFIER</th>
</tr>
</thead>
<tbody>
<tr>
<td>1400*</td>
<td>A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>2400*</td>
<td>A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>2400TH*</td>
<td>A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>2W-B</td>
<td>A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>2WT-B</td>
<td>A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>2WTR-B</td>
<td>A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

### Detection Systems (Max. No. of Detectors Per Zone Is 25)

<table>
<thead>
<tr>
<th>DET. MODEL</th>
<th>IDENTIFIER</th>
<th>BASE MODEL</th>
<th>IDENTIFIER</th>
</tr>
</thead>
<tbody>
<tr>
<td>DS250</td>
<td>A</td>
<td>MB2W/MB2WL</td>
<td>A</td>
</tr>
<tr>
<td>DS250TH</td>
<td>A</td>
<td>MB2W/MB2WL</td>
<td>A</td>
</tr>
<tr>
<td>DS250HD</td>
<td>A</td>
<td>MB2W/MB2WL</td>
<td>A</td>
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</table>

### ESL (Max. No. of Detectors Per Zone Is 25)

<table>
<thead>
<tr>
<th>DET. MODEL</th>
<th>IDENTIFIER</th>
<th>BASE MODEL</th>
<th>IDENTIFIER</th>
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<tbody>
<tr>
<td>611U</td>
<td>S10</td>
<td>601U</td>
<td>S00</td>
</tr>
<tr>
<td>611UD</td>
<td>S10</td>
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<td>S00</td>
</tr>
<tr>
<td>611UT</td>
<td>S10</td>
<td>601U</td>
<td>S00</td>
</tr>
<tr>
<td>612U</td>
<td>S10</td>
<td>601U</td>
<td>S00</td>
</tr>
<tr>
<td>612UD</td>
<td>S10</td>
<td>601U</td>
<td>S00</td>
</tr>
<tr>
<td>613U5</td>
<td>S10</td>
<td>601U</td>
<td>S00</td>
</tr>
<tr>
<td>611UD</td>
<td>S10</td>
<td>609U10</td>
<td>S00</td>
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<tr>
<td>612UD</td>
<td>S10</td>
<td>609U10</td>
<td>S00</td>
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<tr>
<td>425C</td>
<td>S10</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>425CT</td>
<td>S10</td>
<td>N/A</td>
<td>N/A</td>
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### Hochiki (Max. No. of Detectors Per Zone Is 25)

<table>
<thead>
<tr>
<th>DET. MODEL</th>
<th>IDENTIFIER</th>
<th>BASE MODEL</th>
<th>IDENTIFIER</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLR-24*</td>
<td>HD-3</td>
<td>HSC-221R</td>
<td>HB-71</td>
</tr>
<tr>
<td></td>
<td></td>
<td>HSB-221</td>
<td>HB-54</td>
</tr>
<tr>
<td></td>
<td></td>
<td>HSB-221N</td>
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<td></td>
<td>NS6-221</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>NS4-221</td>
<td></td>
</tr>
<tr>
<td>SLR-24H*</td>
<td>HD-3</td>
<td>HSC-221R</td>
<td>HB-71</td>
</tr>
<tr>
<td></td>
<td></td>
<td>HSB-221</td>
<td>HB-54</td>
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<td></td>
<td></td>
<td>HSB-221N</td>
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<td>NS6-221</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>NS4-221</td>
<td></td>
</tr>
<tr>
<td>SIJ-24*</td>
<td>HD-3</td>
<td>HSC-221R</td>
<td>HB-71</td>
</tr>
<tr>
<td></td>
<td></td>
<td>HSB-221</td>
<td>HB-54</td>
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<tr>
<td></td>
<td></td>
<td>HSB-221N</td>
<td>HB-54</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NS6-221</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>NS4-221</td>
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</tr>
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</table>

### Fenwal (Max. No. of Detectors Per Zone Is 25)

<table>
<thead>
<tr>
<th>DET. MODEL</th>
<th>IDENTIFIER</th>
<th>BASE MODEL</th>
<th>IDENTIFIER</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPD-7051*</td>
<td>I51FE1</td>
<td>2-WIRE</td>
<td>FE51A</td>
</tr>
<tr>
<td>PSD-7155*</td>
<td>P55FE1</td>
<td>2WRLET</td>
<td>FE52A</td>
</tr>
<tr>
<td>PSD-7156*</td>
<td>P56FE1</td>
<td>2WRB</td>
<td>FE55A</td>
</tr>
</tbody>
</table>

All of the above Fenwal detectors and bases can be used in any combination.

Retrofit Base Adaptor 70-501000-003, Identifier MAFE1 (for series 70-201000 Bases, Models -001, -002, -003 and -005)

Duct Housing with Detector Base DH-51, Identifier DH22FE5 (for CPD-7051 and PSD-7155 detectors only)

### Potter (Max. No. of Detectors Per Zone Is 25)

<table>
<thead>
<tr>
<th>DET. MODEL</th>
<th>IDENTIFIER</th>
<th>BASE MODEL</th>
<th>IDENTIFIER</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS-24*</td>
<td>HD-3(HOCHIKI)</td>
<td>SB-46</td>
<td>HB-71(HOCHIKI)</td>
</tr>
<tr>
<td>PS-24H</td>
<td>HD-3(HOCHIKI)</td>
<td>SB-46</td>
<td>HB-71(HOCHIKI)</td>
</tr>
<tr>
<td>IS-24*</td>
<td>HD-3(HOCHIKI)</td>
<td>SB-46</td>
<td>HB-71(HOCHIKI)</td>
</tr>
</tbody>
</table>

*UL and ULC Listed

**Notice**

Only one detector can be supported in alarm per zone.
### Automatic Water Control Valves Compatibility Data

<table>
<thead>
<tr>
<th>Using The Following Solenoids</th>
<th>Water Valve Manufacturers</th>
<th>Water Valve Designation</th>
<th>Size NPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASCO Solenoid Valve Model T8210A107</td>
<td>Figgie Fire Protection Systems (Formally ASCOA)</td>
<td>Model D and F</td>
<td>2 1/2”, 4”, 6”</td>
</tr>
<tr>
<td>Model R8210A107</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 8210A107 24 VDC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SKINNER Solenoid Valve Model 73218BN4UNLVMNOC111C2 24 VDC</td>
<td>Grinnell Corp.</td>
<td>Grinnell or Gem Model A-4</td>
<td>4”, 6”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Grinnell or Gem Model B</td>
<td>2”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Grinnell or Gem Model F445</td>
<td>2 1/2”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Grinnell or Gem Model F470</td>
<td>4”, 6”</td>
</tr>
<tr>
<td>SKINNER Solenoid Valve Model 73218BN4UNLVMNOC111C2 24 VDC</td>
<td>Central Sprinkler</td>
<td>Model A</td>
<td>6”</td>
</tr>
<tr>
<td>Reliable Automatic Sprinkler Co. Inc.</td>
<td>Model A Models B and BX</td>
<td></td>
<td>2 1/2”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4”, 6”</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>100mm, 150mm</td>
<td></td>
</tr>
<tr>
<td>Globe Sprinkler Corp. Model F</td>
<td>Model F</td>
<td></td>
<td>2 1/2”, 4”, 6”</td>
</tr>
<tr>
<td>Star Sprinkler Corp. Model A</td>
<td>Model A</td>
<td></td>
<td>3”, 6”</td>
</tr>
<tr>
<td></td>
<td>Model G</td>
<td></td>
<td>3”, 6”</td>
</tr>
<tr>
<td>ASCO Solenoid Valve Model T8210A107</td>
<td>The Viking Corp.</td>
<td>Model E-1</td>
<td>1 1/2”, 2”, 3”, 4”, 6”</td>
</tr>
<tr>
<td>Model R8210A107</td>
<td></td>
<td></td>
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<tr>
<td>Model 8210A107 24 VDC</td>
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</tr>
</tbody>
</table>

### FM Approval

<table>
<thead>
<tr>
<th>Solenoid Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>A, B, D, E, F, G, H, I, J, K</td>
</tr>
</tbody>
</table>

### Fixed Extinguishing Systems Carbon Dioxide Systems Compatibility Data

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Actuator</th>
<th>Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fike Protection Systems Division of Fike, Inc.</td>
<td>C85-102 CO2 Solenoid</td>
<td>24 VDC</td>
</tr>
<tr>
<td>Fike Protection Systems Division of Fike, Inc.</td>
<td>Interface Firing Module P/N 10-2136*</td>
<td>24 VDC</td>
</tr>
</tbody>
</table>

### Alarm Indicating Appliance Compatibility Data

- All Alarm Indicating Appliances must be UL Listed, 24 VDC devices

* ULC Listed
WIRE ROUTING FOR PFC-4410-RA AND PFC-4410A-RC*
(*Shown with false front removed)

1 POWER INPUTS
2 BATTERY LEADS
3 USING THE CABLE CLAMPS PROVIDED, ROUTE ALL OTHER WIRING AWAY FROM POWER INPUT WIRING.

NOTICE
ALL FIELD INSTALLED WIRING CONNECTED TO THIS PANEL MUST MAINTAIN A SPACING OF 1/4" BETWEEN ALL ELECTRIC LIGHT, POWER, CLASS 1 OR NON-POWER LIMITED FIRE PROTECTIVE SIGNALING CONDUCTORS.
NEC Section 760-54. Installation of Conductors and Equipment.

(a) Separation from Electric Light, Power, Class 1, and NPLFA Circuit Conductors.

(1) In Cables, Compartments, Enclosures, Outlet Boxes, or Raceways. Power-limited circuit conductors shall not be placed in any cable, compartment, enclosure, outlet box, raceway, or similar fitting containing conductors of electric light, power, Class 1, or nonpower-limited fire alarm circuit conductors.

Exception No. 1: Where the conductors of electric light, power, Class 1, or nonpower-limited fire alarm circuit conductors are separated by a barrier from the power-limited fire alarm circuits. In enclosures, power-limited fire alarm circuits shall be permitted to be installed in a raceway within the enclosure to separate them from Class 1, electric light, power, and nonpower-limited fire alarm circuits.

Exception No. 2: Conductors in compartments, enclosures, device boxes, outlet boxes, or similar fittings, where electric light, power, Class 1, or nonpower-limited fire alarm circuit conductors are introduced solely to connect to the equipment connected to power-limited circuits to which the other conductors are connected, and

a. The electric light, power, Class 1, and nonpower-limited fire alarm circuit conductors are routed to maintain a minimum of 0.25 in. (6.35mm) separation from the conductors and cables of power-limited fire alarm circuits, or

b. The circuit conductors operate at 150 volts or less to ground and also comply with one of the following:

1. The fire alarm power-limited circuits are installed using Types FPL, FPLR, FPLP or permitted substitute cables, provided these power-limited cable conductors extending beyond the jacket are separated by a minimum of 0.25 in. (6.35mm) or by a nonconductive sleeve or nonconductive barrier from all other conductors, or

2. The fire alarm power-limited circuit conductors are installed as nonpower-limited fire alarm circuits in accordance with Section 760-25.

Exception No. 3: Conductors entering compartments, enclosures, device boxes, outlet boxes, or similar fittings, where electric light, power, Class 1, or nonpower-limited fire alarm circuit conductors are introduced solely to connect to the equipment connected to power-limited fire alarm circuits or to other circuits controlled by the fire alarm system to which the other conductors in the enclosure are connected. If the conductors must enter an enclosure that is provided with a single opening, they shall be permitted to enter through a single fitting (such as a tee) provided the conductors are separated from the conductors of the other circuits by a continuous and firmly fixed nonconductor, such as flexible tubing.
CONNECTION PROCEDURE FOR BATTERY CHARGING CURRENT AND VOLTAGE

1) To measure the battery charging voltage:
   Place a voltmeter across the battery terminals as shown in FIG. 4.

2) To measure the battery charging current:
   Place a current meter in series with the battery terminals as shown in FIG. 5.

INSTALLATION OF BEZEL FOR SEMI-FLUSH INSTALLATIONS

(4) #6-32 X 1/4" MACHINE SCREWS AND NUTS
See PFC-7500 Manual 8910225 for programming information.
See PFC-7500 Manual 8910227 for installation instructions.

Note: PFC-7500 requires RA-7690 LCD Annunciator for programming.