Advanced Integrated Fire Protection Systems

TOTALPac® 3
Owner's Operation and Maintenance Manual

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General

1. Applicable Standards
The TOTALPAC®3 complies with the following standards:
- NFPA-13 Sprinkler Systems;
- NFPA-15 Water Spray Fixed Systems;
- NFPA-16 Foam-Water Deluge and Foam-Water Spray Systems;
- NFPA-72 Fire Alarm Systems.
Before the installation, the contractor installing the unit shall be familiar with the following documents and standards:
- Applicable Local & State Building Codes
- Any additional requirements of the Local Authority Having Jurisdiction.

2. Listings and Approvals
In addition to being fabricated under tight ISO-9001 manufacturing and quality control procedures, your TOTALPAC®3 Unit has also been tested and approved by recognized laboratories. Here is the list of Listings & Approvals it meets:
- Underwriters Laboratories Inc. (UL): Preaction TOTALPAC®3 systems are UL Listed under “Special System Water Control Valves - Assembled Units, category # VKYL.EX4641” and “Assembled Units Certified for Canada, Category # VKYL7.EX4641 (C-UL)”.
- Factory Mutual Research <FM>: Preaction TOTALPAC®3 systems are FM Approved under the heading: "Automatic Water Control Valves" when installed with specific components.

Note: Although most TOTALPAC®3 units are Listed, custom built units are sometimes supplied on request. Components in these special units maintain their individual Listings/Approvals but the units are not Listed as an assembled unit.

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

3. Environment
TOTALPAC®3 units shall be installed in a dry and clean location. Verify that all equipment is properly heated and protected to prevent freezing and physical damage. The unit and its components must be kept free of foreign matter, freezing conditions, corrosive atmospheres, contaminated water supplies, and any condition that could impair its operation or damage the components. The frequency of the inspections and maintenance will vary depending on these environmental conditions. The owner is responsible for maintaining the fire protection system and devices in proper operating condition. Refer to MECHANICAL DESCRIPTION for maintenance instructions.
4. General Description

There are several types of deluge systems, but all of them use open type sprinklers and/or spray nozzles in the sprinkler piping which totally flood an area with pressurized water. A detection network is used in parallel with the open type sprinkler/ nozzles system. This network may be hydraulic, pneumatic or electric and may be actuated by manual, fixed temperature, rate-of-rise temperature, smoke or other means. When the detection system operates it gives an alarm and activates the deluge valve. Because deluge systems are often used in extra-hazard occupancies, electrical and pneumatic detection systems are by far the most common.

The TOTALPAC®3 integrated fire protection system by FireFlex Systems Inc. consists of a deluge system trim totally pre-assembled, pre-wired and factory tested. All electrical and mechanical components of the system are contained in one single unit.

Note: Skid units include the trim components only and must be wired by the installing contractor.

The only connections required for installation are the water supply inlet, water discharge outlet, main drain, and the electrical detection and alarm connections. The discharge outlet is connected to a fixed piping system of open sprinklers and/or nozzles. Water is the extinguishing agent.

Deluge systems are usually supervised. The TOTALPAC®3 system is supervised in order to monitor its integrity. The electrical detectors and associated wiring are also supervised.

The most common applications are protection of extra-hazard occupancies by creating a fire buffer zone or by cooling surfaces to prevent deformation or structural collapse. Examples: storage or process areas containing substances having a low flash point; areas in which fire may spread rapidly; tanks containing combustible solutions, transformers, equipment pits or product handling systems.

Systems should be designed by qualified fire-protection engineers in conjunction with the appropriate Authority Having Jurisdiction.

Note: Each TOTALPAC®3 Unit is identified with it’s unique Serial Number. This number is located on a sticker inside the main door panel and is used to maintain a record in our computerized data base. Have this Serial Number handy when calling for information on your unit (format is TOT3#### or TOTS#### for skids).

5. Features

Your TOTALPAC®3 unit is superior than many other products available on the market now and has been manufactured by the company that has introduced and developed the concept of integrated fire protection systems in the market.

Main features are:
- Trouble free design for safe and easy application
- Available in 5 sizes from 1½” to 6” diameter
- Uses the Viking Deluge Valve
- Available and Listed both with or without Integrated Control Panel
- Compact, aesthetic and easy to move
- User-friendly standardized owner’s manual with every unit
- Unique serial number on every unit
- Uses only UL, C-UL Listed and FM Approved components
- Designed in accordance with NFPA Standards
- Trim is fully assembled and tested at the factory
- Water supply and drain connections on both sides, available both with grooved end or flanged fittings
- Sturdy 14 Gauge steel cabinet or skid painted fire red with oven baked polyester powder on phosphate base
- Textured rust proof finish
- Neoprene gasket on all doors to eliminate vibrations
- Easily removable doors for ease of access
- Key-like locks on all cabinet doors
- Manufactured under ISO-9001 quality control procedures.
6. Configurations Description

**TOTALPac** Deluge systems are built around the Viking trim using straight through deluge valves Model F-1 (Model F-2 is the Halar® Coated version for use in corrosive environments).

All the valves are rated up to a maximum of 250 psi WWP (1724 kPa) max. and are available in the following diameters:

- 1½" (40 mm)
- 2" (50 mm)
- 3" (80 mm)
- 4" (100 mm)
- 6" (150 mm)
- 8" (200 mm)

**TOTALPac** Deluge systems are supplied with groove–groove deluge valves. Units with flange–flange deluge valves are also available on request.

7. Release Systems

7a Hydraulic Release. Hydraulically controlled Deluge systems require a hydraulic release system, equipped with fixed temperature releases, and/or pilot heads.

In fire conditions, operation of a releasing device on the hydraulic release system opens the Deluge Valve, allowing water to enter the system piping. Water will flow from any open sprinklers and/or spray nozzles on the system.

7b Pneumatic Release. Pneumatically controlled deluge systems require a pneumatic release system, equipped with fixed temperature releases, and/or pilot heads.

Release trim, for pneumatically controlled deluge systems utilize a Pneumatic Actuator (F3) normally held closed by pressure maintained in the pneumatic release system.

**Note:** The air supply for the pneumatic release piping system must be provided by the contractor and installed outside the **TOTALPac** unit. The air supply must be restricted to ensure that the automatic air supply cannot replace air as fast as it escapes when a releasing device or sprinkler operates. It is also recommended to provide Inspectors Test Connections on both the release system and the sprinkler system.

In fire conditions, operation of the pneumatic release system opens the Deluge Valve, allowing water to enter the system piping. Water will flow from any open sprinklers and/or spray nozzles on the system.

7c Electric Release. Electrically controlled deluge systems require an electric Solenoid Valve (F1) controlled by an approved System Control Panel with compatible detection devices (if provided with this system, see Controls Section for details).

In fire condition, when the detection condition is satisfied the system Control Panel energizes the Solenoid Valve (F1) open, causing the Deluge Valve (A1) to open allowing water to enter the system piping. Water will flow from any open sprinklers and/or spray nozzles on the system.
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1- Installation, Operations & instructions

See Trim Schematic at the end of the current Section

1.1 Installation
1. Install the TOTALPac®3 unit and connect the system according to instruction manual and technical data supplied.

Note: The drain collector shall be connected to an open drain. Do not restrict or reduce drain piping.

2. Install the automatic sprinkler piping, releasing piping detection and signaling circuits (if applicable) in accordance with applicable standards.

3. Conform to local municipal or other codes regarding installations of fire protection systems.

4. Perform preliminary inspection outlined in paragraph 1.2 prior to putting system in service.

5. Put the system into operation Place the system in service as outlined in paragraph 1.3.

6. Perform the annual inspection sequence and test each detector and alarm unit.

7. If the system does not operate as it should, make the necessary corrections according to manuals issued or consult your distributor or FireFlex Systems Inc.

8. Make sure that building owner or a delegated representative has received instructions regarding the operation of the system.

TOTALPac®3 Units must be installed in an area not subject to freezing temperatures or physical damage.

1.2 Preliminary inspection before placing the system in service

1. Open door to mechanical section. Main Water Supply Control Valve (D1) should be CLOSED. Priming valve (B1) must be CLOSED. Air supply if applicable must be CLOSED (see AIR SUPPLY SECTION). Flow Test Valve (B6) and main drain valve (D3) must be CLOSED. Alarm test valve (B5) must be CLOSED. All gauges (B11, B12 and E3) should show 0 psi pressure.

2. Connect all detection and alarm audible devices according to electrical schematics (see TBA field wiring diagram in PROGRAMMING SECTION).

3. If applicable, connect the AC power for the control panel (L1) on a separate breaker in the electric distribution panel (see TBB field wiring diagram in PROGRAMMING SECTION).

Note: Do not use these circuit breakers for other parallel applications. If necessary, equip each circuit breaker with a security seal in order to avoid accidental closing.

4. After the Deluge Valve is set, operation of the Deluge valve requires the release of priming water from the priming chamber. This may be by automatic or manual operation of one of the release systems described above. For specific trim arrangement, refer to the MECHANICAL TRIM DESCRIPTION.

Note: Electric Release: Solenoid valves, system control panels and electrical detectors must be compatible. Consult the CONTROLS SECTION for compatibility charts.
Integrated Fire Protection Systems
Mechanical Section - Deluge System

1.3 Placing the system in service:
(Refer to MECHANICAL TRIM DESCRIPTION and TRIM SCHEMATIC)
1. Verify the following:
   a) The system Main Water Supply Control Valve (D1) is CLOSED.
   b) The system has been properly drained.
   c) Flow Test Valve (B6) is OPEN.
   d) The Emergency Release Valve (B10) is CLOSED.
   e) The system water supply piping is pressurized up to the CLOSED Main Water Supply Valve (D1) and the priming line is pressurized up to the CLOSED Priming Valve (B1).
2. Verify that all releasing devices are set and that any Inspector's test Valve and/or auxiliary drain valves are CLOSED.
   a) OPEN Priming Valve (B1).
3. OPEN Main Drain Valve (D3).
4. PARTIALLY OPEN Main Water Supply Control Valve (D1).
5. When full flow develops from the Flow Test Valve (B6), CLOSE the Flow Test Valve.
   a) Verify that there is no flow from the open Main Drain Valve (D3).
6. CLOSE Main Drain Valve (D3).
7. FULLY OPEN and secure the Main Water Supply Control Valve (D1).
8. Verify that the Alarm Test Valve (B5) is CLOSED and that all other valves are in their "normal" operating position (Refer to TRIM SCHEMATIC for details).
9. Depress the plunger of the Drip Check Valve (B7). No water should flow from the Drip Check when the plunger is pushed.
10. Check and repair any leaks.
11. On new installations, systems that have been placed out of service, or where new equipment has been installed, trip test system to verify that all equipment functions properly. Refer to MAINTENANCE — ANNUALLY for instructions.

**Important Settings**

**Release Piping Pressures.**

- **Deluge Systems with Pneumatic Release**
  (also refer to Table 1 below):
    a. Provide a minimum 30 PSI (207 kPA) pneumatic pressure to the pneumatic release system and Pneumatic Actuator (F3) for system water pressures of 175 psi (1 207 kPa) or less.
    b. For system water pressures above 175 psi (1 207 kPa) and up to 250 psi (1 724 kPa), provide a minimum of 50 psi (345 kPA) pneumatic pressure to the pneumatic release system and Pneumatic Actuator (F3).
    c. Set release system Air Pressure Supervisory Switch (E3) to activate at 25 psi (172 kPa) on pressure drop for system water pressures of 175 psi (1 207 kPa) or less. For system water pressure above 175 psi up to a maximum of 250 psi (1 724 kPa), set the Air Pressure Supervisory Switch (E4) to activate at 45 psi (310 kPA) on pressure drop. Air Pressure Supervisory Switch (E4) is factory wired to activate an alarm to signal a low air pressure condition (see AIR OPTION SECTION for additional details).

**Note:** The air supply for the pneumatic release piping system must be provided by the contractor and installed outside the TOTALPac®3 unit. The air supply must be restricted to ensure that the automatic air supply cannot replace air as fast as it escapes when a releasing device or sprinkler operates. It is also recommended to provide Inspectors Test Connections on the release system.

**Table 1: Settings for Pneumatic Release Systems.**

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<th>WATER SUPPLY PRESSURES</th>
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<td></td>
<td>Up to 175 psi (1 207 kPa)</td>
<td>175 psi (1 207 kPa) to 250 psi (1 724 kPa)</td>
</tr>
<tr>
<td>Air Maintenance Device (E5)</td>
<td>30 PSI (207 kPa)</td>
<td>50 PSI (345 kPA)</td>
</tr>
<tr>
<td>Release System Pressure Switch (E3)</td>
<td>25 PSI (172 kPa) on Pressure Drop</td>
<td>45 PSI (310 kPA) on Pressure Drop</td>
</tr>
<tr>
<td>Nitrogen Supply Regulator</td>
<td>35 PSI (242 kPA)</td>
<td>55 PSI (379 kPA)</td>
</tr>
<tr>
<td>Nitrogen Back-Up Pressure Switch (E4)</td>
<td>30 PSI (207 kPa) on Pressure Drop</td>
<td>50 PSI (345 kPA) on Pressure Drop</td>
</tr>
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- d) Alarm Pressure Switch (C1) should activate when pressurized to 4 to 8 psi (27 to 55 kPA) on pressure rise. Alarm Pressure Switch (C1) is factory wired to activate the water flow alarm.

**CAUTION!** Performing a trip test results in operation of the Deluge/Flow Control Valve. Water will flow into the sprinkler piping. Take necessary precautions to prevent damage.

12. After completing the trip test, perform MAINTENANCE — SEMI-ANNUALLY.

**Note:** When a valve has been removed from service and is subject to freezing or will be out of service for an extended period of time, all water must be removed from the priming chamber, trim piping, water supply piping and any other trapped areas.

13. Notify the Authority Having Jurisdiction, remote station alarm monitors, and those in the affected area that the system is in service.
Deluge systems with Hydraulic Release:
.a Alarm Pressure Switch (C1) should activate when pressurized to 4 to 8 psi (27 to 55 kPa) on pressure rise. Alarm Pressure Switch (C1) is factory wired to activate the water flow alarm.
.b Release system piping must not exceed the maximum elevation allowed for hydraulic release piping above the Deluge Valve. Refer to technical Data for the hydraulically operated Deluge Valve used.
.c The water supply to the hydraulic release system must include a restricted orifice (B3) to ensure that the priming line cannot replace hydraulic pressure as fast as it escapes when a releasing device operates.

1.4 System Operation
1.4.1 In the SET condition:
System water supply pressure enters the priming chamber of the Deluge Valve (A1) through the priming line which includes a normally open priming valve (B1), strainer (B2), restricted orifice (B3) and spring loaded check valve (B4) and the normally open P.S.O.V. (B9).

Hydraulic Release System: In the SET condition, water supply pressure is trapped in the priming chamber and hydraulic release piping by a spring loaded check valve (B4) and closed releasing devices. The pressure in the priming chamber holds the Deluge Valve clapper closed, keeping the outlet chamber and system piping dry.

Pneumatic release System: In the SET condition, water supply pressure is trapped in the priming chamber by a spring loaded check valve (B4) and Pneumatic Actuator (F3). Pneumatic Actuator is held closed by pressure maintained in the pneumatic release system. The pressure in the priming chamber holds the Deluge Valve clapper closed, keeping the outlet chamber and system piping dry.

Electric Release System: System water supply pressure enters the priming chamber of the Deluge Valve. In the SET condition, water supply pressure is trapped in the priming chamber by a spring loaded check valve (B4) and normally closed Solenoid valve (F1). The pressure in the priming chamber holds the Deluge Valve clapper closed, keeping the outlet chamber and system piping dry.

1.4.2 In a fire condition:
Hydraulic Release System: When a releasing device operates, water pressure in the hydraulic release system escapes.

Pneumatic release System: When a releasing device operates, pressure in the pneumatic release system escapes causing the Pneumatic Actuator (F3) to open.

Electric Release System: When the detection system operates, system Control Panel activates an alarm and energizes normally closed Solenoid valve (F1) to open.

Pressure is released from the priming chamber to the open drain manifold faster than it is supplied through the restricted orifice (B3). The Deluge Valve clapper opens to allow water to flow into the system piping and alarm devices, causing the optional Water Motor Alarm (C2) and water flow alarms connected to the Alarm Pressure Switch (C1) to activate Water will flow from all the open sprinklers and/or nozzles in the system.

When the deluge valve operates, the sensing end of the PSOV (B9) is pressurized, causing the PSOV to close. When the PSOV closes, it shuts off the flow of the priming water pressure to the priming chamber, preventing the Deluge Valve (A1) from resetting, even if the open releasing devices close. The Deluge Valve can only be reset after the system is taken out of service, and the outlet chamber of the deluge valve and associated trim piping is depressurized and drained.

1.4.3 Manual operation:
Anytime the handle of the Emergency Release (B10) is pulled, pressure is released from the priming chamber; Deluge Valve (A1) will open. Water will flow from any open sprinklers and/or other opening in the sprinkler piping and alarm devices (C1 & C2) will operate.

1.4.4 Trouble conditions:

Hydraulic Release System: If the release system operates due to mechanical damage or malfunction, the Deluge Valve will open and water will flow from any open sprinklers and/or other opening in the sprinkler piping.

Pneumatic Release Systems: In the event of an air supply failure and slow leakage of air from the pneumatic release system, alarms connected to Air Supervisory Switch (E3) will signal a low air pressure condition. Failure to restore air supply to the pneumatic release system will result in the operation of the Pneumatic Actuator (F3). Pressure is released from the priming chamber faster than it is supplied through the Restricted Orifice (B3).

Electric Release controlled Deluge Systems: If the releasing system operates due to mechanical damage or malfunction, the Deluge Valve (A1) will open and water will flow from any open sprinklers and/or other opening in the sprinkler piping.
1.5 Emergency Instructions
(Refer to piping diagram provided)

To take system Out of Service:

**Warning**: Placing a control valve or detection system out of service may eliminate the Fire Protection capabilities of the system. Prior to proceeding, notify all Authorities Having Jurisdiction. Consideration should be given to employ a fire patrol in the affected areas.

Sprinkler systems that have been subjected to a fire must be returned to service as soon as possible. The entire system must be inspected for damage, and repaired or replaced as necessary. After a fire, verify that the fire is OUT and that placing the system out of service has been authorized by the appropriate Authority Having Jurisdiction.

.1 Close Water Supply Control Valve (D1).
.2 Open system Main Drain Valve (D3).
.3 Silence alarms (if provided, refer to CONTROL PANEL SECTION for additional details).

**Note**: Electric alarms controlled by a pressure switch installed in the ½” (15mm) NPT connection (C2) for a Non-interruptible Alarm Pressure Switch cannot be shut-off until the Deluge Valve (A1) is reset or taken out of service.

.4 For Pneumatic Release Systems, shut-off the air supply (refer to AIR SUPPLY SECTION).
.5 Close Priming Valve (B1) (optional).
.6 Replace any detectors, pilot heads or fixed temperature releases that have operated.
.a To drain the hydraulic release piping, pull the handle of the Emergency Release (B11).
.7 Replace any sprinklers and/or spray nozzles that have been damaged, or have been exposed to fire conditions.
.8 Perform all maintenance procedures recommended in MAINTENANCE, describing individual components of the system that has operated.
.9 Return the system to service as soon as possible.

1.6 Placing the system back in service after operation:
(refer to TRIM SCHEMATIC)

.1 Verify that the system has been properly drained (in cycling systems, System Main Water Supply Control Valve (D1) should be CLOSED). System Main Drain Valve (D3) should be OPEN. Verify that Emergency Release (B10) is CLOSED. Priming Valve (B1) should be CLOSED except for the electrical release system where is should be OPEN.

.2 ► Hydraulic Release System: Verify that the Inspectors Test Valve and any auxiliary drains are closed.
► Pneumatic Release System: Restore pneumatic pressure. Maintain 30PSI (207 kPa) or 50 PSI (345 kPa) as required by the Pneumatic Actuator (F3) and refer to TABLE 1 above for pressures.
► Electric Release System: Reset the control panel. Solenoid valve (F1) should close. Flow from the solenoid valve to the drain manifold should stop.

.3 Open Priming Valve (B1) (except for electric release system which is already open).
► Hydraulic Release System: Verify that the pressure on Priming Water Pressure Gauge (B11) indicates that the priming chamber is pressurized with system Water Supply Pressure (B12).
.4 Open Flow Test Valve (B6).
.5 Partially open Main Water Supply Valve (D1).
.6 When full flow develops from Flow Test Valve (B6), close the Flow Test Valve. Verify that there is no flow from the System Main Drain Valve (D3).
.7 Close the System Main Drain Valve (D3).
.8 Fully open and secure the Main Water Supply Control Valve (D1).
.9 Verify that the Alarm Test Valve (B5) and all other valves are at their NORMAL operating position.
.10 Depress the plunger of Drip Check (B7). No water should flow from the Drip Check when the plunger is pushed.
1.7 Inspections & Tests

It is imperative that the system be inspected on a regular basis. Refer to INSPECTIONS and TESTS recommended in current Viking technical Data describing individual components of the Viking Deluge System used. The frequency of the inspections may vary due to contaminated water supplies, corrosive or humid atmospheres as well as the condition of the air supply to the system. In addition to the instructions herewith, local Authority Having Jurisdiction may have additional maintenance, testing and inspection requirements which must be followed.

**Warning !** Any system maintenance which involves placing a control valve or detection system out of service may eliminate the fire protection capabilities of that system. Prior to proceeding, notify all Authorities Having Jurisdiction. Consideration should be given to employment of a fire patrol in the affected areas.

1.7.1 Pneumatic Release System Low Air Pressure Alarm Test:

Quarterly testing of low air alarms is recommended.

**To test Pneumatic Release System "Low Supervisory Air" Alarm:**

1. To prevent operation of the Deluge Valve and filling the system with water during the test, close the Main Water Supply Control Valve (D1).
2. Fully open the releasing system Inspectors Test Valve to simulate operation of a releasing device.
3. Verify that low air alarms operate within an acceptable time period and continue without interruption.
4. Close the Inspectors Test Valve.
5. Close the Priming Valve (B1).
6. Establish recommended pneumatic supervisory pressure to be maintained.
7. Alarms should stop.
8. Open the Priming Valve (B1).

When testing is complete, return the system to service following steps 1 through 8 below.

**CAUTION !** This procedure applies only when done in conjunction with "Low Air" Alarm testing described above.

1. Verify that the pressure indicated on Priming Pressure Water Gauge (B11) indicates that the priming chamber is pressurized with System Water Supply Pressure (B12).
2. Depress the plunger of Drip Check (B7). No water should flow from the Drip Check when the plunger is pushed.
3. Open Flow Test Valve (B6).
4. Partially open Main Water Supply Control Valve (D1).
5. When full flow develops from Flow Test Valve (B6), close the Flow Test Valve.
6. Fully open and secure the Main Water Supply Control Valve (D1).
7. Verify that the Alarm Test Valve (B5) and all other valves are in their NORMAL operating position.
8. Depress the plunger of the Drip Check (B7). No water should flow from the Drip Check when the plunger is pushed.

1.7.2 Full Flow Trip test:

Performance of a Trip Test is recommended annually during warm weather. Consider coordinating this test with operation testing of the detectors.

**CAUTION !** Performing this test will cause the Deluge Valve to open. Water will flow into the sprinkler piping and from any open sprinkler and/or nozzles unless the Optional Shut-Off Valve is installed and closed prior to the test. Take necessary precautions to prevent damage.

To test the operation of the hydraulically released Deluge system:

1. Fully open the hydraulic release system Inspectors Test Valve to simulate operation of a releasing device.
2. The Deluge Valve should open.
   a. Water flow alarms should operate.
   b. Water should fill the sprinkler piping and flow from any open sprinklers and/or nozzles.
3. Close Inspectors Test Valve.

When testing is complete, return the system to service:

1. Close Water Supply Valve (D1).
2. Open System Main Drain Valve (D3).
3. Perform steps 1 through 10 of section 1.3 Placing the system in service.

1.7.3 Drain Test:

A main drain test shall be conducted to determine whether there has been a change in the condition of the water supply piping and control valves.

**Test procedure:**

1. Record the pressure indicated by the supply water gauge.
2. Close the alarm control valve (if applicable)
3. Fully open the flow test valve.
4. Record residual pressure.
5. Close the flow test valve slowly.
6. Record the time taken for supply water pressure to return to the original pressure.
7. Open the alarm control valve (if applicable)
1.8 MAINTENANCE

| Note: The owner is responsible for maintaining the fire protection system and devices in proper operating condition. |

Refer to MAINTENANCE INSTRUCTIONS provided in current Viking Technical Data describing individual components of the Viking Preaction System used.

Where difficulty in performance is experienced, the valve manufacturer or his authorized representative shall be contacted if any field adjustment is to be made.

The following requirements are based upon NFPA-25:

**Records.**

Records of inspections, tests, and maintenance of the system and its components shall be made available to the authority having jurisdiction upon request. Typical records include, but are not limited to, valve inspections; flow, drain, and pump tests; and trip tests of dry pipe, deluge, and preaction valves.

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

**Monthly:**

1. Inspection of gauges (water supply and system pressure) to ensure good condition and normal water supply pressure.
2. Control valve shall be externally inspected. The valve inspection shall verify the following:
   a. The gauges indicate that normal supply water pressure is being maintained.
   b. The valve is free of physical damage.
   c. All valves are in the appropriate open or closed position.
   d. There is no leakage from the alarm drains.

**Quarterly:**

1. Alarm Device (pressure or flow switch). *(Testing by opening the inspector's test connection).*
2. Full flow trip test: (isolation valve perfect for special site condition such as freezing condition) to determine if change in water supply or control valve position.

**Semi-Annually:**

1. Valve supervisory switch shall be tested to verify the operation of the switch upon movement of the hand wheel.

**Annually:**

1. Manual Pull station test
2. Full trip test: Isolation valve perfect for special site condition such as freezing condition .
3. Deluge system shall also be tested for flow pattern.
4. Record indicating the date of the last trip, tripping time and name of organization conducting the test shall be maintained at a location available for review by the Authority having Jurisdiction.

**Every 5 years:**

1. Test on gauge (gauge precision required: less than 3% of the full scale)
2. Test on control valves operation.
3. Main drain test.
2- System with Hydraulic Release

1. Description

The TOTALPAC®3 System with the Viking Deluge Trim utilizes a Viking Deluge valve (A1) to control water flow into system piping equipped with open sprinklers and/or spray nozzles. The system piping remains empty until the Deluge Valve is activated by operation of the release system.

Hydraulically controlled deluge systems require a hydraulic release system, equipped with thermostatic (rate-of-rise) releases, and/or fixed temperature releases and/or pilot heads.

Deluge systems are designed so the Deluge valve will open when a detector on the hydraulic release system operates. When the Deluge Valve opens, water will flow into the sprinkler piping and out of any open sprinklers, open spray nozzles and any opening on the system.

Deluge TOTALPAC®3 Systems are commonly used where it is desirable to simultaneously spray water from all open sprinklers and/or spray nozzles on the system when the system operates.

2. Normal condition

1. Valves
   a) Main water supply control valve (D1) is OPEN.
   b) All upstream water supply valves are OPEN.
   c) Priming valve (B1) is OPEN.
   d) Flow test valve (B6) is CLOSED.
   e) System main drain valve (D3) is CLOSED.
   f) Alarm test valve (B5) is CLOSED
   g) Manual emergency release valve (B10) is CLOSED (handle in vertical position).
   h) All gauge valves are OPEN.

2. Gauges
   a) Water supply (B12) - at water supply pressure
   b) Priming chamber (B11) - should be equal to, or higher than, water supply pressure (B12).

3. Pressure switch
   a) Alarm switch (C1) - should activate when pressurized higher than 5 psi.

4. Optional equipment (see OPTIONAL EQUIPMENT SECTION)
   a) Shut-off valve (D4) is OPEN.

REFER TO TRIM SCHEMATIC ON NEXT PAGE.
Trim Schematic: Deluge System with Hydraulic Release

Trim Components:

A. Valve:
   A1  Deluge valve

B. Deluge Valve Trim:
   B1  Priming valve
   B2  Strainer
   B3  1/16" Restricted orifice
   B4  Spring loaded check valve
   B5  Alarm test valve
   B6  Flow test valve
   B7  Drip check valve
   B8  Drain check valve
   B9  Pressure operated relief valve (PORV)
   B10 Emergency release valve
   B11 Priming pressure water gauge & valve
   B12 Water supply pressure gauge & valve
   B13 Clapper check valve

C. Water Flow Alarm Equipment:
   C1  Alarm pressure switch
   C2  Connection to water motor gong (strainer supplied by contractor)

D. Valve:
   D1  Water supply control valve
   D3  Main drain valve
3- System with Pneumatic Release

1. Description

The TOTALPac®3 System with the Viking Deluge Trim utilizes a Viking Deluge valve (A1) to control water flow into system piping equipped with open sprinklers and/or spray nozzles. The system piping remains empty until the Deluge Valve is activated by operation of the release system.

Pneumatically controlled deluge systems require a pneumatic release system, equipped with fixed temperature releases and/or pilot heads. Release trim, for pneumatically controlled deluge systems utilize a Pneumatic Actuator (F3) normally held closed by pressure maintained in the pneumatic release system.

Deluge systems are designed so the Deluge valve will open when a detector on the pneumatic release system operates. When the Deluge Valve opens, water will flow into the sprinkler piping and out of sprinklers and any opening on the system.

Note: The air supply for the pneumatic release piping system must be provided by the contractor and installed outside the TOTALPac®3 cabinet. The air supply must be restricted to ensure that the automatic air supply cannot replace air as fast as it escapes when a releasing device operates. It is also recommended to provide Inspectors Test Connections on both the release system and the sprinkler system.

Deluge TOTALPac®3 Systems are commonly used where it is desirable to simultaneously spray water from all open sprinklers and/or spray nozzles on the system when the system operates.

2. Normal condition

1. Valves
   a) Main water supply control valve (D1) is OPEN.
   b) All upstream water supply valves are OPEN.
   c) Priming valve (B1) is OPEN.
   d) Flow test valve (B6) is CLOSED.
   e) System main drain valve (D3) is CLOSED.
   f) Alarm test valve (B5) is CLOSED.
   g) Manual emergency release valve (B10) is CLOSED (handle in vertical position).
   h) All gauge valves are OPEN.

2. Gauges
   a) Water supply (B12) - at water supply pressure.
   b) Priming chamber (B11) - should be equal to, or higher than, water supply pressure (B12).
   c) Release system air pressure (E3) and Pneumatic Actuator (F4) – See table 1 below.

3. Pressure switch
   a) Alarm switch (C1) - should activate when pressurized higher than 5 psi (35 kPa).
   b) Release system low air pressure switch (E4) – See Table 1 below.

4. Optional equipment (see OPTIONAL EQUIPMENT SECTION)
   a) Shut-off valve (D4) is OPEN.

Table 1: Pressure Settings

<table>
<thead>
<tr>
<th>DEVICE</th>
<th>WATER SUPPLY PRESSURES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Up to 175 psi (1,207 kPa)</td>
</tr>
<tr>
<td>Release System Air Pressure Gauge (E3)</td>
<td>35 PSI (241 kPa)</td>
</tr>
<tr>
<td>Pneumatic Actuator Pressure Gauge (F4)</td>
<td>35 PSI (241 kPa)</td>
</tr>
<tr>
<td>Low Air Supervisory Pressure Switch (E4)</td>
<td>25 PSI (173 kPa)</td>
</tr>
</tbody>
</table>

REFER TO TRIM SCHEMATIC ON NEXT PAGE.
**Trim Schematic:** System with Pneumatic release

### Trim Components:

**A. Valve:**
- A1  Deluge valve

**B. Deluge Valve Trim:**
- B1  Priming valve
- B2  Strainer
- B3  1/16” Restricted orifice
- B4  Spring loaded check valve
- B5  Alarm test valve
- B6  Flow test valve
- B7  Drip check valve
- B8  Drain check valve
- B9  Pressure operated relief valve (PORV)
- B10 Emergency release valve
- B11 Priming pressure water gauge & valve
- B12 Water supply pressure gauge & valve
- B13 Clapper check valve
- B14 N/A

**C. Water Flow Alarm Equipment:**
- C1  Alarm pressure switch
- C2  Connection to water motor gong (strainer supplied by contractor)

**D. Valve:**
- D1  Water supply control valve
- D3  Main drain valve

**E. Supervisory Air Supply:**
(See AIR SUPPLY SECTION for additional details)

**F. Release System:**
- F3  Pneumatic actuator
4- Deluge System with Electric Release

1. Description

The TOTALPac®3 System with the Viking Deluge Trim utilizes a Viking Deluge valve (A1) to control water flow into system piping equipped with open sprinklers and/or spray nozzles. The system piping remains empty until the Deluge Valve is activated by operation of the release system.

Electrically controlled deluge systems require an electric Solenoid valve (F1) controlled by an approved System Control Panel with compatible detection system. In fire conditions, when the detection system operates, System Control Panel energizes the Solenoid Valve (F1) open, causing Deluge Valve (A1) to open and allowing water to enter the system piping. Water will flow from any open sprinklers and/or spray nozzles on the system.

Deluge systems are designed so the Deluge valve will open when a detector on the electric release system operates. When the Deluge Valve opens, water will flow into the sprinkler piping and out of any open sprinklers, open spray nozzles and any opening on the system.

Deluge TOTALPac®3 Systems are commonly used where it is desirable to simultaneously spray water from all open sprinklers and/or spray nozzles on the system when the system operates.

2. Normal condition

1. Control panel of the TOTALPac®3 system
   a) Green lamp identified "AC POWER" lights up.
   b) All other lamps are off.

2. Valves
   a) Main water supply control valve (D1) is OPEN.
   b) All upstream water supply valves are OPEN.
   c) Priming valve (B1) is OPEN.
   d) Flow test valve (B6) is CLOSED.
   e) System main drain valve (D3) is CLOSED.
   f) Alarm test valve (B5) is CLOSED
   g) Manual emergency release valve (B10) is CLOSED (handle in vertical position).
   h) All gauge valves are OPEN.

3. Gauges
   a) Water supply (B12) - at water supply pressure
   b) Priming chamber (B11) - should be equal to, or higher than, water supply pressure (B12).

4. Pressure switch
   a) Alarm switch (C1) - should activate when pressurized higher than 5 psi.

5. Optional equipment (see OPTIONAL EQUIPMENT SECTION)
   a) Shut-off valve (D4) is OPEN.

REFER TO TRIM SCHEMATIC ON NEXT PAGE.
**Trim Schematic:** System with electric release

**Trim Components:**

**A. Valve:**
- A1 Deluge valve

**B. Deluge Valve Trim:**
- B1 Priming valve
- B2 Strainer
- B3 1/16" Restricted orifice
- B4 Spring loaded check valve
- B5 Alarm test valve
- B6 Flow test valve
- B7 Drip check valve
- B8 Drain check valve
- B9 Pressure operated relief valve (PORV)
- B10 Emergency release valve
- B11 Priming pressure water gauge & valve
- B12 Water supply pressure gauge & valve
- B13 Clapper check valve

**C. Water Flow Alarm Equipment:**
- C1 Alarm pressure switch
- C2 Connection to water motor gong (strainer supplied by contractor)

**D. Valve:**
- D1 Water supply control valve
- D3 Main drain valve

**E. Supervisory Air Supply:**
- (Not Applicable)

**F. Release System:**
- F1 N.C. solenoid valve – 24 Vdc
1. Shut-Off Valve & Sight Glass:

The Shut-off Valve & Sight Glass Option is intended to be used for applications where testing of the system operation without filling the sprinkler piping network is desirable and where it is critical that all functions of the deluge system be tested under actual discharge conditions. Examples of such applications are freezers, ovens, museums, data processing and other hazards where the possibility of water leaking from the piping system is to be avoided at all costs.

**Operation of the shut-off valve:** Inspection of the system can be implemented without filling the sprinkler piping system with water.

.1 CLOSE the Supervised sprinkler piping system Shut-Off Valve (D4); the valve is supervised on the same circuit as the system Water Supply Control Valve (D1).

.2 OPEN the system Main Drain Valve (D3).

.3 Simulate the operation of the system to open the Deluge (A1) or Flow Control Valve (A2) (See Annual test under the INSPECTION AND MAINTENANCE section.) Using a flashlight in one of the sight glasses, verify that water flows through the Sight Glass Assembly (D5).

.4 Once tests are completed, make sure the system Main Drain Valve (D3) is completely CLOSED. Reset the system as per PLACING THE SYSTEM BACK IN SERVICE.

.5 FULLY OPEN the system Shut-Off Valve (D4). Reset the system's Release Control Panel.

**Figure 1 - Test Valve for Deluge Systems**

2. Fire Department Connection:

The Fire Department Connection Option consists of a grooved Tee fitting installed in lieu of the 90 degree elbow at the outlet of the Deluge / Flow Control Valve (A1 or A2). An access hole of the proper diameter is factory pre-drilled on the side of the **TOTALPac**3 enclosure for connection of the piping going to the Fire Department Connection.

**Note:** The Fire Department Connection hardware itself (drain, Siamese, etc.) is NOT provided with this option and shall be provided by the installing contractor. Refer to NFPA-13 Standard for additional information about the equipment layout and installation.

**Warning:** Fire department connection is NOT AVAILABLE on 6" & 8" systems.

**Figure 2 – Fire Department Connection for Deluge Systems**
3. Semi and Full-flanged Option:
When required by the user, TOTALPAC®3 units can be provided in either a semi-flanged or full flanged configuration. The semi flanged option provides flanged fittings only on the water inlet pipe (side needs to be specified at the time of order) and on the system riser outlet. The drain manifold is then provided with a threaded end that also needs to have its side specified (left or right). The rest of the fittings are the same as usual with the main components being provided in the standard flanged -grooved configuration.

The full flanged option is the same as above but goes a step further with the main components being also provided with a flanged-flanged configuration. When provided, the face of the flanges will always be situated 6 inches from the outside face of the mounting base or cabinet surface. On skid units, the surface of the flange on the outlet riser will always be 6 inches above the dimension shown on the dimensional data of the system ordered.

Figure 3 – Semi-flanged unit typical detail:
1- Cabinet Air Supplies

Deluge sprinkler systems using air pressure for pneumatic release piping network are provided with external supervised air supply.

The system trim includes only a connection for the air supply including a ball valve, a pressure switch and a pressure gauge, adapted to the particular layout ordered.

The skid air supply trim is factory assembled, mounted in the system cabinet and pressure tested.

➤ Air Supply Style "C": (Refer to Figure 1) Used only for the pneumatic release piping network of pneumatically operated Deluge systems. An external air supply has to be provided by others (compressor, plant air or dry nitrogen cylinders) and piped to the air inlet port of the unit. Air supply style "C" provides an Air Pressure Maintenance Device (APMD) trim, factory mounted in the TOTALPac®3 cabinet.

Note: The air supply should be provided and installed by the sprinkler contractor OUTSIDE of the TOTALPac®3 Cabinet it is NOT provided with the unit.
1.3 Operation

- **Air supplies style "C":**

1. **To Apply Air Supply:**

   Turn on upstream air supply. Open APMD (Air Pressure Maintenance Device) input valve (E6) by placing handle in line with valve body then open APMD output valve (E7) by placing handle in line with the valve body.

2. **To Close Air Supply:**

   Close APMD output valve (E7) by placing handle crossways to valve body then close APMD input valve (E6) by also placing handle crossways to the valve body.

3. **To Adjust System Air pressure:**

   Be sure APMD input valve (E6) and APMD output valve (E7) are both open (handle in line with the valve body), prior to performing this operation. Loosen lock nut and turn pressure adjustment nut clockwise to increase air pressure or counterclockwise to decrease pressure. Tighten lock nut.

   **Note:** Depending on site conditions, the internal filter of the APMD may need maintenance on a regular basis. Refer to Viking Data Sheet # 127 for more details.

1.4 Maintenance and inspection:

- **Air supplies style "C":**

   The Viking Model D-2 Air Pressure Maintenance Device (APMD) (E5) is a pressure regulator that automatically reduces the supply air pressure to a pre-set requirement when connected to a constantly maintained air supply (plant air, external tanked air compressor or dry nitrogen tank). Refer to Figure 2 for details.

   **Features:**

   Replaceable air filter

   Outlet pressure range is 5 to 75 psi (± 2 psi) (34.47 to 517,11 kPa). Air pressure setting can be readjusted after installation. See Paragraph 3.6, TO ADJUST SYSTEM AIR PRESSURE.

   Ball check to prevent back flow.

   Restriction 1/16" (1,59mm) to prevent rapid re- pressurization of a system.

   - The Viking Model D-2 APMD (E5) regulates and restricts air flow.

   The air or nitrogen supply provided to the APMD must be continuous, clean, dry and oil free.

   By-pass piping is provided to allow initial pressurization of system piping more rapidly than the restricted air flow through the APMD will allow.

   Determine the appropriate pressure to be maintained in the system. Refer to Table 1 or Table 2 of the current Section.

The APMD (E5) should be checked for correct pressure regulation after installation or repair by noting the air pressure reading within the system. If adjustment is required, refer to paragraph 1.3 of the current Section. The filter should also be inspected and replaced or cleaned as required.

   To clean Air Pressure Maintenance Device (APMD) (E5) in Air option B (refer to Figure 2):

   Do not disconnect or disassemble the APMD without closing the outlet (E7) and inlet (E6) isolation valves. System air pressure will be trapped between the outlet of the APMD and the downstream control valve. Relieve pressure before proceeding with disassembly.

   This procedure requires turning OFF the compressor’s power.

   Carefully loosen the union between the outlet of APMD (E5) and the outlet isolation valve (E7) to relieve pressure.

   This procedure requires turning OFF the compressor’s power.

   Carefully loosen the union between the outlet of APMD (E5) and the outlet isolation valve (E7) to relieve pressure.

   Remove and clean Air Pressure Maintenance Device (APMD) filter. Refer to VIKING Technical Data Sheet 127 Model D-2 Air Pressure Maintenance Device for more details. If admission filter is blocked, replace with filter kit (part # 03007 A).

   Refer to Viking Data Sheet 127 for additional details.

To close the Air Supply:

Close Air Pressure Maintenance Device (APMD) output isolation valve (E7) by placing handle crossways to the valve body. Make sure the APMD input valve (E6) is open (handle in line with valve body), and the bypass valve (E8) is closed (handle crossways to valve body). Refer to Figure 2 or 3.
Figure 2 – Air Supply Style "C"

(APMD for Pilot Line release system only)

Air Option Components:

E3  System air pressure gauge
E4  Air supervisory pressure switch
E5  Air pressure maintenance device (APMD)
E6  APMD input valve
E7  APMD output valve

Optional Components:
(see Air Supply Options for details)
- Accelerator
Table 1: Water Pressure up to 175 Psi

<table>
<thead>
<tr>
<th>System Type</th>
<th>Air Supply Style</th>
<th>Air Regulator</th>
<th>Compressor Start</th>
<th>Compressor Stop</th>
<th>Low Air Supervisory</th>
<th>Low Air Alarm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release (pilot) Line</td>
<td>C</td>
<td>30 Psi (207 kPa)</td>
<td>n/a</td>
<td>n/a</td>
<td>25 Psi (173 kPa)</td>
<td>n/a</td>
</tr>
</tbody>
</table>

Table 2: Water Pressure from 175 Psi to 250 Psi

<table>
<thead>
<tr>
<th>System Type</th>
<th>Air Supply Style</th>
<th>Air Regulator</th>
<th>Compressor Start</th>
<th>Compressor Stop</th>
<th>Low Air Supervisory</th>
<th>Low Air Alarm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release (pilot) Line</td>
<td>C</td>
<td>50 Psi (345 kPa)</td>
<td>n/a</td>
<td>n/a</td>
<td>45 Psi (311 kPa)</td>
<td>n/a</td>
</tr>
</tbody>
</table>

2- Skid Air Supply Option

When TOTALPac®3 units are provided in skid form, the air supply is provided by the installing contractor. Pneumatic release piping network are provided with external supervised air supply.

The system trim includes only a connection for the air supply including a ball valve, a pressure switch and a pressure gauge, adapted to the particular layout ordered.

The skid air supply trim is factory assembled, mounted in the system trim and pressure tested.

**Skid Air Supply for pilot line:** (Refer to Figure 2) It provides only an air supervisory and shut-off trim. Used with the contractor provided air supply & regulation trim, mounted separate from the TOTALPac®3 trim skid.

**Note:** External air supply MUST always be restricted to insure that the automatic air supply cannot replace air as fast as it escapes when a sprinkler operates.

**WARNING!** Pressures other than the factory pressure settings may affect the operation of the system.

2.2 Operation

.1 To Apply Air Supply:
   - Turn on upstream air supply. Open Air shut-off valve (E14) by placing handle in line with valve body.

.2 To Close Air Supply:
   - Close Air shut-off valve (E14) (handle crossways to valve body).

3. Maintenance and inspection:

- The air or nitrogen supply provided must be continuous, clean, dry and oil free.
- Determine the appropriate pressure to be maintained in the system. Refer to Table 1 or 2

**Important:** Advise local authorities of the necessary work over the fire protection equipment. In order to avoid accidental water release, it is considered good practice to completely close the main water inlet valve while doing the maintenance work.
Figure 2 – Skid Air Supply for Pilot Line

(Air supply connection only for external air supply)

**Note:** The external air supply must be restricted to insure that it cannot replace air as fast as it escapes when a releasing device or sprinkler operates.

**Air Option Components:**

- E3 System air pressure gauge
- E4 Air supervisory pressure switch
- E14 Air shut-off valve
- E16 Swing check valve

**Note:** Piping layout may vary slightly depending on valve trim configuration.
1- Control Section with Control Panel

1.1 Product Description

The release control panel of the TotalPac®3 system is an add-on unit that is installed inside the cabinet at the factory.

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

A releasing circuit disabled switch is located at left of the release control panel.

The control panel can be easily flipped once unlatched from the right side, giving access to electrical junction boxes of the unit.

1.2 Self-contained TotalPac®3 Unit (with Viking VFR-400 Control Panel)

The model VFR-400 is a listed and approved, microprocessor based fire control/releasing panel. It is primarily designed for use as a releasing panel for pre-action, Surefire®, Firecycle® III, and deluge, water based extinguishing systems. The panel is available for use with either 120VAC-60Hz or 220VAC-50Hz power supplies. The battery compartment can hold two 12 volt batteries which are charged by an internal battery charger. Batteries are available to provide up to 90 hours of backup power during AC power failure.

The VFR-400 panel can be used with a wide range of compatible initiating devices such as pull stations, heat detectors (including linear heat detectors), photo-electric and ionization smoke detectors.

For complete compatibility list, please see the VIKING VFR-400 INSTALLATION, OPERATION AND INSTRUCTION MANUAL provided with the TotalPac®3 Unit.

Pre-configured programs allow field programming for one of twelve possible input/output combinations that are available and listed for use with the TotalPac®3 System.

A field wiring electrical junction boxes is integrated with the cabinet for connection of detection system, auxiliary contacts and signaling devices. All inputs & outputs are factory wired to a terminal strip (TBA) for contractor’s field wiring.

Gauges to indicate air, water supply pressure and priming water pressure are all visible through clear Lexan windows.

Note For more information and technical data, please see the VIKING VFR-400 INSTALLATION, OPERATION AND INSTRUCTION MANUAL provided with the TotalPac®3 Unit.

1.3 VFR-400 Visual Indicators:

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)
- Supervisory Zone,
- Supervisory 1,
- Supervisory 2,
- Power Trouble
- Supervisory
- Trouble
- System Troubles
- Ground Fault
- Discharging/Discharged
- Alarm Silenced

1.4 Control buttons:

SCROLL UP / BUZZER SILENCE:
Acknowledge troubles and supervisory. Once all events in trouble or supervisory state have been viewed, the panel buzzer and appropriate output will silence. The applicable TROUBLE or SUPERVISORY LED will change from flashing to steady. A Second trouble or supervisory will resound the panel buzzer. Trouble conditions are self restoring. Supervisory latch and require RESET to clear.

SCROLL DOWN / BUZZER SILENCE:
Acknowledge troubles and supervisory. Once all events in trouble or supervisory state have been viewed, the panel buzzer and appropriate output will silence. The applicable TROUBLE or SUPERVISORY LED will change from flashing to steady. A Second trouble or supervisory will resound the panel buzzer. Trouble conditions are self restoring. Supervisory latch and require RESET to clear.

SIGNAL SILENCE:
By pressing SIGNAL SILENCE button, all silencable outputs will de-activate. A trouble condition will be created, TROUBLE contact will be activated and the yellow ALARM SILENCE LED will light.

WARNING Alarms initiated from a WATERFLOW signal can not be silenced. The panel must be reset to silence audible devices.

SYSTEM RESET: The RESET button breaks power to all initiating circuits, 4-wire smoke power and will clear any activated output circuits. If any alarm or trouble still exists after reset, they will reactivate the panel.
1.5 Time & Date setting:

1. Press the "PROGRAM" switch down

2. Press on "FUNCTION" button until the following is displayed:
   
   SET TIME?

3. Press the "SELECT" button to get to the "MINUTES" sub-menu;
   
   01/21/2000

4. Use "SELECT" button to increase the minutes, or use "SET" button to decrease minutes.

5. Press the "FUNCTION" button to get to the "HOURS" sub-menu;
   
   01/21/2000

6. Use "SELECT" button to increase the hours, or use "SET" button to decrease hours.

7. Press the "FUNCTION" button to get to the "DAY" sub-menu;
   
   DAY 01/21/2000

8. Use "SELECT" button to increase day, or use "SET" button to decrease day.

9. Press the "FUNCTION" button to get to the "MONTH" sub-menu;
   
   MONTH 01/21/2000

10. Use "SELECT" button to increase month, or use "SET" button to decrease month.

11. Press the "FUNCTION" button to get to the "YEAR" sub-menu;
   
   YEAR 01/21/2000

12. Use "SELECT" button to increase year, or use "SET" button to decrease year.
Figure 2 - Control equipment layout:

- AIR COMPRESSOR OR EXCESS PRESSURE PUMP ISOLATING SWITCH
- JUNCTIONS BOX (behind control panel)
- SYSTEM DISABLE SWITCH
- 12VDC BATTERY SET
- UNLATCH TO ROTATE THE CONTROL PANEL
- CONTROL PANEL (shown with door open)
- UNLATCH TO OPEN THE RIGHT DOOR (or rotate the control panel)

Figure 3 - Detail of VFR-400 Panel control section:

- RED OUTPUT LED STEADY: ABORT
- ZONE 1
- ZONE 2
- ZONE 3
- ZONE 4
- OUTPUT 1
- OUTPUT 2
- OUTPUT 3
- OUTPUT 4
- SUPV TBL
- SYSTEM TBL
- COMMON TBL
- POWER TBL
- GROUND TBL
- TROUBLE COM NO NC
- ALARM COM NO NC
- SUPV COM NO NC
- WTRFLW COM NO NC
- RELAISE CIRCUIT
- UNLATCH TO OPEN THE RIGHT DOOR (or rotate the control panel)
- (shown with door open)
- JUNCTIONS BOX (behind control panel)
- AIR COMPRESSOR OR EXCESS PRESSURE PUMP ISOLATING SWITCH
- SYSTEM DISABLE SWITCH
- UNLATCH TO ROTATE THE CONTROL PANEL
- CONTROL PANEL
- 12VDC BATTERY SET
Figure 4 – Junction box layout:

Air Compressor or Excess Pressure Pump Isolating Switch

TBB Terminals

TBA & TBC Terminals

Junction Box with cover removed (behind Control Panel)

Optional ARM-44 Relay Module Location

Factory wired flexible conduits to Control Panel and system devices

Figure 5 - Detail of wiring routing:

AC POWER
120VAC, 50/60Hz or 220VAC, 50Hz

POWER LIMITED CIRCUITS

Refer to Electrical Section for Wiring Diagrams.

All conduits are installed by the Contractor through 1/2” and 3/4” knock-outs

OPTIONAL ARM-44 RELAY MODULE
2- Control Section without control panel.

2.1 Product Description

When the TOTALPAC®3 unit is provided without any control panel, such as in retrofit applications where the unit is connected and controlled by a central control panel already installed in the building or premises.

When such is the case, the control panel of the TOTALPAC®3 is not provided, only a field wiring electrical junction boxes is integrated with the cabinet for connection of all electrical components in the trim. Pressure switches, supervisory switches, etc. are all factory wired to a terminal strip (TBA) for contractor’s field wiring.

The installing contractor should make sure the remote control panel is both listed and programmed to handle the required sequence of operation necessary to operate the automatic sprinkler system. Refer to GENERAL DESCRIPTION Section, appropriate standards and Authority Having Jurisdiction for additional information.

2.2 Technical Data

Cabinet:

Steel enclosure: Refer to Cabinet Data Sheet for further details.

Environment (electrical section):

Temperature: 32°F (0°C) to 120°F (48°C)

Humidity: 85% Relative Humidity (non-condensing) at 90°F (32°C) maximum.

AC Power:

The unit may be provided with an air compressor. Refer to the appropriate Field Wiring Diagram in “Programming Section” to determine applicable power requirements.

Note: This TOTALPAC®3 Unit has been provided without an Integrated Control Panel, which is supplied by others.

Contractor should make sure the control panel supplied to control this system complies with the sequence of operation described in the programming Section. The remote control panel shall also be listed for releasing service and be compatible for supervising N.O. contact devices and operating the 24 Vdc/10Wdc solenoid valve of the system if applicable.
Figure 6 – Junction box layout:

- Air Compressor or Excess Pressure Pump
- Isolating Switch
- TBB Terminals
- Bypass Switch
- TBA & TBC Terminals
- Factory wired flexible conduits to Control Panel and system devices

Junction Box with cover removed (behind Control Panel)
1- Remote Controlled, Pneumatic Release

The TOTALPac®3 Unit without control panel is factory wired for the following configuration:

♦ Deluge System with Pneumatic Release

This TOTALPac®3 Unit has been provided without an Integrated Control Panel since its dry contacts are supervised by a remote panel. Contractor should make sure the control panel supplied to control this system complies with the sequence of operation described in MECHANICAL SECTION. The remote control panel shall also be Listed and be compatible for supervising sprinklers supervisory and alarm contact devices. Refer to FIELD WIRING DIAGRAM for more details. Make sure the system will perform as required and is tested to confirm it meets all requirements.

Note: All field wiring should be terminated in the contractor junction box and terminals provided (TBA and TBB) as shown on the FIELD WIRING DIAGRAM. No connection should be made directly in the trim components as this would void warranty and might prevent the normal operation of the unit.

Operation – Deluge

When a fire occurs, at least one pilot head reaches its trip point. The pilot line pressure is released and the pneumatic actuator is then automatically activated. The system alarm audible devices sound and, if desired, can be silenced manually. The operation of a pilot head will allow the water to escape from the priming chamber of the deluge valve. The clapper of the deluge valve opens, filling the outlet chamber and flooding the entire area covered by the open sprinklers and/or nozzles, causing the closing of the waterflow pressure switch contact. Water flow audible devices and the water motor gong (if installed) will sound. The sprinkler system will continue to operate until the main water supply control valve is manually closed.

1. Pilot Line Air Pressure Drop

   Any leak or opening in the system pilot line network which allows supervisory air pressure to drop below 25 psi on 175 psi systems (45 psi for 250 psi systems) causes the opening of the Low Pressure Switch contact.

2. System Manual Operation

   Manual opening of the deluge valve by the operation of the manual emergency release valve causes the water flow switch to operate.

   Note: The same sequence is obtained with the operation of the alarm test valve, but the deluge valve is kept closed.

3. Supervisory of the Valves

   An abnormal position of a valve will cause the closing of the Valve Supervisory Switch contact. Both the Water Supply Control Valve and the optional Shut-off Valve are supervised.
Field wiring diagrams pneumatic release, remote controlled:

**WIRING OF AIR COMPRESSOR POWER SOURCE**
(with Air Option "A" ONLY)

- TBB: 120VAC, 60Hz 220VAC, 50Hz
- 1: LINE
- 2: NEUTRAL
- 3: GROUND
- 4: AIR COMPRESSOR 2HP MAX

Branch circuit for air compressor shall not be the same as the Release Control Panel power source.

Refer to Local Electrical Codes for wiring size.

**NOTES:**
- All devices are factory wired.
- All devices are shown in their normal supervisory state.
- Contacts are rated:
  - Pressure switches: 2A, 30VDC 10A, 125/250VAC
  - Supervisory switches: 0.5A, 125VDC 0.25A, 250VDC 5A, 1/6HP, 125/250VAC
- Use dry contacts with power limited circuits only.
- EOL devices (not included) must be compatible with the Release Control Panel used.

**OPTIONAL**

**LOS ANGELES OPTION**

**CHICAGO OPTION**

**NOTE:**
- Contacts provided for connection to the building’s central Fire Alarm Panel.
2- Remote Controlled, Hydraulic Release

The TOTALPac®3 Unit without control panel is factory wired for the following configuration:

Deluge Hydraulic Release

This TOTALPac®3 Unit has been provided without an Integrated Control Panel since its dry contacts are supervised by a remote panel. Contractor should make sure the control panel supplied to control this system complies with the sequence of operation described in MECHANICAL SECTION. The remote control panel shall also be Listed and be compatible for supervising sprinklers supervisory and alarm contact devices. Refer to FIELD WIRING DIAGRAM for more details. Make sure the system will perform as required and is tested to confirm it meets all requirements.

Note: All field wiring should be terminated in the contractor junction box and terminals provided (TBA and TBB) as shown on the FIELD WIRING DIAGRAM. No connection should be made directly in the trim components as this would void warranty and might prevent the normal operation of the unit.

Operation – Deluge

When a fire occurs, at least one releasing device reaches its trip point. The operation of a releasing device will allow the water to escape from the priming chamber of the deluge valve. The clapper of the deluge valve opens, filling the outlet chamber and flooding the entire area covered by the open sprinklers and/or nozzles, causing the closing of the water flow pressure switch contact. Water flow audible devices and the water motor gong (if installed) will sound. The sprinkler system will continue to operate until the main water supply control valve is manually closed.

1. System Manual Operation

Manual opening of the deluge valve by the operation of the manual emergency release valve causes the water flow switch to operate.

Note: The same sequence is obtained with the operation of the alarm test valve, but the deluge valve is kept closed.

2. Supervisory of the Valves

An abnormal position of a valve will cause the closing of the Valve Supervisory Switch contact. Both the Water Supply Control Valve and the optional Shut-off Valve are supervised.
Field wiring diagrams hydraulic release, remote controlled:

NOTES:
- All devices are factory wired.
- All devices are shown in their normal supervisory state.
- Contacts are rated:
  Pressure switches: 2A, 30VDC, 10A, 125/250VAC
  Supervisory switches: 0.5A, 125VDC, 0.25A, 250VDC, 5A, 1/6HP, 125/250VAC
- Use dry contacts with power limited circuits only.
- EOL devices (not included) must be compatible with the Release Control Panel used.
3- Remote Controlled, Electric Release

The TOTALPac®3 Unit without control panel is factory wired for the following configuration:

- System with Electric Release

This TOTALPac®3 Unit has been provided without an Integrated Control Panel since its dry contacts are supervised by a remote panel. Contractor should make sure the control panel supplied to control this system complies with the sequence of operation described in MECHANICAL TRIM SCHEMATIC. The remote control panel shall also be Listed and be compatible for supervising sprinklers supervisory and alarm contact devices and be compatible for supervising N.C. 24Vdc Solenoid Valve.

Refer to FIELD WIRING DIAGRAM for more details. Make sure the system will perform as required and is tested to confirm it meets all requirements.

Note: All field wiring should be terminated in the contractor junction box and terminals provided (TBA and TBB) as shown on the FIELD WIRING DIAGRAM. No connection should be made directly in the trim components as this would void warranty and might prevent the normal operation of the unit.

Operation – Deluge

When the detection system operates, the System Control Panel activates an alarm and energizes the normally closed solenoid valve (F1) open. Pressure is released from the priming chamber faster than it is supplied through restricted orifice (B3). The deluge valve clapper opens to allow water to flow into the system piping and alarm devices, causing the water motor alarm and water flow alarms connected to the alarm pressure switch to activate. Water will flow from any open sprinklers and/or spray nozzles on the system.

1. System Manual Operation

Manual opening of the deluge valve by the operation of the manual emergency release valve causes the water flow switch to operate.

Note: The same sequence is obtained with the operation of the alarm test valve, but the deluge valve is kept closed.

2. Supervisory of the Valves

An abnormal position of a valve will cause the closing of the Valve Supervisory Switch contact. Both the Water Supply Control Valve and the optional Shut-off Valve are supervised.
Field wiring diagrams electric release, remote controlled:

- All devices are factory wired.
- All devices are shown in their normal supervisory state.
- Contacts are rated:
  - Pressure switches: 0.5A, 125VDC; 0.25A, 250VDC; 5A, 1/6HP, 125/250VAC
  - Supervisory switches: 0.5A, 125VDC; 0.25A, 250VDC; 5A, 1/6HP, 125/250VAC
- Use dry contacts with power limited circuits only.
- EOL devices (not included) must be compatible with the Release Control Panel used.

### SOLENOID VALVE ELECTRICAL RATINGS

<table>
<thead>
<tr>
<th>Viking P/N</th>
<th>Description (De-energized)</th>
<th>Voltage</th>
<th>Watts</th>
<th>DC Amps</th>
<th>Pressure Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>11591</td>
<td>NC</td>
<td>24 VDC</td>
<td>10.0 DC</td>
<td>416 mA</td>
<td>300 psi (2068 kPa)</td>
</tr>
</tbody>
</table>

**Notes:**
1. Solenoid Valve is UL Listed as Fire Protection Special System Water Control Release Service (UL 429A Product category VLTR).
2. Voltage Drop: For proper operation, make sure that voltage at the solenoid valve is at least 85% of nameplate rating.
4- Self-Contained, Electric Release

The VIKING VFR-400 Control Panel included with the TotalPac®3 Unit is factory programmed and wired for the following configurations:

- Deluge, Electric Release
- Deluge, Electric Release NYC
- Activation by Zone 1 OR Zone 2
- Activation by Zone 1 (NYC)
- Activation by Zone 1 AND Zone 2 (Cross-zoned)
- Activation by Zone 4 (Pull Station) for all configurations

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

Pre-configured programs allows field programming for possible input/output combinations, of which only three are available and Listed for the current use of the TotalPac®3 System:

Program #1, Single Hazard, Two Alarm Zones with One Manual Station Zone, One Waterflow Zone and Two Supervisory Zones.

Program #12, Single Hazard, Two Alarm Zones (Cross-Zoned) with One Manual Station Zone, One Waterflow Zone and Two Supervisory Zones.

Program #5, Single Hazard, One Alarm Zone with One Manual Station Zone, One Waterflow Zone and Three Supervisory Zones. (NYC)

Program #1 allows the panel to activate the solenoid valve when EITHER detection Zone 1, Zone 2 OR Zone 4 is activated.

Program #12 allows the panel to activate the solenoid valve when BOTH detection Zone 1 AND Zone 2 are activated (Cross-zoned) OR Zone 4 only. (Pull Station)

Program #5 allows the panel to activate the solenoid valve when EITHER detection Zone 1 OR Zone 4 is activated.

WARNING! Only the three Pre-configured programs above are Listed/Approved with the present TotalPac®3 Unit. Changing for another pre-configured program may eliminate the Fire Protection capabilities of the system and/or void Listing/Approval and Warranty. Consult FireFlex Systems before making any change.

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

Program #1 Output and Relay Circuits Activated by Detection Circuits:

<table>
<thead>
<tr>
<th>PROGRAM 1 SINGLE HAZARD TWO ZONES</th>
<th>OUTPUT CIRCUITS</th>
<th>RELAY CIRCUITS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ALARM BELL</td>
<td>WATERFALL BELL</td>
</tr>
<tr>
<td>INPUT CIRCUITS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUPERVISORY ZONE 1 (Spare)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUPERVISORY ZONE 2 (Valve Tamper )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DETECTION ZONE 1</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>DETECTION ZONE 2</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>DETECTION ZONE 3 (Waterflow)</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>DETECTION ZONE 4 (Pull Station)</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
### Program #12 Output and Relay Circuits Activated by Detection Circuits:

<table>
<thead>
<tr>
<th>PROGRAM 12</th>
<th>OUTPUT CIRCUITS</th>
<th>RELAY CIRCUITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SINGLE HAZARD CROSS ZONED</td>
<td></td>
<td></td>
</tr>
<tr>
<td>INPUT CIRCUITS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUPERVISORY ZONE 1 (Valve Tamper)</td>
<td></td>
<td>X X X</td>
</tr>
<tr>
<td>SUPERVISORY ZONE 2 (Air)</td>
<td></td>
<td>X X</td>
</tr>
<tr>
<td>DETECTION ZONE 1</td>
<td>X</td>
<td>BOTH</td>
</tr>
<tr>
<td>DETECTION ZONE 2</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>DETECTION ZONE 3 (Waterflow)</td>
<td>X</td>
<td>X X X</td>
</tr>
<tr>
<td>DETECTION ZONE 4 (Pull Station)</td>
<td>X</td>
<td>X X</td>
</tr>
</tbody>
</table>

### Program #5 Output and Relay Circuits Activated by Detection Circuits:

<table>
<thead>
<tr>
<th>PROGRAM 5</th>
<th>OUTPUT CIRCUITS</th>
<th>RELAY CIRCUITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SINGLE HAZARD TWO ZONES NYC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>INPUT CIRCUITS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUPERVISORY ZONE 1 (Valve Tamper)</td>
<td>X</td>
<td>X X</td>
</tr>
<tr>
<td>SUPERVISORY ZONE 2 (Supervisory)</td>
<td>X</td>
<td>X X</td>
</tr>
<tr>
<td>DETECTION ZONE 1 (Detection)</td>
<td>X</td>
<td>X X</td>
</tr>
<tr>
<td>DETECTION ZONE 2 (Supervisory)</td>
<td>X</td>
<td>X X</td>
</tr>
<tr>
<td>DETECTION ZONE 3 (Waterflow)</td>
<td>X</td>
<td>X X</td>
</tr>
<tr>
<td>DETECTION ZONE 4 (Pull Station)</td>
<td>X</td>
<td>X X</td>
</tr>
</tbody>
</table>

**Operation**

When a fire occurs, at least one detector reaches its trip point. One detection circuit is then automatically activated (in crossed zones mode, both detection zones have to be activated) OR the activation of Zone 4 (pull station). The system alarm audible devices sound and, if desired, can be silenced manually. The normally closed (N.C.) solenoid valve of the system is energized, allowing the water to escape from the priming chamber of the deluge valve. The clapper of the deluge valve opens, filling the outlet chamber and flooding the entire area covered by the sprinklers and nozzles. System waterflow audible devices and the water motor gong (if installed) will sound.

**WARNING**! The sprinkler system will continue to operate until the main water inlet valve is manually closed.
Field wiring diagrams electric release, Self-contained:

**Power Limited (supervised) Initiating Device Circuits**
Detection Zone 1, 2, 3, and 4.
Max. loop resistance: 100 ohms
End of line: 5.1K ohms, 1/4W
Leave ELR (provided) on all unused circuits.
Refer to Device Compatibility in the VFR-400 Control Panel Manual.

**Power Limited (supervised) Initiating Device Circuits**
Supervision Zone 1, and 2.
Max. loop resistance: 100 ohms
End of line: 5.1K ohms, 1/4W
Leave ELR (provided) on all unused circuits.
For dry contact supervisory devices such as tamper, low air, or high air switches. (Class-B only)

**Power Limited (supervised) Notification Appliance Circuits**
Output Circuit 1, 2, 3, and 4
Maximum operating voltage: 27Vdc (ripple: 0.3Vdc)
Maximum usable current per circuit: 1.0A
Total current available (all circuits): 2.5A
Polarity is reversed in supervisory condition.
Leave ELR (provided) on all unused circuits.
Refer to Device Compatibility in the VFR-400 Control Panel Manual.

**Auxiliary Power 24Vdc Regulated Source**
Total current available: 0.2A
Resettable for 4 wires smoke detectors
Field wiring diagrams electric release, Self-contained NYC:

**Power Limited (supervised) Initiating Device Circuits**
- Detection Zone 1, 2, 3, and 4.
- Max. loop resistance: 100 ohms
- End of line: 5.1K ohms, 1/4W
- Leave ELR (provided) on all unused circuits.
- Refer to Device Compatibility in the VFR-400 Control Panel Manual.

**Power Limited (supervised) Initiating Device Circuits**
- Supervision Zone 1, and 2.
- Max. loop resistance: 100 ohms
- End of line: 5.1K ohms, 1/4W
- Leave ELR (provided) on all unused circuits.
- For dry contact supervisory devices such as tamper, low air, or high air switches. (Class-B only)

**Power Limited (supervised) Notification Appliance Circuits**
- Output Circuit 1, 2, 3, and 4
  - Maximum operating voltage: 27Vdc (ripple: 0.3Vdc)
  - Maximum usable current per circuit: 1.0A
  - Total current available (all circuits): 2.5A
  - Polarity is reversed in supervisory condition.
  - Leave ELR (provided) on all unused circuits.
  - Refer to Device Compatibility in the VFR-400 Control Panel Manual.

**Auxiliary Power 24Vdc Regulated Source**
- Total current available: 0.2A
- Resettable for 4 wires smoke detectors
Relay module ARM-44

The ARM-44 is an auxiliary relay module designed to operate with the VFR-400 series release panels to provide an additional 8 independent form C relay outputs in 3 different operating modes. The panel communicates with the ARM-44 via the RS-485 and 24 VDC auxiliary power connections on the VFR-400.

### Warning
Leave the drain wire of the shielded cable connected to terminal 5 of TBC.

Card address switch must be set one value higher than the previous one. Set the selector switch at the VFR-400 accordingly.

Selector switch must be set according to the total number of devices installed on the RS-485 terminals. Increment for each device being added.

Relocate existing wires from TBC-1 to 4 to TB1-1 to 4 of ARM-44 then rewire 4 new cables from TB1-1 to 4 of ARM-44 to TBC-1 to 4.

Refer to the ARM-44 datasheet for operating modes of the ARM-44.

<table>
<thead>
<tr>
<th>Mode 1</th>
<th>Relays 1-4 follow the activation of zones 1-4, respectively.</th>
<th>Relays 5-8 follow outputs 5-8, respectively.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode 2</td>
<td>Relays 1-4 follow the activation of zones 1-4, respectively.</td>
<td>Relay 5 operates on any supervisory condition</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Relay 6 operates on any trouble condition</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Relay 7&amp;8 operates on any alarm condition</td>
</tr>
<tr>
<td>Mode 3</td>
<td>Relay 1 operates on any supervisory condition</td>
<td>Relay 2 operates on any trouble condition</td>
</tr>
<tr>
<td></td>
<td>Relay 3&amp;4 operates on any alarm condition</td>
<td>Relay 5-8 follows outputs 5-8, respectively</td>
</tr>
</tbody>
</table>

NOTE: Refer to the ARM-44 datasheet for operating modes of the ARM-44.
Remote Annunciator RA-4410-RC

The RA-4410-RC remote annunciator is designed to operate with the VFR-400 releasing control panel. There are 34 LED’s to indicate a change in panel status. There is a buzzer on the annunciator that sounds for any trouble or supervisory condition. The release control panel supervises and communicates with the annunciator via separate connections for the RS-485 communication and the 24VDC power requirement of the RA-4410-RC. Separate cables should be used for power and communication. Shielded cable MUST be used for the RS-485 communication line. Up to four remote annunciator can be connected to one control panel.
1- Skid mounted Unit

The TOTALPAC®3 unit skids are made of sturdy 14 gauge steel, they are available in four (4) sizes;

- 23" x 25" x 6" (58.4 x 63.5 x 15.2 cm) for 1½", 2" & 3" systems,
- 36" x 25" x 6" (91.4 x 63.5 x 15.2 cm) for 4" system,
- 46" x 25" x 6" (116.8 x 63.5 x 15.2 cm) for 6" system
- 54" x 31" x 6" (137.2 x 78.7 x 15.2 cm) for 8" system

Refer to Figures 1 & 2 for complete dimensions

All surfaces are rust proof coated, inside and outside, with fire red, oven baked polyester powder on phosphate base.

IMPORTANT The TOTALPAC®3 skid units are NOT designed to be installed where they will be subjected to outdoors and/or freezing conditions. Subjecting the unit to conditions outside these limitations might hamper the normal operation of the system.

The skid assembly is pre-assembled and factory tested under ISO-9001 conditions (refer to following figures for installation and clearances details).

Note: This skid unit contains only the mechanical section of the TOTALPAC®3 trim. Electrical connections, control panel and air supply when applicable are provided by others.

Multiple unit installations are easily achieved by manifolding units together at their water inlets but drains shall remain separate and open.
Figure 1 – Dimensions – Preaction:

Optional Shut-off Valve

<table>
<thead>
<tr>
<th>System Size</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>J</th>
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<th>L</th>
<th>M</th>
<th>N</th>
<th>P</th>
<th>Q</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 1/2&quot;</td>
<td>2&quot;</td>
<td>1 1/2&quot;</td>
<td>2&quot;</td>
<td>23&quot;</td>
<td>25&quot;</td>
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<td>11 1/2&quot;</td>
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Note: Dimensions are nominal and may vary ±1/4".
Figure 2 – Dimensions - Deluge:

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</tr>
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</table>

**Note:** Dimensions are nominal and may vary ±¼".
**Figure 3 – Dimensions – Anchoring detail:**

![Anchoring detail diagram](image)

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<th>System size</th>
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<th>C</th>
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**Figure 4 – Skid clearance detail**

![Skid clearance detail diagram](image)

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<th>C</th>
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</table>
Figure 5: Open drain details for single unit:
(see dimensions in table below)

Single Unit Detail

Figure 6: Open drain details for multiple units:
(see dimensions in table below)

Multiple Units Detail

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</table>

Notes:
1. Supply and drain pipes can be connected on either sides of cabinet.
2. All pipes and fittings should meet applicable codes.
3. Actual drain collector diameter shall be determined with detailed hydraulic calculations and is the responsibility of the system designer.
**2- Cabinet for Remote Controlled & Self-contained units**

The TOTALPAC®3 unit skids are made of sturdy 14 gauge steel, they are available in four (4) sizes;

- 23" x 25" x 77" (58.4 x 63.5 x 195.6 cm) for 1½", and 2" systems,
- 36" x 25" x 77" (91.4 x 63.5 x 195.6 cm) for 3" and 4" systems,
- 46" x 25" x 77" (116.8 x 63.5 x 195.6 cm) for 6" system
- 54" x 31" x 81" (137.2 x 78.7 x 205.7 cm) for 8" system

All surfaces are rust proof coated, inside and outside, with fire red, oven baked polyester powder on phosphate base. Cabinet is provided with one or two doors, all provided with a neoprene gasket to absorb vibrations.

**Remote controlled:**
A field wiring electrical junction boxes is integrated with the cabinet for connection of all electrical components in the trim. Pressure switches, supervisory switches, etc. are all factory wired to a terminal strip (TBA) for contractor's field wiring.

**Self-contained:**
A field wiring electrical junction boxes is integrated with the cabinet for connection of detection system, auxiliary contacts and signaling devices. All inputs & outputs are factory wired to a terminal strip (TBA) for contractor's field wiring.

Gauges to indicate air, water supply pressure and priming water pressure are all visible through clear Lexan windows.

**IMPORTANT!** TOTALPAC®3 units are NOT designed to be installed where they will be subjected to outdoors and/or freezing conditions. Refer to environmental data for additional details. Subjecting the unit to conditions outside these limitations might hamper the normal operation of the system.

Cabinet doors are provided with hinges that can easily be disassembled on site to remove the door assemblies for servicing. The cabinet assembly is pre-assembled, pre-wired, and factory tested under ISO-9001 conditions.

Multiple unit installations are easily achieved by manifolding units together at their water inlets but drains shall remain separate and open.
## Integrated Fire Protection System

### Dimensional Data & Cabinet

**Figure 7 Dimensions:**

<table>
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<th>System Size</th>
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**Notes:** Dimensions are nominal and may vary ±¼".
Figure 8 – Cabinet & doors clearance detail

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</table>
Figure 9: Open drain details for single unit:
(see dimensions in table below)

Figure 10: Open drain details for multiple units:
(see dimensions in table below)

<table>
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<tr>
<th>Unit Size</th>
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Notes:
1. Supply and drain pipes can be connected on either sides of cabinet.
2. All pipes and fittings should meet applicable codes.
3. Actual drain collector diameter shall be determined with detailed hydraulic calculations and is the responsibility of the system designer.
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**Limited Warranty**

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

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

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

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

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

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

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

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

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

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

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

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**FireFlex Systems Inc.**
1935, Lionel-Bertrand Blvd.
Boisbriand, Quebec
Canada J7N 1N8
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Toll Free: (866) 347-3353 † Web site: http://www.fireflex.com