Advanced Integrated Fire Protection Systems

TOTALPac® 3

Owner's Operation and Maintenance Manual

DRY
# Integrated Fire Protection System

## Table of contents

### Dry systems

<table>
<thead>
<tr>
<th>Description</th>
<th>Form N°</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General</strong></td>
<td>FM-076A-37</td>
</tr>
<tr>
<td>1- Applicable standards</td>
<td></td>
</tr>
<tr>
<td>2- Listings &amp; Approvals</td>
<td></td>
</tr>
<tr>
<td>3- Environment</td>
<td></td>
</tr>
<tr>
<td>4- General description</td>
<td></td>
</tr>
<tr>
<td>5- Features</td>
<td></td>
</tr>
<tr>
<td>6- Configuration Description</td>
<td></td>
</tr>
</tbody>
</table>

| **Mechanical Section**                                                      | FM-076A-57 |
| 1- Installation, Operation and Instruction                                 |         |
| 1.1- Installation                                                           |         |
| 1.2- Preliminary inspection before placing the system in service           |         |
| 1.3- Placing the system in service                                          |         |
| 1.4- System operation                                                       |         |
| 1.5- Emergency instructions                                                 |         |
| 1.6- Inspections & tests                                                    |         |
| 1.7- Maintenance                                                            |         |
| 2- Standard Dry pipe system Trim Schematic                                  |         |
| 3- HP Dry system Trim Schematic                                             |         |

| **Dry systems Trim Option**                                                | FM-076A-84 |
| 1- Fire department connection                                              |         |
| 2- Semi & Full flange option                                               |         |

| **Air Supply Section**                                                     | FM-076A-88 |
| 1- Cabinet                                                                  |         |
| 2- Skid                                                                     |         |

| **Controls Section**                                                       | FM-076A-90 |

*Continued on next page...*
## Table of contents (cont'd)

<table>
<thead>
<tr>
<th>Dry systems</th>
<th>Description</th>
<th>Form No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Electrical Section</strong></td>
<td></td>
<td>FM-076A-77</td>
</tr>
<tr>
<td><strong>Dimensional Data &amp; cabinet</strong></td>
<td></td>
<td>FM-076A-93</td>
</tr>
<tr>
<td><strong>Limited Warranty</strong></td>
<td></td>
<td>FM-076A-96</td>
</tr>
</tbody>
</table>

---

**Copyright © 2013 - 2014 FireFlex Systems Inc.**

All Rights Reserved

Reproduction or use, without express written permission from FireFlex Systems Inc, of any portion of this manual is prohibited. While all reasonable efforts have been taken in the preparation of this manual to assure its accuracy, FireFlex Systems Inc assumes no liability resulting from any errors or omissions in this manual, or from the use of the information contained herein. TOTALPac® is a registered trademark of FireFlex Systems Inc.

FireFlex Systems Inc. reserves the right to make changes to this manual and the data sheets herewith at any time, without prior notification.
1- Installation, Operations & Instructions

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, in accordance with applicable NFPA standards.

3. Connect the 120/220 VAC power feed for the optional air compressor on a separate breaker at the electrical distribution panel. (see TBB at FIELD WIRING DIAGRAM).

**Note:** Do not use this circuit breaker for any other parallel application. Provide the circuit breaker with a safety lock if necessary to avoid any accidental closure.

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

5. Perform preliminary inspection outlined below prior to putting system in service.

6. Put the system into operation as outlined below.

7. Perform the annual inspection sequence.

8. 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.

9. 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 putting the system into operation

► HP Dry Pipe System

1. Open door to mechanical section. Main Water Supply Control Valve (D1) should be CLOSED. Air supply 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 should show 0 psi pressure.

2. Using the built-in contractor's hydrostatic test ports (see TRIM SCHEMATIC and AIR SUPPLY for location) fill sprinkler system with water and maintain pressure as per NFPA-13 requirements.

Caution Do not subject the air pressure gauges to hydrostatic pressures above 250 psi. Close gauge valves before proceeding with hydrostatic test.

3. Connect all the supervisory and alarm devices, if applicable, according to electrical schematics (see on field wiring diagram in PROGRAMMING SECTION).

4. If applicable, connect the AC power for the integrated air compressor on a separate breaker in the electric distribution panel (see TBB on field wiring diagram in PROGRAMMING SECTION).

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

5. After the HP® Dry Valve is set, operation requires the release of priming water from the priming chamber. This may be by automatic or manual operation. For specific trim arrangement, refer to the MECHANICAL TRIM DESCRIPTION.

Refer to current Viking Technical Data describing individual components of the specific Viking Dry pipe System. Technical Data describing the Viking Dry pipe valve, and other system components are available in the Viking Engineering Design Data Book, CD-ROM or Web Site. Also, refer to applicable installation standards, codes and Authorities Having Jurisdiction.

► Regular Dry Pipe System

1. Open door to mechanical section. The Main Water Supply Control Valve (D1) should be CLOSED.

2. Open Drain Valve (D3) located on the inlet of the Dry Valve (A1).

3. Drain all water from the dry pipe system. If the system has operated or if water has entered the system, open all auxiliary drains and the system test valve. Allow enough time to completely drain the system.

Perform steps 4 through 10 to set the dry valve and/or inspect the internal operating parts of the dry valve.

4. Verify that the dry pipe system is not pressurized.

5. Referring to Figure 2, use a 15/16” wrench to loosen and remove hand-hole cover bolts (W). Remove hand-hole Cover (Z1).

Caution Clapper arm assembly (H) and clapper assembly are spring loaded to open. NEVER place hands inside the Dry Valve if the clapper assembly is latched closed.

To release a latched clapper assembly for service:

a) Insert the re-setting tool through the hole in hook assembly (Q), across the fulcrum cast on top of clapper arm assembly (H) until the re-setting tool contacts the stopping boss on top of clapper arm assembly (H) (see Fig.2C)

b) Apply a downward force on the end (outside the valve) of the re-setting tool. Hook assembly (Q) will slide toward the hand-hole and off clapper arm assembly (E). Clapper arm assembly (E) and clapper assembly (H) will forcefully open, impact against latch (B) and latch in the open position.

Note: Inspection and cleaning procedure step 6 below is considered part of the annual trip test.

6. Inspect and clean the internal parts of the valve. Give special consideration to the water seat (R), air seat (V) and clapper rubber (U). Wipe away all contaminants, dirt, and mineral deposits. Do not use solvents or abrasives. Operate all parts to test freedom of movement. Renew or replace damaged or worn parts as required.

Caution NEVER apply any lubricant to seats, gaskets, or any internal operating parts of the Dry Valve. Petroleum based grease or oil will damage rubber components and may prevent proper operation of the Dry Valve.

7. To set the dry valve clapper: (refer to figures 2, 2a, 2b & 2c)

a) Raise the latch (B) to release spring loaded clapper arm assembly (H) from the latched open position.

b) Move the clapper arm assembly (H) down toward the horizontal position (see figure 2B).
c) While holding spring loaded clapper arm assembly (H) down, insert the re-setting tool through the hole in the hook assembly (Q) across the fulcrum cast on the top of the clapper arm assembly (H), until the re-setting tool contacts the stopping boss as shown in Fig. 2C.

d) Apply a sharp upward force at the end of the re-setting tool. Hook (Q) will slide forward on the resetting bar and latch the clapper closed with a positive setting action. (See Fig. 2C).

8. Priming water is not required and may not be desirable where clean, good quality fresh water is not available. If priming water is desired, fill the dry valve with water to the bottom of the hand-hole.

9. Verify that the intermediate chamber of the dry valve is free of water. No water should flow from the drip check valve (B7) when plunger is pushed.

10. Visually inspect hand-hole cover gasket (Z2). Verify that it is in good condition.

11. Re-install hand-hole cover (Z1), gasket (Z2) and hand-hole cover bolts (W).

12. Close all auxiliary drains, the system test valve (B6), and the priming water level test valve (B1) on the dry valve trim. The main drain valve (D3) should remain open.

13. If equipped with a Viking Accelerator and external Anti-flood device:
   a) Close the ½" (15mm) anti-flood isolation valve.
   b) Observe the air pressure gauge on top of the Accelerator. The gauge must read zero before the accelerator will automatically reset. It may be necessary to loosen, remove, and re-install (use appropriate wrench) the air gauge to vent trapped air pressure from the upper chamber of the Accelerator.

14. Open the dry system air supply and establish desired system pressure. See Table 1 above for suggested air pressure settings. Never exceed 60 Psi (414 kPa) air pressure.

<table>
<thead>
<tr>
<th>Water Pressure</th>
<th>Maximum Air Pressure Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSI</td>
<td>kPa</td>
</tr>
<tr>
<td>50</td>
<td>345</td>
</tr>
<tr>
<td>75</td>
<td>517</td>
</tr>
<tr>
<td>100</td>
<td>690</td>
</tr>
<tr>
<td>150</td>
<td>1034</td>
</tr>
<tr>
<td>175</td>
<td>1207</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Water Pressure</th>
<th>Minimum Air Pressure Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSI</td>
<td>kPa</td>
</tr>
<tr>
<td>15</td>
<td>103</td>
</tr>
<tr>
<td>20</td>
<td>138</td>
</tr>
<tr>
<td>25</td>
<td>172</td>
</tr>
<tr>
<td>35</td>
<td>241</td>
</tr>
<tr>
<td>45</td>
<td>310</td>
</tr>
</tbody>
</table>

15. Verify that the intermediate chamber of the dry valve is free of water. No water should flow from the drip check (B7) when the plunger is pushed.

16. If equipped with a Viking Accelerator and External Anti-flood Device: When pressure in the accelerator air pressure gauge equals the system set pressure, OPEN and secure the ½" (15mm) anti-flood isolation valve.

17. Slowly open the water supply main control valve (D1).

18. When flow is developed from the main drain (D3), CLOSE the main drain valve.

19. Fully open the water supply main control valve (D1).

20. Secure all valves in their normal operating position.

21. Notify Authorities Having Jurisdiction and those in the affected area that the system is in service.

1.3 Placing the System In Service

Regular Dry Pipe system: (refer to Fig.2) When the Dry Pipe System is ready to be placed in service, verify that all equipment is adequately heated and protected to prevent freezing and physical damage.

Caution The dry valve clapper must be latched open during performance of the hydrostatic test. Do not perform a 200 psi (1 379 kPa) hydrostatic system test with the dry valve clapper in the closed (set) position.

Never exceed 60 PSI (414 kPa) pressure in the system piping with the dry valve clapper closed.

Do not expose the Viking Accelerator to the hydrostatic test. For warnings and considerations regarding hydrostatic testing of the Viking Accelerator and other system components, refer to technical Data for the equipment used.

1. Verify that the water supply main water supply control valve (D1) is closed.

2. Open the main drain valve (D3) (located on the inlet of the dry valve) (A1).

3. Drain all water from the dry pipe system. If the system has operated, or if water has entered the system, open all auxiliary drains and the system main drain valve (D3). Allow enough time to completely drain the system.

4. If equipped with a Viking Accelerator and external Anti-flood device:
   a) Close the ½" (15mm) anti-flood isolation valve.
   b) Observe the air pressure gauge on top of the Accelerator. The gauge must read zero before the accelerator will automatically reset. It may be necessary to loosen, remove, and re-install (use appropriate wrench) the air gauge to vent trapped air pressure from the upper chamber of the Accelerator.

5. Pressurize the dry pipe system as per table 1 above and MAKE SURE NOT TO EXCEED 60PSI (414 kPa). Do not perform pressure test on the trim. Correct all leaks before leaving this test. OPEN Main Drain Valve (D3). Completely flush the Dry Pipe System. Verify that the dry valve intermediate chamber is free from water. No water should flow from the drip check (B7) when the plunger is pushed.
6. If equipped with a Viking Accelerator and external Anti-
flood device: when the pressure shown on the
Accelerator pressure gauge equals the system set
pressure shown on the Dry Pipe System air pressure
gauge (E3), OPEN and secure the ½” (15mm) Anti-flood
isolation valve.

7. Slowly OPEN the main water supply control valve (D1).
8. When flow is developed from the main drain, CLOSE the
main drain valve (D3).
9. Fully OPEN the water supply main control valve (D1).
10. Secure all valves on their normal operating position.
11. Notify Authorities Having Jurisdiction and those in the
affected area that the system is in service.

▸ **HP® Dry Pipe System:**
1. Verify that the system has been properly drained. Flow
Test Valve (B6) should be open. Verify that the
Emergency Release (B10) handle is closed. Priming
valve (B1) should be closed. Once sprinkler piping is
drained, close system main drain valve (D3).
2. Restore pneumatic pressure to the system piping.
Maintain as required to the Anti-Flood Device.
3. Open Priming valve (B1). Water pressure should be
present on Priming Water Gauge (B11).
4. Open Flow test Valve (B6).
5. Partially open Main Water Supply Control Valve (D1).
6. When full flow develops from Flow test Valve (B6), close
the Flow test Valve.
7. Fully open and secure Main Water Supply Control Valve
(D1).
8. Verify that the Alarm Test Valve (B5) is close and that all
other valves are in their normal operating position.
9. Depress the plunger of the Drip Check (B7). No water
should flow from the Drip Check when the plunger is
pushed.

1.4 System Operation
1.4.1 In the SET condition:
▸ **Regular Dry Pipe system:** In the normal set condition
the system piping is filled with compressed air or nitrogen. The clapper (E) and air plate (L) assemblies (see Figure 2)
combine to form a floating member assembly. With the
clapper assembly (E) latched closed, system air pressure
forces the member assembly down, sealing the water
seat (R) from the intermediate chamber.

▸ **HP® Dry Pipe System:**
In the normal set condition water supply pressure is trapped
in the priming chamber by spring loaded check valve (B4)
and anti flood device (F3). anti flood device is held closed
by pressure maintained in the pneumatic release system.

1.4.2 In a fire condition:
▸ **Regular Dry Pipe system:** When a sprinkler operates,
the system air pressure is reduced. When system air
pressure is reduced to the differential pressure tripping
point of the valve, water supply pressure in the inlet
chamber lifts the member assembly off the water seat (R)
and flows into the intermediate chamber.
As the member assembly continues to rise, the latching hook (Q) is forced against operating pin (Y) which causes the hook (Q) to pivot on hook rod (F2) and unlatch the clapper. The clapper is spring-loaded and swings to a full-open locked position (see figure 2A). When equipped with the optional Accelerator and external Anti-flood Device, a drop in system air pressure causes the Accelerator to operate. Operation of the Accelerator causes the Anti-flood Device to open allowing system air pressure to enter the dry valve intermediate chamber. This immediately destroys the pressure differential, causing the member assembly to rise faster.

The intermediate chamber is normally at atmospheric pressure and is connected to the alarm line. When the valve trips the intermediate chamber and alarm line are pressurized with the system water pressure, activating alarms connected to the Dry Valve trim.

Sprinkling continues until the main supply water control valve (D1) is manually closed.

**HP® Dry Pipe System:** When a Viking sprinkler head operates, pressure in the system piping escapes causing alarms controlled by Air Supervisory Switch (E4) to activate and Anti-flood Device to open. When Anti-flood Device opens, pressure is released from the priming chamber to open drain manifold faster than it is supplied through the restricted orifice (B3). The Deluge valve (A1) clapper opens to allow water to flow into the system piping and activate alarm devices, including a water flow Alarm Pressure Switch (C1). Water will immediately flow from any sprinklers which may have operated. When the deluge valve operates, the sensing end of the PORV (B9) is pressurized, causing the PORV to open. When the PORV opens, it drains the priming water pressure of 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.

Downstream of the discharge outlet, a check valve (D2) is installed to isolate the discharge outlet from system air pressure. When the water from the discharge outlet passes by the check valve, it will enter to air connection to the system riser. To eliminate water from entering the Viking HP dry system trim, a Model A-1 Float Check Valve (F5) is installed between the anti-flood device and the system riser. The Model A-1 Float Check Valve (F5) allows air to pass from the system riser to the anti-flood device to set the system.

When the system discharges, the Model A-1 Float Check Valve (F5) closes when water flows to the inlet side of the device, protecting the anti-flood device from water pressure on its inlet end and protecting the Deluge Valve from resetting.
1.4.2 Trouble conditions:

► Regular Dry Pipe system: If the valve trips when no sprinkler has fused, either there is a loss of air in the system or an extreme pressure surge in the water supply. If there is a loss of air in the system, check for leaks and check for proper air supply. Consider adding a Air Pressure Maintenance Device on systems provided with an external air supply. If there is an extreme surge in the water supply, increase the air pressure on the system. The maximum limit is 60 psi (414 kPa).

Note: Increasing system air pressure may increase trip time of the dry valve.

If water is constantly passing through the drip check (B7) when the valve is in the SET position, either water is leaking over the water seat into the intermediate chamber or the alarm test valve (B5) in the bypass connection of the dry valve trim is not tightly closed. If water is leaking over the seat of the valve, inspect and clean the water seat and clapper rubber (Refer to section 4. PLACING THE SYSTEM IN SERVICE). Consider replacing the clapper rubber. If the water seat has been pitted or damaged by debris it may be necessary to replace the base assembly. If the alarm test valve (B5) is leaking, verify that water is not getting past the valve.

► HP® Dry Pipe System: In the event of an air supply failure and slow leakage of air from the system piping, alarms connected to the Air Supervisory Switch (E3) will signal a low air pressure condition.

Failure to restore air supply to the system will result in operation of the Anti-Flood Device and the Deluge valve (A1) will open. Similarly, if the system piping is leaking due to mechanical damage, the Anti-Flood Device will operate and the Deluge valve (A1) will open. Water will flow from any open sprinklers or piping on the system. Water motor alarms (C2) and alarms connected to Alarm Pressure Switch (C1) will activate.

1.4.3 Manual operation:

Anytime the handle of the Priming Water Level Test Valve (B1) on the regular Dry Pipe system or the Emergency Release (B10) on the HP Dry pipe system is pulled, pressure is released from the priming chamber; Dry Pipe or 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.
1.5 Emergency Instructions
(Refer to Trim Schematic)

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.

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.

10. Close Water Supply Control Valve (D1).
11. Open system Main Drain Valve (D3).

**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 Dry Pipe Valve or Deluge Valve is reset or taken out of service.

12. Shut-off the air (or nitrogen) supply to the dry system piping (Refer to the Air Supply Section for additional details).
13. Relieve all pressure from the dry system piping. If the system has operated, open all auxiliary drains and the System Test Valve (B6) to allow the system to drain completely.
14. On HP® Dry Pipe System, close Priming Valve (B1).
15. 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.
16. Replace any sprinkler heads that have been damaged, or have been exposed to fire conditions.
17. Perform all maintenance procedures recommended in MAINTENANCE, describing individual components of the system that has operated.
18. Return the system to service as soon as possible. Refer to PLACING THE SYSTEM IN SERVICE.
1.6 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 Single Interlocked Dry pipe 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.

1.6.1 Full Flow Trip test:

Performance of a Trip Test is recommended annually during warm weather.

**Caution** Performing this test will cause the Dry pipe Valve to open. Water will flow into the sprinkler piping and from any open sprinkler unless the Optional Shut-Off Valve is installed and closed prior to the test. Take necessary precautions to prevent damage.

**Note:** Alarms and electric panels controlled by the alarm pressure switch (C1) cannot be interrupted.

9. Verify that the water supply main control valve (D1) is open, and all other valves are in their normal operating position. If equipped with an optional Anti-flood Device the ½” Anti-flood Device isolation valve must be OPEN and secured.

1.6.2 Drain Test:

All sprinkler systems trims need to be properly drained and this is no different for the TOTALPac®3 units. In order to avoid back pressurizing the trim, the drain manifold outlet shall be piped to an open drain.

Article 10-2.4.4 of NFPA-13, 1999 titled "System Operational Tests reads: The main drain valve shall be opened and remain open until the system pressure stabilizes. The static and residual pressures shall be recorded on the contractor’s test certificate."

This mandated drain test will flow a significant amount of water and is the perfect opportunity to flush the system and confirm that the open drain works as intended.

---

1. FULLY OPEN the main drain valve (D3) to flush away any accumulation of foreign material.
2. CLOSE the main drain valve (D3).
3. Record water pressure supply pressure (B12) and system pneumatic pressure (B11).
4. Open the inspectors system test valve to simulate operation of the dry system. Record the following:
   a) Elapsed time from opening of the inspectors test valve to operation of the dry valve.
   b) System pressure (B11) when the dry valve operated.
   c) Elapsed time from opening of the inspectors test valve to development of full flow of water from the system inspectors test connection.
   d) Any other information required by the Authority Having Jurisdiction.
5. Verify that alarms operate properly.
6. Allow water to flow from the system inspectors test connection until it appears clear and clean.
7. When test is complete, close the water supply main control valve (D1).
8. Perform steps of PLACING SYSTEM IN SERVICE.
1.7 Maintenance

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

For additional details, refer to MAINTENANCE INSTRUCTIONS provided in 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 (B11 & B12) to ensure good condition and normal water supply pressure.
2. Control valve (A1) 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 alarm test valve (B5))
2. Main Drain Test (Riser Flow Test) to determine if change in water supply or control valve position.

Test procedure:

1. Record the pressure indicated by the supply water gauge (B12).
2. Close the alarm control valve (D1).
3. Fully open the main drain valve (D3).
4. Record residual pressure.
5. Close the main drain valve (D3) slowly.
6. Record the time taken for supply water pressure to return to the original pressure.
7. Open the alarm control valve (D1).
8. Quick opening devices.

Semi-Annually:

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

Annually:

1. Trip test: every years with control valve partially open.
2. Record on trip test including trip time and related information shall be maintain locally for comparison.
3. Automatic air pressure maintenance device (as per manufacturer instruction)
4. Leak resulting in air pressure losses greater than 10 psi per week shall be repaired.

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.
This page was intentionally left blank
2 - Standard Dry Pipe System

2.1 General

The TOTALPac®3 Dry Pipe System with the Viking Dry Pipe Trim utilizes a Viking Dry Valve (A1). The system piping from the Dry Pipe Valve to the fusible sprinklers is filled with pressurized air or nitrogen.

Dry Pipe TOTALPac®3 Systems are commonly used to protect unheated structures or areas where the system is subject to freezing conditions.

Note: The TOTALPac®3 Trim is provided with a contractor’s hydrostatic test water supply port handily located on the trim (see trim schematic for exact location). Simply remove the plug of the Tee connection and connect the test pump between this port and the system side port located on the air trim (refer to AIR SUPPLY SECTION for exact location).

2.2 Normal condition (refer to trim schematic)

1. Valves:
   a) Water supply control valve (D1) OPEN.
   b) Every water supply control valves situated upstream shall be OPEN
   c) Priming level test valve (B1) CLOSED.
   d) Main drain valve (D3) CLOSED.
   e) Alarm test valve (B5) CLOSED.
   f) Air supply valve (E10) OPEN. (See AIR OPTION SECTION).
   g) Pressure gauges valves are OPEN.

2. Pressure gauges:
   a) Water supply (B12) – at water supply water
   b) Air pressure (B13) - As per Table 1 below.

3. Pressure switches:
   a) Low / high air supervisory switch (E4) : as per Table 1 below.
   b) Alarm switch (C1) - should operate when pressure is equal or above 5 psi.

<table>
<thead>
<tr>
<th>Maximum water pressure</th>
<th>System air pressure</th>
<th>Compressor settings</th>
<th>pressure switch (E4) settings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Minimum</td>
<td>Maximum</td>
<td>Start</td>
</tr>
<tr>
<td>Psi</td>
<td>kPa</td>
<td>Psi</td>
<td>kPa</td>
</tr>
<tr>
<td>50</td>
<td>345</td>
<td>15</td>
<td>103</td>
</tr>
<tr>
<td>75</td>
<td>517</td>
<td>20</td>
<td>138</td>
</tr>
<tr>
<td>100</td>
<td>690</td>
<td>25</td>
<td>172</td>
</tr>
<tr>
<td>150</td>
<td>1034</td>
<td>35</td>
<td>241</td>
</tr>
<tr>
<td>175</td>
<td>1207</td>
<td>45</td>
<td>310</td>
</tr>
</tbody>
</table>

Note: all pressure setting has a 5% tolerance
Trim Schematic: Standard Dry Pipe System

Components:

A1  Dry valve
B1  Priming / water level test valve
B3  1/16" Restricted orifice
B5  Alarm test valve
B7  Drip check valve
B8  Drain check valve
B12 Water supply pressure gauge & valve
B15 7/32" Restricted orifice

C1  Alarm pressure switch
C2  Connection to water motor gong (strainer supplied by contractor)
C3  Hydraulic alarm cut-off valve
D1  Water supply control valve
D3  Main drain valve
E4  Air supervisory pressure switch
3 - High-Pressure Dry Pipe System (HP®)

3.1 General

The TOTALPAC®3 HP® Dry Pipe System with the Viking High Pressure (HP®) Dry Pipe Trim utilizes a Viking Model E Deluge Valve (A1). The system piping from the Dry Pipe Valve to the fusible sprinklers is filled with pressurized air or nitrogen. A riser check valve is required to isolate the system air pressure from the outlet chamber of the deluge valve.

An air check system is a small dry system which is directly connected to a wet pipe system. The air check system uses a dry valve and an air supply but does not have a separate alarm. The alarm is provided by the main alarm valve.

Dry Pipe TOTALPAC®3 Systems are commonly used to protect unheated structures or areas where the system is subject to freezing conditions. High pressure dry systems are commonly used where sprinkler system supply pressures are above 175 psi (12 bar), small systems where anti-freeze solutions are undesirable and smaller conventional dry pipe valves are not available.

Note: The TotalPac®3 Trim is provided with a contractor's hydrostatic test water supply port handily located on the priming trim (see trim schematic for exact location). Simply remove the plug of the Tee connection and connect the test pump between this port and the system side port located on the air trim (refer to AIR SUPPLY SECTION for exact location).

3.2 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) Air supply is OPEN (see AIR SUPPLY section).
   i) 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) Sprinklers air pressure (E3) – as per Table 2 below.

3. Pressure switches
   a) Alarm switch (C1) - should activate when pressurized higher than 5 psi.
   b) Low air pressure switch (E4) - as per Table 2 below.

<table>
<thead>
<tr>
<th>Maximum water pressure</th>
<th>System air pressure</th>
<th>Compressor settings</th>
<th>pressure switch (E4) settings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Minimum</td>
<td>Maximum</td>
<td>Start</td>
</tr>
<tr>
<td>Psi</td>
<td>kPa</td>
<td>Psi</td>
<td>kPa</td>
</tr>
<tr>
<td>50</td>
<td>345</td>
<td>15</td>
<td>103</td>
</tr>
<tr>
<td>75</td>
<td>517</td>
<td>20</td>
<td>138</td>
</tr>
<tr>
<td>100</td>
<td>690</td>
<td>25</td>
<td>172</td>
</tr>
<tr>
<td>150</td>
<td>1034</td>
<td>35</td>
<td>241</td>
</tr>
<tr>
<td>175</td>
<td>1207</td>
<td>40</td>
<td>276</td>
</tr>
<tr>
<td>200</td>
<td>1379</td>
<td>50</td>
<td>345</td>
</tr>
<tr>
<td>250</td>
<td>1724</td>
<td>55</td>
<td>379</td>
</tr>
</tbody>
</table>

Note: all pressure setting has a 5% tolerance
Trim Schematic: High-pressure Dry Pipe System (HP®)

Trim Components:

A1 Deluge valve
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
C1 Alarm pressure switch
C2 Connection to water motor gong (strainer supplied by contractor)
D1 Water supply control valve
D2 Riser check valve
D3 Main drain valve
E4 Air pressure supervisory switch
F3 Anti-flood device
F4 Anti-flood device pressure gauge
F5 Spring Loaded Check Valve
1. 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.

3. Anti-column device option:
The model LD-1 anti-column device is an optional trim component designed for use with dry pipe sprinkler systems. The anti-column device automatically prevents an unwanted water column from establishing within the system riser. On dry pipe sprinkler systems the anti-column device prevents water from columning downstream of the dry valve assembly.
1. **Shut-off valve & sight glass:**

<table>
<thead>
<tr>
<th>Note: Shut-off valve &amp; sight glass option is available on HP Dry only.</th>
</tr>
</thead>
</table>

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 preaction 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) (See annual test under the INSPECTION AND MAINTENANCE section.) Using a flashlight in 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 – Shut-off valve & sight glass**
1 Cabinet Air Supplies

Dry pipe sprinkler systems using air pressure for supervisory or releasing purposes are provided with either internal or external supervised air supplies.

Three (3) styles of air supplies are available for the TotalPac®3 units depending on needs or configurations. These air supplies are all factory assembled, mounted in the cabinet and pressure tested. They are all located in the top part of the cabinet, hung on mounting rails above the valve trim. Here is the description of those options:

Air Supply Style "A": (Refer to Figure 1)
Air supply style "A" includes the air compressor mounted inside the TotalPac®3 cabinets with its supervisory trim and options. Compressors are of the oilless piston type without reservoir and are factory piped to the sprinkler piping system riser, all within the TotalPac®3 cabinets. They are available in four (4) sizes, see table 1 for details.

<table>
<thead>
<tr>
<th>System sizes</th>
<th>Compressor sizes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1/2&quot;</td>
<td>1/6 HP 1/3 HP 1/2 HP 1 HP 1.5 HP 2 HP</td>
</tr>
<tr>
<td>2&quot;</td>
<td>n/a n/a</td>
</tr>
<tr>
<td>3&quot;</td>
<td>n/a n/a</td>
</tr>
<tr>
<td>4&quot;</td>
<td>n/a n/a</td>
</tr>
<tr>
<td>6&quot;</td>
<td>n/a n/a</td>
</tr>
<tr>
<td>8&quot;</td>
<td>n/a n/a n/a</td>
</tr>
</tbody>
</table>

All the air compressors have open, single phase motors with internal thermal protection and can be ordered in three supply voltages settings:

- 115Vac-60Hz
- 230Vac-60Hz
- 220Vac-50Hz.

Air Supply Style "B": (Refer to Figure 2)
Used only when an external air supply is provided by others (either compressor, plant air or dry nitrogen cylinders) and piped to the air inlet port of the unit. Air supply style "B" provides an Air Pressure Maintenance Device (APMD) trim, factory mounted in the TotalPac®3 cabinet.

Air Supply Style "D": (Refer to Figure 3)
Mainly used with Dry pipe systems protecting refrigerated spaces and freezers, where a special dry external air supply unit is piped directly to the system riser inside the freezer itself, as shown in NFPA-13. Air supply Style "D" provides only an air supervisory and shut-off trim.

Ambient temperature at the special external air supply unit location should not exceed 104°F (40°C). Refer to NFPA and Factory Mutual Codes & Standards for details on refrigerated spaces applications. Air supply style "D" can also be used when the contractor prefers to provide his own air supply & regulation trim, mounted outside the TotalPac®3 cabinet.

Note: When air supplies style "B" or "D" are selected, the air supply should be provided and installed by the sprinkler contractor OUTSIDE of the TotalPac®3 Cabinet as it is NOT provided with the unit.

1.1 Air supply design and selection:
The air supply compressor should be sized to automatically establish the total required air pressure in 30 minutes. External air supply should be provided with an Air Maintenance Device (air supply style "B") to regulate and restrict the flow of supervisory air into the sprinkler system piping.

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.

Air compressor selection Table:

<table>
<thead>
<tr>
<th>H.P</th>
<th>CFM @ 40 psi</th>
<th>120Vac System capacity (gallon) to Pump to 40 psi in 30 Minutes</th>
<th>220Vac System capacity (gallon) to Pump to 40 psi in 30 Minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/6</td>
<td>1.33</td>
<td>125</td>
<td>103</td>
</tr>
<tr>
<td>1/3</td>
<td>2.61</td>
<td>250</td>
<td>198</td>
</tr>
<tr>
<td>1/2</td>
<td>4.06</td>
<td>365</td>
<td>301</td>
</tr>
<tr>
<td>1</td>
<td>7.40</td>
<td>615</td>
<td>519</td>
</tr>
</tbody>
</table>

Note: Selection of the proper air compressor size is the responsibility of the installing contractor.
1.2 Connecting the Air Compressor to AC power

The motor must be protected against short circuit, overload and excessive temperature rise. Fuses, motor protective switches and thermal protective switches provide the necessary protection in these circumstances.

Fuses only serve as a short circuit protection of the motor (wiring fault), not as protection against overload. Those are provided and wired by the electrical contractor. An isolation switch (for location detail, refer to Figure 2 in CONTROLS Section) is also provided in the TOTALPac®3 Cabinet and is factory wired, allowing powering off the air compressor while some maintenance work on the unit is done, without disturbing the rest of the system.

Connect non-energized AC power to the air compressor. Refer to field wiring diagram into electrical section of the present document.

### Compressor Service Factor Amp (S.F.A) rating

<table>
<thead>
<tr>
<th>Compressor Size (HP)</th>
<th>115Vac / 60Hz</th>
<th>230Vac / 60Hz</th>
<th>220Vac / 50Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/6</td>
<td>5.0 Amp.</td>
<td>2.5 Amp.</td>
<td>1.3 Amp.</td>
</tr>
<tr>
<td>1/3</td>
<td>7.4 Amp.</td>
<td>3.7 Amp.</td>
<td>2.5 Amp.</td>
</tr>
<tr>
<td>1/2</td>
<td>10.0 Amp.</td>
<td>5.0 Amp.</td>
<td>4.0 Amp.</td>
</tr>
<tr>
<td>1</td>
<td>18.0 Amp.</td>
<td>9.0 Amp.</td>
<td>6.0 Amp.</td>
</tr>
</tbody>
</table>

1.3 Operation

**Air Supply Style “A”:**

1.3.1 To Apply Air Supply:

Establish AC power for the air compressor by activating the correspondent circuit breaker at the electrical distribution panel. Start compressor by activating the compressor isolating switch (E15) located on the junction box of the unit (refer to CONTROL SECTION, Fig.1&2 for exact location of the isolating switch).

If the air compressor motor fails to start or slows down under load, shut the compressor off. Check that the supply voltage agrees with the motor nameplate.

A Float Check Valve (E9) is provided with Air Option “A”. The Float Check Valve allows sensing of air pressure in the system during supervisory times of the system.

1.3.2 To close air supply:

Turn off the compressor isolating switch (E15).

1.3.3 To adjust system air pressure:

**WARNING** The cut-out/cut-in differential switch adjustment screw (small screw to the right) is factory set. **DO NOT CHANGE ITS SETTING.** Any unauthorized modification of this setscrew adjustment will void the system warranty and may also prevent the system from operating normally.

The air compressor cut-off pressure switch (E2) (shown below with its metal cover removed) has its air compressor cut-out adjustment switch (middle screw) factory set. This switch should not need any adjustment but if necessary, follow the instructions below:

1. Remove the metal cover of the compressor air pressure switch (E2).
2. To raise the cut-out pressure of the air compressor, turn the cut-out adjustment screw (middle) half a turn CLOCKWISE.
3. Open the system main drain valve (D3) and let the pressure drop until the air compressor (E1) restarts. Check pressure reading on the system pressure gauge (E3) when the air compressor stops again. Repeat until the desired pressure is reached. Once all done, replace the metal cover on the switch (E2).
Air supplies style "B":

1.3.4 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.

In order to accelerate filling of sprinkler piping by air pressure, bypass valve (E8) can be opened by placing handle in line with valve body while piping is initially filled by the air compressor. This valve (E8) must then be closed (handle crossways to valve body) and kept in this position once the system is filled with air.

1.3.5 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. Be sure bypass valve (E8) is closed (handle crossways to valve body).

1.3.6 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), and bypass valve (E8) is closed (handle crossways to valve body) prior to performing this operation. Loosen lock nut and turn pressure adjustment nut clockwise to increase air pressure or counter-clockwise 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.

Air supply style "D":

1.3.7 To Apply Air Supply:

Turn on upstream air supply. Open air shut-off valve (E14) by placing handle in line with valve body.

1.3.8 To Close Air Supply:

Close bypass air shut-off valve (E14) (handle crossways to valve body).
1.4 Maintenance and inspection:

To drain the air supply accumulator:

The amount of moisture pumped into the system and how quickly it accumulates is proportional to the amount of humidity in the air and how long the compressor is in operation. This unit has been designed to operate between 32 and 100°F.

At least once a year, open air option drain valve (E12) until all condensate water is drained from the air receiver. Close air option drain valve.

WARNING The relief valve and outlet pipe of the air compressor may become very hot during normal operation. Do not touch the valve, compressor heads or outlet piping until the compressor has been turned off and allowed to cool.

A safety relief valve is provided on standard compressors and is preset at the factory. Do not exceed or adjust safety relief pressures other than those preset at the factory.

WARNING Do not unscrew relief valve head entirely off while the compressor is operating. Ejection of valve parts could cause severe injury.

Air supplies style "B":

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.
- If adjustment is necessary, refer to paragraph 1.3 of the current Section

Figure 1 – Air Supply Style "A"

(Cabinet mounted air compressor)
Integrated Fire Protection System

Dry-pipe air supply

Air Option Components:

- E1  Air compressor
- E2  Air compressor "Cut-off" pressure switch
- E3  System air pressure gauge
- E4  Air supervisory pressure switch
- E9  Float check valve
- E10 Soft-seat check valve
- E11 Air compressor check valve
- E12 Air option drain valve
- E15 Compressor isolating switch (not shown)
Figure 2 – Air Supply Style "B"

(APMD without air compressor)

**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
- **E8** APMD bypass valve
- **E16** Swing check valve

**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. When the system is put in service, input valve (E6) must be open first.
Figure 4 – Air Supply Style "D"
(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
- E6 Air shut-off valve
- E16 Swing check valve
## Integrated Fire Protection System

### Dry-pipe air supply

Table 1: Standard Dry pipe system

<table>
<thead>
<tr>
<th>Maximum water pressure</th>
<th>System air pressure</th>
<th>Compressor settings</th>
<th>pressure switch (E4) settings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Minimum</td>
<td>Maximum</td>
<td>Start</td>
</tr>
<tr>
<td>50</td>
<td>345</td>
<td>15</td>
<td>103</td>
</tr>
<tr>
<td>75</td>
<td>517</td>
<td>20</td>
<td>138</td>
</tr>
<tr>
<td>100</td>
<td>690</td>
<td>25</td>
<td>172</td>
</tr>
<tr>
<td>150</td>
<td>1034</td>
<td>35</td>
<td>241</td>
</tr>
<tr>
<td>175</td>
<td>1207</td>
<td>45</td>
<td>310</td>
</tr>
</tbody>
</table>

Table 2: HP Dry pipe system

<table>
<thead>
<tr>
<th>Maximum water pressure</th>
<th>System air pressure</th>
<th>Compressor settings</th>
<th>pressure switch (E4) settings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Minimum</td>
<td>Maximum</td>
<td>Start</td>
</tr>
<tr>
<td>50</td>
<td>345</td>
<td>15</td>
<td>103</td>
</tr>
<tr>
<td>75</td>
<td>517</td>
<td>20</td>
<td>138</td>
</tr>
<tr>
<td>100</td>
<td>690</td>
<td>25</td>
<td>172</td>
</tr>
<tr>
<td>150</td>
<td>1034</td>
<td>35</td>
<td>241</td>
</tr>
<tr>
<td>175</td>
<td>1207</td>
<td>40</td>
<td>276</td>
</tr>
<tr>
<td>200</td>
<td>1379</td>
<td>50</td>
<td>345</td>
</tr>
<tr>
<td>250</td>
<td>1724</td>
<td>55</td>
<td>379</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. Dry-pipe sprinkler systems skids are all provided without the external supervised air supplies.

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. When an air pressure maintenance device is required, it shall also be provided and installed by the contractor along with his air supply.

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

☐ Skid Air Supply for sprinklers: (Refer to Figure 1)
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.

2.1 Air supply design and selection:

The air supply compressor should be sized to automatically establish the total required air pressure in 30 minutes. External air supply should be provided with an air pressure maintenance device to regulate and restrict the flow of supervisory air into the sprinkler system piping.

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

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

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 1 – Skid Air Supply for Sprinklers Network
(Air supply connection only for external air supply)

Contractor external Air or Nitrogen connection

TO PNEUMATIC ACTUATOR AND OPTIONAL ACCELERATOR (plugged when not used)

TO SPRINKLER RISER

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
3- Dehydrator option

The Viking Dehydrator is a manually regenerated desiccant-type air dryer. The desiccant acts as a moisture indicator by changing color, and is visible through the required bowl guard and transparent plastic bowl.

Technical Information:

4. The desiccant is silica gel having a –45°F (-43°C) dew point at a maximum of 180°F (32°C) temperature with a regeneration temperature of 275°F (135°C). When the silica gel color changes from dark blue to light pink or clear, it has become saturated with moisture and must be changed.

5. The unit has a drying capacity of 8100 standard cubic feet (229.3m³) of air to –40°F (-40°C) atmospheric dew point at rated specifications before the desiccant becomes saturated.

6. The maximum airflow rating is 15 standard cubic feet per minute (0.4247m³/minute) at 100 psi (0.6895 BAR) per unit.

7. All ratings are based on 100°F (38°C) saturated inlet air temperatures at 100 psi (0.6895 BAR).

8. The aluminum bowl holds 2.5 pounds (1.134 kg) of desiccant and is rated for a maximum temperature and pressure at 180°F (82°C) and 300 psi (20.68 BAR).

9. The silica gel desiccant is provided in a sealed 2.5 pound (1.134 kg) bag and is shipped in a box inside the unit cabinet.

10. The unit is to be used on compressed air service only.

Operation of Dehydrator:

The Dehydrator directs the incoming air down through the silica gel desiccant. The silica gel absorbs the moisture without physically changing. As the relative humidity increases, the silica gel begins to change color from dark blue to light pink, indicating the desiccant must be replaced.

To Make Dehydrator Functional:

Drain valve (E12) shall be closed.

To Drain Dehydrator input line:

CLOSE air shut-off valve (E14). OPEN drain valve (E12) to drain input line then close it. OPEN air shut-off valve (E14).

To replace Dehydrator cartridge:

Once it has been drained, CLOSE the Dehydrator air shut-off valve (E14).

Turn the clamp ring left while holding the bowl, and exert a downward pull until the clamp ring, and the bowl drop free.

Replace desiccant with a fresh charge.

Follow instructions described on Viking data sheet no. 276 (Form No. F_011711) provided with the silica gel recharge.
3- Accelerator option

The Viking Model E-1 Accelerator is a quick-opening device. When installed with the required external Anti-flood Device (on dry pipe systems only), it is used to increase the operational speed of a differential type valve. An accelerator (quick-opening device) is recommended on all differential dry pipe valves and is required on dry pipe systems of certain capacities. Refer to NFPA Standards and Authorities Having Jurisdiction. The Viking Model E-1 Accelerator may also be used without the Anti-flood device to speed the action of a pneumatic release system on a deluge, flow control or preaction system.

Features:

a) Automatically resets.
b) External anti-flood Assembly.
c) UL Listed for use on systems of maximum capacity allowed.
d) Factory tested.

Operation:

The Viking Model E-1 Accelerator operates on the principle of unbalanced pressures. As the accelerator is pressurized, air enters the inlet chamber, goes through the screen filter into the middle chamber and through an orifice into the lower chamber. From the middle chamber, air slowly enters the upper chamber through a filtered orifice restriction in the cover diaphragm.

In the SET position, the system air pressure is the same in all chambers. When a sprinkler or release device operates, the pressure in the middle and lower chambers is reduced at the same rate as the system pressure. The orifice restriction in the cover diaphragm restricts the air flow from the upper chamber, temporarily causing higher pressure in the upper chamber.

The pressure differential forces the cover diaphragm down, pushing the actuator rod down. This action vents the pressure from the lower chamber to the outlet vent, allowing residual pressure in the inlet chamber to force the clapper diaphragm open. After the clapper diaphragm opens, any pressure remaining in the inlet chamber and associated piping is vented to atmosphere.

As the air pressure increases in the intermediate chamber of the dry valve, the dry valve pressure differential is destroyed and the valve trips, allowing water to enter the dry pipe system.

After the dry valve trips, water entering the intermediate chamber of the dry valve will fill the trim piping connecting the accelerator to the dry system. However, when the anti-flood assembly is pressurized closed, water is prevented from entering the middle and upper chambers of the accelerator.

Viking Accelerator Model E-1

To enable or reset the Accelerator Device:

When the dry pipe system is ready to be placed in service, verify that all equipment is adequately heated and protected to prevent freezing and physical damage.

1. Close the Anti-flood isolation valve (1).
2. Close the Accelerator isolation valve (2).
3. Observe the Accelerator pressure gauge (3) on top of the accelerator. The gauge must read zero before the accelerator will automatically reset. It may be necessary to loosen, remove, and re-install the accelerator air gauge (use the appropriate wrench) to vent trapped air pressure from the upper chamber even when the gauge indicates zero if the air supply is on while performing this step.
4. Pressurize the system in accordance with recommended settings. See technical data for the dry system used. Do not exceed 60 PSI (4.1 bar).
5. Open the Accelerator isolation valve (2). When air pressure on the accelerator air gauge equals the system set pressure, open the Anti-flood isolation valve (1).
6. When the air pressure on the accelerator air gauge equals the system set pressure, perform Dry Pipe Valve Priming Water level test to verify that water is not present above the Priming Level Test Valve in the dry valve trim. This test is important because any water columnation (accumulation of water above the Priming Level Test Valve) can starve the accelerator sensing port and may cause false tripping of the system.

To isolate the Accelerator Device:

Close both the Anti-Flood isolation Valve (1) and the Accelerator isolation Valve (2), positioning the handle across the valve body. This operation can be necessary in order to verify the pressure adjustments or to allow the pressure switches adjustments.

Refer to instructions described on Viking datasheet no. 122 (Form No. 071692).
Components:
1. Anti-flood isolation valve
2. Accelerator isolation valve
3. Accelerator pressure gauge
4. Anti-Flood Device
5. Accelerator
6. Float check assembly
7. Check valve
INSPECTION:

Weekly inspection is recommended. If the system is equipped with a low air (or nitrogen) alarm, monthly inspections may be adequate.

1. Check the air pressure gauge located on the top of the accelerator. Air pressure in the upper chamber of the accelerator should equal the air pressure maintained in the system on which it is installed. A difference in pressures other than slight variation due to gauge calibration tolerance may indicate: Gauge malfunction, plugged accelerator orifices and/or filters, or other maintenance is required.

2. Verify that the Anti-flood isolation valve and Accelerator isolation valve are OPEN.

3. Verify that all other trim valves are in their appropriate normal operating position.

4. Check for signs of mechanical damage and/or corrosive activity. If detected, perform maintenance as required or, if necessary, replace the device.

5. Verify that accelerator and trim are adequately heated and protected to prevent freezing and physical damage.

After every operation, and each time water is allowed to enter the system:

1. Inspect the interior of the accelerator for the presence of water. Dampness or condensation may indicate that the air supply is not being dried adequately. An accumulation of water in the accelerator inlet chamber and associated trim piping may indicate that the float check valve (located between the accelerator and the air inlet to the dry valve) is fouled open, allowing system water to leak past the seat when the dry valve operates filling the system with water. If water is allowed to enter the middle and/or upper chamber of the accelerator, it may contaminate the accelerator orifices and may prevent it from operating properly. Also, when the system operates, if water is allowed to flow into the inlet chamber of the accelerator, water will flow out of the vent opening in the bottom of the accelerator until water supply to the dry valve is shut off.

2. If dampness is found, take appropriate steps to ensure the air supply is adequately dried.

3. If an accumulation of water is found in the accelerator inlet chamber and associated trim piping, conduct an internal inspection of the spring loaded check valve. Clean the seat and or clapper as required.

4. When the inspection is finished, replace the ½” (15 mm) NPT plug removed in step 1 above.
1- Control Section without control panel.

1.1 Product Description

TOTALPAC®3 Dry & Wet system units are provided without any control panel.

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.

1.2 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.
Figure 1 - Cabinet layout:

- SYSTEM AIR PRESSURE
- WATER INLET PRESSURE
Figure 4 – Junction box layout:

Air Compressor or Excess Pressure Pump Isolating Switch

TBB Terminals

TBA & TBC Terminals

Factory wired flexible conduits to 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.

Factory Wired Air Compressor or Excess Pressure Pump Isolating Switch (when applicable)

All conduits are installed by the Contractor through 1/2” and 3/4” knock-outs
Figure 1 – Junction box layout:

- SYSTEM AIR PRESSURE
- WATER INLET PRESSURE
Figure 2 – Junction box layout:

Air Compressor or Excess Pressure Pump Isolating Switch

TBB Terminals

TBA & TBC Terminals

Junction Box with cover removed (behind Control Panel)

Factory wired flexible conduits to system devices

Figure 3 – 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

NOTE: Junction box is located behind the Control Panel once rotated. It is shown with cover removed.
Integrated Fire Protection System
Electrical Section - Dry Pipe System

**Description**

Your TOTALPac®3 Unit without control panel is factory wired for one of the following configurations:
- **Dry Pipe - Standard**
- **Dry Pipe High Pressure (HP®)**

This TOTALPac®3 Unit has been provided without an Integrated Control Panel since its dry contacts are supervised by a remote panel. 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 contractors 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**

- **Dry Pipe - Standard**

  When a sprinkler operates, the system air pressure is reduced. When system air pressure is reduced to the differential pressure tripping point of the valve, water supply pressure in the inlet chamber lifts the member assembly off the water seat and flows into the intermediate chamber.

  When equipped with the optional Accelerator and external Anti-flood Device, a drop in system air pressure causes the Accelerator to operate. Operation of the Accelerator causes the Anti-flood Device to open allowing system air pressure to enter the dry valve intermediate chamber. This immediately destroys the pressure differential, causing the member assembly to rise faster.

  The intermediate chamber is normally at atmospheric pressure and is connected to the alarm line. When the valve trips the intermediate chamber and alarm line are pressurized with the system water pressure, activating alarms connected to the Dry Valve trim.

  Sprinkling continues until the main supply water valve is manually closed.

- **Dry Pipe High Pressure (HP®)**

  When a sprinkler head operates, pressure in the system piping escapes, causing alarms controlled by Air Supervisory Switch to activate and Anti-Flood Device to open. When Anti-Flood Device opens, pressure is released from the priming chamber of the Deluge Valve faster than it is supplied through a restricted orifice. The Deluge Valve clapper opens to allow water to flow into the system piping and alarm devices, causing the Water Motor Alarm Gong (if installed) and water flow alarms connected to the alarm pressure switch to activate. Water will low from any open sprinklers on the system.

  Sprinkling continues until the main supply water valve is manually closed.

  1. **Air Pressure Drop:** The operation of a sprinkler head causes the water discharge. Any air pressure loss allowing the pressure to lower under a set value activates the supervisory alarm pressure switch.

  2. **Supervisory of the Valves:** An abnormal position of a valve will cause the closing of the Valve Supervisory Switch contact. The Water Supply Control Valve is supervised.
Field wiring diagram:

WIRING OF AIR COMPRESSOR POWER SOURCE
(WITH AIR OPTION "A" ONLY)

<table>
<thead>
<tr>
<th>TBB</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LINE</td>
<td>NEUTRAL</td>
<td>GROUND</td>
<td>AIR COMPRESSOR</td>
</tr>
</tbody>
</table>

2HP MAX

Refer to Local Electrical Codes for wiring size.

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

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.

Pressure settings:

**TABLE 1 - HP® Dry**

<table>
<thead>
<tr>
<th>Maximum Water Pressure</th>
<th>Air Pressure Setting Minimum</th>
<th>PSI</th>
<th>kPa</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>15</td>
<td>345</td>
<td>235</td>
</tr>
<tr>
<td>75</td>
<td>20</td>
<td>517</td>
<td>345</td>
</tr>
<tr>
<td>100</td>
<td>25</td>
<td>690</td>
<td>455</td>
</tr>
<tr>
<td>150</td>
<td>35</td>
<td>1034</td>
<td>705</td>
</tr>
<tr>
<td>175</td>
<td>40</td>
<td>1207</td>
<td>835</td>
</tr>
<tr>
<td>200</td>
<td>50</td>
<td>1380</td>
<td>920</td>
</tr>
<tr>
<td>250</td>
<td>55</td>
<td>1725</td>
<td>1140</td>
</tr>
</tbody>
</table>

Adjust Low Air Alarm pressure switch according to Minimum Air Pressure Setting from the appropriate tables above. Never exceed 60 PSI (414 kPa) pressure in the system piping with the dry valve clapper closed.

**TABLE 2 – Standard Dry**

<table>
<thead>
<tr>
<th>Maximum Water Pressure</th>
<th>Air Pressure Setting Minimum</th>
<th>PSI</th>
<th>kPa</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>15</td>
<td>345</td>
<td>235</td>
</tr>
<tr>
<td>75</td>
<td>20</td>
<td>517</td>
<td>345</td>
</tr>
<tr>
<td>100</td>
<td>25</td>
<td>690</td>
<td>455</td>
</tr>
<tr>
<td>125</td>
<td>30</td>
<td>862</td>
<td>570</td>
</tr>
<tr>
<td>150</td>
<td>45</td>
<td>1034</td>
<td>705</td>
</tr>
<tr>
<td>175</td>
<td>50</td>
<td>1207</td>
<td>835</td>
</tr>
</tbody>
</table>

Adjust Low Air Alarm pressure switch according to Minimum Air Pressure Setting from the appropriate tables above. Never exceed 60 PSI (414 kPa) pressure in the system piping with the dry valve clapper closed.
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 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.
## Integrated Fire Protection System

### Dimensional Data & Cabinet

**Figure 1 – Dimensions – HP Dry:**

**Dimensions:**

<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>
<th>K</th>
<th>L</th>
<th>M</th>
<th>N</th>
<th>P</th>
<th>Q</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>1½&quot;</td>
<td>2&quot;</td>
<td>1½&quot;</td>
<td>2&quot;</td>
<td>23&quot;</td>
<td>25&quot;</td>
<td>4&quot;</td>
<td>8¾&quot;</td>
<td>11½&quot;</td>
<td>13½&quot;</td>
<td>3¾&quot;</td>
<td>2&quot;</td>
<td>2&quot;</td>
<td>2&quot;</td>
<td>11&quot;</td>
<td>38&quot;</td>
<td>45&quot;</td>
</tr>
<tr>
<td>2&quot;</td>
<td>2&quot;</td>
<td>2&quot;</td>
<td>2&quot;</td>
<td>23&quot;</td>
<td>25&quot;</td>
<td>4&quot;</td>
<td>8¾&quot;</td>
<td>11½&quot;</td>
<td>13½&quot;</td>
<td>3¾&quot;</td>
<td>2&quot;</td>
<td>2&quot;</td>
<td>2&quot;</td>
<td>11&quot;</td>
<td>38&quot;</td>
<td>45&quot;</td>
</tr>
<tr>
<td>3&quot;</td>
<td>4&quot;</td>
<td>3&quot;</td>
<td>2&quot;</td>
<td>23&quot;</td>
<td>25&quot;</td>
<td>4&quot;</td>
<td>10&quot;</td>
<td>11½&quot;</td>
<td>13½&quot;</td>
<td>3¾&quot;</td>
<td>2&quot;</td>
<td>2&quot;</td>
<td>2&quot;</td>
<td>11¼&quot;</td>
<td>44&quot;</td>
<td>48&quot;</td>
</tr>
<tr>
<td>4&quot;</td>
<td>4&quot;</td>
<td>4&quot;</td>
<td>2&quot;</td>
<td>36&quot;</td>
<td>25&quot;</td>
<td>4&quot;</td>
<td>10&quot;</td>
<td>11½&quot;</td>
<td>13½&quot;</td>
<td>3¾&quot;</td>
<td>2&quot;</td>
<td>2&quot;</td>
<td>16&quot;</td>
<td>11¼&quot;</td>
<td>48&quot;</td>
<td>53&quot;</td>
</tr>
<tr>
<td>6&quot;</td>
<td>6&quot;</td>
<td>6&quot;</td>
<td>2&quot;</td>
<td>46&quot;</td>
<td>25&quot;</td>
<td>4&quot;</td>
<td>11&quot;</td>
<td>11½&quot;</td>
<td>13½&quot;</td>
<td>3¾&quot;</td>
<td>2&quot;</td>
<td>2&quot;</td>
<td>22¼&quot;</td>
<td>11¼&quot;</td>
<td>60&quot;</td>
<td>65&quot;</td>
</tr>
<tr>
<td>8&quot;</td>
<td>8&quot;</td>
<td>8&quot;</td>
<td>2&quot;</td>
<td>54&quot;</td>
<td>31&quot;</td>
<td>4&quot;</td>
<td>12&quot;</td>
<td>13½&quot;</td>
<td>17½&quot;</td>
<td>3¾&quot;</td>
<td>4&quot;</td>
<td>4&quot;</td>
<td>23½&quot;</td>
<td>13¼&quot;</td>
<td>70&quot;</td>
<td>75&quot;</td>
</tr>
</tbody>
</table>

**Note:** Dimensions are nominal and may vary ±¼".

---

FM-076A-0-93A
### Integrated Fire Protection System

**Dimensional Data & cabinet**

Figure 2 – Dimensions – Dry standard:

<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>
<th>K</th>
<th>L</th>
<th>M</th>
<th>N</th>
<th>P</th>
<th>Q</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>4&quot;</td>
<td>4&quot;</td>
<td>4&quot;</td>
<td>2&quot;</td>
<td>46&quot;</td>
<td>25&quot;</td>
<td>4&quot;</td>
<td>9¾&quot;</td>
<td>11½&quot;</td>
<td>13¼&quot;</td>
<td>3½&quot;</td>
<td>2&quot;</td>
<td>2&quot;</td>
<td>15½&quot;</td>
<td>11¼&quot;</td>
<td>38&quot;</td>
<td>42½&quot;</td>
</tr>
<tr>
<td>6&quot;</td>
<td>6&quot;</td>
<td>6&quot;</td>
<td>2&quot;</td>
<td>46&quot;</td>
<td>25&quot;</td>
<td>4&quot;</td>
<td>11&quot;</td>
<td>11½&quot;</td>
<td>13¼&quot;</td>
<td>3½&quot;</td>
<td>2&quot;</td>
<td>2&quot;</td>
<td>15½&quot;</td>
<td>11¼&quot;</td>
<td>41&quot;</td>
<td>47½&quot;</td>
</tr>
</tbody>
</table>

**Note:** Dimensions are nominal and may vary ±¼"..

A = Main Inlet Manifold Diameter  
B = Sprinkler Riser Diameter  
C = Drain Manifold Diameter
Figure 3 – Dimensions – Anchoring detail:

<table>
<thead>
<tr>
<th>System size</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1/2&quot;</td>
<td>25&quot;</td>
<td>15&quot;</td>
<td>N/A</td>
</tr>
<tr>
<td>2&quot;</td>
<td>25&quot;</td>
<td>15&quot;</td>
<td>N/A</td>
</tr>
<tr>
<td>3&quot;</td>
<td>25&quot;</td>
<td>15&quot;</td>
<td>N/A</td>
</tr>
<tr>
<td>4&quot;</td>
<td>38&quot;</td>
<td>15&quot;</td>
<td>25&quot;</td>
</tr>
<tr>
<td>6&quot;</td>
<td>48&quot;</td>
<td>15&quot;</td>
<td>25&quot;</td>
</tr>
<tr>
<td>8&quot;</td>
<td>56&quot;</td>
<td>21&quot;</td>
<td>29&quot;</td>
</tr>
</tbody>
</table>

Figure 4 – Skid clearance detail

<table>
<thead>
<tr>
<th>System size</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1/2&quot;</td>
<td>47&quot;</td>
<td>12&quot;</td>
<td>24&quot;</td>
</tr>
<tr>
<td>2&quot;</td>
<td>47&quot;</td>
<td>12&quot;</td>
<td>24&quot;</td>
</tr>
<tr>
<td>3&quot;</td>
<td>47&quot;</td>
<td>12&quot;</td>
<td>24&quot;</td>
</tr>
<tr>
<td>4&quot;</td>
<td>60&quot;</td>
<td>12&quot;</td>
<td>24&quot;</td>
</tr>
<tr>
<td>6&quot;</td>
<td>70&quot;</td>
<td>12&quot;</td>
<td>24&quot;</td>
</tr>
<tr>
<td>8&quot;</td>
<td>78&quot;</td>
<td>12&quot;</td>
<td>24&quot;</td>
</tr>
</tbody>
</table>
Figure 5: Open drain details for single unit:
(see dimensions in table below)

![Single Unit Detail](image1)

<table>
<thead>
<tr>
<th>Water Supply Pipe</th>
<th>Unit Drain Pipe</th>
<th>Air Gap</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(dia. = C)</td>
<td></td>
</tr>
</tbody>
</table>

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

![Multiple Units Detail](image2)

<table>
<thead>
<tr>
<th>Water Supply Pipe (Can Be Manifolded)</th>
<th>Unit Drain Pipe (dia. = C)</th>
<th>Drain Collector running between wall and units</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DO NOT MANIFOLD!</td>
<td>(pipe diameter per drain flow calculations)</td>
</tr>
</tbody>
</table>

Typical Air Gap

<table>
<thead>
<tr>
<th>Unit Size:</th>
<th>1½”</th>
<th>2”</th>
<th>3”</th>
<th>4”</th>
<th>6”</th>
<th>8”</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>8¾”</td>
<td>8¾”</td>
<td>10”</td>
<td>10”</td>
<td>11”</td>
<td>12”</td>
</tr>
<tr>
<td>B</td>
<td>13½”</td>
<td>13½”</td>
<td>13½”</td>
<td>13½”</td>
<td>13½”</td>
<td>17½”</td>
</tr>
<tr>
<td>C</td>
<td>2”</td>
<td>2”</td>
<td>2”</td>
<td>2”</td>
<td>2”</td>
<td>2”</td>
</tr>
</tbody>
</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 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" system,
- 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.

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:**

| System Size | A | B | C | D | E | F | G | H  | J  | K  | L  | M  | N  | P  | Q  | R  | S  | T  | U  |
|-------------|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|
| **4”**      | 4”| 4”| 2”| 46”| 25”| 77”| 4”| 9¼”| 11½”| 13¾”| 3¼”| 2” | 2” | 15½”| 11¼”| 38” | n/a| n/a| 50” |
| **6”**      | 6”| 6”| 2”| 46”| 25”| 77”| 4”| 11” | 11½”| 13¾”| 3¼”| 2” | 2” | 15½”| 11¼”| 41” | n/a| n/a| 50” |

**Standard Dry**

| System Size | A | B | C | D | E | F | G | H  | J  | K  | L  | M  | N  | P  | Q  | R  | S  | T  | U  |
|-------------|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|
| **1½”**     | 2”| 1½”| 2”| 23”| 25”| 77”| 4”| 8¼”| 11” | 13¾”| 3¼”| 2¼”| 2” | 8”  | 11” | 37½”| 44½”| 34½”| 27” |
| **2”**      | 2”| 2”| 2”| 23”| 25”| 77”| 4”| 8¼”| 11” | 13¾”| 3¼”| 2¼”| 2” | 8”  | 11” | 38” | 45” | 34½”| 27” |
| **3”**      | 3”| 3”| 2”| 36½”| 25”| 77”| 4”| 10” | 11½”| 13¾”| 3¼”| 2½”| 2” | 10½”| 11½”| 44” | 47½”| 37” | 39½”|
| **4”**      | 4”| 4”| 2”| 36½”| 25”| 77”| 4”| 10” | 11½”| 13¾”| 3¼”| 2½”| 2” | 12” | 11½”| 48½”| 53” | 42” | 39½”|
| **6”**      | 6”| 6”| 2”| 46”| 25”| 77”| 4”| 11” | 11½”| 13¾”| 3¼”| 5½”| 2” | 17¼”| 11½”| 59½”| 65½”| n/a| 50” |
| **8”**      | 8”| 8”| 2”| 54”| 31”| 81”| 4”| 12” | 13½”| 17” | 3¼”| 6½”| 4” | 27” | 13½”| 70” | n/a| n/a| 58” |

**HP Dry**

**Notes:** Dimensions are nominal and may vary ±¼”.
Figure 8 – Cabinet & doors clearance detail

<table>
<thead>
<tr>
<th>System size</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1/2&quot;</td>
<td>47&quot;</td>
<td>12&quot;</td>
<td>24&quot;</td>
</tr>
<tr>
<td>2&quot;</td>
<td>47&quot;</td>
<td>12&quot;</td>
<td>24&quot;</td>
</tr>
<tr>
<td>3&quot;</td>
<td>47&quot;</td>
<td>12&quot;</td>
<td>24&quot;</td>
</tr>
<tr>
<td>4&quot;</td>
<td>60&quot;</td>
<td>12&quot;</td>
<td>24&quot;</td>
</tr>
<tr>
<td>6&quot;</td>
<td>70&quot;</td>
<td>12&quot;</td>
<td>24&quot;</td>
</tr>
<tr>
<td>8&quot;</td>
<td>78&quot;</td>
<td>12&quot;</td>
<td>24&quot;</td>
</tr>
</tbody>
</table>
Figure 9: Open drain details for single unit:
(see dimensions in table below)

![Single Unit Detail](image)

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

![Multiple Units Detail](image)

**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.
This page was intentionally left blank
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.

FireFlex Systems Inc.
1935, Lionel-Bertrand Blvd.
Boisbriand, Quebec
Canada J7N 1N8
Tel.: (450) 437-3473 Fax: (450) 437-1930
Toll Free: (866) 347-3353 Web site:
http://www.fireflex.com