Advanced Integrated Fire Protection System

TOTAL PAC®

Owner's Operation
and
Maintenance Manual

VXR DRY PIPE



FM-014M-0-12B

Copyright © 2026 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.

Table of Contents

VXR Dry Pipe

General Section ..... Section A

1- General description
2- Listings and approvals
3- Environment
4- Features
5- Configuration description

Mechanical Section ..... Section B

1- Installation, operation & maintenance instructions
  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 Placing the system back in service after operation
  1.7 Inspections & tests
  1.8 Maintenance
2- System trim
  2.1 Normal condition

Trim Options ..... Section C

1- Anti-column device option

Air Supply ..... Section D

1- Cabinet air supplies
2- Operation
3- Maintenance and inspection
4- Air supply options

Control Section ..... Section E

1- Remotely controlled unit without release control panel
  1.1 Product description
  1.2 Technical data
2- FLX+PC Pressure Controller
  2.1 Display in Normal Condition
  2.2 Air compressor Control
  2.3 Low and High Pressure
  2.4 Very low Pressure
  2.5 Quick Detection of Sprinkler Opening
  2.6 Events History Log
  2.7 Pressure Units Display
  2.8 Trouble Condition
  2.9 Specifications

Electrical Section ..... Section **F**

1- Remotely supervised configuration

Dimensional Data & Cabinet ..... Section **G**

1- Cabinet unit

Limited Warranty ..... Section **H**

Safety Guidelines

This manual contains safety information that is important to know and understand. This information is provided for the safety of installers, operators, and users of the FireFlex releasing panel as well as equipment. To help recognize this information, observe the following symbols.

⚠ DANGER

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury

NOTICE

NOTICE indicates important information, that if not followed may cause damage to equipment or property.

SAFETY INSTRUCTIONS

SAFETY INSTRUCTIONS (or equivalent) indicate specific safety-related instructions or procedures.

INFORMATION

INFORMATION emphasizes useful tips and recommendations as well as information for efficient and trouble-free operation.

This page is left intentionally blank.

Integrated Fire Protection System

General Section – VXR Dry Pipe System

A

1- General description

This **TOTALPAC®4** integrated fire protection system by FIREFLEX Systems Inc. consists of a dry pipe system trim totally pre-assembled, pre-wired and factory tested. All electrical and mechanical components of the system are contained in one single unit..

The only connections required for installation are the water supply inlet, the water discharge outlet, the main drain, the electrical supervisory and alarm connections, as well as the AC power line for the optional air compressor. The discharge outlet is connected to a fixed piping network of automatic sprinklers. Water is the extinguishing agent.

On system piping networks, closed heat sensitive automatic sprinklers are spaced and located in accordance with recognized installation standards in order to detect a fire. Only those sprinklers immediately over or near to fire operate, minimizing water damage.

Dry pipe system uses closed automatic sprinklers on the system piping network, which is supervised with air pressure. A low pressure gives a supervisory signal.

Dry pipe system is designed so the dry pipe valve will open when an important loss of pressure from the system piping network occurs. When the dry pipe valve opens, water will flow into the system piping network and out of any open automatic sprinklers and other opening on the system. The opening the dry pipe valve gives an alarm signal.

INFORMATION

Every **TOTALPAC®4** unit is identified with its unique serial number. This number is located on an adhesive label inside the main door panel and is used to maintain a record in our computerized database. Have this serial number handy when calling for information on your unit (format is TOT4#####).

2- Listings and approvals

In addition to being fabricated under tight ISO-9001 manufacturing and quality control procedures, your **TOTALPAC®4** unit has also been tested and approved by recognized laboratories. Here is the list of Listings & Approvals it meets:

- Underwriters Laboratories Inc. (UL): Dry Pipe **TOTALPAC®4** 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>: Dry Pipe **TOTALPAC®4** systems are FM Approved under the heading: "Automatic Water Control Valves" when installed with specific components.

⚠ 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®4 unit shall be installed in a dry and clean location. Verify that all equipment is properly heated and protected to prevent freezing and physical damage. Refer to section **E** CONTROL SECTION for environment data.

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 as well as the condition of the air supply to the system. The owner is responsible for maintaining the fire protection system and devices in proper operating condition. Refer to section **B** MECHANICAL SECTION for maintenance instructions.

4- Features

The ***TOTALPAC®4*** unit is superior to many other products which are actually available on the fire protection market. It is manufactured by *FIREFLEX* Systems Inc. which has developed and introduced the concept of integrated fire protection systems.

Main features are:

- Trouble free design for safe and easy application
- Available in 4 sizes from 2½" (65 mm) to 6" (150 mm) diameter
- Uses the Viking dry valve Model VXR
- Unit is available either with or without integrated release 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 c-UL-us Listed and FM Approved components
- Designed in accordance with NFPA Standards
- Trim is fully assembled and tested at the factory
- All trims are galvanized steel, Listed and Approved for 250 PSI (1724 kPa) service maximum
- Quick connections to water supply and drain on both sides, and sprinkler riser on top of unit, all available with grooved end fittings
- No open drain cup inside unit
- Sturdy steel cabinet, painted fire red with oven baked polyester powder on phosphate base
- Textured rust proof finish
- Neoprene gasket on all doors to eliminate vibrations
- Separate unlocked access hatch to emergency manual release
- Key-alike locks on all cabinet doors
- Manufactured under ISO-9001 quality control procedures.

5- Configuration description

TOTALPAC®4 VXR Dry pipe system is built around the Viking trim using Viking Model VXR Dry Valve.

The valve is rated up to a maximum of 250 PSI WWP (1724 kPa) and is available in the following diameters:

- ▶ 2½" (65 mm)
- ▶ 4" (100 mm)
- ▶ 3" (80 mm)
- ▶ 6" (150 mm)

TOTALPAC®4 VXR Dry pipe system is supplied with groove/ groove Model VXR Dry Valve.

5.1 Dry pipe system

The system piping network is pressurized with air or nitrogen gas. The dry pipe system uses the Viking dry pipe valve which opens by the fusing of an automatic sprinkler in the system piping network.

The air pressure of the system piping network above the dry pipe valve maintains the dry pipe valve closed.

In fire condition, when an automatic sprinkler fuses on the system piping network, it releases the air pressure above the dry pipe valve, causing the dry pipe valve to open. Water will flow from the dry pipe system through opened sprinklers.

1- Installation, operation & maintenance instructions

INFORMATION

Numbers indicated between brackets refer to figure 1 DETAILED SYSTEM TRIM SCHEMATICS from this section and section D AIR SUPPLY.

1.1 Installation

1. Conform to local municipal or other codes regarding installations of fire protection systems.
2. Install the ***TOTALPAC®4*** unit and connect the system according to instruction manual and technical data supplied.

⚠ WARNING

The cabinet must be firmly anchored to the floor using all four (4) anchoring holes (see section G CABINET).

NOTICE

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

3. Install the system piping network in accordance with applicable standards.
4. Connect supervisory and alarm signals according to electrical schematics and if applicable, all detection and signaling circuits (see section F ELECTRICAL).
5. If applicable, connect the AC power to the air compressor, each on a separate breaker in the electric distribution panel (see section F ELECTRICAL).

⚠ CAUTION

AC power connections must be made by a qualified installer according to national standards and equipment specifications.

Do not apply AC power to the equipment yet.

6. Perform preliminary inspection prior to putting system in service (see paragraph 1.2 of the current section).
7. Place the system in service (see paragraph 1.4 of the current section).
8. Perform the annual inspection sequence (see paragraph 1.8 of the current section) and test each detection device and alarm unit.
9. 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.
10. Make sure that the building owner or a delegated representative has received instructions regarding the operation of the system.

⚠ CAUTION

TOTALPAC®4 unit 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.
   a) Main water supply valve *(D1)* must be CLOSED.
   b) Prime level test valve *(B1)* must be CLOSED.
   c) Air supply for system piping network must be CLOSED (see section D AIR SUPPLY).
   d) Main drain valve (*D3*) must be CLOSED.
   e) Alarm test valve *(B5)* must be CLOSED.
   f) Gauge *(B12)* (FLX+PC *(E3)*) should show 0 PSI (0 kPa). Air pressure is displayed on the LCD screen of the FLX+PC.
2. Using the built-in contractor's hydrostatic test ports (see figure 1 of this section and section D AIR SUPPLY), fill system piping network with water and maintain pressure as per NFPA-13 requirements.

⚠ CAUTION

Do not subject the pressure gauges and pressure transducer to hydrostatic pressure above 250 PSI (1724 kPA). Close gauge valves before proceeding with hydrostatic test.

3. Correct leaks if any before completing test.
4. Verify that main water supply valve *(D1)* is still CLOSED.
5. OPEN main drain valve *(D3)* to completely drain the system piping network.
6. If applicable, apply AC power to the air compressor. The air supply must be CLOSED (see section D AIR SUPPLY).

1.3 Placing the system in service

1. Verify that the main water supply valve *(D1)* is CLOSED. Verify that the system has been properly drained.
2. Verify that all automatic sprinklers are set and that inspector's test valve and/or piping auxiliary drain valves are CLOSED.
3. OPEN the main drain valve *(D3)*. Drain all water from the dry pipe system. If the system has operated, or if water has entered the system, OPEN the prime level test valve *(B1)*. Allow enough time to completely drain the system.
4. CLOSE the prime level test valve *(B1)* on the dry pipe valve trim. The main drain valve *(D3)* should remain OPEN.
5. Reset the clapper by pressing the push-rod upwards. Once reset, pull the handle downward.
6. OPEN the dry pipe system air supply and establish desired system pressure. For complete pressures settings, see section **D** AIR SUPPLY.

NOTICE

On system provided with air pressure maintenance device (air supply style "B"), verify that the APMD bypass valve *(E8)* is CLOSED and that APMD input and output valves *(E7)* are OPEN.

7. Verify that the intermediate chamber of the dry pipe valve *(A1)* is free of water. No water should flow from the drip check *(B7)* when the plunger is pushed.
8. Partially OPEN the main water supply valve *(D1)*.
9. When flow is developed from the main drain valve *(D3)*, CLOSE the main drain valve.
10. FULLY OPEN the main water supply valve *(D1)*.
11. Secure all valves in their normal operating position.
12. Notify the AUTHORITY HAVING JURISDICTION, remote station alarm monitors, and those in the affected area that the system is in service.

⚠ CAUTION

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.

1.4 System Operation

1.4.1 In the SET condition

In the normal set condition the system piping network is filled with compressed air or nitrogen. The clapper of dry pipe valve (*A1*) is closed; however, the latch does not hold the clapper closed. System air/nitrogen pressure enters the valve through the main air/nitrogen connection point and forces the clapper assembly down therefore keeping the water from entering the valve.

1.4.2 In a fire condition

When an automatic sprinkler fuses on the system piping network, the system air pressure is reduced. When system air pressure is reduced to the differential pressure tripping point of the dry pipe valve *(A1)*, water supply pressure in the inlet chamber forces the clapper open allowing water to flow through the valve. The latch holds the clapper off the seat after activation if water pressure is reduced.

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 system water pressure, activating alarms connected to the dry valve trim.

Water will flow from any open sprinklers and/or other opening in the sprinkler piping network and alarm devices *(C1* and optional *C2)* will operate.

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

1.4.3 Manual operation

Anytime the handle of the priming / water level test valve *(B1)* is opened, pressure is released from the priming chamber, causing the dry pipe valve *(A1)* to open.

Water will flow from any open sprinklers and/or other opening in the sprinkler piping network and alarm devices *(C1* and optional *C2)* will operate.

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

1.4.4 Supervisory condition

If the dry pipe valve (*A1*) trips when no sprinkler has fused, either there 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. If there is an extreme surge in the water supply, increase the air pressure on the system.

NOTICE

Increasing system air pressure may increase trip time of the dry pipe valve *(A1)*. See section **D** AIR SUPPLY for dry pipe pressure settings for water pressure up to 250 PSI.

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 of the dry pipe valve (*A1*) or the alarm test valve (*B5*) is not tightly closed. If water is leaking over the seat of the dry pipe valve, inspect and clean the water seat and clapper rubber. 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.

NOTICE

Never exceed 65 PSI (448 kPa) air pressure in the system piping with the dry pipe valve clapper closed.

1.5 Emergency instructions

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 local 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 local AUTHORITY HAVING JURISDICTION.

Sprinkler piping 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.

1. CLOSE main water supply valve *(D1)*.
2. Air supply must be CLOSED (see section **D** AIR SUPPLY).
3. OPEN main drain valve *(D3)*.

NOTICE

Electric alarms controlled by a pressure switch installed at the ¾"-NPT (20mm) connection *(C2)* can only be shut-off when the dry pipe valve *(A1)* is reset or taken out of service.

4. Allow the system to drain completely. PARTIALLY CLOSE the main drain valve *(D1)* after the system has been drained. Verify there is no water pressure showing on the water supply pressure gauge *(B12)*. Verify there is no pressure showing on the air/nitrogen supply pressure gauge (FLX+PC *(E3)*). Verify there is no water trapped in the drip-check *(B7)* by pressing the plunger.

NOTICE

If, for any reason, the push-rod is pressed upward before the system has completely drained, OPEN the prime level test valve *(B1)* to completely drain the system. Once the system has been drained, CLOSE the prime level test valve.

5. Replace any automatic sprinkler that have opened, been damaged or exposed to fire conditions.
6. Return the system to service as soon as possible (see paragraph 1.3 PLACING THE SYSTEM IN SERVICE of the current section).

NOTICE

Pressing upward on the push-rod may cause residual pressurized air/nitrogen to escape.

7. Perform all recommended maintenance procedures (see paragraph 1.8 MAINTENANCE in the current section).

⚠ CAUTION

When a system 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.

1.6 Placing the system back in service after operation

1. Verify that the system has been properly drained. Verify that all automatic sprinklers are set and/or inspector's test valve and system piping auxiliary drain valves are CLOSED.
2. Verify that the main water supply valve *(D1)* is CLOSED, and that the Prime level test valve *(B1)* is CLOSED. CLOSE main drain valve *(D3)*.
3. Air supply must be OPEN (see section **D** AIR SUPPLY).
4. Restore supervisory pressure to the system piping network (see section **D** AIR SUPPLY).

NOTICE

On system provided with air pressure maintenance device (air supply style "B"), verify that the APMD bypass valve *(E8)* is CLOSED and that APMD input and output valves *(E6* and *E7)* are OPEN.

5. Verify that the intermediate chamber of the dry pipe valve *(A1)* is free of water. No water should flow from the drip check *(B7)* when the plunger is pushed.
6. Partially OPEN the main water supply valve *(D1)*.
7. When flow is developed from the main drain valve *(D3)*, CLOSE the main drain valve.

NOTICE

Do not open main water supply valve *(D1)* until gauge *(E3)* shows stabilized pressure.

8. FULLY OPEN the main water supply valve *(D1)*.
9. Secure all valves in their normal operating position.
10. Notify the AUTHORITY HAVING JURISDICTION, remote station alarm monitors, and those in the affected area that the system is in service.

⚠ CAUTION

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.

1.7 Inspections and tests

⚠ CAUTION

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

It is imperative that the system be inspected and tested on a regular basis in accordance with NFPA-25. Refer to Inspections and Tests recommended in Viking technical data describing individual components of the dry pipe system used.

The frequency of the inspections may vary due to contaminated or corrosive water supply, corrosive atmospheres, as well as the condition of the air supply to the system. For minimum maintenance and inspection requirements, refer to NFPA-25. In addition, the AUTHORITY HAVING JURISDICTION may have additional maintenance, testing, and inspection requirements that must be followed.

⚠ WARNING

Any system maintenance that involves placing a control valve or detection system out of service may eliminate the fire protection capabilities of that system.

Prior to proceeding with any testing, notify all local AUTHORITIES HAVING JURISDICTION. Consideration should be given to the employment of a fire patrol in the affected areas.

1.7.1 System piping network low air supervisory test

1. To prevent operation of the dry pipe valve *(A1)* and filling of the piping network with water during the test, CLOSE main water supply valve (*D1*) and OPEN main drain valve *(D3)*.
2. Slowly open the Inspectors test valve on the sprinkler piping network, or the prime level test valve *(B1)*.
3. Verify that low air supervisory signal operates at set pressure and continue without interruption.
4. Close the inspectors test valve, or prime level test valve *(B1)*.
5. CLOSE the inspector's test valve, or the main drain valve *(D3)*.
6. Establish recommended supervisory pressure to the system piping network (see section **D** AIR SUPPLY).
7. Partially open main water supply valve *(D1)*.
8. When flow is developed from the main drain valve *(D3)*, CLOSE the main drain valve.
9. FULLY OPEN the main water supply valve *(D1)*.
10. Verify that there is no flow from the drip check *(B7)* when the plunger is pushed.

1.7.2 Full flow trip test

Performance of a full flow trip test is recommended annually during warm weather. Consider coordinating this test with operation testing of the releasing devices.

⚠ CAUTION

Performance of this test will cause the dry pipe valve *(A1)* to open and the system piping network to be filled with water. Water will flow out from any open sprinkler and/or inspector's tests valve. Take necessary precautions to prevent damage.

To trip test the dry pipe system

1. FULLY OPEN the main drain valve *(D3)* to flush away any accumulation of foreign material. CLOSE the main drain valve.
2. Record water pressure supply pressure *(B12)* and system air pressure (FLX+PC *(E3)*).
3. Open the inspector's system test valve to simulate operation of the dry pipe system.
4. The dry pipe valve *(A1)* should open. The piping network will be filled with water.
5. Record the following:
   a) Elapsed time from opening of the inspector's test valve to operation of the dry pipe valve *(A1)*.
   b) System air pressure *(E3)* when the dry pipe valve *(A1)* operated.
   a) Elapsed time from opening of the inspector's test valve to development of full flow of water from the system inspectors test connection.
   a) Any other information required by the AUTHORITY HAVING JURISDICTION.
6. Alarm devices *(C1* and optional *C2)* should operate.
7. Allow water to flow from the system inspector's test connection until it appears clear and clean.

When trip testing is complete

1. Perform steps 1 through 4 of paragraph 1.5 EMERGENCY INSTRUCTIONS to take the system out of service.
2. Perform steps of paragraph 1.6 PLACING THE SYSTEM BACK IN SERVICE AFTER OPERATION.

1.7.3 Main 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 water supply gauge *(B12)*.
2. If applicable, CLOSE the alarm control valve.
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. Compare results from previous inspections or initial commissioning. Any important variation from those results must be investigated.

NOTICE

A main drain test shall be conducted any time the main water supply valve *(D1)* is closed and reopened at the system.

1.8 Maintenance

⚠ CAUTION

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

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

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

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

The air supply shall be maintained in full operating condition at all times (refer to section **D** AIR SUPPLY).

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: valves inspection; flow, drain, and pump tests, and trip test of the deluge 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 one (1) year after the next test. The comparison determines deterioration of system performance or condition and the need for further testing or maintenance.

1.8.1 Monthly

1. Inspection of gauges (water supply *(B12)* and system air pressure (*E3*)) 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 (see paragraph 2.1 of the current section).
   d) There is no leakage from the alarm drains.

1.8.2 Quarterly

1. Check alarm pressure switch *(C1)* and optional water motor gong *(C2)* by opening the alarm test valve *(B5)*.
2. Conduct system piping network low air supervisory test (see paragraph 1.7.1 of the current section).

1.8.3 Semi-annually

1. Main water supply valve *(D1)* switch shall be operated to verify the switch actuation upon movement of the hand wheel.
2. Check alarm pressure switch *(C1)* and optional water motor gong *(C2)* by opening the alarm test valve *(B5)*.
3. Perform functional test of all components of the system.

1.8.4 Annually

1. Perform full flow trip test (see paragraph 1.7.2 of the current section).
2. Record indicating the date of the last trip, tripping time and name of the organization conducting the test shall be maintained at a location available for review by the AUTHORITY HAVING JURISDICTION.
3. Perform main drain test (see paragraph 1.7.3 of the current section).

1.8.5 Every 5 years

1. Test on gauge (gauge precision required: less than 3% of the full scale).
2. Perform test on control valve operation.
3. Dry pipe valve *(A1)* and their associated strainers, filters and restriction orifices shall be inspected internally.
4. Perform main drain test (see paragraph 1.7.3 of the current section).

2- Dry pipe system

INFORMATION

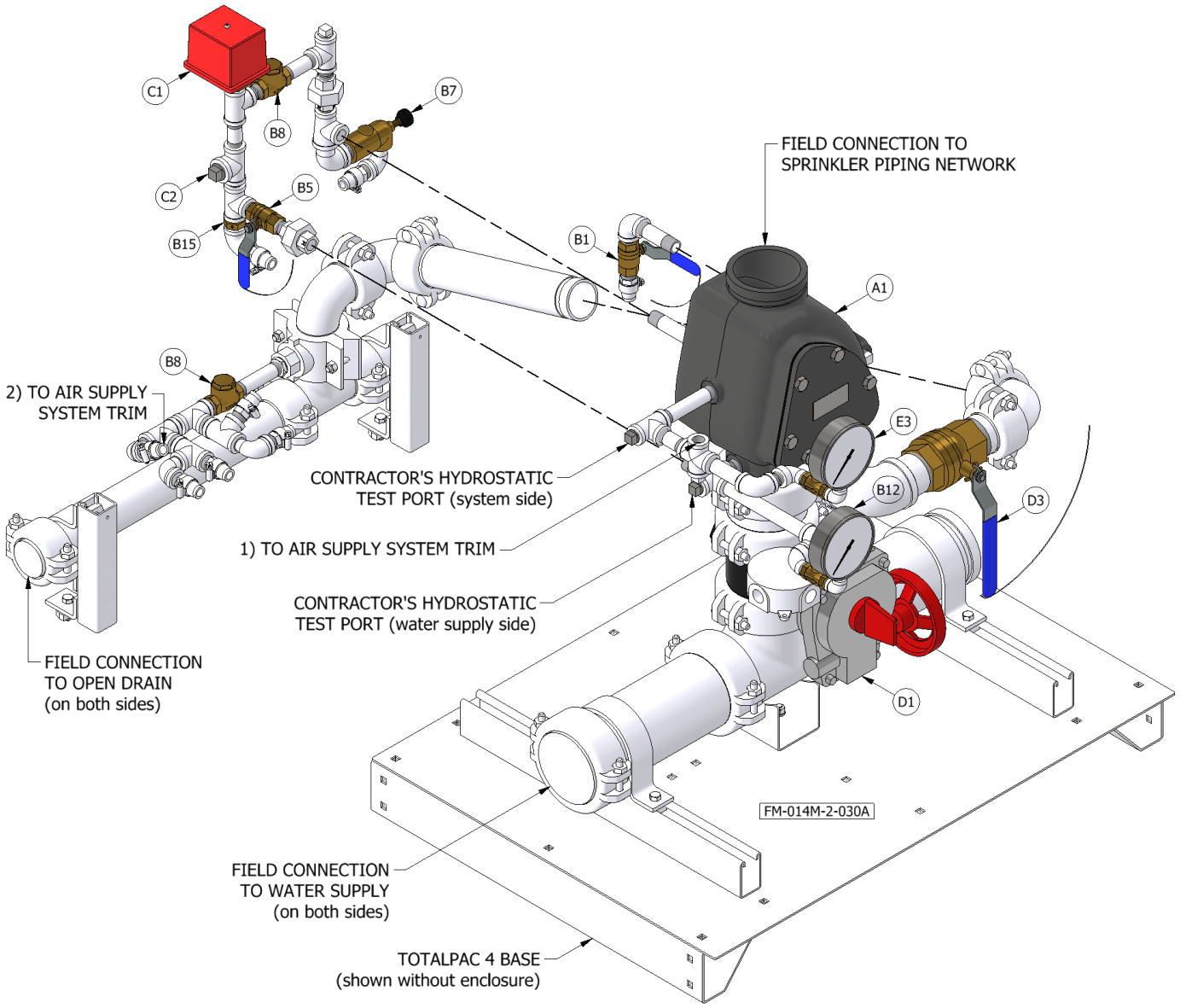
Numbers indicated between brackets refer to figure 1 DETAILED SYSTEM TRIM SCHEMATICS from this section and section **D** AIR SUPPLY.

2.1 Normal condition

1. Valves
   a) Main water supply valve *(D1)* is OPEN.
   b) All upstream water supply valves are OPEN.
   c) Prime level test valve *(B1)* is CLOSED.
   d) Main drain valve (*D3*) is CLOSED.
   e) Air supply is OPEN (see section **D** AIR SUPPLY).
   f) All gauge valves are OPEN.
2. Gauges
   a) Water supply pressure *(B12)* shall not exceed 250 PSI (1724 kPa).
   b) System piping network *(E3)* shall be at adjusted as per table 3 of section **D** AIR SUPPLY.
3. Pressure switches & settings (factory set)
   a) Alarm pressure switch *(C1)* should activate when pressurized higher than 5 PSI (34 kPa).
   b) Low/high air pressure switch (FLX+PC *(E3)*) shall be adjusted according to water pressure as per table 2 at section **D** AIR SUPPLY.

Figure 1 - Detailed system trim schematic

Typical dry pipe system (4" (100 mm) system shown)



Trim components

A1 Dry valve
B1 Prime level test valve (N.C.)
B5 Alarm test valve (N.C.)
B7 Drip check valve (N.O.)
B8 Swing check valve
B12 Water supply pressure gauge & valve (N.O.)
B15 1/8" (3.2 mm) Restricted orifice

C1 Alarm pressure switch (PS10-1)
C2 ¾"-NPT (20 mm) connection to optional water motor gong (strainer to be supplied by contractor)
D1 Main water supply valve (N.O.)
D3 Main drain valve (N.C.)
E3 Air/nitrogen supply pressure gauge & valve (N.O.)

This page is left intentionally blank.

Dry trim options

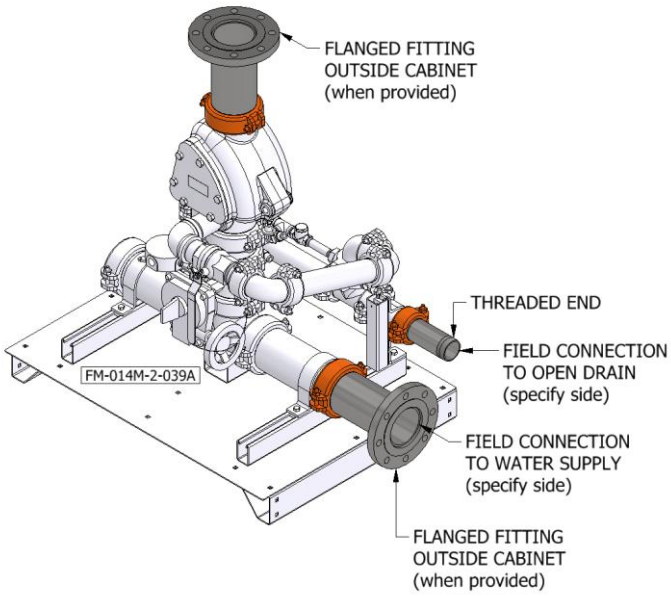
1. Semi-flanged option

When required by the user, ***TOTALPAC®4*** unit can be provided in semi-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.

When provided, the face of the flanges will always be located 6" (150 mm) 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" (150 mm) above the dimension shown on the dimensional data of the system ordered.

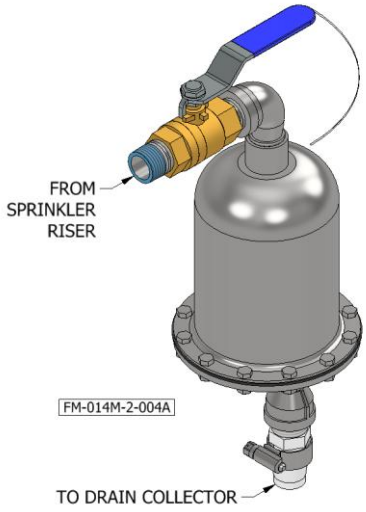
Figure 1 – Semi-flanged unit typical detail
(system is shown without cabinet for clarity)



2. Anti-column device option

The model LD-1 anti-column device is an optional trim component designed for use with dry pipe sprinkler system. 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 easy riser check valve.

Figure 2 – Anti column device detail



This page is left intentionally blank.

1. Cabinet Air Supplies

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

⚠ CAUTION

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

Three (3) styles of air supplies are available for the ***TOTALPAC®4*** units depending on needs or configurations. These air supplies are all factory assembled, mounted in the cabinet and pressure tested. Following is the description of those options.

1.1 Air supply Style "A" (refer to figure 1)

Used only for the sprinkler piping network of dry pipe systems. Air supply style "A" includes the air compressor mounted inside the ***TOTALPAC®4*** cabinet with its supervisory trim and options. Air compressor is of the oilless piston type without reservoir and is factory piped to the sprinkler piping system riser, all within the ***TOTALPAC®4*** cabinet.

A factory wired isolation switch (see figure 2 in section **E** CONTROLS SECTION) is also provided in the ***TOTALPAC®4*** cabinet, allowing powering off the air compressor while some maintenance work on the unit is done, without disturbing the rest of the system.

To connect non-energized AC power to the air compressor, refer to field wiring diagram (see section **F** ELECTRICAL SECTION).

Table 1 - Air compressor F.L.A. (full load amp) rating

Air compressor size	115Vac 60Hz	208Vac 60Hz	230Vac 60Hz
1/6 HP	3.8 Amp	2.2 Amp	2.2 Amp
1/3 HP	4.3 Amp	2.3 Amp	2.3 Amp
1/2 HP	9.4 Amp	4.9 Amp	4.9 Amp
1 HP	11.3 Amp	5.7 Amp	5.7 Amp
1.5 HP	16.6 Amp	8.4 Amp	8.4 Amp
2 HP	n/a	11.3 Amp	9.6 Amp

See General Air data sheet for up-to-date information

Air compressor size	220Vac 50Hz	240Vac 50Hz
0.12 KW	2.0 Amp	2.0 Amp
0.25 KW	3.4 Amp	3.4 Amp
0.56 KW	7.5 Amp	7.5 Amp
1.2 KW	7.5 Amp	7.5 Amp
1.5 KW	6.3 Amp	6.3 Amp

NOTICE

Selection of the appropriate wire size is the responsibility of the installing contractor.

1.2 Air supply Style "B" (refer to figure 2)

Used only for the sprinkler piping network of dry pipe system, when an external air supply is provided by others (either a compressor, plant air or dry nitrogen cylinders) and piped to the air inlet port of the unit.

Air supply style "B" provides an APMD (air pressure maintenance device) trim, factory mounted in the ***TOTALPAC®4*** cabinet. The APMD regulates and restricts the inlet pressure. It allows an outlet pressure range from 5 PSI to 75 PSI (34 kPa to 517 kPa) ±2 PSI (14 kPa). An internal ball check valve prevents back flow.

⚠ CAUTION

When air supply style "B" is selected, the air supply should be provided and installed by the sprinkler contractor OUTSIDE of the ***TOTALPAC®4*** cabinet. Air supply is NOT provided with the unit.

1.3 Air supply Style "D" (refer to figure 3)

Mainly used with dry pipe system 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®4*** cabinet.

NOTICE

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

⚠ CAUTION

When air supply style "D" is selected, the air supply should be provided and installed by the sprinkler contractor OUTSIDE of the ***TOTALPAC®4*** cabinet. Air supply is NOT provided with the unit.

2. Operation

2.1 Air supply Style "A" (refer to figure 1)

To apply air supply

Establish AC power for the air compressor by activating the correspondent circuit breaker at the electrical distribution panel. Start air compressor by activating the compressor isolating switch *(E15)* located on the junction box of the unit (see figure 2 in section **E** CONTROLS SECTION).

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

To close air supply

Turn off the compressor isolating switch *(E15)* (see figure 2 in section **E** CONTROLS SECTION).

To adjust air supply

The air compressor cut/in and cut/out pressure values are factory set. They should not need any adjustment.

The cut/in and cut/out pressure levels are set through DIP switches DS1-5, 6, 7, 8 of the FLX-PC module. If pressure adjustments are required, refer to section **E** CONTROLS SECTION.

Table 2 - Settings for default pressure values

System Configuration (Maximum water pressure)	DS1 Settings			
	5	6	7	8
75 PSI		■		
125 PSI	■	■		
150 PSI			■	
175 PSI	■		■	
200 PSI	■	■	■	
250 PSI				■

A shade box indicates an ON-state DIP switch; a white box indicates an OFF-state DIP switch.

2.2 Air supply Style "B" (refer to figure 2)

To apply air supply

1. Turn on upstream air supply.
2. OPEN APMD (air pressure maintenance device) input valve *(E6)* by placing handle in line with valve body.
3. OPEN APMD output valve *(E7)* by placing handle in line with the valve body.
4. OPEN bypass valve *(E8)* by placing handle in line with valve body in order to accelerate filling of sprinkler piping network by air pressure, while piping is initially filled.
5. Once the piping network pressure is reached, CLOSE the bypass valve *(E8)* by placing handle crossways to valve body, and kept in this position.

NOTICE

The bypass valve *(E8)* must be kept closed once the system is filled with air.

To close air supply

1. CLOSE APMD output valve *(E7)* by placing handle crossways to valve body.
2. CLOSE APMD input valve *(E6)* by also placing handle crossways to the valve body.
3. Be sure bypass valve *(E8)* is CLOSED (handle crossways to valve body).

To adjust air supply

1. Verify that APMD input valve *(E6)* and APMD output valve *(E7)* are both OPEN (handle in line with the valve body).
2. Be sure that bypass valve *(E8)* is CLOSED (handle crossways to valve body) prior to performing this operation.
3. Loosen lock nut of the APMD *(E5)* and turn pressure adjustment nut clockwise to increase air pressure or counter-clockwise to decrease pressure.
4. Tighten lock nut.

NOTICE

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.

2.3 Air supply Style "D" (refer to figure 3)

To apply air supply

1. Turn on upstream air supply.
2. OPEN air shut-off valve *(E6)*.

To close air supply

1. CLOSE bypass air shut-off valve *(E6)*.

3. Maintenance and inspection

⚠ WARNING

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 supply valve *(D1)* while doing maintenance work.

3.1 Air supply Style "A" (refer to figure 1)

The Style "A" air accumulator should be drained once a year. 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.

To drain the air supply accumulator

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.

Safety valve pressure

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

⚠ 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.

⚠ WARNING

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

3.2 Air supply Style "B" (refer to figure 2)

The Viking Model D-2 APMD (air pressure maintenance device) *(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.

Determine the appropriate pressure to be maintained in the system. Refer to table 3 of the current section. If adjustment is necessary, refer to paragraph 2.2 of the current section.

To clean APMD (air pressure maintenance device)

1. Turn off external air supply.
2. CLOSE APMD output valve *(E7)* by placing handle crossways to valve body.
3. CLOSE APMD input valve *(E6)* by also placing handle crossways to the valve body.

NOTICE

Never disconnect or disassemble the APMD (E5) without closing those isolation valves.

4. Carefully loosen the union between the outlet of APMD *(E5)* and the APMD output valve *(E7)* to relieve pressure.
5. Remove and clean air pressure maintenance device APMD *(E5)* filter. If admission filter is blocked, replace with filter kit (part #03007 A).

Refer to Viking data sheet #127 for additional details.

3.3 Air supply Style "D" (refer to figure 3)

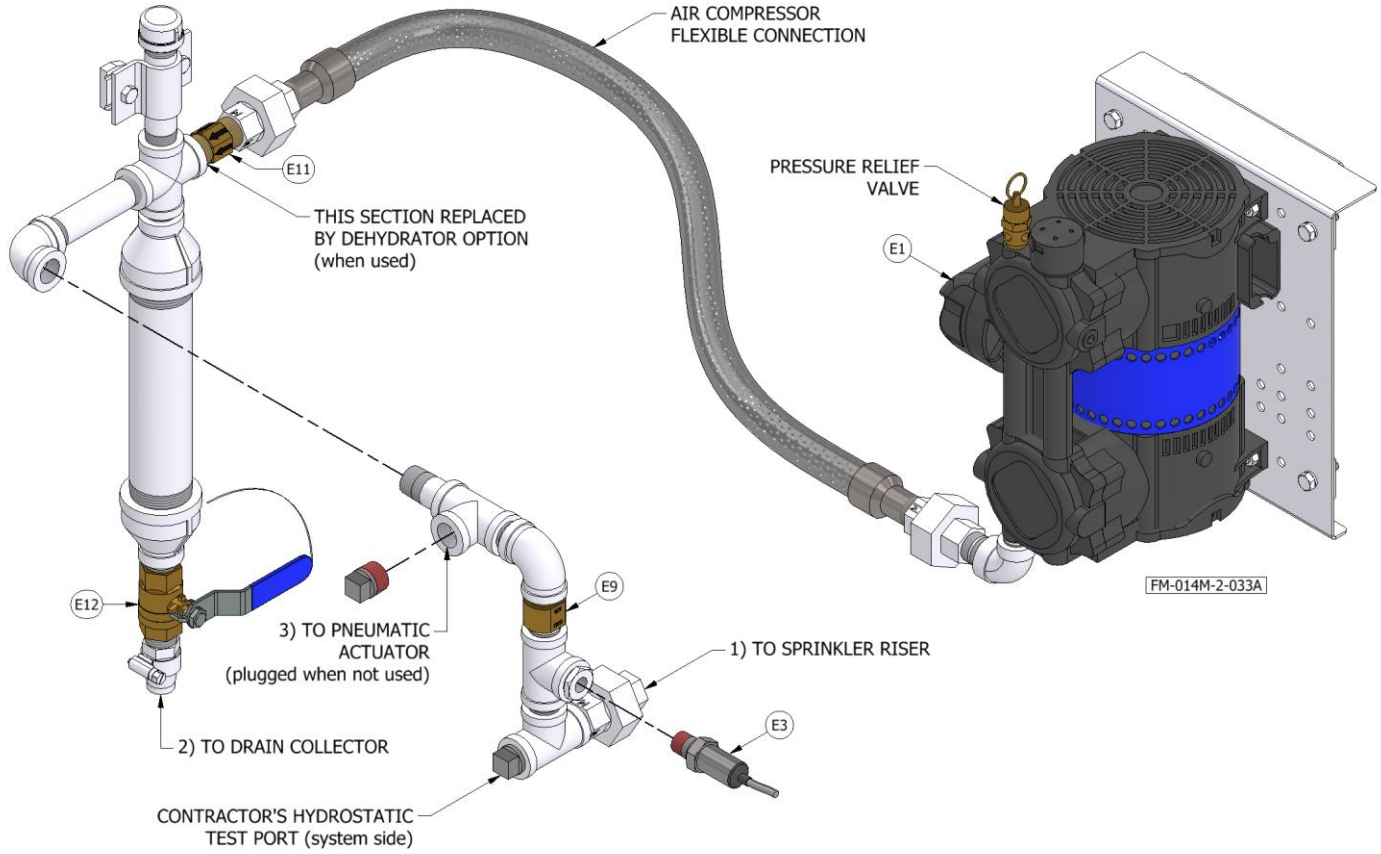
The air or nitrogen supply provided must be continuous, clean, dry and oil free.

Determine the appropriate pressure to be maintained in the system. Refer to table 3 of the current section.

Table 3 – Dry pipe pressure settings for water pressure up to 250 PSI (1724 kPa)

Maximum water pressure	Minimum air pressure	Maximum air pressure	Compressor start	Compressor stop	High air supervisory	Low air supervisory	Very low air supervisory
75	25 PSI (172 kPa)	35 PSI (241 kPa)	30 PSI (207 kPa)	35 PSI (241 kPa)	40 PSI (276 kPa)	25 PSI (172 kPa)	20 PSI (138 kPa)
125	35 PSI (241 kPa)	45 PSI (310 kPa)	35 PSI (241 kPa)	40 PSI (276 kPa)	45 PSI (310 kPa)	30 PSI (207 kPa)	25 PSI (172 kPa)
150	40 PSI (276 kPa)	45 PSI (310 kPa)	40 PSI (276 kPa)	45 PSI (310 kPa)	50 PSI (345 kPa)	35 PSI (241 kPa)	30 PSI (207 kPa)
175	45 PSI (310 kPa)	50 PSI (345 kPa)	45 PSI (310 kPa)	50 PSI (345 kPa)	55 PSI (379 kPa)	40 PSI (276 kPa)	35 PSI (241 kPa)
200	55 PSI (379 kPa)	60 PSI (414 kPa)	55 PSI (379 kPa)	60 PSI (414 kPa)	65 PSI (448 kPa)	50 PSI (345 kPa)	45 PSI (310 kPa)
250	60 PSI (414 kPa)	65 PSI (448 kPa)	60 PSI (414 kPa)	65 PSI (448 kPa)	70 PSI (483 kPa)	55 PSI (379 kPa)	50 PSI (345 kPa)

Figure 1a - Air supply Style "A" (for air compressor smaller than 1 HP)



Air style components

E1 Air compressor

E3 FLX+PC

Air compressor "cut-off" pressure switch (FLX+PC is used as cut/in and cut/out pressure switch)

System air pressure transducer (FLX+PC LCD screen is used as air pressure gauge)

Air pressure supervisory switch (FLX+PC is used as air pressure supervisory switch)

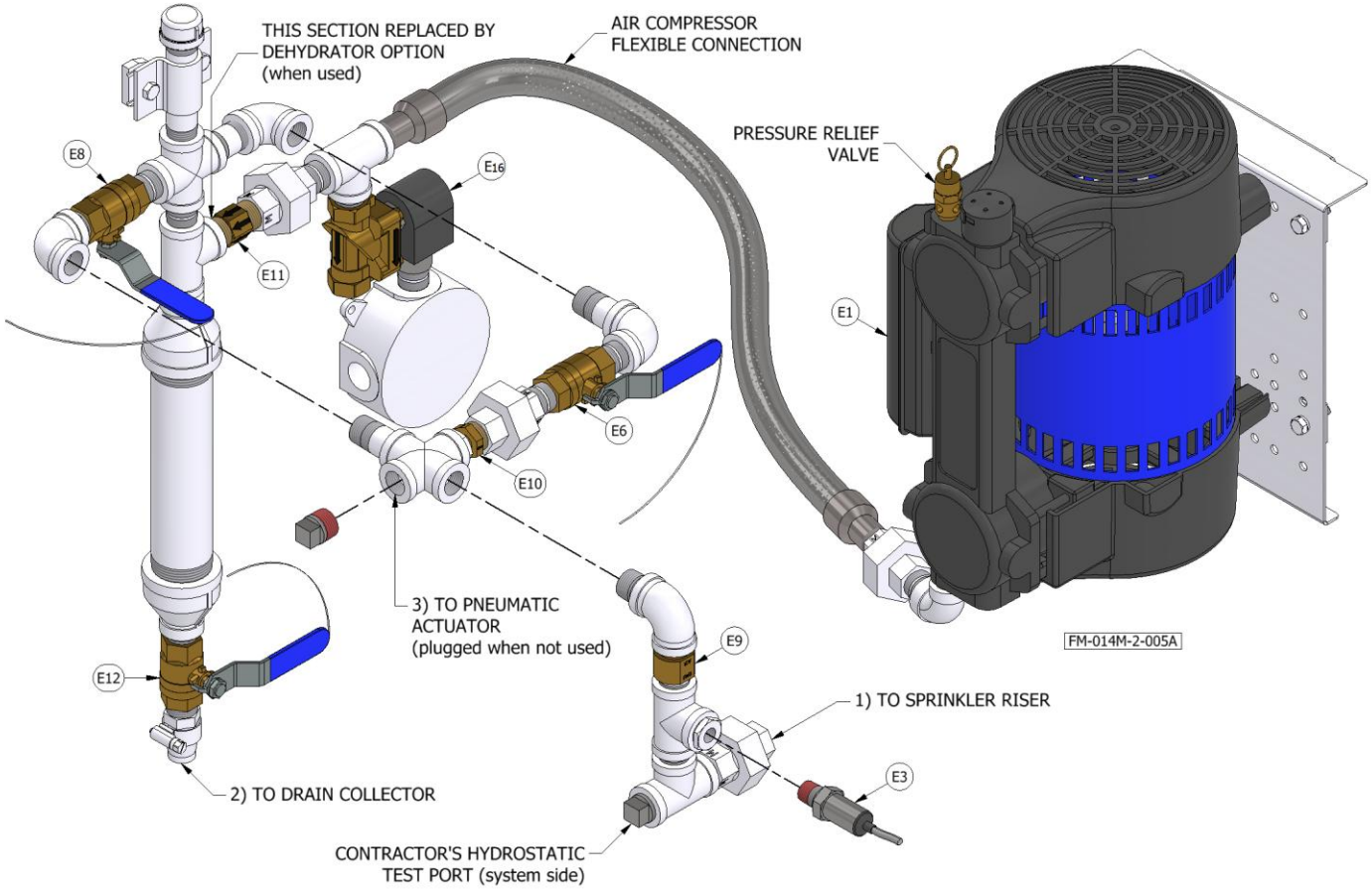
E9 Float check valve

E11 Air compressor check valve

E12 Air option drain valve (N.C.)

E15 Air compressor isolating switch (not shown)

Figure 1b - Air supply Style "A" (for air compressor larger than or equal to 1 HP)



Air style components

E1 Air compressor

E3 FLX+PC

Air compressor "cut-off" pressure switch (FLX+PC is used as cut/in and cut/out pressure switch)

System air pressure transducer (FLX+PC LCD screen is used as air pressure gauge)

Air pressure supervisory switch (FLX+PC is used as air pressure supervisory switch)

E9 Float check valve

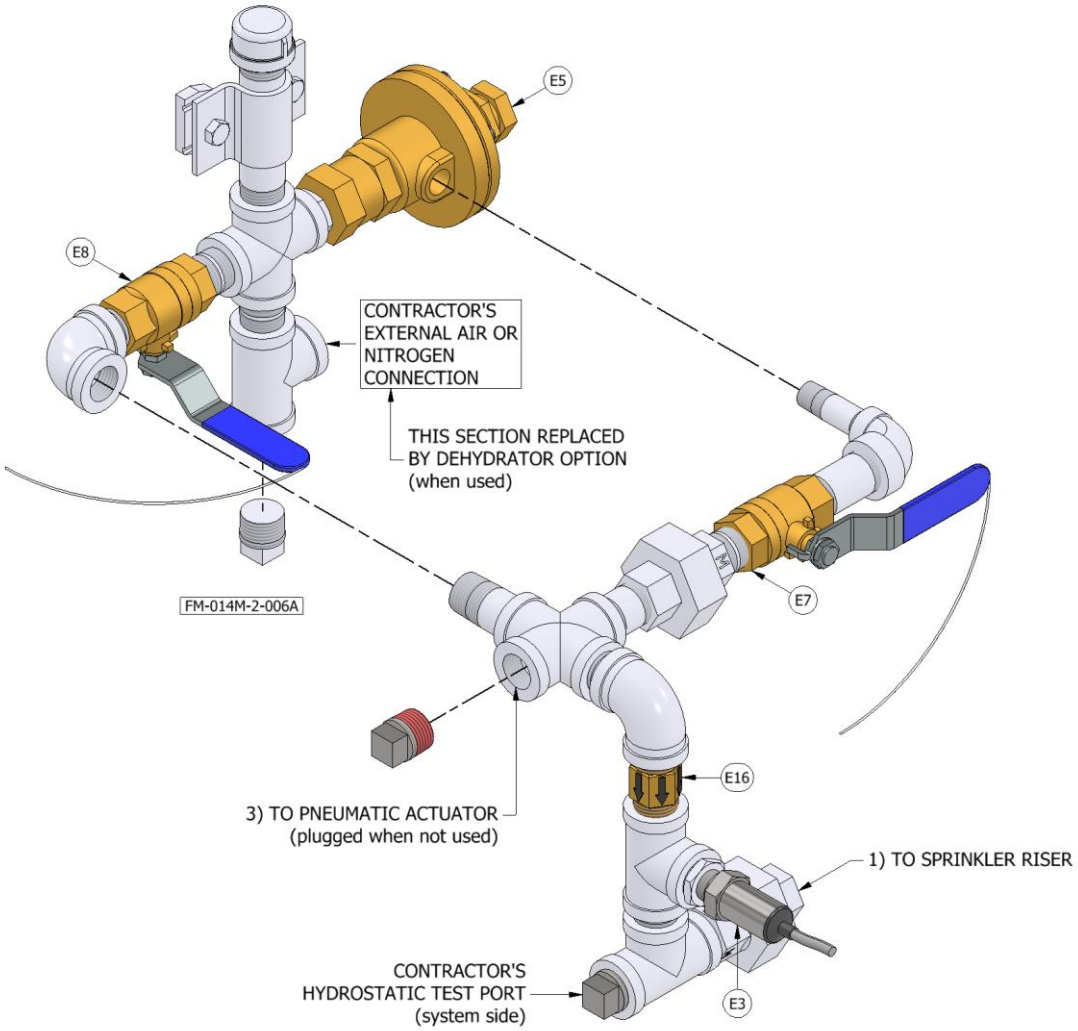
E11 Air compressor check valve

E12 Air option drain valve (N.C.)

E15 Air compressor isolating switch (not shown)

E16 Air compressor unloader solenoid (N.O)

Figure 2 - Air supply Style "B"



Air style components

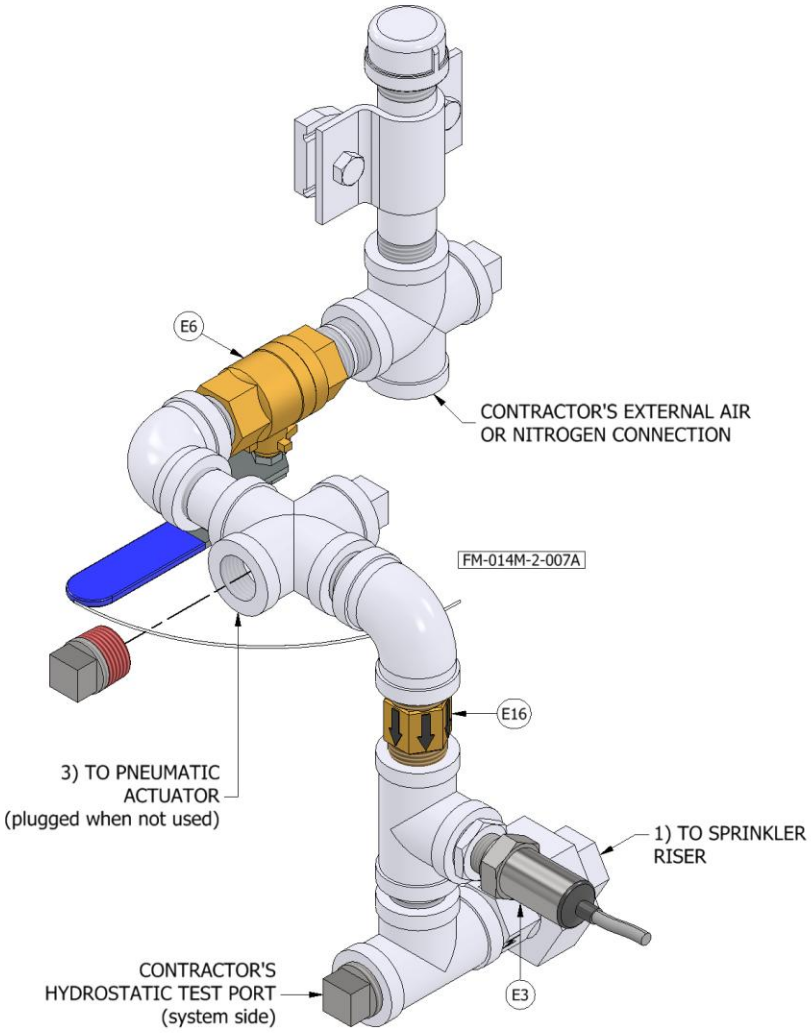
E3 FLX+PC)
System air pressure transducer (FLX+PC LCD screen is used as air pressure gauge)
Air pressure supervisory switch (FLX+PC is used as air pressure supervisory switch)
E5 APMD (air pressure maintenance device)
E7 APMD output valve (N.O.)
E8 APMD bypass valve (N.C.)
E16 Float check valve

D Integrated Fire Protection System

Air Supply – VXR Dry Pipe System

Figure 3 - Air supply Style "D"

Air supply connection for external air supply



⚠ WARNING

The external air supply must be restricted to ensure that it cannot replace air as fast as it escapes when a releasing device or automatic sprinkler operates. Refer to table 3 for pressure settings.

Air style components

E3 FLX+PC)

System air pressure transducer (FLX+PC LCD screen is used as air pressure gauge)

Air pressure supervisory switch (FLX+PC is used as air pressure supervisory switch)

E6 Air shut-off valve (N.O.)

E16 Float check valve

4. Air supply options

4.1 Dehydrator

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 sight glass.

Technical Information

1. The desiccant is silica gel having a -40°F (-40°C) dew point at a maximum 180°F (82°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.
2. The unit has a maximum drying capacity of 8100 ft^3 (229 m^3) of air to -40°F (-40°C) atmospheric dew point at inlet condition of 100 PSI (689 kPa), 50% relative humidity, 70°F (21°C) and 15 scfm (25.5 Nm^3/hr) before the desiccant becomes saturated.
3. The maximum air flow rating is 15 scfm (25.5 Nm^3/hr) at 100 PSI (689 kPa) per unit.
4. All ratings are based on 100°F (38°C) saturated inlet air temperatures at 100 PSI (689 kPa).
5. The aluminum bowl holds 2.5 lb (1.13 kg) of desiccant and is rated for a maximum temperature and pressure at 180°F (82°C) and 300 PSI (2068 kPa).
6. The silica gel desiccant is provided in a sealed 2.5 lb (1.13 kg) bag.
7. The unit has 1/4”-NPT threads on the inlet and outlet.
8. The dehydrator is available as a package unit (Viking P/N 16854), which includes the dehydrator, desiccant, and mounting brackets.
9. 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

1. CLOSE drain valve *(E12)*.

To drain dehydrator input line

1. CLOSE air shut-off valve *(E14)*.
2. OPEN drain valve *(E12)* to drain input line then CLOSE it.
3. OPEN air shut-off valve *(E14)*.

To replace desiccant

Once it has been drained, CLOSE the air supply control valve to the dehydrator.

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

Pour out used desiccant.

Follow instructions described on Viking data sheet #276 (form No. F_011711) provided with the silica gel recharge.

Maintenance

The dehydrator must be regularly inspected to ensure the drying capability of the desiccant. Replace the desiccant when the color has changed from dark blue to light pink. In addition, the recommended condensate trap should be drained on a regular basis. The frequency of the required maintenance is dependent upon the relative humidity and volume of air to be dried. Regular maintenance of the air supply equipment, such as draining condensation from the air compressor receiver, will increase the life of the desiccant.

Figure 4 - Dehydrator option for air supply Style "A"

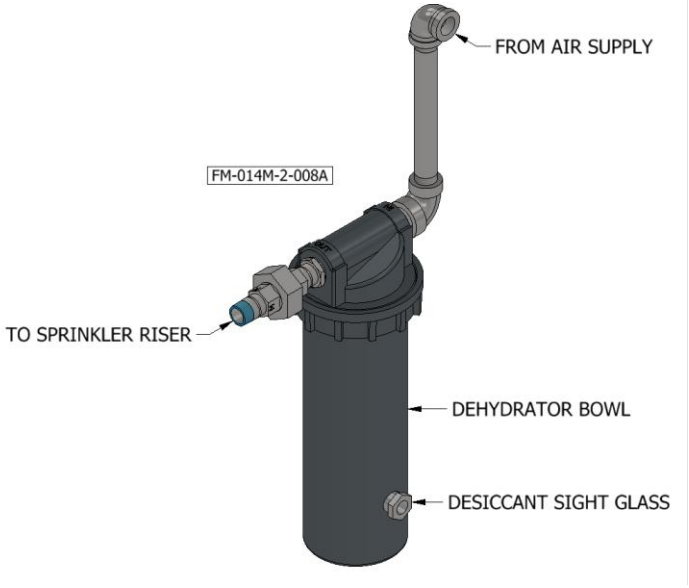
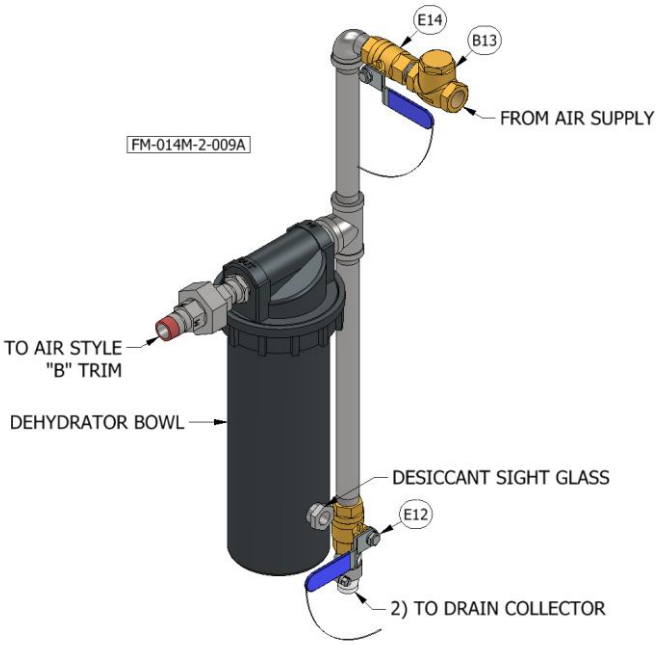


Figure 5 - Dehydrator option for air supply Style "B"



Air option components

B13 Clapper check valve

E12 Air option drain valve (N.C.)

E14 Air shut-off valve (N.O.)

4.2 Accelerator

The Viking Model D-2 Accelerator is a quick-opening device with an integral anti-flood assembly, used to increase the operating speed of a differential type dry pipe valve.

NOTICE

The Viking Model D-2 accelerator is compatible only with the Viking Model VXR Dry Pipe Valve.

Operation

The accelerator operates on the principle of unbalanced pressures. When the accelerator is pressurized, air enters the inlet, goes through the screen filter into the lower chamber and through the anti-flood assembly into the middle chamber. From the middle chamber, the air slowly enters the upper chamber through an orifice restriction in the cover diaphragm.

In the SET position, the system air pressure is the same in all chambers. The accelerator outlet is at atmospheric pressure. When a sprinkler or release operates, the pressure in the middle and lower chambers will reduce at the same rate as the system. The orifice restriction in the cover diaphragm restricts the air flow from the upper chamber, causing a relatively 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, allowing the inlet pressure to force the clapper diaphragm open. The pressure in the accelerator outlet forces the anti-flood assembly closed. On a dry pipe system the air pressure from the accelerator outlet is directed to the dry pipe valve intermediate chamber. As the air pressure increases in the intermediate chamber of the dry valve, the dry valve pressure differential is destroyed and the dry 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.

To enable the accelerator device

1. OPEN the isolation valves of the accelerator

To isolate the accelerator device

This operation can be necessary in order to verify the pressure adjustments.

1. CLOSE the isolation valves of the accelerator

⚠ CAUTION

The accelerator isolation valves are to be kept in the normally open position. Do not close, except during hydrostatic testing or to service the accelerator.

Refer to instructions in Viking datasheet #010898.

To reset the accelerator device

Make sure the system is properly drained and reset.

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 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.

Pressurize the system in accordance with recommended settings.

⚠ WARNING

Do not exceed 60 PSI (414 kPa).

Inspections

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. If water is allowed to enter the middle and/or upper chamber of the accelerator, it may contaminate the accelerator orifices and prevent it from operating properly.
2. Remove the 1/8” NPT inspection plug. If water or dampness is present, the accelerator must be disassembled.

Refer to instructions in Viking datasheet #010898.

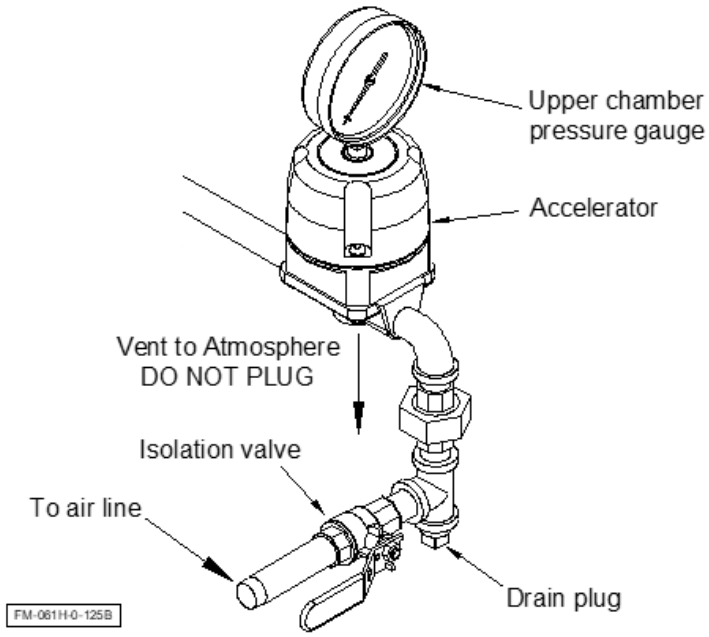
Weekly inspection is recommended. If the system is equipped with a low air (or nitrogen) alarm, monthly inspections may be adequate.

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 all other trim valves are in their normal operating position.
3. Check for signs of mechanical damage and/or corrosive activity. If detected, perform maintenance as required or, if necessary, replace the device.
4. Verify that the accelerator and trim are adequately heated and protected to prevent freezing and physical damage.

NOTICE

Standard tolerance allowance in pressure gauge calibration may result in a slight variation when the pressure readings of any two gauges are compared.

Figure 6 – Accelerator Option



1. Remotely controlled unit without release control panel

1.1 Product description

The ***TOTALPAC®4*** dry pipe unit is provided without release control panel. A field wiring electrical junction box is integrated within the cabinet for connection of pressure switches, supervisory switches, etc. They are factory wired to a terminal strip (TBA & TBC) for contractor's field wiring (see figure 6 and the section **F** ELECTRICAL).

1.2 Technical data

Steel enclosure: Refer to section **G** CABINET SECTION for further details.

Environment (electrical section): 39°F (4°C) minimum.

AC Power

The ***TOTALPAC®4*** unit may be provided with an air compressor. Refer to section **D** AIR SUPPLY to determine applicable power requirements and section **F** ELECTRICAL for contractor's field wiring to terminal strip (TBB).

Figure 1 – Cabinet layout

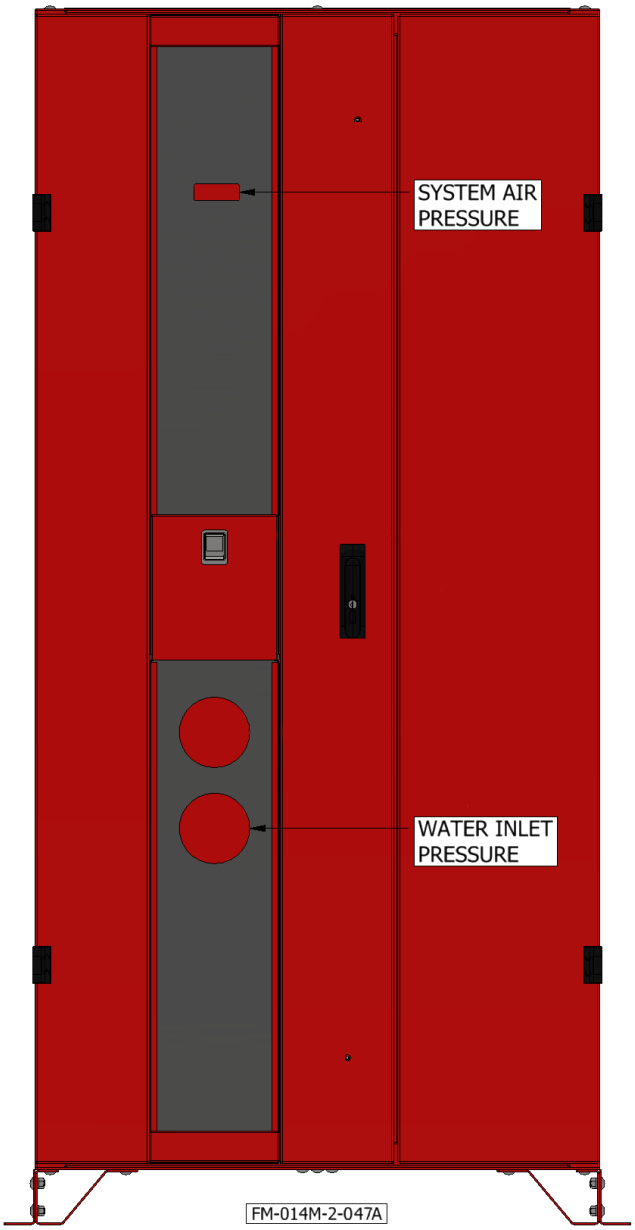
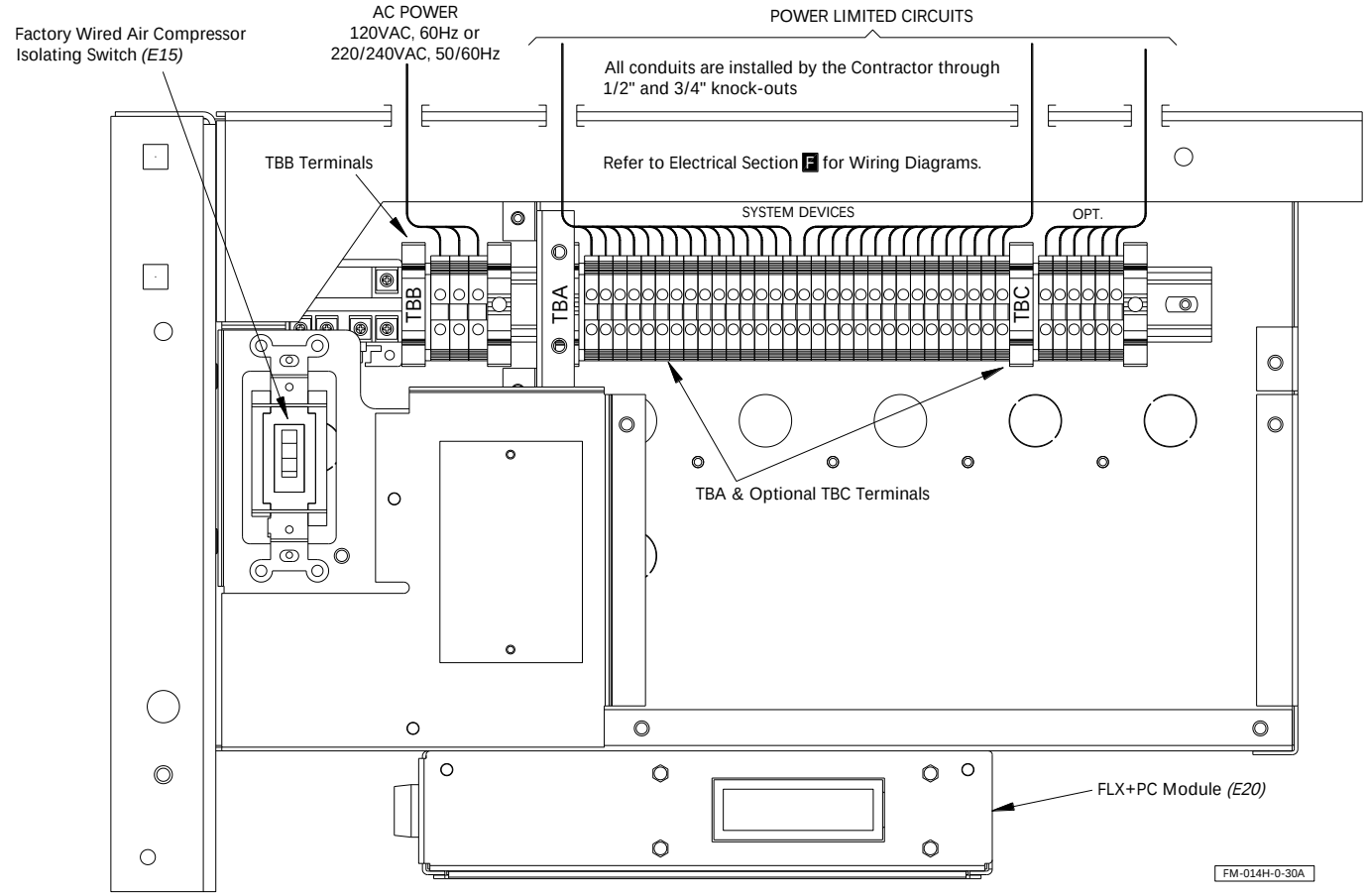


Figure 2 - Junction box layout for system without release control panel



2. *FLX+PC*® Pressure Controller

The ***FLX+PC***® pressure control unit is factory installed and configured within the ***TOTALPAC®4*** self-contained unit. The unit is equipped with a microcontroller based circuit that uses a pressure sensor to analyze in real time the pressure in the piping network and perform various control operations. It includes a LCD type display with 2 lines of 16 characters that displays the status of the system. The display can be read from the front door of the ***TOTALPAC®4*** unit. A single push-button allows the user to perform the various commands.

The ***FLX+PC***® unit is powered by the release control panel and consumes very little energy. Various pre-established parameters allow to conduct supervisory and fire protection system release via connections to the release control panel.

The ***FLX+PC***® unit allows the control of the start-stop cycle of the air compressor according to pre-established parameters.

2.1 Display in Normal Condition

The system pressure is displayed in real time on the first line (see PRESSURE UNITS CONVERSION section for a list of other units of pressure).



The second line shows information on the operation of the air compressor. The hour meter on the left represents the time (in hours: minutes: seconds) between the last two starts of the pump; this gives an idea of the frequency of the pump. The hour meter on the right represents the operation time of the pump (in minutes: seconds) during its last start.

The limit of the time meter on the left is 9999:59:59. The one on the right is 99:59. Each counter restarts at zero when the limit is reached.

In the attached example, we can see that the air compressor starts approximately once a week (the last two cycles of the air compressor having been separated from 168 hours, 30 minutes and 25 seconds) and that the last startup time was 5 minutes, 20 seconds.

This information is useful for identifying a change of state in the pipe network or a change in the performance of the air compressor. In a normal state of supervision, the frequency and duration of operation should be constant with time.

2.1.1 LCD Display Intensity

The brightness of the LCD display is kept at a low level. By pressing the push-button momentarily, the display reaches its full brightness; the full brightness will be kept for a period of one minute.

The contrast of the LCD display is calibrated at the factory, but can be changed via the RV1 adjustment potentiometer located on the side of the unit.

2.2 Air compressor Control

The system is designed to maintain a pressure level in the piping network according to the preaction system configuration. They allow control of the internal air compressor. Those values are factory preset.

The configuration of the cut/in and cut/out values of the air compressor can be changed through DIP switches DS1-5, 6, 7, 8 of the FLX-PC. To have access to DS1, unscrew the 2 screws on front of the FLX-PC module (see figure 2) and slide out the unit until you get access to DS1.

⚠ CAUTION

DIP switches DS1-1, 2, 3, 4 of the FLX-PC are factory set and shall not be changed.

Refer to section **D** AIR SUPPLY for pressure settings according to your system.

The following table shows available pressure settings according to DIP switches DS1-5, 6, 7, 8 of the FLX-PC.

Table 1 - Settings for available pressure values PSI (kPa)

DS1 Settings				Comp. Start	Comp. Stop	Low Air	Very Low Air	High Air
5	6	7	8					
				20 (138)	25 (172)	15 (103)	10 (69)	30 (207)
■				25 (172)	30 (207)	20 (138)	15 (103)	35 (241)
	■			30 (207)	35 (241)	25 (172)	20 (138)	40 (276)
■	■			35 (241)	40 (276)	30 (207)	25 (172)	45 (310)
		■		40 (276)	45 (310)	35 (241)	30 (207)	50 (345)
■		■		45 (310)	50 (345)	40 (276)	35 (241)	55 (379)
	■	■		50 (345)	55 (379)	45 (310)	40 (276)	60 (414)
■	■	■		55 (379)	60 (414)	50 (345)	45 (310)	65 (448)
			■	60 (414)	65 (448)	55 (379)	50 (345)	70 (483)
■			■	65 (448)	70 (483)	60 (414)	55 (379)	75 (517)

A shade box indicates an ON-state DIP switch; a white box indicates an OFF-state DIP switch.

2.2.1 Supervisory pressure

The air compressor starts at low level preset value and stops at normal pressure preset value.



When the air compressor is in operation, the sign [+] appears to the right of the first line.

⚠ CAUTION

The air compressor will not operate if a trouble condition is present on the FLX+PC® unit.

2.3 Low and High Pressure

A supervisory signal is transmitted to the release control panel in the following situations:

```
20 PSI              D
LOW PRESS.
```

When the air pressure level reaches low level preset value. This can happen if the air compressor does not work. Refer to section **D** AIR SUPPLY to correct the situation.

If the air pressure level reached high level preset value, this indicates a high level of air pressure and this situation is abnormal. Refer to section **D** AIR SUPPLY to correct the situation.

```
35 PSI              D
HIGH PRESS.
```

NOTICE

Supervisory signals are kept latched for a period of 5 seconds.

2.4 Very low Pressure

Depending on the configuration of the VFR500 and the FLX-PC, an alarm pressure signal can be transmitted to the release control panel when the air pressure level reaches the very low level preset value.

```
15 PSI              D
V. LOW PRESS.
```

NOTICE

Alarm signal is kept latched for a period of 5 seconds.

2.5 Quick Detection of Sprinkler Opening

The ***FLX+PC***® unit is configured so that it can quickly detect an automatic sprinkler opening; this configuration is factory set. When this mode is enabled, the letter [D] is displayed to the right of the first line. This allows for a time of operation less than 5 seconds between the sprinkler opening and the opening of the deluge valve.

```
33 PSI              D
ALARM SPK
```

An alarm pressure signal is transmitted to the release control panel when a variation of the air pressure corresponding to the opening of an automatic sprinkler is detected.

NOTICE

This feature is not UL listed but it is FM approved.

⚠ CAUTION

This quick detection device contains electronic components that are used to monitor system air/nitrogen pressure. Radio transmitters or RF sources must be always kept at least one foot from the device. Additionally, shielded wire may be used to protect against accidental system activation. Failure to comply with these specifications could cause unintentional system activation.

2.6 Events History Log

The last 50 events are kept inside the ***FLX+PC***® unit for consultation.

To access this information, press and hold the push-button for 3 seconds then release the push-button.

```
***VER: 1.0.0***
1000:45:33 HRS
```

The first line indicates the version of the software of the ***FLX+PC***® unit.

The second line shows the total operating time of the air compressor. When the hour counter reaches the value of 9999:59:59, the counter returns to 0:00:00.

NOTICE

When the 24VDC supply is disconnected from the ***FLX+PC***® unit, the hour counter returns to 0:00:00.

Press the push-button momentarily to scroll through each of the events in history up to a maximum of 50 events. The list will go back to the first event at the end of the last event.

```
***VER: 1.0.0***
 1 COMPR. STOP
```

The display will automatically return to its normal condition after 10 seconds of inactivity of the push-button.

NOTICE

When the 24VDC supply is disconnected from the ***FLX+PC***® unit, all events are cleared from the history.

2.7 Pressure Units Display

The pressure unit can be displayed in KPA, PSI or BAR/PSI. The unit is factory set to PSI.

To change the unit, press and hold the push-button for 10 seconds then release the push-button.



The current unit will be displayed. Press the push-button momentarily to scroll through the various units.





Once the unit has been selected, the display will automatically return to its normal condition after 10 seconds of inactivity of the push-button; the change of units will be completed.

NOTICE

When a unit is changed, the hour counter returns to 0:00:00 and all events are cleared from the history.

2.8 Trouble Condition

A trouble signal is transmitted to the release control panel when the ***FLX+PC***® unit is not powered or a defect of the microcontroller is present.

⚠ CAUTION

The air compressor will not operate if a trouble condition is present on the ***FLX+PC***® unit.

NOTICE

When the 24VDC supply is removed from the ***FLX+PC***® unit, the hour counter returns to 0:00:00 and all events are cleared from the history.

2.9 Specifications

Supply voltage range: 20 to 28VDC

Maximum current consumption: 40mA under normal supervisory condition; 75mA under alarm condition

Pressure range: 0 to 250 PSI

The ***FLX+PC***® unit is factory wired. The configuration of the ***FLX+PC***® unit must only be performed by a qualified technician.

This page is left intentionally blank.

1. Remotely controlled configuration

The ***TOTALPAC®4*** remote controlled unit is provided without an integrated control panel since all internal supervisory are to be connected and supervised from a remote fire alarm control panel.

The remote fire alarm control panel shall be Listed and be compatible for supervisory and alarm contact devices.

NOTICE

It is the responsibility of the installation contractor to ensure that the remote releasing control panel has two independent and reliable power supplies, one primary and one secondary, as per NFPA-72.

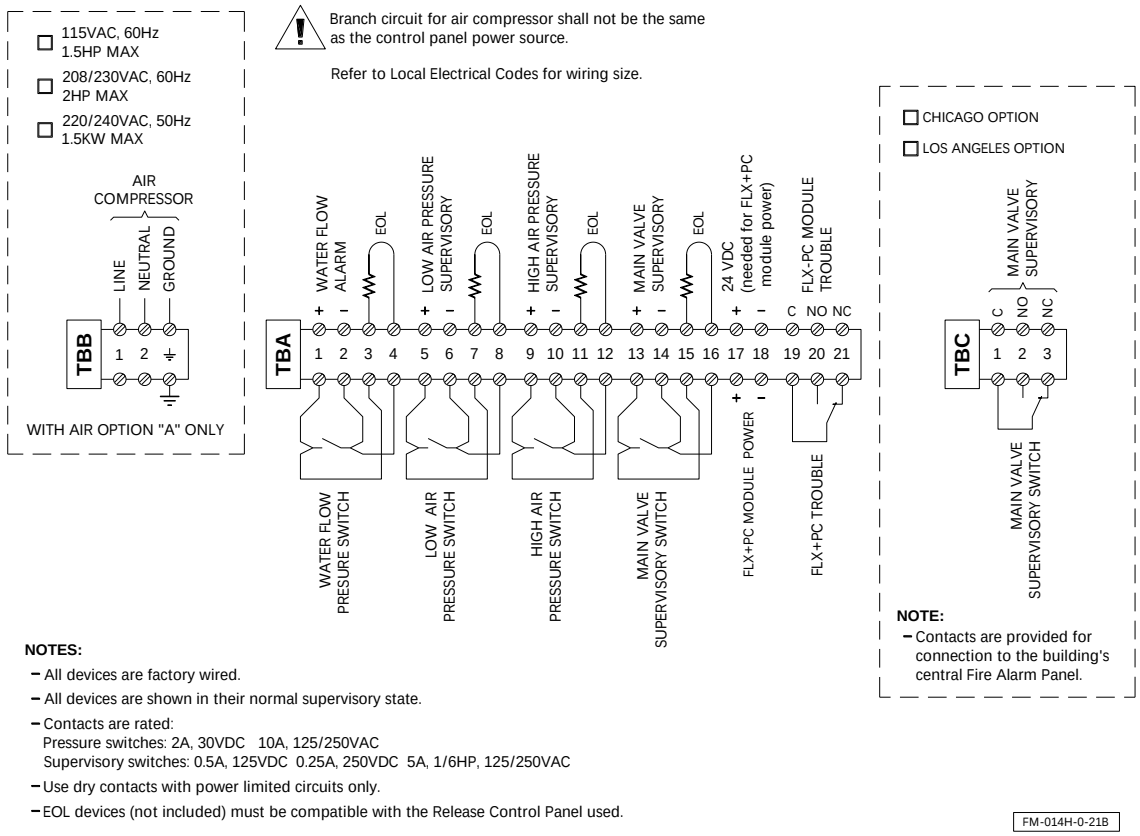
The remote fire alarm control panel is to be wired to the contractor wiring junction box and terminals provided (TBA, TBB & optional TBC) as shown in figure 1.

The system must be tested to confirm compliance as described in section **B** MECHANICAL SECTION).

⚠ WARNING

No connection should be made directly in the trim components as this would void warranty and might prevent the normal operation of the unit.

Figure 1 –Field wiring diagrams



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.

FM-014H-0-21B

This page is left intentionally blank.

1- Cabinet for *TotalPac®4* unit

The ***TotalPac®4*** cabinet is available in three (3) sizes:

- 23" x 27" x 77" (584mm x 686mm x 1956mm) for 2" (50mm) and for 3" (80mm) system
- 36" x 27" x 77" (908mm x 686mm x 1956mm) for 4" (100mm) and for 6" (150mm) system
- 46" x 27" x 77" (1170mm x 686mm x 1956mm) for 8" (200mm) system

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

The cabinet unit is pre-assembled, pre-wired and factory tested under ISO-9001 specifications. Each cabinet door is provided with hinges that can be disassembled on site to remove the door assemblies for servicing.

⚠ CAUTION

Ground wire has to be disconnected prior to removing a door. It must be reconnected once the door is reinstalled.

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

Multiple units installation is easily achieved by joining manifold sections together at their water inlets. Drain outlet shall remain separate and open for each unit. Refer to figure 6 OPEN DRAIN DETAILS FOR MULTIPLE UNITS.

⚠ WARNING

TotalPac®4 unit is NOT designed to be installed where it will be subjected to outdoors and/or freezing conditions. Refer to paragraph 3 ENVIRONMENT in section **A** GENERAL DESCRIPTION for additional details. Subjecting the unit to conditions outside these limitations might hamper the normal operation of the system.

Remote controlled

A field wiring electrical junction box is integrated within the cabinet for connection of all electrical components in the trim to remotely controlled release control panel. Pressure switches, supervisory switches, etc. are all factory wired to a terminal strip (TBA and optional TBC) for contractor's field wiring. Terminal strip TBB is required for AC power connection to air compressor. Refer to section **F** ELECTRICAL for additional information.

Table 1 - System weight in cabinet

System size	Weight [1]
2½" (65mm)	655 lb (297 kg)
3" (80mm)	655 lb (297 kg)
4" (100mm)	730 lb (331 kg)
6" (150mm)	1080 lb (490 kg)

(1) Without air compressor.

Figure 1 - Cabinet and inlets/outlets dimensions

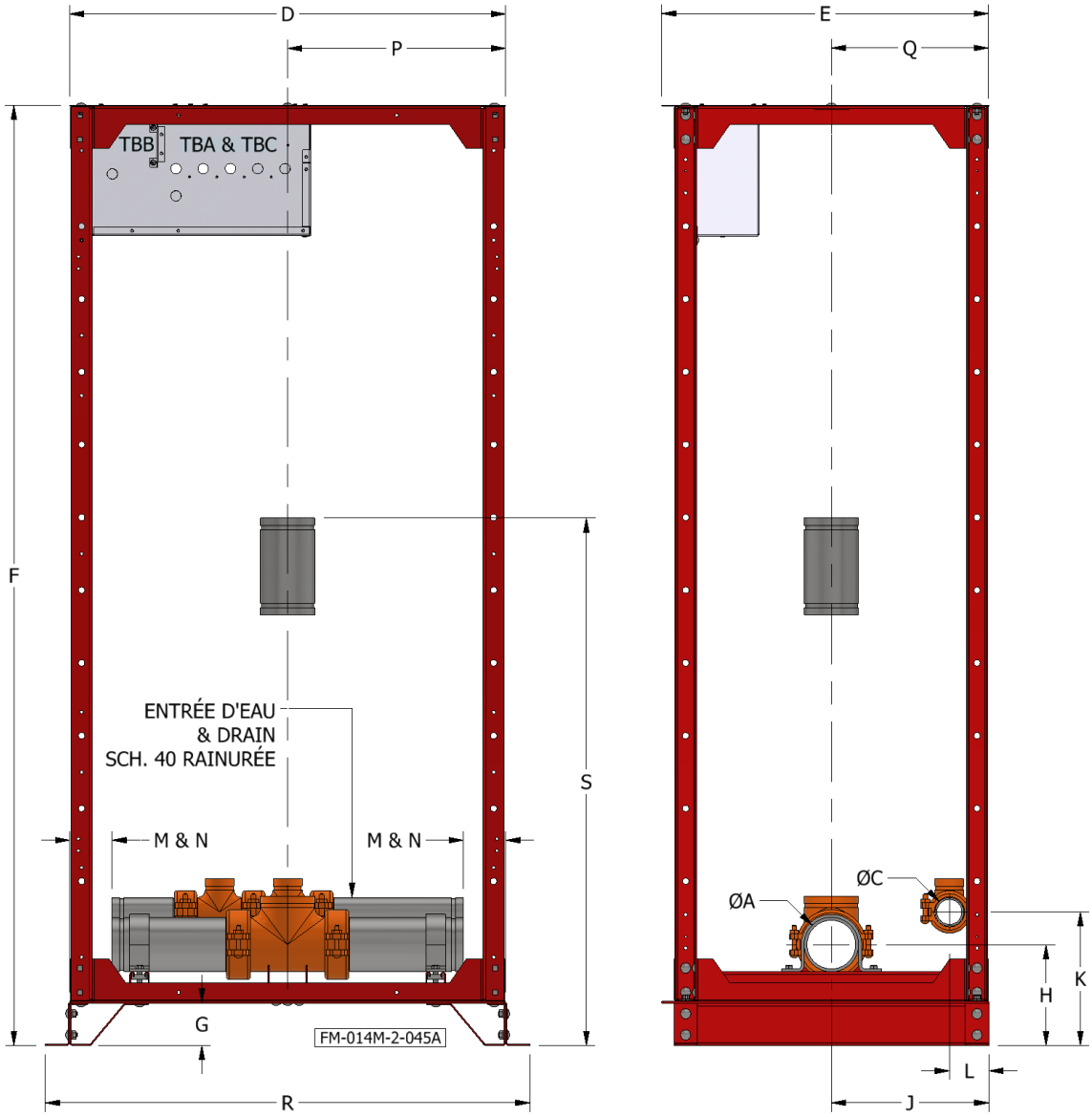


Table 2 - Cabinet dimensions - dimensions are in inches (mm)

Unit size	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T
2½" (60)	2" (51)	2" (51)	2" (51)	23" (584)	27" (686)	77½" (1969)	3½" (89)	7¼" (184)	13" (330)	11" (279)	3¼" (83)	3½" (89)	3½" (89)	11½" (292)	13" (330)	27" (686)	35¼" (895)	39½" (1003)
3" (80)	3" (76)	3" (76)	2" (51)	23" (584)	27" (686)	77½" (1969)	3½" (89)	7¾" (197)	13" (330)	11" (279)	3¼" (83)	3½" (89)	3½" (89)	11½" (292)	13" (330)	27" (686)	43" (1092)	47" (1194)
4" (100)	4" (102)	4" (102)	2" (51)	36" (914)	27" (686)	77½" (1969)	3½" (89)	8¼" (210)	13" (330)	11" (279)	3¼" (83)	3½" (89)	3½" (89)	18" (457)	13" (330)	40" (1016)	43½" (1105)	48" (1219)
6" (150)	6" (152)	6" (152)	2" (51)	36" (914)	27" (686)	77½" (1969)	3½" (89)	9½" (241)	13" (330)	11" (279)	3¼" (83)	3½" (89)	3½" (89)	18" (457)	13" (330)	40" (1016)	52" (1321)	58" (1473)

Notes:

1. Dimensions are nominal and may vary ±¼" (±5mm).

Figure 2 - Floor anchoring dimensions

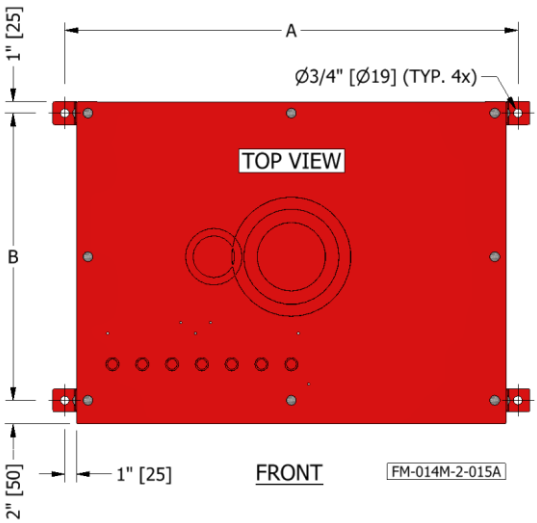


Table 3 - Floor anchoring dimensions

Dimensions are in inches (mm)

Unit size	A	B
2½" (65)	25" (635)	24" (610)
3" (80)	25" (635)	24" (610)
4" (100)	38" (965)	24" (610)
6" (150)	38" (965)	24" (610)

Figure 3 - Cabinet & doors clearance detail

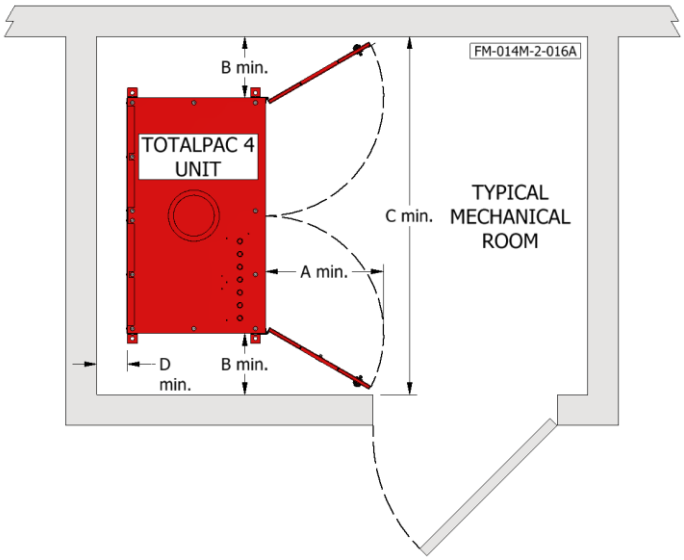


Table 4 - Cabinet clearance dimensions

Dimensions are in inches (mm)

Unit size	A	B	C	D
2½" (65)	24" (610)	12" (305)	48" (1219)	4" (102)
3" (80)	24" (610)	12" (305)	48" (1219)	4" (102)
4" (100)	24" (610)	12" (305)	60" (1524)	4" (102)
6" (150)	24" (610)	12" (305)	60" (1524)	4" (102)

Note : Minimum dimensions are according to door clearance and external piping requirements.

Figure 4 - Knockouts details

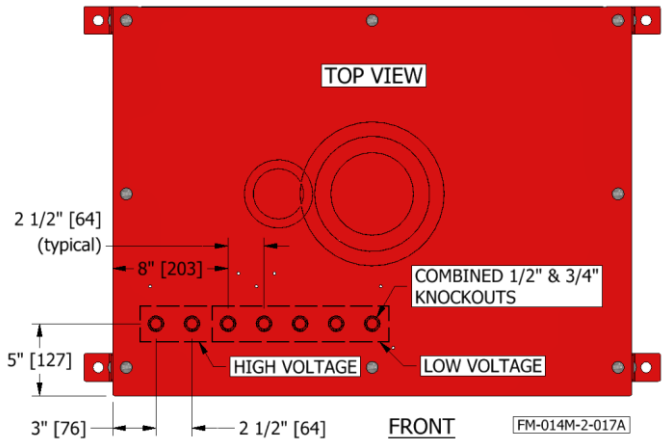


Figure 5 - Open drain details for single unit

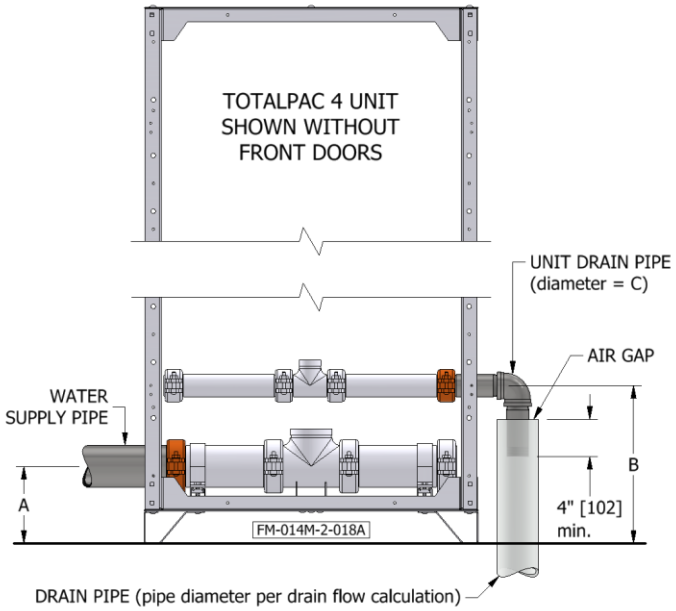
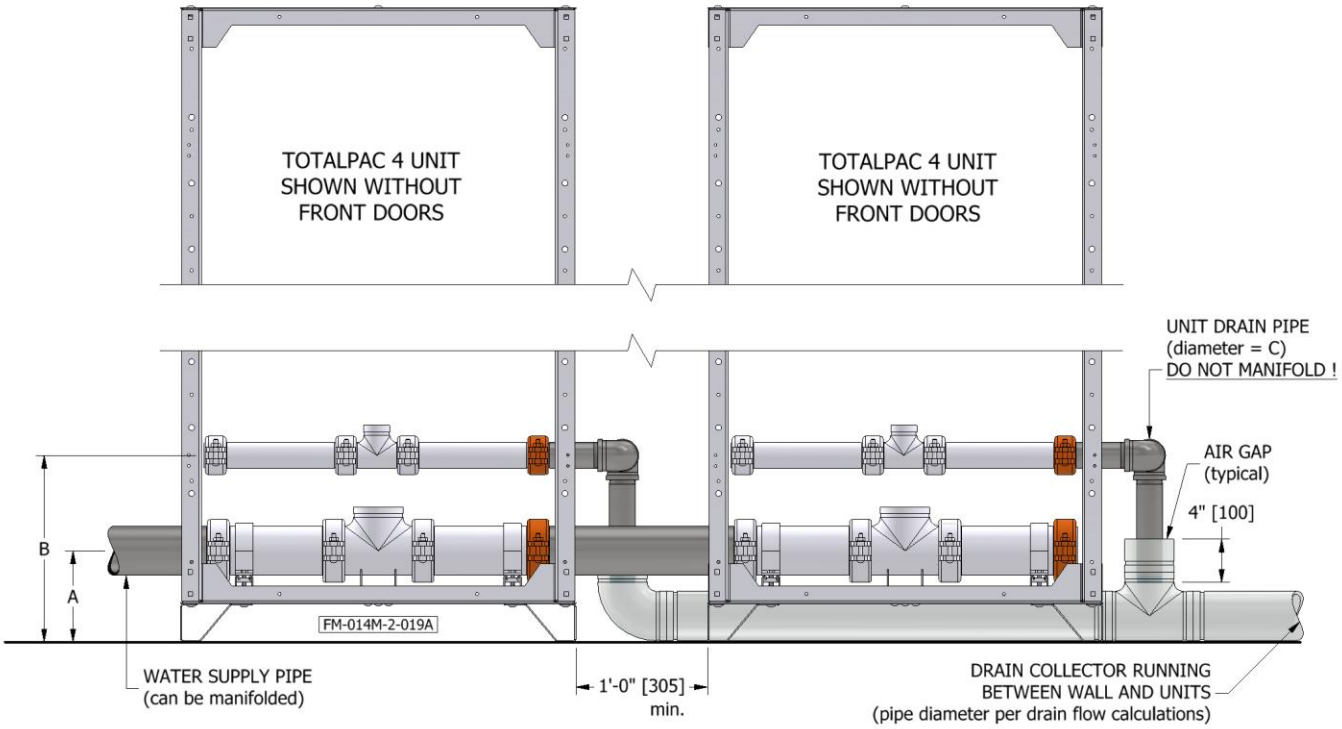


Table 5 - Manifold dimensions

Dimensions are in inches (mm)

Unit size	A	B	C
2½" (65)	7¼" (184)	11" (279)	2" (51)
3" (80)	7¾" (197)	11" (279)	2" (51)
4" (100)	8¼" (210)	11" (279)	2" (51)
6" (150)	9½" (241)	11" (279)	2" (51)

Figure 6 - Open drain details for multiple units
(refer to dimensions in table 5)



Notes:

1. Water supply and drain pipes can be connected on either side 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.

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 original shipping date, 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 parts(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 J7H 1N8
Tel.: (450) 437-3473
Fax: (450) 437-1930
Toll Free: (866) 347-3353
Website: **www.fireflex.com**

User Notes