DESCRIPTION

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

TotalPac®3 deluge systems are built around the Viking trim using deluge valves model F-1.

Pneumatically controlled deluge systems require a pneumatic release system, equipped with fixed temperature releases, and/or pilot heads. Release trim, for pneumatically controlled deluge systems utilize a pneumatic actuator normally held closed by pressure maintained in the pneumatic release system. In fire conditions, operation of the pneumatic release system opens the deluge valve, allowing water to enter the system piping. Water will flow from any open sprinklers and/or spray nozzles on the system.

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

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

Standard features

- cULus Listed & FM Approved as an assembled unit
- Factory assembled, programmed and tested under ISO-9001 standards
- Prewired to a terminal block
- Easy and compact installation
- Viking conventional trim rated at 250 psi (1724 kPa)
- Galvanized trim piping
- Serial number for easy reference
- Corrosion resistant cabinet with flush type handle and lock
- No open drain cup inside the unit
- Numerous modular options to meet the most demanding jobsite requirements
- Four styles of modular air supply options
- Inlet & outlet hydrostatic test ports
- User-friendly standardized operation & installation manual
- Free interactive simulator
**Cabinet**

The TotalPac®3 cabinets 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.

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 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 tamper 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.

**Sequence of operation (see trim diagram)**

In a fire condition, when a releasing device operates, pressure in the pneumatic release system escapes causing the pneumatic actuator (F3) to open.

Pressure is released from the priming chamber of the deluge valve (A1) to the open drain manifold faster than it is supplied through the restricted orifice (B3). The Deluge Valve clapper opens to allow water to flow into the system piping and alarm devices, causing the alarm pressure switch (C1) and optional water motor alarm (C2) to activate. Water will flow from all the open sprinklers and/or nozzles in the system.

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

**Systems hydraulic limitations**

**WARNING** The information contained herewith is for estimation and evaluation purposes only. Its use remains the responsibility of the designer.

Designers should refer to the appropriate NFPA Standards and any other applicable codes for their final design. Also refer to FireFlex Systems Inc. appropriate user manuals and to manufacturer's data sheets for additional details.

Systems limitations indicated below are nominal flow limitations.

<table>
<thead>
<tr>
<th>System size (in.)</th>
<th>Usage Range (gpm)</th>
<th>Piping Equivalent Lengths w/o shut off valve</th>
<th>Piping Equivalent Lengths c/w shut off valve</th>
<th>Drain flow @ 250 PSIG w.p.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(m.)</td>
<td>(ft.)</td>
<td>(m.)</td>
</tr>
<tr>
<td>1½</td>
<td>0 – 210</td>
<td>6.77</td>
<td>22.2</td>
<td>6.98</td>
</tr>
<tr>
<td>2</td>
<td>0 – 360</td>
<td>9.20</td>
<td>30.2</td>
<td>9.42</td>
</tr>
<tr>
<td>3</td>
<td>100 - 700</td>
<td>13.75</td>
<td>45.1</td>
<td>17.28</td>
</tr>
<tr>
<td>4</td>
<td>200 – 1400</td>
<td>17.92</td>
<td>58.8</td>
<td>21.37</td>
</tr>
<tr>
<td>6</td>
<td>400 - 3100</td>
<td>27.17</td>
<td>89.15</td>
<td>31.18</td>
</tr>
<tr>
<td>8</td>
<td>750 - 5250</td>
<td>34.14</td>
<td>112.00</td>
<td>370.7</td>
</tr>
</tbody>
</table>
**Standard equipment**

**Deluge valve**
The Viking Model deluge valve is a quick-opening, differential diaphragm, flood valve with one moving mechanism. The deluge valve is used to control water flow in deluge and preaction sprinkler systems. The valve is held closed by system water pressure trapped in the priming chamber, keeping the outlet chamber and system piping dry. In fire conditions, when the releasing system operates, pressure is released from the priming chamber. The deluge valve clapper opens to allow water to flow into the system piping.

**Water supply control valve**
The water inlet control valve is a supervised, indicating butterfly valve. Purpose of this valve is to manually shutoff the preaction system.

**Pneumatic actuator**
The Viking Pneumatic Actuator is a spring loaded, rolling diaphragm and piston operated valve. It is used to activate the deluge valve on and pneumatic releasing system (pilot line) loss of air.

**Alarm pressure switch**
The alarm pressure switch monitors the water flow within the sprinkler piping. Should the Deluge Valve clapper opens to allow water to flow into the sprinkler piping. The alarm pressure switch will activate, indicating a water flow signal.
Optional mechanical equipment

- **Shut-off valve & sight glass option**
  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 system being 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.

  **Warning:** Shut-off valve & sight glass option is **not available** on 8” systems.

- **Fire department connection**
  The fire department connection option consists of a grooved tee fitting installed in lieu of the 90 degree elbow at the outlet of the deluge valve (A1). An access hole of the proper diameter is factory pre-drilled on the side of the **TotalPac®3** enclosures for connection of the piping going to the fire department connection.

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

  **Warning:** Fire department connection is **not available** on 8” systems.

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Warning: Shut-off valve is **not available** combined with Fire department connection on 6” systems.
Optional mechanical equipment (continued)

- **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 grooved-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.

- **OSHPD option**
  Pre-approved construction, under OSP-0341-10, using specific components.

**Air supply**

- **Air Pressure Maintenance Device (Style “C”)**
  Used only for the pneumatic release piping network of pneumatically operated Preaction systems. An external air supply has to be provided by others (compressor, plant air or dry nitrogen cylinders) and piped to the air inlet port of the unit. Air supply style “C” provides an Air Pressure Maintenance Device (APMD) trim, factory mounted in the **TOTALPAC®3** cabinet.
Details & field wiring diagrams

Cabinet with main components - Configuration without releasing control panel

- Cable Entry
- Junction box
- TBA & TBB
- Riser Outlet to Sprinklers Network
- Straight Through Deluge Valve
- Water Supply Control Valve
- Drain Outlet (either side)
- Water Inlet (either side)
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
D3  Main drain valve
F3  Pneumatic actuator
Field wiring diagrams:

**WIRING OF AIR COMPRESSOR POWER SOURCE**

- 120VAC, 60Hz
- 220VAC, 50Hz

**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.

Refer to Local Electrical Codes for wiring size.

**CONTACTS PROVIDED:**
- Contacts provided for connection to the building's central Fire Alarm Panel.
Figure 1 – Cabinet dimensions:

Dimensions are nominal and may vary ±¼".
Dimensions V and W are with the optional Fire Department Connection

| System Size | A | B | C | D | E | F | G | H | J | K | L | M | N | P | Q | R | S | T | U | V | W |
| 1½"         | 2"| 1½"| 2"| 23"| 25"| 77/8"| 4"| 8¼"| 11½"| 13½"| 3½"| 2½"| 2½"| 8"| 11½"| 37½"| 44½"| 47½"| 27"| 43½"| 50½"|
| 2"          | 2"| 2"| 2"| 23"| 25"| 77/8"| 4"| 8¼"| 11½"| 13½"| 3½"| 2½"| 2½"| 8"| 11½"| 37½"| 45"| 47½"| 27"| 43½"| 50½"|
| 3"          | 4"| 3"| 2"| 39¼"| 25"| 77/8"| 4"| 10"| 11½"| 13½"| 3½"| 2½"| 2½"| 11¼"| 11½"| 44½"| 47½"| 51½"| 39½"| 51½"| 54½"|
| 4"          | 4"| 4"| 2"| 39¼"| 25"| 77/8"| 4"| 10"| 11½"| 13½"| 3½"| 2½"| 2½"| 12"| 11½"| 48½"| 52"| 59"| 39½"| 56½"| 61"|
| 6"          | 6"| 6"| 2"| 46"| 25"| 77/8"| 4"| 11"| 11½"| 13½"| 3½"| 5½"| 5½"| 17¼"| 11½"| 59½"| 65"| 70½"| 50"| 70½"| n/a|
| 8"          | 8"| 8"| 2"| 54"| 31"| 81¼"| 4"| 12"| 13½"| 17"| 3¼"| 9"| 6½"| 27"| 13¼"| 70"| 75½"| n/a| 58"| n/a| n/a|

SYSTEMS WEIGHTS
Cabinets without control panel

<table>
<thead>
<tr>
<th>System Description</th>
<th>Weight (lbs)</th>
<th>Weight (Kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1½&quot; Preaction cabinet unit</td>
<td>450</td>
<td>204</td>
</tr>
<tr>
<td>2&quot; Preaction cabinet unit</td>
<td>455</td>
<td>206</td>
</tr>
<tr>
<td>3&quot; Preaction cabinet unit</td>
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<td>4&quot; Preaction cabinet unit</td>
<td>705</td>
<td>320</td>
</tr>
<tr>
<td>6&quot; Preaction cabinet unit</td>
<td>1010</td>
<td>458</td>
</tr>
<tr>
<td>8&quot; Preaction cabinet unit</td>
<td>1470</td>
<td>667</td>
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</table>
Figure 2 – Anchoring dimensions:

<table>
<thead>
<tr>
<th>System Size</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1½&quot;</td>
<td>25&quot;</td>
<td>15&quot;</td>
</tr>
<tr>
<td>2&quot;</td>
<td>25&quot;</td>
<td>15&quot;</td>
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<tr>
<td>3&quot;</td>
<td>37½&quot;</td>
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<td>4&quot;</td>
<td>37½&quot;</td>
<td>15&quot;</td>
</tr>
<tr>
<td>6&quot;</td>
<td>48&quot;</td>
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</tr>
<tr>
<td>8&quot;</td>
<td>56&quot;</td>
<td>21&quot;</td>
</tr>
</tbody>
</table>

Figure 3 – Cabinet clearance dimensions

<table>
<thead>
<tr>
<th>System Size</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1½&quot;</td>
<td>24&quot;</td>
<td>12&quot;</td>
</tr>
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<td>2&quot;</td>
<td>24&quot;</td>
<td>12&quot;</td>
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<td>12&quot;</td>
</tr>
<tr>
<td>8&quot;</td>
<td>32&quot;</td>
<td>12&quot;</td>
</tr>
</tbody>
</table>

Figure 4 – Knockouts detail

- **High voltage**
- **Low voltage**

**Top of Cabinet**

- 2½" Typ.
- 3¾"
Figure 5: Open drain details for single unit:
(See dimensions in table below)

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

Dimension table

<table>
<thead>
<tr>
<th>Unit Size:</th>
<th>1½&quot;</th>
<th>2&quot;</th>
<th>3&quot;</th>
<th>4&quot;</th>
<th>6&quot;</th>
<th>8&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>8¾&quot;</td>
<td>8¼&quot;</td>
<td>10&quot;</td>
<td>10&quot;</td>
<td>11&quot;</td>
<td>12&quot;</td>
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<tr>
<td>B</td>
<td>13¾&quot;</td>
<td>13¼&quot;</td>
<td>13¾&quot;</td>
<td>13¾&quot;</td>
<td>17&quot;</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>2&quot;</td>
<td>2&quot;</td>
<td>2&quot;</td>
<td>2&quot;</td>
<td>2&quot;</td>
<td>2&quot;</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.