



DESCRIPTION

This **TOTALPAC®3** integrated fire protection system by FireFlex Systems Inc. consists of a **Firecycle®III** 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 Firecycle®III systems are built around the Viking trim using flow control valves model J-1.

Firecycle®III Deluge system uses open type sprinklers and / or spray nozzles in the sprinkler piping which totally flood an area with pressurized water. A detection network is used in parallel with the open type sprinkler / nozzles system. This network is electric and may be actuated by normally closed rate compensated heat detectors, or normally open manual pull station. When the detection system operates it gives an alarm and activates the flow control valve.

In addition to automatically detecting a fire and turning the system on, **Firecycle®III** has the added ability to sense when the fire has been controlled, and automatically turn off the water flow once a preprogrammed "Soak Timer" has been satisfied. Should the fire rekindle, the releasing control panel will initiate the sequence again. This unique **Firecycle®III** feature will repeat as long as power is available to the panel, helping to minimize water usage, water damage, and the danger of pollution to surrounding areas.

The **Firecycle®III** preaction system includes a VIKING VFR-400 control panel

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

- | | |
|--------------------------------------|--------------------------------------|
| <input type="checkbox"/> 1½" (40 mm) | <input type="checkbox"/> 4" (100 mm) |
| <input type="checkbox"/> 2" (50 mm) | <input type="checkbox"/> 6" (150 mm) |
| <input type="checkbox"/> 3" (80 mm) | <input type="checkbox"/> 8" (200 mm) |

Standard features

- cULus Listed & FM Approved as an assembled unit
- Factory assembled, programmed and tested under ISO-9001 standards
- Prewired to the Viking VFR-400 releasing control panel.
- 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 detection system, auxiliary contacts and signaling devices. All inputs & outputs are factory wired to a terminal strip (TBA) for contractor's field wiring.

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

IMPORTANT: TOTALPAC®3 units are NOT designed to be installed where they will be subjected to outdoors and/or freezing conditions. Refer to environmental data for additional details. Subjecting the unit to conditions outside these limitations might 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 the detection condition is satisfied, system control panel (supplied by others) activates an alarm and energizes normally closed Solenoid valve (*F2*) open and normally open solenoid valve (*F1*) closed.

Pressure is released from the priming chamber of the flow control valve (*A1*) to the open drain manifold faster than it is supplied through the restricted orifice (*B3*). The flow control 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 flow control valve operates, the PORV (*B9*) is pressurized, causing it to latch open. Water discharges until all **Firecycle®III** detectors have reset (cooled below their set point). After all detectors have reset, the **Firecycle®III** control panel activates the soak timer, allowing the system to flow water for a pre-determined period of time. When the soak timer has elapsed, the control panel de-energizes the normally closed solenoid valve (*F2*), allowing it to close (the normally open solenoid (*F1*) remains energized closed until the system is manually reset or all power (both AC and batteries) is lost). The flow control valve re-priming and closes, stopping the flow of water through the piping system. Should a **Firecycle®III** detector go into alarm, the control panel reenergizes the normally closed solenoid valve (*F2*) open, and the entire cycle repeats.

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.

System size (in.)	Usage Range (gpm)	Piping Equivalent Lengths w/o shut off valve		Piping Equivalent Lengths c/w shut off valve		Drain flow @ 250 PSIG w.p. GPM
		(m.)	(ft.)	(m.)	(ft.)	
1½	0 – 210	8.3	27.2	8.5	27.9	272
2	0 – 360	11.65	38.2	11.85	38.9	272
3	100 - 700	19.84	65.1	23.38	76.7	762
4	200 – 1400	21.89	71.8	25.33	83.1	1597
6	400 - 3500	33.28	109.15	37.28	122.3	1597
8	750 - 5250	41.15	135	44.71	146.7	1597

Standard equipment

Control panel

- 120 VAC / 60 Hz, 165VA.
- 220 VAC / 50 Hz, 185VA.
- 12VDC / 12Ah batteries. (factory installed)
- 12VDC / 18Ah batteries. (optional)
- Single Zone detection
(Activated by Zone 1)

The release control panel integrated into the **TOTALPAC®3** cabinet is Viking's Model **VFR-400**. This panel includes four Class B, programmable detection zones (optional Class A); two Class B supervisory zones and four Class B, programmable output circuits (optional Class A). It is also provided with menu driven programming, including a specific program assigned at the factory.

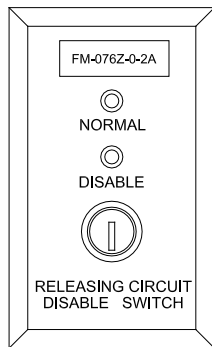
The panel is compatible with many types of fire alarm & supervisory devices such as linear heat detectors, spot-type heat and smoke detectors, water flow and release indicators, low and high air pressure switches, manual pull stations.

The control panel also includes an alphanumeric display with 2 lines of 16 characters describing all the system conditions, as well as a set of red and yellow LED lamps individually indicating each of the alarm and trouble conditions of the system

Easy to operate control buttons are also provided to activate and operate the system's various functions.

Releasing circuit disable switch

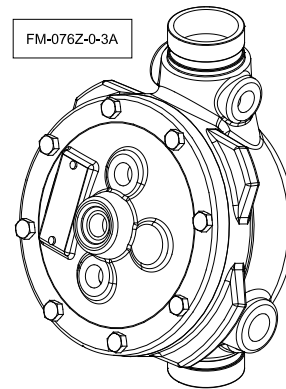
The releasing circuit disable switch is used to disable the releasing solenoid. When the key is set to "Disable", the releasing solenoid will be disconnected from the control panel's releasing circuit, causing a trouble signal and preventing accidental discharge during maintenance or inspection.



Flow control valve

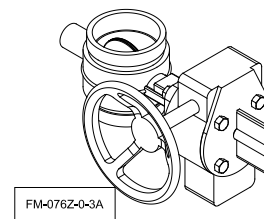
The Viking flow control valve is a quick opening, differential type flood valve with a spring loaded rolling diaphragm clapper. The flow control valve can be used to facilitate manual or automatic on/off control. The Viking flow control valve is an integral part of the Viking Firecycle® System.

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 flow control valve clapper opens to allow water to flow into the system piping.



Water supply control valve

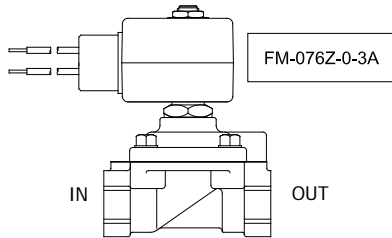
The water inlet control valve is a supervised, indicating butterfly valve. Purpose of this valve is to manually shutoff the preaction system.



Standard equipment (continued)

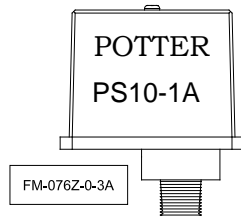
Solenoid valve

The high pressure solenoid valve is a two-way type with one inlet and one outlet. It is a packless, internal pilot operated valve, suitable for use in releasing water pressure from the priming chamber of Viking flow control valves. The solenoid valve has floating diaphragm construction, which requires a minimum pressure drop across the valve to operate properly.



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 preaction system be tested under actual discharge conditions. Examples of such applications are freezers, ovens, museums, data processing and other hazards where the possibility of water leaking from the piping system is to be avoided at all costs.

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

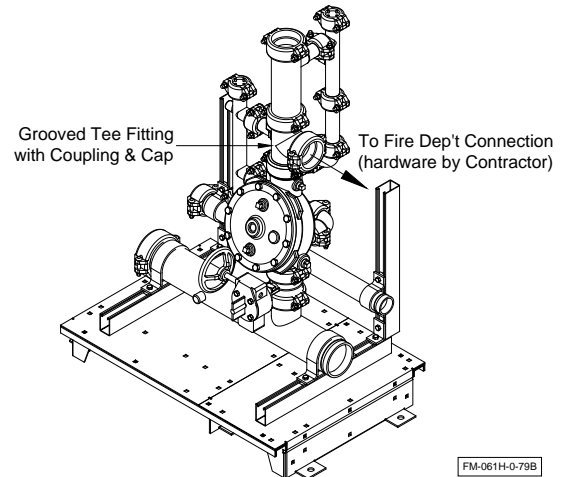
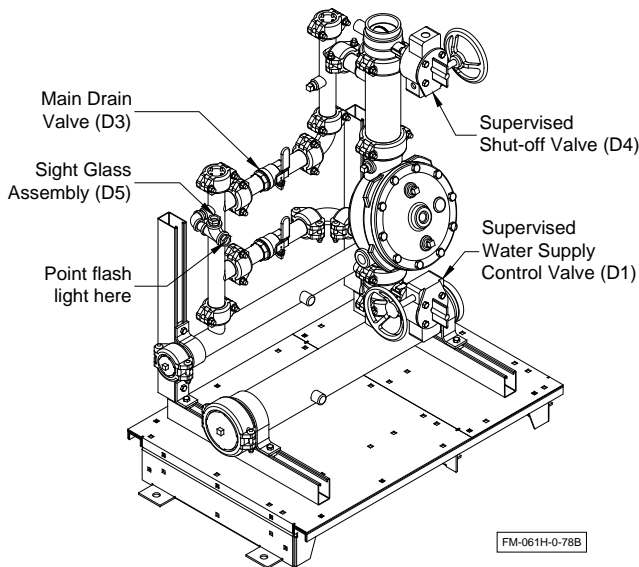
Warning: Shut-off valve is **not available** combined with Fire department connection on 6" systems.

❑ **Fire department connection**

The fire department connection option consists of a grooved tee fitting installed 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.



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.

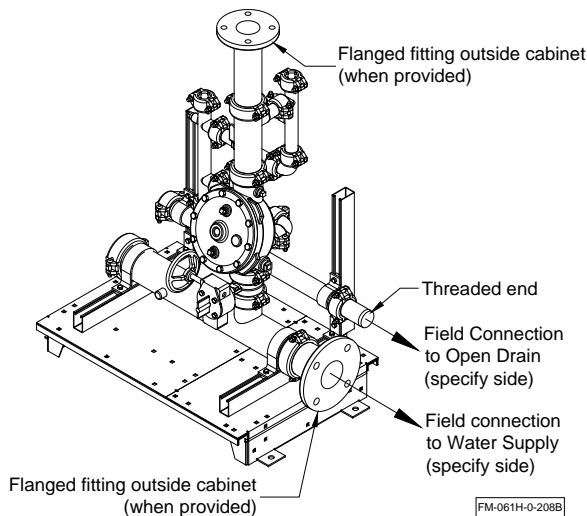
The semi flanged option provides flanged fittings only on the water inlet pipe (side needs to be specified at the time of order) and on the system riser outlet. The drain manifold is then provided with a threaded end that also needs to have its side specified (left or right). The rest of the fittings 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. On skid units, the surface of the flange on the outlet riser will always be 6 inches above the dimension shown on the dimensional data of the system ordered.

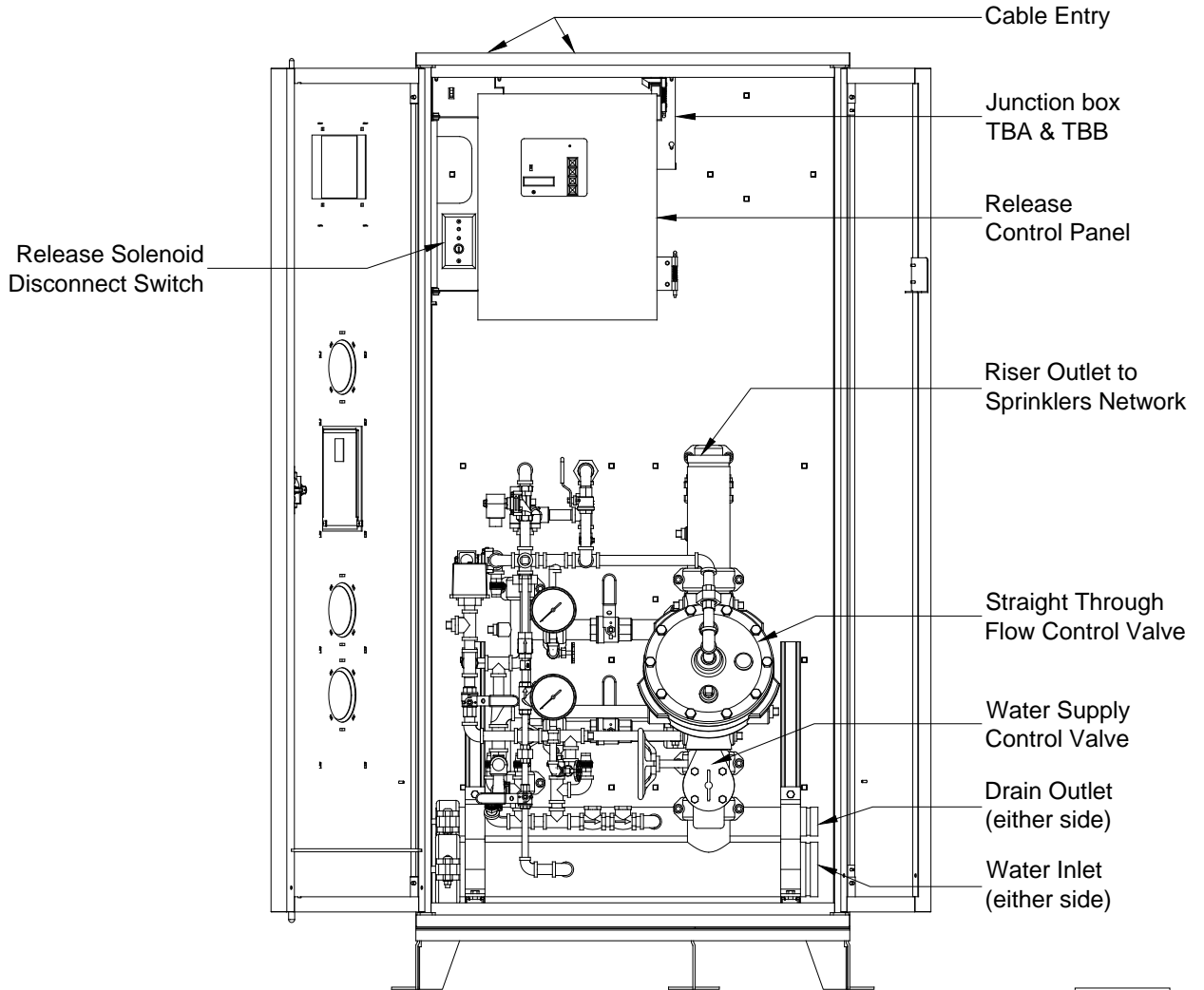
❑ **OSHPD option**

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



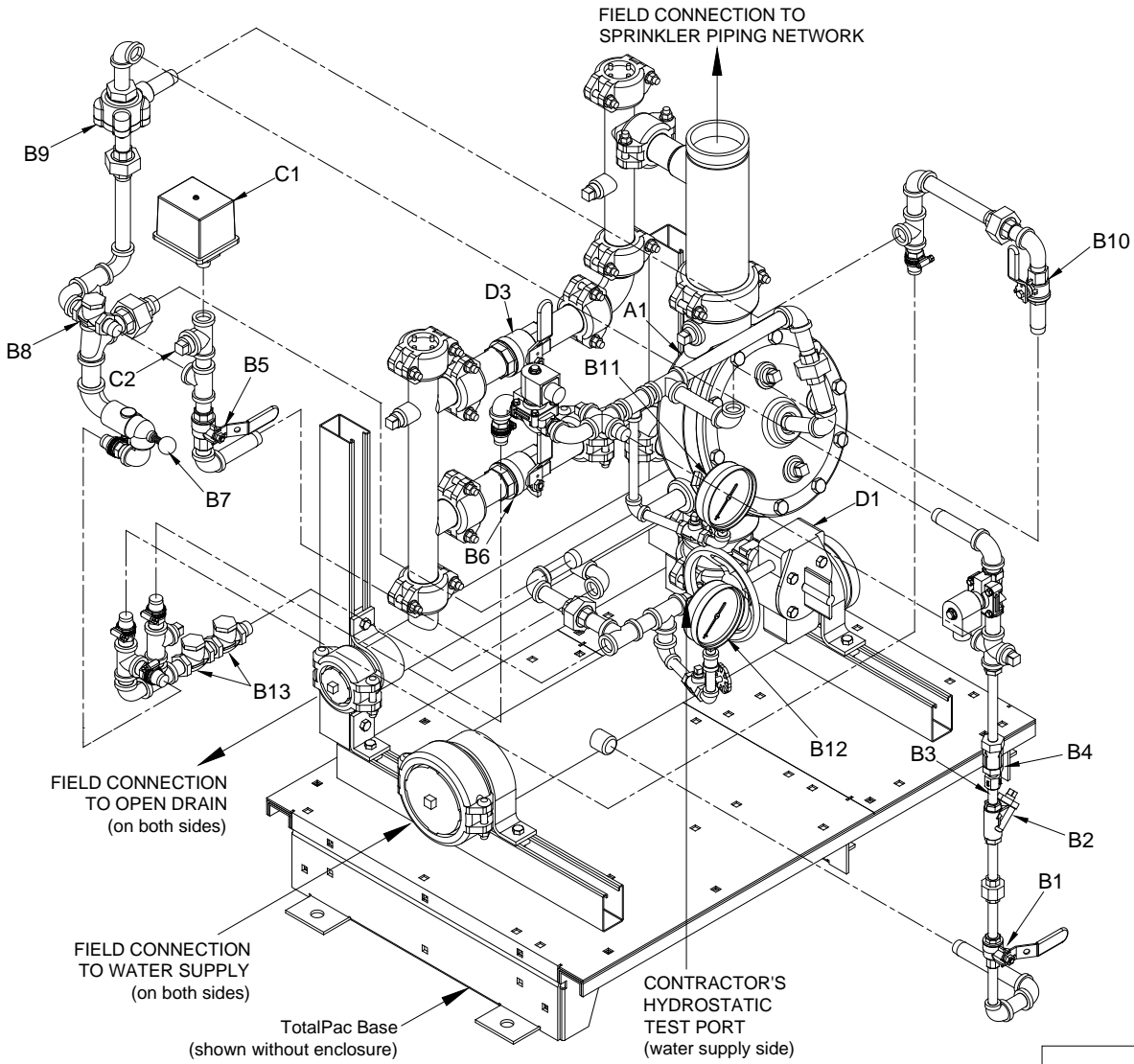
Details & field wiring diagrams

Cabinet with main components - Configuration with release control panel



FM-061H-0-191B

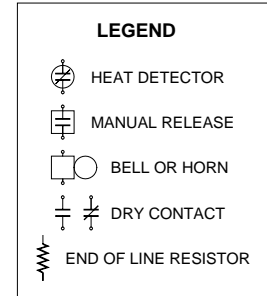
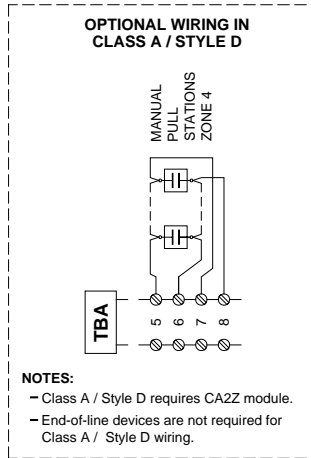
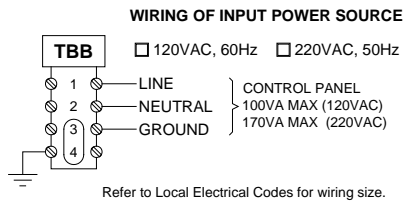
Trim diagram



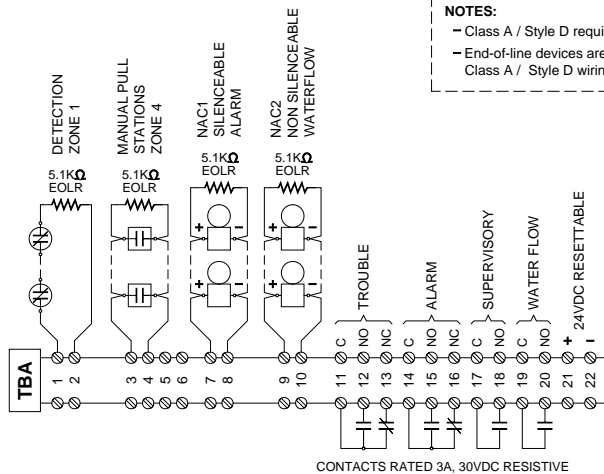
Trim Components:

- | | | | |
|-----|---------------------------------------|----|--|
| A2 | Flow control valve | C1 | Alarm pressure switch |
| B1 | Priming valve | C2 | Connection to water motor gong (strainer supplied by contractor) |
| B2 | Strainer | D1 | Water supply control valve |
| B3 | 1/8" Restricted orifice | D3 | Main drain valve |
| B4 | Spring loaded check valve | F1 | N.O. Solenoid valve – 24Vdc |
| B5 | Alarm test valve | F2 | N.C. Solenoid valve – 24Vdc |
| 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 | | |

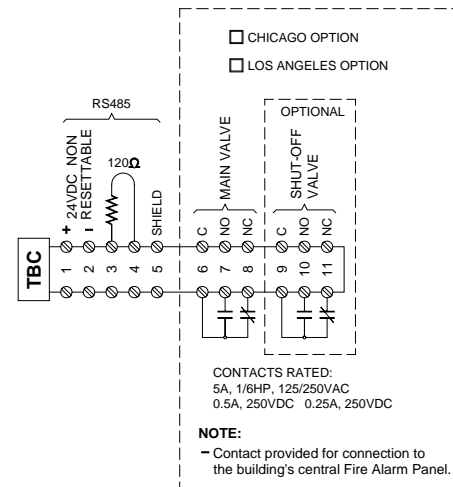
Field wiring diagrams, Deluge Electric, Self-Contained:



WIRING IN CLASS B / STYLE B WIRING IN CLASS B / STYLE Y



- NOTES:**
- Control panel AC power source is supervised and non-power limited.
 - All devices are shown in their normal supervisory state.
 - Use dry contacts with power limited circuits only.



FM-061H-0-87A

Power Limited (supervised) Initiating Device Circuits

Detection Zone 1, 2, 3, and 4.

Max. loop resistance: 100 ohms

End of line: 5.1K ohms, 1/4W

Leave ELR (provided) on all unused circuits.

Refer to Device Compatibility in the VFR-400 Releasing control panel Manual.

Power Limited (supervised) Initiating Device Circuits

Supervision Zone 1, and 2.

Max. loop resistance: 100 ohms

End of line: 5.1K ohms, 1/4W

Leave ELR (provided) on all unused circuits.

For dry contact supervisory devices such as tamper, low air, or high air switches. (Class-B only)

Resettable for 4 wires smoke detectors

Power Limited (supervised) Notification Appliance Circuits

Output Circuit 1, 2, 3, and 4

Maximum operating voltage: 27Vdc (ripple: 0.3Vdc)

Maximum usable current per circuit: 1.0A

Total current available (all circuits): 2.5A

Polarity is reversed in supervisory condition.

Leave ELR (provided) on all unused circuits.

Refer to Device Compatibility in the VFR-400 Releasing control panel Manual.

Auxiliary Power 24Vdc Regulated Source

Total current available: 0.2A

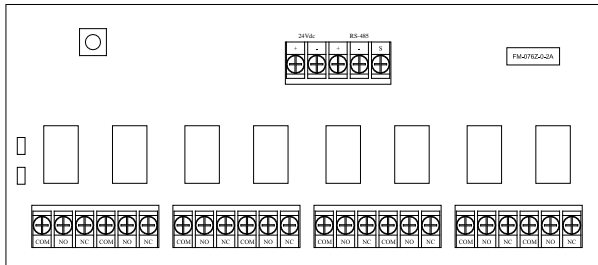
Resettable for 4 wires smoke detectors.

WARNING Releasing control panel shall be supplied by a dedicated circuit breaker, as per NFPA 70, Section 760 and Canadian Electrical Code, Section 32.

Optional electrical equipment

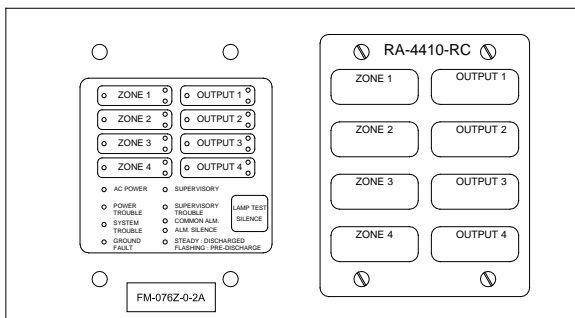
❑ **Relay module ARM-44**

The ARM-44 is an auxiliary relay module designed to operate with the the Viking **VFR-400** releasing control panel to provide 4 independent form C relay outputs. The 4 output circuits each have a dedicated relay. Each relay is rated for 3 amps at 24 volts DC resistive load. The relay module mounts directly to the back of the cabinet and is connected to the main board. All of the relay terminals are wired back to the field wiring junction box. A disable switch is available for disabling the relays when the system is being tested or serviced.



❑ **Remote Annunciator RA-4410-RC**

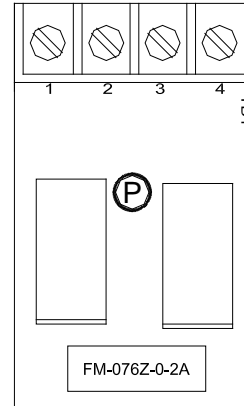
The RA-4410-RC remote annunciator is designed to operate with the the Viking **VFR-400** releasing control panel. There are 34 LED's to indicate a change in panel status. There is a buzzer on the annunciator that sounds for any trouble or supervisory condition. The release control panel supervises and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



❑ **Class A initiating device module CA2Z**

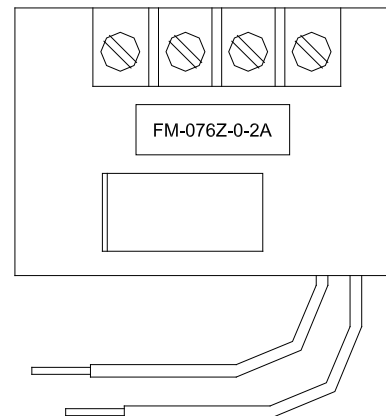
The Model CA2Z Class A Module is designed to be used with the the Viking **VFR-400** releasing control panel to convert from two (Class B) initiating device circuits to two (Class A) circuits.

The module is to be mounted in the upper right hand corner of the panel. All the connections are wired back to the field wiring junction box.



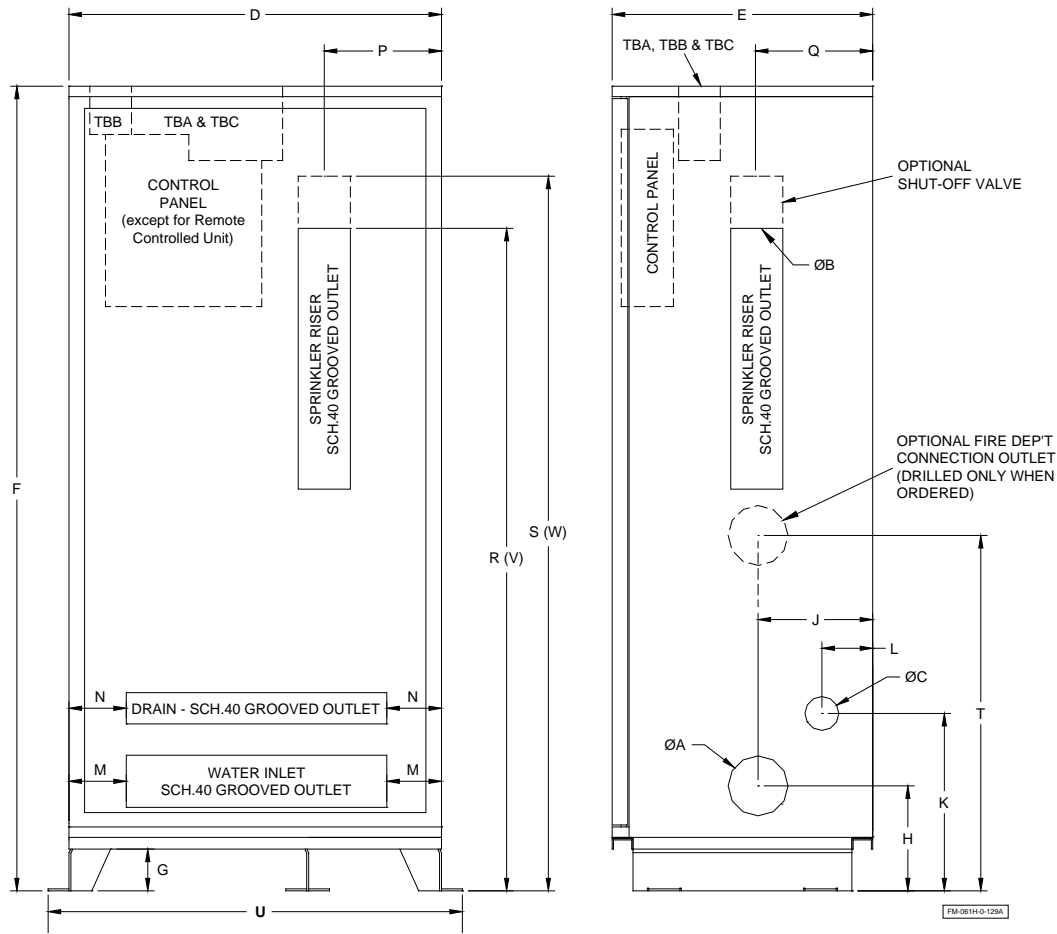
❑ **CLASS A INDICATING APPLIANCE CIRCUIT MODULE**

The Model CAM Class A Module is designed to be used with the the Viking **VFR-400** releasing control panel to convert a single (Class B) indicating appliance circuit to a (Class A) circuit (one module is required for each indicating appliance circuit). After installing the CAM, the indicating circuit should be activated to ensure proper operation and connections. The module is provided with double-sided foam tape and should be mounted in the field wiring junction box so that the terminals are accessible.



Dimensions

Figure 1 – Cabinet dimensions:

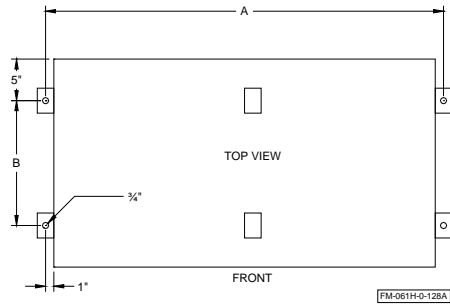


Dimensions are nominal and may vary $\pm 1/4"$.
Dimensions V and W are with the optional Fire Department Connection

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"	77¼"	4"	8¾"	11½"	13¾"	3¾"	2¾"	2¾"	8"	11½"	37½"	44¾"	47½"	27"	43"	50¼"
2"	2"	2"	2"	23"	25"	77¼"	4"	8¾"	11½"	13¾"	3¾"	2¾"	2¾"	8"	11½"	37¾"	45"	47¾"	27"	43¼"	50½"
3"	4"	3"	2"	35¾"	25"	77¼"	4"	10"	11½"	13¾"	3¾"	2¾"	2¾"	11¾"	11½"	44"	47¾"	51¼"	39¾"	51"	54¾"
4"	4"	4"	2"	35¾"	25"	77¼"	4"	10"	11½"	13¾"	3¾"	2½"	2½"	12"	11½"	48½"	53"	59"	39¾"	56½"	61"
6"	6"	6"	2"	46"	25"	77¼"	4"	11"	11½"	13¾"	3¾"	5¼"	5¼"	17¾"	11½"	59¼"	65"	70½"	50"	70¼"	n/a
8"	8"	8"	2"	54"	31"	81¼"	4"	12"	13¾"	17"	3¾"	9"	6¾"	27"	13¾"	70"	75½"	n/a	58"	n/a	n/a

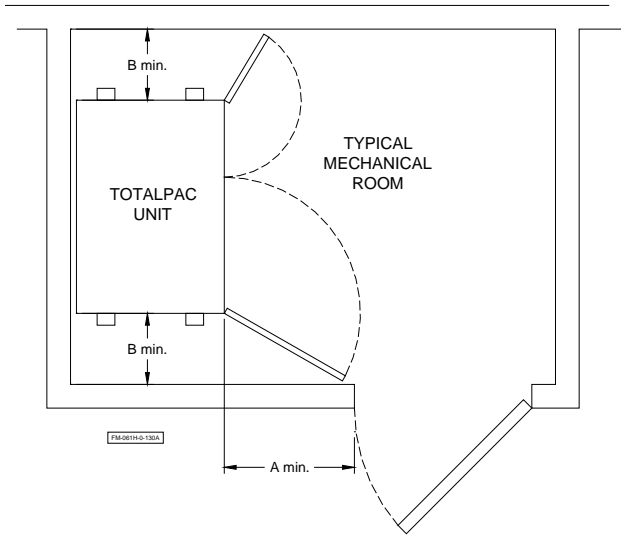
SYSTEMS WEIGHTS		
Cabinets with control panel		
System Description	Weight (lbs)	Weight (Kg)
1½" Preaction cabinet unit	485	220
2" Preaction cabinet unit	490	222
3" Preaction cabinet unit	765	347
4" Preaction cabinet unit	780	354
6" Preaction cabinet unit	1060	481
8" Preaction cabinet unit	1510	685

Figure 2 – Anchoring dimensions:



System Size	A	B
1½"	25"	15"
2"	25"	15"
3"	37¾"	15"
4"	37¾"	15"
6"	48"	15"
8"	56"	21"

Figure 3 – Cabinet clearance dimensions



System Size	A	B
1½"	24"	12"
2"	24"	12"
3"	24"	12"
4"	24"	12"
6"	24"	12"
8"	32"	12"

Figure 4 – Knockouts detail

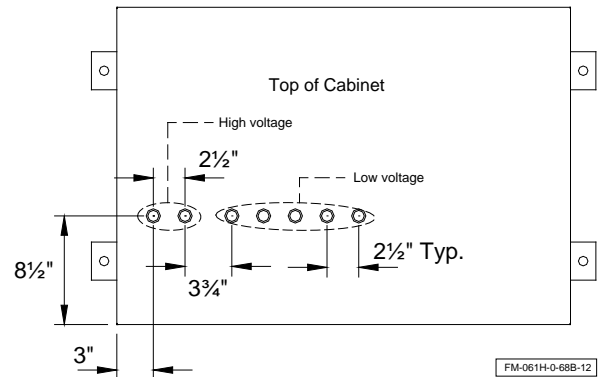


Figure 5: Open drain details for single unit:
(See dimensions in table below)

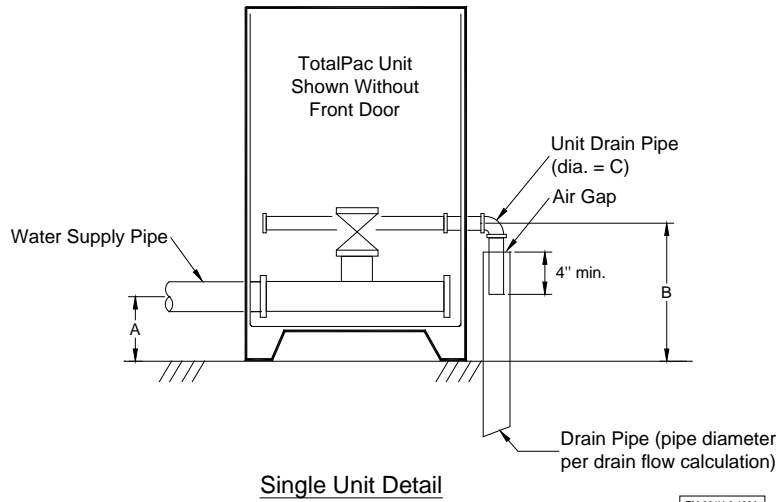
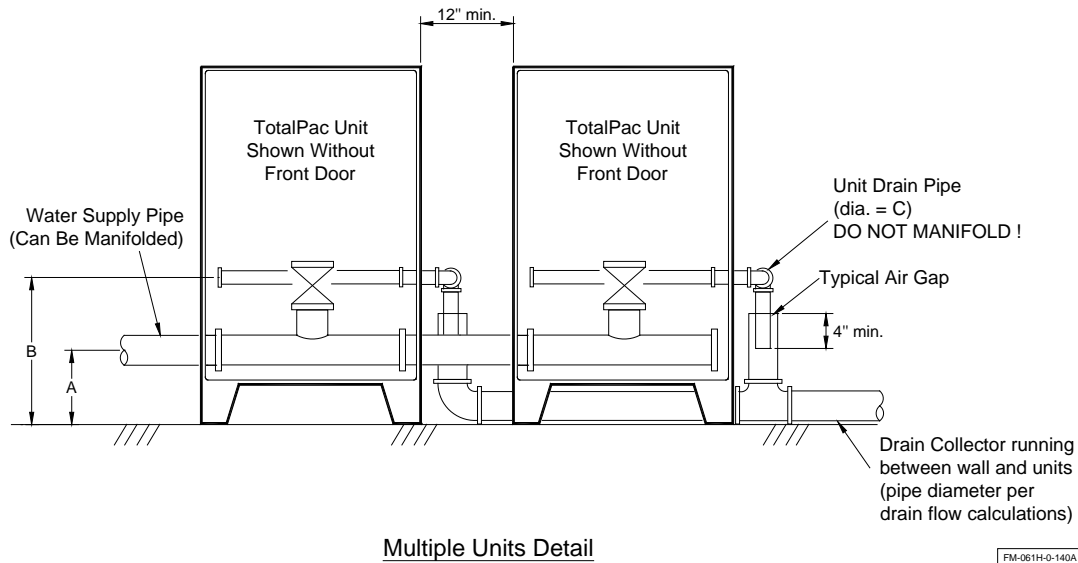


Figure 6: Open drain details for multiple units:
(See dimensions in table below)



Dimension table

Unit Size:	1½"	2"	3"	4"	6"	8"
A	8¾"	8¾"	10"	10"	11"	12"
B	13¾"	13¾"	13¾"	13¾"	13¾"	17"
C	2"	2"	2"	2"	2"	2"

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.



ADVANCED INTEGRATED FIRE PROTECTION SYSTEMS

1935, Lionel-Bertrand Blvd.
Boisbriand QC Canada J7H 1N8
Tel.: 450-437-3473 • Fax: 450-437-1930
Toll Free: 866-347-3353
Email: info@fireflex.com • Web: www.fireflex.com