



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.

Electrically controlled deluge systems require an electric normally closed solenoid valve controlled by an approved system releasing control panel with compatible detection devices. In fire condition, when the detection condition is satisfied the system releasing control panel energizes the solenoid valve, causing the deluge valve to open allowing water to enter the system piping. Water will flow from any open sprinklers and/or spray nozzles on the system

Activation of a releasing device alone or operation of a sprinkler alone will sound an alarm but will NOT cause the system to fill with water.

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 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 releasing control panel activates an alarm and energizes normally closed solenoid valve (F1) 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.

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	6.77	22.2	6.98	22.9	272
2	0 – 360	9.2	30.2	9.42	30.9	272
3	100 - 700	13.75	45.1	17.28	56.7	762
4	200 – 1400	17.92	58.8	21.37	70.1	1597
6	400 - 3500	27.17	89.15	31.18	102.3	1597
8	750 - 5250	34.14	112.0	37.7	123.7	1597

Standard equipment

Releasing control panel

- 120 VAC / 60 Hz, 165VA.
- 220 VAC / 50 Hz, 185VA.
- 12VDC / 7Ah batteries. (factory installed)
- 12VDC / 12Ah batteries. (optional)
- Single Zone detection
(Activated by Zone 1 **or** Zone 2)
- Crossed-Zone detection
(Activated by Zone 1 **and** Zone 2)

The releasing 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.

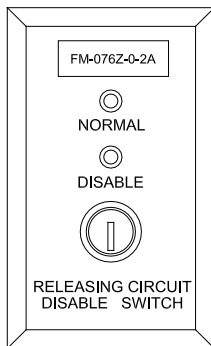
The panel is compatible with many types of fire alarm & supervisory devices such as linear heat detectors, spot-type heat and smoke detectors, water flow and release indicators, low and high air pressure switches, manual pull stations.

The releasing 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.

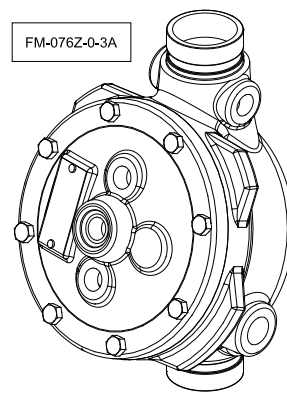
Releasing circuit disable switch

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.



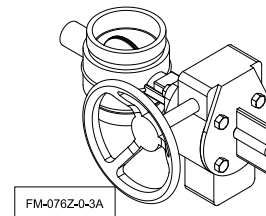
Deluge valve

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

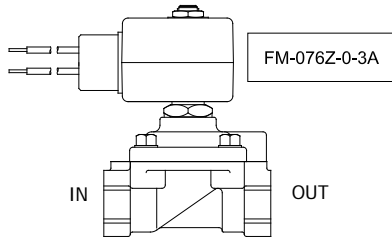
The water inlet control valve is a supervised, indicating butterfly valve. Purpose of this valve is to manually shutoff the preaction system.



Standard equipment (continued)

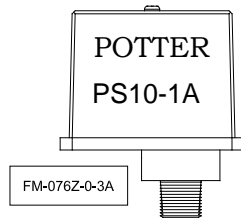
Solenoid valve

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 deluge 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 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.

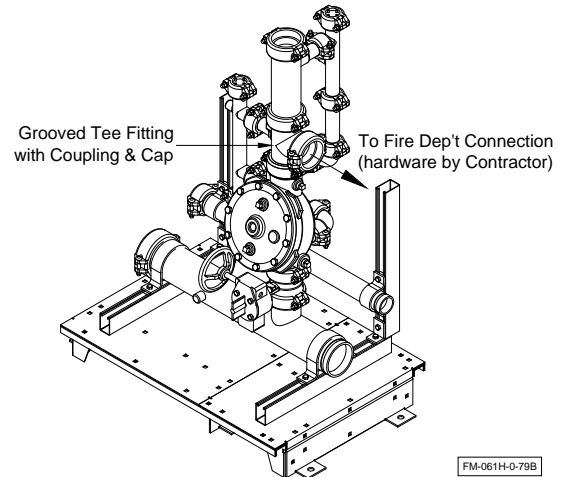
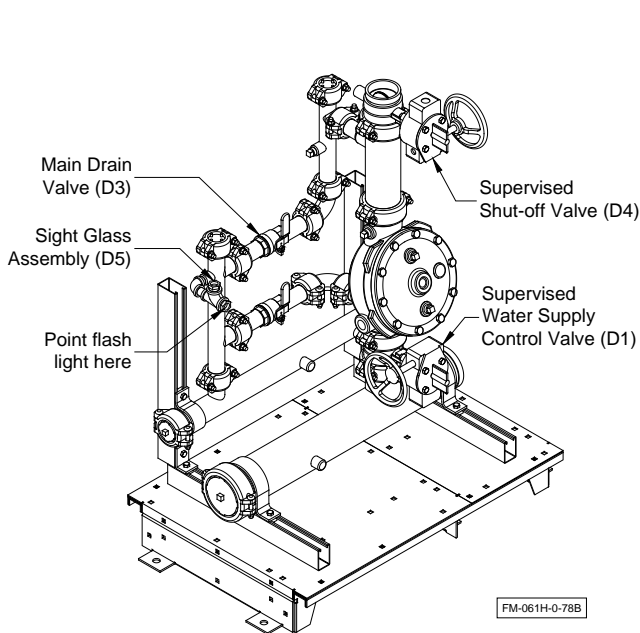
Warning: Shut-off valve is **not available** combined with Fire department connection on 6" systems.

❑ **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.

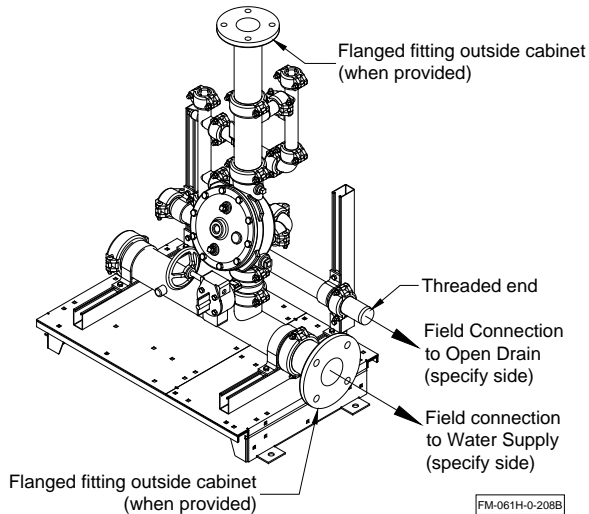
The semi flanged option provides flanged fittings only on the water inlet pipe (side needs to be specified at the time of order) and on the system riser outlet. The drain manifold is then provided with a threaded end that also needs to have its side specified (left or right). The rest of the fittings 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.

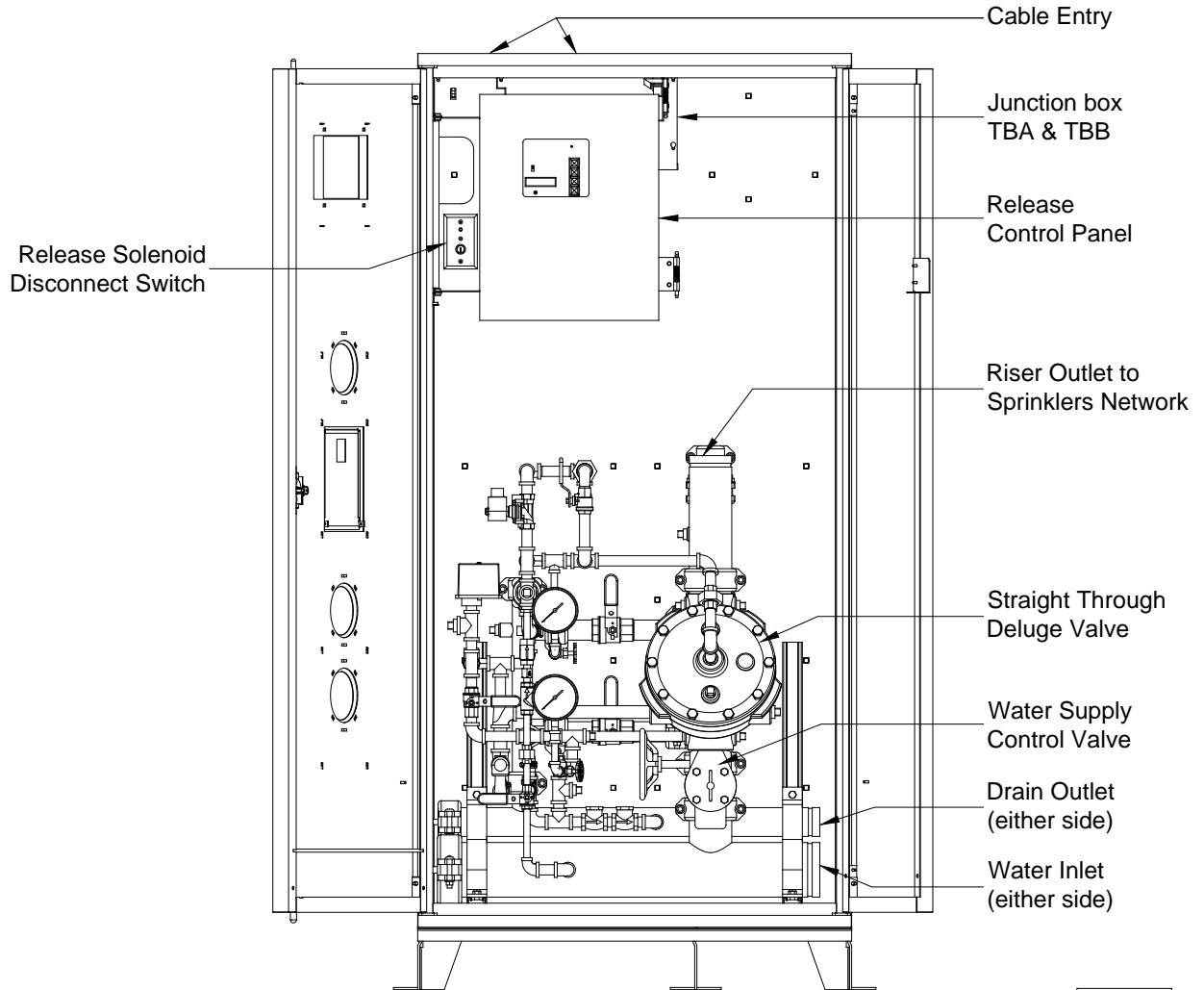
□ OSHPD option

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

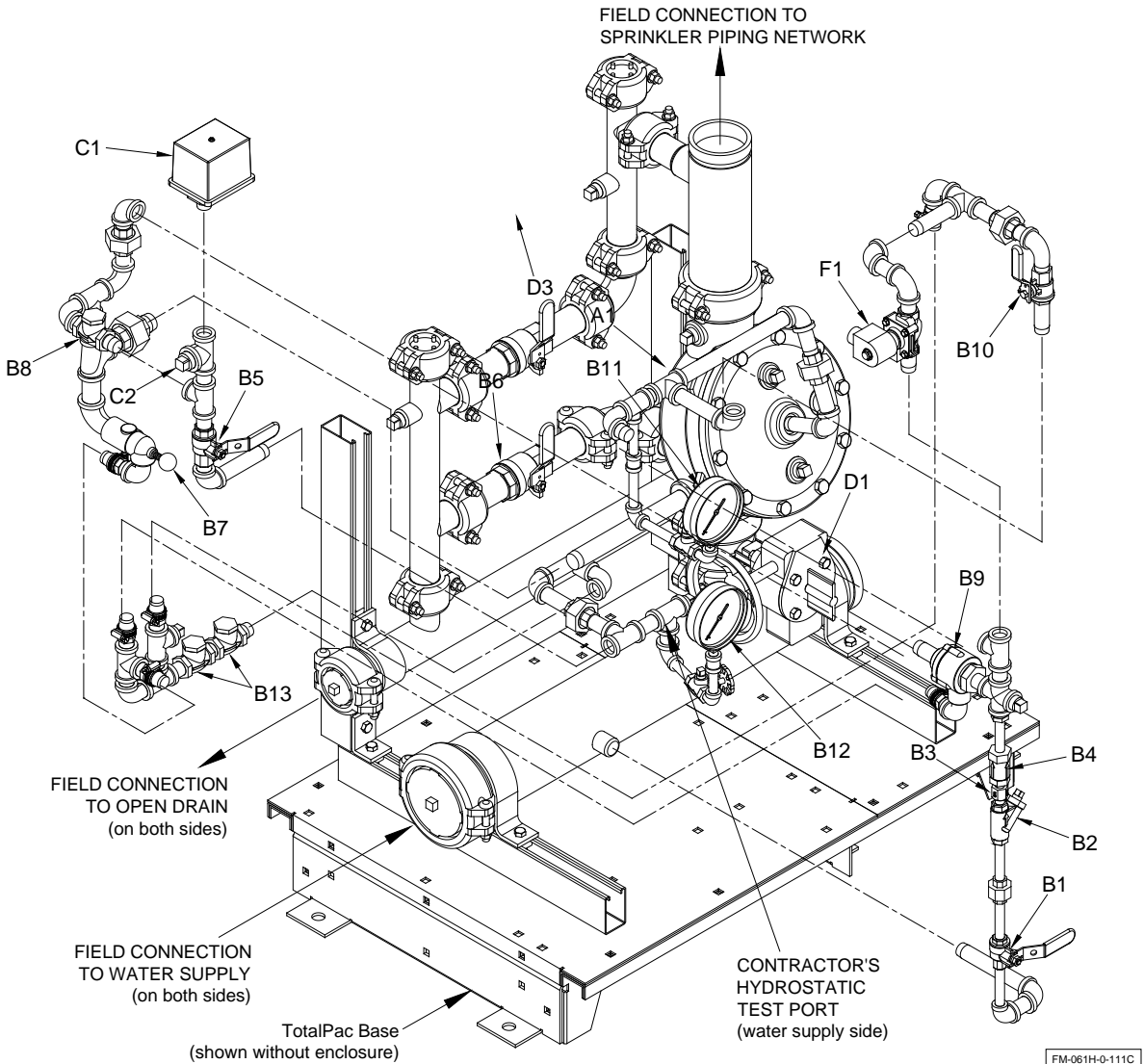


Details & field wiring diagrams

Cabinet with main components - Configuration with releasing control panel



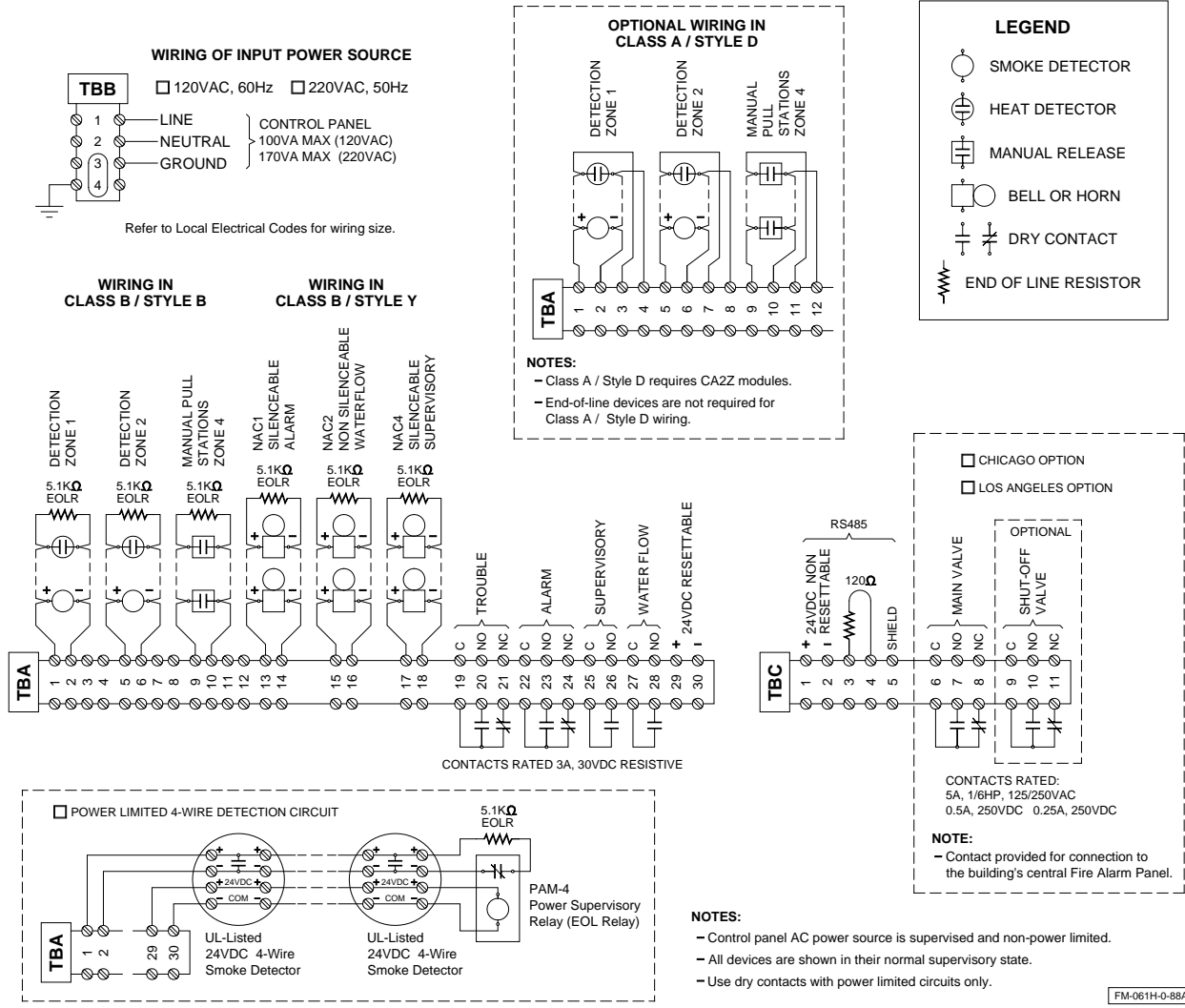
Trim diagram



Trim Components:

- | | | | |
|-----|---------------------------------------|----|--|
| A1 | Deluge 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 | 1/16" Restricted orifice | D3 | Main drain valve |
| B4 | Spring loaded check valve | F1 | N.C. solenoid valve – 24 Vdc |
| 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 | | |

Field wiring diagrams, deluge electric release, Self-contained:



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

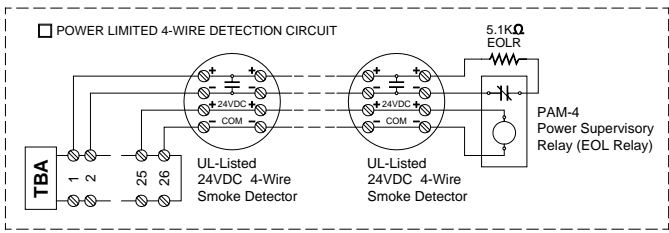
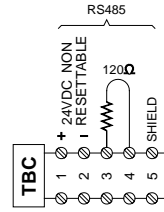
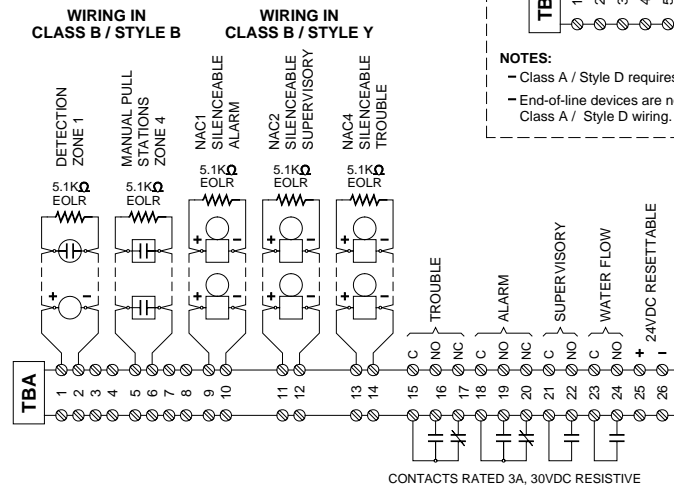
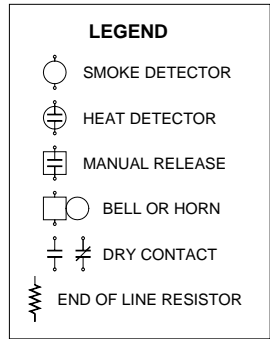
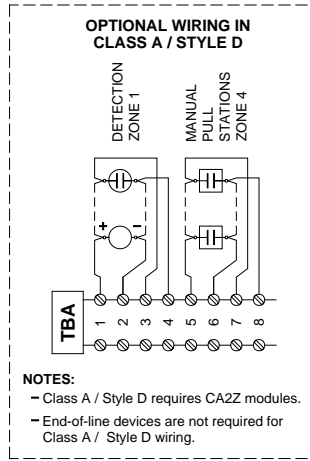
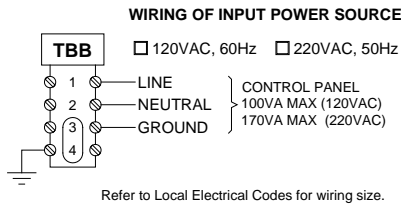
Power Limited (supervised) Initiating Device Circuits
 Supervision Zone 1, and 2.
 Max. loop resistance: 100 ohms
 End of line: 5.1K ohms, 1/4W
 Leave ELR (provided) on all unused circuits.
 For dry contact supervisory devices such as tamper, low air, or high air switches. (Class-B only)

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.

Field wiring diagrams, deluge electric release, Self-contained NYC:



- 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-0-89A

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

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

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

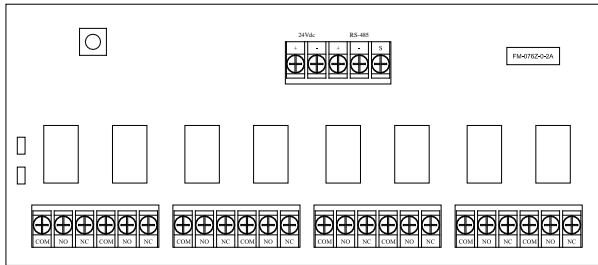
Auxiliary Power 24Vdc Regulated Source
Total current available: 0.2A
Resettable for 4 wires smoke detectors

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 equipments

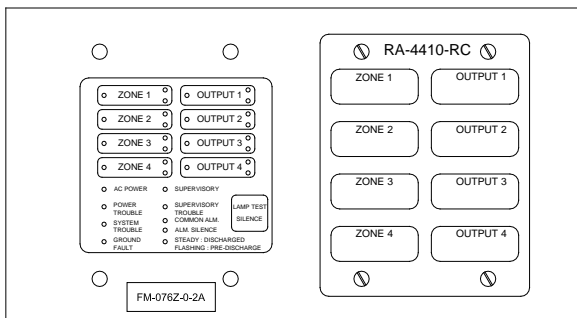
❑ **Relay module ARM-44**

The ARM-44 is an auxiliary relay module designed to operate with 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**

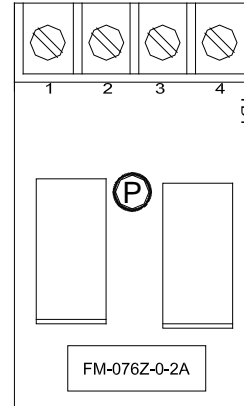
The RA-4410-RC remote annunciator is designed to operate with the Viking **VFR-400** releasing control panel. There are 34 LED's to indicate a change in panel status. There is a buzzer on the annunciator that sounds for any trouble or supervisory condition. The release control panel supervises and communicates 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**

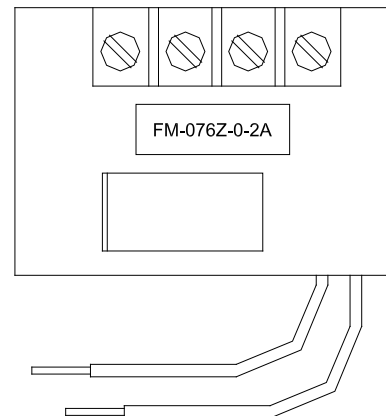
The Model CA2Z Class A Module is designed to be used with the Viking **VFR-400** releasing control panel to convert from two (Class B) initiating device circuits to two (Class A) circuits.

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.



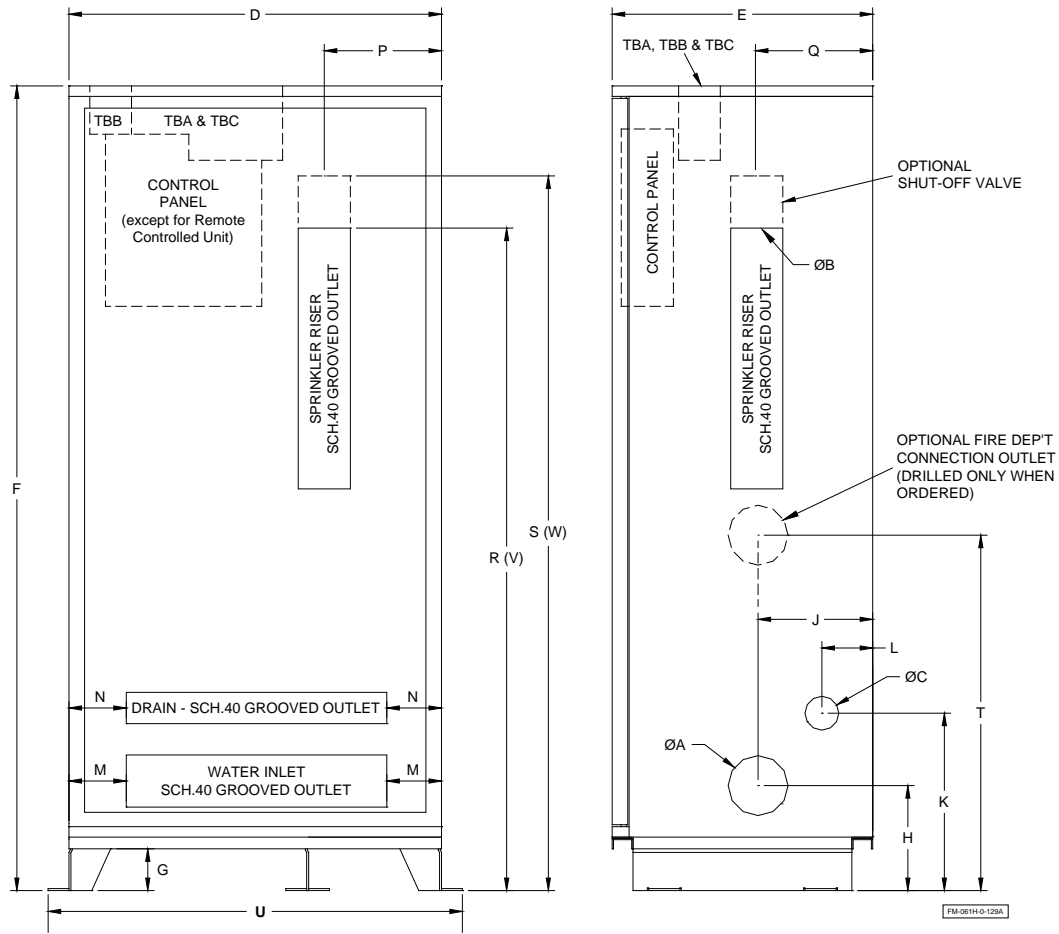
❑ **CLASS A INDICATING APPLIANCE CIRCUIT MODULE**

The Model CAM Class A Module is designed to be used with the 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:

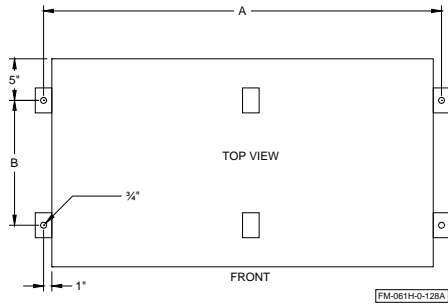


Dimensions are nominal and may vary $\pm 1/4"$.
Dimensions V and W are with the optional Fire Department Connection

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"	43¾"	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

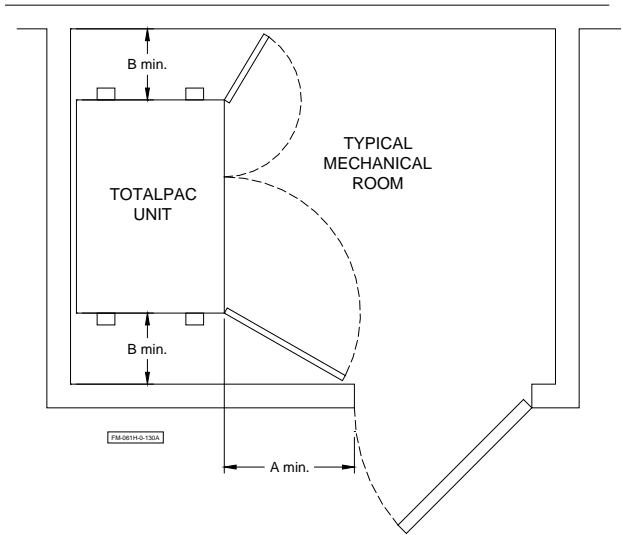
SYSTEMS WEIGHTS		
Cabinets with control panel		
System Description	Weight (lbs)	Weight (Kg)
1½" Preaction cabinet unit	470	213
2" Preaction cabinet unit	475	215
3" Preaction cabinet unit	715	324
4" Preaction cabinet unit	730	331
6" Preaction cabinet unit	1035	469
8" Preaction cabinet unit	1495	678

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

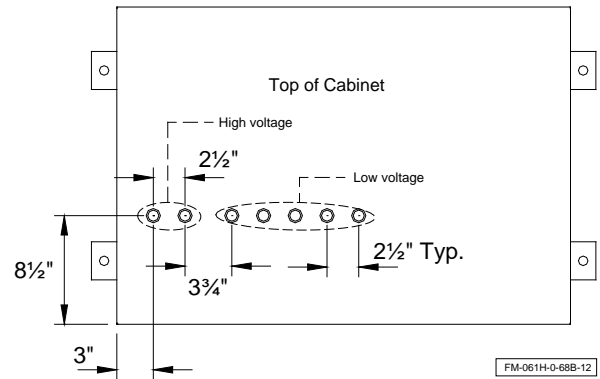


Figure 5: Open drain details for single unit:
(See dimensions in table below)

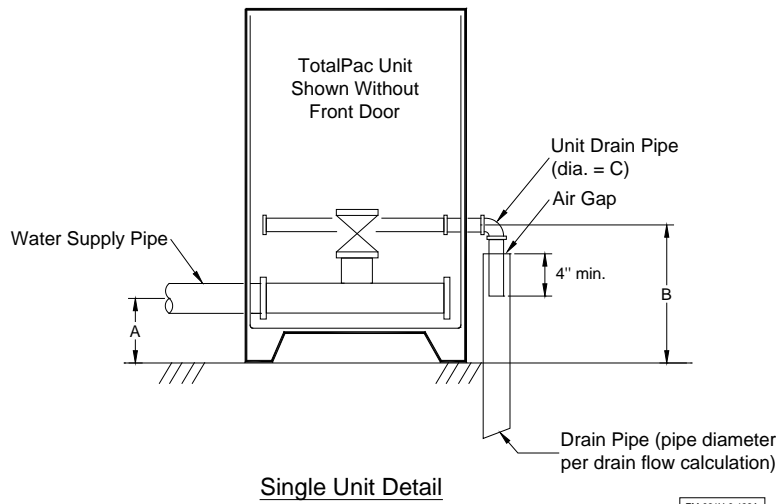
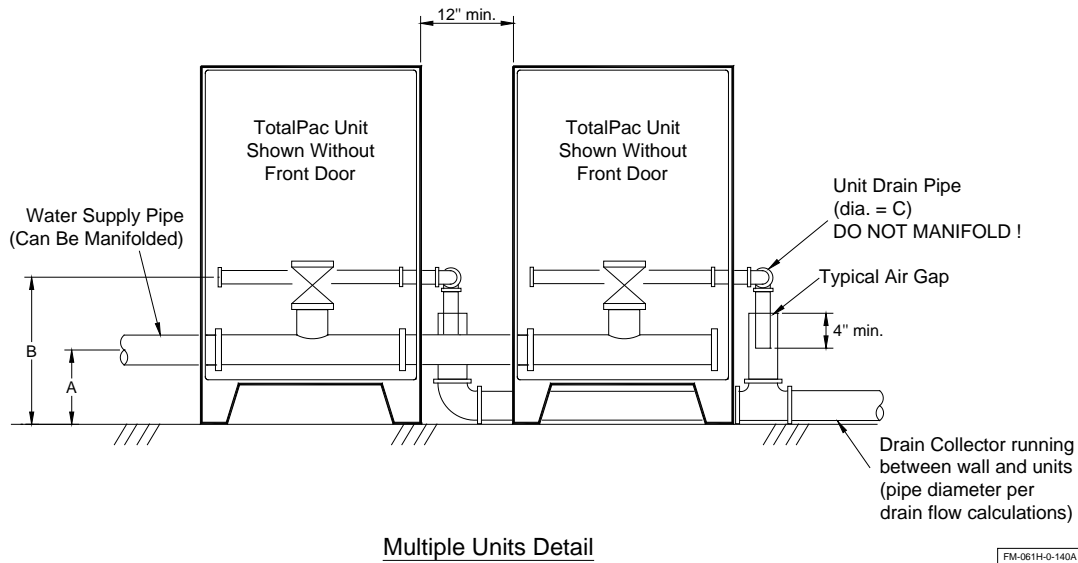


Figure 6: Open drain details for multiple units:
(See dimensions in table below)



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.



TotalPac®3
Deluge, Electric release
Self-contained system



ADVANCED INTEGRATED FIRE PROTECTION SYSTEMS

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