



OSHPD (Optional)

DESCRIPTION

This **TOTALPAC®3** integrated fire protection system by FireFlex Systems Inc. consists of a preaction 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 preaction systems are built around the Viking trim using deluge valves model F-1.

Electric/Pneu-Lectric controlled, double interlock preaction systems use pneumatic supervision of the automatic sprinkler system, and an electric detection system. The deluge valve release trim uses a normally closed electric solenoid valve controlled by an approved system releasing control panel (supplied by others) with two initiating circuits configured for "cross-zoned" operation. One initiating circuit is connected to the electric detection system; the other to a "Low-Air" alarm switch. Both the electric detection system AND supervisory pressure must be relieved from the sprinkler system before the deluge valve will open and fill the sprinkler system with water. 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:

- 1½" (40 mm) 2" (100 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 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
- Available

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 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.

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, operation of the detection system activates the first initiating circuit in the system releasing control panel (supplied by others), causing an alarm to activate. When a sprinkler operates, air pressure escapes from the sprinkler piping. The air supervisory switch activates the second initiating circuit in system releasing control panel. When BOTH initiating circuits have been activated, system releasing control panel energizes 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 any open sprinklers and/or other opening in the sprinkler piping.

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.

System size (in.)	Usage Range (gpm)	Piping Equivalent Lengths w/o shut off valve		Piping Equivalent Lengths c/w shut off valve	
		(m.)	(ft.)	(m.)	(ft.)
1½	0 – 210	8.3	27.2	8.5	27.9
2	0 – 360	11.65	38.2	11.85	38.9
3	100 - 700	16.8	55.1	20.33	66.7
4	200 – 1400	21.89	71.8	25.33	83.1
6	400 - 3500	33.28	109.15	37.28	122.3
8	750 - 5250	41.15	135	44.71	146.7

System drain flow:

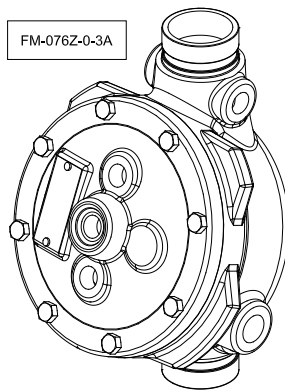
System size	USGPM Formula
1½" & 2"	0.5 x (water pressure Psi) + 65 = USGPM
3"	1.2 x (water pressure Psi) + 130 = USGPM
4", 6" & 8"	2.7 x (water pressure Psi) + 215 = USGPM

System size	LPM Formula
1½" & 2"	2 x (water pressure Psi) + 235 = LPM
3"	4 x (water pressure Psi) + 490 = LPM
4", 6" & 8"	10 x (water pressure Psi) + 800 = LPM

Standard equipment

Deluge valve

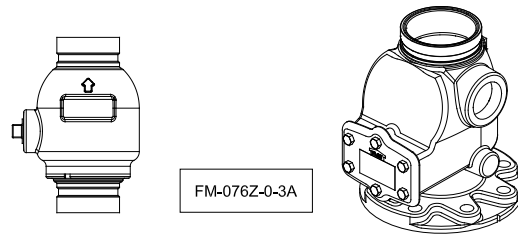
The Viking Model deluge valve is a quick-opening, differential diaphragm, flood valve with one moving mechanism. The deluge valve is used to control water flow in deluge and preaction sprinkler systems. The valve is held closed by system water pressure trapped in the priming chamber, keeping the outlet 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.



Preaction riser check valve

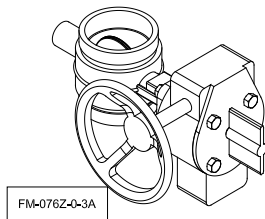
The Viking spring loaded In-Line check valve is a general purpose rubber-faced check valve approved for use in fire-service systems. The Spring Loaded In-Line check valve is manufactured with a brass body, brass seat, and a rubber-faced clapper assembly.

The Viking Easy Riser® Swing check valve is a general purpose rubber-faced check valve approved for use in fire service systems. The valve is for use in preaction system risers.



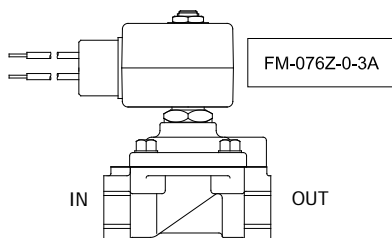
Water supply control valve

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



Solenoid valve

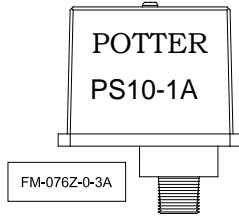
The high pressure solenoid valve is a two-way type with one inlet and one outlet. It is a packless, internal pilot operated valve, suitable for use in releasing water pressure from the priming chamber of Viking deluge valves. The solenoid valve has floating diaphragm construction, which requires a minimum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



Standard equipment (continued)

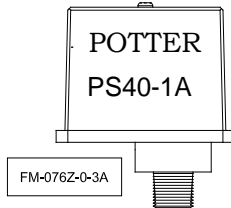
Alarm pressure switch

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.



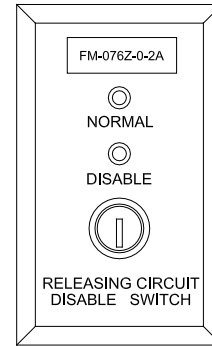
Low air supervisory switch

The low pressure switches monitors the pressure within the sprinkler piping should a loss pressure of the air below 25PSI occurs. The pressure switch contacts transfer indicating supervisory signal.



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.



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.

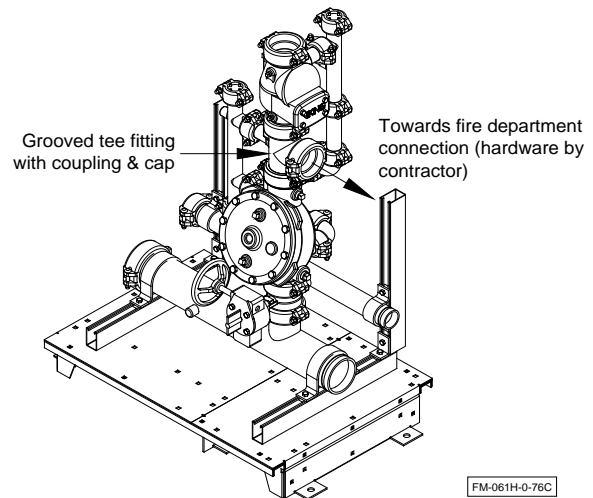
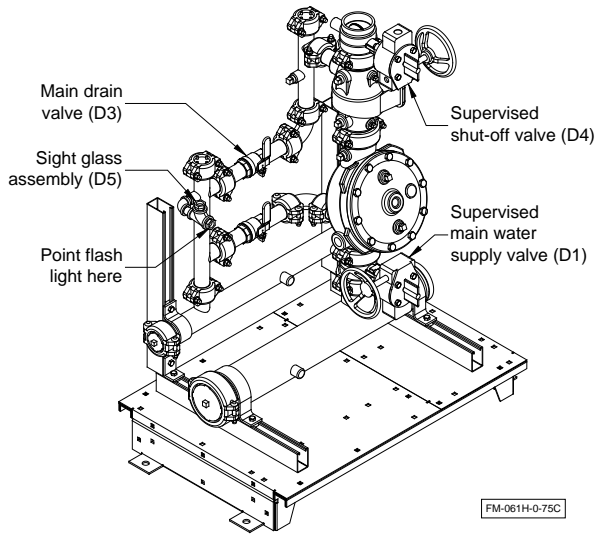
Warning: Shut-off valve & sight glass option is **not available** on 8" systems.

❑ **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)

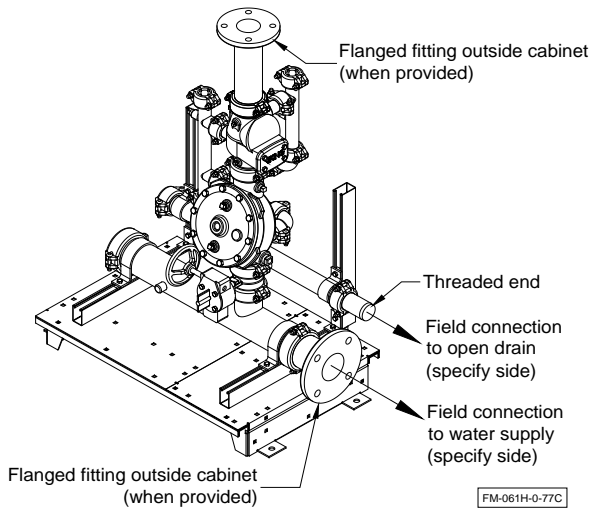
❑ **Semi and full flanged option**

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.

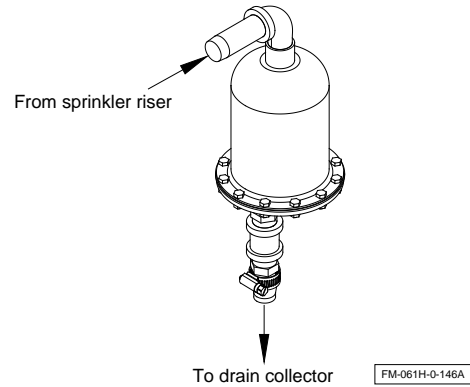
The full flanged option is the same as above but goes a step further with the main components being also provided with a flanged-flanged configuration.

When provided, the face of the flanges will always be situated 6 inches from the outside face of the mounting base or cabinet surface.



❑ **Anti-column device option**

The model LD-1 anti-column device is an optional trim component designed for use with preaction sprinkler systems. The anti-column device automatically prevents an unwanted water column from establishing within the system riser. On preaction sprinkler systems the anti-column device prevents water from columning downstream of the easy riser check valve.



❑ **OSHPD option**

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

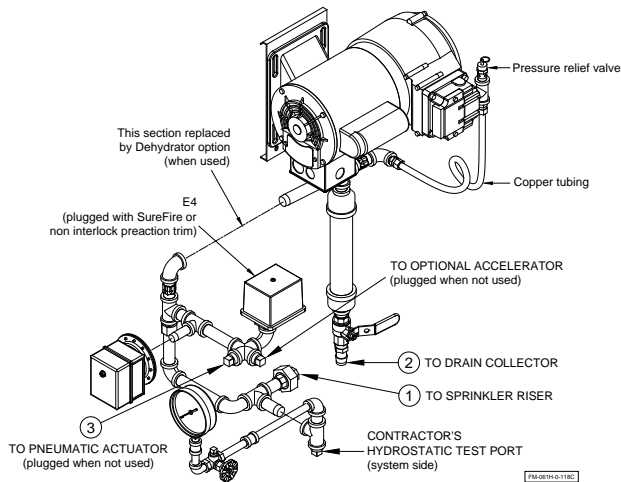
Air supply

Direct air compressor (Style "A")

Used only for the sprinkler piping network of the preaction system. Air supply style "A" includes the air compressor mounted inside the **TOTALPAC®3** cabinets with its supervisory trim and options. Compressors are of the tankless, oilless piston type and are factory piped to the sprinkler system riser, all within the **TOTALPAC®3** cabinets.

Compressors are available in eleven (11) sizes:

- 1/6HP 1/2HP 1-1/2HP
- 1/3HP 1HP 2HP
- 0.12Kw 0.25Kw 0.56Kw
- 1.2Kw 1.5Kw



WARNING 1-1/2H, 2HP and 1.5Kw compressors are only available for 8" system.

Compressor Amperage (amps)

Compressor Size (HP)		115Vac / 60Hz	208Vac / 60Hz	230Vac / 60Hz
1/6	FLA	5.0	2.3	2.5
	Start-up	35	16.1	17.5
1/3	FLA	7.4	3.5	3.7
	Start-up	51.8	24.5	25.9
1/2	FLA	10.0	4.9	5.0
	Start-up	70	34.3	35
1	FLA	18.0	7.7	9.0
	Start-up	126	53.9	63
1-1/2	FLA	16.6	8.2	8.3
	Start-up	116.2	57.4	58.1
2	FLA	N/A	11.6	11.0
	Start-up	N/A	81.2	77

Compressor Amperage (amps)

Compressor Size (Kw)		220Vac / 50Hz	240Vac / 50Hz
0.12	FLA	1.3	1.3
	Start-up	9.1	9.1
0.25	FLA	2.5	2.6
	Start-up	15.5	18.2
0.56	FLA	4.0	4.5
	Start-up	28.0	31.5
1.2	FLA	6.0	6.0
	Start-up	42.0	42.0
1.5	FLA	6.3	6.0
	Start-up	44.1	42.0

115 / 208 / 230 Vac 60Hz air compressor selection Table:

H.P	CFM @ 40 PSI	System capacity to fill system to 20 PSI in 30 minutes *
1/6	1.52	320 gal.
1/3	3.03	550 gal.
1/2	4.43	850 gal.
1	7.46	1550 gal.
1-1/2	11.10	1997 gal.
2	14.85	3247 gal.

220 / 240 Vac 50Hz air compressor selection Table:

Kw	LPM @ 40 PSI	System capacity to fill system to 20 PSI (241 kPa) in 30 minutes *
0.12	35.4	1050 L
0.25	68	2642 L
0.56	103	2873 L
1.2	178	4762 L
1.5	260	6859 L

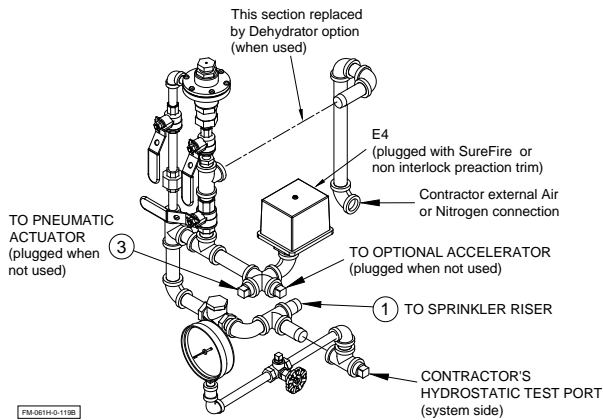
* For systems with maximum water supply pressure of 250 PSI (1724 kPa)

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

Air supply (continued)

❑ **Air Pressure Maintenance Device (Style "B")**

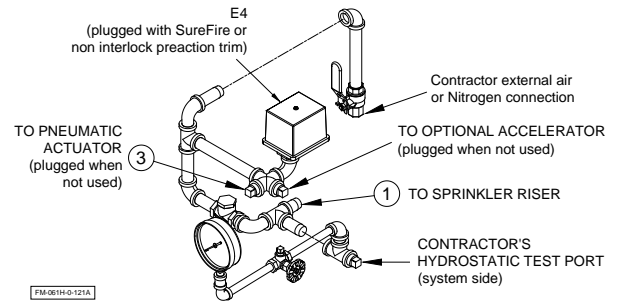
Used only for the sprinkler piping network of the preaction system, when an external air supply is provided by others (tank mounted compressor, plant air or dry nitrogen cylinders) and piped to the air inlet port of the unit. Air supply style "B" provides an Air Pressure Maintenance Device (APMD) trim, factory mounted in the **TOTALPAC®3** cabinets.



❑ **Direct air, external compressor (Style "D")**

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

Warning: When air supplies style "B" or "D" is selected, the air supply should be provided and installed by the sprinkler contractor OUTSIDE of the **TOTALPAC®3** cabinet. It is NOT provided with the unit.

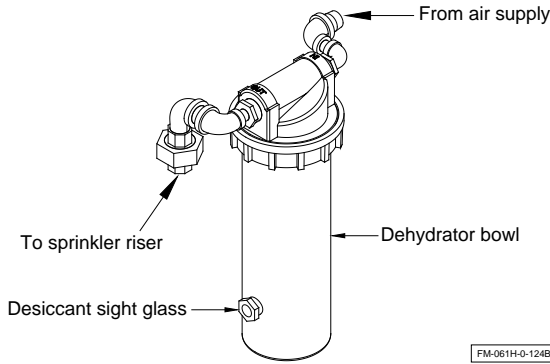


Optional air supply equipments

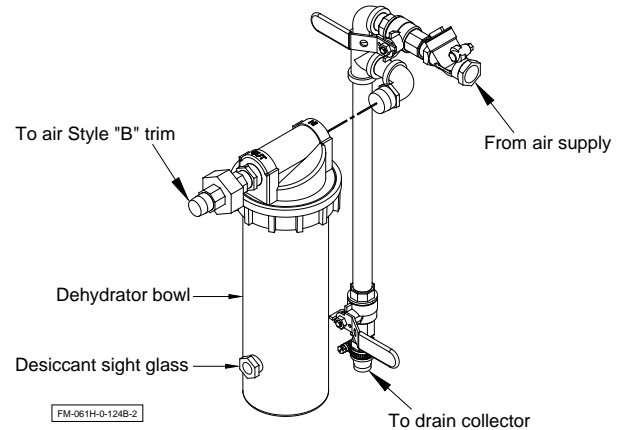
❑ **Dehydrator option**

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

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.



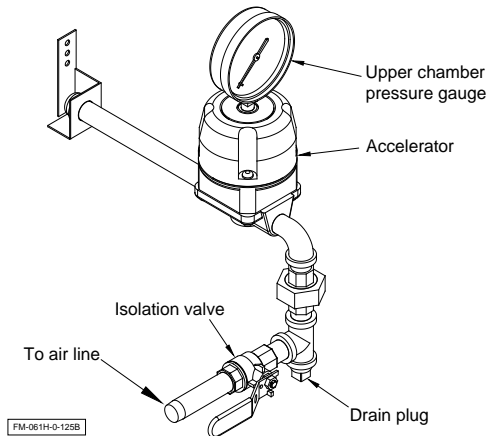
Shown on Direct air compressor (Style "A")



Air Pressure Maintenance Device (Style "B")

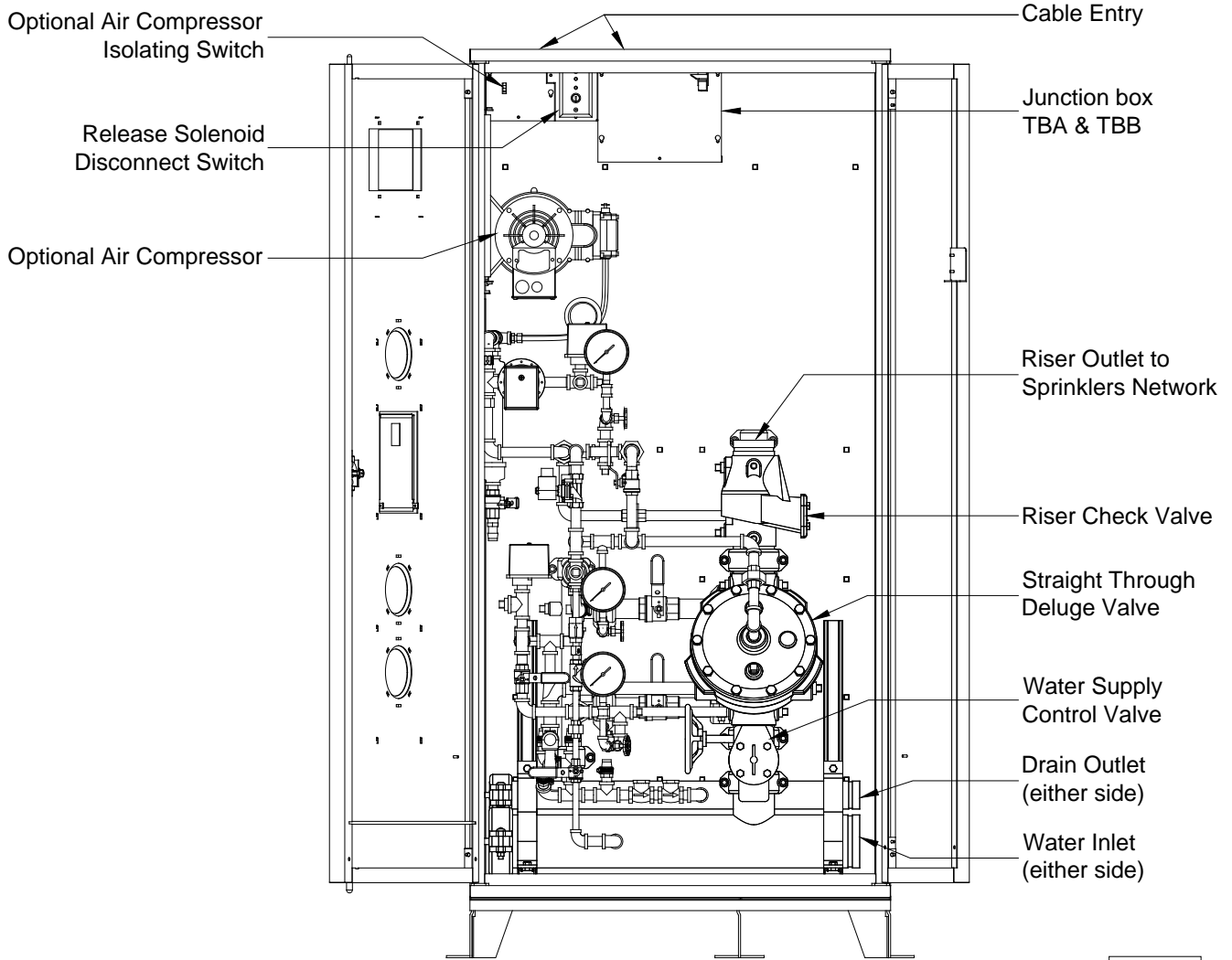
❑ **Accelerator option**

The Viking Model E-1 Accelerator is a quick-opening device. The Viking Model E-1 Accelerator may be used without the Anti-flood device to speed the action of a pneumatic release system on a preaction system.



Details & field wiring diagrams

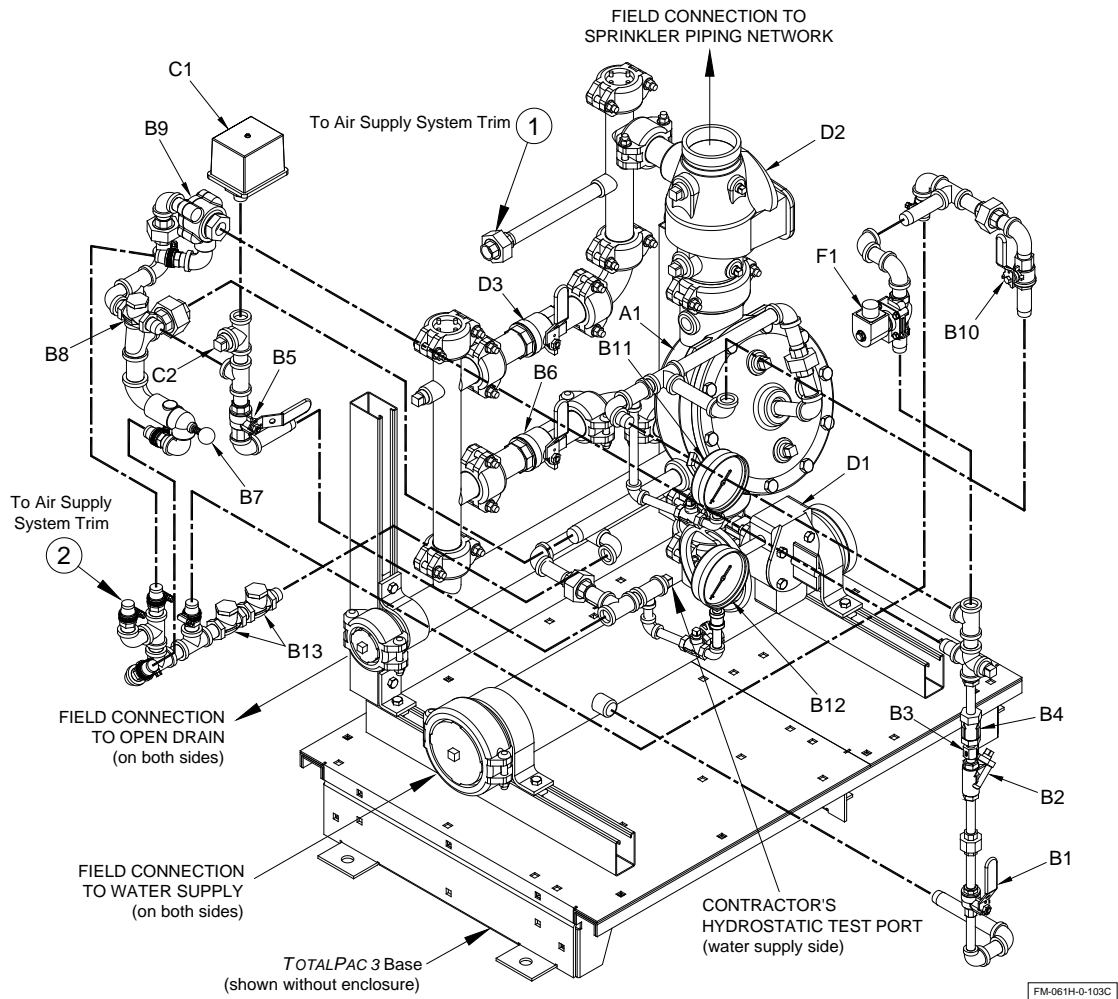
Cabinet with main components - Configuration without releasing control panel, shown with air style "A"



FM-061H-0-164B

4" drain pipe on 8" main black
4" on 8" main pipe black

Trim diagram

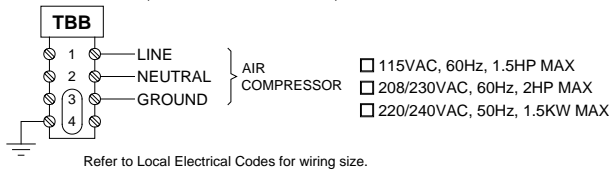


Trim Components:

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	D2	Riser check valve
B4	Spring loaded check valve	D3	Main drain valve
B5	Alarm test valve	F1	N.C Solenoid Valve – 24Vdc
B6	Flow test valve		
B7	Drip check valve		
B8	Drain check valve		
B9	Pressure operated relief (PORV)		
B10	Emergency release valve		
B11	Priming pressure water gauge & valve		
B12	Water supply pressure gauge & valve		
B13	Clapper check valve		

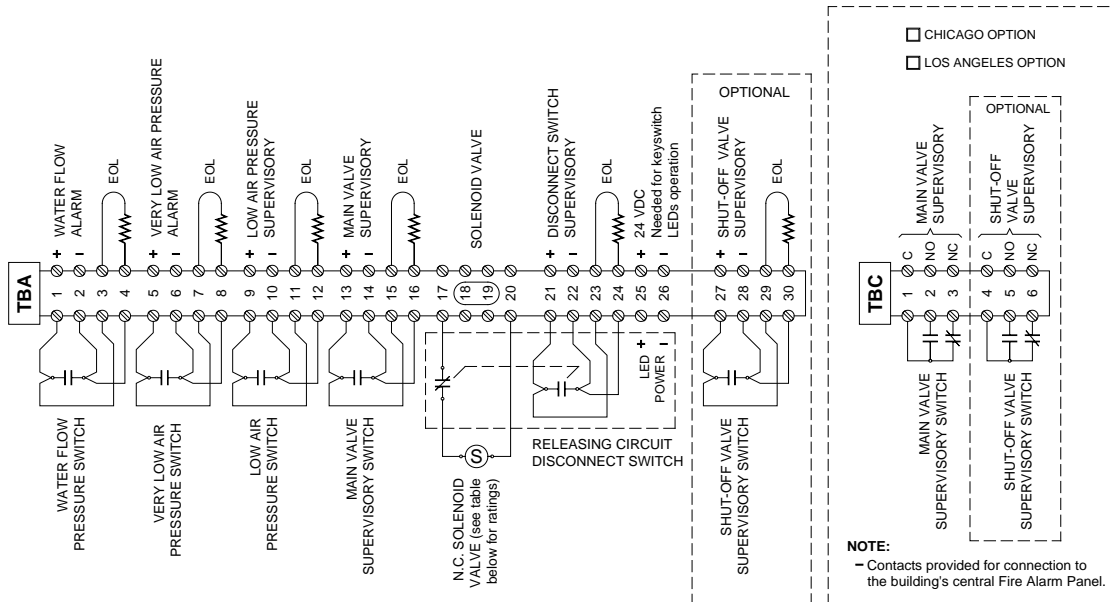
Wiring diagram

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



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-061H-0-92B

IMPORTANT ! FOR APPROPRIATE OPERATION OF THE DOUBLE INTERLOCK PREACTION SYSTEM, *DETECTION ZONE* AND *LOW AIR ALARM* CONDITIONS SHALL BE ARRANGED IN A CROSS ZONE MANNER, WHERE BOTH CONDITIONS ARE REQUIRED TO ACTIVATE THE SOLENOID VALVE.

SOLENOID VALVE ELECTRICAL RATINGS				
Viking P/N	Operation (de-energized)	Voltage	Watts	DC amps
11591	N.C.	24VDC	10W	416mA

Notes:

- Solenoid valve is UL Listed as Fire Protection Special System Water Control Release Service (UL 429A Product category VLTR).
- Voltage drop: For proper operation, make sure that voltage at the solenoid valve is at least 85% of nameplate rating.

Dimensions and weights

Figure 1 – Cabinet dimensions:

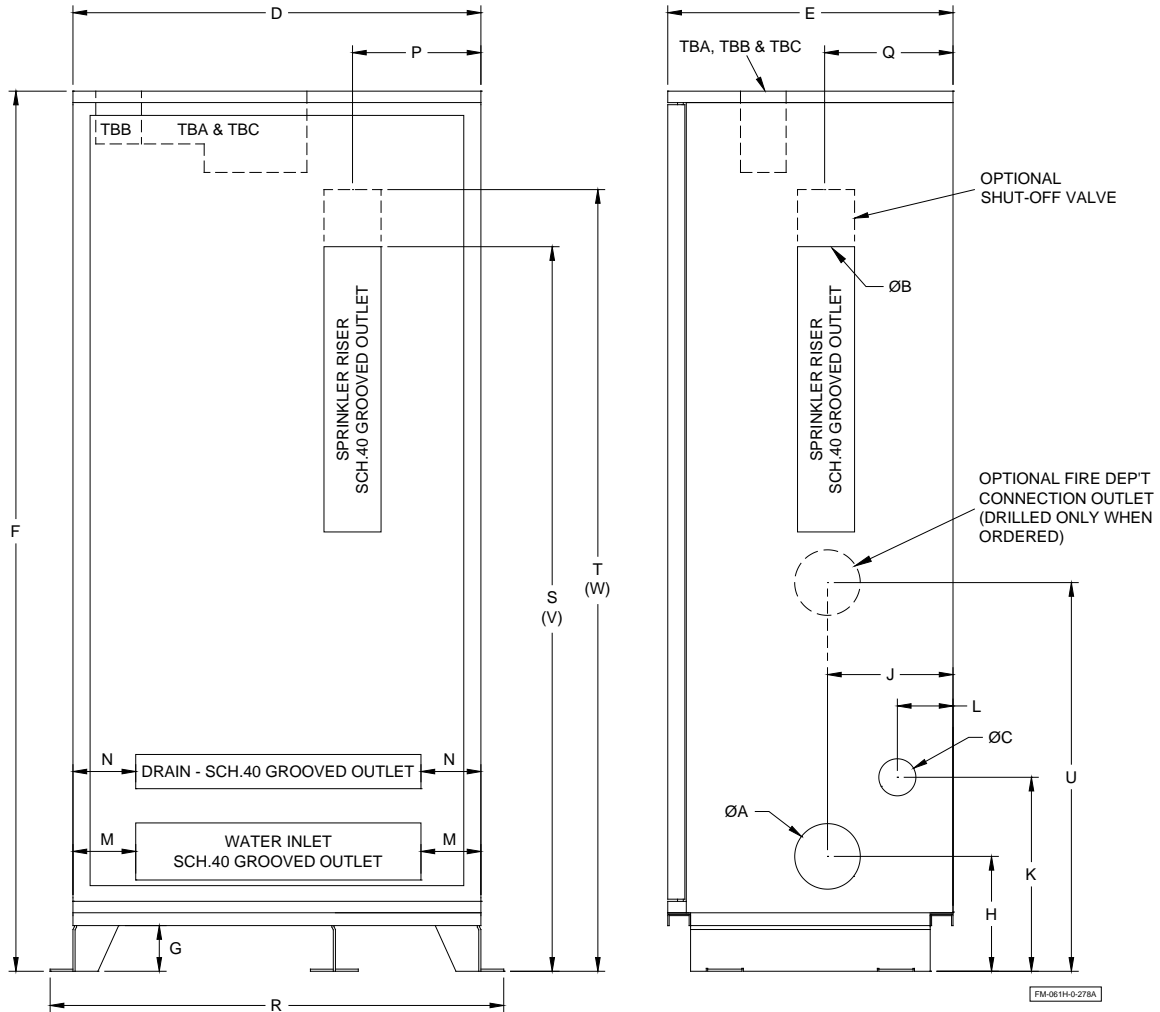


Table 1 - Cabinet dimensions - dimensions are in inches (mm)

Unit size	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W
1½" (40)	2" (51)	1½" (38)	2" (51)	23" (584)	25" (635)	77" (1956)	4" (102)	8¾" (222)	11½" (292)	13¾" (349)	3¾" (95)	2¾" (70)	2¾" (70)	8" (203)	11½" (292)	27" (686)	37½" (953)	41½" (1054)	34¼" (870)	43½" (1105)	47" (1194)
2" (50)	2" (51)	2" (51)	2" (51)	23" (584)	25" (635)	77" (1956)	4" (102)	8¾" (222)	11½" (292)	13¾" (349)	3¾" (95)	2¾" (70)	2¾" (70)	8" (203)	11½" (292)	27" (686)	38" (965)	42" (1067)	34¾" (883)	44½" (1130)	48½" (1232)
3" (80)	4" (102)	3" (76)	2" (51)	35¾" (908)	25" (635)	77" (1956)	4" (102)	10" (254)	11½" (292)	13¾" (349)	3¾" (95)	2¾" (70)	2¾" (70)	11¾" (298)	11½" (292)	39¾" (1010)	44" (1118)	47¾" (1213)	37" (940)	51" (1295)	54¾" (1391)
4" (100)	4" (102)	4" (102)	2" (51)	35¾" (908)	25" (635)	77" (1956)	4" (102)	10" (254)	11½" (292)	13¾" (349)	3¾" (95)	2½" (64)	2½" (64)	12" (305)	11½" (292)	39¾" (1010)	48½" (1232)	53" (1346)	42" (1499)	56½" (1435)	61" (1549)
6" (150)	6" (152)	6" (152)	2" (51)	46" (1168)	25" (635)	77" (1956)	4" (102)	11" (279)	11½" (292)	13¾" (349)	3¾" (95)	5¼" (133)	5¼" (133)	17¾" (451)	11½" (292)	50" (1270)	59¼" (1505)	65¼" (1657)	51½" (1308)	70¼" (1784)	76¼" (1937)
8" (200)	8" (203)	8" (203)	2" (51)	54" (1372)	31" (787)	81" (2057)	4" (102)	12" (305)	13¾" (337)	17" (432)	3¾" (95)	9" (229)	6¾" (171)	27" (686)	13¾" (337)	58" (1473)	70" (1778)	75¼" (1911)	N/A	N/A	N/A

Notes:

- Dimensions are nominal and may vary ±¼" (±5mm).
- Dimensions U, V & W are for optional fire department connection.

Figure 2 - Floor anchoring dimensions

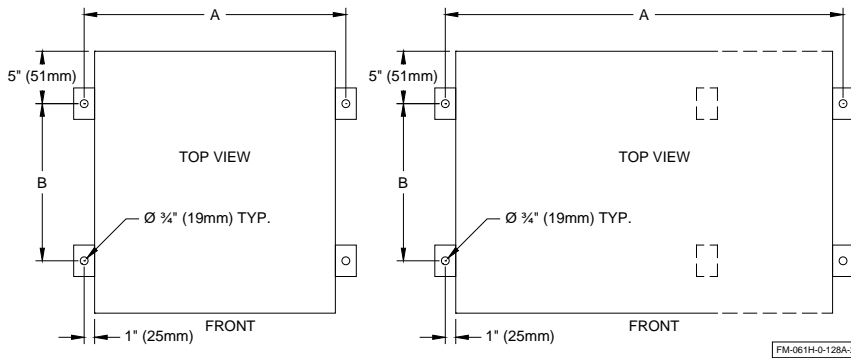


Table 2 - Floor anchoring dimensions

Unit size	A	B
1½" (40mm)	25" (635mm)	15" (380mm)
2" (50mm)	25" (635mm)	15" (380mm)
3" (80mm)	37¾" (959mm)	15" (380mm)
4" (100mm)	37¾" (959mm)	15" (380mm)
6" (150mm)	48" (1220mm)	15" (380mm)
8" (200mm)	56" (1422mm)	21" (530mm)

Figure 3 - Cabinet & doors clearance detail

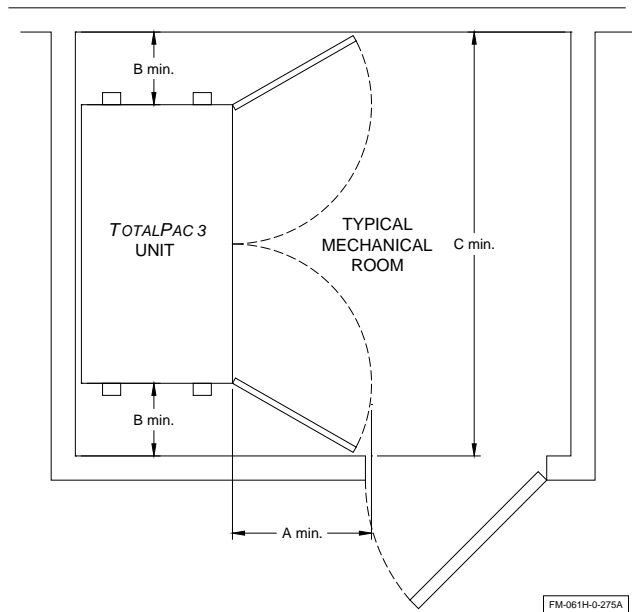


Table 3 - Cabinet clearance dimensions

Unit size	A	B	C
1½" (40mm)	24" (610mm)	12" (305mm)	48" (1219mm)
2" (50mm)	24" (610mm)	12" (305mm)	48" (1219mm)
3" (80mm)	24" (610mm)	12" (305mm)	60" (1524mm)
4" (100mm)	24" (610mm)	12" (305mm)	60" (1524mm)
6" (150mm)	24" (610mm)	12" (305mm)	70" (1778mm)
8" (200mm)	32" (813mm)	12" (305mm)	78" (1981mm)

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

Figure 4 - Knockouts details

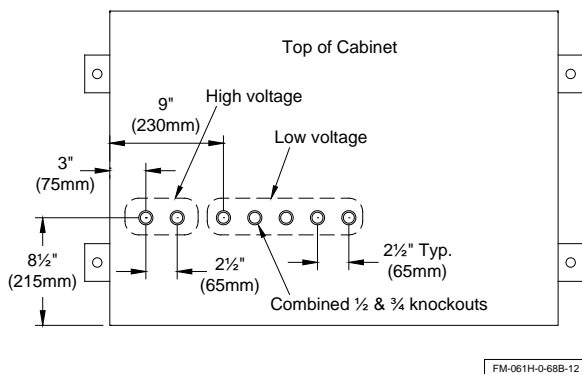
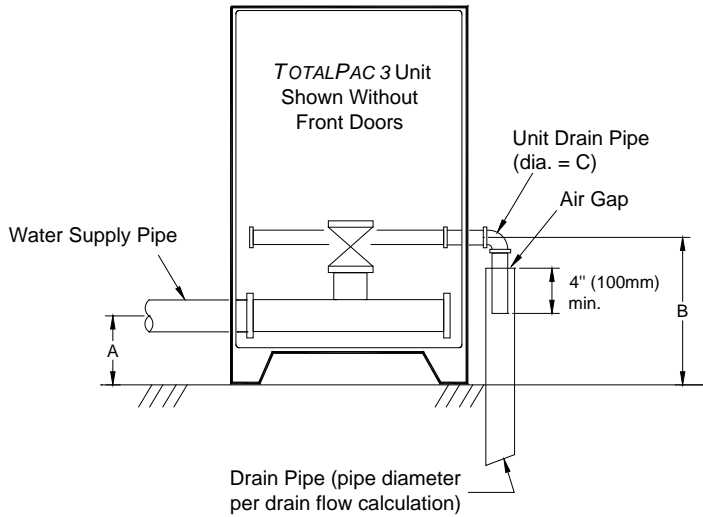


Table 4 - System weight in cabinet

System size	Weight ¹
1½" (40mm)	450 lb (204 kg)
2" (50mm)	455 lb (206 kg)
3" (80mm)	730 lb (331 kg)
4" (100mm)	755 lb (342 kg)
6" (150mm)	1025 lb (465 kg)
8" (200mm)	1475 lb (669 kg)

(1) Without air compressor.

Figure 5 - Open drain details for single unit



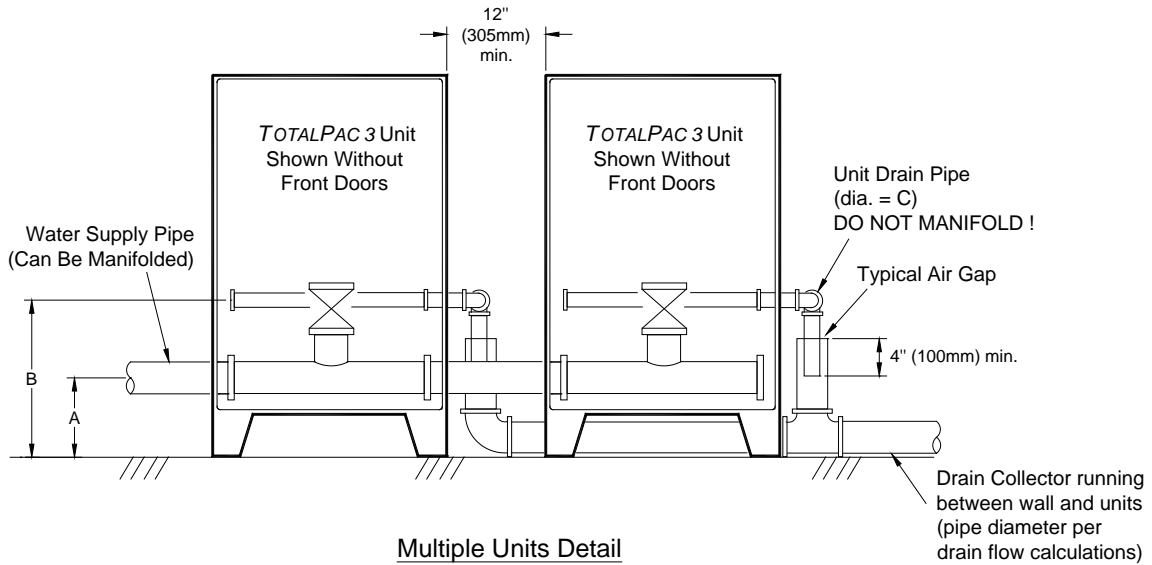
Single Unit Detail

FM-061H-0-139A

Table 5 - Manifold dimensions

Unit size	A	B	C
1½ (40mm)	8¾" (222mm)	13¾" (350mm)	2" (50mm)
2" (50mm)	8¾" (222mm)	13¾" (350mm)	2" (50mm)
3" (80mm)	10" (255mm)	13¾" (350mm)	2" (50mm)
4" (100mm)	10" (255mm)	13¾" (350mm)	2" (50mm)
6" (150mm)	11" (280mm)	13¾" (350mm)	2" (50mm)
8" (200mm)	12" (305mm)	17½" (445mm)	2" (50mm)

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



Multiple Units Detail

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Notes:

1. Water 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.



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