FIREFLEX Systems Inc.
ADVANCED INTEGRATED FIRE PROTECTION SYSTEMS

TotalPac®3
Dry pipe system

FM APPROVED

OSHPD (Optional)

DESCRIPTION

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

TOTALPAC®3 dry pipe systems are built around the Viking trim using dry pipe valves model F-1.

All the valves are rated up to a maximum of 175 psi WWP (1206 kPa) max. and are available in the following diameters:

☐ 4" (100 mm) ☐ 6" (150 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 175 psi (1206 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 two (2) sizes;

36" x 25" x 77" (91.4 x 63.5 x 195.6 cm) for 4" system,

46" x 25" x 77" (116.8 x 63.5 x 195.6 cm) for 6" 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.

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, the activation of at least one automatic sprinkler head is necessary to cause the water discharge.

The activation of at least one automatic sprinkler head will open the dry valve and cause the system to fill the piping network with water and spray through all open sprinklers. This will activate alarm and water flow switch contacts connected to the building fire alarm panel and sound an alarm.

Pressure loss on the piping system will activate an auxiliary contact indicating same.

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	
		(m.)	(ft.)
4	250 - 1200	20.28	66.53
6	750 - 2800	31.23	102.45

System drain flow:

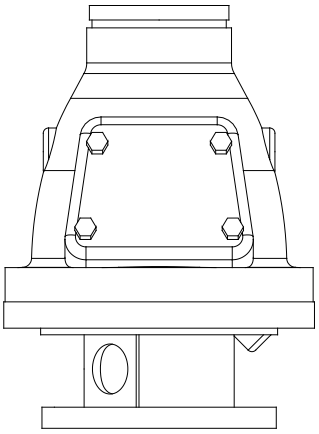
System size	USGPM Formula
4" & 6"	2.7 x (water pressure Psi) + 215 = USGPM

System size	LPM Formula
4" & 6"	10 x (water pressure Psi) + 800 = LPM

Standard equipment

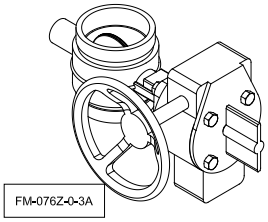
Dry valve

The Viking Model F-1 Dry Pipe Valve is a latching differential valve used to separate the water supply from the dry pipe sprinkler system. The valve combines a positive latching clapper and air plate assembly, with a differential air to water seat design. The latching clapper and air plate assembly provides a positive mechanical seal for the air pressure in the dry pipe system. The differential design allows an air supply of moderate pressure to control a higher water supply pressure. When the air pressure in the dry pipe system is lowered sufficiently to destroy the pressure differential, the valve opens allowing water to enter the dry pipe system.



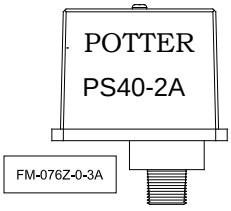
Water supply control valve

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



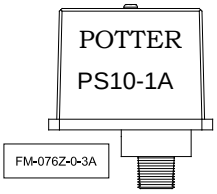
Low/High air supervisory switch

The low/high pressure switches monitors the pressure within the sprinkler piping should a loss or over pressure of the air occurs. The pressure switch contacts transfer indicating supervisory signal.



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

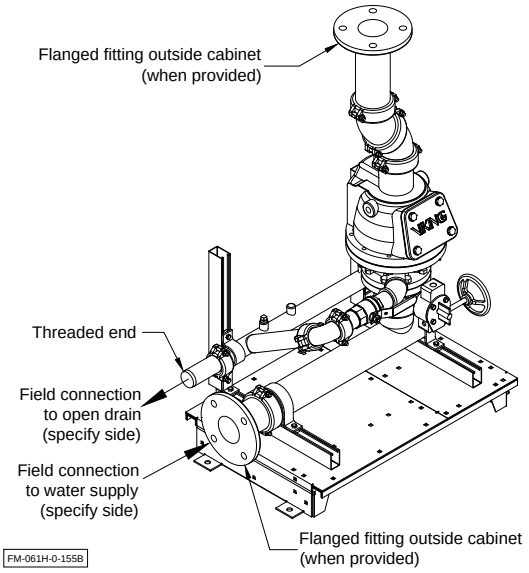
❑ Semi and full flanged option

When required by the user, **TOTALPAC®3** units can be provided in either a semi-flanged of 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.

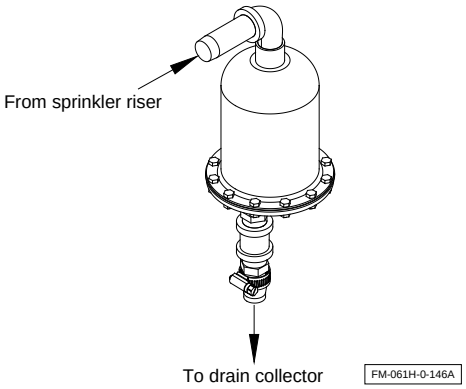
The full flanged option is the same as above but goes a step further with the main components being also provided with a flanged-flanged configuration.

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.

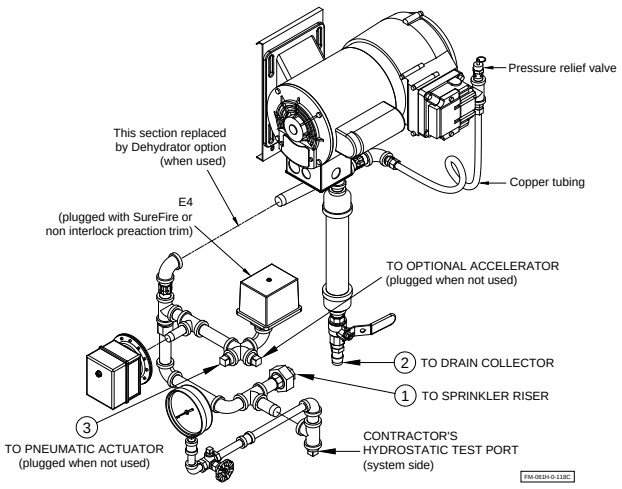
Air supply

❑ **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, oiless 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

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

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 35 PSI in 30 minutes *	System capacity to fill system to 55 PSI in 30 minutes **
1/6	1.52	154 gal.	81 gal.
1/3	3.03	265 gal.	149 gal.
1/2	4.43	454 gal.	253 gal.
1	7.46	796 gal.	458 gal.
1-1/2	11.10	1060 gal.	650 gal.
2	14.85	1660 gal.	950 gal.

220 / 240 Vac 50Hz air compressor selection Table:

Kw	LPM @ 40 PSI	System capacity to fill system to 35 PSI (241 kPa) in 30 minutes *	System capacity to fill system to 55 PSI (379 kPa) in 30 minutes **
0.12	35.4	462 L	220 L
0.25	68	1003 L	492 L
0.56	103	1351 L	723 L
1.2	178	2316 L	1317 L
1.5	260	3407 L	1912 L

* For systems with maximum water supply pressure of 175 PSI (1206 kPa)

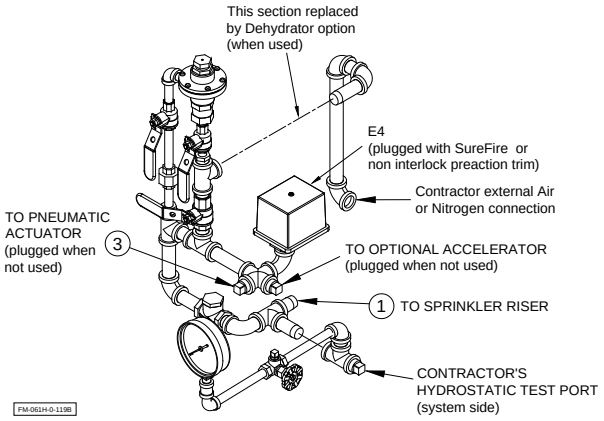
** For systems with water supply pressure between 175 PSI (1206 kPa) and 250 PSI (1724 kPa)

Dry Pipe air requirements					
Maximum		**Air Pressure Setting**			
Water Pressure		**Minimum**		**Maximum**	
PSI	**kPa**	**PSI**	**kPa**	**PSI**	**kPa**
50	345	15	103	25	172
75	517	20	138	30	207
100	690	25	172	35	241
150	1034	35	241	50	310
175	1207	45	310	60	345
Alternate formula: Max. water pressure / 6 + 15 PSI.					

Air supply (continued)

❑ Air Pressure Maintenance Device (Style “B”)

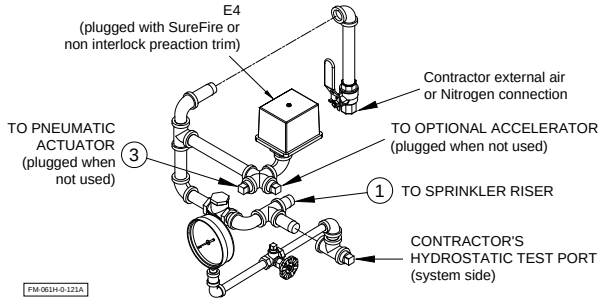
Used only for the sprinkler piping network of the dry pipe system, when an external air supply is provided by others (tank mounted compressor, plant air or dry nitrogen cylinders) and piped to the air inlet port of the unit. Air supply style "B" provides an Air Pressure Maintenance Device (APMD) trim,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



❑ Direct air, external compressor (Style “D”)

Mainly used with dry pipe 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.

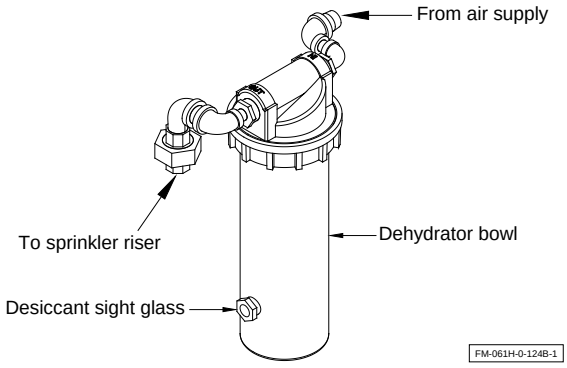
Warning: When air supplies style "B" or "D" is selected, the air supply should be provided and installed by the sprinkler contractor OUTSIDE of the **TOTALPAC®3** cabinet. It is NOT provided with the unit.



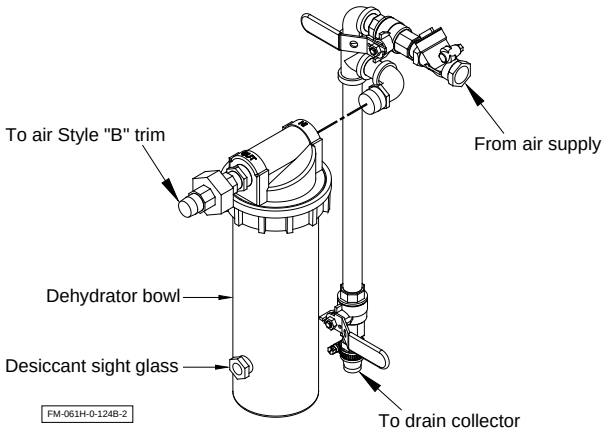
Optional air supply equipments

❑ 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.



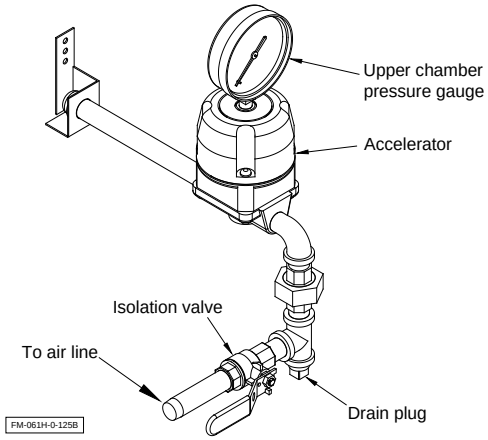
Shown on Direct air compressor (Style “A”)



Air Pressure Maintenance Device (Style “B”)

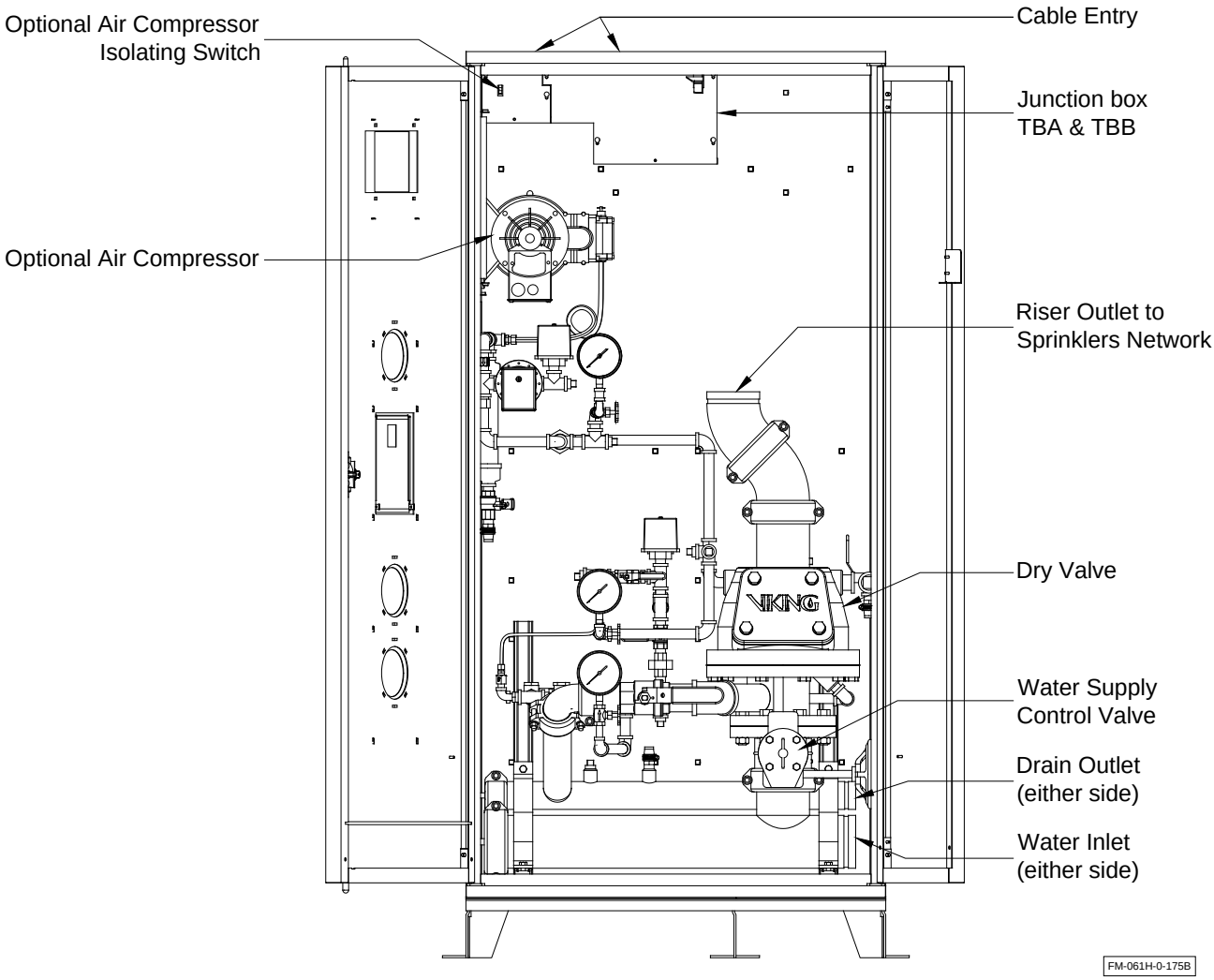
❑ Accelerator option

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.

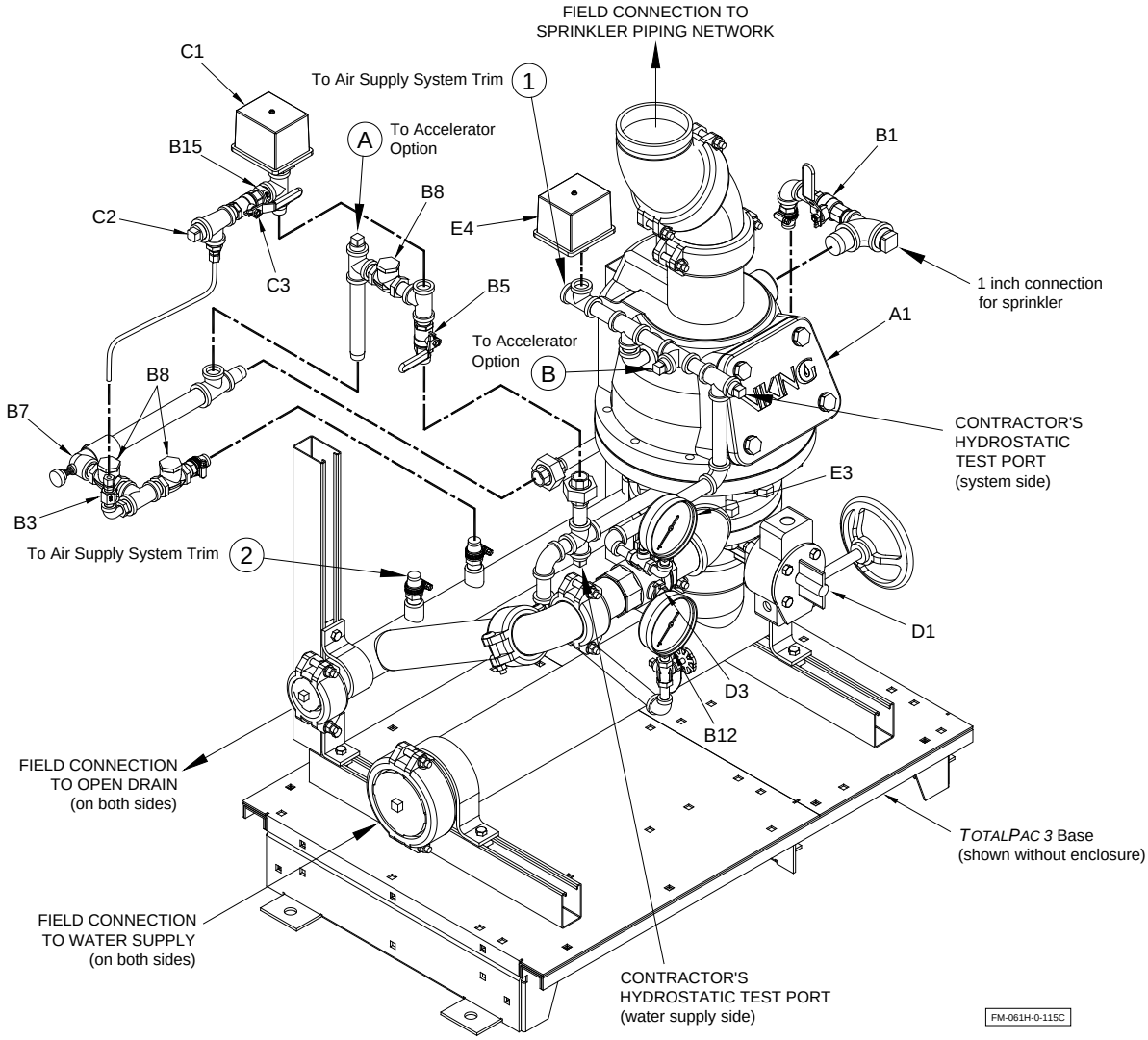


Details & field wiring diagrams

Cabinet with main components - Configuration shown with air style "A"



Trim diagram

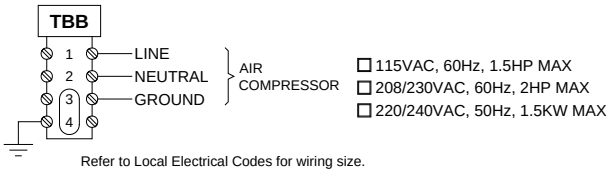


Trim Components:

A1	Dry valve
B1	Priming / water level test valve
B3	1/16" Restricted orifice
B5	Alarm test valve
B6	N/A
B7	Drip check valve
B8	Drain check valve
B11	Air supply pressure gauge & valve
B12	Water supply pressure gauge & valve
B13	Check valve
B15	7/32" Restricted orifice
C1	Alarm pressure switch
C2	Connection to water motor gong (strainer supplied by contractor)
C3	Hydraulic alarm cut-off valve
D1	Water supply control valve
D3	Main drain valve
E4	Air supervisory pressure switch

Field wiring diagrams:

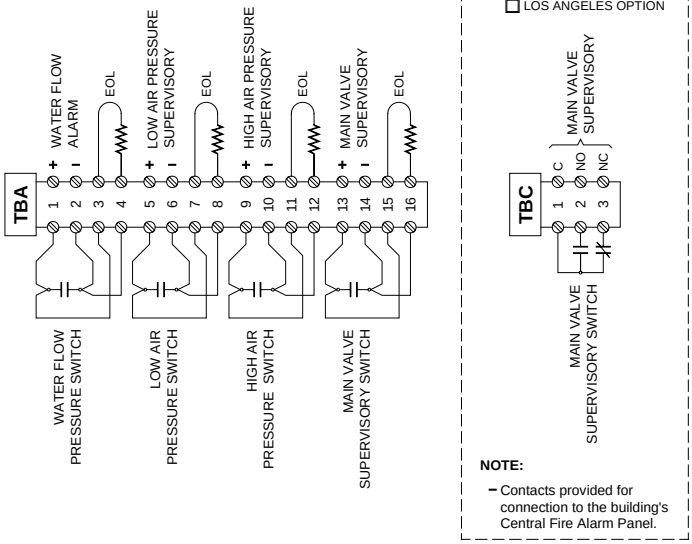
WIRING OF AIR COMPRESSOR POWER SOURCE
(WITH AIR OPTION "A" ONLY)



Refer to Local Electrical Codes for wiring size.

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.



NOTE:

- Contacts provided for connection to the building's Central Fire Alarm Panel.

FM-061H-0-98B

Dimensions and weights

Figure 1 – Cabinet dimensions:

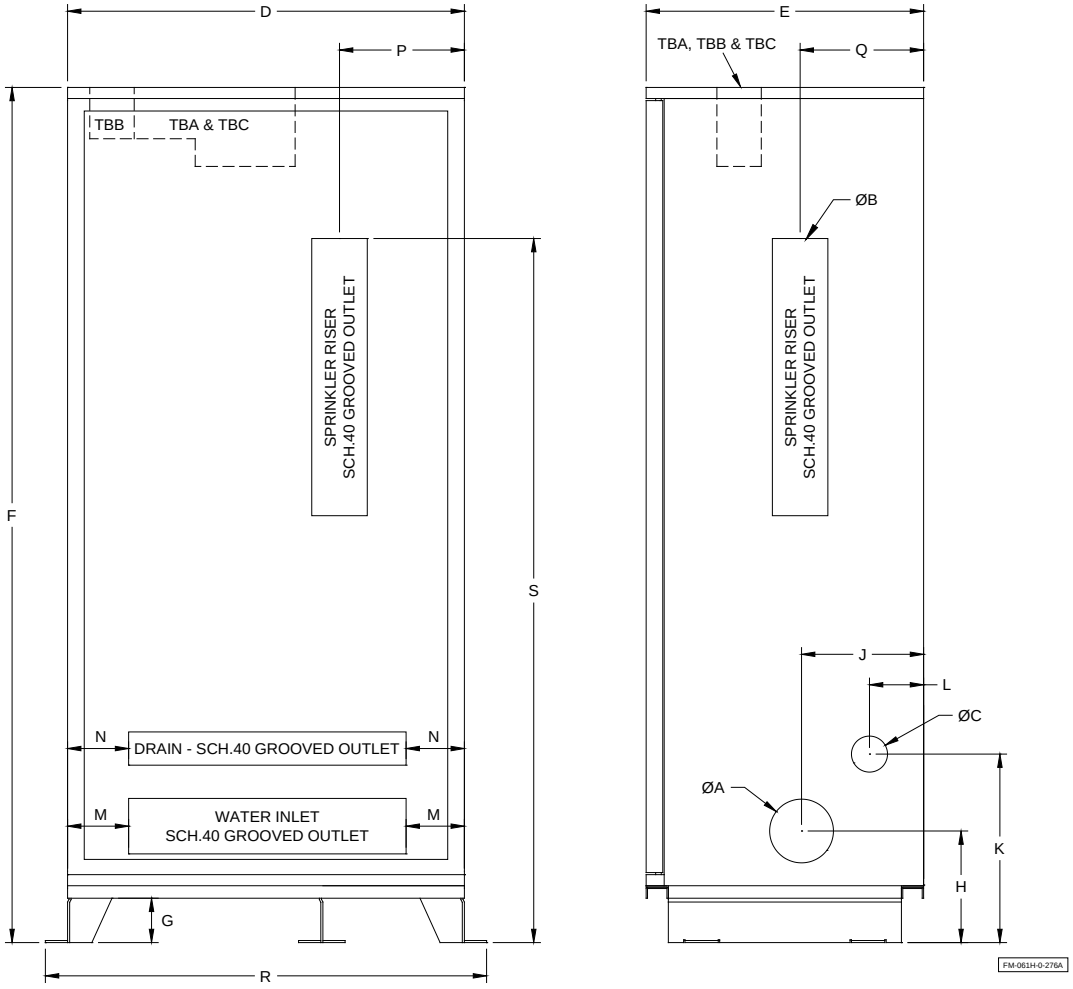


Table 1 - Cabinet dimensions - dimensions are in inches (mm)

Unit size	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S
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)	53" (1346)	48½" (1232)
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)	65" (1651)	59¼" (1505)

Notes:

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

Figure 2 - Floor anchoring dimensions

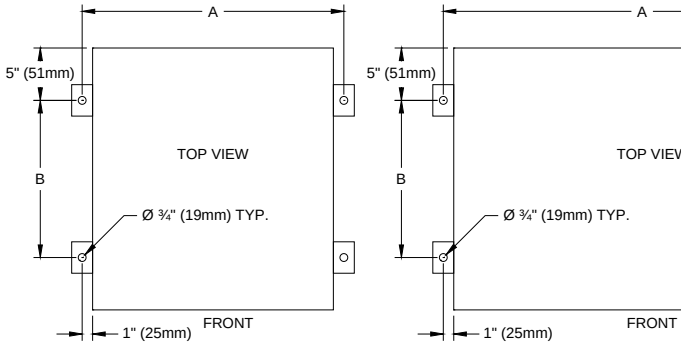


Table 2 - Floor anchoring dimensions

Unit size	A	B
4" (100mm)	37¾" (959mm)	15" (380mm)
6" (150mm)	48" (1220mm)	15" (380mm)

Figure 3 - Cabinet & doors clearance detail

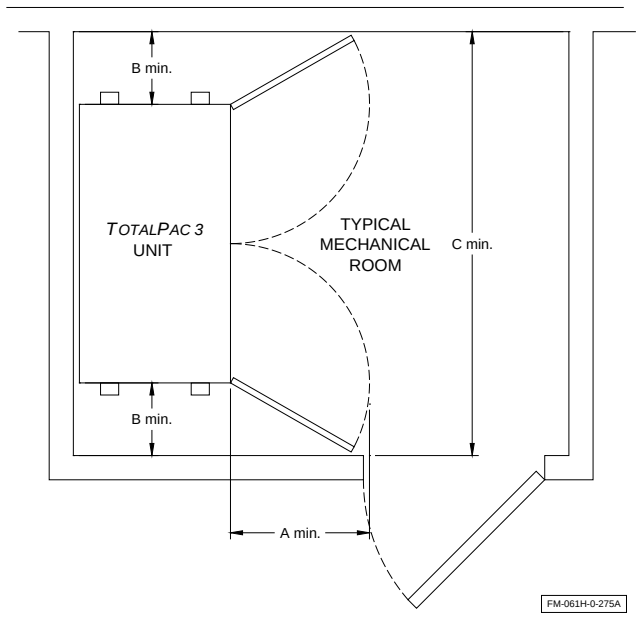


Table 3 - Cabinet clearance dimensions

Unit size	A	B	C
4" (100mm)	24" (610mm)	12" (305mm)	60" (1524mm)
6" (150mm)	24" (610mm)	12" (305mm)	70" (1778mm)

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

Figure 4 - Knockouts details

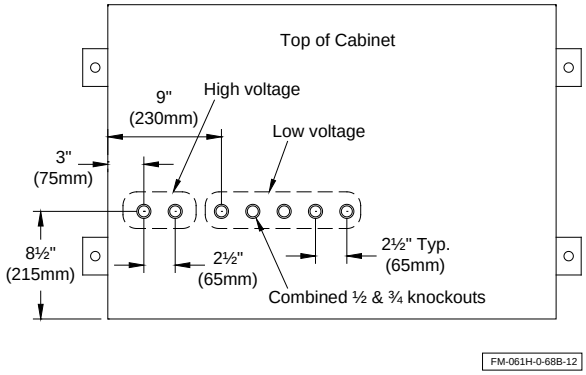


Table 4 - System weight in cabinet

System size	Weight [1]
4" (100mm)	710 lb (322 kg)
6" (150mm)	995 lb (451 kg)

(1) Without air compressor.

Figure 5 - Open drain details for single unit

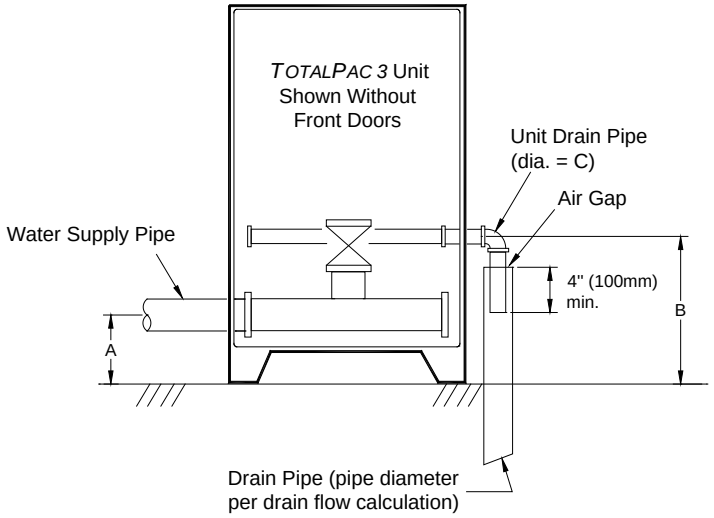
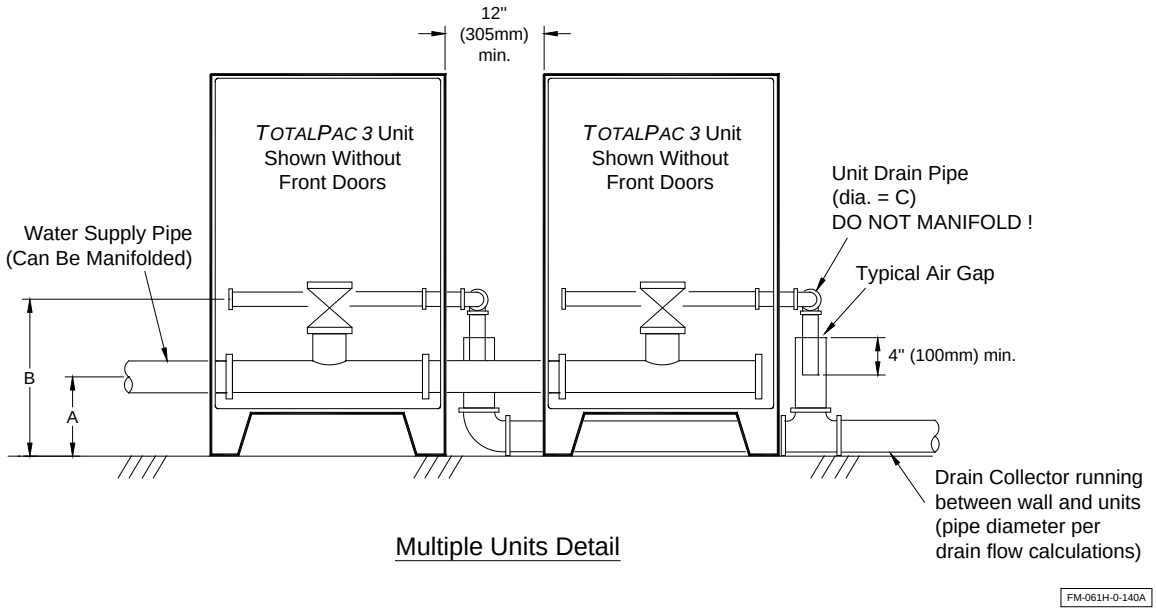


Table 5 - Manifold dimensions

Unit size	A	B	C
4" (100mm)	10" (255mm)	13¾" (350mm)	2" (50mm)
6" (150mm)	11" (280mm)	13¾" (350mm)	2" (50mm)

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



Notes:

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