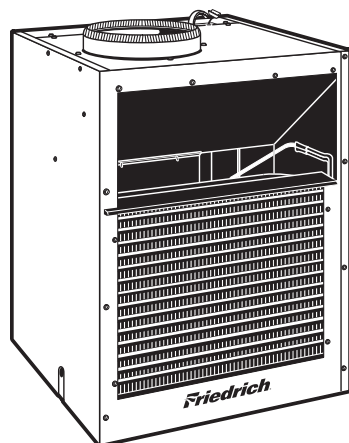




**INSTALLATION &  
OPERATION GUIDE**



**VERT-I-PAK<sup>®</sup> A-SERIES  
SINGLE PACKAGE  
VERTICAL AIR  
CONDITIONING SYSTEM**

9,000 - 18,000 BTU/h

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Please read this manual thoroughly prior to equipment installation or operation. It is the installer's responsibility to properly apply and install the equipment. Installation must be in conformance with the NFPA 70-2002 National Electric Code or current edition and Universal Mechanical Code current edition and applicable local or national codes.

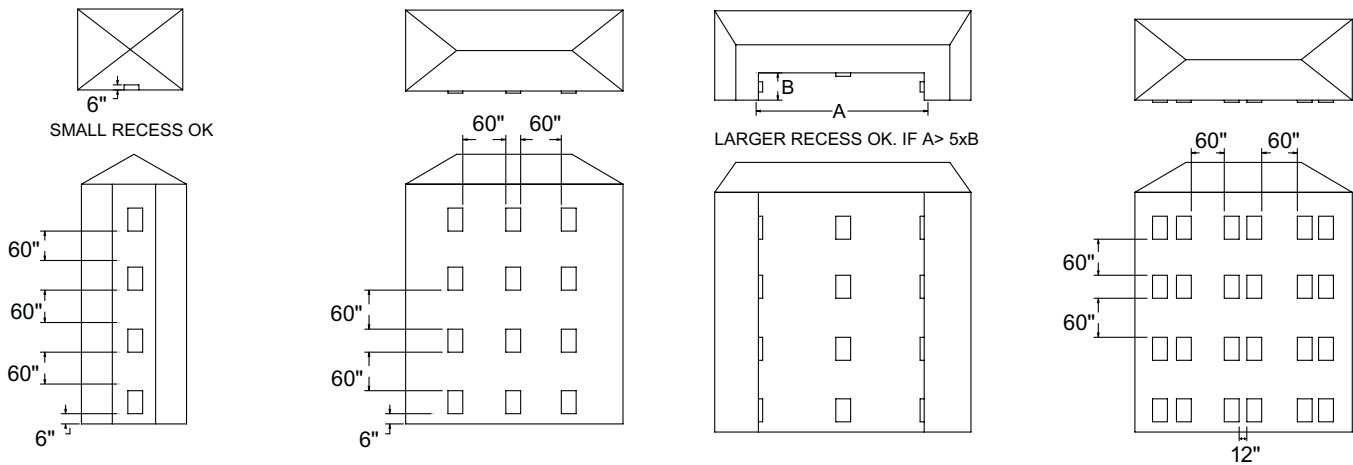
**Proper installation is not difficult but it is essential.**

# Vert-I-Pak Installation Recommendations

For proper unit performance and maximum operating life please refer to the minimum installation clearances below.

**Figure 1**

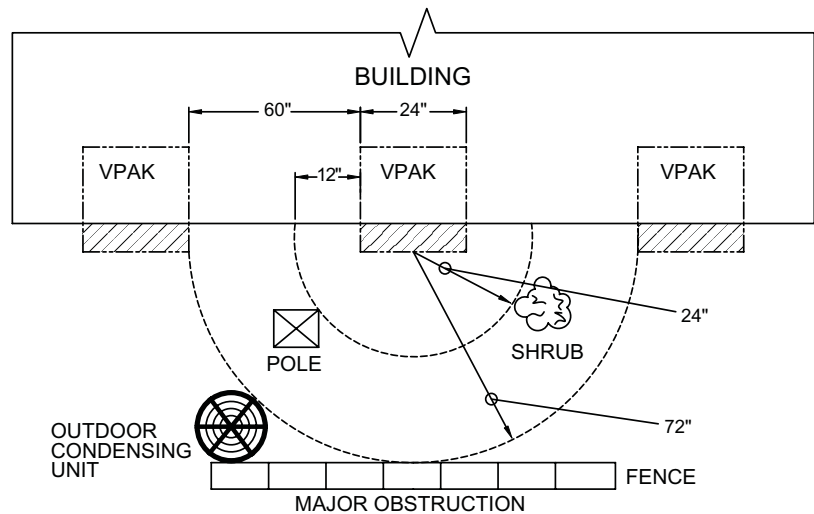
VERT-I-PAK® units must be installed on an outside wall. Confined spaces and/or covered areas should be avoided. Units should be installed no closer than 12" apart when two units are side by side. If three or more units are to operate next to one another allow a minimum of 60" between units or pairs of units. Also, a vertical clearance of 60" should be maintained between units. Units installed on the bottom floor should be mounted at least 6" off of the ground.



**Figure 2**

Any time obstructions are present use the following guidelines for proper spacing from the VERT-I-PAK louver:

- For minor obstructions such as lamp poles or small shrubbery a clearance of 24" from the outdoor louver should be maintained.
- For major obstructions such as a solid fence, wall or other heat rejecting device like a condensing unit, a minimum distance of 72" should be kept.



The above suggestions are for reference only and do not represent all possible installations. Please contact the factory for information regarding affects of other installation arrangements.

By following these simple recommendations you can be confident that your Friedrich Vert-I-Pak® will provide years of worry-free operation.

## Section I. General Specifications

Vert-I-Pak® Model Identification Guide									
MODEL NUMBER	V	E	A	09	K	34	RT	H	
<b>SERIES</b> V=Vertical Series		<b>ENGINEERING CODE</b>							
E =Cooling with electric heat H =Heat Pump									
<b>DESIGN SERIES</b> A = 32"/47" Cabinet		<b>OPTIONS</b> RT = Standard Remote Operation							
<b>NOMINAL CAPACITY</b> <u>A Series (Btu/h)</u> 09 = 9,000      18 = 18,000 12 = 12,000      24 = 24,000									
<b>VOLTAGE</b> K = 208/230V-1Ph-60Hz		<b>ELECTRIC HEATER SIZE</b> <u>A Series</u> 25 = 2.5 KW 34 = 3.4 KW 50 = 5.0 KW* 75 = 7.5 KW**  Refer to electrical data chart for heater/unit compatibility.  * Not available on 9000 BTU models. ** 24000 BTU only.							

Vert-I-Pak® Chassis Specifications			
MODEL:	V(E,H)A09	V(E,H)A12	V(E,H)A18
Voltage (V)	230 / 208	230 / 208	230 / 208
Refrigerant	R-22	R-22	R-22
Chassis Width	23.125"	23.125"	23.125"
Chassis Depth	23.125"	23.125"	23.125"
Chassis Height **	32.25"	32.25"	32.25"
Shipping W x D x H	26.00" x 28.50" x 35.00"	26.00" x 28.50" x 35.00"	26.00" x 28.50" x 35.00"
Supply Duct Collar ***	10"	10"	10"
Drain Connection	3/4" FPT	3/4" FPT	3/4" FPT
Min. Circuit Amps	See Chassis Nameplate		
CFM Indoor	See Charts 2 & 3 (Page 10)		
Max. Duct ESP	.3 in. water	.3 in. water	.3 in. water

### NOTES:

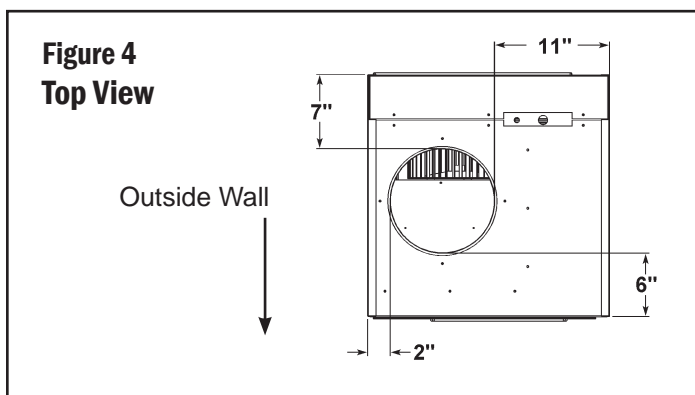
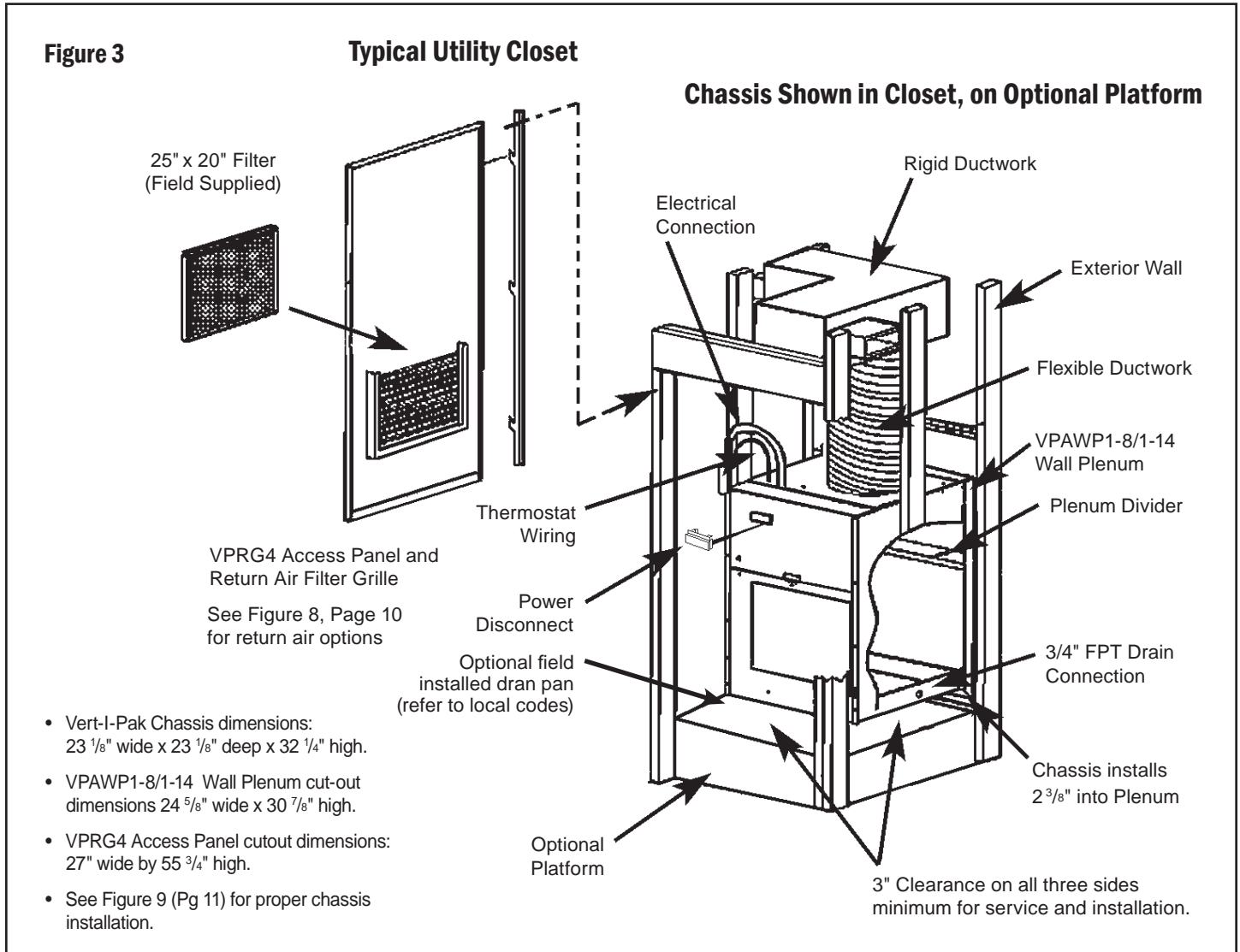
\*\* Height includes 2" duct collar & isolators under unit.

\*\*\* Factory collar accepts 10" flex duct.

## II. Installation

### 1) Utility Closet Dimensions

Recommended utility closet dimensions and a typical indoor installation are illustrated in Figure 3. Three inches minimum clearance on three sides of the unit must be allowed for return airflow, installation access and service access. See Figures 3 and 4 for clearances and reference dimensions.



## 2) Wall Plenum and Architectural Louver Installation

A. Install the wall plenum (VPAWP1-8/1-14) components in accordance with the installation instructions provided with each accessory.

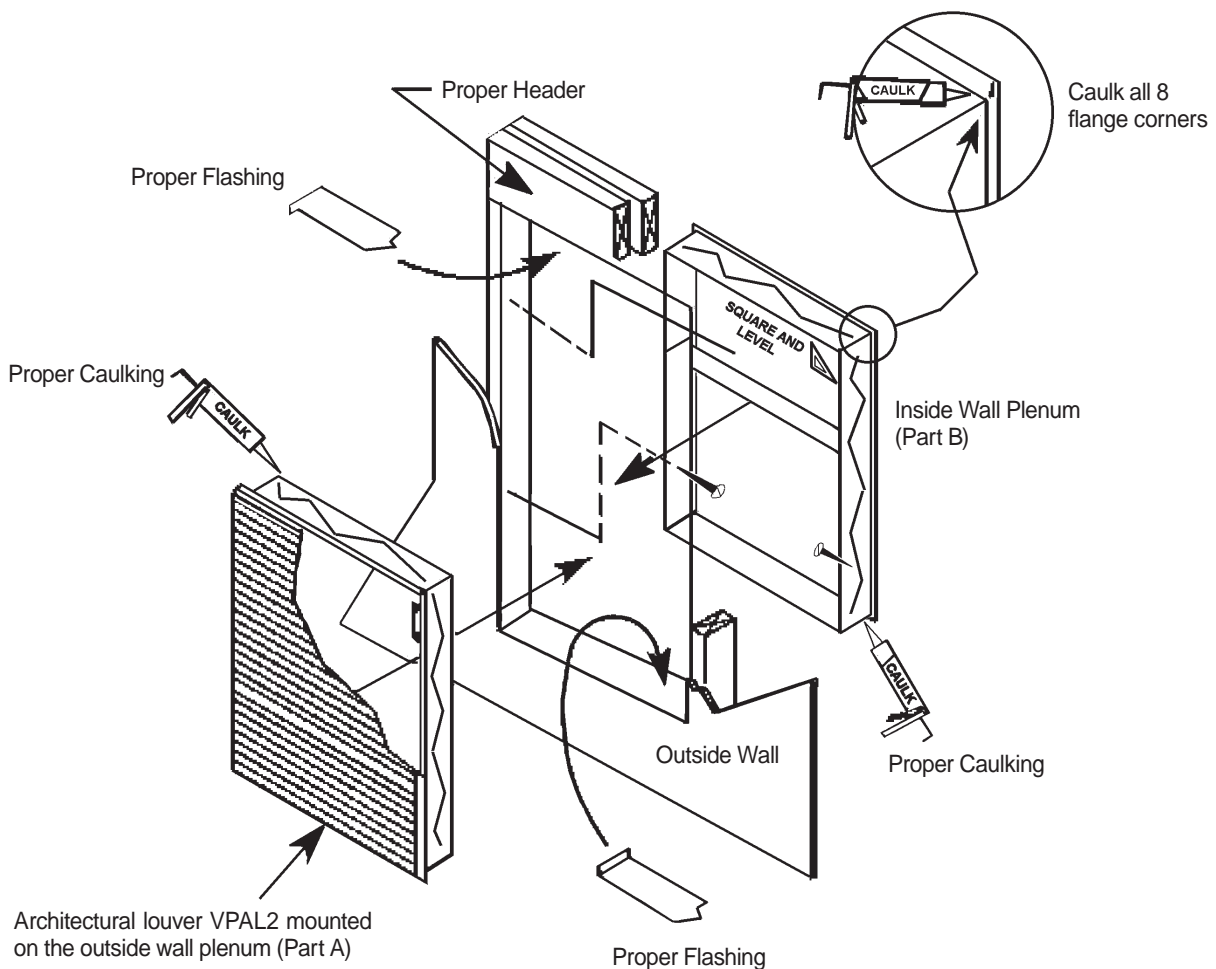


**IMPORTANT REMINDER: FRIEDRICH WALL PLENUM IS NOT DESIGNED TO CARRY STRUCTURAL LOADS. PROPER WALL HEADER CONSTRUCTION IS REQUIRED. THE PLENUM REQUIRES PROPER FLASHING, SHIM AND CAULK FOR A WEATHER RESISTANT INSTALLATION.**

B. Ensure that the divider is adjusted properly for the depth of the wall in accordance with the accessory installation manual.

Figure 5

### Wall Plenum & Outdoor Louver Installation




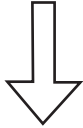
- Rough opening dimension 24  $\frac{5}{8}$ " wide x 30  $\frac{7}{8}$ " high.
- Ensure that the bottom of the plenum is  $\frac{3}{4}$ " from the floor of the closet.
- For proper airflow, maintain a minimum distance of 12" between Vert-I-Pak units (see Figure 1, page 3). Consult the factory for any installation or application questions.

### 3) Electrical Data

#### Electrical Data

Model	V(E,H)A09K25	V(E,H)A09K34	V(E,H)09K50	V(E,H)A12K25	V(E,H)A12K34	V(E,H)A12K50	V(E,H)A18K25	V(E,H)A18K34	V(E,H)A18K50
Voltage ( V )	230/208	230/208	230/208	230/208	230/208	230/208	230/208	230/208	230/208
LRA - Comp. (A)	21	21	21	24.0	24.0	24.0	47	47	47
Cooling Current (A)	4.4/4.9	4.4/4.9	4.4/4.9	5.5/6.1	5.5/6.1	5.5/6.1	9.2/10.2	9.2/10.2	9.2/10.2
MIN. Ckt. Amps (A)	15	20	30	15	20	30	15	20	30
Power Connection	HARD WIRED			HARD WIRED			HARD WIRED		

#### Sample Nameplate (see your chassis nameplate)

<p>MODEL NO 1 SERIAL NO * FRIEDRICH AIR CONDITIONING CO. SAN ANTONIO, TEXAS</p>	<h2>WARNING</h2>	 <p>LISTED 120524</p>
<p>VOLTS: 24,33,34 VOLTAGE RANGE: 255-197 REFRIG CHARGE: 7 OZS. R22 DESIGN PRESSURE: 575 PSIG HS / 150 PSIG LS COOLING: BTU/HR 8 SEER: 10 COP: 16 HEAT PUMP BTU/HR: 14 TOTAL COOLING AMPS: 9 TOTAL ELEC. HEAT AMPS: 15 ELECTRIC HEAT WATTS: 18</p> <p><u>FOR PERMANENTLY CONNECTED UNITS ONLY:</u> COMP. PLA 11 LRA 12 MOTOR: FLA 13 HP 19 HEATER AMPS: 17 MIN. CKT AMP -0 USE -1 MAX. TIME DELAY FUSE OR HACR TYPE CIRCUIT BREAKER.</p>	<p>ELECTRICAL SHOCK AND MOVING PARTS HAZARD CAN CAUSE INJURY OR DEATH PULL OUT/DISCONNECT HEAD LOCATED ON THE FRONT OF THIS UNIT TO DISABLE POWER BEFORE SERVICING.</p> 	<p>HEATING AND COOLING EQUIPMENT</p> <p>APPLICABLE PATENTS: US 6,065,296</p> <p>NY MEA NO.: 295-00-E USE ONE OF THE FOLLOWING ITEMS FROM EACH CATEGORY TO COMPLETE THE ASSEMBLY</p> <p>WALL PLENUM: VPAWP1 -8 VPAWP1 -14 OUTDOOR GRILLE VPAL2 INDOOR GRILLE VPRG1 VPRG2 VPRG5</p>
<p><u>GENERAL UNIT INFORMATION:</u> MAX OUTLET AIR TEMPERATURE: 200°F MAX EXTERNAL STATIC PRESSURE ELECTRIC HEAT*.5 IN. WATER "0" CLEARANCE TO COMBUSTIBLE MATERIAL</p> <p>USE ON SINGLE OUTLET CIRCUIT ONLY</p>		

#### ! CAUTION!

Important: all 208/230v chassis must be hard wired with properly sized breaker. See nameplate for specific chassis electrical requirements. See page 8 - Figure 5 for unit wiring and wall thermostat wiring. See page 8 for wire size. Use HACR type breakers to avoid nuisance trips. All field wiring must be done in accordance with nec and local codes.

### 3) Electrical Data (continued)

<p><b>Figure 6</b> <b>Electrical Requirements</b></p> <p>Note: All field wiring must comply with NEC and local codes. It is the responsibility of the installer to insure that the electrical codes are met.</p>	
Wire Size	Use ONLY wiring size recommended for single outlet branch circuit.
Fuse/Circuit Breaker	Use ONLY type and size fuse or HACR circuit breaker indicated on unit's rating plate (See sample on page 6). Proper current protection to the unit is the responsibility of the owner.
Grounding	Unit <b>MUST</b> be grounded from branch circuit to unit, or through separate ground wire provided on permanently connected units. Be sure that branch circuit or general purpose outlet is grounded.
Wire Sizing	Use recommended wire size given in tables and install a single branch circuit. All wiring must comply with local and national codes. NOTE: Use copper conductors only.

### Electrical Rating Tables

NOTE: Use copper conductors ONLY. Wire sizes are per NEC. Check local codes for overseas applications

Recommended branch circuit wire sizes*	
Nameplate maximum circuit breaker size	AWG Wire size**
<b>15A</b>	<b>14</b>
<b>20A</b>	<b>12</b>
<b>30A</b>	<b>10</b>

AWG — American Wire Gauge  
 \* Single circuit from main box  
 \*\* Based on copper wire, single insulated conductor at 60°C



### CAUTION

Electric shock hazard.

Turn OFF electric power before service or installation.

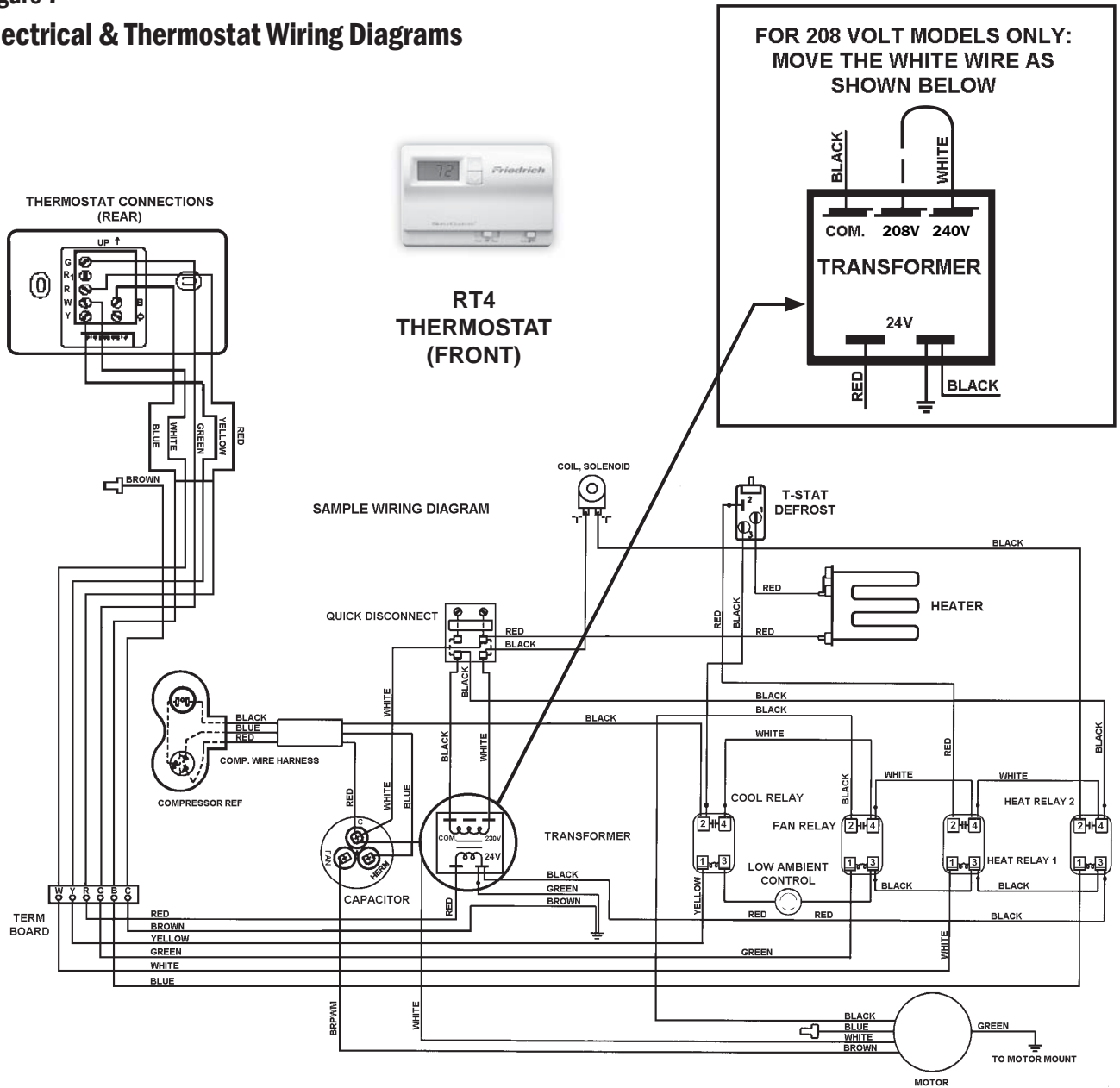
All electrical connections and wiring **MUST** be installed by a qualified electrician and conform to the National Electrical Code and all local codes which have jurisdiction.

Failure to do so can result in property damage, personal injury and/or death.



### 3) Electrical Data (continued)

**Figure 7**  
**Electrical & Thermostat Wiring Diagrams**



Note: the diagram above illustrates the typical thermostat wiring and 208 volt transformer wiring. See the unit control panel for the actual unit wiring diagram and schematic.

## 4) Indoor Return Air Grille Installation

There are two Indoor Return Air Grille options as shown in Figure 8. Choose the option that best suits your needs. Use the installation instructions provided with accessories for installation details.

**Figure 8**

### Return Air Grille Options

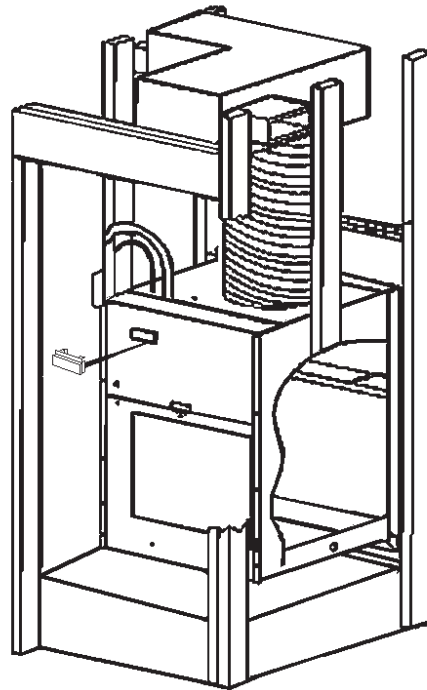
**Option 1**



**VPRG4**

**Return Air Grille with Access Panel**

A field-supplied (25" x 20") filter is mounted inside the hinged access door.



All Vert-I-Pak chassis are shipped with a 14 x 20 filter installed. If an accessory filter holder is to be used, you **MUST** remove the factory shipped filter from the chassis. Do **NOT** use two filters

**Option 2**



**Field Supplied  
Return Air Grille**

Must have a minimum of 220 square inches of free area.

**Notes:**

- A. These are the Friedrich recommended return air grille / filter / access panel arrangements. Consult the factory on other arrangements. Improper return air arrangements will cause performance problems.
- B. Return air arrangements are shown from the front, but can also be installed from the right or left side of the unit.

## 5) Ductwork Preparation

### 1) Duct ESP:

To determine your system's indoor external static pressure (ESP, in inches of water) use a duct calculator (as provided by your duct supplier). Include all flex duct transitions and discharge grille(s). If flex duct is used, be sure all the slack is pulled out of the flex duct. Flex duct ESP can increase considerably when not fully extended. DO NOT EXCEED a total of .30 ESP, as this is the MAXIMUM design limit for the VERT-I-PAK A-Series unit.

### 2) Determining the Indoor CFM: Chart A - CFM

ESP (")	Capacity	
	18000	12000 / 9000
.00	520	420
.10	510	410
.20	500	370
.30	490	330

### 3) Correct CFM (if needed): Chart B - Correction Multipliers

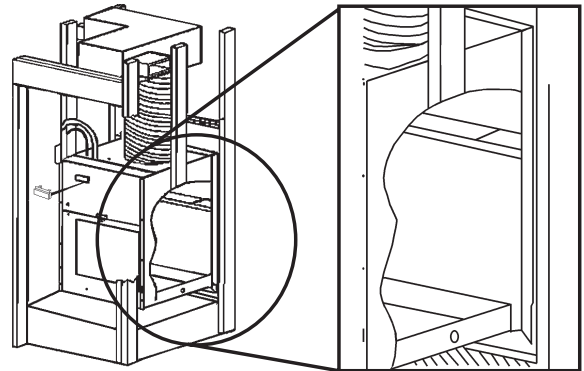
Correction Multipliers for:	
230V	1.00
208V	0.97
Heating	1.00
Cooling	0.95

## 6) Chassis Installation

Install the following components as shown in Figure 5.

- Ensure that the wall plenum is installed in accordance with the VPAWP1-8/1-14 Installation Manual.
- Place the chassis into the closet with the outdoor side facing the wall plenum opening.
- Slide the chassis into the wall plenum until the plenum divider seal is established. (See Figure 9)

**Figure 9**  
**Slide-in View / Chassis Installation**



The Vert-I-Pak chassis must be inserted into the wall plenum so that the plenum divider gasket makes contact with the plastic condenser baffle on the unit. The chassis will fit approximately 2<sup>3</sup>/<sub>8</sub>" into the wall plenum.

## 7) Chassis Final Connections

With the chassis in place, you are now ready to begin chassis connections:

- Move the thermostat switches to "OFF" and "AUTO." This will keep the thermostat from cycling the chassis until final connections are complete.
- Connect the ductwork onto the 10" collar. Plastic wireties (field supplied) are suggested to secure the ductwork in place. Use 2 wire ties, one for each inner and outer flex duct sleeve.
- Using the two 3/4" plugs supplied with the unit, plug two of the condensate drain holes. Connect a drain to the third condensate exit location. Be sure to use teflon tape or approved pipe sealant on all drain connections and plugs. (See Figure 10.)
- For 208 Volt power only: you must move the transformer wire as shown in Figure 7, Page 9.
- Review the Final Installation Checklist on Page 12 before replacing the power quick disconnect, reconnecting power to the chassis, plugging in the remote thermostat harness, or operating the chassis.

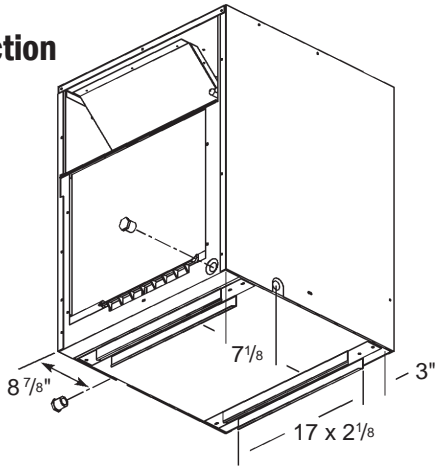
### WARNING

Electrical shock and moving parts hazard can cause injury or death. If you have not done so, pull out the disconnect head found on the front of chassis before continuing installation! Disconnect external power at the breaker.



**RT4 Digital Thermostat**

**Figure 10**  
**Drain Connection**  
**and Location**



### CAUTION

- ☑ The unit basepan has three (3) provisions (left, right, and rear) for connecting an external condensate drain.
- ☑ A field supplied condensate drain system **must** be connected to one of the three (left, right, or rear) 3/4" FPT connections on the unit basepan. Use of rear fitting may result in staining of the outside wall.
- ☑ The remaining two connections **must** be plugged using the two 3/4" pipe plugs (provided) and field supplied teflon tape or pipe joint compound.
- ☑ The addition of a secondary drain pan may be required. Follow all applicable codes.
- ☑ Failure to follow these procedures may result in serious property damage.
- ☑ A field supplied secondary condensate pan may be applied. Check with local codes.

## 8) Final Installation Checklist

- Correct line voltage?
- Chassis deck level?
- Plenum divider baffle installed?
- Wall plenum caulked? Level? Flashing?
- HACR type breaker/fuse?
- Single circuit only?
- Ductwork connected?
- Chassis weather seal in place?
- Wall thermostat wired correctly?
- Chassis inserted into plenum?

## III. Chassis Operation

### 9) Remote Thermostat Control

The chassis requires a simple single stage heat-cool wall thermostat. Each chassis comes with a terminal strip located in the electrical control box. All internal chassis wiring (low & high voltage) is factory ready for 230 Volt operation. For 208 Volt operation a single wire **MUST BE CHANGED ON THE TRANSFORMER**. Refer to Figure 7 on page 9.

### 10) Low Ambient Protection

Each chassis is equipped with Low Ambient Protection in the form of a suction line thermostat. This thermostat will prevent compressor operation at low suction line temperatures. Each chassis is also equipped with a factory installed bellows that will drain water from the base pan to prevent the fan slinger from freezing during winter weather.

### 11) Heating Defrost (Heat Pump Models Only)

All Heat Pumps have a passive heating defrost system. Defrost occurs as needed and automatically switches to electric heat during defrost. When the outdoor ambient temperature drops below a 45°F factory setting, the chassis automatically switches to electric heat. As outdoor ambient temperatures rise above 45°F, the chassis returns to the heat pump mode. The changeover temperature is user adjustable from approximately 32°F - 55°F. The defrost thermostat may also be used to lock out the compressor in an emergency heat situation.

### 12) Fresh Air Door

The Fresh Air Door is an "intake" system. The fresh air door is opened via a slide on the front of the chassis located just above the indoor coil. Move the slide left to open and right to close the fresh air door. The system is capable of up to 60 CFM of fresh air @ ~.3" H2O internal static pressure.

### 13) Condensate Disposal System

The internal drain connections are 3/4" FPT fittings on the right, left and outdoor side of the unit. See Figure 10 on page 12. The chassis is designed with a condensate drain system that has 3 parts. The three parts work as follows:

- Part 1: The system's first stage increases energy efficiency utilizing a factory installed fan that slings the cold condensate onto the hot outdoor coil.
- Part 2: When high outdoor humidity prevents the slinger from disposing of all the condensate, the excess condensate overflows into the internal drain connection.
- Part 3: If Parts 1 & 2 fail for any reason, excess condensate overflows from a spillway directly into the wall plenum to the outside of the building. **IF THIS OCCURS, THIS IS YOUR WARNING THAT THE CHASSIS OR DRAIN NEEDS SERVICING.**

Follow all codes when working with the condensate drain system. A secondary drain pan may be placed beneath the chassis to prevent condensated spillage due to improper installation or unit malfunction.

## IV. Service & Warranty

### 14) Servicing / Chassis Quick Changeouts

The chassis is designed for quick disconnect and change out. For minor electrical service, the control box cover lifts straight up after the screws & disconnect head are removed. For major electrical, refrigeration and fan service the chassis must be removed from utility closet.

#### To Remove the Chassis from the Closet:

- A Switch the wall thermostat off.
- B Pull the power disconnect located in the front of the chassis.
- C Turn off all power to the unit at the main breaker or disconnect.
- D Disconnect the thermostat wiring.
- E Disconnect the electrical connection.
- F Disconnect the ductwork.
- G Disconnect the drain connection.
- H Slide the chassis out of the wall plenum.
- I Lift the chassis out of the utility closet.

### 15) Warranty

All service work must be done by a qualified servicer. See Warranty on the next page, and consult your dealer or contractor for details.

## WARNING

Electrical shock and moving parts hazard can cause injury or death. Pull out the disconnect head found on the front of the chassis before servicing.



Friedrich Air Conditioning Company

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## VERT-I-PAK<sup>®</sup> A SERIES SINGLE PACKAGE VERTICAL AIR CONDITIONERS LIMITED WARRANTY

**SAVE THIS CERTIFICATE.** It gives you specific rights, you may also have other rights which may vary from state to state and province to province.

In the event that your unit needs servicing, contact your nearest authorized service center. If you do not know the nearest service center, ask the company that installed your unit or contact us - see address and telephone number above. To obtain service and/or warranty parts replacement, you must notify an authorized FRIEDRICH Air Conditioning Co. service center, distributor, dealer, or contractor of any defect within the applicable warranty period.

**When requesting service:** please have the model and serial number from your unit readily available.

Unless specified otherwise herein, the following applies:

### FRIEDRICH VERT-I-PAK A SERIES VERTICAL AIR CONDITIONERS AND HEAT PUMPS

**LIMITED WARRANTY - FIRST YEAR (Twelve (12) months from the date of installation).** Any part found to be defective in the material or workmanship will be repaired or replaced free of charge by our authorized service center during the normal working hours; and

**LIMITED WARRANTY - SECOND THROUGH FIFTH YEAR (Sixty (60) months from the date of installation). ON THE SEALED REFRIGERATION SYSTEM.** Any part of the sealed refrigeration system that is defective in material or workmanship will be repaired or replaced free of charge (excluding freight charges) by our authorized service center during normal working hours. The sealed refrigeration system consists of the compressor, metering device, evaporator, condenser, reversing valve, check valve, and the interconnecting tubing.

**These warranties apply only while the unit remains at the original site and only to units installed inside the continental United States, Alaska, Hawaii, Puerto Rico and Canada. The warranty applies only if the unit is installed and operated in accordance with the printed instructions and in compliance with applicable local installation and building codes and good trade practices. For international warranty information, contact the Friedrich Air Conditioning Company - International Division.**

Any defective part to be replaced must be made available to FRIEDRICH in exchange for the replacement part. Reasonable proof must be presented to establish the date of install, otherwise the beginning date of this certificate will be considered to be our shipment date plus sixty days. Replacement parts can be new or remanufactured. Replacement parts and labor are only warranted for any unused portion of the unit's warranty.

We will not be responsible for and the user will pay for:





1. Service calls to:
  - A) Instruct on unit operation. B) Replace house fuses or correct house wiring. C) Clean or replace air filters. D) Remove the unit from its installed location when not accessible for service required. E) Correct improper installations.
2. Parts or labor provided by anyone other than an authorized service center.
3. Damage caused by:
  - A) Accident, abuse, negligence, misuse, riot, fire, flood, or acts of God. B) Operating the unit where there is a corrosive atmosphere containing chlorine, fluorine, or any damaging chemicals (other than in a normal residential environment). C) Unauthorized alteration or repair of the unit, which in turn affects its stability or performance. D) Failing to provide proper maintenance and service. E) Using an incorrect power source. F) Faulty installation or application of the unit.

**We shall not be liable for any incidental, consequential, or special damages or expenses in connection with any use or failure of this unit. We have not made and do not make any representation or warranty of fitness for a particular use or purpose and there is no implied condition of fitness for a particular use or purpose. We make no expressed warranties except as stated in this certificate. No one is authorized to change this certificate or to create for us any other obligation or liability in connection with this unit. Any implied warranties shall last for one year after the original purchase date.** Some states and provinces do not allow limitations on how long an implied warranty or condition lasts, so the above limitations or exclusions may not apply to you. The provisions of this warranty are in addition to and not a modification of or subtraction from the statutory warranties and other rights and remedies provided by law.

**In case of any questions regarding the provisions of this warranty, the English version will govern.**

(10-06)

## V. Vert-I-Pak Accessories

MODEL	DESCRIPTION	PHOTO
<b>VPAWP1-8</b>	<p>WALL PLENUM Two-part sleeve that telescopes in and out from 5 1/2" to 8" in depth. The wall plenum sits inside the exterior wall penetration.</p> <p>DIMENSIONS: 30 3/8" high x 24 1/8" wide.</p> <p>CUTOUT DIMENSIONS: 30 7/8" high x 24 5/8" wide.</p>	
<b>VPAWP1-14</b>	Same as VPAWP1-8, but telescopes 8" to 14" as required.	
<b>VPAL2</b>	<p>ARCHITECTURAL LOUVER Extruded aluminum louver that attaches to the outdoor section of the wall plenum.</p> <p>DIMENSIONS: 31 1/16" high x 25 9/16" wide.</p>	
<b>VPSC2</b>	Same as VPAL2 but can be ordered in a special color to match the exterior wall.	
<b>RT4</b>	<p>DIGITAL THERMOSTAT Single stage, wall-mounted digital thermostat for control of Friedrich VERT-I-PAK.</p>	
<b>VPRG4</b>	<p>ACCESS PANEL / RETURN AIR GRILLE – Serves as an access panel to chassis and interior return air grille. A field-supplied (25" x 20") filter is mounted inside the hinged access door.</p> <p>DIMENSIONS: 58" high x 29" wide.</p> <p>CUTOUT DIMENSIONS: 55 3/4" high x 27" wide.</p>	

***Friedrich***<sup>®</sup>

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Printed in the U.S.A.

920-075-08 (10-06)