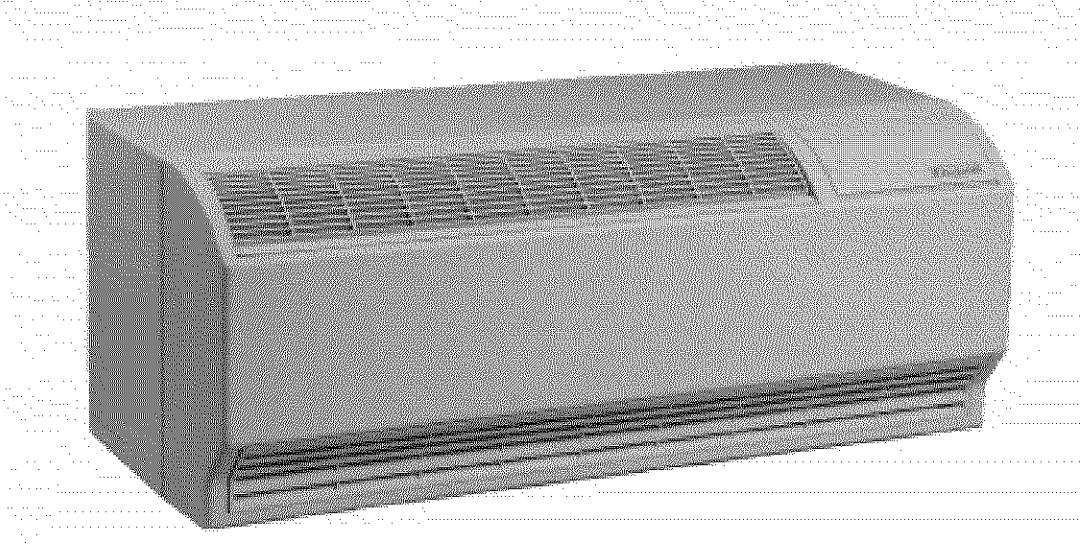
INSTALLATION & OPERATION



Friedrich®

WallMaster® Packaged Terminal Air Conditioners
Packaged Terminal Heat Pumps

- Standard Unit
- Seacoast Protected Unit
- Remote Thermostat Unit
- Central Desk Control Unit

920-062-00 (11/98)

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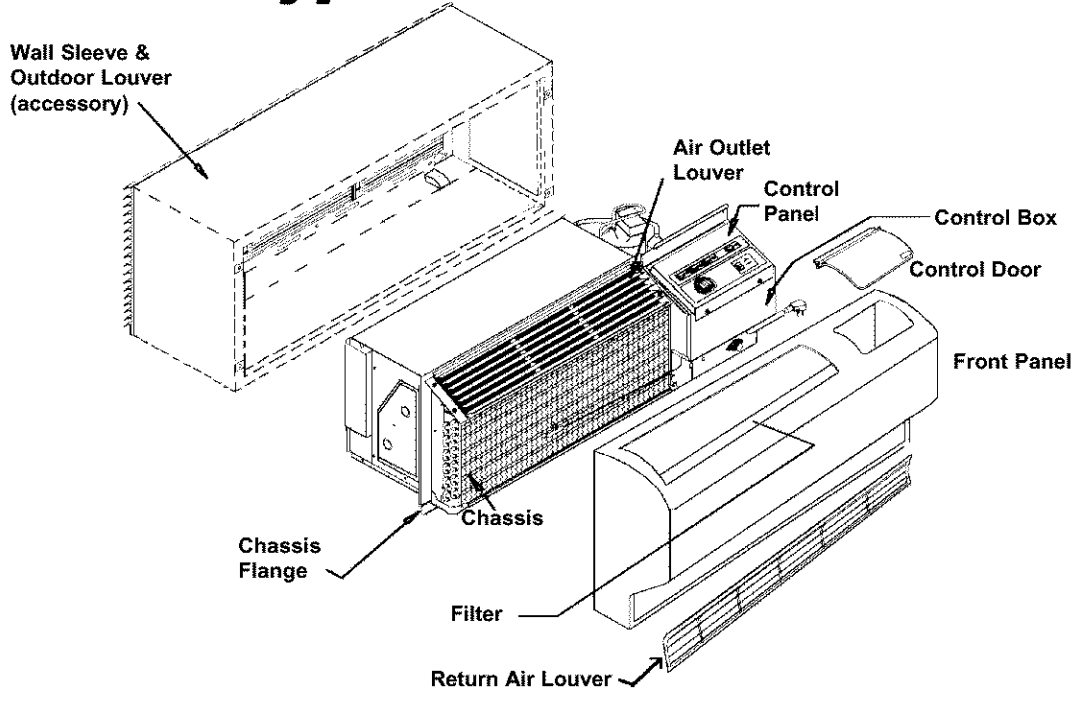
Typical Installation



1 Installation Checklist

CAUTION

Electric shock hazard.

Turn off electric power before service or installation

Read these instructions carefully and completely before attempting installation. Unit should be installed by qualified service personnel **ONLY**.

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

√ All electrical connections and circuits are installed in compliance with and conform to the National Electrical Code and local codes which have jurisdiction.

√ Wall sleeve and condensate lines are installed correctly.

√ Electrical power is disconnected.

√ Condenser air inlet and outlet **MUST** be clear and free of obstructions.

√ Cardboard wall sleeve support and louver weatherboard are removed.

√ Wall sleeve foam gasket is installed (if applicable).

√ Subbase kit or other means of structural support is required for **ALL** installations which project more than 8" into room.

√ Unit is installed in a 16"H x 42"W x 11 1/2"D wall sleeve. A sleeve baffle kit is used when installed in a sleeve greater than 11 1/2" deep.

√ Ensure that drapes, bed, bedspread, furniture, etc. **DO NOT** block either return or discharge air louvers.

√ Condensate Drain Kits should be installed for complete condensate removal.

2 Electrical Requirements

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.

Wire Size Use **ONLY** wiring size recommended for single outlet branch circuit.

Fuse/Circuit Use **ONLY** type and size fuse or HACR circuit breaker.

Breaker Indicated on unit's rating plate (see page 4). Proper current protection to the unit is the responsibility of the owner. **NOTE:** A time delay fuse is provided with 265V units.

Grounding Unit **MUST** be grounded from branch circuit through service cord to unit, or through separate ground wire provided on permanently connected units. Be sure that branch circuit or general purpose outlet is grounded.

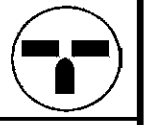
Receptacle The field supplied outlet must match plug on service cord and be within reach of service cord. Refer to **Table 1** for proper receptacle and fuse type. Do **NOT** alter the service cord or plug. Do **NOT** use an extension cord.

Wire Sizing Use recommended wire size given in **Table 2** and install a single branch circuit. All wiring must comply with local and national codes. **NOTE:** Use copper conductors only.

Electrical Rating Tables

All 230/208 volt units are equipped with power cords.
See Appendix C on page 17 for wiring instructions on 265V units.

NOTE: Use Copper Conductors **ONLY.**
Wire sizes are per NEC. Check local codes for overseas applications.

Table 1	250 V Receptacles and Fuse Types		
AMPS	**15**	**20 ***	**30**
RECEPTACLE			
MANUFACTURER	**PART NUMBERS**		
Hubbell **P & S** **GE** **Arrow-Hart**	**5661** **5661** **GE4069-1** **5661**	**5461** **5871** **GE4182-1** **5861**	**9330** **5930** **GE4139-3** **5700**
TIME-DELAY TYPE FUSE (or HACR circuit breaker)	**15**	**20**	**30**

HACR — Heating, Air conditioning, Refrigeration
*** May be used for 15 Amp applications if fused for 15 Amp**
NOTE: 265 volt units are permanently connected.

Table 2	
Recommended branch circuit wire sizes*	
Nameplate maximum circuit breaker size	**AWG Wire size****
15	**14**
20	**12**
30	**10**

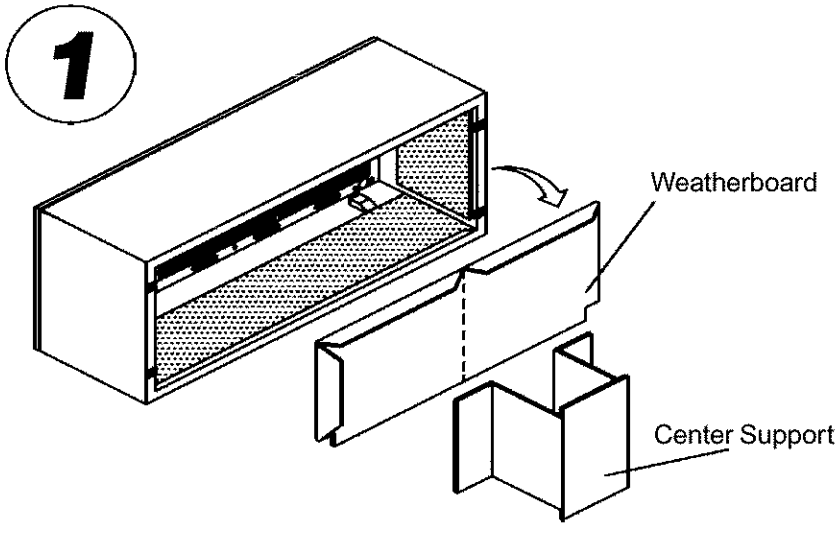
AWG — American Wire Gauge
*** Single circuit from main box**
**** Based on copper wire, single insulated conductor at 60°C**

Chassis Installation

Check to be sure wall sleeve, grille, and drain kit are installed properly before chassis installation.

1. Remove weatherboard and center support from sleeve (if still in place). Be sure an outdoor louver is attached.

Important: Use a sleeve baffle kit if installation is in a wall sleeve deeper than 11 1/2".



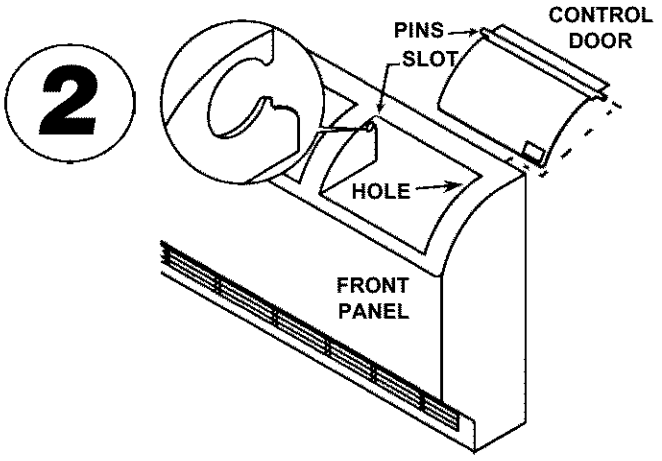
WARNING

Suffocation hazard.

Keep bag away from babies and children.

Do **NOT** use in cribs, beds or playpens. Destroy immediately after opening. This bag is **NOT** a toy!

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



2. Remove the front panel (contained in a protective plastic bag) from chassis. Remove the bag and dispose of it properly. Install the **control door** as per instructions.

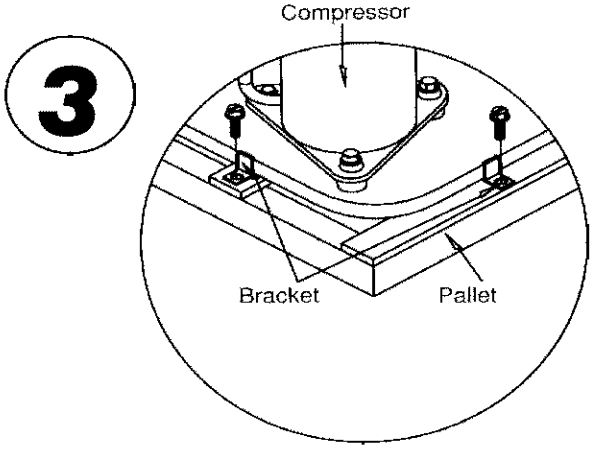
To install, follow these steps:

- Insert the control door into the front panel from *the back side* of panel.
- From *the front* of the panel, slide the right control door pin into the hole on right side of the front panel. Slide the left door pin into the slot on the left of the front panel opening and snap it into place.

CAUTION

To avoid breaking the door or hinge pins, do not apply excessive force when installing.

3. Remove the two chassis shipping brackets from the corner of the shipping pallet.

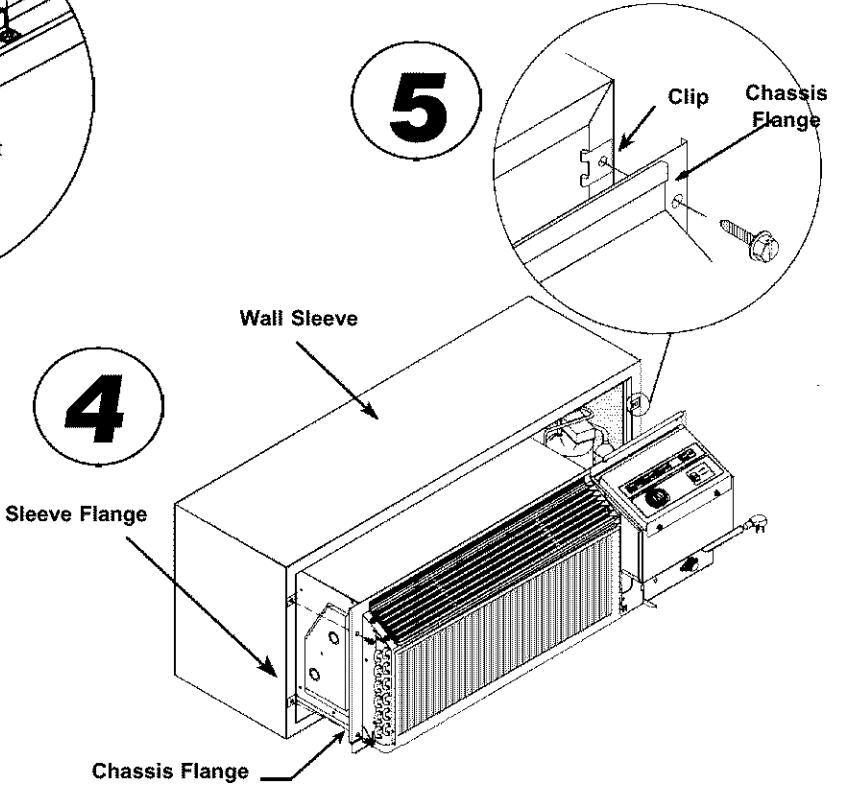


4. Center the chassis in the pre-installed sleeve and carefully push the chassis until the chassis flange and gasket contact the sleeve flange.

CAUTION

Copper refrigerant tubes are **NOT** handles. Do **NOT** use tubing to lift or move chassis.

5. Locate the four #10 x 1" chassis mounting screws and tighten them into the clips in the wall sleeve flange, (two per side).

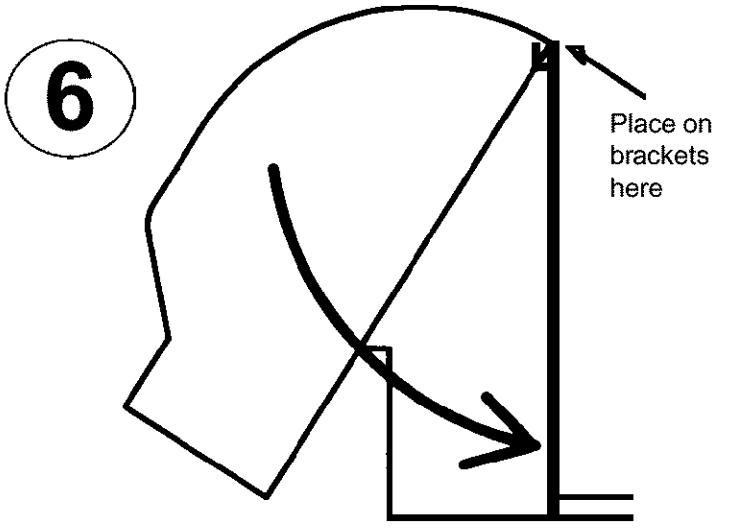


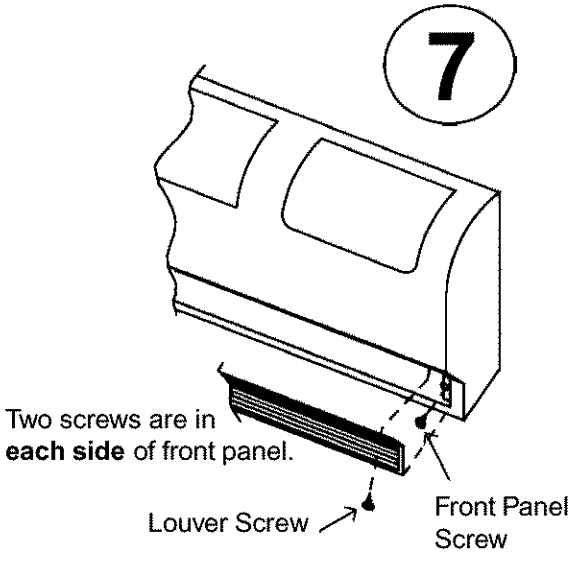
If a Remote Thermostat is to be installed, proceed to Appendix A, Step 6.
If Central Desk Control is to be installed, proceed to Appendix B, Step 6.

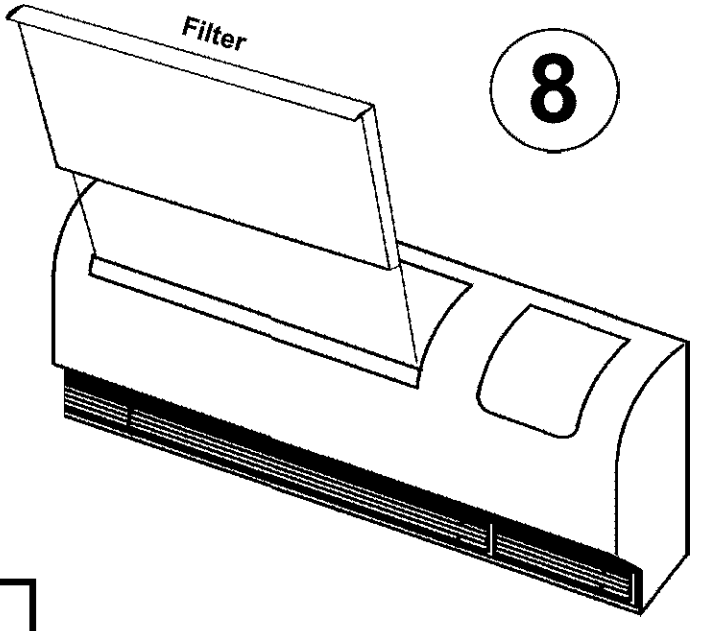
6. Install the front panel by placing the top of the panel onto the brackets at the top of the chassis. Rotate the bottom into place while locating the service cord (or conduit) in a notch at the bottom or sides of the front panel.

7. Secure the panel to the chassis with two #10 x 3/4" screws (provided). Attach the bottom return air louver to the front panel, the louver snaps into place. The louver can be secured in place with two #10 x 3/4" screws, provided (optional).

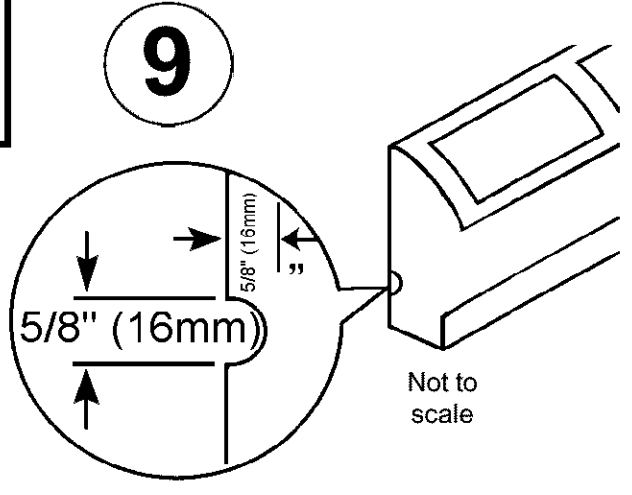
8. The filter is already installed in tracks in the plastic cover.







NOTE: If the unit is mounted flush to the floor, the service cord **MUST** be rerouted through the side of the front panel closest to the receptacle. A notch **MUST** be made in the front panel side where the cord exits the unit. It is the responsibility of the installer to create an exit notch. See diagram (right) for suggested opening size and placement.



9. Plug the cord (if applicable) into the appropriate receptacle. Extra cord may be coiled inside the front panel behind the return air louver. Restore power to the unit.

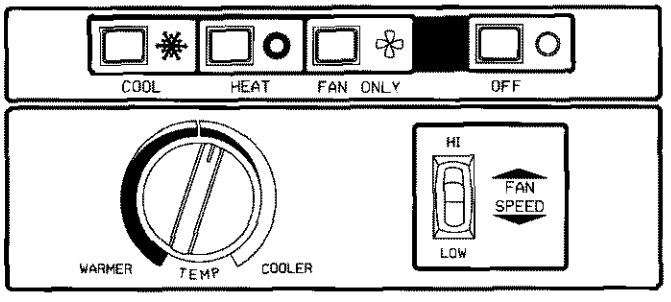
4 Unit Operation

Rotate the temperature dial in small increments in the warmer or cooler direction. Moving the dial more than 1/4" at a time may overcompensate and result in an extreme hot or cold situation.

- **If Thermostat is installed, see Appendix A, page 11.**
- **If Central Desk Control is installed, see Appendix B, page 15.**

Pushbutton Switch Operation	
Control	**Operation**
Cool	Operates unit on cooling - cooling will not begin if room temperature is below 60 F.
Heat	Operates unit on heating. Some models do not provide this selection.
Fan Only	Circulates air within the room. No heating or cooling functions.
Off	Shuts system down.
Temp	Temperature control - maintains room temperature at the desired setting. Counterclockwise - warmer Clockwise - cooler.
Fan Speed	Selects high speed or low speed.

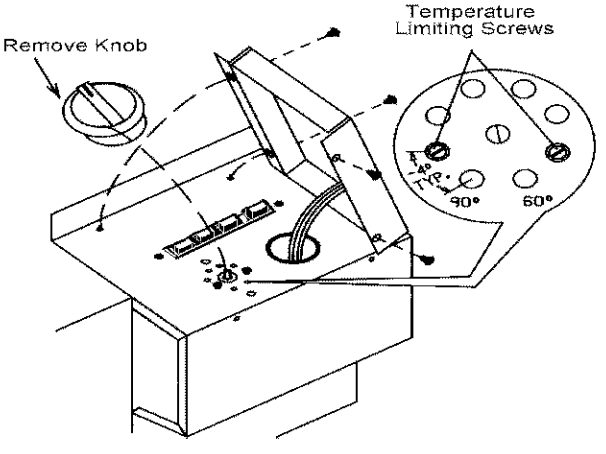
Standard Unit Control Panel



5 Temperature Limiting Thermostat

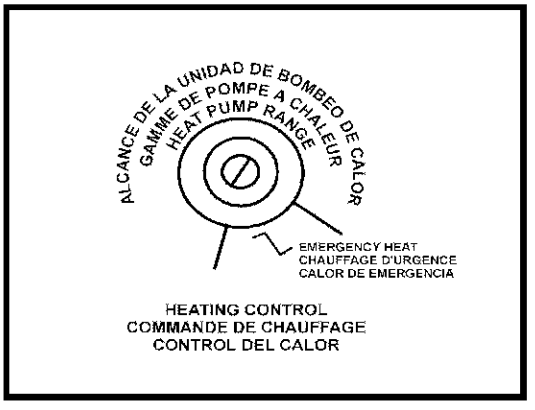
1. Set thermostat knob to center of dial.
2. Remove four screws holding control panel. Pull up on thermostat knob and remove.
3. Locate the two temperature limiting screws. These screws are factory installed for a maximum temperature range of 60-90° F. Each hole in dial plate represents approximately a 4° change from the adjacent hole.
4. To adjust temperature range, move temperature limiting screws to desired location.
5. Replace knob when desired range has been set.
6. Replace control panel.

EXAMPLE: To set a maximum temperature range of approximately 64 to 86° F, move screws to locations shown in diagram at right.



6 Heating Control

NOTE: Heat pump models only. Heat pump equipped models use backup electric resistance heating coils. At extremely low outdoor ambient temperatures, the heat pump is automatically disabled and the unit operates solely on electric resistance heat.

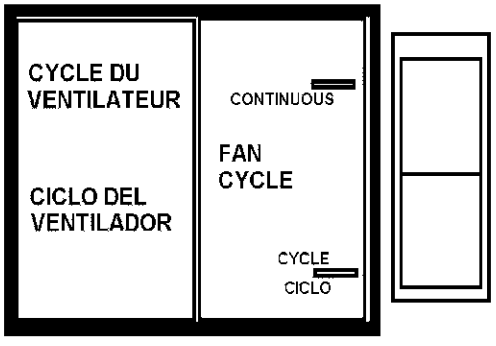


HEATING CONTROL
COMMANDE DE CHAUFFAGE
CONTROL DEL CALOR

The heating control is located behind the front panel at the control box bottom and is accessible through the return air louver opening. Its function is to allow you to set the temperature range in which the heat pump operates. This control switches the unit heat operation between heat pump and electric resistance heat based on the outdoor ambient temperature. These change over temperatures are based on the settings of this control. In most cases, the factory setting (at approximately the one o'clock position) is adequate. If you wish to change the factory set point, insert a flat bladed screwdriver into the slot and turn counterclockwise to increase the changeover set point.

In the event of a compressor malfunction, turn the screw to the extreme counterclockwise emergency heat position. The heater will then cycle using electric resistance heat only. Note that in the emergency heat position, the compressor is locked out, disabling both heat pump and cooling operations. **CALL A SERVICE PERSON**.

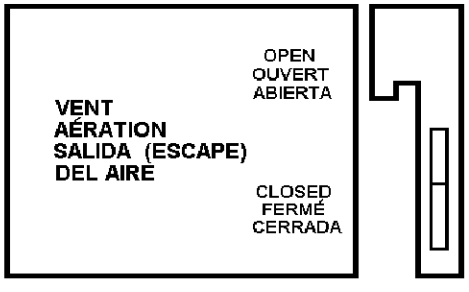
7 Fan Cycle Switch



The fan cycle switch is located behind the front panel at the bottom of the control box. It is accessible through the return air louver opening. It is designed to operate the fan either continuously or intermittently with the compressor or heating elements. When the switch is in the **CONTINUOUS** position, the fan will run continuously when the power switch is on. With the fan cycle switch in the **CYCLE** position, the fan will run only when the compressor or heating elements cycle on.

NOTE: For maximum comfort and temperature control, it is recommended that this switch be set in the continuous position.

8 Vent Control



The vent control lever is located behind the front panel at the bottom of the control box. When the lever is up, (**OPEN**), outside air is mixed with indoor air. When the lever is down, (**CLOSED**), no outside air is admitted into room and room air is recycled through unit.

NOTE: For peak operating efficiency, the vent should remain closed.

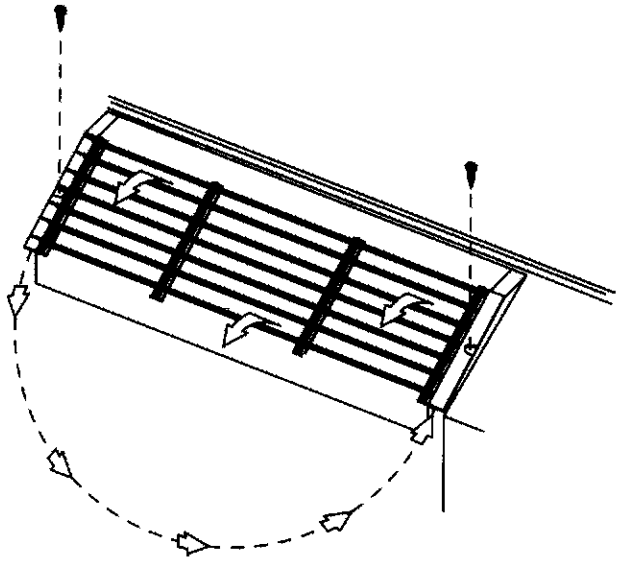
9 Air Outlet Louver

WARNING

Moving parts hazard.

Turn off electric power before servicing this component.

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



The air outlet louver can be redirected to blow air either straight up or at an angle into the room. To change the airflow direction, remove the front panel, and the two screws on either side of the louver. Reverse ends of louver and refasten.

10 Startup Checklist

NOTE: Units are to be installed and checked for proper function by qualified service personnel **ONLY**.

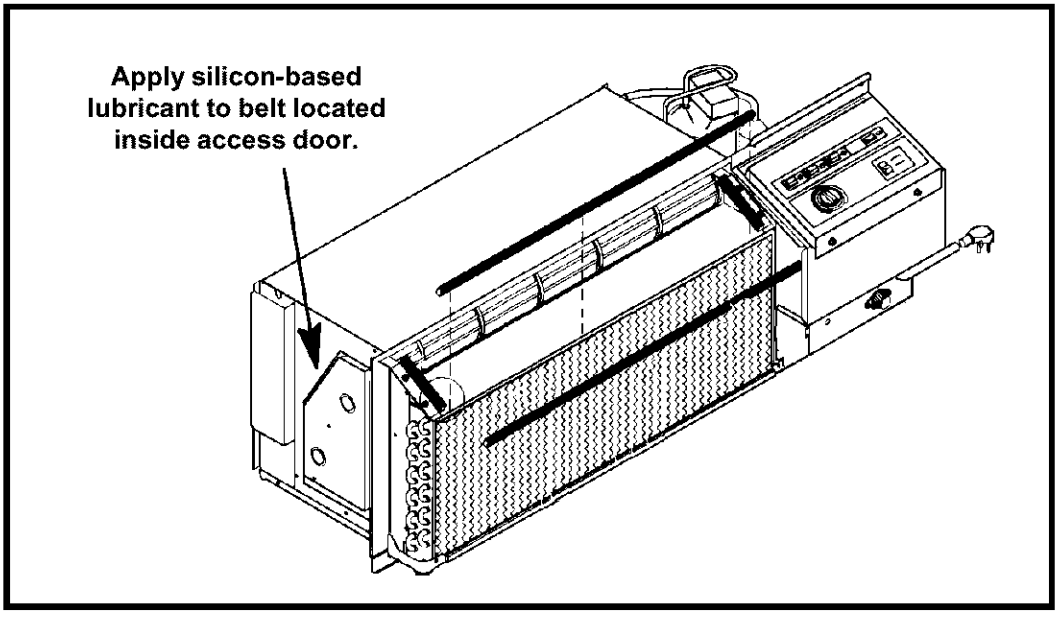
Check the following:

- √ Unit is installed in compliance with all codes and ordinances.
- √ Circuit breakers and wire sizes are correct.
- √ Filter is clean and in place.
- √ All panels are in place.
- √ Condenser air inlet and outlet free of obstructions.
- √ Work area clean and free of debris.
- √ Operate unit 20 minutes.
- √ Controls operation OK.
- √ Owner or operator instructed on control operation and routine maintenance.
- √ Name and phone number of service company attached to unit or noted in telephone directory.
- √ Condensate drain adequate.
- √ Electrical cord is stored properly.

11 Routine Maintenance

NOTE: Fan motor and all bearings are permanently sealed and do not require oiling.

- Keep air intake filter clean. A dirty filter reduces the efficiency of the system and can cause erratic performance of controls. It can also result in damage to the heating element and compressor. The unit is provided with a washable filter that can be cleaned with soap and water. Inspect and clean the filter at least once a month or more often as conditions dictate. Replace as necessary with a factory approved filter. To replace, slide it up and out through the front cover immediately in front of the discharge grille opening.
- Do **NOT** block off outside air flow. Efficient operation of the unit depends on free circulation of air over the indoor and outdoor coils. Paper, leaves and other debris can reduce efficiency and cause serious damage to the compressor.
- Coils should be inspected periodically for buildup of lint, dirt, leaves, other debris and bent fins. Clean coils with a soft brush and compressed air or vacuum. Do **NOT** use sharp objects to clean coils.
- Do **NOT** operate unit with front panel removed or without filter.
- Ensure that objects such as drapes, furniture, or plants are not blocking free air flow of unit.
- Keep doors and windows closed. Leaving them open will increase the work load on the unit and will result in higher operating cost and excessive condensate.
- Do **NOT** operate the unit during construction. Construction dust can clog filter and cause permanent damage to other components.
- Apply silicon based lubricant to the belt drive system as needed. **DO NOT USE ANY SOLVENT BASED LUBRICANTS SUCH AS WD-40™.**



Appendix A: Selection, Wiring & Installation of Remote Thermostat

1. Remote Thermostat Selection & Wiring Guidelines for Packaged Terminal Air Conditioners

Follow the instructions and recommendations of the thermostat manufacturer for installation and wiring. We do not recommend a conventional heat pump thermostat with emergency electric heat selection for our heat pump units. Our units make an automatic decision about turning on emergency heat if the heating demand cannot be met by the heat pump.

A. Manual Changeover Thermostat

A single stage heat/cool thermostat with a terminal for heat damper operation is required. The recommended thermostat/subbase is the Honeywell T-87F/Q539J. You can also substitute a thermostat with single stage cooling and dual stages of heating.

Honeywell Thermostat Terminal Designation:

TERMINAL LETTER	OPERATION	CONTACT MADE
Y	Cooling	During call for cooling.
W	Heating	During call for heating.
G	Fan	Continuous if the slider is in the "Fan" position, otherwise, intermittent.
R	24V common to the thermostat	Makes contact thru the thermostat when a call for heating, cooling or fan is made.
B	Heat Damper	Made continuously during call for heating.
W2	Stage 2 Heating	Made if stage 1 (W) cannot handle the heating load by itself.

Wiring:
Wire as follows:

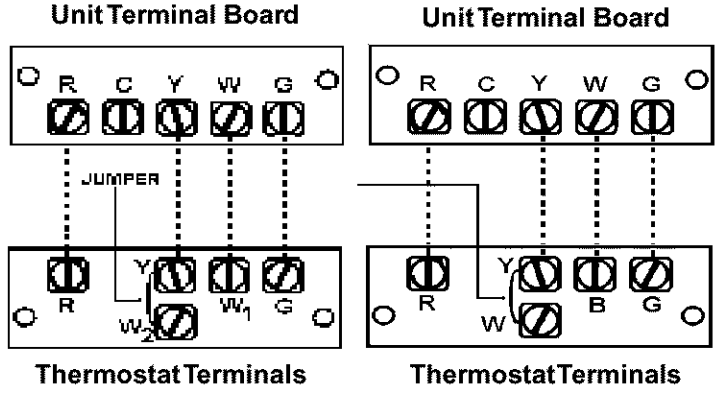
THERMOSTAT TERMINAL	JUMPER	WIRE TO PTAC TERMINAL
W & Y	Yes	N/A
Y	N/A	Y
B	N/A	W
R	N/A	R
G	N/A	G

Manual Changeover Thermostat

Single Stage Cooling/Heating with Heat Damper Terminal

If using a thermostat with single cooling and dual heating stages, install a jumper between the stage 2 heating terminal (W2 on Honeywell) & the cooling terminal (Y on the Honeywell), and wire to terminal "Y" on the Unit Terminal Board.

Wire stage 1 heating (W1 on Honeywell) to terminal "W" on the Unit Terminal Board. The remainder of the wiring is as shown.

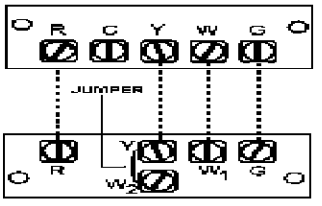


B. Auto Changeover Thermostat

A single stage thermostat with dual stages of heating and auto changeover is needed. The recommended Thermostat/ Subbase combination is the Honeywell T-874C/ Q 674E.

Thermostat Terminal	Jumper	Wire to PTAC Terminal
Y & W2	YES	N/A
Y	N/A	Y
W1	N/A	W
R	N/A	R
G	N/A	G

Unit Terminal Board

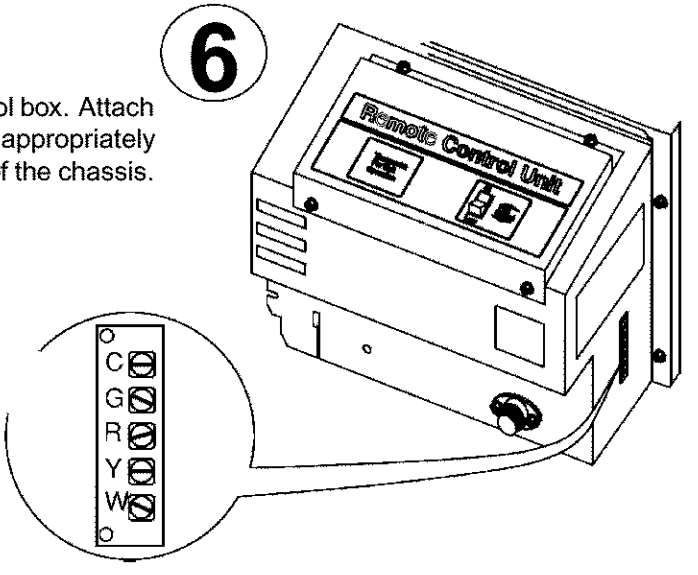


Thermostat Terminals

2. Installation

Follow Steps 1 through 5 (pages 4 and 5), then:

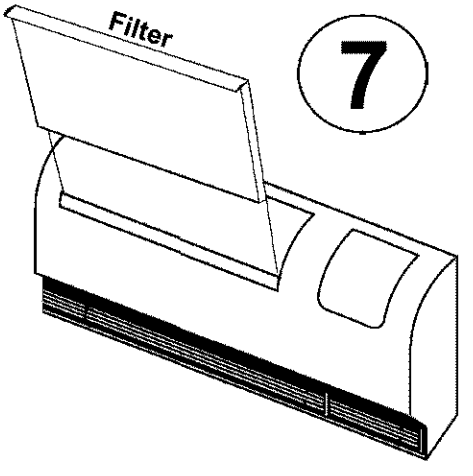
6. Locate the terminal strip on the right side of the control box. Attach the thermostat subbase wires (field supplied) to the appropriately labeled terminals as per wiring diagram on the side of the chassis.



> **NOTE:** No connections are made to the "C" Terminal when one of the manufacturer's thermostat subbases is used.

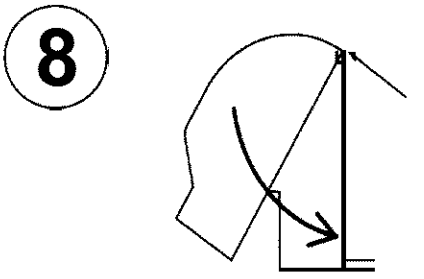
Carefully route the wires alongside the conduit or service cord. Attach the other end of the wires to the appropriate terminals on the thermostat subbase. See thermostat directions for proper wiring and mounting of thermostat.

7. If the filter is not in place, install as shown.

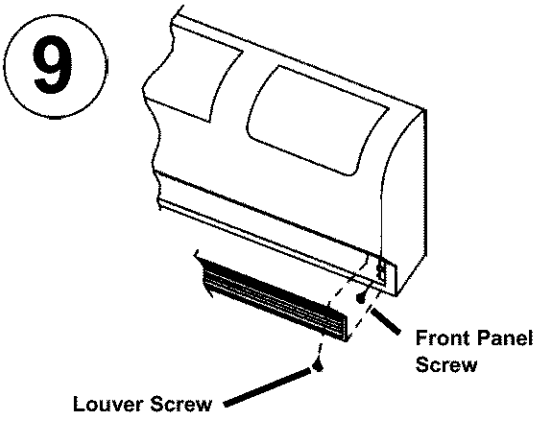


Appendix A (Continued)

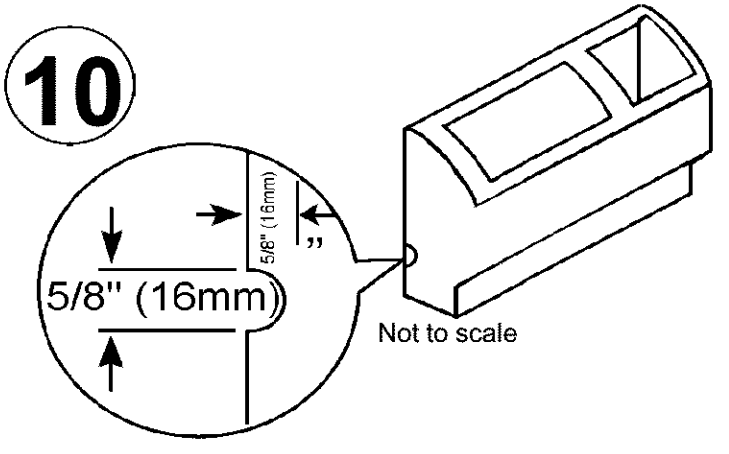
8. Install the front panel by placing the top of the panel onto the brackets at the top of the chassis. Rotate the bottom into place while locating the service cord (or conduit) in the notch at the bottom or sides of the front panel.



9. Secure the panel to the chassis with two #10 x 3/4" screws (provided). Attach the bottom return air louver to the front panel. The louver snaps into place. The louver can be secured in place with two #10 x 3/4" screws provided (optional).



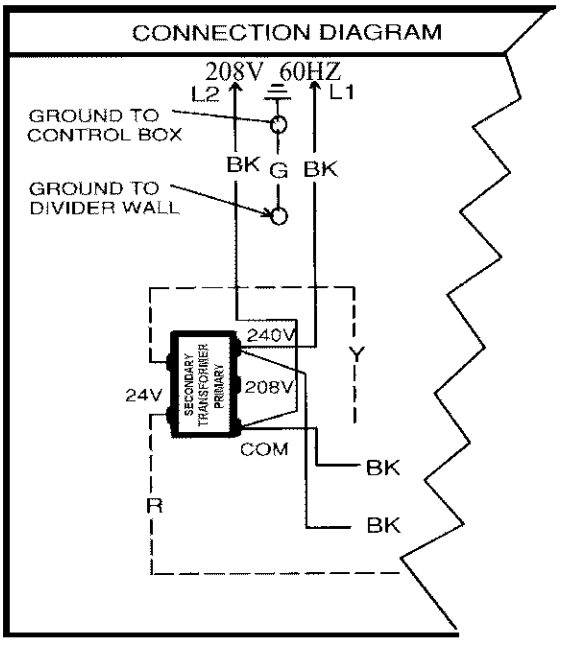
NOTE: If the unit is mounted flush to the floor, the service cord **MUST** be rerouted through the side of the front panel closest to the receptacle. A notch **MUST** be made in the front panel side where the cord exits the unit. It is the responsibility of the installer to create an exit notch. See the diagram for suggested opening size and placement.



10. For 230/208 volt units, plug the cord (if applicable) into an appropriate receptacle. For 265 volt units see Appendix C on page 17. The extra cord may be coiled inside the front panel behind the return air louver. Restore power to the unit.

Appendix A (Continued)

Remote Thermostat 208V Operation



CAUTION

If the supply voltage is 208V, the low voltage transformer **MUST** be wired for 208V operation. Failure to do so will result in lower control voltages to the unit and can damage low voltage components.

The simplified connection diagram at left shows the factory configured wiring set for 240V operation. If you are going to use 208V exclusively, switch the two (2) black wires on the 240V post of the primary side of the transformer to the 208V post. This will ensure correct secondary (low) voltages for the unit. This is only required on the remote thermostat units.

Remote Thermostat Unit Operation

These units are controlled by the use of a remote thermostat that will cycle the unit to maintain desired room temperature. See thermostat operating manual for details.

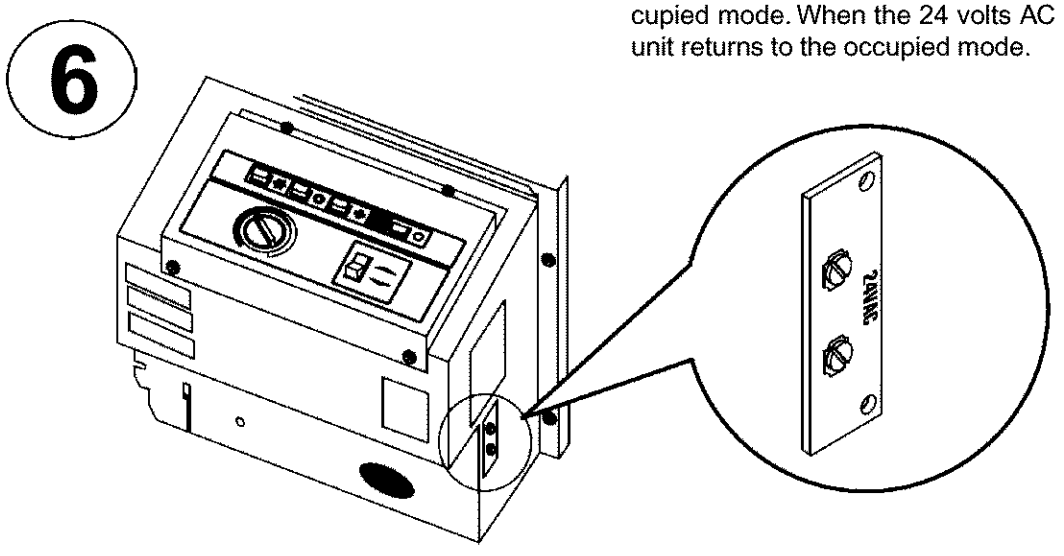
The fan speed switch on the control panel is independent of the thermostat and controls the fan speed. If you wish high speed fan operation, set switch to high. For low

Switch Operation	
Control	**Operation**
Fan Speed	**Selects high speed or low speed**

Appendix B: Installation of Central Desk Control

Follow steps 1 through 5 (pages 4 and 5), then:

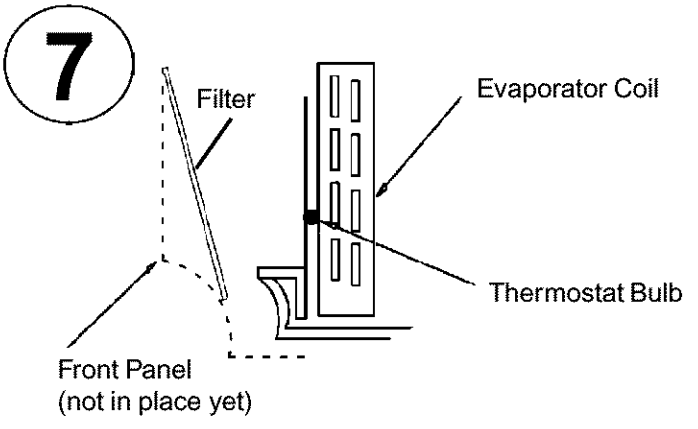
6. Attach two wires from the central desk control to the terminal board on the right side of the control box. The central desk control must provide 24 volts AC to this terminal board in order to switch the unit to the unoccupied mode. When the 24 volts AC is turned off, the unit returns to the occupied mode.

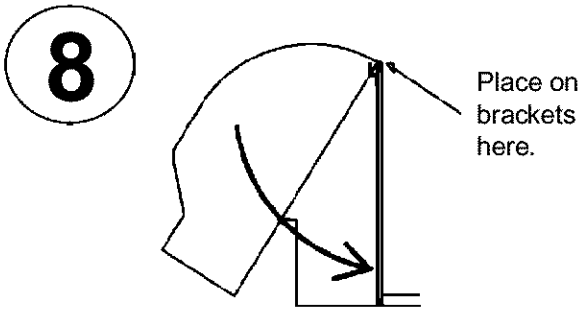


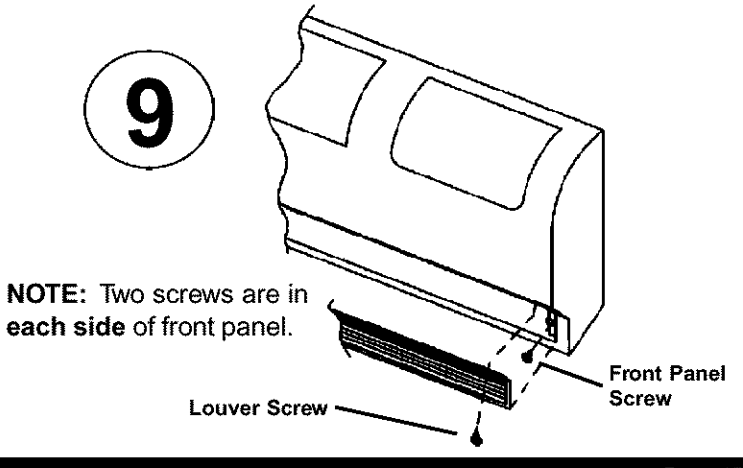
7. If filter is not in place, locate and place as shown.

8. Install the front panel by placing the top of the panel onto the brackets at top of the chassis. Rotate the bottom into place while locating the service cord (or conduit) in the notch at the bottom or sides of the front panel.

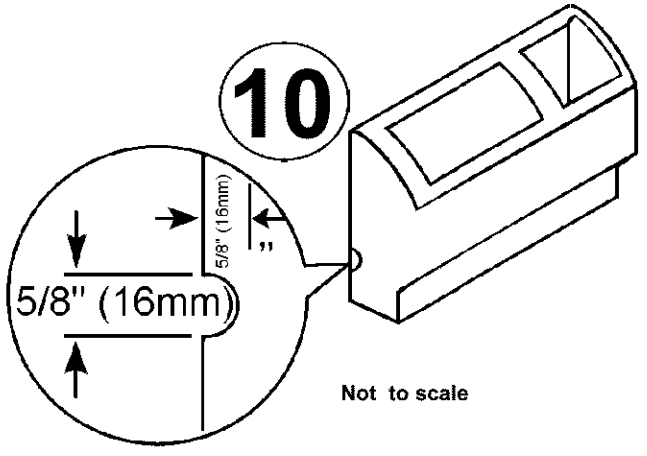
9. Secure the panel to the chassis with two #10 x 3/4" screws (provided). Attach the bottom return air louver to the front panel. The louver can be secured in place with two #10 x 3/4" screws provided (optional).







Appendix B (Continued)



Not to scale

NOTE: If the unit is mounted flush to the floor, the service cord **MUST** be rerouted through the side of the front panel closest to the receptacle. A notch **MUST** be made in the front panel side where the cord exits the unit. It is the responsibility of the installer to create an exit notch. See diagram for suggested opening size and placement.

10. Plug the cord (if applicable) into the appropriate receptacle. Extra cord may be coiled inside front panel behind the return air louver. Restore power to the unit.

Central Desk Control Operation

Units equipped with Central Desk Control are identical in operation with non-Central Desk Control models, except in the "Unoccupied Mode" when all functions are disabled.

All conditions are with 24V power **ON** at Central Desk Control terminal board.

IMPORTANT: Even if Central Desk Control is energized, the low temperature sensor will not allow the temperature in the room to fall below 43° F. If the temperature falls below 43° F, heat will come on until room temperature reaches 58° F.

Appendix B (Continued)

Central Desk Control Low Voltage Wiring Specifications

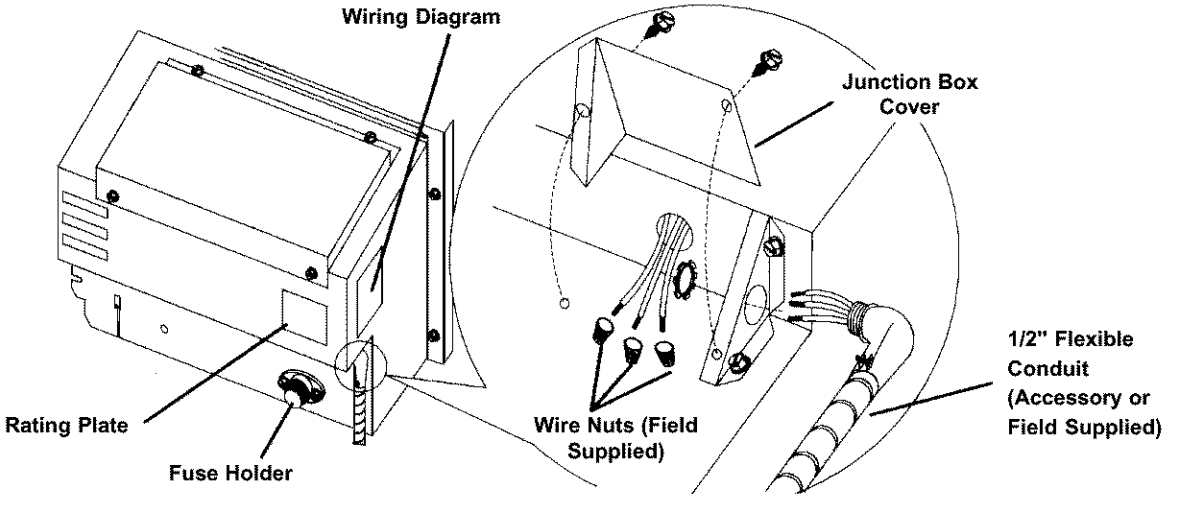
Length of Run	Total Length	Wire Gauge
400 feet (120 m)	800 feet (240 m)	22
550 feet (155 m)	1100 feet (330 m)	20
1000 feet (300 m)	2000 feet (600 m)	18
1500 feet (450 m)	3000 feet (900 m)	16
2400 feet (730 m)	4800 feet (1440 m)	14

NOTE: The following points are the **MINIMUM** requirements needed to operate remote PTACS safely and within design specifications.

1. Central Desk Control panel switches and transformers are field supplied. Switches should be SPST, minimum rating of 0.5 amps inductive at 24 volts.
2. Units will not operate with switches closed. 24V supplied to the unit will **DISABLE** unit. **See chart at left.**
3. Minimum VA rating of transformer is 9.8 VA per unit. (9.8 X # of units determine total VA needed for entire installation).
4. Low voltage transformer is limited to max VA per NEC 725-31. This may require multiple transformers for large installations.
5. Consult the table at left for minimum wire gauges needed for any given low voltage wire run.

Appendix C - Electrical Wiring Options For All 265V Models

265 volt units come shipped with a junction box under the control box. Remove the junction box cover and attach a 90° electrical elbow and a 1/2" flexible conduit (separate accessory or field supplied). If not already in place, route the conduit down through the floor taking care that hole in the floor is located directly below the notch in front panel. Make appropriate electrical connections within the junction box, and reattach the junction box cover to the control box.



NOTE: When installing a flush-floor mounted unit with conduit, make provisions to allow conduit to be removed in case of future service needs to chassis.

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WALLMASTER® PACKAGED TERMINAL PRODUCTS (T Series)

AIR CONDITIONERS AND HEAT PUMPS

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

In the event your unit needs servicing, contact your nearest authorized service center. When requesting service, please have the model and serial number from your unit readily available. 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.

Unless specified otherwise herein, the following applies:

PACKAGED TERMINAL AIR CONDITIONERS AND HEAT PUMPS

LIMITED WARRANTY — FIRST YEAR (Eighteen (18) months from original date of purchase or twelve (12) months from installation). Any defect in the unit's materials or workmanship will be repaired or replaced free of charge by our authorized service center during normal working hours; and

LIMITED WARRANTY — SECOND THROUGH FIFTH YEAR (Sixty-six (66) months from the date of purchase or sixty (60) months from the date of installation, whichever comes first) ON THE SEALED REFRIGERATION SYSTEM AND THE FLEX-DRIVE ® SYSTEM. Any part of the sealed refrigeration system, for the T Series, and the Flex-Drive® System that is defective in material or workmanship will be repaired or replaced 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 interconnecting tubing. The Flex-Drive System® consists of the polyurethane belt and the blower pulleys.

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.

Reasonable proof must be presented to establish the original purchase date, 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. If the unit's normal use is for personal, family or household purposes, then freight and/or handling charges associated with the repair and replacement pursuant to this warranty will be our responsibility.

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 inaccessible locations, and/or (e) correct improper installations.

2. Parts or labor provided by anyone other than an authorized service center.

3. Damages 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 other 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 other than a "Seacoast Protected" unit in a coastal environment, (f) using an incorrect power source, (g) 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 not implied condition of fitness for a particular use or purpose. We make no express 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 the exclusion or limitation of incidental or consequential damages or 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 questions regarding the provisions of this warranty, the English version will govern.

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