

# Owner's Information

**NORDYNE**  
manufacturer of  
**INTERTHERM**  
**INTENTHERM**  
and  
**MILLER**  
products

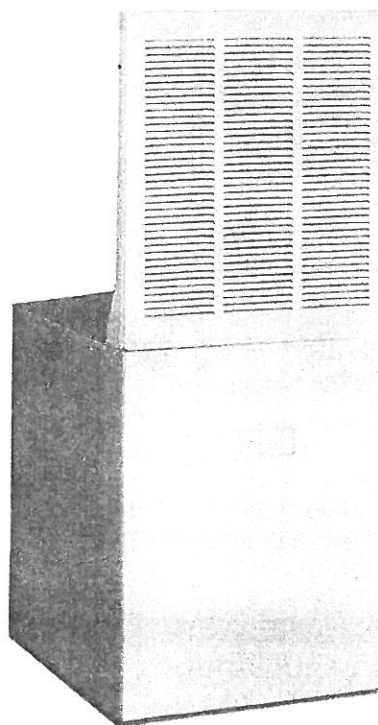
## E1 Series

### Electric Furnace

(Air Conditioner/Heat Pump Air Handler)



*"Take it from me, Willard Scott, America's Weatherman. Follow these instructions and you'll get really great comfort from your NORDYNE equipment."*



## IMPORTANT

Read this owner information to become familiar with the capabilities and use of your heating appliance. Keep this with literature on other appliances where you have easy access to it in the future. If a problem occurs, check the instructions and follow recommendations given. If these suggestions don't eliminate your problem, call the appropriate NORDYNE distributor. A distributor service list is included for your convenience.

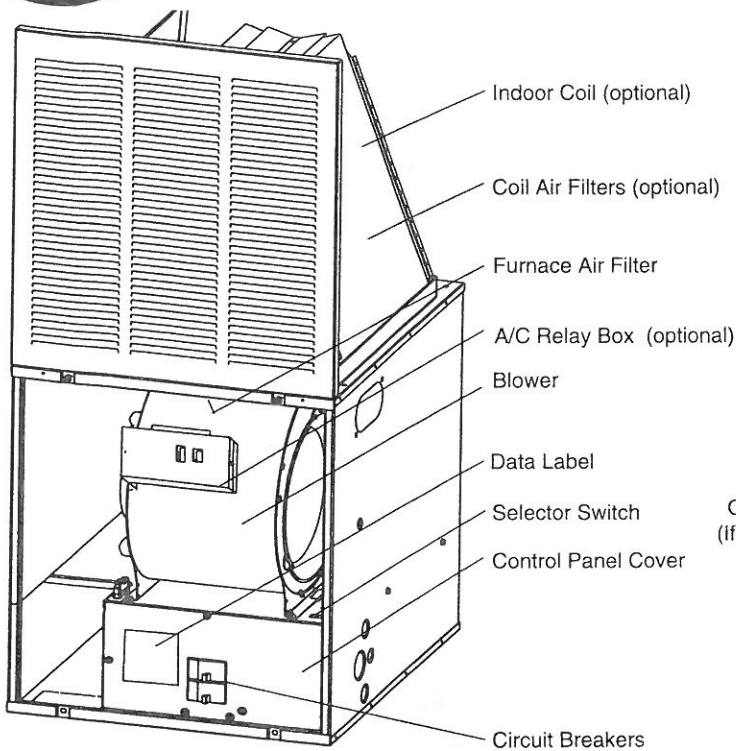
## WARNING:

Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance. Improper installation, adjustment, alteration, service, or maintenance can cause injury, property damage, or death. Refer to this manual. For assistance or additional information consult a qualified installer or service agency. To avoid personal injury or property damage, ask a service technician to inspect the furnace and to replace any part of the control system which has been under water.

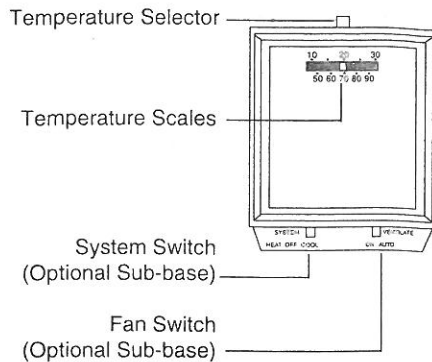


*"Identification of parts you need to know about in order to secure optimum performance from this appliance"*

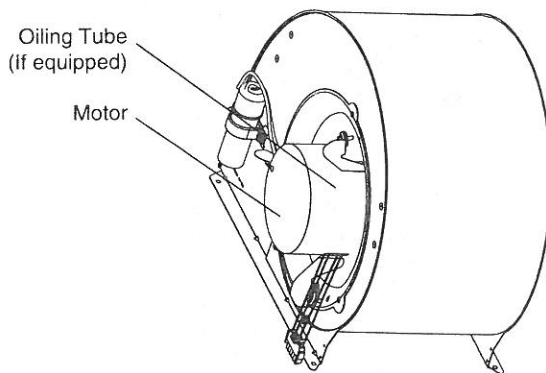
— Willard Scott



**Item 1. Electric Furnace**  
(shown with optional equipment)



**Item 2. RS Type Thermostat**



**Item 3. Blower**

**Figure 1. Furnace Parts Identification**

## OPERATING INSTRUCTIONS

**Before Operating the System** (see Figure 1) **be certain that:**

1. The control panel cover is closed.
2. The blower and the relay control plugs are plugged in.
3. The fan switch is set to the "AUTO" position.

### **! CAUTION:**

**No user servicable parts inside control panel. DO NOT OPEN.**

4. The circuit breakers are in the "ON" position.
5. All power supply switches are

"ON" for the outdoor unit and for the furnace.

6. The furnace door is closed and properly latched.

Refer to the Owner's Manual supplied with the optional heat pump or air conditioner section for further information.

### **! CAUTION:**

**For optional A/C or H/P systems, always wait at least five minutes after the system shuts off before re-starting the system. Observe this procedure when operating the system per the following instructions.**

### **To Operate in the Cooling Mode:**

The Fan On/Fan Off and Heat/Off/Cool Switches are located either on your thermostat (if supplied with a sub-base) or on the A/C Relay Box which is part of your furnace.

1. Set the fan switch to "AUTO".
2. Set the system switch to "COOL".
3. Set the thermostat temperature selector to the desired comfort level.
4. Refer to the thermostat literature in your home owner's envelope for additional thermostat information.

### **To Operate in the Heating Mode:**

1. Set the fan switch to "AUTO".
2. Set the system switch to "HEAT".

3. Set the thermostat temperature selector switch to the desired comfort level.

**Note:** Allow a minimum of one hour for the room temperature to stabilize before making a second adjustment to the thermostat setting. **Once the desired comfort level has been established make only small adjustments to the thermostat setting to meet changing temperature conditions.**

## TO MAINTAIN YOUR FURNACE

### **WARNING:**

**To prevent hazard of electrical shock and injury from moving parts, be certain the thermostat is off and the furnace circuit breaker(s) are in the "OFF" position before servicing. Close and properly latch the outer door after doing the following recommended maintenance.**

#### Regularly:

1. Remove the furnace air filter (see Figure 1) and vacuum clean. Return the filter (mat side down) to the original position.

## BEFORE CALLING A SERVICEMAN

1. Be certain the thermostat selector is set above the room temperature for heating or below room temperature for cooling (optional air conditioning or heat pump). If the thermostat is equipped with a "heating/cooling" sub-base, be certain the system switch (see Figure 1, Item 2) is set to "HEAT" for furnace operation, or set to "COOL" for optional air conditioning operation.
2. Check the main household service panel to see if the appropriate circuit

**Note:** If a coil is installed the furnace filter is not used. Remove coil filters, wash, and allow to dry. Re-install the coil filters to their original positions.

2. Vacuum or wipe clean the interior of the furnace cabinet.
3. Clean all lint and dust from around the furnace.

#### Every Six Months:

1. Vacuum or wipe clean any dust or lint on the blower motor.
2. Oil the blower motor (if equipped with oil tubes) with ten drops SAE No. 20 motor oil (see Figure 1, Item 3).
3. Do not over oil.

#### Before Each Heating Season:

1. Remove and thoroughly wash the air filter(s). Allow the filter(s) to dry and then return them to the original position.

**Note:** The furnace air filter must be installed mat side down.

2. Have a qualified serviceman inspect all furnace components and field wiring and clean and service the heating system as needed. **If this furnace was installed with aluminum power supply wiring, have the**

disconnect(s) for the appliance power supply is on.

3. Refer to the instructions ("Before Operating the System") in this manual for pre-operation checks.
4. Refer to the instructions ("Before Each Heating Season") for maintenance procedures regarding recommended service checks.
5. Refer to the owner's manual provided with the optional air conditioner or heat pump (if installed) for service and maintenance.

**serviceman periodically check all connections to prevent possible equipment failure and/or fire hazard.** The homeowner is advised not to perform any service function which requires opening of the furnace control panel cover.

## GENERAL INFORMATION

### For Continuous Blower Operation:

1. Set the selector switch to the "ON" position for summer air circulation only (see Figure 1, Item 1).
2. If the thermostat is equipped with an optional "heating/cooling" sub-base or an A/C relay box (see Figure 1), set the fan switch to "ON".

### To Shut Off System:

1. Set thermostat selector to the lowest temperature setting.
2. For thermostats with an optional sub-base (see Figure 1, Item 2), set the system switch to "OFF". For a system with an A/C relay box set the Heat/Off/Cool Switch to "OFF".

*(continued on next page)*

**Note: All servicing of this heating appliance other than the normal maintenance described in this manual must be done by authorized trained service personnel. The home owner should not open the control panel cover (see Figure 1, Item 1) at any time.**

Please specify the complete Model and Serial Numbers shown on the furnace (see Figure 1) for all warranty service and when ordering replacement parts or optional equipment. Refer to the replacement parts list provided with the furnace for part numbers.

### To Balance the Air Distribution:

1. On a typical day, set the thermostat selector to the desired comfort level and operate the system for several hours with all air registers open.
2. With the system on, check the temperature in all rooms.
3. Partially close registers in rooms that are too warm (Heating Mode) or too cool (Cooling Mode) and in rooms that are infrequently occupied.

4. Re-check the room temperature and adjust the registers as needed.

### OPTIONAL AIR CONDITIONING & HEAT PUMP

Your E1-Series Electric Furnace is approved for use with an optional central air conditioner or a heat pump. To adapt this heating appliance to a "total comfort system" contact your nearest NORDYNE distributor.

Optional air conditioners and heat pumps are listed by Underwriters' Laboratories (UL) or Environmental Testing Laboratories (ETL) and certified by ARI and the Canadian Standards Association (CSA), or Warnock Hersey or ETLC. These cooling systems include energy-saving components to provide maximum cooling performance at electrical energy usage levels established by federal standards. Refer to the operation instruction label on your furnace for the optional air conditioning equipment approved for your heating appliance.



## Central Electric Furnace

# Installation Instructions

E1E(-) Series Furnace (Air Conditioner or Heat Pump Air Handler)

**NORDDYNE**

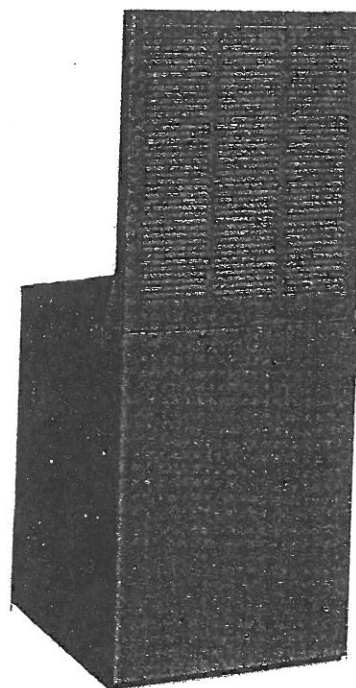
manufacturer of

**INTERTECH**

and

**MILLER**

products



Unit shown with optional grille and frame

These instructions are primarily intended to assist qualified individuals experienced in the proper installation of heating and/or air conditioning appliances. Some local codes require licensed installation/service personnel for this type of equipment. All installations must be in accordance with these instructions and with all applicable national and local codes and standards.

Before beginning the installation, read these instructions thoroughly and follow all warnings and cautions in the instructions and on the unit.

Improper installation, service adjustment, or maintenance can cause explosion, fire, electrical shock or other conditions which may result in personal injury or property damage. Unless otherwise noted in these instructions, only factory authorized kits or accessories may be used when modifying this product.

6. *... ..*

7. *... ..*

8. *... ..*

9. *... ..*

10. *... ..*

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### INTRODUCTION

The E1E(-) Series Electric Furnaces includes E1EH and E1EB models. The E1EH models are equipped with the standard 2-speed blower. Making the E1EB models air conditioning-ready, the furnaces are equipped with the multi-speed (4 speed) blower, the blower relay, and the cabinet insulation kit.

The furnaces are approved for use in mobile, modular, or manufactured homes and single or multistory residential structures. They are approved for downflow and upflow installations as "freestanding" units, closet installations, and alcove installations. All models are approved for "zero" inch clearance to combustible materials and do not require a separate subbase for installations on combustible flooring. Optional plenum connectors and mounting brackets are available for downflow installations.

All models can be easily converted for use with NORDYNE split-system air conditioners and heat pumps.

For typical non-ducted return air downflow applications, installation of an air conditioner or heat pump coil can be accomplished by mounting the coil directly on top of the furnace without adding any sheet metal cavities or cutting and trimming any wood panels.

A return air grille for closet or alcove installations is available. For downflow alcove installations the grille (with frame provided) may be attached to the top of the furnace and all paneling and trim flushed to it. This installation provides an access door for future installation of NORDYNE air conditioning or heat pump coils positioned on top of the furnace.

Power entrance for all models may be through the right side or through the bottom of the unit (when viewing the unit in a downflow position).

### SECTION I - GENERAL INFORMATION

These instructions and specifications are primarily intended to assist qualified individuals experienced in the proper installation of home heating and air conditioning appliances. Some state codes require licensed personnel for the installation and service of this type of equipment. Approved installation, operation, and maintenance of this central heating system appliance must be in accordance with the listed specifications contained in these instructions and other documents supplied with the furnace and/or optional air conditioning equipment. Refer to local authorities having jurisdiction for further information.

#### UNIT CHECKOUT

Before installing this furnace, inspect for possible shipping damage and do the following:

1. File a claim with the transportation company if shipping damage is found.
2. Record the furnace MODEL NUMBER and SERIAL NUMBER (see the furnace data label) for future reference.
3. Read carefully all instructions supplied with optional equipment to be installed with the furnace.

#### FURNACE CODES

Installation and wiring of this furnace, plus the design and construction of the home duct system, must be in accordance with one or more of the following codes: H.U.D. MANUFACTURED HOME CONSTRUCTION AND SAFETY STANDARD (Title 24, Part 3280); American National Standards (ANSI) A119.11, C1-NFPA 7 (National Electrical Code); CANADIAN STANDARDS (C.S.A.) Z240.6.1, and Z240.9.1. All local codes having jurisdiction shall also apply.

## AIR DUCTS

Air ducts should be installed in accordance with the standards of the National Fire Protection Association NFPA 90A and NFPA 90B, these instructions, and all applicable local codes.

1. Materials: Air ducts shall be aluminum, tin plate, galvanized sheet steel, or other approved materials for outlet or return air ducts.
2. Construction: "Snap-Lock" or "Pittsburgh-Lock" seams should be used. All other types of seams shall be made tight to prevent leakage.
3. Sizing: The supply duct system shall be designed for proper air distribution. The static pressure measured external to the furnace shall not exceed the static pressure rating listed on the furnace nameplate.
4. The duct system must be designed so there are no registers or other openings in the duct system directly below the furnace.

## RETURN AIR

Non-ducted return air systems may be used for closet or alcove installations. **However, applicable installation codes may limit the furnace to installation in a single-story residence only. Furnace installations other than closet or alcove require ducted return air systems.** Air return to the furnace must have a minimum free area opening. (See Table 1).

Listing agency(ies)	May vary by model, check the unit data label for applicable agency listing mark.
Approved installation configurations	Approved for: single/multistory residential or mobile/modular structures. Upflow, downflow, (freestanding/closet/alcove)
Accessibility for servicing	Minimum of 18" (46 cm) required in front of unit.
Minimum clearance to combustibles	0" from all surfaces of furnace cabinet, ducts, optional coil housing and plenum connector.
Minimum return air opening required (total free area)	200 in. <sup>2</sup> (1290 cm <sup>2</sup> ) heating only* 235 in. <sup>2</sup> (1516 cm <sup>2</sup> ) A/C or H/P up to 4-ton installed.* 330 in. <sup>2</sup> (2130 cm <sup>2</sup> ) A/C or H/P up to 5 ton installed. *or return air grille assembly p/n 902322.
Return air grille (closet or alcove installation)	Use return air grille and frame assembly P/N 902322- or equivalent. 95 in. <sup>2</sup> (613 cm <sup>2</sup> ) must be added for 5-ton A/C or H/P system.

Table 1. Miscellaneous Listings & Installation Requirements

Acceptable floor or ceiling return air systems for closet installations with return air entering through an opening in the closet floor or ceiling must meet all of the following requirements.

1. The return air opening into the closet, regardless of the location, shall not be sized smaller than the size specified on unit data label.
2. The return air opening, if located in the floor of the closet, shall be provided with means of preventing its inadvertent closure by a flat object placed over the opening.
3. Materials located in the return air duct system must have a flame-spread classification of 200 or less.
4. Noncombustible pans having one-inch upturned flanges shall be located beneath openings in a floor return duct system.
5. Wiring materials located in the return duct system must conform to Article 300-22(c) of the National Electrical Code.
6. Gas piping is not to run in or through the return air duct system.
7. If the return air opening is located below the top of the furnace, a minimum clearance must be provided between the opening and the furnace (see Table 1— Accessibility for servicing).

## CLOSED OFF SPACE

Living space not served by, and closed off from, the return air ducts to the furnace by doors, sliding partitions and other means should be provided with permanent unclosable openings in the doors or partitions to allow air to return to the furnace from all parts of the home. Return air grilles, with a minimum open area of one square inch for every five square feet of living space closed off from the furnace, must be provided in the door or room partition.

## OPTIONAL RETURN AIR GRILLE & FRAME ASSEMBLY #902322-

May be used for non-ducted return air installation. The grille with its support frame mounts directly to the top of

## CAUTION:

The U.S. National Manufactured Home Construction and Safety Standards Act requires the use of components listed or certified by a nationally recognized testing laboratory in all homes subject to that act. Use of other components not tested in combinations with this furnace may violate state codes, create a hazard, damage the equipment and void the warranty.

Electric Furnace Models	E1EH						E1EB					
	010H	012H	015H	017H	020H	023H	010H	012H	015H	017H	020H	023H
Rated Heating Output, Btuh (see note1)	36,500	42,000	53,500	57,500	70,500	76,000	36,500	42,000	53,500	57,500	70,500	76,000
Watts (Total kw, Heating Elements and Blower)	10.4	12.0	15.4	16.6	20.4	22.0	10.4	12.0	15.4	16.6	20.4	22.0
Supply Voltage	240/208 Volts/60Hz/1-Phase											
Heating Elements, No.(Total kw)	2 (10.0)	2 (11.6)	3 (15.0)	3 (16.2)	4 (20.0)	4 (21.6)	2 (10.0)	2 (11.6)	3 (15.0)	3 (16.2)	4 (20.0)	4 (21.6)
Blower:	Wheel Size	10.5" Dia., 7" Wide					10.5" Dia., 7" Wide					
Motor Speeds, H.P. Rating, Amps	2 Speed, 1/4 Hp, 1.5 Amps						4 Speed, 1/3 Hp, 3.0 Amps					
Test ESP, in. w.c. Max	0.3											
Optional Cooling Available with factory installed blower	2.0 - 3.0 ton (see note 3)						2.0 - 4.0 ton					
Optional Heat Pump Available with factory installed blower	2.0 - 3.0 ton (see note 3)				2.0 - 2.5 ton (see note 3)		2.0 - 4.0 ton					
Air Filter (Standard)	16" x 20" x 1" (nominal)											
Furnace Dimensions	Width - 20" Height - 24" ( see note 2) Depth - 24-1/2"											

1. Heating output rated at listed voltage. For outputs at voltages other than 240V, multiply Btuh rating by the following factors: x 0.92 (230V), x 0.84 (220V), x 0.75 (208V)

2. Height is 48" with return air grille installed, 49" with coil housing and 62" with upflow coil/filter housing.

3. The factory installed blower for the E1EH models can be replaced with the multi-speed blower allowing the units to accept up to 4 or 5 tons of air conditioning or heat pump. (See table 3, item 2.) The optional cooling or heat pump availability listed above does not pertain if the factory installed blower has a 9 x 7 wheel.

Table 2. Unit Specifications

the furnace for downflow alcove installations. The grille by itself (without frame) may also be attached to a door or side wall for closet details.

## OPTIONAL AIR CONDITIONING AND HEAT PUMP SYSTEMS

Furnaces can be easily converted for use with NOR-DYNE split-system air conditioning or heat pump units. If installing this furnace with optional air conditioning or heat pump systems, refer to the furnace "Options and Compatibility" label and the installation instructions supplied with each of these optional components.

## OPTIONAL PLENUM CONNECTORS FOR DOWNFLOW SYSTEMS

This system is recommended for heated air distribution using an under-the-floor duct system. Furnaces may be installed on combustible flooring without a separate subbase using of the plenum connectors (ordered separately shown below). Also, the furnace rear mounting plate (supplied with the plenum connectors) is recommended for use with this type of installation (See Figure 2).

## OPTIONAL AUTOMATIC FURNACE DAMPER #901083-

Furnace may (not required) be equipped with the optional automatic damper when a packaged air conditioner is installed and connected to the warm air duct system. This damper prevents cooled air from discharging through the furnace cabinet, causing excessive cooling of the immediate area. Refer to instructions supplied with the damper for details.

Item Number (See Fig. 1)	Description	Model/Part Number
1	Sub-Base "Heat/Cool" Thermostat (Type RS)	624326
2	4-Speed Blower Conversion Kit See Notes: 1 & 6	902805 (4 ton) 902776 (5 ton)
3	A.C./H.P. Relay Control Box (not req'd on E1EB models)	902798
4	A/C Relay Control Box (2-Wire System)	902797
5	Cabinet Insulation Kit See Notes: 2 & 6	902807
6	"A"-Coil Conversion Kit See Note: 3	913221 913222 See Note: 7
7	"FE" Coil Cabinet See Note: 4	912228
8	Up-Flow Coil/Filter Cabinet See Note: 5	912229
9	S1, S2, S3-Series Air Conditioner Outdoor Sections	-024, -030, -036,
10	C1, C3-Series A/C and H/P Indoor Coils	-042, -046, -048,
11	T1, T2, T3-Series Heat Pump Outdoor Sections	-047, -054 (C3 only)
12	Return Air Grille and Frame Assembly	902322

### Notes:

- 1) For A/C and H/P use.
- 2) For A/C or H/P (coil at inlet) installations.
- 3) Includes coil filters.
- 4) For up-flow A/C (coil at discharge) installations. Also for down-flow A/C or H/P (coil at inlet) applications with ducted return.
- 5) For up-flow (coil at inlet) A/C or H/P installations (includes filters).
- 6) 902805 (4 ton) is standard in E1EB models.
- 7) 913222- for C1/C3 series 048 models only.

Table 3. Optional Air Conditioning and Heat Pump Equipment



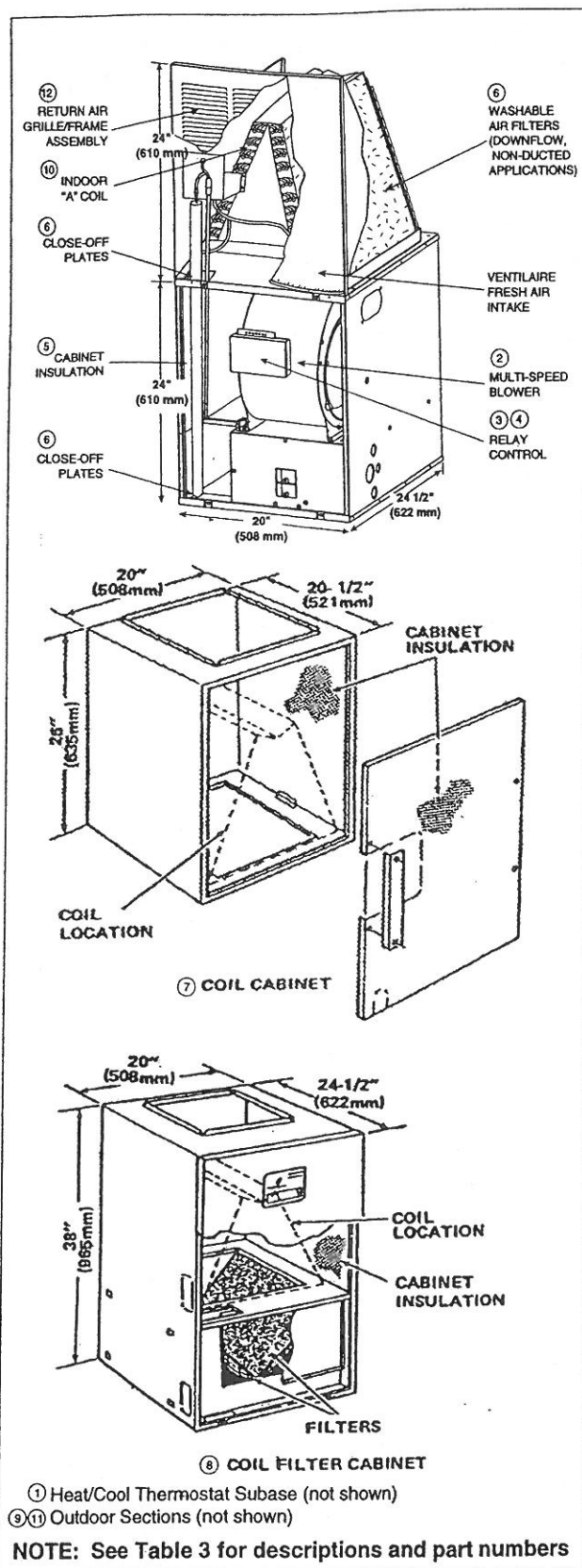


Figure 1. Optional Accessories

## OPTIONAL VENTILAIRE® FRESH AIR INTAKE ASSEMBLY

NORDYNE's VentilAire® fresh air intake assembly provides conditioned fresh air for moisture and odor control. Refer to instructions supplied with the assembly for details.

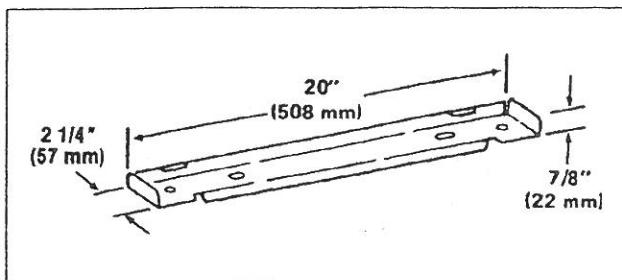


Figure 2. Optional Rear Mounting Plate (P/N 356850-)

## MULTI-SPEED BLOWER CONVERSION PACKAGE: p/n 902805 (4 ton) or p/n 902776 (5 ton)

The blower package p/n 902805 is capable of handling up to 48,000 Btuh from nominal air conditioning or heat pump systems. The blower package p/n 902776 is capable of handling up to 60,000 Btuh from nominal air conditioning or heat pump systems.

## INSTALLATION

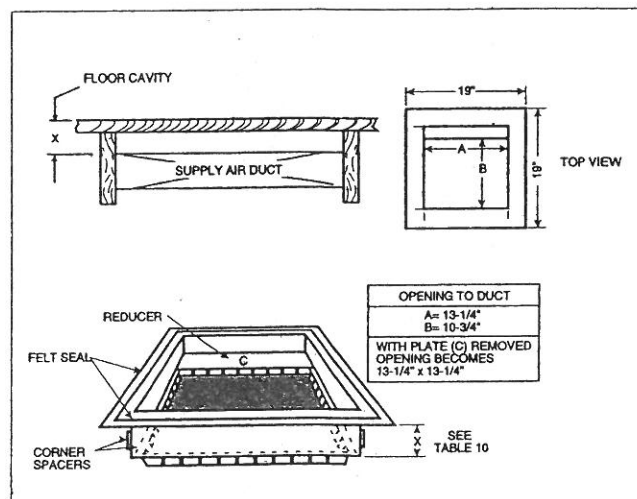
1. Turn off all electrical supply circuits to the furnace at the main service panel.
2. Remove the furnace front door and switch the furnace circuit breaker(s) to the OFF position.
3. Disconnect the 6-pin in-line motor plug from the control panel receptacle.
4. Remove the two screws at the front of the blower housing then slide the blower forward and remove it from the furnace.
5. Install the cabinet insulation kit (where required). See Table 1.
6. Slide the new blower into the furnace in the same manner as the original blower was removed. Be sure the blower mounting plate flanges engage with the tabs at both sides and at the rear.
7. Install the air conditioning or heat pump relay control kit (where required). See Table 1. See the installation instructions supplied with the individual kits for the details of installation, wiring and blower speed selection procedures.
8. Replace the two screws which were removed in Step 4.
9. Switch the circuit breaker(s) to the ON position and reinstall the furnace front door. Turn on the furnace supply circuit(s).

2. Remove the plenum connector and cut out the duct opening slightly larger than the area marked.
3. If using the optional rear mounting plate (supplied with the plenum connector), install it to the back edge of the floor opening now (see Figure 5). Reinstall the plenum connector into the floor opening.
4. Secure the plenum connector to the floor with two flat-head screws or nails at the dimpled locations (see Figure 6).
5. Secure the connector to the duct by bending the bottom tabs under and up against the duct surfaces as shown in Figure 7.

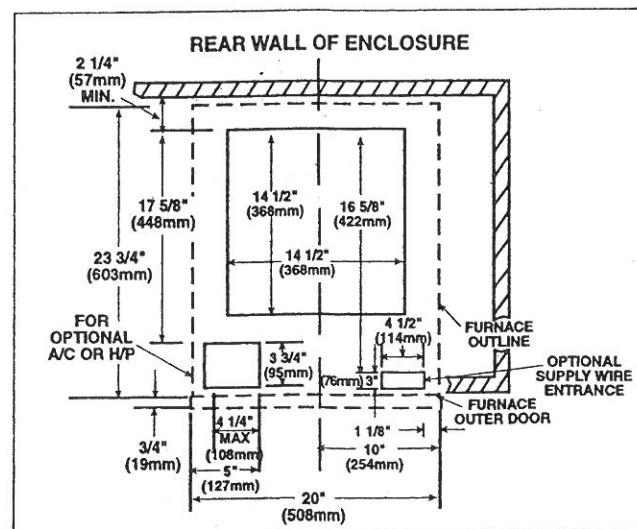
Table 4.

## Install Plenum Connector

- NOTE:** The plenum connector is designed for use on ducts down to 12" width. When used on 12" wide ducts,



### Figure 3. Plenum Connector Selection



**Figure 4. Floor Cutout Locations**

there may be insufficient clearance to bend the tabs on two sides of the plenum connector. In such cases, the tabs may be attached to the sides of the duct (one on each side) by using sheet metal screws or other suitable fasteners, (see Figure 8). When tape is used to provide an air seal, it should be a type approved by any applicable national or local codes.

### Alternate Attachment Methods

This procedure may also be used to install a furnace plenum connector to narrow metal ductwork where insufficient clearance prevents bending of the plenum connector tabs at the side(s) of the duct (see Fig. 9).

1. Score and cut the top of the metal duct as indicated in Step 1 or Step 2. With the Step 1 choice, also cut

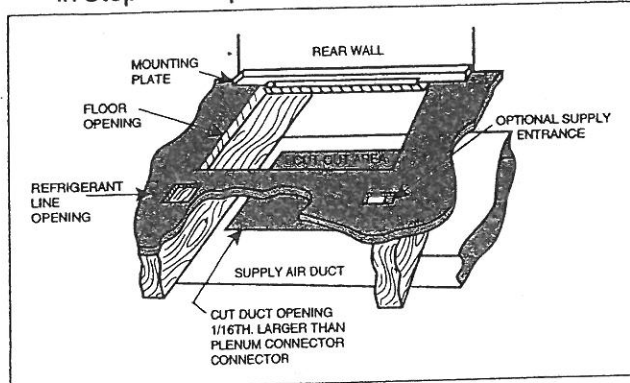


Figure 5. Rear Mounting Plate

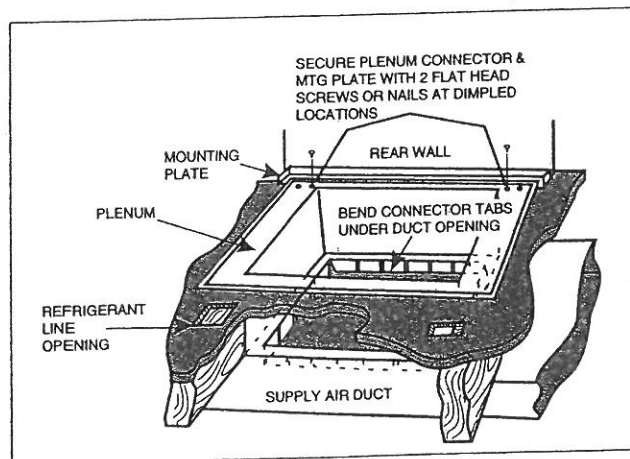


Figure 6. Plenum Connector

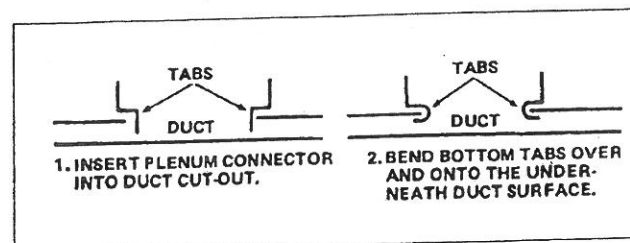


Figure 7. Installation for Plenum Connector

2. Fold the duct flap "B" up, (See Step 3).
3. At the front-to-back of duct run (Area "A"), bend the plenum tabs and secure them directly to the duct.
4. At area "B", bend the plenum tabs up and back over, around the plenum connector (see Step 3).
5. Fold/form the duct flap against the side of the plenum connector and attach as shown, (See Step 4). Use three (3) staples (minimum) on each duct flap OR, if a 2X block/joist is not provided, use two (2) sheet metal screws (minimum) on each duct flap.
6. Tape the duct flap edges with an approved tape for a leak-free joint.

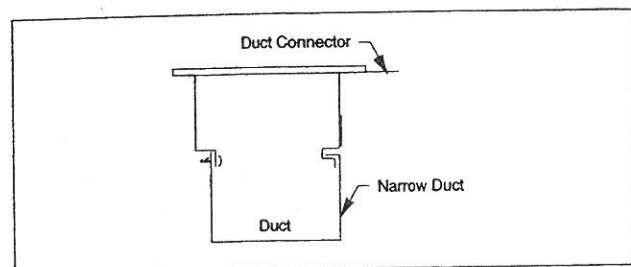


Figure 8. Alternate Optional Plenum Connector Installation

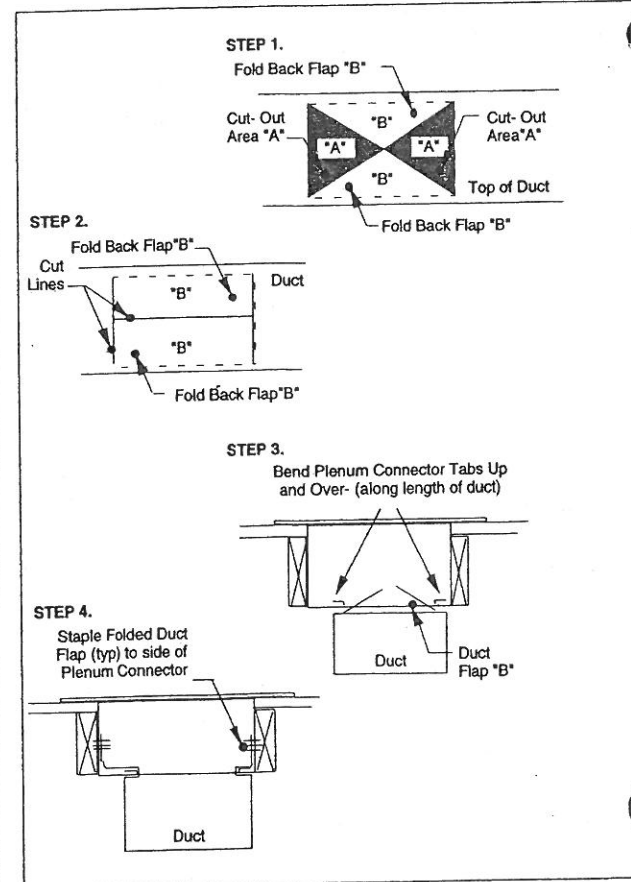


Figure 9. Alternate Plenum Connector Installation

## RETURN AIR PROCEDURES FOR DOWNFLOW INSTALLATIONS

Furnaces may be installed with ducted or non-ducted return air.

For non-ducted systems, the optional grille and frame assembly is recommended. See Figures 10, 11 and 12. For ducted systems with air conditioners or heat pumps, provide an access panel in the duct or use the optional coil cabinet.

NOTE: Refer to the instructions supplied with coil cabinet for installation details.

### A. Alcove Installation

1. Cut the alcove opening to the dimensions shown in Figure 11.
2. Install the grille support frame on top of the furnace and attach it with four sheet metal screws (provided) into pre-punched holes. See Figure 10.
3. Attach the return air grille to the frame assembly by hooking the grille over the flange on top of the frame and into the channel on the bottom.

### B. Closet Installation

1. For closet installations, the return air grille mounting frame is not used since the furnace is located inside the closet. See Figure 12.
2. Locate the opening in the desired position. (Preferably above the top of the furnace). Refer to Table 1 for return air opening requirements.
3. Cut the opening in the closet door as shown in Figure 12. Knock out four holes in the return air grille and insert four wood screws, securing the grille to the door.

## RETURN AIR FILTERS METHODS

- A. For installations **without** an air conditioning or heat pump coil, use the filter supplied with the furnace. Be sure the filter is installed "matt side down" between the support assembly and the furnace top. See Figure 10.
- B. For installations **with** an air conditioning or heat pump coil, the filter supplied with the furnace is not used. REMOVE AND DISCARD THE FILTER AND ITS SUPPORT ASSEMBLY.

1. For non-ducted returns, use the optional coil filters.

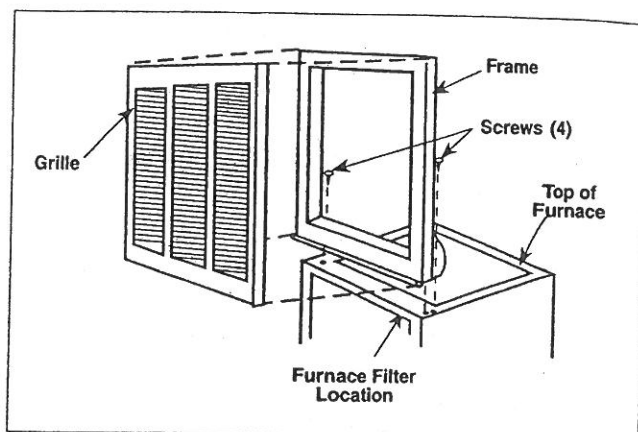


Figure 10.  
Grille Support Frame and Grille Assembly

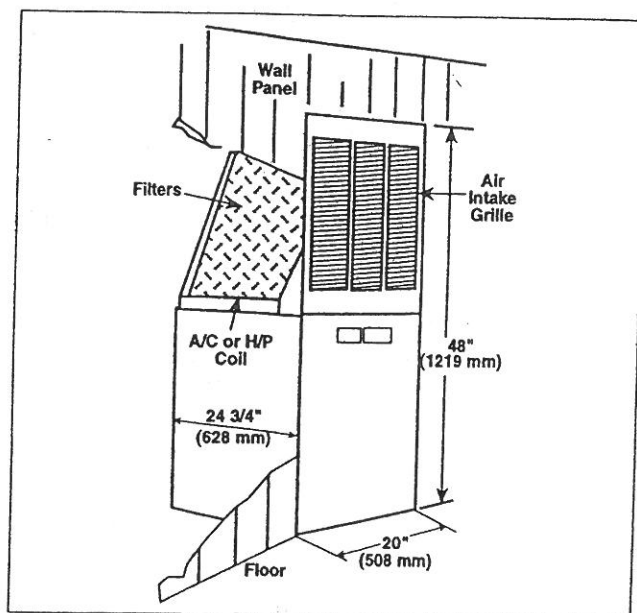


Figure 11. Typical Alcove Installation

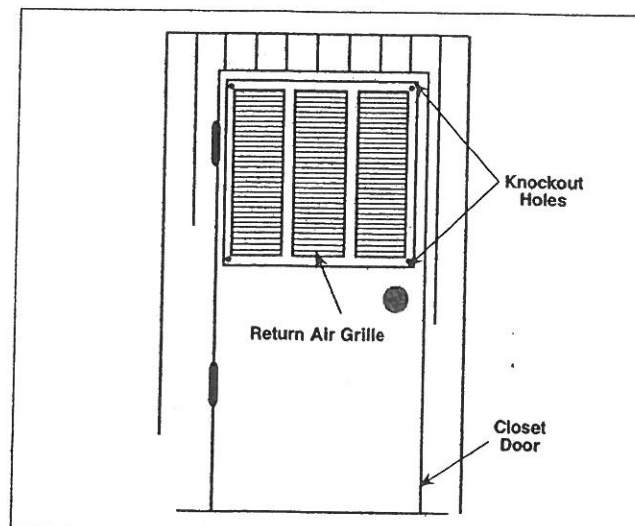


Figure 12. Typical Closet Installation







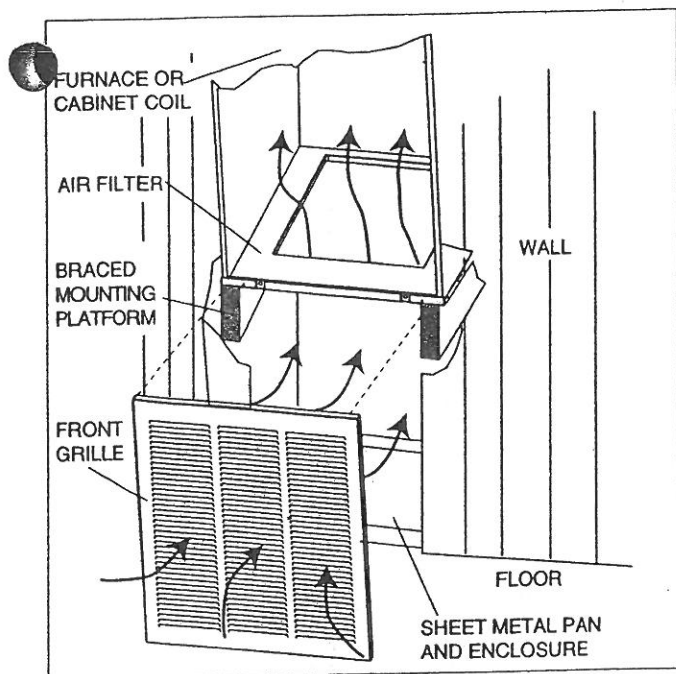


Figure 15. Over-the-Floor Return Air System

## INSTALL FURNACE

- Install the 240 volt supply circuit(s) and 24 volt wiring to the closet or alcove on the same side of furnace as knockouts (right side or bottom for downflow installations and left side for upflow installations).
- Remove the refrigerant line knockouts in the furnace **only** when installing the indoor coil of an air conditioning or heat pump system. Refer to the instructions supplied with accessory equipment.
- Remove the unit front door and set the furnace in position.
- For mobile/modular homes the furnace must

be secured to avoid movement during transport.

- (1). For installations using the optional rear mounting plate, slide the unit back until the bottom slots in the rear of the unit engage with both tabs of the mounting plate.

If the mounting plate is not used, secure the rear of the unit to the floor or wall with two 3/4" screws at the mounting holes provided.

- (2). Secure the front of the unit with two 3/4" screws at the mounting holes provided.

e. Refer to Section IV for furnace wiring instructions.

**NOTE:** Only the Air Conditioner/Heat Pump relay control is recommended for upflow installation.

## SECTION IV - ELECTRICAL

### ! WARNING:

To avoid the risk of electrical shock, personal injury or death, disconnect all electrical power to the unit before performing any maintenance or service. The unit may have more than one electrical power supply.

## GENERAL INFORMATION

The wiring, installation, and electrical hookup of this furnace must comply with the National Electrical Code (or the Canadian Electrical Code), and all regulations of local authorities having jurisdiction.

## SINGLE CIRCUIT KIT

-010 model is factory wired for a single branch supply circuit only.

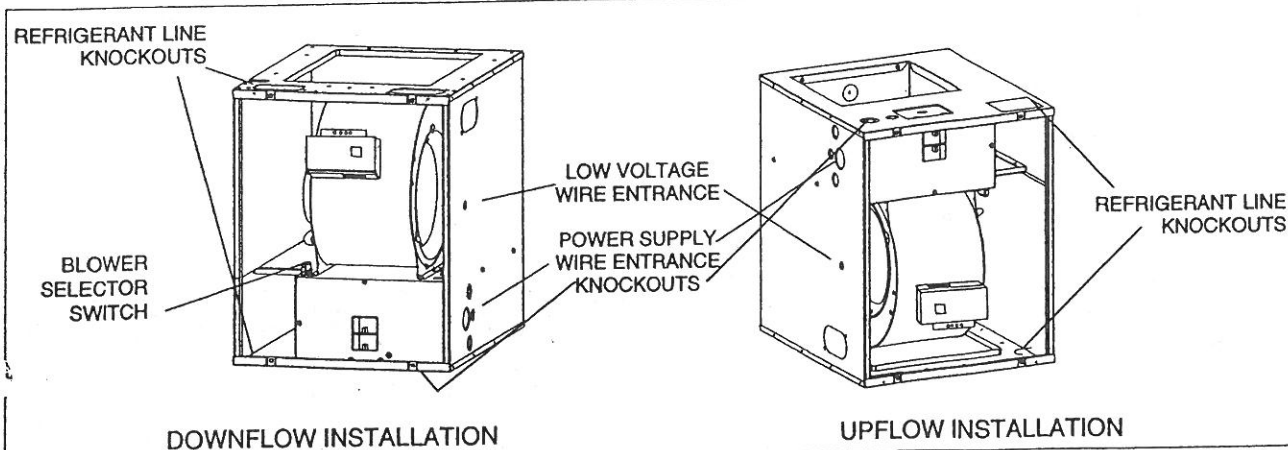


Figure 16. Downflow and Upflow Installations

-012 models are factory wired for a single branch circuit (Single Circuit Kit installed). A dual branch circuit can be used by removing the factory installed single circuit kit (see Figure 17).

-015, -017, -020 and -023 models are factory wired for a dual branch supply circuit. A single branch supply circuit can alternatively be used by installing the optional single circuit kit, P/N 913874.

To install the single circuit kit, loosen the lugs at the top of the circuit breakers. Remove the cover from the single circuit kit (if supplied) and discard. Insert the metal buss bars of the kit into the top lugs of the circuit breaker then tighten the lugs.

**Important!** When installing the single circuit kit, tighten all circuit breaker lug screws securely (45 in.-lbs. recommended).

## SUPPLY WIRING

### ! IMPORTANT:

Note: Circuit breakers installed within this unit are for short-circuit protection of the internal wiring and to serve as a disconnect. Circuit breakers installed within this unit DO NOT provide over-current protection of the supply wiring and therefore may be sized larger than the branch circuit protection.

### Connect Supply Service Wires

Reference Table 6 for minimum circuit ampacity, maximum over-current protection, and recommended wire size. All wiring must comply with the NEC. Reference the unit wiring diagram for other wiring details.

1. Remove the circuit breaker line cover.
2. Remove the appropriate knockout opening(s) applicable to the recommended wire size(s). The knockouts are located in the side of the unit next to the circuit breakers and in the bottom of the unit under the circuit breakers.
3. Install listed cable connector(s) in the knockout opening(s). If metal-sheathed conduit is used for the incoming power line(s), provide an approved metal clamp on the conduit and secure it in the entrance knockout.
4. Insert the supply service wire(s) through the cable connector(s), and connect them to the circuit breakers. See Figures 17 and 18. For installations without the single circuit kit tighten the lugs securely (45 in.-

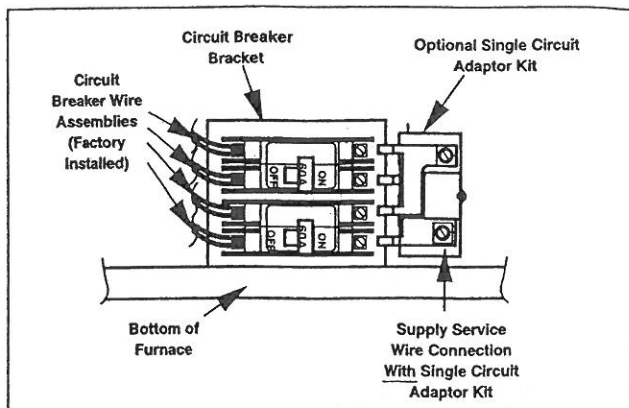


Figure 17. Installation of Optional Single Circuit Adaptor Kit

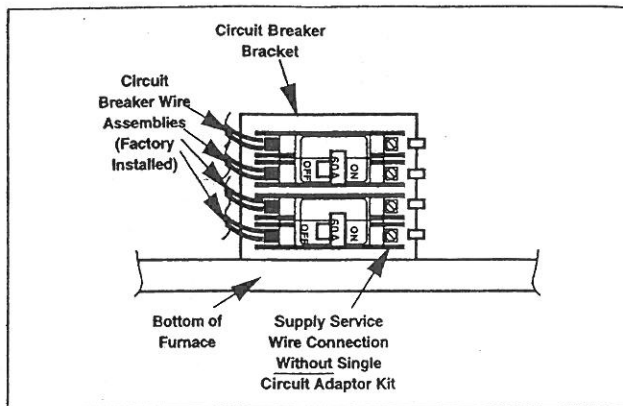


Figure 18. Installation of Supply Service Wires

lbs. recommended). For installations with the single circuit kit installed reference the label on the single circuit kit for recommended torque.

5. Connect the service ground wire(s) to the grounding lug(s) provided. One ground is required for each supply circuit used.

## BLOWER SPEED SELECTION

See Table 5 for the lowest speed approved for the heating output of the unit. Since the blower leads connect to the control box, blower speed selection is accomplished through use of the proper color coded blower lead located inside the control box. The speed(s) set by the factory may be different from what is shown on the wiring diagrams. See the unit control box for blower speed(s) set at factory.

### ! WARNING:

To avoid personal injury or property damage make certain that the motor leads cannot come into contact with non-insulated metal components of the unit.

Plug/Receptical Position	Pin 1	Pin 2	Pin 3	Pin 4
2-Speed Blower	Low	High	-	-
4-Speed Blower	Low	Med-Lo	Med-Hi	High
Control Box Blower Lead	Red	Yellow	Blue	Black

Minimum approved speed for 010 and 012 models.

Minimum approved speed for 015, 017, 020 and 023 models.

Table 5. Furnace Blower Speed Data

**Important!** If a relay box is installed, blower speeds for heating and cooling are set inside the relay box (see instructions included with relay box). The blower speed inside the furnace control box **must** be set to low or medium-low.

**Important!** Never change to a heating speed lower than what is shown in Table 5.

To change the blower speed(s), cut the wire tie holding the unused blower leads inside the control box.

**E1EH Furnace** - The selected heating blower lead is attached to terminal 2 of the blower switch. Remove the blower lead from terminal 2 of the blower switch.

Choose the desired speed and install the new blower lead onto terminal 2 of the blower switch.

**E1EB Furnace** - The selected heating blower lead is attached to terminal 6 on the blower relay. The selected cooling blower lead is attached to terminal 4 on the blower relay. Remove the heating blower lead from terminal 6 on the blower relay. Choose the desired speed and install the new blower lead onto terminal 6 of the blower relay for the new heating speed. Remove the cooling blower lead from terminal 4 on the blower relay. Install the new blower lead onto terminal 4 of the blower relay for the new cooling speed.

**E1EH and E1EB Furnaces** - If the blower leads in the control box were previously unsecured, bundle the unused blower leads together and secure to avoid contact with non-insulated metal components.

Refer to Table 7 for blower performance data.

## CONTROL CIRCUIT WIRING

### Thermostat Installation

The low-voltage wall thermostat is a sensitive instrument especially calibrated for this furnace and it must

Model	Supply Circuit	Total Amperes	Max Over-Current Rating	Min. Over-Current Ampacity	Recommended Wire Sizes*				Low-Voltage Thermostat Wire Size	
					60°C Copper		75°C Copper			
E-1EH/ E-1EB					Wire Size	Ground Size	Wire Size	Ground Size		
010	Single	46.7	60	58	4	10	6	10	2-Wire system max wire lengths : 24 Ga. = 55' 22 Ga. = 90' 20 Ga. = 140' 18 Ga. = 225'	
012	Single	51.3	70	64	4	8	6	8		
	Dual	"A"	27.2	40	34	8	10	8		10
		"B"	24.2	30	30	10	10	10		10
015	Single	67.5	90	84	3	8	4	8	4 or more-Wire system max wire lengths : 24 Ga. = 25' 22 Ga. = 45' 20 Ga. = 70' 18 Ga. = 110'	
	Dual	"A"	46.7	60	58	4	10	6		10
		"B"	20.8	30	26	10	10	10		10
017	Single	70.5	90	88	2	8	3	8		
	Dual	"A"	48.0	60	60	4	10	6		10
		"B"	22.5	30	28	10	10	10		10
020	Single	88.3	125	110	1	6	2	6		
	Dual	"A"	46.7	60	58	4	10	6		10
		"B"	41.7	60	52	6	10	6		10
023	Single	95.0	125	119	0	6	1	6		
	Dual	"A"	46.7	60	58	4	10	6		10
		"B"	48.3	60	60	4	10	6		10

\* All wire sizes for copper conductors only, based on NEC Table 310-16

Table 6. Electrical Specifications

**Standard 2-Speed Blower\*,  
with filter, @ 0.3" ESP**

Pin No.	Speed	CFM
#1	Low	815
#2	High	1080

\* with 10 x 7 wheel

**4-Speed Blower, with Coil and  
Coil Filters, @ 0.3" ESP**

Pin No.	Speed	CFM
#1	Low	845
#2	Med.-Low	1080
#3	Med.-High	1245
#4	High	1390

Table 7. Blower Performance

be carefully handled. Instructions for the installation and operation of the thermostat are provided in the furnace Homeowner's Package. Refer to these instructions for additional information.

**Thermostat Anticipator Setting**

The adjustable heating anticipator is factory set to provide satisfactory operation of the furnace under normal conditions. For optimum performance, the anticipator may require slight adjustment as outlined in the instructions supplied with the thermostat.

Set the anticipator per Table 8 or per the marking on the unit.

**Class 2 control circuit wiring.**

**NOTE:** Installation of a 4-wire thermostat circuit is recommended to provide for future addition of a "Heat/Cool" thermostat.

1. Install the 24 volt control circuit cable through the plastic bushing at side of the furnace.
  - a. For Models without a relay control, connect the wires to the furnace at the blower plug pigtails (see wiring diagrams). Secure all connections with wire nuts.
  - b. For units with a relay control installed, make the wiring connections at the relay control low-voltage terminal board. (See Relay Box Installation Instructions)

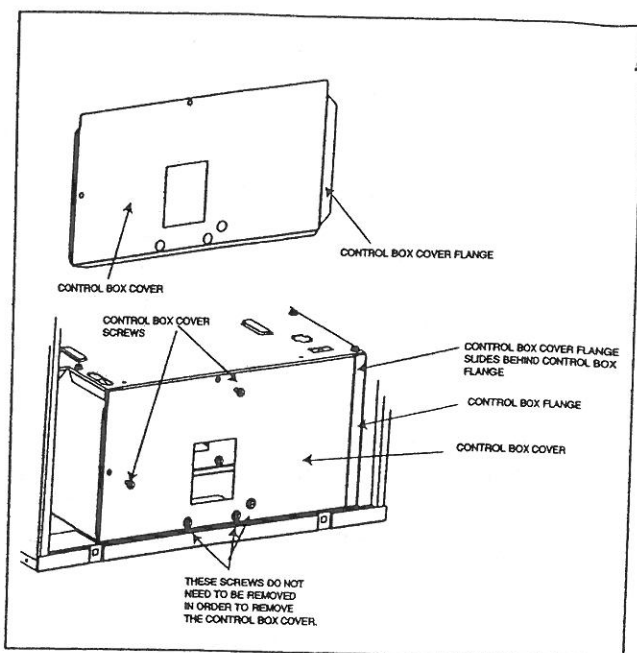


Figure 19. Installation of Control Box Cover

2. Route the control circuit wiring to the wall thermostat and the outdoor section if installed (see relay box Installation Instructions).

**SECTION V - OPERATION & CHECKOUT  
COMPLETE FURNACE INSTALLATION**

1. Refer to the appropriate wiring diagram and re-check all wiring connections. Make sure all connections are tight.
2. Replace the circuit breaker line cover and secure with one screw.
3. Check the blower motor and relay control connectors for proper connection.
4. Replace relay control cover and secure.
5. Reinstall the control box cover with the right side behind the control box flange as shown in Figure 19.
6. Switch the circuit breaker(s) to the "ON" position.
7. Set the furnace blower selector switch (see Figure 16) in the "AUTO" position.
8. Replace the outer furnace door (with the handle at the top).
9. Check all the duct connections and tape for air leakage.

Furnace Model Thermostat Anticipator Setting	
010, 012	0.20
015, 017, 020, 023	0.40

Table 8. Anticipator Settings



## CHECK FURNACE OPERATION

- A. Set the temperature selector on the wall thermostat to the lowest setting. If the thermostat is equipped with a "heating/cooling" subbase, set the **system switch** to the "OFF" position.
- B. Energize the 240 volt branch supply circuit(s).
- C. Set thermostat to a temperature setting above room temperature. If using a "heating/cooling" subbase, set **system switch** to "HEAT" and **thermostat fan switch** to "AUTO".

**NOTE:** Blower and heating elements should energize after a short delay.

- D. With the furnace operating, check room temperature and adjust the registers, as needed, to balance the air distribution.
- E. Check the thermostat heating anticipation for optimum furnace performance. If heating anticipator adjustment is desired, refer to the procedures outlined in the thermostat instructions.
- F. Turn the thermostat to the lowest setting; the blower and heating elements should shut off after a short delay. After checking the off-cycle, reset the thermostat to the desired temperature.
- G. For continuous air circulation with a "heat only" thermostat, turn the furnace blower selector switch from "AUTO" to "ON". If using a "heating/cooling" subbase and relay control, leave the furnace blower selector switch on "AUTO" and turn the thermostat fan switch to "ON".
- H. To shut off the system, with a "heat only" thermostat, turn the thermostat to the lowest setting and the furnace blower selector switch to "AUTO"; with a "heating/cooling" subbase, turn the system switch to "OFF" and the thermostat fan switch to "AUTO".

For heat pump models, refer to instructions supplied with the heat pump system for additional details.

## SECTION VI - MAINTENANCE INSTRUCTIONS

**Homeowner:** Follow operating and maintenance instructions on the furnace and in the "Owner's Manual". **DO NOT ATTEMPT TO CORRECT ANY ELECTRICAL PROBLEM REQUIRING OPENING OF THE CONTROL BOX. NO USER SERVICEABLE PARTS ARE INSIDE.** Call a NORDYNE distributor for service, if needed. (Refer to THE "NORDYNE Distributor List" provided).

1. Disconnect power.
2. For a furnace with a disposable filter, replace the filter monthly. For other applications, regularly remove, wash and/or vacuum the air filter(s) and replace in the original position(s).

### ! WARNING:

Disconnect power at main supply panel and switch the unit circuit breaker(s) to the "OFF" position before performing any of the following maintenance.

### ! WARNING:

Use caution when removing parts from this unit. Personal injury can result from sharp metal edges present in all equipment or sheet metal construction.

3. Every six months, clean on and around the blower motor. If the motor has oil tubes, apply 10 drops of SAE-20 motor oil to each tube.

**NOTE:** Do not over-oil or oil motor if it is not factory equipped with oil tubes.

4. Before each season, remove and wash the system air filter(s) (where applicable). Remove the blower assembly and clean the motor and the blower wheel.
5. Refer to the furnace Parts List for order numbers of replacement filters and fuses.



# Models: E1EH-010H

## WARNING

Switch circuit breakers to the "off" position before servicing the furnace.

### NOTES:

- 1) See unit data label for recommended supply wire sizes.
- 2) Thermostat anticipator setting : 0.20 Amps
- 3) To change blower speed on units without a relay box installed refer to installation instructions
- 4) Refer to furnace and/or relay box installation instructions for thermostat connections.
- 5) If any wire in this unit is to be replaced it must be replaced with 105°C thermoplastic copper wire of the same gauge.
- 6) Not suitable for use on systems exceeding 120V to ground.
- 7) This wire is used with some accessories. See accessory installation instructions for further detail.

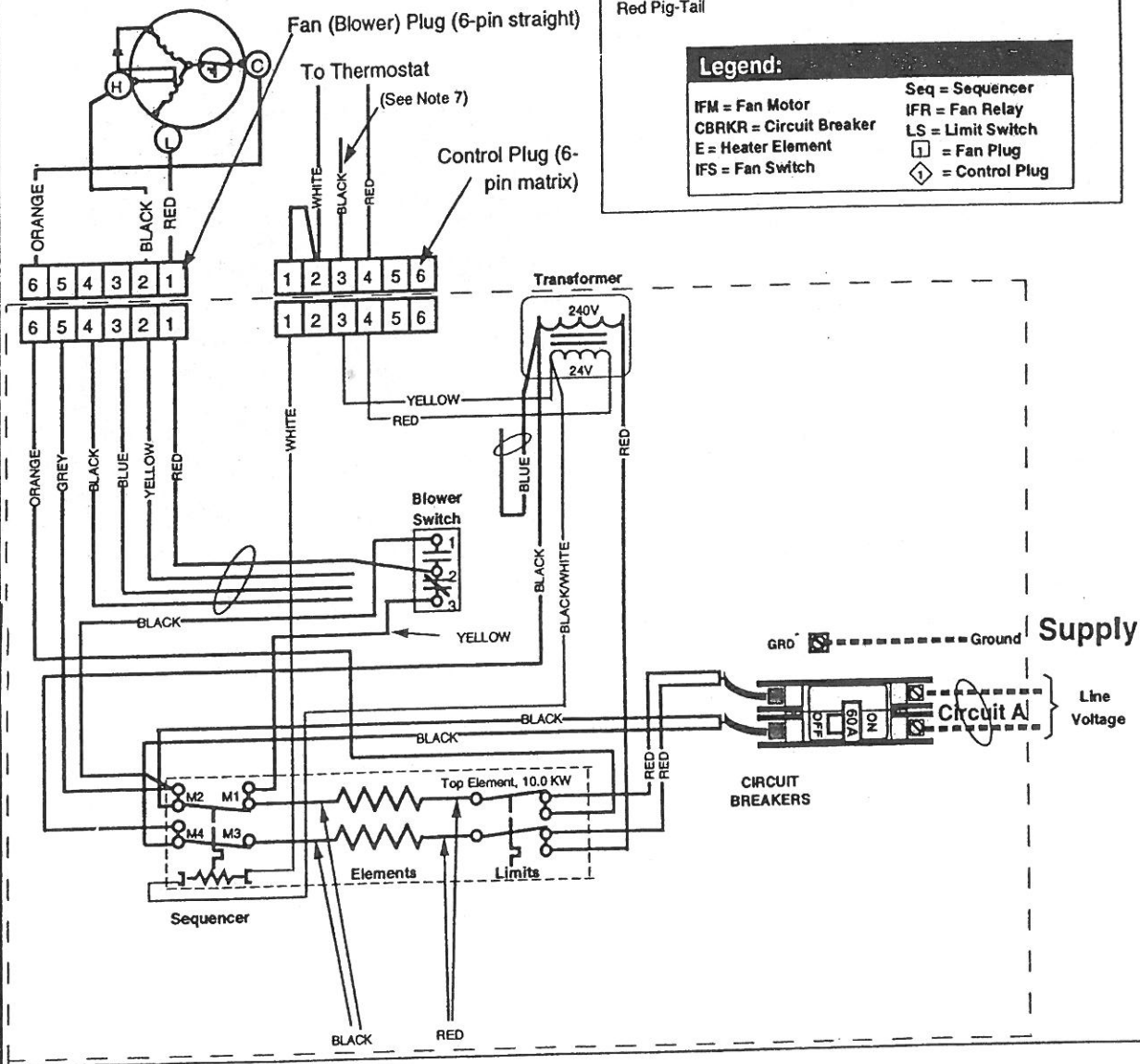
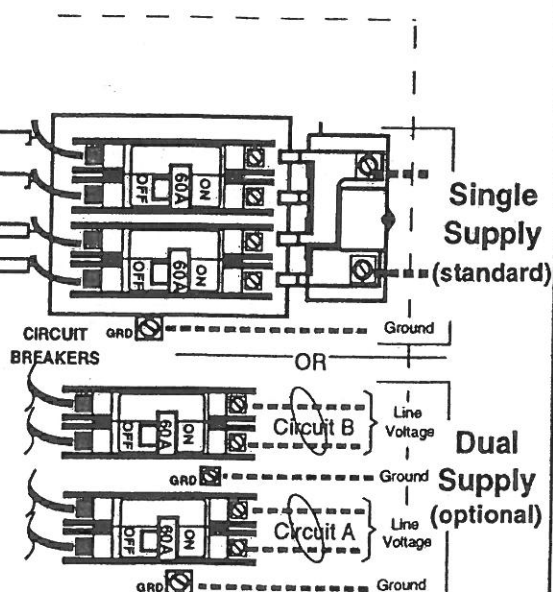
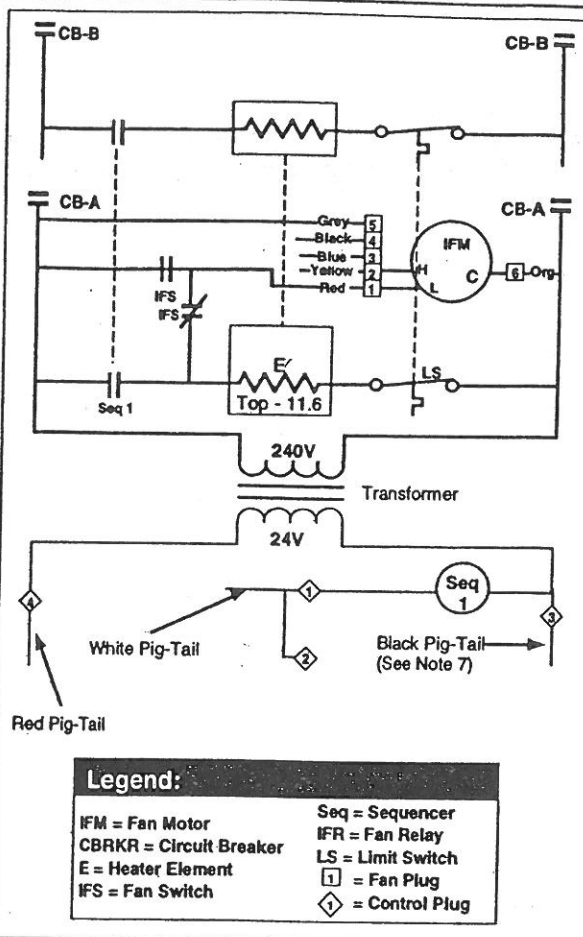


Figure 20. E1EH-010H Wiring Diagram

**⚠ WARNING**

**NOTES:**

- 

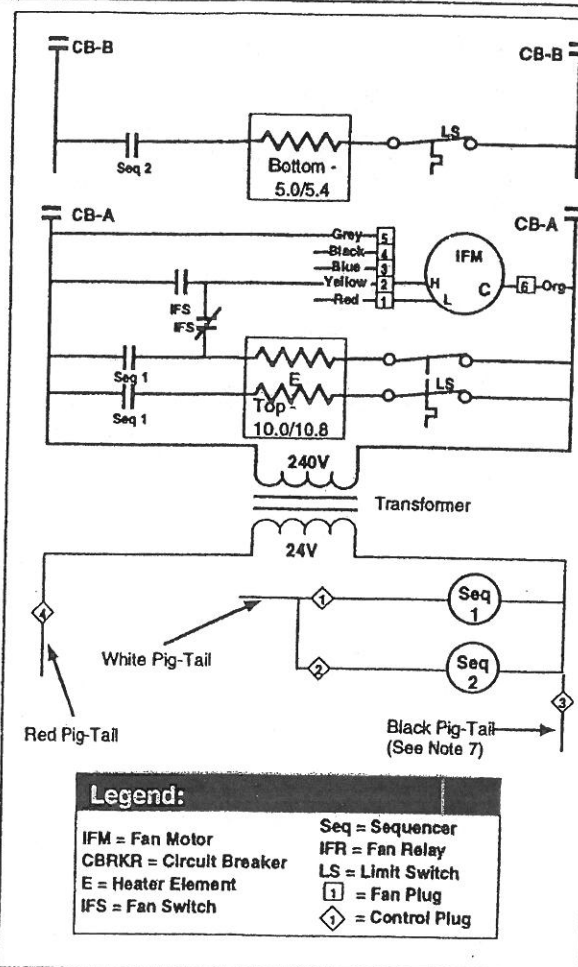


**NORDYNE - manufacturer of Intertherm and Miller products**

**⚠ WARNING**

**NOTES:**

- 
- The diagram illustrates the electrical connections for a 240V electric baseboard heater system. Key components and their connections include:
- Transformer:** A 240V/24V transformer providing power to the heater elements and the blower motor.
  - Fan (Blower) Plug (6-pin straight):** Connected to the blower motor and the thermostat.
  - To Thermostat:** Wires (White, Black, Red) connecting the thermostat to the blower plug.
  - Control Plug (6-pin matrix):** A central control unit with multiple terminals for various components.
  - Blower Switch:** A switch that controls the blower motor, connected to the control plug and the transformer.
  - Sequencer:** A device that manages the timing and sequence of the heater elements, connected to the control plug and the elements.
  - Heating Elements:** Two elements are shown: a "Top Element, 10.0/10.8 KW" and a "Bottom Element, 5.0/5.4 KW". They are connected to the sequencer and the control plug.
  - Wiring Labels:** Various colored wires are labeled throughout the diagram, including Orange, Grey, Black, Blue, Yellow, Red, White, and Blue.



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# Models: E1EH-020H, 023H

## ⚠ WARNING

Switch circuit breakers to the "off" position before servicing the furnace.

### NOTES:

- 1) See unit data label for recommended supply wire sizes.
- 2) Thermostat anticipator setting : 0.20 Amps
- 3) To change blower speed on units without a relay box installed refer to installation instructions
- 4) Refer to furnace and/or relay box installation instructions for thermostat connections.
- 5) If any wire in this unit is to be replaced it must be replaced with 105°C thermoplastic copper wire of the same gauge.
- 6) Not suitable for use on systems exceeding 120V to ground.
- 7) This wire is used with some accessories. See accessory installation instructions for further detail.

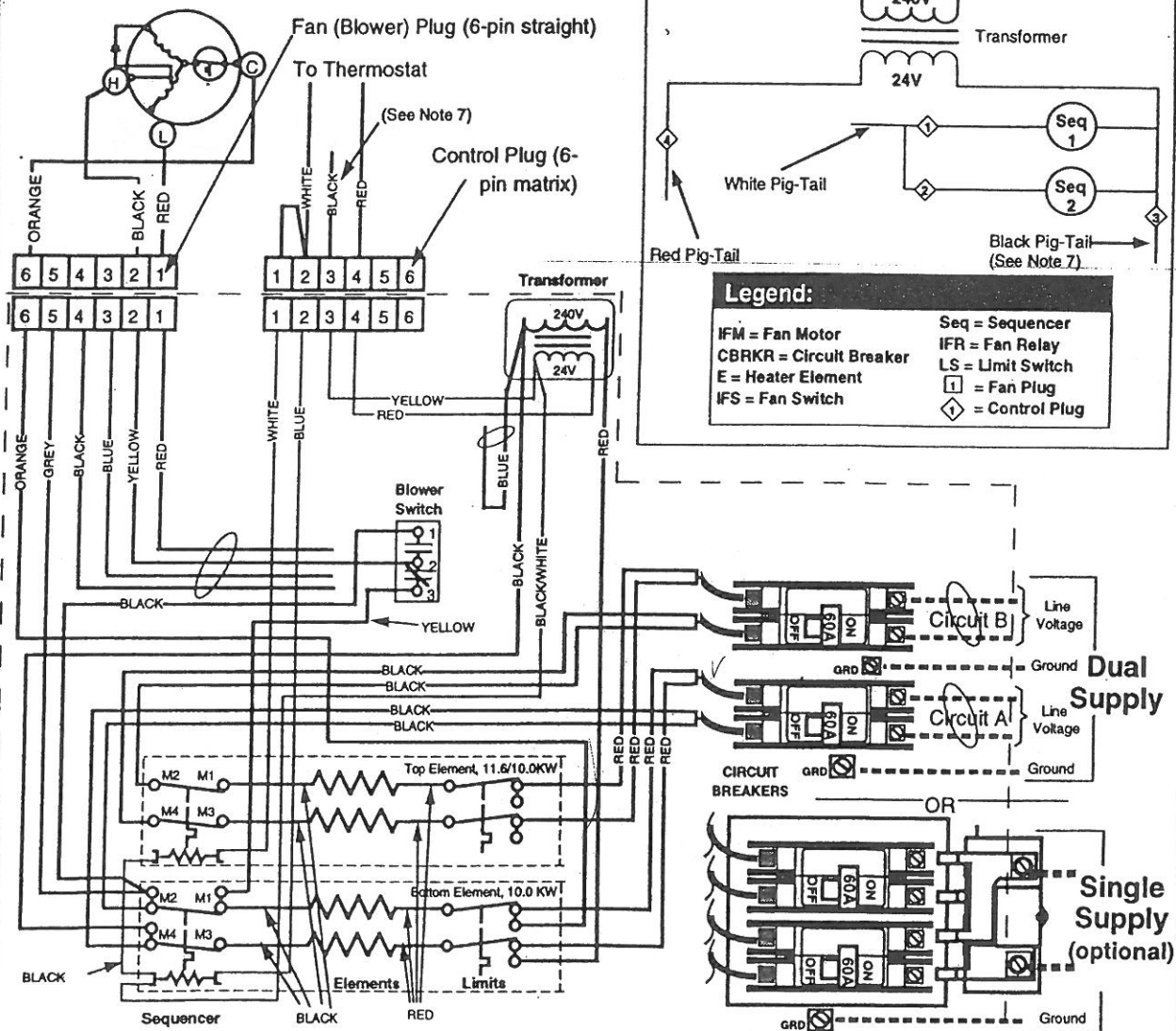


Figure 23. E1EH-020H, 023H Wiring Diagram

# Models: E1EB-010H

## WARNING

Switch circuit breakers to the "off" position before servicing the furnace.

### NOTES:

- 1) See unit data label for recommended supply wire sizes.
- 2) Thermostat anticipator setting : 0.20 Amps
- 3) To change blower speed on units without a relay box installed refer to installation instructions
- 4) Refer to furnace and/or relay box installation instructions for thermostat connections.
- 5) If any wire in this unit is to be replaced it must be replaced with 105°C thermoplastic copper wire of the same gauge.
- 6) Not suitable for use on systems exceeding 120V to ground.

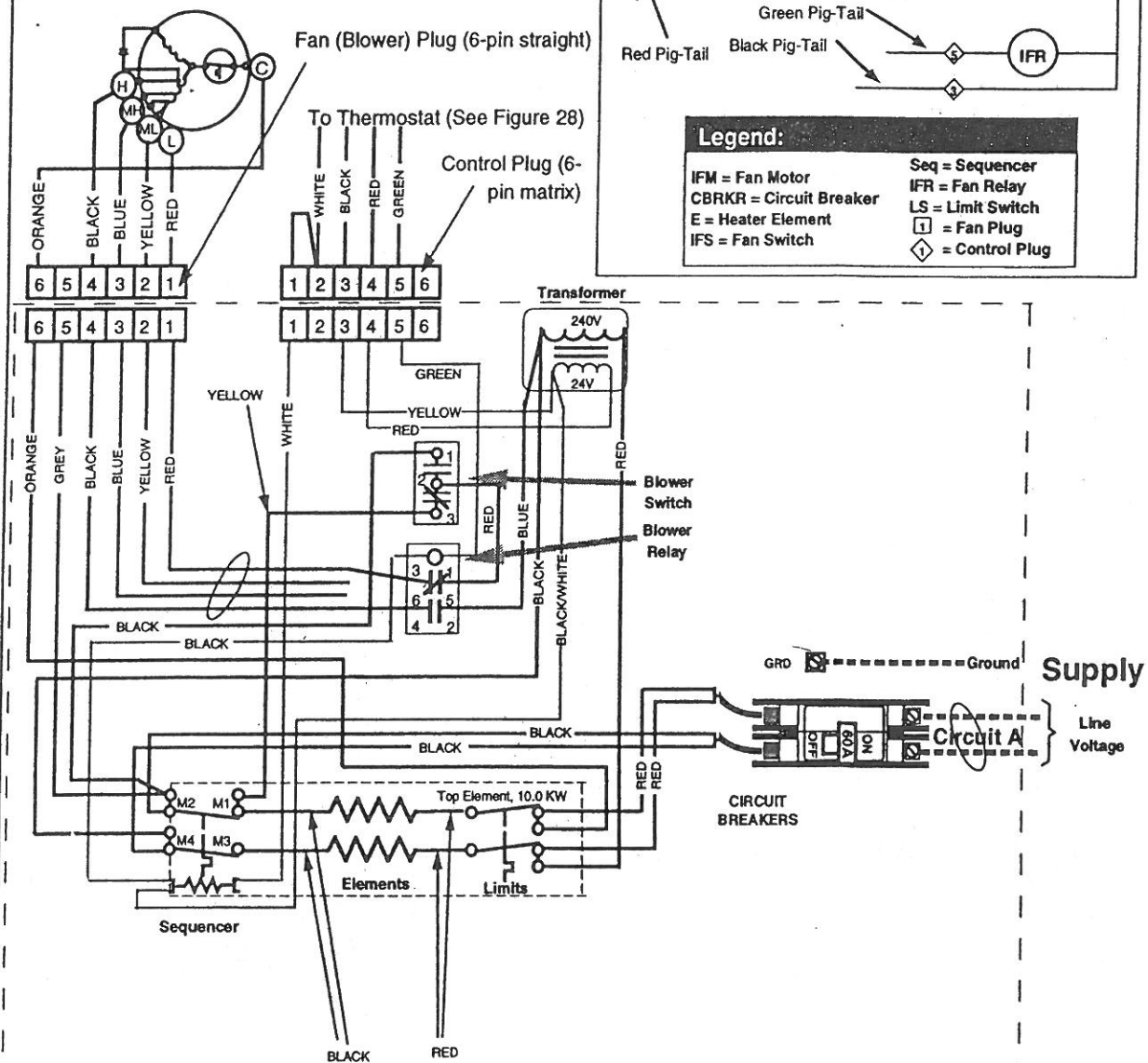


Figure 24. E1EB-010H Wiring Diagram



# Models: E1EB-012H

## ⚠ WARNING

Switch circuit breakers to the "off" position before servicing the furnace.

### NOTES:

- 1) See unit data label for recommended supply wire sizes.
- 2) Thermostat anticipator setting : 0.20 Amps
- 3) To change blower speed on units without a relay box installed refer to installation instructions
- 4) Refer to furnace and/or relay box installation instructions for thermostat connections.
- 5) If any wire in this unit is to be replaced it must be replaced with 105°C thermoplastic copper wire of the same gauge.
- 6) Not suitable for use on systems exceeding 120V to ground.

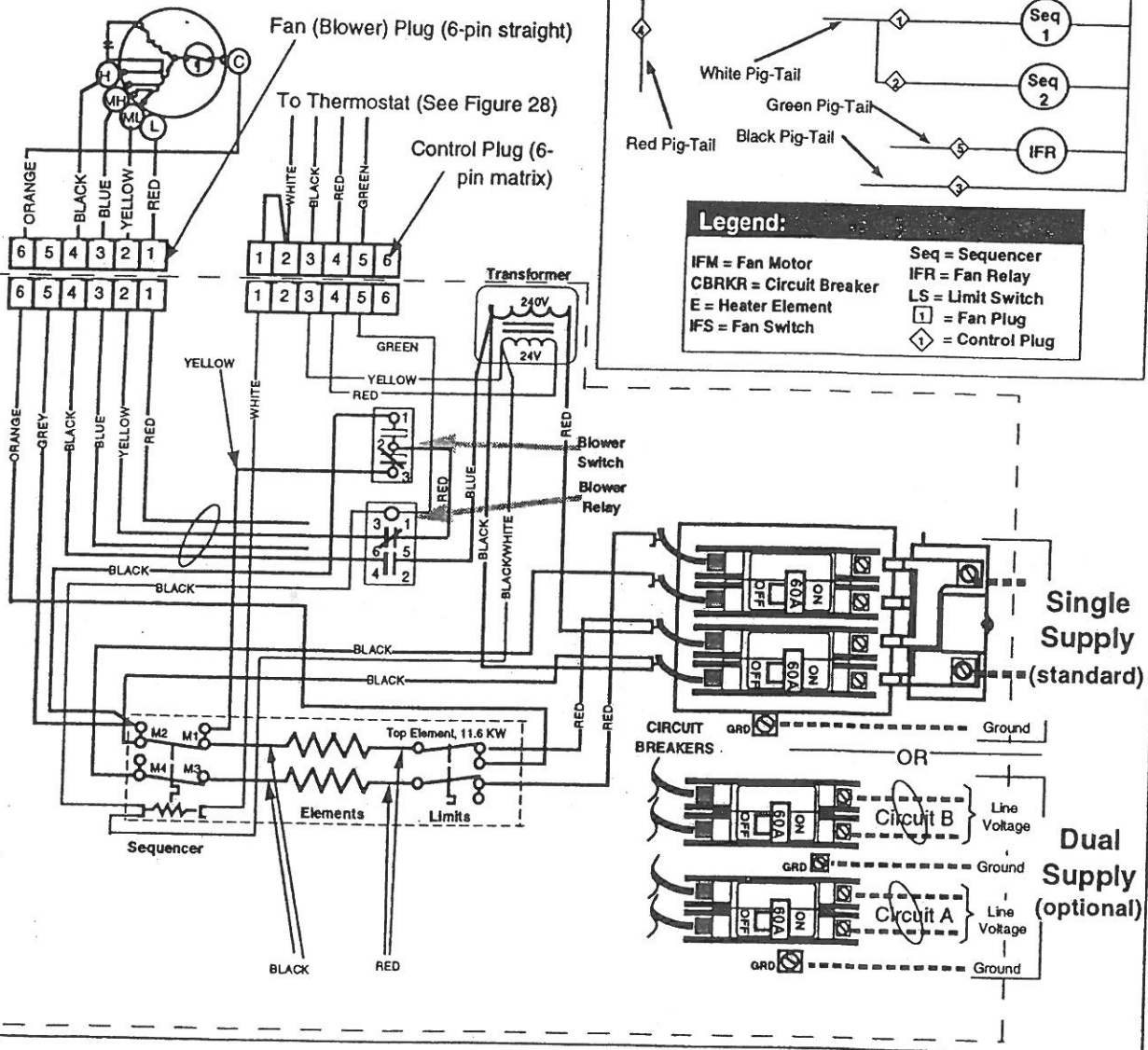


Figure 25. E1EB-012H Wiring Diagram

# Models: E1EB-015H, 017H

## ⚠ WARNING

Switch circuit breakers to the "off" position before servicing the furnace.

### NOTES:

- 1) See unit data label for recommended supply wire sizes.
- 2) Thermostat anticipator setting : 0.40 Amps
- 3) To change blower speed on units without a relay box installed refer to installation instructions
- 4) Refer to furnace and/or relay box installation instructions for thermostat connections.
- 5) If any wire in this unit is to be replaced it must be replaced with 105°C thermoplastic copper wire of the same gauge.
- 6) Not suitable for use on systems exceeding 120V to ground.

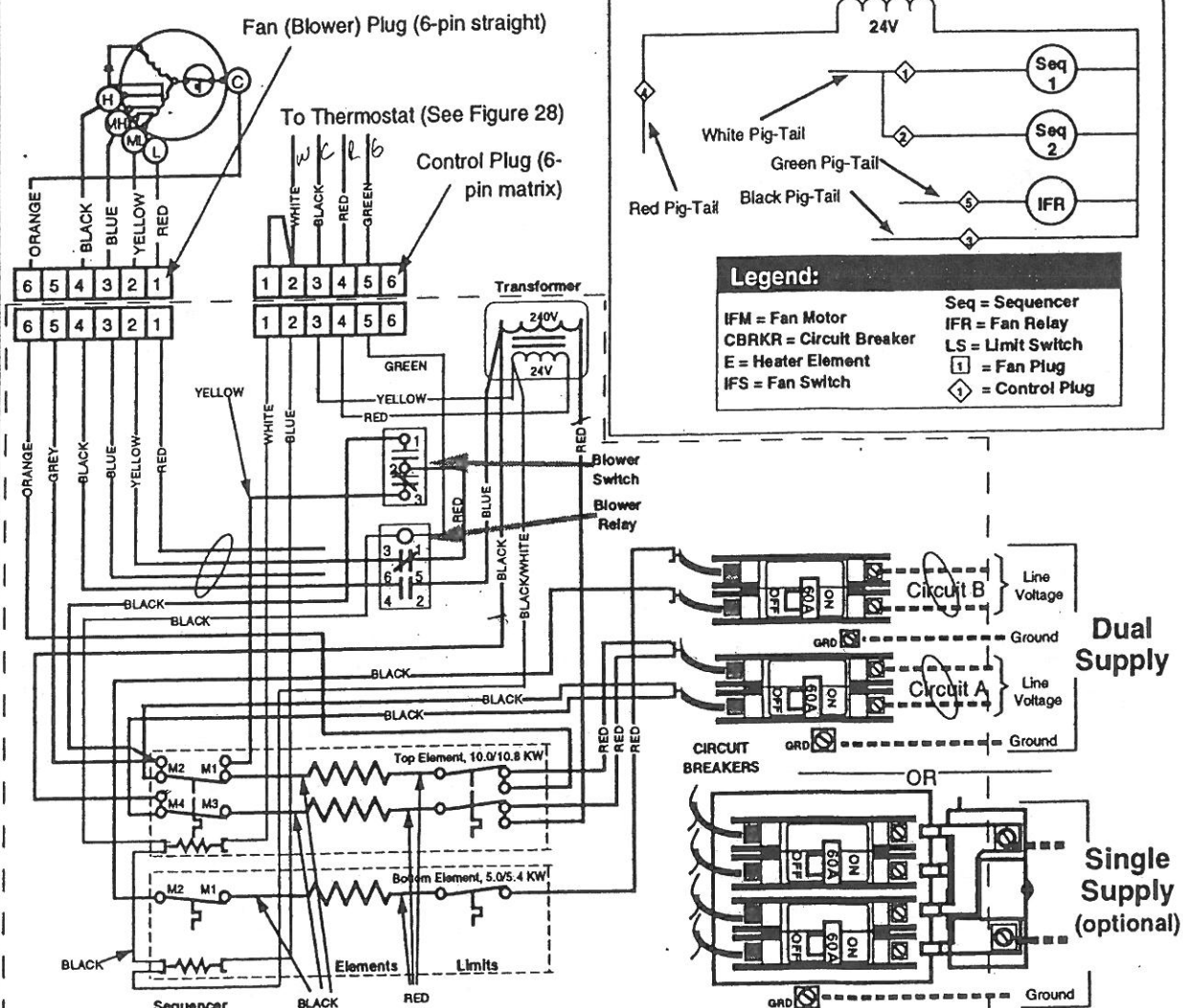


Figure 26. E1EB-015H, 017H Wiring Diagram

# Models: E1EB-020H, 023H

## WARNING

Switch circuit breakers to the "off" position before servicing the furnace.

### NOTES:

- 1) See unit data label for recommended supply wire sizes.
- 2) Thermostat anticipator setting: 0.40 Amps
- 3) To change blower speed on units without a relay box installed refer to installation instructions
- 4) Refer to furnace and/or relay box installation instructions for thermostat connections.
- 5) If any wire in this unit is to be replaced it must be replaced with 105°C thermoplastic copper wire of the same gauge.
- 6) Not suitable for use on systems exceeding 120V to ground.

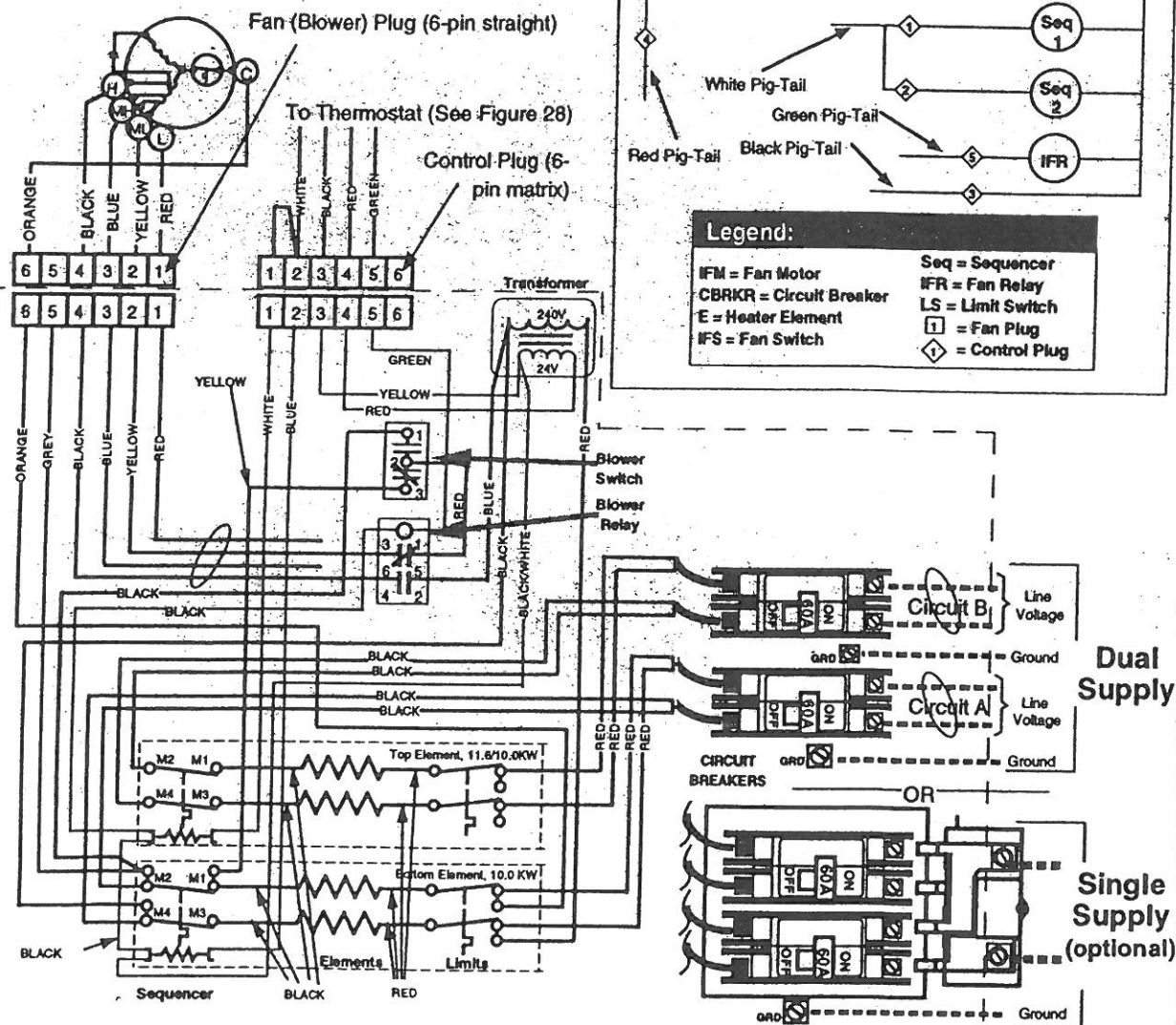


Figure 27. E1EB-020H, 023H Wiring Diagram

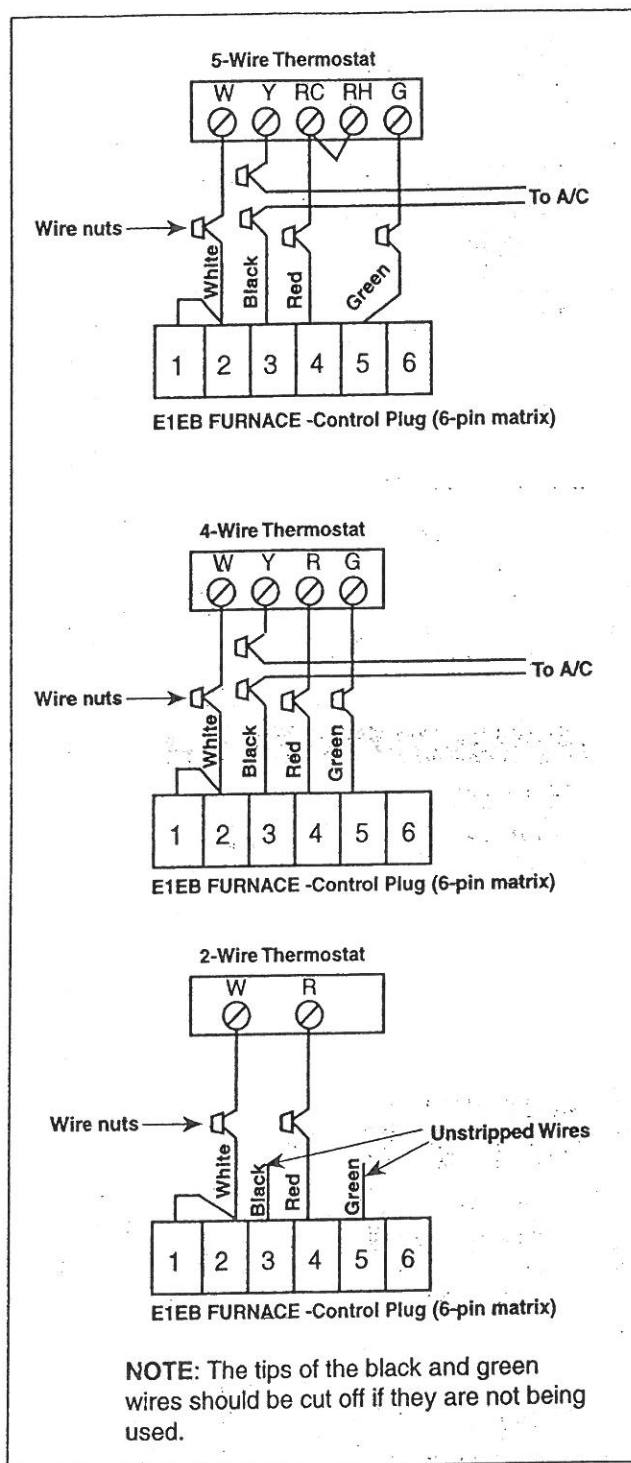


Figure 28. E1EB Thermostat Connection

INSTALLER: Do Not Discard These Instructions. After completing the installation, return these instructions to the Homeowner's Package for owner-user's future reference. Complies with H.U.D. Manufactured Home Construction & Safety Standards.



# PARTNERS

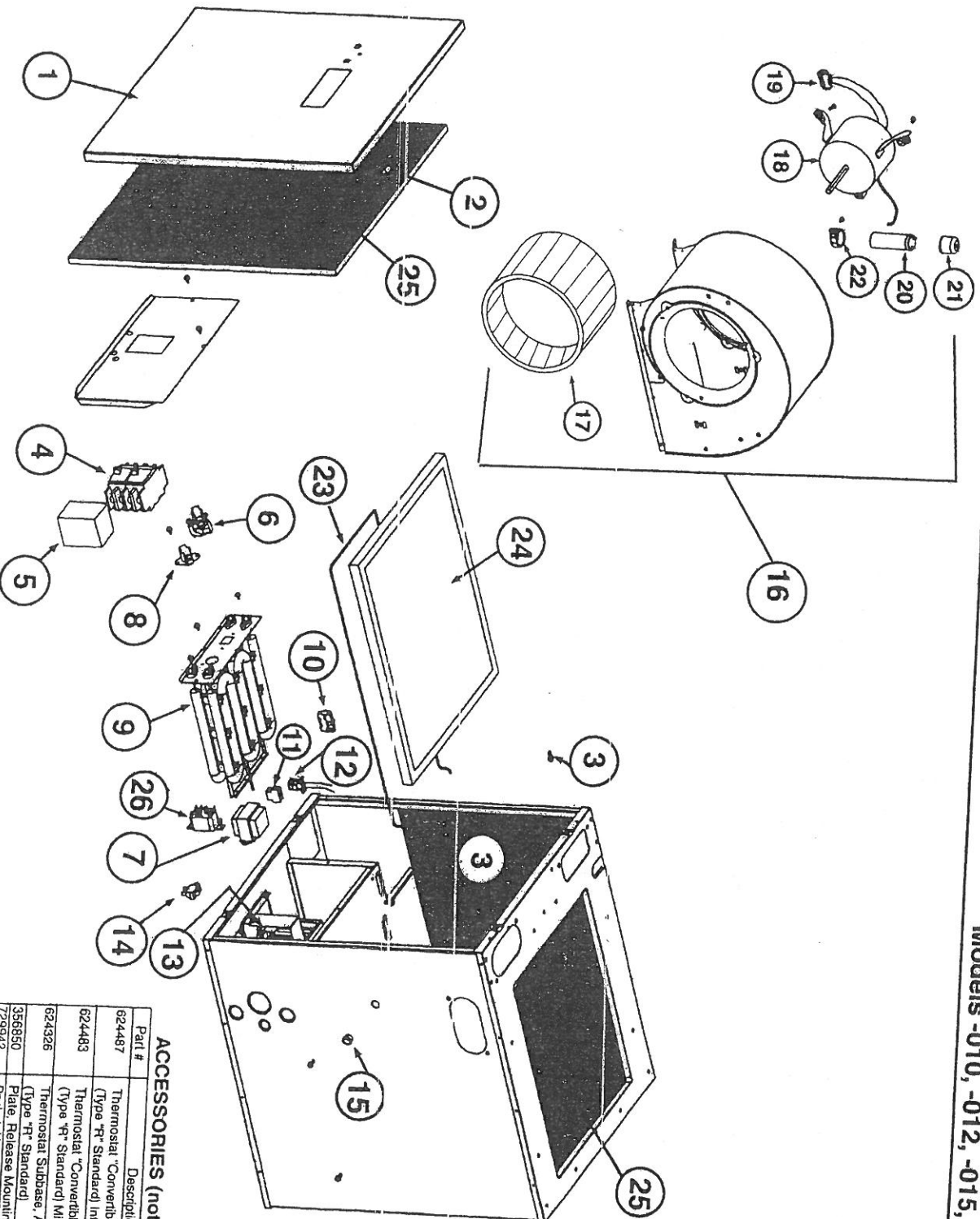
## HEATING & COOLING REPLACEMENT PARTS

### CHOICE™

## REPLACEMENT PARTS LIST

### Model E1E( ) Series

E1EH Series (with two speed blower)  
E1EB Series (with multi-speed blower)  
Models -010, -012, -015, -017, -020, -023



#### ACCESSORIES (not shown)

Part #	Description
624487	Thermostat "Convertible" Heating (Type "R" Standard) Intertherm Brand
624483	Thermostat "Convertible" Heating (Type "R" Standard) Miller Brand
624326	Thermostat Subbase, Air Conditioning (Type "R" Standard)
356850	Plate, Release Mounting, optional
72942	Packet, Homeowner's (includes: Installation Instructions, Owners Manual, Owner's Guide)

# 902776

Item No.	Part No.	Description	240V Single Phase					
			010	012	015	017	020	023
1	902817	Panel Door, Gray (Specify Brand) - includes insulation	1	1	1	1	1	1
2	668420	Receptacle, Latch	2	2	2	2	2	2
3	668905	Strike, Latch	4	4	4	4	4	4
4	632249	Circuit Breaker, 60A, 2 Pole	1	2	2	2	2	2
5	913874	Single Circuit Adapter Kit (optional on all but 012 models)	n/a	1				
6	621381	Sequencer, 2 Pole Aux Timing					1	1
	621383	Sequencer, 1-Pole Aux Timing			1	1		
	621596	Sequencer, 2-Pole Blower Timing	1	1	1	1	1	1
7	621592	Transformer, 30 VA	1	1	1	1	1	1
8	626428	Limit, 2-Pole	1	1	1	1	2	2
	626429	Limit, 1-Pole			1	1		
9	902818	Element Assembly 5.0 KW @ 240 V			1 btm*			
	902819	Element Assembly 5.2 KW @ 240 V						
	902820	Element Assembly 5.4 KW @ 240 V				1 btm*		
	902821	Element Assembly 10.0 KW @ 240 V	1 top*		1 top*		2	1 btm*
	902822	Element Assembly 10.4 KW @ 240 V						
	902823	Element Assembly 10.8 KW @ 240 V				1 top*		
	902824	Element Assembly 11.6 KW @ 240 V		1 top*				1 top*
10	632275	Connector, Cap 6-pin inline	1	1	1	1	1	1
11	631728	Connector, Cap 6-pin matrix	1	1	1	1	1	1
12	631724	Connector, Plug 6-pin matrix	1	1	1	1	1	1
13	632273	Lug, Ground <i>One under BKR + one to E1. of BKR</i>	2	2	2	2	2	2
14	631677	Switch, SPDT ("ON"/"AUTO")	1	1	1	1	1	1
15	631781	Bushing	1	1	1	1	1	1
16	497470	Blower, 2 Speed (includes item #'s 17 - 22): standard in E1EH models	1	1	1	1	1	1
	902805	Blower, Multi-Speed/240 V (includes item #'s 17 - 22): optional in the E1EH models, standard in the E1EB models						
17	667249	Wheel, Blower 9x7: used in 497470 2-speed blowers	1	1	1	1	1	1
	667252	Wheel, Blower 10x7: used in 902805 multi-speed blowers						
18	902512	Motor, 1/4 HP, used in 497470 2 Speed (p/n 621449)	1	1	1	1	1	1
	901838	Motor, 1/3 HP, used in 902805 multi-speed (p/n 620810)						
19	632274	Connector, Plug 6-pin inline	1	1	1	1	1	1
20	621434	Capacitor	1	1	1	1	1	1
21	632232	Boot, Capacitor	1	1	1	1	1	1
22	606228	Strap, Capacitor	1	1	1	1	1	1
23	669031	Filter Retainer	1	1	1	1	1	1
24	668934	Filter	1	1	1	1	1	1
25	902807	Insulation Kit: optional in the E1EH models, standard in the E1EB models	1	1	1	1	1	1
26	620537	Blower Relay: used in E1EB models only	1	1	1	1	1	1
27	632229	Circuit Breaker Close-off (not shown)	2					

\* top = top element in specified unit in the position pictured;  
 btm = bottom element in specified unit in the position pictured

7072720

St. Louis, MO

**NORDYNE**

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