

Installation Instructions

For NORDYNE Models FE()A- Series and Evcon/Coleman Models 3400 and 3500 Series Electric Furnaces

The #901698 2-wire, #901699 or #902248 5-wire, and the #913421 (heat pump) relay controls install with current models of FEHA and FEBA NORDYNE electric furnaces. The 2-wire relay has control switches which are operable through an opening in the furnace door. (Earlier models of the FEH series furnace may be upgraded with the FEHA doors; model #901856).

Important Information

Read all instructions carefully before starting the installation. Specifications or designs are subject to change or to discontinuance without notice and without incurring obligations. Instructions for NORDYNE furnaces are given below. Instructions for Evcon/Coleman furnaces are on page 4.

WARNING:

Improper installation may damage equipment, can create a hazard, and will void the warranty.

DANGER:

Shut off electrical supply to the furnace at the household breaker box to prevent electrical shock which could cause personal injury.

Listed Combinations and Required Equipment:

Air Conditioning (A/C) Systems	Heat Pump (H/P) Systems	Power Miser Systems
<p>1. One of the following unit combinations:</p> <p>Outdoor (A/C)Section AC*-018*, *S1**-018* AC*-024*, *S1**-024* AC*-030*, *S1**-030* AC*-036*, *S1**-036* AC*-042*, *S1**-042* AC*-048*, *S1**-048*</p> <p>Indoor (Coil)Sections AA*-024*, *C1**-024* AA*-024*, *C1**-024* AA*-030*, *C1**-030* AA*-036*, *C1**-036* AA*-042*, *C1**-042* AA*-048*, *C1**-046*, -048*</p> <p>2. Multi-Speed Blower Package #901282 3. A/C Blower Relay Control #901699 (5-wire) or #901698 (2-wire) 4. Coil Conversion Package #913221 or #913222 for (C1**-046 and -048 only) 5. Coil & Relay Adaptor Package #902039 for Evcon/Coleman 6. Insulation Kit #902084 for Evcon/ Coleman or #901682 for NORDYNE FEHA Series 7. Thermostat #910710 for NORDYNE 5-wire</p> <p>*May contain additional prefix or suffix.</p>	<p>1. One of the following unit combinations:</p> <p>Outdoor (H/P)Systems PC*-018*, *T1**-018* PC*-024*, *T1**-024* PC*-030*, *T1**-030* PC*-036*, *T1**-036* PC*-042*, *T1**-042* PCS*-048*, *T1**-048*</p> <p>Indoor (Coil)Section PA*-024*, *C1**-024* PA*-024*, *C1**-024* PA*-030*, *C1**-030* PA*-036*, *C1**-036* PA*-042*, *C1**-042* PAS*-048*, *C1**-046*, -048*</p> <p>2. Multi-Speed Blower Package #901282 3. H/P Blower Relay Control #913421 4. H/P Inter-Connect Cable #910741 (25 ft.) or #910739 (45 ft.) 5. Wall Thermostat and Sub-base Assembly #913270 or 913271 (10-wire cable field required) 6. Coil and Relay Adaptor Package #902039 7. Insulation Kit #902084 for Evcon/Coleman or Insulation Kit #901682 for NORDYNE FEHA Series</p> <p>*May contain additional prefix or suffix.</p>	<p>1. One of the following unit combinations:</p> <p>Outdoor System I1QA-024 / K1QA-024 I1QA-036 / K1QA-036 I1QA-048 / K1QA-048</p> <p>Indoor System CIQA-024 C1QA-036 C1QA-048</p> <p>2. Multi-Speed Blower Package #901282 3. FEH Blower Relay Control #902248 4. H/P Inter-Connect Cable #910741 (25 ft.) 5. Wall Thermostat #913223 (Miller) #913224 (Intertherm) sub-base #913225 (Auto Changeover) #913226 (Manual) 6. Coil Conversion Package #913222 for (C1**-048) 7. Coil and Relay Adaptor Package #902039 for Evcon/Coleman 8. Insulation Kit #902084 for Evcon/ Coleman. Insulation Kit #901682 for NORDYNE FEHA</p>

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. Read all instructions carefully before starting the installation.

Table of Contents

	Page
Introduction	1
Listed Combinations and Required Equipment	1
Installation	2-9
NORDYNE Model FE()A- Series	2
Evcon/Coleman Models 3400 and 3500	4
Blower Speed Selection	3 & 7

Installation Sequence for NORDYNE Model FE()A- Series Electric Furnace (See Figure 1)

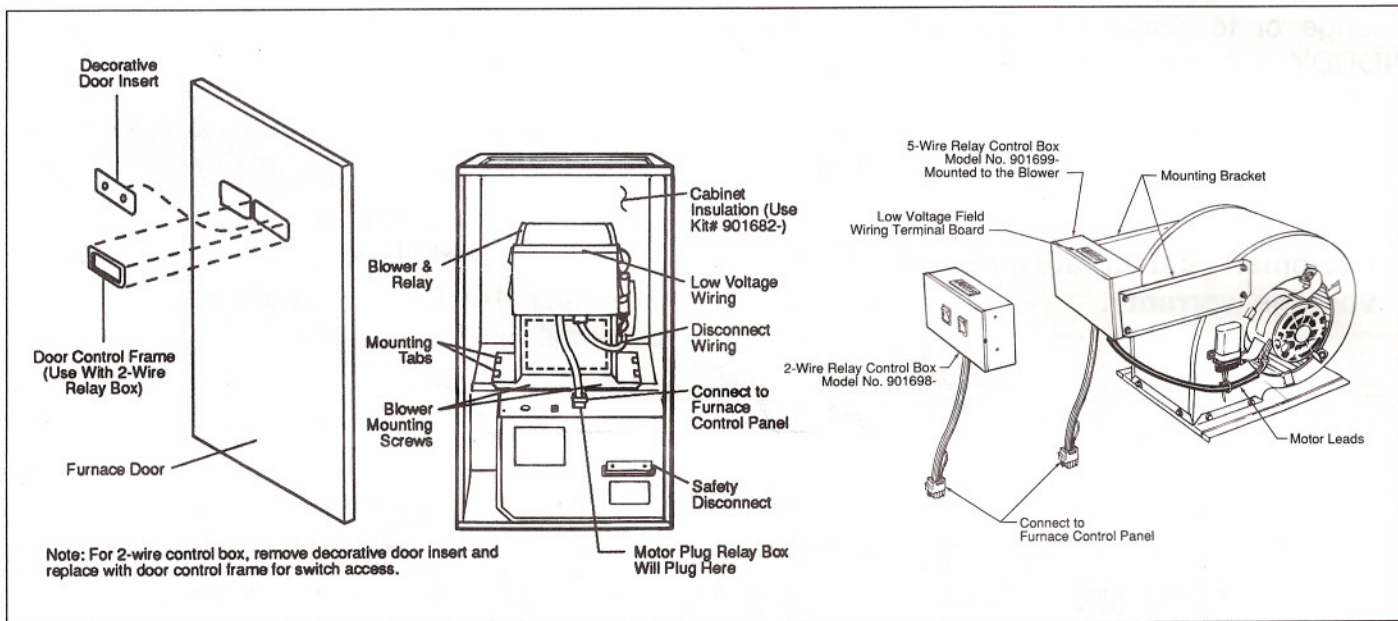


Figure 1. FE()A- Series Electric Furnace

Prior to installing a relay control in the NORDYNE FEHA Series furnace, be sure to install the correct A/C system equipment as described on page 1.

2. A cooling blower model #901282 is to be used for all air conditioning units or heat pump units up to and including the 4 ton unit. Attach the air

1. Remove the furnace door by pulling outward either from the top or top side of the door. Pull out the furnace safety disconnect from the furnace control panel shown in Figure 1.

Before installing the relay control box remove the heating blower and install the cabinet insulation kit model #901682 for furnaces that are not factory equipped with this package. Refer to instructions supplied with the kit for proper installation.

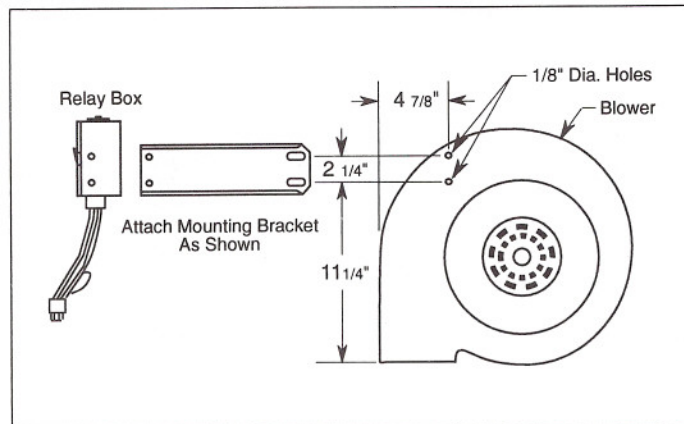


Figure 2. Attaching A/C Relay Box to Blower

conditioning relay control mounting brackets to each side of the blower using the four pointed sheet metal screws supplied, (as shown in Figure 2).

Note: If the blower does not have the two mounting holes on each side as shown, add them to the blower by drilling with an 1/8" dia. drill bit.

- Remove the cover from the relay box by removing the screw from each side. Set the required blower speed by moving the orange wire on position 2 of the terminal block (for heating) and the violet wire on position 4 (for cooling). See Table 1 for the appropriate heating and cooling speed-setting positions. Re-attach the control box cover using the two screws previously removed.

Furnace Operation (orange wire)

Furnace Model No.	-010, -012	-015, -017	-020, -023
Speed Terminal	#1	#2	#3
Nom. Air Delivery	750 cfm	950 cfm	1,200 cfm

Air Conditioning/Heat Pump Operation (violet wire)

Air Conditioning Model No.	-024	-030, -036	-042, -046, 048
Heat Pump Model	-018	-024, -030	-036, -042, -048
Speed Terminal	#2	#3	#4
Nom. Air Delivery	950 cfm	1,200 cfm	1,450 cfm

Table 1. Heating and Cooling Speed Setting Positions

- Attach the relay control box to the mounting brackets as shown in Figure 1 using the four blunt screws provided.

Insert the relay/blower assembly into the furnace by sliding it into and under the mounting tabs, secure the blower in place by using the two blower screws previously removed.

- Connect the motor lead male connector into the bottom female connector of the relay box.

Connect the relay box wire assembly/connector into the furnace control box connector. (See Figure 1)

- Bring in the low voltage field wires from the thermostat and air conditioning/heat pump unit and attach them to the low voltage field wiring terminal board located at the top of the relay control box. (See system wiring as shown in Figure 3.)

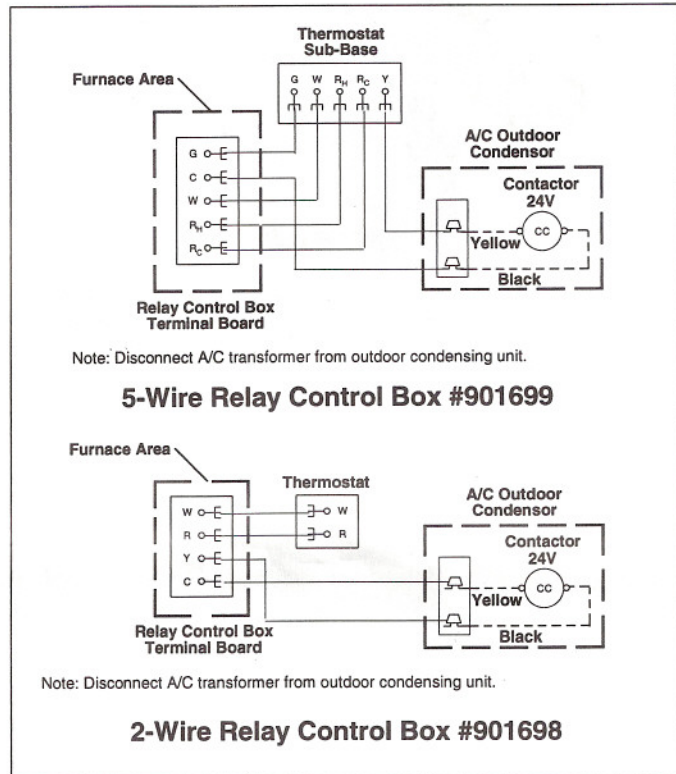


Figure 3. Wire Relays

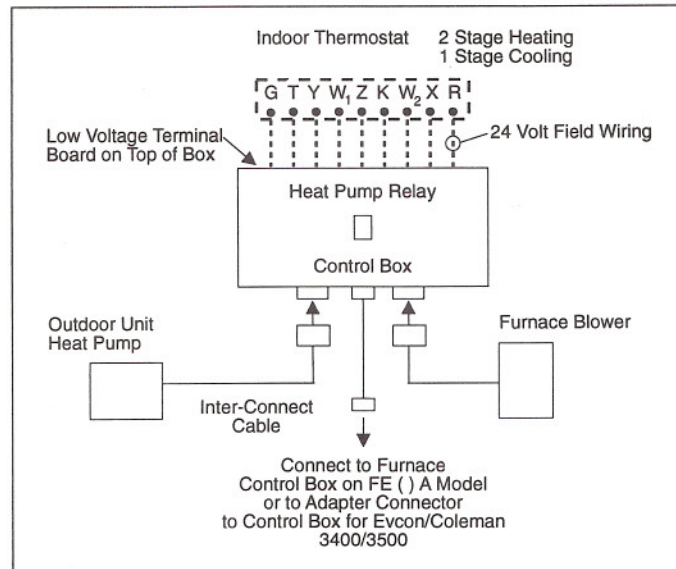
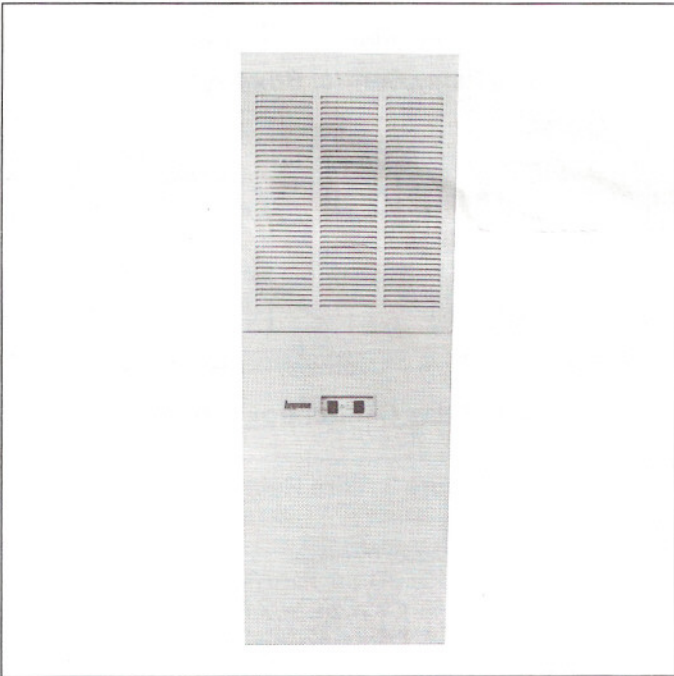
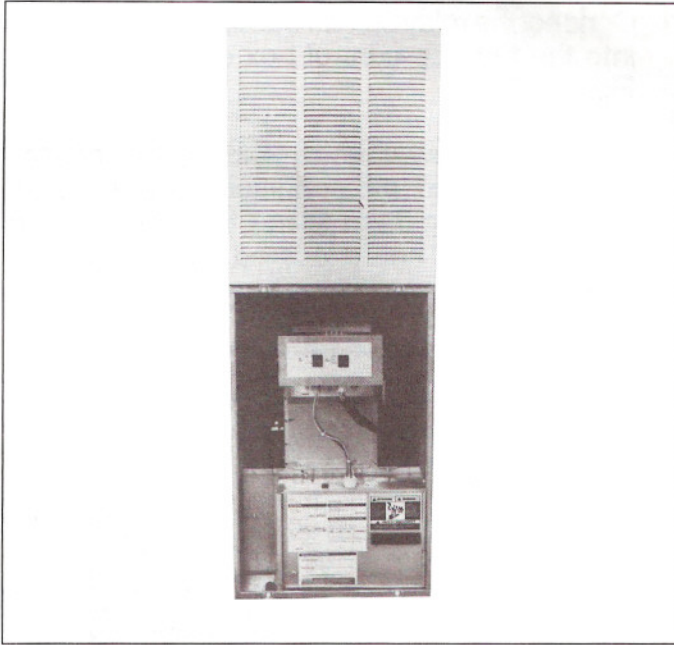


Figure 4. Heat Pump Relay Control Box # 913421



This conversion package is for use on Evcon/Coleman model 3400 and 3500 series electric furnaces when adding a split-system air conditioner or heat pump. Both systems are listed for installation into the Evcon/Coleman furnace. If a furnace is equipped with a Blend-Aire blower damper and control box, additional instructions are shown on page 8. The installer should become familiar with both before proceeding.

This kit consists of:

1. #432690 Blower Mounting Plate (3400) & #457220 Blower Mounting Plate (3500)
2. #125480 Wiring Adaptor Harness
3. #432570 Coil Support Plate
4. #663360 Plastic Overflow Drain Tube (3/8" dia.)
5. #124870 Rear Close-Off (Bottom)
6. #124860 Front Close-Off (Bottom)

Note: Fill in the information on the installer label supplied with this adaptor package and apply the label to the furnace in a visible location.

Read all instructions for details before proceeding with this installation. Where differences occur between these instructions and the Air Conditioning or Heat Pump instructions, these instructions shall apply.

! DANGER:

Shut off electrical supply to the furnace at the household breaker box to prevent electrical shock which could cause personal injury.

7. Re-install the safety disconnect in the control panel. Replace the furnace door. Turn on the furnace electrical supply. The unit is now ready for operation. See page 9 for system operation.

Installation for Evcon/Coleman Models 3400 and 3500:

For installation, use coil/relay adaptor package #902039.

Installation

1. Remove the furnace door and pull out the safety disconnect (See Figure 5):
2. Remove the original furnace blower:
 - a) Disconnect the motor connector plug from the furnace receptacle.
 - b) Remove the blower mounting screws and slide the blower forward out of the furnace cabinet.



Figure 5. Removing Furnace Door

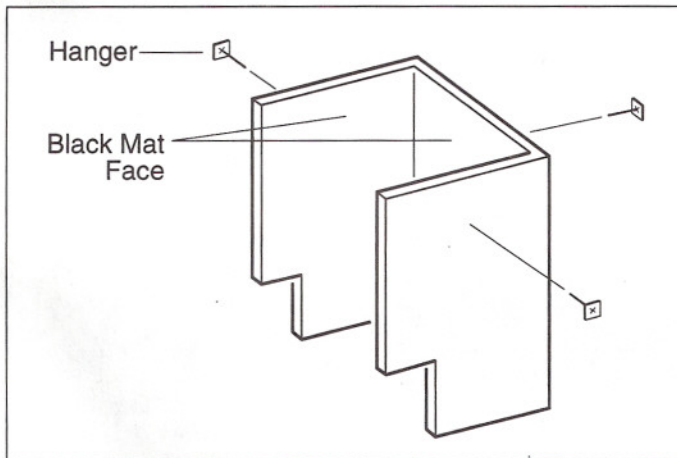


Figure 6. Insulation Kit

3. Install the insulation kit #902084 (See Figure 6):

- a) Remove the paper backing from each of the insulation hangers. Apply one hanger to each interior side and back of the cabinet.

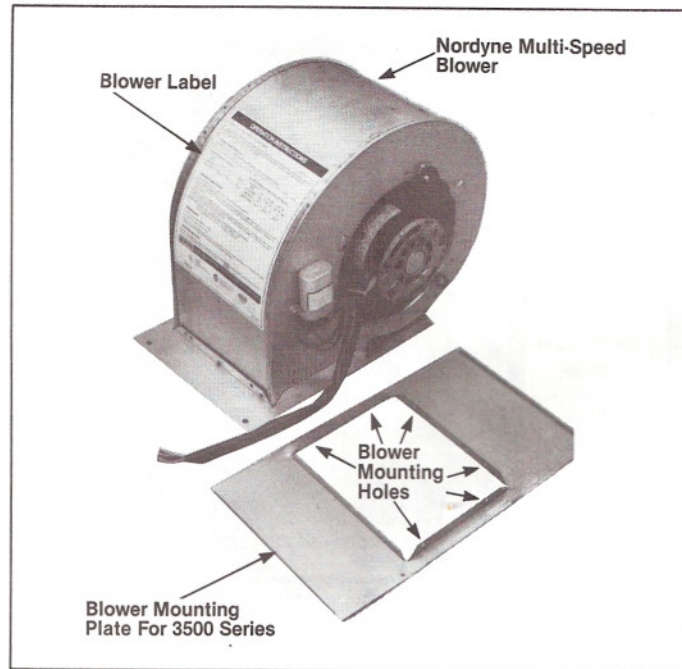


Figure 7. Multi-Speed Blower

The hangers are self adhesive and should be applied at the center of each side.

- b) Bend the insulation into a "U" shape with the black Mat Face visible as shown in Figure 6 and slide it into the furnace cabinet. Be sure the insulation is pushed into the bottom and flat against the sides and back. Place a washer over each hanger and press it against the insulation securing it in place. Cut off the excess hanger that protrudes above the washer.
4. Prepare NORDYNE multi-speed blower #901282 (See Figure 7):
- a) Attach the Blower Mounting Plate to the blower housing. Secure the plate at the **sides** of the blower housing using the four (4) screws supplied with the blower.
 - b) For model 3500, apply the new Blower Label supplied with the kit onto the side of the blower opposite the existing label on the #901282 blower. (The blower received has a label on it, but the information contained on the label does not apply to the Evcon/ Coleman furnace.)

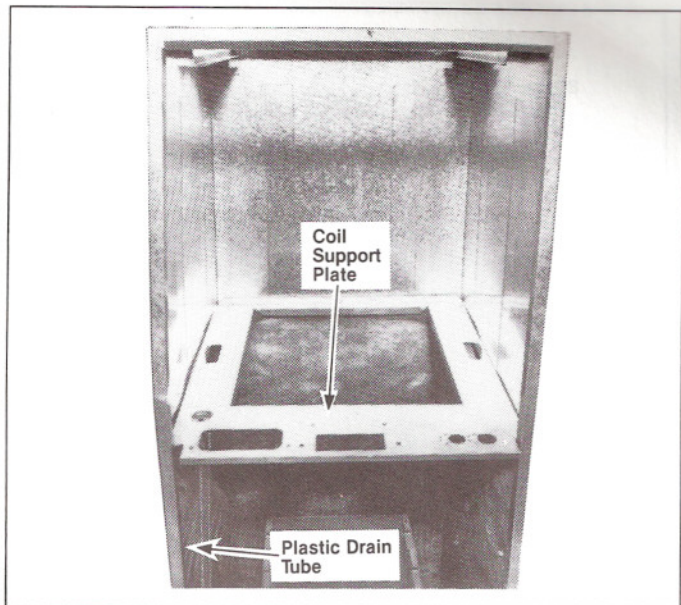


Figure 8. Coil Support Plate

5. Install coil support plate (See Figure 8):

- a) Install the support plate in the upper portion of the furnace cabinet using the lower holes provided. Do not use the upper holes.
- b) Secure the plate to the furnace cabinet at the rear flange using the screws provided.
- c) Install the 3/8" dia. Plastic Drain Tube onto the overflow tube in the bottom of the coil support plate. Route the tube through the hole in the bottom of the furnace cabinet.

For Coleman Model 3400, apply the new blower label supplied with the kit over the existing label on the #901282 blower. The blower is mounted on the support plate #432550 and located so the blower motor is on the right side of the blower when mounted in furnace.

6. Install the A-Coil in the furnace cabinet (See Figure 9):

Install the A-Coil in the cabinet on top of the coil support. Secure with the hold down bracket and two (2) screws.

7. Air Filter(s):

Use of the standard furnace air filter (supplied with the furnace) is recommended. If the furnace

is not provided with a filter, use the coil air filters shipped with the #913221 or #913222 (-046 & -048 only) coil conversion kit. **Select the desired filtering method and be sure to remove and discard the other filter(s). Only one air filter method is to be used. Do Not Use a Double Air Filtration System.**

8. Install Refrigerant and Drain Lines:

- a) Remove the knock-out at the front left-hand corner of the furnace bottom.
- b) Install the rear refrigerant line Close-Off Angle at the lower refrigerant line openings. For lower angle, drill holes in the furnace cabinet and attach the line with the screws provided.
- c) Route the drain hose and refrigerant lines up through the line knock-outs to the "A-Coil."
- d) Refer to the appropriate installation instructions supplied with the air

Note: The lower angles have pre-punched holes for location. (See Figure 10)

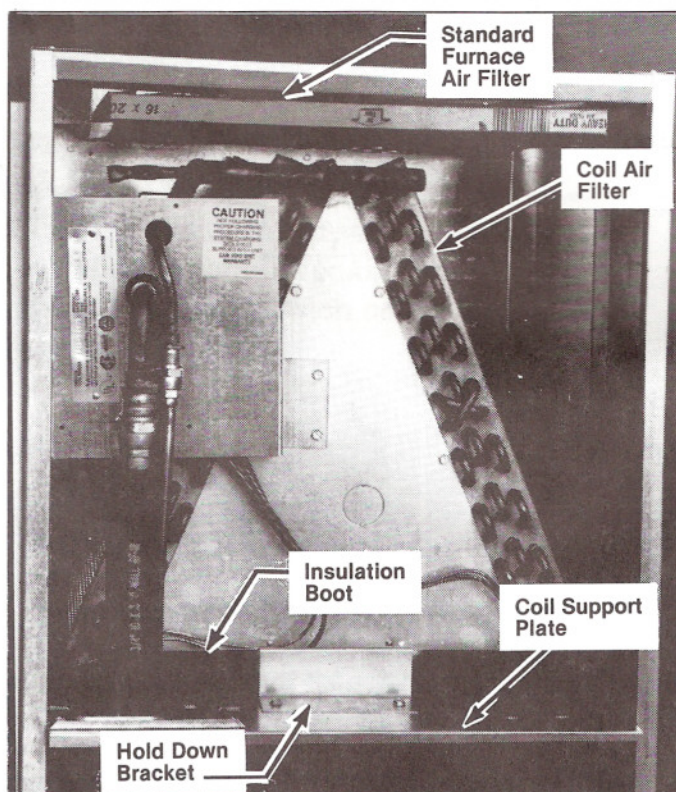


Figure 9. "A" Coil

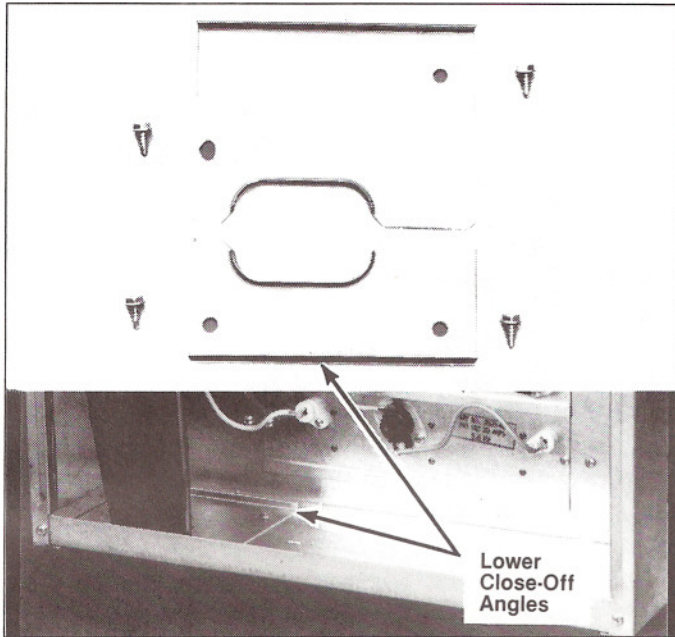


Figure 10. Close-Off Plates

conditioning or heat pump system and connect the lines per those instructions.

- e) Insulate all the exposed suction line within the furnace and the home to prevent condensation damage. Seal the holes around the refrigerant line through the coil support plate using permagum or cork tape.
- f) Install the front Close-Off Plates at the lower refrigerant line openings. Secure with the sheet metal screws provided. Mark and drill holes for the lower plate. (See Figure 10)

9. Complete the system installation and wiring connections per the instructions supplied with the air conditioner or heat pump.

10. Install Relay Control:

- a) Remove the relay control front cover by first removing the screws located on each side.
- b) Set the appropriate blower speed from the inside of the relay control box. Be sure the blower speeds are set properly for capacity of the furnace and the A/C or H/P being used. (See Table 2 for speed selection.)

Blower Speed Selection

***Furnace Operation (orange wire)**

Furnace Model No.	-811, -812	-815, -818	-820, -823
Speed Terminal	#1	#2	#4

***Air Conditioning/Heat Pump Operation (violet wire)**

Air Conditioning Model No.	-024	-030, -036	-042, -046, -048
Heat Pump Model	-018	-024, -030	-036, -042, -048
Speed Terminal	#2	#4	#4

(*See wiring diagram label on relay control cover.)

Table 2. Blower Speed Selection

- c) Install the A/C relay control box by mounting it on top of the coil support plate. Feed the furnace control wires and the connector through the rectangular opening of the support plate.

Note: New support plates have a rectangular pre-punched opening. Earlier versions of the plate may be used by cutting out the rectangular opening to the dimensions shown in Figure 11.

Attach the control box with the cover facing out securing it through the bottom plate using two #10 blunt sheet metal screws. (See Figure 11)

- 11. Slide the blower into the furnace mounting side flanges.

Be sure the blower motor is on the left side of the blower going into model 3500 series furnaces and on the right side for 3400 series. Also make sure the blower mounting plate engages in the hold-down track when sliding the blower into the cabinet. Secure the blower assembly at the front with the same mounting screws removed from the original blower.

Connect the blower lead connector into the short 8" extension 12-pin cable adaptor and attach it to the connector on the relay control box as shown in Figure 11. Connect the

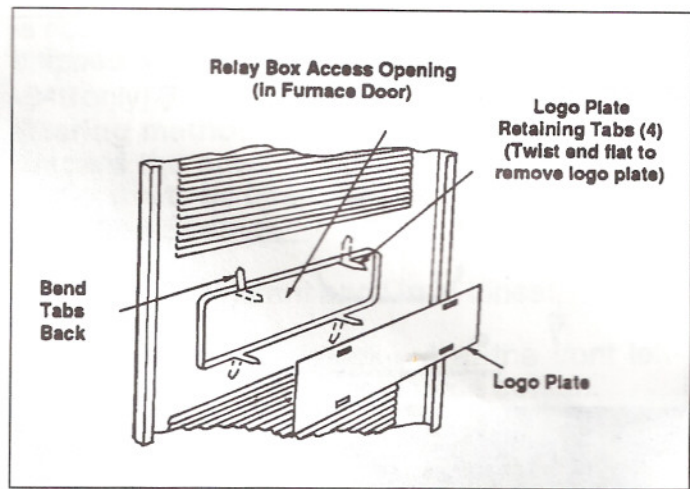
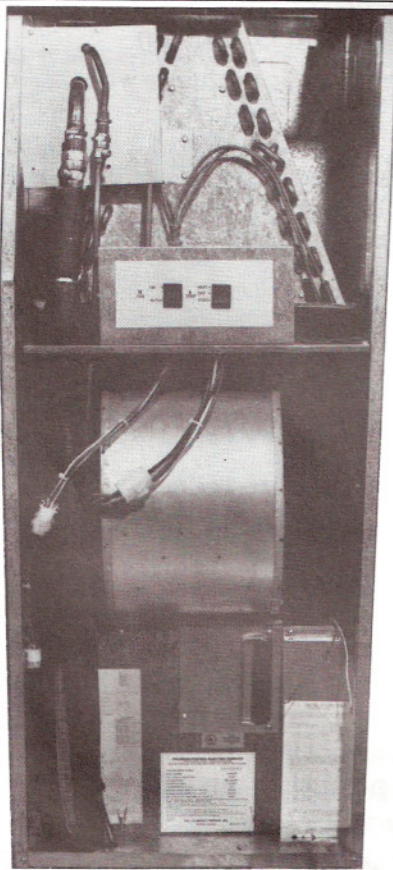


Figure 12. A/C Relay Box Controls

Note: For relay box controls, remove the Evcon/ Coleman logo from the back of the door opening and, using pliers, bend the tabs up or down, out of the way. (See Figure 12)

When the furnace is equipped with the Blend-Aire damper, do the following:

1. Prior to removing the furnace blower, disconnect the following wires from the Blend-Aire control box:
 - a) The plug to the furnace.
 - b) The plugs from the Blend-Aire blower and the damper.
 - c) The low voltage (red, white, and green) wires.

2. Remove the Blend-Aire control box from the furnace blower.
3. Remove the furnace blower.
4. Before installing NORDYNE Blower #901282 fasten the Blend-Aire control box to the left side of the furnace 4" from the front and 7" above the control box. (See Figure 13)
5. Install the blower as described in Step 11, page 7, of these instructions.

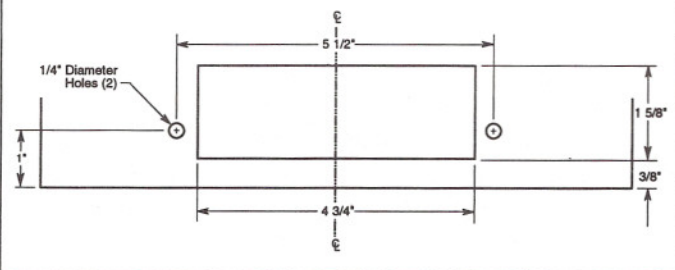


Figure 11. Rectangular Opening in the Support Plate

control box wiring connector into the 12-pin end of the wiring adaptor harness and attach the 15-pin end of the adapter harness into the furnace control box connector.

Connect the low voltage terminals to the low voltage terminal board (as shown in Figure 3) for both the 2-wire and 5-wire A/C relay control boxes. For the heat pump relay control box, follow the low voltage wiring procedure as described on page 3. The necessary heat pump package kit is #913421.

6. Connect the wiring adaptor harness to the Blend-Aire control box instead of the furnace.
7. Connect the plug from the Blend-Aire control box to the furnace receptacle.
8. Connect the low voltage (red, white, and green) wires to the terminal board on the relay control box. (See Figure 13 and the appropriate Wiring Diagram.)
9. Route the flexible cables through the two holes (knock-outs) in the coil support plate. Connect the cables to the Blend-Aire control box. The wires in the larger diameter cable are to be plugged into the control box. The wires in the smaller conduit plug into the two-pronged connector that extends from the control box. After routing the conduit wires, secure them to each other using the wire ties provided. Make sure that the conduit does not touch the low voltage connections on the relay control box.

Note: In some instances, the Blend-Aire may run continuously in the cooling mode. To avoid this, attach a 470 K ohm resistor to the green wire going to terminal "W" on the relay control.

10. Replace and secure all panels, covers, and the door that were previously removed.

System Operation - NORDYNE and Evcon/ Coleman

1. For 5-wire heating/cooling thermostats:
 - a. For heating thermostats: Keep the furnace switch set at AUTO, the thermostat system switch to HEAT, and the fan switch to AUTO.
 - b. For cooling thermostats: Keep the furnace switch at AUTO, set the thermostat system switch to COOL, and the fan switch to AUTO.
 - c. For continuous air circulation: Set the thermostat system fan switch to ON.

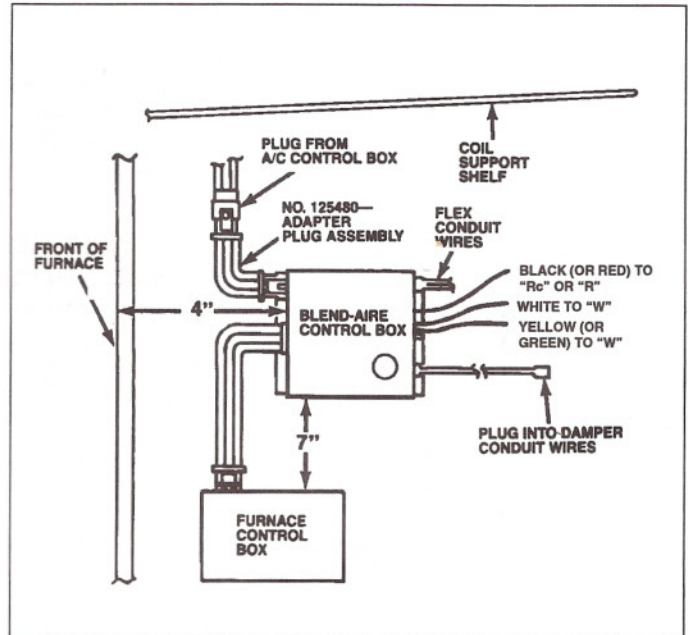


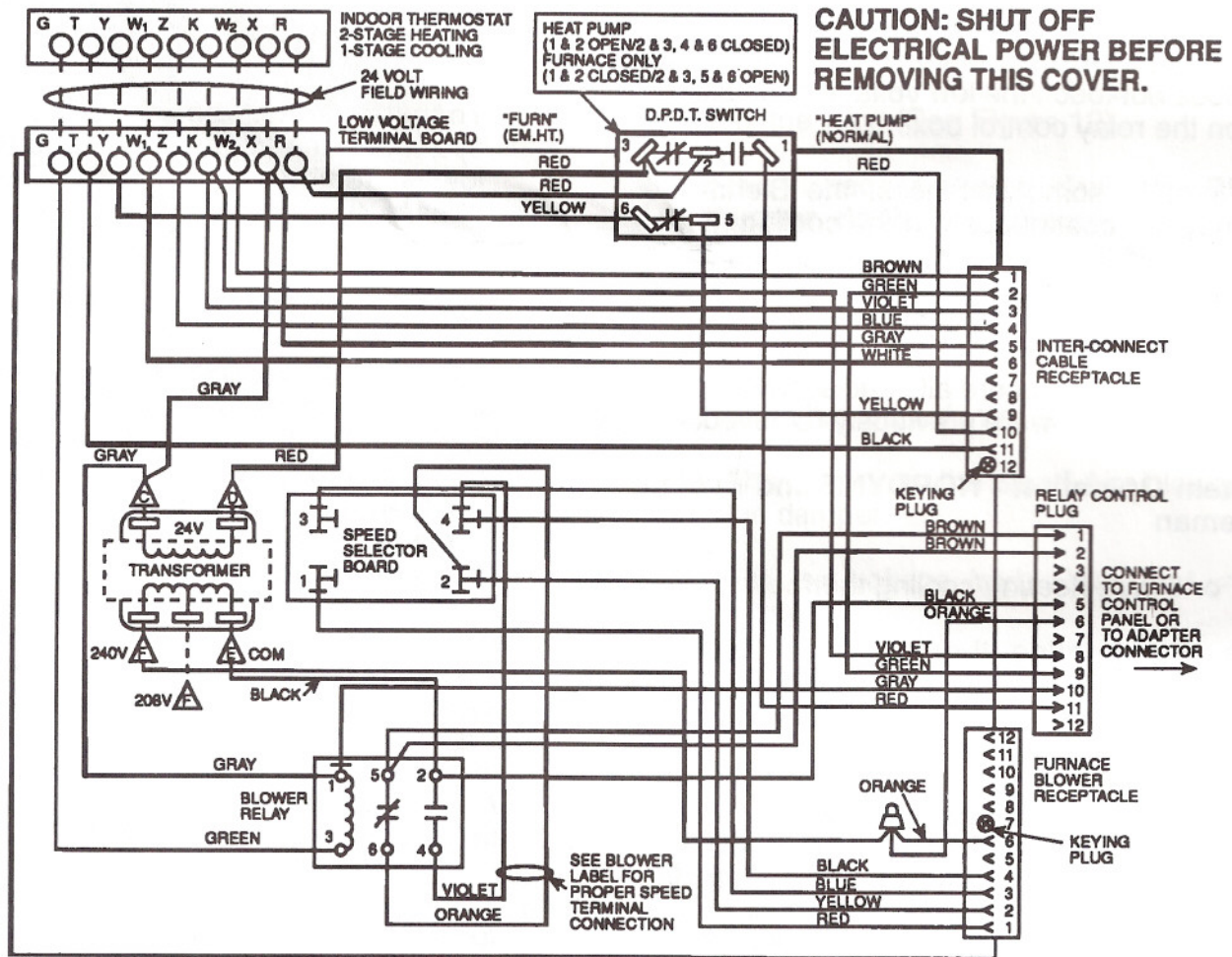
Figure 13

- d. To shut the system off: Set the thermostat system switch to OFF and set it to the lowest temperature setting. Set the furnace system to OFF and shut off all power to the air conditioner.
2. For 2-wire Heating/Cooling Thermostats:
 - a. For heating thermostats: Keep the furnace system switch set at AUTO (located at thermostat), the temperature system switch (on the relay box at the furnace) to HEAT, and the fan switch to AUTO (located on top of the electrical enclosure). Then turn the wall thermostat to the desired temperature setting.
 - b. For cooling thermostats: Keep the furnace system switch at AUTO, the temperature system switch (on the relay box at the furnace) to COOL, and the fan switch to AUTO. Then turn the wall thermostat to the desired temperature setting.
 - c. For continuous air circulation: Set the furnace relay control box fan switch to ON.
 - d. To shut the system off: Set the relay control box switch to OFF and the thermostat to the lowest setting. Then set the furnace system switch to OFF and shut off the power to the air conditioner.

3. For Heat Pump Operation

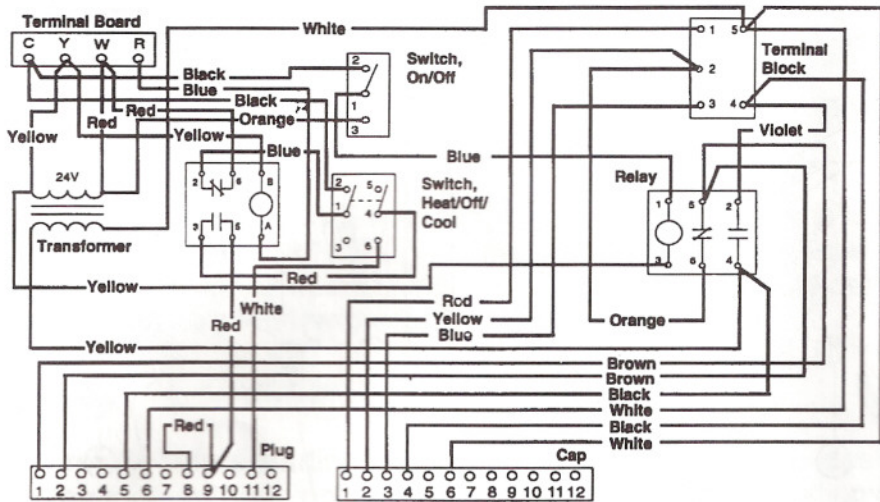
- The emergency heat switch on the front of the control can be set for electric furnace operation or for heat pump operation. Set the system thermostat accordingly.
- For heating operation: Keep the furnace switch set at AUTO, the thermostat system switch to HEAT and the fan switch to AUTO.

- For cooling operation: Keep the furnace switch at AUTO, set the thermostat system switch to COOL and the fan switch to AUTO.
- For continuous air circulation: Set the thermostat system fan switch to ON.
- To shut the system off: Set the thermostat system switch to OFF and set it to the lowest temperature setting. Set the furnace system to OFF, and shut off all power to the heat pump.



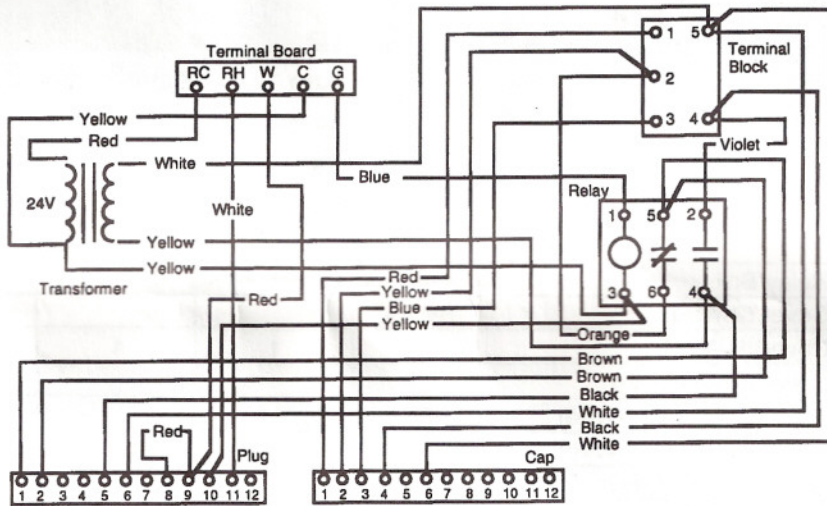
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Figure 14. Heat Pump Wiring Diagram



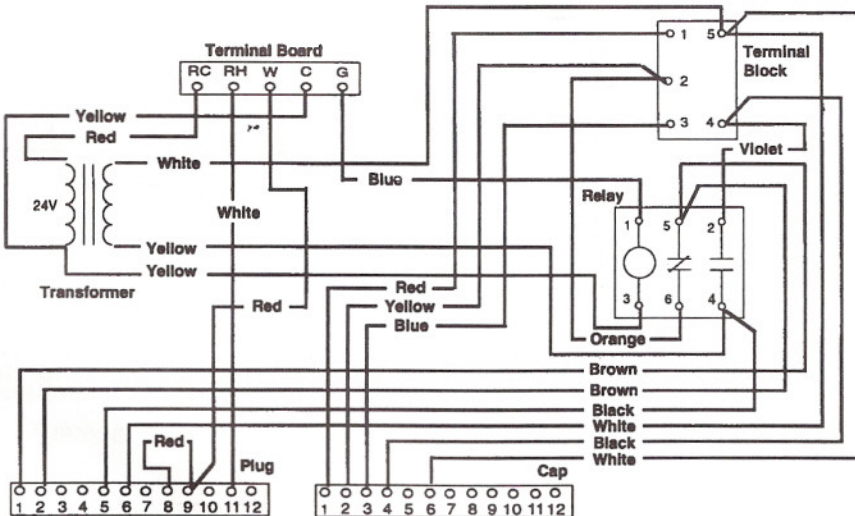
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Figure 15. Air Conditioning 2-Wire Relay Box for Model 901698 Wiring Diagram



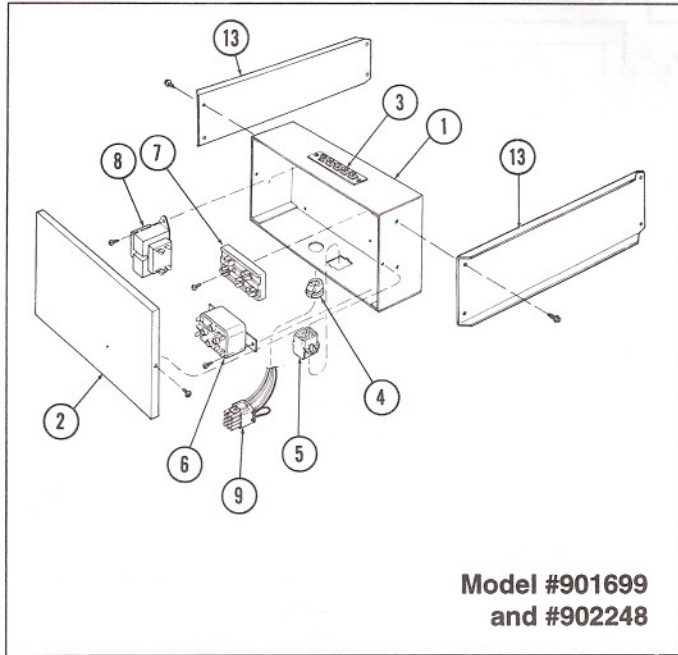
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Figure 16. Air Conditioning 5-Wire Relay Box for Model 902248 Wiring Diagram



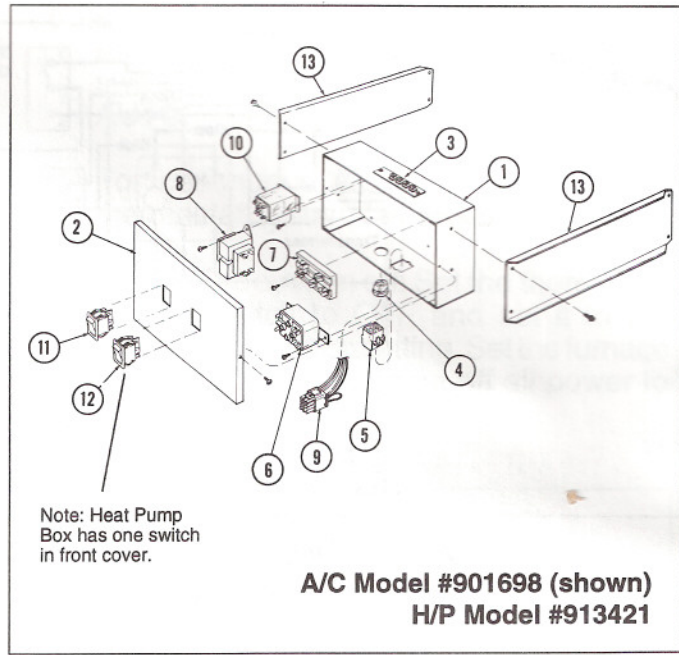
WD #7028880

Figure 17. Air Conditioning 5-Wire Relay Box for Model 901699 Wiring Diagram



**Model #901699
and #902248**

**Figure 18. Air Conditioning 5-Wire Relay Box
Exploded View**



Note: Heat Pump
Box has one switch
in front cover.

**A/C Model #901698 (shown)
H/P Model #913421**

**Figure 19. Air Conditioning 2-Wire and Heat Pump
Relay Box Exploded View**

Relay Box Parts List

ITEM NO.	PART NO.	DESCRIPTION	901699	902248	901698	913421
1	466580	Relay Box	1	1	1	1
2	359561	Cover (2-Wire)			1	
	359562	Cover (5-Wire)	1	1		
	359563	Cover (Heat Pump)				1
3	632093	Terminal Board (2-Wire)			1	
	632095	Terminal Board (5-Wire)	1	1		
	631775	Terminal Board (Heat Pump)				1
4	631593	Bushing S.R.	1	1	1	
	656332	Bushing S.R. (Heat Pump)				1
5	631727	Pin Cap	1	1	1	2
6	620537	Relay	1	1	1	1
7	631944	Terminal Block	1	1	1	
	631774	Terminal Block (Heat Pump)				1
8	621299	Transformer	1	1	1	
	621414	Transformer (Heat Pump)				1
9	631756	Plug Housing	1	1	1	1
10	621099	Relay (901698 ONLY)			1	
11	632091	Switch DPDT (901698 ONLY)			1	
12	632092	Switch DPDT (901698 ONLY)			1	
	631773	Switch DPDT (Heat Pump)				1
13	251450	Mounting Brackets	1	1	1	1



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This symbol on the nameplate
means the product is Listed by
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NOTE: Listings may vary by model.



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LISTED
#1177

Electric Central Furnace - Blower & Relay

Installation Instructions - Addendum

For NORDYNE Models FE()B- Series Electric Furnaces

NORDYNE
Manufacturer of
INTERMEDIA
and
MILLER
products

(See Relay Box Installation Instructions for Further Details.)

The #901698 2-wire, #901699 or #902248 5-wire, and the #913421 (heat pump) relay controls install with current models of FEHB and FEBB NORDYNE electric furnaces. The 2-wire relay has control switches which are operable through an opening in the furnace door.

! WARNING:

Improper installation may damage equipment, can create a hazard, and will void the warranty.

! DANGER:

Shut off electrical supply to the furnace at the household breaker box to prevent electrical shock which could cause personal injury.

Installation Sequence for NORDYNE Model FE()B- Series Electric Furnace (See Figure 1)

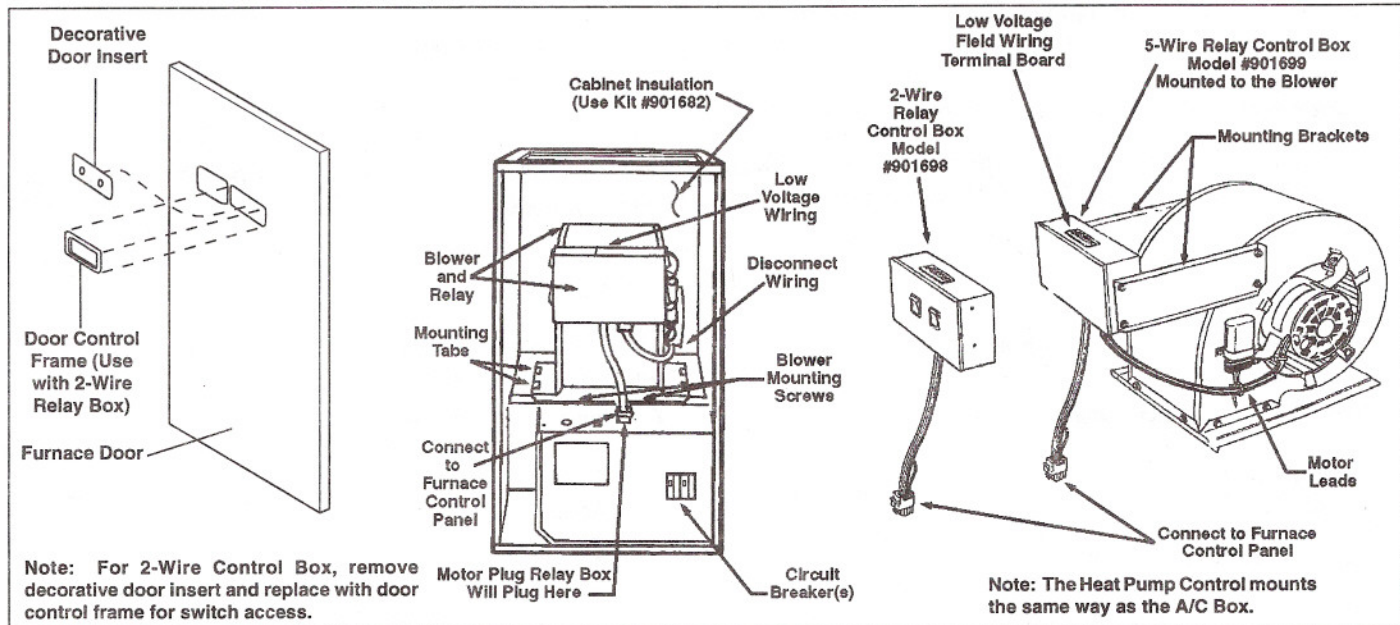


Figure 1. FE()B- Series Electric Furnace

1. Remove the furnace door by pulling outward either from the top or the top side of the door. Switch the circuit breaker(s) to the OFF position. (See Figure 1 for the circuit breaker location.)

Before installing the relay control box remove the blower and install the cabinet insulation kit P/N 901682 for furnaces that are not factory equipped with this package. Refer to the instructions supplied with the kit for proper installation.

2. **FEHB Models:** All FEHB models may be used in air conditioning applications up to 3 ton capacities without changing the blower. FEHB 010, 012, and 015 models may be used in heat pump applications up to 3 tons without changing the blower. The heat/cool multi-speed blower, P/N 901282, must be used in air conditioning and heat pump applications 3-1/2 through 4 ton capacities and all heat pump applications with FEHB 017, 020, and 023 models.

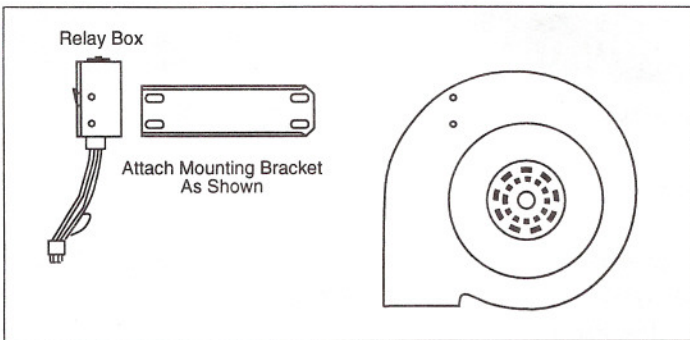


Figure 2. Attaching A/C Relay Box to Multi-Speed Blower

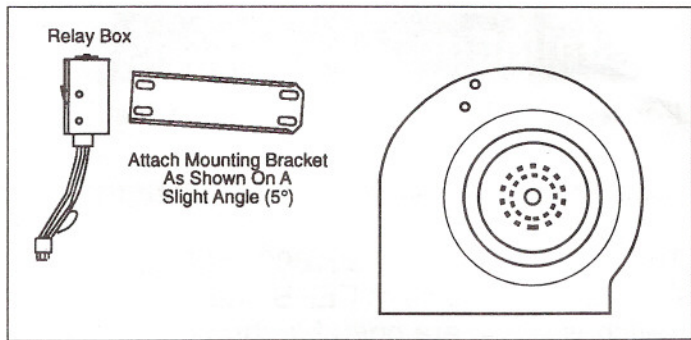


Figure 3. Attaching A/C Relay Box to 2-Speed Blower

All Models: Attach the relay control box mounting brackets to the side of the blower housing using the four pointed screws supplied as shown in Figure 2. **NOTE:** The brackets will be at a 5° angle when installed on the FEHB 2-speed blower.

- Remove the cover from the relay box by removing the screw from each side. Set the required blower speed by moving the orange wire on position 2 of the terminal block (for heating) and the violet wire on position 4 (for cooling). See Table 1 for the appropriate heating and cooling speed-setting positions. Re-attach the control box cover using the two screws previously removed.
- Attach the relay control box to the mounting brackets as shown in Figure 1 using the four blunt screws provided.

Insert the relay/blower assembly into the furnace by sliding it into and under the mounting tabs, secure the blower in place by using the two blower screws previously removed.

- Connect the motor lead male connector into the bottom female connector of the relay box. Connect the relay box wire assembly/connector into the furnace control box connector. (See Figure 1)
- Bring in the low voltage field wires from the thermostat and air conditioning/heat pump unit and attach them to the low voltage field wiring terminal board located at the top of the relay control box. (See system wiring as shown in Figure 3 of the Relay Box Installation Instructions.)
- Switch the circuit breaker(s) to the ON position. The unit is now ready for operation.

FEHB Models with Factory Supplied Blower

Furnace Operation (orange wire)

Furnace Model No.	-010, -012	-015, -017, -020, -023
Speed Terminal	#1	#2

Air Conditioning/Heat Pump Operation (violet wire)

Furnace Model No.	-010, -012, -015	-017, -020, -023
A/C Outdoor Unit Model No.	-018, -024, -030, -036	
H/P Outdoor Unit Model No.	-018, -024, -030, -036	N/A
Speed Terminal	#2	

FEHB Models with Field Installed Multi-Speed Blower (P/N 901282) and all FEHB Models.

Furnace Operation (orange wire)

Furnace Model No.	-010, -012	-015, -017	-020, -023
Speed Terminal	#1	#2	#3

Air Conditioning/Heat Pump Operation (violet wire)

Air Conditioning Outdoor Unit Model No.	-018, -024,	-030, -036,	-042, -046, -048
Heat Pump Outdoor Unit Model No.	-018,	-024, -030	-036, -042, -048
Speed Terminal	#2	#3	#4

Table 1. Heating and Cooling Speed Setting Positions