

INSTALLATION MANUAL



DOWNFLOW OR UPFLOW SINGLE OR TWO STAGE ELECTRIC FURNACE WITH:

- **FACTORY INSTALLED ELECTRIC HEAT**
- **NO HEAT MODELS WITH FIELD INSTALLED ELECTRIC HEAT KITS**

FOR INSTALLATION ONLY IN HUD MANUFACTURED HOMES PER CONSTRUCTION SAFETY 24 CFR PART 3280

MODELS: E30 SERIES

THIS APPLIANCE HAS AN IPX1 RATING

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CONTACT INFORMATION

Manufactured and Distributed by:

Mortex Products Inc
501 Terminal Rd
Fort Worth, TX 76106

www.mortx.com

SECTION 1: GENERAL

The following list includes important facts and information regarding this electric furnace.

1. Furnace is rated at 208/240 VAC at 60 Hz.
2. Furnace is the same size for all models.
3. Furnace is designed for A/C or heat pump operation.
4. Hold-down strap furnished with furnace.
5. This furnace is designed for downflow or upflow applications only.
6. This furnace must not be operated with the control box cover and front access panel removed.
7. This furnace is listed by ETL for the United States and Canada.
8. This air handler is for use at elevations of 10,000 ft (3,048m) or less.
9. This appliance is not to be used by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of this appliance by a person responsible for their safety. Children must not be allowed to play with this appliance.

SAVE THIS MANUAL FOR FUTURE REFERENCE

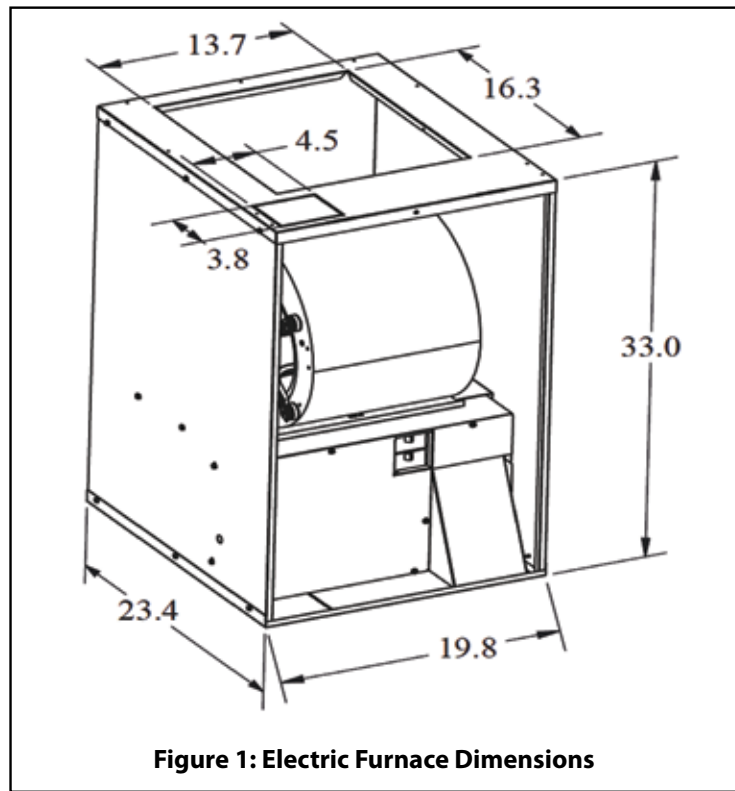


Figure 1: Electric Furnace Dimensions

Furnace Weights

E30B3Dxxx(A,B)D Models – 79 lbs. / 35.834 kg

E30B4Dxxx(A,B)D Models – 81 lbs. / 36.740 kg

E30B5Dxxx(A,B)D Models – 85 lbs. / 38.555 kg

Models	ALL	ALL	ALL
Input kW	6	8	10
With "A" Coil	NO	NO	NO
Air Temperature Rise - F	30-90	35-100	40-100
Air Temperature Rise - C	-1.1-32.2	1.6-37.7	4.4-37.7
Designed Max Outlet Air Temp, F/C	180 / 82.22	185 / 85	185 / 85
Blower Size	10 x 9	10 x 9	10 x 9
Max ESP In.W.C./kPa	0.3/0.075	0.3/0.075	0.3/0.075
Thermostat Circuit Electrical Specs.	24 VAC, 60 HZ, 40 VA		
Electric Furnace Cabinet Height, In/cm	33 / 83.82	33 / 83.82	33 / 83.82

Models	ALL	ALL	ALL
Input kW	12	15	20
With "A" Coil	NO	NO	NO
Air Temperature Rise - F	30-90	35-100	40-100
Air Temperature Rise - C	1.1-32.2	1.6-37.7	4.4-37.7
Designed Max Outlet Air Temp, F/C	180 / 82.22	185 / 85	185 / 85
Blower Size	10 x 9	10 x 9	10 x 9
Max ESP In.W.C./kPa	0.3/0.075	0.3/0.075	0.3/0.075
Thermostat Circuit Electrical Specs.	24 VAC, 60 HZ, 40 VA		
Electric Furnace Cabinet Height, In/cm	33 / 83.82	33 / 83.82	33 / 83.82

Table 1: Electric Furnace Specifications

Available Blower Motors

1. Standard Blower Motor - 5 SPD Constant Torque

Type of Fuel	Cabinet Height	Type of Blower Motor	Speed Taps, HP and kW	Furnace Configuration	Heating Input	Cabinet Height	Heat Stage	Revision Letter
E = Electric Furnace								
30 = 33 Inches								
B = Constant Torque								
3 = 1/3 HP (0.1865kW)								
5 SPD CT								
4 = 1/2 HP (0.3730kW)								
5 SPD CT								
5 = 3/4 HP (0.5595kW)								
D=Downflow								
<p>D = D-Revision</p> <p>A = Single Stage Heat</p> <p>B = Two Stage Heat</p> <p>A = Coil Cabinet Optional</p> <p>006 = 6 kW Electric Heater</p> <p>008 = 8 kW Electric Heater</p> <p>010 = 10 kW Electric Heater</p> <p>012 = 12 kW Electric Heater</p> <p>015 = 15 kW Electric Heater</p> <p>020 = 20 kW Electric Heater</p>								

Table 2: Model Number Nomenclature

Coil Cabinet Model	Front Door of Cabinet	Open Top 17 3/4in (450.85m) x 21 3/4in (52.45m)	Maximum Air Flow CFM (L/s)	1 inPleated Air Filter, in the door	2 in Pleated Air Filter, Top of Cabinet	Height, In (m)	Depth, In (m)	Width In (m)	Coil Sizes
97-FLSB-21	Louvered	N/A	120 (56.369)	20 x 20		23 1/4 (590.5)	25 (635)	19 3/4 (501.65)	All Mortex 96 series coil will fit in Cabinet
97-FSOB-21	Solid		160 (75.159)		20 x 24	23 1/4 (590.5)	25 (635)	19 3/4 (501.65)	
97-FLOB-21	Louvered		180 (849.5054)	20 x 20	20 X 24	23 1/4 (590.5)	25 (635)	19 3/4 (501.65)	
97-FLSB-27	Louvered	N/A	160 (75.159)	20 x 30		30 1/2 (74.7)	25 (635)	19 3/4 (501.65)	96-97 series coil and 98 series coil sizes up to 98-8W7
97-FSOB-27	Solid		160 (75.159)		20 X 24	30 1/2 (74.7)	25 (635)	19 3/4 (501.65)	
97-FLOB-27	Louvered		180 (849.5054)	20 x 20	20 X 24	30 1/2 (74.7)	25 (635)	19 3/4 (501.65)	
97-FLSB-39	Louvered	N/A	180 (849.5054)	(2EA) 20 x 20		40 1/4 (1,02.35)	25 (635)	19 3/4 (501.65)	Frame & Grilles Non-Cabinet
97FSOB-39	Solid		200 (943.8949)		20 X 24	40 1/4 (1,02.35)	25 (635)	19 3/4 (501.65)	
97-FG-18	Louvered	N/A	120 (56.369)	N/A	N/A	18 (457.2)	N/A	19 3/4 (501.65)	
97-FG-24	Louvered	N/A	160 (75.159)	N/A	N/A	24 (609.6)	N/A	19 3/4 (501.65)	

Table 3: Optional Cooling Cabinets and Return Air Grille Frames



This is a safety alert symbol. When you see this symbol on labels or in manuals, be alert to the potential for personal injury. Understand and pay particular attention to the signal words **DANGER**, **WARNING**, or **CAUTION**.

DANGER: Indicates an imminently hazardous situation, which if not avoided, **will result in death or serious injury**.

WARNING: Indicates a potentially hazardous situation, which if not avoided, **could result in death or serious injury**.

CAUTION: Indicates a potentially hazardous situation, which if not avoided, **may result in minor or moderate injury**. It is also used to alert against unsafe practices and hazards involving property damage.

WARNING

Improper installation may create a condition where the operation of the product could cause personal injury or property damage.

Improper installation, adjustment, alteration, service or maintenance can cause injury or property damage. Refer to this manual for assistance. For additional information consult a qualified contractor, installer, or service agency.

CAUTION

This product must be installed in strict compliance with the installation instructions and any applicable local, state, and national codes including, but not limited to; building, electrical, and mechanical codes.

WARNING

FIRE OR ELECTRICAL HAZARD

Failure to follow the safety warnings exactly could result in serious injury, death, or property damage.

A fire or electrical hazard may result causing property damage, personal injury or loss of life.

Safety Requirements

1. This electric furnace should be installed in accordance with all national and local building, safety, plumbing, and wastewater codes along with all other applicable codes. In the absence of local codes, install in accordance with the following codes.
 - Standard for the Installation of Air Conditioning and Ventilating Systems (NFPA 90A)
 - Standard for the Installation of Warm Air Heating and Air Conditioning Systems (NFPA 90B)
 - National Electrical Code (NFPA 70) (USA)
 - Canadian Electrical Code, Part I (CSA C22.1) (CANADA)
 - All local codes (State, City, and Township)

NOTE: All applicable codes take precedence over any recommendation made in these instructions. The manufacturer assumes no responsibility for air handlers installed in violation of any code or regulation.

2. Provide clearances from combustible materials as listed under **Clearances to Combustibles**.
3. Provide clearances for servicing ensuring service access is allowed for the control box, electric elements and the blower.
4. Failure to carefully read and follow all instructions in this manual can result in malfunction of the furnace, personal injury, property damage and or death.
5. Check the rating plate and the power supply to be sure the electrical characteristics match.
6. Electric furnace shall be installed so the electrical components are protected from water.
7. Care should be given when installing and servicing this furnace due to live electrical components. Some components may have dual power supplies. Always be sure to disconnect all fuses or circuit breakers before installing or servicing this furnace.
8. Only trained and qualified personnel should install repair or service this furnace. Untrained service personnel can perform basic maintenance functions such as cleaning of exterior surfaces and replacing the air filters. Observe all precautions in these instructions and on the attached labels when working on this furnace.
9. These instructions cover minimum requirements and conforms to existing national standards and safety codes. In some instances, these instructions exceed certain local codes and ordinances, especially those that have not kept up with changing mobile home, modular home and HUD construction practices. These instructions are to be followed and are the minimum requirement for a safe installation.
10. The size of the system should be based on an acceptable heat loss calculation for the structure. ACCA Manual J or other approved methods may be used.
11. All models use a nominal 208/240 VAC, 1- Phase, 60-Hz power supply.

NOTE: DO NOT CONNECT THIS AIR HANDLER TO A 50 HZ POWER SUPPLY OR A VOLTAGE ABOVE 250 VOLTS.
12. Ground connections must be securely fastened to the ground lug located inside the control box.

Inspection

As soon as the furnace is received, it should be inspected for possible damage during transit. If damage is evident, the extent of the damage should be noted on the carrier's freight bill. A separate request for inspection by the carrier's agent should be made in writing. Before installing the furnace, check the cabinet for screws or bolts which may have loosened in transit. There are no shipping or spacer brackets requiring removal before startup.

Check to be sure all accessories such as heater kits and coils are available. Installation of these accessories should be accomplished before the furnace is set in place or the connecting of the wiring, ducts, or piping.

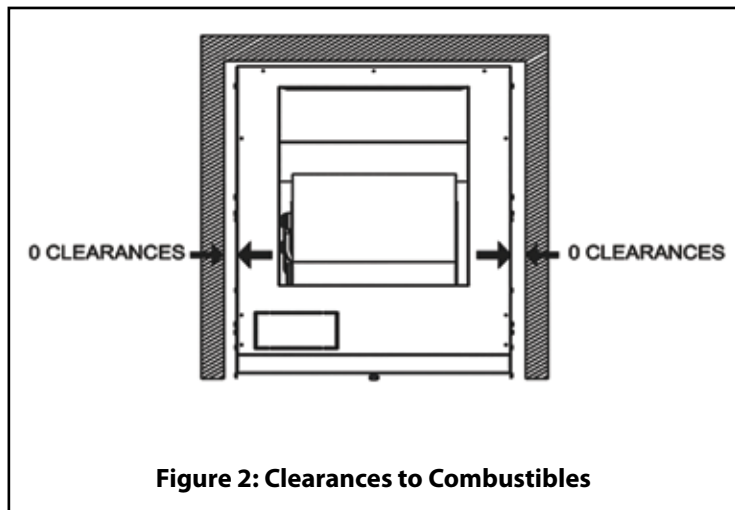
Clearances for Service

Access for servicing is an important factor in the location of any furnace. Provide a minimum of 24 inches (609.6 mm) in front of the furnace for access to the control box, heating elements, and blower. This access may be provided by a closet door or by locating the furnace so that a wall or partition is not less than 24 inches (609.6mm) from the front access door.

Clearance to Combustibles

This furnace is approved for the clearance to combustible material from the furnace exterior and ducts as shown in Table 4 and Figure 2.

Model	Top (in/m)	Back (in/m)	Sides (in/m)	FRONT OF FURNACE		
				Alcove (in/m)	Closet (in/m)	Duct (in/m)
AL	6.0 / 152.4	0.0 / 0.0	0.0 / 0.0	18.0 / 457.2	6.0 / 152.4	0.0 / 0.0

Table 4: Clearances to Combustibles**Figure 2: Clearances to Combustibles**

Provisions must be provided for the air in the living spaces to return to the air handler. Failure to comply may cause a reduction in the amount of return air available to the blower, causing reduced air-flow. If a cooling coil is installed on the furnace, the pressure drop of the coil must be taken into account when selecting the furnace size and selecting the blower motor speed taps to assure proper air flow for the system in both the heating and cooling modes. Reduced air-flow may result in insufficient heating or cooling of the living space. Reduced air flow may also cause the air handler to cycle on the heating over-temperature limit and premature heating element failure in the heating mode or ice formation on the coil in the cooling mode.

For the furnace to work properly, a closet or alcove where it is installed must have a minimum total free area opening for the return air as shown below.

Furnaces With 1/3 HP Blower Motor

- Minimum 200 in² (129,032 mm²) free area opening
- Use Return Grille, A/C Coil Cabinet, or any return grille with a minimum 200 in² (129,032 mm²) free area opening

Furnaces With 1/2 HP Blower Motor

- Minimum 250 in² (161,290 mm²) free area opening
- Use Return Grille, A/C Coil Cabinet, or any return grille with a minimum 250 in² (161,290 mm²) free area opening

**Figure 3: Service Access Clearances**

Furnaces With 3/4 HP Blower Motor

- Minimum 390 in² (251,612 mm²) free area opening
- Use Return Grille, or A/C Coil Cabinet, or any return grille with a minimum 390 in² (251,612 mm²) free area opening

Top Return Only – Recommended Return Grille Size

CFM / L/s	in x in (mm x mm)	in ² / mm ²
800 / 377	20 x 20 (500 x 500)	324 / 209,032
1000 / 472	20 X 25 (500 x 630)	414 / 267,096
1200 / 566	25 X 25 (635 x 635)	414 / 267,096
1400 / 661	25 X 30 (635 x 760)	644 / 415,483
1600 / 755	25 X 30 (635 x 760)	644 / 415,483
1800 / 843	30 X 30 (762 x 762)	784 / 505,805

Louvered Door & Top Return – Recommended Return Grille Size

CFM / L/s	in x in (mm x mm)	in ² / mm ²
800 / 377	10 x 20 (250 x 500)	144 / 92,903
1000 / 472	12 X 20 (300 x 500)	180 / 116,129
1200 / 566	14 X 20 (360 x 500)	216 / 139,355
1400 / 661	18 X 20 (460 x 500)	288 / 185,806
1600 / 755	18 X 20 (460 x 500)	288 / 185,806
1800 / 843	20 X 20 (500 x 500)	324 / 209,032

The return air opening can be located in a closet door, side wall above the furnace cabinet, or in a louvered door on the furnace. If the opening for the return air is located in the side wall of a closet or the closet door below the top of the furnace cabinet, a 6 inch (152.4 mm) minimum clearance must be provided on the side where the return is located to provide for proper air flow to the furnace return opening. The 6 inch (152.4 mm) minimum clearance is not required if the return grille is installed above the top of the furnace cabinet.

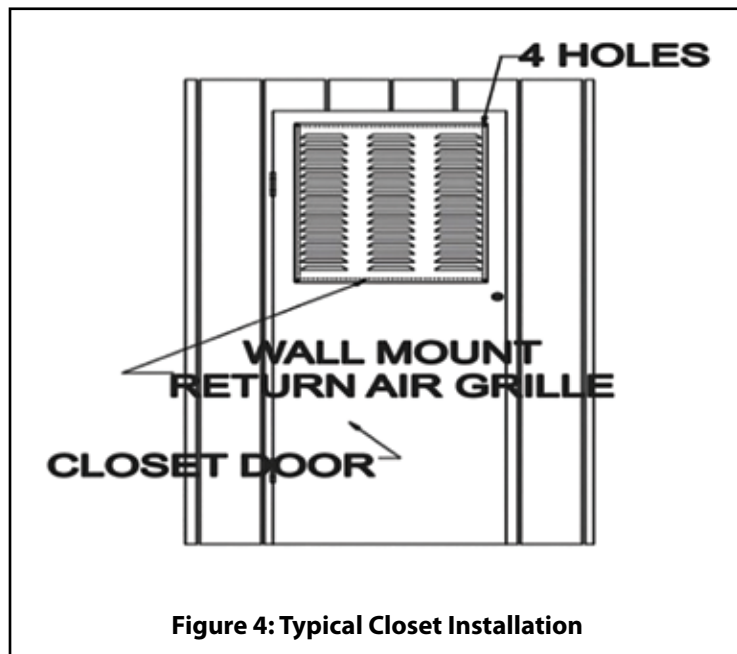


Figure 4: Typical Closet Installation

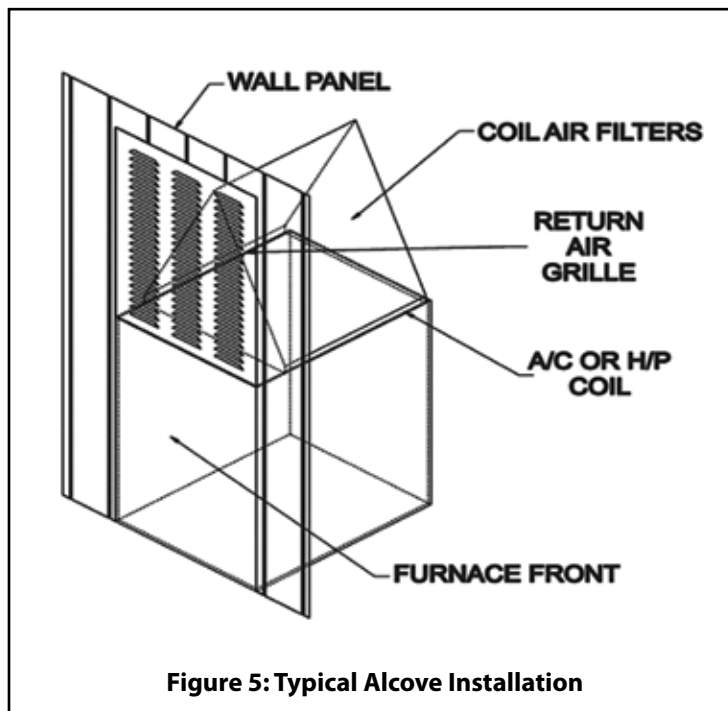


Figure 5: Typical Alcove Installation

Supply Air Distribution System

The furnace with a cooling coil installed is designed to operate against a maximum of 0.30-inch WC (0.074 kPa) external static pressure. In order to assure proper air-flow through the furnace and coil, the air distribution system (duct system) must not exceed a total static pressure of 0.30-inch WC (0.074 kPa). It is recommended that the manual “**Manufactured Housing Duct Systems Guide to Best Practices**” by Manufactured Housing Research Alliance (MHI-MHRA) be reviewed before selecting the air distribution system for use in the application.

Installing Downflow Furnace and Return Air Grille Frame Assembly in Alcove

The Return Air Grille kit is approved for use in an alcove for a heating only installation without an air-conditioning coil. The return air grille frame assembly is available in 18" (457.2mm) height and 24" (609.6mm) height. Follow the steps below to install the return air grille frame assembly to the furnace.

1. Before installing the return air grille frame on the furnace, confirm there is enough clearance to install the furnace and the return air grille assembly.
2. Holes for the electrical and thermostat wiring must be cut prior to installing the furnace and return air grille.
3. Remove the stretch wrap, top and bottom shipping covers, and corner posts from the furnace.
4. Remove the furnace front access panel.
5. Remove the return air grille frame assembly from its carton.
6. Set the return air grille frame assembly on the front of the furnace top cover as shown in Figure 6. Line up the screw holes in the frame assembly with the screw holes in the furnace top cover and attach the frame assembly to the furnace top cover using the provided screws.
7. Slide the furnace onto the floor base. Push the furnace back until the furnace cabinet is against the rear flange of the floor base.
8. Secure the furnace cabinet to the floor by drilling two holes through the furnace base and the floor base in the right and left front inside corners of the furnace cabinet. Use two screws to secure the furnace and floor base to the floor.
9. Place the air filter in the filter rack in the louvered door and install the louvered door on the frame assembly by inserting the tabs in the bottom of the louvered door into the slots in the furnace top cover.
10. Secure the louvered door to the frame assembly with the thumb screw in the top of the door.

Downflow "A" Coil Return Air Filter Rack Assembly For Alcove or Closet Installations

An air filter assembly is available that attaches to the "A" coil as shown in Figure 7. This assembly utilizes 2 filters, one for each coil slab. A return air grille with a sufficient free area opening must be installed in the closet door or wall of the closet.

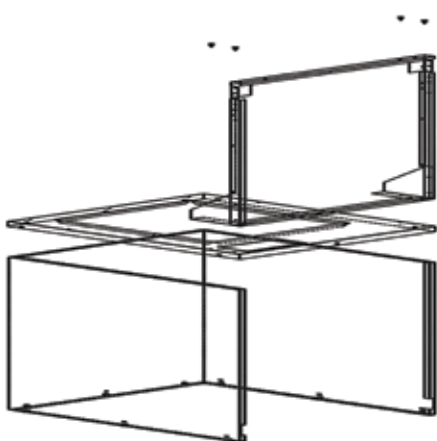


Figure 6: Return Air Grille Frame Assembly

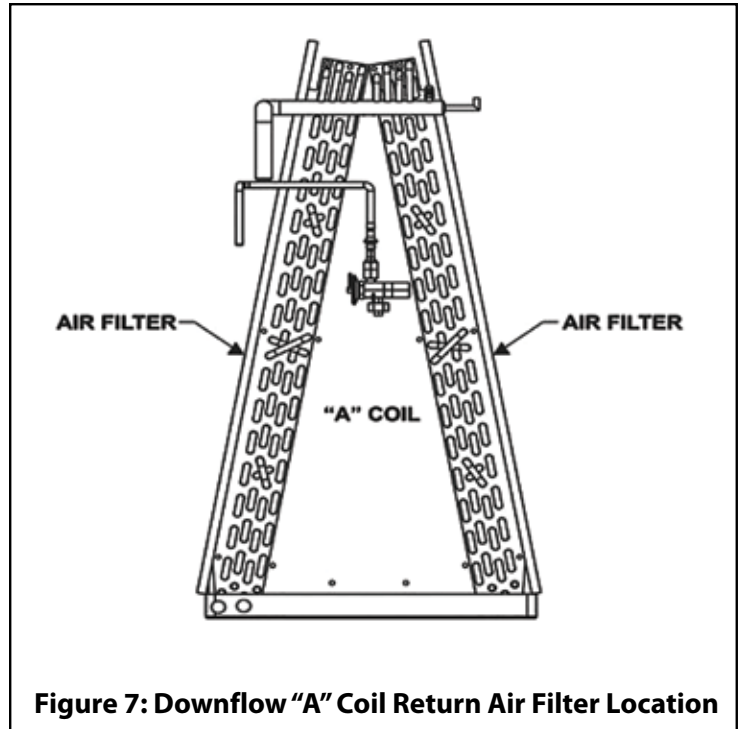


Figure 7: Downflow "A" Coil Return Air Filter Location

Installing the Downflow Furnace and Coil Cabinet in Alcove and Closet

The downflow coil cabinets are approved for use in an alcove or closet installations with an approved air conditioning coil. The downflow coil cabinets are available in 23.25in (590.55mm), 30.50in (774.7mm) and 41.25in (1,047.75mm) height. The furnace is 33in (838.2mm) in height making the combined furnace and coil cabinet height 56in (1,422.4mm), 63in (1,600.2mm) and 73in (1,854.2mm). Follow the steps below to install the coil cabinet assembly to the furnace.

1. Before installing the coil cabinet on the furnace, confirm there is enough clearance to install the furnace and the coil cabinet assembly.
2. Holes for the refrigerant tubing, condensate drain line, line voltage supply wiring, thermostat wiring, and outdoor unit control wiring must be cut prior to installing the furnace and coil cabinet.
3. Remove the stretch wrap, top and bottom shipping covers, and corner posts from the furnace.
4. Remove the furnace front access panel and lay the furnace on its back.
5. Remove the coil cabinet from its carton and assemble it per the instructions.
6. Lay the coil cabinet on its back and place the coil cabinet flanges against the furnace top cover.
7. Secure the cooling coil cabinet to the top cover of the furnace using the provided screws.
8. Slide the furnace onto the floor base. Push the furnace back until the furnace cabinet is against the rear flange of the floor base.
9. Drill two holes through the furnace base and the floor base at the right and left front inside corners of the cabinet. Use two screws to secure the furnace and floor base to the floor.

Duct Connectors

90-DCU0-XX Duct Connectors

A duct connector is used to provide a sealed connection between the furnace base and a below the floor supply duct system. The duct connector allows the furnace to be installed on a combustible floor without the use of a separate sub-base providing insulation is placed between the duct connector and the combustible floor. Table 5 shows the duct connector needed for various applications.

DEPTH FROM FLOOR TO DUCT - in (mm)	DUCT CONNECTOR MODEL NUMBER
1 in (25.4 mm)	90-DCU0-01
2 in (50.8 mm)	90-DCU0-01
3 in (76.2 mm)	90-DCU0-01
4 in (101.6 mm)	90-DCU0-01
5 in (127.0 mm)	90-DCU0-02
6 in (152.4 mm)	90-DCU0-02
7 in (177.8 mm)	90-DCU0-02
8 in (203.2 mm)	90-DCU0-02
9 in (228.6 mm)	90-DCU0-03
10 in (254.0 mm)	90-DCU0-03
11 in (279.4 mm)	90-DCU0-03
12 in (304.8 mm)	90-DCU0-03

Table 5: Duct Connector Models

⚠ WARNING

A duct connector can be installed on combustible flooring **except for carpeting**. It is recommended to use insulation having a rating of R-12 or higher between the floor base and the combustible floor to prevent the combustible floor from getting too hot.

Installing the Duct Connector

1. Refer to Figures 8 – 11 for dimensions necessary for duct connector installation.
2. Attach the four (seal-strip) foam tape gaskets provided with the duct connector around the perimeter of the duct opening in the main supply duct trunk to seal between the duct connector and the top of the duct opening.
3. Insert the duct connector through the opening in the floor and attach the duct connector to the top of the main trunk by inserting the tabs through the opening in the top of the duct and bending the tabs back 90 degrees against the inside of the duct. Confirm the seal-strip has sealed the area around the duct connector where it attaches to the main supply duct trunk.
4. Slit the corners of the duct connector that extend above the floor and then bend the sides over onto the floor surface.
5. It is recommended to place insulation between the floor base and the floor when used on a combustible floor to prevent the

combustible floor from getting too hot. Cut the insulation around the perimeter of the duct connector opening.

6. Install the floor base over the floor opening with the flanges in the opening facing downward.
7. Insert the four screws provided in the kit through the four holes in the floor base and drive the screws into the floor to secure the floor base to the floor.

Additional Duct Connector Installation Information

The duct connector is designed to be installed in place of an existing duct connector and is designed for use on ducts wider than 12 inches (304.8mm). When using the duct connector on narrower ducts, there will be insufficient clearance to bend the tabs on four sides of the duct connector. Some of the tabs on the duct connector may need to remain unbent so it fits into the main trunk. In these cases, the tabs may be attached to the sides of the main trunk by using sheet metal screws or other suitable fasteners. Add holes in the tabs for sheet metal screws by drilling the required screw holes in 3 tabs on each side of the duct connector. If more than three tabs are needed to provide a more secure and air-tight connection, drill the remaining tabs so the additional tabs can also be fastened to the duct with screws. Use a duct sealer to seal any air leaks between the duct and the duct connector. High temperature metal tape can also be used to provide an air seal. The tape should be approved by applicable national or local codes.

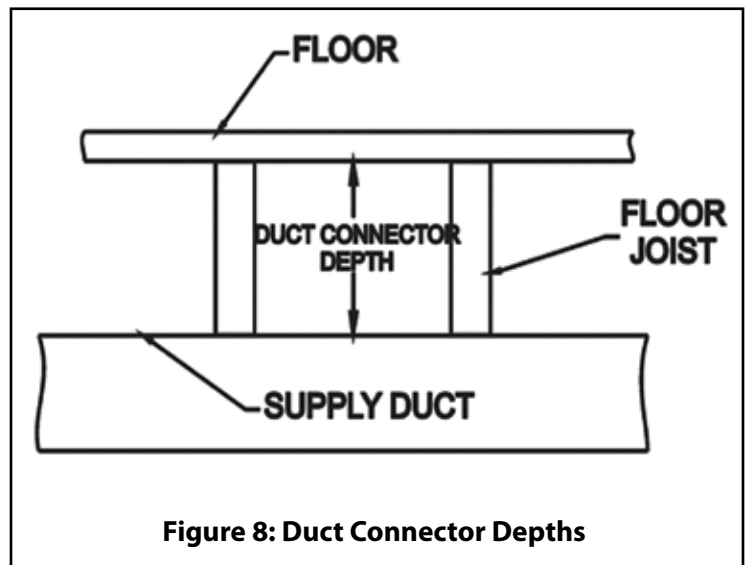


Figure 8: Duct Connector Depths

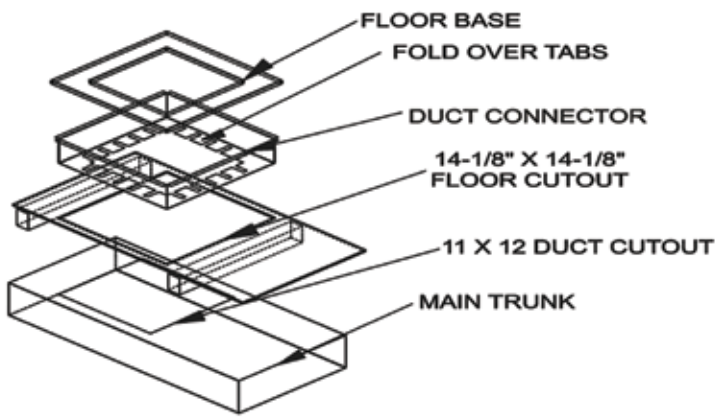


Figure 9: Duct Connector and Combustible Floor Base

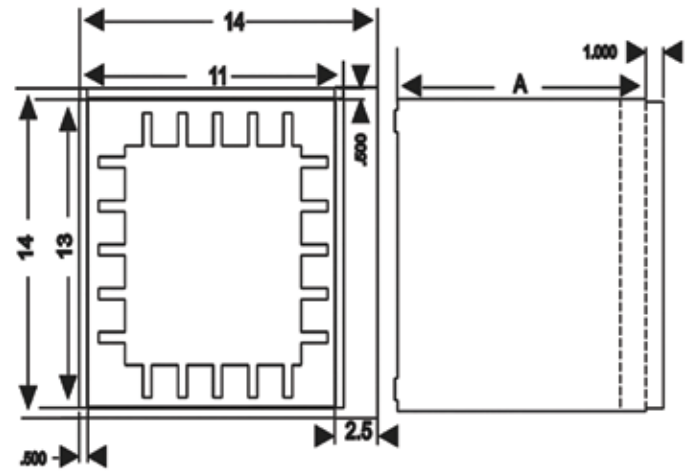


Figure 11: Duct Connector Dimensions

SECTION 7: UPFLOW COIL CABINET AND RETURN AIR CABINET INSTALLATION

Upflow coil and return air cabinets are approved for use in alcove or closet installations with an approved air-conditioning coil. Upflow coil cabinets are available in 28" (711.2 mm) and 36" (914.4 mm) heights. The return air cabinet height for applications with a 28" (711.2 mm) tall coil cabinet is 20" (508mm) and 24" (609.6 mm) for applications with a 36" (915.4 mm) tall coil cabinet. The total height of the furnace, coil cabinet and return air cabinet is as follows:

Return Air Cabinet Height = 20" (508 mm)

Coil Cabinet Height = 28" (711.2 mm)

Furnace height = 33" (838 mm):

Total Height = 81" (2,057.4 mm)

Return Air Cabinet Height = 24" (609.6 mm)

Coil Cabinet Height = 36" (914.4 mm)

Furnace Height = 33" (838 mm)

Total height = 93" (2,362.2 mm)

Follow the steps below to install the coil cabinet assembly.

1. Before beginning the installation, confirm there is enough clearance to install the furnace, coil cabinet, and return air cabinet.
2. Holes for the refrigerant tubing, condensate drain line, line voltage supply wiring, thermostat wiring, and outdoor unit control wiring must be cut prior to installing the furnace, coil cabinet, and return air cabinet.
3. Remove the stretch wrap, top and bottom shipping covers, and corner posts from the furnace.
4. Remove the furnace front access panel (door) and lay the furnace on its back.
5. Remove the coil and return air cabinets from their cartons.
6. If required, remove the left or right metal knockout (not both) in the bottom of the coil cabinet so the refrigerant lines and condensate drain line can be routed through it. Refer to Figure 13 for location of the metal knockouts.
7. Position the coil cabinet on top of the return air cabinet and secure it to the return air cabinet with at least 4 field supplied screws.

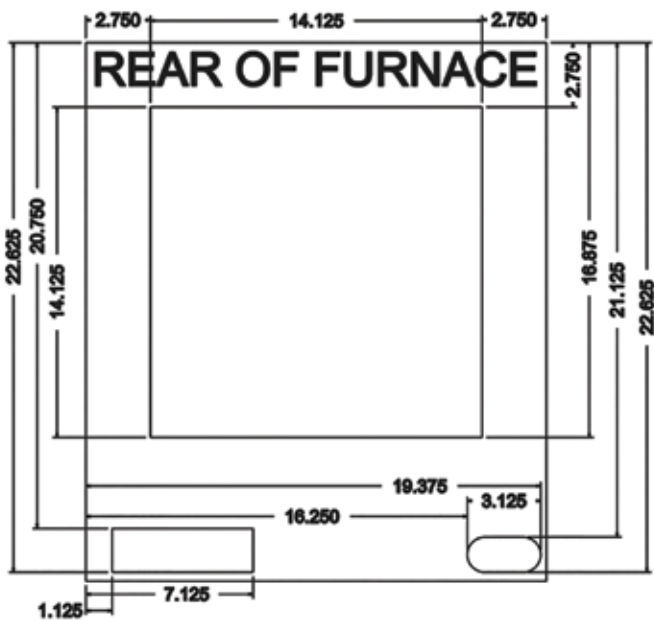
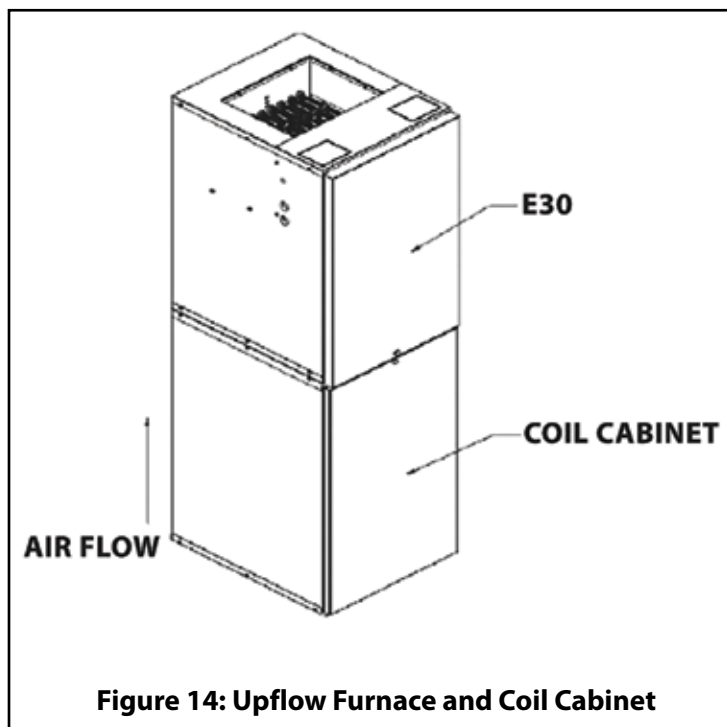
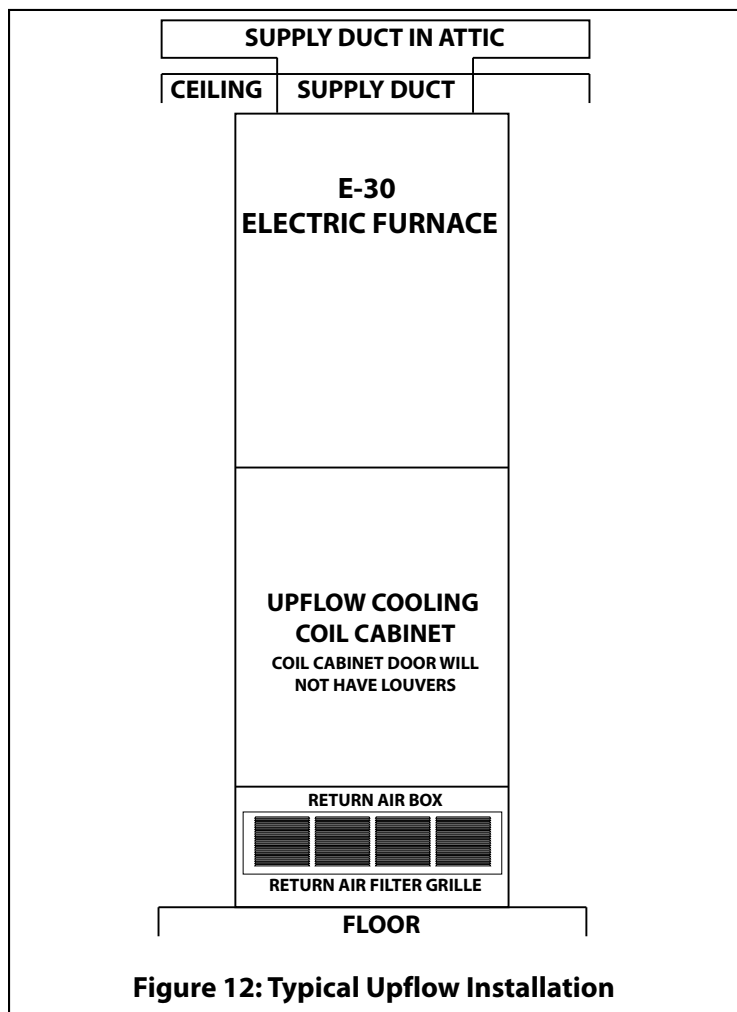
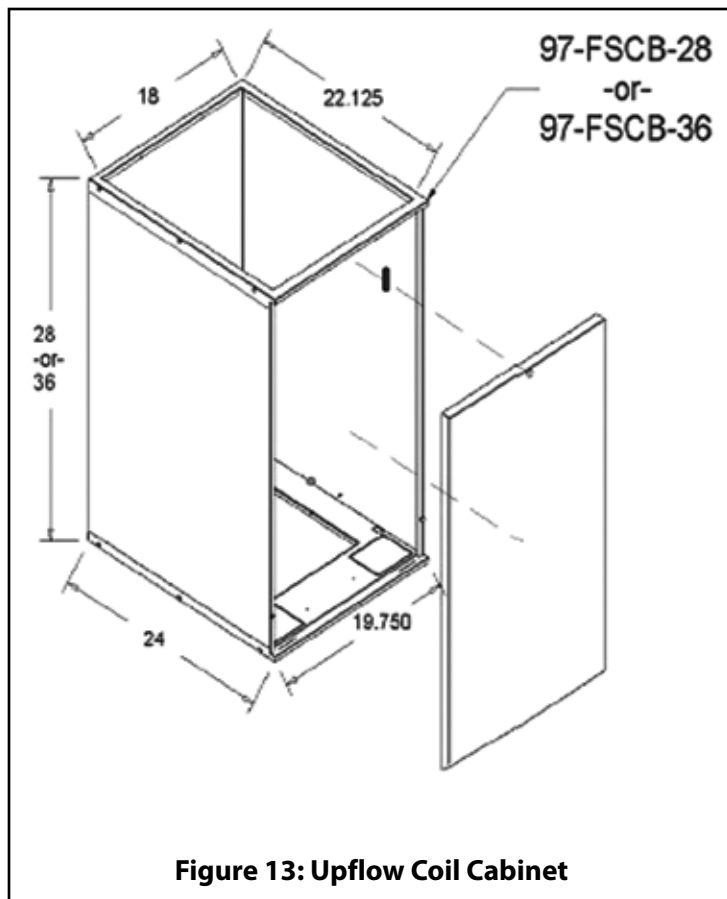


Figure 10: Combustible Floor Base Dimensions

8. The installer must fabricate a duct connector that mounts below the coil cabinet for a return duct connected to a remote return air grille. The duct connector must allow for the refrigerant line set to be in front of the duct connector plenum.
9. Position the furnace on the top of the coil cabinet as shown in Figure 14 with the air discharge pointing upward and secure it to the coil cabinet with the at least 4 field supplied screws.
10. Use the upflow duct connector kit to attach the furnace to the overhead supply duct.
11. Stand the assembled furnace, coil cabinet, and return air cabinet up and seal all of the joints with mastic or tape.
12. Insulate the inside of the coil cabinet and the inside of the solid front door with a minimum 1/2 in (12.7 mm) thick insulation to prevent condensation from forming on the outside of the coil cabinet when the system is operating in the cooling mode.
13. Slide the furnace into position below the supply air duct and secure the return air cabinet to the floor with at least 4 field supplied screws.
14. Use the duct collar to secure the supply air duct to the top of the furnace.

WARNING

When installing the duct collar, do not drive pointed screws into the control box and make sure no screws are touching any components or wires.



The furnace internal wiring is complete except for the 208/240 VAC power supply and the thermostat wiring. See wiring diagram and Tables 6 and 7 for wire size, fuse/circuit breaker size, and ground wire sizes. Power wires can enter through the right side of the furnace or through the auxiliary entrance located in the bottom of the furnace. When bringing wiring through the side of the furnace, a cable connector (strain relief) must be installed to hold wiring in place and to relieve any strain on the wiring.

WARNING

Installation of surge protection circuit breakers is recommended to prevent supply line power surges to the furnace. Power surge protection is designed to prevent voltage spikes that can cause damage to heater contactors and limit controls. Voltage spikes can weld the contacts of heat contactors, relays and limit controls closed preventing them from opening. Welded heat contactor or heat relay contacts will result in the electric heaters remaining ON after the blower motor turns off following the end of a heat cycle. Welded limit control contacts will prevent the limit control from opening in an overtemperature condition due to insufficient air-flow. Either condition can result in a hazardous condition which may cause a fire, loss of property or loss of life.

Single Electrical Power Supply – 5kW, 6kW, 8kW, 10kW Electric Heat

1. Remove the furnace front access panel.
2. Remove the control box cover.
3. Install a cable connector (strain relief) in the 7/8" (22.2 mm) diameter hole on the right side of the control box.
NOTE: Do not install the cable connector in the furnace exterior cabinet hole in the as the sheet metal gauge is too thin.
4. Strip 1/2" (12.7mm) of the insulation on the end of each wire.
5. Insert the incoming power supply cable through the hole in the left side of the casing and through the cable connector.
6. Insert the BLACK wire into the L1 screw terminal on the circuit breaker and tighten the setscrew until the wire is securely fastened to the circuit breaker screw terminal.
7. Insert the WHITE or RED wire into the L2 screw terminal on the circuit breaker and tighten the setscrew until the wire is securely fastened to the circuit breaker L2 screw terminal.
8. Insert the GREEN ground wire into the ground lug and tighten the set screw until the ground wire is securely fastened to the ground lug.
9. Once all of the wiring connections have been made, secure the incoming power supply cable by tightening the cable connector around the incoming power supply cable.
10. Refer to Table 6 for the required wire size and required overcurrent protection (fuse/circuit breaker) size.

Single Electrical Power Supply – 12kW, 15kW, 20kW Electric Heat

1. Remove the furnace front access panel.
2. Remove the control box cover.
3. Install a cable connector in the 7/8" (22.2 mm) diameter hole on the right side of the control box.
NOTE: Do not install the cable connector in the furnace exterior cabinet hole in the as the sheet metal gauge is too thin.

4. Strip 1/2" (12.7mm) of the insulation on the end of each wire.
5. Insert the incoming power supply cable through the hole in the right side of the casing and through the cable connector.
6. Insert the GREEN ground wire into the ground lug and tighten the set screw until the ground wire is securely fastened to the ground lug.

7. Using Jumpers to Connect Power Supply to Stage 2 Circuit Breaker.

- a. Insert the BLACK jumper wire along with the incoming BLACK power supply wire into the L1 screw terminal on the top (stage1) circuit breaker and tighten the set screw until the wires are securely fastened to the top circuit breaker L1 terminal.
- b. Insert the other end of the BLACK jumper wire into the L1 screw terminal on the bottom (stage 2) circuit breaker and tighten the set screw until the wire is securely fastened to the bottom circuit breaker L1 screw terminal.
- c. Insert the WHITE or RED jumper wire along with the incoming WHITE or RED power supply wire into the L2 screw terminal on the top (stage 1) circuit breaker and tighten the set screw until the wires are securely fastened to the top circuit breaker L2 terminal.
- d. Insert the other end of the WHITE or RED jumper wire into the L2 screw terminal on the bottom (stage 2) circuit breaker and tighten the set screw until the wire is securely fastened to the bottom circuit breaker L2 screw terminal.
- e. Once all of the wiring connections have been made, secure the incoming power supply cable by tightening the cable connector around the incoming power supply cable.
- f. Refer to Table 6 for the required wire size and required overcurrent protection (fuse/circuit breaker) size.

8. Using Jumper Bar Assembly to Connect Power Supply to Stage 2 Circuit Breaker

NOTE: Use 100-amp 4 Pole Jumper Bar Assembly Part Number 68BAE001.

- a. Remove the jumper bar cover by removing the 2 screws that secure the cover to the assembly.
- b. Insert the 4 copper tabs on the jumper bar assembly into the L1 and L2 screw terminals on both of the top and bottom circuit breakers. Tighten the set screws on the screw terminals until the tabs are securely fastened to all 4 of the circuit breaker screw terminals.
- c. Insert the incoming BLACK power supply wire into the L1 screw terminal on the jumper bar assembly and tighten the set screw until the wire is securely fastened to the L1 screw terminal.
- d. Insert the incoming WHITE or RED power supply wire into the L2 screw terminal on the jumper bar assembly. Tighten the set screw until the wire is securely fastened to the L2 screw terminal.
- e. Secure the jumper bar cover to the jumper bar assembly with the 2 screws removed in Step 6a above.
- f. Once all of the wiring connections have been made, secure the incoming power supply cable by tightening the cable connector around the incoming power supply cable.
- g. Refer to the instructions that came with the jumper bar assembly for additional installation information.
- h. Refer to Table 6 for the required wire size and required overcurrent protection (fuse/circuit breaker) size.

Dual Circuit Electrical Power Supply - 12kW, 15kW, 20kW

Electric Heat

1. Remove the furnace front access panel.
2. Remove the control box cover.
3. Install a cable connector in the top 7/8" (22.2 mm) diameter hole on the right side of the control box.

NOTE: Do not secure the cable connector in the hole in the casing as the casing sheet metal gauge is too thin.

4. Strip 1/2" (12.7 mm) of the insulation on the end of each wire.
5. Insert the first wire cable (stage 1 circuit) through the top hole in the right side of the casing and through the cable connector.
6. Insert the incoming BLACK power supply wire (stage 1 circuit) into the L1 screw terminal on the top (stage 1) circuit breaker. Tighten the set screw until the wire is securely fastened to the top circuit breaker L1 screw terminal.
7. Insert the incoming WHITE or RED power supply wire (stage 1 circuit) into the L2 screw terminal on the top (stage 1) circuit breaker. Tighten the set screw until the wire is securely fastened to the top circuit breaker L1 screw terminal.
8. Install a cable connector in the bottom 7/8" (22.2 mm) diameter hole on the left side of the control box.

NOTE: Do not secure the cable connector in the hole in the casing as the casing sheet metal gauge is too thin.

9. Strip 1/2" (12.7 mm) of the insulation on the end of each wire.
10. Insert the second wire cable (stage 2 circuit) through the bottom hole in the left side of the casing and through the cable connector.
11. Insert the incoming BLACK power supply wire (stage 2 circuit) into the L1 screw terminal on the bottom (stage 2) circuit breaker. Tighten the set screw until the wire is securely fastened to the bottom circuit breaker L1 screw terminal.
12. Insert the incoming WHITE or RED power supply wire (stage 2 circuit) into the L2 screw terminal on the bottom (stage 2) circuit breaker. Tighten the set screw until the wire is securely fastened to the bottom circuit breaker L1 screw terminal.
13. Insert the GREEN ground wire from each incoming power supply cables into each ground lug inside the control box and tighten the screw terminal on each ground lug to secure the ground wires to the ground lugs.
14. Once all of the wiring connections have been made, secure the incoming power supply cables by tightening the cable connectors around the incoming power supply cables.
15. Refer to Table 7 for the required wire size and required overcurrent protection (fuse/circuit breaker) size.

IMPORTANT – The circuit breakers in the furnace control box protect the wiring inside of the furnace in the event of a short circuit. Additionally, these breakers provide a means of disconnecting the power to the unit. The circuit breakers in the furnace control box are not meant to protect the wiring between the furnace and the main electrical panel. Wire size and overcurrent protection requirements are shown in Tables 6 and 7. If sheathed cable is used, refer to NEC National Electrical Code (NFPA 70) or the Canadian Electrical Code, Part I (CSA C22.1) and any local codes for additional requirements concerning supply circuit wiring. All field installed wiring must be rated for 60°C or higher. Heating capacities can be found in Table 8.

IMPORTANT – Refer to the NEC National Electrical Code (NFPA 70) or the Canadian Electrical Code, Part I (CSA C22.1) and local codes

for wiring material requirements.

IMPORTANT – Casing or cabinet must be permanently grounded in accordance with the National Electrical Code or other applicable codes.

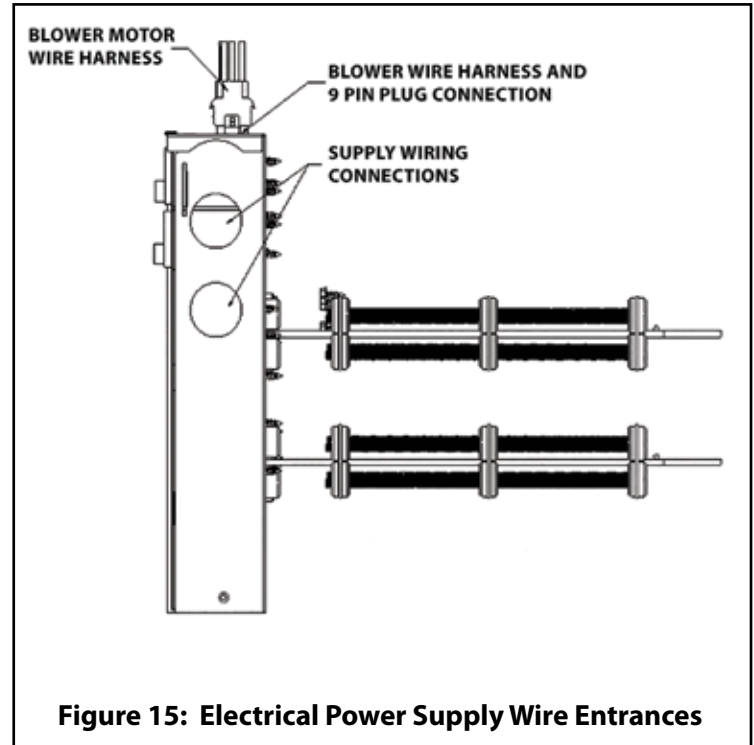


Figure 15: Electrical Power Supply Wire Entrances

ELECTRIC HEATER AND BLOWER MOTOR ELECTRICAL SPECIFICATIONS																		
Electric Heater Size - kW	6 kW			8 kW			10 kW			12 kW			15 kW			20 kW		
Electric Heater Load - FLA	25.00			33.33			41.67			50.00			62.5			83.34		
	AWG			AWG			AWG			AWG			AWG			AWG		
Minimum Wires Size (60° C)	#8	#8	#8	#6	#6	#6	#4	#4	#4	#4	#4	#4	#3	#3	#3	#1	#1	#1
Minimum Wires Size (75° C)	#10	#8	#8	#8	#8	#8	#6	#6	#6	#4	#4	#4	#4	#4	#4	#2	#2	#2
Minimum Wires Size (90° C)	#10	#10	#10	#8	#8	#8	#6	#6	#6	#6	#6	#6	#4	#4	#4	#3	#3	#3
Ground Wire Size	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Furnace Model	E30B3	E30B4	E30B5	E30B3	E30B4	E30B5	E30B3	E30B4	E30B5	E30B3	E30B4	E30B5	E30B3	E30B4	E30B5	E30B3	E30B4	E30B5
Indoor Blower FLA	2.40	3.20	4.10	2.40	3.20	4.10	2.40	3.20	4.10	2.40	3.20	4.10	2.40	3.20	4.10	2.40	3.20	4.10
Minimum Circuit Ampacity	35	36	37	45	46	47	56	57	58	66	67	68	82	83	84	108	109	110
Max Overcurrent Protection Amps	35	40	40	45	50	50	60	60	60	70	70	70	90	90	90	110	110	110

Table 6: Wiring Requirements – Single Branch Circuit

6kW, 8kW and 10kW single-stage models can only be wired as a single branch circuit (single power supply).

+ Refer to the National Electrical Code Table 250-95 for non-sheathed conductor ground wire.

* Ground conductor **must be the same size and temperature rating** as the other conductors listed in Table 6.

ELECTRIC HEATER AND BLOWER MOTOR ELECTRICAL SPECIFICATIONS									
Electric Heater Size - kW	12 kW			15 kW			20 kW		
	FLA		kW	FLA		kW	F L A		kW
Heater Load Circuit 1 - FLA / kW	25.00		6.00	41.67		10.00	41.67		10.00
Heater Load Circuit 2 - FLA / kW	25.00		6.00	20.83		5.00	41.67		10.00
	AWG			AWG			AWG		
Minimum Wire Size (60° C) Circuit 1	#8	#8	#8	#4	#4	#4	#4	#4	#4
Minimum Wire Size (76° C) Circuit 1	#10	#8	#8	#6	#6	#6	#6	#6	#6
Minimum Wire Size (90° C) Circuit 1	#10	#10	#10	#6	#6	#6	#6	#6	#6
Minimum Wire Size (60° C) Circuit 2	#8	#8	#8	#10	#10	#10	#6	#6	#6
Minimum Wire Size (75° C) Circuit 2	#10	#10	#10	#10	#10	#10	#6	#6	#6
Minimum Wire Size (90° C) Circuit 2	#10	#10	#10	#12	#12	#12	#8	#8	#8
Ground Wire Size	*	*	*	*	*	*	*	*	*
Furnace Model	E30B3	E30B4	E30B5	E30B3	E30B4	E30B5	E30B3	E30B4	E30B5
Indoor Blower FLA (Circuit 1)	2.4	3.2	4.1	2.4	3.2	4.1	2.4	3.2	4.1
Minimum Circuit Ampacity (Circuit 1)	35	36	37	56	57	58	56	57	58
Minimum Circuit Ampacity (Circuit 2)	32	32	32	27	27	27	53	53	53
Max Overcurrent Protection Amps (Circuit 1)	35	40	40	60	60	60	60	60	60
Max Overcurrent Protection Amps (Circuit 2)	35	35	35	30	30	30	60	60	60

Table 7: Wiring Requirements – Dual Branch Circuit

12kW, 15kW and 20kW two-stage models may have a dual or single branch circuit (dual or single power supply).

A jumper bar assembly or jumper wires are used to connect a single power supply to the stage 2 (bottom) circuit breaker.

+ Refer to the National Electrical Code Table 250-95 for Non-Sheathed Conductor Ground Wire.

* Ground conductor **must be the same size and temperature rating** as the other conductors listed in Table 7.

ELECTRIC HEATER PERFORMANCE DATA										
Electric Heater Size		6 kW	8 kW	10 kW	12 kW		15 kW		20 kW	
Branch Circuit Number		1	1	1	1	2	1	2	1	2
240 VAC, 60 HZ, 1 PH	BTU	20,439	27,297	34,121	20,473	20,473	17,027	34,121	34,121	34,121
	kW	5.99	8.00	10.00	6.00	6.00	4.99	10.00	10.00	10.00
230 VAC, 60 HZ, 1 PH	BTU	18,771	25,070	31,337	18,802	18,802	15,637	31,337	31,337	31,337
	kW	5.50	7.35	9.18	5.51	5.51	4.58	9.18	9.18	9.18
220 VAC, 60 HZ, 1 PH	BTU	17,174	22,937	28,671	17,203	17,203	14,307	28,671	28,671	28,671
	kW	5.03	6.72	8.40	5.04	5.04	4.19	8.40	8.40	8.40
208 VAC, 60 HZ, 1 PH	BTU	15,352	20,503	25,629	15,377	15,377	12,789	25,629	25,629	25,629
	kW	4.50	6.01	7.51	4.51	4.51	3.75	7.51	7.51	7.51

Table 8: Electric Heat Performance Data

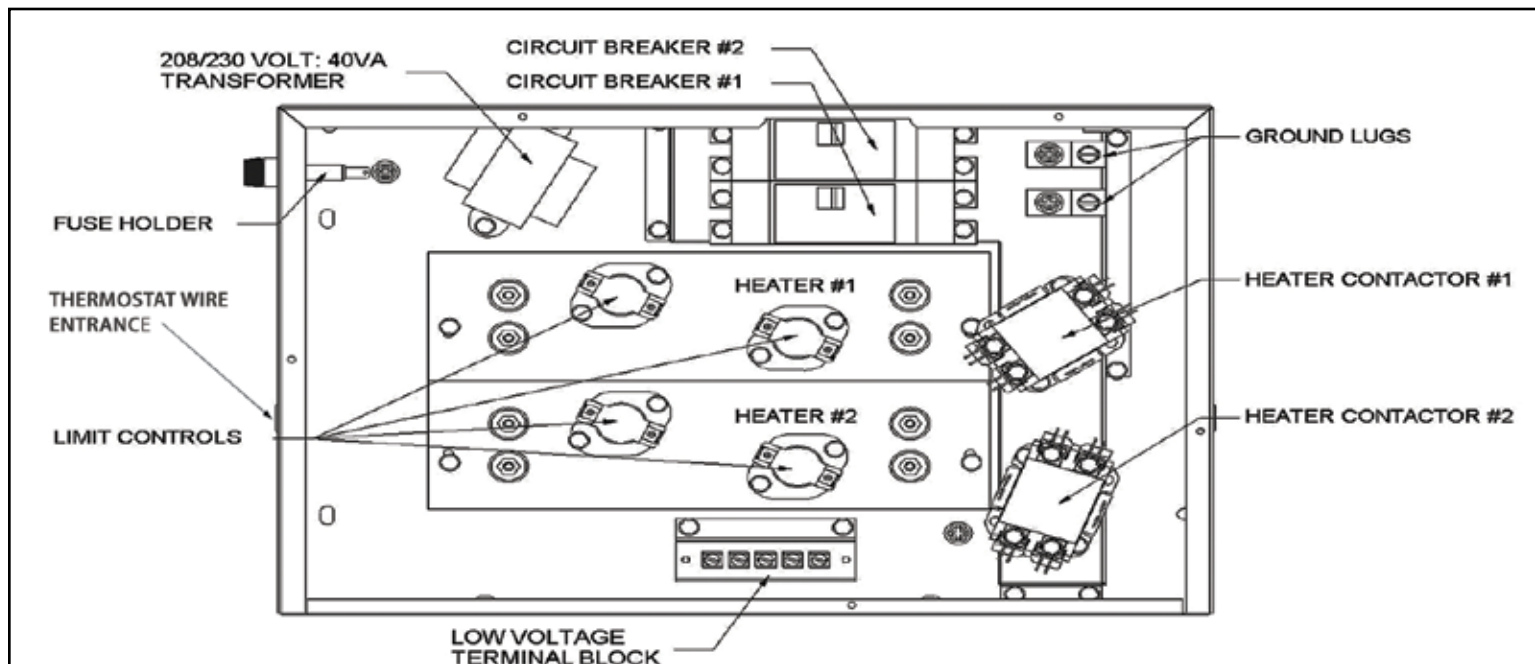


Figure 16: Control Box Component Locations

Casing or cabinet must be permanently grounded in accordance with the National Electrical Code or other applicable codes.

⚠ WARNING

For personal safety, turn the electrical power "OFF" at the main electrical panel (circuit breaker box) and switch the furnace control box circuit breakers to the "OFF" position before attempting any service or maintenance operations. Homeowners should never attempt to perform any maintenance which requires opening the furnace control box cover (See Figure 16).

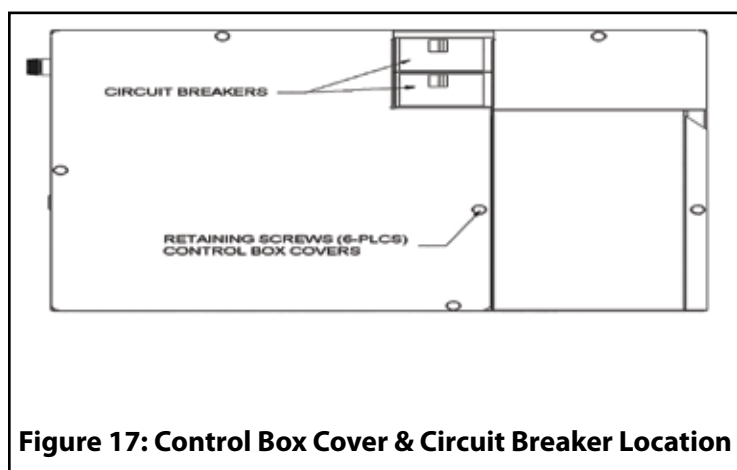


Figure 17: Control Box Cover & Circuit Breaker Location

SECTION 9: THERMOSTAT WIRING AND LOW VOLTAGE CONNECTIONS

Thermostat Wiring

Thermostat wires must on the right side of the furnace cabinet and must be no smaller than 20 AWG. Refer to Table 9 for recommended wire gauge, lengths and maximum current for each wire gauge.

NOTE: The thermostat wire cable must enter only on the left side of the furnace cabinet into the left side of the control box through the provided plastic bushing and CANNOT pass through the line voltage section (right side) of the control box.

Thermostat Wire Length	Thermostat Wire Gauge	Thermostat Wire Maximum Current
Feet/Meters	AWG	Amps
0-70/21.34	20	3.00
0-112/34.14	18	3.00

Table 9: Low Voltage Wire Gauge and Maximum Lengths

NOTE: A 3 Amp slow-blow fuse is located on the left side of the control box that protects the 24 VAC circuit. Replace this fuse only with the equivalent 3 Amp glass fuse.

The use of a five-conductor cable from the thermostat to the furnace is recommended for typical heating or heating/ cooling installations with a two or three-conductor cable from the furnace to the cooling-only outdoor unit.

A seven or eight conductor cable from the thermostat to the furnace is recommended for a typical heat pump installation with a five-conductor cable from the furnace to the heat pump outdoor unit.

The thermostat wire colors for typical heating, cooling and heat pump connections are shown in Tables 10 and 11.

Thermostat Installation

The thermostat should be located on an inside wall in an open area to more closely regulate average room air, preferably where there is air movement back to air handler. Locating height of thermostat is important. If possible, the thermostat should be located in a hallway upstream from the air handler return airflow, not within 3 feet of from any windows and 52 to 66 inches above the floor. DO NOT place the thermostat within three feet of any of the air-distribution supply air registers.

Maintenance, operating and/ or programming instructions are in the envelope accompanying the thermostat. Give the envelope to the homeowner.

CAUTION

Do not locate thermostat within 3 feet of any of the following items:

- 1 Supply air registers
- 2 Lights or heat lamps
- 3 Aquariums
- 4 Televisions, stereo, amplifiers, surround sound systems
- 5 Stoves or any cooking appliance
- 6 Refrigerator
- 7 Washer and/or dryer
- 8 Hot water tank
- 9 Any hot water
- 10 Within 15 feet of an electric space heater
- 11 Within 2 feet of sunlight

Furnace and Outdoor Unit With Separate Transformers

If the furnace and the outdoor unit have separate transformers, it is important to use a thermostat with isolated heating and cooling contacts "RC" and "RH" to prevent interconnection of Class II 24 VAC systems. Most modern thermostats have separate heating and cooling contacts for use with homes that have an air handler and outdoor unit that are completely separate and each have a 24 VAC transformer for system control. These thermostats have a "RC" terminal for cooling and a "RH" terminal for heating. Connect the RED wire from the "R" terminal on the outdoor unit to the "RC" terminal on the thermostat and the "R" terminal from the furnace low voltage terminal block (LVTB) to the "RH" terminal on the thermostat. If the "R" circuits from the furnace and outdoor unit with separate transformers are both connected to the thermostat "R" terminal, a transformer burnout can occur or the outdoor unit control system could go into lockout mode. If a furnace and outdoor unit with separate transformers are being installed and the thermostat does not have the "RC" and "RH" terminals, a new thermostat with "RC" and "RH" terminals must be purchased and installed.

IMPORTANT: Cycle the air handler and outdoor unit separately to make sure both operate correctly.

Separate Thermostats For Heating and Cooling

If heating and cooling are controlled by separate thermostats, a thermostat interlock switch (See Figure 21) is required to prevent the furnace and the outdoor unit from operating at the same time.

CAUTION

When using separate thermostats for heating and cooling, a thermostat interlock must be placed in the thermostat "R" circuit. Simultaneous operation of heating and cooling can result in equipment overheating, equipment damage, and wasted energy.

Do not connect a wire to the thermostat Y terminal unless an outdoor unit is installed.

Thermostat Heat Anticipator

Some thermostats have a heat anticipator setting that must be set to the settings shown below in order to function correctly. If the heat anticipator setting is too low, the system will short cycle. If the heat anticipator setting is too high, the system will run long heat cycles thus causing the temperature to overrun the temperature setting. This will cause the homeowner or user to feel too warm by the time the blower completes its cycle and too cold by the time the system cycles on again. The heat anticipator should be set to 0.4 for all heating kW's.

The thermostat may be a "self-setting" type in which no heat anticipator will be found on the thermostat, eliminating the need for field adjustment.

Typical Heat/Cool Low Voltage Wiring Connections

1. Remove the front access panel.
2. Remove the control box cover.
3. Install a field supplied grommet in the 3/8" hole on the right side of the furnace cabinet to protect the thermostat wire cables.
4. Strip 1/2" of the insulation from the end of each wire in the low voltage cables.
5. Insert the wire cables from the thermostat and outdoor cooling unit through the grommet in the right side of the furnace cabinet and through the 3/8" strain relief installed in the control box.
6. Place the thermostat wire cable next to the furnace low voltage terminal block (LVTB).
7. Connect the RED thermostat wire (24 VAC) to the "R" screw terminal on the LVTB.
8. **Single-Stage Heat Wiring Connection** - Connect the WHITE thermostat wire (heat) to the "W" screw terminal on the furnace LVTB.
- Two-Stage Heat Wiring Connection** (12kW – 20kW Only)
 - Connect the WHITE wire from the thermostat "W1" terminal (1st stage heat) to the "W" screw terminal on the furnace LVTB. Remove the BLACK/W2 wire (2nd stage heat) connected to the spade terminal on the back of the furnace LVTB "W" terminal, cut the terminal off, and strip 1/2" of the insulation from the end of the wire. Connect this wire to the BLACK wire from the thermostat W2 terminal with a wire nut.
9. Connect the GREEN thermostat wire (indoor fan) to the "G" screw terminal on the LVTB.
10. Connect the YELLOW thermostat wire (cool) and the YELLOW wire from the outdoor unit compressor contactor to the "Y" screw terminal on the LVTB.
11. Connect BROWN thermostat wire (24 VAC common) and the BROWN wire from the outdoor unit compressor contactor to the "C" screw terminal on the LVTB.

Typical Heat Pump Low Voltage Wiring Connections

1. Remove the front access panel.
2. Remove the control box cover.
3. Install a field supplied grommet in the 3/8" hole on the right side of the furnace cabinet to protect the thermostat wire cable(s).
4. Strip 1/2" of the insulation from the end of each wire in the low voltage cable(s).
5. Insert the wire cable(s) from the thermostat and outdoor unit through the grommet in the right side of the furnace cabinet and through the 3/8" strain relief installed in the control box.
6. Place the thermostat wire cable next to the furnace low voltage terminal block (LVTB).
7. Connect the RED wire (24 VAC) from the thermostat "R" terminal and the RED wire from the "R" terminal on the outdoor unit control board to the "R" screw terminal on the LVTB.
8. Connect the WHITE wire (emergency heat) from the thermostat "W/E" terminal to the "W" screw terminal on the LVTB.
9. Furnaces with 2-Stage Heat (12kW – 20kW Only): Remove the BLACK/W2 wire (2nd stage heat) connected to the spade terminal on the back of the furnace LVTB "W" terminal, cut the terminal off, and strip 1/2" of the insulation from the end of the wire. Connect this wire to the BLACK wire from the thermostat W2 terminal with a wire nut.
10. Connect the GREEN wire (indoor fan) from the thermostat "G" terminal to the "G" screw terminal on the LVTB.
11. Connect the YELLOW wire (cool/heat pump heat) from the thermostat "Y" terminal and the YELLOW wire from the "Y" terminal on the outdoor unit control board to the "Y" screw terminal on the LVTB.
12. Connect BROWN wire (24 VAC common) from the thermostat "C" terminal and the BROWN wire from the "C" terminal on the outdoor unit control board to the "C" screw terminal on the LVTB.
13. Connect the ORANGE or BLUE thermostat wire from the thermostat "O" or "B" terminal to the ORANGE or BLUE (reversing valve solenoid) wire from the "O" or "B" terminal on the outdoor unit with a wire nut. The connections ("O" vs. "B") will depend on the outdoor unit brand. Refer to the outdoor unit installation instructions and wiring diagram before making this connection.
14. If the outdoor unit control board has a terminal for energizing electric heat during the defrost cycle and this feature is desired, connect a wire from that terminal to the "W1" terminal on the LVTB. Refer to the outdoor unit installation manual and wiring diagram for more information.

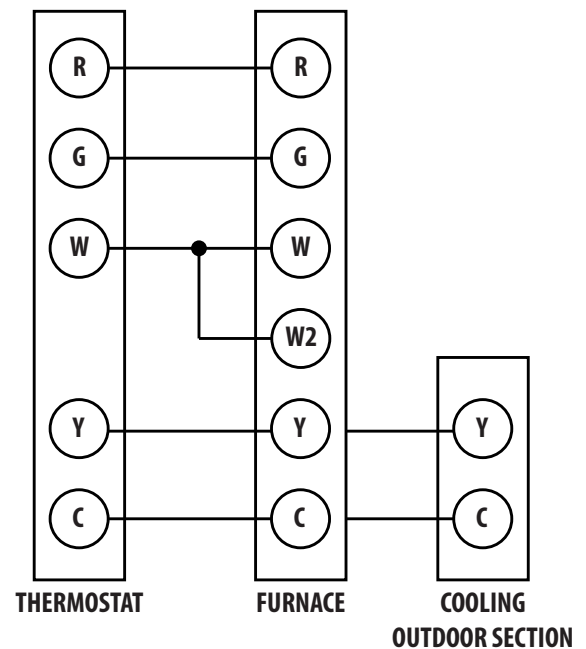


Figure 18: Typical Single-Stage Heat and Cool Low Voltage Connections With Single Transformer in Furnaces

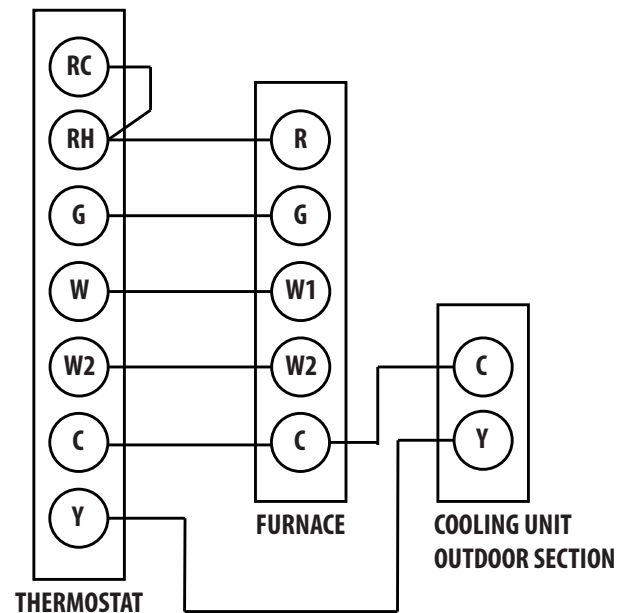
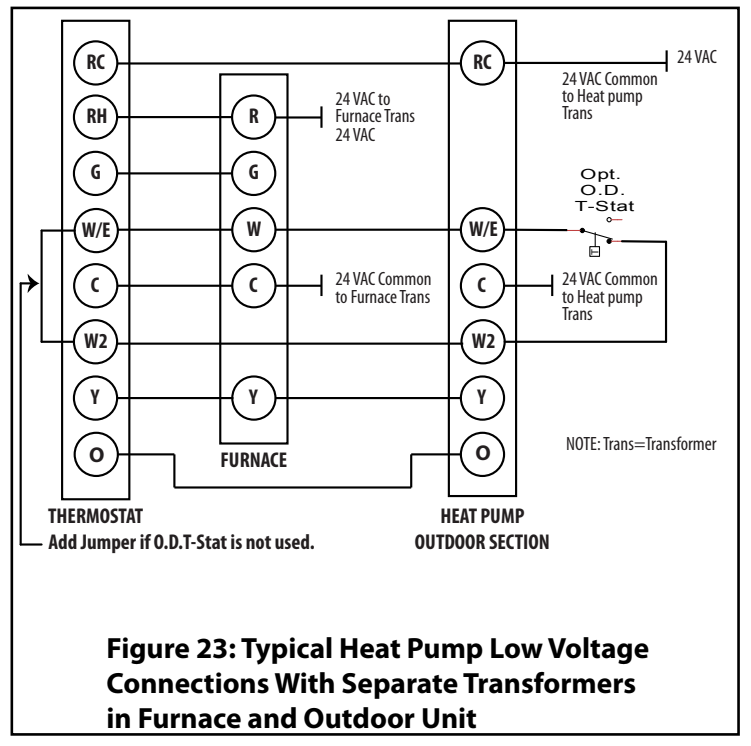
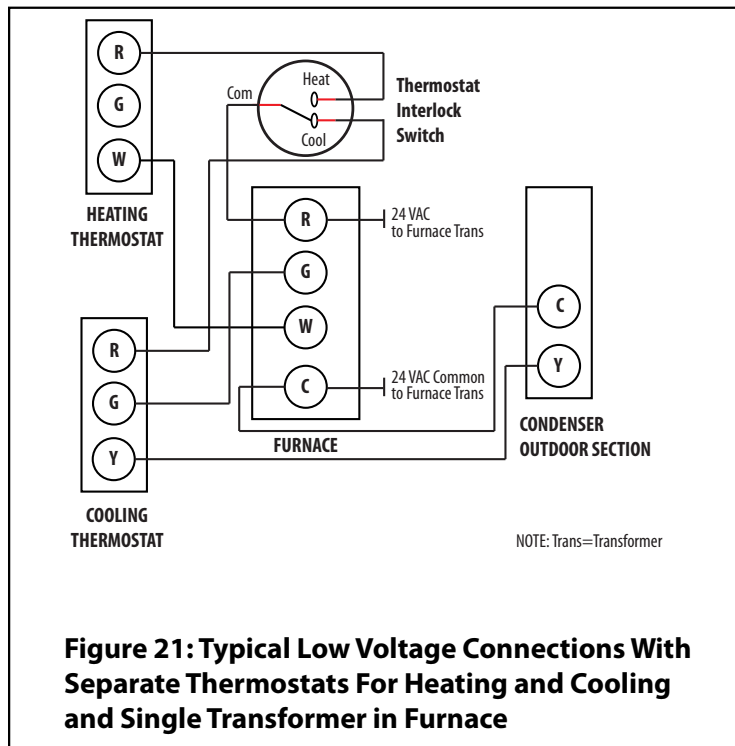
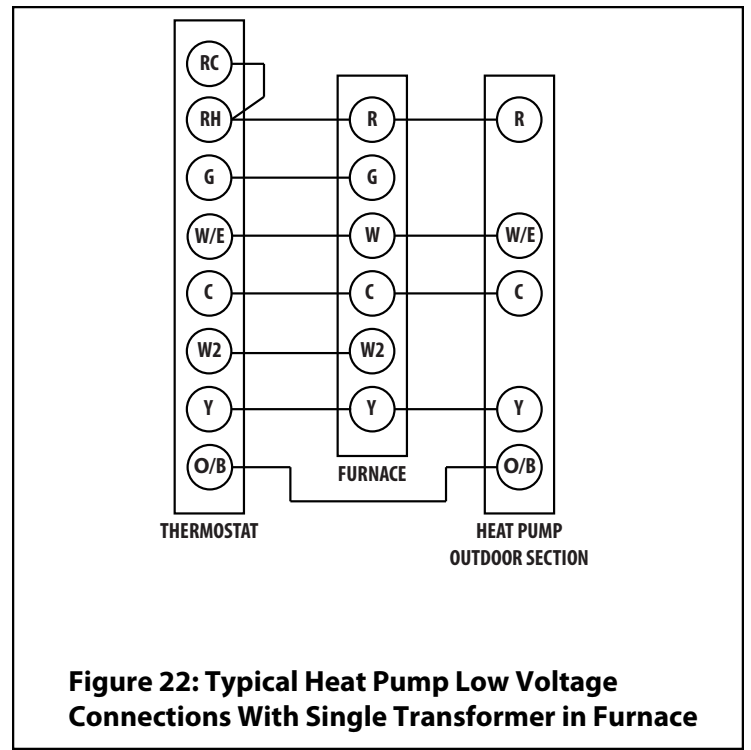
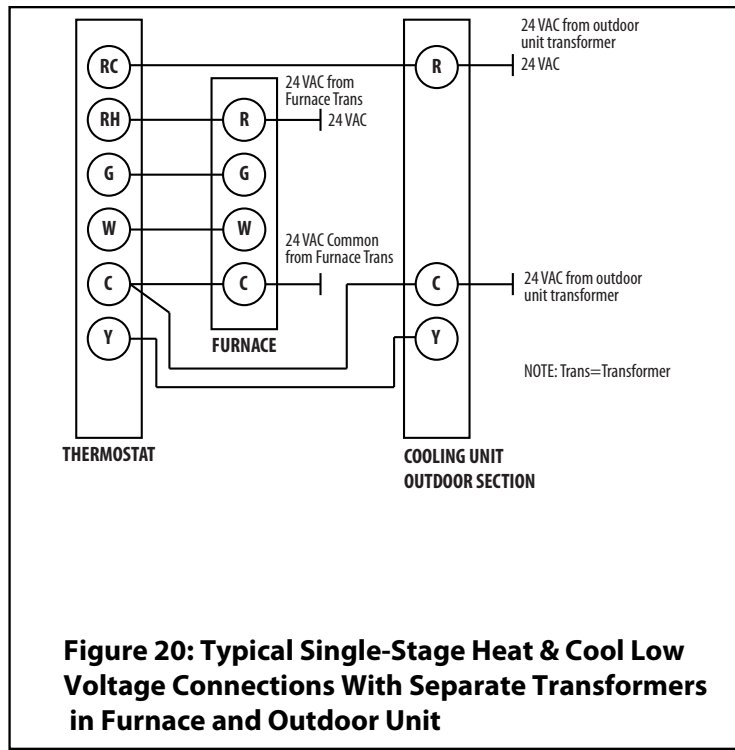


Figure 19: Typical Two-Stage Heat/Single-Stage Cool Low Voltage Connections With Single Transformer in Furnace



THERMOSTAT WIRE COLOR	DESCRIPTION	LETTER CODE	THERMOSTAT AND FURNACE CONNECTIONS	OUTDOOR UNIT CONNECTIONS
RED	24 VAC	R	R	N/A
WHITE	1st Stage Electric Heat	W1	W	N/A
BLACK	2nd Stage Electric Heat	W2	W2 *	N/A
GREEN	Indoor Fan	G	G	N/A
YELLOW	Cooling	Y	Y (Thermostat Only)	Y
BROWN	24 VAC Common	C	C	C

Table 10: Typical Heat / Cool Low Voltage Wire Color Codes and Connections

* For furnaces with 2-stage electric heat (12kW – 20kW), disconnect BLACK wire (2nd stage heat) from spade terminal on the back of the LVTB “W” terminal and connect to the wire from the W2 thermostat terminal with a wire nut.

THERMOSTAT WIRE COLOR	DESCRIPTION	LETTER CODE	THERMOSTAT AND FURNACE CONNECTIONS	OUTDOOR UNIT CONNECTIONS
RED	24 VAC	R	R	R
WHITE	1st Stage Electric Heat	W1	E (Thermostat) W (Furnace)	See Outdoor Unit Instructions
BLACK	2nd Stage Electric Heat	W2	W2 *	See Outdoor Unit Instructions
GREEN	Indoor Fan	G	G	N/A
YELLOW	Cooling	Y	Y (Thermostat Only)	Y
ORANGE	Heat Pump Reversing Valve (Most Brands)	O	O (Thermostat Only)	O (See Outdoor Unit Instructions)
BLUE	Heat Pump Reversing Valve (Some Brands)	B	B (Thermostat Only)	B (See Outdoor Unit Instructions)
BROWN	24 VAC Common	C	C	C

Table 11: Typical Heat Pump Low Voltage Wire Color Codes and Connections

* For furnaces with 2-stage electric heat (12kW – 20kW), disconnect BLACK wire (2nd stage heat) from spade terminal on the back of the LVTB “W” terminal and connect to the wire from the W2 thermostat terminal with a wire nut.

⚠ 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.

⚠ WARNING

Be sure to disconnect the electrical power supply to the furnace by turning off the circuit breakers for the furnace in the home's main electrical panel (circuit breaker box) and the circuit breaker(s) in the furnace control box before removing the furnace front access panel and control box cover.

1. Switch the circuit breakers for the furnace in the main electrical panel (circuit breaker box) to the "OFF" position and switch the furnace circuit breaker(s) to the "OFF" position.
2. Remove the furnace front access panel.
3. Remove the control box cover.
4. Disconnect the speed tap wire to be changed from the ¼ in (6.35 mm) spade terminal on the back of the LVTB and connect the desired speed tap wire to that spade terminal. Refer to Table 12 for motor speed tap descriptions, Table 14 for factory speed tap settings, and the furnace wiring diagram for speed tap wire colors.
5. Reinstall the control box cover.
6. Reinstall the front access panel.
7. Switch the furnace circuit breaker(s) to the "ON" position.
8. Switch the circuit breakers for the furnace in the main electrical panel to the "ON" position.

Speed Tap 5: High Speed – Cooling or Heat Pump Heating Modes

Speed Tap 4: Med-High Speed – Cooling or Heat Pump Heating Modes

Speed Tap 3: Medium Speed – Cooling or Electric Resistance Heating Modes

Speed Tap 2: Med-Low Speed – Electric Resistance Heating Mode

Speed Tap 1: Low Speed – Constant Circulation Mode Only

NOTE: DO NOT USE SPEED TAP 1 FOR HEATING OR COOLING MODES! Speed Tap 1 airflow is approximately 200 CFM. This is not enough airflow for electric heating, cooling, or heat pump heating operation. If Speed Tap 1 is used for cooling, the evaporator will freeze up. If Speed Tap 1 is used for heat pump heating, the outdoor unit high pressure switch will trip. If Speed Tap 1 is used for electric resistance heating, the heater over temperature limits will cycle.

Table 12: Constant Torque Motor Speed Tap Descriptions

Terminal	Connection
C	Speed Tap Common - 24 VAC Common
L	Supply Voltage - 240 VAC Line 1
G	Ground Connection
N	Supply Voltage - 240 VAC Line 2
1	Low Speed Tap - 24 VAC Input
2	Medium-Low Speed Tap - 24 VAC Input
3	Medium Speed Tap - 24 VAC Input
4	Medium-High Speed Tap - 24 VAC Input
5	High Speed Tap - 24 VAC Input

Table 13: Constant Torque Motor Terminal Descriptions

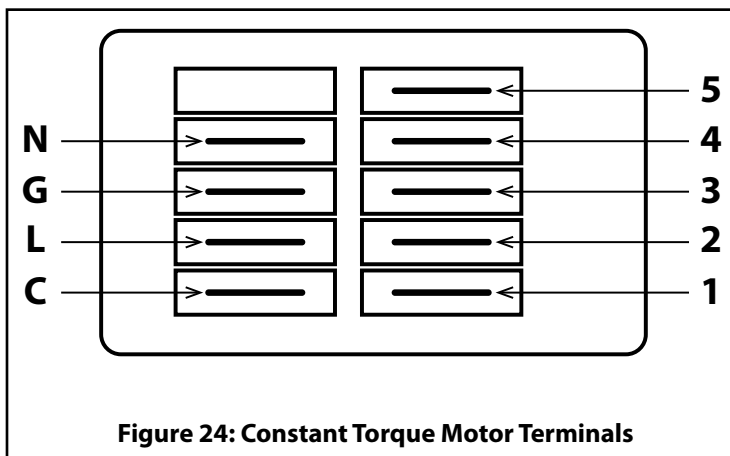


Figure 24: Constant Torque Motor Terminals

Factory Speed Tap Settings @ .3 ESP with Filter and Coil						
Serie Model	Sp Tap	Nom -Tons	CFM	Coil Range (See Coil Face Velocity Chart Below)	Max kW	Blower Setting
E30B3D xxx AAD or E30B3D xxx ABD	T-1	1.5	580	96 - Series, 97 - Series , 98 - Series	5	Factory Setting T-5
	T-2	2.0	750		8	
	T-3	2.5	925		8	
	T-4	3.0	1120		10	
	T-5	3.5	1300		12	
E30B4D xxx AAD or E30B4D xxx ABD	T-1	2.0	800	96 - Series (Do Not use T-5 w /96 -), 97 - Series , 98-Series	12	Factory Setting T-4
	T-2	2.5	950		15	
	T-3	3.0	1120		15	
	T-4	3.5	1260		17	
	T-5	4.0	1380		20	
E30B5D xxx AAD or E30B5D xxx ABD	T-1	3.0	1080	98-Series Only	17	Factory Setting T-3
	T-2	3.5	1300		20	
	T-3	4.0	1440		20	
	T-4	4.0	1520		20	
	T-5	5.0	1680		20	
E30B3 **** 1/3 HP Motor E30B4 **** 1/2 HP Motor E30B5 **** 3/4 HP Motor (+) Metering device , Piston, TXV (+ +) Refrigerant Connection, 0P, 2P, 3P, 4P or 6P xxx Designates Kilowatts, 015 = 15 kW CFM Shown with Dry Coil and Filter in place , Wet Coil Correction 4-6%			Electric furnace temperature rise (TR) can be used to determine air flow rate in CFM. The CFM can then be used to determine velocity across the coil face area using the chart below. For heat pump applications, disable the heat pump heating mode. Set furnace to run all the heater strips and then check return air and supply air temperature. The difference is the temperature rise (TR). CFM = (kW x 3412) x (Voltage Correction Less Than 240 V) x 1.08 / TR Example: CFM = (15 kW x 3412) x .96 x 1.08 / 56 TR CFM = 51180 x .96 x 1.08 / 56 = 948 CFM			Voltage Correction < 240 V .96 = 230 Volts .92 = 220 Volts .87 = 208 Volts
Coil Face Velocity Formula & Maximum Allowances						
Coil Series	CFM	Coil Face Area (Sq Ft)	Nominal Face Velocity (Ft/Min))	Coil Models (See Note Below)	Maximum Face Velocity (Ft/Min)	Note
96-Series	750	3.11	242	96-8(Z,5,G ,8,W)2(+)-(+ +)P	300	WARNING Exceeding these nominal and / or maximum allowances may cause water blow off from the coil, which; may damage furnace, void furnace warranty and limit liability from those damages
	925	3.32	279	96-(R,M)(2,3,4)4(+)-(+ +)P	300	
	1120	3.56	315	96-8(Z,2,3,4,5,G ,8,W)(3,5)(+)-(+ +)P	320	
	1300	4.06	321	96-(8,R,M)(Z,2,3,4,5,G ,8,W)(4,6)(+)-(+ +)P	325	
97-Series	1380	4.44	311	97-(8,R,M)(Z,2,3,4,5,G ,8,W)(5,7)(+)-(+ +)P	325	
98-Series	1440	5.33	270	98-(8,R,M)(Z,2,3,4,5,G ,8,W)(7,10)(+)-(+ +)P	330	
	1520	5.78	263	98-(8,R,M)(Z,2,3,4,5,G ,8,W)(8,11)(+)-(+ +)P	330	
	1520	6.22	245	98-(8,R,M)(Z,2,3,4,5,G ,8,W)(9,12)(+)-(+ +)P	330	
	1680	6.67	252	98-(8,R,M)(Z,2,3,4,5,G ,8,W)(10,13)(+)-(+ +)P	330	
	1680	7.11	237	98-(8,R,M)(Z,2,3,4,5,G ,8,W)(11,14)(+)-(+ +)P	330	
	1680	7.56	223	98-(8,R,M)(Z,2,3,4,5,G ,8,W)(12,15)(+)-(+ +)P	330	
	1680	8.00	210	98-(8,R,M)(Z,2,3,4,5,G ,8,W)(13,17)(+)-(+ +)P (See Example)	330	
Air Velocity Formula : CFM / Coil Face Area = Air Ft/Min Example of Coil Complete Model #98-8G12Y-0P						
Note: When setting up the speed tap on the E30B furnaces, the coil face area must be taken in to account so as not to exceed 330 Feet Per Minute of air across the coil. Any thing higher will blow water off the coil and will be the responsibility of the installing contractor.						

Table 14: Constant Torque Motor Factory Speed Tap Settings

SECTION 11: BLOWER PERFORMANCE

EXTERNAL STATIC PRESSURE (ESP)																					
		IN W.C.	kPa	IN W.C.	kPa	IN W.C.	kPa	IN W.C.	kPa	IN W.C.	kPa	IN W.C.	kPa	IN W.C.	kPa	IN W.C.	kPa	IN W.C.	kPa	IN W.C.	kPa
	SPD TAP	0.10	0.02	0.20	0.05	0.30	0.07	0.40	0.10	0.50	0.12	0.60	0.15	0.70	0.17	0.80	0.20	0.90	0.22	1.00	0.25
CFM-NO-COIL OPEN TOP, SOLID DOOR	LO	935	441	763	360	680	321	560	264	498	235	437	206	347	164						
	MED-LO	968	457	881	416	810	382	756	357	680	321	566	267	531	251	446	210	382	180		
	MEDIUM	1074	507	1022	482	953	450	904	427	842	397	789	372	663	313	623	294	565	267	475	224
	MED-HI	1192	563	1131	534	1079	509	1042	492	971	458	914	431	862	407	748	353	697	329	519	245
	HIGH	1429	674	1372	648	1327	626	1285	606	1227	579	1176	555	1128	532	1072	506	941	444	602	284
CFM-NO-COIL SOLID TOP LOUVERED DOOR	LO	813	384	742	350	655	309	596	281	490	231	436	206	349	165						
	MED-LO	913	431	864	408	806	380	742	350	673	318	593	280	521	246	438	207	379	179		
	MEDIUM	1050	496	990	467	939	443	885	418	843	398	813	384	726	343	642	303	568	268	471	222
	MED-HI	1150	543	1096	517	1082	511	1002	473	958	452	913	431	857	404	806	380	737	348	533	252
	HIGH	1360	642	1314	620	1267	598	1227	579	1182	558	1134	535	1096	517	1002	473	885	418	564	266
CFM-WITH COIL 98-8Z7W-OP WITH CABINET 97-FLSB-27 OR 97-FLSF-27	LO	745	352	689	325	595	281	513	242	453	214	393	185	323	152						
	MED-LO	859	405	800	378	745	352	641	303	581	274	527	249	458	216	401	189	384	181		
	MEDIUM	978	462	926	437	872	412	832	393	721	340	655	309	600	283	563	266	514	243	420	198
	MED-HI	1066	503	1023	483	965	455	923	436	875	413	793	374	709	335	655	309	596	281	439	207
	HIGH	1276	602	1237	584	1197	565	1150	543	1117	527	1061	501	977	461	798	377	668	315	500	236
CFM WITH COIL 98-8Z7W-OP WITH CABINET 97-FSOB-27	LO	721	340	655	309	556	262	490	231	462	218	382	180	321	151						
	MED-LO	832	393	775	366	717	338	623	294	556	262	528	249	470	222	404	191	352	166		
	MEDIUM	939	443	898	424	845	399	793	374	701	331	633	299	623	294	559	264	502	237	413	195
	MED-HI	1037	489	994	469	956	451	901	425	832	393	752	355	697	329	655	309	554	261	453	214
	HIGH	1231	581	1178	556	1146	541	1101	520	1058	499	1003	473	832	393	741	350	615	290	466	220
CFM WITH COIL 98-8G7W-OP WITH CABINET 97-FLSB-27 OR 97-FLSF-27	LO	764	361	689	325	586	277	507	239	460	217	399	188	332	157						
	MED-LO	855	404	807	381	733	346	632	298	571	269	521	246	478	226	416	196	367	173		
	MEDIUM	990	467	923	436	878	414	825	389	741	350	672	317	628	296	574	271	520	245	440	208
	MED_HI	1085	512	1031	487	988	466	929	438	878	414	789	372	725	342	663	313	603	285	474	224
	HIGH	1291	609	1247	589	1202	567	1160	547	1117	527	1073	506	1020	481	821	387	665	314	524	247
CFM WITH COIL 98-8G7W-OP WITH CABINET 97-FSOB-27	LO	721	340	655	309	566	267	507	239	451	213	374	177	315	149						
	MED-LO	828	391	756	357	705	333	623	294	561	265	529	250	462	218	404	191	359	169		
	MEDIUM	948	447	898	424	845	399	778	367	705	333	641	303	595	281	553	261	502	237	406	192
	MED-HI	1048	495	1003	473	965	455	907	428	851	402	771	364	701	331	637	301	562	265	431	203
	HIGH	1252	591	1227	579	1166	550	1139	538	1090	514	1026	484	871	411	709	335	618	292	466	220
CFM WITH COIL 98-8G4W-OP WITH CABINET 97-FLSB-27 OR 97-FLSF-21	LO	731	345	634	299	577	272	473	223	368	174	394	186	290	137						
	MED-LO	827	390	754	356	703	332	629	297	530	250	570	269	457	216	383	181	312	147		
	MEDIUM	937	442	870	411	812	383	769	363	698	329	620	293	590	278	540	255	474	224	403	190
	MED-HI	1030	486	967	456	919	434	877	414	816	385	784	370	673	318	615	290	591	279	472	223
	HIGH	1230	580	1194	564	1136	536	1086	513	1046	494	998	471	947	447	784	370	634	299	500	236
CFM WITH COIL 96-8G4W-OP WITH CABINET 97-FSOB-21	LO	731	345	678	320	587	277	503	237	458	216	398	188	333	157						
	MED-LO	848	400	792	374	739	349	630	297	562	265	527	249	483	228	419	198	387	183		
	MEDIUM	956	451	913	431	868	410	820	387	719	339	657	310	597	282	572	270	524	247	447	211
	MED-HI	1051	496	1012	478	962	454	923	436	875	413	766	362	711	336	661	312	603	285	458	216
	HIGH	1251	590	1216	574	1169	552	1132	534	1093	516	1053	497	986	465	770	363	643	303	510	241

Table 15: Blower Performance - 10 X 9 Blower - 1/3 HP 5 Speed Constant Torque Motor (With Air Filters)

Minimum CFM for Electric Heat: 6kW = 390 CFM
8kW = 520 CFM
10kW = 650 CFM
12kW = 780 CFM
15kW = 975 CFM
20kW = 1,300 CFM

EXTERNAL STATIC PRESSURE (ESP)																					
		IN W.C.	kPa	IN W.C.	kPa	IN W.C.	kPa	IN W.C.	kPa	IN W.C.	kPa	IN W.C.	kPa	IN W.C.	kPa	IN W.C.	kPa	IN W.C.	kPa	IN W.C.	kPa
	SPD TAP	0.10	0.02	0.20	0.05	0.30	0.07	0.40	0.10	0.50	0.12	0.60	0.15	0.70	0.17	0.80	0.20	0.90	0.22	1.00	0.25
CFM-NO-COIL	LO	984	464	922	435	851	402	799	377	740	349	604	285	578	273	497	235	423	200	365	172
	MED-LO	1149	542	1096	517	1051	496	955	451	933	440	870	411	795	375	891	421	658	311	604	285
	MEDIUM	1397	659	1344	634	1293	610	1250	590	1200	566	1148	542	1105	522	1048	495	982	463	699	330
	MED-HI	1630	769	1584	748	1533	723	1493	705	1443	681	1392	657	1352	638	1258	594	1136	536	702	331
	HIGH	1736	819	1712	808	1661	784	1612	761	1570	741	1515	715	1432	676	1321	623	1184	559	704	332
CFM-WITH COIL 98-8Z7W-OP WITH CABINET 97-FLSB-27 OR 97-FLSF-27	LO	875	413	818	386	764	361	718	339	611	288	558	263	507	239	455	215	419	198	372	176
	MED-LO	1027	485	996	470	952	449	897	423	858	405	752	355	688	325	634	299	615	290	497	235
	MEDIUM	1241	586	1212	572	1176	555	1129	533	1090	514	1051	496	997	471	867	409	713	336	545	257
	MED-HI	1440	680	1411	666	1371	647	1328	627	1285	606	1232	581	1155	545	1062	501	734	346	593	280
	HIGH	1546	730	1506	711	1474	696	1415	668	1349	637	1270	599	1186	560	1079	509	702	331	603	285
CFM-WITH COIL 98-8G7W-OP WITH CABINET 97-FSOB-27	LO	845	399	811	383	753	355	682	322	611	288	563	266	522	246	467	220	407	192	364	172
	MED-LO	1032	487	990	467	949	448	897	423	838	395	800	378	730	345	677	320	607	286	477	225
	MEDIUM	1238	584	1191	562	1155	545	1107	522	1068	504	1033	488	991	468	809	382	660	311	492	232
	MED-HI	1419	670	1380	651	1340	632	1294	611	1217	574	1145	540	1068	504	839	396	665	314	486	229
	HIGH	1506	711	1445	682	1389	656	1313	620	1241	586	1166	550	1079	509	824	389	646	305	483	228
CFM WITH COIL 98-8W7W-OP WITH CABINET 97-FLSB-27 OR 97-FLSF-27	LO	884	417	817	386	771	364	722	341	616	291	568	268	536	253	472	223	417	197	380	179
	MED-LO	1040	491	984	464	955	451	893	421	864	408	756	357	698	329	656	310	630	297	494	233
	MEDIUM	1251	590	1216	574	1170	552	1134	535	1079	509	1045	493	1009	476	860	406	685	323	570	269
	MED-HI	1450	684	1410	665	1380	651	1335	630	1303	615	1221	576	1139	538	1056	498	737	348	580	274
	HIGH	1549	731	1506	711	1457	688	1410	665	1335	630	1246	588	1165	550	1056	498	741	350	648	306
CFM WITH COIL 98-8W7W-OP WITH CABINET 97-FSOB-27	LO	878	414	811	383	771	364	714	337	625	295	558	263	536	253	478	226	417	197	377	178
	MED-LO	1035	488	981	463	943	445	891	421	852	402	797	376	702	331	652	308	609	287	474	224
	MEDIUM	1223	577	1090	514	1151	543	1111	524	1072	506	1018	480	940	444	842	397	647	305	523	247
	MED-HI	1422	671	1378	650	1325	625	1262	596	1159	547	1062	501	983	464	868	410	665	314	523	247
	HIGH	1478	698	1416	668	1338	631	1277	603	1174	554	1095	517	992	468	845	399	657	310	513	242
CFM WITH COIL 98-8W12W-OP WITH CABINET 97-FLSB-39 OR 97-FLSF-39	LO	897	423	842	397	796	376	733	346	619	292	566	267	522	246	470	222	408	193	361	170
	MED-LO	1054	497	1013	478	961	454	925	437	874	412	798	377	680	321	623	294	572	270	533	252
	MEDIUM	1281	605	1237	584	1202	567	1154	545	1111	524	1071	505	1012	478	902	426	723	341	613	289
	MED-HI	1478	698	1453	686	1414	667	1374	648	1333	629	1271	600	1191	562	1094	516	752	355	596	281
	HIGH	1581	746	1522	718	1477	697	1421	671	1350	637	1270	599	1180	557	1070	505	777	367	657	310
CFM WITH COIL 98-8W12W-OP WITH CABINET 97-FSOB-39	LO	885	418	825	389	763	360	704	332	612	289	553	261	522	246	459	217	392	185	357	168
	MED-LO	1043	492	986	465	941	444	891	421	858	405	735	347	687	324	630	297	573	270	504	238
	MEDIUM	1240	585	1178	556	1139	538	1100	519	1076	508	1013	478	945	446	800	378	679	320	520	245
	MED-HI	1456	687	1404	663	1359	641	1322	624	1256	593	1190	562	1087	513	845	399	712	336	535	252
	HIGH	1550	732	1485	701	1426	673	1355	639	1294	611	1221	576	1104	521	874	412	735	347	534	252

Table 16: Blower Performance -10 X 9 Blower - 1/2 HP 5 Speed Constant Torque Motor (With Air Filters)

Minimum CFM for Electric Heat: 6kW = 390 CFM
8kW = 520 CFM
10kW = 650 CFM
12kW = 780 CFM
15kW = 975 CFM
20kW = 1,300 CFM

EXTERNAL STATIC PRESSURE (ESP)																					
		IN W.C.	kPa	IN W.C.	kPa	IN W.C.	kPa	IN W.C.	kPa	IN W.C.	kPa	IN W.C.	kPa	IN W.C.	kPa	IN W.C.	kPa	IN W.C.	kPa	IN W.C.	kPa
	SPD TAP	0.10	0.02	0.20	0.05	0.30	0.07	0.40	0.10	0.50	0.12	0.60	0.15	0.70	0.17	0.80	0.20	0.90	0.22	1.00	0.25
CFM WITH COIL 98-8G12W-OP WITH CABINET 97-FLSB-39 OR 97-FLSF-39	LO	884	417	824	389	774	365	692	327	595	281	560	264	507	239	460	217	391	185	360	170
	MED-LO	1035	488	992	468	954	450	893	421	844	398	783	370	692	327	640	302	545	257	474	224
	MEDIUM	1250	590	1211	572	1170	552	1127	532	1083	511	1037	489	982	463	834	394	675	319	520	245
	MED-HI	1449	684	1415	668	1376	649	1345	635	1289	608	1218	575	1127	532	884	417	708	334	535	252
	HIGH	1547	730	1511	713	1462	690	1402	662	1326	626	1245	588	1159	547	976	461	724	342	531	251
CFM WITH COIL 98-8G12W-OP WITH CABINET 97-FSOB-39	LO	862	407	817	386	752	355	672	317	619	292	560	264	525	248	458	216	395	186	381	180
	MED-LO	1013	478	967	456	925	437	887	419	824	389	744	351	692	327	636	300	563	266	435	205
	MEDIUM	1209	571	1173	554	1125	531	1098	518	1050	496	1000	472	865	408	748	353	578	273	484	228
	MED-HI	1415	668	1376	649	1321	623	1255	592	1175	555	1099	519	924	436	767	362	609	287	479	226
	HIGH	1478	698	1428	674	1362	643	1279	604	1195	564	1110	524	915	432	755	356	600	283	484	228
CFM-WITH COIL 98-8Z12W-OP WITH CABINET 97-FLSB-39 OR 97-FLSF-39	LO	899	424	837	395	784	370	724	342	609	287	570	269	519	245	455	215	388	183	360	170
	MED-LO	1040	491	1004	474	964	455	909	429	851	402	751	354	700	330	640	302	616	291	493	233
	MEDIUM	1258	594	1235	583	1185	559	1143	539	1099	519	1060	500	1000	472	848	400	704	332	533	252
	MED-HI	1484	700	1441	680	1393	657	1353	639	1316	621	1245	588	1137	537	1012	478	679	320	551	260
	HIGH	1570	741	1531	723	1488	702	1415	668	1344	634	1279	604	1170	552	1070	505	736	347	562	265
CFM WITH COIL 98-8Z12W-OP WITH CABINET 97-FSOB-39	LO	851	402	813	384	759	358	708	334	618	292	555	262	523	247	458	216	394	186	362	171
	MED-LO	1021	482	982	463	934	441	884	417	837	395	740	349	684	323	636	300	573	270	452	213
	MEDIUM	1210	571	1170	552	1138	537	1092	515	1052	496	999	471	922	435	751	354	613	289	469	221
	MED-HI	1419	670	1385	654	1344	634	1279	604	1210	571	1083	511	1010	477	774	365	621	293	480	227
	HIGH	1503	709	1458	688	1393	657	1312	619	1230	580	1103	521	1019	481	785	370	629	297	486	229
CFM WITH COIL 98-8W4W-OP WITH CABINET 97-FLSB-21 OR 97-FLSF-21	LO	856	404	795	375	740	349	680	321	572	270	536	253	502	237	450	212	398	188	358	169
	MED-LO	1002	473	965	455	920	434	866	409	819	387	712	336	650	307	619	292	630	297	502	237
	MEDIUM	1204	568	1163	549	1128	532	1093	516	1048	495	1007	475	952	449	785	370	667	315	581	274
	MED_HI	1383	653	1364	644	1332	629	1291	609	1248	589	1184	559	1099	519	837	395	696	328	528	249
	HIGH	1468	693	1458	688	1424	672	1368	646	1300	614	1219	575	1126	531	1019	481	700	330	536	253
CFM WITH COIL 98-8W4W-OP WITH CABINET 97-FSOB-21	LO	816	385	775	366	708	334	672	317	557	263	557	263	507	239	444	210	398	188	357	168
	MED-LO	998	471	926	437	876	413	836	395	791	373	692	327	633	299	630	297	596	281	423	200
	MEDIUM	1163	549	1114	526	1087	513	1038	490	1002	473	959	453	895	422	680	321	653	308	477	225
	MED-HI	1355	639	1323	624	1281	605	1224	578	1147	541	1081	510	977	461	736	347	653	308	483	228
	HIGH	1433	676	1381	652	1314	620	1243	587	1166	550	1082	511	989	467	740	349	656	310	493	233

**Table 17: Blower Performance -10 X 9 Blower - 1/2 HP 5 Speed Constant Torque Motor
(Continued) (With Air Filters)**

Minimum CFM for Electric Heat: 6kW = 390 CFM

8kW = 520 CFM

10kW = 650 CFM

12kW = 780 CFM

15kW = 975 CFM

20kW = 1,300 CFM

EXTERNAL STATIC PRESSURE (ESP)																					
	SPD TAP	IN W.C.	kPa	IN W.C.	kPa	IN W.C.	kPa	IN W.C.	kPa	IN W.C.	kPa	IN W.C.	kPa	IN W.C.	kPa	IN W.C.	kPa	IN W.C.	kPa	IN W.C.	kPa
		0.10	0.02	0.20	0.05	0.30	0.07	0.40	0.10	0.50	0.12	0.60	0.15	0.70	0.17	0.80	0.20	0.90	0.22	1.00	0.25
CFM NO COIL	LO	1225	578	1174	554	1121	529	1077	508	1036	489	976	461	924	436	877	414	740	349	629	297
	MED-LO	1429	674	1386	654	1345	635	1308	617	1245	588	1220	576	1158	547	1115	526	1070	505	608	287
	MEDIU M	1569	740	1529	722	1476	697	1438	679	1403	662	1368	646	1313	620	1260	595	1109	523	707	334
	MED H I	1785	842	1740	821	1711	808	1664	785	1619	764	1592	751	1488	702	1359	641	1137	537	967	456
CFM WITH COIL 98-8W 7W-OP WITH CABINET 97-FS B-27 OR 97-FLS F-27	LO	1104	521	1059	500	1012	478	975	460	930	439	876	413	780	368	719	339	662	312	581	274
	MED-LO	1292	610	1244	587	1214	573	1184	559	1136	536	1098	518	1053	497	981	463	773	365	584	276
	MEDIU M	1400	661	1365	644	1334	630	1301	614	1263	596	1219	575	1168	551	1070	505	780	368	592	279
	MED H I	1596	753	1569	740	1521	718	1468	693	1392	657	1301	614	1204	568	1087	513	811	383	604	285
CFM WITH COIL 98-8W 7W -OP WITH CABINET 97-FSOB-27	LO	1067	504	1017	480	978	462	942	445	889	420	805	380	758	358	703	332	661	312	518	244
	MED-LO	1268	598	1229	580	1199	566	1158	547	1109	523	1075	507	1012	478	826	390	675	319	536	253
	MEDIU M	1374	648	1343	634	1311	619	1278	603	1224	578	1163	549	1053	497	812	383	708	334	524	247
	MED H I	1549	731	1481	699	1409	665	1338	631	1258	594	1189	561	1087	513	848	400	669	316	481	227
CFM WITH COIL 98-8W 12W-OP WITH CABINET 97-FLSB-39 OR 97-FLS F-39	LO	1104	521	1085	512	1025	484	979	462	936	442	882	416	786	371	719	339	682	322	580	274
	MED-LO	1309	618	1266	597	1232	581	1197	565	1156	546	1119	528	1074	507	1010	477	790	373	606	286
	MEDIU M	1429	674	1390	656	1350	637	1323	624	1281	605	1234	582	1203	568	1124	530	801	378	629	297
	MED H I	1607	758	1573	742	1539	726	1497	707	1430	675	1332	629	1256	593	1152	544	815	385	637	301
CFM WITH COIL 98-8W 12W -OP WITH CABINET 97-FSOB-39	LO	1104	521	1059	500	1023	483	974	460	935	441	902	426	841	397	723	341	676	319	563	266
	MED-LO	1285	606	1246	588	1211	572	1175	555	1126	531	1104	521	1065	503	874	412	711	336	561	265
	MEDIU M	1404	663	1350	637	1327	626	1294	611	1251	590	1211	572	1145	540	1005	474	718	339	535	252
	MED H I	1601	756	1538	726	1468	693	1400	661	1327	626	1241	586	1148	542	888	419	719	339	541	255
CFM WITH COIL 98-8G 12W-OP WITH CABINET 97-FLSB-39 OR 97-FLSF-39	LO	1111	524	1072	506	1019	481	976	461	931	439	877	414	781	369	712	336	680	321	548	259
	MED-LO	1289	608	1255	592	1226	579	1185	559	1143	539	1105	522	1066	503	938	443	732	345	556	262
	MEDIU M	1415	668	1367	645	1345	635	1308	617	1270	599	1226	579	1170	552	1072	506	751	354	573	270
	MED H I	1594	752	1571	741	1519	717	1449	684	1380	651	1294	611	1205	569	1043	492	736	347	551	260
CFM WITH COIL 98-8G 12W-O P WITH CABINET 97-FSOB-39	LO	1084	512	1038	490	996	470	952	449	899	424	813	384	748	353	705	333	823	388	494	233
	MED-LO	1262	596	1227	579	1187	560	1150	543	1112	525	1067	504	1014	479	775	366	621	293	488	230
	MEDIU M	1373	648	1341	633	1314	620	1265	597	1207	570	1134	535	1032	487	807	381	638	301	489	231
	MED H I	1513	714	1455	687	1373	648	1309	618	1247	589	1150	543	1067	504	793	374	672	317	509	240
CFM WITH COIL 98-8Z 12W-OP WITH CABINET 97-FLSB-39 OR 97-FLS F-39	LO	1106	522	1072	506	1026	484	969	457	938	443	878	414	774	365	721	340	676	319	532	251
	MED-LO	1299	613	1266	597	1222	577	1186	560	1139	538	1100	519	1057	499	938	443	752	355	539	254
	MEDIU M	1416	668	1377	650	1341	633	1309	618	1271	600	1241	586	1181	557	1067	504	740	349	539	254
	MED H I	1603	757	1588	749	1540	727	1476	697	1390	656	1336	631	1232	581	1095	517	748	353	545	257
CFM WITH COIL 98-8Z 12W-OP WITH CABINET 97-FSOB-39	LO	1088	513	1019	481	1007	475	967	456	924	436	870	411	824	389	716	338	621	293	507	239
	MED-LO	1270	599	1240	585	1200	566	1143	539	1110	524	1077	508	990	467	747	353	612	289	496	234
	MEDIU M	1371	647	1340	632	1303	615	1265	597	1210	571	1138	537	1019	481	796	376	627	296	506	239
	MED H I	1555	734	1487	702	1424	672	1331	628	1270	599	1148	542	1037	489	792	374	675	319	494	233
	HIGH	1613	761	1543	728	1445	682	1385	654	1279	604	1200	566	1083	511	924	436	700	330	507	239

Table 18: Blower Performance -10 X 9 Blower - 3/4 HP 5 Speed Constant Torque Motor (With Air filters)

Minimum CFM for Electric Heat: 6kW = 390 CFM
8kW = 520 CFM
10kW = 650 CFM
12kW = 780 CFM
15kW = 975 CFM
20kW = 1,300 CFM

NOTE: Only qualified service personnel can perform this procedure.

1. Remove the control box cover by removing the screws that secure the cover to the control box.
2. Confirm that the incoming supply power wires are connected to the correct terminals on the circuit breaker(s) and that they are securely fastened to the screw terminals.
3. Confirm that the incoming thermostat wires are connected to the correct terminals on the low voltage terminal block and that they are securely fastened to the screw terminals.
4. Reinstall the control box cover with the screws that were removed in step #1.
5. Switch the circuit breaker(s) in the main electrical panel (circuit breaker box) to the "ON" position.
6. Switch the circuit breaker(s) in the furnace control box to the "ON" position.
7. Set the thermostat FAN selector switch to the "ON" position and check for proper blower operation and check all duct connections for air leaks. Seal any leaks that are found.
8. Set the thermostat FAN selector switch to the "AUTO" position.
9. Set the thermostat to the HEAT mode and set the thermostat setpoint above the room temperature to check for proper operation of the electric heaters.
10. Set the thermostat to the COOL mode and set the thermostat setpoint to below the room temperature to check for proper operating of the cooling system (if applicable).
11. Set the thermostat to the desired mode and temperature.

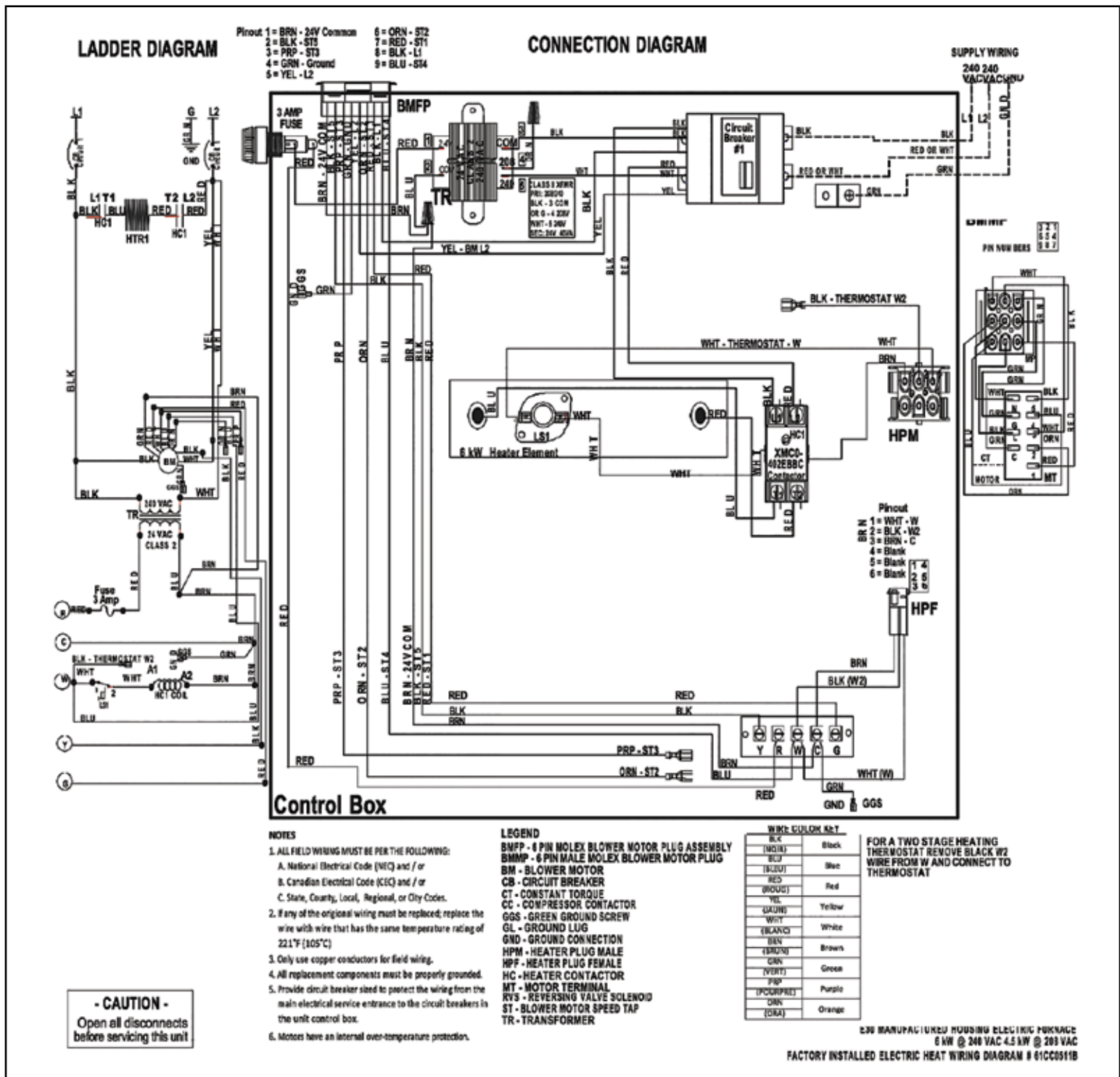


Figure 25: 6kW Electric Heat Wiring Diagram

NOTE: IF ANY OF THE ORIGINAL WIRE SUPPLIED WITH THIS UNIT MUST BE REPLACED. IT MUST BE REPLACED WITH TYPE 105°C THERMOPLASTIC OR ITS EQUIVALENT.

BLOWER MOTOR SPEED TAP INFORMATION:

TAP 5 – High Speed – Used for cooling operation. Energized by the “Y” thermostat terminal.

TAP 4 – Med-High Speed – Used for cooling or heating operation. Energized by the “Y” or “W” thermostat terminals. TAP 3 – Medium Speed – Used for cooling or heating operation. Energized by the “Y” or “W” thermostat terminals. TAP 2 – Med-Low Speed – Used for heating operation only. Energized by the “W” thermostat terminal. TAP 1 – Low Speed – Used for constant circulation operation ONLY. This speed tap only delivers approximately 200 CFM which is insufficient to support cooling or heating operation and will result in the indoor coil freezing and tripping of the heating limits. Energized by the “G” thermostat terminal.

WARNING – LOW SPEED TAP IS TO BE USED FOR CONSTANT CIRCULATION ONLY!

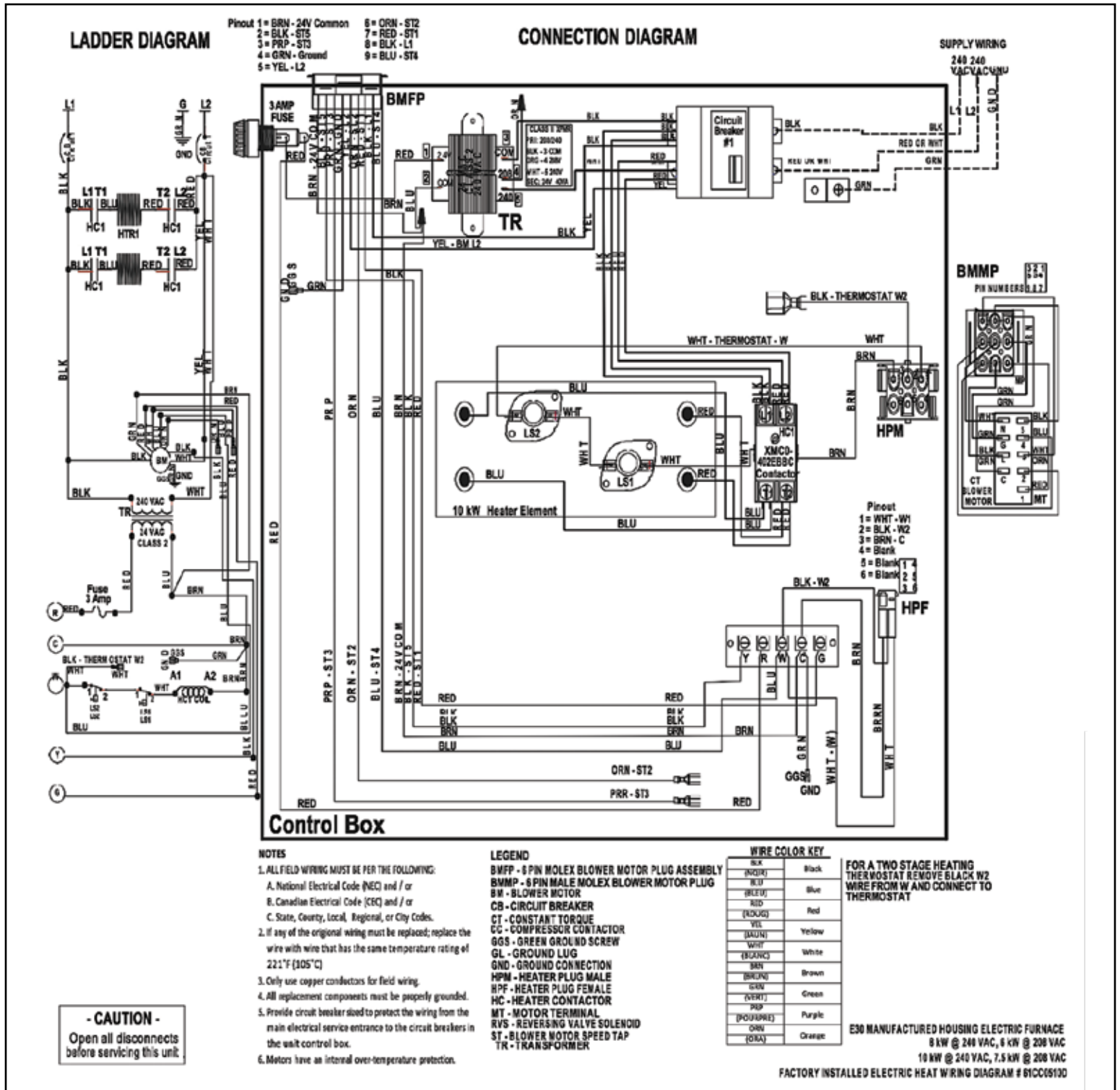


Figure 26: 8 kW and 10 kW Electric Heat Wiring Diagram

NOTE: IF ANY OF THE ORIGINAL WIRE SUPPLIED WITH THIS UNIT MUST BE REPLACED. IT MUST BE REPLACED WITH TYPE 105°C THERMOPLASTIC OR ITS EQUIVALENT.

BLOWER MOTOR SPEED TAP INFORMATION:

TAP 5 – High Speed – Used for cooling operation. Energized by the “Y” thermostat terminal.

TAP 4 – Med-High Speed – Used for cooling or heating operation. Energized by the “Y” or “W” thermostat terminals. TAP 3 – Medium Speed – Used for cooling or heating operation. Energized by the “Y” or “W” thermostat terminals. TAP 2 – Med-Low Speed – Used for heating operation only. Energized by the “W” thermostat terminal. TAP 1 – Low Speed – Used for constant circulation operation ONLY. This speed tap only delivers approximately 200 CFM which is insufficient to support cooling or heating operation and will result in the indoor coil freezing and tripping of the heating limits. Energized by the “G” thermostat terminal.

WARNING – LOW SPEED TAP IS TO BE USED FOR CONSTANT CIRCULATION ONLY!

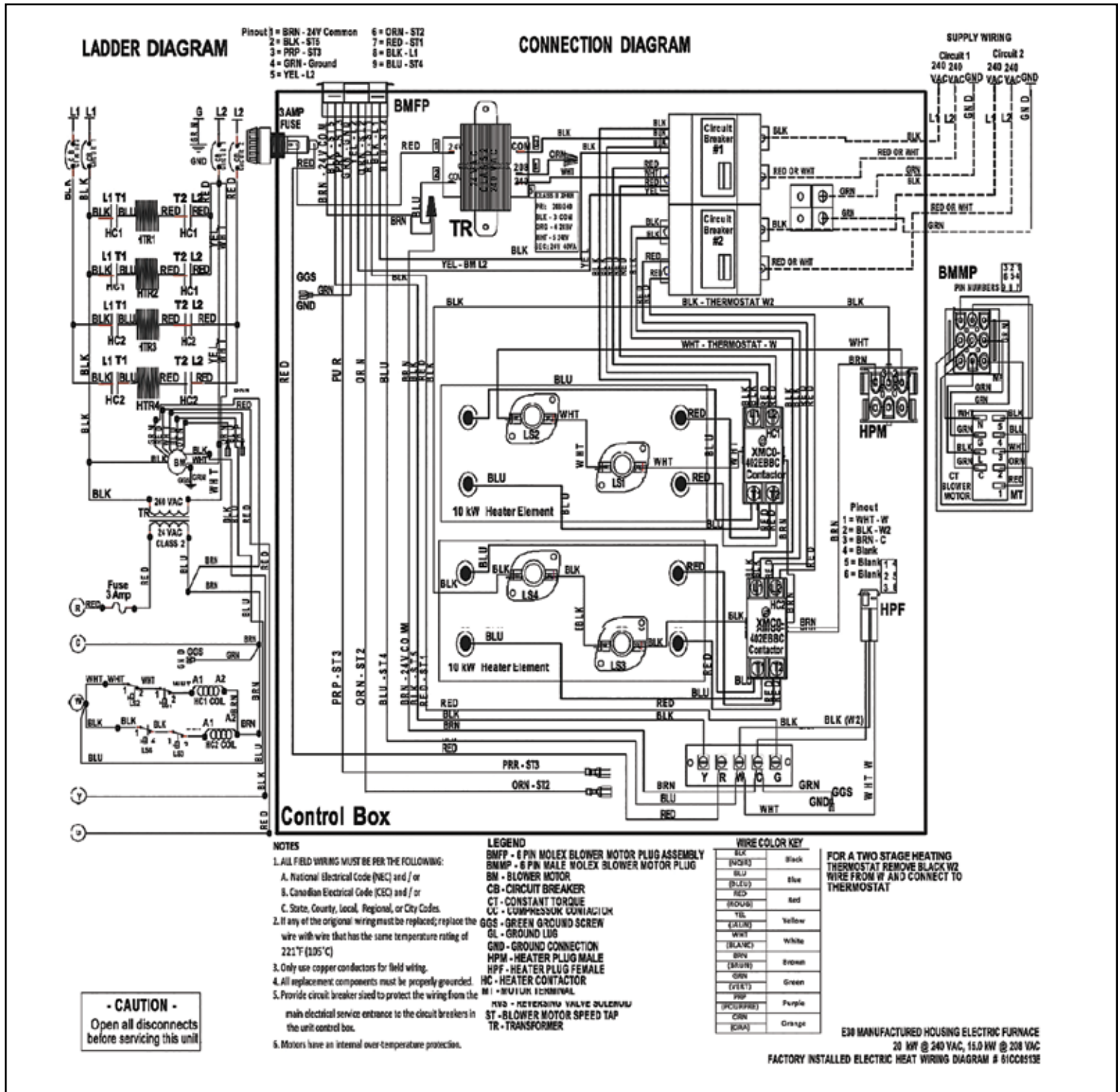


Figure 29: 20 kW Factory Installed Electric Heat Wiring Diagram

NOTE: IF ANY OF THE ORIGINAL WIRE SUPPLIED WITH THIS UNIT MUST BE REPLACED. IT MUST BE REPLACED WITH TYPE 105°C THERMOPLASTIC OR ITS EQUIVALENT

BLOWER MOTOR SPEED TAP INFORMATION:

TAP 5 – High Speed – Used for cooling operation. Energized by the “Y” thermostat terminal.

TAP 4 – Med-High Speed – Used for cooling or heating operation. Energized by the “Y” or “W” thermostat terminals. TAP 3 – Medium Speed – Used for cooling or heating operation. Energized by the “Y” or “W” thermostat terminals. TAP 2 – Med-Low Speed – Used for heating operation only. Energized by the “W” thermostat terminal. TAP 1 – Low Speed – Used for constant circulation operation ONLY. This speed tap only delivers approximately 200 CFM which is insufficient to support cooling or heating operation and will result in the indoor coil freezing and tripping of the heating limits. Energized by the “G” thermostat terminal.

WARNING – LOW SPEED TAP IS TO BE USED FOR CONSTANT CIRCULATION ONLY!

