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Dallas, Texas USA

INSTALLATION INSTRUCTIONS EL180UHNE(K)

ELITE® SERIES GAS FURNACE
UPFLOW / HORIZONTAL AIR DISCHARGE

508545-01
11/2026



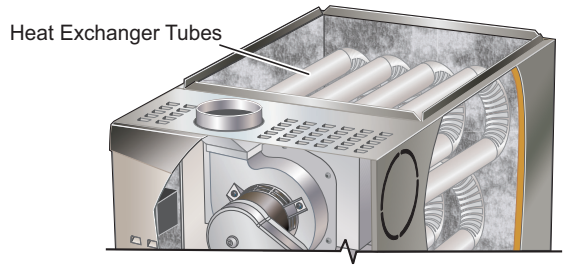
THIS MANUAL MUST BE LEFT WITH THE HOMEOWNER FOR FUTURE REFERENCE

⚠ This is a safety alert symbol and should never be ignored. When you see this symbol on labels or in manuals, be alert to the potential for personal injury or death.

⚠ IMPORTANT

DO NOT use the heat exchanger tubes to lift, drag or pull the furnace to its installation location.

Doing so may damage or bend the tubes causing noise and or unsafe operation.



⚠ WARNING

This furnace is equipped with an ignition control factory enabled for use with Lennox A2L refrigerant systems. Disabling the refrigerant detection functionality on A2L system is prohibited by safety codes. Refer to furnace installation instructions for non-A2L and non-Lennox refrigerant system setup.

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Unit Dimensions - inches (mm)

[1] NOTE - 60C and 60D size units that require air volumes over 1800 cfm must have one of the following:
1. Single side return air and Optional Return Air Base with transition that must accommodate required 20 x 25 x 1 inch (508 x 635 x 25 mm) air filter to maintain proper velocity.
2. Bottom return air.
3. Return air from both sides.
4. Bottom and one side return air.

See Blower Performance Tables for additional information.

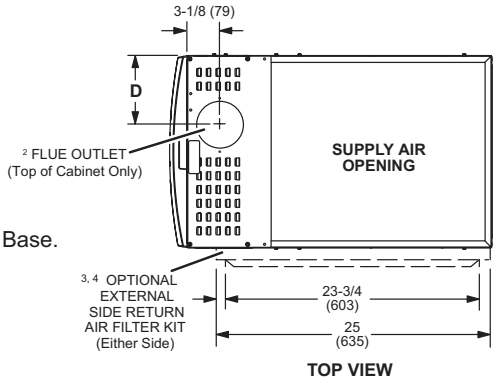
[2] Flue outlet is only on top of furnace **must** be vented vertically.

[3] Optional External Side Return Air Filter Kit is not for use with the optional Return Air Base.

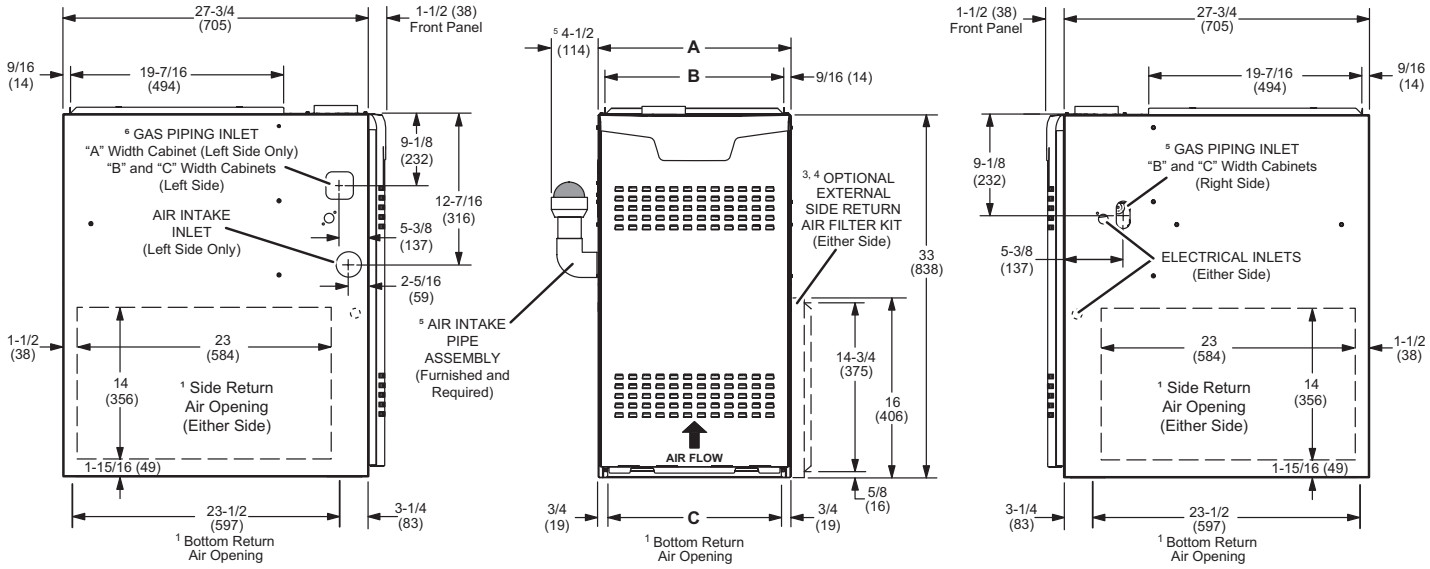
[4] Optional External Side Return Air Filter Kit is not available for "A" width cabinets.

[5] 2-3/4 in. (70 mm) for optional Low Profile Air Intake Pipe Kit.

[6] NOTE - Gas entry is only available on the left side of the cabinet for "A" width cabinet models.



TOP VIEW



EL180UHNEK Model	A		B		C		D	
	in	mm	in	mm	in	mm	in	mm
040NE36AK 060NE36AK	14-1/2	368	13-3/8	340	13	330	4-3/4	121
080NE48BK	17-1/2	446	16-3/8	416	16	406	6-1/4	159
100NE60CK	21	533	19-7/8	504	19-1/2	495	8	203

EL180UHNEK Gas Furnace

The EL180UHNEK unit is shipped ready for installation in the upflow or horizontal position fueled by natural gas. The furnace is shipped with the bottom panel in place. The bottom panel must be removed if the unit is to be installed in a horizontal application. The panel may also be removed in upflow applications. The EL180HUNE is approved for installations from 0 - 7500 ft.

Shipping and Packing List

Package 1 of 1 contains

1 - Assembled EL180UHNEK unit

1 - Bag assembly containing the following:

- 2 - Screws
- 1 - Snap bushing
- 1 - Snap plug
- 1 - Wire tie
- 1 -Vent warning label
- 1 - Owner's manual and warranty card
- 1 - PVC 2" elbow
- 1 - PVC 3" to 2" reducer
- 1- Inlet screen
- 1 - PVC 2" pipe (2-1/2" long)

The following items may be ordered separately:

- 1 - Thermostat
- 1 - Suspension kit (for horizontal installations)
- 1 - Return air base
- 1 - Side filter kit
- 1 - Sensor Kit (field installed)

Check equipment for shipping damage. If you find any damage, immediately contact the last carrier.

Safety Information

⚠ WARNING

Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life. Installation and service must be performed by a licensed professional HVAC installer or equivalent, service agency, or the gas supplier.

⚠ CAUTION

As with any mechanical equipment, contact with sharp sheet metal edges can result in personal injury. Take care while handling this equipment and wear gloves and protective clothing.

Certifications

EL180UHNEK units are CSA International certified to ANSI Z21.47.In the USA, installation of gas furnaces must conform with local building codes. In the absence of local codes, units must be installed according to the current National Fuel Gas Code (ANSI-Z223.1). The National Fuel Gas Code is available from the following address:

American National Standards Institute, Inc.

11 West 42nd Street

New York, NY 10036

Clearances

Adequate clearance must be made around the air openings into the vestibule area. In order to ensure proper unit operation, combustion and ventilation air supply must be provided according to the current National Fuel Gas Code. Vent installations must be consistent with the National Fuel Gas Code venting tables (in this instruction) and applicable provisions of local building codes.

This furnace is CSA International certified for installation clearances to combustible material as listed on the unit nameplate and in the tables in FIGURE 7 and FIGURE 11. Accessibility and service clearances must take precedence over fire protection clearances.

NOTE - *For installation on combustible floors, the furnace shall not be installed directly on carpeting, tile, or other combustible material other than wood flooring.*

Installed Locations

For installation in a residential garage, the furnace must be installed so that the burner(s) and the ignition source are located no less than 18 inches (457 mm) above the floor. The furnace must be located or protected to avoid physical damage by vehicles. When a furnace is installed in a public garage, hangar, or other building that has a hazardous atmosphere, the furnace must be installed according to recommended good practice requirements and current National Fuel Gas Code.

Temperature Rise

NOTE - *Furnace must be adjusted to obtain a temperature rise within the range specified on the unit nameplate. Failure to do so may cause erratic limit operation and may result in premature heat exchanger failure.*

This EL180UHNEK furnace must be installed so that its electrical components are protected from water.

⚠ CAUTION

The EL180UHNEK is approved for natural gas only. Do not attempt to convert and or install in LP propane applications.

Installed in Combination with a Cooling Coil

When this furnace is used with cooling units, it shall be installed in parallel with, or on the upstream side of, cooling units to avoid condensation in the heating compartment. See FIGURE 1. With a parallel flow arrangement, a damper (or other means to control the flow of air) must adequately prevent chilled air from entering the furnace. If the damper is manually operated, it must be equipped to prevent operation of either the heating or the cooling unit, unless it is in the full HEAT or COOL setting.

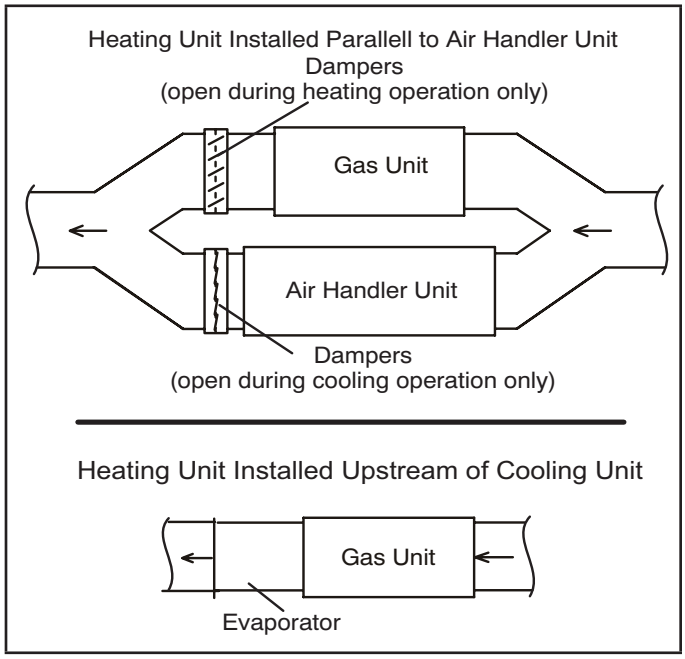


FIGURE 1

When installed, this furnace must be electrically grounded according to local codes. In addition, in the United States, installation must conform with the current National Electric Code, ANSI/NFPA No. 70. The National Electric Code (ANSI/NFPA No. 70) is available from the following address:

National Fire Protection Association

1 Battery March Park

Quincy, MA 02269

NOTE - *This furnace is designed for a minimum continuous return air temperature of 60°F (16°C) or an intermittent operation down to 55°F (13°C) dry bulb for cases where a night setback thermostat is used. Return air temperature must not exceed 85°F (29°C) dry bulb.*

The EL180UHNEK furnace may be installed in alcoves, closets, attics, basements, garages, crawl spaces and utility rooms in the upflow or horizontal position.

This furnace design has not been CSA International certified for installation in mobile homes, recreational vehicles, or outdoors.

Use of Furnace as Construction Heater

Lennox does not recommend the use of EL180UHNEK units as a construction heater during any phase of construction. Very low return air temperatures, harmful vapors and operation of the unit with clogged or misplaced filters will damage the unit.

EL180UHNEK units may be used for heating of buildings or structures under construction, if the following conditions are met:

- The vent system must be permanently installed per these installation instructions.
- A room thermostat must control the furnace. The use of fixed jumpers that will provide continuous heating is not allowed.
- The return air duct must be provided and sealed to the furnace.
- Return air temperature range between 60°F (16°C) and 80°F (27°C) must be maintained.
- Air filters must be installed in the system and must be maintained during construction.
- Air filters must be replaced upon construction completion.
- The input rate and temperature rise must be set per the furnace rating plate.
- One hundred percent (100%) outdoor air must be provided for combustion air requirements during construction. Temporary ducting may supply outdoor air to the furnace. Do not connect duct directly to the furnace. Size the temporary duct following these instructions in section for Combustion, Dilution and Ventilation Air in a confined space with air from outside.
- The furnace heat exchanger, components, duct system, air filters and evaporator coils must be thoroughly cleaned following final construction clean-up. All furnace operating conditions (including ignition, input rate, temperature rise and venting) must be verified according to these installation instructions.
- The refrigerant leak detection sensor must be inspected for dust/debris deposits. Please refer to the evaporator coil and/or refrigerant detection sensor kit instructions for additional information.

General

These instructions are intended as a general guide and do not supersede local codes in any way. Consult authorities having jurisdiction before installation.

In addition to the requirements outlined previously, the following general recommendations must be considered when installing a EL180UHNEK furnace:

- Place the furnace as close to the center of the air distribution system as possible. The furnace should also be located close to the chimney or vent termination point.
- Do not install the furnace where drafts might blow directly into it. This could cause improper combustion and unsafe operation.
- Do not block the furnace combustion air openings with clothing, boxes, doors, etc. Air is needed for proper combustion and safe unit operation.
- When the furnace is installed in an attic or other insulated space, keep insulation away from the furnace.
- Please consult the manufacturer of your evaporator coil for their recommendations on distance required between the heat exchanger and their drain pan. Adequate space must be provided between the drain pan and the furnace heat exchanger.

Combustion, Dilution & Ventilation Air

In the past, there was no problem in bringing in sufficient outdoor air for combustion. Infiltration provided all the air that was needed. In today's homes, tight construction practices make it necessary to bring in air from outside for combustion.

Take into account that exhaust fans, appliance vents, chimneys, and fireplaces force additional air that could be used for combustion out of the house. Unless outside air is brought into the house for combustion, negative pressure (outside pressure is greater than inside pressure) will build to the point that a downdraft can occur in the furnace vent pipe or chimney. As a result, combustion gases enter the living space creating a potentially dangerous situation.

In the absence of local codes concerning air for combustion and ventilation, use the guidelines and procedures in this section to install EL180UHNEK furnaces to ensure efficient and safe operation. You must consider combustion air needs and requirements for exhaust vents. A portion of this information has been reprinted with permission from the

National Fuel Gas Code (ANSI-Z223.1). This reprinted material is not the complete and official position of the ANSI on the referenced subject, which is represented only by the standard in its entirety

⚠ CAUTION

Do not install the furnace in a corrosive or contaminated atmosphere. Meet all combustion and ventilation air requirements, as well as all local codes.

⚠ CAUTION

Insufficient combustion air can cause headaches, nausea, dizziness or asphyxiation. It will also cause excess water in the heat exchanger resulting in rusting and premature heat exchanger failure. Excessive exposure to contaminated combustion air will result in safety and performance related problems. Avoid exposure to the following substances in the combustion air supply:

Permanent wave solutions
Chlorinated waxes and cleaners
Chlorine base swimming pool chemicals
Water softening chemicals
De-icing salts or chemicals
Carbon tetrachloride
Halogen type refrigerants
Cleaning solvents (such as perchloroethylene)
Printing inks, paint removers, varnishes, etc.
Hydrochloric acid
Cements and glues
Antistatic fabric softeners for clothes dryers
Masonry acid washing materials

All gas-fired appliances require air for the combustion process. If sufficient combustion air is not available, the furnace or other appliances will operate inefficiently and unsafely. Enough air must be provided to meet the needs of all fuel-burning appliances and appliances such as exhaust fans which force air out of the house. When fireplaces, exhaust fans, or clothes dryers are used at the same time as the furnace, much more air is necessary to ensure proper combustion and to prevent a downdraft. Insufficient air causes incomplete combustion which can result in carbon monoxide.

In addition to providing combustion air, fresh outdoor air dilutes contaminants in the indoor air. These contaminants may include bleaches, adhesives, detergents, solvents and other contaminants which can corrode furnace components.

The requirements for providing air for combustion and ventilation depend largely on whether the furnace is installed in an unconfined or a confined space.

Unconfined Space

An unconfined space is an area such as a basement or large equipment room with a volume greater than 50 cubic feet (1.42 m3) per 1,000 Btu (.29 kW) per hour of the combined input rating of all appliances installed in that space. This space also includes adjacent rooms which are not separated by a door.

Though an area may appear to be unconfined, it might be necessary to bring in outdoor air for combustion if the structure does not provide enough air by infiltration. If the furnace is located in a building of tight construction with weather stripping and caulking around the windows and doors, follow the procedures in the air from outside section.

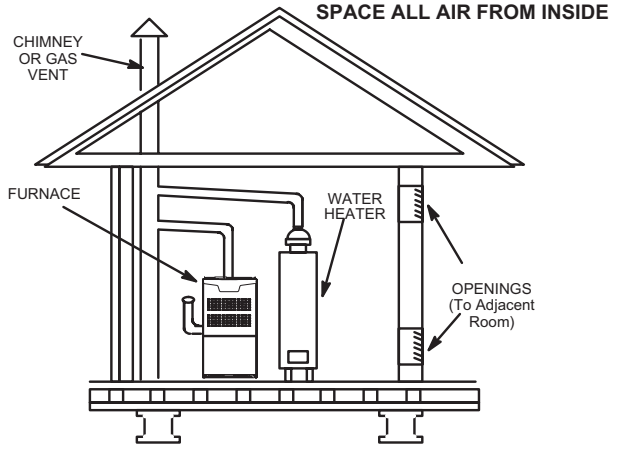
Confined Space

A confined space is an area with a volume less than 50 cubic feet (1.42 m3) per 1,000 Btu (.29 kW) per hour of the combined input rating of all appliances installed in that space. This definition includes furnace closets or small equipment rooms.

When the furnace is installed so that supply ducts carry air circulated by the furnace to areas outside the space containing the furnace, the return air must be handled by ducts which are sealed to the furnace casing and which terminate outside the space containing the furnace. This is especially important when the furnace is mounted on a platform in a confined space such as a closet or small equipment room.

Even a small leak around the base of the unit at the platform or at the return air duct connection can cause a potentially dangerous negative pressure condition. Air for combustion and ventilation can be brought into the confined space either from inside the building or from outside

.



NOTE - Each opening shall have a free area of at least one square inch (645 mm^2) per 1,000 Btu (.29 kW) per hour of the total input rating of all equipment in the enclosure, but not less than 100 square inches (64516 mm^2).

FIGURE 2

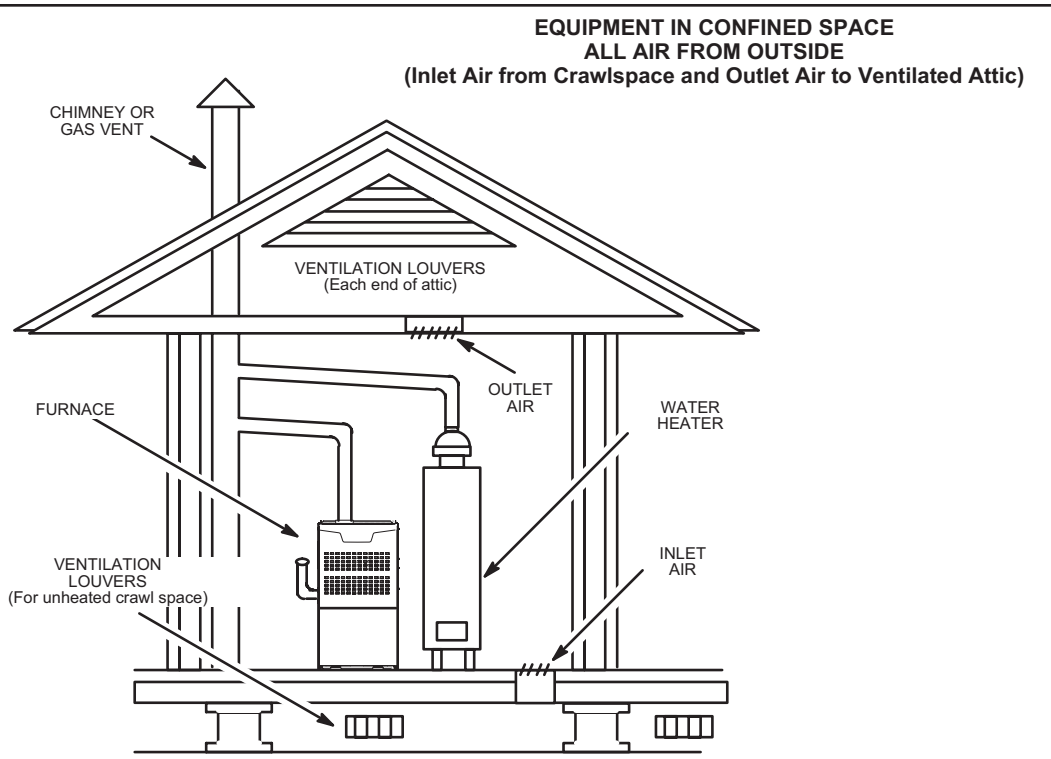
Air from Inside

If the confined space that houses the furnace adjoins a space categorized as unconfined, air can be brought in by providing two permanent openings between the two spaces. Each opening must have a minimum free area of 1 square inch (645 mm2) per 1,000 Btu (.29 kW) per hour of total input rating of all gas-fired equipment in the confined space. Each opening must be at least 100 square inches (64516 mm2). One opening shall be within 12 inches (305 mm) of the top of the enclosure and one opening within 12 inches (305 mm) of the bottom. See FIGURE 2.

Air from Outside

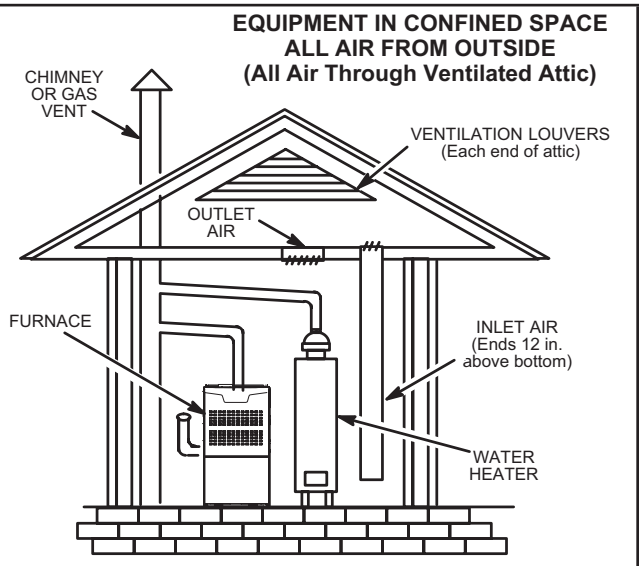
If air from outside is brought in for combustion and ventilation, the confined space must have two permanent openings. One opening shall be within 12 inches (305 mm) of the top of the enclosure and one opening within 12 inches (305 mm) of the bottom. These openings must communicate directly or by ducts with the outdoors or spaces (crawl or attic) that freely communicate with the outdoors or indirectly through vertical ducts. Each opening shall have a minimum free area of 1 square inch (645 mm2) per 4,000 Btu (1.17 kW) per hour of total input rating of all equipment in the enclosure. See FIGURE 4. When communicating with the outdoors through horizontal ducts, each opening shall have a minimum free area of 1 square inch (645 mm2) per 2,000 Btu (.56 kW) per total input rating of all equipment in the enclosure. See FIGURE 5.

When ducts are used, they shall be of the same cross-sectional area as the free area of the openings to which they connect. The minimum dimension of rectangular air ducts shall be no less than 3 inches (75 mm). In calculating free area, the blocking effect of louvers, grilles, or screens must be considered. If the design and free area of protective covering is not known for calculating the size opening required, it may be assumed that wood louvers will have 20 to 25 percent free area and metal louvers and grilles will have 60 to 75 percent free area. Louvers and grilles must be fixed in the open position or interlocked with the equipment so that they are opened automatically during equipment operation.



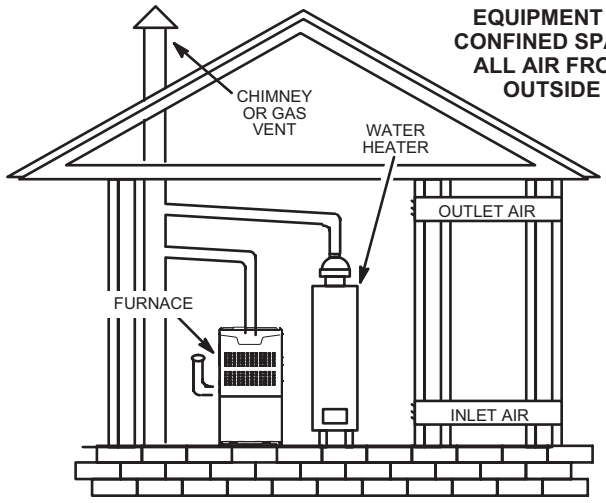
NOTE-The inlet and outlet air openings shall each have a free area of at least one square inch (645 mm^2) *per 4,000 Btu (1.17 kW) per hour of the total input rating of all equipment in the enclosure.*

FIGURE 3



NOTE-The inlet and outlet air openings shall each have a free area of at least one square inch (645 mm^2) per 4,000 Btu (1.17 kW) per hour of the total input rating of all equipment in the enclosure.

FIGURE 4



NOTE - Each air duct opening shall have a free area of at least one square inch (645 mm^2) per 2,000 Btu (.59 kW) per hour of the total input rating of all equipment in the enclosure. If the equipment room is located against an outside wall and the air openings communicate directly with the outdoors, each opening shall have a free area of at least one square inch (645 mm^2) per 4,000 Btu (1.17 kW) per hour of the total input rating of all other equipment in the enclosure.

FIGURE 5

Setting Equipment

⚠ WARNING

Do not install the furnace on its front or its back. Do not connect the return air ducts to the back of the furnace. Doing so will adversely affect the operation of the safety control devices, which could result in personal injury or death.

The EL180UHNEK gas furnace can be installed as shipped in either the upflow position or the horizontal position.

Select a location that allows for the required clearances that are listed on the unit nameplate. Also consider gas supply connections, electrical supply, vent connection, and installation and service clearances [24 inches (610 mm) at unit front]. The unit must be level.

Some units with 1/2 and 3/4 hp blower motor are equipped with three flexible legs and one rigid leg. The rigid leg is equipped with a shipping bolt and a flat white plastic washer (rather than the rubber mounting grommet used with a flexible mounting leg). **The bolt and washer must be removed before the furnace is placed into operation.** After the bolt and washer have been removed, the rigid leg will not touch the blower housing. Other units with a 1/2 and 3/4 hp motor will be equipped with a motor band. See FIGURE 6 for both styles

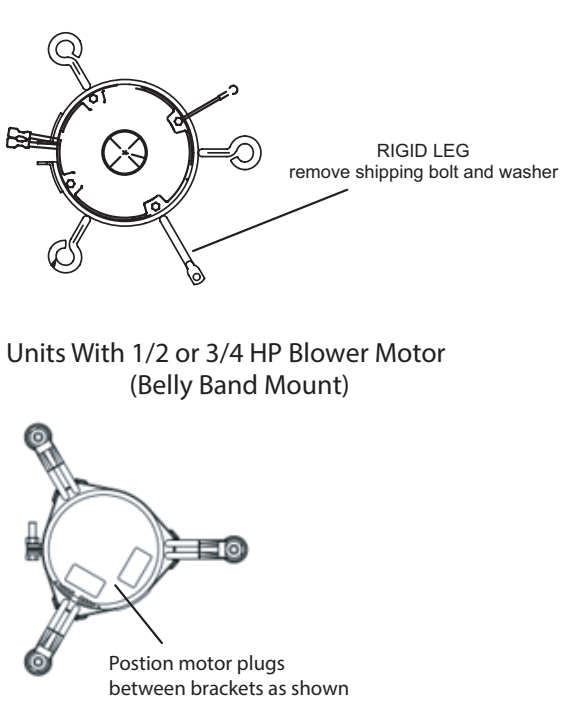
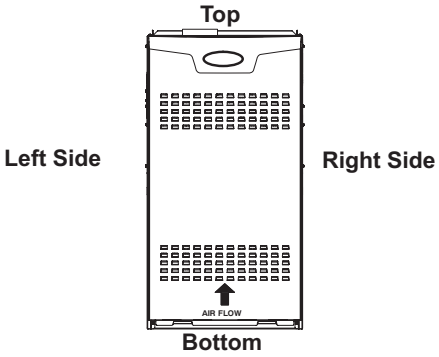


FIGURE 6

Upflow Applications

Allow for clearances to combustible materials as indicated on the unit nameplate. Minimum clearances for closet or alcove installations are shown in FIGURE 7.

Upflow Application Installation Clearances



Type of Vent Connector	Type C	Type B1
Top	1 in. (25 mm)	1 in. (25 mm)
*Front	2-1/4 in. (57 mm)**	2-1/4 in. (57 mm)
Back	1 in. (25 mm)	1 in. (25 mm)
Sides	1 in. (25 mm)	1 in. (25 mm)
Vent	6 in. (152 mm)	1 in. (25 mm)
Floor	0‡	0‡

***Front clearance in alcove installation must be 24 in. (610 mm). Maintain a minimum of 24 in. (610 mm) for front service access.**
**** 3-1/4 in. if single wall vent pipe is used.**
‡For installation on a combustible floor, do not install the furnace directly on carpeting, tile or other combustible materials other than wood flooring.
†Left side requires 3 inches if a single wall vent is used on 14-1/2 inch cabinets, or 2 in. if a single wall vent is used on 17-1/2 in. cabinets.

FIGURE 7

Return Air -- Upflow Applications

Return air can be brought in through the bottom or either side of the furnace installed in an upflow application. If the furnace is installed on a platform with bottom return, make an airtight seal between the bottom of the furnace and the platform to ensure that the furnace operates properly and safely. The furnace is equipped with a removable bottom panel to facilitate installation.

Markings are provided on both sides of the furnace cabinet for installations that require side return air. Cut the furnace cabinet at the maximum dimensions shown on page 2.

NOTE - *60C units that require air volumes over 1800 cfm (850 L/s) must have one of the following:*

1 - Single side return air and optional return air base with transition to accommodate 20 x 25 x 1 in. (508 x 635 x 25 mm) air filter. (Required to maintain proper air velocity.)

2 - Bottom return air.

3 - Return air from both sides.

4 - Bottom and one side return air.

Refer to Engineering Handbook for additional information.

Single Side Return Air
(with transition and filter)

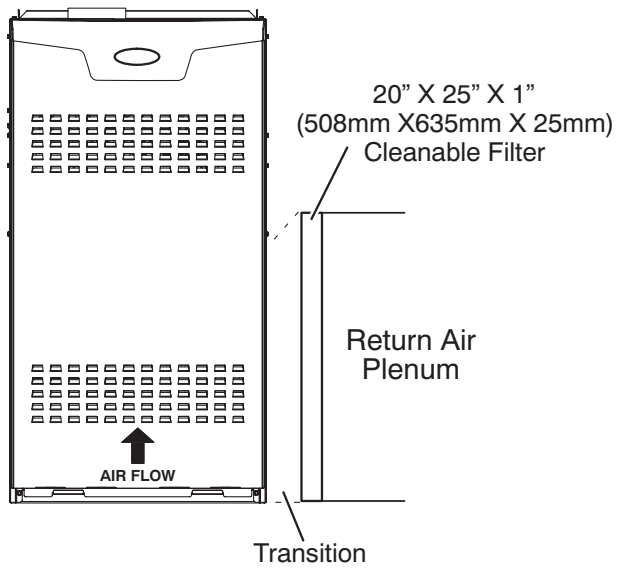
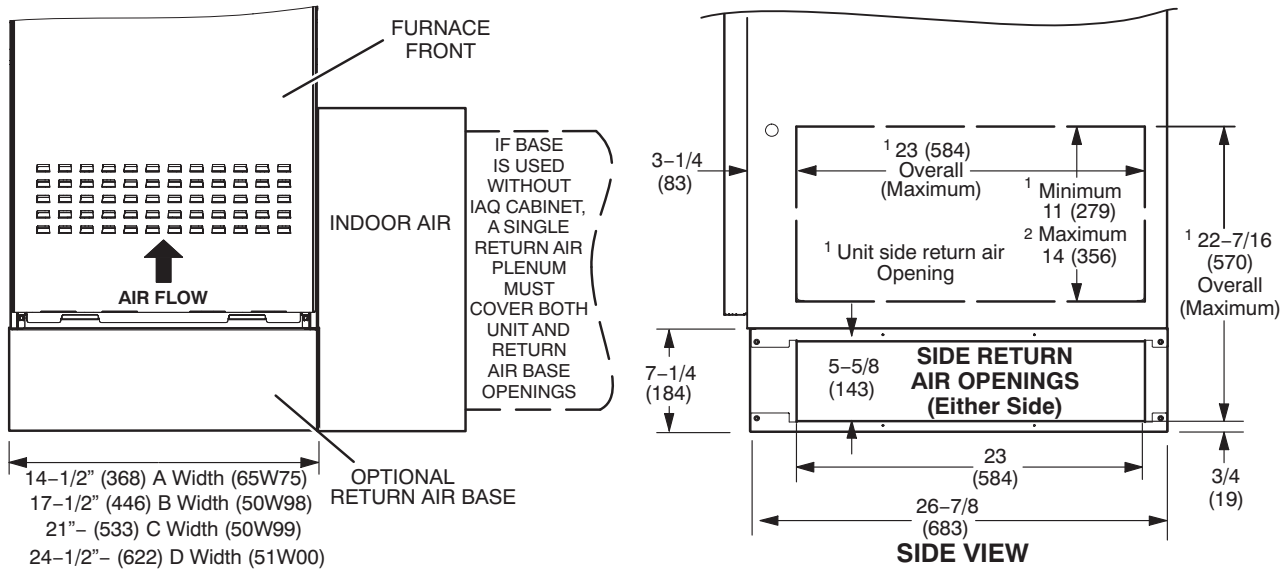


FIGURE 8

Optional Return Air Base
(Upflow Applications Only -- For use with A, B, C and D cabinets)



NOTE- Optional Side Return Air Filter Kits are not for use with Optional Return Air Base.

[1] Both the unit return air opening and the base return air opening must be covered by a single plenum or IAQ cabinet. Minimum unit side return air opening dimensions for units requiring 1800 cfm or more of air (W x H): 23 x 11 in. (584 x 279 mm). The opening can be cut as needed to accommodate plenum or IAQ cabinet while maintaining dimensions shown. Side return air openings must be cut in the field. There are cutting guides stenciled on the cabinet for the side return air opening. The size of the opening must not extend beyond the markings on the furnace cabinet.

[2] To minimize pressure drop, the largest opening height possible (up to 14 inches) is preferred.

FIGURE 9

Removing the Bottom Panel

Remove the two screws that secure the bottom cap to the furnace. Pivot the bottom cap down to release the bottom panel. Once the bottom panel has been removed, reinstall the bottom cap. See FIGURE 10.

Removing the Bottom Panel

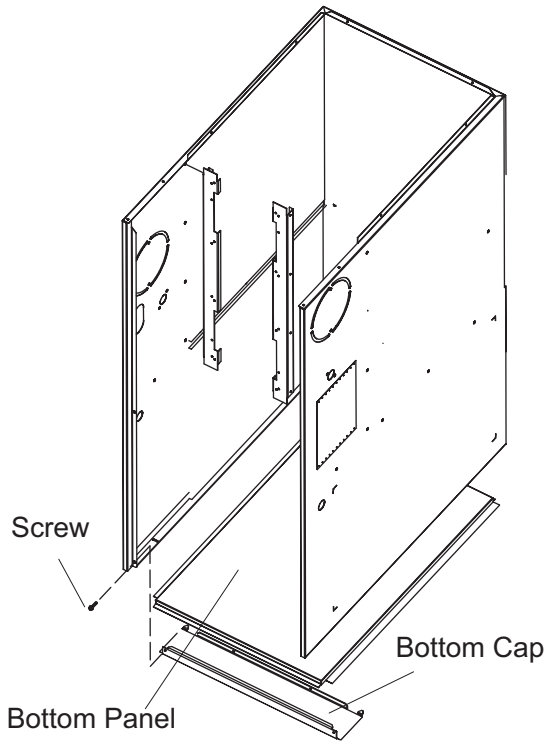
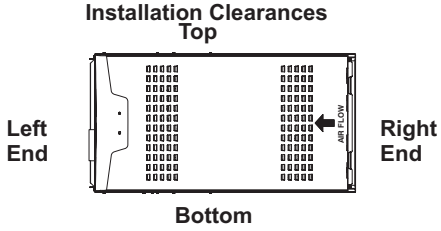


FIGURE 10

Horizontal Application
Installation Clearances



Vent Connector Type	Type C	Type B1
Top	1	1
*Front	2-1/4 in. (57 mm)**	2-14 in. (57 mm)
Back	1	1
Ends	2 in. (51 mm)	2 in. (51 mm)
Vent	6 in. (152 mm)	1 in. (25 mm)
Floor	1‡	1‡

***Front clearance in alcove installation must be 24 in. (610 mm). Maintain a minimum of 24 in. (610 mm) for front service access.**
**** 3-1/4 in. if single wall vent pipe is used.**
‡For installations on a combustible floor, do not install the furnace directly on carpeting, tile or other combustible materials other than wood flooring.

FIGURE 11

Horizontal Applications

The EL180UHNEK furnace can be installed in horizontal applications. Order horizontal suspension kit (51W10) from Lennox, or use equivalent suspension method.

Allow for clearances to combustible materials as indicated on the unit nameplate. Minimum clearances for closet or alcove installations are shown in FIGURE 11.

This furnace may be installed in either an attic or a crawlspace. Either suspend the furnace from roof rafters or floor joists, as shown in FIGURE 12, or install the furnace on a platform, as shown in FIGURE 13.

Typical Horizontal Application
Unit Suspended in Attic or Crawlspace

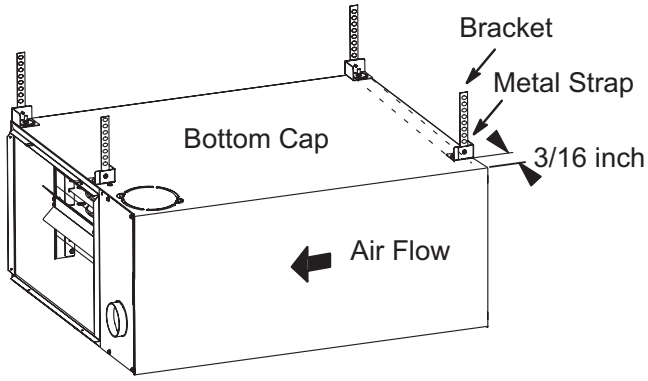


FIGURE 12

NOTE - *Heavy-gauge perforated sheet metal straps may be used to suspend the unit from roof rafters or ceiling joists. When straps are used to suspend the unit in this way, support must be provided for both the ends. The straps must not interfere with the plenum or exhaust piping installation. Cooling coils and supply and return air plenums must be supported separately.*

NOTE - *When the furnace is installed on a platform in a crawlspace, it must be elevated enough to avoid water damage and to allow the evaporator coil to drain.*

Return Air -- Horizontal Applications

Return air must be brought in through the end of a furnace installed in a horizontal application. The furnace is equipped with a removable bottom panel to facilitate installation. See FIGURE 10.

⚠ CAUTION

If this unit is being installed in a space serviced by an exhaust fan, power exhaust fan, or other device which may create a negative pressure in the space, take care when sizing the inlet air opening. The inlet air opening must be sized to accommodate the maximum volume of exhausted air as well as the maximum volume of combustion air required for all gas appliances serviced by this space.

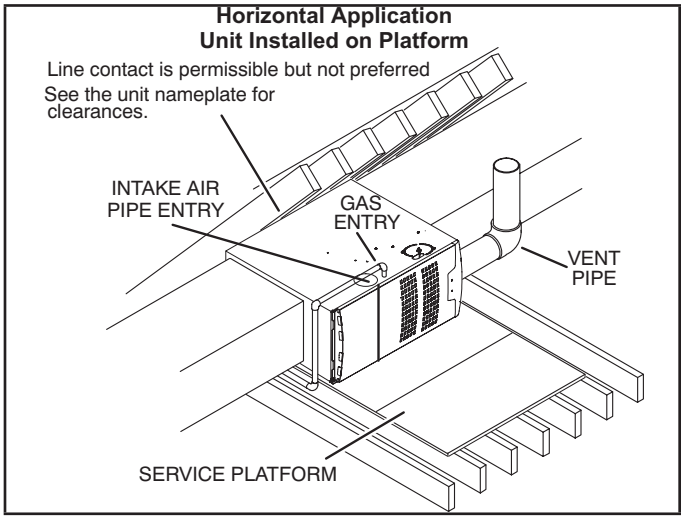


FIGURE 13

⚠ WARNING

Improper installation of the furnace can result in personal injury or death. Combustion and flue products must never be allowed to enter the return air system or the living space. Use screws and joint tape to seal the return air system to the furnace.

In platform installations with bottom return air, the furnace should be sealed airtight to the return air plenum. A door must never be used as a portion of the return air duct system. The base must provide a stable support and an airtight seal to the furnace. Allow absolutely no sagging, cracks, gaps, etc.

The return and supply air duct systems must never be connected to or from other heating devices such as a fireplace or stove, etc. Fire, explosion, carbon monoxide poisoning, personal injury and/or property damage could result.

⚠ WARNING

The blower access panel must be securely in place when the blower and burners are operating. Gas fumes, which could contain carbon monoxide, can be drawn into living space resulting in personal injury or death.

Filters

This unit is not equipped with a filter or rack. A field-provided high-velocity filter is required for the unit to operate properly. TABLE 1 lists recommended filter sizes.

⚠ IMPORTANT

If a high efficiency filter is being installed as part of this system to ensure better indoor air quality, the filter must be properly sized. High efficiency filters have a higher static pressure drop than standard efficiency glass/foam filters. If the pressure drop is too great, system capacity and performance may be reduced. The pressure drop may also cause the limit to trip more frequently during the winter and the indoor coil to freeze in the summer, resulting in an increase in the number of service calls.

Before using any filter with this system, check the specifications provided by the filter manufacturer against the data given in the appropriate Lennox Product Specifications bulletin. Additional information is provided in Service and Application Note ACC002 (August 2000).

A filter must be in place any time the unit is operating.

TABLE 1

Furnace Cabinet Width	Filter Size	
	Side Return	Bottom Return
A - 14-1/2”	16 X 25 X 1 (1)	14 X 25 X 1 (1
B - 17-1/2”	16 X 25 X 1 (1)	16 X 25 X 1 (1)
C - 21”	16 X 25 X 1 (1)	20 X 25 X 1 (1)

Duct System

Use industry-approved standards (such as those published by Air Conditioning Contractors of America or American Society of Heating, Refrigerating and Air Conditioning Engineers) to size and install the supply and return air duct system. FIGURE 14 shows the correct supply and return duct installation. This will result in a quiet and low-static system that has uniform air distribution.

NOTE - *Do not operate the furnace in the heating mode with an external static pressure that exceeds 0.5 inches w.c. Higher external static pressures may cause erratic limit operation.*

Supply Air Plenum

If the furnace is installed without a cooling coil, a removable access panel must be installed in the supply air duct. The access panel should be large enough to permit inspection (either by smoke or reflected light) of the heat exchanger for leaks after the furnace is installed. The furnace access panel must always be in place when the furnace is operating and it must not allow leaks into the supply air duct system.

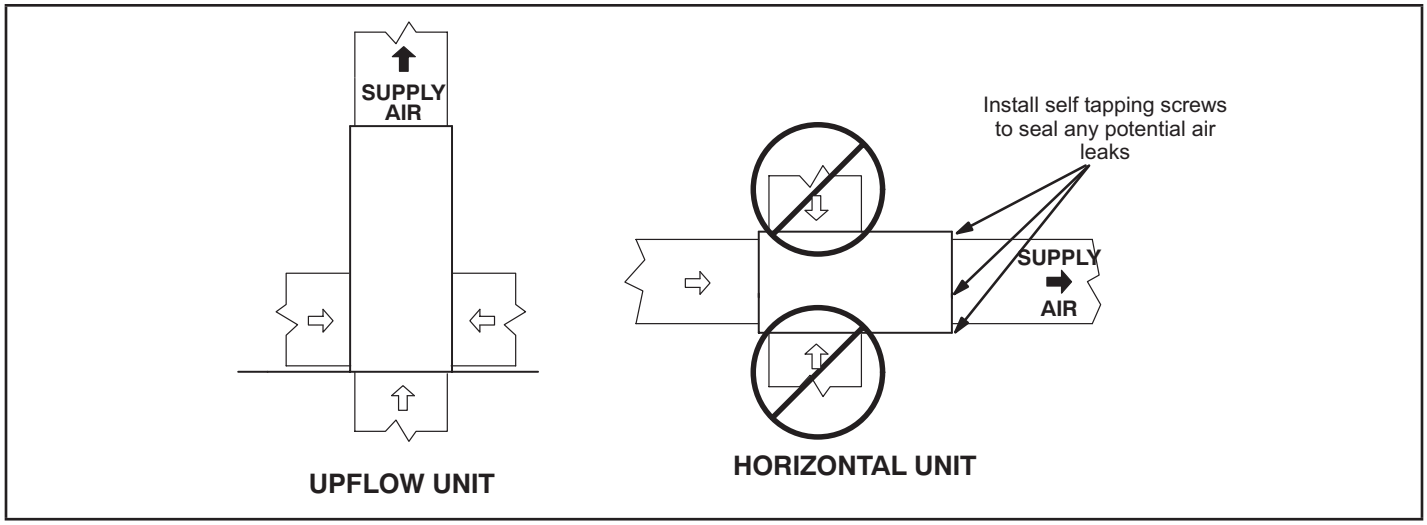


FIGURE 14

Return Air Plenum

NOTE - *Return air must not be drawn from a room where this furnace, or any other gas-fueled appliance (i.e., water heater), or carbon monoxide producing device (i.e., wood fireplace) is installed.*

When return air is drawn from a room, a negative pressure is created in the room. If a gas appliance is operating in a room with negative pressure, the flue products can be pulled back down the vent pipe and into the room. This reverse flow of the flue gas may result in incomplete combustion and the formation of carbon monoxide gas. This toxic gas might then be distributed throughout the house by the furnace duct system.

In upflow applications, the return air can be brought in through the bottom or either side of the furnace. If a furnace with bottom return air is installed on a platform, make an airtight seal between the bottom of the furnace and the platform to ensure that the unit operates properly and safely. Use fiberglass sealing strips, caulking, or equivalent sealing method between the plenum and the furnace cabinet to ensure a tight seal. If a filter is installed, size the return air duct to fit the filter frame.

Intake Piping

The EL180UHNEK must have the provided air intake screen assembly installed. The assembly may be rotated if necessary to accommodate furnace installation.

Follow the next two steps when installing the air intake pipe with screen.

1 - Using a rubber mallet tap the provided elbow into the intake pipe inside the cabinet.

NOTE - *Air intake termination is available on the bottom of the cabinet with left-hand air discharge. The elbow must be firmly secured into the intake pipe inside the cabinet.*

2 - Tap the 2”PVC 2 1/2” pipe in length to the elbow.

3 - Tap the 3” to 2” reducer with screen onto the 2” PVC pipe.

See FIGURE 15 and FIGURE 16. Make note the 4-1/2” space needed between the air intake assembly and furnace cabinet side.

Air Intake Pipe Connections Upflow

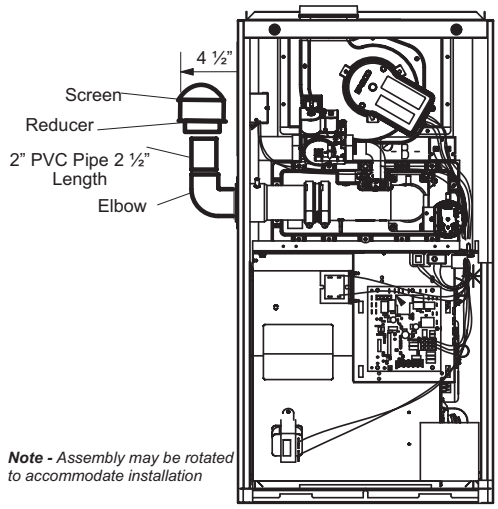


FIGURE 15

Air Intake Pipe Connections Horizontal

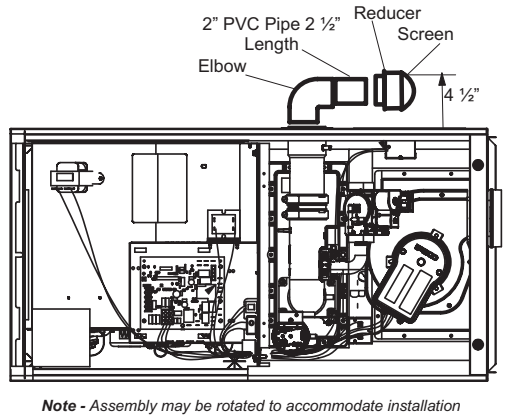


FIGURE 16

Venting

A 4-inch diameter flue transition is factory-installed on the combustion air inducer outlet of all models

The EL180UHNEK series units are classified as fan-assisted Category I furnaces when vertically vented according to the latest edition of National Fuel Gas Code (NFPA 54 / ANSI Z223.1) in the USA. A fan-assisted Category I furnace is an appliance equipped with an integral mechanical means to either draw or force combustion products through the combustion chamber and/or heat exchanger. The EL180UHNEK is not approved for use with horizontal venting.

NOTE - *Use these instructions as a guide. They do not supersede local codes. This furnace must be vented according to all local codes these installation instructions, and the provided venting tables in these instructions*

The venting tables in this manual were extracted from the National Fuel Gas Code (NFPA 54 / ANSI Z223.1) and are provided as a guide for proper vent installation. Proper application, termination, construction and location of vents must conform to local codes having jurisdiction. In the absence of local codes, the NFGC serves as the defining document.

Use self-drilling sheet metal screws or a mechanical fastener to firmly secure the vent pipe to the round collar of the flue transition. If self-drilling screws are used to attach the vent pipe, it is recommended that three be used. Drive one self-drilling screw through the front and one through each side of the vent pipe and collar. See FIGURE 17.

Install the first vent connector elbow at a minimum of six inches (152 mm) from the furnace vent outlet. See FIGURE 17.**Venting Using a Masonry Chimney**

The following additional requirements apply when a lined masonry chimney is used to vent this furnace. Masonry chimneys used to vent Category I central furnaces must be either tile-lined or lined with a listed metal lining system or dedicated gas vent. Unlined masonry chimneys are prohibited. See FIGURE 18 and FIGURE 19 for common venting.

A chimney with one or more sides exposed to the outside of the structure is considered to be an exterior chimney. An exterior masonry chimney that is not tile-lined must be lined with B1 vent or a listed insulated flexible metal vent. An exterior tile-lined chimney that is sealed and capped may be lined with a listed uninsulated flexible metal vent. If the existing chimney will not accommodate a listed metal liner, either the chimney must be rebuilt to accommodate one of these liners or an alternate approved venting method must be found.

Insulation for the flexible vent pipe must be an encapsulated fiberglass sleeve recommended by the flexible vent pipe manufacturer. See FIGURE 18. Refer to the tables and the venting information contained in these instructions to properly size and install the venting system.

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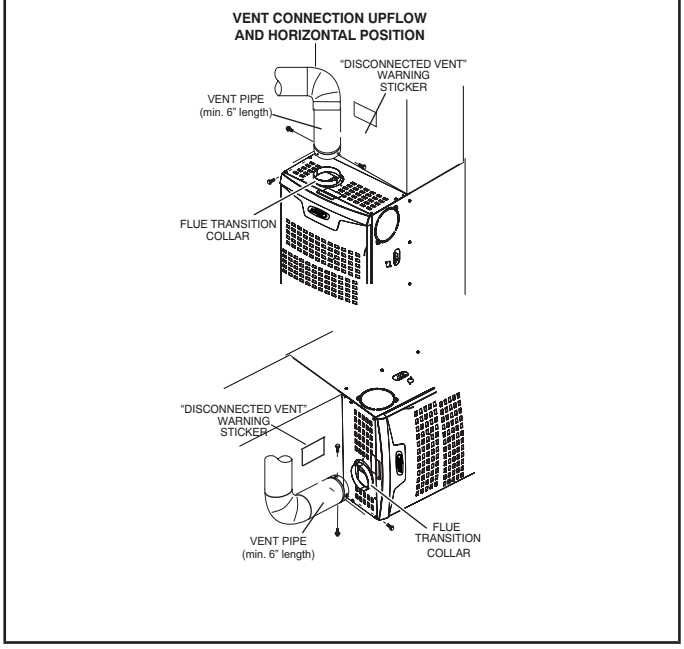
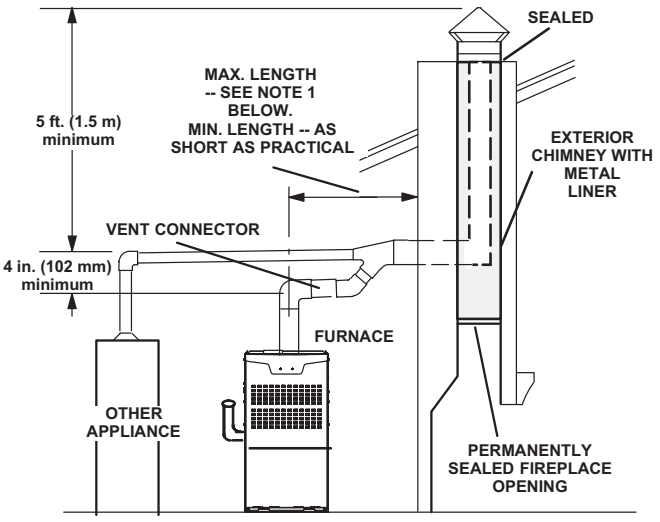


FIGURE 17

⚠ IMPORTANT

Once the venting system is installed, attach the "Disconnected Vent" warning sticker to a visible area of the plenum near the vent pipe. See FIGURE 17. The warning sticker is provided in the bag assembly. Order kit 66W04 for additional stickers.

Common Venting Using Metal-Lined Masonry Chimney



NOTE 1 - Refer to the provided venting tables for installations. Refer to the capacity requirements shown in the provided venting tables.

FIGURE 18

⚠ WARNING

Asphyxiation hazard. The exhaust vent for this furnace must be securely connected to the furnace flue transition at all times.

DO NOT insulate the space between the liner and the chimney wall with puffed mica or any other loose granular insulating material.

⚠ IMPORTANT

SINGLE appliance venting of a fan-assisted furnace into a tile-lined masonry chimney (interior or outside wall) is PROHIBITED. The chimney must first be lined with either type B1 vent or an insulated single wall flexible vent lining system which has been sized according to the provided venting tables and the vent pipe manufacturer's instructions.

A fan-assisted furnace may be commonly vented into an existing lined masonry chimney if the following conditions are met:

- The chimney is currently serving at least one draft-hoodequipped appliance;
- The vent connectors and chimney are sized according to the provided venting tables.

If type B1 double- wall vent is used inside a chimney, no other appliance can be vented into the chimney. The outer wall of type B1 vent pipe must not be exposed to flue products.

A type B1 vent or masonry chimney liner shall terminate

above the roof surface with a listed cap or a listed roof assembly according to the terms of their respective listings and the vent manufacturer's instructions.

When inspection reveals that an existing chimney is not safe for the intended purpose, it shall be rebuilt to conform to nationally recognized standards, lined or relined with suitable materials, or replaced with a gas vent or chimney suitable for venting EL180UHNE series units. The chimney passageway must be checked periodically to ensure that it is clear and free of obstructions.Do not install a manual damper, barometric draft regulator, or flue restrictor between the furnace and the chimney.

Never connect a Category I appliance to a chimney that is servicing a solid-fuel appliance. If a fireplace chimney flue is used to vent this appliance, the fireplace opening must be permanently sealed.

A type B or listed chimney lining system that passes through an unused masonry chimney flue is not considered to be exposed to the outdoors.

General Venting Requirements

Vent all EL180UHNE furnaces according to these instructions:

1 - Vent diameter recommendations and maximum allowable piping runs are found in the provided venting tables.

2 - In no case should the vent or vent connector diameter be less than the diameter specified in the provided venting tables.

3 - The minimum vent capacity determined by the sizing tables must be less than the low fire input rating and the maximum vent capacity must be greater than the high fire input rating.

4 - Single appliance vents - If the vertical vent or tile-lined chimney has a larger diameter or flow area than the vent connector, use the vertical vent diameter to determine the minimum vent capacity and the vent connector diameter to determine the maximum vent capacity. The flow area of the vertical vent, however, shall not exceed 7 times the flow area of the listed appliance categorized vent area, drafthood outlet area or flue collar area unless designed according to approved engineering methods.

5 - Multiple appliance vents - The flow area of the largest section of vertical vent or chimney shall not exceed 7 times the smallest listed appliance categorized vent area, drafthood outlet area or flue collar area unless designed according to approved engineering methods.

6 - The entire length of single wall metal vent connector shall be readily accessible for inspection, cleaning, and replacement.

7 - Single appliance venting configurations with zero lateral lengths (TABLE 3) are assumed to have no elbows in the vent system. For all other vent configurations, the vent system is assumed to have two 90° elbows. For each additional 90° elbow or equivalent (for example two 45° elbows equal one 90° elbow) beyond two, the maximum capacity listed in the venting table should be reduced by 10% (0.90 x maximum listed capacity).

8 - The common venting TABLE 4 and TABLE 5 were generated using a maximum horizontal vent connector length of 1-1/2 feet (.46 m) for each inch (25 mm) of connector diameter as follows:

TABLE 2

Connector Diameter inches (mm)	Maximum Horizontal Connector Length feet (m)
3 (76)	4-1/2 (1.37)
4 (102)	6 (1.83)
5 (127)	7-1/2 (2.29)
6 (152)	9 (2.74)
7 (178)	10-1/2 (3.20)

NOTE - *For any Low GWP refrigerant systems with exposed line set joints installed in the same space, each non-direct vent furnace system must have a refrigerant detection sensor installed below the level of the burners (See "SECONDARY SENSOR REQUIREMENTS" on page 31). Any direct vent furnace system is not subject to this requirement*

Common Venting Using Tile-Lined Interior Masonry Chimney and Combined Vent Connector

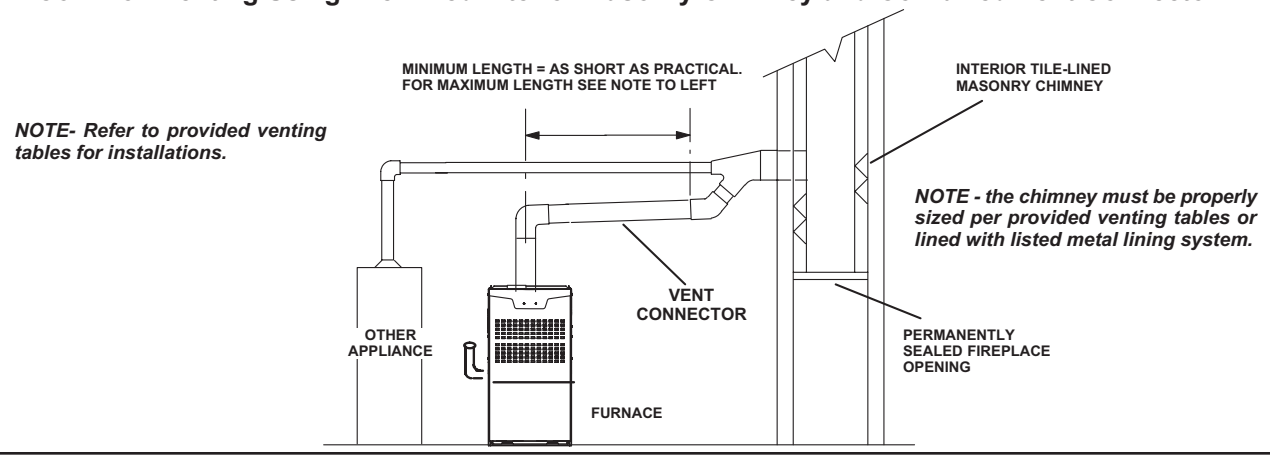


FIGURE 19

9 - If the common vertical vent is offset, the maximum common vent capacity listed in the common venting tables should be reduced by 20%, the equivalent of two 90° elbows (0.80 x maximum common vent capacity). The horizontal length of the offset shall not exceed 1-1/2 feet (.46 m) for each inch (25 mm) of common vent diameter.

10 - The vent pipe should be as short as possible with the least number of elbows and angles required to complete the job. Route the vent connector to the vent using the shortest possible route.

11 - A vent connector shall be supported without any dips or sags and shall slope a minimum of 1/4 inch (6.4 mm) per linear foot (305 mm) of connector, back toward the appliance.

12 - Vent connectors shall be firmly attached to the furnace flue collar by self-drilling screws or other approved means, except vent connectors of listed type B vent material which shall be assembled according to the manufacturer's instructions. Joints between sections of single wall connector piping shall be fastened by screws or other approved means.

13 - When the vent connector used for Category I appliances must be located in or pass through a crawlspace, attic or other areas which may be cold, that portion of the vent connector shall be constructed of listed double-wall type B vent material or material having equivalent insulation qualities.

14 - All venting pipe passing through floors, walls, and ceilings must be installed with the listed clearance to combustible materials and be fire stopped according to local codes. In absence of local codes, refer to NFGC (Z223.1).

15- No portion of the venting system can extend into, or pass through any circulation air duct or plenum.

16 - Vent connectors serving Category I appliances shall not be connected to any portion of mechanical draft systems operating under positive pressure such as Category III or IV venting systems.

17 - If vent connectors are combined prior to entering the common vent, the maximum common vent capacity listed in the common venting tables must be reduced by 10%, the equivalent of one 90° elbow (0.90 x maximum common vent capacity).

18 - The common vent diameter must always be at least as large as the largest vent connector diameter.

19 - In no case, shall the vent connector be sized more than two consecutive table size diameters over the size of the draft hood outlet or flue collar outlet.

20 - Do not install a manual damper, barometric draft

TABLE 3

Capacity of Type B Double-Wall Vents with Type B Double-Wall Connectors
Serving a Single Category I Appliance

Height H (feet)	Lateral L (feet)	Vent and Connector Diameter - D (inches)							
		3 inch		4 inch		5 inch		6 inch	
		Appliance Input Rating in Thousands of Btu Per Hour							
		Min	Max	Min	Max	Min	Max	Min	Max
6	0	0	78	0	152	0	251	0	375
	2	13	51	18	97	27	157	32	232
	4	21	49	30	94	39	153	50	227
	6	25	46	36	91	47	149	59	223
8	0	0	84	0	165	0	276	0	415
	2	12	57	16	109	25	178	28	263
	5	23	53	32	103	42	171	53	255
	8	28	49	39	98	51	164	64	247
10	0	0	88	0	175	0	295	0	447
	2	12	61	17	118	23	194	26	289
	5	23	57	32	113	41	187	52	280
	10	30	51	41	104	54	176	67	267
15	0	0	94	0	191	0	327	0	502
	2	11	69	15	136	20	226	22	339
	5	22	65	30	130	39	219	49	330
	10	29	59	40	121	51	206	64	315
	15	35	53	48	112	61	195	76	301
20	0	0	97	0	202	0	349	0	540
	2	10	75	14	149	18	250	20	377
	5	21	71	29	143	38	242	47	367
	10	28	64	38	133	50	229	62	351
	15	34	58	46	124	59	217	73	337
	20	48	52	55	116	69	206	84	322
30	0	0	100	0	213	0	374	0	587
	2	9	81	13	166	14	283	18	432
	5	21	77	28	160	36	275	45	421
	10	27	70	37	150	48	262	59	405
	15	33	64	44	141	57	249	70	389
	20	56	58	53	132	66	237	80	374
	30	NA	NA	73	113	88	214	104	346

NOTE - *Single appliance venting configurations with zero lateral lengths are assumed to have no elbows in the vent system. For all other vent configurations, the vent system is assumed to have two 90° elbows. For each additional 90° elbow or equivalent (for example two 45° elbows equal one 90° elbow) beyond two, the maximum capacity listed in the venting table should be reduced by 10 percent (0.90 x maximum listed capacity).*

TABLE 4

Vent Connector Capacity Type B Double-Wall Vents with Type B Double-Wall Connectors
Serving Two or More Category I Appliances

Height H (feet)	Lateral L (feet)	Vent and Connector Diameter - D (inches)							
		3 inch		4 inch		5 inch		6 inch	
		Appliance Input Rating in Thousands of Btu Per Hour							
		Min	Max	Min	Max	Min	Max	Min	Max
6	1	22	37	35	66	46	106	58	164
	2	23	41	37	75	48	121	60	183
	3	24	44	38	81	49	132	62	199
8	1	22	40	35	72	49	114	64	176
	2	23	44	36	80	51	128	66	195
	3	24	47	37	87	53	139	67	210
10	1	22	43	34	78	49	123	65	189
	2	23	47	36	86	51	136	67	206
	3	24	50	37	92	52	146	69	220
15	1	21	50	33	89	47	142	64	220
	2	22	53	35	96	49	153	66	235
	3	24	55	36	102	51	163	68	248
20	1	21	54	33	99	46	157	62	246
	2	22	57	34	105	48	167	64	259
	3	23	60	35	110	50	176	66	271
30	1	20	62	31	113	45	181	60	288
	2	21	64	33	118	47	190	62	299
	3	22	66	34	123	48	198	64	309

TABLE 5

Common Vent Capacity Type B Double-Wall Vents with Type B Double-Wall Connectors
Serving Two or More Category I Appliances

Vent Height H (feet)	Vent and Connector Diameter - D (inches)							
	4 inch		5 inch		7 inch		7 inch	
	Appliance Input Rating in Thousands of Btu Per Hour							
	FAN + FAN	FAN + NAT	FAN + FAN	FAN + NAT	FAN + FAN	FAN + NAT	FAN + FAN	FAN + NAT
6	92	81	140	116	204	161	309	248
8	101	90	155	129	224	178	339	275
10	110	97	169	141	243	194	367	299
15	125	112	195	164	283	228	427	352
20	136	123	215	183	314	255	475	394
30	152	138	244	210	361	297	547	459

Removal of the Furnace from Common Vent

In the event that an existing furnace is removed from a venting system commonly run with separate gas appliances, the venting system is likely to be too large to properly vent the remaining attached appliances. Conduct the following test while each appliance is operating and the other appliances (which are not operating) remain connected to the common venting system. If the venting system has been installed improperly, you must correct the system as indicated in the general venting requirements section.

⚠ WARNING

CARBON MONOXIDE POISONING HAZARD

Failure to follow the steps outlined below for each appliance connected to the venting system being placed into operation could result in carbon monoxide poisoning or death. The following steps shall be followed for each appliance connected to the venting system being placed into operation, while all other appliances connected to the venting system are not in operation:

1 - Seal any unused openings in the common venting system.

2 - Inspect the venting system for proper size and horizontal pitch. Determine that there is no blockage, restriction, leakage, corrosion, or other deficiencies which could cause an unsafe condition.

3 - Close all building doors and windows and all doors between the space in which the appliances remaining connected to the common venting system are located and other spaces of the building. Turn on clothes dryers and any appliances not connected to the common venting system. Turn on any exhaust fans, such as range hoods and bathroom exhausts, so they will operate at maximum speed. Do not operate a summer exhaust fan. Close fireplace dampers.

4 - Follow the lighting instructions. Turn on the appliance that is being inspected. Adjust the thermostat so that the appliance operates continuously.

5 - After the burner have operated for 5 minutes, test for leaks of flue gases at the draft hood relief opening. Use the flame of a match or candle.

6 - After determining that each appliance connected to the common venting system is venting properly, (step 3) return all doors, widows, exhaust fans, fireplace dampers, and any other gas-burning appliances to their previous mode of operation.

7 - If a venting problem is found during any of the preceding tests, the common venting system must be modified to correct the problem.

Resize the common venting system to the minimum vent pipe size determined by using the appropriate tables in Appendix G. (These are in the current standards of the National Fuel Gas Code ANSI Z223.1.

Gas Piping

Gas supply piping should not allow more than 0.5”W.C. drop in pressure between gas meter and unit. Supply gas pipe must not be smaller than unit gas connection.

⚠ CAUTION

If a flexible gas connector is required or allowed by the authority that has jurisdiction, black iron pipe shall be installed at the gas valve and extend outside the furnace cabinet. The flexible connector can then be added between the black iron pipe and the gas supply line.

Gas Supply

⚠ WARNING

Do not over torque (800 in-lbs) or under torque (350 in-lbs) when attaching the gas piping to the gas valve.

1 - This unit is shipped standard for left side installation for all models. However 080 and 100 models can be used for right side installation of gas piping (or top entry in horizontal applications). Connect the gas supply piping into the gas valve. The maximum torque is 800 in lbs and minimum torque is 350 in lbs when attaching the gas piping to the gas valve.

2 - When connecting the gas supply piping, consider factors such as length of run, number of fittings, and furnace rating to avoid excessive pressure drop. TABLE 6 lists recommended pipe sizes for typical applications.

3 - The gas piping must not run in or through air ducts, clothes chutes, gas vents or chimneys, dumb waiters, or elevator shafts.

4 - The piping should be sloped 1/4 inch (6.4 mm) per 15 feet (4.57 m) upward toward the meter from the furnace. The piping must be supported at proper intervals [every 8 to 10 feet (2.44 to 3.01 m)] with suitable hangers or straps. Install a drip leg in vertical pipe runs to the unit.

5 - A 1/8” N.P.T. plugged tap or pressure post is located on the gas valve to facilitate test gauge connection. See FIGURE 32.

6 - In some localities, codes may require the installation of a manual main shut-off valve and union (furnished by the installer) external to the unit. The union must be of the ground joint type.

⚠ IMPORTANT

Compounds used on threaded joints of gas piping must be resistant to the actions of liquified petroleum gases.

NOTE - *If emergency shutoff is necessary, shut off the main manual gas valve and disconnect main power to the furnace. The installer should properly label these devices.*

TABLE 6

Gas Pipe Capacity - ft3/hr (m3/hr)

Nominal Iron Pipe Size Inches (mm)	Internal Diameter inches (mm)	Length of Pipe - feet (m)									
		10 (3.048)	20 (6.096)	30 (9,144)	40 (12,192)	50 (15.240)	60 (18.288)	70 (21.336)	80 (24.384)	90 (27.432)	100 (30,480)
1/2 (12.7)	.622 (17.799)	172 (4.87)	118 (3.34)	95 (2.69)	81 (2.29)	72 (2.03)	65 (1.84)	60 (1.69)	56 (1.58)	52 (1.47)	50 (1.42)
3/4 (19.05)	.824 (20.930)	360 (10.19)	247 (7.000)	199 (5.63)	170 (4.81)	151 (4.23)	137 (3.87)	126 (3.56)	117 (3.31)	110 (3.11)	104 (2.94)
1 (25.4)	1.049 (26.645)	678 (19.19)	466 (13.19)	374 (10.59)	320 (9.06)	284 (8.04)	257 (7.27)	237 (6.71)	220 (6.23)	207 (5.86)	195 (5.52)
1-1/4 (31.75)	1.380 (35.052)	1350 (38.22)	957 (27.09)	768 (22.25)	657 (18.60)	583 (16.50)	528 (14.95)	486 (13.76)	452 (12.79)	424 (12.00)	400 (11.33)
1-1/2 (38.1)	1.610 (40.894)	2090 (59.18)	1430 (40.49)	1150 (32.56)	985 (27.89)	873 (24.72)	791 (22.39)	728 (20.61)	677 (19.17)	635 (17.98)	600 (17.00)
2 (50.8)	2.067 (52.502)	4020 (113.83)	2760 (78.15)	2220 (62.86)	1900 (53.80)	1680 (47.57)	1520 (43.04)	1400 (39.64)	1300 (36.81)	1220 (34.55)	1160 (32.844)
2-1/2 (63.5)	2.469 (67.713)	6400 (181.22)	4400 (124.59)	3530 (99.95)	3020 (85.51)	2680 (75.88)	2480 (70.22)	2230 (63.14)	2080 (58.89)	1950 (55.22)	1840 (52.10)
3 (76.2)	3.068 (77.927)	11300 (319.98)	7780 (220.30)	6250 (176.98)	5350 (151.49)	4740 (134.22)	4290 (121.47)	3950 (111.85)	3670 (103.92)	3450 (97.69)	3260 (92.31)

NOTE - *Capacity given in cubic feet (m3) of gas per hour and based on 0.60 specific gravity gas.*

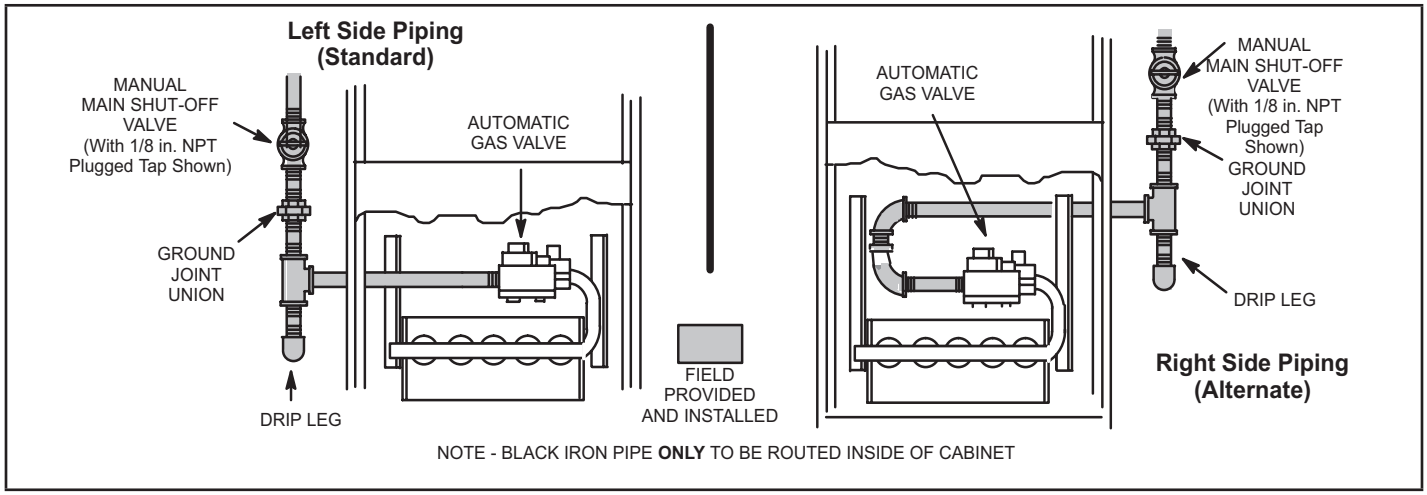


FIGURE 20

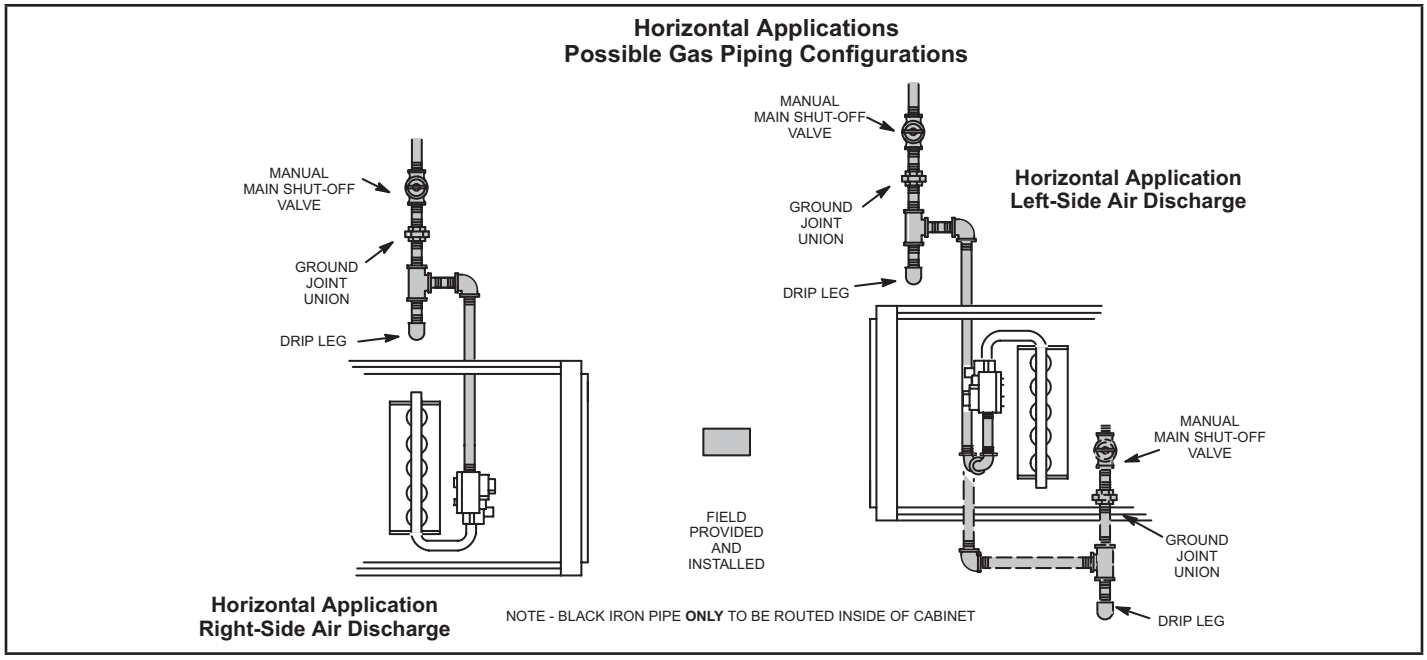


FIGURE 21

Leak Check

After gas piping is completed, carefully check all piping connections (factory- and field-installed) for gas leaks. Use a leak detecting solution or other preferred means.

NOTE - *If emergency shutoff is necessary, shut off the main manual gas valve and disconnect the main power to the furnace. The installer should properly label these devices.*

⚠ CAUTION

Some soaps used for leak detection are corrosive to certain metals. Carefully rinse piping thoroughly after leak test has been completed. Do not use matches, candles, flame or other sources of ignition to check for gas leaks.

The furnace must be isolated by closing its individual manual shut-off valve and disconnecting from from the gas supply system during any pressure testing of the gas supply system at pressures greater than 1/2 psig (3.48 kPa, 14 inches w.c.).

⚠ IMPORTANT

When testing pressure of gas lines, gas valve must be disconnected and isolated. See FIGURE 22. Gas valves can be damaged if subjected to pressures greater than 1/2 psig (3.48 kPa, 14 inches w.c.).

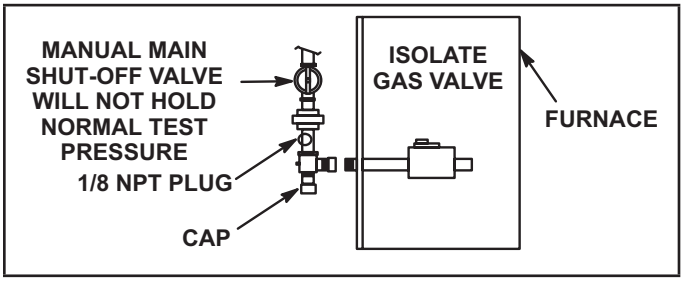


FIGURE 22

Electrical

⚠ IMPORTANT

When matching this gas furnace with zoning, dual fuel or other 24V accessories, It is recommended to replace the factory installed transformer with kit 27J32.

Kit 27J32 contains a 75VA transformer, so you do not overload the original 40VA transformer.

ELECTROSTATIC DISCHARGE (ESD)
Precautions and Procedures

⚠ CAUTION

Electrostatic discharge can affect electronic components. Take precautions to neutralize electrostatic charge by touching your hand and tools to metal prior to handling the control.

The unit is equipped with a field make-up box on the left hand side of the cabinet. The make-up box may be moved to the right side of the furnace to facilitate installation. If the make-up box is moved to the right side, clip the wire ties that bundle the wires together. The excess wire must be pulled into the blower compartment. Secure the excess wire to the existing harness to protect it from damage.

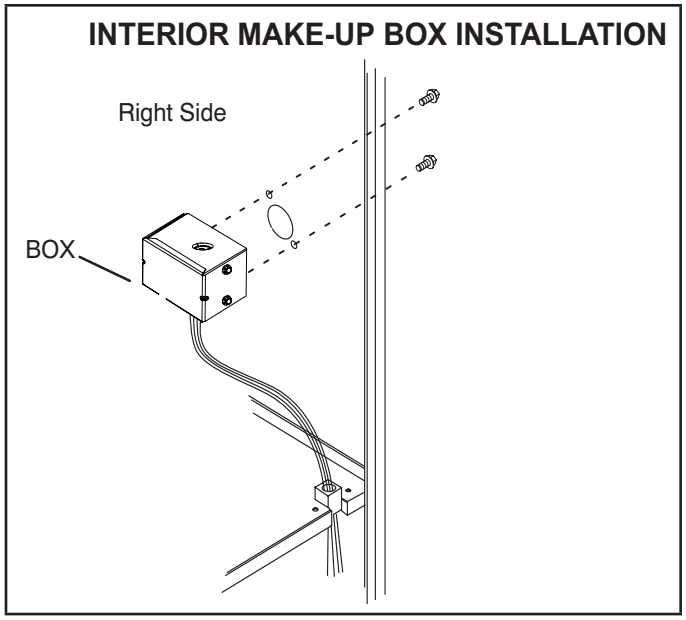


FIGURE 23

⚠ WARNING

Fire Hazard. Use of aluminum wire with this product may result in a fire, causing property damage, severe injury or death. Use copper wire only with this product.

Refer to FIGURE 24 (-040, -060 and -080) or FIGURE 25 (-100) for schematic wiring diagram, field wiring and trouble shooting.

The power supply wiring must meet Class I restrictions. Protected by either a fuse or circuit breaker, select circuit protection and wire size according to unit nameplate.

⚠ CAUTION

Failure to use properly sized wiring and circuit breaker may result in property damage. Size wiring and circuit breaker(s) per Product Specifications bulletin (EHB) and unit rating plate.

NOTE - *Unit nameplate states maximum current draw. Maximum over-current protection allowed is 15 AMP.*

Holes are on both sides of the furnace cabinet to facilitate wiring.

Install a separate (properly sized) disconnect switch near the furnace so that power can be turned off for servicing.

Before connecting the thermostat, check to make sure the wires will be long enough for servicing at a later date. Make sure that thermostat wire is long enough to facilitate future removal of blower for service.

Complete the wiring connections to the equipment. Use the provided unit wiring and field wiring diagram shown in FIGURE 24 and FIGURE 25. Use 18-gauge wire or larger that is suitable for Class II rating for thermostat connections.

Electrically ground the unit according to local codes or, in the absence of local codes, according to the current National Electric Code (ANSI/NFPA No. 70). A green ground wire is provided in the field make-up box.

NOTE - *The EL180UHNE furnace contains electronic components that are polarity sensitive. Make sure that the furnace is wired correctly and is properly grounded.*

⚠ WARNING

Electric Shock Hazard. Can cause injury or death. Unit must be properly grounded in accordance with national and local codes.

Thermostat

Install the room thermostat according to the instructions provided with the thermostat. See FIGURE 24 and FIGURE 25 for thermostat designations. If the furnace is being matched with a heat pump, refer to the FM21 installation instruction or appropriate dual fuel thermostat instructions.

Generator Use - Voltage Requirements

The following requirements must be kept in mind when specifying a generator for use with this equipment:

- The furnace requires 120 volts + 10% (Range: 108 volts to 132 volts).
- The furnace operates at 60 Hz + 5% (Range: 57 Hz to 63 Hz).
- The furnace integrated control requires both polarity and proper ground. Both polarity and proper grounding should be checked before attempting to operate the furnace on either permanent or temporary power.
- Generator should have a wave form distortion of less than 5% total harmonic distortion.

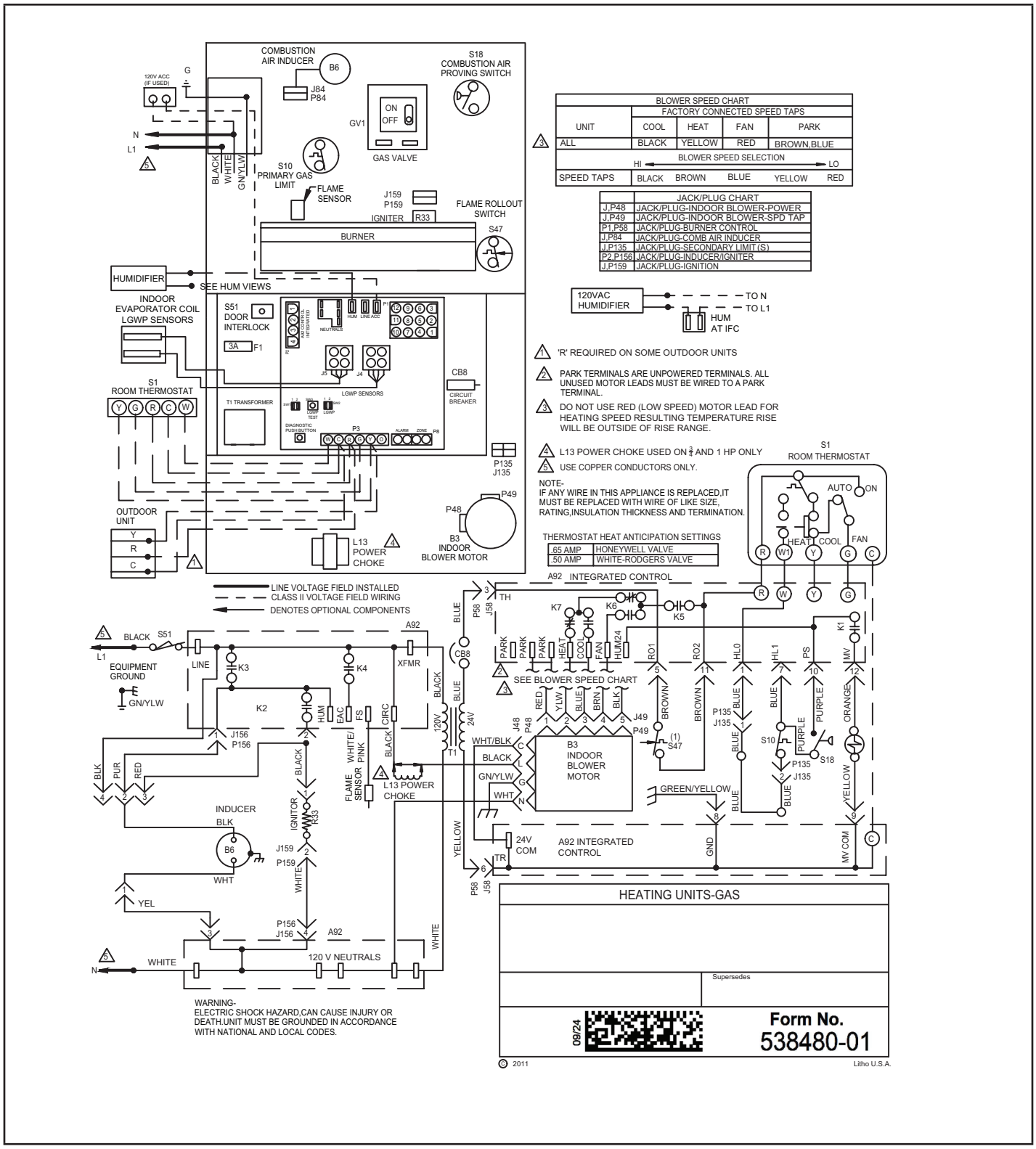

COMBUSTION AIR INDUCER
B6
S18 COMBUSTION AIR PROVING SWITCH
J84 P84
GV1
ON OFF
GAS VALVE
S10 PRIMARY GAS LIMIT
FLAME SENSOR
J159 P159
IGNITER
R33
FLAME ROLLOUT SWITCH
S47
BURNER
HUMIDIFIER
SEE HUM VIEWS
INDOOR EVAPORATOR COIL LGWP SENSORS
S51 DOOR INTERLOCK
3A F1
S1 ROOM THERMOSTAT
T1 TRANSFORMER
LGWP SENSORS
CB8 CIRCUIT BREAKER
P135 J135
P49 P48
B3 INDOOR BLOWER MOTOR
OUTDOOR UNIT
L13 POWER CHOKE
BLOWER SPEED CHART
FACTORY CONNECTED SPEED TAPS
UNIT COOL HEAT FAN PARK
ALL BLACK YELLOW RED BROWN,BLUE
BLOWER SPEED SELECTION
HI LO
SPEED TAPS BLACK BROWN BLUE YELLOW RED
JACK/PLUG CHART
J,P48 JACK/PLUG-INDOOR BLOWER-POWER
J,P49 JACK/PLUG-INDOOR BLOWER-SPD TAP
P1,P58 JACK/PLUG-BURNER CONTROL
J,P84 JACK/PLUG-COMB AIR INDUCER
J,P135 JACK/PLUG-SECONDARY LIMIT (S)
P2,P156 JACK/PLUG-INDUCER/IGNITER
J,P159 JACK/PLUG-IGNITION
120VAC HUMIDIFIER
TO N
TO L1
HUM AT IFC
1 'R' REQUIRED ON SOME OUTDOOR UNITS
2 PARK TERMINALS ARE UNPOWERED TERMINALS. ALL UNUSED MOTOR LEADS MUST BE WIRED TO A PARK TERMINAL.
3 DO NOT USE RED (LOW SPEED) MOTOR LEAD FOR HEATING SPEED RESULTING TEMPERATURE RISE WILL BE OUTSIDE OF RISE RANGE.
4 L13 POWER CHOKE USED ON 3/4 AND 1 HP ONLY
5 USE COPPER CONDUCTORS ONLY.
NOTE-
IF ANY WIRE IN THIS APPLIANCE IS REPLACED,IT MUST BE REPLACED WITH WIRE OF LIKE SIZE, RATING,INSULATION THICKNESS AND TERMINATION.
THERMOSTAT HEAT ANTICIPATION SETTINGS
.65 AMP HONEYWELL VALVE
.50 AMP WHITE-RODGERS VALVE
S1 ROOM THERMOSTAT
AUTO ON
HEAT COOL FAN
R W1 Y G C
LINE VOLTAGE FIELD INSTALLED
CLASS II VOLTAGE FIELD WIRING
DENOTES OPTIONAL COMPONENTS
A92 INTEGRATED CONTROL
SEE BLOWER SPEED CHART
EQUIPMENT GROUND
GN/YLW
LINE
XFMR
K1 K2 K3 K4 K5 K6 K7
HUM EAC FS CIRC
120V 24V
T1
WHT/BLK BLACK GN/YLW WHT
B3 INDOOR BLOWER MOTOR
INDUCER
B6
IGNITOR
R33
FLAME SENSOR
L13 POWER CHOKE
24V COM
A92 INTEGRATED CONTROL
120 V NEUTRALS
WARNING-
ELECTRIC SHOCK HAZARD,CAN CAUSE INJURY OR DEATH.UNIT MUST BE GROUNDED IN ACCORDANCE WITH NATIONAL AND LOCAL CODES.
HEATING UNITS-GAS
Supersedes
09/24
Form No.
538480-01
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FIGURE 24

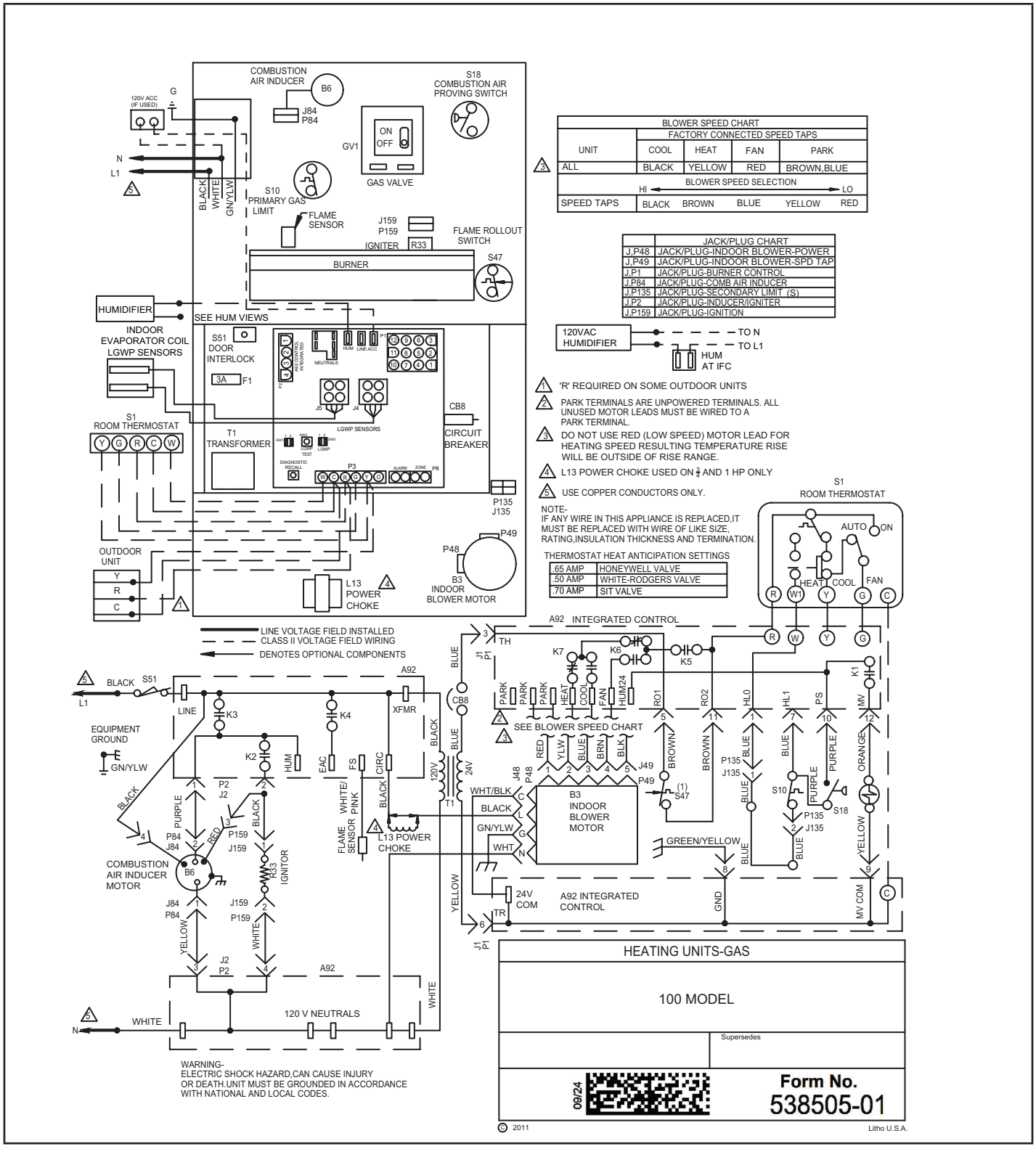

COMBUSTION AIR INDUCER
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GV1
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OFF
GAS VALVE
120V ACC (IF USED)
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PRIMARY GAS LIMIT
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S47
BURNER
HUMIDIFIER
SEE HUM VIEWS
INDOOR EVAPORATOR COIL LGWP SENSORS
S51
DOOR INTERLOCK
3A
F1
S1
ROOM THERMOSTAT
Y G R C W
T1
TRANSFORMER
LGWP SENSORS
CB8
CIRCUIT BREAKER
P135
J135
P49
P48
B3
INDOOR BLOWER MOTOR
OUTDOOR UNIT
Y
R
C
L13
POWER CHOKE
4
1
LINE VOLTAGE FIELD INSTALLED
CLASS II VOLTAGE FIELD WIRING
DENOTES OPTIONAL COMPONENTS
A92
INTEGRATED CONTROL
TH
K7
K6
K5
PARK
HEAT
COOL
FAN
HUM24
RO1
RO2
HL0
HL1
PS
MV
K1
SEE BLOWER SPEED CHART
RED
YLW
BLUE
BRN
BLK
BROWN
PURPLE
ORANGE
YELLOW
WHT/BLK
GN/YLW
WHT
GREEN/YELLOW
24V COM
GND
MV COM
TR
XFMR
K3
K4
K2
HUM
EAC
FS
CIRC
120V
24V
WHITE/ PINK
FLAME SENSOR
EQUIPMENT GROUND
LINE
S51
COMBUSTION AIR INDUCER MOTOR
IGNITOR
120 V NEUTRALS
WARNING-
ELECTRIC SHOCK HAZARD,CAN CAUSE INJURY
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BLOWER SPEED CHART
FACTORY CONNECTED SPEED TAPS
UNIT
COOL
HEAT
FAN
PARK
ALL
BLACK
YELLOW
RED
BROWN,BLUE
BLOWER SPEED SELECTION
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S1
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AUTO
ON
HEAT
COOL
FAN
R W1 Y G C
HEATING UNITS-GAS
100 MODEL
Supersedes
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Form No.
538505-01
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FIGURE 25

IGNITION CONTROL

Integrated Control DIP Switch Settings

EL180UHNEK units are equipped with a single-stage integrated control. This control manages ignition timing, heating mode fan off delays and indoor blower speeds based on selections made using the control dip switches and jumpers. The control includes an internal watchguard feature which automatically resets the ignition control when it has been locked out. After one hour of continuous thermostat demand for heat, the watchguard will break and remake thermostat demand to the furnace and automatically reset the control to relight the furnace.

Accessory Terminals See FIGURE 28

One line voltage “ACC” 1/4” spade terminal is provided on the furnace integrated control. This terminal is energized when the indoor blower is operating. Any accessory rated up to one amp can be connected to this terminal with the neutral leg of the circuit being connected to one of the provided neutral terminals. If an accessory rated at greater than one amp is connected to this terminal, it is necessary to use an external relay.

One line voltage “HUM” 1/4” spade terminal is provided on the furnace integrated control. This terminal is enrgized in the heating mode when the combustion air inducer is operating. Any humidifier rated up to one amp can be connected to this terminal with the neutral leg of the circuit being connected to one of the provided neutral terminals. If a humidifier rated at greater than one amp is connected to this terminal, it is necessary to use an external relay.

One 24V ”H” 1/4” spade terminal is provided on the furnace integrated control. The terminal is energized in the heating mode when the combustion air inducer is operating and the pressure switch is closed. Any humidifier rated up to 0.5 amp can be connected to this terminal with the ground leg of the circuit connected to ground or the ”C” terminal.

Indoor Blower Speeds

1 - When the thermostat is set to “FAN ON,” the indoor blower will run continuously on the fan speed when there is no cooling or heating demand. See TABLE 7.

2 - When the EL180UHNEK is running in the heating mode, the indoor blower will run on the heating speed. See TABLE 8.

3 - When there is a cooling demand, the indoor blower will run on the cooling speed.**Indoor**

TABLE 7

Allowable Circulation Speeds					
Model	RED	YELLOW	BLUE	BROWN	BLACK
All Modes	Factory Setting	Not Allowed			

TABLE 8

Allowable Heating Speeds					
Model	RED	YELLOW	BLUE	BROWN	BLACK
040HNE	Not Allower	Factory setting	Allowed	Allowed	Not Allowed
060NEK		Allowed	Factory Setting		
080NEK		Factory Setting	Allowed		
100NEKL				Not Allowed	

Blower Operation DIP Switch Settings

The heat fan-on time of 30 seconds is not adjustable The heat fan-off delay (amount of time that the blower operates after the heat demand has been satisfied) may be adjusted by changing the two position dip switch on the integrated control, to one of four selections. Blower off delay is factory set at 120 seconds. For other blower off delay settings, please refer to the following chart:

Blower Delay Select		
	SW1-1	SW1-2
90	OFF	ON
120	OFF	OFF
180	ON	OFF
210	ON	ON
Factory Setting is 120		

ON BOARD LINKS AND DIAGNOSTIC PUSH BUTTON

See FIGURE 26 and FIGURE 27

⚠ IMPORTANT

Carefully review all configuration information provided. Failure to properly set DIP switches, jumpers and on-board links can result in improper operation!

On-Board Link W951 Heat Pump (R to O)

On-board link W951 is a clippable connection between terminals R and O on the integrated control. W951 must be cut when the furnace is installed in applications which include a heat pump unit and a thermostat which features dual fuel use. If the link is left intact, terminal “O” will remain energized eliminating the HEAT MODE in the heat pump. See FIGURE 27 and FIGURE 28.

Diagnostic Push Button

The diagnostic push button is located adjacent to the seven-segment diagnostic LED. This button is used to enable the Error Code Recall “E” mode and the Flame Signal “F” mode. Press the button and hold it to cycle through a menu of options. Every five seconds a new menu item will be displayed. When the button is released, the displayed item will be selected. Once all items in the menu have been displayed, the menu resumes from the beginning until the button is released.

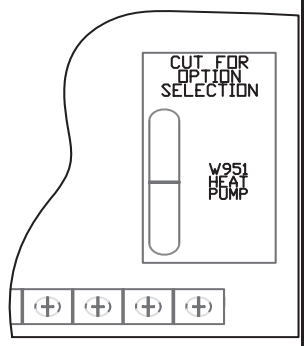
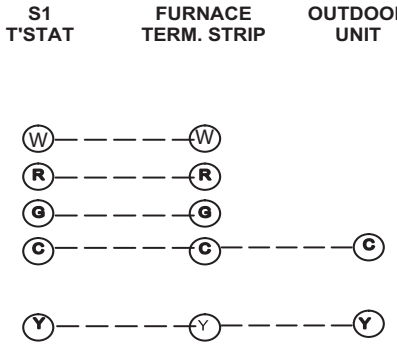
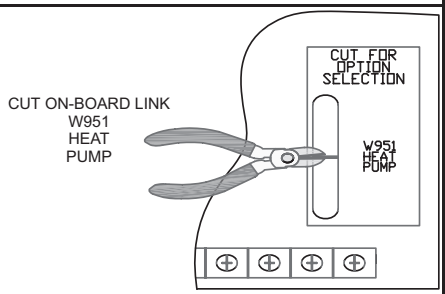
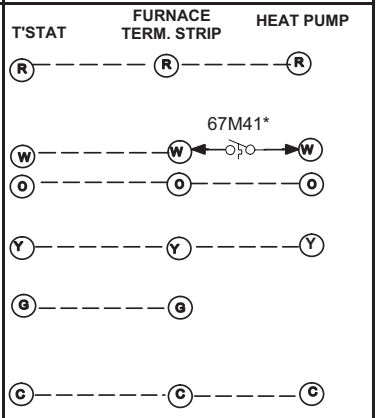
Thermostat	On Board Links Must NOT Be Cut To Select AC ON System Options	Wiring Connections
Heat / Cool .	DO NOT CUT ANY ON-BOARD LINKS 	

FIGURE 26

Thermostat	On Board Links Must Be Cut To Select Heat Pump Options	Wiring Connections
Dual Fuel Single Stage Heat Pump ComfortSense thermostat w/ dual fuel capabilities		

Connect W to W ONLY if using defrost tempering kit 67M41

FIGURE 27

Single Stage, Constant, Torque, Non-Communicating
107792-01

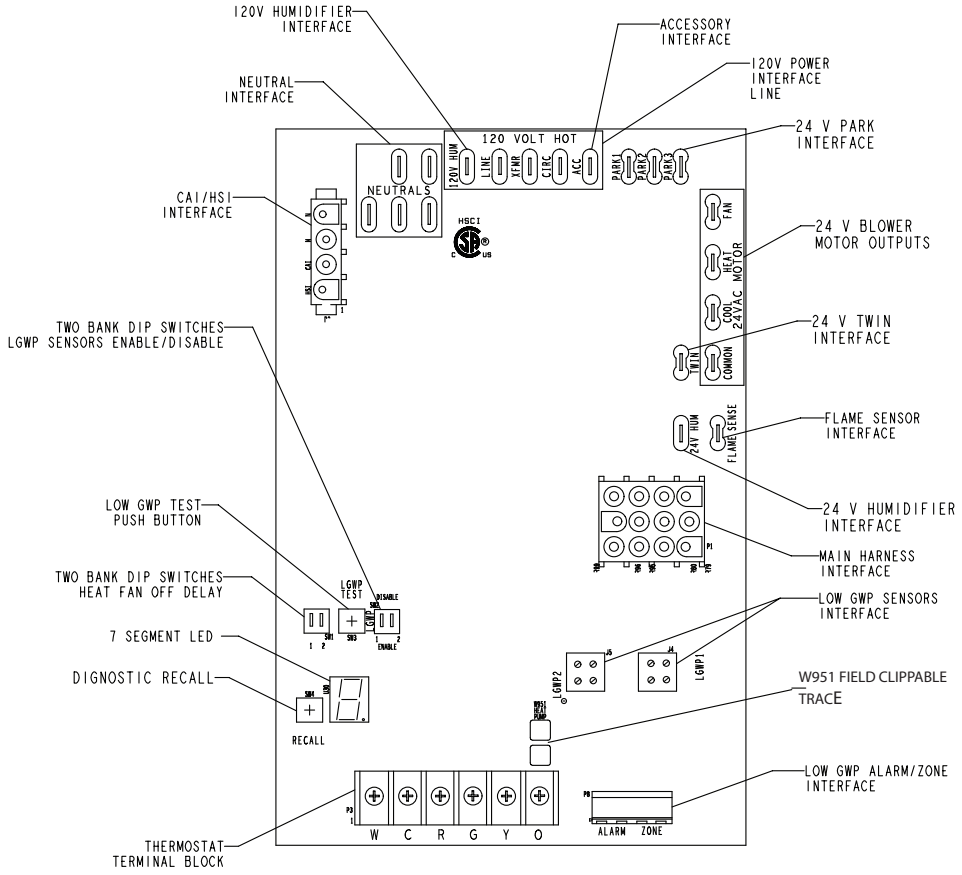


FIGURE 28

TABLE 9

1/4" QUICK CONNECT TERMINALS	
120V HUM	POWER FOR HUMIDIFIER (120 VAC
LINE	INCOMING POWER LINE (120 VAC)
XFMR	TRANSFORMER PRIMARY (120 VAC)
CIRC	INDOOR BLOWER MOTOR (120 VAC)
ACC	ACCESSORY(120 VAC)
24V HUM	HUMIDIFIER (24 VAC)
NEUTRALS	NEUTRAL (5)
3/16" QUICK CONNECT TERMINALS	
COOL	COOL SPEED TAP FROM INDOOR BLOWER MOTOR (24 VAC)
HEAT	HEAT SPEED TAP FROM INDOOR BLOWER MOTOR (24 VAC)
FAN	CONTINUOUS FAN SPEED TAP FROM INDOOR BLOWER MOTOR (24 VAC)
FLAME SENSE	FLAME SENSOR ELECTRODE (120 VAC)
COMMON	COMMON (24 VAC)
TWIN	24V TWINNING COMMUNICATION
PARK	3 TERMINALS TO PARK UNUSED MOTOR SPEED TAPS

TABLE 10

THERMOSTAT INPUT TERMINALS	
W	HEAT
C	COMMON GROUND
R	24V AC
G	FAN
Y	COOL
O	REVERSING VALVE (when W951 is clipped)

TABLE 11

LOW GWP INTERFACE	
LGWP1	LOW GWP SENSOR #1 INTERFACE
LGWP2	LOW GWP SENSOR # 2 INTERFACE
ALARM	INTERFACE TO LOW GWP LEAK AUDIBLE ALARM (DRY CONTACT)
ZONE	INTERFACE TO ZONING CONTROL (DRY CONTACT)
LGWP TEST	PUSH BUTTON TO TEST LOW GWP FUNCTIONALITY

IGNITION CONTROL DIAGNOSTIC CODES

Diagnostic LED (FIGURE 28)

The seven-segment diagnostic LED displays operating status, target airflow, error codes and other information.

Diagnostic Push Button (FIGURE 28)

The diagnostic push button is located adjacent to the seven- segment diagnostic LED. This button is used to enable the Error Code Recall “E” mode and the Flame Signal “F” mode. Press the button and hold it to cycle through a menu of options. Every five seconds a new menu item will be displayed. When the button is released, the displayed item will be selected. Once all items in the menu have been displayed, the menu resumes from the beginning until the button is released

Error Code Recall Mode

Select ”E” from the menu to access the most recent 10 error codes. Select “c” from the Error Code Recall menu to clear all error codes. Button must be pressed a second time while “c” is flashing to confirm command to delete codes. Press the button until a solid “≡” is displayed to exit the Error Code Recall mode.

Flame Signal Mode

Select ”F” from the menu to access the flame signal mode. The integrated control will display the flame current on 7 segment LED in in micro amps (uA).

- Flame signal mode is exited after the following:
- Power is reset
- Pressing and holding push button until 3 horizontal
- lines “≡” are displayed
- 10 minutes of entering the flame sense mode.

Integrated Diagnostic Codes/Status of Equipment

Code	Diagnostic Codes/Status of Equipment
A	Indoor Blower Operation: Continuous Fan only mode
dF	Defrost mode
.	Idle mode (Decimal blinks at 1 Hertz -- 0.5 second ON, 0.5 second OFF).
C	Cooling stage (1 second ON, 0.5 second OFF) 1 or 2 displayed / Pause / Repeat codes.
d	Dehumidification mode (1 second ON, 1 second OFF) / Pause / Repeat Codes).
H	Gas Heat Stage (1 second ON, 0.5 second OFF) 1 or 2 displayed / Pause / Repeat codes. Blinking during ignition.
h	Heat pump stage.

* No change implies the display will continue to show whatever is currently being displayed for normal operation (blinking decimal, active error code, heat state, etc.)

Code	Diagnostic Codes/Status of Equipment	Action Required to Clear and Recover
E000	No error in memory	No active fault exists, or all faults have been cleared
E106	Twin Communication Fault	This may indicate: 1) The power is removed from one furnace and not the other or/and 2) The 24 VAC supply to the twins are not in phase
E110	Low line voltage.	Line Voltage Low (Voltage lower than nameplate rating). Check power line voltage and correct. Alarm clears 5 seconds after fault recovered.
E111	Line voltage polarity reversed.	Reverse line power voltage wiring. System resumes normal operation 5 seconds after fault recovered.
E112	Ground not detected.	System shuts down. Provide proper earth ground. System resumes normal operation 5 seconds after fault recovered.
E113	High line voltage.	Line Voltage High (Voltage higher than nameplate rating). Provide power voltage within proper range. System resumes normal operation 5 seconds after fault recovered.
E114	Line voltage frequency out-of-range.	No 60 Hertz Power. Check voltage and line power frequency. Correct voltage and frequency problems. System resumes normal operation 5 seconds after fault recovered.
E115	Low 24V - Control will restart if the error recovers.	24-Volt Power Low (Range is 18 to 30 volts). Check and correct voltage. Check for additional power-robbing equipment connected to system. May require installation of larger VA transformer to be installed in furnace / air handler. Clears after fault recovered.
E117	Poor ground detected (Warning only).	Provide proper grounding for unit. Check for proper earth ground to the system. Warning only will clear 30 seconds after fault recovered.

IGNITION CONTROLDIAGNOSTIC CODES (CONTINUED)

Code	Diagnostic Codes/Status of Equipment	Action Required to Clear and Recover
E125	Control failed self-check, internal error, failed hardware. Will restart if error recovers. Integrated control not communicating. Covers hardware errors (flame sense circuit faults, pin shorts, etc.).	Hardware problem on the control. Cycle power on control. Replace if problem prevents service and is persistent. Critical alert. Cleared 300 seconds after fault recovered.
E150	Refrigerant Leak detected	This may indicate the presence of a leak at or in the indoor unit coil of the equipment, that will need to be repaired for proper and safe system operation. Additionally, it may indicate that proper refrigerant charge will need to be verified. This fault cannot be cleared while the refrigerant detection system sensor is reporting the presence of a leak
E151	Refrigerant Leak Detector Sensor #1 fault	The refrigerant detection sensor #1 in the unit is reporting an issue that prevents it from functioning properly, and replacement of the sensor may be necessary. This fault clears when the sensor no longer reports the presence of a fault condition.
E152	Refrigerant Leak Detector Sensor #2 fault	The refrigerant detection sensor #2 in the unit is reporting an issue that prevents it from functioning properly, and replacement of the sensor may be necessary. This fault clears when the sensor no longer reports the presence of a fault condition.
E154	Refrigerant Leak Detector Sensor #1 Communication lost or invalid sensor dip switch configuration (Disable/Enable)	There may be an issue with the wiring harness connecting the sensor #1 to the furnace control board, either with the wiring itself or with the connector. Check the wiring and the connector for damage or improper connectivity. Check the sensor for damage or obstruction on the harness plug. This fault clears when communications with the sensor has been reestablished, but blower latches for a minimum of 5 minutes. Retest of the presence of fault can be effected by pressing the Low GWP test button on the furnace unit control board. This may also indicate incorrect Low GWP dip switch settings. Please refer to installation instructions.
E155	Refrigerant Leak Detector Sensor #2 Communication lost	There may be an issue with the wiring harness connecting the sensor #2 to the furnace control board, either with the wiring itself or with the connector. Check the wiring and the connector for damage or improper connectivity. Check the sensor for damage or obstruction on the harness plug. This fault clears when communications with the sensor has been reestablished, but blower latches for a minimum of 5 minutes. Retest of the presence of fault can be effected by pressing the Low GWP test button on the furnace unit control board
E160	Refrigerant Leak Detector Sensor #1 type incorrect	The sensor #1 is of a type not suitable for use in the application. Replace the sensor with a Lennox approved replacement part. This fault clears when a sensor suitable for the application is detected by the furnace control board, but blower will latch for a minimum of 5 minutes. Retest of the presence of the fault can be effected by pressing the Low GWP test button on the furnace unit control board.
E161	Refrigerant Leak Detector Sensor #2 type incorrect	The sensor #2 is of a type not suitable for use in the application. Replace the sensor with a Lennox approved replacement part. This fault clears when a sensor suitable for the application is detected by the furnace control board, but blower will latch for a minimum of 5 minutes. Retest of the presence of the fault can be effected by pressing the Low GWP test button on the furnace unit control board.
E163	Furnace Control Board Failure	There is an issue with the furnace control board, preventing the furnace from operating properly. This may require the replacement of the indoor unit control board. This fault clears when the furnace controller operates normally.

IGNITION CONTROLDIAGNOSTIC CODES (CONTINUED)

Code	Diagnostic Codes/Status of Equipment	Action Required to Clear and Recover
E164	Low GWP Test	Low GWP Test mode activates by manually engaging Low GWP test button. Normal operations resumes and code clears automatically after 1-minute
E200	Hard lockout - Rollout circuit open or previously open.	Correct cause of rollout trip, or replace flame rollout switch. Test furnace operation. Cleared after fault recovered.
E204	Gas valve mis-wired.	Check gas valve operation and wiring. Clears when repaired.
E223	Pressure switch failed open.	Check pressure (inches w.c.) of pressure switch closing on heat call. Measure operating pressure (inches w.c.). Inspect vent and combustion air inducer for correct operation and restriction. Resumes normal operation after fault is cleared.
E224	Pressure switch failed closed.	Check pressure (inches w.c.) of pressure switch closing on heat call. Measure operating pressure (inches w.c.). Inspect vent and combustion air inducer for correct operation and restriction. Resumes normal operation after fault is cleared.
E227	Pressure switch open during trial for ignition or run mode.	Check pressure (inches w.c.) of pressure switch closing on heat call. Measure operating pressure (inches w.c.). Inspect vent and combustion air inducer for correct operation and restriction. Resumes normal operation after fault is cleared.
E240	Low flame current - Run mode.	Check micro-amperes of flame sensor using control diagnostics or field-installed mode. Clean or replace sensor. Measure voltage of neutral to ground to ensure good unit ground. Alert clears after current heat call has been completed. See TABLE 18 for flame signal.
E241	Flame sensed out of sequence - Flame still present.	Shut off gas. Check for gas valve leak. Replace, if necessary. Alert clears when fault is recovered.
E250	Limit switch circuit open.	Check for proper firing rate on furnace. Ensure there is no blockage in heater. Check for proper air flow. If limit not closed within 3 minutes, unit will go into 1-hour soft lockout. Resumes normal operation after fault is cleared.
E270	Soft lockout - Exceeded maximum number of retries. No flame current sensed.	Check for proper gas flow. Ensure that ignitor is lighting burner. Check flame sensor current. Clears when heat call finishes successfully.
E271	Soft lockout - Exceeded maximum number of retries. Last retry failed due to the pressure switch opening.	Check pressure (inches w.c.) of pressure switch closing on heat call. Measure operating pressure (inches w.c.). Inspect vent and combustion air inducer for correct operation and restriction. Clears when heat call finishes successfully.
E272	Soft lockout - Exceeded maximum number of recycles. Last recycle due to the pressure switch opening.	Check operation of low pressure switch to see if it is stuck closed on heat call. Check pressure (inches w.c.) of pressure switch closing on heat call. Measure operating pressure (inches w.c.). Inspect vent and combustion air inducer for correct operation and restriction. Clears when heat call finishes successfully.
E273	Soft lockout - Exceeded maximum number of recycles. Last recycle due to flame failure.	Check micro-amperes of flame sensor using control diagnostics or field-installed mode. Clean or replace sensor. Measure voltage of neutral to ground to ensure good unit ground. Clears when heat call finishes successfully.
E274	Soft lockout - Exceeded maximum number of recycles. Last recycle failed due to the limit circuit opening or limit remained open longer than 3 minutes.	Shut down system. 1-hour soft lockout. Check firing rate and air flow. Check for blockage. Clears when heat call finishes successfully.
E275	Soft lockout - Flame sensed out of sequence. Flame signal is gone.	Shut off gas. Check for gas valve leak. 1-hour soft lockout. Clears when flame has been proven stable.
E290	Ignitor circuit fault - Failed ignitor or triggering circuitry.	Measure resistance of hot surface ignitor. Replace if open or not within specifications. 1-hour soft lockout. Clears when flame has been proven stable.
E390	Low GWP Relay Stuck	This indicates an issue with the Low GWP relay in the furnace control. This may require the replacement of the indoor unit control board. This fault clears when the relay operates normally.

Twinning Two EL180UHNEK Furnaces

The control board in this furnace is equipped with a provision to ”twin” (interconnect) two(2) adjacent furnaces with a common plenum such that they operate as one (1) large unit.

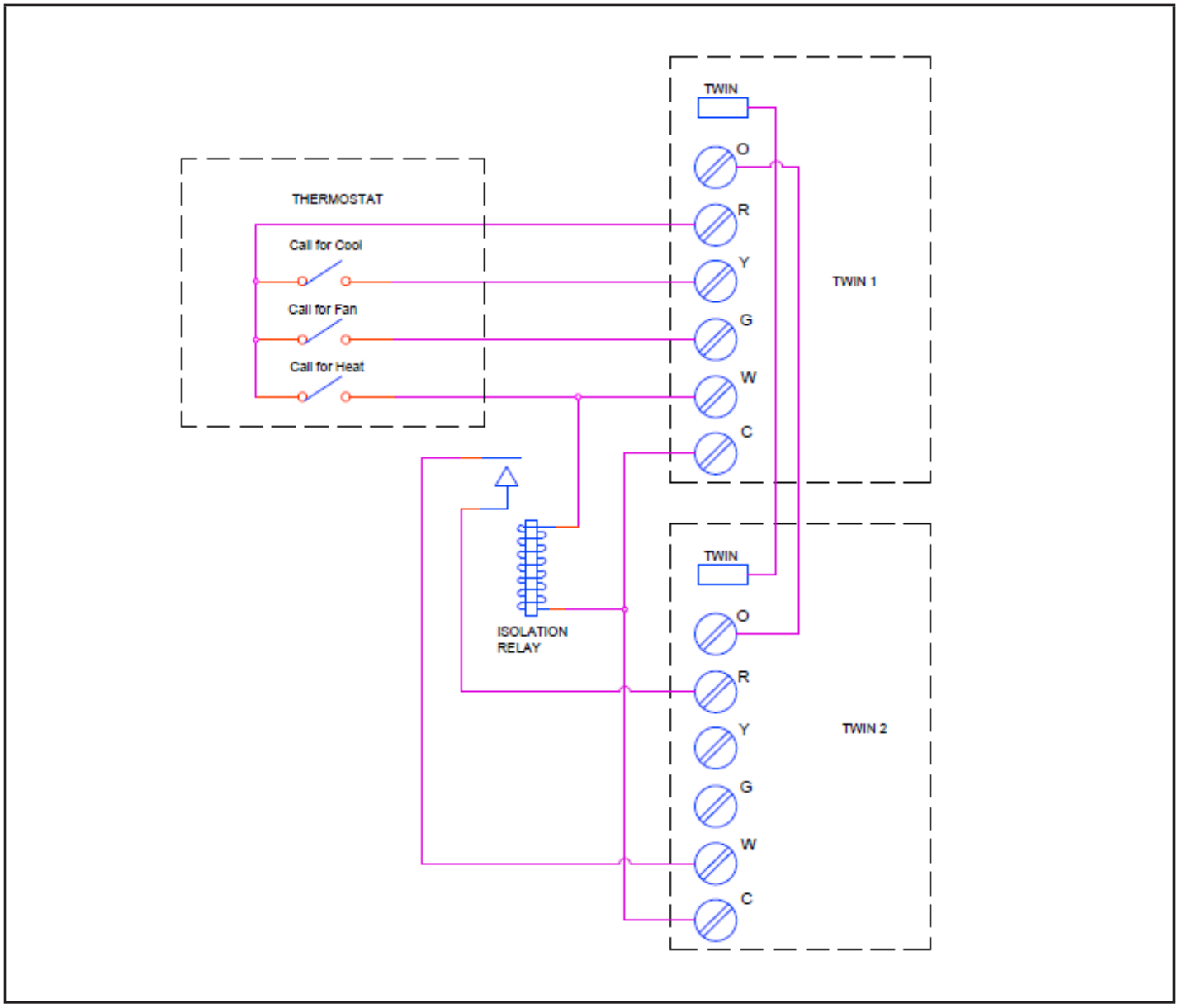
When twinned, the circulating blower speeds are synchronized between the furnaces. If either furnace has a need to run the blower, both furnaces will run the blower on the same speed. The cooling speed has highest priority, followed by heating speed and fan speed.

Field installation of twinning consists of connecting wires between the “C”, ”O” and ”Twin” terminals of the two controls.

The 24 VAC secondary of the two systems must be in phase. All thermostat connections are made to one control only. See diagram below.

The twinned furnace without thermostat connections is to have the call for heat supplied by an external 24VAC isolation relay* to prevent its rollout switch from being bypassed by the other twinned furnace. The coil of the isolation relay connects from the thermostat ”W” to 24 VAC common. The contacts of the relay connect ”R” to ”W” on the non-thermostat twin. Kit 56L68 is available.

*Wiring and quick connects will be field provided



Low GWP Application

⚠ WARNING

For use with Lennox approved evaporator coil and LGWP sensors only. Use original manufacturer recommended LGWP sensors if using non Lennox approved evaporator coil.

CONNECTING THE FURNACE CONTROL BOARD SENSOR.

See FIGURE 31 and follow steps below:

1 - Route sensor wire #1 through provided grommet. Form a drip loop below the control board on upflow installations to prevent condensate dripping on the control board.

2 - Avoid sharp edges when routing sensor wire during installation.

3 - Sensor wire must not block view of 7 segment LED .

Ensure the cable is properly seated into the SENSOR 1 plug (LGWP1). The Molex plug clip should lock into the Molex connection point for a secured connection, as shown below in FIGURE 29.. Verify the connection is free of dust, debris, and moisture.

NOTE - *n confined space applications, connect the second sensor to the SENSOR 2 plug (LGWP2). Refer to evaporator coil installation instructions for more detail.*

Single Stage Constant Torque Control

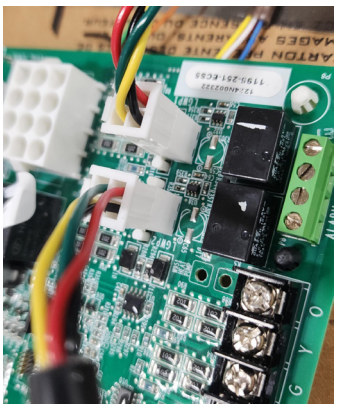


FIGURE 29

LOW GWP DIP SWITCH SETTINGS

Adjust the DIP switch settings to the sensor configuration. Failure to do so will cause faults on power-up. See FIGURE 30 and TABLE 12

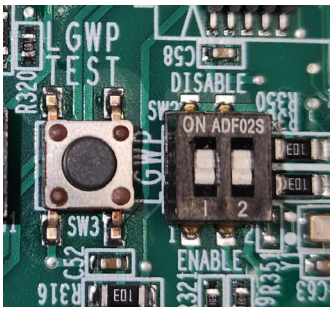


FIGURE 30

TABLE 12

DIP Switch Settings

Configuration	LGWP1	LGWP2
One (1) sensor, connected to SENSOR 1 plug	Enable	Disable
Two (2) sensors, connected to SENSOR 1 plug and SENSOR 2 plug	Enable	Enable
No sensor R410A or heat only applications	Disable	Disable
Invalid Configuration	Disable	Enable

In single sensor configurations, the sensor must be connected to the SENSOR 1 plug (LGWP1). Configurations other than the ones shown in TABLE 17 will cause a servicing fault.

Each DIP switch corresponds to a sensor position (i.e., DIP switch 1 to sensor 1; DIP switch 2 to sensor 2). The default factory switch positions are set to ENABLED.

The furnace control board software reads the ENABLE position as an active sensor. A sensor should be present for the corresponding sensor connector. Setting the DIP switch to DISABLE disables the sensor position.

SECONDARY SENSOR REQUIREMENTS

Additional Line Sets

If additional refrigerant line joints are present outside of the line set sleeve and a secondary refrigerant detection sensor is required, its installation must comply with the requirements listed in Refrigerant Detection Sensor Kit (27V53). See FIGURE 31 for routing the secondary sensor cable through the furnace cabinet.

Non-Low GWP Applications

⚠ WARNING

For Furnace only applications or Furnace replacement in a Non-Low GWP applications, the LOW GWP sensors should be disabled, otherwise the blower will operate continuously. To do this, the Low GWP Dip switches setting for both – Sensor 1 and the Sensor 2 must be moved to the DISABLE position.

FURNACE CONTROL BOARD LOW GWP MODES OF OPERATION

The modes of operation for the furnace control board are Initializing, Normal, Leak Detected, and Fault.

Initializing

The furnace control board is establishing connection with the refrigerant detection sensor and is completing an initial five-minute purge sequence.

Normal

The HVAC system is functioning normally. The furnace control board has not detected a refrigerant leak.

Leak Detected

When the furnace control board detects a refrigerant leak:

1. The furnace control board shuts off the (R) input (24VAC power) to the thermostat, which de-energizes the outdoor unit compressor and heat sources, such as gas and/or electric strip heat. No heating or cooling demands will be met.
2. The furnace control board activates the blower (high speed). The blower purges refrigerant from the cabinet, plenum, and ductwork.
3. After the furnace control board determines the refrigerant levels are below the safety threshold, the blower will continue to operate for the remainder of the seven (7) -minute cycle.
4. After the blower sequence is complete, the HVAC system resumes normal operation.

NOTE - *The HVAC system may not maintain a cooling or heating setpoint if a significant leak exists. Any refrigerant leaks that remain unaddressed for an extended time may cause the HVAC system to shut down on a low refrigerant pressure limit condition.*

Fault

When a Low GWP fault is detected by the furnace control board, the indoor unit blower engages and remains engaged at a constant air flow output until the fault is cleared.

NOTE - *See "IGNITION CONTROL DIAGNOSTIC CODES" on page 27 for Low GWP diagnostic error codes.*

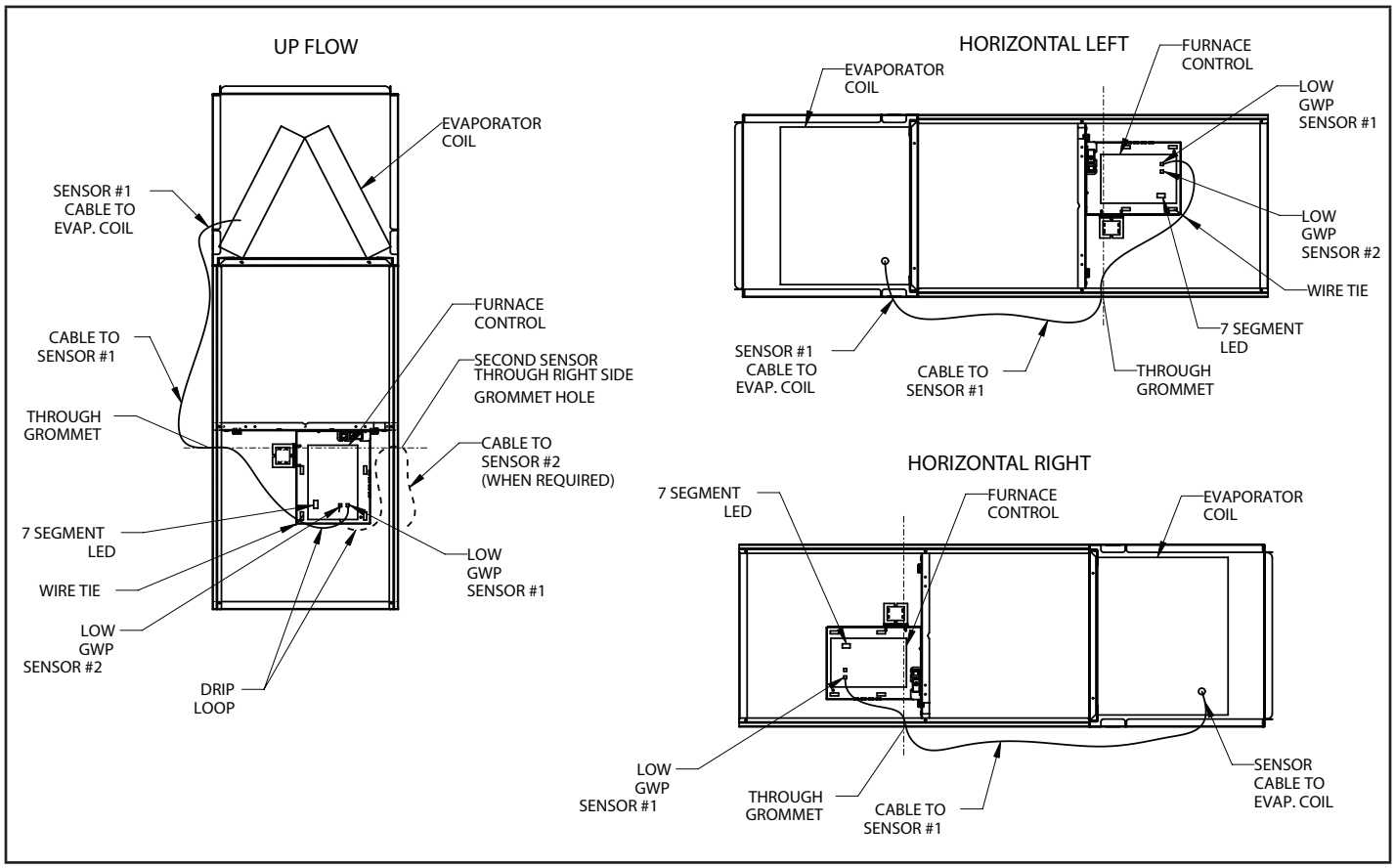


FIGURE 31

LGWP TEST BUTTON FUNCTIONALITY

The furnace control board is equipped with a Test/Reset push button. The Test button can be used to perform several functions, depending on the mode of operation of the furnace control board.

TABLE 13 lists the functions of the Test button during each mode of operation.

TABLE 13

LGWP Test Button Function

Mode of Operation	Press the Test Button to:
Normal	Trigger a leak detection response. Verify all equipment is wired correctly into the furnace blower control board (after installation).
Leak Detected	Reset the furnace control board to a normal mode of operation after a previous leak has been detected and purged from the HVAC system
Fault	Reset the furnace control board after troubleshooting and resolving a fault condition. If the fault is not resolved, the furnace control board will enter the Fault mode again.

LGWP Test Button - Additional Functions

TABLE 14 lists the additional functions of the Test Button while the furnace control board is functioning within the states of Initializing, Monitoring, Leak Detection, Servicing and Fault.

TABLE 14

Additional Button Functions

State	Press	Action
Initializing	Short	Skips remaining pre-purge after sensors are recognized by the furnace control board
Initializing	Long	Reset control
Monitoring	Short	Clear purge-counter if prior mitigation has occurred; Test mitigation
Monitoring	Long	Reset control
Mitigating	Short	If testing mitigation, end test
Servicing	Short	Reevaluate fault condition - if cleared return to monitoring, otherwise update indicator
Servicing	Long	Reset control
Fault	Short	Reevaluate fault condition - if cleared return to monitoring, otherwise update indicator
Fault	Long	Reset control

External Alarm

(*For applications with external alarms wired directly to the furnace control board*)

The furnace control board triggers the external alarm system when it enters Leak Detected mode. For alarm notifications, the furnace control board provides a dry relay contact that is rated 3A at 30 VAC/DC.

THERMOSTAT COMPATIBILITY

Thermostats that preserve memory settings are compatible with the furnace control board. Examples include:

- Battery-powered thermostats
- Analog Thermostat
- Late-model programmable thermostats

NOTE - *Early-generation digital and programmable thermostats may not retain the operation mode and temperature setpoints after a power outage.*

The following scenarios are likely to occur when home occupants are not available to adjust the thermostat setpoints as the system is recovering from leak detection and resuming normal operation:

- Heating could be lost during a cold night
- Cooling could be lost during a hot day
- The thermostat could reset to an incorrect temperature setpoint

START UP PROCEDURE

The furnace control board is equipped with a LGWP Test/Reset button, see Test Button Functionality. After the furnace control board has been mounted and wired, restore power to the HVAC system. The system will then run through a purge sequence for five minutes. After the purge sequence is complete, proceed to testing cooling demand and heating demand.

Cooling Demand

1. Prompt a cooling demand at the thermostat.
2. Press the LGWP Test button on the furnace control board.

   The system then executes a leak detection response.
3. Observe the following sequence:
   a. The LED indicator for leak detection. See “IGNITION CONTROL DIAGNOSTIC CODES” on page 27..
   b. The blower powers up.
   c. The outdoor compressor powers down.
4. Press the LGWP Test button to terminate the simulated Leak Detected mode upon test completion
5. ***Heating Demand***

1. Prompt a heating demand at the thermostat.
2. Observe the following sequence:
   a. The LED indicator for leak detection. See “IGNITION CONTROL DIAGNOSTIC CODES” on page 27.
   b. The blower powers up.
   c. The gas burners power down.
   d. The outdoor compressor powers down.
3. Press the LGWP Test button to terminate the simulated Leak Detected mode upon test completion.

The installation of the furnace control board is complete after both sequences are successfully completed

Unit Start-Up

⚠ WARNING

Do not use this furnace if any part has been underwater. A flood-damaged furnace is extremely dangerous. Attempts to use the furnace can result in fire or explosion. Immediately call a qualified service technician to inspect the furnace and to replace all gas controls, control system parts, and electrical parts that have been wet or to replace the furnace, if deemed necessary.

⚠ WARNING

If overheating occurs or if gas supply fails to shut off, shut off the manual gas valve to the appliance before shutting off electrical supply.

⚠ WARNING

Before attempting to perform any service or maintenance, turn the electrical power to unit OFF at disconnect switch.

BEFORE LIGHTING smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.

The gas valve on the EL180UHNE unit is equipped with a gas control switch. Use only your hand to move the switch. Never use tools. If the control switch will not move by hand, do not try to repair it.

Placing the furnace into operation:

EL180UHNE units are equipped with an automatic ignition system. Do not attempt to manually light burners on these furnaces. Each time the thermostat calls for heat, the burners will automatically light. The ignitor does not get hot when there is no call for heat on units with an automatic ignition system. The gas valve is rated for ambient temperatures between 5^0 F and 158^o F.

⚠ WARNING

If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury or death.

Gas Valve Operation

1 - STOP! Read the safety information at the beginning of this section.

2 - Set the thermostat to the lowest setting.

3 - Turn off all electrical power to the unit.

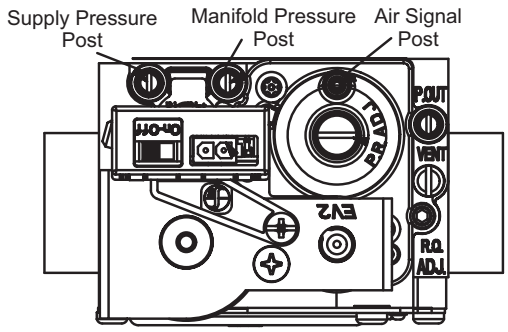
4 - This furnace is equipped with an ignition device which automatically lights the burners. Do not try to light the burners by hand.

5 - Remove the upper access panel.

6 - Move switch on gas valve to OFF. Do not force. See FIGURE 32

7 - Wait five minutes to clear out any gas. If you then smell gas, STOP! Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions. If you do not smell gas go to next step.

SIT VALVE



Gas Valve Shown in **OFF** Position

FIGURE 32

8 - Move switch on gas valve to ON. Do not force. See FIGURE 32.

9 - Replace the upper access panel.

10- Turn on all electrical power to to the unit.

11- Set the thermostat to desired setting.

NOTE - *When unit is initially started, steps 1 through 11 may need to be repeated to purge air from gas line.*

12- If the appliance will not operate, follow the instructions "Turning Off Gas to Unit" and call your service technician or gas supplier.

Turning Off Gas to Unit

1 - Set the thermostat to the lowest setting.

2 - Turn off all electrical power to the unit if service is to be performed.

3 - Remove the upper access panel.

4 - Move switch on gas valve to OFF. Do not force.

5 - Replace the upper access panel.

Failure To Operate

If the unit fails to operate, check the following:

1 - Is the thermostat calling for heat?

2 - Are access panels securely in place?

3 - Is the main disconnect switch closed?

4 - Is there a blown fuse or tripped circuit breaker?

5 - Is the filter dirty or plugged? Dirty or plugged filters willcause the limit control to shut the unit off.

6 - Is gas turned on at the meter?

7 - Is the manual main shut-off valve open?

8 - Is the internal manual shut-off valve open?

9 - Is the unit ignition system in lock out? If the unit locks out again, call the service technician to inspect the unit for blockages.

10 - Is pressure switch closed? Obstructed flue willcause unit to shut off at pressure switch. Check flue and outlet for blockages.

11 - Are flame rollout switches tripped? If flame rollout switches are tripped, call the service technician for inspection.

Heating Sequence Of Operation (follow steps below)

1 - When thermostat calls for heat, combustion air blower starts.

2 - Combustion air pressure switch proves blower operation. Switch is factory-set and requires no adjustment.

3 - After a 15-second prepurge, the hot surface ignitor energizes.

4 - After a 20-second ignitor warm-up period, the gas valve solenoid opens. A 4-second trial for ignition period begins.

5 - Gas is ignited, flame sensor proves the flame, and the combustion process continues.

6 - If flame is not detected after first ignition trial, the ignition control will repeat steps 3 and 4 four more times before locking out the gas valve ("WATCHGUARD" flame failure mode). The ignition control will then automatically repeat steps 1 through 6 after 60 minutes.

7 - To interrupt the 60-minute "WATCHGUARD" period, move thermostat from "Heat" to "OFF" then back to "Heat." Heating sequence then restarts at step 1.

Gas Pressure Adjustment

Gas Flow (Approximate)

Furnace should operate at least 5 minutes before checking gas flow. Determine time in seconds for two revolutions of gas through the meter. (Two revolutions assures a more accurate time.) Divide by two and compare to time in TABLE 15. Remove temporary gas meter if installed.

NOTE - *To obtain accurate reading, shut off all other gas appliances connected to meter.*

Supply Pressure Measurement

On multiple unit installations, each unit should be checked separately, with and without units operating. Supply pressure must fall within range listed in TABLE 16.

Manifold Pressure

A manifold port is located on the gas valve. Loosen the screws and connect a manometer to measure manifold pressure. The manifold pressure should read 0.00" - 0.10" w.c. Tighten after measurement have been taken

⚠ IMPORTANT

DO NOT ADJUST GAS VALVE

See unit service manual for troubleshooting if manifold pressure and combustion sample do not meet specification.

TABLE 15

GAS METER CLOCKING CHART				
Unit	Seconds for One Revolution			
	Natural		LP/Propane	
	1 cu ft Dial	2 cu ft Dial	1 cu ft Dial	2 cu ft Dial
-040	90	180	n/a	n/a
-060	60	120	150	300
-080	45	90	112	224
-100	36	72	n/a	n/a
Natural-1000 btu/cu ft LP/Propane - 2500 btu/cu ft				

⚠ IMPORTANT

For safety, connect a shut-off valve between the manometer and the gas tap to permit shut off of gas pressure to the manometer.

TABLE 16

Supply Line Pressure (inches w.c.)

Altitude ft	Unit	Supply
0-7500 ft	-040	4.5-10.5
	-060	
	-080	
	-100	

Proper Combustion & LP/Propane Conversion Kis

Furnace should operate minimum 15 minutes with correct manifold pressure and gas flow rate before checking combustion. Take combustion sample beyond the flue outlet and compare to the table below.

TABLE 17

Unit	CO2% Nat
-040	6.3 - 7.3
-060	7.0 - 8.0
-080	
-100	

High Altitude

Units may be installed at altitudes up to 7,500 ft. above sea level with no changes to the unit.

Other Unit Adjustments

Primary Limit

The primary limit is located on the heating compartment vestibule panel. The secondary limits (if equipped) are located in the blower compartment, attached to the back side of the blower. These auto reset limits are factory-set and require no adjustment.

Thermal Switch

This manually reset switch is located on the air gas mixing elbow.

A flame sensor is located on the top of the air gas plenum. The sensor can be removed for service without removing the the burner. During operation, flame is sensed by current passed through the flame and sensing electrode. The control allows the gas valve to remain open as long as flame signal is sensed. See TABLE 18 for flame signal.

TABLE 18

Flame Signal in Microamps

Normal	Low	Drop Out
1.5 or greater	0.5 - 1.4	0.4 - or less

Constant Torque Motor

ML180UHE units are equipped with a constant torque ECM motor. It has a DC motor coupled to an electronic control module both contained in the same motor housing. The motor is programmed to provide constant torque at each of the five selectable speeds. The motor has five speed taps. Each tap requires 24 volts to energize.

Pressure Switch

The pressure switch is located in the heating compartment adjacent to the combustion air inducer. The switch checks for proper combustion air inducer operation before allowing ignition trial. The switch is factory-set and requires no adjustment.

Temperature Rise

After the furnace has been started, and supply and return air temperatures have been allowed to stabilize, check the temperature rise. If necessary, adjust the blower speed to maintain the temperature rise within the range shown on the unit nameplate. See TABLE 8 for allowable heating speeds.Increase the blower speed to decrease the temperature. Decrease the blower speed to increase the temperature rise. Failure to adjust the temperature rise may cause erratic limit operation.

Input Voltage Requirements

The circuit is designed to be operated with AC voltage. A voltage of 12 to 33VAC is required to energize the motor. Expected current draw will be less than 20mA.

Blower Speeds

Follow the steps below to change the blower speeds.

1 - Turn off electrical power to furnace.

2 - Remove blower access panel.

3 - Disconnect existing speed tap at integrated control Wspeed terminal.

NOTE - *Termination of any unused motor leads must be insulated.*

4 - Place unused blower speed tap on integrated control “PARK” terminal or insulate.

5 - Refer to blower speed selection chart on unit wiring diagram for desired heating or cooling speed. See Product Specifications manual for blower performance data. See TABLE 8 allowable heating speeds.

6 - Connect selected speed tap at integrated control speed terminal.

7 - Resecure blower access panel.

8 - Turn on electrical power to furnace.

9 - Recheck temperature rise

Electronic Ignition

The integrated control has an added feature of an internal Watchguard control. The feature serves as an automatic reset device for integrated control lockout caused by ignition failure. This type of lockout is usually due to low gas line pressure. After one hour of continuous thermostat demand for heat, the Watchguard will re-set and remake thermostat demand to the furnace and automatically reset the integrated control to begin the ignition sequence.

Service

⚠ WARNING

ELECTRICAL SHOCK, FIRE,
OR EXPLOSION HAZARD.

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

Improper servicing could result in dangerous operation, serious injury, death, or property damage.

Before servicing, disconnect all electrical power to furnace.

When servicing controls, label all wires prior to disconnecting. Take care to reconnect wires correctly.

Verify proper operation after servicing.

⚠ WARNING

The blower access panel must be securely in place when the blower and burners are operating. Gas fumes, which could contain carbon monoxide, can be drawn into living space resulting in personal injury or death.

Annual Furnace Maintenance

At the beginning of each heating season, and to comply with the Lennox Limited Warranty, your system should be checked by a licensed professional technician (or equivalent) as follows:

NOTE - *Burner inspection and service is not recommended for annual furnace maintenance.*

1 - Check wiring for loose connections, voltage at indoor unit and amperage of indoor motor.

2- Inspect all gas pipe and connections for leaks.

3- Check the cleanliness of filters and change if necessary (monthly).

4- Check the cleanliness of blower assembly and clean the housing, blower wheel and blower motor if necessary.

5- Inspect the combustion air inducer and clean if necessary.\

6- Evaluate the heat exchanger integrity by inspecting the heat exchanger per the AHRI heat exchanger inspection procedure. This procedure can be viewed at www.ahrinet.org. See “Induced-draft Furnace Heat Exchanger Inspection Procedure”.

7- Ensure sufficient combustion air is available to the furnace. Fresh air grilles and louvers (on the unit and in the room where the furnace is installed) must be properly sized, open and unobstructed to provide combustion air.

8- Inspect the furnace venting system to make sure it is in place, structurally sound, and without holes, corrosion, or blockage. Vent system must be free and clear of obstructions and must slope upward away from the furnace . Vent system should be installed per the National Fuel Gas Code

9- Inspect the furnace return air duct connection to ensure the duct is sealed to the furnace. Check for air leaks on supply and return ducts and seal where necessary.

10- Check the condition of the furnace cabinet insulation and repair if necessary.

11- Perform a complete combustion analysis during the furnace inspection to ensure proper combustion and operation. Consult Service Literature for proper combustion values.

12- Verify operation of smoke detectors and CO detectors and replace batteries as required.

13- Inspect the Low GWP sensor / sensors and rubber sleeve.

Perform a general system test. Turn on the furnace to check operating functions such as the start-up and shut-off operation.

1 - Check the operation of the ignition system, inspect and clean flame sensor. Check microamps before and after. Check controls and safety devices (gas valve, flame sensor, temperature limits). Consult Service Manual for proper operating range. Thermal Limits should be checked by restricting airflow and not disconnecting the indoor blower. For additional details, please see Service and Application Note H049.

2 - Verify that system total static pressure and airflow settings are within specific operating parameters.

3 - Clock gas meter to ensure that the unit is operating at the specified firing rate. Check the supply pressure. ***Do not check manifold pressure. Manifold pressure is NOT adjustable***

Repair Parts List

The following repair parts are available through independent Lennox dealers. When ordering parts, include the complete furnace model number listed on the CSA International nameplate -- Example: EL180UH040NE36AK-01. **All service must be performed by a licensed professional installer (or equivalent), service agency, or gas supplier**

Cabinet Parts

Access panel
Blower panelTop cap

Control Panel Parts

Transformer
Integrated control
Door interlock switch
Circuit breaker

Blower Parts

Blower wheel
Blower housing
Motor
Motor mounting frame
Motor power choke
Blower housing cutoff plate

Heating Parts

Flame sensor
Heat exchanger assembly
Gas manifold
Combustion air inducer
Gas valve
Main burner
Main burner orifice
Pressure switch
Ignitor
Primary limit control
Rollout switch

Refrigerant Detection System Parts

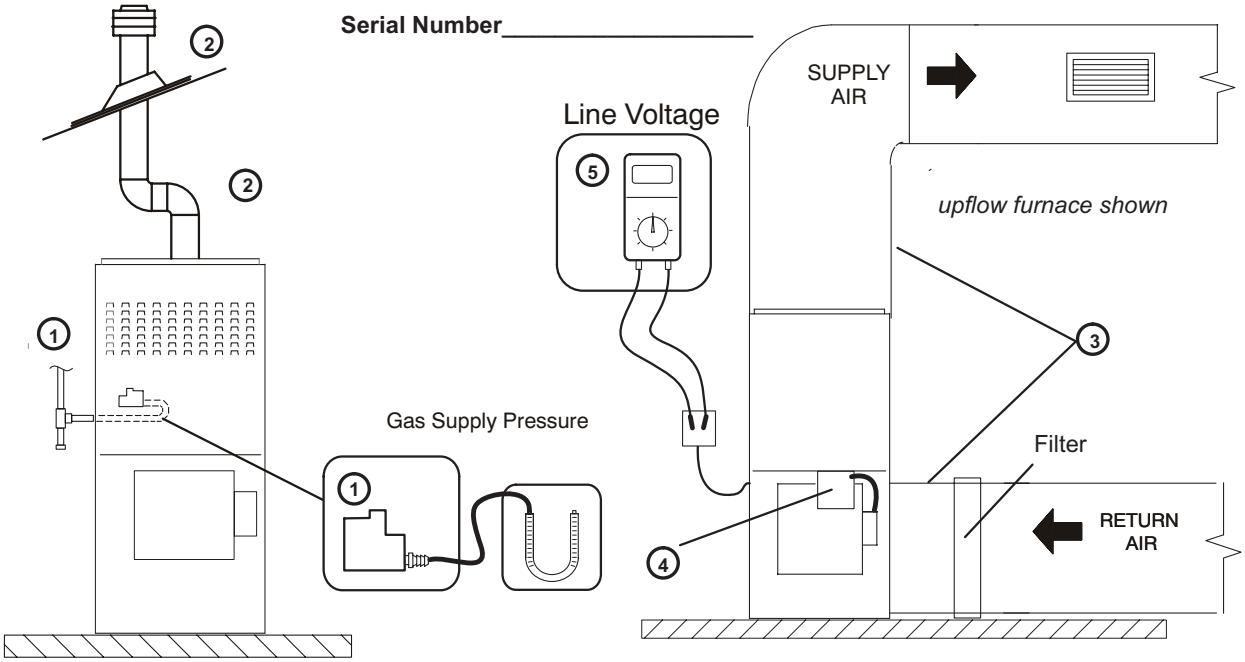
Refrigerant Detection Sensor
Refrigerant Line Set Sleeve

Start-Up & Performance Check list

UNIT SET UP
(typical)

Unit Model Number_____

Serial Number_____



1 GAS SUPPLY

☐ **Natural Gas** ☐ **LP/Propane Gas**

☐ **Piping Connections Tight**

☐ **Leak Tested**

☐ **Supply Line Pressure " W.C.**_____

2 VENT / EXHAUST PIPE

☐ **Secure to Unit**

☐ **Elbows Secured to Pipe**

☐ **Roof Flashing (water tight)**

☐ **Vent Pipe Supported**

3 DUCT SYSTEM

SUPPLY AIR DUCT

☐ **Sealed**

☐ **Insulated (if necessary)**

☐ **Registers Open and Unobstructed**

RETURN DUCT

☐ **Sealed**

☐ **Filter Installed and Clean**

☐ **Grilles Unobstructed**

4 INTEGRATED CONTROL

☐ **DIP Switches Set (if applicable)**

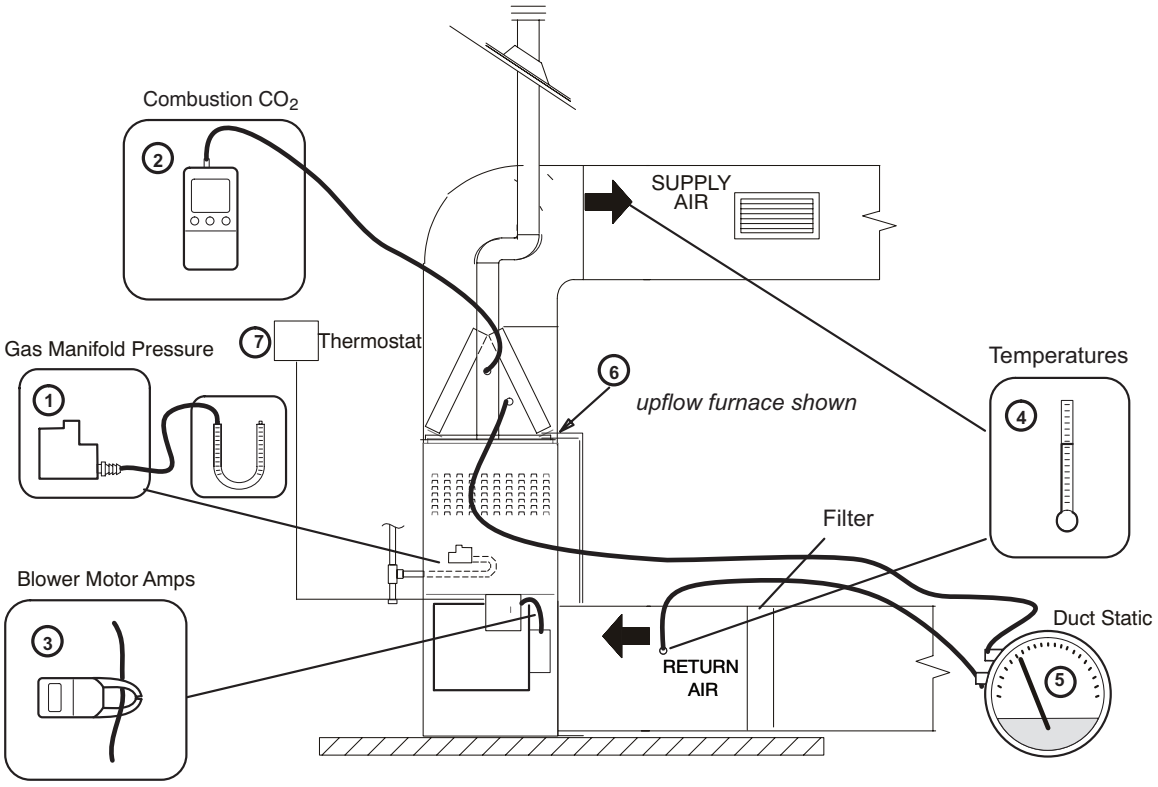
☐ **Appropriate Links in Place (if applicable)**

5 VOLTAGE CHECK

Supply Voltage _____

☐ **Electrical Connections Tight**

UNIT OPERATION
(typical)



HEATING MODE

(1) **GAS MANIFOLD PRESSURE "W.C._____**

(2) **COMBUSTION SAMPLE CO_2%_____CO PPM_____**

(3) **INDOOR BLOWER AMPS_____**

(4) **TEMPERATURE RISE**

Supply Duct Temperature _____
Return Duct Temperature – _____
Temperature Rise = _____

(5) **TOTAL EXTERNAL STATIC (dry coil)**

Supply External Static _____
Return External Static + _____
Total External Static = _____

COOLING MODE

(3) **INDOOR BLOWER AMPS_____**

(4) **TEMPERATURE DROP**

Return Duct Temperature _____
Supply Duct Temperature – _____
Temperature Drop = _____

(5) **TOTAL EXTERNAL STATIC (dry coil)**

Supply External Static _____
Return External Static + _____
Total External Static = _____

(6) **DRAIN LINE**

☐ **Leak Free**

(7) **THERMOSTAT**

☐ **Adjusted and Programmed**

☐ **Operation Explained to Owner**

Contractor's: Name_____Telephone_____Checklist Completed_____

Job Address_____-_____Technician's Name_____

BLOWER DATA

EL180UH040NE36AK PERFORMANCE (Less Filter)

External Static Pressure in. w.g.	Air Volume / Watts at Various Blower Speeds									
	High (Black)		Medium-High (Brown)		Medium (Blue)		Medium-Low (Yellow)		Low (Red)	
	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts
0.10	1389	251	1146	156	1007	111	963	98	945	94
0.20	1355	267	1098	171	935	115	826	89	789	79
0.30	1315	280	1068	184	881	126	768	97	646	75
0.40	1278	287	1022	194	837	133	709	108	593	84
0.50	1247	303	978	203	782	144	646	116	529	92
0.60	1199	317	948	216	719	151	602	126	471	102
0.70	1176	328	899	228	679	163	537	131	422	106
0.80	1128	344	860	235	627	172	500	141	382	115
0.90	1075	347	821	246	577	179	454	146	320	118
1.00	966	322	771	256	546	188	416	154	292	121

EL180UH060NE36AK PERFORMANCE (Less Filter)

External Static Pressure in. w.g.	Air Volume / Watts at Various Blower Speeds									
	High (Black)		Medium-High (Brown)		Medium (Blue)		Medium-Low (Yellow)		Low (Red)	
	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts
0.10	1389	251	1146	156	1007	111	963	98	945	94
0.20	1355	267	1098	171	935	115	826	89	789	79
0.30	1315	280	1068	184	881	126	768	97	646	75
0.40	1278	287	1022	194	837	133	709	108	593	84
0.50	1247	303	978	203	782	144	646	116	529	92
0.60	1199	317	948	216	719	151	602	126	471	102
0.70	1176	328	899	228	679	163	537	131	422	106
0.80	1128	344	860	235	627	172	500	141	382	115
0.90	1075	347	821	246	577	179	454	146	320	118
1.00	966	322	771	256	546	188	416	154	292	121

BLOWER DATA

EL180UH080NE48B PERFORMANCE (Less Filter)

External Static Pressure in. w.g.	Air Volume / Watts at Various Blower Speeds									
	High (Black)		Medium-High (Brown)		Medium (Blue)		Medium-Low (Yellow)		Low (Red)	
	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts
0.10	1828	419	1640	297	1503	238	1440	209	1240	147
0.20	1775	438	1571	318	1446	255	1385	229	1187	159
0.30	1727	457	1515	335	1393	275	1323	244	1110	173
0.40	1676	473	1477	349	1340	292	1263	259	1058	190
0.50	1632	490	1422	376	1290	309	1200	276	991	201
0.60	1575	509	1370	391	1227	326	1154	290	922	218
0.70	1502	507	1309	407	1171	343	1092	305	869	232
0.80	1335	460	1267	422	1114	357	1043	320	804	243
0.90	1115	395	1091	381	1047	367	984	334	735	255
1.00	829	310	845	322	846	318	858	321	669	266

EL180UH100NE60CK (Less Filter)

External Static Pressure in. w.g.	Air Volume / Watts at Different Blower Speeds																			
	Bottom Return Air, Side Return Air with Return Air from Both Sides or Return Air from Bottom and One Side.										**Single Side Return Air** - Air volumes in **bold** (over 1800 cfm) require Optional Return Air Base and field fabricated transition to accommodate 20 x 25 x 1 in. air filter in order to maintain proper air velocity.									
	High (Black)		Medium-High (Brown)		Medium (Blue)		Medium-Low (Yellow)		Low (Red)		High (Black)		Medium-High (Brown)		Medium (Blue)		Medium-Low (Yellow)		Low (Red)	
	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts
0.10	2216	637	1961	438	1707	305	1576	245	1457	193	**2245**	**633**	**1980**	**427**	1763	299	1592	240	1486	194
0.20	2165	663	1921	460	1667	324	1515	255	1323	190	**2199**	**653**	**1931**	**454**	1685	323	1533	253	1343	189
0.30	2129	684	1853	486	1624	344	1460	275	1262	208	**2147**	**678**	**1876**	**474**	1640	343	1470	273	1276	205
0.40	2060	710	1818	508	1559	365	1401	294	1193	222	**2110**	**702**	**1815**	**491**	1574	358	1424	292	1198	219
0.50	2030	726	1775	526	1515	380	1346	317	1134	238	**2064**	**725**	1777	516	1525	375	1360	312	1134	236
0.60	1985	749	1707	547	1453	401	1312	332	1080	252	**2025**	**744**	1726	533	1476	398	1311	330	1083	253
0.70	1931	769	1662	567	1405	419	1238	346	1012	269	**1973**	**765**	1673	558	1417	420	1243	344	1025	268
0.80	1882	789	1617	586	1364	438	1190	364	946	278	**1925**	**788**	1636	577	1372	436	1193	361	955	277
0.90	1832	807	1565	606	1317	457	1135	381	893	294	**1883**	**806**	1575	597	1312	457	1148	378	908	148
1.00	1727	772	1533	623	1244	468	1059	397	823	304	1785	789	1531	616	1263	469	1089	390	838	301

