

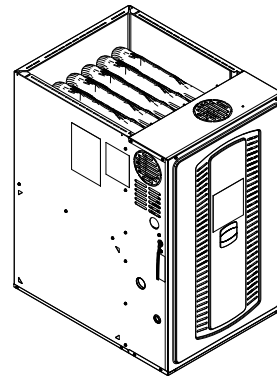
Service Facts

Upflow/Horizontal Left/Right Gas-Fired, Single Stage Induced Draft Furnace with Variable Speed Blower Motor

Upflow, Horizontal Right/Left
(For use with Natural Gas only.)

Single Stage
L8V1A040U3VSAA
L8V1A060U3VSAA
L8V1B080U4VSAA
L8V1C100U5VSAA

Note: This product complies with SJVAPCD 4905 and SCAQDMD 1111 with
NO_x levels below 14 ng/J.



Note: Graphics in this document are for
representation only. Actual model may
differ in appearance.

SAFETY WARNING

Only qualified personnel should install and service the equipment. The installation, starting up, and servicing of heating, ventilating, and air-conditioning equipment can be hazardous and requires specific knowledge and training. Improperly installed, adjusted or altered equipment by an unqualified person could result in death or serious injury. When working on the equipment, observe all precautions in the literature and on the tags, stickers, and labels that are attached to the equipment.

SAFETY SECTION NON-CONDENSING FURNACES

Important: — This document pack contains a wiring diagram and service information. This is customer property and is to remain with this unit. Please return to service information pack upon completion of work.

⚠ WARNING

FIRE OR EXPLOSION HAZARD!

Failure to follow safety warnings exactly could result in a fire or explosion causing property damage, personal injury or loss of life.

— Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance. — WHAT TO DO IF YOU SMELL GAS

- Do not try to light any appliance.
 - Do not touch any electrical switch; do not use any phone in your building.
 - Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
 - If you cannot reach your gas supplier, call the fire department.
- Installation and service must be performed by a qualified installer, service agency, or the gas supplier.

⚠ WARNING

EXPLOSION HAZARD!

Failure to follow this Warning could result in property damage, personal injury or death. Install a gas detecting warning device in case of a gas leak. *NOTE: The manufacturer of your furnace does not test any detectors and makes no representations regarding any brand or type of detector.*

⚠ WARNING

FIRE OR EXPLOSION HAZARD!

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

Never test for gas leaks with an open flame. Use a commercially available soap solution made specifically for the detection of leaks to check all connections. A fire or explosion may result causing property damage, personal injury, or loss of life.

⚠ WARNING

ELECTRICAL SHOCK, FIRE, OR EXPLOSION HAZARD!

Failure to follow this Warning could result in dangerous operation, property damage, severe personal injury, or death.

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

- Before servicing, disconnect all electrical power to furnace.
- When servicing controls, label all wires prior to disconnection. Reconnect wires correctly.
- Verify proper operation after servicing.

⚠ WARNING

CARBON MONOXIDE POISONING HAZARD!

Failure to follow this Warning could result in property damage, severe personal injury, or death.

To ensure furnace is vented properly, do not replace factory supplied venting components with field fabricated parts. Fabricating parts can result in damaged vents and components allowing carbon monoxide to escape the venting system.

⚠ WARNING

CARBON MONOXIDE HAZARD!

Failure to follow this Warning could result in property damage, severe personal injury, or death.

When replacing a furnace, ensure the venting system is adequate for the new furnace.

⚠ WARNING

FIRE HAZARD!

Failure to follow this Warning could result in property damage, severe personal injury, or death.

Do not install the furnace directly on carpeting, tile or other combustible material other than wood flooring.

⚠ WARNING

WARNING!

This product can expose you to chemicals including lead, which are known to the State of California to cause cancer and birth defects or other reproductive harm.
For more information go to www.P65Warnings.ca.gov.

⚠ WARNING

ELECTRICAL SHOCK HAZARD!

Failure to follow this Warning could result in property damage, severe personal injury, or death.
Do not bypass the door switch or panel loop by any permanent means.

⚠ WARNING

ELECTRICAL SHOCK HAZARD!

Failure to follow this Warning could result in property damage, severe personal injury, or death.
Do not touch any components other than the Menu and Option buttons on the IFC.

⚠ WARNING

FIRE OR EXPLOSION HAZARD!

Failure to follow this Warning could result in property damage, severe personal injury, or death.
Do NOT attempt to manually light the furnace.

⚠ WARNING

CARBON MONOXIDE POISONING HAZARD!

Failure to follow this Warning could result in property damage, severe personal injury, or death.
Follow the service and/or periodic maintenance instructions for the Furnace and venting system.

⚠ WARNING

CARBON MONOXIDE POISONING HAZARD!

Failure to follow this Warning could result in serious personal injury or death.
Make sure that the blower door is in place and not ajar. Dangerous fumes could escape an improperly secured door.

⚠ WARNING

ELECTRICAL SHOCK HAZARD!

Failure to follow this Warning could result in property damage, severe personal injury, or death.
Disconnect power to the unit before removing the blower door. Allow a minimum of 10 seconds for IFC power supply to discharge to 0 volts.

⚠ WARNING

SAFETY HAZARD!

Failure to follow this Warning could result in property damage, severe personal injury, or death.
These furnaces are not approved or intended for installation in manufactured (mobile) housing, trailers, or recreational vehicles.

⚠ WARNING

EXPLOSION HAZARD!

Failure to follow this Warning could result in property damage, severe personal injury, or death.
In the event that electrical, fuel, or mechanical failures occur, shut gas supply off at the manual gas valve located on the supply gas piping coming into the furnace before turning off the electrical power to the furnace. Contact the service agency designated by your dealer.

⚠ WARNING

EXPLOSION HAZARD!

Failure to follow this Warning could result in property damage, serious personal injury, or death.
Do not store combustible materials, gasoline, or other flammable vapors or liquids near the unit.

⚠ WARNING

SAFETY HAZARD!

Failure to follow this Warning could result in property damage, severe personal injury, or death.
Do not use semi-rigid metallic gas connectors (flexible gas lines) within the furnace cabinet.

⚠ WARNING

INSTALLATION WARNING — HIGH VOLTAGE MOVING PARTS!

Failure to follow this Warning could result in property damage, severe personal injury, or death.

Bodily injury can result from high voltage electrical components, fast moving fans, and combustible gas. For protection from these inherent hazards during installation and servicing, the main gas valve must be turned off and the electrical supply must be disconnected. If operating checks must be performed with the unit operating, it is the technician's responsibility to recognize these hazards and proceed safely.

⚠ WARNING

SAFETY HAZARD!

Failure to follow this Warning could result in property damage, severe personal injury, or death.

Do not install the filter in the return duct directly above the furnace in horizontal applications. Install the filter remotely.

⚠ WARNING

SAFETY HAZARD!

Failure to follow this Warning could result in property damage, severe personal injury, or death.

Turn the power to the furnace off before servicing filters to avoid contact with moving parts.

⚠ WARNING

CARBON MONOXIDE HAZARD!

Failure to follow this Warning could result in property damage, severe personal injury, or death.

Furnace venting into an unlined masonry chimney or concrete chimney is prohibited.

⚠ WARNING

CARBON MONOXIDE HAZARD!

Failure to follow this Warning could result in property damage, severe personal injury, or death.

The chimney liner must be thoroughly inspected to insure no cracks or other potential areas for flue gas leaks are present in the liner. Liner leaks will result in early deterioration of the chimney.

⚠ WARNING

SHOCK HAZARD!

Failure to follow this Warning could result in property damage, severe personal injury, or death.

If a disconnect switch is present, it must always be locked in the open position before servicing the unit.

⚠ WARNING

OVERHEATING AND EXPLOSION HAZARD!

Failure to follow this Warning could result in property damage, personal injury or death.

Should overheating occur, or the gas supply fail to shut off, shut off the gas valve to the unit before shutting off the electrical supply.

⚠ CAUTION

IMPROPER VOLTAGE CONNECTION!

Failure to follow this Caution could result in property damage.

Do NOT connect the furnace line voltage to a GFCI protected circuit.

⚠ CAUTION

CORROSION WARNING!

Failure to follow this Caution could result in property damage or personal injury.

Do not install the furnace in a corrosive or contaminated atmosphere.

⚠ CAUTION

SHARP EDGE HAZARD!

Failure to follow this Caution could result in property damage or personal injury.

Be careful of sharp edges on equipment or any cuts made on sheet metal while installing or servicing.

⚠ CAUTION

BACKUP WRENCH REQUIRED!

Failure to follow this Caution could result in property damage or personal injury.

Use a backup wrench on the gas valve when installing gas piping to prevent damage to the gas valve and manifold assembly.

⚠ CAUTION

FREEZE CAUTION!

Failure to follow this Caution could result in property damage or personal injury.
If complete furnace shutdown is done during the cold weather months, provisions must be taken to prevent freeze-up of all water pipes and water receptacles.

⚠ CAUTION

FREEZE CAUTION!

Failure to follow this Caution could result in property damage or personal injury.
Whenever your house is to be vacant, arrange to have someone inspect your house for proper temperature. This is very important during freezing weather. If for any reason your furnace should fail to operate damage could result, such as frozen water pipes.

⚠ CAUTION

IGNITION FUNCTION!

Failure to follow this Caution may result in poor ignition characteristics.
Maintain manifold pressure in high altitude installations.

⚠ CAUTION

WATER DAMAGE!

Failure to follow this Caution could result in property damage or personal injury.
It is recommended that an external overflow drain pan be installed in all applications over a finished ceiling to prevent property damage or personal injury from leaking condensate.

⚠ CAUTION

HOT SURFACE!

Failure to follow this Caution could result in personal injury.
Do NOT touch igniter. It is extremely hot.

⚠ CAUTION

FURNACE SERVICE CAUTION!

Failure to follow this Caution could result in property damage or personal injury.
Label all wires prior to disconnection when servicing controls. Verify proper operation after servicing. Wiring errors can cause improper and dangerous operation.

⚠ CAUTION

DO NOT USE AS CONSTRUCTION HEATER!

Failure to follow this Caution could result in property damage or personal injury.
In order to prevent shortening its service life, the Furnace should NOT be used as a "Construction Heater".

⚠ CAUTION

WIRING INFORMATION!

Failure to follow this Caution could result in property damage or personal injury.
The integrated furnace control is polarity sensitive. The hot leg of the 120 VAC power must be connected to the BLACK field lead.

⚠ CAUTION

EQUIPMENT DAMAGE!

UV light exposure can cause the plastic blower material to deteriorate which could lead to Blower Housing Damage.
For units containing a plastic Blower Housing, Do NOT install third party Ultra-Violet Air Cleaners where the Blower Housing can be exposed to UV light.

For more information, visit www.trane.com and www.americanstandardair.com or contact your installing dealer.
6200 Troup Highway
Tyler, TX 75707

⚠ 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:

- Inspect the venting system for proper size and horizontal pitch as required in the National Fuel Gas Code, ANSI Z223.1/NFPA 54 and these instructions. Determine there is no blockage or restriction, leakage, corrosion or other deficiencies which could cause an unsafe condition.
- Close all doors and windows between the space in which the appliance(s) connected to the venting system are located. Also close fireplace dampers.
- Turn on clothes dryers and any appliance not connected to the venting system. Turn on any exhaust fans such as range hoods so they are operating at maximum speed. Do not operate a summer exhaust fan.
- Follow the lighting instructions. Place the appliance being inspected into operation. Adjust the thermostat so appliance is operating continuously.
- Test for spillage from draft hood equipped appliances at the draft hood relief opening after 5 minutes of main burner operation. Use the flame of a match or candle.
- If improper venting is observed during any of the above tests, the venting system must be corrected in accordance with the National Fuel Gas Code, ANSI Z221.1/NFPA 54.
- After it has been determined that each appliance connected to the venting system properly vents when tested, return all doors, windows, exhaust fans, etc. to their previous condition of use.

Product Specifications

MODEL	L8V1A040U3VSAA (a)	L8V1A060U3VSAA (a)	L8V1B080U4VSAA (a)	L8V1C100U5VSAA (a)
TYPE	Upflow / Horizontal	Upflow / Horizontal	Upflow / Horizontal	Upflow / Horizontal
RATINGS (b)				
Input BTUH	40,000	60,000	80,000	100,000
Capacity BTUH (ICS) (c)	31,700	48,100	63,000	80,200
Temp. Rise (Min. - Max.) °F	30 - 60	30 - 60	30 - 60	30 - 60
AFUE — Rating (c)	80	80	80	80
Return Air Temp. (Min. - Max.) °F	55°F - 80°F	55°F - 80°F	55°F - 80°F	55°F - 80°F
BLOWER DRIVE	DIRECT	DIRECT	DIRECT	DIRECT
Diameter — Width (In.)	11 X 8	11 X 8	11 X 8	11 X 10
No. Used	1	1	1	1
Speeds (No.)	Variable	Variable	Variable	Variable
CFM vs. in. w.g.	See Fan Performance Table	See Fan Performance Table	See Fan Performance Table	See Fan Performance Table
Motor HP	0.5	0.5	0.75	1
RPM	Variable	Variable	Variable	Variable
Volts / Ph / Hz	120 / 1 / 60	120 / 1 / 60	120 / 1 / 60	120 / 1 / 60
FLA	6.4	6.4	9.6	10
COMBUSTION FAN — Type	Centrifugal	Centrifugal	Centrifugal	Centrifugal
Drive — No. Speeds	Variable	Variable	Variable	Variable
Motor RPM	4700	4700	4700	4700
Volts/Ph/Hz	120 / 1 / 60	120 / 1 / 60	120 / 1 / 60	120 / 1 / 60
FLA	1.00	1.00	1.00	1.00
Inducer Orifice	3.15	3.15	3.15	3.15
FILTER — Furnished?	No	No	No	No
Type recommended	High Velocity	High Velocity	High Velocity	High Velocity
High Vel. (No.-Size-Thk.)	1 - 14 X 25 - 1 in.	1 - 14 X 25 - 1 in.	1 - 16 X 25 - 1 in.	1 - 20 X 25 - 1 in.
VENT PIPE DIAMETER — Min (in.) (d)	4 Round	4 Round	4 Round	4 Round
HEAT EXCHANGER — Type	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
Gauge (Fired)	20	20	20	20
ORIFICES — Main				
Nat. Gas Qty. - Drill Size	1 - 3.2 mm	1 - #23	1 - #15	1 - #11
GAS VALVE	Redundant - Two Stage	Redundant - Two Stage	Redundant - Two Stage	Redundant - Two Stage
PILOT SAFETY DEVICE — Type	120 V SiNi Igniter	120 V SiNi Igniter	120 V SiNi Igniter	120 V SiNi Igniter
BURNERS				
Type	Premix-ULN	Premix-ULN	Premix-ULN	Premix-ULN
Quantity	1	1	1	1
POWER CONN. — V/Ph/Hz (e)	120 / 1 / 60	120 / 1 / 60	120 / 1 / 60	120 / 1 / 60
Ampacity (Amps)	9.2	9.2	13.2	13.7
Max. Overcurrent Protection (Amps)	15	15	15	15
PIPE CONN. SIZE (in.)	1/2	1/2	1/2	1/2

(a) Central Furnace heating designs are certified to ANSI Z21.47 — latest edition.

(b) For U.S. applications, above input ratings (BTUH) are up to 2,000 feet, derate 4% per 1,000 feet for elevations above 2,000 feet above sea level.

(c) Based on U.S. government standard tests.

(d) Refer to the Installer's Guide.

(e) The above wiring specifications are in accordance with National Electrical Code; however, installations must comply with local codes.

Sequence of Operation

EAC and HUM Timing

- EAC relay closes approximately 5 seconds after the blower starts.
- EAC relay opens when the blower motor stops.
- HUM relay closes on a gas heating call when the blower motor starts and flame is sensed.
- HUM relay opens when flame is no longer sensed, i.e. thermostat is satisfied.

Note: The EAC and HUM terminals are dry contacts, no power output.

Gas Heating

Note: There are two main thermal limits on this unit. Thermal Limit 1 is the primary limit for upflow applications with right side return ducting. Thermal Limit 2 is the primary limit for all other applications.

1. R – W contacts close on the thermostat sending 24VAC to the W low voltage terminal of the IFC. Technician should read 24VAC from W to C. The seven segment LED display will show $H\bar{L} \bar{I}$.
2. The IFC performs a self-check routine and then confirms that the:
 - a. Main thermal limits (HI LIMIT), burner box limit (BBOX LIMIT), and reverse air flow (RAF) switches are closed by sending 24VAC out of the HLO terminal and monitoring the HLI input for 24VAC.
 - b. The IFC then checks the inducer and blower motor communications.
3. Once step 2a and 2b are confirmed, the variable speed inducer motor is energized and performs a 30 seconds pre-purge and then shuts down.
4. Once the pre-purge, the igniter warm up period begins.
 - a. Eight seconds after the igniter warm-up begins, the inducer is energized and ramps up to meet the Light-Off pressure.
 - b. Once the Light-Off pressure feedback is sensed and the igniter warm-up time has elapsed (~17 seconds), the 1st stage gas valve is energized.

Note: If the feedback is not correct, the IFC will time out and flash the proper fault code.
5. The burner system will ignite, providing current to the flame sensor. Proof of flame must be established within 4 seconds or a retry will occur.

Note: Typical flame current ranges from 0.75 – 3.0 μ A.

6. Once flame sense has been established, the igniter is de-energized, the blower on timer begins and the inducer ramps to the “Pre-Run” speed. During this transition, the combustion pressure increases until the Pre-Run pressure is sensed.
7. Once the Pre-Run pressure feedback is sensed, the IFC will energize the 2nd stage of the gas valve.
8. After the blower on timer has completed, the indoor blower will run at the selected gas heating speed.
9. The seven segment LED will alternately read:
 - $H\bar{L} \bar{I}$ = Gas heating, Stage 1
 - $R\bar{r}F$ = Airflow
 - $\bar{0}5\bar{0}$ = 600 calculated cfm (value shown x 10) (example value)
10. When the temperature raises enough to satisfy the thermostat setting, contacts R-W will open.
11. The gas valve relay will open, closing the gas valve. The inducer continues to run for ~5 seconds to remove any combustion by-products from inside the furnace.
12. The indoor blower continues to run to remove heat from the heat exchangers. The Heat Off Delay is field adjustable. The seven segment LED will return to $\bar{I} \bar{d}\bar{L}$ (Idle) assuming there is no other demand from the thermostat, i.e., continuous fan call.

Single Stage Cooling

Note: Factory supplied Y1-O jumper must remain in place for proper seven segment LED readout. If removed, seven segment LED will read $H\bar{P} \bar{I}$

1. R-Y1-G contacts on the thermostat close sending 24VAC to the Y1 and G low voltage terminals on the IFC. Technician should read 24VAC between Y1-B/C and between G-B/C.
2. 24VAC is sent to the OD unit via thermostat wiring.
3. The indoor blower ramps to the cooling airflow. The seven segment LED for example will alternately read:
 - $\bar{C}\bar{L} \bar{I}$ = Cooling, Stage 1
 - $R\bar{r}F$ = Airflow
 - $\bar{0}8\bar{0}$ = 800 calculated cfm (value shown x 10)
4. When the temperature is lowered enough to satisfy the thermostat setting, contacts R-Y-G will open.
5. The OD unit shuts off and the indoor blower shuts off, unless a blower off delay has been enabled in the IFC setup menu options. The seven segment LED will read $\bar{I} \bar{d}\bar{L}$ = Idle, no thermostat demand.

Two Stage Cooling

1. See sequence of operation for Single stage cooling operation above (steps 1-3).
2. R-Y2 contact on the thermostat close sending 24VAC to Y2 low voltage terminal on the IFC. Technician should read 24VAC between Y2 and B/C.
3. 24VAC is sent to the OD unit via thermostat wiring.
4. The indoor airflow ramps to 2nd stage airflow. The seven segment LED for example will read:
 - $LL2$ = Cooling, Stage 2
 - RrF = Airflow
 - 150 = 1600 calculated cfm (value shown x 10)
5. When the temperature is lowered enough to satisfy the thermostat setting, contacts R-Y1-Y2-G will open.
The OD unit shuts off and the indoor blower shuts off, unless a blower off delay has been enabled in the IFC setup menu options. The seven segment LED will read IdL = Idle, no thermostat demand.

Single Stage Heat Pump

Note: Factory supplied Y1-O jumper must be removed for proper seven segment LED readout and defrost operation.

1. R-Y1-G contacts on the thermostat close sending 24VAC to the Y1 and G low voltage terminals on the IFC. Technician should read 24VAC between Y1-B/C and between G-B/C.
2. 24VAC is sent to the OD unit via thermostat wiring.
3. The indoor blower ramps to the HP heating airflow. The seven segment LED for example will alternately read:

- $HP1$ = Heat Pump Heating, Stage 1
 - RrF = Airflow
 - 080 = 800 calculated cfm (value shown x 10)
4. When the temperature is raised enough to satisfy the thermostat setting, contacts R-Y-G will open.
 5. The OD unit shuts off and the indoor blower shuts off, unless a blower off delay has been enabled in the IFC setup menu options. The seven segment LED will read IdL = Idle, no thermostat demand.

Two Stage Heat Pump

1. See sequence of operation for single stage heat pump operation above (steps 1-3)
2. R-Y2 contact on the thermostat close sending 24VAC to Y2 low voltage terminal on the IFC. Technician should read 24VAC between Y2 and B/C.
3. 24VAC is sent to the OD unit via thermostat wiring.
4. The indoor airflow ramps to 2nd stage airflow. The seven segment LED for example will read:
 - $HP2$ = Heat Pump Heating, Stage 2
 - RrF = Airflow
 - 150 = 1600 calculated cfm (value shown x 10)
5. When the temperature is raised enough to satisfy the thermostat setting, contacts R-Y1-Y2-G will open.
6. The OD unit shuts off and the indoor blower shuts off, unless a blower off delay has been enabled in the IFC setup menu options. The seven segment LED will read IdL = Idle, no thermostat demand.

Periodic Servicing Requirements

1. GENERAL INSPECTION – *Examine the furnace installation annually for the following items:*
 - a. All flue product carrying areas external to the Furnace (i.e. chimney, vent connector) are clear and free of obstruction. A vent screen in the end of the Vent (flue) Pipe must be inspected for blockage annually, if applicable.
 - b. The vent connector is in place, slopes upward and is physically sound without holes or excessive corrosion.
 - c. The return air duct connection(s) is physically sound, is sealed to the Furnace and terminates outside the space containing the Furnace.
 - d. The physical support of the Furnace should be sound without sagging, cracks, gaps, etc., around the base so as to provide a seal between the support and the base.
2. FILTERS – Filters should be cleaned or replaced (with high velocity filters only), monthly and more frequently during high use times of the year such as midsummer or midwinter.
3. BLOWERS – The Blower size and speed determine the air volume delivered by the Furnace. The Blower motor bearings are factory lubricated and under normal operating conditions do not require servicing. Annual cleaning of the Blower wheel and housing is recommended for maximum air output, and this must be performed only by a qualified servicer or service agency.
4. IGNITER – This unit has a special hot surface direct ignition device that automatically lights the burners. Please note that it is very fragile and should be handled with care. ! CAUTION Do NOT touch igniter. It is extremely hot.
5. HEAT EXCHANGER/ FLUE PIPE – These items must be inspected for signs of corrosion, and/ or deterioration at the beginning of each heating season by a qualified service technician and cleaned annually for best operation. To clean flue gas passages, follow recommendations below:
 - a. Turn off gas and electric power supply.
 - b. Inspect flue pipe exterior for cracks, leaks, holes or leaky joints.
 - c. Remove door from Furnace.
 - d. Inspect induced draft Blower connections to the flue pipe connection.
 - e. Use a mirror and flashlight to inspect interior of Heat Exchanger, be careful not to damage the Igniter, Flame Sensor or other components.
 - f. If any corrosion is present, the Heat Exchanger should be cleaned by a qualified service technician.
 - g. After inspection is complete replace burner and Furnace door.

- h. Restore gas supply. Check for leaks using a soap solution. Restore electrical supply. Check unit for normal operation.
6. COOLING COIL CONDENSATE DRAIN - If a cooling coil is installed with the Furnace, condensate drains should be checked and cleaned periodically to assure that condensate can drain freely from coil to drain. If condensate cannot drain freely water damage could occur. (See Condensate Drain in Installer's Guide.)

General Maintenance and Cleaning

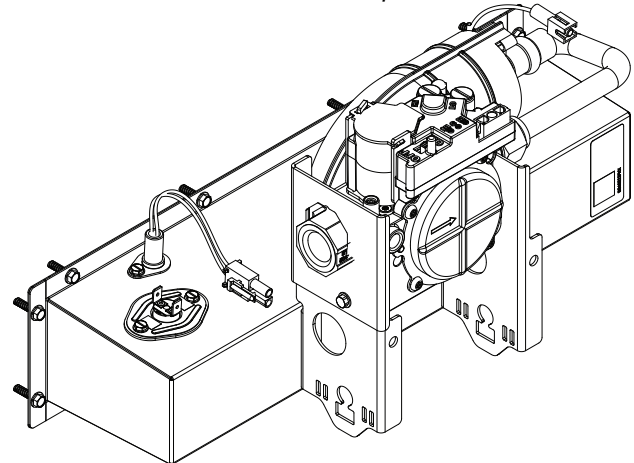
Heat Exchanger

Note: *If the heat exchanger gets a heavy accumulation of soot or carbon, it should be replaced rather than trying to clean. A heavy build-up of soot and/or carbon indicates that a problem exists which needs to be corrected, such as improper adjustment of gas valve outlet pressure, insufficient or poor quality combustion air, incorrect size or damaged orifice(s), improper gas, or a restricted heat exchanger. Action must be taken to correct the problem.*

Burner Assembly

Important: *Proper use of Personal Protective Equipment (PPE) must be followed, including safety glasses, gloves, and dust mask when removing and reinstalling the burner assembly.*

Note: *Disassembly of the burner assembly during annual maintenance should not be required in most applications but may vary depending on the location and application of the furnace. Inspection of all components, wiring, and verifying proper operation should be part of the annual maintenance work performed.*



Maintenance Instructions

The following steps should be performed only by a qualified service technician:

1. Turn OFF gas and electrical power to furnace.
2. Remove door panel.
3. Visually inspect the overall condition of the furnace components: looking for signs of corrosion, excessive wear, loose, or frayed wiring, and overall cleanliness of the furnace.
4. The venting system should be checked for proper pitch, loose connections, and signs of corrosion.
5. Disconnect the wire to the flame sensor and remove the 1/4" retaining screw. Remove the sensor and clean if necessary.

Note: *Cleaning the sensor with steel wool is the approved method. Use of sand paper or similar materials will eventually result in the glass deposits of the sandpaper becoming molten and insulating the small current flow and loss of operation.*

6. Disconnect the wiring to the ignitor. With the ignitor still in place, measure the resistance of the ignitor. Resistance should be between 37-70 ohms.

Cleaning Instructions

The following steps should be performed only by a qualified service technician:

1. Turn OFF gas and electrical power to furnace.
2. Remove door panel.
3. Disconnect wires to the following components after identifying and marking the wires. Taking pictures with a smart phone is also a good aid in when it's time for re-connection:
 - a. Burner box limit switch
 - b. Primary limit switch
 - c. Gas valve
 - d. Hot surface igniter

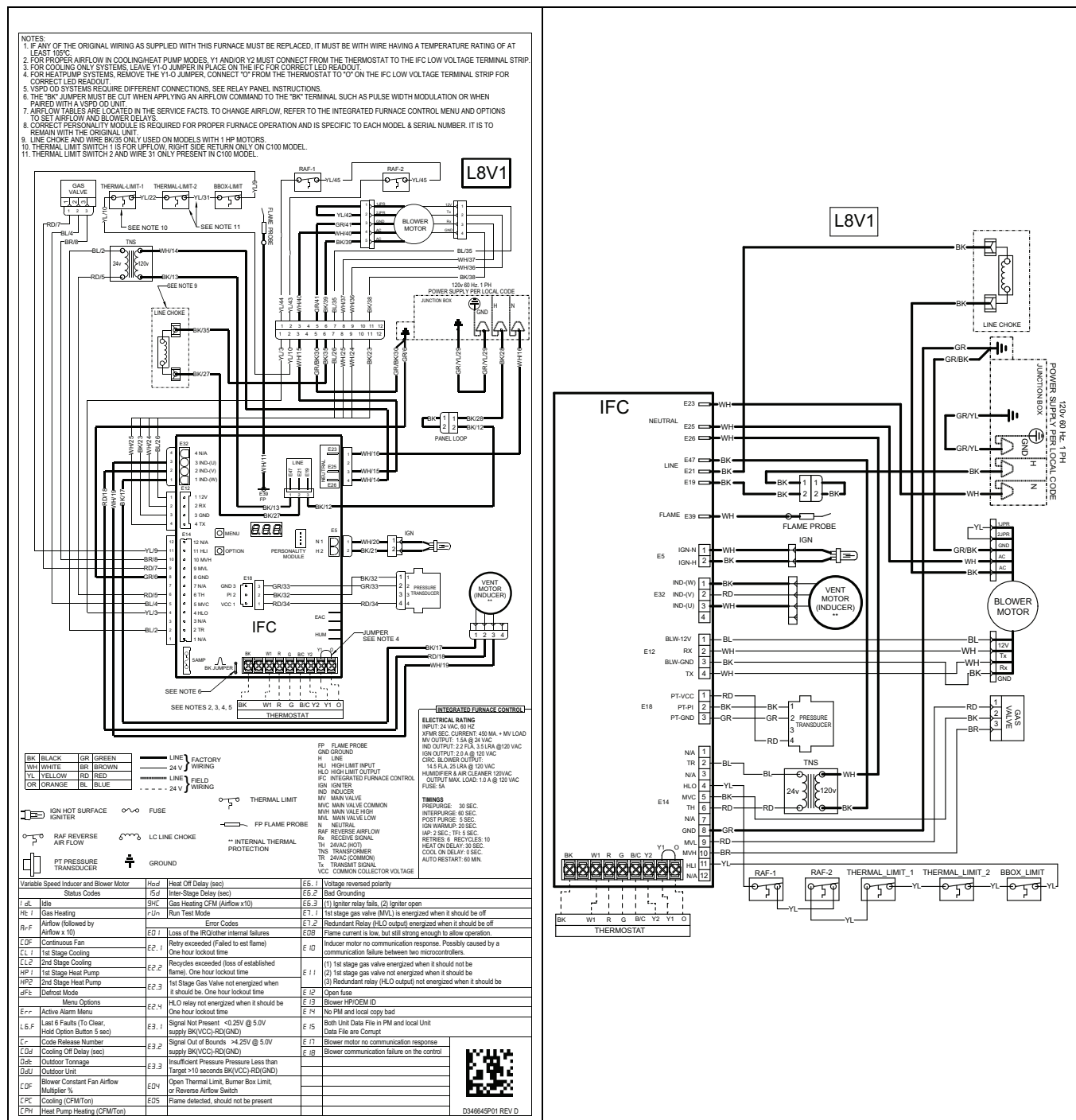
e. Flame sensor

f. Pressure transducer

4. With the use of a back-up wrench on the gas valve, disconnect the gas supply line from gas valve.
5. Remove screws that attach the burner assembly to the vestibule panel. The gas valve and J-tube do not need to be removed from burner box.

Note: *Be careful when removing burner assembly to avoid breaking igniter.*

6. Remove burner box insulation and discard. Re-use of the burner box insulation is not recommended.
7. Remove insulation sleeves from each tube inlet. Inspect each sleeve for signs of damage or overheating. Replace as needed, as a set.
8. Using vacuum cleaner with soft brush attachment, clean burner assembly. Regulated compressed air can be used to aid in cleaning.
9. Clean flame sensor with fine steel wool.
10. Inspect ignitor for visible signs of damage or overheating. Measure resistance of the ignitor with a VOM. Resistance should be between 37-70 ohms. Replace if needed.
11. Reinstall the burner box insulation assembly.
12. Reinstall burner assembly.
13. Reconnect wires to the following components:
 - a. Burner box limit switch
 - b. Primary limit switch
 - c. Gas valve
 - d. Hot surface igniter
 - e. Flame sensor
 - f. Pressure transducer
14. Re-connect gas supply and check for leaks.
15. Set thermostat above room temperature and check furnace for proper operation.
16. Verify blower airflow and temperature rise is within the specified range stated on the nameplate.



Airflow Tables

Table 1. L8V1A040U3VS Heating Airflow

L8V1A040U3VS Furnace Heating Airflow (CFM), Temp. Rise (°F), and Power (Watts) vs. External Static Pressure (iwc) with Filter								
				Heating Capacity = 31,700				
Heating	Airflow Setting	Target Airflow		External Static Pressure				
				0.1	0.3	0.5	0.7	0.9
Heating	Low	550	CFM	594	614	634	653	673
			Temp. Rise	50	48	47	45	44
			Watts	21	66	112	158	204
	Medium Low ^(a)	610	CFM	668	684	699	714	730
			Temp. Rise	44	43	42	42	41
			Watts	28	76	124	172	220
	Medium	630	CFM	705	715	725	736	746
			Temp. Rise	42	41	41	40	40
			Watts	31	80	128	177	225
	High	700	CFM	792	797	801	806	810
			Temp. Rise	37	37	37	37	37
			Watts	43	93	143	194	244

^(a) Factory Setting

Table 2. L8V1A040U3VS Cooling Airflow

L8V1A040U3VS Furnace Cooling Airflow (CFM) and Power (Watts) vs. External Static Pressure with Filter							
Outdoor Tonnage - ODT	Airflow Setting (CFM/Ton)		EXTERNAL STATIC PRESSURE (IN. W. C.)				
			0.1	0.3	0.5	0.7	0.9
1.5	450	CFM	687	682	677	673	668
		WATTS	58	99	143	190	239
	420	CFM	642	638	635	632	628
		WATTS	51	90	133	178	225
	400	CFM	612	609	607	604	602
		WATTS	46	84	126	170	217
	370	CFM	566	566	565	564	563
		WATTS	40	76	116	159	205
	350	CFM	536	536	536	536	536
		WATTS	36	71	110	153	198
	330	CFM	506	507	508	509	510
		WATTS	33	67	105	146	191
	310	CFM	476	478	480	482	484
		WATTS	29	62	99	140	184
	290	CFM	446	449	452	455	458
		WATTS	26	58	94	134	178

Airflow Tables

Table 2. L8V1A040U3VS Cooling Airflow (continued)

L8V1A040U3VS Furnace Cooling Airflow (CFM) and Power (Watts) vs. External Static Pressure with Filter							
2.0	450	CFM	913	901	889	877	865
		WATTS	111	161	213	267	323
	420	CFM	853	843	833	822	812
		WATTS	92	139	189	242	295
	400	CFM	813	804	795	786	777
		WATTS	83	129	177	228	280
	370	CFM	752	746	739	732	725
		WATTS	70	114	160	209	259
	350	CFM	712	707	701	695	690
		WATTS	71	113	158	205	255
	330	CFM	672	668	663	659	655
		WATTS	56	96	140	186	234
2.5	450	CFM	1140	1120	1101	1081	1062
		WATTS	177	236	297	358	422
	420	CFM	1064	1047	1030	1013	996
		WATTS	152	207	264	324	385
	400	CFM	1014	998	983	968	952
		WATTS	136	189	245	303	362
	370	CFM	938	925	913	900	887
		WATTS	114	164	218	273	329
	350	CFM	888	877	866	854	843
		WATTS	100	149	200	254	309
	330	CFM	838	828	818	809	799
		WATTS	88	135	185	236	290
3.0 (a)	450	CFM	1366	1339	1312	1285	1259
		WATTS	190	248	333	409	483
	420	CFM	1275	1251	1228	1204	1180
		WATTS	231	295	361	427	495
	400	CFM	1215	1193	1171	1149	1127
		WATTS	206	267	331	396	462
	370	CFM	1124	1105	1087	1068	1049
		WATTS	172	230	290	352	414
	350	CFM	1064	1047	1030	1013	996
		WATTS	152	207	264	324	385
	330	CFM	1004	989	974	959	944
		WATTS	133	186	241	298	357
	310	CFM	943	930	917	904	891
		WATTS	115	166	219	275	331
	290	CFM	883	872	861	850	838
		WATTS	99	148	199	252	307

(a) Factory Setting

Table 3. L8V1A060U3VS Heating Airflow

L8V1A060U3VS Furnace Heating Airflow (CFM), Temp. Rise (°F), and Power (Watts) vs. External Static Pressure (iwc) with Filter								
				Heating Capacity = 48,100				
Heating	Airflow Setting	Target Airflow		External Static Pressure				
				0.1	0.3	0.5	0.7	0.9
Heating	Low	830	CFM	857	850	843	836	829
			Temp. Rise	51	52	52	53	54
			Watts	51	102	153	204	255
	Medium Low	960	CFM	993	981	970	958	946
			Temp. Rise	44	45	46	47	47
			Watts	76	131	186	241	296
	Medium ^(a)	990	CFM	1014	1010	1005	1001	996
			Temp. Rise	43	44	44	44	45
			Watts	82	139	197	255	312
	High	1130	CFM	1163	1153	1143	1133	1124
			Temp. Rise	38	38	39	39	40
			Watts	120	182	244	307	369

^(a) Factory Setting

Table 4. L8V1A060U3VS Cooling Airflow

L8V1A060U3VS Furnace Cooling Airflow (CFM) and Power (Watts) vs. External Static Pressure with Filter							
Outdoor Tonnage - ODT	Airflow Setting (CFM/Ton)		EXTERNAL STATIC PRESSURE (IN. W. C.)				
			0.1	0.3	0.5	0.7	0.9
1.5	450	CFM	718	706	694	682	670
		WATTS	56	96	140	185	232
	420	CFM	673	661	649	637	625
		WATTS	49	87	129	173	219
	400	CFM	642	630	618	606	594
		WATTS	44	82	122	165	210
	370	CFM	596	584	572	560	548
		WATTS	38	74	113	154	198
	350	CFM	565	553	541	529	517
		WATTS	35	69	107	147	190
	330	CFM	534	522	510	498	485
		WATTS	31	65	101	141	183
	310	CFM	502	490	478	466	454
		WATTS	28	60	96	135	176
	290	CFM	470	458	446	434	422
		WATTS	25	56	91	128	169
2.0	450	CFM	938	926	914	902	890
		WATTS	103	153	204	258	313
	420	CFM	881	868	856	844	832
		WATTS	88	136	185	237	289
	400	CFM	842	830	818	806	794
		WATTS	80	125	173	223	274
	370	CFM	783	771	759	747	735
		WATTS	67	111	156	204	253
	350	CFM	743	731	719	707	695
		WATTS	61	102	146	192	240
	330	CFM	703	691	679	667	655
		WATTS	53	93	136	181	228
	310	CFM	663	651	638	626	614
		WATTS	47	86	127	170	216
	290	CFM	622	610	598	586	574
		WATTS	41	78	118	160	205

Airflow Tables

Table 4. L8V1A060U3VS Cooling Airflow (continued)

L8V1A060U3VS Furnace Cooling Airflow (CFM) and Power (Watts) vs. External Static Pressure with Filter							
2.5	450	CFM	1146	1134	1122	1110	1098
		WATTS	172	230	291	352	416
	420	CFM	1078	1066	1054	1042	1030
		WATTS	146	202	259	318	379
	400	CFM	1032	1020	1008	996	984
		WATTS	131	184	240	297	356
	370	CFM	962	950	938	926	914
		WATTS	110	160	213	267	323
	350	CFM	914	902	890	878	866
		WATTS	97	145	196	249	303
	330	CFM	866	854	842	830	818
		WATTS	85	132	180	231	284
	310	CFM	817	805	793	781	769
		WATTS	74	119	166	215	265
	290	CFM	768	756	744	732	720
		WATTS	65	107	152	199	249
3.0 (a)	450	CFM	1342	1330	1318	1306	1294
		WATTS	266	333	402	472	543
	420	CFM	1265	1253	1241	1229	1217
		WATTS	225	289	354	421	489
	400	CFM	1213	1201	1188	1176	1164
		WATTS	200	262	325	389	455
	370	CFM	1132	1120	1108	1096	1084
		WATTS	167	224	284	345	408
	350	CFM	1078	1066	1054	1042	1030
		WATTS	146	202	259	318	379
	330	CFM	1023	1011	999	986	974
		WATTS	128	181	236	293	351
	310	CFM	966	954	942	930	918
		WATTS	111	162	214	269	325
	290	CFM	909	897	885	873	861
		WATTS	96	144	195	247	301

(a) Factory Setting

Table 5. L8V1B080U4VS Heating Airflow

L8V1B080U4VS Furnace Heating Airflow (CFM), Temp. Rise (°F), and Power (Watts) vs. External Static Pressure (iwc) with Filter								
				Heating Capacity = 63,000				
Heating	Airflow Setting	Target Airflow		External Static Pressure				
				0.1	0.3	0.5	0.7	0.9
Heating	Low	1180	CFM	1253	1243	1234	1224	1214
			Temp. Rise	47	48	48	49	49
			Watts	124	184	244	305	365
	Medium Low	1250	CFM	1313	1298	1283	1268	1253
			Temp. Rise	45	46	46	47	47
			Watts	142	204	266	328	390
	Medium (a)	1350	CFM	1438	1414	1390	1366	1342
			Temp. Rise	42	42	43	43	44
			Watts	184	249	314	379	444
	High	1400	CFM	1454	1442	1429	1417	1404
			Temp. Rise	41	42	42	42	42
			Watts	194	263	332	401	470

(a) Factory Setting

Table 6. L8V1B080U4VS Cooling Airflow

L8V1B080U4VS Furnace Cooling Airflow (CFM) and Power (Watts) vs. External Static Pressure with Filter							
Outdoor Tonnage - ODT	Airflow Setting (CFM/Ton)		EXTERNAL STATIC PRESSURE (IN. W. C.)				
			0.1	0.3	0.5	0.7	0.9
2.0	450	CFM	911	905	893	881	878
		WATTS	90	140	191	241	292
	420	CFM	853	849	833	823	816
		WATTS	77	125	172	221	269
	400	CFM	814	811	795	781	774
		WATTS	69	115	161	208	255
	370	CFM	757	755	738	722	714
		WATTS	58	102	145	190	235
	350	CFM	719	719	700	683	671
		WATTS	52	94	136	179	223
	330	CFM	682	681	662	644	631
		WATTS	46	86	127	169	212
	310	CFM	645	645	625	603	588
		WATTS	41	79	118	159	201
	290	CFM	608	609	587	565	548
		WATTS	36	72	110	150	191
2.5	450	CFM	1130	1121	1113	1110	1117
		WATTS	152	214	274	334	393
	420	CFM	1058	1049	1039	1034	1035
		WATTS	129	187	244	301	356
	400	CFM	1008	1000	990	981	981
		WATTS	115	170	225	279	333
	370	CFM	936	927	917	907	906
		WATTS	95	147	199	250	302
	350	CFM	887	882	868	859	853
		WATTS	84	134	183	233	282
	330	CFM	838	835	819	806	802
		WATTS	74	121	168	216	264
	310	CFM	790	787	771	758	750
		WATTS	64	109	154	200	247
	290	CFM	743	742	724	708	698
		WATTS	56	99	142	186	231
3.0	450	CFM	1349	1340	1337	1339	1357
		WATTS	241	313	384	453	523
	420	CFM	1261	1253	1246	1249	1260
		WATTS	202	270	336	402	467
	400	CFM	1203	1195	1187	1186	1198
		WATTS	179	244	308	370	434
	370	CFM	1116	1106	1097	1095	1101
		WATTS	147	208	268	327	386
	350	CFM	1058	1049	1039	1034	1035
		WATTS	129	187	244	301	356
	330	CFM	998	991	980	972	972
		WATTS	112	167	221	275	329
	310	CFM	940	933	921	911	911
		WATTS	97	149	201	252	304
	290	CFM	882	877	863	852	848
		WATTS	83	132	182	231	280

Airflow Tables

Table 6. L8V1B080U4VS Cooling Airflow (continued)

L8V1B080U4VS Furnace Cooling Airflow (CFM) and Power (Watts) vs. External Static Pressure with Filter							
3.5	450	CFM	1565	1559	1562	1575	1597
		WATTS	360	442	523	604	682
	420	CFM	1465	1457	1455	1463	1484
		WATTS	300	378	454	528	603
	400	CFM	1397	1388	1384	1392	1408
		WATTS	264	339	411	484	555
	370	CFM	1295	1285	1280	1283	1296
		WATTS	216	286	354	421	488
	350	CFM	1227	1219	1213	1210	1221
		WATTS	188	254	320	383	447
	330	CFM	1159	1151	1142	1139	1148
		WATTS	162	225	287	348	409
	310	CFM	1091	1083	1073	1068	1073
		WATTS	139	199	258	315	373
	290	CFM	1023	1015	1004	998	1000
		WATTS	119	175	230	286	341
4.0 (a)	450	CFM	1779	1779	1788	1807	1839
		WATTS	513	607	698	788	877
	420	CFM	1665	1661	1666	1683	1712
		WATTS	427	514	600	685	769
	400	CFM	1589	1584	1587	1600	1623
		WATTS	375	459	541	622	702
	370	CFM	1474	1465	1466	1475	1495
		WATTS	305	383	460	536	611
	350	CFM	1397	1388	1384	1392	1408
		WATTS	264	339	411	484	555
	330	CFM	1319	1310	1304	1308	1323
		WATTS	227	298	367	435	503
	310	CFM	1241	1232	1227	1226	1237
		WATTS	194	261	327	391	455
	290	CFM	1164	1155	1147	1144	1153
		WATTS	164	227	289	350	411

(a) Factory Setting

Table 7. L8V1C100U5VS Heating Airflow

L8V1C100U5VS Furnace Heating Airflow (CFM), Temp. Rise (°F), and Power (Watts) vs. External Static Pressure (iwc) with Filter								
				Heating Capacity = 80,200				
Heating	Airflow Setting	Target Airflow		External Static Pressure				
				0.1	0.3	0.5	0.7	0.9
Heating	Low (a)	1500	CFM	1608	1624	1640	1656	1672
			Temp. Rise	46	46	46	45	45
			Watts	231	301	371	440	510
	Medium Low	1600	CFM	1685	1701	1716	1732	1747
			Temp. Rise	44	44	44	43	43
			Watts	264	343	422	500	579
	Medium	1900	CFM	2014	2021	2027	2033	2039
			Temp. Rise	37	37	37	37	37
			Watts	435	524	613	703	792
	High	2000	CFM	2086	2085	2084	2083	2082
			Temp. Rise	36	36	36	36	36
			Watts	510	606	701	796	892

(a) Factory Setting

Table 8. L8V1C100U5VS Cooling Airflow

L8V1C100U5VS Furnace Cooling Airflow (CFM) and Power (Watts) vs. External Static Pressure with Filter							
Outdoor Tonnage - ODT	Airflow Setting (CFM/Ton)		EXTERNAL STATIC PRESSURE (IN. W. C.)				
			0.1	0.3	0.5	0.7	0.9
2.5	450	CFM	1107	1105	1101	1094	1085
		WATTS	105	152	205	261	321
	420	CFM	1033	1029	1023	1015	1004
		WATTS	88	134	184	239	297
	400	CFM	983	978	971	961	950
		WATTS	78	122	172	225	282
	370	CFM	909	901	892	880	866
		WATTS	65	107	155	206	262
	350	CFM	860	850	838	824	808
		WATTS	57	98	144	195	250
	330	CFM	810	797	783	767	750
		WATTS	50	90	135	185	238
	310	CFM	760	744	728	710	691
		WATTS	44	82	126	175	228
3.0	450	CFM	1328	1328	1327	1324	1318
		WATTS	167	221	280	342	407
	420	CFM	1240	1239	1237	1233	1226
		WATTS	140	191	247	307	370
	400	CFM	1180	1180	1177	1172	1164
		WATTS	123	173	227	286	347
	370	CFM	1092	1090	1085	1079	1069
		WATTS	101	148	201	257	316
	350	CFM	1033	1029	1023	1015	1004
		WATTS	88	134	184	239	297
	330	CFM	973	968	961	951	938
		WATTS	76	120	170	223	279
	310	CFM	914	907	897	885	871
		WATTS	66	108	156	208	263
3.5	450	CFM	1550	1549	1548	1545	1540
		WATTS	253	312	377	446	517
	420	CFM	1447	1446	1445	1442	1437
		WATTS	210	267	328	394	462
	400	CFM	1378	1377	1377	1374	1368
		WATTS	184	239	299	363	429
	370	CFM	1274	1274	1272	1269	1262
		WATTS	150	202	259	320	384
	350	CFM	1205	1204	1202	1198	1190
		WATTS	130	180	235	294	356
	330	CFM	1136	1135	1131	1126	1117
		WATTS	112	160	214	271	331
	310	CFM	1067	1064	1060	1052	1042
		WATTS	95	142	194	249	307
290	290	CFM	998	994	987	978	966
		WATTS	81	126	176	229	286

Airflow Tables

Table 8. L8V1C100U5VS Cooling Airflow (continued)

L8V1C100U5VS Furnace Cooling Airflow (CFM) and Power (Watts) vs. External Static Pressure with Filter							
4.0	450	CFM	1773	1769	1765	1760	1754
		WATTS	364	430	501	576	653
	420	CFM	1654	1652	1649	1646	1640
		WATTS	301	364	431	503	577
	400	CFM	1575	1574	1572	1569	1564
		WATTS	264	324	390	459	530
	370	CFM	1456	1456	1455	1452	1447
		WATTS	214	271	333	399	467
	350	CFM	1378	1377	1377	1374	1368
		WATTS	184	239	299	363	429
	330	CFM	1299	1299	1297	1294	1288
		WATTS	158	210	268	330	394
	310	CFM	1220	1219	1217	1213	1206
		WATTS	134	185	240	300	362
4.5	450	CFM	1996	1988	1980	1971	1962
		WATTS	506	578	655	736	819
	420	CFM	1862	1856	1851	1845	1837
		WATTS	417	486	559	636	715
	400	CFM	1773	1769	1765	1760	1754
		WATTS	364	430	501	576	653
	370	CFM	1639	1637	1635	1631	1626
		WATTS	294	356	423	494	568
	350	CFM	1550	1549	1548	1545	1540
		WATTS	253	312	377	446	517
	330	CFM	1461	1461	1460	1457	1452
		WATTS	216	273	335	401	470
	310	CFM	1373	1373	1372	1369	1363
		WATTS	182	237	297	361	427
5.0 (a)	450	CFM	2220	2206	2194	2181	2167
		WATTS	680	759	842	929	1018
	420	CFM	2071	2061	2051	2041	2031
		WATTS	560	635	714	796	882
	400	CFM	1971	1963	1956	1948	1939
		WATTS	488	560	636	716	799
	370	CFM	1823	1817	1813	1807	1800
		WATTS	393	461	533	608	687
	350 (a)	CFM	1723	1720	1717	1712	1707
		WATTS	337	402	471	544	620
	330	CFM	1624	1622	1620	1617	1612
		WATTS	287	349	415	486	559
	310	CFM	1526	1525	1523	1520	1515
		WATTS	242	301	365	433	503
	290	CFM	1427	1427	1426	1423	1418
		WATTS	202	258	320	385	453

(a) Factory Setting

Integrated Furnace Control Display Codes

Inducer with ECM Blower Motor	
<i>i dL</i>	Idle
<i>HtL</i>	Gas Heating
<i>ArF</i>	Calculated Airflow (Followed by Airflow times 10)
<i>CDf</i>	Continuous Fan
<i>CL1</i>	First Stage Cooling
<i>CL2</i>	Second Stage Cooling
<i>HP1</i>	First Stage Heat Pump
<i>HP2</i>	Second Stage Heat Pump
<i>dFt</i>	Defrost Mode
Menu Options	
<i>Err</i>	Active Alarm Menu
<i>L6F</i>	Last 6 Faults (To clear — Hold Option button down for 5 seconds)
<i>Cr</i>	Code Release Number
<i>COd</i>	Cooling Off Delay (Seconds)
<i>OdL</i>	Outdoor Tonnage
<i>OdU</i>	Outdoor Unit
<i>COF</i>	Blower Constant Fan Airflow Multiplier (Percentage)
<i>CPc</i>	Cooling (CFM/Ton)
<i>CPH</i>	Heat Pump Heating (CFM/Ton)
<i>Hod</i>	Heat Off Delay (Seconds)
<i>ISd</i>	Inter-Stage Delay (Seconds)
<i>GHc</i>	Gas Heating CFM (Airflow times 10)
<i>rUn</i>	Run Test Mode

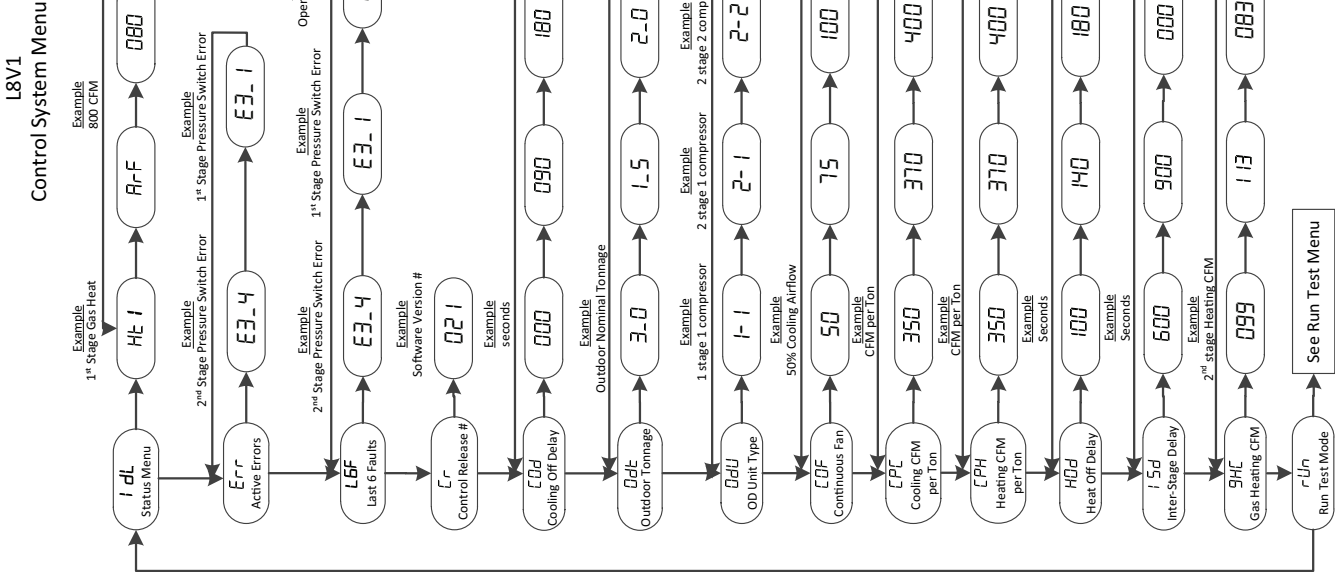
Table 9. Fault Code Recovery

Fault Code Recovery - To view the last 6 faults, press the "Menu" key until the "Last 6 Faults" (<i>L6F</i>) menu appears. - Enter the menu by pressing the "Option" key. - The last 6 faults can be viewed. Clearing the Last 6 Faults - To clear the last 6 faults, press the "Menu" key until the "Last 6 Faults" (<i>L6F</i>) menu appears. - Enter the menu by pressing the "Option" key. - Hold the "Option" key for at least 5 seconds. - Release and a set of 3 dashes with be seen 3 times. This confirms the faults have been cleared. Resetting Factory Defaults - Display must be in Idle Mode. - Push the "Menu" and "Option" buttons at the same time for 15 seconds then release. - The 7 segment will flash "<i>Fd</i>" 3 times. This confirms the unit has been reset to the factory defaults.	IFC Component Layout
--	------------------------------------

Integrated Furnace Control Menu

CLEARING THE LAST 6 FAULTS:
To clear the stored faults, scroll to the last 6 faults menu (L6F), enter the menu by scrolling to the right and hold the "OPTION" key for at least 5 seconds. Release and a set of 3 dashes will be seen 3 times. This confirms the faults have been cleared.

SETTING UP YOUR SYSTEM:
To change any factory default value, first remove and "call" from the furnace and allow any fan off delays to finish. (i dL should be seen on the display.)
Scroll to the selected Menu item by momentarily depressing the "MENU" key and then depress the "OPTION" key to the desired setting. Then momentarily depress the "MENU" key again to save the change.



Note:
Do not adjust COF above 50%.

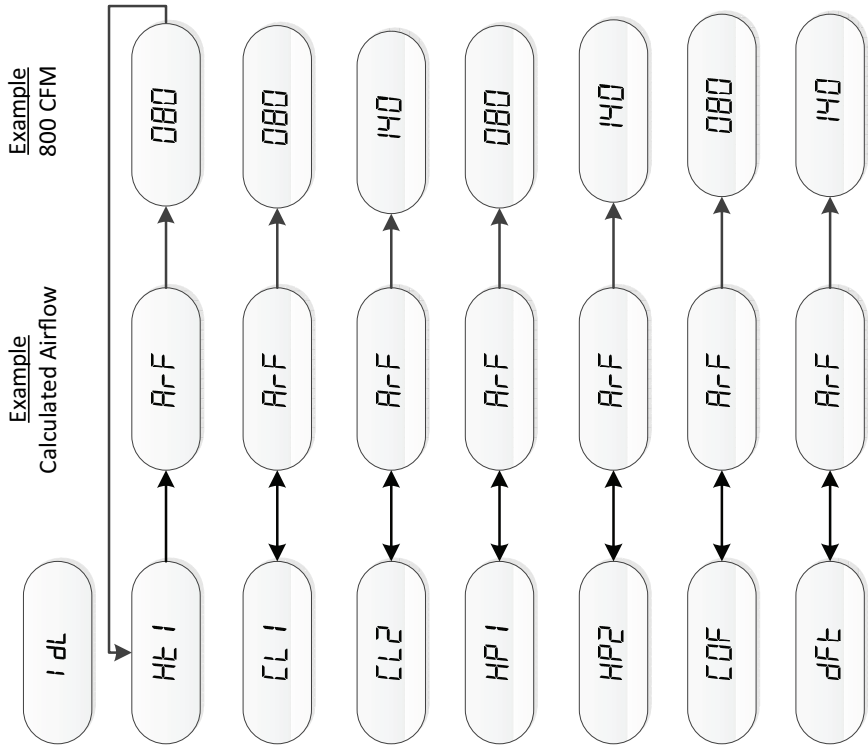
Important:
When applied with zoning or a VSPD outdoor unit, the CFM/Ton must be set to 400 and ODT must match the OD tonnage.

Gas heating CFM can be adjusted while the unit is operating in gas heat mode to enable the technician to quickly adjust to the manufacturer's suggested heat rise across the heat exchanger.
Multiply the value shown by 10 for actual airflow.

Model	Gas Heating CFM	[]=Default
L8V1A040U3VS	061[061]	063, 070, 055
L8V1A060U3VS	099[099]	113, 083, 096
L8V1B080U4VS	135[135]	140, 118, 125
L8V1C100U5VS	150[150]	160, 190, 200

L8V1

Examples of System Status



i dL = Idle, no demand for cooling, heating, or fan
Ht I = Demand for 1st stage gas heat
CL I = Demand for 1st stage cooling
CL2 = Demand for 2nd stage cooling
HP I = Demand for 1st stage heat pump
HP2 = Demand for 2nd stage heat pump
COF = Demand for continuous fan
dFt = Demand for outdoor unit defrost, furnace running in gas heat mode
Ar F / 080 Calculated airflow is 800 CFM.
Airflow display is rounded down to the nearest 10 cfm

NOTES:

- (1) The menu status displayed is solely dependent on the input of 24VAC that is applied to the low voltage terminal strip.
- (2) The status will alternate between the system mode and the airflow request every 2 seconds.
- (3) If an error occurs, an E*.* will alternately flash with the system mode and airflow request. See first example
- (4) Multiply the value shown by 10 for actual airflow

Integrated Furnace Control Menu

Note: During run test mode, depressing the option key will allow the user to hold (HLD) that test sequence if measurements want to be taken. The exception is RU3 (ignitor).



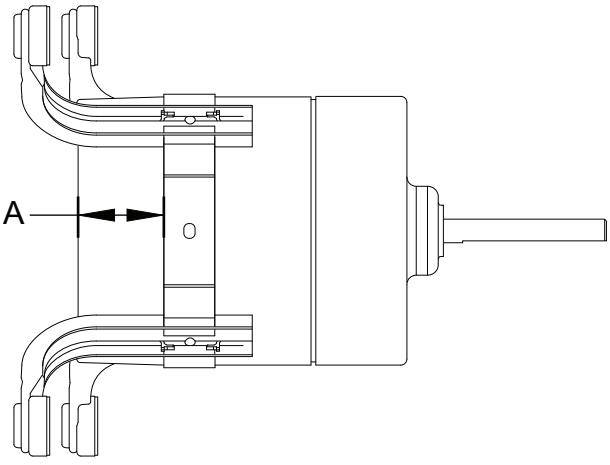
Run Test Mode:
To enter Run Test Mode, scroll to *rUn* using the Menu key, then push the option key. The LED will flash *rUn* three times, then begin the test.
To exit the test mode, momentarily push the Menu key, cycle power to the furnace, or make a valid thermostat call for capacity or fan.

Sequence of Run Test Mode
rU1 – Turns the inducer on in 1st stage for 30 seconds
rU3 – Turns the ignitor on for 10 seconds
rU4 – Turns the circulating blower on 1st stage compressor speed for 10 seconds
rU5 – Turns the circulating blower on 2nd stage compressor speed for 10 seconds
rU6 – Turns the circulating blower on 1st stage gas heat speed for 10 seconds
The above sequence will repeat two more times unless the Run Test Mode is exited, see above

Important: The Run Test Mode does not test fire the furnace or bring the outdoor unit on. It is designed to allow the technician to observe each mode to ensure the IFC, inducer, and circulating blower are performing as intended.

Belly Band Location

Distance from belly band to the front face of motor for minimum vibration

 Blower housings and wheel removed from view for clarity.	Furnace Cabinet Size	Dimension "A" (inches)
	A	3.87
	B	5.04
	C	1.79

LED Fault Codes

LED	ERROR	ERROR EXPLANATION	POSSIBLE CAUSE/ACTION
E01	Loss of IRQ	Internal IFC failure	Replace IFC
E2.1	Retries Exceeded (5 retries, 6 total)	Flame never sensed (5 retries, 6 total results in one hour lockout)	Gas valve not energized, flame sensor faulty, low manifold pressure
E2.2	Recycles Exceeded (9 recycles, 10 total)	Flame sensed and lost (9 recycles, 10 total results in one hour lockout)	Low manifold pressure, dirty burner system, weak flame sensor
E2.3	External Lockout	First stage gas valve not energized when it should be	Replace IFC
E2.4		HLO relay not energized when it should be	Replace IFC
E3.1	Pressure Transducer Error	Signal Not Present Less than 0.25VDC @ 5.0VDC supply for 2 secs. (RD - GND)	Verify transducer tubing is connected and connector is fully seated on the IFC Remove transducer from IFC and verify ~4.8VDC from VCC - GND Low supply voltage, replace IFC. Nominal supply voltage, replace transducer
E3.2		Signal Out of Bounds Greater than 4.25V @ 5.0V supply for 10 secs. (RD - GND)	Verify transducer tubing is connected and connector is fully seated on the IFC Remove transducer from IFC and verify ~4.8VDC from VCC - GND Nominal supply voltage, replace transducer
E3.3		Insufficient Pressure Inducer is unable to reach pressure setting at maximum speed after 10 seconds. (PI - GND)	Verify transducer tubing is connected and connector is fully seated on the IFC Remove transducer from IFC and verify ~4.8VDC from VCC - GND
E04	Open Limit Switch	A thermal limit has opened in the safety circuit	Primary, burner box, or reverse airflow limit tripped Primary Limit - Dirty filter, restricted airflow Burner Box Limit - High manifold pressure, clogged burner inlet, dirty burner system
E05	Flame Sense Error	Flame sensed when no flame should be present	Verify drip leg/sediment trap is installed. Remove gas valve and inspect for signs of debris. Clear debris of gas system and replace gas valve if necessary
E6.1	Reversed Polarity	Hot & neutral reversed	Triggered when Neutral - Ground voltage is greater than 50VAC
E6.2	Ground Error	Ground not detected	Triggered when Neutral - Ground voltage is greater than 20VAC but less than 50VAC
E7.1	External Gas Valve Error	1st Stage Gas Valve (MVL) is Energized when it should be Off	Verify 24VAC is not present on gas valve. Replace IFC
E7.2		Redundant Relay (HLO output) Energized when it should be Off	Verify 24VAC is not present on gas valve. Replace IFC
E08	Low Flame Sense	Flame current is low, but still strong enough to allow operation	Clean flame rod with steelwool only. Replace as necessary
E10	Inducer Communication Error	Inducer motor no communication response	Possibly caused by a communication failure between two microcontrollers. Replace IFC
E11	Internal Gas Valve Error	1st stage gas valve energized when it should not be	Verify all wiring is correct and intact. Replace IFC
		1st stage gas valve not energized when it should be	Verify all wiring is correct and intact. Replace IFC
		Redundant relay (HLO output) not energized when it should be. After 10 unsuccessful tries, E11 will populate and enter into a one hour lockout	Verify all wiring is correct and intact. Replace IFC
E12	Open Fuse	Low voltage fuse blown	Verify approved accessories are connected to xfmr power. Reconnect low voltage field wiring, wire by wire if necessary to eliminate components.

LED Fault Codes

LED	ERROR	ERROR EXPLANATION	POSSIBLE CAUSE/ACTION
E13	PM Motor ID Error	PM motor information does not match the motor installed	Verify correct motor HP with Service Facts. Replacement motor is not approved
E14	Personality Module Missing	PM is not plugged in	Verify PM is fully seated, cycle power to unit
E15	Personality Module Memory Error	Internal PM error	Cycle power to unit. Replace PM
E17	Blower Communication Error on Motor	IFC Rx not detecting motor feedback	Verify wiring from IFC to motor paying close attention to bulkhead connectors and motor connectors behind bulkhead
E18	Blower Communication Error on IFC	IFC Tx not detecting IFC feedback	Remove 4 pin motor connector from IFC. If E17 populates, the IFC is good. Verify wiring from IFC to motor. If wiring is verified, replace motor

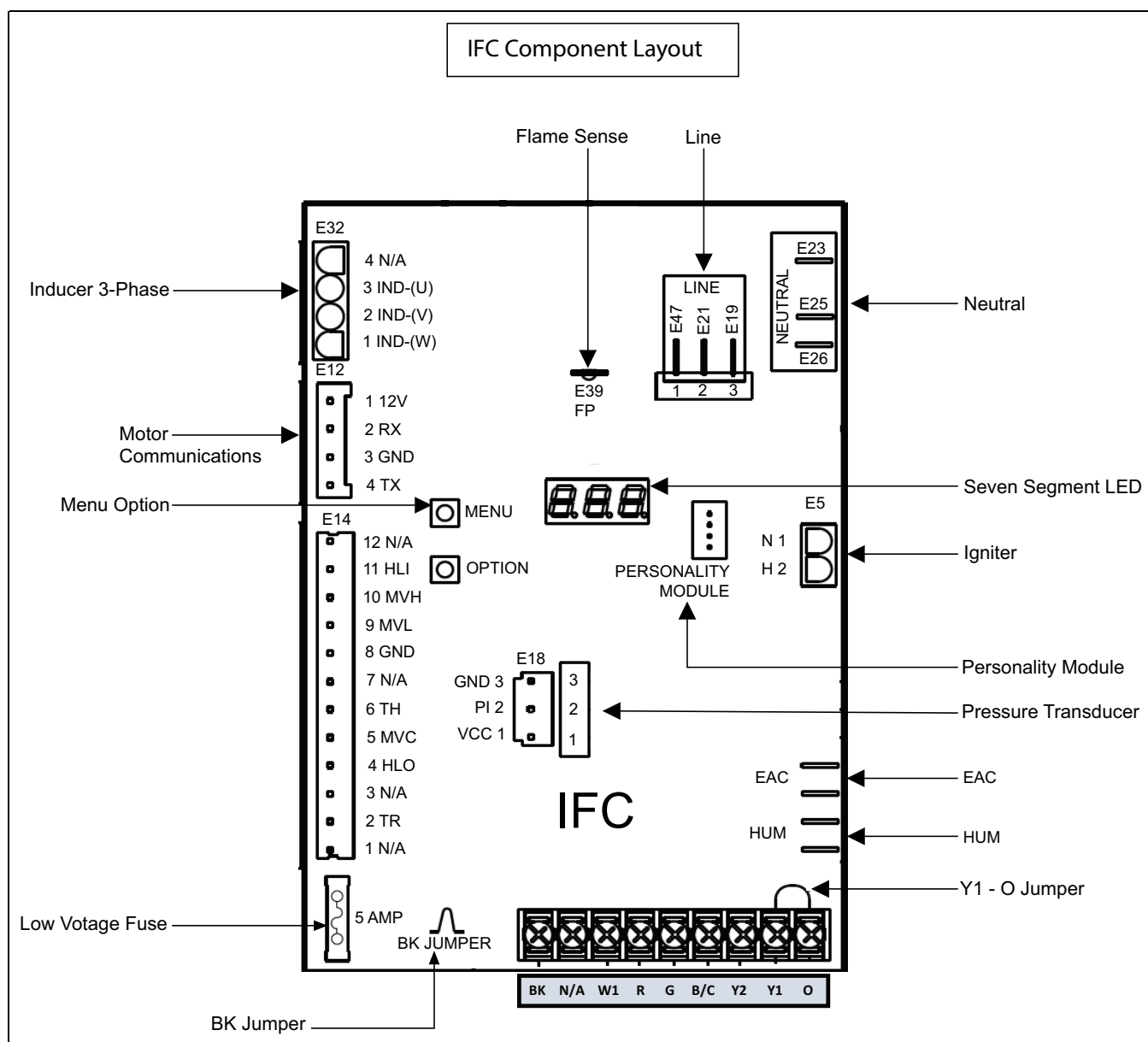


Table 10. Inducer Pressure Transducer

L8V1A040U3VS*		
Inducer Mode	Pressure (in/H2O)	VDC Pins 2 & 3
OFF	0	0.5
Pre-Purge	- 1.3	1.8
Light-Off	- 1.3	1.8
Stabilization	- 1.4	1.9
Run	- 1.75	2.25

L8V1A060U3VS*		
Inducer Mode	Pressure (in/H2O)	VDC Pins 2 & 3
OFF	0	0.5
Pre-Purge	- 1.6	0.1
Light-Off	- 1.1	1.6
Stabilization	- 1.3	1.8
Run	- 1.6	2.1

L8V1B080U4VS*		
Inducer Mode	Pressure (in/H2O)	VDC Pins 2 & 3
OFF	0	0.5
Pre-Purge	- 1.5	2
Light-Off	- 0.75	1.25
Stabilization	- 1	1.5
Run	- 1.68	2.18

L8V1C100U5VS*		
Inducer Mode	Pressure (in/H2O)	VDC Pins 2 & 3
OFF	0	0.5
Pre-Purge	- 1.5	2
Light-Off	- 0.9	1.4
Stabilization	- 1.2	1.7
Run	- 1.6	2.1

Note: Source voltage = ~4.8 VDC with pressure transducer removed Pins 2 & 3.

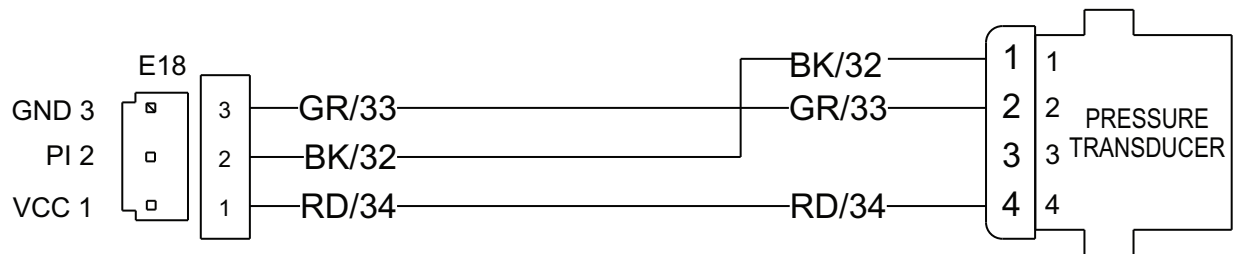
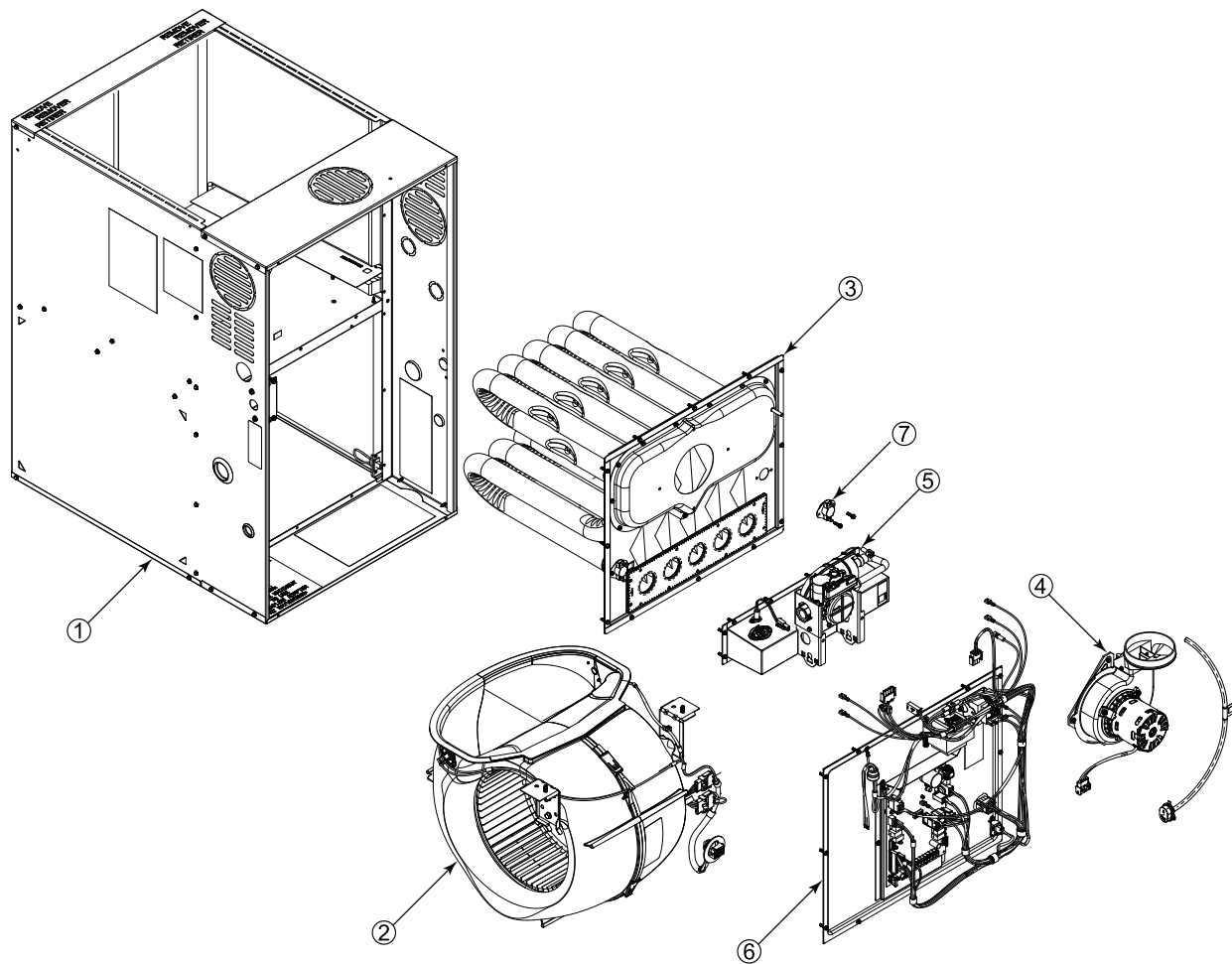


Table 11. Pressure Transducer

E18 Source Voltage 5Vdc Pins 1-2 (GR-RD)	
Hot Header Pressure Inches W.C.	Transducer Signal Vdc Pins 1-3 (GR-BK @ E18)
0.00	0.50
0.10	0.60
0.20	0.70
0.30	0.80
0.40	0.90
0.50	1.00
0.60	1.10
0.70	1.20
0.80	1.30
0.90	1.40
1.00	1.50
1.10	1.60
1.20	1.70
1.30	1.80
1.40	1.90
1.50	2.00
1.60	2.10
1.70	2.20
1.80	2.30
1.90	2.40
2.00	2.50
2.10	2.60
2.20	2.70
2.30	2.80
2.40	2.90
2.50	3.00
2.60	3.10
2.70	3.20
2.80	3.30
2.90	3.40
3.00	3.50
3.10	3.60
3.20	3.70
3.30	3.80
3.40	3.90
3.50	4.00
3.60	4.10
3.70	4.20
3.80	4.30
3.90	4.40
4.00	4.50

Parts List

Figure 1. L8V1 Parts Exploded View



1. Furnace cabinet assembly
 - a. Blower deck
 - b. Panel loop interlock (door switch)
2. Blower assembly
 - a. Variable speed motor
 - b. Vortica blower housing
 - c. RAF – Reverse airflow limit switches
3. Heat exchanger assembly
 - a. Burner tube insulation sleeves
 - b. Burner box insulation
 - c. Flue collector box
4. Inducer assembly
 - a. Combustion motor
 - b. Pressure transducer

5. Burner assembly
 - a. Ignitor
 - b. Flame sensor
 - c. Burner box limit
 - d. Orifice
 - e. J-tube
6. Control assembly
 - a. IFC - Integrated Furnace Control
 - b. Transformer
 - c. Motor choke(B80)
 - d. Wire assemblies
7. Primary limit switch

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